



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 05ATEX1249X

4 Equipment: 7866 Thermal Conductivity Gas Analyzer

5 Applicant: Honeywell International Industrial Measurement & Control

6 Address: 525 East Market Street  
York  
PA 17403  
USA

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R51G13208A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 (amendment A1 and A2)

EN 50018:2000 (amendment A1)

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 G

EEx d IIC T6 (-10°C ≤ Ta ≤ +50°C)

Project Number 51G13208  
Date 7 August 2006  
C. Index 12

C Ellaby  
Certification Officer

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**Sira Certification Service**

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## SCHEDULE

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#### 13 DESCRIPTION OF EQUIPMENT

The 7866 Thermal Conductivity Gas Analyzer is used for gas concentration measurement applications. Supply voltage to the 7866 Thermal Conductivity Gas Analyzer is 30 Vdc, 30 VA. The output signal may be a two wire 4 to 20 mA or a 0 to 20 mA signal. Communications are standard RS422, RS485 or MODBUS type.

The 7866 Thermal Conductivity Gas Analyzer comprises of three basic components: the sensing unit (transmitter), the control unit (receiver), and an AC to DC power supply. This program only focuses on approval of the sensing unit, as requested by the manufacturer. The control unit and the power supply are not part of this examination. The analyzer's sensors feature a solid-state design, which includes a current regulator, a proportional action temperature controller and a voltage to current converter/amplifier. This analyzer is typically used in electric utilities for power plants at large industrial facilities and for dissociated ammonia measurements.

The 7866 Thermal Conductivity Gas Analyser is a four port gas analyzer that is designed to provide three ranges of measurement.

- Range 1: CO<sub>2</sub> in Air.
- Range 2: H<sub>2</sub> in CO<sub>2</sub>.
- Range 3: H<sub>2</sub> in Air (**not** within the flammable range)

The triple range gas sensors contain 4 active ports with flame arresters and no ports are inactive or plugged. The triple range gas sensor is not for use with flammable gas.

**Explosionproof Construction** - the 7866 Thermal Conductivity Gas Analyzer (Triple Range) explosionproof enclosure is comprised of a main enclosure housing and cover. The main enclosure housing consists of a cylindrical, cast aluminium body with a threaded end cover, thus completing the enclosure. The housing and cover are made of cast aluminium alloy 356 (comprised of 7% silicon, 0.4% magnesium, balance aluminium). The enclosure, when capped, creates one compartment that has a free internal volume of 68 in<sup>3</sup> (1114 cm<sup>3</sup>), when installed with the sensor electronics, 106 in<sup>3</sup> (1737 cm<sup>3</sup>) without electronics. Stainless steel tubes connect the internal gas sensor assembly to the flame arresters at the gas inlet/outlet assemblies. The flame arresters each have a density of 42%, with a free volume of 58%. The nominal micron rating is 47 and maximum pore size is 140 micron. The enclosure has two-1/2" NPT conduit connections through the main enclosure body for field wiring to the sensor electronics. The main enclosure cover to body assembly includes a nitrile (Buna-N) o-ring for added environmental sealing.

The sensor cell is vented through a port(s) with a flame arrester installed. The vent is to be connected to a freely vented, 1/4" diameter pipe, with a maximum length of 6 ft to prevent the pressure in the cell to exceed 2 psig. The maximum sample inlet pressure to the enclosure is 2 psig.

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The model code breakdown for the 7866 Thermal Conductivity Gas Analyzer is as follows:

#### 07866DHH2-a-b-c-d-e-f. Digital Thermal Conductivity Gas Analyzer (Triple Range).

a = Sensor Power Supply / Line Voltage: 2 or 4.

b = Output (PV Range): 1 or 2.

c = Communications (3 digit code): 000 or 101.

d = Indicator Use: 1 or 2.

e = Factory Code (3 digit code): 000.

f = Tagging (3 digit code): 000, 206 or 208.

Electrical ratings: 30 Vdc, 30 W max.

#### NOTE

The scope of this approval only covers the Triple Range version of the 7866 Thermal Conductivity Gas Analyser and addresses potential ignition sources by verification of compliance with Directive 94/9/EC. The scope of this report does **not** include the functional performance of the 7866 Thermal Conductivity Gas Analyzers or any associated control/detection system.

#### 14 DESCRIPTIVE DOCUMENTS

##### 14.1 Drawings

Number	Sheet	Rev.	Date	Description
003398	1 of 1	E	01 Dec 05	Nut
004800	1 of 1	F	01 Dec 05	Drive Screw
082103	1 of 1	D	01 Dec 05	O-ring
194293	1 of 2	G	01 Dec 05	Nameplate Cat. 7866 Thermal Conductivity Analyzer
194293	2 of 2	G	01 Dec 05	Nameplate Cat. 7866 Thermal Conductivity Analyzer
267784	1 of 1	F	01 Oct 05	Housing Casting, Explosion Proof Gas Analyzer
267786	1 of 1	D	01 Dec 05	Cover
267787	1 of 1	F	01 Dec 05	Housing
276403	1 of 1	E	01 Dec 05	Pipe Plug
30756916-001	1 of 1	2	01 Dec 05	Cup Terminal Wire Keeper
316415	1 of 1	E	01 Dec 05	Terminal Board
353402	1 of 2	F	01 Dec 05	Thermistor Probe
353402	2 of 2	F	01 Dec 05	Thermistor Probe
353582	1 of 2	L	---	7866 Thermal Conductivity Analyzer Explosion Proof Housing Assy 2 Ports
353582	2 of 2	L	---	7866 Thermal Conductivity Analyzer Explosion Proof Housing Assy 2 Ports
367296	1 of 1	F	01 Dec 05	Housing Explosion Proof Gas Analyzer
367453	1 of 2	J	---	7866 Thermal Conductivity Analyzer Explosion Proof Housing Assy 4 Ports
367453	2 of 2	J	---	7866 Thermal Conductivity Analyzer Explosion Proof Housing Assy 4 Ports
411258	1 of 1	K	01 Dec 05	Heater 30 Watt

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Number	Sheet	Rev.	Date	Description
445643	1 of 2	AA	01 Dec 05	Printed Circuit Assy Sensor Board Cat 7866
445643	2 of 2	AA	01 Dec 05	Printed Circuit Assy Sensor Board Cat 7866
50011366	1 of 1	C	---	7866 Thermal Conductivity Two Port Explosion Proof
50011367	1 of 1	C	---	7866 Thermal Conductivity Four Port Explosion Proof
50011542	1 of 1	B	01 Dec 05	Bushing, Flame Arrestor Fitting
50011543	1 of 1	B	01 Dec 05	Fitting, Flame Arrestor Body
50011544	1 of 1	D	17 Apr 06	Filter, Compressed Knitted Wire Mesh
504259	1 of 1	D	01 Dec 05	Screw
51196688	1 of 1	B	01 Dec 05	Pan Head Phillips/Slotted Sems Split Lockwasher
51451446	1 of 1	B	01 Dec 05	Locknut, Metric
51451447	1 of 1	C	01 Dec 05	Plug Fitting, Metric
51452210	1 of 3	C	---	Nameplate 7866 Gas Analyzer
51452210	3 of 3	C	---	Nameplate 7866 Gas Analyzer

14.2 Report number 51G13208A

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

15.1 The 7866 Thermal Conductivity Gas Analyzers shall not be used where carbon disulphide gas is present.

15.2 The 7866 Thermal Conductivity Gas Analyzers shall not be used to analyse gas samples with an oxygen concentration higher than 21%.

15.3 The 7866 Thermal Conductivity Gas Analyzers shall only be used to analyse gas samples at pressures up to 2 lbf/in<sup>2</sup> (13.8 Kpa)

15.4 The 7866 Thermal Conductivity Gas Analyzers shall not be used to analyse explosive gas mixtures

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in report number R51G13208A.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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