Datasheet

Subject to technical alteration
Issue date: 17.05.2019 • A100
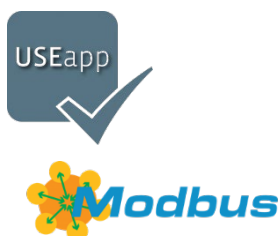
»APPLICATION

Immersion sensor for temperature measurement of gases and liquids in pipework applications. The sensor can optionally be screwed directly into a bonded pocket (see accessories). Types SFKH02+ with a 70 mm neck pipe are designed for applications with insulation materials. The measuring insert can be exchanged without disassembling the entire sensor. Tool-free opening, closing and wiring as well as removable cable entries ensure quick and easy installation.

»TYPES AVAILABLE

Immersion sensor temperature – active RS485 Modbus

SFK02+ RS485 Modbus <xx>.08
SFKH02+ RS485 Modbus <xx>.08

<xx>: mounting length 50/100/150/200/250/450 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 (±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 the USEapp software and an optional Bluetooth interface. **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	-20..+80 °C (default setting), 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 temp	**sensor pocket** -50..+160 °C	**electronic | enclosure** -35..+70 °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
Neck pipe (optional)	stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2", mounting length: 50 | 100 | 150 | 200 | 250 | 450 mm max. operating pressure 40 bar
Ambient condition	max. 85% rH short term condensation

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity

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

» 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.
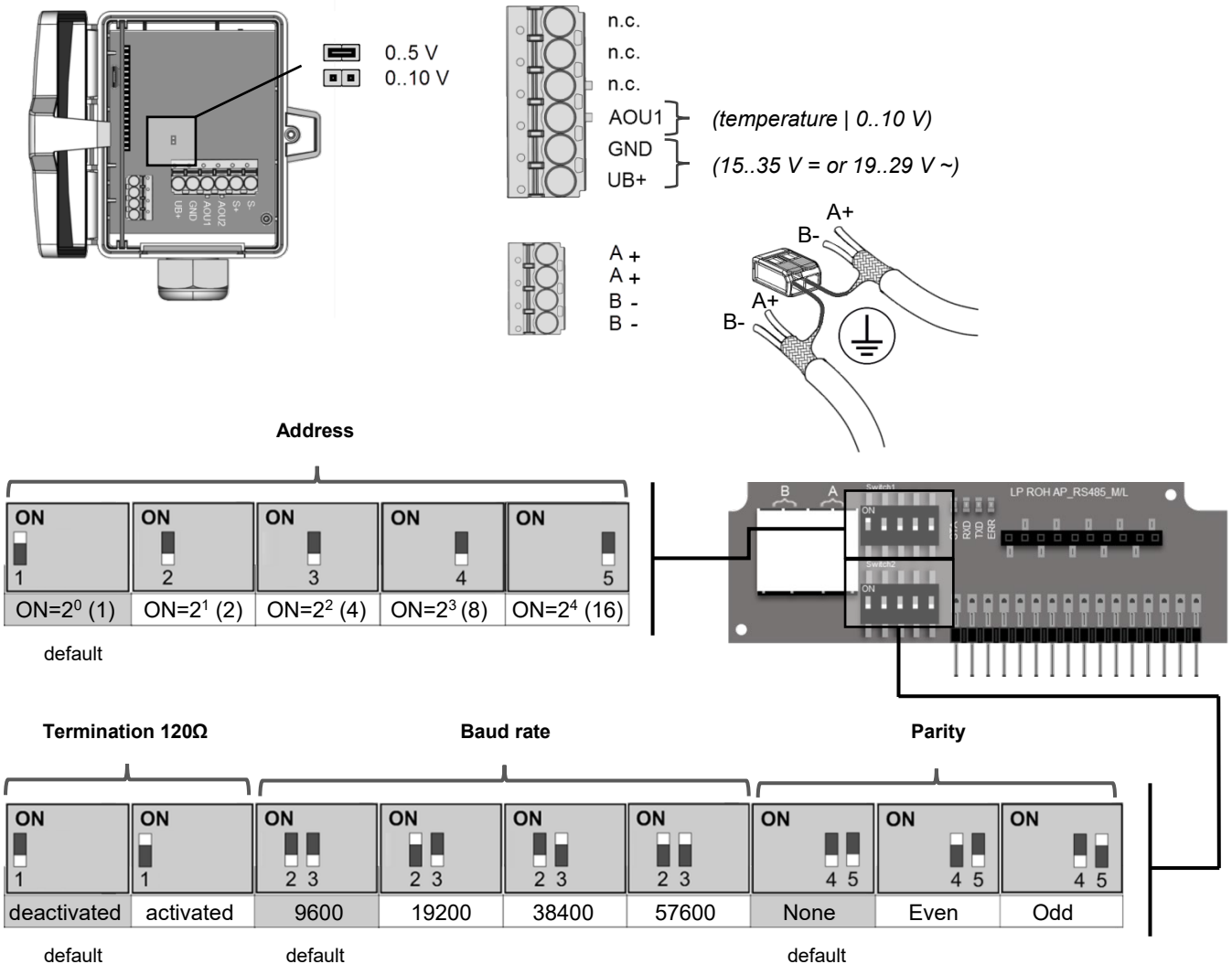
»APPLICATION NOTICE

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.

SFK(H)02+ **RS485 Modbus**

| | | | 0..5 V |
| | | | 0..10 V |

	n.c.
	n.c.
	n.c.
	AOU1	*(temperature | 0..10 V)*
	GND	*(15..35 V = or 19..29 V ~)*
	UB+	

A +
A +
B -
B -

A+
B-
A+
B-

Address

ON	ON	ON	ON	ON
1	2	3	4	5
ON=2^0 (1)	ON=2^1 (2)	ON=2^2 (4)	ON=2^3 (8)	ON=2^4 (16)

default

Termination 120Ω		**Baud rate**				**Parity**		
ON	ON	ON	ON	ON	ON	ON	ON	ON
1	1	2 3	2 3	2 3	2 3	4 5	4 5	4 5
deactivated	activated	9600	19200	38400	57600	None	Even	Odd
default		default				default		

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)
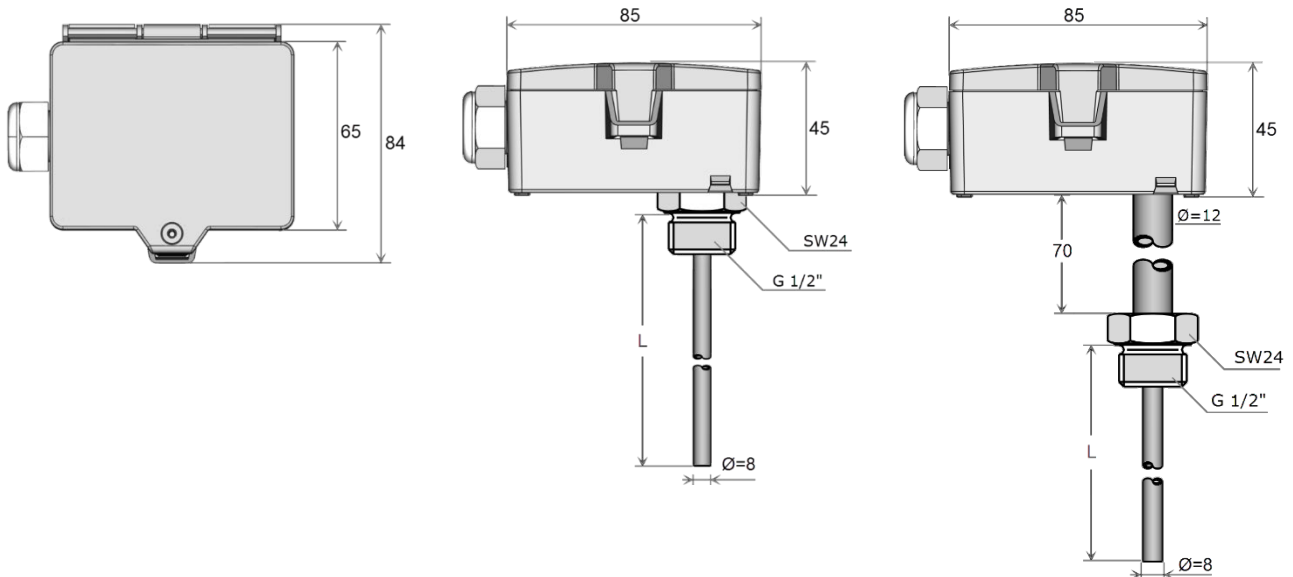
»ACCESSORIES (INCLUDED IN DELIVERY)

Mounting 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
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	Item No. 641364
Bonded pocket St52-3 type ESH110	Item No. 103459
Bonded pocket St52-3 type ESH160	Item No. 103466
Bonded pocket St52-3 type ESH210	Item No. 103473
Bonded pocket St52-3 type ESH260	Item No. 173247