PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Ultra 4
with dB3 transducer and remote temperature sensor or dB3 transducer with twin Pulsar sun shields using internal temperature compensation

Manufactured by:

Pulsar Process Measurement Ltd
Cardinal Building
Enigma Commercial Centre
Sandy's Road
Malvern, Worcestershire
WR14 1JJ

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 **0.107%** (**Class 1)**

Certification ranges:

0 to 3m (nominal)

Certification is awarded in respect of the conditions stated in this certificate

Project No.:	80216984
Certificate No:	CSA MC140269/09
Initial Certification:	21 November 2013
This Certificate issued:	16 August 2024
Renewal Date:	02 September 2029

Andrew Young
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 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, 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 CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

Sira Evaluation Report 6740363, dated 20 August 2009
CSA Group Evaluation Report, revised 15/04/2021, Issue 5
WRc, Report ref. UC15114, dated March 2021

Product Certified

The Ultra 4 measuring system consists of the following parts:

- Ultra 4 Controller
- dB3 transducer
- Remote temp sensor (PT100 Class B3), or

- Ultra 4 Controller
- dB3 transducer with twin Pulsar sun shields

This certificate applies to all instruments fitted with software version 1.0.7 onwards, serial number 342732 4405 (Ultra 4 Controller) and 312378/2020 (dB3 level sensor).

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 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 (Note 2)

Test	Results expressed as error % of certification range				Other results	MCERTS specification
	<0.1	<0.2	<0.5	<1.5		
Laboratory Tests - Protection against unauthorised access	The unit is password protected, with a user level and a service level					Clause 3.1.2
Units of measurement	The indicating device and output are scaled in metric units					Clause 3.1.6
Indicating device	The flowmeter incorporates an indicating device, analogue and digital output signal					Clause 3.1.3
Flow computation	The flowmeter incorporates a facility for a user defined stage/discharge curve to be entered					Clause 3.1.11
Combined performance characteristic **With external temperature probe** **With integrated temperature probe** **With Ultra 4 controller**	 **0.054** 	 **0.193** **0.107**				Clause 6.4 ±0.2% **Class 1** Table 7
Mean error With temperature probe With Ultra 4 Controller	 0.001 0.07					Clause 6.3.2 ±0.1% Class 1
Repeatability With temperature probe With Ultra 4 Controller	 0.002 0.03					Clause 6.3.2 0.05%
Resolution	 0.017					Clause 3.1.15 <2mm Class 1
Supply voltage With temperature probe With Ultra 4 Controller	 0.014 0.011				22-28 V dc 100-110 V ac 200-240 V ac	Clause 6.3.3 0.025% Class 1
Output impedance	 0.002				 50-500Ω	Clause 6.3.4 0.025% Class 1
Ambient air temperature with external temperature probe with integrated temperature probe with Ultra 4 Controller	 0.006 0.08 0.014				 -20 to +50°C	Clause 6.3.6 0.25% Class 3

Certificate No: CSA MC140269/09
Certificate issued: 16 August 2024

Test	Results expressed as error % of certification range				Other results	MCERTS specification
	<0.1	<0.2	<0.5	<1.5		
Accuracy of computation	0.026					Clause 6.3.11 0.075% Class 2
User defined stage-discharge equation	0.004				Result not included in combined performance characteristic	Clause 6.3.12 0.025% Class 1
Warm up time	The unit stabilises after energising within 60 seconds					Clause 6.1.2 to be reported
Loss of Power for electronic flowmeters	No changes in pre-set data					Clause 6.3.1 to be reported
Relative humidity with external temperature probe with integrated temperature probe with Ultra 4 Controller	0.006 -0.052	0.15			Result not included in combined performance characteristic	Clause 6.3.6 0.25% Class 3
Direct Solar Radiation with external temperature probe Direct Solar Radiation with integrated temperature probe	0.0312	0.143				Clause 6.3.10 0.15% Class 2
Response time					<25s	Clause 6.3.19 <30 seconds
Field Tests Error under field test conditions With external temperature probe With integrated temperature probe With Ultra 4 Controller	Error range -0.15% to +0.10% Field test error is <0.2% for 100% of readings Error range 0.00% to -3.875% Field test error is <0.5% for 93.33% of readings Error range 0.00% to 0.763% Field test error of <0.2% for 91.67% of readings					Clause 7.3 0.2% Class 1
Up time					100%	Clause 7.4 >95%
Maintenance					none	Clause 7.5 to be reported

Certificate No: CSA MC140269/09
Certificate issued: 16 August 2024

Note 1:	The following tests are not applicable to the flowmeter:		
6.3.5	Fluid temperature	6.3.15	Ancillary devices
6.3.7	Incident light	6.3.16	Effect of conduit material
6.3.8	Sensor location	6.3.17	Effect of conduit size
6.3.9	Presence of stray currents	6.3.18	Fill level
6.3.13	Bi-directional flow	6.3.20	Vibration
6.3.14	Flow reversal		
Note 2:	Revision '/08' of this certificate states the test results for the Ultra 4 Controller, where applicable. Existing data is based on the 'Flow Star'.		
Note 3:	The certficate, ref. 'MC140269/07' relates to the 'Flow Star' in its entirety		

Description

The Ultra 4 open channel controller has four volt-free contacts for use as flow or level alarms, control functions, or assignable to pulse by volume or time units for remote recording or sampler operation. The controller is housed in a polycarbonate IP65 enclosure which has an isolated mA output proportional to 'flow rate', and an RS232 connection for parameter upload and downloading through a PC should it be required. Easy prompt-led set up, with preset worldwide weirs and flumes configured and they offer a 32-point linearisation to suit head/flow calculations. Internally there are 3 totalisers, two non-resettable, the other being resettable in the field if needed. Other communication options are Hart modem, Modbus and Profibus V0 or V1 via 485 connection and standard SD card data logging.

The non-contacting dB3 transducer uses 125 kHz pulses to measure liquid level to a depth of 3m from the transducer face. The narrow beam angle transducer is IP68 ATEX certified and can be separated by up to 1000m from the controller. If internal temperature compensation is to be used the dB3 must be fitted with two Pulsar sun shields.

Optionally, a remote temperature sensor (PT100 Class B3) could be fitted in a shaded area between the transducer face and the liquid being measured. This measures the ambient air temperature, to allow correction in the controller for 'speed of sound changes' resulting from sensed changes in the air temperature.

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 MC140269/09.

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.