



thermokon®

Keep in touch with the future



Products

2012·2013

World Edition





Thermokon at a Glance

- 1987** Company foundation in Mittenaar
- 1994** New building in Aarstr. 6 in Mittenaar
- 1997** Extension of company building
- 2000** Extension of company building to 2000 sqm office and production space
- 2007** Extension of the building by 600 sqm
- 2011** Another extension of the building by 600 sqm

Foundation of subsidiaries:

- 1998** Thermokon Components GmbH Austria
- 2002** Thermokon-Danelko Elektronik AB Sweden
- 2011** Thermokon Automation Equipment Co. Ltd., China

Managing Directors: H. Zygan & J. Teichmann

Number of employees: 130

Export Initiative Energy Efficiency

Thanks to energy-efficient products and services in the field of energy efficiency, Thermokon also contributes internationally to a safe and cost-effective energy supply, which is of paramount importance to the climate protection.

Thermokon: We build the future – by sensors made in Germany!



25 Years of Energy-efficient Technology at Highest Stage



Thermokon has committed to a responsible use of natural resources and the climate protection. By means of energy-efficient sensors we are contributing actively to a lasting reduction of the CO₂ emission.

Long-Standing Experience in Technology

Thermokon offers 25 years of international know-how in technology and market experience. Thanks to the core expertise in the field of sensors for heating systems and buildings, our technical know-how can be found in all our products and meets highest demands on technology and quality.

Strong Export Business

Worldwide presence in the global market is guaranteed by having a headquarter in Germany, branches in Austria, Sweden and China and sales offices as well as various distributors in many parts of the world. Thermokon's portfolio is exported to more than 80 countries.

Lasting Performance – Continuous Development

Ever since Thermokon was founded, the main pillars of our success in the international market have been a lasting performance and achievement potential as well as continuous further development of our portfolio. Besides new innovative product concepts also redesigns and further developments of existing products towards their marketability are of paramount importance.

Flexibility, Efficiency, Sustainability

Nowadays, the topic “sustainability” is of paramount importance for strategic corporate planning. In the field of building automation, the idea of “green buildings” is omnipresent and stands for a sustainable and energy-efficient use of existing resources in buildings. Besides flexibility and efficiency, the top requirements on functional buildings are also potentials for energy savings.

The complete portfolio of Thermokon is designed for intelligent and sustainable buildings which shall make it to premium classifications according to the directives DIN EN 15232, LEED or Green Star.

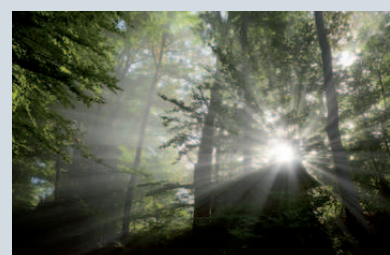
We are pleased to support our customers to select appropriate products for high energy-efficient buildings.

High-Grade Materials – Best Quality

Thanks to a close cooperation with our German partners only high-tensile plastics and stainless steel are used. Last but not least we are guaranteeing best accuracy and compliance with highest safety classes in premium quality which is approved regularly by the certification DIN EN ISO 9001



» Managing Director
Harald Zygan





Mixed Gas & CO₂

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	WRF04 CO₂	Room CO ₂ sensor	P. 196
LW04	Room air quality sensor	P. 193		Accessory	P. 198
LK CO₂	Duct CO ₂ sensor	P. 195		Self calibration with ABCLogic™	P. 198

» LK – Duct Air Quality Sensor active / LON



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

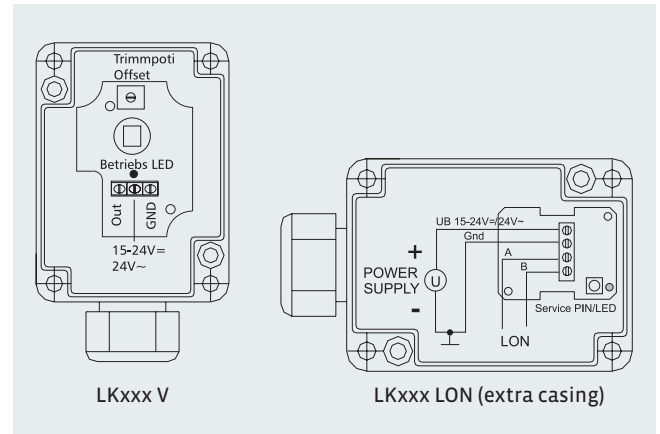
TECHNICAL DATA	
Mounting lengths	130mm, 260mm, 390mm
Sensor	VOC = volatile organic compound (mixed gas)
Ambient humidity	max. 85%rH
Ambient temperature	0°C...+50°C
Power supply	V/LON: 15-24V= (±10%) or 24V~ (±10%)
Power consumption	V: Typ. 50mA/24V=, 150mA/24V~ LON: Typ. 75mA/24V=, 200mA/24V~
Terminal clamp	Screwing terminal, max. 1,5mm ²
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 0,25mm ² L=1m

V / LON			
LK			PG1
Type	Out	Tube L	Art. No.
LK130 V	0-10V	130mm	103442
LK260 V	0-10V	260mm	103572
LK390 V	0-10V	390mm	103589
LK130LON	FTX	130mm	174152
LK260LON	FTX	260mm	155526
LK390LON	FTX	390mm	359351

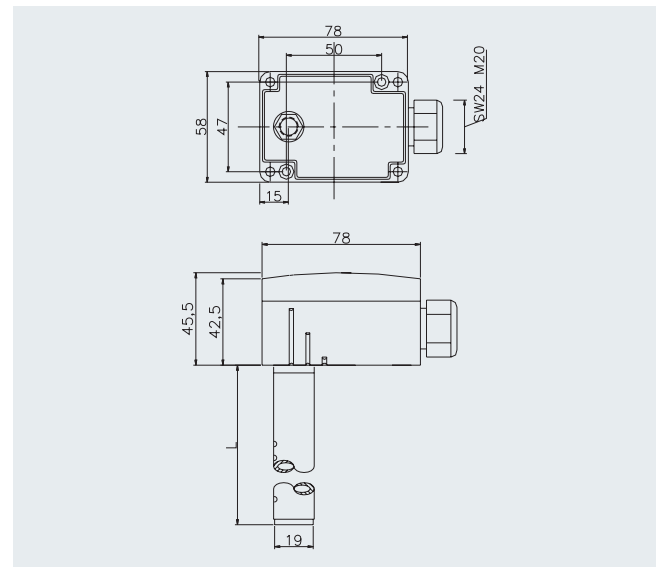
Application

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



Dimensional Drawing (mm)



ACCESSORIES	
LK	PG1
Description	Art. No.
Rawplugs + screws (2 pcs. each)	102209
Mounting flange MF19 (PA6.6)	7375



MF19

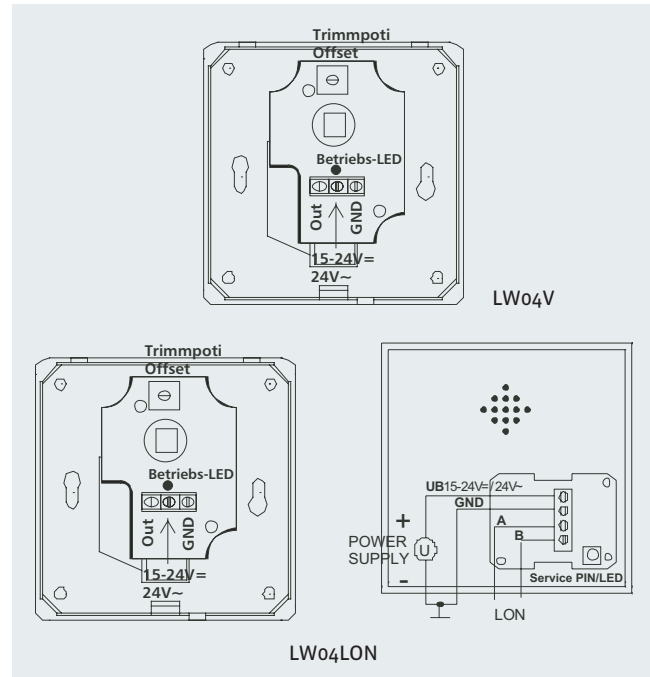
Room Air Quality Sensor active / LON – LW04 «

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.



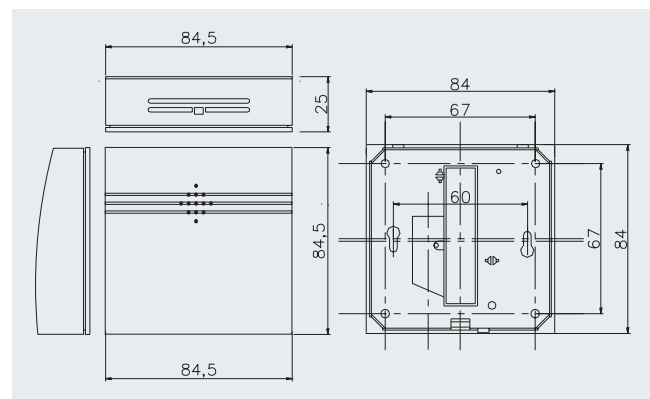
Connection



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

TECHNICAL DATA	
Sensor	VOC = volatile organic compound = (mixed gas)
Ambient humidity	85%rH
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. 1,5mm ²
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

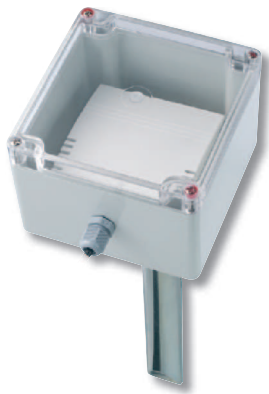
Dimensional Drawing (mm)



V / LON			
LW04			PG1
Type	Out	Art. No.	
LW04V	0-10V	191746	
LW04LON	FTX	191753	

ACCESSORIES	
LW04	PG1
Description	Art. No.
Rawlplugs + screws (2 pcs. each)	102209
Ball stroke protection BS100	103312

» LK CO₂ – Duct CO₂ Sensor active



TYPES AVAILABLE		
Type	Model	Output
LK CO ₂	V	active, 0-10V
LK CO ₂	V-Z	active, 0-10V with 3 LED's for display of air quality
LK CO ₂	V LCD	active, 0-10V

TECHNICAL DATA	
Sensor	NDIR (non dispersive infrared), no calibration necessary, automatic self-calibration ABCLogic™, please see page 198
Measuring range CO ₂	0...2000ppm
Accuracy	±40ppm+3% of meas. range (at 25°C)
Ambient humidity	>85%rH
Ambient temperature	0°C...50°C
Power supply	15-24V= (±10%) or 24V~ (±10%)
Power consumption	Max. 3W/6VA
Terminal clamp	Screwing terminal, max. 1,5mm ²
Connection head	Material PC incl. cover crystal clear
Sensor tube	Galvanised steel
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 CO ₂ concentration reaches the level of the natural CO ₂ -concentration once a day.

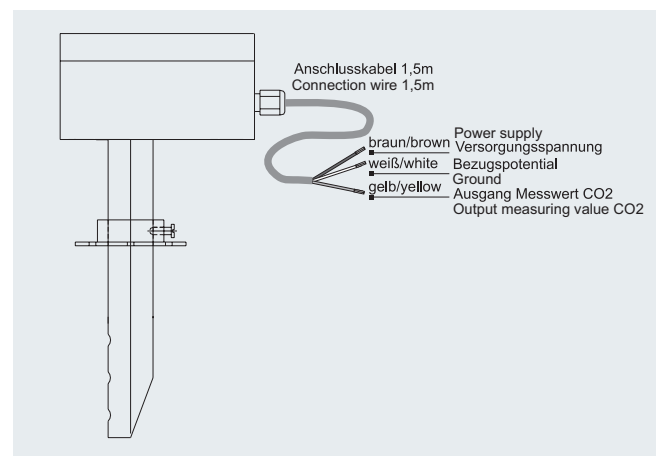
V			
LK CO ₂			PG1
Type	Out	Art. No.	
LK CO ₂ V	0-10V	426084	
LK CO ₂ V-Z	0-10V	426107	
LK CO ₂ V LCD	0-10V	426091	

Application

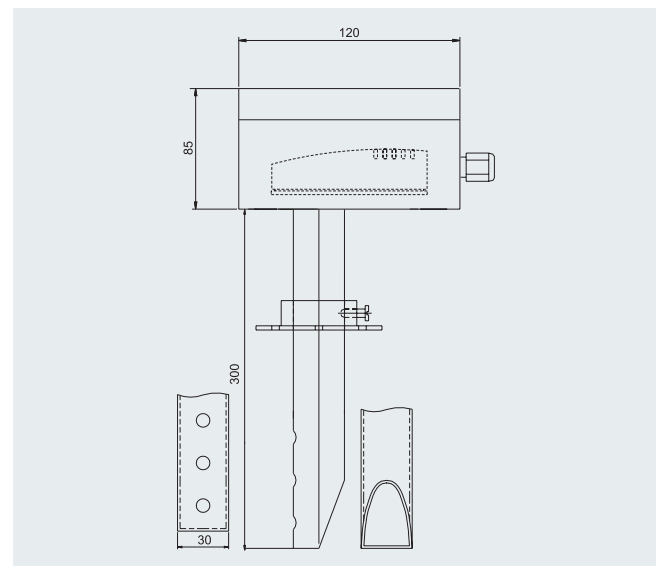
For detection of CO₂ concentration. Especially designed for big air ducts. Optimization of low flow velocities. For direct connection to a DDC or monitoring system an analogue 0-10V output is available for the CO₂ concentration.

Self Calibration ABCLogic™

Connection



Dimensional Drawing (mm)



OPTION

LK CO ₂	PG1
Bezeichnung	
Adjustable CO ₂ threshold value with potential free relay output	

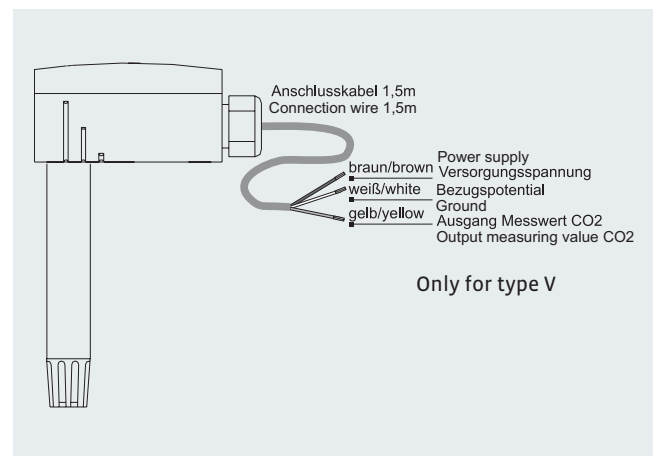


Application

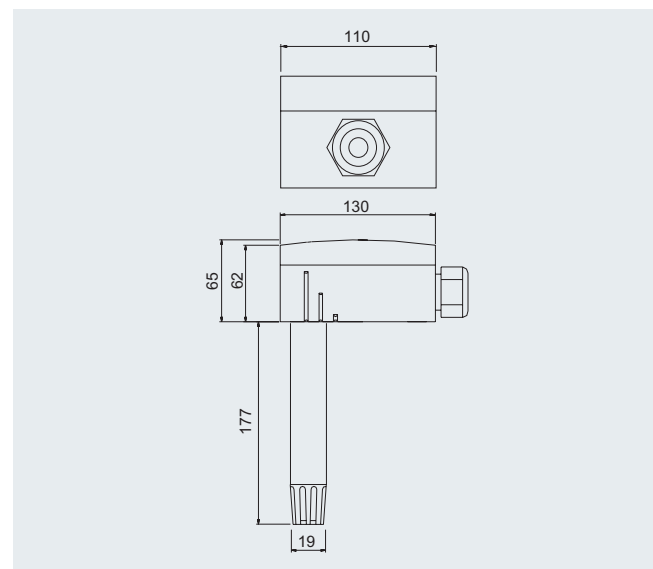
For detection of CO2 concentration, temperature and relative humidity in air ducts. Designed for connection to display and control systems.

Self Calibration ABCLogic™

Connection



Dimensional Drawing (mm)



OPTION

LK-S CO2	PG1
Description	
Additional passive temperature sensor	
Adjustable CO2 threshold value with potential free relay output	

TYPES AVAILABLE			
Type	Model	For detection of	Output
LK-S CO2	V	CO2	active, 0-10V
LK-S CO2	VV	CO2/Temp	active, 2x 0-10V
LK-S CO2	VVV	CO2/Temp/rH	active, 3x 0-10V
LK-S CO2	LON	CO2/Temp/rH	active, FT5000
LK-S CO2	RS485 Modus	CO2/Temp/rH	active, RS485 Modb.

TECHNICAL DATA	
Sensor	NDIR (non dispersive infrared), no calibration necessary, automatic self-calibration ABCLogic™, please see page 198
Measuring ranges	0...2.000ppm / 0°C...+50°C / 0...100%rH
Accuracy	±40ppm+3% of meas. range (at 25°C)
Ambient humidity	>85%rH
Ambient temperature	0°C...50°C
Power supply	15-24V= (±10%) or 24V~ (±10%)
Power consumption	Max. 3W/6VA
Terminal clamp	Screwing terminal, max. 1,5mm ²
Connection head	Material PA6, colour pur white, similar to RAL9010
Sensor tube	Material PA6, colour black
Protection	IP30
Notice	At option with additional passive temperature sensor (please specify sensor when ordering) 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.

V / VV / VVV / LON / RS485 Modbus			
LK-S CO2			PG1
Type	Out	Art. No.	
LK-S CO2 V	0-10V	507493	
LK-S CO2 VV	2x 0-10V	507530	
LK-S CO2 VVV	3x 0-10V	507554	
LK-S CO2 LON	LON FT5000	504966	
LK-S CO2 MODBUS	RS485 Modbus	508797	

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



WRF04 CO2 LCD



WRF04 CO2 -Z

Application

For detection of CO2 concentration, 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 CO2 concentration and temperature. Also available with display.



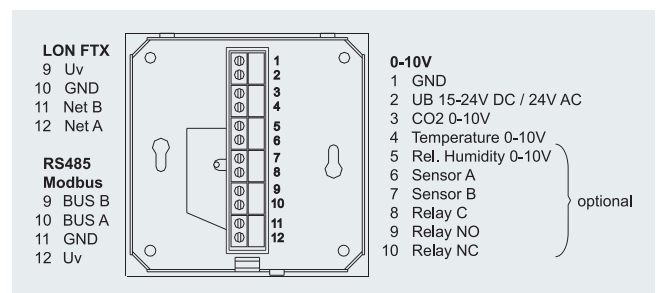
Traffic Light Function

Self Calibration ABCLogic™

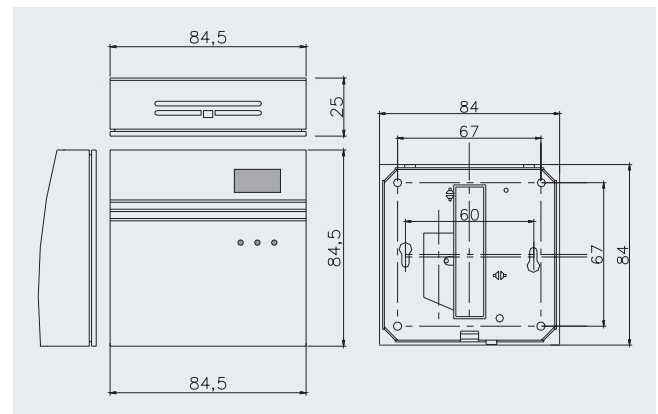
TECHNICAL DATA

Sensor	NDIR (non dispersive infrared), no calibration necessary, automatic self-calibration ABCLogic™, please see page 198
Measuring range CO2	0...2.000ppm
Accuracy CO2	±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%rH
Accuracy humidity	Typ. ±3% between 20...80%rH
Ambient humidity	>85%rH
Ambient temperature	0...50°C
Power supply	15-24V= (±10%) oder 24V~ (±10%)
Power consumption	Max. 3W/6VA
Terminal clamp	Screwing terminal, max. 1,5mm ²
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 CO2 concentration reaches the level of the natural CO2-concentration once a day.

Connection (mm)



Dimensional Drawing (mm)



V / VV / VVV

WRF04 CO2

PG1

“LCD”: with display for indication 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.
LC-WRF04 CO2 V	0-10V	CO2	431750
WRF04 CO2 VV	2x 0-10V	CO2 / Temperature	423717
WRF04 CO2 VV-Z	2x 0-10V	CO2 / Temperature, with traffic light function	423724
WRF04 CO2 VV LCD	2x 0-10V	CO2 / Temperature, with LCD	423731
WRF04 CO2 VVV	3x 0-10V	CO2 / Temperature / rel. humidity	423748
WRF04 CO2 VVV-Z	3x 0-10V	CO2 / Temp. / rel. humidity, traffic light function	423755
WRF04 CO2 VVV LCD	3x 0-10V	CO2 / Temperature / rel. humidity, with LCD	423762

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

LON

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 FT5000	CO2 / Temperature	470544
WRF04 CO2 LON-Z	LON FT5000	CO2 / Temperature, with traffic light function	470551
WRF04 CO2 LON LCD	LON FT5000	CO2 / Temperature, with LCD	470575
WRF04 CO2 rH LON	LON FT5000	CO2 / Temperature / rel. humidity	470582
WRF04 CO2 rH LON-Z	LON FT5000	CO2 / Temp. / rel. humidity, traffic light function	470599
WRF04 CO2 rH LON LCD	LON FT5000	CO2 / Temperature / rel. humidity, with LCD	470612

RS485 MODBUS

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)

Typ	Ausgang	Zur Messung von	Art. No.
WRF04 CO2 RS485 Modbus	RS485 Modbus	CO2 / Temperature	470629
WRF04 CO2 RS485 Modbus-Z	RS485 Modbus	CO2 / Temperature with traffic light function	470636
WRF04 CO2 RS485 Modbus LCD	RS485 Modbus	CO2 / Temperature, with LCD	470643
WRF04 CO2 rH RS485 Modbus	RS485 Modbus	CO2 / Temperature / rel. humidity	470650
WRF04 CO2 rH RS485 Modbus-Z	RS485 Modbus	CO2 / Temp. / rel. humidity, traffic light function	470667
WRF04 CO2 rH RS485 Modbus LCD	RS485 Modbus	CO2 / Temperature / rel. humidity with LCD	470674

OPTION

WRF04 CO2

PG1

Description

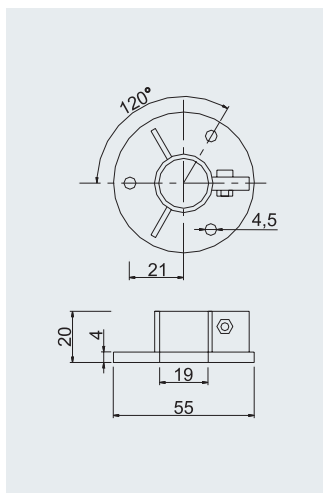
Adjustable CO2 threshold value with potential free relay output

» Information / Accessories – CO₂-Sensors



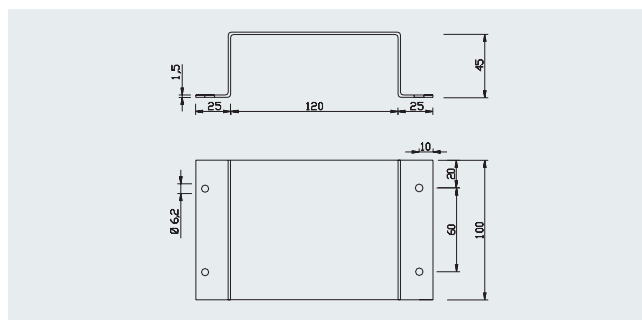
Mounting flange MF19
for duct air quality sensor LK

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



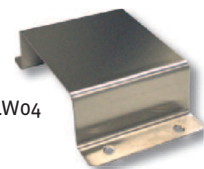
MOUNTING FLANGE

FOR LK	PG1
Description	Art. No.
Mounting flange MF19 (PA6.6)	7375



Ball Stroke Protection BS100
Protection against mechanical influences
for surface-mounting room air quality sensor LW04

- › Material stainless steel 1.4301



BALL STROKE PROTECTION

FOR LW04	PG1
Description	Art. No.
Ball Stroke Protection BS100	103312

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 Telsaire, CA-93117 Goleta, USA

Comparison Measurement WRF04 CO₂ with LW04

