THERMASGARD® HFTM

Sleeve sensor with temperature measuring transducer, calibratable, with multi-range switching and active output (Automatic Output Switching)

NEW

S+S REGELTECHNIK

Patented quality product (patent no. DE 10 2015 015 941 B4)

Calibratable temperature measuring transducer with sleeve sensor **THERM**ASGARD® **HFTM**, with eight switchable measuring ranges (max. –20...+150 °C), aktivem Ausgang, housing made from impact-resistant plastic with quick-release screws, with cable gland or M12 connector according to DIN EN 61076-2-101, optionally with/without display. The standard display can be changed from SI [°C] to imperial [°F] units via DIP switch.

The measuring transducer converts the measured variables into a standard signal of 0-10 V or 4...20 mA. The unit with **Automatic Output Switching** (AOS) detects the required output type and automatically switches to U or I output. Alternatively, a **type version** (2-wire) with 2-wire connection and I output is available.

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** (see chapter Accessories). The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

HFTM
with cable gland

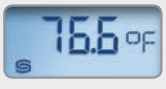
HFTM - Q
with M12 connector

TECHNICAL DATA

HFTM - I	
Power supply:	15...36 V DC, depending on working resistance, residual ripple stabilised ± 0.3 V
Working resistance:	R_a (Ohm) = (U_b -14 V) / 0.02 A
Connection type:	2-wire connection
Output:	**4...20 mA**
HFTM - A (AOS)	
Power supply:	24 V AC / DC (± 10 %)
Load resistance:	R_L = 25...450 Ohm with AOS I variant R_L > 15 kOhm with AOS U variant
Connection type:	3-wire connection
Output:	**automatic 0-10 V / 4...20 mA** (via **Automatic Output Switching** – the unit detects the required output type and automatically switches to U or I output)
GENERAL	
Power consumption:	< 1.0 VA / 24 V DC; < 2.2 VA / 24 V AC
System of units:	**SI** (default) or **Imperial** (switchable via DIP switch)
Data points:	Temperature [°C] [°F]
Measuring ranges:	**multi-range switching with 8 measuring ranges,** see table (other ranges optional) **with manual zero point correction (± 10 K)**
Sensor:	Pt1000, DIN EN 60751, class B (**Perfect Sensor Protection**) at IP68)
Accuracy, temperature:	typically ± 0.2 K at +25 °C
Insulating resistance:	≥ 100 MΩ, at +20 °C (500 V DC)
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)
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 dimension:	72 x 64 x 37.8 mm (Tyr 1 without display) 72 x 64 x 43.3 mm (Tyr 1 with display)
Cable connection:	**cable gland**, plastic (M 16 x 1.5; 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
Electrical connection:	0.14 - 1.5 mm², via terminal screws
Ambient temperature:	measuring transducer –30...+70 °C
Permissible humidity:	< 95 % RH, 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 according to EMC directive 2014 / 30 / EU
Optional:	two-line **display with illumination**, cutout approx. 36 x 15 mm (W x H), for displaying the ACTUAL temperature and the internal diagnostics (sensor breakage, sensor short circuit)
ACCESSORIES	(see table)

Display and internal diagnostics
THERMASGARD®
Measuring transducer with display

Temperature [°C]



Temperature [°F]

Sensor breakage

Sensor short circuit

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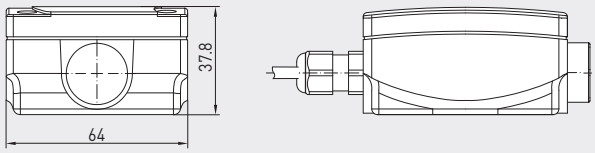
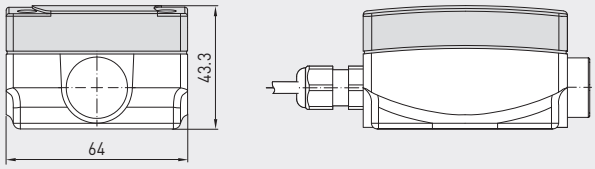
Dimensional drawing
[mm]

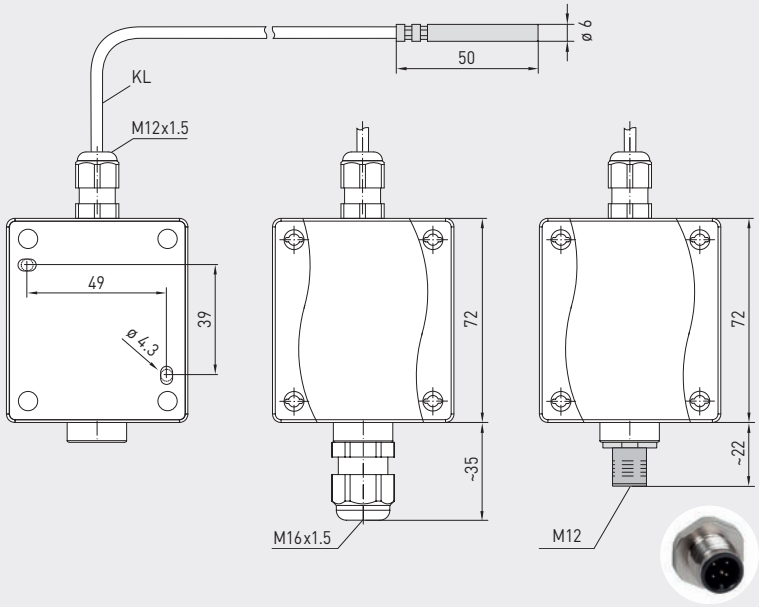
HFTM

without display



with display





Housing with
cable gland

Housing with
M12 connector

HFTM
with cable gland
and display

HFTM-Q
with M12 connector
and display

High-performance encapsulation against vibration, mechanical stress and humidity

PS-PROTECTION
PERFECT SENSOR PROTECTION

Automatic detection and switching to standard signal 0...10 V or 4...20 mA

AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

IP65 (standard)
humidity-tight

IP68 (optional)
water-tight
Perfect Sensor Protection

IP54 (optional)
with **glass fibre** cable

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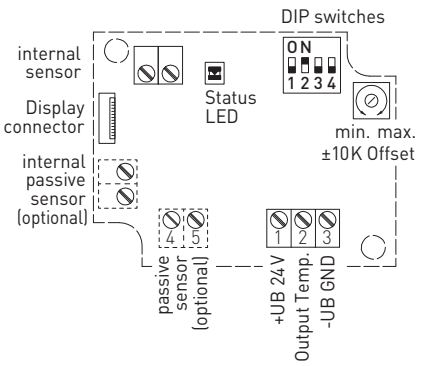
Schematic diagram **HFTM xx**



2-wire connection* **HFTM - I**

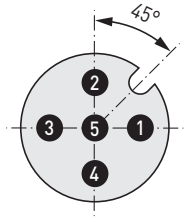
1 +UB 24V DC
2 Output Temp. 4...20mA
3 –UB GND (optional for backlighting)

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

3-wire connection (AOS) **HFTM - A**

1 +UB 24V AC/DC
2 Output Temp. 0-10V / 4...20mA
3 –UB GND

Pin assignment (M12) **HFTM xx**



1 +UB 24V
2 Output temperature
3 free
4 –UB GND
5 Shield

Measuring ranges [°C]	DIP 1	DIP 2	DIP 3	Measuring ranges [°F]
–20...+150 °C	ON	ON	ON	–4...+302 °F
–50... +50 °C	OFF	ON	ON	–58...+122 °F
–20... +80 °C	ON	OFF	ON	–4...+176 °F
–30... +60 °C	OFF	OFF	ON	–22...+140 °F
0... +40 °C	ON	ON	OFF	32...+104 °F
0... +50 °C *	**OFF**	**ON**	**OFF**	**32...+122 °F ***
0...+100 °C	ON	OFF	OFF	32...+212 °F
0...+150 °C	OFF	OFF	OFF	32...+302 °F

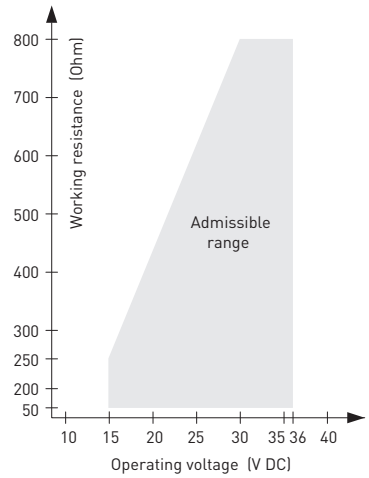
* (default)

Display [°C] / [°F]		DIP 4
Imperial	[°F]	ON
SI (default)	[°C]	**OFF**

Display switchable
Temperature [°C] → [°F]

The display value depends on the set unit system (**DIP 4**).

Load resistance diagram (2-wire) **HFTM - I**



For further technical information, see the operating instructions

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Sleeve sensor with temperature measuring transducer, calibratable, with multi-range switching and active output (Automatic Output Switching)

HFTM-Q
with M12 connector

HFTM
with cable gland

THERMASGARD® HFTM	Sleeve sensor with temperature measuring transducer (with cable gland)			
Type / WG01	**Output**	**Type**	**Display**	**Item No.**
HFTM-I	**(2-wire)**			
HFTM-I	4...20 mA	Remote sensor		1101-1152-0219-920
HFTM-I LCD	4...20 mA	Remote sensor	■	1101-1152-2219-920
HFTM-A	**(3-wire AOS)**			
HFTM-A	0-10 V / 4...20 mA	Remote sensor		1101-115E-0219-920
HFTM-A LCD	0-10 V / 4...20 mA	Remote sensor	■	1101-115E-2219-920
Automatic Output Switching (AOS):	Patented analogueinterface (patent no. DE 10 2015 015 941 B4) Unit automatically detects the required output type 0-10 V or 4...20 mA.			
Housing variant:	Cable connection **with cable gland**			
Extra charge:	other measuring ranges optional Protection type **IP68** (Sensor sleeve watertight compound-filled) 2-wire connecting leads, per running meter (**silicone / PTFE / glass fibre**) Other lengths of protection sleeve optional			 on request on request

THERMASGARD® HFTM-Q	Sleeve sensor with temperature measuring transducer (with M12 connector)			
Type / WG01I	**Output**	**Type**	**Display ● = Q**	**Item No.**
HFTM-I Q	**(2-wire)**			
HFTM-I Q	4...20 mA	Remote sensor	●	2001-2111-2100-001
HFTM-I Q LCD	4...20 mA	Remote Sensor	● ■	2001-2112-2100-001
HFTM-A Q	**(3-wire AOS)**			
HFTM-A Q	0-10 V / 4...20 mA	Remote sensor	●	2001-2111-B100-001
HFTM-A Q LCD	0-10 V / 4...20 mA	Remote Sensor	● ■	2001-2112-B100-001
Automatic Output Switching (AOS):	Patented analogueinterface (patent no. DE 10 2015 015 941 B4) Unit automatically detects the required output type 0-10 V or 4...20 mA.			
Housing variant "Q":	Cable connection **with M12 connector** (male, **5-pin**, A-code)			
Extra charge:	see table above!			

ACCESSORIES		
THE-xx	**Immersion sleeve**, stainless steel **V4A** (1.4571) or polished brass, Ø = 9 mm	
	Special accessories for M12 connector	see chapter Accessories!