

Tm-RS485-MB / Tm-RS485-MT

Module Temperature Sensor with RS485 Interface



Short Description

Our module and surface temperature sensors come equipped with a stable Aluminum housing and a robust weatherproof cable. Thanks to the use of top quality components the sensors achieve very high accuracy and are ideal for use in field environments (PV module temperature).

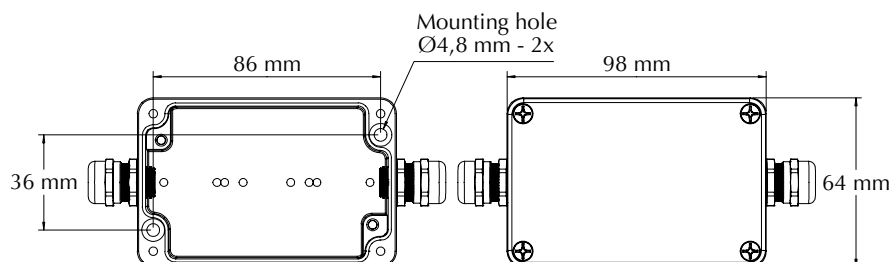
All sensors are shipped with a calibration protocol for the measuring amplifier.

The sensors comply to all requirements as per IEC 61724-1 and are suitable for bifacial modules.

Technical Data

| Type | Tm-RS485-MB | Tm-RS485-MT |
|-----------------------------------|--|-------------|
| Interface | RS485 | |
| Protocol | MODBUS | MT |
| Measuring Range | -40 to +90°C | |
| Uncertainty (-40 to +90°C) | 1 K | |
| Supply Voltage | 24 VDC (10 to 28 VDC) | |
| Current | Typical 25 mA at 24 VDC | |
| Galvanic Isolation | 1,000 VDC between RS485 and Voltage Supply | |
| Sensor Element | Pt1000 Class A as per EN 60751 | |
| Sensor Housing | Self-Adhesive Aluminium Block, 35 mm x 12 mm x 6 mm | |
| Sensor Cable (Pt1000) | Length: 3 m, PUR coated, shielded (LiYC11Y, 2 x 0,25 mm ²) | |
| Case Material | Powder Coated Aluminum | |
| Case Dimension / Protection Level | 98 mm x 64 mm x 34 mm / IP 67 | |
| Weight | approx. 500 g | |
| Operating Condition | Sensor Element -40 to +90°C (see below Installation Instruction) Case -40 to + 80°C | |
| Sensor Connection | Length: 6 m, PUR coated, shielded (LiYC11Y, 4 x 0.14 mm ²) | |
| Customs Tariff Number / HS Code | 90 25 19 00 | |

Drawing



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Safety Instructions

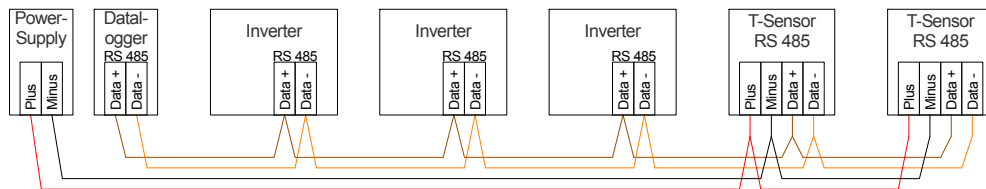
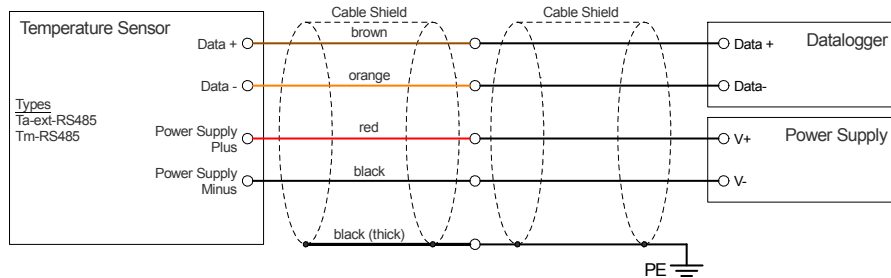
The installation and assembly of electrical equipment must be carried out by electrically qualified persons. The sensor may not be used with equipment whose direct or indirect purpose is to prevent human death or injury, or whose operation poses a risk to humans, animals or property.

Electrical Connection

The sensors are designed for **safety extra-low voltage (SELV)** operation. The maximum power of the voltage supply is 50 VA („Class 2 limited power“).

The cable shield shall be connected to the PE during installation.

WARNING: Connecting the supply voltage to the signal lines will damage the device.



Modbus Note: All bus participants with Modbus protocol (RTU) identical Modbus parameters but different address.

Maximum additional cable length for sensors with 6 m connection cable at voltage supply of 24 VDC / 12 VDC

| Cable Cross Section | | | | | | |
|----------------------|----------------------|----------------------|---------------------|----------------------|---------------------|---------------------|
| 0.14 mm ² | 0.25 mm ² | 0.34 mm ² | 0.5 mm ² | 0.75 mm ² | 1.0 mm ² | 1.5 mm ² |
| 300m / 50m | 600m / 100m | 800m / 150m | 1000m / 200m | 1000m / 300m | 1000m / 400m | 1000m / 650m |

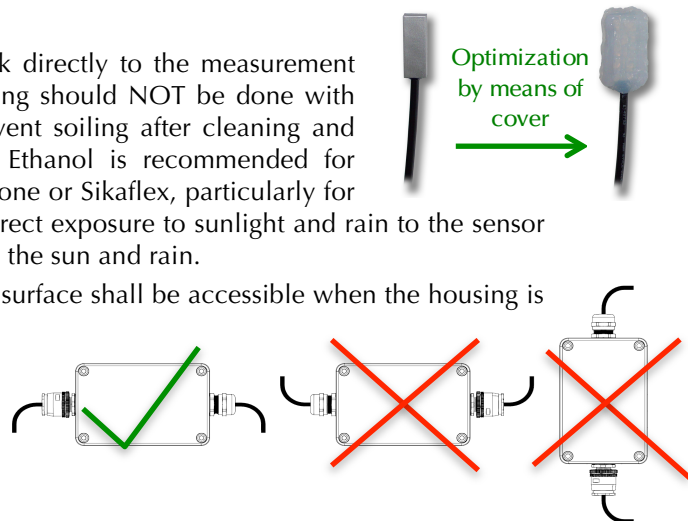
Installation Instructions

The sensor element is mounted by gluing the Aluminum block directly to the measurement surface. The surface must be dry, clean and degreased. Cleaning should NOT be done with glass cleaner, as some glass cleaners contain additives to prevent soiling after cleaning and these additives also prevent adhesion. Isopropyl Alcohol or Ethanol is recommended for cleaning. It is also recommended using an extra fixing with silicone or Sikaflex, particularly for module temperature above 75°C. If mounted outdoors, avoid direct exposure to sunlight and rain to the sensor housing (Aluminum block). If necessary, provide protection from the sun and rain.

The through holes used to fix the sensor to a stable and suitable surface shall be accessible when the housing is opened. The tightening torque of the case cover is 180 Ncm.

Note: The module temperature measurement can be optimized by completely covering the sensor element.

The sensor cable needs a cable grip close to the sensor housing.



Maintenance

Scope of the regularly check (at least every 2 years): Cleaning, external damage, mechanical fastening, cable laying and any damage to the cable.

Should damage be found that degrades the function or safety, the sensor is to be replaced.

A recalibration is recommended at least every 3 years.

User information

The sensor is designed for the measurement of a surface temperature. The warranty is for 1 year from the date of the invoice for the intended use. M&T does not accept any liability for possible losses or damage due to the incorrect usage of the sensor. Liability for consequential damages is excluded.