



Flow radar RQ-30 / RQ-30a

Non-contact flow measurement using radar technology for open channels

The RQ-30 is a sensor for non-contact and continuous flow measurement of rivers, open channels and channels. Two radar measurement methods for determining the surface speed and the water level are combined in the device. It delivers reliable measurement results without any structural measures in the water.

Properties and advantages

- Non-contact measurement, maintenance-free system No structural measures
- required in the water body No danger to the system in the event of flooding Low
- energy consumption allows operation with solar cells Detection of the flow
- direction
-
- Measuring range from +/- 0.10 to +/- 15 m / s (depending on the flow conditions) Detection of hysteresis
- effects Measurement at locations with backlogs Measures even when weeds
-
-
- Measurement in ebb / flow affected waters Automatic angle
- measurement
- Optional (RQ-30a): Analog outputs 4 to 20 mA

Areas of application

The RQ-30 enables flow measurement for rivers, streams, open channels and channels for which continuous monitoring is required. Due to the contactless radar technology, the measuring device is not endangered by pollution and flotsam in the water. This results in very low-maintenance operation and increased reliability, especially in the event of flooding.

application

The sensor can easily be mounted on bridges, ceilings of closed channels or on superstructures of the channel. The bottom of the channel should be as stable as possible to ensure an even measurement. The

Water surface must have a recognizable swell.

Measuring principle

The measurement of the flow rate is based on the principle of the Doppler effect. The water level is determined using a runtime measurement. If the cross-sectional profile is known, the flow Q of the channel can be calculated according to the continuity equation: $Q = v_m A (h)$

Technical specifications

General

- **Dimensions** 338 x 333 x 154 mm
- **total weight** 5.4 kg
- **Degree of protection** IP 67
- **Power supply** 6 ... 30 V
- **Power consumption at 12V** Standby approx. 1 mA; active measurement approx. 140 mA
- **operating temperatur** - 35 ... 60 ° C
- **safety devices** Surge protection, reverse polarity protection, lightning protection

Level measurement

- **Measuring range** 0 ... 15 m standard version / 0 ... 35m extended working area
- **resolution** 1 mm
- **Radar frequency** 26 GHz (K-band)
- **Radar aperture angle** 10 °

Speed measurement

- **Measuring range** 0.10 ... 15m / s (depending on the flow conditions)
- **accuracy** +/- 0.01 m / s; +/- 1% FS
- **resolution** 1 mm / s
- **Direction detection + / Measurement**
- **duration** 5 ... 240 sec
- **Measurement interval** 8 sec. ... 5 h
- **Measurement frequency** 24 GHz (K-band)
- **Radar aperture angle** 12 °
- **Distance to the surface** 0.50 ... 35 m
- **Minimum wave height required** 3 mm

Automatic vertical angle compensation

- **accuracy** +/- 1 °
- **resolution** +/- 0.1 °

Interfaces

- **Analog outputs (RQ-30a)** 4 x output 4 - 20 mA for level, flow rate, flow rate and AUX
- **Digital interfaces** 1 x SDI-12; 1 x RS 485 or Modbus
 - Transmission: 1.2 to 115.2 kBd Protocol: various ASCII
 - protocols
 - Output: flow rate, flow rate, level, quality parameters