Hazardous (Classified) Location Nonhazardous Locations Class I / Division 1, 2 / Groups ABCD Class II / Division 1, 2 / Groups EFG Class III Sensor assembly RTD or T/C style FM approved Explosion-proof Enclosure Ontions A, B, C, D, E, F, G, H, I, J Electronic connection Options: (flanged, welded, threaded barstock) TMT180 power supply TMT181 TMT182 TMT184 TMT142 FM Explosionproof Union FM approved enclosures and electrical connection Pine nipple Optional assemblies: Temperature range for E+H Transmitters TMT180, TMT181, TMT182, TMT184 T4 -40°C ... +85°C T5 -40°C ... +80°C T6 -40°C ... +70°C T4 -40°C ... +85°C (-40°C ... +70°C with display) T5 -40°C ... +70°C -40°C ... +55°C T6

Temperature range for E+H Field Transmitters TMT162, TMT42

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max. Process temperature range  $\leq +130^{\circ}$ C

FM Explosion-proof approved temperature sensor assemblies and accessory hardware for the following locations:

N

| Туре                             | Hazardous location                 |  |  |  |  |  |
|----------------------------------|------------------------------------|--|--|--|--|--|
| T13/T53 and T14/T54              | Class I / Div. 1 / Groups BCD      |  |  |  |  |  |
| with enclosures C, D, E, F       | Class II,III / Div. 1 / Groups EFG |  |  |  |  |  |
| T13/T53 and T14/T54              | Class I / Div. 1 / Groups ABCD     |  |  |  |  |  |
| with enclosures A, B, G, H, I, J | Class II,III / Div. 1 / Groups EFG |  |  |  |  |  |

## Installation Notes for T13, T14, T53, T54

- FM Approved Apparatus must be installed in accordance with manufacturer's instructions.

- Install per National Electrical Code (NFPA 70)

- Use supply wires suitable for 5°C above surroundings.

- Inserts TU111 (RTDs) and TU121 (TC) with Additional Option Code "2" (XP Spare Part) need to be used to ensure approved classifications.

- Keep tight when circuits alive

- Warning: Substitution of components may impair intrinsic safety or suitability for Class I, Division 2.

EXPLOSION PROOF DUST IGNITION PROOF

Class I / Div. 1 / Groups ABCD DIP Class II. III / Div. 1 / Groups EFG

- For E+H TMT162 & TMT142 Field transmitters only for Group A, seal all conduits within 18 inches of enclosure; otherwise, conduit seal not required for compliance with NEC 501.5(A)(1)(1).

- All conduits must be assembled with a minimum of five full threads engagement.

- For Class II Extension and/or thermowell must be used to maintain enclosure 4X rating.

- Spring loaded temperature sensors must use a thermowell assembly

- Class II use a dust tight seal.

## NONINCENDIVE Class I / Div. 2 / Groups ABCD

- Depending on location install per National Electrical Code (NEC) using wiring methods described in article 500 through article 510. Intrinsic safety barrier not required.

- Warning: Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous.

- 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  $Voc \le Vmax$ ,  $Ca \ge Ci + Ccable$ ,  $La \ge Li + Lcable$ .

Transmitter Nonincendive Field Wiring parameters are as follows:

For E+H transmitters TMT162, TMT142, TMT180, TMT181, TMT182, TMT184 (Terminals + and -)

Ui or Vmax ≤ 30 V DC

Ci = 0Ii = 0

Ci = 144 nFfor TMT180

For E+H Field transmitters TMT162 & TMT142 connected to Foundation Fieldbus

Ui or Vmax ≤ 35 V DC

Ci = 5.3 nFLi = 0

Ii or Imax = see following note below

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.

- Supply circuit for E+H Field housing transmitters TMT162 & TMT142 (Terminals + and -)

IJ  $\leq 40 \text{ V DC}$ 

Р ≤ 3 W

- Supply circuit for E+H head transmitters TMT180, TMT181, TMT182, TMT184 (Terminals + and -)

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IJ  $\leq$  35 V DC ( $\leq$  30V for TMT184)

Р  $\leq 750 \text{ mW} (\leq 5.5 \text{ W for TMT184})$ 

| O |   | Approved                           | Date (yyyy-mm-dd)                        | Drawing No.        | Dwg.rev.     | Revision no. | Revision date (yyyy-mm-dd) | Name | Material 7     | 1038673  |   |
|---|---|------------------------------------|--|--------------------|--------------|--------------|----------------------------|------|----------------|----------|---|
|   |   | Pfanzelt                           | 2006-11-27                               | 16 01 00 114       |              |              |                            |      | ZD062R/09/6    | en/01.07 |   |
|   | Volume (mm³)                            | Designed                           | Date (yyyy-mm-dd)                        | Unit               | Scale        | Title        |                            |      |                |          | 1   |
|   |   | Pfanzelt                           | 2006-05-18                               | T13, T14, T53, T54 | 1:1          | CONTRO       | L DRAWING                  | G FM | Serie          | S        |   |
|   | Refer to protection notice<br>ISO 16016 | Edge of working parts<br>ISO 13715 | Geometrical tolerancing<br>ISO 2768-mH-E | Part No.           | Format<br>A4 | XP, NI, DI   | P                          |      | Objekt version |          | Endress + Hauser Wetzer<br>GmbH+Co. KG Nesselwang/Germany |

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