AERASGARD® ACO₂-W / ALQ-CO₂-W
AERASGARD® AFTM-LQ-CO₂

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

NEW

S+S REGELTECHNIK

The maintenance-free, microprocessor-controlled **AER**ASGARD® **AFTM-LQ-CO₂** or **ACO₂-W / ALQ-CO₂-W** 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). All measurands are converted to standard signals (0-10 V or 4…20 mA). As an option, the measurands can also be continuously indicated in the illuminated display. By using a single device to monitor all four measurands, it is possible to effectively monitor and regulate the entire room climate. The AFTM-LQ-CO₂ or ACO₂-W / ALQ-CO₂-W measures CO₂ in the range of 0…2000 ppm or 0…5000 ppm, VOC at one of three selectable sensitivity levels LOW / MEDIUM (default) / HIGH, temperatures in the range of −35…+80 °C, as well as relative air humidity from 0…100 % r.H.

The relative humidity (% r.H.) quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature. A digital, long-term stable sensor used as measuring element for relative air humidity and temperature guarantees exact measurement results.

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. For more information, see the start of the chapter.

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:	**0-10 V or 4…20 mA (selectable via DIP switches**, selected variant applies for all outputs), working resistance < 800 Ω

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. (output equivalent to 0-10 V or 4…20 mA)
Operating range, humidity:	0…95 % r.H. (without dew formation)
Deviation of humidity:	**± 3 % r.H.** (20…80 %) at +20 °C, otherwise ± 5 % r.H.
Output, humidity:	**0-10 V or 4…20 mA (selectable via DIP switches)**

TEMPERATURE

Measuring range, temperature:	−35…+80 °C (output equivalent to 0-10 V or 4…20 mA)
Operating range, temperature:	−10…+60 °C
Temperature deviation:	± 0.2 K at 25 °C
Output, temperature:	**0-10 V or 4…20 mA (selectable via DIP switches)**

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** (selectable via DIP switches) VOC sensitivity low, medium, high
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)
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) **with automatic and manual calibration**
Measuring range, CO₂:	**multi-range switching** (selectable via DIP switches) 0…2000 ppm; 0…5000 ppm
Output, CO₂:	**0-10 V or 4…20 mA (selectable via DIP switches)**
Measuring accuracy, CO₂:	± 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

(continued on next page!)

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Dimensional drawing   **AFTM-LQ-CO₂**

126

90

50

112

20

~ 137

4

~ 35

M 16 x 1.5

ø 16

SF-K
plastic sinter filter
(standard)

112

20

~ 134

4

~ 32

M 16 x 1.5

ø 16

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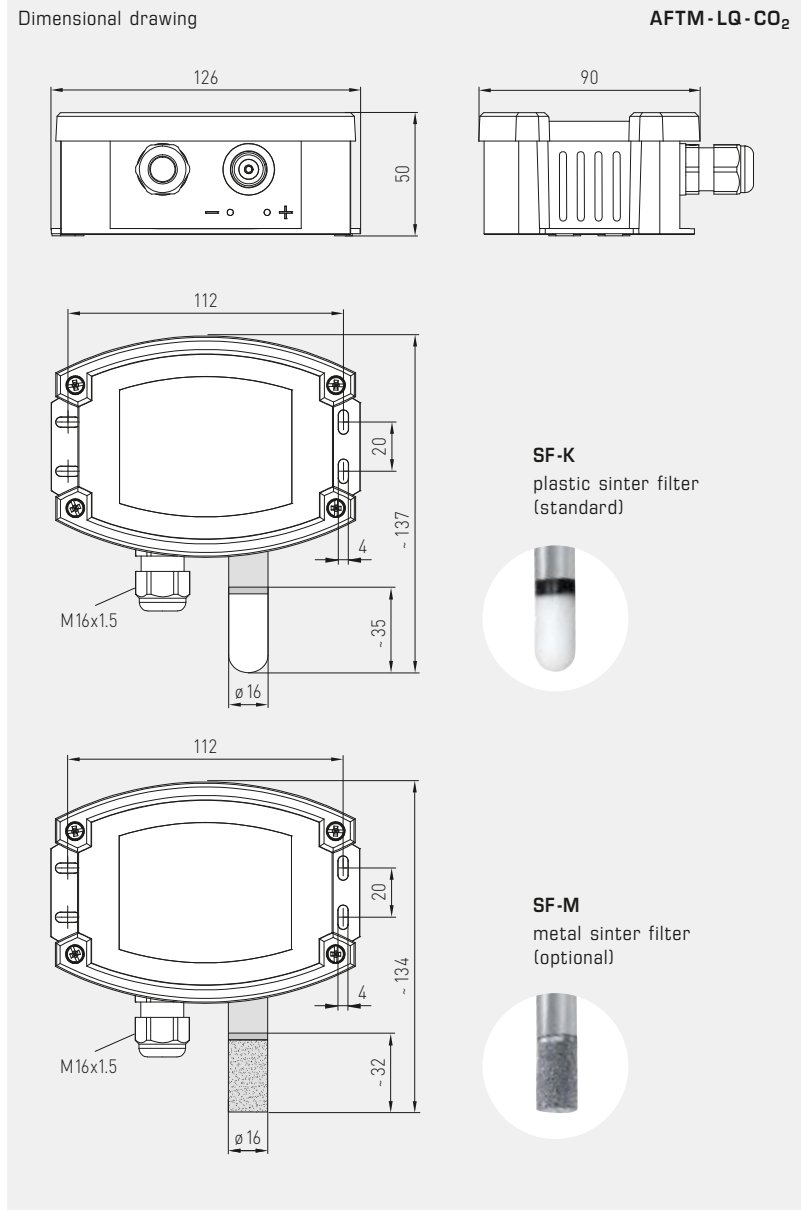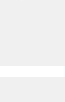
AFTM-LQ-CO₂
with plastic sinter filter
(standard)

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

TECHNICAL DATA   (continued)

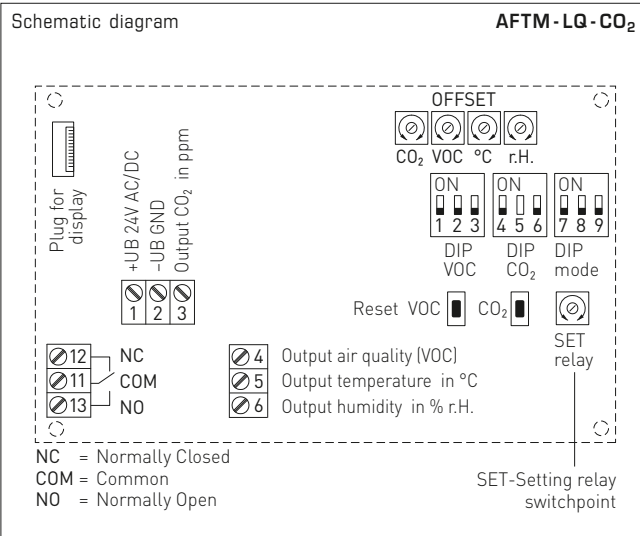|	
Relay output:	with potential-free changeover contact (24 V), 1 A ohmic load (assignment selectable via DIP switches)
Ambient temperature:	–10...+60 °C
Response time:	< 2 minutes
Electrical connection:	0.14 - 1.5 mm², via screw terminals
Enclosure:	plastic, polyamide, 30 % glass-globe reinforced, with 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 (Typ 2)
Cable gland:	M 16 x 1.5; including strain relief, exchangeable
Protective tube:	**stainless steel**, 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:	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

AERASGARD® ACO$_2$-W / ALQ-CO$_2$-W
AERASGARD® AFTM-LQ-CO$_2$

Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO$_2$ content and air quality (VOC),
calibratable, with active / switching output

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Schematic diagram   **AFTM-LQ-CO$_2$**

NC = Normally Closed
COM = Common
NO = Normally Open

SET-Setting relay switchpoint

DIP switches	AFTM-LQ-CO$_2$	
VOC sensitivity	DIP 1	DIP 2
LOW	OFF	OFF
MEDIUM (default)	**ON**	OFF
HIGH	OFF	**ON**
VOC automatic zero point		DIP 3
deactivated		OFF
activated (default)		**ON**
CO$_2$ content		DIP 4
0...2000 ppm (default)		OFF
0...5000 ppm		**ON**
CO$_2$ automatic zero point		DIP 6
deactivated		OFF
activated (default)		**ON**
Relay assignment	DIP 7	DIP 8
CO$_2$ (default): 600...1900 ppm / 900...4700 ppm	OFF	OFF
VOC: 10...95 %	**ON**	OFF
Temperature: −23...+74 °C	OFF	**ON**
Humidity: 10...95% r.H.	**ON**	**ON**
Output		DIP 9
Voltage 0-10 V (default)		OFF
Current 4...20 mA		**ON**
Note: **DIP 5** is not assigned!		

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Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO₂ content and air quality (VOC),
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ACO₂-W / ALQ-CO₂-W
AFTM-LQ-CO₂
with display

Humidity table
MR: 0...100 % r.H.

% r.H.	U_A in V	I_A in mA	% r.H.	U_A in V	I_A in 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 in V	I_A in mA	°C	U_A in V	I_A in 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 …

AERASGARD® ACO₂ - W / ALQ - CO₂ - W
AERASGARD® AFTM - LQ - CO₂

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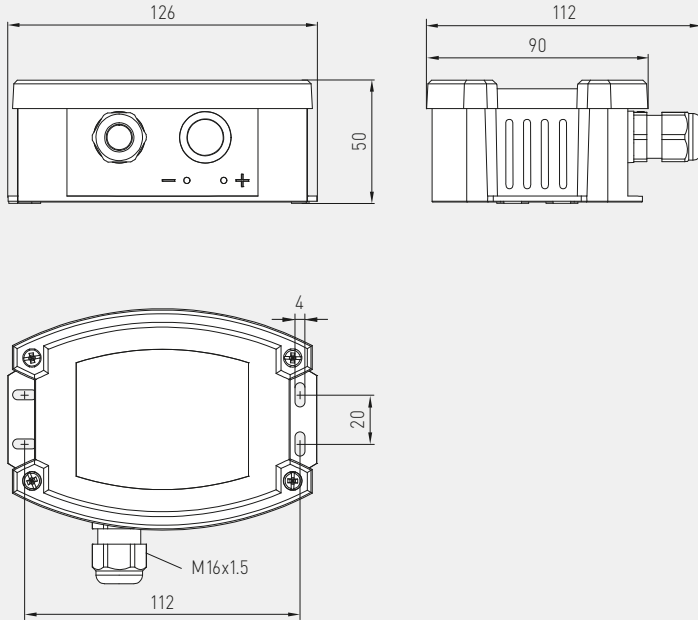
NEW

S+S REGELTECHNIK
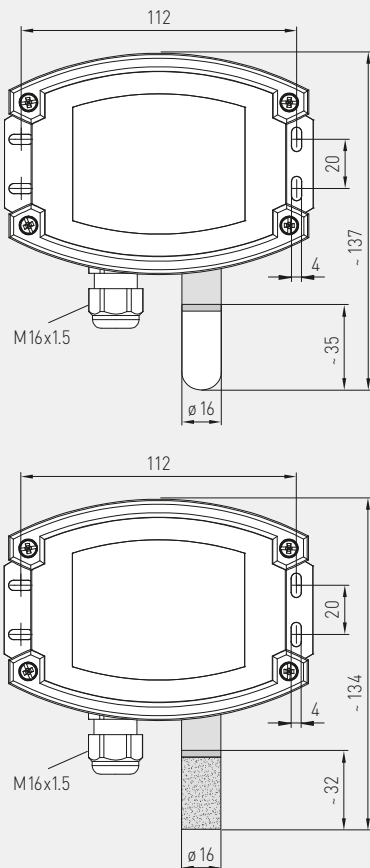

Dimensional drawing   **ACO₂-W**
ALQ-CO₂-W

126

112

90

50

4

20

M16x1.5

112

ACO₂-W
ALQ-CO₂-W

350
PPM
°C 1319

Dimensional drawing   **AFTM-CO₂**
AFTM-LQ-CO₂

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-xx
with metal sinter filter
(optional)

350
PPM
°C 1319

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AERASGARD® **ACO$_2$ - W / ALQ - CO$_2$ - W**
AERASGARD® **AFTM - LQ - CO$_2$**

Multifunctional on-wall sensors and measuring transducers,
for humidity, temperature, CO$_2$ content and air quality (VOC),
calibratable, with active / switching output

WS-03
Weather and sun protection
(optional)

AFTM - xx
with plastic sinter filter
(standard)

AER ASGARD® **ACO$_2$ - W**	On-wall sensor for CO$_2$ content, *Deluxe*
AER ASGARD® **ALQ - CO$_2$ - W**	On-wall sensor for CO$_2$ content and air quality (VOC), *Deluxe*
AER ASGARD® **AFTM - CO$_2$**	Multifunctional on-wall sensor for humidity, temperature and CO$_2$ content, *Deluxe*
AER ASGARD® **AFTM - LQ - CO$_2$**	Multifunctional on-wall sensor for humidity, temperature, CO$_2$ content and air quality (VOC), *Deluxe*

Type / WG02	Measuring Range				Display	Item No.	Price
	Humidity	Temperature	CO$_2$	VOC			
ACO$_2$-W			(switchable)				
ACO2-W	–	–	0...2000 / 5000 ppm	–		1501-7110-7301-200	**306,00 €**
ACO2-W-DISPLAY	–	–	0...2000 / 5000 ppm	–	■	1501-7110-7371-200	**356,80 €**
ALQ - CO$_2$ - W			(switchable)				
ALQ-CO2-W	–	–	0...2000 / 5000 ppm	0...100 %		1501-7111-7301-200	**416,16 €**
ALQ-CO2-W-DISPLAY	–	–	0...2000 / 5000 ppm	0...100 %	■	1501-7111-7371-200	**488,38 €**
AFTM - CO$_2$			(switchable)				
AFTM-CO2-W	0...100 % r.H.	–35...+80 °C	0...2000 / 5000 ppm	–		1501-7116-7301-200	**389,24 €**
AFTM-CO2-W-DISPLAY	0...100 % r.H.	–35...+80 °C	0...2000 / 5000 ppm	–	■	1501-7116-7371-200	**465,12 €**
AFTM - LQ - CO$_2$			(switchable)				
AFTM-LQ-CO2-W	0...100 % r.H.	–35...+80 °C	0...2000 / 5000 ppm	0...100 %		1501-7118-7301-200	**496,95 €**
AFTM-LQ-CO2-W DISPLAY	0...100 % r.H.	–35...+80 °C	0...2000 / 5000 ppm	0...100 %	■	1501-7118-7371-200	**594,87 €**
Outputs:	**0 - 10 V or 4...20 mA** (selectable via DIP switches, selected variant applies for all outputs)						
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 (VA 1.4404)	7000-0050-2200-100	**35,70 €**
WS-03	**Weather and sun protection**, 200 x 180 x 150 mm, stainless steel	7100-0040-6000-000	**37,74 €**
	For further information see last chapter!		