PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

LIDoTT® system with SMART Controller and MSFM Controller

Manufactured by:

Detectronic Ltd
Regent Street
Whitewalls Industrial Estate,
Colne, Lancashire,
BB8 8LJ

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

MCERTS: Performance standards and test procedures for event duration monitors, LIT 60384, Version: 1.0, Published: 09/08/2022*
(*This MCERTS standard is covered under CSA Group's flexible scope of accreditation)

The combined performance characteristic (U_c,) for LIDoTT with SMART Controller is **3.56mm**
The combined performance characteristic (U_c,) for LIDoTT with MSFM Controller is **2.96mm**

Certification range:

Ultrasonic level sensor: 0 - 1m

The certification applies to the ultrasonic level sensor only with SMART and MSFM controllers and the use of the solar radiation shield as detailed in the instrument manual under part ref. "Part No LIDoTT-SRS-654".

Project No.:	80192577
Certificate No:	CSA MC240396/00
Initial certification:	15 March 2024
Certificate issued:	15 March 2024
Renewal date:	14 March 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

The MCERTS certificate consists of this document in its entirety.
For conditions of use, please consider all the information within.
This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

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 as part of an Event Duration Monitoring system to detect and record the occurrence and duration of discharges from a wastewater system to storm storage or to the environment.

It includes EDMs intended to operate in or with:

- Side weirs, double-side weirs and bell mouth weirs
- Tanks and wet wells
- Other locations suitable for event duration monitoring

This EDM has been categorised as Type A.

Limitations:

i) when using the LIDoTT in an open environment the solar radiation shield, *Part No LIDoTT-SRS-654*, *must* be used.

ii) LIDoTT certification is *not* valid for the pressure sensor activated when measuring levels above the ultrasonic sensor blanking distance.

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

Product Certified

The LIDoTT® measuring system consists of the following parts:

LIDoTT® with ultrasonic level, temperature and pressure sensors with battery pack
SMART Controller (using the “LIDoTT Configuator” application)
MSFM Controller (using the HydroEye AI application)

This certificate applies to all instruments fitted with firmware version 1.5.48 with serial number 1032310000157 for the LIDoTT® and 1312240005640 for the SMART controller, onwards.

For the LIDoTT with SMART, the software used is “Hydroeye AI”.
For the LIDoTT with MSFM, the software used is “DetecData (version no. 2.21.15.4258).

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:

WRc, “Detectronic LIDoTT MCERTS testing”, ref. UC 17401 V5, dated February 2024.
The Laboratory for Verification and Validation (LVV), “MCERTS thermal testing of Detectronic LIDoTT sensor with Smart controller”, ref. ‘Detectronic-001-LVV-29-01-2024, rev. FINAL, dated 29/01/24.
The Laboratory for Verification and Validation (LVV), “MCERTS Direct solar radiation testing of Detectronic LIDoTT sensor with Smart controller”, ref. ‘Detectronic-003-LVV-19-02-2024, rev. FINAL, dated 19/02/24.

The field test was carried out at the manufacturer’s premises on the LIDoTT® with SMART controller only as the MSFM controller had previously undergone MCERTS certification testing for another product.
The field testing was carried out between 27th September 2022 and 19th December 2022.

The following field test set-up was verified by the certification committee:
A chamber with two pumps to simulate surcharge conditions was constructed and was located at the manufacturers MCERTS test facility. During the field test, the chamber would surcharge and drain to simulate WWF and DWF conditions. A LIDoTT® sensor connected to a LIDoTT® SMART/Obadiah data logger was installed. A level sensor was used as the reference which was connected to a MSFM multi-channel data logger to compare the data sets.

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: -10°C to +40°C
Instrument IP rating: IP68 (minimum IP68)
Details of individual performance characteristics are summarised below:

Requirement	Means of achieving	MCERTS specification
Unique designation	LIDoTT Sensor – prefixed with '10323' SMART controller – prefixed with '131224000' MSFM controller – prefixed with '20211' Battery Pack – prefixed with '1312'	clause 3.1.1
Access to controls	SMART controller - unit activated by magnet and then programmed through the Configurator app MSFM Controller - through the WinGPS software via a laptop and USB connection to the unit	clause 3.1.2
Availability of on-site reading	SMART controller - through the Configurator app only available for Android systems. MSFM controller - through the WinGPS software	clause 3.1.3
Fault conditions	Smart Controller – alarm conditions can be programmed on the HydroEye platform MSFM – various error codes can be reported	clause 3.1.4
Indication of loss of supply	SMART controller - An SMS alert can be triggered by a low battery voltage from the software platform	clause 3.1.5
Low battery alarm	SMART controller - An SMS alert can be triggered by a low battery voltage from the software platform	clause 3.1.6
Resistance to fouling	In normal operation, the LIDoTT is non-contact as it is mounted above the water surface, hence fouling risk is minimised	clause 3.1.7
Self-maintenance	The LIDoTT pressure sensor is auto-calibrated from the ultrasonic sensor, otherwise no automated maintenance functions are required	clause 3.1.8
Environmental protection (IP rating)	IP68 for all units	clause 3.1.9
Submersibility of electronics (IP rating)	IP68 for all units	clause 3.1.10
Output functions (Type A)	SMART controller - readings via cloud or Configurator app MSFM controller - readings via cloud or wired connection and WinGPS software	clause 3.1.11
Units of measurement (Type A)	Metric (mm)	clause 3.1.12
Resolution as per Table 1 (Type A)	1mm	clause 3.1.13
Alarm setting resolution 1mm or better (Type A)	1mm	clause 3.1.14
Discharge status (Type B)	Not applicable	clause 3.1.15
Setting level within 2mm (Type B)	Not applicable	clause 3.1.16

Certificate No: CSA MC240396/00
Certificate issued: 15 March 2024

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

Requirement	Means of achieving	MCERTS specification
Ancillary equipment	Batteries, sunshade and mounting brackets are available from the manufacturer.	clause 3.1.17

LABORATORY TESTS	Results expressed as mm of the certification range					MCERTS specification
	<0.5	<1	<2	<5	Other results	
Combined performance Characteristic (U_C)						clause 6.4
LIDoTT sensor with SMART controller					3.56	≤5.0mm
LIDoTT sensor with MSFM controller					2.96	Table 2
Loss of power LIDoTT sensor with SMART controller					All settings retained for tested parameters	Clause 6.3.4
Mean error (*x*) LIDoTT sensor with SMART controller TP1 (50mm) TP2 (250mm) TP3 (500mm) TP4 (750mm) TP5 (950mm) Mean error (*x*) LIDoTT sensor with MSFM controller TP1 (50mm) TP2 (250mm) TP3 (500mm) TP4 (750mm) TP5 (950mm)	 0.08 0.32 -0.30 	 -0.94 -0.66 	 1.04 1.28 1.41 1.08 -1.96	 	 	clause 6.3.5 ≤2.5mm Table 2
Repeatability (U_R) LIDoTT sensor with SMART controller TP1 (50mm) TP2 (250mm) TP3 (500mm) TP4 (750mm) TP5 (950mm) Repeatability (U_R) LIDoTT sensor with MSFM controller TP1 (50mm) TP2 (250mm) TP3 (500mm) TP4 (750mm) TP5 (950mm)	 0.22 0.43 0.35 0.41	 0.67 0.65 0.51 0.52 	 1.22 1.39 	 	 	clause 6.3.5 ≤2.5mm Table 2

Certificate No: CSA MC240396/00
Certificate issued: 15 March 2024

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

LABORATORY TESTS	Results expressed as mm of the certification range					MCERTS specification
	<0.5	<1	<2	<5	Other results	
Supply voltage (X_V) LIDoTT sensor with SMART controller		0.50				clause 6.3.6, 6.3.7. 6.3.8 *≤1.0mm* Table 2
Output impedance (X_O)					Not applicable (Note 1)	clause 6.3.9 *≤1.0mm* Table 2
*Water temperature (X_{FT}) (note 2) *LIDoTT sensor with SMART controller +1ºC to +30ºC LIDoTT sensor with MSFM controller +1ºC to +30ºC	 -0.17	 0.67				clause 6.3.10 *≤1.0mm* Table 2
*Ambient air temperature (X_T) (note 2) *LIDoTT sensor with SMART controller -10ºC to +40ºC LIDoTT sensor with MSFM controller -10ºC to +40ºC	 0.05 0.40					clause 6.3.11 *≤1.0mm* Table 2
Relative humidity (X_{RH}) LIDoTT sensor with SMART controller LIDoTT sensor with MSFM controller	 0.1 0.1					clause 6.3.11 *≤1.0mm* *Table 2*
*Direct solar radiation (X_{SV}) (note 2) LIDoTT ultrasonic sensor			1.0			clause 6.3.12 *≤1.0mm* Table 2
Maximum response time LIDoTT sensor with SMART controller LIDoTT sensor with MSFM controller					 ≤30 seconds ≤30 seconds	clause 6.3.13 *≤30 seconds* Table 2
Data logger timing LIDoTT sensor with SMART controller % of data points Clock error LIDoTT sensor with MSFM controller % of data points Clock error					 100 0 seconds 100 0 seconds	clause 6.3.14 *to be reported*

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

Test	Results	MCERTS specification
FIELD TEST (Note 3) Error of the EDM	Number exceeding ±5mm: 4.2% Maximum difference: 7mm Min difference: 0mm Mean difference: 3.0mm Proportion of errors for at least 90% of the overflow events recorded: **95.8%**	clause 4.6.1 ≤5.0mm Table 2 ≥90%
Up-time	100% (Note 4)	clause 4.6.2 >95%

Note 1: The output impedance test was not applicable as the system has no continuous analogue mA output.

Note 2: The tests denoted by '*' were carried out at the Laboratory for Verification and Validation (LVV) at The University of Sheffield. All other laboratory testing was carried out at WRC.

Note 3: The field test was conducted at the manufacturer's facility and witnessed by a member of the certification committee. Test data was required for the LIDoTT with SMART controller only.

Note 4: Of the total operating time 129,600minutes, 0 minutes, or 0 hours, were attributed to outages. Time lost due to test rig freezing was 10,858 minutes (excluded from outage as this was outside the normal operating parameters).

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts

Description

LIDoTT® is a patented open channel fluid level monitoring apparatus for measuring the level of a fluid.

It comprises of an ultrasonic sensor configured to obtain data indicative of a fluid level below a first threshold level; a pressure sensor configured to obtain data indicative of fluid level above a second threshold level, which is lower than the first threshold level; wherein both the ultrasonic sensor and the pressure sensor are configured to obtain data indicative of the fluid level when the fluid level is between the first threshold level and the second threshold.

Operation of the pressure sensor is not included within this certificate.

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 MC240396.

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.

This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts