LK CO2

Duct sensor for air quality for large ducts, low flow velocities

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Datasheet

Subject to technical alteration
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Application

CO_2 Detection for Duct mounted applications and optimization of low flow velocities. 0..10 V linear output for direct connection to a DDC or monitoring system. Available with traffic light LED's and LCD display for CO_2 indication levels.

Options

-LCD	LC-Display for presentation of measured values and setting of properties
-R	Relay, which is switching on/ off at an adjustable CO_2-switching threshold
-Z	3 LEDs for display of CO_2 concentration

Security Advice – Caution

The installation and assembly of electrical equipment must be performed by a skilled electrician.

The device should only be used for the appropriate application. Unauthorised conversions or alteration are prohibited! The modules must not be used in relation with equipment that threatens, directly or indirectly, human health or life or with applications that can result in danger for people, animals or assets. Before connecting devices, the installation must be isolated from the power source!

For devices with controlling units (signal transducers, transmitters, etc.), it is important to make sure that the signal receiving device (actuators, generators, etc.) does not accept damaging or threatening conditions, that may arise from false signals during installation / configuration of the control unit. If necessary, disconnect the signal receiver from any source of power.

CAUTION! Risk of electric shock due to live components within the enclosure, especially devices with mains voltage supply (usually between 90-265 V).

The following procedure must be carried out:

1. Disconnect the device from power.
2. Ensure the device is secured against reconnection.
3. Verify the device is not powered.
4. Prior to reconnection, ensure that the enclosure is securely closed.

Please verify and consult:

- Laws, standards and regulations.
- The current condition of the device at the time of installation, to ensure safe installation.
- The devices technical data and installation manual.

Notes on Disposal

The product is considered electrical and electronic waste and must be disposed accordingly. Special treatment for specific components may be legally binding or ecologically sensible. The local and current applicable legislation must be followed.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power, which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. This dissipative power has to be considered when measuring temperature. In case of a fixed operating voltage (±0,2 V) this is normally done by adding or reducing a constant offset value. As Thermokon transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0..10 V / 4..20 mA have a standard setting at an operating voltage of 24 V =. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased or lowered by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor. Any touch of it will result in an expiration of warranty.

Under normal environmental conditions we recommend a recalibration interval of about 1 year to maintain the indicated accuracy. At high ambient temperatures and high humidity or when using the sensor in aggressive gases, an earlier recalibration or a change of the humidity sensor can become necessary. Such recalibrations or a probable sensor change are not part of the general warranty.

Application Notice for Air Quality Sensors CO_2

Refrain from touching the sensitive sensor. Any touch of it will result in an expiration of warranty.

Information about Indoor Air Quality CO_2

EN 13779 defines several classes for indoor air quality:

Category	CO_2 content above the content in outdoor air in ppm		Description
	Typical range	Standard value	
IDA1	<400 ppm	350 ppm	High indoor air quality
IDA2	400.. 600 ppm	500 ppm	Mean indoor air quality
IDA3	600..1.000 ppm	800 ppm	Moderate indoor air quality
IDA4	>1.000 ppm	1.200 ppm	Low indoor air quality

Information about Self-Calibration Feature CO_2

All gas sensors are subject to drift caused by components. This fact results generally in the need to recalibrate the sensors regularly.

With Dual-Channel technique Thermokon integrates automatic self-calibration in the sensors for different fields of operation.

Therefore manual calibration is not necessary.

Technical Data

Common:

Output voltage	1x 0..10 V (V), load max. 10 mA
Measuring values	CO_2
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 3 W (24 V =) | 6 VA (24 V ~)
Measuring range CO_2	0..2000 ppm
Accuracy CO_2	±75 ppm o. ±10% of measuring range (typ. at 21 °C)
Repeatability CO_2	<1% of full scale
Stability CO_2	<2% full Scale over life of sensor
Temperature dependence	typ. 2 ppm of full scale per °C (0..+50 °C)
Warm up time	<2 minutes
Response time	<10 minutes
Calibration	Self calibration dual channel
Sensor	NDIR (non dispersive infrared)
min. velocity	3 m/sec
LCD	29x12 mm, monochrome (optional)
Traffic light function (-Z)	3 LEDs for display of air quality (optional)
Ambient temperature	0..+50 °C
Ambient humidity	max. 85% rH none condensed
Protection	IP20 according to EN 60529
Lifetime	typ. 10 years
Terminal block	Terminal block, max. 1,5 mm²
Connection head material	PC with transparent cover
Pipe material	Brass, nickel-plated
Pipe length	310 mm
Pipe diameter	30 mm
Weight	ca. 1,3 kg

Option R:

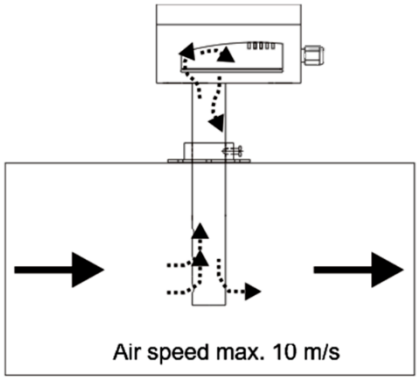
Relay output	Potential free relay output with adjustable CO_2 threshold value (only with analogue output; relay 2 A / 24 V ~ or 24 V =); the relay switches on if the CO_2 value has reached the adjusted set

Option Z:

LEDs	Green LED is on	0.. 750 ppm
	Yellow LED is on	751..1250 ppm
	Red LED is on	1251..2000 ppm

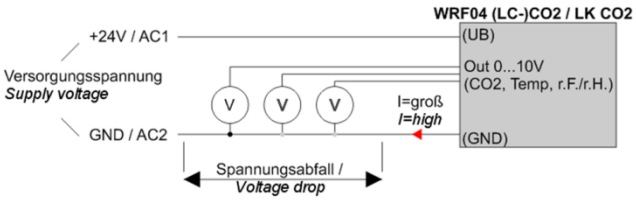
Mounting Advices LK CO2

The devices are supplied in a ready to use condition and are already equipped with a 1,5 m connection cable. Thus, there is no need to open the device. If an opening of the cover becomes necessary, however, please make sure that the housing will be hermetically-sealed, again. The installation in a ventilation duct is made by means of the mounting flange included (fixing screws are not included).

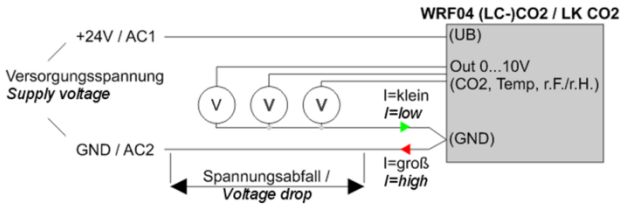


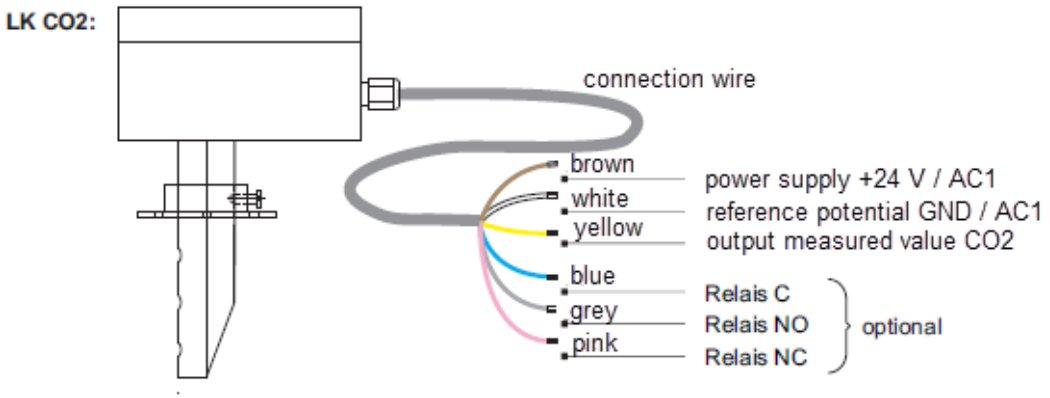
Terminal Connection Plan

1 GND-Leitung für kurze Anschlussleitungen /
1 GND-wire for short connection wires

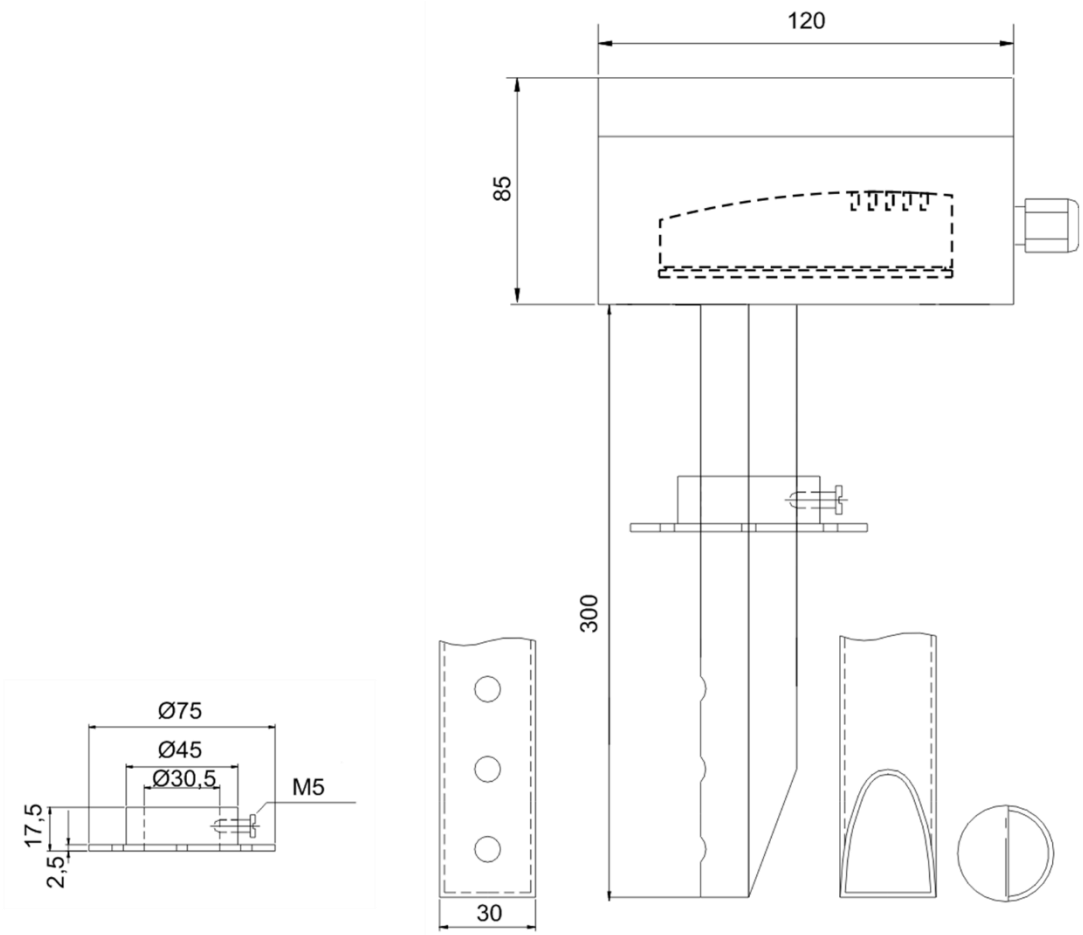


2 GND-Leitungen für lange Anschlussleitungen /
2 GND-wires for long connection wires





Dimensions (mm)



Optional Accessories

(D+S) 1 Set (each 2 pieces) rawl plugs and screws