

Basic Switches Standard



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.

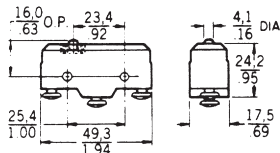
Mounting holes for Types BZ, BM, BA switches accept pins or screws of .139 inch (3.53 mm) diameter. O.P. is normally measured from the top of the actuator to the mounting holes center-line.

FEATURES

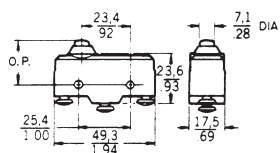
- Sensitive differential travel as low as .0002 to .0003 inches (0,005 to 0,008 mm)
- Power load switching capability to 25 amperes
- Motor handling capacity to 2 horsepower at 250 VAC
- High temperature constructions for up to +400°F (204°C)
- Variety of integral actuators
- Variety of auxiliary actuators
- Variety of terminal designs
- Optional sealed plunger and cover
- Over 50 listings available which meet MIL-S-8805 Qualified products list
- UL recognized CSA certified

TYPICAL DIMENSIONS (For reference only)

BZ Type



BZ-2RD-A2



PIN PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2R-A2	Most applications. Screw terminals	15 Amps L96	2,5-3,61 9-13	0,13 .005	0,01-0,05 .0004-.0020	15,88 .625
BZ-2R	Same as above, Solder terminals	15 Amps L96	2,5-3,61 9-13	0,13 .005	0,01-0,05 .0004-.0020	15,88 .625
BZ-R-A2	Less differential travel	15 Amps L103	1,95-2,5 7-9	0,13 .005	0,005-0,008 .0002-.0003	15,88 .625
BZ-2R5551-A2	Dustproof and splash resistant seal	15 Amps L96	2,5-4,17 9-15	0,13 .005	0,01-0,06 .0004-.0025	15,88 .625
BZ-2R55-A2-S	Best service for sealed construction. Stainless steel spring.	15 Amps L96	2,5-4,17 9-15	0,13 .005	0,01-0,06 .0004-.0025	15,88 .625
BA-2R	Up to 20 ampere load handling. Solder terminals	20 Amps L23	3,89-6,12 14-22	0,25 .010	0,05-0,19 .0020-.0075	16,26 .640
BA-2R-A2	Up to 20 ampere load handling	20 Amps L23	3,89-6,12 14-22	0,25 .010	0,05-0,19 .0020-.0075	16,26 .640
BE-2R-A4	Up to 25 ampere load handling	25 Amps —	3,89-6,12 14-22	0,25 .010	0,05-0,19 .0020-.0075	16,26 .640

*±0,38 mm
±.015 in.

LARGE OVERTRAVEL PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RD-A2	Added overtravel. For manual operation and slow 20° (max.) cam rise	15 Amps L96	2,5-3,61 9-13	1,52 .060	0,01-0,05 .0004-.0020	21,21 .835
BZ-2RDS5551-A2	Dustproof and splash resistant seal. Lower Cost.	15 Amps L96	3,61-5,28 13-19	1,5 .062	0,01-0,063 .0004-.0025	28,20 1.110
BZ-2RDS-A2-S	Applications requiring dustproof and splash resistant seal.	15 Amps L96	3,61-5,28 13-19	1,5 .062	0,01-0,063 .0004-.0025	28,20 1.110
BA-2RB-A2	Up to 20 ampere load handling.	20 Amps L23	3,89-6,12 14-22	2,39 .094	0,05-0,19 .0020-.0075	26,20 1.03
BE-2RB-A4	Up to 25 ampere load handling.	25 Amps —	3,89-6,12 14-22	2,39 .094	0,05-0,19 .0020-.0075	26,20 1.03

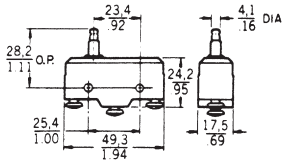
**±0,51 mm
±.020 in.

Basic Switches Standard

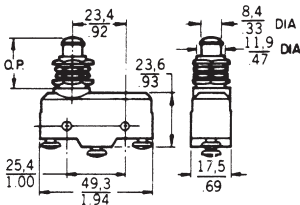
BZ/BA Series

TYPICAL DIMENSIONS (For reference only)

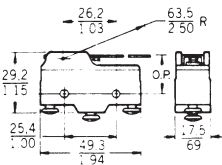
BZ-2RS Type



BZ-2RQ1 Type



BZ-2RW Type



SMALL OVERTRAVEL PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RS-A2	Added overtravel. For in-line operation and with JR auxiliary actuators.	15 Amps L96	2,5-3,61 9-13	1,52 .060	0,01-0,063 .0004-.0025	28,20 1.110
BZ-2RS5551-A2	Dustproof and splash resistant seal.	15 Amps L96	2,5-4,17 9-15	1,52 .060	0,01-0,063 .0004-.0025	28,20 1.110

* ±0,51 mm
±.020 in.

15/32" 32NS BUSHING MOUNT OVERTRAVEL PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RQ1-A2	Applications with bushing mount.	15 Amps L96	2,5-3,61 9-13	5,56 .219	0,01-0,05 .0004-.0020	21,82 .859
BA-2RQ1-A2	Up to 20 ampere load handling.	20 Amps L23	3,89-6,12 14-22	5,56 .219	0,05-0,19 .0020-.0075	21,82 .859
BZ-2RQ18-A2	Added overtravel. Roller plunger for rapid cam (30° max.) rise and slide operation.	15 Amps L96	2,5-3,61 9-13	3,56 .140	0,01-0,05 .0004-.0020	33,32 ± 1,14 1.312 ± .045
BZ-2RQ181-A2	Applications requiring roller plunger 90° to major axis of switch.	15 Amps L96	2,5-3,61 9-13	3,56 .140	0,01-0,05 .0004-.0020	33,32 ± 1,14 1.312 ± .045

Except where stated ** ±0.76 mm
±.030 in.

STRAIGHT LEVER ORDER GUIDES

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RW80-A2	2,5 inch (63,5 mm) lever requirements	15 Amps L96	0,7 2.5	5,56 .219	0,18-1,27 .007-.050	19,1 .750
BZ-2RW84-A2	Lower force (without external return spring)	15 Amps L96	0,28 1	5,56 .219	0,18-1,27 .007-.050	19,1 .750
BZ-2RW863-A2	6 inch (152 mm) long lever requirements	15 Amps L96	0,28 1	14,68 .578	0,46-3,68 .018-.145	19,1 ± 1,52 .750 ± .060
BZ-2RW805551-A2	Dustproof and splash resistant seal. 2.5 inch lever	15 Amps L96	0,7 2.5	5,56 .219	0,18-1,27 .007-.050	19,1 .750
BZ-2RW899-A2	Adjustable operating point (17 mm to 22 mm) .670" to .880"	15 Amps L96	0,7 2.5	3,54† .125	0,18-1,27 .007-.050	17,02-22,35 .670-.880
BA-2RV-A2	Up to 20 ampere load handling	20 Amps L23	0,7 2.5	1,98 .078	2,77 .109	19,1 .750
BE-2RV-A4	Up to 25 ampere load handling	25 Amps —	0,7 2.5	1,98 .078	2,77 .109 max.	19,1 .750

†From 17 mm O.P. .670 in.

Except where stated * ±0.76 mm
±.030 in.

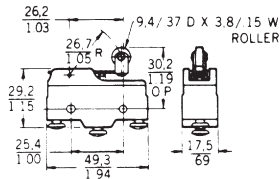
Basic Switches Standard

BZ/BA Series

2 SWITCHES & KNOBS

TYPICAL DIMENSIONS (For reference only)

BZ Type

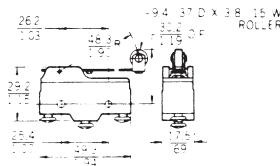


ROLLER LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RW822	1.05 inch (26,7 mm) steel roller lever application. Solder terminal.	15 Amps L96	1,67 6	2,39 .094	0,08-0,51 .003-.020	30,17 1.118
BZ-2RW822-A2	1.05 inch (26,7 mm) steel roller lever applications	15 Amps L96	1,67 6	2,39 .094	0,08-0,51 .003-.020	30,17 1.188
BZ-2RW8225551-A2	As above with dustproof and splash resistant seal	15 Amps L96	1,67 6	2,39 .094	0,08-0,51 .003-.020	30,17 1.188
BA-2RV22-A2	Up to 20 ampere load handling	20 Amps L23	1,67 6	0,76 .030	1,14 .045 max.	29,77 1.172
BE-2RV22-A4	Up to 25 ampere load handling	25 Amps —	1,67 6	0,76 .030	1,14 .045 max.	29,77 1.172

Except where stated * $\pm 0,38$ mm $\pm .015$ in.

BZ/BA Type

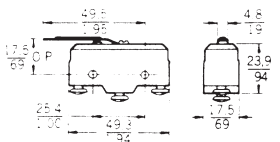


ROLLER LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RW82-A2	1.90 inch (48,3 mm) steel roller lever applications	15 Amps L96	0,97 3.5	3,96 .156	0,10-1,0 .004-.040	30,17 $\pm 0,76$ 1.188 $\pm .030$
BA-2RV2-A2	Up to 20 ampere load handling	20 Amps L23	0,97 3.5	1,52 .060	2,16 .085	30,17 $\pm 0,76$ 1.188 $\pm .030$
BZ-RW922-A2	Best repeatability and O.P. stability	10 Amps L95	3,34 12	2,54 .100	0,013-0,025 .0005-.0010	31,37 1.235
BZ-2RW826-A2	One way roller (9,4 mm $\times$ 3,8 mm) .37" dia. $\times$.15" wide roller	15 Amps L96	1,67 6	2,39 .094	0,08-0,51 .003-.020	41,34 1.625

* $\pm 0,38$ mm $\pm .015$ in.

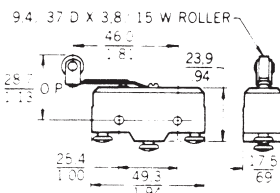
BZ Type



FLEXIBLE LEAF ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RL-A2	Force and stability of the flexible actuator	15 Amps L96	1,39 5	1,52 .060	1,27 .050	17,48 .688

BZ Type



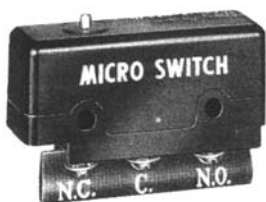
FLEXIBLE ROLLER LEAF ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
BZ-2RL2-A2	Force and stability of the flexible leaf with roller	15 Amps L96	1,39 5	1,52 .060	1,27 .050	28,6 1.125
BZ-2RL25551-A2	Dustproof and splash resistant seal	15 Amps L96	1,95 7	1,52 .060	1,27 .050	28,6 1.125

** $\pm 0,76$ mm $\pm .030$ in.

Basic Switches Double-pole Double-throw

DT Series

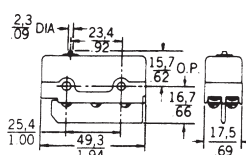


FEATURES

- Two independent single-pole double-throw circuits in one housing
- Savings in space and weight
- Mounting interchangeability with type Z switches
- Temperature tolerance to +180°F (82°C)
- UL recognized, CSA certified

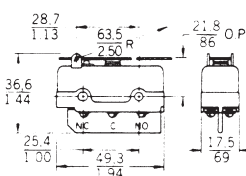
TYPICAL DIMENSIONS (For reference only)

DT-2R Type



MOUNTING HOLES ACCEPT PINS OR SCREWS OF 3.53/.139 DIA

DT-2RV Type



PIN PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
DT-2R-A7	Pin plunger	10 Amps L59	3,34-5,56 12-20	0,13 .005	1,02-1,52 .040-.060	15,6 .615 ± .015

LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
DT-2RV-A7	Straight lever 2.5" (63,5 mm)	10 Amps L59	0,97-1,67 3.5-6	1,57 .062	12,4-19,2 .490-.755	21,8 .859
DT-2RV3-A7	Straight lever. Reversed lever position	10 Amps L59	1,11-1,95 4-7	0,38 .015	2,92-4,83 .115-.190	18,3 .719
DT-2RV22-A7	1.03 inch (26,2 mm) roller lever (steel roller)	10 Amps L59	2,5-3,89 9-14	0,79 .031	4,95-7,75 .195-.305	30,2 ± 0,38 1.188 ± .015
DT-2RV212-A7	Roller lever 1.19" (30,2 mm) Reversed lever position	10 Amps L59	2,5-4,17 9-15	0,13 .005	1,27-2,16 .050-.085	29,4 1.156
DT-2RV23-A7	Roller lever 1.9" (48,3 mm) Reversed lever position	10 Amps L59	1,53-2,64 5.5-9.5	0,25 .010	2,16-3,43 .085-.135	29,4 1.156

Except where stated * ± 0,76 mm ± .030 in.

Basic Switches DC Magnetic Blow-out

MT Series



GENERAL INFORMATION

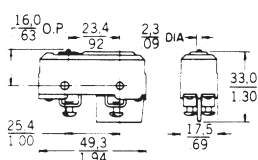
MT (single-pole double-throw) magnetic blow-out switches are designed to switch high capacity (125 and 250 VDC) systems. An integral magnet around the contact gap protects the contacts by deflecting the arc. Vents between the cover and housing allow the hot gas to escape. These switches are designed for the control of DC motors, solenoids, etc.

FEATURES

- Arc resistant case
- Mechanical life of 100,000 operations — 95% survival
- Temperature tolerance to +180°F (82°C)
- Mounting interchangeability with BZ switches
- UL recognized

TYPICAL DIMENSIONS (For reference only)

MT-4R Type



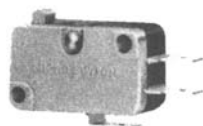
MOUNTING HOLES ACCEPT PINS OR SCREWS OF 3.53/.139 DIA

MT SERIES ORDER GUIDE

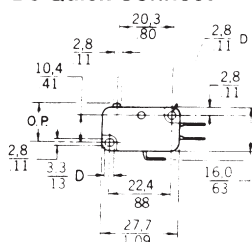
Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
MT-4R-A28	Pin plunger SPDT	10 Amps L168	3,34-5,0 12-18	0,13 .005	0,1-0,18 .004-.007	15,9 ± 0,38 .625 ± .015
MT-4RV-A28	2.5 inch (63,5 mm) straight lever	10 Amps L168	0,56 2	1,19 .047	2,16 .085	19,1 .750

Except where stated * ± 0,76 mm ± .030 in.

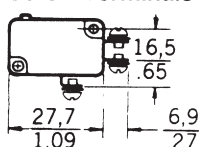
V3 Series



D8 Quick Connect



Screw Terminals



V3 miniature basic switches feature high electrical capacity and long life. Their size and shape meet design requirements in all types of applications.

- Low operating force
- Motor handling capacity of ½ horsepower – silver contacts
- Gold alloy contacts for special applications
- Long mechanical life of 10,000,000 cycles 95% survival for V3-100, 1100, 2100, and 3000 Series
- Temperature tolerance up to + 180°F (82°C) on standard construction
- UL recognized, CSA certified

Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. newtons ounces	O.T. min. mm inches	D.T. mm inches	O.P.* mm inches
V3-101-D8	Most applications	11 Amps L156	2,22 8 max.	1,02 .040	0,15-0,41 .006-.016	14,7 .578
V3-1101-D8	Added overtravel	10 Amps L112	0,72 max. 2.6	1,27 .050	0,051-0,25 .002-.010	14,7 .578
V3-2401-D8	Lower force	5 Amps L162	0,24 .9	1,27 .050	0,051-0,25 .002-.010	14,7 .578
V3-2451-D8	Lowest force	3 Amps L163	0,15 .53	1,27 .050	0,051-0,25 .002-.010	14,7 .578
V3-1-D8	Best for use under shock and vibration	15 Amps L83	1,67-3,89 6-14	1,02 .040	0,15-0,41 .006-.016	14,7 .578
V3-3001-D8	Up to 15 amps load handling	15 Amps L83	1,33 max. 4.8	1,27 .050	0,051-0,25 .002-.010	14,7 .578
V3-2800-D9	Up to 20 amps load handling	20 Amps UL 508	1,22 4.4	1,27 .050	0,051-0,25 .002-.010	14,7 .578
V3-2900-D9	Up to 25 amps load handling	25 Amps UL 508	2,20 7.9	.050	0,51-0,25 .002-.010	14,7 .578
V3-101	General use. Screw terminals.	11 Amps L156	2,22 8 max.	1,02 .040	0,15-0,41 .006-.016	14,7 .578

$$^{**} \pm 0,38\text{mm}$$

$$\pm .015 \text{ in.}$$

If you don't find everything you need, please advise us and we will be pleased to assist with your requirements.

New items are being added to our stock daily. Please call us if you do not find what you want, as it may easily have been a recent addition to our inventory.

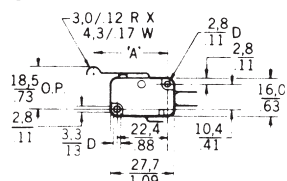
SWITCHES & KNOBS

Basic Switches Miniature

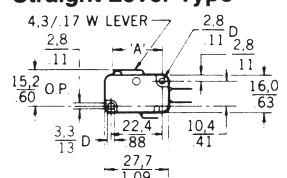
V3 Series

TYPICAL DIMENSIONS (For reference only)

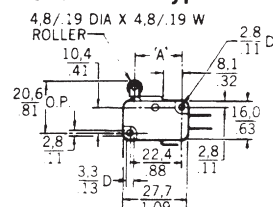
Simulated Roller



Straight Lever Type



Roller Lever Type



SIMULATED ROLLER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	Length Lever "A" mm inches	O.F. max. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
V3L-121-D8	Most applications	11 Amps L156	32,6 1.285	1,11 4	2,03 .080	1,27 .050	18,5 .730
V3L-1123-D8	Lower force	10 Amps L131	32,6 1.285	0,39 1.4	2,03 .080	0,76 .030	18,5 .730

* ± 1.5 mm
± .060 in.

STRAIGHT LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	Length Lever "A" mm inches	O.F. max. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
V3L-101-D8	Most applications	11 Amps L156	21,3 .860	2,50 9	1,02 .040	0,41 .016	15,2 ± 0,51 .600 ± .020
V3L-104-D8	Most applications	11 Amps L156	35,6 1,40	1,11 4	2,29 .090	1,27 .050	15,2 ± 1,5 .600 ± .060
V3L-2102-D8	Lower force. Added overtravel	10 Amps L131	35,6 1.40	0,31 1.1	2,29 .090	0,76 .030	15,2 ± 1,5 .600 ± .060
V3L-131-D8	Most applications	11 Amps L156	59,4 2.34	0,58 2.1	3,81 .150	2,29 .090	14,7 ± 2 .580 ± .080
V3L-2106-D8	Lower force. Added overtravel.	10 Amps L131	59,4 2.34	0,16 .57	4,06 .160	1,4 .055	15,2 ± 1,8 .600 ± .070
V3L-3013-D8	Up to 15 amps load handling. Best performance under shock and vibration	15 Amps L83	59,4 2.34	0,39 1.4	4,06 .160	1,52 .060	15,2 ± 1,9 .600 ± .075

ROLLER LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	Length Lever "A" mm inches	O.F. max. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
V3L-139	Most applications Screw terminals	11 Amps L156	20,6 .81	2,22 8	1,02 .040	0,41 .016	20,6 ± 0,76 .810 ± .030
V3L-139-D8	Most applications	11 Amps L156	20,6 .81	2,22 8	1,02 .040	0,41 .016	20,6 ± 0,76 .810 ± .030
V3L-1117-D8	Add overtravel	10 Amps L112	20,6 .81	0,72 2.6	1,14 .045	0,33 .013	20,6 ± 0,76 .810 ± .030
V3L-3003-D8	Up to 15 amps load handling. Best for performance under shock and vibration	15 Amps L83	20,6 .81	1,33 4.8	1,02 .040	0,33 .013	20,6 ± 0,76 .810 ± .030
V3L-111-D8	Most applications	11 Amps L156	34 1.34	1,11 4	2,16 .085	1,27 .050	20,6 ± 1,5 .810 ± .060
V3L-1101-D8	Added overtravel	10 Amps L112	34 1.34	0,33 1.2	2,16 .085	0,76 .030	20,6 ± 1,5 .810 ± .060
V3L-3004-D8	Up to 15 amps load handling. Best for performance under shock and vibration.	15 Amps L83	34 1.34	0,70 2.5	2,16 .085	0,76 .030	20,6 ± 1,5 .810 ± .060

Basic Switches Snap-In Panel Mount

DM/DP Series

2

S W I T C H E S & K N O B S

Momentary Action



Bullet nose plunger
(SPDT shown)

Alternate Action



Bullet nose plunger
(DPDT shown)

Push-Pull



Finger grip plunger
(DPDT shown)

Pull-to-Cheat



Finger grip plunger
with flat tip (SPDT shown)



Finger grip plunger with
spherical tip (DPDT
shown)

FEATURES

- Attractive, rugged snap-in panel mount design — easy installation
- Choice of momentary, alternate push-pull and pull-to-cheat operation
- Quick-connect terminals
- Expected mechanical life: 1 million operations, 95% survival
- Temperature range: -35° to $+180^{\circ}\text{F}$ (-37° to 82°C)
- UL recognized file #E22779, CSA certified file #LR4442

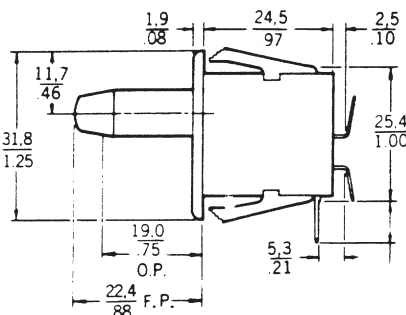
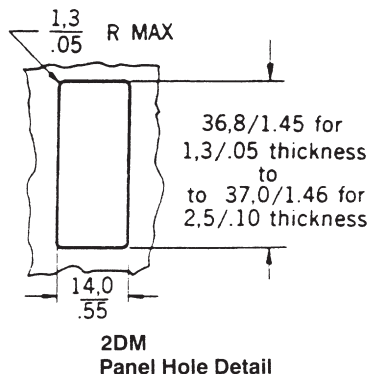
DM electrical rating — UL and CSA rating:
10 amps, 1/2 HP, 125, 250 or 277 VAC

DP electrical rating — UL standard 508,
14 amps 3/4 hp, 125, 250 VAC; Pilot Duty:
150 V A — 125, 250 VAC; 16 amps, 125,
250, 277 VAC, 3/4 hp, 125, 250 VAC; Pilot
Duty: 150 V A — 125, 250 VAC.

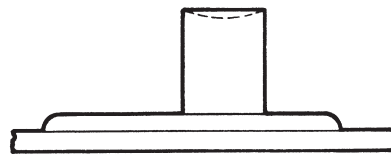
NOTE: Refer to MICRO SWITCH Catalog 30 for DM switches with snap-on pushbuttons.

MOUNTING DIMENSIONS

Dimensions shown are for reference only.



Convex
plunger



Concave
plunger

ALTERNATE ACTION

These switches have push-on, push-off operation. The alternate action is at two levels, with the maintained On position of the plunger at a lower level than the normal Off.

PUSH-PULL

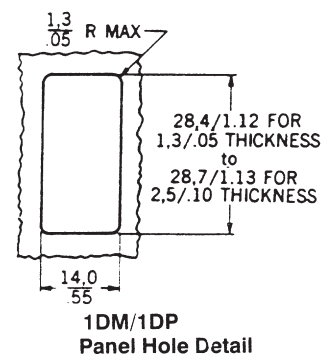
When plunger is depressed, it remains down and maintains circuit transfer. Switch contacts return to the previous position when the plunger is pulled to the extended position.

PULL-TO-CHEAT

Pull-to-cheat operates normally as a momentary action switch. However, by pulling the plunger beyond the normal free position, a maintained On position is achieved.

POSSIBLE VARIATIONS

In addition to the standard quick-connect .188 x .020" (4.78 x 0.51 mm) terminals, angled forms and .250 x .032" (6.35 x 0.81 mm) terminals can be provided. DM plungers and faceplates are available in any combination of white, black, gray, or red.



Basic Switches Snap-In Panel Mount

DM/DP Series

ORDER GUIDE – DM

Characteristics: F.P. — Free Position; O.P. — Operating Position; O.T. — Overtravel; O.F. — Operating Force; R.F. — Release Force

Catalog Listing	Action	Circuitry	Plunger Type/Color	Faceplate Color	F.P. mm in.	O.P. mm in.	O.T. max. mm in.	O.F. max. N oz.	R.F. min. N oz.
1DM1	Momentary	SPDT	Bullet nose/White	White	22,4 .880	19,1±1,5 .750±.060	9,53 .375	4,17 15	0,83 3
1DM2	Momentary	SPNC	Bullet nose/White	White	22,4 .880	19,1±1,5 .750±.060	9,53 .375	4,17 15	0,83 3
1DM3	Momentary	SPNO	Bullet nose/White	White	22,4 .880	19,1±1,5 .750±.060	9,53 .375	4,17 15	0,83 3
1DM18	Momentary	SPDT	Concave/Black	Gray	11,4 .450	—	3,05 .120	4,17 15	0,83 3
1DM19	Momentary	SPDT	Concave/Red	Gray	11,4 .450	—	3,05 .120	4,17 15	0,83 3
1DM21	Momentary	SPDT	Convex/White	White	11,4 .450	9,02±1,5 .355±.060	3,05 .120	4,17 15	0,83 3
1DM38	Momentary	SPNO	Convex/White	White	11,4 .450	9,02±1,5 .355±.060	3,05 .120	4,17 15	0,83 3
1DM301	Push-Pull	SPDT	Finger grip/Black	Gray	24,1 .950	—	15,9 .625	—	—
1DM401**	Pull-to-Cheat	SPDT	Finger grip/White	White	17,8 .700	—	13,2 .520	4,17 15	0,83 3
2DM1	Momentary	DPDT	Bullet nose/Black	Black	22,4 .880	19,6±1,0 .770±.040	10,2 .400	6,67 24	1,67 6
2DM5	Momentary	DPDT	Concave/Black	Gray	11,4 .450	—	3,05 .120	6,67 24	1,67 6
2DM6	Momentary	DPDT	Concave/Red	Gray	11,4 .450	—	3,05 .120	6,67 24	1,67 6
2DM301	Push-Pull	DPDT	Finger grip/Black	Gray	24,1 .950	—	15,9 .625	—	—
2DM409	Pull-to-Cheat	DPDT	Finger grip/Black	Black	21,6 .850	18,9±1,3 .745±.050	15,0 .590	6,67 24	—
2001DM1*	Alternate	SPDT	Bullet nose/White	White	22,4 .880	—	15,4 .605	5,56 20	—

* Latch position 16,9 mm ± 0,76 mm (.665 in. ± .030 in.)

** Extended position 23,6 mm (.930 in. max.)

ORDER GUIDE – DP

Catalog Listing	Action	Circuitry	Plunger Type/Color	Faceplate Color	F.P. mm in.	O.P. mm in.	O.T. max. mm in.	O.F. max. N oz.	R.F. min. N oz.
1DP5	Momentary	SPNO	Bullet nose/White	White	22,4 .880	15,1±1,5 .595±.060	9,53 .375	4,45 16	0,83 3
1DP801	Momentary	SPDT	Concave/White	White	11,4 .45	9,0±1,5 .355±.060	3,0 .120	6,67 24	0,83 3

Basic Switches
Subminiature

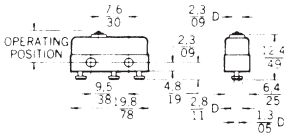


GENERAL INFORMATION
SM subminiature switches are slightly larger than SX switches. These switches combine small size and light weight with ample electrical capacity, precision operation and long life. Unless otherwise noted, all listings have silver contacts.

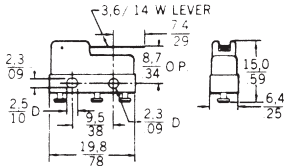
- FEATURES**
- Power load switching capability available to 11 amps (VAC) — silver contacts
 - Optional gold contacts for low energy applications
 - Long mechanical life of 10,000,000 cycles — 95% survival for 11SM series
 - Standard temperature range -65° to +180°F (-54° to 85°C)
 - Variety of integral and auxiliary actuators
 - Choice of several terminal styles
 - Listings available which meet MIL-S-8805 qualified product list.
 - UL recognized, CSA certified

TYPICAL DIMENSIONS
(For reference only)

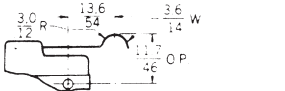
T Terminals



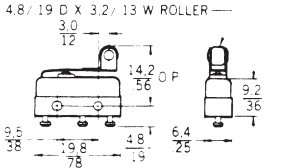
Lever Type



Simulated Lever Type



Roller Leaf Type



PIN PLUNGER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	O.F. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
1SM1	Original design. Solder posts.	5 Amps L4	0.83-1.39 3-5	0.13 .005	0.1 .004	8.38 .330
11SM1	Most applications, long life. Solder posts.	5 Amps L4	0.83-1.39 3-5	0.13 .005	0.1 .004	8.38 .330
11SM1-T	Same as above. Solder terminals.	5 Amps L4	0.83-1.39 3-5	0.13 .005	0.1 .004	8.38 .330
11SM23-T	Application requiring gold contacts	1 Amp L22	0.83-1.39 3-5	0.13 .005	0.1 .004	8.38 .330
11SM401-T	Less differential travel	5 Amps L4	0.97 3.5 max.	0.13 .005	0.025 .001	8.38 .330
11SM701-T	Lower force	4 Amps L119	0.56 2	0.13 .005	0.051 .002	8.38 .330
21SM284 (MS25085-2)	MIL-S-8805 application requirements	5 Amps —	0.83-1.39 3-5	0.13 .005	0.1 .004	8.38 .330
411SM1	Sealed plunger construction	5 Amps L4	0.83-2.09 3-7.5	0.13 .005	0.1 .004	8.38 .330

INTEGRAL LEVER ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	O.F. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
311SM1-T	.285 inch (7.24 mm) straight lever	5 Amps L4	0.39 1.4	0.51 .020	0.48 .019	8.64 ± 1.5 .340 ± .060
311SM2-T	.565 inch (14.35 mm) straight lever	5 Amps L4	0.31 1.1	0.66 .026	0.69 .027	8.51 ± 2 .335 ± .080
311SM3-T	1.765 inch (44.8 mm) straight lever	5 Amps L4	0.15 .53	1.45 .057	2.8 .110	7.11 ± 4.3 .280 ± .170
311SM4-T	.251 inch (6.38 mm) simulated roller lever	5 Amps L4	0.39 1.4	0.46 .018	0.48 .019	11.7 ± 1.5 .460 ± .060
311SM5-T	.535 inch (13.6 mm) simulated roller lever	5 Amps L4	0.31 1.1	0.66 .026	0.69 .027	11.56 ± 2 .455 ± .080
311SM6-T	.251 inch (6.38 mm) roller lever	5 Amps L4	0.39 1.4	0.46 .018	0.48 .019	14.2 ± 1.5 .560 ± .060

INTEGRAL LEAF ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data and UL Code	O.F. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
111SM1-T	Force and stability of flexible leaf actuator	5 Amps L4	1.95 7	0.76 .030	0.76 .030	8.89 ± 0.76 .350 ± .030
111SM2-T	Flexible leaf with roller	5 Amps L4	1.95 7	0.76 .030	0.64 .025	14.3 ± 0.76 .562 ± .030

Except where stated * ± 0.38 mm ± .015 in.

Sealed Basic Switches
Hermetically Sealed

HM Series

2

S
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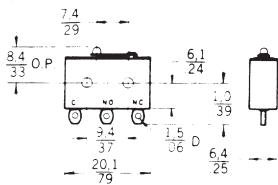


GENERAL INFORMATION

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 and are interchangeable (in mounting hole location and operating characteristics) with the MS25085-1 (listing 21SM284) basic switch.

- FEATURES**
- Hermetically sealed per enclosure design symbol 5, MIL-S-8805
 - Power load switching capability up to 4 amperes 28 VDC and 115 VAC, 400 cycles
 - Optional gold and gold bifurcated contacts for special applications*
 - Temperature tolerance from -85°F to +250°F (-65°C to 121°C)
 - High temperature construction for use from -85°F to +500°F (-65° to 260°C)
 - Variety of auxiliary actuators*
 - Choice of terminal styles
 - Listings available which meet MIL-S-8805 qualified products list.

TYPICAL DIMENSION
(For reference only)



HM SERIES ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data*	O.F. max. newtons ounces	R.F. min. newtons ounces	P.T. max. mm inches	O.T. min. mm inches	D.T. mm inches	O.P.† mm inches
13HM1	Applications requiring gold contacts. Meets MIL-S-8805 high shock requirements	.5 Amps J	1,95 7	0,28 1	0,76 .030	0,08 .003	0,15 .006	8,38 .330
1HM19 (MS27216-1)	MIL-S-8805 application requirements	4 Amps I	1,95 7	0,28 1	0,76 .030	0,08 .003	0,15 .006	8,38 .330
6HM1-1	Operating in temperature to 500°F (260°C)	2.5 Amps G	1,95 7	0,28 1	0,76 .030	0,08 .003	0,15 .006	8,38 .330
11HM1 (MS27216-5)	Meets MIL-S-8805/8 and high shock requirements	1 Amp K	1,95 7	0,28 1	0,76 .030	0,08 .003	0,15 .006	8,38 .330
2HM1-1	1 foot long leads MIL-W-16878/4 Type E wire	4 Amps I	1,95 7	0,28 1	0,76 .030	0,08 .003	0,15 .006	8,38 .330

† ±0,38 mm
±.015 in.

NOTE: Type HM switches are not generally recommended for 60 Hz. If you have a 60 Hz application in the milliamp range, contact Relay Specialties.

For applications that require the switch to function electrically during exposure to sub-freezing temperatures contact Relay Specialties for special design variations that are available.

ELECTRICAL DATA *

G	4 amps res., 2 amps ind., 28 VDC. 2.5 amps res. or 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.
J	½ amp res., ¼ amp ind., 28 VDC (sea level or 70,000 ft.)
K	3 amps res., 1 amp ind. (sea level or 70,000 ft.) 28 VDC. 1 amp res. or ind. (sea level) 115 VAC. 400 Hz.

Sealed Basic Switches
Environment-proof

SE/XE Series

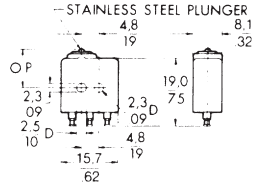


GENERAL INFORMATION
SE and XE switches are the smallest environment-proof switches offered by MICRO SWITCH. Both types enclose a precision basic switch within a corrosion resistant aluminum housing to seal the switch contacts against contamination. The cut-a-way drawing shows the method of sealing. Type SE switches enclose a type SM basic switch and XE switches enclose the smaller SX basic switch.

Switches held depressed for extended periods of time at temperature extremes may experience retarded plunger return upon deactuation. Where such a condition exists in the application, contact Relay Specialties for special design variations that are available.

- FEATURES**
- Water tight seal per enclosure design symbol 3, MIL-S-8805
 - Power load switching capability up to 7 amperes
 - Temperature tolerance up to + 221°F (105°C)
 - High temperature construction for use to + 300°F (149°C)*
 - Several auxiliary actuators*
 - Choice of termination
 - 2 listings available which meet MIL-S-8805 Qualified products list
 - 4SE are UL recognized and CSA certified
 - 4XE are UL recognized

TYPICAL DIMENSIONS
(For reference only)



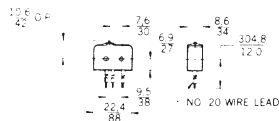
XE SERIES ORDER GUIDE

Catalog Listing	Recommended For	Electrical Data**	O.F. max. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.† mm inches
1XE1* (MS27994-1)	Most applications① MIL-S-8805 requirements	7 Amps C	1,39-4,73 5-17	0,1 .004	0,13 .005	10,8 .425
1XE301* (MS27994-5)	Gold contacts① MIL-W-22759/11 wire	1 Amp R	1,39-4,73 5-17	0,1 .004	0,13 .005	10,8 .425
4XE1*	UL listing and UL and CSA listed leadwire①	7 Amps D	1,39-4,73 5-17	0,1 .004	0,13 .005	10,8 .425
5XE1*	Oil resistant Fluorosilicone seal②	7 Amps C	1,39-4,73 5-17	0,1 .004	0,13 .005	10,8 .425
1XE1-T (MS27994-3)	For customer leading①	7 Amps C	1,39-4,73 5-17	0,1 .004	0,13 .005	10,8 .425

* These listings have one foot leads.
① Temperature range: -65° to 221°F (-54° to 105°C)
② Temperature range: -15° to 185°F (-26° to 85°C)
Except where stated ± 0.51 mm ± .020 in.

ELECTRICAL DATA **

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



SE SERIES ORDER GUIDE

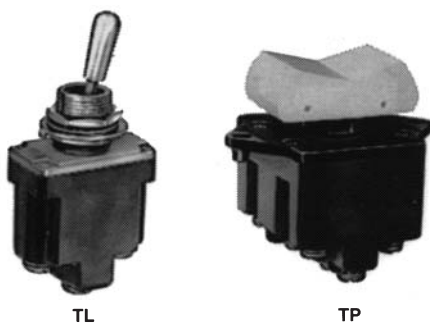
Catalog Listing	Recommended For	Electrical Data***	O.F. max. newtons ounces	O.T. min. mm inches	D.T. max. mm inches	O.P.† mm inches
1SE1*	Most applications①	5 Amps A	1,39-4,73 5-17	0,08 .003	0,1 .004	10,8 .425
4SE1*	UL and CSA listing and UL and CSA listed lead wire①	5 Amps B	1,39-4,73 5-17	0,08 .003	0,1 .004	10,8 .425
5SE1*	Oil resistant. Fluorosilicone seal②	5 Amps A	1,39-4,73 5-17	0,08 .003	0,1 .004	10,8 .425
7SE1*	Lower force①	5 Amps A	1,11-2,22 4-8	0,08 .003	0,1 .004	10,8 .425
1SE1-T	For customer leading①	5 Amps A	1,39-4,73 5-17	0,08 .003	0,1 .004	10,8 .425

* These listings have one foot leads.
① Temperature range: -65° to 221°F (-54° to 105°C)
② Temperature range: -15° to 185°F (-26° to 85°C)

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, 60 Hz.
B	UL and CSA Rating — 5 amps, 250 VAC, 60 Hz. L4

SERIES TL PRECISION TOGGLE SWITCHES



TL

TP

Toggle switches feature greater over-surface creepage and clearance distance; double silicon sealing (between cover and case as well as between bushing and toggle lever); integral terminals for stronger wiring connections; step construction for more space between terminals to reduce the possibility of shorting. Single hole bushing mounted. Meet MIL-S-3950 (Immersion) requirements. **Electrical Rating:** (†) Shown in rating table below. **Operating Temperature:** -85° to +160° F. **Contacts:** Silver cadmium oxide. **Toggle:** Standard; write for information and prices on pull-to-unlock types that prevent accidental toggle movement.

2-POSITION TOGGLE SWITCHES

No. of Poles	Mfr. No.	Military Number MS-	Rating †	Circuit with Toggle At	
				One Side	Other Side
1	1TL1-2	24523-22	1	Off	On
	1TL1-4	24523-29	1	Off*	On
	1TL1-6	24523-30	2	On*	Off
	1TL1-3	24523-23	1	On	On
2	1TL1-8	24523-26	2	On*	On
	2TL1-2	24524-22	3	Off	On
	2TL1-4	24524-29	4	Off*	On
	2TL1-6	24524-30	4	On*	Off
4	2TL1-3	24524-23	3	On	On
	2TL1-8	24524-26	4	On*	On
	4TL1-2	24525-22	5	Off	On
	4TL1-4	24525-29	6	Off*	On
4	4TL1-6	24525-30	6	On*	Off
	4TL1-3	24525-23	5	On	On
	4TL1-8	24525-26	6	On*	On

3-POSITION TOGGLE

No. of Poles	Mfr. No.	Military Number MS-	Rating †	Circuit with ‡ Toggle At		
				One Side	Center	Other Side
1	1TL1-1	24523-21	1	On	Off	On
	1TL1-5	24523-31	2	On*	Off	On
	1TL1-7	24523-27	2	On*	Off	On*
	1TL1-21	24523-24	1	None	Off	On
2	1TL1-31	24523-33	1	None	On	On
	1TL1-51	24523-32	2	None	On	On*
	1TL1-61	24523-28	2	On*	Off	None
	2TL1-1	24524-21	3	On	Off	On
2	2TL1-5	24524-31	4	On*	Off	On
	2TL1-7	24524-27	4	On*	Off	On*
	2TL1-21	24524-24	3	None	Off	On
	2TL1-31	24524-33	3	None	On	On
4	2TL1-51	24524-32	4	None	On	On*
	2TL1-61	24524-28	4	On*	Off	None
	2TL1-10	27407-4	3	On	On	On
	2TL1-50	27407-5	4	On*	On	On
4	2TL1-70	27407-6	4	On*	On	On*
	4TL1-1	24525-21	5	On	Off	On
	4TL1-5	24525-31	6	On*	Off	On
	4TL1-7	24525-27	6	On*	Off	On*
4	4TL1-21	24525-24	5	None	On	On
	4TL1-31	24525-33	5	None	On	On
	4TL1-51	24525-32	6	None	On	On*
	4TL1-61	24525-28	6	On	Off	None
4	4TL1-50	27406-2	6	On*	On	On
	4TL1-12	27406-1	5	On	On	On
	4TL1-72	27406-3	6	On*	On	On*

*Momentary positions; all others are maintained positions. †See rating chart. ‡"None" indicates toggle lever is blocked from these positions, leaving only two usable positions.

SERIES TP ROCKER-ACTUATED SWITCHES

Buttons: Transparent button accepts under-the-surface legend insert; Translucent button is ideal for edge lighting. **Mounting:** Flush Panel for low profile and edge lighting; Above panel for distinctive appearance, 3-hole mtg. in .935" × 1.510" hole.

2-POSITION ROCKER BUTTON SWITCHES

No. of Poles	Rating †	Circuit with Button At	Mfr. No.			
			Flush Panel		Above Panel	
			Trans-lucent	Trans-parent	Trans-lucent	Trans-parent
1	1	Off	1TP201-2	1TP12-2	1TP216-2	1TP4-2
	2	Off*	1TP201-4	.....	.....	.....
	2	On*	1TP201-6	1TP12-6	1TP216-3	1TP4-6
	1	On	1TP201-3	1TP12-3	1TP216-8	1TP4-3
2	2	On*	1TP201-8	1TP12-8	1TP216-2	.....
	3	Off	2TP201-2	2TP12-2	2TP216-2	2TP4-2
	4	Off*	.....	.....	.....	2TP4-4
	4	On*	.....	.....	.....	2TP4-6
4	3	On	2TP201-3	2TP12-3	2TP216-3	2TP4-3
	4	On*	2TP201-8	2TP12-8	2TP216-8	2TP4-8
	5	Off	4TP201-2	4TP12-2	.....	.....
	6	Off*	4TP201-4	4TP12-4	4TP216-4	.....
6	6	On*	4TP201-6	.....	.....	.....
	5	On	4TP201-3	4TP12-3	4TP216-3	4TP4-3
	6	On	4TP201-8	4TP12-8	4TP216-8	.....

3-POSITION ROCKER BUTTON SWITCHES

1TP is 1-pole switch; 2TP, 2-pole; 4TP, 4-pole

Rating †	Circuit‡	Mfr. No.			
		Flush Panel		Above Panel	
		Trans-lucent	Trans-parent	Trans-lucent	Trans-parent
1	On-Off-On	1TP201-1	1TP12-1	1TP216-1	1TP4-1
2	On*-Off-On	1TP201-5	1TP12-5	1TP216-5	1TP4-5
2	On*-Off-On*	1TP201-7	1TP12-7	1TP216-7	1TP4-7
1	N-Off-On	1TP201-21	1TP12-21	.....	.....
1	N-On-On	1TP201-31	.....	.....	.....
3	On-Off-On	2TP201-1	2TP12-1	2TP216-1	2TP4-1
4	On*-Off-On	2TP201-5	2TP12-5	2TP216-5	2TP4-5
4	On*-Off-On*	2TP201-7	2TP12-7	2TP216-7	2TP4-7
3	N-Off-On	2TP201-21	2TP12-21	.....	.....
3	N-On-On	2TP201-31	.....	2TP216-31	2TP4-31
4	N-On-On*	2TP201-51	.....	2TP216-51	2TP4-51
4	On*-Off-On	.....	2TP12-61	.....	2TP4-61
3	On-On-On	2TP201-10	2TP12-10	2TP216-10	2TP4-10
4	On*-On-On	2TP201-50	.....	2TP216-50	2TP4-50
4	On*-On-On*	2TP201-70	2TP12-70	2TP216-70	2TP4-70
5	On-Off-On	4TP201-1	4TP12-1	4TP216-1	4TP4-1
6	On*-Off-On	4TP201-5	4TP12-5	4TP216-5	4TP4-5
6	On*-Off-On*	4TP201-7	4TP12-7	4TP216-7	4TP4-7
5	N-Off-On	4TP201-21	4TP12-21	4TP216-21	.....
5	N-On-On	4TP201-31	.....	4TP216-31	.....
6	N-On-On*	4TP201-51	.....	4TP216-51	.....
6	On*-Off-N	4TP201-61	4TP12-61	4TP216-61	.....
5	On-On§-On	4TP201-10	4TP12-10	.....	.....
6	On*-On§-On	4TP201-50	4TP12-50	4TP216-50	.....
6	On*-On§-On	4TP201-70	4TP12-70	4TP216-70	4TP4-70

*Momentary positions; all others are maintained positions. †See rating chart. ‡"N" indicates toggle lever is blocked from these positions, leaving only two usable positions. §Only two circuits are completed in this position; all other types complete 1 circuit per pole "on" position.

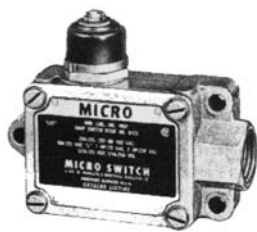
SERIES TL AND TP ELECTRICAL RATINGS†

All ratings in amperes.

Pin Ratings in amperes:									
Code †	28 Volts DC			115 VDC Res.	250 VDC Res.	115 VAC, 60 and 400 Hz			230 VAC Res.
	Ind.	Res.	Lamp			Ind.	Res.	Lamp	
1	15	20	5	0.75	0.5	10	15	3	6
2	10	15	4	0.75	0.5	7	15	2	6
3	15	20	7	0.75	0.5	15	15	4	6
4	10	18	5	0.75	0.5	8	11	2	6
5	12	20	5	0.75	0.5	15	15	4	6
6	10	18	4	0.75	0.5	8	11	2	6

Enclosed Switches
High Capacity

BAF1 Series



GENERAL INFORMATION

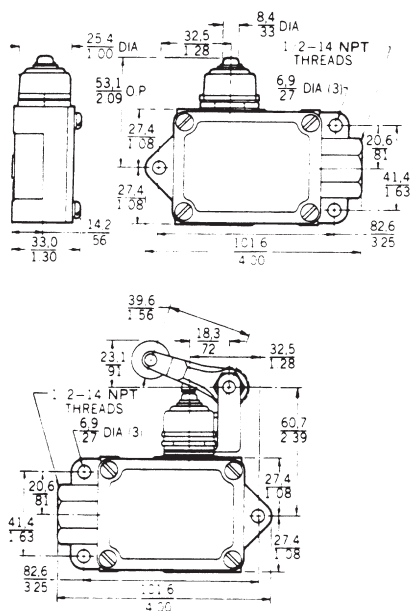
The elastomer boot on sealed actuator versions and cover seal on all switches protect the actuating mechanism and the internal basic switch from contaminants. The cover plate is removed for ease of wiring and basic switch replacement, without demounting the switch. There is a seal gasket between the cover plate and the enclosure. The actuator position is designated “right” or “left”, when looking at the nameplate.

FEATURES

- Up to 20 ampere capacity SPDT
 - Cast aluminum housing with 3-hole mounting
 - Right or left-hand (sealed or unsealed) actuators
 - Cover seal, captive cover screws
 - Momentary or maintained contact
 - UL Recognized, File E12252 and CSA certified, File #LR41372
 - Grounding screw
 - Complies with NEMA 1, 3*, 4*, and 13*
- (* Except BAF-1-2RQ9 listings)

TYPICAL DIMENSIONS
(For reference only)

Left-hand



PLUNGER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Actuator Position †	Catalog Listing	O.P. mm in.	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
With seal boot.	20A L23	Right	BAF1-2RN-RH	53,19 ± 0,76 2.094 ± .030	11,2 2.5	2,39 .094	5,56 .219	0,26 .010
		Left	BAF1-2RN-LH					
Without seal boot. Field adjustable roller 360°	20A L23	Right	BAF1-2RQ9-RH	64,69 2.547	11,1 2.5	2,39 .094	3,96 .156	0,25 .010
		Left	BAF1-2RQ9-LH					

ROLLER LEVER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Actuator Position †	Catalog Listing	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
With seal boot. Field adjustable 360° horizontally and 225° vertically	20A L23	Right	BAF1-2RN2-RH	8,90 2	5,56 .219	6,35 .250	0,51 .020
		Left	BAF1-2RN2-LH				

FLEXIBLE ROD ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Actuator Position †	Catalog Listing	P.T. max.
With seal boot. Operates from any direction, except direct pull.	20A L23	Right	BAF1-2RN18-RH	15°
		Left	BAF1-2RN18-LH	

MAINTAINED CONTACT (RESET) PLUNGER ACTUATED SWITCH ORDER GUIDE

Description	Electrical Data and UL Code	Actuator Position †	Catalog Listing	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.
With seal boot on both top and bottom (reset) plungers.	20A L23	Right	BAF1-3RNX1	7,79 1.75	2,39 .094	4,45 .219

N = Newtons
† When looking at nameplate.

Enclosed Switches Compact

E6/V6 Series

2

S W I T C H E S & K N O B S



Flange mount
with seal boot

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 SPDT switching units.

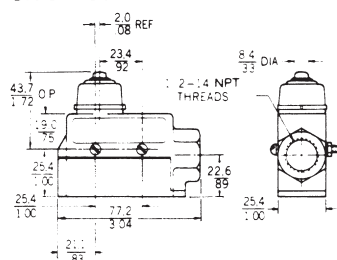
FEATURES

- Side or flange mount
- Momentary or maintained contact
- Sealed or unsealed actuators
- Temperature range -25°F to +160°F (-32° to +71°C)
- UL Recognized, File # E12252
- CSA Certified, File # LR41372

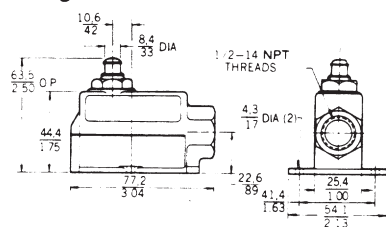
TYPICAL DIMENSIONS

(For reference only)

Side mount with seal boot



Flange mount without seal boot



PLUNGER ACTUATED SWITCH ORDER GUIDE

Description	Electrical Data and UL Codes	Mtg.	Catalog Listing	O.P. mm inches	O.F. N oz.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
With seal boot. SPDT	15A L74	Side	BZE6-2RN	43,66 ± 0,76 1.1719 ± .030	2,50-6,67 9-24	1,98 .078	5,56 .219	0,05 .002
		Flange	BZV6-2RN	69,09 ± 1,52 2.720 ± .060				
With seal boot. DPDT	10A L59	Side	DTE6-2RN	46 ± 0,76 1.812 ± .030	7,23-16,4 26-59	2,80 .110	3,17 .125	1,53 .060
Without seal boot. SPDT	15A L74	Side	BZE6-2RQ	38,1 ± 0,76 1.500 ± .030	2,50-3,62 9-13	0,38 .015	5,56 .219	0,05 .002
		Flange	BZV6-2RQ	63,5 ± 1,14 2.500 ± .045				
With seal boot. Roller parallel to long axis of switch. SPDT.	15A L74	Side	BZE6-2RN80	56,7 ± 1,14 2.232 ± .045	2,50-6,68 9-24	1,98 .078	5,55 .219	0,05 .002
Without seal boot. Roller parallel to long axis of switch. SPDT.	15A L74	Side	BZE6-2RQ8	49,6 ± 1,14 1.953 ± .045	2,50-3,62 9-13	0,38 .015	3,55 .140	0,05 .002
		Flange	BZV6-2RQ8	75 ± 1,52 2.953 ± .060				
Without seal boot. Roller perpendicular to long axis of switch. SPDT.	15A L74	Side	BZE6-2RQ81	49,6 ± 1,14 1.953 ± .045	2,50-3,62 9-13	0,38 .015	3,55 .140	0,05 .002

The Best Products, Competitive Prices and a Helpful Staff:

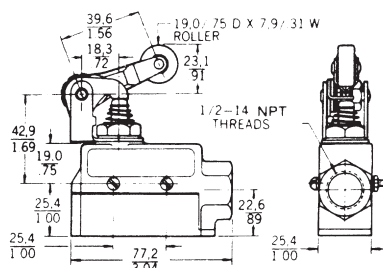
Our Promise to You.

Enclosed Switches Compact

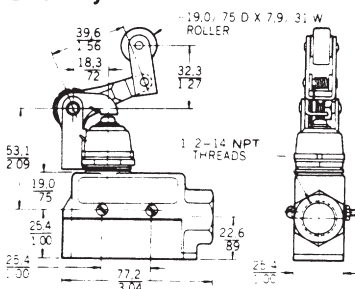
E6/V6 Series

TYPICAL DIMENSIONS (For reference only)

Roller Lever



One-way Roller Lever



ROLLER LEVER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Mtg.	Catalog Listing	O.F. N oz.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
With seal boot. Field adjustable 360° horizontally and 225° vertically.	SPDT 15A L74	Side	BZE6-2RN2	2,78-5,57 10-20	4,78 .188	5,56 .219	0,15 .006
		Flange	BZV6-2RN2				
Without seal boot. Adjustable as above, except horizontal adjustment in 45° increments.	SPDT 10A L59	Side	DTE6-2RN2	2,78-8,35 10-30	6,76 .266	5,56 .219	4,19 .165
		Flange	BZE6-2RQ2 BZV6-2RQ2	2,78-5,01 10-18	4,78 .188	5,56 2.19	0,15 .006

ONE-WAY ROLLER LEVER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Mtg.	Catalog Listing	O.F. N oz.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
With seal boot. Field adjustable 360° horizontally and 180° vertically. SPDT.	15A L74	Side	BZE6-2RN28	2,22-5,57 8-20	5,95 .234	5,56 .219	0,15 .006

COIL SPRING WOBBLE LEVER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Mtg.	Catalog Listing	O.F. max. N oz.	P.T. max.
With seal boot. Operators from any direction, except pull. SPDT.	15A L74	Side	BZE6-2RN18	1,95	15°
		Flange	BZV6-2RN18	7	

MAINTAINED CONTACT (RESET) SWITCHES STRAIGHT PLUNGER ACTUATED ORDER GUIDE

Description	Electrical Data and UL Code	Mtg.	Catalog Listing	O.P. mm in.	O.F. N oz.	P.T. max. mm in.	O.T. min. mm in.	Reset O.F. min. N* oz.
With seal boot. SPDT.	15A L67	Side	BZE6-RNX1	43,66±0,76 1.718±.030	1,66-5,57 6-20	1,98 .078	4,75 .187	1,66 6
		Flange	BZV6-RNX1	69,1±1,53 2.720±.060				

Limit Switches
Compact

LS/200LS Series

2

S
W
I
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C
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&
K
N
O
B
S



Compact



Plug in

GENERAL INFORMATION

Compact LS and plug-in 200LS limit switches have a long record of successful performance in industrial applications. The LS fits in many places too small for any other fully adjustable limit switch. 200LS switches are the original plug-in concept for reducing downtime by making changeover simple and fast. Rotary motion roller lever and rod actuators are adjustable through 360°. They may be set for operation clockwise, counter-clockwise, or in both directions. Operating heads may be positioned in any of four 90° positions.

FEATURES

- Mode of operation is field adjustable.
- Meets NEMA 1, 3, 4, 6, and 13.
- Wide choice of heads and actuators.
- Variety of operating characteristics.
- Optional indicator light.
- Captive screws.
- UL listings available.
- International versions available.

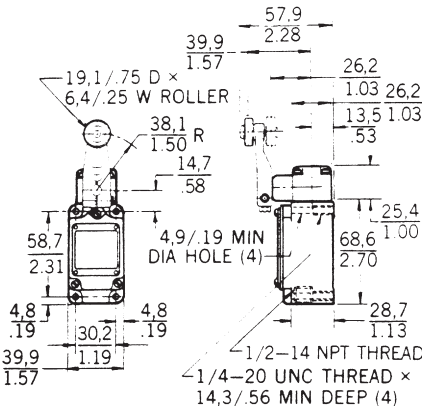
ELECTRICAL RATINGS

Circuitry	Electrical Rating
 Two-Circuit Double-break	A 10 amps, 120, 240 or 480 VAC; 1/3 hp, 120 VAC; 3/4 hp, 240 VAC; 0.8 amp, 115 VDC**; 0.4 amp, 230 VDC**; 0.1 amp, 550 VDC**; Pilot Duty, 600 VAC max.
	B 10 amps, 120, 240 or 480 VAC; 1/4 hp, 120 VAC; 1/2 hp, 240 VAC. Pilot Duty, 600 VAC max.
	D 10 amps, 120, 240 or 480 VAC; 1/4 hp, 120 VAC; 1/2 hp, 240 VAC; 0.8 amp, 115 VDC**; 0.4 amp, 230 VDC**; 0.1 amp, 550 VDC**; Pilot Duty, 600 VAC max.
	F UL Listed; 10 amps, 125, 250 or 480 VAC; 1/3 hp, 125 VAC; 3/4 hp, 250 VAC; 0.8 amp, 125 VDC**; 0.4 amp, 250 VDC**

** Resistive Rating

TYPICAL DIMENSIONS
(For reference only)

Compact 1LS1



ROLLER LEVER ROTARY ACTUATED SWITCHES ORDER GUIDE

Momentary action. Steel rollers. Levers included.

Description	Electrical Rating	Catalog Listing		O.F. max.	P.T. max.	O.T. min.	D.T. max.
		Compact	Plug-in				
Standard 20° Pretravel	A	1LS1	201LS1*	13.3 N 3 lb.	20°	30°	12°
UL Listing	F	1LS1-L	—	13.3 N 3 lb.	20°	30°	12°
Low Pretravel 5°	B	1LS19	201LS19*	13.3 N 3 lb.	5°	30°	4°

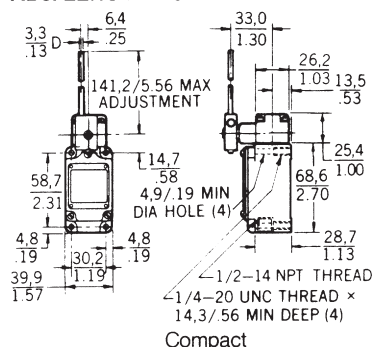
* Require Terminal Block (18PA1 for 200LS switches) which must be ordered separately. Unless damaged, it is not necessary to replace terminal block when replacing switch.

Limit Switches Compact

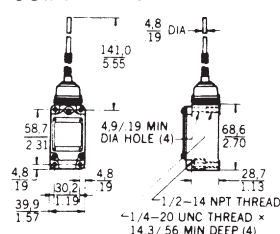
LS/200LS Series

TYPICAL DIMENSIONS (For reference only)

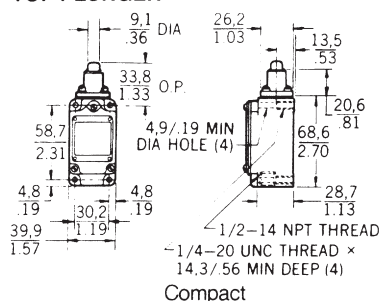
ADJ. LENGTH ROD



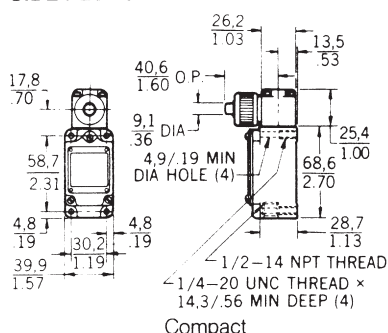
COMBINATION SPRING ROD



TOP PLUNGER



SIDE PLUNGER



ADJUSTABLE LENGTH ROLLER LEVER ROTARY ACTUATED SWITCHES ORDER GUIDE

Length adjustable 1.2 to 3.5 in. (30,6 to 88,9 mm)
Momentary action. Nylon rollers.

Description	Electrical Rating	Catalog Listing		O.F. max.	P.T. max.	O.T. min.	D.T. max.
		Compact	Plug-in				
Standard pretravel 20°	A	1LS3	201LS3*	13,3 N 3 lb.	20°	30°	12°

LOW FORCE ROD ROTARY ACTUATED SWITCHES ORDER GUIDE

Momentary action. 5-inch (127 mm) aluminum rod.

Description	Electrical Rating	Catalog Listing		O.F. max.	P.T. max.	O.T. min.	D.T. max.
		Compact	Plug-in				
Standard pretravel 20°	A	1LS10	201LS10*	13,9 N 5 lb.	20°	30°	12°
Low pretravel 5° and lower operating force	B	1LS53	201LS51*	0,83 N 3 oz.	5°	30°	4°

WOBBLE LEVER ACTUATED SWITCHES ORDER GUIDE

Momentary action.

Description	Electrical Rating	Catalog Listing		O.F. max.	P.T. max.
		Compact	Plug-in		
Flexible cable actuator	D	8LS1	208LS1*	1,39 N 5 oz.	28,6 mm 1.125"
Combination spring-rod	D	8LS3	208LS3*	1,39 N 5 oz.	28,6 mm 1.125"
Low force steel wire	D	8LS125	208LS125*	0,28 N 1 oz.	63,5 mm 2.5"

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

TOP PLUNGER ACTUATED SWITCHES ORDER GUIDE

Momentary action.

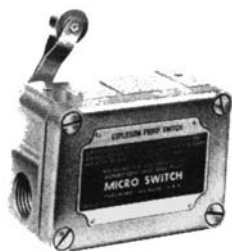
Description	Electrical Rating	Catalog Listing	O.F. max.	P.T. max.	O.T. min.	D.T. max.
			N lb.	mm in.	mm in.	mm in.
Standard top plunger	A	2LS1	31,1 7	1,65 .065	6,35 .250	0,51 .020
Standard top roller plunger — Steel roller	A	5LS1	31,1 7	1,65 .065	5,56 .219	0,51 .020

SIDE PLUNGER ACTUATED SWITCHES ORDER GUIDE

Momentary action. Assembled with plunger facing front (label side).

Description	Elec. Rating	Catalog Listing	O.F. max.	P.T. max.	O.T. min.	D.T. max.
			N lb.	mm in.	mm in.	mm in.
Standard side plunger	A	4LS1	40 9	2,77 .109	6,35 .250	1,02 .040
Standard side roller plunger — Steel roller	A	3LS1	40 9	2,77 .109	5,56 .219	1,02 .040

Explosion-proof Switches Standard

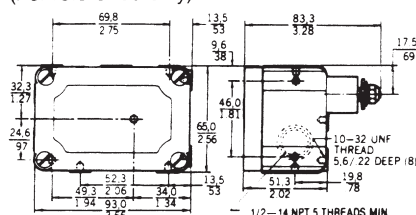


NEMA

EX enclosures meet NEMA standards for Hazardous Locations — Type 7, Class I, Groups B (only Series 800, EXH and EXD as noted in order guides), C, and D; and Type 9, Class II, Groups E, F and G. Also Type 1.

TYPICAL DIMENSIONS

(For reference only)



AUXILIARY ACTUATORS

Order rotary actuators for the EX-AR20 from LSX levers.

GENERAL INFORMATION

Switches feature the smallest UL-listed housings 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.

The enclosed switching unit, which is held in place by screws, is accessible when the cover plate is removed. These switches are not sealed against liquids and are not intended to be subjected to liquid splash or for outdoor applications. If a sealed explosion-proof switch is required, refer to the type CX and LSX.

TEMPERATURE RANGE

EX switches are for use in a temperature range of -40 to 160°F (-40 to 71°C). For applications outside these limits, please consult nearest RELAY SPECIALTIES Sales Office.

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 360°
- Non-sparking actuators
- Captive cover screws
- UL listed, File #E14274 and CSA certified, File #LR57324
- Grounding screw
- Single or double* conduit opening
- Dimensionally interchangeable with OP type switches

ROLLER LEVER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Catalog Listing	O.F.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
CW actuation*. 15 amp. SPDT.	15A L96	EX-AR	2,22-5,56 N .5-1.25 lbs.	5,56 .219 (8°)	90°	0,18 .007 (0.25°)
CCW actuation*. 15 amp. SPDT.	15A L96	EX-AR30	1,11 N 2.5 lb. max.	1,65 .065	25°	0,18 .007 (0.25°)
CW or CCW actuation*. 15 amp. Low O.F. (no return spring). Without mtg. bracket. SPDT.	15A L96	EX-AR16	0,56 N 2 oz. max.	—	—	—
Also UL listed for Class I Group B (hydrogen) atmospheres.	10A L59	EXD-AR-3†	2,22-6,67 N .5-1.5 lb.	6,35 .250	25°	2,77 .109 (4°)
	1A L22	EXH-AR3	2,22-6,67 N .5-1.5 lb.	5,56 .219	25°	0,64 .025
No lever furnished. (Order levers shown at bottom of this page as separate items.) CW actuation*. SPDT.	15A L96	EX-AR20	0,22 Nm 31.25 in./oz.	5,56 .219	90°	0,18 .007 (0.25°)

Nm = Newton meters

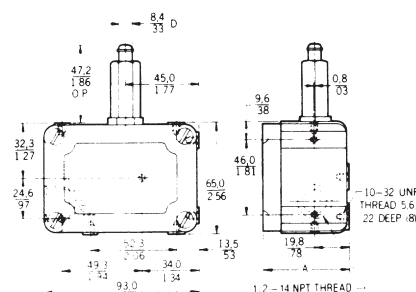
* CW (clockwise) or CCW actuation, when looking at nameplate.

** Hermetically sealed switching unit, furnished with 10.5 ft/3.2 m leadwire.

† Furnished with 0,91 m (3 ft.) leadwire.

OVERTRAVEL PLUNGER ACTUATED SWITCHES ORDER GUIDE

Description	Electrical Data and UL Code	Catalog Listing	O.F. max. N lb.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.	O.P.** mm in.
As shown.	15A L96	EX-Q	13,34 3	1,98 .078	4,78 .188	0,10 .004	47,22 1.859
Also UL listed for Class I, Group B (hydrogen) atmospheres.	10A L23	EXD-Q-3†	13,34 3	3,96 .156	3,58 .141	1,52 .060	46,02 1.812
With seal boot on plunger.	10A L9	EX-N15	13,34 3	1,98 .078	4,78 .188	0,10 .004	52,32 2.060



Enclosed Switches Miniature Pre-Wired

914CE Series



GENERAL INFORMATION

914CE switches satisfy the need for miniature enclosed switches with environmental sealing. Factory prewired cable enables use in limited access areas. Cable is type SJTO. Wire ends are stripped and tinned. Basic switch is not replaceable.

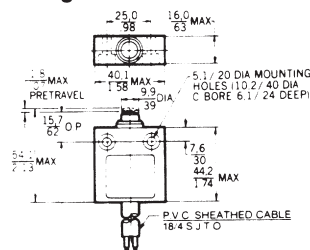
A full range of actuators is available, including plain plungers, roller plungers, side rotary, multi-directional wire, and manual. Any of the LS or HDLS limit switch levers may be used with the side rotary 914CE16. Gold contacts and side exit cable are available.

FEATURES

- Miniature size
- Sealed construction
- Wide selection of actuators
- Precision characteristics
- Simple two-screw mounting (#10 screws)
- Cast zinc housing
- Optional mounting bracket
- Temperature range 35° to +160°F (2° to +71°C), for NEMA 1 to 3 only versions, all others 10° to +200°F (-12° to +93°C)
- All listings comply to NEMA 1 and 3 plus IP65; many to NEMA 4, 6, 6P, 12, and 13 and IP67 as well (see order guides)
- UL Recognized, File # E41859
- CSA certified, File # LR15775

TYPICAL DIMENSIONS (For reference only)

Plunger



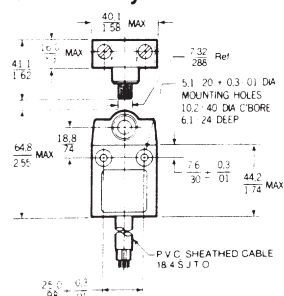
PLUNGER ACTUATED SWITCHES ORDER GUIDE

Description	Catalog Listing*	NEMA	Elec. Rating	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
Plunger	914CE1-3	1,3	5A	12,2 2.75	1,8 .071	3,0 .118	0,1 .004
Boot sealed plunger	914CE18-3	1,3,6,6P, 4,12,13	5A	22,3 5	1,8 .071	3,0 .118	0,1 .004

ROLLER PLUNGER SWITCHES ORDER GUIDE

Description**	Catalog Listing*	NEMA	Elec. Rating	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
Roller plunger	914CE2-3	1,3	5A	12,2 2.75	1,8 .071	3,0 .118	0,1 .004
	914CE2-3K	1,3,6,6P, 4,12,13	5A	22,3 5	1,8 .071	3,0 .118	0,1 .004
Cross roller plunger	914CE3-3	1,3	5A	12,3 2.75	1,8 .071	3,0 .118	0,1 .004

Side Rotary*



* Any LS or HDLS limit switch lever can be used with this switch.

SIDE ROTARY AND WOBBLE ACTUATED SWITCHES ORDER GUIDE

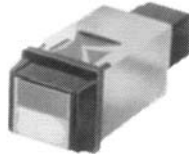
Description	Catalog Listing*	NEMA	Elec. Rating	O.F. max.	P.T. max.	O.T. max.	D.T. max.
Side rotary (Lever not included)	914CE16-3 ***	1,3,6,6P, 4,12,13	5A	0,34 Nm 3 in. lbs.	30°	40°	3°
Multidirectional spring wire wobble actuator	914CE20-3	1,3,6,6P, 4,12,13	5A	0,56 N 2 oz.	—	—	—

N = Newtons

* These listings have 0,91m (3 ft.) cable. To order 1,83 (6 ft.) cable, change the -3 to -6.

** Snap release not recommended on these devices.

*** Switch operates on clockwise and counterclockwise rotation of the lever shaft.

Strip Mount with
Type 3M Hardware

Individual Mount

MOUNTING STYLES

Types 3A, 3B and 3C: For matrix or strip mounting; require Type 3M hardware (listed below). Mount in a single cutout: two or more rows can be attached to form a matrix, or one row can be strip mounted. termination for direct wiring (or plug-in to optional connector block, suffix-1). **Types 3G, 3H and 3J:** Two integral clips for snap-in mounting to panels. .060" to .150" thick; can be strip mounted or individually mounted in single cutout. Size .82" x .86" x 2.110" deep overall.

POWER SWITCHES

Available with Form X (SPDT-NO double-make), Form Y (SPST-NC double-break), or Form Z (SPDT double-make, double-break, break-before-make) contacts. **Rated:** 5 amps inductive resistive at 115 VAC; 3 amps ind.; 5 amps res. at 28 VDC. **Life:** 100,000 operations at rated load. **Operating Force:** 8.0 oz. approx. **Total Travel:** 0.250" approx. **Series 3A:** For matrix or strip mounting; requires Type 3M hardware. **Series 3A-1:** Same as 3A, but with connector block. **Series 3G:** Individual or strip mounting; no additional hardware needed (to order, change prefix 3A to 3G).

Poles	Switch Circuit, Form	Action	Lamp Circuits	Series 3A† Mfr. No.	Series 3A-1 Mfr. No.
1	Z	Mom.	2	3A10*	3A10*-1
1	X	Mom.	2	3A11*	3A11*-1
1	Y	Mom.	2	3A12*	3A12*-1
1	Z	Mom.	1	3A13*	3A13*-1
1	X	Mom.	1	3A14*	3A14*-1
1	Y	Mom.	1	3A15*	3A15*-1
2	Z	Mom.	2	3A20*	3A20*-1
2	X	Mom.	2	3A21*	3A21*-1
2	Y	Mom.	2	3A22*	3A22*-1
2	1Z, 1Y	Mom.	2	3A23*	3A23*-1
2	1X, 1Z	Mom.	2	3A24*	3A24*-1
2	Z	Mom.	1	3A25*	3A25*-1
2	X	Mom.	1	3A26*	3A26*-1
2	Y	Mom.	1	3A27*	3A27*-1
2	1Z, 1Y	Mom.	1	3A28*	3A28*-1
2	1X, 1Z	Mom.	1	3A29*	3A29*-1
1	Z	Alt.	2	3A30*	3A30*-1
1	X	Alt.	2	3A31*	3A31*-1
1	Y	Alt.	2	3A32*	3A32*-1
1	Z	Alt.	1	3A33*	3A33*-1
1	X	Alt.	1	3A34*	3A34*-1
1	Y	Alt.	1	3A35*	3A35*-1
2	Z	Alt.	2	3A40*	3A40*-1
2	X	Alt.	2	3A41*	3A41*-1
2	Y	Alt.	2	3A42*	3A42*-1
2	1Z, 1Y	Alt.	2	3A43*	3A43*-1
2	1X, 1Z	Alt.	2	3A44*	3A44*-1
2	Z	Alt.	1	3A45*	3A45*-1
2	X	Alt.	1	3A46*	3A46*-1
2	Y	Alt.	1	3A47*	3A47*-1
2	1Z, 1Y	Alt.	1	3A48*	3A48*-1
2	1X, 1Z	Alt.	1	3A49*	3A49*-1
1	Z	Mom.	None	3A50*	3A50*-1
1	X	Mom.	None	3A51*	3A51*-1
1	Y	Mom.	None	3A52*	3A52*-1
2	Z	Mom.	None	3A53*	3A53*-1
2	X	Mom.	None	3A54*	3A54*-1
2	Y	Mom.	None	3A55*	3A55*-1
2	1Z, 1Y	Mom.	None	3A56*	3A56*-1
2	1X, 1Z	Mom.	None	3A57*	3A57*-1
1	Z	Alt.	None	3A58*	3A58*-1
1	X	Alt.	None	3A59*	3A59*-1
1	Y	Alt.	None	3A60*	3A60*-1
2	Z	Alt.	None	3A61*	3A61*-1
2	X	Alt.	None	3A62*	3A62*-1
2	Y	Alt.	None	3A63*	3A62*-1
2	1Z, 1Y	Alt.	None	3A64*	3A64*-1
2	1X, 1Z	Alt.	None	3A65*	3A65*-1

*Add suffix from table below to indicate color. †For series 3G, change prefix 3A to 3G.

*COLOR CODES

Add code letter as a suffix to Micro Switch Type No. (for switches with connector block, the code letter should be inserted before the -1 in Type No. e.g., 3A10A-1).

Color Code	Housing (Bezel)	Barrier	Color Code	Housing (Bezel)†	Barrier
A	Black	None	F	Black	Black

†Bezel provided with types 3G only.

Lighted pushbutton switches and matching lighted indicators are available in a wide array of options for display and design flexibility. Choice of matrix, individual or strip mounting; designed for uniform panel appearance.

Switches and lamps can be replaced from front of panel; buttons (order separately) are relegendable. Available with momentary or two-level alternate action; as 5-amp power switches with Form X, Y and Z contacts; or Form A reed switches; all with audible "click click" feedback. Choice or five lighted display colors.

REED SWITCHES

Form A (normally open) contacts: momentary or alternate action. **AC Ratings:** 10 VA max., inrush or resistive. Max. current, 250 mA at 12 VA. **DC Rating:** 8 watts max. resistive only. Max. current 250 mA at 8 watts. **Operating Force:** 3.0 oz. **Total Travel:** 0.250" approx. **Termination:** Direct wire plug-in to connector blocks, or PC terminals. **Series 3B:** For matrix or strip mounting; requires 3M type hardware. **Series 3B-1:** Same as 3B, but with addition of connector block. **Series 3H:** Individual or strip mounting; no additional hardware required (change prefix 3B to 3M).

Poles	Action	Lamp Ckts.	Termination†	Series 3B† Mfr. No.	Series 3B-1 Mfr. No.
1	Mom.	2	DW	3B10*	3B10*-1
1	Mom.	1	DW	3B11*	3B11*-1
2	Mom.	2	DW	3B20*	3B20*-1
2	Mom.	1	DW	3B21*	3B21*-1
1	Alt.	2	DW	3B30*	3B30*-1
1	Alt.	1	DW	3B31*	3B31*-1
2	Alt.	2	DW	3B40*	3B40*-1
2	Alt.	1	DW	3B41*	3B41*-1
1	Mom.	2	PC	3B50*	3B50*-1
1	Mom.	1	PC	3B51*	3B51*-1
2	Mom.	2	PC	3B60*	3B60*-1
2	Mom.	1	PC	3B61*	3B61*-1
1	Alt.	2	PC	3B70*	3B70*-1
1	Alt.	1	PC	3B71*	3B71*-1
2	Alt.	2	PC	3B80*	3B80*-1
2	Alt.	1	PC	3B81*	3B81*-1

*Add suffix from table below to indicate color. †For Series 3H, change prefix 3B to 3H. ‡DW—for direct wiring to switch; PC—for terminating on printed circuit board.

BUTTONS

Re-legendable one-section buttons are easily removed by pulling forward out of switch or indicator housing. Lamps and legends can be changed from front of panel. Transparent colorless insert fits over colored diffuser plate and snaps into button shell. Legends may be applied to diffuser plate, which can be easily changed. Display is provided by one or two T-1, 5 or 28 volt lamps. For hot stamp legends (up to six 7/64" high letters in each or two rows) change N in Type No. to L.

Mfr. Number	Display	Shell Color	Lamps (Assembled)
3D-11(**)1N-1	1-section	Black	One 5-volt
3D-11(**)1N-2	1-section	Black	Two 5-volt
3D-11(**)1N-3	1-section	Black	One 28-volt
3D-11(**)1N-4	1-section	Black	Two 28-volt
3D-11(**)1N	1-section	Black	None
3D-21(**)1N-1	2-section	Black	One 5-volt
3D-21(**)1N-2	2-section	Black	Two 5-volt
3D-21(**)1N-3	2-section	Black	One 28-volt
3D-21(**)1N-4	2-section	Black	Two 28-volt
3D-21(**)1N	2-section	Black	None

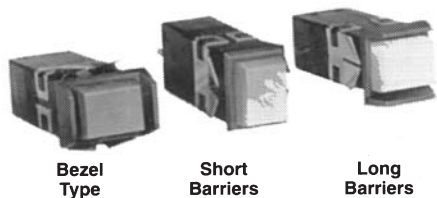
**Insert two letters to indicate display colors (W—white; R—red; G—green; B—blue; Y—yellow). For two-section buttons, add letter for top section first then for bottom section. For one-section buttons, add double letters (RR, BB, etc.)

MOUNTING HARDWARE

For strip or matrix mounting on 3A, 3B and 3C modules. Consists of two mounting bars and two mounting blocks. **Type 3M1:** For use with connector blocks for plug-in wiring. **Type 3M2:** Narrow width type for direct wiring. To determine row length, add the number of switches and/or indicators; then convert the total to the proper suffix number (i.e. 09 for a 5 row unit).

Row Lgth., Units	Standard No. 3M1-	Narrow No. 3M2-	Row Lgth., Units	Standard No. 3M1-	Narrow No. 3M2-
1	01	01	9	17	17
2	03	03	10	19	19
3	05	05	11	21	21
4	07	07	12	23	21
5	09	09	13	25	25
6	11	11	14	27	27
7	13	13	15	29	29
8	15	15	16	31	31

SERIES 4 LIGHTED PUSHBUTTON SWITCHES AND INDICATORS



CONTACT US FOR CATALOG INFORMATION AND PRICES ON SERIES 4 SWITCHES

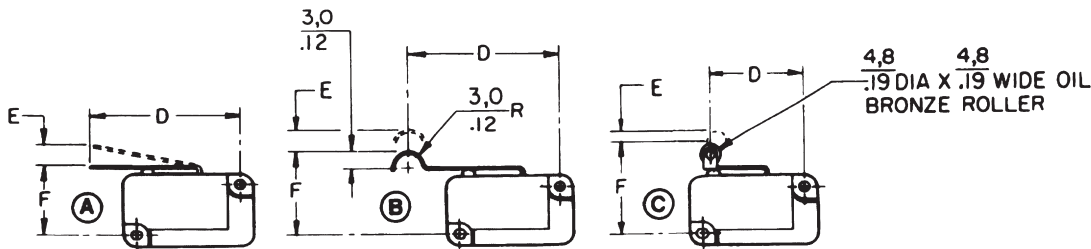
- **INSTALLATION**
Snap-in mounting for panels up to .200" thick. Standard price includes assembled product, with lamp, ready to install in your panels. Front of panel mounting and relamping.
- **WIRING**
Lead wires are readily attached to .110" QC terminals. Lamp and switch terminals are on same level.
- **PRECISION SWITCHING RELIABILITY**
Long life dependability assured by time-proven SM basic switches. Choice of momentary or alternate action, 1 or 2 basic switches. UL Listed low energy (1 amp, 125 VAC) and power load (5 and 10 amp, 250 VAC) versions.
- **LIGHTED DISPLAY COLORS**
Transmitted color, projected color, and hidden legend/hidden color options.
- **PANEL ARRANGEMENT**
Choice of bezel or barrier style housings, which may be mounted individually or in vertical and horizontal strips.
- **MATCHING INDICATORS**
Indicators feature the same buttons and housing styles as the pushbutton switches.

XL SERIES SOLID STATE SWITCH



- Hall effect sensor; operated by magnet in plunger
- 3-pin, solder/quick-connect terminals
- Single output; digital current sinking, Normally High or Normally Low
- Low operating force; as little as 0.15 oz. with lever
- A variety of actuator versions; uses all standard Micro Switch V3 levers
- Same mounting centers as V3 snap-action switch
- 4.5 to 5.5 or 6 to 16 VDC supply voltages

XL Series mechanically-operated hall effect switches combine mechanical switch operation and mounting convenience with solid state reliability. Mounting dimensions and mechanical characteristics are similar to the popular V3 snap-action switch. Over 500 actuators are available, including pin plunger, straight lever, roller lever and simulated roller lever. The output transistors of the units listed are "normally off"; they are not conducting when the plunger is in free position. For "normally on" devices, substitute 32 for 31 (immediately following XL) in the Micro Switch number, e.g., 37XL32XA-12.



Mfr. No.	Lever Style§	"E" Max. Pre-travel (In.)	"F" Operating Point (In.)	Min. Over-travel (In.)	Operating Force (oz.)#
5 VDC TYPE SINKING					
37XL31-01	None	.060	.570	.034	.35
37XL31-02	None	.060	.570	.034	1.25
37XL31-03	None	.060	.570	.034	3.00
37XL31XA-11	A	.075	.610	.035	.40
37XL31XA-12	A	.075	.610	.035	1.40
37XL31XA-13	A	.075	.610	.035	3.20
37XL31XA-21	A	.150	.615	.075	.20*
37XL31XA-22	A	.150	.615	.075	.70
37XL31XA-23	A	.150	.615	.075	1.40
37XL31XA-31	A	.280	.617	.140	.10*
37XL31XA-32	A	.280	.617	.140	.35
37XL31XA-33	A	.280	.617	.140	.70
37XL31XB-11	B	.155	.737	.065	.20*
37XL31XB-12	B	.155	.737	.065	.70
37XL31XB-13	B	.155	.737	.065	1.40
37XL31XC-01	C	.075	.820	.034	.40
37XL31XC-02	C	.075	.820	.034	1.40
37XL31XC-03	C	.075	.820	.034	3.20

Mfr. No.	Lever Style§	"E" Max. Pre-travel (In.)	"F" Operating Point (In.)	Min. Over-travel (In.)	Operating Force (oz.)#
6-16 VDC TYPE SINKING					
47XL31-01	None	.060	.570	.034	.35
47XL31-02	None	.060	.570	.034	1.25
47XL31-03	None	.060	.570	.034	3.00
47XL31XA-11	A	.075	.610	.035	.40
47XL31XA-12	A	.075	.610	.035	1.40
47XL31XA-13	A	.075	.610	.035	3.20
47XL31XA-21	A	.150	.615	.075	.20*
47XL31XA-22	A	.150	.615	.075	.70
47XL31XA-23	A	.150	.615	.075	1.40
47XL31XA-31	A	.280	.617	.140	.10*
47XL31XA-32	A	.280	.617	.140	.35
47XL31XA-33	A	.280	.617	.140	.70
47XL31XB-11	B	.155	.737	.065	.20*
47XL31XB-12	B	.155	.737	.065	.70
47XL31XB-13	B	.155	.737	.065	1.40
47XL31XC-01	C	.075	.820	.034	.40
47XL31XC-02	C	.075	.820	.034	1.40
47XL31XC-03	C	.075	.820	.034	3.20

§Other lever styles available on request. #Nominal values; tolerances available on request. *Lever may not be self-returning.

ILLUMINATED DISPLAY AND PUSHBUTTON SWITCH DEVICES

A series of modular indicator and pushbutton units. No tools required for installation. The needs of modern indication and keyboard control met efficiently. Any panel is made up of the desired number and types of each unit and the units made up of the parts needed to do a specific function. Especially designed for such equipment as: Electronic data-processing systems, computers, graphic flow panels, business machines, missile and supervisory panels, scientific instruments, annunciator panels, etc. All units readily combine into rows or columns.

MOUNTINGS

Barrier Mountings are attached to two sides (long or short) of the indicator or operator-indicator and serve as mounting devices, as well as separation-of-modules function. **Flange Mountings** have spring clip mounting devices ready-attached to two sides into mounting holes.

INDICATOR UNITS

Consist of light box with 2, 3, or 4 sockets and clips for attaching display screen. Barrier or flange mounted (long or short) unit for indication only. Mount same as operator-indicator units.

LIGHTING UNITS

Display Screens are large and may be engraved with signs or symbols. **Color Filters** are placed over lamps to obtain projected color with translucent white display screens. **Lamps** used in all units are standard miniature Nos. 328, 337, 330, 336, 334, 327.

SWITCHING UNITS

Switching units are wired simply and quickly and are snapped into position on the bottom of the operator-indicator units.

SPACING BARRIERS
LONG—1.360"

Mfr. No.	Color	Spacer (In.)	Mfr. No.	Color	Spacer (In.)
2B9	Gray	.160 ± .005	2B19	White	.160 ± .005
2B18	Black	.160 ± .005	.....	.....	.....

SHORT—1.120"

2B23	Gray	.160 ± .005	2B25	White	.160 ± .005
2B24	Black	.160 ± .005	2B26	Red	.160 ± .005

COLOR LAMP FILTERS

Mfr. No.	Color	Type	Mfr. No.	Color	Type
2G12	Red	Silicone	2G15	Blue	Silicone
2G13	Yellow	Silicone	2G16	Amber	Silicone
2G14	Green	Silicone	2G17	White	Silicone

SHORT BARRIER TYPE
OPERATOR-INDICATOR

Mfr. No.	No. of Sockets	Hold-in Coil DC	Mfr. No.	No. of Sockets	Hold-In Coil DC
2C201	2	w/o	2C225	2	28 V
2C203	4	w/o	2C227	4	28 V
2C213	2	6 V	2C237	4	48 V
2C215	4	6 V	2C239	4	48 V

INDICATOR

2F201	2		2F203	4	
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LONG BARRIER TYPE
OPERATOR-INDICATOR

2C207	2	w/o	2C231	2	28 V
2C209	4	w/o	2C233	4	28 V
2C221	4	6 V	2C245	4	48 V

INDICATOR

2F207	2		2F209	4	
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SHORT FLANGE TYPE
OPERATOR-INDICATOR

2C210	2	w/o	2C224	4	6 V
2C212	4	w/o	2C234	2	28 V
2C222	2	6 V	2C236	4	28 V

INDICATOR

2F210	2		2F212	4	
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LONG FLANGE TYPE
OPERATOR-INDICATOR

Mfr. No.	No. of Sockets	Hold-in Coil DC	Mfr. No.	No. of Sockets	Hold-In Coil DC
2C204	2	w/o	2C228	2	28 V
2C206	4	w/o	2C230	4	28 V
2C216	2	6 V	2C242	4	48 V

INDICATOR

2F204	2		2F206	4	
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MOUNTING BARRIERS
SHORT

Mfr. No.	Colors	Panel Thick. (In.)	Mfr. No.	Colors	Panel Thick. (In.)
2B1	Gray	1/16-3/16	2B5	Gray	3/16-5/16
2B3	Black	1/16-3/16	2B7	Black	3/16-5/16
2B10	White	1/16-3/16	2B12	White	3/16-5/16
2B11	Red	1/16-3/16	2B13	Red	3/16-5/16

LONG

2B2	Gray	1/16-3/16	2B6	Gray	3/16-5/16
2B4	Black	1/16-3/16	2B8	Black	3/16-5/16
2B14	White	1/16-3/16	2B16	White	3/16-5/16
2B15	Red	1/16-3/16	2B17	Red	3/16-5/16

LONGITUDINALLY SPLIT

Mfr. No.	Color	Mfr. No.	Color	Mfr. No.	Color
2A51	Red/Red	2A56	Yellow/Green	2A61	Green/White
2A52	Red/Yellow	2A57	Yellow/Blue	2A62	Green/Green
2A53	Red/Green	2A58	Yellow/White	2A63	Blue/White
2A54	Red/Blue	2A59	Yellow/Yellow	2A64	Blue/Blue
2A55	Red/White	2A60	Green/Blue	2A65	White/White

DISPLAY SERIES
LATERALLY SPLIT

Mfr. No.	Color	Mfr. No.	Color	Mfr. No.	Color
2A36	Red/Red	2A43	Yellow/White	2A50	White/White
2A37	Red/Yellow	2A44	Yellow/Yellow	2A1	Red
2A38	Red/Green	2A45	Green/Blue	2A2	Yellow
2A39	Red/Blue	2A46	Green/White	2A3	Green
2A40	Red/White	2A47	Green/Green	2A4	Blue
2A41	Yellow/Green	2A48	Blue/White	2A5	White
2A42	Yellow/Blue	2A49	Blue/Blue	.....	.....

3-PIECE SCREEN

Mfr. No.	Color	Mfr. No.	Color	Mfr. No.	Color
2A66	Red	2A68	Green	2A70	White
2A67	Yellow	2A69	Blue	.....	.....

SWITCHING UNITS

TB Type Switch—Rating: 10 amps, 125-250 VAC; 10 amps 30 VDC.

Mfr. No.	Contact Arrangement	Terminals
2D64	2 Circuit, Double Break	Screw
2D86	2 Circuit, Double Break	Solder

SM Type Subminiature—Rating: UL Listed for 5 amps, 125 or 250 VAC, 30 VDC Rating: Inductive 3 amps at sea level, 2.5 amps at 25,000 ft.; resistive, 5 amps, at sea level and 50,000 ft., max. inrush 24 amps.

Mfr. No.	SPDT Color	Type	Mfr. No.	SPDT Color	Type
2D1*	2	Momentary	2D9†	4	Momentary
2D2†	2	Momentary	2D25*	2	Alternate Action
2D4*	3	Momentary	2D26†	2	Alternate Action
2D5†	3	Momentary	2D32*	4	Alternate Action
2D8*	4	Momentary	2D33†	4	Alternate Action

* Gold Contacts. † Silver Contacts.

LAMP-FILTER TOOLS

Mfr. No. 15PA32—Permits changing of lamps without causing breakage or shorts

Mfr. No. 2D62 HS Type—Hermetically sealed. Rating: 1 amp, 125 VAC inductive or resistive load; 10 amps, 28 VDC inductive load; 25 amps, 28 VDC resistive load. SPDT; screw type terminals

Mfr. No. 2D66 A Type—High capacity. Rating: 20 amps, 125, 250, 480 VAC; 2 hp, 250 VAC. SPDT; screw type terminals

Mfr. No. 2D88 MT Type—Magnetic blow-out. Rating: 10 amps, 125 VAC or DC resistive load; 1/2 hp, 125 VDC polarized; 1/4 hp, 125 V nonpolarized. SPDT; screw type terminals

Mfr. No. 2D89 DT Type—Rating: 10 amps, 125 or 250 VAC; 0.3 amps, 125 VDC; 0.15 amp, 250 VDC. DPDT; screw type terminals

Mfr. No. 2D68 Z Type—Long life. Rating: 15 amps, 125, 250, 480 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC. SPDT; screw type terminals

Mfr. No. 2D70 V3 Type—Rating: 15 amps, 125 or 250 VAC; 10 amps resistive or inductive load at 30 VDC at sea level; 6 amps, inductive and 10 amps resistive load at 30 VDC at 50,000 ft.; 1/2 hp, 125 VAC. SPDT; screw type terminals

Mfr. No. 2D72 V3 Type—Same as above but DPDT contact

AML SERIES SWITCHES

The AML (Advanced Manual Line) Series is an integrated line of switches, indicators and accessories with coordinated button height, bezel size and visual compatibility. The low-profile square and rectangular buttons and rocker and paddle operators are available in various colors. Display capabilities include split screen, hidden color, and a three-segment lens cap indicator.

Those switches having LED displays must have some means of limiting the LED current to a safe value. When a switch is identified as needing 5 VDC for LED voltage, internal resistors are included to hold the LED current to a nominal 20 mA. For switches without these resistors, suitable external

control of the LED current must be provided. A minimum of 5 VDC open circuit voltage with an appropriate series resistor should be used to power the LED.



AML11



AML21



AML31

AML11 SOLID-STATE PUSHBUTTON SWITCHES—INCANDESCENT DISPLAY

The AML mechanism and mounting combined with a Hall Effect integrated circuit for solid-state bounceless switching. Available with 5 and 6-16 V regulated sink. The button mechanisms are available in square or rectangular shapes, unlighted or lighted (1 or 2 lamps), and momentary or alternate action.

AML11	B	B	A	2	AE
Housing Type	Bezel Color	Bezel Color	Lamp Type	Terminal Type	Circuitry Codes
Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description	
B (H)# Square* C (J)# Square† E (K)# Rect.* F (L)# Rect.† G (M)# Rect.‡	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .20" Solder or quick connect 3 .025" × .025" PC or push-on	AA Mom., sink, 5 V AE Alt., sink, 5 V BA Mom., sink, 6-16 V BE Alt., sink, 6-16 V CA Mom., scan, 5 V CE Alt., scan, 5 V DA Mom., sink, 4.5-24 V DE Alt., sink, 4.5-24 V	

#For full guard housing, add appropriate suffix (H, J, K, L, or M) to part number.

AML12 SOLID-STATE PUSHBUTTON SWITCHES—LED DISPLAY

AML12	C	B	D	2	AA
Housing Type	Bezel Color	Bezel Color	Lamp Color/Voltage	Terminal Type	Circuitry Codes
Housing Type Description	Bezel Color Description	Lamp Color/Voltage Description	Terminal Type Description	Circuitry Codes Description	
C Square† J Square, full guard bezel H High profile LED for use w/AML52-A button K Full guard bezel w/high profile LED	B Black	C Red, no res. B Red, 5 VDC D Red, 10 VDC E Red, 15 VDC F Red, 24 VDC H Yel., no res. J Yel., 5 VDC K Yel., 10 VDC L Yel., 15 VDC M Yel., 24 VDC R Grn., no res. S Grn., 5 VDC T Grn., 10 VDC W Grn., 15 VDC X Grn., 24 VDC	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC wire wrap or push-on 8 .110" × .020" With diode protection 9 .025" × .025" With diode protection	AA Mom., sink, 5 V AE Alt., sink, 5 V BA Mom., sink, 6-16 V BE Alt., sink, 6-16 V DA Mom., sink, 4.5-24 V DE Alt., sink, 4.5-24 V	

AML21 ELECTRONIC CONTROL PUSHBUTTON SWITCHES—INCANDESCENT DISPLAY

Intended for electronic control applications up to 3 amps. Contact arrangements are either one or two poles, form "C" (single break-double throw) in silver or gold.

AML21	B	B	A	2	AA
Housing Type	Bezel Color	Bezel Color	Lamp Type	Terminal Type	Circuitry Codes
Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description	
B Square* C Square† E Rect.* F Rect.† G Rect.‡ H Square* J Square† K Rect.* L Rect.† M Rect.‡	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on	AA Mom., SPDT, silver AB Alt., SPDT, silver AC Mom., DPDT, silver AD Alt., DPDT, silver BA Mom., SPDT, gold BB Alt., SPDT, gold BC Mom., DPDT, gold BD Alt., DPDT, gold CC Mom., 4PDT, silver CD Alt., 4PDT, silver DC Mom., 4PDT, gold DD Alt., 4PDT, gold	

AML22 ELECTRONIC CONTROL PUSHBUTTON SWITCHES—LED DISPLAY

AML22	C	B	B	2	AB
Housing Type	Bezel Color	Bezel Color	Lamp Color/Voltage	Terminal Type	Circuitry Codes
Housing Type Description	Bezel Color Description	Lamp Color/Voltage Description	Terminal Type Description	Circuitry Codes Description	
C Square† J Square†, full guard bezel H High profile LED for use w/AML52-A button K Full guard bezel w/high profile LED	B Black	C Red, no res. B Red, 5 VDC D Red, 10 VDC E Red, 15 VDC F Red, 24 VDC H Yel., no res. J Yel., 5 VDC K Yel., 10 VDC L Yel., 15 VDC M Yel., 24 VDC R Grn., no res. S Grn., 5 VDC T Grn., 10 VDC W Grn., 15 VDC X Grn., 24 VDC	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on 8 .110" × .020" With diode protection for LED 9 .025" × .025" With diode protection for LED	AA Mom., SPDT, silver AB Alt., SPDT, silver AC Mom., DPDT, silver AD Alt., DPDT, silver BA Mom., SPDT, gold BB Alt., SPDT, gold BC Mom., DPDT, gold BD Alt., DPDT, gold CC Mom., 4PDT, silver CD Alt., 4PDT, silver DC Mom., 4PDT, gold DD Alt., 4PDT, gold	

*Non-illuminated. †One lamp circuit. ‡Two lamp circuits.

LISTING CONTINUED ON FOLLOWING PAGE.

AML SERIES SWITCHES (CONTINUED)

AML31 POWER DUTY PUSHBUTTON SWITCHES—INCANDESCENT DISPLAY

Intended for power switching applications requiring up to 10 amps capacity. Contact arrangement is form "X" (double break-single throw) normally open.

AML 31	F	B	B	4	AD
	Housing Type	Bezel Color	Lamp Type	Terminal Type	Circuitry Codes
	Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description
	E Rect.* F Rect.† K Rect.*# L Rect.†#	B Black	A No lamp B 6 V lamp C 12 V lamp E 28 V lamp	4 .187" × .200" Solder or quick connect	AC Mom. DPST-NO AD Alt., DPST-NO

AML32 POWER DUTY PUSHBUTTON SWITCHES—NEON DISPLAY

Choice of terminal styles and neon lamp wiring. Models are available with an isolated lamp or an integral lamp connected to the terminals being switched. Switches are intended for power switching applications requiring up to 10 amps.

AML 32	F	B	C	7	AD
	Housing Type	Bezel Color	Lamp Color/Voltage	Terminal Type Lamp Circuit	Circuitry
	Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description
	F Rect.† L Rect.† with full guard bezel	B Black	B Red, 125 VAC C Red, 250 VAC K Clear, 125 VAC L Clear 250 VAC	4 .187" × .020" Solder or quick connect with isolated lamp ckt. 7 .187" × .020" Solder or quick connect with integral lamp ckt.	AC Mom., DPST-NO AD Alt., DPST-NO

AML41 INDICATORS—INCANDESCENT DISPLAY

Provided in three forms: square, rectangular with a P.B. style button, and rectangular with a full lens. The rectangular indicators, mounted with long axis horizontal, can have two or three vertical splits lighting independently.

AML 41	C	B	B	2
	Housing Type	Bezel Color	Lamp Type	Terminal Type
	Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description
	C Square† D Square‡ F Rectangular† G Rectangular‡ J Rectangular Lens type† K Rectangular Lens type‡ L Rectangular Lens type§	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on

AML42 INDICATORS—LED DISPLAY

LED indicators are available in a square pushbutton housing or in a compact, rectangular .80" × .30" device.

AML 42	S	B	C	2
	Housing Type	Bezel Color	LED Color/Voltage	Terminal Type
	Housing Type Description	Bezel Color Description	LED Color/Voltage Description	Terminal Type Description
	C Square† S Rect.†	B Black	B Red, no res. C Red, 5 V lamp D Red, 10 V lamp E Red, 15 V lamp F Red, 2 V lamp H Yel., no res. J Yel., 5 V lamp K Yel., 10 V lamp L Yel., 15 V lamp M Yel., 24 V lamp R Grn., no res. S Grn., 5 V lamp T Grn., 10 V lamp W Grn., 15 V lamp X Grn., 24 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .020" PC, wire-wrap or push-on 8 .110" × .020" With diode protection for LED 9 .025" × .025" With diode protection for LED

AML43 INDICATORS—NEON DISPLAY

Available in rectangular housing only.

AML 43	F	B	B	4	OR	L
	Housing Type	Bezel Color	Lamp Type	Terminal Type	Circuitry Codes	Legend
	Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description	Legend Description
	F Rect.	B Black	B Red, 125 V C Red, 250 V K Clear, 125 V L Clear, 250 V M Green, 125 V P Green, 250 V	4 .187" × .020" Solder or quick connect	OR Red OY Yellow OG Green OW White OK Black	L

†One lamp circuit. ‡Two lamp circuits. §Three lamp circuits. #Full guard bezel. Order must be accompanied by a legend sheet or drawing. *Non-illuminated.

LISTING CONTINUED ON FOLLOWING PAGE.

AML SERIES SWITCHES (CONTINUED)

AML51 BUTTONS AND LENSES FOR INCANDESCENT DISPLAY INDICATORS

Indicator and switch buttons provide bright, uniform color for strong definition and good visibility. Hidden legend, hidden color gives the option of placing dead front areas where required.

Description	Desc.	Desc.	Desc.	Desc.
D Square, 2-split hor.	10 Transmitted, w/o legend	R Red	R Red	R Red
J Rect., lens type, full screen	11 Same w/insert, clear cap	Y Yellow	Y Yellow	Y Yellow
K Rect., lens type, 2-split vert.	20 Transmitted, w/legend	G Green	G Green	G Green
L Rect., lens type, 3-split vert.	21 Same w/insert, clear cap	B Blue	B Blue	B Blue
	30 Dead front, w/o legend	W White	W White	W White
	40 Dead front, w/legend	A Amber	A Amber	A Amber
	50 Projected, w/o legend	C Lt. Grn.	C Lt. Grn.	C Lt. Grn.
	60 Projected, w/legend			

AML51 BUTTONS FOR NON-LIGHTED DISPLAY

DESCRIPTION	DESC.	DESC.	DESC.
C SQUARE	10 TRANSMITTED W/O LEGEND	R RED	R RED
F RECT.	11 SAME W/INSERT, CLEAR CAP	Y YELLOW	Y YELLOW
G RECT., 2-SPLIT HOR.	20 TRANSMITTED W/LEGEND	G GREEN	G GREEN
A SQUARE	21 SAME W/INSERT, CLEAR CAP	B BLUE	B BLUE
B SQUARE	30 DEAD FRONT, W/O LEGEND	W WHITE	W WHITE
R SQUARE	40 DEAD FRONT, W/LEGEND	K BLACK	K BLACK
M RECT.	50 PROJECTED, W/O LEGEND	L GRAY	G GRAY
H RECT.	60 PROJECTED, W/LEGEND	A AMBER	A AMBER
E RECT.		C LT. GRN.	C LT. GRN.

AML52 BUTTONS FOR LED/NEON DISPLAYS

AML52 buttons have a window which allows an LED or neon bulb to extend flush with the top surface of the button.

A For LED devices	Transmitted Color	R Red	K Black
C For LED devices	10 No legend	Y Yellow	A Amber
N For neon devices	20 With legend	G Green	L Gray
		B Blue	C Lt.Gr.
		W White	

Black and gray not recommended for lighted displays. Not available with projected color. May also be used for lighted displays. Also available with trasmitted color; add \$0.75 to price of button with legend.

AML13 SOLID-STATE PADDLE SWITCHES—INCANDESCENT DISPLAY

Paddle switch operators are permanently installed in rectangular housings. Colored covers (ordered separately) snap into the top of the housing. Solid state, electronic control and power duty switching.

Desc.	Desc.	Desc.	Desc.	Desc.	Desc.
E Rect.*	B Black	A No lamp	2 .110" x .020"	AA Sink 5 V	01 Maintained
F Rect.†		B 6 V lamp	Solder or	BA Sink 6-16 V	2 pos.
G Rect.‡		C 14 V lamp	quick connect	AC Sink 5 V ■	
		E 28 V lamp	3 .025" x .025"	BC Sink 6-16V	
			PC, wire-wrap		
			or push-on		

AML15 SOLID-STATE PADDLE SWITCHES—LED DISPLAY

Desc.	Desc.	Desc.	Desc.	Desc.	Desc.	Desc.
F Rect.†	B Black	B No. Res.	2 .110" x .020"	AA Sink 5 V	01 Maintained	R Red
G Rect.‡		C 5 VDC	Solder or	BA Sink 6-16 V	2 pos.	Y Tel.
		D 10 VDC	quick connect	AC Sink 5 V ■		G Grn.
		E 15 VDC	3 .015" x .025"	BC Sink 6-16V		X No
		F 24 VDC	PC, wire-wrap			LED
			or push-on			
			8 .110" x .020"			
			With diode			
			protection			
			for LED			
			9 .025" x .025"			
			With diode			
			protection			
			For LED			

*Non-illuminated. † One lamp circuit. ‡ Two lamp circuit. ■ Contains two Hall Effect ICs; when the output of one IC goes high, the output of the other goes low. #Non-illuminated switches only. Available with type 4 terminals only.

LISTING CONTINUED ON FOLLOWING PAGE

AML SERIES SWITCHES (CONTINUED)

AML23 ELECTRONIC CONTROL PADDLE SWITCHES—INCANDESCENT DISPLAY

AML23 switches provide electronic control capability up to 3 amps 125VAC. There is a choice of two- or three-position operating action.

AML 23	E	B	A	2	AA	01
Housing Type	Bezel Color	Lamp Type	Terminal Type	Circuitry	Action	
Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Codes Description	Action Description	
E Rect.* F Rect.† G Rect.‡	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on	AA SPDT, silver AC DPDT, silver# BA SPST, gold BC DPDT, gold# CA DPDT, silver CC 4PDT, silver DA DPDT, gold DC 4PDT, gold	01 2-Pos. 04 3-Pos. Maint.	

AML25 ELECTRONIC CONTROL PADDLE SWITCHES—LED DISPLAY

AML 25	F	B	B	2	AA	01	R
Housing Type	Bezel Color	LED Voltage	Terminal Voltage	Circuitry	Action	LED	
Housing Type Description	Bezel Color Description	LED Voltage Description	Terminal Voltage Description	Circuitry Description	Action Description	LED Color Description	
F Rect.* G Rect.†	B Black	B No res. C 5VDC D 10VDC E 15VDC F 24VDC	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC wire-wrap or push-on 8 .110" × .020" With diode protection for LED 9 .025" × .025" With diode protection for LED	AA SPDT, silver BA SPDT, gold CA DPDT, silver DA DPDT, gold	01 2-Pos. 04 3-Pos.	R Red Y Yel. G Grn. X No LED	

AML35 POWER DUTY PADDLE SWITCHES—NEON DISPLAY

Choice of terminal styles and neon lamp wiring. Models are available with an isolated lamp or an integral lamp connected to the terminals being switched. Switches are intended for power switching applications requiring up to 15 amps.

AML 35	F	B	B	4	AA	01
Housing Type	Bezel Color	Lamp Voltage	Terminal Type/Lamp Circuit	Circuitry	Action	
Housing Type Description	Bezel Color Description	Lamp Voltage Description	Terminal Type/Circuit Description	Circuitry Description	Action Description	
F Rect.†	B Black	Red B 125VAC C 250VAC Green M 125VAC P 250VAC	4 .187" × .020" Solder or quick connect with isolated lamp ckt. 7 .187" × .020" Solder or quick connect with integral lamp ckt.	AA SPST-NO* AC DPST-NO	01 2-Pos.	

AML53 PADDLE SWITCH COVERS—FOR INCANDESCENT OR NON-LIGHTED DISPLAYS

AML 35	E	B	R
Cover Type	Display/Legend Type	Cover Color	
Cover Type Description	Display/Legend Type Description	Cover Color Description	
E Half Cover T 2-pc. cover	10 Transmitted, w/o legend 11 Transmitted, w/o legend, clear cap 20 Transmitted, w/legend 21 Transmitted, w/legend, clear cap 30 Transmitted, w/o legend, dead front 40 Transmitted, w/legend, dead front 50 Projected, w/o legend, color insert 60 Projected, w/legend, color insert	R Red Y Yellow G Green B Blue W White K Black L Gray\$ A Amber▲ C Lt. Grn.▲	

*Non-illuminated. †One lamp circuit. ■ Contains two Hall Effect IC's; when the output of one IC goes high, the output of the other goes low. #Non-illuminated switches only. •Available with type 4 terminals only. \$Not recommended for lighted displays. ▲Not available in projected color. ‡Two lamp circuit.

SERVICE

Is Not Just a Word.
It is a Promise.

AML SERIES SWITCHES (CONTINUED)

AML55 PADDLE SWITCH COVERS—FOR LED DISPLAYS

The LED covers have a window which allows the LED to be flush with the face of the cover.

AML 55 —	T — Cover Type	10 — Display/Legend Type	R — Cover Color
Cover Type Description	Display/Legend Type Description	Cover Color Description	
E Half cover for 1 LED T 2-pc. cover for 1 LED H 2-pc. cover for 2 LED's	10 No legend 20 With legend	R Red Y Yellow G Green B Blue W White K Black L Gray A Amber C Lt. Grn.	

AML55 PADDLE SWITCH COVERS—FOR NEON DISPLAYS

The neon display covers have a colored lens which extends over the neon bulb.

AML 55 —	N — Cover Type	10 — Display/Legend Type	R — Lens Color	Y — Cover Color
Cover Type Description	Display/Legend Type Description	Lens Color Description	Cover Color Description	
N Full cover	10 No legend 20 With legend	T Clear R Red	R Red Y Yellow G Green B Blue W White K Black L Gray A Amber C Lt. Grn.	

AML14 SOLID-STATE ROCKER SWITCHES—INCANDESCENT DISPLAY

AML 14 —	E — Housing Type	B — Bezel Color	A — Lamp Type	2 — Terminal Type	AA — Circuitry	01 — Action
Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Description	Action Description	
E Rect.* F Rect.† G Rect.‡	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on	AA Sink 5 V BA Sink 6-16 V AC Sink 5 V ■ BC Sink 6-16 V ■ DA Sink 4.5-24V DC Sink 4.5-24V ■	01 Maintained 2 pos. 04 Maintained 3 pos.	

AML16 SOLID-STATE ROCKER SWITCHES—LED DISPLAY

AML 16 —	F — Housing Type	B — Bezel Color	B — LED Type	2 — Terminal Type	AA — Circuitry	01 — Action	R — LED Color
Housing Type Description	Bezel Color Description	LED Type Description	Terminal Type Description	Circuitry Description	Action Description	LED Color Description	
F Rect.† G Rect.	B Black	B No res. C 5 VDC D 10 VDC E 15 VDC F 24 VDC	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, Wire-wrap or push-on 8 .110" × .020" With diode protection for LED 9 .025" × .025" With diode protection for LED	AA Sink 5 V AC Sink 5 V ■ BA Sink 6-16 V BC Sink 6-16 V ■ DA Sink 4.5-24V DC Sink 4.5-24V ■	01 Maintained 2 pos. 04 Maintained 2 pos.	R Red Y Yel. G Grn. X No LED	

AML24 ELECTRONIC CONTROL ROCKER SWITCHES—INCANDESCENT DISPLAY

AML 24 —	E — Housing Type	B — Bezel Color	A — Lamp Type	2 — Terminal Type	AA — Circuitry	01 — Action
Housing Type Description	Bezel Color Description	Lamp Type Description	Terminal Type Description	Circuitry Description	Action Description	
E Rect.* F Rect.† G Rect.‡	B Black	A No lamp B 6 V lamp C 14 V lamp E 28 V lamp	2 .110" × .020" Solder or quick connect 3 .025" × .025" PC, wire-wrap or push-on	AA SPDT, silver AC DPDT, silver BA SPDT, gold# BC DPDT, gold# CA DPDT, silver CC 4PDT, silver DA DPDT, gold DC 4PDT, gold	01 2-Pos. 04 3-pos. Maint.	

*Non-illuminated. †One lamp circuit. ■ Contains two Hall Effect IC's; when the output of one IC goes high, the output of the other goes low. #Non-illuminated switches only. ‡Two lamp circuit.

LISTINGS CONTINUED ON FOLLOWING PAGE

AML SERIES SWITCHES (CONTINUED)

2

SWITCHES

&

KNOBBS

AML26 ELECTRONIC CONTROL ROCKER SWITCHES—LED DISPLAY

AML 26		F	B	B	2	AA	10	R
Housing Type		Bezel Color	LED Voltage	Terminal Type		Circuitry	Action	LED Color
Housing Type Description		Bezel Color Description	LED Voltage Description	Terminal Type Description		Circuitry Description	Action Description	LED Color Description
F Rect.	B Black	B No res.	2 .110" × .020"	Solder or quick connect		AA SPDT, silver	01 2-Pos.	R Red
G Rect.		C 5VDC	3 .025" × .025"	PC, wire-wrap or push-on		BA SPDT, gold	04 3-Pos.	Y Yel.
		D 10VDC	8 110" × .020"	With diode protection for LED		CA DPDT, silver	Maintained	G Grn.
		E 15VDC	9 .025" × .025"	With diode protection for LED		DA DPDT, gold		X No LED
		F 24VDC						

AML34 POWER DUTY ROCKER SWITCHES—INCANDESCENT DISPLAY

AML 34		E	B	A	4	AA	01
Housing Type		Bezel Color	Lamp Type Lamp Circuit	Terminal Type	Circuitry	Action	
Housing Type Description	Bezel Color Description	Lamp Type/Lamp Circuit Description	Terminal Type Description		Circuitry Description	Action Description	
E Rect. F Rect.	B Black	A No lamp B 6V lamp C 14V lamp E 28V lamp	4 .187" × .020" Solder or quick connect with isolated lamp ckt.		AA SPST-NO AC DPST-NO	01 2-Pos. Maintained	

AML36 POWER DUTY ROCKER SWITCHES—NEON DISPLAY

Choice of terminal styles and neon lamp wiring. Models are available with an isolated lamp or an integral lamp connected to the terminals being switched. Switches are intended for power switching applications up to 15 amps.

AML 36		F	B	A	4	AA	01
Housing Type		Bezel Color		Lamp Voltage	Terminal Type	Circuitry	Action
Housing Type Description	Bezel Color Description	Lamp Voltage Description	Terminal Type Description			Circuitry Description	Action Description
F Rect.†	B Black	B 125VAC C 250VAC	4 .187" × .020" Solder or quick connect with isolated lamp ckt. 7 .187" × .020" Solder or quick connect with integral lamp ckt.			AA SPST-NO# AC DPST-NO	01 2-Pos. Maint.

†Available with type 4 terminals only.

AML54 ROCKER OPERATORS FOR NON-LIGHTED OR INCANDESCENT DISPLAYS

AML 54		F	10	R	
Operator Type		Display/Legend Type		Rocker Color	
Rocker Type Description		Display/Legend Type Description		Rocker Color Description	
F	Full Rocker	10	No legend	R	Red
E	Half Rocker	11	No legend, clear cap	Y	Yellow
T	2-pc. Rocker	20	With legend	G	Green
		21	With legend, clear cap	B	Blue
		30	No legend, dead front	W	White
		40	With legend, dead front	K	Black§
		50	Projected w/o legend	L	Gray§
		60	Projected w/legend	A	Amber▲
				C	Lt. Grn.▲

§Not recommended for lighted displays. ▲Not available for projected color.

AML56 ROCKER OPERATORS—FOR NEON & LED DISPLAYS

AML 56		N	10	R	K	
Rocker Type		Display/Legend Type		Lens Color	Rocker Color	
Rocker Type Description	Display/Legend Type Description		Lens Color Description		Rocker Color Description	
N Full Rocker	10	No legend	T	Clear	R	Red
	20	With legend	R	Red	Y	Yellow
					G	Green
					B	Blue
					W	White
					K	Black
					L	Gray
					A	Amber
					C	Lt. Grn.

LISTING CONTINUED ON FOLLOWING PAGE

AML SERIES SWITCHES (CONTINUED)

AML56 ROCKER OPERATORS—FOR LED DISPLAYS

AML 56	E	10	R	R
Rocker Type	Display/Legend Type	Rocker Color	Rocker Color	Rocker Color
Rocker Type Description	Display/Legend Type Description	Rocker Color Description	Rocker Color Description	Rocker Color Description
E Half Rocker	10 Transmitted, no legend	Type E or LED side of Type T or H	Other side of Type H or Non-LED side of Type T	
H 2-pc rocker for 2 LEDs	20 Transmitted with legend	R Red	R Red	
T 1-pc. rocker		Y Yellow	Y Yellow	
		G Green	G Green	
		B Blue	B Blue	
		W White	W White	
		K Black	K Black	
		L Gray	L Gray	
		A Amber	A Amber	
		C Lt. Grn.	C Lt. Grn.	

AML61 STRIP MOUNTING ASSEMBLY

Intended for behind-the-panel mounting of 1 to 10 switches and/or indicators. Brackets can be positioned to accommodate various panel thicknesses and device orientation (horiz. or vert).

AML 61	B	A	5	A
Housing Type	Mounting Bracket Orientation#	No. of Stations (Cans) Square	Rectangular	Mounting Bracket Location
Housing Type Description	Mounting Bracket Description	No. of Square Stations	No. of Rectangular Stations	Mounting Bracket Description
B Square*	A Square	1	1	A 0.06" above top of can
E Rect.*	B Rect., horiz.	2	2	B Flush with top of can
J Square†	C Rect., vert.	3	3	C 0.03" below top of can
K Rect.†		4	4	D 0.06" below top of can
		5	5	E 0.12" below top of can
		6	6	F 1.46" below top of can
		7	7	G 0.020" below top of can
		8	8	K 0.045" below top of can
		9§	9§	L 0.05" below top of can
		10§	10§	P 0.065" below top of can
		11§	11§	T 0.085" below top of can
		12§	12§	U No bracket

*Bright finish. †Black matte finish. #Other orientations available. §A and C orientations only.

AML 71 BARRIERS

Barriers are used to separate individual switches or indicators. One switch or indicator requires two end barriers. Two or more devices require two end barriers plus a center barrier between each two devices.

AML 71	S	C	B
Length	Type	Color	
Length Description	Type Description	Color Description	
S Short for use with square devices or the short side of rect. devices.	C Center	B Black	
L Long for use with the long side of rect. devices.	E End		

AML 91 LAMPS

AML 91	L	A	86
Device	Type	Lamp No.	
Device Description	Type Description	Lamp Description	
L Lamp	A Wedge base T1¼	86 Lamp #86 6.3 volts	
		73 Lamp #73 14 volts	
		85 Lamp #85 28 volts	

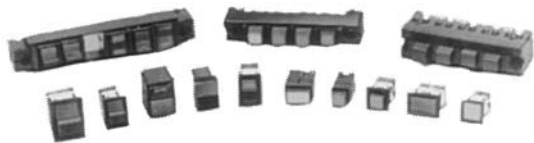
AML27 KEYLOCK SWITCHES

Enable control of access to computer peripherals, keyboards, point of sale terminals, security systems and other locations where tampering must be discouraged. Rated up to 3 amps at 125 VAC. 1 or 2 poles; 2 or 3 positions; maintained or momentary action. UL listed; CSA certified.

AML 27	A	B	K	2	AA	01	BA
	Housing Type	Bezel	Button	Terminal	Circuitry Codes	Operating	Key #
Housing Type Description	Bezel Color	Button Color	Terminal Type	Circuitry Codes Description	Operating Action	Key Combinations	
A Keylock square housing	B Black	K Black	2 .110" × .020" Solder or quick connect	AA 1-pole, silver AC 2-pole, silver BA 1-pole, gold BC 2-pole, gold	01 2-pos. 90° detent, maintained 02 2-pos., 90° detent, maintained* 03 2-pos., 60° detent, momentary† 04 3-pos., 90° detent, maintained 05 3-pos., 60° detent, momentary† 06 3-pos., 90° detent, maintained§	BA BB BC BD BE BF BH BG BK BJ	

*Key withdrawal in both positions. †Spring return from right. ‡Spring return from left and right. §Key withdrawal from all three positions. #Two keys furnished.

MML SERIES MINIATURE MANUAL LINE PUSHBUTTON SWITCHES



MML switches offer a large measure of design freedom in a miniature package. Their low profile design answers space and styling needs of computer, business, instrument and communication equipment design. The many design options available plus a modular ordering system, provide flexibility to choose the mounting option, lens colors, illumination means, electrical ratings and circuits, and operating action (including multi-switch interlock) that best meet specific application needs. Switches, indicators,

lenses, LEDs, incandescent lamps, bezels, mounting clips, strip mounting frames, end rails for matrix mount and multi-switch interlock assemblies are ordered as separate items. To order assembled combinations, to meet special needs, consult your local distributor or nearest Micro Switch sales office. Switch modules available in three styles; solid state, electronic control and power duty.

SOLID STATE PUSHBUTTON SWITCHES

Hall effect reliability. A permanent magnet plunger moves adjacent to the Hall effect integrated circuit to give a digital current-sinking (normally high and normally low) output. Provides low voltage signals that interface with nearly all DC logic, 5 VDC supply voltage. Momentary action or 2-level alternate action. Printed circuit board or snap-in panel mounting. Legend-

able lenses, LED, incandescent or non-lighted display. For LED display, order LEDs (MML92) and lenses (MML52). For incandescent display, order lamps (MML91) and lenses (MML51). Designed to comply with UL and CSA.

Housing Type (Rectangular)	Mounting	Terminals	Circuitry/Action	Plunger
MML11K Black housing MML11E White housing	A No bezel (PWB mounting) K Black bezel, mtg. clip/long sides M Black bezel, mtg. clip/short sides W White bezel, mtg. clip, long sides P White bezel, mtg. clip/short sides	3 Printed wiring board	AA -5-24 VDC sinking mom. action AE -5-24 VDC sinking alt. action	K Black

ELECTRONIC CONTROL PUSHBUTTON SWITCHES

Available with momentary or 2-level alternate action, 1 or 2 poles, silver or gold contacts. Printed circuit board or snap-in panel mounting; solder terminals for panel-mount version. Legendable lenses. Use as an unlighted pushbutton or add one LED or incandescent lamp for lighted display. For

LED display, order LED (MML92) and lens (MML52). For incandescent display, order lamp (MML91) and lens (MML51). Designed to comply with UL and CSA.

Housing Type	Mounting	Terminals	Circuitry/Action (Each pole is double throw)	Standard Plunger (w/o lens)	1-Piece Plunger Lens Cap buttons
Rectangular: MML21K — Black housing MML21E White housing Square: MML21H Black housing MML21B White housing	Rectangular: A No bezel (PWB mounting) K Black bezel, mtg. clip/long sides M Black bezel, mtg. clip/short sides W White bezel, mtg. clip/long sides P White bezel mtg. clip/short sides Square: A No bezel (PWB mounting) R Black bezel/ mtg. clip T White bezel/ mtg. clip	3 Printed wiring board 2 Solder	Silver Contacts: AA 1 pole, mom. action AB 1 pole, alt. action AC 2 poles, mom. action* AD 2 poles, alt. action* Gold Contacts BA 1 pole, mom. action BB 1 pole, alt. action BC 2 poles, mom. action* BD 2 poles, alt. action*	K Black W White A No plunger (use with encoded umbrella buttons only.)	For LED Display: H Red L Yellow N Green For incandescent or non-lighted display: R Red B Blue Y Yellow V White G Green Z Black

*Not available in square housing.

POWER DUTY PUSHBUTTON SWITCHES

Available in 1 or 2 poles, momentary or 2-level alternate action. Printed circuit board or snap-in panel mounting; solder quick connect terminals for panel-mount version. Legendable lenses (order lenses MML51 separately). Designed to comply with UL, CSA and international standards.

Note: MML31 switches do not have a provision for illumination of button. Visual feedback can be achieved by using a 2-level alternate-action switch, or add a companion lighted indicator.

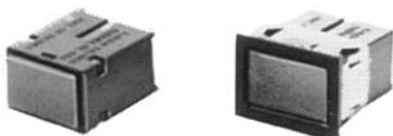
Housing Type: (Rectangular)	Mounting	Terminals	Circuitry/Action (Each pole is single-throw normally open)	Plunger
MML31K — Black housing, non-lighted MML31E White housing, non-lighted	A No bezel (PWB mounting) K Black bezel, mtg. clip/long sides M Black bezel mtg. clip/short sides W White bezel, mtg. clip/long sides P White bezel, mtg. clip/short sides	3 Printed wiring board 2 Solder Quick-connect	AA 1 pole, mom. action AB 1 pole, alt. action AC 2 poles, mom. action AD 2 poles, alt. action	K Black

SWITCH AND INDICATOR LENSES

FOR INCANDESCENT OR NON-LIGHTED DISPLAY HOW TO ORDER

MML51E	20	R
Lens Type	Display/Legend Type*	Color
Rectangular: MML51E — Switch lens MML51G — Indicator lens Square: MML51C — Switch MML51D — Indicator lens	Transmitted Color 10 —No legend 20 —With legend	R —Red Y —Yellow G —Green B —Blue W —White B —Black

MML44 INDICATORS

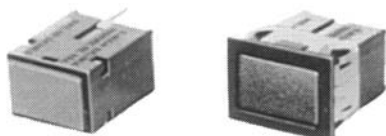


Illuminated by one LED. Legendable lenses. For use with one LED only; order LED (MML92) and lens (MML52) separately.

HOW TO ORDER

MML44K	A	3
Housing Type	Mounting	Terminals
Rectangular MML44K — Black housing MML44F — White housing	A —No bezel; (PWB mounting) K —Black bezel, mtg. clip/long sides M —Black bezel, mtg. clip/short sides W —White bezel, mtg. clip/long sides P —White bezel, mtg. clip/short sides	A —None 3 —printed wiring board 2 —Solder

MML46 INDICATORS



Illuminated by one or two LEDs or incandescent lamps. legendable lenses. Order LEDs (MML92) and lenses (MML52) or incandescent lamps (MML91) and lenses (MML51) separately.

HOW TO ORDER

MML46K	A	3
Housing Type:	Mounting	Support Posts
Rectangular (1 or 2 LEDs or incand. lamps— MML46K — Black housing MML46F — White housing Square (1 LED or incand. lamp) MML46H — Black housing MML46B — White housing	Rectangular: A —No bezel (PWB mounting) K —Black bezel, mtg. clip/long sides M —Black bezel, mtg. clip/short sides W —White bezel, mtg. clip/long sides P —White bezel, mtg. clip/short sides Square: A —No bezel R —Black bezel, mtg. clip T —White bezel, mtg. clip	3 Incl. for PWB mount 0 None For snap-in panel mount and strip/matrix mount No Charge 2 Solder No charge

SWITCH AND INDICATOR LENSES

FOR LED DISPLAY HOW TO ORDER

MML52G	10	Y
Lens Type:	Display Legend Type*	Color/Illumination
Rectangular: MML52E — Switch lens, LED display, MML52G — Indicator lens LED or Neon display Square: MML52C — Switch Lens, LED display MML52D — Indicator lens, LED display	Transmitted Color 10 —No legend 20 —With legend	LED Display: R —Red Y —Yellow G —Green C —Clear Neon Display: R —Red Y —Yellow C —Clear

LEDS/RECEPTACLES

LEDs should be the same color as the button lens they illuminate. Packaged 10 per listing, including spacers for mounting on PCB. Available in red, green or yellow, in Stanley or Hewlett-Packard types.

Mfr. No.	LED Color	Forward Characteristics @ 20 mA		LED Manufacturer's Part Numbers
		Typ.	Max.	
MML92ERS MML92EGS MML92EYS	Red Green Yellow	1.7 V 2.1 V 2.1 V	2.0 V 2.5 V 2.5 V	Stanley ESBR5633 ESBG5633 ESBY5633
MML92ERH MML92EGH MML92EYH	Red Green Yellow	2.2 V 2.3 V 2.2 V	3.0 V 3.0 V 3.0 V	Hewlett-Packard HLMP-3366 HLMP-3568 HLMP-3466

INCANDESCENT LAMPS/RECEPTACLES

Lamps and receptacles available separately or together. Receptacles available with solder or PCB terminals.

MML91 INCANDESCENT LAMP AND RECEPTACLE

T-1.6V incandescent lamp and receptacle with PCB terminals and 1/8-turn base.

MML91B INCANDESCENT LAMP ONLY

T-1, bi-pin 6 V lamp only; industrial lamp No. 7683.

MML93 INCANDESCENT LAMP RECEPTACLE

Incandescent. T-1 bi-pin lamp receptacle with solder terminals and 1/8-turn base. No lamp furnished.

"If You Can't Find It Here . . .

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