Ⓓ Ⓖⓑ Ⓕ Ⓡⓤ 6002-2400-2011-000 **22400-2017 V101** 12/2016

S+S REGELTECHNIK

THERMASGARD® MWTM

Ⓓ Bedienungs- und Montageanleitung

Mittelwert-/Ruten-/Kanal-Temperaturmessumformer,
incl. Montageflansch, kalibrierfähig,
mit Mehrbereichsumschaltung und aktivem Ausgang

Ⓖⓑ Operating Instructions, Mounting & Installation

Mean value/rod/duct temperature measuring transducer,
including mounting flange, calibratable,
with multi-range switching and active output

Ⓕ Notice d'instruction

Convertisseur de température moyenne/à canne/en gaine,
y compris bride de montage, étalonnable,
avec commutation multi-gamme et sortie active

Ⓡⓤ Руководство по монтажу и обслуживанию

Преобразователь средней температуры/гибкий/
канальный преобразователь температуры,
вкл. присоединительный фланец, калибруемый,
с переключением между несколькими диапазонами
и активным выходом

S+S REGELTECHNIK

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MADE IN GERMANY

Herzlichen Glückwunsch!
Sie haben ein deutsches Qualitätsprodukt erworben.

Congratulations!
You have bought a German quality product.

Félicitations!
Vous avez fait l'acquisition d'un produit allemand de qualité.

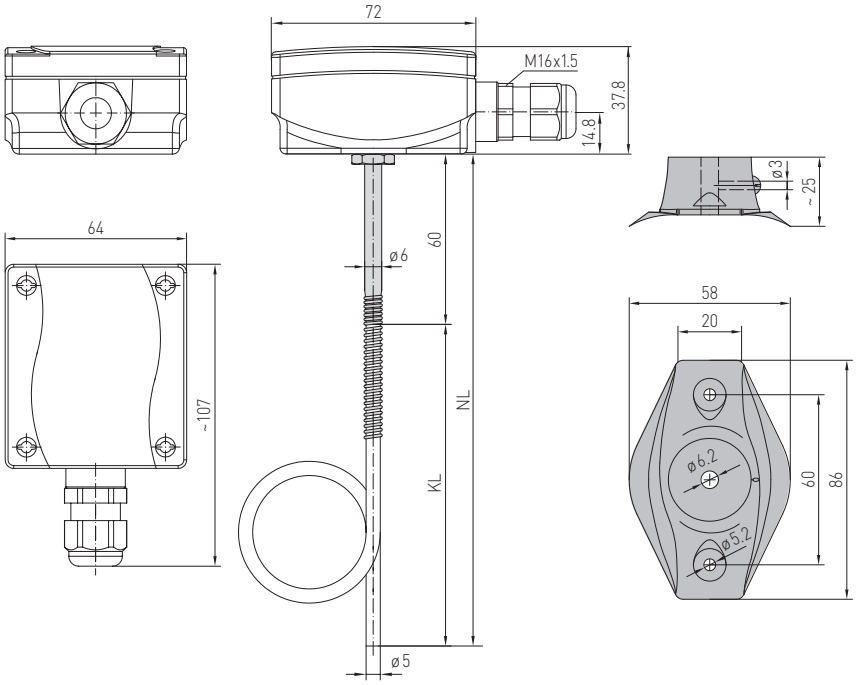
Примите наши поздравления!
Вы приобрели качественный продукт, изготовленный в Германии.

THERMASGARD® MWTM

S+S REGELTECHNIK

Maßzeichnung
Dimensional drawing
Plan coté
Габаритный чертеж

MWTM

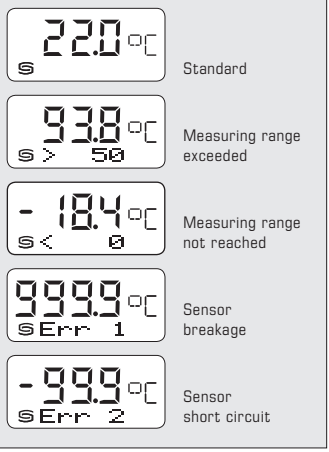


Calibratable mean value temperature measuring transducer **THERM**ASGARD® **MWTM** (rod sensor) with eight switchable measuring ranges, continuous output, fully active flexible sensor rod for mean value measurement, plastic-coated copper protective tube (sturdy version), terminal box enclosure made of impact-resistant plastic and enclosure cover with quick-locking screws. This sensor is used for the detection of average temperatures (mean values) in gaseous media, e.g. in ventilation and air conditioning ducts over the entire cross section, or over a defined length. Laid along a meandering route, it uniformly detects the surrounding temperature as a duct sensor. The mean value sensors are factory-calibrated. Adjustment / fine adjustment by the user is possible (range and zero point are adjustable). The mean value sensor MWTM is available in lengths of 0.4...20 m and is delivered as standard with a mounting flange. Mounting clamps MK-05-M are available as optional accessories.

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:	R_a (ohm) = (U_b -14 V) / 0.02 A for I variant
Load resistance:	R_L > 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
Measuring ranges:	**multi-range switching with 8 switchable measuring ranges,** see table (other ranges optional) T_{min} –30 °C, T_{max} +80 °C **with manual zero point correction (± 10 K)**
Output:	0 - 10 V or 4...20 mA
Ambient temperature:	measuring transducer –30...+70 °C
Connection type:	2- or 3-wire connection
Sleeve:	stainless steel, 1.4571, V4A
Rod material:	**copper sensor tube, plastic-coated** with spring for buckling protection
Sensor and rod dimensions:	Ø = 5 mm, nominal length NL = 0.4 m / 3 m / 6 m (NL optional up to 20 m)
Active length:	active along the entire sensor length
Enclosure:	plastic, material polyamide, 30 % glass-globe-reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016)
Enclosure dimensions:	72 x 64 x 37.8 mm (Typ 1)
Cable gland:	M 16 x 1.5, including strain relief, exchangeable, max. inner diameter 10.4 mm
Electrical connection:	0.14 - 1.5 mm² via terminal screws on circuit board
Installation:	observe minimum bending radius of 35 mm and permissible vibration load ≤ ½ g
Process connection:	by mounting flange, plastic (galvanised steel optional, see accessories) and mounting clamps **MK-05-M**
Humidity:	< 95 % r. H., non-precipitating air
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529)
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 x 15 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)

Display and internal diagnostics



THERMASGARD® **MWTM** – Mean value / rod / duct temperature measuring transducer

Type / WG01	Sensor	Output	Rod Length	Item No.
MWTM-I				**IP65, I-Variante**
MWTM-I 0,4M	Pt1000	4...20 mA	**0.4 m**	1101-3132-0089-900
MWTM-I 3M	Pt1000	4...20 mA	**3.0 m**	1101-3132-0239-900
MWTM-I 6M	Pt1000	4...20 mA	**6.0 m**	1101-3132-0269-900
MWTM-U				**IP65, U-Variante**
MWTM-U 0,4M	Pt1000	0 - 10 V	**0.4 m**	1101-3131-0089-900
MWTM-U 3M	Pt1000	0 - 10 V	**3.0 m**	1101-3131-0239-900
MWTM-U 6M	Pt1000	0 - 10 V	**6.0 m**	1101-3131-0269-900
Extra charge:	Other ranges optional Two-line **display** with illumination Per meter sensor cable (from 6 m to max. 20 m)			

(GB) Measuring transducers, calibrateable, with active output

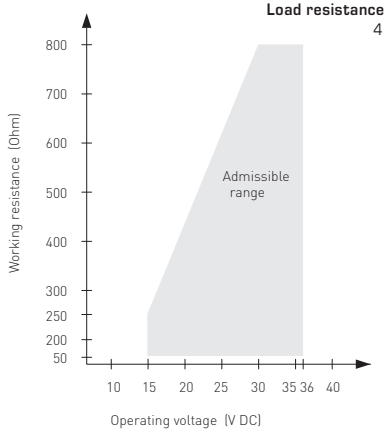
TEMPERATURE RANGES:

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

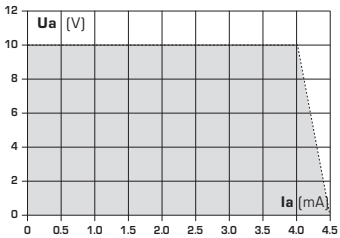
Ambient temperature for measuring transducers: – 30 ... + 70 °C

Apparent ohmic resistance = see load resistance diagram

Load resistance diagram
4 ... 20 mA



Dependency of output voltage on output current



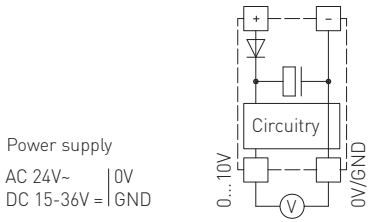
SUPPLY VOLTAGE:

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 0-10 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 (0 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!

Connecting scheme **Individual operation**

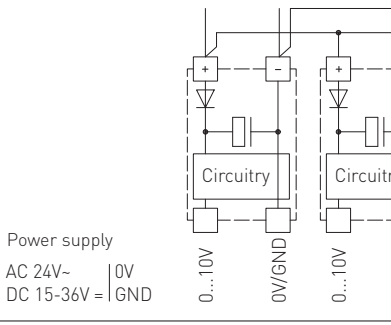


When several devices are supplied by one 24 V **AC voltage supply**, it is to be ensured that all "positive" operating voltage input terminals (+) of the field devices are connected with each other and all "negative" operating voltage input terminals (–) (= reference potential) are connected together (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!

Connecting scheme **Parallel operation**



(GB) Mounting and Installation

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. Installation of these devices must only be realized by authorized qualified personnel. 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 enclosures or enclosure 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.

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".

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.

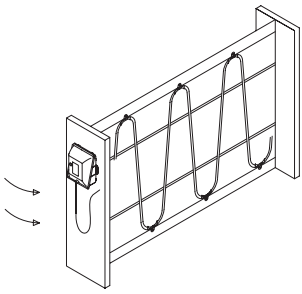
Output: 4 ... 20 mA
In case of the 4 ... 20 mA measuring transducer, display and evaluating elements are connected in series in the current loop. The measuring transducer thereby liWiths the flowing current in variance of the input signal. 4 mA are for the measuring transducer's internal current consumption. 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

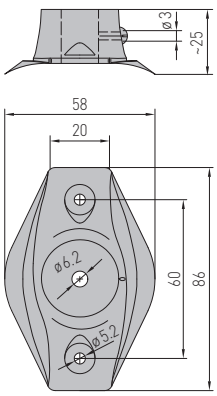
These devices shall only be used for their intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The buyer has to ensure adherence to the building and safety regulations and has to avoid 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 current-carrying lines. EMC directives must be adhered to.

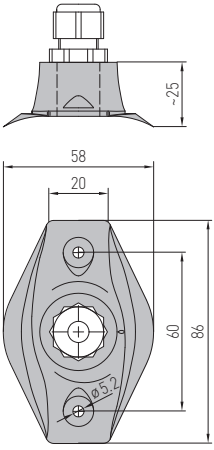
Mounting diagram **MWTM**



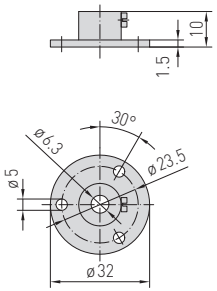
Maßzeichnung **MF-06-K**
Dimensional drawing
Plan coté
Габаритный чертеж



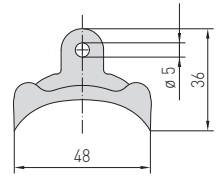
Maßzeichnung **KRD-04**
Dimensional drawing
Plan coté
Габаритный чертеж



Maßzeichnung **MF-06-M**
Dimensional drawing
Plan coté
Габаритный чертеж



Maßzeichnung **MK-05-M**
Dimensional drawing
Plan coté
Габаритный чертеж



MF-06-K

KRD-04

MF-06-M

MK-05-M

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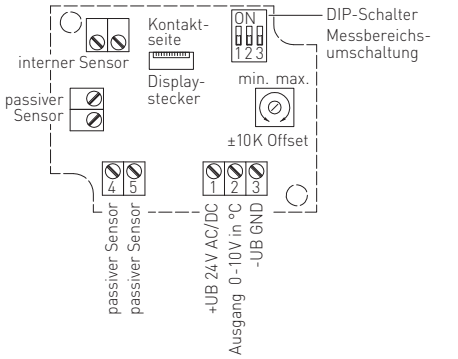
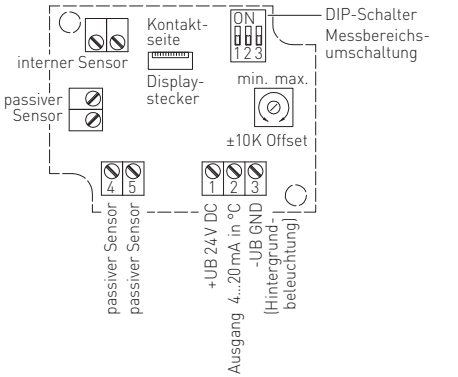
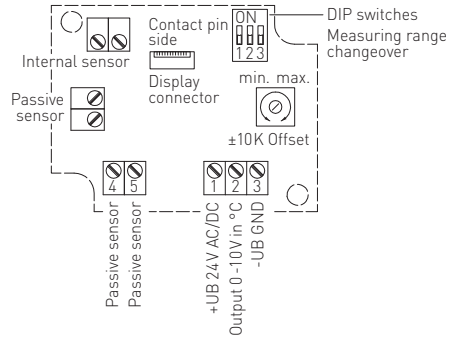
Anschlussbild **MWTM-U**



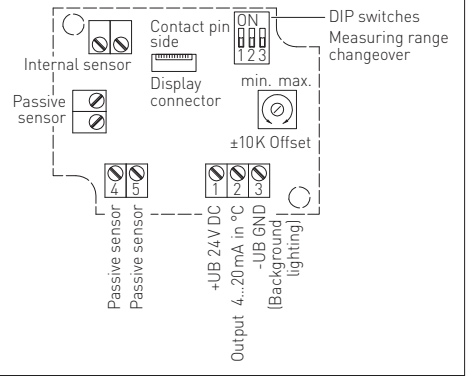
Anschlussbild * **MWTM-I**



Connecting diagram **MWTM-U**
Schéma de raccordement
Схема подключения



Connecting diagram * **MWTM-I**
Schéma de raccordement *
Схема подключения *



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	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!)