

Safety Instructions

Proline Promass 200

INMETRO: Zone 1, Zone 0/1
Ex i version



Proline Promass 200

Table of contents

Associated documentation 4

Certificates and declarations 4

Certificate holder 5

Extended order code 5

Safety instructions: General 7

Safety instructions: Installation 8

Safety instructions: Zone 0 9

Temperature tables 9

Explosion hazards arising from gas and dust 19

Connection values: Signal circuits 20

Associated documentation

- For an overview of the scope of the associated Technical Documentation, refer to the following:
- *Device Viewer* (www.endress.com/deviceviewer): Enter serial number from nameplate.
 - *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

To commission the device, please observe the Operating Instructions pertaining to the device:

Measuring device	Documentation code		
	HART	FOUNDATION Fieldbus	PROFIBUS PA
8A2B**-...	BA01821D	BA01827D	BA01828D
8E2B**-...	BA01027D	BA01314D	BA01133D
8E2C**-...	BA01638D	BA01637D	BA01639D
8F2B**-...	BA01112D	BA01315D	BA01113D

Additional documentation

Contents	Document type	Documentation code
Remote display FHX50	Special documentation	SD01007F
	Safety Instructions Ex ia	XA01077F
Overvoltage Protection (OVP)	Special documentation	SD01090F
Explosion Protection	Brochure	CP00021Z/11

Please note the documentation associated with the device.

Certificates and declarations

Declaration of conformity
INMETRO CERTIFICADO DE CONFORMIDADE

Certificate of Conformity

Certificate number:

- TÜV 18.0687
- TÜV 23.0020
- TÜV 23.0021
- TÜV 23.0022

Affixing the certificate number certifies conformity with the standards under www.abnt.org.br (depending on the device version).

- ABNT NBR IEC 60079-0: 2020
- ABNT NBR IEC 60079-11: 2013
- ABNT NBR IEC 60079-26: 2016

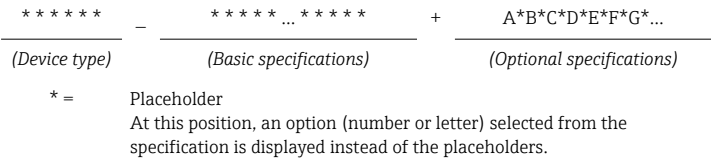
Certificate holder

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



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

Position	Order code for	Option selected	Description
1	Instrument family	8	Coriolis flowmeter
2	Sensor	A, E, F ¹⁾	Sensor type
3	Transmitter	2	Transmitter type: 2-wire, compact version
4	Generation index	B, C	Platform generation
5, 6	Nominal diameter	Examples: 02, 04, 40, 50, 1H, 3E ^{2) 3)}	Nominal diameter of sensor

- 1) For replacement transmitter only: X
- 2) For the exact specification of the nominal diameter, see nameplate
- 3) For replacement transmitter only: XX

Basic specifications

Position	Order code for	Selected option	Device type		Type of protection
			Position 2 Sensor	Position 5, 6 Nominal diameter	
1, 2	Approval	MB	A, E, F	01, 02, 04, 08, 15, 25, 40, 50	Ex ia IIC T6...T1 Ga/Gb
			F	80	Ex ia IIB T6...T1 Ga/Gb

Position	Order code for	Selected option	Description
3	Output; Input	A	4-20mA HART
		B	4-20mA HART, Pulse/frequency/switch output
		C	4-20mA HART + 4-20mA analog
		E	FOUNDATION Fieldbus, Pulse/frequency/switch output
		G	PROFIBUS PA, Pulse/frequency/switch output

Position	Order code for	Selected option	Description
4	Display; Operation	A	W/o; via communication
		C	SD02 4-line; push buttons + data backup function
		E	SD03 4-line, illum.; touch control + data backup function
		L	Prepared for display FHX50 + M12 connection ¹⁾
		M	Prepared for display FHX50 + custom connection ¹⁾
17, 18 ²⁾	Device Model	A1	1

1) FHX50 is separately approved.

2) Order code for "Device model" only for measuring devices with product code 8A2B, 8E2C

Optional specifications

ID	Order code for	Option selected	Description
Nx	Accessory mounted	NA	Overvoltage Protection (OVP)

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. ABNT NBR IEC 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.
- Alterations 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.
- In devices with damaged Ex d threads:
 - Use in hazardous areas is not permitted.
 - Repair of Ex d threads is not permitted.
- Observe all the technical data of the device (see nameplate).

Safety instructions: Installation

- Continuous service temperature of the connecting cable:
–40 to +80 °C; 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 ABNT NBR IEC 60079-14.
- When the measuring device is connected, attention must be paid to explosion protection at the transmitter.

Intrinsic safety

- Observe the guidelines for interconnecting intrinsically safe circuits (e.g. ABNT NBR IEC 60079-14 , Proof of Intrinsic Safety).
- The intrinsically safe input power circuit of the device is isolated from ground. If the device is only equipped with one input, the dielectric strength of the input is at least $500 V_{rms}$. If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least $500 V_{rms}$, and the dielectric strength of the inputs vis-à-vis one another is also at least $500 V_{rms}$.
- The device can be connected to the Endress+Hauser FXA291 service tool: refer to the Operating Instructions.
- The device can be connected to the remote display FHX50 with Ex ia explosion protection; refer to the Special Documentation and Ex documentation.

Basic specification, position 3 (Output; input) = A, B, C, E, G:

- 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.
- When the intrinsically safe Ex ic circuits of the device are connected to certified intrinsically safe circuits of Category Ex ic for Equipment Groups IIB, the type of protection changes from Ex ic IIC to Ex ic IIB.

Potential equalization

- Integrate the device into the 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.

Overvoltage protection

Optional specification, ID Nx (Accessory Mounted) = NA

- Minimum ambient temperature when using Overvoltage Protection (OVP): -40°C
- When using the internal overvoltage protection: Reduce the admissible ambient temperature at the housing by 2 K.
- For installations which require overvoltage protection to comply with national regulations or standards, install the device using overvoltage protection (e.g. HAW56x from Endress+Hauser).
- Observe the safety instructions of the overvoltage protection.
- If an overvoltage protection against atmospheric over voltages is required: no other circuits may leave the enclosure during normal operation without additional measures.
- The intrinsically safe input power circuit of the device is isolated from ground. If the device is only equipped with one input, the dielectric strength of the input is at least $290\text{ V}_{\text{rms}}$. If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least $290\text{ V}_{\text{rms}}$, and the dielectric strength of the inputs vis-à-vis one another is also at least $290\text{ V}_{\text{rms}}$.

Safety instructions: Zone 0

Basic specification, position 1, 2 (Approval) = MB

The intrinsically safe version of the device can be used in the measuring pipe in Zone 0.

In Zone 0/1 not permitted: Promass A DN1 (order code for "Diameter", Option 01)

Temperature tables

Ambient temperature

Minimum ambient temperature

Basic specification, position 3 (Output; input) = A, B, C, E, G:

$T_a = -40^{\circ}\text{C}$

Maximum ambient temperature:

$T_a = +60^{\circ}\text{C}$ depending on the medium temperature and temperature class

Medium temperature

Minimum medium temperature

- Promass 8F2B**-... , Promass 8A2B**-...
 $T_m = -50^{\circ}\text{C}$
- Promass 8E2B**-..., Promass 8E2C**-...:
 $T_m = -40^{\circ}\text{C}$

Maximum medium temperature

T_m for T6...T1 depending on the maximum ambient temperature T_a

Compact version

Basic specification, position 3 (Output; Input) = A

Basic specification, position 1, 2 (Approval) = MB

Promass A

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1 to 4	205	40 ¹⁾	50	95	130	170	205	205
		60 ¹⁾	–	95	130	170	205	205

1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass E (Promass 8E2B**–...)

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	140	50 ¹⁾	50	95	130	140	140	140
		60 ¹⁾	–	95	130	140	140	140

1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass E (Promass 8E2C**–...)

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ²⁾	50	95	130	150	150	150
		60 ²⁾	–	95	130	150	150	150
	205	40 ²⁾	50	95	130	170	205	205
		60 ²⁾	–	95	130	170	205	205

1) Maximum temperature range, see nameplate
2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass F

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ²⁾	50	95	130	150	150	150
		60 ²⁾	–	95	130	150	150	150

DN	$T_{m,max}^{1)}$ [°C]	T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	205	40 ²⁾	50	95	130	170	205	205
		60 ²⁾	–	95	130	170	205	205
80	150	40 ²⁾	50	85	110	150	150	150
		60 ²⁾	–	85	110	150	150	150
	205	40 ²⁾	50	85	110	170	205	205
		60 ²⁾	–	85	110	170	205	205

- 1) Maximum temperature range, see nameplate
- 2) For installation with overvoltage protection in connection with temperature class T5, T6: $T_a = T_a - 2\text{ K}$

Basic specification, position 3 (Output; Input) = B

Basic specification, position 1, 2 (Approval) = MB

Promass A

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1 to 4	205	35 ^{1) 2)}	50	95	130	170	205	205
		50 ^{1) 3)}	–	95	130	170	205	205
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
- 2) T_a = 40 °C for Impulse/Frequency/Switch output input P_i ≤ 0,85 W
- 3) T_a = 55 °C for Impulse/Frequency/Switch output input P_i ≤ 0,85 W

Promass E (Promass 8E2B**–...)

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ^{1) 2)}	50	95	130	140	140	140
		50 ^{1) 3)}	–	95	130	140	140	140
		60	–	–	130	140	140	140

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
- 2) T_a = 40 °C for Impulse/Frequency/Switch output input P_i ≤ 0,85 W
- 3) T_a = 55 °C for Impulse/Frequency/Switch output input P_i ≤ 0,85 W

Promass E (Promass 8E2C**–...)

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ^{2) 3)}	50	95	130	150	150	150
		50 ^{2) 4)}	–	95	130	150	150	150
		55	–	–	130	150	150	150
		60	–	–	130	150	150	150
	205	35 ^{2) 3)}	50	95	130	170	205	205
		50 ^{2) 4)}	–	95	130	170	205	205

DN	$T_{m, max}^{1)}$ [°C]	T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200

- 1) Maximum temperature range, see nameplate
- 2) For installation with overvoltage protection in connection with temperature class T5, T6: $T_a = T_a - 2 \text{ K}$
- 3) $T_a = 40 \text{ °C}$ for Impulse/Frequency/Switch output input $P_i \leq 0,85 \text{ W}$
- 4) $T_a = 55 \text{ °C}$ for Impulse/Frequency/Switch output input $P_i \leq 0,85 \text{ W}$

Promass F

DN	$T_{m, max}^{1)}$ [°C]	T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ^{2) 3)}	50	95	130	150	150	150
		50 ^{2) 4)}	–	95	130	150	150	150
		55	–	–	130	150	150	150
		60	–	–	130	150	150	150
	205	35 ^{2) 3)}	50	95	130	170	205	205
		50 ^{2) 4)}	–	95	130	170	205	205
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200
80	150	35 ^{2) 3)}	50	85	110	150	150	150
		50 ^{2) 4)}	–	85	110	150	150	150
		55	–	–	110	150	150	150
		60	–	–	110	150	150	150
	205	35 ^{2) 3)}	50	85	110	170	205	205
		50 ^{2) 4)}	–	85	110	170	205	205
		55	–	–	110	170	205	205
		60	–	–	110	170	205	200

- 1) Maximum temperature range, see nameplate
- 2) For installation with overvoltage protection in connection with temperature class T5, T6: $T_a = T_a - 2 \text{ K}$
- 3) $T_a = 40 \text{ °C}$ for Impulse/Frequency/Switch output input $P_i \leq 0,85 \text{ W}$
- 4) $T_a = 55 \text{ °C}$ for Impulse/Frequency/Switch output input $P_i \leq 0,85 \text{ W}$

Basic specification, position 3 (Output; Input) = C

Basic specification, position 1, 2 (Approval) = MB

Promass A

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1 to 4	205	35 ¹⁾	50	95	130	170	205	205
		50	–	–	130	170	205	205
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200

1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass E (Promass 8E2B**–...)

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ¹⁾	50	95	130	150	150	150
		50	–	–	130	150	150	150
		55	–	–	130	150	150	150
		60	–	–	130	150	150	150

1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass E (Promass 8E2C**–...)

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ²⁾	50	95	130	150	150	150
		50	–	–	130	150	150	150
		55	–	–	130	150	150	150
		60	–	–	130	150	150	150
	205	35 ²⁾	50	95	130	170	205	205
		50	–	–	130	170	205	205
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200

1) Maximum temperature range, see nameplate

2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Promass F

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	35 ²⁾	50	95	130	150	150	150
		50	–	–	130	150	150	150
		55	–	–	130	150	150	150
		60	–	–	130	150	150	150
	205	35 ²⁾	50	95	130	170	205	205
		50	–	–	130	170	205	205
		55	–	–	130	170	205	205
		60	–	–	130	170	205	200
80	150	35 ²⁾	50	85	110	150	150	150
		50	–	85	110	150	150	150
		55	–	–	110	150	150	150
		60	–	–	110	150	150	150
	205	35 ²⁾	50	85	110	170	205	205
		50	–	85	110	170	205	205
		55	–	–	110	170	205	205
		60	–	–	110	170	205	200

1) Maximum temperature range, see nameplate

2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K

Basic specification, position 3 (Output; Input) = E

Basic specification, position 1, 2 (Approval) = MB

Promass A

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1 to 4	205	40 ^{1) 2)}	50	95	130	170	205	205
		55 ^{1) 3)}	–	95	130	170	205	205
		60	–	–	130	170	205	205

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
2) T_a = 50 °C for use without Impulse/Frequency/Switch output
3) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass E (Promass 8E2B**–...)

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{1) 2)}	50	95	130	140	140	140
		55 ^{1) 3)}	–	95	130	140	140	140
		60	–	–	130	140	140	140

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
2) T_a = 50 °C for use without Impulse/Frequency/Switch output
3) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass E (Promass 8E2C**–...)

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{2) 3)}	50	95	130	150	150	150
		55 ^{2) 4)}	–	95	130	150	150	150
		60	–	–	130	150	150	150
	205	40 ^{2) 3)}	50	95	130	170	205	205
		55 ^{2) 4)}	–	95	130	170	205	205
		60	–	–	130	170	205	205

- 1) Maximum temperature range, see nameplate
2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
3) T_a = 50 °C for use without Impulse/Frequency/Switch output
4) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass F

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{2) 3)}	50	95	130	150	150	150
		55 ^{2) 4)}	–	95	130	150	150	150
		60	–	–	130	150	150	150
	205	40 ^{2) 3)}	50	95	130	170	205	205
		55 ^{2) 4)}	–	95	130	170	205	205
		60	–	–	130	170	205	205
80	150	40 ^{2) 3)}	50	85	110	150	150	150
		55 ^{2) 4)}	–	85	110	150	150	150
		60	–	–	110	150	150	150
	205	40 ^{2) 3)}	50	85	110	170	205	205
		55 ^{2) 4)}	–	85	110	170	205	205
		60	–	–	110	170	205	205

- 1) Maximum temperature range, see nameplate
- 2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
- 3) T_a = 50 °C for use without Impulse/Frequency/Switch output
- 4) T_a = 60 °C for use without Impulse/Frequency/Switch output

Basic specification, position 3 (Output; Input) = G

Basic specification, position 1, 2 (Approval) = MB

Promass A

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1 to 4	205	40 ^{1) 2)}	50	95	130	170	205	205
		55 ^{1) 3)}	–	95	130	170	205	205
		60	–	–	130	170	205	205

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
2) T_a = 50 °C for use without Impulse/Frequency/Switch output
3) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass E (Promass 8E2B**–...)

DN	T _{m, max} [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{1) 2)}	50	95	130	140	140	140
		55 ^{1) 3)}	–	95	130	140	140	140
		60	–	–	130	140	140	140

- 1) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
2) T_a = 50 °C for use without Impulse/Frequency/Switch output
3) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass E (Promass 8E2C**–...)

DN	T _{m, max} ¹⁾ [°C]	T _a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{2) 3)}	50	95	130	150	150	150
		55 ^{2) 4)}	–	95	130	150	150	150
		60	–	–	130	150	150	150
	205	40 ^{2) 3)}	50	95	130	170	205	205
		55 ^{2) 4)}	–	95	130	170	205	205
		60	–	–	130	170	205	205

- 1) Maximum temperature range, see nameplate
2) For installation with overvoltage protection in connection with temperature class T5, T6: T_a = T_a - 2 K
3) T_a = 50 °C for use without Impulse/Frequency/Switch output
4) T_a = 60 °C for use without Impulse/Frequency/Switch output

Promass F

DN	$T_{m, max}^{1)}$ [°C]	T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8 to 50	150	40 ^{2) 3)}	50	95	130	150	150	150
		55 ^{2) 4)}	–	95	130	150	150	150
		60	–	–	130	150	150	150
	205	40 ^{2) 3)}	50	95	130	170	205	205
		55 ^{2) 4)}	–	95	130	170	205	205
		60	–	–	130	170	205	205
80	150	40 ^{2) 3)}	50	85	110	150	150	150
		55 ^{2) 4)}	–	85	110	150	150	150
		60	–	–	110	150	150	150
	205	40 ^{2) 3)}	50	85	110	170	205	205
		55 ^{2) 4)}	–	85	110	170	205	205
		60	–	–	110	170	205	205

- 1) Maximum temperature range, see nameplate
- 2) For installation with overvoltage protection in connection with temperature class T5, T6: $T_a = T_a - 2 \text{ K}$
- 3) $T_a = 50 \text{ °C}$ for use without Impulse/Frequency/Switch output
- 4) $T_a = 60 \text{ °C}$ for use without Impulse/Frequency/Switch output

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

4.

	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

1.2.3.

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 1 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.

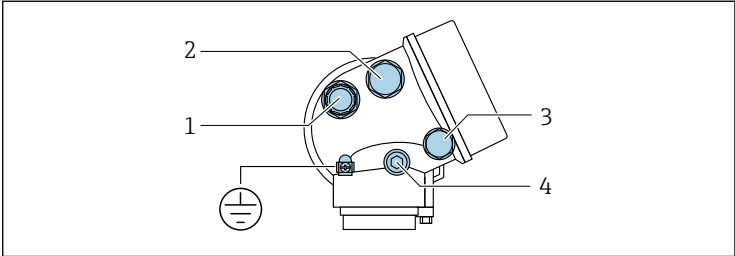
↳ $T_a = 50\text{ °C}$.
The row showing the maximum medium temperature is determined.
3. Select the maximum medium temperature T_m of this row, which is immediately greater than or equal to the maximum medium temperature T_{mm} that is present.

↳ The column with the temperature class for gas is determined:
 $108\text{ °C} \leq 120\text{ °C} \rightarrow T_4$.
4. The maximum temperature of the temperature class determined corresponds to the maximum surface temperature for dust: $T_4 = 135\text{ °C}$.

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.

Connecting the transmitter



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Position		Basic specification, Position 1, 2 Approval	Type of protection used for cable entry	Description
1	Cable entry for output 1	MB	Ex ia	–
2	Cable entry for output 2	MB	Ex ia	–
3	Optional order code ¹⁾ : Cable entry of the remote display and operating module FHX50	MB	Ex ia	–
Position			Description	
4	Pressure compensation plug		NOTICE Housing degree of protection voided due to insufficient sealing of the housing. ► Do not open - not a cable entry.	
⊕	Potential equalization		NOTICE Terminal for connection to potential equalization. ► Pay attention to the grounding concept of the facility.	

1) Basic specification, position 4 (display; operation) = L, M

Terminal assignment

Transmitter

 The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code →  5.

Connection versions

Order code for "Output"	Terminal numbers			
	Output 1		Output 2	
	1 (+)	2 (-)	3 (+)	4 (-)
Option A	4-20mA HART (passive)		-	
Option B ¹⁾	4-20mA HART (passive)		Pulse/frequency/switch output (passive)	
Option C ¹⁾	4-20mA HART (passive)		4-20mA analog (passive)	
Option E ²⁾	FOUNDATION Fieldbus		Pulse/frequency/switch output (passive)	
Option G ³⁾	PROFIBUS PA		Pulse/frequency/switch output (passive)	

- 1) Output 1 must always be used; output 2 is optional.
- 2) FOUNDATION Fieldbus with integrated reverse polarity protection.
- 3) PROFIBUS PA with integrated reverse polarity protection.

Intrinsically safe values

 The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code →  5.

Type of protection Ex ia

Order code for "Output"	Output type	Intrinsically safe values	
Option A	4-20mA HART	$U_i = \text{DC } 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	
Option B	4-20mA HART	$U_i = \text{DC } 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	
	Pulse/frequency/switch output	$U_i = \text{DC } 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 6 \text{ nF}$	
Option C	4-20mA HART	$U_i = \text{DC } 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 30 \text{ nF}$	
	4-20mA analog		
Option E	FOUNDATION Fieldbus	STANDARD $U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1.2 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	FISCO $U_i = 17.5 \text{ V}$ $I_i = 550 \text{ mA}$ $P_i = 5.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$
	Pulse/frequency/switch output	$U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 6 \text{ nF}$	
Option G	PROFIBUS PA	STANDARD $U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1.2 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	FISCO $U_i = 17.5 \text{ V}$ $I_i = 550 \text{ mA}$ $P_i = 5.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$
	Pulse/frequency/switch output	$U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 6 \text{ nF}$	

Remote display FHX50

Basic specification, position 1, 2 Approval	Cable specification	Basic specification, position 4 Display; operation Option L, M
Option MB	Max. cable length: 60 m (196.85 ft)	$U_o = 7.3\text{ V}$
		$I_o = 327\text{ mA}$
		$P_o = 362\text{ mW}$
		$L_o = 149\text{ }\mu\text{H}$
		$C_o = 388\text{ nF}$
		$C_c \leq 125\text{ nF}$
		$L_c \leq 149\text{ }\mu\text{H}$



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