SX GENERAL INFORMATION

SX subminiature basic switches are the smallest snap-action switches from MICRO SWITCH. These switches are ideal where saving space and weight are important. Unless otherwise noted, all listings have silver contacts.

Part Number	Price	Recommended For	FIG #	Electrical Data and U.L. Codes
11SX21-T	$ 6.28	Most Applications	1	5 Amps L4
1SX1-T	7.19	Up to 7 amps load handling	1	7 Amps L7
2SX1-T	8.37	lower force	1	7 Amps L7
11SX1-T	7.74	lowest differential travel	1	3 AmpsL122
21SX1-T	9.28	Best stability under varying humidity	1	7 Amps L7
3SX1-T	8.78	Applications requiring gold contacts	1	1 AmpL22
311SX1-T	7.33	.135 inch straight lever	3	5 Amps / L4
311SX2-T	7.51	.505 inch straight lever	3	5 Amps / L4
311SX3-T	7.74	.965 inch straight lever	4	5 Amps / L4
311SX4-T	7.92	.042 inch simulated roller lever	5	5 Amps / L4
311SX5-T	8.14	.459 inch simulated roller lever	6	5 Amps / L4

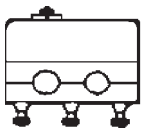


FIG 1

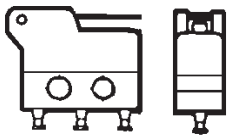


FIG 3

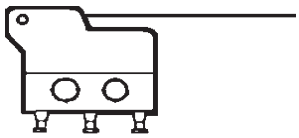


FIG 4

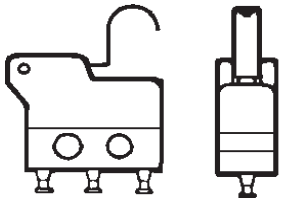


FIG 5

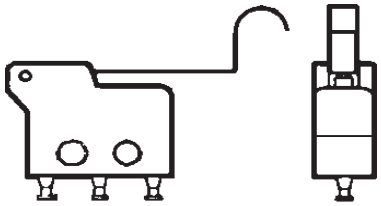


FIG 6

SM GENERAL INFORMATION

SM subminiature switches are slightly larger than SX switches. These switches combine small size and light weight with ample electrical capacity, precision operation and long life. Unless otherwise noted, all listings have silver contacts.

Part Number	Price	Recommended For	FIG #	Electrical Data and U.L. Codes
1SM1	$4.10	Original design. Solder Posts.	8 8	5 Amps / L4
1SM1-T	4.28	Original design. Solder terminals	8 8	5 Amps / L4
11SM1	3.05	Most applications, long life. Solder post,	8 8	5 Amps / L4
11SM1-T	3.05	Same as above. Solder terminals.	8 8	5 Amps / L4
11SM3-T	3.14	Operating in temperatures to +250ºF	8 8	5 Amps / L4
11SM401-T	6.51	Less differential travel	8	5 Amps / L4
11SM701-T	3.14	Lower force	8	4 Amps / L119
411SM1	7.42	Sealed plunger construction	8	5 Amps / L4
311SM1-T	3.73	.285 inch straight lever	10	5 Amps / L4
311SM701-T	3.82	.285 inch straight lever. Lower Force	10	4 Amps / L119
311SM2-T	3.59	.565 inch straight lever	10	5 Amps / L4
311SM702-T	3.82	.565 inch straight lever. Lower force	10	4 Amps / L119
311SM3-T	3.59	1.765 inch straight lever	10	5 Amps / L4
311SM703-T	3.82	1.765 inch straight lever. Lower force	10	4 Amps / L119
311SM4-T	3.73	.251 inch simulated roller lever.	11	5 Amps / L4
311SM704-T	3.96	.251 inch simulated roller Lever. Lower force	11	4 Amps / L119
311SM5-T	3.91	.535 inch simulated roller lever.	11	5 Amps / L4
311SM705-T	4.00	.535 inch simulated roller Lever. Lower force	11	4 Amps / L119
311SM6-T	4.05	.251 inch roller lever.	12	5 Amps / L4
311SM706-T	4.37	.251 inch roller Lever. Lower force	12	4 Amps / L119
111SM1-T	4.60	Force and stability of flex-ible leaf actuator. No roller	13	5 Amps / L4
111SM2-T	5.19	Flexible leaf with roller	13	5 Amps / L4

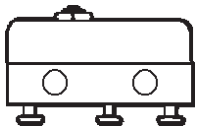


FIG 8

FIG 10

FIG 11

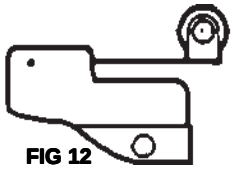


FIG 12

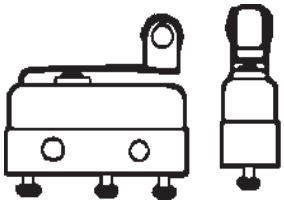


FIG 13

Prices listed in this catalog are for estimating purposes. Prices were correct first column net at the time the pages were composed. Prices are subject to change without notice. Quantity prices are available.

AUXILIARY ACTUATORS

Part Number	Price	Description	FIG #	Actuator Length"A" inches
JS-2	$ 1.37	Straight leaf	14	.66
JS-5	2.96	Roller leaf (Bronze Roller)	15	.59
JS-7	2.23	Formed leaf (Simulated Roller)	16	.58
JS-220	2.78	Straight lever	17	1.03
JS246	5.64	Roller lever (Steel roller)	18	1.00

Switches are not included with actuators

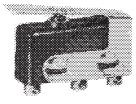


FIG 14

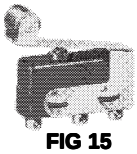


FIG 15

FIG 16

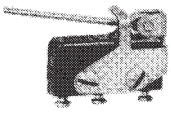


FIG 17

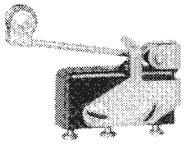


FIG 18

V3 GENERAL INFORMATION

V3 miniature switches feature high electrical capacity and long life. Their size and shape meet design requirements in all types of applications. The V7 series of miniature basic switches is designed to meet European approval agency requirements. Terminal variations and switch Dimensions conform to applicable DIN standards.

Part Number	Price	Recommended For	FIG #	Electrical Data and U.L. Codes
V3-1-D8	$2.75	Best for use under shock and vibration	1	15 Amps / L83
V3-101-D8	2.40	Most applications	1	11 Amps / L156
V3-1101-D8	2.40	Added overtravel	1	10 Amps / L112
V3-2101-D8	2.40	Lower force, added overtravel	1	10 Amps / L131
V3-2401D8	2.70	Lower force	1	5 Amps / L162
V3-2451-D8	2.95	Lowest force	1	3 Amps / L163
V3-3001-D8	2.75	Up to 15 amps load handling	1	15 Amps / L83
V3-343-D8	5.30	Applications requiring gold alloy contacts.	1	1 Amp / L22
V3-2800-D9	3.20	Up to 20 amps load handling	1	20 Amps / UL 508
V3-2900D9	3.45	Up to 25 amps load handling	1	25 Amps / UL 508
V3-1	4.85	Best for use under shock and vibration	2	15 Amps / L83
V3-101	4.50	General use	2	11 Amps / L156
V3-1001 (MS25253-1	6.60	MIL-S-8805 application requirements (SPDT)	2	10 Amps / UU
V3L-121-D8	2.80	Most applications.	3	11 Amps / L156
V3L-1123-D8	2.80	Lower force	3	10 Amps / L131
V3L-101-D8	2.70	Most applications.	4	11 Amps / L156
V3L-104-D8	2.70	Most applications.	5	11 Amps / L156
V3L-2102-D8	2.70	Lower force. Added overtravel.	5	10 Amps / L131
V3L-131-D8	2.70	Most applications.	6	11 Amps / L156
V3L-2106-D8	2.70	Lower force added overtravel.	6	10 Amps / L131
V3L-3013-D8	2.95	Up to 15 ampere load handling.Best performance under shock and vibration.	6	15 Amps / L83
V3L-139	6.15	Most applications Screw terminals.	7	11 Amps / L156
V3L-139-D8	3.20	Most applications.	7	11 Amps / L156
V3L-1117-D8	3.20	Added overtravel.	7	10 Amps / L112
V3L-3003-D8	3.65	Up to 15 amps load handling. Best for performance under shock and vibration.	7	15 Amps / L83
V3L-111-D8	3.20	Most applications	8	11 Amps / L156
V3L-1101-D8	3.20	Added overtravel	8	10 Amps / L112
V3L-3004-D8	3.55	Up to 15 amps load handling. Best for performance under shock and vibration.	8	15 Amps / L83

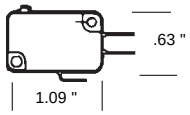


FIG. 1

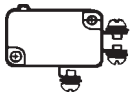


FIG. 2

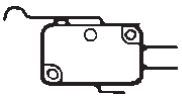


FIG. 3
1.285 lever

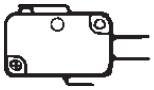


FIG. 4
.860 lever

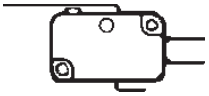


FIG. 5
1.40 lever

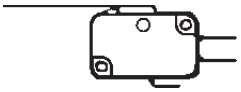


FIG. 6
2.34 lever

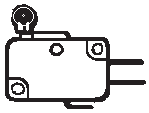


FIG. 7
.81 lever

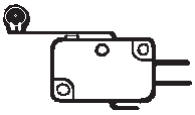


FIG. 8
1.34 lever

V3 AUXILIARY ACTUATORS

Part Number	Price	Description	FIG #	Actuator Length inches
JV-1	$ 2.09	Leaf Type	1	.84
JV-5	2.68	Roller Leaf	2	.81
JV-7	3.19	Long Leaf	2	1.27
JV-20	4.23	Roller Lever	3	.750
JV-26	3.64	Long Lever	3	1.75
JV-30	7.96	One-way Roller Lever	4	.81
JV-82	4.64	Tandem Roller Leaf	5	.81
JV-91	4.28	Tandem Leaf	5	.81
JV-220	4.37	Roller Lever	6	.695

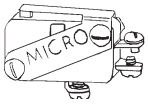


FIG. 1

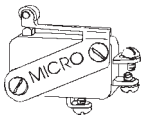


FIG. 2

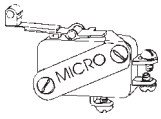


FIG. 3

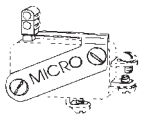


FIG. 4

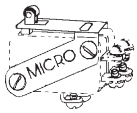


FIG. 5

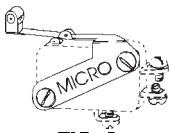


FIG. 6

SWITCHES ARE NOT INCLUDED WITH ACTUATORS

XE ENVIRONMENT PROOF BASIC SWITCHES

GENERAL INFORMATION

SE and XE switches are the smallest environment-proof switches offered by MICRO SWITCH. Both types enclose a precision basic switch within a corrosion resistant aluminum housing to seal the switch contacts against contamination. Type SE switch enclose a type SM basic switch and XE switches enclose the smaller SX basic switch.

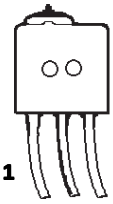
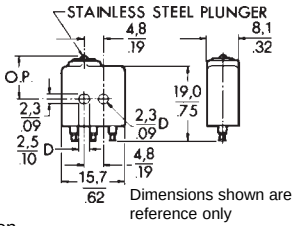


FIG. 1



Dimensions shown are for reference only

SE type switches are described on the following page

Part Number	Price	Recommended For	FIG #	Electrical Data #
1XE1 (MS27994-1)	$ 40.20	Most applications MIL-S-8805 requirements	1	7Amps /**C**
4XE1	39.45	UL listing and UL and CSA listed leadwire	1	7 Amps / **D**
5XE1	49.20	Oil resistant Fluorosilicone seal	1	7 Amps / **C**

	# ELECTRICAL DATA
C	7 amps res., 4 amps ind. (sea level), 7maps res., 2.5 amps ind. (50,000 feet), 28 VDC 7 amps res., 4 amps ind (sea level), 115 VAC, 400Hz
D	UL Rating, 7 amps, 250 VAC 60 Hz. L7
R	1amp res. 0.5 amp ind. 28 VDC

XE AUXILIARY ACTUATOR

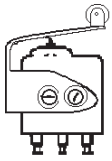


FIG. 3

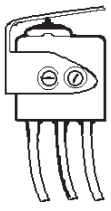
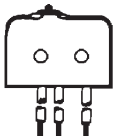


FIG. 4

Part Number	Price	Description	FIG #
JM-1	$ 4.60	Straight leaf	4
JM-5	8.14	Rollerleaf	3

SWITCHES ARE NOT INCLUDED WITH ACTUATORS

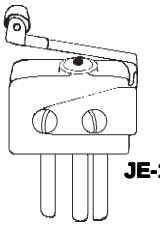
SE ENVIRONMENT PROOF BASIC SWITCHES



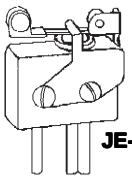
 # ELECTRICAL DATA
A 5 amps res., 3 amps ind. (sea level)
5 amps res., 2.5 amps ind.(50,000 feet), 28 VDC
5 amps res., 5 amps ind 125 or 250 VAC, 60Hz
B UL and CSA Rating - 5 amps, 250 VAC, 60HZ

Part Number	Price	Recommended For	Electrical Data #
4SE1	$ 33.55	**UL and CSA listing and UL and CSA listed lead wire**	5 Amps / **B**
7SE1	33.55	**Lower force**	5 Amps / **A**

SE AUXILIARY ACTUATOR



JE-17



JE-21

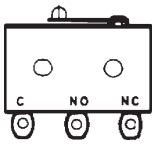
Part Number	Price	Description
JE-17*	$13.51	Roller Leaf Reversed position
JE-21	15.65	Roller leaf

Switches are not included with actuators.
*** Mounting hardware included.**

HM HERMETICALLY SEALED BASIC SWITCHES

GENERAL INFORMATION
HM miniature basic switches are the answer to the need for an extremely small lightweight switch with true hermetic sealing and ample electrical capacity. They are the smallest hermetically sealed snap-action switches offered by MICRO SWITCH .

Part Number	Price	Recommended For	Electrical Data #
1HM19 (MS27216-1)	$111.55	MIL-S-8805 application requirements	4 Amps / **I**
6HM1-1	145.55	Operating in temperature to 500ºF. 1 ft. leads	2.5 Amp / **G**
11HM1 MS27216-5)	93.65	Meets MIL-S-8805/8 and high shock requirements.	1 Amps / **K**



ELECTRICAL DATA
G 4 amps res., 2 amps ind. (sea level)., 28 VDC
2.5 amps res., 5 amps ind 115 VAC, 400.Hz
I 4 amps res., 2 amps ind. 0.5 amps lamp load, 115 VAC, 400 HZ.
4 amps res., 2 amps ind., 1 amp lamp load 28 VDC.
K 3 amps res., 1 amp ind. (sea level or 70,000ft.) 28 VDC.
1 amp res. or ind (sea level) 115 VAC. 400 Hz.

For information on auxiliary actuators for HM series request MICRO SWITCH catalog 10

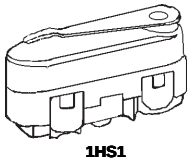
SEALED BASIC SWITCHES

HS HERMETICALLY SEALED BASIC SWITCHES

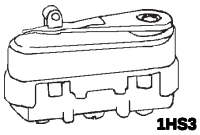
GENERAL INFORMATION
HS switches are designed for applications where maximum electrical ratings and true hermetic sealing are essential, and where size and weight requirement are less critical. These switches are side mounted through mounting holes which are outside the sealed switching chamber. UL recognized and CSA certified.

Part Number	Price	Recommended For	Electrical Data Code. See Chart
1HS1 (MS25011-1)	$ 73.45	Most applications. MIL-S-8805 (M8805/47)	**LL**
1HS3	77.25	Roller lever	**LL**
1HS6 (MS25011-2)	73.40	MIL-S-8805 requirements. More operating force	**LL**
4HS4-118	89.55	Lead wire termination	**M**

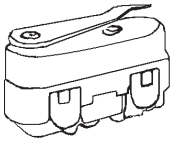
ELECTRICAL DATA
LL 25 amps res., 10 amps ind., 5 amps motor, 3 amps lamp load, 28VDC; 1 amp res., 1 amp ind., 115 VAC, 60 HZ, UL CSA Rating: 1 amp, 115 VAC, 60 Hz
M 15 amps res., 10 amp ind. 28 VDC; 1 amp res., 1 amp ind., 115 VAC, 60Hz.



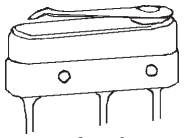
1HS1



1HS3



1HS6



4HS4-118

BZ/BA PIN PLUNGER

GENERAL INFORMATION

MICRO SWITCH standard basic switches are precision snap action mechanisms enclosed in accurately molded plastic cases. These switches are carefully manufactured and thoroughly inspected. They are industry-known for their compactness, light weight , accurate repeatability and long life. Mounting holes for Types BZ, BM and BA accept pins or screws of .139 inch diameter.

Over 50 listings available which meet MIL-S-8805 qualified products list. U.L.recognized C.S.A. certified.

Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2R-A2	Most applications Screw Terminals	1	15 Amps L96	$ 8.00
BZ-2R	Same as above Solder Terminals	1	15Amps L96	8.00
BZ-R21-A2	Lower force Screw Terminals	1	10 Amps L8	11.45
BZ-R-A2	Less Differential travel Screw Terminals	1	15 Amps L103	9.20
BZ-R19-A2	Best Repeatability Screw Terminals	1	15 Amps L103	27.50
BZ-7RT04	MIL-S8805/1-008 Application Require-ments	1	15 Amps -	9.65
YZ-2R-A2	SPST (normally open) Screw Terminals	1	15 Amps L96	7.25
WZ-R	SPST (normally closed) Solder Terminals	1	15 Amps L103	9.15
BZ-2R5551-A2	Dustproof and splash resistant seal Screw Terminals	1	15 Amps L96	11.05
BZ-2R55-A2-S	Best service for sealed construction Stainless steel spring. Screw Terminals	1	15 Amps L96	15.95
BA-2R	Up to 20 Ampere load handling. Solder Terminals	2	20 Amps L23	8.80
BA-2R-A2	Same with Screw Terminals	2	20 Amps L23	8.80
BE-2R-A4	Up to 25 Ampere load handling Screw Term	2	25 Amps -	8.80
BZ-RX	Manual reset (maint. contact) applications . Solder terminals.	3	15 Amps L67	13.80

BZ/BA BUSHING MOUNT OVERTRAVEL PLUNGER

Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2RQ1	Applications with bushing mount. Solder Terminals	9	15 Amps L96	$16.85
BZ-2RQ1-A2	Same with screw terminals.	9	15 Amps L96	16.85
BA-2RQ1	Up to 20 Ampere load handling. Solder Terminals.	10	20 Amps L23	18.60
BA2RQ1-A2	Same with screw terminals.	10	20 Amps L23	17.80
BZ-2RQ18-A2	Added overtravel .Roller plunger for rapid cam (30° max.) rise and slide operation.	12	15 Amps L96	28.90
BZ-2RQ181-A2	Same except roller plunger 90° to major axis of switch.	11	15 Amps L96	28.90

BZ/BA LARGE OVERTRAVEL PLUNGER

Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2RD-A2	Added overtravel. For manual operation and slow 20° (max) cam rise	4	15 Amps L96	$10.35
BZ-2RDS5551-A2	Dustproof and splash resistant seal. Lower Cost.	5	15 Amps L96	23.90
BZ-2RDS-A2-S	Applications requiring dustproof and splash resistant seal	5	15 Amps L96	24.90
BA-2RB	Up to 20 Ampere load handling. Solder term.	6	20 Amps L23	10.55
BA-2RB-A2	Same with screw terminals.	6	20 Amps L23	10.60
BE-2RB-A4	Up to 25 Ampere load handling screw terminals.	6	25 Amps -	10.55

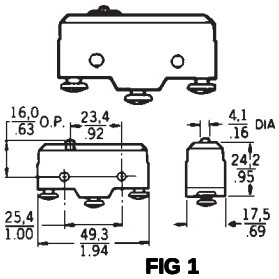


FIG 1

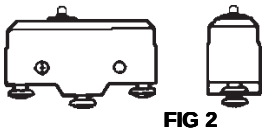


FIG 2

FIG 3

BZ/BA SMALL OVERTRAVEL PLUNGER

Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2RS	Added overtravel. For in-line operation and with JR auxiliary actuators. Solder terminals.	7	15 Amps L96	$ 11.95
BZ-2RS-A2	Same with screw terminals.	7	15 Amps L96	11.25
BZ-2RS5551-A2	Dustproof and splash resistant seal.	8	15 Amps L96	15.05

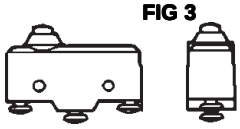


FIG 4

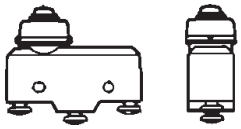


FIG 5

BZ/BA LARGE OVERTRAVEL PLUNGER

BZ-2RW80-A2	2.5 inch lever requirements.	13	15 Amps L96	$ 9.95
BZ2RW84-A2	Lower force without external return spring.	13	15 Amps L96	9.95
BZ-2RW863-A2	6 inch long lever requirements	13	15 Amps L96	10.95
BZ-2RW805551-A2	Dustproof and splash resistant seal. 2.5 inch lever.	13	15 Amps L96	13.45
BZ-2RW899-A2	Adjustable operating point (.670 to .880 ")	15	15 Amps L96	11.95
BA-2RV-A2	Up to 20 Ampere load handling	14	20 Amps L23	11.00
BE-2RV-A4	Up to 25 Ampere load handling	14	25 Amps -	12.00

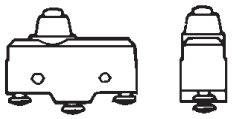


FIG 6

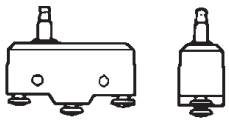


FIG 7

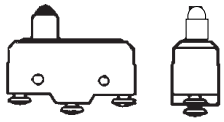


FIG 8

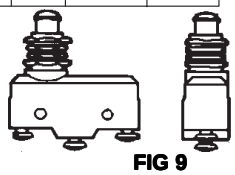


FIG 9

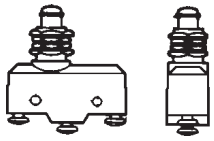


FIG 10

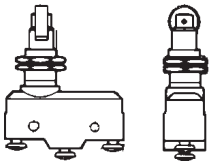


FIG 11

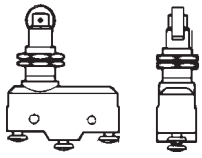


FIG 12

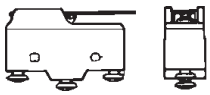


FIG 13

FIG 14

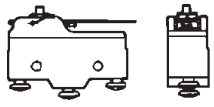


FIG 15

BZ/BA ROLLER LEVER ORDER GUIDES

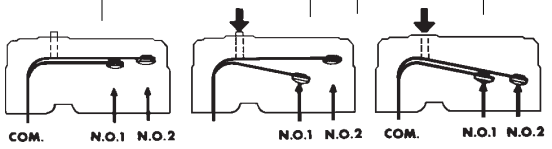
Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2RW822	1.05 inch (26,7mm) steel roller lever application. Solder terminal.	16	15 Amps L96	$12.45
BZ-2RW822-A2	Same with screw terminals.	16	15 Amps L96	12.45
BZ-2RW8225551-A2	As above with dustproof and splash resistant seal	16	15 Amps L96	16.80
BZ-2RW82255-A2-S	Dustproof and splash resistant seal with stainless steel spring.	16	15 Amps L96	24.90
BA-2RV22-A2	Up to 20 ampere load handling	17	20 Amps L23	13.75
BE-2RV22-A4	Up to 25 ampere load handling	17	25 Amps -	14.45
BZ-2RW82-A2	1.90 inch steel roller lever applications	18	15Amps L96	12.45
BA-2RV2-A2	Up to 20 Ampere load handling	18	20Amps L23	14.45
BZ-RW922-A2	Best repeatability and O.P. stability.	19	10 Amps L95	44.75
BZ-2RW826-A2	One-way roller .37" dia x .15" wide roller.	20	15 Amps L96	15.55
BZ-2RW825-A2	One-way roller .19" Dia .x .19" wide roller.	20	15 Amps L96	15.55

BZ/BA SPECIAL CIRCUITRY ORDER GUIDES

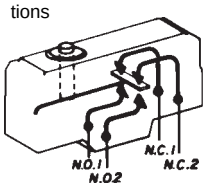
"Special sequence" switches provide unusual circuit control. A make-before make switch, upon actuation, one circuit is made an interval before the second circuit.

Double break versions can interrupt greater inductive loads and feature shorting bar construction. A split contact version allows control of two isolated circuits.

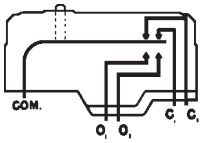
Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
6BS3-B	Make-before-Make contact action	25	10 Amps L115	$32.80



BZ-3AT	Double-break, low voltage DC application	26	15 Amps L73	$17.50
BA -3ST	Double-break, low voltage DC applications	27	25 Amps L58	$18.30



BZ-3YT (MS25383-1)	MIL-S-8505 application requirements. (split contact)	28	5 Amps L4	$19.60



BZ/BA FLEXIBLE LEAF ORDER GUIDES

Part Number	Recommended For	FIG #	Amps and U.L. Codes	Price
BZ-2RL-A2	Force and stability of the flexible actuator.	21	15 Amps L96	$ 9.60
BA-2RL-A2	Up to 20Ampere load handling.	22	20 Amps L23	10.60

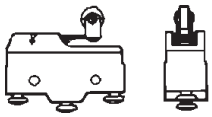


FIG 16

BZ/BA FLEXIBLE ROLLER LEAF ORDER GUIDES

BZ-2RL2-A2	Force and stability of the flexible leaf with roller	23	15 Amps L96	10.55
BZ-2RL25551-A2	Dustproof and splash resistant seal	23	15 Amps L96	15.50
BA-2RL2-A2	Up to 20 Ampere load handling.	24	20 Amps L23	12.70

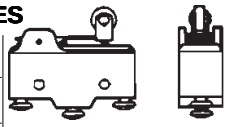


FIG 17

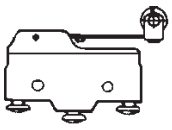


FIG18

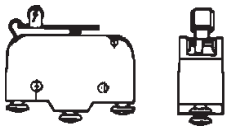


FIG 19

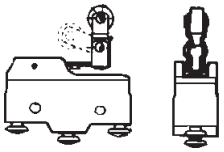


FIG 20

FIG 21

FIG 22

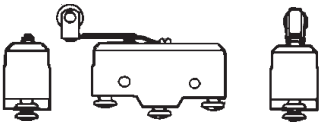


FIG 23

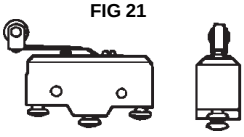


FIG 24

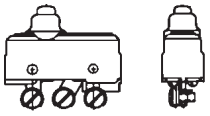


FIG 25

FIG 26

FIG27

FIG 28

3MN DOUBLE-BREAK BASIC SWITCHES

GENERAL INFORMATION:

3MN Switches are for use with limit or control mechanisms on machine tools, presses or other industrial equipment.The terminals of two-and four circuit double break switches must be wired to identical voltage sources and the same polarity. The loads should be on the same sides of the line..

FEATURES:

.080 inch minimum overtravel Power load switching capability up to 15 amperes
Motor handling capacity of 1 horsepower at 240 VAC
Arc resistant plastic
More space between terminals to help reduce the possibility of shorting.
#8 Terminal screws

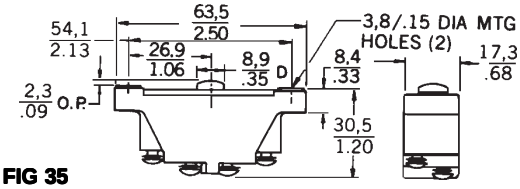
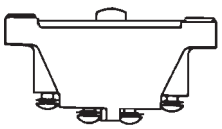


FIG 35

Part Number	Description	FIG #	Electrical Data Motor Control	Price
3MN1	For most applications	35	15 Amps	$24.25
3MN6	Lower force	35	15 Amps	24.25



DT Double-Pole Double Throw

FEATURES:

Two independent single-pole double-throw circuits in one housing.
Savings in space and weight
Mounting interchangeability with type Z switches
Temperature tolerance to + 180ºF
U.L. recognized, C.S.A certified

Part Number	Description	FIG #	Electrical Data and U.L. Codes	Price
DT-2R-A7	Pin plunger	30	10 Amps L59	$54.28
DT-2RV-A7	Sraightlever 2.5" (63., 5mm)	31	10 Amps L59	58.33
DT-2RV3-A7	Straight lever Reversed lever position	32	10 Amps L59	57.33
DT-2RV22-A7	1.03 inch roller lever (steel roller)	33	10 Amps L59	60.28
DT-2RV212-A7	Roller lever 1.19" Reversed lever position	34	10 Amps L59	62.24
DT-2RV23-A7	Roller lever 1.9" Reversed lever position	34	10 Amps L59	58.33

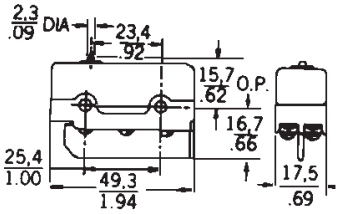


FIG 30

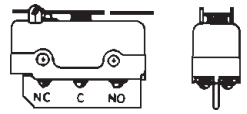


FIG 31

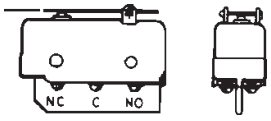


FIG 32

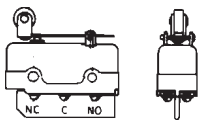


FIG 33

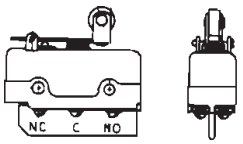


FIG 34

AUXILIARY ACTUATORS

GENERAL INFORMATION:

Auxiliary actuators adapt the plunger-type standard basic switches to many application needs. Auxiliary actuators minimize the need for a large inventory of different type switches. Actuators and switches are sold as different items and must be ordered separately. Mounting hardware is furnished with the actuator.

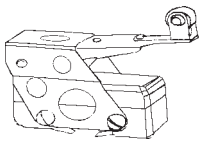


FIG 36

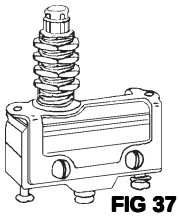


FIG 37

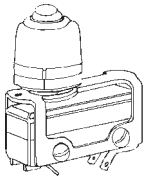


FIG 38

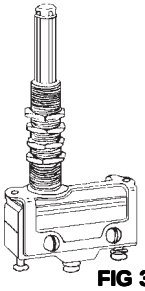


FIG 39

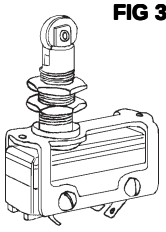


FIG 40

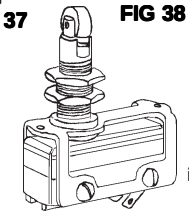


FIG 41

Switches are not included with actuator.

Part Number	Description	Fig #	Use with	Price
AD5721R	Adjustable roller lever. Tang on top of actuator can be bent to adjust position.	**36**	**BZ, BM**	$ 9.87
ADA3721R		**36**	**BA, BE**	9.69
ADD3721R		**36**	**DT, MT**	9.28
MC2711	Straight plunger. Panel mount.	**37**	**BZ, BM**	11.42
MCA2711		**37**	**BA, BE**	16.20
MCD2711		**37**	**DT, MT**	14.92
MC2711H	Sealed straight plunger. Panel mount. Elastomer	**38**	**BZ, BM**	17.79
MCA2711H	seal boot keeps out liquid splash and dirt.	**38**	**BA, BE**	26.79
MC7711	High overtravel plunger. Panel mount	**39**	**BZ, BM**	22.48
MCD7711	Adjustable Operating Point	**39**	**DT, MT**	26.44
MD3211Q	Roller plunger. Panel mount. Roller parallel to long axis of the switch.	**40**	**DT, BZ**	31.45
MD3211Q1	Cross roller plunger. Panel mount. Roller perpendicular to long axis of the switch.	**41**	**BZ, DT**	30.80

DIE CAST ZINC ENCLOSURES

for Standard Basic Switches BZ-BA, ETC.

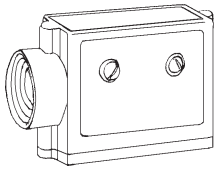


FIG 42

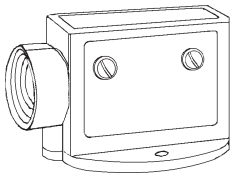


FIG 43

Part Number	Fig #	Price	Description
3PA1	42	$17.82	Side mount enclosure- Can be mounted from either side through 0.140" dia holes on 1" centers
3PA2	43	24.35	Flange mount enclosure- Switch is first secured in enclosure: two 0.172 dia. holes in the flange accept #8 machine screws for mounting

ENCLOSURES AND MOUNTING BRACKETS

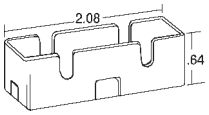
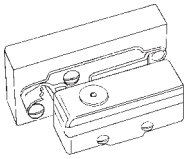
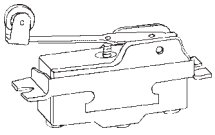


FIG 44



Switch is not included with bracket.

FIG 45



Switch is not included with bracket.

FIG 46

Part Number	Fig #	Price	Description
5PA1	44	$ 1.10	Plastic Terminal Enclosure for solder terminal switches
5PA2	44	1.15	Plastic Terminal Enclosure for screw terminal switches
5PA3	44	5.64	Plastic Terminal Enclosure for solder or screw terminal switches with auxiliary actuators assembled.
8MA1	45	9.19	Adjustable Mounting Bracket, adjustment slot on the left.
8MA2	45	9.51	Adjustable Mounting Bracket, adjustment slot on the right.
17MA1-B	46	5.14	Conversion Mounting Bracket

MICRO SWITCH

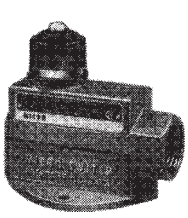
E6/V6 COMPACT ENCLOSED SWITCHES

GENERAL INFORMATION

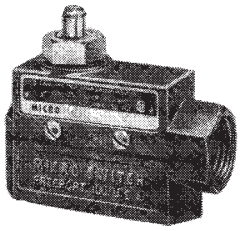
Type E6 and V6 switches contain a precision snap-action basic switch inside a rugged cast zinc housing. Lead washers are used to seal the mounting holes on side mount switches. Removal of the bottom enclosure exposes the terminals for easy wiring. The seal boot is removed when replacing SPST switching units.

PLUNGER ACTUATED SWITCHES

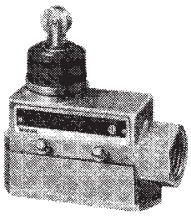
Description	Electrical Data and UL code	Mtg.	Part Number	Price
With seal boot	SPDT 15A /L74	Side Flange	**BZE6-2RN** **BZV6-2RN**	$ 37.42 38.86
With seal boot	DPDT 10A / L59	Side Flange	**DTE6-2RN** **DTV6-2RN**	87.64 91.02
Without seal boot	SPDT 15A / L74	Side Flange	**BZE6-2RQ** **BZV6-2RQ**	30.96 32.20
With seal boot. Roller parallel to long axis of switch	SPDT 15A / L74	Side	**BZE6-2RN80**	53.79
Without seal boot. Roller parallel to long axis of switch.	SPDT 15A / L74	Side Flange	**BZE6-2RQ8** **BZV6-2RQ8**	46.45 48.27
Without seal boot. Roller perpendicular to long axis of switch.	SPDT 15A / L74	Side Flange	**BZE6-2RQ81** **BZV6-2RQ81**	46.45 48.27



BZV6-2RN



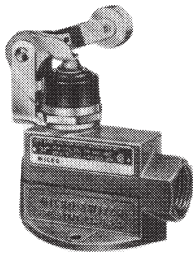
BZE6-2RQ



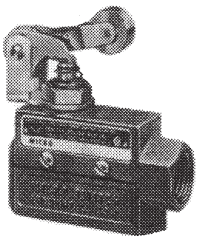
BZE6-2RN80

ROLLER LEVER ACTUATED SWITCHES

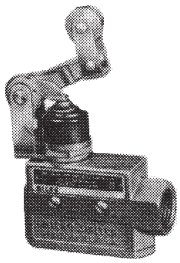
With seal boot. Field adjustable 360° horizontally and 225° vertically	SPDT 15A / L74	Side Flange	**BZE6-2RN2** **BZV6-2RN2**	$ 53.79 55.90
	DPDT 10A / L59	Side Flange	**DTE6-2RN2** **DTV6-2RN2**	103.16 107.16
Without seal boot. Adjustable as above, except horizontal adjustment in 45° increments	SPDT 15A / L74	Side Flange	**BZE6-2RQ2** **BZV6-2RQ2**	46.45 48.27
With seal boot. Field adjustable 360° horizontally and 180 ° vertically.	SPDT 15A / L74	Side Flange	**BZE6-2RN28** **BZV6-2RN28**	64.50 66.99



BZV6-2RN2



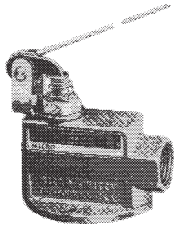
BZE6-2RQ2



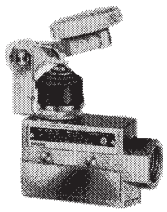
BZE6-2RN28

LOW FORCE ROD LEVER SWITCHES

With boot seal. Field adjustable 360° horizontally in 45° increments and 250° vertically.	SPDT 15A / L74	Side Flange	**BZE6-2RQ62** **BZV6-2RQ62**	$ 46.45 48.27
As above but with seal boot.	SPDT 15A / L74	Side Flange	**BZE6-2RN62** **BZV6-2RN62**	55.39 57.53



BZV6-2RQ62



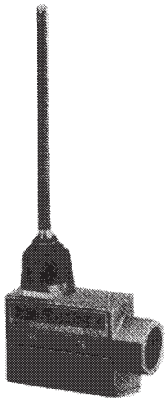
BZE6-2RN4

MANUALLY ACTUATED SWITCHES

With seal boot. Field adjustable 360° horizontally and 180° vertically.	SPDT 15A / L74	Side Flange	**BZE6-2RN4** **BZV6-2RN4**	$ 59.52 61.81

COIL SPRING WOBBLE LEVER ACTUATED SWITCH

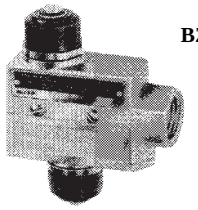
With seal boot. Operates from any direction, except pull.	SPDT 15A / L74	Side Flange	**BZE6-2RN18** **BZV6-2RN18**	$57.84 60.10



BZE6-2RN18

MAINTAINED CONTACT (RESET) PLUNGER

With seal boot.	SPDT L67 / 15A	Side Flange	**BZE6-RNX1** **BZV6-RNX1**	$67.22 69.86



BZE6-RNX1

REPLACEMENT PARTS E6/V6 ENCLOSED SWITCHES

Bottom enclosure includes bottom half of enclosure, insulator seal and two screws. Seal boot includes the elastomer plunger seal, and retaining hardware.

Basic packet includes mounting hardware and seal boot, where applicable.

Catalog Number	Bottom Enclosure	Seal Boot	Basic Packet	Switching Unit**	Actuator
BZE6-2RN **BZV6-2RN**	3PA13-E6 3PA14-V6	10PA2	1PA2 *	BZ-2RQ77	
BZE6-2RQ **BZV6-2RQ**	3PA13-E6 3PA14-V6		1PA1	BZ-2RQ66	
BZE6-2RQ8 **BZV6-2RQ8**	3PA13-E6 3PA14-V6			BZ-2RQ784	
BZE6-2RQ81 **BZV6-2RQ81**	3PA13-E6 3PA14-V6		1PA19	BZ-2RQ785	
BZE6-2RN80	3PA13-E6	10PA2		BZ-2RN784	
BZE6-2RN2 **BZV6-2RN2**	3PA13-E6 3PA14-V6	10PA2	1PA13 *	BZ-2RN702	6PA2 *
BZE6-2RQ2 **BZV6-2RQ2**	3PA13-E6 3PA14-V6		1PA3	BZ-2RQ68	6PA1
BZE6-2RN28 **BZV6-2RN28**	3PA13-E6 3PA14-V6	10PA2	1PA13 *	BZ-2RN702	6PA16 *
BZE6-2RQ62 **BZV6-2RQ62**	3PA13-E6 3PA14-V6		1PA3	BZ-2RQ68	6PA62
BZE6-2RN62 **BZV6-2RN62**	3PA13-E6 3PA14-V6	10PA2	1PA13 *	BZ2RN702	6PA140-E6 *
BZE6-RNX1 **BZV6-RNX1**	8PA56-E6 8PA55-V6	10PA2	1PA2 *	BZ-RQX167	
BZE6-2RN4 **BZV6-2RN4**	3PA13-E6 3PA14-V6	10PA2	1PA13 *	BZ-2RN702	6PA9 *
BZE6-2RN18 **BZV6-2RN18**	3PA13-E6 3PA14-V6	10PA2		BZ-2R-A2	6PA20 *
DTE6-2RN **DTV6-2RN**	3PA13-E6 3PP14-V6	10PA2	1PA2 *	DT-2R-A7	
DTE6-2RN2 *** **DTV6-2RN2** ***	3PA13-E6 3PA14-V6	10PA2		DT-2R-A7	6PA2 *

* Includes Seal Boot. ** Includes basic packet. *** To replace internal plunger, order **8PA14.**

BAF1 HIGH CAPACITY ENCLOSED SWITCHES

PLUNGER ACTUATED SWITCHES

Description	Electrical Data and UL codes	Actuator Position	Part Number	Price
With seal boot.	20 A / L23	Right	**BAF1-2RN-RH**	$ 71.22
		Left	**BAF1-2RN-LH**	71.22
Without seal boot. Field adjustable roller 360°	20A / L23	Right	**BAF1-2RQ9-RH**	94.80
		Left	**BAF1-2RQ9-LH**	94.80
	20A / L23	Right *	**BAF1-2RQN8-RH**	122.15
		Left *	**BAF1-2RQN8-LH**	122.15

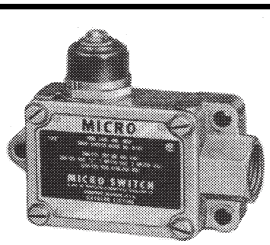
* These two numbers have O-ring actuator seal.

GENERAL INFORMATION

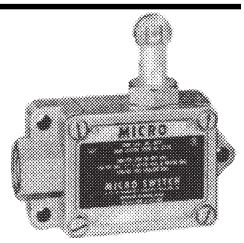
The elastomer boot on sealed actuator versions and cover seal on all switches protect the actuating mechanism and the internal basic switch from contaminants.

The cover plate is removed for ease of wiring and basic switch replacement, without demounting the switch. There is a seal gasket between the cover plate and the enclosure.

The actuator position is designated "right" or "left" when looking at the nameplate.



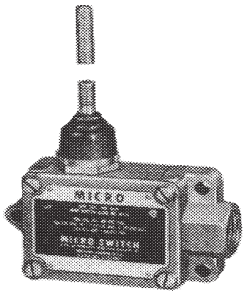
BAF1-2RN-LH



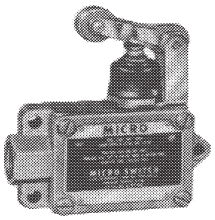
BAF1-2RQ9-RH

ROLLER LEVER ACTUATED SWITCHES

Description	Electrical Data and UL codes	Actuator Position	Part Number	Price
With seal boot Field adjustable 360° horizontally and 225° vertically	20A / L23	Right	**BAF1-2RN2-RH**	$ 89.82
		Left	**BAF1-2RN2-LH**	89.82



BAF1-2RN18-LH



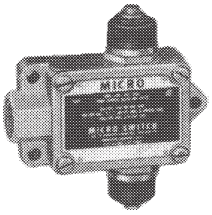
BAF1-2RN2-RH

FLEXIBLE ROD ACTUATED SWITCHES

Description	Electrical and UL Data	Actuator Position	Part Number	Price
With seal boot. Operates from any direction, except direct pull.	20 / L23	Right	**BAF1-2RN18-RH**	$100.95
		Left	**BAF1-2RN18-LH**	100.95

MAINTAINED CONTACT (RESET) PLUNGER ACTUATED SWITCH

Description	Electrical and UL Data	Actuator Position	Part Number	Price
With sealed boot on both top and bottom (reset) plungers	20A / L23	Right	**BAF1-3RNX1**	$104.25



BAF1-3RNX1

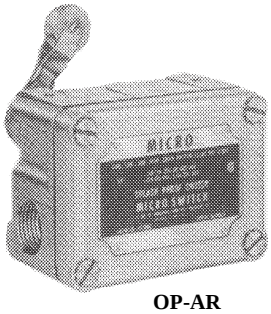
OP ENCLOSED SWITCHES

GENERAL INFORMATION

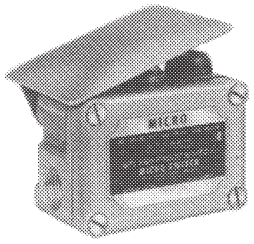
Type OP enclosed switches are precision snap-action switches sealed in rugged cast aluminum housings. Cover and shaft seals provide a degree of protection from moisture and other contaminants on rotary operated switches. The plungers in the Q-plunger versions are not sealed. Explosion-proof Type EX switches are dimensionally interchangeable with OP switches. UL listed and CSA certified.

ROLLER LEVER ACTUATED SWITCHES

Description Roller lever is field adjustable thru 360 °	Electrical and UL Data	Part Number	Price
CW actuation SPDT.	15A / L96	**OP-AR**	$ 91.34
CW actuation High capacity SPDT.	20A / L23	**OPA-AR**	103.75
CW actuation. DPDT	10A / L59	**OPD-AR**	131.13
CCW actuation SPDT	15A / L96	**OP-AR30**	96.43
CCW actuation Basic switch plunger held depressed (normal position) DPDT.	10A / L59	**OPD-AR30**	134.59



OP-AR



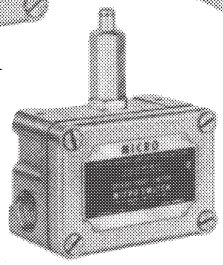
OP-AR50

MANUALLY ACTUATED SWITCH

Description	Electrical and UL Data	Part Number	Price
Large 3x3.5 inch paddle for fast easy operation SPDT	15A / L96	**OP-AR50**	$108.96

OVERTRAVEL PLUNGER ACTUATED SWITCH

Description	Electrical and UL Data	Part Number	Price
In-line actuation SPDT	15A / L96	**OP-Q**	$ 91.33



OP-Q

REPLACEMENT PARTS FOR OP SWITCHES

Switch Listing	Replacement Part Numbers			
	Switching Unit	Actuator	Springs	Internal Lever
OP-AR	**BZ-2R-P4**	**6PA6-OP**	**33PA7-EX**	**33PA2-OP**
OPA-AR	**BA-2R-P4**	**6PA6-OP**	**33PA6-EX**	
OPD-AR	**DT-2R4-A7**	**6PA6-OP**	**33PA6-EX**	
OP-AR30	**BZ-2R-P4**	**6PA6-OP**	**33PA5-EX**	
OPD-AR30	**DT-2R711-A7**	**6PA6-OP**	**33PA5-EX**	
OP-Q	**BZ-2R-P4**	**8PA7-OP**		
OP-AR50	**BZ-2R-P4**	**6PA134-OP**	**33PA7-EX**	**33PA3-OP**

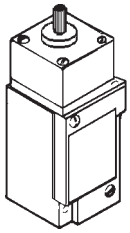
MOUNTING BRACKETS FOR EX AND OP SWITCHES

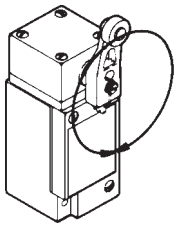
15PA85-EX is used for top, bottom, back or end mounting. It is furnished with all the OP type switches listed. 15PA86-EX is ordered separately for top mounting of plunger switches. EX and OP switches may also be direct mounted, using 10-32 UNF screws.

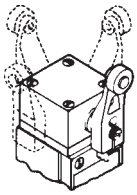
HDLS ROTARY ACTUATED SWITCHES

FEATURES

Complete choice of circuitry and electrical rating options.
Plug in and non-plug in versions have identical operating characteristics and are dimensionally interchangeable.
Meets NEMA 1,3,4,4X .6,6P, and 13.
UL listing and CSA certification.







Head orientation
Head may be orientated and locked in any positions

Plug-in Body Style
Includes Base Receptacle

ELECTRICAL RATINGS CHART UL Listed and CSA certified.							
Elec. Rating	Circuitry	Amps at 0.35 Power Factor			DC VoltsPilot Duty: 240 VDC Make and Break Amps		
		VAC	Make	Break	VDC	Inductive	Resistive
A	SPDT	120	60	6	120	0.25	0.8
		240	30	3	240	0.15	0.4
		480	15	1.5			
		600	12	1.2			
B	DPDT	120	30	3	120	0.25	0.8
		240	15	1.5	240	0.15	0.4
		480	7.5	0.75			
		600	6	0.60			

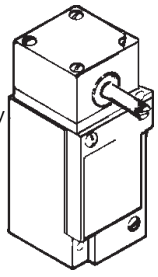
Order Levers Below

			Side Rotary								Top Rotary	
Circuitry / Action	Electrical Rating	Body Style	LSA Standard	Price	LSP Low Differential	Price	LSR Low Torque	Price	LSH Low Diff. Low Torque	Price	LSB High Overtravel	Price
SPDT	A	Plug-in 1/2" Conduit	**LSA1A**	**$90.63**	**LSP1A**	**$96.86**	**LSR1A**	**$90.63**	**LSH1A**	**$96.86**	**LSB1A**	**$110.08**
Double-Break Momentary	A	Non-Plug-in 1/2" Conduit	**LSA3K**	**79.74**	**LSP3K**	**85.19**	**LSR3K**	**79.74**	**LSH3K**	**85.19**	**LSB3K**	**99.19**
DPDT Double	B	Plug-in 3/4" Conduit	**LSA2B**	**110.08**			**LSR2B**	**110.08**				
Break	B	Plug-in 1/2" Conduit	**LSA6B**	**110.08**	**LSP6B**	**115.92**	**LSR6B**	**110.08**	**LSH6B**	**115.92**		
Momentary	B	Non Plug-in 3/4" Conduit	**LSA4L**	**96.86**	**LSP4L**	**101.52**						

ADDITIONAL CIRCUITRY / ACTION

LSN maintained contact. Operation is maintained on counterclockwise rotation, reset on clockwise rotation, and vice versa. Total travel is approximately 80° max. Maintained contact switch is normally used with LSZ53 yoke actuator.

LSM center neutral. One pole operates on clockwise the other on counterclockwise rotation.



Side Rotary

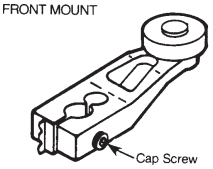
Order Levers Below

Plug in styles Include base receptacle

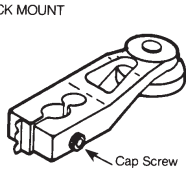
Circuitry / Action	* Elec. Rating	Body Style	LSN Main-tained	Price	LSM Center Neutral	Price
SPDT Double-Break Maintained	A	Plug-in 1/2" Conduit	**LSN1A**	**$107.75**	-	
	A	Non Plug-in 1/2" Conduit	**LSN3K**	**96.86**	-	
(2) SPDT Double-Break	B	Plug-in 3/4" Conduit	-		**LSM2D**	**$115.92**
(1 each direction)	B	Plug-in 1/2" Conduit	-		**LSM6D**	**115.92**
Momentary	B	Non Plug-in 3/4" Conduit	-		**LSM4N**	**101.52**
(2) SPDT Double-Break	B	Plug-in 3/4 Conduit	-		-	
	B	Non Plug-in 1/2 Conduit	-		-	

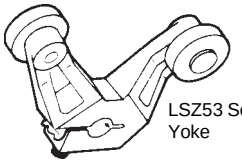
* See electrical ratings chart above

Radius	Roller mounted on this side of lever	Dia. in.	Width in.	Material	Part Number for Levers	Price
1.5	Front	75	.25	Nylon	**LSZ51A**	**$ 8.16**
1.5	Front	.75	.25	Steel	**LSZ51B**	**8.16**
1.5	Back	.75	.25	Nylon	**LSZ51C**	**8.16**
1.5	Back	.75	.25	Steel	**LSZ51D**	**8.16**
1.5	Back	1.0	.50	Nylon	**LSZ51J**	**13.22**
1.5	Front	.75	.50	Nylon	**LSZ51P**	**13.22**
1.5	Front-Back	.75	.25	Nylon	**LSZ53A**	**13.22**
1.5	Front-Back	.75	.25	Steel	**LSZ53D**	**13.22**
1.5	Back-Front	.75	.25	Nylon	**LSZ53E**	**13.22**
1.5	Back-Front	.75	.25	Steel	**LSZ53U**	**13.22**
1.5	Back	.75	.25	Nylon	**LSZ55A**	**13.22**
1.5	Back	.75	.25	Steel	**LSZ55B**	**13.22**
1.5	Front	.75	.25	Nylon	**LSZ55C**	**13.22**
1.5	Front	.75	.25	Steel	**LSZ55D**	**13.22**
1.5	Front	.75	.50	Nylon	**LSZ55E**	**18.67**
1.5	Front	1.5	.25	Nylon	**LSZ55K**	**18.67**
1.3	Front	.75	.25	Nylon	**LSZ59A**	**8.16**
1.3	Front	.75	.25	Steel	**LSZ59B**	**8.16**
1.3	Back	.75	.25	Steel	**LSZ59D**	**8.16**
1.5-3.5	Back	.75	.25	Nylon	**LSZ52A**	**13.22**
1.5-3.5	Back	.75	.25	Steel	**LSZ52B**	**13.22**
1.5-3.5	Front	.75	.25	Nylon	**LSZ52C**	**13.22**
1.5-3.5	Front	.75	.25	Steel	**LSZ52D**	**13.22**
1.5-3.5	Front	1.0	.5	Nylon	**LSZ52J**	**18.67**
1.5-3.5	Front	1.5	.25	Nylon	**LSZ52K**	**18.67**
1.5-3.5	Front	2.0	.25	Nylon	**LSZ52M**	**26.84**
				Less Roller	**LSZ52**	**10.50**
12.0		.25		Delrin Rod w/Spring	**LSZ68**	**18.67**
5.5				Aluminum	**LSZ54M**	**13.22**
13.0				Stainless Steel	**LSZ54N**	**13.22**
12.0				Spring Wire	**LSZ54R**	**13.22**
4.8				Flexible Cable	**LSZ54V**	**13.22**
	6 " Flexible Loop / Cap Screw			Nylatron	**LSZ61**	**13.22**
	Hub only for LSZ52 - 68 - 54 - & 61				**LSZ54**	**10.50**



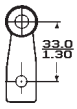
Rollers may be mounted on the front or back side of the lever.



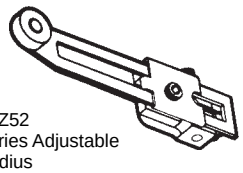


LSZ53 Series Yoke

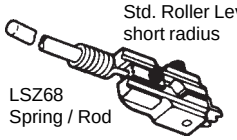
LSZ55 Series Offset



LSZ59 Series Std. Roller Lever, short radius

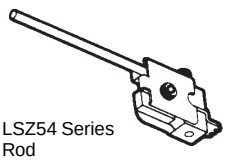


LSZ52 Series Adjustable Radius



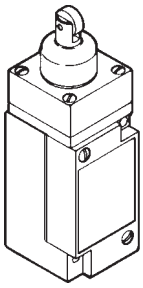
LSZ68 Spring / Rod

LSZ61

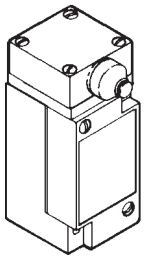


LSZ54 Series Rod

HDLS PLUNGER ACTUATED SWITCHES



Top Plunger



Side Plunger

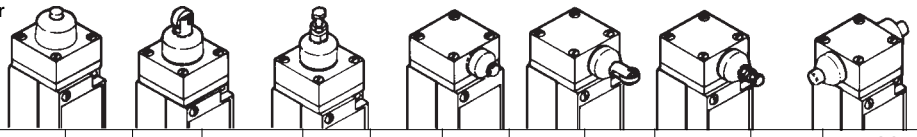
HDLS Switches are available with a choice of top or side-facing plungers for applications flexibility. Switches with adjustable plungers simplify installation, they have a hex set screw and a locknut on their plungers, which provide an adjustment range of .250 inch.
Assembled Conditions. Catalog listings are factory assembled with side plungers facing front (label side of switch): rollers on side plungers are in horizontal position. Rollers on top plunger are parallel to mounting surface.

UL Listed, CSA certified.

Circuitry / LSG Maintained	
SPDT Double Break (Elec. Rating A)	DPDT Double Break (Elec. Rating B)
LSG contact transfer is maintained after either plunger is operated. Operation of other plunger resets switch.	

Electrical Rating chart is shown on page 224

Top Plunger **Side Plunger**



Circuitry/ Action	* Elec. Rating	Body Style	LSC Plain	Price	LSD Roller	Price	LSV Adjustable	Price	LSE Plain	Price	LSF Roller	Price	LSW Adjustable	Price	LSG Maintained (See above for circuitry)	Price
SPDT Double Break Momentary	A	Plug-in 1/2" Conduit	**LSC1A**	$99.19	**LSD1A**	$110.08	**LSV1A**	$104.64	**LSE1A**	$104.64	**LSF1A**	$115.92	**LSW1A**	$110.08	**LSG1A**	$120.97
	A	Non Plug-in 1/2" Conduit	**LSC3K**	88.30	**LSD3K**	99.19	**LSV3K**	93.74	**LSE3K**	93.74	**LSF3K**	104.64	**LSW3K**	99.19	**LSG3K**	110.08
DPDT Double Break Momentary	B	Plug-in 1/2" Conduit	**LSC6B**	118.64	**LSD6B**	129.53	**LSV6B**	124.09	**LSE6B**	124.09	**LSF6B**	134.98	**LSW6B**	129.53	**LSG6B**	140.42
	B	Non-Plug-in 1/2"Conduit	**LSC7L**	105.03	**LSD7L**	115.92	**LSV7L**	110.08	**LSE7L**	110.08	**LSF7L**	120.97	**LSW7L**	115.92	**LSG7L**	127.20

* See Page 196 for Electrical Ratings

WOBBLE ACTUATED SWITCHES

Momentary action wobble actuated switches have flexible levers which may be operated with any movement, except direct pull.

UL Listed, CSA certified.

Plastic Rod

Spring Wire

Cat Whisker

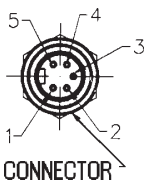
Flexible Cable

Coil Spring

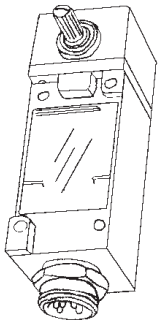
Circuitry/ Action	Elec. Rating	Body Style	Plastic Rod	Price	Spring Wire	Price	Cat Whisker	Price	Cable	Price	Coil Spring	Price
SPDT Double Break	A	Plug-in 1/2" Conduit	LSJ1A-7A	$ 99.19	LSJ1A-7M	$ 96.86	LSK1A-8A	$ 90.63	LSJ1A-7N	$101.52	LSK1A-8C	$101.52
Momentary	A	Non Plug-in 1/2" Conduit	LSJ3K-7A	87.91	LSJ3K-7M	85.19	LSK3K-8A	79.74	LSJ3K-7N	90.63	LSK3K-8C	90.63
DPDT Double Break	B	Plug-in 1/2" Conduit	LSJ6B-7A	118.64	LSJ6B-7M	115.92	LSK6B-8A	110.08	LSJ6B-7N	118.64	LSK6B-8C	120.97
Momentary	B	Non Plug-in 1/2" Conduit	LSJ7L-7A	105.03	LSJ7L-7M	101.52	LSK7L-8A	96.86			LSK7L-8C	107.75

HARSH DUTY EPOXIED LIMIT SWITCH

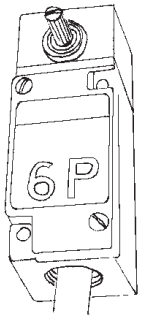
Superior sealing, freely moving shaft
Rugged zinc die-cast housing (both head and body)
Try your "step test"
No adjustment needed over life
Fulfills your actuation criteria
Anti-corrosion
Sealed even with head off!
Eliminates fluid infiltration and contact contamination
Exceeds NEMA 6P rating
SPDT Double Break. Electrical Rating "A"



Brad Harrison 5 Pin Connector Cables
41307 6 FT. $23.62
41308 12 FT. 32.81



LSYAC3KQ-FP



LSYAC3KP-FP

Electrical Rating chart is shown on page 224.

Catalog Listing	Description	Price
LSYAC3KQ-FP	Epoxy filled, Single-pole, side rotary head heavy duty limit switch with 5 pin Brad Harrison connector.	$ 128.37
LSYAC3KP-FP	Epoxy filled, Single-pole side rotary head heavy duty limit switch with 12 foot standard cable leads.	$ 127.20

Many different operating heads and other options are available (including Super-Trex cable). Please call any of the toll-free numbers on the back of this catalog for application help, literature, pricing and availability.

HDLS REPLACMENT PARTS Plug-in Type

Catalog Listings On Switch Nameplate	Complete Plug-in Unit Less Base Receptacle	Plug-in Base Recept. Only	Operat-ing Head Only	Con-tact Block	Plug-in Unit Less Head	Actuator Only	Catalog Listings On Switch Nameplate	Complete Plug-in Unit Less Base Receptacle	Plug-in Base Recept. Only	Operat-ing Head Only	Contact Block Only	Plug-in Unit less Head	Actuator Only
LSA1A	LSZ7A1A	LSZ4001	LSZ1A	**Only**	LSZ21A		LSJ8A-7A	LSZ7J8A-7A	LSZ4001	LSZ1JGA	LSZ3A	LSZ28A	LSZ4009
LSA5A	LSZ7A5A	LSZ4001	LSZ1A	LSZ3A	LSZ25A		LSJ6B-7A	LSZ7J6B-7A	LSZ4006	LSZ1JGA	LSZ3B	LSZ26B	LSZ4009
LSA8A	LSZ7A8A	LSZ4001	LSZ1A	LSZ3A	LSZ28A		LSJ1A-7N	LSZ7J1A-7N	LSZ4001	LSZ1JGN	LSZ3A	LSZ21A	LSZ4011
LSA1J	LSZ7A1J	LSZ4001	LSZ1A	LSZ3A	LSZ21J		LSJ1J-7N	LSZ7J1J-7N	LSZ4001	LSZ1JGN	LSZ3J	LSZ21J	LSZ4011
LSA2B	LSZ7A2B	LSZ4002	LSZ1A	LSZ3J	LSZ22B		LSJ5A-7N	LSZ7J5A-7N	LSZ4001	LSZ1JGN	LSZ3A	LSZ25A	LSZ4011
LSA6B	LSZ7A6B	LSZ4006	LSZ1A	LSZ3B	LSZ26B		LSJ8A-7N	LSZ7J8A-7N	LSZ4001	LSZ1JGN	LSZ3A	LSZ28A	LSZ4011
LSB1A	LSZ7B1A	LSZ4001	LSZ1B	LSZ3B	LSZ21A		LSJ2B-7N	LSZ7J2B-7N	LSZ4002	LSZ1JGN	LSZ3B	LSZ22B	LSZ4011
LSB1J	LSZ7B1J	LSZ4001	LSZ1B	LSZ3A	LSZ21J		LSJ6B-7N	LSZ7J6B-7N	LSZ4006	LSZ1JGN	LSZ3B	LSZ26B	LSZ4011
LSB5A	LSZ7B5A	LSZ4001	LSZ1B	LSZ3J	LSZ25A		LSK1A-8A	LSZ7K1A8A	LSZ001	LSZ1HA	LSZ3A	LSZ21A	LSZ4012
LSB8A	LSZ7B8A	LSZ4001	LSZ1B	LSZ3A	LSZ28A		LSK1J-8A	LSZ7K1J-8A	LSZ4001	LSZ1KHA	LSZ3J	LSZ21J	LSZ4012
LSB2B	LSZ7B2B	LSZ4002	LSZ1B	LSZ3A	LSZ22B		LSK2B-8A	LSZ7K2B-8A	LSZ4002	LSZ1KHA	LSZ3B	LSZ22B	LSZ4012
LSB6B	LSZ7B6B	LSZ4006	LSZ1B	LSZ3B	LSZ26B		LSK5A-8A	LSZ7K5A-8A	LSZ4001	LSZ1KHA	LSZ3A	LSZ25A	LSZ4012
LSC1A	LSZ7C1A	LSZ4001	LSZ1C	LSZ3B	LSZ21A		LSK8A-8A	LSZ7K8A-8A	LSZ4001	LSZ1KHA	LSZ3A	LSZ28A	LSZ4012
LSC1J	LSZ7C3J	LSZ4001	LSZ1C	LSZ3A	LSZ21J		LSK6B-8A	LSZ7K6B-8A	LSZ4006	LSZ1KHA	LSZ3B	LSZ26B	LSZ4012
LSC5A	LSZ7C5A	LSZ4001	LSZ1C	LSZ3J	LSZ25A		LSK1A-8C	LSZ7K1A-8C	LSZ4001	LSZ1KHC	LSZ3A	LSZ21A	LSZ4014
LSC8A	LSZ7C8A	LSZ4001	LSZ1C	LSZ3A	LSZ28A		LSK1A-8B	LSZ7K1A-8B	LSZ4001	LSZ1KHB	LSZ3A	LSZ21A	LSZ4013
LSC2B	LSZ7C2B	LSZ4002	LSZ1C	LSZ3A	LSZ22B		LSK5A-8C	LSZ7K5A-8C	LSZ4001	LSZ1KHC	LSZ3A	LSZ25A	LSZ4014
LSC6B	LSZ7C6B	LSZ4006	LSZ1C	LSZ3B	LSZ26B		LSK8A-8C	LSZ7K8A-8C	LSZ4001	LSZ1KHC	LSZ3A	LSZ28A	LSZ4014
LSD1A	LSZ7D1A	LSZ4001	LSZ1D	LSZ3B	LSZ21A		LSK2B-8C	LSZ7K2B-8C	LSZ4002	LSZ4002	LSZ3B	LSZ22B	LSZ4014
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LSF6B	LSZ7F6B	LSZ4006	LSZ1F	LSZ3A	LSZ26B		LSR1A	LSZ7R1A	LSZ4001	LSZ4001	LSZ3A	LSZ21A	
LSG1A	LSZ7G1A	LSZ4001	LSZ1G	LSZ3B			LSR2B	LSZ7R2B	LSZ4002	LSZ4002	LSZ3B	LSZ22B	
LSG5A	LSZ7G5A	LSZ4001	LSZ1G				LSR6B	LSZ7R6B	LSZ4006	LSZ4006	LSZ3B	LSZ26B	
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LSG6B	LSZ7G6B	LSZ4006	LSZ1G				LSS1H	LSZ7S1H	LSZ4001	LSZ4001	LSZ3H	LSZ21H	
LSH1A	LSZ7H1A	LSZ4001	LSZ1H		LS21A		LST1H	LSZ7T1H	LSZ4001	LSZ4001	LSZ3H		
LSH2B	LSZ7H2B	LSZ4002	LSZ1H	LSZ3A	LSZ22B		LSV1A	LSZ7V1A	LSZ4001	LSZ4001	LSZ3A	LSZ21A	
LSH6B	LSZ7H6B	LSZ4006	LSZ1H	LSZ3B	LSZ26B		LSV1J	LSZ7V1J	LSZ4001	LSZ4001	LSZ3J	LSZ21J	
LSH5A	LSZ7H5A	LSZ4001	LSZ1H	LSZ3B	LSZ25A		LSV5A	LSZ7V5A	LSZ4001	LSZ4001	LSZ3A	LSZ25A	
LSH8A	LSZ7H8A	LSZ4001	LSZ1H	LSZ3A	LSZ28A		LSV8A	LSZ7V8A	LSZ4001	LSZ4001	LSZ3A	LSZ28A	
LSJ1A-7A	LSZ7J1A-7A	LSZ4001	LSZ1JGA	LSZ3A	LSZ21A	LSZ4009	LSV2B	LSZ7V2B	LSZ4002	LSZ4002	LSZ3B	LSZ22B	
LSJ1A-7M	LSZ7J1A-7M	LSZ4001	LSZ1JGM	LSZ3A	LSZ21A	LSZ4010	LSV6B	LSZ7V6B	LSZ4006	LSZ4006	LSZ3B	LSZ26B	
LSJ5A-7M	LSZ7J5A-7M	LSZ4001	LSZ1JGM	LSZ3A	LSZ25A	LSZ4010	LSW1A	LSZ7W1A	LSZ4001	LSZ4001	LSZ3A	LSZ21A	
LSJ8A-7M	LSZ7J8A-7M	LSZ4001	LSZ1JGM	LSZ3A	LSZ28A	LSZ4010	LSW1J	LSZ7W1J	LSZ4001	LSZ4001	LSZ3J	LSZ21J	
LSJ2B-7A	LSZ7J2B-7A	LSZ4002	LSZ1JGM	LSZ3A	LSZ22B	LSZ4009	LSW5A	LSZ7W5A	LSZ4001	LSZ4001	LSZ3A	LSZ25A	
LSJ2B-7M	LSZ7J2B-7M	LSZ4002	LSZ1JGM	LSZ3B	LSZ22B	LSZ4010	LSW8A	LSZ7W8A	LSZ4001	LSZ4001	LSZ3A	LSZ28A	
LSJ6B-7M	LSZ7J6B-7M	LSZ4006	LSZ1JGM	LSZ3B	LSZ26B	LSZ4010	LSW2B	LSZ7W2B	LSZ4002	LSZ4002	LSZ3B	LSZ22B	
LSJ5A-7A	LSZ7J5A-7A	LSZ4001	LSZ1JGA	LSZ3B LSZ3A	LSZ25A	LSZ4010	LSW6B	LSZ7W6B	LSZ4006	LSZ4006	LSZ3B	LSZ26B	

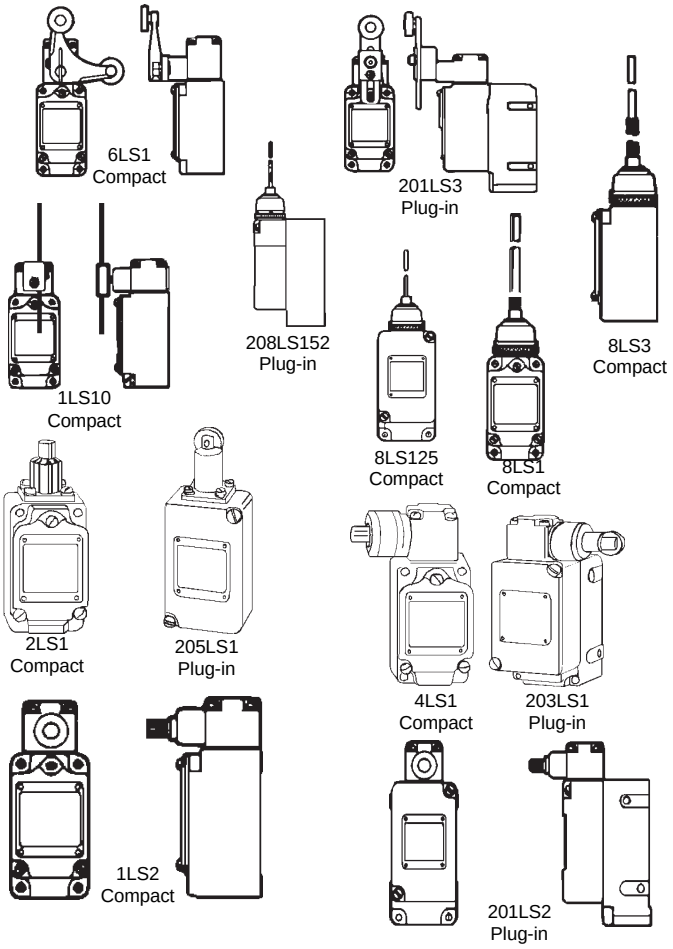
Non-Plug-in Type (These parts will not form a complete switch)

Catalog Listings On Switch Nameplate	Operating Head only *	Contact Block Only	Actuator Only	Catalog Listings On Switch Nameplate	Operating Head only *	Contact Block Only	Actua-tor Only	Catalog Listings On Switch Nameplate	Operating Head only *	Contact Block Only	Actuator Only
LSA3K	LSZ1A	LSZ3K		**LSF4L**	LSZ1F	LSZ3L		**LSM7N**	LSZ1M	LSZ3M	
LSA4L	LSZ1A	LSZ3L		**LSF7L**	LSZF	LSZ3L		**LSN3K**	LSZ1N		
LSA7L	LSZ1A	LSZ3L		**LSG3K**	LSZ1G			**LSN4L**	LSZ1N		
LSB3K	LSZ1B	LSZ3K		**LSG4L**	LSZ1G			**LSN7L**	LSZ1N		
LSB4L	LSZ1B	LSZ3L		**LSG7L**	LSZ1G			**LSP3K**	LSZ1P	LSZ3K	
LSB7L	LSZ1B	LSZ3L		**LSH3K**	LSZ1H	LSZ3K		**LSP4L**	LSZ1P	LSZ3L	
LSC3K	LSZ1C	LSZ3K		**LSH4L**	LSZ1H	LSZ3L		**LSP7L**	LSZ1P	LSZ3L	
LSC4L	LSZ1C	LSZ3L		**LSH7L**	LSZ1H	LSZ3L		**LSR3K**	LSZ1R	LSZ3K	
LSC7L	LSZ1C	LSZ3L		**LSJ3K-7A** **	LSZ1JGA	LSZ3K	LSZ4009	**LSR4L**	LSZ1R	LSZ3L	
LSD3K	LSZ1D	LSZ3K		**LSJ3K-7M** **	LSZ1JGM	LSZ3K	LSZ4010	**LSR7L**	LSZ1R	LSZ3L	
LSD4L	LSZ1D	LSZ3L		**LSJ3K-7N** **	LSZ1JGN	LSZ3K	LSZ4011	**LSV3K**	LSZ1V	LSZ3K	
LSD7L	LSZ1D	LSZ3L		**LSK4L-8C**	LSZ1KHC **	LSZ3L	LSZ4014	**LSV4L**	LSZ1V	LSZ3L	
LSE3K	LSZ1E	LSZ3K		**LSK7L-8C**	LSZ1KHC **	LSZ3L	LSZ4014	**LSV7L**	LSZ1V	LSZ3L	
LSE4L	LSZ1E	LSZ3L		**LSL4M**	LSZ1L	LSZ3M		**LSW3K**	LSZ1W	LSZ3K	
LSE7L	LSZ1E	LSZ3L		**LSL7M**	LSZ1L	LSZ3M		**LSW4L**	LSZ1W	LSZ3L	
LSF3K	LSZ1F	LSZ3K		**LSM4N**	LSZ1M	LSZ3M		**LSW7L**	LSZ1W	LSZ3L	

*For low temperature replacement heads add B. Example LSZ1AB. For Viton seal replacement heads add C. Example LSZ1AC.

** Part number includes operating head and actuator.

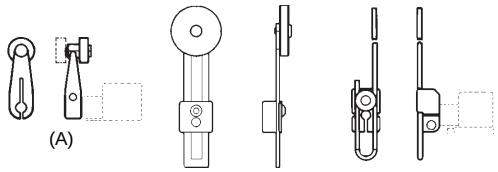
SERIES LS AND 200LS LIMIT SWITCHES ARE AVAILABLE FOR REPLACEMENT PURPOSES. FOR NEW APPLICATIONS, WE STRONGLY RECOMMEND THE HDLS SERIES DESCRIBED ON PREVIOUS PAGES. REFER TO THE CROSS REFERENCE INFORMATION ON PAGE 228 , FOR THE HDLS SERIES TO USE INSTEAD OF THE LS AND/OR 200LS.



200LS Switches Require terminal block (18PA1) which must be ordered separately. Unless damaged, it is not necessary to replace terminal block when replacing switch.

REPLACEMENT PARTS FOR LS AND 200LS SERIES SWITCHES ARE LISTED ON PAGE 228.

Description	Compact	Price	Plug-in	Price
ROLLER LEVER ROTARY ACTUATED SWITCHES				
Momentary action. Steel rollers.				
Standard	1LS1	$103.47	201LS1	$ 111.64
20° pretravel	1LS1-L	103.47		
Low pretravel 5°	1LS19	110.08	201LS19	119.03
Low operating force 5° Pretravel	1LS131	110.08		
Standard with indicator light 120 VAC only			201LS501	130.31
Low Operating Force	1LS6	103.47		
Cavity Mount version of 1LS1	7LS1	101.14		
YOKE ROLLER LEVER ROTARY ACTUATED SWITCHES				
Maintained contact				
Steel rollers on opposite sides	6LS1	129.14	206LS1	139.65
Nylon rollers on same side of arm	6LS3	131.48		
ADJUSTABLE LENGTH ROLLER LEVER ROTARY ACTUATED				
Length adjustable 1.2 to 3.5 in. Momentary action. Nylon rollers.				
Standard pretravel 20°	1LS3	113.97	201LS3	122.53
Low pretravel 5°	1LS58	120.59		
Low pretravel 5 ° and low force	1LS59	120.59		
LOW FORCE ROD ROTARY ACTUATED SWITCHES				
Momentary action. 5-inch aluminum rod.				
Standard pretravel 20°	1LS10	110.08	201LS10	119.03
Low pretravel 5°	1LS47	115.92	201LS47	125.64
Low pretravel 5° and low force	1LS53	119.81	201LS51	128.75
WOBBLE LEVER ACTUATED SWITCHES				
Momentary action.				
Flexible cable actuator	8LS1	103.86	208LS1	97.63
Combination spring-rod	8LS3	103.86	208LS3	97.63
Low force steel wire	8LS125	115.92	208LS125	110.47
Coil spring Stainless steel	8LS152	103.86	208LS152	97.63
TOP PLUNGER ACTUATED Momentary Action				
Standard top plunger	2LS1	104.25	202LS1	97.63
Low operating force top plunger	2LS111	121.36	-	
Standard top roller plunger; steel roller	5LS1	111.25	205LS1	111.64
SIDE PLUNGER ACTUATED Momentary Action				
Standard side plunger	4LS1	111.64	204LS1	119.03
Standard side roller plunger - Steel roller	3LS1	126.81	203LS1	132.64
ROTARY ACTUATED - WITHOUT LEVERS Momentary Action				
Standard 20° pretravel	1LS2	93.74	201LS2	101.52
Low pretravel 5°	1LS9	100.75	201LS9	108.53
Standard pretravel 20° Low operating force	1LS23	93.74	201LS23	101.52
Low pretravel 5° Low operating force maintained contact	1LS56 6LS2	100.75 113.19	201LS56 206LS2	108.53 114.75



AUXILIARY ROTARY LEVERS

Description	Catalog No.	Price
(A) Standard Roller Lever(1.50" radius)		
Nylon Roller	6PA71	$ 11.28
Steel Roller	6PA121	11.28
(B) Adjustable Roller Lever (1.5-3.5" radius)		
Steel Roller	LSZ52D	13.22
Nylon Roller	LSZ52C	13.22
(C) Low Force Rod Lever		
Aluminum rod (5" long)	6PA43	18.28
Stainless steel rod (13" long)	6PA63	26.45
Spring Rod (7.4" long)	6PA69	33.84

REPLACEMENT PARTS

Except where noted, all operating heads are furnished with actuators.

Catalog Listing	Contact Block		Operating Head	Actuator Only
	Compact	Plug-in		
1LS1-L	2MN1-L	2MN6	9PA15	6PA121
1LS1 201LS1	2MN1			
1LS2 201LS2	2MN1	2MN6	9PA16 +	NOTE 1
1LS3 201LS3	2MN1	2MN6	9PA16 +	LSZ52C
1LS6	2MN1	2MN6	9PA50 +	6PA121
1LS9 201LS9	2MN8	2MN13	9PA16 +	NOTE 1
1LS10 201LS10	2MN1	2MN6	9PA40	6PA43
1LS19 201LS19	2MN8	2MN13	9PA15	6PA121
1LS23 201LS23	2MN1	2MN6	9PA68 +	NOTE 2

Catalog Listing	Contact Block		Operating Head	Actuator Only
	Compact	Plug-in		
1LS47 201LS47	2MN8	2MN13	9PA40	6PA43
1LS53 201LS51	2MN8	2MN13	9PA48	6PA43
1LS56 201LS56	2MN8	2MN13	9PA74 +	NOTE 2
1LS58	2MN8		9PA16 +	LSZ52
1LS131	2MN8		9PA50	6PA121
201LS501		2MN14	9PA15	6PA121
2LS1 202LS1	2MN1	2MN6	9PA32	NONE
2LS111 202LS111	2MN3	2MN7	9PA71	NONE
3LS1 203LS1	2MN11	2MN9	9PA45	NONE
4LS1 204LS1	2MN11	2MN9	9PA44	NONE

Catalog Listing	Contact Block		Operating Head	Actuator Only
	Compact	Plug-in		
5LS1 205LS1	2MN1	2MN6	9PA33	NONE
6LS1 206LS1	2MN1	2MN6	9PA46	6PA80
6LS2 206LS2	2MN1	2MN6	9PA47 +	NOTE 1
6LS3	2MN1		9PA47 +	6PA102
7LS1	2MN1		9PA15	6PA121
8LS1 208LS1	2MN11	2MN9	9PA58	NONE
8LS3 208LS3	2MN1	2MN6	9PA49	NONE
8LS125 208LS125	2MN11	2MN9	9PA54	NONE
8LS152 208LS152	2MN1	2MN6	9PA42	NONE

+ Furnished without actuator. Note 1 - Any auxiliary actuator shown can be used with these listings.
Note 2 - 6PA43, 6PA63, 6PA71 or 6PA121 auxiliary actuators only are recommended for these listings.

CROSS REFERENCE FROM LS AND 200LS TO HDLS

The following cross reference between compact LS/plug-in 200LS switches and HDLS Switches applies to style, but not necessarily operating characteristics. When replacing LS/200LS with HDLS switches, the new characteristics should be considered. The HDLS requires an adapter plate to interchange with 200LS

NON PLUG-IN								
LS	HDLS	(Consisting Of)	LS	HDLS	(Consisting Of)	200LS/300LS	HDLS	(Consisting Of)
1LS1	LSA3K-1D	(LSA3K + LSZ51D)	4LS1	LSE3K		201LS9	LSP1A	
1LS1-L	LSA3K-1D	(LSA3K + LSZ51D)	4LS1-L	LSE3K		201LS10	LSR1A-4M	(LSR1A + LSZ54M)
1LS1-N	LSA3K-1C	(LSA3K1 + LSZ51C)	5LS1	LSD3K		201LS19	LSP1A-1D	(LSP1A + LSZ51D)
1LS1-NA	LSA3K1-1C	(LSA3K1 + LSZ51C)	5LS1-L	LSD3K		201LS23	LSR1A	
1LS2	LSA3K		5LS6	LSD3K6		201LS47	LSH1A-4M	(LSH1A + LSZ54M)
1LS3	LSA3K-2C	(LSA3K + LSZ52C)	5LS6-L	LSD3K6		201LS143	LSA1A-2D	(LSA1A + LSZ52D)
1LS3-L	LSA3K-2C	(LSA3K + LSZ52C)	5LS7	LSD3K6		201LS501	LSA5A-1D	(LSA5A + LSZ51D)
1LS5	LSR3K-1C	(LSR3K + LSZ51C)	5LS8	LSD3K		201LS501-A1	LSA8A-1D	(LSA8A + LSZ51D)
1LS6	LSR3K-1D	(LSR3K + LSZ51D)	6LS1	LSN3K-3B	(LSN3K + LSZ53B)	201LS502	LSA5A	
1LS9	LSP3K		6LS1-L			201LS503	LSA5A-2C	(LSA5A + LSZ52C)
1LS10	LSR3K-4M	(LSR3K + LSZ54M)	6LS2	LSN3K		201LS503A1	LSA8A-2C	(LSA8A + LSZ52C)
1LS10-L	LSR3K-4M	(LSR3K + LSZ54M)	6LS2-L	LSN3K		201LS510	LSR5A-4M	(LSR5A + LSZ54M)
1LS19	LSR3K-1D	(LSP3K + LSZ51D)	6LS3	LSN3K-3S	(LSN3K + LSZ53S)	202LS1	LSC1A	
1LS23	LSR3K		8LS1	LSJ3K-7N		202LS7	LSC1A	
1LS27	LSP3K5		8LS1-L	LSJ3K-7N		203LS1	LSF1A	
1LS34	LSR3K-1C	(LSR3K + LSZ51C)	8LS4	LSK3K-8B		203LS501	LSF5A	
1LS47	LSH3K-4M	(LSH3K + LSZ54M)	8LS125	LSK3K-8B		204LS1	LSE1A	
1LS58	LSP3K-2C	(LSP3K + LSZ52C)	11LS1	LSA7L-1D	(LSA7L + LSZ51D)	204LS501	LSE5A	
1LS59	LSH3K-2C	(LSH3K + LSZ52C)	11LS2	LSA7L		205LS1	LSD1A	
1LS128	LSA3K-2K	(LSA3K + LSZ52K)	11LS3	LSA7L-2C	(LSA7L + LSZ52C)	205LS7	LSD1A3	
1LS131	LSH3K-1D	(LSH3K + LSZ51D)	11LS10	LSR7L-4M	(LSR7L + LSZ54M)	205LS8	LSD1A	
1LS139	LSR3K-4M	(LSR3K + LSZ54M)	11LS156	LSA7L-1D	(LSA7L + LSZ51D)	205LS501	LSD5A	
1LS145	LSH3K-2M	(LSH3K + LSZ52M)	12LS1	LSC7L		206LS1	LSN1A-3B	(LSN1A + LSZ53B)
1LS156	LSA3K-1C	(LSA3K + LSZ51C)	13LS1	LSF7L		206LS2	LSN1A	
1LS165-L	LSA3K4-2C	(LSA3K4 + LSZ52C)	14LS1	LSE7L		208LS1	LSJ1A-7N	
1LS212	LSH3K		14LS3	LSE7L5		208LS125	LSK1A-8B	
1LS213	LSH3K		15LS1	LSD7L		208LS501	LSJ5A-7N	
2LS1	LSC3K		15LS8	LSD7L		208LS525	LSK5A-8B	
2LS1-L	LSC3K		**PLUG-IN**			301LS1	LSM2D-1D	(LSM2D + LSZ51D)
2LS7	LSC3K		201LS1	LSA1A-1D	(LSA1A + LSZ51D)	301LS2	LSM2D	
3LS1	LSF3K		201LS1-N	LSA1A1-1C	(LSA1A1 + LSZ51C)	301LS3	LSM2D-2C	(LSM2D + LSZ52C)
3LS1-L	LSF3K		201LS2	LSA1A		301LS5	L2M2D-4N	(LSM2D + LSZ54N)
3LS5	LSF3KF		201LS3	LSA1A-2C	(LSA1A + LSZ52C)	301LS8	LSA2B-1D	(LSA2B + LSZ51D)
			201LS6	LSR1A-1D	(LSR1A + LSZ51D)	301LS28	LSA2B	

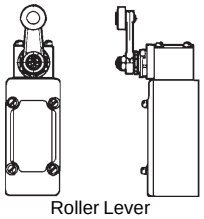
ML SERIES HEAVY DUTY LIMIT SWITCHES

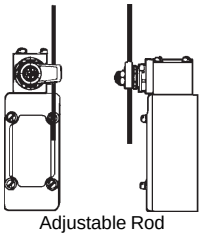
FEATURES
Up to 20 amp capacity.
SPDT, DPDT or 2-ckt DB circuitry.
Adjustable actuation, CW, CCW or in both directions.
Adjustable operating heads.
Momentary contacts
Rotary motion or plunger operation.
Sealed against oil, water and dust.
Captive cover screws.
All ML switches except those with DT and MT contact blocks are UL listed and CSA certified.

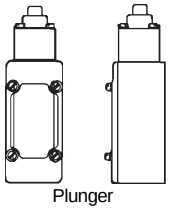
REPLACEMENT PARTS

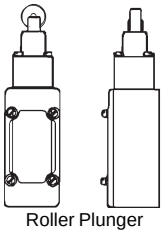
Catalog Listing	Contact Block	Operating Head	Actuator Only
151ML1	1MN1	9PA14 +	6PA118
51ML1	1MK1	9PA8 +	
51ML7	DT-2R711-A7	9PA14 +	
151ML10	1MN5	9PA25 +	
51ML10	1MK5	9PA24 +	6PA19
102ML1	1MN1	9PA2	
2ML1	1MK1	9PA2	
105ML1	1MK5	9PA4	
5ML1	DT-2R711-A7	9PA4	
151ML2	1MN1	9PA39	
51ML2	1MK1	9PA35	
51ML22	1MN1	None	
51ML72	1MK1	9PA39	

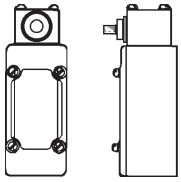
+ Includes Actuator


Roller Lever


Adjustable Rod


Plunger


Roller Plunger


Without Lever


Rod


Lever

ROLLER LEVER ROTARY ACTUATED Momentary Action

Operating Head	Part Number	Price
Sealed	151ML1	$ 200.33
Sealed	51ML1	184.38
Sealed	51ML7	227.17

ADJUSTABLE ROD ROTARY ACTUATED Momentary Action

Sealed	151ML10	201.50
Sealed	51ML10	182.83

PLUNGER ACTUATED Momentary Action

Unsealed	102ML1	159.87
Unsealed	2ML1	140.42

ROLLER PLUNGER ACTUATED Momentary Action

Unsealed	105ML1	196.44
Unsealed	5ML1	182.44

ROTARY ACTUATED WITHOUT LEVERS Momentary Action

Sealed	151ML2	181.27
Sealed	51ML2	164.93
Sealed	51ML22	201.11
Sealed	51ML72	208.50

AUXILIARY LEVERS

Lever Action	Nylon Roller	Price	Steel Roller	Price
4.5in	6PA109	$22.17	6PA117	$19.06
4in.	6PA108	21.78	6PA116	18.67
3.5in	6PA107	20.61	6PA115	18.28
3in	6PA106	20.22	6PA114	18.28
2.5 in	6PA105	20.22	6PA113	17.89
2 in	6PA104	19.83	6PA112	17.50
1.78 in			6PA111	17.50
1.78 in reversible	6PA110	17.16	6PA118	17.89
5.25 in (Aluminum Rod)	6PA19	14.39	-	

914CE MINIATURE PRE-WIRED ENCLOSED SWITCHES

GENERAL INFORMATION
914CE switches satisfy the need for miniature enclosed switches with environment sealing. Factory prewired cable enables use in limited access areas. Cable is type is type SJTO. Wire ends are stripped and tinned. Basic switch is not replaceable. A full range of actuators is available, including plain plungers, roller plungers, side rotary, multi-directional wire, and manual. Any of the LS or the HDLS limit switch levers may be used with side rotary 914CE16.**ELECTRICAL RATING** UL and CSA listed: 5 amps, 1/ 10Hp,125 or 250 VAC.

FEATURES:
Miniature size
Sealed construction.
Simple two screw mounting (#10 screws)
Cast Zinc housing.
Factory prewired 3ft. cable.
All listings comply to NEMA 1 and 3 plus IP65: many to NEMA 4,6,6P,12 and 13 and IP67 as well
UL listed, CSA .certified

PLUNGER ACTUATED SWITCHES

Description	Fig	Catalog Listing	Price
Plunger	1	914CE1-3	$ 49.21
	1	914CE1-6 #	53.33
Boot sealed plunger	2	914CE18-3	69.67

6 ft cable

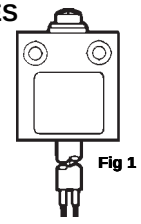


Fig 1

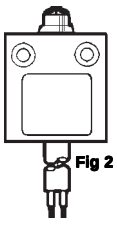


Fig 2

ROLLER PLUNGER SWITCHES

Description	Fig	Catalog Listing	Price
Roller	3	914CE2-3	$ 57.34
Plunger	3	914CE2-3K	66.95
Cross Roller	4	914CE3-3	57.34
Plunger	4	914CE3-3K	66.95

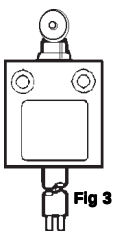


Fig 3

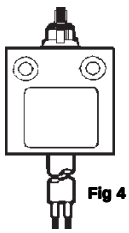


Fig 4

SIDE ROTARY AND WOBBLE ACTUATED SWITCHES

Description	Fig	Catalog Listing	Price
Side rotary (lever not included) * *	5	914CE16-3 *	$ 69.67
Multidirec-tional spring wire wobble actuator	6	914CE20-3	72.39

* Switch operates on clockwise and counterclockwise rotation of the lever shaft
** Order LSZ Type Lever from page 224.

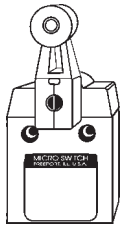


Fig 5

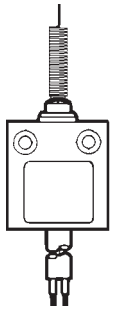


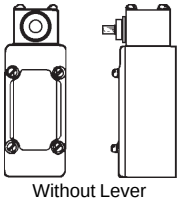
Fig 6

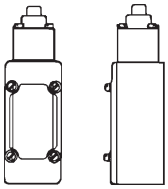
MICRO SWITCH

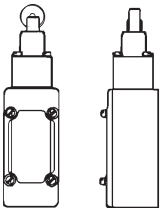
GLOBAL LIMIT SWITCHES

DESCRIPTION
The new GLS series is specifically designed for world-wide applications and is supported by Honeywell global resources to ensure customer satisfaction.
Over 300 versions designed to the newest IEC standard are available and include a wide range of EN50041 and EN50047 type switches. Miniature EN50047 limit switches are available in metal and double insulated enclosures and a metal enclosed 3-cable entry version (EN50047 mounting compatible) is also offered. The larger EN50041 switches include metal enclosed standard and plug-in versions.

FEATURES
Designed to the new IEC standard.
Snap action and slow action mechanism with forced disconnect.
EN50041 metal standard and plug-in versions.
EN50047 metal and double insulated versions.
EN50047 mounting compatible, 3-cable entry metal versions.
UL CSA and CE pending
Sealing up to IP67/NEMA 4.
Direct PLC interface compatible (two circuit).
Galvanically isolated contacts (two circuit).
Modular construction reduces maintenance parts costs.
International conduit sizes.


Without Lever


Plunger


Roller Plunger

All part numbers listed are standard size limit switches

Part Number	Body Type	Housing	Basic Switch	Head	Price
GLAA01A	EN50041 Metal	1/2 NPT	SPDT Snap Action	Side Rotary Momentary	$ 62.24
GLFA01A	EN50041 Standard w/1 LED	1/2 NPT	SPDT Snap Action	Side Rotary Momentary	77.80
GLHA01A	EN50041 Standard w/2 LED	1/2 NPT	SPDT Snap Action	Side Rotary Momentary	93.36
GLAA01B *	EN50041 Metal	1/2 NPT	SPDT Snap Action	Top Pin Plunger	62.24
GLAA01C *	EN50041 Metal	1/2 NPT	SPDT Snap Action	Top Roller Plunger	70.02
GLAA01D *	EN50041 Metal	1/2 NPT	SPDT Snap Action	Roller Arm	66.13
GLAA01E7B *	EN50041 Metal	1/2 NPT	SPDT Snap Action	Coil Wobble Actuator	66.91
GLAA01K8C *	EN50041 Metal	1/2 NPT	SPDT Snap Action	Coil Whisker Actuator	66.91
GLBA02A	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Side Rotary Momentary	70.02
GLBA02B *	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Top Pin Plunger	70.02
GLBA02C *	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Top Roller Plunger	77.80
GLBA02D *	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Roller Arm	73.91
GLBA02E7B *	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Coil Wobble Actuator	74.69
GLBA02K8C *	EN50041 Metal Plug-in	1/2 NPT	SPDT Snap Action Plug-in	Coil Whisker Actuator	74.69

* Actuator built into switch. On other part numbers, actuator must be ordered separately.

EXPLOSION- PROOF SWITCHES

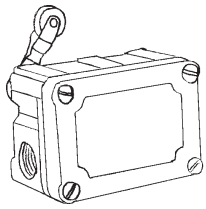
EX EXPLOSION-PROOF SWITCHES

GENERAL INFORMATION
EX switches feature the smallest UL-listed housing available for use in hazardous locations. Flame paths within the housing cool exploding gases below the kindling temperature before they reach the explosive gases surrounding the housing.

TEMPERATURE RANGE
EX Switches are for use in a temperature range of -40 to 160ºF

ROLLER LEVER ACTUATED SWITCHES

Description	Electrical & UL Data	Part Number	Price
CW actuation * 15 amp. SPDT	15A / L96	**EX-AR**	$ 130.90
CW actuation * 20 amp. SPDT	20A / L23	**EXA-AR**	132.22
CCW actuation* 15 amp. SPDT	15A / L96	**EX-AR30**	134.52
CW or CCW actuation*. 15 amp. Low O.F. (no return spring) without mtg. bracket. SPDT	15A / L96	**EX-AR16**	150.66
Also UL listed for Class I Group B (hydrogen) atmospheres.	10A / L59 1A / L22	**EXD-AR-3#** **EXH-AR3**	183.76 239.94
No lever furnished. (Order levers shown below as separate items.) CW actuation*. SPDT	15A / L96	**EX-AR20**	127.44

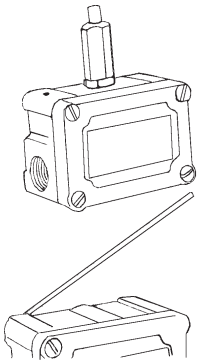

* CW (Clockwise) or CCW actuation, when looking at name plate.
# Furnished with 3 ft lead wire.

FEATURES
Meets applicable portions of NEMA 1.7, and 9
Compact, rugged housing
Up to 20 amp capacity
Ample wiring space
Mounts from 4 sides
Roller arms adjustable through 360º
Non -sparking actuators
Captive cover screws
UL listed and CSA certified
Grounding screw
Single or double conduit opening
Dimensionally interchangeable with OP type switches

NEMA
EX enclosures meet NEMA standards for Hazardous Locations - Type 7 ClassI , GroupsB (Only Series 800, EXH and EXD), C, and D: and Type 9, Class II, Groups E, F, and G. Also Type 1.

OVERTRAVEL PLUNGER ACTUATED SWITCHES

Description	Electrical Data and UL codes	Part Number	Price
As shown	15A / L96	**EX-Q**	$ 130.90
Also UL listed for Class I, Group B (hydrogen) atmospheres	10A / L23	**EXD-Q-3+**	183.76
With seal boot on plunger	10A / L9	**EX-N15**	141.63
	+Furnished with lead wire		



LOW FORCE ROD LEVER ACTUATED SWITCH

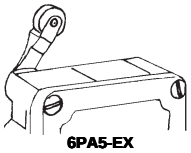
Description	Electrical Data and UL code	Part Number	Price
Furnished without mounting bracket. CW actuation (looking at name plate)	15A / L96	**EX-AR1613**	$ 161.59

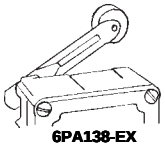
REPLACEMENT PARTS FOR EX SWITCHES

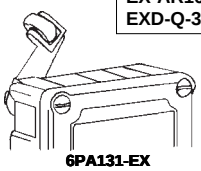
Switch Listing	Replacement Part Numbers: Switching Unit	Actuator	Springs
EX-AR	**BZ-2R-P1**	**6PA5-EX**	**33PA7-EX**
EX-AR16	**BZ-2RW88-P2**	**6PA5-EX**	
EX-AR20	**BZ-2R-P1**		**33PA7-EX**
EX-AR30	**BZ-2R-P1**	**6PA5-EX**	**33PA5-EX**
EX-Q	**BZ-2R-P1**	**8PA15-EX**	
EX-N15	**BZ-2R15-P1**	**8PA12-EX**	
EXA-AR	**BA-2R-P1**	**6PA5-EX**	**33PA6-EX**
EXD-AR-3	**DT-2R4-A7**	**6PA5-EX**	**33PA6-EX**
EXH-AR3	**4HS202**	**6PA5-EX**	**33PA6-EX**
EX-AR1613	**BZ-2RW88-P2**	**6PA136-EX**	
EXD-Q-3	**DT-2R-A7**		

EX AUXILIARY ACTUATORS FOR MODEL EX-AR20

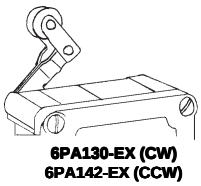
Part Number	Description	Price
6PA5-EX	Bronze roller	$ 35.32
6PA127-EX	Nylon roller	35.32
6PA130-EX	Bronze roller	42.91
6PA131-EX	Bronze roller	50.41
6PA136-EX	Aluminum rod	40.34
6PA138-EX	Adjustable length lever with nylon roller	47.65
6PA142-EX	Bronze roller	42.91


6PA5-EX
6PA127-EX


6PA138-EX


6PA131-EX


6PA136-EX


6PA130-EX (CW)
6PA142-EX (CCW)

CX WEATHER-SEALED EXPLOSION-PROOF SWITCHES

GENERAL INFORMATION

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.

Operating temperature range is -13 to +185ºF

FEATURES

Meets applicable portions of NEMA 1,3,4,4x*,7,9,13(*80CX type only)

Watertight and dust tight for outdoor use

Potentiometer version available

UL listed and CSA certified

Rugged cast aluminum housing

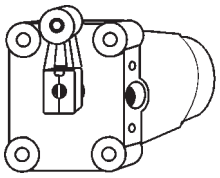
Pretravel, overtravel, and actuating sequence can be field adjusted- without tools

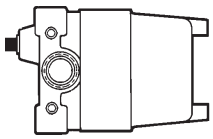
Rotary types convert in seconds to clockwise, or counterclockwise, or both-way operation.

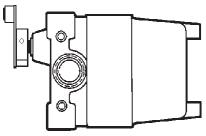
On switches without "Shaft Restoring Force to Center", the shaft can be rotated through 360 º. Basic switches will be in operating mode through two 105 º sections.

NEMA

CX enclosures meet NEMA standards for hazardous location - Type 7, Class I, Group B Groups C and D: and type 9 Class II, Groups E,F and G. They also provide protection against water, dust and oil as defined in NEMA 1,3,4, and 13.







Actuators are not included (see below).

For a more comprehensive listing of levers see page 224.

ROTARY ACTUATED SWITCHES

Description	Catalog Listings Shaft Restoring Force To Center		Price	Housing Size	Basic Switches	Elec. Data and UL Code
	With	W/O				
15 amp SPDT	11CX1	11CX11	$162.41	Short	BZ(1)	15A / L96
	11CX2		184.39	Short	BZ(2)	
	21CX4	21CX14	311.08	Standard	BZ(4)	
20 amp SPDT	12CX2	12CX12	185.09	Short	BA(2)	20A / L23
	22CX4	22CX14	312.33	Standard	BA(4)	
Also UL listed for Class I, Group B (hydrogen atmospheres). 10 amp. DPDT	14CX1	14CX11	192.67	Short	DT(1)	10A / L59
	24CX2	24CX12	337.42	Standard	DT(2)	

LSX WEATHER-SEALED EXPLOSION-PROOF SWITCHES

FEATURES

Meets applicable portions of NEMA 1,4,6,7,9, and 13

Tracking interchangeability with MICRO SWITCH ML-E1 and HDLS.

Variety of heads and non-sparking actuators.

Field adjustability matches switch to application.

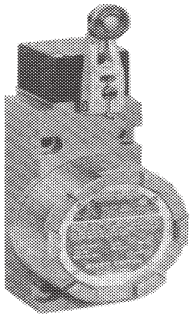
Momentary, maintained, random sequence, or center neutral action.

10 amps continuous carry electrical rating.

1/2 or 3\4 inch conduit opening.

UL listed and CSA certified.

Internal grounding screw.



GENERAL INFORMATION

LSX switches are for use either indoors or outdoors in hazardous atmospheres as they are a completely sealed explosion-proof device.

Standard HDLS levers are used, but because of explosion proof requirements, only nylon rollers or other non-sparking material can be selected. Plunger and cat whisker types listed are of non-sparking material. The LSX withstands pressure of an internal explosion and cools the exploding gases below the kindling temperature of the explosive atmosphere. Flame paths are provided by the cover housing threads and an extended plunger between the switch cavity and head.

NEMA

LSX enclosures meet NEMA standards for hazardous locations - Type 7, Class I (Group B, C, or D), and Type 9, Class II (Groups E, F or G). They also provide protection against corrosion, water, dust, and oil, as defined in NEMA 1, 3, 3R, 4, 6, 12 and 13.

Part numbers listed below are for complete switches without levers.

Head Type	Part Number	Cir-cuitry	Price	Head Type	Part Number	Circuitry	Price
Side Rotary Momentary	LSXA3K	SPDT *	$145.87	Top Roller Plunger	LSXD3K	SPDT	$ 164.93
	LSXA4L	DPDT *	162.60		LSXD4L	DPDT	182.05
Side Rotary Maintained	LSXN3K	SPDT *	162.60	Side Plunge Momentary	LSXE3K	SPDT	159.87
	LSXN4L	DPDT *	179.32		LSXE4L	DPDT	175.82
Top Rotary Momentary	LSXB3K	SPDT *	164.93	Side Roller Plunger Momentary	LSXF3K	SPDT	175.82
	LSXB4L	DPDT *	182.05		LSXF4L	DPDT	192.94
Top Plunger	LSXC3K	SPDT	159.87	Wobble Stick	LSXJ3K-7A	SPDT	154.04
	LSXC4L	DPDT	175.82		LSXJ4L-7A	DPDT	171.16

* Levers not included. Must be ordered separately.

Part Number	Price
LSZ51A Lever arm nylon roller	$8.16
LSZ51C Lever arm nylon roller	8.16
LSZ52C Adjustable arm 1.5 to 3.5 in. .75 in. nylon	13.22
LSZ55C Offset Lever arm .75 nylon roller	13.22
LSZ53S Yoke Lever arm .75 nylon rollers (same side)	13.22
LSZ54M Rod Actuator Aluminum	13.22

MICRO SWITCH

MICRO SWITCH AML Advanced Manual Line combines functional flexibility with electrical versatility to provide a broad range of options .

FEATURES

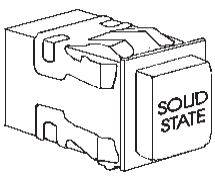
- Complete selection of pushbutton, rocker and paddle (toggle type) switches accommodates different functions and promotes operator efficiency.
- Solid state, electronic, and power duty control.
- Full or split screen incandescent display switches and indicators provide vivid transmitted color, projected color (for neutral display when unlit), and dead front (hidden color).
- Wide-angle visibility LED and line voltage neon display switches and indicators.
- Annunciators back-lighted by LED's enable high density message display.
- Keylock switches available for controlled access applications.
- All AML terminations at the same shallow depth (1.7 in. / 43,1 mm) for convenient wiring or PC board termination.
- Snap-in surface mount or sub-panel (hidden bezel) mount with mounting hardware.
- Pad printed legends with a clear polyurethane overcoat available in a choice of five standard sizes.
- Metric design for worldwide acceptance.
- UL recognized, CSA certification.

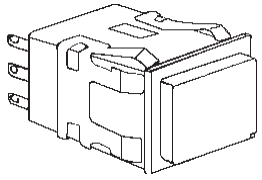
AML 11/12 SOLID STATE PUSH-BUTTON SWITCHES

AML's classic design blends with other panel components to enhance total display harmony. Well-accepted as the only comprehensive line of its kind, AML features uniformly functional and attractive push-button, paddles, rockers, indicators, and annunciators. LED, incandescent, and neon illumination... solid state to electronic and power duty control.

FEATURES

Hall effect reliability.
Low voltage signal interfaces with nearly all DC logic.
5 or 6-16 supply voltage.
UL recognized.





AML11 non-lighted or incandescent illuminated

AML 11 ORDER GUIDE

Use AML51 Buttons

AML11B	B	A	2	AA		
Housing Type	**Bezel Color**	**Lamp Type**	**Terminal Type**	**Circuit Codes**		
Standard Bezel: **AML 11B** Square Non-Lighted **AML 11C** Square 1 Lamp Ckt. **AML 11E** Rect, Non-Lighted **AML 11F** Rect. 1 Lamp Ckt. **AML 11G** Rect. 2 Lamp Ckt. **Note: Buttons and incandescent lamps are ordered separately**	**B** Black	**A** No Lamp Installed (see lamp order guide)	**2** .110 x .020 (Solder or Quick-Connect)	5 VDC Sinking	**AA** Momentary Action	**AE** Alternate Action
			3 .025 x .025 (Printed Circuit or Push-On)	6-16 VDC Sinking	**BA** Momentary Action	**BE** Alternate Action

LAMP ORDER GUIDE

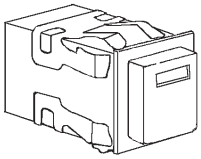
Part Number	Operating Volts
86	6.3V
73	14 V
85	28 V

For Buttons, see AML 51 and AML 52 series on page.236.

AML 12 ORDER GUIDE

User AML52 Buttons

AML12C	B	A	2	AA		
Housing Type	**Bezel Color**	**Lamp Type**	**Terminal Type**	**Circuit Codes**		
Standard Bezel: **AML 12C** Square 1 LED **Housing have integral LED indicator which is flush with button face. LED "window" buttons are ordered separately.** ***** Voltage dropping resistor required	**B** Black	Red **B** V * **C** 5 V Yellow **H** v * **J** 5 V Green **R** V * **S** 5 V	**2** .110 x .020 Quick-Connect)	5 VDC Sinking	**AA** Momentary Action	**AE** Alternate Action
			3 .025 x .025 (Printed Circuit or Push-On)	6-16 VDC Sinking	**BA** Momentary Action	**BE** Alternate Action



AML12 w/integral LED indicator

Electrical Characteristics						Absolute maximum rating[4]			
				Switching Time Max					
Integrated Circuit Function	**Supply Current (Max.)**	**Output Voltage (Operated)**	**Output Leakage Current Max. (Released)**	**Rise 10% to 90%**	**Fall 90% to 10%**	**Supply Voltage (V_s)**	**Voltage Externally Applied to Output**	**Loads to Output**	**Storage Temperature**
5 VDC Sinking [1]	3.5 mA (Released) 6.5mA (operated-No load)	+ .4 volt (Sinking 8mA)	20 u A	1.0 u sec. (Sinking 8m A)	1.0 u sec. (Sinking 8 mA)	-.5 to 7.0 VDC 0° to + 65° C (+32° to + 149 °F)	-.5 volt min. +15 Volts Max. (Off condition)	20 mA (Sinking)	-40°C to 65°C (-40° to +149°F
6-16 VDC Sinking [2]	6.5mA @ 6 VDC 10.0 mA @ 16 VDC (plus load current)[3]	+ .4 Volt (Sinking 20 mA)	20 u A	1.5 u sec (Sinking 20 mA)	0.5 u sec. (Sinking 20 mA)	-1.2 to +20 VDC	+ 20 VDC max. in OFF condition only -0.5 VDC min. in OFF or ON Condition	40 mA	-40°C to 65°C (-40° to +149°F

[1] Over temperature range of 0° to +55°C (+32° to + 131°F) and supply voltage of 4.5 to 5.5 VDC
[2] Over temperature range of 0° to + 55°C (+32° to + 131°F) and supply voltage to 16 VDC
[3] At 24°C (+75°F)

[4] As with all solid state components, performance can be expected to deteriorate as rating limits are approached; however, they will not be damaged unless the limits are exceeded.

A permanent magnet plunger moves adjacent to the Hall effect integrated circuit to give a digital, current sinking output.

ELECTRONIC CONTROL PADDLE SWITCHES AML 23/25

FEATURES
Up to 3 amps, 125 VAC.
Silver or gold contacts
Black toggle type paddle operators.
(Switch covers provide color display.)
UL recognized, CSA Certified.

Additional AML23 Options:
Other two and three-position operating actions and additional circuitry. Request Micro Switch Catalog 30.

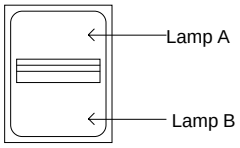
AML 23 ORDER GUIDE

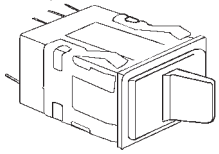
Use AML53 Covers

AML23E	B	A	2	AA	01
Housing Type	**Operator/Bezel Color**	**Lamp Type**	**Terminal Type**	**Circuitry**	**Operating action**
AML23E Rectangular Non-lighted	**B** Black	**A** No Lamp Installed (see lamp order guide)	**2** .110 x .020 (Solder or quick connect terminal)	Insert Code Letters from chart below	Insert Code Numbers from chart below
AML23F Rectangular 1Lamp Ckt.(A)					
AML23G Rectangular 2 lamp Circuits			**3** .025 x .025 (Printed Circuit or Push-On)		

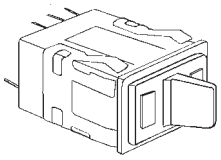
LAMP ORDER GUIDE

Part Number	Operating Volts
86	6.3V
73	14 V
85	28 V





AML 23 non-lighted or incandescent illuminated



AML 25 w/ integral LED indicator

Note: Covers and incandescent lamps are ordered separately.

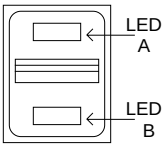
AML 25 ORDER GUIDE

Use AML55 Covers

AML25F	B	B	2	AA	01	R	X
Housing Type	**Operator/ Bezel Color**	**LED Voltage**	**Terminal Type**	**Circuitry**	**Operating Action**	**LED Color**	
						LED A	**LED B**
AML 25F Rectangular 1 LED	**B** Black	**B** **V** **C** * **5.0 V**	**2** .110 x .020 (Solder or quick connect terminal)	Insert Code Letters from chart below	Insert Code Letters from chart below	R Red Y Yellow G Green	X No LED
* Voltage dropping resistor required			**3** .025 x .025 (Printed Circuit)				

Additional AML25 Options:
Two LED's 10,15 and 24 V LED voltage, other two and three-position operating actions, and additional circuitry . Request Micro Switch Catalog 30.

Housings have integral LED indicator which is flush with face of covers. Note: LED "window" rockers are ordered separately.



Circuitry Codes		Operating Action Codes				
		2-Position		3-Position		
		01		04		
						
Silver Contacts	**Gold Contacts**	**Maint.**	**Maint.**	**Maint.**	**Maint.**	**Maint.**
AA	**BA**					
AC**	**BC****					
** For Non-illuminated switches only.						

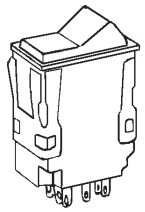
For Covers see AML53 and AML55 Series on page 236.

ELECTRONIC CONTROL ROCKER SWITCHES

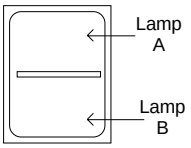
AML 24/26 FEATURES

Up to 3 amps, 125 VAC.
Silver or gold contacts
UL recognized, CSA Certified.

Note: Rockers and incandescent lamps are ordered separately.



AML 24 non-lighted or incandescent illuminated



AML 24 ORDER GUIDE

Use AML54 Rockers

AML24E	B	A	2	AA	01
Housing Type	**Bezel Color**	**Lamp Type**	**Terminal Type**	**Circuitry**	**Operating action**
AML24E Rectangular Non-lighted	**B** Black	**A** No Lamp Installed (see lamp order guide)	**2** .110 x .020 (Solder or Quick-Connect)	Insert Code Letters from chart below	Insert Code Numbers from chart below
AML24F Rectangular 1Lamp Ckt.(A)			**3** .025 x .025 (Printed Circuit or Push-On)		
AML24G Rectangular 2 lamp Circuits					

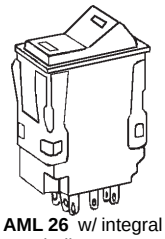
LAMP ORDER GUIDE

Part Number	Operating Volts
86	6.3V
73	14 V
85	28 V

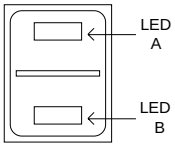
AML 26 ORDER GUIDE

Use AML56 Rockers

AML26F	B	B	2	AA	01	R	X
						LED Color	
Housing Type	**Bezel Color**	**LED Voltage**	**Terminal Type**	**Circuitry**	**Operating Action**	**LED A**	**LED B**
AML 26F Rectangular 1 LED	**B** Black	**B** V * **C** 5.0 V	**2** .110 x .020 (Solder or Quick-Connect)	Insert Code Letters from chart below	Insert Code Letters from chart below	R Red Y Yellow G Green	X No LED
		* Voltage dropping resistor required	**3** .025 x .025 (Printed Circuit)				



AML 26 w/ integral LED indicator



Housings have integral LED indicator which is flush with face of covers. Note: LED "window" rockers are order separately.

ELECTRICAL DATA - AML20 SERIES

Contacts	Voltage	Current	Load Type
Silver or Gold-plated Silver	250VAC 125VAC 24VDC	2 Amps 3 Amps 2 Amps	75% Power Factor 75% Power Factor Resistive
Gold	125 VAC/DC	100 mA	Resistive

For Rockers see AML54 and AML56 series on page 236

CIRCUIT AND ACTION CODES

Circuitry Codes		Operating Action Codes					
		2-Position		3-Position			
		01			04		
Silver Contacts	Gold Contacts	Maint.	Maint.	Maint.	Maint.	Maint.
AA	BA	3 2 1	3 2 1	3 2 1	3 2 1	3 2 1
AC **	BC**	3 2 1 6 5 4	3 2 1 6 5 4	3 2 1 6 5 4	3 2 1 6 5 4	3 2 1 6 5 4

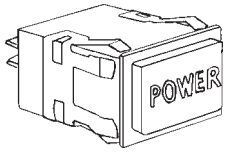
** For Non - illuminated switches only

AML 31/32 POWER DUTY PUSHBUTTON SWITCHES

AML 31 ORDER GUIDE

Use AML51 Buttons

AML31E	B	A	4	AD
Housing Type	**Bezel Color**	**Lamp Type**	**Terminal Type**	**Circuitry**
AML31E Rectangular Non-lighted	**B** Black	**A** No Lamp Installed (see lamp order guide)	**4** .187 x .020 (Solder or Quick-Connect)	2-Pole, Single-Throw Normally-Open, Form X: **AD** Alternate Action
AML31F Rectangular 1Lamp Ckt.				**AC** Momentary Action



AML 31 non-lighted or incandescent illuminated

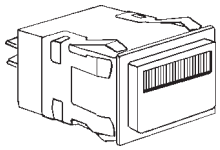
Note: Buttons and incandescent lamps are ordered separately.

For Buttons see AML51 and AML52 series on page 236.

AML 32 ORDER GUIDE

Note: Housings have integral neon lamp wired to 125 or 250 VAC resistor. The indicator has a colored lens which is flush with the button face. Neon "window" buttons (AML52-N) are ordered separately.

AML32F	B	C	7	AD
Housing Type	**Bezel Color**	**Neon Lamp Voltage/ Color**	**Terminal Type Lamp Circuit**	**Circuitry Codes**
Standard Bezel: AML32F Rectangular 1 Neon Lamp	**B** Black	**Red** **B** 125 VAC **C** 250 VAC **Clear** **K** 125 VAC **L** 250VAC **Green** **M** 125 VAC **P** 250 VAC	**4** .187 x .020 (Solder or Quick Connect) with isolated lamp circuit	2-Pole, Single-Throw Normally-Open, Form X: **AD** Alternate Action
			7 .187 x .020 with integral lamp circuit	**AC** Momentary Action



AML 32 w/ integral Neon indicator

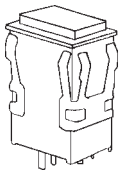
ELECTRICAL DATA - AML30 SERIES

Voltage	Current	Load Type
125 VAC	10 Amps	60% Power Factor
250 VAC	10 Amps	60% Power Factor

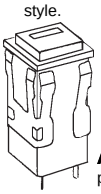
AML 41 INCANDESCENT DISPLAY INDICATORS

FEATURES Up to 3 - lamp split screen capability. UL recognized, CSA certified.

AML41C	B	A	2
Housing Type			
Pushbutton Style / **Lens Style**	**Bezel Color**	**Lamp Type**	**Terminal Type**
AML41C Square 1 lamp ckt / **AML41J** Rectangular 1lamp ckt. (Use AML51-J,K, and L buttons)	**B** Black	**A** No Lamp Installed **B** 6 V Lamp **C** 14 V Lamp **E** 28 V Lamp	**2** .110 x .020 (Solder or Quick-Connect)
AML41D Square 2 lamp ckts. / **AML41F** Rectangular 1 lamp ckt. / **AML41K** Rectangular 2 lamp ckt. / **AML41G** Rectangular 2 lamp ckts. / **AML41L** Rectangular 3 lamp ckts.			**3** .025 x .020 (Printed Circuit or Push-On)
Use AML51 Pushbuttons or AML51-J/-K/-L Lens Buttons			



AML 41 incandescent illuminatedw push-button style and lens style.



AML 42 LED pushbutton style

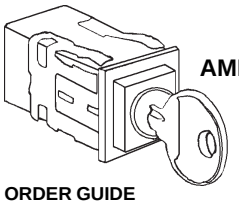
AML42 LED DISPLAY INDICATORS

LEDs are not replaceable. Other LED voltages are available - call for information. Use AML52-C/-A pushbuttons only.

AML42S	B	C	2
Housing Type	**Bezel Color**	**LED Color/ Voltage**	**Terminal Type**
AML42 C Square 1 LED / **AML42 S** Compact 1LED	**B** Black	**Red** **B** V ***** **C** 5V **Yellow** **H** V ***** **J** 5V **Green** R V S 5V	**2** .110 x .020 (Solder or Quick-Connect) **3** .025 x .025 (Printed Circuit or Push-On)

***** For these devices without internal current limiting resistors, suitable external control of the LED current must be provided. Please call for additional information.

AML27 ELECTRONIC CONTROL KEY LOCK SWITCHES



AML27 Non -Lighted

FEATURES
Up to 3 amps, 125 VAC; 1 or 2 poles.
2 or 3 position, maintained (90° throw) and momentary action (60° throw)
5 - bit key combinations
UL recognized , CSA certified

ELECTRICAL DATA - AML20 SERIES

Contacts	Voltage	Current	Load Type
Silver or Gold-plated Silver	250VAC 125VAC 24VDC	2 Amps 3 Amps 2 Amps	75% Power Factor 75% Power Factor Resistive
Gold	125 VAC/DC	100 mA	Resistive

AML27 ORDER GUIDE

AML27 A	B	K	2	AA	21	BA
Housing Type	**Bezel Color**	**LED Voltage**	**Terminal Type**	**Circuitry Codes (Each pole has double throw) Silver Contacts:**	**Operating Action (Key out in center position, except where noted)**	**Key Codes** (Two Keys Furnished)
AML 27A Square housing Non-Lighted	**B** Black	**K** Black	**2** .110 x .020 (Solder or Quick-Connect)	**AA** 1Pole **AC** 2 Pole **Gold Contacts** **BA** 1 Pole **BC** 2 Pole	**CCW Center CW** **21** None Maint. Maint. **22 *** None Maint. Maint. **23** None Maint. Mom **24** Maint. Maint. Maint. **25** Mom Maint. Mom **26 **** Maint. Maint. Maint. **27 ***** Mom Maint. Maint. **28 ***** Maint. Maint. Maint. **29 +** Maint. Maint. Maint. **30 +** Maint. Maint. Mom **31 ++** Maint. Maint. Mom	**BA BL** **BB BM** **BC BN** **BD BP** **BE BQ** **BF BR** **BG BS** **BH BT** **BJ BV** **BK BW**
			3 .025 x .025 (Printed Circuit or Push- On)			

28 and 29 operating actions should be used with key combinations BA, BB, BG or BK

***** Key out in both positions
****** Key out in all three positions
******* Key out in center and CW positions
+ Key out in center and in CCW positions
++ Key out in CCW position only

REPLACEMENT KEYS

Key Code	Key No.	Catalog Listing
BA	110	30PA101-AML
BB	109	30PA102-AML
BC	108	30PA103-AML
BD	107	30PA104-AML
BE	106	30PA105-AML
BF	105	30PA106-AML
BG	104	30PA107-AML
BH	103	30PA108-AML
BJ	102	30PA109-AML
BK	101	30PA110-AML
BL	111	30PA111-AML
BM	112	30PA112-AML
BN	113	30PA113-AML
BP	114	30PA114-AML
BQ	115	30PA115-AML
BR	116	30PA116-AML
BS	117	30PA117-AML
BT	118	30PA118-AML
BV	119	30PA119-AML
BW	120	30PA120-AML

Note: These keys fit the 5-bit keylocks listed. Replacement keys for our old style 4-bit key combinations are available on special order.

CIRCUITRY
2- Position Switches

	Normal Position	Key Turned to Right (CW)
1 Pole	3 2 1	3 2 1
2 Pole	3 2 1 6 5 4	3 2 1 6 5 4

3- Position Switches (Available in 2- pole version only)

	Key Turned to Left (CCW)	Normal Position *	Key Turned to Right (CW)
2 Pole	3 2 1 6 5 4	3 2 1 6 5 4	3 2 1 6 5 4

*** Circuit remains the same with key in or out**

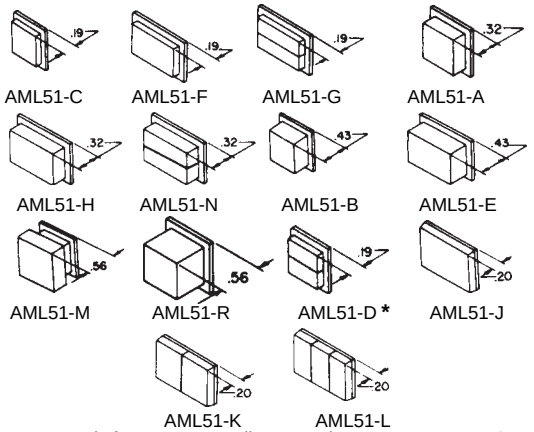
Because of the many options available in the Advanced Manual Line (AML) Switches and Indicators, no prices are listed. Please call any of the toll-free numbers on the back cover of this catalog for current and/or quantity prices and avaiulability.

MICRO SWITCH AML COVER PLATES, BUTTONS AND LENSES

Use AML 51 buttons with AML11 switches and AML41 indicators.
Specify AML-51J, AML51-K and AML51-L buttons for use with AML41J, AML41K and AML41L **lens style indicators only.** They do not fit other AML pushbuttons switches or indicators.

AML51-C **10** **R**

Button Type For AML11 & 31 Switches and AML41 Indicators



AML51-C AML51-F AML51-G AML51-A
AML51-H AML51-N AML51-B AML51-E
AML51-M AML51-R AML51-D * AML51-J
AML51-K AML51-L

* AML51-D is for AML41-D Indicators only. Button Types B, C,D, & M are square. The others are rectangle.

Display Legend Type	Full Color or 1st Color Split	2nd Color Split	3rd Color Split
Transmitted Color **10** No Legend **20** With Legend	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** ** Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** ** Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** ** Green
Transmitted Color (Clear cap and color insert) **11** No Legend **21** With Legend			
Dead Front (Smoky gray cap and color insert) **30** No legend **40** with legend			
Projected Color (White cap and color insert) **50** No legend **60** with legend			

** For use with high intensity green LED

Most AML switches and indicators are available with special legends on buttons, covers and lenses. We can supply legend sheets to make ordering easier. Please call any store listed on the back cover.

AML52 buttons have an open window which allows the LED or neon lamp lens to be flush with the button face. Use with AML12 & AML32 Switches

AML52-N **10** **R**

Button Types	Display/Legend Type	Button Color
For LED Devices **AML52-C** **AML52-A** **For neon Devices** **AML52-N**	**Transmitted Color** **10** No Legend **20** With Legend	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black

Use AML 53 covers with AML23 Switches, non-lighted or incandescent illuminated display

AML53-T **10** **R** **G**

Paddle switch cover type	Display/Legend Type	Cover Color 1/2 Cover, or one side of two-piece cover	Other Side of two-piece cover
AML 53-E 1/2 Cover **AML53-T** Two-Piece Cover	**Transmitted Color** **10** No Legend **20** With Legend **Transmitted Color** (Clear cap and color insert) **11** No Legend **21** With Legend ** For use with high intensity green LED	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** ** Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** Green

Use AML 55 Covers with AML25 Switches.

AML55-T **10** **Y** **R**

Paddle switch cover type	Display/Legend Type Transmitted Color	Cover Color 1/2 cover, or LED side of two-piece covers	Cover Color Other side of two-piece covers
AML55-E 1/2 Cover (For One LED) **AML55-T** Two-piece cover (for one LED) **AML55-H** Two-piece cover (for two LEDs)	**10** No Legend **20** With Legend	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **L** Gray **A** Amber **C** Light Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **L** Gray **A** Amber **C** Light Green

Use AML 54 rockers with AML24 switches, non-lighted or incandescent illuminated display.

AML54-F **10** **R**

Rocker Operator Type	Display/Legend Type	Rocker Color Full rocker, 1/2 rocker, or one side of two-piece rockers	Rocker Color Other side of two-piece rockers
AML54-F Full Rocker **AML54-E** 1/2 Rocker **AML54-T** Two-piece Rocker	**Transmitted Color** **10** No Legend **20** With Legend Transmitted Color (Clear cap and color insert) **11** No Legend **21** With legend Dead Front (Smoky gray cap and color insert) **30** No legend **40** With Legend Projected Color (White cap and color insert) **50** No legend **60** With legend	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** ** Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **U** Green

** For use with high intensity green LED

Use AML 56 rockers with AML26 switches.

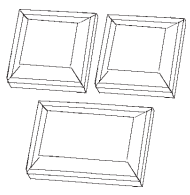
AML56-T **10** **R** **B**

Rocker Operator Type	Display/ Legend Type	Rocker Color 1/2 Rocker or LED side of two-piece rockers	Rocker Color Other side of two-piece rockers
AML56-E 1/2 Rocker (For One LED) **AML56-T** Two-piece Rocker (for one LED) **AML56-H** Two-piece rocker (for two LEDs)	**Transmitted Color** **10** No Legend **20** With Legend	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **L** Gray **A** Amber **C** Light Green	**R** Red **Y** Yellow **G** Green **B** Blue **W** White **K** Black **L** Gray **A** Amber **C** Light Green

AML56-N **10** **R** **R**

Rocker Operator Type	Display/ Legend Type	Lens Color	Rocker Color
AML56-N Full Rocker with Colored Lens	**Trans-mitted Color** **10** No Legend **20** With Legend	**T** Clear **R** Red **Y** Yel-low	**R** Red **Y** Yellow **G** Green **B** Blue **K** Black

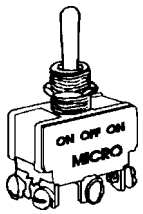
AML75 PANEL SEALS



AML 75 panel seals are used to help protect pushbutton switches and indicators from contaminating, from accidental beverage spills, dust and dirt.

Description	Square.19" high buttons
Base & Seal	**AML75ABC**
Base Only	**AML75ABN**
Seal Only	**AML75ANC**

TS TOGGLE SWITCHES



2-POSITION ORDER GUIDE

No. of Poles	Circuit(s) Made w/Toggle At: Keyway Position	Opposite Keyway	UL/CSA Rating Code	Screw Terminals	Price	Solder Terminals	Price	Quick-Connect Terminals	Price
1	OFF	2-3 ON	L191	**11TS15-2**	$10.78	**11TS115-2**	$10.17	**11TS95-2**	$10.26
	2-1 ON	2-3 ON	L191	**11TS15-3**	12.87	**11TS115-3**	12.21	**11TS95-3**	12.30
	2-1 (ON)	OFF	L192	**11TS15-6**	12.11				
	2-1 (ON)	2-3 ON	L192	**11TS15-8**	13.59				
2	OFF	2-3 & 5-6 ON	L191	**12TS15-2**	13.97	**12TS115-2**	12.64	**12TS95-2**	13.02
	2-1 & 5-4 ON	2-3 &5-6 ON	L191	**12TS15-3**	16.67	**12TS115-3**	15.15	**12TS95-3**	15.49

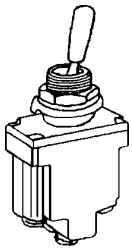
3-POSITION ORDER GUIDE

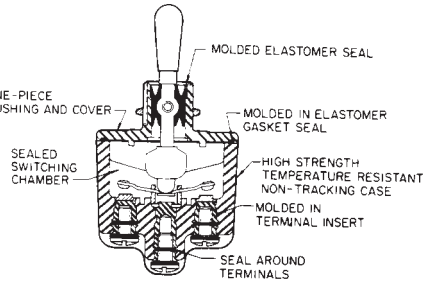
No. of Poles	Circuit(s) Made w/Toggle At: Keyway Position	Center Position	Opposite Keyway	UL/CSA Rating Code	Screw Terminals	Price	Solder Terminals	Price	Quick-Connect Terminals	Price
1	2-1 ON	OFF	2-3 ON	L191	**11TS15-1**	$ 12.87			**11TS95-1**	$ 12.30
	2-1 (ON)	OFF	2-3 ON	L192	**11TS15-5**	13.59	**11TS115-7**	$12.97	**11TS95-5**	13.02
	2-1 (ON)	OFF	2-3 (ON)	L192	**11TS15-7**	13.59	**12TS115-1**	15.15	**11TS95-7**	13.02
2	2-1 & 5-4 ON	OFF	2-3 & 5-6 ON	L191	**12TS15-1**	16.67	**12TS115-7**	16.82	**12TS95-1**	15.49
	2-1 & 5-4 (ON)	OFF	2-3 & 5-6 (ON)	L192	**12TS15-7**	18.38			**12TS95-7**	17.29

ELECTRICAL RATINGS

UL/CSA Rating Code	Electrical Rating
L192	10 Amps,125,250, 277 VAC 1/4 HP - 125 VAC 1/2 HP - 250, 277 VAC 3 amps - 125 VAC "L"
L191	15 Amps, 125,250,277 VAC 1/2 HP - 125 VAC 1HP - 250,277 VAC 5 amps - 125 VAC "L"

TL TOGGLE SWITCHES Meet Military Specs





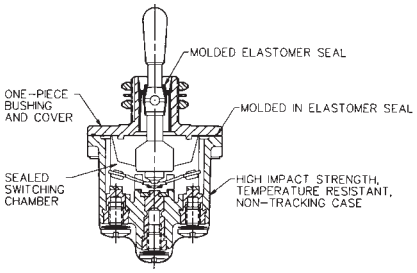
2-POSITION ORDER GUIDE

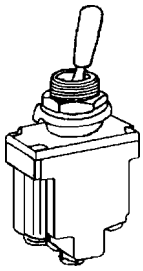
No. of Poles	Circuits Made w/Toggle Keyway Position	Opposite Keyway	UL/CSA Rating Code	Catalog Listing	Price	Military Number
1	OFF	2-3	L191	**1TL1-2**	$16.60	**MS24523-22**
	(OFF)	2-3	L192	**1TL1-4**	16.60	**MS24523-29**
	(1-2)	OFF	L192	**1TL1-6**	16.60	**MS24523-30**
	1-2	2-3	L191	**1TL1-3**	16.60	**MS24523-23**
	(1-2)	2-3	L192	**1TL1-8**	16.60	**MS24523-26**
2	OFF	2-3, 5-6	L191	**2TL1-2**	22.25	**MS24524-22**
	(1-2, 4-5)	OFF	L192	**2TL1-6**	22.25	**MS24524-30**
	1-2, 4-5	2-3, 5-6	L191	**2TL1-3**	22.25	**MS24524-23**
	(1-2, 4-5)	2-3, 5-6	L192	**2TL1-8**	22.25	**MS24524-26**
4	OFF	2-3, 5-6 8-9, 11-12	L191	**4TL1-2**	35.65	**MS24525-22**
	1-2, 4-5 7-8, 10-11	2-3, 5-6 8-9, 11-12	L191	**4TL1-3**	35.65	**MS24525-23**
	(1-2, 4-5 7-8, 10-11)	2-3, 5-6 8-9, 11-12	L192	**4TL1-8**	35.65	**MS24525-26**

3-POSITION ORDER GUIDE

No. of Poles	Circuit(s) Made w/Toggle At: Keyway Position	Center Position	Opposite Keyway	UL/CSA Rating Code	Catalog Listing	Price	Military Number
1	(1-2)	OFF	2-3	L191	**1TL1-1**	$16.60	**MS24523-21**
	(1-2)	OFF	2-3	L192	**1TL1-5**	16.60	**MS24523-31**
	(1-2)	OFF	(2-3)	L192	**1TL1-7**	16.60	**MS24523-27**
	(NONE)	OFF	2-3	L191	**1TL1-21**	18.30	**MS24523-24**
2	1-2, 4-5	OFF	2-3, 5-6	L191	**2TL1-1**	22.25	**MS24524-21**
	(1-2, 4-5)	OFF	2-3, 5-6	L192	**2TL1-5**	22.25	**MS24524-31**
	(1-2,4-5)	OFF	(2-3, 5-6)	L192	**2TL1-7**	22.25	**MS24524-27**
	(1-2, 4-5)	OFF	NONE	L192	**2TL1-61**	24.80	**MS24524-28**
	1-2,4-5	1-2, 5-6	2-3, 5-6	L191	**2TL1-10**	25.55	**MS27407-4**
	(1-2, 4-5)	1-2, 5-6	2-3, 5-6	L192	**2TL1-50**	25.55	**MS27407-5**
	(1-2, 4-5)	1-2, 5-6	(2-3,5-6)	L192	**2TL1-70**	25.55	**MS27407-6**
4	1-2, 4-5 7-8, 10-11	OFF	2-3, 5-6 8-9, 11-12	L191	**4TL1-1**	35.65	**MS24525-21**
	(1-2, 4-5 7-8, 10-11)	OFF	(2-3, 5-6 8-9, 11-12)	L192	**4TL1-7**	35.65	**MS24525-27**

NT TOGGLE SWITCHES are Commercially Sealed





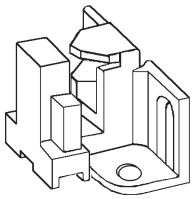
2-POSITION ORDER GUIDE

No. of Poles	Circuits Made w/Toggle Keyway Position	Opposite Keyway	UL/CSA Rating Code	Catalog Listing	Price
1	OFF	2-3	L191	**1NT1-2**	$ 12.60
	1-2	2-3	L191	**1NT1-3**	12.60
	(OFF)	2-3	L192	**1NT1-4**	12.60
	(1-2)	OFF	L192	**1NT1-6**	12.60
	(1-2)	2-3	L192	**1NT1-8**	12.60
2	OFF	2-3, 5-6	L191	**2NT1-2**	17.65
	1-2, 4-5	2-3, 5-6	L191	**2NT1-3**	17.65
	(OFF)	2-3, 4-6	L192	**2NT1-4**	17.65
	(1-2, 4-5)	OFF	L192	**2NT1-6**	17.65
	(1-2, 4-5)	2-3, 4-6	L192	**2NT1-8**	17.65
4	OFF	2-3, 5-6 8-9, 11-12	L191	**4NT1-2**	28.70
	1-2, 4-5 7-8, 10-11	2-3, 5-6 8-9, 11-12	L191	**4NT1-3**	28.70

3-POSITION ORDER GUIDE

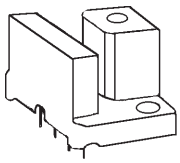
No. of Poles	Circuit(s) Made w/Toggle At: Keyway Position	Center Position	Opposite Keyway	UL/CSA Rating Code	Catalog Listing	Price
1	1-2	OFF	2-3	L191	**1NT1-1**	$ 12.60
	((1-2)	OFF	2-3	L192	**1NT1-5**	12.60
	(1-2)	OFF	(2-3)	L192	**1NT1-7**	12.60
	NONE	OFF	2-3	L191	**1NT1-21**	14.05
	NONE	1-2	2-3	L191	**1NT1-31**	15.45
	NONE	1-2	(2-3)	L192	**1NT1-51**	15.45
	(1-2)	OFF	NONE	L192	**1NT1-61**	14.05
2	1-2, 4-5	OFF	2-3, 5-6	L191	**2NT1-1**	17.65
	(1-2, 4-5)	OFF	2-3, 5-6	L192	**2NT1-5**	17.65
	(1-2, 4-5)	OFF	(2-3, 5-6)	L192	**2NT1-7**	17.65
	NONE	OFF	2-3, 5-6	L191	**2NT1-21**	19.50
	NONE	1-2, 4-5	2-3, 5-6	L191	**2NT1-31**	20.80
	NONE	1-2, 4-5	(2-3, 5-6)	L192	**2NT1-51**	20.80
	(1-2, 4-5)	OFF	NONE	L192	**2NT1-61**	19.50
	(1-2, 4-5)	1-2, 5-6	2-3, 5-6	L192	**2NT1-50**	20.10
	(1-2, 4-5)	1-2, 5-6	(2-3, 5-6)	L192	**2NT1-70**	20.10
4	1-2, 4-5 7-8, 10-11	OFF	2-3, 5-6 8-9, 11-12	L191	**4NT1-1**	28.70
	(1-2, 4-5 7-8, 10-11)	OFF	(2-3, 5-6 8-9, 11-12)	L192	**4NT1-7**	28.70
	1-2, 4-5 7-8, 10-11	2-3, 4-5 7-8, 11-12	2-3, 5-6 8-9, 11-12	L191	**4NT1-12**	31.50

AV VANE OPERATED POSITION SENSORS



1AV

FEATURES
Hall effect sensor
Single digital output
3 pin solder/quick-connect terminals or leadwires
6 to 24 VDC power supply
Lower operating force
UL Recognized housing and leadwires



4AV

FEATURES
Hall effect sensor
Dual digital output... current sinking
4 pin in-line printed circuit board terminals or leadwires
Closely controlled differential to predict pulse width
4.5 to 5.5 VDC or 6 to 24 VDC power supply

PRINCIPLE OF OPERATION
AV vane sensors are operated by passing a ferrous vane through the gap between the Hall sensor and the magnet, shunting the magnet flux away from the sensor. AV's can be used as limit switches by operating with a large vane; as tachometer sensors by using a toothed wheel; as machinery synchronizing elements by using cams or sectors. 1AV and 4AV Series have many features in common such as :

Operation by low cost, easy to fabricate ferrous vane.
Magnet and sensor incorporated in same rugged package.
Sealed construction... unaffected by dust or dirt.
0 to 100 kHz operating speed... no minimum speed of operation.
On and Off times programmable by vane dimensioning.
Precision mechanical operating characteristics.

Supply Voltage (VDC)	Supply Current (mA max.)	Type	Current per Output	Operating Temperature °C	Termination	Catalog Number	Price
4.5 to 5.5	7.0	Sink	4 mA	-40 to 125	PC board	**4AV11C**	$ 14.50
4.5 to 5.5	7.0	Sink	8 mA	-40 to 125	Leadwires	**4AV12C**	19.00
6 to 24	13.0	Sink	20 mA	-40 to 125	Leadwires	**4AV12A**	19.75
6 to 24	13.0	Sink	20 mA	-40 to 125	Leadwires	**1AV2A**	12.85
6 to 24	13.0	Sink	20 mA	-40 to 125	Solder/Q.C.	**1AV3A**	14.70

MICRO SWITCH catalog 20 is a more complete list of solid state sensors and is available upon request, just call any of the toll free numbers on the back cover of this catalog.

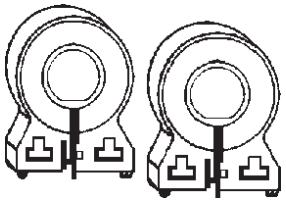
CS CURRENT SENSORS

FEATURES
Digital or linear output
AC or DC current sensing
Through-hole design
Operating Temperature Range - 25 to 85°C

MICRO SWITCH CS series solid state current sensors monitor current flow. Digital sensors produce a digital output signal. Linear sensors produce an analog output signal. When these signals have reached a predetermined level, the control system logic is instructed to perform a function. The digital signal with its logic level output may sound an alarm, start a motor, open a valve, or shut down a pump. The linear signal duplicates the waveform of the current being sensed and is ideal for use as a feedback element to control a motor or regulate the amount of work being done by a machine

LINEAR CURRENT SENSORS -- BOTTOM MOUNT WITH 9SS SENSOR, SOURCE OUTPUT

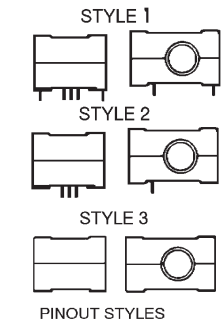
Catalog Number	Price	Supply Volt. (Volts DC)	Supply Current (mA Max.)	Sensed Current (Amps Peak)	Offset Volt. (Volts ±10%)	Sensitivity mV/NI at 12 VDC		Offset Shift (%/ °C)	Response Time (u sec.)
						Nominal	± TOL.		
CSLA1CD	$20.25	8 to16	19	57	Vcc/2	49.6	5.8	± .05	3
CSLA1CE	20.25	8 to16	19	75	Vcc/2	39.4	4.4	± .05	3
CSLA1DE	20.25	8 to16	19	75	Vcc/2	39.1	4.8	± .05	3
CSLA1CF	20.25	8 to16	19	100	Vcc/2	29.7	2.7	± .05	3
CSLA1DG	20.25	8 to16	19	120	Vcc/2	24.6	2.1	± .05	3
CSLA1CH	20.25	8 to 16	19	150	Vcc/2	19.6	1.8	± .05	3
CSLA1DJ	20.25	8 to 16	19	225	Vcc/2	13.2	1.2	± .05	3
CSLA1EJ	32.65	8 to 16	19	225	Vcc/2	13.2	1.5	± .05	3
CSLA1DK	29.40	8 to 16	19	325	Vcc/2	9.1	1.7	± .05	3
CSLA1EK	32.65	8 to 16	19	325	Vcc/2	9.4	1.3	± .05	3
CSLA1EL	32.65	8 to 16	19	625	Vcc/2	5.6	1.3	± .05	3



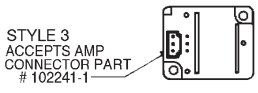
CSLA Series

CS DIGITAL CURRENT DETECTORS, SINKING OUTPUT

Catalog Number	Price	Pinout Style	Operate Current @ 25°C (Amp-Turns)			Operate Current -25°C to + 85°C (Amp-Turns)	Release Current 25°C to + 85°C (Amp-Turns Min)	Supply Volt. (Volts DC)	Output Volt. (Volts)	Output Current Sinking	Response Time (u Sec.)
			Min.	Nom.	Max.						
CSDA1BA	$14.50	2	0.32	0.50	0.88	0.50 + 0.5/ - 0.25	0.08	6 to 16	0.4	20mA	100
CSDA1BC	14.50	2	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	6 to 16	0.4	20mA	100
CSDC1BA	15.75	2	0.32	0.50	0.88	0.50 + 0.5/ - 0.25	0.08	5 ± 0.2	0.4	20mA	100
CSDC1BC	15.75	2	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	5 ± 0.2	0.4	20mA	100
CSDA1AA	16.35	1	0.32	0.50	0.88	0.50 + 0.5/ - 0.25	0.08	6 to 16	0.4	20mA	100
CSDA1AC	16.35	1	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	6 to 16	0.4	20mA	100
CSDC1AA	17.45	1	0.32	0.50	0.88	0.50 + 0.5/ - 0.25	0.08	5 ± 0.2	0.4	20mA	100
CSDC1AC	17.45	1	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	5 ± 0.2	0.4	20mA	100
CSDA1DA	16.35	3	0.32	0.50	0.88	0.50 + 0.5/ - 0.25	0.08	6 to 16	0.4	20mA	100
CSDC1DC	19.95	3	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	5 ± 0.2	0.4	20mA	100
CSDA1DC	16.35	3	2.2	3.5	6.5	3.5 + 4.0/ - 1.8	0.60	6 to 16	0.4	20mA	100



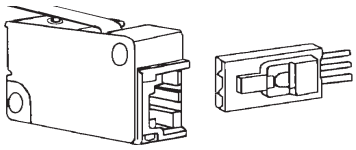
PINOUT STYLES



SOLID STATE BASIC SWITCH

Digital Hall effect sensors combined with integral magnets produce the VX series mechanically operated solid state sensors. When actuated, the sensor produces a sinking output. Mounting dimensions and mechanical characteristics are similar to MICRO SWITCH's popular V3 Series electromechanical snap-action switches.

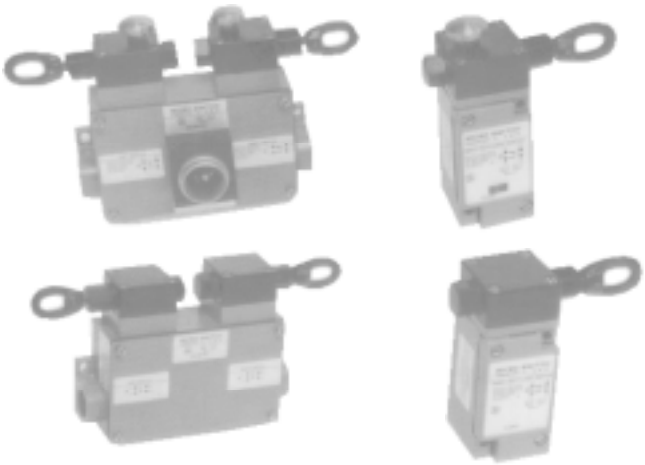
Catalog Number	Operating Force	Price
VX10-A2	0.2 ± .1 oz	$ 5.60
VX10-A3	.10 ± .07 oz	5.60



Connectors are not furnished with switches. Use MICRO SWITCH # VX1A which is AMP # 102241-1 connector & receptacle unassembled. OR MICRO SWITCH # VX1A-01 connector & receptacle pre-assembled with 5.4 " 24 ga. lead wires.

CABLE PULL LIMIT SWITCHES

CLS Series Cable Pull Limit Switches provide a means to manually force disconnection of a normally closed control circuit by pulling on an attached cable. Cable length may be up to 100 ft. in a straight line for Single Head switches -- up to 400 ft. (200 ft. in each direction) -- for Duplex (double head) switches.



FEATURES

- Offered in Single Head and Duplex (Double Head) versions
- Choice of Momentary or maintained (manual reset) designs
- Direct acting contacts enhance reliability
- Maintained version has broken/slackened cable detection for added safety
- Duplex switches can cover up to 400 ft. cable spans (200 ft. in each direction)
- Single Head switches have one normally open auxiliary contact, while Duplex Head switches have up to three normally open and two normally closed auxiliary contacts.
- Four conduit opening thread size options; 1/2-14 NPT; and 20mm, PF1/2 and PG13.5.
- Compact size of Single Head switches -- as compared to other units available -- fits into tight spaces.
- Sealed to NEMA 1, 3, 4, and 13.
- Smart Distributed System output available on Duplex version for monitoring.
- UL listed CSA certified Designed to meet IEC standards.
- Available with indicators and high visibility pilot lights.

MOMENTARY (CONTACT SWITCH) OPERATING HEAD

Momentary switches cause contact transfer if the cable is manually pulled and held. When the cable is released, switch contacts return to their original state. Momentary switches have either direct-acting contacts or snap-action contacts (for non-safety applications).

MAINTAINED (MANUAL RESET SWITCH) OPERATING HEAD

Maintained switches cause contact transfer if the cable is pulled, slackened or broken. When this occurs, the switch contact will remain actuated until the switch is reset by manually depressing the reset button located on the operating head. Disconnection of the normally closed control circuit contacts will occur if the cable is slackened or broken. A tension indicator is provided for easy switch adjustment.

Below is a sample of popular listings.

SINGLE HEAD

Cat. No.	Body	Basic Switch	Switch Action	Price
CLSB4A	Blue with 1/2 NPT	1NO - 1NC Direct Acting	Maintained Manual Reset	$ 139.26
CLSB4B			Momentary	139.26
CLSB6A		1NO - 1NC Direct Acting 120V Neon Indicator	Maintained Manual Reset	155.60
CLSB7A		Same with 24V LED		155.60
DUPLEX (DOUBLE HEAD)				
2CLSB1A1A	Blue with 1/2 NPT	1NO - 1NC Direct Acting Both Sides; 120V-6W Red Pilot Light	Maintained Both Sides	338.43

KEY OPERATED SAFETY INTERLOCK SWITCHES

MICRO SWITCH GK Series Key Operated Safety Interlock Switches enhance operator safety when added to hinged or sliding guard doors, screens, and protective covers or enclosures. When an operator opens the door, the actuator key mounted on the door is removed from the switch's operating head. This action actuates the contact block, which opens the machine's electrical control circuit. The control circuit remains open until the protective door is closed and the key is reinserted.

FEATURES

- Superior resistance to tampering -- lessens the possibility of anyone picking the locking mechanism by external means.
- Heavy duty construction -- withstands harsh industrial environments.
- Built-in compensation for key misalignment -- requires only minimal adjustment over life of machine.
- Detent versions have adjustable key extraction force -- helps prevent false "door ajar" messages and machine chatter.
- IP67, NEMA 4 sealed enclosure -- withstands high-pressure washdown.
- Direct PLC interface compatible.
- UL listed, CSA and CE certified.

The unique design of the operating head helps prevent someone from defeating the keylock mechanism by using external means other than the actuator key provided by MICRO SWITCH.

The contact blocks have screw terminals that enable the use of spade wiring terminals, complying with global safety requirements. Galvanically isolated contacts permit wiring normally closed and normally open contacts to different loads and polarities.

The forced disconnect mechanism on normally closed contacts conforms to IEC947-5-1.

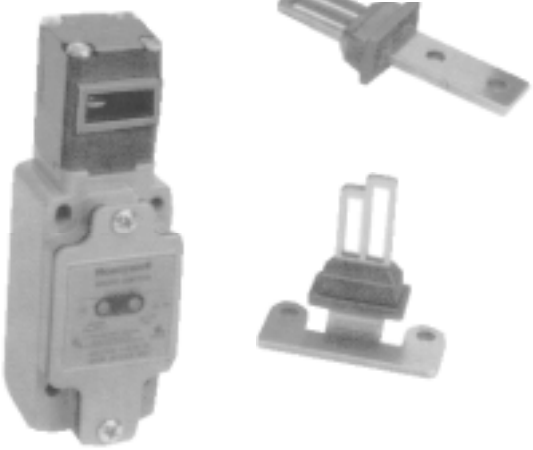
There are two styles of operating heads. The standard versions require the key to be physically held in the head -- or the key will be ejected from the head. Adjustable key extraction force (0 to 4 lbs./17.8N) is available on catalog listing with the detent feature.

The GK Series has a true universal voltage, single-LED indicator option that eliminates the need to stock multiple products for different electrical loads. In addition, and 18 to 30 VDC, dual-LED indicator option facilitates monitoring output and power to speed-up troubleshooting.

Below is a sample of popular listings

Catalog Number	Body Type	Housing Conduit Size	Basic Switch	Head *	Key	Price
GKAA1E1	DIN, non-plug in, blue body/ black head	1/2 In. NPT	SPDT snap action, positive break	Unassembled to body without detent feature	Straight	$ 93.36
GKAA1K1				Same, with detent feature	Straight	110.47
GKAA1E2				Unassembled to body without detent feature	90 Degree	93.36
GKAA1K2				Same, with detent feature	90 Degree	110.47
GKFA1E1	DIN, non-plug in with 1 LED, blue body/ black head			Unassembled to body without detent feature	Straight	108.92
GKFA1E2					90 Degree	108.92
GKFA1K1				Same, with detent feature	Straight	126.03
GKFA1K2					90 Degree	126.03

***** Heads may be rotated to any one of the four sides of the switch.



DIGITAL POSITION SENSORS

2SSP Series position sensors are 3 pin in-line plastic packages for printed circuit board mounting with a single output. They have magnetoresistive material integrated on silicon and encapsulated in a plastic package. The integrated circuit provides a digital output in response to very low magnetic fields. Though this signal is identical to our digital Hall effect sensors, it can be achieved by magnetoresistive sensors at much greater sensor-to-magnet distances. For example, the 2SSP sensing distance is approximately one inch, when operated by a MICRO SWITCH 101MG3 magnet.

FEATURES

- Low gauss operation can extend sensing distance to one inch or more, depending on magnet size.
- Digital current sinking output.
- Omnipolar -- can be operated with either North or South magnetic pole.
- Operating Speed: 0 to over 100 kHz
- Small size: .18 x .18 inch
- 3-pin, in-line PC board terminals on .10-inch mounting centers.

Catalog Number		2SSP
Supply Voltage (VDC)		6 to 24
Supply Current (mA max.)		13.5
Output Type		Sink
Output Voltage (V) @ 20mA		.40 max.
Output Current (mA max.)		20
Leakage Current (uA max.)		10
Magnetics Type		Omnipolar
Magnetic Gauss Char. & Temp.		
-20 to 85 ° C	Max. Op.	25
	Min. Rel.	5
	Max. Dif.	7
25 ° C Typ.	Typ. Op.	15
	Typ. Rel.	11
	Typ. Dif.	4
Price		$ 4.30

The SS1 Series Position Sensor is a 3 pin plastic package for surface-mount assembly. It is identical to the industry standard SOT-89 package.

FEATURES

- Small-size SOT89 style package (.177 x .136 x .059 inches) surface mounts on PC boards and flexible circuits.
- Available in bulk or on tape and reel
- Reverse polarity protection
- Current sinking output
- Sensitive magnetic characteristics
- Compatible with pick-and-place equipment for automated assembly operations.
- Operating speed: 0 to over 100 kHz

Catalog Number		SS11
Magnetic Type		Bipolar
Supply Voltage (VDC)		4.5 to 24
Supply Current (mA)		4 typ. 8.7 max.
Sinking Output (mA)		20 max.
Output Voltage (V)		0.15 typ. 0.40 max.
Output Leakage Current, Released (uA) (Leakage into sensor)		10
Output Switching Time (u sec.)		
Rise (10% to 90%)		0.2 typ. 1.5 max.
Fall (90% to 10%)		0.5 typ. 1.0 max.
Magnetic Gauss Char. & Temp.		
0 to 85 ° C	Max. Op.	150
	Min. Rel.	-150
	Min. Dif.	50
-40 to 125 ° C	Max. Op.	200
	Min. Rel.	-200
	Min. Dif.	40
25 ° C	Typ. Op.	40
	Typ. Rel.	-40
	Typ. Dif.	80
Price		$ 2.10

SR position sensors feature single output and environmentally protected housings. The aluminum 103SR and plastic SR3 housings have color coded leadwires.

FEATURES

- Current sinking or current sourcing output
- Rugged, sealed threaded aluminum housing NEMA 3, 3R, 3S, 4, 12 and 13 requirements. NOTE: Stainless stell housing for NEMA 4X available on special order.
- 20 gauge, 6 inch stranded leadwires, color coded and teflon inlsulated or 1 meter jacketed cable. NOTE: To order 1 meter jacketed leads, change the -1 at the end of the
- Adjustable mounting

103SR Series

Catalog Number		103SR11A-1	103SR12A-1	103SR13A-1
Supply Voltage (VDC)		4.5 to 5.5	6 To 24	4.5 to 24
Supply Current (mA max.)		4	10	10
Output Type		Source	Source	Sink
Output Voltage (V max.)		(Vs-1.5)	(Vs-1.5)	0.4
Output Current (mA max.)		20	20	20
Magnetics Type		Unipolar	Unipolar	Unipolar
Magnetic Gauss Char. & Temp.				
0 to 70 ° C	Max. Op.	735	475	475
	Min. Rel.	25	135	135
	Max. Dif.	50	40	40
-40 to 100 ° C	Max. Op.	--	495	495
	Min. Rel.	--	40	40
	Min. Dif.	--	35	35
25 ° C Typ.	Typ. Op.	350	330	400
	Typ. Rel.	215	245	200
	Typ. Dif.	135	85	85
Price		$ 21.75	$ 20.25	$ 20.25

FEATURES

- Completely enclosed housing
- Color coded leadwires
- High speed, no-touch operation over 100 kHz possible
- Adjustable mounting
- Reverse polarity protection (bipolar listing)
- Meets NEMA 3, 3R, 3S, 4, 4X, 12 and 13 requirements.

Catalog Number		SR3F-A1	SR3B-A1
Supply Voltage (VDC)		4.5 to 24	4.5 to 24
Supply Current (mA max.)		18.0	15.0
Output Type		Sink	Sink
Output Voltage (V max.)		0.40	0.40
Output Current (mA max.)		10	10
Magnetics Type		Unipolar	Bipolar
Magnetic Gauss Char. & Temp.			
-40 to 85 ° C	Max. Op.	450	130
	Min. Rel.	170	-130
	Min. Dif.	20	40
25 ° C Typ.	Typ. Op.	400	90
	Typ. Rel.	185	-90
	Typ. Dif.	20	80
Price		$ 17.00	$ 17.00

SR3 Series

ANALOG POSITION SENSORS

Analog devices are designed to produce an ouptut voltage proportional to the intensity of the magnetic field to which it is exposed.

The 103SR features a single adjustable linear output. An external bias resistor can be used to vary output voltage. The rugged aluminum housing has color coded leadwires.

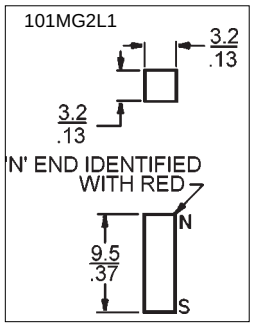
FEATURES

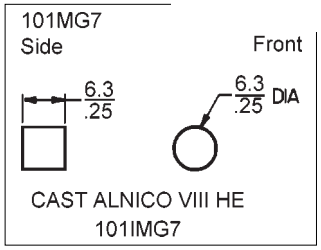
- Rugged, sealed threaded aluminum housing NEMA 3, 3R, 3S, 4, 12 and 13 requirements.
- 22 gauge, 6 inch stranded leadwires, color coded and teflon insulated
- Adjustable mounting

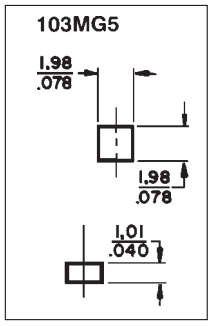
Catalog Number	103SR3F-5
Supply Voltage (VDC)	4 to 10
Supply Current (mA max.)	3.5
Output Voltage (V)	1.75 to 2.25V at 5V, 0 gauss
Sensitivity	(-400 to +400 gauss) 0.75 to 1.06mV/gauss
Price	$ 24.00

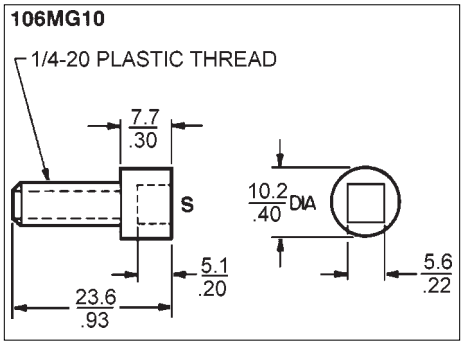
MG SERIES MAGNETS

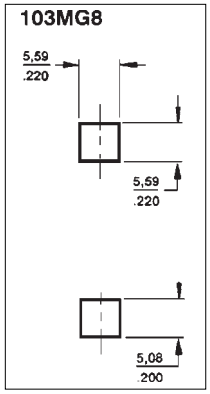
Several bar and ring magnets for actuating Hall effect sensors are availaable from MICRO SWITCH. Bar magnets, in various sizes and strengths, are ideal for sensors with unipolar magnetic characteristics. The ring magnets, with alternate South and North poles on the outside diameter, are especially useful for sensors with bipolar magnetic characteristics. For more information on magnets, request a copy of MICRO SWITCH Sensing and Control Catalog No. 20.

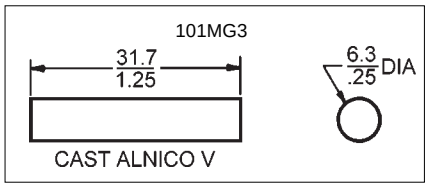


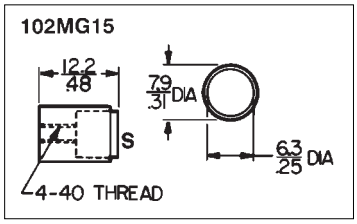


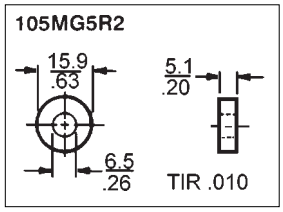


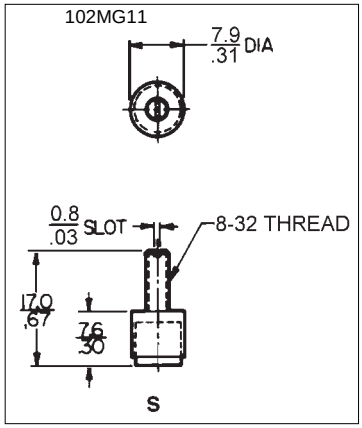












MAGNET SELECTION GUIDE

This guide is designed to aid in determining the best magnet for use with a Hall effect sensor. There must be adequate magnetic gauss to operate the sensor at the correct distance. By using the maximum operate magnetic gauss characteristics from the sensor specifications, you can determine which magnet will operate the sensor.

Temp. Range	Gap Distance & Gauss Level @ 25°C .010 In.	.030 In.	.050 In.	.100 In.	.150 In.	.200 In.	Cat. No.	Price
-40 to 300°C	1460	1320	1170	575	420		101MG3	$ 10.20
-40 to 250°C	1050	900	755	810	295	195	101MG7	3.55
-40 to 140°C				470			102MG11	6.40
-40 to 140°C							102MG15	5.10
-40 to 250°C	730	550	410	205	115	75	101MG2L1	5.10
0 to 100°C	700	520	375	175	85	45	105MG5R2	7.90
							105MG5R4	7.90
-40 to 250°C	1110	630	365	120	55	25	103MG5	1.50
	2620	2100	1600	940	550	350	103MG8	6.65
	2620	2100	1600	940	550	350	106MG10	9.45

NOTE: No. 105MG5R2 is a ring magnet with 2 pole pairs and No. 105MG5R4 has 4 pole pairs.

GT1 HALL EFFECT GEAR TOOTH SENSORS

1GT1 Series Gear Tooth Sensors use a magnetically biased Hall effect integrated circuit to accurately sense movement of ferrous metal targets. This specially designed I.C., with discrete capacitor and bias magnet, is sealed in a probe type package for physical protection and cost effective installation.

Units will function from a 4.5 to 24 VDC power supply. Output is digital, current sinking (open collector). Reverse polarity protection is standard. If power is inadvertently wired backwards, the sensor will not be damaged. Built-in protection against pulsed transients to +60V, -40V is also included.

FEATURES

- Senses ferrous metal targets
- Digital current sinking output (open collector)
- Better signal-to-noise ratio than variable reluctance sensors, excellent low speed performance, output amplitude not dependent on RPM
- Sensor electronically self-adjusts to slight variations in runout and variations in temperature, simplifying installation and maintenance
- Fast operating speed -- over 100kHz
- EMI resistant
- Reverse polarity protection and transient protection (integrated into Hall I.C.)
- Wide continuous operating temperature range (-40° to 150° C), short term to 160° C

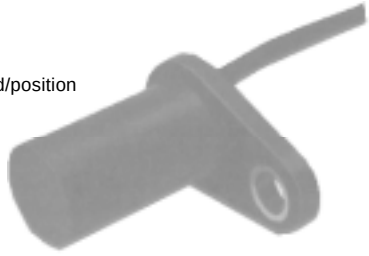
TYPICAL APPLICATIONS

Automotive:

- Camshaft and crankshaft speed/position
- Transmission speed
- Tachometers
- Anti-skid/traction control

Industrial:

- Sprocket speed
- Chain link conveyor speed and distance
- Stop motion detector
- High speed low cost proximity
- Tachometers, Counters



Catalog No. 1GT101DC
Price $ 21.28

UNAMPLIFIED PRESSURE SENSORS

24PC and 26PC Series Miniature Gage & Differential Sensors

Pressure sensors contain a silicon chip with an integral sensing diaphragm and four piezoresistors. Pressure applied on the diaphragm causes it to flex, changing the resistance. This causes a low level output voltage proportional to pressure. Pressure sensors are used in applications which require precise pressure measurement, where the benefits of repeatability, low hysteresis, and long term stability are important.

24PC Series Gage and Differential / Unamplified -- Non compensated.
Noncompensated pressure sensors, excited by constant current instead of voltage, exhibit temperature compensation of Span. 24PC Series sensors were tested over four different current excitation levels. When compared to voltage excitation data, the 2 mA units exhibited an improvement in Span performance over temperature of 7 to 1, without adding any extra components.

24PC Series Performance Characteristics at 10.0 ±0.01 VDC Excitation, 25 ° C

	Typical
Excitation	10 VDC
Null Shift, 25 ° to 0 °, 25 ° to 50 ° C	± 0.5 mV
Null Offset	0 mV
Sensitivity Shift, 25 ° to 0 °, 25 ° to 50 ° C	± 5.0 %Span *
Input Resistance	5.0 K ohms
Output Resistance	5.0 K ohms

* Can be significantly reduced with constant current excitation (2mA)

Catalog No.	Pressure Range	Span, mV, Typ.	Type of Port	Pressure Measurement	Price
24PCAFA1D	1 psi	45	Straight	Differential	$ 14.25
24PCAFA1G	1 psi	45	Straight	Gage	14.25
24PCBFA1D	5 psi	115	Straight	Differential	14.25
24PCBFA1G	5 psi	115	Straight	Gage	14.25
24PCCFA1D	15 psi	225	Straight	Differential	14.25
24PCCFA1G	15 psi	225	Straight	Gage	14.25
24PCDFA1D	30 psi	330	Straight	Differential	14.25
24PCDFA1G	30 psi	330	Straight	Gage	14.25
24PCEFA1D	0.5 psi	35	Straight	Differential	14.65
24PCEFA1G	0.5 psi	35	Straight	Gage	14.65
24PCFFA1G	100 psi	225	Straight	Gage	14.25
24PCFFM1G	100 psi	225	1/4-28 UNF Thread	Gage	15.65
24PCGFA1G	250 psi	212	Straight	Gage	14.65
24PCGFM1G	250 psi	212	1/4-28 UNF Thread	Gage	16.10

NOTE: All Sensors listed above have fluorosilicone seal and 1 x 4 terminals

Gage Pressure Measurement Type

Differential Pressure Measurement Type

26PC Series Performance Characteristics at 10.0 ±0.01 VDC Excitation, 25 ° C

	Typical
Excitation	10 VDC
Null Shift, 25 ° to 0 °, 25 ° to 50 ° C	± 1.0 mV Max.
Null Offset	0 mV
Sensitivity Shift, 25 ° to 0 °, 25 ° to 50 ° C	± 1.0 %Span Max.
Input Resistance	7.5 K ohms
Output Resistance	2.5 K ohms

26PC Series Gage and Differential / Unamplified -- Temperature Compensated and Calibrated for Span over 0 to 50 ° C.

Catalog No.	Pressure Range	Span, mV, Typ.	Type of Port	Pressure Measurement	Price
26PCBFA1D	5 psi	50	Straight	Differential	$ 21.00
26PCBFA1G	5 psi	50	Straight	Gage	21.00
26PCCFA1D	15 psi	100	Straight	Differential	21.00
26PCCFA1G	15 psi	100	Straight	Gage	21.00
26PCDFA1D	30 psi	100	Straight	Differential	21.00
26PCDFA1G	30 psi	100	Straight	Gage	21.00

NOTE: All Sensors listed above have fluorosilicone seal and 1 x 4 terminals

NEED MORE INFORMATION?
MICRO SWITCH Pressure and Airflow Sensors are covered in detail in MICRO SWITCH Sensing and Control Catalog No. 15. Please call any of the toll-free numbers on the back cover of this catalog and we shall be glad to send you a copy.

ABSOLUTE, DIFFERENTIAL, GAGE, VACUUM GAGE/AMPLIFIED PRESSURE SENSORS

140PC Series Performance Characteristics at 8.0 ±0.01 VDC Excitation, 25 ° C

	Typical
Excitation	8 VDC
Supply Current	8.00 mA
Current Sourcing Output	10 mA, Max.
Null Offset (141 / 142PC)	1.00 V
Null Offset (143PC)	3.50 V
Null Offset	
142PC15A @ 2 psia	1.67 V
142PC30A @ 2 psia	1.33 V
Output at Full Pressure	6.00 V
Span (141 / 142 / 143PC)	5.00 V
Span	
142PC15A	4.33 V
142PC30A	4.67 V

Catalog No.	Pressure Range psi	Combined Null & Sensitivity Shift (%Span) 25 to 5° 25 to 45°C Typ.	25 to 5° 25 to 45°C Max.	25 to -28° 25 to +63°C Max.	25 to -40° 25 to 85°C Max.	Sensitivity V/psi	Over pressure psi, Max.	Price
140PC Series, Vacuum Gage Type								
141PC05G	0 - 5	± 0.50	--	± 1.00	± 2.00	1.000	20	$ 76.00
141PC15G	0 - 15	± 0.50	--	± 1.00	± 2.00	0.333	45	76.00
140PC Series, Gage Type								
142PC01G	0 - 1	--	± 1.50	--	--	5.000	20	83.00
142PC02G	0 - 2	--	± 1.50	--	--	2.500	20	83.00
142PC05G	0 - 5	± 0.50	--	± 1.00	± 2.00	1.000	20	76.00
142PC15G	0 - 15	± 0.50	--	± 1.00	± 2.00	0.333	45	76.00
140PC Series, Differential Type								
142PC01D	0 - 1	--	+ 1.50	--	--	5.000	20	83.00
142PC05D	0 - 5	± 0.50	--	± 1.00	± 2.00	1.000	20	76.00
142PC15D	0 - 15	± 0.50	--	± 1.00	± 2.00	0.333	45	76.00
142PC30D	0 - 30	± 0.50	--	± 1.00	± 2.00	0.167	60	76.00
143PC03D	± 2.5	--	--	± 1.00	± 1.50	1.000	20	76.00
140PC Series, Absolute Type								
142PC15A	0 - 15	± 0.50	--	± 1.00	± 2.00	0.333	45	83.00
142PC30A	0 - 30	± 0.50	--	± 1.00	± 2.00	0.167	60	83.00

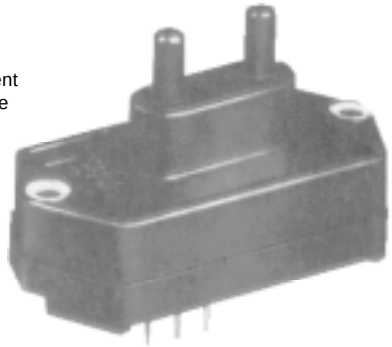
LOW PRESSURE DIFFERENTIAL, GAGE, VACUUM GAGE / AMPLIFIED PRESSURE SENSORS

160 PC Series Performance Characteristics at 8.0 ±0.01 VDC Excitation, 25 ° C

	Typical
Excitation	8.00 VDC
Supply Current	8.00 mA
Current Sourcing Output	10 mA, Max.
Null Offset (161/162/164PC)	1.00 V
Null Offset (163PC)	3.50 V
Output at Full Pressure (161/162/164PC)	6.00 V
Output at Full Vacuum (163PC)	1.00 V
Span (161/162/164PC)	5.00 V
Span (163PC)	5.00 V

Catalog No.	Pressure Range " H_2O	Combined Null & Sensitivity Shift (%Span) 25 to 5° 25 to 45°C Max.	25 to -18° 25 to +63°C Max.	25 to -40° 25 to 85°C Max.	Sensitivity V/ " H_2O	Over pressure psi, Max.	Price
160PC Series, Vacuum Gage and GageType							
161PC01D	0-27.68	--	± 1.00	± 2.00	0.18	5	$ 105.65
162PC01G	0-27.68	--	± 1.00	± 2.00	0.18	5	105.65
160PC Series, Differential Type							
162PC01D	0-27.68	--	± 1.00	± 2.00	0.18	5	105.65
163PC01D36	±5	± 1.00	--	--	0.50	5	105.65
164PC01D37	0-10	± 1.00	--	--	0.50	5	105.65
164PC01D76	0-5	± 1.25	--	--	1.00	5	105.65

160PC Series
- Low pressure measurement
- PCB terminals on opposite side from the ports
- Fully signal conditioned



240PC Series
- Internal O-Ring seals for contamination resistance
- Screw-in or flat-pack mounting
- Rugged aluminum housing

HIGH PRESSURE GAGE, VACUUM GAGE/AMPLIFIED PRESSURE SENSORS

240PC Series Performance Characteristics at 8.0 ±0.01 VDC Excitation, 25 ° C

	Typical
Excitation	8 VDC
Supply Current	8.00 mA
Current Sourcing Output	10 mA, Max.
Null Offset (241 / 242PC)	1.00 V
Null Offset (243PC)	3.50 V
Output at Full Pressure	6.00 V
Span (241 / 242PC)	5.00 V
Span (243PC)	± 2.5

Catalog No.	Pressure Range psi	Combined Null & Sensitivity Shift (%Span) 25 to -18° 25 to +63°C Max.	25 to -40° 25 to 85°C Typ.	Sensitivity V/ psi	Over pressure psi, Max.	Price
241 / 242PC Series, Gage and Vacuum Gage, Buna-N O-Ring Port Seal						
241PC15M *	0 - 15	± 1.00	± 2.00	0.330	45	$144.45
242PC60G	0 - 60	± 1.50	± 2.00	0.083	120	138.85
242PC100G	0 - 100	± 1.00	± 2.00	0.050	200	138.85
242PC150G	0 - 150	± 1.50	± 3.00	0.033	300	138.85
242PC250G	0 - 250	± 1.00	± 2.00	0.020	500	138.85
243PC Series, Vacuum Gage, Buna-N Port Seal						
243PC15M *	+ 15	± 1.00	± 2.00	0.167	50	144.45

HEAVY DUTY DC ADJUSTABLE, 2-WIRE ANALOG PRESSURE SENSORS

SSPB Series
- Rugged diecast zinc plug-in limit switch style housing
- 2-wire, 4-20 mA output current linearly proportional to pressure
- Sealed to meet NEMA 1, 3, 3R, 4, 6, 6P, 12, 13
- Field adjustable zero and span
- Field adjustable up to 15% of total range
- Protected against false pulse, transients and industrial noise
- 0 to +50 ° C operating and compensated temperature
- UL Listed

SSPB Series Performance Characteristics, 25 ° C

	Min.	Max.
Supply Voltage	12.0 VDC	36.0 VDC
Hysteresis & Repeatability		
@ nominal span	--	+ 0.5 % Span
@ max. span comp.	--	+ 1.5 % Span
Response Time	--	2.0 msec
Change in Current	4 to 20 mA proportional to pressure	
Null Pressure Setting (4mA output)	0 psia up to 15% of nominal pressure range @ full scale pressure	
Full pressure Setting (20 mA output)	25 to 100% of nominal pressure range @ 0 psia Null	

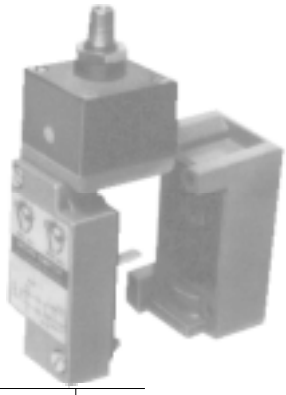
SSPB Series, Gage Pressure

Catalog No.	Nominal Pressure Range psig	Over Pressure Max. psi	Sensitivity Range mA/psi	Price
SSPB0015V	0 - 15	30	1.07 to 4.27	$ 313.85
SSPB0100V	0 - 100	200	0.16 to 0.64	313.85
SSPB0250V	0 - 250	500	0.064 to 0.256	313.85

HEAVY DUTY AC ADJUSTABLE SETPOINT / 2-WIRE DIGITAL PRESSURE SENSORS

SSPC Series

- Rugged diecast zinc plug-in limit switch style housing
- Field adjustable setpoint and differential
- Sealed to meet NEMA 1, 3, 3R, 4, 6, 6P, 12, 13
- Protected against false pulse, transients, industrial noise and NEMA noise
- -25 to +85 ° C storage temperature
- 0 to +50 ° C operating and compensated temperature
- UL Listed



SSPC Series Performance Characteristics, 25 ° C

	Min.	Typ.	Max.
Supply Voltage	92.0 VAC	115VAC	132 VAC
Repeatability @ 25 ° C Comp. temp. range	 -- --	 -- --	 + 0.5 % Adj. range
Response Time Max (no time delay)	On - 20 msec		Off - 10 msec
Rate of Operation	--	--	900 per minute
Power Dissipation	0.35 VA excluding load		
Saturation Voltage	9 V max with 0.5 Amp load		
Load Current (N.O.)	0.5 Amp max. continuous over full temperature range; 2.7 Amp. max. inrush		
Leakage Current (Off state)	2.0 mA RMS, max.		

SSPC Series, Gage Pressure

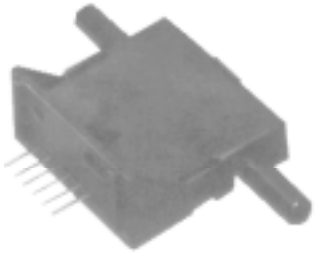
Catalog No.	Nominal Pressure Range psig	Over Pressure Max. psi	Adjustable Setpoint Range	Differential Min.	Price
SSPC0015V	0 - 15	30	1.5 - 15	30% @ 1.5 psi 10% @ F.S.	$ 307.65
SSPC0100V	0 - 100	200	10 - 100	10%	307.65
SSPC0250V	0 - 250	500	25 - 250	10%	307.65

MICROBRIDGE MASS AIRFLOW SENSORS

The microbridge mass airflow sensor operates on the theory of heat transfer due to mass airflow directed across the surface of the sensing element. Output voltage varies in proportion to the mass air or other gas flow through the inlet and outlet ports of the package.

AWM Series Features

- State-of-the-art silicon micromachining
- Sensitive to low flows -- 0.1 sccm to 20 LPM
- Adaptable for use with higher flows
- Fast response time
- Analog output
- Low power consumption
- Repeatable response
- Laser-timmed interchangeability
- Accurate, low cost sensing
- In-line printed circuit board terminals
- Standard .100 " mounting centers
- Accurate sensing of low pressure 0.001 to 2 " H_2O (.003 to 5mBar)



Application

- Damper control for heating, ventilation, and air conditioning systems
- Gas analyzers
- Low vacuum control
- Process control
- Medical respirators and spirometers
- Demand oxygen supply
- Anesthesia control
- Gas metering

AWM2000 Series Microbridge Mass Airflow / Unamplified

AWM2000 Performance Characteristics

	Min.	Typical	Max.
Excitation	8.0 VDC	10 VDC	15 VDC
Power Consumption	--	--	30 mW
Null Voltage	-1.0 mV	0.0 mV	+ 1.0 mV
Response Time	--	--	3.0 msec
Max. Common Mode Pressure	--	1.0 psi	25 psi
Sensor Resistance	--	5	--
Sensor Current	--	Kohms	0.6 mA
Operating Temperature Range	-25 to +85 ° C (-13 to +185 ° F)		

AWM2000 Microbridge Mass Airflow / Unamplified Sensor

Catalog No.	AWM2150V	AWM2200V	AWM2300V
Flow Range (Full Scale) Pressure Range (psi)	± 30 sccm/ ± .05" H_2O (.12mBar)	± 60 sccm (±20 sccm)/ ± 2.0 " H_2O (.5mBar)	± 1000 sccm/ ± 1.3 ± .1 " H_2O (3.2mBar)
Output Voltage @ Trim Point	2.5 mV @ 5 sccm	20 mV @ 2 " H_2O	50 mV @ 650 sccm
Null Voltage Shift, Typ. +25 to 85 ° C	+ ± 0.14 mV	± 0.05 mV	± 0.14 mV
Output Voltage Shift 25 to +25 ° C 25 to 85 ° C	 + 2.5% Reading - 2.5% Reading	 + 22.0% Reading - 22.0% Reading	 + 5% Reading - 15% Reading
Repeatability & Hysteresis	± 0.35% Reading	± 0.35% Reading max.	± 1% Reading max.
Price	$ 77.25	$ 71.10	$ 69.05

AWM3000 Series Microbridge Mass Airflow / Amplified

AWM3000 Series

- Laser trimmed for interchangeability
- Flow sensing up to 1.0 LPM

AWM3000 Performance Characteristics

	Min.	Typical	Max.
Excitation	8.0 VDC	10 VDC	15 VDC
Power Consumption	--	30 mW	50 mW
Response Time	--	1.0 msec	3.0 msec
Max. Common Mode Pressure	--	--	25 psi
Operating Temperature Range	-25 to +85 ° C (-13 to +185 ° F)		

AWM3000 Microbridge Mass Airflow / Amplified Sensor

Catalog No.	AWM3100V	AWM3200V	AWM3300V
Flow Range (Full Scale) Pressure Range (psi)	+ 200 sccm/ + .2" H_2O (.5mBar)	+ 2.0 " H_2O (.5mBar)	+ 1000 sccm/ + 1.3 ± .1 " H_2O (3.2mBar)
Output Voltage @ Trim Point	5 VDC @ 200 sccm	5 VDC @ 2 " H_2O	5 VDC @ 1000 sccm
Null Voltage	1.00 ± .05 VDC	1.00 ± .08 VDC	1.00 ± .10 VDC
Null Voltage Shift, +25 to 85 ° C + 25 to - 25 ° C	 ± 25 mV ± 25 mV	 ± 25 mV ± 25 mV	 ± 25 mV ± 25 mV
Output Voltage Shift 25 to -25 ° C 25 to 85 ° C	 - 4.0% Reading + 4.0% Reading	 + 24.0% Reading - 24.0% Reading	 - 5.0% Reading + 5.0% Reading
Repeatability & Hysteresis	± 0.50% Reading max.	± 0.50% Reading max.	± 1% Reading max.
Price	$ 89.65	$ 91.70	$ 89.65

HIGH FLOW MASS AIRFLOW SENSORS / AMPLIFIED

In-Line Flow Measurement

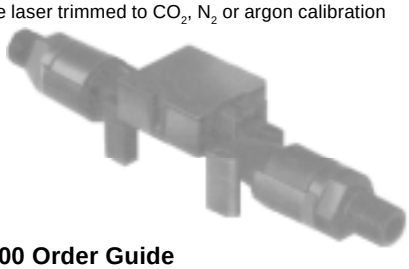
AWM5000 Series Microbridge Mass Airflow sensors feature a venturi type flow housing. They measure flow as high as 20 standard liters per minute (SLPM) while inducing a maximum pressure drop of 2.25 " H_2O. The microbridge chip is in direct contact with the flow stream, greatly reducing error possibilities due to orifice or bypass channel clogging.

Rugged, Versatile Package

The rugged plastic package has been designed to withstand common mode pressures up to 50 psi, and the small sensing element allows 100 g's of shock without compromising performance. The ports are separate moldings which can be modified for alternative fittings with a minimum of toling cost or performance impact. The snap-in "Molex" compatible connector provides reliable connection in demanding applications.

Features

- Variety of flow connections possible
- Venturi design
- Remote mount
- Active laser trimmed to CO_2, N_2 or argon calibration



AWM5000 Order Guide

Catalog No.	Flow Range	Price
AWM5101VA	5 SLPM, Argon calibration	$ 175.00
AWM5101VC	5 SLPM, CO_2 calibration	175.00
AWM5101VN	5 SLPM, N_2 calibration	150.00
AWM5102VA	10 SLPM, Argon calibration	175.00
AWM5102VC	10 SLPM, CO_2 calibration	175.00
AWM5102VN	10 SLPM, N_2 calibration	150.00
AWM5103VA	15 SLPM, Argon calibration	175.00
AWM5103VC	15 SLPM, CO_2 calibration	175.00
AWM5103VN	15 SLPM, N_2 calibration	150.00
AWM5104VA	20 SLPM, Argon calibration	175.00
AWM5104VC	20 SLPM, CO_2 calibration	175.00
AWM5104VN	20 SLPM, N_2 calibration	150.00

AWM5000 Series Specifications

Recommended power supply		10 ± .01 VDC
Minimum power supply		8.0 VDC
Maximum power supply		15 VDC
Power consumption		100 mW max.
Output type		Linear, 1 to 5 VDC
Calibration gas		Suffix VA = Argon Suffix VC = CO_2, Carbon dioxide: N_2O, Nitrous Oxide Suffix VN = N_2, Nitrogen: O_2, Oxygen
Gas flow range	AWM5101	0 -5 SLM
	AWM5102	0 - 10 SLM
	AWM5103	0 - 15 SLM
	AWM5104	0 - 20 SLM
Output @ laser trim point		5 VDC @ Full scale flow
Differential pressure @ full scale		5 SLPM = 0.25 " H_2O 10 SLPM = 0.75 " H_2O 15 SLPM = 1.6 " H_2O 20 SLPM = 2.25 " H_2O
Null output		1.00 ± 0.05 VDC
Null output shift, -20 to +70 ° C		± .050 VDC typ., ± .200 VDC max.
Full scale output shift -20 to +25 ° C, +20 to 70 ° C		Suffix VA or VN = ± 7.0% Reading, Sufffix VC = ± 10.0% Reading
Linearity error		± 3.0% Reading
Repeatability & Hysteresis		± 0.5% Reading
Response time		60.0 msec max.
Temperature range		- 20 to + 70 ° C (-4 to +158 ° F)
Termination (0.100 " centers)		0.025 " square
Connector (4pin receptacle)		Molex 14-56-2042
Maximum common mode pressure		50 psi max.

US SERIES

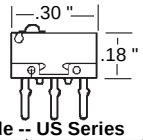
FEATURES

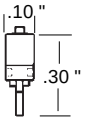
- MICRO SWITCH'S smallest snap-action switch
- Choice of low energy or power duty electrical rating
- Variety of integral actuators
- Form C single-pole double-throw (SPDT) circuitry

ELECTRICAL RATINGS

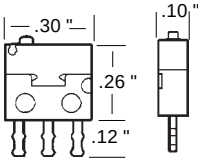
Voltage	Resistive Load Gold Contacts US10 Type	Silver Contacts US20 Type
30 VDC	0.1 A	0.5A
125	0.1 A	0.1A

PCB Term.





Solder Terminals



Order Guide -- US Series

Contact Type	Actuator	Oper. Force max. ounces	Catalog No. Solder Term.	Price	Catalog No. P.C. Straight Terminals	Price
Gold, 0.1 Amp	A pin plunger	3.527	US10D10A00	$ 2.05	US10D20A00	$ 2.05
	C flat lever	.88	US10D10C00	2.20	US10D20C00	2.20
	E simulated roller lever	1.058	US10D10E00	2.20	US10D20E00	2.20
Silver, 0.5 Amp	A pin plunger	3.527	US20D10A00	1.95	US20D20A00	1.95
	C flat lever	.88	US20D10C00	2.10	US20D20C00	2.10
	E simulated roller lever	1.058	US20D10E00	2.10	US20D20E00	2.10

UM SERIES SEALED SUBMINIATURE

FEATURES

- Silver or gold contacts
- Variety of integral actuator styles including pin plunger, flat lever, roller lever, and simulated roller lever
- IP50 or IP67 type sealing
- Choice of quick-connect, printed circuit board, solder or leadwire termination
- Form C (SPDT)
- UL, CSA, VDE, and SEMKO marking designations

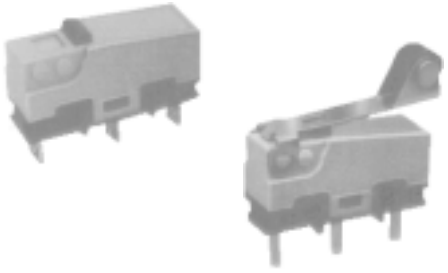
ELECTRICAL RATINGS

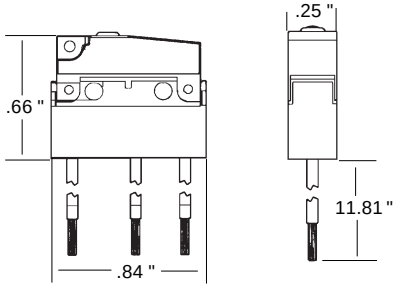
Voltage	UM50E Silver Contacts		UM40B/D Silver Contacts		UM10A/B/D/E Gold Contacts
	Resistive	Inductive	Resistive	Inductive	Resistive
125 VAC	5	3	3	2	0.1
250 VAC	5	3	3	2	0.1
30 VDC	5	3 *	3	2 *	0.1

* Time constant for DC inductive loads: less than 7 msec.
UL File No. E12252, CSA File LR23413M167

Order Guide -- UM Series

Contact Type	Actuator	Oper. Force max. ounces	IP50 Sealed Catalog No. Solder Term.	Price	IP50 Sealed Catalog No. .110 QC Terminals	Price	IP67 Sealed Catalog No. Leadwire Termination	Price
0.1 Amp Gold	A pin plunger	5.3	UM10E11AS1	$ 4.75	UM10E71AS1	$ 4.75	UM10E90AS1	$ 9.95
	C flat lever	2.1	UM10E11BS1	4.95	UM10E71BS1	4.95	UM10E90BS1	10.15
		1.9	UM10E11CS1	4.95	UM10E71CS1	4.95	UM10E90CS1	10.15
		1.6	UM10E11DS1	4.95	UM10E71DS1	4.95	UM10E90DS1	10.15
	E simulated roller lever	1.9	UM10E11ES1	4.95	UM10E71ES1	4.95	UM10E90ES1	10.15
	F roller lever	2.1	UM10E11FS1	5.25	UM10E71FS1	5.25	UM10E90FS1	10.45
2.0 Amp Silver	A pin plunger	5.3	UM35E11AS1	3.85	UM35E71AS1	3.85	UM35E90AS1	8.85
	C flat lever	2.1	UM35E11BS1	4.05	UM35E71BS1	4.05	UM35E90BS1	9.05
		1.9	UM35E11CS1	4.05	UM35E71CS1	4.05	UM35E90CS1	9.05
		1.6	UM35E11DS1	4.05	UM35E71DS1	4.05	UM35E90DS1	9.05
	E simulated roller lever	1.9	UM35E11ES1	4.05	UM35E71ES1	4.05	UM35E90ES1	9.05
	F roller lever	2.1	UM35E11FS1	4.35	UM35E71FS1	4.35	UM35E90FS1	9.35

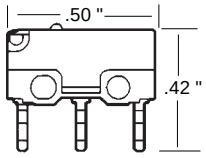


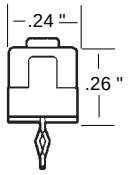


UX SERIES

FEATURES

- Compact size - helps minimize equipment size
- Choice of low energy or power duty electrical ratings
- Variety of integral actuators
- UL/CSA marking designations
- Form C (SPDT circuitry





ELECTRICAL RATINGS

Voltage	Silver Contacts UX40	Silver Contacts UX30	Gold Contacts UX10 Max. Rating	Gold Contacts UX10 Min. Rating
125 VAC *	3 A	1 A	0.1 A	
30 VDC	2 A	1 A	0.1 A	
6 VDC				5 mA
12 VDC				2 mA
24 VDC				1 mA

* UL/CSA rating, UL File No. E12252. UL Standard 1054. CSA file LR23413M167

Order Guide -- UX Series

Contact Type	Actuator	Oper. Force max. ounces	Catalog No. Solder Term.	Price	Catalog No. P.C. Straight Terminals	Price
Gold, 0.1 Amp	A pin plunger	2.65	UX10C10A01	$ 1.30	UX10C30A01	$ 1.30
		5.3	UX10E10A01	1.30	UX10E30A01	1.30
	C flat lever	.88	UX10C10C01	1.50	UX10C30C01	1.50
		1.76	UX10E10C01	1.50	UX10E30C01	1.50
	E simulated roller lever	.95	UX10C10E01	1.50	UX10C30E01	1.50
		1.94	UX10E10E01	1.50	UX10E30E01	1.50
Silver, 0.5 Amp	A pin plunger	2.65	UX30C10A01	1.15	UX30C30A01	1.15
	C flat lever	.88	UX30C10C01	1.35	UX30C30C01	1.35
	E simulated roller lever	.95	UX30C10E01	1.35	UX30C30E01	1.35
Silver, 3.0 Amp	A pin plunger	5.3	UX40E10A01	1.15	UX40E30A01	1.15
	C flat lever	1.76	UX40E10C01	1.35	UX40E30C01	1.35
	E simulated roller lever	1.94	UX40E10E01	1.35	UX40E30E01	1.35