

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Signature® Flowmeter with TIENet™ 310 ultrasonic level sensor

Manufactured by:

Teledyne ISCO

*4700 Superior Street,
Lincoln,
Nebraska,
68504-1398
USA*

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) is **0.67%** (Class3)

Certification range:

0.003 to 3 m

Project No.: 80215328
Certificate No: CSA MC140261/03
Initial Certification: 04 November 2014
This Certificate issued: 28 October 2024
Renewal Date: 03 November 2029



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Environmental Project Engineer

MCERTS is operated on behalf of the Environment Agency by

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The MCERTS certificate consists of this document in its entirety.

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Approved Site Application

Any potential user should make sure, 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 guidance 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 trial took place for three months on the final effluent weir of a food processing plant.

Basis of Certification

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

- R1 WRc Report Number UC9578 v03 dated July 2013
- R2 WRc Report Number UC9663 v03 dated July 2013
- R3 Signature Flow Meter Field Test Report 20131022 dated 21 October 2013
- R4 WRc Report Number UC10265 dated August 2014

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Product Certified

The Signature® Flowmeter with TIENet™ 310 ultrasonic level sensor system consists of the following parts:

- Signature® flowmeter (100 to 230 V AC). Hardware version 3.06.
- TIENet™ model 310 ultrasonic level sensor
- Teledyne sunshade with modification
- Optional external power loss alarm (required for MCERTS conformity).

This certificate applies to all instruments fitted with software version 1.21.037 onwards (Signature® flowmeter serial number 212C02317 & TIENet™ model 310 ultrasonic level sensor serial number 213B00922 onwards).

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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: NEMA 4X/IP66

The instrument meets MCERTS **Class 3** requirements for the combined performance characteristic as specified in Table 7 of the MCERTS performance standard. Details of individual performance characteristics are summarised below:

Results are expressed as error % certification range 0.003 to 3m, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Protection against unauthorised access	Password Protected					Clause 3.1.2
Indicating device	The flowmeter displays totalised volume and/or flow-rate					Clause 3.1.3
Units of measurement	The flowmeter records in metric units					Clause 3.1.7
Combined performance characteristic					Note 1 0.67	Class 3 Table 7
Mean error	0.48					Clause 6.3.2 <±1% Class 3
Repeatability	0.03					Clause 6.3.2 <±0.1% Class 1
Supply voltage 100 to 240 V AC	0.04					Clause 6.3.3 <±0.075% Class 2
Output impedance	<0.01				Note 2	Clause 6.3.4 <±0.025% Class 1
Ambient air temperature	0.1					Clause 6.3.6 <±0.25% Class 3
Relative humidity		0.64			Note 3	Clause 6.3.6 <±0.25% Class 3
Direct solar radiation	0.23					Clause 6.3.10 <±0.5% Class 3

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Test	Results expressed as error % reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Accuracy of computation	-0.2				Note 2	Clause 6.3.11 <±0.25% Class 3
User defined stage-discharge equation	0.09				Note 2	Clause 6.3.12 <±0.25% Class 3
Resolution					1mm	Clause 3.1.15 Class 1
Response time					14 secs	Clause 6.3.19 < 30 secs
Error under field test conditions	Max error 0.47% Min error 0.00% Mean error 0.04% Proportion of errors ≤0.2% = 75% Proportion of errors ≤0.5% = 100%					Clause 7.3 0.5% Class 2
Up time					100%	Clause 7.4 >95%
Maintenance					30 mins scheduled during field trial	Clause 7.5 To be reported

Note 1: The combined performance characteristic reported is the root-sum-square addition of the maximum errors recorded in the following tests: mean error, repeatability, supply voltage, output impedance, ambient air temperature, direct solar radiation, computational accuracy and resolution.

Note 2: A simulated level input using a Teledyne ISCO TIENet™ 310 ultrasonic level sensor was used to evaluate the software / electronics response of the Signature unit.

Note 3: Result does not meet the specification for MCERTS Class 3 at 95% RH condensing.

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Description

The Signature® Flow Meter is designed for open channel flow monitoring applications using any combination of flow and parameter measurement technologies and sampling, depending on what is required at the measurement site.

The ultrasonic level sensor can be used in almost any open channel flow application and performance is unaffected by conditions that affect in situ sensors mounted in the water. The sensor is mounted above the flow stream at the appropriate measuring point in the weir, flume, or other open channel flow situation. The depth measurement is derived by measuring the distance between sensor and surface of the liquid level in the flow stream.

The Signature® Flow Meter can calculate flow using standard open channel level-to-flow conversions, as well as user-defined equations, level to area data points or level to flow data points, depending upon the measurement device(s) used in the application and the program specified by the user.

The Signature® Flow Meter allows multiple simultaneous flow technologies, input for pH and temperature, accepts input from SDI-12 devices and Modbus devices, provides multiple analogue output signals, and includes other interface options. The Signature® has a graphical display for viewing of parameter measurements and instrument configuration. It is compatible with Teledyne Isco Flowlink software which allows on site or remote data collection or instrument configuration. The Signature® has a front panel notification LED to indicate an alarm condition. The Signature® is capable of communicating through an Ethernet modem, a cellular modem, or an USB interface.

The Signature® flow meter has features to verify data integrity. It logs events such as changes in calibration and power outages to validate data accuracy. Data can be reviewed to detect any type of data alteration. Program reports, summary reports, and time series data are retrievable using a USB flash drive.

With multiple smart interface options and multi-parameter logging (such as pH), the Signature® Flow Meter provides a common platform for control action, reporting, and communication.

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 for certificate No. CSA MC140261/03.
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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