

**Multifunctional duct sensors and measuring transducers incl. mounting flange, for humidity, temperature, CO<sub>2</sub> content and air quality (VOC), calibratable, with active/switching output**

The maintenance-free, microprocessor-controlled **AERASGARD® KFTM-LQ-CO<sub>2</sub>** or **KLQ-CO<sub>2</sub>-W** is designed for duct installation and is used to monitor all measurands of relevance to the climate inside a room. These are the measurands air humidity, temperature, CO<sub>2</sub> concentration as well as air quality (VOC). All measurands are converted to standard signals (0-10V or 4...20mA). As an option, the measurands can also be continuously indicated in the illuminated display. By using a single device to monitor all four measurands, it is possible to effectively monitor and regulate the entire room climate. The KFTM-LQ-CO<sub>2</sub> or KLQ-CO<sub>2</sub>-W measures CO<sub>2</sub> in the range of 0...2000 ppm or 0...5000 ppm, VOC at one of three selectable sensitivity levels LOW / MEDIUM (default) / HIGH, temperatures in the range of -35...+80 °C, as well as relative air humidity from 0...100% r.H. The relative humidity (% r.H.) quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature. A digital, long-term stable sensor used as measuring element for relative air humidity and temperature guarantees exact measurement results.

The CO<sub>2</sub> content of the air is measured using an optical NDIR sensor (non-dispersive infra-red technology). The detection range of the sensors is calibrated for standard applications such as monitoring residential rooms and conference rooms. Room ventilation on an as-needed basis, improved well-being and customer benefit, increased comfort as well as reduced operating costs through energy conservation are just some of the benefits of employing the AERASGARD® CO<sub>2</sub> sensor.

The explanations above demonstrate that there are applications for CO<sub>2</sub> measurements, for VOC measurements, but from our perspective, above all, for a combination of both measurands. The crucial factor in this respect is that both of these measurands are not convertible into each other and derivations to or from one another cannot be made. An NDIR CO measuring instrument measures selectively and cannot detect any VOC; a VOC mixed gas sensor cannot recognize CO<sub>2</sub> molecules. For more information, see the start of the chapter.

**TECHNICAL DATA**

Voltage supply:	24V AC / DC (± 10%)
Power consumption:	< 4.8 W / 24V DC typical; < 6.8 VA / 24V AC typical; peak current 200 mA
Outputs:	<b>0-10V or 4...20 mA</b> (selectable via DIP switches, selected variant applies for all outputs) working resistance < 800 Ω

**HUMIDITY**

Sensors:	digital humidity sensor with integrated temperature sensor, low hysteresis, high long-term stability
Sensor protection:	<b>plastic</b> sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional <b>metal</b> sinter filter, Ø 16 mm, L = 32 mm)
Measuring range, humidity:	0...100% r.H. (output equivalent to 0-10V or 4...20mA)
Operating range, humidity:	0...95% r.H. (without dew formation)
Deviation of humidity:	<b>± 3% r.H.</b> (20...80%) at +20 °C, otherwise ± 5% r.H.
Output, humidity:	0-10V or 4...20mA (selectable via DIP switches)

**TEMPERATURE**

Measuring range, temperature:	-35...+80 °C (output equivalent to 0-10V or 4...20mA)
Operating range, temperature:	-10...+60 °C
Temperature deviation:	± 0.8 K at 20 °C, under standard conditions
Output, temperature:	0-10V or 4...20mA (selectable via DIP switches)

**AIR QUALITY (VOC)**

Air quality sensor:	VOC sensor (metal oxide) <b>with automatic calibration</b> (VOC = volatile organic compounds)
Measuring range, air quality:	0...100% air quality; referred to calibrating gas; <b>multi-range switching</b> (selectable via DIP switches) VOC sensitivity low, medium, high
Output, air quality:	0-10V (0V = clean air, 10V = polluted air) or 4...20mA (selectable via DIP switches) (switchpoint can be adjusted from 0...100% of the output signal)

Measuring accuracy, air quality:	± 20% of final value (referred to calibrating gas)
Service life:	> 60 months (under normal load conditions)

**CARBON DIOXIDE (CO<sub>2</sub>)**

Sensor CO <sub>2</sub> :	optical NDIR sensor (non-dispersive infra-red technology) <b>with automatic calibration</b>
Measuring range, CO <sub>2</sub> :	<b>multi-range switching</b> (selectable via DIP switches) 0...2000 ppm; 0...5000 ppm
Output CO <sub>2</sub> :	0-10V or 4...20mA (selectable via DIP switches)
Measuring accuracy CO <sub>2</sub> :	± 30 ppm ± 3% of measured value
Temperature dependence CO <sub>2</sub> :	± 5 ppm / °C or ± 0.5% of measured value / °C (whichever is higher)
Pressure dependence:	± 0.13% / mm Hg
Long-term stability:	< 2% in 15 years
Gas exchange:	by diffusion

(continued on next page!)

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



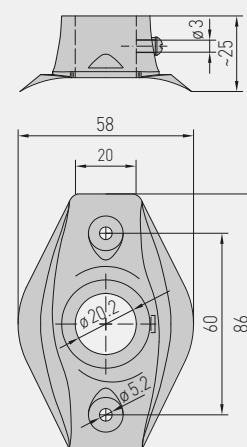
**SF-M**  
Metal sinter filter (optional)



**MFT-20-K**  
Mounting flange, plastic



Dimensional drawing **MFT-20-K**



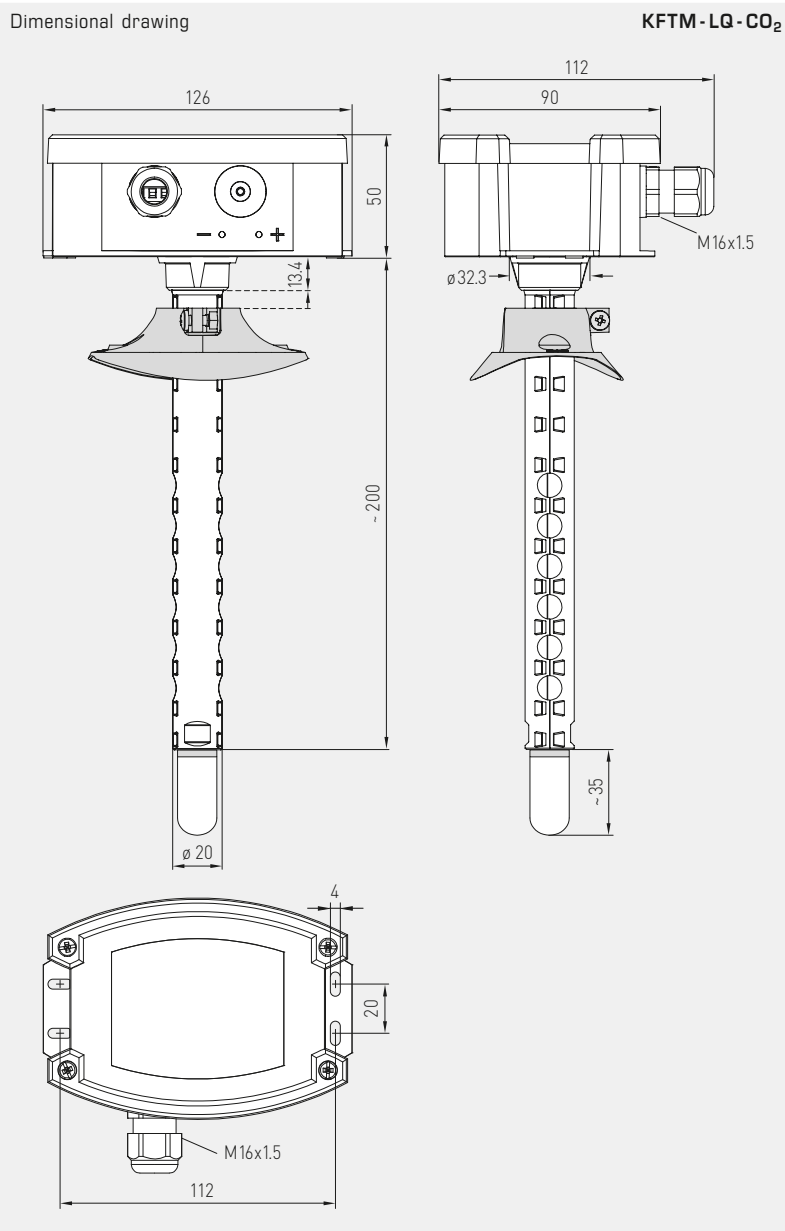


**NEW**

S+S REGELTECHNIK

**AERASGARD® KFTM-LQ-CO<sub>2</sub>**  
**AERASGARD® KLQ-CO<sub>2</sub>-W**

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KFTM-LQ-CO<sub>2</sub>

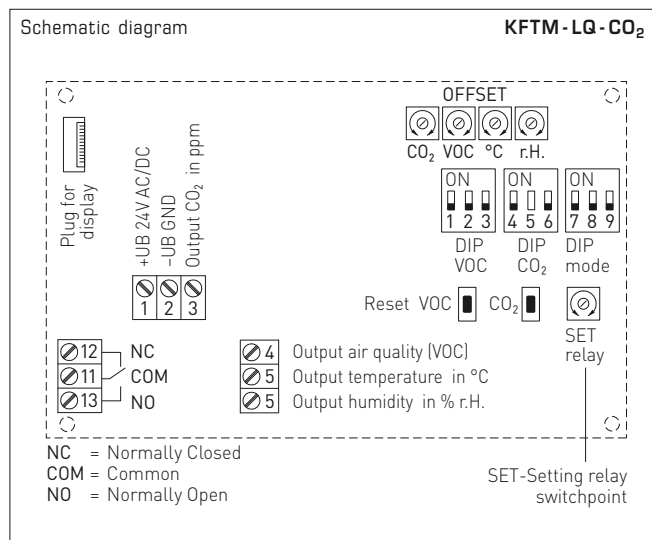


KFTM-LQ-CO<sub>2</sub> with display

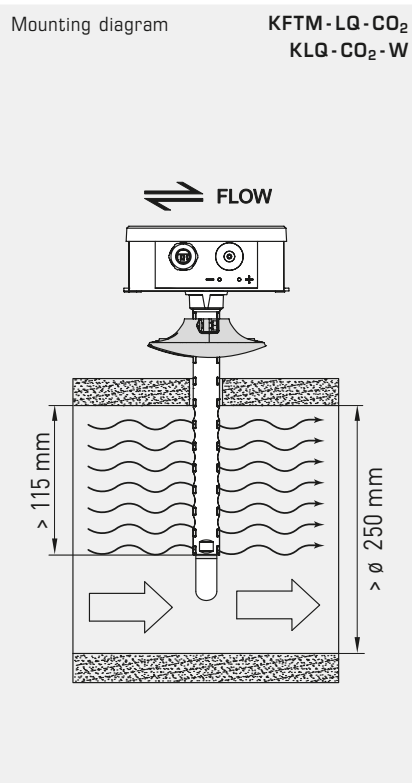
**TECHNICAL DATA** (continued)

Relay output:	with potential-free changeover contact 24 V (assignment selectable via DIP switches)
Ambient temperature:	-10...+60 °C
Response time:	< 2 minutes
Electrical connection:	0.14 - 1.5 mm <sup>2</sup> , via screw terminals
Enclosure:	plastic, polyamide, 30% glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), enclosure cover for display is transparent!
Enclosure dimensions:	126 x 90 x 50 mm (Tyr 2)
Cable gland:	M 16 x 1.5; including strain relief, exchangeable
Protective tube:	<b>PLEUROFORM™</b> , material polyamide (PA6), with torsion protection, Ø 20 mm, without filter: NL = 202.5 mm, with plastic filter: NL = 235 mm (optional with metal filter: NL = 227 mm)
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) enclosure only! (PLEUROFORM IP 30)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2004 / 108 / EC
Optional:	three-line <b>display with illumination</b> , cutout approx. 70 x 40 mm (W x H), for displaying actual humidity, actual temperature, air quality and/or the actual CO <sub>2</sub> content

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DIP switches	<b>KFTM-LQ-CO<sub>2</sub></b>	
VOC sensitivity	DIP 1	DIP 2
VOC LOW	OFF	OFF
VOC MEDIUM (default)	<b>ON</b>	OFF
VOC HIGH	OFF	<b>ON</b>
VOC-automatic zero point	DIP 3	
deactivated	OFF	
activated (default)	<b>ON</b>	
CO <sub>2</sub> content	DIP 4	
0...2000 ppm (default)	OFF	
0...5000 ppm	<b>ON</b>	
CO <sub>2</sub> -automatic zero point	DIP 6	
deactivated	OFF	
activated (default)	<b>ON</b>	
Relay assignment	DIP 7	DIP 8
CO <sub>2</sub> (default)	OFF	OFF
VOC	<b>ON</b>	OFF
Temperature	OFF	<b>ON</b>
Humidity	<b>ON</b>	<b>ON</b>
Output	DIP 9	
Voltage 0-10 V (default)	OFF	
Current 4...20 mA	<b>ON</b>	
Note: <b>DIP 5</b> is not assigned!		





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KFTM-LQ-CO<sub>2</sub>  
KLQ-CO<sub>2</sub>-W  
with display



**Humidity table**

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

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

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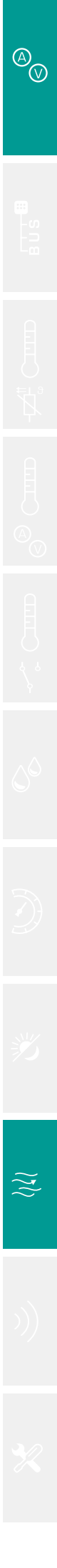
**Temperature table**

MR: -35...+80 °C

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

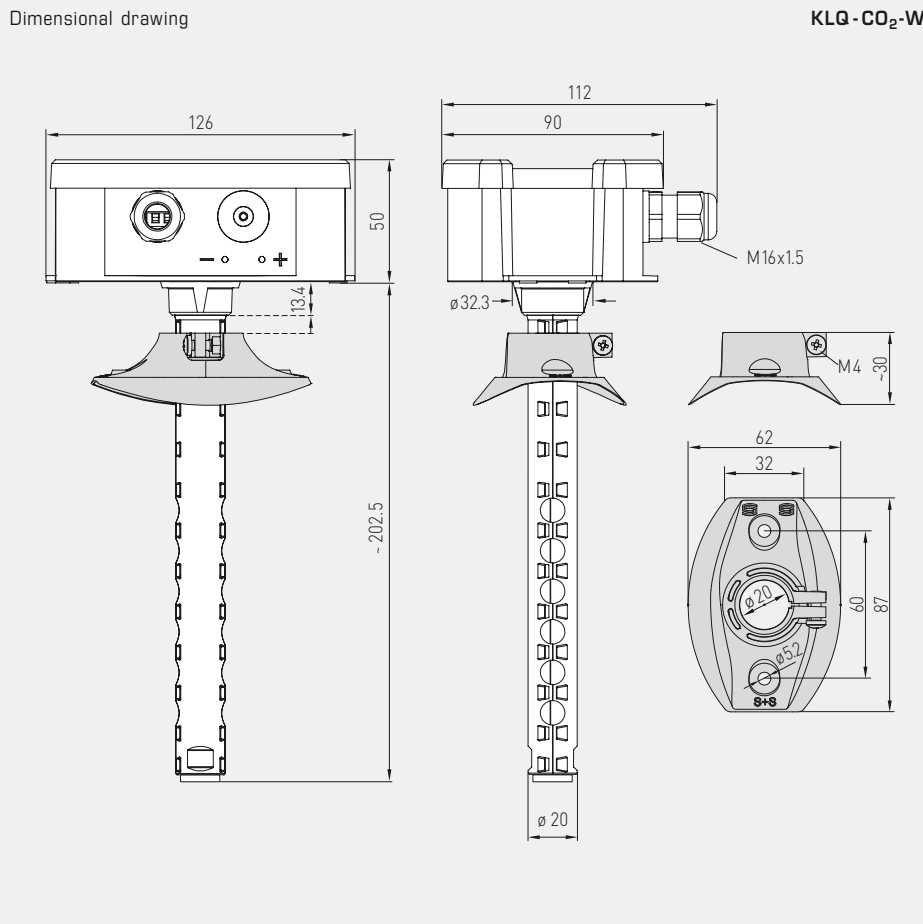
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°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
+25	5.2	12.3
+30	5.7	13.0
+35	6.1	13.7
+40	6.5	14.4
+45	7.0	15.1
+50	7.4	15.8
+55	7.8	16.5
+60	8.3	17.2
+65	8.7	17.9
+70	9.1	18.6
+75	9.6	19.3
+80	10.0	20.0



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KLQ-CO<sub>2</sub>-W



AERASGARD® KLQ-CO<sub>2</sub>-W – Duct sensors for CO<sub>2</sub> content and air quality (VOC), *Deluxe*

Type / WG01	Measuring Range		CO <sub>2</sub>	VOC	Display	Item No.	Price
	Humidity	Temperature					
<b>KLQ-CO<sub>2</sub>-W</b>			(switchable)				
KLQ-CO <sub>2</sub> -W	–	–	0...2000 / 5000 ppm	0...100%		1501-8111-7301-200	<b>340,00 €</b>
KLQ-CO <sub>2</sub> -W-DISPLAY	–	–	0...2000 / 5000 ppm	0...100%	■	1501-8111-7371-200	<b>399,00 €</b>
Outputs:	<b>0-10 V or 4...20 mA</b> (selectable via DIP switches, selected variant applies for all outputs)						
Note:	This unit <b>must not</b> be used as safety-relevant device!						



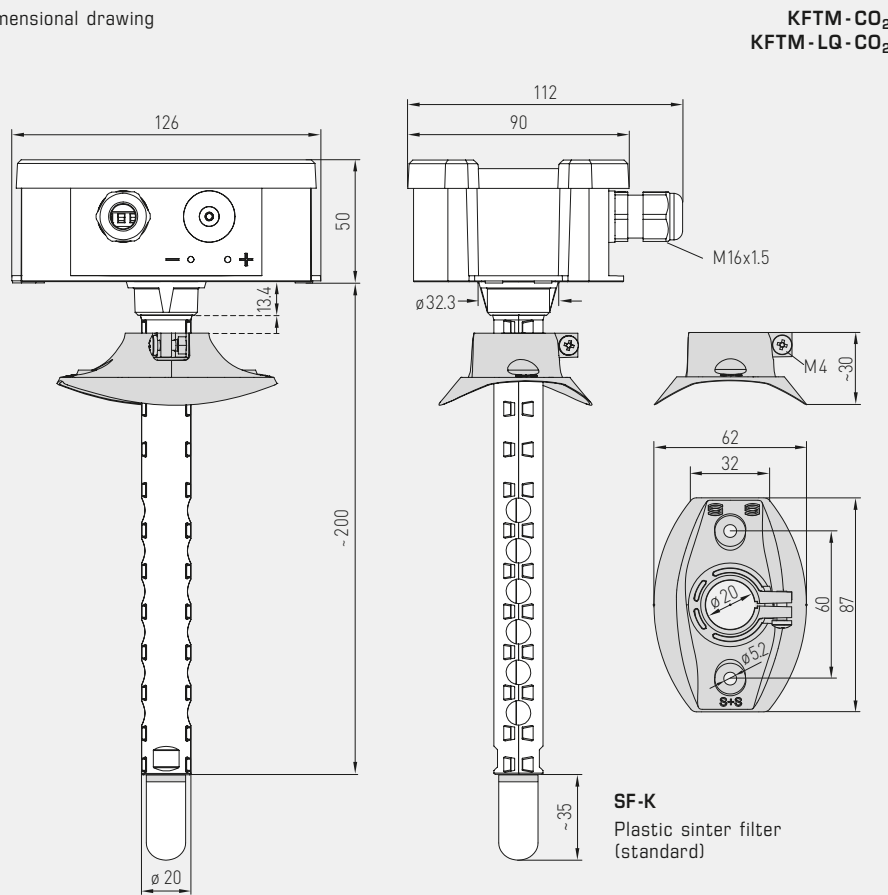
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Dimensional drawing



KFTM-CO<sub>2</sub>  
KFTM-LQ-CO<sub>2</sub>



SF-M  
Metal sinter filter  
(optional)

AERASGARD® KFTM-CO<sub>2</sub>-W – Duct sensors for humidity, temperature, CO<sub>2</sub> content, *Deluxe*  
 AERASGARD® KFTM-LQ-CO<sub>2</sub>-W – Duct sensors for humidity, temperature, CO<sub>2</sub> content and air quality (VOC), *Deluxe*

Type / WG02	Measuring Range		CO <sub>2</sub>	VOC	Display	Item No.	Price
	Humidity	Temperature					
<b>KFTM-CO<sub>2</sub></b>			(switchable)				
KFTM-CO2-W	0...100% r.H.	-35...+80 °C	0...2000 / 5000 ppm	-		1501-8116-7301-200	<b>318,00 €</b>
KFTM-CO2-W-DISPLAY	0...100% r.H.	-35...+80 °C	0...2000 / 5000 ppm	-	■	1501-8116-7371-200	<b>380,00 €</b>
<b>KFTM-LQ-CO<sub>2</sub></b>			(switchable)				
KFTM-LQ-CO2-W	0...100% r.H.	-35...+80 °C	0...2000 / 5000 ppm	0...100%		1501-8118-7301-200	<b>406,00 €</b>
KFTM-LQ-CO2-W-DISPLAY	0...100% r.H.	-35...+80 °C	0...2000 / 5000 ppm	0...100%	■	1501-8118-7371-200	<b>486,00 €</b>
Outputs:	<b>0-10 V or 4...20 mA</b> (selectable via DIP switches, selected variant applies for all outputs)						
Note:	This unit <b>must not</b> be used as safety-relevant device!						

**Accessories**

<b>SF-M</b>	<b>Metal sinter filter</b> , Ø 16 mm, L = 32 mm, exchangeable stainless steel (VA 1.4404)	7000-0050-2200-100	<b>35,00 €</b>
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