

LA+ CO2 (LCD) (Temp_rH) LON

Outdoor sensor for air quality, optional temperature and humidity

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration

Issue date: 16.01.2025 • A140



LON

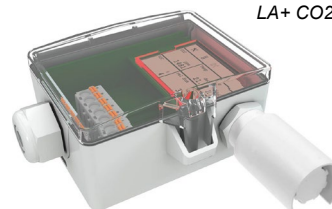
LOCAL OPERATING NETWORK



LA+ CO2



LA+ CO2 Temp



LA+ CO2 Temp_rH

The following illustrations show the LCD design

» APPLICATION

Air quality sensor for measuring CO₂, temperature and humidity in outdoor areas with 2 0..10 V output. LCD models with RGB background light have a transparent cover.

» TYPES AVAILABLE

Outdoor sensor CO₂, optional with display – active LON

- LA+ CO2 (LCD) LON

Outdoor sensor CO₂ temp, optional with display – active LON

- LA+ CO2 (LCD) Temp LON

Outdoor sensor CO₂ + temp + rH, optional with display – active LON

- LA+ CO2 (LCD) Temp_rH LON

» 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
<https://www.thermokon.de/direct/en-gb/categories/laplus>

» NOTES ON DISPOSAL



The crossed-out wheeled 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: www.thermokon.com

» 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 ($\pm 0,2$ 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.

» 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 term to loss of the specified accuracy:

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



Do not touch the sensor elements!

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 ₂ 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	600..1.000 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)

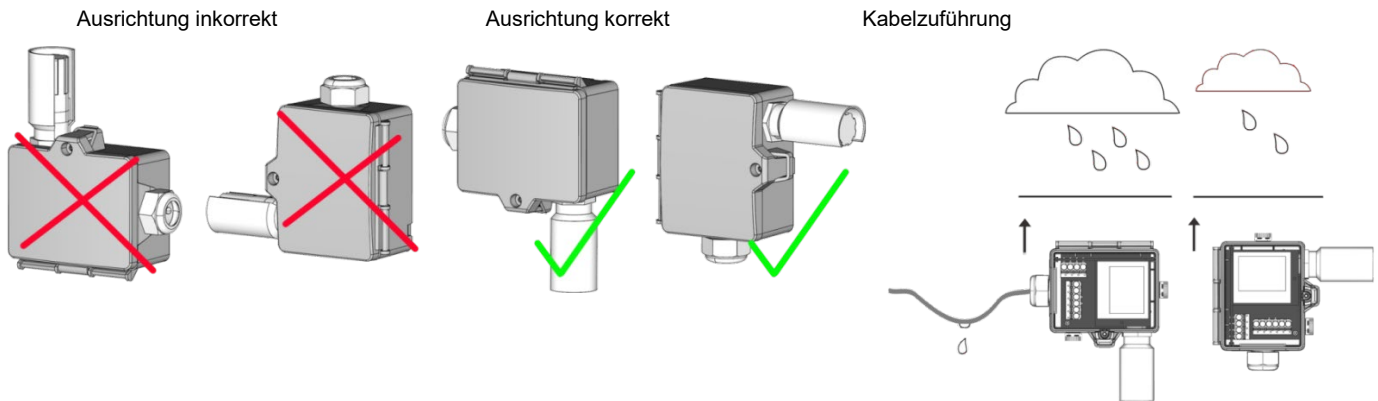
An internal self calibration function with dual channel technology compensates the caused drift. Thermokon sensors are for permanent use. (e.g. hospitals).

» **TECHNICAL DATA**

Measuring values (type-dependent)	CO ₂ , temperature and humidity	
Output voltage	2x 0..10 V or 0..5 V, min. load 10 k Ω (live-zero configuration via Thermokon USEapp)	
Network technology	LON FT (free topology)	
Power supply	15..35 V = or 19..29 V ~	
Power consumption	max. 2,3 W (24 V =) max. 4,3 VA (24 V ~) SELV	
Measuring range temp. (type-dependent)	Temp Temp_rH 0..+50 °C (default setting) , optionally configured via Thermokon USEapp	
Measuring range humidity (type-dependent)	Temp_rH 0..100% rH non-condensing, optionally (enthalpy, absolute humidity, dew point)	
Measuring range CO ₂	0..2000 ppm (default), 0..5000 ppm (optionally configured via Thermokon USEapp)	
Accuracy temperature (type-dependent)	Temp Temp_rH $\pm 0,5$ K (typ. at 21 °C)	
Accuracy humidity (type-dependent)	Temp_rH $\pm 2\%$ between 10..90% rH (typ. at 21 °C)	
Accuracy CO ₂	± 50 ppm +3% of reading (typ. at 21 °C, 50% rH)	
Calibration	self-calibration, Dual Channel	
Sensor	NDIR (non-dispersive, infrared)	
Display (optional)	LCD LCD 29x35 mm with RGB backlight	
Enclosure (type-dependent)	enclosure USE-M, PC, pure white, with removable cable entry	LCD cover PC, transparent
Protection	IP65 according to EN 60529	
Cable entry	M25, for wire max. $\varnothing=7$ mm, seal insert for fourfold cable entry	
Connection electrical	Mainboard removable plug-in terminal, max. 2,5 mm ²	Plug-in card removable plug-in terminal, max. 1,5 mm ²
Ambient condition	0..+50 °C, max. 85% rH short term condensation	

» MOUNTING ADVICES

In case of outdoor installation avoid direct rain and sun contact. Probably use sun respectively rain protection. Cable entry from bottom or side. For side cable routing set loop so that precipitation can drain defined. Observe permissible ambient condition.



Regardless of the compass direction, the outdoor sensor should not be mounted in the following locations:

- on chimneys, under roofs, canopies or balconies
- in close proximity to an exhaust air opening
- above, below or next to windows and doors

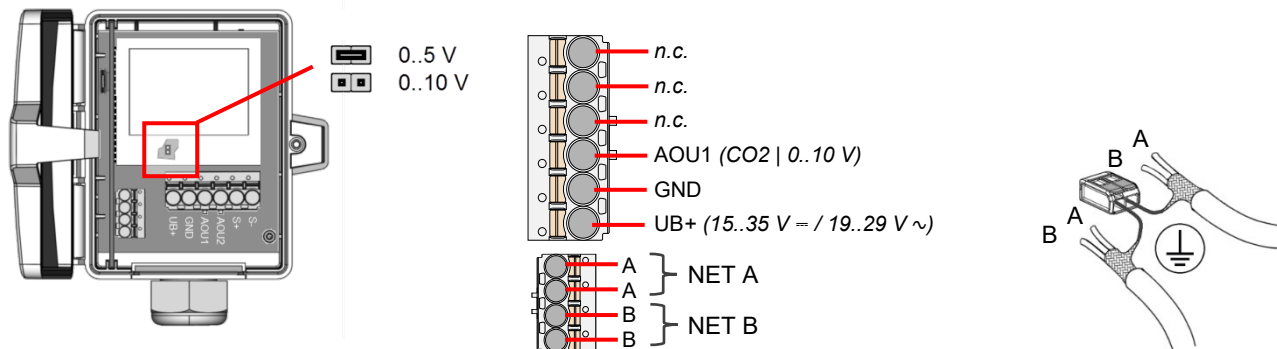
» USE ENCLOSURE WITH UV AND WEATHER RESISTANCE

After some time, outdoor mounted plastics can lose their color and quality. Therefore, all USE housings are made of special white polycarbonate (PC). The light-stable colorants and additives are used to achieve optimum protection of the polymer while maintaining color stability. The titanium dioxide used is specially developed for polycarbonate and offers excellent UV protection through the reflection of the entire light spectrum including the UV component by 340 nm. This effectively counteracts the otherwise occurring photochemical polymer degradation. The colors stay full for a long time without fading. The material is also resistant to cold and frost.

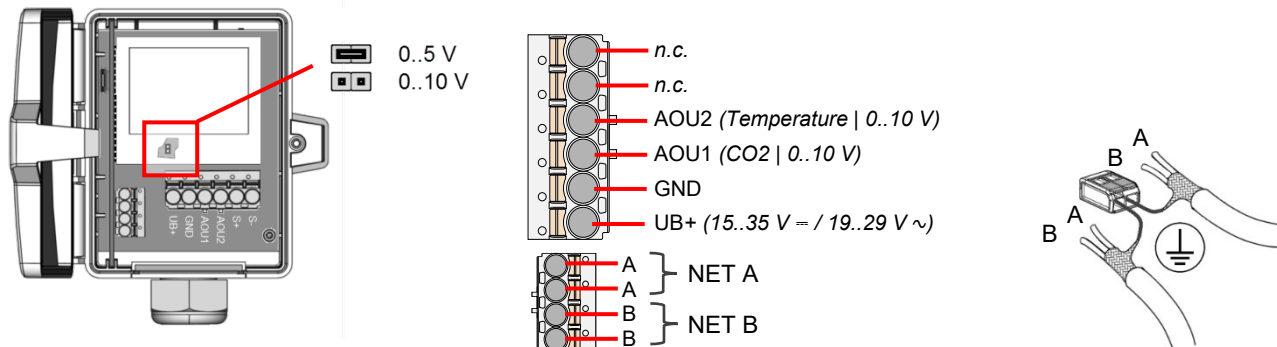
» CONNECTION PLAN

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

LA+ CO2 (LCD) LON



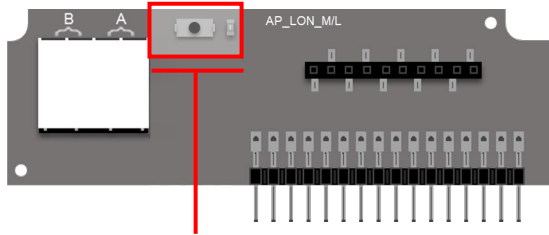
LA+ CO2 Temp (LCD) LON | LA+ CO2 Temp_rH (LCD) LON



» PLUG-IN CARD

Service-Pin-Telegramm

When the service pin is activated, the service pin telegram is transmitted with the LON device identification - the Neuron Chip ID.



Service PIN / Service LED



Specification LON:

A detailed description of the LON variables can be found in our downloadcenter:

<https://www.thermokon.de/direct/files/use-lon-plugin.zip>

» 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.

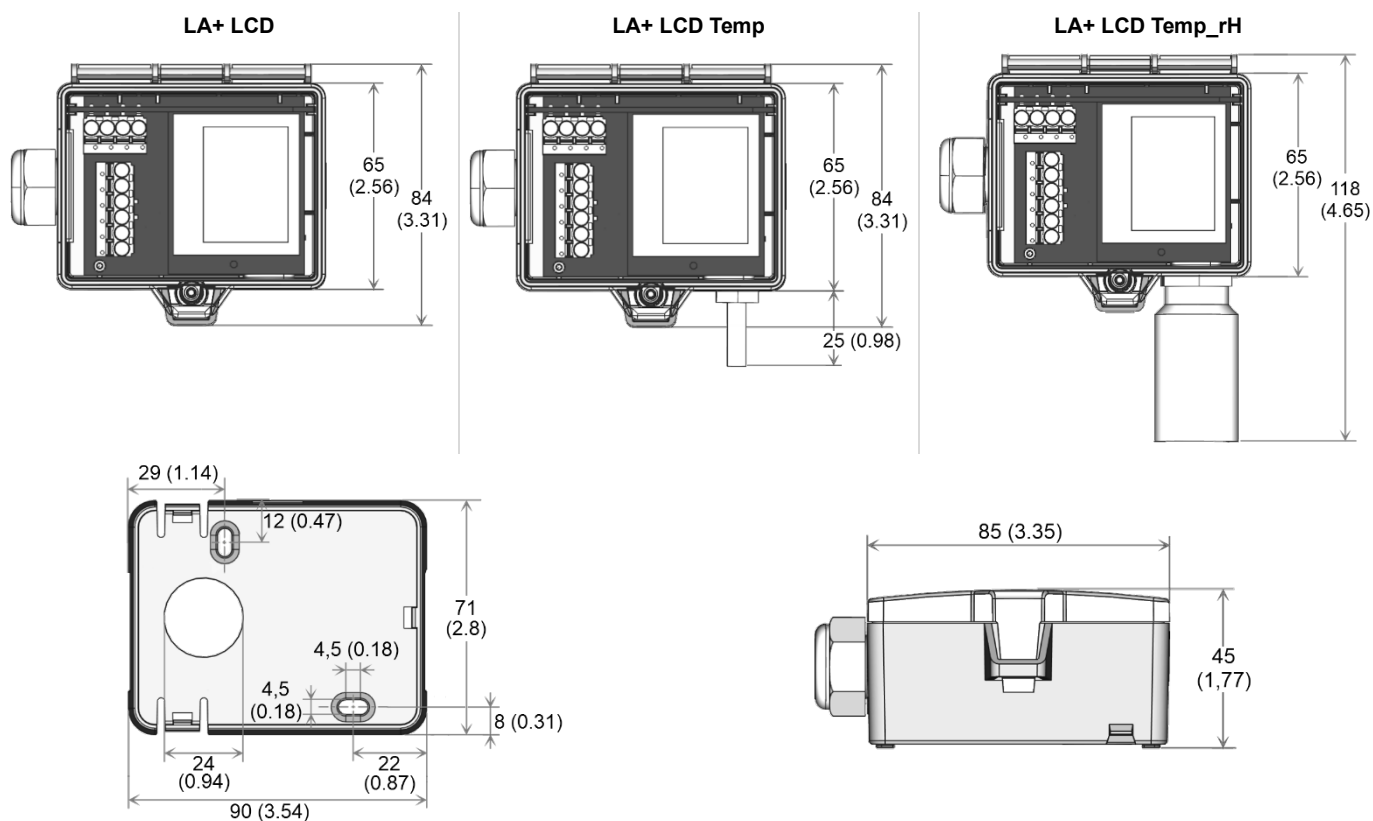


Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.



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

» DIMENSIONS MM (INCH)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base

Item No. 631228

Mounting kit universal

Item No. 698511

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

» ACCESSORIES (OPTIONAL)

Bluetooth dongle

Item No. 668262

Filter stainless steel, wire mesh

Item No. 231169