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# Safety Instructions
# **Proline Prosonic Flow G 300**

NEPSI: Zone 2


Endress+Hauser
People for Process Automation

# Proline Prosonic Flow G 300

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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): 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 | Modbus RS485 |
| Prosonic Flow G 300 | BA01834D | BA01835D |

*Additional documentation*

| Contents | Document type | Documentation code |
|---|---|---|
| Remote display and operating module DKX001 | Special documentation | SD01763D |
| | Safety Instructions<br>Ex ec | XA01503D |
| Explosion Protection | Brochure | CP00021Z/11 |

## Certificates and declarations

### NEPSI Declaration of Conformity

Certificate number:

GYJ19.1240X

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

- GB/T 3836.1-2021
- GB/T 3836.3-2021
- GB/T 3836.4-2021
- GB/T 3836.8-2021

## 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

| ****** | – | ***** ... ***** | + | 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 | 9 | Ultrasonic transit time flowmeter |
| 2 | Sensor | G | Sensor type |
| 3 | Transmitter | 3 | Transmitter type:<br>4-wire, compact version |
| 4 | Generation index | B | Platform generation |
| 5, 6 | Nominal diameter | DN 25 to 300 | Nominal diameter of sensor |

## Basic specifications

| Position 1, 2<br>Order code for "Approval"<br>Option selected | Position 4, 5<br>Order code for "Output, input 1"<br>Option selected | Type of protection | |
|---|---|---|---|
| | | Transmitter | Sensor |
| NS | BA, MA | Ex ec nC ic IIC T1...T5 Gc | Ex ic IIC T1...T5 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 |
| | | 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 | Display; Operation | A | W/o; via communication |
| | | F | 4-line, illuminated; touch control |
| | | G | 4-line, illuminated; touch control + WLAN |
| | | M | W/o; prepared for remote display DKX001 [1)] |
| | | O | Separate, with remote display DKX001 [1)], 4-line, illuminated; 10 m / 30 ft cable; touch control |
| 9 | Housing | A | Alu, coated |

| Position | Order code for | Option selected | Description |
|---|---|---|---|
| | | L | Cast, stainless |
| 17, 18 | Device Model | A2 | 2 |

1) DKX001 is approved according to GYJ21.1084.

### 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) [1] |

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. 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.
- Observe all the technical data of the device (see nameplate).

**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 GB/T3836.15-2017.
- When the measuring device is connected, attention must be paid to explosion protection at the transmitter.
- Turning the transmitter housing
  - Loosen both hexagon socket screws until the transmitter housing can be turned.
  - Turn transmitter housing to desired position (mechanically limited); if necessary turn 270° in other direction.
  - Tighten both hexagon socket screws with a maximum of 7 Nm.
- 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.

### 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 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. GB/T 3836.15-2017 , Proof of Intrinsic Safety).

- When using the remote display and operating module DKX001 the internal display and operating module must be removed.
- When using the separate approved, remote display and operating module DKX001, only use the following variants: Basic specification of the remote display and operating module DKX001, order code "Approval", option NS

### Potential equalization

- Integrate the device into the 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 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 °C
- *Optional specification, ID Jx (Test, Certificate) = JP*
  $T_a$ = −50 °C depending on the selected device variant (see nameplate)

*Maximum ambient temperature*

$T_a$ = +60 °C depending on the medium temperature and temperature class.

### Medium temperature

*Minimum medium temperature*

$T_m$ = −50 °C

*Maximum medium temperature*

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

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

*With integrated pressure measuring cell*

| DN | $T_a$ [°C] | $T_m$ [°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 |

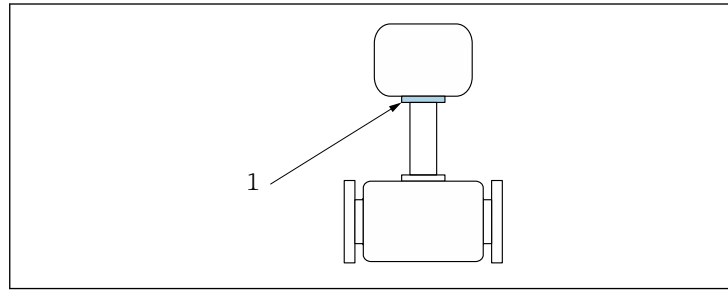
*Without integrated pressure measuring cell*

| DN | $T_a$ [°C] | $T_m$ [°C] | | | | | |
|---|---|---|---|---|---|---|---|
| | | T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
| 25...300 | 50 | – | 85 | 120 | 150 | 150 | 150 |
| | 55 | – | – | 120 | 150 | 150 | 150 |
| | 60 | – | – | 120 [1)] | 150 [1)] | 150 [1)] | 150 [1)] |

1) For horizontal installation: Install the transmitter below the sensor.

### 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 → 9.

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*1 Position of reference point for temperature measurement*

*1 Reference point ($T_{ref}$)*

*Reference temperature $T_{ref}$*

| T6 [85 °C] | T5 [100 °C] | T4 [135 °C] | T3 [200 °C] | T2 [300 °C] | T1 [450 °C] |
|---|---|---|---|---|---|
| – | 62 | 72 | 73 | 73 | 73 |

## 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*

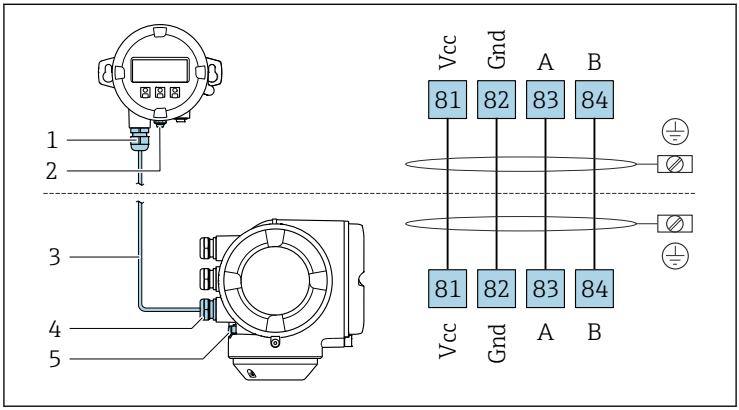
*HART*

| Supply voltage | | Input/output 1 | | Input/output 2 | | Input/output 3 | |
|---|---|---|---|---|---|---|---|
| 1 (+) | 2 (–) | 26 (+) | 27 (–) | 24 (+) | 25 (–) | 22 (+) | 23 (–) |
| | | Device-specific terminal assignment: adhesive label in terminal cover. | | | | | |

*Modbus RS485*

| Supply voltage | | Input/output 1 | | Input/output 2 | | Input/output 3 | |
|---|---|---|---|---|---|---|---|
| 1 (+) | 2 (–) | 26 (B) | 27 (A) | 24 (+) | 25 (–) | 22 (+) | 23 (–) |
| | | Device-specific terminal assignment: adhesive label in terminal cover. | | | | | |

*Remote display and operating module DKX001*

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1 *Remote display and operating module DKX001*
2 *Protective earth (PE)*
3 *Connecting cable*
4 *Measuring device*
5 *Protective earth (PE)*

## 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 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | |
| Option **MA** | Modbus RS485 | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | |

| Order code for "Output; input 2"; "Output; input 3" | Output type | Safety-related values | | | |
|---|---|---|---|---|---|
| | | Output; input 2 | | Output; input 3 | |
| | | 24 (+) | 25 (–) | 22 (+) | 23 (–) |
| Option **B** | Current output 4 to 20 mA | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **D** | User-configurable input/output | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **E** | Pulse/frequency/ switch output | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **F** | Double pulse output | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **H** | Relay output | $U_N$ = 30 $V_{DC}$<br>$I_N$ =100 $mA_{DC}$/500 $mA_{AC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **I** | Current input 4 to 20 mA | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |
| Option **J** | Status input | $U_N$ = 30 $V_{DC}$<br>$U_M$ = 250 $V_{AC}$ | | | |

## Remote display DKX001

| Basic specification, position 1, 2 Approval | Terminal assignment | Basic specification, position 8 Display; Operation Option O |
|---|---|---|
| Option **NS** | 81, 82, 83, 84 | $U_n$ = 3.3 V |
| | | $I_n$ = 150 mA |


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