



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 03ATEX1253X** Issue: **6**

4 Equipment: **EH 1.1 Actuator Control Module**

5 Applicant: **Rotork Controls Inc**

6 Address: **675 Mile Crossing Blvd  
Rochester  
New York 14624  
United States of America**

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 the confidential reports listed in Section 14.2.

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 60079-0:2009

EN 60079-1:2007

EN 60079-7:2007

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 2G

Ex d\* IIB T4 Gb

Ta = -20\*\*°C to +60°C

\* "e" is added to versions that have an increased safety enclosure

\*\* t may go down to -50°C

Project Number 22749-010

D R Stubbings BA MIET  
Certification Manager

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#### 13 DESCRIPTION OF EQUIPMENT

The EH 1.1 Actuator Control Module is used for the remote positioning of hydraulically actuated process control valves. It is rated at 690 V a.c. with a maximum of 120 V a.c. or 60 V d.c. at the control circuit. It consists of a main cylindrical cast aluminium enclosure with a threaded top entry cover, a terminal housing and a hydraulic control block assembly.

The top entry cover is fitted with a window to allow the external observation of an internal LCD device. The window is manufactured from glass and is potted into a threaded housing, which in turn is screwed into the top entry cover.

The main enclosure houses PCBs, electrical control circuits and switches. There are two rotary control knob switch shafts and an indicator switch shaft, which pass through the wall of the main enclosure to form cylindrical flameproof joints. Additionally, there is threaded cable entry in the wall of the main enclosure.

The terminal enclosure provides all electrical field wiring terminations. It connects to the main enclosure by means of a spigoted flamepath joint and is secured by four M8 capscrews. The terminal housing is machined to take four threaded cable entries and is separated from the main enclosure by a terminal bung. The terminal bung comprises of a moulded plastic main body, through which passes a number of terminals that are sealed in place with a potting compound. The terminal enclosure is closed by means of a lid, which connects to the terminal enclosure by means of a spigoted flamepath joint and is secured by four M8 capscrews.

The hydraulic process pressure is sealed from the main enclosure by the hydraulic manifold block, which is secured to the main enclosure by means of a flanged flamepath joint and is secured by ten M8 capscrews. The hydraulic valve block utilises up to three solenoid valves with welded armatures, a pressure switch and a pressure sensor. The pressure switch is designed to vent the process pressure to atmosphere with a pressure drop across the outlet of less than 2 lbf/in<sup>2</sup>, in the event of the switch diaphragm failing. The pressure sensor consists of welded metal diaphragm, the stresses in which, at maximum working pressure, are low enough as not to fail in service due to fatigue.

**Variation 1** - This variation introduced the following changes:

- i. The extension of the ambient temperature range associated with the EH 1.1 Actuator Control Module was approved to be amended from -40°C to -50°C.
- ii. The option to fit a suitable blanking plug in place of the pressure switch was endorsed.

**Variation 2** - This variation introduced the following changes:

- i. The introduction of an alternative manifold block that omits the pressure switch cavity.
- ii. The introduction of a blank manifold plate that replaces the manifold block.
- iii. The introduction of a blank manifold plate incorporating threaded cable entry points that replace the manifold block.

**Variation 3** - This variation introduced the following change:

- i. The revision of the certified nameplate was acknowledged.



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**Variation 4** - This variation introduced the following changes:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents previously listed in section 9, EN 50014:1997 (amendments A1 to A2), EN 50018:2000 (including amendment A1) EN 50019:2000 and EN 50281-1-1:1999, were replaced by those currently listed, the markings in section 12 were updated accordingly and the special condition for safe use was amended to recognise the new standards, the dust standard was removed from those shown.
- ii. The UK manufacturing site for this product has been removed from the certificate.
- iii. The introduction of an alternative pressure sensor.
- iv. The introduction of an alternative solenoid coils to replace obsolete items.
- v. The introduction of an alternative main PCB.
- vi. The introduction of an alternative indicator shaft retention method.
- vii. The introduction of a four way SPDT limit switches assembly.
- viii. The option to omit the two way SPDT limit switches was approved.
- ix. The recognition of minor drawing modifications for the purpose of clarification; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	06 November 2003	R53A7563A	The release of the prime certificate.
1	06 August 2004	R53A7563A	Re-issued to correct changes to the thermal assessment and marking
2	10 March 2005	R53A7563K Rev 1	Re-issued to correct the report number
3	6 November 2003 10 March 2005	R53A7563T	The introduction of Variation 1
4	06 November 2003 10 March 2005	R53A7563Y	The introduction of Variation 2
5	06 November 2003 10 March 2005	N/A	The introduction of Variation 3
6	14 February 2012	R22749A/00-010	This Issue covers the following changes: <ul style="list-style-type: none"><li>• All previously issued certification was rationalised into a single certificate, Issue 6, Issues 0 to 5 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.</li><li>• The introduction of Variation 4</li></ul>

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

15.1 In accordance with clause 5.1 of EN 60079-1, the critical dimensions of the flamepaths relevant to the EH 1.1 are:

Flamepath	Maximum Gap (mm)	Minimum L (mm)
Manifold Block/Main Enclosure	0.10	12.50
Control Knob Shaft /Main Enclosure	0.20	25.00
Terminal Bung/Terminal Enclosure	0.20	26.00
Indicator Shaft Bushing/Main Enclosure	0.00	25.25
Indicator Shaft/Indicator Shaft Bushing	0.20	31.75
Terminal housing/Main Enclosure	0.15	26.20
Terminal Cover/Terminal Housing	0.15	14.70

**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 the reports listed in Section 14.2.

**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.

17.3 When the termination facility is to be designed as 'Ex e', the following electrical strength tests shall be applied to the termination facilities for at least 60 s and no more than 63 s as required by clause 6.1 of EN 60079-7:2007.

Test Voltage Applied Between	Test Voltage
Terminals with voltages of 90 V peak or greater and the case and lower voltage terminals	1000 + 2U V <sub>RMS</sub> <sup>+5</sup> <sub>0</sub> % or 1500 V <sub>RMS</sub> <sup>+5</sup> <sub>0</sub> % whichever is greater (U being the supply voltage)
Terminals with voltages not exceeding 90 V peak and the case	500 V <sub>RMS</sub> <sup>+5</sup> <sub>0</sub> %

17.4 When an ambient temperature below -20°C and down to -40°C is specified, each device shall be subjected to a routine overpressure test in accordance with the table below. In all cases, the pressure shall be maintained for at least 10s as required by clause 16 of EN 60079-1:2009. There shall be no permanent deformation or damage to the enclosure.

Equipment	Hydrostatic Overpressure Test Pressure Applied	
	Bar	Lbf/in2
Terminal compartment	15.38	223.0
Main compartment	13.65	198.0

17.5 When an ambient temperature below -20°C and down to -50°C is specified, each device shall be subjected to a routine overpressure test in accordance with the table below. In all cases the pressure shall be maintained for at least 10s as required by clause 16 of EN 60079-1:2009. There shall be no permanent deformation or damage to the enclosure.

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**Sira Certification Service**

Rake Lane, Eccleston, Chester, CH4 9JN, England

Tel: +44 (0) 1244 670900  
 Fax: +44 (0) 1244 681330  
 Email: [info@siracertification.com](mailto:info@siracertification.com)  
 Web: [www.siracertification.com](http://www.siracertification.com)



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Equipment	Test Pressure	
	Bar	lbf/in <sup>2</sup>
EH 1.1 Actuator Control Module Main Enclosure	14.51	210.32
EH 1.1 Actuator Control Module Terminal Compartment	16.33	236.85
Terminal Bung	16.33	236.85

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# Certificate Annexe

Certificate Number: Sira 03ATEX1253X  
Equipment: EH 1.1 Actuator Control Module  
Applicant: Applicant



## Issues 0 to 2 Inclusive

Drawing	Sheet	Rev.	Date	Title
PLAD 1214	1 of 3	01	06 Aug 03	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	2 of 3	01	06 Aug 03	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	3 of 3	01	06 Aug 03	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
AD1214	1 of 3	01	06 Aug 03	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	2 of 3	01	06 Aug 03	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	3 of 3	01	06 Aug 03	EH 1.1 Actuator Control Module, ATEX IIB Approval
77470-04	1 of 1	04	30 Jun 03	Nameplate EH Roch ATEX Gp IIB – 40 to 60
77564-03	1 of 1	03	10 Jun 03	Nameplate EH Roch ATEX Gp IIB – 20 to 60
77565-03	1 of 1	03	10 Jun 03	Nameplate EH Bath ATEX Gp IIB – 40 to 60
77566-03	1 of 1	03	10 Jun 03	Nameplate EH Bath ATEX Gp IIB – 20 to 60
44210	1 of 1	1	07 Aug 00	Label Conduit Entry – NPT

## Issue 3

Drawing	Sheet	Issue	Date	Title
PLAD 1214	1 of 3	02	18 Feb 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	2 of 3	02	18 Feb 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	3 of 3	02	18 Feb 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
AD1214	1 of 3	02	18 Feb 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	2 of 3	02	18 Feb 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	3 of 3	02	18 Feb 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
78121-01	1 of 1	01	20 Dec 04	Nameplate EH Bath ATEX Gp IIB – 50 to 60
78122-01	1 of 1	01	20 Dec 04	Nameplate EH Roch ATEX Gp IIB – 50 to 60

## Issue 4

Number	Sheet	Rev.	Date	Title
PLAD 1214	1 of 4	03	19 May 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	2 of 4	03	19 May 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	3 of 4	03	19 May 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
PLAD 1214	4 of 4	03	19 May 05	Parts List For EH 1.1 Actuator Control Module, ATEX Group IIB
AD1214	1 of 4	03	18 May 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	2 of 4	03	18 May 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	3 of 4	03	18 May 05	EH 1.1 Actuator Control Module, ATEX IIB Approval
AD1214	4 of 4	03	18 May 05	EH 1.1 Actuator Control Module, ATEX IIB Approval

## Issue 5

Number	Sheet	Rev.	Date (Sira stamp)	Title
77470-06	1 of 1	06	10 Apr 08	Nameplate EH Roch ATEX Gp IIB – 40 to 60
77564-05	1 of 1	05	10 Apr 08	Nameplate EH Roch ATEX Gp IIB – 20 to 60
77566-05	1 of 1	05	10 Apr 08	Nameplate EH Bath ATEX Gp IIB – 20 to 60
78122-03	1 of 1	03	10 Apr 08	Nameplate EH Roch ATEX Gp IIB – 50 to 60

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