

# 6 mm carbon trimmer potentiometer PT6



## Mechanical specifications

Mechanical rotation angle		$235^\circ \pm 5^\circ$
Electrical rotation angle		$200^\circ \pm 20^\circ$
Torque	Rotational	0.2 to 2 Ncm . (0.3 to 2.7 in - oz)
	Stop	> 4 Ncm. (>5.6 in-oz)
Life*		Up to 10K cycles

## Electrical specifications

Range of values *		$220\Omega \leq R_n \leq 5M\Omega$ (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)
Tolerance *	$220\Omega \leq R_n \leq 1M\Omega$	$\pm 20\%$
	$1M\Omega \leq R_n \leq 5M\Omega$	$\pm 30\%$
Max. voltage		100 VDC (lin) 50 VDC (no lin)
Nominal power 50°C (122°F) (see power rating curve)		0.1 W (lin) 0.05 W (no lin)
Taper *		Lin; Log; Alog (Log. & Alog. only $R_n > 1K$ )
Residual resistance*		$\leq 0.5\% R_n$ (5 $\Omega$ min.)
Equivalent noise resistance		$\leq 3\% R_n$ (3 $\Omega$ min.)
Operating temperature **		-25°C to +70°C (-13°F to + 158°F)

\* Others: check availability.

\*\* Up to 85°C depending on application.

## Main features

- Carbon resistive element.
- IP54 protection according to IEC 60529.
- Polyester substrate.
- SMD version available (see PS-6 datasheet).
- Wiper positioned at initial, 50% or fully clockwise.
  
- Also upon request:
  - Supplied in magazines for automatic insertion.
  - Long life model (10K cycles).
  - Housing available in self extinguishable plastic (UL94V0).
  - Mechanical detents.

## Description

The PT-6 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, timer relays, robotics, motion controllers, home and building automation and medical equipment control panels.

This datasheet shows you the basics of the PT-6 potentiometer that is quite versatile and easy to tailor. Do not hesitate to contact Piher for advice.

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## How to order

### Optional extras

<b>PT-6</b> Series	<b>K</b> Rotors A K M Q W X (See note 1)	<b>V</b> Mounting method H = Horizontal adjust V = Vertical adjust	<b>221</b> Value 221 = 220Ω 505 = 5M 000 = CM (See note 2)	<b>A</b> Taper A = Lin. B = Log. C = Alog.	<b>2020</b> Life - = 1K cycles E = 10 K cycles (See note 4)	<b>Life</b> - = 1K cycles E = 10 K cycles (See note 4)	<b>Packaging</b> - = Bulk T = Magazines (See note 5)	<b>Knob/rotor colour</b> - = White AM = Yellow AZ = Blue CR = Cream GR = Grey IN = Not coloured NE = Black RO = Red VE = Green (See note 6)	<b>Wiper position</b> - = Initial PM = 50% PF = Final	<b>Crimping</b> - = Crimped terminals SC = Not crimped
						<b>Detents</b> - = None P04 P05 P06 P07 P08 P10	<b>Shaft/Knob</b> - = Fig. 1 02 = Fig. 2 03 = Fig. 3 04 = Fig. 4 05 = Fig. 5 (Use this option for rotors W or X only)			

**NOTES:**

- (1) Adjust. type: «X» is only available with horizontal adjusting method.
- (2) Value: - Code:  $\frac{22}{1} = 220 \Omega$   
 - 000 = CM = switch SPDT version (contact us for further information)



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
How to 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
Standard tolerance	30%													20%										30%					

- (3) Tolerance (non standard, custom): check availability..... Code eg.:  $\frac{+7}{-5} = \frac{07}{05}$   
 - Negative tolerance  
 - Positive tolerance

- (4) Life: • Standard = 1000 cycles • Long = 10K cycles (non-detented models)
- (5) Only for "V" mounting method. "W" rotor with shaft Fig. 2 is not available in magazines .
- (6) Potentiometer without knob or shaft, only the rotor. Potentiometer with knob or shaft, only the knob/shaft. The default colour for the knob and rotor is white.

Online product configurator: <https://piher.net/configurator/pt6-6-configurator-potentiometer/>

### How to order examples

**PT6KH-103A2020**  
6mm potentiometer with rotor "K" (cross shape), H mounting method (horizontal adjustment), 10K resistive value, linear taper, 20% resistive tolerance and crimped terminals.

**PT6WV-104A1010-5NE-SC**  
6mm potentiometer with factory pre-inserted knob, V mounting method (vertical adjustment), 100K resistive value, linear taper, 10% resistive tolerance, black knob ref. 6148 and straight terminals (not crimped).

### Standard default options

Mechanical life	-----	1000 cycles
Crimping	-----	Yes
Packing	-----	Bulk
Rotor colour	-----	White
Wiper send position	-----	Initial
Knob colour	-----	White
Detents	-----	None

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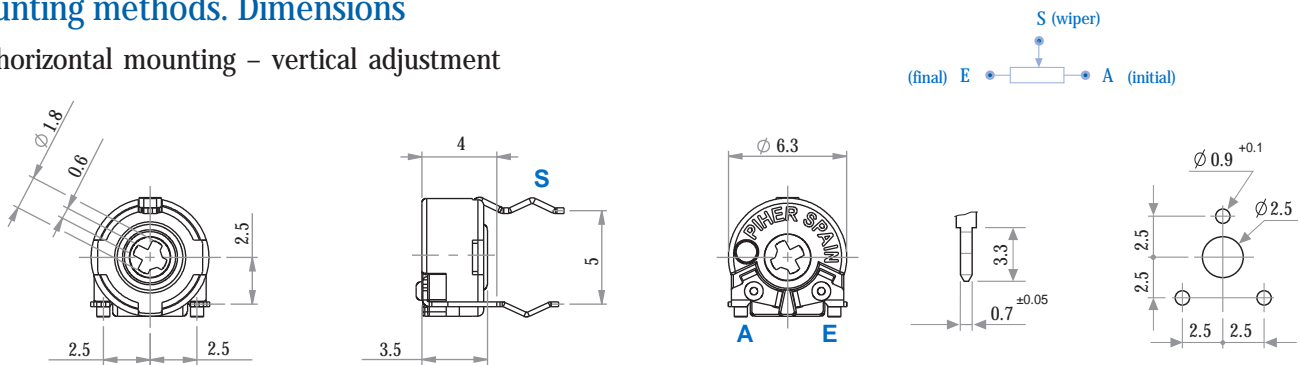
## Rotors



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

## Mounting methods. Dimensions

V = horizontal mounting – vertical adjustment



H = vertical mounting – horizontal adjustment



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## Crimped terminals (detail A)



This is the default terminals type.

## Not-crimped terminals dimensions



Please indicate "SC" at the end of the part number for this version.



Download the STEP file here:  
<https://piher.net/piher/?p=894>

## SMD versions

SMD / SMT version available. See [PS-6](#) and [N-6](#) datasheets at: [www.piher.net](http://www.piher.net)



## Standard Tapers



## Detents / Stop positions



— Relative detent positions along the total mechanical travel.

### NOTES FOR DETENTED VERSIONS

- All detented versions will be studied case by case. Contact Piher for leadtimes and availability.
- Others: check availability. Unless otherwise specified the detents are evenly spaced (using the end points as reference).  
For more than 10 detents versions please contact Piher for more information.
- Standard mechanical life: 100 cycles.
- Long life versions are available under request. Contact Piher for more information.
- Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- The colour of the rotor will be **violet**.

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## Knobs/Shfts

By default shafts, knobs & thumbwheels are delivered unassembled.

Mounted shafts, knobs & thumbwheels are delivered at random position. Custom positioning available.

If you wish to use your own plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

Ref.: 5155 / Fig. 1

Default knob. Standard colour: white.



Ref.: 6132 / Fig. 2

Shaft. Not suitable for magazine packaging



Ref.: 5141 / Fig. 3

Colour: grey. For other colours check availability.



Ref.: 6172 / Fig. 4

Colour: grey. For other colours check availability.



Ref.: 6148 / Fig. 5



Ref.: 6160 / Fig. 6



## Positioning

Default position = CCW



Dual gang version . Ref 6060

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## Packaging

### BOXES / BULK

Model	Units per box
All	1.000



### AUTOMATIC INSERTION

Magazines	Units per magazine
PT-6 V & PT-6 WV	80 Pieces

### Magazines for PT-6 V with or without crimping.



## Tests

Test	Conditions	Typical variations
Electrical life	1.000 h. @ 50° C; 0.25 W	±5 %
Mechanical life (cycles)	1000 @ 10 CPM ...15 CPM	±3 % (Rn < 1 M )
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 %

Out of range values may not comply these results

## Typical variations

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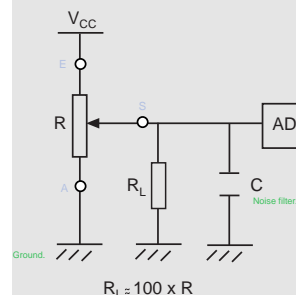
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## Recommended connections

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



## Power rating curve



## Contact

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