# LK+ CO2+VOC (LCD) (Temp\_rH)

Duct sensor for air quality, optional temperature and humidity



## Datasheet

Subject to technical alteration Issue date: 11/18/2024 · A141





The following illustrations show the version with LCD

## » APPLICATION

Sensor for outdoor CO2 measurement optional temperature and humidity: cold rooms, greenhouses, production plants and warehouses. With a mix output, a mixture of CO2 and VOC signals can be realized. The mixing ratio can be configured with the USE app. Designed for outdoor mounted applications with 0..10 V or 4..20 mA output. LCD models with RGB background light have a transparent cover. Display configuration and threshold values for color changes can be parameterized via Thermokon USEapp. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature or humidity can be realized.

### » TYPES AVAILABLE

Duct sensor CO2 + VOC or Mix, optional with LCD - active 2x 0..10 V | 2x 4..20 mA | Relay

- LK+ CO2+VOC (LCD) VV
- LK+ CO2+VOC (LCD) AA
- LK+ CO2+VOC (LCD) VV Relay

#### optionally with shorter sensor tube, Type 100

- LK+ CO2+VOC (LCD) 100 VV
- LK+ CO2+VOC (LCD) 100 AA
- LK+ CO2+VOC (LCD) 100 VV Relay

#### Duct sensor CO2 + VOC + temp +rH (opt.) or mix, optional with LCD - active 3x/4x 0..10 V

- LK+ CO2+VOC (LCD) Temp 3xV
- LK+ CO2+VOC (LCD) Temp\_rH 4xV

## optionally with shorter sensor tube, Type 100

- LK+ CO2+VOC (LCD) 100 Temp 3xV
- LK+ CO2+VOC (LCD) 100 Temp\_rH 4xV

Options: additional passive temperature sensor

eg: PT100/PT1000/NI1000/NI1000TK5000/NTC10K... and other sensors on request.

## »SECURITY ADVICE – CAUTION



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

#### » PRODUCT TESTING AND CERTIFICATION



#### **Declaration of conformity**

The declaration of conformity of the products are available on our website <u>https://www.thermokon.de/direct/en-gb/categories/lkplus</u>

#### »NOTES ON DISPOSAL



The crossed-out wheelie bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: <a href="http://www.thermokon.com">www.thermokon.com</a>

#### » GENERAL REMARKS CONCERNING SENSORS

Especially with regard to passive sensors in 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance has to be compensated by the follow-up electronics. Due to self-heating, the wire current affects the measurement accuracy, so it should not exceed 1 mA.

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage ( $\pm 0, 2$  V). When switching the supply voltage on/off, onsite power surges must be avoided.

### » BUILD-UP OF SELF-HEATING BY ELECTRICAL DISSIPATIVE POWER

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  $(\pm 0, 2 \text{ V})$  this is normally done by adding or reducing a constant offset value.

Thermokon transducers can be operated with variable operating voltages. The transducers are set at the factory with a reference operating voltage of 24 V =.

At this voltage, the expected measuring error of the output signal will be the least. Other operating voltages, can cause a measurement deviation changing power loss of the sensor electronics.

A recalibration can be carried out directly on the unit or via a software variable (app or bus).

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

Do not touch the sensor

elements!

#### » APPLICATION NOTICE FOR HUMIDITY SENSORS

At regular environmental condition, it is recommended to calibrate the sensor annually to check the compliance with the accuracy required in the application. The following conditions can damage the sensor element or lead in long therm to loss of the specified accuracy:

- Mechanical stress
- Contamination (e.g. dust / fingerprints)
- Aggressive chemicals
- Ambient conditions (e.g. condensation on measuring element)

Re-calibration or exchange of the sensor element are not subject of the general warranty.

## »INFORMATION ABOUT INDOOR AIR QUALITY CO2

EN 13779 defines several classes for indoor air quality:

Category	CO <sub>2</sub> content above the content in outdoor air in ppm		Description
	Typical range	Standard value	
IDA1	<400 ppm	350 ppm	Good indoor air quality
IDA2	400 600 ppm	500 ppm	Standard indoor air quality
IDA3	6001.000 ppm	800 ppm	Moderate indoor air quality
IDA4	>1.000 ppm	1.200 ppm	Poor indoor air quality

### »INFORMATION ABOUT SELF-CALIBRATION FEATURE CO2

All gas sensors are subject to drift. The degree of drift is dependent on the use of components and product design. In addition, the following environmental conditions, among others, can accelerate/ favor the aging and wear of the sensors:

- Mechanical stress (also due to temperature fluctuation)
- Contamination (dust / fingerprints e.g.)
- Abrasive chemicals
- Environmental influences (high humidity / condensation on measuring element)

An internal self calibration function with dual channel technology compensates the caused drift. Thermokon sensors are for permanent use. (e.g. hospitals).

## » APPLICATION NOTICE FOR AIR QUALITY SENSORS VOC

Volatile organic compunds (VOC) are gaseous and vaporous substances of organic origin in the air. VOC-sensors monitor the significant part of humanly olfactory sensed air quality. (e.g. body odur | tobacco smoke | odur of materials, furniture, carpets, paint, adhesives, ...)

The VOC-Value is an application-specific indication for air quality and doesn't provide any information about individual components of VOC

A VOC sensor oxidises the organic molecules that collide with it, which results in changing the resistance of the semiconductor.

#### Any contact with the sensitive sensors must be avoided and will invalidate the warranty.

The VOC Sensor is factory calibrated and can be calibrated via USEapp subsequently, if needed.

# » APPLICATION NOTICE



The Bluetooth dongle snaps into the socket easily. When removing, please fix the plug-in card (option PCB) so that it is not unintentionally pulled out.

### **»**CONFIGURATION



The Thermokon bluetooth dongle with micro-USB (Item No.: 668262) is required for communication between USEapp and USE-M / USE L products. Commercial bluetooth dongles are not compatible.

Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.

The configuration-app and the app description can be found in the Google Play Store or in the Apple App Store.

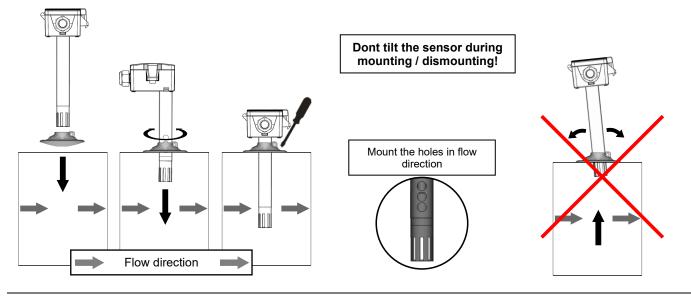
# **»TECHNICAL DATA**

Interstantion  Oct, Oct, etc.potatation  International of this denotes)    Output Valtage  2.4 x 0.01 V or 0.5 V, min. load 10 kQ (live-zero configuration via Thermokon USEapp)    Output Amp (type-dependent)  2x 4.20 m A, max. load 500 Q    Output passive (type-dependent)  2pissive option: additional passive temperature sensor error in the passive temperature sensor (type-dependent)  An    Output switch contact (type-dependent)  Relay 2 footing contacts for 24 V - or 24 V = / 3 A  An    Output switch contact (type-dependent)  XV 14V 15.35 V = SELV  An    Power supply (type-dependent)  3XV (14V P Telay 15.35 V = SELV  An    Power supply (type-dependent)  3XV (14V P Telay 15.35 V = SELV  An    Accuracy temperature  3XV (14V P Telay 15.35 V = SELV  An    Accuracy temperature  0.000 pm (default) 0.0500 pm (optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)  AtV    Accuracy temperature  4V  256 between 10.90% rH (Upp. at 70 °F)  Accuracy temperature    Accuracy temperature  40.5 (Kyp. at 70 °F)  Accuracy temperature  Accuracy temperature    Accuracy fumidity (type-dependent)  4V  256 between 10.90% rH (Upp. at 70	Measuring values	CO2 V/OC temperature + humidity (depending on the	e device)	
Output Amp (type-dependent)    A      Output passive (type-dependent)    Passive points: additional passive temperature sensor experiments: additional passive temperature sensor (type-dependent)    A      Output passive (type-dependent)    Relay 2 floating contacts for 24 V - or 24 V = / 3 A    A      Power supply (type-dependent)    Y1 3XV [4XV   Relay 1535 V = or 19.29 V - SELV    AA 1535 V = SELV      Power consumption    max. 2.3 W (24 V = )   max. 4.3 VA (24 V - )    AA 1535 V = SELV      Measuring range temp. (type-dependent)    3XV [4XV 40410 Y = (default setting), optionally configured via Thermokon USEapp 40510 Y   4X1 XV   4VV (type-dependent)    AA 1535 V = SELV      Measuring range temp. (type-dependent)    4XV 40100% /H non-condensing, optionally configured via Thermokon USEapp 40.55 K (typ. 47 0 °F)    Accuracy tomperature (type-dependent)      Measuring range CO2 (type-dependent)    02000 pm (default) 05000 pm (optionally configured via Thermokon USEapp)      Accuracy tomperature (type-dependent)    4XV 42X between 1090% /H (typ. at 70 °F)    Accuracy tomperature (type-dependent)      Accuracy CO2 ±20 ppm +3% of reading (typ. at 70 °F)    Accuracy CO2 ±20 ppm +3% of reading (typ. at 70 °F)    Accuracy (the attract the temperature (type-dependent)      Beloative (type-dependent)    Enclosure enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry				
(type-dependent)  2x 4.20 mA, max. load 500 Ω    Output passive (type-dependent)  passive eg: FT100/FT1000/N10000N1000TK5000NTC1CK and other sensors on request    Output subtch contact (type-dependent)  Relay 2 floating contacts for 24 V ~ or 24 V = / 3 A    Power suppty (type-dependent)  VI [3xV [4xV [Relay 15.30 V < 018.29 V ~ SELV				
(type-dependent)    Options: additional passive temperature sensor eg: PT1000N11000N11000N1C10K and other sensors on request      Output switch contact (type-dependent)    Relay 2 floating contacts for 24 V ~ or 24 V = / 3 A      Power supply (type-dependent)    W1 3X 14 XV 1 Relay 15.35 V = 019.29 V ~ SELV    A. 15.35 V = SELV      Power consumption    max. 2.3 W (24 V = )   max. 4.3 VA (24 V ~)    A. 15.35 V = SELV      Measuring range temp. (type-dependent)    3X 14XV +40.~140 ° F (default setting), optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)      Measuring range temp. (type-dependent)    3X 14XV +40.~140 ° F (default N Configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)      Measuring range CO2    0.2000 pm (default), 0.5000 pm (optionally configured via Thermokon USEapp)    Dessive dependent)      Accuracy tomperature (type-dependent)    V1 JA 13X 14 V [ Relay 0.515 K (V) p. 11 X <sup>-1</sup> 13 K <sup>-1</sup> (V) F.)    Dessive dependent      Accuracy humidity (type-dependent)    4xY 22% between 1090% rH (typ. at 70 ° F)    VI 22% between 1090% rH (typ. at 70 ° F)      Accuracy humidity (type-dependent)    4xY 22% between 1090% rH (typ. at 70 ° F)    VI 22% between 1090% rH (typ. at 70 ° F)      Accuracy humidity (type-dependent)    4xY 22% between 1090% rH (typ. at 70 ° F)    VI 22% Detween 1090% rH (typ. at 70 ° F)      Sensor <t< td=""><td></td><td colspan="3"></td></t<>				
(type-dependent)  2 floating contacts for 24 V - or 24 V = / 3 A    Power supply (type-dependent)  VI [3xV ] 4xV ] Relay 15.35 V = 5ELV  AA 15.35 V = SELV    Power consumption  max: 2.3 W (24 V =)   max: 4.3 VA (24 V -)  Insert of the second second second sec		Options: additional passive temperature sensor		
(type-dependent)  15.35 V = or 19.29 V ~ SELV  15.35 V = SELV    Power consumption  max. 2.3 W (24 V =)   max. 4.3 VA (24 V ~)    Measuring range temp.  3XV   4xV    (type-dependent)  3XV   4xV    Measuring range temp.  420.+140 °F (default setting), optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)    Measuring range CO2  0.2000 ppm (default), 0.5000 ppm (optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)    Accuracy temperature (type-dependent)  VI (A1 3xV   4xV   Relay ± 0.5000 ppm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  VI (A1 3xV   faV   Relay ± 0.500 ppm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  VI (A1 3xV   faV   Relay ± 0.500 ppm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  VI (A1 3xV   faV   Relay ± 0.500 ptm (0pm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  VI (A1 3xV   faV   Relay ± 2% bs (type at 70 °F)    Accuracy temperature (type-dependent)  4xV ± 2% between 10.90% rH (typ. at 70 °F)    Accuracy temperature (type-dependent)  4xV ± 2% between 10.90% rH (typ. at 70 °F)    Accuracy temperature (type-dependent)  Ext temperature temperature temperature temperature text temperatext temperatext temperature temperature text temperatu		Atput switch contact (pe-dependent)Relay 2 floating contacts for 24 V ~ or 24 V = / 3 A		
Measuring range temp. (type-dependent)    3xV   4xV +40+140 °F (default setting), optionally configured via Thermokon USEapp      Measuring range humidity (type-dependent)    4xV 0100% rH non-condensing, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)      Measuring range CO2    0.2000 ppm (default), 0.5000 ppm (optionally configured via Thermokon USEapp)      Accuracy temperature (type-dependent)    VI   AX   3xV   4xV   Relay 20,5 K (typ. at 70 °F)    passive depending on used sensor      Accuracy humidity (type-dependent)    4xV 2% between 1090% rH (typ. at 70 °F)    depending on used sensor      Accuracy CO2    450 ppm +3% of reading (typ. at 70 °F, 50% rH)    min. 1 ft/s, max. 40 ft/s      Calibration    self-calibration, Dual Channel    VOC VOC      Sensor    CO2 NDIR (non-dispersiv, infrared)    VOC VOC Sensor (heated metal oxide semiconductor)      Display (optional)    LCD 1.14x1.38 in. with RGB backlight    enclosure USE-M, PC, pure while, cover PC, transparent, with removable cable entry      Protaction    IP68 according to EN 60529    3xV   4xV Flox herm M20, for wire 6=0.18035 in, removable    M2S with fourfold cable entry for wire with max. d=0.28 in, removable      Pipe (type-dependent)    VI   AA   VV Relay PA6, black, d=0.77 in, length 6 in. Type 100 Length 2.7 in.    3xV   4xV Flox herevable deloga in terminal, max. 14 AWG				
(type-dependent)  +40.*140 °F (default setting), optionally configured via Thermokon USEapp    Measuring range humidity (type-dependent)  4vV 0100% rH non-condensing, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)    Measuring range CO2  02000 ppm (default), 05000 ppm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  V/ I AA [3x/ I 4xV ] Relay ±0.5 K (typ. at 70 °F)  passive depending on used sensor    Accuracy humidity (type-dependent)  4xV ±2% between 1090% rH (typ. at 70 °F)  thermokon USEapp)    Accuracy humidity (type-dependent)  4xV ±2% between 1090% rH (typ. at 70 °F)  thermokon Use sensor    Accuracy humidity (type-dependent)  4xV ±2% between 1090% rH (typ. at 70 °F)  thermokon Use sensor    Accuracy humidity (type-dependent)  4xV t2% between 1090% rH (typ. at 70 °F)  thermokon Use sensor    Accuracy humidity (type-dependent)  4xV t2% between 1090% rH (typ. at 70 °F)  thermokon Use sensor    Accuracy humidity (type-dependent)  4xV t2% between 1090% rH (typ. at 70 °F)  thermokon Use sensor    Sensor  CO2 NDIR (non-dispersiv, infrared)  VOC VOC sensor (heated metal oxide semiconductor)    Display (optional)  LCD 1.14x1.38 in. with RGB backlight  thermovable cable entry    Protection  IP65 according to EN 60529	Power consumption	max. 2,3 W (24 V =)   max. 4,3 VA (24 V ~)		
(type-dependent)  0100% H1 non-condensing, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew point)    Measuring range CO2  02000 ppm (default), 05000 ppm (optionally configured via Thermokon USEapp)    Accuracy temperature (type-dependent)  VI [AA] 3XV [4XV] Relay to 5,5 K (typ. at 70 °F)  passive depending on used sensor    Accuracy humidity (type-dependent)  4xV to 5,5 K (typ. at 70 °F)  tepending on used sensor    Accuracy CO2  ±50 ppm +3% of reading (typ. at 70 °F, 50% rH)  -    Air speed  min. 1 f/s, max. 40 f/s  -    Sensor  CO2  NDIR (non-dispersiv, infrared)  VOC    VOC  NOR (non-dispersiv, infrared)  VOC  VOC vOC sensor (heated metal oxide semiconductor)    Display (cptional)  LCD 1.14x1.38 in. with RGB backlight  -  -    Protection  IP65 according to EN 60529  -  -    Cable entry (type-dependent)  VI [A] 13X V [4XV  PA6, black, 0=0.77 in., length 7.1 in.  Type 100    Length 2 7 in.  zength 2 7 in.  -  -  -    Connection electrical  removable fug-in terminal, max. 14 AWG  -  -  -  -  -  -  -  -  -  -  - </td <td colspan="3"></td>				
Accuracy temperature (type-dependent)    VV   AA   3xV   4xV   Relay ±0,5 K (typ. at 70 °F)    passive depending on used sensor      Accuracy temperature (type-dependent)    4xV ±2% between 1090% rH (typ. at 70 °F)		0100% rH non-condensing, optionally configured via Thermokon USEapp (enthalpy, absolute humidity, dew		
(type-dependent)  ±0,5 K (typ. at 70 °F)  depending on used sensor    Accuracy humidity (type-dependent)  4xV ±2% between 1090% rH (typ. at 70 °F)	Measuring range CO2	02000 ppm (default), 05000 ppm (optionally configured via Thermokon USEapp)		
(type-dependent)  ±2% between 1090% rH (typ. at 70 °F)    Accuracy CO2  ±50 ppm +3% of reading (typ. at 70 °F, 50% rH)    Air speed  min. 1 ft/s, max. 40 ft/s    Calibration  self-calibration, Dual Channel    Sensor  CO2  VOC    NDIR (non-dispersiv, infrared)  VOC    Voc sensor (heated metal oxide semiconductor)    Display (optional)  LCD 1.14x1.38 in. with RGB backlight    Enclosure  enclosure USE-M, PC, pure white, cover PC, transpert, with removable cable entry    Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV removable    Fipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 3.2 in., removable    Pipe (type-dependent)  removable plug-in terminal, max. 14 AWG    Ambient condition  0+50 °C, max. 85% rH short term condensation    Mounting  installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,		<b>VV   AA   3xV   4xV   Relay</b> ±0,5 K (typ. at 70 °F)		
Air speed  min. 1 ft/s, max. 40 ft/s    Calibration  self-calibration, Dual Channel    Sensor  CO2 NDIR (non-dispersiv, infrared)  VOC VOC sensor (heated metal oxide semiconductor)    Display (optional)  LCD 1.14x1.38 in. with RGB backlight  VOC    Enclosure  enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry    Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.18.0.35 in., Plextherm M20, for wire Ø=0.18.0.35				
Calibration  self-calibration, Dual Channel    Sensor  CO2 NDIR (non-dispersiv, infrared)  VOC VOC sensor (heated metal oxide semiconductor)    Display (optional)  LCD 1.14x1.38 in. with RGB backlight  VOC VOC sensor (heated metal oxide semiconductor)    Enclosure  enclosure USE-M, PC, pure white, cover PC, transpart, with removable cable entry    Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.180.35 in., removable  Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 2.7 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Type 100 Length 3.9 in.    Mounting  instellation is also possible using mounting base  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Accuracy CO2	cy CO2 ±50 ppm +3% of reading (typ. at 70 °F, 50% rH)		
Sensor    CO2 NDIR (non-dispersiv, infrared)    VOC VOC sensor (heated metal oxide semiconductor)      Display (optional)    LCD 1.14x1.38 in. with RGB backlight    VOC sensor (heated metal oxide semiconductor)      Enclosure    enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry      Protection    IP65 according to EN 60529      Cable entry (type-dependent)    VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.18.0.35 in., removable    Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable      Pipe (type-dependent)    VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.    3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.      Connection electrical    removable plug-in terminal, max. 14 AWG    Length 3.9 in.      Mounting    installation is also possible using mounting base    mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Air speed	min. 1 ft/s, max. 40 ft/s		
NDIR (non-dispersiv, infrared)  VOC sensor (heated metal oxide semiconductor)    Display (optional)  LCD 1.14x1.38 in. with RGB backlight    Enclosure  enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry    Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.18.0.35 in., removable  Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Just 2.450 °C, max. 85% rH short term condensation    Mounting  installation is also possible using mounting base  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Calibration	self-calibration, Dual Channel		
Image: continuity  Relay    Enclosure  enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry    Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.180.35 in., removable  Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Image: Content in the image: Content in	Sensor			
Protection  IP65 according to EN 60529    Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.180.35 in., removable  Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Type 100 Length 3.9 in.    Mounting  installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,		LCD 1.14x1.38 in. with RGB backlight		
Cable entry (type-dependent)  VV   AA   3xV   4xV Flextherm M20, for wire Ø=0.180.35 in., removable  Relay M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Type 100 Length 3.9 in.    Ambient condition  0+50 °C, max. 85% rH short term condensation  Installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Enclosure	enclosure USE-M, PC, pure white, cover PC, transparent, with removable cable entry		
(type-dependent)  Flextherm M20, for wire Ø=0.180.35 in., removable  M25 with fourfold cable entry for wire with max. Ø=0.28 in., removable    Pipe (type-dependent)  VV   AA   VV Relay PA6, black, Ø=0.77 in., length 6 in. Type 100 Length 2.7 in.  3xV   4xV PA6, black, Ø=0.77 in., length 7.1 in. Type 100 Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Type 100 Length 3.9 in.    Ambient condition  0+50 °C, max. 85% rH short term condensation  Installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Protection	ection IP65 according to EN 60529		
(type-dependent)  PA6, black, Ø=0.77 in., length 6 in.  PA6, black, Ø=0.77 in., length 7.1 in.    Type 100  Type 100  Length 3.9 in.    Connection electrical  removable plug-in terminal, max. 14 AWG  Length 3.9 in.    Ambient condition  0+50 °C, max. 85% rH short term condensation  Installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,		Flextherm M20, for wire Ø=0.180.35 in.,	M25 with fourfold cable entry for wire with max.	
Ambient condition  0+50 °C, max. 85% rH short term condensation    Mounting  installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,		PA6, black, Ø=0.77 in., length 6 in. <b>Type 100</b>	PA6, black, Ø=0.77 in., length 7.1 in. <b>Type 100</b>	
Mounting  installation is also possible using mounting base    Notes  mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Connection electrical	ion electrical removable plug-in terminal, max. 14 AWG		
Notes    mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke,	Ambient condition	mbient condition 0+50 °C, max. 85% rH short term condensation		
	Mounting	Mounting installation is also possible using mounting base		
	Notes			

# » MOUNTING ADVICE

The sensor can be mounted on the ventilation duct by means of the mounting flange MF20 TPO (optional with mounting base). Align the openings on the sensor tube according to the flow direction. To prevent condensate permeation the pipe must be installed in an orientation that occurring condensate can run off.

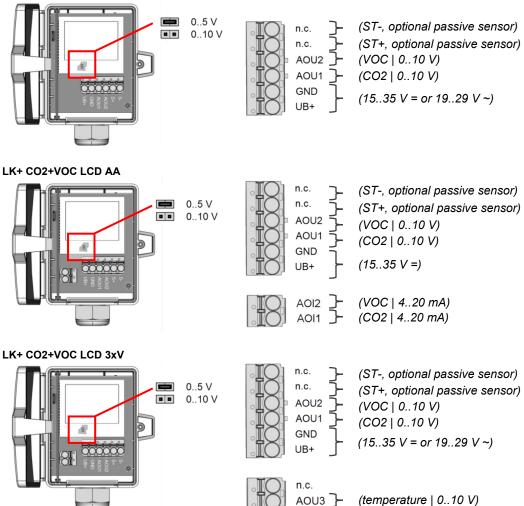
Remove the lower section of the sensor carefully and pulling straight out.

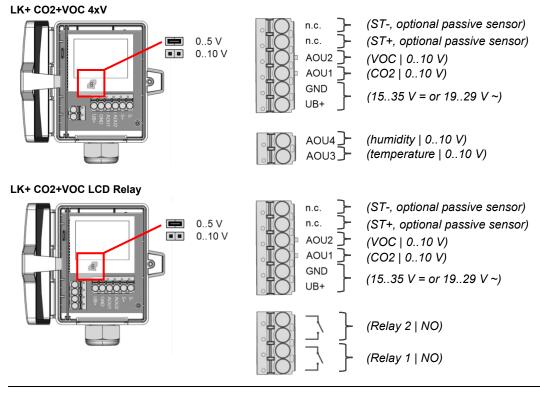


## » CONNECTION PLAN

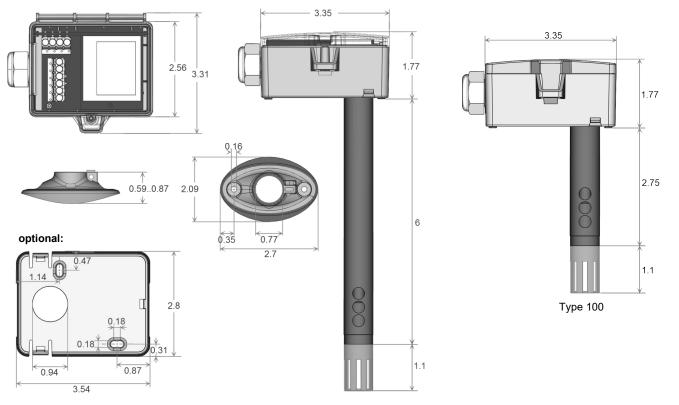
To change the output voltage range (default: 0..10 V to 0..5 V) via jumper, the display must be removed from the board.

#### LK+ CO2+VOC LCD VV





## » DIMENSIONS (MM)



# »ACCESSORIES (INCLUDED IN DELIVERY)

#### Mounting base

Mounting kit universal • Cover screw + screw cover• 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

# »ACCESSORIES (OPTIONAL)

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)

Bluetooth dongle

Item No. 631228 Item No. 698511

Item No. 641333

Item No. 668262