PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Signature® Flow Meter with 350 Velocity Sensor

manufactured by:

Teledyne ISCO
4700 Superior Street,
Lincoln,
Nebraska,
68504-1398
USA

has been assessed by Sira Certification Service
and for the conditions stated on this certificate complies with:

MCERTS Performance Standards for Water Monitoring Equipment Part 3, Version 2.4 dated February 2013

Certification Ranges :

Velocity	0.15 to 2 m/s
Depth	0.1 to 1m
Channel width	0.15m to 1m

Instrument is only certified for forward flow

Project No.:	70004422
Certificate No:	Sira MC160279/00
Initial Certification:	25 April 2016
This Certificate issued:	25 April 2016
Renewal Date:	24 April 2021

Emily Alexander BSc (Hons)
Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 2

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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 trial for the 350AV sensor with Signature® Flow Meter took place for three months on the effluent from a wastewater treatment plant.

The instrument is only certified for forward flow.

Please note, sites that are required to meet the MCERTS Self Monitoring of Flow minimum requirements, the total daily volume of the discharge specified in the permit shall be measured with a target uncertainty of ±8%. See Note 2.

Basis of Certification

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

WRc Report Number UC9578 v03 dated July 2013
WRc Report Number UC10873 v1.0 dated April 2015
WRc Report Number UC10873 v1.1 dated October 2015

Product Certified

The Signature® Flow Meter with TIENet™ 350 Area Velocity Sensor system consists of the following parts:

- Signature® Flow Meter (100 to 240 V AC). Hardware version A0.
- TIENet™ model 350 Area Velocity Sensor. Hardware version A0 (firmware v1.11.000).
- Optional external power loss alarm (required for MCERTS conformity).

This certificate applies to all instruments fitted with software version 1.21.037 onwards (Signature® Flow Meter serial number 214B01774 & TIENet™ model 350 Area Velocity Sensor serial number 213G01372 onwards).

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 4** 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 % reading, unless otherwise stated.

Test	Results expressed as error % reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Warm up time					46 seconds	To be reported
Mean error					7.48	Clause 6.3.2 +/- 8% (Class 4)
Repeatability				2.14		Clause 6.3.2 ±4% Class 3
Supply voltage	0.05					Clause 6.3.3 0.5% Class 1
Output impedance	0.006					Clause 6.3.4 0.5% Class 1
Fluid temperature				2.43		Clause 6.3.5 2.5% Class 4
Ambient air temperature	0.245					Clause 6.3.6 0.5% Class 1
Relative humidity		0.858				Clause 6.3.6 1% Class 2
Response time					22 seconds	Clause 6.3.19
Combined Performance Characteristic					9.47	10% Class 4

Test	Results expressed as error % reading				Other results	MCERTS specification
	<0.5	<1	<2	<8		
Effect of conduit size						Clause 6.3.17
Channel width - 0.33m Ref velocity (m/s)						To be reported
0.27				5.06		
0.66				7.48		
1.13				1.23		
Channel width - 0.595m Ref velocity (m/s)						
1.59				3.21		
2.02				6.67		
Channel width - 0.99m Ref velocity (m/s)						
0.32				7.67		
0.81			-1.19			
1.27				-7.9		
Fill level					Note1	Clause 6.3.18
Depth (m) Velocity (m/s)						To be reported
0.19 0.45				-2.57		
0.15 0.75				7.48		
0.14 1.00			1.23			
0.50 0.45				-2.12		
0.50 0.75				-4.49		
0.50 1.0				-6.04		
0.70 0.45				-3.75		
0.70 0.75				-5.47		
0.70 1.0				4.55		
Error under field test conditions	Max error 9.84% Min error 0.02% Mean error 3.32% Proportion of errors </=8% = 83.3% proportion of errors </= 10% = 92.0%					Clause 7.3 <10% Class 4
Up time					96.15%	Clause 7.4 >95%
Maintenance					None	Clause 7.5 To be reported

Note 1: Instrument is not certified for use in partially filled pipes

Note 2: Sites that are required to meet the MCERTS Self Monitoring of Flow minimum requirements, the total daily volume of the discharge specified in the permit shall be measured with a target uncertainty of ±8%. The MCERTS inspector will determine whether the specific on site calibration and set up meets the minimum requirements of the Self Monitoring of Flow MCERTS standard.

Certificate No : Sira MC160279/00
This Certificate issued : 25 April 2016

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 TIENet 350 Area Velocity sensor is an in situ area velocity flow measurement device that measures flow in open channels using continuous wave ultrasound velocity sensing and differential pressure level sensing technologies.

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, input for rain, input from analog signals, input from SDI-12 devices, input from Modbus devices, provides multiple analog output signals, and includes other interface options. The Signature has a graphical display for viewing of parameter measurements and 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.

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 Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC160279/00.

2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.

3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.

4. This document remains the property of Sira and shall be returned when requested by the company.