

PQ

Discharge Measurement System

Environmental monitoring equipment by Sommer Messtechnik



**Versatile
discharge monitoring
in waste water treatment**

What is it?

The exact and real time knowledge of water discharge is of central importance for the operation of waste water treatment facilities, cost allocation in sewage networks and management of communal and industrial water resources.

The PQ continuously measures the water or effluent flow through ducts, pipes and open canals in sewer networks, water treatment plants and industrial facilities. It combines two sensors in one system. The first determines the water level by means of a pressure probe or radar sensor, the second simultaneously measures the mean flow velocity with an ultrasonic Doppler sensor.



VERSIONS

- PQ with pressure probe
- PQ with contact-free radar sensor
- PQ as flow velocity sensor only



How the PQ works

The PQ measures the water level and the mean flow velocity and calculates the water discharge based on a defined cross-sectional profile with a specified roughness.

The discharge Q is the volume of water V flowing through a cross section of a canal per time unit t . The default metric dimension is m^3/s .

$$Q = \frac{V}{t}$$

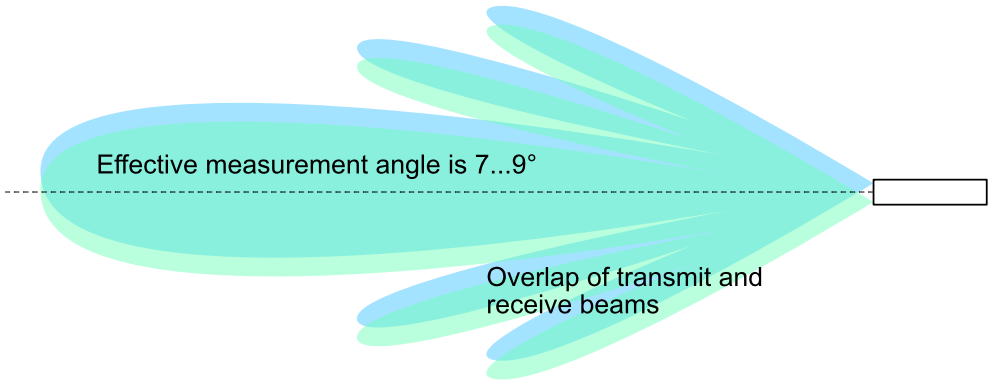
By applying the continuity equation the expression above can be transformed into the base equation of the discharge measurement:

$$Q = A \times v_m$$

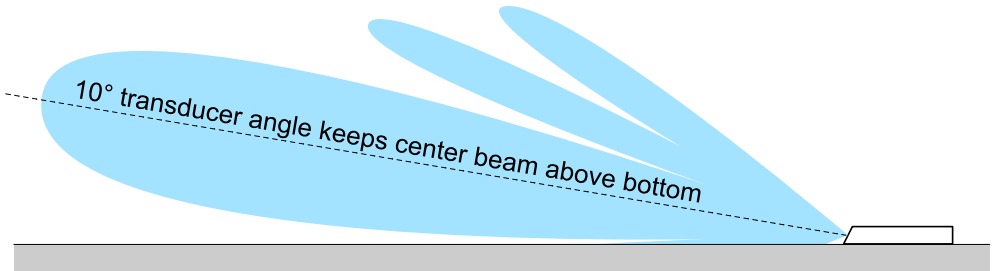
where A is the wetted cross-sectional area deduced by the measured water level, and v_m the mean flow velocity.

Acoustic beam of PQ velocity sensor

Top view

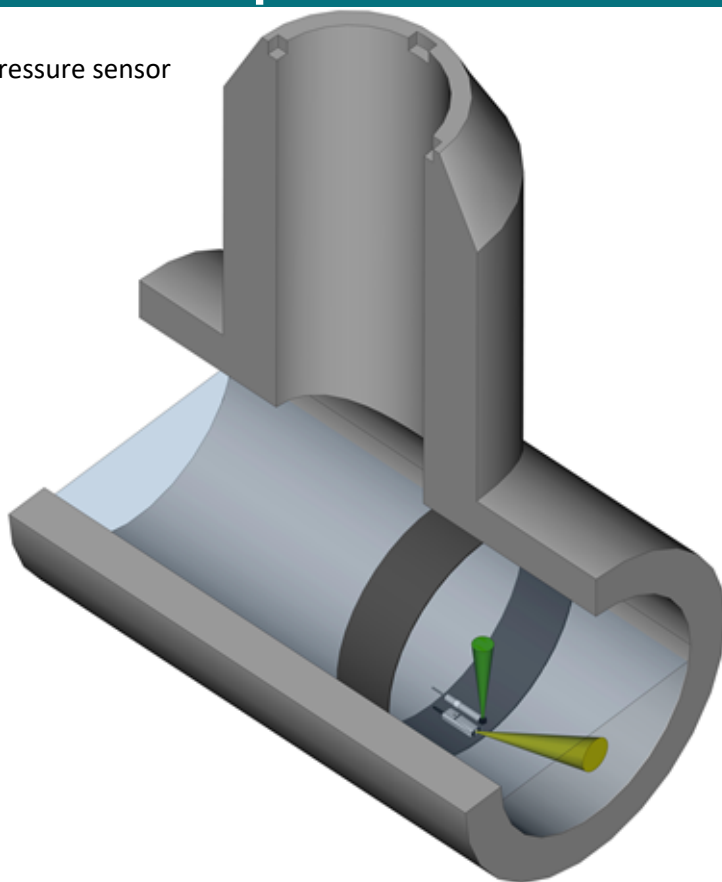


Side view

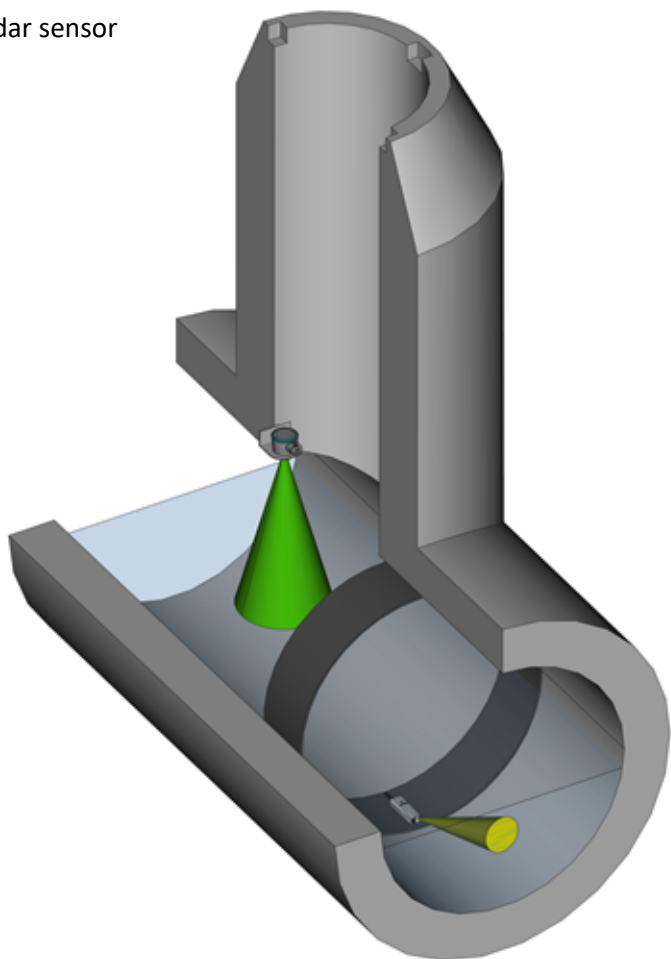


Installation options

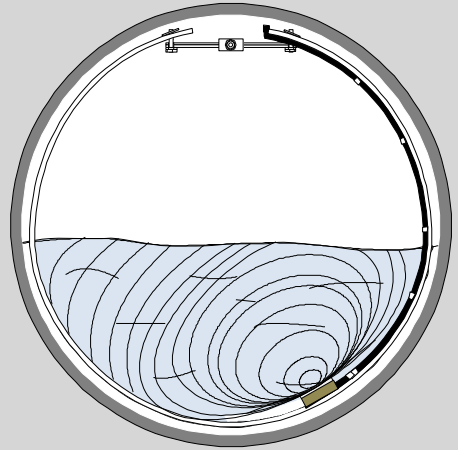
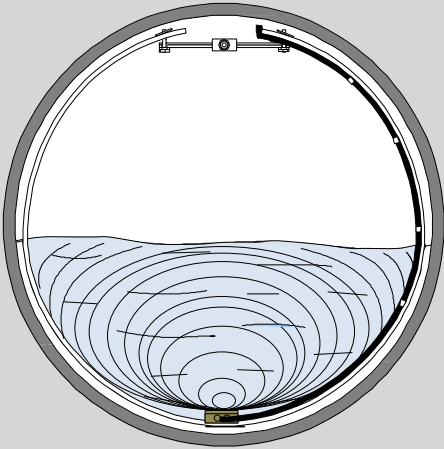
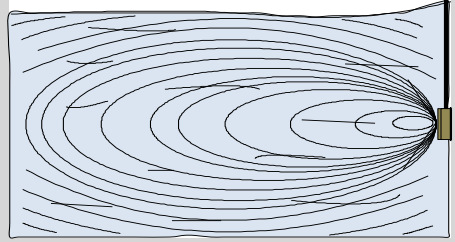
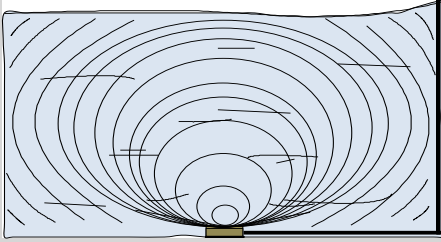
PQ and pressure sensor



PQ and radar sensor



Mounting



Features

- Flow velocity range 0.01 ... 5 m/s
- Water level range with pressure sensor up to 10 m
- Water level range with radar sensor up to 15 m
- Extremely wide discharge rates from a few liters to several cubic meters per second
- Versatile installation options
- Waterproof controller housing that is resistant to aggressive fumes and liquids
- Simple integration into existing data acquisition and control systems
- Easily linked to data loggers
- Multiple data interfaces: RS-485, SDI-12, Modbus, analog, pulse



PLC integration

The PQ 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.



- Create or import a cross-sectional profile
- Communicate with your PQ 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 PQ with easy step-by-step guidance



Cross-sectional profile

Device

PQ

0001

Device	Address	Setup	Software	Serial number
PQ	0001	3.20.00	3.01.00	04200021

Velocity measurement

Viewing direction

Possible flow directions

Measurement duration [s]

Filter

Filter type

Number of values for filter

Advanced

