PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

SONICO® EDGE ultrasonic flowmeter

Manufactured by:

GWF AG
Obergrundstrasse 119
Luzern
Switzerland
CH-6005

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:
1.91 **% (Class 1)**

Certification Range:

Velocity:	0.006m/s to 7.0m/s
Size:	DN50 to DN300

Project No.:	80168199
Certificate No:	CSA MC230426/00
Initial Certification:	22 February 2024
This Certificate issued:	22 February 2024
Renewal Date:	21 February 2029

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Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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Form 3005
Issue 6

Certificate Contents

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 test was carried out between the 30th April 2023 and the 9th August 2023 in Lucerne, Switzerland. Witness testing was arranged by the certification body throughout this period. Two samples of the product were provided by the manufacturer with the performance assessed using a MCERTS certified flowmeter against section 7 of the standard.

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:

Test report, WRC ref. UC17308 V2, January 2024
OIML Type Evaluation Report, 0511-ER-V041-21, Czech Metrology Institute, September 2021
OIML Type Evaluation Report, 6015-PT-P5005-21, Czech Metrology Institute, September 2021
OIML Type Evaluation Report, 6015-PT-P0008-20, Czech Metrology Institute, September 2021

Product Certified

The SONICO® EDGE ultrasonic flowmeter system consists of the following parts:
4D-shape measuring device with register and measuring channel (DN50 to DN300) and optional communication outputs (maximum 2 outputs possible):

- 4-20mA NFC communication module
- Pulse NFC communication module
- ModBus NFC communication module
- ECO/ECO2 (encoder) NFC communication module

This certificate applies to all instruments fitted with software version 2.49 and serial number 24xxxxxxx, onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: -35°C to +70°C
Instrument IP rating: IP68
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	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
LABORATORY TESTS (Note 1) ***General requirements/Initial checks*** - Protection against unauthorised access	Password protected unique to the device. A user password supplied by the manufacturer necessary to run the software.					Clause 3.1.2
Indicative device and/or analogue or digital output signal	Local display, other outputs through inserted modules with pulse output modules available					Clause 3.1.3
Units of measurement	Configurable, e.g. m^3 and l/s					Clause 3.1.6 & 3.1.7
Comparison of output values	Analogue output values consistent with visual display					Clause 6.1.4
Warm-up time					<30s	Clause 6.1.2 No specification assigned, value(s) obtained to be reported.
Loss of Power					All settings retained for 6 parameters	Clause 6.3.1
Combined performance characteristic (Uc)					**1.91**	Clause 6.4 Class 1
****Mean error***						Clause 6.3.2 Class 2
Test point 1A			1.91			
Test point 1B		-0.56				
Test point 2	-0.02					
Test point 3		0.52				
Test point 4			1.15			
Test point 5			1.04			
****Repeatability***						Clause 6.3.2 Class 1
Test point 1A		0.57				
Test point 1B		0.57				
Test point 2	0.23					
Test point 3	0.12					
Test point 4	0.13					
Test point 5	0.28					

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Supply voltage (DC 21.5 to 26.5V)		0.82				Clause 6.3.3 Class 2
Output impedance (10Ω to 500Ω)	0.24					Clause 6.3.4 Class 1
*Fluid temperature (10°C to 30°C)		0.47				Clause 6.3.5 Class 1
*Ambient air temperature (-35°C to +70°C)		0.49				Clause 6.3.6 Class 1
Relative humidity(20°C to 70°C)		-0.63				Clause 6.3.6 Class 2
Effect of conduit size						
Mean error						
**range DN50-75*						
Small - DN50 (0.006m/s)				3.98		
Small - DN50 (0.009m/s)			1.12			
Small - DN50 (1.25m/s)	0.30					
Small - DN50 (2.48m/s)	0.46					
Small - DN50 (5.53m/s)		0.93				
Small - DN50 (6.93m/s)			1.09			
**range DN140-210*						
Medium - DN150 (0.007m/s)			1.91			Clause 6.3.17.1
Medium - DN150 (0.01m/s)		-0.56				No specification assigned, value(s) obtained to be reported
Medium - DN150 (1.38m/s)	-0.02					
Medium - DN150 (2.69m/s)		0.52				
Medium - DN150 (6.00m/s)			1.15			
Medium - DN150 (7.40m/s)			1.04			
**range DN240-300*						
Large - DN300 (0.004m/s)			1.98			
Large - DN300 (0.007m/s)	0.39					
Large - DN300 (0.86m/s)	0.26					
Large - DN300 (1.71m/s)	-0.16					
Large - DN300 (3.78m/s)			-1.68			
Large - DN300 (4.82m/s)		0.79				

Repeatability						
**range DN50-75*						
Small - DN50 (0.006m/s)		0.51				
Small - DN50 (0.009m/s)		0.58				
Small - DN50 (1.25m/s)		Note 4				
Small - DN50 (2.48m/s)		Note 4				
Small - DN50 (5.53m/s)		0.45				
Small - DN50 (6.93m/s)		Note 4				
**range DN140-210*						Clause 6.3.17.1
Medium - DN150 (0.007m/s)		0.57				No specification assigned, value(s) obtained to be reported
Medium - DN150 (0.01m/s)		0.57				
Medium - DN150 (1.38m/s)	0.23					
Medium - DN150 (2.69m/s)	0.12					
Medium - DN150 (6.00m/s)	0.13					
Medium - DN150 (7.40m/s)	0.28					
**range DN240-300*						
Large - DN300 (0.004m/s)		0.89				
Large - DN300 (0.007m/s)			1.08			
Large - DN300 (0.86m/s)	0.06					
Large - DN300 (1.71m/s)	0.05					
Large - DN300 (3.78m/s)	0.16					
Large - DN300 (4.82m/s)	0.16					
*Bi-directional flow ***Mean error** *- forward*						
Test point 1A - 0.006m/s			1.91			
Test point 1B - 0.009m/s		-0.81				
Test point 3 – 3.28m/s		0.73				Clause 6.3.13
Test point 4 – 5.29m/s	0.29					No specification assigned, value(s) obtained to be reported
Mean error *- reverse*						
Test point 1A - 0.006m/s		0.71				
Test point 1B - 0.009m/s			-1.05			
Test point 3 – 3.28m/s		0.63				
Test point 4 – 5.29m/s	0.28					
Response Time (either increasing or decreasing flow)					<5s	clause 6.3.19 No specification assigned, value(s) obtained to be reported

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
FIELD TESTS Error under field conditions	Max error -3.44% Min error -0.14% Mean error -0.84% Proportion of errors ≤2% = 79.2% Proportion of errors ≤5% = 100% Proportion of errors ≤8% = 100%					Clause 7.3 Class 2
Up time					100% Note 2	Clause 7.4 ≥95%
Maintenance					None Note 3	Clause 7.5 To be reported

Note 1: Tests denoted '*' signify data taken from the OIML test reports, all other test data taken from the WRC test report.

Note 2: Of the total operating time 146880 minutes, 0 minutes were attributed to outage time.

Note 3: The flowmeter system was installed from the 30th April 2023 to the 9th August 2023 with a total scheduled operating time of 2448 hours, or 146880 minutes. No maintenance was required during the field test.

Note 4: There was insufficient data within the OIML test report to provide a meaningful standard deviation and therefore for these points repeatability could not be determined.

Description

SONICO® EDGE is a bi-directional ultrasonic flow meter, designed and manufactured by GWF AG in Switzerland. The meter is designed for clean-, process- and waste-water applications up to 50°C.

SONICO® EDGE incorporates GWF's 4D Technology® allowing installation without upstream/ downstream straight length of pipes. The meter includes continuous verification of key measurement parameters, relative to its original manufacturing calibration, any anomalies are notified via a range of error indicators. A range of communication modules enables connectivity with business process systems such as SCADA, ModBus and dataloggers.

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 MC230426/00.

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.