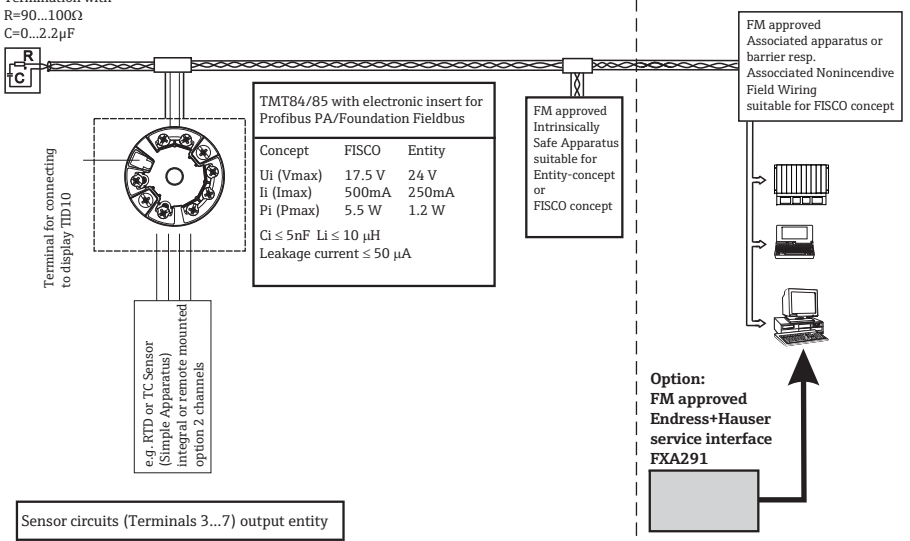


| Sensor circuits (Terminals 3...7) output entity | | |
|---|---|---|
| Uo or Voc or Vt | = 7.2 V | |
| Io or Isc | = 25.9 mA | |
| Po | = 46.7 mW | |
| | Co or Ca | Lo or La |
| Group A, B resp. IIC | 13.5 µF | 59 mH |
| Group C resp. IIB | 240 µF | 238 mH |
| Group D resp. IIA | 1000 µF | 477 mH |

**Installation Notes TMT85 and TMT84**

- FM approved apparatus must be installed in accordance with manufacturer's instructions.
- Use supply wires suitable for 5°C above surroundings.
- Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.
- Only simple apparatus should be terminated to the sensor connection.
  Simple apparatus are components as defined by the NEC (1.2 V, 0.1 A, 0.25 mW or 20 µJ).
- Warning: Substitution of components may impair intrinsic safety or suitability for Class I, Division 2.

TMT85 and TMT84 is suitable for the connection to a Profibus PA / Foundation Fieldbus system according to the Entity- or FISCO-concept.

**Temperature range**

T4 -40°C ... +85°C T5 -40°C ... +70°C T6 -40°C ... +55°C

FM APPROVED

**FISCO-Concept**

The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination.
The criteria for interconnection is that the voltage (Ui or Vmax), the current (Ii or Imax) and the power (Pi or Pmax) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo or Voc or Vt), the current (Io or Isc or It) and the power (Po or Pmax) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 µH respectively.
In each segment only one active device, normally the associated apparatus is allowed to provide the necessary energy for the fieldbus system.
The voltage Uo (or Voc or Vt) of the associated apparatus has to be limited to the range of 14V to 24V d.c. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except to a leakage current of 50 µA for each connected device.
Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.
The cable used to interconnect the devices has to meet the following values:
Loop resistance R´: 15 ... 150 Ω/km, inductance L´: 0.4 ... 1 mH/km capacitance C´: 80 ... 200 nF/km
C´ = C´ line/line + 0.5 C´ line/screen, if both lines are floating or
C ´= C´ line/line + C´ line/screen, if the screen is connected to one line
Length of spur cable: 30 m length of trunk cable: 1 km length of splice: 1 m
At each end of the trunk cable an approved infallible line termination with the following parameters is suitable:
R = 90 ... 100 Ω C = 0 ... 2.2 µF.
One of the allowed terminations might already be integrated in the associated apparatus.
The number of passive devices connected to the bus segment is not limited due to I.S. reasons. If the above rules are respected, up to a total length of 1000 m (sum of the length of trunk cable and all spur cables), the inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

**INTRINSICALLY SAFE** **Class I / Div. 1 / Groups ABCD** **AEx ia IIC**

- FM approved associated apparatus must meet the following requirements:
  Uo or Voc or Vt ≤ Ui (Vmax) and Io or Isc or It ≤ Ii (Imax) and Po or Pmax ≤ Pi (Pmax)
- The maximum non-hazardous area voltage must not exceed 250 V.
- The installation must be in accordance with the National Electrical Code.
- Be aware of multiple earthing of screen. The screen must be connected in accordance with National Electrical Code.
- The polarity for connecting PA+ (1) and PA- (2) is of no importance due to an internal rectifier.

**NONINCENDIVE** **Class I / Div. 2 / Groups ABCD** **AEx nA II**

- Intrinsic safety barrier not required. Vmax ≤ 35 V DC.
- Warning: Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Nonincendive field wiring installation
  The Nonincendive Field Wiring Circuit Concept allows interconnection of Nonincendive Field Wiring Apparatus with Associated Nonincendive Field Wiring Apparatus or Associated Intrinsically Safe Apparatus or Associated Apparatus not specifically examined in combination as a system using any of the wiring methods permitted for unclassified locations, when Voc ≤ Vmax, Ca ≥ Ci + Ccable, La ≥ Li + Lcable.
  Transmitter Nonincendive Field Wiring parameters are as follows: Ui or Vmax ≤ 35 V DC Ci ≤ 5 nF Li ≤ 10 µF
  For these current controlled circuits, the parameter Imax is not required and need not to be aligned with parameter Isc and It of the Associated Nonincendive Field Wiring Apparatus or Associated Apparatus.
- Warning: Explosion Hazard- Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous
- The transmitter is suitable to be installed according the FNICO concept.

| | Approved | Date (yyyy-mm-dd) | Drawing No. | Dwg.rev. | Revision no. | Revision date (yyyy-mm-dd) | Name | Material | |
|---|---|---|---|---|---|---|---|---|---|
| | Pfanzelt | 2007-08-06 | 34 02 00 111 | - | - | - | - | 71540263 XA02315T/09/EN/01.20 | Endress+Hauser |
| Volume (mm³) | Designed | Date (yyyy-mm-dd) | Unit | Scale | Title | | | Series | |
| | Meroth | 2007-03-06 | iTEMP TMT85 FF iTEMP TMT84 PA | 1:1 | CONTROL DRAWING FM IS, NI | | | Objekt version | Sheet |
| Refer to protection notice ISO 16016 | Edge of working parts ISO 13715 | Geometrical tolerancing ISO 2768-mH-E | Part No. - | Format A4 | | | | | 1 of 1 |

Endress + Hauser Wetzer GmbH+Co. KG Nesselwang / Germany