AERASGARD® ACO_2 / ALQ - CO_2 - Modbus
AERASGARD® AFTM - (LQ) - CO_2 - Modbus

Multifunctional on-wall sensors and measuring transducers, for humidity, temperature, CO_2 content and air quality (VOC), calibratable, with Modbus connection

S+S REGELTECHNIK

The maintenance-free, microprocessor-controlled **AER**ASGARD® **AFTM - LQ - CO_2 - Modbus** and **ACO_2 / ALQ - CO_2 / AFTM - CO_2 - 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_2 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_2 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_2) [ppm] and atmospheric pressure [hPa].

The CO_2 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_2 sensor.

The explanations above demonstrate that there are applications for CO_2 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_2 measuring instrument measures selectively and cannot detect any VOC; a VOC mixed gas sensor cannot recognize CO_2 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_2) [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 (CO_2)	
Sensor, CO_2:	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) **with automatic and manual calibration**
Measuring range, CO_2:	0...5000 ppm
Measuring accuracy, CO_2:	typically ± 30 ppm ± 3 % of measured value
Temperature dependence, CO_2:	± 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_2)

Display screen (static) — **Modbus Tyr 2**

Carbon dioxide (CO_2)

Atmospheric pressure

Programmable display screen — **Modbus Tyr 2**


Programmable display screen

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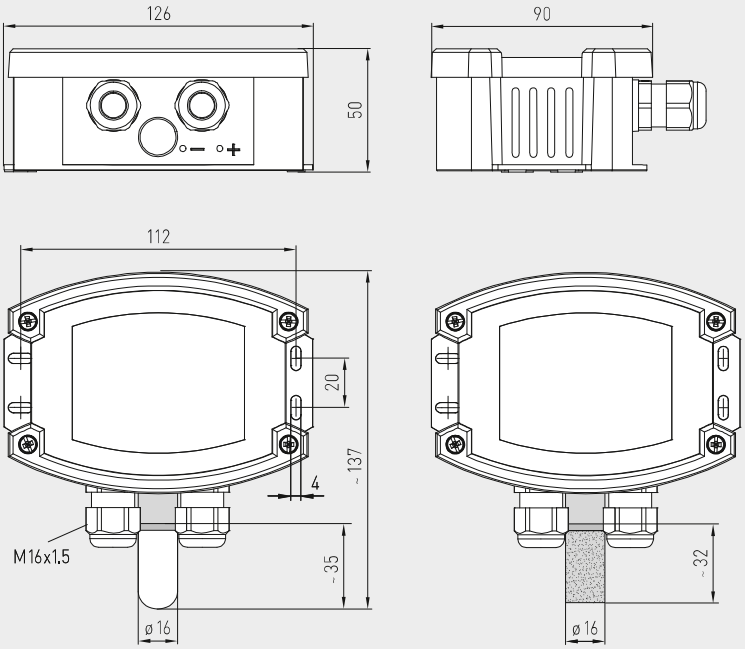
Dimensional drawing

AFTM - LQ - CO_2 - Modbus
AFTM - CO_2 - Modbus



AFTM - LQ - CO_2 - Modbus
AFTM - CO_2 - Modbus
with plastic sinter filter (standard)

AFTM - LQ - CO_2 - Modbus
AFTM - CO_2 - 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^2, 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 CO_2 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

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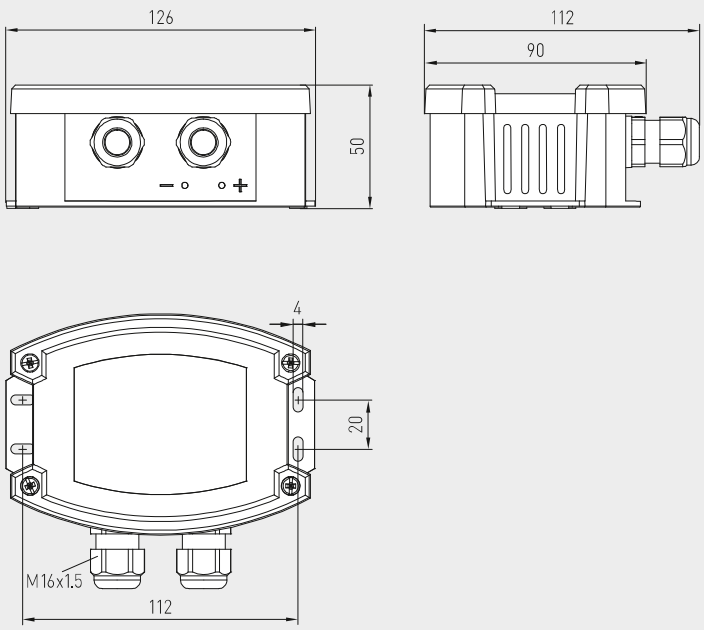
S+S REGELTECHNIK

Dimensional drawing

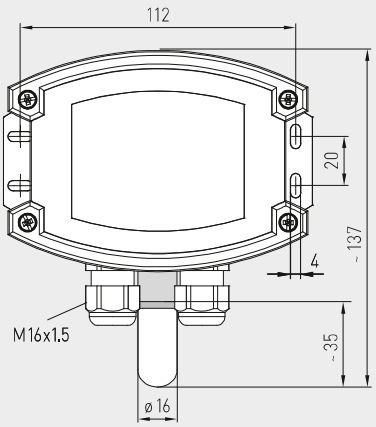
ACO_2-Modbus
ALQ - CO_2-Modbus



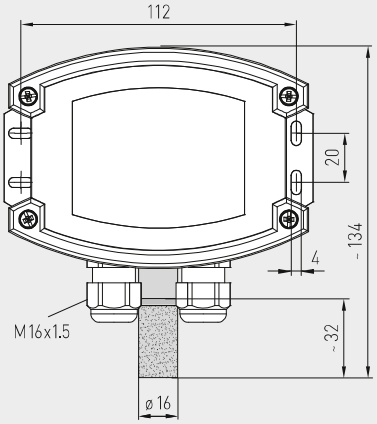
ACO_2-Modbus
ALQ - CO_2-Modbus

Dimensional drawing

AFTM - LQ - CO_2 - Modbus
AFTM - CO_2 - Modbus



SF-K
plastic sinter filter
(standard)



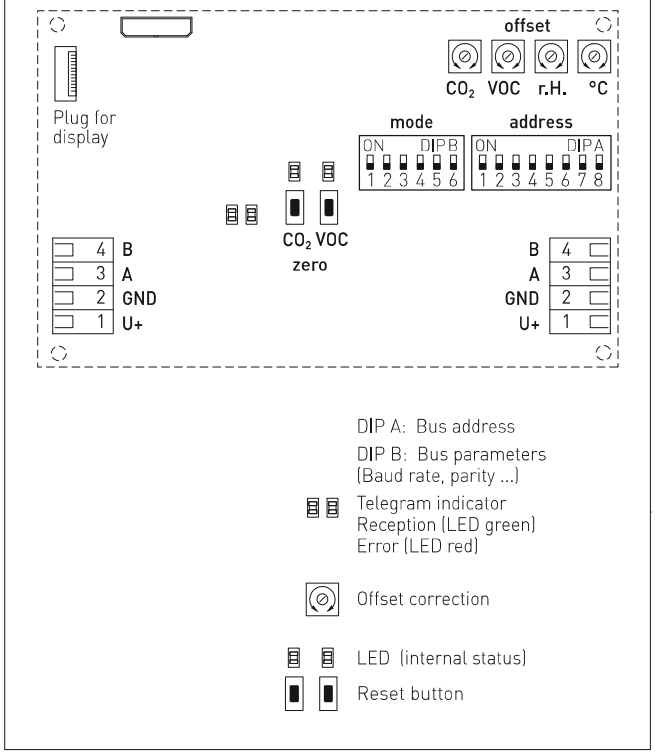
SF-M
metal sinter filter
(optional)

AFTM - LQ - CO_2 - Modbus
AFTM - CO_2 - Modbus
with metal sinter filter
(optional)

AERASGARD® ACO_2 / ALQ-CO_2-Modbus
AERASGARD® AFTM-(LQ)-CO_2-Modbus

Multifunctional on-wall sensors and measuring transducers, for humidity, temperature, CO_2 content and air quality (VOC), calibratable, with Modbus connection

Schematic diagram **AFTM-LQ-CO_2-Modbus**



AFTM-LQ-CO_2-Modbus
with display

AERASGARD® **ACO_2-Modbus**	On-wall sensor for CO_2 content, *Deluxe*
AERASGARD® **ALQ-CO_2-Modbus**	On-wall sensor for CO_2 content and air quality (VOC), *Deluxe*
AERASGARD® **AFTM-CO_2-Modbus**	Multifunctional on-wall sensor for humidity, temperature and CO_2 content, *Deluxe*
AERASGARD® **AFTM-LQ-CO_2-Modbus**	Multifunctional on-wall sensor for humidity, temperature, CO_2 content and air quality (VOC), *Deluxe*

Type / WG02	Measuring Range Humidity	Temperature	CO_2	VOC	Display	Item No.
ACO_2-Modbus						
ACO2 MODBUS	–	–	5000 ppm	–		1501-7110-6001-200
ACO2 MODBUS LCD	–	–	5000 ppm	–	■	1501-7110-6071-200
ALQ-CO_2-Modbus						
ALQ-CO2 MODBUS	–	–	5000 ppm	0...100 %		1501-7111-6001-200
ALQ-CO2 MODBUS LCD	–	–	5000 ppm	0...100 %	■	1501-7111-6071-200
AFTM-CO_2-Modbus						
AFTM-CO2 MODBUS	0...100 % r.H.	–35...+80 °C	5000 ppm	–		1501-7116-6001-200
AFTM-CO2 MODBUS LCD	0...100 % r.H.	–35...+80 °C	5000 ppm	–	■	1501-7116-6071-200
AFTM-LQ-CO_2-Modbus						
AFTM-LQ-CO2 MODBUS	0...100 % r.H.	–35...+80 °C	5000 ppm	0...100 %		1501-7118-6001-200
AFTM-LQ-CO2 MODBUS LCD	0...100 % r.H.	–35...+80 °C	5000 ppm	0...100 %	■	1501-7118-6071-200
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
LA-Modbus	**Line termination device** (with terminating resistor) as an active bus termination					1906-1300-0000-100
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeablevstainless steel **V4A** (1.4404)					7000-0050-2200-100
WS-03	**Weather and sun protection hood**, 200 x 180 x 150 mm, stainless steel **V2A** (1.4301)					7100-0040-6000-000
	For further information see last chapter!					