

SQ-R+

Contact-free Discharge Measurement System

Environmental monitoring equipment by Sommer Messtechnik



Contact-free
discharge monitoring
in waste water treatment,
sewage networks
and
industrial waters

What is it?

The sensors of the SQ-R+ series continuously measure the water and effluent flow through ducts, semi-filled pipes and channels in sewer networks, water treatment plants and industrial facilities.

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



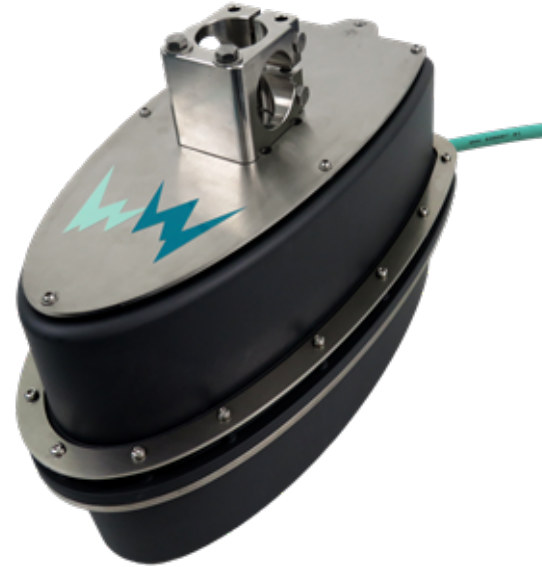
FEATURE

In combination with a proven hydraulic flow model the SQ-R+ computes the discharge in real time.



VERSIONS

- SQ-R+ with radar level and velocity sensors
- SQ-ATEX with radar level and velocity sensors for explosive environments
- SV+ with a single radar velocity sensor for existing gauging station



How does it work?

Flow velocity

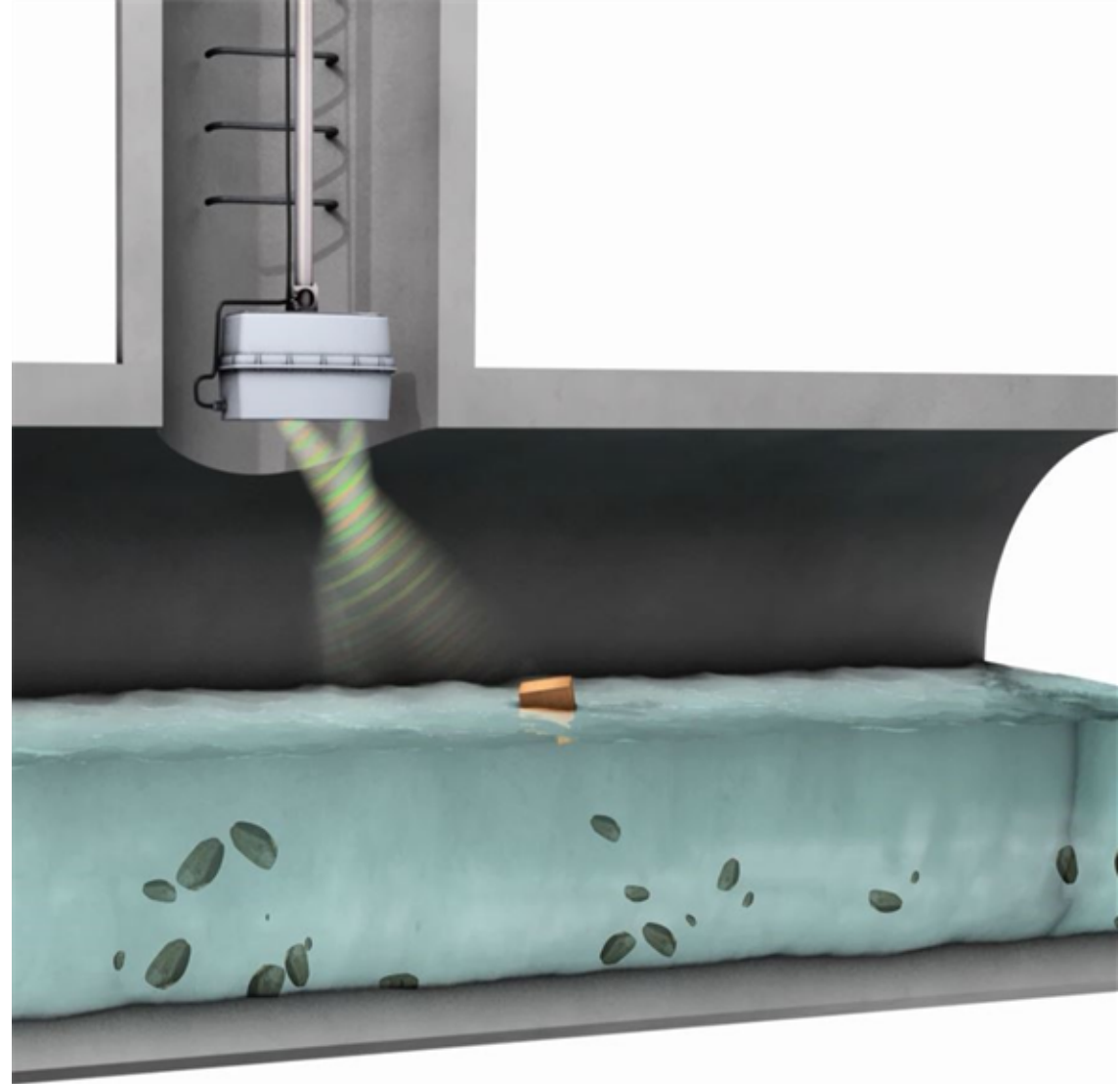
A 24 GHz radar sensor measures the velocity of the water surface. Radar impulses are transmitted at an angle towards the water surface where ripples and waves induce a Doppler frequency shift that is detected by the SQ-R+.

Water level

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

Water discharge

The SQ-R+ 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 radar method prevents soiling and damage, no sensor maintenance
- 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 SQ-R+.
- Water level and velocity sensor combined in one weather and vandalism proof housing.
- Sommer Messtechnik ANR: advanced noise reduction system
- Maintenance-free operation reduces down times and increases reliability
- Robust IP68 sensor housing with enhanced seals prevents corrosion by acids, aging by sunlight, and sustains temporary submersion
- Flexible sensor plug prevents incorrect handling
- ATEX-version certified for use in explosive atmospheres
- New application software SQ-Commander offers quick sensor setup
- An online Service center with instructional videos and a troubleshooting guide make installation and operation very easy



Certified radar velocity sensor



Installation options

Due to its compact design, its waterproof and chemical-resistant housing the SQ-R+ can be installed in various locations such as open canals or semi-filled pipes and ducts.

A versatile bracket allows mounting in different positions



Application range

- Water level 0...8 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 SQ-R+ 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

sq-c^omander

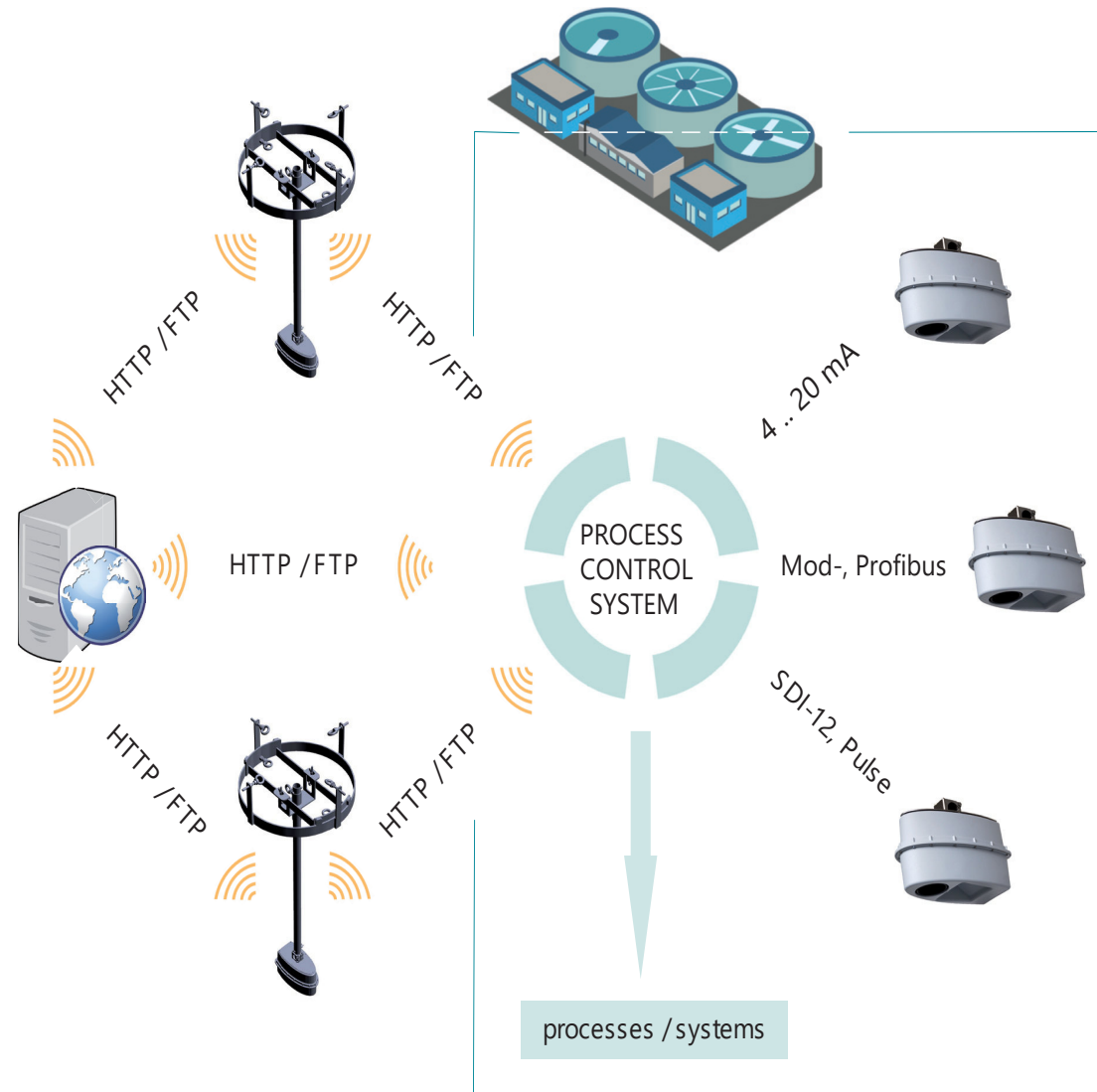
PLC integration

The SQ-R+ can be easily integrated into a process control unit (PLC) by its digital and analog interfaces.



INTERFACES

- RS-485, Modbus RTU
- SDI-12
- 4...20 mA
- Pulse



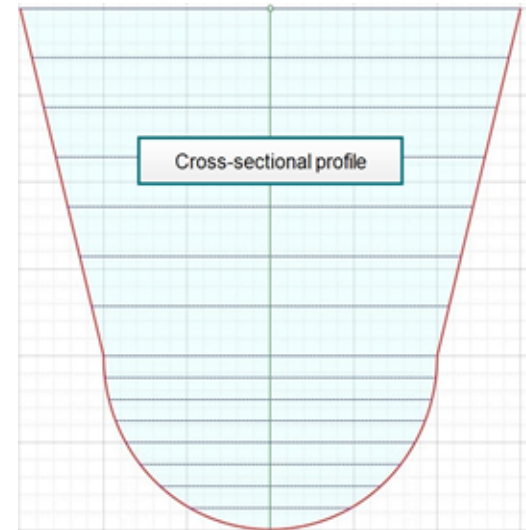
SQ-Commander software

The SQ-Commander manages all your monitoring and configuration tasks with an attractive user interface.



FEATURES

- Create or import a cross-sectional profile
- Communicate with your SQ-R+ 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
- Install the SQ-R+ with easy step-by-step guidance



Velocity measurement

Viewing direction ▼

Possible flow directions ▼

Measurement duration [s]

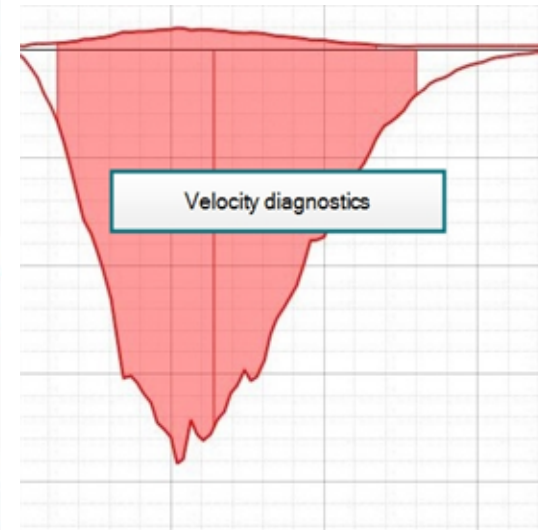
Filter

Filter type ▼

Number of values for filter

Advanced

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



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
- Remote access to logger and SQ-R+ 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 or Bluetooth
- Extended memory on USB-stick

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



Option: Mobile SQ unit

The SQ-mobile is a compact, autonomous measurement unit for remote applications such as discharge monitoring in sewage networks.

It contains:

- SQ-R+ sensor
- MRL data logger with mobile data transmission
- 22-Ah rechargeable lead-acid battery

The SQ-mobile is suitable for temporary as well as permanent installations and can be equipped with a solar panel and additional battery packs.



GADGET

With a flexible mounting bracket for manholes, the SQ-R+ can be installed in less than 30 minutes without entering the manhole! This saves time and resources.



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