S S REGELTECHNIK TM43 Temperature Measuring Transducer Instruction Manual

Contents

S+S REGELTECHNIK

S S REGELTECHNIK TM43 Temperature Measuring Transducer

Operating Instructions, Mounting & Installation

Immersion / screw-in / duct temperature measuring transducer, calibratable, with multi-range switching and active output

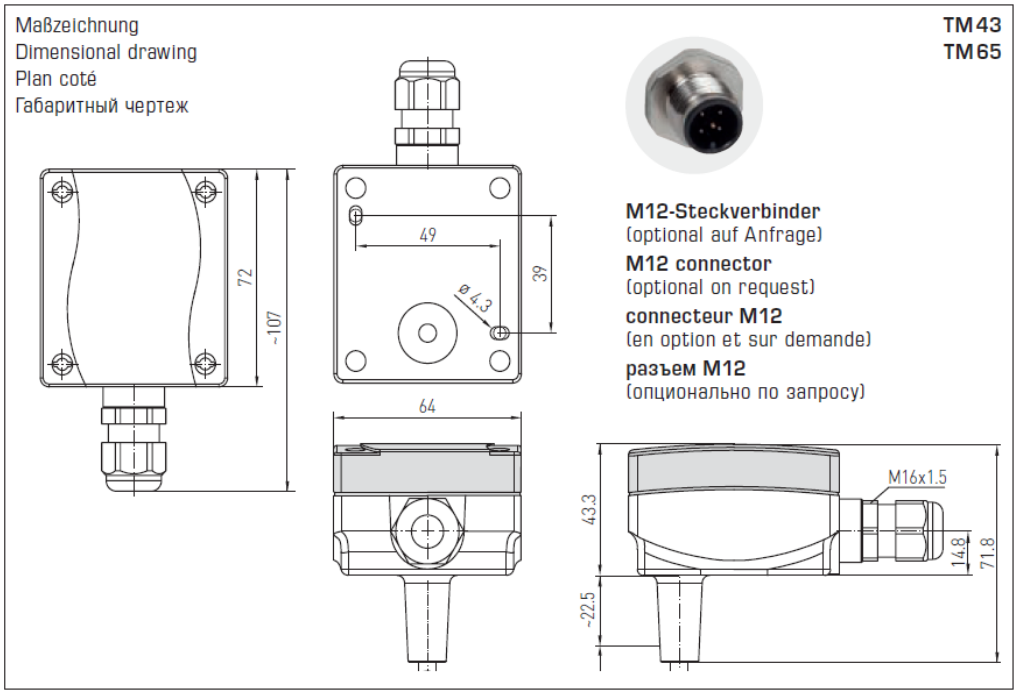
TM43
mit Schnappdeckel
with snap-on lid
avec couvercle emboîté
с защелкивающейся крышкой
(IP54)

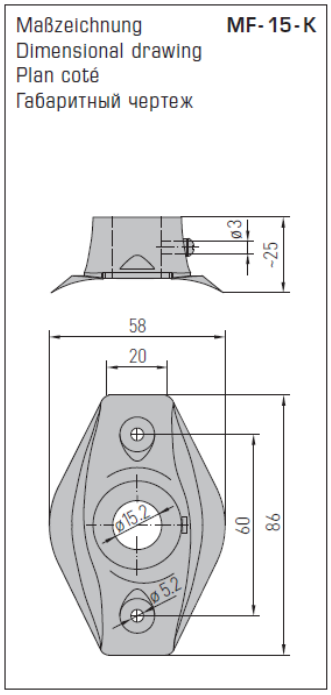
TM65
(IP67)

уры,

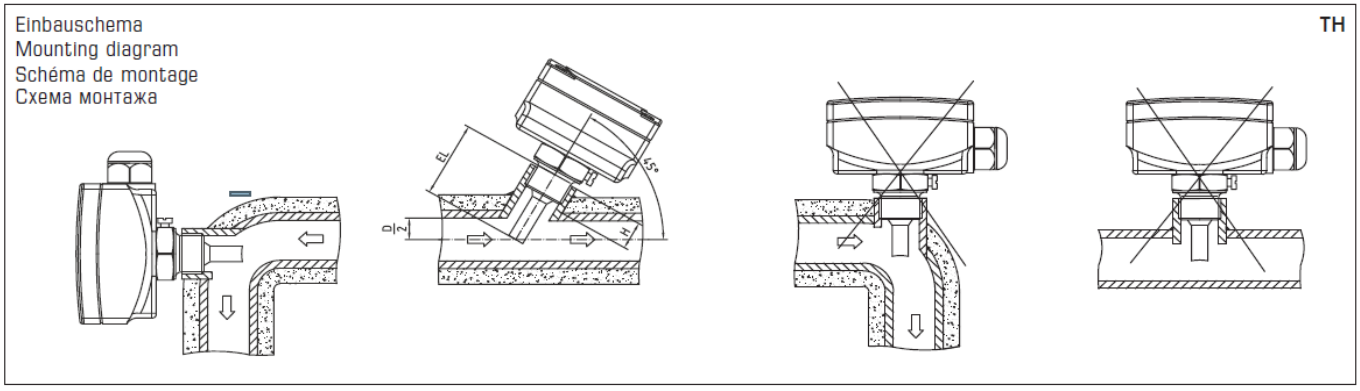
TM65
mit Display
with display
avec écran
с дисплеем
(IP67)

Dimensional drawing



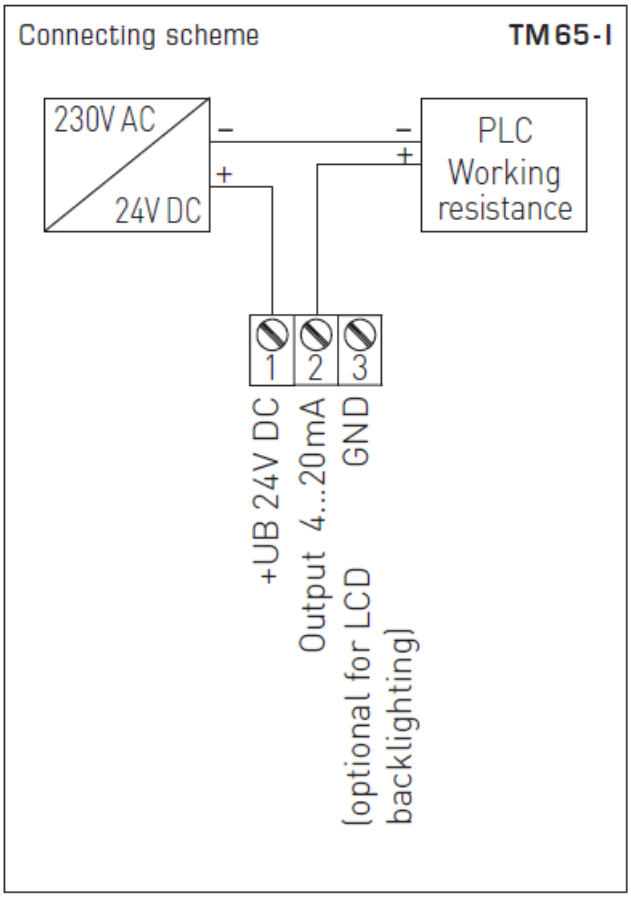


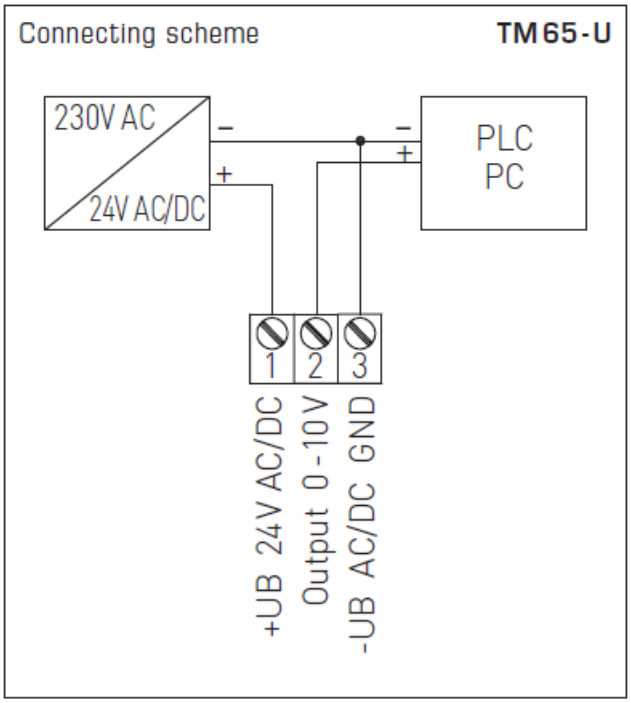
Mounting diagram



Patented quality product (Immersion sensor patent no. DE 10 2012 017 500.0)
Calibratable temperature measuring transducer THERMASGARD® TM 43 with eight switch-able measuring ranges, continuous linear output, straight protective tube, housing made from impact-resistant plastic with snap-on lid. Calibratable temperature measuring transducer THERMASGARD® TM 65 with eight switchable measuring ranges, continuous linear output, straight protective tube, housing made from impact-resistant plastic with quick-locking screws, with / without optional display. For the detection of temperatures in liquid or gaseous media. For

aggressive media, stainless steel immersion sleeves must be used. It is used e.g. in piping systems, in heating technology, in storage tanks, in district heating compact stations, in hot-water and cold-water systems, in oil and lubricant circulation systems, in mechanical, apparatus and plant engineering as well as in the entire industrial sector. 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
- **Load resistance:** RL > 5 kOhm for U variant

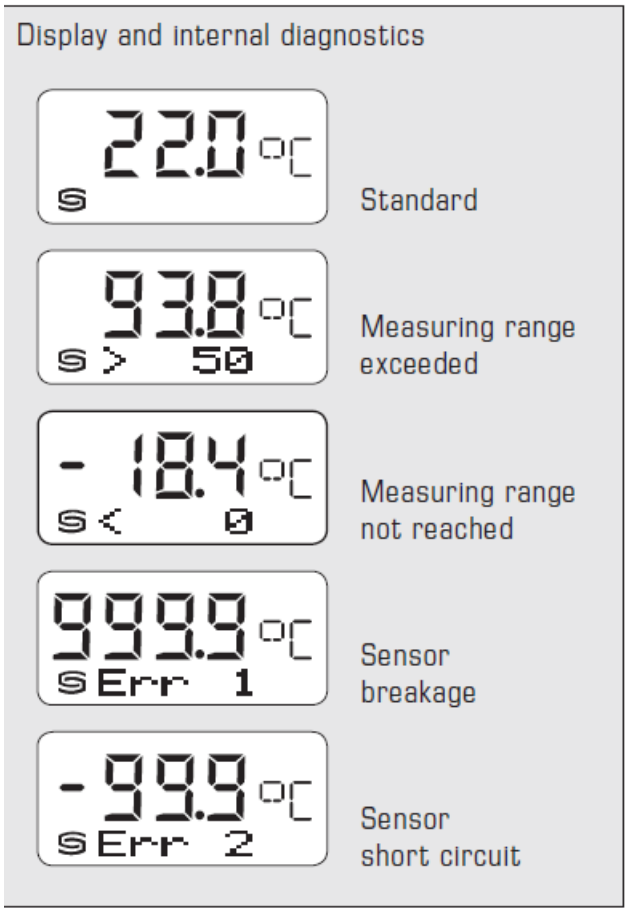
- **Power consumption:** < 1.0 VA / 24 V DC; < 2.2 VA / 24 V AC
- **Sensor:** Pt1000, DIN EN 60751, class B (Perfect Sensor Protection)
- **Measuring ranges:** multi-range switching with 8 switchable measuring ranges, see table (other ranges optional) with manual zero point correction (± 10 K)
- **Deviation, temperature:** typically ± 0.2 K at +25 °C
- **Output:** 0 – 10 V or 4…20 mA
- **Ambient temperature:** measuring transducer –30…+70 °C
- **Connection type:** 2- or 3-wire connection
- **Housing:** plastic, UV-resistant, material polyamide, 30 % glass-globereinforced, colour traffic white (similar to RAL 9016),
  TM 43 with snap-on lid
  TM 65 with quick-locking screws (slotted / Phillips head combination), housing cover for display is transparent!
- **Housing dimensions:** 72 x 64 x 37.8 mm (Tyr 1 / Tyr 01 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 according to DIN EN 61076-2-101 (optional on request)
- **Electrical connection:** 0.14 – 1.5 mm² via terminal screws on circuit board
- Protective tube: stainless steel, V4A (1.4571), Ø = 6 mm, inserted length (EL) = 50 – 400 mm (see table)
- **Humidity:** < 95 % r. H., non-precipitating air
- **Protection class:** III (according to EN 60 730)
- **Protection type:** TM 43 IP 54 (according to EN 60 529)* Housing tested,
  TÜV SÜD, Report No. 713160960A (Tyr 01)
  TM 65 IP 67 (according to EN 60 529)* Housing tested,
  TÜV SÜD, Report No. 713139052 (Tyr 1) * Housing in the built-in state
- **Standards:** CE conformity, electromagnetic compatibility according to EN 61326, according to EMC directive 2014 / 30 / EU
- **Optional:** two-line display with illumination, cutout approx. 36 x15 mm (W x H), for displaying the ACTUAL temperature and the internal diagnostics (measuring range exceeded, measuring range not reached, sensor breakage, sensor short circuit)

ACCESSORIES

- MF – 15 – K Mounting flange, plastic, 56.8 x 84.3 mm, Ø = 15.2 mm tube gland, Tmax = +100 °C
- TH 08 – ms / xx Immersion sleeve, brass, nickel-plated, Ø = 8 mm, Tmax = +150 °C, pmax = 10 bar
- TH 08 – VA / xx Immersion sleeve, stainless steel, V4A (1.4571), Ø = 8 mm, Tmax = +600 °C, pmax = 40 bar
- TH 08 – VA / xx / 90 Immersion sleeve, stainless steel, V4A (1.4571), with neck tube (90 mm), Ø = 8 mm, Tmax = +600 °C, pmax = 40 bar

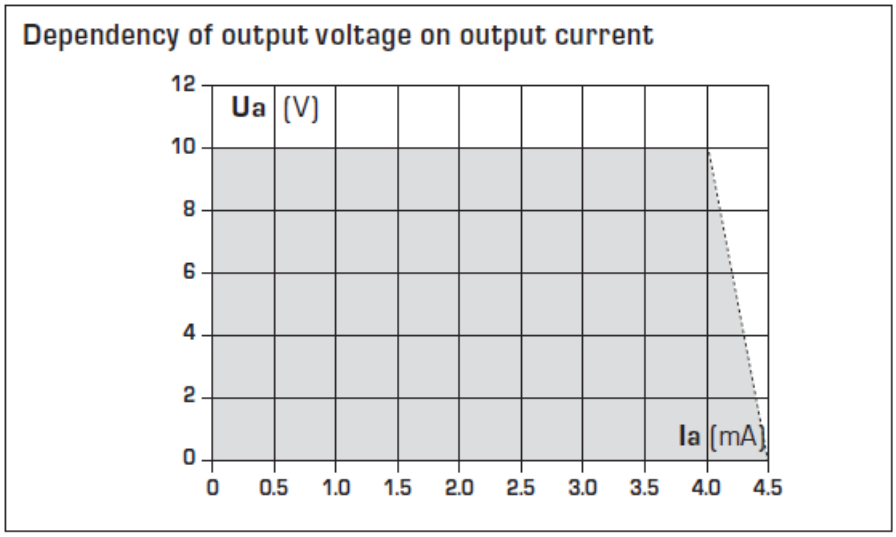
Type	Output	Display
TM 43 – I / WG01B		
T M 4 3 – I **xx** MM	4…20 mA	
TM 43 – U		
T M 4 3 – U **xx** MM	0 – 10 V	
TM 65 – I / WG01		
T M 65 – I **xx** MM	4…20 mA	
T M 65 – I **xx** MM _ LC D	4…20 mA	■
TM 65 – U		
T M65 -U **xx** MM	0 – 10 V	
T M65 -U **xx** MM _ LC D	0 – 10 V	■
Inserted Length:	**xx** MM = 50 mm, 100 m	m, 150 mm, 200 mm, 250 mm, 300 mm, 400 mm

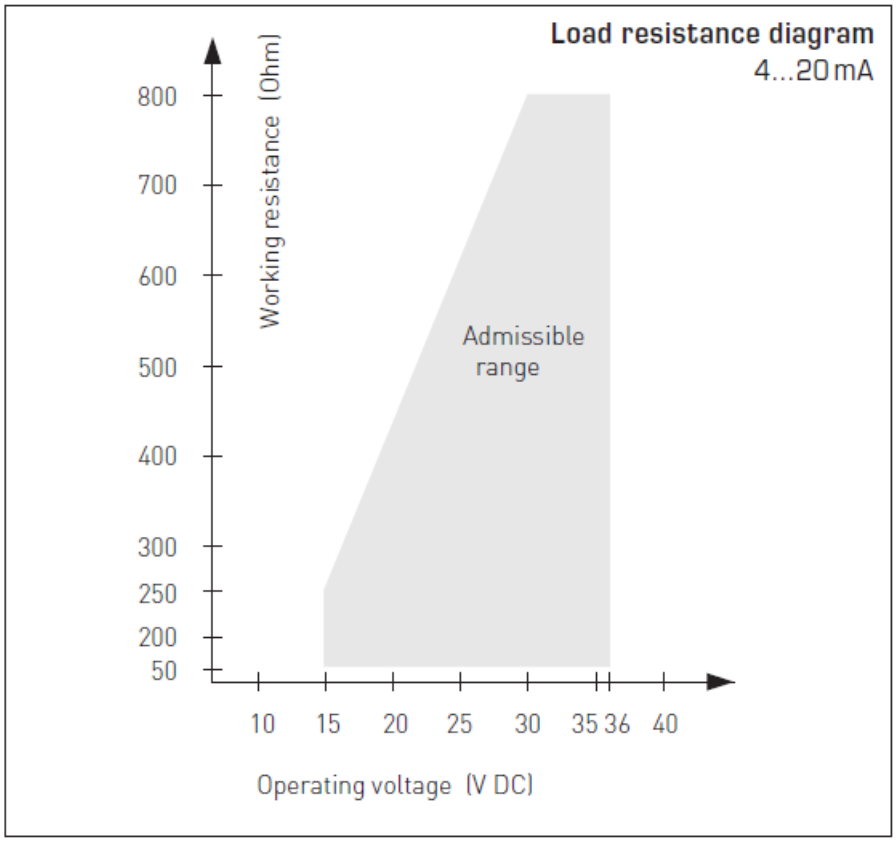
Measuring transducers, calibrateable, with active output

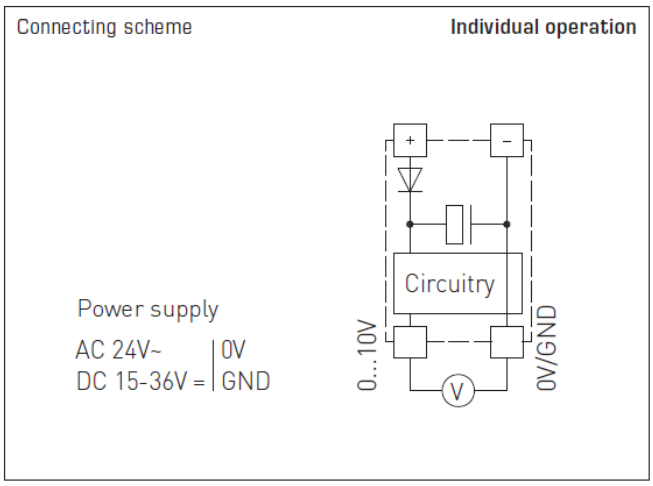


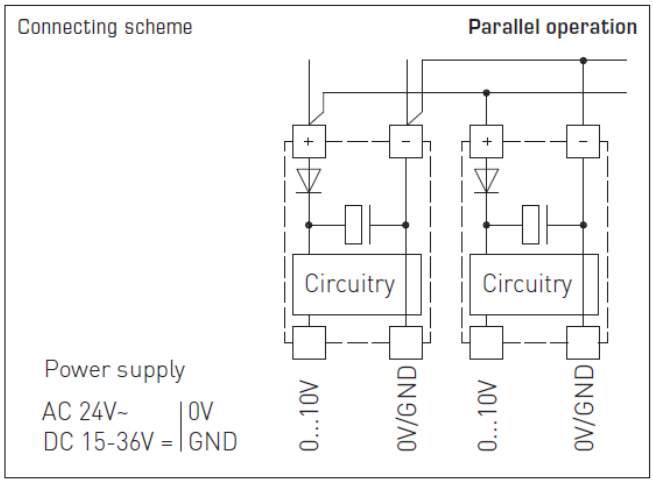
TEMPERATURE RANGES

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









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 special-ists. 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 f orfeited. 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 per-sons 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 toler-ances 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.
These instructions must be read before installation and commissioning and all notes provided therein are to be regarded!
Our “General Terms and Conditions for Business“ together with the “General Conditions for the Supply of Products and Services of the Electrical and E lectronics Industry“ (ZVEI conditions) including supplementary clause “Extended Retention of Title“ apply as the exclusive terms and conditions.

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.
- If the sensor is used in refrigeration circuits, it must be insulated together with the housing to reduce the temperature potential between the device and the medium to a minimum and thus prevent condensation damage.

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
- Installation length, tube dimensions
- Oscillations, vibrations, shocks are to be avoided (< 0.5 g)

Attention! In any case, please observe the mechanical and thermal load limits of protective tubes according to DIN 43763 respectively according to specific S+S standards!
Notes regarding process connection of built-in sensors:
If possible, select material of protective tube to match the material of piping or tank wall, in which the thermometer will be installed!
Maximum temperatures Tmax and maximum pressures pmax are as follows: for TH – MS brass sleeves Tmax = +150 °C, pmax = 10 bar and for
TH – VA stainless steel sleeves (standard) Tmax = +400 °C, pmax = 40 bar.

Screw-in threads:
Ensure appropriate support of the gasket or sealing material when mounting! Permissible tightening torque standard values for screw – in threads, are as follows:
M 18 x 1.5; M 20 x 1.5; pipe thread G ½ ” : 50 Nm
M 27 x 2.0; pipe thread G ¾ ” : 100 Nm

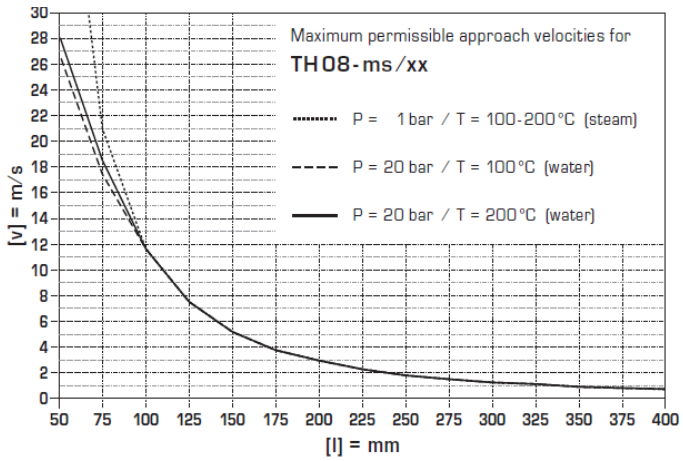
Flange mounting:
In case of flange mounting, screws in the flange part must be equally tightened. The lateral pressure screw must clamp securely, otherwise the feeler shaft might slip through.

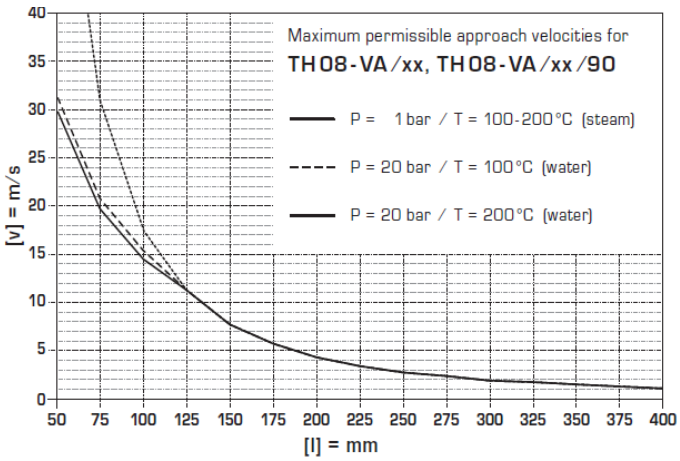
Welding sleeves:
Specific welding instructions shall be observed. On principle, unevenness or the like that might influence the system‘s ”CIP ability“ must not develop at welds.
For high-pressure lines, pressure test certifications and inspections are required.

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.
Commissioning is mandatory and may only be performed by qualified personnel!

Permissible approach velocities (flow rates) for crosswise approached protective tubes in water.
The approaching flow causes protective tube to vibrate. If specified approach velocity is exceeded even by a marginal amount, a negative impact on the protective tube’s service life may result (material fatigue). Discharge of gases and pressure surges must be avoided as they have a negative influence on the service life and may damage the protective tubes irreparably.

Please observe maximum permissible approach velocities
for stainless steel protective tubes 8 x 0.75 mm (1.4571) (see graph TH 08 – VA / xx, TH 08 – VA / xx / 90) as well as for brass protective tubes 8 x 0.75 mm (see graph TH 08 – ms / xx) :





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Documents / Resources

	S S REGELTECHNIK TM43 Temperature Measuring Transducer [pdf] Instruction Manual TM43, TM43 Temperature Measuring Transducer, TM43, Temperature Measuring Transducer, Measuring Transducer, Transducer

References

- S+S Regeltechnik | Ihr zuverlässiger Partner