PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

OPTIFLUX 2100

Manufactured by:

KROHNE Altometer

A production facility of KROHNE AG, Basel
Kerkeplaat 12
3313 LC Dordrecht
The Netherlands

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

MCERTS Performance Standards for Water Monitoring Equipment Part 3, Version 2.4 dated February 2013

The combined performance characteristic (U_c, the expanded uncertainty) is **1.57%** (Class1)

Certification Ranges:

Size range DN25 to DN500

Project No.:	16W29039
Certificate No:	Sira MC130220/02
Initial Certification:	27 February 2013
This Certificate issued:	17 March 2021
Renewal Date:	26 February 2023

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
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Form 3005
Issue 2

Approved Site Application

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 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.

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:

Sira Report	16W29039 dated 28 January 2013
NMi Certain B.V Report	R49-1/2003-NL1 – 06.01 dated 17 March 2006

Product Certified

The OPTIFLUX 2100 consists of the following parts:

- OPTIFLUX 2000 electromagnetic flow / water meter
- IFC 100 electromagnetic signal converter (C / compact or W / Wall Mounting)

This certificate applies to all instruments fitted with software version 4.0.4. (serial number A10 01 xxxxx onwards).

Pipe size	Flow rate		Unit
	max	min	
DN25	0.20	10	m^3/hr
DN32	0.30	17	m^3/hr
DN40	0.40	27	m^3/hr
DN50	0.70	42	m^3/hr
DN65	1.20	72	m^3/hr
DN80	1.80	110	m^3/hr
DN100	2.80	170	m^3/hr
DN125	5.00	265	m^3/hr
DN150	6.40	380	m^3/hr
DN200	12.00	700	m^3/hr
DN250	18.00	1000	m^3/hr
DN300	26.00	1600	m^3/hr
DN350	34.00	2000	m^3/hr
DN400	45.00	2800	m^3/hr
DN450	60.00	3400	m^3/hr
DN500	70.00	4200	m^3/hr

Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: -25^{0}C to +55^{0}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 % reading, 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	A custody transfer seal is present					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 and displayed.					Clause 3.1.6
Bi-directional flow	The flowmeter displays a '+' or' –' flow reading					Clause 3.1.8
Combined performance characteristic				**1.57**		Clause 6.3.2 ±2.0% **Class 1**
Mean error DN250 DN400 DN500	 -0.14 -0.24		 1.07			Clause 6.3.2 ±1.5% Class 1
Repeatability DN250 DN400 DN500	 0.07 0.44 0.14					Clause 6.3.2 1% Class 1
Supply voltage	<0.02				70 to 250 VAC 10 to 26.4 VDC	Clause 6.3.3 0.5% Class 1
Output impedance	<0.02				50 to 1000Ω	Clause 6.3.4 0.5% Class 1
Fluid Temperature	-0.33				12^{0}C to 50^{0}C	Clause 6.3.5 0.5% Class 1
Ambient air temperature	0.01				-25^{0}C to +55^{0}C	Clause 6.3.6 0.5% Class 1
Relative humidity	0.01				Test conducted at 45% relative humidity	Clause 6.3.6 0.5% Class 1
Stray currents	<0.02					Clause 6.3.9 0.5% Class 1

Test	Results expressed as error % of reading				Other results	MCERTS specification
	<0.5	<1.0	<1.5	<2.0		
Bi-directional flow Mean error Repeatability	-0.38				See Note 1	Mean error ±1.5% Class 1 Repeatability 1% Class 1
Loss of Power for electronic flowmeters	No changes in pre set data					Clause 6.3.1 to be reported
Response time					<10s	Clause 6.3.19 30 seconds
Warm up time					<1s	Clause 6.1.2 to be reported
Vibration					Note 2	Clause 6.3.20 to be reported

Note 1: Repeatability for bi-directional flow could not be calculated as only 2 data points were taken at each flow rate

Note 2: Test not conducted

Note 3: The following tests are not applicable to the flowmeter:

6.3.4	Output Impedance	6.3.14	Flow reversal
6.3.7	Incident light	6.3.15	Ancillary devices
6.3.8	Sensor location	6.3.16	Effect of conduit material
6.3.10	Sonic velocity compensation & response	6.3.17	Effect of conduit size
6.3.11	Accuracy of computation	6.3.18	Fill level
6.3.12	User defined stage-discharge equation		

Field Test Results

The field test was conducted on an OPTIFLUX 2100 in series with an electromagnetic flowmeter for 3 months measuring leachate at a landfill site

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 -1.54% to 0.00% Field test error is <2% for 12.5% of readings Field test error is <5% for 100% of readings Field test error is <8% for 100% of readings					Clause 7.3 2% Class 1 5% Class 2 8% Class 3
Up time					100%	Clause 7.4 >95%
Maintenance					none	Clause 7.5 to be reported

Description:

The OPTIFLUX 2100 is a mains powered water meter based on the electromagnetic flow principle. It is dedicated for applications in the water and wastewater industry. It consists of a OPTIFLUX 2000 sensor and a mains powered IFC 100 converter. The converter can be mounted directly on the sensor (compact version) with 0° or 45° angle or separately (field version).

OPTIFLUX 2100 is certified for potable water applications with DVGW, ACS, KTW. Krohne Altometer meets the applicable requirements of MID module D for the conformity assessment of water meters. The accuracy of the OPTIFLUX 2100 is 0.3 % of the measured value plus 1 mm/s and every flow meter leaving the factory is calibrated.

The principle of the electromagnetic flow metering is based on Faraday's law of induction: passing an electrically conductive body through a magnetic field, a voltage is induced. This voltage is proportional to velocity and picked up by electrodes.

The IFC 100 converter is mains powered. It can display positive and negative counter, sum counter and flow rate. It can further provide diagnostic information for self checking, counter overrun, flow direction and empty pipe detection. Available inputs and outputs: Current output (incl. HART ®), pulse / frequency output, status output and control input.

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 MC130220/00

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.