









# Trafag - Sensors and monitoring instruments for pressure and temperature

Trafag, a Swiss-based company founded in 1942, is supported by a broad sales and service network in over 40 countries across the world. This allows Trafag to offer customers personalised and competent advice and ensures the best possible service. High-performance development and production departments not only guarantee the fast and reliable delivery of our high-quality and high-precision products, but also ensure that customisations can be implemented in a short time.



## Competent and customer-oriented

Technological competence, manufacturing expertise and customer-orientation form the three cornerstones of Trafag as a company. Trafag is a completely independent company with headquarters in Bubikon, Switzerland, and further manufacturing companies in Germany and the Czech Republic. A fifth of its employees in Switzerland are involved in the fields of research and development, production technology or applications engineering.

## Application and solution-oriented

The direct availability of these resources enables Trafag to be extremely flexible in the areas of development and production as well as in its perception and implementation of customer requirements. Thanks to modular engineering, Trafag is able to efficiently adapt its standard products to the specific needs of customers and to develop special OEM solutions.

## Market-oriented and always within reach

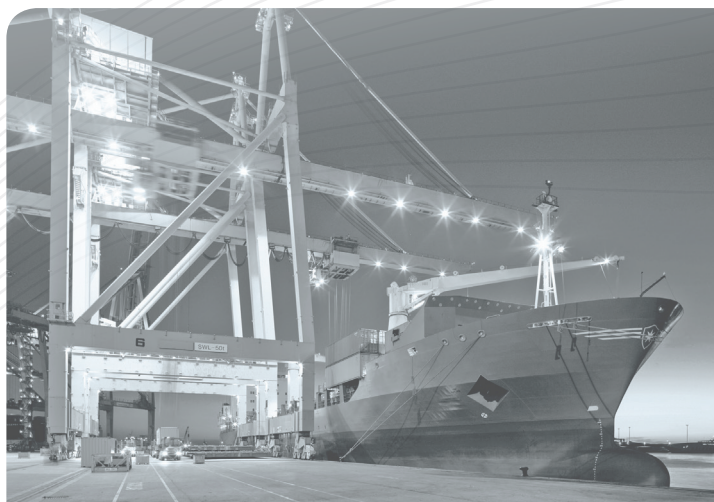
Trafag maintains an active presence in over 40 countries. A great number of customers in diverse industrial sectors such as mechanical engineering, hydraulics, engine manufacturing, shipbuilding, railway technology or high-voltage technology appreciate the cooperation offered by our technically competent customer advisory service.

## Adaptable and efficient

The ability to develop and manufacture its strategically important components in-house means that Trafag can both mass-produce and manufacture on a small scale at short notice. Rigorous quality management in accordance with ISO 9001, state of the art production facilities under clean room conditions and stringently monitored production processes ensure that Trafag meets the highest quality demands.



# Our products are at home where you are



## Shipbuilding



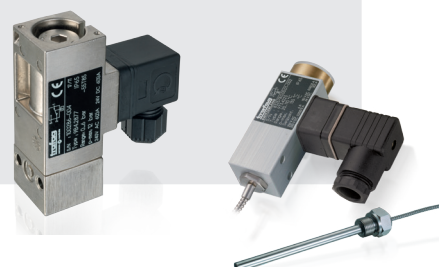
- Propulsion
- Pumps
- Ballast water treatment
- Steering
- Separators
- Tank level



## Hydraulics



- Construction machinery
- Agricultural machinery
- Injection molding machines
- Community vehicles
- Elevators



## Engines



- Common rail injection
- Cooling water
- Oil pressure
- Fuel pressure
- Turbo charger





## Railways

- Brake systems
- Pantograph
- Air compressors



## Water treatment

- Drinking water
- Waste water
- Desalination
- Pools
- Sluice steering
- Level control



## Various

- Chemical industry
- Mining
- Process technology
- Oil and gas
- Machine building industry
- HVAC





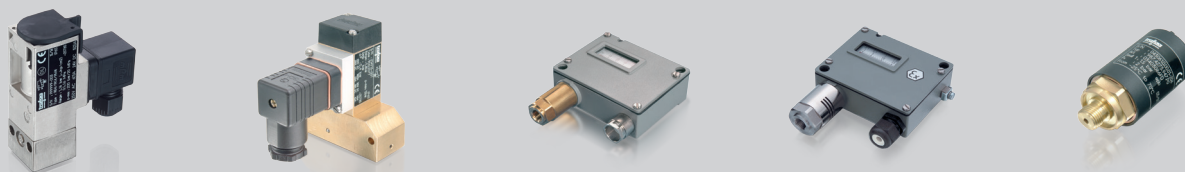
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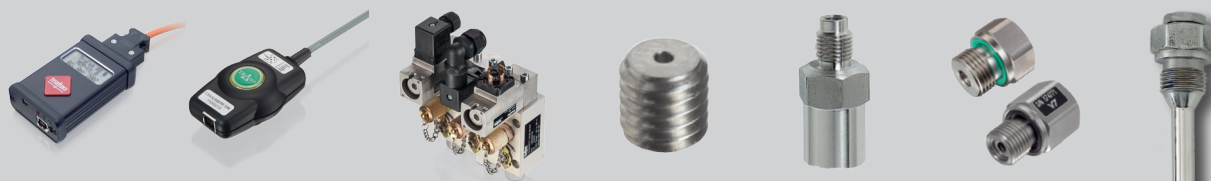


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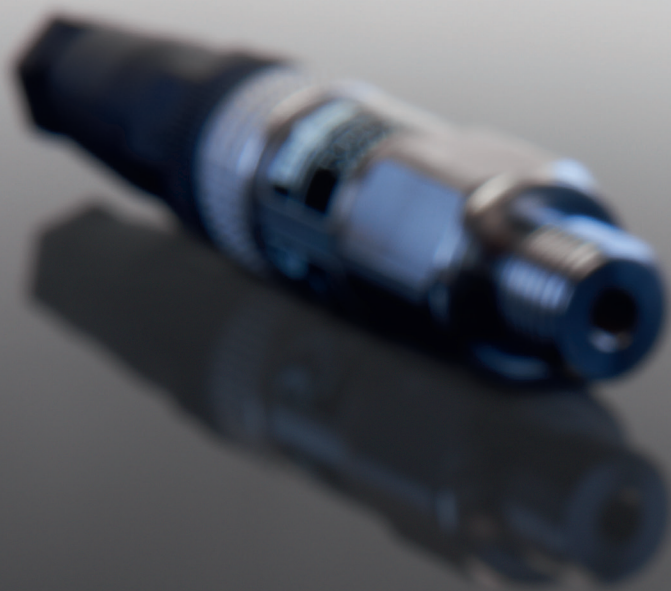
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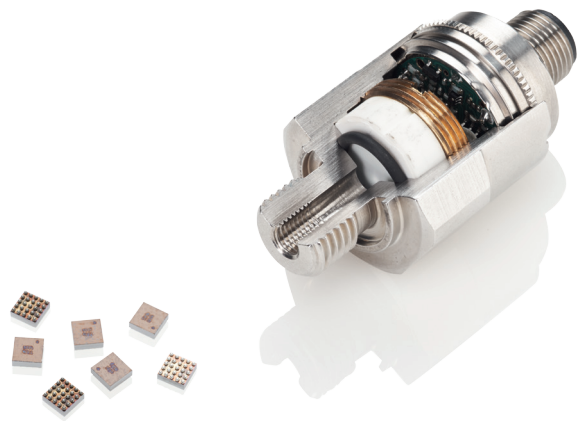


# Pressure transmitters

Trafag pressure transmitters are used for electronically measuring and evaluating pressure. Over the decades they have proven themselves in a multitude of demanding applications in harsh environments. They are available in many different designs to suit pressure and electrical connections, measuring procedures, electrical output signals and certifications (CE, EX, rail and ship). Superior technology and precise manufacturing ensure that the transmitters work perfectly. This is especially important in applications where high requirements are placed on long-term stability, vibration resistance, electromagnetic compatibility, shock resistance or temperature insensitivity.

## Technology

Thin-film-on-steel (welded and O-ring free) or thick-film-on-ceramic pressure sensors are key components of Trafag pressure transmitters. Both sensor technologies as well as the ASIC (application-specific microchip) are developed and produced in-house. As a result, compact pressure sensors and electronics work in perfect partnership and achieve a unique level of long-term stability and reliability even under the most adverse environmental conditions. Trafag is a technological pioneer when it comes to miniaturising robust pressure transmitters.



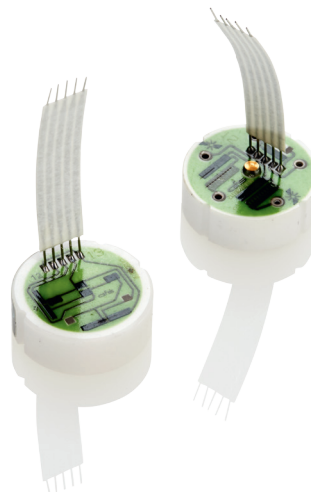
## Thin-film-on-steel technology

- Very good long term stability
- Resistant to high media temperatures
- Completely welded stainless steel sensor system without O-rings
- Resistant to very high over pressures and ideal for nominal pressures up to 3000 bar



## Thick-film-on-ceramic technology

- Resistant to aggressive media
- Ideal for low pressure ranges and absolute measurement
- Economical



# Overview Pressure transmitter

|                                          | NAT<br>8252                                                                                                                                                                                  | NAH<br>8253                                                                                      | NAH<br>8254                                                                                                                                                                                  | NAE<br>8256                                                                         | NSL<br>8257                                                                                                    |  |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--|
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|                                          |                                                                                                             |                 |                                                                                                             |  |                             |  |
| Measuring principle                      | Thin film on steel                                                                                                                                                                           | Thin film on steel                                                                               | Thin film on steel                                                                                                                                                                           | Thin film on steel                                                                  | Thin film on steel                                                                                             |  |
| Measuring range                          | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                         | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                     | 0 ... 10 to 0 ... 600 bar<br>0 ... 150 to 0 ... 7500 psi                            | 0 ... 0.2 to 0 ... 2.5 bar<br>0 ... 3 to 0 ... 30 psi                                                          |  |
| Output signal                            | 4 ... 20 mA, 0.5 ... 4.5 VDC,<br>0 ... 5 VDC, 1 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiometric     | 4 ... 20 mA, 0.5 ... 4.5 VDC,<br>0 ... 5 VDC, 1 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | 4 ... 20 mA                                                                         | 4 ... 20 mA,<br>0 ... 5 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiometric                                   |  |
| Accuracy<br>@ 25°C typ.                  | ± 0.5 % FS typ.                                                                                                                                                                              | ± 0.3 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ.                                           | ± 0.3 % FS typ.                                                                                                                                                                              | 0.5 %: ± 0.5 % FS typ.<br>0.3 %: ± 0.3 % FS typ.                                    | 0.15 ... 0.8 % FS typ.                                                                                         |  |
| Ambient temperature                      | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                                 | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                    | -40°C ... +125°C                                                                                               |  |
| Media temperature                        | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                                 | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                    | -40°C ... +125°C                                                                                               |  |
| Protection                               | IP65, IP67                                                                                                                                                                                   | Min. IP65                                                                                        | IP65, IP67                                                                                                                                                                                   | IP65, IP67                                                                          | Min. IP65                                                                                                      |  |
| Sensor<br>(wetted parts)                 | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                                                 | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)                                                                                               |  |
| Pressure<br>connection<br>(wetted parts) | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)<br>1.4301 (AISI304)                                                             | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)                                                                                               |  |
| Housing                                  | 1.4301 (AISI304)                                                                                                                                                                             | 1.4301 (AISI304)                                                                                 | 1.4301 (AISI304)                                                                                                                                                                             | 1.4301 (AISI304)                                                                    | 1.4301 (AISI304)                                                                                               |  |
| Pressure connections                     | G1/4" m, 1/4"NPT m,<br>7/16"-20UNF SAE J512 f,<br>7/16"-20UNF SAE4 m, R1/4" m,<br>R1/8" m, M10x1 m, M12x1.5 m<br>(DIN EN ISO 9974-2)                                                         | G1/4" m, 1/4"NPT m,<br>7/16"-20UNF m,<br>7/16"-20UNF f (valve opener)                            | G1/4" m, 1/4"NPT m,<br>7/16"-20UNF SAE J512 f,<br>7/16"-20UNF SAE4 m, R1/4" m,<br>R1/8" m, M10x1 m, M12x1.5 m<br>(DIN EN ISO 9974-2)                                                         | G1/4" m, 1/4"NPT m,<br>M10x1 m                                                      | G1/4" m, 1/4"NPT m                                                                                             |  |
| Electrical connections                   | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1; Cable                                                                                                                             | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1                                        | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1; cable IP67                                                                                                                        | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1                           | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1                                                      |  |
| Applications                             | Machine tools<br>Hydraulics<br>HVAC<br>Refrigeration<br>Process technology<br>Water treatment                                                                                                | Machine tools<br>Hydraulics<br>Railways<br>Process technology<br>Water treatment<br>Test benches | Machine tools<br>Hydraulics<br>HVAC<br>Refrigeration<br>Process technology<br>Water treatment                                                                                                | Shipbuilding<br>Engine manufacturing<br>Hydraulics                                  | Shipbuilding<br>Engine manufacturing<br>Machine tools<br>Process technology<br>Water treatment<br>Test benches |  |
| Approval /<br>conformity                 |                                                                                                                                                                                              |                                                                                                  |                                                                                                                                                                                              | ABS, BV, DNV, GL, LRS, KRS,<br>NKK, RINA, RMRS                                      | GL, DNV, RINA                                                                                                  |  |
| Data sheet                               | <a href="http://www.trafag.com/H72303">www.trafag.com/H72303</a>                                                                                                                             | <a href="http://www.trafag.com/H72300">www.trafag.com/H72300</a>                                 | <a href="http://www.trafag.com/H72304">www.trafag.com/H72304</a>                                                                                                                             | <a href="http://www.trafag.com/H72305">www.trafag.com/H72305</a>                    | <a href="http://www.trafag.com/H72302">www.trafag.com/H72302</a>                                               |  |
| Instructions                             | <a href="http://www.trafag.com/H73303">www.trafag.com/H73303</a>                                                                                                                             | <a href="http://www.trafag.com/H73250">www.trafag.com/H73250</a>                                 | <a href="http://www.trafag.com/H73303">www.trafag.com/H73303</a>                                                                                                                             | <a href="http://www.trafag.com/H73303">www.trafag.com/H73303</a>                    | <a href="http://www.trafag.com/H73250">www.trafag.com/H73250</a>                                               |  |



| ECT<br>8472                                                                                                                                            | ECT 0.3 % (0.5 %, 1.0 %)<br>8473                                                                                        | ECTR<br>8471                                                                                                            | ECTN<br>8477                                                                                                         | EPI<br>8287                                                                         | EPN/EPNCR<br>8298                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
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|                                                                        |                                        |                                        |                                     |  |      |
| Thick film on ceramic                                                                                                                                  | Thick film on ceramic                                                                                                   | Thick film on ceramic                                                                                                   | Thick film on ceramic                                                                                                | Thin film on steel                                                                  | Thin film on steel                                                                      |
| 0 ... 1 to 0 ... 400 bar<br>0 ... 15 to 0 ... 5000 psi                                                                                                 | 0 ... 0.1 to 0 ... 40 bar<br>0 ... 1.5 to 0 ... 500 psi                                                                 | -1 ... 9 to 0 ... 40 bar<br>0 ... 15 to 0 ... 500 psi                                                                   | 0 ... 1 to 0 ... 400 bar<br>0 ... 15 to 0 ... 5000 psi                                                               | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                            | 0 ... 2.5 to 0 ... 2500 bar                                                             |
| 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom.                                                               | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom.                                | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom.                                | 4 ... 20 mA                                                                                                          | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC                        | 4 ... 20 mA<br>0.5 ... 4.5 VDC ratiometric                                              |
| ± 0.5 % FS typ.                                                                                                                                        | ± 0.3 % FS typ.<br>(± 0.5 % FS typ.,<br>± 1 % FS typ.)                                                                  | ± 0.5 % FS typ.                                                                                                         | ± 0.5 % FS typ.                                                                                                      | ± 0.5 % FS typ.                                                                     | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                                      |
| -25°C ... +85°C                                                                                                                                        | -25°C ... +85°C                                                                                                         | -25°C ... +85°C                                                                                                         | -25°C ... +85°C                                                                                                      | -40°C ... +125°C                                                                    | -40°C ... +125°C                                                                        |
| -25°C ... +125°C                                                                                                                                       | -25°C ... +125°C                                                                                                        | -25°C ... +125°C                                                                                                        | -25°C ... +85°C                                                                                                      | -40°C ... +125°C                                                                    | -40°C ... +125°C                                                                        |
| Min. IP65                                                                                                                                              | Min. IP65                                                                                                               | Min. IP65                                                                                                               | Min. IP65                                                                                                            | IP65                                                                                | IP65, IP67, IP69K                                                                       |
| Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                                                                                         | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                                                          | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                                                          | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                                                       | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)                                                                        |
| 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                                                 | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                  | 1.4305 (AISI303)                                                                                                        | 1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                                   | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)<br>1.4301 (AISI304)                                                    |
| 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                                                 | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                  | 1.4305 (AISI303)                                                                                                        | 1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                                   | 1.4542 (AISI630)                                                                    | 1.4301 (AISI304)                                                                        |
| G1/4" f, G1/4" m, G1/2" m<br>DIN3852-A, G1/2" m<br>DIN3852-E, 1/4"NPT m,<br>7/16"-20UNF m SAE4,<br>R1/4" m ISO-7-1 (DIN2999)<br>G3/4" frontal membrane | G1/4" f, G1/4" m, G1/2" m,<br>1/4"NPT m,<br>G3/4" frontal membrane                                                      | 7/16"-20UNF m,<br>7/16"-20UNF SAE J512 f,<br>1/4"NPT m                                                                  | G1/4" f, G1/4" m, G1/2" m,<br>1/4"NPT m                                                                              | G1/4" m, G1/4" f, G1/2" m,<br>1/4"NPT m                                             | G1/4" m, R1/4" m,<br>G1/2" m (Manom.),<br>1/4"NPT m, 1/2"NPT m,<br>M14x1.5 m, M18x1.5 m |
| EN175301-803-A<br>(DIN43650-A); M12x1;<br>Industrial standard,<br>contact distance 9.4 mm;<br>Packard Metri Pack; Cable                                | EN175301-803-A<br>(DIN43650-A); M12x1;<br>Industrial standard,<br>contact distance 9.4 mm;<br>Packard Metri Pack; Cable | EN175301-803-A<br>(DIN43650-A); M12x1;<br>Industrial standard,<br>contact distance 9.4 mm;<br>Packard Metri Pack; Cable | EN175301-803-A<br>(DIN43650-A); M12x1;<br>Industrial standard,<br>contact distance 9.4 mm;<br>Cable IP67; Cable IP68 | Industrial standard,<br>contact distance 9.4 mm;<br>M12x1; Packard Metri Pack       | EN175301-803-A<br>(DIN43650-A); DIN72585;<br>Cable                                      |
| Machine tools<br>Hydraulics<br>Water treatment                                                                                                         | Machine tools<br>Hydraulics<br>Water treatment                                                                          | HVAC<br>Refrigeration                                                                                                   | Shipbuilding<br>Engine manufacturing                                                                                 | Machine tools<br>Hydraulics<br>Industrial applications                              | Shipbuilding<br>Engine manufacturing<br>Machine tools<br>Hydraulics                     |
|                                                                                                                                                        |                                                                                                                         |                                                                                                                         | DNV, GL, KRS, RINA                                                                                                   |                                                                                     | ABS, BV, CCS, DNV, GL, KRS,<br>LRS, NKK, RINA, RMRS                                     |
| <a href="http://www.trafag.com/H72324">www.trafag.com/H72324</a>                                                                                       | <a href="http://www.trafag.com/H72326">www.trafag.com/H72326</a>                                                        | <a href="http://www.trafag.com/H72323">www.trafag.com/H72323</a>                                                        | <a href="http://www.trafag.com/H72322">www.trafag.com/H72322</a>                                                     | <a href="http://www.trafag.com/H72317">www.trafag.com/H72317</a>                    | <a href="http://www.trafag.com/H72312">www.trafag.com/H72312</a>                        |
| <a href="http://www.trafag.com/H73324">www.trafag.com/H73324</a>                                                                                       | <a href="http://www.trafag.com/H73324">www.trafag.com/H73324</a>                                                        | <a href="http://www.trafag.com/H73324">www.trafag.com/H73324</a>                                                        | <a href="http://www.trafag.com/H73324">www.trafag.com/H73324</a>                                                     | <a href="http://www.trafag.com/H73317">www.trafag.com/H73317</a>                    | <a href="http://www.trafag.com/H73311">www.trafag.com/H73311</a>                        |

# Overview electronic pressure switches

|                                               | EPN-S<br>8320                                                                     | DPC<br>8380                                                                                                                                                                      | DPS<br>8381                                                                            | DCS<br>8864                                                                               |  |  |
|-----------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--|--|
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|                                               |  |                                                                                                 |       |        |  |  |
| <b>Measuring principle</b>                    | Thin film on steel                                                                | Thick film on ceramic                                                                                                                                                            | Thin film on steel                                                                     | Thin film on steel                                                                        |  |  |
| <b>Measuring range</b>                        | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                          | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi<br>adjustable 50 ... 100 % FS                                                                                             | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi<br>adjustable 50 ... 100 % FS | 0 ... 1 to 0 ... 600 bar                                                                  |  |  |
| <b>Output signal</b>                          | Transistor (open source)                                                          | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>switchable mA or V                                                                                                    | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>switchable mA or V          | 4 ... 20 mA, 0 ... 10 VDC<br>2 Relays, electrically isolated<br>30W (max. 1A), 36 VAC/ DC |  |  |
| <b>Accuracy<br/>@ 25°C typ.</b>               | ± 0.5 % FS typ. (Switchpoint)                                                     | ± 0.5 % FS typ.                                                                                                                                                                  | ± 0.5 % FS typ.                                                                        | ± 0.5 % FS typ.                                                                           |  |  |
| <b>Ambient temperature</b>                    | Standard: -25°C ... +85°C<br>Option: -40°C ... +125°C                             | -25°C ... +85°C                                                                                                                                                                  | -25°C ... +85°C                                                                        | -25°C ... +80°C<br>(LCD display -10°C ... +70°C)                                          |  |  |
| <b>Media temperature</b>                      | -40°C ... +125°C                                                                  | -25°C ... +85°C                                                                                                                                                                  | -25°C ... +85°C                                                                        | -25°C ... +125°C                                                                          |  |  |
| <b>Protection</b>                             | IP65 (IP67), IP69K                                                                | IP65                                                                                                                                                                             | IP65                                                                                   | IP65                                                                                      |  |  |
| <b>Sensor<br/>(wetted parts)</b>              | 1.4542 (AISI630)                                                                  | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                                                                                                                   | 1.4542 (AISI630)                                                                       | 1.4542 (AISI630)                                                                          |  |  |
| <b>Pressure connection<br/>(wetted parts)</b> | 1.4542 (AISI630)<br>1.4301 (AISI304)                                              | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5                                                                                           | 1.4542 (AISI630)                                                                       | 1.4542 (AISI630)<br>1.4404 (AISI316L)                                                     |  |  |
| <b>Housing</b>                                | 1.4301 (AISI304)                                                                  | Steel, die cast metal<br>galvanised<br>display housing plastic                                                                                                                   | Steel, die cast metal<br>galvanised<br>display housing plastic                         | 1.4301 (AISI304)                                                                          |  |  |
| <b>Pressure connections</b>                   | G1/4" m, 1/4"NPT m, G1/2" m,<br>M14x1.5 m, 1/2"NPT m                              | G1/4" f, G1/4" m, G1/2" m<br>DIN3852-E, 1/4"NPT m,<br>R1/4" m ISO 7-1 (DIN 2999),<br>7/16"-20UNF m DIN 3866,<br>7/16"-20UNF f SAE J512 valve<br>opener,<br>7/16"-20UNF f (SAE 4) | G1/4" m, R1/4" m, 1/4"NPT m,<br>1/2"NPT m                                              | G1/4" m, G1/4" f, G1/2" m,<br>Flange                                                      |  |  |
| <b>Electrical connections</b>                 | EN175301-803-A<br>(DIN43650-A); Cable                                             | Male electrical plug M12x1,<br>5-pole;<br>Male electrical plug M12x1,<br>4-pole                                                                                                  | Male electrical plug M12x1,<br>5-pole;<br>Male electrical plug M12x1,<br>4-pole        | M12x1, 8-pole                                                                             |  |  |
| <b>Applications</b>                           | Shipbuilding<br>Engine manufacturing<br>Railways                                  | Machine tools<br>HVAC<br>Refrigeration                                                                                                                                           | Machine tools<br>Hydraulics<br>Process technology                                      | Shipbuilding<br>Machine tools<br>Hydraulics                                               |  |  |
| <b>Approval /<br/>conformity</b>              | GL                                                                                |                                                                                                                                                                                  |                                                                                        | GL                                                                                        |  |  |
| <b>Data sheet</b>                             | <a href="http://www.trafag.com/H72333">www.trafag.com/H72333</a>                  | <a href="http://www.trafag.com/H72320">www.trafag.com/H72320</a>                                                                                                                 | <a href="http://www.trafag.com/H72321">www.trafag.com/H72321</a>                       | <a href="http://www.trafag.com/H72605">www.trafag.com/H72605</a>                          |  |  |
| <b>Instructions</b>                           | <a href="http://www.trafag.com/H73333">www.trafag.com/H73333</a>                  | <a href="http://www.trafag.com/H73320">www.trafag.com/H73320</a>                                                                                                                 | <a href="http://www.trafag.com/H73320">www.trafag.com/H73320</a>                       | <a href="http://www.trafag.com/H73605">www.trafag.com/H73605</a>                          |  |  |



# Overview Pressure transmitter

| EPR<br>8293                                                                       | NPN<br>8264                                                                       | FPT<br>8235                                                                                                             | CMP<br>8270                                                                       | N<br>8202                                                                           | ND<br>8204                                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| page 38                                                                           | page 35                                                                           | page 50                                                                                                                 | page 52                                                                           | page 60                                                                             | page 61                                                                             |
|  |  |                                        |  |  |  |
| Thin film on steel                                                                | Thin film on steel                                                                | Thin film on steel                                                                                                      | Thin film on steel                                                                | Thin film on steel                                                                  | Thin film on steel                                                                  |
| 0 ... 2.5 to 0 ... 600 bar                                                        | 0 ... 2.5 to 0 ... 250 bar                                                        | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi                                                                  | 0 ... 1 to 0 ... 600 bar                                                          | 0 ... 1.0 to 0 ... 600 bar                                                          | 0 ... 1 to 0 ... 16 bar                                                             |
| 4 ... 20 mA                                                                       | 4 ... 20 mA                                                                       | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom.                                      | Bus protocol CANopen<br>DS404                                                     | 4 ... 20 mA                                                                         | 4 ... 20 mA (P1-P2)                                                                 |
| ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                                | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                                | ± 0.4 % FS                                                                                                              | ± 0.5 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ.                            |                                                                                     |                                                                                     |
| -40°C ... +125°C                                                                  | -40°C ... +100°C                                                                  | -40°C ... +85°C                                                                                                         | -40°C ... +125°C                                                                  | -25°C ... +85°C                                                                     | -25°C ... +85°C                                                                     |
| -40°C ... +125°C                                                                  | -40°C ... +100°C                                                                  | -40°C ... +125°C                                                                                                        | -50°C ... +135°C                                                                  | -25°C ... +125°C                                                                    | -25°C ... +125°C                                                                    |
| IP65, IP67                                                                        | IP65, IP69K                                                                       | Min. IP65                                                                                                               | Min. IP67                                                                         | Min. IP65                                                                           | Min. IP65                                                                           |
| 1.4542 (AISI630)                                                                  | 1.4542 (AISI630)                                                                  | 1.4542 (AISI630)                                                                                                        | 1.4542 (AISI630)                                                                  | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)                                                                    |
| 1.4542 (AISI630)<br>1.4301 (AISI304)                                              | 1.4542 (AISI630)                                                                  | 1.4542 (AISI630)                                                                                                        | 1.4542 (AISI630)<br>1.4301 (AISI304)                                              | 1.4542 (AISI630)                                                                    | 1.4542 (AISI630)                                                                    |
| 1.4301 (AISI304)<br>1.4542 (AISI630)                                              | 1.4301 (AISI304)                                                                  | 1.4301 (AISI304)                                                                                                        | 1.4301 (AISI304)                                                                  | AlSi10Mg/ Epoxy coated                                                              | AlSi10Mg/ Epoxy coated                                                              |
| G1/4" m, R1/4" m,<br>1/4"NPT m, 1/2"NPT m                                         | G1/4" f, M10x1 f, G1/8" f                                                         | G1/2" m, flush membrane                                                                                                 | G1/4" m, 1/4"NPT m,<br>7/16"-20UNF m,<br>7/16"-20UNF f<br>(valve opener)          | G1/4" f, G1/2" m                                                                    | G1/4" f                                                                             |
| EN175301-803-A<br>(DIN43650-A)                                                    | EN175301-803-A<br>(DIN43650-A); Cable                                             | EN175301-803-A<br>(DIN43650-A); M12x1;<br>Industrial standard,<br>contact distance 9.4 mm;<br>Packard Metri Pack; Cable | M12x1                                                                             | Terminal screw<br>0.75 ... 2.5 mm <sup>2</sup>                                      | Terminal screw<br>0.75 ... 2.5 mm <sup>2</sup>                                      |
| Railways                                                                          | Shipbuilding<br>Engine manufacturing                                              | Engine manufacturing<br>Machine tools                                                                                   | Engine manufacturing<br>Railways                                                  | Shipbuilding<br>Engine manufacturing                                                | Shipbuilding<br>Engine manufacturing                                                |
| EN50155 (Railways)                                                                | ABS, BV, CCS, DNV, GL, KRS,<br>LRS, NKK, RINA, RMRS                               |                                                                                                                         |                                                                                   | ABS, BV, CCS, DNV, GL, KRS,<br>LRS, RINA                                            | BV, DNV, RINA                                                                       |
| <a href="http://www.trafag.com/H72311">www.trafag.com/H72311</a>                  | <a href="http://www.trafag.com/H72313">www.trafag.com/H72313</a>                  | <a href="http://www.trafag.com/H72316">www.trafag.com/H72316</a>                                                        | <a href="http://www.trafag.com/H72614">www.trafag.com/H72614</a>                  | <a href="http://www.trafag.com/H72206">www.trafag.com/H72206</a>                    | <a href="http://www.trafag.com/H72218">www.trafag.com/H72218</a>                    |
| <a href="http://www.trafag.com/H73311">www.trafag.com/H73311</a>                  | <a href="http://www.trafag.com/H73313">www.trafag.com/H73313</a>                  | <a href="http://www.trafag.com/H73316">www.trafag.com/H73316</a>                                                        | <a href="http://www.trafag.com/H73614">www.trafag.com/H73614</a>                  | <a href="http://www.trafag.com/H70722">www.trafag.com/H70722</a>                    | <a href="http://www.trafag.com/H73218">www.trafag.com/H73218</a>                    |

# Overview Ex Pressure transmitters

|                                    | EXNT<br>8292                                                                                           | EXNA<br>8854                                                                                                                                                            | EXL<br>8432                                                                        | EXNAL<br>8858                                                                                             |  |
|------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--|
|                                    | page 64                                                                                                | page 62                                                                                                                                                                 | page 66                                                                            | page 63                                                                                                   |  |
|                                    |                       |                                                                                        |  |                        |  |
| Measuring principle                | Thin film on steel                                                                                     | Piezoresistive                                                                                                                                                          | Thick film on ceramic                                                              | Piezoresistive                                                                                            |  |
| Measuring range                    | 0 ... 0.4 to 0 ... 2000 bar                                                                            | 0 ... 0.1 to 0 ... 1000 bar                                                                                                                                             | 0 ... 0.2 to 0 ... 10 bar                                                          | 0 ... 0.1 to 0 ... 25 bar                                                                                 |  |
| Output signal                      | 4 ... 20 mA                                                                                            | 4 ... 20 mA                                                                                                                                                             | 4 ... 20 mA                                                                        | 4 ... 20 mA                                                                                               |  |
| Accuracy @ 25°C typ.               | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                                                     |                                                                                                                                                                         | ± 0.3 % FS typ.<br>± 0.5 % FS typ.                                                 |                                                                                                           |  |
| Ambient temperature                | Max. -40°C ... +120°C                                                                                  | -40°C ... +125°C                                                                                                                                                        | -20°C ... +70°C                                                                    | -5°C ... +50°C                                                                                            |  |
| Media temperature                  | Max. -40°C ... +120°C                                                                                  | -40°C ... +150°C                                                                                                                                                        | -20°C ... +70°C                                                                    | -5°C ... +50°C                                                                                            |  |
| Protection                         | IP65, IP67                                                                                             | Min. IP65                                                                                                                                                               | IP68 (25 bar; 250m)                                                                | Min. IP68                                                                                                 |  |
| Sensor (wetted parts)              | 1.4542 (AISI630),<br>optional hydrogen-compatible steel                                                | 1.4435 (AISI316L) or titanium                                                                                                                                           | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                     | 1.4435 (AISI316L)                                                                                         |  |
| Pressure connection (wetted parts) | 1.4542 (AISI630)<br>1.4301 (AISI304)<br>optional hydrogen-compatible steel                             | 1.4435 (AISI316L) or titanium                                                                                                                                           | 1.4404/1.4435 (AISI316L)                                                           | 1.4435 (AISI316L) or titanium                                                                             |  |
| Housing                            | 1.4301 (AISI304)                                                                                       | 1.4435 (AISI316L) or titanium                                                                                                                                           | 1.4404/1.4435 (AISI316L)                                                           | 1.4435 (AISI316L) or titanium                                                                             |  |
| Pressure connections               | G1/4" m, G1/4" f, G1/2" m,<br>G1/2" m (Manom.), R1/4" m,<br>1/4"NPT m, M18x1.5 m                       | 1/4" NPT m, 1/2"NPT m, G1/4" f,<br>G1/4" m, G1/2" m,<br>G1/2" m frontal membrane,<br>G1/2" m flush membrane                                                             | Type 1 f, M 10x1,<br>Type 2 m, M 22x1                                              | Open; Closed; G1/4" m                                                                                     |  |
| Electrical connections             | EN175301-803-A; M12x1;<br>MIL-C 26482; Binder 723; Cable                                               | EN175301-803-A; M12x1;<br>MIL-C 26482; Binder 723; Cable                                                                                                                | Cable PUR/FEP/PE                                                                   | Cable PUR/Teflon/PE                                                                                       |  |
| Applications                       | Shipbuilding<br>Ex Zones 0, 1, 2 (gas); 20, 21, 22<br>(dust) and mining<br>Hydrogen                    | Ex Zone 0, 1, 2 / Gas<br>Ex Zone 20, 21, 22 / Dust<br>Ex Underground Mining                                                                                             | Ex Zone 0, 1, 2 / Gas<br>Ex Underground Mining                                     | Shipbuilding<br>Ex SEV 11 ATEX 0145 X                                                                     |  |
| Approval / conformity              | GL, KRS<br>ATEX / IECEx, according to the norm<br>EN/IEC 60079-0/EN 60079-11/<br>EN 60079-26/ EN 50303 | Ex according to standards,<br>IEC/EN 60079-0 /-11/-26,<br>EN 50303                                                                                                      | GL, KRS<br>Ex ATEX/IECEx, EN 60079-0/<br>EN 60079-11/EN 60079-26/<br>EN 50303      | GL, KRS                                                                                                   |  |
| Type of protection                 |                                                                                                        |  II 1G Ex ia IIC T3 ... T6 Ga<br>II 1D Ex ia IIIC IP6x T145 ... T70°C<br>IM1 Ex ia I |                                                                                    |  Ex ia IIC T3 ... T6 |  |
| Data sheet                         | <a href="http://www.trafag.com/H72329">www.trafag.com/H72329</a>                                       | <a href="http://www.trafag.com/H72334">www.trafag.com/H72334</a>                                                                                                        | <a href="http://www.trafag.com/H72330">www.trafag.com/H72330</a>                   | <a href="http://www.trafag.com/H72231">www.trafag.com/H72231</a>                                          |  |
| Instructions                       | <a href="http://www.trafag.com/H73329">www.trafag.com/H73329</a>                                       |                                                                                                                                                                         | <a href="http://www.trafag.com/H73329">www.trafag.com/H73329</a>                   |                                                                                                           |  |



# Overview Submersible pressure transmitters

| ECL<br>8438                                                                       | ECL<br>8439                                                                       | NAL<br>8838                                                                       |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
| page 48                                                                           | page 46                                                                           | page 45                                                                           |  |
|  |  |  |  |
| Thick film on ceramic                                                             | Thick film on ceramic                                                             | Piezoresistive                                                                    |  |
| 0 ... 0.1 to 0 ... 10 bar                                                         | 0 ... 0.1 to 0 ... 2.0 bar<br>0 ... 1.5 to 0 ... 30 psi                           | 0 ... 0.1 to 0 ... 25 bar                                                         |  |
| 4 ... 20 mA                                                                       | 4 ... 20 mA                                                                       | 4 ... 20 mA<br>0 ... 10 VDC                                                       |  |
| ± 0.3 % FS typ.<br>± 0.5 % FS typ.                                                | ± 0.3 % FS typ.<br>± 0.5 % FS typ.                                                |                                                                                   |  |
| -25°C ... +80°C (+70°C)                                                           | -10°C ... +70°C                                                                   | -5°C ... +50°C                                                                    |  |
| -25°C ... +80°C (+70°C)                                                           | -10°C ... +70°C                                                                   | -5°C ... +50°C                                                                    |  |
| IP68 (25 bar; 250m)                                                               | IP68 (2.0 bar; 20m)                                                               | Min. IP68                                                                         |  |
| Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                    | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96%)                                     | 1.4435 (AISI316L)                                                                 |  |
| 1.4404/1.4435 (AISI316L)                                                          | 1.4404 (AISI316L) or<br>1.4462 (AISI318LN)                                        | 1.4435 (AISI316L) or titanium                                                     |  |
| 1.4404/1.4435 (AISI316L)                                                          | 1.4404 (AISI316L) or<br>1.4462 (AISI318LN)                                        | 1.4435 (AISI316L) or titanium                                                     |  |
| Type 1 f, M 10x1,<br>Type 2 m, M 22x1                                             |                                                                                   | Open, Closed, G1/4" m                                                             |  |
| Cable PUR/FEP/PE                                                                  | Cable PUR/Radox/PE                                                                | Cable PUR/Teflon/PE                                                               |  |
| Shipbuilding<br>Process technology<br>Water treatment                             | Process technology<br>Water treatment (wastewater,<br>grey-water, drinking water) | Shipbuilding<br>Process technology                                                |  |
| GL, KRS                                                                           |                                                                                   | GL, KRS                                                                           |  |
|                                                                                   |                                                                                   |                                                                                   |  |
| <a href="http://www.trafag.com/H72328">www.trafag.com/H72328</a>                  | <a href="http://www.trafag.com/H72336">www.trafag.com/H72336</a>                  | <a href="http://www.trafag.com/H72228">www.trafag.com/H72228</a>                  |  |
| <a href="http://www.trafag.com/H73328">www.trafag.com/H73328</a>                  | <a href="http://www.trafag.com/H73336">www.trafag.com/H73336</a>                  |                                                                                   |  |

# ECT 8472

## Industrial Pressure Transmitter



### Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

### Technical Data

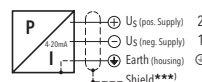
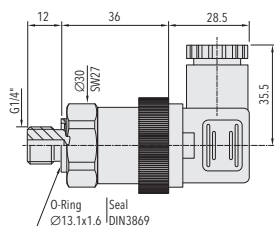
|                     |                                                                                 |                      |                                                   |
|---------------------|---------------------------------------------------------------------------------|----------------------|---------------------------------------------------|
| Measuring principle | Thick film on ceramic                                                           | Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                   |
| Measuring range     | 0 ... 1 to 0 ... 400 bar<br>0 ... 15 to 0 ... 5000 psi                          | Media temperature    | -25°C ... +125°C                                  |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom. | Ambient temperature  | -25°C ... +85°C<br>(Cable PVC 22: -5°C ... +60°C) |

### Standard products (extra short lead time)

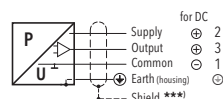
| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Signal output | Supply [VDC] |
|-------------|------------------------------------|----------------------|--------------------------|---------------|--------------|
| ECT1.0A     | 8472 71 5717 05 0000 0000 19 58 61 | 0 ... 1              | 3.2                      | 4 ... 20 mA   | 9 ... 30     |
| ECT2.5A     | 8472 75 5717 05 0000 0000 19 58 61 | 0 ... 2.5            | 5                        | 4 ... 20 mA   | 9 ... 30     |
| ECT6.0A     | 8472 77 5717 05 0000 0000 19 58 61 | 0 ... 6              | 12                       | 4 ... 20 mA   | 9 ... 30     |
| ECT10.0A    | 8472 78 5717 05 0000 0000 19 58 61 | 0 ... 10             | 20                       | 4 ... 20 mA   | 9 ... 30     |
| ECT16.0A    | 8472 79 5717 05 0000 0000 19 58 61 | 0 ... 16             | 32                       | 4 ... 20 mA   | 9 ... 30     |
| ECT25.0A    | 8472 80 5717 05 0000 0000 19 58 61 | 0 ... 25             | 50                       | 4 ... 20 mA   | 9 ... 30     |
| ECT40.0A    | 8472 81 5717 05 0000 0000 19 58 61 | 0 ... 40             | 80                       | 4 ... 20 mA   | 9 ... 30     |
| ECT1.0V     | 8472 71 5717 05 0000 0000 17 58 61 | 0 ... 1              | 3.2                      | 0 ... 10 VDC  | 15 ... 30    |
| ECT2.5V     | 8472 75 5717 05 0000 0000 17 58 61 | 0 ... 2.5            | 5                        | 0 ... 10 VDC  | 15 ... 30    |
| ECT6.0V     | 8472 77 5717 05 0000 0000 17 58 61 | 0 ... 6              | 12                       | 0 ... 10 VDC  | 15 ... 30    |
| ECT10.0V    | 8472 78 5717 05 0000 0000 17 58 61 | 0 ... 10             | 20                       | 0 ... 10 VDC  | 15 ... 30    |
| ECT16.0V    | 8472 79 5717 05 0000 0000 17 58 61 | 0 ... 16             | 32                       | 0 ... 10 VDC  | 15 ... 30    |
| ECT25.0V    | 8472 80 5717 05 0000 0000 17 58 61 | 0 ... 25             | 50                       | 0 ... 10 VDC  | 15 ... 30    |
| ECT40.0V    | 8472 81 5717 05 0000 0000 17 58 61 | 0 ... 40             | 80                       | 0 ... 10 VDC  | 15 ... 30    |

Pressure peak damping element: see 'Accessories' or data sheet H72258

Dimensions see data sheet



ECT ... A (4 ... 20 mA)



ECT ... V (0 ... 10 V)



Data sheet  
Instructions

[www.trafag.com/H72324](http://www.trafag.com/H72324)  
[www.trafag.com/H73324](http://www.trafag.com/H73324)

|                               |                                                                                                                                        |                                    |                      | 8472 . XX     |                                                                                                                                                          |                             |                      | XX         | XX                       | XX | XX | XX |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------|------------|--------------------------|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                       | Over pressure [bar]                | Burst pressure [bar] |               | Pressure measurement range [psi]                                                                                                                         | Over pressure [psi]         | Burst pressure [psi] |            |                          |    |    |    |
|                               | 0 ... 1.0                                                                                                                              | 2                                  | 3                    | 71            | 0 ... 15                                                                                                                                                 | 30                          | 40                   | G1         |                          |    |    |    |
|                               | 0 ... 1.6                                                                                                                              | 3.2                                | 4.8                  | 73            | 0 ... 20                                                                                                                                                 | 45                          | 70                   | G3         |                          |    |    |    |
|                               | 0 ... 2.5                                                                                                                              | 5                                  | 7.5                  | 75            | 0 ... 30                                                                                                                                                 | 60                          | 90                   | G5         |                          |    |    |    |
|                               | 0 ... 4                                                                                                                                | 8                                  | 12                   | 76            | 0 ... 50                                                                                                                                                 | 100                         | 150                  | G6         |                          |    |    |    |
|                               | 0 ... 6                                                                                                                                | 12                                 | 15                   | 77            | 0 ... 100                                                                                                                                                | 200                         | 250                  | G7         |                          |    |    |    |
|                               | 0 ... 10                                                                                                                               | 20                                 | 25                   | 78            | 0 ... 150                                                                                                                                                | 300                         | 375                  | G8         |                          |    |    |    |
|                               | 0 ... 16                                                                                                                               | 32                                 | 40                   | 79            | 0 ... 250                                                                                                                                                | 500                         | 625                  | G9         |                          |    |    |    |
|                               | 0 ... 25                                                                                                                               | 50                                 | 75                   | 80            | 0 ... 400                                                                                                                                                | 800                         | 1200                 | H0         |                          |    |    |    |
|                               | 0 ... 40                                                                                                                               | 80                                 | 100                  | 81            | 0 ... 500                                                                                                                                                | 1000                        | 1250                 | H1         |                          |    |    |    |
|                               | 0 ... 60                                                                                                                               | 120                                | 180                  | 82            | 0 ... 1000                                                                                                                                               | 2000                        | 3000                 | H2         |                          |    |    |    |
|                               | 0 ... 100 <sup>4)</sup>                                                                                                                | 200                                | 300                  | 83            | 0 ... 1500 <sup>4)</sup>                                                                                                                                 | 3000                        | 4500                 | H3         |                          |    |    |    |
|                               | 0 ... 160 <sup>4)</sup>                                                                                                                | 320                                | 480                  | 85            | 0 ... 2000 <sup>4)</sup>                                                                                                                                 | 4000                        | 6000                 | H5         |                          |    |    |    |
|                               | 0 ... 250 <sup>4)</sup>                                                                                                                | 500                                | 750                  | 74            | 0 ... 3000 <sup>4)</sup>                                                                                                                                 | 6000                        | 9000                 | G4         |                          |    |    |    |
|                               | 0 ... 400 <sup>2) 4)</sup>                                                                                                             | 800                                | 1000                 | 84            | 0 ... 5000 <sup>2) 4)</sup>                                                                                                                              | 10000                       | 12500                | H4         |                          |    |    |    |
| Sensor                        | Relative pressure, 1.4305                                                                                                              |                                    |                      | 57            | Absolute pressure, 1.4305 <sup>3)</sup>                                                                                                                  |                             |                      | 87         |                          |    |    |    |
|                               | Relative pressure, 1.4404/1.4435 <sup>4)</sup>                                                                                         |                                    |                      | 59            | Absolute pressure, 1.4404/1.4435 <sup>3) 4)</sup>                                                                                                        |                             |                      | 89         |                          |    |    |    |
|                               | Relative pressure, 1.4462 <sup>4)</sup>                                                                                                |                                    |                      | 52            | Absolute pressure, 1.4462 <sup>3) 4)</sup>                                                                                                               |                             |                      | 82         |                          |    |    |    |
|                               | Relative pressure, titanium grade 5 <sup>4)</sup>                                                                                      |                                    |                      | 53            | Absolute pressure, titanium grade 5 <sup>3) 4)</sup>                                                                                                     |                             |                      | 83         |                          |    |    |    |
| Pressure connection           | G1/4" female                                                                                                                           |                                    |                      | 10            | 1/4" NPT male <sup>4)</sup>                                                                                                                              |                             |                      | 30         |                          |    |    |    |
|                               | G1/4" male                                                                                                                             |                                    |                      | 17            | 7/16"-20UNF male SAE4 <sup>4) 10)</sup>                                                                                                                  |                             |                      | 42         |                          |    |    |    |
|                               | G1/2" male DIN3852-A <sup>4)</sup>                                                                                                     |                                    |                      | 21            | R1/4" male ISO-7-1 (DIN2999)                                                                                                                             |                             |                      | 19         |                          |    |    |    |
|                               | G1/2" male DIN3852-E <sup>4)</sup>                                                                                                     |                                    |                      | 41            | G3/4" frontal membrane, max. nominal pressure 60 bar <sup>4) 7)</sup>                                                                                    |                             |                      | 52         |                          |    |    |    |
| Electrical connection         | Male electrical plug EN 175301-803-A, Mat. PA                                                                                          |                                    |                      | 05            | Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT                                                                              |                             |                      | 01         |                          |    |    |    |
|                               | Male electrical plug M12x1, 5-pole, Mat. PA                                                                                            |                                    |                      | 35            | Cable IP67, Mat. PVC (cable gland PA6-3), -5°C ... +60°C <sup>5) 6)</sup>                                                                                |                             |                      | 22         |                          |    |    |    |
|                               | Male electrical plug Packard Metri Pack <sup>9)</sup>                                                                                  |                                    |                      | 51            | Cable IP68, max. 3m, medium +10°C...+35°C, Pmax. 1 bar rel./abs.                                                                                         |                             |                      | 68         |                          |    |    |    |
| Output signal                 | Signal output                                                                                                                          | Load resistance                    | I (supply)           | U (supply)    |                                                                                                                                                          | Signal output               | Load resistance      | I (supply) | U (supply)               |    |    |    |
|                               | 4 ... 20 mA                                                                                                                            | (U <sub>supply</sub> -9 V) / 20 mA |                      | 9 ... 30 VDC  | 19                                                                                                                                                       | 0 ... 10 VDC                | ≥ 5.0 kΩ             | ≤ 10 mA    | 15 ... 30 VDC            | 17 |    |    |
|                               | 0 ... 5 VDC                                                                                                                            | ≥ 2.5 kΩ                           | ≤ 10 mA              | 10 ... 30 VDC | 14                                                                                                                                                       | 0.5 ... 4.5 VDC ratiometric | ≥ 5.0 kΩ             | ≤ 10 mA    | 5 VDC ± 0.25 VDC ratiom. | 23 |    |    |
|                               | 1 ... 6 VDC                                                                                                                            | ≥ 5.0 kΩ                           | ≤ 10 mA              | 10 ... 30 VDC | 16                                                                                                                                                       |                             |                      |            |                          |    |    |    |
| Accessories                   | Seal FKM (-20°C ... +125°C)                                                                                                            |                                    |                      | 61            | Special electrical connection: Pin 1 out, Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)         |                             |                      |            |                          |    | 98 |    |
|                               | Seal CR ≤ 100 bar (-25°C ... +100°C) <sup>8)</sup>                                                                                     |                                    |                      | 62            | Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out (only for output signals 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) |                             |                      |            |                          |    | 97 |    |
|                               | Seal EPDM (-25°C ... +125°C)                                                                                                           |                                    |                      | 63            | Special electrical connection: Pin 1 +, Pin 3 - (only for output 4...20 mA and male electrical plug Packard Metri Pack 3-poles)                          |                             |                      |            |                          |    | E4 |    |
|                               | Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)                                                            |                                    |                      | 40            | Special electrical connection: Pin 1 +, Pin 2 out Pin 3 - (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)   |                             |                      |            |                          |    | 99 |    |
|                               | Pressure peak damping element ø 0.3 mm (for pressure connections 17 and 30)                                                            |                                    |                      | 43            | Cable length 1.5 m                                                                                                                                       |                             |                      |            |                          |    | 1M |    |
|                               | Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)                                                            |                                    |                      | 44            | Cable length 3.0 m                                                                                                                                       |                             |                      |            |                          |    | 3M |    |
|                               | Pressure peak damping element ø 0.5 mm (for pressure connections 17 and 30)                                                            |                                    |                      | 45            | Cable length 5.0 m                                                                                                                                       |                             |                      |            |                          |    | 5M |    |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)                                                                               |                                    |                      | 58            |                                                                                                                                                          |                             |                      |            |                          |    |    |    |
|                               | Female electrical plug M12x1, 5-pole                                                                                                   |                                    |                      | 33            |                                                                                                                                                          |                             |                      |            |                          |    |    |    |
|                               | Female electrical connector industrial standard                                                                                        |                                    |                      | 34            |                                                                                                                                                          |                             |                      |            |                          |    |    |    |
|                               | Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) |                                    |                      | 92            |                                                                                                                                                          |                             |                      |            |                          |    |    |    |
|                               |                                                                                                                                        |                                    |                      |               |                                                                                                                                                          |                             |                      |            |                          |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Media -10°C ... +125°C

<sup>3)</sup> Absolute ranges max. 40 bar

<sup>4)</sup> Please ask us

<sup>5)</sup> Cable length see accessories

<sup>6)</sup> More materials and cables with venting tubes for low pressure ranges upon request

<sup>7)</sup> Not for sensors 57 and 87, only for pressure ranges ≤ 10 bar or 150 psi

<sup>8)</sup> Only for pressure connections 10 and 30

<sup>9)</sup> Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)

<sup>10)</sup> According to norm J1926, max. 35 MPa



# ECT 0.3 % (0.5 %, 1.0 %) 8473

## Industrial Pressure Transmitter



### Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional
- Frontal membrane optional

### Technical Data

|                     |                                                                                 |                      |                                                     |
|---------------------|---------------------------------------------------------------------------------|----------------------|-----------------------------------------------------|
| Measuring principle | Thick film on ceramic                                                           | Accuracy @ 25°C typ. | ± 0.3 % FS typ.<br>(± 0.5 % FS typ., ± 1 % FS typ.) |
| Measuring range     | 0 ... 0.1 to 0 ... 40 bar<br>0 ... 1.5 to 0 ... 500 psi                         | Media temperature    | -25°C ... +125°C                                    |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom. | Ambient temperature  | -25°C ... +85°C<br>(Cable PVC 22: -5°C ... +60°C)   |

### Standard products (extra short lead time)

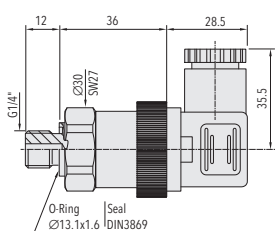
| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Pressure connection    | Signal output | Accuracy @ 25°C typ. [%] |
|-------------|------------------------------------|----------------------|--------------------------|------------------------|---------------|--------------------------|
| ECT0.1A     | 8473 66 5417 05 0000 0000 19 58 61 | 0 ... 0.1            | 2                        | G1/4" male             | 4 ... 20 mA   | 1.0                      |
| ECT0.2A     | 8473 68 5417 05 0000 0000 19 58 61 | 0 ... 0.2            | 2                        | G1/4" male             | 4 ... 20 mA   | 0.5                      |
| ECT0.4A     | 8473 69 5417 05 0000 0000 19 58 61 | 0 ... 0.4            | 2                        | G1/4" male             | 4 ... 20 mA   | 0.5                      |
| ECT0.6A     | 8473 70 5417 05 0000 0000 19 58 61 | 0 ... 0.6            | 2                        | G1/4" male             | 4 ... 20 mA   | 0.3                      |
| ECT0.1V     | 8473 66 5417 05 0000 0000 17 58 61 | 0 ... 0.1            | 2                        | G1/4" male             | 0 ... 10 VDC  | 1.0                      |
| ECT0.2V     | 8473 68 5417 05 0000 0000 17 58 61 | 0 ... 0.2            | 2                        | G1/4" male             | 0 ... 10 VDC  | 0.5                      |
| ECT0.4V     | 8473 69 5417 05 0000 0000 17 58 61 | 0 ... 0.4            | 2                        | G1/4" male             | 0 ... 10 VDC  | 0.5                      |
| ECT0.6V     | 8473 70 5417 05 0000 0000 17 58 61 | 0 ... 0.6            | 2                        | G1/4" male             | 0 ... 10 VDC  | 0.3                      |
| ECTF0.1A    | 8473 66 5652 05 0000 0000 19 58 61 | 0 ... 0.1            | 2                        | G3/4" frontal membrane | 4 ... 20 mA   | 1.0                      |
| ECTF0.2A    | 8473 68 5652 05 0000 0000 19 58 61 | 0 ... 0.2            | 2                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.5                      |
| ECTF0.4A    | 8473 69 5652 05 0000 0000 19 58 61 | 0 ... 0.4            | 2                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.5                      |
| ECTF0.6A    | 8473 70 5652 05 0000 0000 19 58 61 | 0 ... 0.6            | 2                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF1.0A    | 8473 71 5652 05 0000 0000 19 58 61 | 0 ... 1              | 2                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF1.6A    | 8473 73 5652 05 0000 0000 19 58 61 | 0 ... 1.6            | 3.2                      | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF2.5A    | 8473 75 5652 05 0000 0000 19 58 61 | 0 ... 2.5            | 5                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF4.0A    | 8473 76 5652 05 0000 0000 19 58 61 | 0 ... 4              | 8                        | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF6.0A    | 8473 77 5652 05 0000 0000 19 58 61 | 0 ... 6              | 12                       | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |
| ECTF10.0A   | 8473 78 5652 05 0000 0000 19 58 61 | 0 ... 10             | 20                       | G3/4" frontal membrane | 4 ... 20 mA   | 0.3                      |

Pressure peak damping element: see 'Accessories' or data sheet H72258

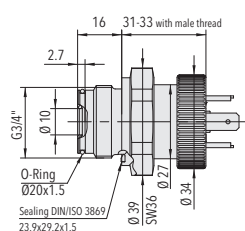
Dimensions & electrical connections see next page

|                               |                                                                             |                                    |                      | 8473                     | XX                                                   | XX   | XX   | XX | XX |
|-------------------------------|-----------------------------------------------------------------------------|------------------------------------|----------------------|--------------------------|------------------------------------------------------|------|------|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                            | Over pressure [bar]                | Burst pressure [bar] |                          |                                                      |      |      |    |    |
|                               | 0 ... 0.1                                                                   | 1.2                                | 2                    | 66                       | 0 ... 1.5                                            | 15   | 30   | F6 |    |
|                               | 0 ... 0.16                                                                  | 1.2                                | 2                    | 67                       | 0 ... 2                                              | 15   | 30   | F7 |    |
|                               | 0 ... 0.2                                                                   | 1.2                                | 2                    | 68                       | 0 ... 2.5                                            | 15   | 30   | F8 |    |
|                               | 0 ... 0.4                                                                   | 1.2                                | 2                    | 69                       | 0 ... 5                                              | 15   | 30   | F9 |    |
|                               | 0 ... 0.6                                                                   | 2                                  | 3                    | 70                       | 0 ... 7.5                                            | 30   | 45   | G0 |    |
|                               | 0 ... 1.0                                                                   | 2                                  | 3                    | 71                       | 0 ... 15                                             | 30   | 45   | G1 |    |
|                               | 0 ... 1.6                                                                   | 3.2                                | 4.8                  | 73                       | 0 ... 20                                             | 40   | 60   | G3 |    |
|                               | 0 ... 2.5                                                                   | 5                                  | 7.5                  | 75                       | 0 ... 30                                             | 60   | 90   | G5 |    |
|                               | 0 ... 4                                                                     | 8                                  | 12                   | 76                       | 0 ... 50                                             | 100  | 150  | G6 |    |
|                               | 0 ... 6                                                                     | 12                                 | 15                   | 77                       | 0 ... 100                                            | 200  | 250  | G7 |    |
|                               | 0 ... 10                                                                    | 20                                 | 25                   | 78                       | 0 ... 150                                            | 300  | 375  | G8 |    |
|                               | 0 ... 16                                                                    | 32                                 | 40                   | 79                       | 0 ... 250                                            | 500  | 625  | G9 |    |
|                               | 0 ... 25                                                                    | 50                                 | 75                   | 80                       | 0 ... 400                                            | 800  | 1200 | H0 |    |
|                               | 0 ... 40                                                                    | 80                                 | 100                  | 81                       | 0 ... 500                                            | 1000 | 1250 | H1 |    |
| Sensor                        | Relative pressure, 1.4305                                                   |                                    |                      | 54                       | Absolute pressure, 1.4305 <sup>2) 3)</sup>           |      |      | 84 |    |
|                               | Relative pressure, 1.4404/1.4435 <sup>2)</sup>                              |                                    |                      | 56                       | Absolute pressure, 1.4404/1.4435 <sup>2) 3)</sup>    |      |      | 86 |    |
|                               | Relative pressure, 1.4462 <sup>2)</sup>                                     |                                    |                      | 50                       | Absolute pressure, 1.4462 <sup>2) 3)</sup>           |      |      | 80 |    |
|                               | Relative pressure, titanium grade 5 <sup>2)</sup>                           |                                    |                      | 51                       | Absolute pressure, titanium grade 5 <sup>2) 3)</sup> |      |      | 81 |    |
| Pressure connection           | G1/4" female                                                                |                                    |                      |                          |                                                      |      |      |    | 10 |
|                               | G1/4" male                                                                  |                                    |                      |                          |                                                      |      |      |    | 17 |
|                               | G1/2" male <sup>2)</sup>                                                    |                                    |                      |                          |                                                      |      |      |    | 21 |
|                               | 1/4" NPT male <sup>2)</sup>                                                 |                                    |                      |                          |                                                      |      |      |    | 30 |
|                               | G3/4" frontal membrane <sup>2) 4)</sup>                                     |                                    |                      |                          |                                                      |      |      |    | 52 |
| Electrical connection         | Male electrical plug EN 175301-803-A, Mat. PA                               |                                    |                      |                          |                                                      |      |      |    | 05 |
|                               | Male electrical plug M12x1, 5-pole, Mat. PA                                 |                                    |                      |                          |                                                      |      |      |    | 35 |
|                               | Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT |                                    |                      |                          |                                                      |      |      |    | 01 |
|                               | Male electrical plug Packard Metri Pack                                     |                                    |                      |                          |                                                      |      |      |    | 51 |
|                               | Cable IP67, Mat. PVC (cable gland PA6-3), -5°C ... +60°C <sup>5) 6)</sup>   |                                    |                      |                          |                                                      |      |      |    | 22 |
|                               | Cable IP68, max. 3m, medium +10°C...+35°C, Pmax. 1 bar rel./abs.            |                                    |                      |                          |                                                      |      |      |    | 68 |
| Output signal                 | Signal output                                                               | Load resistance                    | I (supply)           | U (supply)               |                                                      |      |      |    |    |
|                               | 4 ... 20 mA                                                                 | (U <sub>supply</sub> -9 V) / 20 mA |                      | 9 ... 30 VDC             | 19                                                   |      |      |    |    |
|                               | 0 ... 5 VDC                                                                 | ≥ 2.5 kΩ                           | ≤ 10 mA              | 10 ... 30 VDC            | 14                                                   |      |      |    |    |
|                               | 1 ... 6 VDC                                                                 | ≥ 5.0 kΩ                           | ≤ 10 mA              | 10 ... 30 VDC            | 16                                                   |      |      |    |    |
|                               | 0 ... 10 VDC                                                                | ≥ 5.0 kΩ                           | ≤ 10 mA              | 15 ... 30 VDC            | 17                                                   |      |      |    |    |
|                               | 0.5 ... 4.5 VDC                                                             | ≥ 5.0 kΩ                           | ≤ 10 mA              | 5 VDC ± 0.25 VDC ratiom. | 23                                                   |      |      |    |    |

Continuation on next page



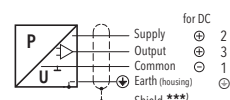
ECT...



ECTF ...



ECT ... A/ECTF ... A (4 ... 20 mA)



ECT ... V (0 ... 10 V)

|                    |                                                                                               |    |
|--------------------|-----------------------------------------------------------------------------------------------|----|
| <b>Accessories</b> | Seal FKM (-20°C ... +125°C)                                                                   | 61 |
|                    | Seal CR ≤ 100 bar (-25°C ... +100°C) <sup>7)</sup>                                            | 62 |
|                    | Seal EPDM (-25°C ... +125°C)                                                                  | 63 |
|                    | Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)                   | 40 |
|                    | Pressure peak damping element ø 0.3 mm (for pressure connections 17 and 30)                   | 43 |
|                    | Pressure peak damping element ø 0.5 mm (for pressure connections 17 and 30)                   | 45 |
|                    | Female electrical connector EN 175301-803-A (DIN43650-A)                                      | 58 |
|                    | Female electrical plug M12x1, 5-pole                                                          | 33 |
|                    | Female electrical connector industrial standard                                               | 34 |
|                    | Special electrical connection: Pin 1 + , Pin 2 -                                              | 92 |
|                    | (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)        |    |
|                    | Special electrical connection: Pin 1 out, Pin 2 -, Pin 3 +                                    | 98 |
|                    | (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)         |    |
|                    | Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out                                   | 97 |
|                    | (only for output signals 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) |    |
|                    | Special electrical connection: Pin 1 + , Pin 3 -                                              | E4 |
|                    | (only for output 4...20 mA and male electrical plug Packard Metri Pack 3-poles)               |    |
|                    | Special electrical connection: Pin 1 + , Pin 2 out Pin 3 -                                    | 99 |
|                    | (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)  |    |
|                    | Cable length 1.5 m                                                                            | 1M |
|                    | Cable length 3.0 m                                                                            | 3M |
|                    | Cable length 5.0 m                                                                            | 5M |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Please ask us

<sup>3)</sup> Only for ranges: ≥ 400 mbar or 5 psi

<sup>4)</sup> Not for sensors 54 and 84, only for pressure ranges ≤ 10 bar or 150 psi

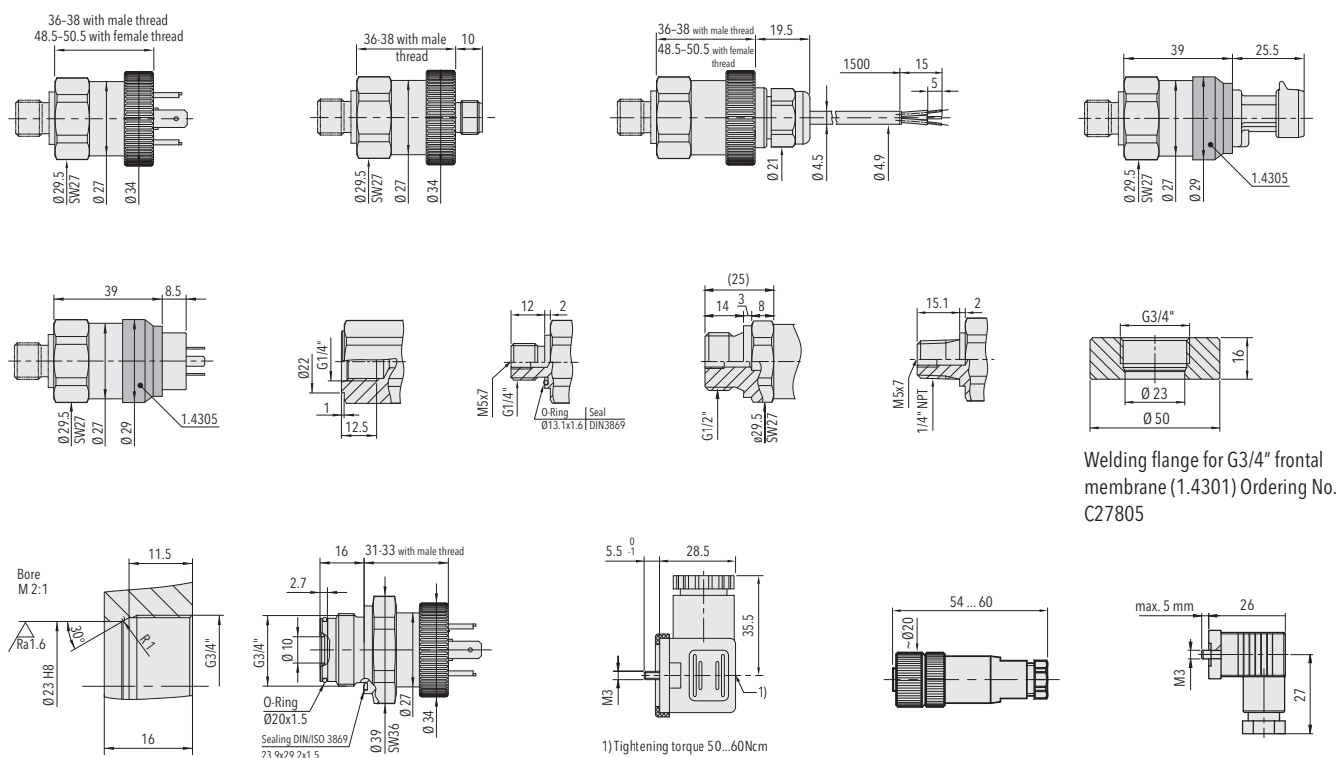
<sup>5)</sup> Cable length see accessories

<sup>6)</sup> More materials and cables with venting tubes for low pressure ranges upon request

<sup>7)</sup> Only for pressure connections 10 and 30



Identical construction for refrigeration:  
Data sheet No. H72323



Welding flange for G3/4\" frontal membrane (1.4301) Ordering No. C27805



# ECTR 8471

## Economic Refrigeration Pressure Transmitter



### Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

### Technical Data

|                     |                                                                                 |                      |                                                   |
|---------------------|---------------------------------------------------------------------------------|----------------------|---------------------------------------------------|
| Measuring principle | Thick film on ceramic                                                           | Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                   |
| Measuring range     | -1 ... 9 to 0 ... 40 bar<br>0 ... 15 to 0 ... 500 psi                           | Media temperature    | -25°C ... +125°C                                  |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom. | Ambient temperature  | -25°C ... +85°C<br>(Cable PVC 22: -5°C ... +60°C) |

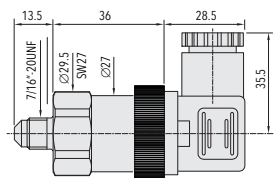


Data sheet  
Instructions

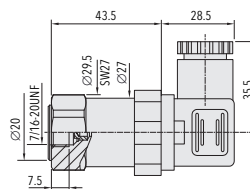
[www.trafag.com/H72323](http://www.trafag.com/H72323)  
[www.trafag.com/H73324](http://www.trafag.com/H73324)

### Standard products (extra short lead time)

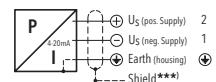
| Product No. | Type Code                             | Pressure range [bar] | Over pressure max. [bar] | Signal output | Supply [VDC] |
|-------------|---------------------------------------|----------------------|--------------------------|---------------|--------------|
| ECTR9.0A    | 8471 26 5718 05 0000 0000 19 58 62 01 | -1 ... 9             | 20                       | 4 ... 20 mA   | 9 ... 30     |
| ECTR16.0A   | 8471 27 5718 05 0000 0000 19 58 62 01 | -1 ... 16            | 32                       | 4 ... 20 mA   | 9 ... 30     |
| *ECTR25.0A  | 8471 80 5718 05 0000 0000 19 58 62    | 0 ... 25             | 50                       | 4 ... 20 mA   | 9 ... 30     |
| ECTR30.0A   | 8471 29 5718 05 0000 0000 19 58 62 01 | 0 ... 30             | 50                       | 4 ... 20 mA   | 9 ... 30     |
| ECTR9.0A    | 8471 26 5724 05 0000 0000 19 58 62 01 | -1 ... 9             | 20                       | 4 ... 20 mA   | 9 ... 30     |
| ECTRV16.0A  | 8471 27 5724 05 0000 0000 19 58 62 01 | -1 ... 16            | 32                       | 4 ... 20 mA   | 9 ... 30     |
| ECTRV25.0A  | 8471 80 5724 05 0000 0000 19 58 62    | 0 ... 25             | 50                       | 4 ... 20 mA   | 9 ... 30     |



ECTR ...



ECTRV ...



ECTR ... A (4 ... 20 mA)  
ECTRV ... A (4 ... 20 mA)

# NAT 8252

## Industrial Pressure Transmitter



### Features

- Smallest design
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- Optional: fivefold overpressure resistance

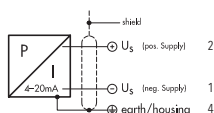
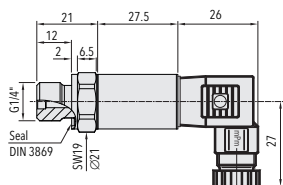
### Technical Data

|                     |                                                                                                                                                                                           |                      |                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------|
| Measuring principle | Thin film on steel                                                                                                                                                                        | Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                                                       |
| Measuring range     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                  | Media temperature    | -40°C ... +125°C                                                                      |
| Output signal       | 4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC,<br>1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | Ambient temperature  | -40°C ... +125°C<br>(Cable PVC 22: -5°C ... +60°C)<br>(Cable PUR 24: -40°C ... +70°C) |

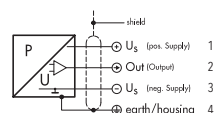
### Standard products (extra short lead time)

| Product No. | Type Code                   | Signal output | Pressure range [bar] | Product No. | Type Code                   | Signal output | Pressure range [bar] |
|-------------|-----------------------------|---------------|----------------------|-------------|-----------------------------|---------------|----------------------|
| NAT2.5A     | 8252 75 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 2.5            | NAT2.5V     | 8252 75 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 2.5            |
| NAT4.0A     | 8252 76 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 4              | NAT4.0V     | 8252 76 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 4              |
| NAT6.0A     | 8252 77 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 6              | NAT6.0V     | 8252 77 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 6              |
| NAT10.0A    | 8252 78 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 10             | NAT10.0V    | 8252 78 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 10             |
| NAT16.0A    | 8252 79 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 16             | NAT16.0V    | 8252 79 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 16             |
| NAT25.0A    | 8252 80 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 25             | NAT25.0V    | 8252 80 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 25             |
| NAT40.0A    | 8252 81 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 40             | NAT40.0V    | 8252 81 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 40             |
| NAT100.0A   | 8252 83 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 100            | NAT100.0V   | 8252 83 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 100            |
| NAT250.0A   | 8252 74 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 250            | NAT250.0V   | 8252 74 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 250            |
| NAT400.0A   | 8252 84 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 400            | NAT400.0V   | 8252 84 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 400            |
| NAT600.0A   | 8252 86 2517 01 19 34 44 61 | 4 ... 20 mA   | 0 ... 600            | NAT600.0V   | 8252 86 2517 01 17 34 44 61 | 0 ... 10 VDC  | 0 ... 600            |

Pressure peak damping element integrated



NAT ... A (4 ... 20 mA)



NAT ... V (0 ... 10 VDC)

Data sheet  
Instructions

[www.trafag.com/H72303](http://www.trafag.com/H72303)  
[www.trafag.com/H73303](http://www.trafag.com/H73303)

|                                      |                                                                             |                            |                                                  | 8252 . XX             | XX        | XX | XX | XX | XX |
|--------------------------------------|-----------------------------------------------------------------------------|----------------------------|--------------------------------------------------|-----------------------|-----------|----|----|----|----|
| <b>Measuring range <sup>1)</sup></b> | <b>Pressure measurement range [bar]</b>                                     | <b>Over pressure [bar]</b> | <b>Burst pressure [bar]</b>                      |                       |           |    |    |    |    |
|                                      | 0 ... 2.5                                                                   | 7.5                        | 50                                               | <b>75</b>             |           |    |    |    |    |
|                                      | 0 ... 4                                                                     | 12                         | 60                                               | <b>76</b>             |           |    |    |    |    |
|                                      | 0 ... 6                                                                     | 18                         | 100                                              | <b>77</b>             |           |    |    |    |    |
|                                      | 0 ... 10                                                                    | 30                         | 200                                              | <b>78</b>             |           |    |    |    |    |
|                                      | 0 ... 16                                                                    | 48                         | 200                                              | <b>79</b>             |           |    |    |    |    |
|                                      | 0 ... 25                                                                    | 75                         | 300                                              | <b>80</b>             |           |    |    |    |    |
|                                      | 0 ... 40                                                                    | 120                        | 300                                              | <b>81</b>             |           |    |    |    |    |
|                                      | 0 ... 60                                                                    | 180                        | 400                                              | <b>82</b>             |           |    |    |    |    |
|                                      | 0 ... 100                                                                   | 300                        | 500                                              | <b>83</b>             |           |    |    |    |    |
|                                      | 0 ... 160                                                                   | 480                        | 750                                              | <b>85</b>             |           |    |    |    |    |
|                                      | 0 ... 250                                                                   | 750                        | 1000                                             | <b>74</b>             |           |    |    |    |    |
|                                      | 0 ... 400                                                                   | 1000                       | 2000                                             | <b>84</b>             |           |    |    |    |    |
|                                      | 0 ... 600                                                                   | 1500                       | 2500                                             | <b>86</b>             |           |    |    |    |    |
|                                      | <b>Option 5P: Fivefold overpressure</b>                                     |                            |                                                  |                       |           |    |    |    |    |
|                                      | 0 ... 2.5                                                                   | 12.5                       | 60                                               | <b>55</b>             |           |    |    |    |    |
|                                      | 0 ... 4                                                                     | 20                         | 100                                              | <b>56</b>             |           |    |    |    |    |
|                                      | 0 ... 6                                                                     | 30                         | 200                                              | <b>57</b>             |           |    |    |    |    |
|                                      | 0 ... 10                                                                    | 50                         | 200                                              | <b>58</b>             |           |    |    |    |    |
|                                      | 0 ... 16                                                                    | 80                         | 300                                              | <b>59</b>             |           |    |    |    |    |
|                                      | 0 ... 25                                                                    | 125                        | 300                                              | <b>60</b>             |           |    |    |    |    |
|                                      | 0 ... 40                                                                    | 200                        | 400                                              | <b>61</b>             |           |    |    |    |    |
|                                      | 0 ... 60                                                                    | 300                        | 500                                              | <b>62</b>             |           |    |    |    |    |
|                                      | 0 ... 100                                                                   | 500                        | 750                                              | <b>63</b>             |           |    |    |    |    |
|                                      | 0 ... 160                                                                   | 800                        | 1000                                             | <b>65</b>             |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
|                                      |                                                                             |                            |                                                  |                       |           |    |    |    |    |
| <b>Sensor</b>                        | Relative pressure                                                           |                            |                                                  |                       | <b>25</b> |    |    |    |    |
| <b>Pressure connection</b>           | G1/4" male, seal: DIN 3869 (accessories 61/63/83)                           | <b>17</b>                  | R1/4" male ISO 7-1 (DIN 2999) <sup>5)</sup>      | <b>19</b>             |           |    |    |    |    |
|                                      | 1/4" NPT male                                                               | <b>30</b>                  | R1/8" male ISO 7-1 (DIN 2999) <sup>5)</sup>      | <b>16</b>             |           |    |    |    |    |
|                                      | 7/16"-20UNF female SAE J512 with valve opener <sup>4)</sup>                 | <b>24</b>                  | M10x1 male                                       | <b>32</b>             |           |    |    |    |    |
|                                      | 7/16"-20UNF SAE4 male, seal: accessory 61 <sup>8)</sup>                     | <b>42</b>                  | M12x1.5 male (DIN EN ISO 9974-2), upon request   | <b>49</b>             |           |    |    |    |    |
| <b>Electrical connection</b>         | Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA | <b>01</b>                  | Cable IP67, Mat. PVC <sup>7)</sup>               | <b>22</b>             |           |    |    |    |    |
|                                      | Male electrical plug M12x1, 4-pole, Mat. PA                                 | <b>32</b>                  | Cable IP67, Mat. PUR <sup>7)</sup>               | <b>24</b>             |           |    |    |    |    |
|                                      | Male electrical plug M12x1, 5-pole, Mat. PA                                 | <b>35</b>                  | Cable IP67, Mat. EPD Raychem FDR25 <sup>7)</sup> | <b>08</b>             |           |    |    |    |    |
| <b>Output signal</b>                 | <b>Signal output</b>                                                        | <b>Load resistance</b>     | <b>I (supply)</b>                                | <b>U (supply)</b>     |           |    |    |    |    |
|                                      | 4 ... 20mA                                                                  | See graphic                |                                                  | 24 (9 ... 32) VDC     | <b>19</b> |    |    |    |    |
|                                      | 0.5 ... 4.5 VDC                                                             | ≥ 5.0 kΩ to Us-            | ≤ 20 mA                                          | 24 (9 ... 32) VDC     | <b>20</b> |    |    |    |    |
|                                      | 0 ... 5 VDC                                                                 | ≥ 5.0 kΩ to Us-            | ≤ 20 mA                                          | 24 (9 ... 32) VDC     | <b>14</b> |    |    |    |    |
|                                      | 1 ... 5 VDC                                                                 | ≥ 5.0 kΩ to Us-            | ≤ 20 mA                                          | 24 (9 ... 32) VDC     | <b>25</b> |    |    |    |    |
|                                      | 1 ... 6 VDC                                                                 | ≥ 5.0 kΩ to Us-            | ≤ 20 mA                                          | 24 (9 ... 32) VDC     | <b>16</b> |    |    |    |    |
|                                      | 0 ... 10 VDC                                                                | ≥ 5.0 kΩ to Us-            | ≤ 15 mA                                          | 24 (15 ... 32) VDC    | <b>17</b> |    |    |    |    |
|                                      | 0.1 ... 10.1 VDC                                                            | ≥ 5.0 kΩ to Us-            | ≤ 15 mA                                          | 24 (15 ... 32) VDC    | <b>13</b> |    |    |    |    |
|                                      | 0.5 ... 4.5 VDC ratiometric                                                 | ≥ 5.0 kΩ to Us-            | ≤ 10 mA                                          | 5 (4.75 ... 5.25) VDC | <b>23</b> |    |    |    |    |
|                                      | 2 PNP transistors <sup>3)</sup>                                             |                            | ≤ 10 mA                                          | 24 (9 ... 32) VDC     | <b>PS</b> |    |    |    |    |
|                                      | 1 PNP transistor <sup>3)</sup>                                              |                            | ≤ 10 mA                                          | 24 (9 ... 32) VDC     | <b>T1</b> |    |    |    |    |

Continuation on next page



| Accessories                                                                                                                                                           |  |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|
| Female electrical plug M12x1, 5-pole <sup>2)</sup>                                                                                                                    |  | 33 |
| Female electrical connector industrial standard (for electrical connection 01)                                                                                        |  | 34 |
| Pressure peak damping element ø 1.0 mm <sup>6)</sup>                                                                                                                  |  | 40 |
| Pressure peak damping element ø 0.4 mm <sup>6)</sup>                                                                                                                  |  | 44 |
| Seal FPM, -18°C ... +125°C                                                                                                                                            |  | 61 |
| Seal EPDM, -40°C ... +125°C                                                                                                                                           |  | 63 |
| Seal NBR, -25°C ... +100°C                                                                                                                                            |  | 83 |
| Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 -<br>(only for output signal 19 and male electrical plug 01, industrial standard)                         |  | 90 |
| Special electrical connection: Pin 1 out, Pin 2 +, Pin 3 ground, Pin 4 -<br>(only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard) |  | 91 |
| Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 -, Pin 4 Out<br>(only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)       |  | 96 |
| Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground<br>(only for output signal 19 and male electrical plug 01, industrial standard)                         |  | 92 |
| Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground<br>(only for output signal 19 and male electrical plug 32, M12x1, 4-pole)                               |  | E1 |
| Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out, Pin 4 ground<br>(only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)       |  | E2 |
| Cable length 0.5 m                                                                                                                                                    |  | EM |
| Cable length 1.0 m                                                                                                                                                    |  | 1M |
| Cable length 2.0 m                                                                                                                                                    |  | 2M |
| Parameterisation according to customer specification (see table parameter), for output signal PS, T1 <sup>3)</sup>                                                    |  | ZC |

<sup>1)</sup> Customized pressure ranges upon request

<sup>2)</sup> For electrical connections 32 and 35

<sup>3)</sup> Only with electrical connection 32.

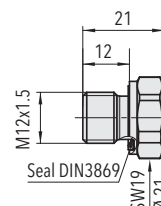
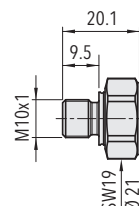
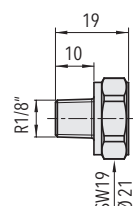
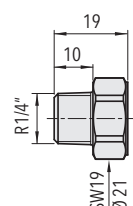
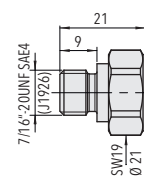
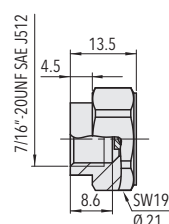
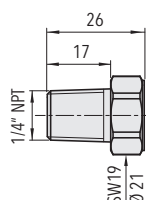
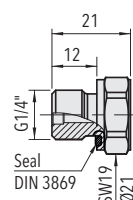
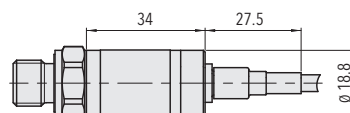
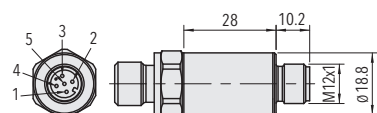
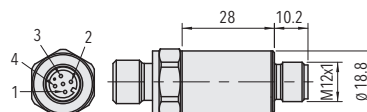
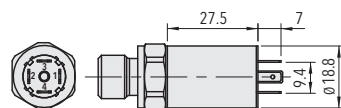
<sup>4)</sup> Max. allowable pressure range 60 bar at 120 bar overpressure

<sup>5)</sup> Max. allowable pressure range 160 bar at 500 bar overpressure

<sup>6)</sup> Only for pressure connections 17, 30, 32

<sup>7)</sup> Cable length see accessories

<sup>8)</sup> According to norm J1926, max. 35 MPa



# NSL 8257

## Low Pressure Transmitter



### Features

- Smallest design
- Relative or absolute pressure measurement
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

### Technical Data

|                      |                                                                        |                       |                  |
|----------------------|------------------------------------------------------------------------|-----------------------|------------------|
| Measuring principle  | Thin film on steel                                                     | Media temperature     | -40°C ... +125°C |
| Measuring range      | 0 ... 0.2 to 0 ... 2.5 bar<br>0 ... 3 to 0 ... 30 psi                  | Ambient temperature   | -40°C ... +125°C |
| Output signal        | 4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiometric | Approval / conformity | GL, DNV, RINA    |
| Accuracy @ 25°C typ. | 0.15 ... 0.8 % FS typ.                                                 |                       |                  |



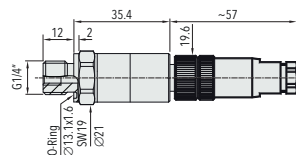
Data sheet  
Instructions

[www.trafag.com/H72302](http://www.trafag.com/H72302)  
[www.trafag.com/H73250](http://www.trafag.com/H73250)

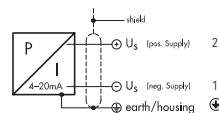
Additional dimensions see data sheet

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range<br>[bar] | Over pressure<br>max.<br>[bar] | Supply<br>[VDC] | Accuracy @ 25°C<br>typ.<br>[%] |
|-------------|------------------------------------|-------------------------|--------------------------------|-----------------|--------------------------------|
| NSL0.2A     | 8257 68 2317 32 0000 0000 19 33 43 | 0 ... 0.2               | 1.2                            | 9 ... 32        | ± 0.8                          |
| NSL0.4A     | 8257 69 2317 32 0000 0000 19 33 43 | 0 ... 0.4               | 1.2                            | 9 ... 32        | ± 0.5                          |
| NSL0.6A     | 8257 70 2317 32 0000 0000 19 33 43 | 0 ... 0.6               | 1.5                            | 9 ... 32        | ± 0.3                          |
| NSL1.0A     | 8257 71 2317 32 0000 0000 19 33 43 | 0 ... 1.0               | 2                              | 9 ... 32        | ± 0.3                          |
| NSL1.6A     | 8257 73 2317 32 0000 0000 19 33 43 | 0 ... 1.6               | 3.5                            | 9 ... 32        | ± 0.3                          |
| NSL2.5A     | 8257 75 2317 32 0000 0000 19 33 43 | 0 ... 2.5               | 5                              | 9 ... 32        | ± 0.3                          |



Pressure peak damping element  
integrated



NSL ... A (4 ... 20 mA)

# NAH 8254

## Hydraulic Pressure Transmitter



### Features

- Measuring accuracy 0.3 %
- Completely welded steel sensor system without additional seals
- Smallest design
- Excellent long-term stability
- Optional: fivefold overpressure resistance

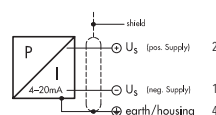
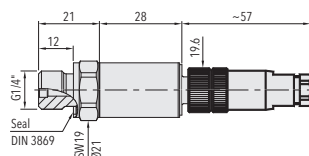
### Technical Data

|                     |                                                                                                                                                                                           |                      |                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------|
| Measuring principle | Thin film on steel                                                                                                                                                                        | Accuracy @ 25°C typ. | ± 0.3 % FS typ.                                                                       |
| Measuring range     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                  | Media temperature    | -40°C ... +125°C                                                                      |
| Output signal       | 4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC,<br>1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | Ambient temperature  | -40°C ... +125°C<br>(Cable PVC 22: -5°C ... +60°C)<br>(Cable PUR 24: -40°C ... +70°C) |

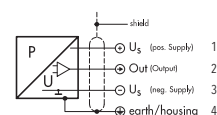
### Standard products (extra short lead time)

| Product No. | Type Code                             | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|---------------------------------------|----------------------|--------------------------|--------------|--------------------------|
| NAH2.5A     | 8254 75 2317 32 0000 0000 19 33 44 61 | 0 ... 2.5            | 7.5                      | 9 ... 32     | ± 0.3                    |
| NAH4.0A     | 8254 76 2317 32 0000 0000 19 33 44 61 | 0 ... 4              | 12                       | 9 ... 32     | ± 0.3                    |
| NAH6.0A     | 8254 77 2317 32 0000 0000 19 33 44 61 | 0 ... 6              | 18                       | 9 ... 32     | ± 0.3                    |
| NAH10.0A    | 8254 78 2317 32 0000 0000 19 33 44 61 | 0 ... 10             | 30                       | 9 ... 32     | ± 0.3                    |
| NAH16.0A    | 8254 79 2317 32 0000 0000 19 33 44 61 | 0 ... 16             | 48                       | 9 ... 32     | ± 0.3                    |
| NAH25.0A    | 8254 80 2317 32 0000 0000 19 33 44 61 | 0 ... 25             | 75                       | 9 ... 32     | ± 0.3                    |
| NAH40.0A    | 8254 81 2317 32 0000 0000 19 33 44 61 | 0 ... 40             | 120                      | 9 ... 32     | ± 0.3                    |
| NAH100.0A   | 8254 83 2317 32 0000 0000 19 33 44 61 | 0 ... 100            | 300                      | 9 ... 32     | ± 0.3                    |
| NAH250.0A   | 8254 74 2317 32 0000 0000 19 33 44 61 | 0 ... 250            | 750                      | 9 ... 32     | ± 0.3                    |
| NAH400.0A   | 8254 84 2317 32 0000 0000 19 33 44 61 | 0 ... 400            | 1000                     | 9 ... 32     | ± 0.3                    |
| NAH600.0A   | 8254 86 2317 32 0000 0000 19 33 44 61 | 0 ... 600            | 1500                     | 9 ... 32     | ± 0.3                    |

Pressure peak damping element integrated



NAH ... A (4 ... 20 mA)



NAH ... V (0 ... 10 VDC)

Data sheet  
Instructions

[www.trafag.com/H72304](http://www.trafag.com/H72304)  
[www.trafag.com/H73303](http://www.trafag.com/H73303)

|                               |                                  |                     |                      | 8254 .    |                                  |                     |                      | XX        | XX | XX | XX | XX | XX |
|-------------------------------|----------------------------------|---------------------|----------------------|-----------|----------------------------------|---------------------|----------------------|-----------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar] | Over pressure [bar] | Burst pressure [bar] |           | Pressure measurement range [psi] | Over pressure [psi] | Burst pressure [psi] |           |    |    |    |    |    |
|                               | 0 ... 2.5                        | 7.5                 | 50                   | <b>75</b> | 0 ... 30                         | 90                  | 700                  | <b>G5</b> |    |    |    |    |    |
|                               | 0 ... 4                          | 12                  | 60                   | <b>76</b> | 0 ... 50                         | 150                 | 850                  | <b>G6</b> |    |    |    |    |    |
|                               | 0 ... 6                          | 18                  | 100                  | <b>77</b> | 0 ... 100                        | 300                 | 1450                 | <b>G7</b> |    |    |    |    |    |
|                               | 0 ... 10                         | 30                  | 200                  | <b>78</b> | 0 ... 150                        | 450                 | 2500                 | <b>G8</b> |    |    |    |    |    |
|                               | 0 ... 16                         | 48                  | 200                  | <b>79</b> | 0 ... 200                        | 600                 | 2500                 | <b>GA</b> |    |    |    |    |    |
|                               | 0 ... 25                         | 75                  | 300                  | <b>80</b> | 0 ... 250                        | 750                 | 2500                 | <b>G9</b> |    |    |    |    |    |
|                               | 0 ... 40                         | 120                 | 300                  | <b>81</b> | 0 ... 300                        | 900                 | 4000                 | <b>HA</b> |    |    |    |    |    |
|                               | 0 ... 60                         | 180                 | 400                  | <b>82</b> | 0 ... 400                        | 1200                | 4000                 | <b>H0</b> |    |    |    |    |    |
|                               | 0 ... 100                        | 300                 | 500                  | <b>83</b> | 0 ... 500                        | 1500                | 4000                 | <b>H1</b> |    |    |    |    |    |
|                               | 0 ... 160                        | 480                 | 750                  | <b>85</b> | 0 ... 1000                       | 3000                | 5000                 | <b>H2</b> |    |    |    |    |    |
|                               | 0 ... 250                        | 750                 | 1000                 | <b>74</b> | 0 ... 1500                       | 4500                | 7000                 | <b>H3</b> |    |    |    |    |    |
|                               | 0 ... 400                        | 1000                | 2000                 | <b>84</b> | 0 ... 2000                       | 6000                | 10000                | <b>H5</b> |    |    |    |    |    |
|                               | 0 ... 600                        | 1500                | 2500                 | <b>86</b> | 0 ... 3000                       | 9000                | 14500                | <b>G4</b> |    |    |    |    |    |
|                               | Option 5P: Fivefold overpressure |                     |                      |           | 0 ... 5000                       | 12500               | 21750                | <b>H4</b> |    |    |    |    |    |
|                               |                                  |                     |                      |           | 0 ... 7500                       | 18750               | 29000                | <b>H6</b> |    |    |    |    |    |
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Continuation on next page



|                    |                                                                                                                                                                       |    |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Accessories</b> | Female electrical plug M12x1, 5-pole <sup>2)</sup>                                                                                                                    | 33 |
|                    | Female electrical connector industrial standard (for electrical connection 01)                                                                                        | 34 |
|                    | Pressure peak damping element ø 1.0 mm <sup>6)</sup>                                                                                                                  | 40 |
|                    | Pressure peak damping element ø 0.4 mm <sup>6)</sup>                                                                                                                  | 44 |
|                    | Seal FPM, -18°C ... +125°C                                                                                                                                            | 61 |
|                    | Seal EPDM, -40°C ... +125°C                                                                                                                                           | 63 |
|                    | Seal NBR, -25°C ... +100°C                                                                                                                                            | 83 |
|                    | Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 -<br>(only for output signal 19 and male electrical plug 01, industrial standard)                         | 90 |
|                    | Special electrical connection: Pin 1 out, Pin 2 +, Pin 3 ground, Pin 4 -<br>(only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard) | 91 |
|                    | Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 -, Pin 4 Out<br>(only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)       | 96 |
|                    | Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground<br>(only for output signal 19 and male electrical plug 01, industrial standard)                         | 92 |
|                    | Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground<br>(only for output signal 19 and male electrical plug 32, M12x1, 4-pole)                               | E1 |
|                    | Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out, Pin 4 ground<br>(only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)       | E2 |
|                    | Cable length 0.5 m                                                                                                                                                    | EM |
|                    | Cable length 1.0 m                                                                                                                                                    | 1M |
|                    | Cable length 2.0 m                                                                                                                                                    | 2M |
|                    | Parameterisation according to customer specification (see table parameter), for output signal PS, T1 <sup>3)</sup>                                                    | ZC |

<sup>1)</sup> Customized pressure ranges upon request

<sup>2)</sup> For electrical connections 32 and 35

<sup>3)</sup> Only with electrical connection 32

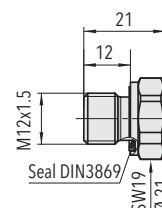
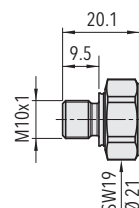
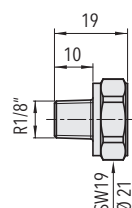
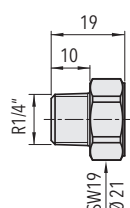
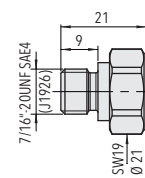
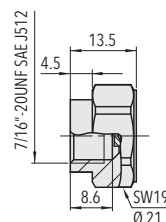
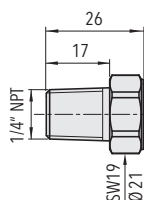
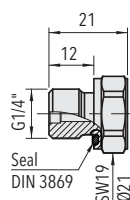
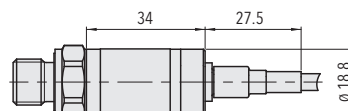
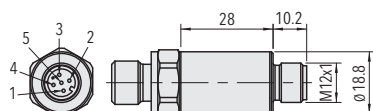
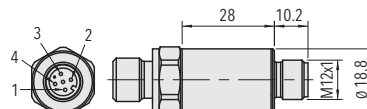
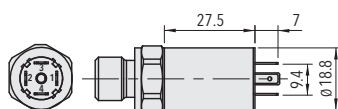
<sup>4)</sup> Max. allowable pressure range 60 bar at 120 bar overpressure

<sup>5)</sup> Max. allowable pressure range 160 bar at 500 bar overpressure

<sup>6)</sup> Only for pressure connections 17, 30, 32

<sup>7)</sup> Cable length see accessories

<sup>8)</sup> According to norm J1926, max. 35 MPa



# NAE 8256

## Engine Pressure Transmitter



### Features

- Measuring accuracy 0.3 %, 0.5 %
- Completely welded steel sensor system without additional seals
- Smallest design
- High resistance to over pressure
- Excellent long-term stability

### Technical Data

|                      |                                                          |                       |                                             |
|----------------------|----------------------------------------------------------|-----------------------|---------------------------------------------|
| Measuring principle  | Thin film on steel                                       | Media temperature     | -40°C ... +125°C                            |
| Measuring range      | 0 ... 10 to 0 ... 600 bar<br>0 ... 150 to 0 ... 7500 psi | Ambient temperature   | -40°C ... +125°C                            |
| Output signal        | 4 ... 20 mA                                              | Approval / conformity | ABS, BV, DNV, GL, LRS, KRS, NKK, RINA, RMRS |
| Accuracy @ 25°C typ. | 0.5 %: ± 0.5 % FS typ.<br>0.3 %: ± 0.3 % FS typ.         |                       |                                             |



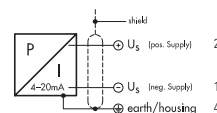
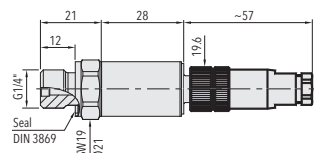
Data sheet  
Instructions

[www.trafag.com/H72305](http://www.trafag.com/H72305)  
[www.trafag.com/H73303](http://www.trafag.com/H73303)

Additional dimensions see data sheet

### Standard products (extra short lead time)

| Product No. | Type Code                             | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|---------------------------------------|----------------------|--------------------------|--------------|--------------------------|
| NAE10.0A    | 8256 78 2317 32 0000 0000 19 33 44 61 | 0 ... 10             | 30                       | 9 ... 32     | ± 0.3                    |
| NAE16.0A    | 8256 79 2317 32 0000 0000 19 33 44 61 | 0 ... 16             | 48                       | 9 ... 32     | ± 0.3                    |
| NAE25.0A    | 8256 80 2317 32 0000 0000 19 33 44 61 | 0 ... 25             | 75                       | 9 ... 32     | ± 0.3                    |
| NAE40.0A    | 8256 81 2317 32 0000 0000 19 33 44 61 | 0 ... 40             | 120                      | 9 ... 32     | ± 0.3                    |
| NAE100.0A   | 8256 83 2317 32 0000 0000 19 33 44 61 | 0 ... 100            | 300                      | 9 ... 32     | ± 0.3                    |
| NAE250.0A   | 8256 74 2317 32 0000 0000 19 33 44 61 | 0 ... 250            | 750                      | 9 ... 32     | ± 0.3                    |
| NAE400.0A   | 8256 84 2317 32 0000 0000 19 33 44 61 | 0 ... 400            | 1000                     | 9 ... 32     | ± 0.3                    |
| NAE600.0A   | 8256 86 2317 32 0000 0000 19 33 44 61 | 0 ... 600            | 1500                     | 9 ... 32     | ± 0.3                    |



NAE... A (4 ... 20 mA)

Pressure peak damping element integrated

# NAH 8253

## Hydraulic Pressure Transmitter

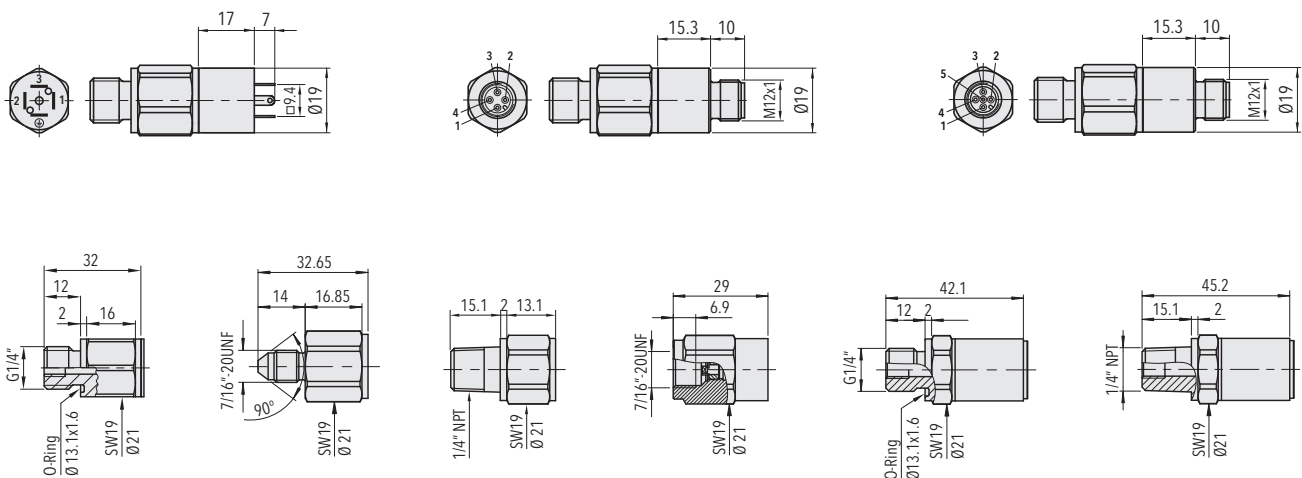


### Features

- Smallest design
- Accuracy classes 0.1%, 0.3%
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

### Technical Data

|                     |                                                                                     |                      |                                                        |
|---------------------|-------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------|
| Measuring principle | Thin film on steel                                                                  | Accuracy @ 25°C typ. | ± 0.3 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ. |
| Measuring range     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                            | Media temperature    | -40°C ... +125°C                                       |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric | Ambient temperature  | -40°C ... +125°C                                       |



Data sheet  
Instructions

[www.trafag.com/H72300](http://www.trafag.com/H72300)  
[www.trafag.com/H73250](http://www.trafag.com/H73250)

|                               |                                                                                                                                                                  |                                   |                      | 8253 . XX                   |                                  |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------|-----------------------------|----------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                                                 | Over pressure [bar]               | Burst pressure [bar] |                             | Pressure measurement range [psi] | Over pressure [psi] | Burst pressure [psi] |    |    |    |    |    |
|                               | 0 ... 2.5 <sup>2)</sup>                                                                                                                                          | 5                                 | 50                   | 75                          | 0 ... 30                         | 90                  | 700                  | G5 |    |    |    |    |
|                               | 0 ... 4                                                                                                                                                          | 8                                 | 60                   | 76                          | 0 ... 50                         | 150                 | 850                  | G6 |    |    |    |    |
|                               | 0 ... 6                                                                                                                                                          | 12                                | 100                  | 77                          | 0 ... 100                        | 300                 | 1450                 | G7 |    |    |    |    |
|                               | 0 ... 10                                                                                                                                                         | 20                                | 200                  | 78                          | 0 ... 150                        | 450                 | 2500                 | G8 |    |    |    |    |
|                               | 0 ... 16                                                                                                                                                         | 32                                | 200                  | 79                          | 0 ... 200                        | 600                 | 2500                 | GA |    |    |    |    |
|                               | 0 ... 25                                                                                                                                                         | 50                                | 300                  | 80                          | 0 ... 250                        | 750                 | 2500                 | G9 |    |    |    |    |
|                               | 0 ... 40                                                                                                                                                         | 80                                | 300                  | 81                          | 0 ... 300                        | 900                 | 4000                 | HA |    |    |    |    |
|                               | 0 ... 60                                                                                                                                                         | 120                               | 400                  | 82                          | 0 ... 400                        | 1200                | 4000                 | H0 |    |    |    |    |
|                               | 0 ... 100                                                                                                                                                        | 200                               | 500                  | 83                          | 0 ... 500                        | 1500                | 4000                 | H1 |    |    |    |    |
|                               | 0 ... 160                                                                                                                                                        | 320                               | 750                  | 85                          | 0 ... 1000                       | 3000                | 5000                 | H2 |    |    |    |    |
|                               | 0 ... 250                                                                                                                                                        | 500                               | 1000                 | 74                          | 0 ... 1500                       | 4500                | 7000                 | H3 |    |    |    |    |
|                               | 0 ... 400                                                                                                                                                        | 800                               | 1500                 | 84                          | 0 ... 2000                       | 6000                | 10000                | H5 |    |    |    |    |
|                               | 0 ... 600                                                                                                                                                        | 1000                              | 2000                 | 86                          | 0 ... 3000                       | 9000                | 14500                | G4 |    |    |    |    |
|                               |                                                                                                                                                                  |                                   |                      |                             | 0 ... 5000                       | 12500               | 21750                | H4 |    |    |    |    |
|                               |                                                                                                                                                                  |                                   |                      |                             | 0 ... 7500                       | 18750               | 29000                | H6 |    |    |    |    |
| Sensor                        | Relative pressure, accuracy: 0.3 %                                                                                                                               |                                   |                      |                             |                                  |                     |                      | 23 |    |    |    |    |
|                               | Relative pressure, accuracy: 0.15 %                                                                                                                              |                                   |                      |                             |                                  |                     |                      | 21 |    |    |    |    |
|                               | Relative pressure, accuracy: 0.1 %                                                                                                                               |                                   |                      |                             |                                  |                     |                      | 24 |    |    |    |    |
|                               | Absolute pressure, accuracy: 0.3 %                                                                                                                               |                                   |                      |                             |                                  |                     |                      | 43 |    |    |    |    |
|                               | Absolute pressure, accuracy: 0.15 %                                                                                                                              |                                   |                      |                             |                                  |                     |                      | 41 |    |    |    |    |
|                               | Absolute pressure, accuracy: 0.1 %                                                                                                                               |                                   |                      |                             |                                  |                     |                      | 44 |    |    |    |    |
| Pressure connection           | G1/4" male (Seal)                                                                                                                                                |                                   |                      |                             |                                  |                     |                      | 17 |    |    |    |    |
|                               | 1/4" NPT male                                                                                                                                                    |                                   |                      |                             |                                  |                     |                      | 30 |    |    |    |    |
|                               | 7/16"-20UNF male <sup>3) 4)</sup>                                                                                                                                |                                   |                      |                             |                                  |                     |                      | 18 |    |    |    |    |
|                               | 7/16"-20UNF female, DIN3866 (valve opener) <sup>3) 4)</sup>                                                                                                      |                                   |                      |                             |                                  |                     |                      | 24 |    |    |    |    |
| Electrical connection         | Male electrical plug, industrial standard (contact distance 9.4 mm), Mat. PBT                                                                                    |                                   |                      |                             |                                  |                     |                      | 01 |    |    |    |    |
|                               | Male electrical plug M12x1, 4-pole, Mat. PBT                                                                                                                     |                                   |                      |                             |                                  |                     |                      | 32 |    |    |    |    |
|                               | Male electrical plug M12x1, 5-pole, Mat. PBT                                                                                                                     |                                   |                      |                             |                                  |                     |                      | 35 |    |    |    |    |
| Output signal                 | Signal output                                                                                                                                                    | Load resistance                   | I (supply)           | U (supply)                  |                                  |                     |                      |    |    |    |    |    |
|                               | 4 ... 20 mA                                                                                                                                                      | (U <sub>supply</sub> 9 V) / 20 mA |                      | 24 (9 ... 32) VDC           |                                  |                     |                      | 19 |    |    |    |    |
|                               | 0 ... 5 VDC                                                                                                                                                      | ≥ 2.0 kΩ                          | ≤ 10 mA              | 24 (9 ... 32) VDC           |                                  |                     |                      | 14 |    |    |    |    |
|                               | 1 ... 6 VDC                                                                                                                                                      | ≥ 2.0 kΩ                          | ≤ 10 mA              | 24 (9 ... 32) VDC           |                                  |                     |                      | 16 |    |    |    |    |
|                               | 0 ... 10 VDC                                                                                                                                                     | ≥ 5.0 kΩ                          | ≤ 10 mA              | 24 (15 ... 32) VDC          |                                  |                     |                      | 17 |    |    |    |    |
|                               | 0.5 ... 4.5 VDC                                                                                                                                                  | ≥ 2.0 kΩ                          | ≤ 10 mA              | 5 (4.5 ... 5.5) VDC ratiom. |                                  |                     |                      | 23 |    |    |    |    |
| Accessories                   | Female electrical plug M12x1, 5-pole, for electrical connections 32 and 35                                                                                       |                                   |                      |                             |                                  |                     |                      | 33 |    |    |    |    |
|                               | Female electrical connector industrial standard                                                                                                                  |                                   |                      |                             |                                  |                     |                      | 34 |    |    |    |    |
|                               | Meets EN50155 (railways) dielectrical strength: 500 VAC, 50 Hz <sup>5)</sup>                                                                                     |                                   |                      |                             |                                  |                     |                      | 11 |    |    |    |    |
|                               | Pressure peak damping element ø 1.0 mm <sup>6)</sup>                                                                                                             |                                   |                      |                             |                                  |                     |                      | 40 |    |    |    |    |
|                               | Pressure peak damping element ø 0.3 mm <sup>6)</sup>                                                                                                             |                                   |                      |                             |                                  |                     |                      | 43 |    |    |    |    |
|                               | Pressure peak damping element ø 0.5 mm <sup>6)</sup>                                                                                                             |                                   |                      |                             |                                  |                     |                      | 45 |    |    |    |    |
|                               | Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 -, Pin 4 Out<br>(only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole) |                                   |                      |                             |                                  |                     |                      | 96 |    |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Measuring accuracy 0.3 %

<sup>3)</sup> Relative pressure only

<sup>4)</sup> Max. allowable pressure range 40 bar

<sup>5)</sup> Only with output 19

<sup>6)</sup> Only for pressure connections 17 and 30


Identical construction with higher/lower specifications: Data sheet No. H72250, H72301



# EPI 8287

## Industrial Pressure Transmitter



### Features

- Excellent long-term stability
- High resistance to over pressure
- Completely welded steel sensor system without additional seals
- Compact design

### Technical Data

|                     |                                                          |                      |                  |
|---------------------|----------------------------------------------------------|----------------------|------------------|
| Measuring principle | Thin film on steel                                       | Accuracy @ 25°C typ. | ± 0.5 % FS typ.  |
| Measuring range     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi | Media temperature    | -40°C ... +125°C |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC   | Ambient temperature  | -40°C ... +125°C |

### Standard products (extra short lead time)

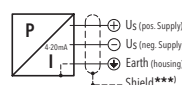
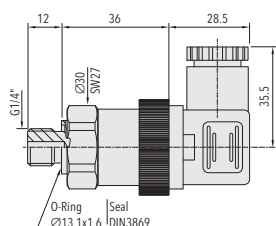
| Product No. | Type Code                             | Pressure range<br>[bar] | Over pressure<br>max.<br>[bar] | Signal output | Supply<br>[VDC] |
|-------------|---------------------------------------|-------------------------|--------------------------------|---------------|-----------------|
| EPI4.0A     | 8287 76 2517 05 0000 0000 19 44 58 61 | 0 ... 4                 | 12                             | 4 ... 20 mA   | 9 ... 32        |
| EPI6.0A     | 8287 77 2517 05 0000 0000 19 44 58 61 | 0 ... 6                 | 18                             | 4 ... 20 mA   | 9 ... 32        |
| EPI10.0A    | 8287 78 2517 05 0000 0000 19 44 58 61 | 0 ... 10                | 30                             | 4 ... 20 mA   | 9 ... 32        |
| EPI16.0A    | 8287 79 2517 05 0000 0000 19 44 58 61 | 0 ... 16                | 48                             | 4 ... 20 mA   | 9 ... 32        |
| EPI25.0A    | 8287 80 2517 05 0000 0000 19 44 58 61 | 0 ... 25                | 75                             | 4 ... 20 mA   | 9 ... 32        |
| EPI40.0A    | 8287 81 2517 05 0000 0000 19 44 58 61 | 0 ... 40                | 120                            | 4 ... 20 mA   | 9 ... 32        |
| EPI60.0A    | 8287 82 2517 05 0000 0000 19 44 58 61 | 0 ... 60                | 180                            | 4 ... 20 mA   | 9 ... 32        |
| EPI100.0A   | 8287 83 2517 05 0000 0000 19 44 58 61 | 0 ... 100               | 300                            | 4 ... 20 mA   | 9 ... 32        |
| EPI250.0A   | 8287 74 2517 05 0000 0000 19 44 58 61 | 0 ... 250               | 750                            | 4 ... 20 mA   | 9 ... 32        |
| EPI400.0A   | 8287 84 2517 05 0000 0000 19 44 58 61 | 0 ... 400               | 1000                           | 4 ... 20 mA   | 9 ... 32        |
| EPI600.0A   | 8287 86 2517 05 0000 0000 19 44 58 61 | 0 ... 600               | 1500                           | 4 ... 20 mA   | 9 ... 32        |
| EPI4.0V     | 8287 76 2517 05 0000 0000 17 44 58 61 | 0 ... 4                 | 12                             | 0 ... 10 VDC  | 15 ... 32       |
| EPI6.0V     | 8287 77 2517 05 0000 0000 17 44 58 61 | 0 ... 6                 | 18                             | 0 ... 10 VDC  | 15 ... 32       |
| EPI10.0V    | 8287 78 2517 05 0000 0000 17 44 58 61 | 0 ... 10                | 30                             | 0 ... 10 VDC  | 15 ... 32       |
| EPI16.0V    | 8287 79 2517 05 0000 0000 17 44 58 61 | 0 ... 16                | 48                             | 0 ... 10 VDC  | 15 ... 32       |
| EPI25.0V    | 8287 80 2517 05 0000 0000 17 44 58 61 | 0 ... 25                | 75                             | 0 ... 10 VDC  | 15 ... 32       |
| EPI40.0V    | 8287 81 2517 05 0000 0000 17 44 58 61 | 0 ... 40                | 120                            | 0 ... 10 VDC  | 15 ... 32       |
| EPI60.0V    | 8287 82 2517 05 0000 0000 17 44 58 61 | 0 ... 60                | 180                            | 0 ... 10 VDC  | 15 ... 32       |
| EPI100.0V   | 8287 83 2517 05 0000 0000 17 44 58 61 | 0 ... 100               | 300                            | 0 ... 10 VDC  | 15 ... 32       |
| EPI250.0V   | 8287 74 2517 05 0000 0000 17 44 58 61 | 0 ... 250               | 750                            | 0 ... 10 VDC  | 15 ... 32       |
| EPI400.0V   | 8287 84 2517 05 0000 0000 17 44 58 61 | 0 ... 400               | 1000                           | 0 ... 10 VDC  | 15 ... 32       |
| EPI600.0V   | 8287 86 2517 05 0000 0000 17 44 58 61 | 0 ... 600               | 1500                           | 0 ... 10 VDC  | 15 ... 32       |



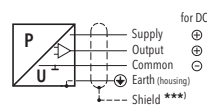
Data sheet  
Instructions

[www.trafag.com/H72317](http://www.trafag.com/H72317)  
[www.trafag.com/H73317](http://www.trafag.com/H73317)

|                               |                                                                                                               |                                    |                      | 8287 . XX     | XX         | XX    | XX    | XX | XX |
|-------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------|------------|-------|-------|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                              | Over pressure [bar]                | Burst pressure [bar] |               |            |       |       |    |    |
|                               |                                                                                                               |                                    |                      |               |            |       |       |    |    |
|                               | 0 ... 2.5                                                                                                     | 7.5                                | 50                   | 75            | 0 ... 30   | 90    | 700   | G5 |    |
|                               | 0 ... 4                                                                                                       | 12                                 | 60                   | 76            | 0 ... 50   | 150   | 850   | G6 |    |
|                               | 0 ... 6                                                                                                       | 18                                 | 100                  | 77            | 0 ... 100  | 300   | 1450  | G7 |    |
|                               | 0 ... 10                                                                                                      | 30                                 | 200                  | 78            | 0 ... 150  | 450   | 2500  | G8 |    |
|                               | 0 ... 16                                                                                                      | 48                                 | 200                  | 79            | 0 ... 200  | 600   | 2500  | GA |    |
|                               | 0 ... 25                                                                                                      | 75                                 | 300                  | 80            | 0 ... 250  | 750   | 2500  | G9 |    |
|                               | 0 ... 40                                                                                                      | 120                                | 300                  | 81            | 0 ... 300  | 900   | 4000  | HA |    |
|                               | 0 ... 60                                                                                                      | 180                                | 400                  | 82            | 0 ... 400  | 1200  | 4000  | H0 |    |
|                               | 0 ... 100                                                                                                     | 300                                | 500                  | 83            | 0 ... 500  | 1500  | 4000  | H1 |    |
|                               | 0 ... 160                                                                                                     | 480                                | 750                  | 85            | 0 ... 1000 | 3000  | 5000  | H2 |    |
|                               | 0 ... 250                                                                                                     | 750                                | 1000                 | 74            | 0 ... 1500 | 4500  | 7000  | H3 |    |
|                               | 0 ... 400                                                                                                     | 1000                               | 2000                 | 84            | 0 ... 2000 | 6000  | 10000 | H5 |    |
|                               | 0 ... 600                                                                                                     | 1500                               | 2500                 | 86            | 0 ... 3000 | 9000  | 14500 | G4 |    |
|                               | Option 5P: Fivefold overpressure                                                                              |                                    |                      |               | 0 ... 5000 | 12500 | 21750 | H4 |    |
|                               | 0 ... 2.5                                                                                                     | 12.5                               | 60                   | 55            | 0 ... 7500 | 18750 | 29000 | H6 |    |
|                               | 0 ... 4                                                                                                       | 20                                 | 100                  | 56            |            |       |       |    |    |
|                               | 0 ... 6                                                                                                       | 30                                 | 200                  | 57            |            |       |       |    |    |
|                               | 0 ... 10                                                                                                      | 50                                 | 200                  | 58            |            |       |       |    |    |
|                               | 0 ... 16                                                                                                      | 80                                 | 300                  | 59            |            |       |       |    |    |
|                               | 0 ... 25                                                                                                      | 125                                | 300                  | 60            |            |       |       |    |    |
|                               | 0 ... 40                                                                                                      | 200                                | 400                  | 61            |            |       |       |    |    |
|                               | 0 ... 60                                                                                                      | 300                                | 500                  | 62            |            |       |       |    |    |
|                               | 0 ... 100                                                                                                     | 500                                | 750                  | 63            |            |       |       |    |    |
|                               | 0 ... 160                                                                                                     | 800                                | 1000                 | 65            |            |       |       |    |    |
| Sensor                        | Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4542 (AISI630)                |                                    |                      |               | 25         |       |       |    |    |
|                               | Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4404 (AISI316L) <sup>3)</sup> |                                    |                      |               | 35         |       |       |    |    |
| Pressure connection           | G1/4" female                                                                                                  |                                    |                      |               | 10         |       |       |    |    |
|                               | G1/4" male (Seal)                                                                                             |                                    |                      |               | 17         |       |       |    |    |
|                               | R1/4" male                                                                                                    |                                    |                      |               | 19         |       |       |    |    |
|                               | G1/2" male DIN16288-8 (Manometer)                                                                             |                                    |                      |               | 11         |       |       |    |    |
|                               | 1/4" NPT male <sup>2)</sup>                                                                                   |                                    |                      |               | 30         |       |       |    |    |
|                               | 1/2" NPT male                                                                                                 |                                    |                      |               | 51         |       |       |    |    |
|                               | M14x1.5 male DIN6149-2                                                                                        |                                    |                      |               | 31         |       |       |    |    |
| Electrical connection         | Male electrical plug EN 175301-803-A, Mat. PA                                                                 |                                    |                      |               | 05         |       |       |    |    |
| Output signal                 | Signal output                                                                                                 | Load resistance                    | I (supply)           | U (supply)    |            |       |       |    |    |
|                               | 4 ... 20 mA                                                                                                   | (U <sub>supply</sub> -9 V) / 20 mA |                      | 9 ... 32 VDC  | 19         |       |       |    |    |
|                               | 0 ... 5 VDC                                                                                                   | > 2.5 kΩ                           | < 10 mA              | 9 ... 32 VDC  | 14         |       |       |    |    |
|                               | 1 ... 6 VDC                                                                                                   | > 5.0 kΩ                           | < 10 mA              | 9 ... 32 VDC  | 16         |       |       |    |    |
|                               | 0 ... 10 VDC                                                                                                  | > 5.0 kΩ                           | < 10 mA              | 15 ... 32 VDC | 17         |       |       |    |    |



EPI ... A (4 ... 20 mA)



EPI ... V (0 ... 10 VDC)

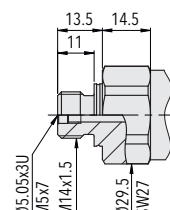
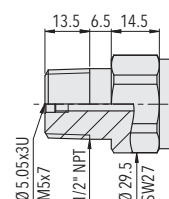
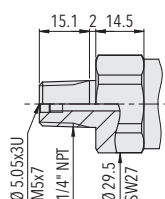
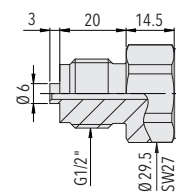
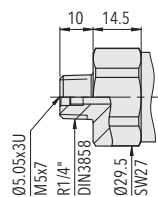
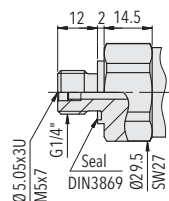
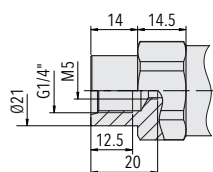
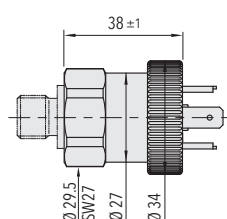
Continuation on next page

|                    |                                                                                                                                                              |    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Accessories</b> | Seal FPM, -18°C ... +125°C                                                                                                                                   | 61 |
|                    | Seal EPDM, -40°C ... +125°C                                                                                                                                  | 63 |
|                    | Seal NBR, -25°C ... +100°C                                                                                                                                   | 83 |
|                    | Pressure peak damping element $\varnothing$ 1.0 mm (for pressure connections 17 and 30)                                                                      | 40 |
|                    | Pressure peak damping element $\varnothing$ 0.4 mm (for pressure connections 17 and 30)                                                                      | 44 |
|                    | Female electrical connector EN 175301-803-A (DIN43650-A)                                                                                                     | 58 |
|                    | Special electrical connection: Pin 1 + , Pin 2 -<br>(only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)                   | 92 |
|                    | Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out<br>(only for output signals 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) | 98 |
|                    | Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out<br>(only for output signals 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) | 97 |

<sup>1)</sup> Customized pressure ranges upon request

<sup>2)</sup> Upon request

<sup>3)</sup> Only with pressure connection 17 (G1/4")



# NPN 8264

## Picotrans



### Features

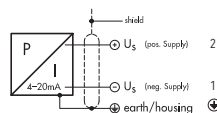
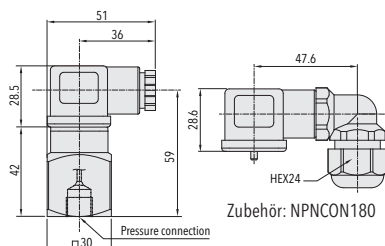
- Compact design
- Flange connection (PICO family)
- High vibration resistance
- Good temperature resistance
- Completely welded steel sensor system without additional seals

### Technical Data

|                      |                                    |                       |                                                  |
|----------------------|------------------------------------|-----------------------|--------------------------------------------------|
| Measuring principle  | Thin film on steel                 | Media temperature     | -40°C ... +100°C                                 |
| Measuring range      | 0 ... 2.5 to 0 ... 250 bar         | Ambient temperature   | -40°C ... +100°C                                 |
| Output signal        | 4 ... 20 mA                        | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.<br>± 0.3 % FS typ. |                       |                                                  |

### Standard products (extra short lead time)

| Product No. | Type Code                                | Pressure range [bar] | Over pressure max. [bar] | Signal output | Supply [VDC]  |
|-------------|------------------------------------------|----------------------|--------------------------|---------------|---------------|
| NPN4.0A4    | 8264 76 2510 04 0000 0000 19 58 V3       | 0 ... 4              | 10                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN6.0A4    | 8264 77 2510 04 0000 0000 19 58 V3       | 0 ... 6              | 15                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN10.0A4   | 8264 78 2510 04 0000 0000 19 58 V3       | 0 ... 10             | 20                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN16.0A4   | 8264 79 2510 04 0000 0000 19 58 V3       | 0 ... 16             | 32                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN25.0A4   | 8264 80 2510 04 0000 0000 19 58 V3       | 0 ... 25             | 50                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN40.0A4   | 8264 81 2510 04 0000 0000 19 58 V3       | 0 ... 40             | 80                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN4.0AF4   | 8264 76 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 4              | 10                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN6.0AF4   | 8264 77 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 6              | 15                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN10.0AF4  | 8264 78 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 10             | 20                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN16.0AF4  | 8264 79 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 16             | 32                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN25.0AF4  | 8264 80 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 25             | 50                       | 4 ... 20 mA   | 24 (9 ... 32) |
| NPN40.0AF4  | 8264 81 2510 04 0000 0000 19 41 58 74 V3 | 0 ... 40             | 80                       | 4 ... 20 mA   | 24 (9 ... 32) |



NPN ... A4 (4 ... 20 mA)  
NPN ... AF4 (4 ... 20 mA)



Data sheet  
Instructions

[www.trafag.com/H72313](http://www.trafag.com/H72313)  
[www.trafag.com/H73313](http://www.trafag.com/H73313)

Additional dimensions see data sheet



# EPN/EPNCR 8298

## Engine Pressure Transmitter



### Features

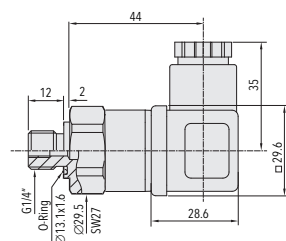
- Nominal pressure up to 2500 bar (Common Rail) with high pressure threaded connection
- High vibration resistance
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

### Technical Data

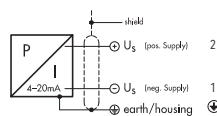
|                      |                                            |                       |                                                  |
|----------------------|--------------------------------------------|-----------------------|--------------------------------------------------|
| Measuring principle  | Thin film on steel                         | Media temperature     | -40°C ... +125°C                                 |
| Measuring range      | 0 ... 2.5 to 0 ... 2500 bar                | Ambient temperature   | -40°C ... +125°C                                 |
| Output signal        | 4 ... 20 mA<br>0.5 ... 4.5 VDC ratiometric | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.<br>± 0.3 % FS typ.         |                       |                                                  |

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|------------------------------------|----------------------|--------------------------|--------------|--------------------------|
| EPN4.0A     | 8298 76 2517 04 0000 0000 19 43 58 | 0 ... 4              | 8                        | 9 ... 32     | ± 0.5                    |
| EPN6.0A     | 8298 77 2517 04 0000 0000 19 43 58 | 0 ... 6              | 12                       | 9 ... 32     | ± 0.5                    |
| EPN10.0A    | 8298 78 2517 04 0000 0000 19 43 58 | 0 ... 10             | 20                       | 9 ... 32     | ± 0.5                    |
| EPN16.0A    | 8298 79 2517 04 0000 0000 19 43 58 | 0 ... 16             | 32                       | 9 ... 32     | ± 0.5                    |
| EPN25.0A    | 8298 80 2517 04 0000 0000 19 43 58 | 0 ... 25             | 50                       | 9 ... 32     | ± 0.5                    |
| EPN40.0A    | 8298 81 2517 04 0000 0000 19 43 58 | 0 ... 40             | 80                       | 9 ... 32     | ± 0.5                    |
| EPN60.0A    | 8298 82 2517 04 0000 0000 19 43 58 | 0 ... 60             | 120                      | 9 ... 32     | ± 0.5                    |
| EPN100.0A   | 8298 83 2517 04 0000 0000 19 43 58 | 0 ... 100            | 200                      | 9 ... 32     | ± 0.5                    |
| EPN250.0A   | 8298 74 2517 04 0000 0000 19 43 58 | 0 ... 250            | 500                      | 9 ... 32     | ± 0.5                    |
| EPN400.0A   | 8298 84 2517 04 0000 0000 19 43 58 | 0 ... 400            | 800                      | 9 ... 32     | ± 0.5                    |



Pressure peak damping element integrated



EPN ... A (4 ... 20 mA)



Data sheet  
Instructions

[www.trafag.com/H72312](http://www.trafag.com/H72312)  
[www.trafag.com/H73311](http://www.trafag.com/H73311)

|                               |                                                                                                   |                                    |                                                                                                                                         | 8298 . XX |                                  |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                  | Over pressure [bar]                | Burst pressure [bar]                                                                                                                    |           | Pressure measurement range [bar] | Over pressure [bar] | Burst pressure [bar] |    |    |    |    |    |
|                               | 0 ... 2.5                                                                                         | 5                                  | 100                                                                                                                                     | 75        | 0 ... 100                        | 200                 | 500                  | 83 |    |    |    |    |
|                               | 0 ... 4                                                                                           | 8                                  | 100                                                                                                                                     | 76        | 0 ... 160                        | 320                 | 1000                 | 85 |    |    |    |    |
|                               | 0 ... 6                                                                                           | 12                                 | 100                                                                                                                                     | 77        | 0 ... 250                        | 500                 | 1000                 | 74 |    |    |    |    |
|                               | 0 ... 10                                                                                          | 20                                 | 200                                                                                                                                     | 78        | 0 ... 400                        | 800                 | 1500                 | 84 |    |    |    |    |
|                               | 0 ... 16                                                                                          | 32                                 | 200                                                                                                                                     | 79        | 0 ... 600                        | 1000                | 2000                 | 86 |    |    |    |    |
|                               | 0 ... 25                                                                                          | 50                                 | 300                                                                                                                                     | 80        | 0 ... 1600                       | 3000                | 4000                 | 89 |    |    |    |    |
|                               | 0 ... 40                                                                                          | 80                                 | 300                                                                                                                                     | 81        | 0 ... 2000                       | 3000                | 4000                 | 90 |    |    |    |    |
|                               | 0 ... 60                                                                                          | 120                                | 500                                                                                                                                     | 82        | 0 ... 2500                       | 3000                | 4000                 | 91 |    |    |    |    |
| Sensor                        | Relative pressure, accuracy: 0.3 %                                                                |                                    |                                                                                                                                         |           |                                  |                     |                      | 23 |    |    |    |    |
|                               | Relative pressure, accuracy: 0.5 %                                                                |                                    |                                                                                                                                         |           |                                  |                     |                      | 25 |    |    |    |    |
| Pressure connection           | G1/4" male (Seal) <sup>2)</sup>                                                                   | 17                                 | 1/2" NPT male <sup>2) 5)</sup>                                                                                                          |           |                                  |                     |                      | 51 |    |    |    |    |
|                               | R1/4" male <sup>2) 4)</sup>                                                                       | 19                                 | M14x1.5 male (conical seal: 58°) <sup>3)</sup>                                                                                          |           |                                  |                     |                      | 28 |    |    |    |    |
|                               | G1/2" male DIN16288-8 (Manometer) <sup>2)</sup>                                                   | 11                                 | M18x1.5 male (conical seal: 58°) <sup>3)</sup>                                                                                          |           |                                  |                     |                      | 29 |    |    |    |    |
|                               | 1/4" NPT male <sup>2) 5)</sup>                                                                    | 30                                 |                                                                                                                                         |           |                                  |                     |                      |    |    |    |    |    |
| Electrical connection         | Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, normal vibration resistance ≤ 600 bar |                                    |                                                                                                                                         |           |                                  |                     |                      | 04 |    |    |    |    |
|                               | Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, extended vibration resistance         |                                    |                                                                                                                                         |           |                                  |                     |                      | 05 |    |    |    |    |
|                               | Male electrical plug: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn)                              |                                    |                                                                                                                                         |           |                                  |                     |                      | 25 |    |    |    |    |
|                               | Male electrical plug MIL-C 26482, 6-pole, metal <sup>8)</sup>                                     |                                    |                                                                                                                                         |           |                                  |                     |                      | 02 |    |    |    |    |
|                               | Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm <sup>2</sup> <sup>6)</sup>                |                                    |                                                                                                                                         |           |                                  |                     |                      | 78 |    |    |    |    |
| Output signal                 | Signal output                                                                                     | Load resistance                    | I (supply)                                                                                                                              |           | U (supply)                       |                     |                      |    |    |    |    |    |
|                               | 4 ... 20mA                                                                                        | (U <sub>supply</sub> -9 V) / 20 mA |                                                                                                                                         |           | 9 ... 32 VDC                     |                     |                      |    |    |    | 19 |    |
|                               | 0.5 ... 4.5 VDC <sup>7)</sup>                                                                     | ≥ 15.0 kΩ                          | ≤ 12 mA                                                                                                                                 |           | 5 VDC ± 0.25 VDC ratiom.         |                     |                      |    |    |    | 23 |    |
| Accessories                   | Pressure peak damping element ø 1.0 mm                                                            | 40                                 | Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) |           |                                  |                     |                      | 92 |    |    |    |    |
|                               | Pressure peak damping element ø 0.3 mm                                                            | 43                                 |                                                                                                                                         |           |                                  |                     |                      |    |    |    |    |    |
|                               | Pressure peak damping element ø 0.5 mm                                                            | 45                                 | Cable length 1.5 m                                                                                                                      |           |                                  |                     |                      | 1M |    |    |    |    |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C                          | 58                                 | Cable length 3.0 m                                                                                                                      |           |                                  |                     |                      | 3M |    |    |    |    |
|                               | Female electrical connector MIL-C 26482, 6-pole, metal                                            | 32                                 | Cable length 5.0 m                                                                                                                      |           |                                  |                     |                      | 5M |    |    |    |    |
|                               |                                                                                                   |                                    |                                                                                                                                         |           |                                  |                     |                      |    |    |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> For Ranges ≤ 600 bar

<sup>3)</sup> For ranges > 600 bar

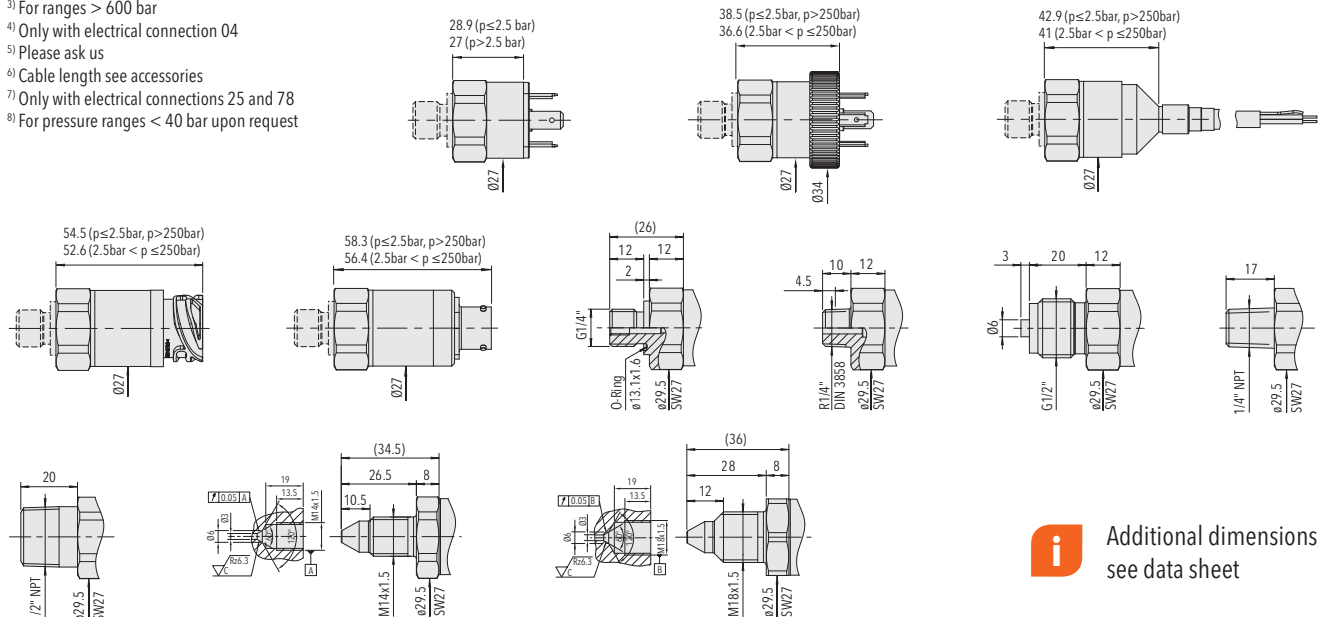
<sup>4)</sup> Only with electrical connection 04

<sup>5)</sup> Please ask us

<sup>6)</sup> Cable length see accessories

<sup>7)</sup> Only with electrical connections 25 and 78

<sup>8)</sup> For pressure ranges < 40 bar upon request



# EPR 8293

## Railway Pressure Transmitter

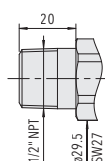
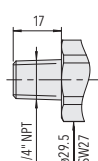
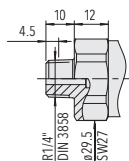
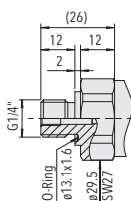
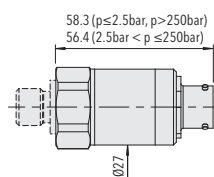
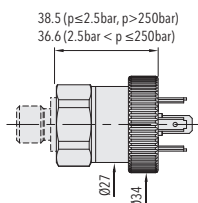
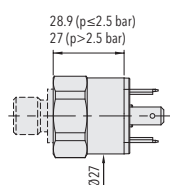


### Features

- Dielectrical strength: 500 VAC, 50 Hz, meets EN50155 (Railways)
- Compact design
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

### Technical Data

|                      |                                    |                       |                    |
|----------------------|------------------------------------|-----------------------|--------------------|
| Measuring principle  | Thin film on steel                 | Media temperature     | -40°C ... +125°C   |
| Measuring range      | 0 ... 2.5 to 0 ... 600 bar         | Ambient temperature   | -40°C ... +125°C   |
| Output signal        | 4 ... 20 mA                        | Approval / conformity | EN50155 (Railways) |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.<br>± 0.3 % FS typ. |                       |                    |



| 8293 . XX                     |                                                                                                                                            |                                    |                      |              | XX | XX | XX | XX | XX | XX |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|--------------|----|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                           | Over pressure [bar]                | Burst pressure [bar] |              |    |    |    |    |    |    |
|                               | 0 ... 2.5                                                                                                                                  | 5                                  | 100                  | 75           |    |    |    |    |    |    |
|                               | 0 ... 4                                                                                                                                    | 8                                  | 100                  | 76           |    |    |    |    |    |    |
|                               | 0 ... 6                                                                                                                                    | 12                                 | 100                  | 77           |    |    |    |    |    |    |
|                               | 0 ... 10                                                                                                                                   | 20                                 | 200                  | 78           |    |    |    |    |    |    |
|                               | 0 ... 16                                                                                                                                   | 32                                 | 200                  | 79           |    |    |    |    |    |    |
|                               | 0 ... 25                                                                                                                                   | 50                                 | 300                  | 80           |    |    |    |    |    |    |
|                               | 0 ... 40                                                                                                                                   | 80                                 | 300                  | 81           |    |    |    |    |    |    |
|                               | 0 ... 60                                                                                                                                   | 120                                | 500                  | 82           |    |    |    |    |    |    |
|                               | 0 ... 100                                                                                                                                  | 200                                | 500                  | 83           |    |    |    |    |    |    |
|                               | 0 ... 160                                                                                                                                  | 320                                | 1000                 | 85           |    |    |    |    |    |    |
|                               | 0 ... 250                                                                                                                                  | 500                                | 1000                 | 74           |    |    |    |    |    |    |
|                               | 0 ... 400                                                                                                                                  | 800                                | 1500                 | 84           |    |    |    |    |    |    |
|                               | 0 ... 600                                                                                                                                  | 1000                               | 2000                 | 86           |    |    |    |    |    |    |
| Sensor                        | Relative pressure, accuracy: 0.3 %                                                                                                         |                                    |                      | 23           |    |    |    |    |    |    |
|                               | Relative pressure, accuracy: 0.5 %                                                                                                         |                                    |                      | 25           |    |    |    |    |    |    |
| Pressure connection           | G1/4" male (Seal)                                                                                                                          |                                    |                      |              | 17 |    |    |    |    |    |
|                               | R1/4" male <sup>2)</sup>                                                                                                                   |                                    |                      |              | 19 |    |    |    |    |    |
|                               | 1/4" NPT male <sup>3)</sup>                                                                                                                |                                    |                      |              | 30 |    |    |    |    |    |
|                               | 1/2" NPT male <sup>3)</sup>                                                                                                                |                                    |                      |              | 51 |    |    |    |    |    |
| Electrical connection         | Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA                                                                                 |                                    |                      |              | 04 |    |    |    |    |    |
|                               | Male electrical plug EN 175301-803-A, Mat. PA, Extended vibration resistance                                                               |                                    |                      |              | 05 |    |    |    |    |    |
|                               | Male electrical plug MIL-C 26482, 6-pole, metal <sup>4)</sup>                                                                              |                                    |                      |              | 02 |    |    |    |    |    |
| Output signal                 | Signal output                                                                                                                              | Load resistance                    | I (supply)           | U (supply)   |    |    |    |    |    |    |
|                               | 4 ... 20mA                                                                                                                                 | (U <sub>supply</sub> -9 V) / 20 mA |                      | 9 ... 32 VDC |    |    |    |    | 19 |    |
| Accessories                   | Pressure peak damping element ø 1.0 mm                                                                                                     |                                    |                      |              |    |    |    |    |    | 40 |
|                               | Pressure peak damping element ø 0.3 mm                                                                                                     |                                    |                      |              |    |    |    |    |    | 43 |
|                               | Pressure peak damping element ø 0.5 mm                                                                                                     |                                    |                      |              |    |    |    |    |    | 45 |
|                               | Female electrical connector: EN 175301-803-A (DIN43650-A)/Silicone, -40...125°C                                                            |                                    |                      |              |    |    |    |    |    | 56 |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C                                                                   |                                    |                      |              |    |    |    |    |    | 58 |
|                               | Female electrical connector MIL-C 26482, 6-pole, metal                                                                                     |                                    |                      |              |    |    |    |    |    | 32 |
|                               | Special electrical connection: Pin 1 + , Pin 2 -<br>(only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) |                                    |                      |              |    |    |    |    |    | 92 |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Only with electrical connection 04

<sup>3)</sup> Please ask us

<sup>4)</sup> For pressure ranges < 40 bar upon request

# EPN-S 8320

## Electronic Pressure Switch

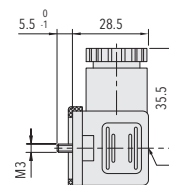
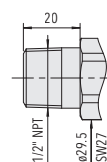
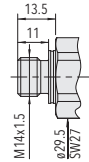
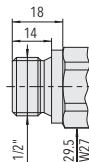
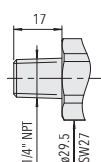
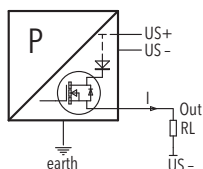
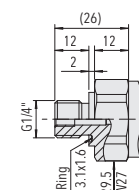
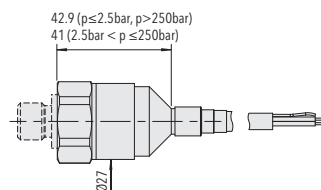
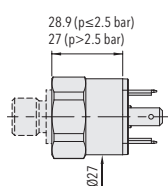
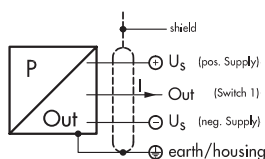


### Features

- Rugged design for harsh environments
- Wide temperature range
- Excellent long-term stability
- Very compact design
- Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC

### Technical Data

|                      |                                                          |                       |                                                                    |
|----------------------|----------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| Measuring principle  | Thin film on steel                                       | Media temperature     | -40°C ... +125°C                                                   |
| Measuring range      | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi | Ambient temperature   | Standard: -25°C ... +85°C<br>Option accessory 67: -40°C ... +125°C |
| Output signal        | Transistor (open source)                                 | Approval / conformity | GL                                                                 |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ. (Switchpoint)                            |                       |                                                                    |



Connection of loads to switch contacts

1) Tightening torque 50...60 Ncm

### Switching output

|                      |                                                                                                                                 |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Output signal        | 1 transistor (open source)                                                                                                      |
| Switchpoint setting  | Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC                                              |
| Adjustment range     | 0 ... 100 % FS                                                                                                                  |
| Switching hysteresis | ≥ 1 % FS                                                                                                                        |
| Switching current    | ≤ 0.5 A @ -40°C ... +85°C<br>≤ 0.4 A @ +85°C ... +125°C (only with accessory 67: higher operating temperature -40°C ... +125°C) |
| Switching resistance | ≤ 3Ω                                                                                                                            |
| Delay time           | Standard adjustment: 5 ms<br>Adjustable with Trafag Sensor Communicator (only electrical connection 04): 5 ms ... 10 s          |



Data sheet  
Instructions

[www.trafag.com/H72333](http://www.trafag.com/H72333)  
[www.trafag.com/H73333](http://www.trafag.com/H73333)



| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                              | Over pressure [bar] | Burst pressure [bar] |    | Pressure measurement range [ps] | Over pressure [ps] | Burst pressure [ps] |    | 8320 . XX | XX | XX | XX | XX | XX |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|----|---------------------------------|--------------------|---------------------|----|-----------|----|----|----|----|----|
|                               |                                                                                                                                               |                     |                      |    |                                 |                    |                     |    |           |    |    |    |    |    |
|                               | 0 ... 2.5                                                                                                                                     | 5                   | 100                  | 75 | 0 ... 30                        | 30                 | 720                 | G5 |           |    |    |    |    |    |
|                               | 0 ... 4                                                                                                                                       | 8                   | 100                  | 76 | 0 ... 50                        | 115                | 860                 | G6 |           |    |    |    |    |    |
|                               | 0 ... 6                                                                                                                                       | 12                  | 100                  | 77 | 0 ... 100                       | 170                | 1450                | G7 |           |    |    |    |    |    |
|                               | 0 ... 10                                                                                                                                      | 20                  | 200                  | 78 | 0 ... 150                       | 290                | 2900                | G8 |           |    |    |    |    |    |
|                               | 0 ... 16                                                                                                                                      | 32                  | 200                  | 79 | 0 ... 250                       | 464                | 2900                | G9 |           |    |    |    |    |    |
|                               | 0 ... 25                                                                                                                                      | 50                  | 300                  | 80 | 0 ... 400                       | 725                | 4350                | H0 |           |    |    |    |    |    |
|                               | 0 ... 40                                                                                                                                      | 80                  | 300                  | 81 | 0 ... 500                       | 1160               | 4350                | H1 |           |    |    |    |    |    |
|                               | 0 ... 60                                                                                                                                      | 120                 | 500                  | 82 | 0 ... 1000                      | 1740               | 5800                | H2 |           |    |    |    |    |    |
|                               | 0 ... 100                                                                                                                                     | 200                 | 500                  | 83 | 0 ... 1500                      | 2900               | 7250                | H3 |           |    |    |    |    |    |
|                               | 0 ... 160                                                                                                                                     | 320                 | 1000                 | 85 | 0 ... 2000                      | 4640               | 10850               | H5 |           |    |    |    |    |    |
|                               | 0 ... 250                                                                                                                                     | 500                 | 1000                 | 74 | 0 ... 3000                      | 7250               | 14500               | G4 |           |    |    |    |    |    |
|                               | 0 ... 400                                                                                                                                     | 800                 | 1500                 | 84 | 0 ... 5000                      | 11600              | 21750               | H4 |           |    |    |    |    |    |
|                               | 0 ... 600                                                                                                                                     | 1000                | 2000                 | 86 | 0 ... 7500                      | 14500              | 29000               | H6 |           |    |    |    |    |    |
| <b>Sensor</b>                 | Relative pressure                                                                                                                             |                     |                      |    |                                 |                    |                     |    | 23        |    |    |    |    |    |
| <b>Pressure connection</b>    | G1/4" male (Seal)                                                                                                                             |                     |                      |    |                                 |                    |                     |    | 17        |    |    |    |    |    |
|                               | 1/4" NPT male                                                                                                                                 |                     |                      |    |                                 |                    |                     |    | 30        |    |    |    |    |    |
|                               | G1/2" male (DIN3852-A) <sup>2)</sup>                                                                                                          |                     |                      |    |                                 |                    |                     |    | 21        |    |    |    |    |    |
|                               | M14x1.5 male (DIN3852-A) <sup>2)</sup>                                                                                                        |                     |                      |    |                                 |                    |                     |    | 22        |    |    |    |    |    |
|                               | 1/2" NPT male <sup>2)</sup>                                                                                                                   |                     |                      |    |                                 |                    |                     |    | 51        |    |    |    |    |    |
| <b>Electrical connection</b>  | Male electrical plug: EN 175301-803-A (DIN43650-A)                                                                                            |                     |                      |    |                                 |                    |                     |    | 04        |    |    |    |    |    |
|                               | Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm <sup>2</sup> , -40°C ... +125°C, (Cable length see "Accessories")                     |                     |                      |    |                                 |                    |                     |    | 78        |    |    |    |    |    |
|                               | Cable with shield: Material: Radox Tenuis-TW 600V MM S (EN45545), 4 x 0.5mm <sup>2</sup> , -40°C ... +120°C, (Cable length see "Accessories") |                     |                      |    |                                 |                    |                     |    | 88        |    |    |    |    |    |
| <b>Output signal</b>          | 1 Transistor out: switchpoint "ON": ... (bar); switchpoint "OFF": ... (bar); delay time: standard 5 (ms), ... (ms) range: 5...10000 (ms)      |                     |                      |    |                                 |                    |                     |    | T1        |    |    |    |    |    |
| <b>Accessories</b>            | Pressure peak damping element ø 0.4 mm                                                                                                        |                     |                      |    |                                 |                    |                     |    | 44        |    |    |    |    |    |
|                               | Pressure peak damping element ø 1.0 mm                                                                                                        |                     |                      |    |                                 |                    |                     |    | 40        |    |    |    |    |    |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C                                                                      |                     |                      |    |                                 |                    |                     |    | 58        |    |    |    |    |    |
|                               | 🚂 Railways version (500 VAC/DC), with shielded cable only                                                                                     |                     |                      |    |                                 |                    |                     |    | 11        |    |    |    |    |    |
|                               | Higher operating temperature: -40°C ... +125°C                                                                                                |                     |                      |    |                                 |                    |                     |    | 67        |    |    |    |    |    |
|                               | Cable length 1.5 m                                                                                                                            |                     |                      |    |                                 |                    |                     |    | 1M        |    |    |    |    |    |
|                               | Cable length 3.0 m                                                                                                                            |                     |                      |    |                                 |                    |                     |    | 3M        |    |    |    |    |    |
|                               | Cable length 5.0 m                                                                                                                            |                     |                      |    |                                 |                    |                     |    | 5M        |    |    |    |    |    |

<sup>1)</sup> Customized pressure ranges upon request

<sup>2)</sup> Please ask us



## Programming device Sensor Communicator SC

### Ordering No.

- Sensor Communicator SC: F88030
- Programming cable with connector EN 175301-803A: F88049

### Manuals:

- Sensor Communicator SC: [www.trafag.com/H73699](http://www.trafag.com/H73699) (EN) / [www.trafag.com/H73698](http://www.trafag.com/H73698) (DE)



# ECTN 8477

## Marine Pressure Transmitter



### Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

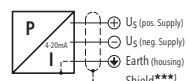
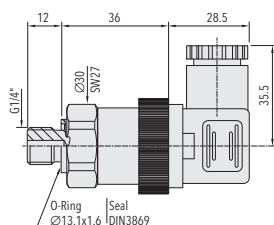
### Technical Data

|                      |                                                        |                       |                                                      |
|----------------------|--------------------------------------------------------|-----------------------|------------------------------------------------------|
| Measuring principle  | Thick film on ceramic                                  | Media temperature     | -25°C ... +85°C<br>400 bar/5000 psi: -10°C ... +85°C |
| Measuring range      | 0 ... 1 to 0 ... 400 bar<br>0 ... 15 to 0 ... 5000 psi | Ambient temperature   | -25°C ... +85°C                                      |
| Output signal        | 4 ... 20 mA                                            | Approval / conformity | DNV, GL, KRS, RINA                                   |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                        |                       |                                                      |

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Signal output | Supply [VDC] |
|-------------|------------------------------------|----------------------|--------------------------|---------------|--------------|
| ECTN1.0A    | 8477 71 5917 05 0000 0000 19 58 61 | 0 ... 1              | 2                        | 4 ... 20 mA   | 9 ... 30     |
| ECTN2.5A    | 8477 75 5917 05 0000 0000 19 58 61 | 0 ... 2.5            | 5                        | 4 ... 20 mA   | 9 ... 30     |
| ECTN4.0A    | 8477 76 5917 05 0000 0000 19 58 61 | 0 ... 4              | 8                        | 4 ... 20 mA   | 9 ... 30     |
| ECTN6.0A    | 8477 77 5917 05 0000 0000 19 58 61 | 0 ... 6              | 12                       | 4 ... 20 mA   | 9 ... 30     |
| ECTN10.0A   | 8477 78 5917 05 0000 0000 19 58 61 | 0 ... 10             | 20                       | 4 ... 20 mA   | 9 ... 30     |
| ECTN16.0A   | 8477 79 5917 05 0000 0000 19 58 61 | 0 ... 16             | 32                       | 4 ... 20 mA   | 9 ... 30     |
| ECTN25.0A   | 8477 80 5917 05 0000 0000 19 58 61 | 0 ... 25             | 50                       | 4 ... 20 mA   | 9 ... 30     |
| ECTN40.0A   | 8477 81 5917 05 0000 0000 19 58 61 | 0 ... 40             | 80                       | 4 ... 20 mA   | 9 ... 30     |

Pressure peak damping element: see 'Accessories' or data sheet H72258



ECTN ... A (4 ... 20 mA)



Data sheet  
Instructions

[www.trafag.com/H72322](http://www.trafag.com/H72322)  
[www.trafag.com/H73324](http://www.trafag.com/H73324)

Additional dimensions see data sheet

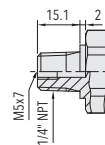
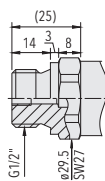
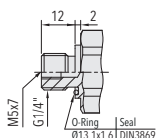
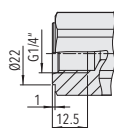
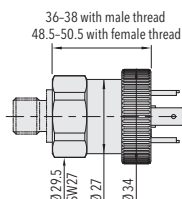
|                               |                                                                                                                                           |                                    |                      | 8477 . XX |                                  |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|-----------|----------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                          | Over pressure [bar]                | Burst pressure [bar] |           | Pressure measurement range [psi] | Over pressure [psi] | Burst pressure [psi] |    |    |    |    |    |
|                               | 0 ... 1.0                                                                                                                                 | 2                                  | 3                    | 71        | 0 ... 15                         | 30                  | 45                   | G1 |    |    |    |    |
|                               | 0 ... 1.6                                                                                                                                 | 3.2                                | 4.8                  | 73        | 0 ... 20                         | 40                  | 70                   | G3 |    |    |    |    |
|                               | 0 ... 2.5                                                                                                                                 | 5                                  | 7.5                  | 75        | 0 ... 30                         | 60                  | 90                   | G5 |    |    |    |    |
|                               | 0 ... 4                                                                                                                                   | 8                                  | 12                   | 76        | 0 ... 50                         | 100                 | 150                  | G6 |    |    |    |    |
|                               | 0 ... 6                                                                                                                                   | 12                                 | 15                   | 77        | 0 ... 100                        | 200                 | 250                  | G7 |    |    |    |    |
|                               | 0 ... 10                                                                                                                                  | 20                                 | 25                   | 78        | 0 ... 150                        | 300                 | 375                  | G8 |    |    |    |    |
|                               | 0 ... 16                                                                                                                                  | 32                                 | 40                   | 79        | 0 ... 250                        | 500                 | 625                  | G9 |    |    |    |    |
|                               | 0 ... 25                                                                                                                                  | 50                                 | 75                   | 80        | 0 ... 400                        | 800                 | 1200                 | H0 |    |    |    |    |
|                               | 0 ... 40                                                                                                                                  | 80                                 | 100                  | 81        | 0 ... 500                        | 1000                | 1250                 | H1 |    |    |    |    |
|                               | 0 ... 60                                                                                                                                  | 120                                | 180                  | 82        | 0 ... 1000                       | 2000                | 3000                 | H2 |    |    |    |    |
|                               | 0 ... 100 <sup>4)</sup>                                                                                                                   | 200                                | 300                  | 83        | 0 ... 1500 <sup>4)</sup>         | 3000                | 4500                 | H3 |    |    |    |    |
|                               | 0 ... 160 <sup>4)</sup>                                                                                                                   | 320                                | 480                  | 85        | 0 ... 2000 <sup>4)</sup>         | 4000                | 6000                 | H5 |    |    |    |    |
|                               | 0 ... 250 <sup>4)</sup>                                                                                                                   | 500                                | 750                  | 74        | 0 ... 3000 <sup>4)</sup>         | 6000                | 9000                 | G4 |    |    |    |    |
|                               | 0 ... 400 <sup>2) 4)</sup>                                                                                                                | 800                                | 1000                 | 84        | 0 ... 5000 <sup>2) 4)</sup>      | 10000               | 12500                | H4 |    |    |    |    |
| Sensor                        | Relative pressure, 1.4404/1.4435                                                                                                          |                                    |                      |           |                                  |                     |                      | 59 |    |    |    |    |
|                               | Relative pressure, 1.4462 <sup>4)</sup>                                                                                                   |                                    |                      |           |                                  |                     |                      | 52 |    |    |    |    |
|                               | Relative pressure, titanium grade 5 <sup>4)</sup>                                                                                         |                                    |                      |           |                                  |                     |                      | 53 |    |    |    |    |
|                               | Absolute pressure, 1.4404/1.4435 <sup>3)</sup>                                                                                            |                                    |                      |           |                                  |                     |                      | 89 |    |    |    |    |
|                               | Absolute pressure, 1.4462 <sup>3) 4)</sup>                                                                                                |                                    |                      |           |                                  |                     |                      | 82 |    |    |    |    |
|                               | Absolute pressure, titanium grade 5 <sup>3) 4)</sup>                                                                                      |                                    |                      |           |                                  |                     |                      | 83 |    |    |    |    |
| Pressure connection           | G1/4" female <sup>4)</sup>                                                                                                                |                                    |                      |           |                                  |                     |                      |    | 10 |    |    |    |
|                               | G1/4" male                                                                                                                                |                                    |                      |           |                                  |                     |                      |    | 17 |    |    |    |
|                               | G1/2" male <sup>4)</sup>                                                                                                                  |                                    |                      |           |                                  |                     |                      |    | 21 |    |    |    |
|                               | 1/4" NPT male <sup>4)</sup>                                                                                                               |                                    |                      |           |                                  |                     |                      |    | 30 |    |    |    |
| Electrical connection         | Male electrical plug EN 175301-803-A, Mat. PA                                                                                             |                                    |                      |           |                                  |                     |                      |    | 05 |    |    |    |
|                               |                                                                                                                                           |                                    |                      |           |                                  |                     |                      |    |    |    |    |    |
| Output signal                 | Signal output                                                                                                                             | Load resistance                    | I (supply)           |           | U (supply)                       |                     |                      |    |    |    |    |    |
|                               | 4 ... 20 mA                                                                                                                               | (U <sub>supply</sub> -9 V) / 20 mA |                      |           | 9 ... 30 VDC                     |                     | 19                   |    |    |    |    |    |
| Accessories                   | Seal FKM (-20°C ... +125°C)                                                                                                               |                                    |                      |           |                                  |                     |                      |    |    |    |    | 61 |
|                               | Seal EPDM (-25°C ... +125°C)                                                                                                              |                                    |                      |           |                                  |                     |                      |    |    |    |    | 63 |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)                                                                                  |                                    |                      |           |                                  |                     |                      |    |    |    |    | 58 |
|                               | Pressure peak damping element ø 0.4 mm                                                                                                    |                                    |                      |           |                                  |                     |                      |    |    |    |    | 44 |
|                               | Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)                                                               |                                    |                      |           |                                  |                     |                      |    |    |    |    | 40 |
|                               | Special electrical connection: Pin 1 + , Pin 2 -<br>(only for output signal 4...20mA and male electrical plug EN175301-803-A/ DIN43650-A) |                                    |                      |           |                                  |                     |                      |    |    |    |    | 92 |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Media -10°C ... +85°C

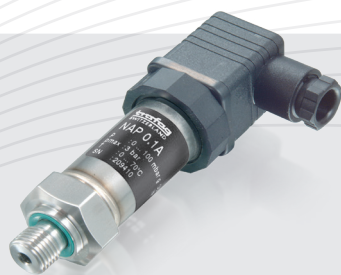
<sup>3)</sup> Absolute ranges max. 40 bar

<sup>4)</sup> Upon request



# NAP 8842/8843

## Pressure Transmitter



### Features

- Pressure ranges from 100 mbar
- Media temperature to 150°C
- EMC protection, IEC 61000
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

### Technical Data

|                     |                             |                       |                                                       |
|---------------------|-----------------------------|-----------------------|-------------------------------------------------------|
| Measuring principle | Piezoresistive              | Media temperature     | 0°C ... +80°C<br>(opt. -25 ... +100°C/-25 ... +150°C) |
| Measuring range     | 0 ... 0.1 to 0 ... 1000 bar | Ambient temperature   | 0°C ... +70°C<br>(opt. -25 ... +85°C)                 |
| Output signal       | 4 ... 20 mA<br>0 ... 10 VDC | Approval / conformity | GL, KRS                                               |

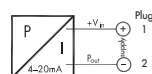
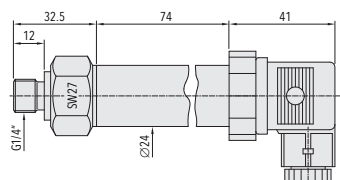


Data sheet  
Instructions

[www.trafag.com/H72230](http://www.trafag.com/H72230)  
[www.trafag.com/H73208](http://www.trafag.com/H73208)

### Standard products (extra short lead time)

| Product No. | Type Code                       | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|---------------------------------|----------------------|--------------------------|--------------|--------------------------|
| NAP0.1A     | 8842 66 P515 04 0000 0000 19 58 | 0 ... 0.1            | 3                        | 9 ... 33     | ±0.5                     |
| NAP0.2A     | 8842 68 P515 04 0000 0000 19 58 | 0 ... 0.2            | 3                        | 9 ... 33     | ±0.5                     |
| NAP0.4A     | 8842 69 P515 04 0000 0000 19 58 | 0 ... 0.4            | 3                        | 9 ... 33     | ±0.5                     |
| NAP0.6A     | 8842 70 P515 04 0000 0000 19 58 | 0 ... 0.6            | 3                        | 9 ... 33     | ±0.5                     |
| NAP1.0A     | 8842 71 P515 04 0000 0000 19 58 | 0 ... 1.0            | 3                        | 9 ... 33     | ±0.5                     |



NAP ... A (4 ... 20 mA)

# NAL 8838

## Submersible Pressure Transmitter



### Features

- Pressure ranges from 100 mbar
- No media contacting O-rings
- PUR or Teflon cables
- Option: Chemical resistant material, e.g. titanium
- Option: Lightning protection (IEC 61000-4-5)

### Technical Data

|                     |                             |                       |                |
|---------------------|-----------------------------|-----------------------|----------------|
| Measuring principle | Piezoresistive              | Media temperature     | -5°C ... +50°C |
| Measuring range     | 0 ... 0.1 to 0 ... 25 bar   | Ambient temperature   | -5°C ... +50°C |
| Output signal       | 4 ... 20 mA<br>0 ... 10 VDC | Approval / conformity | GL, KRS        |

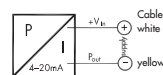
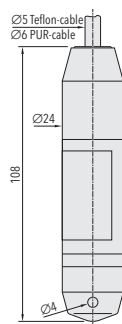


Data sheet  
Instructions

[www.trafag.com/H72228](http://www.trafag.com/H72228)  
[www.trafag.com/](http://www.trafag.com/)

### Standard products (extra short lead time)

| Product No. | Type Code | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|-----------|----------------------|--------------------------|--------------|--------------------------|
| NAL0.1A     | 8838      | 0...0.1              | 3                        | 9...33       | ±0.5                     |
| NAL0.2A     | 8838      | 0...0.2              | 3                        | 9...33       | ±0.5                     |
| NAL1.0A     | 8838      | 0...1.0              | 3                        | 9...33       | ±0.5                     |



NAL ... A (4 ... 20 mA)



# ECL 8439

## Submersible Pressure Transmitter

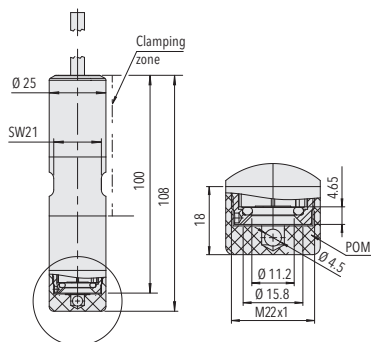


### Features

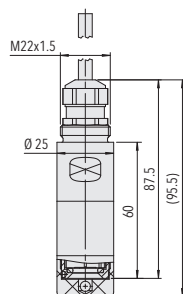
- Suitable for thick and viscous media
- Different materials for optimum media compatibility
- Lightning protection integrated

### Technical Data

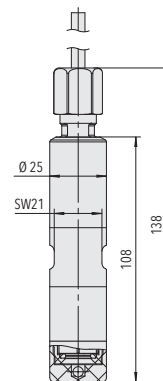
|                     |                                                         |                      |                                                                         |
|---------------------|---------------------------------------------------------|----------------------|-------------------------------------------------------------------------|
| Measuring principle | Thick film on ceramic                                   | Accuracy @ 25°C typ. | ± 0.3 % FS typ.<br>Range 0 ... 0.1 to 0 ... 0.2 bar:<br>± 0.5 % FS typ. |
| Measuring range     | 0 ... 0.1 to 0 ... 2.0 bar<br>0 ... 1.5 to 0 ... 30 psi | Media temperature    | -10°C ... +70°C<br>(Cable PE: -10°C ... +65°C)                          |
| Output signal       | 4 ... 20 mA                                             | Ambient temperature  | -10°C ... +70°C<br>(Cable PE: -10°C ... +65°C)                          |



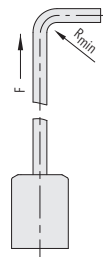
Standard version



OEM version



Serto adapter



Serto adapter SO 50021-12  
for stainless steel tubes with  
outer diameter 12 mm  
inner diameter 8 mm



Data sheet  
Instructions

[www.trafag.com/H72336](http://www.trafag.com/H72336)  
[www.trafag.com/H73336](http://www.trafag.com/H73336)

|                               |                                                   |                     |                      | 8439 . XX         |                                                     |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|---------------------------------------------------|---------------------|----------------------|-------------------|-----------------------------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                  | Over pressure [bar] | Burst pressure [bar] |                   | Pressure measurement range [psi]                    | Over pressure [psi] | Burst pressure [psi] |    |    |    |    |    |
|                               | 0 ... 0.1                                         | 1.2                 | 2                    | 66                | 0 ... 1.5                                           | 15                  | 30                   | F6 |    |    |    |    |
|                               | 0 ... 0.16                                        | 1.2                 | 2                    | 67                | 0 ... 2                                             | 15                  | 30                   | F7 |    |    |    |    |
|                               | 0 ... 0.2                                         | 1.2                 | 2                    | 68                | 0 ... 2.5                                           | 15                  | 30                   | F8 |    |    |    |    |
|                               | 0 ... 0.4                                         | 1.2                 | 2                    | 69                | 0 ... 5                                             | 15                  | 30                   | F9 |    |    |    |    |
|                               | 0 ... 0.5                                         | 1.2                 | 2                    | 64                | 0 ... 6.5                                           | 15                  | 30                   | F4 |    |    |    |    |
|                               | 0 ... 0.6                                         | 1.2                 | 2                    | 70                | 0 ... 7.5                                           | 15                  | 30                   | G0 |    |    |    |    |
|                               | 0 ... 1.0                                         | 2                   | 3                    | 71                | 0 ... 15                                            | 30                  | 45                   | G1 |    |    |    |    |
|                               | 0 ... 1.6                                         | 3.2                 | 4.8                  | 73                | 0 ... 20                                            | 45                  | 70                   | G3 |    |    |    |    |
|                               | 0 ... 2.0                                         | 3.2                 | 4.8                  | 72                | 0 ... 30                                            | 45                  | 70                   | G2 |    |    |    |    |
| <b>Sensor</b>                 |                                                   |                     |                      | Relative pressure |                                                     |                     |                      |    | 23 |    |    |    |
| <b>Housing</b>                | Housing AISI316L, standard version <sup>2)</sup>  |                     |                      | 58                | Housing 1.4462, OEM-version <sup>2) 3)</sup>        |                     |                      | 50 |    |    |    |    |
|                               | Housing 1.4462, standard version <sup>2) 3)</sup> |                     |                      | 55                | Housing AISI316L, Serto Connection <sup>2) 3)</sup> |                     |                      | 60 |    |    |    |    |
|                               | Housing AISI316L, OEM-version <sup>2)</sup>       |                     |                      | 56                |                                                     |                     |                      |    |    |    |    |    |
| <b>Electrical connection</b>  | Cable PUR, Ø 6 mm, L = 5 m                        |                     |                      | 21                | Cable Radox, Ø 6 mm, L = 25 m                       |                     |                      | 35 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, L = 10 m                       |                     |                      | 22                | Cable Radox, Ø 6 mm, L = 30 m                       |                     |                      | 36 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, L = 15 m                       |                     |                      | 23                | Cable Radox, Ø 6 mm, customized (L = max. 50m)      |                     |                      | 30 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, L = 20 m                       |                     |                      | 24                | Cable PE, Ø 6 mm, L = 5 m                           |                     |                      | 41 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, L = 25 m                       |                     |                      | 25                | Cable PE, Ø 6 mm, L = 10 m                          |                     |                      | 42 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, L = 30 m                       |                     |                      | 26                | Cable PE, Ø 6 mm, L = 15 m                          |                     |                      | 43 |    |    |    |    |
|                               | Cable PUR, Ø 6 mm, customized (L = max. 50m)      |                     |                      | 20                | Cable PE, Ø 6 mm, L = 20 m                          |                     |                      | 44 |    |    |    |    |
|                               | Cable Radox, Ø 6 mm, L = 5 m                      |                     |                      | 31                | Cable PE, Ø 6 mm, L = 25 m                          |                     |                      | 45 |    |    |    |    |
|                               | Cable Radox, Ø 6 mm, L = 10 m                     |                     |                      | 32                | Cable PE, Ø 6 mm, L = 30 m                          |                     |                      | 46 |    |    |    |    |
|                               | Cable Radox, Ø 6 mm, L = 15 m                     |                     |                      | 33                | Cable PE, Ø 6 mm, customized (L = max. 50m)         |                     |                      | 40 |    |    |    |    |
|                               | Cable Radox, Ø 6 mm, L = 20 m                     |                     |                      | 34                |                                                     |                     |                      |    |    |    |    |    |
|                               |                                                   |                     |                      |                   |                                                     |                     |                      |    |    |    |    |    |
|                               |                                                   |                     |                      |                   |                                                     |                     |                      |    |    |    |    |    |
| <b>Output signal</b>          | 4 ... 20 mA                                       |                     |                      |                   |                                                     |                     |                      |    |    |    | 19 |    |
|                               |                                                   |                     |                      |                   |                                                     |                     |                      |    |    |    |    |    |
| <b>Accessories</b>            | Seal FKM / FPM / Viton                            |                     |                      |                   |                                                     |                     |                      |    |    |    | 61 |    |
|                               | Seal EPDM / TPE                                   |                     |                      |                   |                                                     |                     |                      |    |    |    | 63 |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> See "Dimensions"

<sup>3)</sup> Upon request

| Type                   | Type code                 | Housing  | Cable material | Seal        | Typical applications                   |
|------------------------|---------------------------|----------|----------------|-------------|----------------------------------------|
| Standard <sup>1)</sup> | 8439.XX.2358.2X.19.61.XX  | AISI316L | PUR            | FKM / Viton | General applications                   |
| OEM <sup>1)</sup>      | 8439.XX.2356.2X.19.61.XX  |          |                |             |                                        |
| Serto                  | 8439.XX.2360.2X.19.61.XX  |          |                |             |                                        |
| Standard               | 8439.XX.2358.3X.19.61.XX  | AISI316L | Radox          | FKM / Viton | Oils and fuels                         |
| OEM                    | 8439.XX.2356.3X.19.61.XX  |          |                |             |                                        |
| Serto                  | 8439.XX.2360.3X.19.61.XX  |          |                |             |                                        |
| Standard               | 8439.XX.2358.4X.19.63.XX  | AISI316L | PE             | EPDM / TPE  | Wastewater, grey-water, drinking water |
| OEM                    | 8439.XX.2356.4X.19.63.XX  |          |                |             |                                        |
| Serto                  | 8439.XX.2360.4X.19.63.XX  |          |                |             |                                        |
| Standard               | 8439.XX.2355.4X.19.63.XX  | 1.4462   | PE             | EPDM / TPE  | Seawater, Saline water                 |
| OEM                    | 8439.XX.2350.4X.19.63.XX  |          |                |             |                                        |
| Standard               | 8439.XX.23.55.3X.19.63.XX | 1.4462   | Radox          | EPDM / TPE  | Marine applications                    |
| OEM                    | 8439.XX.23.50.3X.19.63.XX |          |                |             |                                        |

Non-standard build-up combinations may be selected, whereas minimum order quantities may apply

<sup>1)</sup> Extra short lead time

# ECL 8438

## Submersible Pressure Transmitter



### Features

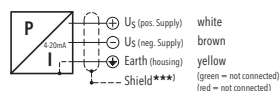
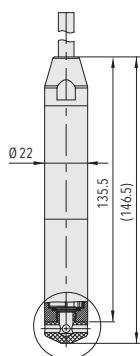
- Good media compatibility
- Economical
- Cable PUR/PE or FEP
- Lightning protection integrated

### Technical Data

|                      |                                                                     |                       |                         |
|----------------------|---------------------------------------------------------------------|-----------------------|-------------------------|
| Measuring principle  | Thick film on ceramic                                               | Media temperature     | -25°C ... +80°C (+70°C) |
| Measuring range      | 0 ... 0.1 to 0 ... 10 bar                                           | Ambient temperature   | -25°C ... +80°C (+70°C) |
| Output signal        | 4 ... 20 mA                                                         | Approval / conformity | GL, KRS                 |
| Accuracy @ 25°C typ. | ± 0.3 % FS typ.<br>Range 0...0.1 to 0...0.4 bar:<br>± 0.5 % FS typ. |                       |                         |

### Standard products (extra short lead time)

| Product No. | Type Code                             | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Cable length |
|-------------|---------------------------------------|----------------------|--------------------------|--------------|--------------|
| ECL0.2A     | 8438 68 2646 22 0000 0000 19 61 5M    | 0 ... 0.2            | 2                        | 9 ... 30     | 5 m          |
| ECL0.5A     | 8438 21 2346 22 0000 0000 19 61 8M 01 | 0 ... 0.5            | 2                        | 9 ... 30     | 10 m         |



ECL ... A (4 ... 20 mA)



Data sheet  
Instructions

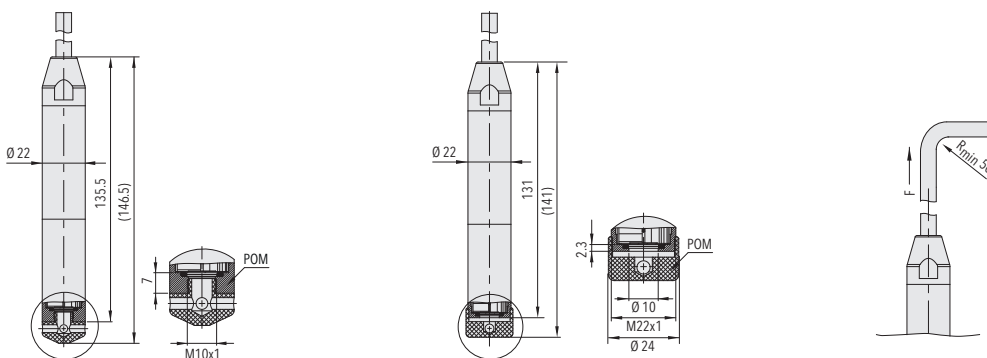
[www.trafag.com/H72328](http://www.trafag.com/H72328)  
[www.trafag.com/H73328](http://www.trafag.com/H73328)

|                               |                                              |                                    |                      |  | 8438 .       | XX | XX | XX | XX | XX |
|-------------------------------|----------------------------------------------|------------------------------------|----------------------|--|--------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]             | Over pressure [bar]                | Burst pressure [bar] |  |              |    |    |    |    |    |
|                               | 0 ... 0.1                                    | 1.2                                | 2                    |  | 66           |    |    |    |    |    |
|                               | 0 ... 0.16                                   | 1.2                                | 2                    |  | 67           |    |    |    |    |    |
|                               | 0 ... 0.2                                    | 1.2                                | 2                    |  | 68           |    |    |    |    |    |
|                               | 0 ... 0.4                                    | 1.2                                | 2                    |  | 69           |    |    |    |    |    |
|                               | 0 ... 0.6                                    | 1.2                                | 2                    |  | 70           |    |    |    |    |    |
|                               | 0 ... 1.0                                    | 2                                  | 3                    |  | 71           |    |    |    |    |    |
|                               | 0 ... 1.6                                    | 3.2                                | 4.8                  |  | 73           |    |    |    |    |    |
|                               | 0 ... 2.5                                    | 5                                  | 7.5                  |  | 75           |    |    |    |    |    |
|                               | 0 ... 4                                      | 8                                  | 12                   |  | 76           |    |    |    |    |    |
|                               | 0 ... 6                                      | 12                                 | 15                   |  | 77           |    |    |    |    |    |
|                               | 0 ... 10                                     | 20                                 | 25                   |  | 78           |    |    |    |    |    |
| Sensor                        | Relative pressure > 400 mbar, accuracy 0.3%  |                                    |                      |  |              | 23 |    |    |    |    |
|                               | Relative pressure ≤ 400 mbar, accuracy: 0.5% |                                    |                      |  |              | 26 |    |    |    |    |
| Pressure connection           | Type 1, female, M 10x1, 1.4404/1.4435        |                                    |                      |  |              |    | 46 |    |    |    |
|                               | Type 2, male, M 22x1, 1.4404/1.4435          |                                    |                      |  |              |    | 48 |    |    |    |
| Electrical connection         | Cable: PUR ø 6 mm <sup>2) 3)</sup>           |                                    |                      |  |              |    |    | 22 |    |    |
|                               | Cable: FEP ø 6 mm <sup>2) 3)</sup>           |                                    |                      |  |              |    |    | 32 |    |    |
|                               | Cable: PE ø 6 mm <sup>2) 3)</sup>            |                                    |                      |  |              |    |    | 42 |    |    |
| Output signal                 | Signal output                                | Load resistance                    | I (supply)           |  | U (supply)   |    |    |    |    |    |
|                               | 4 ... 20mA                                   | (U <sub>supply</sub> -9 V) / 20 mA |                      |  | 9 ... 30 VDC |    | 19 |    |    |    |
| Accessories                   | Seal FKM                                     |                                    |                      |  |              |    |    |    |    | 61 |
|                               | Seal CR                                      |                                    |                      |  |              |    |    |    |    | 62 |
|                               | Seal EPDM                                    |                                    |                      |  |              |    |    |    |    | 63 |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)

<sup>3)</sup> For level measurement applications on ships under certification GL (German Lloyd), the cable of such transmitters must be installed inside the tank only



# FPT 8235

## Flush Membrane Transmitter



### Features

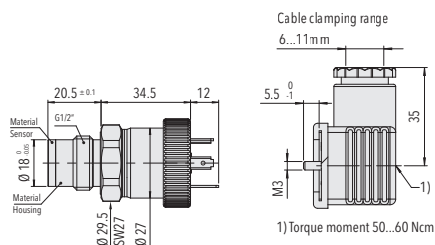
- Flush membrane with smooth and plain surface
- Completely welded sensor system
- Very compact design
- Accuracy NLH 0.1% FS typ.
- Excellent long-term stability

### Technical Data

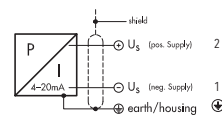
|                     |                                                                                 |                      |                                                   |
|---------------------|---------------------------------------------------------------------------------|----------------------|---------------------------------------------------|
| Measuring principle | Thin film on steel                                                              | Accuracy @ 25°C typ. | ± 0.4 % FS                                        |
| Measuring range     | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi                          | Media temperature    | -40°C ... +125°C                                  |
| Output signal       | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom. | Ambient temperature  | -40°C ... +85°C<br>(Cable PVC 22: -5°C ... +60°C) |

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Signal output | Accuracy @ 25°C typ. [%] |
|-------------|------------------------------------|----------------------|--------------------------|---------------|--------------------------|
| FPT1.0A     | 8235 71 2391 05 0000 0000 19 58 61 | 0 ... 1              | 2                        | 4 ... 20 mA   | ± 0.4                    |
| FPT2.5A     | 8235 75 2391 05 0000 0000 19 58 61 | 0 ... 2.5            | 5                        | 4 ... 20 mA   | ± 0.4                    |
| FPT4.0A     | 8235 76 2391 05 0000 0000 19 58 61 | 0 ... 4              | 8                        | 4 ... 20 mA   | ± 0.4                    |
| FPT6.0A     | 8235 77 2391 05 0000 0000 19 58 61 | 0 ... 6              | 12                       | 4 ... 20 mA   | ± 0.4                    |
| FPT10.0A    | 8235 78 2391 05 0000 0000 19 58 61 | 0 ... 10             | 20                       | 4 ... 20 mA   | ± 0.4                    |
| FPT16.0A    | 8235 79 2391 05 0000 0000 19 58 61 | 0 ... 16             | 32                       | 4 ... 20 mA   | ± 0.4                    |
| FPT25.0A    | 8235 80 2391 05 0000 0000 19 58 61 | 0 ... 25             | 50                       | 4 ... 20 mA   | ± 0.4                    |
| FPT40.0A    | 8235 81 2391 05 0000 0000 19 58 61 | 0 ... 40             | 80                       | 4 ... 20 mA   | ± 0.4                    |
| FPT100.0A   | 8235 83 2391 05 0000 0000 19 58 61 | 0 ... 100            | 200                      | 4 ... 20 mA   | ± 0.4                    |



FPT ... A Female electrical plug included



FPT ... A (4 ... 20 mA)



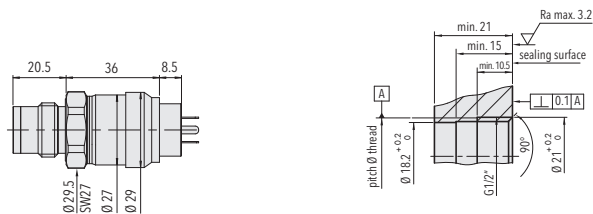
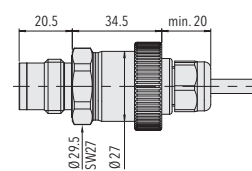
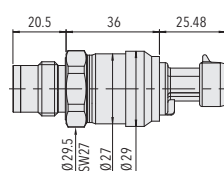
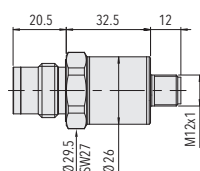
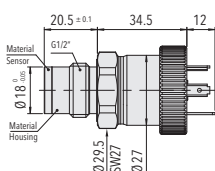
Data sheet  
Instructions

[www.trafag.com/H72316](http://www.trafag.com/H72316)  
[www.trafag.com/H73316](http://www.trafag.com/H73316)

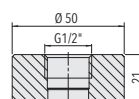


|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              | 8235 . XX                                                                    |                                  |                                                                                                        |                          | XX | XX | XX | XX | XX |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                                               | Over pressure [bar]                | Burst pressure [bar]                                                                                                                                                                         |                                                                              | Pressure measurement range [psi] | Over pressure [psi]                                                                                    | Burst pressure [psi]     |    |    |    |    |    |
|                               | 0 ... 1.0                                                                                                                                                      | 2                                  | 3                                                                                                                                                                                            | 71                                                                           | 0 ... 15                         | 30                                                                                                     | 40                       | G1 |    |    |    |    |
|                               | 0 ... 2.5                                                                                                                                                      | 5                                  | 7.5                                                                                                                                                                                          | 75                                                                           | 0 ... 30                         | 70                                                                                                     | 100                      | G5 |    |    |    |    |
|                               | 0 ... 4                                                                                                                                                        | 8                                  | 12                                                                                                                                                                                           | 76                                                                           | 0 ... 50                         | 115                                                                                                    | 170                      | G6 |    |    |    |    |
|                               | 0 ... 6                                                                                                                                                        | 12                                 | 18                                                                                                                                                                                           | 77                                                                           | 0 ... 100                        | 150                                                                                                    | 260                      | G7 |    |    |    |    |
|                               | 0 ... 10                                                                                                                                                       | 20                                 | 30                                                                                                                                                                                           | 78                                                                           | 0 ... 150                        | 290                                                                                                    | 430                      | G8 |    |    |    |    |
|                               | 0 ... 16                                                                                                                                                       | 32                                 | 48                                                                                                                                                                                           | 79                                                                           | 0 ... 250                        | 450                                                                                                    | 690                      | G9 |    |    |    |    |
|                               | 0 ... 25                                                                                                                                                       | 50                                 | 75                                                                                                                                                                                           | 80                                                                           | 0 ... 400                        | 725                                                                                                    | 1080                     | H0 |    |    |    |    |
|                               | 0 ... 40                                                                                                                                                       | 80                                 | 120                                                                                                                                                                                          | 81                                                                           | 0 ... 500                        | 1100                                                                                                   | 1740                     | H1 |    |    |    |    |
|                               | 0 ... 100                                                                                                                                                      | 200                                | 300                                                                                                                                                                                          | 83                                                                           | 0 ... 1450                       | 2900                                                                                                   | 4350                     | H3 |    |    |    |    |
| <b>Sensor</b>                 |                                                                                                                                                                |                                    |                                                                                                                                                                                              | Relative pressure                                                            |                                  |                                                                                                        |                          |    | 23 |    |    |    |
| <b>Pressure connection</b>    |                                                                                                                                                                |                                    |                                                                                                                                                                                              | G1/2" male, flush membrane                                                   |                                  |                                                                                                        |                          |    | 91 |    |    |    |
| <b>Electrical connection</b>  |                                                                                                                                                                |                                    |                                                                                                                                                                                              | Male electrical plug EN 175301-803-A (DIN 43650-A) Mat. PA                   | 05                               | Male electrical plug Packard Metri Pack                                                                |                          |    |    | 51 |    |    |
|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              | Male electrical plug M12x1, 5-pol., Mat. PA                                  | 35                               | Cable IP67 (cable length see "Accessories") Mat. PVC (cable gland PA6-3), -5°C ... +60°C <sup>2)</sup> |                          |    |    | 22 |    |    |
|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              | Male electrical plug, Industrial standard (contact distance 9.4 mm) Mat. PBT | 01                               | Cable IP68 max. 3m, medium +10°C...+35°C, max. 1 bar relative                                          |                          |    |    | 68 |    |    |
| <b>Output signal</b>          | <b>Signal output</b>                                                                                                                                           | <b>Load resistance</b>             | <b>I (supply)</b>                                                                                                                                                                            | <b>U (supply)</b>                                                            |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | 4 ... 20mA                                                                                                                                                     | (U <sub>supply</sub> -9 V) / 20 mA |                                                                                                                                                                                              | 9 ... 30 VDC                                                                 |                                  |                                                                                                        |                          | 19 |    |    |    |    |
|                               | 0 ... 5 VDC                                                                                                                                                    | > 2.5 kΩ                           | < 10 mA                                                                                                                                                                                      | 10 ... 30 VDC                                                                |                                  |                                                                                                        |                          | 14 |    |    |    |    |
|                               | 1 ... 6 VDC                                                                                                                                                    | > 5.0 kΩ                           | < 10 mA                                                                                                                                                                                      | 10 ... 30 VDC                                                                |                                  |                                                                                                        |                          | 16 |    |    |    |    |
|                               | 0 ... 10 VDC                                                                                                                                                   | > 5.0 kΩ                           | < 10 mA                                                                                                                                                                                      | 15 ... 30 VDC                                                                |                                  |                                                                                                        |                          | 17 |    |    |    |    |
|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              | 0.5 ... 4.5 VDC                                                              | > 5.0 kΩ                         | < 10 mA                                                                                                | 5 VDC ± 0.25 VDC ratiom. | 23 |    |    |    |    |
| <b>Accessories</b>            | Sealing Ring DIN 3869, Mat. FPM (FKM) -15°C ... +125°C                                                                                                         | 61                                 | Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out (Only for output 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A) <sup>2)</sup> |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Sealing Ring DIN 3869, Mat. NBR, -25°C ... +100°C                                                                                                              | 69                                 |                                                                                                                                                                                              |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C                                                                                       | 58                                 | Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 GR (Only for output 4...20mA and male electrical plug M12x1, 5-pol.) <sup>2)</sup>                                                   |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Female electrical plug M12x1, 5-pole                                                                                                                           | 33                                 | Special electrical connection: Pin 1 + , Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.) <sup>2)</sup>                                                                     |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Female electrical connector industrial standard                                                                                                                | 34                                 | Membrane electropolished Ra=0.4µm                                                                                                                                                            |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) <sup>2)</sup>          | 92                                 | Cable length 1.5 m                                                                                                                                                                           |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               | Special electrical connection: Pin 1 out, Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) <sup>2)</sup> | 98                                 | Cable length 3.0 m                                                                                                                                                                           |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               |                                                                                                                                                                |                                    | Cable length 5.0 m                                                                                                                                                                           |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |
|                               |                                                                                                                                                                |                                    |                                                                                                                                                                                              |                                                                              |                                  |                                                                                                        |                          |    |    |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Details see electrical connection


Mounting thread G1/2"  
DIN EN ISO 1179-1



Welding flange for  
G1/2" (1.4301)

# CMP 8270

## CANopen Miniature Pressure Transmitter



### Features

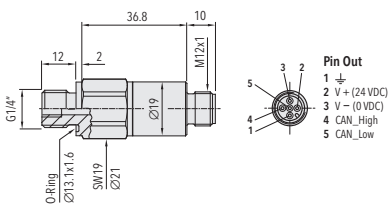
- Small and rugged construction
- Different accuracy classes
- Measurement of pressure and temperature
- CANopen bus protocol DS301/DS404 supports CAN 2.0A/B
- LSS (DS 305 V2.0)

### Technical Data

|                     |                            |                      |                                                        |
|---------------------|----------------------------|----------------------|--------------------------------------------------------|
| Measuring principle | Thin film on steel         | Accuracy @ 25°C typ. | ± 0.5 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ. |
| Measuring range     | 0 ... 1 to 0 ... 600 bar   | Media temperature    | -50°C ... +135°C                                       |
| Output signal       | Bus protocol CANopen DS404 | Ambient temperature  | -40°C ... +125°C                                       |

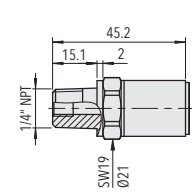
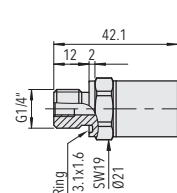
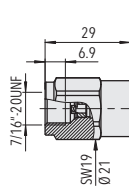
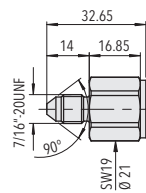
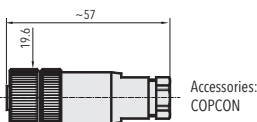
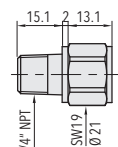
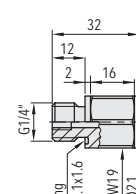
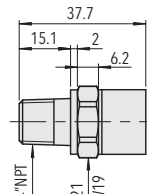
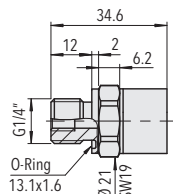
### Standard products (extra short lead time)

| Product No. | Type Code                       | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|---------------------------------|----------------------|--------------------------|--------------|--------------------------|
| CMP4.0M     | 8270 76 2517 35 0000 0000 52 43 | 0 ... 4              | 12                       | 8 ... 32     | ± 0.5                    |
| CMP6.0M     | 8270 77 2517 35 0000 0000 52 43 | 0 ... 6              | 12                       | 8 ... 32     | ± 0.5                    |
| CMP10.0M    | 8270 78 2517 35 0000 0000 52 43 | 0 ... 10             | 20                       | 8 ... 32     | ± 0.5                    |
| CMP16.0M    | 8270 79 2517 35 0000 0000 52 43 | 0 ... 16             | 32                       | 8 ... 32     | ± 0.5                    |
| CMP25.0M    | 8270 80 2517 35 0000 0000 52 43 | 0 ... 25             | 50                       | 8 ... 32     | ± 0.5                    |
| CMP40.0M    | 8270 81 2517 35 0000 0000 52 43 | 0 ... 40             | 80                       | 8 ... 32     | ± 0.5                    |
| CMP100.0M   | 8270 83 2517 35 0000 0000 52 43 | 0 ... 100            | 200                      | 8 ... 32     | ± 0.5                    |
| CMP250.0M   | 8270 74 2517 35 0000 0000 52 43 | 0 ... 250            | 500                      | 8 ... 32     | ± 0.5                    |
| CMP400.0M   | 8270 84 2517 35 0000 0000 52 43 | 0 ... 400            | 800                      | 8 ... 32     | ± 0.5                    |



CMP ... M

Pressure peak damping element integrated



Data sheet  
Instructions

[www.trafag.com/H72614](http://www.trafag.com/H72614)  
[www.trafag.com/H73614](http://www.trafag.com/H73614)

|                               |                                                                                    |                     |                      | 8270 . XX |                                     |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|------------------------------------------------------------------------------------|---------------------|----------------------|-----------|-------------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                   | Over pressure [bar] | Burst pressure [bar] |           | Pressure measurement range [bar]    | Over pressure [bar] | Burst pressure [bar] |    |    |    |    |    |
|                               | 0 ... 1 <sup>2)</sup>                                                              | 2                   | 25                   | 71        | 0 ... 40                            | 80                  | 300                  | 81 |    |    |    |    |
|                               | 0 ... 1.6 <sup>2)</sup>                                                            | 3.5                 | 50                   | 73        | 0 ... 60                            | 120                 | 400                  | 82 |    |    |    |    |
|                               | 0 ... 2.5 <sup>2)</sup>                                                            | 5                   | 50                   | 75        | 0 ... 100                           | 200                 | 500                  | 83 |    |    |    |    |
|                               | 0 ... 4                                                                            | 12                  | 100                  | 76        | 0 ... 160                           | 320                 | 750                  | 85 |    |    |    |    |
|                               | 0 ... 6                                                                            | 12                  | 100                  | 77        | 0 ... 250                           | 500                 | 1000                 | 74 |    |    |    |    |
|                               | 0 ... 10                                                                           | 20                  | 200                  | 78        | 0 ... 400                           | 800                 | 1500                 | 84 |    |    |    |    |
|                               | 0 ... 16                                                                           | 32                  | 200                  | 79        | 0 ... 600                           | 1200                | 2000                 | 86 |    |    |    |    |
|                               | 0 ... 25                                                                           | 50                  | 300                  | 80        |                                     |                     |                      |    |    |    |    |    |
| Sensor                        | Relative pressure, accuracy: 0.5 %                                                 |                     |                      | 25        | Absolute pressure, accuracy: 0.5 %  |                     |                      | 45 |    |    |    |    |
|                               | Relative pressure, accuracy: 0.15 %                                                |                     |                      | 21        | Absolute pressure, accuracy: 0.15 % |                     |                      | 41 |    |    |    |    |
|                               | Relative pressure, accuracy: 0.1 %                                                 |                     |                      | 24        | Absolute pressure, accuracy: 0.1 %  |                     |                      | 44 |    |    |    |    |
| Pressure connection           | G1/4" male (Seal)                                                                  |                     |                      |           |                                     |                     |                      |    | 17 |    |    |    |
|                               | 1/4" NPT male                                                                      |                     |                      |           |                                     |                     |                      |    | 30 |    |    |    |
|                               | 7/16"-20UNF male <sup>3)</sup>                                                     |                     |                      |           |                                     |                     |                      |    | 18 |    |    |    |
|                               | 7/16"-20UNF female, DIN3866 (valve opener) <sup>3)</sup>                           |                     |                      |           |                                     |                     |                      |    | 24 |    |    |    |
| Electrical connection         | Male electrical plug M12x1, 5-pole, Mat. PA                                        |                     |                      |           |                                     |                     |                      |    | 35 |    |    |    |
|                               |                                                                                    |                     |                      |           |                                     |                     |                      |    |    |    |    |    |
| Output signal                 | CANopen bus protocol with pre-adjustment Node-ID = 1, baudrate = 20 kbps           |                     |                      |           |                                     |                     |                      |    | 52 |    |    |    |
|                               | CANopen bus protocol with pre-adjustment, Node-ID: 1, automatic baudrate detection |                     |                      |           |                                     |                     |                      |    | 53 |    |    |    |
| Accessories                   | Female electrical plug M12x1, 5-pole                                               |                     |                      |           |                                     |                     |                      |    | 33 |    |    |    |
|                               | Pressure peak damping element ø 1.0 mm                                             |                     |                      |           |                                     |                     |                      |    | 40 |    |    |    |
|                               | Pressure peak damping element ø 0.3 mm                                             |                     |                      |           |                                     |                     |                      |    | 43 |    |    |    |
|                               | Pressure peak damping element ø 0.5 mm                                             |                     |                      |           |                                     |                     |                      |    | 45 |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Only with pressure connection 17 (G1/4") or 30 (1/4"NPT)

<sup>3)</sup> Only for relative pressure measurement, max. allowable pressure range 40 bar



## CANopen Features

- CiA conformance tested
- All CiA bus speeds: 10kbit/s...1Mbit/s
- Autobaud
- Supports 11/29 bit identifiers: CAN 2.0 A/B
- Frequency of measurement and transmission upto 1kHz
- Moving average filter: 1ms...65s (pressure)
- Additional PDO mode: delta and limit triggered
- All standardised data types for PDO's Floating point, integer with 32, 24, 16 bits
- Eligible, prefix adjustable units pressure: bar, Pa, psi, mmHg, mmWg, atm, at; temperature: °C, °F, K
- Auto-zero function
- Auto-Start-Mode for operation without master
- 4 Pressure - and 4 temperature thresholds with 8 free definable CAN messages
- Separate storage of parameters for communication and application
- Flash-Update
- Baudrate detection

## CANopen- Bus Protocol

- Output signal: CAN BUS (ISO 118982)
- CANopen: DS301 V4.0
- Device profile: DS404 V1.2
- Baudrate (Autobaude): 10kbit/s...1Mbit/s
- Error control: Nodeguarding, Heartbeat
- Node ID: LSS (DSP 305 V2.0) fully implemented, proprietary
- No. of PDO's: 4 TX
- PDO modes: event-/time-triggered, remotely requested, sync (cyclic/acyclic)
- PDO linking: yes
- PDO mapping: yes
- No. of SDO's: 1 server
- Emergency message: yes

# DPC 8380

## Display Pressure Switch

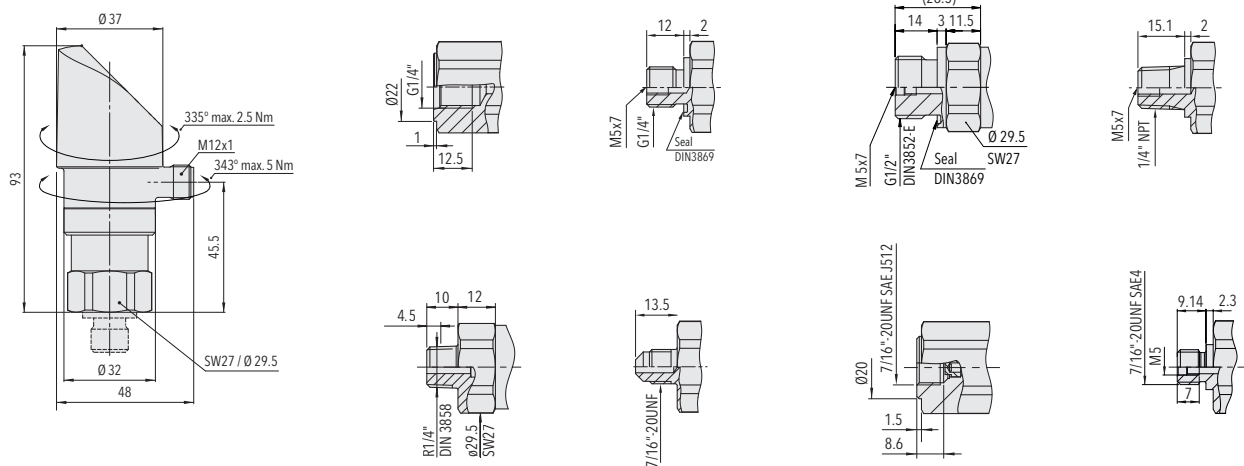


### Features

- Analogue output switchable mA or V
- 2 Switching outputs PNP
- Relative or absolute pressure measurement, measuring principle thick film on ceramic
- Parametrisation also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°

### Technical Data

|                      |                                                                                      |                           |                                                                          |
|----------------------|--------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------|
| Measuring principle  | Thick film on ceramic                                                                | Media temperature         | -25°C ... +85°C                                                          |
| Measuring range      | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi<br>adjustable 50 ... 100 % FS | Ambient temperature       | -25°C ... +85°C                                                          |
| Output signal        | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, switchable mA or V           | Pressure unit for display | bar, psi, MPa, kPa, m WC, mm WC                                          |
| Switching output     | 2 transistors PNP                                                                    | Logger                    | Ring buffer: 3518 data points<br>Sampling time: 0.1 ... 999.9 s, Off (0) |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                                                      |                           |                                                                          |



Pressure peak damping element: see  
'Accessories' or data sheet H72258



Data sheet  
Instructions

[www.trafag.com/H72320](http://www.trafag.com/H72320)  
[www.trafag.com/H73320](http://www.trafag.com/H73320)

|                               |                                                                                             |                     |                      | 8380 . XX |                                                                       |                     |                      | XX | XX | XX | XX | XX |
|-------------------------------|---------------------------------------------------------------------------------------------|---------------------|----------------------|-----------|-----------------------------------------------------------------------|---------------------|----------------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                            | Over pressure [bar] | Burst pressure [bar] |           | Pressure measurement range [psi]                                      | Over pressure [psi] | Burst pressure [psi] |    |    |    |    |    |
|                               | 0 ... 1                                                                                     | 2                   | 4.8                  | 71        | 0 ... 15                                                              | 45                  | 70                   | G1 |    |    |    |    |
|                               | 0 ... 1.6                                                                                   | 3.2                 | 4.8                  | 73        | 0 ... 20                                                              | 45                  | 70                   | G3 |    |    |    |    |
|                               | 0 ... 2.5                                                                                   | 5                   | 7.5                  | 75        | 0 ... 30                                                              | 60                  | 90                   | G5 |    |    |    |    |
|                               | 0 ... 4                                                                                     | 8                   | 12                   | 76        | 0 ... 50                                                              | 100                 | 150                  | G6 |    |    |    |    |
|                               | 0 ... 6                                                                                     | 12                  | 15                   | 77        | 0 ... 100                                                             | 200                 | 250                  | G7 |    |    |    |    |
|                               | 0 ... 10                                                                                    | 20                  | 25                   | 78        | 0 ... 150                                                             | 300                 | 375                  | G8 |    |    |    |    |
|                               | 0 ... 16                                                                                    | 32                  | 40                   | 79        | 0 ... 250                                                             | 500                 | 625                  | G9 |    |    |    |    |
|                               | 0 ... 25                                                                                    | 50                  | 75                   | 80        | 0 ... 400                                                             | 800                 | 1200                 | H0 |    |    |    |    |
|                               | 0 ... 40                                                                                    | 80                  | 100                  | 81        | 0 ... 500                                                             | 1000                | 1250                 | H1 |    |    |    |    |
|                               | 0 ... 60                                                                                    | 120                 | 180                  | 82        | 0 ... 1000                                                            | 2000                | 3000                 | H2 |    |    |    |    |
|                               | 0 ... 100                                                                                   | 200                 | 300                  | 83        | 0 ... 1500                                                            | 3000                | 4500                 | H3 |    |    |    |    |
| Sensor                        | Relative pressure, 1.4305, accuracy: 0.5 %                                                  |                     |                      | 57        | Absolute pressure, 1.4305, accuracy: 0.5 % <sup>3)</sup>              |                     |                      | 87 |    |    |    |    |
|                               | Relative pressure, 1.4404/1.4435, accuracy: 0.5 % <sup>4)</sup>                             |                     |                      | 59        | Absolute pressure, 1.4404/1.4435, accuracy: 0.5 % <sup>3) 4)</sup>    |                     |                      | 89 |    |    |    |    |
|                               | Relative pressure, 1.4462, accuracy: 0.5 % <sup>4)</sup>                                    |                     |                      | 52        | Absolute pressure, 1.4462, accuracy: 0.5 % <sup>3) 4)</sup>           |                     |                      | 82 |    |    |    |    |
|                               | Relative pressure, Titanium Grade 5, accuracy: 0.5 % <sup>4)</sup>                          |                     |                      | 53        | Absolute pressure, Titanium Grade 5, accuracy: 0.5 % <sup>3) 4)</sup> |                     |                      | 83 |    |    |    |    |
| Pressure connection           | G1/4" female                                                                                |                     |                      | 10        | R1/4" male ISO 7-1 (DIN 2999) <sup>4)</sup>                           |                     |                      | 19 |    |    |    |    |
|                               | G1/4" male                                                                                  |                     |                      | 17        | 7/16"-20UNF male, DIN3866 <sup>4)</sup>                               |                     |                      | 18 |    |    |    |    |
|                               | G1/2" male DIN3852-E <sup>4)</sup>                                                          |                     |                      | 41        | 7/16"-20UNF female SAE J512 with valve opener <sup>4)</sup>           |                     |                      | 24 |    |    |    |    |
|                               | 1/4" NPT male <sup>4)</sup>                                                                 |                     |                      | 30        | 7/16"-20UNF female SAE4 <sup>4)</sup>                                 |                     |                      | 42 |    |    |    |    |
| Electrical connection         | Male electrical plug M12x1, 4-pole, Mat. PA (Accessories P3, P4)                            |                     |                      |           |                                                                       |                     |                      |    |    | 32 |    |    |
|                               | Male electrical plug M12x1, 5-pole, Mat. PA (Accessories P1, P2)                            |                     |                      |           |                                                                       |                     |                      |    |    | 35 |    |    |
| Output signal                 | Switching output PNP, current output 4 ... 20 mA; output detail see accessories P1, P2, P3  |                     |                      |           |                                                                       |                     |                      |    |    |    | PA |    |
|                               | Switching output PNP, voltage output 1 ... 6 VDC; output detail see accessories P1, P2, P3  |                     |                      |           |                                                                       |                     |                      |    |    |    | PU |    |
|                               | Switching output PNP, voltage output 0 ... 10 VDC; output detail see accessories P1, P2, P3 |                     |                      |           |                                                                       |                     |                      |    |    |    | PV |    |
|                               | Switching output PNP, voltage output 0 ... 5 VDC; output detail see accessories P1, P2, P3  |                     |                      |           |                                                                       |                     |                      |    |    |    | PW |    |
|                               | Switching output PNP; output detail see accessory P4                                        |                     |                      |           |                                                                       |                     |                      |    |    |    | PS |    |
| Accessories                   | Pin configuration 5-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1, 5: SP2                        |                     |                      |           |                                                                       |                     |                      |    |    |    | P1 |    |
|                               | Pin configuration 5-pole.; 1: U+, 2: SP2, 3: U-, 4: SP1, 5: analogue                        |                     |                      |           |                                                                       |                     |                      |    |    |    | P2 |    |
|                               | Pin configuration 4-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1                                |                     |                      |           |                                                                       |                     |                      |    |    |    | P3 |    |
|                               | Pin configuration 4-pole.; 1: U+, 2: SP2, 3: U-, 4: SP1                                     |                     |                      |           |                                                                       |                     |                      |    |    |    | P4 |    |
|                               | Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)                 |                     |                      |           |                                                                       |                     |                      |    |    |    | 40 |    |
|                               | Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)                 |                     |                      |           |                                                                       |                     |                      |    |    |    | 44 |    |
|                               | Seal FPM, -18°C ... +125°C                                                                  |                     |                      |           |                                                                       |                     |                      |    |    |    | 61 |    |
|                               | Seal EPDM, -40°C ... +125°C                                                                 |                     |                      |           |                                                                       |                     |                      |    |    |    | 63 |    |
|                               | Female electrical plug M12x1, 5-pole <sup>5)</sup>                                          |                     |                      |           |                                                                       |                     |                      |    |    |    | 33 |    |
|                               | Parametrisation standard (see table Parameter)                                              |                     |                      |           |                                                                       |                     |                      |    |    |    | ZS |    |
|                               | Parametrisation according to customer specifications (see table Parameter)                  |                     |                      |           |                                                                       |                     |                      |    |    |    | ZC |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>3)</sup> Absolute ranges max. 40 bar

<sup>4)</sup> Please ask us

<sup>5)</sup> For electrical connections 32 and 35



# DPS 8381

## Display Pressure Switch

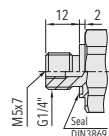
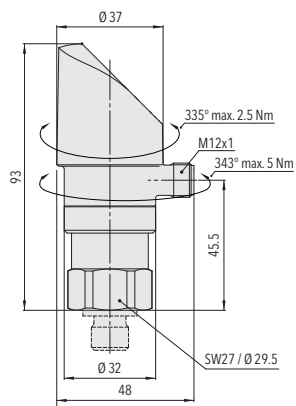


### Features

- Analogue output switchable mA or V
- 2 Switching outputs PNP
- Parametrisation also via NFC-smartphone App (Android)
- Threefold overpressure resistance, measuring principle thin film on steel
- Display and electrical connection are independently rotatable 335°/343°

### Technical Data

|                      |                                                                                        |                           |                                                                          |
|----------------------|----------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------|
| Measuring principle  | Thin film on steel                                                                     | Media temperature         | -25°C ... +85°C                                                          |
| Measuring range      | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi<br>adjustable 50 ... 100 % FS | Ambient temperature       | -25°C ... +85°C                                                          |
| Output signal        | 4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC,<br>0 ... 10 VDC, switchable mA or V             | Pressure unit for display | bar, psi, MPa, kPa, m WC, mm WC                                          |
| Switching output     | 2 transistors PNP                                                                      | Logger                    | Ring buffer: 3518 data points<br>Sampling time: 0.1 ... 999.9 s, Off (0) |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                                                        |                           |                                                                          |



Pressure peak damping element: see  
'Accessories' or data sheet H72258



Data sheet  
Instructions

[www.trafag.com/H72321](http://www.trafag.com/H72321)  
[www.trafag.com/H73320](http://www.trafag.com/H73320)

Additional dimensions see data sheet

|                               |                                                                                             |                     |                      | 8381 . XX |                                  |                     |                      | XX        | XX | XX | XX | XX |
|-------------------------------|---------------------------------------------------------------------------------------------|---------------------|----------------------|-----------|----------------------------------|---------------------|----------------------|-----------|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                            | Over pressure [bar] | Burst pressure [bar] |           | Pressure measurement range [psi] | Over pressure [psi] | Burst pressure [psi] |           |    |    |    |    |
|                               | 0 ... 2.5                                                                                   | 7.5                 | 50                   | <b>75</b> | 0 ... 30                         | 90                  | 700                  | <b>G5</b> |    |    |    |    |
|                               | 0 ... 4                                                                                     | 12                  | 60                   | <b>76</b> | 0 ... 50                         | 150                 | 850                  | <b>G6</b> |    |    |    |    |
|                               | 0 ... 6                                                                                     | 18                  | 100                  | <b>77</b> | 0 ... 100                        | 300                 | 1450                 | <b>G7</b> |    |    |    |    |
|                               | 0 ... 10                                                                                    | 30                  | 200                  | <b>78</b> | 0 ... 150                        | 450                 | 2500                 | <b>G8</b> |    |    |    |    |
|                               | 0 ... 16                                                                                    | 48                  | 200                  | <b>79</b> | 0 ... 200                        | 600                 | 2500                 | <b>GA</b> |    |    |    |    |
|                               | 0 ... 25                                                                                    | 75                  | 300                  | <b>80</b> | 0 ... 250                        | 750                 | 2500                 | <b>G9</b> |    |    |    |    |
|                               | 0 ... 40                                                                                    | 120                 | 300                  | <b>81</b> | 0 ... 300                        | 900                 | 4000                 | <b>HA</b> |    |    |    |    |
|                               | 0 ... 60                                                                                    | 180                 | 400                  | <b>82</b> | 0 ... 400                        | 1200                | 4000                 | <b>H0</b> |    |    |    |    |
|                               | 0 ... 100                                                                                   | 300                 | 500                  | <b>83</b> | 0 ... 500                        | 1500                | 4000                 | <b>H1</b> |    |    |    |    |
|                               | 0 ... 160                                                                                   | 480                 | 750                  | <b>85</b> | 0 ... 1000                       | 3000                | 5000                 | <b>H2</b> |    |    |    |    |
|                               | 0 ... 250                                                                                   | 750                 | 1000                 | <b>74</b> | 0 ... 1500                       | 4500                | 7000                 | <b>H3</b> |    |    |    |    |
|                               | 0 ... 400                                                                                   | 1000                | 2000                 | <b>84</b> | 0 ... 2000                       | 6000                | 10000                | <b>H5</b> |    |    |    |    |
|                               | 0 ... 600                                                                                   | 1500                | 2500                 | <b>86</b> | 0 ... 3000                       | 9000                | 14500                | <b>G4</b> |    |    |    |    |
|                               |                                                                                             |                     |                      |           | 0 ... 5000                       | 12500               | 21750                | <b>H4</b> |    |    |    |    |
|                               |                                                                                             |                     |                      |           | 0 ... 7500                       | 18750               | 29000                | <b>H6</b> |    |    |    |    |
| <b>Sensor</b>                 | Relative pressure, accuracy: 0.5 %                                                          |                     |                      |           |                                  |                     |                      |           | 25 |    |    |    |
| <b>Pressure connection</b>    | G1/4" male                                                                                  |                     |                      |           |                                  |                     |                      |           |    | 17 |    |    |
| <b>Electrical connection</b>  | Male electrical plug M12x1, 4-pole, Mat. PA (Accessories P3, P4)                            |                     |                      |           |                                  |                     |                      |           |    |    | 32 |    |
|                               | Male electrical plug M12x1, 5-pole, Mat. PA (Accessories P1, P2)                            |                     |                      |           |                                  |                     |                      |           |    |    |    | 35 |
| <b>Output signal</b>          | Switching output PNP, current output 4 ... 20 mA; output detail see accessories P1, P2, P3  |                     |                      |           |                                  |                     |                      |           |    |    |    | PA |
|                               | Switching output PNP, voltage output 1 ... 6 VDC; output detail see accessories P1, P2, P3  |                     |                      |           |                                  |                     |                      |           |    |    |    | PU |
|                               | Switching output PNP, voltage output 0 ... 10 VDC; output detail see accessories P1, P2, P3 |                     |                      |           |                                  |                     |                      |           |    |    |    | PV |
|                               | Switching output PNP, voltage output 0 ... 5 VDC; output detail see accessories P1, P2, P3  |                     |                      |           |                                  |                     |                      |           |    |    |    | PW |
|                               | Switching output PNP; output detail see accessory P4                                        |                     |                      |           |                                  |                     |                      |           |    |    |    | PS |
| <b>Accessories</b>            | Pin configuration 5-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1, 5: SP2                        |                     |                      |           |                                  |                     |                      |           |    |    |    | P1 |
|                               | Pin configuration 5-pole.; 1: U+, 2: SP2, 3: U-, 4: SP1, 5: analogue                        |                     |                      |           |                                  |                     |                      |           |    |    |    | P2 |
|                               | Pin configuration 4-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1                                |                     |                      |           |                                  |                     |                      |           |    |    |    | P3 |
|                               | Pin configuration 4-pole.; 1: U+, 2: SP2, 3: U-, 4: SP1                                     |                     |                      |           |                                  |                     |                      |           |    |    |    | P4 |
|                               | Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)                 |                     |                      |           |                                  |                     |                      |           |    |    |    | 40 |
|                               | Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)                 |                     |                      |           |                                  |                     |                      |           |    |    |    | 44 |
|                               | Seal FPM, -18°C ... +125°C                                                                  |                     |                      |           |                                  |                     |                      |           |    |    |    | 61 |
|                               | Seal EPDM, -40°C ... +125°C                                                                 |                     |                      |           |                                  |                     |                      |           |    |    |    | 63 |
|                               | Seal NBR, -25°C ... +100°C                                                                  |                     |                      |           |                                  |                     |                      |           |    |    |    | 83 |
|                               | Female electrical plug M12x1, 5-pole <sup>3)</sup>                                          |                     |                      |           |                                  |                     |                      |           |    |    |    | 33 |
|                               | Parametrisation standard (see table Parameter)                                              |                     |                      |           |                                  |                     |                      |           |    |    |    | ZS |
|                               | Parametrisation according to customer specifications (see table Parameter)                  |                     |                      |           |                                  |                     |                      |           |    |    |    | ZC |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>3)</sup> For electrical connections 32 and 35

# DCS 8864

## Display Control Switch



### Features

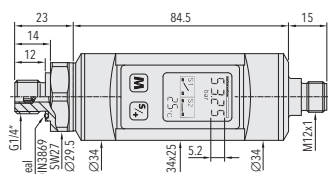
- Simple adjustment of switchpoints
- Back-lit LCD-Display
- Measurement and indication of pressure (incl. switch state) and sensor temperature in various units
- High resistance to pressure cycling
- Output signal 2 relays, electrically isolated

### Technical Data

|                      |                                                                                           |                       |                                                         |
|----------------------|-------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------|
| Measuring principle  | Thin film on steel                                                                        | Media temperature     | -25°C ... +125°C                                        |
| Measuring range      | 0 ... 1 to 0 ... 600 bar                                                                  | Ambient temperature   | -25°C ... +80°C<br>(LCD display active -10°C ... +70°C) |
| Output signal        | 4 ... 20 mA, 0 ... 10 VDC<br>2 Relays, electrically isolated<br>30W (max. 1A), 36 VAC/ DC | Approval / conformity | GL                                                      |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.                                                                           |                       |                                                         |

### Standard products (extra short lead time)

| Product No. | Type Code                                                      | Pressure range [bar] | Over pressure max. [bar] | Signal output                                 |
|-------------|----------------------------------------------------------------|----------------------|--------------------------|-----------------------------------------------|
| DCS2.5AR    | 8864 75 2315 38 0000 0000 19 23                                | 0...2.5              | 6                        | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS4.0AR    | 8864 76 2315 38 0000 0000 19 23                                | 0...4                | 10                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS6.0AR    | 8864 77 2315 38 0000 0000 19 23                                | 0...6                | 15                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS10.0AR   | 8864 78 2315 38 0000 0000 19 23                                | 0...10               | 20                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS16.0AR   | 8864 79 2315 38 0000 0000 19 23                                | 0...16               | 32                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS25.0AR   | 8864 80 2315 38 0000 0000 19 23                                | 0...25               | 80                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS40.0AR   | 8864 81 2315 38 0000 0000 19 23                                | 0...40               | 80                       | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS100.0AR  | 8864 83 2315 38 0000 0000 19 23                                | 0...100              | 200                      | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCS250.0AR  | 8864 74 2315 38 0000 0000 19 23                                | 0...250              | 500                      | 4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC |
| DCSCON2     | Female electrical connector, cable included, length 2 m (PUR)  |                      |                          |                                               |
| DCSCON5     | Female electrical connector, cable included, length 5 m (PUR)  |                      |                          |                                               |
| DCSCON10    | Female electrical connector, cable included, length 10 m (PUR) |                      |                          |                                               |

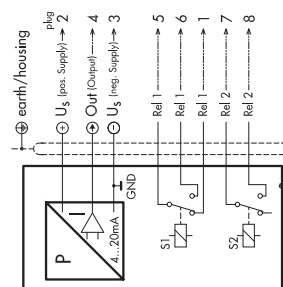


DCS ... AR

Pressure peak damping element integrated



DCSCON ...

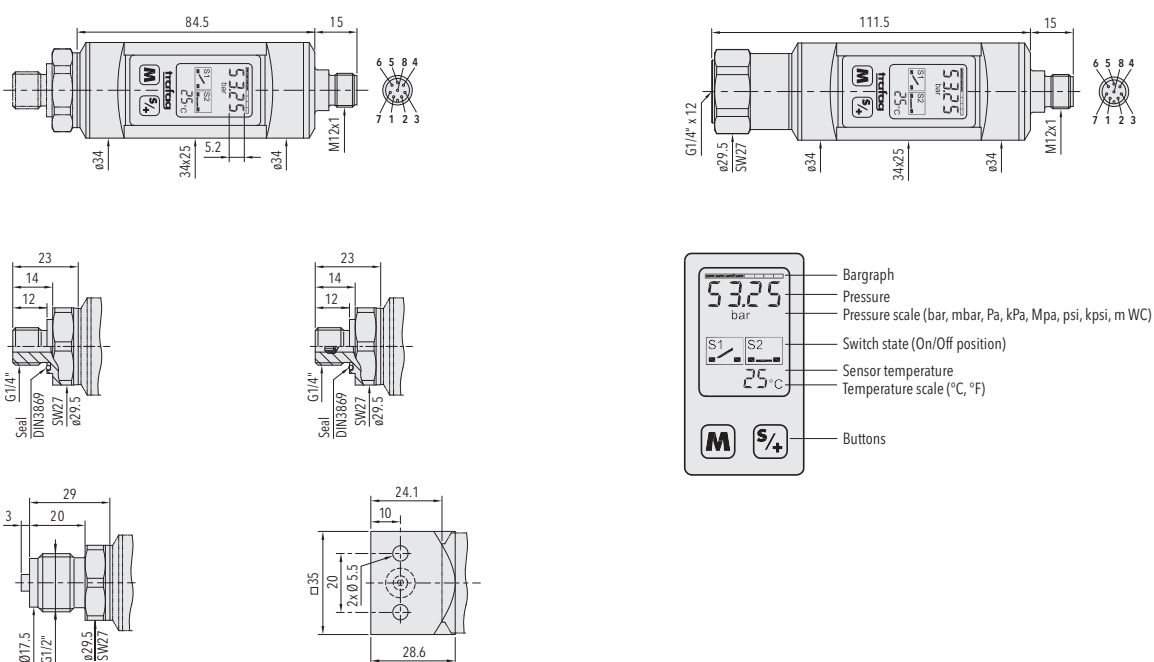


Data sheet  
Instructions

[www.trafag.com/H72605](http://www.trafag.com/H72605)  
[www.trafag.com/H73605](http://www.trafag.com/H73605)

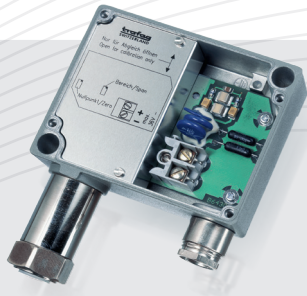
|                               |                                                                |                     |                      |        |    |    |    |    |    |    |
|-------------------------------|----------------------------------------------------------------|---------------------|----------------------|--------|----|----|----|----|----|----|
|                               |                                                                |                     |                      | 8864 . | XX | XX | XX | XX | XX | XX |
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                               | Over pressure [bar] | Burst pressure [bar] |        |    |    |    |    |    |    |
|                               | 0 ... 1                                                        | 2                   | 30                   | 71     |    |    |    |    |    |    |
|                               | 0 ... 2.5                                                      | 5                   | 100                  | 75     |    |    |    |    |    |    |
|                               | 0 ... 4                                                        | 8                   | 100                  | 76     |    |    |    |    |    |    |
|                               | 0 ... 6                                                        | 12                  | 100                  | 77     |    |    |    |    |    |    |
|                               | 0 ... 10                                                       | 20                  | 200                  | 78     |    |    |    |    |    |    |
|                               | 0 ... 16                                                       | 32                  | 200                  | 79     |    |    |    |    |    |    |
|                               | 0 ... 25                                                       | 50                  | 300                  | 80     |    |    |    |    |    |    |
|                               | 0 ... 40                                                       | 80                  | 300                  | 81     |    |    |    |    |    |    |
|                               | 0 ... 60                                                       | 120                 | 500                  | 82     |    |    |    |    |    |    |
|                               | 0 ... 100                                                      | 200                 | 500                  | 83     |    |    |    |    |    |    |
|                               | 0 ... 250                                                      | 500                 | 1000                 | 74     |    |    |    |    |    |    |
|                               | 0 ... 400                                                      | 800                 | 1500                 | 84     |    |    |    |    |    |    |
|                               | 0 ... 600                                                      | 1200                | 2000                 | 86     |    |    |    |    |    |    |
|                               | Sensor                                                         | Relative pressure   |                      |        |    | 23 |    |    |    |    |
| Pressure connection           | G1/4" male (Seal DIN3869 and pressure peak damping element)    |                     |                      |        | 15 |    |    |    |    |    |
|                               | G1/4" male (seal DIN3869)                                      |                     |                      |        | 17 |    |    |    |    |    |
|                               | G1/4" female                                                   |                     |                      |        | 10 |    |    |    |    |    |
|                               | G1/2" male DIN16288-B (Manometer)                              |                     |                      |        | 11 |    |    |    |    |    |
|                               | Flange connection                                              |                     |                      |        | 41 |    |    |    |    |    |
| Electrical connection         | Male electrical plug M12x1, 8-poles                            |                     |                      |        | 38 |    |    |    |    |    |
| Output signal                 | Signal output                                                  | Load resistance     | U (supply)           |        |    |    |    |    |    |    |
|                               | 4 ... 20mA                                                     | ≤ 250W              | 11 ... 32 VDC        |        |    |    |    | 19 |    |    |
|                               | 0 ... 10 VDC                                                   | ≥ 5.0 kW            | 15 ... 30 VDC        |        |    |    |    | 17 |    |    |
| Accessories                   | 2 Relays                                                       |                     |                      |        |    |    |    |    |    | 23 |
|                               | Female electrical connector: M12x1, 8-pol., incl. 2m PUR-cable |                     |                      |        |    |    |    |    |    |    |
|                               | Ordering code: DCS CON                                         |                     |                      |        |    |    |    |    |    |    |

<sup>1)</sup> Customized pressure ranges upon request



# N 8202

## Navitrag



### Features

- Excellent long-term stability
- Protection IP65
- EMC protection, IEC 61000
- Excellent resistance to pressure peaks and dynamic pressure changes

### Technical Data

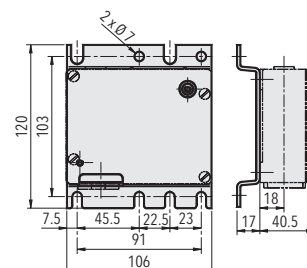
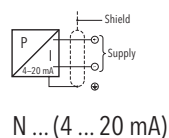
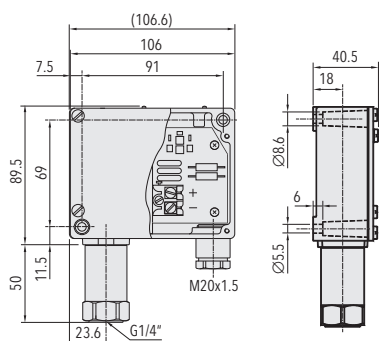
|                      |                            |                       |                                       |
|----------------------|----------------------------|-----------------------|---------------------------------------|
| Measuring principle  | Thin film on steel         | Media temperature     | -25°C ... +125°C                      |
| Measuring range      | 0 ... 1.0 to 0 ... 600 bar | Ambient temperature   | -25°C ... +85°C                       |
| Output signal        | 4 ... 20 mA                | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.            |                       |                                       |

Data sheet  
Instructions

[www.trafag.com/H72206](http://www.trafag.com/H72206)  
[www.trafag.com/H70722](http://www.trafag.com/H70722)

### Standard products (extra short lead time)

| Product No. | Type Code    | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|--------------|----------------------|--------------------------|--------------|--------------------------|
| N1.0        | 8202 71 2210 | 0 ... 1              | 3                        | 12 ... 34    | ± 0.5                    |
| N2.5        | 8202 75 2210 | 0 ... 2.5            | 6                        | 12 ... 34    | ± 0.5                    |
| N4.0        | 8202 76 2210 | 0 ... 4              | 10                       | 12 ... 34    | ± 0.5                    |
| N6.0        | 8202 77 2210 | 0 ... 6              | 15                       | 12 ... 34    | ± 0.5                    |
| N10.0       | 8202 78 2210 | 0 ... 10             | 20                       | 12 ... 34    | ± 0.5                    |
| N16.0       | 8202 79 2210 | 0 ... 16             | 32                       | 12 ... 34    | ± 0.5                    |
| N25.0       | 8202 80 2210 | 0 ... 25             | 80                       | 12 ... 34    | ± 0.5                    |
| N40.0       | 8202 81 2210 | 0 ... 40             | 80                       | 12 ... 34    | ± 0.5                    |
| N100.0      | 8202 83 2210 | 0 ... 100            | 200                      | 12 ... 34    | ± 0.5                    |
| N250.0      | 8202 74 2210 | 0 ... 250            | 500                      | 12 ... 34    | ± 0.5                    |
| N400.0      | 8202 84 2210 | 0 ... 400            | 800                      | 12 ... 34    | ± 0.5                    |



Mounting plate MB31 see chapter 'Accessories'

# ND 8204

## Differential Pressure Transmitter



### Features

- High zero point stability
- High resistance to pressure cycling
- EMC protection, IEC 61000

### Technical Data

|                      |                         |                       |                  |
|----------------------|-------------------------|-----------------------|------------------|
| Measuring principle  | Thin film on steel      | Media temperature     | -25°C ... +125°C |
| Measuring range      | 0 ... 1 to 0 ... 16 bar | Ambient temperature   | -25°C ... +85°C  |
| Output signal        | 4 ... 20 mA (P1-P2)     | Approval / conformity | BV, DNV, RINA    |
| Accuracy @ 25°C typ. | ± 0.8 % FS typ          |                       |                  |

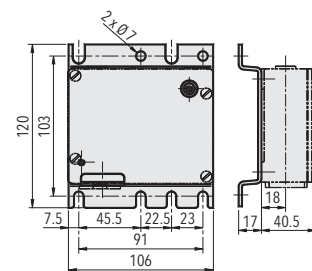
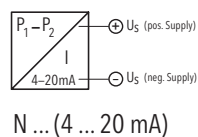
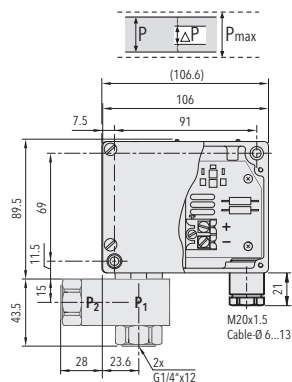


Data sheet  
Instructions

[www.trafag.com/H72218](http://www.trafag.com/H72218)  
[www.trafag.com/H73218](http://www.trafag.com/H73218)

### Standard products (extra short lead time)

| Product No. | Type Code    | Differential pressure<br>(measuring range)<br>[bar] | Maximum<br>system pressure<br>[bar] | Over pressure<br>max.<br>[bar] | Supply<br>[VDC] | Accuracy @<br>25°C typ.<br>[%] |
|-------------|--------------|-----------------------------------------------------|-------------------------------------|--------------------------------|-----------------|--------------------------------|
| ND1.0       | 8204 71 2210 | 0 ... 1.0                                           | 2.5                                 | 6                              | 12 ... 34       | ± 0.8                          |
| ND1.5       | 8204 55 2210 | -1 ... 1.5                                          | 6                                   | 15                             | 12 ... 34       | ± 0.8                          |
| ND2.5       | 8204 75 2210 | 0 ... 2.5                                           | 6                                   | 32                             | 12 ... 34       | ± 0.8                          |
| ND5         | 8204 58 2210 | -1 ... 5.0                                          | 16                                  | 32                             | 12 ... 34       | ± 0.8                          |
| ND6         | 8204 77 2210 | 0 ... 6.0                                           | 16                                  | 32                             | 12 ... 34       | ± 0.8                          |



Mounting plate MB31 see chapter 'Accessories'



# Potentially hazardous areas: Ex-approved products for pressure measurement



Trafag offers a wide range of EX-, ATEX- and IECE approved products for pressure and temperature monitoring.



Further information see "Terminology"



Ex brochure [www.trafag.com/H70659](http://www.trafag.com/H70659)

## EXNA 8854

### Ex Pressure Transmitter



#### Features

- Ex ATEX / IECEx
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- EMC protection, IEC 61000

#### Technical Data

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Measuring principle   | Piezoresistive                                                                             |
| Measuring range       | 0 ... 0.1 to 0 ... 1000 bar                                                                |
| Output signal         | 4 ... 20 mA                                                                                |
| Media temperature     | T3: -40°C ... +150°C<br>T4: -40°C ... +100°C<br>T6: -40°C ... +50°C                        |
| Approval / conformity | Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303                               |
| Type of protection    | Ex<br>II 1G Ex ia IIC T3 ... T6 Ga<br>II 1D Ex ia IIIC IP6x T145 ... T70°C<br>I M1 Ex ia I |



Data sheet

[www.trafag.com/H72334](http://www.trafag.com/H72334)

# EXNA 8852/8853

## Ex Pressure Transmitter

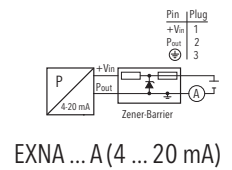
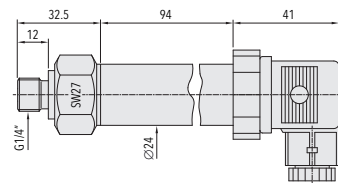


### Features

- Explosion-proof Ex ia IIC T3 ... T6
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

### Technical Data

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Measuring principle   | Piezoresistive                                                      |
| Measuring range       | 0 ... 0.1 to 0 ... 1000 bar                                         |
| Output signal         | 4 ... 20 mA                                                         |
| Media temperature     | T3: -25°C ... +150°C<br>T4: -25°C ... +100°C<br>T6: -25°C ... +55°C |
| Approval / conformity | GL, KRS                                                             |



Data sheet

[www.trafag.com/H72227](http://www.trafag.com/H72227)

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range [bar] | Over pressure max. [bar] | Supply [VDC] | Accuracy @ 25°C typ. [%] |
|-------------|------------------------------------|----------------------|--------------------------|--------------|--------------------------|
| EXNA0.2A    | 8852 68 P515 04 0000 0000 19 58 T4 | 0 ... 0.2            | 3                        | 10 ... 30    | ±0.5                     |

# EXNAL 8858

## Ex Tauchdrucktransmitter



### Features

- Pressure ranges from 100 mbar
- PUR or Teflon cables
- Chemical resistant material, e.g. titanium
- Explosion-proof Ex ia IIC T3 ... T6
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

### Technical Data

|                       |                           |
|-----------------------|---------------------------|
| Measuring principle   | Piezoresistive            |
| Measuring range       | 0 ... 0.1 to 0 ... 25 bar |
| Output signal         | 4 ... 20 mA               |
| Media temperature     | T4/T6: -5°C ... +50°C     |
| Approval / conformity | GL, KRS                   |
| Type of protection    | Ex ia IIC T3 ... T6       |

Data sheet

[www.trafag.com/H72231](http://www.trafag.com/H72231)

# EXNT 8292

## Ex Pressure Transmitter



### Features

- II 1G Ex ia IIC T4/T6 Ga  
II 1D Ex ia IIIC IP6x T130° Da  
I M1 Ex ia I Ma  
II 1/2G Ex ia IIC T4/T6 Ga/Gb (with plastic-type connector)
- Pressure ranges from 0.4 to 2000 bar
- Completely welded sensor system
- Optional with hydrogen-compatible sensor
- ATEX and IECEx

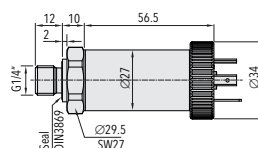
### Technical Data

|                      |                                    |                       |                                                                                                        |
|----------------------|------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------|
| Measuring principle  | Thin film on steel                 | Media temperature     | Max. -40°C ... +120°C<br>(see electrical connection)                                                   |
| Measuring range      | 0 ... 0.4 to 0 ... 2000 bar        | Ambient temperature   | Max. -40°C ... +120°C<br>(see electrical connection)                                                   |
| Output signal        | 4 ... 20 mA                        | Approval / conformity | GL, KRS<br>ATEX / IECEx, according to the norm<br>EN/IEC 60079-0/EN 60079-11/<br>EN 60079-26/ EN 50303 |
| Accuracy @ 25°C typ. | ± 0.5 % FS typ.<br>± 0.3 % FS typ. |                       |                                                                                                        |

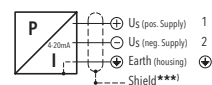
### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range<br>[bar] | Over pressure<br>max.<br>[bar] | Supply<br>[VDC] | Accuracy<br>@ 25°C typ.<br>[%] |
|-------------|------------------------------------|-------------------------|--------------------------------|-----------------|--------------------------------|
| EXNT0.4A    | 8292 69 2617 05 0000 0000 19 58 92 | 0 ... 0.4               | 1.2                            | 10 ... 30       | ± 0.5                          |
| EXNT0.6A    | 8292 70 2617 05 0000 0000 19 58 92 | 0 ... 0.6               | 1.5                            | 10 ... 30       | ± 0.5                          |
| EXNT1.0A    | 8292 71 2617 05 0000 0000 19 58 92 | 0 ... 1                 | 2                              | 10 ... 30       | ± 0.5                          |
| EXNT2.5A    | 8292 75 2517 05 0000 0000 19 58 92 | 0 ... 2.5               | 5                              | 10 ... 30       | ± 0.5                          |
| EXNT4.0A    | 8292 76 2517 05 0000 0000 19 58 92 | 0 ... 4                 | 8                              | 10 ... 30       | ± 0.5                          |
| EXNT6.0A    | 8292 77 2517 05 0000 0000 19 58 92 | 0 ... 6                 | 12                             | 10 ... 30       | ± 0.5                          |
| EXNT10.0A   | 8292 78 2517 05 0000 0000 19 58 92 | 0 ... 10                | 20                             | 10 ... 30       | ± 0.5                          |
| EXNT16.0A   | 8292 79 2517 05 0000 0000 19 58 92 | 0 ... 16                | 32                             | 10 ... 30       | ± 0.5                          |
| EXNT25.0A   | 8292 80 2517 05 0000 0000 19 58 92 | 0 ... 25                | 50                             | 10 ... 30       | ± 0.5                          |
| EXNT40.0A   | 8292 81 2517 05 0000 0000 19 58 92 | 0 ... 40                | 80                             | 10 ... 30       | ± 0.5                          |
| EXNT100.0A  | 8292 83 2517 05 0000 0000 19 58 92 | 0 ... 100               | 200                            | 10 ... 30       | ± 0.5                          |
| EXNT250.0A  | 8292 74 2517 05 0000 0000 19 58 92 | 0 ... 250               | 500                            | 10 ... 30       | ± 0.5                          |

Pressure peak damping element: see  
'Accessories' or data sheet H72258



EXNT ... A



EXNT ... A (4 ... 20 mA)



Data sheet  
Instructions

[www.trafag.com/H72329](http://www.trafag.com/H72329)  
[www.trafag.com/H73329](http://www.trafag.com/H73329)

|                               |                                                                                                                                                 |                                     |                      | 8292 . XX |                                                                                                                                         |                     |                      | XX | XX | XX | XX | XX |  |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|----|----|----|----|----|--|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                                                                                                                | Over pressure [bar]                 | Burst pressure [bar] |           | Pressure measurement range [bar]                                                                                                        | Over pressure [bar] | Burst pressure [bar] |    |    |    |    |    |  |
|                               | 0 ... 0.4 <sup>2)</sup>                                                                                                                         | 1.2                                 | 25                   | 69        | 0 ... 40                                                                                                                                | 80                  | 300                  | 81 |    |    |    |    |  |
|                               | 0 ... 0.6 <sup>2)</sup>                                                                                                                         | 1.5                                 | 25                   | 70        | 0 ... 60                                                                                                                                | 120                 | 500                  | 82 |    |    |    |    |  |
|                               | 0 ... 1.0 <sup>2)</sup>                                                                                                                         | 2.0                                 | 25                   | 71        | 0 ... 100                                                                                                                               | 200                 | 500                  | 83 |    |    |    |    |  |
|                               | 0 ... 1.6                                                                                                                                       | 3.5                                 | 80                   | 73        | 0 ... 160                                                                                                                               | 320                 | 1000                 | 85 |    |    |    |    |  |
|                               | 0 ... 2.5                                                                                                                                       | 5                                   | 100                  | 75        | 0 ... 250                                                                                                                               | 500                 | 1000                 | 74 |    |    |    |    |  |
|                               | 0 ... 4                                                                                                                                         | 8                                   | 100                  | 76        | 0 ... 400                                                                                                                               | 800                 | 1500                 | 84 |    |    |    |    |  |
|                               | 0 ... 6                                                                                                                                         | 12                                  | 100                  | 77        | 0 ... 600                                                                                                                               | 1000                | 2000                 | 86 |    |    |    |    |  |
|                               | 0 ... 10                                                                                                                                        | 20                                  | 200                  | 78        | 0 ... 1000                                                                                                                              | 1600                | 3000                 | 88 |    |    |    |    |  |
|                               | 0 ... 16                                                                                                                                        | 32                                  | 200                  | 79        | 0 ... 1600                                                                                                                              | 3000                | 4000                 | 89 |    |    |    |    |  |
|                               | 0 ... 25                                                                                                                                        | 50                                  | 300                  | 80        | 0 ... 2000                                                                                                                              | 3000                | 4000                 | 90 |    |    |    |    |  |
| Sensor                        | Relative pressure, accuracy: 0.3% (> 1 bar)                                                                                                     |                                     |                      | 23        | Relative pressure, accuracy: 0.5 %, wetted parts hydrogen compatible <sup>7)</sup>                                                      |                     |                      | 35 |    |    |    |    |  |
|                               | Relative pressure, accuracy: 0.5% (> 1 bar)                                                                                                     |                                     |                      | 25        | Relative pressure, accuracy: 0.3 %, wetted parts hydrogen compatible <sup>7)</sup>                                                      |                     |                      | 33 |    |    |    |    |  |
|                               | Relative pressure, accuracy: 0.5% (≤ 1 bar)                                                                                                     |                                     |                      | 26        |                                                                                                                                         |                     |                      |    |    |    |    |    |  |
| Pressure connection           | G1/4" male <sup>3)</sup>                                                                                                                        |                                     |                      | 17        | R1/4" male <sup>3)</sup>                                                                                                                |                     |                      | 19 |    |    |    |    |  |
|                               | G1/4" female <sup>3)</sup>                                                                                                                      |                                     |                      | 10        | 1/4" NPT male <sup>3)</sup>                                                                                                             |                     |                      | 30 |    |    |    |    |  |
|                               | G1/2" male <sup>3)</sup>                                                                                                                        |                                     |                      | 21        | M18x1.5 male (conical seal: 58°) <sup>4)</sup>                                                                                          |                     |                      | 29 |    |    |    |    |  |
|                               | G1/2" male DIN16288-8 (Manometer) <sup>3)</sup>                                                                                                 |                                     |                      | 11        |                                                                                                                                         |                     |                      |    |    |    |    |    |  |
| Electrical connection         | Male electrical plug EN 175301-803-A, plastic (only zones 1, 2 (gas) and 20, 21 (dust))                                                         |                                     |                      |           |                                                                                                                                         |                     |                      |    | 05 |    |    |    |  |
|                               | Male electrical plug M12x1, 5-pole, metal                                                                                                       |                                     |                      |           |                                                                                                                                         |                     |                      |    | 35 |    |    |    |  |
|                               | Male electrical plug MIL-C 26482, 6-pole, metal <sup>5)</sup>                                                                                   |                                     |                      |           |                                                                                                                                         |                     |                      |    | 02 |    |    |    |  |
|                               | Male electrical plug Binder 723, 5-pole, metal                                                                                                  |                                     |                      |           |                                                                                                                                         |                     |                      |    | 14 |    |    |    |  |
|                               | Cable with shield, material FDR 25 (Raychem), 4 x 0.5mm <sup>2</sup> (cable length see "Accessories") - not ship approved                       |                                     |                      |           |                                                                                                                                         |                     |                      |    | 78 |    |    |    |  |
|                               | Cable intrinsically safe with shield, material PVC, 2 x 0.75mm <sup>2</sup> (-40...+80°C), (cable length see "Accessories") - not ship approved |                                     |                      |           |                                                                                                                                         |                     |                      |    | 80 |    |    |    |  |
| Output signal                 | Signal output                                                                                                                                   | Load resistance                     |                      |           | I (supply)                                                                                                                              |                     | U (supply)           |    |    |    |    |    |  |
|                               | 4 ... 20mA                                                                                                                                      | (U <sub>supply</sub> -10 V) / 20 mA |                      |           |                                                                                                                                         |                     | 10 ... 30 VDC        |    |    | 19 |    |    |  |
| Accessories                   | Female electrical connector EN 175301-803-A (DIN43650-A), plastic (only zones 1, 2 (gas) and 20, 21 (dust))                                     |                                     |                      | 58        | Cable length 1.5 m <sup>6)</sup>                                                                                                        |                     |                      | 1M |    |    |    |    |  |
|                               | Female electrical plug M12x1, 5-pole, plastic (only zones 1, 2 (gas) and 20, 21 (dust))                                                         |                                     |                      | 33        | Cable length 3.0 m <sup>6)</sup>                                                                                                        |                     |                      | 3M |    |    |    |    |  |
|                               | Female electrical plug M12x1, 5-pole, metal                                                                                                     |                                     |                      | 35        | Cable length 5.0 m <sup>6)</sup>                                                                                                        |                     |                      | 5M |    |    |    |    |  |
|                               | Female electrical connector MIL-C 26482, 6-pole, metal                                                                                          |                                     |                      | 32        | Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) |                     |                      | 92 |    |    |    |    |  |
|                               | Female electrical connector Binder 723, 5-pole, metal                                                                                           |                                     |                      | 37        | Zener barrier 28V/93mA; R ≈ 300Ω: Ordering no ZEN28VDC                                                                                  |                     |                      |    |    |    |    |    |  |
|                               | Pressure peak damping element ø 0.4 mm                                                                                                          |                                     |                      | 44        | Damping elements and snubber see data sheet H72258                                                                                      |                     |                      |    |    |    |    |    |  |
|                               | Pressure peak damping element ø 1.0 mm                                                                                                          |                                     |                      | 40        |                                                                                                                                         |                     |                      |    |    |    |    |    |  |
|                               |                                                                                                                                                 |                                     |                      |           |                                                                                                                                         |                     |                      |    |    |    |    |    |  |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Only with sensor 26 (0.5%)

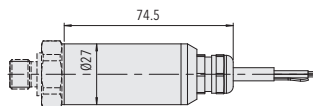
<sup>3)</sup> For pressure ranges ≤ 600 bar

<sup>4)</sup> For pressure ranges > 600 bar

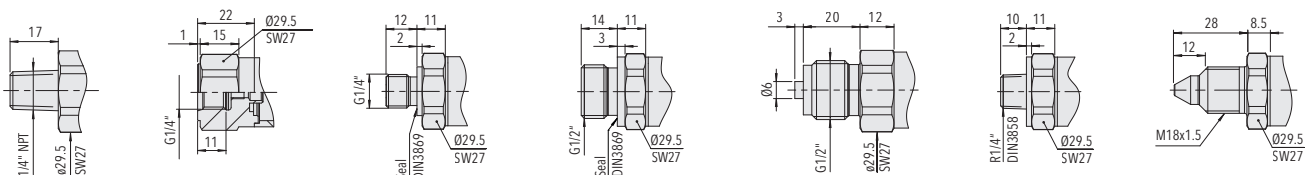
<sup>5)</sup> For pressure ranges < 40 bar upon request

<sup>6)</sup> Other cable lengths upon request

<sup>7)</sup> Pressure ranges 0 ... 40 to 0 ... 1000 bar



Additional dimensions see data sheet



# EXL 8432

## Ex Submersible Pressure Transmitter

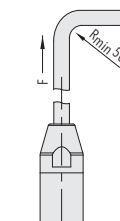
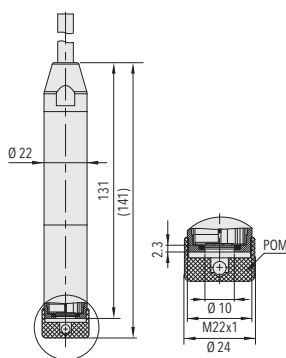
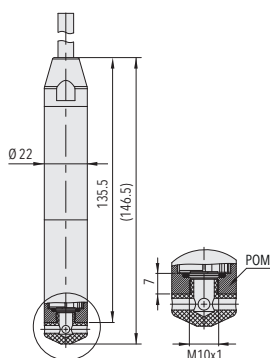


### Features

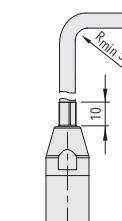
- II 1G Ex ia IIC T4/T6 Ga  
I M1 Ex ia I Ma
- Good media compatibility
- Cable PUR/PE or FEP
- EMC protection, IEC 61000

### Technical Data

|                      |                                    |                       |                                                                            |
|----------------------|------------------------------------|-----------------------|----------------------------------------------------------------------------|
| Measuring principle  | Thick film on ceramic              | Media temperature     | T4: -20°C ... +70°C<br>T6: -20°C ... +65°C                                 |
| Measuring range      | 0 ... 0.2 to 0 ... 10 bar          | Ambient temperature   | T4: -20°C ... +70°C<br>T6: -20°C ... +65°C                                 |
| Output signal        | 4 ... 20 mA                        | Approval / conformity | GL, KRS<br>Ex ATEX/IECEX, EN 60079-0/<br>EN 60079-11/EN 60079-26/ EN 50303 |
| Accuracy @ 25°C typ. | ± 0.3 % FS typ.<br>± 0.5 % FS typ. |                       |                                                                            |



PUR



PE/FEP



Data sheet  
Instructions

[www.trafag.com/H72330](http://www.trafag.com/H72330)  
[www.trafag.com/H73329](http://www.trafag.com/H73329)

| 8432 . XX                     |                                                            |                                     |                      |               | XX | XX | XX | XX | XX |
|-------------------------------|------------------------------------------------------------|-------------------------------------|----------------------|---------------|----|----|----|----|----|
| Measuring range <sup>1)</sup> | Pressure measurement range [bar]                           | Over pressure [bar]                 | Burst pressure [bar] |               |    |    |    |    |    |
|                               | 0 ... 0.2                                                  | 1.2                                 | 2                    | 68            |    |    |    |    |    |
|                               | 0 ... 0.4                                                  | 1.2                                 | 2                    | 69            |    |    |    |    |    |
|                               | 0 ... 0.6                                                  | 2                                   | 3                    | 70            |    |    |    |    |    |
|                               | 0 ... 1.0                                                  | 3.2                                 | 4.8                  | 71            |    |    |    |    |    |
|                               | 0 ... 1.6                                                  | 3.2                                 | 4.8                  | 73            |    |    |    |    |    |
|                               | 0 ... 2.5                                                  | 5                                   | 7.5                  | 75            |    |    |    |    |    |
|                               | 0 ... 4                                                    | 8                                   | 12                   | 76            |    |    |    |    |    |
|                               | 0 ... 6                                                    | 12                                  | 15                   | 77            |    |    |    |    |    |
|                               | 0 ... 10                                                   | 20                                  | 25                   | 78            |    |    |    |    |    |
| Sensor                        | Relative pressure > 400 mbar, Accuracy: 0.3%               |                                     |                      |               | 23 |    |    |    |    |
|                               | Relative pressure ≤ 400 mbar, Accuracy: 0.5%               |                                     |                      |               | 26 |    |    |    |    |
| Pressure connection           | Type 1, female, M 10x1, 1.4404/1.4435                      |                                     |                      |               |    | 46 |    |    |    |
|                               | Type 2, male, M 22x1, 1.4404/1.4435                        |                                     |                      |               |    | 48 |    |    |    |
| Electrical connection         | Cable with shield: PUR ø 6 mm, 5x0.22mm <sup>2 2) 3)</sup> |                                     |                      |               |    |    | 22 |    |    |
|                               | Cable with shield: FEP ø 6 mm, 5x0.22mm <sup>2 2) 3)</sup> |                                     |                      |               |    |    | 32 |    |    |
|                               | Cable with shield: PE ø 6 mm, 5x0.22mm <sup>2 2) 3)</sup>  |                                     |                      |               |    |    | 42 |    |    |
| Output signal                 | Signal output                                              | Load resistance                     | I (supply)           | U (supply)    |    |    |    |    |    |
|                               | 4 ... 20mA                                                 | (U <sub>supply</sub> -10 V) / 20 mA |                      | 10 ... 30 VDC |    |    |    | 19 |    |
| Accessories                   | Seal FKM                                                   |                                     |                      |               |    |    |    |    | 61 |
|                               | Seal EPDM                                                  |                                     |                      |               |    |    |    |    | 63 |
|                               | Zener barrier 28V/93mA; R ≈ 300Ω: Ordering no ZEN28VDC     |                                     |                      |               |    |    |    |    |    |

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)

<sup>3)</sup> For level measurement applications on ships under certification GL (German Lloyd), the cable of such transmitters must be installed inside the tank only

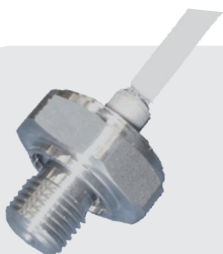


# Pressure sensors

Pressure sensors provide the basis for the outstanding reliability and durability of Trafag pressure transmitters. Developed and produced by Trafag, these pressure sensors are also available to third parties for special OEM solutions. Trafag pressure sensors lend themselves extremely well to adaptation, providing the basis for seamless integration into OEM applications. Trafag's specialists work together with customers to develop tailor-made solutions. Success is assured by combining professional project management – from drafting the requirements specification right through to start of production – with a team of experienced application engineers.



## OEM Pressure sensor 8810



### Features

- Thin-film-on-steel sensor technology
- Excellent long-term stability
- Further versions available

### Technical Data

|                               |                  |
|-------------------------------|------------------|
| Sensor material               | 1.4542/630       |
| Output signal (10 VDC supply) | 1.2 ... 2.8 mV/V |
| Media temperature             | -25°C ... +125°C |
| Ambient temperature           | -25°C ... +100°C |

### Product description

| Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % d.S. typ.] | Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % d.S. typ.] |
|-------------|-----------------------------|----------------|------------------------------------|-------------|-----------------------------|----------------|------------------------------------|
| 0 ... 40    | 80                          | 10 ... 15      | 0.07                               | 0 ... 400   | 800                         | 10 ... 15      | 0.07                               |
| 0 ... 100   | 200                         | 10 ... 15      | 0.07                               | 0 ... 600   | 1000                        | 10 ... 15      | 0.07                               |
| 0 ... 250   | 500                         | 10 ... 15      | 0.07                               |             |                             |                |                                    |



Data sheet

[www.trafag.com/H72205](http://www.trafag.com/H72205)

# OEM Pressure sensor 8421



## Features

- Thick film on ceramic sensor technology
- Excellent long-term stability

## Technical Data

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Sensor material               | Al <sub>2</sub> O <sub>3</sub> , 316L (1.4435, 1.4404) |
| Output signal (10 VDC supply) | 2.3 ... 3.5 mV/V                                       |
| Media temperature             | -25°C ... +125°C                                       |
| Ambient temperature           | -25°C ... +100°C                                       |

## Product description

| Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % d.S. typ.] | Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % d.S. typ.] |
|-------------|-----------------------------|----------------|------------------------------------|-------------|-----------------------------|----------------|------------------------------------|
| 0 ... 1.6   | 3.2                         | 20             | 0.25                               | 0 ... 25    | 50                          | 20             | 0.25                               |
| 0 ... 4     | 10                          | 20             | 0.25                               | 0 ... 40    | 80                          | 20             | 0.25                               |
| 0 ... 6     | 12                          | 20             | 0.25                               | 0 ... 60    | 120                         | 20             | 0.25                               |
| 0 ... 10    | 20                          | 20             | 0.25                               | 0 ... 100   | 200                         | 20             | 0.25                               |
| 0 ... 16    | 32                          | 20             | 0.25                               |             |                             |                |                                    |



Data sheet

[www.trafag.com/H72233](http://www.trafag.com/H72233)

# Transducer 8822



## Features

- Thin-film-on-steel sensor technology
- Smallest design
- Excellent long-term stability

## Technical Data

|                             |                  |
|-----------------------------|------------------|
| Sensor material             | 1.4542/630       |
| Output signal (ratiometric) | 1.7 ... 2 mV/V   |
| Media temperature           | -25°C ... +125°C |
| Ambient temperature         | -25°C ... +125°C |

## Product description

| Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % FS typ.] | Range [bar] | Max. working pressure [bar] | U-supply [VDC] | Accuracy NLH (BSL) [± % FS typ.] |
|-------------|-----------------------------|----------------|----------------------------------|-------------|-----------------------------|----------------|----------------------------------|
| 0 ... 6     | 12                          | 10 ... 15      | 0.5                              | 0 ... 100   | 200                         | 10 ... 15      | 0.5                              |
| 0 ... 10    | 20                          | 10 ... 15      | 0.5                              | 0 ... 160   | 320                         | 10 ... 15      | 0.5                              |
| 0 ... 16    | 32                          | 10 ... 15      | 0.5                              | 0 ... 250   | 500                         | 10 ... 15      | 0.5                              |
| 0 ... 25    | 50                          | 10 ... 15      | 0.5                              | 0 ... 400   | 800                         | 10 ... 15      | 0.5                              |
| 0 ... 40    | 80                          | 10 ... 15      | 0.5                              | 0 ... 600   | 1000                        | 10 ... 15      | 0.5                              |
| 0 ... 60    | 120                         | 10 ... 15      | 0.5                              |             |                             |                |                                  |



Data sheet

[www.trafag.com/H72315](http://www.trafag.com/H72315)

## Customer specific design for OEMs

If the requirements of an application cannot be met with an existing product, Trafag is able to efficiently adapt its standard products to the specific needs of customers and to develop special OEM solutions. Thanks to their modular design, Trafag products can be efficiently customized to fit seamlessly into the targeted environment, providing the high performance and reliability of all Trafag products which are based on the proprietary sensor technologies.

A team of experienced and highly skilled engineers in development and production guarantees excellent products. An efficient project management minimizes risks and ensures a short time to market.

## Tank pressure transmitter with temperature sensor



### Features

- For fuel density measurement
- Based on established thick-film-on-ceramic technology

### Technical Data

|                       |                   |
|-----------------------|-------------------|
| Pressure range        | -100 ... 900 mbar |
| Output signal         | Digital signal    |
| Electrical connection | PCB connector     |
| Media temperature     | -25°C ... +85°C   |

To determine the fuel density in petrol tanks, the pressure signal from a ceramics sensor element and the signal from an integrated PTC temperature sensor are processed in the Trafag ASIC electronics to calculate the density. The digital output signal is used in a chip-to-chip communication with the control unit. The key advantages of this cost-effective solution are the very compact design and the low project risk due to the use of well-proven sensing elements.

## Crank case pressure transmitter



### Features

- For low pressure measurement
- Crank case on large diesel engines

### Technical Data

|                             |                  |
|-----------------------------|------------------|
| Pressure range (relative)   | 0 ... 124 mbar   |
| Output signal (ratiometric) | 0.5 ... 4.5 VDC  |
| Electrical connection       | DIN72585         |
| Ambient temperature         | -25°C ... +105°C |

In large diesel engines the crank case pressure is an important indicator for the condition (wear) of the piston rings of diesel engines. Alternative technologies to detect the wear of piston rings only react after the piston ring is already defective while the small pressure changes give early indication of possible increased wear. A pressure transmitter in this application must withstand harsh conditions in terms of vibration and temperature and must maintain a high accuracy over a long lifetime. Trafag developed a new transmitter based on the well-tried EPN series, but extending the measurement range the thin-film-on-steel technology way beyond state-of-the-art towards low pressure down to 0...124 mbar. Due to the experience and expertise of Trafag in this field, the accuracy of the transmitter is high and stable over a long time in operational conditions.

# Transmitter 8 x overpressure safety, 0.3 % accuracy



## Features

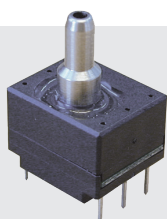
- For low pressure measurement
- Overpressure max. 80 bar

## Technical Data

|                           |                  |
|---------------------------|------------------|
| Temperature range         | -40°C ... +125°C |
| Pressure range (relative) | 0 ... 10 bar     |
| Burst pressure min.       | 300 bar          |
| Accuracy @ +25°C          | ± 0.3 % FS typ.  |

In water pump applications extreme pressure peaks often occur and can damage pressure transmitters. To avoid failures due to these pressure peaks, Trafag developed a transmitter with 8x overpressure safety and an accuracy of 0.3 % through extended calibration, selection of sensor elements and using high-performance electronics.

# On-board pressure transmitter OPT



## Features

- Miniatur pressure transmitter
- Completely welded sensor system
- Stainless steel

## Technical Data

|                             |                  |
|-----------------------------|------------------|
| Sensor material             | 1.4542/630       |
| Ambient temperature         | -25°C ... +100°C |
| Sensor temperature max.     | -25°C ... +100°C |
| Output signal (ratiometric) | 0.5 ... 4.5 VDC  |

The on-board transmitter for applications requiring a very compact solution directly applied to the pcb offers a wide media temperature and the excellent long-term stability of the thin-film-on-steel sensor technology. The high overpressure safety and the fully welded design allow the use in critical and very demanding applications.

# Technical data pressure transmitters

|                                           | NAT<br>8252                                                                                                                                                                                  | NAH<br>8253                                                                                  | NAH<br>8254                                                                                                                                                                                  | NAE<br>8256                                                                    | NSL<br>8257                                                                  |  |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|--|
| <b>Main characteristics</b>               |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>Measuring principle</b>                | Thin film on steel                                                                                                                                                                           | Thin film on steel                                                                           | Thin film on steel                                                                                                                                                                           | Thin film on steel                                                             | Thin film on steel                                                           |  |
| <b>Measuring range</b>                    | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                     | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                                                                                                                                     | 0 ... 10 to 0 ... 600 bar<br>0 ... 150 to 0 ... 7500 psi                       | 0 ... 0.2 to 0 ... 2.5 bar<br>0 ... 3 to 0 ... 30 psi                        |  |
| <b>Accuracy</b>                           |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>TEB typ.<br/>@ -25 ... +85°C</b>       | ± 1.75 % FS typ.                                                                                                                                                                             | ± 1.0 % FS typ.<br>± 0.5 % FS typ.                                                           | ± 1.0 % FS typ.                                                                                                                                                                              | 0.5 %: ± 1.75 % FS typ.<br>0.3 %: ± 1.0 % FS typ.                              | 0.5 ... 2 % FS typ.                                                          |  |
| <b>Accuracy @ 25°C typ.</b>               | ± 0.5 % FS typ.                                                                                                                                                                              | ± 0.3 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ.                                       | ± 0.3 % FS typ.                                                                                                                                                                              | 0.5 %: ± 0.5 % FS typ.<br>0.3 %: ± 0.3 % FS typ.                               | 0.15 ... 0.8 % FS typ.                                                       |  |
| <b>NLH @ 25°C (BSL) typ.</b>              | ± 0.2 % FS typ.                                                                                                                                                                              | ± 0.2 % FS typ.<br>± 0.1 % FS typ.                                                           | ± 0.2 % FS typ.                                                                                                                                                                              | 0.5 %: ± 0.2 % FS typ.<br>0.3 %: ± 0.2 % FS typ.                               | 0.2 % FS typ.                                                                |  |
| <b>TC zero point and span typ.</b>        | ± 0.03 % FS/K typ.                                                                                                                                                                           | ± 0.01 % FS/K typ.<br>± 0.002 % FS/K typ.                                                    | ± 0.01 % FS/K typ.                                                                                                                                                                           | 0.5 %: ± 0.03 % FS/K typ.<br>0.3 %: ± 0.01 % FS/K typ.                         | 0.002 ... 0.02 % FS typ./K                                                   |  |
| <b>Electrical data</b>                    |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>Output signal</b>                      | 4 ... 20 mA, 0.5 ... 4.5 VDC,<br>0 ... 5 VDC, 1 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiometric | 4 ... 20 mA, 0.5 ... 4.5 VDC,<br>0 ... 5 VDC, 1 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>0.1 ... 10.1 VDC,<br>0.5 ... 4.5 VDC ratiometric,<br>Switching output:<br>1 or 2 PNP transistors | 4 ... 20 mA                                                                    | 4 ... 20 mA,<br>0 ... 5 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiometric |  |
| <b>Rise time</b>                          | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                                                                                                                                  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                                  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                                                                                                                                  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                    | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                  |  |
| <b>Switch-on-delay</b>                    | 100 ms                                                                                                                                                                                       | 1 s                                                                                          | 100 ms                                                                                                                                                                                       | 100 ms                                                                         | 1 s                                                                          |  |
| <b>Environmental conditions</b>           |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>Ambient temperature</b>                | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                             | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                               | -40°C ... +125°C                                                             |  |
| <b>Media temperature</b>                  | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                                             | -40°C ... +125°C                                                                                                                                                                             | -40°C ... +125°C                                                               | -40°C ... +125°C                                                             |  |
| <b>Protection</b>                         | IP65, IP67                                                                                                                                                                                   | Min. IP65                                                                                    | IP65, IP67                                                                                                                                                                                   | IP65, IP67                                                                     | Min. IP65                                                                    |  |
| <b>Vibration</b>                          | 15 g RMS (20...2000 Hz)<br>25 g sin (80...2000 Hz),<br>1 oct./min, (1x @ 25°C)                                                                                                               | 40 g (20...2000 Hz)                                                                          | 15 g RMS (20...2000 Hz)<br>25 g sin (80...2000 Hz),<br>1 oct./min, (1x @ 25°C)                                                                                                               | 15 g RMS (20...2000 Hz)<br>25 g sin (80...2000 Hz),<br>1 oct./min, (1x @ 25°C) | 25 g (20...2000 Hz)                                                          |  |
| <b>Shock</b>                              | 50 g / 11 ms<br>100 g / 6 ms                                                                                                                                                                 | 100 g / 11 ms                                                                                | 50 g / 11 ms<br>100 g / 6 ms                                                                                                                                                                 | 50 g / 11 ms                                                                   | 100 g / 11 ms                                                                |  |
| <b>EMC Protection</b>                     |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>Emission</b>                           | EN/IEC 61000-6-3                                                                                                                                                                             | EN/IEC 61000-6-4                                                                             | EN/IEC 61000-6-3                                                                                                                                                                             | EN/IEC 61000-6-3                                                               | EN/IEC 61000-6-4                                                             |  |
| <b>Immunity</b>                           | EN/IEC 61000-6-2                                                                                                                                                                             | EN/IEC 61000-6-2                                                                             | EN/IEC 61000-6-2                                                                                                                                                                             | EN/IEC 61000-6-2                                                               | EN/IEC 61000-6-2                                                             |  |
| <b>Mechanical data</b>                    |                                                                                                                                                                                              |                                                                                              |                                                                                                                                                                                              |                                                                                |                                                                              |  |
| <b>Sensor (wetted parts)</b>              | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                                             | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                               | 1.4542 (AISI630)                                                             |  |
| <b>Pressure connection (wetted parts)</b> | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)<br>1.4301 (AISI304)                                                         | 1.4542 (AISI630)                                                                                                                                                                             | 1.4542 (AISI630)                                                               | 1.4542 (AISI630)                                                             |  |
| <b>Housing</b>                            | 1.4301 (AISI304)                                                                                                                                                                             | 1.4301 (AISI304)                                                                             | 1.4301 (AISI304)                                                                                                                                                                             | 1.4301 (AISI304)                                                               | 1.4301 (AISI304)                                                             |  |
| <b>Sealing</b>                            | FPM/EPDM/NBR                                                                                                                                                                                 | FKM 70 Sh                                                                                    | FPM/EPDM/NBR                                                                                                                                                                                 | FPM/NBR/EPDM                                                                   | FKM 70 Sh                                                                    |  |
| <b>Weight</b>                             | ~ 50 g                                                                                                                                                                                       | ~ 50 g                                                                                       | ~ 50 g                                                                                                                                                                                       | ~ 50 g                                                                         | ~ 50 g                                                                       |  |

|  | ECT<br>8472                                                                              | ECT 0.3 % (0.5 %, 1.0 %)<br>8473                                                         | ECTR<br>8471                                                                             | ECTN<br>8477                                                       | EPI<br>8287                                                                    | EPN/EPNCR<br>8298                                                 |
|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------|
|  | Thick film on ceramic                                                                    | Thick film on ceramic                                                                    | Thick film on ceramic                                                                    | Thick film on ceramic                                              | Thin film on steel                                                             | Thin film on steel                                                |
|  | 0 ... 1 to 0 ... 60 bar<br>0 ... 15 to 0 ... 1000 psi                                    | 0 ... 0.1 to 0 ... 40 bar<br>0 ... 1.5 to 0 ... 500 psi                                  | -1 ... 9 to 0 ... 40 bar<br>0 ... 15 to 0 ... 500 psi                                    | 0 ... 1 to 0 ... 400 bar<br>0 ... 15 to 0 ... 5000 psi             | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi                       | 0 ... 2.5 to 0 ... 2500 bar                                       |
|  | ± 3.0 % FS typ.                                                                          | ± 1.0 % FS typ.<br>± 2.0 % FS typ.                                                       | ± 3.0 % FS typ.                                                                          | ± 3.0 % FS typ.                                                    | ± 1.75 % FS typ.                                                               | ± 2.0 % FS typ.<br>± 0.5 % FS typ.                                |
|  | ± 0.5 % FS typ.                                                                          | ± 0.3 % FS typ.<br>(± 0.5 % FS typ.,<br>± 1 % FS typ.)                                   | ± 0.5 % FS typ.                                                                          | ± 0.5 % FS typ.                                                    | ± 0.5 % FS typ.                                                                | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                |
|  | ± 0.2 % FS typ.                                                                          | ± 0.2 FS typ.<br>(± 0.3 FS typ.)                                                         | ± 0.2 % FS typ.                                                                          | ± 0.2 % FS typ.                                                    | ± 0.2 % FS typ.                                                                | ± 0.2 % FS typ.<br>± 0.1 % FS typ.                                |
|  | ± 0.03 % FS/K typ.                                                                       | ± 0.02 % FS/K typ.                                                                       | ± 0.03 % FS/K typ.                                                                       | ± 0.03 % FS/K typ.                                                 | ± 0.03 % FS/K typ.                                                             | ± 0.03 % FS/K typ.<br>± 0.005 % FS/K typ.                         |
|  | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom. | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom. | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom. | 4 ... 20 mA                                                        | 4 ... 20 mA,<br>0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC                   | 4 ... 20 mA<br>0.5 ... 4.5 VDC ratiometric                        |
|  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                              | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                              | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                              | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                        | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                    | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                       |
|  | Max. 1.5 s                                                                               | Max. 1.5 s                                                                               | Max. 1.5 s                                                                               | 100 ms                                                             | 100 ms                                                                         |                                                                   |
|  | -25°C ... +85°C                                                                          | -25°C ... +85°C                                                                          | -25°C ... +85°C                                                                          | -25°C ... +85°C                                                    | -40°C ... +125°C                                                               | -40°C ... +125°C                                                  |
|  | -25°C ... +125°C                                                                         | -25°C ... +125°C                                                                         | -25°C ... +125°C                                                                         | -25°C ... +85°C                                                    | -40°C ... +125°C                                                               | -40°C ... +125°C                                                  |
|  | Min. IP65                                                                                | Min. IP65                                                                                | Min. IP65                                                                                | min. IP65                                                          | IP65                                                                           | IP65, IP67, IP69K                                                 |
|  | 4 g (10...2000 Hz)                                                                       | 4 g (10...2000 Hz)                                                                       | 4 g (10...2000 Hz)                                                                       | 20 g (10...2000 Hz)                                                | 15 g RMS (20...2000 Hz)<br>25 g sin (80...2000 Hz),<br>1 oct./min, (1x @ 25°C) | 10 g (50...2000 Hz)<br>15 g (50...2000 Hz)<br>15 g RMS / 20 g RMS |
|  | 50 g / 8 ms                                                                              | 50 g / 8 ms                                                                              | 50 g / 8 ms                                                                              | 50 g / 3 ms                                                        | 500 g / 1 ms acc. to<br>EN 60068-2-27                                          | 50 g / 3 ms                                                       |
|  | EN/IEC 61000-6-3                                                                         | EN/IEC 61000-6-3                                                                         | EN/IEC 61000-6-3                                                                         | EN/IEC 61000-6-3                                                   | EN/IEC 61000-6-3                                                               | EN/IEC 61000-6-4                                                  |
|  | EN/IEC 61000-6-2                                                                         | EN/IEC 61000-6-2                                                                         | EN/IEC 61000-6-2                                                                         | EN/IEC 61000-6-2                                                   | EN/IEC 61000-6-2                                                               | EN/IEC 61000-6-2                                                  |
|  | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                           | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                           | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                           | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                     | 1.4542 (AISI630)                                                               | 1.4542 (AISI630)                                                  |
|  | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5   | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5   | 1.4305 (AISI303)                                                                         | 1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5 | 1.4542 (AISI630)                                                               | 1.4542 (AISI630)<br>1.4301 (AISI304)                              |
|  | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5   | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5   | 1.4305 (AISI303)                                                                         | 1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5 | 1.4542 (AISI630)                                                               | 1.4301 (AISI304)                                                  |
|  | FKM 70 Sh, CR, EPDM                                                                      | FKM 70 Sh, CR, EPDM                                                                      | FKM 70 Sh, CR, EPDM                                                                      | FKM 70 Sh, EPDM                                                    | FPM/EPDM/NBR                                                                   | FKM 70 Sh                                                         |
|  | ~ 110 g                                                                                  | ~ 110 g                                                                                  | ~ 110 g                                                                                  | ~ 110 g                                                            | ~ 80 ... 110 g                                                                 | ~ 80...110 g                                                      |



# Technical data electronic pressure switches

|                                               | EPN-S<br>8320                                            | DPC<br>8380                                                                            | DPS<br>8381                                                                            | DCS<br>8864                                                                               |  |  |
|-----------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--|--|
| <b>Main characteristics</b>                   |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>Measuring principle</b>                    | Thin film on steel                                       | Thick film on ceramic                                                                  | Thin film on steel                                                                     | Thin film on steel                                                                        |  |  |
| <b>Measuring range</b>                        | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi<br>adjustable 50 ... 100 % FS   | 0 ... 2.5 to 0 ... 600 bar<br>0 ... 30 to 0 ... 7500 psi<br>adjustable 50 ... 100 % FS | 0 ... 1 to 0 ... 600 bar                                                                  |  |  |
| <b>Accuracy</b>                               |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>TEB typ.<br/>@ -25 ... +85°C</b>           |                                                          | ± 2.0 % FS typ.                                                                        | ± 1.75 % FS typ.                                                                       | ± 1.0 % FS typ.                                                                           |  |  |
| <b>Accuracy @ 25°C typ.<br/>(Switchpoint)</b> | ± 0.5 % FS typ.                                          | ± 0.5 % FS typ.                                                                        | ± 0.5 % FS typ.                                                                        | ± 0.5 % FS typ.                                                                           |  |  |
| <b>NLH @ 25°C (BSL) typ.</b>                  |                                                          | ± 0.2 % FS typ.                                                                        | ± 0.2 % FS typ.                                                                        | ± 0.25 % FS typ.                                                                          |  |  |
| <b>TC zero point and span typ.</b>            |                                                          | ± 0.03 % FS/K typ.                                                                     | ± 0.03 % FS/K typ.                                                                     | ± 0.01 % FS/K typ.                                                                        |  |  |
| <b>Electrical data</b>                        |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>Output signal</b>                          | Transistor (open source)                                 | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>switchable mA or V          | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC, 0 ... 10 VDC,<br>switchable mA or V          | 4 ... 20 mA, 0 ... 10 VDC<br>2 Relays, electrically isolated<br>30W (max. 1A), 36 VAC/ DC |  |  |
| <b>Rise time</b>                              |                                                          |                                                                                        |                                                                                        | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                               |  |  |
| <b>Switch-on-delay</b>                        |                                                          | Typ. 200 ms                                                                            | Typ. 200 ms                                                                            |                                                                                           |  |  |
| <b>Environmental conditions</b>               |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>Ambient temperature</b>                    | Standard: -25°C ... +85°C<br>Option: -40°C ... +125°C    | -25°C ... +85°C                                                                        | -25°C ... +85°C                                                                        | -25°C ... +80°C<br>(LCD display -10°C ... +70°C)                                          |  |  |
| <b>Media temperature</b>                      | -40°C ... +125°C                                         | -25°C ... +85°C                                                                        | -25°C ... +85°C                                                                        | -25°C ... +125°C                                                                          |  |  |
| <b>Protection</b>                             | IP65 (IP67), IP69K                                       | IP65                                                                                   | IP65                                                                                   | IP65                                                                                      |  |  |
| <b>Vibration</b>                              | 15 g (50...2000 Hz)                                      | 10 g (10 ... 2000 Hz)                                                                  | 10 g (10 ... 2000 Hz)                                                                  | 10 g (25...2000 Hz)                                                                       |  |  |
| <b>Shock</b>                                  | 50 g / 11 ms                                             | 50 g / 3 ms                                                                            | 50 g / 3 ms                                                                            | 50 g / 1 ms                                                                               |  |  |
| <b>EMC Protection</b>                         |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>Emission</b>                               | EN/IEC 61000-6-3                                         | EN/IEC 61000-6-3                                                                       | EN/IEC 61000-6-3                                                                       | EN/IEC 61000-6-3                                                                          |  |  |
| <b>Immunity</b>                               | EN/IEC 61000-6-2                                         | EN/IEC 61000-6-2                                                                       | EN/IEC 61000-6-2                                                                       | EN/IEC 61000-6-2                                                                          |  |  |
| <b>Mechanical data</b>                        |                                                          |                                                                                        |                                                                                        |                                                                                           |  |  |
| <b>Sensor<br/>(wetted parts)</b>              | 1.4542 (AISI630)                                         | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %)                                         | 1.4542 (AISI630)                                                                       | 1.4542 (AISI630)                                                                          |  |  |
| <b>Pressure connection<br/>(wetted parts)</b> | 1.4542 (AISI630)<br>1.4301 (AISI304)                     | 1.4305 (AISI303)<br>1.4404/1.4435 (AISI316L)<br>1.4462 (AISI318LN)<br>Titanium Grade 5 | 1.4542 (AISI630)                                                                       | 1.4542 (AISI630)<br>1.4404 (AISI316L)                                                     |  |  |
| <b>Housing</b>                                | 1.4301 (AISI304)                                         | Steel, die cast metal<br>galvanised<br>display housing plastic                         | Steel, die cast metal<br>galvanised<br>display housing plastic                         | 1.4301 (AISI304)                                                                          |  |  |
| <b>Sealing</b>                                | FKM 70 Sh                                                | FPM, EPDM                                                                              | FPM, NBR, EPDM                                                                         | NBR 70 Sh                                                                                 |  |  |
| <b>Weight</b>                                 | ~ 85 ... 110 g                                           | ~ 189 g                                                                                | ~ 189 g                                                                                | ~ 200 g                                                                                   |  |  |

# Technical data pressure transmitters

|  | <b>EPR<br/>8293</b>                                    | <b>NPN<br/>8264</b>                                    | <b>FPT<br/>8235</b>                                                                   | <b>CMP<br/>8270</b>                                    | <b>N<br/>8202</b>                       | <b>ND<br/>8204</b>                      |
|--|--------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------|-----------------------------------------|
|  | Thin film on steel                                     | Thin film on steel                                     | Thin film on steel                                                                    | Thin film on steel                                     | Thin film on steel                      | Thin film on steel                      |
|  | 0 ... 2.5 to 0 ... 600 bar                             | 0 ... 2.5 to 0 ... 250 bar                             | 0 ... 1 to 0 ... 100 bar<br>0 ... 15 to 0 ... 1500 psi                                | 0 ... 1 to 0 ... 600 bar                               | 0 ... 1.0 to 0 ... 600 bar              | 0 ... 1 to 0 ... 16 bar                 |
|  | ± 2.0 % FS typ.<br>± 0.5 % FS typ.                     | ± 2.0 % FS typ.<br>± 0.5 % FS typ.                     | ± 0.5 % FS typ.                                                                       | ± 2.0 % FS typ.<br>± 0.2 % FS typ.<br>± 0.1 % FS typ.  | ± 2 % FS typ.                           | ± 3.5 % FS typ.                         |
|  | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                     | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                     | ± 0.4 % FS                                                                            | ± 0.5 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ. | ± 0.5 % FS typ.                         | ± 0.8 % FS typ.                         |
|  | ± 0.2 % FS typ.<br>± 0.1 % FS typ.                     | ± 0.3 % FS typ.<br>± 0.1 % FS typ.                     | ± 0.1 % FS typ.                                                                       | ± 0.3 % FS typ.<br>± 0.15 % FS typ.<br>± 0.1 % FS typ. | ± 0.3 % FS typ.                         | ± 0.5 % FS typ.                         |
|  | ± 0.03 % FS/K typ.<br>± 0.005 % FS/K typ.              | ± 0.03 % FS/K typ.<br>± 0.005 % FS/K typ.              | ± 0.005 % FS/K typ.                                                                   | ± 0.03 % FS/K typ.<br>± 0.002 % FS/K typ.              | ± 0.02 % FS/K typ.                      | ± 0.04 % FS/K typ.                      |
|  | 4 ... 20 mA                                            | 4 ... 20 mA                                            | 4 ... 20 mA, 0 ... 5 VDC,<br>1 ... 6 VDC,<br>0 ... 10 VDC,<br>0.5 ... 4.5 VDC ratiom. | Bus protocol CANopen<br>DS404                          | 4 ... 20 mA                             | 4 ... 20 mA (P1-P2)                     |
|  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure            | Typ. 1 ms / 10 ... 90 %<br>nominal pressure            | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                           | Typ. 1 ms / 10 ... 90 %<br>nominal pressure            | Typ. 1 ms/10...90 %<br>nominal pressure | Typ. 1 ms/10...90 %<br>nominal pressure |
|  |                                                        |                                                        | max. 1.5 s                                                                            |                                                        |                                         |                                         |
|  | -40°C ... +125°C                                       | -40°C ... +100°C                                       | -40°C ... +85°C                                                                       | -40°C ... +125°C                                       | -25°C ... +85°C                         | -25°C ... +85°C                         |
|  | -40°C ... +125°C                                       | -40°C ... +100°C                                       | -40°C ... +125°C                                                                      | -50°C ... +135°C                                       | -25°C ... +125°C                        | -25°C ... +125°C                        |
|  | IP65, IP67                                             | IP65, IP69K                                            | Min. IP65                                                                             | Min. IP67                                              | Min. IP65                               | Min. IP65                               |
|  | 10 g (20...2000 Hz)/<br>5 g RMS<br>15 g (20...2000 Hz) | 10 g (50...2000 Hz)<br>15 g (50...2000 Hz)<br>15 g RMS | 15 g (50...2000 Hz)                                                                   | 40 g (20...2000 Hz)                                    | 6 g (25...2000 Hz)                      | 6 g (25...2000 Hz)                      |
|  | 50 g / 11 ms                                           | 50 g / 3 ms                                            | 50 g / 3 ms                                                                           | 100 g / 11 ms                                          | 50 g / 11 ms                            | 50 g / 1 ms                             |
|  | EN/IEC 61000-6-4                                       | EN/IEC 61000-6-4                                       | EN/IEC 61000-6-3                                                                      | EN/IEC 61000-6-4                                       | EN/IEC 61000-6-3                        | EN/IEC 61000-6-3                        |
|  | EN/IEC 61000-6-2                                       | EN/IEC 61000-6-2                                       | EN/IEC 61000-6-2                                                                      | EN/IEC 61000-6-2                                       | EN/IEC 61000-6-2                        | EN/IEC 61000-6-2                        |
|  | 1.4542 (AISI630)                                       | 1.4542 (AISI630)                                       | 1.4542 (AISI630)                                                                      | 1.4542 (AISI630)                                       | 1.4542 (AISI630)                        | 1.4542 (AISI630)                        |
|  | 1.4542 (AISI630)<br>1.4301 (AISI304)                   | 1.4542 (AISI630)                                       | 1.4542 (AISI630)                                                                      | 1.4542 (AISI630)<br>1.4301 (AISI304)                   | 1.4542 (AISI630)                        | 1.4542 (AISI630)                        |
|  | 1.4301 (AISI304)<br>1.4542 (AISI630)                   | 1.4301 (AISI304)                                       | 1.4301 (AISI304)                                                                      | 1.4301 (AISI304)                                       | AlSi10Mg/ Epoxy coated                  | AlSi10Mg/ Epoxy coated                  |
|  | FKM 70 Sh                                              | NBR                                                    | FPM (FKM) NBR                                                                         | FKM 70 Sh                                              | NBR 70 Sh                               | NBR 70 Sh                               |
|  | ~ 80...110 g                                           | ~ 190...220 g                                          | ~ 80 ... 110 g (without cable)                                                        | ~ 60 g                                                 | ~ 520 g                                 | ~ 720 g                                 |

# Technical data Ex pressure transmitters

|                                           | EXNT<br>8292                                                               | EXNA<br>8854                                | EXL<br>8832                                    | EXNAL<br>8858                               |  |
|-------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|---------------------------------------------|--|
| <b>Main characteristics</b>               |                                                                            |                                             |                                                |                                             |  |
| <b>Measuring principle</b>                | Thin film on steel                                                         | Piezoresistive                              | Thick film on ceramic                          | Piezoresistive                              |  |
| <b>Measuring range</b>                    | 0 ... 0.4 to 0 ... 2000 bar                                                | 0 ... 0.1 to 0 ... 1000 bar                 | 0 ... 0.2 to 0 ... 10 bar                      | 0 ... 0.1 to 0 ... 25 bar                   |  |
| <b>Accuracy</b>                           |                                                                            |                                             |                                                |                                             |  |
| <b>TEB typ.<br/>@ -25 ... +85°C</b>       | ± 2.0 % FS typ.<br>± 0.5 % FS typ.                                         |                                             | ± 0.75 % FS typ.<br>± 1.5 % FS typ.            |                                             |  |
| <b>Accuracy @ 25°C typ.</b>               | ± 0.5 % FS typ.<br>± 0.3 % FS typ.                                         |                                             | ± 0.3 % FS typ.<br>± 0.5 % FS typ.             |                                             |  |
| <b>NLH @ 25°C (BSL) typ.</b>              | ± 0.3 % FS typ.<br>± 0.1 % FS typ.                                         |                                             | ± 0.2 % FS typ.<br>± 0.3 % FS typ.             |                                             |  |
| <b>TC zero point and span typ.</b>        | ± 0.03 % FS/K typ.<br>± 0.005 % FS/K typ.                                  |                                             | ± 0.02 % FS /K typ.<br>± 0.02 % FS /K typ.     |                                             |  |
| <b>Electrical data</b>                    |                                                                            |                                             |                                                |                                             |  |
| <b>Output signal</b>                      | 4 ... 20 mA                                                                | 4 ... 20 mA                                 | 4 ... 20 mA                                    | 4 ... 20 mA                                 |  |
| <b>Rise time</b>                          | Typ. 1 ms / 10 ... 90 %<br>nominal pressure                                | Typ. 1 ms / 10 ... 90 %<br>nominal pressure | Typ. 1 ms / 10 ... 90 %<br>nominal pressure    | Typ. 1 ms / 10 ... 90 %<br>nominal pressure |  |
| <b>Switch-on-delay</b>                    | Max. 1.5 s                                                                 |                                             | max. 1.5 s                                     |                                             |  |
| <b>Environmental conditions</b>           |                                                                            |                                             |                                                |                                             |  |
| <b>Ambient temperature</b>                | Max. -40°C ... +120°C                                                      | -40°C ... +125°C                            | -20°C ... +70°C                                | -5°C ... +50°C                              |  |
| <b>Media temperature</b>                  | Max. -40°C ... +120°C                                                      | -40°C ... +150°C                            | -20°C ... +70°C                                | -5°C ... +50°C                              |  |
| <b>Protection</b>                         | Min. IP65, IP67                                                            | Min. IP65                                   | IP68 (25 bar; 250m)                            | Min. IP68                                   |  |
| <b>Vibration</b>                          | 10 g (50...2000 Hz)                                                        | EN 60068-2-6: 10 g (4...2000 Hz)            | 10 g (50...2000 Hz)                            | 6 g (25...2000 Hz)                          |  |
| <b>Shock</b>                              | 50 g / 3 ms                                                                | EN 60068-2-27: 100 g / 6 ms                 | 50 g / 3 ms                                    | 50 g / 1 ms                                 |  |
| <b>EMC Protection</b>                     |                                                                            |                                             |                                                |                                             |  |
| <b>Emission</b>                           | IEC 61000-6-4                                                              | EN 61000-4-3: 10 V/m                        | IEC 61000-6-4                                  | EN/IEC 61000-6-3                            |  |
| <b>Immunity</b>                           | IEC 61000-6-2                                                              | IEC 61000-4-2: 8 kV K./15 kV L.             | IEC 61000-6-2                                  | EN/IEC 61000-6-2                            |  |
| <b>Mechanical data</b>                    |                                                                            |                                             |                                                |                                             |  |
| <b>Sensor (wetted parts)</b>              | 1.4542 (AISI630),<br>optional hydrogen-compatible steel                    | 1.4435 (AISI316L) or titanium               | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %) | 1.4435 (AISI316L)                           |  |
| <b>Pressure connection (wetted parts)</b> | 1.4542 (AISI630)<br>1.4301 (AISI304)<br>optional hydrogen-compatible steel | 1.4435 (AISI316L) or titanium               | 1.4404/1.4435 (AISI316L)                       | 1.4435 (AISI316L) or titanium               |  |
| <b>Housing</b>                            | 1.4301 (AISI304)                                                           | 1.4435 (AISI316L) or titanium               | 1.4404/1.4435 (AISI316L)                       | 1.4435 (AISI316L) or titanium               |  |
| <b>Sealing</b>                            | FKM 70 Sh                                                                  | FKM 70 Sh; EPDM / Kalrez                    | FKM 70 Sh                                      | FKM                                         |  |
| <b>Weight</b>                             | ~ 165 g                                                                    | ~ 220 g                                     | ~ 200 g                                        | ~ 200 g                                     |  |

# Technical data submersible pressure transmitters

|  | ECL<br>8438                                    | ECL<br>8439                                             | NAL<br>8838                                 |  |
|--|------------------------------------------------|---------------------------------------------------------|---------------------------------------------|--|
|  | Thick film on ceramic                          | Thick film on ceramic                                   | Piezoresistive                              |  |
|  | 0 ... 0.1 to 0 ... 10 bar                      | 0 ... 0.1 to 0 ... 2.0 bar<br>0 ... 1.5 to 0 ... 30 psi | 0 ... 0.1 to 0 ... 25 bar                   |  |
|  | ± 1.0 % FS typ.<br>± 2.0 % FS typ.             | ± 1.0 % FS typ.<br>± 2.0 % FS typ.                      |                                             |  |
|  | ± 0.3 % FS typ.<br>± 0.5 % FS typ.             | ± 0.3 % FS typ.<br>± 0.5 % FS typ.                      |                                             |  |
|  | ± 0.2 % FS typ.<br>± 0.3 % FS typ.             | ± 0.2 % FS typ.<br>± 0.3 % FS typ.                      |                                             |  |
|  | ± 0.02 % FS/K typ.                             | ± 0.02 % FS/K typ.                                      |                                             |  |
|  | 4 ... 20 mA                                    | 4 ... 20 mA                                             | 4 ... 20 mA<br>0 ... 10 VDC                 |  |
|  | Typ. 1 ms / 10 ... 90 %<br>nominal pressure    | Typ. 1 ms / 10 ... 90 %<br>nominal pressure             | Typ. 1 ms / 10 ... 90 %<br>nominal pressure |  |
|  | Max. 1.5 s                                     | 100 ms                                                  |                                             |  |
|  | -25°C ... +80°C (+70°C)                        | -10°C ... +70°C                                         | -5°C ... +50°C                              |  |
|  | -25°C ... +80°C (+70°C)                        | -10°C ... +70°C                                         | -5°C ... +50°C                              |  |
|  | IP68 (25 bar; 250m)                            | IP68 (2.0 bar; 20m)                                     | Min. IP68                                   |  |
|  | 6 g (25...2000 Hz)                             | 6 g (25...2000 Hz)                                      | 6 g (25...2000 Hz)                          |  |
|  | 50 g / 8 ms                                    | 50 g / 8 ms                                             | 50 g / 11 ms                                |  |
|  | EN/IEC 61000-6-3                               | EN/IEC 61000-6-3 / GL 2012, IV, Part 7                  | EN/IEC 61000-6-3                            |  |
|  | EN/IEC 61000-6-2                               | EN/IEC 61000-6-2 / GL 2012, IV, Part 7                  | EN/IEC 61000-6-2                            |  |
|  | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96 %) | Ceramic, Al <sub>2</sub> O <sub>3</sub> (96%)           | 1.4435 (AISI316L)                           |  |
|  | 1.4404/1.4435 (AISI316L)                       | 1.4404 (AISI316L) or<br>1.4462 (AISI318LN)              | 1.4435 (AISI316L) or titanium               |  |
|  | 1.4404/1.4435 (AISI316L)                       | 1.4404 (AISI316L) or<br>1.4462 (AISI318LN)              | 1.4435 (AISI316L) or titanium               |  |
|  | FKM 70 Sh<br>CR, EPDM                          | FKM / FPM / Viton / EPDM / TPE                          | FKM                                         |  |
|  | ~ 200 g                                        | ~ 200 g (without cable) /<br>OEM ~ 150 g                | ~ 220 g                                     |  |



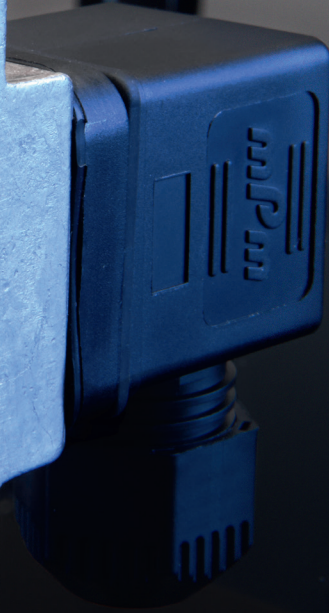
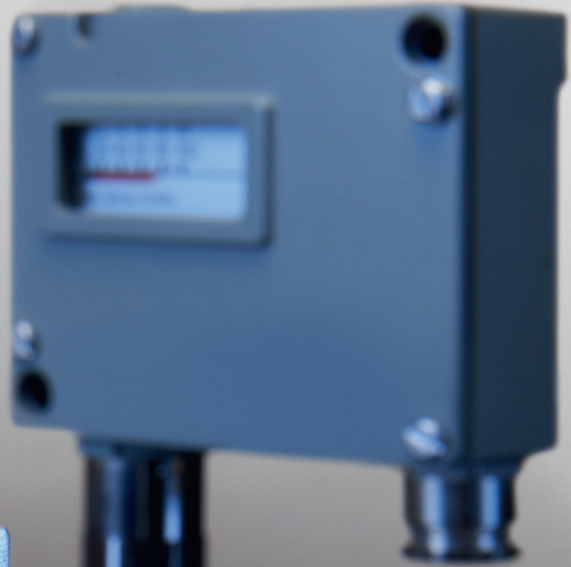


**trafag**  
sensors controls



CE

S/N : 999999-001  
Type : 9M4.4279  
Range : 1...16 bar (kg/cm<sup>2</sup>) -25T85  
0...1.6 MPa  
p-max : 200 bar/20 MPa  
250V AC 6(1)A 24V DC 3(2)A





# Pressure switches

Trafag's electromechanical pressure switches provide high vibration resistance and switch point precision in combination with an extremely robust and durable design. This results in switches that can be operated for decades without requiring maintenance, even under harsh conditions. Various designs with bellows, membrane and piston sensors cover a wide variety of pressure ranges, media and load profiles for many different applications.

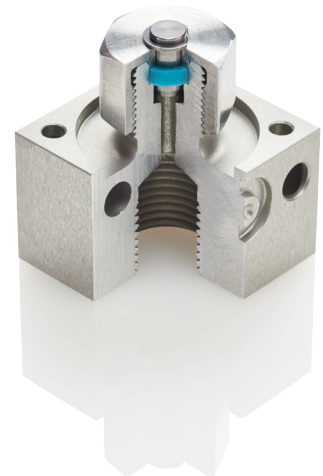
## Bellows sensors

- High switching point precision and repeatability
- Stainless steel, bronze and brass designs
- Optionally welded/soldered design for absolute impermeability
- Measure liquid, vaporous and gaseous media



## Piston sensors

- Suitable for high pressure ranges
- Not sensitive to pressure surges
- Suitable for applications with many load cycles
- Ideal for hydraulic systems



## Membrane sensors

- Resistant to high overpressures and not sensitive to pressure surges
- Suitable for applications with many load cycles
- Measure liquid, vaporous and gaseous media





# Overview Pressure switches

|                               | PST4B<br>9B4                                                                        | PST4K<br>9K4                                                                      | PST4M<br>9M4                                                                      | PSTD<br>9D0                                                                       | P/PS<br>900/904/912                                                                 | PV/PVF<br>903/907/915/940/941/942                                                   |  |
|-------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                               | page 82                                                                             | page 84                                                                           | page 86                                                                           | page 88                                                                           | page 89                                                                             | page 90                                                                             |  |
|                               |    |  |  |  |  |  |  |
| <b>Measuring principle</b>    | Bellow                                                                              | Piston                                                                            | Membrane                                                                          | Bellow                                                                            | Bellow                                                                              | Bellow                                                                              |  |
| <b>Measuring range</b>        | -0.6 ... 3.4 to 4 ... 40 bar<br>-8 ... 45 to 60 ... 500 psi                         | 1 ... 10 to 40 ... 400 bar<br>14 ... 150 to<br>580 ... 5800 psi                   | 1 ... 10 to 10 ... 100 bar<br>14 ... 150 to<br>150 ... 1500 psi                   | -1 ... 6 and -1 ... 8 bar                                                         | -0.9 ... 1.5 to<br>10 ... 100 bar<br>5 ... 50 to<br>125 ... 1500 psi                | -0.9 ... 1.5 to 4 ... 40 bar<br>5 ... 50 to 50 ... 500 psi                          |  |
| <b>Output signal</b>          | 1 Floating change-over contact (SPDT)                                               | 1 Floating change-over contact (SPDT)                                             | 1 Floating change-over contact (SPDT)                                             | 1 Floating change-over contact (SPDT)                                             | 1 Floating change-over contact (SPDT)                                               | 1 Floating change-over contact (SPDT)                                               |  |
| <b>Pressure connections</b>   | G1/8" f, G1/4" f, M10x1.0 f                                                         | G1/8" f, G1/4" f, M10x1.0 f                                                       | G1/8" f, G1/4" f, M10x1.0 f                                                       | G1/4" f                                                                           | G1/4" f, G1/2" m, 1/4" NPT f                                                        | G1/4" f, G1/2" m, 1/4" NPT f                                                        |  |
| <b>Electrical connections</b> | EN175301-803-A (DIN43650-A)                                                         | EN175301-803-A (DIN43650-A)                                                       | EN175301-803-A (DIN43650-A)                                                       | EN175301-803-A (DIN43650-A)                                                       | Screw terminal                                                                      | Screw terminal                                                                      |  |
| <b>Switching differential</b> | Not adjustable                                                                      | Not adjustable                                                                    | Not adjustable                                                                    | Not adjustable                                                                    | Not adjustable                                                                      | Adjustable                                                                          |  |
| <b>Media temperature</b>      | -25°C ... +125°C<br>-40°C ... +125°C                                                | -25°C ... +125°C                                                                  | 0°C ... +80°C                                                                     | -25°C ... +120°C                                                                  | -40°C ... +150°C                                                                    | -40°C ... +150°C                                                                    |  |
| <b>Ambient temperature</b>    | -25°C ... +125°C<br>-40°C ... +125°C                                                | -25°C ... +85°C                                                                   | 0°C ... +80°C                                                                     | -25°C ... +85°C                                                                   | -25°C ... +70°C                                                                     | -25°C ... +70°C                                                                     |  |
| <b>Protection</b>             | IP65                                                                                | IP65                                                                              | IP65                                                                              | IP65                                                                              | IP65                                                                                | IP65                                                                                |  |
| <b>Housing</b>                | Aluminium EN AW-6026 AlMgSiPb0.4 anodized                                           | Aluminium EN AW-6026 AlMgSiPb0.4 anodized                                         | Aluminium EN AW-6082 AlMgSi1 anodized                                             | Brass CuZn39Pb3                                                                   | AlSi10Mg/ Epoxy coated                                                              | AlSi10Mg/ Epoxy coated                                                              |  |
| <b>Sealing</b>                | HNBR 75 Sh                                                                          | PTFE                                                                              | FKM                                                                               | -                                                                                 | NBR                                                                                 | NBR                                                                                 |  |
| <b>Applications</b>           | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools                   | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics   | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics   | Shipbuilding<br>Engine manufacturing<br>Machine tools<br>Hydraulics               | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics     | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics     |  |
| <b>Approval / conformity</b>  | ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS, EN60730-1/ EN60730-2-6: Typ 2.B.H | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H          | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H          | GL EN60730-1/ EN60730-2-6: Typ 2.B.H                                              | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H             | ABS, BV, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H                  |  |
| <b>Type of protection</b>     |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |  |
| <b>Data sheet</b>             | <a href="http://www.trafag.com/H72367">www.trafag.com/H72367</a>                    | <a href="http://www.trafag.com/H72369">www.trafag.com/H72369</a>                  | <a href="http://www.trafag.com/H72368">www.trafag.com/H72368</a>                  | <a href="http://www.trafag.com/H72273">www.trafag.com/H72273</a>                  | <a href="http://www.trafag.com/H72252">www.trafag.com/H72252</a>                    | <a href="http://www.trafag.com/H72257">www.trafag.com/H72257</a>                    |  |
| <b>Instructions</b>           | <a href="http://www.trafag.com/H73367">www.trafag.com/H73367</a>                    | <a href="http://www.trafag.com/H73367">www.trafag.com/H73367</a>                  | <a href="http://www.trafag.com/H73367">www.trafag.com/H73367</a>                  | <a href="http://www.trafag.com/H73273">www.trafag.com/H73273</a>                  | <a href="http://www.trafag.com/H71261">www.trafag.com/H71261</a>                    | <a href="http://www.trafag.com/H71261">www.trafag.com/H71261</a>                    |  |

| PK<br>944/947                                                                    | PD<br>920/924/932                                                                 | 901/902/905/906                                                                   | 987/988                                                                           | EXP<br>900/904/912                                                                                                                     | EXPK<br>944/947/953                                                                                                                     | EXPD<br>920/924/932                                                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| page 91                                                                          | page 92                                                                           | page 93                                                                           | page 94                                                                           | page 96                                                                                                                                | page 98                                                                                                                                 | page 99                                                                                                                                 |
|  |  |  |  |                                                      |                                                      |                                                      |
| Piston                                                                           | Bellow                                                                            | Membrane                                                                          | Bellow                                                                            | Bellow                                                                                                                                 | Piston                                                                                                                                  | Bellow                                                                                                                                  |
| 1 ... 10 to 60 ... 600 bar                                                       | -1 ... 6 to -1 ... 18 bar                                                         | 30 ... 600 and<br>50 ... 1000 mbar                                                | -0.3 ... 1.3 to 1 ... 10 bar                                                      | -0.9 ... 1.5 to 4 ... 40 bar                                                                                                           | 1 ... 10 to 60 ... 600 bar                                                                                                              | -1 ... 6 to -1 ... 18 bar                                                                                                               |
| 1 Floating change-over<br>contact (SPDT)                                         | 1 Floating change-over<br>contact (SPDT)                                          | 1 Floating change-over<br>contact (SPDT)                                          | 1 or 2 floating change-<br>over contacts (SPDT)                                   | 1 Floating change-over<br>contact (SPDT)                                                                                               | 1 Floating change-over<br>contact (SPDT)                                                                                                | 1 Floating change-over<br>contact (SPDT)                                                                                                |
| G1/4" f, G1/2" m                                                                 | G1/4" f, G1/8" f, G1/2" m                                                         | G1/4" f, G1/2" m                                                                  | G1/4" m                                                                           | G1/4" f, G1/2" m                                                                                                                       | G1/4" f, G1/2" m                                                                                                                        | G1/4" f, G1/8" f, G1/2" m                                                                                                               |
| Screw terminal                                                                   | Screw terminal                                                                    | Screw terminal                                                                    | Blade connector                                                                   | Screw terminal                                                                                                                         | Screw terminal                                                                                                                          | Screw terminal                                                                                                                          |
| Not adjustable                                                                   | Not adjustable                                                                    | Not adjustable                                                                    | Not adjustable                                                                    | Not adjustable                                                                                                                         | Not adjustable                                                                                                                          | Not adjustable                                                                                                                          |
| NBR: -30°C ... +100°C<br>FKM: -15°C ... +150°C                                   | -40°C ... +150°C                                                                  | -40°C ... +150°C                                                                  | -25°C ... +80°C                                                                   | -40°C ... +150°C                                                                                                                       | NBR: -30°C ... +100°C<br>FKM: -15°C ... +150°C                                                                                          | -50°C ... +150°C                                                                                                                        |
| -20°C ... +70°C                                                                  | -25°C ... +70°C                                                                   | -25°C ... +70°C                                                                   | -25°C ... +70°C                                                                   | -50°C ... +65°C                                                                                                                        | -50°C ... +65°C                                                                                                                         | -50°C ... +65°C                                                                                                                         |
| IP65                                                                             | IP65                                                                              | IP65                                                                              | IP40<br>(Microswitch IP67)                                                        | IP66<br>Accessory 06: IP66                                                                                                             | IP66<br>Accessory 06: IP66                                                                                                              | IP66                                                                                                                                    |
| AlSi10Mg/ Epoxy coated                                                           | AlSi10Mg/ Epoxy coated                                                            | AlSi10Mg/ Epoxy coated                                                            | PBTP, Crastin                                                                     | AlSi10Mg/ Epoxy coated<br>Accessory 06:<br>1.4301 (AISI 304)                                                                           | AlSi10Mg/ Epoxy coated<br>Accessory 06:<br>1.4301 (AISI 304)                                                                            | AlSi10Mg/ Epoxy coated                                                                                                                  |
| NBR/FKM                                                                          | NBR                                                                               | NBR                                                                               | -                                                                                 | NBR                                                                                                                                    | NBR / FKM                                                                                                                               | NBR                                                                                                                                     |
| Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics  | Shipbuilding<br>Engine manufacturing<br>Railways<br>Machine tools<br>Hydraulics   | Machine tools<br>HVAC                                                             | Machine tools<br>Medium voltage<br>switchgear                                     | ☞ II 2 G / D                                                                                                                           | ☞ II 2 G / D                                                                                                                            | ☞ II 2 G / D                                                                                                                            |
| ABS, BV, CCS, DNV, GL,<br>KRS, LRS, RINA<br>EN60730-1/<br>EN60730-2-6: Typ 2.B.H | ABS, BV, CCS, DNV, GL,<br>KRS, LRS, RINA<br>EN60730-1/<br>EN60730-2-6: Typ 2.B.H  | EN60730-1/<br>EN60730-2-6: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-6: Typ 2.B.H                                              | SEV 15 ATEX 0157 X                                                                                                                     | SEV 15 ATEX 0157 X                                                                                                                      | SEV 15 ATEX 0157 X                                                                                                                      |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   | Areas with gaz explosion<br>hazards:<br>II 2 G Ex d e IIC T6 Gb<br>Areas with dust<br>explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db | Areas with gas explosion<br>hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust<br>explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db | Areas with gas explosion<br>hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust<br>explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db |
| <a href="http://www.trafag.com/H72259">www.trafag.com/H72259</a>                 | <a href="http://www.trafag.com/H72253">www.trafag.com/H72253</a>                  | <a href="http://www.trafag.com/H72269">www.trafag.com/H72269</a>                  | <a href="http://www.trafag.com/H72272">www.trafag.com/H72272</a>                  | <a href="http://www.trafag.com/H72263">www.trafag.com/H72263</a>                                                                       | <a href="http://www.trafag.com/H72270">www.trafag.com/H72270</a>                                                                        | <a href="http://www.trafag.com/H72256">www.trafag.com/H72256</a>                                                                        |
| <a href="http://www.trafag.com/H71261">www.trafag.com/H71261</a>                 | <a href="http://www.trafag.com/H73256">www.trafag.com/H73256</a>                  |                                                                                   | <a href="http://www.trafag.com/H73272">www.trafag.com/H73272</a>                  | <a href="http://www.trafag.com/H73171">www.trafag.com/H73171</a>                                                                       | <a href="http://www.trafag.com/H73171">www.trafag.com/H73171</a>                                                                        | <a href="http://www.trafag.com/H73171">www.trafag.com/H73171</a>                                                                        |

# PST4B 9B4

## Picostat Pressure Switch



### Features

- Improved vibration resistance
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                                             |                       |                                                                                           |
|------------------------|-------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------|
| Measuring principle    | Bellow                                                      | Repeatability         | ± 0.5 % FS typ.                                                                           |
| Measuring range        | -0.6 ... 3.4 to 4 ... 40 bar<br>-8 ... 45 to 60 ... 500 psi | Media temperature     | Standard: -25°C ... +125°C<br>with sensor 789/790/791:<br>-40°C ... +125°C                |
| Output signal          | 1 Floating change-over contact (SPDT)                       | Ambient temperature   | Standard: -25°C ... +125°C<br>with sensor 789/790/791:<br>-40°C ... +125°C                |
| Switching differential | Not adjustable                                              | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, NKK,<br>RINA, RMRS,<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |

### Standardprodukte (extra kurze Lieferfrist)

| Product No. | Type Code                                | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] |
|-------------|------------------------------------------|----------------------|--------------------------|------------------------------|
| PST4B3.44   | 9B4 4274 769 04 0000 0000 15 46 V3       | -0.6 ... 3.4         | 12                       | 0.2 ± 0.1 (fixed)            |
| PST4B64     | 9B4 4277 770 04 0000 0000 15 46 V3       | 0 ... 6              | 12                       | 0.2 ± 0.1 (fixed)            |
| PST4B164    | 9B4 4279 771 04 0000 0000 15 46 V3       | 1 ... 16             | 24                       | 0.4 ± 0.2 (fixed)            |
| PST4B254    | 9B4 4280 772 04 0000 0000 15 46 V3       | 2 ... 25             | 40                       | 1.0 ± 0.6 (fixed)            |
| *PST4B404   | 9B4 4281 772 04 0000 0000 15 46 V3       | 4 ... 40             | 50                       | 1.2 ± 0.8 (fixed)            |
| PST4B3.4F4  | 9B4 4274 769 04 0000 0000 11 15 46 74 V3 | -0.6 ... 3.4         | 12                       | 0.2 ± 0.1 (fixed)            |
| PST4B6F4    | 9B4 4277 770 04 0000 0000 11 15 46 74 V3 | 0 ... 6              | 12                       | 0.2 ± 0.1 (fixed)            |
| PST4B16F4   | 9B4 4279 771 04 0000 0000 11 15 46 74 V3 | 1 ... 16             | 24                       | 0.4 ± 0.2 (fixed)            |
| *PST4B25F4  | 9B4 4280 772 04 0000 0000 11 15 46 74 V3 | 2 ... 25             | 40                       | 1.0 ± 0.6 (fixed)            |
| *PST4B40F4  | 9B4 4281 772 04 0000 0000 11 15 46 74 V3 | 4 ... 40             | 50                       | 1.2 ± 0.8 (fixed)            |
| PST4B6S4    | 9B4 4277 753 04 0000 0000 15 46 V3       | 0 ... 6              | 12                       | 0.2 ± 0.1 (fixed)            |
| PST4B16S4   | 9B4 4279 754 04 0000 0000 15 46 V3       | 1 ... 16             | 24                       | 0.4 ± 0.2 (fixed)            |

### PST4B...4 / PST4B...F4:

Sensor: Bronze bellow CuSn6)

Housing / pressure connection:

Aluminium EN AW-6026 AlMgSiPb0.4 anodized

### PST4B...S4:

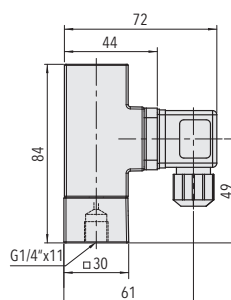
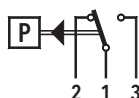
Sensor: Bellows stainless steel (1.4404/AISI316L)

Housing / pressure connection: Stainless steel

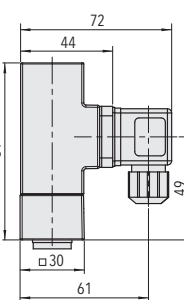
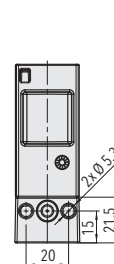
AC 250 V, 6 (1) A

DC 24 V, 3 (2) A

DC 220 V, 0.25 (0.1) A



PST4B ... 4 / PST4B ... S4



PST4B ... F4

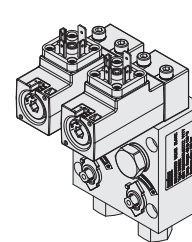
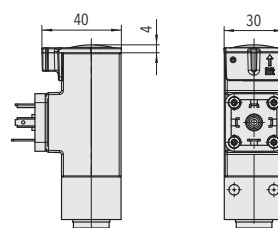
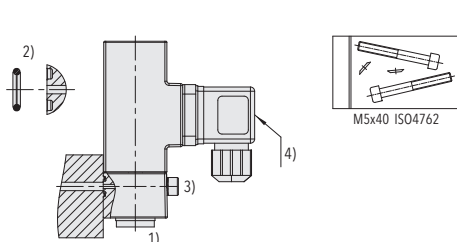
|                            |                                                                                                                          |                                           |                                                                             |                   |                           |            |           |    |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------|-------------------|---------------------------|------------|-----------|----|
|                            |                                                                                                                          |                                           |                                                                             | 9B4 . XX          | XX                        | XXX        | XX        | XX |
| <b>Microswitch</b>         | Standard <sup>1)</sup>                                                                                                   |                                           |                                                                             | 42                |                           |            |           |    |
|                            | Standard  <sup>1)</sup>                 |                                           |                                                                             | 33                |                           |            |           |    |
|                            | Gold plated contacts <sup>1)</sup>                                                                                       |                                           |                                                                             | 84                |                           |            |           |    |
| <b>Range</b>               | <b>Range [bar]</b>                                                                                                       | <b>Over pressure [bar]</b>                |                                                                             | <b>Range [si]</b> | <b>Over pressure [si]</b> |            |           |    |
|                            | -0.6 ... 3.4                                                                                                             | 12                                        | <b>74</b>                                                                   | -8 ... 45         | 174                       | <b>G4</b>  |           |    |
|                            | 0 ... 4                                                                                                                  | 12                                        | <b>76</b>                                                                   | 0 ... 50          | 174                       | <b>G6</b>  |           |    |
|                            | 0 ... 6                                                                                                                  | 12                                        | <b>77</b>                                                                   | 0 ... 100         | 174                       | <b>G7</b>  |           |    |
|                            | 1 ... 10                                                                                                                 | 24                                        | <b>78</b>                                                                   | 14 ... 150        | 348                       | <b>G8</b>  |           |    |
|                            | 1 ... 16                                                                                                                 | 24                                        | <b>79</b>                                                                   | 14 ... 250        | 348                       | <b>G9</b>  |           |    |
|                            | 2 ... 25                                                                                                                 | 40                                        | <b>80</b>                                                                   | 30 ... 400        | 580                       | <b>H0</b>  |           |    |
|                            | 4 ... 40                                                                                                                 | 50                                        | <b>81</b>                                                                   | 60 ... 500        | 725                       | <b>H1</b>  |           |    |
| <b>Sensor</b>              | <b>Sensor material</b>                                                                                                   | <b>Sensor housing material</b>            |                                                                             | <b>Range</b>      |                           |            |           |    |
|                            | Bronze bellow (CuSn6)  <sup>2)</sup>    | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |                                                                             | 74                |                           | <b>769</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>2)</sup>    | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |                                                                             | 76, 77            |                           | <b>770</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>2)</sup>    | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |                                                                             | 78, 79            |                           | <b>771</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>2)</sup>    | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |                                                                             | 80, 81            |                           | <b>772</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>3) 4)</sup> | Brass (CuZn39Pb3)                         |                                                                             | 74                |                           | <b>789</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>3) 4)</sup> | Brass (CuZn39Pb3)                         |                                                                             | 76, 77            |                           | <b>790</b> |           |    |
|                            | Bronze bellow (CuSn6)  <sup>3) 4)</sup> | Brass (CuZn39Pb3)                         |                                                                             | 78, 79            |                           | <b>791</b> |           |    |
|                            | Bellows stainless steel (1.4404/AISI316L) <sup>4)</sup>                                                                  | Stainless steel                           |                                                                             | 76, 77            |                           | <b>753</b> |           |    |
| <b>Pressure connection</b> | G1/8" female                                                                                                             |                                           |                                                                             |                   |                           |            | <b>02</b> |    |
|                            | G1/4" female                                                                                                             |                                           |                                                                             |                   |                           |            | <b>04</b> |    |
|                            | M10x1.0" female <sup>5)</sup>                                                                                            |                                           |                                                                             |                   |                           |            | <b>03</b> |    |
| <b>Accessories</b>         | Flange with O-Ring <sup>4)</sup>                                                                                         | <b>11</b>                                 | Lead seal (manipulation protection)                                         | <b>16</b>         |                           |            |           |    |
|                            | Female electrical connector EN175301-803-A (DIN43650-A)                                                                  | <b>46</b>                                 | Switch point adjustment on customers request                                |                   |                           |            |           |    |
|                            | Welsh plug G1/4"                                                                                                         | <b>74</b>                                 | Please indicate when ordering:                                              |                   |                           |            |           |    |
|                            | Fixing set                                                                                                               | <b>V3</b>                                 | - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.) | <b>88</b>         |                           |            |           |    |
|                            | Covering cap                                                                                                             | <b>15</b>                                 | - Increasing or decreasing                                                  |                   |                           |            |           |    |
|                            |                                                                                                                          |                                           | Damping elements and snubber see data sheet H72258                          |                   |                           |            |           |    |

<sup>1)</sup> Switching differential not adjustable

<sup>2)</sup> Media contacting O-Ring

<sup>3)</sup> O-Ring not media contacting

<sup>4)</sup> Only with pressure connection 04 (G1/4") others upon request

<sup>5)</sup> Please ask us

1) Torque: G 1/4":  $M_A = 32 \dots 40 \text{ Nm}$ 

2) O-Ring:  $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$ 

3) Fixing screw: M5;  
property class: 8.8;  
torque:  $4.5 \dots 6 \text{ Nm}$ 

4) Torque connector center screw: max.  $0.4 \text{ Nm}$ 

Diagnostic Valve Bloc (DVB)  
see specification sheet H72361

 Data sheet  
Instructions

[www.trafag.com/H72367](http://www.trafag.com/H72367)  
[www.trafag.com/H73367](http://www.trafag.com/H73367)

# PST4K 9K4

## Picostat Pressure Switch



### Features

- Compact design
- Rugged housing
- Protection IP65 (with plug connector)
- Any mounting position possible

### Technical Data

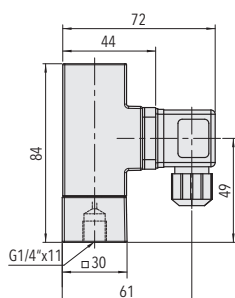
|                        |                                                              |                       |                                                                             |
|------------------------|--------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------|
| Measuring principle    | Piston                                                       | Repeatability         | ± 1.0 % FS typ.                                                             |
| Measuring range        | 1 ... 10 to 40 ... 400 bar<br>14 ... 150 to 580 ... 5800 psi | Media temperature     | -25°C ... +125°C                                                            |
| Output signal          | 1 Floating change-over contact (SPDT)                        | Ambient temperature   | -25°C ... +85°C                                                             |
| Switching differential | Not adjustable                                               | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA,<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |

### Standard products (extra short lead time)

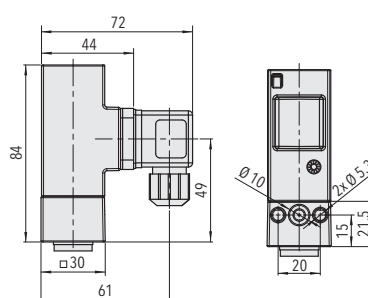
| Product No. | Type Code                                | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] |
|-------------|------------------------------------------|----------------------|--------------------------|------------------------------|
| PST4K164    | 9K4 4279 756 04 0000 0000 15 46 V3       | 1 ... 16             | 100                      | 0.4 ... 2.4 (fixed)          |
| PST4K404    | 9K4 4281 757 04 0000 0000 15 46 V3       | 4 ... 40             | 100                      | 1 ... 6 (fixed)              |
| PST4K1004   | 9K4 4283 758 04 0000 0000 15 46 V3       | 10 ... 100           | 200                      | 5 ... 15 (fixed)             |
| PST4K2504   | 9K4 4285 759 04 0000 0000 15 46 V3       | 25 ... 250           | 400                      | 12 ... 40 (fixed)            |
| PST4K4004   | 9K4 4286 759 04 0000 0000 15 46 V3       | 40 ... 400           | 600                      | 15 ... 50 (fixed)            |
| PST4K16F4   | 9K4 4279 756 04 0000 0000 11 15 46 74 V3 | 1 ... 16             | 100                      | 0.4 ... 2.4 (fixed)          |
| PST4K40F4   | 9K4 4281 757 04 0000 0000 11 15 46 74 V3 | 4 ... 40             | 100                      | 1 ... 6 (fixed)              |
| PST4K100F4  | 9K4 4283 758 04 0000 0000 11 15 46 74 V3 | 10 ... 100           | 200                      | 5 ... 15 (fixed)             |
| PST4K250F4  | 9K4 4285 759 04 0000 0000 11 15 46 74 V3 | 25 ... 250           | 400                      | 12 ... 40 (fixed)            |
| PST4K400F4  | 9K4 4286 759 04 0000 0000 11 15 46 74 V3 | 40 ... 400           | 600                      | 15 ... 50 (fixed)            |

Sensor: Piston 1.4035, sealing PTFE

Housing / pressure connection: Aluminium EN AW-6026 AlMgSiPb0.4 anodized

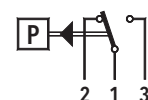


PST4K ... 4



PST4K ... F4

AC 250 V, 6 (1) A  
DC 24 V, 3 (2) A  
DC 220 V, 0.25 (0.1) A



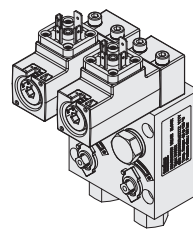
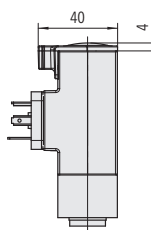
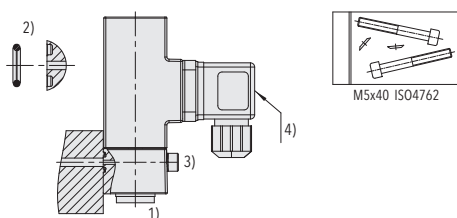
Data sheet  
Instructions

[www.trafag.com/H72369](http://www.trafag.com/H72369)  
[www.trafag.com/H73367](http://www.trafag.com/H73367)

|                            |                                                                                                          |                                           |    |                    |                            |     |     |    |    |
|----------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------|----|--------------------|----------------------------|-----|-----|----|----|
|                            |                                                                                                          |                                           |    | 9K4 .              | XX                         | XX  | XXX | XX | XX |
| <b>Microswitch</b>         | Standard <sup>1)</sup>                                                                                   |                                           |    |                    | 42                         |     |     |    |    |
|                            | Standard  <sup>1)</sup> |                                           |    |                    | 33                         |     |     |    |    |
|                            | Gold plated contacts <sup>1)</sup>                                                                       |                                           |    |                    | 84                         |     |     |    |    |
| <b>Range</b>               | <b>Range [bar]</b>                                                                                       | <b>Over pressure [bar]</b>                |    | <b>Range [psi]</b> | <b>Over pressure [psi]</b> |     |     |    |    |
|                            | 1 ... 10                                                                                                 | 100                                       | 78 | 14 ... 150         | 1450                       | G8  |     |    |    |
|                            | 1 ... 16                                                                                                 | 100                                       | 79 | 14 ... 250         | 1450                       | G9  |     |    |    |
|                            | 2 ... 25                                                                                                 | 100                                       | 80 | 30 ... 400         | 1450                       | H0  |     |    |    |
|                            | 4 ... 40                                                                                                 | 100                                       | 81 | 60 ... 500         | 1450                       | H1  |     |    |    |
|                            | 6 ... 60                                                                                                 | 200                                       | 82 | 85 ... 850         | 2900                       | H2  |     |    |    |
|                            | 10 ... 100                                                                                               | 200                                       | 83 | 150 ... 1500       | 2900                       | H3  |     |    |    |
|                            | 16 ... 160                                                                                               | 400                                       | 84 | 250 ... 2500       | 5800                       | H4  |     |    |    |
|                            | 25 ... 250                                                                                               | 400                                       | 85 | 350 ... 3500       | 5800                       | H5  |     |    |    |
|                            | 40 ... 400                                                                                               | 600                                       | 86 | 580 ... 5800       | 8700                       | H6  |     |    |    |
| <b>Sensor</b>              | <b>Sensor material</b>                                                                                   | <b>Sensor housing material</b>            |    | <b>Range</b>       |                            |     |     |    |    |
|                            | Piston 1.4035, sealing PTFE <sup>2)</sup>                                                                | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |    | 78, 79             |                            | 756 |     |    |    |
|                            | Piston 1.4035, sealing PTFE <sup>2)</sup>                                                                | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |    | 80, 81             |                            | 757 |     |    |    |
|                            | Piston 1.4035, sealing PTFE                                                                              | Aluminium EN AW-6026 AlMgSiPb0.4 anodized |    | 82, 83             |                            | 758 |     |    |    |
| <b>Pressure connection</b> | G1/8" female                                                                                             |                                           |    |                    |                            |     |     | 02 |    |
|                            | G1/4" female                                                                                             |                                           |    |                    |                            |     |     | 04 |    |
|                            | M10x1.0" female <sup>2)</sup>                                                                            |                                           |    |                    |                            |     |     | 03 |    |
| <b>Accessories</b>         | Flange with O-Ring <sup>3)</sup>                                                                         |                                           |    |                    |                            |     |     |    | 11 |
|                            | Female electrical connector EN175301-803-A (DIN43650-A)                                                  |                                           |    |                    |                            |     |     |    | 46 |
|                            | Welsh plug G1/4"                                                                                         |                                           |    |                    |                            |     |     |    | 74 |
|                            | Fixing set                                                                                               |                                           |    |                    |                            |     |     |    | V3 |
|                            | Covering cap                                                                                             |                                           |    |                    |                            |     |     |    | 15 |
|                            | Sealing switchpoint (manipulation protection)                                                            |                                           |    |                    |                            |     |     |    | 16 |
|                            | Switch point adjustment on customers request                                                             |                                           |    |                    |                            |     |     |    |    |
|                            | Please indicate when ordering:                                                                           |                                           |    |                    |                            |     |     |    |    |
|                            | - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.)                              |                                           |    |                    |                            |     |     |    | 88 |
|                            | - Increasing or decreasing                                                                               |                                           |    |                    |                            |     |     |    |    |
|                            | Damping elements and snubber see data sheet H72258                                                       |                                           |    |                    |                            |     |     |    |    |

<sup>1)</sup> Switching differential not adjustable

<sup>2)</sup> Please ask us

<sup>3)</sup> Only with pressure connection 04 (G1/4"), others upon request

1) Torque: G 1/4":  $M_A = 32 \dots 40 \text{ Nm}$ 

2) O-Ring:  $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$ 

3) Fixing screw: M5;  
property class: 8.8;  
torque:  $4.5 \dots 6 \text{ Nm}$ 

4) Torque connector center screw: max.  $0.4 \text{ Nm}$ 

Diagnostik Ventil Block (DVB)  
siehe Datenblatt H72361



# PST4M 9M4

## Picostat Pressure Switch



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

### Technical Data

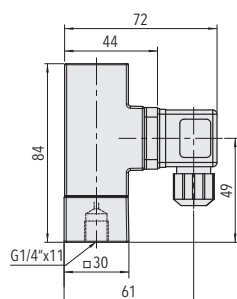
|                        |                                                              |                       |                                                                             |
|------------------------|--------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------|
| Measuring principle    | Membrane                                                     | Repeatability         | ± 2.0 % FS typ.                                                             |
| Measuring range        | 1 ... 10 to 10 ... 100 bar<br>14 ... 150 to 150 ... 1500 psi | Media temperature     | 0°C ... +80°C                                                               |
| Output signal          | 1 Floating change-over contact (SPDT)                        | Ambient temperature   | 0°C ... +80°C                                                               |
| Switching differential | Not adjustable                                               | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA,<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |

### Standard products (extra short lead time)

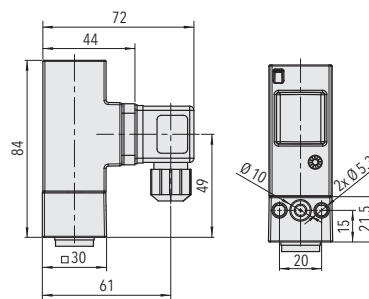
| Product No. | Type Code                                | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] |
|-------------|------------------------------------------|----------------------|--------------------------|------------------------------|
| PST4M164    | 9M4 4279 761 04 0000 0000 15 46 V3       | 1 ... 16             | 200                      | 0.2 ... 1.7 (fixed)          |
| PST4M404    | 9M4 4281 762 04 0000 0000 15 46 V3       | 4 ... 40             | 200                      | 1.2 ... 4.5 (fixed)          |
| PST4M1004   | 9M4 4283 763 04 0000 0000 15 46 V3       | 10 ... 100           | 200                      | 4 ... 16 (fixed)             |
| PST4M16F4   | 9M4 4279 761 04 0000 0000 11 15 46 74 V3 | 1 ... 16             | 200                      | 0.2 ... 1.7 (fixed)          |
| PST4M40F4   | 9M4 4281 762 04 0000 0000 11 15 46 74 V3 | 4 ... 40             | 200                      | 1.2 ... 4.5 (fixed)          |
| PST4M100F4  | 9M4 4283 763 04 0000 0000 11 15 46 74 V3 | 10 ... 100           | 200                      | 4 ... 16 (fixed)             |

Sensor: FKM Membrane

Housing / pressure connection: Aluminium EN AW-6082 AlMgSi1 anodized

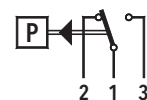


PST4M ... 4



PST4M ... F4

AC 250 V, 6 (1) A  
DC 24 V, 3 (2) A  
DC 220 V, 0.25 (0.1) A



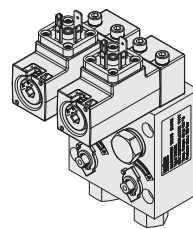
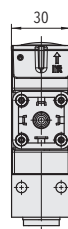
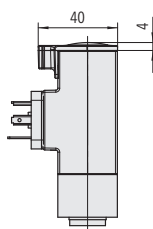
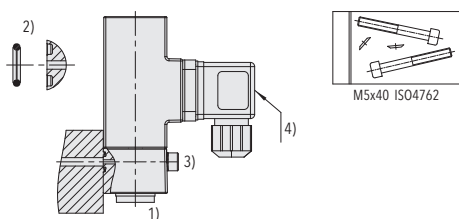
 Data sheet  
Instructions

[www.trafag.com/H72368](http://www.trafag.com/H72368)  
[www.trafag.com/H73367](http://www.trafag.com/H73367)

|                                                    |                                                                                                          |                                       |                         |              |                    |       |     |     |    |    |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------|--------------|--------------------|-------|-----|-----|----|----|
|                                                    |                                                                                                          |                                       |                         |              | 9M4 .              | XX    | XX  | XXX | XX | XX |
| Microswitch                                        | Standard <sup>1)</sup>                                                                                   |                                       |                         |              |                    | 42    |     |     |    |    |
|                                                    | Standard  <sup>1)</sup> |                                       |                         |              |                    | 33    |     |     |    |    |
|                                                    | Gold plated contacts <sup>1)</sup>                                                                       |                                       |                         |              |                    | 84    |     |     |    |    |
| Range                                              | Range [bar]                                                                                              | Over pressure [bar]                   |                         | Range [si]   | Over pressure [si] |       |     |     |    |    |
|                                                    | 1 ... 10                                                                                                 | 200                                   | 78                      | 14 ... 150   | 2900               | G8    |     |     |    |    |
|                                                    | 1 ... 16                                                                                                 | 200                                   | 79                      | 14 ... 250   | 2900               | G9    |     |     |    |    |
|                                                    | 2 ... 25                                                                                                 | 200                                   | 80                      | 30 ... 400   | 2900               | H0    |     |     |    |    |
|                                                    | 4 ... 40                                                                                                 | 200                                   | 81                      | 60 ... 500   | 2900               | H1    |     |     |    |    |
|                                                    | 6 ... 60                                                                                                 | 200                                   | 82                      | 85 ... 850   | 2900               | H2    |     |     |    |    |
|                                                    | 10 ... 100                                                                                               | 200                                   | 83                      | 150 ... 1500 | 2900               | H3    |     |     |    |    |
|                                                    | Sensor                                                                                                   | Sensor material                       | Sensor housing material |              |                    | Range |     |     |    |    |
| FKM Membrane                                       |                                                                                                          | Aluminium EN AW-6082 AlMgSi1 anodized |                         |              | 78, 79             |       | 761 |     |    |    |
| FKM Membrane                                       |                                                                                                          | Aluminium EN AW-6082 AlMgSi1 anodized |                         |              | 80, 81             |       | 762 |     |    |    |
| FKM Membrane                                       |                                                                                                          | Aluminium EN AW-6082 AlMgSi1 anodized |                         |              | 82, 83             |       | 763 |     |    |    |
| Pressure connection                                | G1/8" female                                                                                             |                                       |                         |              |                    |       |     |     | 02 |    |
|                                                    | G1/4" female                                                                                             |                                       |                         |              |                    |       |     |     | 04 |    |
|                                                    | M10x1.0" female <sup>2)</sup>                                                                            |                                       |                         |              |                    |       |     |     | 03 |    |
| Accessories                                        | Flange with O-Ring <sup>3)</sup>                                                                         |                                       |                         |              |                    |       |     |     |    | 11 |
|                                                    | Female electrical connector EN175301-803-A (DIN43650-A)                                                  |                                       |                         |              |                    |       |     |     |    | 46 |
|                                                    | Welsh plug G1/4"                                                                                         |                                       |                         |              |                    |       |     |     |    | 74 |
|                                                    | Fixing set                                                                                               |                                       |                         |              |                    |       |     |     |    | V3 |
|                                                    | Covering cap                                                                                             |                                       |                         |              |                    |       |     |     |    | 15 |
|                                                    | Sealing switchpoint (manipulation protection)                                                            |                                       |                         |              |                    |       |     |     |    | 16 |
|                                                    | Switch point adjustment on customers request                                                             |                                       |                         |              |                    |       |     |     |    |    |
|                                                    | Please indicate when ordering:                                                                           |                                       |                         |              |                    |       |     |     |    |    |
|                                                    | - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.)                              |                                       |                         |              |                    |       |     |     |    | 88 |
|                                                    | - Increasing or decreasing                                                                               |                                       |                         |              |                    |       |     |     |    |    |
| Damping elements and snubber see data sheet H72258 |                                                                                                          |                                       |                         |              |                    |       |     |     |    |    |

<sup>1)</sup> Switching differential not adjustable

<sup>2)</sup> Please ask us

<sup>3)</sup> Only with pressure connection 04 (G1/4"), others upon request

1) Torque: G 1/4":  $M_A = 32 \dots 40 \text{ Nm}$ 

2) O-Ring:  $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$ 

3) Fixing screw:

M5; property class: 8.8;

torque: 4.5 ... 6 Nm

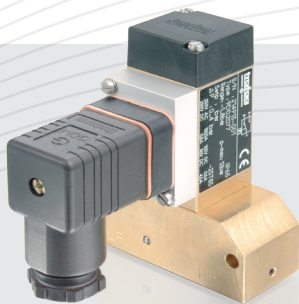
4) Torque connector center screw: max. 0.4 Nm

Diagnostic Valve Bloc (DVB)

see specification sheet H72361

# PSTD 9D0

## Differential Pressure Picostat



### Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65 (with plug connector)
- Any mounting position possible

### Technical Data

|                        |                                       |                       |                                         |
|------------------------|---------------------------------------|-----------------------|-----------------------------------------|
| Measuring principle    | Bellow                                | Repeatability         | $\pm 1.0\%$ FS typ.                     |
| Measuring range        | -1 ... 6 and -1 ... 8 bar             | Media temperature     | -25°C ... +120°C                        |
| Differential pressure  | 0 ... 4 and 0 ... 6 bar               | Ambient temperature   | -25°C ... +85°C                         |
| Output signal          | 1 Floating change-over contact (SPDT) | Approval / conformity | GL<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |
| Switching differential | Not adjustable                        |                       |                                         |



Data sheet  
Instructions

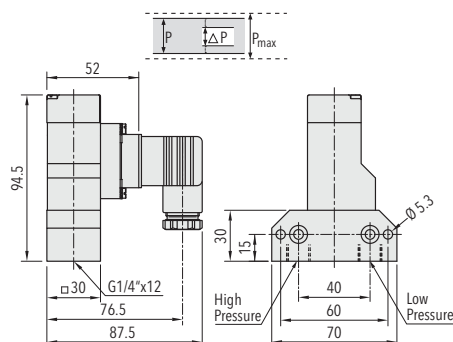
[www.trafag.com/H72273](http://www.trafag.com/H72273)  
[www.trafag.com/H73273](http://www.trafag.com/H73273)

### Standard products (extra short lead time)

| Product No. | Type Code                          | Pressure range [bar] | Differential pressure [bar] | Over pressure max. [bar] | Switching differential [bar] |
|-------------|------------------------------------|----------------------|-----------------------------|--------------------------|------------------------------|
| PSTD4       | 9D0 2076 770 04 0000 0000 15 58 V3 | -1 ... 6             | 0 ... 4                     | 8                        | 0.2 (fixed)                  |
| PSTD6       | 9D0 2077 771 04 0000 0000 15 58 V3 | -1 ... 8             | 0 ... 6                     | 12                       | 0.3 (fixed)                  |

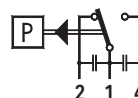
Sensor: Bronze (CuSn8)

Housing / pressure connection: Brass (CuZn39Pb3)



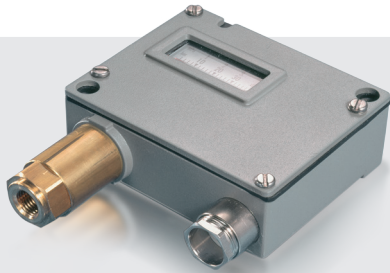
PSTD ...

AC 250 V, 10 (3) A  
DC 250 V, 0.1 (0.05) A  
DC 220 V, 0.25 (0.2) A  
DC 110 V, 0.5 (0.3) A  
DC 24 V, 2 (1) A



# P/PS 900/904/912

## Pressostat



### Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                                                |                       |                                                                            |
|------------------------|----------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------|
| Measuring principle    | Bellow                                                         | Repeatability         | ± 1.0 % FS typ.                                                            |
| Measuring range        | -0.9 ... 1.5 to 10 ... 100 bar<br>5 ... 50 to 125 ... 1500 psi | Media temperature     | -40°C ... +150°C                                                           |
| Output signal          | 1 Floating change-over contact (SPDT)                          | Ambient temperature   | -25°C ... +70°C                                                            |
| Switching differential | Not adjustable                                                 | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |

Data sheet  
Instructions

[www.trafag.com/H72252](http://www.trafag.com/H72252)  
[www.trafag.com/H71261](http://www.trafag.com/H71261)

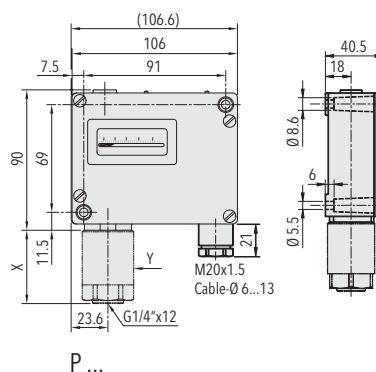
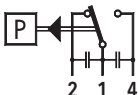
### Standard products (extra short lead time)

| Product No. | Type Code    | Pressure range<br>[bar] | Over pressure<br>max.<br>[bar] | Switching differential<br>[bar] | Diameter Y<br>[mm] | Length X<br>[mm] |
|-------------|--------------|-------------------------|--------------------------------|---------------------------------|--------------------|------------------|
| P1.5        | 900 2672 900 | -0.9 ... 1.5            | 10                             | 0.1 (fixed)                     | 45                 | 56.5             |
| P2.5        | 900 2675 901 | 0.2 ... 2.5             | 10                             | 0.1 (fixed)                     | 45                 | 56.5             |
| P4          | 900 2376 903 | 0 ... 4                 | 12                             | 0.2 (fixed)                     | 33                 | 47               |
| P6          | 900 2377 903 | 0 ... 6                 | 12                             | 0.2 (fixed)                     | 33                 | 47               |
| P10         | 900 2378 905 | 1 ... 10                | 24                             | 0.4 (fixed)                     | 27                 | 42.5             |
| P16         | 900 2379 905 | 1 ... 16                | 24                             | 0.4 (fixed)                     | 27                 | 42.5             |
| P25         | 900 2380 907 | 2 ... 25                | 40                             | 1 (fixed)                       | 33                 | 47               |
| P40         | 900 2381 907 | 4 ... 40                | 40                             | 1 (fixed)                       | 33                 | 47               |
| PS1.5       | 904 2672 900 | -0.9 ... 1.5            | 10                             | 0.1 (fixed)                     | 45                 | 56.5             |
| PS2.5       | 904 2675 901 | 0.2 ... 2.5             | 10                             | 0.1 (fixed)                     | 45                 | 56.5             |
| PS6         | 904 2377 903 | 0 ... 6                 | 12                             | 0.2 (fixed)                     | 33                 | 47               |
| PS16        | 904 2379 905 | 1 ... 16                | 24                             | 0.4 (fixed)                     | 27                 | 42.5             |
| PS40        | 904 2381 907 | 4 ... 40                | 40                             | 1 (fixed)                       | 27                 | 42.5             |

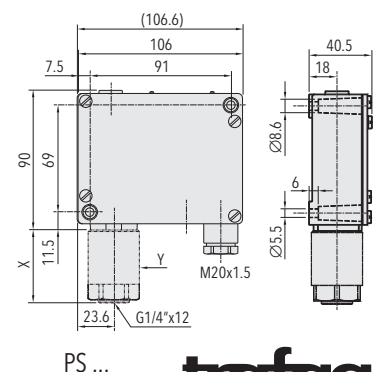
Sensor: Bronze (CuSn8)

Housing / pressure connection: Brass (CuZn39Pb3)

AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



P ...

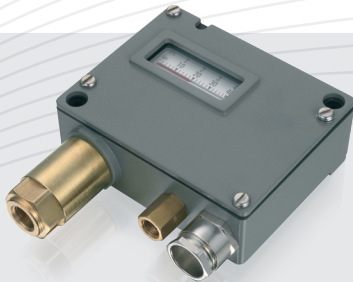


PS ...

**trafag**  
sensors & controls

# PV/PVF 903/907/915/940/941/942

## Vari Pressostat



### Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                                            |                       |                                                                       |
|------------------------|------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------|
| Measuring principle    | Bellow                                                     | Repeatability         | $\pm 1.0\%$ FS typ.                                                   |
| Measuring range        | -0.9 ... 1.5 to 4 ... 40 bar<br>5 ... 50 to 50 ... 500 psi | Media temperature     | -40°C ... +150°C                                                      |
| Output signal          | 1 Floating change-over contact (SPDT)                      | Ambient temperature   | -25°C ... +70°C                                                       |
| Switching differential | Adjustable                                                 | Approval / conformity | ABS, BV, DNV, GL, KRS, LRS, RINA<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |
| Switching point        | Calibration for decreasing pressure                        |                       |                                                                       |

Data sheet  
Instructions

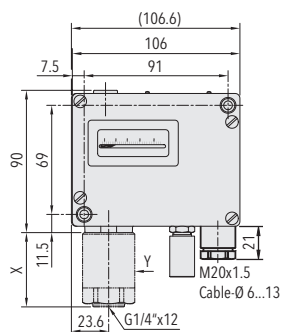
[www.trafag.com/H72257](http://www.trafag.com/H72257)  
[www.trafag.com/H71261](http://www.trafag.com/H71261)

### Standard products (extra short lead time)

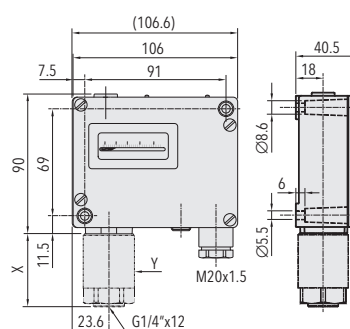
| Product No. | Type Code    | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] | Diameter Y [mm] | Length X [mm] |
|-------------|--------------|----------------------|--------------------------|------------------------------|-----------------|---------------|
| PV6         | 903 2377 903 | 0 ... 6              | 12                       | 0.4 ... 3.2 (adjustable)     | 33              | 47            |
| PV16        | 903 2379 905 | 1 ... 16             | 24                       | 1 ... 7.5 (adjustable)       | 27              | 42.5          |
| PV40        | 903 2381 907 | 4 ... 40             | 40                       | 3 ... 18 (adjustable)        | 27              | 42.5          |
| PVF1.5      | 940 2372 900 | -0.9 ... 1.5         | 10                       | 0.06 ... 0.2 (adjustable)    | 45              | 56.5          |
| PVF2.5      | 940 2375 901 | 0.2 ... 2.5          | 10                       | 0.06 ... 0.2 (adjustable)    | 45              | 56.5          |
| PVF6        | 940 2377 903 | 0 ... 6              | 12                       | 0.2 ... 0.6 (adjustable)     | 33              | 47            |
| PVF16       | 940 2379 905 | 1 ... 16             | 24                       | 0.5 ... 1.6 (adjustable)     | 27              | 42.5          |

Sensor: Bronze (CuSn8)

Housing / pressure connection: Brass (CuZn39Pb3)

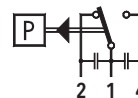


PV ...

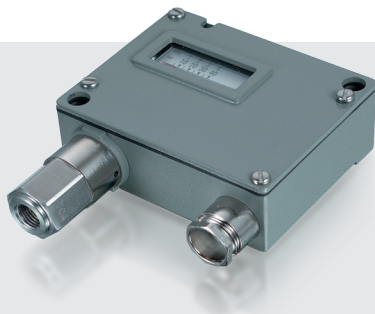


PVF ...

AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



# Pressostat



## Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

## Technical Data

|                        |                                       |                       |                                                                            |
|------------------------|---------------------------------------|-----------------------|----------------------------------------------------------------------------|
| Measuring principle    | Piston                                | Repeatability         | ± 1.0 % FS typ.                                                            |
| Measuring range        | 1 ... 10 to 60 ... 600 bar            | Media temperature     | O-Ring NBR: -30°C ... +100°C<br>O-Ring FKM: -15°C ... +150°C               |
| Output signal          | 1 Floating change-over contact (SPDT) | Ambient temperature   | -20°C ... +70°C                                                            |
| Switching differential | Not adjustable                        | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |



Data sheet  
Instructions

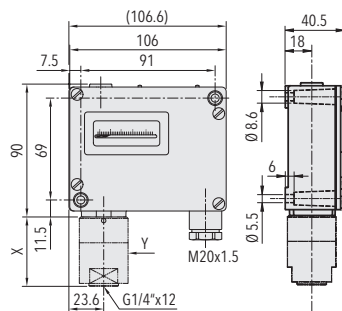
[www.trafag.com/H72259](http://www.trafag.com/H72259)  
[www.trafag.com/H71261](http://www.trafag.com/H71261)

### Standard products (extra short lead time)

| Product No. | Type Code    | Pressure range<br>[bar] | Over pressure<br>max.<br>[bar] | Switching differential<br>[bar] | Diameter Y<br>[mm] | Length X<br>[mm] |
|-------------|--------------|-------------------------|--------------------------------|---------------------------------|--------------------|------------------|
| PK10        | 944 2378 700 | 1 ... 10                | 100                            | 0.45 ... 0.9 (fixed)            | 33                 | 47               |
| PK40        | 944 2381 704 | 4 ... 40                | 200                            | 1.8 ... 3.4 (fixed)             | 27                 | 42.5             |
| PK100       | 944 2383 708 | 10 ... 100              | 200                            | 3.2 ... 7.5 (fixed)             | 27                 | 42.5             |
| PK250       | 944 2385 712 | 25 ... 250              | 400                            | 5.2 ... 16 (fixed)              | 27                 | 42.5             |

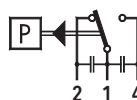
Sensor: 1.4435, O-ring NBR

Housing / pressure connection: 1.4435



PK...

AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A





# PD 920/924/932

## Differential Pressure Pressostat



### Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                       |                       |                                                                            |
|------------------------|---------------------------------------|-----------------------|----------------------------------------------------------------------------|
| Measuring principle    | Bellow                                | Repeatability         | $\pm 1.0\%$ FS typ.                                                        |
| Measuring range        | -1 ... 6 to -1 ... 18 bar             | Media temperature     | -40°C ... +150°C                                                           |
| Differential pressure  | -0.6 ... 3.4 to 1 ... 16 bar          | Ambient temperature   | -25°C ... +70°C                                                            |
| Output signal          | 1 Floating change-over contact (SPDT) | Approval / conformity | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA<br>EN60730-1/ EN60730-2-6: Typ 2.B.H |
| Switching differential | Not adjustable                        |                       |                                                                            |

Data sheet  
Instructions

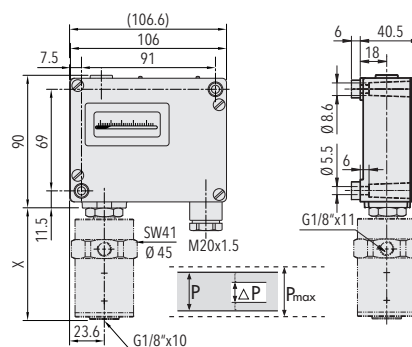
[www.trafag.com/H72253](http://www.trafag.com/H72253)  
[www.trafag.com/H73256](http://www.trafag.com/H73256)

### Standard products (extra short lead time)

| Product No. | Type Code    | Pressure range [bar] | Differential pressure [bar] | Over pressure max. [bar] | Switching differential [bar] | Length X [mm] |
|-------------|--------------|----------------------|-----------------------------|--------------------------|------------------------------|---------------|
| PD3.4       | 920 2374 931 | -1 ... +6            | -0.6 ... +3.4               | 12                       | 0.16 (fixed)                 | 77            |
| PD6         | 920 2377 933 | -1 ... +8            | 0 ... 6                     | 12                       | 0.16 (fixed)                 | 77            |
| PD16        | 920 2379 935 | -1 ... 18            | 1 ... 16                    | 24                       | 0.4 (fixed)                  | 87            |

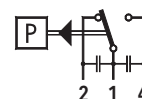
Sensor: Bronze

Housing / pressure connection: Brass



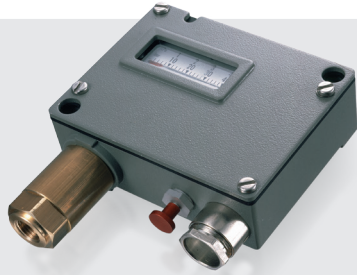
PK ...

AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



# 901/902/905/906

## Limi Pressostat



### Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                       |
|------------------------|---------------------------------------|
| Measuring principle    | Bellow                                |
| Measuring range        | -0.9 ... 1.5 to 4 ... 40 bar          |
| Output signal          | 1 Floating change-over contact (SPDT) |
| Switching differential | Not adjustable                        |
| Repeatability          | ± 1.0 % FS typ.                       |
| Media temperature      | -40°C ... +150°C                      |
| Ambient temperature    | -25°C ... +70°C                       |
| Approval / conformity  | EN60730-1/ EN60730-2-6: Typ 2.B.H     |

Data sheet

[www.trafag.com/H72254](http://www.trafag.com/H72254)

# 901/902/905/906

## Limi Membrane Pressostat



### Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                        |                                       |
|------------------------|---------------------------------------|
| Measuring principle    | Membrane                              |
| Measuring range        | 30 ... 600 and 50 ... 1000 mbar       |
| Output signal          | 1 Floating change-over contact (SPDT) |
| Switching differential | Not adjustable                        |
| Repeatability          | ± 1.0 % FS typ.                       |
| Media temperature      | -40°C ... +150°C                      |
| Ambient temperature    | -25°C ... +70°C                       |
| Approval / conformity  | EN60730-1/ EN60730-2-6: Typ 2.B.H     |

Data sheet

[www.trafag.com/H72269](http://www.trafag.com/H72269)

# 987/988

## Pressostat

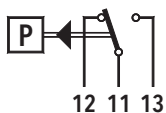
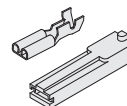
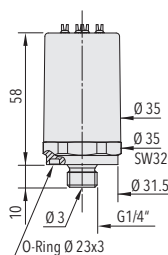
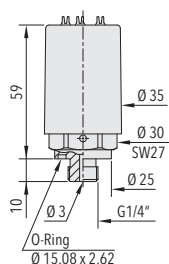
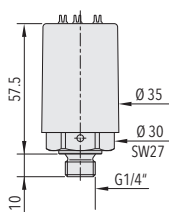


### Features

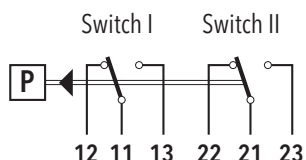
- Steel or bronze bellows
- Blade connector (IEC) 2.8 x 0.5 mm
- Compact design
- Adjustment in factory

### Technical Data

|                        |                                             |                       |                                   |
|------------------------|---------------------------------------------|-----------------------|-----------------------------------|
| Measuring principle    | Bellow                                      | Repeatability         | $\pm 1.0\%$ FS typ.               |
| Measuring range        | -0.3 ... 1.3 to 1 ... 10 bar                | Media temperature     | -25°C ... +80°C                   |
| Output signal          | 1 or 2 floating change-over contacts (SPDT) | Ambient temperature   | -25°C ... +70°C                   |
| Switching differential | Not adjustable                              | Approval / conformity | EN60730-1/ EN60730-2-6: Typ 2.B.H |
| Switching point        | Adjustment in factory                       |                       |                                   |



987



988



Data sheet  
Instructions

[www.trafag.com/H72272](http://www.trafag.com/H72272)  
[www.trafag.com/H73272](http://www.trafag.com/H73272)

## Ordering information/type code

|                          |                                                                                       |                                              |                             |     |     |    |    |    |
|--------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|-----|-----|----|----|----|
|                          |                                                                                       | XXX                                          | XX                          | XX  | XXX | XX | XX | XX |
| <b>Custom build code</b> | 1 Floating change-over contact (SPDT)                                                 | 987                                          |                             |     |     |    |    |    |
|                          | 2 Floating change-over contacts (SPDT)                                                | 988                                          |                             |     |     |    |    |    |
| <b>Microswitch</b>       | Standard contacts, switching differential not adjustable                              |                                              | 42                          |     |     |    |    |    |
|                          | With gold plated contacts, switching differential not adjustable                      |                                              | 84                          |     |     |    |    |    |
| <b>Range</b>             | <b>Range [bar]</b>                                                                    | <b>Over pressure [bar]</b>                   | <b>Burst pressure [bar]</b> |     |     |    |    |    |
|                          | -0.3 ... 1.3                                                                          | -1 ... 4                                     | 10                          | 72  |     |    |    |    |
|                          | 0 ... 1.6                                                                             | -1 ... 4                                     | 10                          | 73  |     |    |    |    |
|                          | 0 ... 2.5                                                                             | -1 ... 4                                     | 10                          | 75  |     |    |    |    |
|                          | 0 ... 4                                                                               | -1 ... 6                                     | 10                          | 76  |     |    |    |    |
|                          | 1 ... 10                                                                              | -1 ... 15                                    | 15                          | 78  |     |    |    |    |
| <b>Sensor</b>            | <b>Sensor material</b>                                                                | <b>Pressure connection</b>                   | <b>Range</b>                |     |     |    |    |    |
|                          | Bellows: 1.4301 (AISI 304)                                                            | 1.4301 (AISI 304), with groove for O-ring    | 73, 75                      | 847 |     |    |    |    |
|                          | Bellows: 1.4301 (AISI 304)                                                            | 1.4301 (AISI 304), with groove for O-ring    | 76                          | 846 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), without groove for O-ring | 72, 73, 75                  | 947 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), without groove for O-ring | 76                          | 946 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), without groove for O-ring | 78                          | 945 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), with groove for O-ring    | 72, 73, 75                  | 949 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), with groove for O-ring    | 76                          | 948 |     |    |    |    |
|                          | Bellows: Bronze (CuSn6)                                                               | Brass (CuZn39Pb3), with groove for O-ring    | 78                          | 939 |     |    |    |    |
| <b>Code number</b>       | Specified by Trafag                                                                   |                                              |                             |     |     | XX |    |    |
|                          |                                                                                       |                                              |                             |     |     |    |    |    |
| <b>Fixing</b>            | Direct on sensor or housing                                                           |                                              |                             |     |     |    | 00 |    |
| <b>Accessories</b>       | Blade receptacle (2.8 x 0.5 mm) and insulator for flat plugs (2 x 6 pcs.)             |                                              |                             |     |     |    |    | 09 |
|                          | Switchpoint fixed and sealed upon customer's request                                  |                                              |                             |     |     |    |    | 88 |
|                          | Switchpoint preset upon customer's request, no guarantee on switching accuracy        |                                              |                             |     |     |    |    | 83 |
|                          | Switchpoint adjustment switch I (lower switchpoint) and switch II (upper switchpoint) |                                              |                             |     |     |    |    |    |
|                          | Please indicate for each switch when ordering:                                        |                                              |                             |     |     |    |    |    |
|                          | - Switchpoint [bar]                                                                   |                                              |                             |     |     |    |    |    |
|                          | - Increasing or decreasing                                                            |                                              |                             |     |     |    |    |    |
|                          | Routine test of leakage rate < 10 <sup>-7</sup> mbar-l/s                              |                                              |                             |     |     |    |    | 05 |
|                          | Damping elements and snubber see data sheet H72258                                    |                                              |                             |     |     |    |    |    |

## Switching differential typ. @ 25°C

| Measuring range bellows sensor                       | [bar] | -0.3 ... 1.3 | 0 ... 1.6   | 0 ... 2.5   | 0 ... 4     | 1 ... 10    |
|------------------------------------------------------|-------|--------------|-------------|-------------|-------------|-------------|
| <b>Microswitch 42/84:</b>                            | [bar] | 0.1          | 0.1         | 0.2         | 0.3         | 0.6         |
| Switching differential not adjustable                |       |              |             |             |             |             |
| <b>Setting tolerance</b>                             | [bar] | ±0.08        | ±0.08       | ±0.12       | ±0.16       | ±0.2        |
| <b>Adjustment range of switch-points, increasing</b> | [bar] | -0.3 ... 1.4 | 0.2 ... 1.7 | 0.3 ... 3.2 | 0.4 ... 4.8 | 0.5 ... 11* |
| <b>Adjustment range of switch-points, decreasing</b> | [bar] | -0.4 ... 1.3 | 0.1 ... 1.6 | 0.1 ... 3.0 | 0.1 ... 4.5 | 0.2 ... 10* |

\* Pressure range 1 ... 10 bar: Max. 2 bar switchpoint difference

# EXP 900/904/912

## Ex Pressostat



### Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

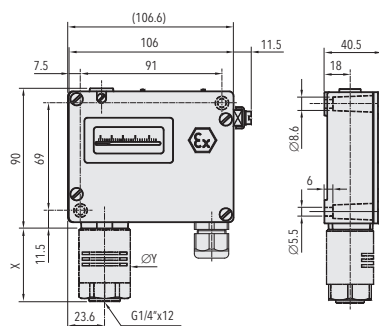
|                        |                                       |                       |                                                                                                                                  |
|------------------------|---------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Measuring principle    | Bellow                                | Media temperature     | -40°C ... +150°C                                                                                                                 |
| Measuring range        | -0.9 ... 1.5 to 4 ... 40 bar          | Ambient temperature   | -50°C ... +65°C                                                                                                                  |
| Output signal          | 1 Floating change-over contact (SPDT) | Approval / conformity | SEV 15 ATEX 0157 X                                                                                                               |
| Switching differential | Not adjustable                        | Type of protection    | Areas with gaz explosion hazards:<br>II 2 G Ex d e IIC T6 Gb<br>Areas with dust explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db |
| Repeatability          | ± 1.0 % FS typ.                       |                       |                                                                                                                                  |

### Standard products (extra short lead time)

| Product No. | Type Code                    | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] | Diameter Y [mm] | Length X [mm] |
|-------------|------------------------------|----------------------|--------------------------|------------------------------|-----------------|---------------|
| EXP1.5      | 900 9172 850 00 0000 0000 02 | -0.9 ... 1.5         | 10                       | 0.2 (fixed)                  | 45              | 56.5          |
| EXP2.5      | 900 9175 851 00 0000 0000 02 | 0.2 ... 2.5          | 10                       | 0.2 (fixed)                  | 45              | 56.5          |
| EXP6        | 900 9177 853 00 0000 0000 02 | 0 ... 6              | 12                       | 0.4 (fixed)                  | 33              | 47            |
| EXP16       | 900 9179 855 00 0000 0000 02 | 1 ... 16             | 24                       | 0.9 (fixed)                  | 27              | 42.5          |

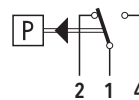
Sensor: 1.4435

Housing / pressure connection: Brass nickel plated



EXP ...

AC 250 V, 5 (5) A  
DC 30 V, 5 (3) A  
DC 250 V, 0.25 (0.03) A

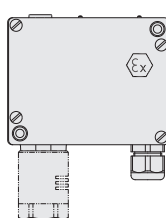
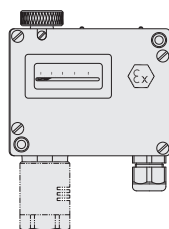
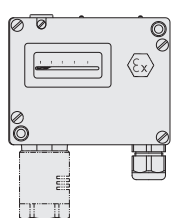
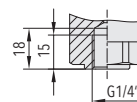
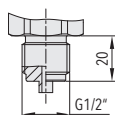
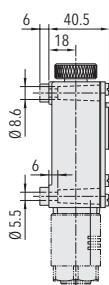
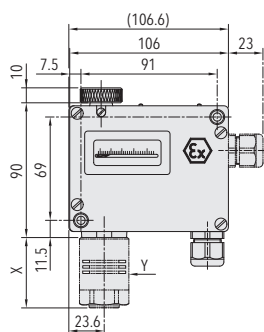


Data sheet  
Instructions

[www.trafag.com/H72263](http://www.trafag.com/H72263)  
[www.trafag.com/H73171](http://www.trafag.com/H73171)

## Ordering information/type code

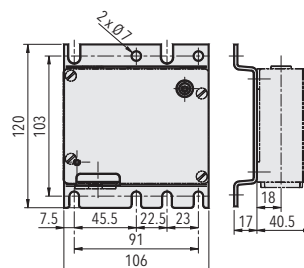
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
|--------------------------|----------------------------------------------------|--------------------------------|-----------------------------|--------------|--------------------|----------------------------|--------------------------------|---------------|--------------|------------|----|
|                          |                                                    |                                |                             |              |                    | XXX                        | XX                             | XX            | XXX          | XX         | XX |
| <b>Custom build code</b> | With display and adjusting screw                   |                                |                             |              |                    | 900                        |                                |               |              |            |    |
|                          | Without display, with adjusting screw              |                                |                             |              |                    | 904                        |                                |               |              |            |    |
|                          | With display and adjusting knob                    |                                |                             |              |                    | 912                        |                                |               |              |            |    |
| <b>Microswitch</b>       | Standard, switching differential not adjustable    |                                |                             |              |                    |                            | 91                             |               |              |            |    |
| <b>Range</b>             | <b>Range [bar]</b>                                 | <b>Over pressure [bar]</b>     | <b>Burst pressure [bar]</b> |              | <b>Range [bar]</b> | <b>Over pressure [bar]</b> | <b>Burst pressure [bar]</b>    |               |              |            |    |
|                          | -0.9 ... 1.5                                       | 10                             | 13                          | <b>72</b>    | 1 ... 10           | 24                         | 36                             | <b>78</b>     |              |            |    |
|                          | 0.2 ... 1.6                                        | 10                             | 13                          | <b>73</b>    | 1 ... 16           | 24                         | 36                             | <b>79</b>     |              |            |    |
|                          | 0.2 ... 2.5                                        | 10                             | 13                          | <b>75</b>    | 2 ... 25           | 40                         | 75                             | <b>80</b>     |              |            |    |
|                          | 0 ... 4                                            | 12                             | 26                          | <b>76</b>    | 4 ... 40           | 40                         | 75                             | <b>81</b>     |              |            |    |
|                          | 0 ... 6                                            | 12                             | 26                          | <b>77</b>    |                    |                            |                                |               |              |            |    |
| <b>Sensor</b>            | <b>Sensor material</b>                             | <b>Sensor housing material</b> | <b>Thread</b>               | <b>Range</b> |                    | <b>Sensor material</b>     | <b>Sensor housing material</b> | <b>Thread</b> | <b>Range</b> |            |    |
|                          | 1.4435                                             | Brass nickel plated            | G1/4" female                | 72           | <b>850</b>         | 1.4435                     | Brass nickel plated            | G1/2" male    | 76, 77       | <b>854</b> |    |
|                          | 1.4435                                             | Brass nickel plated            | G1/2" male                  | 72           | <b>859</b>         | 1.4435                     | Brass nickel plated            | G1/4" female  | 78, 79       | <b>855</b> |    |
|                          | 1.4435                                             | Brass nickel plated            | G1/4" female                | 73, 75       | <b>851</b>         | 1.4435                     | Brass nickel plated            | G1/2" male    | 78, 79       | <b>856</b> |    |
|                          | 1.4435                                             | Brass nickel plated            | G1/2" male                  | 73, 75       | <b>852</b>         | 1.4435                     | Brass nickel plated            | G1/4" female  | 80, 81       | <b>857</b> |    |
|                          | 1.4435                                             | Brass nickel plated            | G1/4" female                | 76, 77       | <b>853</b>         | 1.4435                     | Brass nickel plated            | G1/2" male    | 80, 81       | <b>858</b> |    |
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
|                          |                                                    |                                |                             |              |                    |                            |                                |               |              |            |    |
| <b>Fixing</b>            | Direct on sensor or housing                        |                                |                             |              |                    |                            |                                |               |              | 00         |    |
|                          | With mounting bracket                              |                                |                             |              |                    |                            |                                |               |              | 31         |    |
| <b>Accessories</b>       | Housing stainless steel                            |                                |                             |              |                    |                            |                                |               |              |            | 06 |
|                          | Damping elements and snubber see data sheet H72258 |                                |                             |              |                    |                            |                                |               |              |            |    |



900

912

904



Mounting plate MB31 see chapter 'Accessories'



# EXPK 944/947/953

## Ex Pressostat



### Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

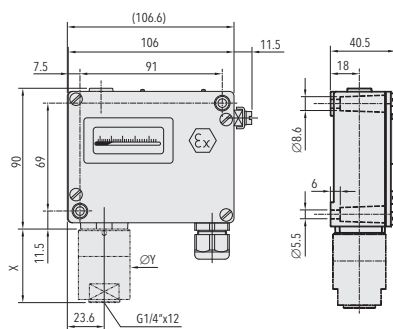
|                        |                                       |                       |                                                                                                                                   |
|------------------------|---------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Measuring principle    | Piston                                | Media temperature     | NBR: -30°C ... +100°C<br>FKM: -15°C ... +150°C                                                                                    |
| Measuring range        | 1 ... 10 to 60 ... 600 bar            | Ambient temperature   | -50°C ... +65°C                                                                                                                   |
| Output signal          | 1 Floating change-over contact (SPDT) | Approval / conformity | SEV 15 ATEX 0157 X                                                                                                                |
| Switching differential | Not adjustable                        | Type of protection    | Areas with gas explosion hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db |
| Repeatability          | ± 1.0 % FS typ.                       |                       |                                                                                                                                   |

### Standard products (extra short lead time)

| Product No. | Type Code                    | Pressure range [bar] | Over pressure max. [bar] | Switching differential [bar] | Diameter Y [mm] | Length X [mm] |
|-------------|------------------------------|----------------------|--------------------------|------------------------------|-----------------|---------------|
| EXPK10      | 944 9178 700 00 0000 0000 02 | 1 ... 10             | 100                      | 0.4 ... 0.8 (fixed)          | 33              | 47            |
| EXPK40      | 944 9181 704 00 0000 0000 02 | 4 ... 40             | 200                      | 2 ... 5 (fixed)              | 27              | 42.5          |
| EXPK100     | 944 9183 708 00 0000 0000 02 | 10 ... 100           | 200                      | 4 ... 11 (fixed)             | 27              | 42.5          |
| EXPK250     | 944 9185 712 00 0000 0000 02 | 25 ... 250           | 400                      | 8 ... 26 (fixed)             | 27              | 42.5          |

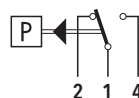
Sensor: 1.4435, O-ring NBR

Housing / pressure connection: 1.4435



EXPK ...

AC 250 V, 5 (5) A  
DC 30 V, 5 (3) A  
DC 250 V, 0.25 (0.03) A



Data sheet  
Instructions

[www.trafag.com/H72270](http://www.trafag.com/H72270)  
[www.trafag.com/H73171](http://www.trafag.com/H73171)

# EXPD 920/924/932

## Ex Differential Pressostat



### Features

- Rugged aluminium housing
- Protection IP66
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db
- Any mounting position possible

### Technical Data

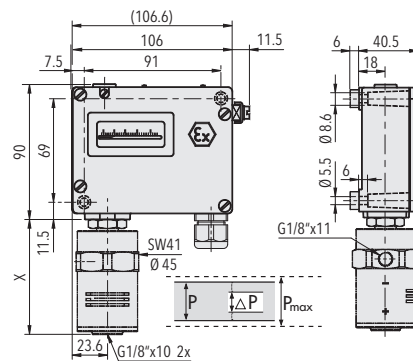
|                        |                                       |                       |                                                                                                                                   |
|------------------------|---------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Measuring principle    | Bellow                                | Repeatability         | ± 1.0 % FS typ.                                                                                                                   |
| Measuring range        | -1 ... 6 to -1 ... 18 bar             | Media temperature     | -50°C ... +150°C                                                                                                                  |
| Differential pressure  | -0.6 ... 3.4 to 1 ... 16 bar          | Ambient temperature   | -50°C ... +65°C                                                                                                                   |
| Output signal          | 1 Floating change-over contact (SPDT) | Approval / conformity | SEV 15 ATEX 0157 X                                                                                                                |
| Switching differential | Not adjustable                        | Type of protection    | Areas with gas explosion hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db |

### Standard products (extra short lead time)

| Product No. | Type Code                    | Pressure range [bar] | Differential pressure [bar] | Over pressure max. [bar] | Switching differential [bar] | Length X [mm] |
|-------------|------------------------------|----------------------|-----------------------------|--------------------------|------------------------------|---------------|
| EXPD3.4     | 920 9174 992 00 0000 0000 02 | -1 ... +6            | -0.6 ... +3.4               | 12                       | 0.4 (fixed)                  | 77            |
| EXPD6       | 920 9177 993 00 0000 0000 02 | -1 ... +8            | 0 ... 6                     | 12                       | 0.4 (fixed)                  | 77            |
| EXPD16      | 920 9179 994 00 0000 0000 02 | -1 ... +18           | 1 ... 16                    | 24                       | 0.7 (fixed)                  | 87            |

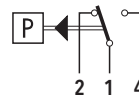
Sensor: Bronze

Housing / pressure connection: Brass nickel plated



EXPD ...

AC 250 V, 5 (5) A  
DC 30 V, 5 (3) A  
DC 250 V, 0.25 (0.03) A



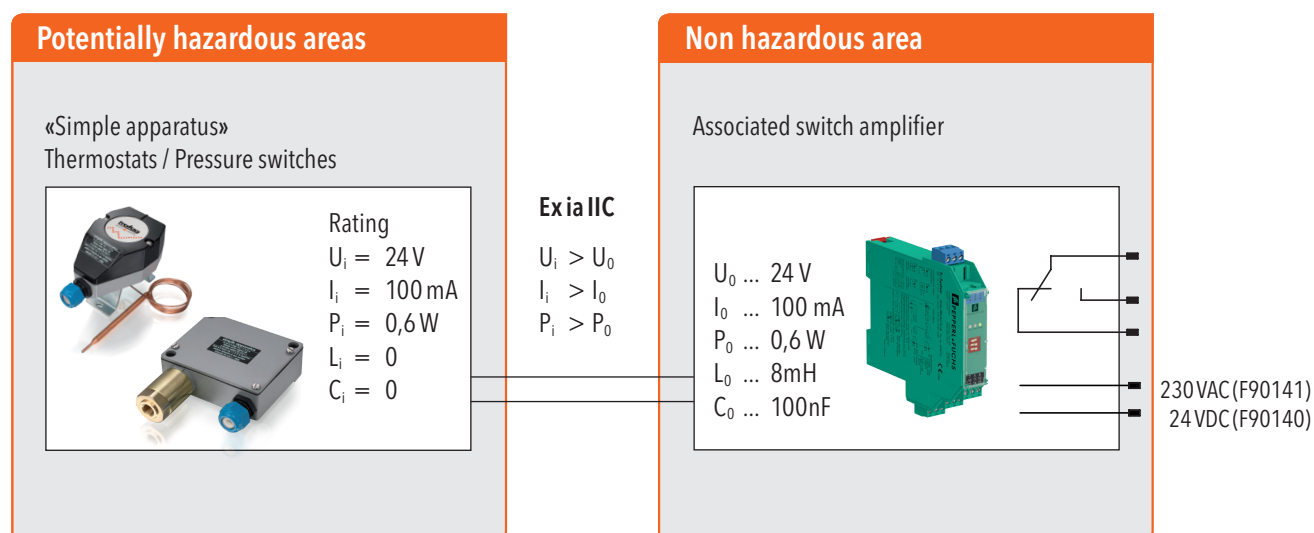
Data sheet  
Instructions

[www.trafag.com/H72256](http://www.trafag.com/H72256)  
[www.trafag.com/H73171](http://www.trafag.com/H73171)

# Simple Apparatus

Pressostats and Thermostats, when combined with a certified switch amplifier (Zener barrier/Zener relay), can be used as «simple electrical apparatus» in Zone 1 and 2, as well as in Zone 21 and 22, according to IEC/EN 60079-14. These pressostats and thermostats are not suitable for Zone 0 and Zone 20. The use in safety relevant applications (approved electrical apparatus) is not permitted.

Switch amplifiers are suitable for intrinsically safe applications. The device transmits signals from the hazardous area into the safe area.



Recommended switch amplifier (see chapter "Accessories"):

Trafag parts no.: ZEN230VAC (230 VAC)

ZEN24VDC (24 VDC)

If another type of switch amplifier is used, make sure its electrical rating limits are within the specification of the simple apparatus thermostat or pressostat.

# «Simple Apparatus» 904 conformity to ATEX

## Pressostat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

### Technical Data

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| Measuring principle    | Bellow                                                                                |
| Measuring range        | -0.9 ... 1.5 to 10 ... 100 bar                                                        |
| Output signal          | 1 Floating change-over contact (SPDT)                                                 |
| Switching differential | Not adjustable                                                                        |
| Repeatability          | ± 1.0 % FS typ.                                                                       |
| Media temperature      | -40°C ... +150°C                                                                      |
| Ambient temperature    | -25°C ... +70°C                                                                       |
| Approval / conformity  | EN60730-1/ EN60730-2-6: Typ 2.B.H<br>EN60079-0, EN60079-11 Zone 1 and 2,<br>21 and 22 |

Switch amplifier See chapter “Accessories”



Data sheet

[www.trafag.com/H72364](http://www.trafag.com/H72364)

# «Simple Apparatus» 924 conformity to ATEX

## Differential Pressure Pressostat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

### Technical Data

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| Measuring principle    | Bellow                                                                                |
| Measuring range        | -1 ... 6 to -1 ... 18 bar                                                             |
| Differential pressure  | -0.6 ... 3.4 to 1 ... 16 bar                                                          |
| Output signal          | 1 Floating change-over contact (SPDT)                                                 |
| Switching differential | Not adjustable                                                                        |
| Repeatability          | ± 1.0 % FS typ.                                                                       |
| Media temperature      | -40°C ... +150°C                                                                      |
| Approval / conformity  | EN60730-1/ EN60730-2-6: Typ 2.B.H<br>EN60079-0, EN60079-11 Zone 1 and 2,<br>21 and 22 |

Switch amplifier See chapter “Accessories”



Data sheet

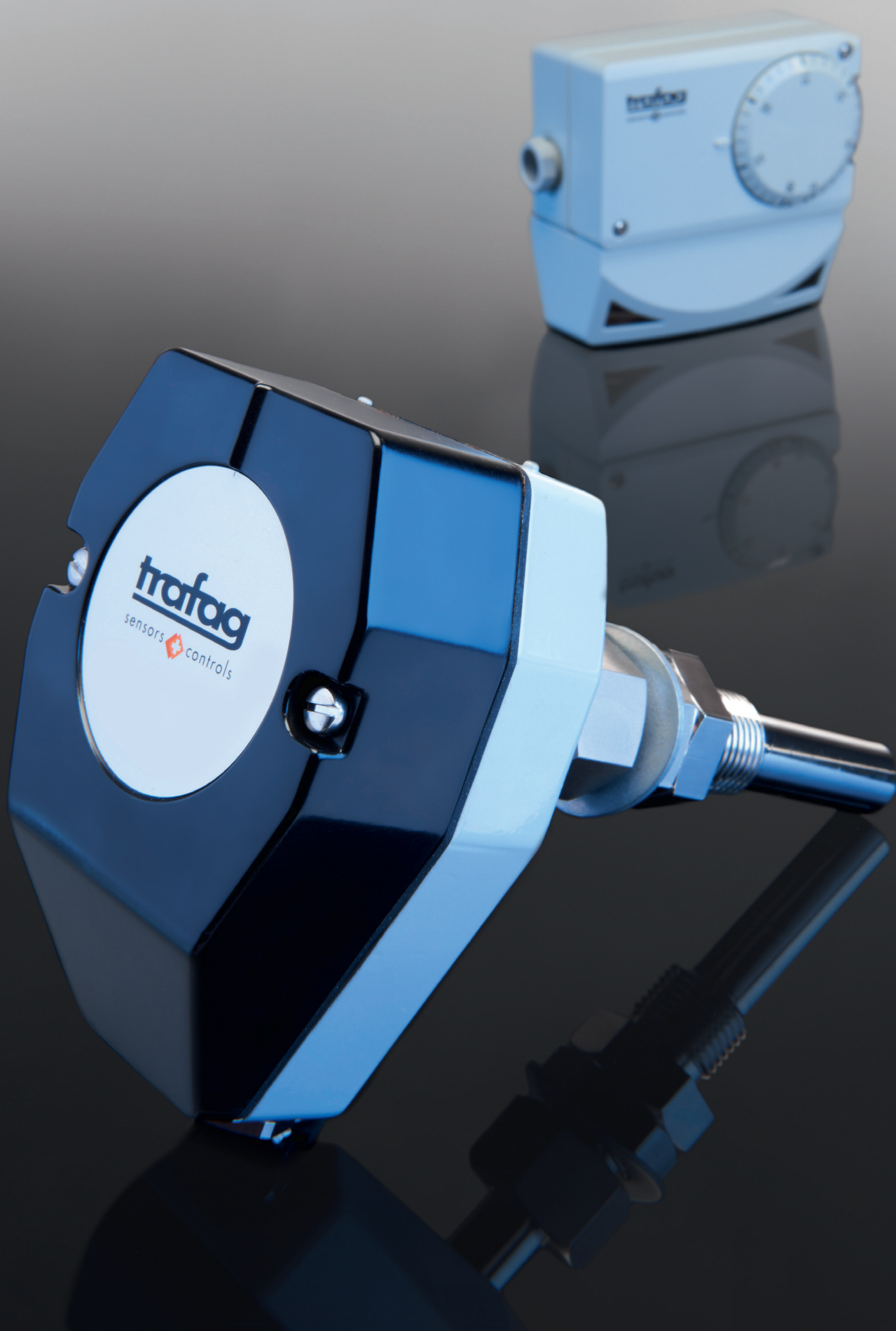
[www.trafag.com/H72365](http://www.trafag.com/H72365)

# Technical data pressure switches

|                                     | PST4B<br>9B4                                                                     | PST4K<br>9K4                                                                                 | PST4M<br>9M4                                                                                 | PSTD<br>9D0                              | P/PS<br>900/904/912                                                                                    | PV/PVF<br>903/907/915/940/941/942                                                    |  |
|-------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--|
| <b>Main characteristics</b>         |                                                                                  |                                                                                              |                                                                                              |                                          |                                                                                                        |                                                                                      |  |
| Measuring principle                 | Bellow                                                                           | Piston                                                                                       | Membrane                                                                                     | Bellow                                   | Bellow                                                                                                 | Bellow                                                                               |  |
| Measuring range                     | -0.6 ... 3.4 to 4 ... 40 bar<br>-8 ... 45 to 60 ... 500 psi                      | 1 ... 10 to 40 ... 400 bar<br>14 ... 150 to<br>580 ... 5800 psi                              | 1 ... 10 to 10 ... 100 bar<br>14 ... 150 to<br>150 ... 1500 psi                              | -1 ... 6 and -1 ... 8 bar                | -0.9 ... 1.5 to<br>10 ... 100 bar<br>5 ... 50 to<br>125 ... 1500 psi                                   | -0.9 ... 1.5 to 4 ... 40 bar<br>5 ... 50 to 50 ... 500 psi                           |  |
| Output signal                       | 1 Floating change-over<br>contact (SPDT)                                         | 1 Floating change-over<br>contact (SPDT)                                                     | 1 Floating change-over<br>contact (SPDT)                                                     | 1 Floating change-over<br>contact (SPDT) | 1 Floating change-over<br>contact (SPDT)                                                               | 1 Floating change-over contact<br>(SPDT)                                             |  |
| Switching differential              | Not adjustable                                                                   | Not adjustable                                                                               | Not adjustable                                                                               | Not adjustable                           | Not adjustable                                                                                         | Adjustable                                                                           |  |
| <b>Accuracy</b>                     |                                                                                  |                                                                                              |                                                                                              |                                          |                                                                                                        |                                                                                      |  |
| Repeatability                       | ± 0.5 % FS typ.                                                                  | ± 1.0 % FS typ.                                                                              | ± 2.0 % FS typ.                                                                              | ± 1.0 % FS typ.                          | ± 1.0 % FS typ.                                                                                        | ± 1.0 % FS typ.                                                                      |  |
| Resistance of<br>insulation         | 500 VDC > 10 MΩ                                                                  | 500 VDC > 10 MΩ                                                                              | 500 VDC > 10 MΩ                                                                              | > 2 MΩ                                   | > 2 MΩ                                                                                                 | 500 VDC/100 MΩ                                                                       |  |
| Dielectric strength                 | >1.5 kV AC/60 s<br>terminal ground<br>>500 VAC/60 s via open<br>contacts         | (IEC/EN 60730-1)<br>>1.5 kV AC/60 s<br>terminal ground<br>>500 VAC/60 s via open<br>contacts | (IEC/EN 60730-1)<br>>1.5 kV AC/60 s<br>terminal ground<br>>500 VAC/60 s via open<br>contacts | 1.45 kV terminal<br>ground               | U ≤ 250V: 1.45 kV /<br>U ≤ 500V: 2 kV terminal<br>ground                                               | 2 kV terminal ground                                                                 |  |
| Cable gland                         |                                                                                  |                                                                                              |                                                                                              |                                          | M20x1.5<br>Cable-Ø 6...13 mm                                                                           | M20x1.5<br>Cable-Ø 6...13 mm                                                         |  |
| Terminal screw                      |                                                                                  |                                                                                              |                                                                                              |                                          | 3 x 1.5...4 mm <sup>2</sup>                                                                            | 3 x 1.5...4 mm <sup>2</sup>                                                          |  |
| Electrical connections              | EN175301-803-A<br>(DIN43650-A)                                                   | EN175301-803-A<br>(DIN43650-A)                                                               | EN175301-803-A<br>(DIN43650-A)                                                               | EN175301-803-A<br>(DIN43650-A)           | Screw terminal                                                                                         | Screw terminal                                                                       |  |
| <b>Environmental<br/>conditions</b> |                                                                                  |                                                                                              |                                                                                              |                                          |                                                                                                        |                                                                                      |  |
| Media temperature                   | -25°C ... +125°C<br>-40°C ... +125°C                                             | -25°C ... +125°C<br>-40°C ... +125°C                                                         | 0°C ... +80°C                                                                                | -25°C ... +120°C                         | -40°C ... +150°C                                                                                       | -40°C ... +150°C                                                                     |  |
| Ambient temperature                 | -25°C ... +125°C<br>-40°C ... +125°C                                             | -25°C ... +125°C<br>-40°C ... +125°C                                                         | 0°C ... +80°C                                                                                | -25°C ... +85°C                          | -25°C ... +70°C                                                                                        | -25°C ... +70°C                                                                      |  |
| Protection                          | IP65                                                                             | IP65                                                                                         | IP65                                                                                         | IP65                                     | IP65                                                                                                   | IP65                                                                                 |  |
| Humidity                            | Max. 95 % relative                                                               | Max. 95 % relative                                                                           | Max. 95 % relative                                                                           | Max. 95 % relative                       | Max. 95% relative                                                                                      | Max.95 % relative                                                                    |  |
| Vibration                           | Switch:<br>IEC/EN 60068-2-6<br>10...59 Hz:<br>±0.75 mm Ampl.<br>59...500 Hz: 5 g | Switch<br>IEC/EN 60068-2-6:<br>10...59 Hz:<br>±0.75 mm Ampl.<br>59...500 Hz: 5 g             | Switch<br>IEC/EN 60068-2-6:<br>10...59 Hz:<br>±0.75 mm Ampl.<br>59...500 Hz: 5 g             | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g   | Switch 23/26:<br>5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g<br>Ranges 72, 73, 75,<br>5...50 Hz: 20 mm/sec. | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g<br>Ranges 72, 73, 75<br>5...50 Hz: 20 mm/sec. |  |
| Shock                               | 50 g / 3 ms                                                                      | 50 g / 3 ms                                                                                  | 50 g / 3 ms                                                                                  | 50 g / 11 ms                             | 50 g / 11 ms                                                                                           | 50 g / 11 ms                                                                         |  |
| <b>Mechanical data</b>              |                                                                                  |                                                                                              |                                                                                              |                                          |                                                                                                        |                                                                                      |  |
| Housing                             | Aluminium EN<br>AW-6026 AlMgSiPb0.4<br>anodized                                  | Aluminium EN<br>AW-6026 AlMgSiPb0.4<br>anodized                                              | Aluminium EN<br>AW-6082 AlMgSi1<br>anodized                                                  | Brass CuZn39Pb3                          | AlSi10Mg/ Epoxy coated                                                                                 | AlSi10Mg/ Epoxy coated                                                               |  |
| Sealing                             | HNBR 75 Sh                                                                       | PTFE                                                                                         | FKM                                                                                          | -                                        | NBR                                                                                                    | NBR                                                                                  |  |
| Weight                              | ~ 160 g                                                                          | ~ 200 g                                                                                      | ~ 200 g                                                                                      | ~ 800 g                                  | ~ 710 g                                                                                                | ~ 710 g                                                                              |  |

|  | <b>PK<br/>944/947</b>                                    | <b>PD<br/>920/924/932</b>                               | <b>901/902/905/906</b>                   | <b>987/988</b>                                    | <b>EXP<br/>900/904/912</b>                                                            | <b>EXPK<br/>944/947/953</b>                                            | <b>EXPD<br/>920/924/932</b>                                            |
|--|----------------------------------------------------------|---------------------------------------------------------|------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
|  | Piston                                                   | Bellow                                                  | Membrane                                 | Bellow                                            | Bellow                                                                                | Piston                                                                 | Bellow                                                                 |
|  | 1 ... 10 to 60 ... 600 bar                               | -1 ... 6 to -1 ... 18 bar                               | 30 ... 600 and<br>50 ... 1000 mbar       | -0.3 ... 1.3 to 1 ... 10 bar                      | -0.9 ... 1.5 to 4 ... 40 bar                                                          | 1 ... 10 to 60 ... 600 bar                                             | -1 ... 6 to -1 ... 18 bar                                              |
|  | 1 Floating change-over<br>contact (SPDT)                 | 1 Floating change-over<br>contact (SPDT)                | 1 Floating change-over<br>contact (SPDT) | 1 or 2 floating<br>change-over contacts<br>(SPDT) | 1 Floating change-over<br>contact (SPDT)                                              | 1 Floating change-over<br>contact (SPDT)                               | 1 Floating change-over<br>contact (SPDT)                               |
|  | Not adjustable                                           | Not adjustable                                          | Not adjustable                           | Not adjustable                                    | Not adjustable                                                                        | Not adjustable                                                         | Not adjustable                                                         |
|  | ± 1.0 % FS typ.                                          | ± 1.0 % FS typ.                                         | ± 1.0 % FS typ.                          | ± 1.0 % FS typ.                                   | ± 1.0 % FS typ.                                                                       | ± 1.0 % FS typ.                                                        | ± 1.0 % FS typ.                                                        |
|  | 500 VDC / 100 MΩ                                         | > 2 MΩ                                                  | > 2 MΩ                                   | > 2 MΩ, 500 VDC                                   | > 2 MΩ                                                                                | > 2 MΩ                                                                 | > 2 MΩ                                                                 |
|  | U ≤ 250V: 1.45 kV /<br>U ≤ 500V: 2 kV<br>terminal ground | U ≤ 250V: 1.45 kV/<br>U ≤ 500V: 2 kV<br>terminal ground | 2 kV terminal ground                     | 2 kV terminal ground                              | 1.5 kV                                                                                | 1.5 kV                                                                 | 1.5 kV                                                                 |
|  | M20x1.5<br>Cable-Ø 6...13 mm                             | M20x1.5<br>Cable-Ø 6...13 mm                            | M20x1.5<br>Cable-Ø 6...13 mm             |                                                   | M20x1.5/SW24<br>Cable-Ø 5.5-13 mm<br>Approval:<br>PTB 99 ATEX 3128 X                  | M20x1.5/SW24<br>Cable-Ø 5.5...13 mm<br>Approval:<br>PTB 99 ATEX 3128 X | M20x1.5/SW24<br>Cable-Ø 5.5...13 mm<br>Approval:<br>PTB 99 ATEX 3128 X |
|  | 3 x 1.5...4 mm²                                          | 3 x 1.5...4 mm²                                         | 3 x 0.5...4 mm²                          |                                                   | 3 x 0.5...1.5 mm²                                                                     | 3 x 0.5...1.5 mm²                                                      | 3 x 0.5...1.5 mm²                                                      |
|  | Screw terminal                                           | Screw terminal                                          | Screw terminal                           | Blade connector                                   | Screw terminal                                                                        | Screw terminal                                                         | Screw terminal                                                         |
|  | NBR: -30°C ... +100°C<br>FKM: -15°C ... +150°C           | -40°C ... +150°C                                        | -40°C ... +150°C                         | -25°C ... +80°C                                   | -40°C ... +150°C                                                                      | NBR: -30°C ... +100°C<br>FKM: -15°C ... +150°C                         | -50°C ... +150°C                                                       |
|  | -20°C ... +70°C                                          | -25°C ... +70°C                                         | -25°C ... +70°C                          | -25°C ... +70°C                                   | -50°C ... +65°C                                                                       | -50°C ... +65°C                                                        | -50°C ... +65°C                                                        |
|  | IP65                                                     | IP65                                                    | IP65                                     | IP40<br>(Microswitch IP67)                        | IP66                                                                                  | IP66                                                                   | IP66                                                                   |
|  | Max. 95 % relative                                       | Max. 95 % relative                                      | Max. 95 % relative                       | Max. 95 % relative                                | Max. 95 % relative                                                                    | Max. 95 % relative                                                     | Max. 95 % relative                                                     |
|  | Switch 23/26:<br>5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g  | Switch 23/26:<br>5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g   | 5 ... 100 Hz: 2 g                                 | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g<br>Ranges 72, 73, 75:<br>5...50 Hz: 20 mm/sec. | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g                                 | 5...25 Hz: ±1.6 mm<br>25...100 Hz: 4 g                                 |
|  | 50 g / 11 ms                                             | 50 g / 11 ms                                            | 50 g / 11 ms                             | 50 g / 11 ms                                      | 50 g / 11 ms                                                                          | 50 g / 11 ms                                                           | 50 g / 11 ms                                                           |
|  | AlSi10Mg/ Epoxy coated                                   | AlSi10Mg/ Epoxy coated                                  | AlSi10Mg/ Epoxy coated                   | PBTP, Crastin                                     | AlSi10Mg/ Epoxy coated<br>Accessory 06:<br>1.4301 (AISI 304)                          | AlSi10Mg/ Epoxy coated<br>Accessory 06:<br>1.4301 (AISI 304)           | AlSi10Mg/ Epoxy coated                                                 |
|  | NBR/FKM                                                  | NBR                                                     | NBR                                      | -                                                 | NBR                                                                                   | NBR / FKM                                                              | NBR                                                                    |
|  | ~ 710 g                                                  | ~ 610 g                                                 | ~ 850 g                                  | ~ 110 g                                           | ~ 710 g                                                                               | ~ 710 g                                                                | ~ 610 g                                                                |





# Thermostats

For 70 years, Trafag thermostats have proven their robustness in the most adverse environmental conditions. Industry useage ranges from air conditioning applications to engine manufacturing and ship building and even to offshore oil and gas platform production. The appeal of Trafag thermostats lies in their high switching point precision even after decades of operation under harsh conditions without maintenance. Various sensor and casing designs cover a wide range of temperatures and possible applications.

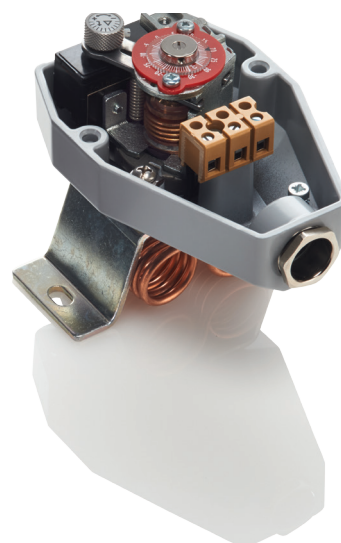
## Measurement principle

A capillary tube filled with liquid reacts to a temperature change as a result of the principle of thermal expansion. This expansion is detected using a precision structure which switches one or multiple microswitches.



## Design variations

- With internal or external temperature set-point adjustment
- Internal or external measuring scale
- With or without a manual reset switch
- With or without switching differential adjustment
- Switch designs for inside or outside applications
- Optional capillary tube safeguard
- Single or double-step circuit
- CE, EX or ship certifications

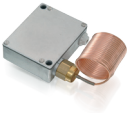


## Sensor systems and accessories

- Sensors that are fixed or can be mounted freely
- Copper (Cu), Cu nickel-plated or stainless steel sensor material
- Nickel-plated bronze or stainless steel protective sensor tube
- Additional capillary tube protection

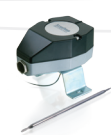
# Overview Thermostats

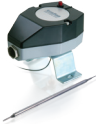
|                                   | A/AS/ASE<br>645/650                                                               | ADS<br>319                                                                        | A2/A2S<br>198/199                                                                 | IA/IAS<br>409/419                                                                  | MSK<br>624/634                                                                      | MP/MSP<br>663/664                                                                   |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                                   | page 110                                                                          | page 111                                                                          | page 112                                                                          | page 113                                                                           | page 114                                                                            | page 115                                                                            |  |
|                                   |  |  |  |  |  |  |  |
| <b>Designation of application</b> | Room thermostat                                                                   | Double room thermostat                                                            | Multistage room thermostat                                                        | Industrial room thermostat                                                         | Duct thermostat                                                                     | Pipe mounting thermostat                                                            |  |
| <b>Measuring range</b>            | -45°C ... +15°C to 0°C ... +60°C                                                  | -30°C ... +30°C to 0°C ... +60°C                                                  | -45°C ... +15°C to 0°C ... +60°C                                                  | -30°C ... +30°C to 0°C ... +60°C                                                   | -30°C ... +40°C to +20°C ... +110°C                                                 | -10°C ... +35°C to +20°C ... +110°C                                                 |  |
| <b>Output signal</b>              | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                       | Floating change-over contact                                                        | Floating change-over contact                                                        |  |
| <b>Switching differential</b>     | Adjustable / not adjustable                                                       | Adjustable / not adjustable                                                       | Not adjustable                                                                    | Adjustable / not adjustable                                                        | Adjustable / not adjustable                                                         | Adjustable / not adjustable                                                         |  |
| <b>Ambient temperature</b>        | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                    | -30°C ... +70°C                                                                     | -30°C ... +70°C                                                                     |  |
| <b>Protection</b>                 | IP54                                                                              | IP54                                                                              | IP54                                                                              | IP65                                                                               | IP54                                                                                | IP54                                                                                |  |
| <b>Applications</b>               | HVAC<br>Refrigeration                                                             | HVAC<br>Refrigeration                                                             | HVAC<br>Refrigeration                                                             | HVAC                                                                               | HVAC                                                                                | Process technology<br>Water treatment                                               |  |
| <b>Approval / conformity</b>      | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                               | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                                | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                                |  |
| <b>Type of protection</b>         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |  |
| <b>Data sheet</b>                 | <a href="http://www.trafag.com/H72170">www.trafag.com/H72170</a>                  | <a href="http://www.trafag.com/H72146">www.trafag.com/H72146</a>                  | <a href="http://www.trafag.com/H72137">www.trafag.com/H72137</a>                  | <a href="http://www.trafag.com/H72116">www.trafag.com/H72116</a>                   | <a href="http://www.trafag.com/H72177">www.trafag.com/H72177</a>                    | <a href="http://www.trafag.com/H72175">www.trafag.com/H72175</a>                    |  |
| <b>Instructions</b>               | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                  | <a href="http://www.trafag.com/H73170">www.trafag.com/H73170</a>                  | <a href="http://www.trafag.com/H70311">www.trafag.com/H70311</a>                  | <a href="http://www.trafag.com/H73111">www.trafag.com/H73111</a>                   | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                    | <a href="http://www.trafag.com/H73663">www.trafag.com/H73663</a>                    |  |

|  | <b>MST<br/>624/634</b>                                                            | <b>M/MS<br/>624/634</b>                                                           | <b>MS...R<br/>630/632</b>                                                         | <b>F/F...R<br/>990/991/992/993</b>                                                  | <b>GS<br/>657/658</b>                                                              | <b>D...R<br/>302</b>                                                                | <b>M2S<br/>104/114</b>                                                              |
|--|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | page 116                                                                          | page 118                                                                          | page 117                                                                          | page 123                                                                            | page 120                                                                           | page 121                                                                            | page 122                                                                            |
|  |  |  |  |    |  |  |  |
|  | Direct mounting thermostat                                                        | Remote sensing thermostat                                                         | Remote sensing thermostat with limiter                                            | Frost protection thermostat                                                         | Remote sensing thermostat                                                          | Double thermostat with remote sensor and limiter                                    | Multistage thermostat with remote sensor                                            |
|  | -30°C ... +40°C to +70°C ... +350°C                                               | -30°C ... +40°C to +70°C ... +350°C                                               | -30°C ... +40°C to +70°C ... +350°C                                               | -5°C ... +15°C                                                                      | +5°C ... +95°C and +20°C ... +150°C                                                | -30°C ... +40°C to +70°C ... +350°C                                                 | -30°C ... +40°C to +70°C ... +350°C                                                 |
|  | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                        | Floating change-over contact                                                       | Floating change-over contact                                                        | Floating change-over contact                                                        |
|  | Adjustable / not adjustable                                                       | Adjustable / not adjustable                                                       | Not adjustable                                                                    | Not adjustable                                                                      | Not adjustable                                                                     | Adjustable / not adjustable                                                         | Not adjustable                                                                      |
|  | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | Max. operating temperature: +70°C<br>Min. operating temperature: switch point + 2°C | -30°C ... +70°C                                                                    | -30°C ... +70°C                                                                     | -30°C ... +70°C                                                                     |
|  | IP54                                                                              | IP54                                                                              | IP54                                                                              | IP 54                                                                               | IP54                                                                               | IP54                                                                                | IP54                                                                                |
|  | Machine tools<br>HVAC<br>Process technology<br>Water treatment                    | Railways<br>Machine tools<br>HVAC<br>Refrigeration<br>Process technology          | Railways<br>Machine tools<br>HVAC<br>Refrigeration<br>Process technology          | HVAC<br>Refrigeration                                                               | Process technology                                                                 | HVAC<br>Refrigeration                                                               | Machine tools<br>HVAC<br>Refrigeration<br>Process technology                        |
|  | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                                | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                               | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                                | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                                |
|  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                    |                                                                                     |                                                                                     |
|  | <a href="http://www.trafag.com/H72174">www.trafag.com/H72174</a>                  | <a href="http://www.trafag.com/H72172">www.trafag.com/H72172</a>                  | <a href="http://www.trafag.com/H72173">www.trafag.com/H72173</a>                  | <a href="http://www.trafag.com/H72123">www.trafag.com/H72123</a>                    | <a href="http://www.trafag.com/H72179">www.trafag.com/H72179</a>                   | <a href="http://www.trafag.com/H72142">www.trafag.com/H72142</a>                    | <a href="http://www.trafag.com/H72139">www.trafag.com/H72139</a>                    |
|  | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                  | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                  | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                  | <a href="http://www.trafag.com/H70821">www.trafag.com/H70821</a>                    | <a href="http://www.trafag.com/H73624">www.trafag.com/H73624</a>                   | <a href="http://www.trafag.com/H73170">www.trafag.com/H73170</a>                    | <a href="http://www.trafag.com/H70311">www.trafag.com/H70311</a>                    |



# Overview Thermostats

|                                   | L/LF<br>736/754                                                                   | L...R<br>755                                                                      | I/IS<br>404/414                                                                   | IS...R<br>410/412                                                                  | ISN/ISNT<br>471/472                                                                    | ISP/ISPT<br>474                                                                                |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--|
|                                   | page 124                                                                          | page 125                                                                          | page 126                                                                          | page 129                                                                           | page 130                                                                               | page 132                                                                                       |  |
|                                   |  |  |  |  |     |             |  |
| <b>Designation of application</b> | Remote sensing thermostat, skeleton type                                          | Remote sensing thermostat with limiter, skeleton type                             | Industrial thermostat with remote sensor                                          | Industrial thermostat with remote sensor and limiter                               | Thermostat for shipbuilding                                                            | Compact thermostat for shipbuilding                                                            |  |
| <b>Measuring range</b>            | -30°C ... +40°C to +70°C ... +350°C                                               | -30°C ... +40°C to +70°C ... +350°C                                               | -30°C ... +40°C to +70°C ... +350°C                                               | -30°C ... +40°C to +70°C ... +350°C                                                | +20°C ... +110°C to +40°C ... +300°C                                                   | +5°C ... +95°C to +20°C ... +150°C                                                             |  |
| <b>Output signal</b>              | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                      | Floating change-over contact                                                       | Floating change-over contact                                                           | Floating change-over contact                                                                   |  |
| <b>Switching differential</b>     | Adjustable / not adjustable                                                       | Not adjustable                                                                    | Adjustable / not adjustable                                                       | Not adjustable                                                                     | Not adjustable                                                                         | Not adjustable                                                                                 |  |
| <b>Ambient temperature</b>        | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                   | -30°C ... +70°C                                                                    | -30°C ... +70°C                                                                        | -30°C ... +70°C                                                                                |  |
| <b>Protection</b>                 | IP00                                                                              | IP00                                                                              | IP65                                                                              | IP65                                                                               | IP65                                                                                   | IP65                                                                                           |  |
| <b>Applications</b>               | Machine tools                                                                     | Machine tools                                                                     | Railways<br>Machine tools                                                         | Machine tools<br>Process technology                                                | Shipbuilding<br>Engine manufacturing<br>Railways                                       | Shipbuilding<br>Engine manufacturing<br>Railways<br>Hydraulics<br>HVAC                         |  |
| <b>Approval / conformity</b>      | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                              | EN60730-1/<br>EN60730-2-9: Typ 2.B.H                                               | ABS, BV, CCS, DNV, GL,<br>KRS, LRS, RINA, RMRS<br>EN60730-1/<br>EN60730-2-9: Typ 2.B.H | ABS, BV, CCS, DNV, GL,<br>KRS, LRS, NKK, RINA,<br>RMRS<br>EN60730-1/<br>EN60730-2-9: Typ 2.B.H |  |
| <b>Type of protection</b>         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                        |                                                                                                |  |
| <b>Data sheet</b>                 | <a href="http://www.trafag.com/H72122">www.trafag.com/H72122</a>                  | <a href="http://www.trafag.com/H72124">www.trafag.com/H72124</a>                  | <a href="http://www.trafag.com/H72110">www.trafag.com/H72110</a>                  | <a href="http://www.trafag.com/H72138">www.trafag.com/H72138</a>                   | <a href="http://www.trafag.com/H72111">www.trafag.com/H72111</a>                       | <a href="http://www.trafag.com/H72113">www.trafag.com/H72113</a>                               |  |
| <b>Instructions</b>               | <a href="http://www.trafag.com/H70211">www.trafag.com/H70211</a>                  | <a href="http://www.trafag.com/H70211">www.trafag.com/H70211</a>                  | <a href="http://www.trafag.com/H73111">www.trafag.com/H73111</a>                  | <a href="http://www.trafag.com/H73111">www.trafag.com/H73111</a>                   | <a href="http://www.trafag.com/H73111">www.trafag.com/H73111</a>                       | <a href="http://www.trafag.com/H73113">www.trafag.com/H73113</a>                               |  |

| EXS<br>404/414                                                                                                                          | EXAS<br>409/419                                                                                                                         | «Simple Apparatus»<br>conformity to ATEX<br>414                                          | «Simple Apparatus»<br>conformity to ATEX<br>419                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| page 134                                                                                                                                | page 137                                                                                                                                | page 138                                                                                 | page 138                                                                                 |
|                                                        |                                                        |         |         |
| Ex Industrial thermostat<br>with remote sensor                                                                                          | Ex Industrial room<br>thermostat                                                                                                        | Industrial room<br>thermostat with remote<br>sensor                                      | Industrial room<br>thermostat                                                            |
| -30°C ... +40°C to<br>+70°C ... +350°C°C                                                                                                | -30°C ... +30°C to<br>0°C ... +60°C                                                                                                     | -30°C ... +40°C to<br>+70°C ... +350°C                                                   | -30°C ... +30°C to<br>0°C ... +60°C                                                      |
| Floating change-over<br>contact                                                                                                         | Floating change-over<br>contact                                                                                                         | Floating change-over<br>contact                                                          | Floating change-over<br>contact                                                          |
| Not adjustable                                                                                                                          | Not adjustable                                                                                                                          | Not adjustable                                                                           | Not adjustable                                                                           |
| -30°C ... +70°C                                                                                                                         | -30°C ... +60°C                                                                                                                         | -30°C ... +70°C                                                                          | -30°C ... max. +65°C                                                                     |
| IP65                                                                                                                                    | IP65                                                                                                                                    | IP65                                                                                     | IP65                                                                                     |
| ⚡ II 2 G / D                                                                                                                            | ⚡ II 2 G / D                                                                                                                            | Hazardous area                                                                           | Hazardous area                                                                           |
| SEV 15 ATEX 0156 X                                                                                                                      | SEV 15 ATEX 0156 X                                                                                                                      | EN60730-1/<br>EN60730-2-9: Typ 2.B.H<br>EN60079-0, EN60079-11<br>Zone 1 and 2, 21 and 22 | EN60730-1/<br>EN60730-2-9: Typ 2.B.H<br>EN60079-0, EN60079-11<br>Zone 1 and 2, 21 and 22 |
| Areas with gas explosion<br>hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust<br>explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db | Areas with gas explosion<br>hazards:<br>II 2 G Ex d e IIC T6 Gb;<br>Areas with dust<br>explosion hazards:<br>II 2 D Ex tb IIIC T80°C Db |                                                                                          |                                                                                          |
| <a href="http://www.trafag.com/H72108">www.trafag.com/H72108</a>                                                                        | <a href="http://www.trafag.com/H72128">www.trafag.com/H72128</a>                                                                        | <a href="http://www.trafag.com/H72183">www.trafag.com/H72183</a>                         | <a href="http://www.trafag.com/H72182">www.trafag.com/H72182</a>                         |
| <a href="http://www.trafag.com/H73172">www.trafag.com/H73172</a>                                                                        | <a href="http://www.trafag.com/H73172">www.trafag.com/H73172</a>                                                                        | <a href="http://www.trafag.com/H73173">www.trafag.com/H73173</a>                         | <a href="http://www.trafag.com/H73173">www.trafag.com/H73173</a>                         |



# A/AS/ASE 645/650

## Ambistat



### Features

- Switching differential adjustable or fixed
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                  |                        |                                   |
|----------------------------|----------------------------------|------------------------|-----------------------------------|
| Designation of application | Room thermostat                  | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -45°C ... +15°C to 0°C ... +60°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact     | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

[www.trafag.com/H72170](http://www.trafag.com/H72170)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

### Standard products (extra short lead time)

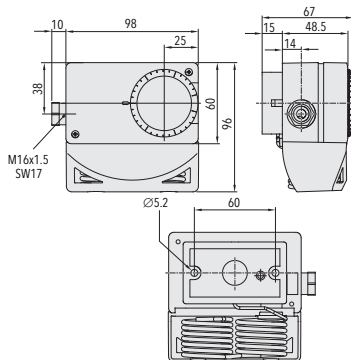
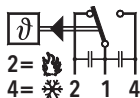
| Product No. | Type Code                             | Temperature range [°C] | Switching differential [°C] | Operating temperature [°C] |
|-------------|---------------------------------------|------------------------|-----------------------------|----------------------------|
| A30         | 645 2503 402 19                       | 0 ... +30              | 0.7 ... 6 (adjustable)      | -30 ... +50                |
| A33         | 645 2502 402 19                       | -30 ... +30            | 0.7 ... 6 (adjustable)      | -30 ... +40                |
| A40         | 645 2504 402 19                       | +10 ... +40            | 0.7 ... 6 (adjustable)      | -30 ... +70                |
| A60         | 645 2512 402 19                       | 0 ... +60              | 0.7 ... 6 (adjustable)      | -30 ... +70                |
| AS30        | 650 2503 402 19                       | 0 ... +30              | 0.7 ... 6 (adjustable)      | -30 ... +50                |
| AS33        | 650 2502 402 19                       | -30 ... +30            | 0.7 ... 6 (adjustable)      | -30 ... +40                |
| AS40        | 650 2504 402 19                       | +10 ... +40            | 0.7 ... 6 (adjustable)      | -30 ... +70                |
| AS60        | 650 2512 402 19                       | 0 ... +60              | 0.7 ... 6 (adjustable)      | -30 ... +70                |
| ASE40       | 650 2404 402 19 0000 0000 00 00 00 01 | +10 ... +40            | 5 (fixed)                   | -30 ... +70                |

Sensor: Sensor coil

Sensor material: Copper

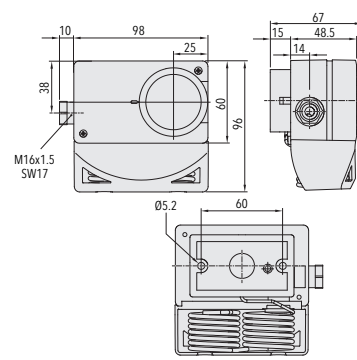
Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



A ...

External switchpoint adjustment

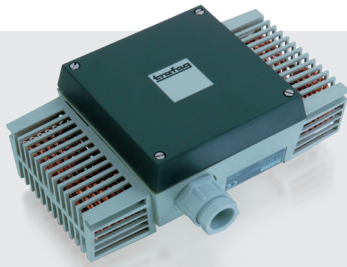


AS ... / ASE ...

Internal switchpoint adjustment

# ADS 319

## Ambi Duostat



### Features

- Two individual measuring systems
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                  |                        |                                   |
|----------------------------|----------------------------------|------------------------|-----------------------------------|
| Designation of application | Double room thermostat           | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +30°C to 0°C ... +60°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact     | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

[www.trafag.com/H72146](http://www.trafag.com/H72146)  
[www.trafag.com/H73170](http://www.trafag.com/H73170)

### Standard products (extra short lead time)

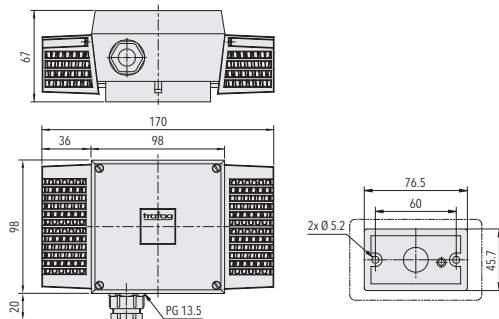
| Product No. | Type Code       | Temperature range [°C] | Set point adjustment            | Operating temperature [°C] |
|-------------|-----------------|------------------------|---------------------------------|----------------------------|
| ADS30       | 319 2503 402 19 | 0 ... +30              | Internal switchpoint adjustment | -30 ... +50                |
| ADS33       | 319 2502 402 19 | -30 ... +30            | Internal switchpoint adjustment | -30 ... +40                |
| ADS60       | 319 2512 402 19 | 0 ... +60              | Internal switchpoint adjustment | -30 ... +70                |

Sensor: Sensor coil

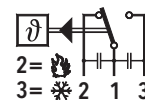
Sensor material: Copper

Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 6 (adjustable)



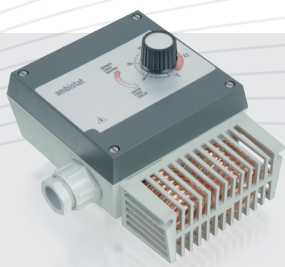
AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



ADS ...  
Internal switchpoint adjustment

# A2/A2S 198/199

## Altero Ambistat



### Features

- With 1 adjustable step between 2 stages
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                  |                        |                                   |
|----------------------------|----------------------------------|------------------------|-----------------------------------|
| Designation of application | Multistage room thermostat       | Switching differential | Not adjustable                    |
| Measuring range            | -45°C ... +15°C to 0°C ... +60°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact     | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

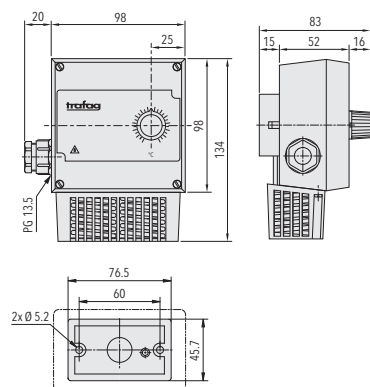
[www.trafag.com/H72137](http://www.trafag.com/H72137)  
[www.trafag.com/H70311](http://www.trafag.com/H70311)

### Standard products (extra short lead time)

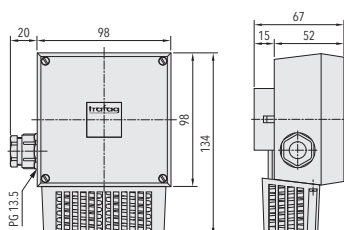
| Product No. | Type Code       | Temperature range [°C] | Set point adjustment            | Operating temperature [°C] |
|-------------|-----------------|------------------------|---------------------------------|----------------------------|
| A233        | 199 1102 402 19 | -30 ... +30            | External switchpoint adjustment | -30 ... +40                |
| A230        | 199 1103 402 19 | 0 ... +30              | External switchpoint adjustment | -30 ... +50                |
| A260        | 199 1112 402 19 | 0 ... +60              | External switchpoint adjustment | -30 ... +70                |
| A2S33       | 198 1102 402 19 | -30 ... +30            | Internal switchpoint adjustment | -30 ... +40                |
| A2S30       | 198 1103 402 19 | 0 ... +30              | Internal switchpoint adjustment | -30 ... +50                |
| A2S60       | 198 1112 402 19 | 0 ... +60              | Internal switchpoint adjustment | -30 ... +70                |

Sensor: Sensor coil  
Sensor material: Copper  
Electrical connection: Screw terminal

Switching differential [°C]: 0.7 (fixed)  
Smallest stage difference [°C]: -6  
Largest stage difference [°C]: 15

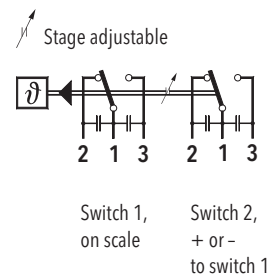


A2 ...  
External switchpoint adjustment



A2S ...  
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



# IA/IAS 409/419

## Indu Ambistat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                            |                                  |                        |                                   |
|----------------------------|----------------------------------|------------------------|-----------------------------------|
| Designation of application | Industrial room thermostat       | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +30°C to 0°C ... +60°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact     | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

[www.trafag.com/H72116](http://www.trafag.com/H72116)  
[www.trafag.com/H73111](http://www.trafag.com/H73111)

### Standard products (extra short lead time)

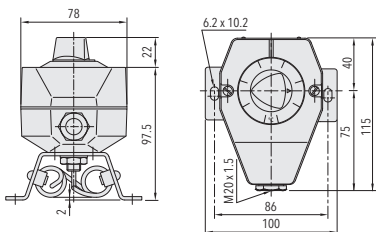
| Product No. | Type Code       | Temperature range [°C] | Set point adjustment            | Operating temperature [°C] |
|-------------|-----------------|------------------------|---------------------------------|----------------------------|
| IA33        | 409 2502 522 27 | -30 ... +30            | External switchpoint adjustment | -30 ... +40                |
| IA35        | 409 2510 522 27 | +5 ... +35             | External switchpoint adjustment | -30 ... +50                |
| IA60        | 409 2512 522 27 | 0 ... +60              | External switchpoint adjustment | -30 ... +70                |
| IAS33       | 419 2502 522 27 | -30 ... +30            | Internal switchpoint adjustment | -30 ... +40                |
| IAS35       | 419 2510 522 27 | +5 ... +35             | Internal switchpoint adjustment | -30 ... +50                |
| IAS60       | 419 2512 522 27 | 0 ... +60              | Internal switchpoint adjustment | -30 ... +70                |

Sensor: Sensor coil

Sensor material: Copper

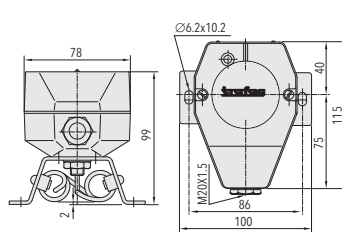
Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 6 (adjustable)



IA ...

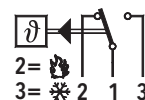
External switchpoint adjustment



IAS ...

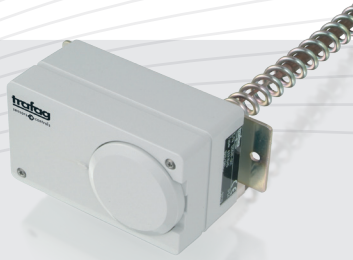
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



# MSK 624/634

## Duct Thermostat



### Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                     |                        |                                   |
|----------------------------|-------------------------------------|------------------------|-----------------------------------|
| Designation of application | Duct thermostat                     | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +20°C ... +110°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact        | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

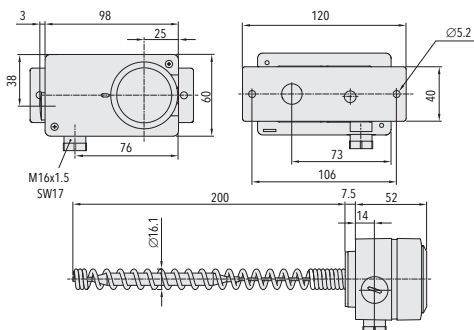
[www.trafag.com/H72177](http://www.trafag.com/H72177)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

### Standard products (extra short lead time)

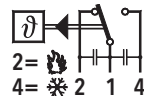
| Product No. | Type Code       | Temperature range [°C] | Set point adjustment            | Sensor max. [°C] |
|-------------|-----------------|------------------------|---------------------------------|------------------|
| MSK35       | 634 2509 432 30 | 0 ... +35              | Internal switchpoint adjustment | 50               |
| MSK40       | 634 2501 432 30 | -30 ... +40            | Internal switchpoint adjustment | 45               |
| MSK80       | 634 2513 432 30 | +10 ... +80            | Internal switchpoint adjustment | 100              |

Sensor: Capillary tube with direct mounted sensor  
Sensor material: Copper  
Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 10 (adjustable)



AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



MSK ...  
Internal switchpoint adjustment  
Accessories: K200 / W200 See chapter "Accessories"

# MP/MSP 663/664

## Pipe Mounting Thermostat



### Features

- For pipe or barrel mounting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                     |                        |                                   |
|----------------------------|-------------------------------------|------------------------|-----------------------------------|
| Designation of application | Pipe mounting thermostat            | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -10°C ... +35°C to +20°C ... +110°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact        | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

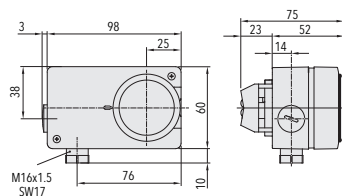
[www.trafag.com/H72175](http://www.trafag.com/H72175)  
[www.trafag.com/H73663](http://www.trafag.com/H73663)

### Standard products (extra short lead time)

| Product No. | Type Code       | Temperature range [°C] | Set point adjustment            | Sensor max. [°C] |
|-------------|-----------------|------------------------|---------------------------------|------------------|
| MSP35       | 664 2594 502 00 | -10 ... +35            | Internal switchpoint adjustment | 50               |
| MSP80       | 664 2595 502 00 | -10 ... +80            | Internal switchpoint adjustment | 85               |
| MSP95       | 664 2520 502 00 | +5 ... +95             | Internal switchpoint adjustment | 105              |
| MSP110      | 664 2523 502 00 | +20 ... +110           | Internal switchpoint adjustment | 115              |

Sensor: Capillary tube with direct mounted sensor  
Sensor material: Copper  
Electrical connection: Screw terminal

Switching differential [°C]: 3.7 ... 14 (adjustable)



MSP ...  
Internal switchpoint adjustment

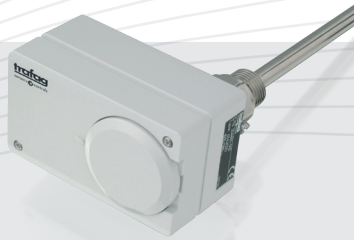
AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A





# MST 624/634

## Ministat



### Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                     |                        |                                   |
|----------------------------|-------------------------------------|------------------------|-----------------------------------|
| Designation of application | Direct mounting thermostat          | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact        | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

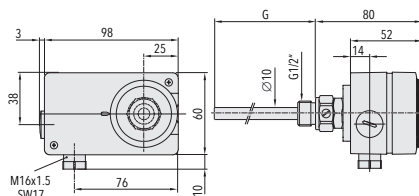
[www.trafag.com/H72174](http://www.trafag.com/H72174)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

### Standard products (extra short lead time)

| Product No. | Type Code                 | Temperature range [°C] | Protection tube length [mm] | Switching differential [°C] | Sensor max. [°C] |
|-------------|---------------------------|------------------------|-----------------------------|-----------------------------|------------------|
| MST8015     | 634 2595 322 12 1216 0150 | -10 ... +80            | 150                         | 2 ... 12 (adjustable)       | 105              |
| MST8040     | 634 2595 322 12 1216 0400 | -10 ... +80            | 400                         | 2 ... 12 (adjustable)       | 85               |
| MST9511     | 634 2520 322 12 1217 0110 | +5 ... +95             | 110                         | 2 ... 12 (adjustable)       | 85               |
| MST9515     | 634 2520 322 12 1216 0150 | +5 ... +95             | 150                         | 2 ... 12 (adjustable)       | 105              |
| MST9540     | 634 2520 322 12 1216 0400 | +5 ... +95             | 400                         | 2 ... 12 (adjustable)       | 105              |
| MST15015    | 634 2531 322 12 1216 0150 | +20 ... +150           | 150                         | 2.5 ... 16 (adjustable)     | 165              |
| MST15040    | 634 2531 322 12 1216 0400 | +20 ... +150           | 400                         | 2.5 ... 16 (adjustable)     | 165              |

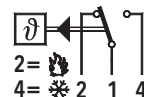
Sensor: Capillary tube with direct mounted sensor

Electrical connection: Screw terminal



MST ...  
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



# MS...R 630/632

## Mini Limistat



### Features

- External or internal resetting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                        |                        |                                   |
|----------------------------|----------------------------------------|------------------------|-----------------------------------|
| Designation of application | Remote sensing thermostat with limiter | Switching differential | Not adjustable                    |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C    | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact           | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

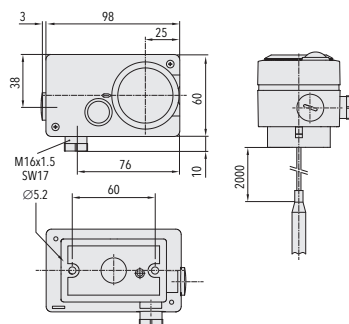
[www.trafag.com/H72173](http://www.trafag.com/H72173)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

### Standard products (extra short lead time)

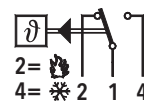
| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|------------------|
| MS95R       | 632 1220 322 19 | Copper            | +5 ... +95             | 105              |
| MS150R      | 632 1231 322 19 | Copper            | +20 ... +150           | 165              |
| MS230SR     | 632 1224 121 19 | 1.4435 (AISI316L) | +20 ... +230           | 250              |
| MS350SR     | 632 1254 121 19 | 1.4435 (AISI316L) | +70 ... +350           | 380              |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



MS ... R

Internal switchpoint adjustment, external reset

Calibrated for increasing temperatures

# M/MS 624/634

## Ministat



### Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                     |                        |                                   |
|----------------------------|-------------------------------------|------------------------|-----------------------------------|
| Designation of application | Remote sensing thermostat           | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact        | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

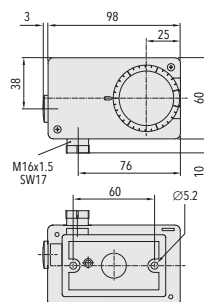
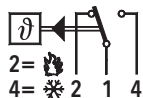
### Standard products (extra short lead time)

| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Switching differential [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|-----------------------------|------------------|
| M35         | 624 2509 422 19 | Copper            | 0 ... +35              | 0.7 ... 10 (adjustable)     | 70               |
| M40         | 624 2501 422 19 | Copper            | -30 ... +40            | 0.7 ... 10 (adjustable)     | 45               |
| M95         | 624 2520 322 19 | Copper            | +5 ... +95             | 2 ... 12 (adjustable)       | 105              |
| M150        | 624 2531 322 19 | Copper            | +20 ... +150           | 2.5 ... 16 (adjustable)     | 165              |
| M230S       | 624 2524 121 19 | 1.4435 (AISI316L) | +20 ... +230           | 3 ... 32 (adjustable)       | 250              |
| M350S       | 624 2554 121 19 | 1.4435 (AISI316L) | +70 ... +350           | 4 ... 40 (adjustable)       | 380              |
| MS35        | 634 2509 422 19 | Copper            | 0 ... +35              | 0.7 ... 10 (adjustable)     | 70               |
| MS40        | 634 2501 422 19 | Copper            | -30 ... +40            | 0.7 ... 10 (adjustable)     | 45               |
| MS95        | 634 2520 322 19 | Copper            | +5 ... +95             | 2 ... 12 (adjustable)       | 105              |
| MS150       | 634 2531 322 19 | Copper            | +20 ... +150           | 2.5 ... 16 (adjustable)     | 165              |
| MS230S      | 634 2524 121 19 | 1.4435 (AISI316L) | +20 ... +230           | 3 ... 32 (adjustable)       | 250              |
| MS350S      | 634 2554 121 19 | 1.4435 (AISI316L) | +70 ... +350           | 4 ... 40 (adjustable)       | 380              |

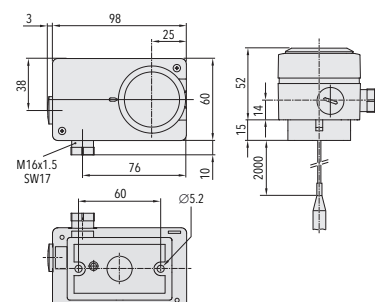
Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



M ...  
External switchpoint adjustment



MS ...  
Internal switchpoint adjustment



Data sheet  
Instructions

[www.trafag.com/H72172](http://www.trafag.com/H72172)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

## Ordering information/type code

|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------|--------------------------|-------------------------|-----------------------------|------------------------|-----|------------|----|----|
|                              |                                                                                                                             |                             |                                                                              | XXX                      | XX                      | XX                          | XXX                    | XX  | XXXXXXXXXX | XX | XX |
| <b>Custom build code</b>     | External adjustment                                                                                                         |                             |                                                                              | 624                      |                         |                             |                        |     |            |    |    |
|                              | Internal adjustment                                                                                                         |                             |                                                                              | 634                      |                         |                             |                        |     |            |    |    |
| <b>Microswitch</b>           | Small switching differential, not adjustable                                                                                | 10                          | With gold plated contacts, switching differential not adjustable             |                          | 21                      |                             |                        |     |            |    |    |
|                              | Average switching differential, not adjustable                                                                              | 11                          | Adjustable large switching differential                                      |                          | 24                      |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             | Adjustable standard switching differential                                   |                          | 25                      |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
| <b>Range</b>                 | <b>Range [°C]</b>                                                                                                           | <b>Sensor max. [°C]</b>     |                                                                              | <b>Range [°C]</b>        | <b>Sensor max. [°C]</b> |                             |                        |     |            |    |    |
|                              | -30 ... 40                                                                                                                  | 45                          | 01                                                                           | -10 ... 80 <sup>4)</sup> | 85                      | 95                          |                        |     |            |    |    |
|                              | -10 ... 25 <sup>4)</sup>                                                                                                    | 60                          | 07                                                                           | 5 ... 95                 | 105                     | 20                          |                        |     |            |    |    |
|                              | 0 ... 35                                                                                                                    | 70                          | 09                                                                           | 20 ... 110 <sup>4)</sup> | 115                     | 23                          |                        |     |            |    |    |
|                              | 10 ... 45                                                                                                                   | 85                          | 11                                                                           | 20 ... 150               | 165                     | 31                          |                        |     |            |    |    |
|                              | 10 ... 80 <sup>4)</sup>                                                                                                     | 100                         | 13                                                                           | 20 ... 230               | 250                     | 24                          |                        |     |            |    |    |
|                              | 15 ... 30                                                                                                                   | 60                          | 17                                                                           | 40 ... 300 <sup>4)</sup> | 330                     | 53                          |                        |     |            |    |    |
|                              | -10 ... 35                                                                                                                  | 70                          | 94                                                                           | 70 ... 350               | 380                     | 54                          |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
| <b>Sensor <sup>1)</sup></b>  | <b>Range</b>                                                                                                                | <b>Sensor diameter [mm]</b> | <b>Sensor material</b>                                                       |                          | <b>Range</b>            | <b>Sensor diameter [mm]</b> | <b>Sensor material</b> |     |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø4.7                        | Stainless steel                                                              | 111                      | 01, 07, 09, 11, 13, 17  | Ø4.7                        | Copper                 | 412 |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø7                          | Stainless steel                                                              | 121                      | 01, 07, 09, 11, 13, 17  | Ø7                          | Copper                 | 422 |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø9                          | Stainless steel                                                              | 131                      | 01, 07, 09, 11, 13, 17  | Ø9                          | Copper                 | 432 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø4.7                        | Stainless steel                                                              | 311                      | 24, 53, 54              | Ø4.7                        | Copper nickel plated   | 113 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø7                          | Stainless steel                                                              | 321                      | 24, 53, 54              | Ø7                          | Copper nickel plated   | 123 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø9                          | Stainless steel                                                              | 331                      | 24, 53, 54              | Ø9                          | Copper nickel plated   | 133 |            |    |    |
|                              | 01, 07, 09, 11, 13, 17                                                                                                      | Ø7                          | Stainless steel                                                              | 421                      | 94, 95, 20, 23, 31      | Ø4.7                        | Copper nickel plated   | 313 |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø4.7                        | Copper                                                                       | 112                      | 94, 95, 20, 23, 31      | Ø7                          | Copper nickel plated   | 323 |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø7                          | Copper                                                                       | 122                      | 94, 95, 20, 23, 31      | Ø9                          | Copper nickel plated   | 333 |            |    |    |
|                              | 24, 53, 54                                                                                                                  | Ø9                          | Copper                                                                       | 132                      | 01, 07, 09, 11, 13, 17  | Ø4.7                        | Copper nickel plated   | 413 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø4.7                        | Copper                                                                       | 312                      | 01, 07, 09, 11, 13, 17  | Ø7                          | Copper nickel plated   | 423 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø7                          | Copper                                                                       | 322                      | 01, 07, 09, 11, 13, 17  | Ø9                          | Copper nickel plated   | 433 |            |    |    |
|                              | 94, 95, 20, 23, 31                                                                                                          | Ø9                          | Copper                                                                       | 332                      |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
| <b>Fixing <sup>2)</sup></b>  | Nut M10 (for remote sensing version)                                                                                        | 10                          | Angle bracket (for remote sensing version)                                   |                          | 17                      |                             |                        |     |            |    |    |
|                              | Cap nut (for direct mounting version)                                                                                       | 14                          | Grubscrew locked with spacer (cooling element) (for direct mounting version) |                          | 18                      |                             |                        |     |            |    |    |
|                              | Grubscrew locked, lateral (direct mounting version)                                                                         | 12                          | Mounting bracket (for remote sensing version)                                |                          | 19                      |                             |                        |     |            |    |    |
| <b>Protection tube</b>       | See data sheet H72114/H72163                                                                                                |                             |                                                                              |                          |                         |                             |                        |     | XXXX.XXXX  |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
| <b>Accessories</b>           | Switchpoint locking <sup>4)</sup>                                                                                           | 15                          | Condensators over Pin 1-2 / 1-3                                              |                          | 23                      |                             |                        |     |            |    |    |
|                              | Switchpoint fixed and sealed upon customer's request                                                                        | 88                          | Railway version (UIC 616)                                                    |                          | 28                      |                             |                        |     |            |    |    |
|                              | Switchpoint preset upon customer's request, no guarantee on switching accuracy                                              | 83                          | Outdoor application (vented)                                                 |                          | 44                      |                             |                        |     |            |    |    |
|                              | Switchpoint adjustment please indicate when ordering:                                                                       |                             | Cover with window                                                            |                          | 77                      |                             |                        |     |            |    |    |
|                              | - Switchpoint [bar]                                                                                                         |                             | Capillary tube protection: Flexible metal tube, brass nickel plated          |                          | 90                      |                             |                        |     |            |    |    |
|                              | - Increasing or decreasing                                                                                                  |                             | Capillary tube protection: Flexible metal tube 1.4541/V2A                    |                          | 91                      |                             |                        |     |            |    |    |
|                              | Condensator over Pin 1-2                                                                                                    | 12                          | Capillary tube protection: PVC tube                                          |                          | 92                      |                             |                        |     |            |    |    |
|                              | Condensator over Pin 1-3                                                                                                    | 13                          |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
| <b>Capillary tube length</b> | Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX <sup>3)</sup> |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |
|                              |                                                                                                                             |                             |                                                                              |                          |                         |                             |                        |     |            |    |    |

<sup>1)</sup> See data sheet H72114/H72163

<sup>3)</sup> Overlengths upon request

<sup>2)</sup> See data sheet H72106

<sup>4)</sup> Only with type 634 internal adjustment

# GS 657/658

## Galvanostat



### Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw
- Coated capillary tube 1500 mm

### Technical Data

|                            |                                     |                        |                                   |
|----------------------------|-------------------------------------|------------------------|-----------------------------------|
| Designation of application | Remote sensing thermostat           | Switching differential | Not adjustable                    |
| Measuring range            | +5°C ... +95°C and +20°C ... +150°C | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact        | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

[www.trafag.com/H72179](http://www.trafag.com/H72179)  
[www.trafag.com/H73624](http://www.trafag.com/H73624)

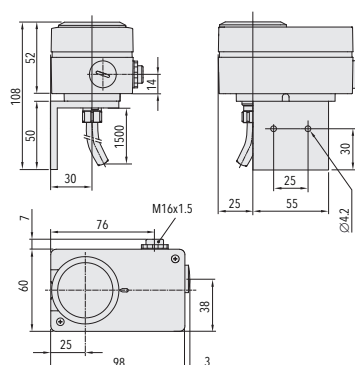
### Standard products (extra short lead time)

| Product No. | Type Code       | Temperature range [°C] | Switching differential [°C] | Sensor max. [°C] |
|-------------|-----------------|------------------------|-----------------------------|------------------|
| GS95        | 658 1120 326 26 | +5 ... +95             | 2.5 (fixed)                 | 105              |
| GS150       | 658 1131 326 26 | +20 ... +150           | 3.0 (fixed)                 | 165              |

Sensor: Capillary tube with remote sensor

Sensor material: Copper with protection tube Teflon FEP

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



GS ...  
Internal switchpoint adjustment

# D...R 302

## Duo Limistat



### Features

- Two individual measuring systems
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                                  |                        |                                   |
|----------------------------|--------------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Double thermostat with remote sensor and limiter | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C              | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact                     | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

[www.trafag.com/H72142](http://www.trafag.com/H72142)  
[www.trafag.com/H73170](http://www.trafag.com/H73170)

### Standard products (extra short lead time)

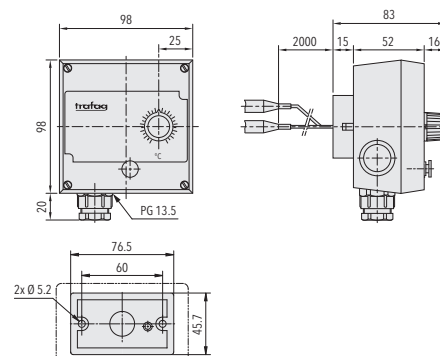
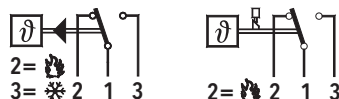
| Product No. | Type Code       | Temperature range [°C] | Switching differential [°C] | Measuring range limiter [°C] | Sensor max. [°C] |
|-------------|-----------------|------------------------|-----------------------------|------------------------------|------------------|
| D95R        | 302 5836 362 19 | +5 ... +95             | 2 ... 12 (adjustable)       | +20 ... +110                 | 105              |
| D150R       | 302 5842 362 19 | +20 ... +150           | 2.5 ... 16 (adjustable)     | +35 ... +175                 | 165              |
| D300R       | 302 5839 162 19 | +40 ... +300           | 4 ... 40 (adjustable)       | +70 ... +350                 | 380              |

Sensor: Capillary tube with remote sensor

Sensor material: Copper

Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



D ... R

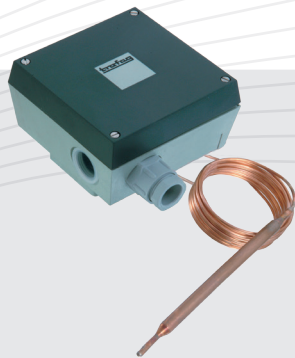
External switchpoint adjustment

Calibrated for increasing temperatures



# M2S 104/114

## Alterostat



### Features

- With 1 adjustable step between 2 stages
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                                          |                        |                                   |
|----------------------------|------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Multistage thermostat with remote sensor | Switching differential | Not adjustable                    |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C      | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact             | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

Data sheet  
Instructions

[www.trafag.com/H72139](http://www.trafag.com/H72139)  
[www.trafag.com/H70311](http://www.trafag.com/H70311)

### Standard products (extra short lead time)

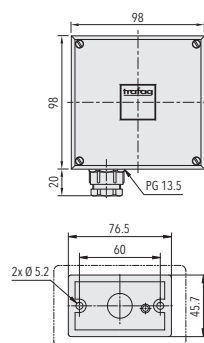
| Product No. | Type Code       | Temperature range [°C] | Switching differential [°C] | Smallest stage difference [°C] | Largest stage difference [°C] | Sensor max. [°C] |
|-------------|-----------------|------------------------|-----------------------------|--------------------------------|-------------------------------|------------------|
| M2S40       | 114 1101 422 19 | -30 ... +40            | 1.8 (fixed)                 | 0.8                            | 25                            | 45               |
| M2S35       | 114 1109 422 19 | 0 ... +35              | 1.8 (fixed)                 | 0.8                            | 15                            | 50               |
| M2S95       | 114 1120 322 19 | +5 ... +95             | 2.5 (fixed)                 | 1.2                            | 35                            | 105              |
| M2S150      | 114 1131 322 19 | +20 ... +150           | 3 (fixed)                   | 1.5                            | 40                            | 165              |
| M2S230S     | 114 1124 121 19 | +20 ... +230           | 4.5 (fixed)                 | 2                              | 70                            | 250              |
| M2S350S     | 114 1154 121 19 | +70 ... +350           | 5 (fixed)                   | 2.5                            | 80                            | 380              |

### M2S40 ... M2S150

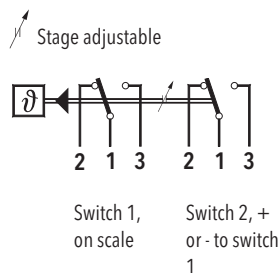
Sensor: Capillary tube with remote sensor  
Sensor material: Copper  
Electrical connection: Screw terminal

### M2S230S ... M2S350S

Sensor: Capillary tube with remote sensor  
Sensor material: 1.4435 (AISI316L)  
Electrical connection: Screw terminal

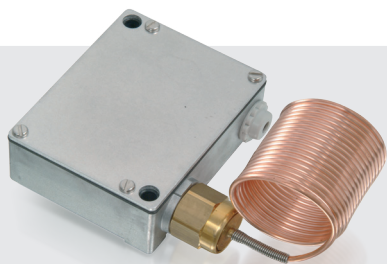


M2S ...  
Internal switchpoint adjustment



# F/F...R 990/991/992/993

## Froststat



### Features

- Rugged aluminium housing
- Short response time
- Protection IP54
- Electrical connection on terminal screw

### Technical Data

|                            |                              |                        |                                   |
|----------------------------|------------------------------|------------------------|-----------------------------------|
| Designation of application | Frost protection thermostat  | Switching differential | Not adjustable                    |
| Measuring range            | -5°C ... +15°C               | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

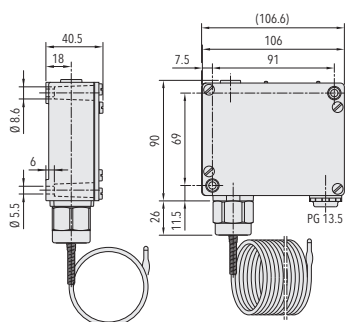
[www.trafag.com/H72123](http://www.trafag.com/H72123)  
[www.trafag.com/H70821](http://www.trafag.com/H70821)

### Standard products (extra short lead time)

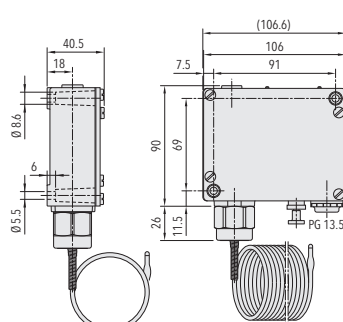
| Product No. | Type Code    | Sensor material             | Set point adjustment                                    |
|-------------|--------------|-----------------------------|---------------------------------------------------------|
| F15         | 991 1299 000 | Copper capillary tube, L=6m | Internal switchpoint adjustment                         |
| F153        | 990 1299     | Copper capillary tube, L=3m | Internal switchpoint adjustment                         |
| F15R        | 993 1299 000 | Copper capillary tube, L=6m | Internal switchpoint adjustment and external reset knob |
| F153R       | 992 1299     | Copper capillary tube, L=3m | Internal switchpoint adjustment and external reset knob |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal

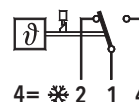


F ...  
Internal switchpoint adjustment



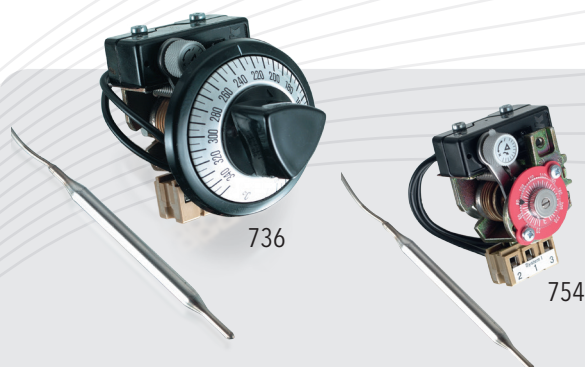
F ... R  
Internal switchpoint adjustment, external reset  
Calibrated for increasing temperatures

AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



# L/LF 736/754

## Laborstat



### Features

- Without housing
- Short response time
- Electrical connection on terminal screw

### Technical Data

|                            |                                          |                        |                                   |
|----------------------------|------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Remote sensing thermostat, skeleton type | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C      | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact             | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

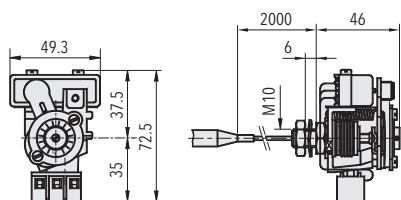
Data sheet  
Instructions

[www.trafag.com/H72122](http://www.trafag.com/H72122)  
[www.trafag.com/H70211](http://www.trafag.com/H70211)

### Standard products (extra short lead time)

| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Switching differential [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|-----------------------------|------------------|
| L35         | 754 2509 422 10 | Copper            | 0 ... +35              | 0.7 ... 10 (adjustable)     | 60               |
| L40         | 754 2501 422 10 | Copper            | -30 ... +40            | 0.7 ... 10 (adjustable)     | 45               |
| L95         | 754 2520 322 10 | Copper            | +5 ... +95             | 2 ... 12 (adjustable)       | 105              |
| L150        | 754 2531 322 10 | Copper            | +20 ... +150           | 2.5 ... 16 (adjustable)     | 165              |
| L230S       | 754 2524 121 10 | 1.4435 (AISI316L) | +20 ... +230           | 3 ... 32 (adjustable)       | 250              |
| L350S       | 754 2554 121 10 | 1.4435 (AISI316L) | +70 ... +350           | 4 ... 40 (adjustable)       | 380              |

Sensor: Capillary tube with remote sensor  
Electrical connection: Screw terminal



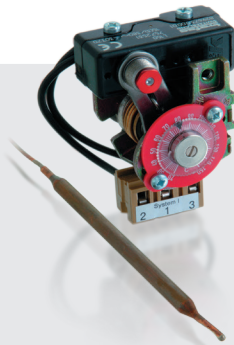
L ...  
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



# L...R 755

## Labor Limistat



### Features

- Without housing
- Short response time
- Electrical connection on terminal screw

### Technical Data

|                            |                                                       |                        |                                   |
|----------------------------|-------------------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Remote sensing thermostat with limiter, skeleton type | Switching differential | Not adjustable                    |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C                   | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact                          | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

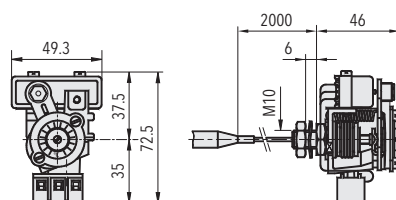
[www.trafag.com/H72124](http://www.trafag.com/H72124)  
[www.trafag.com/H70211](http://www.trafag.com/H70211)

### Standard products (extra short lead time)

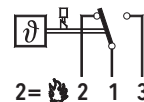
| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|------------------|
| L95R        | 755 1220 322 10 | Copper            | +5 ... +95             | 105              |
| L150R       | 755 1231 322 10 | Copper            | +20 ... +150           | 165              |
| L230SR      | 755 1224 121 10 | 1.4435 (AISI316L) | +20 ... +230           | 250              |
| L350SR      | 755 1254 121 10 | 1.4435 (AISI316L) | +70 ... +350           | 380              |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A

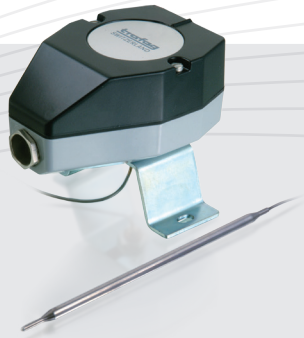


L ... R

Internal switchpoint adjustment and reset  
Calibrated for increasing temperatures

# I/IS 404/414

## Industat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

### Technical Data

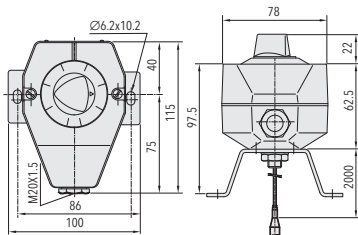
|                            |                                          |                        |                                   |
|----------------------------|------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Industrial thermostat with remote sensor | Switching differential | Adjustable / not adjustable       |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C      | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact             | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |

### Standard products (extra short lead time)

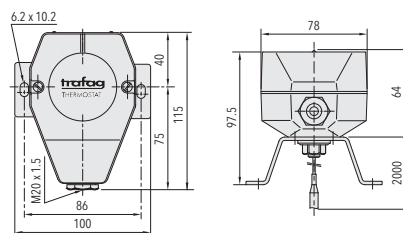
| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Switching differential [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|-----------------------------|------------------|
| I35         | 404 2509 422 27 | Copper            | 0 ... +35              | 0.7 ... 10 (adjustable)     | 60               |
| I40         | 404 2501 422 27 | Copper            | -30 ... +40            | 0.7 ... 10 (adjustable)     | 45               |
| I95         | 404 2520 322 27 | Copper            | +5 ... +95             | 2 ... 12 (adjustable)       | 105              |
| I150        | 404 2531 322 27 | Copper            | +20 ... +150           | 2.5 ... 16 (adjustable)     | 165              |
| I230S       | 404 2524 121 27 | 1.4435 (AISI316L) | +20 ... +230           | 3 ... 32 (adjustable)       | 250              |
| I350S       | 404 2554 121 27 | 1.4435 (AISI316L) | +70 ... +350           | 4 ... 40 (adjustable)       | 380              |
| IS35        | 414 2509 422 27 | Copper            | 0 ... +35              | 0.7 ... 10 (adjustable)     | 60               |
| IS40        | 414 2501 422 27 | Copper            | -30 ... +40            | 0.7 ... 10 (adjustable)     | 45               |
| IS95        | 414 2520 322 27 | Copper            | +5 ... +95             | 2 ... 12 (adjustable)       | 105              |
| IS150       | 414 2531 322 27 | Copper            | +20 ... +150           | 2.5 ... 16 (adjustable)     | 165              |
| IS230S      | 414 2524 121 27 | 1.4435 (AISI316L) | +20 ... +230           | 3 ... 32 (adjustable)       | 250              |
| IS350S      | 414 2554 121 27 | 1.4435 (AISI316L) | +70 ... +350           | 4 ... 40 (adjustable)       | 380              |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal

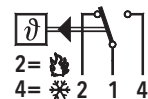


I ...  
External switchpoint adjustment



IS ...  
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A  
DC 30 V, 6 (1.5) A  
DC 250 V, 0.25 (0.03) A



Data sheet  
Instructions

[www.trafag.com/H72110](http://www.trafag.com/H72110)  
[www.trafag.com/H73111](http://www.trafag.com/H73111)

## Ordering information/type code

|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|-----------------------------|------------------------------------------------------------------------------|------------------------|------------------------|--------------|--------------------|------------------------|------------------------|-----|------------|----|----|
|                             |                                                                              |                        |                        | XXX          | XX                 | XX                     | XXX                    | XX  | XXXXXXXXXX | XX | XX |
| <b>Custom build code</b>    | External adjustment                                                          |                        |                        | 404          |                    |                        |                        |     |            |    |    |
|                             | Internal adjustment                                                          |                        |                        | 414          |                    |                        |                        |     |            |    |    |
| <b>Microswitch</b>          | Small switching differential, not adjustable                                 |                        |                        | 10           |                    |                        |                        |     |            |    |    |
|                             | Average switching differential, not adjustable                               |                        |                        | 11           |                    |                        |                        |     |            |    |    |
|                             | With gold plated contacts, switching differential not adjustable             |                        |                        | 21           |                    |                        |                        |     |            |    |    |
|                             | Adjustable large switching differential                                      |                        |                        | 24           |                    |                        |                        |     |            |    |    |
|                             | Adjustable standard switching differential                                   |                        |                        | 25           |                    |                        |                        |     |            |    |    |
| <b>Range</b>                | <b>Range</b>                                                                 | <b>Sensor max.</b>     |                        | <b>Range</b> | <b>Sensor max.</b> |                        |                        |     |            |    |    |
|                             | [°C]                                                                         | [°C]                   |                        | [°C]         | [°C]               |                        |                        |     |            |    |    |
|                             | -30 ... 40                                                                   | 50                     | 01                     | -10 ... 80   | 85                 | 95                     |                        |     |            |    |    |
|                             | -10 ... 25                                                                   | 60                     | 07                     | 5 ... 95     | 105                | 20                     |                        |     |            |    |    |
|                             | 0 ... 35                                                                     | 70                     | 09                     | 20 ... 110   | 115                | 23                     |                        |     |            |    |    |
|                             | 10 ... 45                                                                    | 85                     | 11                     | 20 ... 150   | 165                | 31                     |                        |     |            |    |    |
|                             | 10 ... 80                                                                    | 100                    | 13                     | 20 ... 230   | 250                | 24                     |                        |     |            |    |    |
|                             | 15 ... 30                                                                    | 60                     | 17                     | 40 ... 300   | 330                | 53                     |                        |     |            |    |    |
|                             | -10 ... 35                                                                   | 70                     | 94                     | 70 ... 350   | 380                | 54                     |                        |     |            |    |    |
| <b>Sensor <sup>1)</sup></b> | <b>Range</b>                                                                 | <b>Sensor diameter</b> | <b>Sensor material</b> |              | <b>Range</b>       | <b>Sensor diameter</b> | <b>Sensor material</b> |     |            |    |    |
|                             |                                                                              | [mm]                   |                        |              |                    | [mm]                   |                        |     |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø7                     | Stainless steel        | 421          | 94, 95, 20, 23, 31 | Ø9                     | Copper                 | 332 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø4.7                   | Copper                 | 412          | 94, 95, 20, 23, 31 | Ø4.7                   | Copper nickel plated   | 313 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø7                     | Copper                 | 422          | 94, 95, 20, 23, 31 | Ø7                     | Copper nickel plated   | 323 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø9                     | Copper                 | 432          | 94, 95, 20, 23, 31 | Ø9                     | Copper nickel plated   | 333 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø4.7                   | Copper nickel plated   | 413          | 24, 53, 54         | Ø4.7                   | Stainless steel        | 111 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø7                     | Copper nickel plated   | 423          | 24, 53, 54         | Ø7                     | Stainless steel        | 121 |            |    |    |
|                             | 01, 07, 09, 11, 13, 17                                                       | Ø9                     | Copper nickel plated   | 433          | 24, 53, 54         | Ø9                     | Stainless steel        | 131 |            |    |    |
|                             | 94, 95, 20, 23, 31                                                           | Ø4.7                   | Stainless steel        | 311          | 24, 53, 54         | Ø4.7                   | Copper                 | 112 |            |    |    |
|                             | 94, 95, 20, 23, 31                                                           | Ø7                     | Stainless steel        | 321          | 24, 53, 54         | Ø7                     | Copper                 | 122 |            |    |    |
|                             | 94, 95, 20, 23, 31                                                           | Ø9                     | Stainless steel        | 331          | 24, 53, 54         | Ø9                     | Copper                 | 132 |            |    |    |
|                             | 94, 95, 20, 23, 31                                                           | Ø4.7                   | Copper                 | 312          | 24, 53, 54         | Ø4.7                   | Copper nickel plated   | 113 |            |    |    |
|                             | 94, 95, 20, 23, 31                                                           | Ø7                     | Copper                 | 322          | 24, 53, 54         | Ø7                     | Copper nickel plated   | 123 |            |    |    |
|                             |                                                                              |                        |                        |              | 24, 53, 54         | Ø9                     | Copper nickel plated   | 133 |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |
| <b>Fixing <sup>2)</sup></b> | Nut M10 (for remote sensing version)                                         |                        |                        |              |                    |                        |                        | 10  |            |    |    |
|                             | Flange connection (for remote sensing version)                               |                        |                        |              |                    |                        |                        | 16  |            |    |    |
|                             | Angle bracket (for remote sensing version)                                   |                        |                        |              |                    |                        |                        | 17  |            |    |    |
|                             | Bracket (for remote sensing version)                                         |                        |                        |              |                    |                        |                        | 27  |            |    |    |
|                             | Grubscrew locked, lateral (direct mounting version)                          |                        |                        |              |                    |                        |                        | 12  |            |    |    |
|                             | Cap nut (for direct mounting version)                                        |                        |                        |              |                    |                        |                        | 13  |            |    |    |
|                             | Cap nut (for direct mounting version)                                        |                        |                        |              |                    |                        |                        | 14  |            |    |    |
|                             | Grubscrew locked with spacer (cooling element) (for direct mounting version) |                        |                        |              |                    |                        |                        | 18  |            |    |    |
| <b>Protection tube</b>      | See data sheet H72114/H72163                                                 |                        |                        |              |                    |                        |                        |     | XXXX.XXXX  |    |    |
|                             |                                                                              |                        |                        |              |                    |                        |                        |     |            |    |    |

Continuation on next page



|                    |                                                                                |    |
|--------------------|--------------------------------------------------------------------------------|----|
| <b>Accessories</b> | Signal lamp                                                                    | 14 |
|                    | Switchpoint locking <sup>4)</sup>                                              | 15 |
|                    | Switchpoint fixed and sealed upon customer's request                           | 88 |
|                    | Switchpoint preset upon customer's request, no guarantee on switching accuracy | 83 |
|                    | Switchpoint adjustment please indicate when ordering:                          |    |
|                    | - Switchpoint [bar]                                                            |    |
|                    | - Increasing or decreasing                                                     |    |
|                    | Condensator over Pin 1-2                                                       | 12 |
|                    | Condensator over Pin 1-4                                                       | 13 |
|                    | Condensators over Pin 1-2 / 1-4                                                | 23 |
|                    | Railway version (UIC 616)                                                      | 28 |
|                    | Outdoor application (vented)                                                   | 44 |
|                    | Capillary tube protection: Flexible metal tube, brass nickel plated            | 90 |
|                    | Capillary tube protection: Flexible metal tube 1.4541/V2A                      | 91 |
|                    | Capillary tube protection: PVC tube                                            | 92 |

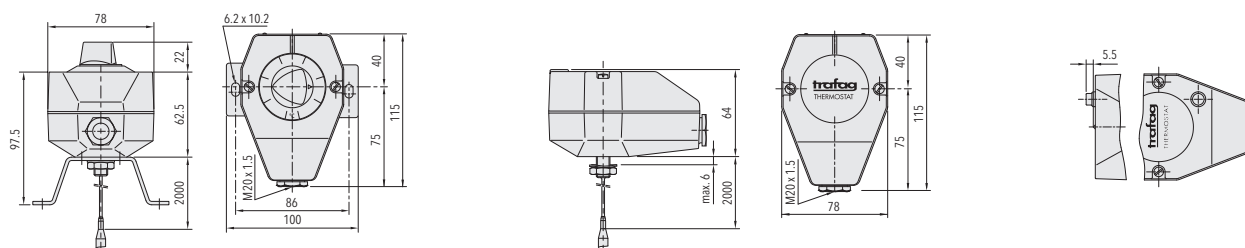
|                              |                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Capillary tube length</b> | Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX <sup>3)</sup> |
|                              |                                                                                                                             |
|                              |                                                                                                                             |

<sup>1)</sup> See data sheet H72114/H72163

<sup>2)</sup> See data sheet H72106

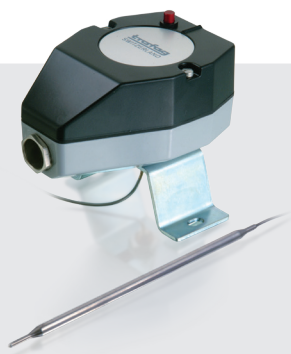
<sup>3)</sup> Overlengths upon request

<sup>4)</sup> Only with type 414, internal adjustment



# IS...R 410/412

## Indu Limistat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

### Technical Data

|                            |                                                      |                        |                                   |
|----------------------------|------------------------------------------------------|------------------------|-----------------------------------|
| Designation of application | Industrial thermostat with remote sensor and limiter | Switching differential | Not adjustable                    |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C                  | Repeatability          | ± 0.5 % FS typ.                   |
| Output signal              | Floating change-over contact                         | Approval / conformity  | EN60730-1/ EN60730-2-9: Typ 2.B.H |



Data sheet  
Instructions

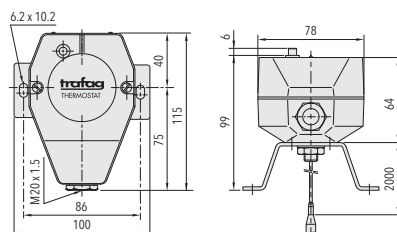
[www.trafag.com/H72138](http://www.trafag.com/H72138)  
[www.trafag.com/H73111](http://www.trafag.com/H73111)

### Standard products (extra short lead time)

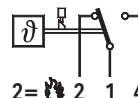
| Product No. | Type Code       | Sensor material   | Temperature range [°C] | Sensor max. [°C] |
|-------------|-----------------|-------------------|------------------------|------------------|
| IS95R       | 412 1220 322 27 | Copper            | +5 ... +95             | 105              |
| IS150R      | 412 1231 322 27 | Copper            | +20 ... +150           | 165              |
| IS230SR     | 412 1224 121 27 | 1.4435 (AISI316L) | +20 ... +230           | 250              |
| IS350SR     | 412 1254 121 27 | 1.4435 (AISI316L) | +70 ... +350           | 380              |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



IS ... R

Internal switchpoint adjustment, external reset  
Calibrated for increasing temperatures

# ISN/ISNT 471/472

Navistat



## Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65
- Any mounting position possible

## Technical Data

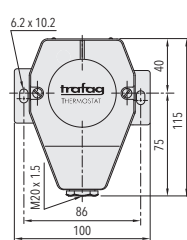
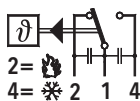
|                            |                                      |                        |                                                                                  |
|----------------------------|--------------------------------------|------------------------|----------------------------------------------------------------------------------|
| Designation of application | Thermostat for shipbuilding          | Switching differential | Not adjustable                                                                   |
| Measuring range            | +20°C ... +110°C to +40°C ... +300°C | Repeatability          | ± 0.5 % FS typ.                                                                  |
| Output signal              | Floating change-over contact         | Approval / conformity  | ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, RMRS<br>EN60730-1/ EN60730-2-9: Typ 2.B.H |

## Standard products (extra short lead time)

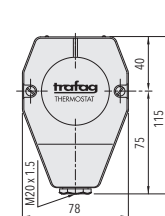
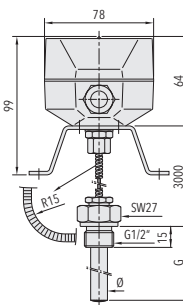
| Product No. | Type Code                    | Temperature range [°C] | Protection tube diameter [mm] | Protection tube length [mm] | Switching differential [°C] | Sensor max. [°C] |
|-------------|------------------------------|------------------------|-------------------------------|-----------------------------|-----------------------------|------------------|
| ISN11011    | 471 2323 332 27 8317 0110 90 | +20 ... +110           | 12                            | 110                         | 4.5 (fixed)                 | 115              |
| ISN11015    | 471 2323 322 27 8316 0150 90 | +20 ... +110           | 10                            | 150                         | 4.5 (fixed)                 | 115              |
| ISN11065    | 471 2323 342 27 8319 0065 90 | +20 ... +110           | 15                            | 65                          | 4.5 (fixed)                 | 115              |
| ISN15011    | 471 2331 332 27 8317 0110 90 | +20 ... +150           | 12                            | 110                         | 5 (fixed)                   | 165              |
| ISN15015    | 471 2331 322 27 8316 0150 90 | +20 ... +150           | 10                            | 150                         | 5 (fixed)                   | 165              |
| ISN15065    | 471 2331 342 27 8319 0065 90 | +20 ... +150           | 15                            | 65                          | 5 (fixed)                   | 165              |
| ISNT11011   | 471 2323 332 14 1417 0110    | +20 ... +110           | 12                            | 110                         | 4.5 (fixed)                 | 115              |
| ISNT11015   | 471 2323 322 14 1416 0150    | +20 ... +110           | 10                            | 150                         | 4.5 (fixed)                 | 115              |
| ISNT11065   | 471 2323 342 14 1419 0065    | +20 ... +110           | 15                            | 65                          | 4.5 (fixed)                 | 115              |
| ISNT15011   | 471 2331 332 14 1417 0110    | +20 ... +150           | 12                            | 110                         | 5 (fixed)                   | 165              |
| ISNT15015   | 471 2331 322 14 1416 0150    | +20 ... +150           | 10                            | 150                         | 5 (fixed)                   | 165              |
| ISNT15065   | 471 2331 342 14 1419 0065    | +20 ... +150           | 15                            | 65                          | 5 (fixed)                   | 165              |

Sensor: Capillary tube with remote sensor  
Electrical connection: Screw terminal

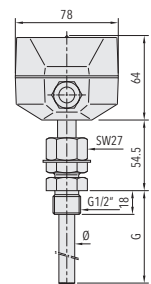
AC 500 V, 10 (0.75) A  
DC 30 V, 15 (1.5) A  
DC 250 V, 0.3 (0.2) A



ISN ...  
Internal switchpoint adjustment



ISNT ...  
Internal switchpoint adjustment



Data sheet  
Instructions

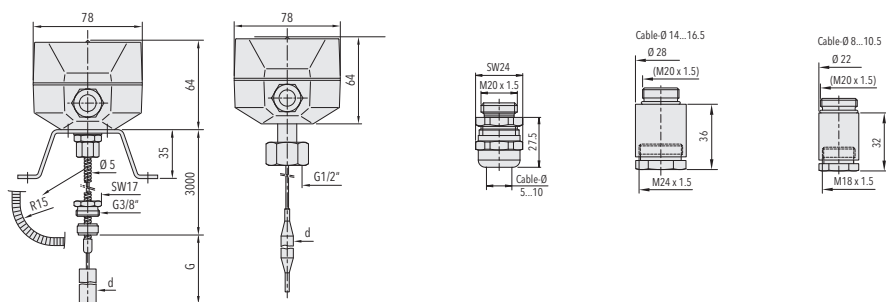
[www.trafag.com/H72111](http://www.trafag.com/H72111)  
[www.trafag.com/H73111](http://www.trafag.com/H73111)

## Ordering information/type code

|                        |                                                                                                                 |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------|------|---------------------|-------------------------------|-----------------------------|------------------------|------|------|----|----|
|                        |                                                                                                                 |                               |                             |                        |      | XXX . XX            | XX                            | XXX                         | XX                     | XXXX | XXXX | XX | XX |
| Custom build code      | Controller, increased vibration resistance                                                                      |                               |                             |                        |      | 471 . 23            |                               |                             |                        |      |      |    |    |
|                        | Controller, high vibration resistance <sup>1)</sup>                                                             |                               |                             |                        |      | 471 . 26            |                               |                             |                        |      |      |    |    |
|                        | Temperature switch with locking, high vibration resistance <sup>2)</sup>                                        |                               |                             |                        |      | 472 . 12            |                               |                             |                        |      |      |    |    |
| Range                  | Range [°C]                                                                                                      | Sensor max. [°C]              |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        | +20 ... 110                                                                                                     | 115                           |                             |                        |      |                     |                               |                             | 23                     |      |      |    |    |
|                        | +20 ... 150                                                                                                     | 165                           |                             |                        |      |                     |                               |                             | 31                     |      |      |    |    |
|                        | +40 ... 300                                                                                                     | 330                           |                             |                        |      |                     |                               |                             | 53                     |      |      |    |    |
| Sensor                 | Range [°C]                                                                                                      | Sensor diameter [mm]          |                             |                        |      | Range [°C]          | Sensor diameter [mm]          |                             |                        |      |      |    |    |
|                        | +20 ... 110                                                                                                     | Ø7                            | 322                         |                        |      | +40 ... 300         | Ø7                            | 122                         |                        |      |      |    |    |
|                        | +20 ... 150                                                                                                     | Ø9                            | 332                         |                        |      | +40 ... 300         | Ø9                            | 132                         |                        |      |      |    |    |
|                        | +20 ... 150                                                                                                     | Ø12                           | 342                         |                        |      | +40 ... 300         | Ø12                           | 142                         |                        |      |      |    |    |
| Fixing                 | Version B (remote sensing version)                                                                              |                               |                             |                        |      |                     |                               |                             | 27                     |      |      |    |    |
|                        | Version K (direct mounting version)                                                                             |                               |                             |                        |      |                     |                               |                             | 14                     |      |      |    |    |
| Protection tube        | Suitable for sensor                                                                                             | Protection tube diameter [mm] | Protection tube length [mm] | Electrical connection  |      | Suitable for sensor | Protection tube diameter [mm] | Protection tube length [mm] | Electrical connection  |      |      |    |    |
|                        | 322                                                                                                             | 10/8                          | min. 150                    | K, Stainless steel     | 1411 | 322                 | 10/8                          | min. 150                    | B, Brass nickel plated | 8316 |      |    |    |
|                        | 332                                                                                                             | 12/10                         | min. 110                    | K, Stainless steel     | 1412 | 332                 | 12/10                         | min. 110                    | B, Brass nickel plated | 8317 |      |    |    |
|                        | 342                                                                                                             | 15/13                         | min. 65                     | K, Stainless steel     | 1414 | 342                 | 15/13                         | min. 65                     | B, Brass nickel plated | 8319 |      |    |    |
|                        | 322                                                                                                             | 10/8                          | min. 150                    | K, Brass nickel plated | 1416 | 322                 | 10/8                          | min. 150                    | B, Stainless steel     | 8411 |      |    |    |
|                        | 332                                                                                                             | 12/10                         | min. 110                    | K, Brass nickel plated | 1417 | 332                 | 12/10                         | min. 110                    | B, Stainless steel     | 8412 |      |    |    |
|                        | 342                                                                                                             | 15/13                         | min. 65                     | K, Brass nickel plated | 1419 | 342                 | 15/13                         | min. 65                     | B, Stainless steel     | 8414 |      |    |    |
|                        |                                                                                                                 |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
| Protection tube length | Length G, see data sheet H72114/H72163                                                                          |                               |                             |                        |      |                     |                               |                             |                        |      | XXXX |    |    |
|                        |                                                                                                                 |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        |                                                                                                                 |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
| Accessories            | Switchpoint fixed and sealed upon customer's request                                                            |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 88 |
|                        | Switchpoint preset upon customer's request, no guarantee on switching accuracy                                  |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 83 |
|                        | Switchpoint adjustment please indicate when ordering:                                                           |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        | - Switchpoint [bar]                                                                                             |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        | - Increasing or decreasing                                                                                      |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        | Screwed cable gland M20x1.5 (EN 50262)                                                                          |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 07 |
|                        | Screwed cable gland M24x1.5 (DIN 89280)                                                                         |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 27 |
|                        | Screwed cable gland M18x1.5 (DIN 89280)                                                                         |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 40 |
|                        | Capillary tube protection: Flexible metal tube, brass nickel plated                                             |                               |                             |                        |      |                     |                               |                             |                        |      |      |    | 90 |
| Capillary tube length  | Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L = XXXX |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |
|                        | Standard length: L = 3000 mm with flexible metal tube                                                           |                               |                             |                        |      |                     |                               |                             |                        |      |      |    |    |

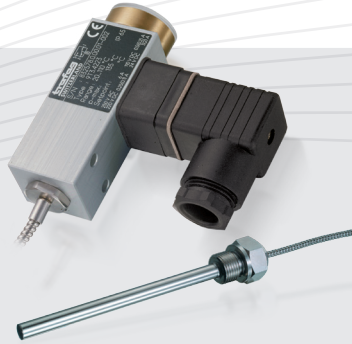
<sup>1)</sup> Without ship approval GL

<sup>2)</sup> Without ship approval LRS



# ISP/ISPT 474

Picotherm



## Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65
- Any mounting position possible

## Technical Data

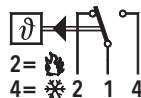
|                            |                                     |                        |                                                                                       |
|----------------------------|-------------------------------------|------------------------|---------------------------------------------------------------------------------------|
| Designation of application | Compact thermostat for shipbuilding | Switching differential | Not adjustable                                                                        |
| Measuring range            | +5°C ... +95°C to +20°C ... +150°C  | Repeatability          | ± 1 % FS typ.                                                                         |
| Output signal              | Floating change-over contact        | Approval / conformity  | ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS<br>EN60730-1/ EN60730-2-9: Typ 2.B.H |

## Standard products (extra short lead time)

| Product No. | Type Code                          | Temperature range [°C] | Protection tube diameter [mm] | Protection tube length [mm] | Switching differential [°C] | Sensor max. [°C] |
|-------------|------------------------------------|------------------------|-------------------------------|-----------------------------|-----------------------------|------------------|
| ISPT9515    | 474 0320 322 14 1416 0150 58 V3    | +5 ... +95             | 10                            | 150                         | 4 (fixed)                   | 100              |
| ISPT9565    | 474 0320 342 14 1419 0065 58 V3    | +5 ... +95             | 15                            | 65                          | 4 (fixed)                   | 100              |
| ISPT11015   | 474 0323 322 14 1416 0150 58 V3    | +20 ... +110           | 10                            | 150                         | 4 (fixed)                   | 115              |
| ISPT11065   | 474 0323 342 14 1419 0065 58 V3    | +20 ... +110           | 15                            | 65                          | 4 (fixed)                   | 115              |
| ISPT15015   | 474 0331 322 14 1416 0150 58 V3    | +20 ... +150           | 10                            | 150                         | 5 (fixed)                   | 165              |
| ISPT15065   | 474 0331 342 14 1419 0065 58 V3    | +20 ... +150           | 15                            | 65                          | 5 (fixed)                   | 165              |
| ISP9515     | 474 0320 322 00 8316 0150 58 90 V3 | +5 ... +95             | 10                            | 150                         | 4 (fixed)                   | 100              |
| ISP9565     | 474 0320 342 00 8319 0065 58 90 V3 | +5 ... +95             | 15                            | 65                          | 4 (fixed)                   | 100              |
| ISP11015    | 474 0323 322 00 8316 0150 58 90 V3 | +20 ... +110           | 10                            | 150                         | 4 (fixed)                   | 115              |
| ISP11065    | 474 0323 342 00 8319 0065 58 90 V3 | +20 ... +110           | 15                            | 65                          | 4 (fixed)                   | 115              |
| ISP15015    | 474 0331 322 00 8316 0150 58 90 V3 | +20 ... +150           | 10                            | 150                         | 6 (fixed)                   | 165              |
| ISP15065    | 474 0331 342 00 8319 0065 58 90 V3 | +20 ... +150           | 15                            | 65                          | 6 (fixed)                   | 165              |

External switchpoint adjustment  
Electrical connection: EN175301-803-A

AC 250 V, 3 (1) A  
DC 24 V, 2 (4) A  
DC 250 V, 0.1 (0.05) A



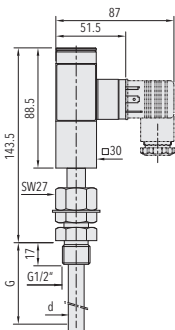
Data sheet  
Instructions

[www.trafag.com/H72113](http://www.trafag.com/H72113)  
[www.trafag.com/H73113](http://www.trafag.com/H73113)

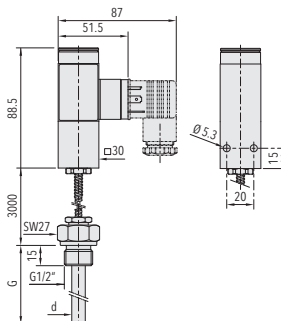
## Ordering information/type code

|                               |                                                                                                                                                                          |                            |                                         |                                       |      |    |      |      |    |    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------|---------------------------------------|------|----|------|------|----|----|
|                               |                                                                                                                                                                          | 474 .                      | XX                                      | XX                                    | XXX  | XX | XXXX | XXXX | XX | XX |
| <b>Microswitch</b>            | Standard, switching differential not adjustable                                                                                                                          | 03                         |                                         |                                       |      |    |      |      |    |    |
| <b>Range</b>                  | <b>Range</b><br>[°C]                                                                                                                                                     | <b>Sensor max.</b><br>[°C] |                                         |                                       |      |    |      |      |    |    |
|                               | +5 ... +95                                                                                                                                                               | 100                        | 20                                      |                                       |      |    |      |      |    |    |
|                               | +20 ... +110                                                                                                                                                             | 115                        | 23                                      |                                       |      |    |      |      |    |    |
|                               | +20 ... +150                                                                                                                                                             | 165                        | 31                                      |                                       |      |    |      |      |    |    |
| <b>Sensor</b>                 | <b>Sensor diameter</b><br>[mm]                                                                                                                                           |                            |                                         |                                       |      |    |      |      |    |    |
|                               | Ø7                                                                                                                                                                       |                            | 322                                     |                                       |      |    |      |      |    |    |
|                               | Ø12                                                                                                                                                                      |                            | 342                                     |                                       |      |    |      |      |    |    |
| <b>Fixing <sup>2)</sup></b>   | Flange connection (for remote sensing version)                                                                                                                           |                            |                                         |                                       |      | 00 |      |      |    |    |
|                               | Cap nut (for direct mounting version)                                                                                                                                    |                            |                                         |                                       |      | 14 |      |      |    |    |
| <b>Protection tube</b>        | <b>Mounting</b>                                                                                                                                                          | <b>Suitable for sensor</b> | <b>Protection tube diameter</b><br>[mm] | <b>Protection tube length</b><br>[mm] |      |    |      |      |    |    |
|                               | For direct mounting on protection tube                                                                                                                                   | 322                        | 10                                      | 150                                   | 1416 |    |      |      |    |    |
|                               | For direct mounting on protection tube                                                                                                                                   | 342                        | 15                                      | 65                                    | 1419 |    |      |      |    |    |
|                               | For remote sensing version                                                                                                                                               | 322                        | 10                                      | 150                                   | 8316 |    |      |      |    |    |
|                               | For remote sensing version                                                                                                                                               | 342                        | 15                                      | 65                                    | 8319 |    |      |      |    |    |
| <b>Protection tube length</b> | <b>Protection tube length</b><br>[mm]                                                                                                                                    |                            |                                         |                                       |      |    |      |      |    |    |
|                               | 65                                                                                                                                                                       |                            |                                         |                                       | 0065 |    |      |      |    |    |
|                               | 150                                                                                                                                                                      |                            |                                         |                                       | 0150 |    |      |      |    |    |
| <b>Accessories</b>            | Female electrical connector EN 175301-803-A (DIN43650-A)                                                                                                                 |                            |                                         |                                       |      |    |      |      | 58 |    |
|                               | Capillary tube protection: Flexible metal tube, brass nickel plated                                                                                                      |                            |                                         |                                       |      |    |      |      | 90 |    |
|                               | Fixing set                                                                                                                                                               |                            |                                         |                                       |      |    |      |      | V3 |    |
|                               | Cover with window                                                                                                                                                        |                            |                                         |                                       |      |    |      |      | 77 |    |
| <b>Capillary tube length</b>  | Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L = XXXX<br>Standard length: L = 3000 mm with flexible metal tube |                            |                                         |                                       |      |    |      |      |    |    |

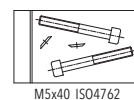
<sup>2)</sup> See data sheet H72106



ISPT ...  
Direct mounting version



ISP ...  
For remote sensing version L = 3000 mm



M5x40 ISO4762



# EXS 404/414

## EX Industat



### Features

- Compact design
- Rugged housing
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

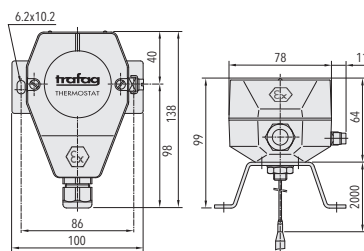
|                            |                                             |                        |                    |
|----------------------------|---------------------------------------------|------------------------|--------------------|
| Designation of application | Ex Industrial thermostat with remote sensor | Switching differential | Not adjustable     |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C         | Repeatability          | ± 0.5 % FS typ.    |
| Output signal              | Floating change-over contact                | Approval / conformity  | SEV 15 ATEX 0156 X |

### Standard products (extra short lead time)

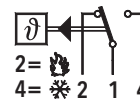
| Product No. | Type Code                    | Sensor material      | Temperature range [°C] | Switching differential [°C] | Sensor max. [°C] |
|-------------|------------------------------|----------------------|------------------------|-----------------------------|------------------|
| EXS35       | 414 9109 423 27 0000 0000 02 | Copper nickel plated | 0 ... +35              | 2.5 (fixed)                 | 50               |
| EXS40       | 414 9101 423 27 0000 0000 02 | Copper nickel plated | -30 ... +40            | 2.5 (fixed)                 | 45               |
| EXS95       | 414 9120 323 27 0000 0000 02 | Copper nickel plated | +5 ... +95             | 3.5 (fixed)                 | 105              |
| EXS150      | 414 9131 323 27 0000 0000 02 | Copper nickel plated | +20 ... +150           | 5.5 (fixed)                 | 165              |
| EXS230S     | 414 9124 121 27 0000 0000 02 | 1.4435 (AISI316L)    | +20 ... +230           | 8 (fixed)                   | 250              |
| EXS350S     | 414 9154 121 27 0000 0000 02 | 1.4435 (AISI316L)    | +70 ... +350           | 10 (fixed)                  | 380              |

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal



AC 250 V, 5 (5) A  
DC 30 V, 5 (3) A  
DC 250 V, 0.25 (0.03) A



EXS ...  
Internal switchpoint adjustment

Data sheet  
Instructions

[www.trafag.com/H72108](http://www.trafag.com/H72108)  
[www.trafag.com/H73172](http://www.trafag.com/H73172)

## Ordering information/type code

|                             |                                                                              |                                |                        |     |                      |                            |     |    |            |    |    |
|-----------------------------|------------------------------------------------------------------------------|--------------------------------|------------------------|-----|----------------------|----------------------------|-----|----|------------|----|----|
|                             |                                                                              |                                |                        | XXX | XX                   | XX                         | XXX | XX | XXXXXXXXXX | XX | XX |
| <b>Custom build code</b>    | External adjustment                                                          |                                |                        | 404 |                      |                            |     |    |            |    |    |
|                             | Internal adjustment                                                          |                                |                        | 414 |                      |                            |     |    |            |    |    |
| <b>Microswitch</b>          | Standard, switching differential not adjustable                              |                                |                        |     | 91                   |                            |     |    |            |    |    |
| <b>Range</b>                | <b>Range</b><br>[°C]                                                         | <b>Sensor max.</b><br>[°C]     |                        |     | <b>Range</b><br>[°C] | <b>Sensor max.</b><br>[°C] |     |    |            |    |    |
|                             | -30 ... +40                                                                  | 50                             | 01                     |     | -10 ... +80          | 85                         | 95  |    |            |    |    |
|                             | -10 ... +25                                                                  | 60                             | 07                     |     | +5 ... +95           | 105                        | 20  |    |            |    |    |
|                             | 0 ... +35                                                                    | 70                             | 09                     |     | +20 ... +110         | 115                        | 23  |    |            |    |    |
|                             | +10 ... +45                                                                  | 85                             | 11                     |     | +20 ... +150         | 165                        | 31  |    |            |    |    |
|                             | +10 ... +80                                                                  | 100                            | 13                     |     | +20 ... +230         | 250                        | 24  |    |            |    |    |
|                             | +15 ... +30                                                                  | 60                             | 17                     |     | +40 ... +300         | 330                        | 53  |    |            |    |    |
|                             | -10 ... +35                                                                  | 70                             | 94                     |     | +35 ... +175         | 200                        | 56  |    |            |    |    |
|                             | +10 ... +70                                                                  | 85                             | 59                     |     | +20 ... +270         | 330                        | 55  |    |            |    |    |
|                             | +20 ... +85                                                                  | 100                            | 58                     |     | +70 ... +350         | 380                        | 54  |    |            |    |    |
|                             | +20 ... +115                                                                 | 130                            | 57                     |     |                      |                            |     |    |            |    |    |
| <b>Sensor <sup>1)</sup></b> | <b>Range</b>                                                                 | <b>Sensor diameter</b><br>[mm] | <b>Sensor material</b> |     |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø7                             | Stainless steel        | 421 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø4.7                           | Stainless steel        | 311 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø7                             | Stainless steel        | 321 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø9                             | Stainless steel        | 331 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø4.7                           | Stainless steel        | 111 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø7                             | Stainless steel        | 121 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø9                             | Stainless steel        | 131 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø4.7                           | Copper                 | 412 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø7                             | Copper                 | 422 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø9                             | Copper                 | 432 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø4.7                           | Copper                 | 312 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø7                             | Copper                 | 322 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø9                             | Copper                 | 332 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø4.7                           | Copper                 | 112 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø7                             | Copper                 | 122 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø9                             | Copper                 | 132 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø4.7                           | Copper nickel plated   | 413 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø7                             | Copper nickel plated   | 423 |                      |                            |     |    |            |    |    |
|                             | 01, 07, 09, 11, 13, 17, 58, 59                                               | Ø9                             | Copper nickel plated   | 433 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø4.7                           | Copper nickel plated   | 313 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø7                             | Copper nickel plated   | 323 |                      |                            |     |    |            |    |    |
|                             | 94, 95, 20, 23, 31, 56, 57                                                   | Ø9                             | Copper nickel plated   | 333 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø4.7                           | Copper nickel plated   | 113 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø7                             | Copper nickel plated   | 123 |                      |                            |     |    |            |    |    |
|                             | 24, 53, 54, 55                                                               | Ø9                             | Copper nickel plated   | 133 |                      |                            |     |    |            |    |    |
| <b>Fixing <sup>2)</sup></b> | Nut M10 (for remote sensing version)                                         |                                |                        |     |                      |                            |     | 10 |            |    |    |
|                             | Bracket (for remote sensing version)                                         |                                |                        |     |                      |                            |     | 27 |            |    |    |
|                             | Grubscrew locked, lateral (direct mounting version)                          |                                |                        |     |                      |                            |     | 12 |            |    |    |
|                             | Cap nut (for direct mounting version)                                        |                                |                        |     |                      |                            |     | 14 |            |    |    |
|                             | Grubscrew locked with spacer (cooling element) (for direct mounting version) |                                |                        |     |                      |                            |     | 18 |            |    |    |

Continuation on next page

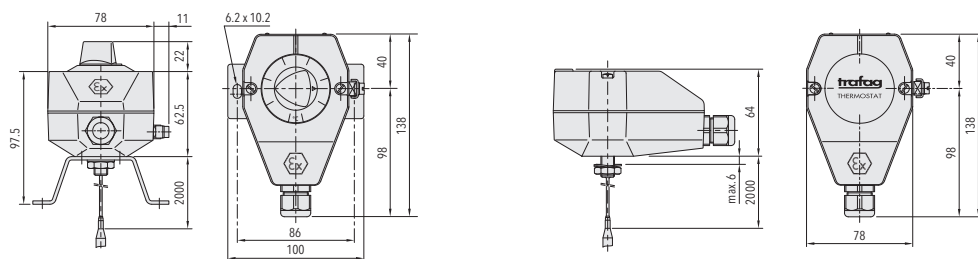
|                       | XXX                                                                                                                         | XX | XX | XXX | XX | XXXXXXXXXX | XX        | XX |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|----|----|-----|----|------------|-----------|----|
| Protection tube       | See data sheet H72114/H72163                                                                                                |    |    |     |    |            | XXXX.XXXX |    |
| Accessories           | Switchpoint locking <sup>4)</sup>                                                                                           |    |    |     |    |            |           | 15 |
|                       | Switchpoint fixed and sealed upon customer's request                                                                        |    |    |     |    |            |           | 88 |
|                       | Switchpoint preset upon customer's request, no guarantee on switching accuracy                                              |    |    |     |    |            |           | 83 |
|                       | Switchpoint adjustment please indicate when ordering:                                                                       |    |    |     |    |            |           |    |
|                       | - Switchpoint [bar]                                                                                                         |    |    |     |    |            |           |    |
|                       | - Increasing or decreasing                                                                                                  |    |    |     |    |            |           |    |
|                       | Capillary tube protection: Flexible metal tube, brass nickel plated                                                         |    |    |     |    |            |           | 90 |
|                       | Capillary tube protection: Flexible metal tube 1.4541/V2A                                                                   |    |    |     |    |            |           | 91 |
| Capillary tube length | Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX <sup>3)</sup> |    |    |     |    |            |           |    |

<sup>1)</sup> See data sheet H72114/H72163

<sup>2)</sup> See data sheet H72106

<sup>3)</sup> Overlengths upon request

<sup>4)</sup> Only with type 414, internal adjustment



# EXAS 409/419

## Ex Indu Ambistat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

|                            |                                  |                        |                    |
|----------------------------|----------------------------------|------------------------|--------------------|
| Designation of application | Ex Industrial room thermostat    | Switching differential | Not adjustable     |
| Measuring range            | -30°C ... +30°C to 0°C ... +60°C | Repeatability          | ± 0.5 % FS typ.    |
| Output signal              | Floating change-over contact     | Approval / conformity  | SEV 15 ATEX 0156 X |



Data sheet  
Instructions

[www.trafag.com/H72128](http://www.trafag.com/H72128)  
[www.trafag.com/H73172](http://www.trafag.com/H73172)

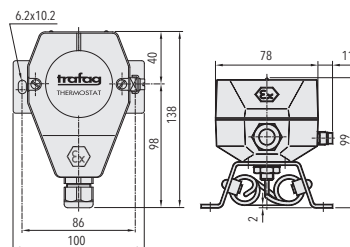
### Standard products (extra short lead time)

| Product No. | Type Code                    | Temperature range [°C] | Switching differential [°C] | Operating temperature [°C] |
|-------------|------------------------------|------------------------|-----------------------------|----------------------------|
| EXAS33      | 419 9102 523 27 0000 0000 02 | -30 ... +30            | 2.5 (fixed)                 | -30 ... +40                |
| EXAS35      | 419 9110 523 27 0000 0000 02 | +5 ... +35             | 2.5 (fixed)                 | -30 ... +50                |
| EXAS60      | 419 9112 523 27 0000 0000 02 | 0 ... +60              | 2.5 (fixed)                 | -30 ... +60                |

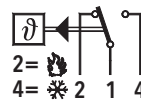
Sensor: Sensor coil

Sensor material: Copper

Electrical connection: Screw terminal



AC 250 V, 5 (5) A  
DC 30 V, 5 (3) A  
DC 250 V, 0.25 (0.03) A



EXAS ...

Internal switchpoint adjustment

# «Simple Apparatus» 414 conformity to ATEX

Industat



## Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

## Technical Data

|                            |                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------|
| Designation of application | Industrial room thermostat with remote sensor                                         |
| Measuring range            | -30°C ... +40°C to +70°C ... +350°C                                                   |
| Output signal              | Floating change-over contact                                                          |
| Switching differential     | Not adjustable                                                                        |
| Repeatability              | ± 0.5 % FS typ.                                                                       |
| Approval / conformity      | EN60730-1/ EN60730-2-9: Typ 2.B.H<br>EN60079-0, EN60079-11 Zone 1 and 2,<br>21 and 22 |

Switch amplifier: See chapter "Accessories"

Further information for devices of the type "Simple Apparatus":

See chapter "Pressure Switches"

Data sheet

[www.trafag.com/H72183](http://www.trafag.com/H72183)

# «Simple Apparatus» 419 conformity to ATEX

Ambistat



## Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

## Technical Data

|                            |                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------|
| Designation of application | Industrial room thermostat                                                            |
| Measuring range            | -30°C ... +30°C to 0°C ... +60°C                                                      |
| Output signal              | Floating change-over contact                                                          |
| Switching differential     | Not adjustable                                                                        |
| Repeatability              | ± 0.5 % FS typ.                                                                       |
| Approval / conformity      | EN60730-1/ EN60730-2-9: Typ 2.B.H<br>EN60079-0, EN60079-11 Zone 1 and 2,<br>21 and 22 |

Switch amplifier: See chapter "Accessories"

Further information for devices of the type "Simple Apparatus":

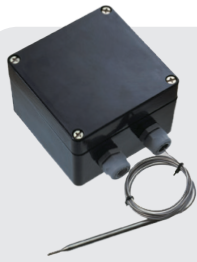
See chapter "Pressure Switches"

Data sheet

[www.trafag.com/H72182](http://www.trafag.com/H72182)

# Safety temperature limiter KTSB

PTB 09  
ATEX 1027



## Features

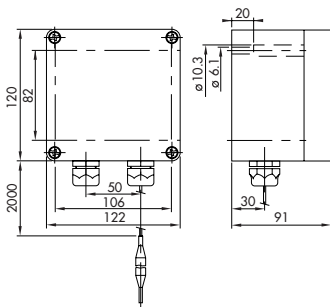
- High current ratings 16 A
- With mechanical reset
- Internal switchpoint adjustment

## Technical Data

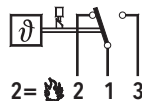
|                       |                                   |
|-----------------------|-----------------------------------|
| Sensor technology     | Capillary tube with remote sensor |
| Sensor material       | 1.4435/316L                       |
| Output signal         | Microswitch                       |
| Electrical connection | Screw terminal                    |

## Standard products (extra short lead time)

| Product No. | Range T [°C] | Operating temperature [°C] | Media temperature [°C] | Capillary tube length [m] |
|-------------|--------------|----------------------------|------------------------|---------------------------|
| KTSB150S    | +20 ... +150 | -50 ... +60                | max. 165               | 2                         |
| KTSB230S    | +20 ... +230 | -50 ... +60                | max. 250               | 2                         |
| KTSB350S    | +70 ... +350 | -50 ... +60                | max. 380               | 2                         |



AC 400 V, 16 A



- Areas with gas explosion hazards EX II 2 G Ex d e IIC T6
- Areas with dust explosion hazards EX II 2 D Ex tD A21 IP 66 T80°C



Data sheet

[www.trafag.com/H72181](http://www.trafag.com/H72181)



# Marine transmitter for PT100 sensors T...



## Features

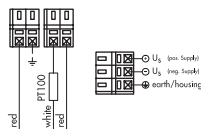
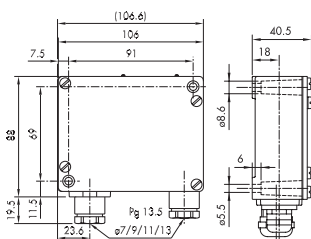
- For shipbuilding
- 4 ... 20 mA
- Protection IP65

## Technical Data

|                       |                |
|-----------------------|----------------|
| Sensor type           | PT100          |
| Operating temperature | -40 ... +85 °C |
| Electrical connection | Screw terminal |
| Output signal         | 4 ... 20 mA    |

## Standard products (extra short lead time)

| Product No. | Type code       | Range T [°C] | Supply [VDC] | Product No. | Type code       | Range T [°C] | Supply [VDC] |
|-------------|-----------------|--------------|--------------|-------------|-----------------|--------------|--------------|
| T50         | 8100 01 0003 01 | -50 ... +50  | 12 ... 30    | T200        | 8100 05 0003 01 | 0 ... +200   | 12 ... 30    |
| T100        | 8100 02 0003 01 | 0 ... +100   | 12 ... 30    | T400        | 8100 06 0003 01 | 0 ... +400   | 12 ... 30    |



Data sheet  
Instructions

[www.trafag.com/H72102](http://www.trafag.com/H72102)  
[www.trafag.com/H73102](http://www.trafag.com/H73102)

# Temperature sensor PT100



## Features

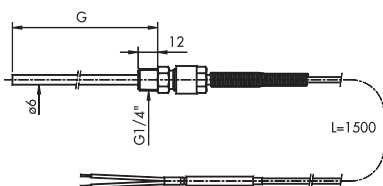
- 2-wire temperature sensor
- Incl. mounting stopper
- Protection IP65

## Technical Data

|                          |                |
|--------------------------|----------------|
| Sensor type              | PT100 (IEC751) |
| Protection tube material | 1.4435/316L    |
| Immersion                | Adjustable     |
| Electrical connection    | 2 wires        |

## Standard products (extra short lead time)

| Product No. | Range T [°C] | Protection tube length G [mm] | Class (IEC751) |
|-------------|--------------|-------------------------------|----------------|
| PT100L15    | -50 ... +250 | 150                           | B              |



# Temperature sensor PT100/1000



## Features

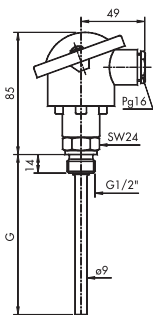
- 3-wire temperature sensor in DIN B head
- Protection IP65

## Technical Data

|                          |                        |
|--------------------------|------------------------|
| Sensor type              | PT100 (IEC751) or 1000 |
| Protection tube material | 1.4435/316L            |
| Immersion                | Adjustable             |
| Electrical connection    | 3 wires                |

## Standard products (extra short lead time)

| Product No. | Range T [°C] | Protection tube length G [mm] | Class (IEC751) | Product No. | Range T [°C] | Protection tube length G [mm] | Class (IEC751) |
|-------------|--------------|-------------------------------|----------------|-------------|--------------|-------------------------------|----------------|
| PT100L12    | -50 ... +250 | 120                           | B              | PT100L40    | -50 ... +250 | 400                           | B              |
| PT1000L12   | -50 ... +250 | 120                           | B              |             |              |                               |                |



# Temperature sensor



## Features

- High Precision
- Compliant with DIN 43760
- Measuring current 5 mA

## Technical Data

|                          |                             |
|--------------------------|-----------------------------|
| Sensor material          | Nickel thin film on ceramic |
| Temperature range        | -60°C ... +200°C            |
| Response time water flow | 0.3 s (@ 0.2m/s)            |
| Response time airflow    | 27 s (@ 0.2m/s)             |

## Description

| Resistivity $R_0$ @ 0°C [Ohm] | Electrical connection |
|-------------------------------|-----------------------|
| 100                           | lead frames           |
| 1000                          | lead frames           |

# Electronic thermostat with display and relay LTR



## Features

- 1 Panel mounting
- Single stage thermostat with display
- 1 Relay (SPDT)
- Protection IP54

## Technical Data

|                       |                |
|-----------------------|----------------|
| Sensor type           | PTC1000        |
| Output signal         | 1 Relay        |
| Electrical connection | Screw terminal |
| Operating temperature | -10°C... +50°C |

## Standard products (extra short lead time)

| Product No. | Range T [°C] | Relay Output | U-Supply [VAC] | Dimensions [mm] | Cutout of panel |
|-------------|--------------|--------------|----------------|-----------------|-----------------|
| LTR5TSRE    | -50 ... +150 | 240V/16 (4)A | 240            | 76 x 35 x 77    | 71 x 29         |

# Electronic controller with display ATR



## Features

- Supply voltage: 24 ... 230 VAC/VDC
- 17 Sensor inputs to select
- 2 Relays and 1 SSR output, configurable

## Technical Data

|                         |                                                                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inputs (to be selected) | Thermocouples: K,S,R,J<br>Thermoresistors:<br>PT100, PT500, PT1000, NI100,<br>PTC, NTC, Potentiometers<br>Linear signals: 0...10V,<br>0...20mA, 4...20mA, 0...40mV |
| Protection              | IP65 front panel (with gasket)<br>IP30 housing<br>IP20 terminals                                                                                                   |
| Operating temperature   | 0°C ... +45°C                                                                                                                                                      |

## Standard products (extra short lead time)

| Product No. | Output signal                                                                                                                                                | Supply voltage           | Dimensions [mm] | Cutout of panel [mm] |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------|----------------------|
| ATR142      | Relay 1: 8A - 250 VAC Resistive Load<br>Relay 2: 5A - 250 VAC Resistive Load<br>SSR 1: Configurable as command output and /<br>or alarm output 12 VDC, 30 mA | 24 ... 230 VAC/VDC ±15 % | 77 x 35 x 60    | 28.5 x 70.5          |

# Hygrostat HMH



## Features

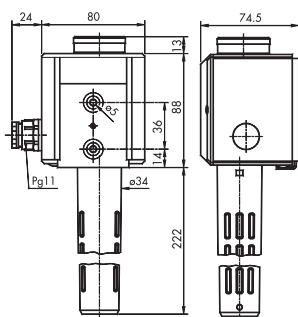
- With adjustable switch point
- rH 10 ... 100 %

## Technical Data

|                       |                            |
|-----------------------|----------------------------|
| Protection            | IP54                       |
| Operating temperature | -20°C ... +60°C            |
| Output signal         | 1 Microswitch 250 V / 10 A |
| Electrical connection | Screw terminal             |

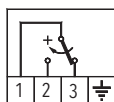
## Standard products (extra short lead time)

| Product No. | Humidity [%rH] | Hysteresis [d%rH] | Sensor T max. [°C] |
|-------------|----------------|-------------------|--------------------|
| HMH         | 10 ... 100     | approx. 1.5       | +70                |



AC 250 V, 10 A (25 °C)  
8 A (60 °C)

2 = dehumidifying  
3 = humidifying



 Data sheet

[www.trafag.com/H72402](http://www.trafag.com/H72402)

# Technical Data Thermostats

|                                   | A/AS/ASE<br>645/650                                 | ADS<br>319                                          | A2/A2S<br>198/199                                   | IA/IAS<br>409/419                                  | MSK<br>624/634                                      | MP/MSP<br>663/664                                   |  |
|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|
| <b>Main characteristics</b>       |                                                     |                                                     |                                                     |                                                    |                                                     |                                                     |  |
| <b>Designation of application</b> | Room thermostat                                     | Double room thermostat                              | Multistage room thermostat                          | Industrial room thermostat                         | Duct thermostat                                     | Pipe mounting thermostat                            |  |
| <b>Measuring range</b>            | -45°C ... +15°C to 0°C ... +60°C                    | -30°C ... +30°C to 0°C ... +60°C                    | -45°C ... +15°C to 0°C ... +60°C                    | -30°C ... +30°C to 0°C ... +60°C                   | -30°C ... +40°C to +20°C ... +110°C                 | -10°C ... +35°C to +20°C ... +110°C                 |  |
| <b>Output signal</b>              | Floating change-over contact                        | Floating change-over contact                        | Floating change-over contact                        | Floating change-over contact                       | Floating change-over contact                        | Floating change-over contact                        |  |
| <b>Switching differential</b>     | Adjustable / not adjustable                         | Adjustable / not adjustable                         | Not adjustable                                      | Adjustable / not adjustable                        | Adjustable / not adjustable                         | Adjustable / not adjustable                         |  |
| <b>Accuracy</b>                   |                                                     |                                                     |                                                     |                                                    |                                                     |                                                     |  |
| <b>Repeatability</b>              | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                    | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     |  |
| <b>Scale accuracy typ.</b>        | ± 2 % FS typ.                                       | ± 2 % FS typ.                                       | ± 2 % FS typ.                                       | ± 2 % FS typ.                                      | ± 2 % FS typ.                                       | ± 2 % FS typ.                                       |  |
| <b>Switching point</b>            |                                                     |                                                     |                                                     |                                                    | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever   |  |
| <b>Electrical data</b>            |                                                     |                                                     |                                                     |                                                    |                                                     |                                                     |  |
| <b>Resistance of insulation</b>   | > 2 MΩ                                              | > 2 MΩ                                              | > 2 MΩ                                              | > 2 MΩ                                             | > 2 MΩ                                              | > 2 MΩ                                              |  |
| <b>Dielectric strength</b>        | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground |  |
| <b>Cable gland</b>                | M16x1.5<br>Cable-Ø 4...9 mm                         | PG13.5<br>Cable-Ø 5 ... 12.5 mm                     | PG13.5<br>Cable-Ø 5 ... 12.5 mm                     | M20x1.5<br>Cable-Ø 4...10 mm                       | M16x1.5<br>Cable-Ø 4...9 mm                         | M16x1.5<br>Cable-Ø 4...9 mm                         |  |
| <b>Terminal screw</b>             | 3 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                   | 6 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                  | 3 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                   |  |
| <b>Environmental conditions</b>   |                                                     |                                                     |                                                     |                                                    |                                                     |                                                     |  |
| <b>Ambient temperature</b>        | -30°C ... +70°C                                     | -30°C ... +70°C                                     | -30°C ... +70°C                                     | -30°C ... +70°C                                    | -30°C ... +70°C                                     | -30°C ... +70°C                                     |  |
| <b>Protection</b>                 | IP54                                                | IP54                                                | IP54                                                | IP65                                               | IP54                                                | IP54                                                |  |
| <b>Humidity</b>                   | Max. 95 % relative                                  | Max. 95 % relative                                  | Max. 95 % relative                                  | Max. 95 % relative                                 | Max. 95 % relative                                  | Max. 95 % relative                                  |  |
| <b>Mechanical data</b>            |                                                     |                                                     |                                                     |                                                    |                                                     |                                                     |  |
| <b>Housing</b>                    | PC/ABS-Blend V0                                     | Noryl                                               | Noryl                                               | AlSi9Cu3, coated                                   | PC/ABS-Blend V0                                     | PC/ABS-Blend V0                                     |  |
| <b>Weight</b>                     | ~ 300 g                                             | ~ 220 g                                             | ~ 480 g                                             | ~ 950 g                                            | ~ 220 g                                             | ~ 220 g                                             |  |

|  | <b>MST<br/>624/634</b>                              | <b>M/MS<br/>624/634</b>                             | <b>MS...R<br/>630/632</b>                         | <b>F/F...R<br/>990/991/992/993</b>                                                  | <b>GS<br/>657/658</b>                               | <b>D...R<br/>302</b>                                | <b>M2S<br/>104/114</b>                              |
|--|-----------------------------------------------------|-----------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
|  | Direct mounting thermostat                          | Remote sensing thermostat                           | Remote sensing thermostat with limiter            | Frost protection thermostat                                                         | Remote sensing thermostat                           | Double thermostat with remote sensor and limiter    | Multistage thermostat with remote sensor            |
|  | -30°C ... +40°C to +70°C ... +350°C                 | -30°C ... +40°C to +70°C ... +350°C                 | -30°C ... +40°C to +70°C ... +350°C               | -5°C ... +15°C                                                                      | +5°C ... +95°C and +20°C ... +150°C                 | -30°C ... +40°C to +70°C ... +350°C                 | -30°C ... +40°C to +70°C ... +350°C                 |
|  | Floating change-over contact                        | Floating change-over contact                        | Floating change-over contact                      | Floating change-over contact                                                        | Floating change-over contact                        | Floating change-over contact                        | Floating change-over contact                        |
|  | Adjustable / not adjustable                         | Adjustable / not adjustable                         | Not adjustable                                    | Not adjustable                                                                      | Not adjustable                                      | Adjustable / not adjustable                         | Not adjustable                                      |
|  | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                   | ± 0.5 % FS typ.                                                                     | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                     |
|  | ± 2 % FS typ.                                       | ± 2 % FS typ.                                       | ± 2 % FS typ.                                     | ± 1.5 % FS typ.                                                                     | ± 3 % FS typ.                                       | ± 2 % FS typ.                                       | ± 2 % FS typ.                                       |
|  | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever |                                                                                     | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever   |
|  | > 2 MΩ                                              | > 2 MΩ                                              | > 2 MΩ                                            | > 2 MΩ                                                                              | > 2 MΩ                                              | > 2 MΩ                                              | > 2 MΩ                                              |
|  | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | 2 kV terminal ground                              | 2 kV terminal ground                                                                | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground |
|  | M16x1.5<br>Cable-Ø 4...9 mm                         | M16x1.5<br>Cable-Ø 4...9 mm                         | M16x1.5<br>Cable-Ø 4...9 mm                       | M20x1.5<br>Cable-Ø 8...13 mm                                                        | M16x1.5<br>Cable-Ø 4...9 mm                         | PG13.5<br>Cable-Ø 5...12.5 mm                       | PG13.5<br>Cable-Ø 5 ... 12.5 mm                     |
|  | 3 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                 | 3 x 1 ... 2.5 mm²                                                                   | 3 x 1 ... 2.5 mm²                                   | 6 x 1 ... 2.5 mm²                                   | 6 x 1 ... 2.5 mm²                                   |
|  | -30°C ... +70°C                                     | -30°C ... +70°C                                     | -30°C ... +70°C                                   | Max. operating temperature: +70°C<br>Min. operating temperature: switch point + 2°C | -30°C ... +70°C                                     | -30°C ... +70°C                                     | -30°C ... +70°C                                     |
|  | IP54                                                | IP54                                                | IP54                                              | IP 54                                                                               | IP54                                                | IP54                                                | IP54                                                |
|  | Max. 95 % relative                                  | Max. 95 % relative                                  | Max. 95 % relative                                | Max. 95 % relative                                                                  | Max. 95 % relative                                  | Max. 95 % relative                                  | Max. 95 % relative                                  |
|  | PC/ABS-Blend V0                                     | PC/ABS-Blend V0                                     | PC/ABS-Blend V0                                   | AlSi9Pb3                                                                            | PC/ABS-Blend V0                                     | Noryl                                               | Noryl                                               |
|  | ~ 430 g                                             | ~ 380 g                                             | ~ 250 g                                           | ~ 850 g                                                                             | ~ 380 g                                             | ~ 620 g                                             | ~ 480 g                                             |

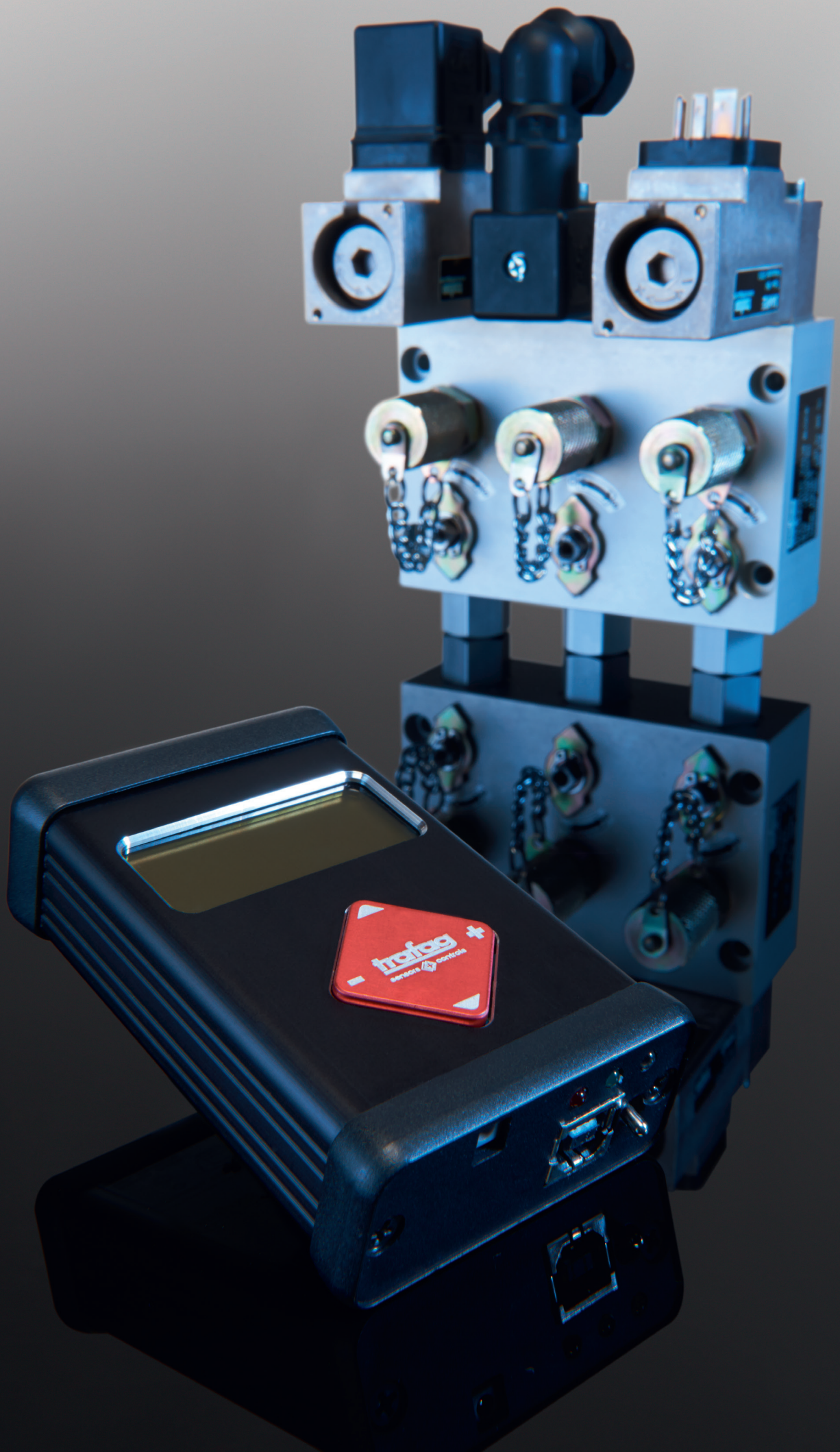


# Technical Data Thermostats

|                                   | L/LF<br>736/754                                     | L...R<br>755                                          | I/IS<br>404/414                                    | IS...R<br>410/412                                    | ISN/ISNT<br>471/472                               | ISP/ISPT<br>474                                   |  |
|-----------------------------------|-----------------------------------------------------|-------------------------------------------------------|----------------------------------------------------|------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|--|
| <b>Main characteristics</b>       |                                                     |                                                       |                                                    |                                                      |                                                   |                                                   |  |
| <b>Designation of application</b> | Remote sensing thermostat, skeleton type            | Remote sensing thermostat with limiter, skeleton type | Industrial thermostat with remote sensor           | Industrial thermostat with remote sensor and limiter | Thermostat for shipbuilding                       | Compact thermostat for shipbuilding               |  |
| <b>Measuring range</b>            | -30°C ... +40°C to +70°C ... +350°C                 | -30°C ... +40°C to +70°C ... +350°C                   | -30°C ... +40°C to +70°C ... +350°C                | -30°C ... +40°C to +70°C ... +350°C                  | +20°C ... +110°C to +40°C ... +300°C              | +5°C ... +95°C to +20°C ... +150°C                |  |
| <b>Output signal</b>              | Floating change-over contact                        | Floating change-over contact                          | Floating change-over contact                       | Floating change-over contact                         | Floating change-over contact                      | Floating change-over contact                      |  |
| <b>Switching differential</b>     | Adjustable / not adjustable                         | Not adjustable                                        | Adjustable / not adjustable                        | Not adjustable                                       | Not adjustable                                    | Not adjustable                                    |  |
| <b>Accuracy</b>                   |                                                     |                                                       |                                                    |                                                      |                                                   |                                                   |  |
| <b>Repeatability</b>              | ± 0.5 % FS typ.                                     | ± 0.5 % FS typ.                                       | ± 0.5 % FS typ.                                    | ± 0.5 % FS typ.                                      | ± 0.5 % FS typ.                                   | ± 1 % FS typ.                                     |  |
| <b>Stability typ.</b>             |                                                     |                                                       |                                                    |                                                      | ± 1 % FS typ.                                     | ± 1 % FS typ.                                     |  |
| <b>Scale accuracy typ.</b>        | ± 2 % FS typ.                                       | ± 2 % FS typ.                                         | ± 2 % FS typ.                                      | ± 2 % FS typ.                                        | ± 2 % FS typ.                                     | ± 4 % FS typ.                                     |  |
| <b>Switching point</b>            | Temperature compensated with bimetal switch lever   | Temperature compensated with bimetal switch lever     | Temperature compensated with bimetal switch lever  | Temperature compensated with bimetal switch lever    | Temperature compensated with bimetal switch lever | Temperature compensated with bimetal switch lever |  |
| <b>Electrical data</b>            |                                                     |                                                       |                                                    |                                                      |                                                   |                                                   |  |
| <b>Resistance of insulation</b>   | > 2 MΩ                                              | > 2 MΩ                                                | > 2 MΩ                                             | > 2 MΩ                                               | > 10 MΩ                                           | > 10 MΩ                                           |  |
| <b>Dielectric strength</b>        | U ≤ 250V: 1.45 kV<br>U ≤ 500V: 2 kV terminal ground | 2 kV terminal ground                                  | U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground | 2 kV terminal ground                                 | 2 kV terminal ground                              | 2 kV terminal ground                              |  |
| <b>Cable gland</b>                |                                                     |                                                       | M20x1.5<br>Cable-Ø 4...10 mm                       | M20x1.5<br>Cable-Ø 4...10 mm                         | M20x1.5<br>Cable-Ø 4...10 mm                      | Cable-Ø: 6...13 mm                                |  |
| <b>Terminal screw</b>             | 3 x 1 ... 2.5 mm²                                   | 3 x 1 ... 2.5 mm²                                     | 3 x 1 ... 2.5 mm²                                  | 3 x 1 ... 2.5 mm²                                    | 3 x 1 ... 2.5 mm²                                 | 4 x 0.5...1.5 mm²                                 |  |
| <b>Environmental conditions</b>   |                                                     |                                                       |                                                    |                                                      |                                                   |                                                   |  |
| <b>Ambient temperature</b>        | -30°C ... +70°C                                     | -30°C ... +70°C                                       | -30°C ... +70°C                                    | -30°C ... +70°C                                      | -30°C ... +70°C                                   | -30°C ... +70°C                                   |  |
| <b>Protection</b>                 | IP00                                                | IP00                                                  | IP65                                               | IP65                                                 | IP65                                              | IP65                                              |  |
| <b>Humidity</b>                   | Max. 95 % relative                                  | Max. 95 % relative                                    | Max. 95 % relative                                 | Max. 95 % relative                                   | Max. 95 % relative                                | Max. 95 % relative                                |  |
| <b>Mechanical data</b>            |                                                     |                                                       |                                                    |                                                      |                                                   |                                                   |  |
| <b>Housing</b>                    |                                                     | See ordering information                              | AlSi9Cu3, coated                                   | AlSi9Cu3, coated                                     | AlSi9Cu3, coated                                  | AlMgSi1 anodized                                  |  |
| <b>Weight</b>                     | 754: ~ 250 g<br>736: ~ 300 g                        | ~ 250 g                                               | ~ 950 g                                            | ~ 950 g                                              | ~ 950 g                                           | ~ 260 g                                           |  |

|  | <b>EXS<br/>404/414</b>                                                 | <b>EXAS<br/>409/419</b>                                                | <b>«Simple Apparatus»<br/>conformity to ATEX<br/>414</b>                         | <b>«Simple Apparatus»<br/>conformity to ATEX<br/>419</b>                         |
|--|------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|  | Ex Industrial thermostat<br>with remote sensor                         | Ex Industrial room<br>thermostat                                       | Industrial room<br>thermostat with remote<br>sensor                              | Industrial room<br>thermostat                                                    |
|  | -30°C ... +40°C to<br>+70°C ... +350°C                                 | -30°C ... +30°C to<br>0°C ... +60°C                                    | -30°C ... +40°C to<br>+70°C ... +350°C                                           | -30°C ... +30°C to<br>0°C ... +60°C                                              |
|  | Floating change-over<br>contact                                        | Floating change-over<br>contact                                        | Floating change-over<br>contact                                                  | Floating change-over<br>contact                                                  |
|  | Not adjustable                                                         | Not adjustable                                                         | Not adjustable                                                                   | Not adjustable                                                                   |
|  | ± 0.5 % FS typ.                                                        | ± 0.5 % FS typ.                                                        | ± 0.5 % FS typ.                                                                  | ± 0.5 % FS typ.                                                                  |
|  | ± 2 % FS typ.                                                          | ± 2 % FS typ.                                                          | ± 2 % FS typ.                                                                    | ± 2 % FS typ.                                                                    |
|  | Temperature<br>compensated with<br>bimetal switch lever                |                                                                        |                                                                                  |                                                                                  |
|  | > 2 MΩ                                                                 | > 2 MΩ                                                                 | > 2 MΩ                                                                           | > 2 MΩ                                                                           |
|  | 1.5 kV                                                                 | 1.5 kV                                                                 | 1.25 kV terminal<br>ground                                                       | 500 VAC terminal<br>ground                                                       |
|  | M20x1.5/SW24<br>Cable-Ø 5.5...13 mm<br>Approval:<br>PTB 99 ATEX 3128 X | M20x1.5/SW24<br>Cable-Ø 5.5...13 mm<br>Approval:<br>PTB 99 ATEX 3128 X | M20x1.5<br>Cable-Ø 4...10 mm,<br>max. cable length<br>according to<br>EN60079-11 | M20x1.5<br>Cable-Ø 4...10 mm,<br>max. cable length<br>according to<br>EN60079-11 |
|  | 3 x 1 ... 2.5 mm²                                                      | 3 x 1 ... 2.5 mm²                                                      | 3 x 1 ... 2.5 mm²                                                                | 3 x 1 ... 2.5 mm²                                                                |
|  | -30°C ... +70°C                                                        | -30°C ... +60°C                                                        | -30°C ... +65°C                                                                  | -30°C ... max. +65°C                                                             |
|  | IP65                                                                   | IP65                                                                   | IP65                                                                             | IP65                                                                             |
|  | Max. 95 % relative                                                     | Max. 95 % relative                                                     | Max. 95 % relative                                                               | Max. 95 % relative                                                               |
|  | AlSi9Cu3, coated                                                       | AlSi9Cu3, coated                                                       | AlSi9Cu3, coated                                                                 | AlSi9Cu3, coated                                                                 |
|  | ~ 950 g                                                                | ~ 950 g                                                                | ~ 950 g                                                                          | ~ 950 g                                                                          |







# Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. These include devices for monitoring or configuring transmitters such as hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the calibration values of the transmitter in the Trafag ASIC. Trafag also offers a wide range of accessories meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements for measuring pressure, or protective pipes for thermostats.

## Accessories for pressure measurement instruments

- Sensor Communicator
- CAN2USB Tool
- Diagnostic valve block
- Hand pump with precision manometer
- Zenerbarrier
- Venting box
- Cable hanger
- Pressure peak damping elements
- Snubbers
- Adapters for different pressure connections
- Stop valves

## Accessories for thermostats

- Protection tubes for direct mounting and remote sensors
- Duct mounting bracket
- Capillary tube holder
- Mounting brackets
- Screwed cable glands, ship approved, for retrofit



### Features

- Read out of sensor data
- Adjustment of set point or zero point and span
- Real time pressure measuring
- Software update and battery charge with USB-interface

### Technische Daten

- Identification of device data: Model, signal output, type plate, manufacturing date
- Setting of switchpoint (8320 EPN-S)
- CANopen: Setting of Node-ID and baudrate
- Reset to factory settings

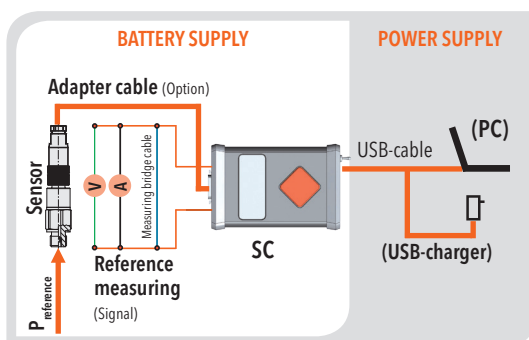


Instruction [www.trafiga.com/H73699\\_en](http://www.trafiga.com/H73699_en)  
H73698 de

### Compatible devices and adapter cables

| Model                                                | Connector                                 | 4 ... 20 mA | Output signal                              |                                |
|------------------------------------------------------|-------------------------------------------|-------------|--------------------------------------------|--------------------------------|
|                                                      |                                           |             | 0 ... 10 VDC<br>0 ... 5 VDC<br>1 ... 6 VDC | 0.5 ... 4.5 VDC<br>ratiometric |
| NAT (8251)<br>NAH (8253)<br>NAE (8255)<br>NSL (8257) | Industrial standard<br>82XX.XXXX.01.XX..  | SC01A       | SC01V                                      | SC01R                          |
|                                                      | M12, 4-pole<br>82XX.XXXX.32.XX..          | SC32A       | SC32V                                      | SC32R                          |
|                                                      | M12, 5-pole<br>82XX.XXXX.35.XX..          | SC35A       | SC35V                                      | SC35R                          |
| Model                                                | Connector                                 | 4 ... 20 mA | Output signal                              |                                |
|                                                      |                                           |             | CANopen                                    | Switching output               |
| CMP (8270)                                           | M12, 5-pole<br>82XX.XXXX.35.XX..          |             | SC35CAN                                    |                                |
| EPN-S (8320)                                         | DIN43650<br>8320.XXXX.40.XX..             |             |                                            | SC04SW                         |
| EPR (8293)<br>EPN (8298)<br>NPN (8264)               | DIN43650<br>82XX.XXXX.04.XX..             | SC04A       |                                            |                                |
|                                                      | DIN43650 (invers)<br>82XX.XXXX.04.XX.92.. | SC04A92     |                                            |                                |

### Connection scheme



### Content of delivery:

- 1 pce SC incl. batteries
- 1 pce USB-cable
- 1 pce Measuring bridge cable
- Option: Adapter cable (see table)

# CAN2USB

## CANopen Configuration Tool



### Features

- Configuration of Trafag's pressure transmitter CMP 8270 via USB
- Easy to use visual user interface
- Integrated datalogger
- Complete set available at Trafag AG
- System requirements: Windows 7, Windows 8, Windows 10, USB 2.0 or higher

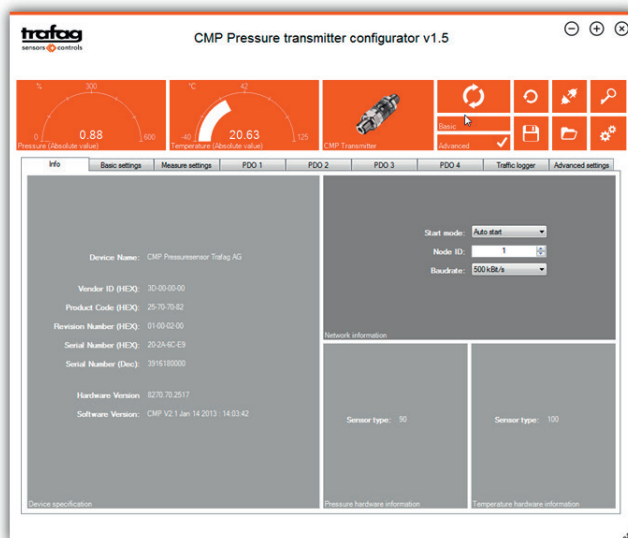
### Technical Data

Configuration of CANopen devices is for non-experts a very difficult task. Common software is geared towards experts with a lot of background knowledge and routine in programming such devices. Neither the software user interface nor hardware like connectors and adapter cards are a comfortable solution for occasional users. The CMP CANopen Configuration tool, developed and produced for Trafag CMP 8270 CANopen pressure transmitter, is the perfect solution for this: Easy-to-use software interface and a USB-to-CANopen dongle. It allows configuration of all CANopen parameters and access to the complete object dictionary. Live display of the actual measurements of pressure and temperature and an integrated logger with export function offers easy monitoring of the CANopen bus communication.



Instruction

[www.trafag.com/H73617](http://www.trafag.com/H73617)



### Content of delivery:

- CAN2USB adapter
- Cable from adapter to USB
- T-connector M12 F-F-M
- Terminator 120  $\Omega$
- USB Memory stick with software and manual for CAN2USB and CMP 8270

### Recommended accessory (not included):

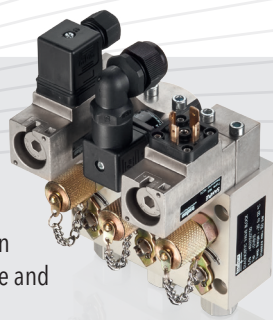
- CMP0.6M: CANopen Pressure Transmitter 8270 CMP with pressure range 0 ... 0.6 bar
- C29161: Pressure applicator



## Diagnostic Valve Block

### Features

- Function tests during operation (no interruption necessary) with stop valve and test connection



### Technical Data

|                     |                  |
|---------------------|------------------|
| Pressure            | -0.8 ... 100 bar |
| Ambient temperature | -20°C ... +120°C |

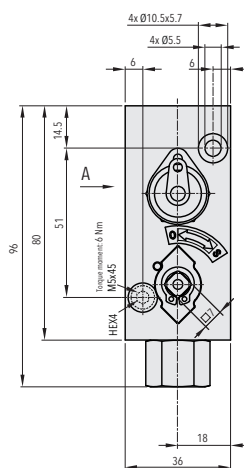
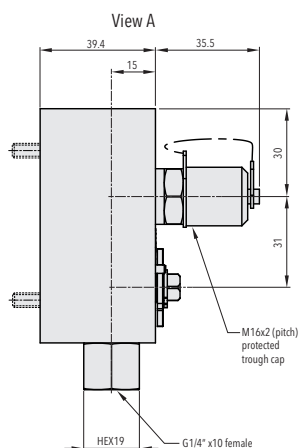
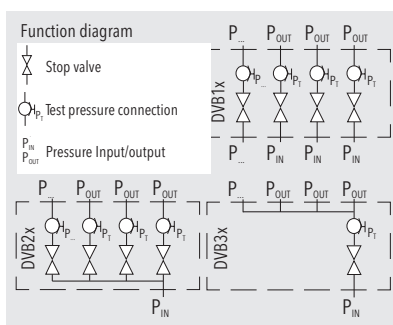


Data sheet  
Instruction

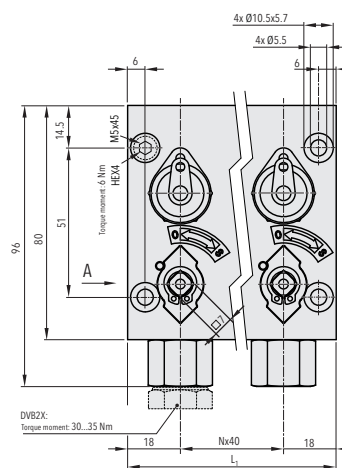
[www.trafag.com/H72361](http://www.trafag.com/H72361)  
[www.trafag.com/H73361](http://www.trafag.com/H73361)

### Standard products (extra short lead time)

| Product No |                                    | Material      | Product No |                                    | Material      |
|------------|------------------------------------|---------------|------------|------------------------------------|---------------|
| DVB11      | 1 P-in, 1 test connection, 1 P-out | Al, PEEK, FPM | DVB24      | 1 P-in, 4 test connection, 4 P-out | Al, PEEK, FPM |
| DVB12      | 2 P-in, 2 test connection, 2 P-out | Al, PEEK, FPM | DVB25      | 1 P-in, 5 test connection, 5 P-out | Al, PEEK, FPM |
| DVB13      | 3 P-in, 3 test connection, 3 P-out | Al, PEEK, FPM | DVB32      | 1 P-in, 1 test connection, 2 P-out | Al, PEEK, FPM |
| DVB14      | 4 P-in, 4 test connection, 4 P-out | Al, PEEK, FPM | DVB33      | 1 P-in, 1 test connection, 3 P-out | Al, PEEK, FPM |
| DVB15      | 5 P-in, 5 test connection, 5 P-out | Al, PEEK, FPM | DVB34      | 1 P-in, 1 test connection, 4 P-out | Al, PEEK, FPM |
| DVB22      | 1 P-in, 2 test connection, 2 P-out | Al, PEEK, FPM | DVB35      | 1 P-in, 1 test connection, 5 P-out | Al, PEEK, FPM |
| DVB23      | 1 P-in, 3 test connection, 3 P-out | Al, PEEK, FPM |            |                                    |               |



DVB11



DVB X2... X5



# THP...

## Hand pump



### Features

- For testing of pressure transmitters and pressure switches

### Technical Data

|            |              |
|------------|--------------|
| Connection | G1/4" female |
|------------|--------------|

### Standard products (extra short lead time)

| Product No | Range [bar]   |                    |
|------------|---------------|--------------------|
| THP30      | -0.85 ... +25 |                    |
| THP700     | 0 ... 700     | Resolution 0.2 bar |

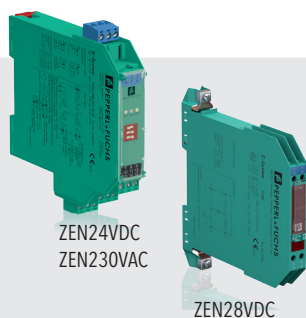
# ZEN...

## Switch amplifier



### Features

- Ex II 1 G Ex ia IIC Ga
- Ex II 1 D Ex ia IIIC Da
- Ex I M1 Ex ia I Ma
- IP 20
- Output: Signal, relays



### Technische Daten

|                     |                 |
|---------------------|-----------------|
| Ambient temperature | -20°C ... +60°C |
|---------------------|-----------------|

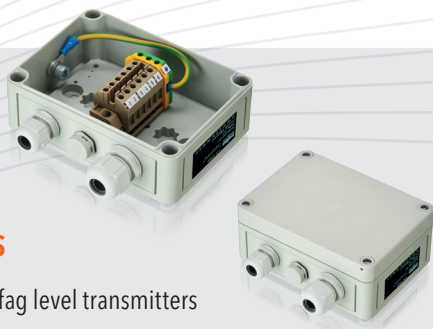
The switch amplifier transfers digital signals from the hazardous area. Sensors per DIN EN 60947-5-6 (NAMUR) and mechanical contacts may be used as alarms. The control circuit is monitored for lead breakage (LB).

### Standard products (extra short lead time)

| Product No | Connection                    |                                                                          |
|------------|-------------------------------|--------------------------------------------------------------------------|
| ZEN24VDC   | 20 ... 30 VDC, 20 ... 23 mA   | $U_0 = 10.5 \text{ V}$ , $I_0 = 13 \text{ mA}$ , $P_0 = 34 \text{ mW}$   |
| ZEN230VAC  | 207 ... 253 VAC, 45 ... 65 Hz | $U_0 = 10.6 \text{ V}$ , $I_0 = 19.1 \text{ mA}$ , $P_0 = 51 \text{ mW}$ |
| ZEN28VDC   | Max. 28 VDC                   | $U_0 = 28 \text{ V}$ , $I_0 = 93 \text{ mA}$ , $P_0 = 650 \text{ mW}$    |

## HIP...

### Venting box



#### Features

- For all Trafag level transmitters

#### Technical Data

Vented plastic housing with wire terminals to connect a submersible pressure transmitter.

#### Standard products (extra short lead time)

| Product No |                                                                   | Material                                          |
|------------|-------------------------------------------------------------------|---------------------------------------------------|
| HIP67      | Box 130 x 94 x 57 mm, fixing 4 x Ø 5 mm, hole pattern 115 x 79 mm | Polystyrol, not suitable for outdoor applications |

## AKL...

### Cable hanger



#### Features

- For all Trafag level transmitters

#### Technical Data

Cable hanger to clamp cable with diameters of 5.5 ... 9.5 mm

#### Standard products (extra short lead time)

| Product No |                  | Connection                       | Material                         |
|------------|------------------|----------------------------------|----------------------------------|
| AKL5.5-9.5 | 174 x 45 x 32 mm | For cable diameters 5.5 ... 9 mm | 1.4301, PA fibreglass reinforced |

# A../D..

## Adapters with manometer pressure ports

### Features

- Pressure adapters with different thread combinations and materials for individual applications

A1/A2  
D1/D2



D4

### Technical Data

|            |                                                   |
|------------|---------------------------------------------------|
| Material   | 1.4435 (AISI316L) / Brass                         |
| Connection | G1/4"m - G1/2"m, G1/4"m - G3/8"m, G1/4"f - G1/2"m |

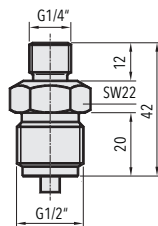


Data sheet

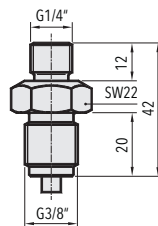
[www.trafag.com/H72258](http://www.trafag.com/H72258)

### Standard products (extra short lead time)

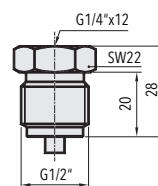
| Product No |                                     | Material          |
|------------|-------------------------------------|-------------------|
| A1         | G1/4" male - G3/8" male manometer   | Brass             |
| A2         | G1/4" male - G1/2" male manometer   | Brass             |
| D1         | G1/4" male - G3/8" male manometer   | 1.4435 (AISI316L) |
| D2         | G1/4" male - G1/2" male manometer   | 1.4435 (AISI316L) |
| D4         | G1/4" female - G1/2" male manometer | 1.4435 (AISI316L) |



A2/D2



A1/D1



D4

# K.../F...

## Snubber

### Features

- Integrated in an adapter
- K1/K2: Pressure peak damping element integrated in an adapter



### Technical Data

|            |                                             |
|------------|---------------------------------------------|
| Material   | 1.4435/316L, brass                          |
| Connection | G1/4" male - female,<br>G1/8" male - female |

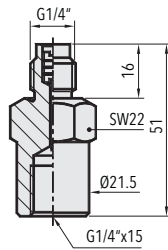


Data sheet

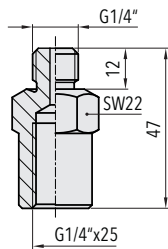
[www.trafag.com/H72258](http://www.trafag.com/H72258)

### Standard products (extra short lead time)

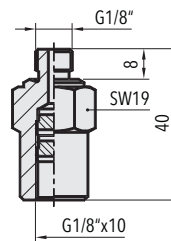
| Product No |                                 | Connection          | Material          |
|------------|---------------------------------|---------------------|-------------------|
| F3         | Snubber for heavy oil           | G1/4" male - female | Brass             |
| F4         | Snubber for light oil           | G1/4" male - female | Brass             |
| F5         | Snubber for water/air           | G1/4" male - female | Brass             |
| K1         | Snubber for water/air/light oil | G1/4" male - female | 1.4435 (AISI316L) |
| K2         | Snubber for water/air/light oil | G1/8" male - female | 1.4435 (AISI316L) |
| K3         | Snubber for heavy oil           | G1/4" male - female | 1.4435 (AISI316L) |
| K4         | Snubber for light oil           | G1/4" male - female | 1.4435 (AISI316L) |
| K5         | Snubber for water/air           | G1/4" male - female | 1.4435 (AISI316L) |



K3/K4/K5  
F3/F4/F5



K1



K2



# MB31

## Mounting Plate

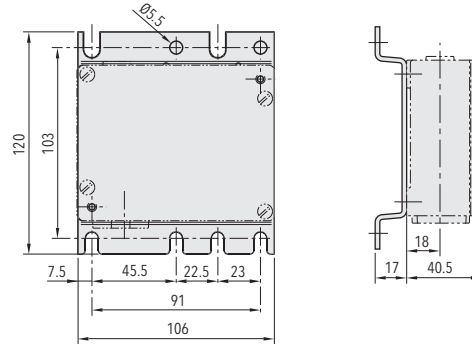


### Features

- For pressure transmitters and pressure switches

### Technical Data

|          |                  |
|----------|------------------|
| Material | Steel galvanised |
|----------|------------------|



### Standard products (extra short lead time)

| Product No | Suitable for type                              | Material         |
|------------|------------------------------------------------|------------------|
| MB31       | N, ND, P, PS, PV, PD, PK, PVF, EXP, EXPK, EXPD | Steel galvanised |

# CG

## Screwed cable gland



### Features

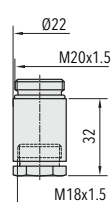
- DIN 8280 for shipbuilding
- Retrofit for pressure transmitters, pressure switches and thermostats

### Technical Data

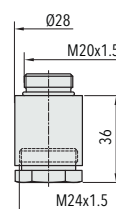
|            |                    |
|------------|--------------------|
| Material   | Brass              |
| Connection | M18x1.5, M24x1.5   |
| Cable      | Ø 10.5 mm, 16.5 mm |

### Standard products (extra short lead time)

| Product No |                                           | Material |
|------------|-------------------------------------------|----------|
| CG18       | M18x1.5 for 8 ... 10.5 mm cable diameter  | Brass    |
| CG24       | M24x1.5 for 14 ... 16.5 mm cable diameter | Brass    |



CG18



CG24



# 83../84..

## Protection tubes for remote sensors

### Features

- For liquid media
- Pressure proof up to 25 bar (types 83xx)
- Pressure proof up to 40 bar (types 84xx)



### Technical Data

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Material          | Stainless steel 1.44435/316L, brass nickel plated |
| Media temperature | See table                                         |

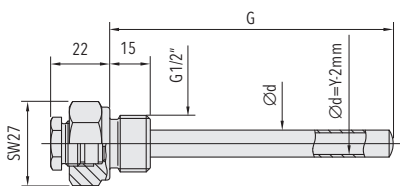


Data sheet

[www.trafag.com/H72163](http://www.trafag.com/H72163)

### Standard products (extra short lead time)

| Product No | Suitable for type              | Material            | Protection tube diameter [mm] | Protection tube length [mm] |
|------------|--------------------------------|---------------------|-------------------------------|-----------------------------|
| 83160110K  | M, MS, M2S, L, I, IS, ISP      | Brass nickel plated | 10                            | 110                         |
| 83160150K  | M, MS, M2S, L, I, IS, ISP, ISN | Brass nickel plated | 10                            | 150                         |
| 83160200K  | I, IS                          | Brass nickel plated | 10                            | 200                         |
| 83160300K  | M, MS, M2S, L, I, IS           | Brass nickel plated | 10                            | 300                         |
| 83160400K  | M, MS, M2S, L, I, IS           | Brass nickel plated | 10                            | 400                         |
| 83170110   | ISP, ISN                       | Brass nickel plated | 12                            | 110                         |
| 83180150K  | D ... R                        | Brass nickel plated | 14                            | 150                         |
| 83190065   | ISP, ISN                       | Brass nickel plated | 15                            | 65                          |
| 84110110K  | M, MS, M2S, L, I, IS, ISP      | 1.4435 (AISI316L)   | 10                            | 110                         |
| 84110150K  | M, MS, M2S, L, I, IS, ISP, ISN | 1.4435 (AISI316L)   | 10                            | 150                         |
| 84110200K  | I, IS                          | 1.4435 (AISI316L)   | 10                            | 200                         |
| 84110400K  | M, MS, M2S, L, I, IS           | 1.4435 (AISI316L)   | 10                            | 400                         |
| 84120110   | ISP, ISN                       | 1.4435 (AISI316L)   | 12                            | 110                         |
| 84140065   | ISP, ISN                       | 1.4435 (AISI316L)   | 15                            | 65                          |



### Operating temperature

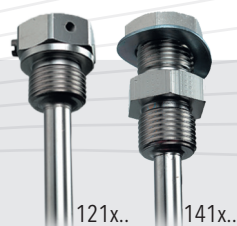
| Length G [mm] | Range T [°C]                           | Sensor-Ø [mm] |
|---------------|----------------------------------------|---------------|
| 200           | -30 ... +40, 0 ... +35, +10 ... +80    | 7             |
| 150           | +5 ... +95, +20 ... +150, +20 ... +110 | 7             |
| 110           | +20 ... +230, +70 ... +350             | 7             |
| 180           | -30 ... +40, 0 ... +35                 | 5.5/11        |
| 150           | +5 ... +95, +20 ... +150               | 5.5/11        |
| 110           | +20 ... +230, +70 ... +350             | 9             |
| 65            | +5 ... +95, +20 ... +150, +20 ... +110 | 12            |

# 121.../141...

## Protection tubes for direct mounting

### Features

- For thermostats type MST and ISPT/ISNT
- Lateral clamp mounting (type MST)
- Pressure proof up to 40 bar (types 141x)
- With captive nut (types 141x)



### Technical Data

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Material          | Stainless steel 1.44435/316L, brass nickel plated |
| Media temperature | See table                                         |

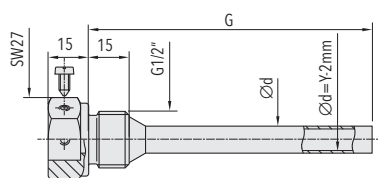


Data sheet

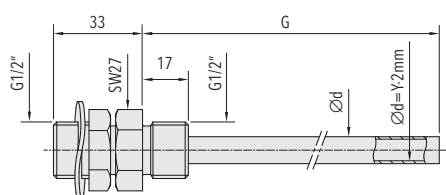
[www.trafag.com/H72163](http://www.trafag.com/H72163)

### Standard products (extra short lead time)

| Product No | Suitable for type | Material            | Protection tube diameter [mm] | Protection tube length [mm] |
|------------|-------------------|---------------------|-------------------------------|-----------------------------|
| 12110150K  | MST ... 15        | 1.4435 (AISI316L)   | 10                            | 150                         |
| 12110400K  | MST ... 40        | 1.4435 (AISI316L)   | 10                            | 400                         |
| 12160150K  | MST ... 15        | Brass nickel plated | 10                            | 150                         |
| 12160400K  | MST ... 40        | Brass nickel plated | 10                            | 400                         |
| 14110150K  | ISNT ... 150      | 1.4435 (AISI316L)   | 10                            | 150                         |
| 14120110K  | ISNT ... 110      | 1.4435 (AISI316L)   | 12                            | 110                         |
| 14140065K  | ISP/ISNT ... 65   | 1.4435 (AISI316L)   | 15                            | 65                          |



121X..



141X..

### Operating temperature

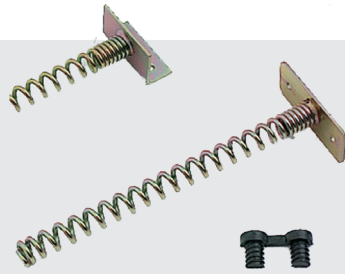
| Length G [mm] | Range T [°C]                           | Sensor-Ø [mm] |
|---------------|----------------------------------------|---------------|
| 200           | -30 ... +40, 0 ... +35, +10 ... +80    | 7             |
| 150           | +5 ... +95, +20 ... +150, +20 ... +110 | 7             |
| 110           | +20 ... +230, +70 ... +350             | 7             |
| 180           | -30 ... +40, 0 ... +35                 | 5.5/11        |
| 150           | +5 ... +95, +20 ... +150               | 5.5/11        |
| 110           | +20 ... +230, +70 ... +350             | 9             |
| 65            | +5 ... +95, +20 ... +150, +20 ... +110 | 12            |

# W.../K...

## Thermostat sensor duct holder

### Features

- For HVAC
- For retrofitting of thermostats



### Technical Data

Material Steel galvanised

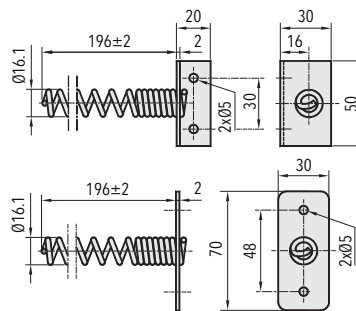


Data sheet

[www.trafag.com/H72106](http://www.trafag.com/H72106)

### Standard products (extra short lead time)

| Product No | Suitable for type | Material         |
|------------|-------------------|------------------|
| K200       | L, LF, M, MS      | Steel galvanised |
| W200       | I, IS, M2, M2S    | Steel galvanised |



# K80140

## Capillary tube holder

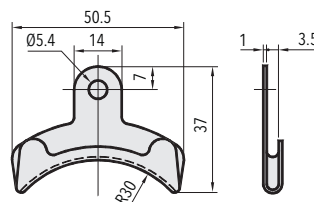
### Features

- For Froststats F/F...R



### Technical Data

Material Steel galvanised



### Standard products (extra short lead time)

| Product No | Material         |                     |
|------------|------------------|---------------------|
| K80140     | Steel galvanised | Package size 6 pcs. |

# Terminology for pressure measurement instruments

## Relevant standards

DIN 16086, IEC 61298-2

### Instrument types

#### Pressure sensors

Membranes with elements applied whose physical properties change when the membranes deform (strain gauges with changing resistance, for example).

#### Pressure transmitters

Transmitters for converting the pressure to be measured into a defined or standardised analogue and/or digital output signal.

#### Pressure transducers

Pressure sensors that have a process connection and electrical connection (e.g. connector) but do not convert pressure into a standardised electrical signal like a pressure transmitter.

### Types of pressure measurement

#### Differential pressure measurement

The measurement of differential pressure of two different pressures. The measuring instrument has two pressure connections.

#### Absolute pressure measurement

The measuring result is always the deviation to the absolute zero (vacuum).

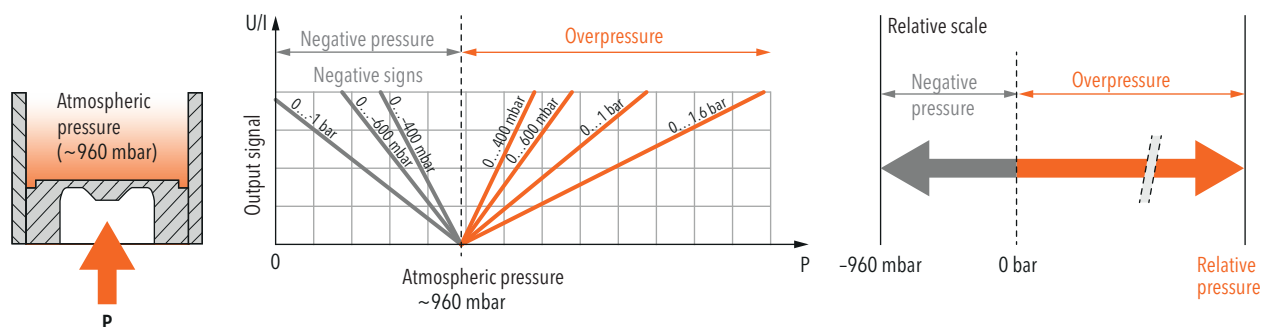
e.g. 4 mA = 0 bar (= vacuum); zero point (ZP): 0 bar

#### Relative pressure measurement DIN 16086: overpressure

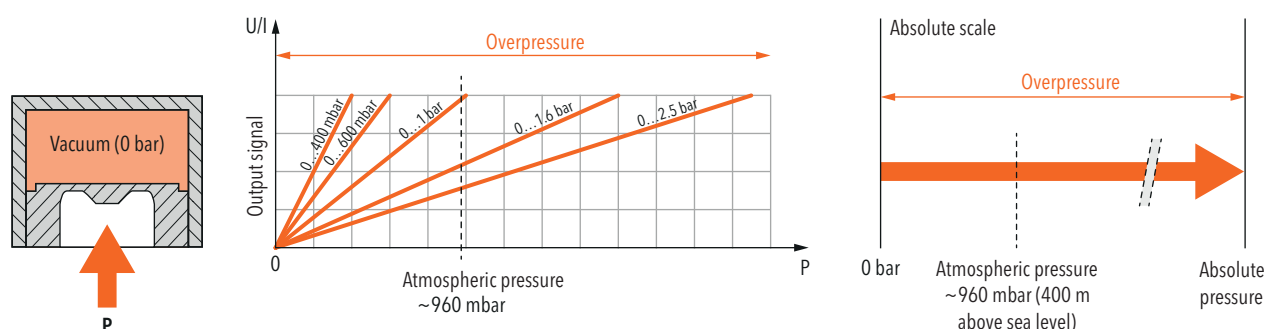
The measuring result is always the deviation to the current, absolute atmospheric pressure.

e.g. 4 mA = 960 mbar (= atmospheric pressure); zero point (ZP): 0 bar

### Relative pressure measurement



### Absolute pressure measurement



# Terminology for pressure measurement instruments

## Main features

### Nominal pressure measuring range

Range between the upper and lower limits of the size measured (operating pressure). The specified accuracy remains within this range.

### Measuring span

Algebraic difference between the upper and lower limit values of a certain measuring range.

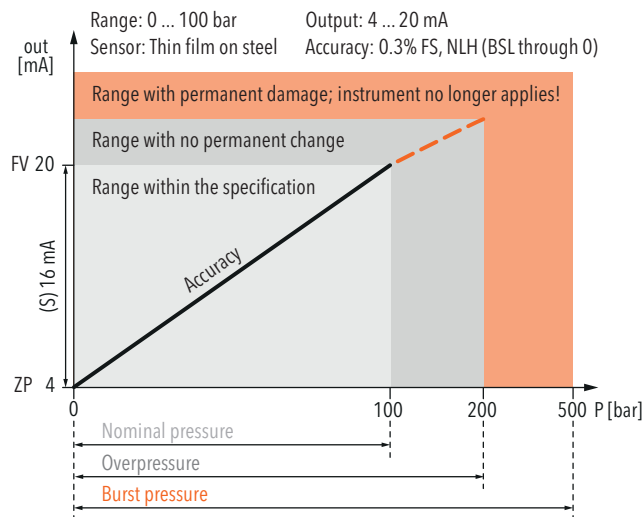
### Overpressure Max. working pressure

Highest pressure specified by manufacturer for which the pressure transformer is designed at maximum temperature. The pressure transformer can be loaded up to this pressure without the guaranteed metrological properties having changed after going back into the measuring range. However, there is no longer a clear link between pressure and output signal in the range between nominal pressure and overpressure.

### Burst pressure

Pressure value (static) at which the measuring instrument suffers permanent damage. The instrument can withstand pressures up to this value without bursting and will not leak any measuring medium.

## Example



## Accuracy

### Typ. accuracy

(Typical) Mostly corresponds to the 1-sigma value of the normal distribution, i.e. approx. 68.3%. Generally, well over 75% of all Trafag instruments meet this typical measured value.

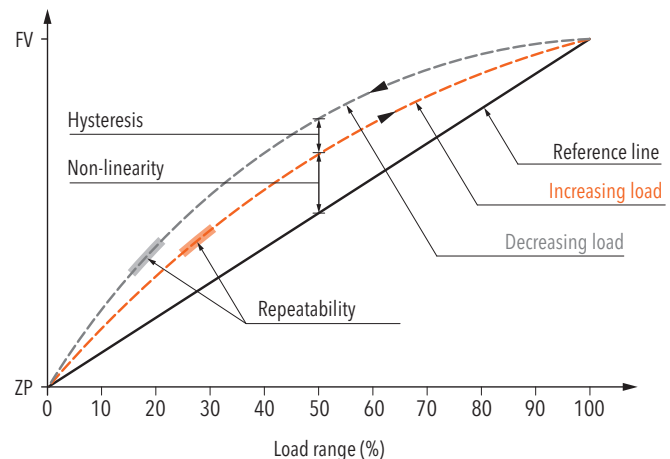
### Max. accuracy

(maximum) 100% of all instruments meet this maximum measured value.

### Non-linearity

The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

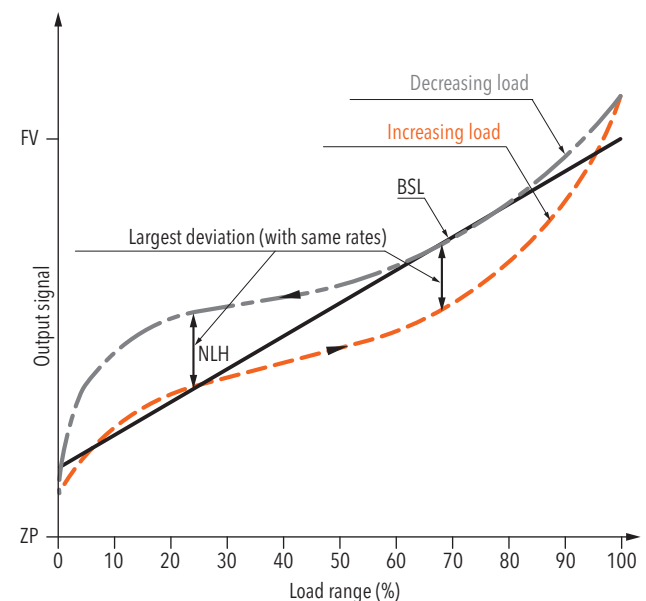
## Specifications: Non-linearity, Hysteresis



### BSL Best Straight Line

The reference line according to the BSL or the minimum value adjustment is placed in such a way that the maximum positive and negative deviations are as small as possible.

## Specifications: Accuracy NLH (BSL)

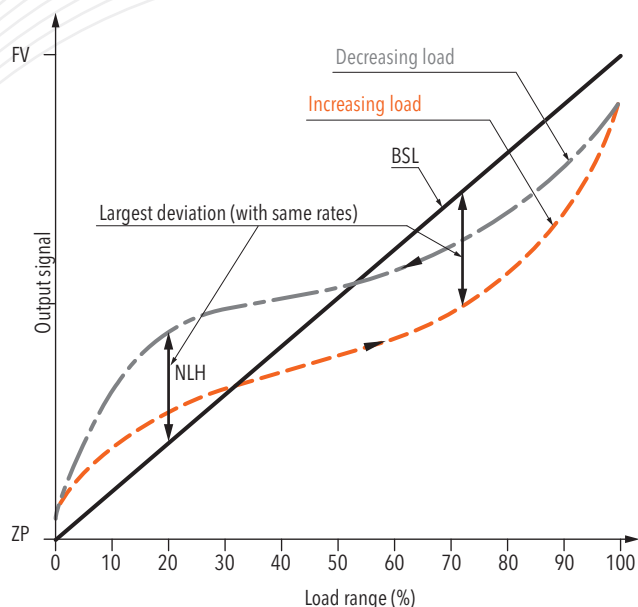


# Terminology for pressure measurement instruments

## BSL through zero

As an additional requirement for the minimum value adjustment, the BSL through zero (also BSL/0) must go straight through zero or the origin.

## Specifications: Accuracy NLH (BSL through zero)



## Non-linearity according to limit point adjustment

The reference line runs through the origin and end point of the characteristic line. Non-linearity indicates the greatest deviations from this line.

## Hysteresis

Property of an instrument for yielding different output values in relation to its input values, which are dependent on the effective direction in which the input values are created (acc. to IEC 61298-2).

## Pressure hysteresis

The difference that occurs at the same pressure between measurements in the direction of increasing and then decreasing pressure.

## Temperature hysteresis

Maximum change of the zero point and output span for the pressure signal after specified temperature cycle over the operating temperature range.

## NLH non-linearity and hysteresis

Largest deviation from the ideal characteristic line (BSL, BSL/0 or limit point). In pressure measuring instruments, the non-linearity and pressure hysteresis are given together at a constant temperature.

## Accuracy DIN 16086: Measurement deviation

The accuracy denoted in the standard DIN 16086 with measurement deviation (at 25°C reference temperature) includes all deviations as a result of non-linearity, hysteresis, non-repeatability, zero point (start of measuring range) errors and span (end of measuring range) errors. Zero point errors and span errors also include the measuring uncertainty of the configuration ensemble.

## Repeatability DIN 16086: Non-repeatability

Deviation of the output signals with same input signals under identical (established) application conditions.

## Temperature coefficient TC

Change of measured value for zero point and span as a result of changes in temperature.

## Long-term stability Long-term drift

The change of accuracy due to aging under certain reference conditions during a certain period of time, typically 1 year.

## TEB Total error band

Total error (root from sum of the square of the deviations) due to measurement deviations (accuracy) and temperature influence (temperature coefficient TC). The temperature influence is usually given in the information from Trafag across a range larger than that given in the standard (-10 ... +60 °C). Whilst DIN 16086 also continues to add to the long-term stability over a year, the information from Trafag is subject to ex-works conditions for obvious reasons.

## Scale accuracy

For pressostats: Deviation arising from the manual switch point adjustment with the help of the display (scale).

## Electrical Data

### Output signal

Electrical signal that emits the value of the measurement size for further processing

### Rise time Step response

The time it takes for an output signal after a severe pressure change to increase from 10% to 90% of its final value that results from the change in pressure.

### Zero point ZP

Output signal in the pressureless state ( $P_{min}$ ), e.g. 4 mA at 0 bar ( $P_{min}$ ).



# Terminology for pressure measurement instruments

## Final value FV

Output value of the largest pressure value in the nominal pressure range ( $P_{\max}$ ), e.g. 20 mA at 100 bar ( $P_{\max}$ ).

## Span S

Final value (FV) – zero point (ZP) = span (S)  
e.g. span (S) = (FV) 20 mA – (ZP) 4 mA = 16 mA

## Switching differential Pressostats

Range within which the micro-switch in pressostats switches on and off  
Example:

X...X = adjustable value

X - X = non-adjustable value; runs proportional to the nominal pressure

X = fixed value

## Limiter Pressostats

Pressostat with manual micro-switch reset.

## Environmental conditions

### Media temperature

Permissible temperature range of the measuring media.

### Operating temperature Ambient temperature

Temperature range in which the measuring instrument adheres to its specifications. As the electronics in certain instruments are more sensitive to temperature than the sensor element, the maximum ambient temperature for the instrument is lower than the permissible media temperature.

### Storage temperature

Temperature range in which the measuring instrument can be stored or transported without permanently changing the measuring characteristics.

### Protection

Humidity and dust shield according to IP classes in accordance with EN 60529.

## EMC Protection

### EMC Electromagnetic compatibility

Instrument property for functioning in an environment with electromagnetic interference and for not unduly influencing this environment (to which other equipment also belongs).

### Immission

Immunity to external electromagnetic disturbances.

### Emission

Interference emission from electromagnetic disturbances.

### Surge

Immunity to unipolar surge voltages that can occur due to surges as a result of switching operation and lighting.

### Burst

Immunity to recurring, rapid, transient electrical disturbances.

# Ex-Product lines for pressure and temperature control

Trafag offers a wide range of EX-, ATEX- and IECEx approved products for pressure and temperature monitoring. These products provide reliable functionality in various hazardous zones, with a guaranteed safety operation. In addition to both CE and ATEX-conformance, Trafag products are also extremely fail-safe.

## CE - Designation and labelling

**CE** 1258 **Ex** **II 2** **GD**

Control No. of notified body for the supervision of the quality assurance system

I: Mining  
II: All other areas

Category (see below)

G = Gas  
D = Dust

- Category 1: Can be used in zone 0 (gas) and 20 (dust)
  - Potentially explosive atmosphere: Permanent
  - Two independent failures – safety
- Category 2: Can be used in zone 1 (gas) and 21 (dust)
  - Potentially explosive atmosphere: Regularly
  - One failure – safety
- Category 3: Can be used in zone 2 (gas) and 22 (dust)
  - Potentially explosive atmosphere: Unlikely or for very short time

## IEC/EN 60079-8 – Gases

**Ex ia IIC T6 Ga**

Type of protection

Equipment groups (for gases)

Temperature class

Equipment protection level

- Type of protection: Intrinsically safe
- Equipment group (gases): IIC = Hydrogen, Acetylene
- Temperature level: Defines ignition temperature and permissible temperature of equipment surface
- Protection level: Referring to installation zone (Ga = Zone 0 = Category 1 in ATEX)

## IEC/EN 60079-0 – Dust

**Ex ia IIIC IP6X T130 °C Da**

Type of protection

Equipment groups (for dust)

IP protection

Surface temperature

Equipment protection level

- Type of protection: Intrinsically safe, powder filling, encapsulation, ...
- Equipment group (dust): IIIC = Conductive dust
- Temperature level: Defines maximum surface temperature
- Protection level: Referring to installation zone (Da = Zone 20 = Category 1 in ATEX)

## EN 50303 – Mining

**Ex ia I Ma**

Type of protection

Equipment for mining

Equipment protection level

- Category and Protection level:
  - Category M1 / Protection level Ma: Fully functional and safe when explosive atmosphere is present. Requires means to cope with two independent failures
  - Category M2 / Protection level Mb: These products are intended to be deenergised in the presence of an explosive atmosphere

# Fluid resistance guide

[illegible][illegible]

Due to the numerous different application possibilities Trafag cannot accept any guarantee for the correctness of these recommendations. We therefore suggest that for a particular application you carry out tests to verify the fluid resistance.

## Fluid resistance guide

[illegible][illegible]

## Fluid resistance guide

[illegible][illegible]



# Conversion of pressure units

|                                   | bar                    | mbar            | Pa<br>N/m <sup>2</sup> | kPa<br>kN/m <sup>2</sup> | MPa<br>MN/m <sup>2</sup> | at<br>kp/cm <sup>2</sup> | atm                    | mmWS<br>mmCE          | mWS<br>mCE             | Torr<br>mm Hg | psi<br>lbf/in <sup>2</sup> |
|-----------------------------------|------------------------|-----------------|------------------------|--------------------------|--------------------------|--------------------------|------------------------|-----------------------|------------------------|---------------|----------------------------|
| <b>1 bar</b>                      | <b>1</b>               | 1000            | 10 <sup>5</sup>        | 100                      | 0.1                      | 1.02                     | 0.987                  | 1.02·10 <sup>4</sup>  | 10.2                   | 750           | 14.5                       |
| <b>1 mbar</b>                     | 0.001                  | <b>1</b>        | 100                    | 0.1                      | 10 <sup>-4</sup>         | 1.02·10 <sup>-3</sup>    | 0.987·10 <sup>-3</sup> | 10.2                  | 0.0102                 | 0.75          | 0.0145                     |
| <b>1 Pa 1 N/m<sup>2</sup></b>     | 10 <sup>-5</sup>       | 0.01            | <b>1</b>               | 0.001                    | 10 <sup>-6</sup>         | 1.02·10 <sup>-5</sup>    | 0.987·10 <sup>-5</sup> | 0.102                 | 1.02·10 <sup>-4</sup>  | 0.0075        | 1.45·10 <sup>-4</sup>      |
| <b>1 kPa 1 kN/m<sup>2</sup></b>   | 0.01                   | 10              | 1000                   | <b>1</b>                 | 0.001                    | 0.0102                   | 9.87·10 <sup>-3</sup>  | 102                   | 0.102                  | 7.5           | 0.145                      |
| <b>1 MPa 1 MN/m<sup>2</sup></b>   | 10                     | 10 <sup>4</sup> | 10 <sup>6</sup>        | 1000                     | <b>1</b>                 | 10.2                     | 9.87                   | 1.02·10 <sup>5</sup>  | 102                    | 7500          | 145                        |
| <b>1 at 1 kp/cm<sup>2</sup></b>   | 0.981                  | 981             | 0.981·10 <sup>5</sup>  | 98.1                     | 0.0981                   | <b>1</b>                 | 0.968                  | 10 <sup>4</sup>       | 10                     | 736           | 14.22                      |
| <b>1 atm</b>                      | 1.013                  | 1013            | 1.013·10 <sup>5</sup>  | 101.3                    | 0.1013                   | 1.033                    | <b>1</b>               | 1.033·10 <sup>4</sup> | 10.332                 | 760           | 14.696                     |
| <b>1 mmWS 1mmCE</b>               | 0.981·10 <sup>-4</sup> | 0.098           | 9.807                  | 9.81·10 <sup>-3</sup>    | 9.81·10 <sup>-6</sup>    | 10 <sup>-4</sup>         | 0.968·10 <sup>-4</sup> | <b>1</b>              | 0.001                  | 0.0736        | 1.422·10 <sup>-3</sup>     |
| <b>1 mWS 1mCE</b>                 | 0.0981                 | 98.07           | 9807                   | 9.81                     | 9.81·10 <sup>-3</sup>    | 0.1                      | 0.0968                 | 1000                  | <b>1</b>               | 73.6          | 1.422                      |
| <b>1 Torr 1 mmHg</b>              | 1.133·10 <sup>-3</sup> | 1.333           | 133.323                | 0.133                    | 1.333·10 <sup>-4</sup>   | 1.36·10 <sup>-3</sup>    | 1.316·10 <sup>-3</sup> | 13.595                | 1.359·10 <sup>-2</sup> | <b>1</b>      | 1.934·10 <sup>-2</sup>     |
| <b>1 psi 1 lbf/in<sup>2</sup></b> | 6.895·10 <sup>-2</sup> | 68.95           | 6895                   | 6.895                    | 6.895·10 <sup>-3</sup>   | 7.031·10 <sup>-2</sup>   | 0.06805                | 703.1                 | 0.7031                 | 51.7          | <b>1</b>                   |



# Conversion of temperature units

| [°F] to [°C]<br>Formula: °C = 5/9·(°F - 32) |       |     |       |     |       |
|---------------------------------------------|-------|-----|-------|-----|-------|
| °F                                          | °C    | °F  | °C    | °F  | °C    |
| -100                                        | -73.3 | 105 | 40.6  | 315 | 157.2 |
| -95                                         | -70.6 | 110 | 43.3  | 320 | 160.0 |
| -90                                         | -67.8 | 115 | 46.1  | 325 | 162.8 |
| -85                                         | -65.0 | 120 | 48.9  | 330 | 165.6 |
| -80                                         | -62.2 | 125 | 51.7  | 335 | 168.3 |
| -75                                         | -59.4 | 130 | 54.4  | 340 | 171.1 |
| -70                                         | -56.7 | 135 | 57.2  | 345 | 173.9 |
| -65                                         | -53.9 | 140 | 60.0  | 350 | 176.7 |
| -60                                         | -51.1 | 145 | 62.8  | 355 | 179.4 |
| -55                                         | -48.3 | 150 | 65.6  | 360 | 182.2 |
| -50                                         | -45.6 | 155 | 68.3  | 365 | 185.0 |
| -45                                         | -42.8 | 160 | 71.1  | 370 | 187.8 |
| -40                                         | -40.0 | 165 | 73.9  | 375 | 190.6 |
| -35                                         | -37.2 | 170 | 76.7  | 380 | 193.3 |
| -30                                         | -34.4 | 175 | 79.4  | 385 | 196.1 |
| -25                                         | -31.7 | 180 | 82.2  | 390 | 198.9 |
| -20                                         | -28.9 | 185 | 85.0  | 395 | 201.7 |
| -15                                         | -26.1 | 190 | 87.8  | 400 | 204.4 |
| -10                                         | -23.3 | 195 | 90.6  | 405 | 207.2 |
| -5                                          | -20.6 | 200 | 93.3  | 410 | 210.0 |
| 0                                           | -17.8 | 205 | 96.1  | 415 | 212.8 |
| 5                                           | -15.0 | 210 | 98.9  | 420 | 215.6 |
| 10                                          | -12.2 | 215 | 101.7 | 425 | 218.3 |
| 15                                          | -9.4  | 220 | 104.4 | 430 | 221.1 |
| 20                                          | -6.7  | 225 | 107.2 | 435 | 223.9 |
| 25                                          | -3.9  | 230 | 110.0 | 440 | 226.7 |
| 30                                          | -1.1  | 235 | 112.8 | 445 | 229.4 |
| 32                                          | 0     | 240 | 115.6 | 450 | 232.2 |
| 35                                          | 1.7   | 245 | 118.3 | 455 | 235.0 |
| 40                                          | 4.4   | 250 | 121.1 | 460 | 237.8 |
| 45                                          | 7.2   | 255 | 123.9 | 465 | 240.6 |
| 50                                          | 10.0  | 260 | 126.7 | 470 | 243.3 |
| 55                                          | 12.8  | 265 | 129.4 | 475 | 246.1 |
| 60                                          | 15.6  | 270 | 132.2 | 480 | 248.9 |
| 65                                          | 18.3  | 275 | 135.0 | 485 | 251.7 |
| 70                                          | 21.1  | 280 | 137.8 | 490 | 254.4 |
| 75                                          | 23.9  | 285 | 140.6 | 495 | 257.2 |
| 80                                          | 26.7  | 290 | 143.3 | 500 | 260.0 |
| 85                                          | 29.4  | 295 | 146.1 | 505 | 262.8 |
| 90                                          | 32.2  | 300 | 148.9 | 510 | 265.6 |
| 95                                          | 35.0  | 305 | 151.7 | 515 | 268.3 |
| 100                                         | 37.8  | 310 | 154.4 | 520 | 271.1 |

| [°C] to [°F]<br>Formula: °F = 9/5·(°C + 32) |      |     |     |     |     |
|---------------------------------------------|------|-----|-----|-----|-----|
| °C                                          | °F   | °C  | °F  | °C  | °F  |
| -100                                        | -148 | 105 | 221 | 315 | 599 |
| -95                                         | -139 | 110 | 230 | 320 | 608 |
| -90                                         | -130 | 115 | 239 | 325 | 617 |
| -85                                         | -121 | 120 | 248 | 330 | 626 |
| -80                                         | -112 | 125 | 257 | 335 | 635 |
| -75                                         | -103 | 130 | 266 | 340 | 644 |
| -70                                         | -94  | 135 | 275 | 345 | 653 |
| -65                                         | -85  | 140 | 284 | 350 | 662 |
| -60                                         | -76  | 145 | 293 | 355 | 671 |
| -55                                         | -67  | 150 | 302 | 360 | 680 |
| -50                                         | -58  | 155 | 311 | 365 | 689 |
| -45                                         | -49  | 160 | 320 | 370 | 698 |
| -40                                         | -40  | 165 | 329 | 375 | 707 |
| -35                                         | -31  | 170 | 338 | 380 | 716 |
| -30                                         | -22  | 175 | 347 | 385 | 725 |
| -25                                         | -13  | 180 | 356 | 390 | 734 |
| -20                                         | -4   | 185 | 365 | 395 | 743 |
| -15                                         | 5    | 190 | 374 | 400 | 752 |
| -10                                         | 14   | 195 | 383 | 405 | 761 |
| -5                                          | 23   | 200 | 392 | 410 | 770 |
| 0                                           | 32   | 205 | 401 | 415 | 779 |
| 5                                           | 41   | 210 | 410 | 420 | 788 |
| 10                                          | 50   | 215 | 419 | 425 | 797 |
| 15                                          | 59   | 220 | 428 | 430 | 806 |
| 20                                          | 68   | 225 | 437 | 435 | 815 |
| 25                                          | 77   | 230 | 446 | 440 | 824 |
| 30                                          | 86   | 235 | 455 | 445 | 833 |
| 32                                          | 89.6 | 240 | 464 | 450 | 842 |
| 35                                          | 95   | 245 | 473 | 455 | 851 |
| 40                                          | 104  | 250 | 482 | 460 | 860 |
| 45                                          | 113  | 255 | 491 | 465 | 869 |
| 50                                          | 122  | 260 | 500 | 470 | 878 |
| 55                                          | 131  | 265 | 509 | 475 | 887 |
| 60                                          | 140  | 270 | 518 | 480 | 896 |
| 65                                          | 149  | 275 | 527 | 485 | 905 |
| 70                                          | 158  | 280 | 536 | 490 | 914 |
| 75                                          | 167  | 285 | 545 | 495 | 923 |
| 80                                          | 176  | 290 | 554 | 500 | 932 |
| 85                                          | 185  | 295 | 563 | 505 | 941 |
| 90                                          | 194  | 300 | 572 | 510 | 950 |
| 95                                          | 203  | 305 | 581 | 515 | 959 |
| 100                                         | 212  | 310 | 590 | 520 | 968 |

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