

**Multifunctional on-wall sensors and measuring transducers,  
 for humidity, temperature, CO<sub>2</sub> content and air quality (VOC),  
 calibratable, with active/switching output**

The maintenance-free, microprocessor-controlled **AERASGARD® AFTM-LQ-CO<sub>2</sub>** or **ACO<sub>2</sub>-W / ALQ-CO<sub>2</sub>-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, CO<sub>2</sub> concentration as well as air quality (VOC). All measurands are converted to standard signals (0-10V 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-CO<sub>2</sub> or ACO<sub>2</sub>-W / ALQ-CO<sub>2</sub>-W measures CO<sub>2</sub> 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 CO<sub>2</sub> 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<sub>2</sub> sensor.

The explanations above demonstrate that there are applications for CO<sub>2</sub> 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<sub>2</sub> measuring instrument measures selectively and cannot detect any VOC; a VOC mixed gas sensor cannot recognize CO<sub>2</sub> 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:	<b>0-10V or 4...20 mA</b> (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:	<b>plastic</b> sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional <b>metal</b> sinter filter, Ø 16 mm, L = 32 mm)
Measuring range, humidity:	0...100% r.H. (output equivalent to 0-10V or 4...20 mA)
Operating range, humidity:	0...95% r.H. (without dew formation)
Deviation of humidity:	<b>± 3% r.H.</b> (20...80%) at +20 °C, otherwise ± 5% r.H.
Output, humidity:	<b>0-10V or 4...20 mA</b> (selectable via DIP switches)

#### TEMPERATURE

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

#### AIR QUALITY (VOC)

Sensor, VOC:	VOC sensor (metal oxide) <b>with automatic calibration</b> (VOC = volatile organic compounds)
Measuring range, VOC:	0...100% air quality; referred to calibrating gas; <b>multi-range switching</b> (selectable via DIP switches) VOC sensitivity low, medium, high
Output, VOC:	<b>0-10V</b> (0V = clean air, 10V = polluted air) <b>or 4...20 mA</b> (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 (CO<sub>2</sub>)

Sensor, CO <sub>2</sub> :	optical NDIR sensor (non-dispersive infra-red technology) <b>with automatic and manual calibration</b>
Measuring range, CO <sub>2</sub> :	<b>multi-range switching</b> (selectable via DIP switches) 0...2000 ppm; 0...5000 ppm
Output, CO <sub>2</sub> :	<b>0-10V or 4...20 mA</b> (selectable via DIP switches)
Measuring accuracy, CO <sub>2</sub> :	± 30 ppm ± 3% of measured value
Temperature dependence, CO <sub>2</sub> :	± 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!)

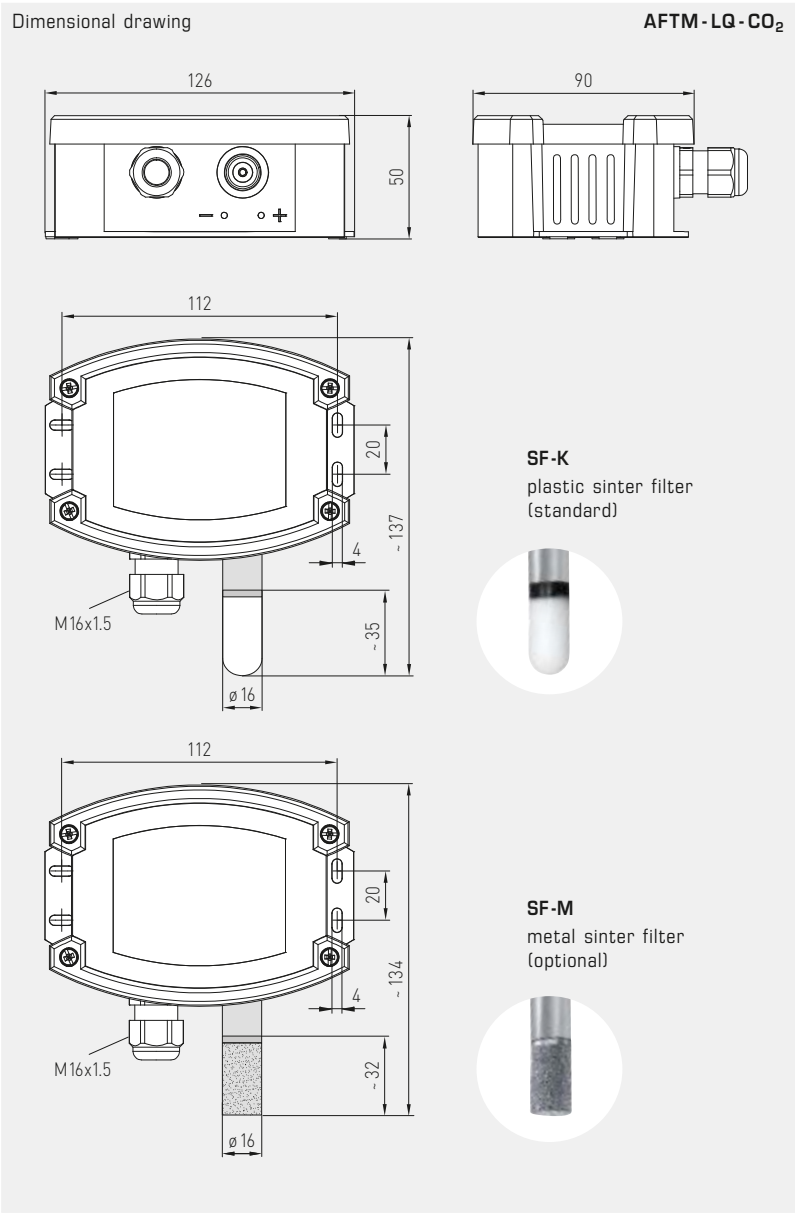
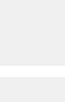


**NEW**

S+S REGELTECHNIK

**AERASGARD® ACO<sub>2</sub>-W / ALQ-CO<sub>2</sub>-W**  
**AERASGARD® AFTM-LQ-CO<sub>2</sub>**

Multifunctional on-wall sensors and measuring transducers,  
for humidity, temperature, CO<sub>2</sub> content and air quality (VOC),  
calibratable, with active/switching output



**AFTM-LQ-CO<sub>2</sub>**  
with plastic sinter filter  
(standard)



**AFTM-LQ-CO<sub>2</sub>**  
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 mm <sup>2</sup> , 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 (Tyr 2)
Cable gland:	M 16 x 1.5; including strain relief, exchangeable
Protective tube:	<b>stainless steel</b> , Ø 16 mm, NL = 55 mm
Process connection:	by screws
Protection class:	III (according to EN 60 730)
Protection type:	IP65 (according to EN 60 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU
Optional:	three-line <b>display with illumination</b> , cutout approx. 70 x 40 mm (W x H), for displaying actual humidity, actual temperature, air quality and/or the actual CO <sub>2</sub> content

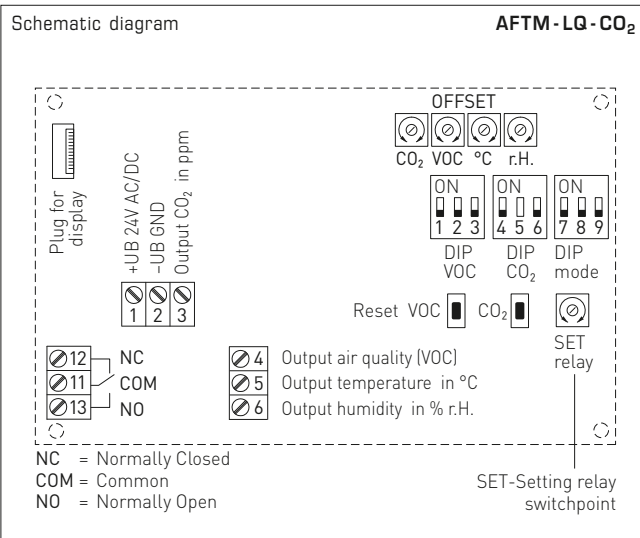
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DIP switches		<b>AFTM-LQ-CO<sub>2</sub></b>	
<b>VOC sensitivity</b>	<b>DIP 1</b>	<b>DIP 2</b>	
LOW	OFF	OFF	
MEDIUM (default)	<b>ON</b>	OFF	
HIGH	OFF	<b>ON</b>	
<b>VOC automatic zero point</b>			<b>DIP 3</b>
deactivated			OFF
activated (default)			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



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# AERASGARD® ACO<sub>2</sub>-W / ALQ-CO<sub>2</sub>-W AERASGARD® AFTM-LQ-CO<sub>2</sub>

Multifunctional on-wall sensors and measuring transducers, for humidity, temperature, CO<sub>2</sub> content and air quality (VOC), calibratable, with active/switching output

ACO<sub>2</sub>-W / ALQ-CO<sub>2</sub>-W  
AFTM-LQ-CO<sub>2</sub>  
with display



### Humidity table

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

% r.H.	U <sub>A</sub> in V	I <sub>A</sub> in mA
0	0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
50	5.0	12.0
55	5.5	12.8

Continued at the right ...

% r.H.	U <sub>A</sub> in V	I <sub>A</sub> in mA
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

### Temperature table

MR: -35...+80 °C

°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
-35	0.0	4.0
-30	0.4	4.7
-25	0.9	5.4
-20	1.3	6.1
-15	1.7	6.8
-10	2.2	7.5
-5	2.6	8.2
0	3.0	8.9
+5	3.5	9.6
+10	3.9	10.3
+15	4.3	11.0
+20	4.8	11.7

Continued at the right ...

°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
+25	5.2	12.3
+30	5.7	13.0
+35	6.1	13.7
+40	6.5	14.4
+45	7.0	15.1
+50	7.4	15.8
+55	7.8	16.5
+60	8.3	17.2
+65	8.7	17.9
+70	9.1	18.6
+75	9.6	19.3
+80	10.0	20.0

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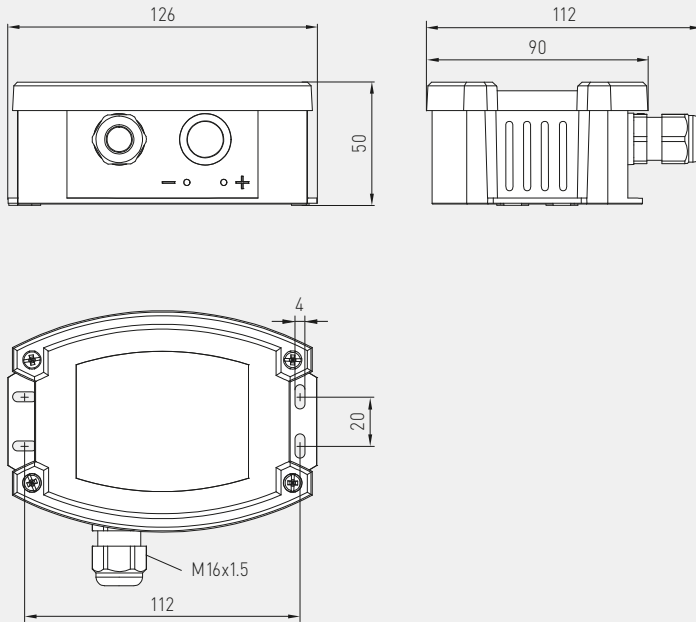
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Dimensional drawing

**ACO<sub>2</sub>-W**  
**ALQ-CO<sub>2</sub>-W**

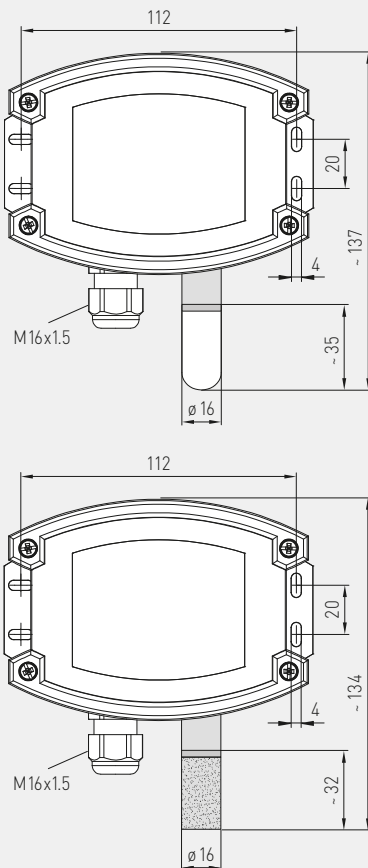


**ACO<sub>2</sub>-W**  
**ALQ-CO<sub>2</sub>-W**



Dimensional drawing

**AFTM-CO<sub>2</sub>**  
**AFTM-LQ-CO<sub>2</sub>**



**SF-K**  
plastic sinter filter  
(standard)



**SF-M**  
metal sinter filter  
(optional)



**AFTM-xx**  
with metal sinter filter  
(optional)





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**WS-03**

Weather and sun protection (optional)

**AFTM-xx**

with plastic sinter filter (standard)



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

Type / WG02	Measuring Range		CO <sub>2</sub>	VOC	Display	Item No.	Price
	Humidity	Temperature					
<b>ACO<sub>2</sub>-W</b>			(switchable)				
ACO2-W	-	-	0...2000 / 5000 ppm	-		1501-7110-7301-200	<b>306,00 €</b>
ACO2-W-DISPLAY	-	-	0...2000 / 5000 ppm	-	■	1501-7110-7371-200	<b>356,80 €</b>
<b>ALQ-CO<sub>2</sub>-W</b>			(switchable)				
ALQ-CO2-W	-	-	0...2000 / 5000 ppm	0...100 %		1501-7111-7301-200	<b>416,16 €</b>
ALQ-CO2-W-DISPLAY	-	-	0...2000 / 5000 ppm	0...100 %	■	1501-7111-7371-200	<b>488,38 €</b>
<b>AFTM-CO<sub>2</sub></b>			(switchable)				
AFTM-CO2-W	0...100 % r.H.	-35...+80 °C	0...2000 / 5000 ppm	-		1501-7116-7301-200	<b>389,24 €</b>
AFTM-CO2-W-DISPLAY	0...100 % r.H.	-35...+80 °C	0...2000 / 5000 ppm	-	■	1501-7116-7371-200	<b>465,12 €</b>
<b>AFTM-LQ-CO<sub>2</sub></b>			(switchable)				
AFTM-LQ-CO2-W	0...100 % r.H.	-35...+80 °C	0...2000 / 5000 ppm	0...100 %		1501-7118-7301-200	<b>496,95 €</b>
AFTM-LQ-CO2-W DISPLAY	0...100 % r.H.	-35...+80 °C	0...2000 / 5000 ppm	0...100 %	■	1501-7118-7371-200	<b>594,87 €</b>
Outputs:	<b>0-10 V or 4...20 mA</b> (selectable via DIP switches, selected variant applies for all outputs)						
Note:	This unit <b>must not</b> be used as safety-relevant device!						

Accessories			
<b>SF-M</b>	Metal sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel (VA 1.4404)	7000-0050-2200-100	<b>35,70 €</b>
<b>WS-03</b>	Weather and sun protection, 200 x 180 x 150 mm, stainless steel For further information see last chapter!	7100-0040-6000-000	<b>37,74 €</b>