



**THE DATASHEET OF
EN-10020**



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Sensing and Control

Honeywell Inc.

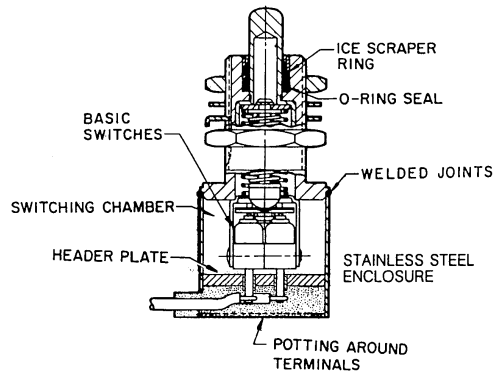
11 West Spring Street

Freeport, IL 61032

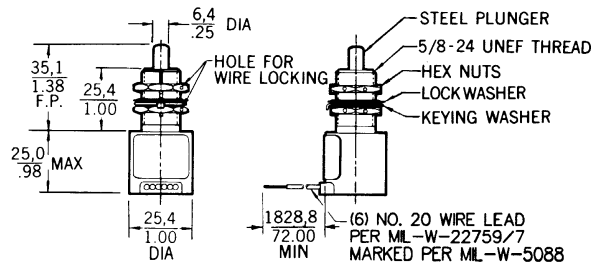
Position Sensors

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)

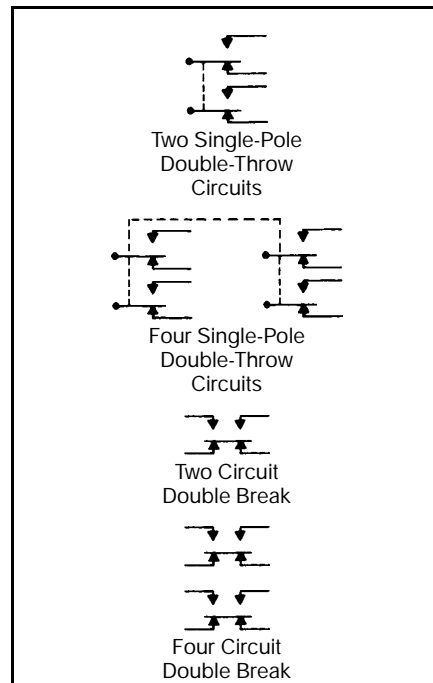
| Rating ² Code | Voltage | Sea Level | | | | 50,000 Feet | | | |
|--------------------------|---------|-----------|-------|------|------|-------------|----------------|----------------|------|
| | | Inrush | Motor | Res. | Ind. | Inrush | Motor | Res. | Ind. |
| A | 28 VDC | 24 | 4 | 4 | 2 | 24 | 4 ³ | 4 ¹ | 2 |
| B | 28 VDC | 36 | 6 | 10 | 3 | 36 | 6 ³ | 10 | 3 |
| C | 28 VDC | 30 | 5 | 15 | 10 | 30 | 5 ³ | 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 ³ | 7 | 2.5 |

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

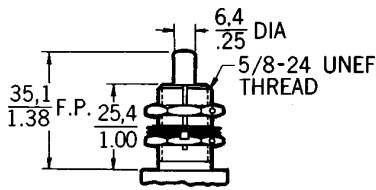
Plunger actuator switches mount through $\frac{5}{8}$ inch or $\frac{15}{32}$ inch diameter holes. Lock washer, keyed washer, and wire lock hexagon mounting nuts lock the switches in their mounting holes.

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

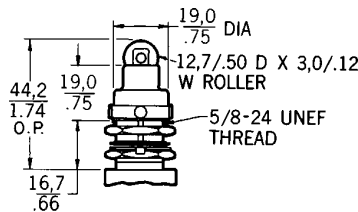
Plunger Actuators

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



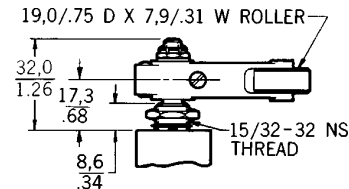
Roller Plunger Actuators

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.



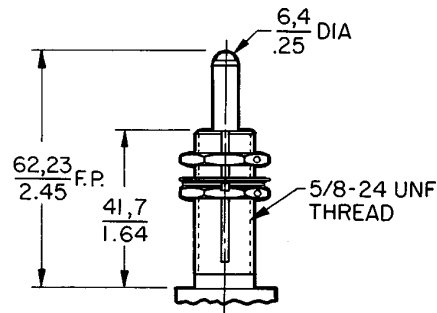
Rotary Roller Lever Actuator

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.



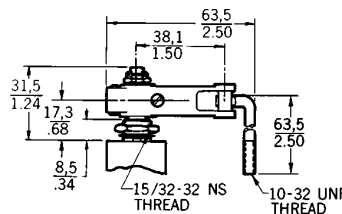
Ball Bearing Plunger Actuator

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



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.



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

DIMENSIONS SHOWN ARE FOR REFERENCE ONLY

Position Sensors

Environment-Sealed Limit Switches

EN Series

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 ¹ Code | Catalog Listing | Characteristics | | | | | Housing Dimensions ² | | | Repl. Mtg. Hdw. Pkt. ⁶ |
|-----------|----------------------|-------------------------------|--------------------------------|------------------------------|-------------------|------------------|---------------------|---------------------|---------------------|---------------------------------|--------------------------|-----------------|-----------------------------------|
| | | | | | 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 ⁴ | 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 ⁵ 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 ³ 2.3 | 221 7.8 | 3 |

Position Sensors

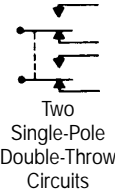
Notes:
¹ Electrical ratings are on page 25.
² Combine housing diameter and height with actuator on page 26 for overall size.
³ Maximum length rather than housing diameter.
⁴ This listing has 4-48 NF x .175 inch round head screws with lockwashers. Terminals are well isolated by phenolic barriers and epoxy casting resin.
⁵ These listings have pin receptacles (mating connectors should be ordered from a local supplier).
⁶ 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 ¹ Code | Catalog Listing | Characteristics | | | | | Housing Dimensions ² | | | Repl. Mtg. Hdw. Pkt. ⁴ |
|---|----------------------|---------------------------------|--------------------------------|--|----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------|----------------|-----------------|-----------------------------------|
| | | | | | 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 ³ 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:
¹ Electrical ratings are on page 25.
² Combine housing diameter and height with actuator on page 26 for overall size.

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

⁴ 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 ¹ Code | Catalog Listing | Characteristics | | | | | Housing Dimensions ² | | Wgt. max. g oz. | Repl. Mtg. Hdw. Pkt. ³ |
|---|----------------------|-------------------------------|--------------------------------|--|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------|----------------|-----------------|-----------------------------------|
| | | | | | 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 |

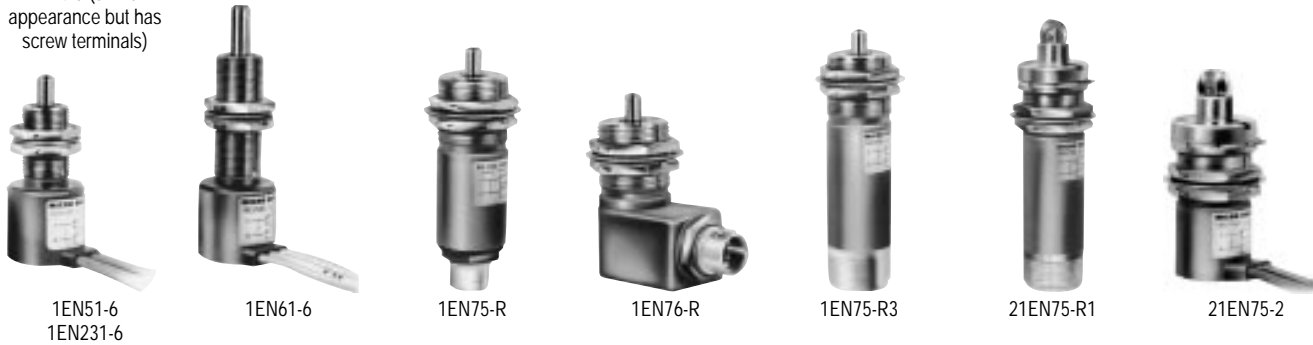
Position Sensors

Notes:
¹ Electrical ratings are on page 25.
² Combine housing diameter and height with actuator dimension on page 26 for overall size.
³ 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 ² Requirement | Actuator | Termination | Circuitry | Elec. Rating ¹ Code | Catalog Listing | Characteristics | | | | | Wgt. max. g oz. | Repl. Mtg. Hdw. Pkt. ³ |
|----------------------------------|----------------|---------------------------------|-----------|--------------------------------|-------------------------|-------------------|------------------|------------------------|---------------------|---------------------|-----------------|-----------------------------------|
| | | | | | | 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:
¹ Electrical ratings are on page 25.

² 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.

³ 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.

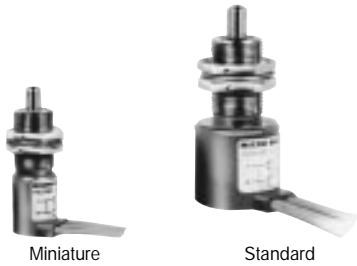
Terminations of these listings are:

- 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. ¹ 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. ¹ 70-2000 Hz at 15gs | 100gs .006 sec. pulse sawtooth | Applicable test | Applicable test | Applicable test | N/A | Applicable test |

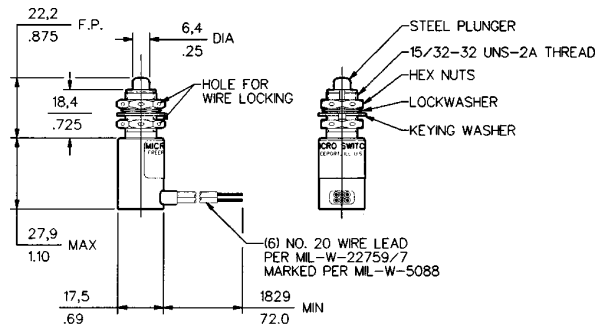
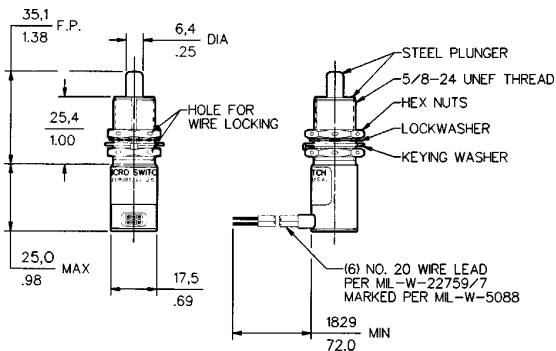
Notes:
¹D.A. = double amplitude or displacement.



402EN1-6



602EN1-6



Position Sensors

Position Sensors

Environment-Sealed Limit Switches

EN Series



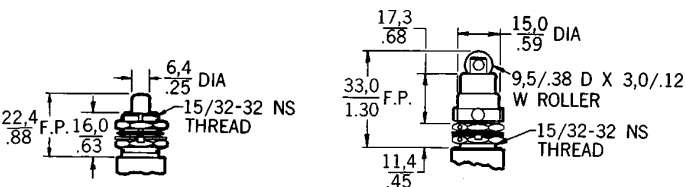
Characteristics: O.F. – Operating Force; R.F. – Release Force;
P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel.

EN MINIATURE SWITCHES ORDER GUIDE

| Circuitry | Actuator | Elec. Rating Code | Catalog Listing | Characteristics | | | | | Housing Dimensions ¹ | | Wgt. g oz. | Repl. Mtg. Hdw. Pkt ² |
|--|----------------------|-------------------|----------------------------------|---------------------------|------------------|---------------------|---------------------|---------------------|---------------------------------|----------------|-------------|----------------------------------|
| | | | | 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) | | | | | | | | | |
| 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:
¹ Combine housing diameter and height with actuator dimension on this page or page 26 for overall size of the switch.
² 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.
³ 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 (5/8" bushing) 622/624EN series (1 1/32" bushing) |
|  | 15PA137 15PA107 | Locking ring only Locking ring only | 21EN 422/424EN series (5/8" bushing) 622EN & 624EN series (1 1/32" bushing) |
|  | 19PA8 19PA9 | Military-type mounting hardware Military-type mounting hardware | 1EN series (5/8" bushing) 600EN series (1 1/32" 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 | | |

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

Position Sensors

Position Sensors

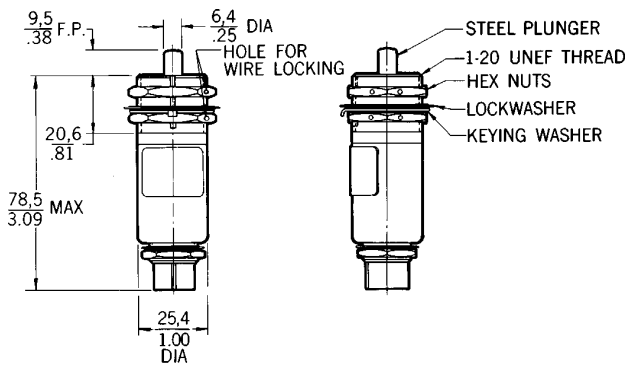
Environment-Sealed Limit Switches

EN Series

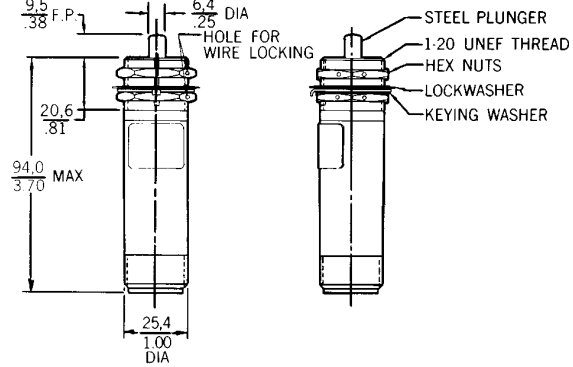
EN MOUNTING DIMENSIONS (For reference only)

Standard size EN switches

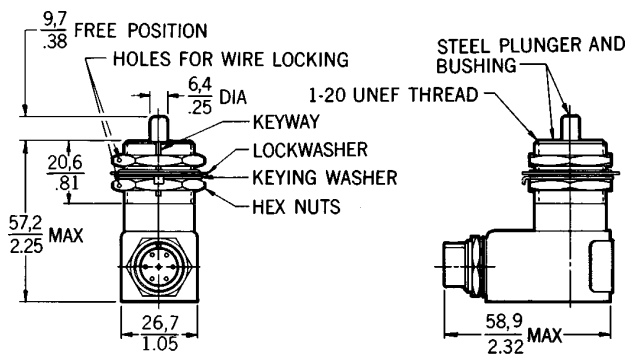
1EN75-R



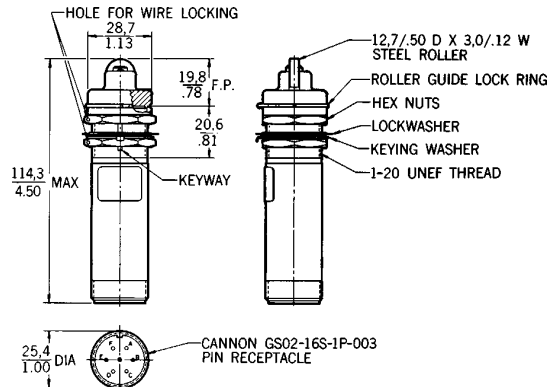
1EN75-R3



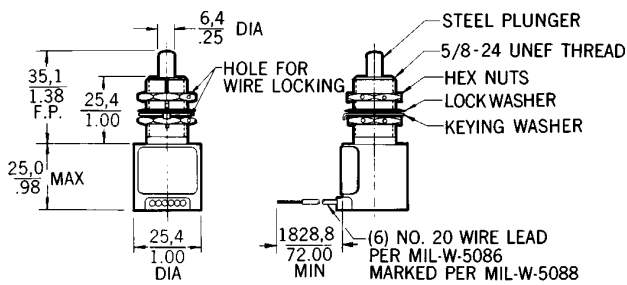
1EN76-R



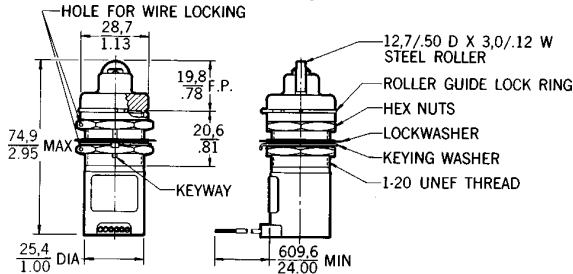
21EN75-R1



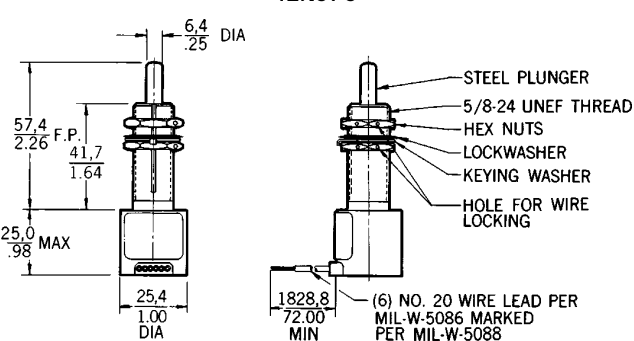
1EN51-6
1EN231-6



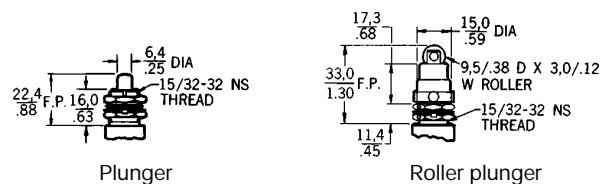
21EN75-2



1EN61-6



600EN actuators



Key: 0,0 = mm
0.00 = inches

Looking for pricing, stock, or lifecycle information?

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 [Honeywell Information](#)

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