

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Q-Eye PSC stationary with submerged area velocity sensor

Manufactured by:

GWF Technologies GmbH

Gewerbestrasse 46f
87600 Kaufbeuren
Germany

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

**Performance Standards and Test Procedures for Continuous Water
Monitoring Equipment, Part 3: Performance standards and test procedures for water
flowmeters, Environment Agency, version 4, March 2020**

The combined performance characteristic (U_c , the expanded uncertainty) are as follows:

Q-Eye PSC transmitter (AC) is **3.80% (Class 2)**

Q-Eye PSC transmitter (DC) is **3.13% (Class 2)**

Certification Range:

Velocity: 0.05 m/s - 3 m/s

Project No.: 80070512
Certificate No: Sira MC210370/00
Initial Certification: 10 May 2022
This Certificate issued: 10 May 2022
Renewal Date: 09 May 2027



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Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

The product is suitable for use, where it is appropriate, for regulated applications such as abstraction, effluent discharge, ultraviolet disinfection and industrial processing.

The field test was carried out between the 16th March 2021 and 1st July 2021 at a wastewater treatment plant in Kaufbeuren, Germany.

Basis of Certification

This certification is based on the following Test Report(s) and on CSA's assessment and ongoing surveillance of the product and the manufacturing process:

WRC test report ref. UC15787, dated February 2022

CSA Group report ref. 80070512, incorporating report "Laboratory and Field Test Results", dated 6th May 2022, Issue/Rev. 1.0(08.11.2021)

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Product Certified

The Q-Eye PSC flow meter with area velocity sensor system consists of the following parts:

- Q-Eye PSC transmitter (AC or DC), standard communication or with integrated 4G modem
- Area velocity sensor (wedge-type) with integrated ultrasonic level sensor

Each system should be composed of a minimum of one transmitter and one area velocity sensor. An additional level sensor can be connected to the system using the analogue input.

This certificate applies to all instruments fitted with software: Flowmeter version 6.4.2, Board FW 0.9.2, Hardware V2.0R01 and Web User Interface version 3.1.10 onwards (serial number GWFS1543P).

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +60°C

Instrument IP rating: IP66

The instrument meets **MCERTS Class 2** requirements for the combined performance characteristic as specified in Table 6 of the MCERTS performance standard. Details of individual performance characteristics are summarised below:

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
LABORATORY TESTS General requirements/Initial checks - Protection against unauthorised access	Password protected unique to the device. Core metrological functions only modified by manufacturer administration password.					Clause 3.1.2
Indicative device and/or analogue or digital output signal	LCD and 4-20mA output incorporated					Clause 3.1.3
Units of measurement	Verified					Clause 3.1.6 & 3.1.7
Comparison of output values	Verified - results comparable					Clause 6.1.4
Warm-up time					120s	Clause 6.1.2 To be reported
Combined performance characteristic(U_c) AC (110 to 220V) DC (9 to 32V)					3.80 3.13	Clause 6.4 Class 2 Table 6
Loss of Power					All settings retained	Clause 6.3.1
Mean error AC (110 to 220V) DC (9 to 32V)	0.31		-1.16			Clause 6.3.2 Class 1
Repeatability AC (110 to 220V) DC (9 to 32V)	0.31	0.85				Clause 6.3.2 Class 1
Supply voltage (AC 110 to 220V, DC 9 to 32V) AC (110 to 220V) DC (9 to 32V)	0.24	0.55				Clause 6.3.3 Class 2
Output impedance (10Ω to 550Ω) AC (110 to 220V) DC (9 to 32V)	0.24 0.05					Clause 6.3.4 Class 1
Fluid temperature (4°C to 29°C) AC (110 to 220V) DC (9 to 32V)			1.98	2.53		Clause 6.3.5 Class 4

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Ambient air temperature (-20°C to 60°C) AC (110 to 220V) DC (9 to 32V)	0.49		1.05			Clause 6.3.6 Class 2
Relative humidity AC (110 to 220V) DC (9 to 32V)	0.20	0.79				Clause 6.3.6 Class 2
Effect of conduit size - Insertion and non-invasive sensors (range 0.1-1m) Mean error Small - 0.3m (0.2m/s) Small - 0.3m (1.2m/s) Large - 0.99m (0.2m/s) Large - 0.99m (1.2m/s)		0.74 0.69	-1.16			Clause 6.3.17.1 to be reported
Fill level – free surface flows Mean error test point 1 - 0.1m/s (0.72m) test point 2 - 0.2m/s (0.46 & 0.72m) test point 3 - 0.6m/s (0.46 & 0.75m) test point 4 - 1.2m/s (0.34m) Repeatability test point 1 - 0.1m/s (0.72m) test point 2 - 0.2m/s (0.46 & 0.72m) test point 3 - 0.6m/s (0.46 & 0.75m) test point 4 - 1.2m/s (0.34m)	-0.16 -0.11	0.69	-1.15	1.71 1.50 2.09		Clause 6.3.18.1 to be reported
Surcharge conditions Mean error test point 4 - 1m/s test point 5 - 2m/s test point 6 - 2.5m/s Repeatability test point 4 - 1m/s test point 5 - 2m/s test point 6 - 2.5m/s			1.17 -1.82	2.44 2.72 3.12 3.61		Clause 6.3.18.2 to be reported
Response Time (either increasing or decreasing flow) AC (110 to 220V) DC (9 to 32V)					210s 210s Note 1	Clause 6.3.19 to be reported

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
FIELD TESTS Error under field conditions					Max error 5.8% Min error 0.12% Mean error 2.04% Proportion of errors ≤2% = 50% Proportion of errors ≤5% = 91.6% Proportion of errors ≤8% = 100%	Clause 7.3 Class 2
Up time					98.6% Note 2	Clause 7.4 ≥95%
Maintenance					Note 3	Clause 7.5 To be reported

Note 1: Response time – during laboratory testing it was noted that the display update and cycle time can be set independently, meaning that the visual display on the instrument can update every 5 seconds. It was observed that, with the 10 second output averaging time it took 25 seconds for the displayed flow to reach its final value.

Note 2: Of the total operating time 154020 minutes, 2220 minutes, or 37 hours, were attributed to device malfunction and repairs (1.44%)

Note 3: The measuring system was installed in a wastewater treatment plant from 16th March 2021 to the 1st July 2021 with a total operating time of 154020 minutes. The system was not operation between 29/05/2021 and 31/05/2021 due to overflow storage medium (MicroSD). 37 hours were attributed to device malfunction and repairs.

Note 4: For best practice for use of the instrument, specifically 'Installation', please refer to the manufacturer's instructions. For calibration to enable optimum measuring accuracy, refer to Section 4 'Installation', clause 4.4 'Calibration'.

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Description

The Q-Eye PSC flowmeter with area velocity sensor is designed for continuous flow measurement in partially and fully filled pipes as well as open channels. The stationary flowmeter can be operated in a variety of media, ranging from slightly to heavily polluted (≥ 50 ppm particle concentration). Data can be transferred and stored using the Q-Eye PSC transmitter.

Q-Eye PSC uses a pulse-coherent cross-correlation technology. The area velocity sensor transmits acoustic pulses into the flow. These ultrasonic pulses are reflected by particles in the medium and return to the sensor as time-gated echoes. The resulting reflection patterns are correlated and analysed for different regions (cells) of the flow profile. By tracking the movement of the particles in each measurement cell, the entire flow velocity profile can be scanned.

Simultaneously, Q-Eye PSC determines water level using an up-looking ultrasonic level sensor integrated in the area velocity sensor. The level sensor can compensate a sensor tilt of up to 10° to ensure accurate results. Additionally, a temperature sensor is integrated in the area velocity sensor and accounts for changes in medium temperature.

Combining the parametrized cross-section with the level and velocity profile measurement, total discharge is evaluated.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of CSA Certificates'.
2. The design of the product certified is defined in the CSA design schedule V00 for certificate No. Sira MC210370/00.
3. If the certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.
4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Certificates'.
5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.

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