AERASGARD® ACO2-W / ALQ-CO2-W
AERASGARD® AFTM-(LQ)-CO2-W / ATM-CO2-SD

Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO2 content and air quality (VOC),
calibratable, with active/switching output

S+S REGELTECHNIK

Maintenance-free on-wall sensor **AER**ASGARD® **ATM-CO2-SD** with active output, automatic calibration, in an impact-resistant plastic housing with quick-locking screws, for determining the CO2 content of the air (0...2000 ppm/0...5000 ppm) and the temperature (−35...+80 °C). The measuring transducer converts the measured values into a standard signal of 0-10 V.

Maintenance-free on-wall sensor **AER**ASGARD® **AFTM-LQ-CO2-W** with active/switching output, automatic calibration, in an impact-resistant plastic housing with quick-locking screws, optionally with/without Display, for determining the CO2 content of the air (0...2000 ppm/0...5000 ppm), the quality (0...100 % VOC), the temperature (−35...+80 °C) as well as the relative air humidity (0...100 % RH). The measuring transducer converts the measured values into a standard signal of 0-10 V or 4...20 mA (switchable).

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 room area 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. As an alternative, use IAQ categories (from excellent to unhealthy) following the guidelines of the German Federal Environmental Agency to assess the room air.

TECHNICAL DATA

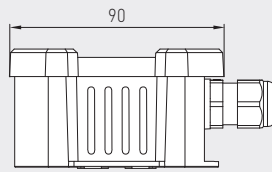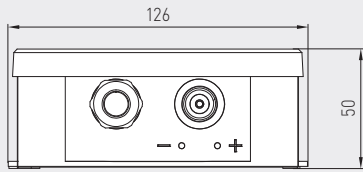|	
Voltage supply:	24 V AC / DC (± 10 %)
Power consumption:	< 4.8 W / 24 V DC typical; < 6.8 VA / 24 V AC typical; peak current 200 mA
Outputs:	**Axx-SD** 0-10 V (fixed) **Axx-W** 0-10 V **or** 4...20 mA, working resistance < 800 Ω (selectable via DIP switches, selected variant applies for all outputs), with offset potentiometer (± 10 % of the measuring range)
Relay output:	**Axx-SD** without changeover contact **Axx-W** with potential-free **changeover contact** (24 V / 1 A)
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 %
Output, humidity:	0-10 V **or** 4...20 mA (selectable via DIP switches)
TEMPERATURE	
Measuring range, temperature:	−35...+80 °C
Operating range, temperature:	−10...+60 °C
Accuracy temperature:	typically ± 0.4 K at 25 °C
Output, temperature:	**Axx-SD** 0-10 V (fixed) **Axx-W** 0-10 V **or** 4...20 mA (selectable via DIP switches)
AIR QUALITY (VOC)	
Sensor, VOC:	VOC sensor (metal oxide) (VOC = volatile organic compounds), with manual calibration (using zero button) and automatic calibration (permanently active)
Measuring range, VOC:	0...100 % air quality; referred to calibrating gas; **multi-range switching** (selectable via DIP switches) VOC sensitivities (low/medium/high) or IAQ category (Indoor Air Quality)
Output, VOC:	0-10 V (0 V = clean air, 10 V = polluted air) **or** 4...20 mA (selectable via DIP switches, switchpoint can be adjusted from 0...100 % of the output signal)
Accuracy VOC:	typically ± 20 % of final value (referred to calibrating gas)
Service life:	> 60 months (under normal load conditions) depending on the type of loading and gas concentration
CARBON DIOXIDE (CO2)	
Sensor, CO2:	optical NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button), **Axx-SD** with automatic calibration (fixed) **Axx-W** with automatic calibration (can be deactivated via DIP switches)
Measuring range, CO2:	0...2000 ppm **or** 0...5000 ppm (selectable via DIP switches)
Output, CO2:	**Axx-SD** 0-10 V (fixed) **Axx-W** 0-10 V **or** 4...20 mA (selectable via DIP switches)
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)

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Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO2 content and air quality (VOC),
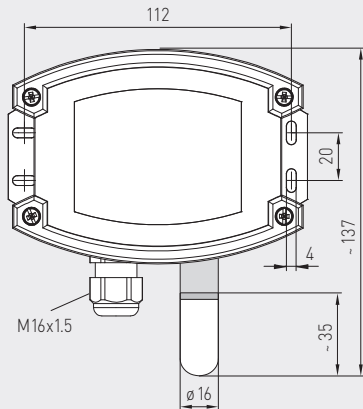calibratable, with active / switching output
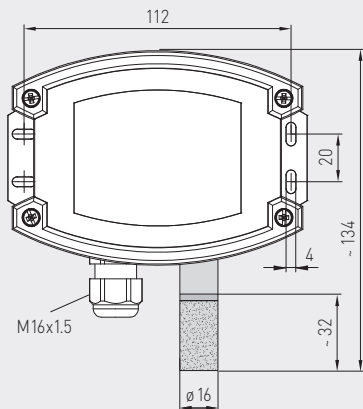
Dimensional drawing

AFTM-LQ-CO2-W

M12 connector
(optional on request)

SF-K
plastic sinter filter
(standard)

SF-M
metal sinter filter
(optional)

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

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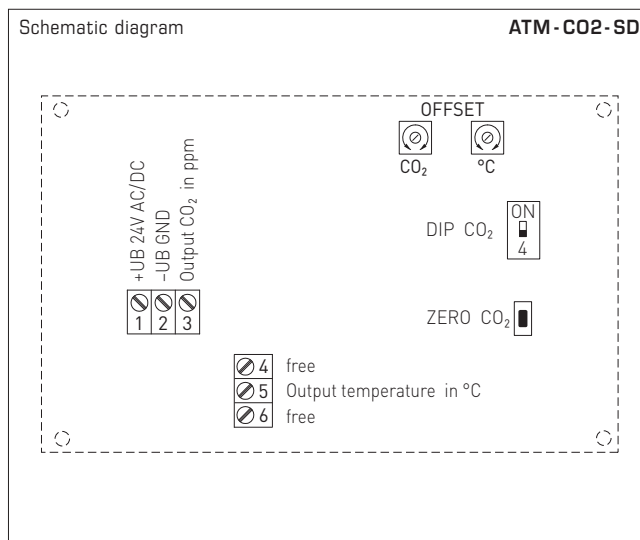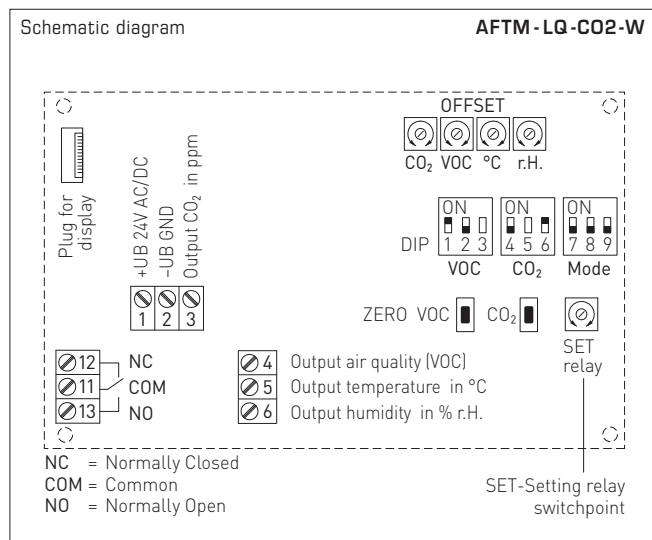with display and
plastic sinter filter
(standard)

TECHNICAL DATA (continued)

Pressure dependence:	± 0.13 % / mm Hg
Long-term stability:	< 2 % in 15 years
Gas exchange:	by diffusion
Ambient temperature:	−10...+60 °C
Response time:	< 2 minutes
Electrical connection:	0.14 - 1.5 mm², via screw terminals
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)
Cable connection:	**cable gland**, plastic (M 16 x 1.5; with strain relief, exchangeable, max. 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 according to EMC Directive 2014 / 30 / EU
Optional:	three-line **display with illumination,** cutout approx. 70 x 40 mm (W x H), for displaying actual humidity, actual temperature, air quality and / or the actual CO2 content

Multifunctional on-wall sensors and measuring transducers,
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calibratable, with active / switching output

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Schematic diagram **AFTM-LQ-CO2-W**

NC = Normally Closed
COM = Common
NO = Normally Open

SET-Setting relay switchpoint

Schematic diagram **ATM-CO2-SD**

DIP switches		AFTM-LQ-CO2-W
VOC sensitivity	**DIP 1**	**DIP 2**
LOW	OFF	OFF
MEDIUM (default)	**ON**	OFF
HIGH	OFF	**ON**
IAQ (Indoor Air Quality)	**ON**	**ON**
CO2 content		**DIP 4**
0...2000 ppm (default)		OFF
0...5000 ppm		**ON**
CO2 automatic zero point		**DIP 6**
deactivated		OFF
activated (default)		**ON**
Relay assignment	**DIP 7**	**DIP 8**
CO2 (default): 600...1900 ppm / 900...4700 ppm	OFF	OFF
VOC: 10...95 %	**ON**	OFF
Temperature: −23...+74 °C	OFF	**ON**
Humidity: 10...95% RH	**ON**	**ON**
Output		**DIP 9**
Voltage 0-10 V (default)		OFF
Current 4...20 mA		**ON**
Note: **DIP 3** and **DIP 5** are not assigned!		

DIP switches	ATM-CO2-SD
CO2 content	**DIP 4**
0...2000 ppm (default)	OFF
0...5000 ppm	**ON**

Level	IAQ (Indoor Air Quality)	VOC
1	**excellent** no action required	**0...19** %
2	**good** prompt airing recommended	**20...39** %
3	**moderate** airing recommended	**40...59** %
4	**poor** increased airing required	**60...79** %
5	**unhealthy** intense airing necessary	**80...100** %

Table according to TVOC guidelines of the German Federal
Environmental Agency to assess indoor air contamination
(*Bundesgesundheitsbl - Gesundheitsforsch - Gesundheitsschutz 2007, 50: 990–1005*)

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AERASGARD® **ACO2-W / ALQ-CO2-W**
AERASGARD® **AFTM-(LQ)-CO2-W / ATM-CO2-SD**

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

Humidity table
MR: 0...100 % RH

% RH	U_A [V]	I_A [mA]	% RH	U_A [V]	I_A [mA]
0	0	4.0	60	6.0	13.6
5	0.5	4.8	65	6.5	14.4
10	1.0	5.6	70	7.0	15.2
15	1.5	6.4	75	7.5	16.0
20	2.0	7.2	80	8.0	16.8
25	2.5	8.0	85	8.5	17.6
30	3.0	8.8	90	9.0	18.4
35	3.5	9.6	95	9.5	19.2
40	4.0	10.4	100	10.0	20.0
45	4.5	11.2			
50	5.0	12.0			
55	5.5	12.8			
Continued at the right …					

Temperature table
MR: −35...+80 °C

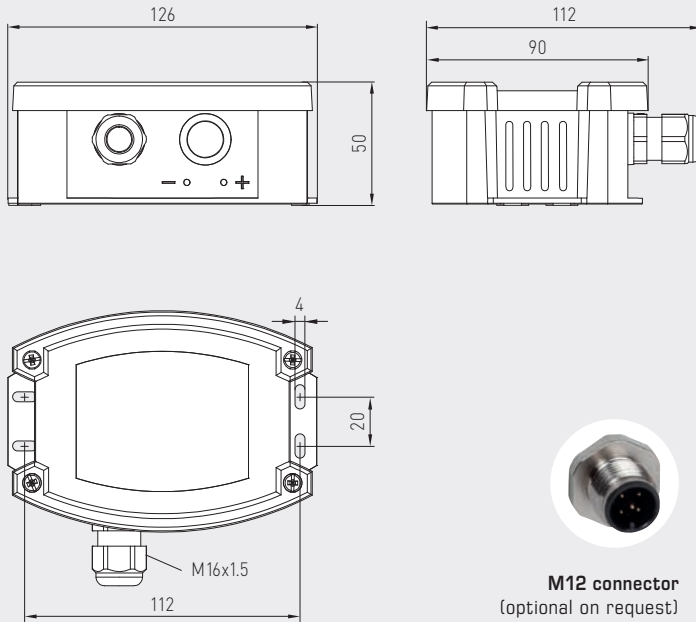| °C	U_A [V]	I_A [mA]	°C	U_A [V]	I_A [mA]
−35	0.0	4.0	+25	5.2	12.3
−30	0.4	4.7	+30	5.7	13.0
−25	0.9	5.4	+35	6.1	13.7
−20	1.3	6.1	+40	6.5	14.4
−15	1.7	6.8	+45	7.0	15.1
−10	2.2	7.5	+50	7.4	15.8
−5	2.6	8.2	+55	7.8	16.5
0	3.0	8.9	+60	8.3	17.2
+5	3.5	9.6	+65	8.7	17.9
+10	3.9	10.3	+70	9.1	18.6
+15	4.3	11.0	+75	9.6	19.3
+20	4.8	11.7	+80	10.0	20.0
Continued at the right …					

Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO2 content and air quality (**VOC**),
calibratable, with active / switching output
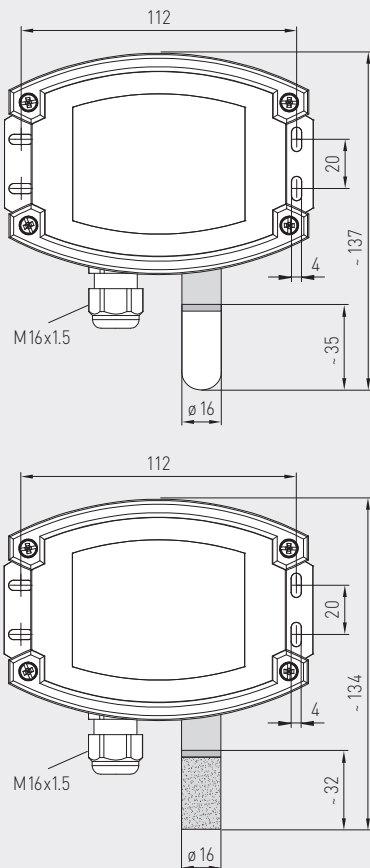
S+S REGELTECHNIK

Dimensional drawing

ACO2-W
ALQ-CO2-W

126

112
90

50

4
20

M16x1.5

112

M12 connector
(optional on request)

ACO2-W
ALQ-CO2-W

Dimensional drawing

AFTM-CO2-W
AFTM-LQ-CO2-W
ATM-CO2-SD

112

20

4

~ 137

M16x1.5

~ 35

ø 16

SF-K
plastic sinter filter
(standard)

112

20

4

~ 134

M16x1.5

~ 32

ø 16

SF-M
metal sinter filter
(optional)

AFTM-CO2-W
AFTM-LQ-CO2-W
ATM-CO2-SD
with metal sinter filter
(optional)

S+S REGELTECHNIK

Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, **CO2** content and air quality (**VOC**),
calibratable, with active / switching output

WS-03
Weather and sun protection hood
(optional)

AFTM - CO2 - W
AFTM - LQ - CO2 - W
ATM - CO2 - SD
with plastic sinter filter
(standard)

AERASGARD® **ATM - CO2 - SD**	On-wall temperature and CO2 sensor, *Standard*
AERASGARD® **ACO2 - W**	On-wall CO2 sensor, *Premium*
AERASGARD® **ALQ - CO2 - W**	On-wall air quality (VOC) and CO2 sensor, *Premium*
AERASGARD® **AFTM - CO2 - W**	Multifunctional on-wall sensor for humidity, temperature and CO2 content, *Deluxe*
AERASGARD® **AFTM - LQ - CO2 - W**	Multifunctional on-wall sensor for humidity, temperature, CO2 content and air quality (VOC), *Deluxe*

Typ / WG02	Measuring Range				Equipment		Item No.	Price
	Humidity	Temperature	CO2	VOC		Display	(Baldur 2)	
ATM - CO2 - SD			(switchable)					
ATM-CO2-SD-U	–	–35…+80 °C	0…2000 / 5000 ppm	–		–	1501-7112-1001-200	**333,82 €**
ACO2-W			(switchable)					
ACO2-W (without display)	–	–	0…2000 / 5000 ppm	–	W		see **ACO2-W / ACO2-SD**	
ACO2-W **LCD**	–	–	0…2000 / 5000 ppm	–	W	■	1501-7110-7371-200	**440,74 €**
ALQ - CO2 - W			(switchable)					
ALQ-CO2-W	–	–	0…2000 / 5000 ppm	0…100 %	W		1501-7111-7301-500	**501,81 €**
ALQ-CO2-W **LCD**	–	–	0…2000 / 5000 ppm	0…100 %	W	■	1501-7111-7371-500	**566,53 €**
AFTM - CO2 - W			(switchable)					
AFTM-CO2-W	0…100 % RH	–35…+80 °C	0…2000 / 5000 ppm	–	W		1501-7116-7301-200	**481,95 €**
AFTM-CO2-W **LCD**	0…100 % RH	–35…+80 °C	0…2000 / 5000 ppm	–	W	■	1501-7116-7371-200	**578,33 €**
AFTM - LQ - CO2 - W			(switchable)					
AFTM-LQ-CO2-W	0…100 % RH	–35…+80 °C	0…2000 / 5000 ppm	0…100 %	W		1501-7118-7301-500	**631,13 €**
AFTM-LQ-CO2-W **LCD**	0…100 % RH	–35…+80 °C	0…2000 / 5000 ppm	0…100 %	W	■	1501-7118-7371-500	**755,48 €**

Outputs:	**0-10 V or 4...20 mA** (selectable via DIP switches, selected variant applies for all outputs) – *Standard* on-wall sensor **ATM - CO2 - SD** with fixed output 0-10 V!
Equipment:	**W = changeover contact** – *Standard* on-wall sensor **ATM - CO2 - SD** without changeover contact !
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!

ACCESSORIES			
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)	7000-0050-2200-100	**45,34 €**
WS-03	**Weather and sun protection hood**, 200 x 180 x 150 mm, stainless steel **V2A** (1.4301)	7100-0040-6000-000	**47,92 €**
	For further information see last chapter!		