

Limit and Enclosed Switches

Weather-Sealed Explosion-Proof Switches

CX Series

FEATURES

- Sealing - applicable portions of NEMA 1, 3, 4, 4X, 6, 6P, 7, 9, and 13
- Watertight and dusttight for outdoor use
- 4-20 mA analog output available
- UL Listed, file #E14274
- Analog UL file #E68247
- CSA Certified, file #LR57324
- Rugged cast aluminum housing
- Pretravel, overtravel, and actuating sequence can be field adjusted without tools (all basics individually)
- Rotary types convert in seconds to clockwise, counterclockwise, or both-way operation

CX switches are built especially for outdoor use in hazardous atmospheres. These enclosures are constructed to withstand the pressure of an internal explosion. Flame paths cool the exploded gases to a point less than the lowest safe operating temperature of the surrounding gas.

O-ring seals make the enclosure weather-proof but are outside of required flame paths so explosion proof requirements are maintained.

Analog output: either resistive or 4-20 mA is available.

Operating temperature range is -25° to +85°C (-13° to 185°F).

NEMA standards: 1, 3, 4, 4X, 6, 6P, 7, 9 and 13.

UL listed: Class I, Div. 1, Groups B (14CX, 16CX, 24CX, 26CX, 36CX, and 84CX only), C and D; and Class II, Div. 1, Groups E, F and G. CSA certified: Class I, Div. 1, Groups B (14CX, 16CX, 24CX, 26CX, 36CX and 84CX only), C and D; and Class II, Groups E, F and G.

For rapid response – off the shelf service, all **bold face** listings are normally stocked items.

ROTARY ACTUATED SWITCHES



Short housing



Standard housing

Actuators are not included with switch. Order them separately.

ROTARY LEVERS

Lever Type	Catalog Listing
1.5 in. lever, no roller	LSZ51
.75 in. roller, front	LSZ51A
.75 in. roller, back	LSZ51C
1.5-3.5 in. adjustable lever	LSZ52C
.75 in. roller	LSZ52J
1.0 in. roller	LSZ52K
1.5 in. roller	
1.5 in. yoke roller	LSZ53S
.75 in. rollers, back	LSZ53E
.75 in. rollers, each side	
5 in. rod lever	LSZ54M
Hub only	LSZ54
1.5 in. offset lever, no roller	LSZ55
.75 in. roller, back	LSZ55A
.75 in. roller, front	LSZ55C

Rollers are nylon. Non-sparking rollers must be used in hazardous locations.

ORDER GUIDE

As factory assembled, all basic switches operate on clockwise and counterclockwise rotation. Actuating mechanism can be field adjusted for CW or CCW operation only. No tools are required.

Description ¹	Catalog Listings Shaft Restoring Force To Center		Housing Size	Basic Switch(es) ²	Electrical Ratings
	With	W/O ²			
15 amp. SPDT.	11CX1 11CX2 21CX3 21CX4	11CX11 11CX12 21CX13 21CX14	Short Short Standard Standard	BZ(1) BZ(2) BZ(3) BZ(4)	A A A A
20 amp. SPDT.	12CX1 12CX2 22CX3 22CX4	12CX11 12CX12 22CX13 22CX14	Short Short Standard Standard	BA(1) BA(2) BA(3) BA(4)	B B B B
Also UL listed for Class I. Group B (hydrogen atmospheres). 10 amp. DPDT.	14CX1 24CX2 24CX3	14CX11 24CX12 24CX13	Short Standard Standard	DT(1) DT(2) DT(3)	C C C
Also UL listed for Class I, Group B (hydrogen atmospheres). 1 amp. SPDT.	16CX2 26CX4 16CX1 26CX3	16CX12 26CX14 16CX11 26CX13	Short Standard Short Standard	HS(2) HS(4) HS(1) HS(3)	D D D D
Analog position sensing.* Current output (4-20 mA).	— —	18CX10 281CX12 284CX12	Short Standard Standard	None BZ(2) DT(2)	— A C
Analog position sensing.* Resistive output.	19CX0 29CX1 29CX2	— — —	Short Standard Standard	None BZ(1) BZ(2)	— A A
1 amp. SPDT with gold contacts.	1172CX2 2172CX4	1172CX12 2172CX14	Short Standard	BZ(2) BZ(4)	F F

* Where noted, BZ basic switches are 15 amp, SPDT; DT basic switches are 10 amp DPDT. Refer to next page for analog position sensing specifications.

MOUNTING HOLES

Add the letter A to listings with side mounting holes tapped 5/16-18(8).

Example: 11CX2A

Add the letter B to listings with thru mounting holes tapped 3/8-24(4).

Example: 11CX2B.

¹ Basic switches operate nearly simultaneously in multiple switch devices.

² Shafts of devices without shaft restoring force can be rotated through 360°.

Basic switches will be in operated mode through two 105° sections.

Eight side mounting holes can be tapped 5/16"-18.






Limit/Enclosed

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ELECTRICAL RATINGS

Circuitry	Electrical Ratings
 A BZ Single-Pole Double-throw	UL/CSA Rating: L96 15 amps, 120, 240 or 480 VAC, ind. and res. 1/8 Hp, 120 VAC; 1/4 Hp, 240 VAC. .5 amp, 125 VDC, .25 amp, 250 VDC., res.
 B BA Single-Pole Double-throw	UL/CSA Rating: L23 20 amps, 120, 240 or 480 VAC, ind. and res. 1 Hp, 120 VAC; 2 Hp, 240 VAC. .5 amp, 125 VDC, .25 amp, 250 VDC res.
 C DT Double-pole Double-throw	UL/CSA Rating: L59 10 amps, 120 or 240 VAC, ind. and res. .3 amp, 125 VDC, .15 amp, 250 VDC, res.
 D HS Single-Pole Double-throw	UL/CSA Rating: L22 1 amp, 120 VAC, ind. and res.
 F BZ (Gold Contact) Single-Pole Double-throw	UL/CSA Rating: L22 1 amp, 125 VAC

REPLACEMENT BASIC SWITCH ASSEMBLIES

These assemblies are factory adjusted to the same operating characteristics as a new CX switch. They include components subject to mechanical or electrical wear: basic switches, cam wheels and followers, and springs.

To order, change the first number in the complete switch catalog listing to 9 for rotary switches and 10 for plunger switches with short housings.

Example:

Rotary switch **12CX5**

Replacement = **92CX5**

Plunger switch **36CX2**

Replacement = **106CX2**

Note: Basic switch assemblies for rotary actuated switches, with or without shaft restoring force, will be the same.

For example:

11CX1 and 11CX11 use 91CX1.

ANALOG POSITION SENSING SPECIFICATIONS

Current Output (4-20 mA)	Resistive Output	Replacement PC Board
Voltage compliance range: 12.5 to 40 VDC Maximum load resistance: RL, Max., $\frac{V \text{ Supply} - 12.5}{20 \text{ mA}}$ Current signal output: 4-20 mA Span: Adjustable from 15° to 90° of angular rotation. Null: 4 mA position may be set at any angular position.	500 ohms \pm 10% in center (free position) 975 ohms max at 105° rotation clockwise (CW). 25 ohms min. at 105° rotation CCW. 2 watts power at 70°/150°F at full scale Different potentiometer values can be ordered. (Minimum order quantities may be required.)	For current output devices 15PA261-CX

PLUNGER ACTUATED SWITCHES



Standard housing shown.

ORDER GUIDE

Description ¹	Catalog Listing With Restoring Force	Housing Size	Basic Switch(es)	Electrical Ratings
15 amp. SPDT	31CX1 31CX2 41CX3 41CX4	Short Short Standard Standard	BZ(1) BZ(2) BZ(3) BZ(4)	A A A A
20 amp. SPDT	32CX1 32CX2 42CX3 42CX4	Short Short Standard Standard	BA(1) BA(2) BA(3) BA(4)	B B B B
Also UL listed for Class I, Group B (hydrogen atmospheres). 1 amp. SPDT.	36CX1 36CX2	Short Short	HS(1) HS(2)	D D

¹ Basic switches operate nearly simultaneously in multiple switch devices.

OPERATING CHARACTERISTICS (All CX Switches)

Basic Switch Type	Rotary Actuation				Plunger Actuation		
	BZ	BA	DT	HS	BZ	BA	HS
Pretravel (max.)*	15°	15°	30°	30°	.10 in./2.5 mm		
Differential Travel (max.)	10°	10°	25°	20°	.04 in./1.0 mm		
Overtravel (min.)*	90°	90°	75°	75°	.19 in./4.75 mm		
Operating Torque (max.)	11.1 in. lb./1,25 Nm				—		
Operating Force (max.)	—				8.82 lb./39.2 N		

* May be modified in field to suit application requirements.

N = Newtons

Nm = Newton meters

LOW TEMPERATURE SWITCHES

Add the letter C to listings for low temperature versions.

Example: 21CX14**C** –40°F (–40°C) Rotary

36CX2**C** –35°F (–37°C) Plunger

Weather-Sealed Explosion-Proof Switches

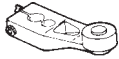
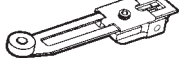
80CX SWITCHES ALSO WITHSTAND CORROSIVE ENVIRONMENTS

80CX switches have rugged bronze housings which are resistant to salt water and other corrosive environments. They comply with the NEMA 4X requirement for protection against corrosion, in addition to NEMA enclosure standards met by other CX switches. O-ring seals make the enclosure weather-proof, but are outside of required flame paths so explosion-proof requirements are maintained.

STAINLESS STEEL LEVER ACTUATORS

These levers match the corrosion resistance of the 80CX housing. Non-sparking rollers must be used in hazardous locations.

ORDER GUIDE STAINLESS STEEL LEVERS WITH NYLON ROLLERS

	Radius (In.)	Dia. In.	Width In.	Catalog Listing
	1.5	.75	.25	LS2Z51A
Std. Lever w/o roller	1.5	.75	.25	LS2Z51
	1.5-3.5	.75	.25	LS2Z52A

Note: Refer to page A36 for lever dimensions.

ROTARY ACTUATED SWITCHES



80CX switches available with standard housing only.

Actuators are not included with switches. Order them separately.

MOUNTING HOLES

Add the letter A to listings with side mounting holes tapped 5/16-18(8).

Example: 82CX2A

Add the letter B to listings with thru mounting holes tapped 3/8-24(4).

Example: 81CX2B.

ORDER GUIDE

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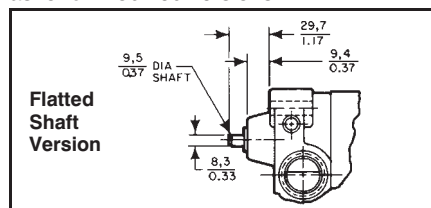
Description ¹	Catalog Listings Shaft Restoring Force To Center		Housing Size	Basic Switch(es)	Electrical Ratings Page A109
	With	Without ²			
15 amp. SPDT	81CX1	81CX11	Standard	BZ(1)	A
	81CX2	81CX12	Standard	BZ(2)	A
	81CX3	81CX13	Standard	BZ(3)	A
	81CX4	81CX14	Standard	BZ(4)	A
20 amp. SPDT	82CX1	82CX11	Standard	BA(1)	B
	82CX2	82CX12	Standard	BA(2)	B
	82CX3	82CX13	Standard	BA(3)	B
	82CX4	82CX14	Standard	BA(4)	B
Also UL listed for Class I, Group B (hydrogen atmospheres). 10 amp. DPDT	84CX1	84CX11	Standard	DT(1)	C
	84CX2	84CX12	Standard	DT(2)	C
Potentiometer-equipped versions. (Where noted, basic switches are 15 amps, SPDT.)	89CX0	—	Standard	Pot. only	E
	89CX1	—	Standard	BZ(1), pot.	A,E
	89CX2	—	Standard	BZ(2), pot.	A,E

Notes: Refer to page A127.

MODIFIED SHAFT ENABLES DIRECT COUPLING

CX switches are available with a 3/8 inch diameter by 3/4 inch long flatted shaft which conforms to standard NEMA motor shaft specifications. It accepts commercially available shaft couplers, permitting easy, direct coupling to most equipment actuators.

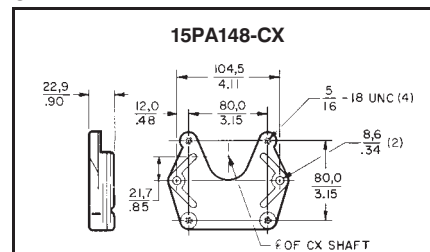
To specify a "direct-couple" CX switch, add **-DO1** to catalog listings shown in the order guides, i.e. 11CX12-**DO1**. Pricing is the same as for unmodified versions.



MOUNTING BRACKET

An aluminum mounting bracket is available for adapting CX switches to existing 2-hole mounting arrangements.

To order, specify Catalog Listing **15PA148-CX**.



Limit/Enclosed

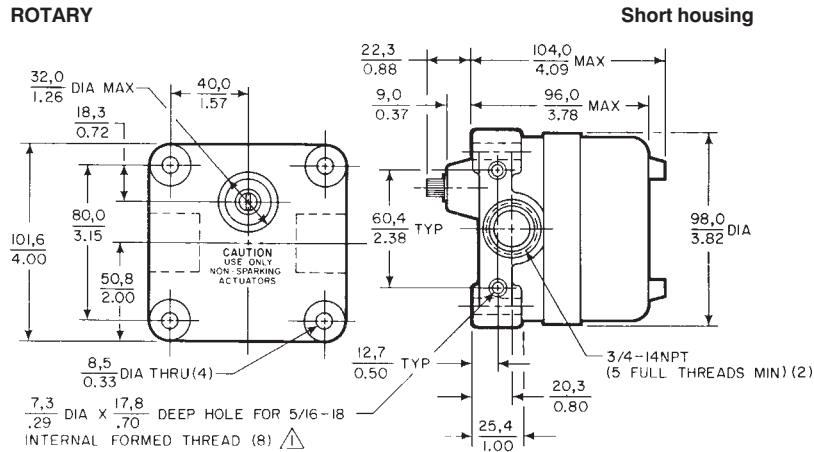
Limit and Enclosed Switches

CX Series

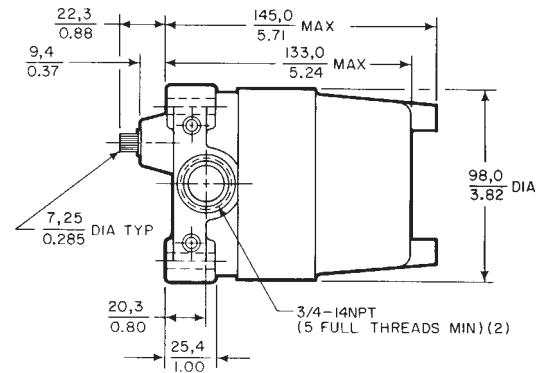
Weather-Sealed Explosion-Proof Switches

MOUNTING DIMENSIONS (For reference only)

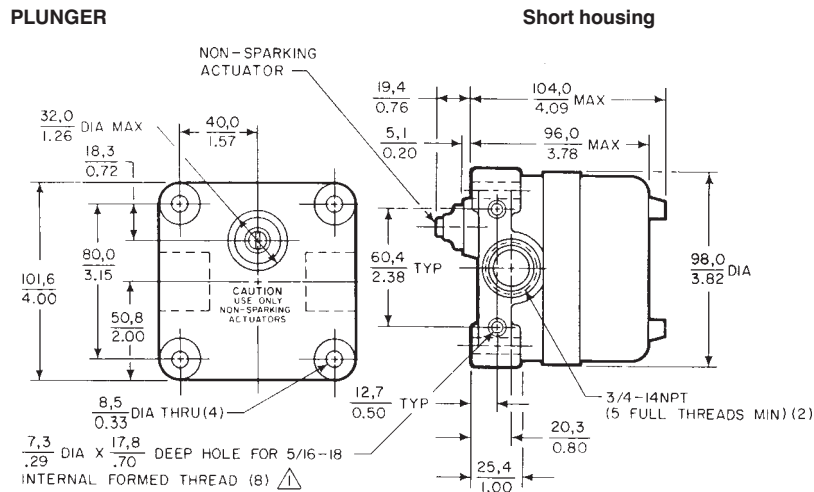
ROTARY



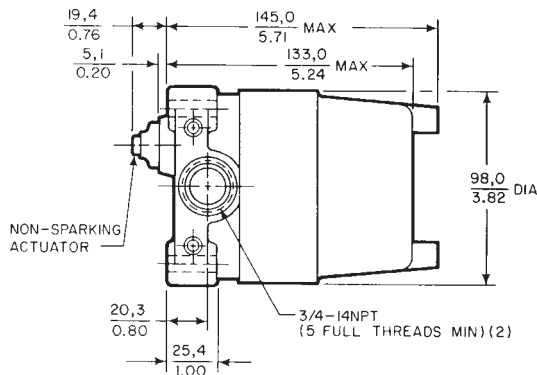
Standard housing



PLUNGER



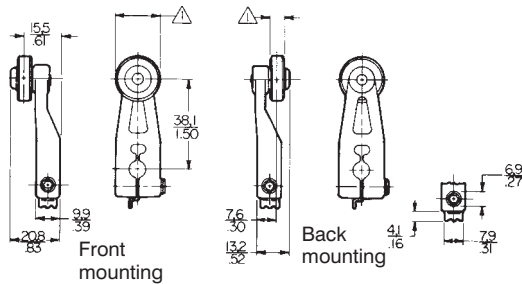
Standard housing



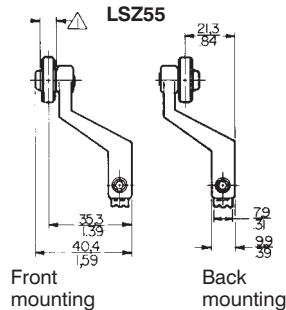
⚠ THESE HOLES NOT FURNISHED ON 80CX SERIES

LEVER ACTUATORS

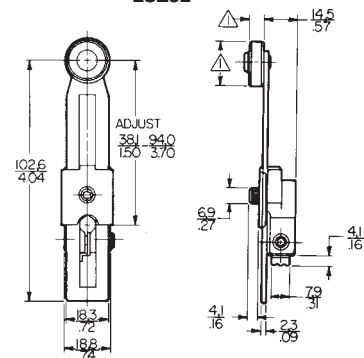
LSZ51



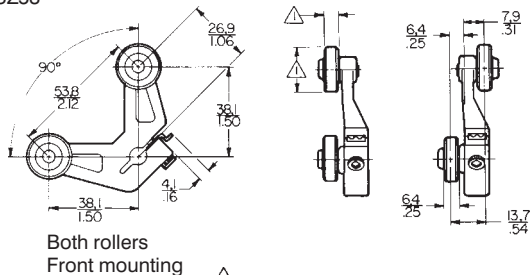
LSZ55



LSZ52



LSZ53



⚠ See order guides for roller dimensions.

LSZ54

