

# Safety Instructions

## Proline Promag 300

ATEX: II3G

IECEX: Zone 2



BG - Правила за техниката на безопасност за електрически средства за производство във взривоопасни зони. Ако не разбирате езика на това ръководство има възможност да спорячате при нас едно ръководство, преведено на езика на Вашата страна.

#### ЕС декларация за съответствие

Производителят Endress+Hauser декларира с това заявление за съответствие и с предявяването на сертификата CE, че този продукт отговаря на изискванията на съответните европейски директиви. Прилаганите директиви, норми и документи са указани в заявлението за съответствие.

CS - Bezpečnostní pokyny pro elektrické přístroje v místech s nebezpečím výbuchu. Pokud nemáte možnost přečíst si tento návod, můžete si u nás objednat návod přeložený do svého jazyka.

#### EU prohlášení o shodě

Společnost Endress+Hauser prohlašuje prostřednictvím tohoto prohlášení a použitím značky CE, že tento výrobek vyhovuje příslušným evropským směrnicím. Zmíněné směrnice, normy a dokumenty jsou uvedeny v Prohlášení o shodě.

DA - Sikkerhedsforskrifter for elektriske apparater certificeret til brug i eksplosionsfarlige områder. Hvis du ikke forstår denne manual, kan en oversat kopi af den på dit eget sprog bestilles fra os.

#### EU-overensstemmelseserklæring

Med denne overensstemmelseserklæring og tilføjelsen af CE-mærket sikrer producenten Endress+Hauser, at produktet er i overensstemmelse med relevante europæiske direktiver. Dokumentation for overensstemmelsen gives i de anførte direktiver, standarder og dokumenter.

EL - Οδηγίες ασφαλείας ηλεκτρικών συσκευών για επικίνδυνες για έκρηξη περιοχές. Σε περίπτωση που δεν μπορείτε να διαβάσετε αυτές τις οδηγίες, τότε μπορείτε να παραγγείλετε ένα αντίτυπο μεταφρασμένο στη γλώσσα σας.

#### Δήλωση συμμόρφωσης ΕΕ

Με αυτή τη δήλωση πιστότητας και την τοποθέτηση του σήματος CE ο κατασκευαστής Endress+Hauser δηλώνει, ότι αυτό το προϊόν συμμορφώνεται με τις ευρωπαϊκές οδηγίες που πρέπει να εφαρμοστούν. Οι οδηγίες, τα πρότυπα και τα έγγραφα που εφαρμόστηκαν αναφέρονται στη δήλωση πιστότητας.

ES - Instrucciones de seguridad de aparatos eléctricos homologados para su utilización en áreas expuestas a riesgos de deflagración. Si no entiende este manual, puede pedir un ejemplar en su idioma.

#### Declaración UE de conformidad

Por la presente declaración y la inclusión de la marca CE, el fabricante Endress+Hauser, declara que el producto cumple con las directivas europeas pertinentes. Las directivas, normas y documentos de aplicación se indican en la declaración de conformidad.

ET - Ohutusjuhised plahvatusohtlikus keskkonnas kasutatavate elektriseadmete kohta. Kui Te ei saa käesolevast juhendist aru, võite meilt tellida Teie riigikeelde tõlgitud juhendi.

#### EL i vastavusdeklaratsioon

Tootja Endress+Hauser kinnitab juurdelisatud vastavusdeklaratsiooni esitamisega ja CE-märgise kandmisega tootele, et käesolev toode vastab kohaldatavate Euroopa Liidu direktiivide nõuetele. Kohaldatavad direktiivid, standardid ja dokumendid on ära toodud vastavusdeklaratsioonis.

FI - Turvallisuusohjeita sähkölaitteille, jotka on vahvistettu käytettäväksi räjähdysvaarallisilla alueilla. Jos et ymmärrä tätä käsikirjaa, voit tilata meiltä käännöksen omalla kansallisella kielelläsi.

#### EU-vaatimustenmukaisuusvakuutus

Valmistaja Endress+Hauser vakuuttaa täällä vaatimustenmukaisuustodistuksella ja CE-merkin kiinnittämisellä, että tämä tuote täyttää sovellettavien EU-direktiivien määräykset. Sovellettavat direktiivit, normit ja dokumentit on merkitty vaatimustenmukaisuustodistukseen.

HR - Sigurnosni naputci za elektromaterijal u sredini u kojoj prijeti opasnost od eksplozije. Ako Vam nije moguće čitati ovaj naputak, onda imate mogućnost da kod nas naručite naputak sastavljen na Vašem materinskom jeziku.

#### EU izjava o sukladnosti

Dobavljač Endress+Hauser jamči ovom izjavom i stavljanjem oznake CE da ovaj proizvod udovoljava zahtjevima europskih direktiva koje su na snazi. U izjavi o usuglašenosti se navode direktive, norme i dokumenti koji su na snazi.

HU - Biztonsági információk robbanásveszélyes területre való elektromos eszközökhöz. Amennyiben nem tudja elolvasni ezt az útmutatót, akkor megrendelheti az Ön anyanyelvére lefordítva is.

#### EU-megfelelőségi nyilatkozat

Az Endress+Hauser mint gyártó jelen megfeleléségi nyilatkozattal és a CE-jelzés felhelyezésével kijelenti, hogy ez a termék megfelel az alkalmazandó európai irányelveknek. Az alkalmazott irányelvek, szabványok és dokumentumok a megfeleléségi nyilatkozatban fel vannak tüntetve.

IT - Istruzioni di sicurezza per apparecchiature elettriche certificate per l'utilizzo in aree con pericolo di esplosione. Se il presente manuale non risulta comprensibile potete ordinarne una copia tradotta nella vostra lingua.

#### **Dichiarazione di conformità UE**

Con questa dichiarazione e con l'applicazione del marchio CE, il costruttore Endress+Hauser, assicura che il prodotto è conforme alle direttive europee vigenti. Prova della conformità è fornita dall'osservanza delle direttive, delle norme e dei documenti elencati.

LT - Elektros įrenginio saugumo nurodymai, susiję su sprogimo zonomis. Jeigu negalite perskaityti šios instrukcijos, kreipkitės į mus, kad užsisakytumėte į jūsų gimtąją kalbą išverstą instrukciją.

#### **ES atitikties deklaracija**

Gamintojas Endress+Hauser šia atitikties deklaracija ir CE ženkliniu patvirtina, kad gaminyje atitinka taikytinas ES direktyvas. Taikomos direktyvos, normos ir dokumentai yra pateikiami atitikties deklaracijoje.

LV - Drošības norādījumi elektrisko darba instrumentu lietošanai apgabalos, kas pakļauti sprādzienbīstamībai. Ja Jums nav iespēju izlasīt šos norādījumus, Jūs varat pasūtīt pie mums tulkojumu Jūsu valsts valodā.

#### **ES atbilstības deklarācija**

Ražotājs Endress+Hauser ar šo atbilstības apliecinājumu un CE zīmola lietojumu apstiprina, ka produkts izgatavots saskaņā ar atbilstošajām Eiropas vadlīnijām. Piemērotās vadlīnijas, normas un dokumenti atrunāti atbilstības apliecinājumā.

NL - Veiligheidsinstructies voor elektrisch materieel in explosiegevaarlijke omgeving. Wanneer u deze handleiding niet kunt lezen, kunt u een in uw landstaal vertaalde handleiding bij ons bestellen.

#### **EU-conformiteitsverklaring**

De leverancier Endress+Hauser waarborgt met deze verklaring en het aanbrengen van het CE-teken, dat dit product overeenstemt met de geldende Europese richtlijnen. De geldende richtlijnen, normen en documenten zijn aangegeven in de conformiteitsverklaring.

PL - Wskazówki dot. bezpieczeństwa dla urządzeń elektrycznych stosowanych w obszarze zagrożonym wybuchem. Jeśli niniejsza instrukcja napisana jest w języku, którym się nie posługujesz, możesz zamówić u nas przetłumaczony dokument.

#### **Deklaracja zgodności UE**

Producent Endress+Hauser w niniejszej deklaracji zgodności wraz z nadaniem znaku CE oświadcza, że produkt ten jest zgodny z obowiązującą Europejską Dyrektywą. Zastosowane wytyczne, normy oraz dokumenty podane są w deklaracji zgodności.

PT - Instruções de segurança para dispositivos eléctricos certificados para utilização em áreas de risco de incêndio. Se não compreender este manual, pode encomendar-nos directamente uma cópia na sua língua.

#### **Declaração UE de conformidade**

Com esta declaração de conformidade e a aplicação da marca CE, o fabricante Endress+Hauser, garante que o produto obedece às directivas europeias a aplicar. As directivas, normas e documentos são apresentadas na declaração de conformidade.

RO - Indicații de siguranță pentru mijloacele de producție electrice pentru zonele periclitare de explozie. Dacă nu puteți citi aceste instrucțiuni, atunci puteți comanda la noi instrucțiunile traduse în limba țării dumneavoastră.

#### **Declarația UE de conformitate**

Producătorul Endress+Hauser declară prin declarația de conformitate alăturată și prin aplicarea semnului CE că acest produs corespunde directivelor europene aplicabile. Directivele, normele aplicate și documentele sunt menționate în declarația de conformitate.

SK - Bezpečnostné pokyny pre elektrické zariadenie prevádzkované v priestoroch s nebezpečenstvom výbuchu. Ak nemáte možnosť 'prečítať' si tento návod, môžete si u nás objednať 'návod preložený do svojho jazyka.

#### **EÚ vyhlásenie o zhode**

Spoločnosť Endress+Hauser vyhlasuje prostredníctvom tohto vyhlásenia o konformite a použitím značky CE, že tento výrobok vyhovuje príslušným európskym smerniciam. Zmieňované smernice, normy a dokumenty sú uvedené vo Vyhlásení o konformite.

SL - Varnostni napotki glede električne opreme, namenjene za uporabo v eksplozivnih območjih. Če teh navodil ne morete razumeti, lahko pri nas naročite prevod v vaš jezik.

#### **Izjava EU o skladnosti**

Proizvajalec Endress+Hauser s to izjavo o skladnosti in navedbo oznake CE izjavlja, da je ta izdelek skladen s predpisanimi evropskimi smernicami. Upošteevane smernice, standardi in dokumenti so navedeni v izjavi o skladnosti.

SV - Säkerhetsföreskrifter för elektrisk utrustning certifierad för användning i explosionsfarliga områden. Om du inte förstår denna manual, kan en översatt kopia på ditt eget språk beställas från oss.

#### **EU-försäkran om överensstämmelse**

Endress+Hauser försäkrar med vidstående försäkran om överensstämmelse och med CE-märkningen att denna produkt överensstämmer med de tillämplbara europeiska riktlinjerna. De tillämplade riktlinjerna, normerna och dokumenten anges i försäkran om överensstämmelse.

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# Proline Promag 300

## Table of contents

Associated documentation ..... 6

Manufacturer's certificates ..... 6

Manufacturer address ..... 7

Extended order code ..... 7

Safety instructions: General ..... 10

Safety instructions: Installation ..... 11

Temperature tables ..... 12

Connection values: Signal circuits ..... 17

Associated documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* ([www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)): Enter serial number from nameplate.
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

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

| Measuring device | Documentation code |                     |             |             |
|------------------|--------------------|---------------------|-------------|-------------|
|                  | HART               | FOUNDATION Fieldbus | PROFIBUS PA | PROFIBUS DP |
| Promag H 300     | BA01392D           | BA01477D            | BA01396D    | BA01865D    |
| Promag P 300     | BA01393D           | BA01478D            | BA01397D    | BA01853D    |
| Promag W 300     | BA01918D           | BA01938D            | BA01928D    | BA01940D    |

| Measuring device | Documentation code |             |          |
|------------------|--------------------|-------------|----------|
|                  | Modbus RS485       | EtherNet/IP | PROFINET |
| Promag H 300     | BA01394D           | BA01716D    | BA01718D |
| Promag P 300     | BA01395D           | BA01717D    | BA01719D |
| Promag W 300     | BA01939D           | BA01937D    | BA01941D |

Additional documentation

| Contents                                   | Document type                                | Documentation code |
|--------------------------------------------|----------------------------------------------|--------------------|
| Remote display and operating module DKX001 | Special documentation                        | SD01763D           |
|                                            | Safety Instructions II3G Ex nA or II3G Ex ec | XA01498D           |
| Explosion Protection                       | Brochure                                     | CP00021Z/11        |
| Ethernet-APL Installation Drawing          | Installation Drawing                         | HE_01622           |

Please note the documentation associated with the device.

Manufacturer's certificates

**EU Declaration of conformity**  
Documentation code: EC\_00410

**IEC Certificate of Conformity**  
Certificate number:  
IECEx CSA 16.0034X

Affixing the certificate number certifies conformity with the standards under [www.IECEx.com](http://www.IECEx.com) (depending on the device version).

- IEC 60079-0: 2017
- IEC 60079-7: 2017
- IEC 60079-11: 2011
- IEC 60079-15: 2017
- IEC TS 60079-47: 2021

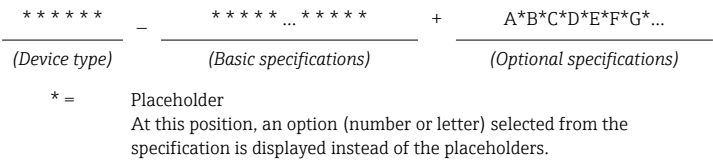
**Manufacturer address**

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



*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 | 5                                                               | Electromagnetic flowmeter                    |
| 2        | Sensor            | H, P, W <sup>1)</sup>                                           | Sensor type                                  |
| 3        | Transmitter       | 3                                                               | Transmitter type:<br>4-wire, compact version |
| 4        | Generation index  | B                                                               | Platform generation                          |
| 5, 6     | Nominal diameter  | Examples:<br>02, 04, 40, 50, 1H, 1Z, T0,<br>E4 <sup>2) 3)</sup> | 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<br>Order code for "Approval"<br>Option selected | Position 4, 5<br>Order code for "Output, input 1"<br>Option selected | Type of protection              |                         |
|---------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------|-------------------------|
|                                                               |                                                                      | Transmitter                     | Sensor                  |
| BS                                                            | BA, BB, GA, LA, MA, MB, NA, RA, RB, SA                               | Ex ec nC ic IIC T5...T1 Gc      | Ex ec ic IIC T5...T1 Gc |
|                                                               | HA, MC, RC, TA                                                       | Ex ec nC ic  ic  IIC T5...T1 Gc |                         |

| 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 |

| Position | Order code for     | Option selected | Description                                |
|----------|--------------------|-----------------|--------------------------------------------|
|          |                    | 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                               |
| 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    |
|          |                    | O               | 4-line, illuminated; touch control         |
| 9        | Housing            | A               | Alu, coated                                |
|          |                    | B               | Stainless, hygienic                        |
| 11       | Liner              | A               | PFA                                        |

| Position | Order code for | Option selected | Description          |
|----------|----------------|-----------------|----------------------|
|          |                | B               | PFA High-temperature |
|          |                | E               | PTFE                 |
|          |                | H               | Hard rubber          |
|          |                | Q               | PTFE 90°C            |
|          |                | U               | Polyurethane         |
| 17, 18   | Device Model   | A1              | 1                    |
|          |                | A2              | 2                    |

Optional specifications

| ID | Order code for       | Option selected | Description                                                       |
|----|----------------------|-----------------|-------------------------------------------------------------------|
| Cx | Sensor option        | CG              | Extended neck for insulation <sup>1)</sup>                        |
| Px | Enclosed accessories | P8              | Wireless antenna, wide area (external WLAN antenna) <sup>2)</sup> |

1) Only for Promag W and Promag P available  
2) 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. IEC/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.
- 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 →  6
- 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  $T_{a,max} + 20\text{ K}$ ).
- Only use certified cable entries suitable for the application. Observe selection criteria as per IEC/EN 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.

### Optional RFID TAG

- In the case of high electromagnetic field intensities in accordance with IEC/EN 60079-14: Use is not permitted.
- Avoid electrostatic charging.

### Intrinsic safety

Observe the guidelines for interconnecting intrinsically safe circuits (e.g. IEC/EN 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 BS

### 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

T<sub>m</sub> = -40 to 0 °C depending on the selected device version (see nameplate!)

Maximum medium temperature

T<sub>m</sub> for T5...T1 depending on the maximum ambient temperature T<sub>a</sub>

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

Promag H

| DN                         | T <sub>a</sub><br>[°C] | T <sub>m</sub> [°C] |                  |                |                |                |                |
|----------------------------|------------------------|---------------------|------------------|----------------|----------------|----------------|----------------|
|                            |                        | T6<br>[85 °C]       | T5<br>[100 °C]   | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
| Without thermal insulation |                        |                     |                  |                |                |                |                |
| 2...150                    | 50                     | –                   | 95 <sup>1)</sup> | 130            | 150            | 150            | 150            |
|                            | 55 <sup>2)</sup>       | –                   | 80 <sup>1)</sup> | 130            | 150            | 150            | 150            |
|                            | 60 <sup>2)</sup>       | –                   | –                | 100            | 100            | 100            | 100            |

- 1)    The maximum admissible ambient temperature changes for devices with order code for "Housing", Option B  
      "Stainless, hygienic" in connection with temperature class T5: T<sub>a</sub> = T<sub>a</sub> - 3 K
- 2)    T<sub>a</sub> = 50 °C for optional specification, ID Cx (Sensor option) = CI (Fluid Temperature Probe)

Promag P

| DN                                                                                                                    | Liner | T <sub>a</sub><br>[°C] | T <sub>m</sub> [°C] |                |                |                |                |                |
|-----------------------------------------------------------------------------------------------------------------------|-------|------------------------|---------------------|----------------|----------------|----------------|----------------|----------------|
|                                                                                                                       |       |                        | T6<br>[85 °C]       | T5<br>[100 °C] | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
| Without thermal insulation                                                                                            |       |                        |                     |                |                |                |                |                |
| 15...600                                                                                                              | PTFE  | 50                     | –                   | 90             | 130            | 130            | 130            | 130            |
|                                                                                                                       |       | 55                     | –                   | –              | 130            | 130            | 130            | 130            |
|                                                                                                                       |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |
| 25...200                                                                                                              | PFA   | 40                     | –                   | –              | –              | 150            | 150            | 150            |
|                                                                                                                       |       | 45                     | –                   | 95             | 130            | 130            | 130            | 130            |
|                                                                                                                       |       | 50                     | –                   | 90             | 130            | 130            | 130            | 130            |
|                                                                                                                       |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |
| Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation |       |                        |                     |                |                |                |                |                |
| 15...300                                                                                                              | PTFE  | 50                     | –                   | 90             | 130            | 130            | 130            | 130            |

| DN                                                                                     | Liner | T <sub>a</sub><br>[°C] | T <sub>m</sub> [°C] |                |                |                |                |                |
|----------------------------------------------------------------------------------------|-------|------------------------|---------------------|----------------|----------------|----------------|----------------|----------------|
|                                                                                        |       |                        | T6<br>[85 °C]       | T5<br>[100 °C] | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
| 25...200                                                                               | PFA   | 55                     | –                   | –              | 130            | 130            | 130            | 130            |
|                                                                                        |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |
|                                                                                        |       | 40                     | –                   | –              | –              | 150            | 150            | 150            |
|                                                                                        |       | 45                     | –                   | 95             | 130            | 130            | 130            | 130            |
|                                                                                        |       | 50                     | –                   | 90             | 130            | 130            | 130            | 130            |
|                                                                                        |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |
| High-temperature version (Order code for "Liner", option B) without thermal insulation |       |                        |                     |                |                |                |                |                |
| 25...200                                                                               | PFA   | 45                     | –                   | 95             | 130            | 180            | 180            | 180            |
|                                                                                        |       | 50                     | –                   | 90             | 130            | 160            | 160            | 160            |
|                                                                                        |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |
| High-temperature version (Order code for "Liner", option B) with thermal insulation    |       |                        |                     |                |                |                |                |                |
| 25...200                                                                               | PFA   | 45                     | –                   | 95             | 130            | 170            | 170            | 170            |
|                                                                                        |       | 50                     | –                   | 90             | 130            | 160            | 160            | 160            |
|                                                                                        |       | 60                     | –                   | –              | 100            | 100            | 100            | 100            |

*Promag W*

| DN                                                                                                                    | Liner       | T <sub>a</sub><br>[°C] | T <sub>m</sub> [°C] |                |                |                |                |                |
|-----------------------------------------------------------------------------------------------------------------------|-------------|------------------------|---------------------|----------------|----------------|----------------|----------------|----------------|
|                                                                                                                       |             |                        | T6<br>[85 °C]       | T5<br>[100 °C] | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
| Without thermal insulation                                                                                            |             |                        |                     |                |                |                |                |                |
| 25...300                                                                                                              | PTFE        | 50                     | –                   | 90             | 90             | 90             | 90             | 90             |
|                                                                                                                       |             | 55                     | –                   | –              | 90             | 90             | 90             | 90             |
|                                                                                                                       |             | 60                     | –                   | –              | 90             | 90             | 90             | 90             |
| 50...2400                                                                                                             | Hard rubber | 50                     | –                   | 80             | 80             | 80             | 80             | 80             |
|                                                                                                                       |             | 60                     | –                   | –              | 80             | 80             | 80             | 80             |
| 25...1200                                                                                                             | PU          | 50                     | –                   | 50             | 50             | 50             | 50             | 50             |
| Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation |             |                        |                     |                |                |                |                |                |
| 25...300                                                                                                              | PTFE        | 50                     | –                   | 90             | 90             | 90             | 90             | 90             |
|                                                                                                                       |             | 55                     | –                   | –              | 90             | 90             | 90             | 90             |
|                                                                                                                       |             | 60                     | –                   | –              | 90             | 90             | 90             | 90             |

| DN        | Liner       | T <sub>a</sub><br>[°C] | T <sub>m</sub> [°C] |                |                |                |                |                |
|-----------|-------------|------------------------|---------------------|----------------|----------------|----------------|----------------|----------------|
|           |             |                        | T6<br>[85 °C]       | T5<br>[100 °C] | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
| 50...300  | Hard rubber | 50                     | –                   | 80             | 80             | 80             | 80             | 80             |
|           |             | 60                     | –                   | –              | 80             | 80             | 80             | 80             |
| 25...1200 | PU          | 50                     | –                   | 50             | 50             | 50             | 50             | 50             |

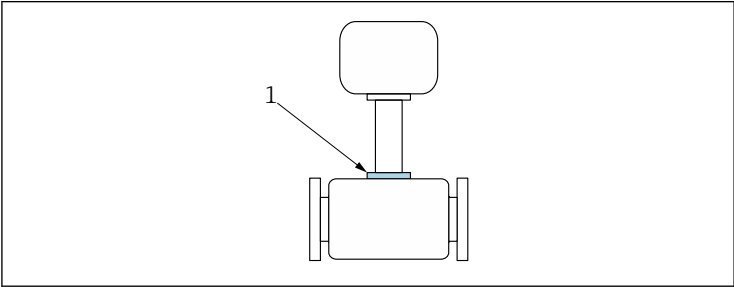
With thermal insulation without Endress+Hauser specifications

NOTICE

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

- Thermal insulation is not allowed.

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



A0038947

- 1 High-temperature version or extension neck for insulation: position of reference point for temperature measurement

1 Reference point ( $T_{ref}$ )

Reference temperature  $T_{ref}$

| T6<br>[85 °C] | T5<br>[100 °C] | T4<br>[135 °C] | T3<br>[200 °C] | T2<br>[300 °C] | T1<br>[450 °C] |
|---------------|----------------|----------------|----------------|----------------|----------------|
| –             | 62.2           | 74,0           | 75.6           | 75.6           | 75.6           |

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<br>(RJ45 connector) | 24 (+)         | 25 (-) | 22 (+)         | 23 (-) |
| Device-specific terminal assignment:<br>adhesive label in terminal cover. |       |                              |                |        |                |        |

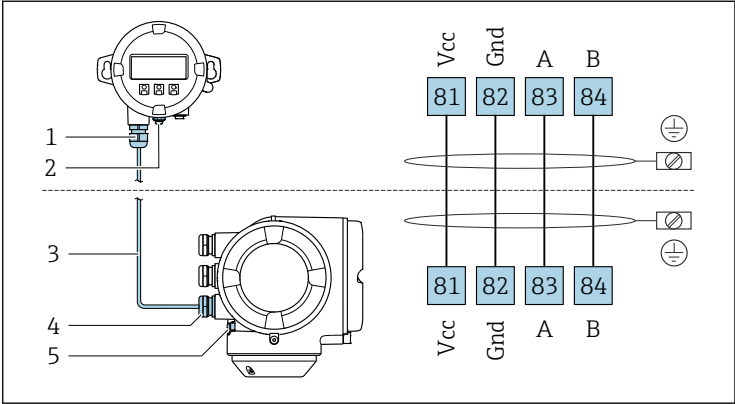
PROFINET with Ethernet-APL

| 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<br>(RJ45 connector) | 24 (+)         | 25 (-) | 22 (+)         | 23 (-) |
| Device-specific terminal assignment:<br>adhesive label in terminal cover. |       |                                 |                |        |                |        |

Remote display and operating module DKX001



A0027518

Safety-related values

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

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

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

## Intrinsically safe values

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

1) For further options see Ethernet-APL Installation Drawing HE\_01622.

| Order code for<br>"Output; input 2";<br>"Output; input 3" | Output type                                       | Intrinsically safe values                                                                                               |        |                 |        |
|-----------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------|-----------------|--------|
|                                                           |                                                   | Output; input 2                                                                                                         |        | Output; input 3 |        |
|                                                           |                                                   | 24 (+)                                                                                                                  | 25 (-) | 22 (+)          | 23 (-) |
| Option C                                                  | Current output<br>4 to 20 mA Ex i<br>passive      | U <sub>i</sub> = 30 V<br>I <sub>i</sub> = 100 mA<br>P <sub>i</sub> = 1.25 W<br>L <sub>i</sub> = 0<br>C <sub>i</sub> = 0 |        |                 |        |
| Option G                                                  | Pulse/frequency/<br>switch output Ex i<br>passive | U <sub>i</sub> = 30 V<br>I <sub>i</sub> = 100 mA<br>P <sub>i</sub> = 1.25 W<br>L <sub>i</sub> = 0<br>C <sub>i</sub> = 0 |        |                 |        |

Remote display DKX001

| Basic specification, position 1,<br>2<br>Approval | Terminal assignment | Basic specification, position 8<br>Display; Operation<br>Option O |
|---------------------------------------------------|---------------------|-------------------------------------------------------------------|
| Option BS                                         | 81, 82, 83, 84      | U <sub>n</sub> = 3,3 V                                            |
|                                                   |                     | I <sub>n</sub> = 150 mA                                           |

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