PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

600 XL, 600XL V2, 600XLM, 600XLM V2 and 600 OMS Multiparameter Sonde with 6500 Environmental Process Monitor

manufactured by:

YSI Inc.

1700/1725 Brannum Lane
Yellow Springs
Ohio, 45387

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 2 – On-line analysers, Version 2.2 dated March 2008

Certification Ranges :

DO:	0 to 200% saturation
pH	2 to 12
Turbidity	0 to 500 NTU

Project No:	674/0134
Certificate No:	Sira MC080134/00
Initial Certification:	4 November 2008
This Certificate Issued	4 November 2008
Renewal Date:	3 November 2013

Technical Director

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
12 Acorn Industrial Park, Crayford Road, Crayford
Dartford, Kent, UK, DA1 4AL
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Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the water monitoring system is suitable for the process on which it will be installed.

On the basis of the assessment this instrument is considered suitable for use on treated wastewater, untreated wastewater and receiving water applications.

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:

Environment Agency Warrington; Report Ref EA-MCERTS-06 issue 03 dated October 2008

Environment Agency Warrington; Report Ref EA-MCERTS-07 V1 dated May 2008, with Addendum TR-02, issue 01 dated October 2008,

The Evaluation of a YSI 6820 Sonde and a 610-DM Logger / Display Unit ; C.J.Wright ; September 1998 ; Environment Agency Instrument Evaluation Centre report – NCI.EV-98.3

Evaluation of a YSI 6600 EDS (Extended Deployment System) in the Fleet Lagoon, Dorset, England ; EA South Wessex Monitoring and Data Team ; October 2003

Environmental Technology Verification Report – YSI inc. 6600 EDS Multi-parameter Water Quality Probe / Sonde ; J Myers et. al. ; July 2004 ; Battelle for US-EPA

Product Certified

The measuring system consists of the following parts:

600 XL, 600XL V2, 600XLM, 600XLM V2 or 600 OMS Multiparameter Sonde with 6500 Environmental Process Monitor.

This certificate applies to all instruments fitted with software version 3.06 (serial number 00A onwards).

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -5ºC to +45ºC

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 testing detailed below has been conducted on the 6600 EDS model with 6500 environmental process monitor and is deemed equivalent by the certification committee for the models stated on this certificate.

Please note, pH stated in pH units, turbidity stated as % span, Dissolved Oxygen (DO) stated as % reading.

Test	Results expressed as % of the certification range				Other results	MCERTS specification	
	<0.5	<1	<2	<5			
Combined performance characteristic							
pH	0.23					pH	0.3
Turbidity				2.25		Turbidity	2.5
DO Rapid Pulse				5.05		DO	6
DO ROX				5.87			
Mean Error							
pH	0.17					pH	0.2
Turbidity			1.11			Turbidity	2
DO Rapid Pulse			1.92			DO	5
DO ROX				3.80			
Linearity							
pH	0.06					pH	0.1
Turbidity		0.55				Turbidity	1
DO Rapid Pulse			1.93			DO	2.5
DO ROX				2.05			

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability						
pH	0.02					pH 0.1
Turbidity	0.19					Turbidity 1
DO Rapid Pulse				2.21		DO 2.5
DO ROX			1.34			
Sample matrix effects/ interference						
pH					See Note 1	pH – to be reported
Turbidity	1.6				See Note 1	Turbidity – to be reported
DO Rapid Pulse		0.93				DO 2.5
DO ROX		0.57				
Drift						
pH	0.03					pH 0.1
Turbidity		0.99				Turbidity 1
DO Rapid Pulse			1.89			DO 2.5
DO ROX				2.11		
Output impedance						
pH	0.02					pH 0.05
Turbidity	0.21					Turbidity 0.5
DO Rapid Pulse		0.68				DO 1
DO ROX		0.65				
Supply voltage						
pH	0.00					pH 0.05
Turbidity	0.05					Turbidity 0.5
DO Rapid Pulse	0.07					DO 1
DO ROX	0.08					

Test	Results expressed as % of the certification range				Other results	MCERTS specification	
	<0.5	<1	<2	<5			
Ambient temperature							
pH	0.07					pH	0.1
Turbidity		0.55			See Note 2	Turbidity	1
DO Rapid Pulse		0.73			See Note 2	DO	2.5
DO ROX		0.73			See Note 2		
Relative humidity and temperature							
pH	0.08					pH	0.1
Turbidity		0.67			See Note 2	Turbidity	1
DO Rapid Pulse		0.89			See Note 2	DO	2.5
DO ROX		0.89			See Note 2		
Incident light					See Note 3		
Sample temperature							
pH	0.03					pH	0.1
Turbidity		0.91				Turbidity	1
DO Rapid Pulse		0.95				DO	2.5
DO ROX			1.03				
Sample flow-rate							
pH	0.03					pH	0.05
Turbidity	0.37				See Note 4	Turbidity	0.5
DO Rapid Pulse	0.15					DO	1
DO ROX		0.63			See Note 4		
Sample pressure					See Note 5		

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
pH					<5s	Value to be reported
Turbidity					<5s	
DO Rapid Pulse					96s	
DO ROX					23s	
Initial warm up						
pH					40s	Value to be reported
Turbidity					<5s	
DO Rapid Pulse					35s	
DO ROX					45s	
Loss of power					Pass – all data & settings correct after 30 days	Value to be reported

Note 1: This test was deemed not applicable for the pH sensor by the certification committee.

The interference result stated for turbidity is the % error of span calculated for a 125NTU standard compared with a 125NTU standard spiked with 15 colour units. The % span error at 30 colour units compared to 15 colour units is 5.3%.

Note 2: Only the pH sensor was tested as it is a high impedance probe, and it has been agreed by the certification committee that any changes due to temperature will show up on this probe. The results stated for turbidity and DO have been extrapolated from the pH results.

Note 3: Incident light test has not yet been conducted on the instrument, and has not been included in the combined performance characteristic.

Note 4: This was tested at low flow only for DO ROX and turbidity to see if low flow rates have an effect on the sensor reading.

Note 5: Test not applicable as the products are only certified for use on non-pressurised applications.

Field Test results:

The testing detailed below has been conducted on the 6600 sonde, 6600 V2 sonde and 6920 sonde with 6500 environmental process monitor and is deemed equivalent by the certification committee for the models stated on this certificate.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Error under field conditions						
pH					100%	>90% of errors
Turbidity					100%	≤ the U_C value
DO Rapid Pulse					100%	in table 3 shall
DO ROX					96%	be calculated
Response time (start)						
pH					5s	
Turbidity					23s	To be
DO Rapid Pulse					55s	Reported
DO ROX					58s	
Response time (end)						
pH					5s	
Turbidity					20s	To be
DO Rapid Pulse					64s	Reported
DO ROX					83s	
Up-time						
pH					100%	
Turbidity					95.4%	>95%
DO Rapid Pulse					99.9%	
DO ROX					95.4%	
Maintenance	Routine maintenance only					To be reported

Description:

The YSI 600 series is a family of multiparameter sondes used to measure water quality in a variety of difference applications. The 600 series is available in five designs, YSI 600XL (rapid pulse dissolved oxygen, no optical port, without batteries), YSI 600XLM (rapid pulse dissolved oxygen, no optical port, with batteries), 600XL-V2 (optical port, without batteries), 600XLM-V2 (optical port, with batteries) and 600OMS (no pH port, options with or without battery packs) with the ability to measure up to ten water quality parameters simultaneously.

When used with the 6500 monitor, the 600 series sonde is a complete sampling and monitoring water quality station providing continuous data from a compact system measuring Temperature, Conductivity, pH, Turbidity and Dissolved oxygen. Other parameters available include chlorophyll, blue-green algae, salinity, redox, total dissolved solids, depth and level.

The 6500 provides the user interface, local display and can be configured to either interface direct with SCADA, using eight scaleable 4-20mA outputs or MODBUS.

Working in fresh, polluted, brackish or seawater, the YSI 600 series is an IP68 sonde deployable to depths of 61m.

The 600 series sonde is capable of operating in a self-powering mode from an internal battery operated supply for 30 days or more with a full sensor payload at a 15-minute sampling interval. The sonde also has the capability of being powered by an external 12VDC-power supply through an interface cable. Batteries are removable via an external hatch without opening the sonde. Standard memory is 384 kilobytes of non-volatile flash disk capable of storing 150,000 individual readings. Loss of battery power will not cause loss of memory.

The “quick select guide” details the sensors available for all 600 series sonde options.

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UKAS PRODUCT CERTIFICATION 011

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Environment Agency

YSI 6-series quick select guide

Features/Parameters	V2 Sondes					600 Sondes			
	6600	6600EDS	6920	6820	600OMS	600R	600XL	600XLM	600LS
Field-replaceable probes	●	●	●	●	●		●	●	
RS-232 & SDI-12 standard	●	●	●	●	●	●	●	●	●
Fits 2" wells					●	●	●	●	●
Internal memory	●	●	●	●	●	●	●	●	●
Internal power (batteries)	●	●	●		■			●	■
Flow cell	■	▲	■	■		■	■	■	
Ammonium/ammonia*	□		■	■			▲	▲	
Blue green algae	■	■	■	■	■		□	□	
Chloride*	□		■	■			▲	▲	
Chlorophyll	■	■	■	■	■		□	□	
Conductivity	●	●	●	●	●	●	●	●	■
Depth	■	■	■	■	■		■	■	
Dissolved oxygen	□	■	□	□		■	■	■	
Dissolved oxygen, optical	■	■	■	■	■		□	□	
Free chlorine									
Nitrate*	□		■	■			▲	▲	
Open channel flow**	■	■	■	■	■		■	■	●
ORP	■	■	■	■			■	■	
PAR (Photosynthetically Active Radiation)	▲	▲							
pH	■	■	■	■		■	■	■	
Resistivity**	●	●	●	●	●	●	●	●	■
Rhodamine	■	■	■	■	■		□	□	
Salinity	●	●	●	●	●	●	●	●	■
Specific conductance**	●	●	●	●	●	●	●	●	■
Temperature	●	●	●	●	●	●	●	●	●
Total dissolved solids**	●	●	●	●	●	●	●	●	■
Turbidity	■	■	■	■	■		□	□	
Vented level	■	■	■	■	■		■	■	●

* Freshwater only. ** Calculated parameters.

● Standard ■ Customer Selectable ▲ Special Order

■ Available only on 6600 V2-2 □ Available only on 6920 V2-1 or 6820 V2-1

□ Available only on 600XL V2 or 600XLM V2

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 MC 080134/00

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.