

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

Patented quality product (AOS patent no. DE 10 2015 015 941 B4)

Maintenance-free on-wall sensor **AERASGARD® ATM-CO2-SD** with active output, automatic calibration, with plastic sinter filter (exchangeable), 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 / -31...+176 °F). The measuring transducer converts the measured values into a standard signal of 0-10 V.

Maintenance-free on-wall sensor **AERASGARD® AFTM-LQ-CO2-AW** with active/switching output, automatic calibration, with plastic sinter filter (exchangeable), 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 air quality (0...100 % VOC), the temperature (-35...+80 °C / -31...+176 °F) as well as the relative air humidity (0...100 % RH). The display can be changed from SI [°C] to imperial [°F] units via DIP switch. The measuring transducer automatically detects the required output type (**Automatic Output Switching**) and converts the measurands into a standard signal of 0-10 V or 4...20 mA.

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 a photo-acoustic **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 contaminant load 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 (SLOW), medium (NORMAL) or high (FAST) VOC sensitivity can be selected.

TECHNICAL DATA

Voltage supply:	24 V AC/DC (± 10%)
Power consumption:	typical < 4.8 W / 24 V DC; < 6.8 VA / 24 V AC; peak current 200 mA
System of units:	SI (default) or imperial (can be changed via DIP switch)
Measurands:	CO2 (ppm), VOC [%], temperature [°C] [°F], relative humidity [% RH]
Outputs:	ATM-CO2-SD 0-10 V (fixed) Axx-CO2-AW automatic 0-10 V/4...20 mA (via Automatic Output Switching – the unit detects the required output type and automatically switches to U or I output), >15k Ω load at AOS-U / 25...450 Ω working resistance at AOS-I, with Offset potentiometer (± 10% of the measuring range)
Relay output:	ATM-CO2-SD without changeover contact Axx-CO2-AW potential-free changeover contact (24 V / 1 A), Assignment of measurand is selectable via DIP switches, Switching point can be set via SET-Potentiometer, Hysteresis 1 % of measuring range

HUMIDITY

Sensors:	digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability
Sensor protection:	Plastic sinter filter, Ø 16mm, l=35mm, exchangeable (optionally metal sinter filter, Ø 16mm, l=32mm)
Measuring range, humidity:	0...100 % RH
Operating range, humidity:	0...95 % RH (without dew formation)
Accuracy humidity:	typical ± 2.0 % (20...80 % RH) at +25 °C, otherwise ± 3.0 %

TEMPERATURE

Temp. measuring range:	-35...+80 °C / -31...+176 °F
Operating range, temp.:	-10...+60 °C / +14...+140 °F
Accuracy temperature:	typical ± 0.2 K / ± 0.5 °F at +25 °C / +77 °F

AIR QUALITY (VOC)

Sensor, VOC:	VOC sensor (metal oxide) (volatile organic compounds), with automatic air quality algorithm
Measuring range, VOC:	0...100 % air quality, referred to calibrating gas, multi-range switching VOC sensitivity SLOW/NORMAL/FAST (selectable via DIP switches)
Accuracy, VOC:	typical ± 20 % 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:	photo-acoustic NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button) ATM-CO2-SD with automatic calibration (fixed) Axx-CO2-AW with automatic calibration (can be deactivated via DIP switches)
Measuring range, CO2:	0...2000 ppm or 0...5000 ppm (selectable via DIP switches)
Accuracy, CO2:	typical ± 50 ppm ± 5 % of measured value
Temp. dependence, CO2:	± 5 ppm per °C or ± 0.5% of the measured value per °C (whichever is higher)

Continued on next page!

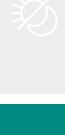
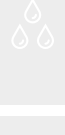


NEW

S+S REGELTECHNIK

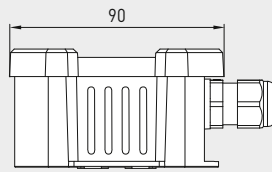
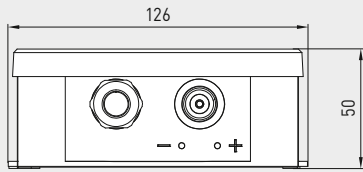
AERASGARD® ATM-CO2-SD AERASGARD® AFTM-(LQ)-CO2-AW / A(LQ)-CO2-AW

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

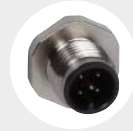


Dimensional drawing (mm)

AFTM-LQ-CO2-AW



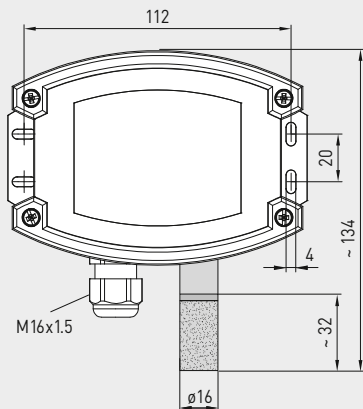
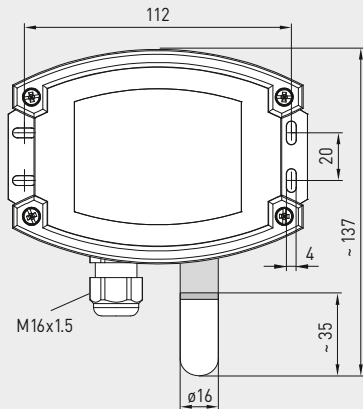
M12 connector (optional on request)



SF-K plastic sinter filter (exchangeable)



SF-M metal sinter filter (optional)



AFTM-LQ-CO2-AW with plastic sinter filter



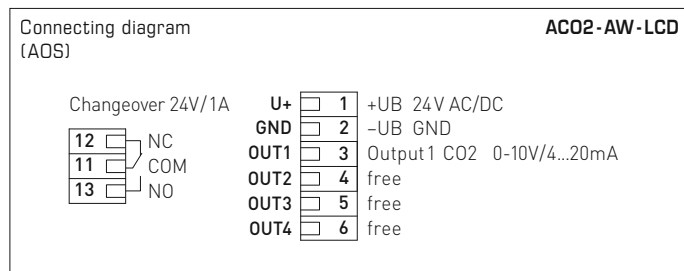
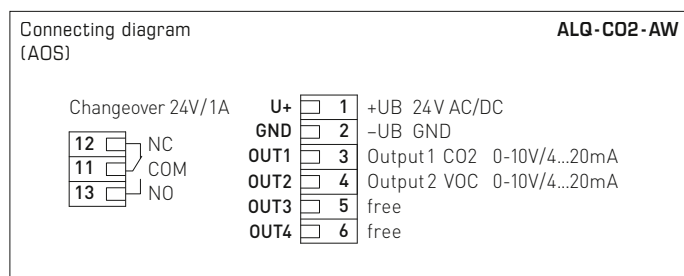
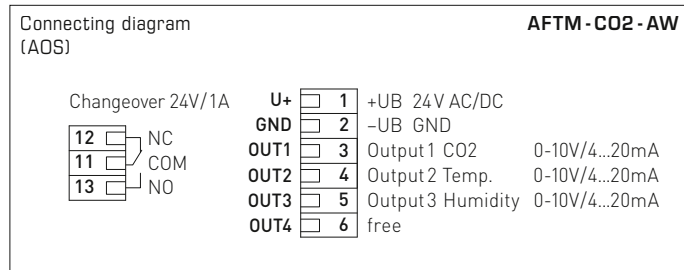
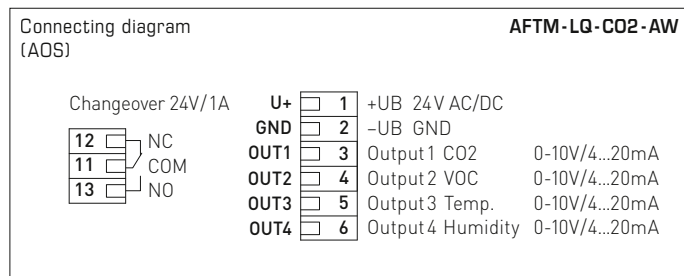
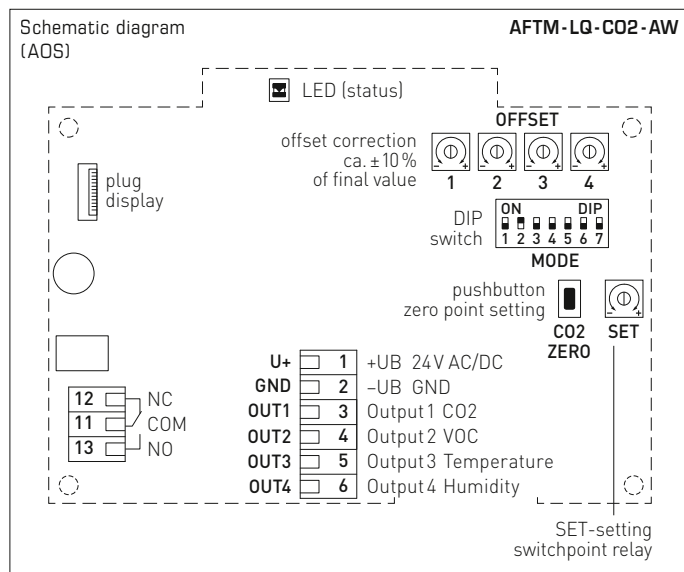
AFTM-LQ-CO2-AW with plastic sinter filter and display



TECHNICAL DATA (continued)

Pressure dependence:	± 0.13 % / mm Hg
Long-term stability:	< 2% in 15 years
Gas exchange:	by diffusion
Response time:	< 2 minutes, minimum flow rate 0.3 m/s (air)
Ambient temperature:	-10...+60 °C / +14...+140 °F
Electrical connection:	0.2 - 1.5 mm², via push-in terminals
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)
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 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,
 for humidity, temperature, CO2 content and air quality (VOC), calibratable,
 with active output (Automatic Output Switching) / switching output



DIP switches		AFTM-LQ-CO2-AW	
CO2			
CO2 content		DIP 1	
0...5000 ppm		ON	
0...2000 ppm (default)		OFF	
CO2 automatic calibration		DIP 2	
activated (default)		ON	
deactivated		OFF	
VOC			
VOC sensitivity		DIP 3	DIP 4
FAST		ON	ON
SLOW		ON	OFF
NORMAL (default)		OFF	OFF
Relay			
Relay assignment		DIP 5	DIP 6
Humidity:	10...95% RH	ON	ON
Temperature:	-23...+74 °C -31...+176 °F	OFF	ON
VOC:	10...95 %	ON	OFF
CO2 (default):	600...1900 ppm / 900...4700 ppm	OFF	OFF
Display			
System of units		DIP 7	
Imperial:	[°F]	ON	
SI (default):	[°C]	OFF	
Temperature			
Value indicated in display depends on system of units set (DIP 7).			



AFTM-CO2-AW: DIP 3 / 4 not assigned.
ALQ-CO2-AW: DIP 7 not assigned.
ACO2-AW-LCD: DIP 3 / 4 / 7 not assigned.

Note :
 The offset potentiometers are assigned to the corresponding output of the measurand, depending on the respective unit type.
 Output 1 → Offset 1
 Output 2 → Offset 2
 Output 3 → Offset 3
 Output 4 → Offset 4
 Output free → Offset not assigned.

For further technical information, see the operating instructions

Automatic detection and switching to standard signal 0...10V or 4...20mA



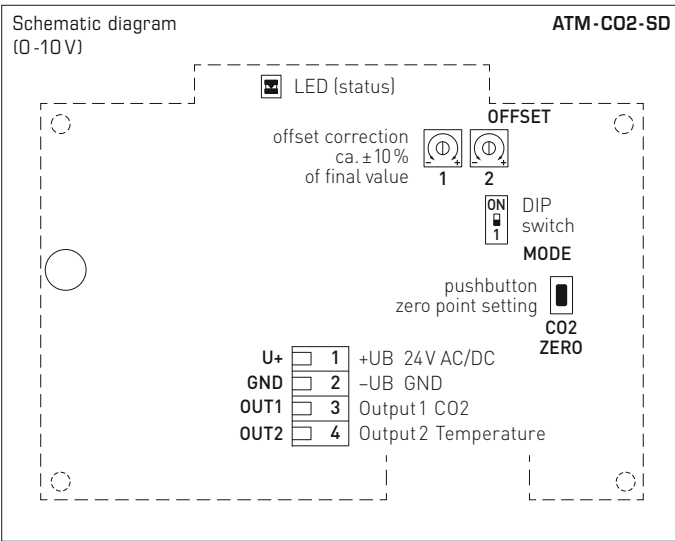


NEW

S+S REGELTECHNIK

AERASGARD® ATM-CO2-SD AERASGARD® AFTM-(LQ)-CO2-AW / A(LQ)-CO2-AW

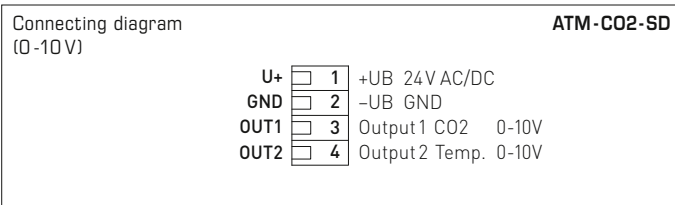
Multifunctional on-wall sensors and measuring transducers, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with active output (Automatic Output Switching) /switching output



DIP switches ATM-CO2-SD	
CO2	
CO2 content	DIP 1
0...5000 ppm	ON
0...2000 ppm (default)	OFF

Note:
The offset potentiometers are assigned to the corresponding output of the measurand, depending on the respective unit type.
Output 1 → Offset 1 (CO2)
Output 2 → Offset 2 (temperature)

For further technical information, see the operating instructions



Temperature
MR: -35...+80 °C / -31...+176 °F

°C	U _A [V]	I _A [mA]	°F
-35	0.0	4.0	-31
-30	0.4	4.7	-22
-25	0.9	5.4	-13
-20	1.3	6.1	-4
-15	1.7	6.8	+5
-10	2.2	7.5	+14
-5	2.6	8.2	+23
0	3.0	8.9	+32
+5	3.5	9.6	+41
+10	3.9	10.3	+50
+15	4.3	11.0	+59
+20	4.8	11.7	+68
+25	5.2	12.3	+77
+30	5.7	13.0	+86
+35	6.1	13.7	+95
+40	6.5	14.4	+104
+45	7.0	15.1	+113
+50	7.4	15.8	+122
+55	7.8	16.5	+131
+60	8.3	17.2	+140
+65	8.7	17.9	+149
+70	9.1	18.6	+158
+75	9.6	19.3	+167
+80	10.0	20.0	+176

Humidity
MR: 0...100% RH

% RH	U _A [V]	I _A [mA]
0	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
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

CO2
MR: 0...2000 ppm / 0...5000 ppm

2000 ppm	U _A [V]	I _A [mA]	5000 ppm
0	0.0	4.0	0
100	0.5	4.8	250
200	1.0	5.6	500
300	1.5	6.4	750
400	2.0	7.2	1000
500	2.5	8.0	1250
600	3.0	8.8	1500
700	3.5	9.6	1750
800	4.0	10.4	2000
900	4.5	11.2	2250
1000	5.0	12.0	2500
1100	5.5	12.8	2750
1200	6.0	13.6	3000
1300	6.5	14.4	3250
1400	7.0	15.2	3500
1500	7.5	16.0	3750
1600	8.0	16.8	4000
1700	8.5	17.6	4250
1800	9.0	18.4	4500
1900	9.5	19.2	4750
2000	10.0	20.0	5000

VOC
MR: 0...100% VOC

% VOC	U _A [V]	I _A [mA]
0	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
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

AERASGARD® ATM-CO2-SD
AERASGARD® AFTM-(LQ)-CO2-AW / A(LQ)-CO2-AW

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

NEW

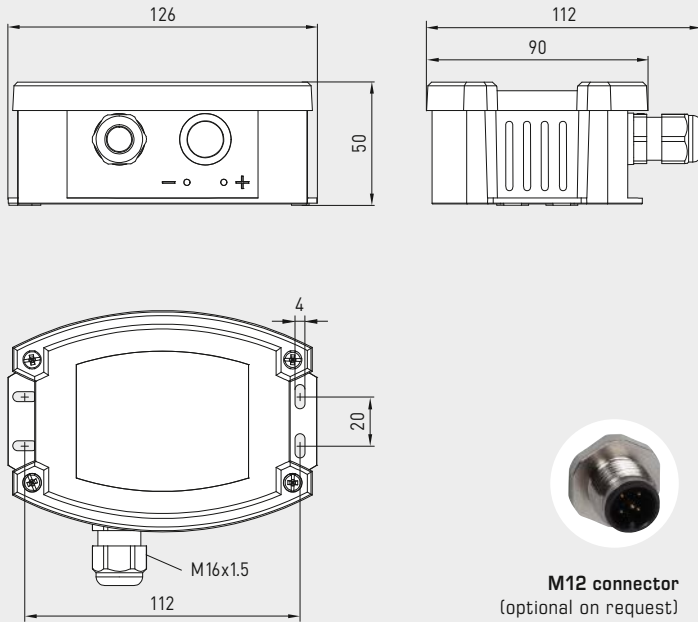


S+S REGELTECHNIK

Dimensional drawing
 [mm]

ALQ-CO2-AW
ACO2-AW-LCD

ALQ-CO2-AW
ACO2-AW-LCD



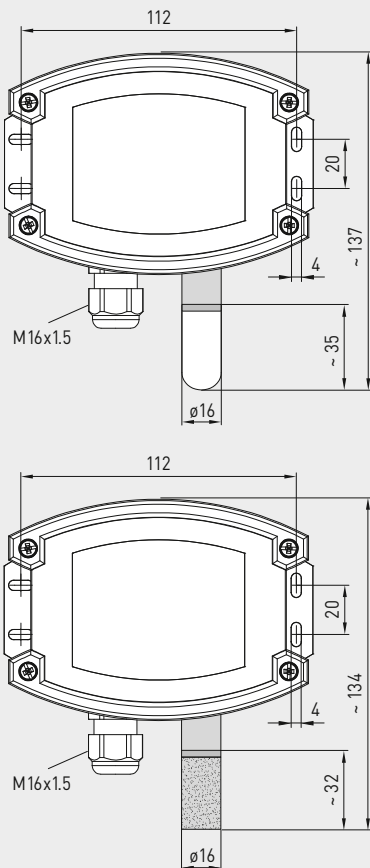
M12 connector
 (optional on request)



Dimensional drawing
 [mm]

AFTM-LQ-CO2-AW
AFTM-CO2-AW
ATM-CO2-SD

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



SF-K
 plastic sinter filter
 (standard)



SF-M
 metal sinter filter
 (optional)





NEW

S+S REGELTECHNIK

AERASGARD® AFTM-(LQ)-CO2-AW / A(LQ)-CO2-AW

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



WS-03

Weather and sun protection hood (optional)



AFTM-LQ-CO2-AW
AFTM-CO2-AW
ATM-CO2-SD

with plastic sinter filter (standard)



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

Type / WG02	Measuring ranges				Equipment Display	Item No.
	Humidity	Temperature	CO2	VOC		
ATM-CO2-SD			(switchable)			U variant
ATM-CO2-SD-U	-	-35...+80 °C / -31...+176 °F	0...2000 / 5000 ppm	-	-	1501-7112-1001-600
ACO2-AW			(switchable)			AOS
ACO2-AW (without display)	-	-	0...2000 / 5000 ppm	-	W	see ACO2-AW / ACO2-SD
ACO2-AW LCD	-	-	0...2000 / 5000 ppm	-	W ■	1501-7110-E371-600
ALQ-CO2-AW			(switchable)			AOS
ALQ-CO2-AW	-	-	0...2000 / 5000 ppm	0...100%	W	1501-7111-E301-600
ALQ-CO2-AW LCD	-	-	0...2000 / 5000 ppm	0...100%	W ■	1501-7111-E371-600
AFTM-CO2-AW			(switchable)			AOS
AFTM-CO2-AW	0...100% RH	-35...+80 °C	0...2000 / 5000 ppm	-	W	1501-7116-E301-600
AFTM-CO2-AW LCD	0...100% RH	-35...+80 °C / -31...+176 °F	0...2000 / 5000 ppm	-	W ■	1501-7116-E371-600
AFTM-LQ-CO2-AW			(switchable)			AOS
AFTM-LQ-CO2-AW	0...100% RH	-35...+80 °C	0...2000 / 5000 ppm	0...100%	W	1501-7118-E301-600
AFTM-LQ-CO2-AW LCD	0...100% RH	-35...+80 °C / -31...+176 °F	0...2000 / 5000 ppm	0...100%	W ■	1501-7118-E371-600
Outputs / equipment:	0 – 10 V / 4...20 mA (automatic via AOS) – W = with changeover contact For unit type ATM-CO2-SD , 0-10V is fixed – no 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-K	Plastic sinter filter , Ø 16 mm, L = 35 mm, exchangeable					7000-0050-2310-000
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