

## Heavy-Duty Plug-In Switches

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Cutler-Hammer® E50 Modular Plug-In Limit Switch Components from Eaton's electrical business are the industry standard with versatility of design and high reliability for low maintenance, installation and inventory costs. Standard Viton® gaskets, seals and boots and a zinc die cast enclosure provide exceptional chemical resistance to the common coolants, cleansing agents, and hydraulic fluids found in machine tool, automotive, waste water treatment and other heavy-duty industrial applications. Mounting dimensions accommodate both U.S. and DIN standards for easy retrofit installations. Super bright 24 – 120V AC/DC LED indicating light versions simplify setup and troubleshooting operations.

### Approvals

- UL Listed
- CSA Certified
- IEC.947.5.1
- TUV — E9271605E02

CE (where shown)



Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

Viton® is a registered trademark of Dupont Dow Elastomers.

## Modular Limit Switches Provide Extremely Easy Installation, High Reliability, and Low Maintenance and Inventory Costs

Available as Assembled Switches or Components

Viton Gasket Seals

Rugged Zinc Die-Cast Housing

Conduit, Cable and Connector Wiring Options



Dozens of Operators to Perfectly Fit Your Application

Rotary, Top and Side Push, Wobble and Specialty Operating Heads

Single- or Double-Pole Switch Bodies with Optional Indicating Lights

A Variety of Receptacles Meet Your Wiring Needs



### Product Features










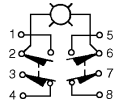
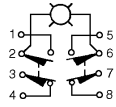
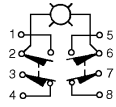
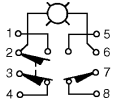
- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical resistant Viton® gaskets, seals and boots are standard, and so are captive, posi-drive screws
- The switches have terminal identification on the nameplate for a visual wiring check-out without guesswork. Heads and switch bodies can be replaced without rewiring
- E50 devices can be ordered in separate components or as complete assembled switches
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Keyed, four direction head positioning
- Standard 5° pre-travel and 90° total travel
- 24 – 120V AC/DC LED and 120V AC neon indicating lights available
- Rotary heads are field convertible CW, CCW, or both, without special tools
- Epoxy filled, pin connector or pigtail pin connector receptacles available

For Customer Service in the U.S. call 1-800-356-1243, in Canada call 1-800-268-3578.

For Application Assistance in the U.S. and Canada call 1-800-426-9184.

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Model Selection — Assembled Switches — Standard

|  |   |   |                       |                       |   |                       |                       |   |                |
|--|---|---|-----------------------|-----------------------|---|-----------------------|-----------------------|---|----------------|
|   |   | Single Pole (5 Terminal Receptacle)   |                       |                       | Double Pole (9 Terminal Receptacle)   |                       |                       |   |                |
|  | Indicating Light:   | None  | LED (24 – 120V AC/DC) | Neon (120V AC)        | None  | LED (24 – 120V AC/DC) | Neon (120V AC)        | LED (24 – 120V AC/DC)   | Neon (120V AC) |
|  | Switch Body:  | E50SA<br>1N.O.-1N.C.  | E50SAL<br>1N.O.-1N.C. | E50SAN<br>1N.O.-1N.C. | E50SB<br>2N.O.-2N.C.  | E50SBL<br>2N.O.-2N.C. | E50SBN<br>2N.O.-2N.C. | E50SCL<br>1N.O.-2N.C.   | —              |
|  | Receptacle: ①   | E50RA   | E50RA                 | E50RA                 | E50RB   | E50RB                 | E50RB                 | E50RB   | E50RB          |
| Operating Head Type ②  |   | Catalog Number for Assembled Switches   |                       |                       |   |                       |                       |   |                |
| Side Rotary (requires an operating lever, see PG.05C.04.T.E)  | Standard Spring Return — E50DR1 ③   | E50AR1<br>CE  | E50ALR1               | E50ANR1               | E50BR1  | E50BLR1               | E50BNR1               | —   | —              |
|  | Low Force Spring Return — E50DL1 ③  | E50AL1<br>CE  | E50ALL1               | E50ANL1               | E50BL1  | E50BLL1               | E50BNL1               | —   | —              |
|  | Maintained Two-Position — E50DM1  | E50AM1<br>CE  | E50ALM1               | E50ANM1               | E50BM1  | E50BLM1               | E50BNM1               | —   | —              |
| Side Pushbutton, Spring Return — E50DS1  |    | E50AS1<br>CE  | E50ALS1               | E50ANS1               | E50BS1  | E50BLS1               | E50BNS1               | E50CLS1   | —              |
| Side Pushbutton, Adjustable Spring Return — E50DS2   |   | E50AS2<br>CE  | E50ALS2               | E50ANS2               | E50BS2  | E50BLS2               | E50BNS2               | E50BLS2   | E50CNS2        |
| Side Push Roller, Spring Return — E50DS3 ④   |  | E50AS3<br>CE  | E50ALS3               | E50ANS3               | E50BS3  | E50BLS3               | E50BNS3               | E50BLS3   | —              |
| Side Pushbutton, Maintained — E50DH1   |  | E50AH1<br>CE  | E50ALH1               | E50ANH1               | E50BH1  | E50BLH1               | E50BNH1               | E50BLH1   | —              |
| Wiring:  |   | Single Pole 1N.O.-1N.C. Must be same polarity    |                       |                       | Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole   |                       |                       | Double Pole 1N.O.-2N.C. Series wired Indicator light; Same polarity each pole  |                |

① Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

| Option  | Catalog Number                     | Code Suffix   |
|---|------------------------------------|---------------|
| Mini-Connector ⑤ (with epoxy filled receptacle) | Single Pole (5-Pin Mini-Connector) | CSMS5D5CY1602 |
|   | Double Pole (9-pin Mini-Connector) | CSMS9D9CY1602 |
| Cable Connection (with epoxy filled receptacle) | 8-foot cable length                | —             |
|   | 12-foot cable length               | —             |
|   | 20-foot cable length               | —             |
| Manifold Mount (rear wiring entrance)           | —                                  | M             |
| 20 mm Conduit Entrance                          | —                                  | 20            |

② For Operating Head specifications, see Page 5.









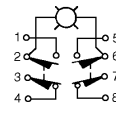
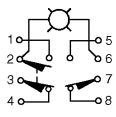
③ CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

④ Roller can be converted in the field between horizontal and vertical.

⑤ For a full selection of cable connectors, see PG.05.05.T.E.

☐ Fast turn product with typical one day lead-time to shipment.

**Model Selection — Assembled Switches — Standard (Continued)**<sup>①</sup>

| Assembled Switch<br>   | Single Pole (5 Terminal Receptacle)<br>             |                                       |                       | Double Pole (9 Terminal Receptacle)<br>  |                      |                       |  |                       |                |
|---|--|---------------------------------------|-----------------------|---|----------------------|-----------------------|--|-----------------------|----------------|
|   | Indicating Light:  | None                                  | LED (24 – 120V AC/DC) | Neon (120V AC)  | None                 | LED (24 – 120V AC/DC) | Neon (120V AC)   | LED (24 – 120V AC/DC) | Neon (120V AC) |
|   | Switch Body:   | E50SA<br>1N.O.-1N.C.                  | E50SAL<br>1N.O.-1N.C. | E50SAN<br>1N.O.-1N.C.   | E50SB<br>2N.O.-2N.C. | E50SBL<br>2N.O.-2N.C. | E50SBN<br>2N.O.-2N.C.  | E50SCL<br>1N.O.-2N.C. | —              |
|   | Receptacle: ①  | E50RA                                 | E50RA                 | E50RA   | E50RB                | E50RB                 | E50RB  | E50RB                 | E50RB          |
| Operating Head Type <sup>②</sup>  |  | Catalog Number for Assembled Switches |                       |   |                      |                       |  |                       |                |
| Top Pushbutton, Spring Return — E50DT1<br>                                       | E50AT1   | E50ALT1                               | E50ANT1               | E50BT1  | E50BLT1              | E50BNT1               | E50CLT1  | E50BNT1               |                |
| Top Pushbutton, Adjustable Spring Return — E50DT2<br>                            | E50AT2   | E50ALT2                               | E50ANT2               | E50BT2  | E50BLT2              | E50BNT2               | —  | —                     |                |
| Top Push Roller, Spring Return — E50DT3 <sup>③</sup><br>                        | E50AT3   | E50ALT3                               | E50ANT3               | E50BT3  | E50BLT3              | E50BNT3               | —  | —                     |                |
| Wobble Head, Spring Return (requires a wobble operator, see PG.05C.04.T.E)<br> | Standard Duty — E50DW1   | E50AW1                                | E50ALW1               | E50ANW1   | E50BW1               | E50BLW1               | E50BNW1  | E50CLW1               | —              |
|   | Heavy-Duty High Strength Steel — E50DW2  | E50AW2                                | E50ALW2               | E50ANW2   | E50BW2               | E50BLW2               | E50BNW2  | E50CLW2               | E50BNW2        |
| Wiring:   | Single Pole 1N.O.-1N.C. Must be same polarity<br> |                                       |                       | Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole<br> |                      |                       | Double Pole 1N.O.-2N.C. Series wired Indicator light; Same polarity each pole<br> |                       |                |


<sup>①</sup> Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

| Option   | Catalog Number                     | Code Suffix   |
|--|------------------------------------|---------------|
| Mini-Connector <sup>④</sup> (with epoxy filled receptacle) | Single Pole (5-Pin Mini-Connector) | CSMS5D5CY1602 |
|  | Double Pole (9-pin Mini-Connector) | CSMS9D9CY1602 |
| Cable Connection (with epoxy filled receptacle)            | 8-foot cable length                | —             |
|  | 12-foot cable length               | —             |
|  | 20-foot cable length               | —             |
| Manifold Mount (rear wiring entrance)                      | —                                  | M             |
| 20 mm Conduit Entrance                                     | —                                  | 20            |

<sup>②</sup> For Operating Head specifications, see Page 5.


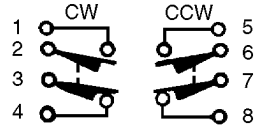

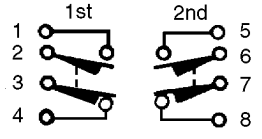


<sup>③</sup> Roller can be converted in the field between horizontal and vertical.

<sup>④</sup> For a full selection of cable connectors, see PG.05.05.T.E.

 Fast turn product with typical one day lead-time to shipment.



July 2005

**Model Selection — Assembled Switches — Special Purpose**

|  | Operating Data — Nominal   | Catalog Number  |                  |                 |                     | Circuit Diagram  |
|--|--|---|------------------|-----------------|---------------------|--|
|  |  | Assembled Switch  | Switch Body Only | Receptacle Only | Operating Head Only |  |
| Neutral Position<br>(requires an operating lever, see <b>PG.05C.04.T.E</b> )<br><br>                            | 5° Travel  | <b>E50NN1</b>   | <b>E50SN</b>     | <b>E50RB</b>    | <b>E50DN1</b>       | Same Polarity Each Pole<br><br> |
|  | 15° Travel   | <b>E50NN2</b>   | <b>E50SN</b>     | <b>E50RB</b>    | <b>E50DN2</b>       |  |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 5° or 15° (depending upon model selected)<br>2°<br>90°<br>1.8 in-lbs<br>2.5 in-oz<br>14° to 200°F (-10° to 94°C)  |                  |                 |                     |  |
| Two Step CW, CCW or both, Convertible (requires an operating lever, see <b>PG.05C.04.T.E</b> )<br><br>          |  | <b>E50TD1</b>   | <b>E50ST</b>     | <b>E50RB</b>    | <b>E50DD1</b>       | Same Polarity Each Pole<br><br> |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 1st Step 10°; 2nd Step 20°<br>4° Each<br>90°<br>3 in-lbs<br>4.5 in-oz<br>CW or CCW: 14° to 250°F (-10° to 121°C)<br>CW and CCW: 14° to 200°F (-10° to 94°C) |                  |                 |                     |  |
| Gravity Return (requires E50KL220, E50KL226 or equivalent operating lever, see <b>PG.05C.04.T.E</b> )<br><br> | without Indicating Light   | <b>E50GG1</b>   | <b>E50SG</b>     | <b>E50RA</b>    | <b>E50DG1</b>       | Must Be Same Polarity<br><br> |
|  | with LED Indicating Light (24-120V AC/DC)  | <b>E50GLG1</b>  | <b>E50SGL</b>    |                 |                     |  |
|  | with Neon Indicating Light (120V AC)   | <b>E50GNG1</b>  | <b>E50SGN</b>    |                 |                     |  |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 10° to 170°<br>8°<br>360°<br>3.0 in-oz<br>Gravity<br>14° to 200°F (-10° to 94°C)  |                  |                 |                     |  |

Fast turn product with typical one day lead-time to shipment.

## Model Selection — Operating Heads

| Description   | Travel to Operate Contacts                 | Travel to Reset Contacts | Total Travel | Force to Operate Contacts | Minimum Return Force | Operating Temperature <sup>①</sup> |  | Catalog Number                           |                |
|---|--|--------------------------|--------------|---------------------------|----------------------|------------------------------------|--|--|----------------|
|   |  |                          |              |                           |                      | Without Cable                      | With Pre-wired Cable                     |  |                |
| Side Rotary (requires an operating lever, see <b>PG.05C.04.T.E</b> )<br>                 | Standard Spring Return <sup>②</sup>        | 5°                       | 2°           | 90°                       | 3 in-lbs             | 4.5 in-oz                          | 10° to 200°F (-12° to 94°C) <sup>③</sup> | 10° to 200°F (-12° to 94°C) <sup>③</sup> | <b>E50DR1</b>  |
|   | Low <sup>②</sup> Temperature Spring Return | 5°                       | 2°           | 90°                       | 3 in-lbs             | 4.5 in-oz                          | -40° to 175°F (-40° to 79°C)             | -31° to 175°F (-34° to 79°C)             | <b>E50DR19</b> |
|   | Low Force Spring Return <sup>②</sup>       | 15°                      | 6°           | 90°                       | 1.5 in-lbs           | 2.5 in-oz                          | 10° to 200°F (-12° to 94°C) <sup>③</sup> | 10° to 200°F (-12° to 94°C) <sup>③</sup> | <b>E50DL1</b>  |
|   | Maintained Two-Position                    | 50°                      | 50°          | 90°                       | 3 in-lbs             | —                                  | 14° to 200°F (-10° to 94°C)              | 14° to 200°F (-10° to 94°C)              | <b>E50DM1</b>  |
| Side Pushbutton, Spring Return<br>   | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS1</b>                            |                |
| Side Pushbutton, Adjustable Spring Return<br>  | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS2</b>                            |                |
| Side Push Roller, Spring Return <sup>④</sup><br>   | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS3</b> <sup>⑤</sup>               |                |
|   |  |                          |              |                           |                      |                                    |  | <b>E50DS4</b> <sup>⑤</sup>               |                |
| Side Pushbutton, Maintained<br>   | 0.200 inch                                 | 0.130 inch               | 0.320 inch   | 5 lbs                     | 5 lbs                | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DH1</b>                            |                |
| Top Pushbutton, Spring Return<br>  | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT1</b>                            |                |
| Top Pushbutton, Adjustable Spring Return<br>   | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT2</b>                            |                |
| Top Push Roller, Spring Return<br>   | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT3</b>                            |                |
| Wobble Head, Spring Return (requires a wobble operator, see <b>PG.05C.04.T.E</b> )<br> | Standard Duty                              | 10°                      | 6°           | 15°                       | 2 in-lbs             | 2.4 in-oz                          | 14° to 250°F (-10° to 121°C)             | 14° to 221°F (-10° to 105°C)             | <b>E50DW1</b>  |
|   | Heavy-Duty High Strength Steel             | 10°                      | 6°           | 15°                       | 2 in-lbs             | 2.4 in-oz                          | 14° to 250°F (-10° to 121°C)             | 14° to 221°F (-10° to 105°C)             | <b>E50DW2</b>  |

① Temperature ranges below +32°F (0°C) are based on absence of freezing moisture or water.

② CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

③ For CW and CCW operation. For CW only or CCW only operation, high temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with pre-wired cable.


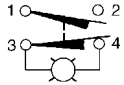
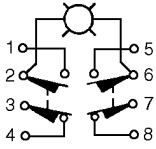
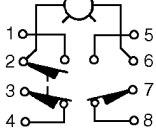
④ Roller can be converted in the field between horizontal and vertical.

⑤ Roller shaft is 0.38 inches (9.5 mm) longer on E50DS4, see dimensions on **Page 11**.

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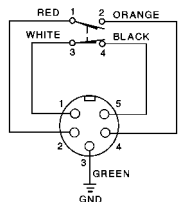


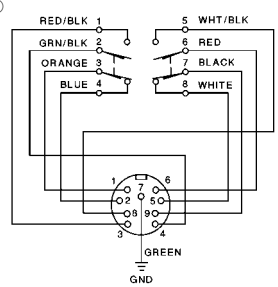

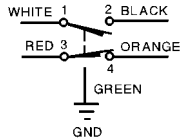
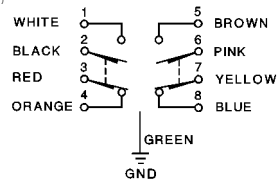
**Model Selection — Switch Bodies**



|  | Circuit  | Switch Body Construction                     | Catalog Number     |
|--|--|--|--------------------|
| <p>Switch Bodies</p>    | <p>Single Pole 1N.O.-1N.C.<br/>Must Be Same Polarity ①</p>                                | Without Indicating Light                     | <b>E50SA</b><br>CE |
|  |  | With LED Indicating Light<br>24 – 120V AC/DC | <b>E50SAL</b>      |
|  |  | With Neon Indicating Light 120V AC           | <b>E50SAN</b>      |
|  | <p>Double Pole 2N.O.-2N.C.<br/>Parallel Wired Ind. Light<br/>Same Polarity Each Pole</p>  | Without Indicating Light                     | <b>E50SB</b>       |
|  |  | With LED Indicating Light<br>24 – 120V AC/DC | <b>E50SBL</b>      |
|  |  | With Neon Indicating Light 120V AC           | <b>E50SBN</b>      |
| <p>Double Pole 2N.C.-1N.O.<br/>Series Wired Ind. Light<br/>Same Polarity Each Pole ①</p>  | With LED Indicating Light<br>24 – 120V AC/DC   | <b>E50SCL</b>                                |                    |

① Indicating lights are supplied from the factory wired as shown. However, they can easily be re-connected to terminals 1 and 2 if necessary (SPDT).

■ Fast turn product with typical one day lead-time to shipment.

**Model Selection — Receptacles**




|   | Description   | Poles                    | Conduit Entrance     | Cable Length    | Catalog Number   | Wiring  |
|---|---|--------------------------|----------------------|-----------------|--|---|
|    | Conduit entrance, front or rear mounting  | Single Pole (5 Terminal) | 1/2 NPT              | —               | <b>E50RA</b>   | ①   |
|   |   |                          | 20 mm                | —               | <b>E50RA20</b>   |   |
|   |   | Double Pole (9 Terminal) | 1/2 NPT              | —               | <b>E50RB</b>   | ①   |
|   |   |                          | 3/4 NPT              | —               | <b>E50RB34</b>   |   |
|    | Rear wiring entrance instead of conduit hole, gasket on back for oil tightness  | Single Pole (5 Terminal) | —                    | —               | <b>E50RAM</b>  | ①   |
|   |   | Double Pole (9 Terminal) | —                    | —               | <b>E50RBM</b>  | ①   |
|  | Epoxy filled receptacle with pre-wired Mini-Connector. (The -W version is a wiring scheme typically used in automotive applications.) | Single Pole (5 Terminal) | 5-pin Mini-Connector | —               | <b>E50RAP5</b>    | ②    |
|   |   |                          |                      |                 | <b>E50RAP5-W</b>  |   |
|   |   | Double Pole (9 Terminal) | 9-pin Mini-Connector | —               | <b>E50RBP9</b>  | ②  |
|  | Epoxy filled receptacle with pre-wired 16 gauge, yellow jacketed, type S00W-A cable. Cable enters through hole threaded for conduit   | Single Pole (5 Terminal) | 1/2 NPT              | 8-foot          | <b>E50RAS</b>  | ②  |
|   |   |                          |                      | 12-foot         | <b>E50RAS12</b>  |   |
|   |   |                          | 20-foot              | <b>E50RAS20</b> |  |   |
|   |   |                          | 20 mm                | 8-foot          | <b>E50RA20S</b>  |   |
|   |   |                          |                      | 12-foot         | <b>E50RA20S12</b>  |   |
|   |   |                          |                      | 20-foot         | <b>E50RA20S20</b>  |   |
|   |   | Double Pole (9 Terminal) | 1/2 NPT              | 8-foot          | <b>E50RBS</b>  | ②  |
|   |   |                          |                      | 12-foot         | <b>E50RBS12</b>  |   |
|   |   |                          | 20-foot              | <b>E50RBS20</b> |  |   |
|   |   |                          | 20 mm                | 8-foot          | <b>E50RB20S</b>  |   |
| 12-foot   | <b>E50RB20S12</b>   |                          |                      |                 |  |   |
| 20-foot   | <b>E50RB20S20</b>   |                          |                      |                 |  |   |

① See Model Selection — Switch Bodies for wiring information.  
 ② The wire colors referenced on these diagrams are those internal to the switch itself.  
 See listing of compatible connector cables on **Page 8**.  
 Fast turn product with typical one day lead-time to shipment.



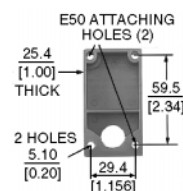
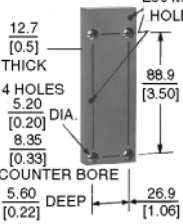
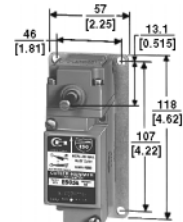
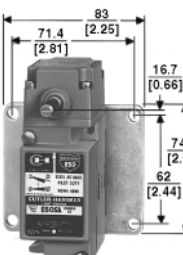
July 2005

**Model Selection — Compatible Connector Cables** ①

|  | Voltage Style | Number of Pins | Gauge  | Length       | Catalog Number       | Pin Configuration/Wire Colors (Face View Female Shown)  |
|--|---------------|----------------|--------|--------------|----------------------|---|
| <b>Standard Cables — Mini Style</b>  |               |                |        |              |                      |   |
| <br>Mini Style Straight Female<br><br>Current Rating @ 600V<br>5-pin: 8A<br>9-pin: 7A | —             | 5-pin          | 16 AWG | 6 feet (2m)  | <b>CSMS5D5CY1602</b> |  1-White<br>2-Red<br>3-Green<br>4-Orange<br>5-Black  |
|  | —             | 9-pin          | 16 AWG | 12 feet (4m) | <b>CSMS9D9CY1602</b> |  1-Orange<br>2-Blue<br>3-Red/Black<br>4-Green/Black<br>5-White<br>6-Red<br>7-Green<br>8-White/Black<br>9-Black |

① For a full selection of connector cables, see **PG.05.05.T.E.**

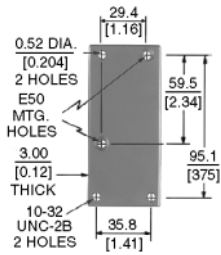
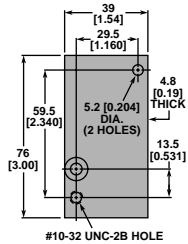
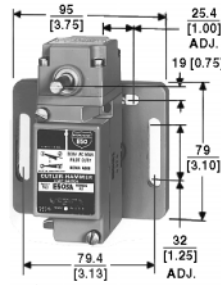

**Model Selection — Accessories**

| Approximate Dimensions in mm [Inches]   | Description  | Catalog Number  |
|---|--|-----------------|
|  E50 ATTACHING HOLES (2)<br>25.4 [1.00] THICK<br>59.5 [2.34]<br>2 HOLES 5.10 [0.20]<br>29.4 [1.156]  | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Surface Mounting Plug-In Limit Switch  | <b>E50KH1</b>   |
|   | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Manifold Mounting Plug-In Limit Switch   | <b>E50KH1M</b>  |
|  E50 MTG HOLES<br>12.7 [0.5] THICK<br>4 HOLES 5.20 [0.20] DIA.<br>8.35 [0.33] COUNTER BORE<br>5.60 [0.22] DEEP<br>88.9 [3.50]<br>26.9 [1.06] | Allows E50 to replace Square D Type AW Surface Mounting Non Plug-In Standard Box Limit Switch  | <b>E50KH7</b>   |
|  46 [1.81]<br>57 [2.25]<br>13.1 [0.515]<br>118 [4.62]<br>107 [4.22]  | Allows E50 to replace National Acme, Type D-1200M, Style 2 Mounting. Denison LoxSwitch, Model L-100W, Style 2 Mounting. Square D 9007 Type T, Style B Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.) | <b>E50KH4</b> ① |
|  71.4 [2.81]<br>83 [2.25]<br>16.7 [0.66]<br>74.6 [2.94]<br>62 [2.44]   | Allows E50 to replace National Acme, Type D-1200M, Style 1 Mounting. Denison LoxSwitch, Model L-100W, Style 1 Mounting. Square D 9007 Type T, Style C Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.) | <b>E50KH5</b> ① |

① Limit Switch not included.



### Model Selection — Accessories (Continued)

| Approximate Dimensions in mm [Inches]   | Description   | Catalog Number  |
|---|---|-----------------|
| <p>Adapter Plate</p>               | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LT Non Plug-In 2-Pole Limit Switch   | <b>E50KH2</b>   |
| <p>Adapter Plate</p>               | Allows E50 to replace Allen-Bradley 802M Sealed Limit Switch  | <b>E50KH10</b>  |
| <p>Adjustable Mounting Plate</p>  | This is a mounting plate only 5/16 inch thick and includes the proper mounting bolts and nuts. The slots in the plate allow a maximum horizontal adjustment of 1 inch and vertical adjustment of 1-1/4 inches | <b>E50KH3</b> ① |
| <p>Conduit Sealing Nut</p>       | 1/2 inch oiltight   | <b>E50KH6</b>   |

① Limit Switch not included.

■ Fast turn product with typical one day lead-time to shipment.

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**Specifications**

| Description  | Specification  |
|--|--|
| Environmental Ratings  | NEMA 1, 3, 3S, 4, 4X, 6, 6P, 13, IP67  |
| Material of Construction   | Zinc die cast  |
| Switch Gasket Material   | Viton <sup>®</sup>   |
| Universal U.S./DIN Mounting Dimensions   | 1.16 in (30 mm) x 2.34 in (60 mm)  |
| Conduit Entrance   | 1/2 in NPT or 20 mm threading  |
| Contact Ratings  | See below  |
| Contact Operation  | Snap action over center mechanism  |
| Contact Material   | Fine silver  |
| Maximum Frequency of Operation   | 8000 operations per hour   |
| Mechanical Life:<br>Side Rotary<br>Side or Top Push  | 13,000,000 operations minimum<br>10,000,000 operations minimum   |
| Electrical Life:<br>Single Pole<br>Double Pole   | 1,000,000 operations typical at full load<br>100,000 operations typical at full load   |
| Ambient Temperature Range — Standard<br>Standard without Cable<br>Standard with Cable<br>Low Temperature without Cable<br>Low Temperature with Cable | 14° to 250°F (-10° to 121°C)<br>14° to 221°F (-10° to 105°C)<br>-40° to 250°F (-40° to 121°C)<br>-40° to 221°F (-40° to 105°C) |
| Repeat Accuracy — Standard<br>Side Operated<br>Top Operated<br>Side Rotary   | Within 0.0012 in<br>Within 0.0003 in<br>Within 0.0014 in   |
| Torque Requirements:<br>Switch Body Screws<br>Operating Head Screws  | 25 – 30 lb-in<br>14 – 18 lb-in   |
| Wire Size  | Will accept AWG #22 – #12, single or stranded wire   |

**Electrical Data — Maximum Contact Ratings (Same polarity each pole)**

| AC Volts | Current, Amperes |       |         | Voltamperes |       | DC Volts | Current, Amperes   |         |
|----------|------------------|-------|---------|-------------|-------|----------|--------------------|---------|
|          | Make             | Break | Cont. ① | Make        | Break |          | Max. Make or Break | Cont. ① |

**All Switches Except Gravity Return and Indicating Light Versions**

| NEMA A600 Rating |    |     |    |      |     | NEMA R300 |      |     |
|------------------|----|-----|----|------|-----|-----------|------|-----|
| 120              | 60 | 6   | 10 | 7200 | 720 | 125       | 0.22 | 1.0 |
| 240              | 30 | 3   |    |      |     | 250       | 0.11 | 1.0 |
| 480              | 15 | 1.5 |    |      |     |           |      |     |
| 600              | 12 | 1.2 |    |      |     |           |      |     |

**Switches with Indicating Lights (LED or Neon)**

| NEMA A150 Rating |    |   |    |      |     | NEMA R150 |      |     |
|------------------|----|---|----|------|-----|-----------|------|-----|
| 120              | 60 | 6 | 10 | 7200 | 720 | 125       | 0.22 | 1.0 |

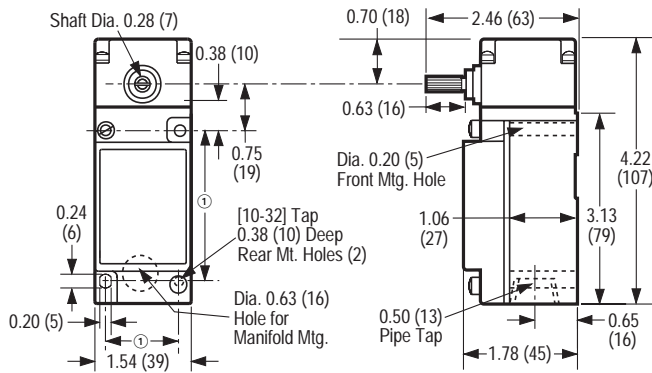
**Gravity Return Switches — Maximum Contact Ratings**

| NEMA 6600 Rating — Contacts on Same Polarity |     |      |   |      |     | — |   |   |
|--|-----|------|---|------|-----|---|---|---|
| 120  | 30  | 3    | 5 | 3600 | 360 | — | — | — |
| 240  | 15  | 1.5  |   |      |     |   |   |   |
| 480  | 7.5 | 0.75 |   |      |     |   |   |   |
| 600  | 6   | 0.60 |   |      |     |   |   |   |

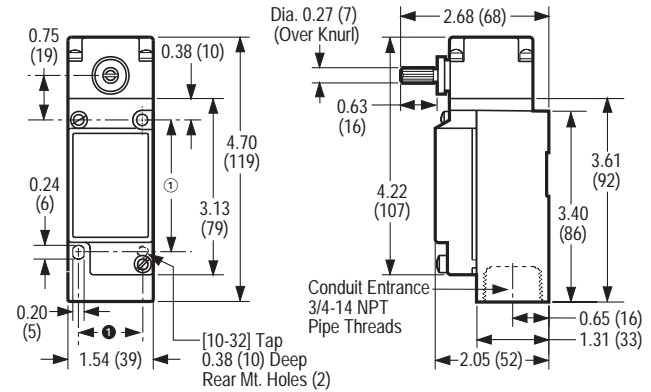
① Thermal rating. Valid only if switch does not have to make or break.

**Approximate Dimensions in Inches (mm)**

**Standard**



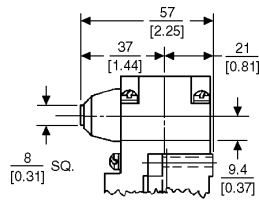
**E50SB34**



① Can accommodate both U.S., 1.16 (29.4) x 2.34 (59.5) and DIN, 1.18 (30) x 3.26 (60), mounting dimensions.

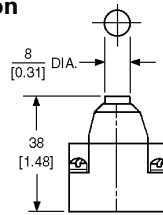
**Side Push Operators in mm [Inches]**

**Pushbutton**



**Top Push Operators in mm [Inches]**

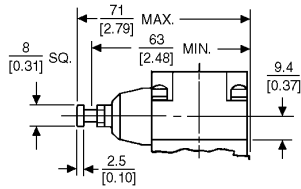
**Pushbutton**



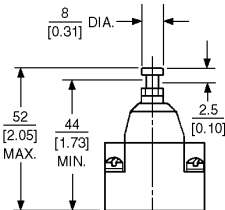
**Wobble Operators**

See Operators, PG.05C.04.T.E

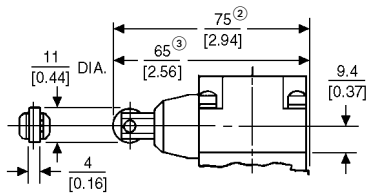
**Adjustable Pushbutton**



**Adjustable Pushbutton**

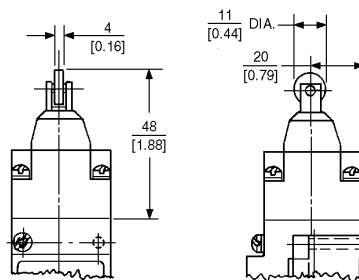


**Roller**

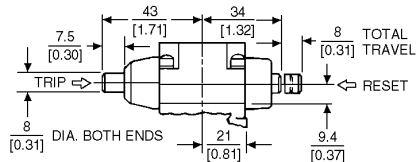


② For E50DS4.  
③ For E50DS3.

**Roller**



**Maintained Pushbutton**



## Heavy-Duty Plug-In Switches

### Contents

|   |    |
|---|----|
| Overview .....                            | 1  |
| Model Selection, Assembled Switches ..... | 2  |
| Model Selection, Operating Heads .....    | 5  |
| Model Selection, Switch Bodies.....       | 6  |
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| Specifications.....                       | 10 |
| Dimensions.....                           | 11 |

Cutler-Hammer® E50 Modular Plug-In Limit Switch Components from Eaton's electrical business are the industry standard with versatility of design and high reliability for low maintenance, installation and inventory costs. Standard Viton® gaskets, seals and boots and a zinc die cast enclosure provide exceptional chemical resistance to the common coolants, cleansing agents, and hydraulic fluids found in machine tool, automotive, waste water treatment and other heavy-duty industrial applications. Mounting dimensions accommodate both U.S. and DIN standards for easy retrofit installations. Super bright 24 – 120V AC/DC LED indicating light versions simplify setup and troubleshooting operations.

### Approvals

- UL Listed
- CSA Certified
- IEC.947.5.1
- TUV — E9271605E02

CE (where shown)



Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

Viton® is a registered trademark of Dupont Dow Elastomers.

## Modular Limit Switches Provide Extremely Easy Installation, High Reliability, and Low Maintenance and Inventory Costs

Available as Assembled Switches or Components

Viton Gasket Seals

Rugged Zinc Die-Cast Housing

Conduit, Cable and Connector Wiring Options



Dozens of Operators to Perfectly Fit Your Application

Rotary, Top and Side Push, Wobble and Specialty Operating Heads

Single- or Double-Pole Switch Bodies with Optional Indicating Lights

A Variety of Receptacles Meet Your Wiring Needs



### Product Features











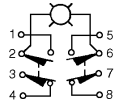
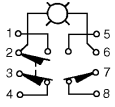
- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical resistant Viton® gaskets, seals and boots are standard, and so are captive, posi-drive screws
- The switches have terminal identification on the nameplate for a visual wiring check-out without guesswork. Heads and switch bodies can be replaced without rewiring
- E50 devices can be ordered in separate components or as complete assembled switches
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Keyed, four direction head positioning
- Standard 5° pre-travel and 90° total travel
- 24 – 120V AC/DC LED and 120V AC neon indicating lights available
- Rotary heads are field convertible CW, CCW, or both, without special tools
- Epoxy filled, pin connector or pigtail pin connector receptacles available

For Customer Service in the U.S. call 1-800-356-1243, in Canada call 1-800-268-3578.

For Application Assistance in the U.S. and Canada call 1-800-426-9184.

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Model Selection — Assembled Switches — Standard

| Assembled Switch   | Single Pole (5 Terminal Receptacle)   |  |   | Double Pole (9 Terminal Receptacle)   |   |                       |                       |  |                |
|--|---|--|---|---|---|-----------------------|-----------------------|--|----------------|
|  |    |   |  |  |    |                       |                       |  |                |
|  | Indicating Light:   | None   | LED (24 – 120V AC/DC)   | Neon (120V AC)  | None  | LED (24 – 120V AC/DC) | Neon (120V AC)        | LED (24 – 120V AC/DC)  | Neon (120V AC) |
|  | Switch Body:  | E50SA<br>1N.O.-1N.C.   | E50SAL<br>1N.O.-1N.C.   | E50SAN<br>1N.O.-1N.C.   | E50SB<br>2N.O.-2N.C.  | E50SBL<br>2N.O.-2N.C. | E50SBN<br>2N.O.-2N.C. | E50SCL<br>1N.O.-2N.C.  | —              |
| Receptacle: ①  | E50RA   | E50RA  | E50RA   | E50RB   | E50RB   | E50RB                 | E50RB                 | E50RB  |                |
| Operating Head Type ②  |   | Catalog Number for Assembled Switches  |   |   |   |                       |                       |  |                |
| Side Rotary (requires an operating lever, see PG.05C.04.T.E) | Standard Spring Return — E50DR1 ③   | E50AR1<br>CE   | E50ALR1   | E50ANR1   | E50BR1  | E50BLR1               | E50BNR1               | —  | —              |
|  | Low Force Spring Return — E50DL1 ③  | E50AL1<br>CE   | E50ALL1   | E50ANL1   | E50BL1  | E50BLL1               | E50BNL1               | —  | —              |
|  | Maintained Two-Position — E50DM1  | E50AM1<br>CE   | E50ALM1   | E50ANM1   | E50BM1  | E50BLM1               | E50BNM1               | —  | —              |
| Side Pushbutton, Spring Return — E50DS1                      |    | E50AS1<br>CE   | E50ALS1   | E50ANS1   | E50BS1  | E50BLS1               | E50BNS1               | E50CLS1  | —              |
| Side Pushbutton, Adjustable Spring Return — E50DS2           |   | E50AS2<br>CE   | E50ALS2   | E50ANS2   | E50BS2  | E50BLS2               | E50BNS2               | E50BLS2  | E50CNS2        |
| Side Push Roller, Spring Return — E50DS3 ④                   |  | E50AS3<br>CE   | E50ALS3   | E50ANS3   | E50BS3  | E50BLS3               | E50BNS3               | E50BLS3  | —              |
| Side Pushbutton, Maintained — E50DH1                         |  | E50AH1<br>CE   | E50ALH1   | E50ANH1   | E50BH1  | E50BLH1               | E50BNH1               | E50BLH1  | —              |
| Wiring:  |   | Single Pole 1N.O.-1N.C. Must be same polarity<br> |   |   | Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole<br> |                       |                       | Double Pole 1N.O.-2N.C. Series wired Indicator light; Same polarity each pole<br> |                |

① Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

| Option  | Catalog Number                     | Code Suffix   |     |
|---|------------------------------------|---------------|-----|
| Mini-Connector ⑤ (with epoxy filled receptacle) | Single Pole (5-Pin Mini-Connector) | CSMS5D5CY1602 | P5  |
|   | Double Pole (9-pin Mini-Connector) | CSMS9D9CY1602 | P9  |
| Cable Connection (with epoxy filled receptacle) | 8-foot cable length                | —             | S   |
|   | 12-foot cable length               | —             | S12 |
|   | 20-foot cable length               | —             | S20 |
| Manifold Mount (rear wiring entrance)           | —                                  | —             | M   |
| 20 mm Conduit Entrance                          | —                                  | —             | 20  |

② For Operating Head specifications, see Page 5.









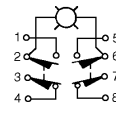
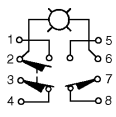
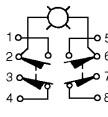
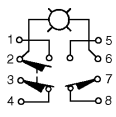
③ CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

④ Roller can be converted in the field between horizontal and vertical.

⑤ For a full selection of cable connectors, see PG.05.05.T.E.

☐ Fast turn product with typical one day lead-time to shipment.

Model Selection — Assembled Switches — Standard (Continued)<sup>①</sup>

|  |   |   |                       |  |   |                       |   |                       |                |
|--|---|---|-----------------------|--|---|-----------------------|---|-----------------------|----------------|
|   |   | Single Pole (5 Terminal Receptacle)   |                       |  | Double Pole (9 Terminal Receptacle)   |                       |   |                       |                |
|  | Indicating Light:   | None  | LED (24 – 120V AC/DC) | Neon (120V AC)   | None  | LED (24 – 120V AC/DC) | Neon (120V AC)  | LED (24 – 120V AC/DC) | Neon (120V AC) |
|  | Switch Body:  | E50SA<br>1N.O.-1N.C.  | E50SAL<br>1N.O.-1N.C. | E50SAN<br>1N.O.-1N.C.  | E50SB<br>2N.O.-2N.C.  | E50SBL<br>2N.O.-2N.C. | E50SBN<br>2N.O.-2N.C.   | E50SCL<br>1N.O.-2N.C. | —              |
|  | Receptacle: <sup>①</sup>  | E50RA   | E50RA                 | E50RA  | E50RB   | E50RB                 | E50RB   | E50RB                 | E50RB          |
| Operating Head Type <sup>②</sup>   |   | Catalog Number for Assembled Switches   |                       |  |   |                       |   |                       |                |
| Top Pushbutton, Spring Return — E50DT1                                        | E50AT1  | E50ALT1   | E50ANT1               | E50BT1   | E50BLT1   | E50BNT1               | E50CLT1   | E50BNT1               |                |
| Top Pushbutton, Adjustable Spring Return — E50DT2                             | E50AT2  | E50ALT2   | E50ANT2               | E50BT2   | E50BLT2   | E50BNT2               | —   | —                     |                |
| Top Push Roller, Spring Return — E50DT3 <sup>③</sup>                         | E50AT3  | E50ALT3   | E50ANT3               | E50BT3   | E50BLT3   | E50BNT3               | —   | —                     |                |
| Wobble Head, Spring Return (requires a wobble operator, see PG.05C.04.T.E)  | Standard Duty — E50DW1  | E50AW1  | E50ALW1               | E50ANW1  | E50BW1  | E50BLW1               | E50BNW1   | E50CLW1               | —              |
|  | Heavy-Duty High Strength Steel — E50DW2   | E50AW2  | E50ALW2               | E50ANW2  | E50BW2  | E50BLW2               | E50BNW2   | E50CLW2               | E50BNW2        |
| Wiring:  | Single Pole 1N.O.-1N.C. Must be same polarity  |   |                       | Double Pole 2N.O.-2N.C. Parallel wired Indicator light Same polarity each pole  |   |                       | Double Pole 1N.O.-2N.C. Series wired Indicator light; Same polarity each pole  |                       |                |


<sup>①</sup> Connection options (add the Code Suffix from the table below to the end of the Catalog Number):

| Option  | Catalog Number                     | Code Suffix   |
|---|------------------------------------|---------------|
| Mini-Connector <sup>④</sup><br>(with epoxy filled receptacle) | Single Pole (5-Pin Mini-Connector) | CSMS5D5CY1602 |
|   | Double Pole (9-pin Mini-Connector) | CSMS9D9CY1602 |
| Cable Connection<br>(with epoxy filled receptacle)            | 8-foot cable length                | —             |
|   | 12-foot cable length               | —             |
|   | 20-foot cable length               | —             |
| Manifold Mount (rear wiring entrance)                         | —                                  | M             |
| 20 mm Conduit Entrance  | —                                  | 20            |

<sup>②</sup> For Operating Head specifications, see Page 5.


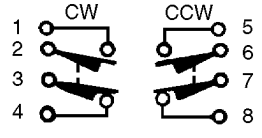

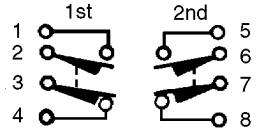


<sup>③</sup> Roller can be converted in the field between horizontal and vertical.

<sup>④</sup> For a full selection of cable connectors, see PG.05.05.T.E.

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**Model Selection — Assembled Switches — Special Purpose**

|  | Operating Data — Nominal   | Catalog Number  |                  |                 |                     | Circuit Diagram  |
|--|--|---|------------------|-----------------|---------------------|--|
|  |  | Assembled Switch  | Switch Body Only | Receptacle Only | Operating Head Only |  |
| Neutral Position<br>(requires an operating lever, see <b>PG.05C.04.T.E</b> )<br><br>                            | 5° Travel  | <b>E50NN1</b>   | <b>E50SN</b>     | <b>E50RB</b>    | <b>E50DN1</b>       | Same Polarity Each Pole<br><br> |
|  | 15° Travel   | <b>E50NN2</b>   | <b>E50SN</b>     | <b>E50RB</b>    | <b>E50DN2</b>       |  |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 5° or 15° (depending upon model selected)<br>2°<br>90°<br>1.8 in-lbs<br>2.5 in-oz<br>14° to 200°F (-10° to 94°C)  |                  |                 |                     |  |
| Two Step CW, CCW or both, Convertible (requires an operating lever, see <b>PG.05C.04.T.E</b> )<br><br>          |  | <b>E50TD1</b>   | <b>E50ST</b>     | <b>E50RB</b>    | <b>E50DD1</b>       | Same Polarity Each Pole<br><br> |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 1st Step 10°; 2nd Step 20°<br>4° Each<br>90°<br>3 in-lbs<br>4.5 in-oz<br>CW or CCW: 14° to 250°F (-10° to 121°C)<br>CW and CCW: 14° to 200°F (-10° to 94°C) |                  |                 |                     |  |
| Gravity Return (requires E50KL220, E50KL226 or equivalent operating lever, see <b>PG.05C.04.T.E</b> )<br><br> | without Indicating Light   | <b>E50GG1</b>   | <b>E50SG</b>     | <b>E50RA</b>    | <b>E50DG1</b>       | Must Be Same Polarity<br><br> |
|  | with LED Indicating Light (24-120V AC/DC)  | <b>E50GLG1</b>  | <b>E50SGL</b>    |                 |                     |  |
|  | with Neon Indicating Light (120V AC)   | <b>E50GNG1</b>  | <b>E50SGN</b>    |                 |                     |  |
|  | Travel to Operate Contacts:<br>Travel to Reset Contacts:<br>Total Travel:<br>Force to Operate Contacts:<br>Minimum Return Force:<br>Operating Temperature: | 10° to 170°<br>8°<br>360°<br>3.0 in-oz<br>Gravity<br>14° to 200°F (-10° to 94°C)  |                  |                 |                     |  |

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## Model Selection — Operating Heads

| Description   | Travel to Operate Contacts                 | Travel to Reset Contacts | Total Travel | Force to Operate Contacts | Minimum Return Force | Operating Temperature <sup>①</sup> |  | Catalog Number                           |                |
|---|--|--------------------------|--------------|---------------------------|----------------------|------------------------------------|--|--|----------------|
|   |  |                          |              |                           |                      | Without Cable                      | With Pre-wired Cable                     |  |                |
| Side Rotary (requires an operating lever, see <b>PG.05C.04.T.E</b> )<br>                 | Standard Spring Return <sup>②</sup>        | 5°                       | 2°           | 90°                       | 3 in-lbs             | 4.5 in-oz                          | 10° to 200°F (-12° to 94°C) <sup>③</sup> | 10° to 200°F (-12° to 94°C) <sup>③</sup> | <b>E50DR1</b>  |
|   | Low <sup>②</sup> Temperature Spring Return | 5°                       | 2°           | 90°                       | 3 in-lbs             | 4.5 in-oz                          | -40° to 175°F (-40° to 79°C)             | -31° to 175°F (-34° to 79°C)             | <b>E50DR19</b> |
|   | Low Force Spring Return <sup>②</sup>       | 15°                      | 6°           | 90°                       | 1.5 in-lbs           | 2.5 in-oz                          | 10° to 200°F (-12° to 94°C) <sup>③</sup> | 10° to 200°F (-12° to 94°C) <sup>③</sup> | <b>E50DL1</b>  |
|   | Maintained Two-Position                    | 50°                      | 50°          | 90°                       | 3 in-lbs             | —                                  | 14° to 200°F (-10° to 94°C)              | 14° to 200°F (-10° to 94°C)              | <b>E50DM1</b>  |
| Side Pushbutton, Spring Return<br>   | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS1</b>                            |                |
| Side Pushbutton, Adjustable Spring Return<br>  | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS2</b>                            |                |
| Side Push Roller, Spring Return <sup>④</sup><br>   | 0.065 inch                                 | 0.030 inch               | 0.250 inch   | 4 lbs                     | 8 oz                 | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DS3</b> <sup>⑤</sup>               |                |
|   |  |                          |              |                           |                      |                                    |  | <b>E50DS4</b> <sup>⑤</sup>               |                |
| Side Pushbutton, Maintained<br>   | 0.200 inch                                 | 0.130 inch               | 0.320 inch   | 5 lbs                     | 5 lbs                | 14° to 200°F (-10° to 94°C)        | 14° to 200°F (-10° to 94°C)              | <b>E50DH1</b>                            |                |
| Top Pushbutton, Spring Return<br>  | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT1</b>                            |                |
| Top Pushbutton, Adjustable Spring Return<br>   | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT2</b>                            |                |
| Top Push Roller, Spring Return<br>   | 0.040 inch                                 | 0.020 inch               | 0.280 inch   | 4 lbs                     | 8 oz                 | 14° to 250°F (-10° to 121°C)       | 14° to 221°F (-10° to 105°C)             | <b>E50DT3</b>                            |                |
| Wobble Head, Spring Return (requires a wobble operator, see <b>PG.05C.04.T.E</b> )<br> | Standard Duty                              | 10°                      | 6°           | 15°                       | 2 in-lbs             | 2.4 in-oz                          | 14° to 250°F (-10° to 121°C)             | 14° to 221°F (-10° to 105°C)             | <b>E50DW1</b>  |
|   | Heavy-Duty High Strength Steel             | 10°                      | 6°           | 15°                       | 2 in-lbs             | 2.4 in-oz                          | 14° to 250°F (-10° to 121°C)             | 14° to 221°F (-10° to 105°C)             | <b>E50DW2</b>  |

① Temperature ranges below +32°F (0°C) are based on absence of freezing moisture or water.

② CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

③ For CW and CCW operation. For CW only or CCW only operation, high temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with pre-wired cable.


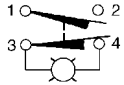
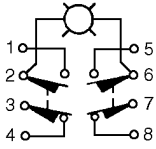
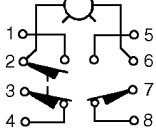
④ Roller can be converted in the field between horizontal and vertical.

⑤ Roller shaft is 0.38 inches (9.5 mm) longer on E50DS4, see dimensions on **Page 11**.

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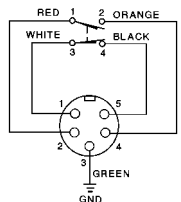


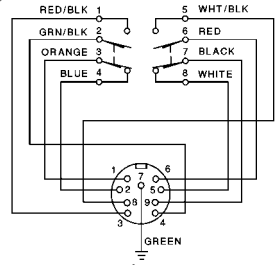

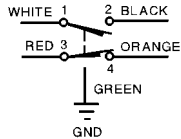
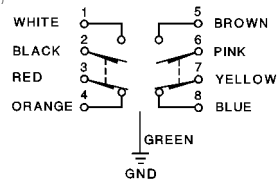
**Model Selection — Switch Bodies**

|  | Circuit  | Switch Body Construction                     | Catalog Number     |
|--|--|--|--------------------|
| <p>Switch Bodies</p>    | <p>Single Pole 1N.O.-1N.C.<br/>Must Be Same Polarity ①</p>                                | Without Indicating Light                     | <b>E50SA</b><br>CE |
|  |  | With LED Indicating Light<br>24 – 120V AC/DC | <b>E50SAL</b>      |
|  |  | With Neon Indicating Light 120V AC           | <b>E50SAN</b>      |
|  | <p>Double Pole 2N.O.-2N.C.<br/>Parallel Wired Ind. Light<br/>Same Polarity Each Pole</p>  | Without Indicating Light                     | <b>E50SB</b>       |
|  |  | With LED Indicating Light<br>24 – 120V AC/DC | <b>E50SBL</b>      |
|  |  | With Neon Indicating Light 120V AC           | <b>E50SBN</b>      |
| <p>Double Pole 2N.C.-1N.O.<br/>Series Wired Ind. Light<br/>Same Polarity Each Pole ①</p>  | With LED Indicating Light<br>24 – 120V AC/DC   | <b>E50SCL</b>                                |                    |

① Indicating lights are supplied from the factory wired as shown. However, they can easily be re-connected to terminals 1 and 2 if necessary (SPDT).


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### Model Selection — Receptacles

|  | Description   | Poles                    | Conduit Entrance     | Cable Length    | Catalog Number   | Wiring  |
|--|---|--------------------------|----------------------|-----------------|--|---|
| Surface Mount<br>     | Conduit entrance, front or rear mounting  | Single Pole (5 Terminal) | 1/2 NPT              | —               | <b>E50RA</b>   | ①   |
|  |   |                          | 20 mm                | —               | <b>E50RA20</b>   |   |
|  |   | Double Pole (9 Terminal) | 1/2 NPT              | —               | <b>E50RB</b>   | ①   |
|  |   |                          | 3/4 NPT              | —               | <b>E50RB34</b>   |   |
| Manifold Mount<br>    | Rear wiring entrance instead of conduit hole, gasket on back for oil tightness  | Single Pole (5 Terminal) | —                    | —               | <b>E50RAM</b>  | ①   |
|  |   | Double Pole (9 Terminal) | —                    | —               | <b>E50RBM</b>  | ①   |
| Mini-Connector<br>  | Epoxy filled receptacle with pre-wired Mini-Connector. (The -W version is a wiring scheme typically used in automotive applications.) | Single Pole (5 Terminal) | 5-pin Mini-Connector | —               | <b>E50RAP5</b>    | ②    |
|  |   |                          |                      |                 | <b>E50RAP5-W</b>  |   |
|  |   | Double Pole (9 Terminal) | 9-pin Mini-Connector | —               | <b>E50RBP9</b>  | ②  |
| Pre-wired Cable<br> | Epoxy filled receptacle with pre-wired 16 gauge, yellow jacketed, type SOOW-A cable. Cable enters through hole threaded for conduit   | Single Pole (5 Terminal) | 1/2 NPT              | 8-foot          | <b>E50RAS</b>  | ②  |
|  |   |                          |                      | 12-foot         | <b>E50RAS12</b>  |   |
|  |   |                          | 20-foot              | <b>E50RAS20</b> |  |   |
|  |   |                          | 20 mm                | 8-foot          | <b>E50RA20S</b>  |   |
|  |   |                          |                      | 12-foot         | <b>E50RA20S12</b>  |   |
|  |   |                          |                      | 20-foot         | <b>E50RA20S20</b>  |   |
|  |   | Double Pole (9 Terminal) | 1/2 NPT              | 8-foot          | <b>E50RBS</b>  | ②  |
|  |   |                          |                      | 12-foot         | <b>E50RBS12</b>  |   |
|  |   |                          | 20-foot              | <b>E50RBS20</b> |  |   |
|  |   |                          | 20 mm                | 8-foot          | <b>E50RB20S</b>  |   |
| 12-foot  | <b>E50RB20S12</b>   |                          |                      |                 |  |   |
| 20-foot  | <b>E50RB20S20</b>   |                          |                      |                 |  |   |

① See Model Selection — Switch Bodies for wiring information.




② The wire colors referenced on these diagrams are those internal to the switch itself.

 See listing of compatible connector cables on **Page 8**.

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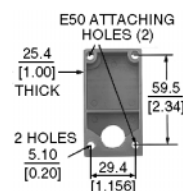
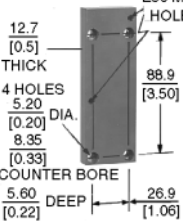
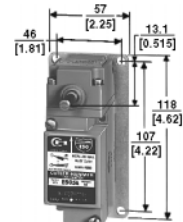
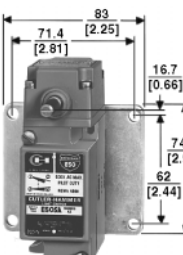
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**Model Selection — Compatible Connector Cables** ①

|  | Voltage Style | Number of Pins | Gauge  | Length       | Catalog Number       | Pin Configuration/Wire Colors (Face View Female Shown)  |
|--|---------------|----------------|--------|--------------|----------------------|---|
| <b>Standard Cables — Mini Style</b>  |               |                |        |              |                      |   |
| <br>Mini Style Straight Female<br><br>Current Rating @ 600V<br>5-pin: 8A<br>9-pin: 7A | —             | 5-pin          | 16 AWG | 6 feet (2m)  | <b>CSMS5D5CY1602</b> |  1-White<br>2-Red<br>3-Green<br>4-Orange<br>5-Black  |
|  | —             | 9-pin          | 16 AWG | 12 feet (4m) | <b>CSMS9D9CY1602</b> |  1-Orange<br>2-Blue<br>3-Red/Black<br>4-Green/Black<br>5-White<br>6-Red<br>7-Green<br>8-White/Black<br>9-Black |

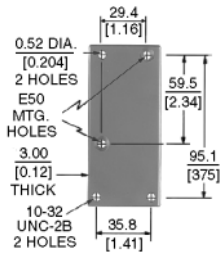
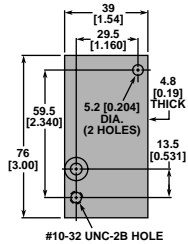
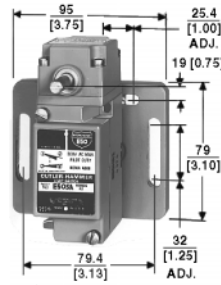

① For a full selection of connector cables, see **PG.05.05.T.E.**

**Model Selection — Accessories**

| Approximate Dimensions in mm [Inches]   | Description  | Catalog Number  |
|---|--|-----------------|
|    | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Surface Mounting Plug-In Limit Switch  | <b>E50KH1</b>   |
|   | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LP Manifold Mounting Plug-In Limit Switch   | <b>E50KH1M</b>  |
|  | Allows E50 to replace Square D Type AW Surface Mounting Non Plug-In Standard Box Limit Switch  | <b>E50KH7</b>   |
|  | Allows E50 to replace National Acme, Type D-1200M, Style 2 Mounting. Denison LoxSwitch, Model L-100W, Style 2 Mounting. Square D 9007 Type T, Style B Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.) | <b>E50KH4</b> ① |
|  | Allows E50 to replace National Acme, Type D-1200M, Style 1 Mounting. Denison LoxSwitch, Model L-100W, Style 1 Mounting. Square D 9007 Type T, Style C Mounting. (Adapter plate is 1/8 inch thick, with 1/4 inch mounting holes.) | <b>E50KH5</b> ① |

① Limit Switch not included.

### Model Selection — Accessories (Continued)

| Approximate Dimensions in mm [Inches]   | Description   | Catalog Number  |
|---|---|-----------------|
| <p>Adapter Plate</p>               | Allows E50 to replace Eaton's Cutler-Hammer 10316 Type LT Non Plug-In 2-Pole Limit Switch   | <b>E50KH2</b>   |
| <p>Adapter Plate</p>               | Allows E50 to replace Allen-Bradley 802M Sealed Limit Switch  | <b>E50KH10</b>  |
| <p>Adjustable Mounting Plate</p>  | This is a mounting plate only 5/16 inch thick and includes the proper mounting bolts and nuts. The slots in the plate allow a maximum horizontal adjustment of 1 inch and vertical adjustment of 1-1/4 inches | <b>E50KH3</b> ① |
| <p>Conduit Sealing Nut</p>       | 1/2 inch oiltight   | <b>E50KH6</b>   |

① Limit Switch not included.

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**Specifications**

| Description  | Specification  |
|--|--|
| Environmental Ratings  | NEMA 1, 3, 3S, 4, 4X, 6, 6P, 13, IP67  |
| Material of Construction   | Zinc die cast  |
| Switch Gasket Material   | Viton <sup>®</sup>   |
| Universal U.S./DIN Mounting Dimensions   | 1.16 in (30 mm) x 2.34 in (60 mm)  |
| Conduit Entrance   | 1/2 in NPT or 20 mm threading  |
| Contact Ratings  | See below  |
| Contact Operation  | Snap action over center mechanism  |
| Contact Material   | Fine silver  |
| Maximum Frequency of Operation   | 8000 operations per hour   |
| Mechanical Life:<br>Side Rotary<br>Side or Top Push  | 13,000,000 operations minimum<br>10,000,000 operations minimum   |
| Electrical Life:<br>Single Pole<br>Double Pole   | 1,000,000 operations typical at full load<br>100,000 operations typical at full load   |
| Ambient Temperature Range — Standard<br>Standard without Cable<br>Standard with Cable<br>Low Temperature without Cable<br>Low Temperature with Cable | 14° to 250°F (-10° to 121°C)<br>14° to 221°F (-10° to 105°C)<br>-40° to 250°F (-40° to 121°C)<br>-40° to 221°F (-40° to 105°C) |
| Repeat Accuracy — Standard<br>Side Operated<br>Top Operated<br>Side Rotary   | Within 0.0012 in<br>Within 0.0003 in<br>Within 0.0014 in   |
| Torque Requirements:<br>Switch Body Screws<br>Operating Head Screws  | 25 – 30 lb-in<br>14 – 18 lb-in   |
| Wire Size  | Will accept AWG #22 – #12, single or stranded wire   |

**Electrical Data — Maximum Contact Ratings (Same polarity each pole)**

| AC Volts | Current, Amperes |       |         | Voltamperes |       | DC Volts | Current, Amperes   |         |
|----------|------------------|-------|---------|-------------|-------|----------|--------------------|---------|
|          | Make             | Break | Cont. ① | Make        | Break |          | Max. Make or Break | Cont. ① |

**All Switches Except Gravity Return and Indicating Light Versions**

| NEMA A600 Rating |    |     |    |      |     | NEMA R300 |      |     |
|------------------|----|-----|----|------|-----|-----------|------|-----|
| 120              | 60 | 6   | 10 | 7200 | 720 | 125       | 0.22 | 1.0 |
| 240              | 30 | 3   |    |      |     | 250       | 0.11 | 1.0 |
| 480              | 15 | 1.5 |    |      |     |           |      |     |
| 600              | 12 | 1.2 |    |      |     |           |      |     |

**Switches with Indicating Lights (LED or Neon)**

| NEMA A150 Rating |    |   |    |      |     | NEMA R150 |      |     |
|------------------|----|---|----|------|-----|-----------|------|-----|
| 120              | 60 | 6 | 10 | 7200 | 720 | 125       | 0.22 | 1.0 |

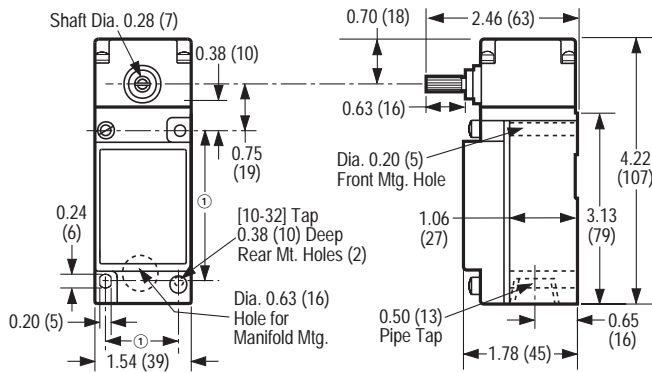
**Gravity Return Switches — Maximum Contact Ratings**

| NEMA 6600 Rating — Contacts on Same Polarity |     |      |   |      |     | — |   |   |
|--|-----|------|---|------|-----|---|---|---|
| 120  | 30  | 3    | 5 | 3600 | 360 | — | — | — |
| 240  | 15  | 1.5  |   |      |     |   |   |   |
| 480  | 7.5 | 0.75 |   |      |     |   |   |   |
| 600  | 6   | 0.60 |   |      |     |   |   |   |

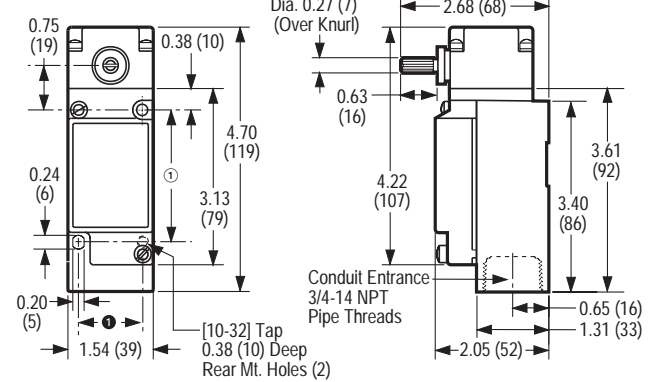
① Thermal rating. Valid only if switch does not have to make or break.

Approximate Dimensions in Inches (mm)

Standard



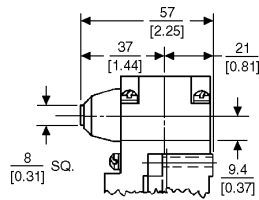
E50SB34



① Can accommodate both U.S., 1.16 (29.4) x 2.34 (59.5) and DIN, 1.18 (30) x 3.26 (60), mounting dimensions.

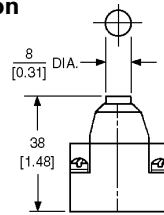
Side Push Operators in mm [Inches]

Pushbutton



Top Push Operators in mm [Inches]

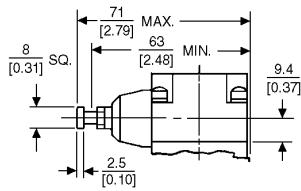
Pushbutton



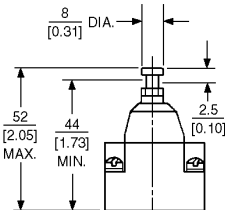
Wobble Operators

See Operators, PG.05C.04.T.E

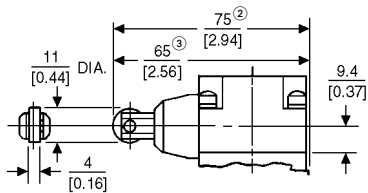
Adjustable Pushbutton



Adjustable Pushbutton

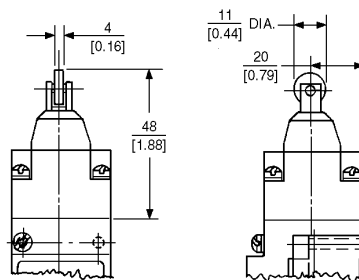


Roller



② For E50DS4.  
③ For E50DS3.

Roller



Maintained Pushbutton

