

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

SITRANS FS230 Ultrasonic Clamp-on Flowmeter

Manufactured by:

Siemens AG,

DE-76181 Karlsruhe
Germany

Siemens S.A.S
Chemin de la Sandlach,
67500 Haguenau, France

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

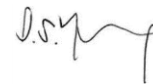
**MCERTS Performance Standards for Continuous Water
Monitoring Systems, Part 3, Version 3 dated July 2018**

The combined performance characteristic (U_c , the expanded uncertainty) is **1.05%** (Class1)

Certification Ranges:

0.25 m/s to 6 m/s

Project No.: 70159727
Certificate No: Sira MC190341/02
Initial Certification: 29 March 2019
This Certificate issued: 17 March 2021
Renewal Date: 28 March 2024



Andrew Young
Environmental Project Engineer

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



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CERTIFICATION

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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 product has been tested on 150mm and 50mm diameter pipe over a range of velocities using C3 sensors. The field trial was tested on a 600mm pipe using E2 sensors. It is suitable for pipe sizes upwards of 50mm.

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 ref: UC9776.1 dated July 2014
- WRc Report ref: UC13051 dated March 2018
- Evaluation Report_Siemens_FS220_FS230 dated March 2019

Product Certified

The FS230 ultrasonic flowmeter measuring system consists of the following parts:

- Sitrans FST030 transmitter unit (serial no. N1k1038001249)
- FSS200 universal and Hi-Precision sensor units (87388A & 87388B, 87932A & 87932B)

This certificate applies to all instruments fitted with software version FS 1.00.00 (serial number N1K1038001249) onwards.

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -10°C to +35°C
Instrument IP rating: IP65

Note: If the instrument is supplied with an enclosure, then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

The instrument meets MCERTS **Class 1** 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 % of certification range, unless otherwise stated.

Test	Results expressed as error % certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Protection against unauthorised access					Password required	Clause 3.1.2
Units of measurement					The flowmeter records in metric units	Clause 3.1.6
Indicating device					The flowmeter displays totalised volume and/or flow-rate	Clause 3.1.3
Combined performance characteristic					1.05	Table 7 ≤2% Class 1
Mean error	0.05					Clause 6.3.2 ±1.5% Class 1
Repeatability	0.06					Clause 6.3.2 ±0.05% Class 1
Bi-directional flow	0.17					Clause 6.3.13 0.5% Class 1
Supply voltage 100 to 240 V AC	0.0					Clause 6.3.3 0.5% Class 1
100 to 240 V DC	0.03					
Output impedance 50Ω to 200Ω	0.02					Clause 6.3.4 0.5% Class 1
Ambient temperature -10°C to +35°C		0.9				Clause 6.3.6 1% Class 2

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Test	Results expressed as error % reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Relative humidity ≥95%RH	0.45					Clause 6.3.6 0.5% Class 1
Effect of conduit material						Clause 6.3.16
Carbon steel						To be reported
Mean error				2.5		
Repeatability	0.14					
ABS						
Mean error				7.7		
Repeatability	0.34					
Cement lined ductile iron						
Mean error				3.9		
Repeatability	0.20					
Effect of conduit size						Clause 6.3.17
24" (0.5m nominal) – Mean error						To be reported
0.28				-2.9		
0.85				-2.6		
1.38				-2.3		
1.90				-2.0		
2.44				-2.1		
42" (1.2m nominal) – Mean error						
0.29			-1.4			
0.80			-1.6			
1.32			-1.5			
1.87			-1.6			
2.36			-1.3			

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Test	Results expressed as error % reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					6.47s	Clause 6.3.19 < 30 secs
Warm-up time					15s	Clause 6.1.2 To be reported
Error under field test conditions	Max error 13.69% Min error -22.69% Mean error -3.45% Proportion of errors ≤2% = 28% Proportion of errors ≤5% = 69% Proportion of errors ≤8% = 90%					Clause 7.3 % Class 3
Up time					100%	Clause 7.4 >95%
Maintenance					None	Clause 7.5 To be reported

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Description

The SITRANS FS230 clamp-on flowmeters described on this certificate provide accurate, non-intrusive flow measurement in full pipes. They consist of a FST030 transmitter, calibrated matched pair of transducers and mounting hardware such as cables and easy mount frames.

The transducer use Wide-Beam technology. This technology increases precision by reducing the sensitivity to any change in the medium type or pressure. The Wide-Beam ultrasonic signal is not affected by step velocity changes (hydraulic surging) or solids particle distribution.

The sensors can be mounted in two different orientations depending on the quality of the pipe and viscosity of the product. To achieve the best accuracy the “reflect method” is recommended. Using this method enables auto zero calibration, eliminating any necessity to stop process flow. With this configuration in place the pipe characteristics are continually monitored to instantly correct any offset generated by temperature changes in the process.

The matched pair of transducers is available in two types, either Universal or High Precision. The High Precision sensors have been tuned for use on steel pipe only and should only be used for these applications. The standard Universal Transducers, are suitable any other pipe material including steel.

The FS230 is a configurable transmitter that can be expanded to 2 path operation. This enables 2 transducer sets to be installed on one pipe providing better coverage of the flow profile for larger pipes and improving accuracy and repeatability. Extra hardwire outputs and communications cards can be added to increase the functionality.

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 V01 for certificate No. Sira MC190341/00
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.

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