

Safety Instruction

Prothermo NMT539

Average Temperature

IECE_x KEM 10.0058 X

Safety Instructions for Electrical Apparatus Certified
for Use in Explosion-hazardous Areas

Designation according to IECE_x 02

Equipment Protection Level (EPL): Ga/Gb or Gb

Hazardous Zone at Mounting Point		Ignition Protection Provided		
		Ga	Gb	Gc
Hazard due to explosive gas-air mixture	Zone 0	○	×	×
Hazard due to explosive gas-air mixture	Zone 1	○	○	×
Hazard due to explosive gas-air mixture	Zone 2	○	○	○

○ : Applicable ×: Not Applicable

Designation of Explosion Protection

Converter with sensor

Converter only

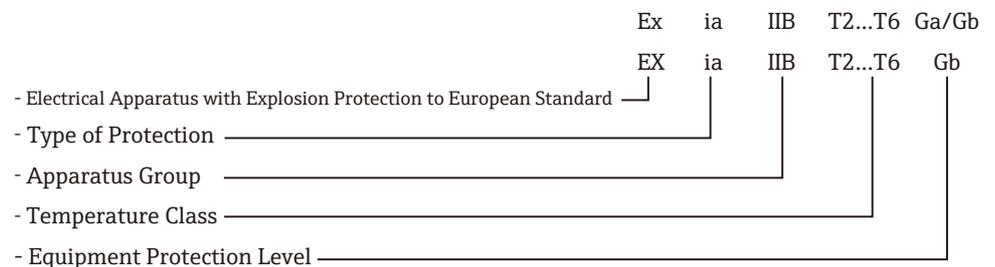


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NMT539 Product Type and Installation

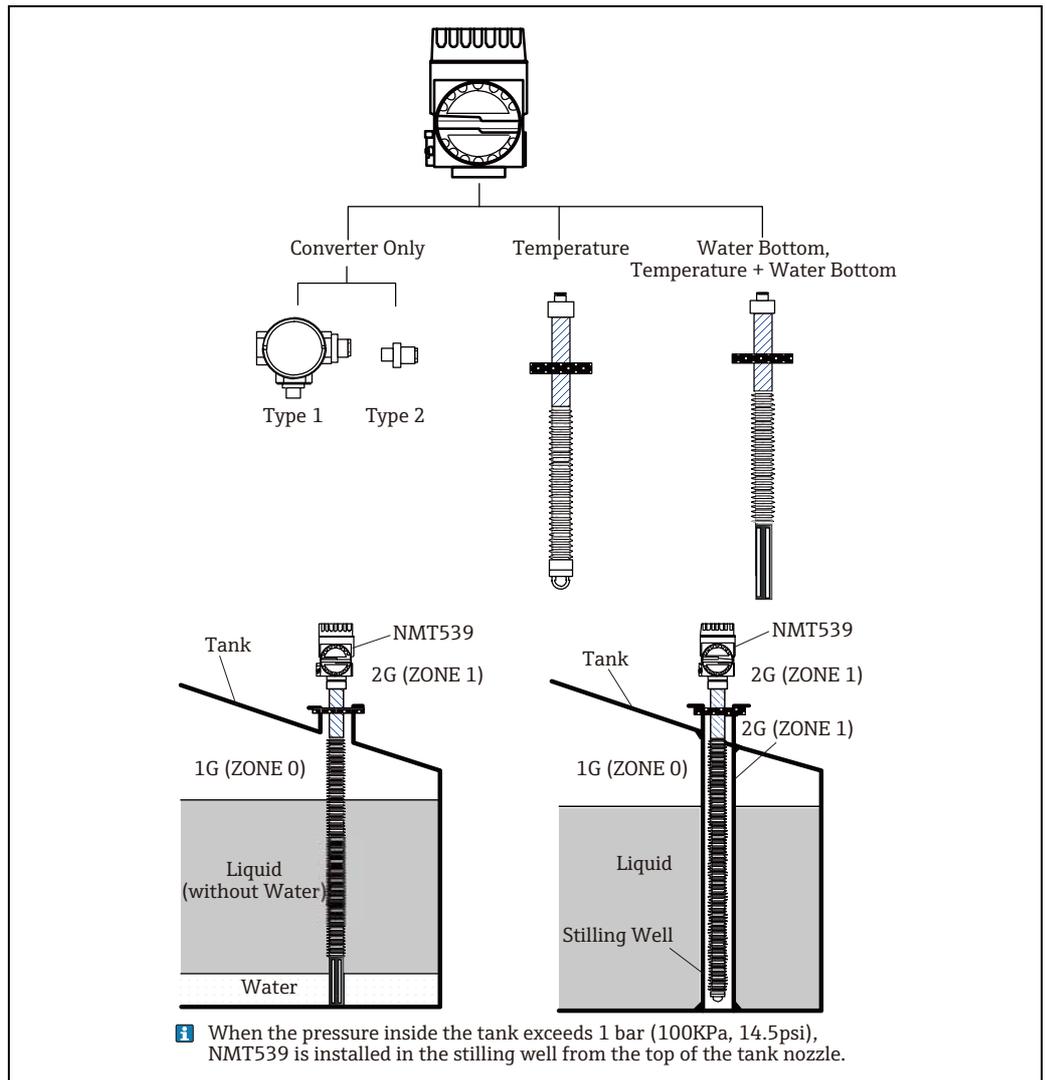


Figure 1: Product Type and Installation

NMT539 Terminal Board Layout

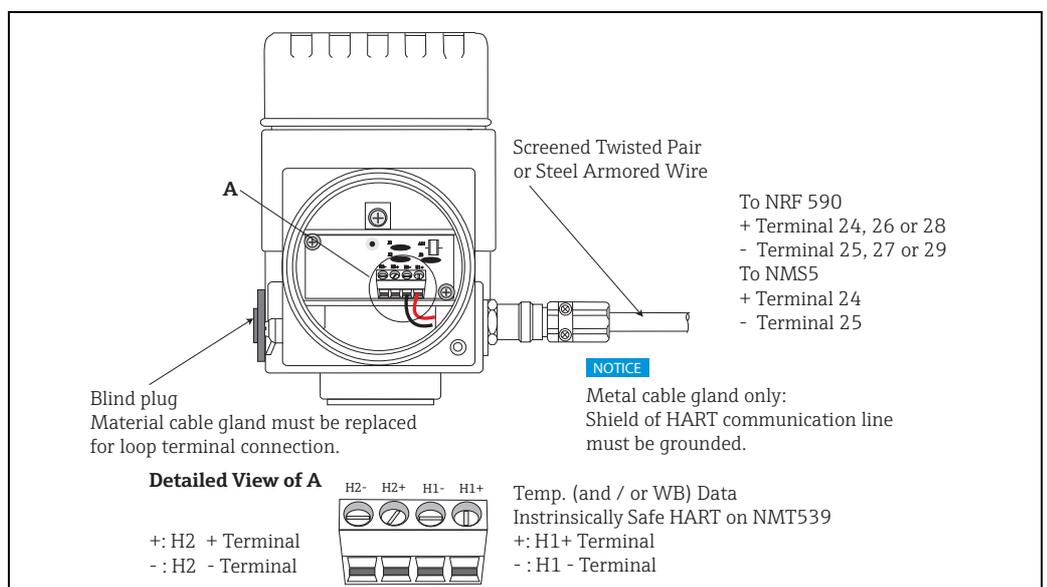


Figure 2: Description of Terminal Board

1 Safety Notes for Installation in Hazardous Areas

- Install NMT539 according to the manufacturer's instructions and any other valid standards and guidelines.
- Avoid electrostatic charge at the surface when NMT539 is equipped with WB sensor (capacitance sensor for water I/F detection).

2 Guideline for Safety Use

2.1 Electrical Data

2.1.1 Supply and Output Circuit; All Versions (Terminals H1+ and H1-)

This is only for connection to a certified intrinsically safe circuit with the following maximum values.

$U_i = 30 \text{ V}$ $I_i = 120 \text{ mA}$ $P_i = 1 \text{ W}$	Internal capacitance $C_i = 7.9 \text{ nF}$ Internal inductance $L_i = 48 \text{ } \mu\text{H}$
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2.1.2 Converter Only

For connection to an external temperature probe, with following maximum values (trapezoidal characteristic)

$U_o = 8.6 \text{ V}$ $I_o = 71 \text{ mA}$ $P_o = 153 \text{ mW}$	External capacitance $C_o = 9.5 \text{ } \mu\text{F}$ External inductance $L_o = 7.5 \text{ mH}$
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The level sensor circuit is connected to ground and is infallibly galvanically isolated from the supply and output circuit and from temperature measurement circuit.

2.2 Ambient Temperature and Medium Temperature

The ambient temperature for the transmitter is minimum -40°C .

The relation between the ambient temperature, the process temperature and the temperature class is shown in the following table.

Temperature class	Ambient temperature	Medium temperature of Sensor	
		Temperature measurement only	Temperature measurement and water level or water level only
T6	$\leq 60^\circ\text{C}$	$\leq 60^\circ\text{C}$	$\leq 60^\circ\text{C}$
T5	$\leq 85^\circ\text{C}$	$\leq 80^\circ\text{C}$	$\leq 80^\circ\text{C}$
T4	$\leq 85^\circ\text{C}$	$\leq 100^\circ\text{C}$	$\leq 100^\circ\text{C}$
T3	$\leq 85^\circ\text{C}$	$\leq 175^\circ\text{C}$	$\leq 125^\circ\text{C}$
T2	$\leq 85^\circ\text{C}$	$\leq 235^\circ\text{C}$	---

2.3 Temperature Sensor Tube Installation

- All metal parts of the sensor and transmitter shall electrically conductive and securely be connected to the potential equalization system within the hazardous area.
 - In order to exclude ignition sources due to impact and friction sparks, even in the event of rare incidents, the temperature sensor tube shall not be subject to environmental stress, such as impact from moving parts, and the bottom parts shall be secured.
1. Continuous duty temperature of the cable $\geq T_{amb} + 5 K$
 2. When taking out and winding the flexible tube, keep the length a minimum of 1 meter in diameter. When attaching and bending the flexible tube, the radius of curvature must be 500mm or more (19.69") at any bend portion.

2.4 Mounted in Area Ga

When the enclosure of the Transmitter Model Prothermo is made of aluminum, if it is mounted in an area where the use of EPL Ga equipment is required, it must be installed such, that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded the temperature sensor tube shall not be subject to environmental stress, such as impact from moving parts, and the bottom part shall be secured. Precautions shall be taken to minimize the risk from electrostatic discharge of painted parts.

2.5 Withstanding Voltage

Circuit is not capable of withstanding 500 V, between signal and ground, according to clause 6.3.13 of IEC60079-11, this is limited to a maximum voltage of 250 V.

3 Safety Notes for Zone 0

Potentially explosive vapor/air mixtures may arise under atmospheric conditions only:

- $-20^{\circ}\text{C} \leq T \leq +60^{\circ}\text{C}$
- $0.8 \text{ bar} \leq P \leq 1.1 \text{ bar}$

Associated apparatus with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

4 Applied Standards

The following standards are effective for NMT539.

- IEC 60079 - 0 Edition 5.0: 2011
- IEC 60079 -11 Edition 6.0: 2011
- IEC 60079 - 26 Edition 2.0: 2006

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