AERASGARD® ACO₂ / ALQ-CO₂-Modbus
AERASGARD® AFTM-(LQ)-CO₂-Modbus

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

S+S REGELTECHNIK

The maintenance-free, microprocessor-controlled AERASGARD® **AFTM-LQ-CO₂-Modbus** and **ACO₂ / ALQ-CO₂ / AFTM-CO₂-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, CO₂ 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 CO₂ 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 (CO₂) [ppm] and atmospheric pressure [hPa].

The CO₂ 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® CO₂ sensor.

The explanations above demonstrate that there are applications for CO₂ 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 CO₂ measuring instrument measures selectively and cannot detect any VOC; a VOC mixed gas sensor cannot recognize CO₂ molecules.

Display screen (cyclic) — Modbus Tyr 2

Temperature

Humidity

Air quality (VOC)

Carbon dioxide (CO₂)

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 (CO₂) [ppm], atmospheric pressure [hPa]
HUMIDITY	
Sensors:	**digital humidity sensor with integrated temperature sensor,** low hysteresis, high long-term stability
Sensor protection:	**plastic** sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional **metal** sinter filter, 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 **± 2.0 %** (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) **with automatic calibration** (VOC = volatile organic compounds)
Measuring range, VOC:	0...100 % air quality; referred to calibrating gas; **multi-range switching** 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 (CO₂)	
Sensor, CO₂:	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) **with automatic and manual calibration**
Measuring range, CO₂:	0...5000 ppm
Measuring accuracy, CO₂:	typically ± 30 ppm ± 3 % of measured value
Temperature dependence, CO₂:	± 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

Display screen (static) — Modbus Tyr 2

Carbon dioxide (CO₂)

Atmospheric pressure

Programmable display screen — Modbus Tyr 2

(continued on next page!)

AERASGARD® **ACO₂ / ALQ - CO₂ - Modbus**
AERASGARD® **AFTM - (LQ) - CO₂ - Modbus**

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Dimensional drawing

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

126 · 90 · 50 · 112 · 20 · ~137 · 4 · ~35 · ø 16 · M16x1.5 · ~32 · ø 16

SF-K
Plastic sinter filter
(standard)

SF-M
Metal sinter filter
(optional)
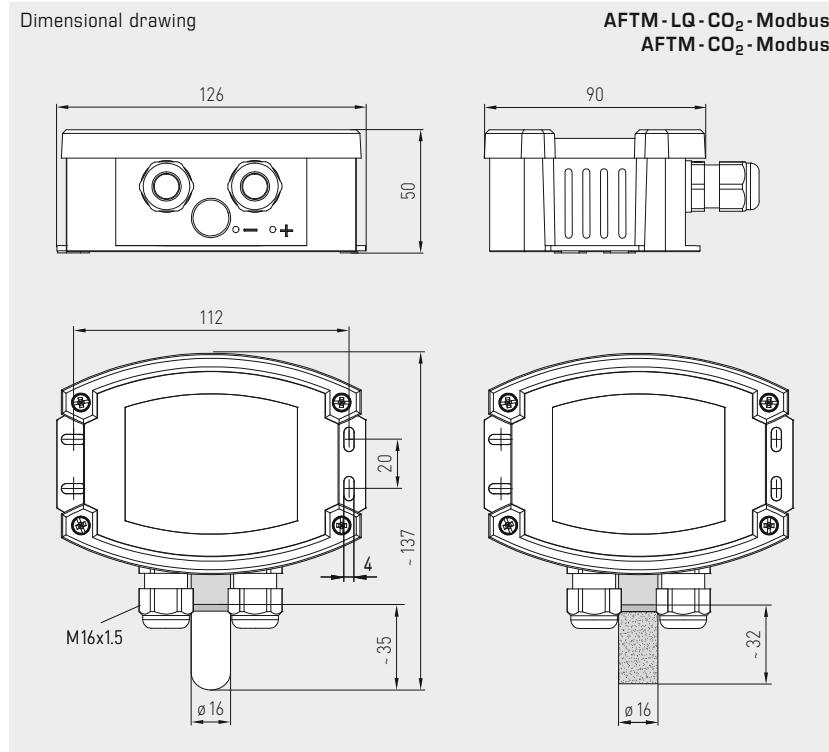
AFTM - LQ - CO₂ - Modbus
AFTM - CO₂ - Modbus
with plastic sinter filter
(standard)

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

350 PPM

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 mm², via push-in terminal
Housing:	plastic, UV-stabilised, 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)
Cable connection:	**cable gland**, plastic (M 16 x 1.5; with strain relief, exchangeable, inner diameter 10.4 mm) **or** **M12 connector** according to DIN EN 61076-2-101 (optional on request)
Protective tube:	**stainless steel V2A** (1.4301), Ø 16 mm, NL = 55 mm
Process connection:	by screws
Protection class:	III (according to EN 60 730)
Protection type:	**IP 65** (according to EN 60 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU
Optional:	**Display with illumination,** 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 (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® ACO₂ / ALQ - CO₂ - Modbus
AERASGARD® AFTM - (LQ) - CO₂ - Modbus

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S+S REGELTECHNIK

Dimensional drawing — ACO₂-Modbus / ALQ-CO₂-Modbus

126
112
90
50
4
20
M16x1.5
112
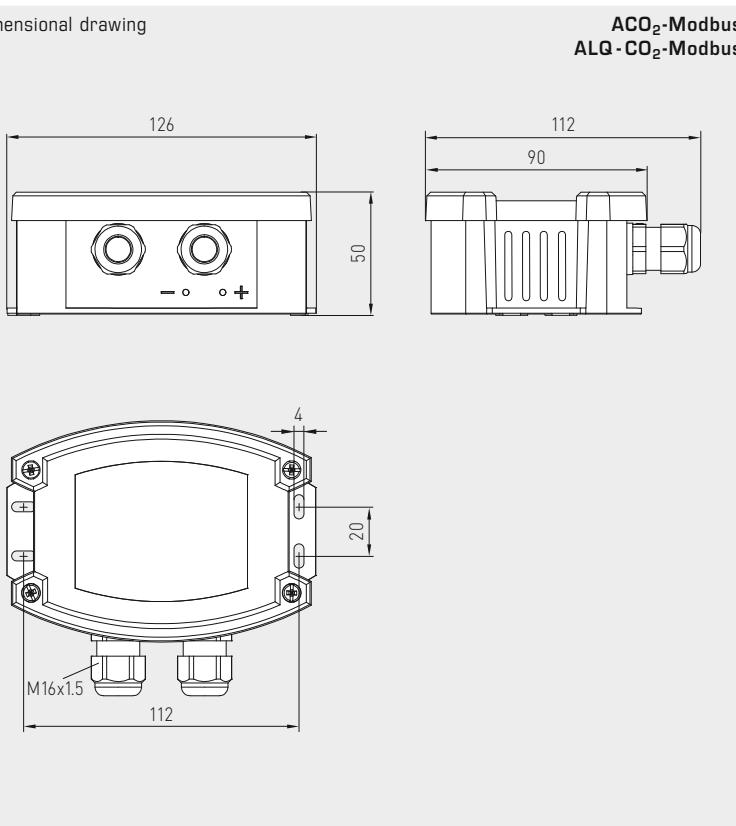
**ACO₂-Modbus
ALQ-CO₂-Modbus**

Dimensional drawing — AFTM-LQ-CO₂-Modbus / AFTM-CO₂-Modbus

112
20
~137
4
~35
M16x1.5
ø 16

SF-K
plastic sinter filter
(standard)

112
20
~134
4
~32
M16x1.5
ø 16

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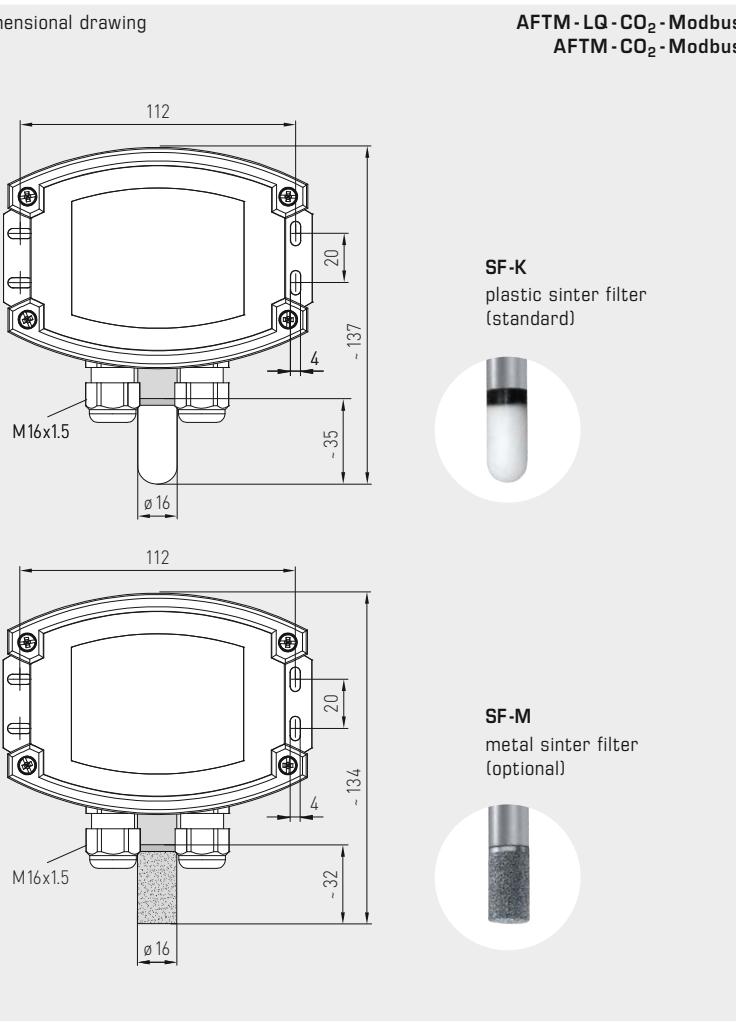
**AFTM - LQ - CO₂ - Modbus
AFTM - CO₂ - Modbus
with metal sinter filter
(optional)**

AERASGARD® ACO₂ / ALQ - CO₂ - Modbus
AERASGARD® AFTM - (LQ) - CO₂ - Modbus

Multifunctional on-wall sensors and measuring transducers,
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Schematic diagram · AFTM - LQ - CO₂ - Modbus

AFTM - LQ - CO₂ - Modbus
with display

Plug for display

offset: CO₂ VOC r.H. °C

mode — DIP B (ON 1 2 3 4 5 6)
address — DIP A (ON 1 2 3 4 5 6 7 8)

CO₂ VOC zero

4 B
3 A
2 GND
1 U+

B 4
A 3
GND 2
U+ 1

DIP A: Bus address
DIP B: Bus parameters (Baud rate, parity ...)

Telegram indicator
Reception (LED green)
Error (LED red)

Offset correction

LED (internal status)

Reset button
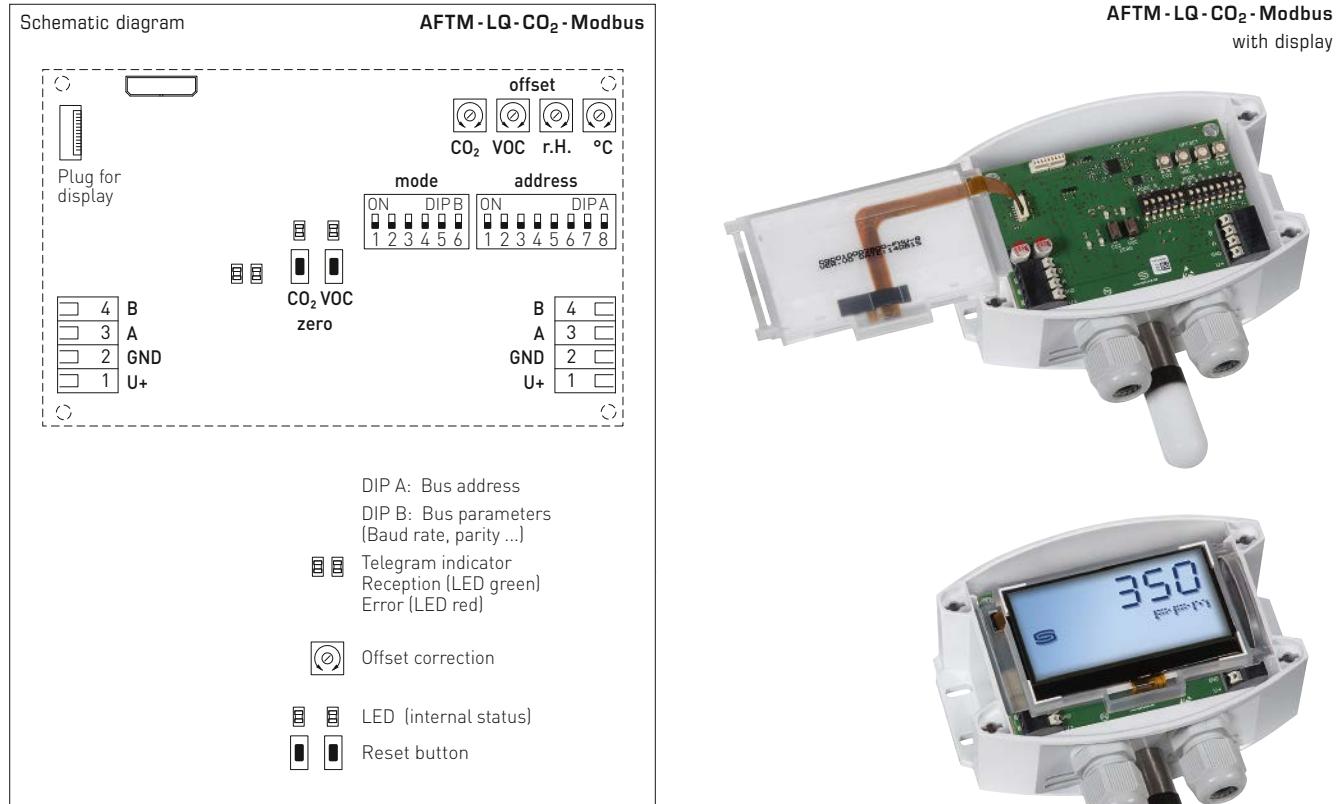
AERASGARD® **ACO₂ - Modbus**	On-wall sensor for CO_2 content, *Deluxe*
AERASGARD® **ALQ - CO₂ - Modbus**	On-wall sensor for CO_2 content and air quality (VOC), *Deluxe*
AERASGARD® **AFTM - CO₂ - Modbus**	Multifunctional on-wall sensor for humidity, temperature and CO_2 content, *Deluxe*
AERASGARD® **AFTM - LQ - CO₂ - Modbus**	Multifunctional on-wall sensor for humidity, temperature, CO_2 content and air quality (VOC), *Deluxe*

Type / WG02	Measuring Range Humidity	Temperature	CO₂	VOC	Display	Item No.	Price
ACO₂-Modbus							
ACO2 MODBUS	–	–	5000 ppm	–		1501-7110-6001-200	**334,56 €**
ACO2 MODBUS LCD	–	–	5000 ppm	–	■	1501-7110-6071-200	**386,63 €**
ALQ - CO₂-Modbus							
ALQ-CO2 MODBUS	–	–	5000 ppm	0...100 %		1501-7111-6001-200	**447,47 €**
ALQ-CO2 MODBUS LCD	–	–	5000 ppm	0...100 %	■	1501-7111-6071-200	**521,70 €**
AFTM - CO₂-Modbus							
AFTM-CO2 MODBUS	0...100 % r.H.	−35...+80 °C	5000 ppm	–		1501-7116-6001-200	**417,15 €**
AFTM-CO2 MODBUS LCD	0...100 % r.H.	−35...+80 °C	5000 ppm	–	■	1501-7116-6071-200	**497,66 €**
AFTM - LQ - CO₂-Modbus							
AFTM-LQ-CO2 MODBUS	0...100 % r.H.	−35...+80 °C	5000 ppm	0...100 %		1501-7118-6001-200	**530,28 €**
AFTM-LQ-CO2 MODBUS LCD	0...100 % r.H.	−35...+80 °C	5000 ppm	0...100 %	■	1501-7118-6071-200	**625,21 €**
Note:	This unit **must not** be used as safety-relevant device!						
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101					on request	
ACCESSORIES							
KA2 -Modbus	**Communication adapter** (USB/RS485) for system connection					1906-1200-0000-100	**185,00 €**
LA-Modbus	**Line termination device** (with terminating resistor) as an active bus termination					1906-1300-0000-100	**69,00 €**
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)					7000-0050-2200-100	**36,59 €**
WS-03	**Weather and sun protection hood**, 200 x 180 x 150 mm, stainless steel **V2A** (1.4301)					7100-0040-6000-000	**38,68 €**
	For further information see last chapter!						