

SMD versión available (PS-10)

MECHANICAL SPECIFICATIONS

- Mechanical rotation angle: $235^\circ \pm 5^\circ$
- Electrical rotation angle: $220^\circ \pm 20^\circ$
- 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 check availability.

** Up to 85°C depending on application.

FEATURES

- Carbon resistive element
- IP54 protection according to IEC 60529
- Polyester substrate
- Also upon request:
 - Wiper positioned at 50% or fully clockwise.
 - Supplied in magazines for automatic insertion.
 - Long life model for low cost control potentiometer applications
 - Self extinguishable plastic UL 94V-0
 - Cut track option
 - Special tapers
 - Mechanical detents
 - Low torque version
 - Special switch option
 - 3% Linearity and 100K cycles mechanical life

ELECTRICAL SPECIFICATIONS

- Range of values*: $100\Omega \leq R_n \leq 5\text{ M}$ (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)
- Tolerance*: $100\Omega \leq R_n \leq 1\text{M}\Omega$ $\pm 20\%$
 $1\text{M}\Omega < R_n \leq 5\text{M}\Omega$ $\pm 30\%$
- Max. Voltage: 200 VDC (lin) 100 VDC (no lin)
- Nominal Power 50°C (122°F) (see power rating curve)
0.15 W (lin) 0.07 W (no lin)
- Taper* (Log. & Alog. only $R_n \geq 1\text{K}$) Lin ; Log; Alog.
- Residual resistance*: $\leq 0.5\%$ R_n (5 Ω min.)
- Equivalent Noise Resistance: $\leq 3\%$ R_n (3 Ω min.)
- Operating temperature**: -25°C + 70°C (-13°F + 158°F)

HOW TO ORDER

OPTIONAL EXTRAS									
PT 10	L	H01	101	A	2020				S
Series	Code	Mounting Method	Taper	Life	Detents	Shaft/Thum.	Shaft/rotor colour	Torque	
PT-10	H01 H05 H02 H07 H10 V05 V10 V11 V13	H2.5 H5 H2.5P H3.8 H5P V5 V VP VJ	A = Lin. B = Log. C = Alog.	E = Long life (See note 5)	PAI PAM PAF P1I P1F P02 : P16	01 = Fig. 1 02 = Fig. 2 : 17 = Fig. 17	RO = Red NE = Black VE = Green AM = Yellow AZ = Blue MA = Brown GR = Grey NA = Orange CR = Cream (See note 8)	– = Standard L = Low Torque (See note 9)	
Rotors	(See note 2 / SMD version available)		Value	Tolerance	Cut track	Magazine	Flammability	Wiper position	
B G K L M R W X Y Z (See note 1)			101 = 100 Ω : 504 = 500 K : 505 = 5 M 000 = CM (See note 3)	2020 = $\pm 20\%$ 3030 = $\pm 30\%$ (See note 4)	PCI = Initial PCF = Final	T (See note 6)	I = Non flammable (See note 7)	PM = 50% PF = Final	

NOTES:

- "Z" adjustment only available on "H" versions. Rotor "G" only available in purple (shaft/rotor colour "VI").
- Terminals styles: "P" & "J" are crimped. V=Vertical adjust; H=Horizontal Adjust. H07 mounting: available with brass leads only.
- Value Example: Code: 10 1 100 Ω 000 = CM = Switch version (contact us)
 Numb of zeros
 First two digits of the value.
- Non standard tolerance, check Example: +7% Code: 07 05
 -5% negative tolerance
 positive tolerance
- Standard = 1000 cycles • Long = 10K cycles
 Others check availability.
- Magazines: not available with the H10, V05 and V13 models, nor with adjustment types X, W, Y, Z.
- Non flammable: housing, rotor and shaft. According to UL 94V-0
- Colour shaft/rotor:
 - Potentiometer without shaft: only rotor
 - Potentiometer with shaft: only shaft
 - Cream colour only available in standard plastic.
- Low Torque: $\leq 1\text{ Ncm}$. 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

PT-10 LH 01 + DRAWING NUMBER (Max. 16 characters)

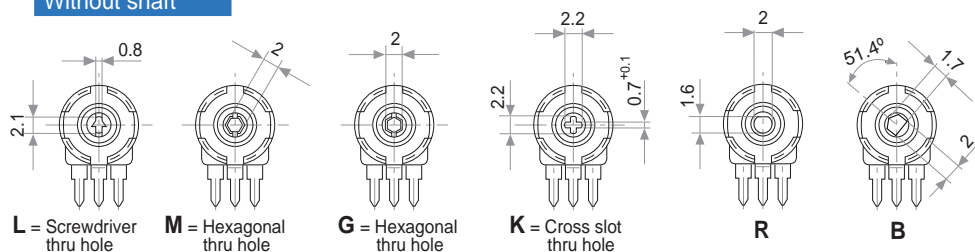
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.

STANDARD OPTIONS

Cut track	-----	No
Detents	-----	None
Packing	-----	Bulk
Non flammable	-----	No
Rotor colour	-----	White
Shaft colour	-----	Natural
Wiper position	-----	Initial
Torque	-----	Standard
Life	-----	1000 cycles

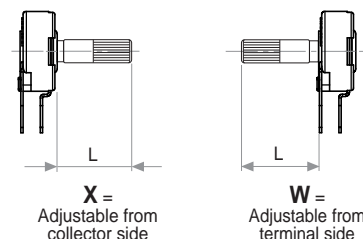
ROTORS

Without shaft

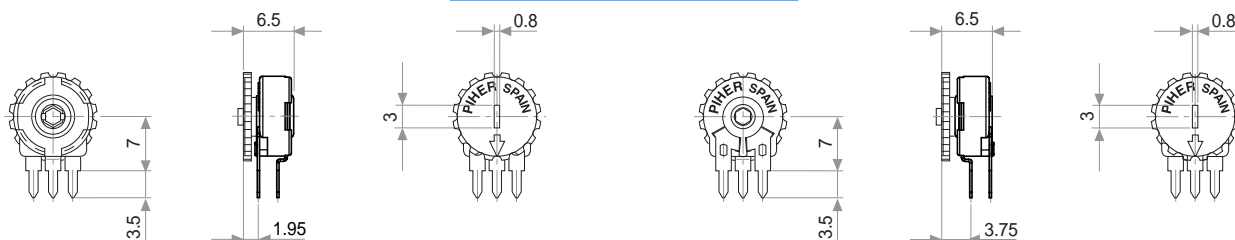


Wipers positioned at 50%

With shaft



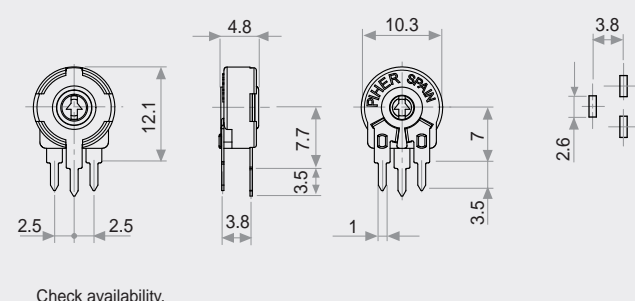
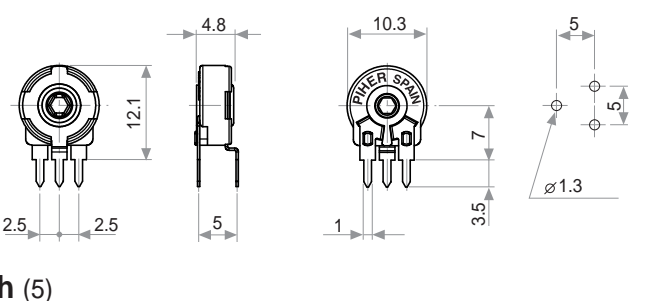
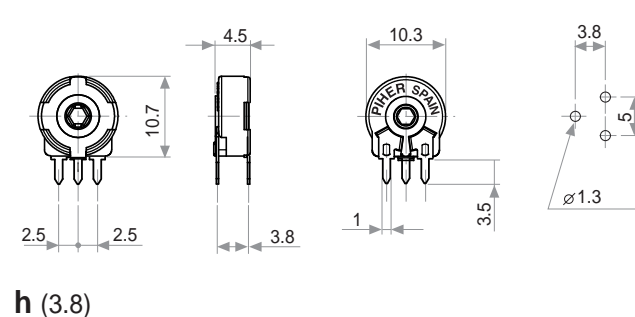
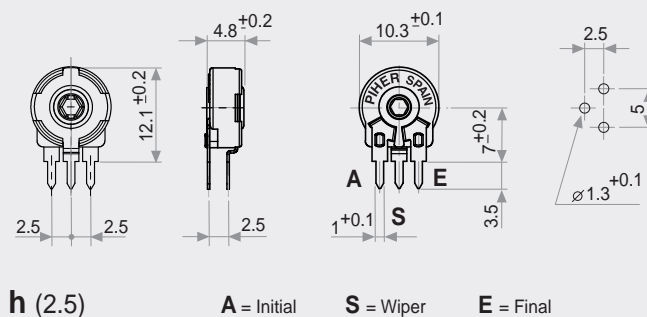
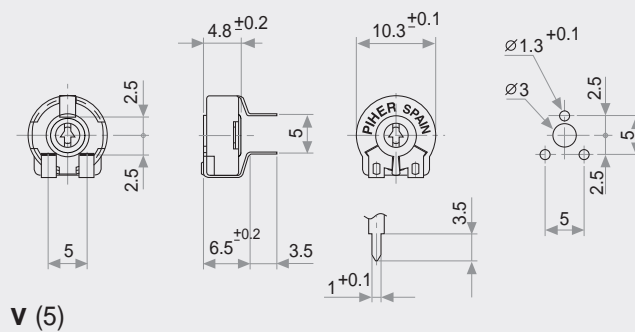
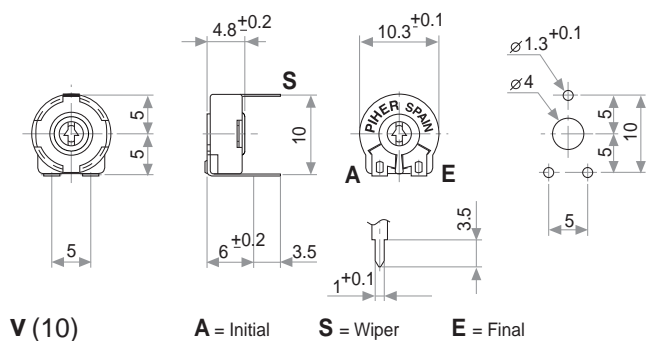
With thumbwheel



MOUNTING METHODS

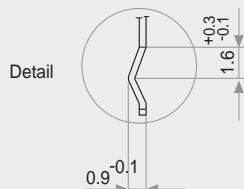
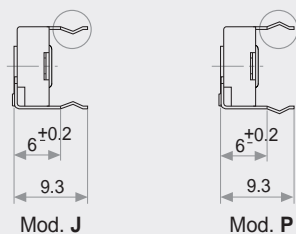
v = horizontal mount – vertical adjust

h = vertical mount – horizontal adjust

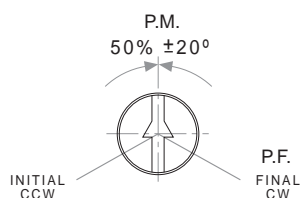


OPTIONS

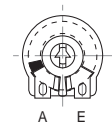
Crimped terminals



Positioning (Std. Position = CCW)



CUT TRACK
CCW on-off (A)

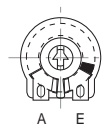


A = Initial

E = Final

S = Wiper

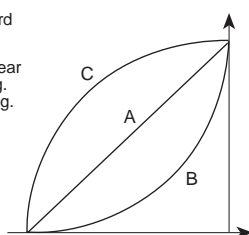
CW on-off (E)



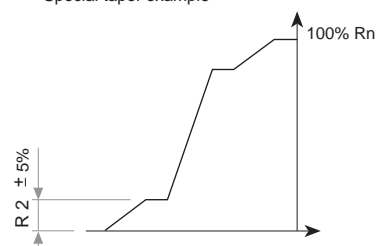
TAPERS

Standard

A = Linear
B = Log.
C = Alog.



Special taper example



NOTE = Please note relative terminal positions when ordering non linear tapers.

TESTS

TYPICAL VARIATIONS

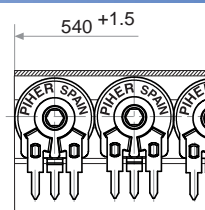
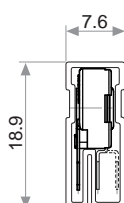
ELECTRICAL LIFE	1.000 h. @ 50°C; 0.15 W	±5 %
MECHANICAL LIFE (CYCLES)	1000 @ 10 CPM ... 15 CPM	±3 % (Rn < 1 M Ω)
TEMPERATURE COEFFICIENT	-25°C; +70°C	±300 ppm (Rn < 100 K)
THERMAL CYCLING	16 h. @ 85°C; 2h. @ -25°C	±2.5 %
DAMP HEAT	500 h. @ 40°C @ 95% HR	±5 %
VIBRATION (for each plane X,Y,Z)	2 h. @ 10 Hz. ... 55 Hz.	±2 %

NOTE: Out of range values may not comply these results.

PACKAGING

BOXES

Model	Units
Without shaft	1000 (80 x 85 x 185 mm.)
With thumbwheel	800 (80 x 85 x 185 mm.)
With shaft	400 (80 x 85 x 185 mm.)

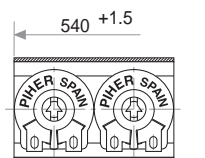
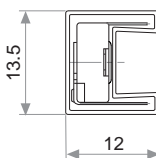


Magazines for PT-10 h 2.5; h 5

Also crimped term. h 2.5 P

AUTOMATIC INSERTION

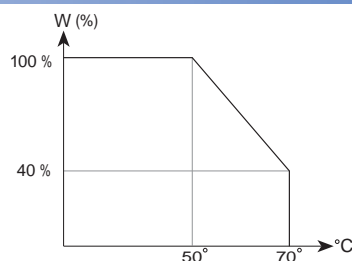
Magazines	Units per magazine
PT-10H & PT-10V	50 Pieces



Magazines for PT-10 V

Also crimped term. VP

POWER RATING CURVE



SHAFTS (for G and M rotor types, top view)

Shafts, knobs & thumbwheels are delivered at random position. Positioning available check availability.
If you wish to use your own custom plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

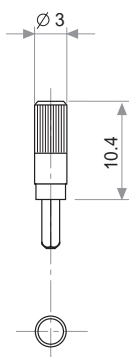


Fig. 1 / Ref. 5016

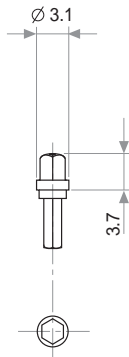


Fig. 2 / Ref. 5053

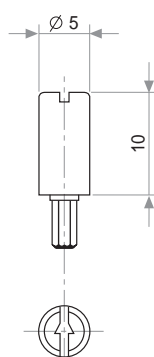


Fig. 3 / Ref. 5012

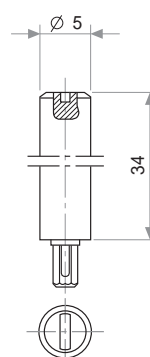


Fig. 4 / Ref. 6053

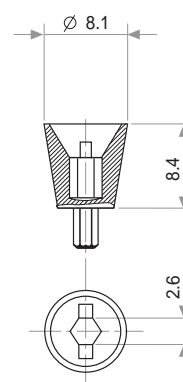


Fig. 6 / Ref. 5035

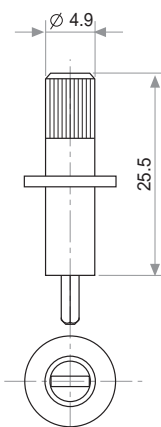


Fig. 7 / Ref. 5115

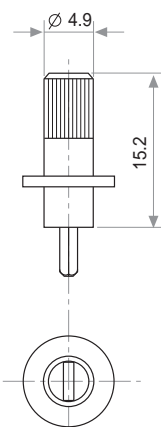


Fig. 8 / Ref. 5116

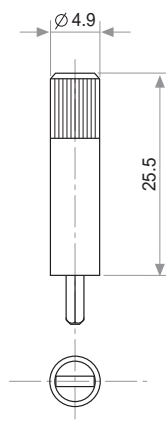


Fig. 9 / Ref. 5119

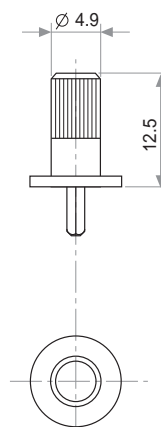


Fig. 10 / Ref. 5120

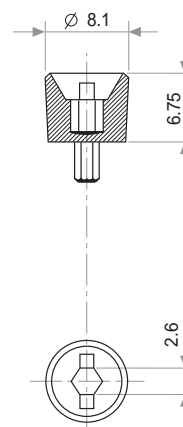


Fig. 11 / Ref. 5027

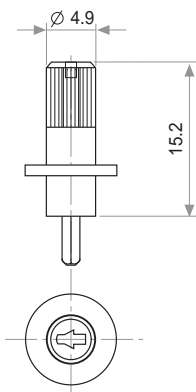


Fig. 12 / Ref. 6052

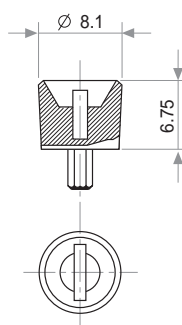


Fig. 13 / Ref. 5121

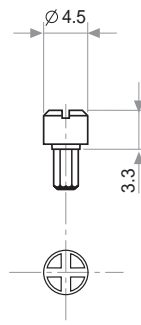
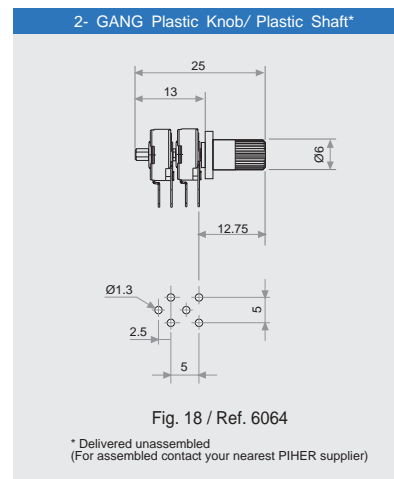


Fig. 14 / Ref. 5055



THUMBWHEELS (for G and M rotor types, top view)

Shafts, knobs & thumbwheels are delivered at random position. Positioning available check availability.

THUMBWHEEL

For R rotor type only

Marking: configurable number of positions.

Example of four positions marking:

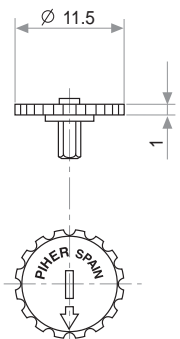


Fig. 5 / Ref. 5034

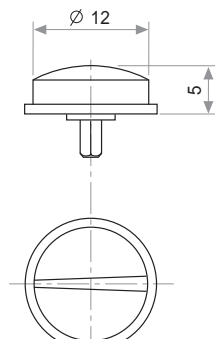


Fig. 15 / Ref. 6008

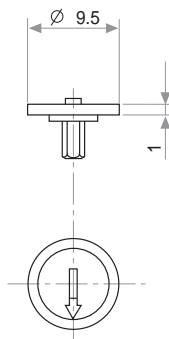


Fig. 16 / Ref. 5039

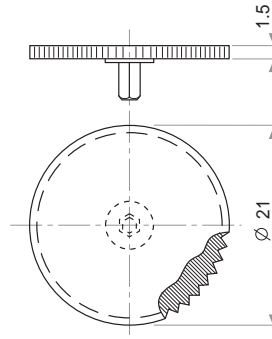
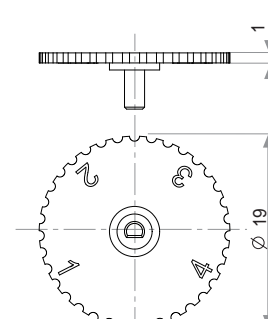


Fig. 17 / Ref. 5062



check availability

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

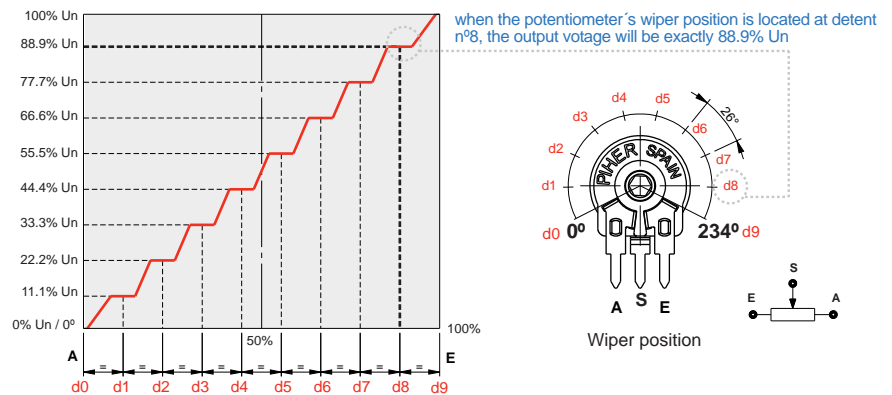
These constant voltage zones can be combined with PIHER's mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent's positions. The result is a higher level of precision in controlling lighting, temperature, motor or other electronic control systems.

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.

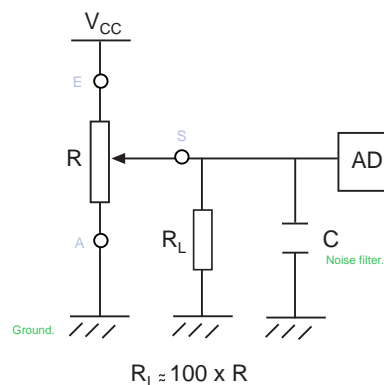


Main advantages

- ✓ 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

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



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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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