



# EXPLOSION PROTECTION

## Certificate of Conformity

Certificate No.: GYJ13.1297X

**Manufacturer:** Topworx Inc.  
(Address: 3300 Fern Valley Road, Louisville, Kentucky 40213, USA)

**Product:** Valve position switch

**Model Specification:** DXR, DXP and DXS series

**Explosion-proof sign** Please refer to the attachment of the Explosion Protection Certificate of Conformity for details

**Product standard** /

**Drawing No.** SK-1256 Rev.c

After examining the drawings and technical documents as well as sample testing, it has been confirmed that the abovementioned products are in compliance with the GB 3836.1-2010, GB 3836.4-2010, GB 3836.20-2010 and GB12476.1-2000 standards and this certificate is hereby issued.

This certificate is valid from September 30, 2013 to September 29, 2018

**Remarks:**

1. Please refer to the attachment of this certificate for safety precautions.
2. Please refer to the attachment of this certificate for specific model specifications.
3. This certificate is applicable to products with same model number manufactured by Emerson Machinery Equipment (Shenzhen) Co., Ltd. (Address: Bao Heng Technology Industry Park, North Hong Lang 2nd Road, District 68, Bao'an District, Shenzhen) and Emerson Process Management Magyarorszag Kft. (Address: H-8001 Szekesfehervar Berenyi U 72-100, Hungary)
4. [Amendment I]: additional manufacturing site, issued on July 9, 2014.

Director [Signature - illegible]  
National Supervision and Inspection Center for  
Explosion Protection and Safety of Instrumentation  
Date of Issue September 30, 2013  
[Seal – National Supervision and Inspection Center for  
Explosion Protection and Safety of Instrumentation]

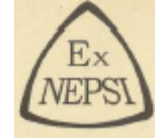
This certificate is valid only for products matching the approved documentation and sample.

103 Cao Bao Road  
Shanghai 200233, China

<http://www.nepsi.org.cn>  
Email: [info@nepsi.org.cn](mailto:info@nepsi.org.cn)

Tel: +86 21 64368180  
Fax: +86 21 64844580

Edition 05



# EXPLOSION PROTECTION CERTIFICATE OF CONFORMITY

**Cert No. GYJ13.1297X**

**This is to certify that the product**

**Switchboxes**

**manufactured by Topworx Inc.**

**(Address: 3300 Fern Valley Road, Louisville, Kentucky 40213, USA)**

**which model is DXR, DXP and DXS series**

**Ex marking See attachment to this certification**

**product standard /**

**drawing number SK-1256 Rev.c**

**has been inspected and certified by NEPSI, and that it conforms to GB 3836.1-2010, GB 3836.4-2010, GB3836.20-2010, GB 12476.1-2000**

**This approval shall remain in force until September 29, 2018**

- Remarks**
- 1. Conditions for safe use are specified in the attachment to this certificate**
  - 2. Safe parameters specified in the attachment to this certificate.**
  - 3. This certificate is also applicable for the product with the same type manufactured by Emerson Machinery Equipment (Shenzhen) Co., Ltd. (Address: Bao Heng Technology Industry Park, North Hong Lang 2nd Road, District 68, Bao'an District, Shenzhen P.R. China) and Emerson Process Management Magyarorszag Kft. (Address: H-8001 Szekesfehervar Berenyi U 72-100, Hungary)**
  - 4. [variation I]: Add manufacturing site, issued on July 9, 2014.**

**Director [Signature - illegible]  
National Supervision and Inspection Center for  
Explosion Protection and Safety of Instrumentation  
Issued Date September 30, 2013  
[Seal – National Supervision and Inspection Center for  
Explosion Protection and Safety of Instrumentation]**

This certificate is valid only for products compatible with the documents and samples approved by NEPSI.

103 Cao Bao Road  
Shanghai 200233, China

<http://www.nepsi.org.cn>  
Email: [info@nepsi.org.cn](mailto:info@nepsi.org.cn)

Tel: +86 21 64368180  
Fax: +86 21 64844580

Edition 05

# National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation

**(GYJ13.1297X)**

**(Attachment I)**

## GYJ13.1297X Explosion Protection Certificate of Conformity Attachment I

After inspection by the National Supervision and Inspection Center for Explosion Protection and Safety Instrumentation (NEPSI), the DXR, DXP, DXS series of valve position switches produced by Topworx Inc., Emerson Process Management Magyarorszag Kft., and Emerson Machinery Equipment (Shenzhen) Co., Ltd. have been found to be in compliance with the following standards:

GB3836.1-2010 Explosive Atmosphere Part 1: Equipment - General Requirements

GB3836.4-2010 Explosive Atmosphere Part 4: Equipment Protected by Intrinsic Safety Type "I"

GB3836.20-2010 Explosive Atmosphere Part 20: Equipment with Equipment Protection Level (EPL) of Ga

GB12476.1-2000 Electrical Equipment Used in Combustible Dust Atmosphere Part 1: Electrical Equipment Protected by Enclosure and Surface Temperature Limitation Section 1: Technical Requirements for Electrical Equipment

The DXR, DXS, DXP series of valve position switches have the explosion protection label of Ex ia II C T4/T6 Ga, DIP A21 T<sub>A</sub>, T6 Db. Of which DXR's enclosure satisfies the requirements of level IP67, and DXS's and DXP's enclosures satisfy the requirements of levels IP66 and IP67. The Explosion Protection Certificate of Conformity's certificate number is GYJ13.1297X.

This certificate recognizes products with the specific model number: DX**a-b c 0 d e f g**

Where: **a** indicates enclosure material; can be R, P or S;

**b** indicates main line and sensor information; can be B, C, E, F, J, L, M, K, N, R, T, V, Z, 0, 3 or 8;

**c** indicates equipped with HART protocol or not; can be 1~6, H or X;

**d e f g** are parameters not related to explosion protection.

[Seam-riding seal]

### I. Specific Conditions for Safety Precaution

If the certificate number ends with "X", it indicates that the product has special conditions for safety precaution:

1. Installation must be able to prevent the danger of ignition due to impact or friction.
2. The DX series of valve position switches may contain one or more of the following certified components:

Certification Number	Product Description
PTB 99ATEX2219X Attachment 1	Pepperl & Fuchs SJ and SC Model Slot Type Initiator
PTB 00ATEX2032X Attachment 1 & 2	Pepperl & Fuchs NJ Type Cube-style Inductive Sensor
PTB 00ATEX2048X Attachment 1, 2 & 3	Pepperl & Fuchs NC & NJ Type Cylindrical Inductive Sensor
PTB 00ATEX2049X Attachment 1	Pepperl & Fuchs NJ Type SN Sensor
KEMA 02ATEX1090X Attachment 1	Turck Y1 Type Two-wire Proximity Sensor

PTB 01ATEX2191	IFM NE, NF, NG, NI, NN, NT & NS Type Inductive Proximity Sensors
LCIE 02ATEX6122x	Crouzet Model 81519 Solenoid Valve
Sira 12ATEX2191U	4-20mA Transmission Module

3. The installation, usage and environment for DXR’s enclosure should avoid mechanical damage.
4. 4-20mA loop circuits and various additional subassemblies (switches, sensors, valves etc.) will be treated as independent and intrinsically safe circuits.
5. When the internal assembly of the valve position switch is only a simple switch, the corresponding maximum input power for temperature group T4 is 1.3W, the corresponding maximum input power for temperature group T6 is 0.7W.
6. For T4 temperature group, when the internal assembly of the valve position switch contains simple switch and electric resistance, the maximum power input for intrinsically safe circuits may not exceed 0.7W.
7. For T6 temperature group, according to certificates for PTB 99ATEX2219X, PTB 00ATEX2032X, PTB 00ATEX2048X and PTB 00ATEX2049X, the sensor’s input parameters should be limited to  $U_i=16V$ ,  $I_i=25mA$ ,  $P_i=64mW$ .
8. For T6 temperature group, according to Turck proximity sensor’s certificate KEMA 02ATEX1090X, the sensor’s maximum input parameters are:  
AX & GX Models:  $U_i=15V$ ,  $I_i=20mA$ ,  $P_i=200mW$   
Other Models:  $U_i=15V$ ,  $I_i=60mA$ ,  $P_i=130mW$
9. The cable connecting this product to its associated equipment should be shielded, insulated cable, and the shielded layer should be grounded in a safe place.

[Seam-riding seal]

**II. Safety Precaution**

1. Based on the model of the seal and main line/sensor, the manufacturer must specify the ambient temperature range: fluorubber = -15°C (not applicable to dusty atmosphere); buna-n rubber = -25°C (not applicable to dusty atmosphere); EPDM = 40°C; silicone rubber = -50°C.

2. The minimum ambient temperature when using the product should be based on whichever is higher between the minimum ambient temperature of the O-ring material and of the sensor inside the valve position switch, which may be -10°C, -15°C, -25°C, -30°C, -40°C, or -50°C. The maximum ambient temperature when using the product use should be based on whichever is lower between the maximum ambient temperature of the outer enclosure material and of the sensor inside the valve position switch, which may be +50°C, +53°C or +55°C.

3. The P&F’s cylindrical inductive sensor associated with PTB 00ATEX2048X Certificate below is not applicable to T4 temperature group:

NJ 0,2-10GM-N	NJ 1,5-6,5...-N...	NJ 1,5-8-N...	NCB4-12GM...-N0...
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NJ 0,8-4,5-N...	NJ 1,5-6,5...-N...	NJ 1,5-10GM-N-Y...	NCB8-18GM...-N0
NJ 0,8-5GM-N...	NJ 1,5-8GM-N...	NJ 4-12GM-N...	NCB15-30GM...-N0

4. When used in the zone 0 atmosphere, the P&F's NJ type cube-style inductive sensor associated with PTB 00ATEX2032X Certificate below is not applicable to T6 temperature group (zone 1 has no limit):

NJ 2-V3-N...	NJ 15+U.+N...	NJ 20+U.+N...	NJ 30+U.+N...
NJ 40+U.+N...	NJ 50-FP-N...		

5. The P&F's inductive sensors associated with PTB 00ATEX2048X Certificate below is not applicable to T6 temperature group:

NJ 0,2-10GM-N...	NJ 1,5-6,5...-N...	NJ 1,5-8-N...	NCB4-12GM...-N0...
NJ 0,8-4,5-N...	NJ 1,5-6,5...-N...	NJ 1,5-10GM-N-Y...	NCB8-18GM...-N0...
NJ 0,8-5GM-N...	NJ 1,5-8GM-N...	NJ 4-12GM-N...	NCB15-30GM...-N0
NJ 2-11-N...	NJ 4-30GM-N-200	NJ 4-30GM-N-200	NCB 1,5...M...N0...
NJ 5-18GK-N...	NJ 5-18GK-N-150...	NJ 8-18GK-N...	NJ 8-18GK-N-150
NJ 15-30GK-N...	NJ 15-30GK-N-150...		

6. The P&F's NJ sensor associated with PTB 00ATEX2049X Certificate below is not applicable to T6 temperature group:

NJ 2-11-SN...	NJ 1012GK-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...			

7. The intrinsic safety parameters and the internal maximum equivalent parameters are as follows:

Maximum Input Voltage U <sub>i</sub> (V)	Maximum Input Current I <sub>i</sub> (mA)	Maximum Input Power P <sub>i</sub> (W)	Maximum Internal Equivalent Parameter	
			C <sub>i</sub> (nF)	L <sub>i</sub> (mH)
28	100	0.7	14	2.06

8. The product's outer enclosure is equipped with grounding terminal. When it is used by the user after installation, it can be grounded safely.

9. Must be used with certified explosion protection ancillary equipment to assemble the intrinsically safe explosion protection system for use in an explosive gas atmosphere.

10. Harmful gases with corrosive effect on aluminum alloy should not be present at the installation site.

11. When installing the product onsite, cables that have passed inspection of State designated testing laboratories with explosion protection grade of Exd II C, thread specification of 1/2NPT, 3/4NPT, M16x1.5 or M20x1.5 must be used for the cable entry point that leads to the device or blanking element, and redundant cable inlets must be effectively sealed by blanking element.

[Seam-riding seal]

12. The user should not replace parts by themselves, and should work with the product manufacturer to jointly resolve malfunctions that occurred during operations to prevent damage.

13. When this product is used onsite, its surface should be cleaned regularly and the thickness of dust accumulation should not exceed 5mm.

14. The installation, use and maintenance of this product shall comply with the relevant provisions in the product manuals, GB3836.13-1997 “Electrical Equipment Used in Explosive Gas Atmosphere Part 13: Inspection and Maintenance of Electrical Equipment Used in Explosive Gas Atmosphere”, GB3836.15-2000 “Electrical Equipment Used in Explosive Gas Atmosphere Part 15: Electrical Installation in Dangerous Places (Except Coal Mines)”, GB3836.16-2006 “Electrical Equipment Used in Explosive Gas Atmosphere Part 16: Inspection and Maintenance of Electrical Equipment (Except Coal Mines)”, GB50257-1996 “Electrical Equipment Installation and Acceptance Standards for Electrical Equipment Installation in Dangerous Explosive and Fire Hazard Atmosphere”, GB15577-2007 “Safety Regulation on Dust Explosion Protection”, and GB12476.2-2006 “Electrical Equipment Used in Combustible Dust Atmosphere Part 1: Electrical Equipment Protected by Enclosures and Surface Temperature Limitation Section 2: The Selection, Installation and Maintenance of Electrical Equipment”.

**III. Responsibilities of the Manufacturer:**

1. The product manufacturer must incorporate the special requirements and safety precautions mentioned above into the product manual;

2. The manufacturer must produce the product strictly in compliance with the documentation approved by NEPSI;

3. The product nameplate must at least include the following:

- a) NEPSI Approval Label (please refer to the Explosion Protection Certificate of Conformity)
- b) Product Explosion Protection Label
- c) Explosion Protection Certificate of Conformity’s Certificate Number
- d) Ambient Temperature
- e) Intrinsic Safety Parameters

[Seam-riding seal]

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