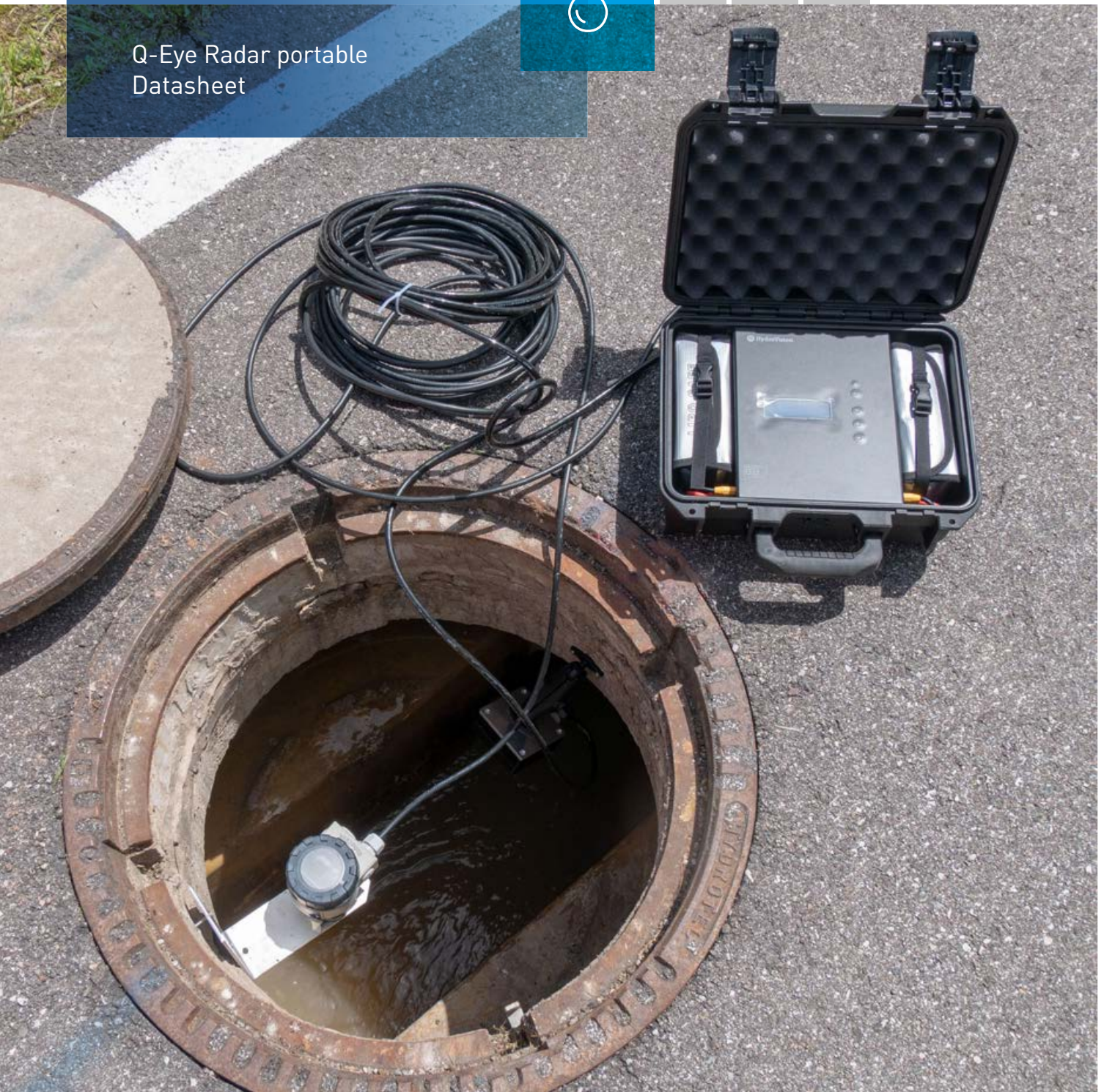


Flow meter for pipes & open channels



Q-Eye Radar portable
Datasheet



Q-Eye Radar portable

The Q-Eye Radar portable contact free flow meter is designed for mobile flow monitoring of slightly to heavily polluted media in partially full pipes or open channels. It consists of a radar-based velocity sensor and an ultrasonic or radar based water level sensor.

The system is designed for continuous operation and suitable for measurements of flows in municipal waste water and storm water sewers. Compact construction combined with the contact-free measurement principle enables an easy installation and use. Due to the contact-free measurement the setup is not threatened by sediments or floating debris in the fluid. The result is a very low maintenance and increased reliability.

Radar Technology

The sensor sends the radar signal inclined at an about 55° angle to the surface of the water. The reflected signals from the water surface are received, analyzed and converted into the average surface velocity.

The flow velocity is measured based on the principle of the Doppler shift of frequency. By comparison of the radiated frequency and the reflected frequency, the local velocity is determined.

The stability of the profile is the important factor to ensure a constant measurement. The water surface must neither be completely smooth nor extremely wild, however, there should be a visible swell of the water surface. The quality of the measurement is determined by the choice of the measurement location.

Water Level Technology

The waterlevel is calculated by an ultrasonic or radar sensor. If there is considerable amount of foam on the surface, the radar will provide more reliable results.

Data Transmission

Automatic data transmission via GPRS communication is an option and can be used worldwide. The logged data can be sent to any host computer (FTP-Server) or to the GWF web-based cloud solution at a user-selectable frequency (typically 4 times a day, once a day or once a week).

The Q-Eye Radar portable is ideal for temporary flow monitoring and studies/surveys:

- Wastewater collection systems (Infiltration studies, hydraulic model calibration, event notification, long term trend analysis)
- Combined sewer systems (Characterize combined sewer overflow (CSO) impacts)
- Wastewater treatment facilities (Influent measurement, real-time process control, effluent measurement)
- Irrigation channels (Supply management)
- Industrial flows (process optimization)
- Storm water runoff monitoring



Key Features

- maintenance free
- no contact with medium – higher safety for staff and equipment
- no need for construction in the water
- simple installation and integration in existing monitoring systems
- self supporting, independent and compact

Technical Information

Transmitter



The flowmeter comes in an IP67 case ready for use in harsh environments e.g. the use in sewer networks. The instrument can be read out without opening the case by simply activating WLAN transmission. No need to connect any cable for data download or configuration! Neither cable, nor app or software are

needed to connect the transmitter with your already existing laptop, smartphone or tablet. All components of the flowmeter are powered by 2 redundant batteries. Those batteries are hot swappable so they can be changed during operation. Optionally to the integrated modem, a LAN connection is available.

Velocity Sensor RV11



The velocity sensor is operating at the free 24 GHz band frequencies and makes use of the Doppler effect to produce velocity data about the speed of the moving surface. It does this by beaming a microwave signal to the flow surface at a defined angle and listening for its reflection at particles and disturbances on the surface moving with the flow. The

frequency of these returning signals have been shifted by an amount directly proportional to the speed of the moving surface. This frequency shift is measured by means of a Fast-Fourier-Transformation (FFT). The velocity is calculated based on knowledge of the radar frequency, speed of light and average frequency shift.

Water Level Sensors



Compact ultrasonic level transmitter



Radar sensor

The ultrasonic level sensor operates by energizing a piezoelectric transducer with an electronic pulse. This pulse creates a pressure wave that travels to the flow surface where a portion returns to the transducer. The transit-time to the flow surface and back is recorded and the

distance calculated by knowing the speed of sound at the site which has been corrected by an embedded temperature sensor. Alternatively, the system can be equipped with an additional radar water level sensor which is independent from the temperature of the ambient air.

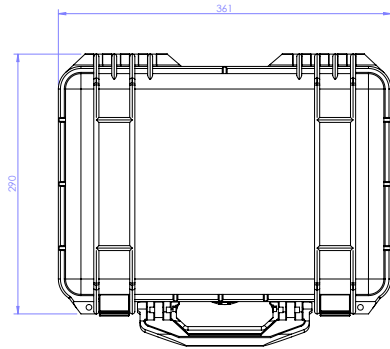
Cloud data logging



Cloud data logging enables real time remote access to our web-based graphing and analysis platform that provides 24/7 web access to data collected with your flow meter.

Technical Data

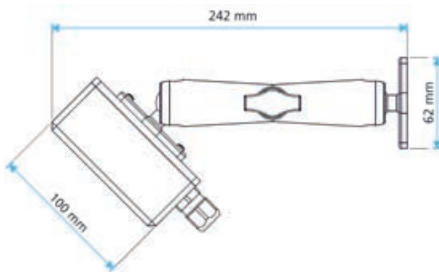
Transmitter



Transmitter & Battery

LC Display	4 lines, 20 characters
Keyboard	4 keys
Memory	16 GB Micro SD card
Communication	WLAN, RJ45 Ethernet / LAN (option)
Modem	integrated
Inputs	max. 2 x 4-20 mA
Power supply internal	2 x rechargeable batteries, hot swappable
Power supply external	possible via 24 V _{DC}
Protection class	IP 67
Case material	HPX resin
Dimensions	290 x 361 x 165 mm

Radar Sensor RV11



Radar Velocity Sensor

Frequency	24 GHz
Beamwidth	11° at -3dB
Range	± 0,05 m/s to ± 15 m/s
Resolution	1 mm/s min. wave height 3 mm
Accuracy Q	< 2,5% of reading under normal flow conditions
V-Sensor	bi-directional
Min. Distance to surface	0,2 m
Max. Distance to surface	10 m
Protection class	IP68

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