PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

SITRANS FM520 Electromagnetic Flowmeter composed of SITRANS FMS500 Sensor combined with SITRANS FMT020 transmitter, coupled with optional field verification device SITRANS Verificator

Manufactured by:

Siemens AG

DE-76181 Karlsruhe
Germany

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

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:
SITRANS FM520 electromagnetic flowmeter is **0.73% (Class 1)**

Certification Range:

Size: DN15 to DN1200

Project No.:	80203177
Certificate No:	CSA MC240428/00
Initial certification:	15 November 2024
Certificate issued:	15 November 2024
Renewal date:	14 November 2029

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 3005
Issue 6

Certificate Contents

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 test was carried out between the 2nd May 2024 and 4th August 2024 in Haguenau, France.

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:

CSA Group report ref. 80203177, incorporating report "Laboratory and Field Test Results", dated 13th November 2024.

Product Certified

The SITRANS FM520 flowmeter system consists of the following parts:

- SITRANS FMS500 sensor
- SITRANS FMT020 transmitter
- SITRANS Verificator (optional) – additional field portable verification device that can be coupled with the flowmeter system

Meter Size	*Flow rate*		Unit
	Min (Q1)	Max (Q3)	
DN15	0.1575	6.3	m^3/h
DN25	0.4	17.671	m^3/h
DN40	1	45	m^3/h
DN50	0.315	63	m^3/h
DN65	0.5	100	m^3/h
DN80	0.8	160	m^3/h
DN100	1.25	250	m^3/h
DN125	2	400	m^3/h
DN150	3.15	629	m^3/h
DN200	5	997	m^3/h
DN250	8	1600	m^3/h
DN300	8	2500	m^3/h
DN350	20	3463	m^3/h
DN400	32	4523	m^3/h
DN450	50.4	5725	m^3/h
DN500	50.4	7068	m^3/h
DN600	50.4	10178	m^3/h
DN700	50.4	13854	m^3/h
DN750	50.4	15904	m^3/h
DN800	50.4	18095	m^3/h
DN900	80	22902	m^3/h
DN1000	80	28274	m^3/h
DN1200	80	40715	m^3/h

This certificate applies to all instruments fitted with software version 1.01.05 onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: -20°C to +65°C
Instrument IP rating: IP66 / IP67

The instrument meets **MCERTS Class 1** 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	*Result expressed as % of the certification range*				*Other results*	*Class*	*MCERTS specification*
	<0.5	*<1*	*<2*	*<5*			
LABORATORY TESTS							
General requirements/initial checks							
Protection against unauthorised access	Password protected unique to the device						cl. 3.1.2
Indicative device and/or analogue digital output signal	LCD and digital I/O signals incorporated						cl. 3.1.3
Units of measurement	Metric units - LCD display						cl. 3.1.6 & 3.1.7
*Comparison of output values	Verified - outputs comparable						cl. 6.1.4
***Warm-up time**							cl. 6.1.2 - no specification assigned, to be reported
FM520					<10 secs		
Combined performance characteristic (Uc)							cl. 6.4 - Table 6 - class specific
FM520	**0.73**					**1**	
Performance tests							
Loss of power	Settings retained for all 13 parameters						cl. 6.3.1
***Mean error, x**							cl. 6.3.2 - Table 6 - class specific
DN50							
FM520	-0.56					1	
***Repeatability, U_R**							cl. 6.3.2 - Table 6 - class specific
DN50							
FM520	0.05					1	
Supply voltage, $X_{V\ (100\ to\ 240V)}$							
*FM520 - AC	0.018					1	cl. 6.3.3.1 - Table 6 - class specific
FM520 - DC	0.024					1	cl. 6.3.3.2 - Table 6 - class specific
Output Impedance, $X_{O\ (0\ -\ 470\Omega)}$							cl. 6.3.3 - Table 6 - class specific
FM520	0.006					1	

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Test	Result expressed as % of the certification range				Other results	Class	MCERTS specification
	<0.5	<1	<2	<5			
Fluid temperature, X_{FT} (4°C to +28°C)							cl. 6.3.5 - Table 6 - class specific
FM520	0.279					1	
Ambient air temperature, X_T (-20°C to +65°C)							cl. 6.3.6 - Table 6 - class specific
FM520	0.015					1	
Relative humidity, X_{RH} (>95%, 20°C to 65°C)							cl. 6.3.6 - Table 6 - class specific
FM520	0.010					1	
Presence of stray currents, X_{SC}							cl. 6.3.9 - Table 6 - class specific
FM520	0.015					1	
***Flow reversal (DN50)**							cl. 6.3.14 - no specification assigned, to be reported
Mean error							
FM520	0.27						
Repeatability							
FM520	0.02						
Effect of conduit size - SMALL (DN25), MEDIUM 1 (DN350), MEDIUM 2 (DN700), LARGE (DN1200)							cl. 6.3.17 - no specification assigned, to be reported
Mean error							
SMALL	0.16						
MEDIUM 1	-0.14						
MEDIUM 2	-0.32						
LARGE			-1.25				
Repeatability							cl. 6.3.17 - no specification assigned, to be reported
SMALL	0.03						
MEDIUM 1	0.11						
MEDIUM 2	0.34						
LARGE	0.29						
Response Time (either increasing or decreasing flow)							cl. 6.3.19 - ≤30 seconds
FM520					1 sec		

Test	Parameter	Result	Class	MCERTS specification
FIELD TESTS				
Error under field conditions	Maximum error (%)	0.22	1	cl. 7.3 - Table 6
	Minimum error (%)	-0.01		
	Mean error (%)	0.14		
	Proportion of errors ≤2%	100		
	Proportion of errors ≤5%	100		
	Proportion of errors ≤8%	100		
Up-time (%)		99.36%		cl. 7.4 ≥95%
Maintenance		Note 2		cl. 7.5 - to be reported

Note 1: Test witnessing was carried out for the parameters denoted '*'.

Note 2: The measuring system was installed in a field test real environment with data acquired from 2nd May to the 4th August 2024 with a total scheduled operating time of 135,511 minutes (94.1 days). Maintenance was carried out on 29 occasions for a total time of 14.5 hours and involved cleaning of the filter. Each maintenance period was 30 minutes. Of the total operating time 135,511 minutes, 0 minutes were attributed to power outages.

Description

SITRANS FM520 electromagnetic flowmeters consists of a sensor type SITRANS FMS500, in sizes from DN15 to DN1200; and a transmitter, type SITRANS FMT020. The plug-in transmitters can be integral to the sensor or remote mounted. SITRANS FMS500 sensors are designed specifically to meet water and wastewater applications. IP68 versions can be buried or submerged.

The measuring principle is based on Faraday's law of electromagnetic induction. An electrode voltage, proportional to velocity, is generated when a conductive liquid passes through the sensor's magnetic field.

Calibration data, sensor fingerprint, factory and customer settings are stored in a SENSORPROM module, separate from the transmitter. Transmitters can, therefore, be freely exchanged.

Transmitters use low noise high resolution digital signal processors which provide continuous self-monitoring and adjustment of measurement circuits to maintain required accuracy. Plug-in modules for digital communications, e.g. Profinet, can be added at any time during the life of the meter.

On-site verification is achieved using the Siemens FM Verificator; a standalone field test device, independently calibrated every 12 months. It performs three tests, all referenced to original calibration: Transmitter accuracy, Insulation of measurement circuits, and Sensor magnetism (fingerprint).

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 MC240428/00.

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.