



Velocity Radar RG-30 / RG-30a

Radar sensor for contact-free velocity measurement

The flow velocity sensor RG-30 has been designed for contact-free measurements of the surface flow velocity of rivers and channels by means of radar technology.

Features and advantages

- Maintenance free
- No structural work is necessary in the water
- Simple integration into existing systems
- No threat to the system through flooding
- Low power consumption
- Recognition of flow direction
- Measuring range 0.08 ... 16 m/s (depending on the flow conditions)
- Near blanking zone 0.5 m
- Non-contact and fast measurement
- Own measurement interval or externally triggered
- Independent of environmental influences

Fields of application

The radar sensor RG-30 is used by hydrography and water management. It is applied for example in open rivers, streams or channels. It is especially suitable for measurement tasks where the usage of conventional respectively contact intense measurement systems is problematic. As for example at measuring spots which are hard to reach or carry highly turbid water. It is installed outside the water and measures without direct contact to the same. Hence, the system requires no maintenance and works reliably even during high flow, floodings or despite of debris, driftwood or high turbidity.

Implementation

The sensor impresses with low power consumption and its high reliability for permanent recording of the flow velocity. The compact design and the contact-free measurement principle by means of radar technology allows easy and uncomplicated mounting and usage.

Measuring principle

The measurement of the flow velocity is based on the principle of the Doppler frequency shift. The sensor emits a radar signal and compares its frequency with the one of the reflected signal from the water surface. The frequency is shifted proportional to the surface flow velocity. Those signals are collected, evaluated and the medial surface flow velocity is determined.

Technical details

General

- **Dimensions** 241 mm x 246 mm x 154 mm
- **Total weight** 2.7 kg
- **Protection class** IP 67
- **Power supply** 6 ... 30 V
- **Power consumption at 12V** standby approx. 1 mA; active operation approx. 110 mA
- **Operating temperature** -35 ... 60°C
- **Miscellaneous Protection** over voltage protection, reverse power protection, lightning protection

Velocity measurement

- **Measurement range** 0.08 ... 16 m/s (depending on flow conditions)
- **Accuracy** +/- 0.01 m/s; +/- 1 % FS
- **Resolution** 1 mm/s
- **Direction recognition** +/-
- **Measurement duration single measurement** 5 ... 240 sec.
- **Measurement interval** 8 sec. ... 5h
- **Radar frequency** 24 GHz (K-Band)
- **Radar opening angle** 12°
- **Distance to water surface** 0.50 ... 130 m
- **Necessary minimum swell** 3 mm

Automatic vertical angle compensation

- **Accuracy** +/- 1°
- **Resolution** +/- 0.1°

Interface

- **Analogue output (only at RG-30a)** velocity 4 ... 20 mA; 0 ... 10 m/s configurable
- **Interface** 1 x RS 485 or Modbus; 1 x SDI-12
- **Digital input** 1 x trigger input low: 0 ... 0.6 V; high: 2 ... 30 V