1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 04ATEX1218X** Issue: **8**

4 Equipment: **Limit Switch Enclosure Types TXP and TXS**

5 Applicant: **Topworx Inc.**

6 Address: 3300 Fern Valley Road
Louisville
Kentucky 40213
USA

Refer to the Description for alternative Manufacturing locations

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:

Limit Switch Enclosure
Types TXP and TXS without solenoid

II 2GD
Ex d IIC T4 Gb (Ta = -60°C to +80°C)
Ex tb IIIC T135°C Db (Ta = -50°C to +80°C)

Solenoid Switch
Types For TXP and TXS with solenoid

II 2GD
Ex d IIB T4 Gb (Ta = -60°C to +80°C)
Ex tb IIIC T135°C Db (Ta = -50°C to +80°C)

Project Number 30951

C Ellaby
Deputy Certification Manager

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13 **DESCRIPTION OF EQUIPMENT**

The Limit Switch Enclosure Types TXP and TXS are intended to indicate the position of a valve or actuator to which it is connected. The equipment comprises a rectangular enclosure manufactured from either die cast aluminium (TXP) or stainless steel (TXS) with the cover being fixed to the body via four M5 x 20 socket head fasteners. The body contains two, single pole, double throw, limit switches, which make and break via a rotating armature connected to the operating shaft. The operating shaft passes through a bronze bushing and the position of the valve or actuator to which it is connected is transferred. There are either one, two or three M20 x 1.5 cable entry points, with a maximum of one per side, via which electrical connection to external circuitry is made.

Design options:

- The cable entry points may have the thread form ½" x 14 NPT.
- The equipment may contain up to four limit switches and a 1 KΩ potentiometer in varying combinations.

Alternative models	
Limit Switch Enclosure Types TXP and TXS	As described above
Solenoid Switch Types TXP and TXS	Formed by using a pilot operated solenoid valve and has the option to fit a position indicator within a plastic cover on the lid of the switch box

The enclosure fasteners are stainless steel M8 x 1.25 – 6H, reduced shank A2-70 grade fasteners.

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

Alternative Manufacturing Locations:

Emerson Machinery Equipment (Shenzhen) Co. Ltd.
Fisher Controls Division
Bao Heng Technology Industry Park
North Hong Long 2nd Road
District 68
Boan District
Shenzhen 51810
China

Emerson Process Management Magyarorszag Kft.
Fisher Controls International LLC.
H-8001 Szekesfehervar Berenyi U
72-100
Hungary

Variation 1 - This variation introduced the following change:

i. The introduction of alternative product labels that allow a distributor's name to be applied to the products.

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Variation 2 - This variation introduced the following changes:

i. The TS-EXD-C, TS-EXD-C-S/S & TS-SOL-B variants were permitted to be fitted with switch types:
SPDT - 250 V ac at 1.5 A
SPDT - 250 V ac at 0.5 A
NO Proximity - 250 V ac at 0.2 A
DPDTh - 110 V ac at 6 A
NO Proximity - 60 V dc at 0.2 A
PNP Proximity - 30 V dc at 0.2 A
NC Proximity - 8 V dc at 3 mA
ii. The option to use of nickel plated brass as a material of manufacture of the TS-EXD-3 venting and breathing device was recognised.
iii. The option to machine the shaft from one piece of metal was endorsed.

Variation 3 - This variation introduced the following changes:

i. The equipment was allowed to be used in a lower ambient temperature of -50°C; in consequence, the marking has been modified to include Ta = -50°C.
ii. The inclusion of bus network cards to provide feedback on the actuator position; the equipment type reference suffix is detailed below:
A - AS-I card
B - Profibus DP card
C - Profibus PA card
D - Foundation Fieldbus card
E - Position transmitter card
F - Devicenet card
G - Modbus card
iii. The introduction of alternative labels that allow a distributors name to be applied to the products.

Variation 4 - This variation introduced the following change:

i. The option to fit Go® switches to the TS-SOL-B & TS-EXD-C Enclosures was approved.

Variation 5 - This variation introduced the following change:

i. The existing routine overpressure testing requirements were removed.

Variation 6 - This variation introduced the following changes:

i. Topworx were recognised to have ownership the of the intellectual rights of these products.
ii. An alternative manufacturing site in Shenzhen China was introduced.
iii. Minor drawing modifications were recognised; these changes relate to the securing arrangements and are not detrimental to explosion safety.
iv. The ambient temperature range (-50°C to +40°C) is increased to -50°C to +80°C, the temperature class is raised to T4 as a result of this change.
v. The range of products has been rationalised, the certificate now covers the Limit Switch Enclosure Types TXP and TXS.
vi. The Limit Switch Enclosure Types TXP and TXS were allowed to be used in IIC environments, in consequence, a condition of certification associated with routine pressure testing was introduced.

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vii. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997 A1 - A2, EN 50018:2000 and EN 50281-1-1:1998, were replaced by those currently listed, the markings in section 12 were updated accordingly.

Variation 7 - This variation introduced the following change:

i. To recognise a modification to the product nomenclature, by including a letter 'M', for the TXP and TXS versions only

Variation 8 - This variation introduced the following change:

i. The introduction of a new model designated as the type 'TXP0X', this model has an alternative shaft and bushing arrangement in enclosure lid.

Variation 9 - This variation introduced the following change:

i. Minor drawing and dimensional changes were approved.

Variation 10 - This variation introduced the following change:

i. To permit the metal enclosures to be given an IP66/67 ingress protection rating. The marking in Section 12 was amended accordingly.

Variation 11 - This variation introduced the following change:

i. The enclosure was modified in order to make it more robust.

Variation 12 - This variation introduced the following change:

i. Following appropriate assessment to later stamdards, the following standards, EN 60079-0:2006, EN 61241-0: 2006 and EN 61241-1:2004, were replaced with those currently listed, 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.

Variation 13 - This variation introduced the following change:

i. The introduction of an alternative manufacturing location, Emerson Process Management Magyarorszag Kft., Fisher Controls International LLC., H-8001 Szekesfehervar Berenyi U, 72-100, Hungary, was recognised

Variation 14 - 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-03002-1, 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.

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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	22 July 2005	R51V12251A	The release of the prime certificate and Variations 1 to 5.
1	12 October 2009	R51L19482A	This Issue covers the following changes: • All previously issued certification was rationalised into a single certificate, Issue 6, Issue 0 referenced above is only intended to reflect the history of the previous certification and has not been issued as document in this format. • The introduction of Variation 6.
2	26 January 2010	R21598A/00	The introduction of Variation 7.
3	16 March 2011	R24283A/00	The introduction of Variation 8.
4	15 November 2011	R25806A/00	The introduction of Variation 9.
5	23 March 2012	R25461A/00	The introduction of Variation 10.
6	16 May 2012	R27180A/00	The introduction of Variation 11.
7	11 December 2012	R21191A/00 R28146A/00	The introduction of Variation 12.
8	21 May 2013	R30386A/00	The introduction of Variation 13.
9	02 December 2013	R30951A/00	The introduction of Variation 14, as a result of the assessment, Special Conditions for Safe Use were introduced and therefore an 'X' suffix was added to the certificate number

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

15.1 The slotted hexagonal head cover screws are not of standard form; they shall only be replaced with identical screws sourced from the equipment manufacturer.

15.2 The hexagonal head cover screws are to be replaced only with stainless steel A2-70 or A4-80 screws to ISO 35061.

15.3 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.

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17.3 This product shall be uniquely marked with the label identified in the annexe of this certificate.

17.4 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
26 bar	18.2 bar

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Certificate Annexe

Certificate Number: **Sira 04ATEX1218X**

Equipment: **Limit Switch Enclosure Types TXP and TXS**

Applicant: **Topworx Inc.**

Issue 0: The drawings listed with these Issues were rationalised and have been superseded by those detailed in Issue 1.

Issue 1

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
CERT-S-S01-00037*	1 of 1	a	10 Aug 09	O-ring, Shaft
CERT-ES-00321-1	1 of 1	1	22 Jul 09	Breathing device
CERT-ES-01113-1	1 of 1	b	10 Aug 09	Enclosure base
CERT-ES-01114-1	1 of 1	3	02 Sep. 09	Enclosure lid –indicator
CERT-ES-01455-1	1 of 1	1	22 Jul 09	TXP bearing - lid
CERT-ES-01456-1	1 of 1	1	22 Jul 09	TXP bearing - base
CERT-ES-01457-1	1 of 1	1	22 Jul 09	TXP shaft
CERT-ES-01495-1	1 of 1	1	22 Jul 09	Hollow O-ring
CERT-ES-01498-1	1 of 1	b	10 Aug 09	TXP exploded assembly
CERT-ES-01523-1	1 of 1	2	22 Jul 09	Enclosure base
CERT-ES-01530-1	1 of 1	C	02 Sep 09	Enclosure lid – w/o indicator
ES-01604-1	1 of 1	1	11 Sep 09	Label, warning
ES-01605-1	1 of 1	1	11 Sep 09	Nameplate, blank
ES-01606-1	1 of 1	1	11 Sep 09	Ex d IIC Artwork, Nameplate
ES-01607-1	1 of 1	1	11 Sep 09	Ex d IIC Artwork, Nameplate
ES-01608-1	1 of 1	1	11 Sep 09	Ex d IIB Artwork, Nameplate
ES-01609-1	1 of 1	1	11 Sep 09	Ex d IIB ASSY. Artwork, Nameplate
ES-01642-1	1 of 1	1	11 Sep. 09	Nameplate, label
ES-01757-1	1 of 1	1	11 Sep 09	Label, logo
ES-01831-1	1 of 1	1	11 Sep 09	Plate, Blank for logo, warning
ES-01835-1	1 of 1	1	11 Sep 09	Label, custom marking

* This drawing was amended by Sira 12 October 2009

Issue 2

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Title
CERT-ES-01498-1	1 of 1	3	12 Jan 10	TXP/TXS Exploded Assembly

Issue 3

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Title
CERT-ES-01498-1	1 of 1	7	07 Mar 11	TXP Exploded Assembly
ES-01606-1	1 of 1	3	21 Feb 11	TXP/TXS, Ex d IIC Nameplate
ES-01608-1	1 of 1	4	21 Feb 11	TXP/TXS, Ex d IIB Nameplate
ES-01995-1	1 of 1	1	10 Mar 11	Alternative Bushing, Lid TXP 4-20
ES-01988-1	1 of 1	1	07 Mar 11	Alternative Shaft, TS 4-20 TXP0X Model
ES-02627-1	1 of 1	1	21 Feb 11	Assembly, Lid, TX Series
ES-02638-1	1 of 1	1	21 Feb 11	Assembly, Lid, TX Series
CERT-ES-01456-1	1 of 1	2	10 Mar 11	Lower bearing, TXP
CERT-ES-01457-1	1 of 1	3	07 Mar 11	Shaft, TXP
CERT-ES-01503-1	1 of 1	1	07 Mar 11	Shaft, TXP Flat Top
CERT-ES-01455-1	1 of 1	2	10 Mar 11	Upper Bearing, TXP

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Certificate Annexe

Certificate Number: **Sira 04ATEX1218X**

Equipment: **Limit Switch Enclosure Types TXP and TXS**

Applicant: **Topworx Inc.**

Issue 4

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
ES-01757-1	1 of 1	4	27 Sep 11	Label, logo
ES-01642-1	1 of 1	4	27 Sep 11	Nameplate, label
ES-01609-1	1 of 1	7	27 Sep 11	Ex d IIB ASSY. Artwork, Nameplate
ES-01608-1	1 of 1	8	27 Sep 11	Ex d IIB Artwork, Nameplate
ES-01607-1	1 of 1	7	27 Sep 11	Ex d IIC Artwork, Nameplate
ES-01606-1	1 of 1	7	27 Sep 11	Ex d IIC Artwork, Nameplate
ES-01604-1	1 of 1	5	27 Sep 11	Label, warning
ES-01995-1	1 of 1	2	27 Sep 11	Alternative Bushing, Lid TXP 4-20
ES-01988-1	1 of 1	2	27 Sep 11	Alternative Shaft, TS 4-20 TXP0X Model
ES-01835-1	1 of 1	4	27 Sep 11	Label, custom Logo marking
CERT-ES-01530-1	1 of 1	5	28 Sep 11	Enclosure lid – w/o indicator
CERT-ES-01523-1	1 of 1	3	27 Sep 11	Enclosure base
CERT-ES-01498-1	1 of 1	8	27 Sep 11	TXP Exploded Assembly
CERT-ES-01457-1	1 of 1	4	27 Sep 11	TXP shaft
CERT-ES-01114-1	1 of 1	6	28 Sep 11	Enclosure lid –indicator

Issue 5

Drawing	Sheets	Rev.	Date(Sira stamp)	Title
CERT-ES-01607-1	1 of 1	8	07 Dec 11	Assembly, Nameplate & Artwork, TXP/TXS IIC
CERT-ES-01609-1	1 of 1	8	07 Dec 11	Assembly, Nameplate & Artwork, TXP/TXS IIB

Issue 6

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
ES-02476-1	1 of 1	4	16 May 12	TXP/TXS DIV 1 Base
CERT-ES-02477-1	1 of 1	3	16 May 12	TXP Base Machined
ES-02478-1	1 of 1	2	16 May 12	TXP Base with conduit
ES-02479-1	1 of 1	1	16 May 12	Assembly, TXP Base
ES-02480-1	1 of 1	3	16 May 12	TXP Lid Raw Casting
CERT-ES-02481-1	1 of 1	3	16 May 12	TXP Lid Machined
ES-02482-1	1 of 1	1	16 May 12	Assembly, TXP Lid
CERT-ES-02738-1	1 of 1	3	16 May 12	TXP Lid Machined, blank
ES-03002-1	1 of 1	1	16 May 12	TXP Housing Bolt

Issue 7

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
CERT-ES-01607-1	1 of 1	9	10 Nov 12	Assembly, Nameplate & Artwork, TXP/TXS IIC
CERT-ES-01609-1	1 of 1	9	10 Nov 12	Assembly, Nameplate & Artwork, TXP/TXS IIB
CERT-ES-01523-1	1 of 1	4	10 Nov 12	TX Series DIV 1, Base, Aluminium
ES-02627-1	1 of 1	2	10 Nov 12	Assembly, Lid, TX Series DIV 1
CERT-ES-01530-1	1 of 1	6	10 Nov 12	TXP DIV 1, Lid, Flat Top
CERT-ES-01114-1	1 of 1	7	10 Nov 12	TXP/TXS DIV 1, Lid
ES-02476-1	1 of 1	6	10 Nov 12	Enclosure base – casting
CERT-ES-02477-1	1 of 1	1	06 Dec 12	Enclosure base – machining
ES-02478-1	1 of 1	3	06 Dec 12	Enclosure base – entries
ES-02480-1	1 of 1	4	10 Nov 12	Enclosure lid –indicator
ES-02482-1	1 of 1	2	10 Nov 12	Assembly, Lid, TXP

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Certificate Annexe

Certificate Number: **Sira 04ATEX1218X**

Equipment: **Limit Switch Enclosure Types TXP and TXS**

Applicant: **Topworx Inc.**

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
CERT-ES-02738-1	1 of 1	2	07 Dec 12	Enclosure lid – w/o indicator – machining
CERT-ES-03445-1	1 of 1	1	06 Dec 12	Nameplate Artwork – IIC, -60°C
CERT-ES-03446-1	1 of 1	1	06 Dec 12	Nameplate Artwork – IIB+H2, -60°C
ES-01506-1	1 of 1	3	06 Dec 12	Enclosure specification
ES-01525-1	1 of 1	3	07 Dec 12	TXP DIV 1, Lid, RC

Issue 8

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
CERT ES 01607 1	1 of 1	10	20 May 13	Nameplate TXP/TXC IIC
CERT ES 01609 1	1 of 1	10	20 May 13	Nameplate TXP/TXC IIB
CERT ES 01759 1	1 of 1	3	20 May 13	Label, Logo for TXP/TXS

Issue 9

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
ES-03002-1	1 of 1	2	18 Nov 13	Cover bolt
CERT-ES-01607-1	1 of 1	11	18 Nov 13	Nameplate TXP/TXC IIC
CERT-ES-01609-1	1 of 1	11	18 Nov 13	Nameplate TXP/TXC IIB
ES-01995-1	1 of 1	3	18 Nov 13	Alternative Bushing, Lid TXP 4-20

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