

# Safety Instructions

## Proline Prowirl 200

ATEX: II2G, II1/2G, II1G  
II2D

IECEX: Zone 1, Zone 0/1, Zone 0  
Zone 21



BG - Правила за техниката на безопасност за електрически средства за производство във взривоопасни зони. Ако не разбирате езика на това ръководство има възможност да спорьчате 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 kohaldatavale 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 prijete opasnost od eksplozije. Ako Vam nije moguće čitati ovaj naputak, onda imate mogućnost da kod nas naručite naputak sastavljen na Vašem materninskom jeziku.

#### EU izjava o sukladnosti

Dobavljajući 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-megfeleléségi 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 gaminys 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 tulkojumus 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 semnelui 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. Upoštewane 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 försäkras med vidstående försäkran om överensstämmelse och med CE-märkningen att denna produkt överensstämmer med de tillämpbara europeiska riktlinjerna. De tillämpade riktlinjerna, normerna och dokumenten anges i försäkran om överensstämmelse.



# Proline Prowirl 200

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## About this document



The document number of these Safety Instructions (XA) must match the information on the nameplate.

## 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.

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

Measuring device	Documentation code			
	HART	FOUNDATION Fieldbus	PROFIBUS PA	PROFINET over Ethernet-APL
Prowirl D 200	BA01685D	BA01693D	BA01689D	BA02133D
Prowirl F 200	BA01686D	BA01694D	BA01690D	BA02132D
Prowirl O 200	BA01687D	BA01695D	BA01691D	BA02134D
Prowirl R 200	BA01688D	BA01696D	BA01692D	BA02135D

## Additional documentation

Contents	Document type	Documentation code
Remote display FHX50	Special documentation	SD01007F
	Safety Instructions II2G, II2D Ex ia	XA01053F
Oversvoltage Protection (OVP)	Special documentation	SD01090F
Explosion Protection	Brochure	CP00021Z/11
Ethernet-APL Installation Drawing	Installation Drawing	HE_01622

Please note the documentation associated with the device.

## Certificates and declarations

### EU Declaration of Conformity

Documentation code: EC\_00308

### EU type-examination certificate

Certificate number:

KEMA 10ATEX0072

### IEC Certificate of Conformity

Certificate number:

IECEX KEM 10.0032

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 60079-1: 2014
- IEC 60079-7: 2017
- IEC 60079-11: 2011
- IEC 60079-26: 2014
- IEC 60079-31: 2013
- IEC TS 60079-47: 2021

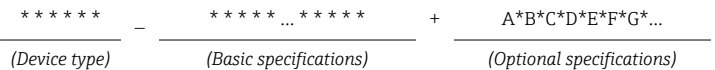
**Manufacturer address**

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**



\* = 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	7	Vortex flowmeter
2	Sensor	D, F, O, R	Sensor type
3	Transmitter	2	Transmitter type: 2-wire, compact version Remote version
4	Generation index	C	Platform generation
5, 6	Nominal diameter	D: DN 15 to 150 F: DN 15 to 300 O: DN 15 to 300  R: <ul style="list-style-type: none"> <li>▪ Reducer DN 25 to 200</li> <li>▪ Super reducer DN 40 to 250</li> </ul>	Nominal diameter of sensor

### Basic specifications


#### Positions 1...2


Position	Order code for	Option selected	Description
1, 2	Approval	BA, IA	Ex ia IIC T6...T1 Ga
		BB, IB	Ex ia IIC T6...T1 Ga/Gb
		BJ, IJ	Ex ia IIC T6...T1 Gb
		B2, I4	Ex ia IIC T6...T1 Ga/Gb
			Ex tb IIIC Txx °C Db <sup>1)</sup>

- 1) The labeling changes according to whether the "Display; Operation" equals "L" or "M":  
Ex tb [ia Da] IIIC Txx °C Db.



## Positions 3...17

Position	Order code for	Selected option	Description
3	Output; Input	A	4-20mA HART
		B	4-20mA HART, Pulse/ frequency/switch output
		C	4-20mA HART + 4-20mA analog
		D	4-20mA HART, Pulse/ frequency/switch output, 4-20mA input
		E	FOUNDATION Fieldbus, Pulse/ frequency/switch output
		G	PROFIBUS PA, Pulse/ frequency/switch output
		S	PROFINET over Ethernet-APL/ SPE, 10Mbit/s
		T	Modbus TCP over Ethernet- APL/SPE, 10Mbit/s
4	Display; Operation	A	W/o; via communication
		C	SD02 4-line; push buttons + data backup function
		E	SD03 4-line, illum.; touch control + data backup function
		L	Prepared for display FHX50 + M12 connection <sup>1)</sup>
		M	Prepared for display FHX50 + custom connection <sup>1)</sup>
8, 9	Sensor version; DSC sensor; measuring tube  Only available for sensors F, O, R with the HART communication protocol.	DA	Mass steam; 316L; 316L (integrated pressure/ temperature measurement), -200 to +400 °C (-328 to +750 °F)
		DB	Mass gas/liquid; 316L; 316L (integrated pressure/ temperature measurement), -40 to +260 °C (-40 to +500 °F)
		DC	Mass steam; Alloy 718; 316L (integrated pressure/ temperature measurement), -200 to +400 °C (-328 to +750 °F)

Position	Order code for	Selected option	Description
		DD	Mass gas/liquid; Alloy 718; 316L (integrated pressure/temperature measurement), -40 to +100 °C (-40 to +212 °F)
11	Pressure component  Only available for sensors F, O, R with the HART communication protocol.	A	Not used
		B	Pressure measuring cell 2bar/29psi abs
		C	Pressure measuring cell 4bar/58psi abs
		D	Pressure measuring cell 10bar/145psi abs
		E	Pressure measuring cell 40bar/580psi abs
		F	Pressure measuring cell 100bar/1450psi abs
		G	Pressure measuring cell 160bar/2320psi abs
16, 17	Device Model	A1	1

- 1) FHX50 is separately approved.

### Optional specifications


ID	Order code for	Option selected	Description
Jx	Test, certificate	JN	Ambient temperature transmitter -50 °C
Nx	Accessory mounted	NA	Overvoltage Protection (OVP)

### Safety instructions: General

- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations or guidelines (e.g. 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.
- When using in hybrid mixtures (gas and dust occurring simultaneously), observe additional measures for explosion protection.
- Observe all the technical data of the device (see nameplate).
- Avoid electrostatic charge (e.g. caused by friction, cleaning, maintenance, strong currents in the medium):  
On the attached stainless steel nameplate and on painted metallic housings that are not integrated into the local potential equalization system.

### Safety instructions: Installation

- Continuous service temperature of the connecting cable:  
–40 to +80 °C (–50 to +80 °C for optional specifications, ID Jx (Test, Certificate) = JN); 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 glands suitable for the application. Observe selection criteria as per IEC/EN 60079-14.
- When the measuring device is connected, attention must be paid to the type of protection at the transmitter. →  25

*Basic specification, position 8, 9 (sensor version; DSC sensor; measuring tube) = DA, DB, DC, DD and position 11 (pressure component) = B, C, D, E, F, G*

- The maximum medium temperature is limited for device versions with a pressure component that is installed directly on the sensor F, O, R:
  - To 40 °C for T6 and T5
  - To 90 °C for T4 and T1
- In the case of T4 ... T1 and medium temperatures > 90 °C the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R.
  - The spacer tube must have a minimum length of 50 cm (19.7 in).
  - The spacer tube supplied meets this requirement.

### Optional RFID TAG

- Observe the maximum permissible ambient temperature of 70°C.
- In the case of high electromagnetic field intensities in accordance with IEC/EN 60079-14: Use is not permitted.
- Avoid electrostatic charging.
- Ensure sufficient distance from processes generating high charges.


### Intrinsic safety

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

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

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

### Potential equalization

- Integrate the device into the potential equalization →  25.
- If the ground connection has been established via the pipe as specified, it is also possible to integrate the sensor into the potential equalization system via the pipe.

### Overvoltage protection

Optional specification, ID Nx (Accessory Mounted) = NA

- Minimum ambient temperature when using Overvoltage Protection (OVP):  $-40\text{ °C}$
- When using the internal overvoltage protection: Reduce the admissible ambient temperature at the housing by 2 K.
- For installations which require overvoltage protection to comply with national regulations or standards, install the device using overvoltage protection (e.g. HAW56x from Endress+Hauser).

- Observe the safety instructions of the overvoltage protection.
- If an overvoltage protection according to IEC/EN 60079-14 against atmospheric over voltages is required: no other circuits may leave the housing during normal operation without additional measures.
- The intrinsically safe input power circuit of the device is isolated from ground. If the device is only equipped with one input, the dielectric strength of the input is at least  $290 V_{\text{rms}}$ . If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least  $290 V_{\text{rms}}$ , and the dielectric strength of the inputs vis-à-vis one another is also at least  $290 V_{\text{rms}}$ .

**Safety instructions:**  
**Zone 0**


*Basic specification, position 1, 2 (Approval) = BB, B2, IB, I4*

Install the measuring instrument in Zone 1. For measuring instruments with Ga/Gb the zone 0 is permitted in the measuring tube.

*Basic specification, position 1, 2 (Approval) = BA, IA*

The sensor's coated aluminum AlSi10Mg transmitter or connector housing installed in Zone 0: Mechanical shock-proof installation.


**Safety instructions:**  
**Zone 21**

- To ensure dust-tightness, securely seal all housing openings, cable entries and sealing plugs.
- Only open all housing briefly, ensuring that no dust or moisture enters the housing.
- Seal unused entry glands with approved blanking elements that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Only use certified cable entries and blanking elements. The metal cable entries, extensions and sealing plugs supplied meet this requirement.
- If the transmitter is connected to the remote display FHX50, the circuit has type of protection Ex ia IIIC.  
Connection values →  24

**Temperature tables**

**Ambient temperature**

Minimum ambient temperature:

- *Basic specification, position 3 (Output; Input) = A, B, D in conjunction with optional specification, ID Jx (Test, Certificate) = JN*  
 $T_{a, \text{min}} = -50 \text{ }^\circ\text{C}$   
(Not permitted in conjunction with *optional specification, ID Nx (Accessory Mounted) = NA* →  12)
- *Basic specification, position 3 (Output; input) = A, B, C, D, E, G, S, T:*  
 $T_{a, \text{min}} = -40 \text{ }^\circ\text{C}$

Maximum ambient temperature:

- Compact version  
 $T_{a, \max} = +70 \text{ °C}$  depending on the medium temperature and temperature class
- Transmitter remote version  
 $T_{a, \max} = +75 \text{ °C}$  depending on the medium temperature and temperature class
- Sensor remote version  
 $T_{a, \max} = +85 \text{ °C}$  depending on the medium temperature and temperature class

### Medium temperature

The following relationship of ambient temperature to medium temperature applies when  $T_m < -50 \text{ °C}$ :

$T_{m, \min} \text{ [°C]}$	-50	-100	-150	-200
$T_{a, \min} \text{ [°C]}$	-50	-47	-44	-39

### Compact version

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

#### NOTICE

**The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.**

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

- ▶  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \max \text{ range}} = 280 \text{ °C}$						
$T_{a, \max} \text{ [°C]}$	$T_{m, \max}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
60	–	95 <sup>1) 2)</sup>	130 <sup>1)</sup>	195	280 <sup>1)</sup>	280 <sup>1)</sup>
65	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
70	–	–	130 <sup>1)</sup>	130 <sup>1)</sup>	130 <sup>1)</sup>	130 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ...T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \max} = 55 \text{ °C}$  for device versions with pressure component option DA, DB, DC, DD.

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

**NOTICE**

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_a - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 280 \text{ °C}$						
$T_{a, \text{max}}$ [°C]	$T_{m, \text{max}}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
35 <sup>1)</sup>	80 <sup>2)</sup>	95 <sup>2)</sup>	130 <sup>2)</sup>	195 <sup>2)</sup>	280 <sup>2)</sup>	280 <sup>2)</sup>
50 <sup>3)</sup>	–	95 <sup>2)</sup>	130 <sup>2)</sup>	195	280 <sup>2)</sup>	280 <sup>2)</sup>
60	–	–	130 <sup>2)</sup>	195 <sup>2)</sup>	280 <sup>2)</sup>	280 <sup>2)</sup>
65	–	–	130 <sup>2)</sup>	195 <sup>2)</sup>	280 <sup>2) 4)</sup>	280 <sup>2) 4)</sup>
70	–	–	130 <sup>2)</sup>	195 <sup>2) 5)</sup>	280 <sup>5)</sup>	280 <sup>5)</sup>

- 1)  $T_{a, \text{max}} = 40 \text{ °C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 2) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ...T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 3)  $T_{a, \text{max}} = 55 \text{ °C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 4)  $T_{a, \text{max}} = 65 \text{ °C}$  for pulse/frequency/switch output  $P_i = 0.7 \text{ W}$
- 5)  $T_{a, \text{max}} = 70 \text{ °C}$  for pulse/frequency/switch output  $P_i = 0.7 \text{ W}$

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

**NOTICE**

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_a - 2 \text{ K}$

Version with max. $T_{m, \max}$ range = 280 °C						
$T_{a, \max}$ [°C]	$T_{m, \max}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
55	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
60	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
65	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1) 2)</sup>	280 <sup>1) 2)</sup>
70	–	–	130 <sup>1)</sup>	130 <sup>1)</sup>	130 <sup>1)</sup>	130 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ... T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \max} = 65$  °C for pulse/frequency/switch output  $P_1 = 0$  W

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

#### NOTICE

**The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.**

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

- $T_a = T_a - 2$  K

Version with max. $T_{m, \max}$ range = 280 °C						
$T_{a, \max}$ [°C]	$T_{m, \max}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
35	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
50	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
55	–	–	–	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
60	–	–	–	195 <sup>1)</sup>	195 <sup>1)</sup>	195 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ... T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).



Basic specification, position 3 (output; input) = E, G

### NOTICE

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 280 \text{ }^\circ\text{C}$						
$T_{a, \text{max}}$ [ $^\circ\text{C}$ ]	$T_{m, \text{max}}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
50	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
60	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
65	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)2)</sup>	280 <sup>1)</sup>
70	–	–	130 <sup>1)</sup>	195 <sup>1)3)</sup>	280 <sup>1)3)</sup>	280 <sup>1)3)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^\circ\text{C}$  for T6 ...T5 and to 90  $^\circ\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^\circ\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \text{max}} = 65 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_1 = 0 \text{ W}$
- 3)  $T_{a, \text{max}} = 70 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_1 = 0 \text{ W}$

Basic specification, position 3 (output; input) = S, T

### NOTICE

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 280 \text{ }^\circ\text{C}$						
$T_{a, \text{max}}$ [ $^\circ\text{C}$ ]	$T_{m, \text{max}}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
50	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>

Version with max. $T_{m, \max}$ range = 280 °C						
$T_{a, \max}$ [°C]	$T_{m, \max}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
55	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
60	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C. Für T4 ... T1 und Messstofftemperatur > 90 °C, the pressure component DPC2.1 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).

## High-temperature version

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

### NOTICE

**The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.**

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

- $T_a = T_a - 2 \text{ K}$

Version with max. $T_{m, \max}$ range = 440 °C						
$T_{a, \max}$ [°C]	$T_{m, \max}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
60	–	95 <sup>1) 2)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
70	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ... T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC2.1 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_a = 55 \text{ °C}$  for device versions with pressure component option DA, DB, DC, DD.

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

**NOTICE**

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 440 \text{ }^\circ\text{C}$						
$T_{a, \text{max}}$ [ $^\circ\text{C}$ ]	$T_{m, \text{max}}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
35 <sup>1)</sup>	80 <sup>2)</sup>	95 <sup>2)</sup>	130 <sup>2)</sup>	195 <sup>2)</sup>	290 <sup>2)</sup>	440 <sup>2)</sup>
50 <sup>3)</sup>	–	95 <sup>2)</sup>	130 <sup>2)</sup>	195	290 <sup>2)</sup>	440 <sup>2)</sup>
65	–	–	130 <sup>2)</sup>	195 <sup>2)</sup>	290 <sup>2)</sup>	440 <sup>2)</sup>
70	–	–	130 <sup>2)</sup>	195 <sup>2) 4)</sup>	290 <sup>2) 4)</sup>	440 <sup>2) 4)</sup>

- 1)  $T_{a, \text{max}} = 40 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 2) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^\circ\text{C}$  for T6 ...T5 and to 90  $^\circ\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^\circ\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 3)  $T_{a, \text{max}} = 55 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 4)  $T_{a, \text{max}} = 70 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$

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

**NOTICE**

The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 440 \text{ }^\circ\text{C}$						
$T_{a, \text{max}}$ [ $^\circ\text{C}$ ]	$T_{m, \text{max}}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
55	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>

Version with max. $T_{m, \max \text{ range}} = 440 \text{ }^\circ\text{C}$						
$T_{a, \max}$ [ $^\circ\text{C}$ ]	$T_{m, \max}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
65	-	-	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
70	-	-	130 <sup>1)</sup>	195 <sup>1) 2)</sup>	290 <sup>1) 2)</sup>	440 <sup>1) 2)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^\circ\text{C}$  for T6 ...T5 and to 90  $^\circ\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^\circ\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \max} = 70 \text{ }^\circ\text{C}$  for pulse/frequency/switch output  $P_1 = 0 \text{ W}$

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

### NOTICE

#### The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

- $T_a = T_a - 2 \text{ K}$

Version with max. $T_{m, \max \text{ range}} = 440 \text{ }^\circ\text{C}$						
$T_{a, \max}$ [ $^\circ\text{C}$ ]	$T_{m, \max}$					
	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
35	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
50	-	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
55	-	-	-	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
60	-	-	-	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
65	-	-	-	-	290 <sup>1)</sup>	290 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^\circ\text{C}$  for T6 ...T5 and to 90  $^\circ\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^\circ\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).

Basic specification, position 3 (output; input) = E, G

**NOTICE**

**The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.**

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \text{max range}} = 440 \text{ °C}$						
$T_{a, \text{max}}$ [°C]	$T_{m, \text{max}}$					
	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
50	–	95 <sup>1)</sup>	130 <sup>1) 2)</sup>	195 <sup>1) 2)</sup>	290 <sup>1) 2)</sup>	440 <sup>1) 2)</sup>
65	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
70	–	–	130 <sup>1)</sup>	195 <sup>1) 3)</sup>	290 <sup>1) 3)</sup>	440 <sup>1) 3)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40 °C for T6 ...T5 and to 90 °C for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90 °C, the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \text{max}} = 60 \text{ °C}$  for pulse/frequency/switch output  $P_1 = 0 \text{ W}$
- 3)  $T_{a, \text{max}} = 70 \text{ °C}$  for pulse/frequency/switch output  $P_1 = 0 \text{ W}$

Basic specification, position 3 (output; input) = S, T

**NOTICE**

**The ambient temperature changes for installations with overvoltage protection in conjunction with temperature classes T5 and T6.**

The following applies for the basic specification, position 1, 2 (approval) = BA, BB, BJ, B2, IA, IB, IJ, I4:

►  $T_a = T_m - 2 \text{ K}$

Version with max. $T_{m, \max \text{ range}} = 440 \text{ }^{\circ}\text{C}$						
$T_{a, \max}$ [ $^{\circ}\text{C}$ ]	$T_{m, \max}$					
	T6 [85 $^{\circ}\text{C}$ ]	T5 [100 $^{\circ}\text{C}$ ]	T4 [135 $^{\circ}\text{C}$ ]	T3 [200 $^{\circ}\text{C}$ ]	T2 [300 $^{\circ}\text{C}$ ]	T1 [450 $^{\circ}\text{C}$ ]
40	80 <sup>1)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
50	–	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
60	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^{\circ}\text{C}$  for T6 ...T5 and to 90  $^{\circ}\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^{\circ}\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).

## Remote version

### Transmitter

Basic specification, Position 3 Output; input <sup>1)</sup>	Basic specification, position 1, 2 Approval	T6 [85 $^{\circ}\text{C}$ ]	T5 [100 $^{\circ}\text{C}$ ]	T4 [135 $^{\circ}\text{C}$ ]
A	All	40	60	75
B	All	35 <sup>2)</sup>	50 <sup>3)</sup>	70 <sup>4)</sup>
C	All	40	55	70 <sup>5)</sup>
D	All	35	50	65
E G	All	40	55	70 <sup>5)</sup>
S T	All	40	55	65

- 1) The following applies for installations with overvoltage protection in conjunction with basic specification, position 1, 2 (approval) = BA, BB, BD, BH, BJ, B2, IA, IB, ID, IH, IJ, I4, C2:  $T_a = T_a - 2 \text{ K}$
- 2)  $T_a = 40 \text{ }^{\circ}\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 3)  $T_a = 60 \text{ }^{\circ}\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 4)  $T_a = 75 \text{ }^{\circ}\text{C}$  for pulse/frequency/switch output  $P_i = 0.85 \text{ W}$
- 5)  $T_a = 75 \text{ }^{\circ}\text{C}$  for pulse/frequency/switch output  $P_i = 0 \text{ W}$

## Sensor

Version with max. $T_{m, \max \text{ range}} = 280 \text{ }^{\circ}\text{C}$						
$T_{a, \max}$ [ $^{\circ}\text{C}$ ]	$T_{m, \max}$					
	T6 [85 $^{\circ}\text{C}$ ]	T5 [100 $^{\circ}\text{C}$ ]	T4 [135 $^{\circ}\text{C}$ ]	T3 [200 $^{\circ}\text{C}$ ]	T2 [300 $^{\circ}\text{C}$ ]	T1 [450 $^{\circ}\text{C}$ ]
55	80 <sup>1) 2)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
70	–	95 <sup>2) 3)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>
85	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	280 <sup>1)</sup>	280 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^{\circ}\text{C}$  for T6 ...T5 and to and to 90  $^{\circ}\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^{\circ}\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \max} = 40 \text{ }^{\circ}\text{C}$  For device versions with pressure component option DA, DB, DC, DD.
- 3)  $T_{a, \max} = 55 \text{ }^{\circ}\text{C}$  for device versions with pressure component option DA, DB, DC, DD.

## High-temperature version

Version with max. $T_{m, \max \text{ range}} = 440 \text{ }^{\circ}\text{C}$						
$T_{a, \max}$ [ $^{\circ}\text{C}$ ]	$T_{m, \max}$					
	T6 [85 $^{\circ}\text{C}$ ]	T5 [100 $^{\circ}\text{C}$ ]	T4 [135 $^{\circ}\text{C}$ ]	T3 [200 $^{\circ}\text{C}$ ]	T2 [300 $^{\circ}\text{C}$ ]	T1 [450 $^{\circ}\text{C}$ ]
55	80 <sup>1) 2)</sup>	95 <sup>1)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
70	–	95 <sup>1) 3)</sup>	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>
85	–	–	130 <sup>1)</sup>	195 <sup>1)</sup>	290 <sup>1)</sup>	440 <sup>1)</sup>

- 1) For device versions with a pressure component that is installed directly on the sensor F, O, R, the maximum medium temperature is limited to 40  $^{\circ}\text{C}$  for T6 ...T5 and to and to 90  $^{\circ}\text{C}$  for T4 ... T1. In the case of T4 ... T1 and medium temperatures > 90  $^{\circ}\text{C}$ , the pressure component DPC21 must be installed using a spacer tube between the pressure component and the sensor F, O, R. The length of the spacer tube must be at least 50 cm (19.7 in).
- 2)  $T_{a, \max} = 40 \text{ }^{\circ}\text{C}$  For device versions with pressure component option DA, DB, DC, DD.
- 3)  $T_{a, \max} = 55 \text{ }^{\circ}\text{C}$  for device versions with pressure component option DA, DB, DC, DD.

## Explosion hazards arising from gas and dust

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

- In the case of gas: Determine the temperature class as a function of the maximum ambient temperature  $T_{a, \max}$  and the maximum medium temperature  $T_{m, \max}$ .
- In the case of dust: Determine the maximum surface temperature as a function of the maximum ambient temperature  $T_{a, \max}$  and the maximum medium temperature  $T_{m, \max}$ .

### Example

- Measured maximum ambient temperature:  $T_{a, \max} = 63 \text{ }^\circ\text{C}$
- Measured maximum medium temperature:  $T_{m, \max} = 108 \text{ }^\circ\text{C}$

$T_a$ [ $^\circ\text{C}$ ]	T6 [85 $^\circ\text{C}$ ]	T5 [100 $^\circ\text{C}$ ]	T4 [135 $^\circ\text{C}$ ]	T3 [200 $^\circ\text{C}$ ]	T2 [300 $^\circ\text{C}$ ]	T1 [450 $^\circ\text{C}$ ]
40	80	95	130	195	280	-
60	-	95	130	195	280	-
65	-	-	130	195	280	-

Diagram illustrating the selection process for temperature class and surface temperature. The table shows ambient temperature ( $T_a$ ) and medium temperature ( $T_m$ ) values. The maximum ambient temperature is 65  $^\circ\text{C}$  (circled in blue, labeled 1.). The maximum medium temperature is 130  $^\circ\text{C}$  (circled in blue, labeled 2.). The corresponding temperature class is T4 (135  $^\circ\text{C}$ ), which is circled in blue (labeled 3.).

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- ☑ 1 Procedure for determining the temperature class and surface temperature

1. In the column for the maximum ambient temperature  $T_{a, \max}$  select the temperature that is immediately greater than or equal to the maximum ambient temperature  $T_{a, \max}$  that is present.

↳  $T_{a, \max} = 65 \text{ }^\circ\text{C}$ .

The row showing the maximum medium temperature is determined.

2. Select the maximum medium temperature  $T_{m, \max}$  of this row, which is immediately greater than or equal to the maximum medium temperature  $T_{m, \max}$  that is present.

↳ The column with the temperature class for gas is determined:  
 $108 \text{ }^\circ\text{C} \leq 130 \text{ }^\circ\text{C} \rightarrow \text{T4}$ .

3. The maximum temperature of the temperature class determined corresponds to the maximum surface temperature for dust:  $T_4 = 135 \text{ }^\circ\text{C}$ .

### Connection values: Signal circuits

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

#### Cable specification: Connecting cable for remote version

The sensor cable connection between the sensor and the transmitter has type of protection Ex ia.

Cable parameter:  $L/R \leq 38.2 \text{ } \mu\text{H}/\Omega$

The cable supplied by Endress+Hauser complies with the specifications.



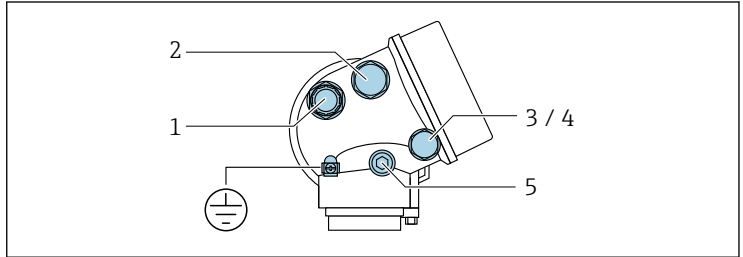
### Cable specification for pressure measuring cell connecting cable

The cable connection between the transmitter and pressure component or between the sensor and pressure component has type of protection Ex ia IIC.

Cable parameter:  $L/R \leq 38.2 \mu\text{H}/\Omega$

The cable supplied by Endress+Hauser complies with the specifications.

### Connecting the transmitter



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Position		Basic specification, position 1, 2: Approval	Type of protection used for cable entry	Description
1	Cable entry for output 1	BA, BB, BJ, IA, IB, IJ B2, I4	Ex ia Ex ia/Ex tb	The following applies for devices with basic specification, position 1, 2 (approval) = B2, I4: In the case of device versions with a plastic transport sealing plug, this plug does not meet the explosion protection requirements and must be replaced during installation by a suitable entry that meets the approval specifications. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.
2	Cable entry for output 2	BA, BB, BJ, IA, IB, IJ B2, I4	Ex ia Ex ia/Ex tb	The following applies for devices with basic specification, position 1, 2 (approval) = B2, I4: In the case of device versions with metal extensions and sealing plugs, the latter are part of the device approval and meet the requirements of the explosion protection indicated on the nameplate. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.
3	Optional order code <sup>1)</sup> : Cable entry of the remote display and operating module FHX50	BA, BB, BJ, IA, IB, IJ B2, I4	Ex ia Ex ia/Ex tb <sup>2)</sup>	The following applies for devices with basic specification, position 1, 2 (approval) = B2, I4: In the case of device versions with metal extensions and sealing plugs, the latter are part of the device approval and meet the requirements of the explosion protection indicated on the nameplate. In the case of device versions with a cable entry, this entry has a separate component approval and meets the requirements of the explosion protection indicated on the nameplate.

Position		Basic specification, position 1, 2: Approval	Type of protection used for cable entry	Description
4	Optional order code <sup>3)</sup> : Cable entry of pressure measuring cell	BA, BB, BJ, IA, IB, IJ	Ex ia	-
Position		Description		
5	Pressure compensation plug	<b>NOTICE</b> <b>Housing degree of protection voided due to insufficient sealing of the housing.</b> ▶ Do not open - not a cable entry.		
⊕	Potential equalization	<b>NOTICE</b> <b>Terminal for connection to potential equalization.</b> ▶ Pay attention to the grounding concept of the facility.		

- 1) Basic specification, position 4 (display; operation) = L, M
- 2) The labeling changes according to whether "Display; operation" = "L" or "M": Ex tb[ia Da] IIIC Txx °C Db.
- 3) Basic specification, position 8, 9 (sensor version; DSC sensor; measuring tube) = DA, DB, DC, DD and position 11 (pressure component) = B, C, D, E, F, G

## Terminal assignment

### Transmitter



The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code → 7.

### Connection versions

Order code for "Output"	Terminal numbers					
	Output 1		Output 2		Input	
	1 (+)	2 (-)	3 (+)	4 (-)	5 (+)	6 (-)
Option <b>A</b>	4-20mA HART (passive)		-		-	
Option <b>B</b> <sup>1)</sup>	4-20mA HART (passive)		Pulse/frequency/switch output (passive)		-	
Option <b>C</b> <sup>1)</sup>	4-20mA HART (passive)		4-20mA analog (passive)		-	
Option <b>D</b> <sup>1) 2)</sup>	4-20mA HART (passive)		Pulse/frequency/switch output (passive)		4-20mA current input (passive)	
Option <b>E</b> <sup>1) 3)</sup>	FOUNDATION Fieldbus		Pulse/frequency/switch output (passive)		-	
Option <b>G</b> <sup>1) 4)</sup>	PROFIBUS PA		Pulse/frequency/switch output (passive)		-	
Option <b>S</b>	PROFINET over Ethernet-APL/SPE, 10Mbit/s		-		-	
Option <b>T</b>	Modbus TCP over Ethernet-APL/SPE, 10Mbit/s		-		-	

- 1) Output 1 must always be used; output 2 is optional.
- 2) The integrated overvoltage protection is not used with option D: Terminals 5 and 6 (current input) are not protected against overvoltage.
- 3) FOUNDATION Fieldbus with integrated reverse polarity protection.
- 4) PROFIBUS PA with integrated reverse polarity protection.

### Intrinsically safe values



The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code → 7.

*Type of protection Ex ia*

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

Order code for "Output"	Output type	Intrinsically safe values	
Option G	PROFIBUS PA	STANDARD $U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1.2 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	FISCO $U_i = 17.5 \text{ V}$ $I_i = 550 \text{ mA}$ $P_i = 5.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$
	Pulse/frequency/switch output	$U_i = 30 \text{ V}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 6 \text{ nF}$	
Option S	PROFINET over Ethernet-APL/SPE, 10Mbit/s	<b>2-WISE power load, APL port profile SLAA</b> <sup>1)</sup>	
Option T	Modbus TCP over Ethernet-APL/SPE, 10Mbit/s	<b>Ex ia</b> $U_i = 17.5 \text{ V}$ $I_i = 380 \text{ mA}$ $P_i = 5.32 \text{ W}$ $L_i = \text{negligible}$ $C_i = 1 \text{ nF}$ <b>Cable specifications according to 2-WISE:</b> $R_c = 15 \text{ to } 150 \text{ } \Omega/\text{km}$ $L_c = 0.4 \text{ to } 1 \text{ mH}/\text{km}$ $C_c = 45 \text{ to } 200 \text{ nF}/\text{km}$ $C_c = C_c \text{ line}/\text{line} + 0,5 C_c \text{ line}/\text{screen}$ , 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: $\leq 1 \text{ m (3.3 ft)}$	

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

## Remote display FHX50

Basic specification, position 1, 2 Approval	Cable specification	Basic specification, position 4 Display, Operation Option L, M
Option <b>BA, BB, BJ, B2, IA, IB, JJ, I4</b>	Max. cable length: 60 m (196.85 ft)	$U_o = 7,3 \text{ V}$
		$I_o = 327 \text{ mA}$
		$P_o = 362 \text{ mW}$
		$L_o = 149 \text{ } \mu\text{H}$
		$C_o = 388 \text{ nF}$
		$C_c \leq 125 \text{ nF}$
		$L_c \leq 149 \text{ } \mu\text{H}$



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