Safety Instructions

# Proline Prosonic Flow 92F

## Ex d version

## UKEX: II2G, II1/2G

**This document is an integral part of the following Operating Instructions:**
BA00121D, Proline Prosonic Flow 92F HART
BA00122D, Proline Prosonic Flow 92F PROFIBUS PA
BA00128D, Proline Prosonic Flow 92F FOUNDATOION Fieldbus

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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.

Additional documentation:

| Document type | Contents | Documentation code |
|---|---|---|
| Brochure | Explosion Protection | CP00021Z/11 |

Please note the documentation associated with the device.

## Manufacturer's certificates

**UK declaration of conformity**
Documentation code: UK_00347

**UK type-examination certificate**
Certificate number: CML 23UKEX1276X

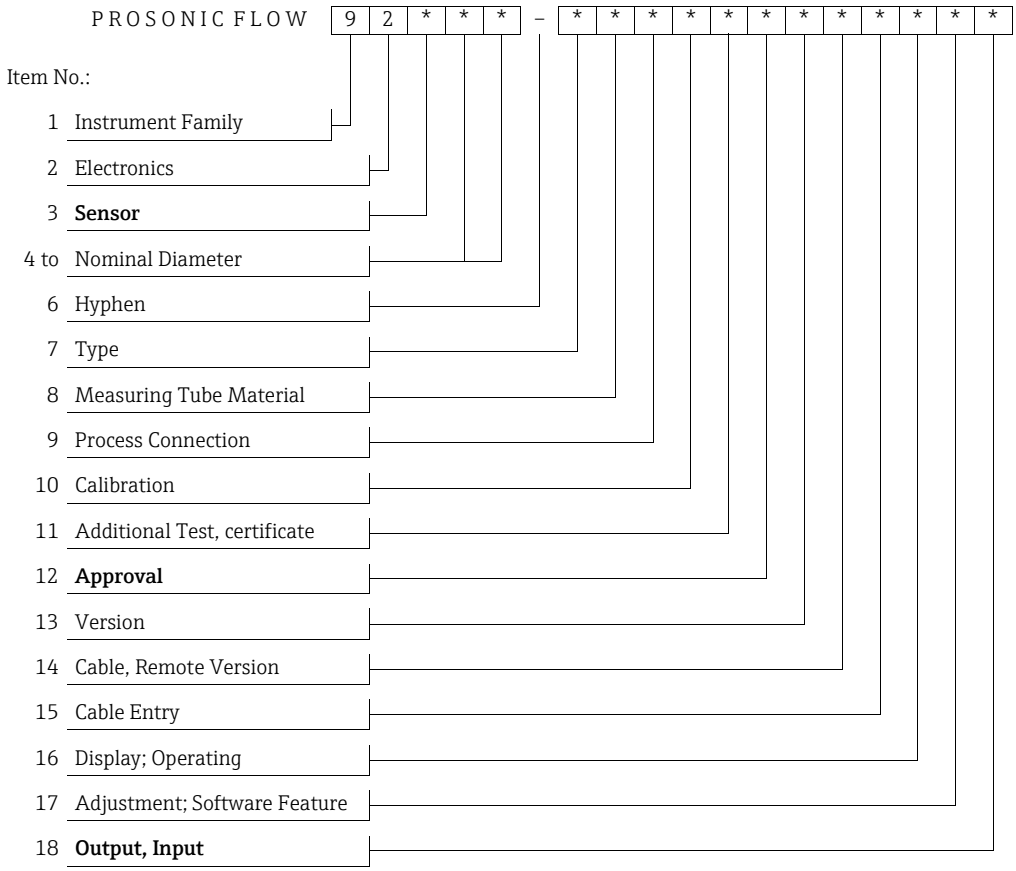
## Description of the measuring system

The measuring system consists of a transmitter and a sensor. Two versions are available:
- Compact version: The transmitter and sensor form a mechanical unit.
- Remote version: The transmitter and sensor are mounted separate from one another and interconnected by means of a connecting cable.

## Order code

The order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible.
Additional information on the nameplate is provided in the associated Operating Instructions.

**Structure of the order code:**



**Sensor (Item No. 3 in order code)**

| * | Sensor |
|---|---|
| F | Sensor F |
| X | only transmitter (as spare part) |

**Approval (Item No. 12 in order code)**

| * | Housing/design | Identification | |
|---|---|---|---|
| | | UKEX | Explosion protection |
| I | Compact | II2G | Ex db[ia] IIC T*...T1 Gb |
| | Remote, transmitter | | Ex db[ia] IIC T*...T1 Gb |
| | Remote, sensor | | Ex ia IIC T*...T1 Gb |
| 5 | Compact | II1/2G | Ex db[ia] IIC T*...T1 Ga/Gb |
| | Remote, transmitter | | Ex db[ia] IIC T*...T1 Gb |
| | Remote, sensor | | Ex ia IIC T*...T1 Ga/Gb |

T* = T6 or T4 (see table Output, input → 🖹 3)

**Output, input (Item No. 18 in order code)**

| * | Temperature marking (T*) |
|---|---|
| A, W | T6...T1 |
| H, K | T4...T1 |

✎ Note!
A detailed explanation of these values with regard to the inputs and outputs available, as well as a description of the associated terminal assignments and connection data is provided on → 🖹 5 onwards.

## General warnings

- Any national regulations pertaining to the installation of devices in hazardous areas must be observed.
- Mounting, electrical installation, commissioning and maintenance of the devices may only be performed by technical staff trained in the area of explosion protection.
- Compliance with all of the technical data of the device (see nameplate) is mandatory.
- The connection compartment of the transmitter housing may only be opened when the unit is de-energized or if an explosive atmosphere is not present.
- The device must be integrated into the potential equalization system. Potential must be equalized along the intrinsically safe sensor circuits. Further information can be found in the “Potential matching” chapter on → 🖹 5.
- The connection compartment Prosonic Flow 92**-*****I/5****** may only be opened in an Ex atmosphere when the device is de-energized (and after waiting 6 minutes after switching off the power supply).

## Installation instructions

- Use of devices in zones according to the category:

| | Zone | Transmitter | Sensor | Within the measuring pipe |
|---|---|---|---|---|
| II2(1)G | 0 | – | – | – |
| | 1 | ✔ | ✔ | ✔ |
| | 21 | – | – | – |
| II1/2(1)G | 0 | – | – | ✔ |
| | 1 | ✔ | ✔ | ✔ |
| | 21 | – | – | – |

- If the active intrinsically safe communication circuits are fed into areas that require 2G apparatus, the connected apparatus must be tested and certified accordingly.
- The cable entries and openings not used must be sealed tight with suitable components.
- The measuring device must only be used in the permitted temperature class.
  The values of the individual temperature classes can be found in the temperature tables on → 🖹 4.

- The manufacturer's specifications for all devices connected to the intrinsically safe circuits must be taken into consideration.
- To rotate the transmitter housing, please follow the same procedure as for non-Ex versions. The transmitter housing may also be rotated during operation.
- The continuous service temperature of the cable must correspond at least to the temperature range of −40 °C and up to +10 °C above the ambient temperature present (−40 °C to ($T_a$ +10 °C)).
- The devices may only be used for fluids against which the wetted materials are sufficiently resistant.
- Only use cable entries that have separate certification (Ex d IIC) which are suitable for an operating temperature up to 80 °C. When using conduit entries, the associated sealing facilities must be mounted directly to the housing.
- The service connector may not be connected in a potentially explosive atmosphere.

## Compact version temperature table

Medium temperature range $T_{med}$ [°C] depending on the device version (→ 🖹 2) and the ambient temperature range $T_a$:

| | $T_a$ [°C] | $T_{med}$ T6 (85 °C) | T5 (100 °C) | T4 (135 °C) | T3 (200 °C) | T2 (300 °C) | T1 (450 °C) |
|---|---|---|---|---|---|---|---|
| 92F**-*****I/5*****A/W | −40 to +40 | −40 to +80 | −40 to +95 | −40 to +130 | −40 to +195 | −40 to +200 | −40 to +200 |
| | −40 to +55 | – | | | | | |
| | −40 to +60 | – | – | | | | |
| 92F**-*****I/5*****H/K | −40 to +60 | – | – | −40 to +130 | −40 to +195 | −40 to +200 | −40 to +200 |

## Remote version temperature table

### Sensor

Medium temperature range $T_{med}$ [°C] depending on the device version (→ 🖹 2) and the ambient temperature range $T_a$:

| | $T_a$ [°C] | $T_{med}$ T6 (85 °C) | T5 (100 °C) | T4 (135 °C) | T3 (200 °C) | T2 (300 °C) | T1 (450 °C) |
|---|---|---|---|---|---|---|---|
| 92F**-*****I/5*****A/W | −40 to +60 | −40 to +80 | −40 to +95 | −40 to +130 | −40 to +195 | −40 to +200 | −40 to +200 |
| | −40 to +80 | – | – | | | | |
| 92F**-*****I/5*****H/K | −40 to +80 | – | – | −40 to +130 | −40 to +195 | −40 to +200 | −40 to +200 |

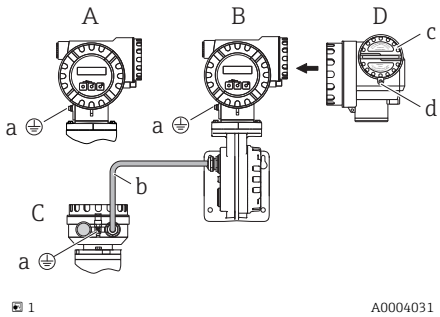
### Transmitter

Ambient temperature range Ta [°C] depending on the device version (→ 🖹 2):

| | $T_{med}$ T6 (85 °C) | T5 (100 °C) | T4 (135 °C) | T3 (200 °C) | T2 (300 °C) | T1 (450 °C) |
|---|---|---|---|---|---|---|
| 92F**-*****I/5*****A/W | −40 to +40 | −40 to +55 | −40 to +60 | −40 to +60 | −40 to +60 | −40 to +60 |
| 92F**-*****I/5*****H/K | – | – | −40 to +60 | −40 to +60 | −40 to +60 | −40 to +60 |

## Design of measuring system

**Compact/remote version design**

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*A Transmitter housing (compact version)*
*B Transmitter housing (remote version)*
*C Sensor connection housing (remote version)*
*D Transmitter housing side view (compact/remote version)*
*a Screw terminal for connecting to potential matching system*
*b Remote version connecting cable → 🖹 5*
*c Terminal/electronics compartment cover: view section cable entries → 🖹 5*
*d Securing clamp*

*– Terminal assignment and connection data → 🖹 7*

## Potential matching

Caution!
- There must be potential matching along the circuits (inside and outside the hazardous area).
- The transmitter must be safely included in the potential matching system by means of the screw terminal on the outside of the transmitter housing or by means of the corresponding ground terminal in the connection compartment.
- Alternatively, the sensor and the transmitter (compact version) or the connection housing of the sensor can be included in the potential matching system by means of the pipeline if a ground connection, performed as per the specifications, is ensured.

## Cable entries

Cable entries for the connection compartment (Ex d version):
Thread for cable entry M20x1.5 or ½"-NPT or G ½", as required. Ensure that the Ex d cable glands/ entries are secured against self-locking and the associated seals are arranged directly on the housing.

## Connecting cable specifications remote version

The sensor cable connection between the sensor and the transmitter has Ex ia explosion protection.

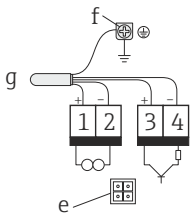
The maximum capacitance per unit length of the cable connection is 1mF/km.
The maximum inductance of the cable is 1 mH/km.

The cable supplied by Endress+Hauser (max. 30 m) complies with these values.

## Electrical connections

**Terminal/electronics compartment cover (terminal assignment, see tables below)**

**4...20 mA HART**
(connection with a cable)

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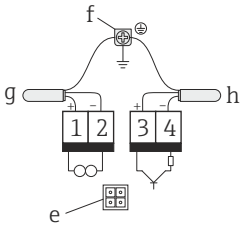
**4...20 mA HART**
**(connection with two cables)**

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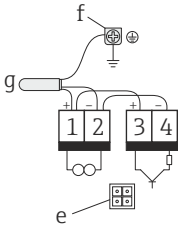
**4...20 mA HART**
**(PFM connection)**

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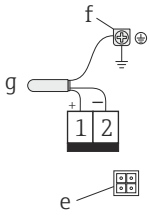
**PROFIBUS PA**

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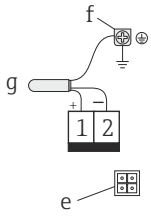
**FOUNDATION Fieldbus**

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*e Service connector → 7*

*f HART ground terminal: if the potential matching is routed via the cable and if two cables are used, both cables must be connected to the potential matching system if a connection is not already established externally. PROFIBUS PA and FOUNDATION Fieldbus: between the stripped fieldbus cable and the ground terminal, the cable shielding must not exceed 5 mm in length*

*g HART (→ 2): cable for supply voltage and/or pulse output*
*HART (→ 3): cable for supply voltage*
*PFM (→ 4): Optional pulse/frequency output, can also be operated as a status output (not for PROFIBUS PA and FOUNDATION Fieldbus*
*PROFIBUS PA (→ 5): cable of input and output circuits*
*FOUNDATION Fieldbus (→ 6): cable of input and output circuits*

*h Optional pulse/frequency output, can also be operated as a status output (not for PROFIBUS PA and FOUNDATION Fieldbus)*

✎ Note!
*PFM output (pulse/frequency modulation): connection as illustrated in → 4 (only together with flow computer RMC or RMS 621).*

**Terminal assignment and connection data**

The terminal assignment and the connection data for the supply voltage are identical for all devices, regardless of the device version (order code).

✎ Note!
A graphic illustration of the electrical connections is provided on → 🖹 6.

**Terminal assignment /connection data**

| | Terminals | 1 (+) | 2 (–) | 3 (+) | 4 (–) |
|---|---|---|---|---|---|
| Prosonic 92F**-**********A<br>Prosonic 92F**-**********W | Terminal designation | Transmitter power supply / 4 to 20 mA HART | | Optional pulse/status output | |
| | Safety related values | ≤ 35 V ($U_{max}$ = 253 V) | | ≤ 35 V ($U_{max}$ = 253 V) | |

| | Terminals | 1 (+) | 2 (–) |
|---|---|---|---|
| Prosonic 92F**-**********H | Terminal designation | PROFIBUS PA | |
| | Safety related values | U = 35 V<br>($U_{max}$ = 253 V) | |

| | Terminals | 1 (+) | 2 (–) |
|---|---|---|---|
| Prosonic 92F**-**********K | Terminal designation | FOUNDATION Fieldbus | |
| | Safety related values | U = 35 V<br>($U_{max}$ = 253 V) | |

## Service connector

The service connector (for connection →🖻 2 to →🖻 6, e) is only used to connect service interfaces approved by Endress+Hauser.

⚠ Warning!
The service connector may not be connected in a potentially explosive atmosphere.

www.addresses.endress.com

Endress+Hauser

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