

Vertical Explosion-Proof Switches Compliant with IEC Standards

Model 1LX7001- _ _ _

OVERVIEW

Limit switch model 1LX7001- _ _ _ complies with IEC explosion-proof standards and can be used in hydrogen gas atmospheres.

Corrosion-resistant models are available for use in wet environments and coastal areas.

Features

- These limit switches have been certified as explosion-proof by the organizations shown in Table 1.
- For standard models, anti-corrosion treatment is applied to the aluminum alloy housing and external screws are made of stainless steel.

For corrosion-resistant models, corrosion-resistant aluminum is used for the housing and corrosion-resistant paint is applied to it.

- Model 1LX7001 is equipped with a roller lever head.
- With the compact, palm-sized housing, there are no worries about finding an installation location.
- Models with gold-plated contacts for longer electrical life are also available.

Note) This specification sheet is prepared for the application of Azbil Corporation's control valve accessory usage.

China RoHS

This device is used in the Oil & Gas, Petrochemical, Chemical, Pulp & Paper, Food & Beverage, Machinery, Steel/Metal & Mining, and Automobile industries and therefore does not fall under the China RoHS Legislation. If this device is used in semiconductor manufacturing equipment, labeling on the device and documents for the China RoHS may be required. If such documents are required, consult an Azbil Corp. representative.



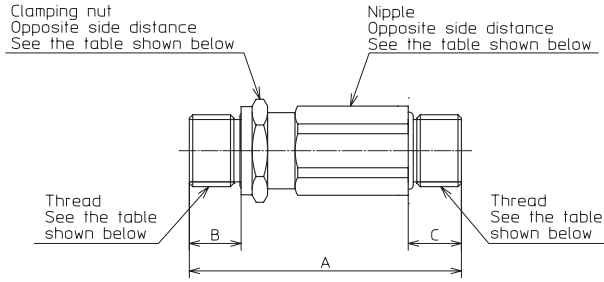
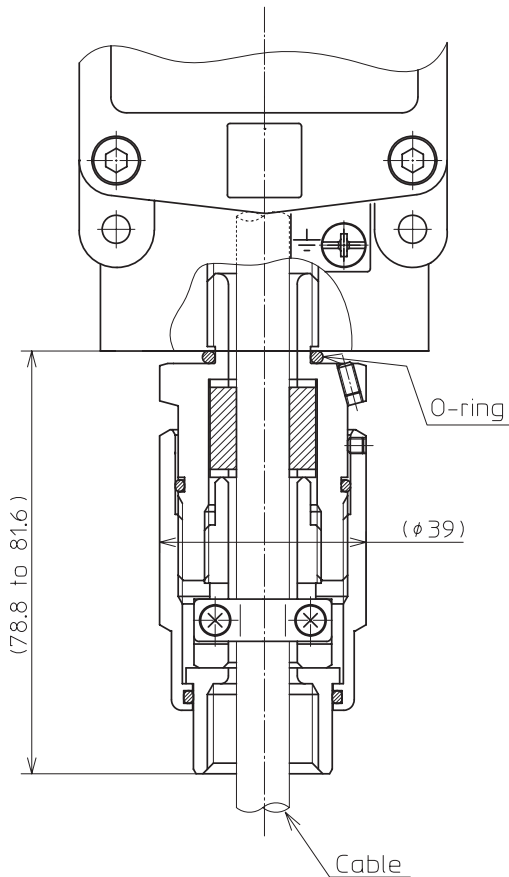
Table 1. Explosion-proof organizations

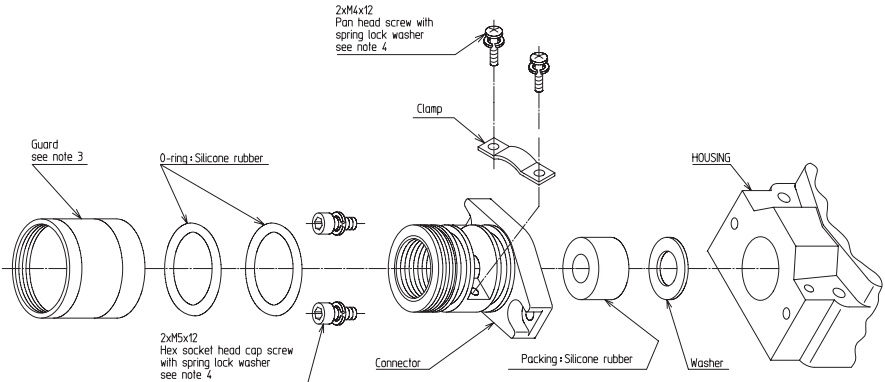
Standards	Explosion-proof structure
TIIS	Ex d e IIC T6
NEPSI	Ex d e IIC T6
KOSHA	Ex d e IIC T6 IP67
ATEX	II 2G Ex d e IIC T6
IEC Ex	Ex d e IIC T6
CNS	Ex d e IIC T6 Gb X

MODEL SELECTION

EX. Proof	Housing material	Contact material	Cable lead-in	Connecstion	Model
TIIS	standard	Silver	G 1/2	Cable conduit	1LX7001-J
	Corrosion resistant	Silver	G 1/2		1LX7001-JM
	Corrosion resistant	Gold plated	G 1/2		1LX7001-JKM
	standard	Silver	-	Increased safety packing cable gland	1LX7001-R
	standard	Gold plated	-		1LX7001-RK
	Corrosion resistant	Silver	-		1LX7001-RM
	Corrosion resistant	Gold plated	-		1LX7001-RKM
	standard	Silver	-	Cable gland	1LX7001-A1
ATEX	standard	Silver	G 1/2	-	1LX7001-(Blank)
	standard	Gold plated	G 1/2	-	1LX7001-K
	standard	Silver	M20	-	1LX7001-C
	standard	Gold plated	M20	-	1LX7001-CK
NEPSI	standard	Silver	G 1/2	-	1LX7001-P
	standard	Gold plated	G 1/2	-	1LX7001-PK
	standard	Silver	M20	-	1LX7001-Q
	standard	Gold plated	M20	-	1LX7001-QK
KOSHA	standard	Silver	G 1/2	-	1LX7001-S
	standard	Gold plated	G 1/2	-	1LX7001-SK
	standard	Silver	M20	-	1LX7001-V
	standard	Gold plated	M20	-	1LX7001-VK
CNS	standard	Silver	G1/2	-	1LX7001-ET
	standard	Silver	M20	-	1LX7001-FT
	standard	Gold plated	M20	-	1LX7001-FTK
	Corrosion resistant	Silver	M20	-	1LX7001-FTM

Table 2. Accessories for TIIS explosion-proof limit switch according to connection method

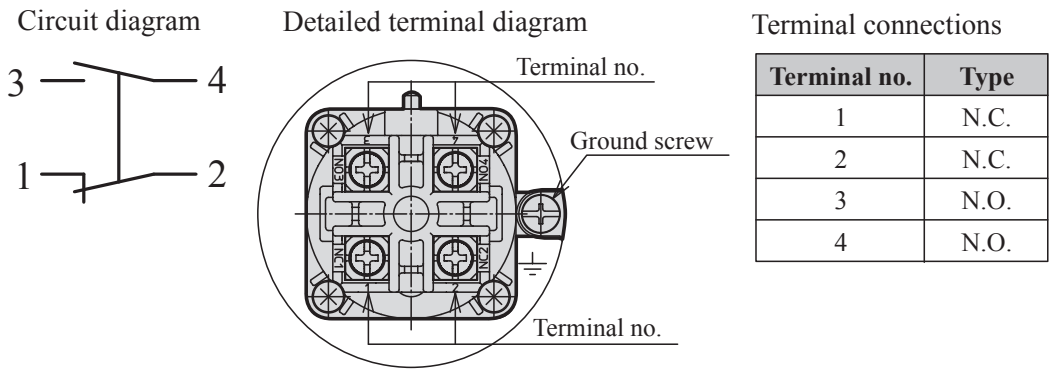
Model	Conduit	Option										
1LX7001-J _	Cable conduit	<p>Nipple : 2PA-JEXN16</p>  <table border="1" data-bbox="614 645 1409 712"> <thead> <tr> <th>Part</th> <th>A</th> <th>B</th> <th>C</th> <th>Thread</th> </tr> </thead> <tbody> <tr> <td>Dimension (mm)</td> <td>79.3</td> <td>15.1</td> <td>15.5</td> <td>Parallel pipe thread G1/2</td> </tr> </tbody> </table>	Part	A	B	C	Thread	Dimension (mm)	79.3	15.1	15.5	Parallel pipe thread G1/2
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1LX7001-A1 _	Cable gland (Increased safety packing method)	<p>LX7001-A1 _ has obtained an explosion-proof standard in combination with this cable gland.</p> <table border="1" data-bbox="683 808 1358 958"> <thead> <tr> <th>Applicable cable O.D.</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>φ10 to 12 (mm)</td> <td>EXPC-16B-1</td> </tr> <tr> <td>φ8 to 10 (mm)</td> <td>EXPC-16B-2</td> </tr> <tr> <td>φ6 to 8 (mm)</td> <td>EXPC-16B-3</td> </tr> </tbody> </table> 	Applicable cable O.D.	Model	φ10 to 12 (mm)	EXPC-16B-1	φ8 to 10 (mm)	EXPC-16B-2	φ6 to 8 (mm)	EXPC-16B-3		
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Model	Conduit	Option																													
1LX7001-R_	Increased safety packing cable gland	<p>1LX7001-R_ has obtained an explosion-proof standard in combination with this packing cable gland.</p> <table border="1" data-bbox="624 197 1401 660"> <thead> <tr> <th>Protective tube size</th> <th>Applicable cable O.D.(mm)</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Parallel pipe thread G1/2</td> <td>φ7.5 to 8.5 (mm)</td> <td>2PA-JEX108PM</td> </tr> <tr> <td>φ8.5 to 9.5 (mm)</td> <td>2PA-JEX109PM</td> </tr> <tr> <td>φ9.5 to 10.5 (mm)</td> <td>2PA-JEX110PM</td> </tr> <tr> <td>φ10.5 to 11.5 (mm)</td> <td>2PA-JEX111PM</td> </tr> <tr> <td>φ11.5 to 12.5 (mm)</td> <td>2PA-JEX112PM</td> </tr> <tr> <td>φ12.5 to 13.5 (mm)</td> <td>2PA-JEX113PM</td> </tr> <tr> <td rowspan="6">Parallel pipe thread G3/4</td> <td>φ7.5 to 8.5 (mm)</td> <td>2PA-JEX208PM</td> </tr> <tr> <td>φ8.5 to 9.5 (mm)</td> <td>2PA-JEX209PM</td> </tr> <tr> <td>φ9.5 to 10.5 (mm)</td> <td>2PA-JEX210PM</td> </tr> <tr> <td>φ10.5 to 11.5 (mm)</td> <td>2PA-JEX211PM</td> </tr> <tr> <td>φ11.5 to 12.5 (mm)</td> <td>2PA-JEX212PM</td> </tr> <tr> <td>φ12.5 to 13.5 (mm)</td> <td>2PA-JEX213PM</td> </tr> </tbody> </table> <p>Explosion-proof packing type connector exploded view</p> 	Protective tube size	Applicable cable O.D.(mm)	Model	Parallel pipe thread G1/2	φ7.5 to 8.5 (mm)	2PA-JEX108PM	φ8.5 to 9.5 (mm)	2PA-JEX109PM	φ9.5 to 10.5 (mm)	2PA-JEX110PM	φ10.5 to 11.5 (mm)	2PA-JEX111PM	φ11.5 to 12.5 (mm)	2PA-JEX112PM	φ12.5 to 13.5 (mm)	2PA-JEX113PM	Parallel pipe thread G3/4	φ7.5 to 8.5 (mm)	2PA-JEX208PM	φ8.5 to 9.5 (mm)	2PA-JEX209PM	φ9.5 to 10.5 (mm)	2PA-JEX210PM	φ10.5 to 11.5 (mm)	2PA-JEX211PM	φ11.5 to 12.5 (mm)	2PA-JEX212PM	φ12.5 to 13.5 (mm)	2PA-JEX213PM
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PERFORMANCE

Item		Specifications	
Structure	Contact form	2-circuit double break (2CKT-DB×1)	
	Terminal type	M4 pan head screw with square washer	
	Contact material	Silver/gold-plated rivet	
	Explosion-proof structure	Internal switch: d (explosion-proof), housing: e (increased-safety explosion-proof)	
	Protective structure	IP67 (IEC 60529, JIS C 0920)	
Electrical performance	Electrical rating	Silver: 5A at 250 Vac, 0.8A at 125 Vdc, 0.4 A at 250 Vdc Gold-plated: 0.1A at 125 Vac, 0.1 A at 30 Vdc	
	Dielectric strength	Between continuous terminals: 600 Vac, 50/60 Hz for 1 minute Between each terminal and non-live metal part: 2000 Vac, 50/60 Hz for 1 minute Between each terminal and ground: 2000 Vac, 50/60 Hz for 1 minute	
	Insulation resistance	Min. 100 MΩ (by 500 Vdc megger)	
	Initial contact resistance	Silver: max. 50 MΩ (6–8 Vdc, thermal current 1 A, measured by voltage drop method) Gold-plated: max. 100 MΩ (6–8 Vdc, thermal current 0.1 A, measured by voltage drop method)	
	Recommended min. contact operating voltage/current	Silver: 10 mA at 24 V, 20 mA at 12 V Gold-plated: 10 mA at 5 V	
Mechanical performance	Actuator strength	Withstands loads 5 times O.F. (operating direction for 1 minute)	
	Terminal strength	Withstands tightening torque of 1.5 N•m for 1 minute	
	Impact resistance	200 m/s ² , contacts open for 1 ms max. in free position and total travel position	
	Vibration resistance	1.5 mm peak-to-peak amplitude, frequency 10 to 55 Hz, 2 h continuously, contacts open for 1 ms max. in free position and total travel position	
	Allowable operating speed	1.0 mm/s to 0.5 m/s At min. speed, unstable state of contacts lasts for 0.1 s max. At max. speed actuator is not damaged.	
	Operating frequency	Max. 120 operations/minute	
Life	Mechanical	Min. 4 million operations (with overtravel at 70 to 100% of rated value)	
	Electrical	Silver: min. 200,000 operations, 5 A at 250 Vac, 0.8 A at 125 Vdc, 0.4 A at 250 Vdc (Min. 500,000 operations, 1 A at 250 Vac, 0.2 A at 125 Vdc, 0.1 A at 250 Vdc) Gold-plated: min. 2 million operations, 0.1 A at 125 Vac, 0.1 A at 30 Vdc	
Environment	Operating temperature	-10 to +60 °C (no freezing allowed)	
	Operating humidity	45–85%RH	
	Storage temperature	-10 to +60 °C	
	Storage humidity	Max. 98% RH (with conduit section plug inserted)	
	Group and temperature class	II C T6	
	Hazardous area classification	Zone 1 and Zone 2 hazardous areas	
Recommended tightening torque	Body	5–6 N•m (M5 hexagon socket head bolt)	
	Cover	5–6 N•m (M5 hexagon socket head bolt with spring washer)	
	Head	1.3–1.7 N•m (M4 pan head screw head with spring washer)	
	Terminals	1.3–1.7 N•m (M4 pan head screw with square washer)	
	Lever	4–5.2 N•m (M5 hexagon socket head bolt)	
	Internal ground	1.3–1.7 N•m (M4 binding head machine screw with spring washer)	
	External ground	1.3–1.7 N•m (M4 binding head machine screw with spring washer)	
Applicable cable size	Terminals	Stranded cable	Nominal cross-sectional area 0.5mm ² to 1.5 mm ² (AWG20 to AWG16)
		Single cable	Nominal cross-sectional area 0.5 mm ² to 1.5 mm ² (AWG20 to AWG16)
	Internal ground	Uses M4 crimp-type terminal with insulating coating	
	External ground	Uses M4 crimp-type terminal Cables with a nominal cross-sectional area of up to 4 mm ² can be connected	
Material of main parts	Housing	Corrosion-resistant aluminum alloy	
	Bolt and screw	Stainless steel	
	Sealing	Silicone rubber	

DIMENSIONS



Conduit section details		
1LX7001-J _ _ (Increased safety cable conduit type) 1LX7001-A1 _ _ (Increased safety packing cable gland type)	1LX7001-R _ _ (Increased safety packing connector type)	1LX7001- _ _ _
<p>G1/2 parallel screw for piping Effective thread 5 threads min.</p>		<p>Metric fine pitch thread M20×1.5 Effective thread depth: min. 5 threads _ : Q,V,FT,C,F,N2</p>

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Azbil Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan
URL: <https://www.azbil.com/>

1st edition: Aug. 2015
3rd edition: Nov. 2019

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