

# PS-6

## 6-mm carbon SMD potentiometer

The PS-6 potentiometer offers control where frequent adjustment is required. The shaftless design allows for employment of different engagement mechanisms, such as a customized shaft, a motor control or a human interface adjustment. This potentiometer can also control variable outputs including frequency, change in motor speed or volume.



### KEY FEATURES

- ▶ Designed for lead-free reflow soldering processes
- ▶ Excellent performance
- ▶ Carbon resistive element
- ▶ Up to 10 mechanical detents
- ▶ 1.000 life cycles
- ▶ IP54 protection
- ▶ Moisture sensitivity level 1
- ▶ Embossed tape packaging
- ▶ Wiper positioned at initial, 50% or fully clockwise
- ▶ Loose and assembled knobs, shafts available separately
- ▶ Self extinguishable plastic UL 94V-0

### ELECTRICAL SPECIFICATIONS

|                             |  |
|-----------------------------|--|
| Taper*                      | Linear   |
| Range of values*            | 1KΩ ≤ Rn ≤ 1.5MΩ<br>Decad. 1.0-2.0-2.2-2.5-4.7-5.0 |
| Tolerance*                  |  |
| 1KΩ ≤ Rn ≤ 500KΩ            | ± 30%  |
| 500KΩ < Rn ≤ 1.5MΩ          | + 50% / - 30%                                      |
| Max voltage                 | 100 VDC  |
| Nominal power @ 50°C        | 0.1 W  |
| Residual resistance         | ≤ 0.5% Rn  |
| Equivalent noise resistance | ≤ 4.5% Rn  |
| Operating temperature       | -40°C to +85°C                                     |

\* Others available on request

### MECHANICAL SPECIFICATIONS

|                                |                                 |
|--------------------------------|---------------------------------|
| Mechanical rotation angle      | 235° ± 5°                       |
| Electrical rotation angle      | 200° ± 20°                      |
| Torque                         |                                 |
| Rotational                     | 0.2 to 2 Ncm [0.3 to 2.7 in-oz] |
| Stop                           | > 4 Ncm [>7 in-oz]              |
| Push-pull force over the rotor | > 5 N                           |
| Life*                          | 1k cycles                       |

\* Others available on request

### APPLICATIONS

- ▶ Appliance program selection
- ▶ Thermostat adjustment
- ▶ Timer and control relays
- ▶ Consumer electronics
- ▶ Power tool controls
- ▶ Test and measurement equipment

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## 6-mm carbon SMD potentiometer

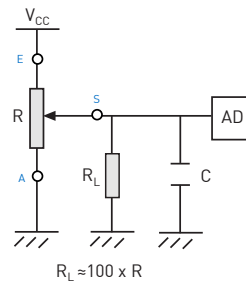
### ENVIRONMENTAL TESTING

|                         | Test conditions (CEI 393-1)                      | $\Delta R(\%)$ - Typical test results |
|-------------------------|--|---------------------------------------|
| Electrical life         | 1.000h at 50°C; 0.25 W                           | $\pm 10\%$                            |
| Mechanical life         | 1000 cycles at 10 to 15 cpm                      | $\pm 10\%$                            |
| Temperature coefficient | -25° C; +85° C                                   | $\pm 1.500$ ppm/°C                    |
| Thermal cycling         | 16h at 85°C and 2h at -25°C                      | $\pm 5\%$                             |
| Damp heat               | 500h at 40°C and 95% relative humidity (RH)      | $\pm 15\%$                            |
| Vibration               | 2h each plane at 10Hz - 55Hz                     | $\pm 3\%$                             |
| Storage                 | 6 month at 23°C $\pm 2^\circ\text{C}$ and 50% RH | $\pm 5\%$                             |

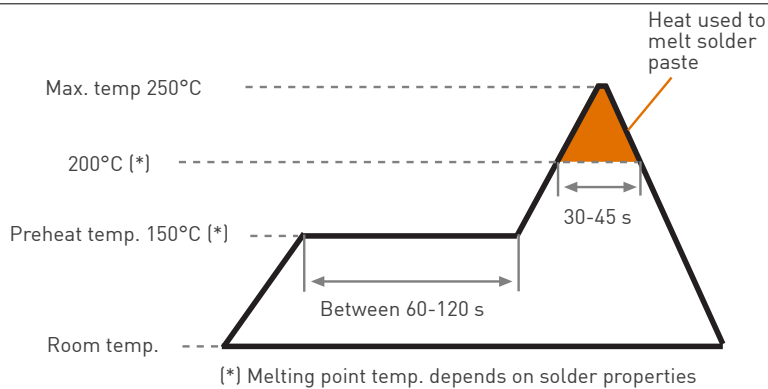
Out of range values may not comply with these results. Standard test conditions: temperature: 23°C  $\pm 2^\circ\text{C}$  and 45% to 70% RH. Mechanical life of detented versions is 100 cycles

### RECOMMENDED CONNECTIONS

Recommended connection circuit for a position sensor or control application (voltage divider circuit electronic design).



### RECOMMENDED REFLOW PROFILE



The 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.

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### HOW TO ORDER

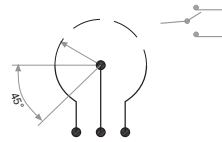
Vertical Adjustment - Horizontal mount: PS6KV50-102A3030

| PS6    | -                                     | V__                      | -   | ---        | A   | -   | ---  | -   | ---                                 | -                          | --- | - | --- | - | --- |
|--------|---------------------------------------|--------------------------|---|------------|---|---|--|---|-------------------------------------|----------------------------|-----|---|-----|---|-----|
| Series | Rotors                                | Mounting method          | Ω-Value <sup>1</sup>  | Taper      | Tolerance <sup>2</sup>                        | Detents <sup>3</sup>                              | Knob <sup>4</sup>                          | Wiper position                              | Knob color                          | Packaging                  |     |   |     |   |     |
|        | A<br>K<br>M<br>Q<br>W   inserted knob | V40<br>V45<br>V50<br>V55 | 102 = 1KΩ<br>202 = 2KΩ<br>...<br>105 = 1MΩ<br>155 = 1.5MΩ<br>000 = CM | A = linear | 2525 = ±25%<br>3030 = ±30%<br>5030 = +50/-30% | [empty]<br>P04<br>P05<br>P06<br>P07<br>P08<br>P10 | [empty] = none<br>05 = Fig.5<br>06 = Fig.6 | [empty] = initial<br>PM = 50%<br>PF = final | [empty]<br>CR = cream<br>NE = black | [empty] = reel<br>B = bulk |     |   |     |   |     |

Horizontal adjustment - Vertical mount: PS6H40-120A3030

| PS6    | -                | H40             | -   | ---        | A   | -   | ---   | -                          | --- | - | --- | - | --- |
|--------|------------------|-----------------|---|------------|---|---|---|----------------------------|-----|---|-----|---|-----|
| Series | Rotors           | Mounting method | Ω-Value <sup>1</sup>  | Taper      | Tolerance <sup>2</sup>                        | Detents <sup>3</sup>                              | Wiper position                              | Packaging                  |     |   |     |   |     |
|        | A<br>K<br>M<br>Q | H40             | 102 = 1KΩ<br>202 = 2KΩ<br>...<br>105 = 1MΩ<br>155 = 1.5MΩ<br>000 = CM | A = linear | 2525 = ±25%<br>3030 = ±30%<br>5030 = +50/-30% | [empty]<br>P04<br>P05<br>P06<br>P07<br>P08<br>P10 | [empty] = initial<br>PM = 50%<br>PF = final | [empty] = reel<br>B = bulk |     |   |     |   |     |

1. Ω- Value: XXX - First two digits of Ω-value  
XXX - Number of zeros  
 000 = CM = switch SPDT version:



2. Tolerance: for custom tolerance please check availability  
 3. Detents: Available for K and M rotor type. Rotor color: brown. Others available on request.  
 4. Knobs also made of self-extinguishable plastic. Shaft available to order separately.

### STANDARD CONFIGURATION

| PS-6                   |  |
|------------------------|--|
| Life                   | 1.000 cycles / detented versions: 100 cycles |
| Detents                | none   |
| Non-flammable material | yes  |
| Housing color          | grey   |
| Wiper Position         | initial                                      |
| Packaging              | reel   |

### ORDER CODE EXAMPLES

PS6KV50-103A3030

PS6 model with K rotor; V50 mounting type; 10K ohm resistive value; linear taper and 30% resistive tolerance

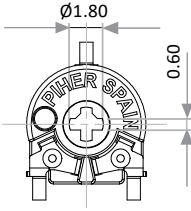
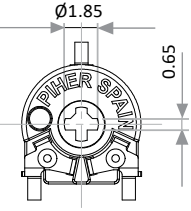
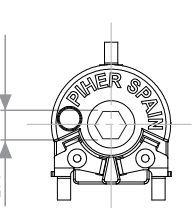
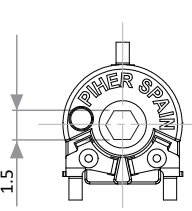
PS6WV40-502A2525-06NE-PF

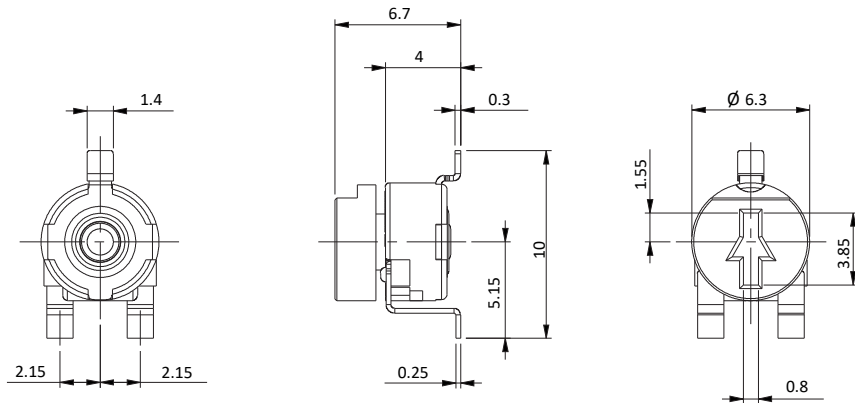
PS6 model with inserted knob fig. 6; 5K ohm resistive value; linear taper; 25% resistive tolerance; color of the knob: black; wiper positioned at the end of the travel

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### ROTORS

| K<br>Cross slot through hole  | Q<br>Cross slot through hole<br>Available in white only                           | M<br>Hexagonal through hole  | A<br>Hexagonal through hole<br>Available in white only                              |
|---|---|--|---|
|                        |  |  |  |
| <p style="text-align: center;"><b>W</b><br/>With inserted knob (Standard knob: Ref. 6, cream color)</p> |   |  |   |



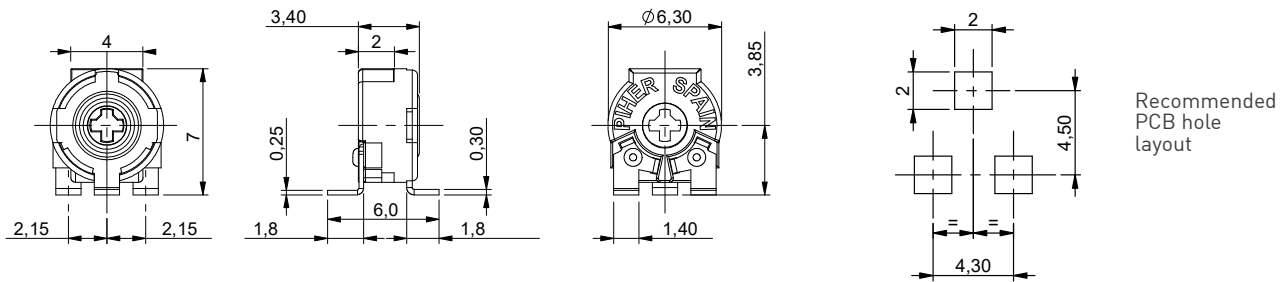
Drawing example W V40 with knob Ref. 6

Default delivery is at initial position. Wipers are shown positioned at 50% for the picture.

### MOUNTING METHOD - DIMENSIONS

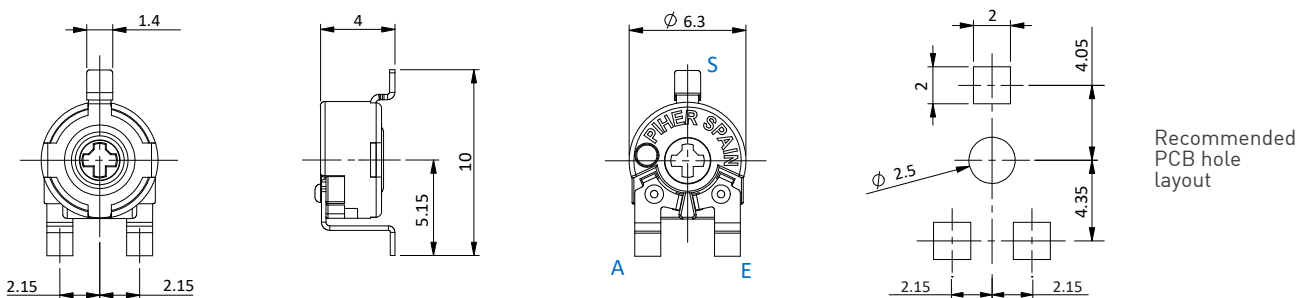
#### Horizontal Adjustment / Vertical Mounting

H40

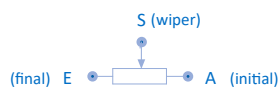


#### Vertical Adjustment / Horizontal Mounting

V40



Download STEP files here:  
<https://piher.net/piher/?p=897>



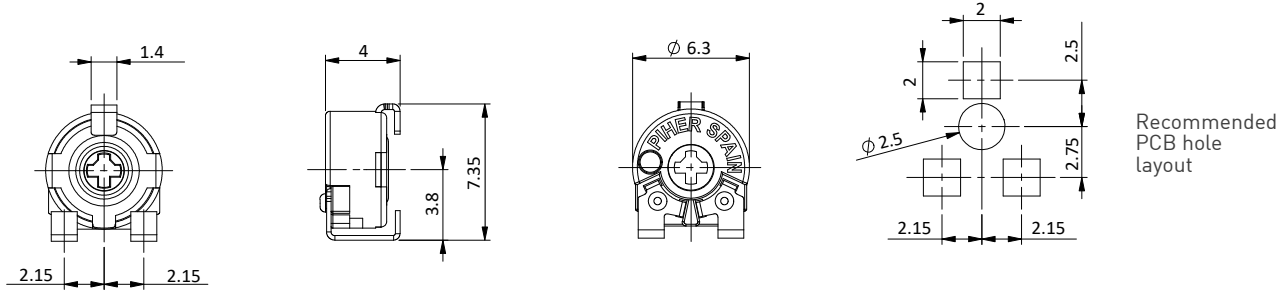
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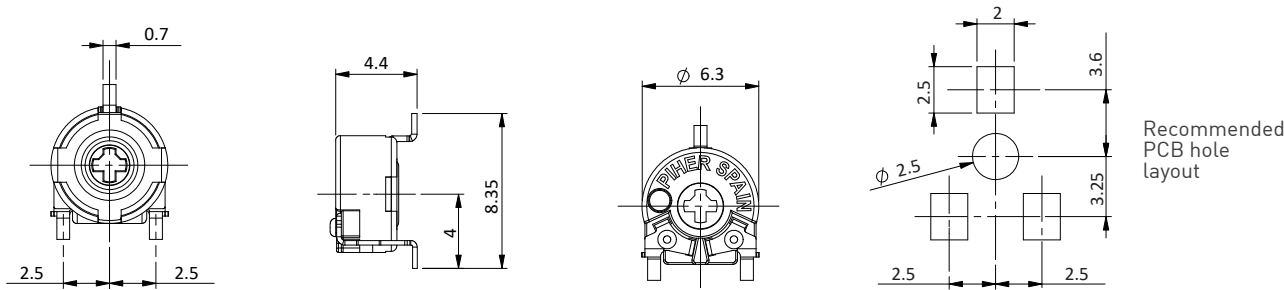
### MOUNTING METHOD - DIMENSIONS

#### Vertical Adjustment / Horizontal Mounting

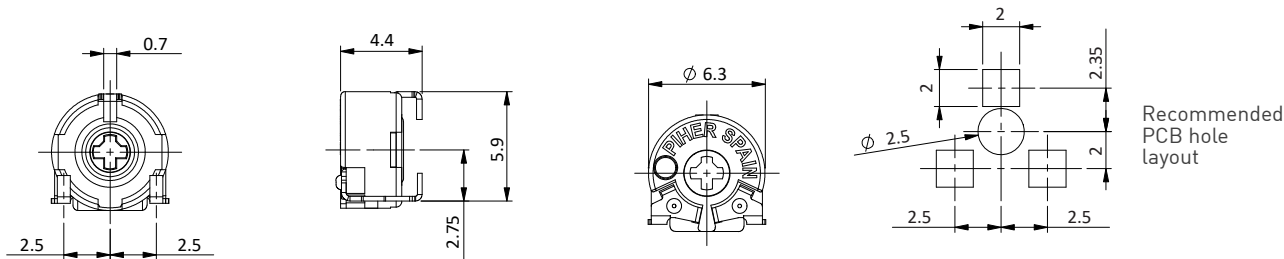
V45



V50



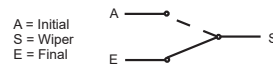
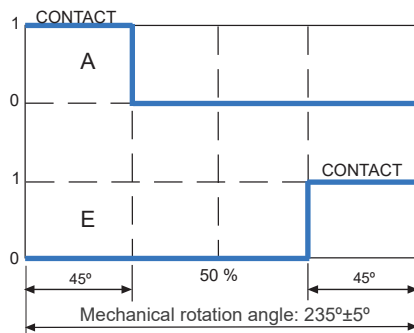
V55



### STANDARD RESISTANCE-VALUES AND TOLERANCES

| Resistance $\Omega$ | 1K         | 2K  | 2.2K | 2.5K | 4.7K | 5K  | 10K | 20K | 22K | 25K | 47K | 50K | 100K | 200K | 220K | 250K | 470K | 500K | 1M        | 1.5M |
|---------------------|------------|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----------|------|
| Order Code          | 102        | 202 | 222  | 252  | 472  | 502 | 103 | 203 | 223 | 253 | 473 | 503 | 104  | 204  | 224  | 254  | 474  | 504  | 105       | 155  |
| Tolerance           | $\pm 30\%$ |     |      |      |      |     |     |     |     |     |     |     |      |      |      |      |      |      | +50%/-30% |      |

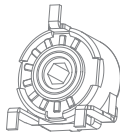
### SWITCH VERSION



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### DETENTS / STOP POSITIONS

|         |         |         |   |
|---------|---------|---------|---|
| P04<br> | P05<br> | P06<br> | <ul style="list-style-type: none"> <li>Relative detent positions along total mechanical travel</li> </ul>  |
| P07<br> | P08<br> | P10<br> |   |

Unless otherwise specified the detents are evenly spaced (using the end points as reference). Rotor color of detented versions is brown. Standard mechanical life for PS-6 with detents: 100 cycles. Long life versions are available on request.

### KNOBS / SHAFTS

Fig. 5 - Ref.: 6148  
For W rotors only.

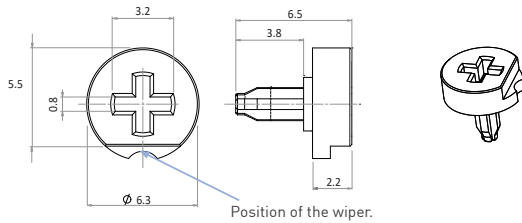
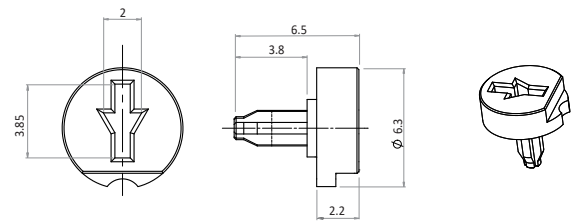
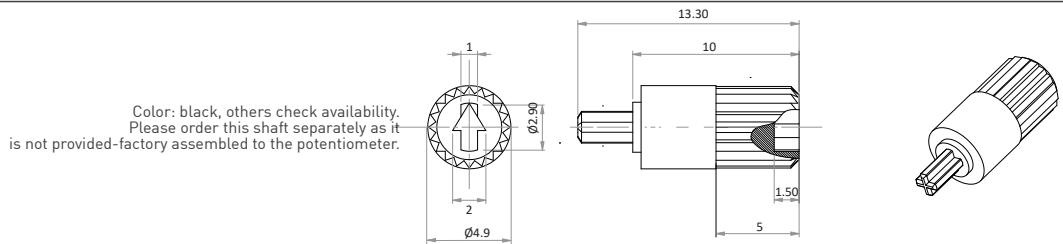


Fig. 6 - Ref.: 6160  
For W rotors only.

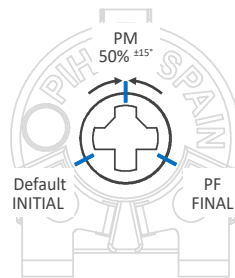


Ref.: 6144  
For K or Q rotor.



If you wish to use your own plastic shaft/knob/actuator please contact Piher Sensing Systems for advice about compatible materials.

### WIPER POSITION



Wiper positioning on initial position is standard. Special delivery positions available on request.

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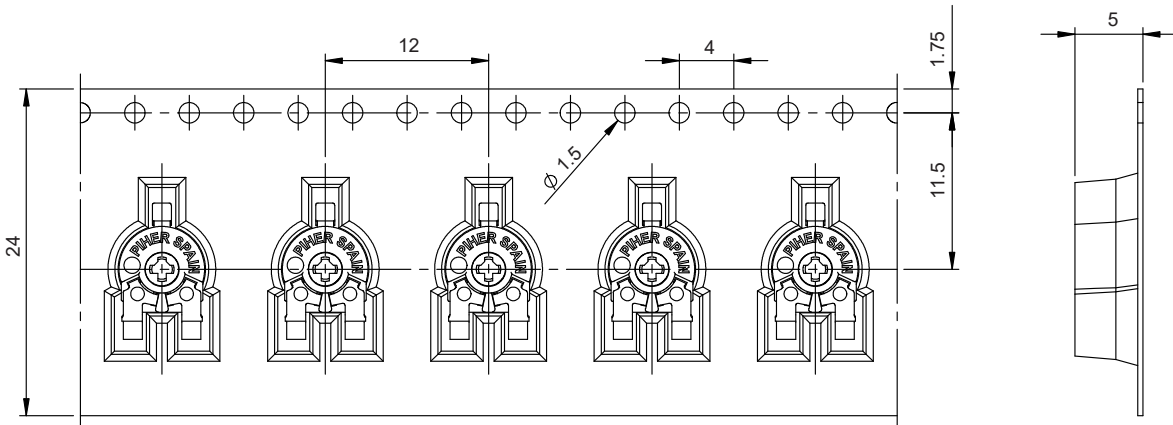
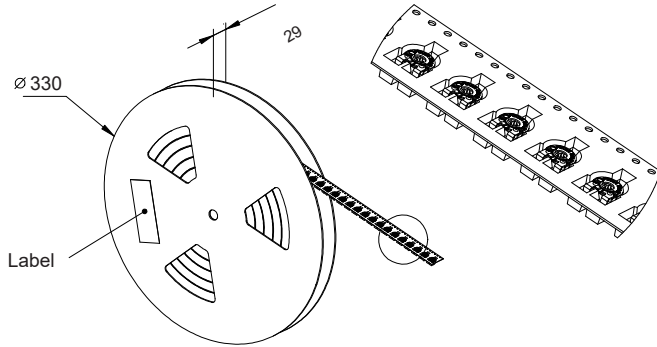
### PACKAGING

#### V40 and V45 models

Bulk (1.000 pcs/box)



Reel - embossed tape (1.000 pcs/reel)

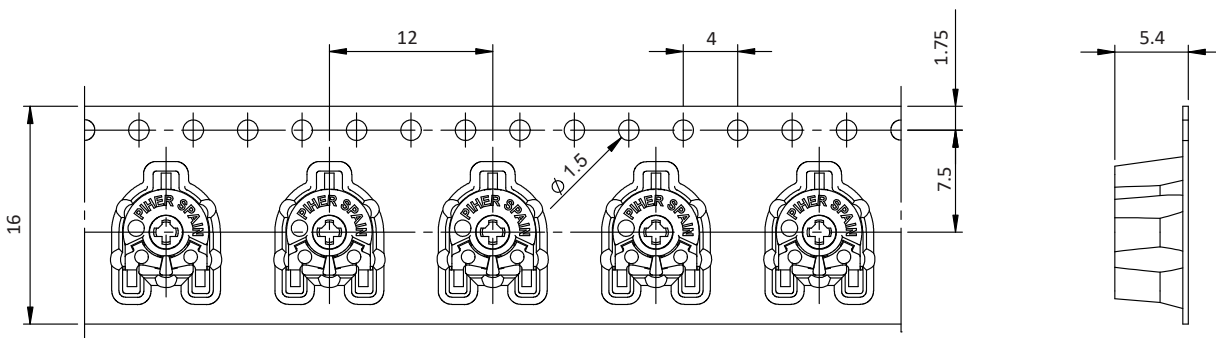
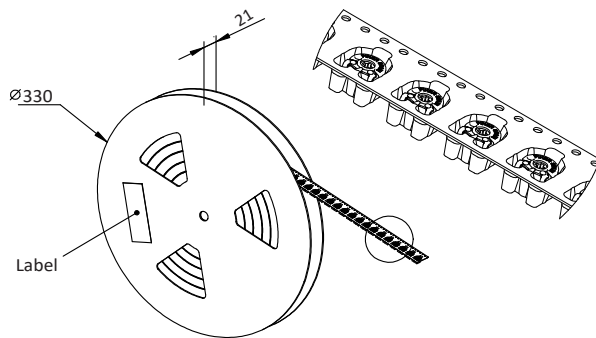


#### V50 and V55 models

Bulk (1.000 pcs/box)



Embossed tape (1.000 pcs/reel)



Models with factory-assembled knob will use a reel of 380mm diameter.

# PS-6

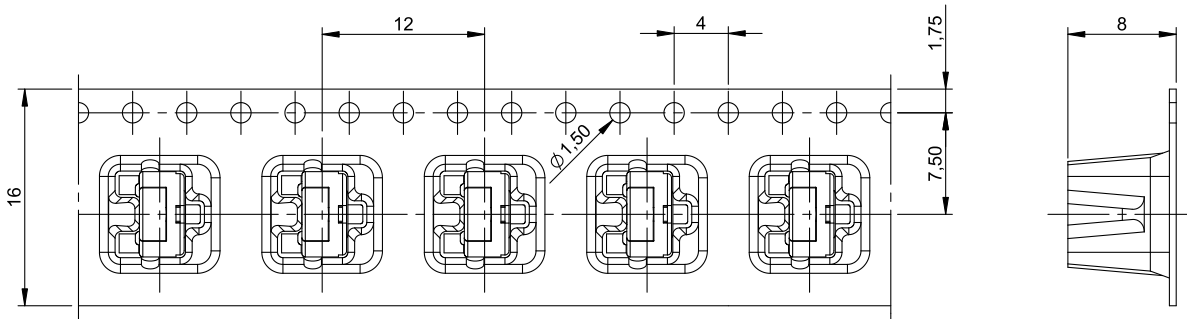
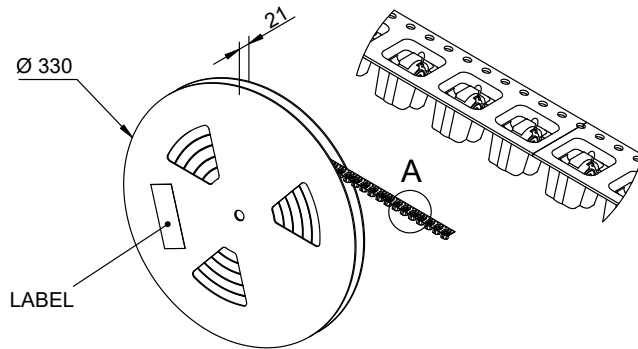
## 6-mm carbon SMD potentiometer

### PACKAGING

H40

Bulk (1.000 pcs/box)

Reel - embossed tape (1.000 pcs/reel)



### OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
  - ▷ Contactless (Hall-effect and Inductive Technology)
  - ▷ Contacting (Potentiometers, Printed Electronics)
- ▶ Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirement
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas,...) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation



Please always use the latest updated datasheets and 3D models published on our website.

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### CONTACT

**Piher Sensing Systems**  
 Polígono Industrial Municipal  
 Vial T2, Nº22  
 31500 Tudela  
 Spain

[sales@piher.net](mailto:sales@piher.net)

**Europe:** +34 948 820 450  
**Americas:** +1 636 251 0855  
**Asia Pacific:** +65 9641 8886  
**India:** +91 9538 686 586

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