IEC-Compliant Explosion-Proof Switches

1LX5700 Series

Compact, outdoor-use gas explosion-proof and pressure-resistant switches can be used in hydrogen gas atmospheres, and meet IEC standards.

- Certified by KEMA (Europe), TIIS (Japan), and NEPSI (China). See the table below for certifications and relevant catalog listings.Internal switches conform to standards for pressure-resistant explosion-proof structures
- Clip-on terminal screws are used on the terminal plate to facilitate wiring
- Usable in hydrogen gas atmospheres

D LIMIT SWITCHES
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Certifying	Explosion-proof structure	Approval No.
KEMA	Ex II 2G EEx de II C T6 CE 1585	KEMA 03ATEX2066
The Technology Institution of Industrial Safety (Japan)	Ex de II C T6 X	No. TC16333
NEPSI	Ex de II C T6	GYJ04185

ORDER GUIDE

JIS explosion-proof switches			IEC explosion-proof switches		
JIS explosion-proof and NEPSI-certified			KEMA and CE-certified		
		Conduit type with increased safety			G1/2 conduit thread
	Contacts	Catalog listing		Contacts	Catalog listing
Standard roller lever	Silver alloy	**1LX5701-J**	Standard roller lever	Silver alloy	**1LX5701**
	Gold plated	**1LX5701-JK**		Gold plated	**1LX5701-K**
No lever	Silver alloy	**1LX5702-J**	No lever	Silver alloy	**1LX5702**
	Gold plated	**1LX5702-JK**		Gold plated	**1LX5702-K**
Adjustable roller lever	Silver alloy	**1LX5703-J**	Adjustable roller lever	Silver alloy	**1LX5703**
	Gold plated	**1LX5703-JK**		Gold plated	**1LX5703-K**
		Packing type with increased safety			Metric fine pitch thread M20 x 1.5
	Contacts	Catalog listing		Contacts	Catalog listing
Standard roller lever	Silver alloy	**1LX5701-R**	Standard roller lever	Silver alloy	**1LX5701-C**
	Gold plated	**1LX5701-RK**		Gold plated	**1LX5701-CK**
No lever	Silver alloy	**1LX5702-R**	No lever	Silver alloy	**1LX5702-C**
	Gold plated	**1LX5702-RK**		Gold plated	**1LX5702-CK**
Adjustable roller lever	Silver alloy	**1LX5703-R**	Adjustable roller lever	Silver alloy	**1LX5703-C**
	Gold plated	**1LX5703-RK**		Gold plated	**1LX5703-CK**

AUXILIARY ACTUATORS

Type	Shape	Catalog listing	Roller material	Lever tightening method
Roller lever		**6PA-J63**	Black nylon	Hexagon socket head bolt
		6PA-J105		
Adjustable roller lever		**6PA-J79**	Black nylon	Hexagon socket head bolt
		6PA-J119	Brass	

Note: When combining actuators, use combinations made of non-ignitable materials.

PERFORMANCE

Standards	**Compliance**		JIS C 4508, JIS C 0930
	Certification	**NEPSI**	GB3836.1-2000 GB3836.2-2000 GB3836.3-2000
		The Technology Institution of Industrial Safety (Japan)	Explosion-proof structure, electromechanical apparatus (technical standard)
		KEMA	EN50014:1977+A1...A5 (explosion-proof electrical equipment regulations) EN50018:1977+A1...A3 (pressure-tight, explosion proofing “d”) EN50019:1977+A1...A5 (increased safety explosion-proofing “e”)
Structure	**Contact form**		Single-pole double-throw (SPDT)
	Terminal type		Clip-on terminal plate (M2.6 slotted-head screw)
	Contact type		Silver-rivet
	Protective structure		IP67(IEC60529, JIS C 0920)
Electrical performance	**Electrical rating**		See Table 1 below.
	Dielectric strength		Between non-continuous terminal : 600Vac, 50/60Hz, for 1 minute Between terminals and non-live metal parts : 2,000Vac, 50/60Hz, for 1 minute Between terminals and ground : 2,000Vac, 50/60Hz, for 1 minute
	Insulation resistance		Max. 100MΩ(by 500Vdc megger)
	Initial contact resistance		Max. 125mΩ(measured by voltage drop method, 6 to 8Vdc, thermal current 1A)
	Recommended min. contact voltage/current		24Vdc, 20mA
Mechanical performance	**Actuator strength**		5 times O.F. (operating force) for 1 minute in operating direction
	Terminal strength		Withstands tightening torque of 0.5N·m for 1 minute
	Shock resistance		200m/s^2 Contacts separate in free position and total travel position for 1ms max.
	Vibration resistance		Amplitude 1.5mm, frequency 10 to 55 Hz, 2 continuous hours Contacts separate in free position and total travel position for 1ms max.
	Allowable operating speed		1.0mm/s to 0.5m/s (At min. speed, unstable state of contacts lasts 0.1s max. At max. speed, actuator is not damaged.)
	Operating frequency		Max. 120 operations/min, 3,000 operations/hour
Life	**Mechanical**		Min. 2 million operations (with overtravel at 1/3 to 2/3 of rated amount)
	Electrical		Min. 50,000 operations (240Vac 2A, or 125Vdc 0.2A, resistive load)
Environment	**Standard ambient temperature**		KEMA setting: -20 to +70˚C(no freezing or condensation allowed)TIIS/NEPSI setting: -20 to +60˚C
	Explosion-proof environment		IIC T6
Recommended tightening torque	**Body**		5 to 6N·m (M5 hexagon socket head cap screw)
	Cover		1.5 to 2.0N·m (M5 screw)
	Head		1.3 to 1.7N·m (M4 screw)
	Terminals		0.3 to 0.4N·m (M2.6 screw)
	Lever		4 to 5.2N·m (M5 screw)
	Internal ground		1.3 to 1.7N·m (M4 screw)
	External ground		1.5 to 2.0N·m (M5 screw)
Compatible lead diameters	**Terminals**	**Stranded leads**	0.5 to 1.5mm^2
		Single leads	0.5 to 2.5mm^2
	Internal ground	**Stranded leads**	Max. 1.5mm^2
		Single leads	Max. 2.5mm^2
	External ground	**Stranded leads**	Max. 2.5mm^2
		Single leads	Max. 4mm^2

Table 1. Electrical Rating

Usage categories	AC-11: 240Vac, 2A DC-11: 125Vdc, 0.2A

CONTACT CIRCUITRY

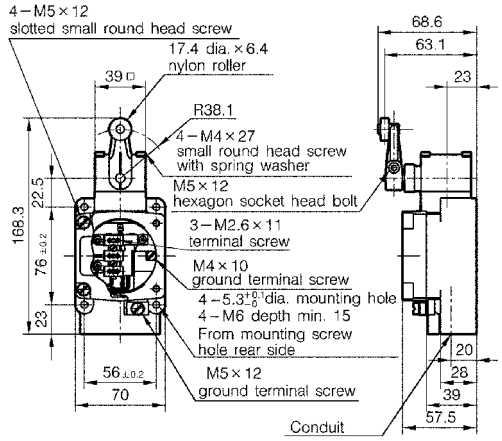
Numbers are the same as those on the terminal block.

EXTERNAL APPEARANCE, OPERATING PERFORMANCE, EXTERNAL DIMENSIONS (unit: mm)

Roller Lever type

Catalog listing	1LX5701-□
Standards certification	EN(IEC)
O.F. (N max.)	12.4
R.F. (N min.)	1.7
P.T. (˚max.)	15
M.D. (˚max.)	7
O.T. (˚min.)	30

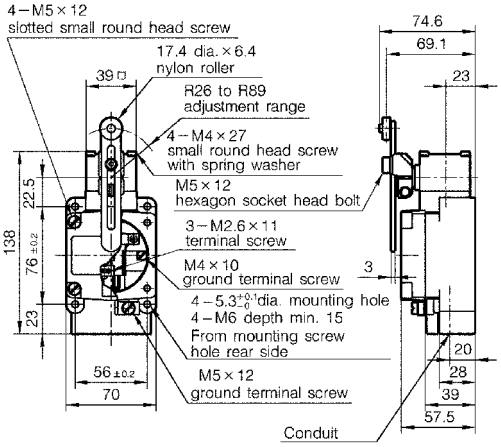
Note: □ is for the conduit size code.



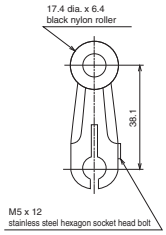
Adjustable roller lever type

Catalog listing	1LX5703-□
Standards certification	EN(IEC)
O.F. (N max.)	12.4
R.F. (N min.)	1.7
P.T. (˚max.)	15
M.D. (˚max.)	7
O.T. (˚min.)	30

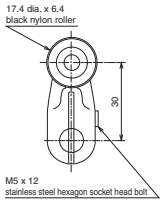
Note1: Values are for a lever length of 38.1mm.
Note2: □is for the conduit size code.



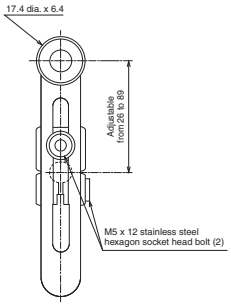
Auxiliary actuator for 1LX5700 explosion-proof switches



6PA-J63



6PA-J105

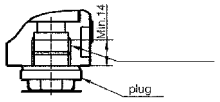


6PA-J79 (black nylon roller)
6PA-J119 (brass roller)

●Conduit size and catalog listing

1LX57-□**
(none)
C

Code	Screw
(none)	G½
C	M20×1.5



PRECAUTIONS FOR USE

1. Before wiring the switch, turn the equipment power OFF. Some operating voltages may cause an electric shock.
2. Do not leave or use a switch with the covers and conduit open. Doing so might cause an explosion.
3. The 1LX5700 Series conforms to IEC explosion-proof standards. Use in appropriate areas in corresponding explosion-proof structures according to the standards for the relevant facilities or equipment.
4. To connect the 1LX5700, remove the four M5 screws with a flat-head screwdriver, remove the cover, and wire to the required terminals. During this operation, take care to prevent the power leads from contacting the switch plunger. Also, take care to tighten the cover with sufficient pressure on all of the screws uniformly, and attach the conduit properly. Failure to do so might result in reduced explosion- proof performance.
5. Do not disassemble the switch except when removing the covers for wiring or when removing the operating head to change the operating direction.
6. During work, take care not to allow tools to touch or fall onto the switch. Also, do not use the switch in a damaged state. If the switch cover or housing is dented or cracked, replace the entire switch immediately.
7. Only the lever can be replaced. To replace other parts, replace the entire switch.
8. The housing, covers and head are made of aluminum alloy, and finished in gray paint.
9. Use stainless steel screws on externally exposed parts.
10. When connecting the power leads to the terminal plate, fit the ends of the leads with a Weidmüller H ferrule (H0,75/6, order No.: 02827.0) or equivalent product.
11. Do not remove the stopper until the wiring work begins.
12. Be sure to ground the switch using its ground screw.
13. Applicable hazardous areas: Class 1 and 2
    Class 1: Location which might become hazardous under normal conditions.
    Class 2: Location which might become hazardous under abnormal conditions.
14. "Explosion-proof environment E Ex de IIC T6" refers to the following environmental conditions:

E ① Ex ② d ③ e ④ II ⑤ C ⑥ T6 ⑦

① : Explosion-proof structure
② : Type of explosion-proof structure
③ : Type of explosion-proof structure(flameproof enclosure structure) ——— de: Body (internal switch) has a pressure-resistant explosion-proof structure,
④ : Type of explosion-proof structure (increased safety explosion-proof structure) ——— and terminal box has an increased safety explosion-proof structure.
⑤ : Explosion-proof electrical equipment group
⑥ : Gas or moisture category
⑦ : Temperature class (or maximum surface temperature) ——— T6: From 85˚C to less than 100˚C

APPLICATION RANGES FOR EN(IEC)-COMPLIANT EXPLOSION-PROOF SWITCHES

Source: (New) Electrical Facilities Explosion-Proofing Guidelines (Gas Explosion Proofing, 1985)

Temperature class			T1	T2	T3	T4	T5	T6
Explosive gas category			Over 450˚C	Over 300˚C to 450˚C	Over 200˚C to 300˚C	Over 135˚C to 200˚C	Over 100˚C to 135˚C	Over 85˚C to 100˚C
Explosion-proof electrical equipment group	II	IIA	Acetone, ammonia, ethyl acetate, benzene, carbon monoxide, methane, methanol, propane, toluene	Ethanol, PVC, butyl acetate, ethylbenzene, dimethylamine, propylene, 1-propanol, n-butane, methyl methacrylate	Octane, hexane, cyclohexane, butyl chloride, pentane, 1-octanol, gasoline, kerosene, petroleum naphtha	Acetaldehyde, trimethylamine		Ethyl nitrite
		IIB	Acrylonitrile, hydrocyanic acid, cyclopropane, coke furnace gas	Ethyl acrylate, ethylene, ethylene oxide, 1,3-butadiene	Acrylaldehyde, crotonaldehyde, dimethyl ether, tetrahydrofuran	Ethyl methyl ether, diethyl ether, dibutyl ether, tetrafluoroethylene		
		IIC	Hydrogen	Acetylene			Carbon disulfide	Ethyl nitrate

Note: E Ex de IIC T6 applies to gases or vapors within the bold lines.