

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

SITRANS F M MAG 5100W Electromagnetic Flowmeter with MAG 5000, MAG 6000 or MAG 6000 I Transmitter

Manufactured by:

Siemens AG,

DE-76181 Karlsruhe
Germany

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

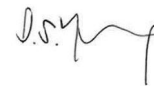
has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

**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) is **0.806%** (Class1)

Size range: DN 25-1200

Project No.: 80156234
Certificate No: CSA MC080136/11
Initial Certification: 04 November 2008
This Certificate issued: 02 November 2023
Renewal Date: 03 November 2028



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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 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 may be used on all MCERTS applications including abstraction, effluent discharge, ultraviolet disinfection and industrial processing.

Any potential user should ensure, in consultation with the manufacturer that the product is suitable for the process on which it will be installed.

Field Test Site

A three-month field test was conducted on the final effluent discharge at a municipal wastewater treatment 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:

Sira Evaluation Report MAG 5100 674/0190 dated 04 November 2008

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Product Certified

The measuring system consists of the following parts:

SITRANS F M MAG 5100W Electromagnetic Flowmeter with MAG 5000, MAG 6000 or MAG 6000 I Transmitter

This certificate applies to all instruments fitted with the following software versions and onwards:

- 3.03 X 03 for standard MAG 5000
- 3.03 X 04 for MAG 5000 C with HART
- 3.03 X 05 for MAG 5000 CT
- 3.03 for standard MAG 600
- 3.03 X 02 for MAG 6000 CT
- 3.03 X 01 for MAG 6000 SV
- 3.04 for MAG 6000 I

Serial number (MLFB code) 7ME6520-XXXXX-2XXX-Z (onwards)

[Where X = any figure]

DN (mm)	Flow Rate		unit
	Min	Max	
25	442.0	17671	l/h
40	1.2	45	m ³ /h
50	1.6	63	m ³ /h
65	2.5	100	m ³ /h
80	4.0	160	m ³ /h
100	6.3	250	m ³ /h
125	10.0	400	m ³ /h
150	15.7	629	m ³ /h
200	24.9	997	m ³ /h
250	40.0	1600	m ³ /h
300	62.5	2500	m ³ /h
350	86.6	3463	m ³ /h
400	113.1	4523	m ³ /h
450	143.2	5725	m ³ /h
500	176.8	7068	m ³ /h
600	254.5	10178	m ³ /h
700	346.4	13854	m ³ /h
750	397.7	15904	m ³ /h
800	452.4	18095	m ³ /h
900	573.0	22902	m ³ /h
100	707.0	28274	m ³ /h
1100	855.3	34211	m ³ /h
1200	1018.0	40715	m ³ /h

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Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: -20°C to +50°C

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:

Results are expressed as error % of certification range, unless otherwise stated.

Test	Results expressed as error % of reading				Other results	MCERTS specification
	<0.5	<1.0	<1.5	<2.0		
Protection against unauthorised access	Access to change mode is password protected					Clause 3.1.2
Indicating device	The flowmeter incorporates an indicating device, analogue and digital output signal					Clause 3.1.3
Units of measurement	Various units of measurement are available.					Clause 3.1.6
Bi-directional flow	The sign (-) will stand in front of the flow reading when the reading is negative.					Clause 3.1.8
Combined performance characteristic		0.806				2% Class 1 Table 6
Mean error	0.15					Clause 6.3.2 ±1.5% Class 1
Repeatability	0.07					Clause 6.3.2 1% Class 1
Supply voltage	0.05					Clause 6.3.3 0.5% Class 1
Output impedance	0.15					Clause 6.3.4 0.5% Class 1
Fluid Temperature	0.13					Clause 6.3.5 0.5% Class 1
Ambient air temperature	0.60					Clause 6.3.6 0.5% Class 1
Relative humidity	0.04					Clause 6.3.6 0.5% Class 1
Stray currents	0.23					Clause 6.3.9 0.5% Class 1
Bi-directional flow Mean error Repeatability	0.18 0.038					Mean error ±1.5% Class 1 Repeatability 1% Class 1

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Test	Results expressed as error % of reading				Other results	MCERTS specification
	<0.5	<1.0	<1.5	<2.0		
Loss of Power for electronic flowmeters	No changes in pre set data					Clause 6.3.1 to be reported
Response time					See Note 1	Clause 6.3.19 30 seconds

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Field Test Results

The field test was conducted on two MAG 5100 sensors with MAG 6000 transmitters in series and is deemed equivalent by the certification committee for the models stated on this certificate.

Test	Results expressed as error % of reading				Other results	MCERTS specification
	<0.5	<1.0	<1.5	<2.0		
Error under field test conditions	Error range 0.29% to 0.61% Field test error is <2% for 100% of readings					Clause 7.3 2% Class 1 5% Class 2
Up time					100%	Clause 7.4 >95%
Maintenance					none	Clause 7.5 to be reported

Note 1: This test has not been conducted.

Note 2: The following tests are not applicable to the flowmeter:

6.3.7	Incident light	6.3.16	Effect of conduit material
6.3.8	Sensor location	6.3.17	Effect of conduit size
6.3.10	Sonic velocity compensation & response	6.3.18	Fill level
6.3.11	Accuracy of computation	6.3.20	Vibration
6.3.12	User defined stage-discharge equation		

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Description

Sitrans FM electromagnetic flow meters included in this certificate consist of a sensor type MAG 5100W, in sizes from DN25 to DN1200; and a transmitter, type MAG 5000, MAG 6000 or MAG 6000I. The plug-in transmitters can be integral to the sensor or remote mounted. MAG 5100W 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. This technology is proven in use; fitted in Sitrans FM meters for more than 10 years.

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. Profibus, can be added at any time during the life of the meter. Transmitter dynamic range is better than 3000:1. Very high input impedance means measurement accuracy is unaffected by liquid conductivity or cable length.

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).

Approvals include the new EU directive for cold water custody transfer, MI 001, WRAS for potable water, and OIML R49 pattern approval. Every Siemens flow meter is calibrated at facilities that are individually accredited in accordance with ISO / IEC 17025 by UKAS, DANAK and traceable to NIST.

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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 V06 for certificate No. CSA MC080136/11.
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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