



### **“DAT1000 SERIES”: temperature transmitters for DIN B in-head mounting**

*The transmitters of the DAT1000 series can accept at their input signals coming from 2,3 or 4 wires Pt100, thermocouple and potentiometer sensors or voltage signals (mV).The devices provide a 4÷20 mA two wire current loop output signal.*

*The series is composed of devices with input configurable by PC with or without galvanic isolation. Moreover it is available a version of the transmitters of the DAT1000 series developed for the use in potentially explosive atmospheres certified in according to the DIRECTIVE ATEX 94/9/EC. (see p. 24 to 26).*

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**DAT1000 SERIES** Temperature transmitters for DIN B in-head mounting

**DAT 1010**



**GENERAL DESCRIPTION**

The transmitter DAT 1010 is able to execute many functions such as: measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of a voltage signal even coming from a potentiometer connected on its input.

The measured values are converted in a 4÷20 mA current signal .

The device guarantees high accuracy and performances stability both in time and in temperature.

**FEATURES**

- Configurable input for RTD, mV, Resistance and Potentiometer
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer
- High accuracy

- On-field reconfigurable
- Programming of the unit measure as °C or °F
- EMC compliant – CE mark
- Suitable for DIN B in-head mounting
- Option for DIN rail mounting in compliance with EN-50022 ("KIT DIN RAIL" Option)



**Application areas**



DAT1000 SERIES

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**POWER SUPPLY**

Power supply voltage 10 .. 32Vdc

Reverse polarity protection 60 Vdc max

**TEMPERATURE & HUMIDITY**

Operative temperature -40°C .. +85°C

Storage temperature -40°C .. +85°C

Humidity (not condensed) 0 .. 90 %

**EMC (for industrial environments)**

**DIRECTIVE 2004/108/EC**

Immunity EN 61000-6-2

Emission EN 61000-6-4

**HOUSING**

Material PC + ABS V0

Mounting DIN B head or bigger

Dimensions (mm) Ø= 43 mm ; H = 24 mm

Weight about 50 g.

**INPUT**

Input type	Min	Max	Span min
<b>RTD 2,3,4 wires</b>			
Pt100	-200°C	850°C	50°C
Pt1000	-200°C	200°C	50°C
Ni100	-60°C	180°C	50°C
Ni1000	-60°C	150°C	50°C
<b>Voltage</b>			
mV	-100mV	+700mV	2 mV
<b>Potentiometer</b>			
Nominal value	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	2 KΩ	10%
<b>RES. 2,3,4 wires</b>			
Low	0 Ω	300 Ω	10 Ω
High	0 Ω	2000 Ω	200 Ω
<b>Input calibration(1)</b>			
RTD	the higher of ±0.1 % f.s. or ±0.2 °C		
Res. Low	the higher of ±0.1 % f.s. or ±0.15 Ω		
Res. High	the higher of ±0.2 % f.s. or ±1 Ω		
mV	the higher of ±0.1 % f.s. or ±18 uV		
<b>Input impedance</b>			
mV	≥ 10 MΩ		
<b>Linearity (1)</b>			
RTD	± 0.1 % f.s		

**INPUT**

<b>Line resistance influence(1)</b>	
mV	<=0.8 uV/Ohm
RTD 3 wires	0.05 %/Ω (50 Ω balanced max.)
RTD 4 wires	0.005 %/Ω (100 Ω balanced max.)
<b>RTD excitation current</b>	
Typical	0.350 mA
<b>Thermal drift (1)</b>	
Full scale	± 0.01 % / °C
<b>Burn-out values</b>	
Max. value output	about 21.6 mA
Min. value output	about 3.5 mA
<b>Response time (10÷90% of f.s.)</b>	about 400 ms

(1) referred to input Span (difference between max. and min. values)

**OUTPUT**

Output type	Min	Max	Span min
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA
<b>Output calibration</b>			
Current	± 7 uA		

**TWO WIRE UNIVERSAL TRANSMITTER PROGRAMMABLE BY PC**
**DAT 1015**

**GENERAL DESCRIPTION**

The transmitter DAT 1015 is able to execute many functions such as: measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of a voltage signal even coming from a potentiometer connected on its input.

Moreover the DAT 1015 is able to measure and linearise the standard thermocouples with internal cold junction compensation. The measured values are converted in a 4÷20 mA current signal.

The device guarantees high accuracy and performances stability both in time and in temperature.

**FEATURES**

- Configurable input for RTD, TC, mV, Resistance and Potentiometer
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer
- High accuracy

- On-field reconfigurable
- Programming of the unit measure as °C or °F
- EMC compliant – CE mark
- Suitable for DIN B in-head mounting
- Option for DIN rail mounting in compliance with EN-50022 ("KITDIN RAIL" Option)


**Application areas**


POWER SUPPLY		TEMPERATURE & HUMIDITY	
Power supply voltage	10 .. 32Vdc	Operative temperature	-40°C .. +85°C
Reverse polarity protection	60 Vdc max	Storage temperature	-40°C .. +85°C
		Humidity (not condensed)	0 .. 90 %

EMC (for industrial environments)		HOUSING	
<b>DIRECTIVE 2004/108/EC</b>		Material	PC + ABS V0
Immunity	EN 61000-6-2	Mounting	DIN B head or bigger
Emission	EN 61000-6-4	Dimensions (mm)	Ø= 43 mm ; H = 24 mm
		Weight	about 50 g.

INPUT			
Input type	Min	Max	Span min
<b>TC CJC int./ext.</b>			
J	-200°C	1200°C	2 mV
K	-200°C	1370°C	2 mV
S	-50°C	1760°C	2 mV
R	-50°C	1760°C	2 mV
B	400°C	1820°C	2 mV
E	-200°C	1000°C	2 mV
T	-200°C	400°C	2 mV
N	-200°C	1300°C	2 mV
<b>RTD 2,3,4 wires</b>			
Pt100	-200°C	850°C	50°C
Pt1000	-200°C	200°C	50°C
Ni100	-60°C	180°C	50°C
Ni1000	-60°C	150°C	50°C
<b>Voltage</b>			
mV	-100 mV	+700 mV	2 mV
<b>Potentiometer (Nominal value)</b>	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	2 KΩ	10%
<b>Resistance 2,3,4 wires</b>			
Low	0 Ω	300 Ω	10 Ω
High	0 Ω	2000 Ω	200 Ω
<b>Input calibration(1)</b>			
RTD	the higher of ±0.1 % f.s. or ±0.2 °C		
Res. Low	the higher of ±0.1 % f.s. or ±0.15 Ω		
Res. High	the higher of ±0.2 % f.s. or ±1 Ω		
mV, TC	the higher of ±0.1 % f.s. or ±18 uV		

INPUT	
<b>Input impedance</b>	
TC, mV	>= 10 MΩ
<b>Linearity (1)</b>	
TC	± 0.2 % f.s.
RTD	± 0.1 % f.s.
<b>Line resistance influence(1)</b>	
TC, mV	<=0.8 uV/Ohm
RTD 3 wires	0.05 %/Ω (50 Ω balanced max.)
RTD 4 wires	0.005 %/Ω (100 Ω balanced max.)
<b>RTD excitation current</b>	
Typical	0.350 mA
<b>CJC comp.</b>	± 0.5°C
<b>Thermal drift (1)</b>	
Full scale	± 0.01 % / °C
CJC	± 0.01 % / °C
<b>Burn-out values</b>	
Max. value output	about 21.6 mA
Min. value output	about 3.5 mA
<b>Response time (10÷90% of f.s.)</b>	about 400 ms

(1) referred to input Span (difference between max. and min. values)

OUTPUT			
Output type	Min	Max	Span min
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA
<b>Output calibration</b>			
Current	± 7 uA		

**DAT 1061**



**GENERAL DESCRIPTION**

The isolated transmitter DAT 1061 is able to execute many functions such as : measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of a voltage signal even coming from a potentiometer connected on its input. The measured values are converted in a 4÷20 mA current signal. The device guarantees high accuracy and performances stability both in time and in temperature.

**FEATURES**

- Configurable input for RTD, mV, Resistance and Potentiometer
- Galvanic isolation at 1500 Vac
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer
- High accuracy
- On-field reconfigurable
- Programming of the unit measure as °C or °F
- EMC compliant – CE mark
- Suitable for DIN B in-head mounting
- Option for DIN rail mounting in compliance with EN-50022 (“DIN RAIL” Option)



**Application areas**



**POWER SUPPLY**

Power supply voltage	07 .. 32Vdc
Reverse polarity protection	60 Vdc max

**ISOLATION VOLTAGE**

Input- output/Power supply	1500 Vac, 50 Hz,1 min.
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**EMC (for industrial environments)**

**DIRECTIVE 2004/108/EC**

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

**TEMPERATURE & HUMIDITY**

Operative temperature	-40°C .. +85°C
Storage temperature	-40°C .. +85°C
Humidity (not condensed)	0 .. 90 %

**HOUSING**

Material	PC + ABS V0
Mounting	DIN B head or bigger
Dimensions (mm)	Ø= 43 mm ; H = 24 mm
Weight	about 50 g.

**Input**

Input type	Min	Max	Span min
<b>RTD 2,3,4 wires</b>			
Pt100	-200°C	850°C	50°C
Pt1000	-200°C	200°C	50°C
Ni100	-60°C	180°C	50°C
Ni1000	-60°C	150°C	50°C
<b>Voltage</b>			
mV	-100mV	+700mV	2 mV
<b>Potentiometer</b>			
Nominal value	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	50 KΩ	10%
<b>Resistance 2,3,4 wires</b>			
Low	0 Ω	300 Ω	10 Ω
High	0 Ω	2000 Ω	200 Ω
<b>Input calibration(1)</b>			
RTD	the higher of ±0.1 % f.s. or ±0.2 °C		
Res. Low	the higher of ±0.1 % f.s. or ±0.15 Ω		
Res. High	the higher of ±0.2 % f.s. or ±1 Ω		
mV	the higher of ±0.1 % f.s. or ±10 uV		
<b>Input impedance</b>			
mV	≥ 10 MΩ		
<b>Linearity (1)</b>			
RTD	± 0.1 % f.s		

**Input**

<b>Line resistance influence(1)</b>	
mV	<=0.8 uV/Ohm
RTD 3 wires	0.05 %/Ω (50 Ω balanced max.)
RTD 4 wires	0.005 %/Ω (100 Ω balanced max.)
<b>RTD excitation current</b>	
Typical	0.350 mA
<b>Thermal drift (1)</b>	
Full scale	± 0.01 % / °C
<b>Burn-out values</b>	
Max. value output	about 20.5 mA
Min. value output	about 3.8 mA
Value max. fault	about 21.6 mA
Value min. fault	about 3.5 mA
<b>Response time (10÷90% of f.s.)</b>	about 400 ms

(1) referred to input Span (difference between max. and min. values)

**OUTPUT**

Output type	Min	Max	Span min
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA
<b>Output calibration</b>			
Current	± 7 uA		

**ISOLATED TWO WIRE UNIVERSAL TRANSMITTER PROGRAMMABLE BY PC**
**DAT 1066**

**GENERAL DESCRIPTION**

The isolated transmitter DAT 1066 is able to execute many functions such as : measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of a voltage signal even coming from a potentiometer connected on its input.

Moreover the DAT 1066 is able to measure and linearise the standard thermocouples with internal cold junction compensation.

The measured values are converted in a 4÷20 mA current signal.

The device guarantees high accuracy and performances stability both in time and in temperature.

**FEATURES**

- Configurable input for RTD, TC, mV, Resistance and Potentiometer
- Galvanic isolation at 1500 Vac
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer
- High accuracy

- On-field reconfigurable
- Programming of the unit measure as °C or °F
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**Application areas**


POWER SUPPLY		TEMPERATURE & HUMIDITY	
Power supply voltage	07 .. 32Vdc	Operative temperature	-40°C .. +85°C
Reverse polarity protection	60 Vdc max	Storage temperature	-40°C .. +85°C
ISOLATION VOLTAGE		Humidity (not condensed)	0 .. 90 %
Input- output/Power supply	1500 Vac, 50 Hz,1 min.	HOUSING	
EMC (for industrial environments)		Material	PC + ABS V0
DIRECTIVE 2004/108/EC		Mounting	DIN B head or bigger
Immunity	EN 61000-6-2	Dimensions (mm)	Ø= 43 mm ; H = 24 mm
Emission	EN 61000-6-4	Weight	about 50 g.

Input			
Input type	Min	Max	Span min
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J	-200°C	1200°C	2 mV
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<b>RTD 2,3,4 wires</b>			
Pt100	-200°C	850°C	50°C
Pt1000	-200°C	200°C	50°C
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Ni1000	-60°C	150°C	50°C
<b>Voltage</b>			
mV	-100 mV	+700 mV	2 mV
<b>Potentiometer</b> (Nominal value)	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	50 KΩ	10%
<b>Resistance 2,3,4 wires</b>			
Low	0 Ω	300 Ω	10 Ω
High	0 Ω	2000 Ω	200 Ω

OUTPUT			
Output type	Min	Max	Span min
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA
Output calibration			
Current	± 7 uA		

Input	
<b>Input calibration(1)</b>	
RTD	the higher of ±0.1 % f.s. or ±0.2 °C
Res. Low	the higher of ±0.1 % f.s. or ±0.15 Ω
Res. High	the higher of ±0.2 % f.s. or ±1 Ω
mV, TC	the higher of ±0.1 % f.s. or ±10 uV
<b>Input impedance</b>	
TC, mV	>= 10 MΩ
<b>Linearity (1)</b>	
TC	± 0.2 % f.s.
RTD	± 0.1 % f.s.
<b>Line resistance influence(1)</b>	
TC, mV	<=0.8 uV/Ohm
RTD 3 wires	0.05 %/Ω (50 Ω balanced max.)
RTD 4 wires	0.005 %/Ω (100 Ω balanced max.)
<b>RTD excitation current</b>	
Typical	0.350 mA
<b>CJC comp.</b>	
	± 0.5°C
<b>Thermal drift (1)</b>	
Full scale	± 0.01 % / °C
CJC	± 0.01 % / °C
<b>Burn-out values</b>	
Max. value output	about 20.5 mA
Min. value output	about 3.8 mA
Value max. fault	about 21.6 mA
Value min. fault	about 3.5 mA
<b>Response time (10÷90% of f.s.)</b>	about 400 ms

(1) referred to input Span (difference between max. and min. values)