

RG-30

Contact-free velocity sensor
for open channels and rivers



Properties and benefits

- » Maintenance free
- » No structural constructions in water needed
- » Simple integration into existing system
- » Fully operating even in flood water situation
- » Low power consumption
- » Detection of flow direction
- » Measurement range from +/- 0.10 to +/- 15 m/s (depending on flow conditions)
- » Near blanking zone 0.5 m
- » Non-contact and fast measurement
- » Own measurement interval or externally triggered
- » Independent of environmental influences

General

Introduction

The flow velocity sensor RG-30 has been designed for contact-free measurements of the surface flow velocity of rivers and channels. The sensor is mounted above the channel, there it radiates the radar signal inclined about 60° to the water surface. The reflected radar si-

gnals from the water surface are received, analyzed and converted into the average surface velocity.



Measurement principle

Measurement flow velocity

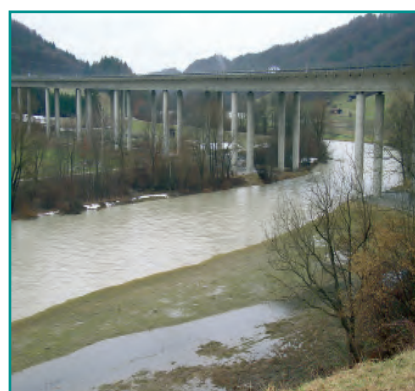
The measurement of the flow velocity is based on the principle of the Doppler frequency shift. Due to the comparison of the radiated frequency and the reflected frequency from the water surface, the local flow velocity is determined.

Measurements in hard to reach areas

The choice of the measurement location determines the quality of a measurement. By simply mounting the sensor on bridges, ceilings of closed channels or any superstructures of the channel, now locations can be selected that were previously difficult to achieve.

The most important criterias are the quality of the measuring point of the profile, the water surface and the flow conditions. The stability of the profile is the determining factor in order to ensure a constant measure-

ment. The water surface must neither be completely smooth nor extremely upset, but there should be a visible swell of the water surface. Stones, swirls, steps or standing waves should not be within the measuring area. Depending on the condition of the water surface, the maximum mounting height above the water surface is 130 m, but a minimum distance of 0.5 m should be maintained.



Technical Data

General	
Dimensions (mm)	241 x 246 x 154 2 brackets for pipe Ø 35 - 48 mm
Total weight	2.7 kg
Material	Aluminum housing, powder coated
Protection	IP 67
Power supply	6 V ... 30 V
Consumption at 12 V	Standby ... 1 mA during active measurement about 110 mA
Operating temperature	- 35° ... 60° C
Storage temperature	- 40° ... 60° C
Lightning protection	integrated lightning protection
Velocity Measurement	
Measurement range	0.10 ... 15 m/s (depending on flow conditions)
Accuracy	+/- 0.01 m/s; +/- 1 % FS
Resolution	1 mm/s
Direction recognition	+/-
Measurement duration single measurment	5 ... 240 sec
Measurement interval	8 sec. ... 5 h
Radar frequency	24 GHz (K-band)
Radar opening angle	12°
Distance to water surface	0.5 ... 130 m
Necessary minimum wave height	3 mm
Automatical Vertical Angle Compensation	
Accuracy	+/- 1°
Resolution	+/- 0.1 °
Interface	
Interface	1 x RS485 or Modbus 1 x SDI-12
Analog output (only at RG-30a)	Velocity 4 ... 20 mA 0 ... 10 m/s Configurable
Digital input	1 x Trigger input Low: 0 ... 0.6 V High: 2 ... 30 V