SQ-R Flow Meter

Non-contact flow measurement for wastewater treatment plants, sewers and industrial water channels

Learn more about our SQ-R ATEX products

The SQ-R measures continuously and contact-free the flow rate of effluent channels, partially filled pipes and technical ducts in industry and water supply. The SQ-R is not in contact with the water and can therefore be operated without being affected by debris and entrained solids. With its compact design and versatile mounting options, it is the ideal choice for flow measurements in manholes of facilities and sewers.

FEATURES AND ADVANTAGES

- Non-contact measurement, maintenance-free system
- Calculation of discharge by continuous measurement of flow velocity and water level
- No construction measures necessary in the sewer
- Waterproof and resistant housing also for use in aggressive environments
- Wide measuring range from a few liters up to several cubic meters per minute
- High data availability even with intensive turbidity and high solids content
- Easy integration into existing measuring and control systems
- Self-check function supports correct installation and high data quality
- Versatile measurement output via RS-485, Modbus, SDI-12, pulse and analog signal
- Integrated hydraulic model for precise flow calculations
- Easy configuration with SQ-Commander software

FIELDS OF APPLICATION

The SQ-R is specially designed for municipal and industrial applications in wastewater treatment plants, sewers and process water circuits. For example, the amount of wastewater entering a treatment plant can be monitored to control the facility and allocate wastewater costs. Furthermore, the duration and frequency of rain and flood events can be recorded, which is essential for sewer management by plant operators and utilities.

IMPLEMENTATION

Due to its compact design and flexible mounting device, the sensor is very easy to install, for example under bridges or extensions, on ceilings of sewers or in manholes. The non-contact measuring technology has the decisive advantage that the sensor can be mounted above the water level. Thus, the SQ-R can be easily installed, is readily accessible and cannot be clogged or blocked by entrained solids, which is often the case with submerged sensors.

A specially designed adjustable mounting bracket is available for installation in manholes of sewers.

SQ-R as mobile, autonomous monitoring station

For remote monitoring sites without grid connection, the SQ-R can also be operated autonomously: In combination with a data logger, a data transmission modem, a powerful battery and an adequate solar module, the SQ-R can be upgraded to

an independent system. Optionally, it can also be equipped with a camera to visualize the conditions on site.

TECHNICAL Data

GENERAL

- **Dimensions** 272 x 153 x 186 mm (1 bracket for pipe with Ø 30 mm)
- **Total weight** 1.55 kg
- **Protection class** IP 68
- **Power supply** 6 ... 30 V DC
- **Power consumption** 1.5 Ah per day (for a measurement interval of 60 s)
- **Operating temperature** -35° ... 60° C
- **Storing temperature** -40° ... 60° C
- **Protection** over voltage protection, reverse power protection, lightning protection

Level measurement

- **Measuring range** 0.05 ... 8 m (0.16…26.25 ft)
- **Radar frequency** 80 GHz (W-band)
- **Beam angle** 8
- **Near field blanking** 0.05 m
- **Resolution** ? 2 mm

VELOCITY MEASUREMENT

- **Measuring principle** Doppler-radar
- **Measuring range** 0.08 ... 16 m/s (depending on flow conditions)
- **Accuracy** +/- 0.01 m/s; +/- 1 % FS
- **Resolution** 1 mm/s
- **Direction recognition** +/-
- **Measuring duration** 5 ... 240 sec.
- **Measuring interval** 8 sec. ... 5 h
- **Measuring frequency** 24 GHz (K-Band)
- **Radar opening angle** 12°
- **Distance to water surface** 0.05 ... 35 m (0.16...114.83 ft)
- **Required minimum swell** 3 mm

AUTOMATIC VERTICAL ANGLE COMPENSATION

- **Accuracy** +/- 1°
- **Resolution** +/- 0,1 °

INTERFACES

- **Analogue outputs** 2 x 4 ... 20 mA
  - 1 x water level
  - 1 x flow rate or flow velocity
- **Pulse output** pulse per volume (selectable units)
- **Digital Interfaces** 1 x SDI-12; 1 x RS 485 or Modbus
  - Transfer rate: 1.2 to 115,2 kBd
  - Protocol: various ASCII-protocols
  - Output: discharge, flow velocity, water level, quality parameter