

Datasheet

Subject to technical alteration
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Application

Cable sensor for temperature measurement in HVAC applications. In conjunction with a Thermowell pocket suitable for temperature measurement in duct applications. Designed for control and monitoring applications.

Types Available

Cable sensors -50...+160 °C – active RS485 Modbus

TF25+ RS485 Modbus T160 050.06 L1000

TF25+ RS485 Modbus T160 100.06 L1000

mounting length 50/100/150 mm

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

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.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature 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. As Thermokon transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers $0..10$ V / $4..20$ mA have a standard setting at an operating voltage of 24 V =. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

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

Technical Data

| | | | |
|---|---|--|------------------------------|
| Measuring values | temperature | | |
| Output voltage | 0..10 V or 0.5 V, min load 10kΩ (live-zero configuration via Thermokon USEapp) | | |
| 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) | | |
| Power supply | 15..35 V = or 19..29 V ~ | | |
| Power consumption | max. 2,3 W (24 V =) max. 4,3 VA (24 V ~) | | |
| Output signal range temp. *Scaling analogue output | default setting: -20..+80 °C selectable from 8 temperature ranges -50..+50 -20..+80 -15..+35 -10..+120 0..+50 0..+100 0..+160 0..+250 °C, optionally configurable via Thermokon USEapp | | |
| Operating temperature range * Max. permissible operating temperature | sensor pocket -50..+160 °C optional -50..+250 °C (T250) | enclosure -35..+70 °C | mounting base -35..+90 °C |
| Accuracy temperature | ±0,5 K (typ. at 21 °C) | | |
| Enclosure | enclosure USE-M, PC, pure white, with removable cable entry | | |
| Protection | IP65 according to EN 60529 | | |
| Cable entry | M25, for wire max. Ø=7 mm, seal insert for fourfold cable entry | | |
| Connection electrical | Mainboard removable plug-in terminal, max. 2,5 mm² | Plug-in card removable plug-in terminal, max. 1,5 mm² | |
| Pocket | stainless steel V4A, Ø=6 mm, mounting length: 50 100 150 mm, tension spring (optional) | | |
| Ambient condition | max. 85% rH short term condensation | | |
| Notes | PE connection wire available (please request) | | |

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.

Application notice



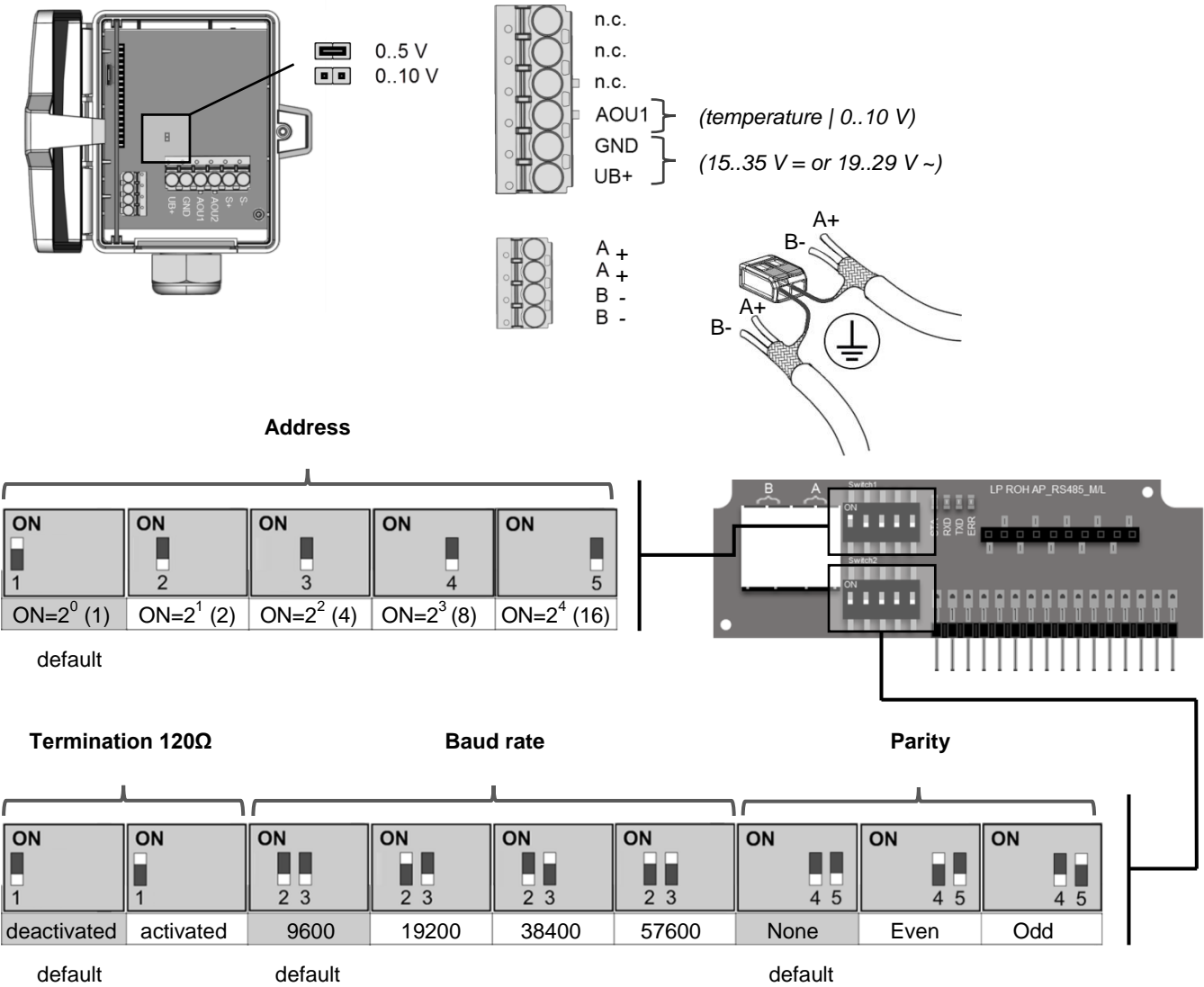
The housing cover must be completely closed in order to ensure the accuracy and reproducibility of the measured values during a test or service log via USEapp.

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.

Connection Plan

If the RS485 cable is looped through, connect both cable shields using the enclosed 2-pol. Connect terminal as shown.

TF25+ RS485 Modbus



Register 400 = 1 (unit SI)

| Address | Access | Description | Resolution / Unit | | |
|---------|--------|-------------|-------------------|-----|----|
| 0 | R | Temperatur | SI | 0.1 | °C |

Register 400 = 2 (unit Imperial)

| Address | Access | Description | Resolution / Unit | | |
|---------|--------|-------------|-------------------|-----|----|
| 0 | R | Temperatur | Imperial | 0.1 | °F |

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.



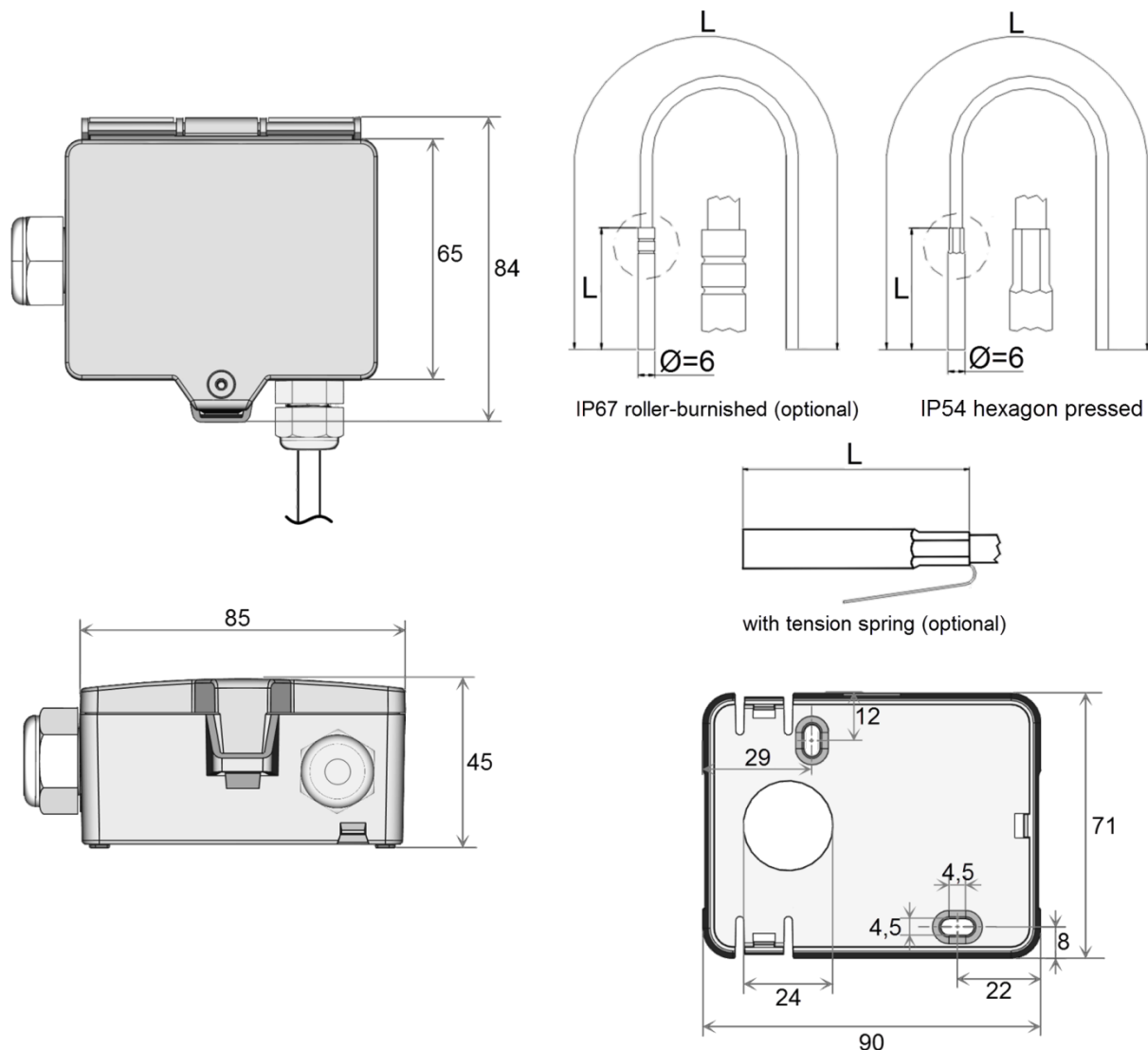
Modbus addresses:

USE-RS485 Modbus Interface

A detailed description of the Modbus addresses can be found under the following link:

→ [Download](#)

Dimensions (mm)



Accessories (included in delivery)

Mounting base
Mounting kit 5
• Cable entry M16 • Cover screw • 2 Rawlplugs • 2 Screws (countersunk head)

Item No. 631228

Item No. 640558

Accessories (optional)

Bluetooth dongle
Mounting flange MF6DS
VA-Compression fitting type KL6VA
Mounting flange MF6 (brass)

Item No. 668262

Item No. 669016

Item No. 103213

Item No. 003407

Thermowell pockets stainless steel / brass for sensors with pocket Ø=6 mm

| length | 50 mm | 100 mm | 150 mm |
|--------|--------|--------|--------|
| THMSDS | 610995 | 611008 | 611015 |
| THVADS | 611152 | 611817 | 611824 |

MS-thermowell pocket (brass, suitable up to 16 bar) type THMSDS <xx>.

VA-thermowell pocket (stainless steel, suitable up to 40 bar) type THVADS <xx>.