

**Multifunctional room sensor and measuring transducer for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content, calibratable, with Modbus connection**

Multifunctional indoor climate sensor **AERASGARD® RFTM - LQ - PS - CO2 - Modbus** (maximum expansion level) with Modbus connection, in an elegant plastic housing with snap-on lid, base with 4-hole attachment, optionally with / without display, type variant **RFTM - CO2 - Modbus** optionally with / without setpoint potentiometer. The room sensor is used for detecting the air humidity (0...100% RH), room temperature (0...+50 °C), air quality (VOC) (0...100%), the fine dust (PM) (0...1000 µg/m³) and CO2 content (0...5000 ppm) as well as a room control unit (% setpoint). International system of units **SI** (default) can be changed to **imperial** (via Modbus). The following parameters can be accessed via the Modbus: Temperature, relative humidity, air quality (VOC), fine dust (PM) and carbon dioxide (CO2). Use just one device to monitor and control the entire indoor climate effectively. This enables energy-saving room ventilation on an as-needed basis, thereby reducing operating costs and improving well-being. It is used in offices, hotels, convention centres, apartments, shops, etc. One sensor for every 30 m² of room area is recommended.

A long-term stable, **digital humidity and temperature sensor** guarantees exact measurement results. The air quality is determined based on a (VOC) **mixed gas sensor**. The CO2 content of the air is measured using an optical **NDIR sensor** (non-dispersive infra-red technology). An optical **fine dust sensor** precisely detects **particulate (PM)** of the size category 0.3 to 10 micrometres.

**Innovative Modbus sensor** with galvanically separated RS485-Modbus-interface, selectable bus termination resistance, DIP switch for setting the bus parameters and bus address in current-free state, internal LEDs for telegram status display, two separate push-in terminals and two-line display (illuminated; with customised programming in the 7-segment and dot-matrix range). The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

**RFTM - CO2 - Modbus - P**  
with display and potentiometer



**TECHNICAL DATA**

|                    |                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply:      | 24 V AC / DC (± 10%)                                                                                                                                   |
| Power consumption: | typically < 4.4 W / 24 V DC; < 6.4 VA / 24 V AC; peak current 200 mA                                                                                   |
| System of units:   | <b>SI</b> (default) or <b>imperial</b> (can be changed via Modbus)                                                                                     |
| Data points:       | temperature [°C] [°F], relative humidity [% RH], fine dust (PM) [µg/m³], air quality (VOC) [%], carbon dioxide (CO2) [ppm], setpoint potentiometer [%] |

**HUMIDITY & TEMPERATURE**

|                         |                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------|
| Sensor:                 | <b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability |
| Measuring range:        | 0...100% RH (humidity)<br>0...+50 °C (temperature)                                                           |
| Deviation, humidity:    | typically <b>±2,0%</b> (20...80% RH) at +25 °C, otherwise <b>±3,0%</b>                                       |
| Deviation, temperature: | typically <b>± 0,2 K</b> at +25 °C                                                                           |

**AIR QUALITY (VOC)**

|                           |                                                                                                                  |
|---------------------------|------------------------------------------------------------------------------------------------------------------|
| Sensor (VOC):             | <b>VOC sensor</b> (metal oxide) <b>with automatic calibration</b> (VOC = volatile organic compounds)             |
| Measuring range (VOC):    | 0...100% air quality; with reference to calibration gas; multi-range switching VOC sensitivity low, medium, high |
| Measuring accuracy (VOC): | typically <b>±20%</b> final value (with reference to the calibration gas)                                        |
| Service life (VOC):       | >60 months (under normal load conditions)                                                                        |

**FINE DUST (PM)**

|                           |                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Sensor (PM):              | optical <b>particulate sensor</b> (PM = particulate matter), <b>fine-dust sensor</b> with laser- and soiling-resistant technology |
| Measuring range (PM):     | 0...1000 µg/m³                                                                                                                    |
| Particle size (PM):       | <b>PM 2.5</b> (0.3...2.5 µm); <b>PM 10</b> (0.3...10 µm)                                                                          |
| Measuring accuracy (PM):  | typically <b>± 10 µg/m³</b> (± 10% of measured value) at PM 2.5<br>typically <b>± 25 µg/m³</b> (± 25% of measured value) at PM 10 |
| Long-term stability (PM): | <b>± 1.25 µg/m³</b> (± 1.25% of measured value/year)                                                                              |
| Service life (PM):        | > 10 years                                                                                                                        |

**CARBON DIOXIDE (CO2)**

|                               |                                                                                                                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor (CO2):                 | optical <b>NDIR sensor</b> (non-dispersive infra-red technology) <b>with manual calibration</b> (via zero button), <b>with automatic calibration</b> (can be deactivated via Modbus) |
| Measuring range (CO2):        | 0...5000 ppm                                                                                                                                                                         |
| Measuring accuracy (CO2):     | typically <b>± 30 ppm</b> (± 3% of measured value)                                                                                                                                   |
| Temperature dependence (CO2): | <b>± 5 ppm per °C</b> or <b>± 0.5% of measured value per °C</b> (whichever is greater)                                                                                               |
| Pressure dependence (CO2):    | <b>± 0.13%</b> per mm Hg                                                                                                                                                             |
| Long-term stability (CO2):    | < 2% in 15 years                                                                                                                                                                     |
| Gas exchange (CO2):           | Diffusion                                                                                                                                                                            |

Continued on next page!

Display screen **standard** Modbus (Balduz)



Carbon dioxide (CO2) (ppm)



Air quality (VOC) [%]



Temperature [°C] [°F]



Humidity [% RH]



Fine dust (PM) [µg/m³]

Display screen **programmable** Modbus (Balduz)



Symbols



S+S REGELTECHNIK

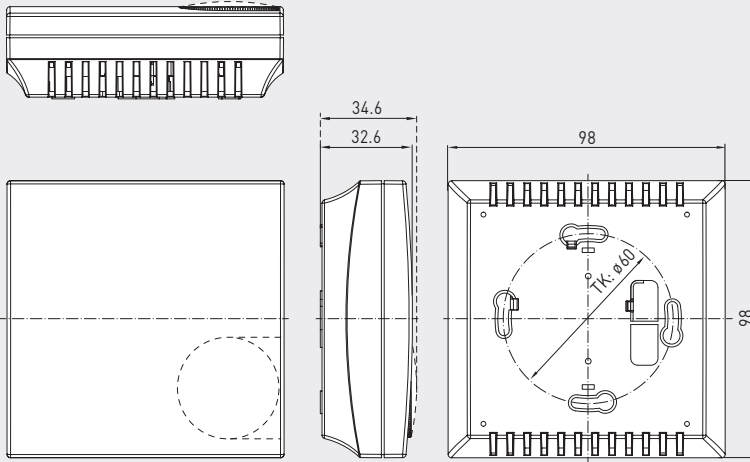
# AERASGARD® RC02 / RLQ - CO2 - Modbus AERASGARD® RFTM - LQ - PS - CO2 - Modbus

Multifunctional room sensor and measuring transducer  
for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content,  
calibratable, with Modbus connection



Dimensional drawing  
(mm)

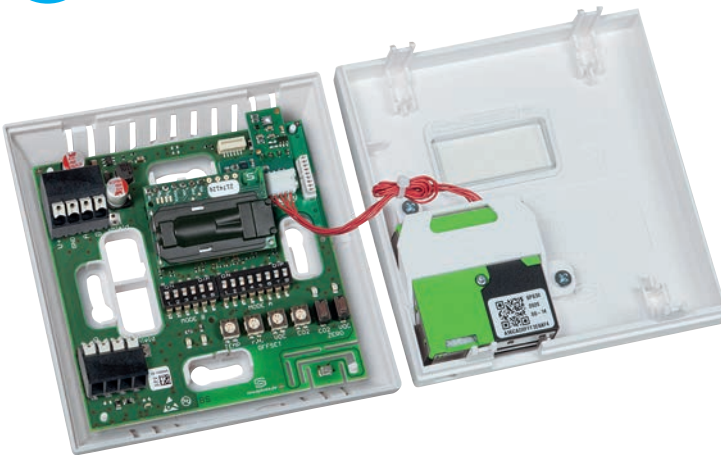
Housing Baldur 2



R x x CO2 - Modbus  
without display



RFTM - LQ - PS - CO2 - Modbus  
with display

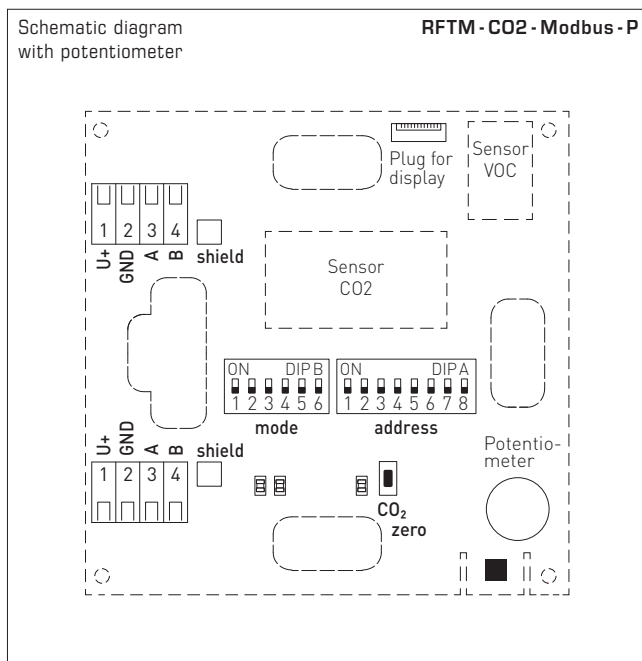
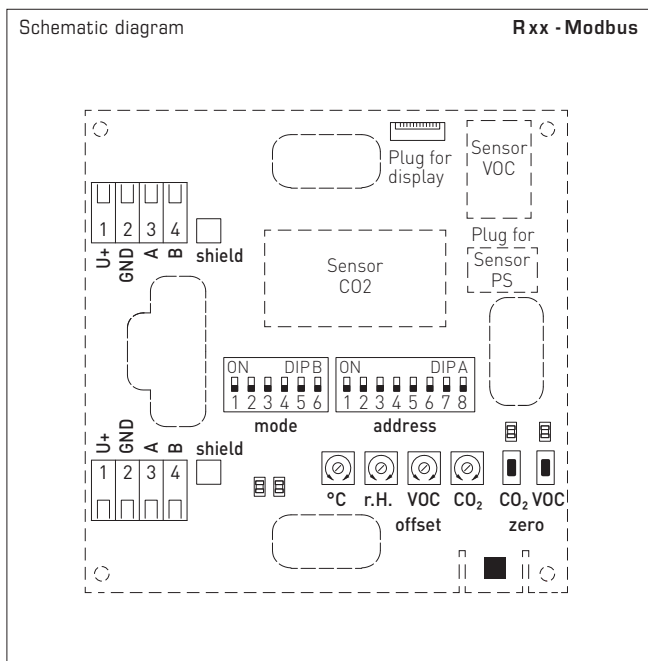


## TECHNICAL DATA

(continued)

|                           |                                                                                                                                                                                                                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bus protocol:             | Modbus (RTU mode), address range 0... <b>247</b> selectable                                                                                                                                                                                                           |
| Baud rate:                | 9600, 19200, 38400 Baud                                                                                                                                                                                                                                               |
| Signal filtering:         | 4 s / 32 s                                                                                                                                                                                                                                                            |
| Warm up time:             | approx. 1 hour                                                                                                                                                                                                                                                        |
| Response time:            | < 2 minutes                                                                                                                                                                                                                                                           |
| Ambient temperature:      | 0...+50 °C                                                                                                                                                                                                                                                            |
| Permissible air humidity: | 0...95% RH (non-precipitating air)                                                                                                                                                                                                                                    |
| Electrical connection:    | 0.2 - 1.5 mm <sup>2</sup> , via push-in terminal                                                                                                                                                                                                                      |
| Housing:                  | plastic, material ABS, colour pure white (similar to RAL9010)                                                                                                                                                                                                         |
| Dimensions:               | 98 x 98 x 33 mm (Baldur 2)                                                                                                                                                                                                                                            |
| Mounting:                 | wall mounting or on in-wall flush box, Ø55 mm, base with 4 holes, for attachment to vertically or horizontally installed in-wall flush boxes for rear cable entry, with predetermined breaking point for top/bottom cable entry for surface-mounted installation      |
| Protection class:         | III (according to EN 60 730)                                                                                                                                                                                                                                          |
| Protection type:          | <b>IP 30</b> (according to EN 60 529)                                                                                                                                                                                                                                 |
| Standards:                | CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU                                                                                                                               |
| Optional:                 | <b>Display with illumination</b> , 2-line, cutout approx. 36 x 15 mm (W x H), to display actual humidity, actual temperature, air quality, of the fine-dust and CO2 content (cyclic) or a selectable parameter (static) or an individually programmable display value |

Multifunctional room sensor and measuring transducer  
 for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content,  
 calibratable, with Modbus connection



Display screen  
**standard (cyclic)**



Carbon dioxide (CO2)



Air quality (VOC)



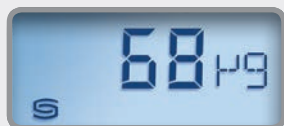
Temperature [°C]



Temperature [°F]



Humidity



Fine dust (PM)

Display screen  
**alternative (static)**



Carbon dioxide (CO2)



Air quality (VOC)



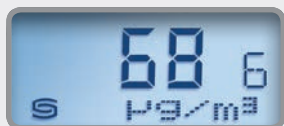
Temperature [°C]



Temperature [°F]



Humidity



Fine dust (PM)

Display screen  
**programmable**

**Modbus**  
 (Baldur)



Symbols

The Modbus interface allows the display to be **individually** configured both in the 7-segment range and in the dot-matrix range. For improved legibility, backlighting is provided.



By default, the display indicates the measurements with the corresponding units **cyclically** and consecutively:

**CO2** content, **air quality** (VOC),  
**temperature**, **relative humidity**,  
**fine dust** (PM).

The **Modbus** configuration can be used to program an **alternative output variable** instead of the standard display. In this case, the first line indicates the value and index while the second line indicates the corresponding unit **statically**. The index identifies the display type:

- Index 1** = carbon dioxide (CO2) [ppm]
- Index 2** = air quality (VOC) [%]
- Index 3** = temperature [°C] [°F]
- Index 4** = relative humidity [%RH]
- Index 6** = fine dust (PM) [µg/m³]



S+S REGELTECHNIK

# AERASGARD® RCO2 / RLQ - CO2 - Modbus AERASGARD® RFTM - LQ - PS - CO2 - Modbus

Multifunctional room sensor and measuring transducer  
for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content,  
calibratable, with Modbus connection

**RFTM - CO2 - Modbus - P**  
with setpoint potentiometer  
(room control unit)



**RFTM - LQ - PS - CO2 - Modbus**  
with display



**R xx CO2 - Modbus**  
without display



| AERASGARD®<br>Rxx - Modbus           |                 | Room sensor and measuring transducer<br>for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content, <i>Deluxe</i> |                |          |          |                |                    |                 |  |
|--------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|----------|----------------|--------------------|-----------------|--|
| Type / WG02                          | Measuring Range |                                                                                                                                     | PM             | CO2      | VOC      | Display<br>☼=P | Item No.           | Price           |  |
|                                      | Humidity        | Temperature*                                                                                                                        |                |          |          |                |                    |                 |  |
| <b>RCO2 - Modbus</b>                 |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RCO2-Modbus                          | –               | –                                                                                                                                   | –              | 5000 ppm | –        |                | 1501-61B0-6001-200 | <b>280,79 €</b> |  |
| RCO2-Modbus <b>LCD</b>               | –               | –                                                                                                                                   | –              | 5000 ppm | –        | ■              | 1501-61B0-6021-200 | <b>332,13 €</b> |  |
| <b>RLQ - CO2 - Modbus</b>            |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RLQ-CO2-Modbus                       | –               | –                                                                                                                                   | –              | 5000 ppm | 0...100% |                | 1501-61B1-6001-500 | <b>411,59 €</b> |  |
| RLQ-CO2-Modbus <b>LCD</b>            | –               | –                                                                                                                                   | –              | 5000 ppm | 0...100% | ■              | 1501-61B1-6021-500 | <b>462,91 €</b> |  |
| <b>RFTM - PS - Modbus</b>            |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RFTM-PS-Modbus                       | 0...100% RH     | 0...+50 °C                                                                                                                          | 0...1000 µg/m³ | –        | –        |                | 1501-2116-6001-200 | <b>382,69 €</b> |  |
| RFTM-PS-Modbus <b>LCD</b>            | 0...100% RH     | 0...+50 °C                                                                                                                          | 0...1000 µg/m³ | –        | –        | ■              | 1501-2116-6021-200 | <b>439,73 €</b> |  |
| <b>RFTM - CO2 - Modbus</b>           |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RFTM-CO2-Modbus                      | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | –        |                | 1501-61B6-6001-200 | <b>331,32 €</b> |  |
| RFTM-CO2-Modbus <b>LCD</b>           | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | –        | ■              | 1501-61B6-6021-200 | <b>382,40 €</b> |  |
| <b>RFTM - CO2 - Modbus - P</b>       |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RFTM-CO2-Modbus- <b>P</b>            | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | –        | ☼              | 1501-61B6-6501-271 | <b>366,65 €</b> |  |
| RFTM-CO2-Modbus- <b>P LCD</b>        | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | –        | ☼ ■            | 1501-61B6-6521-271 | <b>417,97 €</b> |  |
| <b>RFTM - LQ - CO2 - Modbus</b>      |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RFTM-LQ-CO2-Modbus                   | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | 0...100% |                | 1501-61B8-6001-500 | <b>448,97 €</b> |  |
| RFTM-LQ-CO2-Modbus <b>LCD</b>        | 0...100% RH     | 0...+50 °C                                                                                                                          | –              | 5000 ppm | 0...100% | ■              | 1501-61B8-6021-500 | <b>500,29 €</b> |  |
| <b>RFTM - LQ - PS - CO2 - Modbus</b> |                 |                                                                                                                                     |                |          |          |                |                    |                 |  |
| RFTM-LQ-PS-CO2-Modbus                | 0...100% RH     | 0...+50 °C                                                                                                                          | 0...1000 µg/m³ | 5000 ppm | 0...100% |                | 1501-2119-6001-500 | <b>580,02 €</b> |  |
| RFTM-LQ-PS-CO2-Modbus <b>LCD</b>     | 0...100% RH     | 0...+50 °C                                                                                                                          | 0...1000 µg/m³ | 5000 ppm | 0...100% | ■              | 1501-2119-6021-500 | <b>631,34 €</b> |  |
| <b>Housing variant "P":</b>          |                 | <b>Room control unit</b> with potentiometer<br>(standard printing is a widening arrow with central position unfilled)               |                |          |          |                |                    |                 |  |
| <b>Note:</b>                         |                 | These units must <b>not</b> be used as safety-relevant devices!                                                                     |                |          |          |                |                    |                 |  |
|                                      |                 | * International system of units <b>SI</b> (default) can be changed to <b>imperial</b> (via Modbus).                                 |                |          |          |                |                    |                 |  |

| ACCESSORIES       |                                                                                         |                    |                 |
|-------------------|-----------------------------------------------------------------------------------------|--------------------|-----------------|
| <b>KA2-Modbus</b> | <b>Communication adapter</b> (USB/RS485) for system connection                          | 1906-1200-0000-100 | <b>220,41 €</b> |
| <b>LA-Modbus</b>  | <b>Line termination device</b> (with terminating resistor) as an active bus termination | 1906-1300-0000-100 | <b>82,20 €</b>  |