

LS02+ ext. RS485 Modbus

Leakage Sensor

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Leakage sensor for the detection of (weakly) electrically conductive liquids (e.g. water leaks under air conditioners, pipe bursts, otherwise conductive liquids). With an electrolytic alternating voltage measurement, the leakage sensor measures point-like via 2 electrodes. For connection to controller and display systems. The device contains sensor and evaluation electronics with relay contact and signalling LED.

» TYPES AVAILABLE

Leakage sensor

- LS02+ ext. RS485 Modbus

» 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/ls02plus-ext>

» 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

» TECHNICAL DATA

Measuring values	leakage	
Network technology	RS485 Modbus, RTU, half-duplex, baud rate 9.600, 19.200, 38.400 or 57600, parity: none (2 stopbits), even or odd (1 stopbit), Fail-safe Biasing required	
Output switch contact	changeover contact, max. 250 V / 3,0 A (resistive, floating)	
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) SELV	
Power consumption	typ. 0,8 W (24 V =) 1,6 VA (24 V ~)	
Display	LED green – power supply OK, LED red – Leakage	
Enclosure	enclosure USE-L, PC, pure white, cover PC, transparent, with removable cable entry	
Protection	IP65 according to EN 60529	
Cable entry	Flextherm M20 for wire Ø=3..9 mm incl. seal insert for double cable entry for wire max Ø=6 mm and M25, for wire max. Ø=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
Switching threshold conductivity	ca. 1 µS	
Ambient condition	0..+50 °C, max. 85% rH short term condensation	
Notes	with external sensor (PVC, diameter 0,25 mm ² , L=5 m)	

» 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.

» CONFIGURATION



The Thermokon bluetooth dongle with micro-USB is required for communication between USEapp and USE-M / USE L (Item No.: 668262). 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.

» DIP SWITCHES, PLUG-IN CARD

The Modbus address of the device is set in the range of 1 ... 31 (binary encoded) using a 5-pole DIP switch. With address 0 via DIP, an extended address range (32..247) is available via USEapp.

* factory default settings

Termination 120 Ω <input type="checkbox"/> ON <input type="checkbox"/> ON Not active* active		Modbus address <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON ON=2⁰ (1)* ON=2 ¹ (2) ON=2 ² (4) ON=2 ³ (8) ON=2 ⁴ (16)
Baud <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON 9600* 19200 <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON 38400 57600		Sample address: 26 <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON
<input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON <input type="checkbox"/> ON none* even odd none (2-stopbits) (1-stopbit) (1-stopbit) (1-stopbit)		



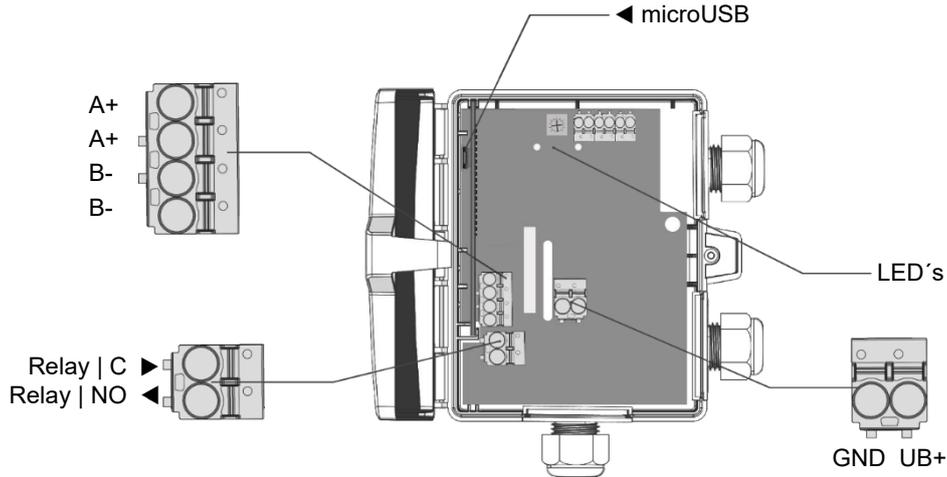
Modbus addresses:

USE-RS485 Modbus Interface

A detailed description of the Modbus addresses can be found under the following link: → [Download](#)

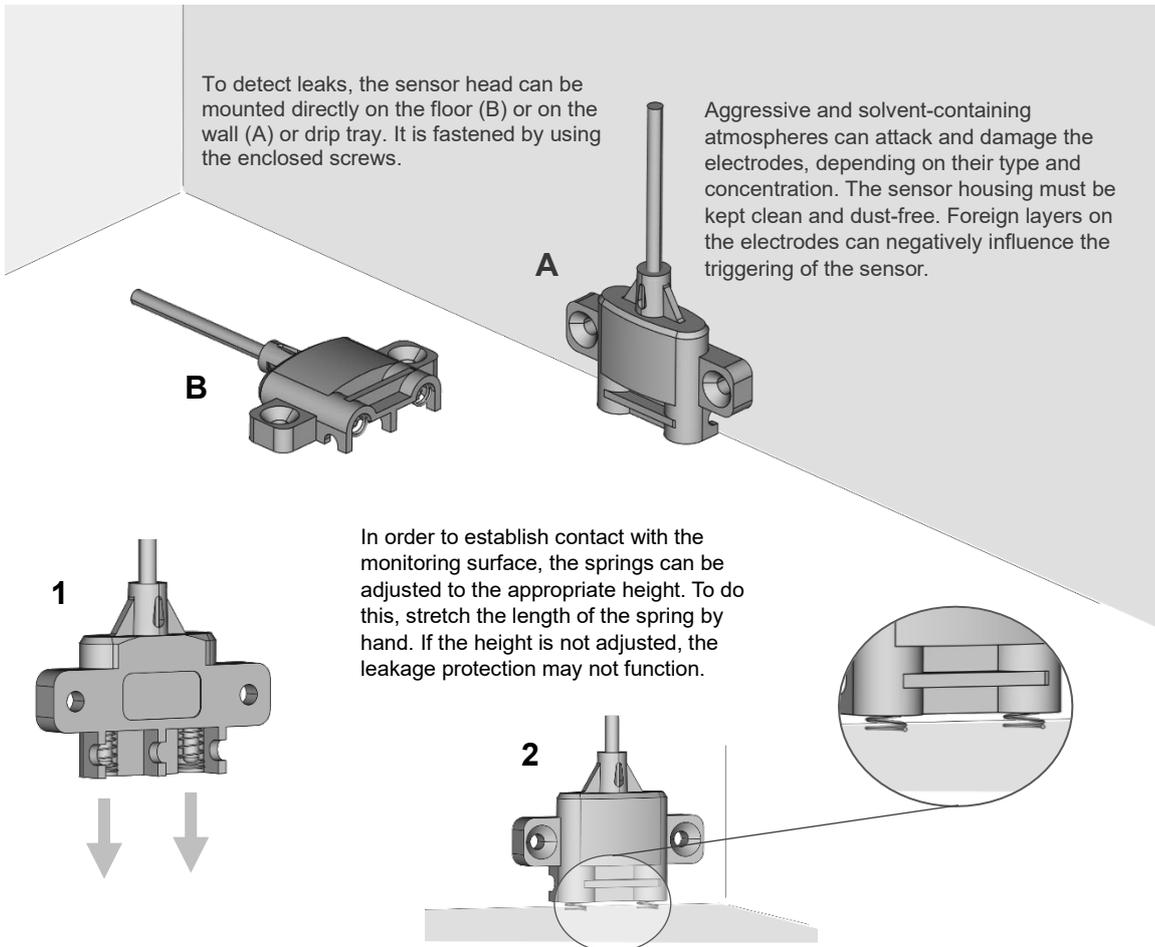
» **CONNECTION PLAN**

The power supply must not be interrupted. If the leakage protection is not permanently supplied with power, a possible leakage cannot be detected.



The relay is energized in the operating state (relays NO and C connected). Upon leakage or when the operating voltage is switched-off, the relay falls off.

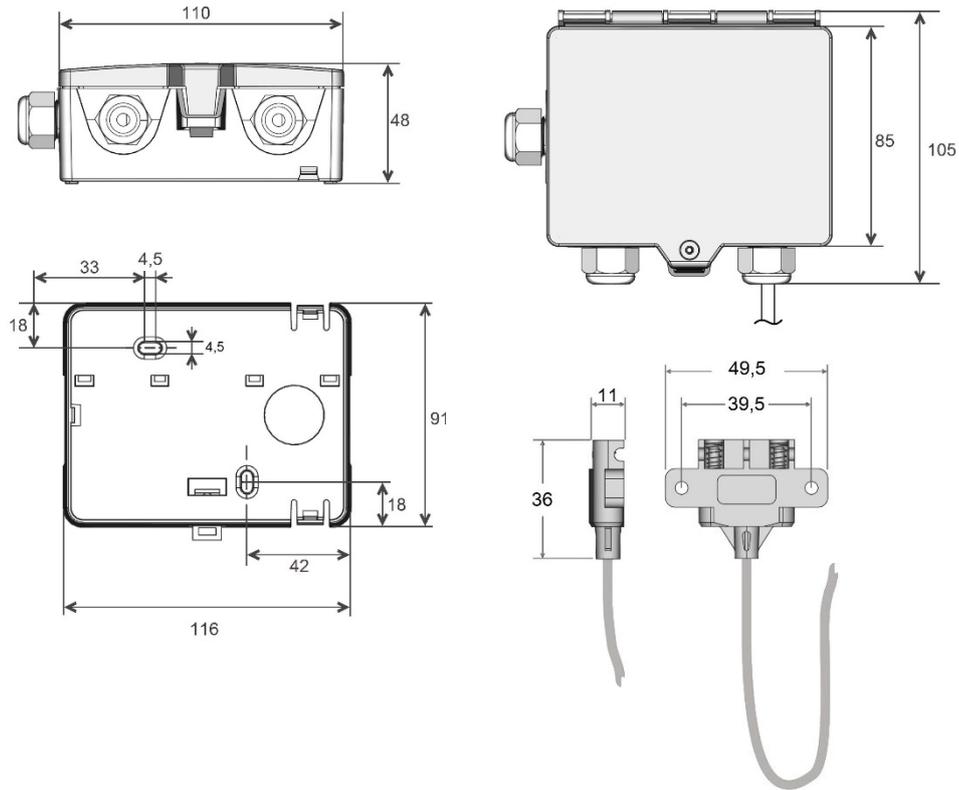
» **MOUNTING ADVICE**



» **MAINTENANCE/INSPECTION**

- ▶ Carry out a functional check at least once a year. Short-circuit the sensor electrodes and check the switching process of the relay.
- ▶ If heavily soiled, disassemble and clean the sensor housing.
- ▶ After a leakage, the sensor must also be tested again for function.

» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base enclosure USE-L pure white

Item No. 632294

Mounting kit universal

Item No. 698511

• 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)

Item No. 641333

USB RS485 Modbus RTU Logger

Item No. 809917

USB Interface RS485 (incl. driver CD)

Item No. 668293

RS485 Biasing Adapter

Item No. 811378