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PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

3000HM Flame Ionisation Detector 3010 & 3030 Portable Flame Ionisation Detector

manufactured by:

Signal Group Ltd
12 Doman Road
Camberley
Surrey, UK
GU15 3DF

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

**MCERTS Performance Standards for Continuous Emission
Monitoring Systems, Version 2, Revision 1 (April 2003)**

Certification Ranges :

TOC	0 to 15 mgC/m ³ 0 to 500 mgC/m ³
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Project No:	674/0099
Certificate No:	Sira MC 060078/03
Initial Certification:	12 April 2006
This Certificate Issued	23 August 2011
Renewal Date:	11 April 2011

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

Tel: 01322 520500 Fax: 01322 520501

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Approved Site Application

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications.

Any potential user should ensure, in consultation with the manufacturer, that the emission monitoring system is suitable for the process on which it will be installed. For general guidance on stack emission monitoring techniques refer to Environment Agency Technical Guidance Note M2: Monitoring of stack emissions to air. This is available on the Agency's website at www.mcerts.net

Fuel type H₂/He mix was used during the field test.

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:

NPL Report Ref: E03100275 Signal 01 dated 13/05/05
AEA Report Ref: AEAT/ENV/R/2127/ Issue 01 dated 03/03/06

Product Certified

The 3000HM measuring system consists of the following parts:

- 3000HM FID analyser
- Heated sample line manufactured by Signal
- Model 540 Heated line controller
- Moxa N-port 56616 Device Server } provided solely for use during the field trial
- Software Model 102 Version 2 } provided solely for use during the field trial

The Signal 3010 MiniFID and the Signal 3030 portable heated total hydrocarbon (THC) analysers use flame ionisation detection in the same way as the Signal 3000HM to measure levels of THC in the sample gas (see description for further details).

This certificate applies to all instruments fitted with the following software version and serial numbers:

- 3000HM software version 1.17 onwards (serial number 16675 onwards)
- 3010 serial version 15327 onwards
- 3030 software version 1-02 onwards (serial number 16991 onwards)

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: 5°C to +40°C

Unless otherwise stated the evaluation was carried out using two model 3000HM FID instruments both having the certification range 0 to 15 mgC/m³.

Test	Results expressed as % of certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Linearity (0 to 15mgC/m ³)					0.11mgC/m ³	±<0.4mgC/m ³
Linearity (0 to 500mgC/m ³)	0.4					<5%
Cross-sensitivity (to H ₂ O, CO, CO ₂ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl)					-0.659mgC/m ³ See Note 1	±<1.0mgC/m ³
Temperature dependent zero shift	0.3					<0.3%/°C
Temperature dependent span shift	0.3					<0.3%/°C
Response time (0 to 15mgC/m ³)					32s	60s
Response time (0 to 500mgC/m ³)					24s	60s
Detection Limit					0.05mgC/m ³	±<0.4mgC/m ³
Mains voltage (10V increments, varying voltage from 230V to 190V and then 230V to 250V)			1.8			<2%
Effect of oxygen (synergism)					0.69mgC/m ³	±<0.8mgC/m ³
Range of response factors:						
N-Butane					0.975	0.90 – 1.10
Ethyl Acetate					0.625	0.50 – 1.00
Isopropanol					0.743	0.70 – 1.00
N-Heptane					0.911	0.90 – 1.10
P-Xylene					0.906	0.85 – 1.10
Benzene					0.889	0.85 – 1.10
Toluene					0.849	0.85 – 1.10

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Test	Results expressed as % of certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Range of response factors (continued):						
Methane					1.075	0.90 – 1.10
Dichloromethane					0.931	0.75 – 1.15
Isobutyl Acetate					0.668	0.50 – 1.00
Chlorobenzene					0.941	0.75 – 1.15
Cyclohexane					0.883	0.90 – 1.10
Ethyl Benzene					0.871	0.85 – 1.10
Acetylene					1.024	0.90 – 1.10
Tetrachloroethylene					0.877	0.75 – 1.15
Range of response factors (0 to 500 mg/m ³)						
Acetone					0.801	0.70 – 1.00
Zero drift during field test ^{Note 2}			1.67			<2%/week
Span drift during field test ^{Note 2}			2.48			<4%/week
Analysis function (field) ^{Note 2}					95.4%	>95%
Availability ^{Note 2}					100%	>95%
Vibration test (10 to 60Hz (0.3mm), 60Hz to 150Hz at 19.6m/s ²)					Test not applicable as not stack-mounted	To be reported
Reproducibility ^{Note 2}					167.1	>30
Maintenance Interval ^{Note 2}					3.5 weeks	To be reported

Note 1: Certification is based on the performance of one instrument.

Note 2: Field test was carried out over a three month period on a waste incinerator.

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Description:

The 3000HM FID is an extractive analyser that uses the principle of flame ionisation to measure volatile organic components in a gas stream. The detector output is proportional to the concentration of organic molecules with a carbon-hydrogen bond that are present in the sample gas. The response is proportional to carbon number for any specific type of organic compound with oxygenated compounds having a lower response. The 3000HM FID is available with an integrated pump and 'no-pump' option, the pump specification for the analyser is 400mbar at 3.5 L/min.

The Signal 3010 MiniFID and the Signal 3030 portable heated total hydrocarbon (THC) analysers use flame ionisation detection in the same way as the Signal 3000HM to measure levels of THC in the sample gas. The two models are distinguished by the following:

The 3010 MiniFID is a non-microprocessor controlled analyser which features include:

- Heated sample conditioning module with built in sample pump
- Field replaceable carbon scrubber cartridge to provide hydrocarbon free burner and zero air.
- Integral heated line, temperature controlled by the 300 MiniFID (no separate heated line control required)
- Light weight

The 3030 is a microprocessor controlled analyser which features include:

- Heated sample conditioning system with built in sample pump
- Built in zero and burner air generator
- Full microprocessor control
- Auto-ignition
- Remote controllability & LED display

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 060078/02.
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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