

# AERASGARD® ACO<sub>2</sub> / ALQ-CO<sub>2</sub> - Modbus

## AERASGARD® AFTM-(LQ)-CO<sub>2</sub> - Modbus



S+S REGELTECHNIK

**Multifunctional on-wall sensors and measuring transducers, for humidity, temperature, CO<sub>2</sub> content and air quality (VOC), calibratable, with Modbus connection**

The maintenance-free, microprocessor-controlled **AERASGARD® AFTM-LQ-CO<sub>2</sub>-Modbus** and **ACO<sub>2</sub> / ALQ-CO<sub>2</sub> / AFTM-CO<sub>2</sub>-Modbus** with Modbus connection, with /without optional display, is designed for on-wall installation and is used to monitor all measurands of relevance to the climate inside a room. These are the measurands air humidity, temperature, CO<sub>2</sub> concentration as well as air quality (VOC). By using a single device to monitor all four measurands, it is possible to effectively monitor and regulate the entire room climate. It measures CO<sub>2</sub> in the range of 0...5000 ppm, VOC at one of three selectable sensitivity levels LOW / MEDIUM / HIGH, temperatures in the range of -35...+80 °C, as well as relative air humidity from 0...100% r.H.

A digital, long-term stable sensor used as measuring element for relative air humidity and temperature guarantees exact measurement results. The Modbus can be used to retrieve the following parameters: Temperature [°C], relative humidity [% r.H.], air quality (VOC) [%], carbon dioxide (CO<sub>2</sub>) [ppm] and atmospheric pressure [hPa].

The CO<sub>2</sub> content of the air is measured using an optical NDIR sensor (non-dispersive infra-red technology). The detection range of the sensors is calibrated for standard applications such as monitoring residential rooms and conference rooms. Room ventilation on an as-needed basis, improved well-being and customer benefit, increased comfort as well as reduced operating costs through energy conservation are just some of the benefits of employing the AERASGARD® CO<sub>2</sub> sensor.

The explanations above demonstrate that there are applications for CO<sub>2</sub> measurements, for VOC measurements, but from our perspective, above all, for a combination of both measurands. The crucial factor in this respect is that both of these measurands are not convertible into each other and derivations to or from one another cannot be made. An NDIR CO<sub>2</sub> measuring instrument measures selectively and cannot detect any VOC; a VOC mixed gas sensor cannot recognize CO<sub>2</sub> molecules.

### TECHNICAL DATA

Voltage supply:	24 V AC / DC (± 10%)
Power consumption:	< 4.8 W / 24 V DC typical; < 6.8 VA / 24 V AC typical; peak current 200 mA
Data points:	Temperature [°C], relative humidity [% r.H.], air quality (VOC) [%], carbon dioxide (CO <sub>2</sub> ) [ppm], atmospheric pressure [hPa]

### HUMIDITY

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% r.H.
Operating range, humidity:	0...95% r.H. (without dew formation)
Deviation of humidity:	typically <b>± 2.0%</b> (20...80% r.H.) at +25 °C, otherwise ± 3.0%

### TEMPERATURE

Measuring range, temperature:	-35...+80 °C
Operating range, temperature:	-10...+60 °C
Deviation, temperature:	typically ± 0.4 K at 25 °C

### AIR QUALITY (VOC)

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 sensitivity low, medium, high
Measuring accuracy, VOC:	± 20% of final value (referred to calibrating gas)
Service life:	> 60 months (under normal load conditions)

### CARBON DIOXIDE (CO<sub>2</sub>)

Sensor, CO <sub>2</sub> :	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) <b>with automatic and manual calibration</b>
Measuring range, CO <sub>2</sub> :	0...5000 ppm
Measuring accuracy, CO <sub>2</sub> :	typically ± 30 ppm ± 3% of measured value
Temperature dependence, CO <sub>2</sub> :	± 5 ppm / °C or ± 0.5% of measured value / °C (whichever is higher)
Pressure dependence:	± 0.13% / mm Hg
Long-term stability:	< 2% in 15 years
Gas exchange:	by diffusion

(continued on next page!)

Display screen (cyclic)

Modbus Tyr 2



Temperature



Humidity



Air quality (VOC)



Carbon dioxide (CO<sub>2</sub>)

Display screen (static)

Modbus Tyr 2



Carbon dioxide (CO<sub>2</sub>)



Atmospheric pressure

Programmable display screen

Modbus Tyr 2



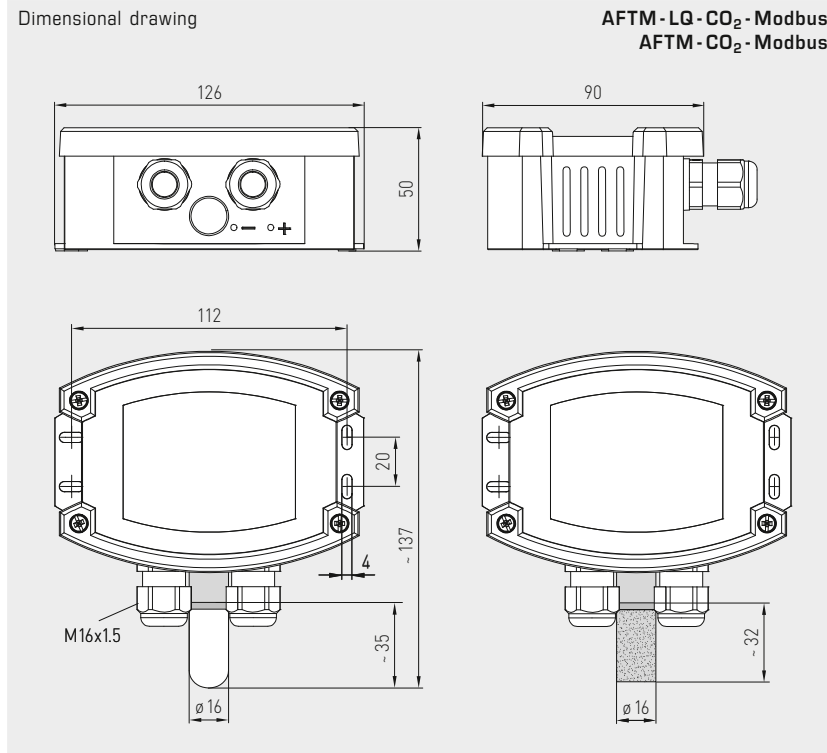


S+S REGELTECHNIK

# AERASGARD® ACO<sub>2</sub> / ALQ - CO<sub>2</sub> - Modbus AERASGARD® AFTM - (LQ) - CO<sub>2</sub> - Modbus

Multifunctional on-wall sensors and measuring transducers,  
for humidity, temperature, CO<sub>2</sub> content and air quality (VOC),  
calibratable, with Modbus connection

Dimensional drawing



AFTM - LQ - CO<sub>2</sub> - Modbus  
AFTM - CO<sub>2</sub> - Modbus

AFTM - LQ - CO<sub>2</sub> - Modbus  
AFTM - CO<sub>2</sub> - Modbus  
with plastic sinter filter  
(standard)



AFTM - LQ - CO<sub>2</sub> - Modbus  
AFTM - CO<sub>2</sub> - Modbus  
with display and  
plastic sinter filter  
(standard)



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



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

## TECHNICAL DATA

(continued)

Bus protocol:	Modbus (RTU mode), address range 0...247 selectable
Signal filtering:	4 s / 32 s
Ambient temperature:	-10...+60 °C
Response time:	< 2 minutes
Electrical connection:	0.2 - 1.5 mm <sup>2</sup> , via push-in terminal
Enclosure:	plastic, UV-stabilised, material polyamide, 30 % glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), enclosure cover for display is transparent!
Enclosure dimensions:	126 x 90 x 50 mm (Tyr 2)
Cable gland:	2x M 16 x 1.5; including strain relief, exchangeable
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 60 730)
Protection type:	IP65 (according to EN 60 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326, 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 CO <sub>2</sub> content (cyclic) or a selectable parameter (static) or an individually programmable display value (The Modbus interface allows the display to be individually configured in the 7-segment area and in the dot-matrix area.)

**ACCESSORIES** see table



**AERASGARD® ACO<sub>2</sub> / ALQ - CO<sub>2</sub> - Modbus**  
**AERASGARD® AFTM - (LQ) - CO<sub>2</sub> - Modbus**

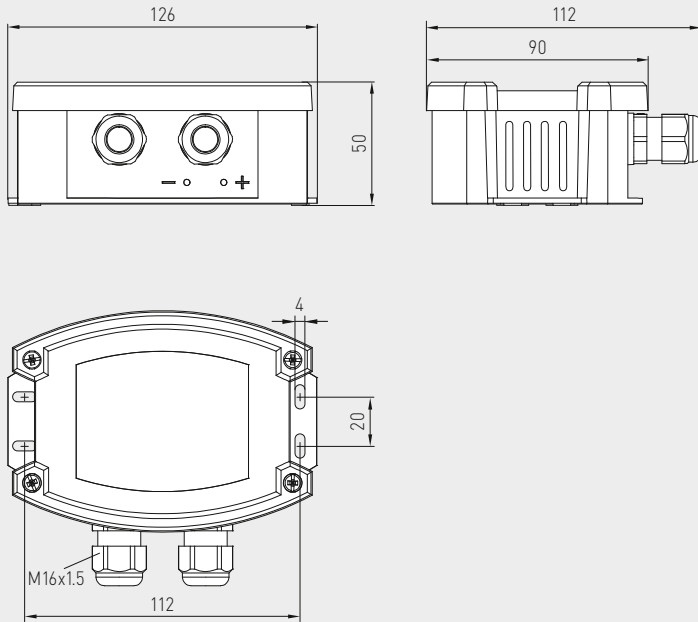


S+S REGELTECHNIK

Multifunctional on-wall sensors and measuring transducers,  
 for humidity, temperature, CO<sub>2</sub> content and air quality (VOC),  
 calibratable, with Modbus connection

Dimensional drawing

ACO<sub>2</sub>-Modbus  
 ALQ - CO<sub>2</sub>-Modbus

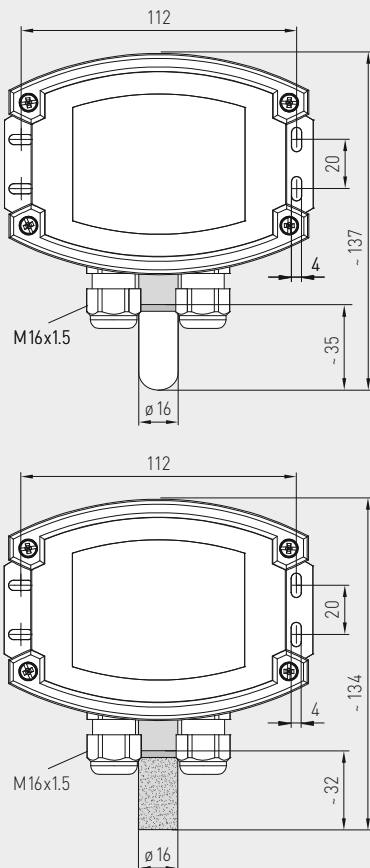


ACO<sub>2</sub>-Modbus  
 ALQ - CO<sub>2</sub>-Modbus



Dimensional drawing

AFTM - LQ - CO<sub>2</sub> - Modbus  
 AFTM - CO<sub>2</sub> - Modbus



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

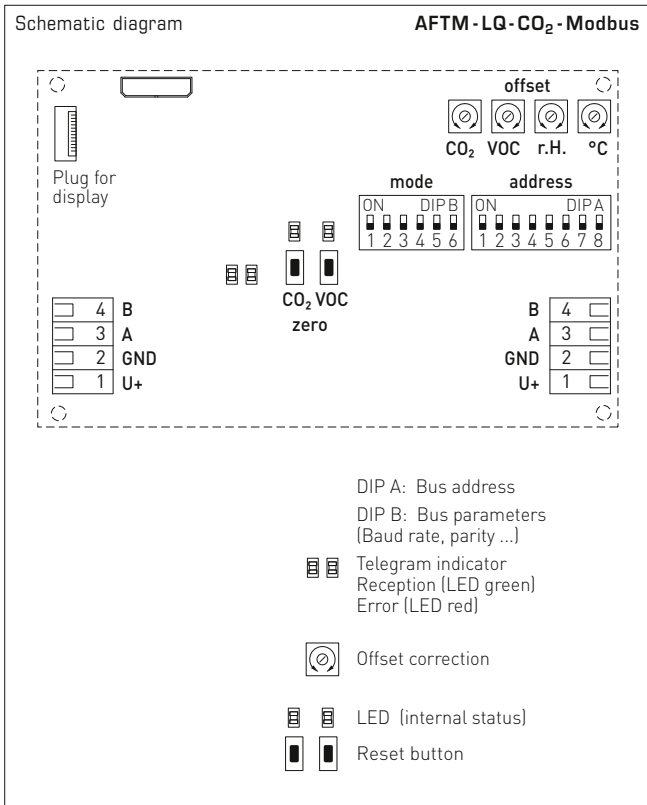


**SF-M**  
 metal sinter filter  
 (optional)



AFTM - LQ - CO<sub>2</sub> - Modbus  
 AFTM - CO<sub>2</sub> - Modbus  
 with metal sinter filter  
 (optional)





AFTM-LQ-CO<sub>2</sub>-Modbus with display



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

Type / WG02	Measuring Range	Humidity	Temperature	CO <sub>2</sub>	VOC	Display	Item No.	Price	
<b>ACO<sub>2</sub>-Modbus</b>									
ACO2 MODBUS	-	-	-	5000 ppm	-		1501-7110-6001-200	326,40 €	
ACO2 MODBUS LCD	-	-	-	5000 ppm	-	■	1501-7110-6071-200	377,20 €	
<b>ALQ - CO<sub>2</sub>-Modbus</b>									
ALQ-CO2 MODBUS	-	-	-	5000 ppm	0..100%		1501-7111-6001-200	436,56 €	
ALQ-CO2 MODBUS LCD	-	-	-	5000 ppm	0..100%	■	1501-7111-6071-200	508,98 €	
<b>AFTM - CO<sub>2</sub>-Modbus</b>									
AFTM-CO2 MODBUS	0..100% r.H.	-35...+80 °C	-	5000 ppm	-		1501-7116-6001-200	406,98 €	
AFTM-CO2 MODBUS LCD	0..100% r.H.	-35...+80 °C	-	5000 ppm	-	■	1501-7116-6071-200	485,52 €	
<b>AFTM - LQ - CO<sub>2</sub>-Modbus</b>									
AFTM-LQ-CO2 MODBUS	0..100% r.H.	-35...+80 °C	-	5000 ppm	0..100%		1501-7118-6001-200	517,35 €	
AFTM-LQ-CO2 MODBUS LCD	0..100% r.H.	-35...+80 °C	-	5000 ppm	0..100%	■	1501-7118-6071-200	609,96 €	
Note:	This unit <b>must not</b> be used as safety-relevant device!								
<b>ACCESSORIES</b>									
KA-2	Modbus communication adapter with USB/RS485 interface for system connection or/and as an active bus termination resistance							on request	
SF-M	Metal sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel V4A (1.4404)							7000-0050-2200-100	35,70 €
WS-03	Weather and sun protection hood, 200 x 180 x 150 mm, stainless steel V2A (1.4301)							7100-0040-6000-000	37,74 €

For further information see last chapter!