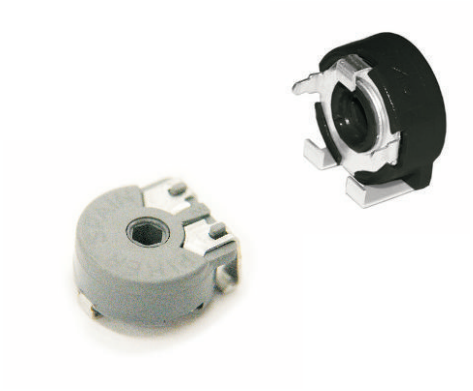
PIHER

10mm potentiometer SMD

10mm SMD Potentiometer



MAIN FEATURES

- Specifically designed for leadfree reflow soldering processes (excellent performance).
- Carbon resistive element.
- IP54 protection according to IEC 60529.
- Self extinguishable plastic UL 94V-0 (PS-10).
- Full traceability.
- Moisture sensitivity level 1 (PS-10).
- Embossed tape according to IEC 60286-3:2007
- Also upon request:
  - Wiper positioned at 50% or fully clockwise.
  - Long life model for low cost control potentiometer applications.
  - Mechanical detents.
  - Low torque versions.
  - Locating pins for accurate PCB positioning.
  - Shafts and knobs.

MECHANICAL SPECIFICATIONS

– Mechanical rotation angle:	235° ± 5°
– Electrical rotation angle:	220° ± 20°
– 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

* Others upon request

ELECTRICAL SPECIFICATIONS

– Value (*): 1kΩ to 1MΩ

– Tolerance (*): ± 30%

– Taper (*): Linear

– Nominal Power: 0.15W @ 50°C (122°F)

– Operating temperature: PSX-10: –25°C + 70°C
PS-10: –40°C + 85°C

– Residual resistance: ≤ 5.10^{-3} Rn

– Equivalent Noise Resistance: ≤ 3% Rn

HOW TO ORDER

STANDARD

PSX- 10	L	V50	102	A	3030
Series: PSX-10, PS-10	Rotors: G, L, M, K, R (See note 1)	Code: V50, V60 (See note 2)	Value: 102 = 1kΩ … 105 = 1MΩ	Taper: A = Lin.	Tolerance: 3030 = ± 30% (See note 3)

OPTIONAL EXTRAS

Life	Detents	Wiper position	Torque
E= Long life (See note 4)	PAM, P1I, P1F, P1 … P16 (See detent configurations)	PM = 50%, PF = Final	– = Standard, L = Low torque (See note 5)

NOTES:

(1) Rotor "R" not available for PSX-10

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

(3) Others upon request.

(4) Standard = 500 cycles. Long life = 10K cycles. Others upon request.

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

NOTE: The information contained here should be used for reference purposes only.

HOW TO ORDER CUSTOM DRAWING

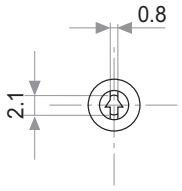
PS(X)-10LV50 + DRAWING NUMBER (Max. 16 characters)

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

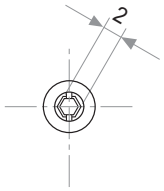
STANDARD OPTIONS

	PSX-10	PS-10
Detents	None	None
Rotor colour	Black	Dark grey
Housing colour	Black	Dark grey
Wiper position	Initial	Initial
Torque	Standard	Standard
Packing	Reel	Reel
Life	1000 cycles	1000 cycles

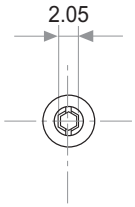
ROTORS



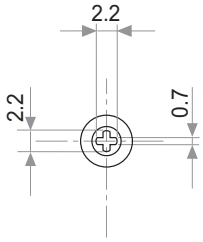
L = Screwdriver thru hole



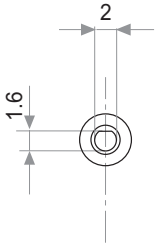
M = Hexagonal thru hole



G = Hexagonal thru hole



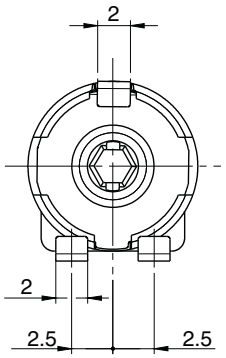
K = Cross slot thru hole

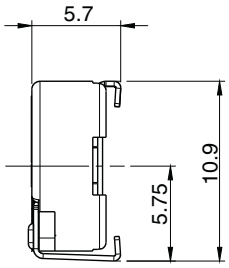


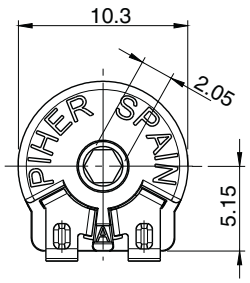
R = thru hole

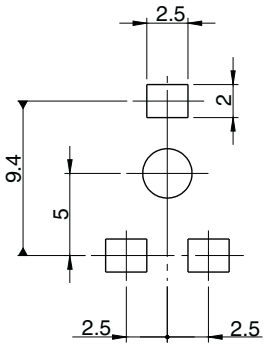
Note: wipers are shown positioned at 50%

DIMENSIONS (V50 version)

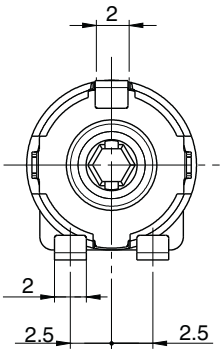


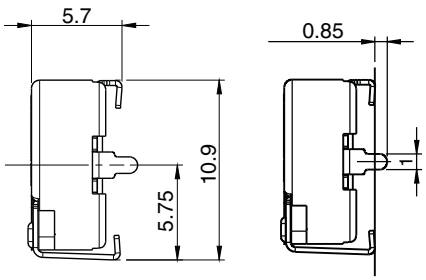


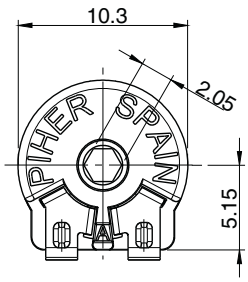


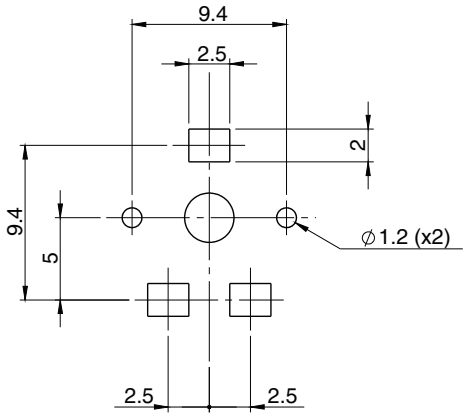


DIMENSIONS (V60 version - with centering pins)



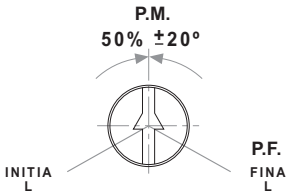




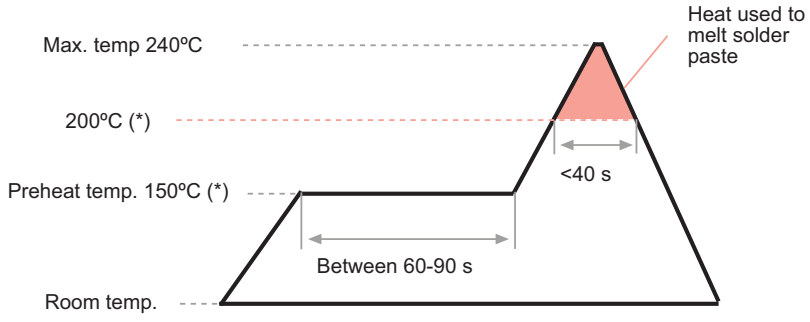


POSITIONING

Positioning (Std. Position = CCW)



PSX-10 RECOMMENDED REFLOW PROFILE

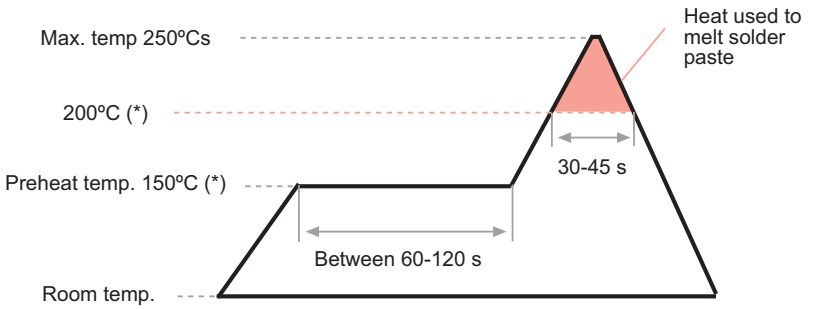


(*) Melting point temp. depends on solder properties

PSX-10 TESTS		TYPICAL VARIATIONS
ELECTRICAL LIFE	1.000 h. @ 50°C; 0.15 W	±10%
MECHANICAL LIFE (CYCLES)*	1000 @ 10 CPM ...15 CPM	±10 %
TEMPERATURE COEFFICIENT	–25°C; +70°C	±1000 ppm
THERMAL CYCLING	16 h. @ 85°C; 2h. @ –25°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.
NOTE: Out of range values may not comply these results. Please confirm with the factory all the information before designing in.

PS-10 RECOMMENDED REFLOW PROFILE



(*) Melting point temp. depends on solder properties

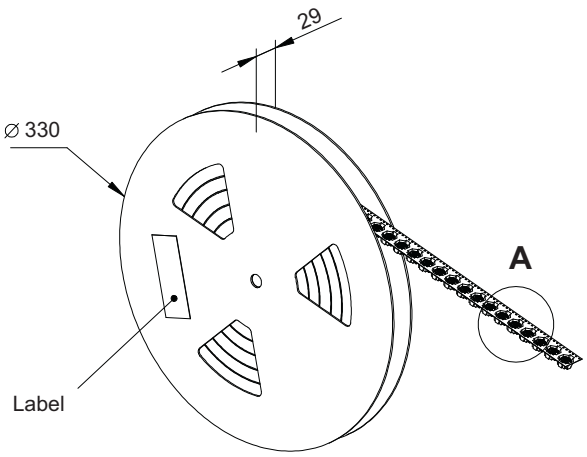
PS-10 TESTS		TYPICAL VARIATIONS
ELECTRICAL LIFE	1.000 h. @ 50°C; 0.15 W	±10%
MECHANICAL LIFE (CYCLES)*	500 @ 10 CPM ...15 CPM	±10 %
TEMPERATURE COEFFICIENT	–40°C; +85°C	±1500 ppm
	–25°C; +70°C	±1000 ppm
THERMAL CYCLING	16 h. @ 90°C; 2h. @ –40°C	±5 %
DAMP HEAT	500 h. @ 40°C @ 95% HR	±15 %
VIBRATION (for each plane X,Y,Z)	2 h. @ 10 Hz. ... 55 Hz.	±3 %

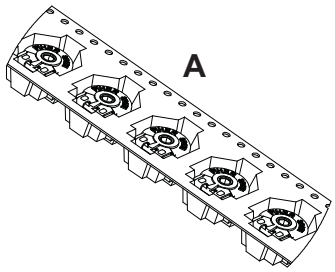
* Tests at room temperature. Other life cycles upon request.
NOTE: Out of range values may not comply these results. Please confirm with the factory all the information before designing in.

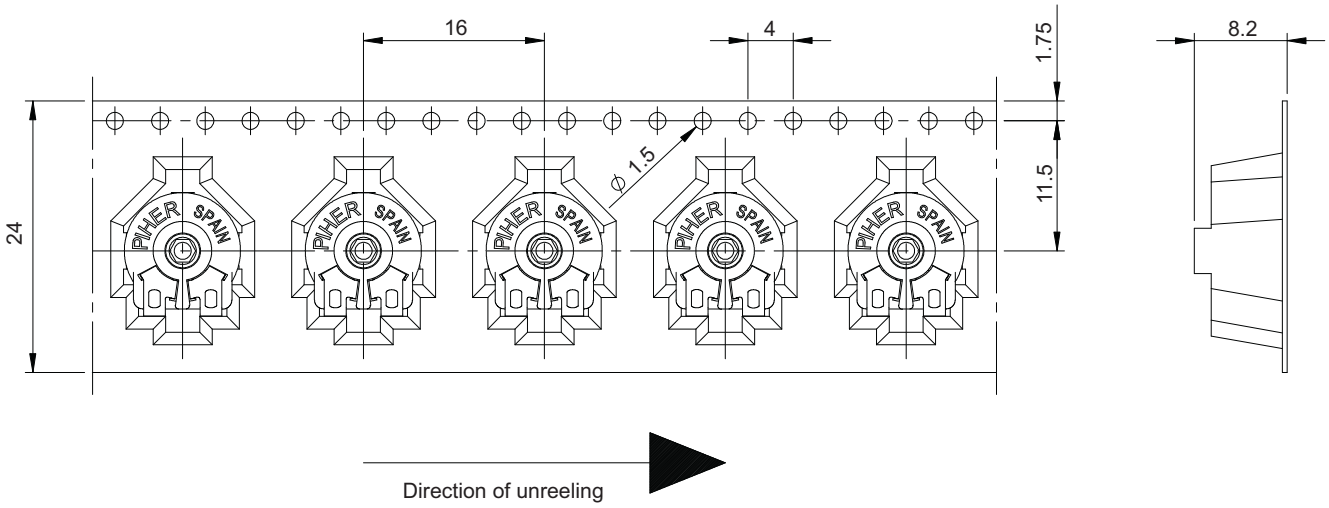
PACKAGING

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

EMBOSSED TAPE: 1000pcs / Reel







DETENTS CONFIGURATION EXAMPLES

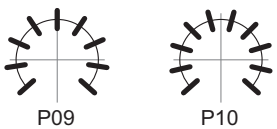
This innovative PT´s with detents family has been specifically developed to allow the integration of otherwise large and expensive external mechanisms into the body of the majority of the 6, 10 & 15 mm. potentiometer series thus allowing a high range of configurations: special tapers, tolerances, linearity,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

Strong and weak detents can be mixed as per customer´s request.

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

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



*For more than 10 detents versions please contact your nearest PIHER distributor. Mechanical and/or electrical features may be affected by detents. Please see our separate PTs with detents datasheet at www.piher.net

DETENTS WITH CONSTANT VALUE ZONES

PIHER´s potentiometers may feature special stepped outputs or 'constant voltage zones' for the 6, 10 and 15mm product families.

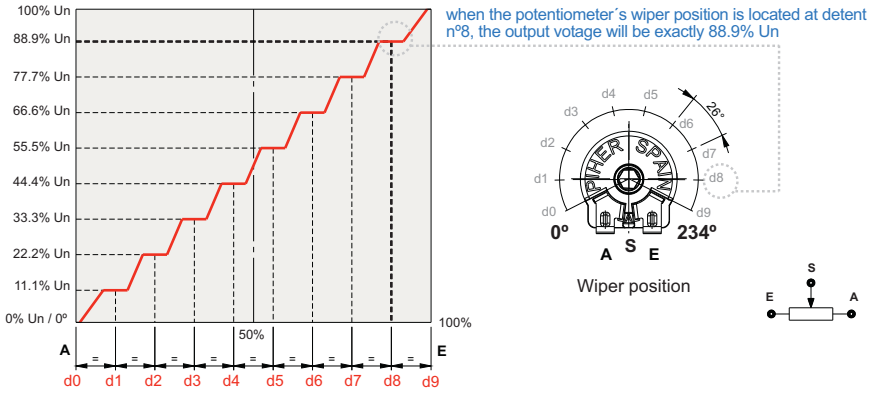
These constant voltage zones can be combined with PIHER's mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent's positions. The result is a higher level of precision in controlling lighting, temperature, motor or other electronic control systems.

In addition to established catalogue detent configurations, we will design and manufacture any other configuration on our tried-and-tested carbon/cermet & THM/SMD potentiometer technology and processes.

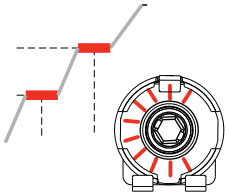
With its exacting control capabilities, our 10mm and 15mm potentiometers series are well suited for many consumer applications such as ovens, ranges, dishwashers, lighting (dimmers), power hand tools, washing machines and HVAC systems.

Constant value zones can be combined with strategically located stops matching the flat areas of the output.

10 stepped outputs version example:



Improved repeatability



By combining the constant value zones with the detents, engineers can align the same voltage values with each of the detent stops when rotating the control both forward and backward.

This provides clear mechanical positions that are not only repeatable, but perfectly aligned electrical outputs at each of the (detent) angles.

Piher´s detents also prevent output values from changing due to vibration or accidental rotor movements, furthering reliable control consistency.

Design tip. Cost-effectiveness

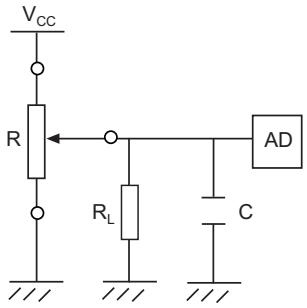
Absolute encoders can easily be replaced connecting the potentiometer to the microprocessor´s analogue input.

Main advantages

- ✓ Unique, non-overlapping values at each stop (detent position)
- ✓ Prevents output value change due to light vibration or accidental rotor micro-movements
- ✓ Fully customisable according to customer´s needs
- ✓ Cost effective replacement for absolute encoders

RECOMMENDED CONNECTIONS

Recommended connection scheme for Piher´s position sensors (voltage divider)



$R_L \approx 100 \times R$

Disclaimer

The product information in this catalogue is for reference purposes. Please consult for the most up to date and accurate design information.

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