

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 **KC02 / 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...5000 ppm), 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 30 m² 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:	Modbus (RTU cable)
Bus interface:	RS 485, galvanically isolated
Baud rate:	9600, 19200, 38400 Baud
Bus protocol:	Modbus (RTU mode), address range 0...247 adjustable
Signal filtering:	4 s / 32 s
System of units:	SI (default) or Imperial (switchable via Modbus)
Data points:	Temperature [°C] [°F], Relative humidity [% RH], Atmospheric pressure [hPa], Air quality (VOC) [%], Carbon dioxide (CO2) [ppm]

HUMIDITY & TEMPERATURE

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

AIR QUALITY (VOC)

Sensor:	VOC sensor (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 VOC sensitivity SLOW / NORMAL / FAST (selectable via DIP switches)
Accuracy:	typical ± 20 % final value, referred to calibrating gas
Service life:	> 60 months (under normal load conditions)

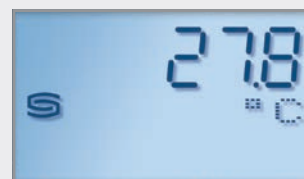
CARBON DIOXIDE (CO2)

Sensor:	optical NDIR sensor (non-dispersive infra-red technology) including atmospheric pressure compensation (up to 1100 mbar) with manual calibration (via zero button), with automatic calibration (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

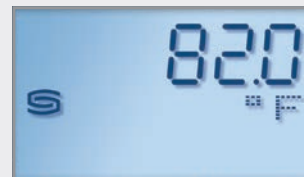
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Display screen
(cyclic)

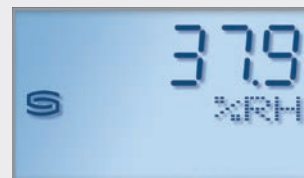
Modbus
Tyr 2



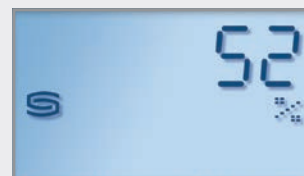
Temperature [°C]



Temperature [°F]



Humidity

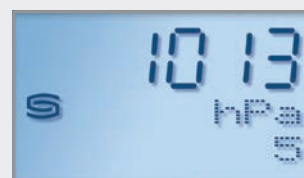


Air quality (VOC)



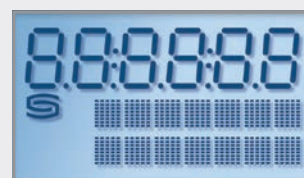
Carbon dioxide (CO2)

Display screen
(static)



Atmospheric pressure
(Example Index 5)

Programmable
display screen





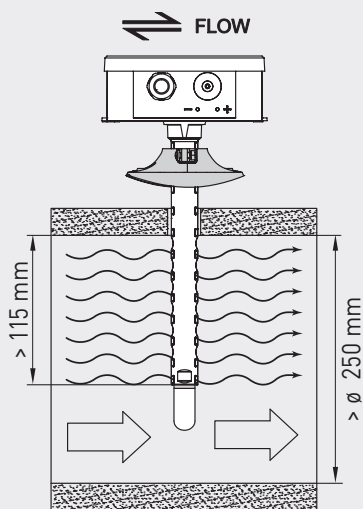
S+S REGELTECHNIK

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

Mounting diagram
(mm)

KC02 - Modbus
KLQ - CO2 - Modbus
KFTM - CO2 - Modbus
KFTM - LQ - CO2 - Modbus



PATENTED



MFT-20-K
Mounting flange,
plastic



SF-K
Plastic sinter filter
(standard)



SF-M
Metal sinter filter
(optional)



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)

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 ² , via push-in terminals
Cable connection:	Cable gland , plastic (M 16 x 1.5; with strain relief, exchangeable, 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 (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:	IP65 (according to EN 60 529) Housing in the built-in state (permeable PLEUROFORM: IP30)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU
Optional:	Display with illumination , 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® KC02 / KLQ - CO2 - Modbus

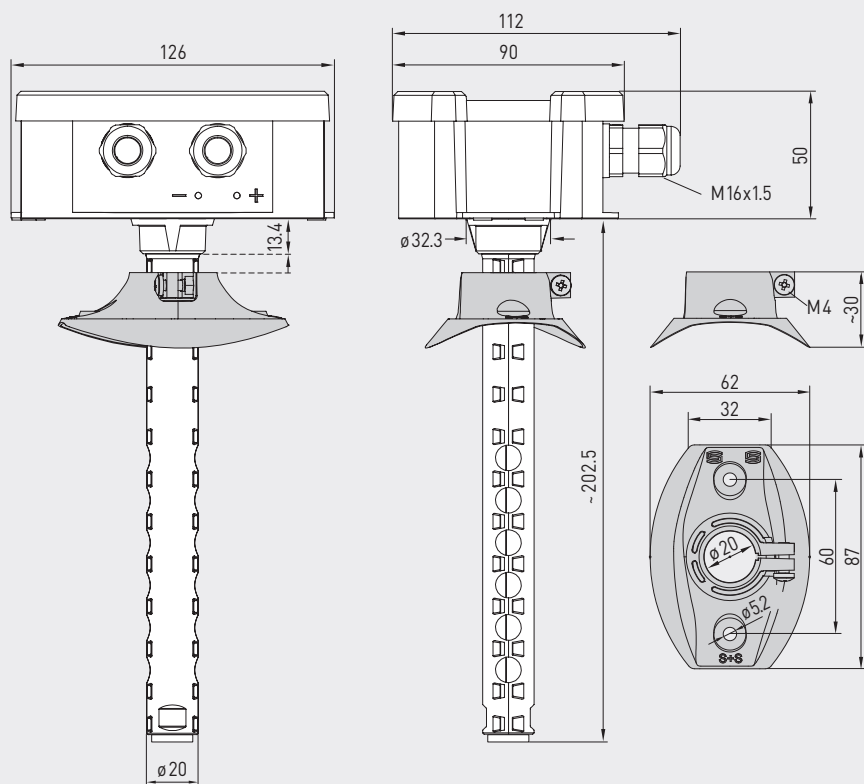
AERASGARD® KFTM - (LQ) - CO2 - Modbus



S+S REGELTECHNIK

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

Dimensional drawing
[mm]

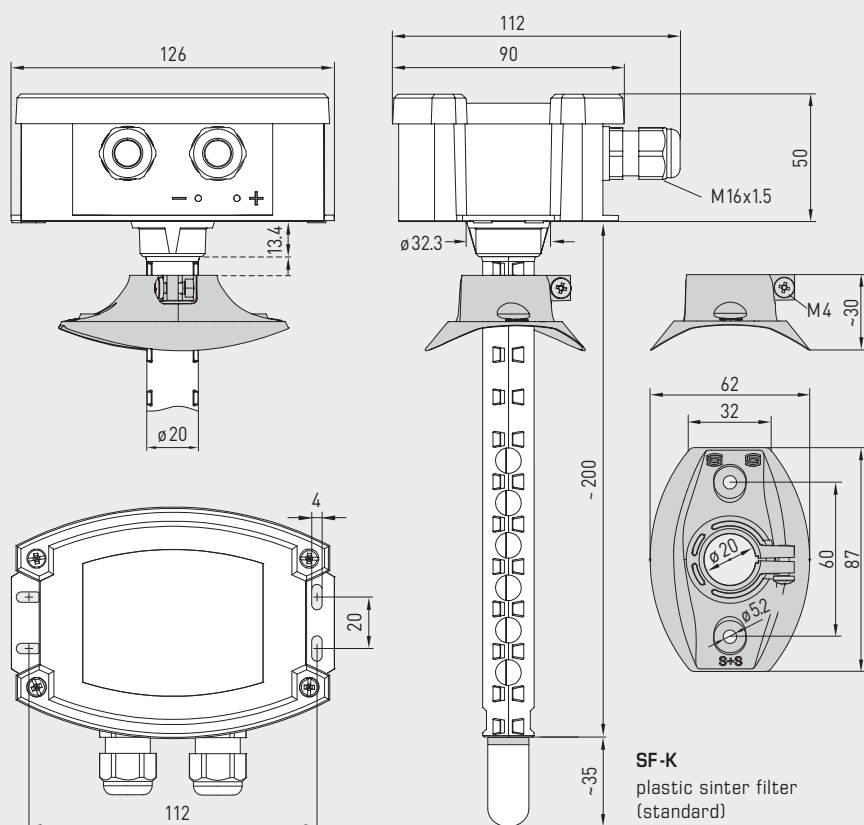


KC02-Modbus
KLQ - CO2-Modbus

KC02-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)



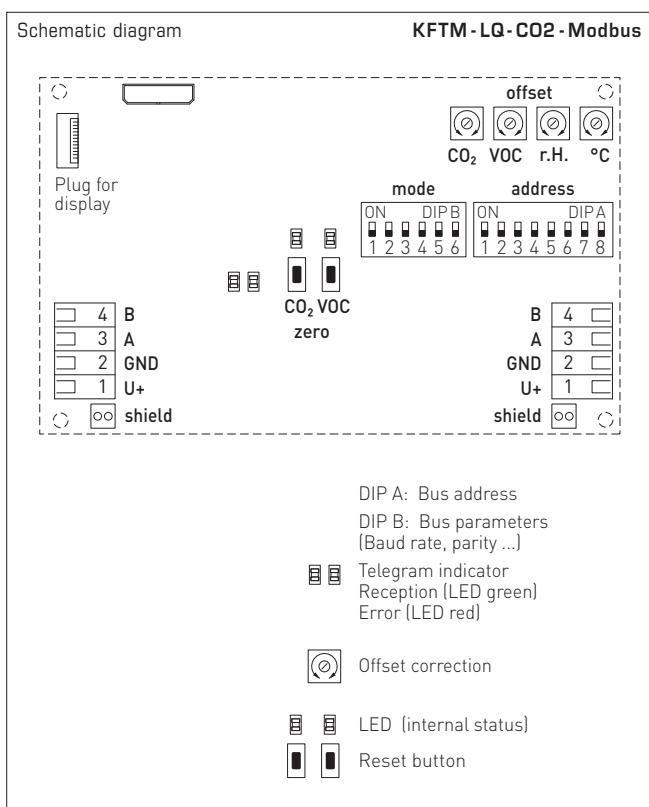
SF-K
plastic sinter filter
(standard)



S+S REGELTECHNIK

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

Multifunctional duct sensors and measuring transducers incl. mounting flange,
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calibratable, with Modbus connection



KFTM - LQ - CO2 - Modbus
with display



AERASGARD® KC02 - Modbus	Duct sensor for CO2 content, <i>Deluxe</i>
AERASGARD® KLQ - CO2 - Modbus	Duct sensor for air quality (VOC) and CO2 content, <i>Deluxe</i>
AERASGARD® KFTM - CO2 - Modbus	Multifunctional duct sensor for humidity, temperature and CO2 content, <i>Deluxe</i>
AERASGARD® KFTM - LQ - CO2 - Modbus	Multifunctional duct sensor for humidity, temperature, air quality (VOC) and CO2 content, <i>Deluxe</i>

Type / WG02		Measuring ranges		Display		Item No.
		Humidity	Temperature*	CO2	VOC	
KC02-Modbus						
KC02-Modbus		–	–	5000 ppm	–	1501-8110-6001-200
KC02-Modbus LCD		–	–	5000 ppm	–	■ 1501-8110-6071-200
KLQ - CO2-Modbus						
KLQ-CO2-Modbus		–	–	5000 ppm	0...100%	1501-8111-6001-600
KLQ-CO2-Modbus LCD		–	–	5000 ppm	0...100%	■ 1501-8111-6071-600
KFTM - CO2-Modbus						
KFTM-CO2-Modbus		0...100% RH	–35...+80 °C	5000 ppm	–	1501-8116-6001-200
KFTM-CO2-Modbus LCD		0...100% RH	–35...+80 °C	5000 ppm	–	■ 1501-8116-6071-200
KFTM - LQ - CO2-Modbus						
KFTM-LQ-CO2-Modbus		0...100% RH	–35...+80 °C	5000 ppm	0...100%	1501-8118-6001-600
KFTM-LQ-CO2-Modbus LCD		0...100% RH	–35...+80 °C	5000 ppm	0...100%	■ 1501-8118-6071-600
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						
KA2-Modbus	Communication adapter (USB/RS485) for system connection					1906-1200-0000-100
LA-Modbus	Line termination device (with terminating resistor) as an active bus termination					1906-1300-0000-100
SF-M	Metal sinter filter , Ø 16 mm, L = 32 mm, exchangeable, stainless steel V4A (1.4404)					7000-0050-2200-100
MFT-20-K	Mounting flange , plastic (included in the scope of delivery)					7000-0031-0000-000
	For further information, see last chapter Accessories!					