

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***T100 UV Fluorescent SO₂ Analyser /
100E UV Fluorescent SO₂ Analyser***

manufactured by:

Teledyne API
9970 Carroll Canyon Road
San Diego
California
92131
USA

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

**MCERTS Performance Standards for Continuous Ambient Air
Quality Monitoring Systems, Version 10, dated June 2016**

Certification ranges:

SO₂ 0 to 1,000 µg/m³

Project number: 80060100
Certificate number: Sira MC050067/08
Initial certification: 27 October 2005
This certificate issued: 21 December 2020
Renewal date: 26 October 2025



Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service

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*The MCERTS certificate consists of this document in its entirety.
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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 technical guidance on monitoring, available at www.mcerts.net

All tests have been conducted in accordance with BS EN 14212. On the basis of these tests this certificate is valid when the instrument is used for urban air quality monitoring and similar 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:

TÜV Essen Report ref: 389005/01 dated 09/12/1992
Teledyne- API, Modification of Method EQSA-0495-100 submitted to US EPA in support or equivalency designation (Model API 100 E) dated February 2003
TÜV-Report 936/21205926/B1, Cologne, 22.06.2007
TÜV-Report 936/21218734/A, Cologne, 11 October 2012
TÜV- Report Addendum II 936/21221556/A, Cologne, March 16, 2013
TÜV Letter Teledyne_NumaView_22012016

Product certified

The system tested comprised:

A Model 100E/T100 Ultraviolet (UV) fluorescence SO₂ analyzer

This certificate applies to all instruments fitted with the following software:

- version 041630000 revision C3 onwards (serial number 278 onwards) for the 100E.
- version 041630001 build 46 onwards and/or NUMAview™ software for the T100 (serial number 51 onwards).

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Certified performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: 5 to 40°C

Performance values are expressed as a percentage of the certification range, except for availability and analysis function.

Test	Results expressed as % of measured value				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Repeatability at zero					0.3 nmol/mol	≤1nmol/mol
Repeatability at hourly limit value					0.9 nmol/mol	≤3 nmol/mol
Residual lack of fit at zero					0.47nmol/mol	≤5 nmol/mol
Lack of fit (largest residual from the linear regression line)	-0.4					≤4%
Sensitivity coefficient to sample gas pressure					0.06 nmol/mol/kPa	≤2 nmol/mol/kPa
Sensitivity coefficient to sample gas temperature					0.013 nmol/mol/K	≤1.0 nmol/mol/K
Sensitivity coefficient to surrounding air temperature					0.05 nmol/mol/K	≤1.0 nmol/mol/k
Sensitivity coefficient to electrical supply voltage					0.02 nmol/mol/V	≤0.3 nmol/mol/V
Interference by H ₂ O (at concentration of 19 mmol/mol)					-1.7 nmol/mol	≤10 nmol/mol
Interference by H ₂ S (at concentration of 200nmol/mol)					0.9 nmol/mol	≤5 nmol/mol

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Test	Results expressed as % of measured value				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Interference by NH ₃ (at concentration of 200 nmol/mol)					1.1 nmol/mol	≤5 nmol/mol
Interference by NO (at concentration of 500 nmol/mol)					3.2 nmol/mol	≤5 nmol/mol
Interference by NO ₂ (at concentration of 200 nmol/mol)					0.8 nmol/mol	≤5 nmol/mol
Interference by m-xylene (at concentration of 1 µmol/mol)					1.2 nmol/mol	≤10 nmol/mol
Averaging effect					2.4%	≤7%
Short term zero drift (over 12h)					0.4 nmol/mol	≤2 nmol/mol
Short term span drift (over 12h)					-1.4 nmol/mol	≤6 nmol/mol
Response time (rise)					80 s	≤180 s
Response time (fall)					80 s	≤180 s
Difference between rise and fall time					5 s	≤10 s
Reproducibility under field conditions Note 1					4.8%	≤5% averaged over three month period
Long term zero drift (over 3months) Note 1					1.35 nmol/mol	≤4 nmol/mol
Long term span drift (over 3 months) Note 1			1.56			≤5% of the max of certification range
Period of unattended operation Note 1					4 weeks	3 months not less than 2 weeks
Availability (data capture) Note 1					98.6%	>90%
Combined performance characteristic					11.75 %	≤15%

Note 1: Field test: The 100E analyser was assessed on the basis of a three month field trial on an urban field test site.

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Description

The instrument uses UV fluorescence to provide measurements of low level SO₂. Stability of the measurements is achieved with the use of an optical shutter to compensate for photo-multiplier tube drift and a reference detector to correct for changes in UV lamp intensity. The analyser is designed with elements that minimise inaccuracies due to interferences. The software provides real time indication of a number of operational parameters and provides automatic alarms if diagnostic limits are exceeded. The instrument also includes built in data acquisition capability providing for the logging of up to one million records including instantaneous concentration values, calibration data and operating parameters such as flow, pressure and lamp intensity.

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'.
2. The design of the product certified is held and maintained by TUV Rheinland for certificate No. Sira MC050067/08
3. If a certified product is found not to comply, Sira 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 Sira certificates'.
5. This document remains the property of Sira and shall be returned if requested by Sira.

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