



# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No.: 2022312304001360

**Applicant Address** Topworx Incorporated  
3300 Fern Valley Road, Louisville, Kentucky 40213, United States of America

**Manufacturer Address** Topworx Incorporated  
3300 Fern Valley Road, Louisville, Kentucky 40213, United States of America

**Production Factory** Topworx Incorporated

**Production Address** 3300 Fern Valley Road, Louisville, Kentucky 40213, United States of America

**Product** Switchboxes

**Model/Type** DX\*-0\*\*\*\*\*

**Ex marking** Ex ia IIC T4/T5/T6 Gb, Ex tb IIIC T\*°C Db (\* See Annex)

**Reference Standards** GB/T3836.1-2021, GB/T3836.4-2021, GB/T3836.31-2021

**Certification mode** Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEC-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product*.

See Annex for the detailed product information (9 pages)

Initial issue date: 2022-04-25

Issued date: 2023-03-20

Valid to: 2027-04-24

The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:



Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.



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CN 0001637



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**Product information:**

1. This certificate covers the following models:

- DX\*\_0\*\*\*\*\*

|    |    |   |    |    |    |    |    |    |    |     |     |     |     |       |
|----|----|---|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|
| DX | *  | - | *  | 0  | *  | *  | *  | *  | *  | *   | *   | *   | *   | ***** |
| 1) | 2) |   | 3) | 4) | 5) | 6) | 7) | 8) | 9) | 10) | 11) | 12) | 13) | 14)   |

1) Enclosure

2) Enclosure Material

P=Aluminum

S=316SS

R=Engineered Resin

3) Bus/Sensor

B1, B2, B3, B4 = P+F NJ2-12GK-SN

E1, E2, E3, E4, E5, E6 = P+F NJ2-V3-N

EX = (2) P+F NJ2-V3-N w/4-20mA Transmitter

EH = (2) P+F NJ2-V3-N w/HART Transmitter

F1, F2 = P+F NJ2-12GK-N

J1, J2 = P+F NJ2-11-SN-G

K1, K2, K3, K4, K5, K6 = MECH SWITCH SPDT w/GOLD CONTACTS

KX = (2) MECH SWITCH SPDT w/4-20mA Transmitter

KH or HK = (2) MECH SWITCH SPDT w/HART Transmitter

L1, L2, L3, L4 = GO SWITCH SPDT

LX = (2) GO SWITCH SPDT w/4-20mA Transmitter

LH or HL = (2) GO SWITCH SPDT w/HART Transmitter

M1, M2, M3, M4, M5, M6 = MECH SWITCH SPDT

MX = (2) MECH SWITCH SPDT w/4-20mA Transmitter

MH or HM = (2) MECH SWITCH SPDT w/HART Transmitter

N1, N2, N3, N4, N5, N6 = ANY NAMUR SWITCH

NX = (2) ANY NAMUR SWITCH w/4-20mA Transmitter

NH = (2) ANY NAMUR SWITCH w/HART Transmitter

PN = (2) Reed Switch Module w/LEDs

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T2 = MECH SWITCH DPDT  
TX = MECH SWITCH DPDT w/4-20mA Transmitter  
V1, V2, V3, V4 = P+F NJ3-18GK-S1N  
Z1, Z2, Z3, Z4 = GO SWITCH DPDT  
ZX = (2) GO SWITCH DPDT w/4-20mA Transmitter  
ZH = (2) GO SWITCH DPDT w/HART Transmitter  
00 = NO SWITCH  
31, 32, 33, 34 = P+F NJ5-30GK-S1N  
81, 82, 83, 84 = ITW MECH SWITCH DPDT

- 4) Area Class  
0 – Intrinsic Safety
- 5) Visual Display  
ANY NUMBER OR LETTER
- 6) Shaft  
ANY NUMBER OR LETTER
- 7) Conduit Entries  
ANY NUMBER OR LETTER
- 8) O-Rings  
B=BUNA  
E=EPDM  
S=SILICONE S7395  
V=VITON
- 9) Pilot  
0 or BLANK = NO PILOT  
1=24VDC FAIL Open/Closed  
2=24VDC FAIL Last Position
- 10) Spool  
ANY NUMBER OR LETTER OR BLANK
- 11) Cv

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ANY NUMBER OR LETTER OR BLANK

12) Override

ANY NUMBER OR LETTER OR BLANK

13) Regional

- 0 or BLANK = UL (North America), IECEx, ATEX
- B = InMetro (Brazil)
- K = KCs (Korea)
- N = CCCEX (China)
- P = PESO (India)
- R = EAC (Eurasian Economic Union)
- T = ITRI (China Taiwan)

14) Custom Build Indents

6 digits (without relevance for explosion protection)

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<br>(3.78W max.)                |  | Ex ia IIC T5 Gb<br>(1.36W max.)                |   | Ex ia IIC T6 Gb<br>(1.36W max.)                |   |
|                    |       |                |               | DXS/DX<br>P (8 K<br>internal<br>temp.<br>rise) | DXR<br>(15 K<br>internal<br>temp.<br>rise) | DXS/DX<br>P (3 K<br>internal<br>temp.<br>rise) | DXR (13<br>K internal<br>temp.<br>rise) | DXS/DX<br>P (3 K<br>internal<br>temp.<br>rise) | DXR (13<br>K internal<br>temp.<br>rise) |
| Mechanical switch  | K     | V7             | Simple Switch |  |  |  |   |  |   |
| Micro/Limit Switch | M     | VS10N001<br>C2 | Simple Switch | -60°C<br>~+92°C                                | -60°C<br>~+85°C                            | -60°C<br>~+85°C                                | -60°C<br>~+75°C                         | -60°C<br>~+70°C                                | -60°C<br>~+60°C                         |
| Reed Switch        | P     | HSR-V933       | Simple Switch |  |  |  |   |  |   |

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|  |           |  |                               |                   |                   |                  |                  |                   |                     |
|--|-----------|--|-------------------------------|-------------------|-------------------|------------------|------------------|-------------------|---------------------|
| Reed Switch                                    | R         | LV-ELE14<br>5  | Simple<br>Switch              |                   |                   |                  |                  |                   |                     |
| Go Switch                                      | L/Z       | 35 Series  | Simple<br>Switch              |                   |                   |                  |                  |                   |                     |
| DPDT Micro<br>Switch                           | T/8       | Cherry<br>Burrell<br>E19 or<br>ITW<br>DPDT-ZZ<br>#26-804   | Simple<br>Switch              |                   |                   |                  |                  |                   |                     |
| Line fault<br>detection                        | -         | -  | -60°C to<br>+100°C            | -60°C to<br>+92°C | -60°C to<br>+85°C | Not<br>permitted | Not<br>permitted | Not<br>permitted  | Not<br>permitted    |
| Topworx<br>Cube                                | PN        | 2 reed<br>switch with<br>LEDs  | -60°C to<br>+100°C            | -60°C to<br>+92°C | -60°C to<br>+85°C | Not<br>permitted | Not<br>permitted | Not<br>permitted  | Not<br>permitted    |
| ASCO<br>Electro-valve                          | 1 or<br>2 | 3021....IA   | FR/INE/Ex<br>TR10.0001/<br>02 | -40°C to<br>+82°C | -40°C to<br>+75°C | Not<br>permitted | Not<br>permitted | Not<br>assessed   | Not<br>assesse<br>d |
| Pepperl &<br>Fuchs Slot<br>Type Initiators     | N         | SJ... &<br>SC...<br>T4: with<br>supply<br>types 1, 2<br>+3 only<br>T6: with<br>supply<br>type 1 only | CCC:<br>202032231<br>5002306  | -60°C to<br>+67°C | -60°C to<br>+60°C | Not<br>permitted | Not<br>permitted | -60°C to<br>+69°C | -60°C to<br>+59°C   |
| Pepperl &<br>Fuchs Valve<br>Position<br>sensor | N         | NCN-...-N<br>4...,<br>PL.-F25.-<br>N4...,<br>NC.-<br>F31.-N5...<br>(with                             | CCC:<br>202032231<br>5002302  | -60°C to<br>+74°C | -60°C to<br>+67°C | Not<br>permitted | Not<br>permitted | -60°C to<br>+59°C | -60°C to<br>+49°C   |

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|---|-----------------------------|---|--|--|----------------|---------------|---------------|----------------|----------------|
|   |                             | supply types 1, 2 +3 only)                              |  |  |                |               |               |                |                |
| Pepperl & Fuchs Cuboidal Inductive Proximity sensor             | E                           | Type NJ2-V3-N... only (with supply types 1, 2 +3 only)  | CCC: 202032231 5002302                             | -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 supply types 1, 2 +3 only)        | CCC: 202032231 5002255                             | -60°C to +55°C   | -60°C to +48°C | Not permitted | Not permitted | -60°C to +52°C | -60°C to +42°C |
| TopWorx 4-20 mA Transmitter Module and associated potentiometer | X                           | N/A   | GB/SIR/Ex TR13.0251 /00                            | -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   | GB/SIR/Ex TR17.0094 /00<br>GB/SIR/Ex TR18.0191 /00 | -40°C to +72°C   | -40°C to +65°C | Not permitted | Not permitted | Not permitted  | Not permitted  |
| Pepperl+ Fuchs Switches /sensors                                | N, E, B, F, J, V, 3 and N_+ | SC, SJ, NC or NJ (Only one type of switch to be used as | CCC: 202032231 5002255, 202032231 5002302,         | 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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|   |          |   |   |                   |       |               |               |                   |       |
|---|----------|---|---|-------------------|-------|---------------|---------------|-------------------|-------|
|   | N<br>--- | per drawing<br>CERT-ES-08677-1<br>without any other components) | 202032231<br>5002306,<br><br>202032231<br>5002308 |                   |       |               |               |                   |       |
| Group dust minimum ambient temperature (silicone S7395-60 flange O-ring, S70R2 shaft O-rings) |          |   |   | -60°C             | -20°C | Not permitted | Not permitted | -60°C             | -20°C |
| Dust maximum ambient temperature:   |          |   |   | As Gp. II         | 40°C  | Not permitted | Not permitted | As Gp. II         | 42°C  |
| Ex tb IIIC T*°C Db where T*°C is:   |          |   |   | Ta(max)<br>+ 14 K | T55°C | Not permitted | Not permitted | Ta(max)<br>+ 10 K | T55°C |
| IP rating:  |          |   |   | IP66/67           | IP67  | IP66/67       | IP67          | IP66/67           | IP67  |

The switch box shall only be fitted with devices that that are listed in the table above. Where applicable; these devices shall also conform to the certificates, supplements and amendments that are also listed therein. Because the exact composition of the switch box is variable, Topworx Inc. shall:

- Supply the installer/end user with a full set of appropriate certificates and instructions that are relevant to the contents of the enclosure.
- Indicate which certificates apply to the contents of the enclosure.

Ex marking: Ex ia IIC T4/T5/T6 Gb, Ex tb IIIC T\*°C Db

(\* ) The temperature class, dust temperature marking and ambient temperature depends on the electrical devices that are fitted in the Switchbox.)

- Producers should organize production in accordance with the technical documents approved by the certification body.

2. Specific conditions of safety use:

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- Ingress protection : IP66/67.

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

| Description   | Parameters   |
|---|--|
| ASCO Electro-valve Module type 3021....IA   | If fitted, the entity parameters are $U_i = 28$ V, $I_i = 300$ mA, $P_i = 1.6$ W, $C_i = 0$ , $L_i = 0$ .  |
| Pepperl & Fuchs slot-type initiators, types SJ... & SC...                                 | If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW ("type 1" supply)               |
| Pepperl & Fuchs Valve Position sensor types NCN-...-N4..., PL.-F25.-N4..., NC.-F31.-N5... | If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW ("type 1" supply).              |
| Pepperl & Fuchs cuboidal inductive sensors, type NJ...                                    | If a T6 temperature class is marked, the input entity parameters to sensors covered by this certificate (if fitted) shall be limited to $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW ("type 1" supply).              |
| TopWorx HART v7 Module  | If fitted, the entity parameters are $U_i = 28$ V, $I_i = 100$ mA, $P_i = 700$ mW, $C_i = 11$ nF, $L_i = 14$ $\mu$ H; $U_o = 7.71$ V, $I_o = 100$ mA, $P_o = 700$ mW, $C_o = 0.993$ $\mu$ F, $L_o = 3541$ $\mu$ H. |

- 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).

- 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  $U_i = 30$  V,  $I_i = 200$  mA and  $P_i = 0.34$  W per switch circuit.

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- 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.

- The supplies to all internal devices shall be treated as separate intrinsically safe circuits.

- 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.

- 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.

- When marked for use in flammable dust, the DXR (resin) enclosure shall only be installed where there is a low risk of mechanical damage.

- The air pressure to the valve block, when fitted, shall not exceed 10.0 bar.

- 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.

- 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                                     | CCC number       |
|---|------------------|
| Pepperl+Fuchs Switches/Sensors SC, SJ, NC or NJ | 2020322315002255 |
|   | 2020322315002302 |
|   | 2020322315002306 |
|   | 2020322315002308 |

- See instruction for other information.

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3. Certificate related report(s):

- Type test report: CQST2109C051, CQST2109C051/01
- Factory inspection report: CN2021Q010370

4. Certificate change information:

- 1st change on March 20, 2023: Updated the standards for certification.

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