

Automotive / Appliance / Industrial control - sensor

15 mm carbon potentiometer PS-15



Mechanical specifications

Mechanical rotation angle*	265° ± 5°
Electrical rotation angle**	240° ± 20°
Rotational torque	0.5 to 2.5 Ncm. (0.7 to 3.4 in - oz)
Stop torque	>10Ncm. (>14 in-oz)
Life**	Up to 100K cycles

* 360° non-stop rotation available with the STS-15 potentiometer.

** Others: check availability.

Electrical specifications

Range of values *	1K Ω to 1M Ω
Tolerance *	± 30%
Operating temperature	-40°C +85°C
Nominal power (122°F)	0.25 W 50°C (122°F)
Taper *	Linear
Residual resistance	≤ 5.10 ⁻³ Rn
Equivalent noise resistance	≤ 3% Rn

* Others: check availability.

Main features

- Carbon resistive element
- Specifically designed for leadfree reflow soldering processes (excellent performance)
- IP54 protection according to IEC 60529
- Moisture sensitivity level 1
- Full traceability
- Embossed tape according to IEC 60286-3:2007
- Wiper positioned at initial, 50% or fully clockwise
- Also upon request:
 - Self extinguishable plastic UL 94V-0
 - Mechanical detents
 - Locating pins for accurate PCB positioning
 - Low torque versions
 - Matching shafts and knobs

Description

The PS-15 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 change in motor speed or volume.

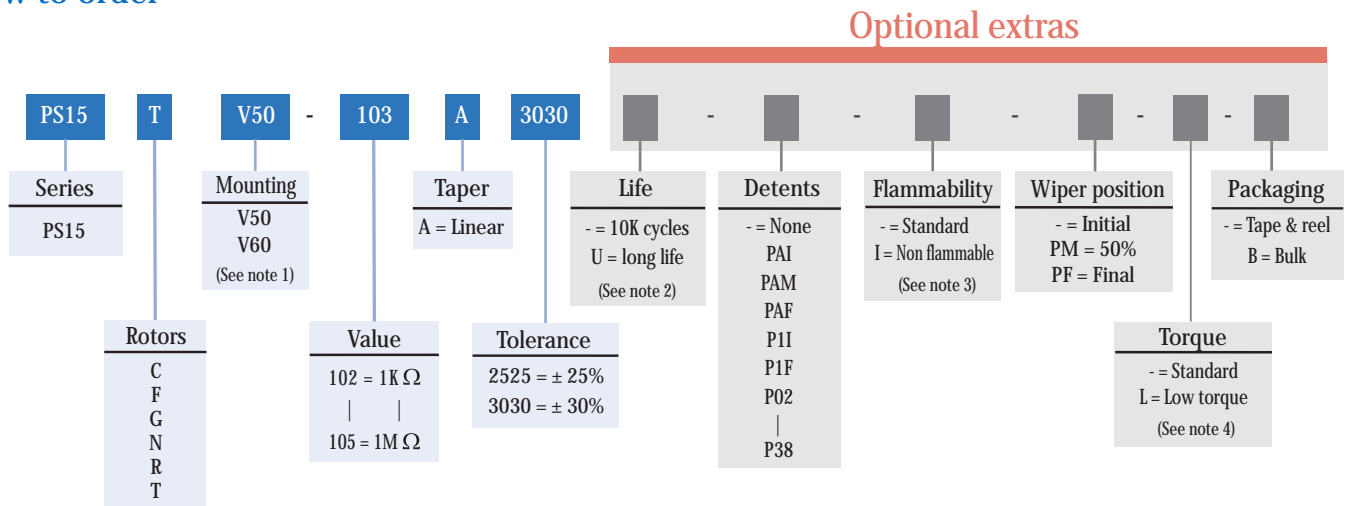
Typical applications include test and measurement equipment, consumer electronics, appliances, engines, robotics, motion controllers, power tools, relays, timers, HVAC systems, position sensors and medical equipment control panels.

This datasheet shows you the basics of the PS15 potentiometer that is quite versatile and easy to tailor.

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How to order



NOTES

- (1) V50: without locating pins.
V60: with locating pins.
- (2) Higher life available to be studied case by case.
- (3) Non flammable plastic material for housing and rotor.
- (4) Low Torque: ≤ 1.5 Ncm. No detent option available for low torque models.

All Piher products can be adapted to meet customer's requirements.

How to order examples

PS15NV50-102A3030-PM

15mm potentiometer with rotor "N", V50 mounting method, 1K ohm resistive value, 30% resistive tolerance and rotor/wiper positioned at 50% of the angle of rotation.

PS15RV60-105A3030-I

15mm potentiometer with rotor "R", V60 mounting method, 1M ohm resistive value, 30% resistive tolerance, non flammable plastic materials and rotor/wiper positioned at initial position.

Standard default options

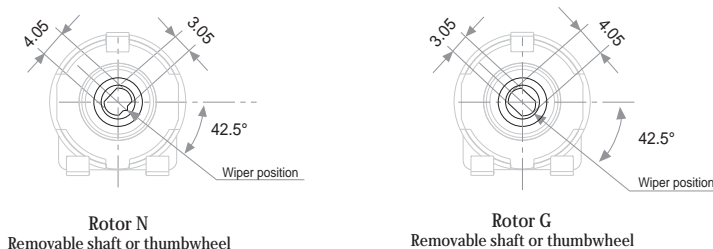
Detents	None
Rotor colour	Gray
Housing colour	Gray
Wiper position	Initial
Torque	Standard
Packaging	Reel
Life	10000 cycles

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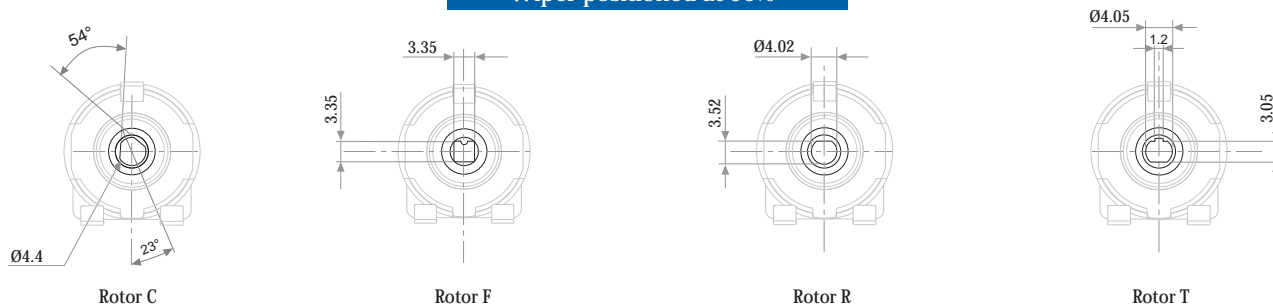
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Rotors (collector side view). Default delivery is at initial position.

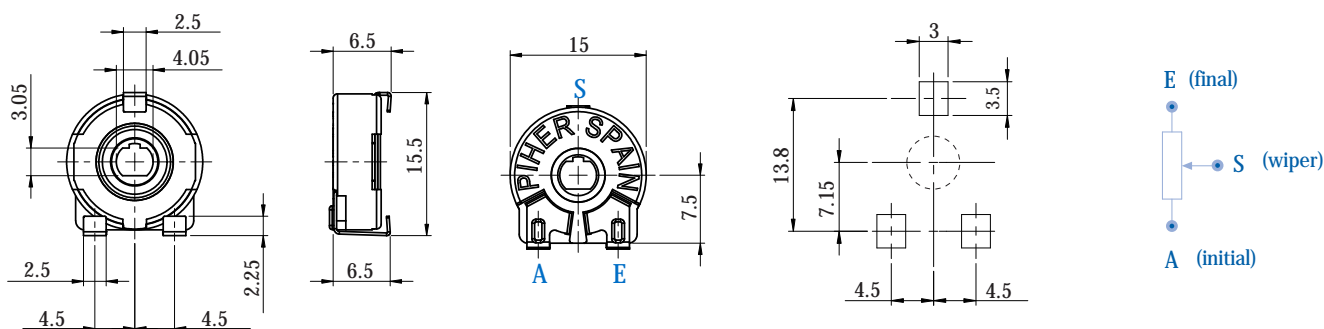
Wiper positioned at initial



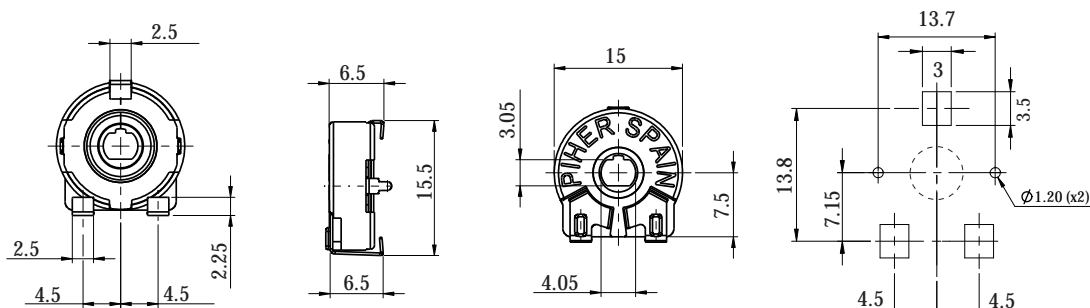
Wiper positioned at 50%



Dimensions (V50 version)



Dimensions (V60 version - with centering pins)



STEP files:
piher.net/piher/?p=1006

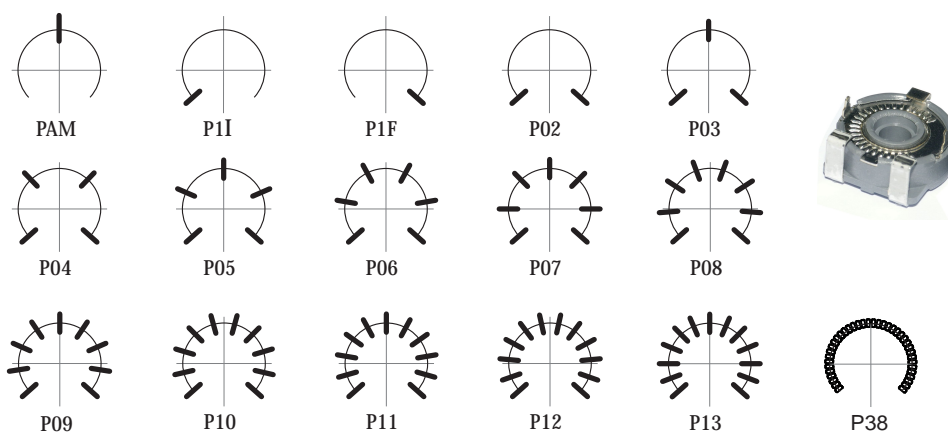
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Standard - values tolerances

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%																		

Detents



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

This innovative stop feeling 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.

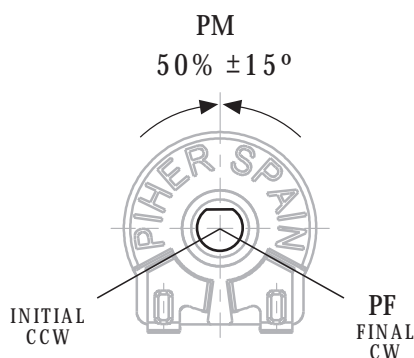
Detent number and positions can be made or fitted to the customer needs or preferences.

NOTES FOR DETENTED VERSIONS

- Some configurations may have a longer leadtime.
- 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 may 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).

Positioning

Pictured position = PM
Default position = CCW



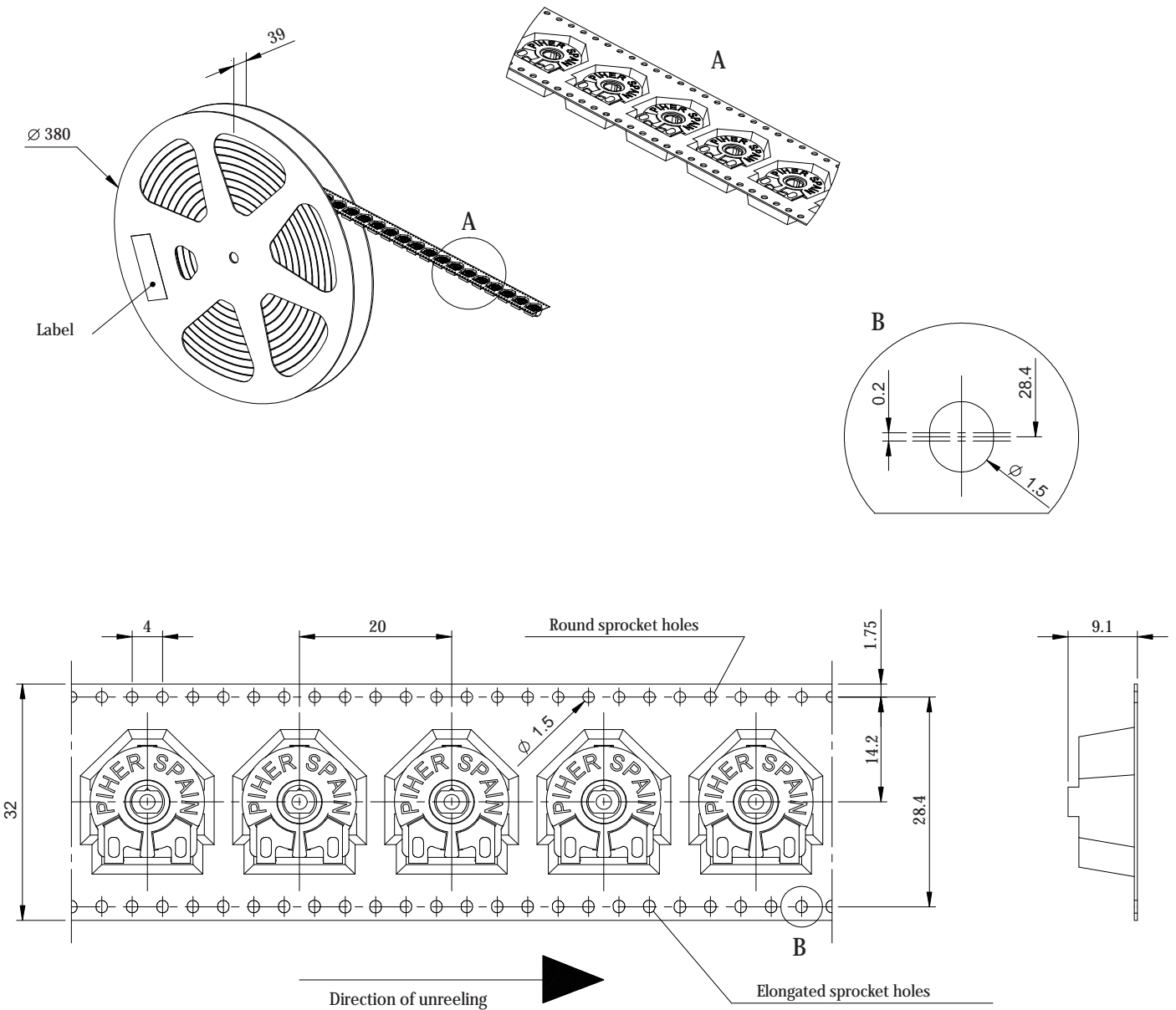
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Packaging

EMBOSED TAPE (default): 500pcs per reel

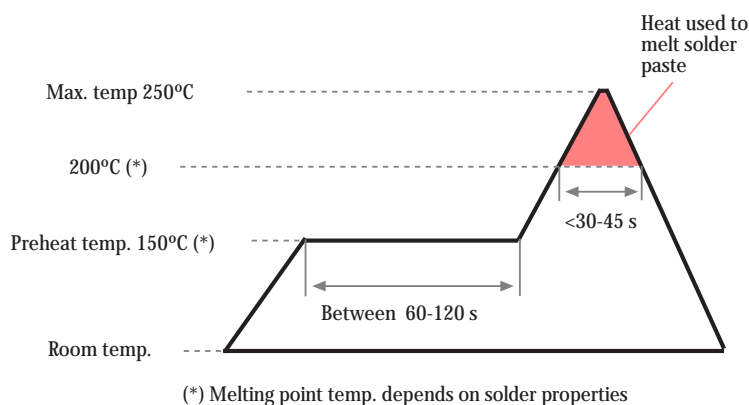
BULK: 500pcs per box (80 x 85 x 185 mm.)



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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.

Tests

		Typical variations
Electrical life	1.000 h. @ 50°C; 0.25 W	±10%
Mechanical life (cycles)*	10.000 @ 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 %

* Tests at room temperature. Other life cycles upon request.

One cycle is forth and back the mechanical angle travel.

NOTE: Out of range values may not comply these results. Please confirm with the factory all the information before designing in.

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Disclaimer

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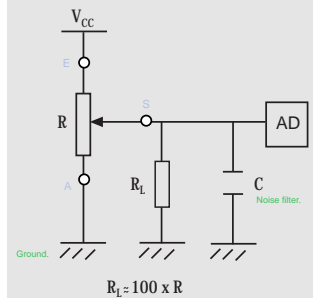
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Recommended connections

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



Our Advantage Value added proposition



Engineering design-in support



Output customization



Cable harness and connector assembly



One-stop solution provider for different position sensing technologies

Hall-effect	Potentiometric	Inductive
Capacitive	Reed switch	Printed PCB



Global footprint



Manufacturing capabilities for high and low volume programs

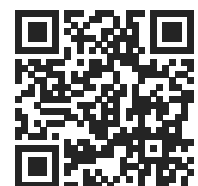


Diverse portfolio of standard and customised sensors: Temperature, Gas & Moisture, Pressure, etc.



All Piher products can be adapted to meet customer's requirements. Due to continuous process improvement, specifications are subject to change without notice. Please always use the latest updated datasheets and 3D models published at our website www.piher.net.

rev231220



Piher Sensing Systems

Potentiometers | Hall-effect sensors | Inductive sensors
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