



# 7/8" (22.2 mm) Multi Turn Wirewound Potentiometer - 533: 3 Turns / 534: 10 Turns / 535: 5 Turns



### DESIGN SUPPORT TOOLS

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### FEATURES

- Bushing and servo mount designs available
- Linearity  $\pm 0.25\%$ , down to  $0.05\%$  on request
- Special resistance tolerances to  $1\%$
- Rear shaft extensions and support bearing
- Metric shaft available
- Dual gang configuration and concentric shafts
- High torque, center tap, slipping clutch on request
- Special markings and front shaft extensions
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



| QUICK REFERENCE DATA |                                  |
|----------------------|----------------------------------|
| Sensor type          | ROTATIONAL, multi turn wirewound |
| Output type          | Output by turrets                |
| Market appliance     | Industrial                       |
| Dimensions           | 7/8" (22.2 mm)                   |

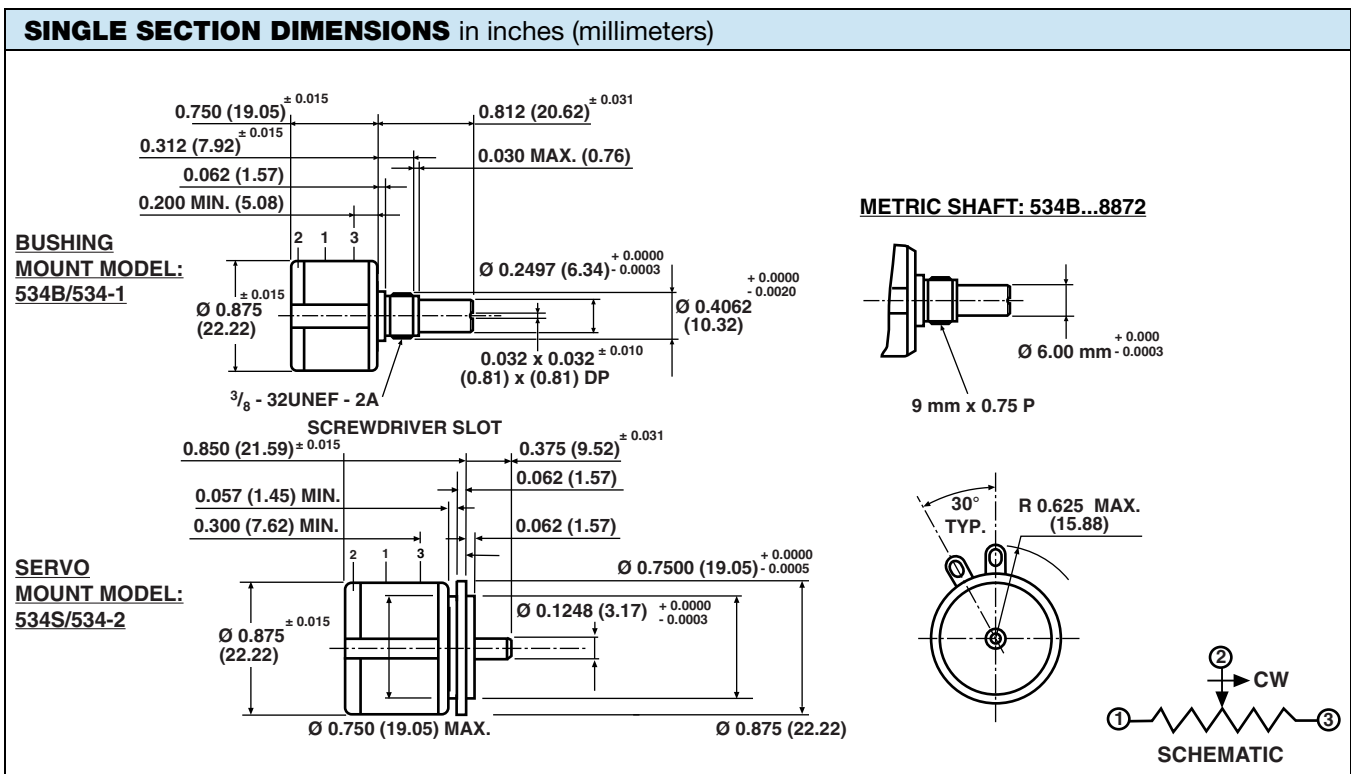
| ELECTRICAL SPECIFICATIONS            |   |                                 |                                 |
|--------------------------------------|---|---------------------------------|---------------------------------|
| PARAMETER                            | MODEL 533   | MODEL 534                       | MODEL 535                       |
| Resistance range - standard values   | 50 $\Omega$ to 20 k $\Omega$  | 100 $\Omega$ to 100 k $\Omega$  | 50 $\Omega$ to 50 k $\Omega$    |
| Capability range                     | 5 $\Omega$ to 60 k $\Omega$   | 10 $\Omega$ to 200 k $\Omega$   | 5 $\Omega$ to 100 k $\Omega$    |
| Standard tolerance                   | $\pm 5\%$   | $\pm 5\%$                       | $\pm 5\%$                       |
| Linearity (independent)              | $\pm 0.25\%$  | $\pm 0.25\%$                    | $\pm 0.25\%$                    |
| Noise                                | 100 $\Omega$ ENR  | 100 $\Omega$ ENR                | 100 $\Omega$ ENR                |
| Rotation (electrical and mechanical) | 1080° $+10^\circ$<br>$-0^\circ$   | 3600° $+10^\circ$<br>$-0^\circ$ | 1800° $+10^\circ$<br>$-0^\circ$ |
| Power rating (at 70 °C)              | 1.0 W   | 2.0 W                           | 1.5 W                           |
| Insulation resistance                | 1000 M $\Omega$ minimum 500 V <sub>DC</sub>                                     |                                 |                                 |
| Dielectric strength                  | 1000 V <sub>RMS</sub> minimum 60 Hz   |                                 |                                 |
| Absolute minimum resistance          | Not to exceed linearity x total resistance or 1 $\Omega$ , whichever is greater |                                 |                                 |
| Temperature coefficient              | 20 ppm/°C (standard values, wire only)  |                                 |                                 |
| End voltage                          | 0.25 % of total applied voltage, maximum  |                                 |                                 |
| Phasing                              | CCW end points - section 2 phased to section 1 within $\pm 2^\circ$             |                                 |                                 |
| Taps                                 | Center tap only   |                                 |                                 |

| MARKING             |   |
|---------------------|---|
| Unit identification | Manufacturer's name and model number, resistance value and tolerance, linearity specification date code and terminal identification.<br>Example of a marking for a standard part: 534-11103 |

| RESISTANCE VALUES |  |
|-------------------|--|
| 533 ( $\Omega$ )  | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K        |
| 534 ( $\Omega$ )  | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K |
| 535 ( $\Omega$ )  | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K   |

| ORDERING INFORMATION |                        |        |  |   |  |   |                          |   |                             |   |                      |   |   |   |   |
|----------------------|------------------------|--------|--|---|--|---|--------------------------|---|-----------------------------|---|----------------------|---|---|---|---|
| 5                    | 3                      | 4      | B  | 2 | 1  | 0 | 3                        | 2 | 0                           | 3 | J                    | C | 4 | 7 | 0 |
| MODEL                | STYLE                  | GANGS  | OHMIC VALUE GANGS N° 1   |   | OHMIC VALUE GANGS N° 2   |   | TOLERANCE ON OHMIC VALUE |   | LINEARITY                   |   | SPECIAL REQUEST      |   |   |   |   |
| 533<br>534<br>535    | B: bushing<br>S: servo | 1<br>2 | 470 = 47 Ω<br>222 = 2.200 Ω<br>103 = 10 kΩ<br>For ohmic value range see electrical specification |   | 470 = 47 Ω<br>222 = 2.200 Ω<br>103 = 10 kΩ<br>For ohmic value range see electrical specification |   | J = ± 5 %<br>F = ± 1 %   |   | C = ± 0.25 %<br>L = ± 0.2 % |   | Special code<br>xxxx |   |   |   |   |

| PART NUMBER DESCRIPTION (for information only) |              |       |                        |                        |         |
|--|--------------|-------|------------------------|------------------------|---------|
| 534-   | 1            | 2     | 103                    | 203                    | xxxx    |
| MODEL  | STYLE        | GANGS | OHMIC VALUE GANGS N° 1 | OHMIC VALUE GANGS N° 2 | SPECIAL |
|  | B: 1<br>S: 2 |       |                        |                        |         |

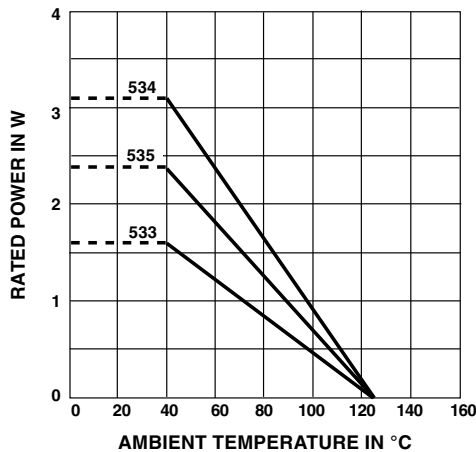


Mounting hardware, washer and panel nut, nickel plated



| MECHANICAL SPECIFICATIONS                             |  |   |
|---|--|---|
| PARAMETER   |  |   |
| Bearing type  | Bushing: sleeve bearing  | Servo: ball bearing   |
| Torque (maximums): starting<br>Section 1<br>Section 2 | <b>534</b><br>0.5 oz.-in (36 g-cm)<br>0.9 oz.-in (65 g-cm)       | <b>533/535</b><br>0.7 oz.-in (50 g-cm)<br>1.1 oz.-in (79 g-cm)      |
| Torque (maximums): running<br>Section 1<br>Section 2  | <b>534</b><br>0.4 oz.-in (28.80 g-cm)<br>0.7 oz.-in (50.40 g-cm) | <b>533/535</b><br>0.6 oz.-in (43.20 g-cm)<br>0.9 oz.-in (64.8 g-cm) |
| Weight (maximums)<br>Section 1<br>Section 2           | 0.75 oz. (21.26 g)<br>1.25 oz. (35.44 g)                         |   |
| Stop strength   | 75 oz.-in (static) (5.4 kg-cm)                                   |   |
| Ganging   | 2 sections maximum   |   |

**POWER RATING CHART**



| ENVIRONMENTAL SPECIFICATIONS       |                   |
|------------------------------------|-------------------|
| Vibration                          | 15 g thru 2000 Hz |
| Shock                              | 50 g              |
| Rotational life (shaft revolution) |                   |
| 533                                | 300 000           |
| 534                                | 1 000 000         |
| 534 (servo)                        | > 1 000 000       |
| 535                                | 500 000           |
| Load life                          | 900 h             |
| Temperature range                  | -55 °C to +125 °C |

**Note**

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

| RESISTANCE ELEMENT DATA |      |     |                |       |       |               |        |        |                                       |       |       |                                 |       |       |
|-------------------------|------|-----|----------------|-------|-------|---------------|--------|--------|---------------------------------------|-------|-------|---------------------------------|-------|-------|
| RESISTANCE VALUE (Ω)    |      |     | RESOLUTION (%) |       |       | OHMS PER TURN |        |        | MAXIMUM CURRENT AT 70 °C AMBIENT (mA) |       |       | MAXIMUM VOLTAGE ACROSS COIL (V) |       |       |
| 533                     | 534  | 535 | 533            | 534   | 535   | 533           | 534    | 535    | 533                                   | 534   | 535   | 533                             | 534   | 535   |
| 50                      | -    | 50  | 0.149          | -     | 0.120 | 0.0746        | -      | 0.0603 | 141.0                                 | -     | 173.0 | 7.07                            | -     | 8.66  |
| 100                     | 100  | 100 | 0.111          | 0.060 | 0.075 | 0.1114        | 0.0603 | 0.0746 | 100.0                                 | 141.0 | 122.0 | 10.0                            | 14.1  | 12.2  |
| 200                     | 200  | 200 | 0.097          | 0.037 | 0.061 | 0.1954        | 0.0746 | 0.1220 | 70.7                                  | 100.0 | 86.6  | 14.1                            | 20.0  | 17.3  |
| 500                     | 500  | 500 | 0.069          | 0.031 | 0.049 | 0.3424        | 0.1520 | 0.2459 | 44.7                                  | 63.2  | 54.7  | 22.4                            | 31.6  | 27.4  |
| 1K                      | 1K   | 1K  | 0.063          | 0.025 | 0.041 | 0.6331        | 0.2459 | 0.4113 | 31.6                                  | 44.7  | 38.7  | 31.6                            | 44.7  | 38.7  |
| 2K                      | 2K   | 2K  | 0.041          | 0.021 | 0.031 | 0.8206        | 0.4113 | 0.6331 | 22.4                                  | 31.6  | 27.4  | 44.7                            | 63.2  | 54.8  |
| 5K                      | 5K   | 5K  | 0.044          | 0.016 | 0.034 | 2.2330        | 0.8206 | 1.7230 | 14.1                                  | 20.0  | 17.3  | 70.7                            | 100.0 | 86.6  |
| 10K                     | 10K  | 10K | 0.034          | 0.017 | 0.030 | 3.4510        | 1.7230 | 3.0160 | 10.0                                  | 14.1  | 12.2  | 100.0                           | 141.0 | 122.0 |
| 20K                     | 20K  | 20K | 0.031          | 0.015 | 0.020 | 6.1790        | 3.0160 | 3.9910 | 7.07                                  | 10.0  | 8.66  | 141.0                           | 200.0 | 173.0 |
| -                       | 50K  | 50K | -              | 0.009 | 0.015 | -             | 4.6690 | 7.4560 | -                                     | 6.32  | 5.47  | -                               | 316.0 | 274.0 |
| -                       | 100K | -   | -              | 0.007 | -     | -             | 7.4560 | -      | -                                     | 4.47  | -     | -                               | 447.0 | -     |
| -                       | -    | -   | -              | -     | -     | -             | -      | -      | -                                     | -     | -     | -                               | -     | -     |
| -                       | -    | -   | -              | -     | -     | -             | -      | -      | -                                     | -     | -     | -                               | -     | -     |



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