
OTT SVR 100
Surface Velocity Radar
a brand of
OTT
HydroMet

Surface Velocity Radar for Measuring Open Channel Flow

OTT SVR 100

The OTT SVR 100 offers a non-contact and cost – effective solution to monitor flow in open channels continuously.

- SDI-12 interface for compatibility with SDI-12 data loggers
- Integrated tilt sensor for simple instrument alignment and control
- Integrated vibration sensor for extended QA / QC
- Swivel mount for flexible sensor mounting at vertical and horizontal structures
- Velocity and status information available via SDI-12, RS-232, RS-485, and MODBUS protocol

The OTT SVR 100 is a simple, non-contact water surface velocity sensor, designed for measuring flow where reliable velocity data is required continuously even during floods or periods of high concentrations of suspended sediments.

The sensor is mounted above the water surface, away from floating debris using a flexible bracket for installation at vertical or horizontal structures.

Surface velocity readings are applicable for discharge computation based on the index – velocity – method.

Measurement QA / QC

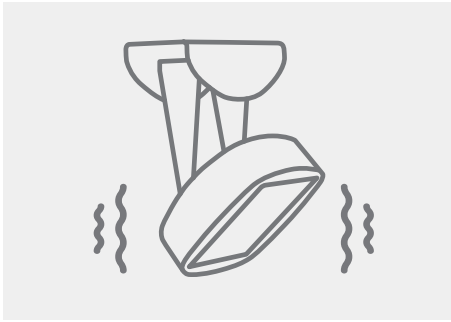
The OTT SVR 100 includes measurement quality and vibration index parameters via SDI-12. These are leading indicators that allow you to quickly determine if the velocity data is good or bad.

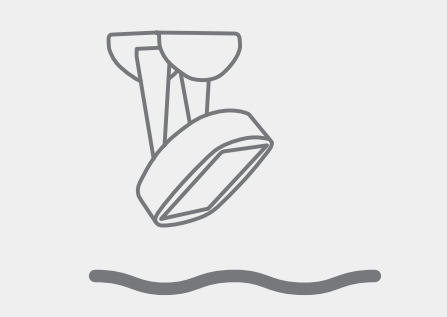
SNR

A good signal-to-noise ratio is the most important parameter of a radar signal that provides accurate and stable velocity readings. SNR values can be used for qualified data plausibility check.

Vibration Sensor

Sensor vibrations, caused by wind, traffic or others, may affect the accuracy of velocity measurements. An integrated vibration sensor provides the level of vibration with each measurement to qualify data post-processing and verification.





Tilt Sensor

The sensor orientation can change by a variety of reasons including vandalism, storm events or false installations. An accurate sensor orientation is essential for reliable velocity readings. The integrated tilt sensor provides the angle of sensor inclination with each velocity measurement.

Data Filter

Wind, waves, precipitation and other environmental influences may induce noisy measurement data. A moving average filter can be applied to smooth out the hydrograph of measured velocities.

Direction Filter

For slow moving rivers with low slope the water surface flow is subject to be affected by wind gradients and flow direction may change. The direction filter prevents the velocity radar from reporting wrong velocities induced by wind or other environmental influences.

Measuring Principle

The SVR 100 measuring principle is based on the latest state-of-the-art radar technology. Oriented parallel to the main flow direction and tilted against the water surface, the sensor is transmitting and receiving electromagnetic waves. If the water surface is rough and in motion the echo returns with a change in frequency or wavelength (Doppler shift). From this the water surface velocity can be derived.

Leading indicator of shifts in rating curves

If you have a rating curve based on flow meter or ADCP measurements and you are measuring continuous surface water velocity, you can use real measurements to verify the extrapolated part of the rating curve. When a shift is detected, depending on the nature and extent of the shift, it can indicate when a field visit is necessary to take instream velocity measurements. This ultimately improves data quality by enabling fast response to changes.

Features

- Proven non-contact radar technology
- Automatic detection of flow direction
- Customizable filter algorithms
- Meta data for QA / QC
- Low power consumption
- Maintenance free
- Instrument setup via SDI-12 commands

Benefits

- Continuous non-contact surface velocity measurement during low, normal or high flow conditions
- Meta data parameters for quick determination of data quality that can be used for automating QA/QC
- Safe measurement due to non-contact measurement principle
- Easy system integration due to standardized protocols (SDI-12 and MODBUS).
- These combined features ultimately reduce number of field visits and total cost of ownership.

Technical Specifications

	OTT SVR 100
Measurement range velocity	0.08 ... 15 m/s (0.26 ... 49.12 ft/s)
Resolution	0.1 mm/s (0.0003 ft/s)
Accuracy	+/- 2% of measured value (0.08 m/s ... 4 m/s) (0.26 ... 13.12 ft/s) +/- 2.5% of measured value (4 m/s ... 12 m/s) (13.12 ... 39.37 ft/s)
Beam Angle	12° Azimuth / 24° Elevation
Detection distance	1 ... 50 m (3.3 ... 164 ft)
Distance to water	0.5 ... 25 m (1.64 ... 82 ft)
Radar frequency	24 GHz (K-band)
Serial interfaces	RS-232 / RS-485 / SDI-12
Protocols	SDI-12 / MODBUS
Operating Voltage	9 ... 27 VDC
Power / current consumption	Active: < 90 mA @ 12 VDC Standby: < 7.5 mA @ 12 VDC Max. current: < 175 mA
Dimensions (LxWxH)	134.5 x 114.5 x 80 mm (5.3 x 4.5 x 3.2 in) without mounting bracket
Material	Housing: ASA & Aluminum Radom: TFM PTFE Mounting support: 1.4301 (V2A)
Rotation range of swivel mount	Lateral axis: ± 90° Longitudinal axis: ± 15°
Cable length	SDI-12 / RS-232: max. 65 m (9,600 Baud) RS-485: max. 500 m (9,600 Baud)
Weight	without mounting support: 820 g (1.81 lbs.) with mounting support: 1.530 g (3.37 lbs.)
Operating temperature	- 40°C ... + 85°C (-40° ... 185° F)
Waterproof rating housing	IP 68

Contactless OTT SVR 100 flow sensor and RLS level sensor in La Veta, Colorado

For more information, please contact

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