

# Safety Instructions

## Proline Prosonic Flow B 200

NEPSI: Zone 1  
Ex d version



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# Proline Prosonic Flow B 200

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Associated documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* ([www.endress.com/deviceviewer](http://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 device	Documentation code
	HART
Prosonic Flow B 200	BA01031D

Additional documentation

Contents	Document type	Documentation code
Remote display FHX50	Special documentation	SD01007F
	Safety Instructions Zone 0, Zone 21; Ex ia	XA01076F
Explosion Protection	Brochure	CP00021Z/11

Please note the documentation associated with the device.

Certificates and declarations

NEPSI Declaration of Conformity

Certificate number:

GYJ23.1039X

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

- GB/T 3836.1-2021
- GB/T 3836.2-2021
- GB/T 3836.4-2021

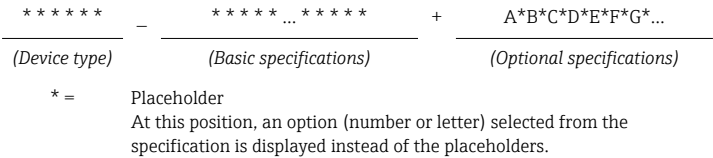
Certificate holder

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**



*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	B	Sensor type
3	Transmitter	2	Transmitter type: 2-wire, compact version

Position	Order code for	Option selected	Description
4	Generation index	B	Platform generation
5, 6	Nominal diameter	DN 50 to 200	Nominal diameter of sensor

### Basic specifications

Position	Order code	Selected option	Description
1, 2	Approval	NJ	Ex db[ia] IIC T1...T6 Gb
3	Output	A	4-20mA HART
		B	4-20mA HART, Pulse/frequency/switch output
		C	4-20mA HART + 4-20mA analog
		D	4-20mA HART, pulse/frequency/switch output, 4-20mA input
4	Display; Operation	A	W/o; via communication
		C	SD02 4-line; push buttons + data backup function
		E	SD03 4-line, illum.; touch control + data backup function
		L	Prepared for display FHX50 + M12 connection <sup>1)</sup>
		M	Prepared for display FHX50 + custom connection <sup>1)</sup>

1) FHX50 is separately approved.

### 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 or guidelines (e.g. GB/T 3836.15-2017)
- Install the device according to the manufacturer's instructions and the following standards:
  - GB 50257-2014 "Code for construction and acceptance of electric device for explosive atmospheres and fire hazard electrical equipment installation engineering"
  - GB/T 3836.13-2021 "Explosive atmospheres – Part 13: Equipment repair, overhaul, reclamation and modification"
  - 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"
  - GB/T 3836.18-2017 "Explosive atmospheres – Part 18: Intrinsically safe electrical systems"
- 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.
- 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).


## Safety instructions: Installation

- 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 suitable for the application. Observe selection criteria as per GB/T3836.15-2017. Accordingly, the connection terminal does not include any ignition sources.
- When the measuring device is connected, attention must be paid to explosion protection at the transmitter.
- Suitable certified cable entry and blanking plug for unused holes approved by ExTL according to GB/T 3836.1-2021 and GB/T 3836.2-2021 with Ex marking "Ex db IIC" shall be used and correctly installed (for terminal compartment).
- The external earth connection facility of the enclosure shall be connected reliably.
- 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.
- 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.

### Intrinsic safety

- The device can be connected to the Endress+Hauser FXA291 service tool: refer to the Operating Instructions.
- The device can be connected to the remote display FHX50 with Ex ia explosion protection; refer to the Special Documentation and Ex documentation.

### Potential equalization

- Integrate the device into the potential equalization →  10.
- 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*



*Basic specification, position 3 (Output; input) = A, B, C, D:*

$$T_a = -40\text{ °C}$$

Maximum ambient temperature:

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

### Medium temperature

*Minimum medium temperature*

$$T_m = 0\text{ °C}$$

*Maximum medium temperature*

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

### Compact version

*Basic specification, position 3 (Output; Input) = A*

$T_a$ [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	60	80	80	80	80	80
50	–	80	80	80	80	80
60	–	80	80	80	80	80

*Basic specification, position 3 (Output; Input) = B*

$T_a$ [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	– <sup>1)</sup>	80	80	80	80	80
50	–	60 <sup>2)</sup>	80	80	80	80
60	–	–	80	80	80	80

1)  $T_m = 60\text{ °C}$  for pulse/frequency/switch output  $P_1 \leq 0.85\text{ W}$

2)  $T_m = 80\text{ °C}$  for pulse/frequency/switch output  $P_1 \leq 0.85\text{ W}$

*Basic specification, position 3 (Output; Input) = C*

$T_a$ [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
40	60	80	80	80	80	80
50	–	80	80	80	80	80
60	–	55	80	80	80	80

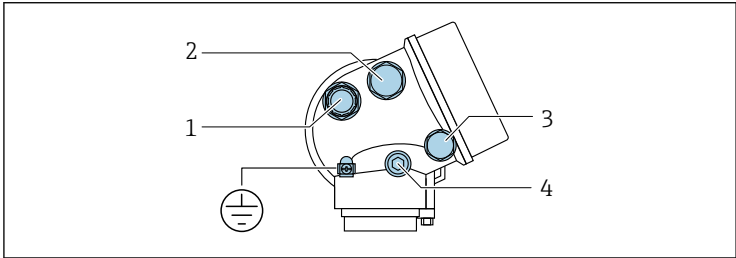
Basic specification, position 3 (Output; Input) = D

T <sub>a</sub> [°C]	T6 [85 °C]	T5 [100 °C]	T4 [135 °C]	T3 [200 °C]	T2 [300 °C]	T1 [450 °C]
35	60	80	80	80	80	80
50	–	80	80	80	80	80
60	–	–	80	80	80	80

Connection data:  
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.

Connecting the transmitter





A0023831

Position		Basic specification, position 1, 2: Approval	Type of protection used for cable entry	Description
1	Cable entry for output 1	NJ	Ex db	<p>Plastic sealing plugs act as safeguards during transportation and must be replaced by suitable, individually approved installation material.</p> <p>The metal extensions and dummy plugs supplied are tested and certified as part of the housing for explosion protection Ex db IIC. The various threaded versions are labeled as follows for identification purposes:</p> <ul style="list-style-type: none"> <li>■ Md: M20 x 1.5</li> <li>■ NPTd: NPT ½"</li> <li>■ Gd: G ½"</li> </ul>
2	Cable entry for output 2	NJ	Ex db	<p>Plastic sealing plugs act as safeguards during transportation and must be replaced by suitable, individually approved installation material.</p> <p>The metal extensions and dummy plugs supplied are tested and certified as part of the housing for explosion protection Ex db IIC. The various threaded versions are labeled as follows for identification purposes:</p> <ul style="list-style-type: none"> <li>■ Md: M20 x 1.5</li> <li>■ NPTd: NPT ½"</li> <li>■ Gd: G ½"</li> </ul>
3	Cable entry of the remote display and operating module FHX50	NJ	Ex ia	–
Position		Description		
4	Pressure compensation plug	<p><b>NOTICE</b></p> <p><b>Housing degree of protection voided due to insufficient sealing of the housing.</b></p> <p>► Do not open - not a cable entry.</p>		
⊕	Potential equalization	<p><b>NOTICE</b></p> <p><b>Terminal for connection to potential equalization.</b></p> <p>► Pay attention to the grounding concept of the facility.</p>		

Terminal assignment

Transmitter



 The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code →  5.

Connection versions



Order code for "Output"	Terminal numbers					
	Output 1		Output 2		Input	
	1 (+)	2 (-)	3 (+)	4 (-)	5 (+)	6 (-)
Option A	4-20mA HART (passive)		-		-	
Option B <sup>1)</sup>	4-20mA HART (passive)		Pulse/frequency/switch output (passive)		-	
Option C <sup>1)</sup>	4-20mA HART (passive)		4-20mA analog (passive)		-	
Option D <sup>1) 2)</sup>	4-20mA HART (passive)		Pulse/frequency/switch output (passive)		4-20mA current input (passive)	

- 1) Output 1 must always be used; output 2 is optional.  
2) The integrated overvoltage protection is not used with option D: Terminals 5 and 6 (current input) are not protected against overvoltage.

Intrinsically safe values

 The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code →  5.

Safety-related values

 The order code is part of the extended order code. Detailed information on the features of the device and on the structure of the extended order code →  5.

Type of protection Ex d

Order code for "Output"	Output type	Safety-related values
Option A	4-20mA HART	$U_{nom}$ = DC 35 V $U_{max}$ = 250 V
Option B	4-20mA HART	$U_{nom}$ = DC 35 V $U_{max}$ = 250 V

Order code for "Output"	Output type	Safety-related values
	Pulse/frequency/switch output	$U_{nom} = \text{DC } 35 \text{ V}$ $U_{max} = 250 \text{ V}$ $P_{max} = 1 \text{ W}^{1)}$
Option C	4-20mA HART	$U_{nom} = \text{DC } 30 \text{ V}$
	4-20mA analog	$U_{max} = 250 \text{ V}$
Option D	4-20mA HART	$U_{nom} = \text{DC } 35 \text{ V}$ $U_{max} = 250 \text{ V}$
	Pulse/frequency/switch output	$U_{nom} = \text{DC } 35 \text{ V}$ $U_{max} = 250 \text{ V}$ $P_{max} = 1 \text{ W}^{1)}$
	4 to 20 mA current input	$U_{nom} = \text{DC } 35 \text{ V}$ $U_{max} = 250 \text{ V}$

1) Internal circuit limited by  $R_i = 760.5 \, \Omega$

Remote display FHX50

Basic specification, position 1, 2 Approval	Cable specification	Basic specification, position 4 Display; operation Option L, M
Option <b>NJ</b>	Max. cable length: 60 m (196.85 ft)	$U_o = 7.3 \text{ V}$
		$I_o = 327 \text{ mA}$
		$P_o = 362 \text{ mW}$
		$L_o = 149 \, \mu\text{H}$
		$C_o = 388 \text{ nF}$
		$C_c \leq 125 \text{ nF}$
		$L_c \leq 149 \, \mu\text{H}$

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