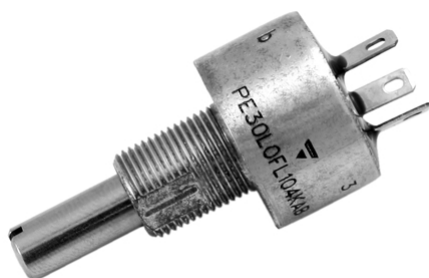




# Fully Sealed Potentiometer Military and Professional Grade



## FEATURES

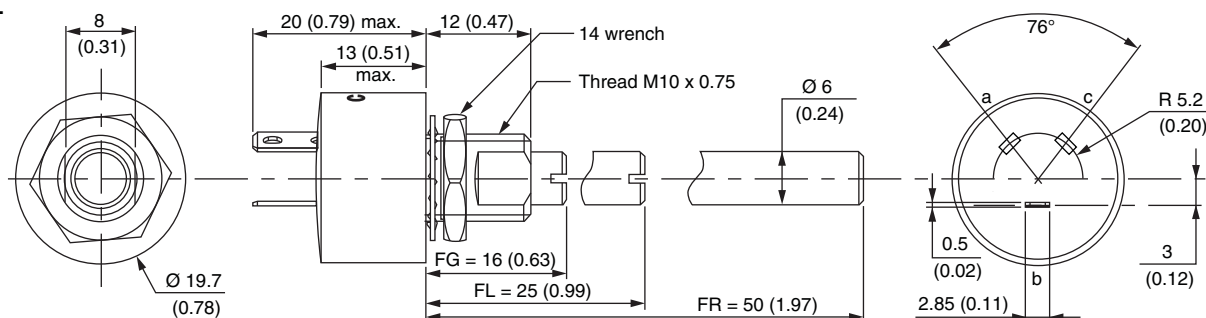
- High power rating 3 W at 70 °C
- Low temperature coefficient (150 ppm/°C typical)
- Cermet element
- Full sealing
- Use of faston 2.86 connections
- Tests according to CECC 41000 or IEC 60393-1
- Wires and connectors available
- Custom design on request
- Center detent option
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



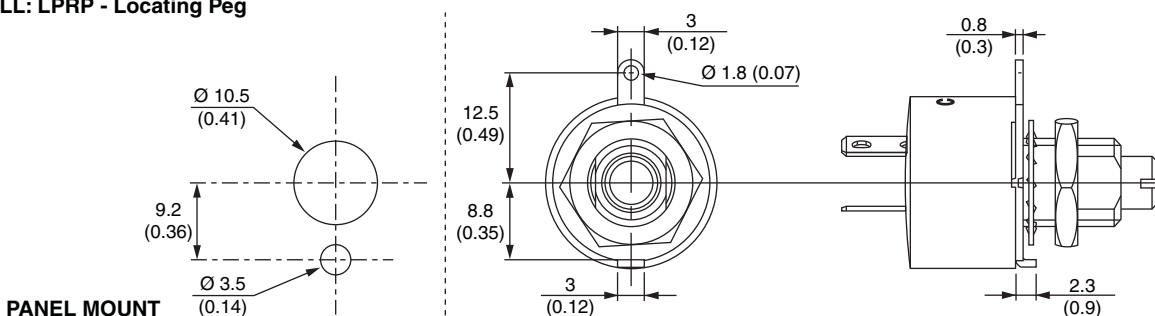
RoHS  
COMPLIANT

## DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

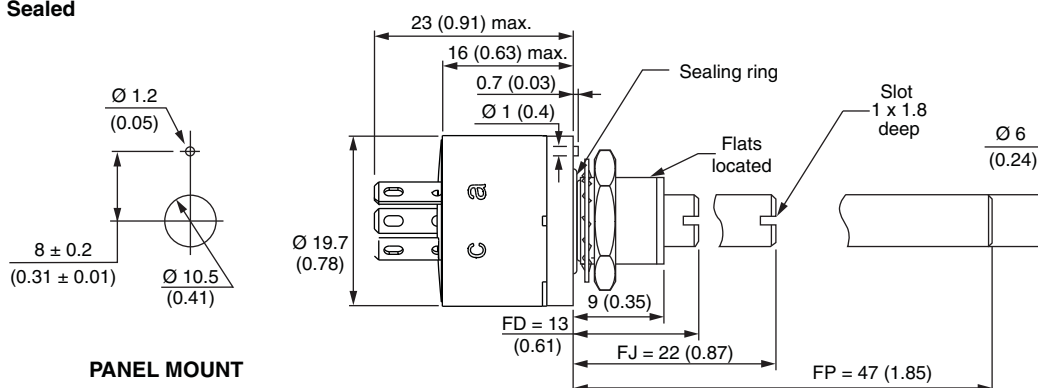
### PE30L



### PE30LL: LPRP - Locating Peg



### PE30ME: Panel Sealed





| ELECTRICAL SPECIFICATIONS                    |                                   |                                                                |
|----------------------------------------------|-----------------------------------|----------------------------------------------------------------|
| Resistive Element                            |                                   | Cermet                                                         |
| Electrical Travel                            |                                   | $270^\circ \pm 10^\circ$                                       |
| Resistance Range                             | Linear Taper<br>Logarithmic Taper | 22 $\Omega$ to 10 M $\Omega$<br>100 $\Omega$ to 2.2 M $\Omega$ |
| Standard Series E3                           |                                   | 1 - 2.2 - 4.7 and on request 1 - 2 - 5                         |
| Tolerance                                    | Standard<br>On Request            | $\pm 20\%$<br>$\pm 10\%$ to $\pm 5\%$                          |
| Taper                                        |                                   |                                                                |
| Power Rating                                 | Linear<br>Logarithmic             | 3 W at 70 $^\circ\text{C}$<br>1.5 W at 70 $^\circ\text{C}$<br> |
| Circuit Diagram                              |                                   |                                                                |
| Temperature Coefficient (Typical)            |                                   | $\pm 150$ ppm/ $^\circ\text{C}$                                |
| Limiting Element Voltage                     |                                   | 300 V                                                          |
| Contact Resistance Variation (Typical)       |                                   | 3 % Rn or 3 $\Omega$                                           |
| End Resistance (Typical)                     |                                   | 1 $\Omega$                                                     |
| Dielectric Strength (RMS)                    |                                   | 2500 V                                                         |
| Insulation Resistance (300 V <sub>DC</sub> ) |                                   | 10 <sup>5</sup> M $\Omega$                                     |
| Independent Linearity (Typical)              |                                   | $\pm 5\%$                                                      |

**STANDARD RESISTANCE ELEMENT DATA**

| STANDARD<br>RESISTANCE<br>VALUES | LINEAR TAPER              |                            |                               | LOGS TAPER                |                            |                               |
|----------------------------------|---------------------------|----------------------------|-------------------------------|---------------------------|----------------------------|-------------------------------|
|                                  | MAX.<br>POWER<br>AT 70 °C | MAX.<br>WORKING<br>VOLTAGE | MAX. CUR.<br>THROUGH<br>WIPER | MAX.<br>POWER<br>AT 70 °C | MAX.<br>WORKING<br>VOLTAGE | MAX. CUR.<br>THROUGH<br>WIPER |
| $\Omega$                         | W                         | V                          | mA                            | W                         | V                          | mA                            |
| 22                               | 3                         | 8.1                        | 369                           |                           |                            |                               |
| 47                               | 3                         | 11.9                       | 252                           |                           |                            |                               |
| 100                              | 3                         | 17.3                       | 173                           |                           |                            |                               |
| 220                              | 3                         | 25.7                       | 116                           | 1.5                       | 12.2                       | 122                           |
| 470                              | 3                         | 37.5                       | 79                            | 1.5                       | 18.2                       | 82.6                          |
| 1K                               | 3                         | 54.8                       | 54                            | 1.5                       | 26.6                       | 56.6                          |
| 2.2K                             | 3                         | 81.2                       | 37                            | 1.5                       | 38.7                       | 38.7                          |
| 4.7K                             | 3                         | 119.9                      | 25                            | 1.5                       | 57.4                       | 26.1                          |
| 10K                              | 3                         | 173                        | 17                            | 1.5                       | 83.9                       | 17.9                          |
| 22K                              | 3                         | 257.7                      | 11                            | 1.5                       | 122                        | 12.2                          |
| 47K                              | 1.91                      | 300                        | 6.3                           | 1.5                       | 181.6                      | 8.25                          |
| 100K                             | 0.90                      | 300                        | 3                             | 1.5                       | 265                        | 5.64                          |
| 220K                             | 0.41                      | 300                        | 1.36                          | 0.9                       | 300                        | 3                             |
| 470K                             | 0.19                      | 300                        | 0.63                          | 0.41                      | 300                        | 1.36                          |
| 1M                               | 0.09                      | 300                        | 0.30                          | 0.19                      | 300                        | 0.63                          |
| 2.2M                             | 0.04                      | 300                        | 0.13                          | 0.09                      | 300                        | 0.30                          |
| 4.7M                             | 0.02                      | 300                        | 0.06                          | 0.04                      | 300                        | 0.13                          |
| 10M                              | 0.01                      | 300                        | 0.03                          |                           |                            |                               |

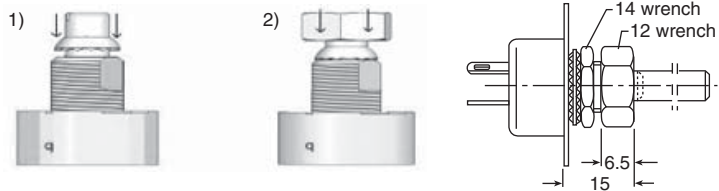
**MECHANICAL SPECIFICATIONS**

|                                   |                   |                        |
|-----------------------------------|-------------------|------------------------|
| Mechanical Travel                 | 300° ± 5°         |                        |
| Operating Torque (Typical)        | 3 Ncm max.        | 4.25 oz.-inch max.     |
| End Stop Torque                   | 120 Ncm max.      | 10.51 lb oz.-inch max. |
| Tightening Torque of Mounting Nut | 250 Ncm max.      | 22 lb-inch max.        |
| Unit Weight                       | 23 g to 32 g max. | 0.8 oz. to 1.13 oz.    |
| Terminals                         | e3: Pure Sn       |                        |

**ENVIRONMENTAL SPECIFICATIONS**

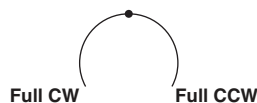
|                   |                               |
|-------------------|-------------------------------|
| Temperature Range | -55 °C to +125 °C             |
| Climatic Category | 55/125/56                     |
| Sealing           | Fully sealed - Container IP67 |

**OPTIONS**

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special Feature Command Shaft | Length is measured from the mounting surface to the free end of the shaft. The screwdriver slot is aligned with the wiper within ± 10°. Special shafts are available, in accordance to drawings supplied by customers. We recommend that customers should not machine tool shafts, in order to avoid damage. Bending or torsion of terminals should also be avoided.                                                                                            |
| Panel Sealing (PE30M)         | The panel sealing device consists of a ring located in a groove on the potentiometer face. Sealing is obtained by tightening the ring against the panel when mounting the potentiometer.<br>Old code: PE30P                                                                                                                                                                                                                                                     |
| Locating Peg (PE30LL)         | Location is obtained by fitting a special washer on the mounting face of the potentiometer.<br>Old code: LPRP                                                                                                                                                                                                                                                                                                                                                   |
| Shaft Locking (PE30LD)        | <p>The shaft locking device consists of a tapered nut tightening a slotted notched washer against both bushing and shaft.<br/>DBAN tightening torque is 200 Ncm, shaft locking torque being 30 Ncm.<br/>DBAN is also available with all special types.<br/>This device is normally supplied in a separate bag. Can be pre-mounted on request.</p> <p>Assembling Method</p>  |

**CENTER DETENT**

- Stable position in mid mechanical travel
- Output ratio 50 %  $\pm$  10 %
- Rotational life: 10 000 actuations

**ORDERING INFORMATION** (First order only)

CV1M

**MARKING**

- Vishay trademark
- Part number (including ohmic value and tolerance code)
- Manufacturing date code
- Marking of terminals 3, and a, b, c

**PERFORMANCE**

| TESTS                   | CONDITIONS                                                                                        | TYPICAL VALUES AND DRIFTS |                              |                                              |
|-------------------------|---------------------------------------------------------------------------------------------------|---------------------------|------------------------------|----------------------------------------------|
|                         |                                                                                                   | $\Delta R_T/R_T$ (%)      | $\Delta R_{1-2}/R_{1-2}$ (%) | OTHER                                        |
| Electrical Endurance    | 1000 h at rated power<br>90°/30° - ambient temp. 70 °C                                            | $\pm 1$ %                 | -                            | Contact res. variation: < 3 % R <sub>n</sub> |
| Climatic Sequence       | Phase A dry heat 125 °C<br>Phase B damp heat<br>Phase C cold -55 °C<br>Phase D damp heat 5 cycles | $\pm 0.5$ %               | $\pm 1$ %                    | -                                            |
| Damp Heat, Steady State | 56 days<br>40 °C 93 % HR                                                                          | $\pm 0.5$ %               | $\pm 1$ %                    | Insulation resistance: > 10 <sup>4</sup> MΩ  |
| Change of Temperature   | 5 cycles<br>-55 °C at +125 °C                                                                     | $\pm 0.5$ %               | -                            | -                                            |
| Mechanical Endurance    | 25 000 cycles                                                                                     | $\pm 3$ %                 | -                            | Contact res. variation: < 2 % R <sub>n</sub> |
| Shock                   | 50 g's at 11 ms<br>3 successive shocks<br>in 3 directions                                         | $\pm 0.1$ %               | $\pm 0.2$ %                  | -                                            |
| Vibration               | 10 Hz to 55 Hz<br>0.75 mm or 10 g's<br>during 6 h                                                 | $\pm 0.1$ %               | $\pm 0.2$ %                  | -                                            |

**Note**

- Nothing stated herein shall be construed as a guarantee of quality or durability.



| ORDERING INFORMATION (part number) |                                               |                                                                                                                        |                                                                                                                                                                                                                 |   |                                                                                                     |   |                                                      |   |                                                                              |   |                      |                                                                   |   |
|------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------|---|------------------------------------------------------|---|------------------------------------------------------------------------------|---|----------------------|-------------------------------------------------------------------|---|
| P                                  | E                                             | 3                                                                                                                      | 0                                                                                                                                                                                                               | L | B                                                                                                   | F | G                                                    | 2 | 0                                                                            | 4 | M                    | A                                                                 | B |
| MODEL                              | BUSHING                                       | OPTION                                                                                                                 | SHAFT                                                                                                                                                                                                           |   | OHMIC VALUE                                                                                         |   | TOLERANCE                                            |   | TAPER                                                                        |   | PACKAGING            | SPECIAL NUMBER                                                    |   |
| PE30                               | L = M10 x 0.75<br>M = Panel sealed M10 x 0.75 | 0 = none<br>For L bushing<br>D = DBAN<br>L = LPRP<br>B = DBAN and LPRP<br>For M bushing<br>E = Peg<br>A = Peg and DBAN | For L bushing (= old codes):<br>FG 16 mm, slotted = AC<br>FL 25 mm, slotted = AM<br>FR 50 mm, plain = AL<br><br>For M bushing<br>FD = 13 mm, slotted = AC<br>FJ = 22 mm, slotted = AM<br>FP = 47 mm, plain = AL |   | A law = from 22 $\Omega$ to 10 M $\Omega$<br><br>L and F laws = from 100 $\Omega$ to 2.2 M $\Omega$ |   | $\pm 20\%$<br>On request:<br>$\pm 10\%$<br>$\pm 5\%$ |   | A = Linear<br>L = Clockwise logarithmic<br>F = Clockwise inverse logarithmic |   | B = Box of 10 pieces | (if applicable)<br>Given by Vishay for custom design or E105 CV1M |   |

| PART NUMBER DESCRIPTION (for information only) |          |        |       |       |      |       |        |         |        |           |              |         |                |
|------------------------------------------------|----------|--------|-------|-------|------|-------|--------|---------|--------|-----------|--------------|---------|----------------|
| PE30                                           |          | LPRP   | AC    | 200K  | 20 % | A     | DBAN   |         | CV1M   | BO        |              |         | e3             |
| MODEL                                          | FEATURES | OPTION | SHAFT | VALUE | TOL. | TAPER | OPTION | SPECIAL | DETENT | PACKAGING | CUSTOM SHAFT | SPECIAL | LEAD (Pb)-FREE |



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