



PQ / PV Flow Meter

Ultrasonic discharge measurement system for water treatment and distribution applications

The PQ continuously measures the water or effluent flow through ducts, pipes and open canals in sewer networks, water treatment plants and industrial facilities. It combines two sensors in one system. The first determines the water level by means of a pressure probe or radar sensor, the second simultaneously measures the mean flow velocity with an ultrasonic Doppler sensor.

FEATURES

- Flow velocity range 0.01 ... 5 m/s
- Water level range with pressure sensor up to 10 m
- Water level range with radar sensor up to 15 m
- Extremely wide discharge range
- Versatile installation options
- Waterproof controller housing that is resistant to aggressive fumes and liquids
- Simple integration into existing data acquisition and control systems
- Easily linked to data loggers
- Multiple data interfaces: RS-485, SDI-12, Modbus, analog, pulse

Versions

- PQ with flow velocity sensor and pressure probe
- PQ with flow velocity sensor and contact-free radar sensor
- PV with flow velocity sensor only

PLC integration

The PQ can be easily integrated into a process control unit (PLC) by its digital and analog interfaces.

specifications

ultrasonic Doppler velocity sensor

- **Measurement range** Bi-directional 0.01 to 5 m/s (0.03 to 16.4 ft/s)
- **Accuracy** $\pm 2\%$ of reading if $V \geq 0.5\text{m/s}$ (1.64 ft/s) $\pm 0.01\text{ m/s}$ ($\pm 0.03\text{ ft/s}$) if $V < 0.5\text{m/s}$ (1.64 ft/s)
- **Resolution** 1 mm/s (0.003ft/s)
- **Minimum fluid level** 5 mm (0.59 in) to 20mm (0.79in) above base of sensor, provided transducers fully wetted
- **Immersion** up to 1 bar
- **Principle** Doppler sensor using twin 1 MHz transducers
- **Operating temperature** -20 to +60 °C (fluid non-freezing)
- **Storage temperature** -20 to +70 °C
- **Size** L x B x H 122 x 46 x 19 mm
- **Weight** 1.1 kg (incl. 10-m cable)
- **Material** PVDF, polyurethane, 316 Stainless steel

PTM pressure probe

- **Measurement range** 0 ... 10m, 0 ... 1bar (piezo membrane, absolute pressure, temperature compensated)
- **Accuracy** $\pm 0.05\%$
- **Long term stability** $< 0.2\%$ FS / $< 4\text{ mbar}$ (1 year (typ. / max.)), the long term stability can be improved by ageing (burn-in) the sensor)
- **Output** SDI-12 V1.3
- **Operating temperature** -10° C ... +80° C
- **Storage temperature** -10° C ... +80° C
- **Size** L x Ø 160 x 24 mm
- **Weight** 200 g
- **Material** Stainless steel (316L / 1.4404)
- **Seals** Viton (Standard), EPDM, Kalrez

SOMLEVEL level sensor

- **Measurement range** up to 15 m (49.21 ft)
- **Accuracy** $\pm 2\text{ mm}$
- **Beam angle** 8°
- **Measurement frequency** W-band (80 GHz)
- **Mounting** connection thread G1, 1NPT, R1
- **Process pressure** -1 ... +3 bar (-100 ... 200 kPa, -14.5 ... 43.51 psig)
- **Process temperature** -40 ... +80 °C (-40 ... +176 °F)
- **Ambient temperature** -40 ... +80 °C (-40 ... +176 °F)
- **Size** Ø x H Straight cable output: Ø76 x 109 mm (Ø2.99 x 4.28 in)
- **Weight** 0.7 kg (1.543 lbs)
- **Material** Wetted parts: PVDF Process seal: FKM Connection cable: PVC insulated
- **Protection rating** IP68

PQ-Controller

- **Power supply** 9...28 VDC; Overvoltage and reverse voltage protection deep-discharge protected if used with optional battery
- **Outputs** RS-485 (9600...115200 Baud), Modbus RTU, SDI-12 (version 1.3), 3x 4 ... 20 mA output (level, velocity and flow)
- **Operating temperature** -40...60 °C (-40...140 °F)
- **Storage temperature** -40...60 °C (-40...140 °F)
- **Protection rating** IP67
- **Lightning protection** Integrated protection against indirect lightning with a discharge capacity of 6 kA Ppp
- **Housing material** Aluminium, powder coated