

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***testo 350 portable flue gas analyser***

Manufactured by:

### **Testo SE & Co. KGaA**

Testo-Strasse 1  
79853 Lenzkirch  
Germany

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

### **MCERTS Performance Standards for Handheld Emission Monitoring Systems (HEMs), Version 4 dated September 2018**

#### Certification Ranges :

O <sub>2</sub>	0 to 25 %vol.	
CO	0 to 500 ppm	0 to 5000 ppm
NO	0 to 300 ppm	0 to 3000 ppm
NO <sub>2</sub>	0 to 500 ppm	
SO <sub>2</sub>	0 to 2000 ppm	

Project No. : 16A29953/70190221  
Certificate No : Sira MC090159/05  
Initial Certification : 13 October 2009  
This Certificate issued : 31 October 2018  
Renewal Date : 27 October 2023

Emily Alexander  
Environmental Project Engineer

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

Unit 6, Hawarden Industrial Park  
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*The MCERTS certificate consists of this document in its entirety.  
For conditions of use, please consider all the information within.*

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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](http://www.mcerts.net)*

## 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:

Environmental Technology Verification Report (under cooperative agreement with US EPA), dated March 2003

Germanischer Lloyd Hamburg, verified report 42-967-50/0608 dated June 2008

Testo AG Report No. 16-750-15/1211-ST version V1.1 dated 05 March 2013

Testo AG Report No. 16-799-24, version V1.0 dated 15 July 2013

Testo AG Report No. 17-750-15/SO2 version V1.0 dated 02 October 2013.

## Product Certified

The testo 350 measuring system consists of the following parts:

- Testo 350 Analyser Box
- Testo 350 Control Unit
- Connection cable between Analyser Box and Control Unit
- Gas sampling probe with exchangeable probe pipe and sampling line

This certificate applies to all instruments fitted with software version 1.07 (serial number 2061212) onwards.

For the original model, the testo 350 XL, the certificate applies to all instruments fitted with software version 2.01 (serial number 1183408 onwards).

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +8°C to +40°C  
Instrument IP rating: IP40

Results are expressed as a percentage of certification ranges O<sub>2</sub> 0 to 25 %<sup>vol.</sup>, CO 0 to 500 ppm, NO 0 to 300 ppm, NO<sub>2</sub> 0 to 500 ppm & SO<sub>2</sub> 0 to 2000 ppm, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Warm up time					85 secs	To be reported
Response time						
O <sub>2</sub> (0 to 25%vol)					20s	<200s
CO (0 to 500ppm)					32s	<200s
NO (0 to 300 ppm)					10s	<200s
NO (0 to 3000ppm)					20s	<200s
NO <sub>2</sub> (0 to 500 ppm)					18s	<200s
SO <sub>2</sub> (0 to 2000ppm)					27s	<200s
Repeatability standard deviation at zero point					Note 1	
O <sub>2</sub>	0.00					<±0.4%vol
CO	0.08					<±5%
NO	0.18					<±5%
NO <sub>2</sub>	0.03					<±5%
SO <sub>2</sub>	0.08					<±5%
Repeatability standard deviation at span point					Note 1	
O <sub>2</sub>	0.00					<±0.4%vol
CO	0.33					<±5%
NO	0.25					<±5%
NO <sub>2</sub>	0.06					<±5%
SO <sub>2</sub>	0.10					<±5%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Lack-of-fit						
O <sub>2</sub> (0 to 25%vol)	0.31					<±0.4%vol
CO (0 to 500 ppm)	0.14					<±5%
CO (0 to 5000 ppm)		0.52				<±5%
NO (0 to 300 ppm)		-0.72				<±5%
NO (0 to 3000 ppm)		-0.59				<±5%
NO <sub>2</sub> (0 to 500 ppm)	0.20					<±5%
SO <sub>2</sub> (0 to 500 ppm)	0.27					<±5%
SO <sub>2</sub> (0 to 2000 ppm)	0.13					<±5%
Influence of ambient temperature at zero point						
O <sub>2</sub>	0.00					<±0.8%vol
CO	0.20					<±5%
NO	0.33					<±5%
NO <sub>2</sub>	0.04					<±5%
SO <sub>2</sub>	0.40					<±5%
Influence of ambient temperature at span point						
O <sub>2</sub>	0.00					<±0.8%vol
CO			1.80			<±5%
NO		1.00				<±5%
NO <sub>2</sub>				2.58		<±5%
SO <sub>2</sub>				-4.00		<±5%
Cross sensitivity at zero point:						
O <sub>2</sub>	0.00					<±0.8%vol
CO	0.28					<±5%
NO	0.30					<±5%
NO <sub>2</sub>	-0.07					<±5%
SO <sub>2</sub>	0.00				Note 2	<±5%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross sensitivity at span point:					Note 3	
O <sub>2</sub>	0.00					<±0.8%vol
CO	0.28					<±5%
NO	0.43					<±5%
NO <sub>2</sub>	0.19					<±5%
SO <sub>2</sub>		0.65				<±5%
Zero drift					Note 4	
O <sub>2</sub>	0.00					<±0.3%vol
CO	0.30					<±3%
NO	0.03					<±3%
NO <sub>2</sub>	0.08					<±3%
SO <sub>2</sub>	0.20					<±3%
Span drift					Note 4	
O <sub>2</sub>	0.00					<±0.3%vol
CO	0.36					<±3%
NO	-0.37					<±3%
NO <sub>2</sub>			1.48			<±3%
SO <sub>2</sub>	0.40					<±3%

Note 1: Repeatability data has been taken from 6 readings using detection limit data, except oxygen which has been taken from 3 readings.

Note 2: Cross sensitivity at zero for SO<sub>2</sub> tested interferents:

CO<sub>2</sub>, H<sub>2</sub>, NH<sub>3</sub>, NO, SO<sub>2</sub> & HC mix

Note 3: Cross sensitivity at zero and span tested interferents:

**O<sub>2</sub>:** H<sub>2</sub>O, CO, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO, NO<sub>2</sub>, NH<sub>3</sub>, SO<sub>2</sub> (low and high range) & HCl (low and high range)

**CO:** O<sub>2</sub>, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO, NO<sub>2</sub>, NH<sub>3</sub>, SO<sub>2</sub> (low and high range) & HCl (low and high range).

**NO:** O<sub>2</sub>, H<sub>2</sub>O, CO, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO<sub>2</sub>, NH<sub>3</sub>, SO<sub>2</sub> (low range) & HCl (low range)

**NO<sub>2</sub>:** O<sub>2</sub>, H<sub>2</sub>O, CO, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO, NH<sub>3</sub>, SO<sub>2</sub> (low range) & HCl (low range).

**SO<sub>2</sub>:** CO, CH<sub>4</sub>, N<sub>2</sub>O, NO, NO<sub>2</sub>, NH<sub>3</sub> & HCl (span only, for cross sensitivity at zero interferents see note 2)

Note 4: Zero and span drift results are derived from measurements taken before and after the lack-of-fit test.

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## Description

The testo 350 portable flue gas analyser is a self contained portable emission analyser system which can be configured with up to 6 sensors for measurement of gases including O<sub>2</sub>, CO, CO<sub>2</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S and hydrocarbons in combustion emissions from engines, turbines, boilers, burners and other combustion sources.

The MCERTS certified testo 350 configuration measures O<sub>2</sub>, CO, NO, NO<sub>2</sub> and SO<sub>2</sub> and is certified over the ranges stated on the front of the certificate.

The testo 350 uses electrochemical sensors that are temperature controlled and are designed to operate over an ambient temperature range of -5°C to +45°C.

The testo 350 weighs approximately 4.8kg and has an automatic sample conditioning system that includes a Peltier cooler, moisture removal pump, and patented non-heated sample line to provide representative samples from a range of combustion sources.

The entire system operates independently on li-ion batteries, or it can be connected to AC power (100 to 240V, 50 to 60 Hz) or DC power (11 to 40V). A handheld control unit can operate the analyser "docked" in the analyser unit or remotely from the base unit via a data cable or wireless Bluetooth communication.

The control unit provides the user with a simple interface and communications. Pull down menu selections, user-defined function buttons, and/or a computer interface provides access to all operations of the system. Automatic programs for unattended operation facilitate remote, event driven, and/or long-term testing.

A bluetooth printer provides documentation of test results, while internal data logging of up to 250,000 data points can be programmed. Data retrieval options include an onboard menu system and a computer download procedure; data sets can be stored in files and converted into standard spreadsheets and charts. Internal calculations may be performed automatically. In addition to gas concentrations the unit provides on-screen information such as O<sub>2</sub> reference corrections (freely selectable), combustion efficiency, excess air, flow, mass-emissions (kg per hour, etc.), and flue gas loss.

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## 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 MC090159/02
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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