

Monitoring your Flow

Flow Transmitter PD 340

Application

The PD 340 flow transmitter is a precision meter used for volumetric measurement of liquids with a certain degree of electrical conductivity. It is well suited for use in the food industry and in other applications that require a hygienic design together with easy cleanability. The design of the transmitter allows measurement of liquids containing solid particles. An integrated micro processor constantly monitors the function of the transmitter.

Working principle

The unit consists of three parts: Meter unit, electronic module and terminal box. The electronic module and the terminal box are identical for all sizes. The meter unit consists of a stainless steel tube mounted with magnetic coils on the outside and two electrodes on the inner side. When a current is applied to the coils a magnetic field is induced through the metering tube. When a conductive liquid is flowing through the tube an electrical voltage is induced over the measuring electrodes. This voltage is independent of viscosity and of the flow profile of the liquid (laminar or turbulent). Furthermore it is always proportional to the volumetric flow calculated by the integrated micro processor. When using an external Pt-100 detector (DIN 43760), the liquid temperature can be measured.

Standard design

The metering tube is coated with Teflon (FEP) on the inside and is fitted with clamp connections. The electronic module is available in two versions, standard and extended, both fitted with two pulse outputs. The standard version can be directly connected to a display unit. On the extended version one of the outputs can be converted to an analogue output, 4-20 mA. In the meterunit and the electronic module the sensitive electronic is completely embedded and consequently hermetically sealed. The flow transmitter is water proof, protection class IP 67. The terminals of the terminal box are clearly marked with both number and function and they are equipped with 3 PG-11 cable glands.

Materials

Metering tube:	Acid-resistant steel AISI 316.
Electrodes:	Acid-resistant steel AISI 316.
Inside coating of metering tube:	FEP Teflon
Housings:	Noryl (PPO)



Fig. 1. Flow transmitter PD 340 with optional Display Unit PD 210

Functions

- Automatic zero point adjustment.
- Uni- or bidirectional flow.
- Temperature compensated volumetric measurement in m³, litres, US gallons etc.
- Temperature measurement using external temperature sensor.
- Pulse output to:

- electronic counter:	0 - 1000 pulses per second.
- electro-mechanical counter:	0 - 5 pulses per second.
- Current output: 4 - 20 mA (extended version only).
- Stop signal from internal preset counter.
- Direct connection to PD 210 display unit.

Sizes

25 mm, 38 mm, 51 mm, 63.5 and 76.1 mm.

Display unit

Various options are available for displaying information from the PD 340 Flow Transmitter. The display units are water proof, class IP 67.

Local Display Unit, PD 210:

The display unit PD 210 can be connected directly to the flow transmitter. It is used as an accumulative counter and preset counter for registration of present values of flow rate and temperature. PD 210 is also used for fault finding (readout and preset of error codes.)

Display Unit PD 4000/340 (extended version only):

The PD 4000/340 Flowmeter Display utilizes the P-NET interface for data exchange between the unit and up to three connected Flow Transmitters. It is possible to change data and to select various functions in the Flow Transmitter. The displayed data may be e.g. flow or volume, or a setpoint or filter constant can be selected for modification. A standard configuration for a PD 340 Flow Transmitter is stored in the Flowmeter-Display and may be transferred automatically via P-NET to a new Flow Transmitter in the system. The standard configuration can be adjusted to match a specific customer configuration.

The actual configuration for each of the selected Flow Transmitters may be listed in clear text on the display.

Selection of meter size

In order to secure optimal accuracy the smallest possible meter, capable of handling the maximum flow rate (including CIP-flow), should be selected.

If the meter is smaller than the tubes in the system, it must be connected with tapered reducers.

Technical data

Deviation, flow measurement:	Less than ± 0.3 % of max. flow.
Deviation, current output:	As per fig. 2 (± 0.3 % of the preset current output range.
Linearity:	As per fig. 2.
Repeatability:	Better than 0.5 x deviation.
Dependence of ambient temperature:	Less than 0.04 % per 10°C.
Dependence of supply voltage:	Less than 0.01 % per 10 %.
Response time:	0.2 sec. on pulse output. 1 sec. on current output.

Temperature measurement

Deviation: Less than ± 0.9°C.
Range: -30°C to +100°C.

Ambient temperature: -10°C to +50°C.
Power supply: 24 V AC ± 15 %, 50/60 Hz or 24 V DC ± 15 %.

Power consumption: Max. 6 W.

Liquid

Conductivity: Min 5 µS/cm (Siemens).
Temperature: -30°C to +100°C.
Pressure: Max. 10 bar.

Outputs

Pulse signals: Max. 40 V, 100 mA.
Current signal: 10 - 30 V, 4 - 20 mA.

Pressure drop: Negligible.
Weight: 5 kg.
Protection class: IP 67, water proof.

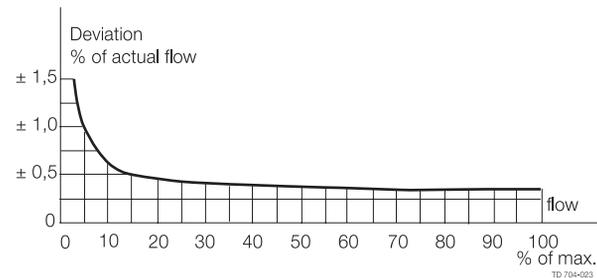


Fig. 2. Deviation, flow measurement.

D Nom. size DN/OD mm	Capacity m ³ /h	Standard calibration	
		OUTPUT 2 I/pulse	OUTPUT 3 I/pulse
25	8	1.00	0.01
38	20	1.00	0.01
51	40	10.00	0.1
63	80	10.00	0.1
76	120	10.00	0.1

Note! Max. flow (including CIP-flow) should be used for selection. Excessive flow rates can damage the FEP coating.

Dimensions (mm)

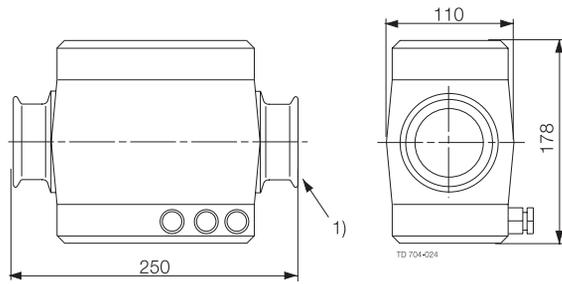


Fig. 3. Dimensions.

1) Clamp ferrules ISO 2852

Options

- A. Display unit PD 210.
- B. Display unit PD 4000/340 (Extended version only).
- C. Extended version.
- D. Special features as per agreement.
- E. Counters. Please ask for details.

Ordering

Please state the following when ordering:

- Type PD 340.
- Size.
- Options.

Note!

For further details, see also instruction IM 70763.