

Hazardous (Classified) Location  
Class I / Division 1 / Groups ABCD  
Class I / Zone 0 / Ex ia IIC  
Class I / Division 2 / Groups ABCD  
Class II / Division 1 / Groups EFG  
Class III / Division 1 / Hazardous Locations



Nonhazardous Locations

CSA Approved Associated Apparatus  
or Associated Nonincendive Field  
Wiring Apparatus

e.g. RTD or TC Sensor  
(Simple Apparatus)  
integral or remote mounted  
option 2 channels

CSA Approved Programming  
Handheld Device

#### Temperature range

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

**INTRINSICALLY SAFE**  
**NONINCENDIVE, FIELD WIRING**

**Class I / Div. 1 / Groups ABCD**  
**Class I / Div. 2 / Groups ABCD**

Sensor circuits (Terminals 1...6)

|                                 |                               |                         |
|---------------------------------|-------------------------------|-------------------------|
| $U_o$ or $V_o$ or $V_t = 7.6$ V | $I_o$ or $I_{sc} = 29.3$ mA   | $P_o = 55.6$ mW         |
| Group A, B resp. IIC            | $C_o$ or $C_a = 10.4$ $\mu$ F | $L_o$ or $L_a = 40$ mH  |
| Group C resp. IIB               | $C_o$ or $C_a = 160$ $\mu$ F  | $L_o$ or $L_a = 150$ mH |
| Group D resp. IIA               | $C_o$ or $C_a = 1000$ $\mu$ F | $L_o$ or $L_a = 300$ mH |

#### Installation Notes TMT 162



- CSA approved apparatus must be installed in accordance with manufacturer's instructions.
- Use supply wires suitable for 5°C above surroundings.
- Stating that only simple apparatus should be terminated to the sensor connection.  
Simple apparatus is defined as a device that will neither generate nor store more than 1.2V, 0.1A, 0.25mW or 20 $\mu$ J. Examples are Thermocouples or RTDs.

#### INTRINSICALLY SAFE

**Class I / Div. 1 / Groups ABCD**

- Installation should be in accordance with the Canadian Electrical Code (CEC).
- CSA Approved Associated Apparatus must meet the following parameters:  
 $U_o \leq U_i$     $I_o \leq I_i$     $P_o \leq P_i$     $C_a \geq C_i + C_{cable}$     $L_a \geq L_i + L_{cable}$   
Transmitter entity parameters are as follows:  
 $U_i$  or  $V_{max} \leq 30$  V DC    $C_i = 5.3$  nF  
 $I_i$  or  $I_{max} \leq 300$  mA    $L_i = 0$   
 $P_i \leq 1000$  mW
- $V_{oc} + V_{oc}$  of Handheld device <  $V_{max}$ ,  $I_{sc} + I_{sc}$  of Handheld device <  $I_{max}$ ,  
 $P_o + P_o$  of Handheld device <  $P_i$ ,  $C_a > C_i + C_{cable} + C_i$  of Handheld device,  
 $L_a > L_i + L_{cable} + L_i$  of Handheld device, when Programming Handheld device is used.
- Warning: Substitution of components may impair intrinsic safety.

#### NONINCENDIVE

**Class I / Div. 2 / Groups ABCD**

- Intrinsic safety barrier is not required.  $V_{max} \leq 40$  V DC.
- 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  $V_{oc} \leq V_{max}$ ,  $C_a \geq C_i + C_{cable}$ ,  $L_a \geq L_i + L_{cable}$ .  
Transmitter Nonincendive Field Wiring parameters are as follows:  
 $U_i$  or  $V_{max} \leq 40$  V DC    $C_i = 5.3$  nF    $L_i = 0$   
 $I_i$  or  $I_{max}$  = see following note below  
For these current controlled circuits, the parameter  $I_{max}$  is not required and need not to be aligned with parameter  $I_{sc}$  and  $I_t$  of the Associated Nonincendive Field Wiring Apparatus or Associated Apparatus.

#### Functional ratings

These ratings do not supersede Hazardous Location values  
 $U_{nom} \leq 40$  DC    $I_{nom} \leq 4$  to 20 mA

|                                         |                                    |                                          |                             |               |                                                                  |                                          |                  |                                              |                                                                |
|-----------------------------------------|------------------------------------|------------------------------------------|-----------------------------|---------------|------------------------------------------------------------------|------------------------------------------|------------------|----------------------------------------------|----------------------------------------------------------------|
|                                         | Approved<br>Kellermann             | Date (yyyy-mm-dd)<br>2002-07-22          | Drawing No.<br>14 12 00 112 | Dwg.rev.<br>A | Revision no.<br>T04501                                           | Revision date (yyyy-mm-dd)<br>2004-11-10 | Name<br>Pfanzelt | Material<br>510 05927<br>ZD 024R/09/en/11.04 | Endress+Hauser                                                 |
| Volume (mm³)                            | Designed<br>Kellermann             | Date (yyyy-mm-dd)<br>2002-07-22          | Unit<br>iTEMP TMT162        | Scale<br>1:1  | Title<br>CONTROL DRAWING CSA<br>Intrinsical safety, Nonincendive |                                          |                  | Series                                       |                                                                |
| Refer to protection notice<br>ISO 16016 | Edge of working parts<br>ISO 13715 | Geometrical tolerancing<br>ISO 2768-mH-E | Part No.<br>-               | Format<br>A4  |                                                                  |                                          |                  | Objekt version<br>1 of 1                     | Endress + Hauser Wetzer<br>GmbH+Co. KG<br>Nesselwang / Germany |