

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* | | $\leq 0.5\% R_n$ (5Ω min.) |
| Equivalent noise resistance | | $\leq 3\% R_n$ (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.

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How to order

Optional extras

PT-6 K V - 221 A 2020

Series: PT-6
Rotors: K
Mounting method: V
Value: 221
Taper: A
Life: 2020

Optional extras: Life, Packaging, Knob/rotor colour, Wiper position, Crimping, Detents, Shaft/Knob

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

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

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

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

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

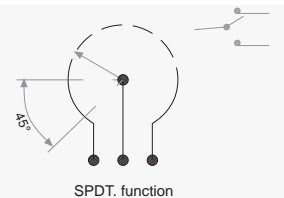
Tolerance: 3030 = ± 30%, 2020 = ± 20%, 1010 = ± 10%, 0505 = ± 5% (See note 3)

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)

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.

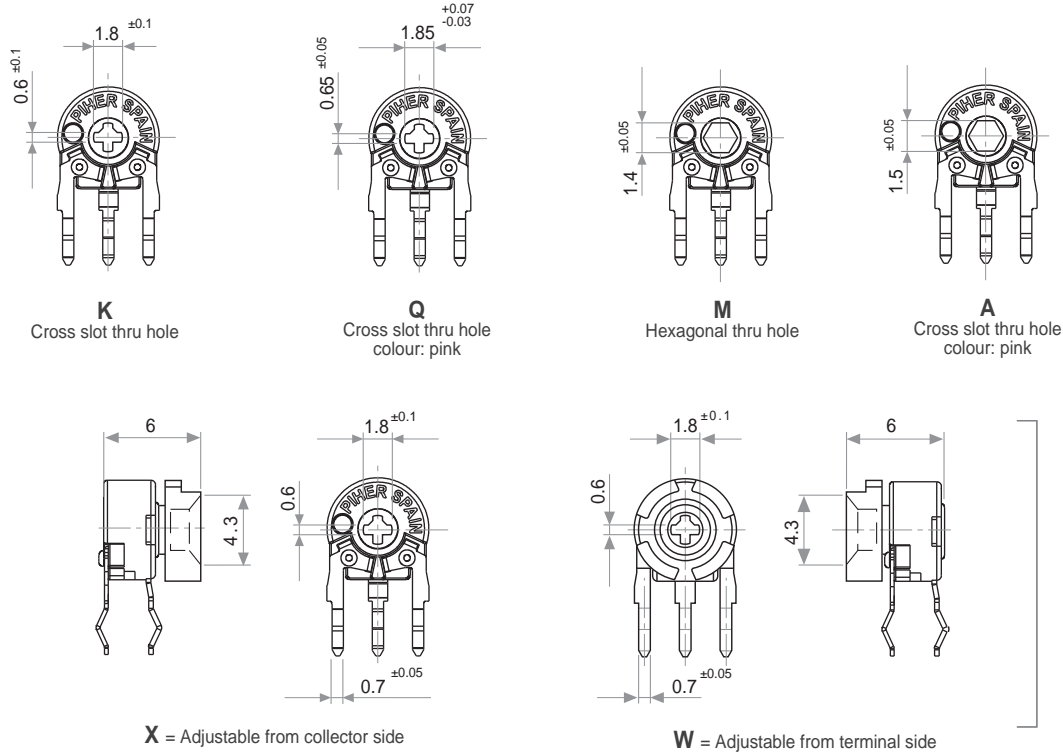
PT6WV-104A1010-5NE-SC
 6mm potentiometer with factory pre-inserted knob, V mounting method (vertical adjustment), 10K resistive value, linear taper, 10% resistive tolerance, black knob ref. 6148 and straight terminals (not crimped).

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



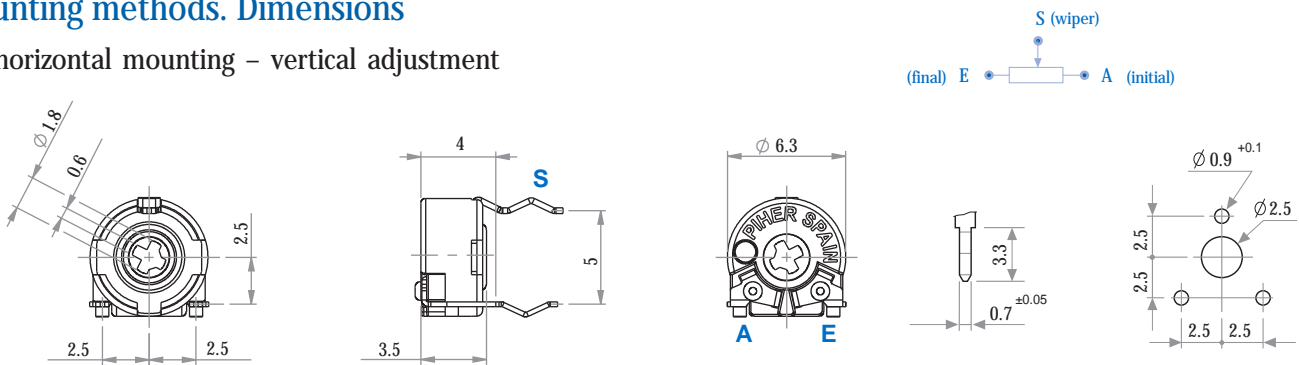
Default delivery is at initial position. Wipers are shown positioned at 50% for the picture.

With inserted knob / shaft.

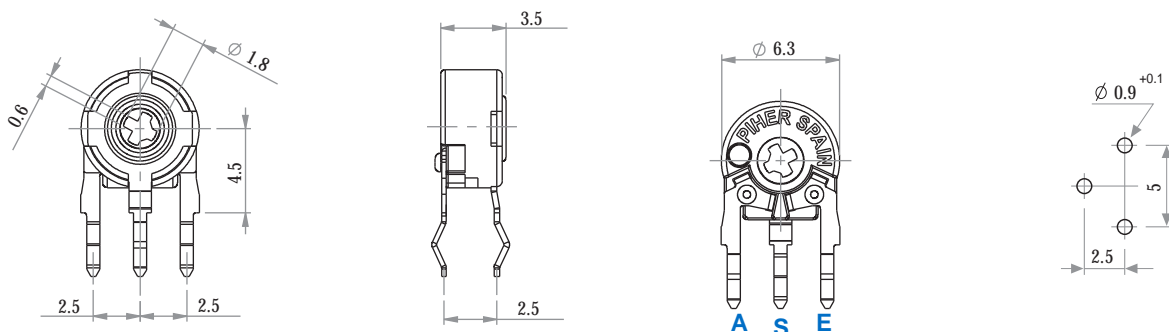
Default knob is ref. 5155 white.

Mounting methods. Dimensions

V = horizontal mounting – vertical adjustment

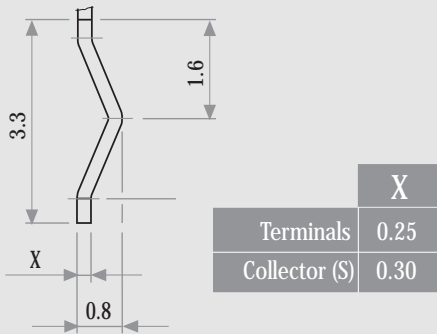


H = vertical mounting – horizontal adjustment



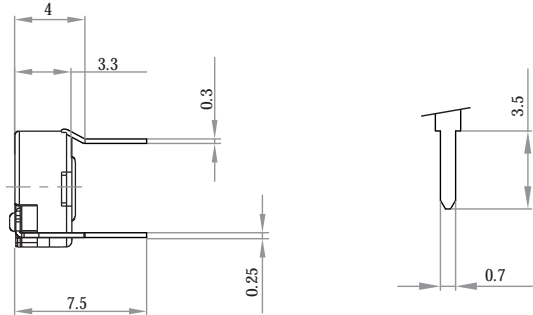
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Crimped terminals (detail A)



This is the default terminals type.

Not-crimped terminals dimensions



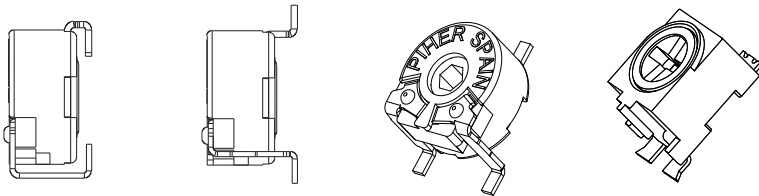
Please indicate "SC" at the end of the part number for this version.



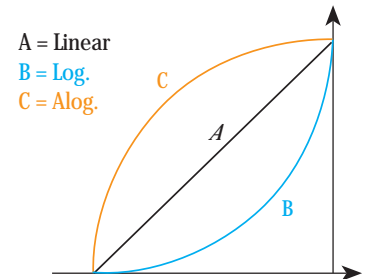
Download the STEP file here:
<https://piher.net/piher/?p=894>

SMD versions

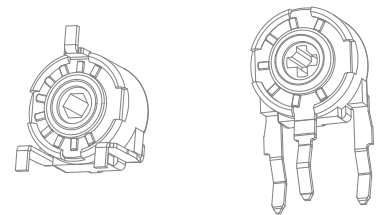
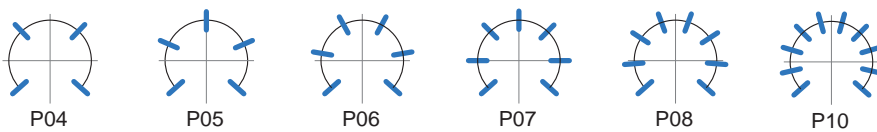
SMD / SMT version available. See [PS-6](#) and [N-6](#) datasheets at: www.piher.net



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

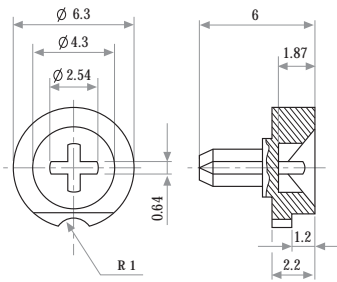
By default shafts, knobs & thumbwheels are delivered unassembled.

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.

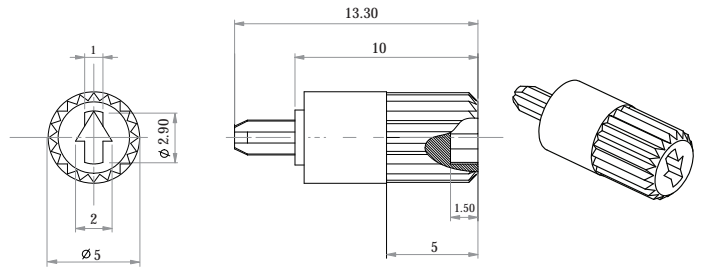
Ref.: 5155 / Fig. 1

Default knob. Standard colour: white.



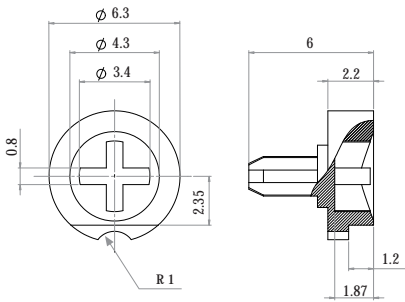
Ref.: 6132 / Fig. 2

Shaft. Not suitable for magazine packaging



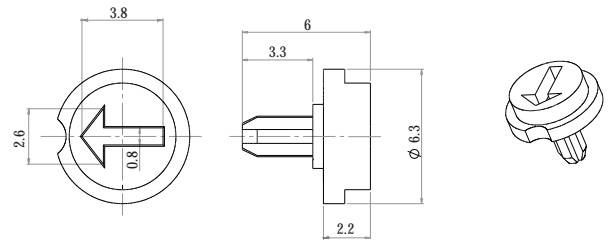
Ref.: 5141 / Fig. 3

Colour: grey. For other colours check availability.

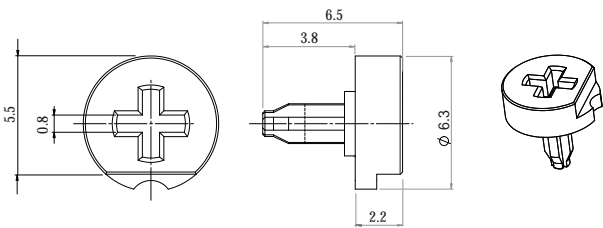


Ref.: 6172 / Fig. 4

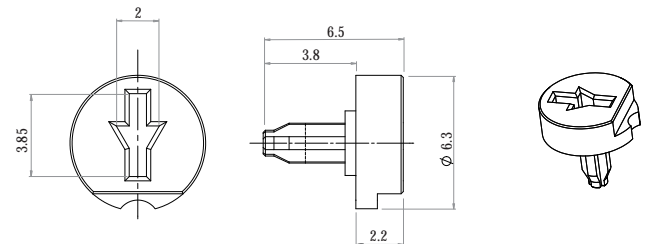
Colour: grey. For other colours check availability.



Ref.: 6148 / Fig. 5

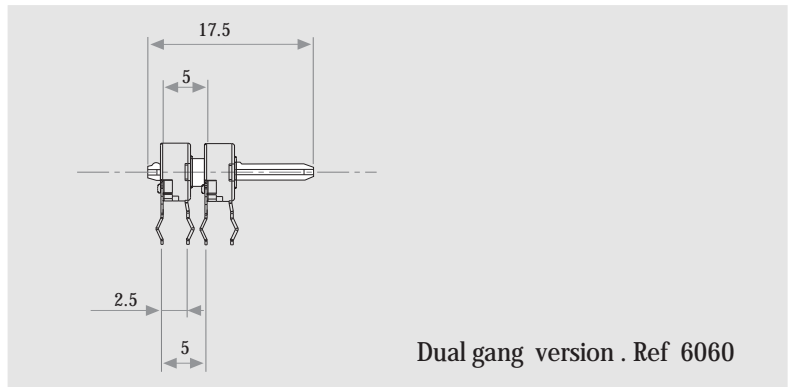
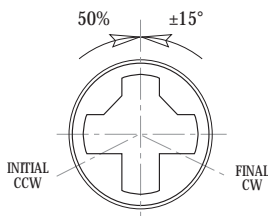


Ref.: 6160 / Fig. 6



Positioning

Default position = CCW



Dual gang version . Ref 6060

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Packaging

BOXES / BULK

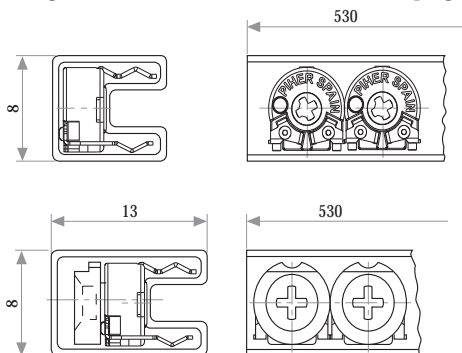
| Model | Units per box |
|-------|---------------|
| All | 1.000 |



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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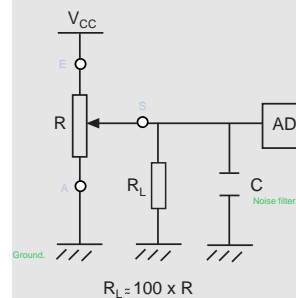
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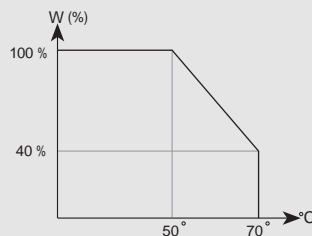
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Recommended connections

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

sales@piher.net

www.piher.net

rev100620





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Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
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