

# 6 mm carbon trimmer potentiometer PT6



## 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.

## 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.

## 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

**PT-6** **K** **V** - **221** **A** **2020**

Series: PT-6

Rotors: K  
A  
M  
Q  
W  
X  
(See note 1)

Mounting method: V  
H = Horizontal adjust  
V = Vertical adjust

Taper: A  
A = Lin.  
B = Log.  
C = Alog.

Life: 2020  
- = 1K cycles  
E = 10 K cycles  
(See note 4)

Packaging: -  
- = Bulk  
T = Magazines  
(See note 5)

Knob/rotor colour: -  
- = White  
AM = Yellow  
AZ = Blue  
CR = Cream  
GR = Grey  
IN = Not coloured  
NE = Black  
RO = Red  
VE = Green  
(See note 6)

Wiper position: -  
- = Initial  
PM = 50%  
PF = Final

Value: 221 = 220Ω  
505 = 5M  
(See note 2)

Tolerance: 3030 = ± 30%  
2020 = ± 20%  
1010 = ± 10%  
0505 = ± 5%  
(See note 3)

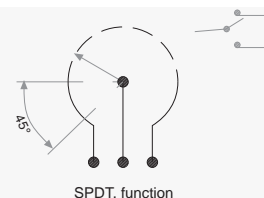
Detents: - = None  
P04  
P05  
P06  
P07  
P08  
P10

Shaft/Knob: - = Fig. 1  
02 = Fig. 2  
03 = Fig. 3  
04 = Fig. 4  
05 = Fig. 5  
(Use this option for rotors W or X only)

Crimping: - = Crimped terminals  
SC = Not crimped

#### NOTES:

- (1) Adjust. type: «X» is only available with horizontal adjusting method.
- (2) Value: - Code: 22 | 1 = 220 Ω  
Number of zeros  
First two digits.  
- 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.: +7 -5 = 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

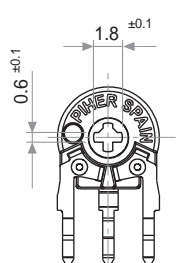
6mm potentiometer with factory pre-inserted knob, V mounting method (vertical adjustment), 10K resistive value, linear taper, 10% resistive tolerance, black knob ref. 6148 and straight terminals (not crimped).

#### Standard default options

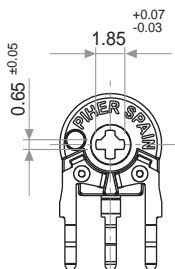
|                     |             |
|---------------------|-------------|
| Mechanical life     | 1000 cycles |
| Crimping            | Yes         |
| Packing             | Bulk        |
| Rotor colour        | White       |
| Wiper send position | Initial     |
| Knob colour         | White     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

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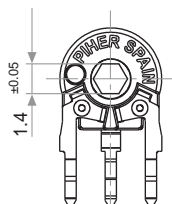
## Rotors



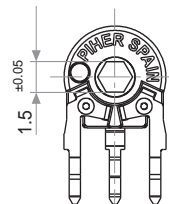
**K**  
Cross slot thru hole



**Q**  
Cross slot thru hole  
colour: pink

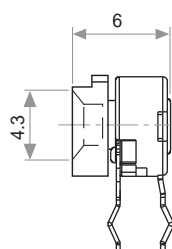
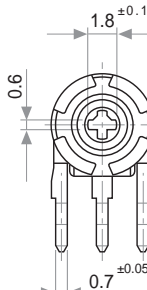
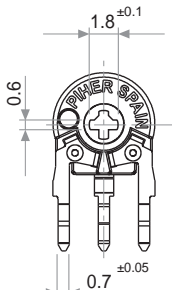
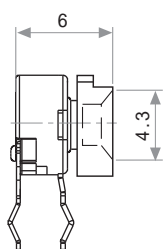


**M**  
Hexagonal thru hole



**A**  
Cross slot thru hole  
colour: pink

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



**X** = Adjustable from collector side

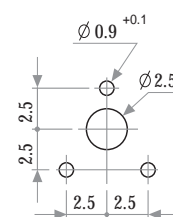
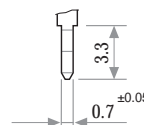
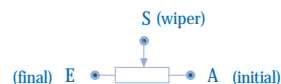
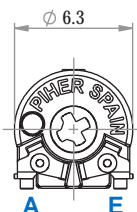
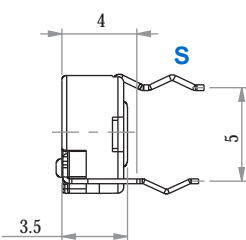
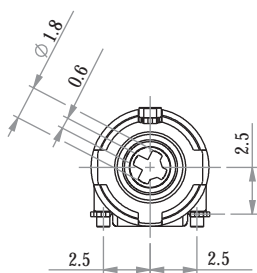
**W** = Adjustable from terminal side

With inserted  
knob / shaft.

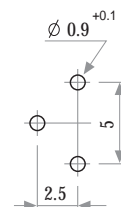
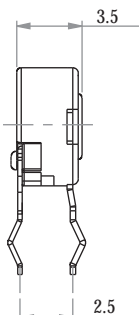
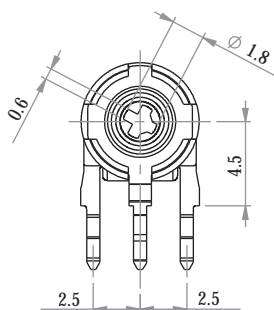
Default knob is  
ref. 5155 white.

## Mounting methods. Dimensions

V = horizontal mounting – vertical adjustment

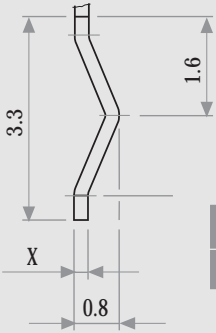


H = vertical mounting – horizontal adjustment



# 6 mm carbon trimmer potentiometer PT6

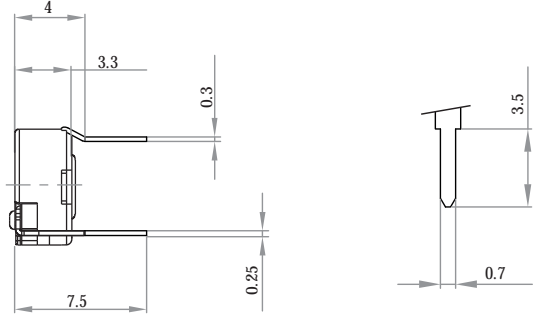
## Crimped terminals (detail A)



|               |      |
|---------------|------|
|               | X    |
| Terminals     | 0.25 |
| Collector (S) | 0.30 |

This is the default terminals type.

## Not-crimped terminals dimensions



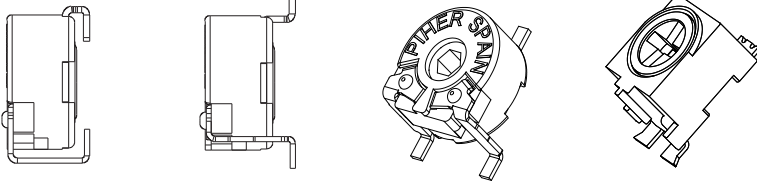
Please indicate "SC" at the end of the part number for this version.



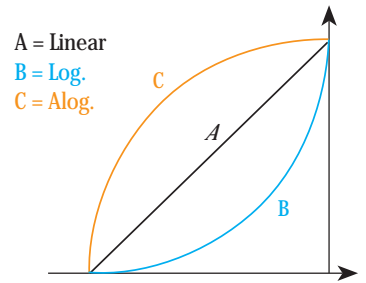
Download the STEP file here:  
<https://piher.net/piher/?p=894>

## SMD versions

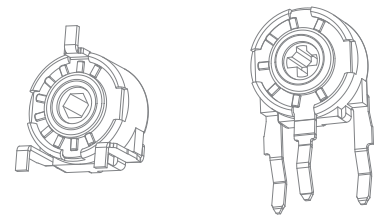
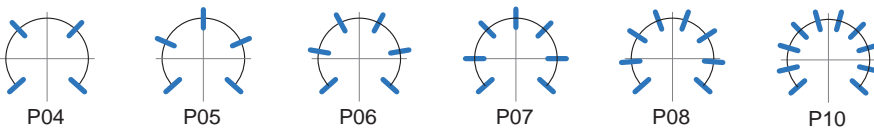
SMD / SMT version available. See PS-6 and N-6 datasheets at: [www.piher.net](http://www.piher.net)



## Standard Tapers



## Detents / Stop positions



— Relative detent positions along the total mechanical travel.

### NOTES FOR DETENTED VERSIONS

- (1) All detented versions will be studied case by case. Contact Piher for leadtimes and availability.
- (2) 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.
- (3) Standard mechanical life: 100 cycles.
- (4) Long life versions are available under request. Contact Piher for more information.
- (5) Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- (6) The colour of the rotor will be violet.

# 6 mm carbon trimmer potentiometer PT6

## Knobs/Shfts

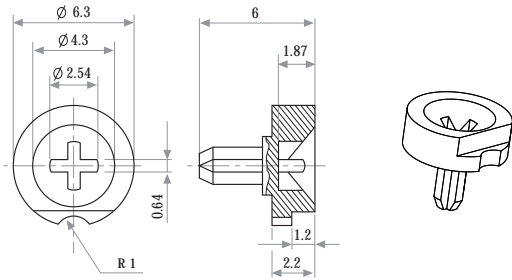
By default shafts, knobs & thumbwheels are delivered unassembled.

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.

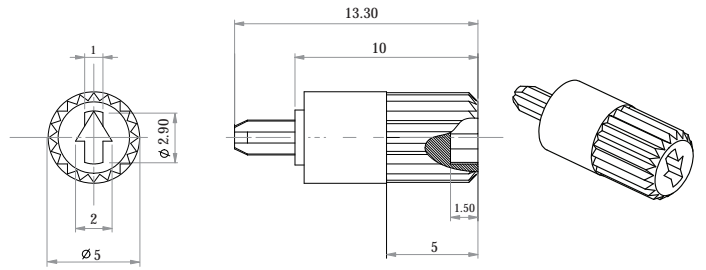
Ref.: 5155 / Fig. 1

Default knob. Standard colour: white.



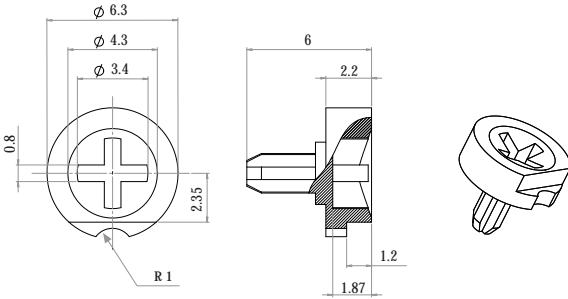
Ref.: 6132 / Fig. 2

Shaft. Not suitable for magazine packaging



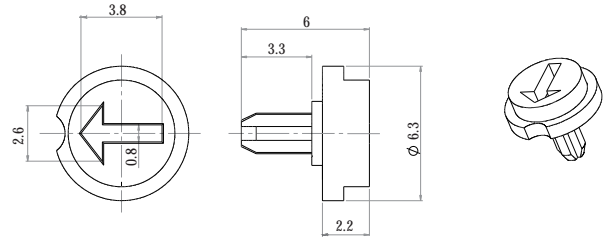
Ref.: 5141 / Fig. 3

Colour: grey. For other colours check availability.

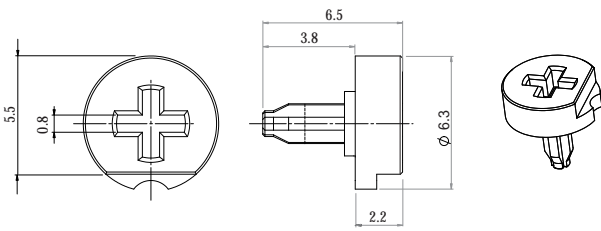


Ref.: 6172 / Fig. 4

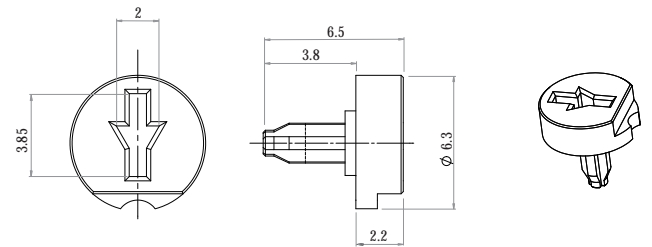
Colour: grey. For other colours check availability.



Ref.: 6148 / Fig. 5

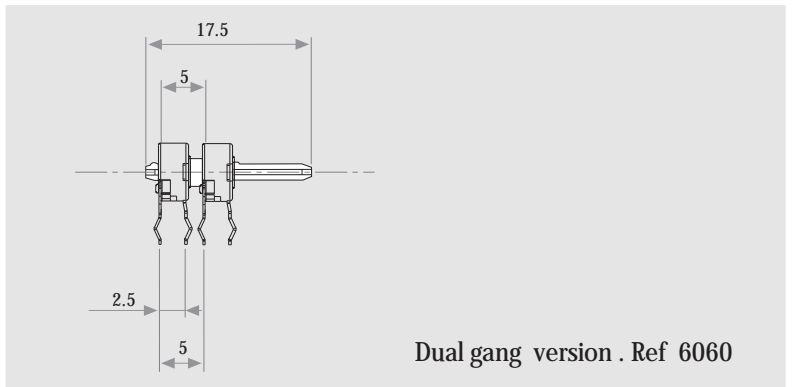
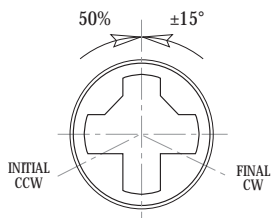


Ref.: 6160 / Fig. 6



## Positioning

Default position = CCW



Dual gang version . Ref 6060

# 6 mm carbon trimmer potentiometer PT6

### Packaging

BOXES / BULK

| Model | Units per box |
|-------|---------------|
|-------|---------------|

All

1.000



Box dimensions (mm):  
185x85x40

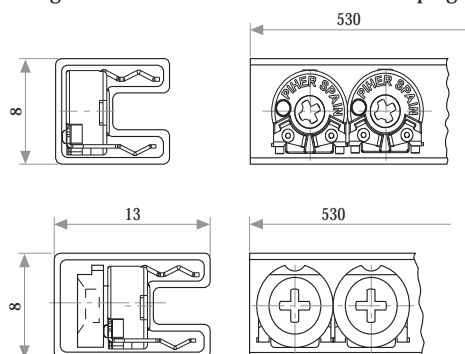
AUTOMATIC INSERTION

| Magazines | Units per magazine |
|-----------|--------------------|
|-----------|--------------------|

PT-6 V & PT-6 WV

80 Pieces

Magazines for PT-6 V with or without crimping.



### Tests

| 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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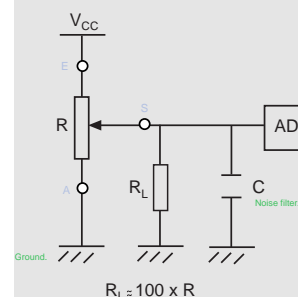


All Piher products can be adapted to meet customer's requirements.

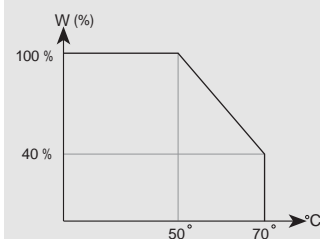
Please always use the latest updated datasheets and 3D models published at our website [www.piher.net](http://www.piher.net).

### 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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Poligono Industrial Municipal  
Vial T2 N°22  
31500 Tudela - Spain  
Tel: +34-948-820450

[sales@piher.net](mailto:sales@piher.net)

[www.piher.net](http://www.piher.net)

rev100620





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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### **Как с нами связаться**

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.