



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx SIR 14.0078X

Issue No: 1

Certificate history:

Status: **Current**

Issue No. 1 (2017-07-17)

Issue No. 0 (2015-07-07)

Date of Issue: **2017-07-17**

Page 1 of 4

Applicant: **TopWorx**
3300 Fern Valley Road
Louisville
Kentucky 40213
United States of America

Equipment: **D-Series Switchbox**

Optional accessory:

Type of Protection: **Intrinsic Safety and Dust Protection by Enclosure**

Marking:

Ex ia IIC T4 Gb
Ex ia IIC T6 Gb
Ex tb III C T⁺°C Db
Ta = -[°]C to +[°]C

The temperature class and ambient temperature depends on the electrical devices that are fitted in the Switchbox.

Approved for issue on behalf of the IECEx
Certification Body:

C Ellaby

Position:

Deputy Certification Manager

Signature:
(for printed version)

Date:

2017-07-17

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

sira
CERTIFICATION





IECEX Certificate of Conformity

Certificate No: IECEX SIR 14.0078X Issue No: 1

Date of Issue: 2017-07-17 Page 2 of 4

Manufacturer: **TopWorx**
3300 Fern Valley Road
Louisville
Kentucky 40213
United States of America

Additional Manufacturing location(s):

Emerson Machinery Equipment (Shenzhen) Co. Ltd.
Fisher Controls Division
Bao Heng Technology Industry Park
Liu Xian 1st Road
District 68, Bao'an District
Shenzhen 518101
China

Emerson Process Management Magyarország Kft.
Fisher Controls International LLC
Holland Faszor 6
Székesfehérvár
8000
Hungary

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[GB/SIR/ExTR15.0178/00](#) [GB/SIR/ExTR17.0150/00](#)

Quality Assessment Report:

[GB/BAS/QAR06.0020/06](#) [GB/BAS/QAR13.0005/01](#) [GB/SIR/QAR07.0025/05](#)



IECEX Certificate of Conformity

Certificate No: IECEx SIR 14.0078X

Issue No: 1

Date of Issue: 2017-07-17

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The D-Series Switchbox is a valve position indicator. A rotating cam activates a number of internal devices that sense the status of the valve position. The Switchbox consists of an enclosure made up of a body and a lid. All models have a visual valve position indicator underneath a plastic dome. The body has threaded entries to allow the installation of cable glands. The approved internal devices are as shown in the Conditions of Manufacture, refer to Annex.

Enclosure types

Model	Body	Lid	Dome
DXP	Aluminium	Aluminium	Lexan
DXS	Stainless steel	Stainless steel	Lexan
DXR	Resin	Resin	Lexan

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to Annex



IECEX Certificate of Conformity

Certificate No: IECEX SIR 14.0078X

Issue No: 1

Date of Issue: 2017-07-17

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1

1. The HART 4-20 mA board was replaced with the HART v7 Module, IECEX SIR 16.0107U, this required additions and amendments to the Specific Conditions of Use and Conditions of Manufacture.

Annex:

[IECEX SIR 14-0078X_Annex Iss 1.pdf](#)

Conditions of Manufacture

The Manufacturer shall comply with the following:

- i. The manufacturer shall subject 100% of completed units to the dielectric strength test in accordance with IEC 60079-11:2011 clauses 6.3.12 and 10.3, by applying a voltage of 500 Vrms to all input terminals and the outer enclosure for a minimum of 60 s. Alternatively, a voltage of 700 Vrms may be applied for 1 s. The current flowing during the test shall not exceed 5 mA.
- ii. When the equipment incorporates a 4-20 mA Transmitter Module, the output shall only be connected to a Novotechnic WAL305 potentiometer.
- iii. The certification codes, ambient temperature ranges and (where applicable) dust temperature marking shall be as shown in the table below. The ambient temperature range marked is dependent on the internal devices fitted and shall reflect the most restrictive values.

Device	Style	Type	Description	Limiting ambient temp. range			
				Ex ia IIC T4 Gb (3.78W max.)		Ex ia IIC T6 Gb (1.36W max.)	
				DXS/DXP (8 K internal temp. rise)	DXR (15 K internal temp. rise)	DXS/DXP (3 K internal temp. rise)	DXR (13 K internal temp. rise)
Mechanical switch	K	V7	Simple Switch	-60°C to +92°C	-60°C to +85°C	-60°C to +70°C	-60°C to +60°C
Micro/Limit Switch	M	VS10N001C2	Simple Switch				
Reed Switch	P	HSR-V933	Simple Switch				
Reed Switch	R	LV-ELE145	Simple Switch				
Go Switch	L/Z	35 Series	Simple Switch				
DPDT Micro Switch	T/8	Cherry Burrell E19 or ITW DPDT-ZZ #26-804	Simple Switch				
Line fault detection	-	-	Not certified. -60°C to +100°C	-60°C to +92°C	-60°C to +85°C	Not permitted	Not permitted
Topworx Cube	PN	2 reed switch with LEDs	Not certified. -60°C to +100°C	-60°C to +92°C	-60°C to +85°C	Not permitted	Not permitted
ASCO Electro-valve	1 or 2	3021....IA	IECEx INE 10.0002X issue 1; Ex ia IIC T6/T5/T4 -40°C to 40/50/90°C	-40°C to +82°C	-40°C to +75°C	Not assessed for T6	Not assessed for T6
IFM Electronic Inductive Proximity Switch	N	N*50**, N95001 & K15030	IECEx BVS 06.0003 issue 4 Ex ia IIC T6 Ga -20°C to +60°C	-20°C to +52°C	-20°C to +45°C	-20°C to +57°C	-20°C to +47°C
Pepperl & Fuchs Slot Type Initiators	N	SJ... & SC... T4: with supply types 1, 2 +3 only T6: with supply type 1 only	IECEx TUN 04.0016X issue 0 Ex ia IIC T4 -60°C to +75°C Ex ia IIC T6 -60°C to +72°C	-60°C to +67°C	-60°C to +60°C		-60°C to +69°C -60°C to +59°C
Pepperl & Fuchs Valve Position sensor	N	NCN-...-N4..., PL.-F25.- N4..., NC.-F31.-N5... (with supply types 1, 2 +3 only)	IECEx TUN 04.0014X issue 0 Ex ia IIC T6 T4: -60°C to +82°C T6 (Type 1): -60°C to +62°C	-60°C to +74°C	-60°C to +67°C	-60°C to +59°C	-60°C to +49°C
Pepperl & Fuchs Cuboidal Inductive Proximity sensor	E	Type NJ2-V3-N... only (with supply types 1, 2 +3 only)	IECEx PTB 11.0021X issue 0 Ex ia IIC T4/T6 Ga -60°C to +89/73°C	-60°C to +81°C	-60°C to +74°C	-60°C to +70°C	-60°C to +60°C
		All other types (with supply types 1, 2 +3 only)	Ex ia IIC T4/T6 Ga -60°C to +63/55°C	-60°C to +55°C	-60°C to +48°C	-60°C to +52°C	-60°C to +42°C

Annexe to: IECEx SIR 14.0078X Annexe Issue 1

Applicant: TopWorx

Apparatus: D-Series Switchbox



Device	Style	Type	Description	Limiting ambient temp. range			
				Ex ia IIC T4 Gb (3.78W max.)		Ex ia IIC T6 Gb (1.36W max.)	
				DXS/DXP (8 K internal temp. rise)	DXR (15 K internal temp. rise)	DXS/DXP (3 K internal temp. rise)	DXR (13 K internal temp. rise)
TopWorx 4-20 mA Transmitter Module and associated potentiometer	X	N/A	IECEx SIR 12.0076U issue 0 Ex ia IIC Ga -40°C to +80°C	-40°C to +72°C	-40°C to +65°C	Not permitted	Not permitted
TopWorx HART v7 Module	H	N/A	IECEx SIR 16.0107U/0; Ex ia IIC Ga -40°C to +80°C	-40°C to +72°C	-40°C to +65°C	Not permitted	Not permitted
Turk Two Wire Proximity Sensors	N	Type ...-...-Y1-.../...	IECEx KEM 06.0036X issue 3 Ex ia IIC T4/T6 Gb -25°C to +70°C	-25°C to +62°C	-25°C to +55°C	-25°C to +67°C	-25°C to +57°C
Group III (dust) minimum ambient temperature (silicone S7395-60 flange O-ring, S70R2 shaft O-rings)				-60°C	-20°C	-60°C	-20°C
Group III (dust) maximum ambient temperature:				As Gp. II	40°C	As Gp. II	42°C
Ex tb IIIC T*°C Db where T*°C is:				Ta(max) + 14 K	T55°C	Ta(max) + 10 K	T55°C
IP rating:				IP66/67	IP67	IP66/67	IP67

Since the exact composition of the Valve Position Indicators is variable, the manufacturer shall:

- Supply the installer/end user with a full set of appropriate certificates and instructions that are relevant to the contents of the enclosure;
- Ensure that the installer/end user can identify which certified sub-assemblies are fitted to each Valve Position Indicator.

Specific Certifications of Use

The user/installer shall comply with the following:

i. The Switchbox may contain one or more devices covered by the following certificates:

Description	Certificate number
ASCO Electro-valve Module type 3021....IA	IECEx INE 10.0002X issue 1. If fitted, the entity parameters are Ui = 28 V, Ii = 300 mA, Pi = 1.6 W, Ci = 0, Li = 0.
IFM inductive proximity switch type NE****, NF****, NG****, NI****, NN****, NT****, NS****	IECEx BVS 06.0003 issue 4. Refer to certificate for entity parameters specific to the model number.
Pepperl & Fuchs slot-type initiators, types SJ... & SC...	IECEx TUN 04.0016X, issue 0 If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to Ui = 16 V, Ii = 25 mA, Pi = 34 mW ("type 1" supply)
Pepperl & Fuchs Valve Position sensor types NCN-...-N4..., PL.-F25.-N4..., NC.-F31.-N5...	IECEx TUN 04.0014X, issue 0. If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to Ui = 16 V, Ii = 25 mA, Pi = 34 mW ("type 1" supply).

Date: 17 July 2017

Page 2 of 3

Form 9530 Issue 1

Sira Certification Service

Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom

Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Annexe to: IECEx SIR 14.0078X Annexe Issue 1
Applicant: TopWorx
Apparatus: D-Series Switchbox



Description	Certificate number
Pepperl & Fuchs cuboidal inductive sensors, type NJ...	IECEX PTB 11.0021X issue 0 If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 34\text{ mW}$ ("type 1" supply).
TopWorx HART v7 Module	IECEX SIR 16.0107U issue 0 If fitted, the entity parameters are $U_i = 28\text{V}$, $I_i = 100\text{mA}$, $P_i = 700\text{mW}$, $C_i = 11\text{nF}$, $L_i = 14\mu\text{H}$; $U_o = 7.71\text{V}$, $I_o = 100\text{mA}$, $P_o = 700\text{mW}$, $C_o = 0.993\mu\text{F}$, $L_o = 3541\mu\text{H}$.
Turck two-wire proximity sensors type ...-...- .Y1.-.../....	IECEX KEM 06.0036X, issue 3. Refer to certificate for entity parameters specific to the model number.

The installer shall confirm which certified sub-assemblies are contained within the equipment and ensure compliance with the appropriate certificate (with particular reference to entity parameters).

- ii. If fitted, the entity parameters for uncertified simple mechanical or reed switches (including the Topworx R2 and R4 Cubes), with or without line fault detection, are $U_i = 3\text{ OV}$, $I_i = 200\text{ mA}$ and $P_i = 0.34\text{ W}$ per switch circuit.
- iii. If fitted, the entity parameters for the Topworx PN Cube are $U_i = 28\text{ V}$, $I_i = 250\text{ mA}$ and $P_i = 0.8\text{ W}$ per switch circuit.
- iv. The supplies to all internal devices shall be treated as separate intrinsically safe circuits.
- v. The DXP version of the Switchbox has an enclosure that is manufactured from aluminium alloy. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered when the equipment is installed.
- vi. The plastic parts of the Switchbox may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.
- vii. When marked for use in flammable dust, the DXR (resin) enclosure shall only be installed where there is a low risk of mechanical damage.
- viii. The air pressure to the valve block, when fitted, shall not exceed 10.0 bar.
- ix. If the equipment is fitted with a HART v7 Module, it may be supplied with a bonding strap that could be used to connect the shield (screen) of the cable to ground when installed in a metallic enclosure. In this case, the user/installer shall take this into consideration and ensure that earthing arrangements of the final circuitry comply with the requirements of the relevant Code of Practice.

Date: 17 July 2017

Page 3 of 3

Form 9530 Issue 1

Sira Certification Service

Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom

Tel: +44 (0) 1244 670900
 Fax: +44 (0) 1244 681330
 Email: ukinfo@csagroup.org
 Web: www.csagroupuk.org