IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx SIR 12.0089X**

Page 1 of 5

Status: **Current**

Issue No: 12

Date of Issue: 2024-01-18

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

Equipment: **TV* Switchboxes**

Optional accessory:

Type of Protection: **Type ec Type nC and Dust Protection by Enclosure**

Marking: Refer to the Annexe for markings.

Certificate history:

Issue 11 (2023-04-11)
Issue 10 (2021-05-19)
Issue 9 (2020-07-30)
Issue 8 (2019-03-19)
Issue 7 (2018-03-29)
Issue 6 (2017-09-28)
Issue 5 (2015-02-04)
Issue 4 (2013-11-07)
Issue 3 (2013-06-24)
Issue 2 (2013-05-28)

Approved for issue on behalf of the IECEx Certification Body: **Michelle Halliwell**

Position: **Director Operations, UK & Industrial Europe**

Signature:
(for printed version)

Date:
(for printed version)

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 www.iecex.com or use of this QR Code.

Certificate issued by:

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside CH5 3US
United Kingdom

IECEx Certificate of Conformity

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

Manufacturing locations:

TopWorx Inc
3300 Fern Valley Road
Louisville
Kentucky 40213
United States of America

Emerson Automation Fluid Control & Pneumatics Poland Sp. z o. o. (Emerson AFCP Poland Sp. z o.o.)
Kurczaki 132
Lodz 93-331
Poland

Emerson Machinery Equipment (Shenzhen) Co. Ltd
101 Building 2, COFCO Park
Honglang North 2nd Road
Xin'an Street
Bao'an District
Shenzhen 518101
China

See following pages for more locations

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 equipment 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 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-15:2017 Edition:5.0	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-31:2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7:2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

This Certificate **does not** indicate compliance with 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 Reports:

GB/SIR/ExTR12.0208/00
GB/SIR/ExTR12.0259/00
GB/SIR/ExTR13.0061/00
GB/SIR/ExTR13.0168/00
GB/SIR/ExTR13.0263/00
GB/SIR/ExTR14.0290/00
GB/SIR/ExTR17.0210/00
GB/SIR/ExTR18.0057/00
GB/SIR/ExTR19.0054/00
GB/SIR/ExTR20.0142/00
GB/SIR/ExTR21.0088/00
GB/SIR/ExTR23.0076/00
GB/SIR/ExTR24.0009/00

Quality Assessment Reports:

BR/ULBR/QAR17.0001/04
GB/BAS/QAR06.0020/12
GB/SIR/QAR07.0025/11
GB/SIR/QAR07.0041/11
NL/DEK/QAR11.0004/07

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The TV* Switchbox consists of an enclosure (approximately 145 mm x 100 mm by 80 mm, without dome) comprising a base and a lid. The enclosure can be made from aluminium alloy (TVL) or stainless steel (TVH), with or without a Lexan indicator dome, depending upon the application. The lid is fitted with a seal inside a groove and four captive screws for attachment to the base. There are two types of lid; one is normal (flat) the other is a flat lid with a bushing and indicator dome. The bushing version of the lid has a hole in its centre to allow a shaft to be fitted for a Position Indicator under the Lexan dome. The base provides a cable entry via screwed entry holes for cable glands.

Refer to the Annexe for the marking and additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

i. When fitted with an indicator dome, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall only be cleaned with a damp cloth.
ii. When the supply to the Series 36 & 36SD GO Switches do not exceed 60 VAC/85VDC, the supply shall be protected such that transients are limited to a maximum of 119 V. If the supply is above 60VAC / 85 VDC but not exceeding 120 VAC, the supply shall be protected such that the transients are limited to a maximum of 238 V.
iii. The supply values, when option S LED board is fitted, are Umax =24V, Imax =250 mA and Pmax = 1.2W

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
This issue, Issue 12, recognises the following change; refer to the certificate annex to view a comprehensive history:

1. 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 plastic insulation.
2. Manufacturer's Name & Address for the IECEx certification is revised to add two new alternate manufacturing locations.

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Additional manufacturing locations:

ASCO VALVE (Shanghai) Co;Limited
No. 480, Xin Miao No. 3 Road
Xin Qiao Town, Song
Jiang District
Shanghai 201612
China

ASCOVAL INDUSTRIA E COMERCIO LTDA
Rua Goiatuba 81 Jardim Mutinga
06465-010 Barueri – SP – Brasil
Brazil

Annex:

IECEx SIR 12.0089X Annexe Issue 12.pdf

The marking is as follows:

TV* option	Certification code (gas)	Certification code (dust)	Ambient temperature range
P2	Ex ec nC IIC T6 Gc Ex ec nC IIC T4 Gc	Ex tc IIIC T85°C Dc, IP66/68 Ex tc IIIC T115°C Dc, IP66/68	-40°C to +55°C -40°C to +80°C
R2, R4	Ex ec nC IIC T3 Gc Ex ec nC IIC T3 Gc	Ex tc IIIC T85°C Dc, IP66/68 Ex tc IIIC T115°C Dc, IP66/68	-40°C to +60°C -40°C to +95°C
0X	Ex ec IIC T4 Gc	Ex tc IIIC T70°C Dc IP66/68	-40°C to +55°C
PX, RX	Ex ec nC IIC T4 Gc	Ex tc IIIC T115°C Dc, IP66/68	-40°C to +55°C
Q2, Q4, G2, G4	Ex ec nC IIC T6 Gc Ex ec nC IIC T4 Gc	Ex tc IIIC T85°C Dc, IP66/68 Ex tc IIIC T115°C Dc, IP66/68	-40°C to +55°C -40°C to +80°C
AS, DN, PB	Ex ec nC IIC T4 Gc	Ex tc IIIC T115°C Dc, IP66/68	-40°C to +85°C
S	Ex ec nC IIC T4 Gc	Not applicable	-40°C to +60°C
D2, D4, S2, S4	Ex ec nC IIC T6 Gc Ex ec nC IIC T4 Gc	Ex tc IIIC T85 °C Dc Ex tc IIIC T115°C Dc, IP66/68	-40°C to +55°C -40°C to +80°C

Equipment:

The TV*-series Switchboxes consist of an enclosure (approximately 145 mm x 100 mm by 80 mm, without dome) comprising a base and a lid. The enclosure can be made from aluminium alloy (TVL) or stainless steel (TVH), with or without a Lexan indicator dome, depending upon the application. The lid is fitted with a seal inside a groove and four captive screws for attachment to the base. There are two types of lid; one is normal (flat) the other is a flat lid with a bushing and indicator dome. The bushing version of the lid has a hole in its centre to allow a shaft to be fitted for a Position Indicator under the Lexan dome. The base provides a cable entry via screwed entry holes for cable glands.

The permitted internal devices are as follows:

Device	Style	Ambient temp. range
Two reed switches (nC) type HSR-634W only	P2	-40°C to +55°C
Two or four reed switches (nC) type LV ELE145 only	R2, R4	-40°C to +95°C
ASI module (ec) plus two reed switches (nC)	AS	-40°C to +85°C
DeviceNet module (ec) plus two reed switches (nC)	DN	-40°C to +85°C
Profibus module (ec) plus two reed switches (nC)	PB	-40°C to +85°C
Two reed switches (nC) plus TopWorx 4-20 mA Transmitter Module (ec, Sira 12ATEX4193U) and associated potentiometer	PX, RX	-40°C to +55°C
TopWorx 4-20 mA Transmitter Module (ec, Sira 12ATEX4193U) and associated potentiometer only	0X	-40°C to +55°C
Two or four Series 36 GO switches (nC), 120Vac/4A, 24Vdc/3A	G2/G4	-40°C to +80°C
Two or four Series 36 GO switches (nC), 120Vac/2A, 24Vdc/1A	Q2/Q4	-40°C to +80°C
LED Board, Q, P, R switch options	S	-40°C to +60°C
Series 36SD GO Switch module (IEC UL 18.0139U), 120Vac/4A,24Vdc/3A	S2, S4	-40°C to +80°C
Series 36SD GO Switch module (IEC UL 18.0139U), 120Vac/2A,24Vdc/1A	D2, D4	-40°C to +80°C

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Conditions of Manufacture

i. The manufacturer shall subject 100% of completed switchbox units to the electrical strength test in IEC 60079-15:2010 clauses 6.5, by applying a voltage of 1500 Vrms between all input terminals and the outer enclosure for a minimum of 60 s. Alternatively, a voltage of 1800 Vrms may be applied for 100 ms. There shall be no breakdown or flashover. The current flowing during the test shall not exceed 5 mA.

ii. When the equipment incorporates a 4-20 mA Transmitter Module (IECEx SIR 12.0076U), the following additional requirements apply:
- the manufacturer shall supply a copy of certificate IECEx SIR 12.0076U with each unit or batch of units;
- the output from the 4-20mA Transmitter Module shall only be connected to a 10k potentiometer that has a 0.5 mm separation distance through a plastic insulation;
- A maximum of two switches is permitted when the 4-20 mA Transmitter Module is fitted.

iii. The following drawings, relating to TV* Switchboxes incorporating simple mechanical switches (models AK, AM, DK, DM, PK, PM), are withdrawn and shall not be used for production:
- CERT-ES-02883-1
- CERT-ES-02888-1
- CERT-ES-02890-1

Full certificate change history

Issue 1 – this Issue introduced the following changes:

1 The introduction of an alternative manufacturing location, Emerson Machinery Equipment (Shenzhen) Co. Ltd. Bao Heng Technology Industry Park, North Hong Long 2nd Road, District 68, Boan District, Shenzhen 518101, China, was recognised.

2. A typographical error to the description was amended

Issue 2 – this Issue introduced the following change:

1. 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

Issue 3 – this Issue introduced the following changes:

1. Introduction of model numbers TV* Px.... (Profibus), TV* Ax.... (ASi) and TV* Dx.... (DeviceNet), where 'x' = K, M or R.
2. The product description and marking were amended for clarity.
3. Removal of drawing CERT-ES-03003-1 from the list of controlled drawings

Issue 4 – this Issue introduced the following changes:

1. The introduction new models that incorporate a 4-20mA Transmitter Module, IECEx SIR 12.0076U, plus an associated Novotechnic WAL305 potentiometer. This change required the application of a new Condition of Manufacture.
2. The following model number changes were recognised: TV*.AR to TV*.AS (ASI option); TV*.DR to TV*.DN (DeviceNet option); TV*.PR to TV*.PB (ProfiBus option)
3. The removal of the nitrile O-ring option; only silicone O-rings will now be fitted.
4. The Description of Equipment and the marking were extensively modified to better describe the product in its current format and recognise the following.
   - The introduction the new models that incorporate a 4-20mA Transmitter Module.
   - The removal of the nitrile O-ring option.
   - The clarification of the ambient temperature ranges that are applicable to alternative internal constructions.

   It should be noted that previous Issues of the certificate are still relevant and apply to products manufactured in accordance with already certified constructions.

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Issue 5.-. this Issue introduced the following changes:

1. The introduction of S50440A silicone O-ring on the lid/base joint as a replacement to S7395-60 silicone.
2. The replacement of IP64 with IP66/68 marking, the marking was amended accordingly.
3. The removal of the following devices that incorporate mechanical switches:

Device	Style	Ambient temp. range
2 switches plus ASI module (nA)	AK, AM	-40°C to +85°C
2 switches plus DeviceNet module (nA)	DK, DM	-40°C to +85°C
2 switches plus Profibus module (nA)	PK, PM	-40°C to +85°C

The product description was amended accordingly and an additional Condition of Manufacture was introduced.

4. The addition of ASi, DeviceNet and Profibus drawings.

Issue 6 – this Issue introduced the following changes:

1. Change of manufacturing locations

Hungary

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

To
Emerson Process Management Magyarorszag Kft.,
Fisher Controls International LLC,
Holland Fasor 6,
Szekesfehervar,
Hungary 8000

China

From
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

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

2. Introduction of the 36-series GO Switch, associated with sensing options Q2/Q4 and G2/G4, requiring the addition of a Specific Condition of Use
3. Rationalisation of dust temperature marking to T85ºC (associated with gas T6 marking) and T115ºC (associated with gas T4 marking) for all except the '0X' option

Issue 7 – this Issue introduced the following changes:

1. The addition of an LED circuit board (option S) to enclosure models TVL/TVH to be used in conjunction with listed switch options Q, P and R and referred to as options QS, PS and RS was recognised, and the description was amended accordingly.
2. A Specific Condition of Use was introduced.
3. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-31:2008 was replaced with IEC 60079-31:2013 in the list of certification standards.

Issue 8 – this Issue introduced the following changes:

1. The introduction of the Series 36SD GO Switch, associated with new sensing options D2, D4, S2 S4.
2. The Marking was revised to include the Series 36SD GO Switch options D2, D4, S2, S4 and Ta range.
3. The Product Description was revised to include the Series 36SD GO Switch options D2, D4, S2, S4 options to the Device table.
4. Condition of Use referencing "Series 36GO Switches" was revised to include the introduced Series 36SD GO Switches; to "Series 36 & 36SD GO Switches".
5. Emerson Process Management Magyarorszag Kft. was removed from the list of Manufacturing locations.

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Hawarden Deeside CH5 3US, UK.

Issue 9 – this Issue introduced the following change:

1. The recognition of an alternative manufacturing location;
   Emerson Automation Fluid Control & Pneumatics Poland Sp. z o.o.
   Kurczaki 132
   93 331 Lodz
   Poland

Issue 10 – this Issue introduced the following change:

1. The address of the manufacturing location in Shenzhen was updated as was the related QAR.
   Emerson Machinery Equipment (Shenzhen) Co. Ltd
   101 Building 2, COFCO Park
   Honglang North 2nd Road
   Xin'an Street
   Bao'an District
   Shenzhen
   518101
   China

Issue 11 – this Issue introduced the following change:

1. After appropriate assessment the standards on the certificate were updated to the latest editions.
   IEC 60079-0:2011 Ed.6 was updated to IEC 60079-0:2017 Ed.7
   IEC 60079-15:2010 Ed.4 was updated to IEC 60079-15:2017 Ed.5
   IEC 60079-31:2013 Ed.2 remains unchanged

   The following was added to comply with updating 'nA' to 'ec'
   IEC 60079-7:2015 Ed.5

Issue 12 – this Issue introduced the following change:

1. 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 plastic insulation.
2. Manufacturer's Name & Address for the IECEx certification is revised to add two new alternate manufacturing locations.

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