

# Safety Instructions

## Proline Promass 500

UKEX: II2G, II1/2G  
II2D





# Proline Promass 500

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**Associated documentation**

All documentation is available:

- On the CD-ROM supplied (not included in the delivery for all device versions).
- Available for all device versions via:
  - Internet: [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)
  - Smart phone/tablet: *Endress+Hauser Operations App*
- In the Download Area of the Endress+Hauser web site: [www.endress.com](http://www.endress.com) → Download.

This document is an integral part of the following Operating Instructions:

Measuring device	Documentation code			
	HART	FOUNDATION Fieldbus	PROFIBUS PA	PROFIBUS DP
Promass A 500 (8A5B)	BA01526D	BA01559D	BA01548D	–
Promass A 500 (8A5C)	BA01817D	BA01883D	BA01869D	BA01870D
Promass E 500	BA01528D	BA01561D	BA01550D	BA01872D
Promass F 500	BA01529D	BA01562D	BA01551D	BA01873D
Promass H 500	BA01530D	BA01563D	BA01552D	BA01874D
Promass I 500	BA01531D	BA01564D	BA01553D	BA01875D
Promass O 500	BA01532D	BA01565D	BA01554D	BA01876D
Promass P 500	BA01533D	BA01566D	BA01555D	BA01877D
Promass Q 500	BA01534D	BA01567D	BA01556D	BA01878D
Promass S 500	BA01535D	BA01568D	BA01557D	BA01879D
Promass X 500	BA01536D	BA01569D	BA01558D	BA01880D

Measuring device	Documentation code		
	Modbus RS485	EtherNet/IP	PROFINET
Promass A 500 (8A5B)	BA01537D	BA01747D	BA01758D
Promass A 500 (8A5C)	BA01884D	BA01885D	BA01886D
Promass E 500	BA01539D	BA01749D	BA01760D
Promass F 500	BA01540D	BA01750D	BA01761D
Promass H 500	BA01541D	BA01751D	BA01762D
Promass I 500	BA01542D	BA01752D	BA01763D
Promass O 500	BA01543D	BA01753D	BA01764D
Promass P 500	BA01544D	BA01754D	BA01765D
Promass Q 500	BA01545D	BA01755D	BA01766D

Measuring device	Documentation code		
	Modbus RS485	EtherNet/IP	PROFINET
Promass S 500	BA01546D	BA01756D	BA01767D
Promass X 500	BA01547D	BA01757D	BA01768D

*Additional documentation*

Contents	Document type	Documentation code
Explosion Protection	Brochure	CP00021Z/11

Please note the documentation associated with the device.

**Manufacturer's certificates**

**UK Declaration of Conformity**

Documentation code: UK\_00054

**UKCA type-examination certificate**

Certificate number: CML 21UKEX1236X

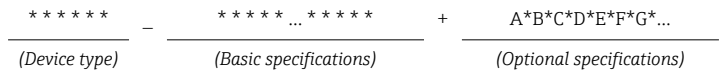
**Manufacturer address**

Endress+Hauser Flowtec AG  
 Kägenstrasse 7  
 4153 Reinach BL  
 Switzerland

**Extended order code**

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.

**Structure of the extended order code**



\* = Placeholder  
 At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

*Device type*

The device and the device design is defined in the "Device type" section (Product root).

### *Basic specifications*

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.

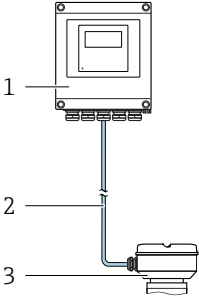
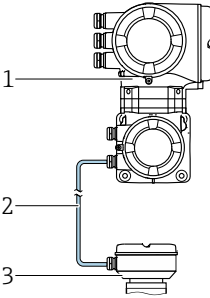
### *Optional specifications*

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.

### **Device type**

<b>Position</b>	<b>Order code for</b>	<b>Option selected</b>	<b>Description</b>
1	Instrument family	8	Coriolis flowmeter
2	Sensor	A, E, F, H, I, O, P, Q, S, X	Sensor type
3	Transmitter	5	Transmitter type: 4-wire, remote version
4	Generation index	B, C	Platform generation
5, 6	Nominal diameter	DN 1 ... 350 DN 1: 01 DN 2: 02 ... DN 350: 3E, 3F, 3R	Nominal diameter of sensor

Proline 500 – digital	Proline 500
Order code for "Integrated ISEM Electronic", option <b>A</b> "Sensor"	Order code for "Integrated ISEM Electronic", option <b>B</b> "Transmitter"
 <p>1 Transmitter 2 Connecting cable 3 Sensor connection housing with integrated ISEM</p>	 <p>1 Transmitter with integrated ISEM 2 Connecting cable 3 Sensor connection housing</p>

### Basic specifications

Position 1, 2 Order code for "Approval" Option selected	Position 10 Order code for "Integrated ISEM electronics" Option selected	Type of protection	
		Transmitter	Sensor
UA	B	Ex db eb ia [ia Ga] IIB T6...T5 Gb Ex tb [ia Da] IIIC T85°C Db	Ex ia IIB T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UB	B	Ex db eb ia [ia Ga] IIC T6...T5 Gb Ex tb [ia Da] IIIC T85°C Db	Ex ia IIC T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UC	B	Ex db ia [ia Ga] IIB T6...T5 Gb Ex tb [ia Da] IIIC T85°C Db	Ex ia IIB T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UD	B	Ex db ia [ia Ga] IIC T6...T5 Gb Ex tb [ia Da] IIIC T85°C Db	Ex ia IIC T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UI	A	Ex ia  IIC  Ex ia  IIIC	Ex ia IIB T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UJ	A	Ex ia  IIC  Ex ia  IIIC	Ex ia IIC T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db

Position 1, 2 Order code for "Approval" Option selected	Position 10 Order code for "Integrated ISEM electronics" Option selected	Type of protection	
		Transmitter	Sensor
UM	A	Ex ec nC [ia Ga] IIC T5...T4 Gc <sup>2)</sup> [Ex ia Da] IIIC	Ex ia IIB T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db
UN	A	Ex ec nC [ia Ga] IIC T5...T4 Gc <sup>2)</sup> [Ex ia Da] IIIC	Ex ia IIC T6...T1 Ga/Gb <sup>1)</sup> Ex ia tb IIIC T** °C Db

- 1) Sensors Promass A DN 1, Promass H DN 8 to 50, Promass I DN 8 to 80 are only suitable for equipment protection level EPL Gb.
- 2) The marking changes with order code "Output; input 1", option HA or TA: Ex ec nC [ic] IIC T5...T4 Gc

Position	Order code for	Option selected	Description
4, 5	Output, input 1	BA	4-20mA HART
		CA	4-20mA Ex-i passive
		CC	4-20mA HART Ex-i active
		GA	PROFIBUS PA
		HA	PROFIBUS PA Ex-i
		LA	PROFIBUS DP
		MA	Modbus RS485
		NA	EtherNet/IP 2-port switch integrated
		RA	PROFINET IO 2-port switch integrated
		SA	FOUNDATION Fieldbus
		TA	FOUNDATION Fieldbus Ex-i
6	Output, input 2	A	W/o
		B	4-20mA
		C	4-20mA Ex-i passive
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		F	Pulse output, phase-shifted
		G	Pulse/frequency/switch output Ex-i passive
		H	Relay
		I	4-20mA input
		J	Status input
7	Output, input 3	A	W/o
		B	4-20mA



Position	Order code for	Option selected	Description
		C	4-20mA Ex-i passive
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		F	Pulse output, phase-shifted
		G	Pulse/frequency/switch output Ex-i passive
		H	Relay
		I	4-20mA input
		J	Status input
8	Output; input 4 <sup>1)</sup>	A	W/o
		B	4-20mA
		C	4-20mA Ex-i passive
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		G	Pulse/frequency/switch output Ex-i passive
		H	Relay
		I	4-20mA input
		J	Status input
9	Display; Operation	F	4-line, illuminated; touch control
		G	4-line, illuminated; touch control + WLAN
10	Integrated ISEM Electronic	A	Sensor
		B	Transmitter
11	Transmitter Housing	A	Alu, coated
		D	Polycarbonate
		L	Cast, stainless
12	Sensor junction Housing	A	Alu, coated
		B	Stainless
		C	Ultra compact hygienic, stainless
		L	Cast, stainless
15, 16	Meas. Tube Mat., Wetted Parts Surface	LA	Stainl. steel, cryogenic -196°C/-320°F
21, 22	Device Model	A1	1
		A2	2

1) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.

## Optional specifications

ID	Order code for	Option selected	Description
Jx	Test, certificate	JP	Ambient temperature, measuring device -50 °C
Jx	Test, certificate	JQ	Ambient temperature, transmitter-50 °C Ambient temperature, sensor-60 °C
Px	Enclosed accessories	P8	Wireless antenna, wide area (external WLAN antenna) <sup>1)</sup>

1) The external WLAN antenna is available with the order code for "Accessory Enclosed", option P8.

### Safety instructions: General

- 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 or guidelines (e.g. EN 60079-14)
- 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.
- 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 classes.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- When using in hybrid mixtures (gas and dust occurring simultaneously), observe additional measures for explosion protection.
- Open the housing cover of the transmitter housing in explosion protection Ex db only if one of the following conditions is met:
  - An explosive atmosphere is not present.
  - A waiting time of 10 minutes is observed after switching off the power supply.  
The following warning notice is on the device:  
WARNING – AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING ENCLOSURE IN TYPE OF PROTECTION EX D
- Observe all the technical data of the device (see nameplate).
- Avoid electrostatic charge (e.g. caused by friction, cleaning, maintenance, strong currents in the medium):  
on the attached stainless steel nameplate and on painted metallic housings that are not integrated into the local potential equalization system

**Safety  
instructions:  
Installation**

- Continuous service temperature of the connecting cable:  
–40 to +80 °C (–50 to +80 °C for optional specifications, ID Jx (Test, Certificate) = JP) (–60 to +80 °C for optional specifications, ID Jx (Test, Certificate) = JQ); in accordance with the range of service temperature taking into account additional influences of the process conditions ( $T_{a,min}$  and  $T_{a,max} + 20$  K).
- Only use certified cable entries suitable for the application. Observe selection criteria as per EN 60079-14.
- The following applies when connecting the transmitter with a connection compartment in Ex db:  
Only use separately certified cables and wire entries (Ex db IIC) which are suitable for operating temperatures up to 85 °C and for IP 66/67. If using conduit entries, the associated sealing mechanisms must be mounted directly on the housing.  
Plastic sealing plugs act as transport protection and have to be replaced by suitable, individually approved installation material. The mounted metal thread extensions and blind plugs are tested and certified as part of the housing for type of protection Ex db IIC. The thread extension or the blind plug labeled as follows for identification purposes:
  - Md: M20 x 1.5
  - d: NPT ½"
  - Gd: G ½"
- The following applies when connecting the transmitter with a connection compartment in Ex eb:  
Only use separately certified cable and wire entries and sealing plugs (Ex eb IIC) which are suitable for operating temperatures up to 85 °C and for IP 66/67. The cables must be routed such that they are securely seated, and sufficient strain relief must be ensured. The mounted metal thread extensions and blind plugs supplied are tested and certified as part of the housing for type of protection Ex eb IIC. Plastic sealing plugs act as transport protection and have to be replaced by suitable, individually approved installation material. Supplied cable glands are separately certified and marked as components and meet device specification requirements.
- When the measuring device is connected, attention must be paid to explosion protection at the transmitter.

- In potentially explosive atmospheres:
  - Do not disconnect the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover when energized.
- For measuring devices with order code "Approval", option UJ, UI the transmitter housing (plastic) is allowed to be installed at most in a Pollution Degree 2 environment.
- Basic specification, order code for "Sensor connection housing", option B:

To protect the housing of stainless steel housings: Ensure that the housing gasket is flat and not bent when closing the housing cover. Replace bent gaskets.
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the enclosure.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Only use certified sealing plugs. The metal sealing plugs supplied meet this requirement.
- Transmitters with Ex db eb approval must not be connected via the service interface (CDI-RJ45)! Order code "Approval; Transmitter + Sensor", options (Ex de): UA, UB

### **Optional external WLAN antenna**

- The external WLAN antenna can be used only in conjunction with an Ex eb or Ex ec connection compartment.

Order code for "Integrated ISEM Electronic", option B:  
Use with an Ex db connection compartment is not permitted.
- Connect the antenna bushing H337 to the transmitter housing and tighten by hand.
- Use only external antennas supplied by Endress+Hauser.
- Connect antenna or antenna cable with plug-in connector type N (MIL-STD-348) to antenna bushing H337.

### Intrinsic safety

- Observe the guidelines for interconnecting intrinsically safe circuits (e.g. EN 60079-14 , Proof of Intrinsic Safety).
- When the intrinsically safe Ex ia circuits of the device are connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC or IIB, the type of protection changes to Ex ib IIC or Ex ib IIB.
- Proline 500 - digital (Order code for "Integrated ISEM electronics", option A)  
The connecting cables between the transmitter and sensor must meet the following requirements:
  - Group IIC:  $L/R \leq 0.0089 \text{ mH}/\Omega$  or  $L_{\text{cable}} \leq 26 \text{ }\mu\text{H}$  and  $C_{\text{cable}} \leq 760 \text{ nF}$
  - Group IIB:  $L/R \leq 0.0356 \text{ mH}/\Omega$  or  $L_{\text{cable}} \leq 104 \text{ }\mu\text{H}$  and  $C_{\text{cable}} \leq 4.2 \text{ }\mu\text{F}$
- Proline 500 (Order code for "Integrated ISEM electronics", option B)  
Connecting cables with a maximum length of 120 m must meet the following requirements:
  - Core/shield capacitance: maximum 0.5 pF/m  
(Inductance: maximum 0.5  $\mu\text{H}/\text{m}$ )
  - The connecting cables supplied meet this requirement.

### Potential equalization

- Integrate the device into the local potential equalization .
- If the ground connection has been established via the pipe as specified, it is also possible to integrate the sensor into the potential equalization system via the pipe.
- The antenna bushing H337 of the external antenna must be integrated into the local potential equalization system. This is the case if the sensor is connected in accordance with the regulations via the coupling.

### Safety instructions: Zone 0

For sensors with EPL Ga/Gb the zone 0 is permitted in the measuring tube.

### Safety instructions: Zone 21

- To ensure dust-tightness, securely seal all housing openings, cable entries and sealing plugs.
- Only open all housing briefly, ensuring that no dust or moisture enters the housing.
- Cable routing shall be arranged so that the cables are not exposed to friction effects and static buildup due to the passage of dust. Precautions shall be taken to prevent the build-up of static on surfaces of cables.

## Temperature tables

### NOTICE

#### In case of heating, risk of overheating.

- ▶ On devices with Heating jacket the corresponding temperature tables for isolated sensor, are to be observed.
- ▶ Make sure that the heating medium, may not exceeded the maximum specified medium temperature of the exact used temperature classes of the device.

#### Ambient temperature

##### Minimum ambient temperature

- $T_a = -40\text{ °C}$  depending on the selected device variant (see nameplate)
- *Optional specification, ID Jx (Test, Certificate) = JP*  
 $T_a = -50\text{ °C}$  depending on the selected device variant (see nameplate)
- Promass F, Q, X with order code "Integrated ISEM electronics", Option **B** and order code "Test, Certificate", Option **JQ**:
  - Sensor:  $-60\text{ °C}$
  - Transmitter:  $-50\text{ °C}$

##### Maximum ambient temperature

$T_a = +60\text{ °C}$  depending on the temperature class

#### Proline 500 – digital transmitter

##### Non-hazardous area, Zone 2

Transmitter housing material	$T_a\text{ [°C]}$			
	Non-hazardous area	T6	T5	T4
Aluminum	60	-	45	60
Polycarbonate	60	-	-	-

#### Proline 500 transmitter

##### Zone 1

$T_a\text{ [°C]}$	
T6	T5
55	60

##### Zone 21

Maximum surface temperature $T_a = 60\text{ °C}$	85 °C
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## Medium temperature

### *Minimum medium temperature*

- Promass A, F, H, I, P, Q, S, X:  
 $T_m = -50\text{ °C}$
- Promass E, O:  
 $T_m = -40\text{ °C}$
- Promass F, Q with cryogenic temperature version (order code for "Measuring tube material", option LA):  
 $T_m = -196\text{ °C}$

### *Maximum medium temperature*

- $T_m$  for T6...T1 depending on the maximum ambient temperature  $T_a$
- ( ) = The maximum permitted medium temperatures in brackets only apply if the sensor is installed in such a way that the connection housing is not mounted above the sensor and free convection can occur on all sides.

**Proline 500 – digital**

Order code for "Integrated ISEM electronics", option A "Sensor"

*Maximum medium temperature without thermal insulation according to Endress+Hauser specifications*

*Promass A (8A5B\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	35	205	60	95	130	150	205	205
	50		-	95	130	150	205	205
	60		-	-	130	150	205	205

*Promass A (8A5C\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	35	205	55	85	130	150	205	205
	50		-	95	130	150	205	205
	55		-	-	130	150	205	205
	60		-	-	130	150	190	190

*Promass E*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	35	150	40	60	130	130	150	150
	50		-	60	130	130	150	150
	60		-	-	130	130	150	150
80	35	150	40	60	110	150	150	150
	50		-	60	110	150	150	150
	60		-	-	110	150	150	150



## Promass F

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...50	35	150	40	65	130	150	150	150
	50		-	65	130	150	150	150
	60		-	-	130	130	130	130
	35	150 <sup>2)</sup>	40	65	130	150	150	150
	50		-	65	130	150	150	150
	60		-	-	130	150	150	150
	35	240	40	65	130	160	240	240
	50		-	65	130	160	240	240
	60		-	-	130	160	240	240
15...25	35	350	40	80	130	175	275	350
	50		-	80	130	175	275	350
	60		-	-	130	175	240 (275)	240 (350)
80...250	35	150	40	65	110	150	150	150
	50		-	65	110	150	150	150
	60		-	-	110	130	130	130
	35	150 <sup>2)</sup>	40	65	110	150	150	150
	50		-	65	110	150	150	150
	60		-	-	110	150	150	150
	35	240	40	65	110	170	240	240
	50		-	65	110	170	240	240
	60		-	-	110	170	240	240
50...250	35	350	40	80	120	175	275	350
	50		-	80	120	175	275	350
	60		-	-	120	175	240 (275)	240 (350)

- 1) Maximum temperature range, see nameplate
- 2) Cryogenic temperature version: T<sub>m</sub> = -196 to 150 °C

*Promass H*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	40	65	100	150	150	150
	50		-	65	100	150	150	150
	60		-	-	100	150	150	150
	35	205	40	65	100	160	205	205
	50		-	65	100	160	205	205
	60		-	-	100	160	205	205
15...50	35	150	40	65	115	150	150	150
	50		-	65	115	150	150	150
	60		-	-	115	150	150	150
	35	205	40	65	115	180	205	205
	50		-	65	115	180	205	205
	60		-	-	115	180	205	205

1) Maximum temperature range, see nameplate

*Promass I*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...80	35	150	45	70	115	140	140	150
	50		-	70	115	140	140	150
	55		-	-	115	140	140	150
	60		-	-	115	140	140	140

*Promass O*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80 ... 250	35	205	45	65	110	170	205	205
	50		-	65	110	170	205	205
	60		-	-	110	170	205	205

*Promass P*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	45	65	100	150	150	150
	50		-	65	100	150	150	150
	60		-	-	100	150	150	150
	35	205	45	65	100	160	205	205
	50		-	65	100	160	205	205
	60		-	-	100	160	205	205
15...50	35	150	45	65	110	150	150	150
	50		-	65	110	150	150	150
	60		-	-	110	150	150	150
	35	205	45	65	110	180	205	205
	50		-	65	110	180	205	205
	60		-	-	110	180	205	205

1) Maximum temperature range, see nameplate

*Promass Q*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25 ... 100	35	205	45	65	100	160	205	205
	50		-	65	100	160	205	205
	60		-	-	100	160	205	205
	35	150 <sup>2)</sup>	45	65	100	150	150	150
	50		-	65	100	150	150	150
	60		-	-	100	150	150	150

1) Maximum temperature range, see nameplate

2) Cryogenic temperature version: T<sub>m</sub> = -196 to 150 °C

*Promass S*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	45	65	100	150	150	150
	50		-	65	100	150	150	150
	60		-	-	100	150	150	150
15...50	35	150	45	65	110	150	150	150
	50		-	65	110	150	150	150
	60		-	-	110	150	150	150

*Promass X*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	35	180	45	65	110	170	180	180
	50		-	65	110	170	180	180
	60		-	-	110	170	180	180

*Maximum medium temperature with thermal insulation according to Endress+Hauser specifications*



For information on the thermal insulation of the device, see the "Thermal insulation" section of the "Operating instructions" document .

*Promass A (8A5B\*\*-\*..., 8A5C\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	35	205	40	90	90	150	150	150
	40		-	90	90	150	150	150
	45		-	-	90	150	150	150
	50		-	-	90	120	120	120

*Promass E*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	35	150	40	55	130	150	150	150
	50		-	55	130	150	150	150
80	35	150	40	55	110	150	150	150
	50		-	55	110	150	150	150

*Promass F*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...50	35	150	40	60	130	130	130	130
	45		-	60	130	130	130	130
	50		-	-	130	130	130	130
	35	150 <sup>2)</sup>	40	60	130	150	150	150
	45		-	60	130	150	150	150
	50		-	-	130	150	150	150
	35	240	40	60	130	160	240	240
	45		-	60	130	160	240	240
	50		-	-	130	160	240	240

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
15...25	35	350	40	80	130	175	275	350
	50		–	80	130	175	275	350
	60		–	–	130	175	240 (275)	240 (350)
80...250	35	150	40	60	110	130	130	130
	45		–	60	110	130	130	130
	50		–	–	110	130	130	130
	35	150 <sup>2)</sup>	40	60	110	150	150	150
	45		–	60	110	150	150	150
	50		–	–	110	150	150	150
	35	240	40	60	110	170	240	240
	45		–	60	110	170	240	240
	50		–	–	110	170	240	240
50...250	35	350	40	80	120	175	275	350
	50		–	80	120	175	275	350
	60		–	–	120	175	240 (275)	240 (350)

1) Maximum temperature range, see nameplate

2) Cryogenic temperature version: T<sub>m</sub> = –196 to 150 °C

### Promass H

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	40	65	100	150	150	150
	45		–	65	100	150	150	150
	55		–	–	100	150	150	150
	35	205	40	65	100	160	205	205
	45		–	65	100	160	205	205
	55		–	–	100	160	205	205
15...50	35	150	40	65	115	150	150	150
	45		–	65	115	150	150	150
	55		–	–	115	150	150	150

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	35	205	40	65	115	180	205	205
	45		-	65	115	180	205	205
	55		-	-	115	180	205	205

1) Maximum temperature range, see nameplate

### Promass I

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...80	35	150	45	70	90	150	150	150
	45		-	70	90	150	150	150
	50		-	-	90	120	120	-

### Promass O

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80...250	35	205	40	55	110	170	205	205
	50		-	55	110	170	205	205

### Promass P

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	40	55	100	150	150	150
	45		-	55	100	150	150	150
	50		-	-	100	120	120	120
	35	205	40	55	100	160	205	205
	50		-	55	100	160	205	205
	55		-	-	100	160	205	205
15...50	35	150	40	55	110	150	150	150
	45		-	55	110	150	150	150

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	50	205	-	-	110	120	120	120
	35		40	55	100	180	205	205
	50		-	55	100	180	205	205
	55		-	-	100	180	205	205

1) Maximum temperature range, see nameplate

### Promass Q

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25...100	35	205	40	55	100	160	205	205
	50		-	55	100	160	205	205
25...100	35	150 <sup>2)</sup>	40	55	100	150	150	150
	50		-	55	100	150	150	150

1) Maximum temperature range, see nameplate

2) Cryogenic temperature version: T<sub>m</sub> = -196 to 150 °C

### Promass S

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	35	150	40	55	100	150	150	150
	45		-	55	100	150	150	150
	50		-	-	100	120	120	120
15...50	35	150	40	55	110	150	150	150
	45		-	55	110	150	150	150
	50		-	-	110	120	120	120



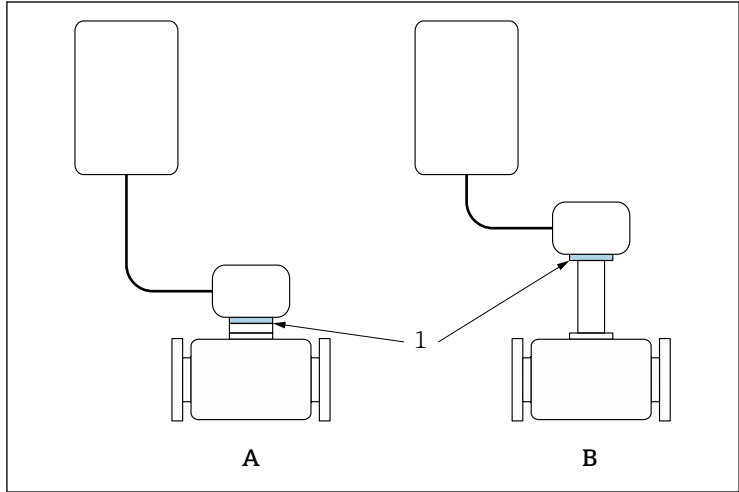
*Promass X*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	35	180	40	55	120	170	180	180
	50		-	55	120	170	180	180
	55		-	-	120	170	180	180

*With thermal insulation without Endress+Hauser specifications*

The specified reference temperature  $T_{ref}$  and the maximum medium temperature  $T_{m,max}$  for each temperature class must not be exceeded.

→ 21



A0031199

1 Position of reference point for temperature measurement

A Standard version

B Extended temperature version, cryogenic temperature version, high-temperature version

1 Reference point ( $T_{ref}$ )

Reference temperature  $T_{ref}$

T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
45	64	82	82	85	85

**Proline 500**

Order code for "Integrated ISEM electronics", option B "Transmitter"

*Maximum medium temperature without thermal insulation according to Endress+Hauser specifications**Promass A (8A5B\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	60	205	60	95	130	150	205	205

*Promass A (8A5C\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	55	205	55	95	130	150	205	205
	60		-	95	130	150	205	205

*Promass E*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	50	150	50	100	130	130	150	150
	60		-	100	130	130	150	150
80	60	150	60	75	110	150	150	150

*Promass F*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...15	55	150	50	95	130	150	150	150
	60		-	95	130	150	150	150
	55	150 <sup>2)</sup>	50	95	130	150	150	150
	60		-	95	130	150	150	150
	55	240	50	95	130	160	240	240
	60		-	95	130	160	240	240

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
15...25	60	350	70	95	130	175	265	350
25...40	55	150	55	95	130	150	150	150
	60		–	95	130	150	150	150
	55	150 <sup>2)</sup>	55	95	130	150	150	150
	60		–	95	130	150	150	150
	55	240	55	95	130	160	240	240
	60		–	95	130	160	240	240
50	55	150	55	95	130	150	150	150
	60		–	95	130	150	150	150
	60	150 <sup>2)</sup>	60	95	130	150	150	150
	60	240	60	95	130	170	240	240
80...250	55	150	55	75	110	150	150	150
	60		–	75	110	150	150	150
	60	150 <sup>2)</sup>	60	75	110	150	150	150
	60	240	60	75	110	170	240	240
50...250	60	350	70	85	120	175	265	350

- 1) Maximum temperature range, see nameplate  
 2) Cryogenic temperature version: T<sub>m</sub> = –196 to 150 °C

### Promass H

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	50	150	50	65	100	150	150	150
	60		–	65	100	150	150	150
	50	205	50	65	100	160	205	205
	60		–	65	100	160	205	205
15...50	60	150	60	75	115	150	150	150
		205	60	75	115	180	205	205

- 1) Maximum temperature range, see nameplate

*Promass I*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8, 15, 15FB, 25	60	150	60	95	130	150	150	150
25FB, 40, 40FB, 50, 50FB, 80	60	150	70	85	120	150	150	150
FB = Full bore								

*Promass O*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80 ... 250	60	205	60	75	110	170	205	205

*Promass P*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		-	65	100	150	150	150
	45	205	45	65	100	160	205	205
	60		-	65	100	160	205	205
15...40	50	150	50	75	115	150	150	150
	60		-	75	115	150	150	150
	50	205	50	75	115	180	205	205
	60		-	75	115	180	205	205
50	60	150	60	75	115	150	150	150
		205	60	75	115	180	205	205

1) Maximum temperature range, see nameplate

*Promass Q*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25 ... 100	60	205	55	75	110	160	205	205
		150 <sup>2)</sup>	55	75	110	150	150	150

- 1) Maximum temperature range, see nameplate  
 2) Cryogenic temperature version: T<sub>m</sub> = -196 to 150 °C

*Promass S*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		-	65	100	150	150	150
15...40	50		50	75	115	150	150	150
	60		-	75	115	150	150	150
50	60		60	75	115	150	150	150

*Promass X*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	60	180	70	90	120	170	180	180

*Maximum medium temperature with thermal insulation according to Endress+Hauser specifications*



For information on the thermal insulation of the device, see the "Thermal insulation" section of the "Operating instructions" document .

*Promass A (8A5B\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	50	205	60	95	130	150	(180)	(180)
	60		60	95	130	150	150	150

*Promass A (8A5C\*\*-\*...)*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	50	205	60	95	130	150	(180)	(180)
	55		55	95	130	150	150	150
	60		-	95	130	150	150	150

*Promass E*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	50	150	50	100	130	130	150	150
	60		-	100	130	130	150	150
80	60	150	60	75	110	150	150	150

*Promass F*

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...15	55	150	50	95	130	150	150	150
	60		-	95	130	150	150	150
	55	150 <sup>2)</sup>	50	95	130	150	150	150
	60		-	95	130	150	150	150

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	55	240	50	95	130	160	240	240
	60		–	95	130	160	240	240
15...25	60	350	70	95	130	175	265	350
25...40	55	150	55	95	130	150	150	150
	60		–	95	130	150	150	150
	55	150 <sup>2)</sup>	55	95	130	150	150	150
	60		–	95	130	150	150	150
	55	240	55	95	130	160	240	240
	60		–	95	130	160	240	240
50	55	150	55	95	130	150	150	150
	60		–	95	130	150	150	150
	60	150 <sup>2)</sup>	60	95	130	150	150	150
	60	240	60	95	130	170	240	240
80...250	55	150	55	75	110	150	150	150
	60		–	75	110	150	150	150
	60	150 <sup>2)</sup>	60	95	130	150	150	150
	60	240	60	75	110	170	240	240
50...250	60	350	70	85	120	175	265	350

- 1) Maximum temperature range, see nameplate  
 2) Cryogenic temperature version: T<sub>m</sub> = –196 to 150 °C

### Promass H

DN	T <sub>a</sub> [°C]	T <sub>m, max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	50	150	50	65	100	150	150	150
	60		–	65	100	150	150	150
	50	205	50	65	100	160	205	205
	60		–	65	100	160	205	205
15...50	60	150	60	75	115	150	150	150
		205	60	75	115	180	205	205

- 1) Maximum temperature range, see nameplate



*Promass I*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8, 15, 15FB, 25	60	150	60	95	130	150	150	150
25FB, 40, 40FB, 50, 50FB, 80			70	85	120	150	150	150
FB = Full bore								

*Promass O*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80...250	60	205	60	75	110	170	205	205

*Promass P*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		-	65	100	150	150	150
	45	205	45	65	100	160	205	205
	60		-	65	100	160	205	205
15...40	50	150	50	75	115	150	150	150
	60		-	75	115	150	150	150
	50	205	50	75	115	180	205	205
	60		-	75	115	180	205	205
50	60	150	60	75	115	150	150	150
	60	205	60	75	115	180	205	205

1) Maximum temperature range, see nameplate

*Promass Q*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> <sup>1)</sup> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25...100	60	205	55	75	110	160	205	205
		150 <sup>2)</sup>	55	75	110	150	150	150

- 1) Maximum temperature range, see nameplate  
 2) Cryogenic temperature version: T<sub>m</sub> = -196 to 150 °C

*Promass S*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		-	65	100	150	150	150
15...40	50	150	50	75	115	150	150	150
	60		-	75	115	150	150	150
50	60	150	60	75	115	150	150	150

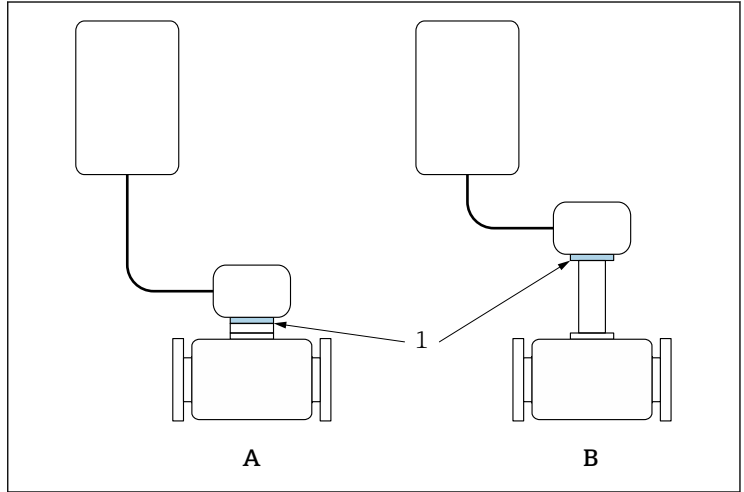
*Promass X*

DN	T <sub>a</sub> [°C]	T <sub>m,max</sub> [°C]	T <sub>m</sub> [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	60	180	70	90	120	170	180	180


*With thermal insulation without Endress+Hauser specifications*

The specified reference temperature  $T_{ref}$  and the maximum medium temperature  $T_{m,max}$  for each temperature class must not be exceeded.

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 2 *Position of reference point for temperature measurement*

A *Standard version*

B *Extended temperature version, cryogenic temperature version, high-temperature version*

1 *Reference point ( $T_{ref}$ )*

*Reference temperature  $T_{ref}$*

T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
63	72	84	91	91	91

**Explosion hazards arising from gas and dust**

**Determining the temperature class and surface temperature with the temperature table**

- In the case of gas: Determine the temperature class as a function of the maximum ambient temperature  $T_a$  and the maximum medium temperature  $T_m$ .
- In the case of dust: Determine the maximum surface temperature as a function of the maximum ambient temperature  $T_a$  and the maximum medium temperature  $T_m$ .

**Example**

- Measured maximum ambient temperature:  $T_{ma} = 47\text{ }^{\circ}\text{C}$
- Measured maximum medium temperature:  $T_{mm} = 108\text{ }^{\circ}\text{C}$

	Ta [°C]	T6 [85°C]	T5 [100°C]	T4 [135°C]	T3 [200°C]	T2 [300°C]	T1 [450°C]
	35	50	85	120	140	140	140
	50	-	85	120	140	140	140
	60	-	-	120	140	140	140
	35	50	85	120	140	140	140
	45	-	85	120	140	140	140
	50	-	-	120	140	140	140

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3 Procedure for determining the temperature class and surface temperature

1. Select device (optional).
2. In the column for the maximum ambient temperature  $T_a$  select the temperature that is immediately greater than or equal to the maximum ambient temperature  $T_{ma}$  that is present.
  - ↳  $T_a = 50\text{ }^{\circ}\text{C}$ .  
The row showing the maximum medium temperature is determined.
3. Select the maximum medium temperature  $T_m$  of this row, which is immediately greater than or equal to the maximum medium temperature  $T_{mm}$  that is present.
  - ↳ The column with the temperature class for gas is determined:  
 $108\text{ }^{\circ}\text{C} \leq 120\text{ }^{\circ}\text{C} \rightarrow T4$ .
4. The maximum temperature of the temperature class determined corresponds to the maximum surface temperature for dust:  $T4 = 135\text{ }^{\circ}\text{C}$ .

## Connection values: Signal circuits

The following tables contain specifications which are dependent on the transmitter type and its input and output assignment. Compare the following specifications with those on the nameplate of the transmitter.

### Terminal assignment

*Transmitter: supply voltage, input/outputs*

#### HART

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (+)	27 (-)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

#### FOUNDATION Fieldbus

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (A)	27 (B)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

#### PROFIBUS DP

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

#### PROFIBUS PA

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

#### Modbus RS485

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

*EtherNet/IP*

Supply voltage		Input/output 1	Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	EtherNet/IP (RJ45 connector)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.								

*PROFINET*

Supply voltage		Input/output 1	Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	PROFINET (RJ45 connector)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.								

**Safety-related values**

Order code "Output; input 1"	Output type	Safety-related values "Output; input 1"	
		26 (+)	27 (-)
Option <b>BA</b>	Current output 4 to 20 mA HART	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>GA</b>	PROFIBUS PA	$U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>LA</b>	PROFIBUS DP	$U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>MA</b>	Modbus RS485	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>SA</b>	FOUNDATION Fieldbus	$U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>NA</b>	EtherNet/IP	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$	
Option <b>RA</b>	PROFINET	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$	

Order code "Output; input 2"; "Output; input 3" "Output; input 4"	Output type	Safety-related values					
		Output; input 2		Output; input 3		Output; input 4 <sup>1)</sup>	
		24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Option B	Current output 4 to 20 mA	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					
Option D	User-configurable input/output	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					
Option E	Pulse/frequency/ switch output	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					
Option F	Double pulse output	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					
Option H	Relay output	$U_N = 30 V_{DC}$ $I_N = 100 mA_{DC}/500 mA_{AC}$ $U_M = 250 V_{AC}$					
Option I	Current input 4 to 20 mA	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					
Option J	Status input	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					

- 1) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.

### Intrinsically safe values

Order code for "Output; input 1"	Output type	Intrinsically safe values "Output; input 1"	
		26 (+)	27 (-)
Option CA	Current output 4-20mA HART Ex-i passive	$U_i = 30 V$ $I_i = 100 mA$ $P_i = 1.25 W$ $L_i = 0 \mu H$ $C_i = 6 nF$	
Option CC	Current output 4-20mA HART Ex-i active	<b>Ex ia</b> <sup>1)</sup> $U_0 = 21.8 V$ $I_0 = 90 mA$ $P_0 = 491 mW$ $L_0 = 4.1 mH(IIC)/$ 15 mH(IIB) $C_0 = 160 nF(IIC)/$ 1 160 nF(IIB)	<b>Ex ic</b> <sup>2)</sup> $U_0 = 21.8 V$ $I_0 = 90 mA$ $P_0 = 491 mW$ $L_0 = 9 mH(IIC)/$ 39 mH(IIB) $C_0 = 600 nF(IIC)/$ 4 000 nF(IIB)

Order code for "Output; input 1"	Output type	Intrinsically safe values "Output; input 1"	
		26 (+)	27 (-)
		$U_i = 30\text{ V}$ $I_i = 10\text{ mA}$ $P_i = 0.3\text{ W}$ $L_i = 5\text{ }\mu\text{H}$ $C_i = 6\text{ nF}$	
Option HA	PROFIBUS PA Ex i (STANDARD + FISCO)	<b>Ex ia</b> <sup>1)</sup> $U_i = 30\text{ V}$ $I_i = 570\text{ mA}$ $P_i = 8.5\text{ W}$ $L_i = 10\text{ }\mu\text{H}$ $C_i = 5\text{ nF}$	<b>Ex ic</b> <sup>2)</sup> $U_i = 32\text{ V}$ $I_i = 570\text{ mA}$ $P_i = 8.5\text{ W}$ $L_i = 10\text{ }\mu\text{H}$ $C_i = 5\text{ nF}$
Option TA	FOUNDATION Fieldbus Ex i (STANDARD + FISCO)	<b>Ex ia</b> <sup>1)</sup> $U_i = 30\text{ V}$ $I_i = 570\text{ mA}$ $P_i = 8.5\text{ W}$ $L_i = 10\text{ }\mu\text{H}$ $C_i = 5\text{ nF}$	<b>Ex ic</b> <sup>2)</sup> $U_i = 32\text{ V}$ $I_i = 570\text{ mA}$ $P_i = 8.5\text{ W}$ $L_i = 10\text{ }\mu\text{H}$ $C_i = 5\text{ nF}$

- 1) Only for the order code for "Approval", option UA, UB, UC, UD
- 2) Only for the order code for "Approval", option UM, UN

Order code for "Output; input 2"; "Output; input 3"; "Output; input 4"	Output type	Intrinsically safe values					
		Output; input 2		Output; input 3		Output; input 4 <sup>1)</sup>	
		24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Option C	Current output 4 to 20 mA Ex i passive	$U_i = 30\text{ V}$ $I_i = 100\text{ mA}$ $P_i = 1.25\text{ W}$ $L_i = 0$ $C_i = 0$					
Option G	Pulse/frequency/switch output Ex i passive	$U_i = 30\text{ V}$ $I_i = 100\text{ mA}$ $P_i = 1.25\text{ W}$ $L_i = 0$ $C_i = 0$					

- 1) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.











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