



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 07ATEX1273X** Issue: **7**

4 Equipment: **Type DXP and Type DXS Switchboxes**

5 Applicant: a. **Topworx Inc.**
b. **Emerson Machinery Equipment (Shenzhen) Co. Ltd.**
c. **Emerson Process Management Magyarország Kft.**

6 Address: a. **3300 Fern Valley Road, Louisville, Kentucky 40213, USA**
b. **Fisher Controls Division, Bao Heng Technology Industry Park, North Hong Long 2nd Road, District 68, Bao'an District, Shenzhen 518101, China**
c. **Fisher Controls International LLC, H-8001 Székesfehérvár, Berenyi U, 72-100, Hungary**

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: 2012

EN 60079-1: 2007

EN 60079-31:2009

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

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 GD

Marking for Group IIC/IIB+H₂

Ex d IIC T6 or Ex d IIB+H₂ T6

Ta = -60°C to +60°C

Ex d IIC T5 or Ex d IIB+H₂ T5

Ta = -60°C to +75°C

Ex d IIC T4 or Ex d IIB+H₂ T4

Ta = -60°C to +110°C

Ex d IIC T3 or Ex d IIB+H₂ T3

Ta = -60°C to +175°C

Marking for Group IIIC

Ex tb IIIC T85°C Db

Ta = -50°C to +60°C

Ex tb IIIC T100°C Db

Ta = -50°C to +75°C

Ex tb IIIC T135°C Db

Ta = -50°C to +110°C

Project Number 70005505

A G Boyes
Certification Support Officer

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13 DESCRIPTION OF EQUIPMENT

The Type DXP switchbox comprises a rectangular base and cover manufactured in aluminium. The base and cover has a boss with a bronze sleeve bearing, through which passes the switch shaft. Cams with magnets are attached to the shaft to operate sensors within the enclosure. The enclosure is provided with either a flat flange joint or a serrated joint for gas group IIB + H₂ or group IIC applications respectively. The cover securing bolts are Grade A2-70 stainless steel.

The rectangular base and cover can be manufactured from stainless steel to form a Type DXS Switchbox; in this case the cover/base joint is a flat flange only (IIB + H₂) and the sleeve bearing is not provided.

The enclosure may contain a combination of switches, a fieldbus module, pilots and terminal strips up to the maximum thermal dissipation of 10 W. The pilots provide feedback to control a pneumatic valve attached to the side of the enclosure.

The switch box is rated up to 240 V, 15 A.

The enclosure fasteners are stainless steel M8x1.25 – 6H, reduced shank A2-70 grade fasteners.

When marked for dust, the enclosures have an IP66/IP67 rating.

Variation 1 - This variation introduced the following changes:

- i. To permit the use within a combustible dust laden atmospheres in accordance with the requirements of IEC 60079-0:2007 and IEC 61241-1:2004.

Variation 2 - This variation introduced the following changes:

- i. The recognition of minor drawing modifications; these amendments, which are fully described in the associated Sira report, are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.
- ii. The external valve block pressure was increased, the special condition for safe use being modified accordingly.

Variation 3 - This variation introduced the following changes:

- i. To permit the metal enclosures to be given an IP67/66 ingress protection rating. The marking in Section 12 was amended accordingly.
- ii. Following appropriate re-assessment, IEC 61241-1:2004 was replaced by EN 60079-31:2009.

Variation 4 - This variation introduced the following changes:

- i. The introduction of an alternative internal arrangement which is designated the Type FF 2.0 Module.
- ii. Minor drawing modifications were recognised.

Variation 5 - This variation introduced the following changes:

- i. The equipment was permitted to be used in an ambient temperature up to 175°C, the marking is amended accordingly and a Special condition for safe use was added to reflect the change.



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Variation 6 - This variation introduced the following changes:

- i. Following appropriate assessment, EN 60079-0:2006 was replaced with EN 60079-0: 2012, the marking in Section 12 was amended accordingly.
- ii. The ambient temperature range has been extended to -60°C for category 2G only.
- iii. The requirement for routine overpressure testing has been removed for enclosures suitable for a -50°C ambient temperature limit, in addition, a routine overpressure testing requirement for enclosures suitable for -60°C was added.
- iv. The DXP can be fitted with the following switch types:

| | |
|----------------------------------|---------------------------------|
| SPDT - 250 V ac at 1.5 A | NO Proximity - 250 V ac at 0.2A |
| SPDT - 250 V ac at 0.5 A | NO Proximity - 60 V dc at 0.2 A |
| DPDTh - 110 V ac at 6 A | NC Proximity - 8 V dc at 3 mA |
| PNP Proximity - 30 V dc at 0.2 A | |

Variation 7 - This variation introduced the following change:

- i. The removal of routine overpressure testing on model variants with stainless steel housings was endorsed.
- ii. Clarification of the special fastener head, on drawing numbers ES-00238-1, was approved.
- iii. The recognition of minor drawing modifications; the leading edge of the bushing from 0.5 mm x 30° to 1.0 mm x 10° to aid assembly, 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.

Variation 8 - This variation introduced the following change:

- i. The introduction of two additional manufacturing locations:

| | |
|--|--|
| Emerson Machinery Equipment (Shenzhen) Co. Ltd. Fisher Controls Division Bao Heng Technology Industry Park North Hong Long 2 nd Road District 68 Bao'an District Shenzhen 518101, China | Emerson Process Management Magyarország Kft. Fisher Controls International LLC H-8001 Székesfehérvár Berenyi U 72-100, Hungary |
|--|--|

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

| Issue | Date | Report no. | Comment |
|-------|------------------|--------------------------|--|
| 0 | 10 April 2008 | R51A15997A | The release of the prime certificate. |
| 1 | 21 May 2009 | R51L18967A | The introduction of Variation 1. |
| 2 | 25 November 2011 | R25807A/00 | The introduction of Variation 2. |
| 3 | 23 March 2012 | R25461A/00 R25661A/00 | The introduction of Variation 3 (report R25461A/00) and Variation 4 (report R25661A/00). |
| 4 | 01 August 2012 | R25661B/00 | The introduction of Variation 5. |
| 5 | 11 December 2012 | R21191A/00 R28146A/00 | The introduction of Variation 6. |

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Sira Certification Service

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| Issue | Date | Report no. | Comment |
|-------|------------------|------------|----------------------------------|
| 6 | 02 December 2013 | R30951A/00 | The introduction of Variation 7. |
| 7 | 07 May 2014 | R70005505A | The introduction of Variation 8. |

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

- 15.1 The IIC enclosures are excluded from use in carbon disulphide atmospheres.
- 15.2 The air pressure to the valve block, when fitted, shall not exceed 10.0 bar.
- 15.3 For ambient temperatures above 110°C, the degrees of ingress protection IP66 and IP67 are not endorsed by Sira.
- 15.4 The slotted hexagonal head cover screws are not of standard form; they shall only be replaced with identical screws sourced from the equipment manufacturer.
- 15.5 The hexagonal head cover screws are to be replaced only with stainless steel A2-70 or A4-80 screws to ISO 35061
- 15.6 Cover fasteners are to be tightened to a torque value of 10.85 Nm (8ft/lbs) minimum.

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 The manufacturer shall conduct a routine overpressure test on each unit to be marked with a -60°C ambient, unless manufacture from stainless steel, at the following pressures; for at least 10 s as required by clause 16.1 of EN 60079-1:2007. There shall be no permanent damage or deformation to the enclosure.

| Gas group IIC | Gas group IIB+H2 |
|---------------|------------------|
| 28 bar | 19.1 bar |

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Certificate Annexe

Certificate Number: Sira 07ATEX1273X
 Equipment: Type DXP and Type DXS Switchboxes
 Applicant: Topworx Inc.



Issue 0

| Drawing No. | Sheets | Rev. | Date | Description |
|--------------|--------|------|----------|--|
| ES-01141-1 | 1 of 1 | 3 | 03.19.08 | General Assembly - DXP |
| S-AV1-0003 | 1 of 1 | 13 | 03.13.08 | General Assembly – DXS Valve |
| S-S01-0008 | 1 of 1 | 12 | 02.05.08 | Upper Casting -DXP |
| S-S01-0007 | 1 of 1 | 21 | 03.14.08 | Lower Casting -DXP With Ports |
| S-S01-0012 | 1 of 1 | 17 | 03.14.08 | Lower Casting -DXP Without Ports |
| S-S01-SS08 | 1 of 1 | 5 | 02.05.08 | Upper Casting -DXS |
| S-S01-SS07 | 1 of 1 | 11 | 03.14.08 | Lower Casting -DXS With Ports |
| S-S01-SS12 | 1 of 1 | 10 | 03.14.08 | Lower Casting -DXS Without Ports |
| ES-00746-1 | 1 of 1 | 2 | 11.07.07 | Serration Joint Details - Lower Casting |
| ES-00747-1 | 1 of 1 | 2 | 11.07.07 | Serration Joint Details – Upper Casting |
| ES-01068-1 | 1 of 1 | 1 | 03.25.08 | Serration Joint Match Details |
| ES-00157-1 | 1 of 1 | 3 | 06.13.07 | Switch Shaft Assembly |
| S-S01-0016 | 1 of 1 | 7 | 01.18.08 | Switch Shaft - Standard |
| S-S01-0017 | 1 of 1 | 7 | 01.18.08 | Switch Shaft - Universal |
| S-S01-0006 | 1 of 1 | 1 | 09.19.03 | Bushing |
| S-S01-0013 | 1 of 1 | 5 | 12.10.07 | Sinter |
| ES-00238-1 | 1 of 1 | 6 | 03.19.08 | Cover Bolt |
| PS-00177-1 | 1 of 1 | 3 | 03.12.08 | Blanking Plug |
| ES-00874-1 | 1 of 1 | 1 | 05.11.07 | EDS Cube Assembly |
| S-A01-0001-M | 1 of 1 | 10 | 01.15.08 | Switch Assembly - SPDT |
| S-A01-0030 | 1 of 1 | 12 | 06.28.07 | Switch Assembly - DPDT |
| S-A01-0032 | 1 of 1 | 9 | 10.11.07 | Switch Assembly – L2 |
| S-A01-0001-F | 1 of 1 | 8 | 01.16.08 | Switch Assembly – P & F |
| S-A01-0010 | 1 of 1 | 5 | 02.01.05 | Target Assembly |
| ES-00973-1 | 1 of 1 | 3 | 01.31.08 | Nameplate |
| ES-01149-1 | 1 of 1 | 1 | 12.11.07 | Nameplate Artwork – IIC |
| ES-01147-1 | 1 of 1 | 2 | 03.28.08 | Certification Label Details – IIC |
| ES-01148-1 | 1 of 1 | 2 | 03.26.08 | Nameplate Artwork – IIB + H ₂ |
| ES-01146-1 | 1 of 1 | 3 | 03.28.08 | Certification Label Details – IIB + H ₂ |

Issue 1

| Drawing | Sheets | Rev. | Date (Sira stamp) | Description |
|------------|--------|------|-------------------|--|
| ES-01141-1 | 1 of 1 | 4 | 14 May 09 | DXP/DXS IIC cert Drawing |
| ES-00973-1 | 1 of 1 | 6 | 14 May 09 | Nameplate |
| ES-01146-1 | 1 of 1 | 6 | 14 May 09 | Certification Label Details – IIB + H ₂ |
| ES-01147-1 | 1 of 1 | 4 | 14 May 09 | Certification Label Details - IIC |
| ES-01148-1 | 1 of 1 | 4 | 14 May 09 | Nameplate Artwork – IIB + H ₂ |
| ES-01149-1 | 1 of 1 | 2 | 14 May 09 | Nameplate Artwork – IIC |

Issue 2

| Drawing | Sheets | Rev. | Date(Sira stamp) | Title |
|------------|--------|------|------------------|--|
| ES-00746-1 | 1 of 1 | 3 | 29 Sep 11 | Serration Joint Casting - Lower Casting |
| ES-00238-1 | 1 of 1 | 8 | 29 Sep 11 | Cover Bolt |
| S-S01-0008 | 1 of 1 | 16 | 29 Sep 11 | Upper Casting - DXP |
| S-S01-SS07 | 1 of 1 | 14 | 29 Sep 11 | Lower Casting - DXS With Ports |
| ES-01146-1 | 1 of 1 | 11 | 29 Sep 11 | Certification Label Details - IIB + H ₂ |

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Certificate Annexe



Certificate Number: Sira 07ATEX1273X
 Equipment: Type DXP and Type DXS Switchboxes
 Applicant: Topworx Inc.

| Drawing | Sheets | Rev. | Date(Sira stamp) | Title |
|--------------|--------|------|------------------|--|
| ES-01147-1 | 1 of 1 | 8 | 29 Sep 11 | Certification Label Details - IIC |
| S-AV1-0003 | 1 of 1 | 15 | 29 Sep 11 | General Assembly - DXS Valve |
| S-A01-0001-M | 1 of 1 | 14 | 29 Sep 11 | Switch Assembly - SPDT |
| S-S01-SS08 | 1 of 1 | 6 | 29 Sep 11 | Upper Casting - DXS |
| S-S01-0016 | 1 of 1 | 9 | 29 Sep 11 | Switch Shaft - Standard |
| S-S01-0017 | 1 of 1 | 9 | 29 Sep 11 | Switch Shaft - Universal |
| S-S01-0012 | 1 of 1 | 20 | 29 Sep 11 | Lower Casting - DXP Without Ports |
| S-S01-0007 | 1 of 1 | 23 | 29 Sep 11 | Lower Casting - DXP With Ports |
| ES-01148-1 | 1 of 1 | 8 | 29 Sep 11 | Nameplate Artwork - IIB + H ₂ |
| ES-01149-1 | 1 of 1 | 5 | 29 Sep 11 | Nameplate Artwork - IIC |
| ES-01141-1 | 1 of 1 | 6 | 29 Sep 11 | General Assembly - DXP |
| S-S01-0006 | 1 of 1 | 2 | 29 Sep 11 | Bushing |
| S-A01-0030 | 1 of 1 | 17 | 29 Sep 11 | Switch Assembly - DPDT |
| S-A01-0032 | 1 of 1 | 12 | 29 Sep 11 | Switch Assembly - L2 |
| S-A01-0001-F | 1 of 1 | 11 | 29 Sep 11 | Switch Assembly - P & F |
| ES-00747-1 | 1 of 1 | 4 | 29 Sep 11 | Serration Joint Details - Upper Casting |
| ES-00973-1 | 1 of 1 | 7 | 04 Oct 11 | Nameplate |
| ES-00874-1 | 1 of 1 | 2 | 29 Sep 11 | EDS Cube Assembly |
| ES-00157-1 | 1 of 1 | 6 | 29 Sep 11 | Switch Shaft Assembly |
| S-S01-SS12 | 1 of 1 | 14 | 29 Sep 11 | Lower Casting - DXS Without Ports |

Issue 3

(Report R25461A/00)

| Drawing | Sheets | Rev. | Date(Sira stamp) | Title |
|-----------------|--------|------|------------------|--|
| CERT-ES-01148-1 | 1 of 1 | 9 | 06 Dec 11 | Assembly, Nameplate DXP/DXS IIB+H ₂ |
| CERT-ES-01149-1 | 1 of 1 | 6 | 06 Dec 11 | Assembly, Nameplate DXP/DXS IIC |
| PS-00177-1 | 1 of 1 | 5 | 05 Dec 11 | Plug, Hole |

(Report R25661A/00)

| Drawing | Sheets | Rev. | Date(Sira stamp) | Title |
|------------|--------|------|------------------|-----------------------------------|
| SK-1256 | 1 of 1 | C | 06 Jan 12 | General Assembly - FF2.0 Module |
| ES-01141-1 | 1 of 1 | 7 | 06 Jan 12 | DXP/DXS IIC Certification Drawing |

Issue 4

| Drawing | Sheets | Rev. | Date (Sira stamp) | Title |
|-----------------|--------|------|-------------------|--|
| ES-01141-1 | 1 of 1 | 9 | 23 Jul 12 | DXP/DXS IIC Certification Drawing |
| CERT-ES-01148-1 | 1 of 1 | 10 | 23 Jul 12 | Nameplate Artwork [IIB+H ₂] |
| CERT-ES-01149-1 | 1 of 1 | 7 | 23 Jul 12 | Nameplate Artwork [IIC] |
| CERT-ES-03278-1 | 1 of 1 | 1 | 23 Jul 12 | Nameplate Artwork [IIB+H ₂ /IIIC T6/T5/T4-Silicone S7426-60 O-Ring] |
| CERT-ES-03279-1 | 1 of 1 | 1 | 23 Jul 12 | Nameplate Artwork [IIC/IIIC T6/T5/T4-Silicone S7426-60 O-Ring] |
| CERT-ES-03288-1 | 1 of 1 | 1 | 23 Jul 12 | Nameplate Artwork [IIC/IIB+H ₂ T3] |

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Certificate Annexe

Certificate Number: Sira 07ATEX1273X
Equipment: Type DXP and Type DXS Switchboxes
Applicant: Topworx Inc.



Issue 5

| Drawing | Sheets | Rev. | Date (Sira stamp) | Title |
|-----------------|--------|------|-------------------|--|
| CERT-ES-03278-1 | 1 of 1 | 2 | 10 Nov 12 | Artwork, Nameplate DXP/DXS IIB+H2 T6/T5/T4 |
| CERT-ES-03279-1 | 1 of 1 | 2 | 10 Nov 12 | Artwork, Nameplate DXP IIC T6/T5/T4 |
| CERT-ES-03288-1 | 1 of 1 | 2 | 10 Nov 12 | Artwork, Nameplate DXP/DXS IIB+H2/IIC T3 |
| CERT-ES-01148-1 | 1 of 1 | 11 | 10 Nov 12 | Assembly, Nameplate & Artwork DXP/DXS IIB+H2 |
| CERT-ES-01149-1 | 1 of 1 | 8 | 10 Nov 12 | Assembly, Nameplate & Artwork DXP/DXS IIC |
| S-S01-0007 | 1 of 1 | 25 | 06 Dec 12 | Lower Casting - DXP With Ports |
| S-S01-0012 | 1 of 1 | 22 | 06 Dec 12 | Lower Casting - DXP Without Ports |
| S-S01-0008 | 1 of 1 | 18 | 06 Dec 12 | Upper Casting - DXP |
| CERT-ES-03440-1 | 1 of 1 | 1 | 06 Dec 12 | Nameplate Artwork – IIB+H2, -60°C |
| CERT-ES-03442-1 | 1 of 1 | 1 | 06 Dec 12 | Nameplate Artwork – IIB+H2, -60°C to +75°C |
| CERT-ES-03443-1 | 1 of 1 | 1 | 06 Dec 12 | Nameplate Artwork – IIC, -60°C to +75°C |
| CERT-ES-03444-1 | 1 of 1 | 1 | 06 Dec 12 | Nameplate Artwork – IIB+H2/ IIC, -60°C to +175°C |
| ES-01506-1 | 1 of 1 | 3 | 06 Dec 12 | Enclosure specification |

Issue 6

| Drawing | Sheets | Rev. | Date (Sira stamp) | Title |
|------------|--------|------|-------------------|-----------------------------------|
| ES-00238-1 | 1 of 1 | 12 | 18 Nov 13 | Cover bolt |
| ES-00157-1 | 1 of 1 | 7 | 18 Nov 13 | Switch shaft assembly |
| S-S01-0016 | 1 of 1 | 11 | 18 Nov 13 | Switch shaft - Standard |
| S-S01-0017 | 1 of 1 | 11 | 18 Nov 13 | Switch shaft - Universal |
| S-S01-SS07 | 1 of 1 | 15 | 18 Nov 13 | Lower Casting – DXP With Ports |
| S-S01-SS12 | 1 of 1 | 15 | 18 Nov 13 | Lower Casting – DXS Without Ports |
| S-A01-0030 | 1 of 1 | 20 | 18 Nov 13 | Switch Assembly – DPDT |

Issue 7

| Drawing | Sheets | Rev. | Date (Sira stamp) | Description |
|-----------------|--------|------|-------------------|-------------|
| CERT-ES-01148-1 | 1 of 1 | 12 | 07 May 14 | Nameplate |
| CERT-ES-01149-1 | 1 of 1 | 9 | 07 May 14 | Nameplate |
| CERT-ES-03278-1 | 1 of 1 | 3 | 07 May 14 | Nameplate |
| CERT-ES-03279-1 | 1 of 1 | 3 | 07 May 14 | Nameplate |
| CERT-ES-03288-1 | 1 of 1 | 3 | 07 May 14 | Nameplate |
| CERT-ES-03440-1 | 1 of 1 | 2 | 07 May 14 | Nameplate |
| CERT-ES-03442-1 | 1 of 1 | 2 | 07 May 14 | Nameplate |
| CERT-ES-03443-1 | 1 of 1 | 2 | 07 May 14 | Nameplate |
| CERT-ES-03444-1 | 1 of 1 | 2 | 07 May 14 | Nameplate |

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