

Safety Instructions

Proline Promag 500

EAC: Zone 1
Zone 21



Proline Promag 500

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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): 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 instrument	Documentation code			
	HART	FOUNDATION Fieldbus	PROFIBUS PA	PROFIBUS DP
Promag H 500	BA01398D	BA01479D	BA01404D	BA01866D
Promag P 500	BA01399D	BA01480D	BA01405D	BA01867D
Promag W 500	BA01400D	BA01481D	BA01406D	BA01868D

Measuring instrument	Documentation code			
	Modbus RS485	EtherNet/IP	PROFINET	PROFINET mit Ethernet-APL
Promag H 500	BA01401D	BA01720D	BA01723D	BA02106D
Promag P 500	BA01402D	BA01721D	BA01724D	BA02105D
Promag W 500	BA01403D	BA01722D	BA01725D	BA02104D

Additional documentation

Contents	Document type	Documentation code
Explosion Protection	Brochure	CP00021Z/11
Ethernet-APL Installation Drawing	Installation Drawing	HE_01622

Please note the documentation associated with the device.

Manufacturer's certificates

Measuring instruments meet the fundamental health and safety requirements for the design and construction of devices and protective systems intended for use in potentially explosive atmospheres in accordance with TR CU 012/2011.

Certification body

LLP "T-Standard"

Certificate number

EA3C KZ 7500525.01.01.01597

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

- ГОСТ 31610.0-2019 (IEC 60079-0:2017)
- ГОСТ IEC 60079-1-2013
- ГОСТ 31610.7-2017 (IEC 60079-7:2015)
- ГОСТ 31610.11-2014 (IEC 60079-11:2011)
- ГОСТ 31610.15-2014 (IEC 60079-15:2010)
- ГОСТ IEC 60079-31-2013

Manufacturer address

Endress+Hauser Flowtec AG
35, rue de l'Europe
68700 Cernay
France

Endress+Hauser Flowtec (India) Pvt. Ltd.
M-171/176, Waluj Industrial Area, MIDC
IN-431 136 Aurangabad
India

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	5	Electromagnetic flowmeter
2	Sensor	H, P, W ¹⁾	Sensor type
3	Transmitter	5	Transmitter type: 4-wire, remote version
4	Generation index	B	Platform generation
5, 6	Nominal diameter	Examples: 02, 04, 40, 50, 1H, 1Z, T0, E4 ^{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

Proline 500 – digital	Proline 500
Order code for "Integrated ISEM Electronic", option A "Sensor"	Order code for "Integrated ISEM Electronic", option B "Transmitter"
1 Transmitter 2 Connecting cable 3 Sensor connection housing with integrated ISEM	1 Transmitter with integrated ISEM 2 Coil current cable 3 Signal cable 4 Sensor connection housing

Basic specifications

Position 1, 2 Order code for "Approval" Option selected	Position 10 ¹⁾ Order code for "Integrated ISEM electronics" Option selected	Type of protection	
		Transmitter	Sensor
GB, BB ²⁾	B	1Ex db eb ia Ga IIC T6...T5 Gb X Ex tb ia Da IIIC T85 °C Db X	1Ex eb ia IIC T6...T1 Gb X Ex ia tb IIIC T** °C Db X
GD, BD ³⁾	B	1Ex db eb ia Ga IIC T6...T5 Gb X Ex tb ia Da IIIC T85 °C Db X	1Ex eb ia IIC T6...T1 Gb X Ex ia tb IIIC T** °C Db X
GJ, BJ	A	for non-hazardous areas	1Ex db ia IIC T6...T1 Gb X (sensor, terminal box) Ex ia tb IIIC T** °C Db X (sensor, terminal box) 1Ex eb ia IIC T6...T1 Gb X (sensor) Ex ia tb IIIC T** °C Db X (sensor)
GN, BN	A	2Ex ec nC IIC T5...T4 Gc X ⁴⁾	1Ex db ia IIC T6...T1 Gb X (sensor, terminal box) Ex ia tb IIIC T** °C Db X (sensor, terminal box) 1Ex eb ia IIC T6...T1 Gb X (sensor) Ex ia tb IIIC T** °C Db X (sensor)

Position 1, 2 Order code for "Approval" Option selected	Position 10 ¹⁾ Order code for "Integrated ISEM electronics" Option selected	Type of protection	
		Transmitter	Sensor
G7, B7 ²⁾	B	1Ex db eb [ia Ga] IIC T6...T5 Gb X	1Ex eb ia IIC T6...T1 Gb X
G8, B8 ³⁾	B	1Ex db eb [ia Ga] IIC T6...T5 Gb X	1Ex eb ia IIC T6...T1 Gb X

- 1) Promag W 500: Position 11
 2) Connection compartment of the transmitter: Ex db
 3) Connection compartment of the transmitter: Ex eb
 4) The marking changes depending on the order code for "Output; input 1", option HA, MC, RC or TA: 2Ex ec nC [ic] IIC T5...T4 Gc X

Position ¹⁾	Order code for	Option selected	Description
4, 5 (5,6)	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
		SA	FOUNDATION Fieldbus
		TA	FOUNDATION Fieldbus Ex-i
6 (7)	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

Position ¹⁾	Order code for	Option selected	Description
7 (8)	Output, input 3	I	4-20mA input
		J	Status input
		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
8 (9)	Output; input 4 ²⁾	I	4-20mA input
		J	Status input
		A	W/o
		B	4-20mA
		C	4-20mA Ex-i passive
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		G	Pulse/frequency/switch output Ex-i passive
		H	Relay
		I	4-20mA input
9 (10)	Display; Operation	J	Status input
		A	W/o
10 (11)	Integrated ISEM Electronic	B	4-20mA
		C	4-20mA Ex-i passive
12 (13)	Sensor junction Housing	D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
14 (15)	Liner	G	Pulse/frequency/switch output Ex-i passive
		H	Relay
10 (11)	Integrated ISEM Electronic	F	4-line, illuminated; touch control
		G	4-line, illuminated; touch control + WLAN
		A	Sensor
		B	Transmitter
12 (13)	Sensor junction Housing	A	Alu, coated
		B	Stainless
		D	Polycarbonate
		L	Cast, stainless
14 (15)	Liner	A	PFA
		E	PTFE
		H	Hard rubber
		Q	PTFE 90°C

Position ¹⁾	Order code for	Option selected	Description
		U	Polyurethane
21, 22 (22, 23)	Device Model	A1	1
		A2	2

- 1) Position in brackets: Promag W 500
- 2) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.

Optional specifications

ID	Order code for	Option selected	Description
Cx	Sensor option	CG	Extended neck for insulation ¹⁾
Cx	Sensor option	CI	Fluid Temperature Probe ²⁾
Jx	Test, certificate	JN	Ambient temperature transmitter -50 °C
Px	Enclosed accessories	P8	Wireless antenna, wide area (external WLAN antenna) ³⁾

- 1) Only for Promag W and Promag P available
- 2) Only for Promag H available
- 3) 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. ГOCT IEC 60079-14-2013)
- 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.

- For measuring device with digital signal transmission, order code for "Integrated ISEM electronics", Option A "Sensor" open the housing cover of the **sensor connection 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
- For measuring device with analog signal transmission, order code for "Integrated ISEM electronics", Option B "Transmitter" 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).
- Avoid electrostatic charge (e.g. caused by friction, cleaning, maintenance, strong currents in the medium):
 - On the plastic connection housing of the Promag W sensor and at the transmitter housing with analog signal transmission (order code for "Integrated ISEM electronics", option B).
 - 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 specification, ID Jx (Test, certificate) = JN); but at least according to the operating temperature range of the application plus allowance for 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 ГОСТ IEC 60079-14-2013.
- 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 the type of protection at the transmitter.

- 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 the device is energized.
Exception for the Ex eb connection compartment with intrinsically safe inputs and outputs: opening of the connection compartment is permitted for short period to perform live maintenance of intrinsically safe circuits. Internal non-intrinsically safe circuits are protected by an additional IP30 cover.
- For measuring devices with order code "Approval", option BJ, GJ the transmitter housing (plastic) is allowed to be installed at most in a Pollution Degree 2 environment.
- Basic specification, order code for "Sensor connection housing", option B:
To protect the housing of stainless steel housings: Ensure that the housing gasket is flat and not bent when closing the housing cover. Replace bent gaskets.
- 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): GB, BB

Optional external WLAN antenna

- The external WLAN antenna can be used only in conjunction with an Ex eb or Ex ec connection compartment.
Order code for "Integrated ISEM Electronic", option B:
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.

Intrinsic safety

- Observe the guidelines for interconnecting intrinsically safe circuits (e.g. GOCT IEC 60079-14-2013 , 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.
- Proline 500 (order code for "Integrated ISEM electronics", option B) Connecting cables with a maximum length of 200 m must meet the following requirements:
 - Capacitance core/shield: 0.42 nF/m maximum
(Inductance: 0.5 μ H/m maximum)
 - The connecting cables supplied fulfil this requirement.

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 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.
- Cable routing shall be arranged so that the cables are not exposed to friction effects and static buildup due to the passage of dust. Precautions shall be taken to prevent the build-up of static an surfaces of cables.

Temperature tables

Ambient temperature

Minimum ambient temperature

$T_{a, \min} = -40\text{ }^{\circ}\text{C}$ depending on the device version selected (see nameplate)

Maximum ambient temperature

$T_{a, \max} = +60\text{ }^{\circ}\text{C}$ depending on the medium temperature and temperature class.

Proline 500 – digital transmitter

Non-hazardous area, Zone 2

Transmitter housing material	T _{a, max} [°C]			
	Non-hazardous area	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]
Aluminum	60	–	45	60
Polycarbonate	60	–	–	–

Proline 500 transmitter

Zone 1, Zone 21

T _{a, max} [°C]	
T6 [85 °C]	T5 [100 °C]
55	60

Medium temperature

Minimum medium temperature

T_{m, min} = –40 to 0 °C depending on the selected device version (see nameplate!)

Maximum medium temperature

T_{m, max} for T6...T1 depending on the maximum ambient temperature T_{a, max}.

Proline 500 - digital

Order code for "Integrated ISEM electronics", option A

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

Promag H

DN	T _{a, max} [°C]	T _{m, max} [°C]					
		T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation							
2 to 150	35	80 ¹⁾	95	130	150	150	150
	45	80 ¹⁾	95	135	135	135	135
	60 ²⁾	80 ¹⁾	95	115	115	115	115

- 1) T_{m, max} = 50 °C for optional specification, ID Cx (Sensor option) = CI (Fluid Temperature Probe)
- 2) T_{a, max} = 50 °C for optional specification, ID Cx (Sensor option) = CI (Fluid Temperature Probe)

Promag P

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation								
15 to 600	PTFE	60	80	95	130	130	130	130
25 to 200	PFA	50	80	95	130	150	150	150
		60	80	95	130	130	130	130
Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation								
15 to 300	PTFE	60	70	95	130	130	130	130
25 to 200	PFA	60	75	95	130	150	150	150

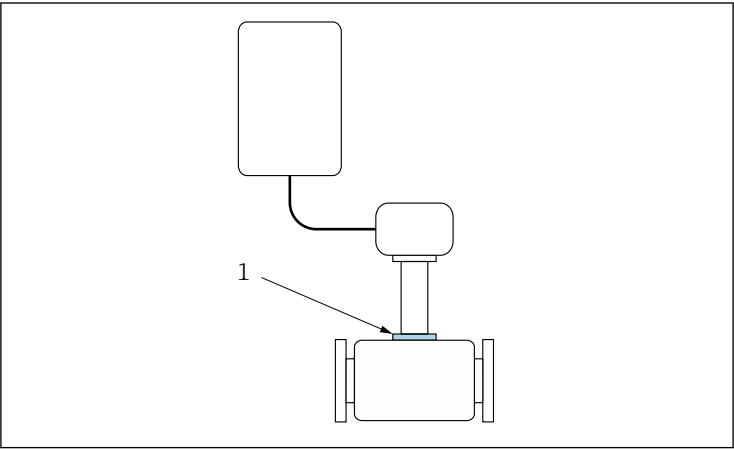
Promag W

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation								
15 to 300	PTFE	60	80	95	130	130	130	130
50 to 3000	Hard rubber	60	80	80	80	80	80	80
25 to 1000	PU	50	50	50	50	50	50	50

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation								
15 to 300	PTFE	60	70	95	130	130	130	130
50 to 300	Hard rubber	60	75	80	80	80	80	80
25 to 300	PU	50	50	50	50	50	50	50

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
→  16.



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 1 *Extension neck for insulation: position of reference point for temperature measurement*

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]
63.8	65.7	69.0	70.9	70.9	70.9

Proline 500

Order code for "Integrated ISEM electronics", option B

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

Promag H

DN	T _{a, max} [°C]	T _{m, max} [°C]					
		T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation							
2 to 150	45	80 ¹⁾	95	130	150	150	150
	55 ²⁾	80 ¹⁾	95	130	130	130	130
	60 ²⁾	80 ¹⁾	95	110	110	110	110

- 1) T_{m, max} = 50 °C for optional specification, ID Cx (Sensor option) = CI (Fluid Temperature Probe)
2) T_{a, max} = 50 °C for optional specification, ID Cx (Sensor option) = CI (Fluid Temperature Probe)

Promag P

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation								
15 to 600	PTFE	60	80	95	130	130	130	130
25 to 200	PFA	50	80	95	130	150	150	150
		60	80	95	130	130	130	130
Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation								
15 to 300	PTFE	60	80	95	130	130	130	130
25 to 200	PFA	60	80	95	130	150	150	150

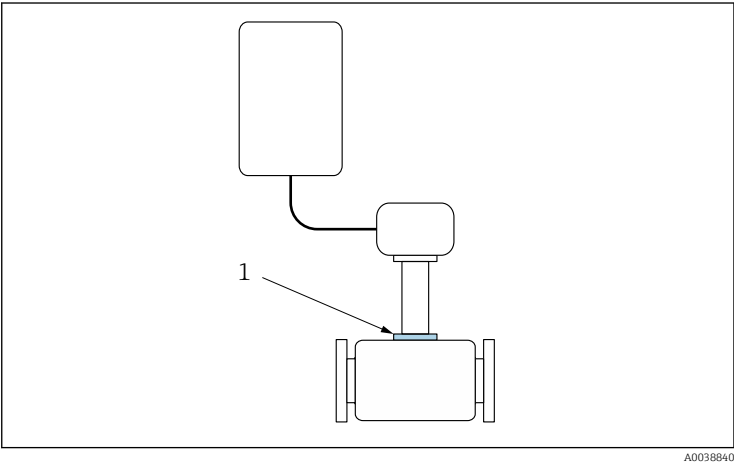
Promag W

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Without thermal insulation								
15 to 300	PTFE	60	80	95	130	130	130	130
50 to 3000	Hard rubber	60	80	80	80	80	80	80
25 to 1000	PU	50	50	50	50	50	50	50

DN	Liner	T _{a, max} [°C]	T _{m, max} [°C]					
			T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
Extended neck for insulation (Optional specification, ID Cx (Sensor Option) = CG), with or without thermal insulation								
15 to 300	PTFE	60	75	95	130	130	130	130
50 to 300	Hard rubber	60	75	80	80	80	80	80
25 to 300	PU	50	50	50	50	50	50	50

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



 2 Extension neck for insulation: position of reference point for temperature measurement

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]
63.8	65.7	69.0	69.0	69.0	69.0

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

3.

T_a [°C]	T_6 [85 °C]	T_5 [100 °C]	T_4 [135 °C]	T_3 [200 °C]	T_2 [300 °C]	T_1 [450 °C]
40	80	95	130	150	150	150
55	-	95	130	150	150	150
60	-	95	130	150	150	150

1.2.

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 3 *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.

↳ $T_{a, \max} = 60\text{ °C}$.
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:
 $108\text{ °C} \leq 130\text{ °C} \rightarrow T_4$.
3.

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

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.

Terminal assignment

Transmitter: supply voltage, input/outputs

Promag H, P, W

HART

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (+)	27 (-)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

FOUNDATION Fieldbus

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (A)	27 (B)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

PROFIBUS DP

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

PROFIBUS PA

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

Modbus RS485

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
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		Input/output 4	
1 (+)	2 (-)	26 (B)	27 (A)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

EtherNet/IP

Supply voltage		Input/output 1	Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	EtherNet/IP (RJ45 connector)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.								

PROFINET

Supply voltage		Input/output 1	Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	PROFINET (RJ45 connector)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.								

PROFINET with Ethernet-APL

Supply voltage		Input/output 1		Input/output 2		Input/output 3		Input/output 4	
1 (+)	2 (-)	26 (+)	27 (-)	24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Device-specific terminal assignment: adhesive label in terminal cover.									

Safety-related values

Order code "Output; input 1"	Output type	Safety-related values "Output; input 1"	
		26 (+)	27 (-)
Option BA	Current output 4 to 20 mA HART	$U_N = 30\text{ V}_{DC}$ $U_M = 250\text{ V}_{AC}$	
Option GA	PROFIBUS PA	$U_N = 32\text{ V}_{DC}$ $U_M = 250\text{ V}_{AC}$	
Option LA	PROFIBUS DP	$U_N = 32\text{ V}_{DC}$ $U_M = 250\text{ V}_{AC}$	
Option MA	Modbus RS485	$U_N = 30\text{ V}_{DC}$ $U_M = 250\text{ V}_{AC}$	

Order code "Output; input 1"	Output type	Safety-related values "Output; input 1"	
		26 (+)	27 (-)
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	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$	
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 "Output; input 2"; "Output; input 3" "Output; input 4"	Output type	Safety-related values					
		Output; input 2		Output; input 3		Output; input 4 ¹⁾	
		24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
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	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					

- 1) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.

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	$U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1.25 \text{ W}$ $L_i = 0 \text{ }\mu\text{H}$ $C_i = 6 \text{ nF}$	
Option CC	Current output 4-20mA HART Ex-i active	Ex ia ¹⁾ $U_0 = 21.8 \text{ V}$ $I_0 = 90 \text{ mA}$ $P_0 = 491 \text{ mW}$ $L_0 = 4.1 \text{ mH(IIC)}/$ 15 mH(IIB) $C_0 = 160 \text{ nF(IIC)}/$ 1160 nF(IIB) $U_i = 30 \text{ V}$ $I_i = 10 \text{ mA}$ $P_i = 0.3 \text{ W}$ $L_i = 4.1 \text{ }\mu\text{H}$ $C_i = 6 \text{ nF}$	
Option HA	PROFIBUS PA Ex i (STANDARD + FISCO)	Ex ia ¹⁾ $U_i = 30 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ }\mu\text{H}$ $C_i = 5 \text{ nF}$	Ex ic ²⁾ $U_i = 32 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ }\mu\text{H}$ $C_i = 5 \text{ nF}$

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 SLAA³⁾ Ex ia $U_i = 17.5 \text{ V}$ $I_i = 380 \text{ mA}$ $P_i = 5.32 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$ Cable specifications according to 2-WISE: $R_c = 15 \text{ to } 150 \text{ } \Omega/\text{km}$ $L_c = 0.4 \text{ to } 1 \text{ mH/km}$ $C_c = 45 \text{ to } 200 \text{ nF/km}$ $C_c = C_c \text{ line/line} + 0.5 C_c \text{ line/screen}$, if both lines are floating, or $C_c = C_c \text{ line/line} + C_c \text{ line/screen}$, if the screen is connected to one line Length of cable (not including cable stubs) $\leq 200 \text{ m}$ (656.2) Length of cable stubs: $\leq 1 \text{ m}$ (3.3 ft)	
Option RC	PROFINET with Ethernet-APL Ex i		
Option TA	FOUNDATION Fieldbus Ex i (STANDARD + FISCO)	$U_i = 30 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$	$U_i = 32 \text{ V}$ $I_i = 570 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i = 10 \text{ } \mu\text{H}$ $C_i = 5 \text{ nF}$

- 1) Only for the order code for "Approval", option GB, GD, G7, G8, BB, BD, B7, B8
- 2) Only for the order code for "Approval", option GN, BN
- 3) For further options see Ethernet-APL Installation Drawing HE_01622.

Order code "Output; input 2"; "Output; input 3"; "Output; input 4"	Output type	Intrinsically safe values					
		Output; input 2		Output; input 3		Output; input 4 ¹⁾	
		24 (+)	25 (-)	22 (+)	23 (-)	20 (+)	21 (-)
Option C	Current output 4 to 20 mA Ex i passive	$U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1.25 \text{ W}$ $L_i = 0$ $C_i = 0$					
Option G	Pulse/frequency/ switch output Ex-i passive	$U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1.25 \text{ W}$ $L_i = 0$ $C_i = 0$					

- 1) The order code "Output; input 4" is only available for the Proline 500 – digital transmitter.



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