1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 02ATEX1018X** Issue: **7**

4 Equipment: **Series Type 'D' and 'T' Shaft Encoders**

5 Applicant: **Hohner Automation Limited**

6 Address: Units 14-16, 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 CSA Group Netherlands B.V., Notified Body Number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 60079-0:2012	EN 60079-1:2014	EN 60079-7:2007
EN 60079-31:2014	EN 13463-1:2009	EN 13463-5:2011

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-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:

Series Type 'D'

II 2 GDc
I M2c
Ex db IIC T6 Gb
Ex db I Mb
Ex tb IIIC Db T85°C
(Ta -20°C to +60°C) Temperature rating code 'E'
(Ta -40°C to +60°C) Temperature rating code 'L'

Series Type 'T'

II 2 GDc
I M2c
Ex db eb IIC T6 Gb
Ex db eb I Mb
Ex tb IIIC Db T85°C
(Ta -20°C to +60°C) Temperature rating code 'E'
(Ta -40°C to +60°C) Temperature rating code 'L'

Project Number 1612

Signed:

Title: Director of Operations

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Netherlands

13 **DESCRIPTION OF EQUIPMENT**

The DXE Series Shaft Encoder is used to indicate shaft angle movement from an arbitrary datum. It operates on the Moiré fringe pr iple using a light source and radially graduated discs to produce two square-wave outputs. The phase difference between the two series pulses indicates the direction of shaft rotation and a marker pulse indicates complete revolutions of the shaft. The DXE Series Shaft Encoder is constructed from stainless steel and has the following three flamepaths:

- A thread cable entry in the lid
- A rotating joint between the body and shaft
- A spigot joint between the lid and body

Design Options

- The equipment shaft may be rotated at a maximum speed of 6000 RPM.
- The use of an alternative DXE Radial Lid design casting.
- The markings to be engraved onto alternative lid designs or applied to a stainless steel plate that is secured to the equipment by fasteners.
- D*XX-2813-2813 is the product code where D* is either DE to indicate -20°C type or DL for -40°C type, XX-2813-2813 refers to the electronic circuit, connection and resolution.

Variation 1 - This variation introduced the following changes:

i. Dimensions relating to the fastener shroud to be changed from 7.50 mm to 8.00 mm.

Variation 2 - This variation introduced the following changes:

i. The introduction of a new type that may be used in a lower ambient temperature of -40°C; this type is marked with the certification codings:
EEx d IIC T6 Ta -40°C to +60°C and EEx d I Ta -40°C to +60°C
ii. The original type designation, DXE, was re-defined due to the introduction of the new model; the new type number breakdown is as follows:
D*XX-2813-2813
Where – D* is the product code, i.e. DE indicates –20°C type and DL indicates –40°C type 2813-XX-2813 indicates electronic circuit, connection and resolution
iii. The equipment shaft was allowed to be rotated at a maximum speed of 6000 RPM.
iv. The use of an alternative 'DXE Radial Lid' design casting was introduced.
v. The markings were permitted to be engraved onto alternative lid designs or to be applied to a stainless steel plate that is secured to the equipment by fasteners.
vi. The recognition of minor drawing modifications, these included:
    - minor dimensional and tolerance changes
    - typographical amendments
    - the removal of aluminium as a construction material, the description is modified accordingly.
    - the correction of the label shape

Variation 3 - 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 originally used, EN 50014:1997 (amendments A1 & A2), EN 50018:2000, EN 50281-1-1:1998, EN 13463-1:2001 and prEN 13463-5:2001, are to be replaced by those listed in section 9, the markings were updated accordingly and the condition was removed the cable entry thread details are adequately covered by the certified drawings.

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ii. The rationalisation of the drawing package and the equipment description taking into account previous changes.

Variation 4 - This variation introduced the following changes:

i. Following appropriate re-assessment to demonstrate compliance with the requirements of the latest technical knowledge, EN 61241-1:2004 was replaced by IEC 60079-31:2008, the dust markings of the existing products becoming:
Ex tb IIIC Db T85°C IP6X
(Ta = -40°C to +60°C) - DLXX-2813-2813
(Ta = -20°C to +60°C) - DEXX-2813-2813

ii. The introduction of the TXXX-2813-2813 variant that orporates an 'Ex e' terminal compartment The main body of the TXXX-2813-2813 has an M16 threaded hole on its rear face that is fitted with a Type LE* * ** * ** flameproof line bushing manufactured by Quintex GmbH as detailed in certificate no. Bureau Veritas EPS 08ATEX1105X. The 'Ex e' terminal compartment, which is secured to the rear face with four, M4, socket-head cap screws, contains a Type TOP1.5GS 08/180 5.08 Terminal Block manufactured by Weidmuller Interface GmbH & Co. and detailed in certificate no. DEMKO 03ATEX134439U. or a Type 256-408/000-009/999-950 Terminal Block manufactured by Wago and detailed in certificate no. PTB 06ATEX1061U. The cover of the terminal compartment is secured by four, M4, socket-head cap screws and cables enter the terminal compartment via an M16 threaded hole in the sidewall. There are two versions of the TXXX-2813-2813 that are marked as follows:

II 2 GDc
I M2c
Ex d e IIC Gb T6
Ex d e I Mb
Ex tb IIIC Db T85°C IP6X
(Ta - 40°C to +60°C) - TLXX-2813-2813
(Ta - 20°C to +60°C) - TEXX-2813-2813

Variation 5 - This variation introduced the following changes:

i. The manufacturer's Part Code System was updated; the new codes use 'D' or 'T' to identify the Series Type and 'E' or 'L' to distinguish between the different, applicable Temperature Ratings.

ii. The manufacturer has supplied a new label drawing; EX-LB-DXTX-01, which replaces the following:
EX-LB-DX1-01 IX-LB-DX1-01 EX-LB-TX1-01 IX-LB-TX1-01 DXE-LB-03 DXE-LB-02

iii. Drawing EX-AS-DX1-02 sheet 3 of 9 was amended with the addition of notes to clarify the paint thickness and the amount of light metals in the equipment, 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.

iv. The manufacturer has specified an alternative line bushing (the Type LB* * ** * **) certified as IECEx EPS 11.0004X and EPS 11ATEX1342X, which replaces the original Type LE* * ** * **. Both are manufactured by Quintex GmbH. A 'Condition of Manufacture' has been added to the certificates to support this change.

v. The manufacturer has clarified which previously certified terminal blocks are to be used in each variant of the equipment.

vi. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, EN 60079-0:2009, EN 60079-1:2007, IEC 60079-31:2008 and EN 13463-5:2003 were replaced by EN 60079-0:2012, EN 60079-1:2014, EN 60079-31:2014 and EN 13463-5:2011, the markings in section 12 were

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updated accordingly, a Special Condition for Safe Use was introduced and therefore an 'X' suffix was added to the certificate number.

The separately certified components detailed in previous variations have been updated as follows:

Previously certified flameproof line bushing Type LE* * ** * ** certified as EPS 08ATEX1105X has been replaced by the line bushing type LB* * ** * **, certified as EPS 11ATEX1342X. Both line bushings are manufactured by Quintex GmbH.

Previously certified terminal block Type TOP1.5GS 08/180 5.08 manufactured by Weidmuller Interface GmbH & Co as detailed in certificate DEMKO 03ATEX134439U remains unchanged. This terminal block type is for use in ATEX variants of the shaft encoder only.

Previously certified terminal block Type 256-408/000-009/999-950 manufactured by WAGO as detailed in certificates PTB 06ATEX1061U also remains unchanged. This terminal block type is for use in ATEX and IECEx variants of the shaft encoder.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	File/Report no.	Comment
0	9 July 02	R51A8336A	The release of the prime certificate.
1	25 September 02	R51A8336B 51V9399	This Issue covers the following changes: • The introduction of Variation 1. • Report number R51A8336B replaced R51A8336A.
2	24 November 2003	R51V10601A	The introduction of Variation 2.
3	5 January 04	51V9476	This Issue covers the following changes: • EN 13463-1 was added to section 9. • The marking was corrected and the label drawing was revised.
4	13 January 10	R51A21121A	This Issue covers the following changes: • All previously issued certification was rationalised into a single certificate, Issue 4, Issues 0 to 3 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format. • The introduction of Variation 3.
5	02 Jun 10	R21888A/00	The introduction of Variation 4.
6	11 June 2015	R70022955A	The introduction of Variation 5.
7	15th October 2019	1612	• Transfer of certificate **Sira 02ATEX1018X** from Sira Certification Service to CSA Group Netherlands B.V.. • EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. *(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if*

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			they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)

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

15.1 The fasteners used in this equipment are 316 stainless steel, M4 x 10mm hexagon socket head screws with a minimum yield stress of 450 N/mm^2. If replacement fasteners are required they must have the same or better properties.

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.

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Certificate Annexe

Certificate Number: **Sira 02ATEX1018X**

Equipment: **Series Type 'D' and 'T' Shaft Encoders**

Applicant: **Hohner Automation Limited**

Issues 0 to 3 (The drawings listed with these Issues were rationalised and have been superseded by those detailed in Issue 4.)

Issue 4

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
Ex-LB-DX1-01	1 of 9	01	23 Nov 09	ATEX DXE Label
IX-LB-DX1-01	2 of 9	01	23 Nov 09	IECEx DXE Label
Ex-AS-DX1-01	3 of 9	01	23 Nov 09	DX Assembly drawing
Ex-BD-DX1-01	4 of 9	01	23 Nov 09	DXE Body
Ex-LD-DX1-01	5 of 9	01	23 Nov 09	DX Axial lid
Ex-LD-DX2-01	6 of 9	01	23 Nov 09	DX* Axial lid
Ex-LD-DX3-01	7 of 9	01	23 Nov 09	DX* Radial lid
Ex-LD-DX4-01	8 of 9	01	23 Nov 09	DX* Radial lid
Ex-SH-DX1-01	9 of 9	01	23 Nov 09	DX* Shaft

Issue 5

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
EX-LB-TX1-01	1 of 5	1	27 May 10	ATEX TXE Label
EX-LD-TXB-01	3 of 5	1	25 May 10	TXE Terminal Block Lid
EX-LD-TX1-01	4 of 5	1	02 Jun 10	TXE Lid
EX-TH-TX1-01	5 of 5	1	02 Jun 10	TXE Terminal Block Housing

Issue 6

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
EX-LB-DXTX-01	1 to 5	1.0	05 Jun 15	ATEX/IECEx DXTX Label
EX-AS-DX1-02	3 of 9	2.0	21 May 15	DX* ASSEMBLY DRAWING

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