LS02+ x LRW

Leakage Sensor

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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USEapp ✓

LoRaWAN®

» APPLICATION

Leakage detector with relay output and two signalling LEDs designed for alarm, control and monitoring applications of containers, false floors, suspended ceilings or rooms for preventing unintended ingress of water. The sensor can be adjusted to different heights so that the response time of the sensor can be adapted to the water level that is to be detected. The type flex detects water or liquid intrusion over the entire length of the sensor rod. Additionally to the LoRaWAN® interface a potential-free switching contact can be used for direct communication with a higher-level control system. Thanks to the compact design of the sensor rod, the sensor can be mounted in a variety of places (floors, ceilings, etc.) to save space. The sophisticated and highly flexible insulation braiding also allows direct mounting on water-bearing pipe systems. The sensor rod can easily be shortened on site. In radio-shielded mounting locations, an optional external antenna can be used to optimize the radio link between the device and the gateway.

» TYPES AVAILABLE

Leakage sensor
- LS02+ flex 5 m
- LS02+ flex 20 m
- LS02+ flex 30 m

- LS02+ ext 5m

» 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

CE UKCA

Declaration of conformity
The declaration of conformity of the products can be found on our website https://www.thermokon.de/

» NOTES ON DISPOSAL

As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

»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.

»TECHNICAL DATA

Measuring values	Leakage
Output switch contact	Changeover contact, max. 24 V / 1,0 A (resistive, floating)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
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=4,5..9 mm, removeable
Connection electrical	removable plug-in terminal, max. 2,5 mm²
Sensor rod *(type dependend)*	**LS02+ flex LRW** PVC hose wrapped with PBT braiding, L=2 | 5 m, other lengths on request (max. 30 m)	**LS02+ ext LRW** external sensor (PVC, diameter 0,25 mm², L=5 m)
Switching threshold conductivity	ca. 1 µS
Ambient condition	-20..+60 °C, max. 85% rH short term condensation
Configuration	Thermokon USEapp, LoRaWAN® Downlink

» LoRaWAN®

Radio technology	LoRaWAN®
LoRaWAN version	1.0.2
Device class	Class A
Frequency	EU868 (863-870 MHz)
Max. transmission power	+14 dBm (25 mW)
Receiver sensitivity	-137 dBm
Antenna	Internal send- / receiver antenna, external antenna available on request
LoRaWAN Features	Over the Air Activation (OTAA), Adaptive Data Rate (ADR)
Data transmission *(configurable)*	Configurable transmission interval, factory default value 5 min

»INFORMATION ABOUT LORAWAN SPECIFICATION

The Thermokon LoRaWAN specification can be downloaded from our website.

»CONFIGURATION

The Thermokon Bluetooth-Dongle (Item-No. 668262) is required for Communication between USEapp and USE-M/USE-L LRW-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 on the website www.thermokon.de

Configuration- Button
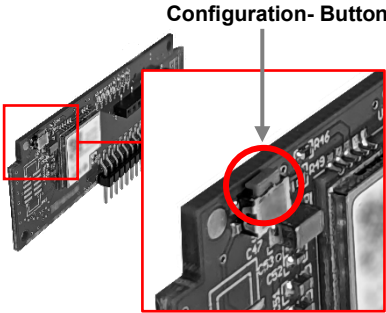
1. Connect the sensor with the power supply according to wiring diagram
2. Plug in the bluetooth dongle
3. Press the button to start configuration mode.
4. Configure the sensor using the USEapp on a mobile device.
5. Disconnect the bluetooth connection.
6. Remove the bluetooth dongle off the sensor.
7. Press the button to stop configuration mode.
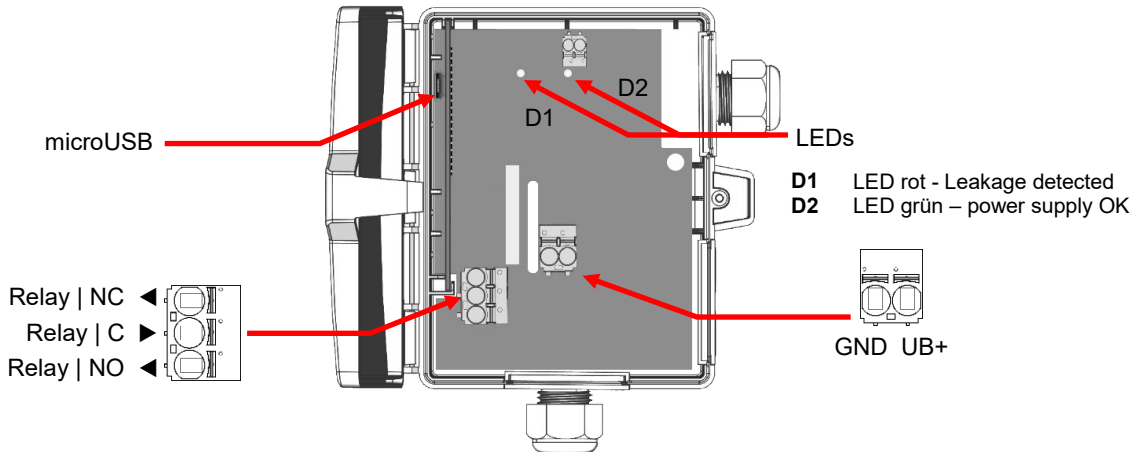8. Configuration values are saved and the device is ready for use.

»USER ADVICE

The bluetooth dongle snaps in the connector, when removing the bluetooth dongle hold the board down to prevent pulling out the board.

»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.

microUSB

D1
D2

LEDs

D1 LED rot - Leakage detected
D2 LED grün – power supply OK

Relay | NC ◄
Relay | C ►
Relay | NO ◄

GND UB+

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

» MOUNTING AND INSTALLATION

If necessary, the sensor cable can be individually shortened on the clamping side of the housing. If the sensor cable is shortened, the tinned copper wires must be put back on the terminal. Protruding fibers of the plastic braiding can be shortened and fixed around the PVC core with insulating tape or shrink tubing. After shortening and connecting the sensor cable, a functional test must be performed.

The sensor cables can be fixed to a surface with the self-adhesive holders (see accessories). Make sure that the surface to be glued is dry and free of dirt.

» MAINTENANCE/INSPECTION

► Carry out a functional check at least once a year. In this case, immerse the end of the sensor rod in a container of water and check the switching process of the relay.

► If heavily soiled, disassemble and clean the sensor housing and sensor rod.

► After a leakage, the sensor must also be tested again for function.

» DIMENSIONS (MM)
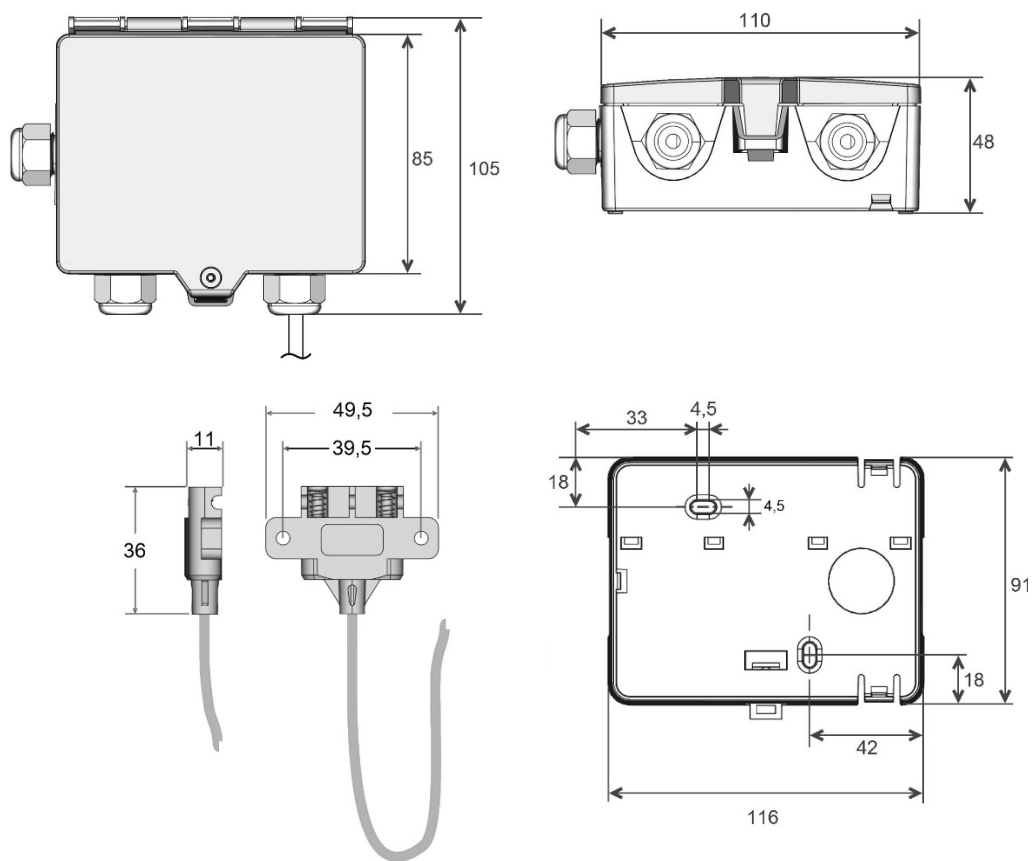
(LS02+ ext. Ausführung)

» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base enclosure USE-L pure white   Item No. 632294
Holder for sensor cable, self-adhesive (PU 5 pieces)   Item No. 778596
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
Bluetooth dongle   Item No. 668262