

# 6 mm carbon trimmer potentiometer PT6



## Mechanical specifications

|                           |                    |                                                             |
|---------------------------|--------------------|-------------------------------------------------------------|
| Mechanical rotation angle |                    | 235° ± 5°                                                   |
| Electrical rotation angle |                    | 200° ± 20°                                                  |
| Torque                    | Rotational<br>Stop | 0.2 to 2 Ncm . (0.3 to 2.7 in - oz)<br>> 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 *                                         | $220\Omega \leq R_n \leq 1M\Omega$ | ± 20%                                                                         |
|                                                     | $1M\Omega \leq R_n \leq 5M\Omega$  | ± 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*                                |                                    | ≤ 0.5% $R_n$ (5Ω min.)                                                        |
| Equivalent noise resistance                         |                                    | ≤ 3% $R_n$ (3Ω 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.

# 6 mm carbon trimmer potentiometer

## PT6

### How to order

PT-6

Series

K

Rotors

A  
K  
M  
Q  
W  
X  
(See note 1)

V

Mounting method

H = Horizontal adjust  
V = Vertical adjust

221

Value

221 = 220Ω  
505 = 5M  
000 = CM  
(See note 2)

A

Taper

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

2020

Life

- = 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

Crimping

- = Crimped terminals  
SC = Not crimped

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)

Optional extras

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)

(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.

Resistance Ω

How to order code

Standard tolerance

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

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

30%

20%

30%

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

| How to order examples                                                                                                                                                                                                                              | Standard default options          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>PT6KH-103A2020</b><br>6mm potentiometer with rotor “K” (cross shape), H mounting method (horizontal adjustment), 10K resistive value, linear taper, 20% resistive tolerance and crimped terminals.                                              | Mechanical life ----- 1000 cycles |
| <b>PT6WV-104A1010-5NE-SC</b><br>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). | Crimping ----- Yes                |
|                                                                                                                                                                                                                                                    | Packing ----- Bulk                |
|                                                                                                                                                                                                                                                    | Rotor colour ----- White          |
|                                                                                                                                                                                                                                                    | Wiper send position ----- Initial |
|                                                                                                                                                                                                                                                    | Knob colour ----- White           |
|                                                                                                                                                                                                                                                    | Detents ----- None                |

Piher Sensing Systems

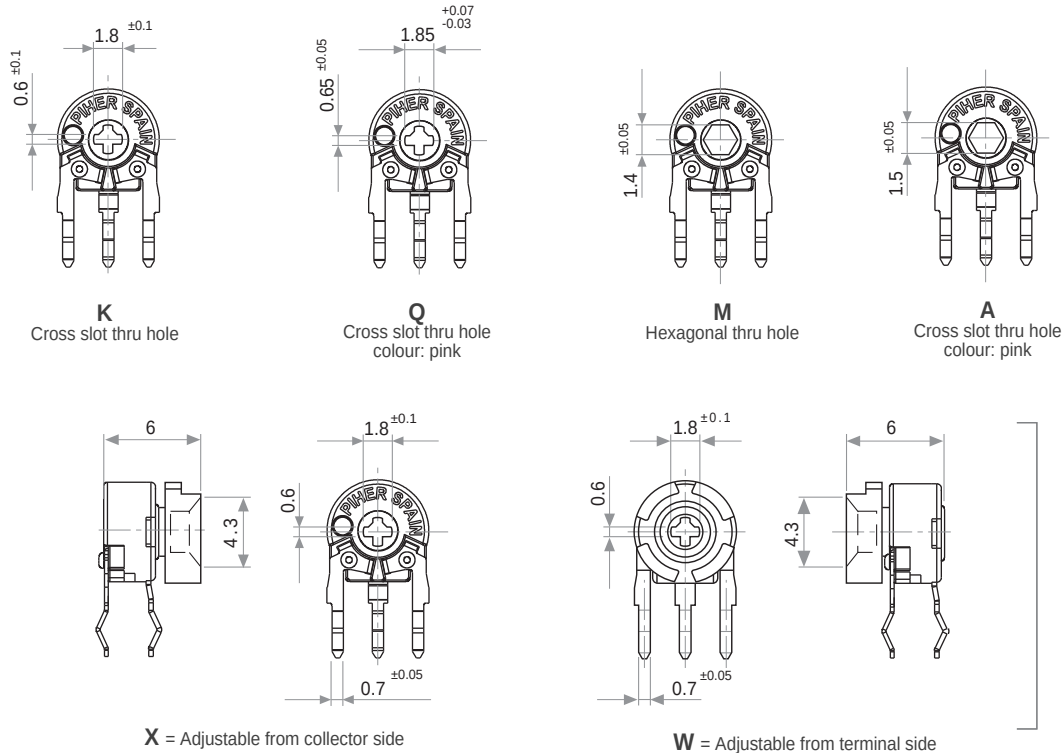
Potentiometers | Hall effect contactless sensors | Inductive sensors  
Printing electronics | Value added assemblies

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PIHER *sensing* systems

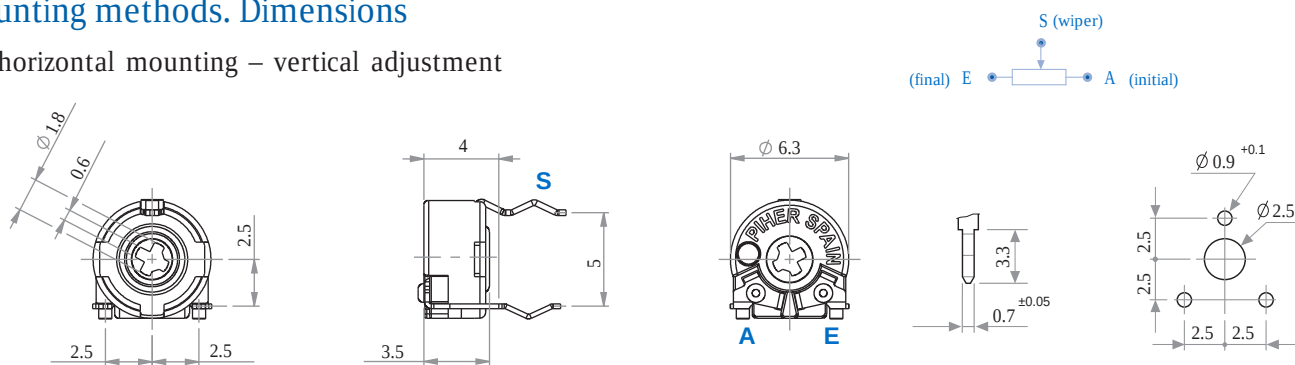
# 6 mm carbon trimmer potentiometer PT6

## Rotors

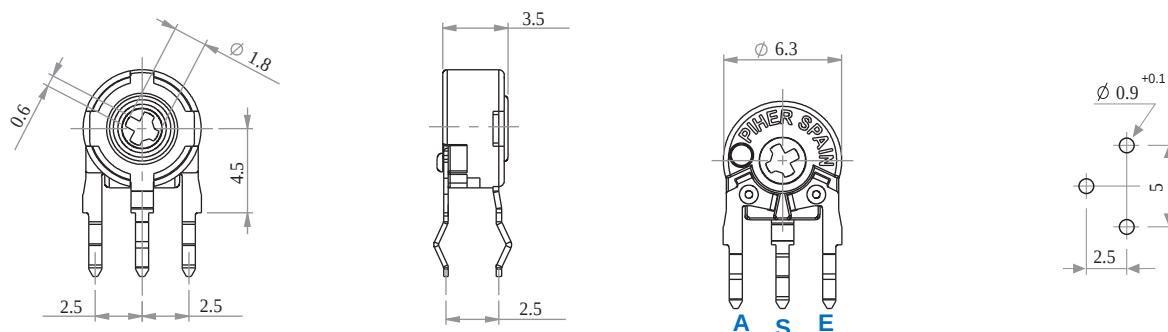


## Mounting methods. Dimensions

V = horizontal mounting – vertical adjustment

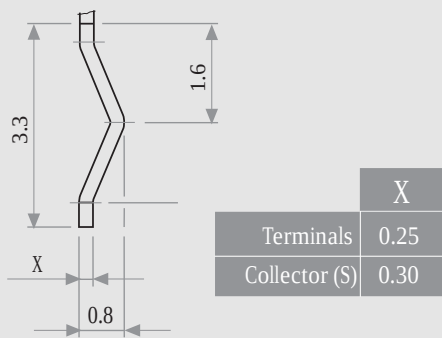


H = vertical mounting – horizontal adjustment



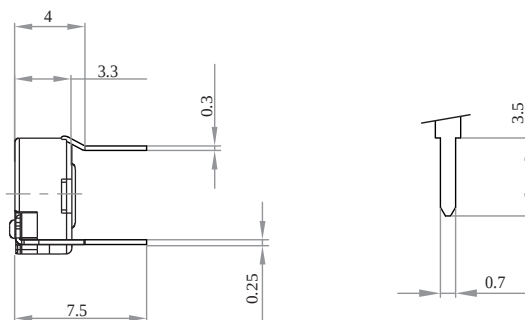
# 6 mm carbon trimmer potentiometer PT6

## Crimped terminals (detail A)



This is the default terminals type.

## Not-crimped terminals dimensions



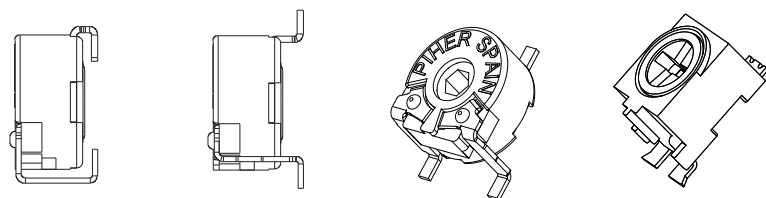
Please indicate "SC" at the end of the part number for this version.



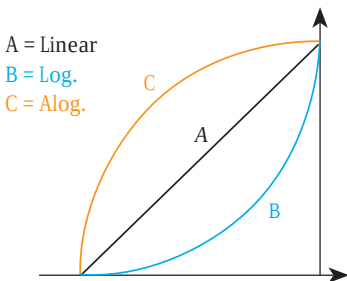
Download the STEP file here:  
<https://piher.net/piher/?p=894>

## SMD versions

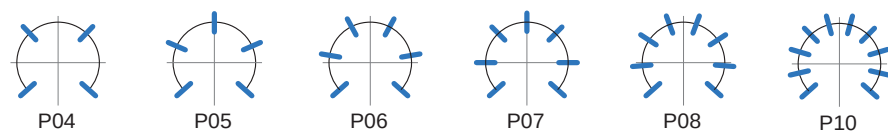
SMD / SMT version available. See [PS-6](#) and [N-6](#) datasheets at: [www.piher.net](http://www.piher.net)



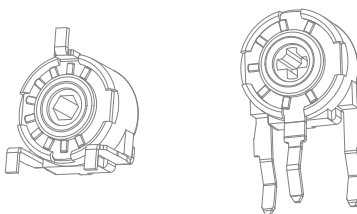
## Standard Tapers



## Detents / Stop positions



— Relative detent positions along the total mechanical travel.



### NOTES FOR DETENTED VERSIONS

- (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

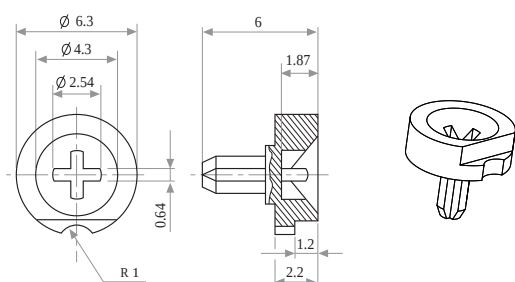
By default shafts, knobs & thumbwheels are delivered unassembled.

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.

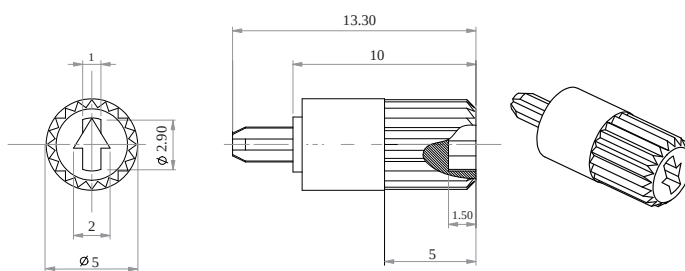
Ref.: 5155 / Fig. 1

Default knob. Standard colour: white.



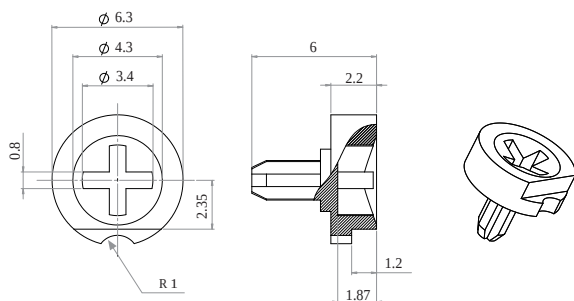
Ref.: 6132 / Fig. 2

Shaft. Not suitable for magazine packaging



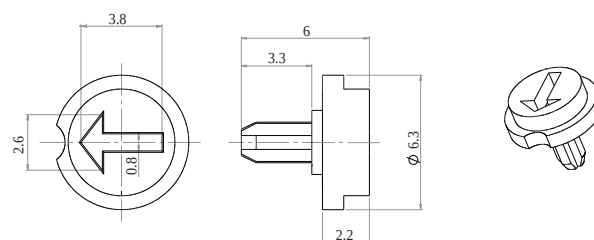
Ref.: 5141 / Fig. 3

Colour: grey. For other colours check availability.

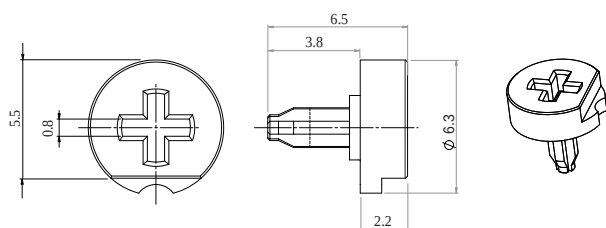


Ref.: 6172 / Fig. 4

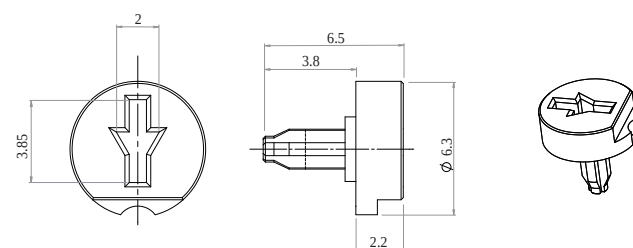
Colour: grey. For other colours check availability.



Ref.: 6148 / Fig. 5

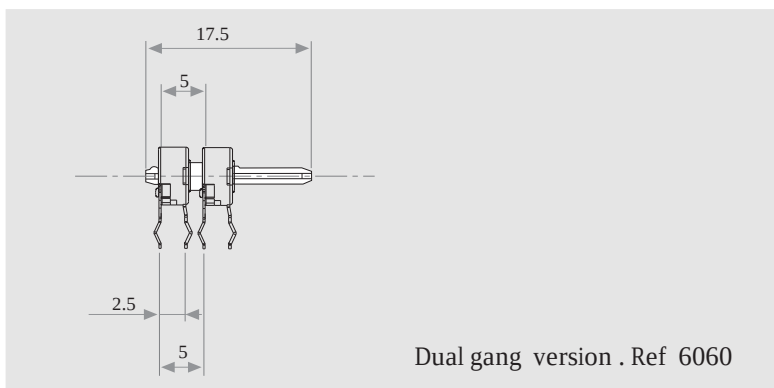
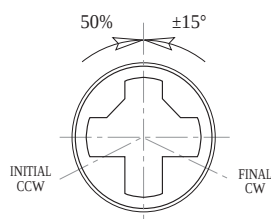


Ref.: 6160 / Fig. 6



## Positioning

Default position = CCW



# 6 mm carbon trimmer potentiometer PT6

## Packaging

BOXES / BULK

| Model | Units per box |
|-------|---------------|
| All   | 1.000         |

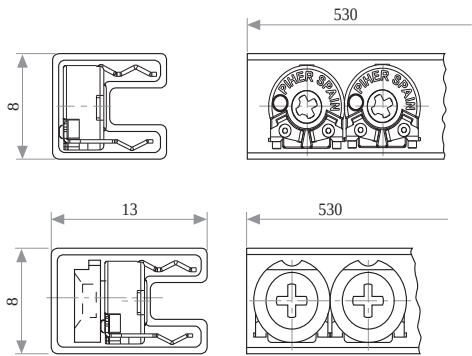


Box dimensions (mm):  
185x85x40

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

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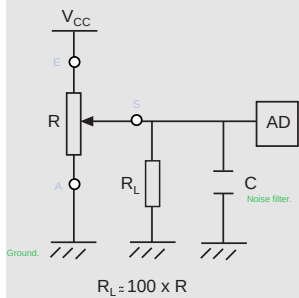
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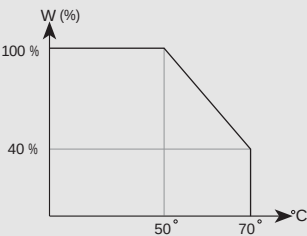


## Recommended connections

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



## Power rating curve



## Contact

Piher Sensing Systems  
Polígono 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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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

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