

# Safety Instructions

## Proline Prosonic Flow 500

Class I Zone 2

Class I Division 2



Document: XA01851D  
Safety instructions for electrical apparatus for explosion-  
hazardous areas →  3



# Proline Prosonic Flow 500

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**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](http://www.endress.com/deviceviewer)
  - Smart phone/tablet: *Endress+Hauser Operations App*
- In the Download Area of the Endress+Hauser web site: [www.endress.com](http://www.endress.com) → Download.

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

Measuring device	Documentation code	
	HART	Modbus RS485
Prosonic Flow G 500	BA01836D	BA01837D

*Additional documentation*

Contents	Document type	Documentation code
Explosion Protection	Brochure	CP00021Z/11
Control drawing		As wanted on the nameplate.

Please note the documentation associated with the device.

**Manufacturer's certificates**

**Certificate number**

CSA 16.70087366

**Notified body**

CSA Group

**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*...
<i>(Device type)</i>	<i>(Basic specifications)</i>	<i>(Optional specifications)</i>

\* = 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.

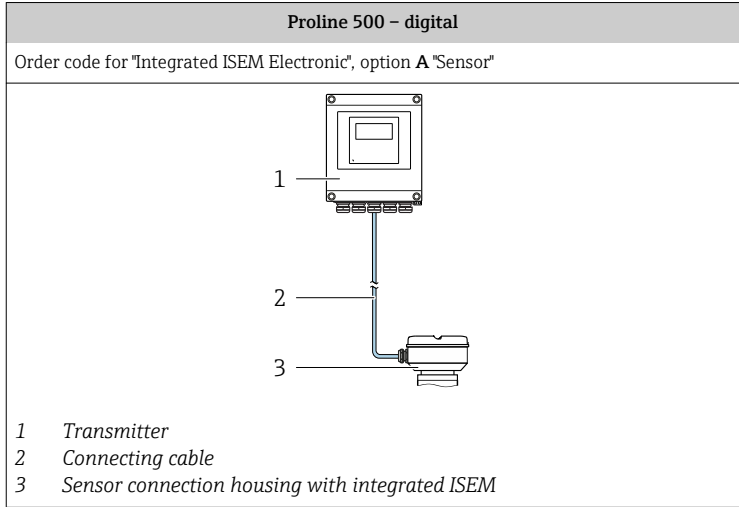
### *Optional specifications*

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	9	Ultrasonic transit time flowmeter
2	Sensor	G	Sensor type
3	Transmitter	5	Transmitter type: 4-wire, remote version
4	Generation index	B	Platform generation
5, 6	Nominal diameter	DN 25...300	Nominal diameter of sensor



**Basic specifications**

Position 1, 2 Order code for "Approval" Option selected	Position 10 Order code for "Integrated ISEM electronics" Option selected	Type of protection	
		Transmitter	Sensor
CS	A	Cl.I, Div.2, Gps. A-D T5...T4	Cl.I, Div.2, Gps. A-D T5...T1
CZ	A	Cl.I, Zone 2, AEx/Ex ec nC IIC T5...T4 Gc	Cl.I, Zone 2, AEx/Ex ec ic IIC T5...T1 Gc

Position	Order code for	Option selected	Description
4, 5	Output, input 1	BA	4-20mA HART
		MA	Modbus RS485
6	Output, input 2	A	W/o
		B	4-20mA
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		F	Pulse output, phase-shifted
		H	Relay
		I	4-20mA input
	J	Status input	
7	Output, input 3	A	W/o

Position	Order code for	Option selected	Description
		B	4-20mA
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		F	Pulse output, phase-shifted
		H	Relay
		I	4-20mA input
		J	Status input
8	Output; input 4	A	W/o
		B	4-20mA
		D	Configurable I/O initial setting off
		E	Pulse/frequency/switch output
		H	Relay
		I	4-20mA input
		J	Status input
9	Display; Operation	F	4-line, illuminated; touch control
		G	4-line, illuminated; touch control + WLAN
10	Integrated ISEM Electronic	A	Sensor
11	Transmitter Housing	A	Alu, coated
		D	Polycarbonate
12	Sensor junction Housing	A	Alu, coated
		L	Cast, stainless
22	Device Model	A2	2

### Optional specifications

ID	Order code for	Option selected	Description
Jx	Test, certificate	JP	Ambient temperature, measuring device -50 °C
Px	Enclosed accessories	P8	Wireless antenna, wide area (external WLAN antenna) <sup>1)</sup>

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. CEC or NEC)
- 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).
- Avoid electrostatic charge (e.g. caused by friction, cleaning, maintenance, strong currents in the medium):  
on the attached stainless steel nameplate and on painted metallic housings that are not integrated into the local potential equalization system

### WARNING

#### Substitution of components is not permitted.

- ▶ Substitution of components may impair suitability for Class I, Division 2.

## Safety instructions: Installation

- Continuous service temperature of the connecting cable: -40 to +80 °C (-50 to +60 °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 CEC or NEC.
- When the measuring device is connected, attention must be paid to explosion 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 energized.
- 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.
- For transmitter housing with digital signal transmission (order code for "Integrated ISEM electronics", Option A) the housing cover are tighten with a torque of 2.5 Nm.

#### **AEx/Ex ec type of protection**

- In potentially explosive atmospheres: Do not disconnect the electrical connection of the power supply circuit when energized.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.
- Only use certified cable entries or sealing plugs.
- Equipment in type of protection AEx/Ex ec, shall be installed using a transient protection not exceeding 140% of the peak rated voltage value at the power supply terminals and IO terminals.

#### **Optional external WLAN antenna**

- 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. Proof of Intrinsic Safety).

#### **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.
- The antenna bushing H337 of the external antenna must be integrated into the local potential equalization system. This is the case if the sensor is connected in accordance with the regulations via the coupling.

**Temperature tables**

**Ambient temperature**

*Minimum ambient temperature*

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

*Maximum ambient temperature*

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

### **Proline 500 – digital transmitter**

*Non-hazardous area, Zone 2 and Class I Division 2*

Transmitter housing material	$T_a$ [°C]			
	Non-hazardous area	T6	T5	T4
Aluminum	60	-	45	60
Polycarbonate	60	-	-	-

### **Medium temperature**

*Minimum medium temperature*

$T_m = -50\text{ °C}$

*Maximum medium temperature*

$T_m$  for T5...T1 depending on the maximum ambient temperature  $T_a$

**Proline 500 - digital**

Order code for "Integrated ISEM electronics", option A

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

*With integrated pressure measuring cell*

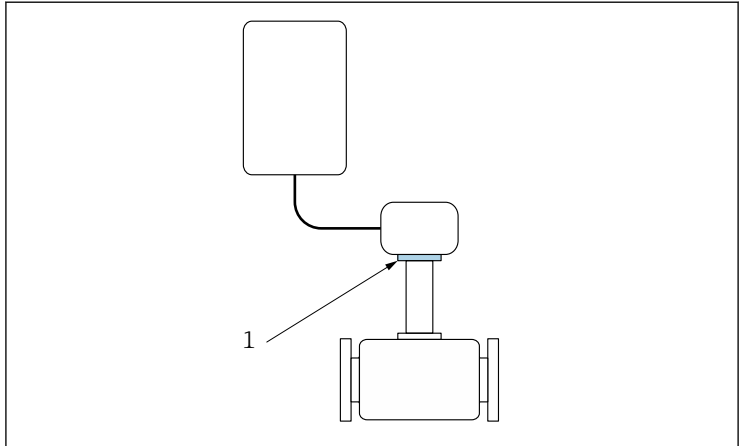
DN	T <sub>a</sub> [°C]	T <sub>m</sub> [°C]					
		T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25...300	55	-	40	90	90	90	90
	60	-	-	90	90	90	90

*Without integrated pressure measuring cell*

DN	T <sub>a</sub> [°C]	T <sub>m</sub> [°C]					
		T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
25...300	60	-	85	120	150	150	150

*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 .



A0039278

☐ 1 Position of reference point for temperature measurement

1 Reference point ( $T_{ref}$ )

Reference temperature  $T_{ref}$

T6 [80 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
-	71	75	77	77	77

**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		Input/output 4	
1 (+)	2 (-)	26 (+)	27 (-)	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.									

**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 MA	Modbus RS485	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$			

Order code for "Output; input 2"; "Output; input 3" "Output; input 4"	Output type	Safety-related values					
		Output; input 2		Output; input 3		Output; input 4	
		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	$U_N = 30 V_{DC}$ $U_M = 250 V_{AC}$					

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



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