Safety Instructions
Proline Promag 100

INMETRO: Ex nA IIC T6...T1

Segurança

Document: XA01339D
Safety instructions for electrical apparatus for explosion-hazardous areas according to ABNT NBR IEC 60079-0 → 3

Endress+Hauser
People for Process Automation

Proline Promag 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
Promag E 100	BA01305D	BA01307D	BA01306D	BA01308D
Promag H 100	BA01171D	BA01237D	BA01175D	BA01173D
Promag P 100	BA01172D	BA01238D	BA01176D	BA01174D

Additional documentation:

Document type	Contents	Documentation code
Brochure	Explosion Protection	CP00021Z/11

Please note the documentation associated with the device.

Manufacturer's certificates

Declaration of conformity

INMETRO CERTIFICADO DE CONFORMIDADE

INMETRO certificate of conformity

Certificate number:
DEKRA 13.0005

Affixing the certificate number certifies conformity with the standards under www.abnt.org.br (depending on the device version).
- ABNT NBR IEC 60079-0: 2013
- ABNT NBR IEC 60079-15: 2012

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

* = Spaceholder: 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	Selected option	Description
1	Instrument family	5	Electromagnetic flowmeter
2	Sensor	E, H, P	Sensor type
3	Transmitter	1	Transmitter type: 4-wire, compact version
4	Generation index	B	Platform generation
5, 6	Nominal diameter	H: DN 2...150 E, P: DN 15...600	Nominal diameter of sensor

Basic specifications

Position	Order code	Selected option	Description
1, 2	Approval	M6	Ex nA IIC T6...T1 Gc
3	Output, Input	B	4-20mA HART, Pulse/frequency/switch output
		M	Modbus RS485
		N	EtherNet/IP
		L	PROFIBUS DP
4	Display, Operation	A	W/o; via communication
		B	4-line; via communication
5	Housing	A	Compact, alu, coated
		B	Compact, hygienic, stainless
		C	Ultra compact, hygienic, stainless

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. ABNT NBR IEC 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.
- 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 according to EN 1127-1, 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.
- Continuous service temperature of the connecting cable: −40 to +80 °C; in accordance with the range of service temperature taking into account additional influences of the process conditions ($T_{a,min}$ and $T_{a,max}$ + 20 K).
- Only use certified cable entries and connection plugs M12 × 1 suitable for the application. Observe selection criteria as per ABNT NBR IEC 60079-14.
- 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.
- In potentially explosive atmospheres: Do not disconnect the electrical connection of the power supply circuit.
- 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.

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:
T_m = −40 °C

Maximum medium temperature:
T_m for T6…T1 depending on the maximum ambient temperature T_a

Compact version

T_a [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
30	50	95	130	150	150	150
50	–	95	130	150	150	150
60	–	95	110	110	110	110

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

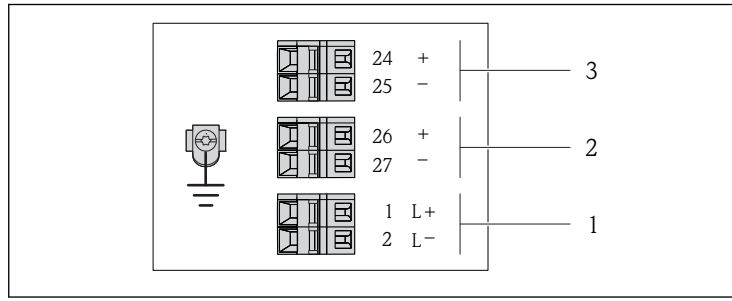
Transmitter

The order code constitutes part of the extended order code. Detailed information on the codes for the device and on 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 clamps 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)*

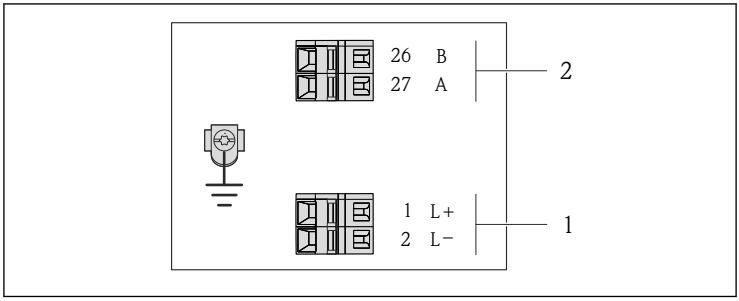
Order code "Output"	Terminal number					
	Power supply		Output 1		Output 2	
	2 (L-)	1 (L+)	27 (–)	26 (+)	25 (–)	24 (+)
Option **B**	DC 24 V		4-20 mA HART (active)		Pulse/frequency/ switch output (passive)	
Order code for "Output": Option **B**: 4-20 mA HART with pulse/frequency/switch output						

PROFIBUS DP connection version

For use in the non-hazardous area and Zone 2/Div. 2.

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

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



2 PROFIBUS DP terminal assignment

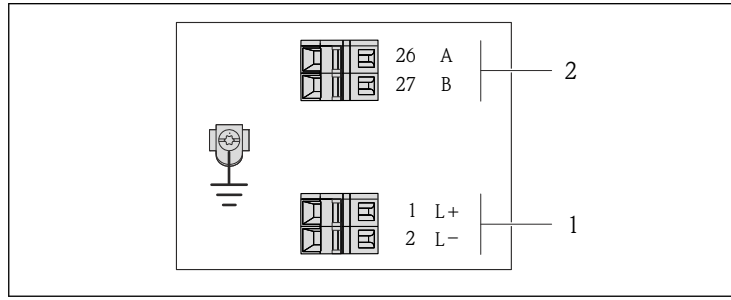
1 Power supply: DC 24 V
2 PROFIBUS DP

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/div. 2				

Modbus RS485 connection version

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

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



3 Modbus RS485 terminal assignment

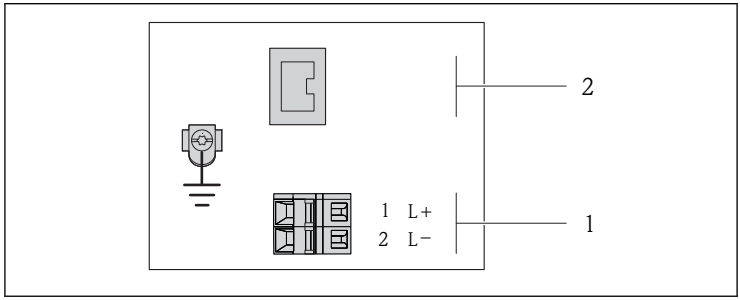
1 Power supply: DC 24 V
2 Modbus RS485

Order code "Output"	Terminal number			
	Power supply		Output	
	2 (L-)	1 (L+)	27 (B)	26 (A)
Option **M**	DC 24 V		Modbus RS485	
Order code for "Output": Option **M**: Modbus RS485				

EtherNet/IP connection version

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

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



4 *EtherNet/IP terminal assignment*

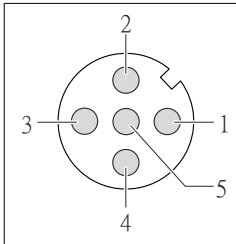
1 Power supply: DC 24 V
2 EtherNet/IP

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			

Pin assignment, device plug

Supply voltage

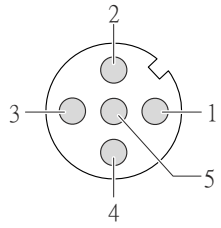
For all connection versions (device side)



Pin	Assignment	
1	L+	DC 24 V
2		
3		
4	L-	DC 24 V
5		Grounding/shielding
Coding		**Plug/socket**
A		Plug

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

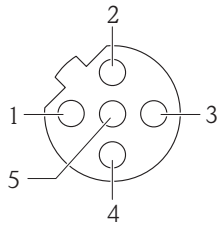
Device plug for signal transmission (device side)



Pin	Assignment	
1	L+	DC24 V
2		
3		
4	L-	DC24 V
5		Grounding/shielding
Coding		**Plug/socket**
A		Plug

PROFIBUS DP

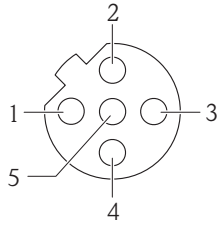
Device plug for signal transmission (device side)



Pin	Assignment	
1		
2	A	PROFIBUS DP
3		
4	B	PROFIBUS DP
5		Grounding/shielding
Coding		**Plug/socket**
B		Socket

MODBUS RS485

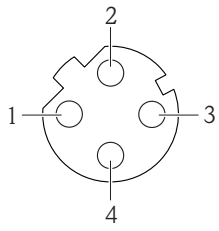
Device plug for signal transmission (device side), MODBUS RS485 (not intrinsically safe)



Pin	Assignment	
1		
2	A	Modbus RS485
3		
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

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