**FEATURES**

Conceived and designed for easy customisation.

SMD or Through-hole Mount.

Endless Rotation (360°).

Wide Electrical Angle (340° ± 10°).

Extended Mechanical Life (100k cycles).

Working Temperature Range (-40°C to +120°C).

Low Profile (4.4 mm).

Linearity: ± 3% (default).

Embossed Tape or Bulk packaging.

Reflow Soldering capability.

Shaft insertable from both sides.

Polarised “T” rotor (European Home Appliance standard).

All PT/ PTC 15 shafts compatible.

IP54 protection according to IEC 60529.

**TYPICAL APPLICATIONS**

The N15 series offers an SMD and Through Hole mount solution for the majority of Position/Rotary Sensor and multi-purpose Control applications such as:

- Automotive HVAC, Seat, Rear-view mirror actuator feedback sensors and HVAC Controls

- Temperature Control for Boilers, Wall Heaters, Showers, Radiators, Conventional and Microwave Ovens, Freezers...

- Timer & Function/Programme Select for Washing Machines, Dishwashers and all White Goods in general.

- Size and Position detectors

**STANDARD SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance values*</td>
<td>5k to 100k</td>
</tr>
<tr>
<td>Tolerance</td>
<td>± 30%</td>
</tr>
<tr>
<td>Nominal Power</td>
<td>0.15 W @ 50°C</td>
</tr>
<tr>
<td>Linearity (absolute)</td>
<td>± 3%</td>
</tr>
<tr>
<td>Taper</td>
<td>Linear</td>
</tr>
<tr>
<td>Mechanical Life **</td>
<td>100K cycles</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-40°C to +120°C</td>
</tr>
<tr>
<td>Mechanical Angle</td>
<td>360°</td>
</tr>
<tr>
<td>Electrical Angle</td>
<td>340° ± 10°</td>
</tr>
<tr>
<td>Rotational Torque</td>
<td>≤ 20 mN.m</td>
</tr>
<tr>
<td>Max. Voltage</td>
<td>250 VDC</td>
</tr>
</tbody>
</table>

* Others: check availability

** 200K cycles version available check availability. For higher mechanical life see the Z15 product with 2M cycles.

**HOW TO ORDER**

N15

Series: N-15

(See note 1)

T

Rotors: T

(See note 4)

S

Mounting Method:

V = Through Hole

S = SMD

H = Horizontal Adjust

(See note 5)

502

Value:

502 = 5 K

104 = 100 K

(See note 2)

A

Taper: A = Lin.

(See note 2)

3030

Tolerance: 3030 = ± 30%

(See note 3)

**NOTES:**

(1) A wide variety of custom substrates available

(2) Availability of a wide range of customised tapers and step curves

(3) Others: check availability. Optional precision laser-trimmed voltage divider calibration

(4) Horizontal adjust versions will be studied case by case

(5) Value Example: Code: 5k Ω 2 5K Ω 2

Numb of zeros

First two digits of the value.

Shafts are not available mounted to the potentiometer and should be ordered separately.

NOTE: The information contained here should be used for reference purposes only.
Recommended PCB hole diameter when using listed Piher shafts

**SMD MOUNT**

![SMD Mount Diagram]

Recommended PCB hole diameter when using listed Piher shafts

**THROUGH HOLE MOUNT**

![Through Hole Mount Diagram]

Recommended PCB hole diameter when using listed Piher shafts

Download the STEP file here: https://piher.net/piher/?p=924

N-15 T S + DRAWING NUMBER (Max. 16 digits)

This way of ordering should be used for options which are not included in the “How to order” standard and optional extras.

STANDARD WIPER POSITION

Wiper positioned at 50% of the electrical angle.
HORIZONTAL ADJUST - VERTICAL MOUNT

BULK
150 Units per box.
This is the default packaging for through-hole models.

If you want SMD models to be delivered with bulk packaging please contact Piher before ordering.

EMBOSSED TAPE
500 Units per reel.
For SMD models only.

TESTS

<table>
<thead>
<tr>
<th>ELEC. LIFE</th>
<th>TYPICAL VARIATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000 h. @ 50°C; 0.15 W</td>
<td>± 40 %</td>
</tr>
<tr>
<td>100,000 @ 20 CPM</td>
<td>± 40 % (Rn &lt; 100 K)</td>
</tr>
<tr>
<td>-40°C to +120°C</td>
<td>±300 ppm (Rn &lt;100 K)</td>
</tr>
<tr>
<td>10h. @ 120°C; 10h. @ -40°C</td>
<td>± 40 %</td>
</tr>
<tr>
<td>500 h. @ 40°C @ 95% HR</td>
<td>± 40 %</td>
</tr>
</tbody>
</table>

NOTE: Out of range values may not comply these results.

PACKAGING

BULK
150 Units per box.
This is the default packaging for through-hole models.

If you want SMD models to be delivered with bulk packaging please contact Piher before ordering.

EMBOSSED TAPE
500 Units per reel.
For SMD models only.
Recommended reflow profile is provided as a guideline. Optimal profile may differ due to oven type, assembly layout or other design or process variables. Customers should verify actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

### SHAFTS

**Hollow model shafts**

<table>
<thead>
<tr>
<th>FIG.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>5272</td>
</tr>
<tr>
<td>2</td>
<td>19</td>
<td>9</td>
<td>15</td>
<td>6</td>
<td>5214</td>
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<tr>
<td>5</td>
<td>9.5</td>
<td>6.5</td>
<td>5.5</td>
<td>6</td>
<td>5208</td>
</tr>
<tr>
<td>9</td>
<td>35</td>
<td>9</td>
<td>15</td>
<td>6</td>
<td>5216</td>
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<tr>
<td>10</td>
<td>37.8</td>
<td>9</td>
<td>33.8</td>
<td>6</td>
<td>5218</td>
</tr>
<tr>
<td>11</td>
<td>35</td>
<td>25</td>
<td>15</td>
<td>6</td>
<td>5209</td>
</tr>
<tr>
<td>13</td>
<td>7.8</td>
<td>4.8</td>
<td>3.8</td>
<td>6</td>
<td>5265</td>
</tr>
</tbody>
</table>

**Solid model shafts**

<table>
<thead>
<tr>
<th>FIG.</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>15</td>
<td>9</td>
<td>6</td>
<td>5219</td>
</tr>
<tr>
<td>7</td>
<td>16.8</td>
<td>9</td>
<td>6</td>
<td>5220</td>
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<tr>
<td>8</td>
<td>25.3</td>
<td>9</td>
<td>6</td>
<td>5207</td>
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<tr>
<td>12</td>
<td>46</td>
<td>5</td>
<td>6</td>
<td>5227</td>
</tr>
</tbody>
</table>

A = Length (FRS); B=Knurling length; C=Hollow depth; D=Shaft diameter; FRS=From rotor surface

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Other shafts

Fig. 3 / Ref. 5372
Fig. 15 / Ref. 5217
Fig. 17 / Ref. 5210
Fig. 18 / Ref. 5271
Fig. 19 / Ref. 6032*

Fig. 20 / Ref. 5369*
Fig. 21 / Ref. 6031*
Fig. 22 / Ref. 6029
Fig. 23 / Ref. 6022
Fig. 29 / Ref. 6162
Fig. 25 / Ref. 6059

Fig. 27 / Ref. 5268*
Fig. 28 / Ref. 6055

* Not available in self extinguishable plastic

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