S S REGELTECHNIK ThermasGard HFTM-VA Sleeve Sensors with Temperature Measuring Transducer Instruction Manual

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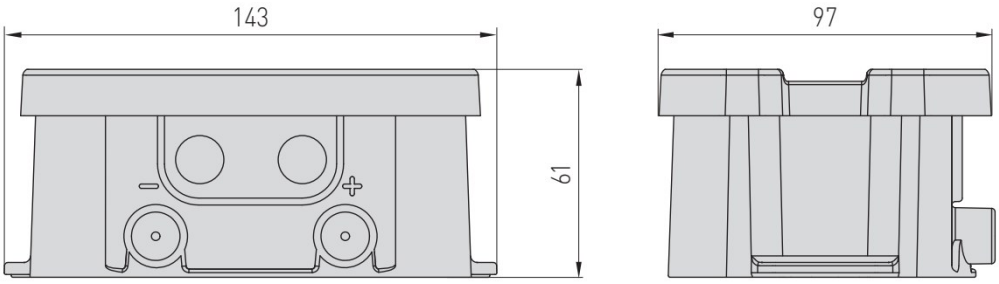
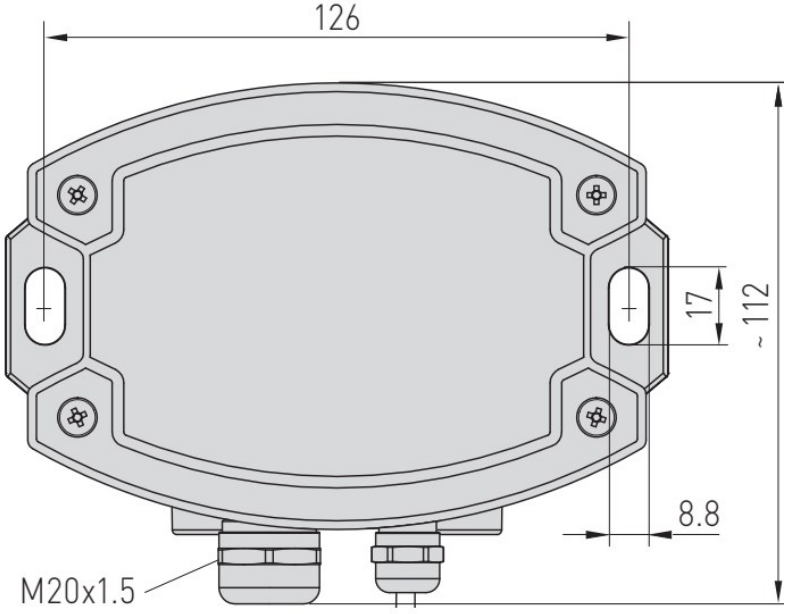
Contents

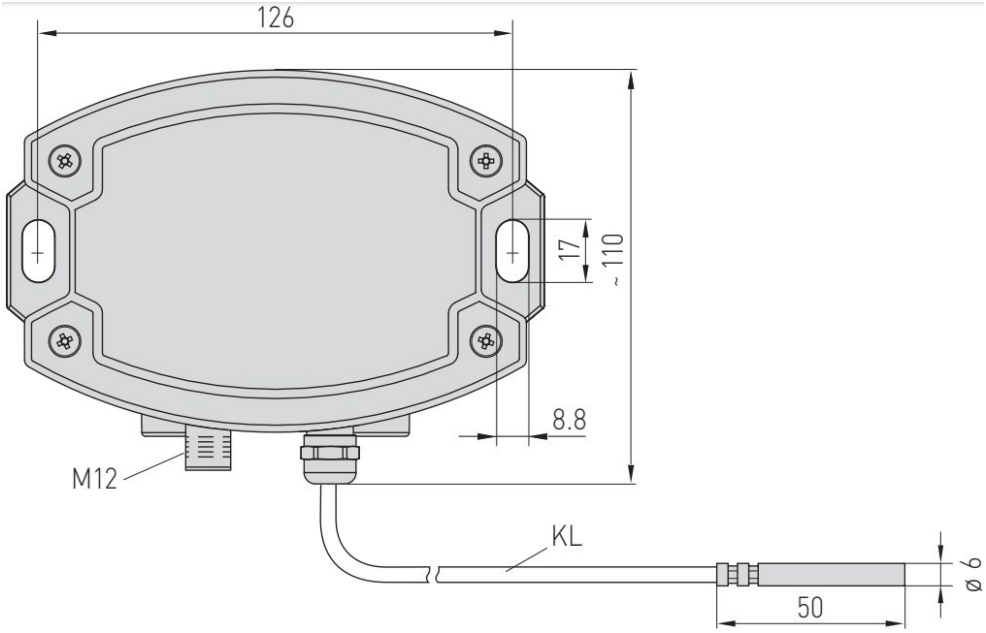
Dimensional drawing



Housing with cable gland



Housing with M12 connector



(standard) humidity-tight

(optional) watertight Perfect Sensor Protection

(optional) with glass fibre cable

Calibratable temperature measuring transducer with sleeve sensor THERMASGARD® HFTM – VA with eight switchable measuring ranges, continuous output, rugged housing made from stainless steel V4A with cable gland or M12 connector according to DIN EN 61076-2-101. The temperature transmitter with remote sensor is used to detect temperatures in liquid and gaseous media e.g. if installed in an immersion sleeve or as a duct sensor. The measuring transducer is factory-calibrated. Adjustment / fine adjustment by the user is possible (zero point offset is adjustable). A direct, permanent use in liquids is possible in combination with immersion sleeves THE. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

Power supply: 24 V AC / DC (± 10 %) for U variant 15…36 V DC for I variant, depending on working resistance, residual ripple stabilised ± 0.3 V
Working resistance: Ra (ohm) = (Ub -14 V) / 0.02 A for I variant, see working resistance diagram
Load resistance: RL > 5 kOhm for U variant
Power consumption: < 1.0 VA / 24 V DC; < 2.2 VA / 24 V AC
Insulating resistance: ≥ 100 MΩ, at +20 °C (500 V DC)
Sensor: Pt1000, DIN EN 60751, class B (Perfect Sensor Protection with IP68) Sensor external
Measuring ranges: multi-range switching with 8 switchable measuring ranges, see table (other ranges optional) with manual zero point correction (± 10 K)
Deviation, temperature: typically ± 0.2 K at +25 °C
Output: 0 – 10 V or 4… 20 mA
Connection type: 2-wire connection
Electrical connection: 0.14 -1.5 mm², via screw terminals
Cable connection: cable gland, stainless steel V2A (1.4305) (M 20 x 1.5; with strain relief, exchangeable, inner diameter 6 – 12 mm) or M12 connector (male, 5-pin, A-code) according to DIN EN 61076-2-101
Housing: stainless steel V4A (1.4571), with non-distortion cover bolting, impact-resistant, high EMI shielding, corrosion, temperature, weather- and UV-resistant
Housing dimensions: 143 x 97 x 61 mm (Tyr 2E)
Sensor protection: sensor sleeve, stainless steel V4A (1.4571), Ø = 6 mm, nominal length NL = 50 mm (optional 30…400 mm)
Sensor cable: Silicone, SiHF, 2x 0.25mm²; cable length (KL) = 1.5m (other lengths and jacket materials, e.g. PTFE or glass fibre with steel mesh, available on request)
Ambient temperature: measuring transducer –30…+70 °C
Permitted humidity: < 95 % r. H., non-precipitating air
Protection class: III (according to EN 60 730)
Protection type housing: IP 65 (according to EN 60 529) Housing tested, TÜV SÜD, Report No. 713160960B (Skadi2)
Protection type sensor: IP 65 (according to EN 60 529) sleeve humidity-tight (standard) IP 68 (according to EN 60 529) sleeve water-tight (optional) IP 54 (according to EN 60 529) with glass fibre cable (optional)
Standards: CE conformity, electromagnetic compatibility according to EN 61326, according to EMC Directive 2014 / 30 / EU

THERMASGARD® **HFTM – VA** Sleeve sensor with temperature measuring transducer, *ID***THERM**ASGARD® **HFTM – VAQ** Sleeve sensor with temperature measuring transducer, *ID*					
Type / WG02I	**Sensor**	**Output**	**Type**	**= Q**	**Item No.**
HF T M- I VA	Pt1000	4…20 mA	Remote sensor		2001-2141-2200-001
HF T M- U VA	Pt1000	0 -10 V	Remote sensor		2001-2141-1200-001

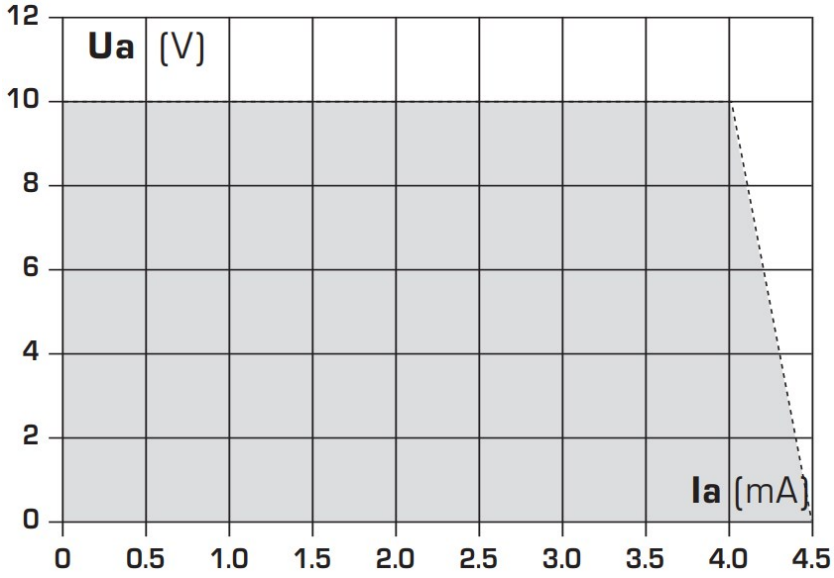
HFTM – VAQ	**with M12 connector**
HF T M- I VA **Q**	Pt1000 4…20 mA Remote sensor 2001-2141-2100-001
HF T M- U VA **Q**	Pt1000 0 -10 V Remote sensor 2001-2141-1100-001
Housing variant "Q":	Cable connection **with M12 connector** (male, **5-pin**, A-code)
Extra charge:	other measuring ranges optionalProtection type **IP 68** (Sensor sleeve watertight compound-filled)2-wire connecting leads, per running meter (**silicone** / **PTFE** / **glass fibre**) on requestOther lengths of protection sleeve optional on request
ACCESSORIES	
THE – xx	**Immersion sleeve**, stainless steel **V4A** (1.4571) or nickel-plated brass, Ø = 9 mm
Special accessories for M12 connector	

Measuring transducers, calibrateable, with active output

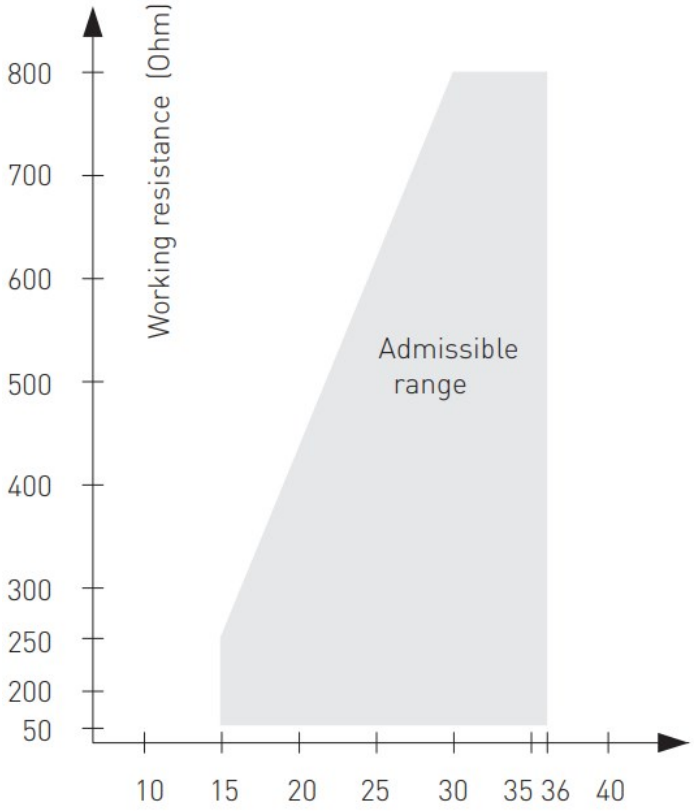
TEMPERATURE RANGES:
When selecting measuring transducer ranges, it is necessary to ensure that the maximum temperatures permissible for sensor / enclosure are not exceeded !
Ambient temperature for measuring transducers: – 30 …+ 70 °C

Apparent ohmic resistance = see load resistance diagram

Dependency of output voltage on output current

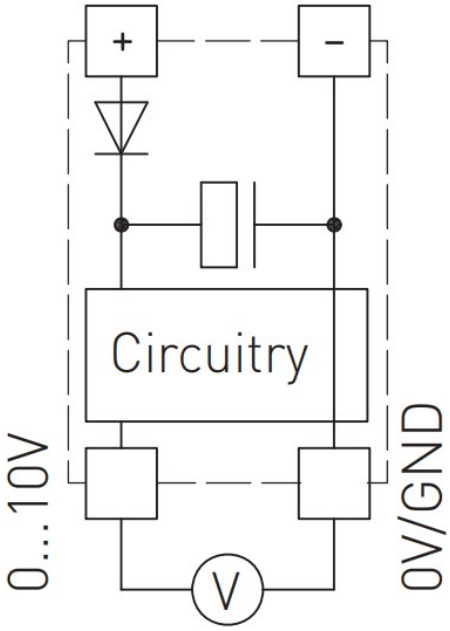


Load resistance diagram 4…20 mA



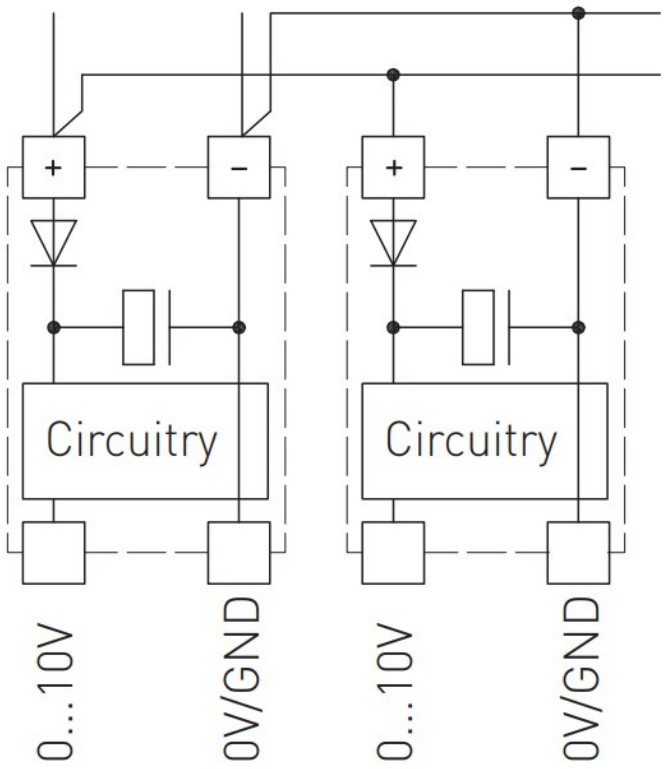
SUPPLY VOLTAGE :

For operating voltage reverse polarity protection, a one-way rectifier or reverse polarity protection diode is integrated in this device variant. This internal one-way rectifier also allows operating 0 – 10 V devices on AC supply voltage. The output signal is to be tapped by a measuring instrument. Output voltage is measured her against zero potential (O V) of the input voltage! When this device is operated on DC supply voltage, the operating voltage input UB+ is to be used for 15…36 V DC supply and UB – or GND for ground wire!



When several devices are supplied by one 24 V AC voltage supply, it is to be ensured that all ”positive“ operating voltage input terminals (+) of the field devices are connected with each other and all ”negative“ operating voltage input terminals (–) (= reference potential) are connected together (in-phase connection of field devices). All outputs of field devices must be referenced to the same potential! In case of reversed polarity at one field device, a supply voltage short circuit would be caused by that device. The consequential short-circuit current flowing through this field device may cause damage to it.

Therefore, pay attention to correct wiring!



Installation and Commissioning

Devices are to be connected under dead-voltage condition. Devices must only be connected to safety extra-low voltage. Consequential damages caused by a fault in this device are excluded from warranty or liability. These devices must be installed and commissioned by authorised specialists. The technical data and connecting conditions shown on the device labels and in the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products. In case of any modifications

made by the user, all warranty claims are forfeited. Operating this device close to other devices that do not comply with EMC directives may influence functionality. This device must not be used for monitoring applications, which serve the purpose of protecting persons against hazards or injury, or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes. Dimensions of housing or housing accessories may show slight tolerances on the specifications provided in these instructions. Modifications of these records are not permitted. In case of a complaint, only complete devices returned in original packing will be accepted.

Notes on commissioning:
This device was calibrated, adjusted and tested under standardised conditions. When operating under deviating conditions, we recommend performing an initial manual adjustment on-site during commissioning and subsequently at regular intervals.

Notes regarding mechanical mounting and attachment:
Mounting shall take place while observing all relevant regulations and standards applicable for the place of measurement (e.g. such as welding instructions, etc.). Particularly the following shall be regarded:

- VDE / VDI directive technical temperature measurements, measurement set – up for temperature measurements.
- The EMC directives must be adhered to.
- It is imperative to avoid parallel laying of current-carrying lines.
- We recommend to use shielded cables with the shielding being attached at one side to the DDC / PLC.

Before mounting, make sure that the existing thermometer‘s technical parameters comply with the actual conditions at the place of utilization, in particular in respect of:

- Measuring range
- Permissible maximum pressure, flow velocity
- Oscillations, vibrations, shocks are to be avoided (< 0.5 g)

CONNECTING CONDITIONS

Output: 0 – 10 V
The output voltage follows linear to the temperature signal applied at the input terminals and generates a proportional output signal of 0 – 10 V. The voltage outputs are short-circuit proof against ground wire. Applying voltage supply to the output terminals will destroy the device.

Output: 4 … 20 mA
In case of the 4 … 20 mA measuring transducer, display and evaluating elements are connected in series in the current loop. The measuring transducer thereby liWiths the flowing current in variance of the input signal. 4 mA are for the measuring transducer‘s internal current consumption. The apparent ohmic resistance can either be connected in the plus or minus path of the measuring transducer. In case of an apparent ohmic resistance in the plus path, power supply and resist.

SAFETY REGULATIONS
These devices shall only be used for their intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The buyer has to ensure adherence to the building and safety regulations and has to avoid all dangers of any kind. We do not assume any warranty for faults or damages arising or resulting from improper use of our equipment or from non-observance of operating instructions. These instruments must be installed by authorised specialists only!

Preferably shielded cables should be used in order to prevent damages / errors. It is imperative to avoid laying

parallel with currentcarrying lines. EMC directives must be adhered to.

General notes

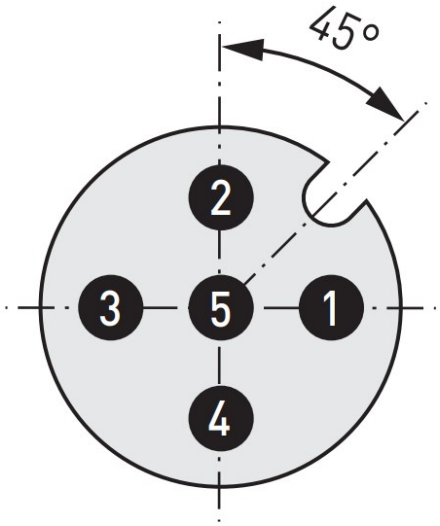
Our “General Terms and Conditions for Business“ together with the “General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry“ (ZVEI conditions) including supplementary clause “Extended Retention of Title“ apply as the exclusive terms and conditions.

In addition In addition, the following points are to be observed:

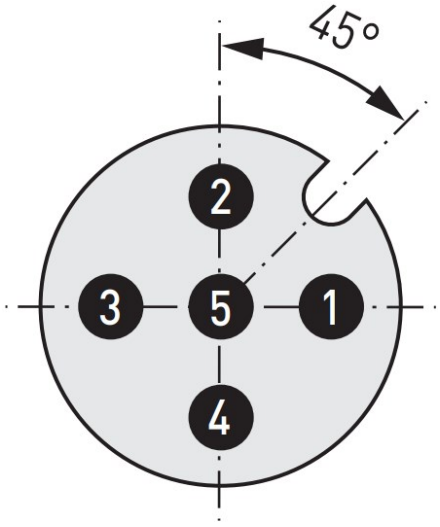
- These instructions must be read before installation and putting in operation and all notes provided therein are to be regarded!
- Devices must only be connected to safety extra-low voltage and under dead-voltage condition. To avoid damages and errors the device (e.g. by voltage induction) shielded cables are to be used, laying parallel with current-carrying lines is to be avoided, and EMC directives are to be observed.
- This device shall only be used for its intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The purchaser has to adhere to the building and safety regulations and has to prevent perils of any kind.
- No warranties or liabilities will be assumed for defects and damages arising from improper use of this device.
- Consequential damages caused by a fault in this device are excluded from warranty or liability.
- These devices must be installed and commissioned by authorised specialists.
- The technical data and connecting conditions of the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products.
- In case of any modifications made by the user, all warranty claims are forfeited.
- This device must not be installed close to heat sources (e.g. radiators) or be exposed to their heat flow. Direct sun irradiation or heat irradiation by similar sources (powerful lamps, halogen spotlights) must absolutely be avoided.
- Operating this device close to other devices that do not comply with EMC directives may influence functionality.
- This device must not be used for monitoring applications, which serve the purpose of protecting persons against hazards or injury, or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes.
- Dimensions of housing or housing accessories may show slight tolerances on the specifications provided in these instructions.
- Modifications of these records are not permitted.
- In case of a complaint, only complete devices returned in original packing will be accepted.

Commissioning is mandatory and may only be performed by qualified personnel!
These instructions must be read before installation and commissioning and all notes provided therein are to be regarded!

Pin assignment

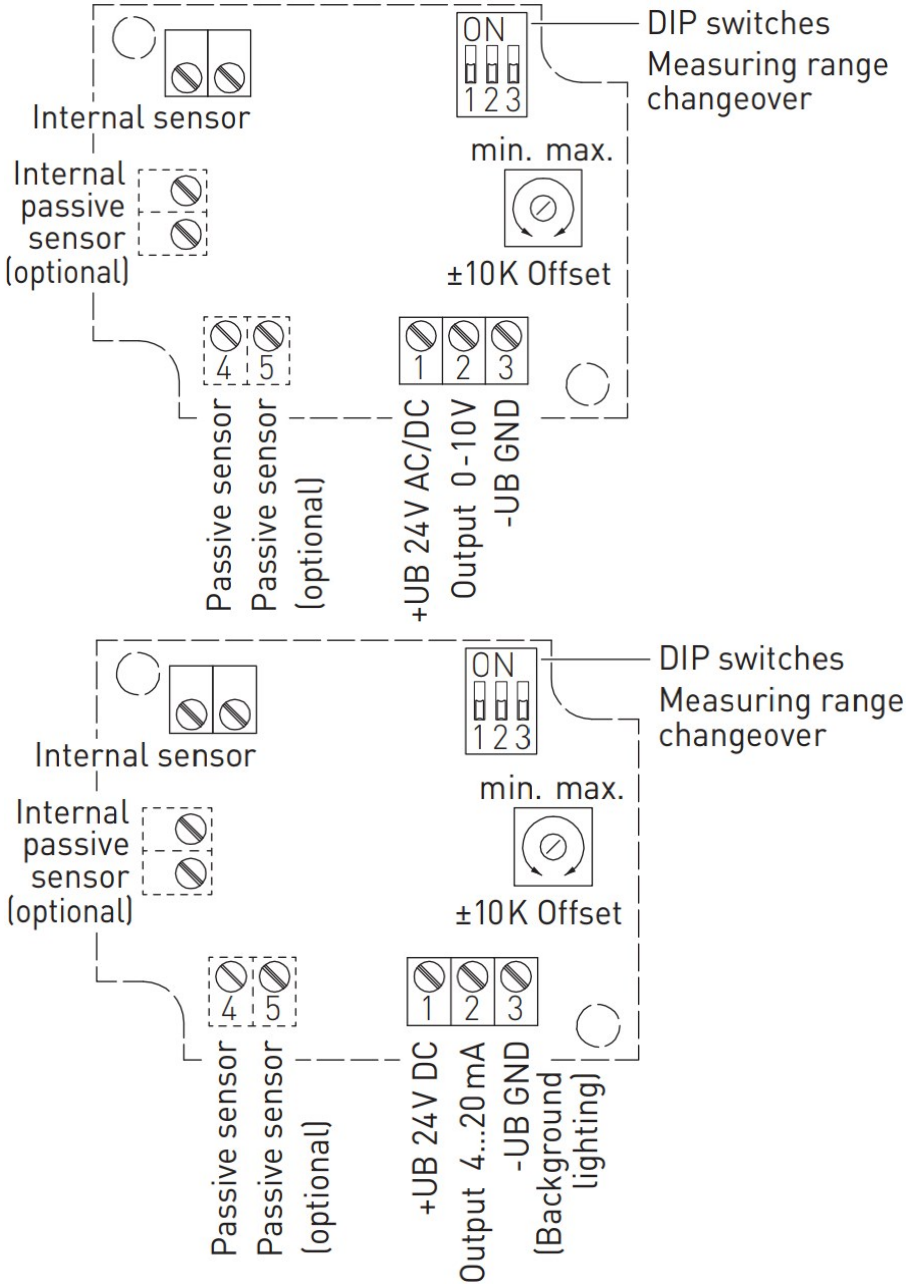


1. +UB 24V AC/DC
2. Output temperature 0 -10V [°C]
3. free
4. –UB GND
5. Shield



1. +UB 24V DC
2. Output temperature 4…20mA [°C]
3. free
4. –UB GND (optional)
5. Shield

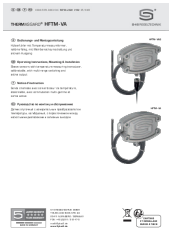
Connecting diagram



Measuring ranges (adjustable)	**DIP 1**	**DIP 2**	**DIP 3**
– 20 °C … + 150 °C	**O N**	**O N**	**O N**
– 50 °C … + 50 °C	OFF	**O N**	**O N**
– 20 °C … + 80 °C	**O N**	OFF	**O N**
– 30 °C … + 60 °C	OFF	OFF	**O N**
0 °C … + 40 °C	**O N**	**O N**	OFF
0 °C … + 50 °C (default)	OFF	**O N**	OFF
0 °C … + 100 °C	**O N**	OFF	OFF
0 °C … + 150 °C	OFF	OFF	OFF

(observe max. permissible temperature ranges!)

Documents / Resources

	S S REGELTECHNIK ThermasGard HFTM-VA Sleeve Sensors with Temperature Measuring Transducer [pdf] Instruction Manual ThermasGard HFTM-VA Sleeve Sensors with Temperature Measuring Transducer, ThermasGard HFTM-VA, Sleeve Sensors with Temperature Measuring Transducer, ThermasGard HFTM-VA Sleeve Sensors, Sleeve Sensors, Sensors

References

- S+S Regeltechnik | Ihr sensorik Partner