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Safety Instructions
Proline Promass 200

UKEX: II2G, II1/2G, II2D
Ex i version

Endress+Hauser
People for Process Automation

Proline Promass 200

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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
  - Smart phone/tablet: *Endress+Hauser Operations App*
- In the Download Area of the Endress+Hauser web site: www.endress.com → Download.

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

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 II2G, II2D Ex ia	XA01053F
Overvoltage Protection (OVP)	Special documentation	SD01090F
Explosion Protection	Brochure	CP00021Z/11

Please note the documentation associated with the device.

Manufacturer's certificates

UK Declaration of Conformity

Documentation code: UK_00326

UKCA type-examination certificate

Certificate number: CML 21UKEX11112X

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

* * * * * *	–	* * * * * ... * * * * *	+	A*B*C*D*E*F*G*...
(Device type)		*(Basic specifications)*		*(Optional specifications)*

* = 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

Position	Order code for	Option selected	Description
1	Instrument family	8	Coriolis flowmeter
2	Sensor	A, E, F	Sensor type
3	Transmitter	2	Transmitter type: 2-wire, compact version
4	Generation index	B, C	Platform generation
5, 6	Nominal diameter	01, 02, 04, 08, 15, 25, 40, 50, 80	Nominal diameter of sensor

Basic specifications

Position	Order code for	Option selected	Device type		Description
			Position 2 Sensor	Position 5, 6 Nominal diameter	
1, 2	Approval	UB	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
		UJ	A, E, F	01, 02, 04, 08, 15, 25, 40, 50	Ex ia IIC T6...T1 Gb
			F	80	Ex ia IIB T6...T1 Gb
		U2	A, E, F	01, 02, 04, 08, 15, 25, 40, 50	Ex ia IIC T6...T1 Ga/Gb Ex tb IIIC Txx °C Db [1]
			F	80	Ex ia IIB T6...T1 Ga/Gb Ex tb IIIC Txx °C Db [1]

1) The labeling changes according to whether the "Display; Operation" equals "L" or "M": .

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 [2]
17, 18 [3]	Device Model	A1	1

1) FHX50 is separately approved.
2) FHX50 is separately approved.
3) 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. 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.
- 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 EN 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. EN 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 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 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.

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 V_{rms}. If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least 290 V_{rms}, and the dielectric strength of the inputs vis-à-vis one another is also at least 290 V_{rms}.

Safety instructions: Zone 0

Basic specification, position 1, 2 (Approval) = UB, U2

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)

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.
- 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 cable entries and sealing plugs. The metal cable entries, extensions and sealing plugs supplied meet this requirement.
- If the transmitter is connected to the remote display FHX50, the circuit has type of protection Ex ia IIIC.
  Connection values

Temperature tables

Ambient temperature

Minimum ambient temperature

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

T_a = −40 °C

Maximum ambient temperature:
T_a = +60 °C depending on the medium temperature and temperature class

Medium temperature

Minimum medium temperature

- Promass 8F2B**-... , Promass 8A2B**-...
  T_m = −50 °C
- Promass 8E2B**-..., Promass 8E2C**-...:
  T_m = −40 °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, positions 1, 2 (approval) =
UB, UJ, U2

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
	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 K

Basic specification, position 3 (output; input) = B

Basic specification, positions 1, 2 (approval) =
UB, UJ, U2

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 $P_i \leq 0{,}85$ W
3) T_a = 55 °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ 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 $P_i \leq 0{,}85$ W
3) T_a = 55 °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ 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: $T_a = T_a - 2$ K
3) $T_a = 40$ °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ W
4) $T_a = 55$ °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ 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: $T_a = T_a - 2$ K
3) $T_a = 40$ °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ W
4) $T_a = 55$ °C for Impulse/Frequency/Switch output input $P_i \leq 0{,}85$ W

Basic specification, position 3 (output; input) = C

Basic specification, positions 1, 2 (approval) =
UB, UJ, U2

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...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...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...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...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, positions 1, 2 (approval) =
UB, UJ, U2

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...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...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...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...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, positions 1, 2 (approval) =
UB, UJ, U2

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...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...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...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...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

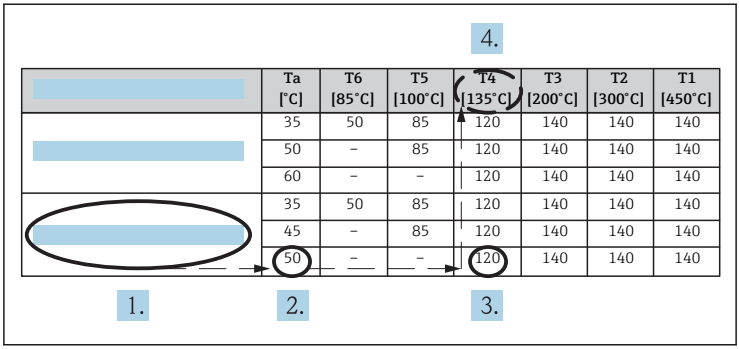
Explosion hazards arising from gas and dust

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 °C
- Measured maximum medium temperature: T_{mm} = 108 °C



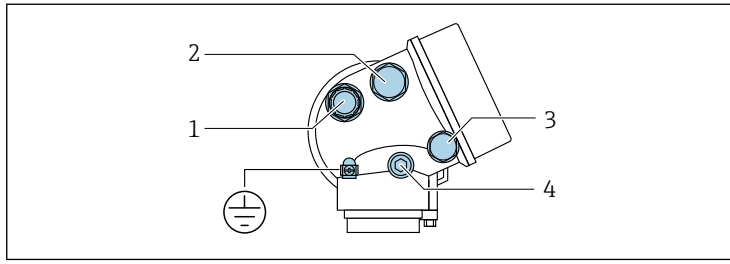
1 *Procedure for determining the temperature class and surface temperature*

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 °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 °C ≤ 120 °C → T4.
4. The maximum temperature of the temperature class determined corresponds to the maximum surface temperature for dust: T4 = 135 °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	UB, UJ U2	Ex ia Ex ia/Ex tb	The following applies for devices with basic specification, position 1, 2 (approval) = U2: In the case of device versions with a plastic transport sealing plug, this plug does not meet the explosion protection requirements and must be replaced during installation by a suitable entry that meets the approval specifications. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.
2	Cable entry for output 2	UB, UJ U2	Ex ia Ex ia/Ex tb	The following applies for devices with basic specification, position 1, 2 (approval) = U2: In the case of device versions with metal extensions and sealing plugs, the latter are part of the device approval and meet the requirements of the explosion protection indicated on the nameplate. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.
3	Optional order code [1]: Cable entry of the remote display and operating module FHX50	UB, UJ U2	Ex ia Ex ia/Ex tb [2]	The following applies for devices with basic specification, position 1, 2 (approval) = U2: In the case of device versions with metal extensions and sealing plugs, the latter are part of the device approval and meet the requirements of the explosion protection indicated on the nameplate. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.

Position		Basic specification, position 1, 2: Approval	Type of protection used for cable entry	Description
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
2) The labeling changes according to whether "Display; operation" = "L" or "M": Ex tb[ia Da] IIIC Txx °C Db.

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 = DC 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 5 nF
Option B	4-20mA HART	U_i = DC 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 5 nF
	Pulse/frequency/switch output	U_i = DC 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 6 nF
Option C	4-20mA HART	U_i = DC 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 30 nF
	4-20mA analog	
Option E	FOUNDATION Fieldbus	STANDARD U_i = 30 V I_i = 300 mA P_i = 1.2 W L_i = 10 µH C_i = 5 nF
	Pulse/frequency/switch output	U_i = 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 6 nF
Option G	PROFIBUS PA	STANDARD U_i = 30 V I_i = 300 mA P_i = 1.2 W L_i = 10 µH C_i = 5 nF
	Pulse/frequency/switch output	U_i = 30 V I_i = 300 mA P_i = 1 W L_i = 0 µH C_i = 6 nF

Remote display FHX50

Basic specification, position 1, 2 Approval	Cable specification	Basic specification, position 4 Display; operation Option L, M
Option UB, UJ, U2	Max. cable length: 60 m (196.85 ft)	U_o = 7,3 V
		I_o = 327 mA
		P_o = 362 mW
		L_o = 149 µH
		C_o = 388 nF
		C_c ≤ 125 nF
		L_c ≤ 149 µH

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