

# Safety Instructions

## Prothermo NMT81

ATEX: II 1/2G Ex ia IIC T6...T2 Ga/Gb  
II 1/2G Ex ia IIB T6 Ga/Gb  
II 2G Ex ia IIC T6 Gb

IECEX: Ex ia IIC T6...T2 Ga/Gb  
Ex ia IIB T6 Ga/Gb  
Ex ia IIC T6 Gb



**EU-Konformitätserklärung**  
**EU-Declaration of Conformity**  
**Déclaration UE de Conformité**

**Endress+Hauser**   
 People for Process Automation



**Company** **Endress+Hauser Yamanashi Co., Ltd.**  
**862-1 Mitsukunugi Sakaigawa-cho, Fuefuki-shi,**  
**Yamanashi Prefecture, 406-0846 Japan**  
 erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt  
 declares as manufacturer under sole responsibility, that the product  
 déclare sous sa seule responsabilité en qualité de fabricant que le produit

**Product** **PROTHERMO**  
**NMT81**

**Regulations** den folgenden Europäischen Richtlinien entspricht:  
 conforms to following European Directives:  
 est conforme aux prescriptions des Directives Européennes suivantes :

ATEX	2014/34/EU (L96/309)
EMC	2014/30/EU (L96/79)
RoHS	2011/65/EU (L174/B8)+ 2015/863/EU (L137/10)

**Standards** angewandte harmonisierte Normen oder normative Dokumente:  
 applied harmonized standards or normative documents:  
 normes harmonisées ou documents normatifs appliqués:

EN 60079-0	(2018)	EN 60529	(1991) + A1(2000) + A2(2013)
EN 60079-11	(2012)	EN 61010-1	(2010) + A1(2019)
EN 60079-26	(2015)	EN 61326-1	(2013)
EN IEC63000	(2018)	EN 61326-2-3	(2013)

<b>Certification</b>	EG-Baumusterprüfbescheinigung Nr. EC-Type Examination Certificate No. Numéro de l'attestation d'examen CE de typ	CML 20ATEX2305X
	Ausgestellt von/issued by/délivré par Qualitätssicherung Quality assurance Système d'assurance qualité	Eurofins E&E CML Limited (2776) TÜV Nord CERT (GmbH) (0044)

Yamanashi, 24 May 2021  
 (Ort und Datum)  
 (Place and Date)  
 (Lieu et date)

  
 i.V. Mr. Kotaro Wariishi  
 Geschäftsführer  
 General Manager  
 Directeur général

# Prothermo NMT81

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<b>Associated documentation</b>	This document is an integral part of the following Operating Instructions: BA02038G										
<b>Supplementary documentation</b>	Explosion-protection brochure: CP00021Z/11 The Explosion-protection brochure is available: <ul style="list-style-type: none"> <li>■ In the download area of the Endress+Hauser website: <a href="http://www.endress.com">www.endress.com</a> -&gt; Downloads -&gt; Media Type: Documentation -&gt; Documentation Type: Brochures and catalogs -&gt; Text Search: CP00021Z</li> <li>■ On the CD for devices with CD-based documentation</li> </ul>										
<b>Manufacturer's certificates</b>	<p><b>EU Declaration of Conformity</b></p> <p>→  2</p> <p><i>EU type-examination certificate</i></p> <p>Certificate number: CML 20 ATEX 2305X List of applied standards: See EU Declaration of Conformity.</p> <p><b>IEC Declaration of Conformity</b></p> <p>Certificate number: IECEX CML 20.0170X</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none"> <li>■ IEC 60079-0 : 2017</li> <li>■ IEC 60079-11 : 2011</li> <li>■ IEC 60079-26 : 2014</li> <li>■ IEC 60529 : 2013</li> </ul>										
<b>Manufacturer address</b>	Endress+Hauser Yamanashi Co., Ltd. 406-0846 862-1 Mitsukunugi, Sakaigawa-cho, Fuefuki-shi, Yamanashi										
<b>Extended order code</b>	<p>The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.</p> <p><b>Structure of the extended order code</b></p> <table style="margin-left: auto; margin-right: auto; border: none;"> <tr> <td style="text-align: center;">NMT81</td> <td style="text-align: center;">–</td> <td style="text-align: center;">*****</td> <td style="text-align: center;">+</td> <td style="text-align: center;">A*B*C*D*E*F*G*..</td> </tr> <tr> <td style="text-align: center;"><i>(Device type)</i></td> <td></td> <td style="text-align: center;"><i>(Basic specifications)</i></td> <td></td> <td style="text-align: center;"><i>(Optional specifications)</i></td> </tr> </table> <p>* = Placeholder At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.</p> <p><i>Basic specifications</i></p> <p>The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.</p>	NMT81	–	*****	+	A*B*C*D*E*F*G*..	<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>
NMT81	–	*****	+	A*B*C*D*E*F*G*..							
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>							

*Optional specifications*

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

**Extended order code: Prothermo**

The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

*Device type*

NMT81

*Basic specifications*

Position 1, 2 (Approval)		
Selected option		Description
NMT81	BB	ATEX/IEC II 1/2G Ex ia IIC T6 Ga/Gb
	B2	ATEX/IEC II 1/2G Ex ia IIB T6 Ga/Gb
	B3	ATEX/IEC II 2G Ex ia IIC T6 Gb

Position 6 (Housing ; Material)		
Selected option		Description
NMT81	M	Dual compartment L-shape; Alu, coated
	N	Dual compartment L-shape; 316L

Position 7 (Electrical Connection)		
Selected option		Description
NMT81	F	Thread M20, IP66/68 Type 4X/6P
	G	Thread G1/2, IP66/68 Type 4X/6P
	H	Thread NPT1/2, IP66/68 Type 4X/6P

Position 8 (Application temperature)		
Selected option		Description
NMT81	A	Converter, not selected
	F	Process max -40 to 75 °C (-40 to 167 °F)
	G	Process max -55 to 235 °C (-67 to 455 °F)
	H	Process max -196 to 100 °C (-320.8 to 212 °F)

Position 19, 20 (Water bottom length)		
Selected option		Description
NMT81	00	W/o
	05	500 mm (19.69 in)
	10	1 000 mm (39.37 in)
	20	2 000 mm (78.74 in)

**Safety instructions: General**

- Comply with the installation and safety instructions in the Operating Instructions.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application and the temperature class.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

**Safety instructions:  
Special conditions**

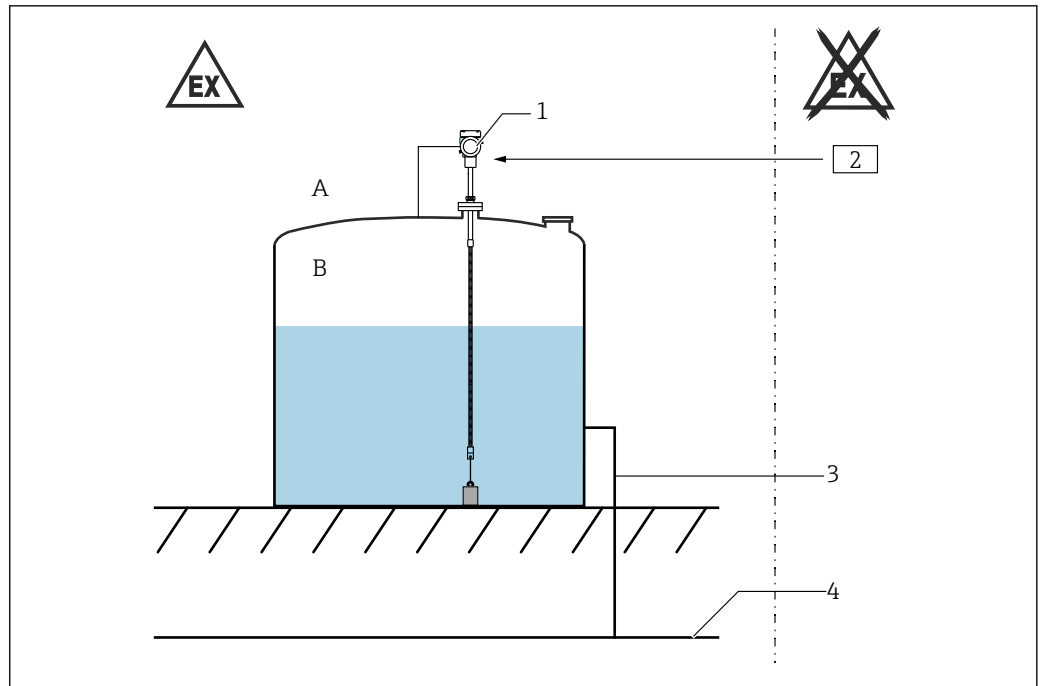
Permitted ambient temperature range at the electronics housing:

$-40\text{ °C} \leq T_a \leq +60\text{ °C}$

Observe the information in the temperature table on page →  8

- Use supply wires suitable for 20 K above the ambient temperature.
- In the event of additional or alternative special varnishing on the housing or other metal parts:
  - Observe the danger of electrostatic charging and discharge.
  - Do not rub surfaces with a dry cloth.
  - Do not install in the vicinity of processes generating strong electrostatic charges.
- The apparatus is not capable of withstanding the 500V insulation test required by Clause 6.3.13 of EN 60079-11:2012/ IEC60079-11:2012. This must be taken into account when installing the equipment.

### Safety instructions: Installation



- A Zone 1, Zone 2  
 B Tank; Zone 0, Zone 1  
 1 Prothermo NMT81  
 2 Power supply  
 3 Potential equalization line  
 4 Potential equalization

- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Pay particular attention to the following points to prevent leakage of gas or vapor.
  - Connection of equipment and tank connection flange.
  - When opening the cover and reclosing it.
    - If the O-ring is deteriorated or deformed, replace it with a new O-ring.
- Continuous operating temperature of external wiring cable: See → 6
- In potentially explosive atmospheres:
  - Do not disconnect the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover.

#### Potential equalization

Integrate the device into the local potential equalization.

#### Measure low or high temperature liquid

- The process temperature shall not bring the enclosure of the electronics compartment beyond the specified ambient temperature range limits.
- When installing high or low temperature storage tank, heat or cold from the liquid, the vapor or tank wall should not be conducted to the NMT81 directly.
- Cover the tank with a thermal isolation material and/or install an ambient temperature adjustment pipe between NMT81 and nozzle of the tank.

### Safety instructions: Zone 0

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
  - Temperature: -20 to +60 °C
  - Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
  - Air with normal oxygen content, usually 21 % (V/V)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.

**Temperature tables**

The ambient temperature and the process temperature are specified as below table.

T-Class	Temperature specification	T ambient	T process <sup>1)</sup>	
			Temperature only	Temperature + WB
T6	Standard	$-40\text{ °C} \leq T_a \leq 60\text{ °C}$	$-40\text{ °C} \leq T_p \leq 75\text{ °C}$	$-40\text{ °C} \leq T_p \leq 70\text{ °C}$
	Low Temp.		$-196\text{ °C} \leq T_p \leq 75\text{ °C}$	-
T4...T2	Standard	$-40\text{ °C} \leq T_a \leq 70\text{ °C}$	$-40\text{ °C} \leq T_p \leq 75\text{ °C}$	$-40\text{ °C} \leq T_p \leq 75\text{ °C}$
	High Temp.		$-55\text{ °C} \leq T_p \leq 235\text{ °C}$	-
	Low Temp.		$-196\text{ °C} \leq T_p \leq 100\text{ °C}$	-

1) T process varies depending on the specification of the sensor if the convertor only is selected.

**Connection data**

*Average temperature probe + Converter*

Power supply
$U_i = 30\text{ V}$
$I_i = 300\text{ mA}$
$P_i = 1\text{ W}$
$C_i = 10\text{ nF}$
$L_i = 0$

*Converter only*

Power supply
$U_o = 7\text{ V}$
$I_o = 68\text{ mA}$
$P_o = 250\text{ mW}$
$C_o = 15.58\text{ uF}$ (for $L_o = 0$ )
$L_o = 5\text{ mH}$ (for $C_o = 0$ )

**Others**

- The contents of this document may be added or changed without notice when new knowledge about explosion protection or safety is obtained.
- Keep this document together with the instruction manual (BA).





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