



UNITED KINGDOM CONFORMITY ASSESSMENT

1 UK TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Certificate Number: CSAE 21UKEX2697X Issue: 1

4 Product: D-Series Switchbox

5 Manufacturer: TopWorx Inc.

6 Address: 3300 Fern Valley Road
Louisville
KY, 40213
USA

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Testing UK Limited, Approved Body number 0518, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. 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 has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-31:2014

Except in respect of those requirements listed at Section 16 of the schedule to this certificate. The above standards may not appear on the UKAS Scope of Accreditation, but have been added through flexible scope of accreditation, which is available on request.

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

11 This UK TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of this product shall be in accordance with Regulation 41 and include the following:



II 2G
Ex ia IIC T4 Gb or
Ex ia IIC T6 Gb
Ta = -*°C to +*°C



II 2GD
Ex ia IIC T4 Gb or
Ex ia IIC T6 Gb
Ex tb IIIC T*°C Db
Ta = -*°C to +*°C

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

Name: M Halliwell
Title: Director of Operations



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13 DESCRIPTION OF PRODUCT

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 Production Control.

Enclosures types

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

The product description includes the following applicable amendments, only amendments directly applicable to UKCA certification have been included in this list.

The amendments are numbered to include a reference to the previous ATEX variation at which these were introduced.

- 1a The HART 4-20 mA board was replaced with the HART v7 Module, Sira 16ATEX2342U, this required additions and amendments to the Specific Conditions of Use and Conditions of Manufacture.
- 2a Recognise update to HART v7 Module certificate and thereby modify the Specific Conditions of Use and the Conditions of Manufacture.
- 5a Add new ambient ranges for Pepperl +Fuchs Switches and sensors when used without any other components.
- 5b Add T5 temperature code for Simple Switches.
- 5c The Specific Conditions of Use and Conditions of Manufacture were amended.
- 6a Addition of an alternative hall effect sensor connected to HART v7, Model ES-04900-1 module certified under IECEx SIR 16.0107U and Sira 16ATEX2342U.
- 7a Addition of an alternate construction of the external indicator.

Variation 1 - This variation introduced the following changes:

- i. Conditions of Manufacture is revised to replace the Novotechnic WAL305 potentiometer with a generic 10k potentiometer that has a 0.5 mm separation distance through a solid insulation.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	28 September 2022	R80088230A	The release of the prime certificate.
1	11 January 2024	R80188973A	The introduction of Variation 1.

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15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

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

Description	Certificate number
ASCO Electro-valve Module type 3021....IA	INERIS 03ATEX0249X IECEx INE 10.0002X If fitted, the entity parameters are $U_i = 28V$, $I_i = 300mA$, $P_i = 1.6W$, $C_i = 0$, $L_i = 0$.
Pepperl & Fuchs slot-type initiators, types SJ... & SC...	PTB 99ATEX2219X plus supplement 1. IECEx PTB 11.0091X If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16V$, $I_i = 25mA$, $P_i = 34mW$ ("type 1" supply).
Pepperl & Fuchs cuboidal inductive sensors, type NJ...	PTB 00ATEX2032X plus Supplements 1 & 2. IECEx PTB 11.0021X If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16V$, $I_i = 25mA$, $P_i = 34mW$ ("type 1" supply).
Pepperl & Fuchs cylindrical inductive sensors, types NC... & NJ...	PTB 00ATEX2048X plus Supplements 1, 2 & 3. IECEx PTB 11.0037X If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16V$, $I_i = 25mA$, $P_i = 34mW$ ("type 1" supply).
Pepperl & Fuchs SN sensors, type NJ...	PTB 00ATEX2049X plus Supplement 1. IECEx PTB 11.0092X If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16V$, $I_i = 25mA$, $P_i = 34mW$ ("type 1" supply).
Topworx 4-20 mA Transmitter Module	Sira 12ATEX2192U issue 1. IECEx SIR 12.0076U If fitted, the entity parameters are $U_i = 30V$, $P_i = 1.5W$, $C_i = 0$, $L_i = 0$. I_i can be any value from an intrinsically safe source meeting the U_i and P_i requirements.
Topworx HART v7 Module	Sira 16ATEX2342U issue 1. IECEx SIR 16.0107U If fitted, the entity parameters are $U_i = 28V$, $I_i = 100mA$, $P_i = 700mW$, $C_i = 11nF$, $L_i = 14\mu H$; $U_o = 7.71V$, $I_o = 100mA$, $P_o = 700mW$, $C_o = 0.993\mu F$, $L_o = 3541\mu H$.
Turck two-wire proximity sensors type ...-.....Y1.-...../.....	KEMA 02ATEX1090X plus Amendment 1. IECEx KEM 06.0036X Refer to certificate for entity parameters specific to the model number.

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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).

- 15.2 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 $U_i = 30\text{ V}$, $I_i = 200\text{ mA}$ and $P_i = 0.34\text{ W}$ per switch circuit.
- 15.3 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.
- 15.4 The supplies to all internal devices shall be treated as separate intrinsically safe circuits.
- 15.5 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.
- 15.6 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.
- 15.7 When marked for use in flammable dust, the DXR (resin) enclosure shall only be installed where there is a low risk of mechanical damage.
- 15.8 The air pressure to the valve block, when fitted, shall not exceed 10.0 bar.
- 15.9 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.
- 15.10 The Switchbox may contain switches/sensors covered by the following certificates, when only one type of switch/sensor is used as per drawing CERT-ES-08677-1 without any other components.

Description	Certificate number
Pepperl+Fuchs Switches/Sensors SC, SJ, NC or NJ	PTB 00ATEX2032X PTB 00ATEX2048X PTB 00ATEX2049X PTB 99ATEX2219X

Only one type of switch to be used as per drawing CERT-ES-08677-1 without any other components.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (REGULATIONS SCHEDULE 1)

In addition to the Essential Health and Safety Requirements covered by the standards listed in Section 9, all other requirements are demonstrated in the relevant reports.

17 PRODUCTION CONTROL

- 17.1 Holders of this certificate are required to comply with production control requirements defined in Schedule 3A, as applicable, and CSA Group Testing UK Regulations for Certificate Holders.

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- 17.2 The manufacturer shall subject 100% of completed units to the dielectric strength test in accordance with EN 60079-11:2012 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, apply a test voltage of 600 Vrms for 1 sec; or a test voltage of 707 Vdc for 60 sec; or a test voltage of 845 Vdc for 1 sec. The current flowing during the test shall not exceed 5 mA.
- 17.3 The only approved potentiometer is a 10k potentiometer that has a 0.5 mm separation distance through a solid insulation.
- 17.4 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 T5 Gb (1.36W max.)	Ex ia IIC T6 Gb (1.36W max.)		Ex ia IIC T6 Gb (1.36W 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)	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 +85°C	-60°C to +75°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	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	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	Not permitted	Not permitted
ASCO Electro-valve	1 or 2	3021....IA	INERIS 03ATEX0249X IECEx INE 10.0002X Ex ia IIC T6/T5/T4 -40°C to 40/50/90°C	-40°C to +82°C	-40°C to +75°C	Not permitted	Not permitted	Not assessed for T6	Not assessed for T6

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Device	Style	Type	Description	Limiting ambient temp. range							
				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)	DXS/DXP (3 K internal temp. rise)	DXR (13 K internal temp. rise)		
Pepperl & Fuchs Slot Type Initiators	N	SJ... & SC... T4: with supply types 1, 2 +3 only T6: with supply type 1 only	PTB 99ATEX2219X IECEX PTB 11.0091X 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	Not permitted	Not permitted	Not permitted	Not permitted	-60°C to +69°C	-60°C to +59°C
Pepperl & Fuchs Cuboidal Inductive Proximity sensor	E	Type NJ2-V3-N... only (with supply types 1, 2 +3 only)	PTB 00ATEX2032X IECEX PTB 11.0021X Ex ia IIC T4/T6 Ga -60°C to +89/73°C	-60°C to +81°C	-60°C to +74°C	Not permitted	Not permitted	-60°C to +70°C	-60°C to +60°C		
		All other types (with	Ex ia IIC T4/T6 Ga -60°C to +63/55°C	-60°C to +55°C	-60°C to +48°C	Not permitted	Not permitted	-60°C to +52°C	-60°C to +42°C		
Pepperl & Fuchs cylindrical inductive sensors	N	Types NC... & NJ... T4: Supply types 1, 2 +3 only T6: supply type 1 only	PTB 00ATEX2048X plus supplements 1, 2, 3 & 4 IECEX PTB 11.0037X Ex ia IIC T4 -60°C to +67°C Ex ia IIC T6 -60°C to +72°C	-60°C to +59°C	-60°C to +52°C	Not permitted	Not permitted	-60°C to +69°C	-60°C to +59°C		

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				Limiting ambient temp. range					
				Ex ia IIC T4 Gb (3.78W max.)		Ex ia IIC T5 Gb (1.36W max.)		Ex ia IIC T6 Gb (1.36W max.)	
Device	Style	Type	Description	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)	DXS/DXP (3 K internal temp. rise)	DXR (13 K internal temp. rise)
Pepperl + Fuchs SN sensors	N	Types NJ... & SJ... with supply types 1, 2 +3 only), exclusions listed below With supply type 1 only), exclusions listed below	PTB 00ATEX2049X plus supplements 1 & 2 IECEX PTB 11.0092X Ex ia IIC T4 -60°C to +68°C Ex ia IIC T6 -60°C to +73°C	-60°C to +60°C	-60°C to +53°C	Not permitted	Not permitted	-60°C to +70°C	-60°C to +60°C
TopWorx 4-20 mA Transmitter Module and associated potentiometer	X	N/A	Sira 12ATEX2192U iss. 1 IECEX SIR 12.0076U Ex ia IIC Ga -40°C to +80°C	-40°C to +72°C	-40°C to +65°C	Not permitted	Not permitted	Not permitted	Not permitted
TopWorx HART v7 Module	H	N/A	Sira 16ATEX2342U Iss.1; IECEX SIR 16.0107U Ex ia IIC Ga -40°C to +80°C	-40°C to +72°C	-40°C to +65°C	Not permitted	Not permitted	Not permitted	Not permitted
Turk Two Wire Proximity Sensors	N	Type ...-...-.Y1.-.../...	KEMA 02ATEX1090X issue 6 IECEX KEM 06.0036X Ex ia IIC T4/T6 Gb -25°C to +70°C	-25°C to +62°C	-25°C to +55°C	Not permitted	Not permitted	-25°C to +67°C	-25°C to +57°C
Pepperl+Fuchs	N, E,	SC, SJ, NC (Only one type)	PTB 00ATEX2032X PTB 00ATEX2048X	Tamb and Tcode will depend on number of switches inside, as marked on internal labels (reference drawing CERT-ES-08677-1)					





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Device	Style	Type	Description	Limiting ambient temp. range					
				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)	DXS/DXP (3 K internal temp. rise)	DXR (13 K internal temp. rise)
Switches/sensors	B, F, J, V, 3 and N_ +N -- -	of switch to used as per drawing ES-08677-1 without any other components)	PTB 00ATEX2049X PTB 99ATEX2219X IECEX PTB 11.0021X IECEX PTB 11.0091X IECEX PTB 11.0092X IECEX PTB 11.0037X						
Group III (dust) minimum ambient temperature (silicone S7395-60)				-60°C	-20°C	Not permitted	Not permitted	-60°C	-20°C
Group III (dust) maximum ambient temperature:				As Gp.	40°C	Not permitted	Not permitted	As Gp. II	42°C
Ex tb IIIC T*°C Db where T*°C is:				Ta(max) + 14	T55°C	Not permitted	Not permitted	Ta(max) + 10 K	T55°C
IP rating:				IP66/67	IP67	IP66/67	IP67	IP66/67	IP67
Additional ATEX marking:				  II 2G or 2GD					

17.5 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.

17.6 For a T6 temperature class, the following P&F NJ... sensors listed in certificate PTB 00ATEX2049X shall not be fitted:

NJ 2-11-SN... NJ 1-12GK-SN... NJ 3-18GK-S1N... NJ 3-12GK-SN...
 NJ 5-18GK-SN... NJ 5-30GK-S1N... NJ 6-22-SN... NJ 6S1+U.+N...
 NJ 8-18GK-SN... NJ 10-30GK-SN... NJ 15-30GK-SN... NJ 15S-U.-N...
 NJ 20S-U.-N...



Certificate Annexe

Certificate Number: CSAE 21UKEX2697X
Product: D-Series Switchbox
Manufacturer: TopWorx Inc.

Issue 0

Drawing	Sheets	Rev.	Date (Stamp)	Title
CERT-E-B0070	1 to 7	G	05 Jun 15	PN Cube schematic, artwork, BoM, marking
CERT-ES-02176-1	1 of 1	2	05 Jun 15	Go-Switch, 4-way, SPDT, assembly
CERT-ES-04311-1	1 to 5	AB	18 Jun 21	D-series master assembly
CERT-PS-00675	1 to 3	3	05 Jun 15	GO NUMAR simulator board, schematic, BoM, artwork
ES-01005-1	1 to 7	8	20 Dec 13	HART board schematic, parts list & artwork
ES-01006-1	1 of 1	9	20 Dec 13	HART board, assembly
ES-01568-1	1 of 1	3	20 Dec 13	Cube, 4 reed switch, assembly
ES-01569-1	1 to 8	7	20 Dec 13	Cube, 4 reed switch, schematic & artwork
ES-01571-1	1 of 1	5	20 Dec 13	Cube, 2 reed switch, assembly
ES-01572-1	1 to 8	5	20 Dec 13	Cube, 2 reed switch, schematic & artwork
ES-02175-1	1 of 1	3	05 Jun 15	Sub switch 35
ES-02177-1	1 of 1	4	20 Dec 13	L2 wiring diagram
ES-02341-1	1 of 1	1	05 Jun 15	L4 wiring diagram
S-S01-0151	1 of 1	2	05 Jun 15	DPDT mechanical switch
S-S40-0033Y	1 of 1	7	05 Jun 15	PN Cube assembly
CERT-ES-08677-1	1 to 7	AA	29 Jul 20	Internal labels
ES-08221-1	1 of 1	AA	02 Dec 20	Schematic AH8503 Hall Effect Sensor
ES-08619-1	1 to 2	AA	02 Dec 20	Assembly Drawing AH8503 Hall Effect Sensor
ES-08220-1	1 to 2	AA	02 Dec 20	PCB AH8503 Hall Effect Sensor
ES-08567-1	1 of 1	AA	2 Dec 20	Contactless Positioner Hall Effect Sensor Board Housing
ES-08568-1	1 of 1	AA	02 Dec 20	CPS Magnet Holder Hall Effect Sensor Magnet Lid
ES-08569-1	1 of 1	AA	02 Dec 20	CPS Magnet Holder Hall Effect Sensor Magnet Holder
ES-08570-1	1 of 1	AA	02 Dec 20	Contact Position Sensor Assembly
ES-08599-1	1 of 1	AA	02 Dec 20	CPS Ring Magnet
CERT-ES-09058-1	1 of 1	AA	21 Jan 22	Nameplate, Markings DXP/S/R Ex ia CSAE21UKEX2697X

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Drawing	Sheets	Rev.	Date (Stamp)	Title
CERT-ES-02205-1	1 of 1	AA	19 Dec 23	Assembly, Potentiometer

