

## Weather-Sealed Explosion-Proof Switches

## 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

## 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	
.75 in. roller	LSZ52C
1.0 in. roller	LSZ52J
1.5 in. roller	LSZ52K
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.

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 weatherproof 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  $-25^{\circ}$  to  $+85^{\circ}\text{C}$  ( $-13^{\circ}$  to  $185^{\circ}\text{F}$ ).

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.

Limit/Enclosed

## 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 <sup>1</sup>	Catalog Listings		Housing Size	Basic Switch(es) <sup>2</sup>	Electrical Ratings
	With	W/O <sup>2</sup>			
15 amp. SPDT.	11CX1 11CX2 21CX3 21CX4	11CX11 11CX12 21CX13 21CX14	Short Short Standard Standard	BZ(1) BZ(2) BZ(3) BZ(4)	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
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
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
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.

<sup>1</sup> Basic switches operate nearly simultaneously in multiple switch devices.

<sup>2</sup> 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.

## Weather-Sealed Explosion-Proof Switches

### 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

### 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, -V Supply - 12.5 20 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 ± 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 <sup>1</sup>	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
20 amp. SPDT	32CX1 32CX2 42CX3 42CX4	Short Short Standard Standard	BA(1) BA(2) BA(3) BA(4)	B
Also UL listed for Class I, Group B (hydrogen atmospheres). 1 amp. SPDT.	36CX1 36CX2	Short Short	HS(1) HS(2)	D

<sup>1</sup> 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

### 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.

## 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.

### 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.

### 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

Std. Roller Lever	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.

### ORDER GUIDE

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

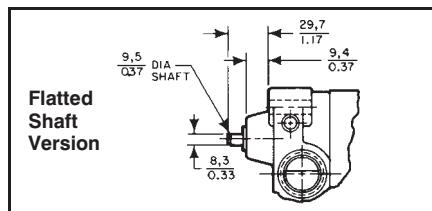
Description <sup>1</sup>	Catalog Listings		Housing Size	Basic Switch(es)	Electrical Ratings Page A109
	Shaft Restoring Force To Center With	Without <sup>2</sup>			
15 amp. SPDT	81CX1 81CX2 81CX3 81CX4	81CX11 81CX12 81CX13 81CX14	Standard	BZ(1) BZ(2) BZ(3) BZ(4)	A A A A
20 amp. SPDT	82CX1 82CX2 82CX3 82CX4	82CX11 82CX12 82CX13 82CX14	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	84CX1 84CX2	84CX11 84CX12	Standard	DT(1) DT(2)	C C
Potentiometer-equipped versions. (Where noted, basic switches are 15 amps, SPDT.)	89CX0 89CX1 89CX2	— — —	Standard Standard Standard	Pot. only BZ(1), pot. BZ(2), pot.	E A,E A,E

Notes: Refer to page A127.

### MODIFIED SHAFT ENABLES DIRECT COUPLING

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

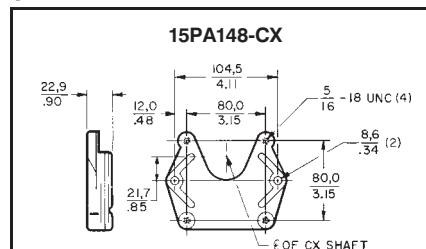
To specify a "direct-couple" CX switch, add -DO1 to catalog listings shown in the order guides, i.e. 11CX12-DO1. Pricing is the same as for unmodified versions.



### 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.



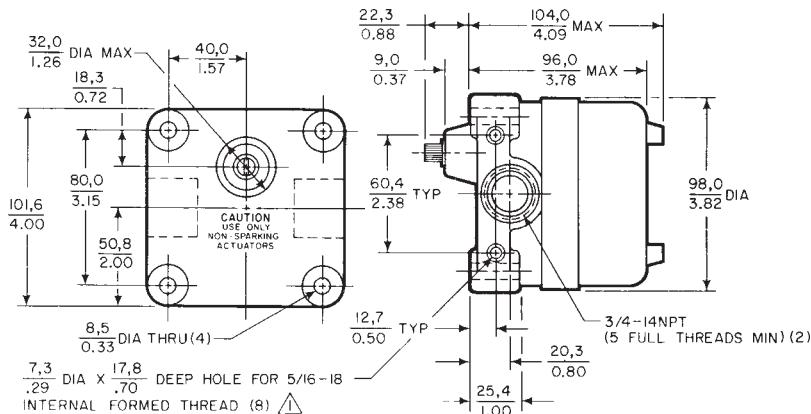
# Limit and Enclosed Switches

CX Series

## Weather-Sealed Explosion-Proof Switches

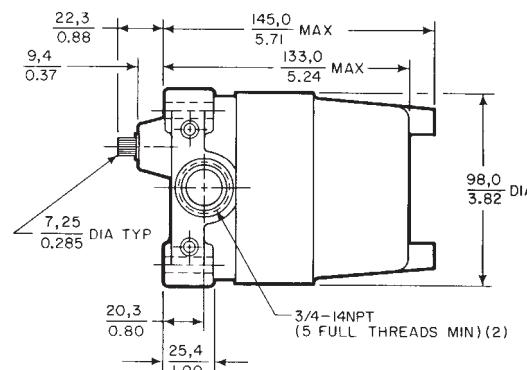
MOUNTING DIMENSIONS (For reference only)

### ROTARY

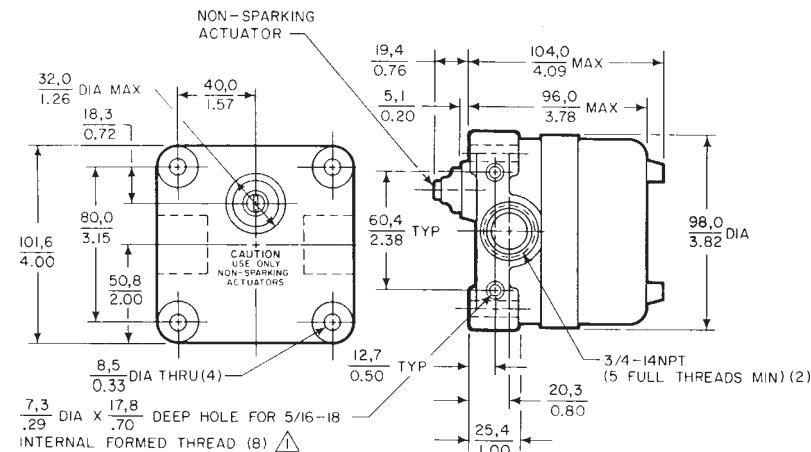


### Short housing

### Standard housing

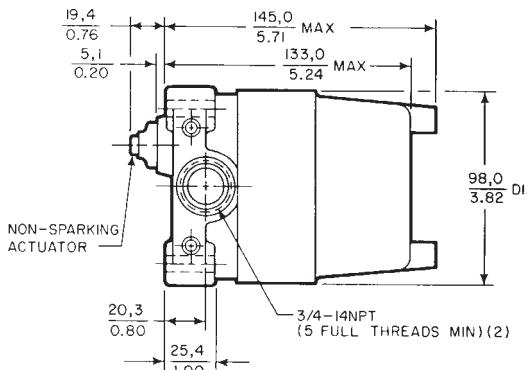


### PLUNGER



### Short housing

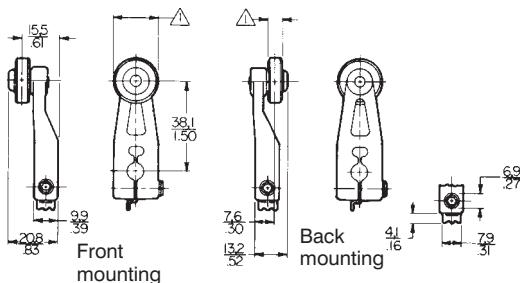
### Standard housing



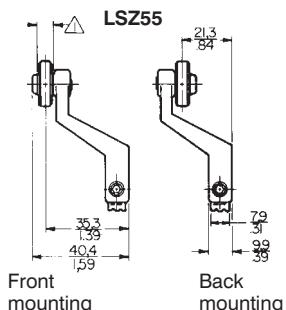
THESE HOLES NOT FURNISHED ON 80CX SERIES

### LEVER ACTUATORS

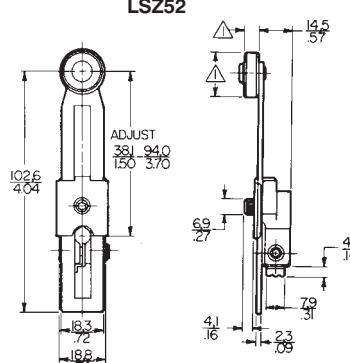
#### LSZ51



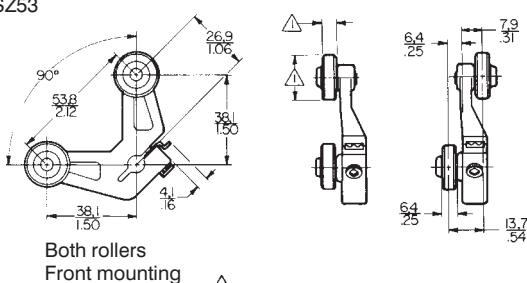
#### LSZ55



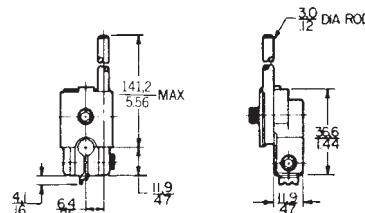
#### LSZ52



#### LSZ53



#### LSZ54



See order guides for roller dimensions.