

RQ-30+

Contact-free Discharge Measurement System



The exact and real time knowledge of water discharge is of central importance in the fields of hydrography, water storage management, irrigation and for the early detection of floods. It is essential in hydraulic engineering and water resource management and is the basis for hydrological modelling and simulation.

The RQ-30+ sensor is a continuous measurement device for the contact-free determination of the water discharge of open rivers and channels. It combines two sensors in one system. The first determines the water level by measuring the transit time of a radar signal. The second simultaneously measures the flow velocity of the water surface by means of the Doppler frequency shift. These two measurements are internally combined and thus provide the water discharge by using an advanced hydraulic model from Sommer Messtechnik to calculate the discharge in real-time inside the RQ-30+.

Due to the contact-free measurement method the RQ-30+ can be installed on extension arms or cable ways without costly structural measures under or inside the water. This also has the advantage that the sensor is located outside the danger area of flood events and that it requires no maintenance over many years.

Harnessing the Power of AI and Machine Learning for Precision Measurements and Unmatched Reliability.

Unlocking new frontiers in data accuracy, the RQ-30+ integrates cutting-edge internal AI and machine learning algorithms, ensuring unparalleled precision even in challenging environmental conditions.

Distinguished by its exceptional robustness, the RQ-30+ stands tall as the instrument of choice, trusted and deployed across thousands of sites spanning over 120 countries worldwide.

Not just a technological marvel, the RQ-30+ is also eco-conscious, boasting low-power consumption and seamlessly operating on solar power, making it a sustainable solution for tomorrow's needs.

Experience the future of measurement technology with the RQ-30+: Where innovation meets reliability, and precision knows no bounds.



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 RQ-30+.
- Water level and velocity sensor combined in one weather and vandalism proof housing.
- Sommer Messtechnik ANR: advanced noise reduction system

Versions

Art	Version
21600	RQ-30+ System for contact-free discharge measurement 0.08...16 m/s, 0...15 m, analog output
22080	RQ-30+ System for contact-free discharge measurement 0.08...16 m/s, 0...30 m, analog output
22081	RG-30+ System for contact-free flow velocity measurement 0.08...16 m/s, analog output

Scope of delivery

Qty	Art	Item
1	-	RQ-30+ in the required version
1	-	Manual and Commander Software on USB stick

Accessories

Art	Accessory
15543	Configuration and testing of cable for RQ-30 / RG-30 / SQ
15833	Data cable for RQ-30 / RG-30 / SQ, 12x0,25 mm ² , up to 60m
18711	Data cable for RQ-30 / RG-30, LiYCY 12x0,25mm ² , 10 m
18712	Data cable for RQ-30 / RG-30, LiYCY 12x0,25mm ² , 20 m
20074	RG / RQ standart mouniting set, 2x U-bolt max. Ø60 mm
20572	RQ-30 lightning protection for cable length >50 m
22524	Universal extension box for cable extension
-	Radar velocity verifier

Specifications

Physical and environmental	
Power supply	9...30 VDC; Reverse voltage protection, overvoltage protection
Power consumption at 12 VDC	Standby approx. 1 mA Active measurement approx. 140 mA (default 30 sec)
Inputs	Trigger input (low: 0...0.6 V, high: 2.2...28 V)
Outputs	RS-485 ASCII or Modbus RTU SDI-12 4x Analog output 4...20 mA (self-check, water-level, flow-velocity, discharge) (14 bit, max. load 250 Ω) Digital output (low: 0 V, high: Vsupply, max. 1.5 A)
Operating temperature	-40...85 °C (-40...185 °F)
Storage temperature	-40...85 °C (-40...185 °F)
Relative humidity	0...100 %
Protection rating	IP67 (IP68 on request)
Lightning protection	Integrated protection against indirect lightning with a discharge capacity of 0,6 kW Ppp
Housing material	Powder coated aluminum, vandalism-proof, plastic cover
Mounting bracket	Ø 34...48 mm
Size L x W x H	295 x 160 x 210,5 mm (11.61 x 6.30 x 8,29 in)
Weight	5.4 kg (11.90 lb)

Velocity	
Detectable measurement range	0.08...16 m/s practical range (depending on surface water waves) 0.01...20 m/s technical range
Accuracy	± 0.01 m/s with ± 1 % FS (certified by METAS)
Resolution	1 mm/s
Direction recognition	+/-
Measurement duration	5...240 s
Measurement interval	8...18'000 s
Measurement frequency	24 GHz (K-Band)
Radar opening angle	12 °
Distance to water surface	0.05...130 m (0.16...426.51 ft)
Noise reduction	Sommer Messtechnik ANR (advanced noise reduction) based on velocity spectrum analysis

Automatic vertical angle compensation	
Vertical inclination	Measured internally
Accuracy	± 1 °
Resolution	± 0.1 °

Water level measurement	15 m	30 m
Measurement range	0...15 m 49.2 ft.	0...30 m 98.4 ft.
Measurement frequency	80 GHz	
Resolution	1 mm	
Accuracy	± 2 mm	
Level sensor opening angle	8 °	4 °

Features	
Self-check	Internal self-check with code output for each measurement
AI Machine learning	Internal Machine learning for velocity and discharge, outputted with each measurement.
Hydraulic model	Dynamically and automatically calculated k-factors for discharge calculation
Data quality	Internal measurement quality value output with each measurement

