



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: Sira 01ATEX2189

4 Equipment: Type 4-20 mA ABS Absolute Shaft Encoder

5 Applicant: Hohner Automation Limited

6 Address: Units 14, 15 and 16
Whitegate Industrial Estate
Wrexham
LL13 8UG
UK

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 R52A8132A.

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 (including Amendments A1 to A2)
EN 50020:1994
EN 50284:1999
EN 50303:2000

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 1G
EEx ia IIC T4 (T_a = -20°C to +60°C)



I M1
EEx ia I (T_a = -20°C to +60°C)

Project Number 52A8132
Date 14 June 2002
C. Index 12

M D Shearman
Certification Manager

This certificate and its schedules may only be reproduced in its entirety and without change

Sira Certification Service

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX2189

13 DESCRIPTION OF EQUIPMENT

The **Error! Reference source not found.** shaft encoder is designed to indicate the angular movement of a shaft. Movement is detected optically by shining light produced by LEDs through a graduated disc that rotates with the shaft. User connections are by means of an external plug-and-socket.

The circuit comprises two PCBs, the top board being mainly at the supply voltage and the lower board being exclusively powered from the nominally 5 V rail. The assembly is contained within a metallic enclosure with an ingress protection rating of at least IP54.

The equipment is a 2-wire device, utilising pins 1 and 2, with the following safety description:

U_i	=	28 V
I_i	=	100 mA
P_i	=	0.7 W
C_i	=	12 nF
L_i	=	0

The screen may be connected to pin 4, which is galvanically isolated from the enclosure. Pin 3 is not used.

There are three builds, differing in the number of LEDs and the physical arrangement of the PCBs:

- 10-bit hollow shaft encoder
- 10-bit solid shaft encoder
- 11-bit hollow shaft encoder

14 DESCRIPTIVE DOCUMENTS

14.1	Drawing No.	Rev.	Sheet	Date	Title
	GA-ABS2W-HOLLOW-01	1.0	1 of 1	25 Mar 02	General assembly
	GA-ABS2W-SOLID -01	1.0	1 of 1	29 Apr 02	General assembly
	HV10BIT SCHEMATIC	1.0	1 of 1	18 Jul 01	Schematic – high voltage 10-bit PCB
	HV11BIT SCHEMATIC	1.0	1 of 1	05 Apr 02	Schematic – high voltage 11-bit PCB
	HV-10BIT-55-ART	1.0	1 to 2	21 Mar 02	Artwork – 10-bit hollow shaft
	HV-10BIT-S3-ART	1.0	1 to 2	30 Apr 02	Artwork – 10-bit solid shaft
	HV-11BIT-14-ART	1.0	1 to 2	15 Apr 02	Artwork – 11-bit hollow shaft
	HV-10BIT-55-PARTS	1.0	1 to 2	21 Mar 02	Silkscreen – 10-bit hollow shaft
	HV-10BIT-S3-PARTS	1.0	1 to 2	30 Apr 02	Silkscreen – 10-bit solid shaft
	HV-11BIT-14-PARTS	1.0	1 to 2	15 Apr 02	Silkscreen – 11-bit hollow shaft
	LB-ABS55-001-01	1.0	1 of 2	14 Dec 01	Marking
	LV10BIT	1.0	1 to 4	20 Sep 01	Schematic – low voltage 10-bit PCB
	LV11BIT*	1.0	1 to 4	05 Apr 02	Schematic – low voltage 11-bit PCB

* Sheet 4 was-amended by Sira on 10 June 2002.

14.2 Report No. R52A8132A

Date 14 June 2002

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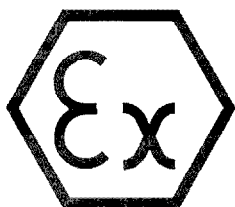


SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX2189

- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
None
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSR'S)
The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in Report No. R52A8132A.
- 17 **CONDITIONS OF CERTIFICATION**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of SCS 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 The assembled apparatus shall be subjected to a routine test voltage of 500V rms for 1 minute. There shall be no flashover or breakdown of insulation and the maximum current flowing shall not exceed 5 mA, in accordance with EN 50020:1994 clause 10.6.



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX2189 **Dated** 14 June 2002

VARIATION NUMBER 1 (ONE) **Dated** 5 September 2002

VARIATION TO EQUIPMENT

To permit:

- 1 The reduction of the number of zener diodes to two per voltage clamp and the specification of 1N5339B as an alternative to MLL5919 5.6 V.
- 2 The change of the high voltage board artworks to accommodate the alternative zener diode.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
HV10BIT SCHEMATIC	1 of 1	1.1	08 Aug 02	Schematic – high voltage 10-bit PCB
HV11BIT SCHEMATIC	1 of 1	1.1	08 Aug 02	Schematic – high voltage 10-bit PCB
HV-10BIT-55-ART	1 to 2	1.1	08 Aug 02	Artwork – 10-bit hollow shaft
HV-10BIT-55-PARTS	1 to 2	1.1	08 Aug 02	Silkscreen – 10-bit hollow shaft
HV-10BIT-S3-ART	1 to 2	1.1	08 Aug 02	Artwork – 10-bit solid shaft
HV-10BIT-S3-PARTS	1 to 2	1.1	08 Aug 02	Silkscreen – 10-bit solid shaft
HV-11BIT-14-ART	1 to 2	1.1	08 Aug 02	Artwork – 11-bit hollow shaft
HV-11BIT-14-PARTS	1 to 2	1.1	08 Aug 02	Silkscreen – 11-bit hollow shaft

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No 52V9373

Report No. NA

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Certification Manager

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX2189 Dated 14 June 2002
VARIATION NUMBER 2 (TWO) Dated 12 November 2002

VARIATION TO EQUIPMENT

To permit:

- 1 The high voltage board circuit to be changed.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
HV10BIT SCHEMATIC	1 of 1	1.2	10 Oct 02	Schematic – high voltage 10-bit PCB
HV11BIT SCHEMATIC	1 of 1	1.2	10 Oct 02	Schematic – high voltage 11-bit PCB
HV-10BIT-55-ART	1 to 2	1.2	10 Oct 02	Artwork – 10-bit hollow shaft
HV-10BIT-S3-ART	1 to 2	1.2	18 Oct 02	Artwork – 10-bit solid shaft
HV-11BIT-14-ART	1 to 2	1.2	21 Oct 02	Artwork – 11-bit hollow shaft
HV-10BIT-55-PARTS	1 to 2	1.2	10 Oct 02	Silkscreen – 10-bit hollow shaft
HV-10BIT-S3-PARTS	1 to 2	1.2	18 Oct 02	Silkscreen – 10-bit solid shaft
HV-11BIT-14-PARTS	1 to 2	1.2	21 Oct 02	Silkscreen – 11-bit hollow shaft

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No 52V9696

Report No. NA

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