

Precise Measurement of Laminar or Turbulent Flow

PD340 Magnetic Flow Meter

Application

The PD 340 flow transmitter is used for volumetric and flow measurement of electrically conductive liquids. It is well suited for hygienic applications, and where the liquid may contain solid particles. This meter meets 3A standards.

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 meter head consists of a stainless steel metering tube coated inside with Teflon. Two magnetic coils are fitted outside the tube and two stainless steel electrodes inside the tube, all enclosed in a rigid Noryl box. The flow meter is designed so that the changes in flow profile, from laminar to turbulent flow, or in viscosity, have no effect on the measuring accuracy. The electronic module is available in two versions: standard and extended. The standard version has two pulse outputs. In the extended version, one of the outputs can be configured to a current output: 4 - 20 mA. In the terminal box, all terminals are clearly marked with both number and function. The box is equipped with 3 cable glands and 3 cord grips having a PG 11 pipe thread.

Materials

Metering tube:	AISI 316, stainless steel
Electrodes:	AISI 316, stainless steel
Inside coating of metering tube:	Teflon (FEP)
Housings:	Noryl (PPO)



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 (4 wire RTD required)
- Output 3: 0 - 1000 pulses per second (maximum)
- Output 2: 0 - 10 pulses per second (maximum)
- Current output: 4 - 20 mA (extended version only)
- Batch complete signal from internal preset counter with use of PD 210 as a batch controller.

Display unit

The PD 210 waterproof display unit can be mounted on the flowmeter or in a control panel up to 325 cable-feet away. It is used as a batch totalizer, grand totalizer and single output batch controller; as well as a temperature, volume and flow rate display. The PD 210 can run a diagnostic test on the flow meter, and also be used to configure flow meter parameters for various applications.

Technical data

Discrete input	Remotely reset PD 210 totalizer or disable meter output
Connections	Tri-Clamp® sanitary
Entry wiring	Water tight cord grip - three units supplied PG11
Protection	IP67/NEMA 4X

Standard configuration

output 3 Pulse	100 pls/gallon
4 - 20 mA	4 mA-0 flow 20 mA-Maximum flow for each meter size
Deviation, flow measurement	Less than ± 0.3% of maximum flow
Deviation, current output	As per figure, ± 0.3% of range
Pressure drop	Negligible
Weight	11 lbs
Linearity	As per figure 2
Repeatability	Maximum (0.5 % error), See figure 2
Effect of ambient temp.	Less than 0.04 per 50° F
Effect of voltage supply	Less than 0.01% per 10%
Response time	0.2 sec. on pulse output
1 sec. on current output	

Temperature measurement

Deviation	Less than ± 1.6° F
Limits	-22° F to + 212° F
Ambient temperature:	14° F to 122° F
Power supply:	24 V AC ±15%, 50/60 Hz or 24 V DC ±15%

Power consumption: Maximum 6 W

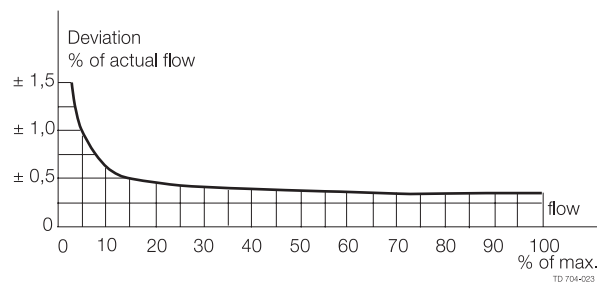


Figure 2. Flow Meter Accuracy

Liquids

Conductivity:	Minimum 5 µs/cm
Temperature:	Maximum 212° F
Pressure:	Maximum 145 PSI
Maximum capacity	1-inch size: 35 GPM 1.5-inch size: 88 GPM 2-inch size: 176 GPM 2.5-inch size: 352 GPM 3-inch size: 528 GPM
Current at Power Up	350 mA
Digital outputs	Two independent, scalable non-voltage pulse outputs Open collector Sinking OPTO-isolated output
Pulse width	40 msec Output 2: 10 Hz maximum Output 3: 1000 Hz maximum
Analog option	Output 3: 4 - 20 mA Adjustable time constant

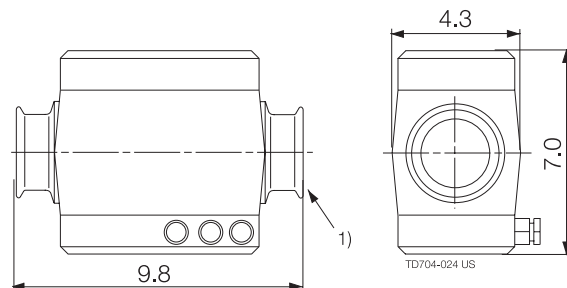


Figure 3. Dimensions (Inches)

Options

- Equipment
- A. Display unit PD 210
 - B. Extended version - standard version
 - C. Batch controller

Ordering

Please state the following when ordering:

- Type PD 340.
- Size (application guidance is available for correct sizing and options)
- Options.