

Automotive / Appliance / Industrial control - sensor

10 mm SMD carbon potentiometer PS-10



Mechanical specifications

Mechanical rotation angle	235° ± 5°
Electrical rotation angle	220° ± 20°
Rotational torque	0.4 to 2 Ncm. (0.6 to 2.7 in - oz)
Stop torque	> 5 Ncm. (>7 in-oz)
Life*	Up to 10K cycles

Electrical specifications

Range of values *	1KΩ ≤ Rn ≤ 1MΩ (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)
Tolerance *	± 30%, ± 25%, ± 20%
Equivalent noise resistance	≤ 3% Rn
Nominal power 50° (122°F)	0.15 W (lin)
Taper *	Linear
Residual resistance	≤ 5.10 ⁻³ Rn
Operating temperature	-40°C + 85°C

* Others: upon request

Main features

- Specifically designed for leadfree reflow soldering processes (excellent performance)
- Carbon resistive element
- IP54 protection according to IEC 60529
- Moisture sensitivity level 1
- Embossed tape according to IEC 60286-3:2007
- Wiped positioned at initial, 50% or fully clockwise
- Full traceability
- Also upon request:
 - Long life model for low cost control potentiometer applications
 - Locating pins for accurate PCB positioning
 - Shaft - knobs
 - Mechanical detents
 - Low torque version
 - Self extinguishable plastic UL 94V-0.

Description

The PS-10 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.

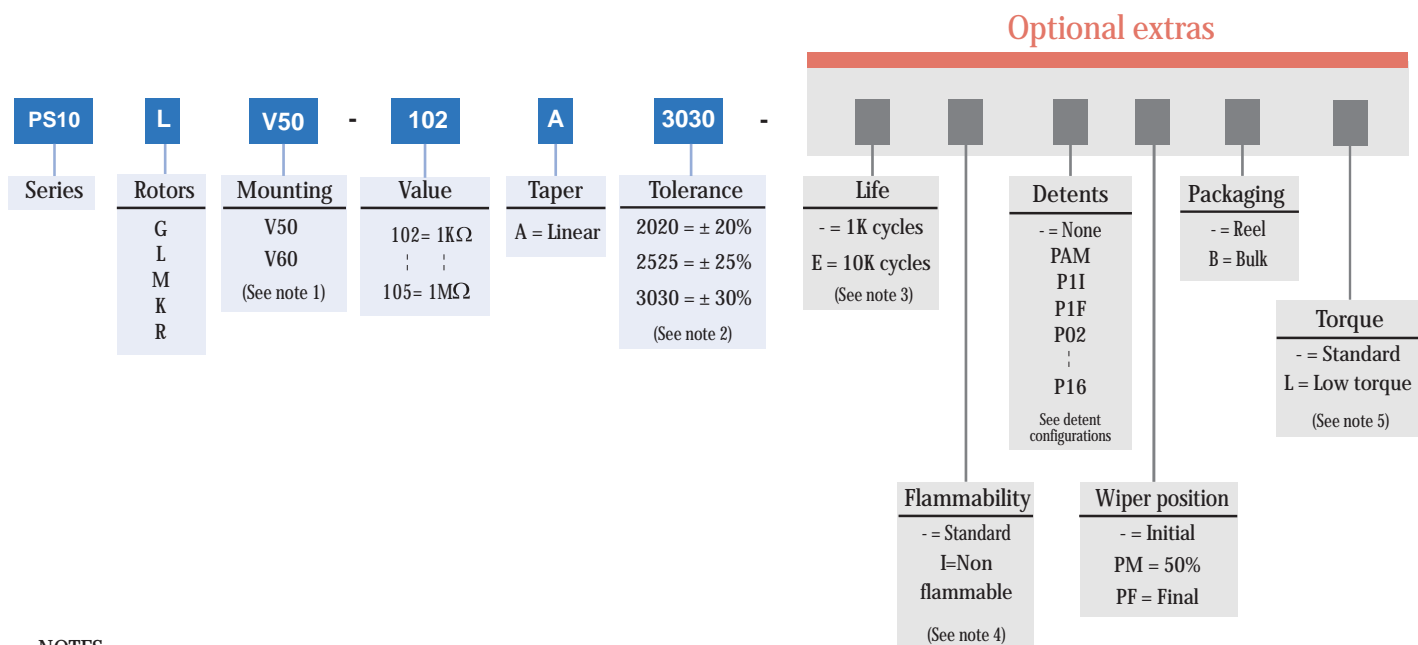
Typical applications include test and measurement equipment, consumer electronics, appliances, small engines, robotics, motion controllers, and medical equipment control panels.

A wide range of options, including up to 16 detents, allows further customization. Detents not only add a crisp "click" sensation for each position without affecting the original sensor specification or performance, but also offer significant savings in both cost and space; and are particularly advantageous in industrial and domestic power tool applications to prevent accidental movement.

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How to order



NOTES

(1) V50: without locating pins. V60: with locating pins.

(2) Others upon request.

Resistance Ω	1K	2K	2.2K	2.5K	4.7K	5K	10K	20K	22K	25K	47K	50K	100K	200K	220K	250K	470K	500K	1M
How to order code	102	202	222	252	472	502	103	203	223	253	473	503	104	204	224	254	474	504	105
Standard tolerance	30%																		

(3) Standard = 1K cycles. Long life = 10K cycles. Others upon request.

(4) Non flammable plastic material for housing and rotor.

(5) Low torque: < 1.5Ncm . No detent option available for low torque models.

How to order examples

PS10RV50-102A3030

10mm potentiometer with rotor "R", V50 mounting method, 1K resistive value, 30% resistive tolerance and crimped terminals.

PS10LV60-105A3030

10mm potentiometer with rotor "L", V60 mounting method, 1M resistive value, 30% resistive tolerance and crimped terminals.

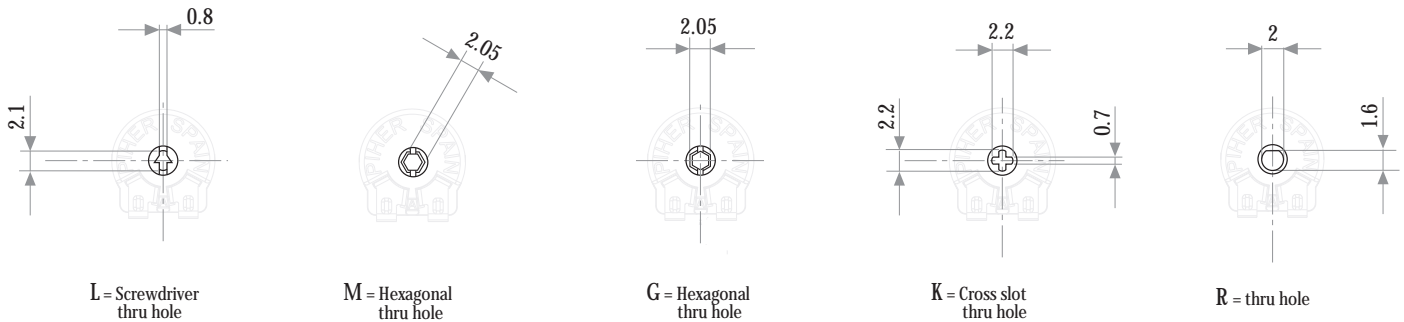
Standard default options

Detents	None
Rotor colour	Dark grey
Housing colour	Dark grey
Wiper position	Initial
Torque	Standard
Packaging	Reel
Life	1K cycles

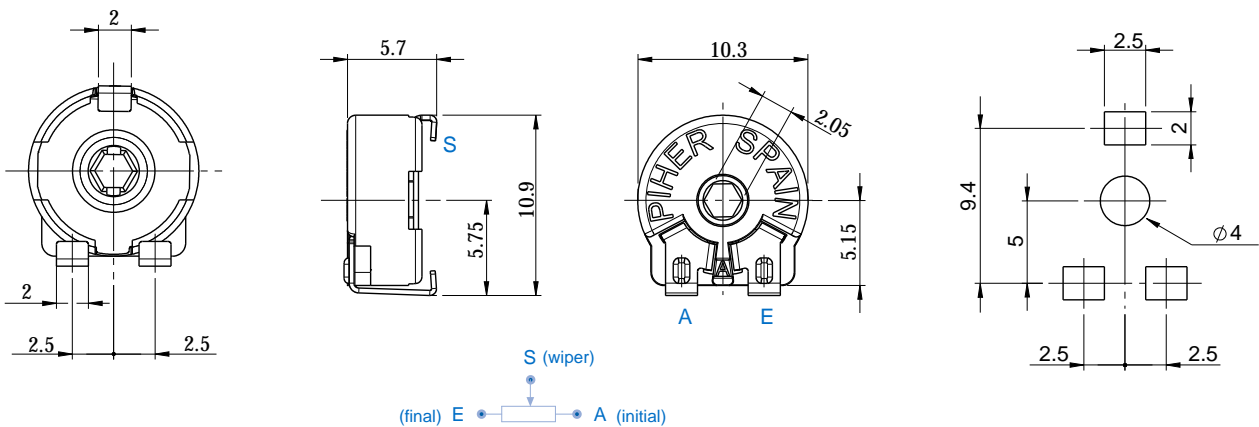
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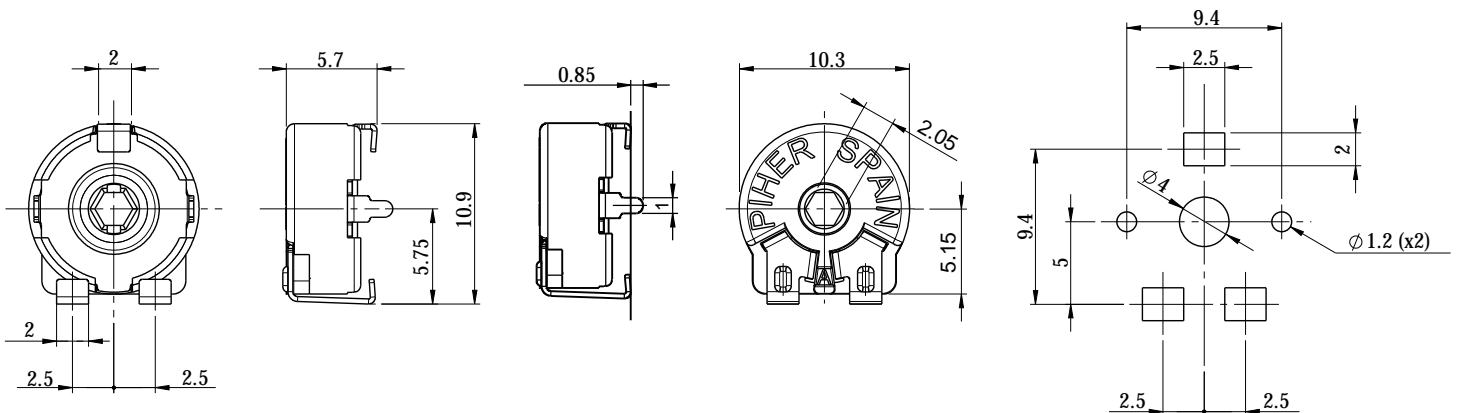
Rotors (Default delivery is at initial position. They are shown positioned at 50% for the picture):




Dimensions - V50



Dimensions - V60

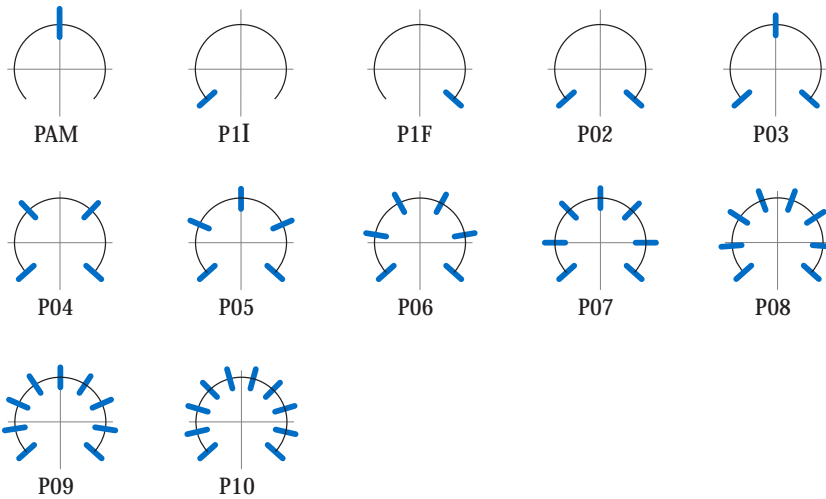


 Download STEP files here:
<https://piher.net/piher/?p=909>

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Detents



- Relative detent positions along the total mechanical travel. Unless otherwise specified the detents are evenly spaced (using the end points as reference)

For other configurations: check availability at info@piher.net.

This innovative potentiometer with detents family has been specifically developed to allow the integration of otherwise large and expensive external mechanisms into the body of the majority of the 6, 10 & 15 mm. potentiometer series thus allowing a high range of configurations: special tapers, tolerances, linearity, cut track, etc.

This detent design not only adds a "click" sensation of position, but also offers enormous savings in both cost and space for any given application.

Detent number and positions can be made or fitted to the customer needs or preferences.

NOTES FOR DETENTED VERSIONS

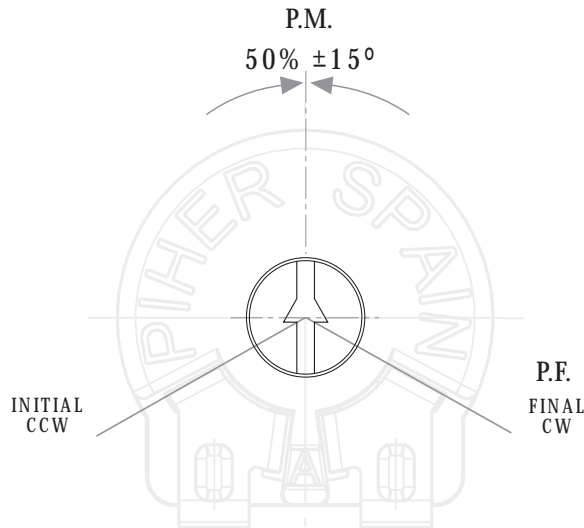
- Some configurations may have a longer leadtime.
- Standard mechanical life is 500 cycles.
- Long life versions are available under request and have the following characteristics at T^a:
 - Potentiometers with 1 to 3 detents: up to 10K cycles
 - Potentiometers with 4 and more detents: up to 5K cycles
- Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- Different output voltage values can be matched at each detent position (under request).

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Positioning

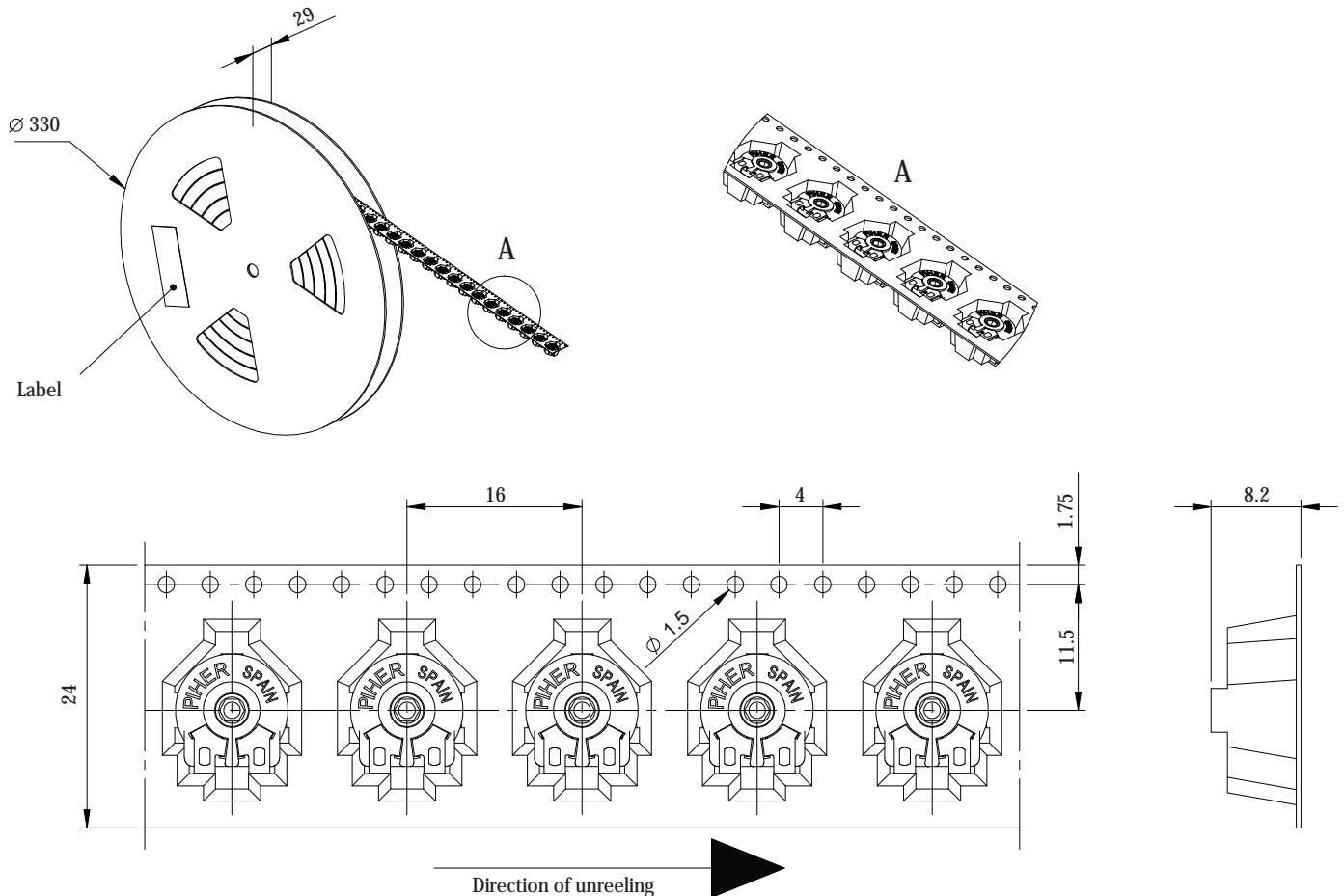
Default position = CCW



Packaging

Bulk: 500pcs / per Box (80 x 85 x 185 mm.)

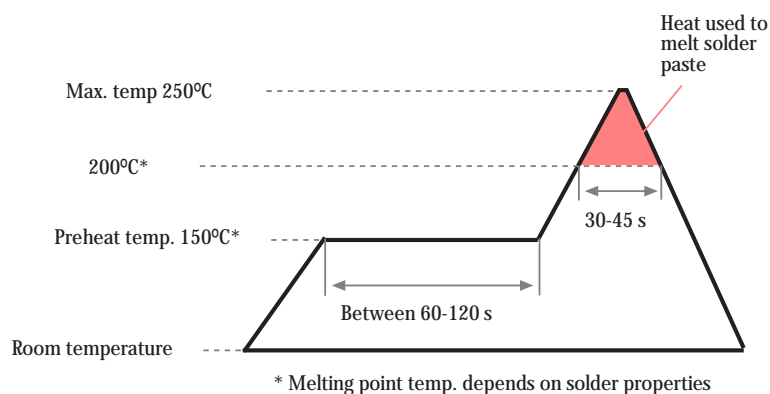
Embossed tape (default): 500pcs / Reel



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Recommended reflow profile



This 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.

Tests

		Typical variations
Electrical life	1000 h. @ 50°C; 0.15 W	±10%
Mechanical life (cycles)	1000 @ 10 CPM ...15 CPM	±10%
Temperature coefficient	-40°C; +85°C	±1500 ppm
	-25°C; +70°C	±1000 ppm
Thermal cycling	16 h. @ 90°C; 2h. @ -40°C	±5%
Damp heat	500 h. @ 40°C @ 95% HR	±15%
Vibration (for each plane,X,Y,Z)	2 h. @ 10 Hz. ... 55 Hz.	±3%

Test at room temperature.
 1 cycle = go and return over the total mechanical angle. Other life cycles upon request

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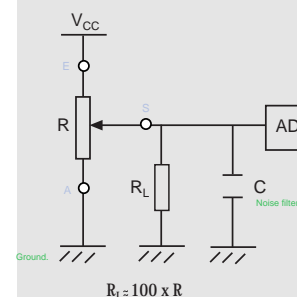
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Recommended connections

Piher potentiometer's recommended connection circuit for a position sensor or control application. (voltage divider circuit electronic design)



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