

**Multifunctional duct sensors and measuring transducers incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with Modbus connection**

**Patented quality product**, patent no. DE 10 2014 010 719.1 (FLOW)

The maintenance-free duct sensor **AERASGARD® KFTM-LQ-CO2-Modbus** (max. expansion level) and **KCO2 / KLQ-CO2 / KFTM-CO2-Modbus** with Modbus connection, automatic calibration, in an impact-resistant plastic housing with quick-locking screws, plastic sinter filter (replaceable), incl. mounting flange, optionally with/without display, for determining the CO2-content of the air (0...5000ppm), of the air quality (0...100% VOC), the temperature (-35...+80°C / -31...+176°F) and the relative air humidity (0...100% RH). International system of units **SI** (default) can be changed to **imperial** (via Modbus). The following parameters can be accessed via the Modbus: Temperature, relative humidity, air quality (VOC), carbon dioxide (CO2) and atmospheric pressure. 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 30m<sup>2</sup> of space 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. 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. The air quality is detected by a **VOC sensor** (mixed gas sensor for volatile organic substances). With regard to the expected air contamination, low (SLOW), medium (NORMAL) or high (FAST) VOC sensitivity can be selected.

**Innovative Modbus sensor** with galvanically separated RS485-Modbus-interface, selectable bus termination resistance, DIP switch for setting the bus parameters and bus address in current-free state, internal LEDs for telegram status display, two separate push-in terminals and large three-line display (illuminated; with customised programming in the 7-segment and dot-matrix range). The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

**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
Communication:	<b>Modbus</b> (RTU cable)
Bus interface:	RS 485, <b>galvanically isolated</b>
Baud rate:	9600, 19200, 38400 Baud
Bus protocol:	Modbus (RTU mode), address range <b>0...247</b> adjustable
Signal filtering:	4 s / 32 s
System of units:	<b>SI</b> (default) or <b>Imperial</b> (switchable via Modbus)
Data points:	Temperature [°C] [°F], Relative humidity [%RH], Atmospheric pressure [hPa], Air quality (VOC) [%], Carbon dioxide (CO2) [ppm]

**HUMIDITY & TEMPERATURE**

Sensor:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability
Measuring range:	0...100% RH (humidity); -35...+80°C / -31...+176°F (temperature)
Accuracy humidity:	typically <b>± 2.0%</b> (20...80% RH) at +25°C, otherwise ± 3.0%
Accuracy temperature:	typically ± 0.2 K at +25°C

**AIR QUALITY (VOC)**

Sensor:	<b>VOC sensor</b> (metal oxide) with automatic air quality algorithm (volatile organic compounds)
Measuring range:	0...100% air quality (0% = clean air / 100% = polluted air), referred to calibrating gas, multi-range switching <b>VOC sensitivity</b> SLOW / NORMAL / FAST (selectable via DIP switches)
Accuracy:	typical ± 20% final value, referred to calibrating gas
Service life:	> 60 months (under normal load conditions)

**CARBON DIOXIDE (CO2)**

Sensor:	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) <b>with manual calibration</b> (via zero button), <b>with automatic calibration</b> (can be deactivated via Modbus)
Measuring range:	0...5000 ppm
Accuracy:	typical ± 30 ppm (± 3% of measured value)
Temperature dependence:	± 5 ppm pro °C/°F or ± 0,5% of measured value pro °C/°F (whichever is higher)
Pressure dependence:	± 0.13% per mm Hg
Long-term stability:	< 2% in 15 years

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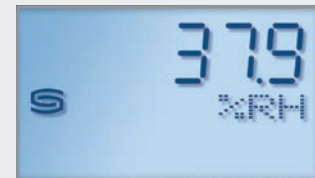
Display screen (cyclic) **Modbus Tyr 2**



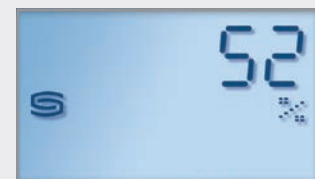
Temperature [°C]



Temperature [°F]



Humidity

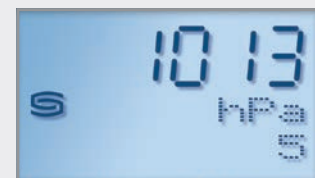


Air quality (VOC)



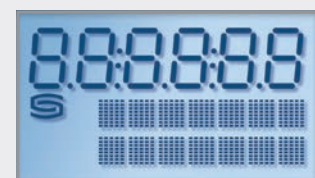
Carbon dioxide (CO2)

Display screen (static)



Atmospheric pressure (Example Index 5)

Programmable display screen

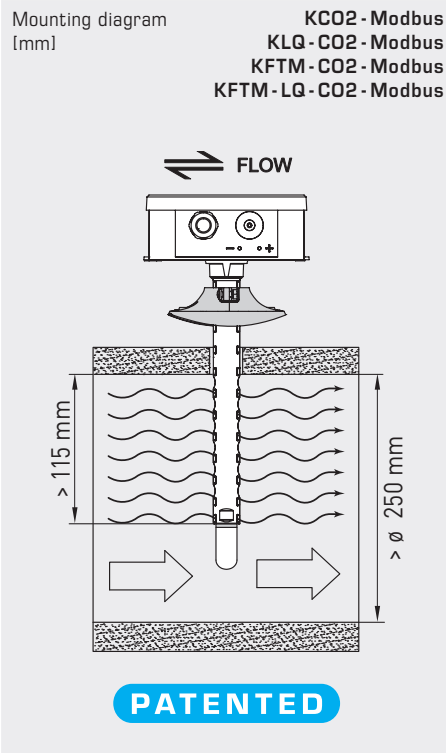




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# AERASGARD® KC02 / KLQ - CO2 - Modbus AERASGARD® KFTM - (LQ) - CO2 - Modbus

Multifunctional duct sensors and measuring transducers incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with Modbus connection



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



**KFTM - CO2 - Modbus**  
**KFTM - LQ - CO2 - Modbus**  
with plastic sinter filter  
(standard)



**KFTM - CO2 - Modbus**  
**KFTM - LQ - CO2 - Modbus**  
with display and  
plastic sinter filter  
(standard)



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



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



TECHNICAL DATA		(continued)
Warm-up time:	approx. 1 hour	
Response time:	< 2 minutes, minimum flow rate 0.3 m/s - 0.98 ft/s (air)	
Gas exchange:	by diffusion	
Ambient temperature:	-10...+60 °C	
Electrical connection:	0.2 - 1.5 mm <sup>2</sup> , via push-in terminals	
Cable connection:	<b>Cable gland</b> , plastic (M 16 x 1.5; with strain relief, exchangeable, inner diameter 10.4 mm) or <b>M12 connector</b> 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:	<b>PLEUROFORM™</b> , material polyamide (PA6), with torsion protection, v <sub>max</sub> = 30 m/s (air), ø 20 mm, NL = 200 mm (L = 202.5 mm without filter, L = 235 mm with filter)	
Process connection:	via mounting flange made of plastic (included in scope of delivery)	
Protection class:	III (according to EN 60 730)	
Protection type:	<b>IP65</b> (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:	<b>Display with illumination</b> , three-line, cutout approx. 70 x 40 mm (W x H), for displaying actual humidity, actual temperature, air quality and the actual CO2 content (cyclic) or a selectable parameter (static) or an individually programmable display value	

**AERASGARD® KCO2 / KLQ - CO2 - Modbus**  
**AERASGARD® KFTM - (LQ) - CO2 - Modbus**



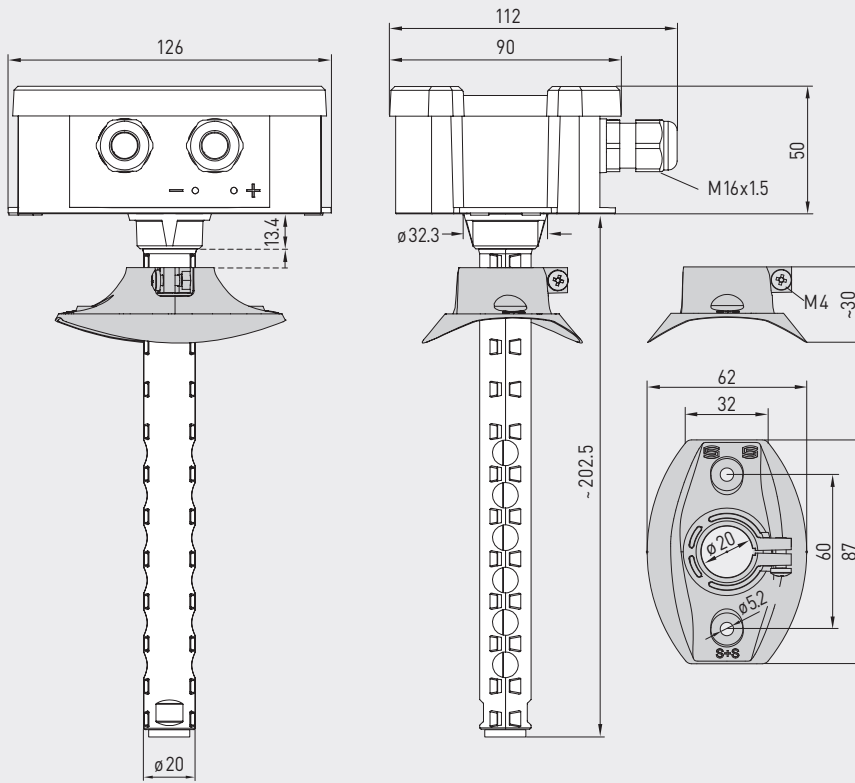
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Dimensional drawing [mm]

KCO2-Modbus  
 KLQ - CO2-Modbus

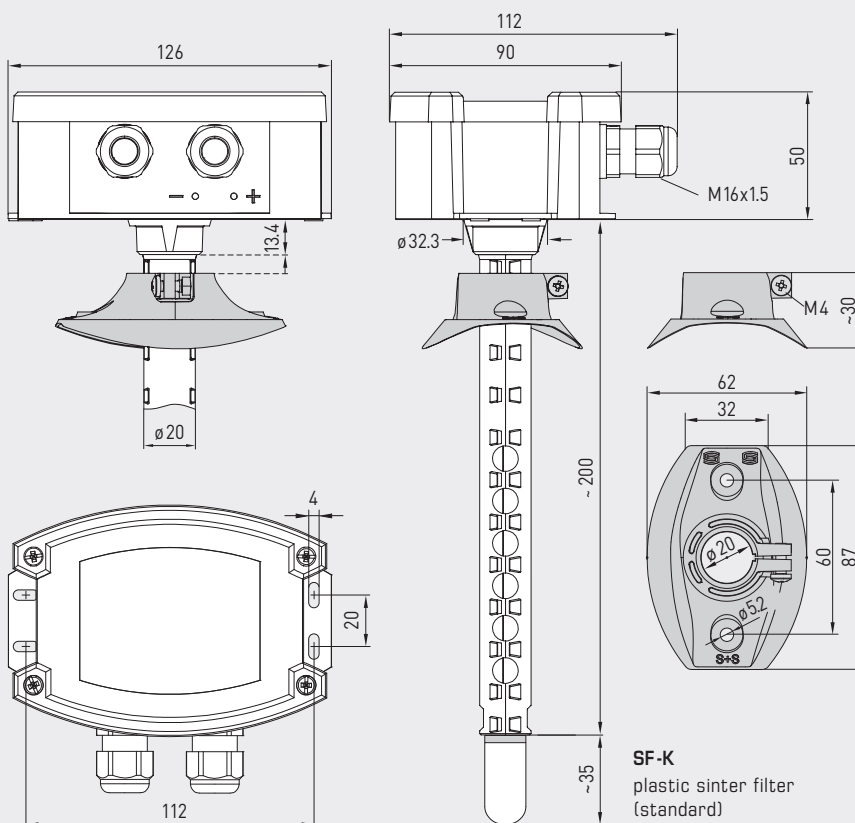
KCO2-Modbus  
 KLQ - CO2-Modbus



Dimensional drawing [mm]

KFTM - CO2 - Modbus  
 KFTM - LQ - CO2 - Modbus

KFTM - CO2 - Modbus  
 KFTM - LQ - CO2 - Modbus



SF-M  
 metal sinter filter  
 (optional)

SF-K  
 plastic sinter filter  
 (standard)

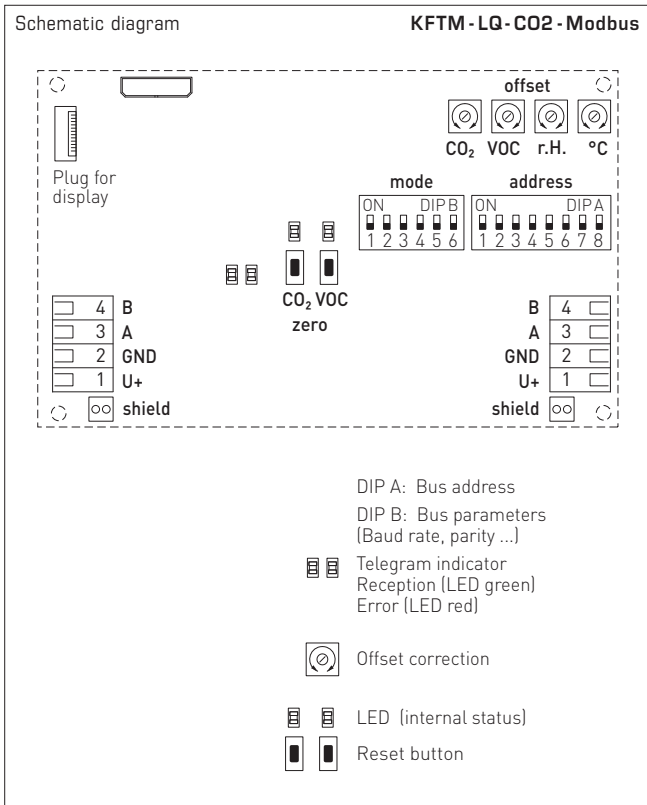




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# AERASGARD® KCO2 / KLQ - CO2 - Modbus AERASGARD® KFTM - (LQ) - CO2 - Modbus

Multifunctional duct sensors and measuring transducers incl. mounting flange, for humidity, temperature, CO2 content and air quality (VOC), calibratable, with Modbus connection



KFTM - LQ - CO2 - Modbus with display



AERASGARD® KCO2 - Modbus	Duct sensor for CO <sub>2</sub> content, <i>Deluxe</i>
AERASGARD® KLQ - CO2 - Modbus	Duct sensor for air quality (VOC) and CO <sub>2</sub> content, <i>Deluxe</i>
AERASGARD® KFTM - CO2 - Modbus	Multifunctional duct sensor for humidity, temperature and CO <sub>2</sub> content, <i>Deluxe</i>
AERASGARD® KFTM - LQ - CO2 - Modbus	Multifunctional duct sensor for humidity, temperature, air quality (VOC) and CO <sub>2</sub> content, <i>Deluxe</i>

Type / WG02	Measuring ranges	CO <sub>2</sub>	VOC	Display	Item No.	Price
	Humidity Temperature*					
<b>KCO2-Modbus</b>						
KCO2-Modbus	- -	5000 ppm	-		1501-8110-6001-200	414,20 €
KCO2-Modbus LCD	- -	5000 ppm	-	■	1501-8110-6071-200	480,65 €
<b>KLQ - CO2-Modbus</b>						
KLQ-CO2-Modbus	- -	5000 ppm	0...100%		1501-8111-6001-600	467,58 €
KLQ-CO2-Modbus LCD	- -	5000 ppm	0...100%	■	1501-8111-6071-600	546,29 €
<b>KFTM - CO2-Modbus</b>						
KFTM-CO2-Modbus	0...100% RH -35...+80 °C	5000 ppm	-		1501-8116-6001-200	424,89 €
KFTM-CO2-Modbus LCD	0...100% RH -35...+80 °C	5000 ppm	-	■	1501-8116-6071-200	518,28 €
<b>KFTM - LQ - CO2-Modbus</b>						
KFTM-LQ-CO2-Modbus	0...100% RH -35...+80 °C	5000 ppm	0...100%		1501-8118-6001-600	555,64 €
KFTM-LQ-CO2-Modbus LCD	0...100% RH -35...+80 °C	5000 ppm	0...100%	■	1501-8118-6071-600	653,02 €

Optional: Cable connection with **M12 connector** according to DIN EN 61076-2-101 shortened protective tube **PLEUROFORM™**, NL = 120 mm on request on request

**Note:** This unit **must not** be used as safety-relevant device!

\* Temperature: -35...+80 °C / -31...+176 °F  
International system of units **SI** (default) can be changed to **imperial** (via Modbus).

ACCESSORIES			
<b>KA2-Modbus</b>	<b>Communication adapter</b> (USB/RS485) for system connection	1906-1200-0000-100	236,11 €
<b>LA-Modbus</b>	<b>Line termination device</b> (with terminating resistor) as an active bus termination	1906-1300-0000-100	88,05 €
<b>SF-M</b>	<b>Metal sinter filter</b> , Ø 16 mm, L = 32 mm, exchangeable, stainless steel <b>V4A</b> (1.4404)	7000-0050-2200-100	46,70 €
<b>MFT-20-K</b>	<b>Mounting flange</b> , plastic (included in the scope of delivery)	7000-0031-0000-000	10,55 €

For further information, see last chapter Accessories!