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

S+S REGELTECHNIK

Multifunctional indoor climate sensor **AER**ASGARD® **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:	**SI** (default) or **imperial** (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:	**digital humidity sensor with integrated temperature sensor,** low hysteresis, high long-term stability
Measuring range:	0…100 % RH (humidity) 0…+50 °C (temperature)
Accuracy, humidity:	typically **± 2.0** % (20…80 % RH) at +25 °C, otherwise ± 3.0 %
Accuracy, temperature:	typically ± 0.2 K at +25 °C
AIR QUALITY (VOC)	
Sensor (VOC):	**VOC sensor** (metal oxide) **with automatic calibration** (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 ± 20 % final value (with reference to the calibration gas)
Service life (VOC):	> 60 months (under normal load conditions)
FINE DUST (PM)	
Sensor (PM):	optical **particulate sensor** (**PM** = particulate matter), **fine-dust sensor** with laser- and soiling-resistant technology
Measuring range (PM):	0…1000 µg/m³
Particle size (PM):	**PM 2.5** (0.3…2.5 µm); **PM 10** (0.3…10 µm)
Measuring accuracy (PM):	typically ± 10 µg/m³ (± 10 % of measured value) at PM 2.5 typically ± 25 µg/m³ (± 25 % of measured value) at PM 10
Long-term stability (PM):	± 1.25 µg/m³ (± 1.25 % of measured value/year)
Service life (PM):	> 10 years
CARBON DIOXIDE (CO2)	
Sensor (CO2):	optical **NDIR sensor** (non-dispersive infra-red technology) **with manual calibration** (via zero button), **with automatic calibration** (can be deactivated via Modbus)
Measuring range (CO2):	0…5000 ppm
Measuring accuracy (CO2):	typically ± 30 ppm (± 3 % of measured value)
Temperature dependence (CO2):	± 5 ppm per °C or ± 0.5 % of measured value per °C (whichever is greater)
Pressure dependence (CO2):	± 0.13 % per mm Hg
Long-term stability (CO2):	< 2 % in 15 years
Gas exchange (CO2):	Diffusion

Continued on next page!

Display screen **standard** — **Modbus** (Baldur)

Carbon dioxide (CO2) [ppm]

Air quality (VOC) [%]

Temperature [°C] [°F]

Humidity [% RH]

Fine dust (PM) [µg/m³]

Display screen **programmable** — **Modbus** (Baldur)

Symbols

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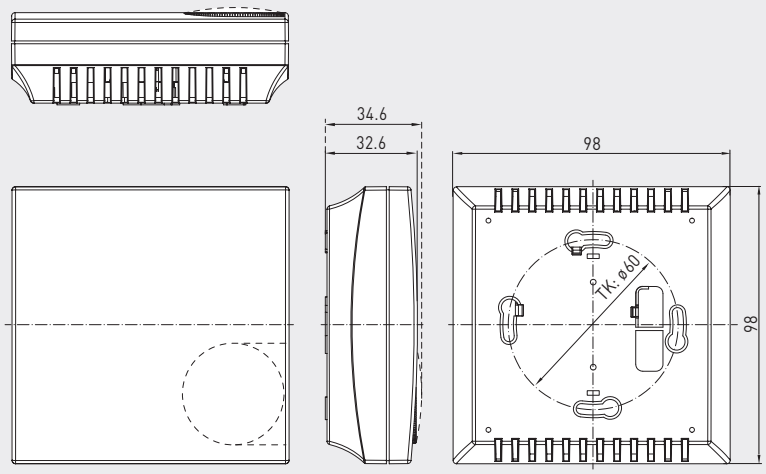
Dimensional drawing [mm]

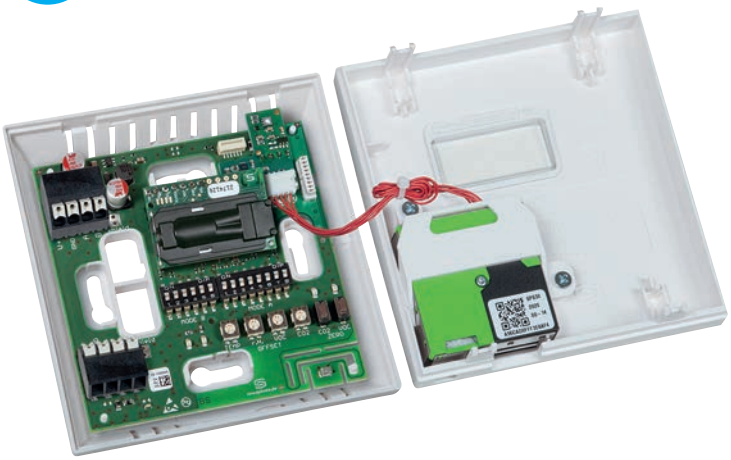
Housing **Baldur 2**



R xx CO2 - Modbus
without display

RFTM - LQ - PS - CO2 - Modbus
with display

SI IMP



TECHNICAL DATA (continued)

Communication:	**Modbus** (RTU cable)
Bus interface:	RS 485, **galvanically isolated**
Baud rate:	9600, 19200, 38400 Baud
Bus protocol:	Modbus (RTU mode), address range 0...**247** adjustable
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 mm², via push-in terminal
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016)
Dimensions:	98 x 98 x 33 mm (Baldur 2)
Mounting:	wall mounting or on in-wall flush box, Ø 55 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:	**IP 30** (according to EN 60 529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU
Optional:	**display with illumination,** 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

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Modbus

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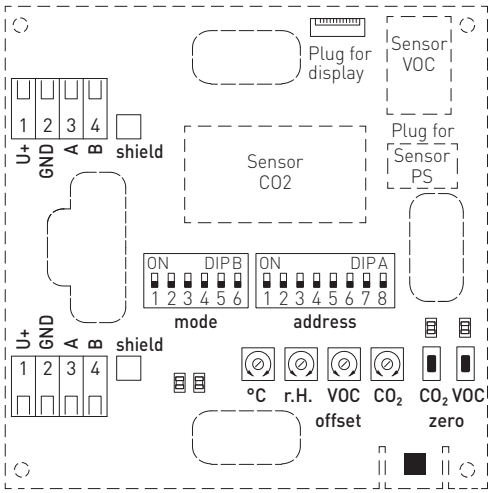
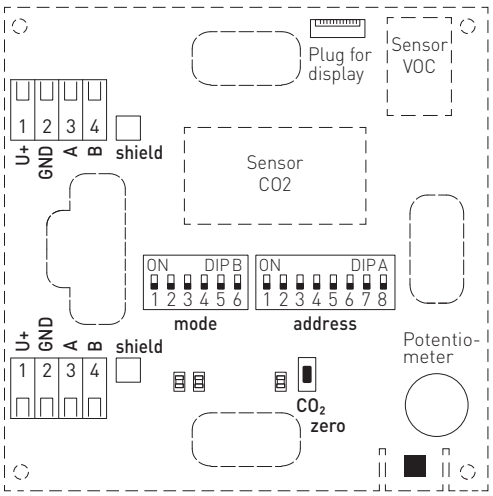
Schematic diagram **Rxx - Modbus**



Schematic diagram with potentiometer **RFTM - CO2 - Modbus - P**



Display screen **standard (cyclic)**

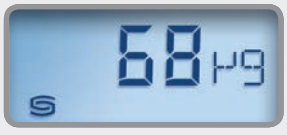
Carbon dioxide (CO2)

Air quality (VOC)

Temperature [°C]

Temperature [°F]

Humidity



Fine dust (PM)

Display screen **alternative (static)**

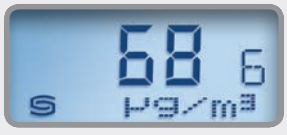
Carbon dioxide (CO2)

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.

SI IMP

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]

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AERASGARD® RFTM-LQ-PS-CO2-Modbus

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

RFTM-LQ-PS-CO2-Modbus
with display

Rxx CO2-Modbus
without display

AERASGARD® Rxx-Modbus	Room sensor and measuring transducer for humidity, temperature, air quality (VOC), fine dust (PM) and CO2 content, *Deluxe*							
Type / WG02	**Measuring Range** Humidity	Temperature*	PM	CO2	VOC	**Display** ☼=P	**Item No.**	**Price**
RCO2-Modbus								
RCO2-Modbus	–	–	–	5000 ppm	–		1501-61B0-6001-200	**292,02 €**
RCO2-Modbus **LCD**	–	–	–	5000 ppm	–	■	1501-61B0-6021-200	**345,42 €**
RLQ-CO2-Modbus								
RLQ-CO2-Modbus	–	–	–	5000 ppm	0...100 %		1501-61B1-6001-500	**428,05 €**
RLQ-CO2-Modbus **LCD**	–	–	–	5000 ppm	0...100 %	■	1501-61B1-6021-500	**481,43 €**
RFTM-PS-Modbus								
RFTM-PS-Modbus	0...100 % RH	0...+50 °C	0...1000 µg/m³	–	–		1501-2116-6001-200	**398,00 €**
RFTM-PS-Modbus **LCD**	0...100 % RH	0...+50 °C	0...1000 µg/m³	–	–	■	1501-2116-6021-200	**457,32 €**
RFTM-CO2-Modbus								
RFTM-CO2-Modbus	0...100 % RH	0...+50 °C	–	5000 ppm	–		1501-61B6-6001-200	**344,57 €**
RFTM-CO2-Modbus **LCD**	0...100 % RH	0...+50 °C	–	5000 ppm	–	■	1501-61B6-6021-200	**397,70 €**
RFTM-CO2-Modbus-P								
RFTM-CO2-Modbus-**P**	0...100 % RH	0...+50 °C	–	5000 ppm	–	☼	1501-61B6-6501-271	**381,32 €**
RFTM-CO2-Modbus-**P LCD**	0...100 % RH	0...+50 °C	–	5000 ppm	–	☼ ■	1501-61B6-6521-271	**434,69 €**
RFTM-LQ-CO2-Modbus								
RFTM-LQ-CO2-Modbus	0...100 % RH	0...+50 °C	–	5000 ppm	0...100 %		1501-61B8-6001-500	**466,93 €**
RFTM-LQ-CO2-Modbus **LCD**	0...100 % RH	0...+50 °C	–	5000 ppm	0...100 %	■	1501-61B8-6021-500	**520,30 €**
RFTM-LQ-PS-CO2-Modbus								
RFTM-LQ-PS-CO2-Modbus	0...100 % RH	0...+50 °C	0...1000 µg/m³	5000 ppm	0...100 %		1501-2119-6001-500	**603,22 €**
RFTM-LQ-PS-CO2-Modbus **LCD**	0...100 % RH	0...+50 °C	0...1000 µg/m³	5000 ppm	0...100 %	■	1501-2119-6021-500	**656,59 €**
Housing variant "P":	**Room control unit** with potentiometer (standard printing is a widening arrow with central position unfilled)							
Note:	These units must **not** be used as safety-relevant devices!							
	* International system of units **SI** (default) can be changed to **imperial** (via Modbus).							

ACCESSORIES			
KA2-Modbus	**Communication adapter** (USB/RS485) for system connection	1906-1200-0000-100	**229,23 €**
LA-Modbus	**Line termination device** (with terminating resistor) as an active bus termination	1906-1300-0000-100	**85,49 €**