

RQ-30+

Contact-free Discharge Measurement System

Environmental monitoring equipment by Sommer Messtechnik

Contact-free
discharge monitoring
of rivers
and
streams



What is it?

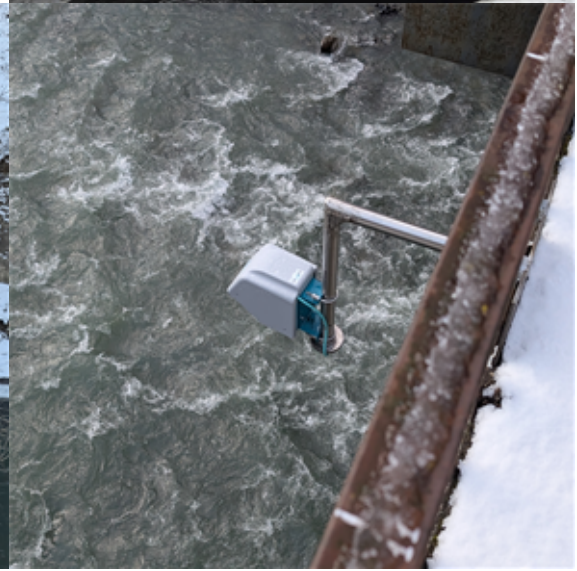
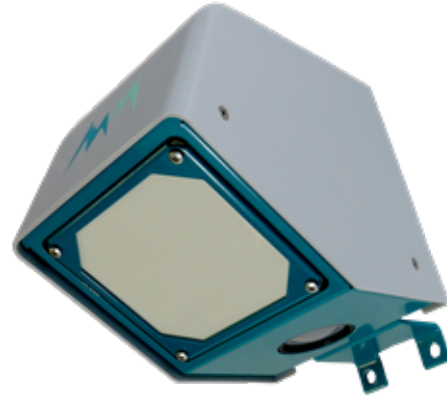
The sensors of the RQ-30+-series continuously measure the water flow of watercourses, from small rivers to large streams.

Water level and flow velocity are detected with contact-free, state of the art radar sensors enclosed in a single, vandalism-proof housing.



FEATURE

In combination with a proven hydraulic flow model the RQ-30+ computes and returns the discharge in real time.



How does it work?

Flow velocity

A 24 GHz radar sensor measures the velocity of the water surface. Radar impulses are transmitted at an angle towards the water surface where ripples and waves induce a Doppler frequency shift that is detected by the RQ-30+.

Water level

A radar sensor measures the distance between the RQ-30+ and the water surface by registering the travel time of an impulse sent towards the water surface.

Water discharge

The RQ-30+ computes the discharge by $v_m \cdot A(h)$, where the mean velocity v_m is derived in real time from the surface velocity and additional dynamic factors using a complex hydraulic model. The cross-sectional area $A(h)$ is computed from the water level and the stored profile.

Features

- Contact-free method prevents soiling and damage
- Automatic discharge calculation based on hydraulic model with multiple dyn. k-factors.
- Sensor self-check with status and error output.
- AI-based machine learning for compensation of environmental influences and early detection of errors.
- 3-point velocity calibration certificate.
- Advanced velocity diagnostics with spectrum display
- Discharge calculation inside the RQ-30+.
- Water level and velocity sensor combined in one weather and vandalism proof housing.
- Maintenance-free operation reduces down times and increases reliability
- Easy to install and integrate with virtually any data logger



Certified radar velocity sensor



Application range

- Water level 0...15 m / 30 m
- Flow velocity 0.08...16 m/s (technically 0.01...30 m/s)
- Extremely wide discharge rates from a few liters to several cubic meters per second
- Independent of turbidity
- Unaffected by high solid content



SELF-TEST

The RQ-30+ has a self-test function to report abnormal operation and any malfunction. This simplifies installation and provides live information about system status and data quality.



Advantages

- No installation below water table
- Waterproof housing
- Simple mounting and versatile installation options
- Save installation and minimum risk of damage
- Simple integration into existing data acquisition and control systems
- Easily linked to data loggers
- Multiple data interfaces: RS-485, SDI-12, Modbus, analog
- High data quality through self-check function and quality indicators

Includes

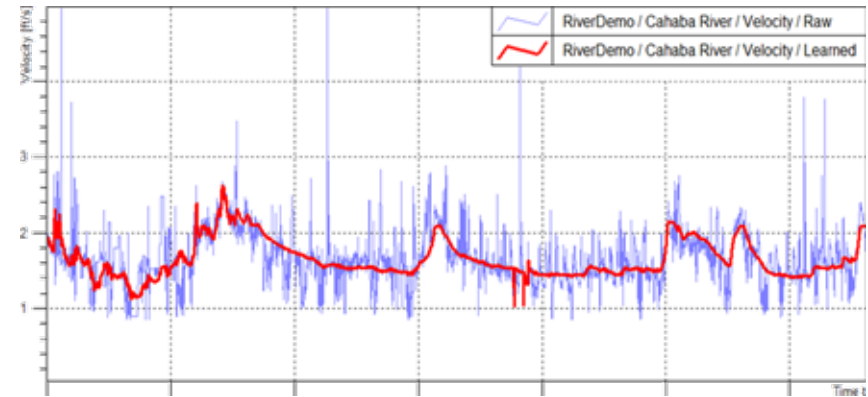
RQ-co^{mander}

Support software

Machine learning for environmental impact compensation

The RQ-30+ will automatically learn the relationship between water level and velocity as well as water level and discharge over time. The RQ-30+ will always output the real measurement and also the machines learned values. This will help you to:

- Compensate for wind effects
- Detect unusual flow, like blockages
- Correct measurement errors
- Optimize Measurement results



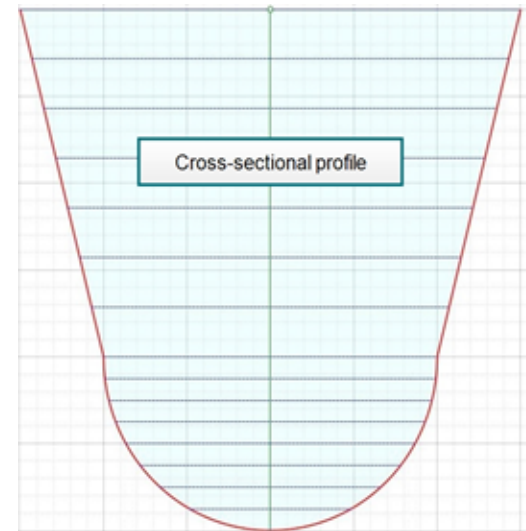
RQ-Commander software

The RQ-Commander is an easy to use step by step software with an attractive user interface that manages all your monitoring and configuration tasks.



FEATURES

- Create or import a cross-sectional profile
- Communicate with your RQ-30+ locally and remotely
- Configure and update the sensor settings
- View your measurement data
- Validate your data with the velocity diagnostics tool
- Transfer data files to HTTP and FTP servers

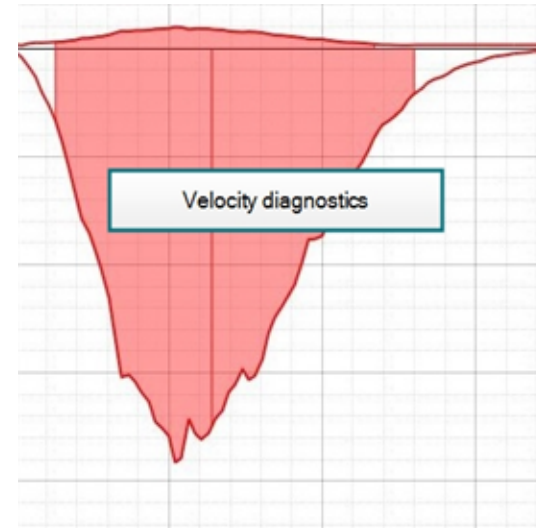


Device				
SQ-Xa 0001				
Device	Address	Setup	Software	Serial number
SQ-Xa	0001	2.39.03	3.00.00	50100021

Velocity measurement	
Viewing direction	Upstream ▼
Possible flow directions	Just downstream ▼
Measurement duration [s]	30

Filter	
Filter type	Moving average ▼
Number of values for filter	1

Advanced	☐
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Option: Data logger

Collect, process and transmit your monitoring data with the Sommer Messtechnik MRL data logger.



FEATURES

- Waterproof IP67
- Integrated data transmission by 3G and 4G
- Optional satellite data transmission
- Remote access to logger and RQ-30+ by mobile internet
- Data acquisition from RS-485, SDI-12 and analog sensors
- Solar charger for internal or external battery
- Very low power consumption
- Display for on-site data checks
- Configuration by RS-232, Bluetooth or internet
- Extended memory with SD card
- Data download via USB stick, PC, Android App and internet
- Signal input extension available

Remote adjustment, data retrieval and maintenance by mobile internet saves time and money.



Option: RQ-30+ station

The RQ-30+ station is a data acquisition unit with a MRL data logger in an IP67 stainless steel or fiberglass housing. It can be operated by mains or solar power.



FEATURES

- Autonomous station with solar power supply
- Weather proof
- Includes data logger, data transmission unit, batteries and solar charger
- Optional data transmission by satellite modem
- Optional expansion with analog and digital sensors like Sommer Messtechnik SOMQUALITY water quality sensors
- Optional integration of a time lapse camera



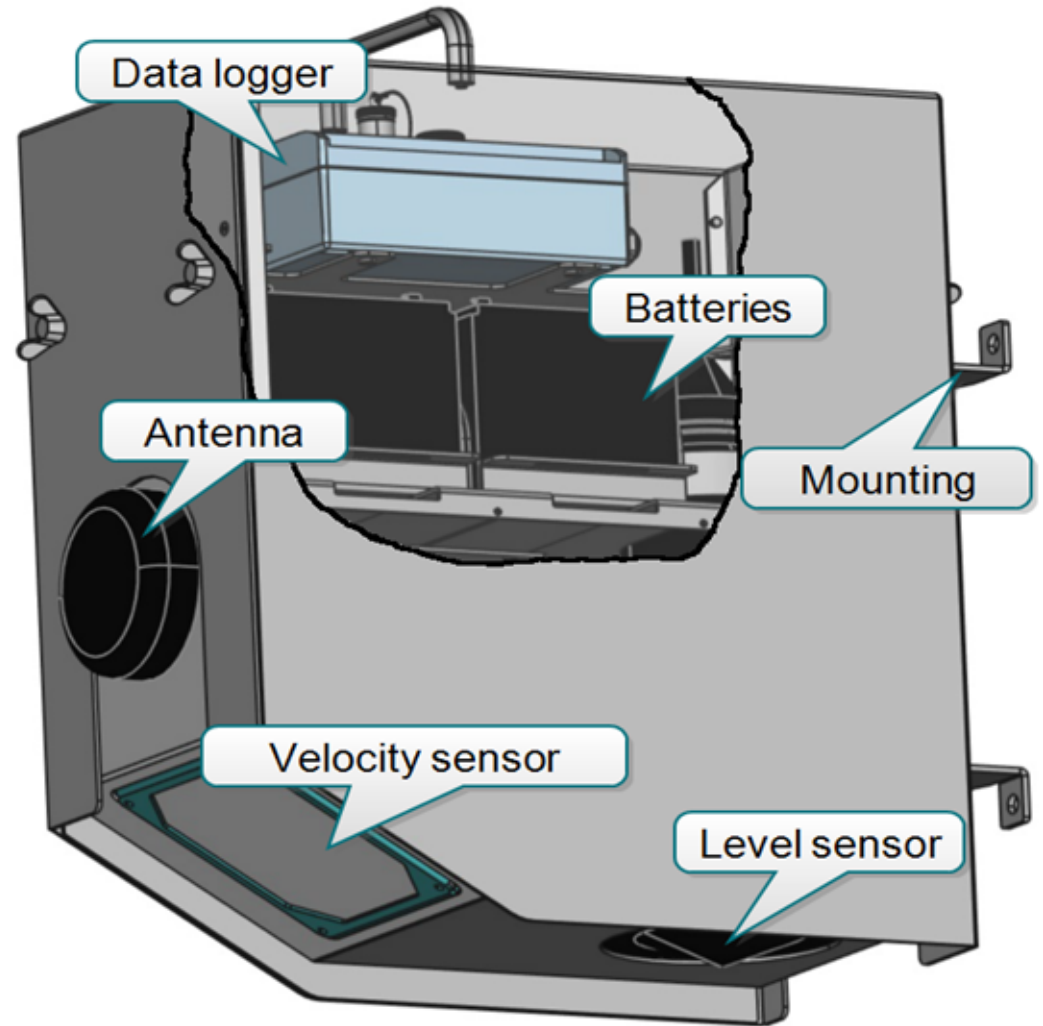
Option: RQ30-ADMS

The RQ-30+ is an all-in-one discharge measurement system, suitable for spot-measurements, temporary applications or stationary long-term installations.



FEATURES

- RQ-30 level and velocity sensors
- MRL data logger with mobile data transmission
- Rechargeable 24 Ah battery
- Options: solar panel, time laps camera
- Remote service of RQ-30 and data logger



Option: RQ-30+

Measurement system for large rivers and watercourses with complex flow conditions.

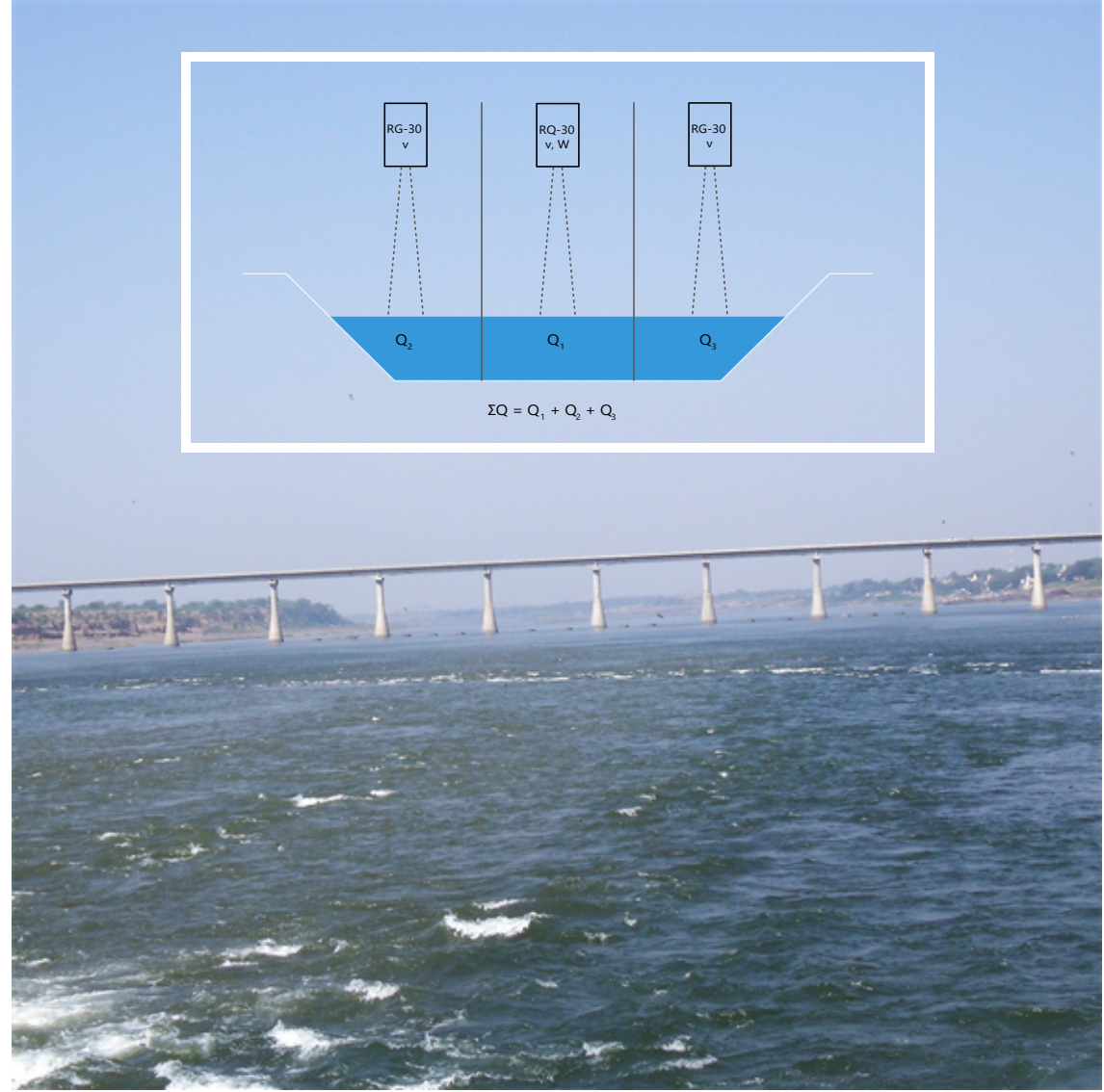
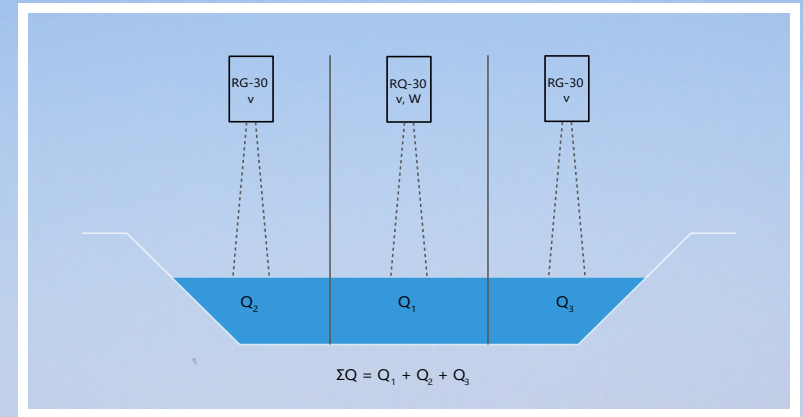


PRINCIPLE

The river is divided into multiple cross-sections and each section is equipped with a velocity sensor. The RQ-30+ devices determine the water level. In combination, the discharge of each section is computed and all discharge values are summed up to the total discharge of the river.

Compared to a single-sensor setup the RQ-30+ takes different flow conditions and irregular riverbed-roughness that often occur in wide rivers into account.

The number of sensors is determined by the flow conditions of the river.





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