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Safety Instructions
Proline Promass 100

NEPSI: Zone 2
Ex nA version

Document: XA01262D
Safety instructions for electrical apparatus for explosion-hazardous areas → 3

Endress+Hauser
People for Process Automation

Proline Promass 100

Table of contents

Associated documentation

All documentation is available:
- On the CD-ROM supplied (not included in the delivery for all device versions).
- Available for all device versions via:
  - Internet: www.endress.com/deviceviewer
  - Smart phone/tablet: *Endress+Hauser Operations App*
- In the Download Area of the Endress+Hauser web site: www.endress.com → Download

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

Measuring device	Documentation code				
	HART	PROFIBUS DP	Modbus RS485	EtherNet/IP	PROFINET
Promass A 100	BA01187D	BA01246D	BA01179D	BA01182D	BA01424D
Promass E 100 (8E1B**-...)	BA01167D	BA01248D	BA01056D	BA01064D	BA01426D
Promass E 100 (8E1C**-...)	BA01713D	BA01714D	BA01711D	BA01712D	BA01715D
Promass F 100	BA01168D	BA01249D	BA01057D	BA01065D	BA01427D
Promass G 100	BA01346D	BA01348D	BA01345D	BA01347D	BA01433D
Promass H 100	BA01189D	BA01250D	BA01177D	BA01184D	BA01428D
Promass I 100	BA01190D	BA01251D	BA01058D	BA01066D	BA01429D
Promass O 100	BA01191D	BA01252D	BA01180D	BA01185D	BA01430D
Promass P 100	BA01192D	BA01253D	BA01059D	BA01067D	BA01431D
Promass S 100	BA01193D	BA01254D	BA01060D	BA01068D	BA01432D
Promass X 100	BA01194D	BA01255D	BA01181D	BA01186D	BA01437D

Additional documentation

Contents	Document type	Documentation code
Explosion Protection	Brochure	CP00021Z/11

Please note the documentation associated with the device.

Manufacturer's certificates

NEPSI Declaration of Conformity

Certificate number:

GYJ13.1225

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

GB3836.1-2010

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, G, H, I, O, P, S, X	Sensor type
3	Transmitter	1	Transmitter type: 4-wire, compact version
4	Generation index	B, C	Platform generation
5, 6	Nominal diameter	DN 1 ... 350 DN 1: 01 DN 2: 02 ... DN 350: 3E, 3F, 3R	Nominal diameter of sensor

Basic specifications

Position	Order code	Selected option	Explosion protection
1, 2	Approval	NJ	Ex nA IIC T1 ~ T5 Gc Ex nA IIC T1 ~ T6 Gc

Position	Order code	Selected Option	Description
3	Input; Output	B	4-20mA HART, Pulse/frequency/switch output
		L	PROFIBUS DP
		M	Modbus RS485
		N	EtherNet/IP
		R	PROFINET IO
4	Display; Operation	A	W/o; via communication
5	Housing	A	Compact, alu, coated
		B	Compact hygienic, stainless
		C	Ultra compact hygienic, stainless
13, 14	Device model [1)]	A1	1

1) Order code for "Device model" only for measuring devices with product code 8E1C**-...

Optional specifications

No options specific to hazardous locations are available.

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 (e.g. GB/T 3836.15-2017).
- Install the device according to the manufacturer's instructions and the following standards:
  - GB50257-2014 "Code for construction and acceptance of electric device for explosive atmospheres and fire hazard electrical equipment installation engineering"
  - GB3836.13-2013 "Explosive atmospheres - Part 13: Equipment repair, overhaul and reclamation".
  - 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"
  - GB3836.18-2010 "Explosive atmospheres-Part 18: Intrinsically safe system
- 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.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- Observe all the technical data of the device (see nameplate).

Safety instructions: Installation

In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.

- Temperature: −20 to +60 °C
- Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
- Air with normal oxygen content, usually 21 % (V/V)

If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.

- Connecting or disconnecting the devices:
  - Ensure the supply voltage is switched off.
  - Or the device is located in a non-hazardous area.
- In potentially explosive atmospheres: Do not disconnect the electrical connection of the power supply circuit.
- Only use certified cable entries and connection plugs M12×1 suitable for the application. Please comply with the selection criteria as defined in GB/T 3836.15-2017.
- Continuous service temperature of the connecting cable: −40 to +80 °C; however, at least 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).
- 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 cable entries or sealing plugs. The metal sealing plugs supplied meet this requirement.
- Supplied cable glands M20 × 1.5 are only suitable for fixed installation of cables and connections. In the installation, a strain relief must be provided.

Basic specification, Position 5 (Housing) = B, C
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.

Potential equalization

- Integrate the device into the local 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.

Temperature tables

Ambient temperature

Minimum ambient temperature:
T_a = −40 °C

Maximum ambient temperature:
T_a = +60 °C depending on the medium temperature and temperature class

Medium temperature

Minimum medium temperature

- Promass A, F, G, H, I, P, S, X:
  T_m = −50 °C
- Promass E, O:
  T_m = −40 °C

Maximum medium temperature

T_m for T1 ~ T6 depending on the maximum ambient temperature T_a

Compact version

Basic specification, Position 5 (Housing) = A, B

T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
35	50	85	120	150 [1) 2)]	150 [1) 3) 4)]	150 [1) 3) 4)]
50	–	85	120	150 [1) 2)]	150 [1) 3) 4)]	150 [1) 3) 4)]
60	–	–	120	150 [1) 2)]	150 [1) 3) 4)]	150 [1) 3) 4)]

1) The medium temperature for Promass 8E1B**-... is limited to T_m = 140 °C.
2) The following applies to specified sensors with a maximum medium temperature T_m = 205 °C: T_m = 170 °C
3) The following applies to specified sensors with a maximum medium temperature T_m = 205 °C: T_m = 205 °C
4) Maximum medium temperature = 240 °C for Promass F version with maximum T_m = 240 °C. For medium temperature above 205 °C, the transmitter shall not be installed above the sensor.

Basic specification, Position 5 (Housing) = C

T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
50	–	85	120	150 [1) 2)]	150 [1) 3) 4)]	150 [1) 3) 4)]
60	–	–	120	150 [1) 2)]	150 [1) 3) 4)]	150 [1) 3) 4)]

1) The medium temperature for Promass 8E1B**-... is limited to T_m = 140 °C.
2) The following applies to specified sensors with a maximum fluid temperature T_m = 205 °C: T_m = 170 °C
3) The following applies to specified sensors with a maximum medium temperature T_m = 205 °C: T_m = 205 °C
4) Maximum process temperature = 240 °C for Promass F version with maximum T_m = 240 °C. For process temperature above 205 °C, the transmitter shall not be installed above the sensor.

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

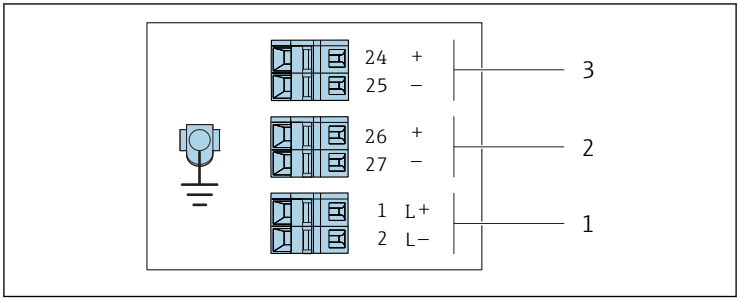
Transmitter

The order code constitutes part of the extended order code. For detailed information on the device features and the structure of the extended order code → 5.

Connection version 4-20 mA HART with pulse/frequency/switch output

Order code for "Output", option **B**

Depending on the housing version, the transmitters can be ordered with terminals or device plugs.



1 *Terminal assignment 4-20 mA HART with pulse/frequency/switch output*

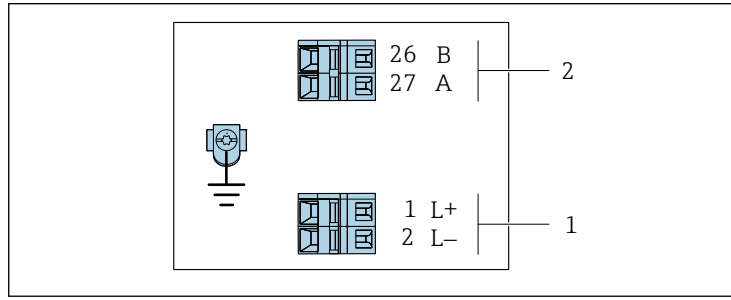
1 *Power supply: DC 24 V*
2 *Output 1: 4-20 mA HART (active)*
3 *Output 2: pulse/frequency/switch output (passive)*

Order code "Output"	Terminal number					
	Power supply		Output 1		Output 2	
	2 (L-)	1 (L+)	27 (–)	26 (+)	25 (–)	24 (+)
Option **B**	DC 24 V		4-20 mA HART (active)		Pulse/frequency/ switch output (passive)	
Order code for "Output": Option **B**: 4-20 mA HART with pulse/frequency/switch output						

PROFIBUS DP connection version

Order code for "Output", option **L**

Depending on the housing version, the transmitters can be ordered with terminals or device plugs.



2 PROFIBUS DP terminal assignment

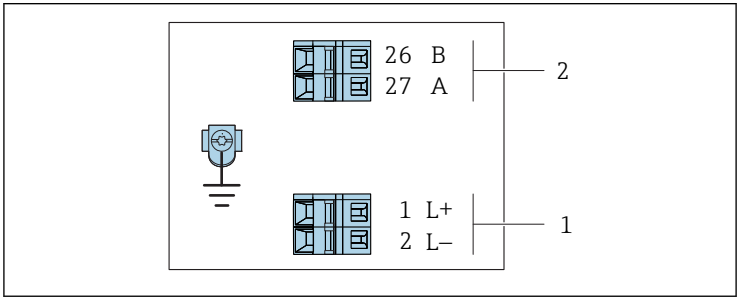
1 Power supply: DC 24 V
2 PROFIBUS DP

Order code "Output"	Terminal number			
	Power supply		Output	
	2 (L-)	1 (L+)	26 (RxD/ TxD-P)	27 (RxD/ TxD-N)
Option **L**	DC 24 V		B	A
Order code for "Output": Option **L**: PROFIBUS DP, for use in non-hazardous areas and Zone 2				

Modbus RS485 connection version

Order code for "Output", option **M**

Depending on the housing version, the transmitters can be ordered with terminals or device plugs.



3 Modbus RS485 terminal assignment, connection version for use in non-hazardous areas and Zone 2

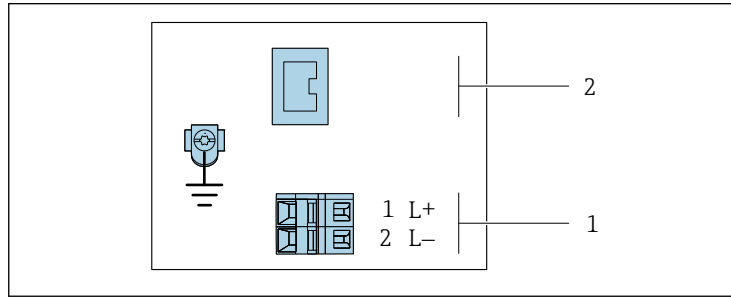
1 Power supply: DC 24 V
2 Modbus RS485

Order code "Output"	Terminal number			
	Power supply		Output	
	1 (L+)	2 (L-)	26 (B)	27 (A)
Option **M**	DC 24 V		Modbus RS485	
Order code for "Output": Option **M**: Modbus RS485, for use in non-hazardous areas and Zone 2				

EtherNet/IP connection version

Order code for "Output", option **N**

Depending on the housing version, the transmitters can be ordered with terminals or device plugs.



4 *EtherNet/IP terminal assignment*

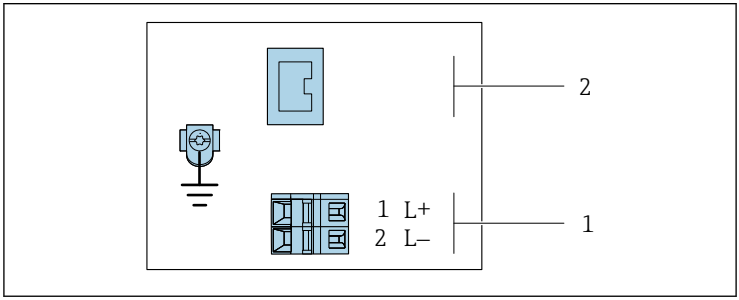
1 Power supply: DC 24 V
2 EtherNet/IP

Order code "Output"	Terminal number		
	Power supply		Output
	2 (L-)	1 (L+)	Device plug M12x1
Option **N**	DC 24 V		EtherNet/IP
Order code for "Output": Option **N**: EtherNet/IP			

PROFINET connection version

Order code for "Output", option **R**

Depending on the housing version, the transmitters can be ordered with terminals or device plugs.



5 *PROFINET terminal assignment*

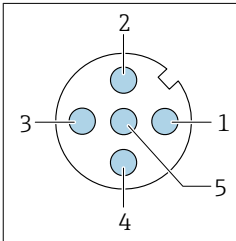
1 Power supply: DC 24 V
2 PROFINET

Order code "Output"	Terminal number		
	Power supply		Output
	2 (L-)	1 (L+)	Device plug M12x1
Option **R**	DC 24 V		PROFINET
Order code for "Output": Option **R**: PROFINET			

Pin assignment, device plug

Supply voltage

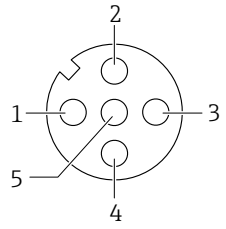
For all connection versions (device side)



Pin	Assignment	
1	L+	DC 24 V
2		Not assigned
3		Not assigned
4	L-	DC 24 V
5		Grounding/shielding
Coding		**Plug/socket**
A		Plug

4-20 mA HART with pulse/frequency/switch output

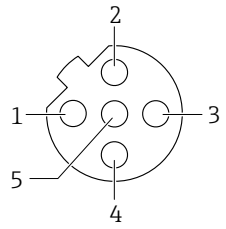
Device plug for signal transmission (device side)



Pin	Assignment	
1	+	4-20 mA HART (active)
2	-	4-20 mA HART (active)
3	+	Pulse/frequency/switch output (passive)
4	-	Pulse/frequency/switch output (passive)
5		Grounding/shielding
Coding		**Plug/socket**
A		Socket

PROFIBUS DP

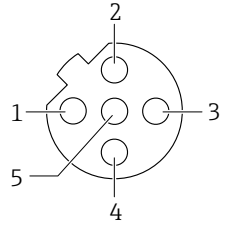
Device plug for signal transmission (device side)



Pin	Assignment	
1		Not assigned
2	A	PROFIBUS DP
3		Not assigned
4	B	PROFIBUS DP
5		Grounding/shielding
Coding		**Plug/socket**
B		Socket

MODBUS RS485

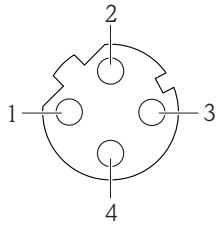
Device plug for signal transmission (device side)



Pin	Assignment	
1		Not assigned
2	A	Modbus RS485
3		Not assigned
4	B	Modbus RS485
5		Grounding/shielding
Coding		**Plug/socket**
B		Socket

EtherNet/IP

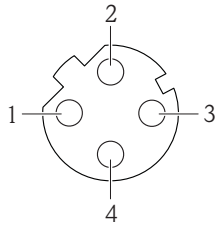
Device plug for signal transmission (device side)



Pin		Assignment
1	+	Tx
2	+	Rx
3	-	Tx
4	-	Rx
Coding		**Plug/socket**
D		Socket

PROFINET

Device plug for signal transmission (device side)



Pin		Assignment
1	+	TD +
2	-	RD +
3	+	TD –
4	-	RD –
Coding		**Plug/socket**
D		Socket

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