

Safety Instructions

CNGmass

Cl.I Div.1, Zone 1 for IS
(Ex i Intrinsically safe version)



Document: XA01252D
Safety instructions for electrical apparatus for explosion-hazardous areas classified according to the National Electrical Code (NEC) and Canadian Electrical Code (CEC) →  3

CNGmass

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Zugehörige Dokumentation

Alle Dokumentationen sind verfügbar:

- Auf der mitgelieferten CD-ROM (nicht bei allen Geräteausführungen Bestandteil des Lieferumfangs).
- Für alle Geräteausführungen verfügbar über:
 - Internet: www.endress.com/deviceviewer
 - Smartphone/Tablet: *Endress+Hauser Operations App*
- Im Download Bereich der Endress+Hauser Internetseite: www.endress.com → Download.

Dieses Dokument ist fester Bestandteil der folgenden Betriebsanleitungen:

Messgerät	Dokumentationscode
CNGmass	BA01283D

Weitere Dokumentationen:

Dokumenttyp	Inhalt	Dokumentationscode
Installation Drawing		As wanted on the nameplate.

Die zum Gerät gehörigen Dokumentationen beachten.

Manufacturer's certificates

Certificate number

160686-2537178

Notified body

CSA: Canadian Standards Association

Extended order code

Der erweiterte Bestellcode (Extended order code) wird auf dem Typenschild dargestellt, das auf dem Gerät gut sichtbar angebracht ist. Weitere Informationen zum Typenschild: Siehe Betriebsanleitung.

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	Flow	D	D = flow
2	Instrument family	8	Coriolis flowmeter
3	Product	C	C = CNGmass
4	Generation index	B	Platform generation
5, 6	Nominal diameter	08, 15, 25	Nominal diameter of sensor

Basic specifications

Position	Order code	Selected option	Explosion protection	
			Transmitter/sensor	Safety Barrier Promass 100
1, 2	Approval	C2	Intrinscally safe for Class I,II,III, Div.1	Suitable for Class I, Div.2, Groups ABCD or Class I Zone 2, IIC T4 installation Intrinscally safe outputs: Class I, Div.1, Groups ABCD Class II, Div.1, Groups EFG Class III

Position	Order code	Selected Option	Description
3	Input; Output	M	Modbus RS485
4	Display; Operation	A	W/o; via communication
5	Housing	A	Compact, alu, coated

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. IEC/EN 60079-14).
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application, and the temperature classes.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- When using in hybrid mixtures (gas and dust occurring simultaneously), observe additional measures for explosion protection.
- Observe all the technical data of the device (see nameplate).

Safety instructions: Installation

- The measuring device should only be used with the supplied Safety Barrier Promass 100 (safety barrier).
- When the Safety Barrier Promass 100 is located in Class I Division 2 (respectively safe area) it shall be mounted inside an additional enclosure which meets the requirements of CSA C22.2 No.213, CAN/CSA 60079-15, ANSI/ISA 60079-15 and FM 3611 (respectively as CAN/CSA C22.2 No. 61010-1 and FM 3810).
- Continuous service temperature of the connecting cable: -40 to $+80$ °C (-50 to $+80$ °C for optional specifications, ID Jx (Test, Certificate) = JM); 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).
- The connection cable and the installation between Safety Barrier Promass 100 and the measuring device must meet the requirements of CEC or NEC.
- Only use certified cable entries and connection plugs $M12 \times 1$ suitable for the application. Observe selection criteria as per CEC or NEC.
- Supplied cable glands $M20 \times 1.5$ are only suitable for fixed installation of cables and connections. In the installation, a strain relief must be provided.
- Control room equipment shall not use or generate more than $250 V_{rms}$.
- Install the transmitter circuit wiring according to Canadian Electrical Code (CEC) respective National Electrical Code (NEC) using threaded conduit or other wiring methods in accordance with articles 500 to 510.
- Install all Intrinsically Safe Circuits:
 - Per Canadian Electrical Code (CEC) Part I Section 18 and Appendix F
 - Per National Electrical Code (NEC) ANSI/NFPA 70 and ISA RP 12.6
- The following sensors are Dual Seal devices in accordance with ANSI/ISA-12.27.01-2003: Promass A, F, H, O, P, S, and X . Promass E is a Dual Seal device if the optional rupture disk is present.

Intrinsic safety

- The device can be connected to the Endress+Hauser FXA291 service tool: refer to the Operating Instructions.
- Observe the connection data when selecting the connection cable between Safety Barrier Promass 100 and measuring device .

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.

Safety instructions:
Class II, Class III

- To ensure dust-tightness, securely seal the transmitter housing, cable entries and sealing plugs.
- Only open the transmitter housing briefly, ensuring that no dust or moisture enters the housing.
- 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 and sealing plugs. The cable entries and metal sealing plugs supplied meet this requirement.

Temperature tables

Ambient temperature

Minimum ambient temperature:

$$T_a = -40 \text{ °C}$$

Maximum ambient temperature:

$T_a = +60 \text{ °C}$ depending on the medium temperature and temperature class

Medium temperature

Minimum medium temperature:

$$T_m = -50 \text{ °C}$$

Maximum medium temperature:

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

Compact version

Basic specification, Position 5 (Housing) = A

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	150	150
50	-	85	120	150	150	150
60	-	-	120	150	150	150


Connection data: 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.

Signal circuits

Terminal assignment

Transmitter



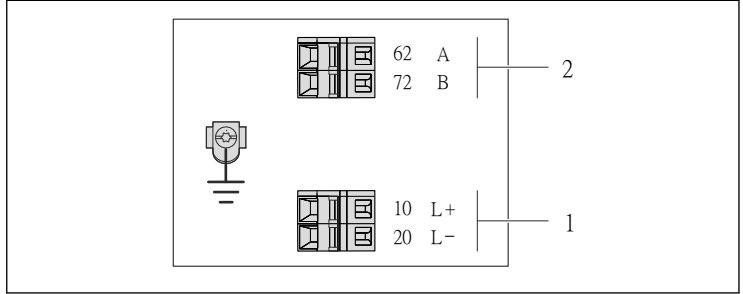
The order code constitutes part of the extended order code. Detailed information on the codes for the device and on the structure of the extended order code (→  5).

Modbus RS485 connection version



For use in the intrinsically safe area. Connection via Safety Barrier Promass 100.

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



A0017053

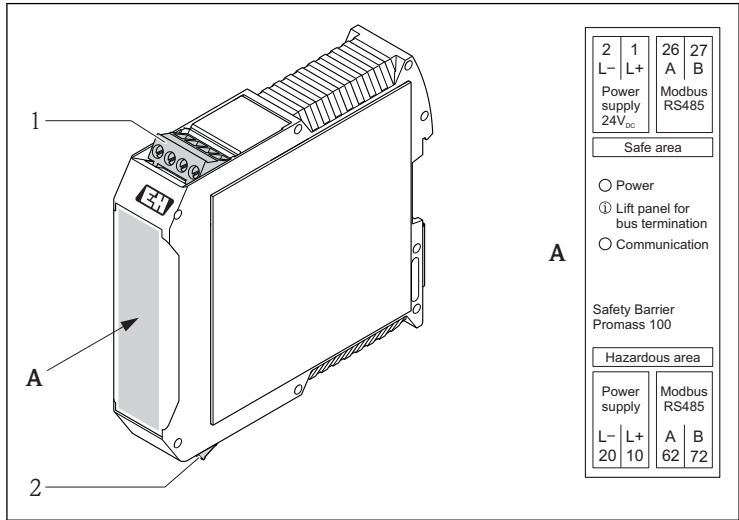
1 *Modbus RS485 terminal assignment, connection version for use in intrinsically safe areas (connection via Safety Barrier Promass 100)*

1 *Intrinsically safe power supply*

2 *Modbus RS485*

Order code "Output"	20 (L-)	10 (L+)	72 (B)	62 (A)
Option M	Intrinsically safe supply voltage		Modbus RS485 intrinsically safe	
Order code for "Output": Option M : Modbus RS485, for use in intrinsically safe areas (connection via Safety Barrier Promass 100)				

Safety Barrier Promass 100



2 Safety Barrier Promass 100 with terminals

- 1 Non-hazardous area and Zone 2/Div. 2
- 2 Intrinsically safe area

Intrinsically safe values

These values only apply for the following device version:
 Order code for "Output", option M "Modbus RS485", for use in intrinsically safe areas

Safety Barrier Promass 100

Safety-related values

Terminal numbers			
Supply voltage		Signal transmission	
2 (L-)	1 (L+)	26 (A)	27 (B)
$U_{nom} = DC\ 24\ V$ $U_{max} = AC\ 260\ V$		$U_{nom} = DC\ 5\ V$ $U_{max} = AC\ 260\ V$	

Intrinsically safe values

Terminal numbers			
Supply voltage		Signal transmission	
20 (L-)	10 (L+)	62 (A)	72 (B)
$U_o = 16.24 \text{ V}$ $I_o = 623 \text{ mA}$ $P_o = 2.45 \text{ W}$ With IIC ¹⁾ : $L_o = 92.8 \text{ } \mu\text{H}$, $C_o = 0.433 \text{ } \mu\text{F}$, $L_o/R_o = 14.6 \text{ } \mu\text{H}/\Omega$			

1) The gas group depends on the sensor and nominal diameter.

Transmitter

Intrinsically safe values

Terminal numbers			
Supply voltage		Signal transmission	
20 (L-)	10 (L+)	62 (A)	72 (B)
$U_i = 16.24 \text{ V}$ $I_i = 623 \text{ mA}$ $P_i = 2.45 \text{ W}$ $L_i = 0 \text{ } \mu\text{H}$ $C_i = 6 \text{ nF}$			

Pin assignment, device plug

MODBUS RS485

Device plug for signal transmission with supply voltage (device side), MODBUS RS485 (intrinsically safe)

<p style="text-align: center;">A0016809</p>	Pin	Assignment		
	1	L+	Supply voltage, intrinsically safe	
	2	A	Modbus RS485 intrinsically safe	
	3	B		
	4	L-	Supply voltage, intrinsically safe	
5		Grounding/shielding		
Coding	Plug/socket			
A	Plug			

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