PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

NivuFlow 550 with Velocity Radar Sensor and air ultrasonic level i-Sensor

Manufactured by:

Nivus GmbH
Im Täle 2
75031 Eppingen
Germany

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

MCERTS Performance Standards for Continuous Water Monitoring Equipment – Part 3 Version 3 dated July 2018

The combined performance characteristic (U_c, the expanded uncertainty) is **7.8%** (Class3)

Certification Ranges:

Velocity: 0.15 to 2.5 m/s
Depth: 0.05 to 1.6 m

Project No.:	70205396
Certificate No:	Sira MC190344/01
Initial Certification:	11 April 2019
This Certificate issued:	17 March 2021
Renewal Date:	10 April 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

Form 3005
Issue 2

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.

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:

Nivus GmbH MCERTS Test Report NF550 & Radar dated 23rd January 2019

CSA Group Witness Test Report 70205396 (incorporated with Evaluation Report) dated 11th February 2019

Product Certified

The NivuFlow 550 measuring system consists of the following parts:

- NivuFlow transmitter (NF5)
- Velocity radar sensor (OFR0-EVG)
- Level i-sensor (NIMI0)

This certificate applies to all instruments fitted with software version T2.22, V1.02 (serial number 1722NF50031 and 1816OFG0019) onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C
Instrument IP rating: IP68

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 3 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 % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Mean error				3.31		Clause 6.3.2 ±4% (Class 2)
Repeatability				3.09		Clause 6.3.2 4% (Class 3)
Supply voltage (90 to 230VAC, 10 to 35VDC) AC DC	 0.31 0.22					Clause 6.3.3 0.5 (Class 1)
Output impedance (50 to 500 Ω)	 0.19					Clause 6.3.4 0.5 (Class 1)
Fluid temperature (+1°C to +30°C)			1.1			Clause 6.3.5 1% (Class 2)
Ambient air temperature (-20°C to +50°C)	0.2					Clause 6.3.6 0.5% (Class 1)
Relative humidity (95% RH)	0.02					Clause 6.3.6 0.5% (Class 1)
Sensor location				3.68		Clause 6.3.8 2.5% (Class 4)
Direct Solar radiation i-6 sensor		 0.9				Clause 6.3.10 1% (Class 1)
Bi-directional flow 0.38m/s 1.35m/s 2.39m/s			 1.29	 2.1 2.13		Clause 6.3.13 To be reported

Certificate No: Sira MC190344/01
This Certificate issued: 17 March 2021

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Effect of conduit size						Clause 6.3.17
0.35m				-4.57		To be reported
0.6m				-3.82		
2.5m			1.97			
Fill level						Clause 6.3.18
Variation of depth						To be reported
15%				4.37		
50%				2.51		
85%				-4.69		
Variation of velocity						
15%				3.27		
50%			1.54			
85%				-2.76		
Response time					Note 1 115s	Clause 6.3.19 <30 seconds
Combined performance characteristics					**7.8%**	Clause 4.2 <8% (**Class 3**)
Error under field conditions	Max error 9.99% Min error -0.05% Mean error -0.72% Proportion of errors </= 8% = 87.5% Proportion of errors </= 10% = 100%					Clause 7.3 <10% (Class 4)
Up-time					99.5%	Clause 7.4 >95%
Maintenance					Note 2 15.4 hours	Clause 7.5 To be reported

Note 1: This instrument is not suitable on not suitable for rapidly changing or pumped flows
Note 2: Of the three sensors, the worst maintenance result has been reported. 15.4 hours was spent on device malfunctions, repairs and scheduled manual interventions (out of 2,952 hours)

Description

The flowmeter type NivuFlow 550 including the Radar Sensor supplied by NIVUS is intended to be used for continuous flow measurement in free surface flows with presence of free surface waves or tracers. The flowmeter can be operated in partially filled pipes or open channels with various dimensions. It is a stationary measurement system for flow measurement and storage of the measurement data.
The flowmeter simultaneously determines the velocity and level at a common measurement point. The radar sensor is associated to an air-ultrasonic sensor. To ensure accurate level measurement, the air temperature is constantly monitored. A radar sensor with a certain installation angle towards the flow direction operates as a flow velocity sensor. All the free surface tracers (waves …) reflect a part of the emitted radar signal and the signal are converted to electric signals. The velocity is evaluated through the Doppler shift. Associated to the cross section, the discharge is evaluated.

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 for certificate No. Sira MC190344/00

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.