

THERMASGARD® HFTM

Bedienungs- und Montageanleitung

Hülsenfühler mit Temperaturmessumformer, kalibrierfähig, mit Mehrbereichumschaltung und aktivem Ausgang

Operating Instructions, Mounting & Installation

Sleeve sensors with temperature measuring transducer, calibratable, with multi-range switching and active output

Notice d'instruction

Sonde chemisée avec convertisseur de température, étalonnable, avec commutation multi-gamme et sortie active

Руководство по монтажу и обслуживанию

Датчик втулочный с измерительным преобразователем температуры, калибруемый, с переключением между несколькими диапазонами и активным выходом



HFTM
mit Kabelverschraubung
with cable gland
avec presse-étoupe
с резьбовым кабельным
вводом



HFTM-Q
mit M12-Steckverbinder
with M12 connector
avec connecteur M12
с разъемом M12



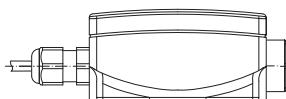
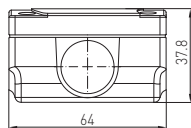
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CARTONS
ET EMBALLAGE
PAPIER À TRIER

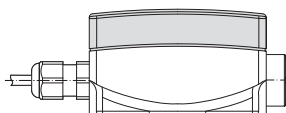
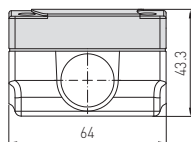
Maßzeichnung
Dimensional drawing
Plan coté
Габаритный чертеж

HFTM



IP65

(Standard) feuchtedicht
(standard) humidity-tight
(standard) étanche à l'humidité
(стандартное исполнение)
влагоотталкивающий



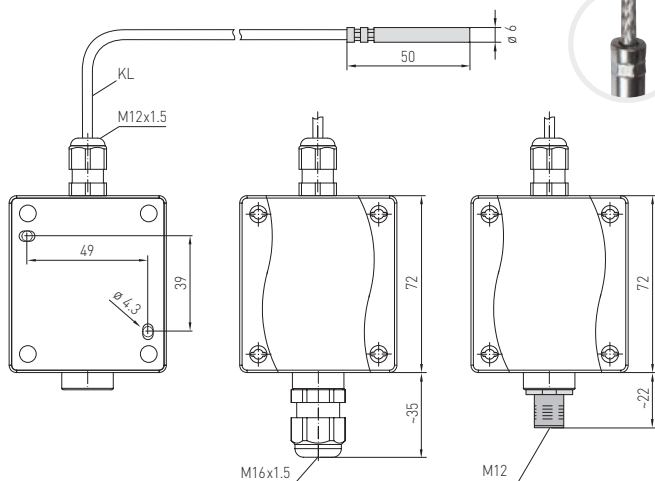
IP68 Perfect Sensor Protection

(optional) wasserdicht
(optional) watertight
(en option) étanche à l'eau
(опционально) водонепроницаемый



IP54

(optional) mit **Glasseide-Kabel**
(optional) with **glass fibre cable**
(en option) avec câble en **fibre de verre**
(опционально) с кабелем из **стеклонити**



M12-Steckverbinder

M12 connector
connecteur M12
разъем M12

- * High-Performance-Verguss gegen Vibration, mechanischer Belastung und Feuchtigkeit
- * High-performance encapsulation against vibration, mechanical stress and humidity

Calibratable temperature measuring transducer with sleeve sensor **THERMASGARD® HFTM** with eight switchable measuring ranges, continuous output, housing made from impact-resistant plastic with quick-release screws, optionally **with/without display**, 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. 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...36V DC for I variant, depending on working resistance, residual ripple stabilised ±0.3V
Working resistance:	R _a (ohm) = (U _b ·14 V) / 0.02 A for I variant, see working resistance diagram
Load resistance:	R _L > 5kOhm for U variant
Power consumption:	< 1.0VA / 24 V DC; < 2.2 VA / 24 V AC
Insulating resistance:	≥ 100MΩ, at +20 °C (500 V DC)
Sensor:	Pt1000, DIN EN 60751, class B (Perfect Sensor Protection at IP68) sensor external
Measuring ranges:	multi-range switching with 8 switchable measuring ranges see table (other measuring ranges optional) with manual zero point correction (± 10K)
Deviation in temperature:	typically ± 0.2 K at +25 °C
Output:	0 - 10V or 4...20mA
Connection type:	2- or 3-wire connection
Electrical connection:	0.14 - 1.5 mm², via screw terminals
Cable connection:	cable gland , plastic (M16 x1.5; with strain relief, exchangeable, max. inner diameter 10.4 mm) or M12 connector (male, 5-pin, A-code) according to DIN EN 61076-2-101
Housing:	plastic, UV-resistant, material polyamide, 30% glass-globe reinforced, with quick-release screws (slotted/Phillips head combination), colour traffic white (similar to RAL 9016), cover for display is transparent!
Housing dimensions:	72 x 64 x 37.8 mm (Tyr 1 without display) 72 x 64 x 43.3 mm (Tyr 1 with display)
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, 2x0.25mm²; 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.713139052 (Tyr 1)
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
Optional:	display with illumination , two-line, cut-out approx. 36 x15 mm (B x H), to display the actual temperature and internal diagnostics (measuring range exceeded, measuring range not reached, sensor breakage, sensor short circuit)

Display and internal diagnostics



Standard



Measuring range exceeded



Measuring range not reached



Sensor breakage



Sensor short circuit

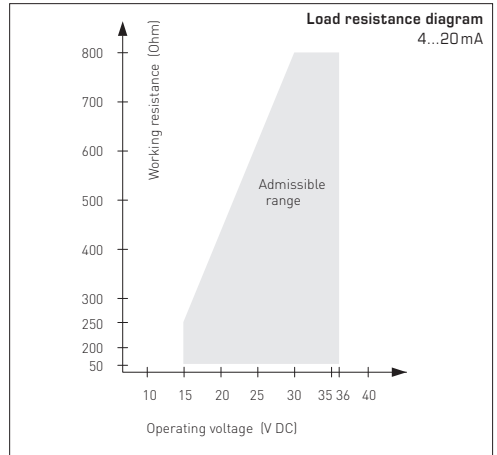
GB Measuring transducers, calibrateable, with active output

TEMPERATURE RANGES:

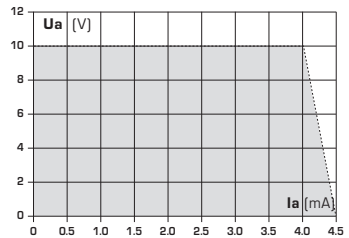
When selecting measuring transducer ranges, it is necessary to ensure that the maximum temperatures permissible for sensor/housing are not exceeded!

Ambient temperature for measuring transducers:
- 30...+70 °C

Apparent ohmic resistance = see load resistance diagram



Dependency of output voltage on output current



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 0-10V devices on AC supply voltage.

The output signal is to be tapped by a measuring instrument. Output voltage is measured here against zero potential (0V) of the input voltage!

When this device is operated on **DC supply voltage**, the operating voltage input UB+ is to be used for 15...36V DC supply and UB- or GND for ground wire!

When several devices are supplied by one 24V **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.

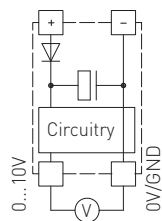
Therefore, pay attention to correct wiring!

Connecting scheme

Individual operation

Power supply

AC 24V~ | 0V
DC 15-36V = GND

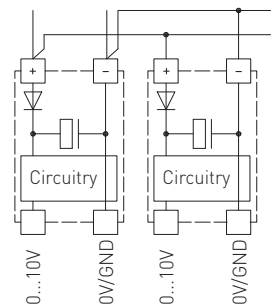


Connecting scheme

Parallel operation

Power supply

AC 24V~ | 0V
DC 15-36V = GND



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.

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, 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!

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.

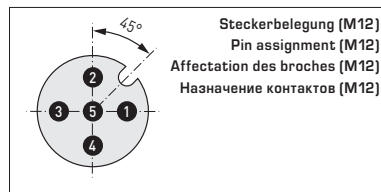
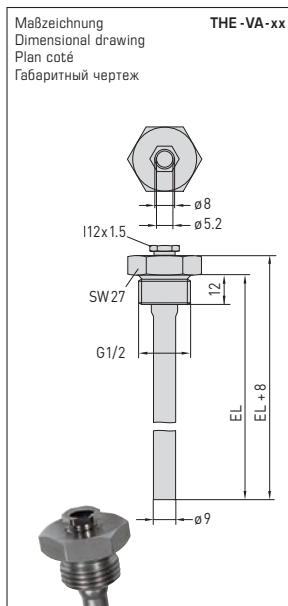
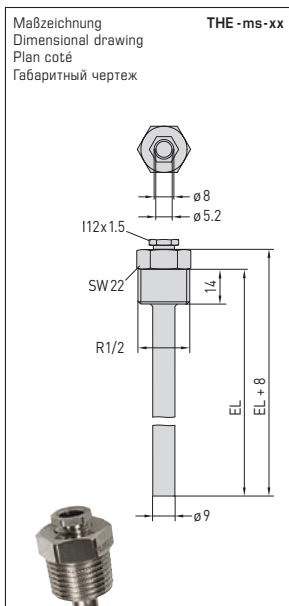
Output: 4 ... 20 mA

In case of the 4...20mA measuring transducer, display and evaluating elements are connected in series in the current loop. The measuring transducer thereby iIWiths the flowing current in variance of the input signal. 4mA 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 current-carrying lines. EMC directives must be adhered to.



HFTM - I

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

1	+UB 24V DC
2	Ausgang Temperatur 4...20 mA [°C]
3	frei
4	-UB GND (optional für LCD-Hintergrundbeleuchtung)
5	Shield

HFTM - U

1	+UB 24V AC/DC
2	Ausgang Temperatur 0-10V [°C]
3	frei
4	-UB GND
5	Shield

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

THE -ms/xx
Messingtauchhülse
Brass immersion sleeve
doigt de gant en laiton
Гильза погружная из латуни

THE -VA/xx
Edelstahltauchhülse
Stainless steel immersion sleeve
doigt de gant en acier inox
Гильза погружная из высококачественной стали

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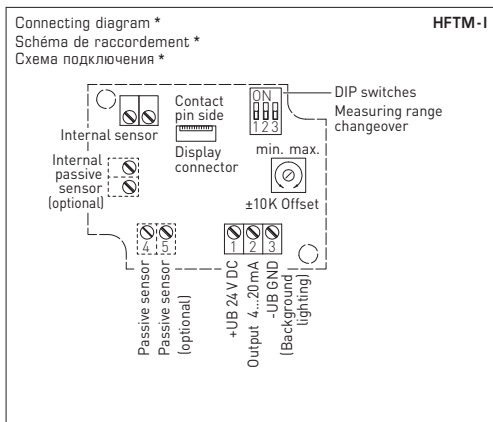
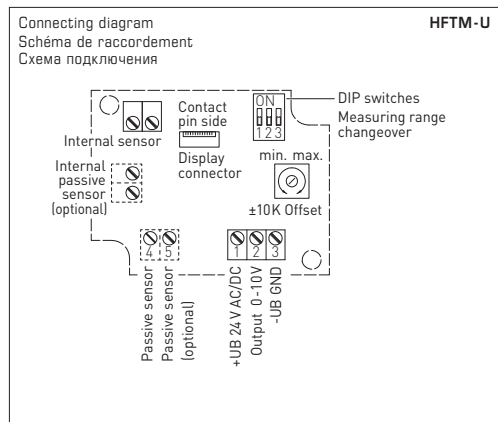
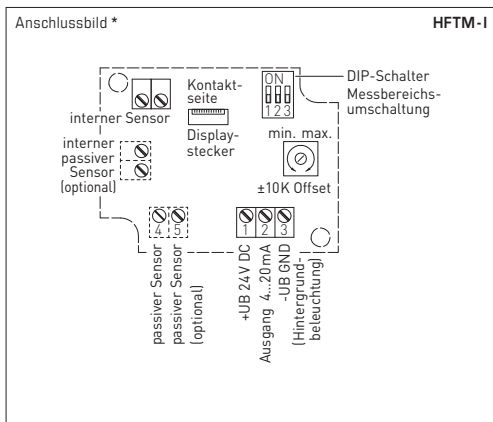
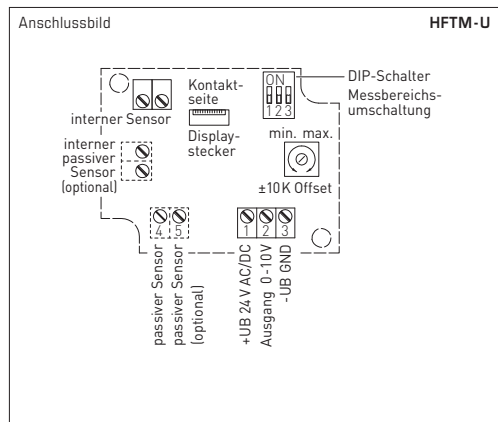
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Messbereiche (einstellbar) Measuring ranges (adjustable) Plages de mesure (réglables) Диапазоны измерения (настраиваемые)	DIP 1	DIP 2	DIP 3
-20 °C ... +150 °C	ON	ON	ON
-50 °C ... +50 °C	OFF	ON	ON
-20 °C ... +80 °C	ON	OFF	ON
-30 °C ... +60 °C	OFF	OFF	ON
0 °C ... +40 °C	ON	ON	OFF
0 °C ... +50 °C (default)	OFF	ON	OFF
0 °C ... +100 °C	ON	OFF	OFF
0 °C ... +150 °C	OFF	OFF	OFF

Anschluss*:

2-Leiter-Anschluss für Geräte ohne / mit Display (unbeleuchtet)
3-Leiter-Anschluss für Geräte mit beleuchtetem Display

Connection*:

2-wire connection for devices with / without display (not illuminated)
3-wire connection for devices with illuminated display

Raccordement* :

Raccordement 2 fils pour appareils sans / avec écran (non éclairé)
Raccordement 3 fils pour appareils à écran rétro-éclairé

Подключение*:

двухпроводное для устройств без дисплея / с дисплеем (без подсветки)
трехпроводное для устройств с подсветкой дисплея

(max. zulässige Temperaturbereiche beachten)

(observe max. permissible temperature ranges!)

(respecter les plages de températures max. autorisées !)

(Соблюдать макс. допустимые диапазоны температуры!)