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Safety Instructions
Proline Promass 300

NEPSI: Zone 0/1
Zone 1
Zone 21

Endress+Hauser
People for Process Automation

Proline Promass 300

Table of contents

Associated documentation

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

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

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

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

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

Additional documentation

Contents	Document type	Documentation code
Remote display and operating module DKX001	Special documentation	SD01763D
	Safety Instructions Ex ia or Ex tb	XA01502D
Explosion Protection	Brochure	CP00021Z/11
Ethernet-APL Installation Drawing	Installation Drawing	HE_01622

Certificates and declarations

NEPSI Declaration of Conformity

Certificate number:

GYJ22.1052X

Affixing the certificate number certifies conformity with the following standards (depending on the device version):

- GB/T 3836.1-2021
- GB/T 3836.2-2021
- GB/T 3836.3-2021
- GB/T 3836.4-2021
- GB 3836.20-2010
- GB/T 3836.31-2021

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

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

* = Placeholder
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Device type

The device and the device design is defined in the "Device type" section (Product root).

Basic specifications

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available.
The selected option of a feature can consist of several positions.

Optional specifications

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Device type

Position	Order code for	Option selected	Description
1	Instrument family	8	Coriolis flowmeter
2	Sensor	A, E, F, H, I, O, P, Q, S, X [1]	Sensor type
3	Transmitter	3	Transmitter type: 4-wire, compact version
4	Generation index	B, C	Platform generation
5, 6	Nominal diameter	Examples: 02, 04, 40, 50, 1H, 3E [2] [3]	Nominal diameter of sensor

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

Basic specifications

Position 1, 2 Order code for "Approval" Option selected	Position 4, 5 Order code for "Output, input 1" Option selected	Type of protection	
		Transmitter	Sensor
NA	BA, BB, GA, LA, MA, MB, NA, RA, RB, SA	Ex db eb ia IIB T1...T6 Ga/Gb [1] Ex tb IIIC T** °C Db	Ex ia IIB T1...T6 Ga/Gb [1] Ex ia tb IIIC T** °C Db
	CA, CC, HA, MC, RC, TA	Ex db eb ia |ia Ga| IIB T1...T6 Ga/Gb [1] Ex tb |ia Da| IIIC T** °C Db	
NB	BA, BB, GA, LA, MA, MB, NA, RA, RB, SA	Ex db eb ia IIC T1...T6 Ga/Gb [1] Ex tb IIIC T** °C Db	Ex ia IIC T1...T6 Ga/Gb [1] Ex ia tb IIIC T** °C Db
	CA, CC, HA, MC, RC, TA	Ex db eb ia |ia Ga| IIC T1...T6 Ga/Gb [1] Ex tb |ia Da| IIIC T** °C Db	
NC	BA, BB, GA, LA, MA, MB, NA, RA, RB, SA	Ex db ia IIB T1...T6 Ga/Gb [1] Ex tb IIIC T** °C Db	Ex ia IIB T1...T6 Ga/Gb [1] Ex ia tb IIIC T** °C Db
	CA, CC, HA, MC, RC, TA	Ex db ia |ia Ga| IIB T1...T6 Ga/Gb [1] Ex tb |ia Da| IIIC T** °C Db	
ND	BA, BB, GA, LA, MA, MB, NA, RA, RB, SA	Ex db ia IIC T1...T6 Ga/Gb [1] Ex tb IIIC T** °C Db	Ex ia IIC T1...T6 Ga/Gb [1] Ex ia tb IIIC T** °C Db
	CA, CC, HA, MC, RC, TA	Ex db ia |ia Ga| IIC T1...T6 Ga/Gb [1] Ex tb |ia Da| IIIC T** °C Db	

1) Sensors Promass A DN 1, Promass H DN 8 to 50, Promass I DN 8 to 80 are only suitable for equipment protection level EPL Gb.

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

Position	Order code for	Option selected	Description
		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 [1)]
		O	Separate, with remote display DKX001 [1)], 4-line, illuminated; 10 m / 30 ft cable; touch control
9	Housing	A	Alu, coated
		L	Cast, stainless
11, 12	Meas. Tube Mat., Wetted Parts Surface	LA	Stainl. steel, cryogenic -196°C/-320°F

Position	Order code for	Option selected	Description
17, 18	Device Model	A1	1
		A2	2

1) DKX001 is approved according to GYJ21.1084.

Optional specifications

ID	Order code for	Option selected	Description
Cx	Sensor option	CA	Rupture disk
Cx	Sensor option	CH	Purge connection
Jx	Test, certificate	JP	Ambient temperature measuring device −50 °C
Px	Enclosed accessories	P8	Wireless antenna, wide area (external WLAN antenna) [1]

1) The external WLAN antenna is available with the order code for "Accessory Enclosed", option P8.

Safety instructions: General

- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations or guidelines (e.g. GB/T 3836.15-2017)
- Install the device according to the manufacturer's instructions and the following standards:
  - GB 50257-2014 "Code for construction and acceptance of electric device for explosive atmospheres and fire hazard electrical equipment installation engineering"
  - GB/T 3836.13-2021 "Explosive atmospheres – Part 13: Equipment repair, overhaul, reclamation and modification"
  - GB/T 3836.15-2017 "Explosive atmospheres – Part 15: Electrical installations design, selection and erection"
  - GB/T 3836.16-2017 "Explosive atmospheres – Part 16: Electrical installations inspection and maintenance"
  - GB/T 3836.18-2017 "Explosive atmospheres – Part 18: Intrinsically safe electrical systems"
  - GB 15577-2018: "Safety regulations for dust explosion prevention and protection". (Only if installed in dust hazardous areas.)
- 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.
- Open the housing cover of the transmitter housing in explosion protection Ex db only if one of the following conditions is met:
  - An explosive atmosphere is not present.
  - A waiting time of 10 minutes is observed after switching off the power supply.
    The following warning notice is on the device:
    WARNING – AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING ENCLOSURE IN TYPE OF PROTECTION EX D
- In devices with damaged Ex d threads:
  - Use in hazardous areas is not permitted.
  - Repair of Ex d threads is not permitted.
- Observe all the technical data of the device (see nameplate).

Safety instructions: Installation

- Continuous service temperature of the connecting cable:
  −40 to +80 °C (−50 to +80 °C for optional specifications, ID Jx (Test, Certificate) = JP); in accordance with the range of service temperature taking into account additional influences of the process conditions ($T_{a,min}$ and $T_{a,max}$ + 20 K).
- Only use certified cable entries suitable for the application. Observe selection criteria as per GB/T3836.15-2017.
- The following applies when connecting the transmitter with a connection compartment in Ex db:
  Only use separately certified cables and wire entries (Ex db IIC) which are suitable for operating temperatures up to 85 °C and for IP 66/67.
  If using conduit entries, the associated sealing mechanisms must be mounted directly on the housing.
  Plastic sealing plugs act as transport protection and have to be replaced by suitable, individually approved installation material.
  The mounted metal thread extensions and blind plugs are tested and certified as part of the housing for type of protection Ex db IIC. The thread extension or the blind plug labeled as follows for identification purposes:
  - Md: M20 x 1.5
  - d: NPT ½"
  - Gd: G ½"

- The following applies when connecting the transmitter with a connection compartment in Ex eb:
  Only use separately certified cable and wire entries and sealing plugs (Ex eb IIC) which are suitable for operating temperatures up to 85 °C and for IP 66/67. The cables must be routed such that they are securely seated, and sufficient strain relief must be ensured.
  The mounted metal thread extensions and blind plugs supplied are tested and certified as part of the housing for type of protection Ex eb IIC. Plastic sealing plugs act as transport protection and have to be replaced by suitable, individually approved installation material. Supplied cable glands are separately certified and marked as components and meet device specification requirements.
- 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.
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the enclosure.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Only use certified sealing plugs. The metal sealing plugs supplied meet this requirement.
- Transmitters with Ex db eb approval must not be connected via the service interface (CDI-RJ45)! Order code "Approval; Transmitter + Sensor", options (Ex de): NA, NB

Optional external WLAN antenna

- The external WLAN antenna can be used only in conjunction with an Ex eb connection compartment.
  Use with an Ex db connection compartment is not permitted.
- 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 GB/T 3836.15-2017: 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. GB/T 3836.15-2017 , Proof of Intrinsic Safety).
- 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.
- The device can be connected to the remote display DKX001 which has Ex ia explosion protection: refer to the Special documentation and Ex documentation.

- 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 NE, NF, NG

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.

Safety instructions: Zone 0

Install the transmitter electronics in Zone 1. For sensors with EPL Ga/Gb the zone 0 is permitted in the measuring tube.

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.
- Only use certified cable entries. The metal cable entries, extensions and sealing plugs supplied meet this requirement.
- The metal extensions and blind plugs supplied are tested and certified as part of the enclosure for explosion protection Ex tb IIIC. Plastic sealing plugs in extensions act as transport protection and have to be replaced by suitable, individually approved installation material. Supplied cable glands are separately certified and marked as components and meet device specification requirements.
- If the transmitter is connected to the remote display and operating module DKX001, the circuit has Ex ia IIIC explosion protection. Connection values , DKX001→ 🖹 28

Temperature tables

Ambient temperature

Minimum ambient temperature

- T_a = −40 °C
- *Optional specification, ID Jx (Test, Certificate) = JP*
  T_a = −50 °C depending on the selected device variant (see nameplate)

Maximum ambient temperature

T_a = +60 °C depending on the medium temperature and temperature class.

Medium temperature

Minimum medium temperature

- Promass A, F, H, I, P, Q, S, X:
  T_m = −50 °C
- Promass E, O:
  T_m = −40 °C
- Promass F, Q with cryogenic temperature version (order code for "Measuring tube material", option LA):
  T_m = −196 °C

Maximum medium temperature

- T_m for T1…T6 depending on the maximum ambient temperature T_a
- ( ) = The maximum permitted medium temperatures in brackets only apply if the sensor is installed in such a way that the transmitter is not mounted above the sensor and free convection can occur on all sides.

Compact version

NOTICE

In case of heating, risk of overheating.

- ▶ On devices with Heating jacket the corresponding temperature tables for isolated sensor, are to be observed.
- ▶ Make sure that the heating medium, may not exceeded the maximum specified medium temperature of the exact used temperature classes of the device.

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

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

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	50	205	50	95	130	150	205	205
	60		–	95	130	150	205	205

Promass E

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	50	150	50	100	130	130	150	150
	55		–	80	100	130	150	150
	60		–	(80)	(100)	(130)	(150)	(150)
80	50	150	50	75	110	150	150	150
	55		–	75	110	150	150	150
	60		–	(75)	(110)	(150)	(150)	(150)

Promass F

DN	T_a [°C]	$T_{m, max}$ [1)] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...15	50	150	50	95	130	150	150	150
	60		–	95	130	150	150	150
	50	150 [2)]	50	95	100	150	150	150
	60		–	95	100	150	150	150

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	50	240	50	95	130	160	240	240
	60		–	95	130	160	(240)	(240)
15...25	50	350	45	95	130	175	275	350
	60		–	95	130	175	275	350
25...50	50	150	50	95	130	150	150	150
	60		–	95	130	150	150	150
	50	150 [2]	50	95	100	150	150	150
	60		–	95	100	150	150	150
	50	240	50	95	130	160	240	240
	60		–	95	130	160	(240)	(240)
80...250	50	150	50	75	110	150	150	150
	60		–	75	110	150	150	150
	50	150 [2]	50	75	110	150	150	150
	60		–	75	110	150	150	150
	50	240	50	75	110	170	240	240
	60		–	75	110	170	(240)	(240)
50...250	50	350	45	85	120	175	275	350
	60		–	85	120	175	275	350

1) Maximum temperature range, see nameplate
2) Cryogenic temperature version: T_m = −196 to 150 °C

Promass H

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	50	150	50	65	100	150	150	150
	60		–	65	100	150	150	150
8	50	205	50	65	100	160	205	205
	60		–	65	100	160	205	205
15...50	50	150	50	75	115	150	150	150
	60		–	75	115	150	150	150

DN	T_a [°C]	$T_{m, max}$ [1)] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
15…50	50	205	50	75	115	180	205	205
	60		–	75	115	180	205	205

1) Maximum temperature range, see nameplate

Promass I

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8, 15, 15FB, 25	50	150	50	95	130	150	150	150
	60		–	95	120	(150)	(150)	(150)
25FB, 40, 40FB, 50	50	150	50	85	120	150	150	150
	60		–	85	120	(150)	(150)	(150)
50FB, 80	50	150	50	85	120	150	150	150
	60		–	85	120	(150)	(150)	(150)
FB = Full bore								

Promass O

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80 … 250	50	205	50	75	110	170	205	205
	55		–	75	110	170	205	205
	60		–	75	110	170	(205)	(205)

Promass P

DN	T_a [°C]	$T_{m, max}$ [1)] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		–	65	100	150	150	150
	45	205	45	65	100	160	205	205
	60		–	65	100	160	205	205

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
15...50	50	150	50	75	115	150	150	150
	60		–	75	115	150	150	150
	50	205	50	75	115	180	205	205
	60		–	75	115	180	205	205

1) Maximum temperature range, see nameplate

Promass Q

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25 ... 250	50	205	50	75	110	160	205	205
	60		–	75	110	160	205	205
25 ... 250	50	150 [2]	50	75	110	150	150	150
	60		–	75	110	150	150	150

1) Maximum temperature range, see nameplate
2) Cryogenic temperature version: T_m = −196 to 150 °C

Promass S

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	60		–	65	100	150	150	150
15...50	50	150	50	75	115	150	150	150
	60		–	75	115	150	150	150

Promass X

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	50	180	50	90	120	170	180	180
	55		–	90	120	170	180	180
	60		–	(90)	(120)	(170)	(180)	(180)

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

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

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

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
1...4	50	205	50	95	130	150	205	205
	55		–	(95)	(130)	(150)	(205)	(205)

Promass E

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8...50	50	150	50	100	130	130	150	150
	55		–	(100)	(130)	(130)	(150)	(150)
80	45	150	50	75	110	150	150	150
	50		–	75	110	150	150	150
	55		–	(75)	(110)	(150)	(150)	(150)

Promass F

DN	T_a [°C]	$T_{m, max}$ [1)] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
08...15	50	150	50	95	130	150	150	150
	60		–	95	110	(150)	(150)	(150)
	50	150 [2)]	50	95	130	150	150	150
	55		–	95	(130)	(150)	(150)	(150)
	60		–	95	110	110	110	110
	50	240	50	95	130	160	240	240
	55		–	95	(130)	(160)	(240)	(240)
	60		–	95	110	110	110	110
15...25	50	350	45	95	130	175	275	350
	60		–	95	130	175	275	350

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25…50	50	150	50	95	130	150	150	150
	60		–	95	110	(150)	(150)	(150)
	50	150 [2]	50	95	130	150	150	150
	55		–	95	(130)	(150)	(150)	(150)
	60		–	95	110	110	110	110
	50	240	50	95	130	160	240	240
	55		–	95	(130)	(160)	(240)	(240)
	60		–	95	110	110	110	110
80…250	50	150	50	75	110	150	150	150
	60		–	75	110	(150)	(150)	(150)
	50	150 [2]	50	75	110	150	150	150
	55		–	75	110	150	150	150
	60		–	75	110	110	110	110
	50	240	50	75	110	170	240	240
	55		–	75	110	(170)	(240)	(240)
	60		–	75	110	110	110	110
50…250	50	350	45	85	120	175	275	350
	60		–	85	120	175	275	350

1) Maximum temperature range, see nameplate
2) Cryogenic temperature version: T_m = −196 to 150 °C

Promass H

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	50	150	50	65	100	150	150	150
	55		–	65	100	(150)	(150)	(150)
	60		–	65	100	100	100	100
8	50	205	50	65	100	160	205	205
	55		–	65	100	(160)	(205)	(205)
	60		–	65	100	100	100	100
15…50	50	150	50	75	115	150	150	150

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	55		–	75	115	(150)	(150)	(150)
	60		–	75	115	115	115	115
15...50	50	205	50	75	115	180	205	205
	55		–	75	115	(180)	(205)	(205)
	60		–	75	115	115	115	115

1) Maximum temperature range, see nameplate

Promass I

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8, 15, 15FB, 25	50	150	50	95	130	150	150	150
	60		–	95	120	(150)	(150)	(150)
25FB, 40, 40FB, 50	50	150	50	85	120	150	150	150
	60		–	85	120	(150)	(150)	(150)
50FB, 80	50	150	50	85	120	150	150	150
	60		–	85	120	(150)	(150)	(150)
FB = Full bore								

Promass O

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
80...250	50	205	50	75	110	170	205	205
	55		–	(75)	(110)	(170)	(205)	(205)

Promass P

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	50		–	65	100	150	150	150

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
	60		–	65	100	125	(150)	(150)
	45	205	45	65	100	160	205	205
	50		–	65	100	160	205	205
	60		–	65	100	115	(205)	(205)
15…50	50	150	50	75	115	150	150	150
	60		–	75	115	125	(150)	(150)
	50	205	50	75	115	180	205	205
	60		–	75	115	(150)	(150)	(150)

1) Maximum temperature range, see nameplate

Promass Q

DN	T_a [°C]	$T_{m, max}$ [1] [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25…250	50	205	50	75	110	160	205	205
	55		–	(75)	(110)	(160)	(205)	(205)
25…250	50	150 [2]	50	75	110	150	150	150
	55		–	(75)	(110)	(150)	(150)	(150)

1) Maximum temperature range, see nameplate
2) Cryogenic temperature version: T_m = −196 to 150 °C

Promass S

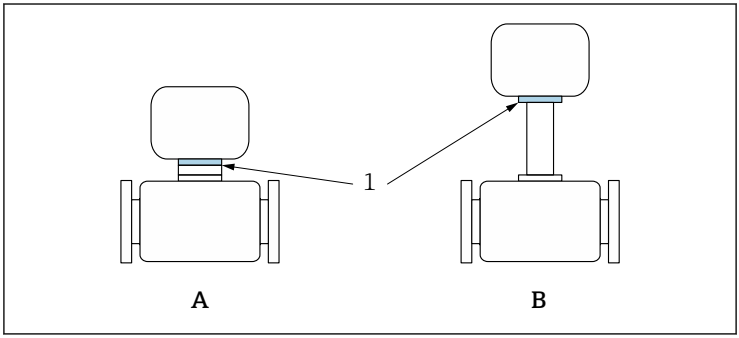
DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
8	45	150	45	65	100	150	150	150
	50		–	65	100	150	150	150
	60		–	65	100	125	(150)	(150)
15…50	50	150	50	75	115	150	150	150
	60		–	75	115	125	(150)	(150)

Promass X

DN	T_a [°C]	$T_{m, max}$ [°C]	T_m [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
350	50	180	50	90	120	170	180	180
	55		–	(90)	(120)	(170)	(180)	(180)

With thermal insulation without Endress+Hauser specifications

The specified reference temperature T_{ref} and the maximum medium temperature $T_{m, max}$ for each temperature class must not be exceeded. → 19



1 Position of reference point for temperature measurement

A Standard version
B Extended temperature version, cryogenic temperature version, high-temperature version
1 Reference point (T_{ref})

Reference temperature T_{ref}

T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
59	72	75	76	77	77

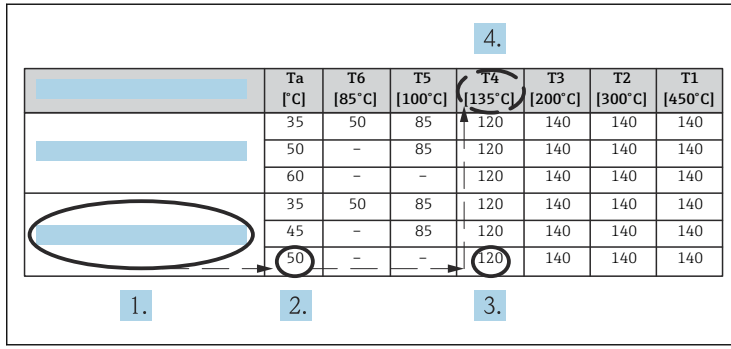
Explosion hazards arising from gas and dust

Determining the temperature class and surface temperature with the temperature table

- In the case of gas: Determine the temperature class as a function of the maximum ambient temperature T_a and the maximum medium temperature T_m.
- In the case of dust: Determine the maximum surface temperature as a function of the maximum ambient temperature T_a and the maximum medium temperature T_m.

Example

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



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

1. Select device (optional).
2. In the column for the maximum ambient temperature T_a select the temperature that is immediately greater than or equal to the maximum ambient temperature T_{ma} that is present.
   ↳ T_a = 50 °C.
   The row showing the maximum medium temperature is determined.
3. Select the maximum medium temperature T_m of this row, which is immediately greater than or equal to the maximum medium temperature T_{mm} that is present.
   ↳ The column with the temperature class for gas is determined: 108 °C ≤ 120 °C → T4.
4. The maximum temperature of the temperature class determined corresponds to the maximum surface temperature for dust: T4 = 135 °C.

Connection values: Signal circuits

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

Terminal assignment

Transmitter: supply voltage, input/outputs

HART

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

FOUNDATION Fieldbus

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

PROFIBUS DP

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

PROFIBUS PA

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

Modbus RS485

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

Modbus TCP with Ethernet-APL

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

PROFINET

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

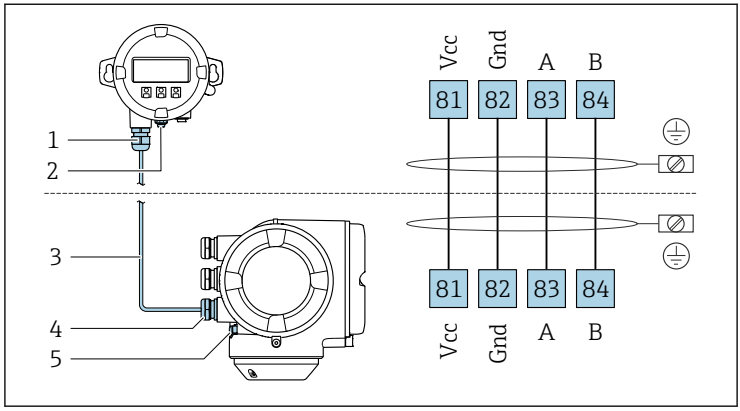
PROFINET with Ethernet-APL

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

EtherNet/IP

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

Remote display and operating module DKX001



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

Safety-related values

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

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

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

Intrinsically safe values

Order code for "Output; input 1"	Output type	Intrinsically safe values "Output; input 1"	
		26 (+)	27 (–)
Option CA	Current output 4-20mA HART Ex-i passive	U_i = 30 V I_i = 100 mA P_i = 1.25 W L_i = 0 µH C_i = 6 nF	
Option CC	Current output 4-20mA HART Ex-i active	**Ex ia** U_0 = 21.8 V I_0 = 90 mA P_0 = 491 mW L_0 = 4.1 mH(IIC)/ 15 mH(IIB) C_0 = 160 nF(IIC)/ 1 160 nF(IIB) U_i = 30 V I_i = 10 mA P_i = 0.3 W L_i = 5 µH C_i = 6 nF	
Option HA	PROFIBUS PA Ex i (STANDARD + FISCO)	**Ex ia** U_i = 30 V I_i = 570 mA P_i = 8.5 W L_i = 10 µH C_i = 5 nF	

Order code for "Output; input 1"	Output type	Intrinsically safe values "Output; input 1"	
		26 (+)	27 (–)
Option MC	Modbus TCP with Ethernet-APL Ex i	**2-WISE power load, APL port profile SLAA** [1] **Ex ia** U_i = 17.5 V I_i = 380 mA P_i = 5.32 W L_i = 10 µH C_i = 5 nF **Cable specifications according to 2-WISE:** R_c = 15 to 150 Ω/km L_c = 0.4 to 1 mH/km C_c = 45 to 200 nF/km C_c = C_c line/line + 0,5 C_c line/screen, if both lines are floating, or C_c = C_c line/line + C_c line/screen, if the screen is connected to one line Length of cable (not including cable stubs): ≤200 m (656.2) Length of cable stubs: ≤1 m (3.3 ft)	
Option RC	PROFINET with Ethernet-APL Ex i		
Option TA	FOUNDATION Fieldbus Ex i (STANDARD + FISCO)	**Ex ia** U_i = 30 V I_i = 570 mA P_i = 8.5 W L_i = 10 µH C_i = 5 nF	

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

Order code for "Output; input 2"; "Output; input 3"	Output type	Intrinsically safe values			
		Output; input 2		Output; input 3	
		24 (+)	25 (–)	22 (+)	23 (–)
Option **C**	Current output 4 to 20 mA Ex i passive	U_i = 30 V I_i = 100 mA P_i = 1.25 W L_i = 0 C_i = 0			
Option **G**	Pulse/frequency/ switch output Ex i passive	U_i = 30 V I_i = 100 mA P_i = 1.25 W L_i = 0 C_i = 0			

Remote display DKX001

Basic specification, position 1, 2 Approval	Terminal assignment	Basic specification, position 8 Display; Operation Option O
Option [1] **NA, NB, NC, ND**	81, 82, 83, 84	A connecting cable with the value L/R ≤ 24 µH/Ω and C_{cable} ≤ 1 000 nF must be used for the version for connecting to the remote display DKX001 or ODKX001. The cable supplied meets this requirement.

1) With separate order of DKX001: NE, NF, NG

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