Mixed Gas & CO_2

Mixed gas and CO2 sensors enable an individual and demand-responsive control of outdoor air supply and thus an optimization of the energy consumption. In modern buildings, the use of sensors is almost a matter of course – because energy-saving and well-being of people is of paramount importance.

LK	Duct air quality sensor	**P. 192**
LW04	Room air quality sensor	**P. 193**
LK CO_2	Duct CO2 sensor	**P. 194**
WRF04 CO2	Room CO2 sensor	**P. 195**
	Accessory	**P. 197**
	Self calibration with ABCLogic™	**P. 198**

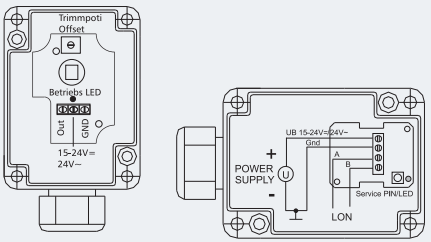
» LK – Duct Air Quality Sensor active / LON

LONMARK®

Application

For detection of air quality in air ducts. The sensor consists of a transmitter with VOC sensor, based on a heated tinoxide semiconductor (VOC volatile organic compounds = mixed gas). Designed for connection to control and display systems.

Connection

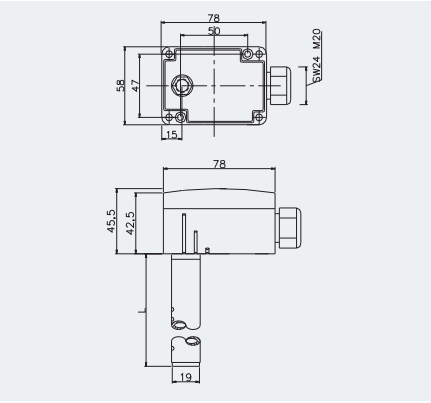


LKxxx V | LKxxx LON (extra casing)

TYPES AVAILABLE		
Type	**Model**	**Output**
LK	V	active, 0-10V
LK	LON	active, FTT10

TECHNICAL DATA	
Mounting lengths	130mm, 260mm, 390mm
Sensor	VOC = volatile organic compound (mixed gas)
Ambient humidity	max. 85%rF
Ambient temperature	0°C...+50°C
Power supply	V/LON: 15-24V= (±10%) or 24V~ (±10%)
Power consumption	V: Typ. 50mA/24V=, 150mA/24V~ LON: Typ. 75mA/24V=, 200mA/24V~
Terminal clamp	Screwing terminal, max. 1,5mm²
Connection head	Material PA6, colour pure white, similar to RAL9010
Cable entry	M20
Sensor tube	Material PVC, colour black, Ø19mm
Protection	IP20
Notice	LON-Module in separate enclosure Wire: PVC, cross section 0,25mm² L=1m

Dimensional Drawing (mm)



V / LON				
LK				**PG1**
Type	**Out**	**Tube L**	**Art. No.**	**€**
LK130 V	0-10V	130mm	103442	250,14 €
LK260 V	0-10V	260mm	103572	267,31 €
LK390 V	0-10V	390mm	103589	270,07 €
LK130LON	LON	130mm	174152	365,58 €
LK260LON	LON	260mm	155526	382,75 €
LK390LON	LON	390mm	359351	385,51 €

ACCESSORIES		
LK		**PG1**
Description	**Art. No.**	**€**
Rawlplugs + screws (2 pcs. each)	102209	0,72 €
Mounting flange MF19 (PA6.6)	7375	11,00 €

MF19

Thermokon Sensortechnik GmbH | Aarstraße 6 | 35756 Mittenaar | Telefon +49 (0) 2772 / 6501-0 | Fax +49 (0) 2772 / 6501-400 | www.thermokon.de

LONMARK®

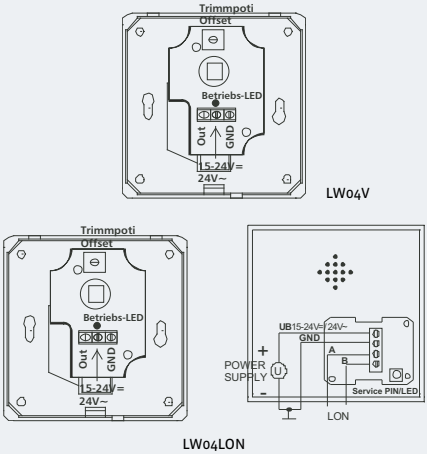
TYPES AVAILABLE		
Type	**Model**	**Output**
LW04	V	active, 0-10V
LW04	LON	active, FTT10

TECHNICAL DATA	
Sensor	VOC = volatile organic compound = (mixed gas)
Ambient humidity	85%rF
Ambient temperature	0°C...+50°C
Power supply	V/LON: 15-24V= (±10%) or 24V~ (±10%)
Power consumption	V: Typ. 50mA/24V=, 150mA/24V~ LON: Typ. 75mA/24V=, 200mA/24V~
Terminal clamp	Screwing terminal, max. 1,5mm²
Enclosure	Material ASA, colour pure white similar to RAL9010, mountable on standard flush-mounting box
Cable entry	From back or sidewise top/bottom
Protection	IP30

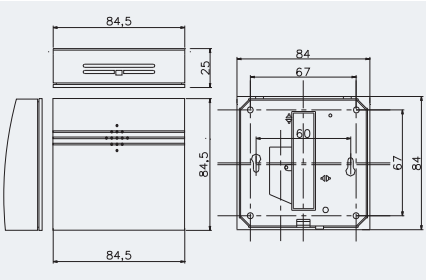
Application

For detection of air quality in room and office spaces. The sensor consists of a transmitter with VOC sensor, based on a heated tinoxide semiconductor (VOC volatile organic compounds = mixed gas). Designed for connection to control and display systems.

Connection



Dimensional Drawing (mm)



V / LON			
LW04			**PG1**
Type	**Out**	**Art. No.**	**€**
LW04V	0-10V	191746	184,03 €
LW04LON	FTT	191753	303,20 €

ACCESSORIES		
LW04		**PG1**
Description	**Art. No.**	**€**
Rawlplugs + screws (2 pcs. each)	102209	0,72 €
Ball stroke protection BS100	103312	31,25 €

» LK CO2 – Duct CO2 Sensor active

Application

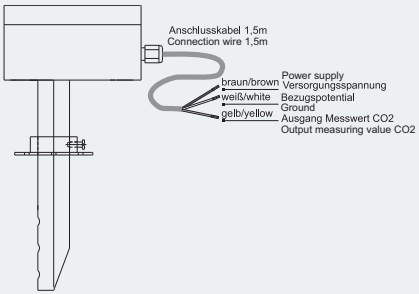
For detection of CO2 concentration in air ducts. For direct connection to a DDC or a monitoring system, there is an analogue 0-10V output for CO2 concentration. Also available with display.

Self Calibration ABCLogic™

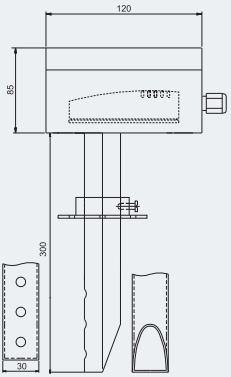
TYPES AVAILABLE		
Type	**Model**	**Output**
LK CO2	V	active, 0-10V
LK CO2	V-Z	active, 0-10V
	with 3 LED´s for display of air quality	
LK CO2	V LCD	active, 0-10V

TECHNICAL DATA	
Sensor	NDIR (non dispersive infrared), no calibration necessary, see page 195
Measuring range CO2	0...2000ppm
Accuracy	±40ppm+3% of meas. range (at 25°C)
Ambient humidity	>85%rF
Ambient temperature	0...50°C
Power supply	15-24V= (±10%) or 24V~ (±10%)
Power consumption	Max. 3W/6VA
Terminal clamp	Screwing terminal, max. 1,5mm²
Connection head	Mounting set air duct incl. WRF04 CO2 and WRF04 CO2 LCD, connection head material PC incl. cover crystal clear
Cable entry	M12
Protection	IP20
Notice	Delivery incl. PE-connecting wire (L=1,5m) and mounting flange For the automatic self-calibration it must be guaranteed that the ambient CO2 concentration reaches the level of the natural CO2-concentration once a day.

Connection



Dimensional Drawing (mm)



V			
LK CO2			**PG1**
Type	**Out**	**Art. No.**	**€**
LK CO2 V	0-10V	426084	402,48 €
LK CO2 V-Z	0-10V	426107	409,70 €
LK CO2 V LCD	0-10V	426091	430,34 €

OPTION	
LK CO2	**PG1**
Description	**€**
Relay output CO2	18,58 €

Thermokon Sensortechnik GmbH | Aarstraße 6 | 35756 Mittenaar | Telefon +49 (0) 2772/6501-0 | Fax +49 (0) 2772/6501-400 | www.thermokon.de

Room CO_2 Sensor active / LON / RS485 Modbus – WRF04 CO_2 «

WRF04 CO_2 LCD

WRF04 CO_2 -Z

Application

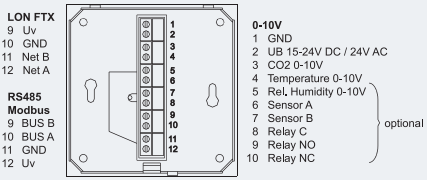
For detection of CO_2 concentration, the temperature and relative humidity (option) in room and office spaces. For direct connection to a DDC or a monitoring system, there are two analogue 0-10V outputs for CO_2 concentration and temperature. Also available with display.

Traffic Light Function

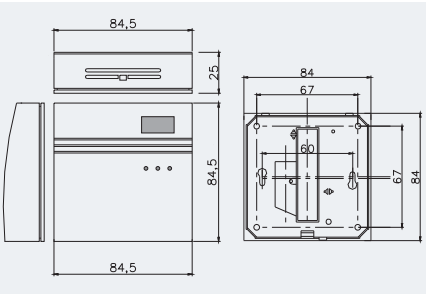
Self Calibration ABCLogic™

TECHNISCHE DATEN	
Sensor	NDIR (non dispersive infrared), no calibration necessary, automatic self-calibration ABCLogic™, please see page 195
Measuring range CO_2	0...2.000ppm
Accuracy CO_2	±40ppm+4% of meas. value (at 21°C)
Measuring range	Temperature 0...50°C
Accuracy temperature	Typ. 1% of measuring range
Measuring range	Humidity 0...100%rF
Accuracy humidity	Typ. ±3% between 20...80%rF
Ambient humidity	>85%rF
Ambient temperature	0...50°C
Power supply	15-24V= (±10%) oder 24V~ (±10%)
Power consumption	Max. 3W/6VA
Terminal clamp	Screwing terminal, max. 1,5mm²
Enclosure	Material ASA, colour pure white similar to RAL9010, mountable on standard flush-mounting box
Cable entry	From back or sidewise top/bottom
Protection	IP20
Notice	For the automatic self-calibration it must be guaranteed that the ambient CO_2 concentration reaches the level of the natural CO_2-concentration once a day.

Connection (mm)



Dimensional Drawing (mm)



V / VV / VVV

WRF04 CO_2					PG1
"LCD": with display for indication of CO_2 concentration, temperature and/or rel. humidity **"Z":** with 3 LEDs for indication of air quality (traffic light function)					
Type		**Output**	**For detection of**	**Art. No.**	**€**
LC-WRF04 CO_2 V	«NEW»	0-10V	CO_2	431750	260,00 €
WRF04 CO_2 VV		2x 0-10V	CO_2 / Temperature	423717	328,18 €
WRF04 CO_2 VV-Z		2x 0-10V	CO_2 / Temperature, with traffic light function	423724	335,40 €
WRF04 CO_2 VV LCD		2x 0-10V	CO_2 / Temperature, with LCD	423731	356,04 €
WRF04 CO_2 VVV		3x 0-10V	CO_2 / Temperatur / rel. humidity	423748	418,99 €
WRF04 CO_2 VVV-Z		3x 0-10V	CO_2 / Temp.erature / rel. humidity, with traffic light function	423755	426,22 €
WRF04 CO_2 VVV LCD		3x 0-10V	CO_2 / Temperature / rel. humidity, with LCD	423762	446,86 €

» WRF04 CO2 – Room CO2 Sensor active / LON / RS485 Modbus

LON

«NEW»

WRF04 CO2 — **PG1**

"LCD": with display of CO2 concentration, temperature and/or rel. humidity
"Z": with 3 LEDs for indication of air quality (traffic light function)

Type	Output	For detection of	Art. No.	€
WRF04 CO2 LON	LON FTX	CO2 / Temperature	470544	361,00 €
WRF04 CO2 LON-Z	LON FTX	CO2 / Temperature, with traffic light function	470551	368,00 €
WRF04 CO2 LON LCD	LON FTX	CO2 / Temperature, with LCD	470575	388,00 €
WRF04 CO2 rH LON	LON FTX	CO2 / Temperature / rel. humdity	470582	449,00 €
WRF04 CO2 rH LON-Z	LON FTX	CO2 / Temperature / rel. humidity, with traffic light function	470599	456,00 €
WRF04 CO2 rH LON LCD	LON FTX	CO2 / Temperature / rel. humidity, with LCD	470612	476,00 €

RS485 MODBUS

«NEW»

WRF04 CO2 — **PG1**

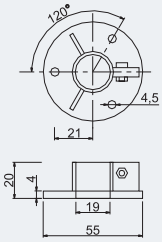
"LCD": with display of CO2 concentration, temperature and/or rel. humidity
"Z": with 3 LEDs for indication of air quality (traffic light function)

Type	Output	For detection of	Art. No.	€
WRF04 CO2 RS485 Modbus	RS485 Modbus	CO2 / Temperature	470629	348,00 €
WRF04 CO2 RS485 Modbus-Z	RS485 Modbus	CO2 / Temperature with traffic light function	470636	355,00 €
WRF04 CO2 RS485 Modbus LCD	RS485 Modbus	CO2 / Temperature, with LCD	470643	375,00 €
WRF04 CO2 rH RS485 Modbus	RS485 Modbus	CO2 / Temperature / rel. humidity	470650	436,00 €
WRF04 CO2 rH RS485 Modbus-Z	RS485 Modbus	CO2 / Temperature/ rel. humidity, with traffic light function	470667	443,00 €
WRF04 CO2 rH RS485 Modbus LCD	RS485 Modbus	CO2 / Temperature / rel. humidity with LCD	470674	463,00 €

OPTION

WRF04 CO2 — **PG1**

Description	€
Relay output CO2	18,58 €

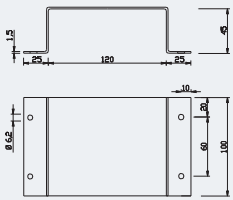


Mounting flange MF19
for duct air quality sensor LK

› Material PA6.6, colour black
› Operation temperature 130°C

MOUNTING FLANGE

FOR LK		PG1
Description	**Art. No.**	**€**
Mounting flange MF19 (PA6.6)	7375	11,00 €

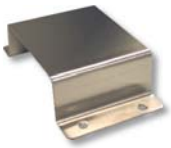


BS100

Ball Stroke Protection BS100

Protection against mechanical influences
for surface-mounting room air quality sensor LW04

› Material stainless steel 1.4301



BS100

BALL STROKE PROTECTION

FOR LW04		PG1
Description	**Art. No.**	**€**
BS100	103312	31,25 €

Mounting Set D+S

for duct air quality sensor LK, room air quality sensor LW04
and Co2 sensor WRF04 CO2

› Screws (2 pcs.): SPAX, 3,5x35mm, blue galvanized
› Rawlplugs (2 pcs.): 6mm

MOUNTING SET

FOR LK, LW04, WRF04 CO2		PG1
Description	**Art. No.**	**€**
Rawlplugs + screws (2 pcs. each)	102209	0,72 €

CO2 Sensors–
Self-Calibration by ABCLogic™

Virtually all gas sensors are subject to some sort of drift. The degree of drift is partially depending on the use of quality components and good design. But even with good components and excellent design a small amount of drift can still occur in the sensor that may ultimately result in the need for a sensor to be recalibrated.

Generally, recalibration involves a maintenance person visiting each sensor in a building and performing a 5 minute to 20 minute recalibration routine using gas bottles and plastic tubing.

The calibration process is simple but it can turn into a significant expense if recalibration is required frequently. If the wrong choice of sensors is made, the expense of sensor maintenance may wipe out any potential energy savings that could come from CO2 based demand controlled ventilation.

How Thermokon sensors are differing from other devices?

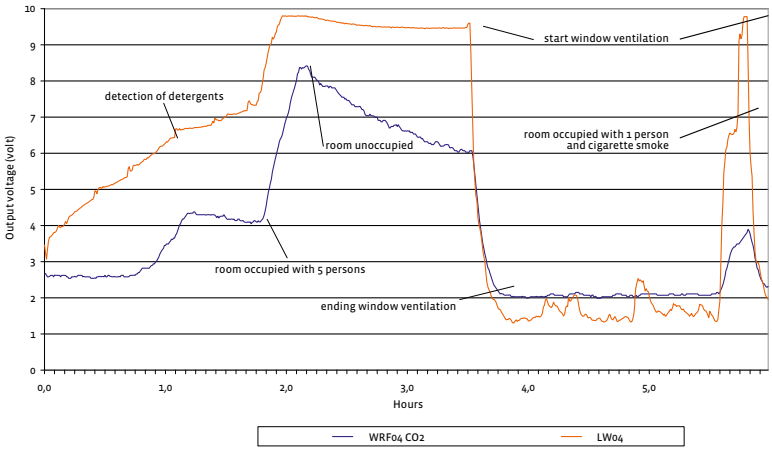
Thermokon sensors have an automatic self-calibration counteracting this behaviour by an intelligent software and a dynamic offset evaluation. Thus, there is in principle no necessity for a re-calibration of the sensor during operation.

Many years of experience with the self-calibration ABCLogic™ prove the good features of the sensors.

Detailed information on the self-calibration can be found in the CO2 data sheet.

ABCLogic™ is a registered trademark of the company Telaire, CA-93117 Goleta, USA

Comparison Measurement WRF04 CO2 with LW04



Thermokon Sensortechnik GmbH | Aarstraße 6 | 35756 Mittenaar | Telefon +49 (0) 2772 / 6501-0 | Fax +49 (0) 2772 / 6501-400 | www.thermokon.de