SE/XE SERIES

003122
Issue 6

MICRO SWITCH Sealed Miniature Basic Switches



DESCRIPTION

The MICRO SWITCH SE and XE Series miniature sealed switches are designed for precise and reliable position indication on aircraft and military systems. These switches are also suitable for other commercial and industrial applications where a degree of environmental sealing is required.

The SE Series switches incorporate the premium snap-action SM basic switch into the SE housing. The approximate 22 mm x 18 mm x 9 mm package size of the SE switch housing is suitable where there is limited space on equipment. The SE Series is environmentally sealed to symbol 3 “watertight” per MIL-PRF-8805. Select SE Series switches are also UL and CSA certifications.

The XE Series switches are similar to the SE Series switches except in a smaller package size of approximately 16 mm x 18 mm x 8 mm. The XE Series switches incorporate the premium snap-action SX basic switch. The XE Series switches are also environmentally sealed to symbol 3 “watertight” per MIL-PRF-8805. Select XE Series switches are UL certified and MIL-PRF-8805 qualified.

FEATURES

- Miniature package size of switch
- Environmentally sealed per MIL-PRF-8805 symbol 3 “watertight”
- SPDT (single pole double throw, 1NC-1NO), or SPST (single pole single throw 1NC or 1NO)
- Electrical termination with epoxy sealed integral solder pins or epoxy sealed 0,52 mm² [20 awg] wire leads
- Silver contacts standard for power duty circuits or optional gold contacts for logic level circuits
- Standard temperature range of -53°C to 105°C [-65°F to 221°F] or optional temperature range of -26°C to 85°C [-15°F to 185°F]
- Wide selection of stainless steel auxiliary actuators

USE CASE EXAMPLES

- Military aircraft and helicopters
- Commercial aircraft and helicopters
- Aviation ground support equipment
- Military land vehicles (track and wheeled vehicles)

VALUE TO CUSTOMERS

- Miniature package size with power duty or logic level switch capability
- Agency certifications and military approvals
- Worldwide Honeywell support

DIFFERENTIATION

- SE Series built with premium MICRO SWITCH SM switch mechanism
- XE Series built with premium MICRO SWITCH SX switch mechanism
- Diaphragm seal between plunger and housing with epoxy sealed termination

PORTFOLIO

Honeywell MICRO SWITCH SE and XE Series of limit switches are a portion of a comprehensive line of sealed switches. To view the complete line, click here.

Honeywell

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

TABLE 1. SPECIFICATIONS

Characteristic	SE Series	XE Series
Description	environmentally sealed switch	environmentally sealed miniature switch
Housing material	anodized aluminum	anodized aluminum
Mechanical endurance	contact Honeywell	25,000
Electrical endurance	contact Honeywell	25,000
Circuitry	SPST (NC), SPST (NO), SPDT	SPST (NC), SPST (NO), SPDT
Electrical termination	epoxy sealed leadwire, (0,52 mm² [20 awg]) or epoxy sealed solder pins	epoxy sealed leadwire, (0,52 mm² [20 awg]) or epoxy sealed solder pins
Electrical rating	5 A @ 30 Vdc; 5 A @ 250 Vac, 60 Hz	7 A @ 28 Vdc; 7 A @ 250 Vac, 60 Hz
Sealing	Symbol 3 “watertight” per MIL-PRF-8805	Symbol 3 “watertight” per MIL-PRF-8805
Temperature range	-53°C to 105°C [-65°F to 221°F] (standard) -26°C to 85°C [-15°F to 185°F] (5SE Series)	-53°C to 105°C [-65°F to 221°F] (standard) -26°C to 85°C [-15°F to 185°F] (5XE Series)
Temperature range (optional)	contact Honeywell	-53°C to 149°C [-65°F to 300°F] (14XE Series)
Vibration	Grade 2 (15 G) per MIL-PRF-8805	Grade 2 (15 G) per MIL-PRF-8805
Approvals	UL, CSA	UL, MIL-PRF-8805
Actuators	top pin plunger, optional auxiliary actuators available	top pin plunger, optional auxiliary actuators available

TABLE 2. ELECTRICAL RATINGS

Rating code	SE/XE Series
A	Sea level @ 28 Vdc; 5 A res. and 3 A ind. 50,000 feet @ 28 Vdc; 5 A res. and 2.5 A ind. General purpose; 5 A res. and 5 A ind. at 125 or 250 Vac, 60 Hz
B	UL and CSA rating; 5 A at 125 or 250 Vac, 60 Hz
C	Sea level @ 28 Vdc; 7 A res. and 4 A ind. 50,000 feet @ 28 Vdc; 7 A res. and 2.5 A ind. General purpose; 7 A res. and 4 A ind. at 115 Vac, 400 Hz
D	UL rating; 7 A at 125 or 250 Vac, 60 Hz
E	Sea level @ 28 Vdc; 7 A res. and 4 A ind. 50,000 feet @ 28 Vdc; 7 A res and 2.5 A ind.
F	Logic level @ 28 Vdc; 1 amp res. and 0.50 A ind.

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

ELECTROMECHANICAL SWITCHES

Definitions below explain the meaning of operating characteristics. Characteristics shown in tables were chosen as most significant. They are taken at normal room temperature and humidity. These may vary as temperature and humidity conditions differ. Sketches show how characteristics are measured for in-line plunger actuation.

Linear dimensions for in-line actuation are from top of plunger to a reference line, usually the center of the mounting holes.

Differential Travel (D.T.) – Plunger or actuator travel from point where contacts "snap-over" to point where they "snap-back."

Free Position (F.P.) – Position of switch plunger or actuator when no external force is applied (other than gravity).

Full Overtravel Force – Force required to attain full overtravel of actuator.

Operating Position (O.P.) – Position of switch plunger or actuator at which point contacts snap from normal to operated position. Note that in the case of flexible or adjustable actuators, the operating position is measured from the end of the lever or its maximum length. Location of operating position measurement shown on mounting dimension drawings.

Operating Force (O.F.) – Amount of force applied to switch plunger or actuator to cause contact "snap-over." Note in the case of adjustable actuators, the force is measured from the maximum length position of the lever.

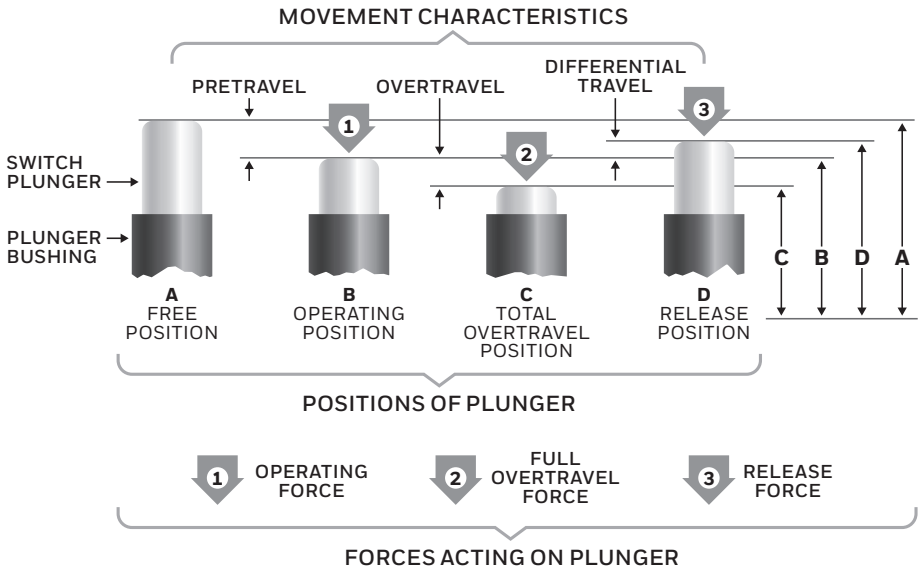
Overtravel (O.T.) – Plunger or actuator travel safely available beyond operating position.

Pretravel (P.T.) – Distance or angle traveled in moving plunger or actuator from free position to operating position.

Release Force (R.F.) – Amount of force still applied to switch plunger or actuator at moment contacts snap from operated position to unoperated position.

Total Travel (T.T.) – Distance from actuator free position to overtravel limit position.

IN-LINE PLUNGER ACTUATION



MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

O.F. • Operating force
R.F. • Release force
P.T. • Pretravel
O.T. • Overtravel
D.T. • Differential travel
O.P. • Operating position

MICRO SWITCH SE PRODUCT SPECIFICATIONS AND LISTINGS

Contact your Honeywell rep or distributor for additional listings

	Catalog Listing	Elect. Rating Spec. (page 5)	Contacts	Termination mm [in]	O.F. g [oz]	R.F. min. g [oz]	P.T. max. mm [inches]	O.T. min. mm [inches]	D.T. max. mm [inches]	O.P. nom. mm [inches]	Comment
 *(see Figure 1)*	**1SE1**	A	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	General purpose
	1SE2	A	SPST, NC	Wire leads (2) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Single circuit only
	1SE3	A	SPST, NO	Wire leads (2) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Single circuit only
	1SE401	F	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Gold bifurcated contacts
	4SE1	B	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	UL, CSA
	5SE1	A	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Oil resistant fluorosilicone seal
	7SE1	A	SPDT	Wire leads (3) 305 [12]	113 to 227 [4 to 8]	57 [2]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Lower force
 *(see Figure 2)*	**1SE1-T**	A	SPDT	Solder pins	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Solder terminals
	12SE4-T	A	SPDT	Solder pins	142 to 539 [5 to 19]	113 [4]	1,27 [0.050]	0,08 [0.003]	0,1 [0.004]	10,8 [0.425]	Higher force

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

O.F. • Operating force
R.F. • Release force
P.T. • Pretravel
O.T. • Overtravel
D.T. • Differential travel
O.P. • Operating position

MICRO SWITCH XE PRODUCT SPECIFICATIONS AND LISTINGS

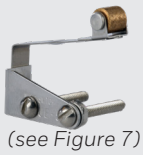
Contact your Honeywell rep or distributor for additional listings

	Catalog Listing	Elect. Rating Spec. (page 5)	Contacts	Termination mm [in]	O.F. g [oz]	R.F. min. g [oz]	P.T. max. mm [inches]	O.T. min. mm [inches]	D.T. max. mm [inches]	O.P. nom. mm [inches]	Comment
 *(see Figure 3)*	**1XE1* [MS27994-1]**	C	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	MIL-PRF 8805 applications
	1XE201* [MS27994-4]	C	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	MIL-PRF 8805 applications
	1XE2-3	C	SPNC	Wire leads (2) 914 [36]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Normally closed circuit
	1XE3	C	SPNO	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Normally open circuit
	1XE301* [MS27994-5]	F	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Gold bifurcated contacts
	4XE1	D	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	UL
	5XE1	C	SPDT	Wire leads (3) 305 [12]	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Oil resistent fluorosilicone seal
	14XE1	E	SPDT	Wire leads (3) 305 [12]	255 [9] max.	57 [2]	0,76 [0.030]	0,1 [0.004]	0,13 [0.005]	10,9 [0.430]	High temp. 149 °C [300 °F]
 *(see Figure 4)*	**1XE401-T**	F	SPDT	Solder pins	142 to 482 [5 to 17]	85 [3]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Gold bifurcated contacts
	14XE1-T	E	SPDT	Solder pins	255 [9] max.	57 [2]	0,76 [0.030]	0,1 [0.004]	0,13 [0.005]	10,9 [0.430]	High temp. 149 °C [300 °F]
	1XE1-T* [MS27994-3]	C	SPDT	Solder pins	142 to 482 [5 to 17]	113 [4]	1,27 [0.050]	0,1 [0.004]	0,13 [0.005]	10,8 [0.425]	Mil-PRF 8805

* Reference MIL-PRF-8805/32

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

MICRO SWITCH JE SERIES AUXILIARY ACTUATORS FOR THE MICRO SWITCH™ SE SERIES SWITCHES (specifications when assembled to 1SE1)

		Description	Actuator Length	Operting Force max.	Release Force min.	Pretravel max.	Overtravel min.	Differential Travel max.	Operating Point nom.	Free Position nom.
JE-1	 *(see Figure 5)*	Straight leaf *(mounting hardware included)*	16,8 mm [0.66 in]	340 g [12 oz]	57 g [2 oz]	3,81 mm [0.150 in]	0,38 mm [0.015 in]	0,64 mm [0.025 in]	11,2 mm [0.44 in]	15 mm [0.59 in]
JE-4	 *(see Figure 6)*	Roller leaf, roller rotated 90° to switch axis *(mounting hardware included)*	16,8 mm [0.66 in]	340 g [12 oz]	57 g [2 oz]	3,81 mm [0.150 in]	0,38 mm [0.015 in]	0,64 mm [0.025 in]	16,3 mm [0.64 in]	20,1 mm [0.79 in]
JE-5	 *(see Figure 7)*	Roller leaf *(mounting hardware included)*	15,2 mm [0.60 in]	340 g [12 oz]	57 g [2 oz]	3,81 mm [0.150 in]	0,38 mm [0.015 in]	0,64 mm [0.025 in]	16,3 mm [0.64 in]	20,1 mm [0.79 in]
JE-17	 *(see Figure 8)*	Roller leaf [reversed] *(mounting hardware included)*	15,2 mm [0.60 in]	340 g [12 oz]	57 g [2 oz]	3,81 mm [0.150 in]	0,38 mm [0.015 in]	0,64 mm [0.025 in]	16,3 mm [0.64 in]	20,1 mm [0.79 in]
JE-21	 *(see Figure 9)*	Roller lever	13,7 mm [0.540 in]	170 g [6 oz]	28 g [1 oz]	2,54 mm [0.100 in]	0,25 mm [0.01 in]	0,41 mm [0.016 in]	16,3 mm [0.64 in]	18,8 mm [0.74 in]
JE-22**	 *(see Figure 10)*	Tandem roller lever	17,8 mm [0.700 in]	482 g [17 oz]	113 g [4 oz]	2,54 mm [0.100 in]	0,15 mm [0.006 in]	0,3 mm [0.012 in]	16,8 mm [0.66 in]	19,3 mm [0.76 in]
JE-61**	 *(see Figure 11)*	Tandem roller leaf	15,2 mm [0.60 in] ref.	–	–	3,81 mm [0.150 in]	0,13 mm [0.005 in]	–	16,3 mm [0.64 in]	20,1 mm [0.79 in]

** Travel characteristics on tandem actuators vary with actual basic switch characteristics

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

MICRO SWITCH JM SERIES AUXILIARY ACTUATORS FOR THE MICRO SWITCH™ XE SERIES SWITCHES (specifications when assembled to 1XE1)

		Description	Actuator Length	Operting Force max.	Release Force min.	Pretravel max.	Overtravel min.	Differential Travel max.	Operating Point nom.	Free Position nom.
JM-1	 *(see Figure 12)*	Straight leaf *(mounting hardware included)*	11,4 mm [0.45 in]	595 g [21 oz]	85 g [3 oz]	3,18 mm [0.125 in]	0,23 mm [0.009 in]	0,3 mm [0.012 in]	10,8 mm [0.425 in]	14 mm [0.55 in]
JM-5	 *(see Figure 13)*	Roller leaf *(mounting hardware included)*	9,5 mm [0.375 in]	595 g [21 oz]	85 g [3 oz]	3,18 mm [0.125 in]	0,23 mm [0.009 in]	0,3 mm [0.012 in]	15,9 mm [0.625 in]	19,1 mm [0.75 in]

** Travel characteristics on tandem actuators vary with actual basic switch characteristics

MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
SE/XE SERIES

PRODUCT AND ACTUATOR DIMENSIONS

Figure 1. MICRO SWITCH SE Dimensions, Wire Lead

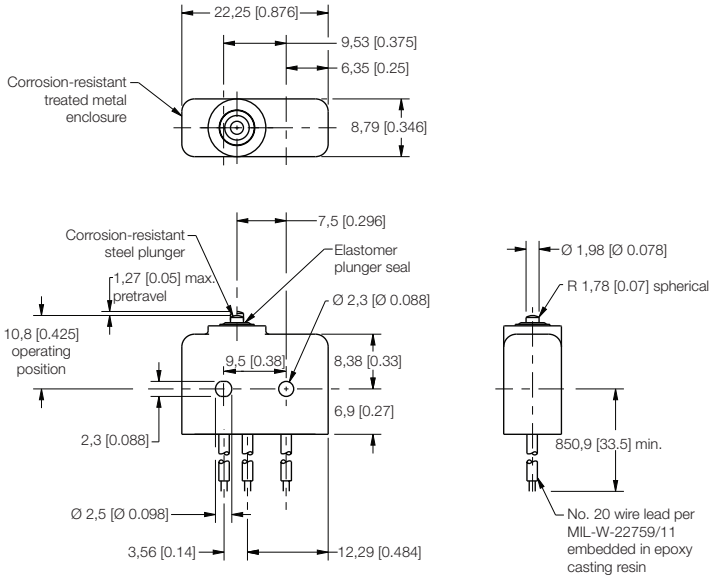


Figure 2. MICRO SWITCH SE Dimensions, Solder Terminal

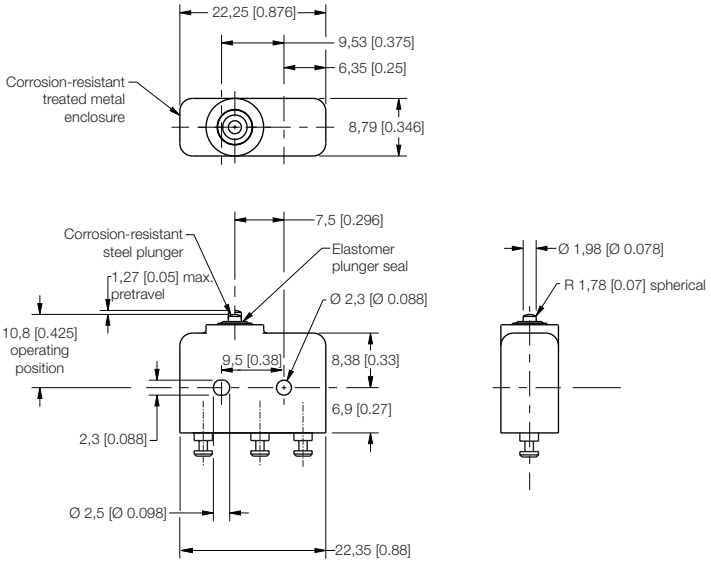


Figure 3. MICRO SWITCH XE Dimensions, Wire Lead

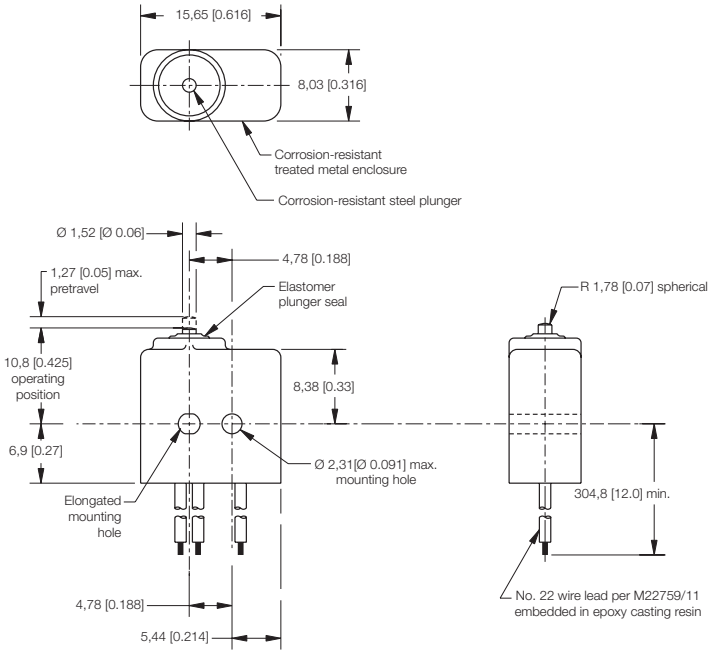
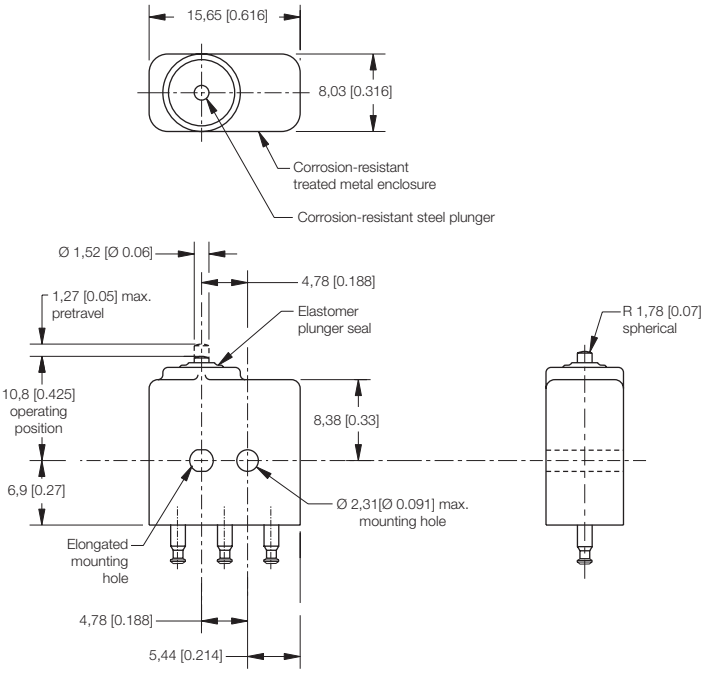


Figure 4. MICRO SWITCH XE Dimensions, Solder Terminal



MICRO SWITCH SEALED MINIATURE BASIC SWITCHES
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Figure 5. JE-1 Dimensions

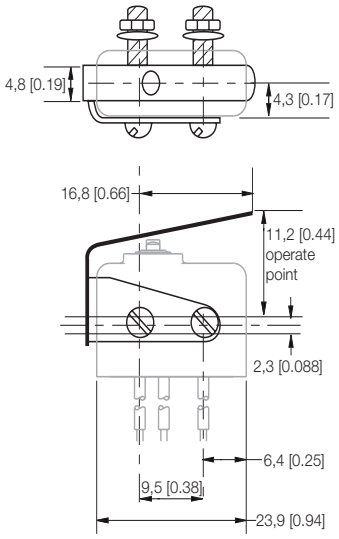


Figure 6. JE-4 Dimensions

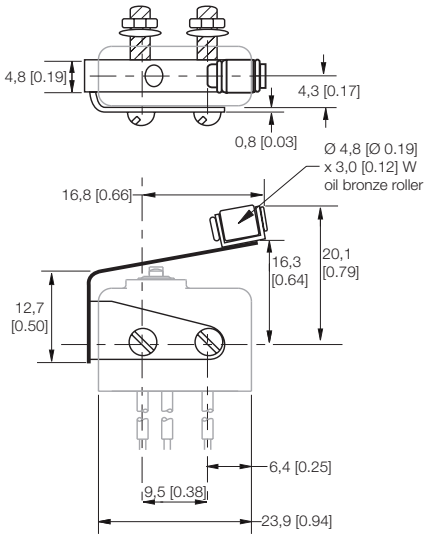


Figure 7. JE-5 Dimensions

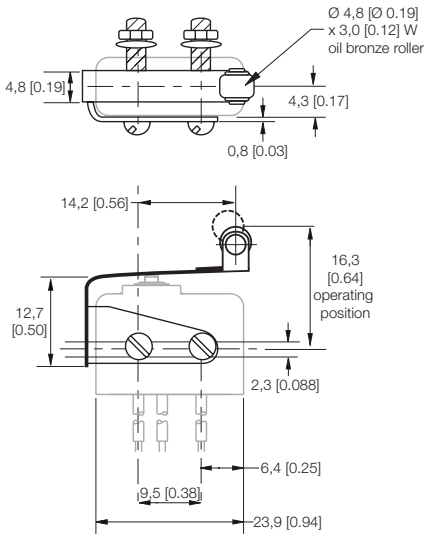


Figure 8. JE-17 Dimensions

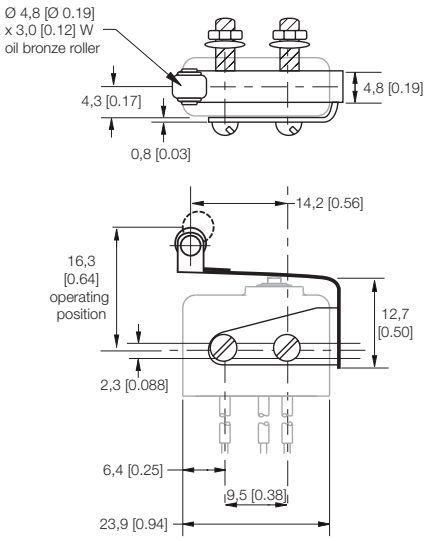


Figure 9. JE-21 Dimensions

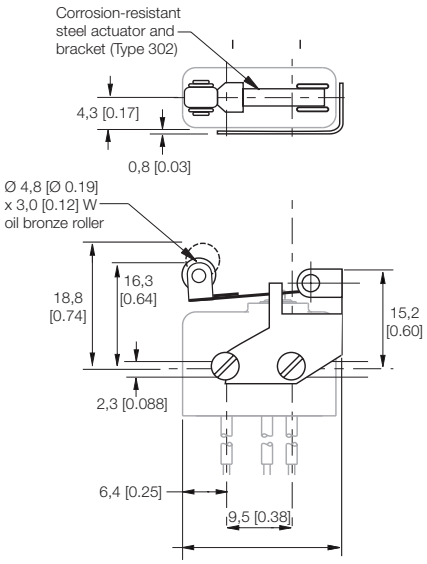


Figure 10. JE-22 Dimensions

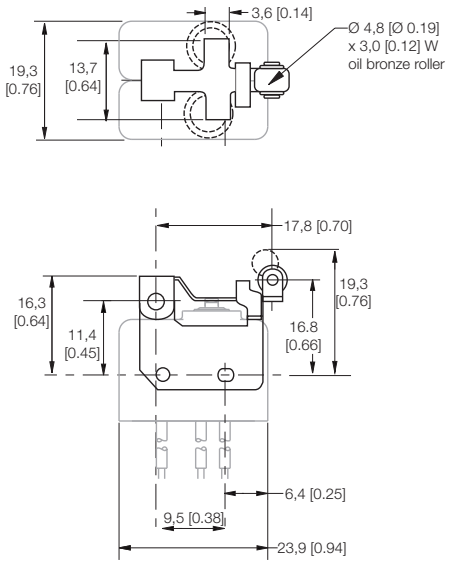


Figure 11. JE-61 Dimensions

need dimensional drawing

Figure 12. JM-1 Dimensions

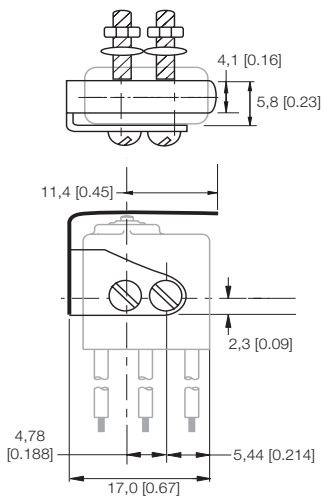
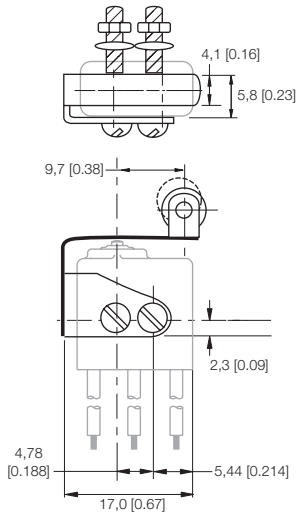


Figure 13. JM-5 Dimensions



⚠ WARNING
IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING
MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. The Honeywell standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While Honeywell may provide information or engineering support for its products through Honeywell personnel, literature and website, it is the buyer's sole responsibility to determine the suitability of the Honeywell product(s) for the buyer's requirements

Specifications may change without notice. The information we supply is believed to be accurate as of this writing. However, Honeywell assumes no responsibility for its use.

For more information

Honeywell Sensing Solutions services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit automation.honeywell.com or call:

USA/Canada	+302 613 4491
Latin America	+1 305 805 8188
Europe	+44 1344 238258
Japan	+81 (0) 3-6730-7152
Singapore	+65 6355 2828
Greater China	+86 4006396841

Honeywell Sensing Solutions
830 East Arapaho Road
Richardson, TX 75081
www.honeywell.com

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