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This PDF catalog information was published in November 2000.



Sensing and Control  
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### Sensing and Control

Honeywell Inc.

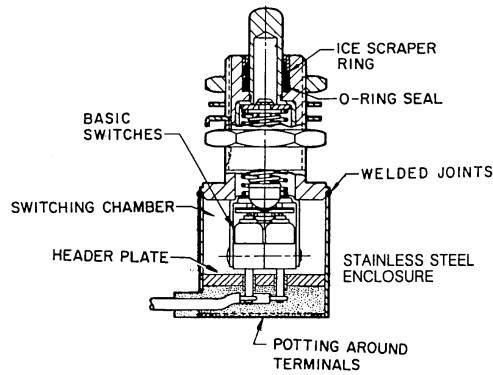
11 West Spring Street

Freeport, IL 61032

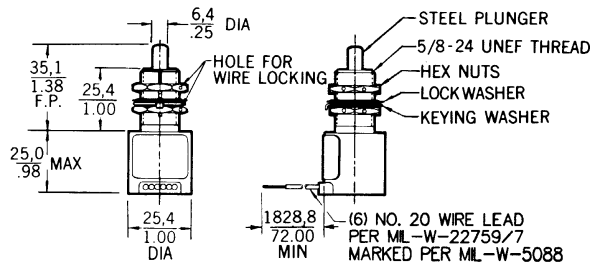
# Position Sensors

## Environment-Sealed Limit Switches

EN Series



1EN1-6



### FEATURES

- Environment-proof seal per Symbol 4, MIL-S-8805
- Qualified to MIL-S-8805
- Standard temperature range: -65°F to +185°F (-54°C to +85°C)
- High temperature range listings: -65°F to +257°F (-54°C to +125°C)
- Meets or exceeds mechanical and electrical life as defined in MIL-S-8805

### ELECTRICAL SPECIFICATIONS

The electrical ratings charted below are referenced in the order guides. Refer to appropriate MIL specification for ratings applicable to specific switches.

#### DC RATINGS (Amps)

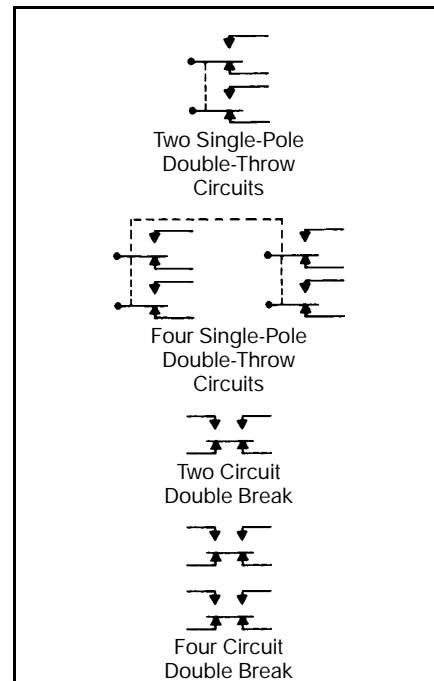
Rating <sup>2</sup> Code	Voltage	Sea Level				50,000 Feet			
		Inrush	Motor	Res.	Ind.	Inrush	Motor	Res.	Ind.
A	28 VDC	24	4	4	2	24	4 <sup>3</sup>	4 <sup>1</sup>	2
B	28 VDC	36	6	10	3	36	6 <sup>3</sup>	10	3
C	28 VDC	30	5	15	10	30	5 <sup>3</sup>	15	10
D	28 VDC	24	4	5	3	N/A			
E	28 VDC	N/A		1	.5	N/A		1	.5
F	28 VDC	24	4	7	4	24	4 <sup>3</sup>	7	2.5

Notes:  
<sup>1</sup> 5 amps for rotary switches  
<sup>2</sup> For other electrical data, contact your nearest MICRO SWITCH Sales Office. MIL-S-8805 ratings apply when this specification is invoked.  
<sup>3</sup> Application information only.

#### AC RATINGS (Amps)

Rating Code	Voltage	Sea Level			
		Motor		Res.	Ind.
		Make	Break		
A&D	125/460 VAC @ 60 Hz	24	4	5	3
	125 VAC @ 400 Hz	24	4	5	5
B	125/250 VAC @ 60 Hz	20	3	5	5
	460 VAC @ 60 Hz	20	3	3	3
	125 VAC @ 400 Hz	36	6	10	6
C	125/250 VAC @ 60 Hz	20	3	5	5
	460 VAC @ 60 Hz	20	3	3	3
	125 VAC @ 400 Hz	30	5	10	6
F	125/460 VAC @ 60 Hz	12	2	2	2
	125 VAC @ 400 Hz	24	4	5	5

### CIRCUITRY



Position Sensors

# Position Sensors

## Environment-Sealed Limit Switches

### TERMINATION

Termination is specified in the order guides. Leadwires are generally six feet long, and of the gage and Military Specifications noted in the order guides.

### MOUNTING

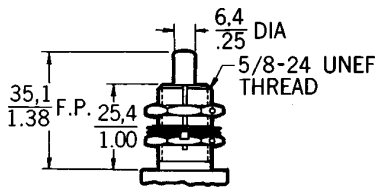
Plunger actuator switches mount through  $\frac{5}{8}$  inch or  $\frac{15}{32}$  inch diameter holes. Lock washer, keyed washer, and wire lock hexagon mounting nuts lock the switches in their mounting holes.

Rotary actuator switches mount through  $\frac{15}{32}$  inch diameter holes. A lock washer wire lock hexagon nut and locating pins on the top of the housing prevent switch rotation.

### OPERATION

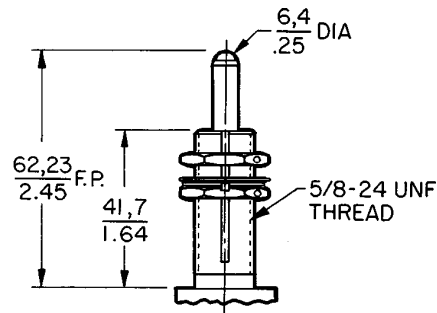
#### Plunger Actuators

For in-line actuation. An ice scraper ring cleans the actuator with each operation.



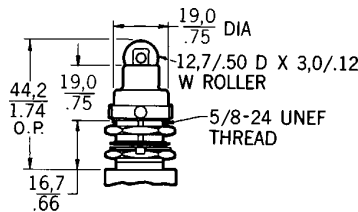
#### Ball Bearing Plunger Actuator

For random direction operation. An ice scraper ring cleans the actuator with each operation. For further information, contact your nearest MICRO SWITCH Sales Office.



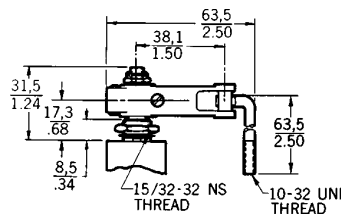
#### Roller Plunger Actuators

For cam and slide actuation not to exceed 20° rise. Roller adjusts laterally in 45° increments. An ice scraper ring cleans the actuator with each operation.



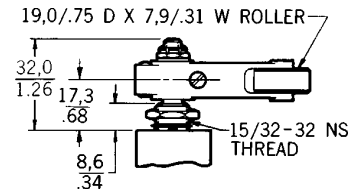
#### Rotary Linkage Lever Actuator

A threaded rod attaches to the rotary lever for positive actuation. The rotary lever operates in either direction and adjusts laterally to any position through 360°. The threaded rod pivots in two planes. The actuator has no spring return, but is controlled directly by the movement of the actuating device.



#### Rotary Roller Lever Actuator

For cam and slide actuation with more than a 30° rise. A spring returned mechanism, this actuator is available in clockwise and counterclockwise operation designs. The actuator adjusts laterally to any position through 360°. The roller is laminated phenolic.



Key:  $\frac{0,0}{0.00} = \frac{\text{mm}}{\text{inches}}$

DIMENSIONS SHOWN ARE FOR REFERENCE ONLY

# Position Sensors

## Environment-Sealed Limit Switches

MIL-S-8805 PERFORMANCE APPROVED SWITCHES

EN Standard Size Switches

Catalog Listing	Procurement Part No.	Terminal Strength Newtons lbs.	Strength of Actuating Means Newtons lbs.	Strength of Mounting Bushing Nm in. lbs.	Vibration	Shock	Moisture Resistance	Salt Spray	Explosion	Acceleration	Seal Resilient (Symbol 4)
1EN1-6 2EN1-6 3EN1-6 4EN1-6	MS24331-1 MS24331-2 MS24331-3 MS24331-4	66,7 15	133 30	1,7 15	10-58 Hz at .060 in. (1,52mm) Double Amplitude 58-500 Hz at 10gs	100gs .006 sec. pulse sawtooth	Applicable test	Applicable test	Applicable test	N/A	Applicable test
31EN11-6 31EN1-6 32EN11-6 32EN1-6 33EN11-6 33EN1-6 34EN11-6 34EN1-6	MS21320-1 MS21320-2 MS21320-3 MS21320-4 MS21320-5 MS21320-6 MS21320-7 MS21320-8	66,7 15	44,5 10	1,7 15	10-58 Hz at .060 in. (1,52mm) Double Amplitude  58-500 Hz at 10gs	100gs .006 sec. pulse sawtooth	Applicable test	Applicable test	Applicable test	N/A	Applicable test
41EN1-6 42EN1-6 43EN1-6 44EN1-6	MS24420-1 MS24420-2 MS24420-3 MS24420-4	66,7 15	—	1,7 15	10-58 Hz at .060 in. (1,52mm) Double Amplitude  58-500 Hz at 10gs	100gs .006 sec. pulse sawtooth	Applicable test	Applicable test	Applicable test	N/A	Applicable test
1EN75-R3	M8805/65-001	—	44,5 10	1,7 15	10-70 Hz at .060 in. (1,52mm) Double Amplitude 70-2000 Hz at 15gs	High impact type "H"	Applicable test	Applicable test	Applicable test	20g	Applicable test



1EN1-6



1EN1-S



1EN42-R

Characteristics: O.F. - Operating Force; R.F. - Release Force; P.T. - Pretravel; O.T. - Overtravel; D.T. - Differential Travel.

### EN STANDARD SIZE SWITCHES ORDER GUIDE

Circuitry	Actuator	Termination	Elec. Rating <sup>1</sup> Code	Catalog Listing	Characteristics					Housing Dimensions <sup>2</sup>			Repl. Mtg. Hdw. Pkt. <sup>6</sup>
					O.F. N lbs.	R.F. min. N lbs.	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	Height mm inches	Dia. mm inches	Wgt. max. g oz.	
	Plunger	No. 20 Leadwire MIL-W-22759/7	A	1EN1-6 (MS24331-1) (8805/40)	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	24,9 .980	25,4 1.0	207 7.3	1
	Ball Bearing Plunger	as above	A	2001EN1-6	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	24,9 .980	25,4 1.0	207 7.3	1
	Plunger	Screw <sup>4</sup>	A	1EN1-S	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	38,2 1.505	25,4 1.0	99 3.5	3
	Plunger	Side <sup>5</sup> Receptacle	A	1EN42-R	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	26,9 1.06	58,4 <sup>3</sup> 2.3	221 7.8	3

Position Sensors

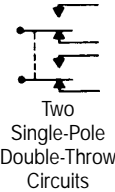
Notes:  
<sup>1</sup> Electrical ratings are on page 25.  
<sup>2</sup> Combine housing diameter and height with actuator on page 26 for overall size.  
<sup>3</sup> Maximum length rather than housing diameter.  
<sup>4</sup> This listing has 4-48 NF x .175 inch round head screws with lockwashers. Terminals are well isolated by phenolic barriers and epoxy casting resin.  
<sup>5</sup> These listings have pin receptacles (mating connectors should be ordered from a local supplier).  
<sup>6</sup> See page 33 for replacement mounting hardware packet catalog listings.  
 N = Newtons

**Position Sensors**  
Environment-Sealed Limit Switches



Characteristics: O.F. — Operating Force; R.F. — Release Force;  
P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel.

**EN STANDARD SIZE SWITCHES ORDER GUIDE**

Circuitry	Actuator	Termination	Elec. Rating <sup>1</sup> Code	Catalog Listing	Characteristics					Housing Dimensions <sup>2</sup>			Repl. Mtg. Hdw. Pkt. <sup>4</sup>
					O.F. N lbs.	R.F. min. N lbs.	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	Height mm inches	Dia. mm inches	Wgt. max. g oz.	
 Two Single-Pole Double-Throw Circuits	Plunger	Bottom <sup>3</sup> Receptacle	A	1EN43-R	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	53,3 2.1	25,4 1.0	204 7.2	3
	Plunger	No. 18 Leadwire MIL-W-22759/7	B	2EN1-6 (MS24331-2) (8805/40)	26,7-53,4 6-12	22,8 5	1,27 .050	6,35 .250	0,89 .035	38,1 1.5	38,1 1.5	156 5.5	1
	Roller Plunger	No. 20 Leadwire (MIL-W-22759/7)	A	21EN9-6	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	24,9 .980	25,4 1.0	252 8.9	4
	Roller Plunger	No. 18 Leadwire (MIL-W-22759/7)	B	22EN9-6	26,7-53,4 6-12	22,2 5	1,02 .040	6,35 .250	0,76 .030	38,1 1.5	38,1 1.5	38,3 13.5	4
	Rotary Roller Lever	No. 20 Leadwire MIL-W-22759/7	A	31EN11-6 (CW) (MS21320-1) (8805/48) 31EN1-6 (CCW) (MS21320-2)	1,4-2,8 Nm max. 12-25 in. lb.	1,0 Nm 9 in. lb.	— 13"	— 32"	4" max.	53,6 2.11	25,4 1.0	269 9.5	5 5
	Rotary Roller Lever	No. 18 Leadwire MIL-W-22759/7	B	32EN11-6 (CW) (MS21320-3) (8805/48) 32EN1-6 (CCW) (MS21320-4) (8805/48)	1,4-2,8 Nm max. 12-25 in. lb.	1,0 Nm 9 in. lb.	— 20"	— 25"	6" max.	68,6 2.7	38,1 1.5	368 13	5 5
	Rotary Linkage Lever	No. 20 Leadwire MIL-W-22759/7	A	41EN1-6 (MS24420-1)	0,34 Nm max. 3 in. lb.	—	—	—	12" max.	25,4 1	25,4 1.0	213 7.5	5
	Rotary Linkage Lever	No. 18 Leadwire MIL-W-22759/7	B	42EN1-6 (MS24420-2) (8805/49)	0,57 Nm max. 5 in. lb.	—	—	—	12" max.	42,2 1.66	38,1 1.5	220 7.75	5

Notes:  
<sup>1</sup> Electrical ratings are on page 25.  
<sup>2</sup> Combine housing diameter and height with actuator on page 26 for overall size.

<sup>3</sup> These listings have pin receptacles (mating connectors should be ordered from a local supplier).

<sup>4</sup> See page 33 for replacement mounting hardware packet catalog listings.  
N = Newtons

# Position Sensors

# EN Series

## Environment-Sealed Limit Switches



5EN1-6



25EN9-6



3EN1-6



23EN9-6



33EN1-6



4EN1-6



24EN9-6



34EN1-6



44EN1-6

Characteristics: O.F. — Operating Force; R.F. — Release Force;  
P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel.

### EN STANDARD SIZE SWITCHES ORDER GUIDE

Circuitry	Actuator	Termination	Elec. Rating <sup>1</sup> Code	Catalog Listing	Characteristics					Housing Dimensions <sup>2</sup>		Wgt. max. g oz.	Repl. Mtg. Hdw. Pkt. <sup>3</sup>
					O.F. N lbs.	R.F. min. N lbs.	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	Height mm inches	Dia. mm inches		
Four Single-Pole Double-Throw Circuits  (See p. 25 for circuit drawing)	Plunger	No. 20 Leadwire (MIL-W-5086)	A	5EN1-6	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,76 .030	30,5 1.2	38,1 1.5	346 12.2	3
	Roller Plunger	No. 20 Leadwire (MIL-W-5086)	A	25EN9-6	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,76 .030	30,5 1.2	38,1 1.5	360 12.7	4
Two Circuit Double Break	Plunger	No. 18 Leadwire MIL-W-22759/7	C	3EN1-6 (MS24331-3) (8805/40)	26,7-53,4 6-12	22,2 5	1,52 .060	6,35 .250	0,89 .035	33,3 1.31	38,1 1.5	241 8.5	1
	Roller Plunger	No. 18 Leadwire (MIL-W-5086)	C	23EN9-6	26,7-53,4 6-12	22,2 5	1,52 .060	6,35 .250	0,89 .035	33,3 1.31	38,1 1.5	255 9	4
	Rotary Roller Lever	No. 18 Leadwire MIL-W-22759/7	C	33EN11-6 (CW) (MS21320-5) (8805/48) 33EN1-6 (CCW) (MS21320-6) (8805/48)	1,4-2,8 Nm 12-25 in. lb.	0,9 Nm 8 in. lb.	15°	30°	5°	62 2.44	38,1 1.5	269 9.5	5 5
Four Circuit Double Break	Plunger	No. 18 Leadwire MIL-W-22759/7	C	4EN1-6 (MS24331-4) (8805/40)	26,7-53,4 6-12	22,2 5	1,78 .070	6,35 .250	1,14 .045	43,2 1.7	38,1 1.5	368 13	1
	Roller Plunger	No. 18 Leadwire (MIL-W-5086)	C	24EN9-6	26,7-53,4 6-12	22,2 5	1,78 .070	6,35 .250	1,14 .045	43,2 1.7	38,1 1.5	368 13	4
	Rotary Roller Lever	No. 18 Leadwire MIL-W-22759/7	C	34EN11-6 (CW) (MS21320-7) (8805/48) 34EN1-6 (CCW) (MS21320-8) (8805/48)	1,4-2,8 Nm 12-25 in. lb.	0,9 Nm 8 in. lb.	15°	30°	10°	71,6 2.82	38,1 1.5	439 15.5	5 5
	Rotary Linkage Lever	No. 18 Leadwire MIL-W-22759/7	C	44EN1-6 (MS24420-4) (8805/49)	1,1 Nm max. 10 in. lb.	—	—	—	20°	45,7 1.8	38,1 1.5	451 15.9	5

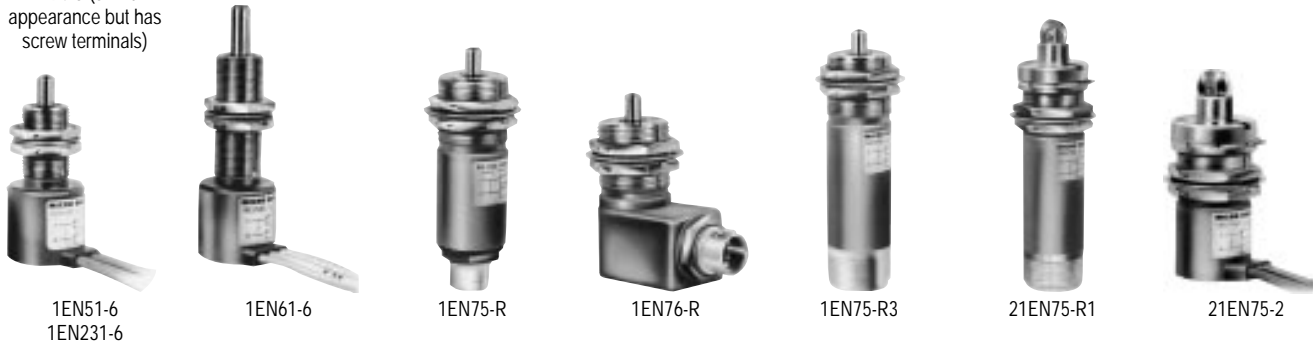
Position Sensors

Notes:  
<sup>1</sup> Electrical ratings are on page 25.  
<sup>2</sup> Combine housing diameter and height with actuator dimension on page 26 for overall size.  
<sup>3</sup> See page 33 for replacement mounting hardware packet catalog listings.  
 N = Newtons

# Position Sensors

## Environment-Sealed Limit Switches

1EN194-S (similar in appearance but has screw terminals)



**Characteristics:** O.F. – Operating Force; R.F. – Release Force; P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel.

### EN SPECIAL REQUIREMENTS ORDER GUIDE

Special <sup>2</sup> Requirement	Actuator	Termination	Circuitry	Elec. Rating <sup>1</sup> Code	Catalog Listing	Characteristics					Wgt. max. g oz.	Repl. Mtg. Hdw. Pkt. <sup>3</sup>
						O.F. N lbs.	R.F. min. N lbs.	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches		
High Velocity Actuation	Plunger	No. 20 Leadwire (MIL-W-22759/1)	(2)SPDT	A	1EN231-6	26,7-53,4 6-12	17,8 4	1,02 .040	5,84 .230	0,51 .020	207 7.3	3
Low Force Operation	Plunger	No. 20 Leadwire (MIL-W-5086)	(2)SPDT	A	1EN51-6	13,3-26,7 3-6	8,9 2	1,02 .040	6,35 .250	0,51 .020	213 7.5	3
Increased Overtravel	Plunger	No. 20 Leadwire (MIL-W-5086)	(2)SPDT	A	1EN61-6	26,7-53,4 6-12	17,8 4	1,02 .040	12,7 .500	0,51 .020	227 8	3
Increased Overtravel	Plunger	Screw	(2)SPDT	A	1EN194-S	26,7-53,4 6-12	17,8 4	0,38-1,02 .015-.040	21,8 .860	0,51 .020	113 4	7
High Shock	Plunger	Bottom Receptacle	(2)SPDT	A	1EN75-R	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	198 7	8
High Shock	Plunger	Side Receptacle	(2)SPDT	A	1EN76-R	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	227 8	8
High Shock	Plunger	Bottom Receptacle	(2)SPDT	D	1EN75-R3 (M8805/65-001)	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	198 7	8
High Shock	Roller Plunger	Bottom Receptacle	(2)SPDT	A	21EN75-R1	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	204 7.2	11
High Shock	Roller Plunger	No. 20 Leadwire (MIL-W-22759/7)	(2)SPDT	A	21EN75-2	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	207 7.3	11

Notes:  
<sup>1</sup> Electrical ratings are on page 25.

<sup>2</sup> These are just a few of the designs that have been developed to meet special application requirements. If you have similar or different special requirements, contact MICRO SWITCH for the right switch to meet them.

<sup>3</sup> See page 33 for replacement mounting hardware packet catalog listings  
 N = Newtons

### EXPLANATIONS OF SWITCHES WITH SPECIAL REQUIREMENTS

#### High velocity actuation

This switch is designed to withstand near “hammer-blow” actuation as is found in over-center locking mechanisms. It is dimensionally interchangeable with standard listing 1EN1-6.

#### Low force operation

Special spring construction within this switch reduces the normal 6 to 12 pound (26,7 to 53,4 N) EN operating force to 3 to 6 pounds (13,3 to 26,7 N). This switch is also dimensionally interchangeable with the standard size 1EN1-6. Low force 600 series ENs have 3 to 6 pounds (13,3 to 26,7 N) of operating force.

#### Increased overtravel

A longer plunger and bushing on the switch extends the EN overtravel capabilities from the normal .250 inch to .860 (6,35 to 21,8 mm). The longer bushing also permits additional adjustment of the plunger position.

#### High impact shock

Catalog listing 1EN75-R3 (M8805/65-001) has been qualified to MIL-S-8805, including high impact shock class H. Other switches rated for high impact shock applications incorporate the same plunger mechanism and internal switch design as used in the 1EN75-R3 and are expected to conform to the same requirements.

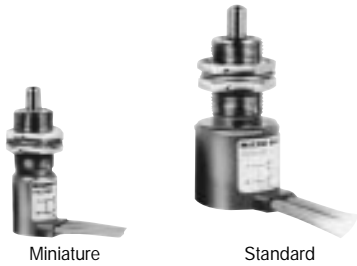
Terminations of these listings are:

- 1EN75-R                      DM-9601-7P-1D  
Deutch receptacle
- 1EN75-R3                    GS02-16S-1P-003  
Canon receptacle
- 1EN76-R                      DM-9601-7P-1D  
Deutch receptacle
- 21EN75-R1                   GS02-16S-1P-003  
Canon receptacle
- 21EN75-2                    MIL-W-22759/7  
Two foot lead wire 20 gage

MICRO SWITCH does not furnish mating connectors with these products.

# Position Sensors

## Environment-Sealed Limit Switches



### FEATURES

- Meets or exceeds mechanical and electrical life as defined in MIL-S-8805.
- Seal definition: Environment-proof. Resilient per MIL-S-8805, symbol 4.
- Military specification: MIL-S-8805
- Temperature range: -67°F to +185°F (-55°C to +85°C)

### MINIATURE TYPE SWITCHES

Miniature type EN switches meet the demand for smaller size and lighter weight without sacrificing performance or electrical capacity. These types are of the same construction, seal, and materials as the standard size EN switches.

Type 400EN switches are directly interchangeable with their standard size EN counterpart, yet are smaller in diameter and lighter in weight. The miniature listing housing is .312 inch (7.92mm) smaller in diameter, and the switch weight ½ ounce (14,2g) less.

### ELECTRICAL RATINGS

Refer to page 25.

### MIL-S-8805 PERFORMANCE APPROVED SWITCHES

#### EN Miniature Switches

Catalog Listing	Procurement Part No.	Terminal Strength Newtons lbs.	Strength of Actuating Means Newtons lbs.	Strength of Mounting Bushing Nm in. lbs.	Vibration	Shock	Moisture Resistance	Salt Spray	Explosion	Acceleration	Seal Resilient (Design 4)
402EN1-6 404EN1-6	MS21321-1 MS21321-2	66,7 15	133 30	1,7 15	10-70 Hz at .060 in. (1,52mm) D.A. <sup>1</sup> 70-2000 Hz at 15gs	100gs .006 sec. pulse sawtooth	Applicable test	Applicable test	Applicable test	N/A	Applicable test
602EN1-6 604EN1-6 622EN1-6 624EN1-6 602EN222-6 604EN222-6 622EN222-6 624EN222-6	MS27240-1 MS27240-2 MS27240-3 MS27240-4 MS27240-5 MS27240-6 MS27240-7 MS27240-8	66,7 15	44,5 10	1,7 15	10-70 Hz at .060 in. (1,52mm) D.A. <sup>1</sup> 70-2000 Hz at 15gs	100gs .006 sec. pulse sawtooth	Applicable test	Applicable test	Applicable test	N/A	Applicable test

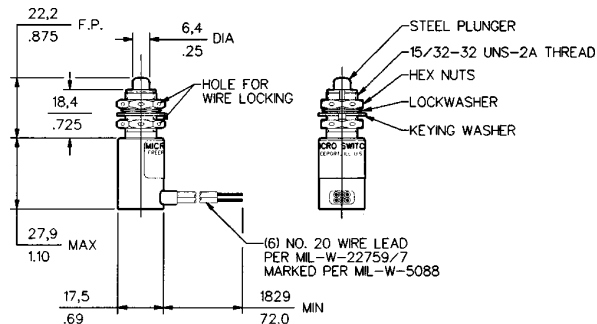
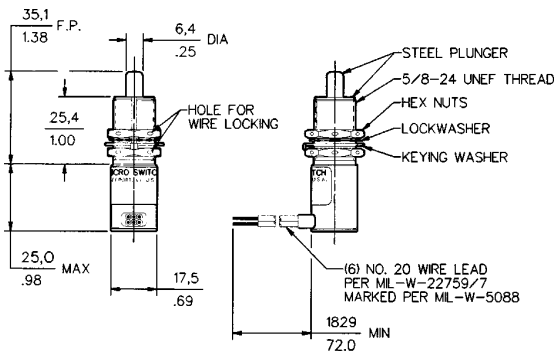
Notes:  
<sup>1</sup>D.A. = double amplitude or displacement.



402EN1-6



602EN1-6



Position Sensors



# Position Sensors

## Environment-Sealed Limit Switches

EN Series



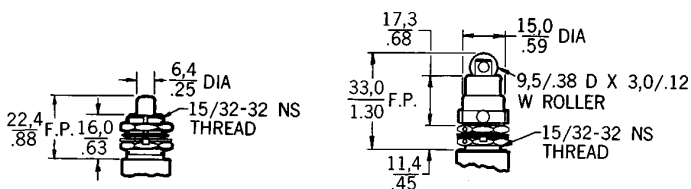
Characteristics: O.F. – Operating Force; R.F. – Release Force;  
P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel.

### EN MINIATURE SWITCHES ORDER GUIDE

Circuitry	Actuator	Elec. Rating Code	Catalog Listing	Characteristics					Housing Dimensions <sup>1</sup>		Wgt. g oz.	Repl. Mtg. Hdw. Pkt <sup>2</sup>
				O.F. N lbs.	R.F. min. N lbs.	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	Height mm inches	Dia. mm inches		
Two Single-Pole Double-Throw Circuits	Plunger	F	402EN1-6 (MS21321-1) (8805/39)	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	24,9 .980	17,5 .688	204 7.2	1
	Rotary Linkage Lever	F	442EN1-6	34 Nm max. 3 in. lbs.	—	—	—	12"	25,4 1.0	17,5 .688	207 7.3	9
Four Single-Pole Double-Throw Circuits	Plunger	F	404EN1-6 (MS21321-2) (8805/39)	26,7-53,4 6-12	17,8 4	1,02 .040	6,35 .250	0,51 .020	30,5 1.2	25,4 1.0	354 12.5	1
	Rotary Linkage Lever	F	444EN1-6	.34 Nm max. 3 in. lbs.	—	—	—	12"	30,2 1.19	25,4 1.0	340 12	6
Two SPDT Circuits	Plunger	F	602EN1-6 (MS27240-1) (8805/43)	26,7-53,4 6-12	17,8 4	1,02 .040	3,18 .125	0,51 .020	25,4 1.0	17,5 .688	176 6.2	2
		E	602EN222-6 (MS27240-5) (8805/43)									2
	Roller Plunger	F	622EN1-6 (MS27240-3) (8805/43)	26,7-53,4 6-12	17,8 4	1,02 .040	3,18 .125	0,51 .020	25,4 1.0	17,5 .688	204 7.2	10
		E	622EN222-6 (MS27240-7) (8805/43)									10
Four SPDT Circuits	Plunger	F	604EN1-6 (MS27240-2) (8805/43)	26,7-53,4 6-12	17,8 4	1,02 .040	3,18 .125	0,51 .020	30,5 1.2	25,4 1.0	354 12.5	2
		E	604EN222-6 (MS27240-6) (8805/43)									2
	Roller Plunger	F	624EN1-6 (MS27240-4) (8805/43)	26,7-53,4 6-12	17,8 4	1,02 .040	3,18 .125	0,51 .020	30,5 1.2	25,4 1.0	354 12.5	10
		E	624EN222-6 (MS27240-8) (8805/43)									10
Two SPDT Circuits	.125 Dia. Plunger	F	602EN602-6	8,9-17,8 2-4	4,4 1	0,38 .015±.010	6,35 .250	0,51 .020	25,4 1.0	17,5 .688	170 6.0	2

Notes:  
<sup>1</sup> Combine housing diameter and height with actuator dimension on this page or page 26 for overall size of the switch.  
<sup>2</sup> All miniature EN limit switches listed here have 6 foot (1,8m) lengths of No. 20 leadwire per MS22759-7, marked per MIL-W-5088. For variations, contact MICRO SWITCH.  
<sup>3</sup> See page 33 for replacement mounting hardware packet catalog listings  
 N = Newtons

### 600EN ACTUATOR DIMENSIONS









400EN actuator dimensions are the same as those shown for standard size ENs on page 26.

# Position Sensors

## Environment-Sealed Limit Switches

EN Series

### EN REPLACEMENT PARTS ORDER GUIDE

	Catalog Listing	Description	For Use on:
	6PA30	Roller lever arm	30EN series
	6PA31 6PA357	Linkage lever arm Threaded rod only	40EN series
	6PA32 6PA202	Roller lever arm Roller lever arm	1EN & 1HE series 600EN & 600HE series
	15PA104 15PA105	Roller guide and locking ring Roller guide and locking ring	21EN, 422/424EN series ( $\frac{5}{8}$ " bushing) 622/624EN series ( $1\frac{15}{32}$ " bushing)
	15PA137 15PA107	Locking ring only Locking ring only	21EN 422/424EN series ( $\frac{5}{8}$ " bushing) 622EN & 624EN series ( $1\frac{15}{32}$ " bushing)
	19PA8 19PA9	Military-type mounting hardware Military-type mounting hardware	1EN series ( $\frac{5}{8}$ " bushing) 600EN series ( $1\frac{15}{32}$ " bushing)

#### REPLACEMENT MOUNTING HARDWARE PACKETS

Refer to EN order guides on previous pages (catalog listing column and right hand column) for switch/mounting hardware cross-reference.

Repl. Mtg. Hdw. Pkt.	Catalog Listing	Repl. Mtg. Hdw. Pkt.	Catalog Listing
1	19PA8	7	19PA120-EN
2	19PA9	8	19PA121-EN
3	19PA78-EN	9	19PA122-EN
4	19PA115-EN	10	19PA123-EN
5	19PA117-EN	11	19PA124-EN
6	19PA119-EN		

<sup>1</sup> Other packets are available. Contact your local MICRO SWITCH sales office for more information.

Position Sensors

# Position Sensors

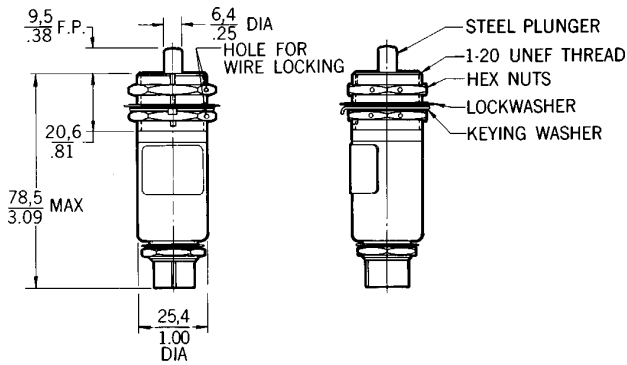
## Environment-Sealed Limit Switches

EN Series

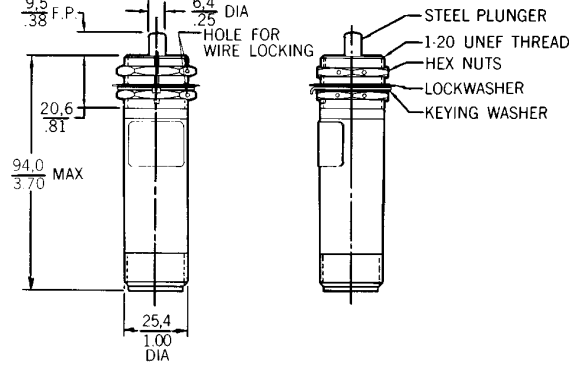
EN MOUNTING DIMENSIONS (For reference only)

Standard size EN switches

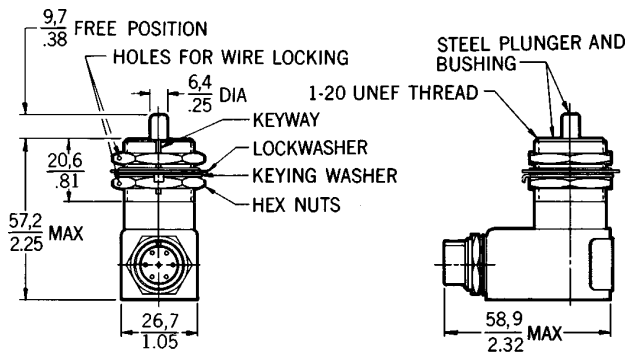
1EN75-R



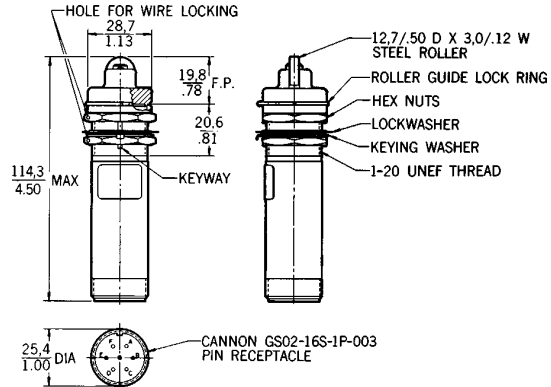
1EN75-R3



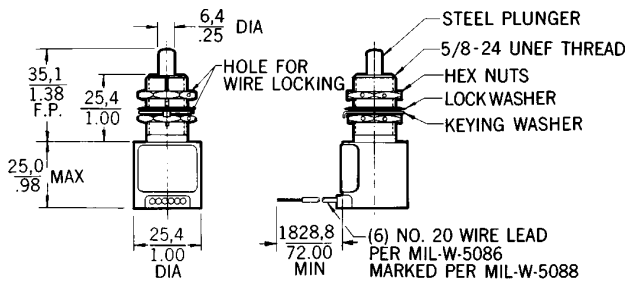
1EN76-R



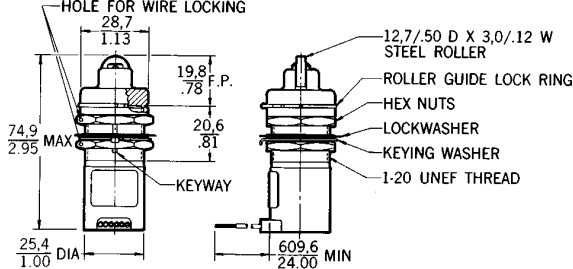
21EN75-R1



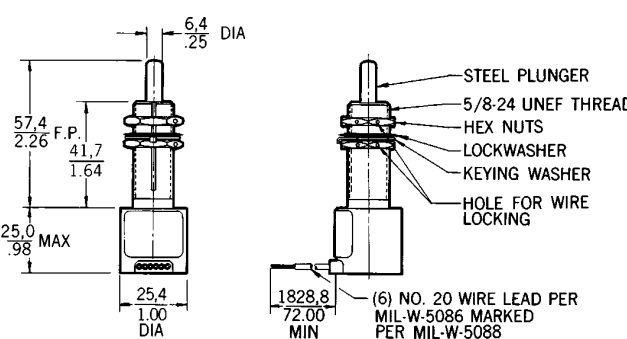
1EN51-6  
1EN231-6



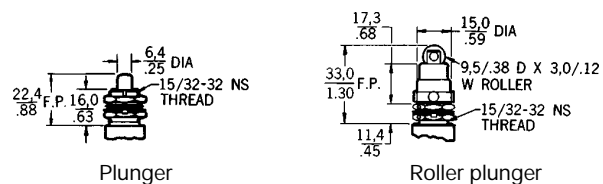
21EN75-2



1EN61-6



600EN actuators



Key: 0,0 = mm  
0.00 = inches

# Mouser Electronics

Authorized Distributor

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## Honeywell:

[15PA177-V7](#) [15PA232-JV](#) [15PA235-PL](#) [15PA246-V3](#) [15PA256-WW](#) [15PA258](#) [15PA281-JV](#) [15PA302](#) [15PA32](#)  
[15PA85-EX](#) [15PA90-2R](#) [15PA90-2Y](#) [15PA90-4BL](#) [15PA90-4G](#) [15PA90-4R](#) [15PA90-4Y](#) [15PA90-5BK](#) [15PA90-5W](#)  
[15PA90-6W](#) [21EN75-R1](#) [39EN3-R](#) [15PA313-AT](#) [39EN231](#) [602EN550](#) [622EN514-6](#) [622EN95](#) [15PA87](#) [624EN338-](#)  
[R](#) [626EN200-3](#) [624EN334-R](#) [602EN16-6](#) [602EN24-6B](#) [622EN69-3](#) [15PA165-EN](#) [15PA292-HE](#) [15PA293-HE](#)  
[15PA311-AT](#) [15PA312-AT](#) [19PA115-EN](#) [19PA123-EN](#) [19PA124-EN](#) [19PA78-EN](#) [21EN75-2](#) [23EN51-S](#) [31EN102-6](#)  
[31EN10-6](#) [31EN20-6](#) [31EN78-6](#) [31EN79-6](#) [32EN14-12](#) [32EN14-4](#) [32EN19-1](#) [32EN21-4](#) [32EN3-1](#) [32EN61-4](#)  
[35EN24-4](#) [35EN25-4](#) [3802EN1-6](#) [3802EN2-6](#) [39EN222-6](#) [39EN4-3B](#) [39EN5-RB](#) [39EN6-6](#) [3EN9](#) [41EN1-12](#)  
[41EN13-6](#) [41EN32-6](#) [41EN344-9](#) [41EN345-6](#) [41EN35-6B](#) [41EN45-6](#) [41EN46-2](#) [41EN47-2](#) [41EN49-6](#) [41EN96-6](#)  
[41HE1-6](#) [422EN1-12](#) [422EN133-RB](#) [422EN17-6](#) [422EN43-6](#) [424EN15-5](#) [424EN222-RB](#) [424EN31-RB](#) [424EN31-](#)  
[RB1](#) [424EN31-RB2](#) [424EN31-RB3](#) [424EN33-RB](#) [426EN12-8](#) [42EN3-3](#) [4402EN222-6](#) [442EN19-6](#) [442EN223-6](#)  
[444EN1-12](#) [444EN2-R](#) [444EN3-R](#) [444EN49-6](#) [446EN1-9](#) [44EN27-12](#) [4602EN1-6](#) [4EN44-RB1](#)