

Electrical Equipment for Explosive Atmospheres

Certificate of Type Verification

Applicant	TopWorx Inc.																											
Applicant address	3300 Fern Valley Road Louisville, Kentucky 40213 United States of America	TEL	+1-502-969-8000																									
Manufacturer	1. TopWorx Inc. 2. Emerson Machinery Equipment (Shenzhen) Co. Ltd. 3. Emerson Automation Fluid Control & Pneumatics Poland Sp. z o. o. (Emerson AFCP Poland Sp. z o. o.)																											
Manufacturer address	1. 3300 Fern Valley Road Louisville, Kentucky 40213 United States of America 2. 101 Building 2, COFCO Park, Honglang North 2nd Road, Xin'an Street Bao'an District, Shenzhen 51801 China 3. Kurczaki 132 Lodz 93-331 Poland	TEL																										
Name of product Type	Valve position indicators TV-Series																											
Ex marking	Ex ia IIC T* Gb (TVH/TVL/TVA/TVF) Ex tb IIIC T* C Db (TVH/TVL) The temperature class and maximum surface temperature depend on the electrical device fitted. Refer to Annex.																											
Certificate No.	(ITRI)2022 07-00006X																											
Date of first issue	January 06, 2022																											
Date of Renewal																												
Valid period	January 06, 2022 to January 05, 2025																											
Standards:	CNS 3376-0 : 2014 / IEC 60079-0 : 2011 IEC 60079-11 : 2011 IEC 60079-31 : 2013																											
Ratings:	Refer to Specific conditions of use : IP66/68 or IP64 depends on type of O-ring fitted.																											
Ambient temperature:	The ambient temperature depends on the electrical devices fitted in the Valve position indicator. Refer to Annex.																											
Main components:	Base, lid, shaft, switch, O-ring, w/o dome and indicator. Enclosure types :																											
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model</th> <th>Base</th> <th>Lid</th> <th>Dome</th> <th>Protection type</th> </tr> </thead> <tbody> <tr> <td>TVA</td> <td>Lexan</td> <td>Lexan</td> <td>None</td> <td>ia</td> </tr> <tr> <td>TVF</td> <td>Aluminum</td> <td>Lexan</td> <td>None</td> <td>ia</td> </tr> <tr> <td>TVH</td> <td>Stainless steel</td> <td>Sainless steel</td> <td>Lexan</td> <td></td> </tr> <tr> <td>TVL</td> <td>Aluminum</td> <td>Aluminum</td> <td>Lexan</td> <td></td> </tr> </tbody> </table>			Model	Base	Lid	Dome	Protection type	TVA	Lexan	Lexan	None	ia	TVF	Aluminum	Lexan	None	ia	TVH	Stainless steel	Sainless steel	Lexan		TVL	Aluminum	Aluminum	Lexan	
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Type variants:	Refer to Annex.																											

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Specific conditions of use:	<p>The 4-20 mA loop circuit and the various additional sub-assemblies (switches, sensors, valves, etc.) shall be treated as separate intrinsically safe circuit.</p> <p>The entity parameters for simple switches that are not covered by a certificate are $U_i=30$ V, $I_i=200$ mA and $P_i=0.72$ W/switch (T4) or $P_i=0.34$ W/switch (T6).</p> <p>The entity parameters of equipment must be followed with that of certified devices fitted.</p> <p>The plastic parts of valve position indicator 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.</p> <p>Cable glands or blanking plugs for enclosure entries are not provided with the equipment. For safe use, certified cable glands or blanking plugs with proper type of protections shall be correctly fitted to maintain the integrity of specified protections.</p>																																													
Routine tests:	The manufacturer shall carry out the routine tests as prescribed in Clause 6.3.13 and Clause 10.3 of IEC 60079-11. The dielectric test shall be performed at the voltage 500 Vac applied for 60 s.																																													
Approval reference:	The assessment of the above equipment is based on the review of IECEX Certificate of Conformity (IECEX SIR 13.0146X Issue No : 8) issued by CSA Group Testing UK Ltd (CSAE), UK and the associate test reports (GB/SIR/ExTR14.0190/00, GB/SIR/ExTR15.0261/00, GB/SIR/ExTR16.0215/00, GB/SIR/ExTR18.0018/00, GB/SIR/ExTR19.0053/00, GB/SIR/ExTR19.0069/00, GB/SIR/ExTR20.0142/00, GB/SIR/ExTR20.0153/00, GB/SIR/ExTR21.0088/00).																																													
Certificate history:	Issue 1 (B202100340) (2022-01-06)																																													
Annex:	<table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td>(1)</td><td>(2)</td><td>(3)</td><td>(4)</td><td>(5)</td><td>(6)</td><td>(7)</td><td>(8)</td><td>(9)</td><td>(10)</td> </tr> <tr> <td>TV</td><td>F</td><td>-</td><td>D</td><td>2</td><td>0</td><td>*</td><td>*</td><td>*</td><td>M 0</td> </tr> </table> <p>(1)Series : TV (2)Enclosure material : F, A, L, H (Refer to row of Main components) (3)(4)Bus/sensor Code of column (3) : 0, L, M, K, P, Q, R, E, T, N, D, B, F, J, V, 3 Code of column (4) : X, 1, 2, 3, 4, S (Type TVF, TVA : Code X is only available with code 0, E, K, M, T in column (3) ; type TVH, TVL : Code X is only available with code 0, E, K, M, Q, T in column (3) ; Code S is only available with code F, A in column (2), as well as code K, M, P, Q2, R, D in column (3)) (5)Area class : 0 : Ex i (9)O-ring : M : silicone (10)Pilot : 0/blank : not installed ; 1 : 24 Vdc fail O/C ; 2 : 24 Vdc fail L/P Column (6), (7), (8) are not related to Ex protection.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ID</th><th>Device</th><th>Sensing option</th><th>Type</th><th>Description</th></tr> </thead> <tbody> <tr> <td>1</td><td>Mechanical switch</td><td>K</td><td>V7</td><td rowspan="5" style="text-align: center;">Simple switch</td></tr> <tr> <td>2</td><td>GO switch</td><td>L</td><td>35 series</td></tr> <tr> <td>3</td><td>Micro/Limit switch</td><td>M</td><td>VS10N001C2</td></tr> <tr> <td>4</td><td rowspan="2">Reed switch</td><td>P</td><td>HSR-V933</td></tr> <tr> <td>5</td><td>R</td><td>LV-ELE145</td></tr> </tbody> </table>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	TV	F	-	D	2	0	*	*	*	M 0	ID	Device	Sensing option	Type	Description	1	Mechanical switch	K	V7	Simple switch	2	GO switch	L	35 series	3	Micro/Limit switch	M	VS10N001C2	4	Reed switch	P	HSR-V933	5	R	LV-ELE145
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ID	Device	Sensing option	Type	Description	
6	DPDT Micro switch	T	Cherry Burrell E19 or ITW DPDT-ZZ #26-804	Simple switch	
7	ASCO Electro-valve	1 or 2	3021...1A	IECEX INE 10.0002X issue 1	
8	IFM Electronic Inductive Proximity Switch	N	N*50**, N95001 &K15030 supply types 1, 2+3	IECEX BVS 06.0003 issue 4	
9	Pepperl+ Fuchs Slot Type Initiators	N	SJ...& SC... supply types 1, 2+3	IECEX TUN 04.0016X issue 0	
10	Pepperl+ Fuchs Cuboidal Inductive Proximity Sensor	E	Type NJ2-V3-N... supply types 1, 2+3	IECEX TUN 04.0014X issue 0	
11			All other types supply types 1, 2+3	IECEX PTB 11.0021X issue 0	
12	TopWorx 4-20 mA Transmitter Module and associated potentiometer	X	N/A	IECEX SIR 12.0076U issue 0	
13	Hans Turk two wire proximity sensors	N	...-...-Y1-.../...	IECEX KEM 6.0036X issue 3	
14	GO switch	Q	36 series	IECEX BAS 15.0092U	
15		D	36D series (D2 · D4)	IECEX UL 19.0002U	
16	LED board	S	ES-05116-1	Used with K, M, P, Q2, R and D sensing options	
17	Pepperl + Fuchs switches/sensors	N, E, B, F, J, V, 3 and N+N	SC · SJ · NC 或 NJ (Only one type of switch to be used as per drawing CERT-ES-08677-1 without any other components)	IECEX TUN 04.0016X issue 0 IECEX TUN 04.0014X issue 0 IECEX PTB 11.0021X issue 0 IECEX PTB 11.0091X issue 1 IECEX PTB 11.0092X issue 1 IECEX PTB 11.0037X issue 1	

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Applicant	TopWorx Inc.		
ID	Gas or dust	Ambient temperature(° C)	Temperature class or T* ° C
1-6	Gas	-65~+55	T6
		-65~+70	T5
		-65~+85	T4
		-65~+100	T3
	Dust	-50~+55	T75 ° C
		-50~+85	T104 ° C
7	Gas	-40~+56	T4
	Dust		T75 ° C
8	Gas	-25~+42	T4
	Dust		T75 ° C
9	Gas	-60~+47	T4
	Dust	-50~+47	T75 ° C
10	Gas	-60~+56	T4
	Dust	-50~+56	T75 ° C
11	Gas	-60~+35	T4
	Dust	-50~+35	T75 ° C
12	Gas	-40~+52	T4
	Dust		T75 ° C
13	Gas	-25~+42	T4
	Dust		T75 ° C
14	Gas	-55~+55	T6
		-55~+85	T4
		-55~+100	T3
	Dust	-50~+55	T75 ° C
		-50~+85	T104 ° C
15	Gas	-55~+55	T6
		-55~+85	T4
	Dust	-50~+55	T75 ° C
		-50~+85	T104 ° C
16	Gas	-65~+60	T4
	Dust	-50~+55	T75 ° C
		-50~+85	T104 ° C
17	Gas	The ambient temperature and the temperature class will depend on number of switches inside, as marked on internal labels (reference drawing CERT-ES-08677-1)	
	Dust	-50~+85	T104 ° C

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