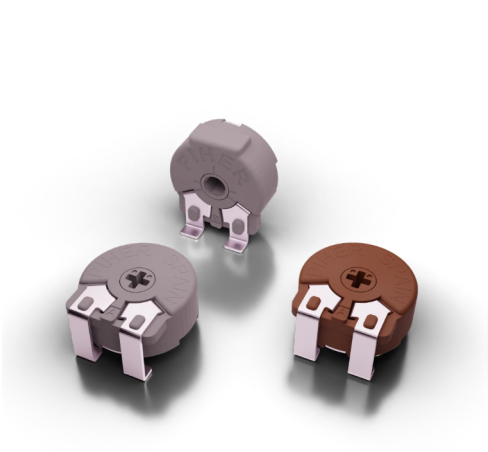
PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

The PS-10 and PSC-10 SMD potentiometers offer 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

- Carbon or cermet resistive element
- Polyester / Alumina substrate
- Up to 10.000 life cycles
- IP54 protection
- Embossed tape packaging according to IEC 60286-3:2007
- Wiper positioned at initial, 50% or fully clockwise
- Linear, logarithmic and antilogarithmic tapers (PSC-10)
- Self extinguishable plastic (UL 94V-0) available
- Up to 16 mechanical detents for tactile feedback
- Locating pins for accurate PCB positioning
- Low torque version available

On request

- Shafts and knobs
- Long life models for control potentiometer applications

ELECTRICAL SPECIFICATIONS

	PS-10	PSC-10
Taper[1]	Lin	Lin, Log, Alog
Range of values[1] Lin Log, Alog	 1KΩ ≤ Rn ≤ 1MΩ n/a	 100Ω ≤ Rn ≤ 5MΩ 1KΩ ≤ Rn ≤ 5MΩ
Standard tolerance[1] 100Ω ≤ Rn ≤ 1MΩ 1MΩ < Rn ≤ 5MΩ	 ± 30% n/a	 ± 20% ± 30%
Max. Voltage Lin Log, Alog	 200 Vdc n/a	 200 Vdc 100 Vdc
Nominal power	50°C (122°F) 0.15 W	70°C (158°F) 0.33 W
Residual resistance[1]	≤ 0.5% Rn (5Ω min.)	
Equivalent noise resistance	≤ 3% Rn (3Ω min.)	
Operating temperature[1]	-40°C to +85°C (-13°F to + 158°F)	-40°C to +90°C[2] (-40°F to + 194°F)

[1] Others available on request [2] +120°C/+248°F upon request

APPLICATIONS

- Appliance program selection
- Thermostat adjustment
- Timer and control relays
- Consumer electronics
- Power tool controls
- Test and measurement equipment
- Small engines
- Robotics
- Medical Equipment Control

PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

MECHANICAL SPECIFICATIONS

	PT-10	PTC-10
Mechanical rotation angle	235° ± 5°	
Electrical rotation angle	220° ± 20°	
Torque Rotational Stop	 0.4 to 2 Ncm (0.6 to 2.7 in-oz) › 5 Ncm (›7 in-oz)	
Life[1]	Up to 10k cycles	

1 Others check availability

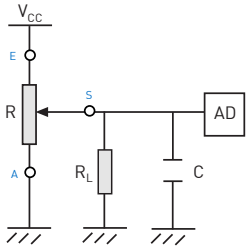
ENVIRONMENTAL TESTING

	Test method (CEI 393-1)	PS-10 ΔR(%)- typical test results	PSC-10 ΔR(%) - typical test results
Electrical life	1.000h at 50°C; 0.15W 1.000h at 70°C; 0.33W	±10% n/a	n/a ±5%
Mechanical life	1000 cycles at 10 to 15 cpm	±10%	±3% (Rn ‹ 1MΩ)
Temperature coefficient	-40°C; +90°C -40°C; +85°C -25°C; +70°C	n/a ±1.500 ppm/°C ±1.000 ppm/°C	±100 ppm/°C (Rn ‹ 100KΩ) n/a n/a
Thermal cycling	16h at 90°C and 2h at -40°C	±5%	±2.5%
Damp heat	500h at 40°C and 95% relative humidity (RH)	±15%	±5%
Vibration	2h each plane at 10Hz - 55Hz	±3%	±2%
Storage	6 month at 23°C ±2°C and 50% RH	±5%	±5%

Out of range values may not comply with these results. Standard test conditions: temperature:23°C ±2°C and 45% to 70% RH

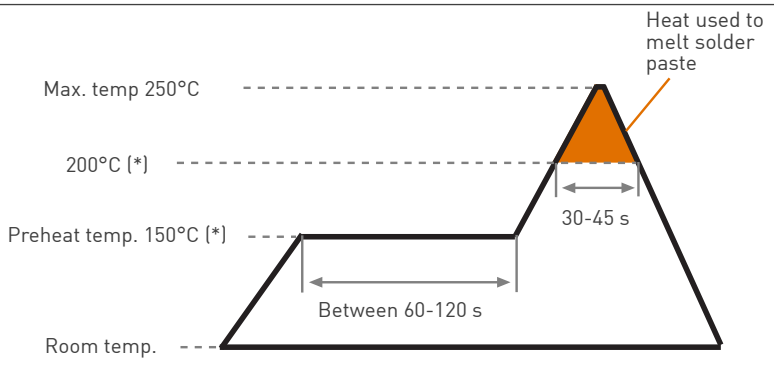
RECOMMENDED CONNECTIONS

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



$R_L \approx 100 \times R$

RECOMMENDED REFLOW PROFILE



(*) Melting point temp. depends on solder properties

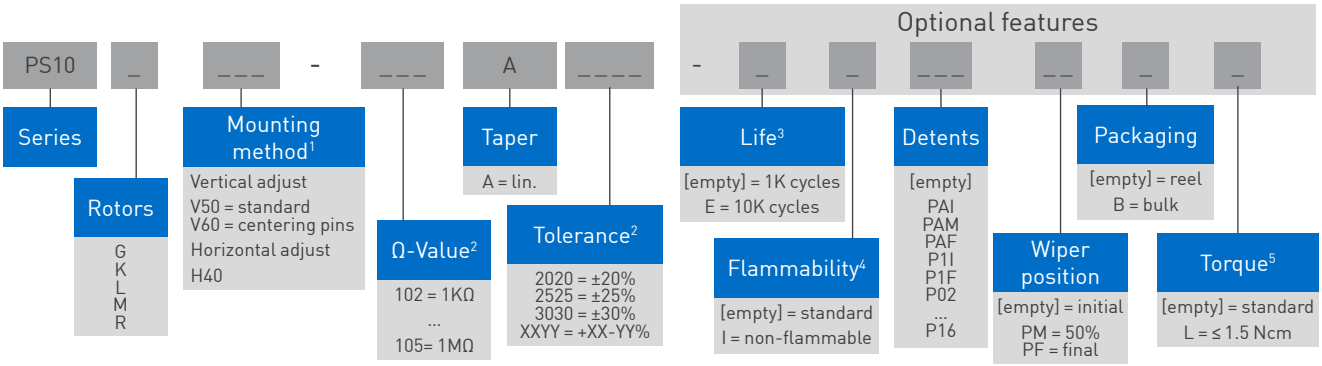
The recommended reflow profile is provided as a guideline. Optimal profile may differ due to oven type, assembly layout or other design or process variables. Customers should verify actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

PS-10 / PSC-10

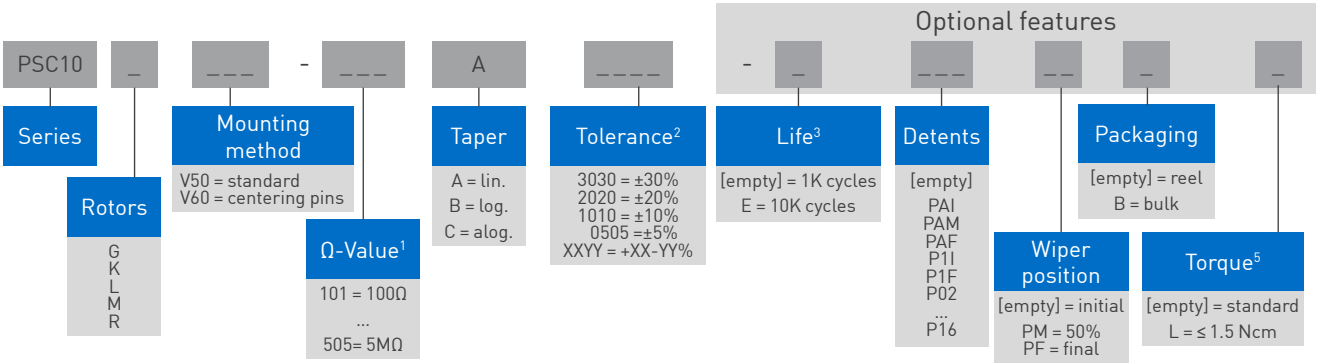
10-mm carbon / cermet SMD potentiometer

HOW TO ORDER

Carbon potentiometer (Example: PS10LV50-102A3030)



Cermet potentiometer (Example: PSC10LV50-102A2020)



1. Ω- Value: XXX - First two digits of Ω-value; XXX - Number of zeros
2. Tolerance: For custom tolerance, please check availability: info@piher.net
3. Life: Higher on request.
4. Non-flammable according to UL 94V-0: housing and rotor. PS10 horizontal adjust model is only available with standard plastic. PSC-10 made of non-flammable material by standard.
5. Torque: No detent option available for low torque models.

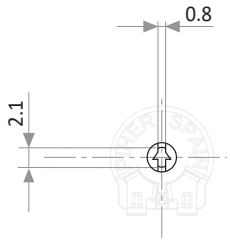
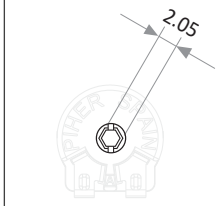
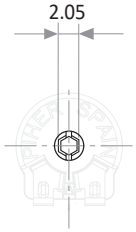
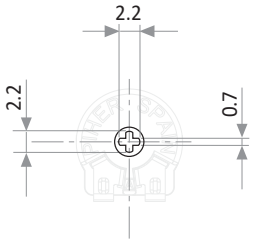
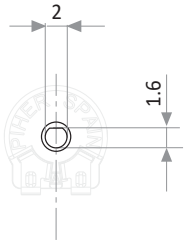
STANDARD CONFIGURATION

	PS-10	PSC-10
Life	1.000 cycles	
Non-flammable plastic	no	yes
Detents	none	
Packaging	reel	
Wiper Position	initial	
Housing color	dark grey	brown
Rotor color	dark grey	brown
Torque	0.4 to 2 Ncm	
Linearity	not controlled	
Shafts/thumb wheels	Available separately, see PT-10 datasheet for possible options	

PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

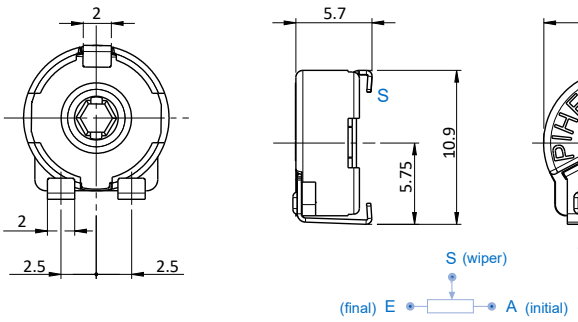
ROTORS

L Screwdriver	M Hexagonal	G Hexagonal	K Cross slot	R
				

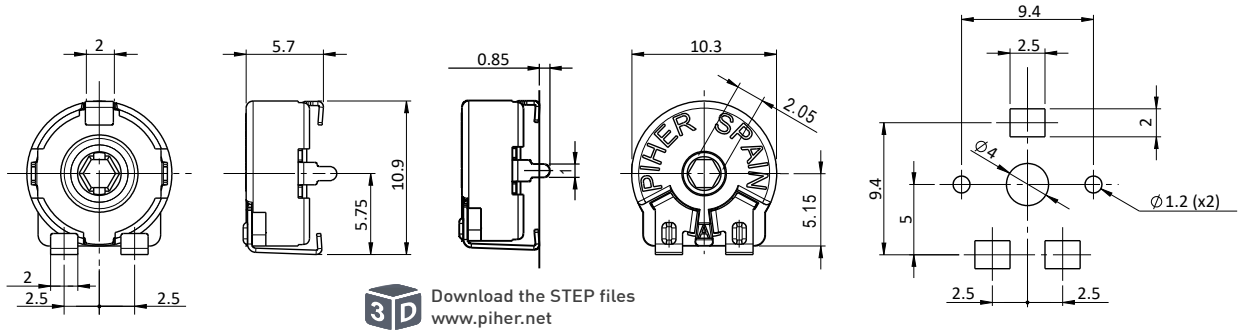
Default delivery is at initial position. Wipers are shown positioned at 50% for the picture.

MOUNTING METHOD

V50 - without centering pins



V60 - with centering pins



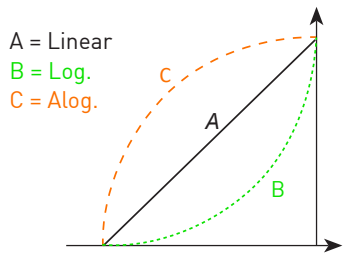
Download the STEP files
www.piher.net

STANDARD RESISTANCE-VALUES AND TOLERANCES

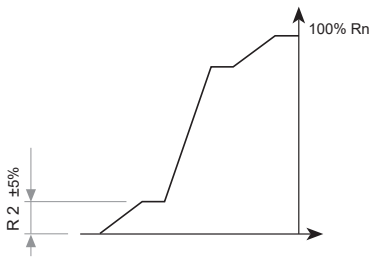
Resistance Ω	100	200	220	250	470	500	1K	2K	2.2K	2.5K	4.7K	5K	10K	20K	22K	25K	47K	50K	100K	200K	220K	250K	470K	500K	1M	2M	2.5M	4.7M	5M
Order Code	101	201	221	251	471	501	102	202	222	252	472	502	103	203	223	253	473	503	104	204	224	254	474	504	105	205	255	475	505
Tolerance (PS-10)	30%																									n/a			
Tolerance (PSC-10)	20%																									30%			

TAPERS

Standard



Example: special custom taper



For PS-10 only linear taper. For more information on custom tapers contact Piher Sensing Systems.

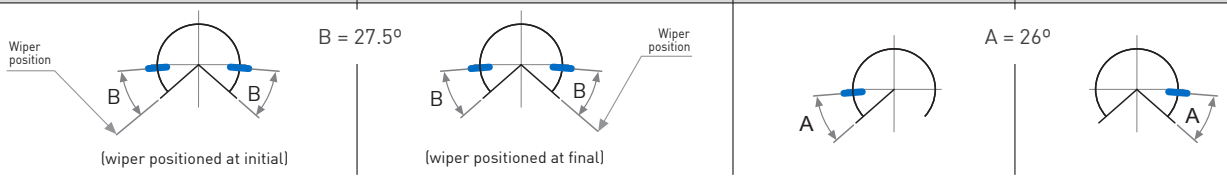
PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

DETENTS

PAM	P1i	P1F	P02	P03	P04	P05
P06	P07	P08	P09	P10	P11	P16

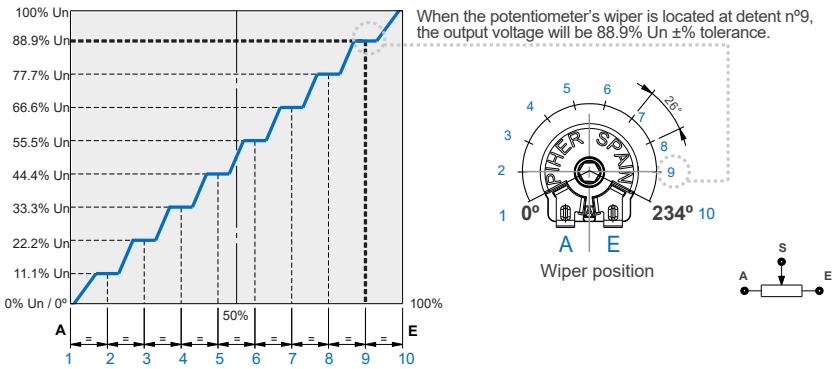
PAI	PAF	PID	PFD



Relative detent positions along total mechanical travel

- Standard mechanical life is 500 cycles.
- Long life versions are available upon request and have the following characteristics at Tª: Potentiometers with 1 to 3 detents up to 10K cycles; Potentiometers with 4 and more detents up to 5K cycles
- Different output voltage values can be matched at each detent position (see next section).
- Please consult your nearest Piher supplier if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.
- Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- For more than 16 detents or special detent positions please contact Piher Sensing Systems.

STEPPED OUTPUTS / CONSTANT VALUE ZONES

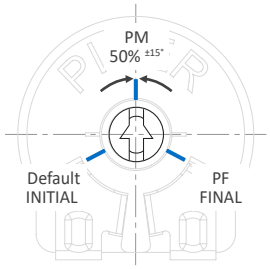


IMPROVED REPEATABILITY

Constant value zones can be combined with strategically located mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent position. This provides clear mechanical positions that are not only repeatable, but perfectly aligned electrical outputs at each of the (detent) angles. The detents also prevent output values from changing due to vibration or accidental rotor movements.
The result is a higher level of precision in controlling lighting, temperature, motor or other electronic control systems.

Contact Piher Sensing Systems for ordering information.

POSITIONING



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

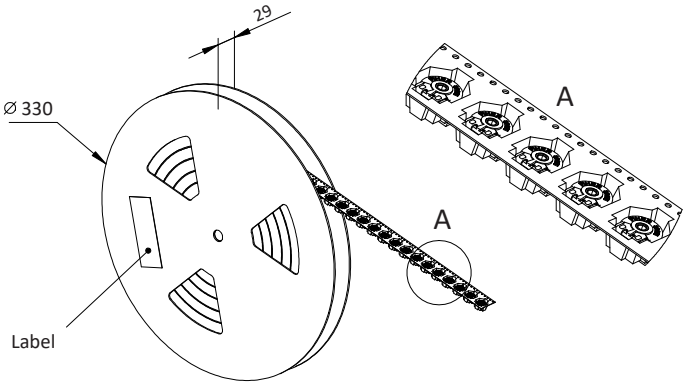
PS-10 / PSC-10

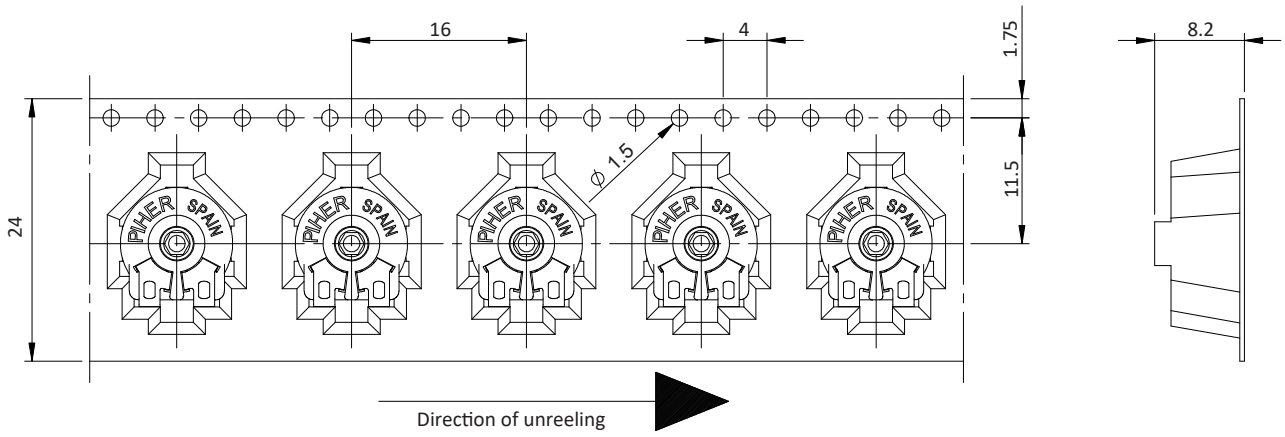
10-mm carbon / cermet SMD potentiometer

PACKAGING

Bulk (500 pcs/box)

Reel - embossed tape (500 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

IATF 16949 Automotive Quality Management CERTIFIED · ISO 9001 Quality Management Systems CERTIFIED · ISO 14001 BUREAU VERITAS Certification · RoHS REACH compliant

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

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