

**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 m² 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:	SI (default) or Imperial (switchable via Modbus)
Data points:	temperature [°C] [°F], relative humidity [%RH], atmospheric pressure [hPa], air quality (VOC) [%], carbon dioxide (CO2) [ppm]

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 % RH
Operating range, humidity:	0...95 % RH (without dew formation)
Accuracy humidity:	typically ± 2.0 % (20...80 % RH) at +25 °C, otherwise ± 3.0 %

TEMPERATURE

Measuring range, temperature:	-35...+80 °C
Operating range, temperature:	-10...+60 °C
Accuracy 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 sensitivities (low/medium/high)
Measuring accuracy (VOC):	typically ± 20 % of final value (referred to calibrating gas)
Service life (VOC):	> 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 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 higher)
Pressure dependence (CO2):	± 0.13 % per mm Hg
Long-term stability (CO2):	< 2 % in 15 years
Gas exchange (CO2):	by diffusion

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



Continued on next page!



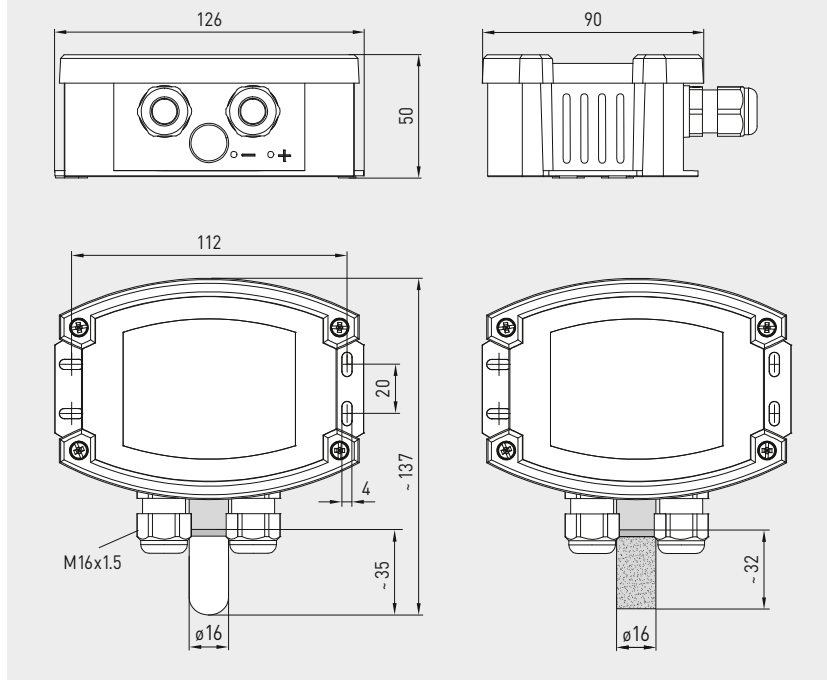
S+S REGELTECHNIK

AERASGARD® AC02 / 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

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 ² , ia push-in terminal
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)
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:	stainless steel V2A (1.4301), Ø 16 mm, NL = 55 mm
Process connection:	by screws
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529)
Standards:	CE conformity according to 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

ACCESSORIES see table

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

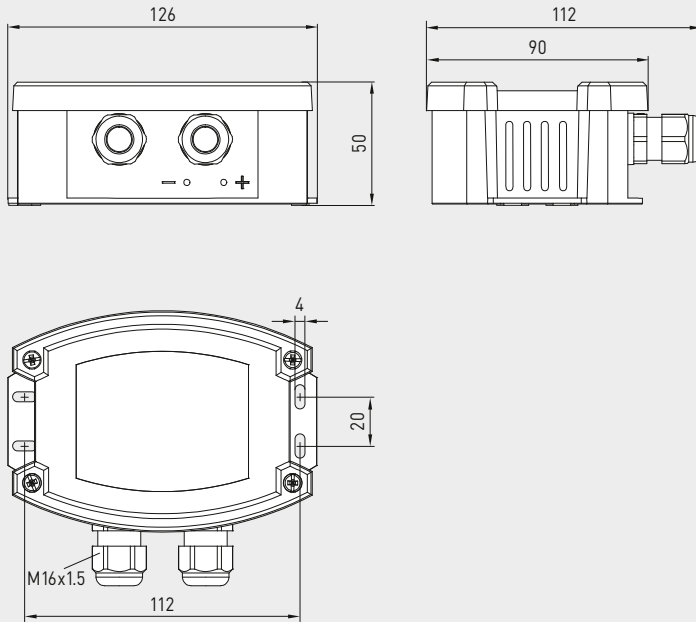


S+S REGELECHNIK

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

Dimensional drawing

AC02-Modbus
 ALQ - CO2-Modbus

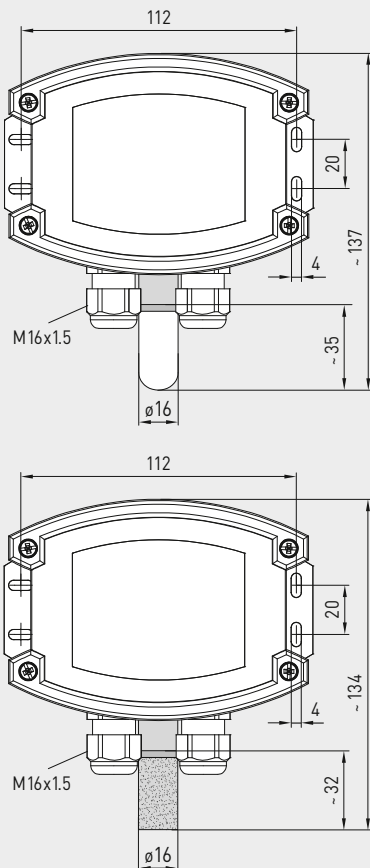


AC02-Modbus
 ALQ - CO2-Modbus



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)

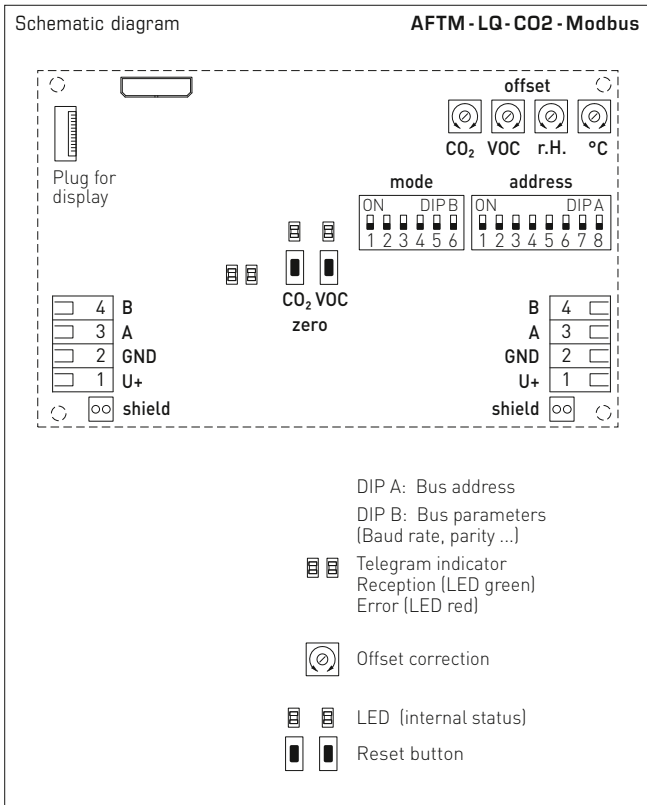




S+S REGELTECHNIK

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

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



AFTM - LQ - CO2 - Modbus
with display



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

Type / WG02	Measuring Range	Display	Item No.
	Humidity Temperature*	CO ₂ VOC	
AC02-Modbus			
AC02-Modbus	– –	5000 ppm –	1501-7110-6001-200
AC02-Modbus LCD	– –	5000 ppm –	■ 1501-7110-6071-200
ALQ - CO2-Modbus			
ALQ-CO2-Modbus	– –	5000 ppm 0..100%	1501-7111-6001-500
ALQ-CO2-Modbus LCD	– –	5000 ppm 0..100%	■ 1501-7111-6071-500
AFTM - CO2-Modbus			
AFTM-CO2-Modbus	0..100% RH –35...+80 °C	5000 ppm –	1501-7116-6001-200
AFTM-CO2-Modbus LCD	0..100% RH –35...+80 °C	5000 ppm –	■ 1501-7116-6071-200
AFTM - LQ - CO2-Modbus			
AFTM-LQ-CO2-Modbus	0..100% RH –35...+80 °C	5000 ppm 0..100%	1501-7118-6001-500
AFTM-LQ-CO2-Modbus LCD	0..100% RH –35...+80 °C	5000 ppm 0..100%	■ 1501-7118-6071-500
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101		on request
Note:	This unit must not be used as safety-relevant device!		
	* 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
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, exchangeable, stainless 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!