

**Multifunctional on-wall sensors and measuring transducers,  
 for humidity, temperature, CO2 content and air quality (VOC),  
 calibratable, with Modbus connection**

The maintenance-free on-wall sensor **AERASGARD® AFTM-LQ-CO2-Modbus** (max. expansion level) and **AC02/ALQ-CO2/AFTM-CO2-Modbus** with Modbus connection, automatic calibration, in an impact-resistant plastic housing with quick-locking screws, plastic sinter filter (replaceable), optionally with/without display, for determining the CO2-content of the air (0...5000 ppm), of the air quality (0...100% VOC), the temperature (-35...+80 °C) and the relative air humidity (0...100% RH). 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), carbon dioxide (CO2) and atmospheric pressure. The sensor is used in offices, hotels, convention centres, apartments, shops, etc. for the purpose of evaluating the indoor climate. This enables energy-saving room ventilation on an as-needed basis, thereby reducing operating costs and improving well-being. One sensor for every 30 m<sup>2</sup> of space is recommended.

A long-term stable, **digital humidity and temperature sensor** guarantees exact measurement results. The CO2 measurement is performed using an optical **NDIR sensor** (non-dispersive infra-red technology). The detection range is calibrated for standard applications such as monitoring residential rooms and conference rooms. The air quality is detected by a **VOC sensor** (mixed gas sensor for volatile organic substances). This sensor determines the loading of the room air due to contaminated gases such as cigarette smoke, body perspiration, exhaled breathing air, solvent vapours, emissions etc. With regard to the expected air contamination, low, medium or high VOC sensitivity can be selected.

**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 large three-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.

**TECHNICAL DATA**

Voltage supply:	24 V AC / DC (± 10 %)
Power consumption:	< 4.8 W / 24 V DC typically; < 6.8 VA / 24 V AC typically; peak current 200 mA
System of units:	<b>SI</b> (default) or <b>Imperial</b> (switchable via Modbus)
Data points:	temperature [°C] [°F], relative humidity [%RH], atmospheric pressure [hPa], air quality (VOC) [%], carbon dioxide (CO2) [ppm]
<b>HUMIDITY</b>	
Sensors:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability
Sensor protection:	<b>plastic sinter filter</b> , Ø 16 mm, L = 35 mm, exchangeable (optional <b>metal sinter filter</b> , Ø 16 mm, L = 32 mm)
Measuring range, humidity:	0...100% RH
Operating range, humidity:	0...95% RH (without dew formation)
Accuracy humidity:	typically <b>±2.0%</b> (20...80%RH) at +25 °C, otherwise ± 3.0%
<b>TEMPERATURE</b>	
Measuring range, temperature:	-35...+80 °C
Operating range, temperature:	-10...+60 °C
Accuracy temperature:	typically ± 0.4 K at +25 °C
<b>AIR QUALITY (VOC)</b>	
Sensor (VOC):	VOC sensor (metal oxide) <b>with automatic calibration</b> (VOC = volatile organic compounds)
Measuring range (VOC):	0...100% air quality; referred to calibrating gas; <b>multi-range switching</b> VOC sensitivities (low/medium/high)
Measuring accuracy (VOC):	typically <b>± 20%</b> of final value (referred to calibrating gas)
Service life (VOC):	> 60 months (under normal load conditions)
<b>CARBON DIOXIDE (CO2)</b>	
Sensor (CO2):	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) <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):	± 5 ppm per °C or ± 0,5% of measured value per °C (whichever is higher)
Pressure dependence (CO2):	± 0.13 % per mm Hg
Long-term stability (CO2):	< 2% in 15 years
Gas exchange (CO2):	by diffusion

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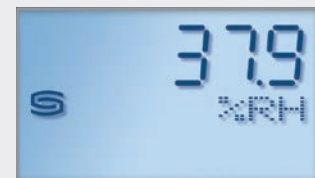
Display screen (cyclic) **Modbus Tyr 2**



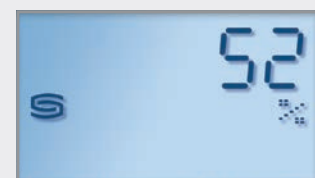
Temperature [°C]



Temperature [°F]



Humidity

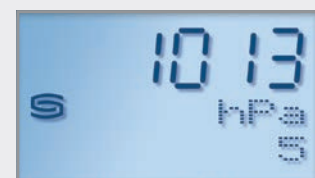


Air quality (VOC)



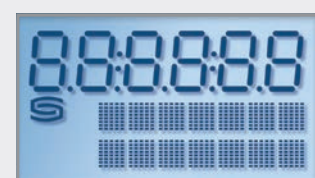
Carbon dioxide (CO2)

Display screen (static)



Atmospheric pressure (Example Index 5)

Programmable display screen





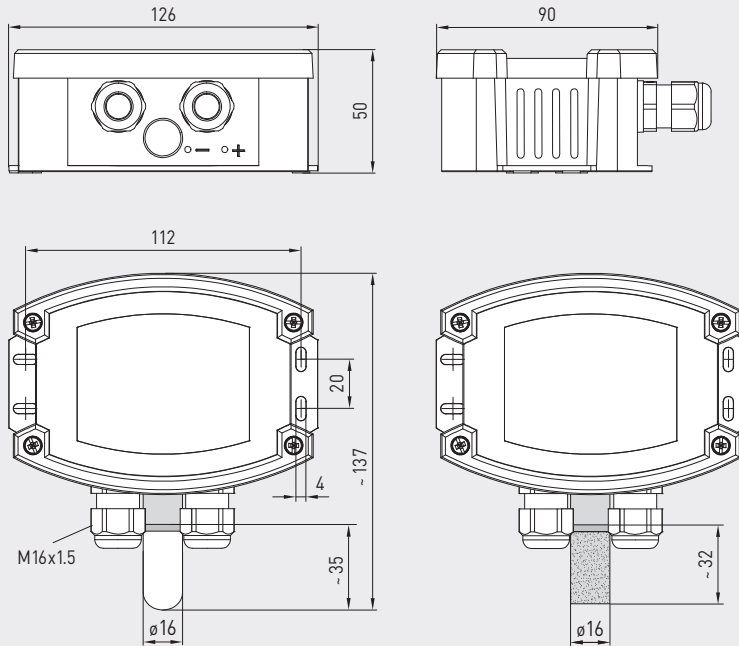
S+S REGELTECHNIK

# AERASGARD® AC02 / ALQ-CO2 - Modbus AERASGARD® AFTM-(LQ)-CO2 - Modbus

Multifunctional on-wall sensors and measuring transducers,  
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Dimensional drawing

AFTM-LQ-CO2-Modbus  
AFTM-CO2-Modbus



AFTM-LQ-CO2-Modbus  
AFTM-CO2-Modbus  
with plastic sinter filter  
(standard)



AFTM-LQ-CO2-Modbus  
AFTM-CO2-Modbus  
with display and  
plastic sinter filter  
(standard)



**SF-K**  
Plastic sinter filter  
(standard)



**SF-M**  
Metal sinter filter  
(optional)

## 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
Response time:	< 2 minutes
Ambient temperature:	-10...+60 °C
Electrical connection:	0.2 - 1.5 mm <sup>2</sup> , ia push-in terminal
Cable connection:	<b>cable gland</b> , plastic (M 16 x 1.5; with strain relief, exchangeable, inner diameter 10.4 mm) or <b>M12 connector</b> according to DIN EN 61076-2-101 (optional on request)
Housing:	plastic, UV-resistant, material polyamide, 30% glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), housing cover for display is transparent!
Housing dimensions:	126 x 90 x 50 mm (Tyr 2)
Protective tube:	<b>stainless steel V2A</b> (1.4301), Ø 16 mm, NL = 55 mm
Process connection:	by screws
Protection class:	III (according to EN 60730)
Protection type:	<b>IP 65</b> (according to EN 60529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU
Optional:	<b>display with illumination</b> , three-line, cutout approx. 70 x 40 mm (W x H), for displaying actual humidity, actual temperature, air quality and the actual CO2 content (cyclic) or a selectable parameter (static) or an individually programmable display value

**ACCESSORIES** see table

**AERASGARD® AC02 / ALQ - CO2 - Modbus**  
**AERASGARD® AFTM - (LQ) - CO2 - Modbus**

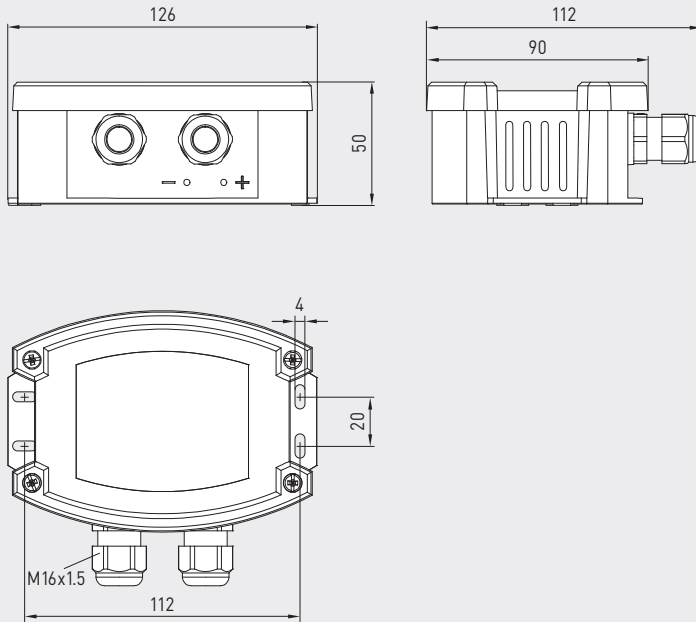


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Dimensional drawing

AC02-Modbus  
 ALQ - CO2-Modbus

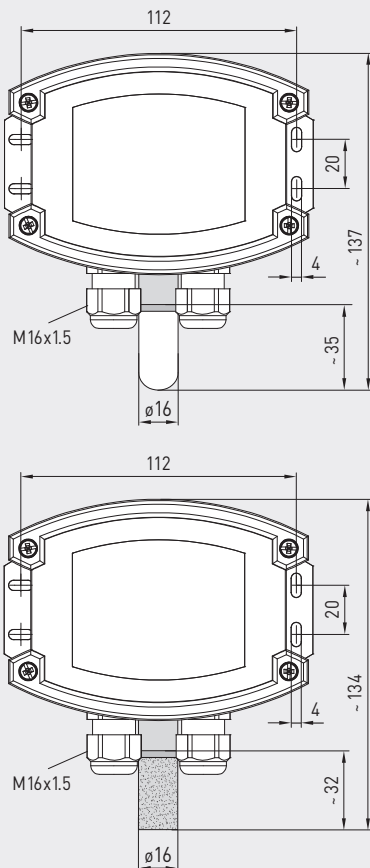


AC02-Modbus  
 ALQ - CO2-Modbus



Dimensional drawing

AFTM - LQ - CO2 - Modbus  
 AFTM - CO2 - Modbus



SF-K  
 plastic sinter filter  
 (standard)



SF-M  
 metal sinter filter  
 (optional)



AFTM - LQ - CO2 - Modbus  
 AFTM - CO2 - Modbus  
 with metal sinter filter  
 (optional)

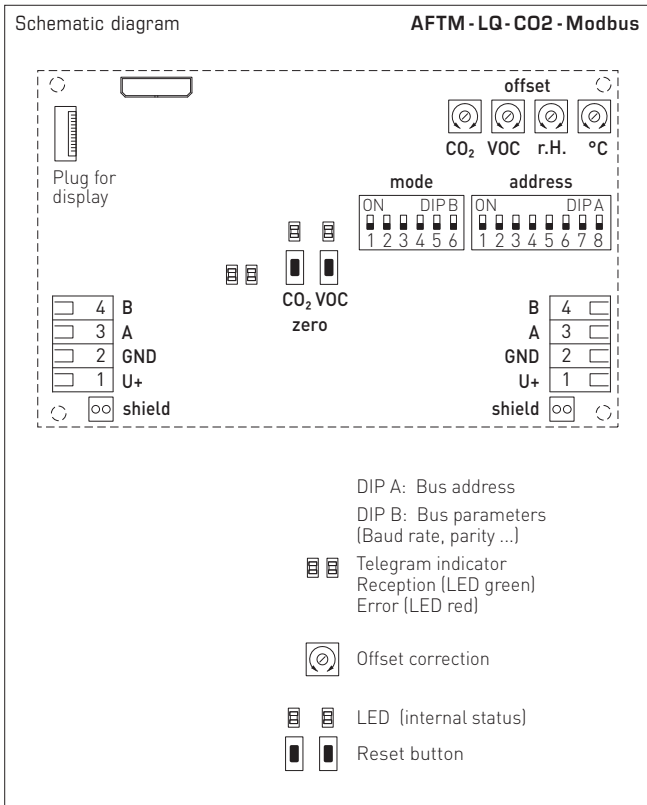




S+S REGELTECHNIK

# AERASGARD® AC02 / ALQ - CO2 - Modbus AERASGARD® AFTM - (LQ) - CO2 - Modbus

Multifunctional on-wall sensors and measuring transducers,  
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**AFTM - LQ - CO2 - Modbus**  
with display



<b>AERASGARD® AC02 - Modbus</b>	On-wall sensor for CO <sub>2</sub> content, <i>Deluxe</i>
<b>AERASGARD® ALQ - CO2 - Modbus</b>	On-wall sensor for CO <sub>2</sub> content and air quality (VOC), <i>Deluxe</i>
<b>AERASGARD® AFTM - CO2 - Modbus</b>	Multifunctional on-wall sensor for humidity, temperature and CO <sub>2</sub> content, <i>Deluxe</i>
<b>AERASGARD® AFTM - LQ - CO2 - Modbus</b>	Multifunctional on-wall sensor for humidity, temperature, CO <sub>2</sub> content and air quality (VOC), <i>Deluxe</i>

Type / WG02	Measuring Range	Display	Item No.	Price
	Humidity Temperature*	CO <sub>2</sub> VOC		
<b>AC02-Modbus</b>				
AC02-Modbus	– –	5000 ppm –	1501-7110-6001-200	<b>402,14 €</b>
AC02-Modbus <b>LCD</b>	– –	5000 ppm –	■ 1501-7110-6071-200	<b>479,06 €</b>
<b>ALQ - CO2 - Modbus</b>				
ALQ-CO2-Modbus	– –	5000 ppm 0..100%	1501-7111-6001-500	<b>542,05 €</b>
ALQ-CO2-Modbus <b>LCD</b>	– –	5000 ppm 0..100%	■ 1501-7111-6071-500	<b>634,00 €</b>
<b>AFTM - CO2 - Modbus</b>				
AFTM-CO2-Modbus	0..100% RH –35...+80 °C	5000 ppm –	1501-7116-6001-200	<b>504,47 €</b>
AFTM-CO2-Modbus <b>LCD</b>	0..100% RH –35...+80 °C	5000 ppm –	■ 1501-7116-6071-200	<b>604,22 €</b>
<b>AFTM - LQ - CO2 - Modbus</b>				
AFTM-LQ-CO2-Modbus	0..100% RH –35...+80 °C	5000 ppm 0..100%	1501-7118-6001-500	<b>644,65 €</b>
AFTM-LQ-CO2-Modbus <b>LCD</b>	0..100% RH –35...+80 °C	5000 ppm 0..100%	■ 1501-7118-6071-500	<b>762,27 €</b>
Optional:	Cable connection with <b>M12 connector</b> according to DIN EN 61076-2-101			on request
<b>Note:</b>	This unit <b>must not</b> be used as safety-relevant device!			
	* International system of units <b>SI</b> (default) can be changed to <b>imperial</b> (via Modbus).			
<b>ACCESSORIES</b>				
<b>KA2-Modbus</b>	<b>Communication adapter</b> (USB/RS485) for system connection			1906-1200-0000-100 <b>229,23 €</b>
<b>LA-Modbus</b>	<b>Line termination device</b> (with terminating resistor) as an active bus termination			1906-1300-0000-100 <b>85,49 €</b>
<b>SF-M</b>	<b>Metal sinter filter</b> , Ø 16 mm, L = 32 mm, exchangeable, stainless steel <b>V4A</b> (1.4404)			7000-0050-2200-100 <b>45,34 €</b>
<b>WS-03</b>	<b>Weather and sun protection hood</b> , 200 x 180 x 150 mm, stainless steel <b>V2A</b> (1.4301)			7100-0040-6000-000 <b>47,92 €</b>

For further information see last chapter!