



Air Quality

AERASGARD®

Feel-good climate with energy efficiency

Increased CO₂, fine dust or VOC pollution are detrimental with regard to energy costs and well-being. Our air quality sensors allow you to monitor the entire indoor climate in a controlled manner.

If needed, you can control up to four measured values, including humidity and temperature, with just one single device.

Application Areas

- Ventilation and air conditioning
- Energy management
- Residential, working and conference rooms
- Movie theaters, showrooms and retail stores
- Schools, institutes and laboratories





AERASGARD® AIR QUALITY SENSORS AND AIR QUALITY MONITORS



CO₂ sensors

FSC02	In-wall CO ₂ sensor	593
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RCO2-SD	Room CO ₂ sensor	583
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Multifunctional sensors VOC / CO₂ / fine dust (PM)

RLQ-CO2-W	Room air-quality / CO ₂ sensor	587
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KFTM-LQ-CO2-AW	Duct humidity / temperature / air-quality / CO ₂ sensor	AOS 621

Accessories

see chapter Accessories	652
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Note concerning type designation:
W = with changeover contact



Air Quality

AERASGARD®

Multifunctional sensor technology for air quality and more

Broad Spectrum

Our active devices for measuring and regulating CO₂, gas mixtures (VOC) and fine dust (PM) are designed to be multifunctional. This reduces the diversity of types and expands their possible applications. Thanks to micro-processor technology, almost any measuring range can be represented, including custom specifications. DIP switches are used to select functions such as multi-range switching, automatic mode, and manual calibration.

Optimum Precision

The devices are tested according to the latest criteria. Take advantage of our experience, our development, manufacturing and product know-how and order these products directly from the manufacturer.

Tested safety and certified quality



RoHS conforming materials



ESD compliant manufacturing



CE conformity



UKCA conformity
(UK Conformity Assessed)

Development, production and sales are certified by TÜV Thüringen according to DIN EN ISO 9001:2015 (quality management) and ISO 14001:2015 (environmental management).

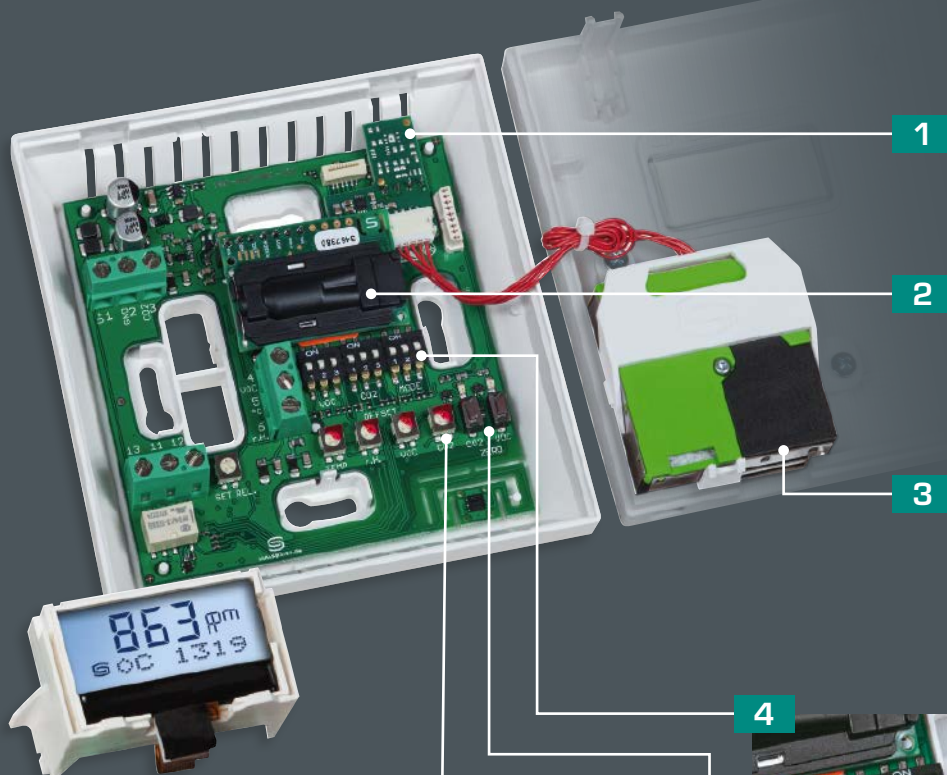


EAC certified



GOST certified

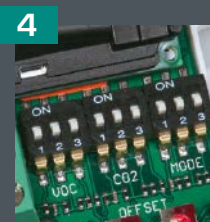




1 VOC Sensor
Air quality sensor for detecting mixed gases

2 CO2 Sensor
Optical carbon dioxide sensor with non-dispersive infrared technology (NDIR)

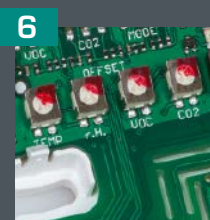
3 Fine dust sensor (PM)
Optical particle sensor with laser and contamination resistance technology



4 DIP Switches
For individual adjustment of measuring ranges, output, automatic zero point and relay assignment



5 Trigger
For CO2 or VOC zero point

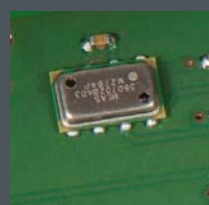


6 Potentiometer
For setting the relay thresholds for CO2 and VOC. For setting the offsets for temperature, humidity, CO2 and VOC

Optional Display
With backlighting



PLEUROFORM™
Multi-channel pipe for simultaneous measuring of CO2 and VOC



Air Pressure Compensation
Premium duct sensors with barometric air pressure compensation of CO2 readings



Maintenance-free room sensor **AERASGARD® RLQ-SD** with active output, automatic calibration, in an elegant plastic housing with snap-on lid, for determining the air quality (0...100% VOC). The measuring transducer converts the measured values into a standard signal of 0-10 V or 4...20 mA (switchable).

Maintenance-free room sensor **AERASGARD® RLQ-W** with active/switching output, automatic calibration in an elegant plastic housing with snap-on lid, optional with traffic light indicator (five coloured LEDs), for determining the air quality (0...100% VOC). 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.

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.

RLQ-W
RLQ-SD



TECHNICAL DATA

Power supply:	24 V AC / DC ($\pm 10\%$)
Power consumption:	< 1.5 W / 24 V DC typical; < 2.9 VA / 24 V AC typical
Sensor:	VOC sensor (metal oxide) (VOC = volatile organic compounds),, with manual calibration (via zero button), with automatic calibration (permanently active)
Measuring range:	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:	(0 V = clean air, 10 V = polluted air) RLQ-SD 0-10 V (fixed) RLQ-W 0-10 V or 4...20 mA, working resistance < 800 Ω (selectable via DIP switches), with offset potentiometer ($\pm 10\%$ of the measuring range)
Relay output:	RLQ-SD without changeover contact RLQ-W with potential-free changeover contact (24 V / 1 A) (switchpoint can be adjusted from 0...100% of the output signal)
Measuring accuracy:	typically $\pm 20\%$ of final value (referred to calibrating gas)
Service life:	> 60 months (under normal load conditions), depending on the type of loading and gas concentration
Gas exchange:	by diffusion
Ambient temperature:	0...+50 °C
Warm-up time:	approx. 1 hour
Response time:	approx. 1 minute
Electrical connection:	0.14 - 1.5 mm ² , via screw terminals
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016), optional stainless steel V2A (1.4301)
Dimensions:	85 x 85 x 27 mm (Baldur 1) 100 x 100 x 25 mm (stainless steel)
Installation:	wall mounting or on in-wall flush box, $\varnothing 55$ mm, base with 4-hole for mounting on vertically or horizontally installed in-wall flush boxes for cable entry from the back, with predetermined breaking point for on-wall cable entry from top / bottom in case of plain on-wall installation
Protection class:	III (according to EN 60730)
Protection type:	IP 30 (according to EN 60529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU
Optional:	with traffic light indicator (five coloured LEDs, see table) for displaying the air quality.



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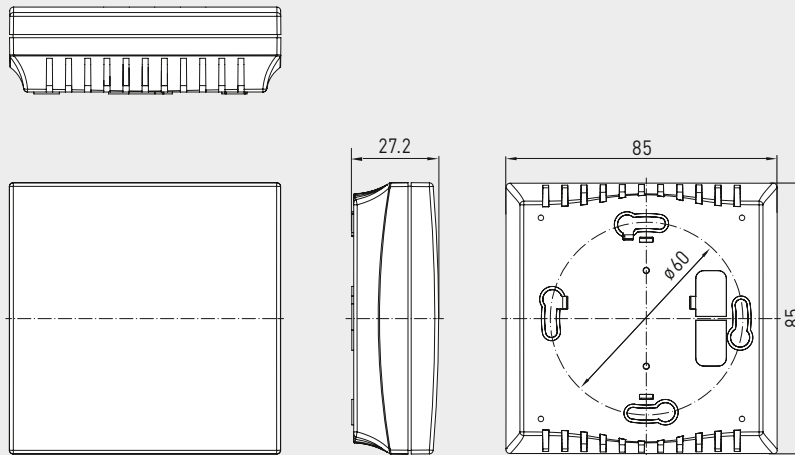
AERASGARD® RLQ-W
AERASGARD® RLQ-SD

Room air quality sensor (VOC) and measuring transducer,
self-calibrating, with multi-range switching
and active/switching output



Dimensional drawing

RLQ-W
RLQ-SD



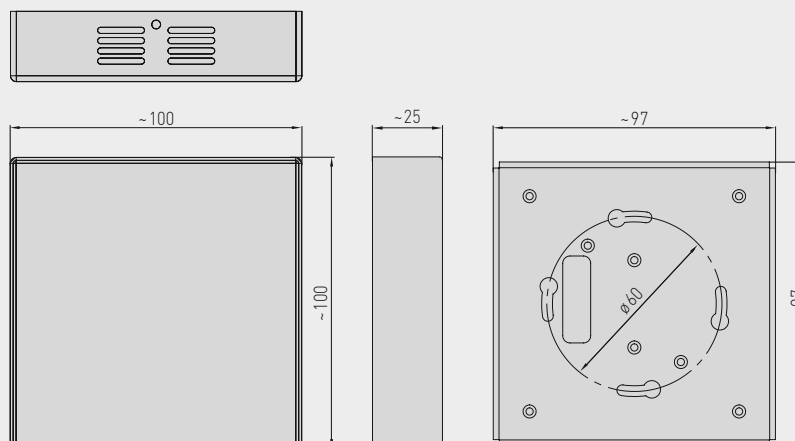
RLQ-W-A
with LEDs



Dimensional drawing

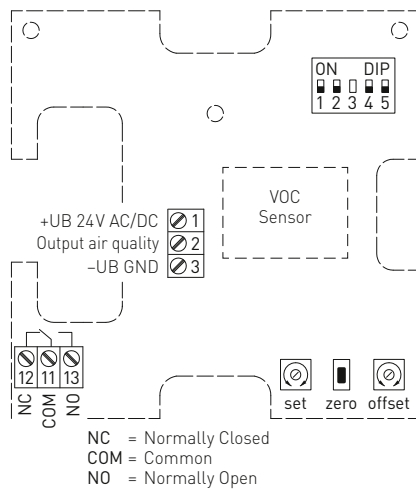
RLQ-W VA

RLQ-W VA
(stainless steel housing)



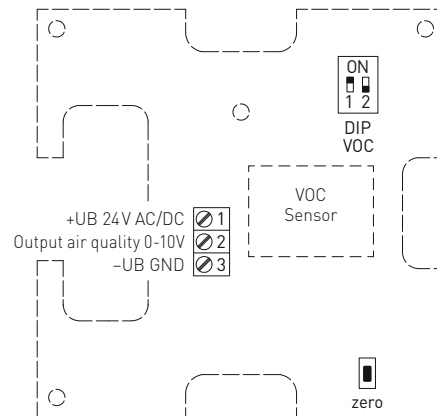
Connecting diagram

RLQ-W



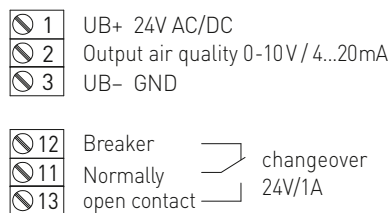
Connecting diagram

RLQ-SD



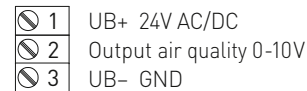
Schematic diagram

RLQ-W



Schematic diagram

RLQ-SD



DIP switches RLQ-W		
VOC sensitivity	DIP 1	DIP 2
LOW	OFF	OFF
MEDIUM (default)	ON	OFF
HIGH	OFF	ON
IAQ (Indoor Air Quality)	ON	ON
Output		DIP 4
Voltage 0-10V (default)		OFF
Current 4...20 mA		ON
Traffic light (5x LEDs)		DIP 5
deactivated		OFF
activated		ON
Note: DIP 3 is not assigned!		

DIP switches RLQ-SD		
VOC sensitivity	DIP 1	DIP 2
LOW	OFF	OFF
MEDIUM (default)	ON	OFF
HIGH	OFF	ON
IAQ (Indoor Air Quality)	ON	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® RLQ-W
AERASGARD® RLQ-SD

Room air quality sensor (VOC) and measuring transducer,
self-calibrating, with multi-range switching
and active/switching output



RLQ-W-A
with LEDs

Traffic light indicator					RLQ-W-A
VOC content	LED 1 green	LED 2 green	LED 3 yellow	LED 4 yellow	LED 5 red
0 %	25 %	—	—	—	—
5 %	50 %	—	—	—	—
10 %	75 %	—	—	—	—
15 %	100 %	—	—	—	—
20 %		25 %	—	—	—
25 %		50 %	—	—	—
30 %		75 %	—	—	—
35 %		100 %	—	—	—
40 %			25 %	—	—
45 %			50 %	—	—
50 %			75 %	—	—
55 %			100 %	—	—
60 %				25 %	—
65 %				50 %	—
70 %				75 %	—
75 %				100 %	—
80 %					25 %
85 %					50 %
90 %					75 %
95 %					100 %
100 %					

Once the aforementioned values have been reached, the respective LED becomes active (with increasing luminosity of 25 %, 50 %, 75 % and 100 %); LEDs that are already active continue to be illuminated.



AERASGARD® RLQ-SD		Room air quality sensor (VOC) and measuring transducer, <i>Standard</i>		
AERASGARD® RLQ-W		Room air quality sensor (VOC) and measuring transducer, <i>Premium</i>		
Type/WG02	Measuring Range VOC	Output VOC	Equipment	Item No.
RLQ-SD		(fixed)		
RLQ-SD-U	0...100 %	0-10 V	—	1501-61C0-1001-500
RLQ-W		(switchable)		
RLQ-W	0...100 %	0-10 V / 4...20 mA	Changeover contact	1501-61C0-7301-500
RLQ-W VA	0...100 %	0-10 V / 4...20 mA	Changeover contact, stainless steel housing	1501-61C0-7301-505
RLQ-W-A		(switchable)		with traffic light
RLQ-W-A	0...100 %	0-10 V / 4...20 mA	Changeover contact, LEDs	1501-61C0-7331-500
A = with "traffic light" (five coloured LEDs) for displaying the air quality (VOC).				
Note: This unit must not be used as safety-relevant device!				

Maintenance-free room sensor **AERASGARD® RC02 - SD** with active output, automatic calibration (fixed), in an elegant plastic housing with snap-on lid, for determining the CO₂ content of the air (0...2000 ppm). The measuring transducer converts the measured values into a standard signal of 0-10 V.

Maintenance-free room sensor **AERASGARD® RC02 - W** with active/switching output, automatic calibration (can be deactivated), in an elegant plastic housing with snap-on lid, optional with traffic light indicator (five coloured LEDs), for determining the CO₂ content of the air (0...2000 ppm/0...5000 ppm). 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.

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.

TECHNICAL DATA

Power supply:	24 V AC / DC (± 10 %)
Power consumption:	< 1.5 W / 24 V DC typical; < 2.9 VA / 24 V AC typical; peak current 200 mA
Sensor:	optical NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button), RC02 - SD with automatic calibration (fixed) RC02 - W with automatic calibration (can be deactivated via DIP switches)
Measuring range:	RC02 - SD 0...2000 ppm (fixed) RC02 - W 0...2000 ppm or 0...5000 ppm (selectable via DIP switches)
Output:	RC02 - SD 0-10 V (fixed) RC02 - W 0-10 V or 4...20 mA, working resistance < 800 Ω (selectable via DIP switches), with offset potentiometer (± 10 % of the measuring range)
Relay output:	RC02 - SD without changeover contact RC02 - W with potential-free changeover contact (24 V / 1 A)
Accuracy:	typically ± 30 ppm ± 3 % of measured value
Temperature dependence:	± 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
Ambient temperature:	0...+50 °C
Warm up time:	approx. 1 hour
Response time:	< 2 minutes
Electrical connection:	0.14 - 1.5 mm ² , via screw terminals
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016), stainless steel housing optional V2A (1.4301)
Dimensions:	85 x 85 x 27 mm (Baldur 1) 100 x 100 x 25 mm (stainless steel)
Installation:	wall mounting or on in-wall flush box, Ø 55 mm, base with 4-hole for mounting on vertically or horizontally installed in-wall flush boxes for cable entry from the back, with predetermined breaking point for on-wall cable entry from top / bottom in case of plain on-wall installation
Protection class:	III (according to EN 60 730)
Protection type:	IP 30 (according to EN 60 529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU
Optional:	with traffic light indicator (five coloured LEDs, see table) for displaying the CO ₂ concentration with display (see AERASGARD® RFTM-LQ-CO2) for displaying the actual CO ₂ content in ppm



S+S REGELTECHNIK

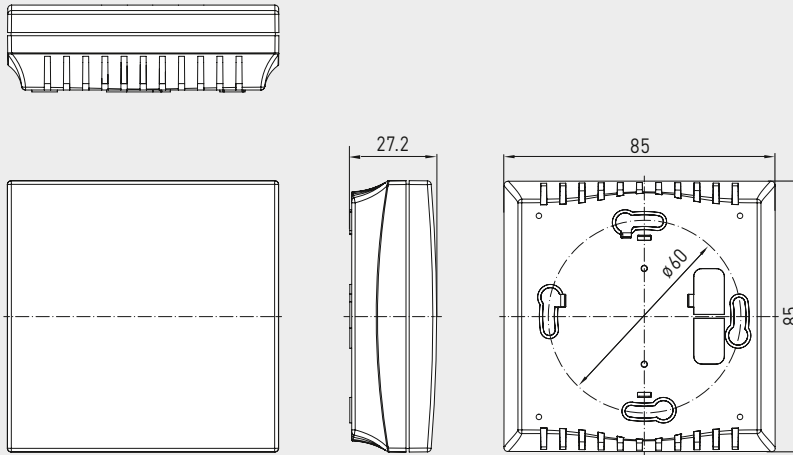
AERASGARD® RC02-W
AERASGARD® RC02-SD

Room CO₂ sensor and measuring transducer,
self-calibrating, with multi-range switching
and active/switching output



Dimensional drawing

RC02-W
RC02-SD



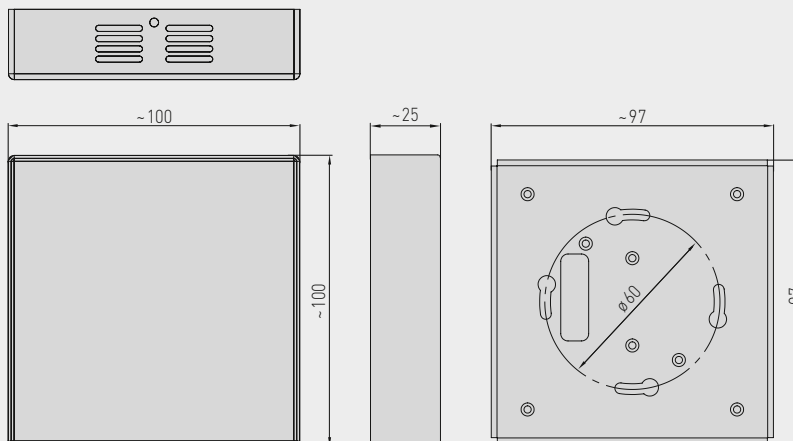
RC02-W
RC02-SD

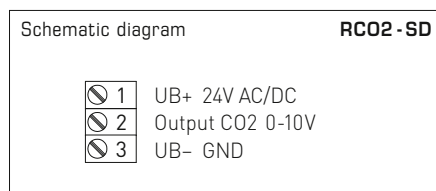
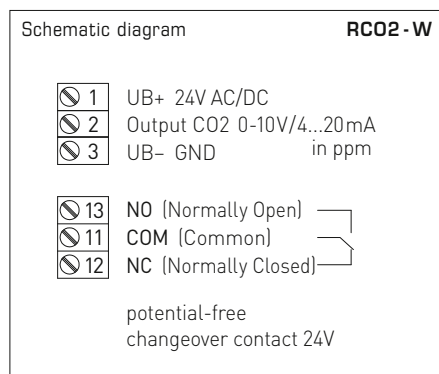
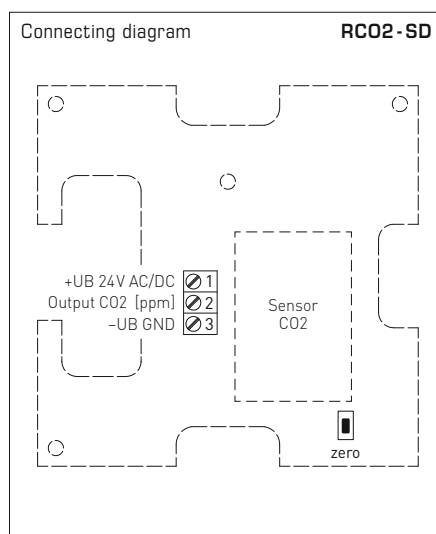
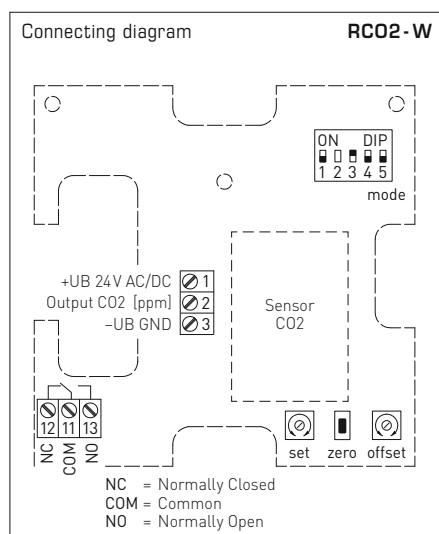


Dimensional drawing

RC02-W VA

(stainless steel housing)





DIP switches RC02 - W	
CO2 content	DIP 1
0...2000 ppm (default)	OFF
0...5000 ppm	ON
CO2 automatic zero point	DIP 3
deactivated	OFF
activated (default)	ON
Output	DIP 4
Voltage 0-10V (default)	OFF
Current 4...20mA	ON
Traffic light (5x LEDs)	DIP 5
deactivated	OFF
activated	ON
Note: DIP 2 is not assigned!	



S+S REGELTECHNIK

AERASGARD® RC02-W
AERASGARD® RC02-SD

Room CO2 sensor and measuring transducer,
self-calibrating, with multi-range switching
and active/switching output

RC02-W-A
with LEDs

Traffic light indicator		RC02-W-A				
CO2 content in ppm		LED 1	LED 2	LED 3	LED 4	LED 5
0...2000 ppm	0...5000 ppm	green	green	yellow	yellow	red
350	350	20 %	–	–	–	–
416	536	40 %	–	–	–	–
482	722	60 %	–	–	–	–
548	908	80 %	–	–	–	–
614	1094	100 %	–	–	–	–
680	1280		20 %	–	–	–
746	1466		40 %	–	–	–
812	1652		60 %	–	–	–
878	1838		80 %	–	–	–
944	2024		100 %	–	–	–
1010	2210			20 %	–	–
1076	2396			40 %	–	–
1142	2582			60 %	–	–
1208	2768			80 %	–	–
1274	2954			100 %	–	–
1340	3140				20 %	–
1406	3326				40 %	–
1472	3512				60 %	–
1538	3698				80 %	–
1604	3884				100 %	–
1670	4070					20 %
1736	4256					40 %
1802	4442					60 %
1868	4628					80 %
1934	4814					100 %
2000	5000					

Once the aforementioned values have been reached, the respective LED becomes active (with increasing luminosity of 20 %, 40 %, 60 %, 80 % and 100 %); LEDs that are already active continue to be illuminated.



AERASGARD® RC02-SD Room CO2 sensor and measuring transducer, *Standard*
AERASGARD® RC02-W Room CO2 sensor and measuring transducer, *Premium*

Type / WG02	Measuring Range CO2	Output CO2	Equipment	Display	Item No. (Baldur 1)
RC02-SD	(fixed)	(fixed)			
RC02-SD-U	0...2000 ppm	0-10 V	–		1501-61A0-1001-200
RC02-W	(switchable)	(switchable)			
RC02-W	0...2000 ppm / 0...5000 ppm	0-10 V / 4...20 mA	Changeover contact		1501-61A0-7301-200
RC02-W VA	0...2000 ppm / 0...5000 ppm	0-10 V / 4...20 mA	Changeover contact, stainless steel housing		1501-61A0-7301-205
RC02-W LCD	0...2000 ppm / 0...5000 ppm	0-10 V / 4...20 mA	Changeover contact, display	■ see RFTM-LQ-C02	
RC02-W-A	(switchable)	(switchable)			with traffic light
RC02-W-A	0...2000 ppm / 0...5000 ppm	0-10 V / 4...20 mA	Changeover contact, LEDs		1501-61A0-7331-200
A = with "traffic light" (five coloured LEDs) for displaying the CO2 concentration.					
Note: This unit must not be used as safety-relevant device!					

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

Maintenance-free room sensor **AERASGARD® RTM - CO2 - SD** with active output, automatic calibration, in an elegant plastic housing with snap-on lid, for determining the CO2 content of the air (0...2000 ppm) and the temperature (0...+50°C). The measuring transducer converts the measured values into a standard signal of 0-10 V.

Maintenance-free room sensor **AERASGARD® RFTM - LQ - CO2 - W** with active/switching output, automatic calibration, in an elegant plastic housing with snap-on lid, optionally with/without display, for determining the CO2 content of the air (0...2000 ppm/0...5000 ppm), the quality in three VOC sensitivity (0...100% VOC), the temperature (0...+50°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. 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:	RC02 - W / RTM - CO2 - SD: < 1.5 W / 24 V DC typical; < 2.9 VA / 24 V AC typical; peak current 200 mA RLQ - CO2 - W / RFTM - LQ - CO2 - W: < 4.4 W / 24 V DC typical; < 6.4 VA / 24 V AC typical; peak current 200 mA
Outputs:	RTM - CO2 - SD 0-10 V (fixed) Rxx - CO2 - 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:	RTM - CO2 - SD without changeover contact Rxx - CO2 - W with potential-free changeover contact (24 V / 1 A) (assignment selectable via DIP switches, switchpoint adjustable)

HUMIDITY

Sensor (RH / °C):	digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability
Measuring range (RH):	0...100% RH
Output (RH):	0-10 V or 4...20 mA (selectable via DIP switches)
Accuracy (RH):	typically ± 2.0% (20...80% RH) at +25 °C, otherwise ± 3.0%

TEMPERATURE

Measuring range (°C):	0...+ 50 °C
Accuracy (°C):	typically ± 0.2 K at +25 °C
Output (°C):	RTM - CO2 - SD 0-10 V (fixed) Rxx - CO2 - 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 (via 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 (VOC):	> 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), RTM - CO2 - SD with automatic calibration (fixed) Rxx - CO2 - W with automatic calibration (can be deactivated via DIP switches)
Measuring range (CO2):	RTM - CO2 - SD 0...2000 ppm (fixed) Rxx - CO2 - W 0...2000 ppm or 0...5000 ppm (selectable via DIP switches)
Output (CO2):	RTM - CO2 - SD 0-10 V (fixed) Rxx - CO2 - 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)
Pressure dependence (CO2):	± 0.13% / mm Hg
Long-term stability (CO2):	< 2% in 15 years
Gas exchange (CO2):	by diffusion

continued on next page!



S+S REGELTECHNIK

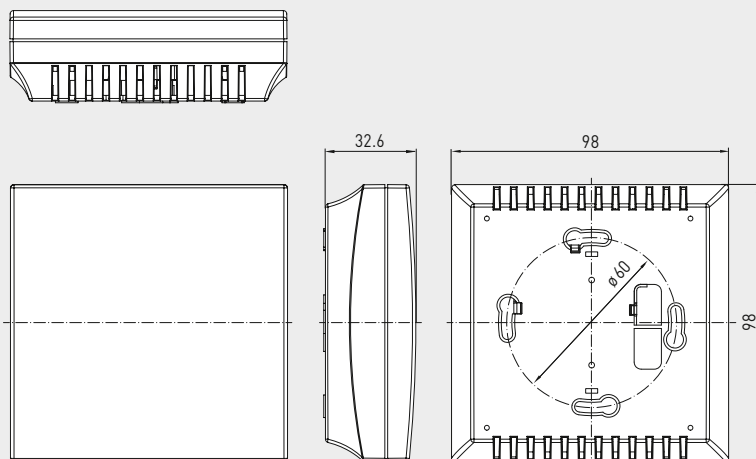
AERASGARD® RC02-W / RLQ-CO2-W AERASGARD® RFTM-(LQ)-CO2-W / RTM-CO2-SD

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



Dimensional drawing

RC02-W with display
RLQ-CO2-W
RFTM-LQ-CO2-W
RTM-CO2-SD

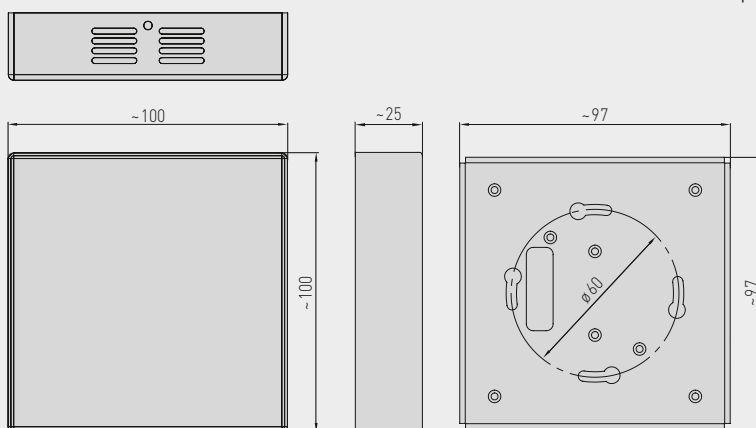


RLQ-CO2-W
RFTM-LQ-CO2-W
RTM-CO2-SD



Dimensional drawing

Stainless steel housing
(See picture
on next page)



RC02-W
RLQ-CO2-W
RFTM-LQ-CO2-W
with display



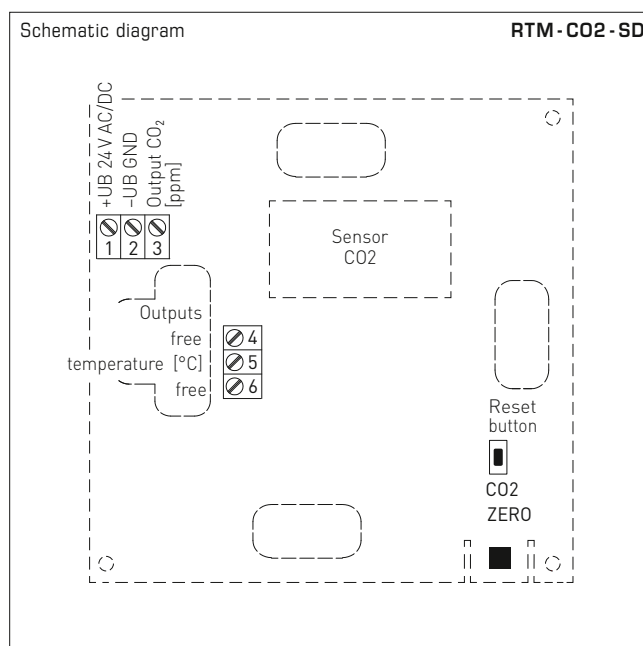
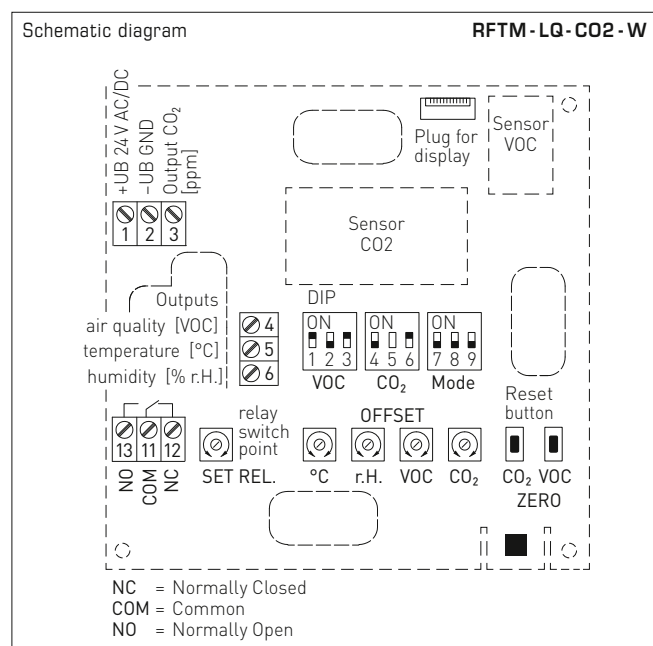
TECHNICAL DATA		(continued)
Ambient temperature:	0...+50 °C	
Permitted humidity:	0...95% RH (non-precipitating air)	
Warm up time:	approx. 1 hour	
Response time:	< 2 minutes	
Electrical connection:	0.14 - 1.5 mm², via screw terminals	
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016), stainless steel V2A (1.4301) housing optional	
Dimensions:	98 x 98 x 33 mm (Baldur 2)	
Installation:	wall mounting or on in-wall flush box, Ø55 mm, base with 4 holes, for attachment to vertically or horizontally installed in-wall flush boxes for rear cable entry, with predetermined breaking point for cable entry from top/bottom in case of plain on-wall installation	
Protection class:	III (according to EN 60 730)	
Protection type:	IP 30 (according to EN 60 529)	
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU	
Optional:	display with illumination , two line, cutout approx. 36 x 15 mm (W x H), for displaying actual humidity, actual temperature, air quality and the actual CO2 content	

AERASGARD® RC02-W / RLQ-CO2-W AERASGARD® RFTM-(LQ)-CO2-W / RTM-CO2-SD



S+S REGELTECHNIK

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

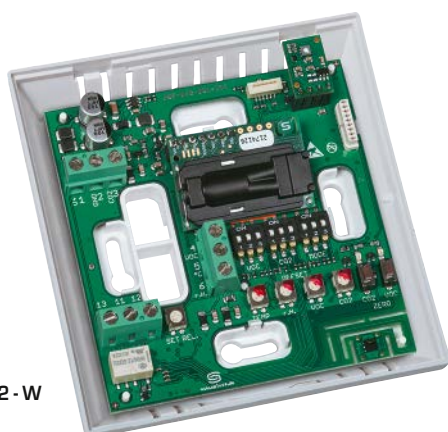


DIP switches (Baldur 2)		RFTM-LQ-CO2-W	
VOC sensitivity		DIP 1	DIP 2
LOW		OFF	OFF
MEDIUM (default)		ON	OFF
HIGH		OFF	ON
IAQ (Indoor Air Quality)		ON	ON
CO2 content			DIP 4
0...2000 ppm (default)			OFF
0...5000 ppm			ON
CO2 automatic zero point			DIP 6
deactivated			OFF
activated (default)			ON
Relay assignment		DIP 7	DIP 8
CO2 (default): 600...1900 ppm / 900...4700 ppm		OFF	OFF
VOC:	10...95%	ON	OFF
Temperature:	+5...+48°C	OFF	ON
Humidity:	10...95% RH	ON	ON
Output			DIP 9
Voltage 0-10V (default)			OFF
Current 4...20mA			ON
Note: DIP 3 and DIP 5 are not assigned!			

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)

RFTM-LQ-CO2-W
(Baldur 2)



Stainless steel housing
(optionally available
upon request)





S+S REGELTECHNIK

AERASGARD® RCO2-W / RLQ-CO2-W AERASGARD® RFTM-(LQ)-CO2-W / RTM-CO2-SD

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

Humidity table

MR: 0...100 % RH

% RH	U _A [V]	I _A [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
Continued at the right ...		

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

Temperature table

MR: 0...+50 °C

°C	U _A [V]	I _A [mA]
0	0	4.0
5	1.0	5.6
10	2.0	7.2
15	3.0	8.8
20	4.0	10.4
25	5.0	12.0
30	6.0	13.6
35	7.0	15.2
40	8.0	16.8
45	9.0	18.4
50	10.0	20.0

AERASGARD® RTM-CO2-SD	Room temperature and CO2 sensor, <i>Standard</i>
AERASGARD® RCO2-W	Room CO2 sensor, <i>Premium</i>
AERASGARD® RLQ-CO2-W	Room air quality (VOC) and CO2 sensor, <i>Premium</i>
AERASGARD® RFTM-CO2-W	Multifunctional room sensor for humidity, temperature and CO2 content, <i>Deluxe</i>
AERASGARD® RFTM-LQ-CO2-W	Multifunctional room sensor for humidity, temperature, CO2 content and air quality (VOC), <i>Deluxe</i>

Type / WG02	Measuring Range		CO2	VOC	Equipment Display	Item No. (Baldur 2)
	Humidity	Temperature				
RTM-CO2-SD			(fixed)			
RTM-CO2-SD-U	–	0...+50 °C	0...2000 ppm	–	–	1501-61B2-1001-200
RCO2-W			(switchable)			
RCO2-W (without display)	–	–	0...2000 / 5000 ppm	–	W	see RCO2-W / RCO2-SD
RCO2-W LCD	–	–	0...2000 / 5000 ppm	–	W ■	1501-61B0-7321-200
RLQ-CO2-W			(switchable)			
RLQ-CO2-W	–	–	0...2000 / 5000 ppm	0...100 %	W	1501-61B1-7301-500
RLQ-CO2-W LCD	–	–	0...2000 / 5000 ppm	0...100 %	W ■	1501-61B1-7321-500
RFTM-CO2-W			(switchable)			
RFTM-CO2-W	0...100 % RH	0...+50 °C	0...2000 / 5000 ppm	–	W	1501-61B6-7301-200
RFTM-CO2-W LCD	0...100 % RH	0...+50 °C	0...2000 / 5000 ppm	–	W ■	1501-61B6-7321-200
RFTM-LQ-CO2-W			(switchable)			
RFTM-LQ-CO2-W	0...100 % RH	0...+50 °C	0...2000 / 5000 ppm	0...100 %	W	1501-61B8-7301-500
RFTM-LQ-CO2-W LCD	0...100 % RH	0...+50 °C	0...2000 / 5000 ppm	0...100 %	W ■	1501-61B8-7321-500
Outputs:	0-10V or 4...20mA (selectable via DIP switches, selected variant applies for all outputs) – <i>Standard</i> room sensor RTM-CO2-SD with fixed output 0-10V!					
Equipment:	W = changeover contact – <i>Standard</i> room sensor RTM-CO2-SD without changeover contact!					
Note:	This unit must not be used as safety-relevant device!					

Maintenance-free room sensor **AERASGARD® RPS-SD** with active output, in an elegant plastic housing with snap-on lid, base with 4-hole attachment, for detecting the fine dust content (0...500 µg/m³). The measuring transducer converts the measurand into a standard signal of 0-10 V (fixed).

Maintenance-free, multifunctional room sensor **AERASGARD® RFTM-PS-CO2-W** with active/switching output, automatic calibration, in an elegant plastic housing with snap-on lid, base with 4-hole attachment, optionally with/without display, for detection of measurands air humidity (0...100% RH), temperature (0...+50°C), fine dust (PM) (0...50/100/300/500 µg/m³) and CO2 content (0...2000/5000 ppm). The measuring transducer converts the measurand into a standard signal of 0-10 V or 4...20 mA (switchable).

Use just one device to monitor and control the entire indoor climate effectively. This enables energy-saving room ventilation on an as-needed basis, thereby reducing operating costs and improving well-being. It is used in offices, hotels, convention centres, apartments, shops, etc. 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 content of the air is measured using an optical **NDIR sensor** (non-dispersive infra-red technology). An optical **fine dust sensor** precisely detects **particulate (PM)** of the size category 0.3 to 10 micrometres. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible (except for particulate sensor).

TECHNICAL DATA

Power supply:	24 V AC / DC (± 10 %)	
Power consumption:	RPS-SD	typically < 1.5 W / 24 V DC; < 2.9 VA / 24 V AC
	RFTM-PS-CO2-W	typically < 4.4 W / 24 V DC; < 6.4 VA / 24 V AC; peak current 200 mA
Output:	RPS-SD	0-10 V (fixed)
	RFTM-PS-CO2-W	0-10 V or 4...20 mA, working resistance < 800 Ω (selectable via DIP switches, selected version applies uniformly to all outputs), with offset potentiometer (± 10 % of measuring range)
Relay output:	RPS-SD	without changeover contact
	RFTM-PS-CO2-W	with potential-free changeover contact (24 V / 1 A) (assignment selectable via DIP switches, switch point can be set)

HUMIDITY

Sensor (RH / °C):	digital humidity sensor with integrated temperature sensor, low hysteresis, high long-term stability
Measuring range (RH):	0...100% RH
Output (RH):	0-10 V or 4...20 mA (selectable via DIP switches)
Accuracy (RH):	typically ± 2.0 % (20...80 % RH) at +25 °C, otherwise ± 3.0 %

TEMPERATURE

Measuring range (°C):	0...+ 50 °C
Output (°C):	0-10 V or 4...20 mA (selectable via DIP switches)
Accuracy (°C):	typically ± 0.2 K at +25 °C

FINE DUST (PM)

Sensor (PM):	optical particulate sensor (PM = particulate matter), fine-dust sensor with laser- and soiling-resistant technology
Measuring range (PM):	multi-range switching (selectable via DIP switches) 0...50, 0...100, 0...300 or 0...500 µg/m³
Output (PM):	RPS-SD 0-10 V (fixed) RFTM-PS-CO2-W 0-10 V or 4...20 mA (selectable via DIP switches)
Particle size (PM):	PM 2.5 (0.3...2.5 µm); PM 10 (0.3...10 µm)
Accuracy (PM):	typically ± 10 µg/m³ (± 10 % of measured value) at PM 2.5 typically ± 25 µg/m³ (± 25 % of measured value) at PM 10
Long-term stability (PM):	± 1.25 µg/m³ (± 1.25 % of measured value/year)
Service life (PM):	> 10 years

CARBON DIOXIDE (CO2)

Sensor (CO2):	optical NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button), 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):	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 greater)
Pressure dependence (CO2):	± 0.13 % / mm Hg
Long-term stability (CO2):	< 2 % in 15 years
Gas exchange (CO2):	diffusion

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S+S REGELTECHNIK

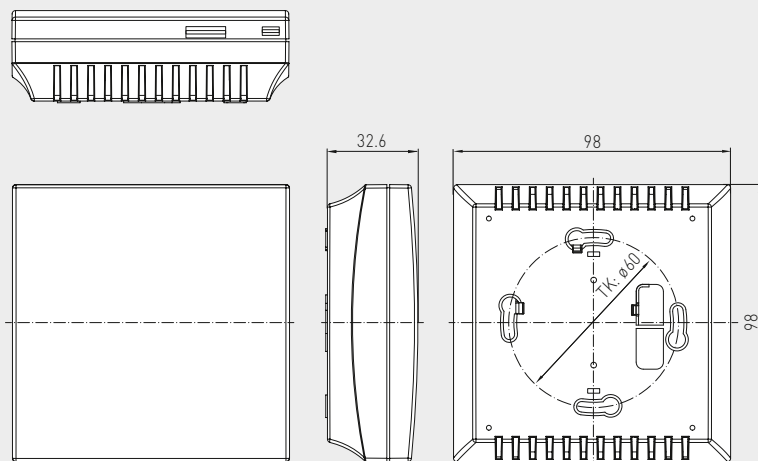
AERASGARD® RPS-SD AERASGARD® RFTM-PS-CO2-W

Fine dust sensor/particulate sensor,
multifunctional room sensor and measuring transducer
for humidity, temperature, fine dust (PM) and CO2 content,
calibratable, with active/switching output



Dimensional drawing

RPS-SD
RFTM-PS-CO2-W



RPS-SD
RFTM-PS-CO2-W
without display



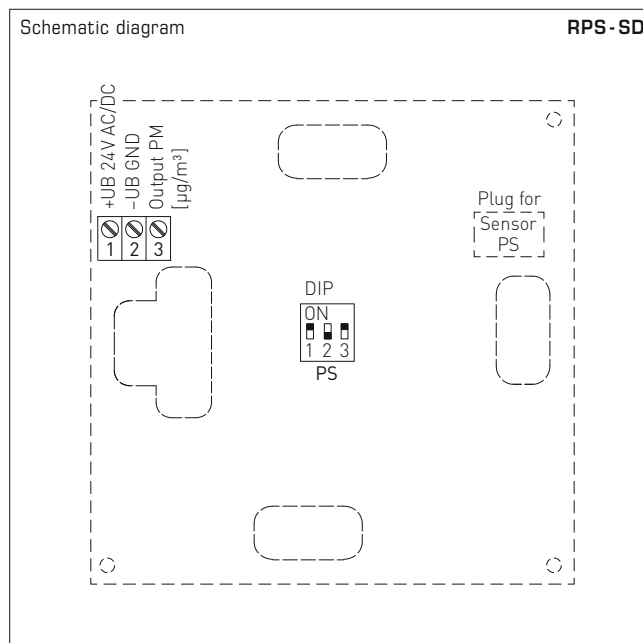
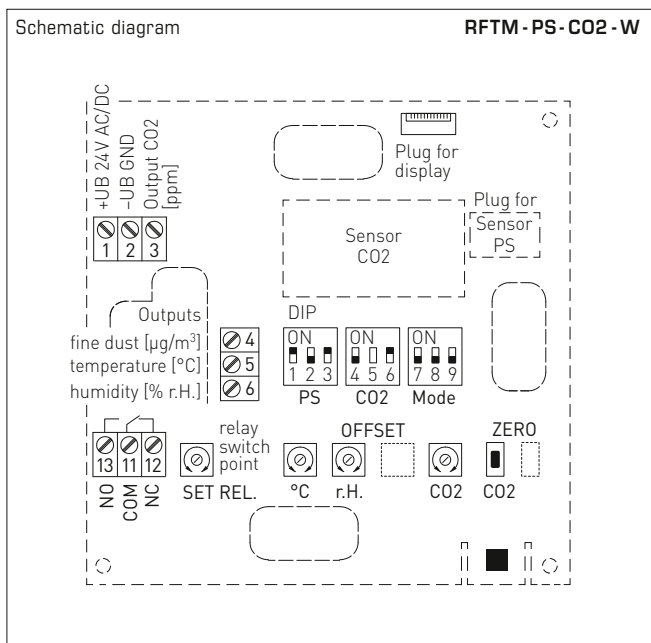
RFTM-PS-CO2-W
with display



TECHNICAL DATA

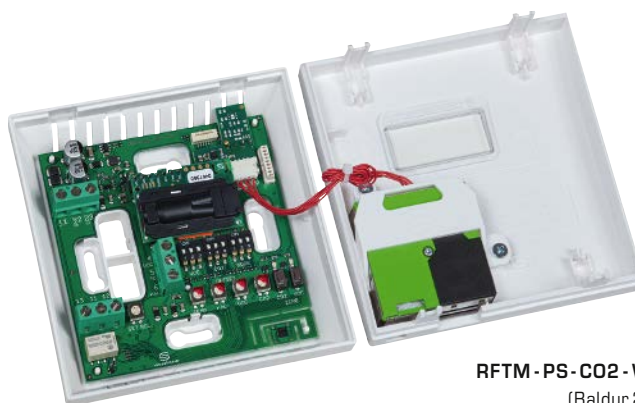
(continued)

Ambient temperature:	0...+50 °C
Permitted humidity:	0...95% RH (non-precipitating air)
Warm up time:	approx. 1 hour
Response time:	< 2 minutes
Electrical connection:	0.14 - 1.5 mm², via screw terminals
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016)
Dimensions:	98 x 98 x 33 mm (Baldur 2)
Mounting:	wall mounting or on in-wall flush box, Ø 55 mm, base with 4 holes, for attachment to vertically or horizontally installed in-wall flush boxes for rear cable entry, with predetermined breaking point for top/bottom cable entry for surface-mounted installation
Protection class:	III (according to EN 60 730)
IP rating:	IP 30 (according to EN 60 529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, Low Voltage Directive 2014 / 35 / EU
Optional:	display with illumination , 2-line, cutout approx. 36 x 15 mm (W x H), to display the actual humidity, actual temperature, of the fine-dust and CO2 content as well as for switch point display



DIP switch		RFTM - PS - xx	
Fine dust (PM) Measuring range		DIP 1	DIP 2
0...50 µg/m³		OFF	OFF
0...100 µg/m³ (default)		ON	OFF
0...300 µg/m³		OFF	ON
0...500 µg/m³		ON	ON
Fine dust (PM) Particle size		DIP 3	
PM 2.5 (default)		ON	
PM 10		OFF	
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
Fine dust	10 %...95 % of measuring range	ON	OFF
Temperature	+5...+48 °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 5 is not assigned !			

DIP switch	RPS - SD	
Fine dust (PM) Measuring range	DIP 1	DIP 2
0...50 µg/m³	OFF	OFF
0...100 µg/m³ (default)	ON	OFF
0...300 µg/m³	OFF	ON
0...500 µg/m³	ON	ON
Fine dust (PM) Particle size	DIP 3	
PM 2.5 (default)	ON	
PM 10	OFF	



RFTM-PS-CO2-W
(Baldur 2)



S+S REGELTECHNIK

AERASGARD® RPS-SD
AERASGARD® RFTM-PS-CO2-W

Fine dust sensor/particulate sensor,
multifunctional room sensor and measuring transducer
for humidity, temperature, fine dust (PM) and CO2 content,
calibratable, with active/switching output



Humidity table

MR: 0...100 % RH

% RH	U _A [V]	I _A [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
Continued at the right ...		

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

Temperature table

MR: 0...+50 °C

°C	U _A [V]	I _A [mA]
0	0	4.0
5	1.0	5.6
10	2.0	7.2
15	3.0	8.8
20	4.0	10.4
25	5.0	12.0
30	6.0	13.6
35	7.0	15.2
40	8.0	16.8
45	9.0	18.4
50	10.0	20.0

AERASGARD® RPS-SD Room fine dust sensor / fine dust sensor / particulate sensor (PM), <i>Standard</i> RFTM-PS-W Multifunctional room sensor for humidity, temperature and fine dust (PM), <i>Premium</i> RFTM-PS-CO2-W Multifunctional room sensor for humidity, temperature, fine dust (PM) and CO2 content, <i>Deluxe</i>						
Type/WG02	Measuring Range		PM	CO2	Equipment Display	Item No.
	Humidity	Temperature				
RPS-SD			(switchable)			
RPS-SD	–	–	0... 50 µg/m³ 0...100 µg/m³ 0...300 µg/m³ 0...500 µg/m³	–		1501-2110-1001-000
RFTM-PS-W			(switchable)	(switchable)		
RFTM-PS-W	0...100% RH	0...+50 °C	0... 50 µg/m³ 0...100 µg/m³ 0...300 µg/m³ 0...500 µg/m³	–	W	1501-2116-7301-000
RFTM-PS-W LCD	0...100% RH	0...+50 °C	(4x as above)	–	W ■	1501-2116-7321-000
RFTM-PS-CO2-W						
RFTM-PS-CO2-W	0...100% RH	0...+50 °C	0... 50 µg/m³ 0...100 µg/m³ 0...300 µg/m³ 0...500 µg/m³	0...2000 ppm / 0...5000 ppm	W	1501-2113-7301-000
RFTM-PS-CO2-W LCD	0...100% RH	0...+50 °C	(4x as above)	0...2000 ppm / 0...5000 ppm	W ■	1501-2113-7321-000
Outputs:	0-10V or 4...20mA (selectable via DIP switches, selected variant applies for all outputs) – Standard room sensor RPS-SD with fixed output 0-10V!					
Equipment:	W = changeover contact – Standard room sensor RPS-SD without changeover contact!					
Note:	These units must not be used as safety-relevant devices!					

**Room CO2 and temperature sensor or measuring transducer,
in-wall in the panel switch programme,
with active output**

The room sensor **AERASGARD® FSCO2 / FSTM-CO2** in the in-wall housing is used for measuring the CO2 content and temperature of the air. It converts the measured values into a standard signal of 0-10 V.

The CO2 content of the air is measured using an optical NDIR sensor (non-dispersive infra-red technology). A digital, long-term stable sensor is used for temperature measurement.

The in-wall sensor is mounted in high-quality panel switch programmes, ideally of the brands Gira, Berker, Merten, Jung, Siemens or Busch-Jaeger (using in-wall adapters) either individually or in combination with light switches, socket outlets, etc.

It is used in non-aggressive, dust-free environments, in refrigeration, air conditioning and clean room technology, and in interior rooms, such as living rooms, offices, hotels, etc.

TECHNICAL DATA

Power supply:	24 V AC / DC ($\pm 10\%$)
Power consumption:	< 1.5 W / 24 V DC; < 2.9 VA / 24 V AC

CARBON DIOXIDE (CO2)

Sensor, CO2:	optical NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button) and automatic calibration (fixed)
Long-term stability:	< 2 % in 15 years
Measuring range, CO2:	0...2000 ppm
Output, CO2:	0-10 V
Accuracy CO2:	typically ± 30 ppm $\pm 3\%$ of measured value
Temperature dependence:	± 5 ppm / °C or $\pm 0.5\%$ of measured value / °C (whichever is higher)
Pressure dependence:	$\pm 0.13\%$ / mm Hg
Gas exchange:	by diffusion
Warm up time:	approx. 1 hour
Response time:	< 2 minutes

TEMPERATURE

Sensor:	digital temperature sensor , low hysteresis, high long-term stability
Long-term stability:	$\pm 1\%$ per year
Measuring range:	0...+50 °C
Accuracy, temperature:	typically ± 0.8 K at +25 °C
Output, temperature:	0-10 V

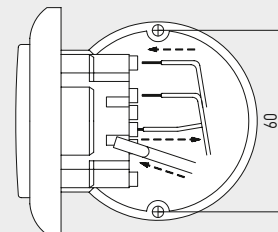
Mounting:	in-wall flush box $\varnothing$ 55 mm
Electrical connection:	1.0-2.5 mm ² , via plug terminals
Ambient temperature:	storage -35...+85 °C; operation 0...+50 °C
Permitted humidity:	max. 90 % RH, non-precipitating air
Medium:	clean air and other non-aggressive, non-combustible gases
Protection class:	III (according to EN 60 730)
Protection type:	IP 20 (according to 60 529)
Standards:	CE-conformity according to EMC Directive 2014 / 30 / EU

SWITCH PROGRAMME

Manufacturer:	GIRA System 55 (other switch programmes, manufacturers, colours as well as prices available upon request)
Housing:	plastic, the standard colour is pure glossy white (similar to RAL 9010) (other colours are available upon request with colour variants depending on the respective light switch programme)

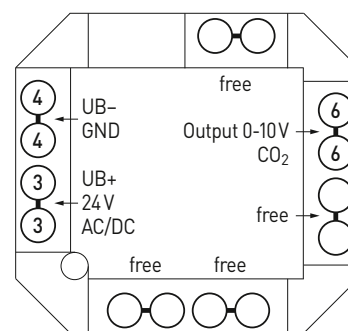
Mounting diagram

in-wall



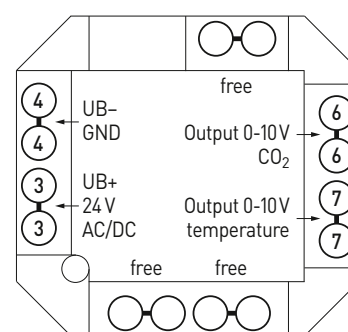
Connection diagram

FSCO2



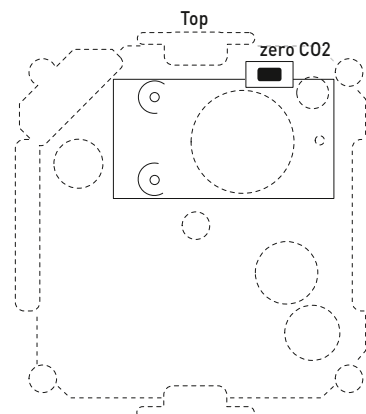
Connection diagram

FSTM-CO2



Schematic diagram

FSFTM-CO2





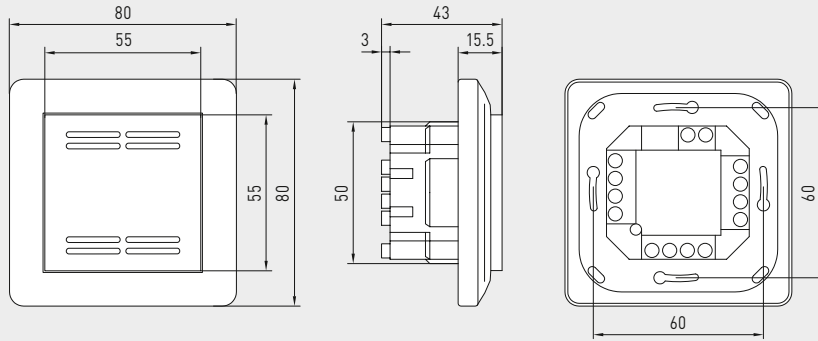
S+S REGELTECHNIK

AERASGARD® FSC02
AERASGARD® FSTM-C02

Room CO2 and temperature sensor or measuring transducer,
in-wall in the panel switch programme,
with active output



Dimensional drawing



FSC02
FSTM-C02

FSC02
FSTM-C02



CO2 content table
MR: 0...2000 ppm

ppm	U _A [V]
0	0.00
350	1.75
400	2.00
450	2.25
500	2.50
550	2.75
600	3.00
700	3.50
800	4.00
900	4.50
Continued to the right ...	

ppm	U _A [V]
1000	5.0
1100	5.5
1200	6.0
1300	6.5
1400	7.0
1500	7.5
1600	8.0
1700	8.5
1800	9.0
1900	9.5
2000	10.0

Temperature table
MR: 0...+50 °C

°C	U _A [V]
0	0.0
5	1.0
10	2.0
15	3.0
20	4.0
25	5.0
30	6.0
35	7.0
40	8.0
45	9.0
50	10.0

AERASGARD® FSC02

Room CO2 sensor or measuring transducer, in-wall

AERASGARD® FSTM-C02

Room temperature and CO2 sensor or measuring transducer, in-wall

Type / WG02	Measuring Range CO2	Temperature	Output CO2	Temperature	Item No.
FSC02					
FSC02-U	0...2000 ppm	–	0-10 V	–	1501-9120-1001-162
FSTM-C02					
FSTM-C02-U	0...2000 ppm	0...+50 °C	0-10 V	0-10 V	1501-9122-1001-162

**Room air-quality sensors (VOC) or measuring transducers,
in-wall in the panel switch programme,
with active output**

Maintenance-free air-quality sensor **AERASGARD® FSLQ** with active output, automatic calibration, in the in-wall housing, for determining the air quality (0...100 % VOC). The measuring transducer converts the measured variables into a standard signal of 0-10 V. The in-wall sensor is mounted in high-quality panel switch programmes, ideally of the brands Gira, Berker, Merten, Jung, Siemens or Busch-Jaeger (using in-wall adapters) either individually or in combination with light switches, socket outlets, etc.

The sensor is used in offices, hotels, convention centres, apartments, shops, etc. and is used for evaluating the indoor climate. This enables energy-saving room ventilation on an as-needed basis, thereby reducing operating costs and improving well-being.

The air quality is detected by a **VOC sensor** (mixed gas sensor for volatile organic substances). This determines the pollutant loading of the room air by contaminated gases such as cigarette smoke, body vapours, breathing air, solvent vapours, emissions, etc.

TECHNICAL DATA

Power supply:	24 V AC / DC (± 10 %)
Power consumption:	typically < 2.0 VA / 24 V AC; typically < 1.0 W / 24 V DC

AIR QUALITY (VOC)

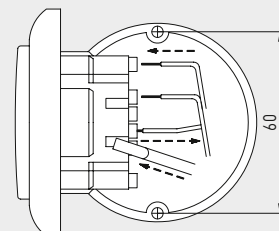
Sensor:	VOC sensor (metal oxide) with automatic calibration (VOC = volatile organic compounds) Detection of the gases is not selective
Measuring range:	0...100 % air quality (with reference to the calibration gas)
Accuracy:	typically ± 20 % final value (with reference to the calibration gas)
Service life:	> 60 months (under normal load conditions)
Warm-up time:	approx. 1 hour
Response time:	< 60 s
Output:	0 - 10 V (0 V = clean air, 10 V = polluted air) (low to elevated room air pollution load)
Mounting:	in-wall flush box Ø 55 mm
Electrical connection:	max. 1.5 mm², via push-in terminals
Ambient temperature:	storage -20...+50 °C; operation 0...+50 °C
Permitted humidity:	max. 95 % RH, non-condensing air
Medium:	clean air and non-aggressive, non-combustible gases
Protection class:	III (according to EN 60 730)
Protection type:	IP 20 (according to EN 60 529)
Standards:	CE-conformity according to EMC Directive 2014 / 30 / EU

SWITCH PROGRAMME

Manufacturer:	GIRA System 55 (other switch programmes, manufacturers, colours as well as prices available upon request)
Housing:	plastic, the standard colour is pure glossy white (similar to RAL 9010) (other colours are available upon request with colour variants depending on the respective light switch programme)

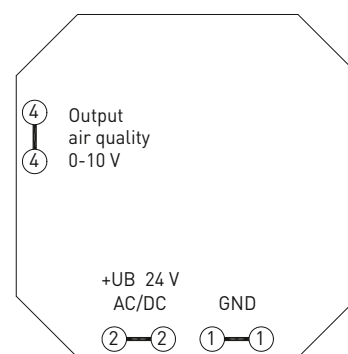
Mounting diagram
[mm]

In-wall



Schematic diagram

FSLQ-U





S+S REGELTECHNIK

AERASGARD® FSLQ

Room air-quality sensors (VOC) or measuring transducers,
in-wall in the panel switch programme,
with active output



Dimensional drawing
[mm]

FSLQ

FSLQ

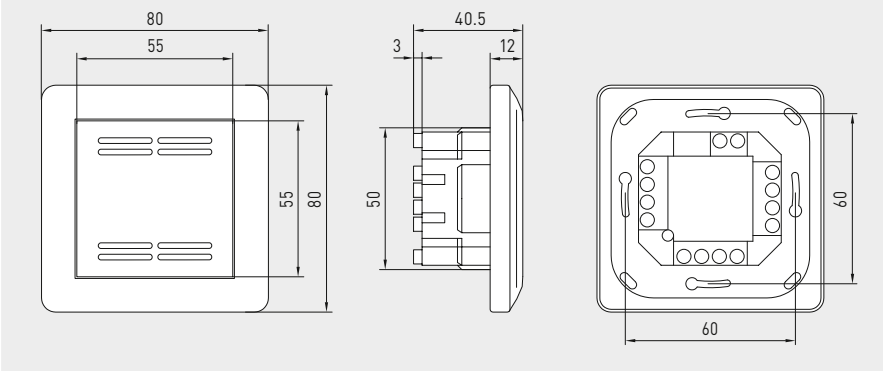


Table VOC content
MR: 0...100 %

VOC %	U _A [V]
0	0,0
5	0,5
10	1,0
15	1,5
20	2,0
25	2,5
30	3,0
35	3,5
40	4,0
45	4,5
50	5,0
55	5,5
60	6,0
65	6,5
70	7,0
75	7,5
80	8,0
85	8,5
90	9,0
95	9,5
100	10,0

AERASGARD®
FSLQ

Room air quality sensor (VOC) or measuring transducer,
in-wall

Type / WG01	Measuring range VOC	Output VOC	Item No.
FSLQ			
FSLQ-U	0...100 %	0-10 V	1501-5120-1000-162
Note: This unit must not be used as a safety-relevant device!			



**On-wall CO₂ sensor or measuring transducer,
self-calibrating, with multi-range switching
and active (Automatic Output Switching) / switching output**

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

Maintenance-free on-wall sensor **AERASGARD® AC02-SD** with active output, automatic calibration (fixed), in an impact-resistant plastic housing with quick-locking screws, for determining the CO₂ content of the air (0...2000 ppm/0...5000 ppm). The measuring transducer converts the measured values into a standard signal of 0-10V.

Maintenance-free on-wall sensor **AERASGARD® AC02-AW** with active/switching output, automatic calibration (can be deactivated), 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 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.

The CO₂ measurement is performed using an 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 sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

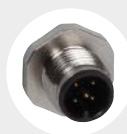
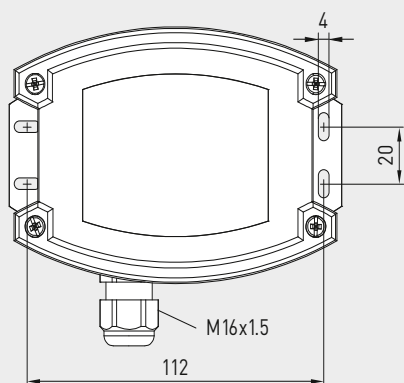
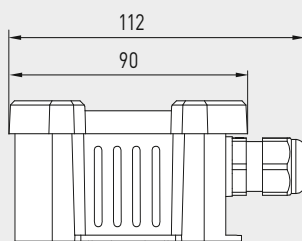
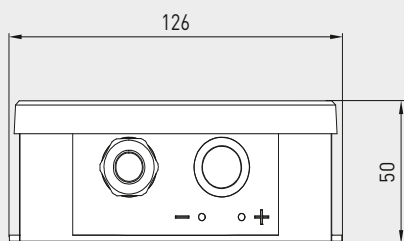
Power supply:	24 V AC / DC (± 10 %)
Power consumption:	typical < 4.8 W / 24 V DC; < 6.8 VA / 24 V AC; peak current 200 mA
Measurand:	CO ₂ [ppm]
Output:	AC02-SD 0-10 V (fixed) AC02-AW automatic 0-10 V / 4...20 mA (Automatic Output Switching – the unit detects the required output type and automatically 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:	AC02-SD without changeover contact AC02-AW potential-free changeover contact (24 V / 1 A), Switching point can be set via SET-Potentiometer, Setting range 10...95 % of set measuring range Hysteresis 1 % of set measuring range
Sensor:	photo-acoustic NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button), AC02-SD with automatic calibration (fixed) AC02-AW with automatic calibration (can be deactivated via DIP switches)
Measuring range:	0...2000 ppm or 0...5000 ppm (selectable via DIP switches)
Accuracy:	typically ± 50 ppm ± 5 % of measured value
Temperature dependence:	± 5 ppm per °C or ± 0.5 % of measured value per °C (whichever is higher)
Pressure dependence:	± 0.13 % per 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
Electrical connection:	0.14 - 1.5 mm ² , via screw 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 dimensions:	126 x 90 x 50 mm (Tyr 2)
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:	with display (see AERASGARD® AFTM-LQ-CO2) for displaying the actual CO ₂ content
ACCESSORIES	see table

**NEW**

S+S REGELTECHNIK

AERASGARD® AC02-SD
AERASGARD® AC02-AWOn-wall CO₂ sensor or measuring transducer,
self-calibrating, with multi-range switching
and active (Automatic Output Switching) / switching outputDimensional drawing
[mm]

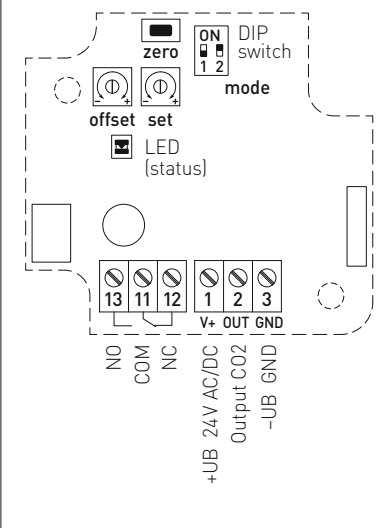
AC02 xx

**M12 connector**
(optional on request)**AC02-SD**
AC02-AW**CO₂**

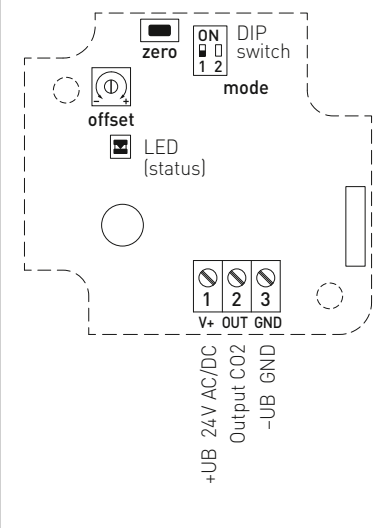
MR: 0...2000 ppm / 0...5000 ppm

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

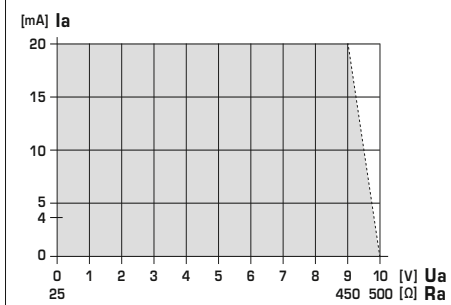
Schematic diagram **ACO2-AW**
(AOS)



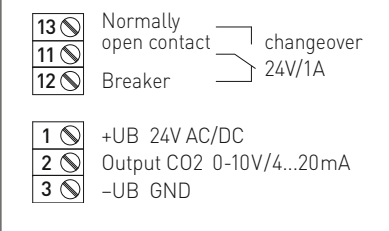
Schematic diagram **ACO2-SD**
(0-10 V)



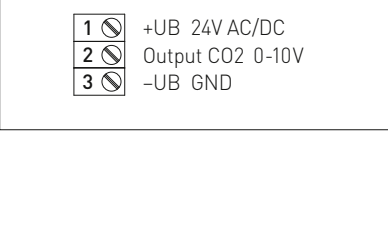
Dependence of output voltage
on output current **AOS-I**
4...20mA



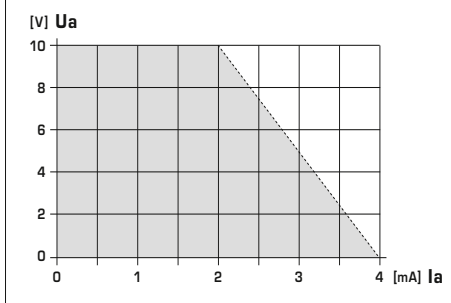
Connecting diagram **ACO2-AW**
(AOS)



Connecting diagram **ACO2-SD**
(0-10 V)



Dependence of output current
on output voltage **AOS-U**
0-10 V



DIP switch	ACO2-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

DIP switch	ACO2-SD
CO₂	
CO₂ content	DIP 1
0...5000 ppm	ON
0...2000 ppm (default)	OFF
DIP 2 is not assigned!	
For further technical information, see the operating instructions	

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

AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

**NEW**

S+S REGELTECHNIK

AERASGARD® ACO2-SD
AERASGARD® ACO2-AWOn-wall CO₂ sensor or measuring transducer,
self-calibrating, with multi-range switching
and active (Automatic Output Switching) / switching output**ACO2-AW-LCD**

see data sheet AFTM-LQ-CO2!

ACO2-SD
ACO2-AW**AERASGARD® ACO2-SD** On-wall CO₂ sensor, *Standard*
AERASGARD® ACO2-AW On-wall CO₂ sensor with changeover contact, *Premium*

Type / WG02	Measuring range CO ₂	Output CO ₂	Equipment Display	Item No.
ACO2-SD	(switchable)	(fixed)		U variant
ACO2-SD-U	0...2000 / 5000 ppm	0-10 V	–	1501-7110-1001-600
ACO2-AW	(switchable)	(automatic)		AOS
ACO2-AW	0...2000 / 5000 ppm	0-10 V / 4...20 mA	W	1501-7110-E301-600
ACO2-AW LCD	0...2000 / 5000 ppm	0-10 V / 4...20 mA	W ■	see AFTM-LQ-CO2
Output / equipment:	0–10 V / 4...20 mA (automatic via AOS) – W = with changeover contact For unit type 'SD', 0–10 V is permanently set – no changeover contact! AOS units ACO2-AW with display see extra data sheet 'AFTM-LQ-CO2'			
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

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!		

**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!



S+S REGELTECHNIK

NEW

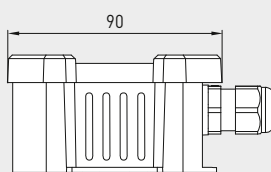
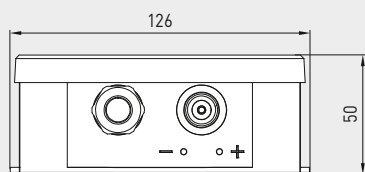
AERASGARD® ATM-CO2-SD AERASGARD® AFTM-(LQ)-CO2-AW / A(LQ)-CO2-AW

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

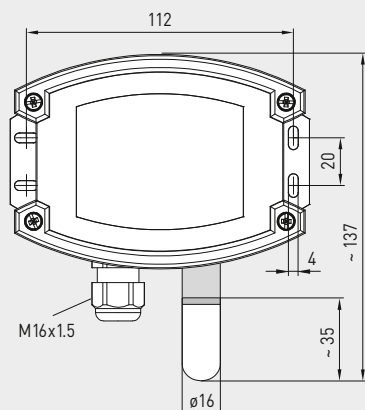


Dimensional drawing
[mm]

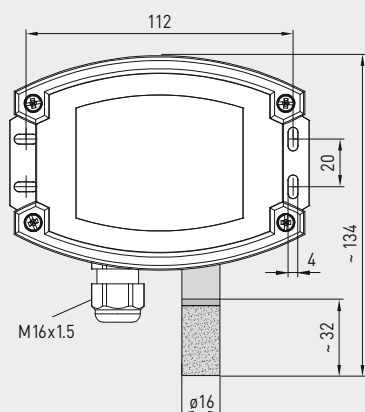
AFTM-LQ-CO2-AW



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

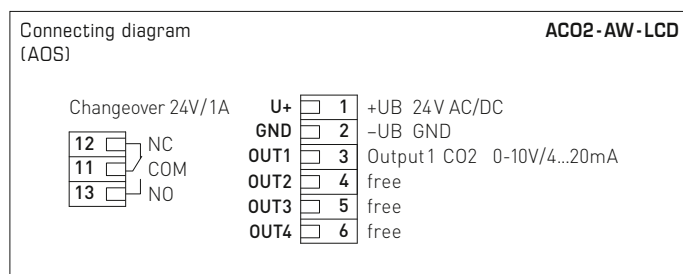
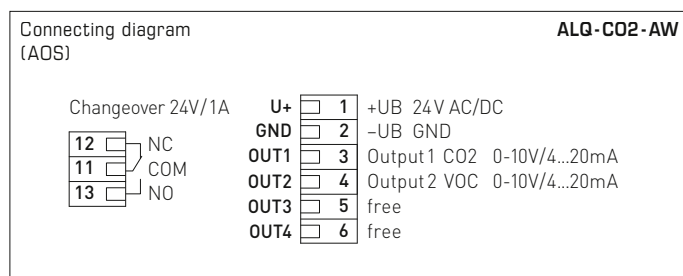
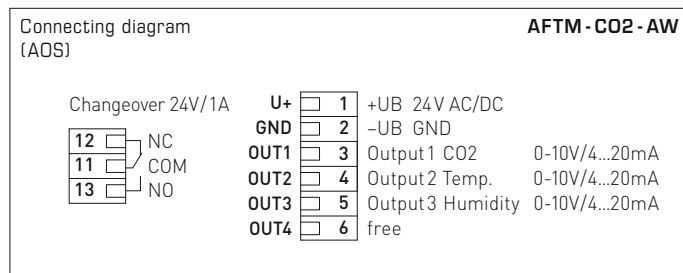
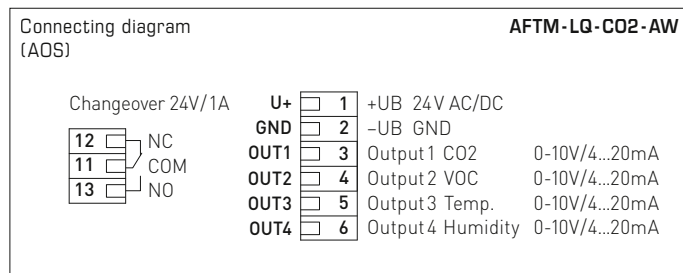
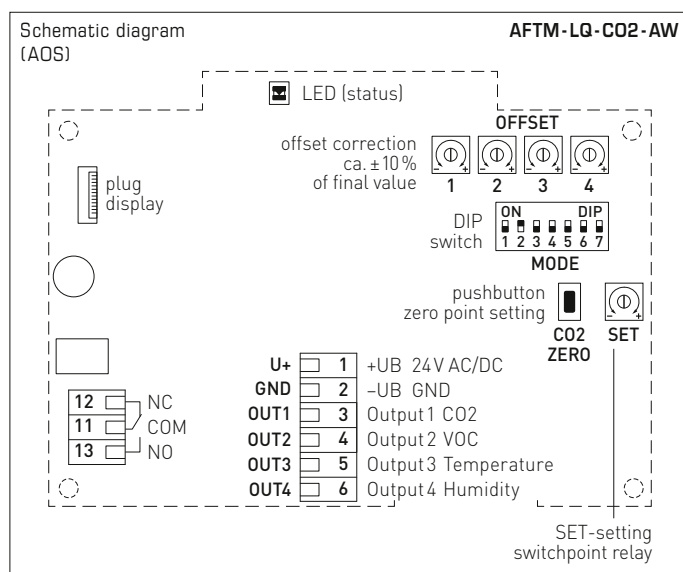


TECHNICAL DATA

(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:			ON
SI (default):			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.

AC02-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



AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

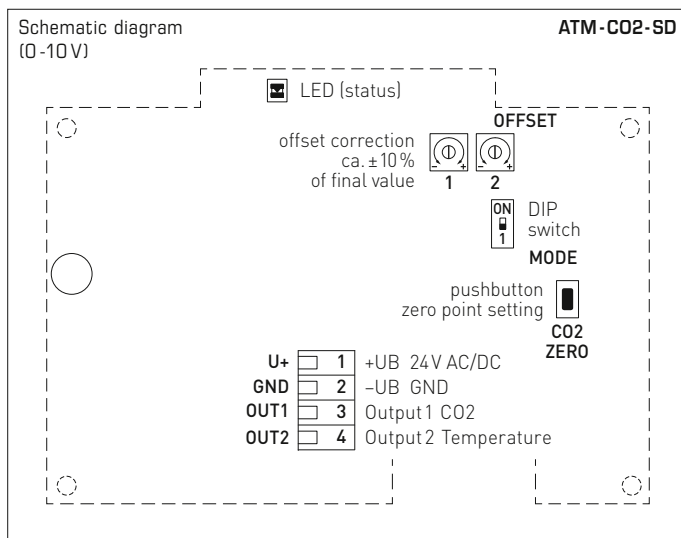
**NEW**

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

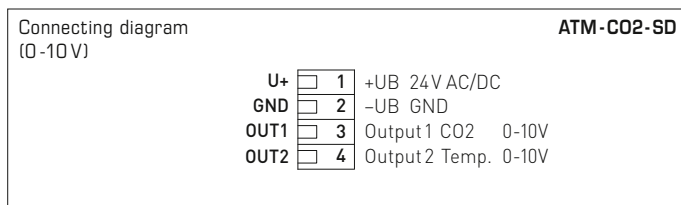
Note:

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

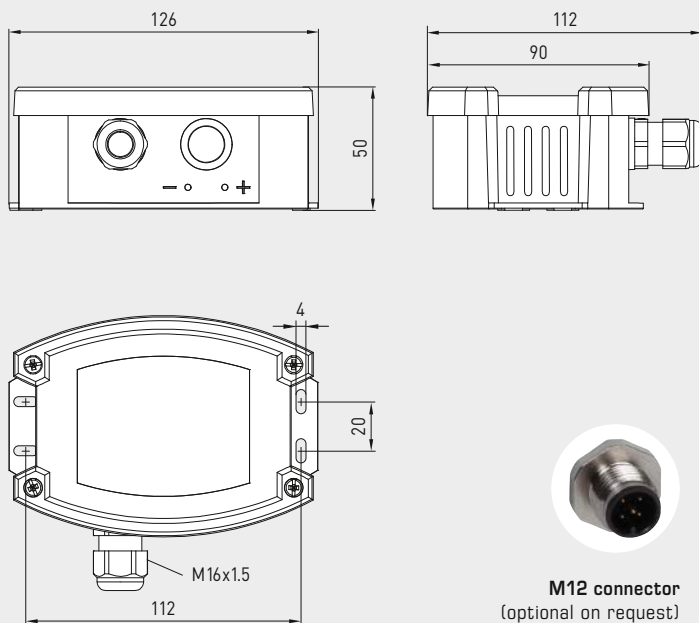
MR: 0...100 % VOC

% 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

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]

ALQ-CO2-AW
AC02-AW-LCD

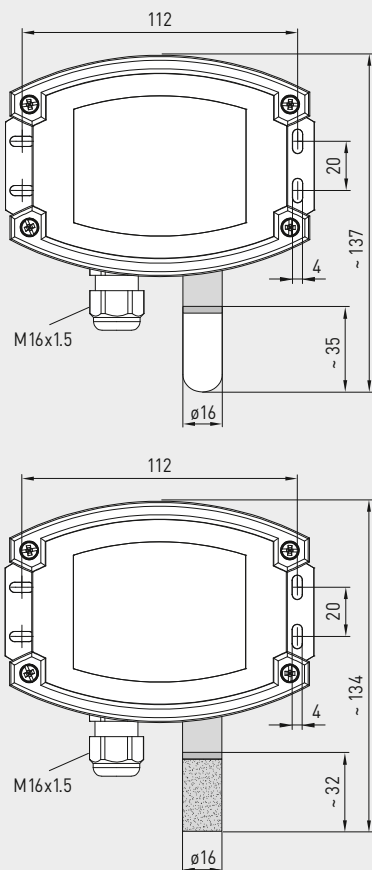


ALQ-CO2-AW
AC02-AW-LCD



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)



**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

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® AC02-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	Item No.
	Humidity	Temperature	CO2	VOC	Display	
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 , 0-10 V 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

**Fine dust sensor / particulate sensor,
on-wall sensor and measuring transducer, with multi-range switching
and active output**

Maintenance-free on-wall sensor **AERASGARD® APS-SD** with active output, in an impact-resistant plastic housing with quick-locking screws, for measuring the fine-dust content (0...500 µg/m³). The measuring transducer converts the measured values into a standard signal of 0-10 V.

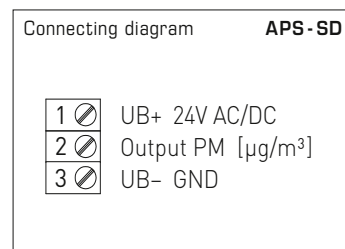
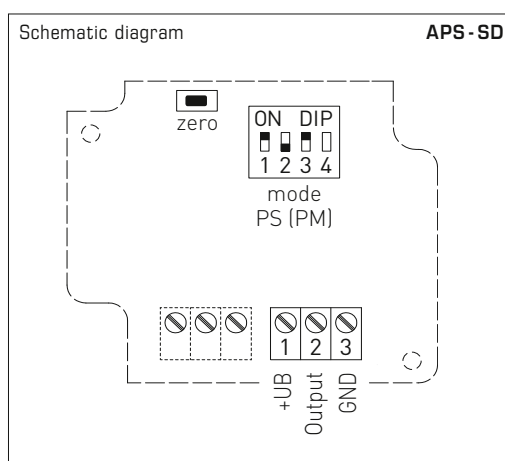
The sensor is used in offices, hotels, convention centres, apartments, shops, etc. and is used for evaluation of the indoor climate. This enables energy-saving, demand-based room ventilation, thereby reducing operating costs and improving well-being. One sensor for every 30 m² of room area is recommended.

An optical **fine dust sensor** precisely detects **particulate (PM)** of the size category 0.3 to 10 micrometres. The sensor is factory-calibrated.

TECHNICAL DATA

Power supply:	24 V AC / DC (± 10 %)
Power consumption:	typical < 1.5 W / 24 V DC; < 2.9 VA / 24 V AC
Output:	0-10 V
FINE DUST (PM)	
Sensor (PM):	optical particulate sensor (PM = particulate matter) , fine-dust sensor with laser- and soiling-resistant technology
Measuring range:	multi-range switching (selectable via DIP switches) 0...50, 0...100, 0...300 or 0...500 µg/m³
Particle size:	PM 2.5 (0.3...2.5 µm); PM 10 (0.3...10 µm)
Accuracy:	typical ± 10 µg/m³ (± 10% of the measured value) for PM 2.5 typical ± 25 µg/m³ (± 25% of the measured value) for PM 10
Long-term stability:	± 1.25 µg/m³ (± 1.25 % of measured value/year)
Service life:	> 10 years
Response time:	< 2 minutes
Warm-up time:	approx. 1 hour
Ambient temperature:	0...+50 °C
Permitted humidity:	0...95 % RH (non-precipitating air)
Housing:	plastic, UV-resistant, polyamide material, 30 % glass-globe reinforced, with quick-locking screws (slotted/Phillips head combination) colour traffic white (similar to RAL 9016)
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)
Electrical connection:	0.14–1.5 mm², via screw terminals
Process connection:	via screws
Protection class:	III (according to EN 60 730)
Safety class:	IP 30 (according to EN 60 529)
Standards:	CE-conformity according to EMC Directive 2014 / 30 / EU

DIP switch		APS-SD	
Fine dust (PM) Measuring range	DIP 1	DIP 2	
0...50 µg/m³	OFF	OFF	
0...100 µg/m³ (default)	ON	OFF	
0...300 µg/m³	OFF	ON	
0...500 µg/m³	ON	ON	
Fine dust (PM) Particle size			DIP 3
PM 2.5 (default)			ON
PM 10			OFF
Note: DIP 4 is not assigned !			





S+S REGELTECHNIK

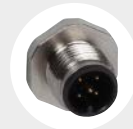
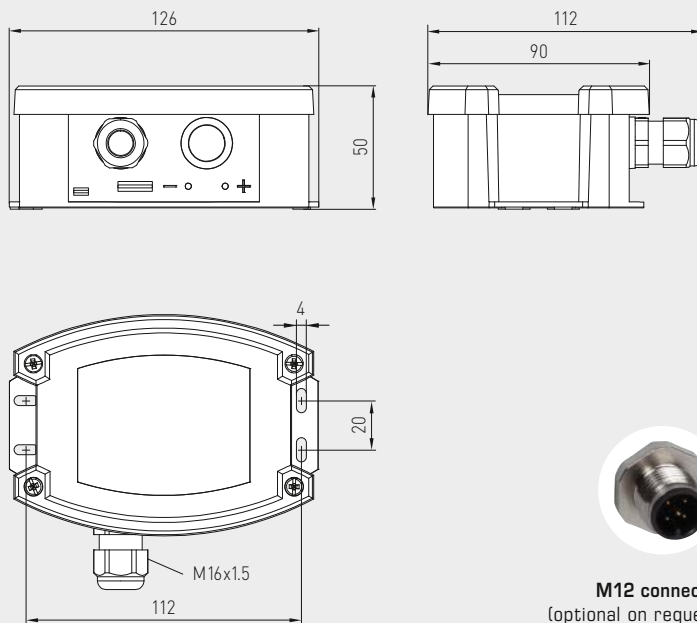
AERASGARD® APS-SD

Fine dust sensor / particulate sensor,
on-wall sensor and measuring transducer, with multi-range switching
and active output



Dimensional drawing

APS-SD



M12 connector
(optional on request)

APS-SD



AERASGARD® APS-SD				
On-wall fine dust sensor / fine dust sensor / particulate sensor (PM), Standard				
Type / WG02	Measuring Range	Particle size	Output	Item No.
APS-SD	(switchable)	(switchable)		
APS-SD-U	0... 50 µg/m³ 0... 100 µg/m³ 0... 300 µg/m³ 0... 500 µg/m³	PM 2.5 PM 10	0-10 V	1501-7130-1001-000
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!		

Duct air quality sensor (VOC) or measuring transducer, incl. mounting flange, self-calibrating, with multi-range switching and active (Automatic Output Switching) / switching output

Patented quality product (patent no. DE 10 2014 010 719.1 (FLOW), DE 10 2015 015 941 B4 (AOS))

Maintenance-free duct sensor **AERASGARD® KLQ-SD** with active output, automatic calibration (fixed), in an impact-resistant plastic housing with quick-locking screws, for determining the air quality (0...100 % VOC). The measuring transducer converts the measured values into a standard signal of 0-10 V.

Maintenance-free duct sensor **AERASGARD® KLQ-AW** with active/switching output, automatic calibration (fixed), in an impact-resistant plastic housing with quick-locking screws, for determining the air quality (0...100 % VOC). 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.

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.

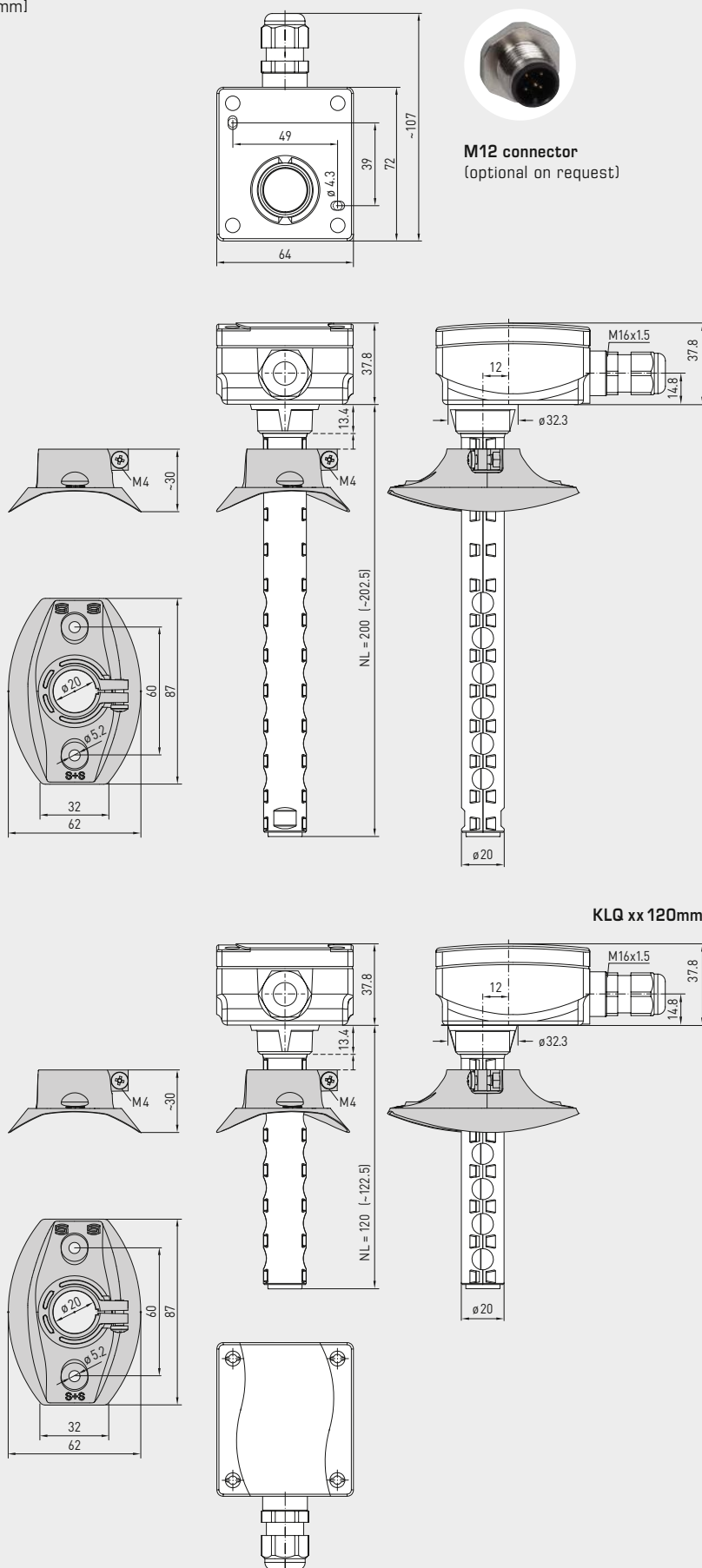
TECHNICAL DATA

Power 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
Measurand:	VOC [%]
Output:	KLQ-SD 0-10 V (fixed) KLQ-AW automatic 0-10 V / 4...20 mA (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:	KLQ-SD without changeover contact KLQ-AW potential-free changeover contact (24 V / 1 A), Switching point can be set via SET-Potentiometer, Setting range 10...95 % of set measuring range Hysteresis 1 % of set measuring range
Sensor:	VOC sensor (metal oxide) (volatile organic compounds), with automatic air quality algorithm
Measuring range:	0...100 % air quality, referred to calibrating gas, multi-range switching VOC sensitivity SLOW / NORMAL / FAST (selectable via DIP switches)
Genauigkeit:	typical ± 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
Pressure dependence:	± 0.13 % per 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
Electrical connection:	0.14 - 1.5 mm ² , via screw 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 dimensions:	72 x 64 x 37,8 mm (Tyr 1 without display)
Protective tube:	PLEUROFORM™ , material polyamide (PA6), with torsion protection, Ø 20 mm, NL = 200 mm / 120 mm (shortened), v _{max} = 30 m/s (air)
Process connection:	via flange made of plastic (included in scope of delivery)
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529)* Housing tested, TÜV SÜD, Report No. 713139052 (Tyr 1) * Housing in the built-in state (permeable PLEUROFORM: IP 30)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU

Duct air quality sensor (VOC) or measuring transducer, incl. mounting flange, self-calibrating, with multi-range switching and active (Automatic Output Switching) / switching output

Dimensional drawing
[mm]

KLQ xx



KLQ-SD
KLQ-AW



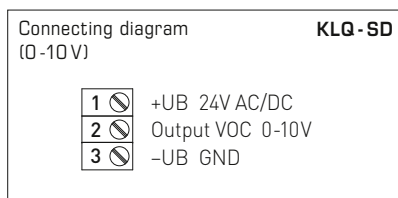
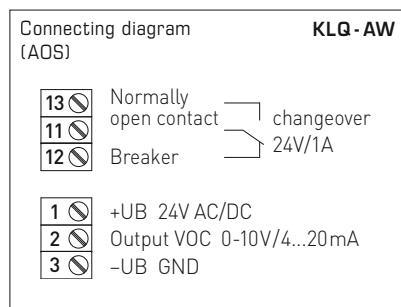
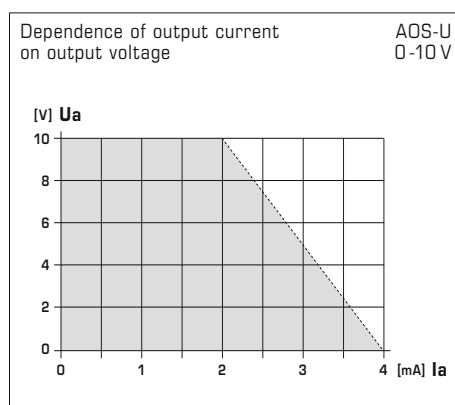
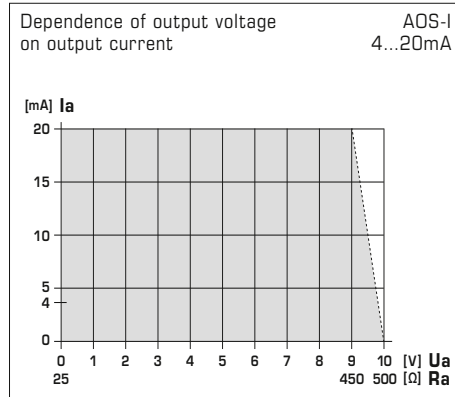
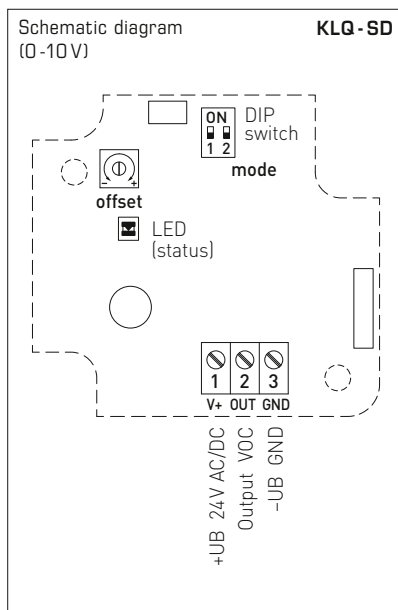
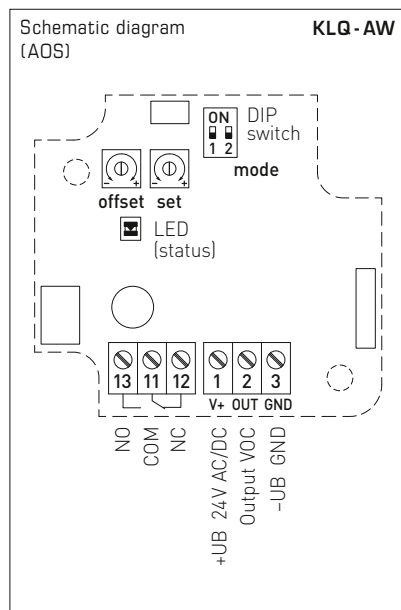
KLQ-SD 120mm
KLQ-AW 120mm



MFT-20-K

Mounting flange,
plastic





For further technical information,
see the operating instructions

DIP switch KLQ-AW / KLQ-SD		
VOC		
VOC sensitivity	DIP 1	DIP 2
FAST	ON	ON
SLOW	ON	OFF
NORMAL (default)	OFF	OFF

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

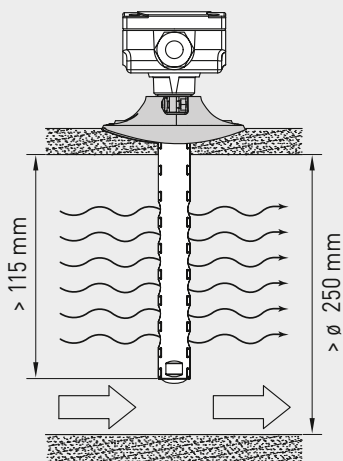
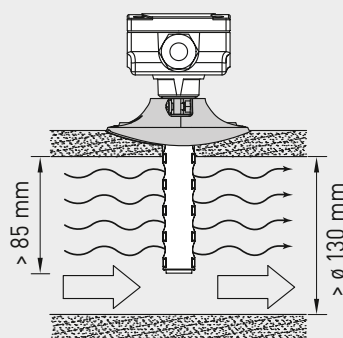
AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

**NEW**

S+S REGELTECHNIK

AERASGARD® KLQ-SD
AERASGARD® KLQ-AW

Duct air quality sensor (VOC) or measuring transducer, incl. mounting flange,
self-calibrating, with multi-range switching
and active (Automatic Output Switching) / switching output

**PATENTED**Mounting diagram
(NL 200 mm)**PATENTED**Mounting diagram
(NL 120 mm)

AERASGARD® KLQ-SD Duct air quality sensor, *Standard*
AERASGARD® KLQ-AW Duct air quality sensor with changeover contact, *Premium*

Type / WG02	Measuring ranges VOC	Output VOC	Equipment (NL)	Item No.
KLQ-SD		(fixed)		U variant
KLQ-SD-U 120mm	0...100 %	0-10 V	120 mm	– 1501-3170-1001-601
KLQ-SD-U	0...100 %	0-10 V	200 mm	– 1501-3170-1001-600
KLQ-AW		(automatic)		AOS
KLQ-AW 120MM	0...100 %	0-10 V / 4...20 mA	120 mm	W 1501-3150-E301-601
KLQ-AW	0...100 %	0-10 V / 4...20 mA	200 mm	W 1501-3150-E301-600
Output / equipment:	0-10 V / 4...20 mA (automatic via AOS) – W = with changeover contact For unit type 'SD', 0-10 V is permanently set – 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!			

Duct CO₂ sensors and measuring transducers, incl. mounting flange, self-calibrating, with multi-range switching and active (Automatic Output Switching) / switching output

Patented quality product (patent no. DE 10 2014 010 719.1 (FLOW), DE 10 2015 015 941 B4 (AOS))

Maintenance-free duct sensor **AERASGARD® KC02-SD** with active output, automatic calibration (fixed), in an impact-resistant plastic housing with quick-locking screws, for determining the CO₂ content of the air (0...2000 ppm/0...5000 ppm). The measuring transducer converts the measured values into a standard signal of 0-10V.

Maintenance-free duct sensor **AERASGARD® KC02-AW** with active/switching output, automatic calibration (can be deactivated), 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 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.

The CO₂ measurement is performed using an 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 sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

Power 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
Measurand:	CO ₂ [ppm]
Output:	KC02-SD 0-10V (fixed) KC02-AW automatic 0-10V/4...20 mA (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:	KC02-SD without changeover contact KC02-AW potential-free changeover contact (24 V / 1 A), Switching point can be set via SET-Potentiometer, Setting range 10...95 % of set measuring range Hysteresis 1 % of set measuring range
Sensor:	photo-acoustic NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero button), KC02-SD with automatic calibration (fixed) KC02-AW with automatic calibration (can be deactivated via DIP switches)
Measuring range:	0...2000 ppm or 0...5000 ppm (selectable via DIP switches)
Accuracy:	typically ± 50 ppm ± 5 % of measured value
Temperature dependence:	± 5 ppm per °C or ± 0.5 % of measured value per °C (whichever is higher)
Pressure dependence:	± 0.13 % per 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
Electrical connection:	0.14 - 1.5 mm ² , via screw 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 dimensions:	72 x 64 x 37,8 mm (Tyr 1 without display) 72 x 64 x 43,3 mm (Tyr 1 with display)
Protective tube:	PLEUROFORM™ , material polyamide (PA6), with torsion protection, Ø 20 mm, NL = 200 mm / 120 mm (shortened), v _{max} = 30 m/s (air)
Process connection:	via flange made of plastic (included in scope of delivery)
Protection class:	III (according to EN 60 730)
Protection type:	IP65 (according to EN 60 529)* Housing tested, TÜV SÜD, Report No. 713139052 (Tyr 1) * Housing in the built-in state (permeable PLEUROFORM: IP 30)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU
Optional:	Display with illumination , two line, cutout approx. 36 x 15 mm (W x H), for displaying the Actual CO₂ content and switching point

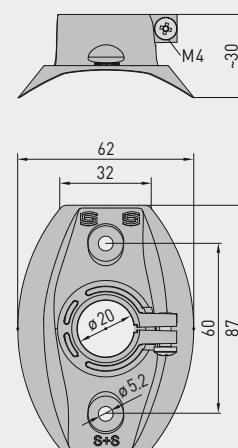
KC02-SD 120mm
KC02-AW 120mm
without display



KC02-AW 120mm
with display



Dimensional drawing [mm] **MFT-20-K**





NEW

S+S REGELTECHNIK

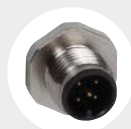
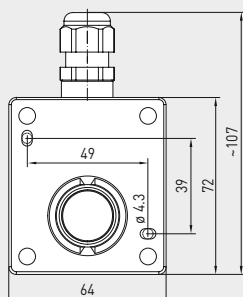
AERASGARD® KC02-SD
AERASGARD® KC02-AW

Duct CO₂ sensors and measuring transducers, incl. mounting flange, self-calibrating, with multi-range switching and active (Automatic Output Switching) / switching output



Dimensional drawing
[mm]

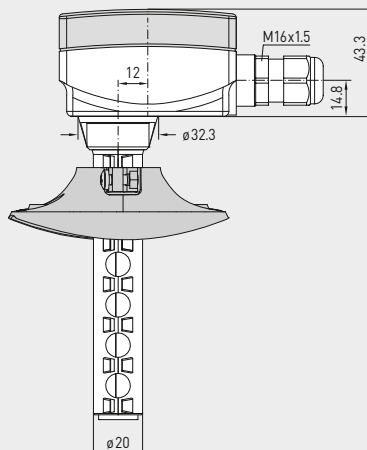
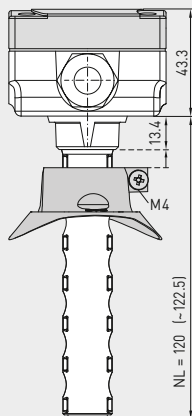
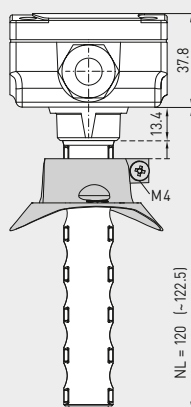
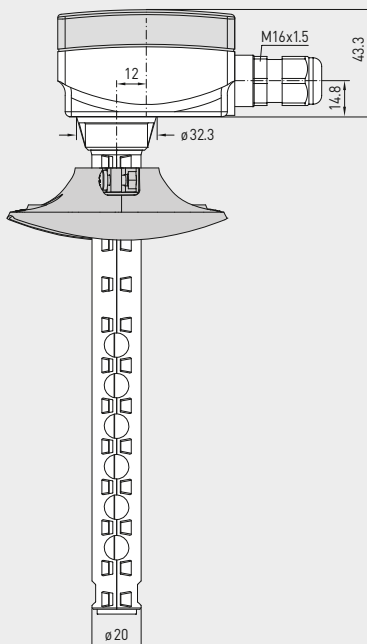
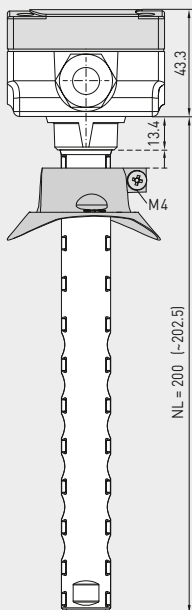
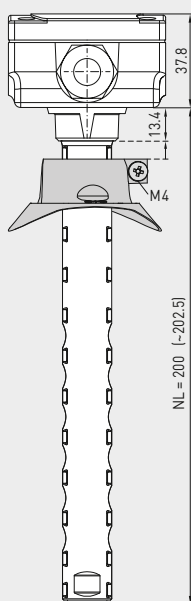
KC02 xx



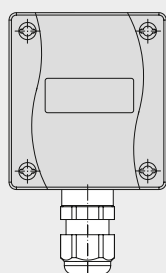
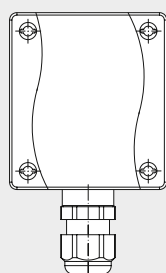
M12 connector
(optional on request)

without display

with display



KC02 xx 120mm



KC02-SD
KC02-AW
without display



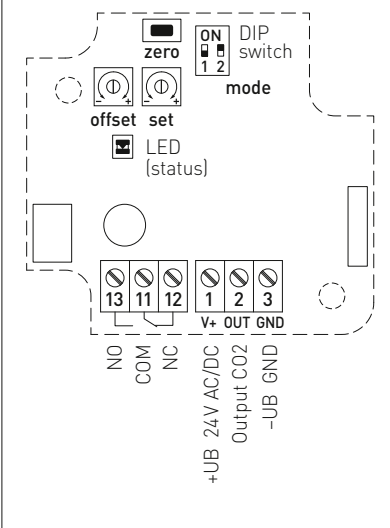
KC02-AW LCD
with display



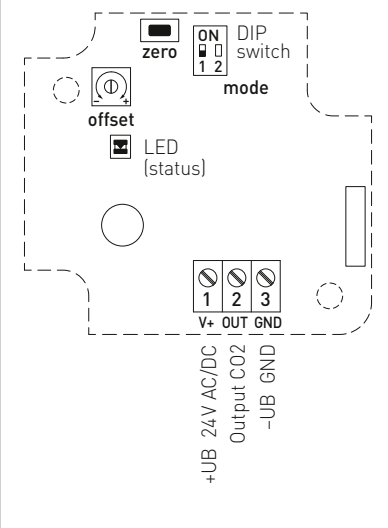
MFT-20-K
Mounting flange,
plastic



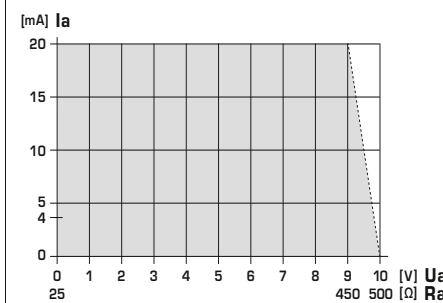
Schematic diagram
(AOS) **KC02-AW**



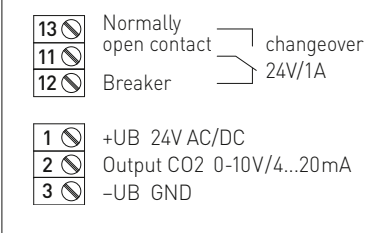
Schematic diagram
(0-10 V) **KC02-SD**



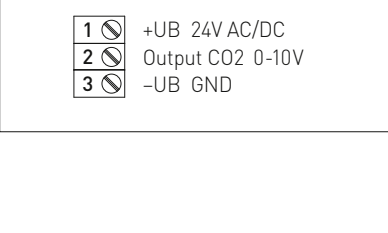
Dependence of output voltage
on output current **AOS-I**
4...20mA



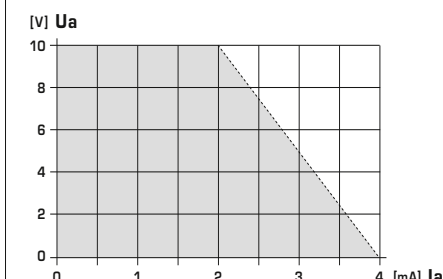
Connecting diagram
(AOS) **KC02-AW**



Connecting diagram
(0-10 V) **KC02-SD**



Dependence of output current
on output voltage **AOS-U**
0-10 V



DIP switch	KC02-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

DIP switch	KC02-SD
CO₂	
CO₂ content	DIP 1
0...5000 ppm	ON
0...2000 ppm (default)	OFF
DIP 2 is not assigned!	
For further technical information, see the operating instructions	

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

AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

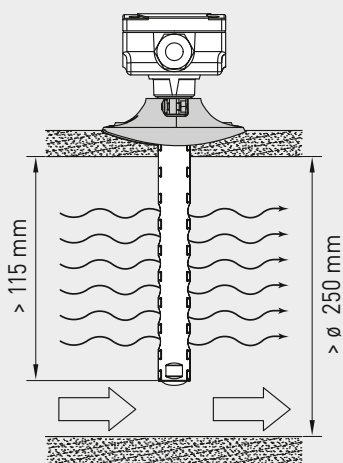


NEW

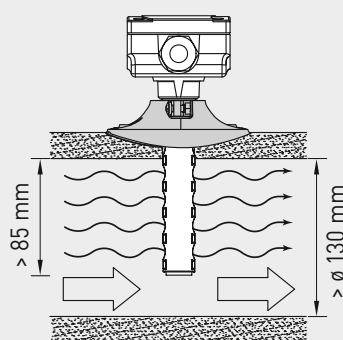
S+S REGELTECHNIK

AERASGARD® **KCO2-SD**
AERASGARD® **KCO2-AW**Duct CO₂ sensors and measuring transducers, incl. mounting flange,
self-calibrating, with multi-range switching
and active (Automatic Output Switching) / switching output

PATENTED

Mounting diagram
(NL 200 mm)

PATENTED

Mounting diagram
(NL 120 mm)AERASGARD® **KCO2-SD** Duct CO₂ sensors, *Standard*AERASGARD® **KCO2-AW** Duct CO₂ sensors with changeover contact, *Premium*

Type / WG02	Measuring ranges CO ₂	Output CO ₂	Equipment (NL) Display	Item No.
KCO2-SD	(switchable)	(fixed)		U variant
KCO2-SD-U 120MM	0...2000 / 5000 ppm	0-10 V	120mm	– 1501-3160-1001-601
KCO2-SD-U	0...2000 / 5000 ppm	0-10 V	200mm	– 1501-3160-1001-600
KCO2-AW	(switchable)	(automatic)		AOS
KCO2-AW 120mm	0...2000 / 5000 ppm	0-10 V / 4...20mA	120mm	W 1501-3140-E301-601
KCO2-AW LCD 120mm	0...2000 / 5000 ppm	0-10 V / 4...20mA	120mm	W ■ 1501-3140-E321-601
KCO2-AW	0...2000 / 5000 ppm	0-10 V / 4...20mA	200mm	W 1501-3140-E301-600
KCO2-AW LCD	0...2000 / 5000 ppm	0-10 V / 4...20mA	200mm	W ■ 1501-3140-E321-600
Output / equipment:	0–10 V / 4...20 mA (automatic via AOS) – W = with changeover contact For unit type 'SD', 0–10 V is permanently set – 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!			

AERASGARD® KTM-CO2-SD

AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

NEW



S+S REGELTECHNIK

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with active output (Automatic Output Switching)/switching output

Patented quality product (patent no. DE 10 2014 010 719.1 (FLOW), DE 10 2015 015 941 B4 (AOS))

Maintenance-free duct sensor **AERASGARD® KTM-CO2-SD** with active output, automatic calibration, incl. mounting flange, 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 duct sensor **AERASGARD® KFTM-LQ-CO2-AW** with active / switching output, automatic calibration, incl. mounting flange, 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 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:	KTM-CO2-SD 0-10 VV (fixed) Kxx-CO2-AW automatic 0-10 V / 4...20 mA (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:	KTM-CO2-SD without changeover contact Kxx-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) KTM-CO2-SD with automatic calibration (fixed) Kxx-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!

SF-K

Plastic sinter filter (standard)



SF-M

Metal sinter filter (optional)



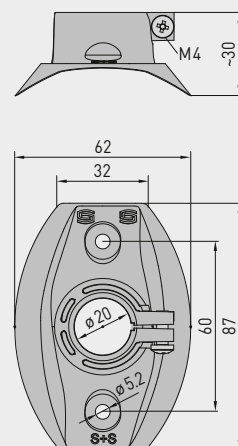
MFT-20-K

Mounting flange, plastic



Dimensional drawing (mm)

MFT-20-K



**NEW**

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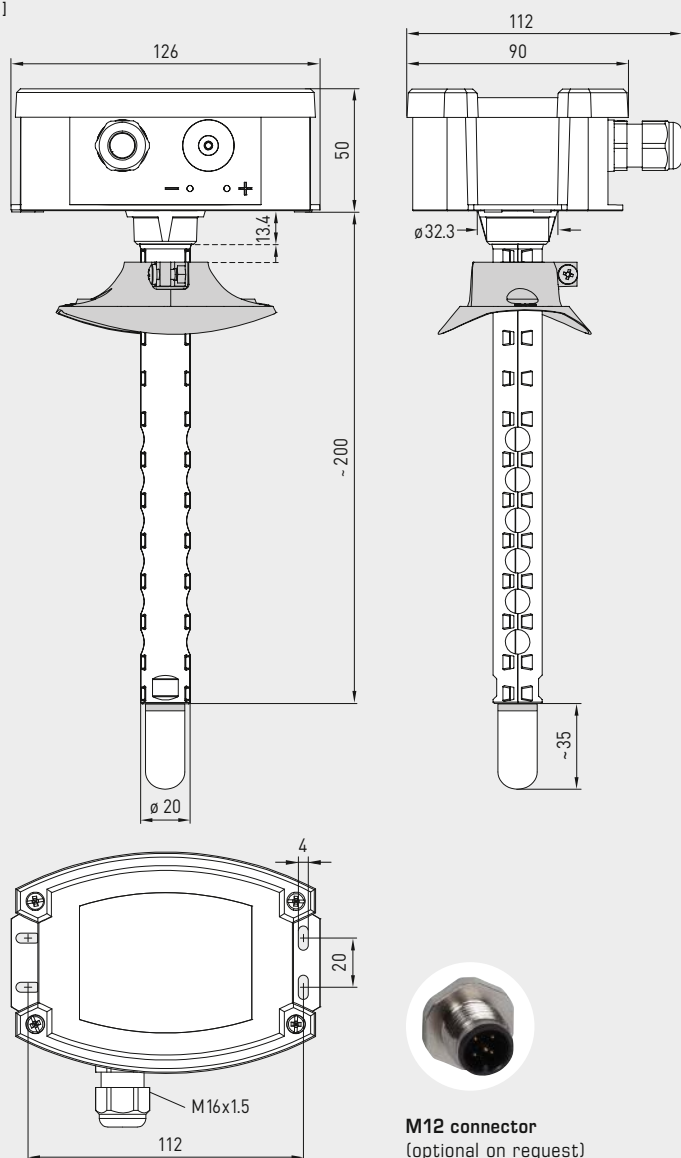
AERASGARD® KTM-CO2-SD AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO₂ content and air quality (VOC), calibratable, with active output (Automatic Output Switching) / switching output



Dimensional drawing
[mm]

KFTM-LQ-CO2-AW



M12 connector
(optional on request)

KFTM-LQ-CO2-AW
with plastic sinter filter
(standard)



KFTM-LQ-CO2A-AW
with display and
plastic sinter filter
(standard)



TECHNICAL DATA

(continued)

Pressure dependence:	± 0.13 % per 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:	0.14 - 1.5 mm ² , via screw 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:	PLEUROFORM™ , material polyamide (PA6), with torsion protection, v _{max} = 30 m/s (air) Ø 20 mm, NL = 200 mm (optional 120 mm), L = 202.5 mm (without filter) / L = 235 mm (with filter)
Process connection:	via flange made of plastic (included in scope of delivery)
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529) Housing in the built-in state (permeable PLEUROFORM: IP 30)
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 CO ₂ content

AERASGARD® KTM-CO2-SD

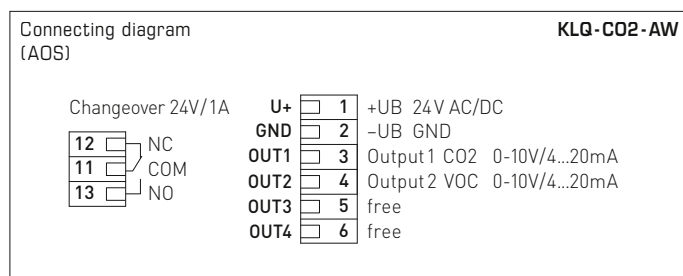
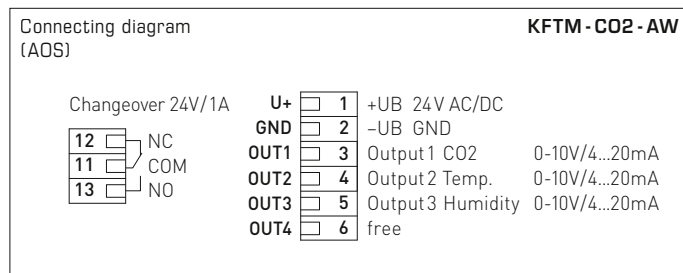
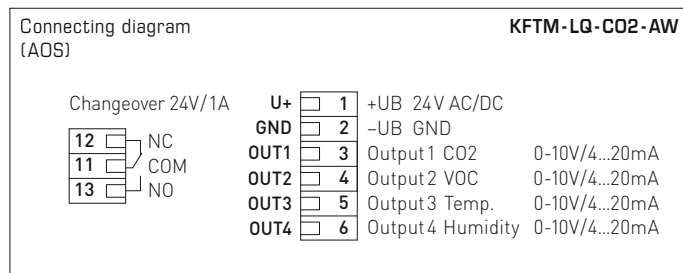
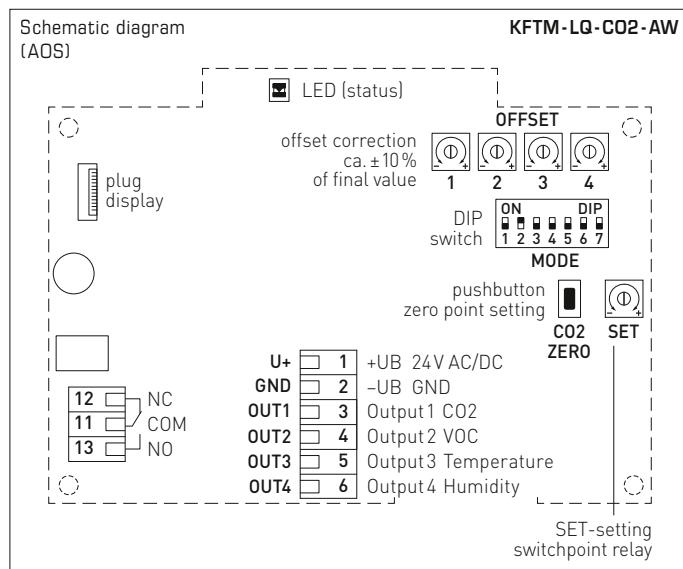
AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with active output (Automatic Output Switching) / switching output

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S+S REGELTECHNIK



DIP switches		KFTM-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).				





KFTM-CO2-AW: DIP 3 and 4 not assigned.

KLQ-CO2-AW: DIP 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...20 mA



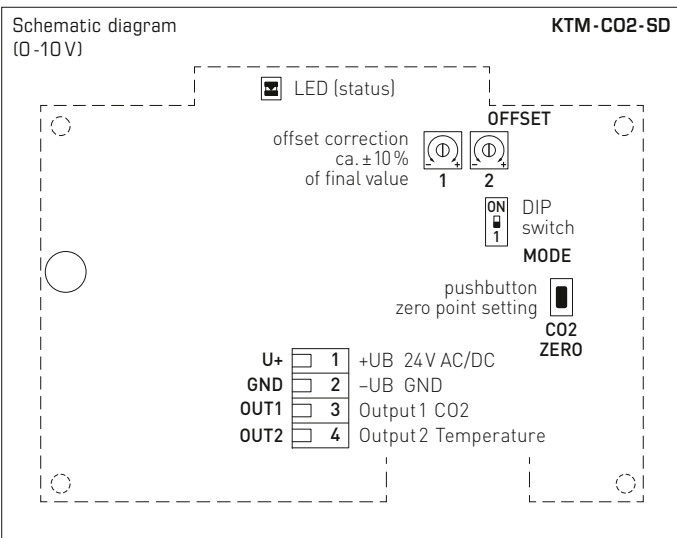


S+S REGELTECHNIK

NEW

AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with active output (Automatic Output Switching) / switching output



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

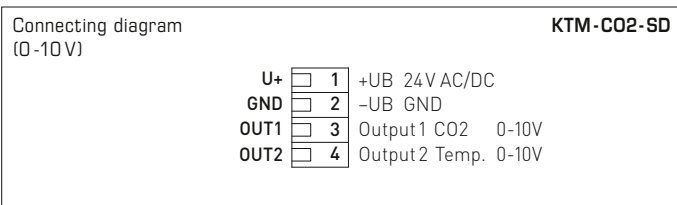
Note:

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® KTM-CO2-SD

AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with active output (Automatic Output Switching) / switching output

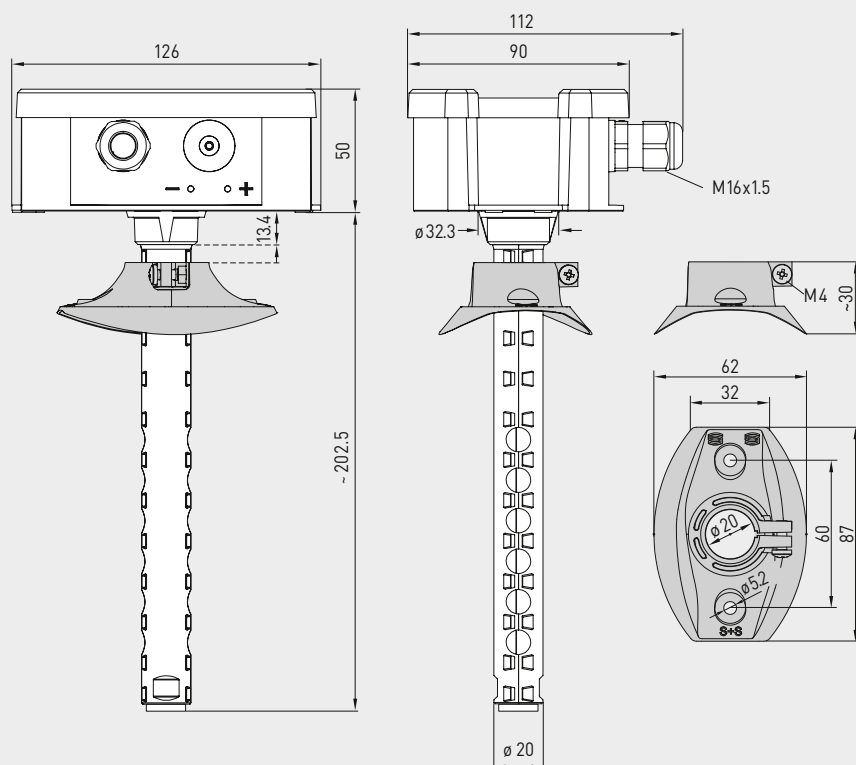
NEW



S+S REGELTECHNIK

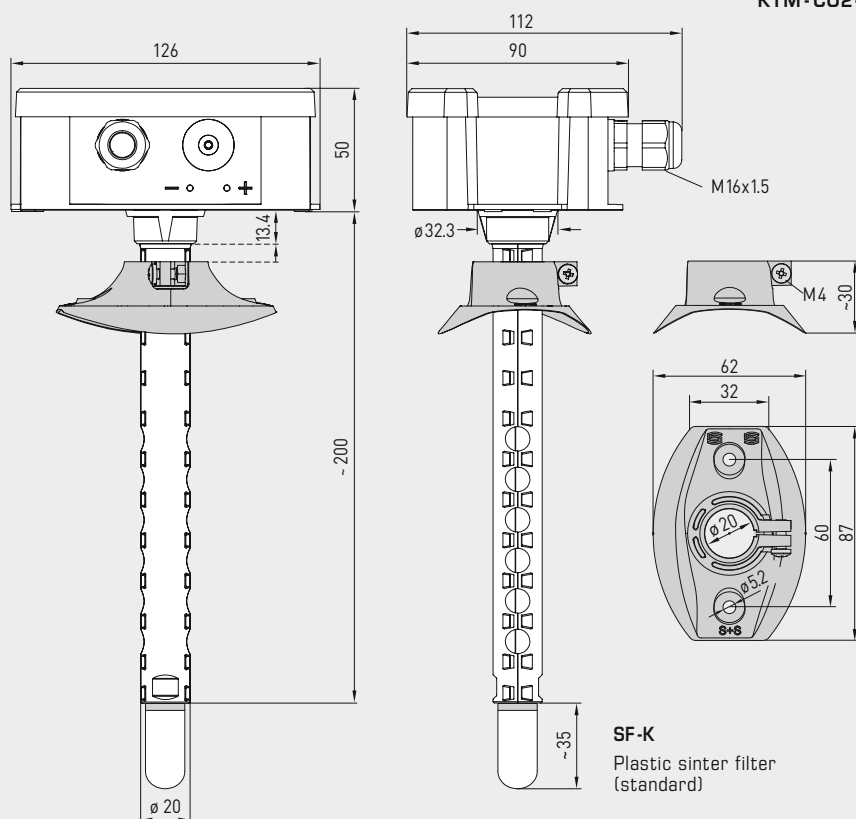
Dimensional drawing
[mm]

KLQ-CO2-AW



Dimensional drawing
[mm]

KFTM-CO2-AW
KFTM-LQ-CO2-AW
KTM-CO2-SD



SF-K
Plastic sinter filter
(standard)

SF-M
Metal sinter filter
(optional)





NEW

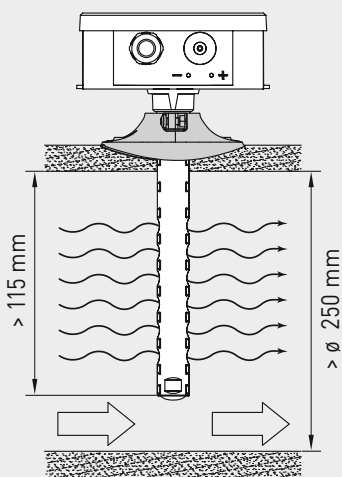
S+S REGELTECHNIK

AERASGARD® KTM-CO2-SD AERASGARD® KFTM-(LQ)-CO2-AW / KLQ-CO2-AW

Multifunctional duct sensors and measuring transducers, incl. mounting flange, for humidity, temperature, CO₂ content and air quality (VOC), calibratable, with active output (Automatic Output Switching) / switching output



PATENTED

Mounting diagram
(NL 200 mm)KLQ-CO2-AW
without filterKFTM-CO2-AW
KFTM-LQ-CO2-AW
KTM-CO2-SD
with plastic
sinter filter

AERASGARD® KTM-CO2-SD

Duct sensor for temperature and CO₂ content, *Standard*

AERASGARD® KLQ-CO2-AW

Duct sensor for air quality (VOC) and CO₂ content, *Premium*

AERASGARD® KFTM-CO2-AW

Multifunctional duct sensor
for humidity, temperature and CO₂ content, *Deluxe*

AERASGARD® KFTM-LQ-CO2-AW

Multifunctional duct sensor
for humidity, temperature, CO₂ content and air quality (VOC), *Deluxe*

Type / WG02	Measuring range				Equipment	Item No.
	Humidity	Temperature	CO2	VOC	Display	
KTM-CO2-SD			(switchable)			U variant
KTM-CO2-SD-U	–	–35...+80 °C / –31...+176 °F	0...2000 / 5000 ppm	–	–	1501-8112-1001-600
KLQ-CO2-AW			(switchable)			AOS
KLQ-CO2-AW	–	–	0...2000 / 5000 ppm	0...100 %	W	1501-8111-E301-600
KLQ-CO2-AW LCD	–	–	0...2000 / 5000 ppm	0...100 %	W ■	1501-8111-E371-600
KFTM-CO2-AW			(switchable)			AOS
KFTM-CO2-AW	0...100 % RH	–35...+80 °C	0...2000 / 5000 ppm	–	W	1501-8116-E301-600
KFTM-CO2-AW LCD	0...100 % RH	–35...+80 °C / –31...+176 °F	0...2000 / 5000 ppm	–	W ■	1501-8116-E371-600
KFTM-LQ-CO2-AW			(switchable)			AOS
KFTM-LQ-CO2-AW	0...100 % RH	–35...+80 °C	0...2000 / 5000 ppm	0...100 %	W	1501-8118-E301-600
KFTM-LQ-CO2-AW LCD	0...100 % RH	–35...+80 °C / –31...+176 °F	0...2000 / 5000 ppm	0...100 %	W ■	1501-8118-E371-600
Outputs / equipment:	0 – 10 V / 4...20 mA (automatic via AOS) – W = with changeover contact For unit type KTM-CO2-SD , 0-10 V is fixed – no changeover contact!					
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101 on request shortened protective tube PLEUROFORM™ , NL = 120 mm 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



Maintenance-free room pendulum sensor **AERASGARD® RPC02** with active output and **RPC02-W** with active/switching output, automatic calibration (can be deactivated via DIP) and manual calibration (via push-button), in an impact-resistant plastic housing with quick-locking screws, optionally with / without display, for determining the CO₂ content in the air (0 to 2000 / 5000 / 10000 ppm). The measuring transducer converts the measurand into a standard signal of 0-10 V (output 1) and 4...20 mA (output 2).

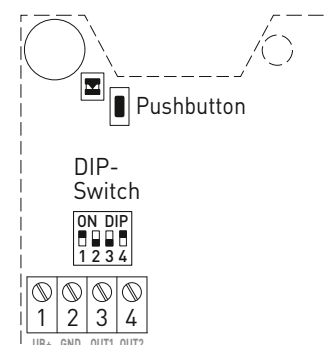
The CO₂ measurement is performed using an optical **NDIR sensor** (non-dispersive infra-red technology). The sensor is simply suspended into the room as a pendulum, which ensures an accurate measurement result in rooms with high walls. The zero point calibration (400 ppm CO₂) can be carried out in relation to the current ambient conditions by manual calibration on the unit. The air quality sensor performs an automatic self-calibration at regular intervals, which ensures CO₂ measurement with long-term stability. The sensor is used in ventilation and air conditioning technology, ventilation monitoring, filter monitoring, level measurement.

TECHNICAL DATA

Power supply:	24 V AC / DC (± 10 %), half-wave rectifier, read the instructions!
Power consumption:	Ø 100 mA, peak current up to 300 mA
Switching type:	3-wire connection
Output 1 (CO ₂):	0-10V
Output 2 (CO ₂):	4...20 mA
Relay output:	RPC02 without changeover contact RPC02-W with potential-free changeover contact (max. 48 V / 1 A), switch point can be set
Sensor:	optical NDIR sensor (non-dispersive infra-red technology), with manual calibration (via zero push-button), with automatic calibration (can be deactivated via DIP switches)
Measuring range:	multi-range switching (selectable via DIP switches) 0...2000 ppm; 0...5000 ppm; 0...10000 ppm (other measuring ranges optionally available upon request)
Accuracy:	typically ± 75 ppm ± 5 % of measured value up to 5000 ppm, otherwise ± 100 ppm ± 5 % of measured value (at 20 °C, 45 % RH, 1013 mbar, auto-calibration active)
Temperature dependence:	± 5 ppm per °C (at 20 °C)
Pressure dependence:	± 0.16 % per hPa based on standard pressure
Long-term stability:	< 1 % of final value per year
Gas exchange:	by diffusion
Warm-up time:	< 10 minutes
Response time:	< 5 minutes
Sensor protection:	filter foil (sensor in pendulum)
Protective tube:	Ø 25.5 mm, L = 95 mm (see dimensional drawing)
Sensor cable:	PVC, H03VV-F, 4 x 0.14 mm ² , KL = 2 m
Housing:	plastic, UV-resistant, polyamide material, 30% glass-globe reinforced, with quick-locking screws (slotted/Phillips head combination) colour traffic white (similar to RAL 9016)
Housing dimensions:	126 x 90 x 50 mm (Tyr 2)
Cable connection:	cable gland made of plastic (M 16 x 1.5; with strain relief, exchangeable, max. inner diameter 10.4 mm)
Electrical connection:	0.14–1.5 mm ² , via screw terminals
Process connection:	via screws
Ambient temperature:	0...+50 °C (operation); -20...+50 °C (storage)
Permitted humidity:	10...95 % RH, non-condensing air
Response time:	< 5 min, running-in time < 20 min
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529) housing IP 30 (according to EN 60 529) pendulum
Standards:	CE-conformity according to EMC Directive 2014 / 30 / EU
Optional:	with display in hinged cover housing BC* (90 x 80 x 47 mm), LCD display (128 x 64 pixels), display content can be rotated by 90° steps, backlight (on/off/auto), to display the actual CO ₂ content in ppm, set switching threshold, switching status and MIN/MAX of the selected interval (1 h / 6 h / 12 h / 24 h)

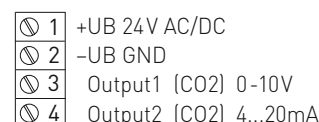
Schematic diagram

RPC02



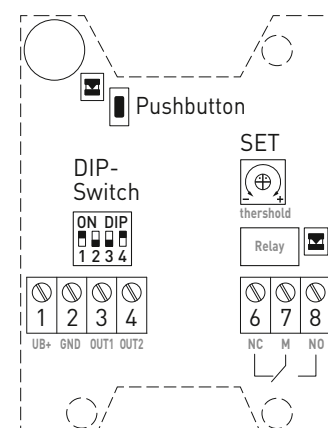
Connection diagram

RPC02



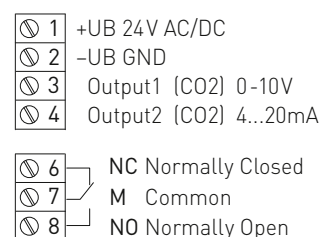
Schematic diagram

RPC02-W



Connection diagram

RPC02-W





NEW

S+S REGELTECHNIK

AERASGARD® RPC02
AERASGARD® RPC02-W

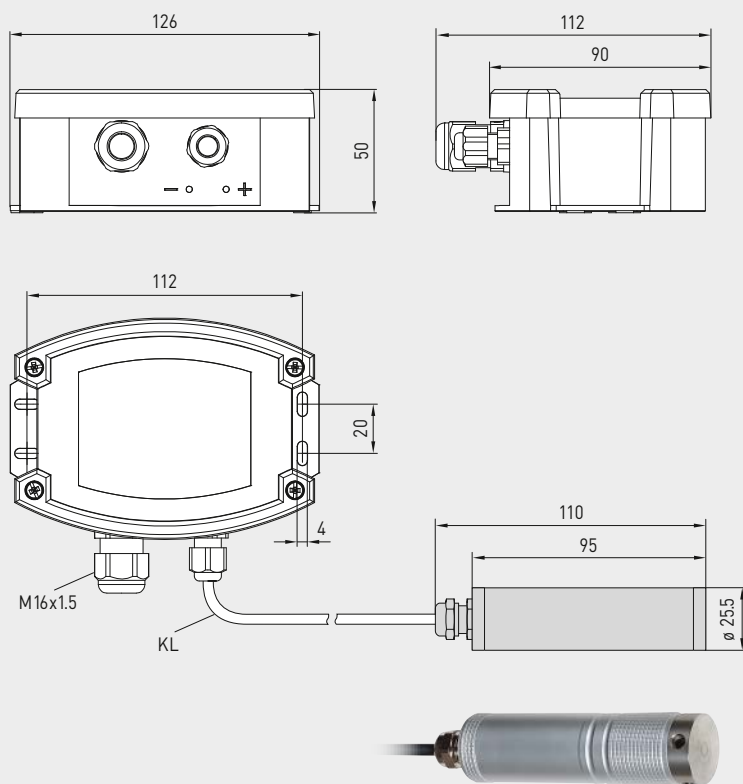
Room pendulum CO2 sensor or measuring transducer,
self-calibrating, with multi-range switching
and active/switching output



Dimensional drawing
[mm]

RPC02 - xx

RPC02 - xx



Measuring range CO2 content	DIP 1	DIP 2	DIP 3
0...2000 ppm (default)	ON	OFF	OFF
0...5000 ppm	OFF	ON	OFF
0...10000 ppm	OFF	OFF	ON

Automatic CO2 calibration	DIP 4
activated (default)	ON
deactivated	OFF

AERASGARD® RPC02 Room pendulum CO2 sensor or measuring transducer, Premium					
AERASGARD® RPC02 - W Room pendulum CO2 sensor or measuring transducer, Premium					
Type / WG02	Measuring ranges CO2	Output 1 CO2	Output 2 CO2	Output switching	Item no.
Display					
RPC02	(switchable)				
RPC02	0...2000 ppm / 0...5000 ppm / 0...10000 ppm	0-10 V	4...20 mA	–	3CON-0203-0001-000
RPC02 LCD	(3x as above)	0-10 V	4...20 mA	–	■ 3CON-0206-0001-000
RPC02 - W	(switchable)				
RPC02-W	0...2000 ppm / 0...5000 ppm / 0...10000 ppm	0-10 V	4...20 mA	Changeover contact	3CON-0203-1001-000
RPC02-W LCD	(3x as above)	0-10 V	4...20 mA	Changeover contact	■ 3CON-0206-1001-000
Note: This unit must not be used as a safety-relevant device!					