

Safety Instructions

Proline Promass 300

INMETRO: Zone 2



Proline Promass 300

Table of contents

| | |
|--|----|
| Associated documentation | 4 |
| Certificates and declarations | 5 |
| Certificate holder | 5 |
| Extended order code | 5 |
| Safety instructions: General | 9 |
| Safety instructions: Installation | 9 |
| Temperature tables | 11 |
| Connection values: Signal circuits | 23 |

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 | PROFIBUS DP |
| Promass A 300 (8A3B) | BA01482D | BA01515D | BA01504D | – |
| Promass A 300 (8A3C) | BA01816D | BA01843D | BA01841D | BA01857D |
| Promass E 300 | BA01484D | BA01517D | BA01506D | BA01855D |
| Promass F 300 | BA01485D | BA01518D | BA01507D | BA01850D |
| Promass H 300 | BA01486D | BA01519D | BA01508D | BA01858D |
| Promass I 300 | BA01487D | BA01520D | BA01509D | BA01859D |
| Promass O 300 | BA01488D | BA01521D | BA01510D | BA01860D |
| Promass P 300 | BA01489D | BA01522D | BA01511D | BA01861D |
| Promass Q 300 | BA01490D | BA01523D | BA01512D | BA01862D |
| Promass S 300 | BA01491D | BA01524D | BA01513D | BA01863D |
| Promass X 300 | BA01492D | BA01525D | BA01514D | BA01864D |

| Measuring device | Documentation code | | |
|----------------------|--------------------|-------------|----------|
| | Modbus RS485 | EtherNet/IP | PROFINET |
| Promass A 300 (8A3B) | BA01493D | BA01699D | BA01736D |
| Promass A 300 (8A3C) | BA01884D | BA01842D | BA01840D |
| Promass E 300 | BA01495D | BA01727D | BA01738D |
| Promass F 300 | BA01496D | BA01728D | BA01739D |
| Promass H 300 | BA01497D | BA01729D | BA01740D |
| Promass I 300 | BA01498D | BA01730D | BA01741D |
| Promass O 300 | BA01499D | BA01731D | BA01742D |
| Promass P 300 | BA01500D | BA01732D | BA01743D |
| Promass Q 300 | BA01501D | BA01733D | BA01744D |
| Promass S 300 | BA01502D | BA01734D | BA01745D |
| Promass X 300 | BA01503D | BA01735D | BA01746D |

Additional documentation

| Contents | Document type | Documentation code |
|---|---------------------------------------|--------------------|
| Remote display and operating module DKX001 | Special documentation | SD01763D |
| | Safety Instructions Ex nA or Ex ec | XA01501D |
| Explosion Protection | Brochure | CP00021Z/11 |
| Ethernet-APL Installation Drawing | Installation Drawing | HE_01622 |

Certificates and declarations**Declaration of conformity**

INMETRO CERTIFICADO DE CONFORMIDADE

Certificate of Conformity

Certificate number:

- TÜV 19.1341X
- TÜV 23.0040X
- TÜV 23.0041X
- TÜV 23.0042X

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 60079-7: 2018
- ABNT NBR IEC 60079-11: 2013
- ABNT NBR IEC 60079-15: 2019

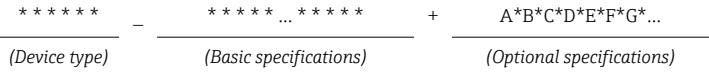
Certificate holder

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



* = 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, H, I, O, P, Q, S, X ¹⁾ | Sensor type |
| 3 | Transmitter | 3 | Transmitter type: 4-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 1, 2 Order code for "Approval" Option selected | Type of protection | |
|---|--|---------------------------------------|
| | Transmitter | Sensor |
| MS | Ex ec nC IIC T5...T1 Gc | Ex ec IIC T5...T1 Gc |
| | Ex ec nC [ic] IIC T5...T1 Gc ²⁾ | Ex ec nC IIC T5...T1 Gc ¹⁾ |

- 1) Sensors with type of protection Ex ec nC are only available for sensor versions without purge connection or rupture disk (see "Optional specifications")
- 2) The marking Ex ec nC [ic] IIC T5...T1 Gc is only available for devices with order code "Output; Input 1", option HA or TA

| Position | Order code for | Option selected | Description |
|----------|-----------------|-----------------|--|
| 4, 5 | Output, input 1 | BA | 4-20mA HART |
| | | GA | PROFIBUS PA |
| | | HA | PROFIBUS PA Ex-i |
| | | LA | PROFIBUS DP |
| | | MA | Modbus RS485 |
| | | MB | Modbus TCP with Ethernet-APL |
| | | MC | Modbus TCP with Ethernet-APL Ex i |
| | | NA | EtherNet/IP 2-port switch integrated |
| | | RA | PROFINET IO 2-port switch integrated |
| | | RB | PROFINET with Ethernet-APL |
| | | RC | PROFINET with Ethernet-APL Ex i |
| | | 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 |

| Position | Order code for | Option selected | Description |
|----------|--|-----------------|---|
| 7 | Output, input 3 | 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 |
| 8 | Display; Operation | A | W/o; via communication |
| | | F | 4-line, illuminated; touch control |
| | | G | 4-line, illuminated; touch control + WLAN |
| | | M | W/o; prepared for remote display DKX001 ¹⁾ |
| | | O | Separate, with remote display DKX001 ¹⁾ , 4-line, illuminated; 10 m / 30 ft cable; touch control |
| 9 | Housing | A | Alu, coated |
| | | B | Stainless, hygienic |
| | | L | Cast, stainless |
| 11, 12 | Meas. Tube Mat., Wetted Parts Surface | LA | Stainl. steel, cryogenic -196°C/-320°F |
| 17, 18 | Device Model | A1 | 1 |
| | | A2 | 2 |

1) DKX001 is separately approved.

Optional specifications


| ID | Order code for | Option selected | Description |
|----|----------------------|-----------------|---|
| Cx | Sensor option | CA | Rupture disk |
| Cx | Sensor option | CH | Purge connection |
| Px | Enclosed accessories | P8 | Wireless antenna, wide area (external WLAN antenna) ¹⁾ |

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. 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.
- Observe all the technical data of the device (see nameplate).

Safety instructions: Installation

- In the case of a horizontal orientation and the order code for "Housing", option **B** "Stainless, hygienic": install the transmitter at the side of or below the sensor.
For more information on the orientation, see the Operating Instructions for the device →  4
- The following applies for devices with order code for "Housing", Option B "Stainless, hygienic": Thermal insulation is not allowed.
- 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.
- Turning the transmitter housing
 - Loosen both hexagon socket screws until the transmitter housing can be turned.
 - Turn transmitter housing to desired position (mechanically limited); if necessary turn 270° in other direction.
 - Tighten both hexagon socket screws with a maximum of 7 Nm.
- 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.

Ex ec type of protection


- In potentially explosive atmospheres: Do not disconnect the electrical connection of the power supply circuit when energized.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.
- Only use certified cable entries or sealing plugs.
- Equipment in type of protection Ex ec, shall be installed using a transient protection not exceeding 140% of the peak rated voltage value at the power supply terminals and IO terminals.
- For measuring devices with order code "Housing", option B "Stainless, hygienic":
 - To close the connection compartment cover, first hand-tight the cover and then tighten it further 45° (corresponds to 15 Nm).
 - In combination with order code "Display; Operation", option F or G "4-line illum.": Prevent electrostatic charge. Clean only with moist cloth.

Optional external WLAN antenna

- 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. ABNT NBR IEC 60079-14 , Proof of Intrinsic Safety).

-  ▪ When using the remote display and operating module DKX001 the internal display and operating module must be removed.
- When using the separate approved, remote display and operating module DKX001, only use the following variants:
Basic specification of the remote display and operating module DKX001, order code "Approval", option MS

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.
- The antenna bushing H337 of the external antenna must be integrated into the potential equalization system. This is the case if the sensor is connected in accordance with the regulations via the coupling.

Temperature tables

Ambient temperature

Minimum ambient temperature

$$T_a = -40\text{ °C}$$

Maximum ambient temperature

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

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 T5...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 transmitter is not mounted above the sensor and free convection can occur on all sides.

Compact version

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.

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

*Promass A (8A3B**-*..., 8A3C**-*...)*

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|-------|------------------------|----------------------------|---------------------|---------------------|----------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 1...4 | 50 | 205 | - | 90 ^{1) 2)} | 130 | 170 ³⁾ | 205 | 205 |
| | 60 | | - | - | 130 | 170 ³⁾ | 205 | 205 |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

Promass E

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|---------|------------------------|----------------------------|---------------------|---------------------|----------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8...15 | 50 | 150 | - | 80 ^{1) 2)} | 115 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | 115 ³⁾ | 150 | 150 | 150 |
| | 60 | | - | - | (115 ³⁾) | (140 ⁴⁾) | (150) | (150) |
| 25...80 | 50 | 150 | - | 80 ^{1) 2)} | 95 ³⁾ | 140 ⁴⁾ | 150 | 150 |
| | 55 | | - | - | 95 ³⁾ | 140 ⁴⁾ | 150 | 150 |
| | 60 | | - | - | (95 ³⁾) | (140 ⁴⁾) | (150) | (150) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 150 °C

Promass F

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|--|---------------------|---------------------|-------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 08...15 | 50 | 150 | - | 80 ^{2) 3)} | 115 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 115 ⁴⁾ | 150 | 150 | 150 |
| | 50 | 150 ⁵⁾ | - | 80 ^{2) 3)} | 100 | 150 | 150 | 150 |
| | 55 | | - | - | 100 | 150 | 150 | 150 |
| | 60 | | - | - | 100 | 150 | 150 | 150 |

| DN | T _a [°C] | T _{m, max} ¹⁾ [°C] | T _m [°C] | | | | | |
|----------------------|------------------------|---|---------------------|---------------------|---------------------|-------------------|-------------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| | 50 | 240 | - | 80 ^{2) 3)} | 115 ⁴⁾ | 170 ⁶⁾ | 240 | 240 |
| | 55 | | - | - | 115 ⁴⁾ | 170 ⁶⁾ | 240 | 240 |
| | 60 | | - | - | 115 ⁴⁾ | 170 | 170 (240) | 170 (240) |
| 25...80 | 50 | 150 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 95 ⁴⁾ | 150 | 150 | 150 |
| | 50 | 150 ⁵⁾ | - | 60 ^{2) 3)} | 95 | 150 | 150 | 150 |
| | 55 | | - | - | 95 | 150 | 150 | 150 |
| | 60 | | - | - | 95 | 150 | 150 | 150 |
| | 50 | 240 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 160 ⁶⁾ | 240 | 240 |
| | 55 | | - | - | 95 ⁴⁾ | 160 ⁶⁾ | 240 | 240 |
| | 60 | | - | - | 95 ⁴⁾ | 150 ⁷⁾ | 170 (240) | 170 (240) |
| 15, 25, 50... 250 | 50 | 350 | - | 85 ^{2) 3)} | 120 ⁴⁾ | 185 ⁶⁾ | 280 ⁸⁾ | 350 |
| | 60 | | - | - | 120 ⁴⁾ | 185 ⁶⁾ | 280 ⁸⁾ | 350 |
| 100...250 | 50 | 150 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 95 ⁴⁾ | 150 | 150 | 150 |
| | 50 | 150 ⁵⁾ | - | 60 ^{2) 3)} | 95 | 150 | 150 | 150 |
| | 60 | | - | - | 95 | 150 | 150 | 150 |
| | 50 | | 240 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 160 ⁶⁾ | 240 |
| | 55 | - | | - | 95 ⁴⁾ | 160 ⁶⁾ | 240 | 240 |
| | 60 | - | | - | 95 ⁴⁾ | 160 ⁷⁾ | 170 (240) | 170 (240) |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 5) Cryogenic temperature version: T_m = -196 to 150 °C
- 6) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 7) The following applies for sensors with type of protection Ex ec nC: T_m = 170 °C
- 8) The following applies for sensors with type of protection Ex ec nC: T_m = 290 °C

Promass H

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|--|---------------------|------------------|-------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | - | 80 ²⁾ | 115 ³⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 115 ³⁾ | 150 | 150 | 150 |
| 8 | 50 | 205 | - | 80 ²⁾ | 115 ³⁾ | 165 ⁴⁾ | 205 | 205 |
| | 60 | | - | - | 115 ³⁾ | 165 ⁴⁾ | 205 | 205 |
| 15...50 | 50 | 150 | - | 60 ²⁾ | 95 ³⁾ | 130 ⁵⁾ | 150 | 150 |
| | 60 | | - | - | 95 ³⁾ | 130 ⁵⁾ | 150 | 150 |
| 15...50 | 50 | 205 | - | 60 ²⁾ | 95 ³⁾ | 130 ⁴⁾ | 205 | 205 |
| | 60 | | - | - | 95 ³⁾ | 130 ⁴⁾ | 205 | 205 |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 5) The following applies for sensors with type of protection Ex ec nC: T_m = 150 °C

Promass I

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|--------|------------------------|----------------------------|---------------------|---------------------|---------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8...80 | 50 | 150 | - | 60 ^{1) 2)} | 95 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | 95 ³⁾ | 150 | 150 | 150 |
| | 60 | | - | - | (95 ³⁾) | (150) | (150) | (150) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C

Promass O

| DN | T _a [°C] | T _{m, max} [°C] | T _m [°C] | | | | | |
|------------|------------------------|-----------------------------|---------------------|------------------|------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 80 ... 250 | 50 | 205 | - | 60 ¹⁾ | 95 ²⁾ | 160 ³⁾ | 205 | 205 |
| | 55 | | - | - | 95 ²⁾ | 160 ³⁾ | 205 | 205 |
| | 60 | | - | - | 95 ²⁾ | 160 ⁴⁾ | 180 (205) | 180 (205) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 180 °C

Promass P

| DN | T _a [°C] | T _{m, max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|---|---------------------|---------------------|-------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | - | 80 ^{2) 3)} | 115 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 115 ⁴⁾ | 150 | 150 | 150 |
| | 50 | 205 | - | 80 ^{2) 3)} | 115 ⁴⁾ | 170 ⁵⁾ | 205 | 205 |
| | 60 | | - | - | 115 ⁴⁾ | 170 ⁵⁾ | 205 | 205 |
| 15...50 | 50 | 150 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | - | - | 95 ⁴⁾ | 150 | 150 | 150 |
| | 50 | 205 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 160 ⁵⁾ | 205 | 205 |
| | 60 | | - | - | 95 ⁴⁾ | 160 ⁵⁾ | 205 | 205 |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 5) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

Promass Q

| DN | T _a [°C] | T _{m, max} ¹⁾ [°C] | T _m [°C] | | | | | |
|------------|------------------------|---|---------------------|---------------------|------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 25 ... 250 | 50 | 205 | - | 60 ^{2) 3)} | 95 ⁴⁾ | 160 ⁵⁾ | 205 | 205 |
| | 60 | | - | - | 95 ⁴⁾ | 160 ⁵⁾ | 205 | 205 |

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|------------|------------------------|--|---------------------|---------------------|------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 25 ... 250 | 50 | 150 ⁶⁾ | – | 60 ^{2) 3)} | 95 ⁴⁾ | 150 | 150 | 150 |
| | 60 | | – | – | 95 ⁴⁾ | 150 | 150 | 150 |

- 1) Maximaler Temperaturbereich siehe Typenschild
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 5) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 6) Cryogenic temperature version: T_m = -196 to 150 °C

Promass S

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|---------|------------------------|----------------------------|---------------------|---------------------|-------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | – | 80 ^{1) 2)} | 115 ³⁾ | 150 | 150 | 150 |
| | 60 | | – | – | 115 ³⁾ | 150 | 150 | 150 |
| 15...50 | 50 | 150 | – | 60 ^{1) 2)} | 95 ³⁾ | 150 | 150 | 150 |
| | 60 | | – | – | 95 ³⁾ | 150 | 150 | 150 |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B "Stainless, hygienic" in connection with temperature class T5: T_a = T_a - 3 K
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C

Promass X

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|-----|------------------------|----------------------------|---------------------|------------------|---------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 350 | 50 | 180 | – | 60 ¹⁾ | 95 ²⁾ | 160 ³⁾ | 180 | 180 |
| | 55 | | – | – | 95 ²⁾ | 160 ³⁾ | 180 | 180 |
| | 60 | | – | – | (95 ²⁾) | (160 ³⁾) | (180) | (180) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 180 °C

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

NOTICE

The following applies for devices with order code for "Housing", Option B "Stainless, hygienic":

- ▶ Thermal insulation is not allowed.



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

Promass A (8A3B**-*..., 8A3C**-*...)

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|-------|---------------------|-------------------------|---------------------|------------------|-------------|----------------------|-------------|-------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 1...4 | 50 | 205 | - | 90 ¹⁾ | 130 | 170 ²⁾ | 205 | 205 |
| | 55 | | - | - | (130) | (170 ²⁾) | (205) | (205) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

Promass E

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|---------|---------------------|-------------------------|---------------------|------------------|----------------------|----------------------|-------------|-------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8...15 | 50 | 150 | - | 80 ¹⁾ | 115 ²⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (115 ²⁾) | (140 ³⁾) | (150) | (150) |
| 25...80 | 50 | 150 | - | 60 ¹⁾ | 95 ²⁾ | 140 ³⁾ | 150 | 150 |
| | 55 | | - | - | (95 ²⁾) | (140 ³⁾) | (150) | (150) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 150 °C

Promass F

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|---------------------|---------------------------------------|---------------------|------------------|----------------------|-------------|-------------|-------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 08...15 | 50 | 150 | - | 80 ²⁾ | 115 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (115 ³⁾) | (150) | (150) | (150) |
| | 50 | 150 ⁴⁾ | - | 80 | 100 | 150 | 150 | 150 |

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|----------------------|------------------------|--|---------------------|------------------|----------------------|----------------------|-------------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| | 55 | 240 | - | - | 100 | 150 | 150 | 150 |
| | 50 | | - | 80 ²⁾ | 115 ³⁾ | 170 ⁵⁾ | 240 | 240 |
| | 55 | | - | - | (115 ³⁾) | (170 ⁵⁾) | (240) | (240) |
| 25...80 | 50 | 150 | - | 60 ²⁾ | 95 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (95 ³⁾) | (150) | (150) | (150) |
| | 50 | 150 ⁴⁾ | - | 60 ²⁾ | 95 | 150 | 150 | 150 |
| | 55 | | - | - | 95 | 150 | 150 | 150 |
| | 50 | 240 | - | 60 ²⁾ | 95 ³⁾ | 160 ⁵⁾ | 240 | 240 |
| | 55 | | - | - | (95 ³⁾) | (160 ⁵⁾) | (240) | (240) |
| 15, 25, 50... 250 | 50 | 350 | - | 85 ²⁾ | 120 ³⁾ | 185 ⁵⁾ | 280 ⁶⁾ | 350 |
| | 60 | | - | - | 120 ³⁾ | 185 ⁵⁾ | 280 ⁶⁾ | 350 |
| 100...250 | 50 | 150 | - | 60 ²⁾ | 95 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (95 ³⁾) | (150) | (150) | (150) |
| | 50 | 150 ⁴⁾ | - | 60 ²⁾ | 95 | 150 | 150 | 150 |
| | 55 | | - | - | 95 | 150 | 150 | 150 |
| | 50 | 240 | - | 60 ²⁾ | 95 ³⁾ | 160 ⁵⁾ | 240 | 240 |
| | 55 | | - | - | (95 ³⁾) | (160 ⁵⁾) | (240) | (240) |

1) Maximum temperature range, see nameplate

2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C

3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C

4) Cryogenic temperature version: T_m = -196 to 150 °C

5) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

6) The following applies for sensors with type of protection Ex ec nC: T_m = 290 °C

Promass H

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|--|---------------------|------------------|----------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | - | 80 ²⁾ | 115 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (115 ³⁾) | (150) | (150) | (150) |
| 8 | 50 | 205 | - | 80 ²⁾ | 115 ³⁾ | 165 ⁴⁾ | 205 | 205 |
| | 55 | | - | - | (115 ³⁾) | (165 ⁴⁾) | (205) | (205) |
| 15...50 | 50 | 150 | - | 60 ²⁾ | 95 ³⁾ | 130 ⁵⁾ | 150 | 150 |

| DN | T _a [°C] | T _{m, max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|---|---------------------|------------------|---------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| | 55 | | - | - | (95 ³⁾) | (130 ⁵⁾) | (150) | (150) |
| 15...50 | 50 | 205 | - | 60 ²⁾ | 95 ³⁾ | 130 ⁴⁾ | 205 | 205 |
| | 55 | | - | - | (95 ³⁾) | (130 ⁴⁾) | (205) | (205) |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 5) The following applies for sensors with type of protection Ex ec nC: T_m = 150 °C

Promass I

| DN | T _a [°C] | T _{m, max} [°C] | T _m [°C] | | | | | |
|--------|------------------------|-----------------------------|---------------------|------------------|---------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8...80 | 50 | 150 | - | 60 ¹⁾ | 95 ²⁾ | 150 | 150 | 150 |
| | 60 | | - | - | (95 ²⁾) | (150) | (150) | (150) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C

Promass O

| DN | T _a [°C] | T _{m, max} [°C] | T _m [°C] | | | | | |
|------------|------------------------|-----------------------------|---------------------|------------------|---------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 80 ... 250 | 50 | 205 | - | 60 ¹⁾ | 95 ²⁾ | 160 ³⁾ | 205 | 205 |
| | 55 | | - | - | (95 ²⁾) | (160 ³⁾) | (205) | (205) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

Promass P

| DN | T _a [°C] | T _{m, max} ¹⁾ [°C] | T _m [°C] | | | | | |
|----|------------------------|---|---------------------|------------------|----------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | - | 80 ²⁾ | 115 ³⁾ | 150 | 150 | 150 |
| | 55 | | - | - | (115 ³⁾) | (150) | (150) | (150) |
| | 50 | 205 | - | 80 ²⁾ | 115 ³⁾ | 170 ⁴⁾ | 205 | 205 |

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|---------|------------------------|--|---------------------|------------------|----------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| | 55 | | – | – | (115 ³⁾) | (170 ⁴⁾) | (205) | (205) |
| 15...50 | 50 | 150 | – | 60 ²⁾ | 95 ³⁾ | 150 | 150 | 150 |
| | 55 | | – | – | 95 ³⁾ | 150 | 150 | 150 |
| | 60 | | – | – | (95 ³⁾) | (150) | (150) | (150) |
| | 50 | 205 | – | 60 ²⁾ | 95 ³⁾ | 160 ⁴⁾ | 205 | 205 |
| | 55 | | – | – | 95 ³⁾ | 160 ⁴⁾ | 205 | 205 |
| | 60 | | – | – | (95 ³⁾) | (160 ⁴⁾) | (205) | (205) |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C

Promass Q

| DN | T _a [°C] | T _{m,max} ¹⁾ [°C] | T _m [°C] | | | | | |
|------------|------------------------|--|---------------------|------------------|------------------|-------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 25 ... 250 | 50 | 205 | – | 60 ²⁾ | 95 ³⁾ | 160 ⁴⁾ | 205 | 205 |
| | 55 | | – | (40) | (95) | (160) | (205) | (205) |
| 25 ... 250 | 50 | 150 ⁵⁾ | – | 60 ²⁾ | 95 ³⁾ | 150 | 150 | 150 |
| | 55 | | – | (40) | (95) | (150) | (150) | (150) |

- 1) Maximum temperature range, see nameplate
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 4) The following applies for sensors with type of protection Ex ec nC: T_m = 195 °C
- 5) Cryogenic temperature version: T_m = –196 to 150 °C

Promass S

| DN | T _a [°C] | T _{m,max} [°C] | T _m [°C] | | | | | |
|---------|------------------------|----------------------------|---------------------|------------------|----------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 8 | 50 | 150 | – | 80 ¹⁾ | 115 ²⁾ | 150 | 150 | 150 |
| | 55 | | – | – | (115 ²⁾) | (150) | (150) | (150) |
| 15...50 | 50 | 150 | – | 60 ¹⁾ | 95 ²⁾ | 150 | 150 | 150 |

| DN | T _a [°C] | T _{m, max} [°C] | T _m [°C] | | | | | |
|----|------------------------|-----------------------------|---------------------|----------------|---------------------|----------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| | 55 | | - | - | 95 ²⁾ | 150 | 150 | 150 |
| | 60 | | - | - | (95 ²⁾) | (150) | (150) | (150) |

- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C

Promass X

| DN | T _a [°C] | T _{m, max} [°C] | T _m [°C] | | | | | |
|-----|------------------------|-----------------------------|---------------------|------------------|---------------------|----------------------|----------------|----------------|
| | | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 350 | 50 | 180 | - | 60 ¹⁾ | 95 ²⁾ | 160 ³⁾ | 180 | 180 |
| | 55 | | - | - | (95 ²⁾) | (160 ³⁾) | (180) | (180) |


- 1) The following applies for sensors with type of protection Ex ec nC: T_m = 95 °C
- 2) The following applies for sensors with type of protection Ex ec nC: T_m = 130 °C
- 3) The following applies for sensors with type of protection Ex ec nC: T_m = 180 °C

With thermal insulation without Endress+Hauser specifications

NOTICE

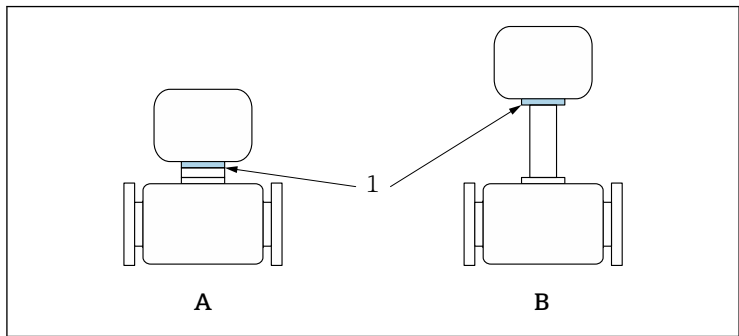
The following applies for devices with order code for "Housing", Option B "Stainless, hygienic":

- Thermal insulation is not allowed.


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

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

→  17



A0031198

 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}

| T_m [°C] | | | | | |
|---------------|----------------|----------------|----------------|----------------|----------------|
| T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| - | 63 | 72 | 75 | 77 | 77 |

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 | |
|--|-------|----------------|--------|----------------|--------|----------------|--------|
| 1 (+) | 2 (-) | 26 (+) | 27 (-) | 24 (+) | 25 (-) | 22 (+) | 23 (-) |
| Device-specific terminal assignment: adhesive label in terminal cover. | | | | | | | |

FOUNDATION Fieldbus

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

PROFIBUS DP

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

PROFIBUS PA

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

Modbus RS485

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

Modbus TCP with Ethernet-APL

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

PROFINET

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

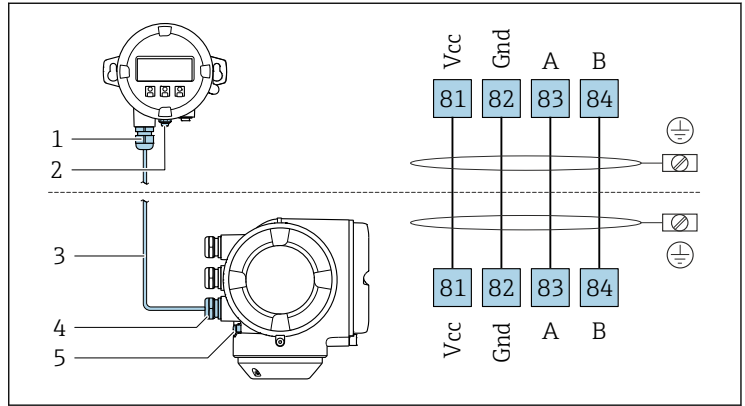
PROFINET with Ethernet-APL

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

EtherNet/IP

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

Remote display and operating module DKX001



A0027518

- 1 Remote display and operating module DKX001
- 2 Protective earth (PE)
- 3 Connecting cable
- 4 Measuring device
- 5 Protective earth (PE)

Safety-related values

| Order code for "Output; input 1" | Output type | Safety-related values "Output; input 1" | |
|----------------------------------|-----------------------------------|---|--------|
| | | 26 (+) | 27 (-) |
| Option BA | Current output 4 to 20 mA HART | $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option GA | PROFIBUS PA | $U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option LA | PROFIBUS DP | $U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option MA | Modbus RS485 | $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option MB | Modbus TCP with Ethernet-APL | APL port profile SLAX SPE PoDL classes 10, 11, 12 $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option SA | FOUNDATION Fieldbus | $U_N = 32 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option NA | EtherNet/IP | $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |

| Order code for "Output; input 1" | Output type | Safety-related values "Output; input 1" | |
|-------------------------------------|-------------------------------|---|--------|
| | | 26 (+) | 27 (-) |
| Option RA | PROFINET | $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |
| Option RB | PROFINET with Ethernet-APL | APL port profile SLAX SPE PoDL classes 10, 11, 12 $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | |

| Order code for "Output; input 2"; "Output; input 3" | Output type | Safety-related values | | | |
|---|-----------------------------------|--|--------|-----------------|--------|
| | | Output; input 2 | | Output; input 3 | |
| | | 24 (+) | 25 (-) | 22 (+) | 23 (-) |
| 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 | $U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$ | | | |

Intrinsically safe values

| Order code for "Output; input 1" | Output type | Intrinsically safe values "Output; input 1" | |
|-------------------------------------|--|--|--------|
| | | 26 (+) | 27 (-) |
| Option HA | PROFIBUS PA Ex i (STANDARD + FISCO) | Ex ic $U_i = 32 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$ | |
| Option MC | Modbus TCP with Ethernet-APL Ex i | 2-WISE power load, APL port profile SLAC¹⁾ Ex ic $U_i = 17.5 \text{ V}$ $I_i = 380 \text{ mA}$ $P_i = 5.32 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$ Cable specifications according to 2-WISE: $R_c = 15 \text{ to } 150 \text{ } \Omega/\text{km}$ $L_c = 0.4 \text{ to } 1 \text{ mH}/\text{km}$ $C_c = 45 \text{ to } 200 \text{ nF}/\text{km}$ $C_c = C_c \text{ line}/\text{line} + 0,5 C_c \text{ line}/\text{screen}$, if both lines are floating, or $C_c = C_c \text{ line}/\text{line} + C_c \text{ line}/\text{screen}$, if the screen is connected to one line Length of cable (not including cable stubs): $\leq 200 \text{ m (656.2)}$ Length of cable stubs: $\leq 1 \text{ m (3.3 ft)}$ | |
| Option RC | PROFINET with Ethernet-APL Ex i | | |
| Option TA | FOUNDATION Fieldbus Ex i (STANDARD + FISCO) | Ex ic $U_i = 32 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$ | |

1) For further options see Ethernet-APL Installation Drawing HE_01622.

| Order code for "Output; input 2"; "Output; input 3" | Output type | Intrinsically safe values | | | |
|---|---|--|--------|-----------------|--------|
| | | Output; input 2 | | Output; input 3 | |
| | | 24 (+) | 25 (-) | 22 (+) | 23 (-) |
| 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 | $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1.25 \text{ W}$ $L_i = 0$ $C_i = 0$ | | | |

Remote display DKX001

| Basic specification, position 1, 2 Approval | Terminal assignment | Basic specification, position 8 Display; Operation Option O |
|---|---------------------|---|
| Option MS | 81, 82, 83, 84 | $U_n = 3.3 \text{ V}$ |
| | | $I_n = 150 \text{ mA}$ |



71604767

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