

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

6600, 6600 V2 and 6600EDS 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 3.1 dated August 2010**

Certification Ranges :

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

Project No. : 674/0134
Certificate No : Sira MC080132/03
Initial Certification : 04 November 2008
This Certificate issued : 04 November 2014
Renewal Date : 03 November 2018

Emily Alexander
Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service

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For conditions of use, please consider all the information within.*

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Registered Office: Rake Lane, Eccleston, Chester, UK CH4 9JN

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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

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:

6600, 6600 V2 or 6600EDS Multiparameter Sonde with 6500 Environmental Process Monitor

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

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -5°C to +45°C

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 | | | | | <0.3pH |
| Turbidity | | | | 2.25 | | <2.5% |
| DO Rapid Pulse | | | | | 5.05 | <6.0% |
| DO ROX | | | | | 5.87 | <6.0% |
| Mean error | | | | | | |
| pH | 0.17 | | | | | <0.2pH |
| Turbidity | | | 1.11 | | | <2.0% |
| DO Rapid Pulse | | | 1.92 | | | <5.0% |
| DO ROX | | | | 3.80 | | <5.0% |
| Linearity | | | | | | |
| pH | 0.06 | | | | | <0.1pH |
| Turbidity | | 0.55 | | | | <1.0% |
| DO Rapid Pulse | | | 1.93 | | | <2.5% |
| DO ROX | | | | 2.05 | | <2.5% |
| Repeatability | | | | | | |
| pH | 0.02 | | | | | <0.1pH |
| Turbidity | 0.19 | | | | | <1.0% |
| DO Rapid Pulse | | | | 2.21 | | <2.5% |
| DO ROX | | | 1.34 | | | <2.5% |

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| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|-----------------------|---|------|------|------|---------------|----------------------|
| | <0.5 | <1 | <2 | <5 | | |
| Sample matrix effects | | | | | Note 1 | |
| Turbidity | | | 1.6 | | | - |
| DO Rapid Pulse | | 0.93 | | | | <1.0% |
| DO ROX | | 0.57 | | | | <1.0% |
| Drift | | | | | | |
| pH | 0.03 | | | | | <0.1pH |
| Turbidity | | 0.99 | | | | <1.0% |
| DO Rapid Pulse | | | 1.89 | | | <2.5% |
| DO ROX | | | | 2.11 | | <2.5% |
| Output impedance | | | | | | |
| pH | 0.02 | | | | | <0.05pH |
| Turbidity | 0.21 | | | | | <0.5% |
| DO Rapid Pulse | | 0.68 | | | | <1.0% |
| DO ROX | | 0.65 | | | | <1.0% |
| Supply voltage | | | | | | |
| pH | 0.00 | | | | | <0.05pH |
| Turbidity | 0.05 | | | | | <0.5% |
| DO Rapid Pulse | 0.07 | | | | | <1.0% |
| DO ROX | 0.08 | | | | | <1.0% |
| Ambient temperature | | | | | | |
| pH | 0.07 | | | | | <0.1pH |
| Turbidity | | 0.55 | | | Note 2 | <1.0% |
| DO Rapid Pulse | | 0.73 | | | Note 2 | <2.5% |
| DO ROX | | 0.73 | | | Note 2 | <2.5% |

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| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|-----------------------------------|---|------|------|----|---------------|----------------------|
| | <0.5 | <1 | <2 | <5 | | |
| Relative humidity and temperature | | | | | | |
| pH | 0.08 | | | | | <0.1pH |
| Turbidity | | 0.67 | | | Note 2 | <1.0% |
| DO Rapid Pulse | | 0.89 | | | Note 2 | <2.5% |
| DO ROX | | 0.89 | | | Note 2 | <2.5% |
| Incident light | | | | | | |
| All parameters | | | | | Note 3 | |
| Sample temperature | | | | | | |
| pH | 0.03 | | | | | <0.1pH |
| Turbidity | | 0.91 | | | | <1.0% |
| DO Rapid Pulse | | 0.95 | | | | <2.5% |
| DO ROX | | | 1.03 | | | <2.5% |
| Sample flow-rate | | | | | | |
| pH | 0.03 | | | | | <0.05pH |
| Turbidity | 0.93 | | | | Note 4 | <0.5% |
| DO Rapid Pulse | 0.15 | | | | | <1.0% |
| DO ROX | | 0.63 | | | Note 4 | <1.0% |
| Sample pressure | | | | | | |
| All parameters | | | | | Note 5 | |
| Response time | | | | | | |
| pH | | | | | <5s | To be reported |
| Turbidity | | | | | <5s | |
| DO Rapid Pulse | | | | | 96s | |
| DO ROX | | | | | 23s | |

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| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|------------------------------|---|----|----|----|----------------------------------|-------------------------------------|
| | <0.5 | <1 | <2 | <5 | | |
| Initial warm up | | | | | | |
| pH | | | | | 40s | To be reported |
| Turbidity | | | | | <5s | |
| DO Rapid Pulse | | | | | 35s | |
| DO ROX | | | | | 45s | |
| Loss of power | | | | | | |
| All parameters | | | | | Pass- data correct after 30 days | To be reported |
| Error under field conditions | | | | | | |
| pH | | | | | 100% | >90% of errors to be ≤ the Uc value |
| Turbidity | | | | | 100% | |
| DO Rapid Pulse | | | | | 100% | |
| DO ROX | | | | | 96% | |
| Response time | | | | | | |
| pH | | | | | 5s | To be reported |
| Turbidity | | | | | 23s | |
| DO Rapid Pulse | | | | | 64s | |
| DO ROX | | | | | 83s | |
| Up-time | | | | | | |
| pH | | | | | 100% | >95% |
| Turbidity | | | | | 95.4% | |
| DO Rapid Pulse | | | | | 99.9% | |
| DO ROX | | | | | 95.4% | |
| Maintenance | | | | | | |
| All parameters | Routine maintenance only. | | | | | To be reported |

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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.

EXPIRED

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Description

The YSI 6600 series is a family of multiparameter sondes used to measure water quality in a variety of difference applications. The 6600 series is available in three designs, YSI 6600 (two optical ports), YSI 6600EDS (two optical ports) and YSI 6600V2 (four optical ports) with the ability to measure up to seventeen water quality parameters.

When used with the 6500 monitor, the 6600 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 include chlorophyll, blue-green algae, salinity, redox, total dissolved solids, depth, level, PAR, ammonia, ammonium, chloride and nitrate.

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 6600 is an IP68 sonde deployable to depths of 61m.

The sonde is capable of operating in a self-powering mode from an internal battery operated power supply for 45 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.

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 MC080132/01
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.

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