

10mm carbon / cermet through-hole potentiometer

The PT-10 and PTC-10 potentiometers offer 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.















KEY FEATURES

- ► Excellent performance (up to 3% linearity)
- ► Carbon or cermet resistive element
- ▶ Up to 16 mechanical detents (stop positions) for tactile feedback
- ▶ Up to 100.000 life cycles
- ▶ IP54 protection
- ▶ Magazine packaging for automatic insertion available
- ► Polyester / Alumina substrate
- ▶ Wiper positioned at initial, 50% or fully clockwise
- ▶ Loose and assembled shaft and knobs
- ► Linear, logarithmic and anti-logarithmic tapers
- ▶ Self extinguishable plastic (UL 94V-0) available
- ▶ SPDT switch and low torque version available

On request

► Embossed tape packaging

ELECTRICAL SPECIFICATIONS

	PT-10 ((carbon)	PTC-10 (cermet)					
Taper ¹	Lin, Log, Alog						
Range of values ¹	(Decad. 1.0 - 2.0 - 2.2 - 2.5 -	4.7 - 5.0)					
Lin	100Ω ≤ Rn ≤ 5MΩ						
Log, Alog	1KΩ ≤ Rn ≤ 5MΩ						
Standard Tolerance ¹							
$100\Omega \le Rn \le 1M\Omega$	± 20%						
1MΩ < Rn ≤ $5MΩ$	± 30%						
Max. Voltage Lin Log, Alog	200 VDC 100 VDC						
Nominal power Lin Log, Alog	50°C (122°F) 0.15 W 0.07 W	70°C (158°F) 0.33 W 0.17 W					
Residual resistance ¹	≤ 0.5% Rn (5Ω min.)						
Equivalent noise resistance	≤ 3% Rn (3Ω min.)						
Operating temperature	-25°C to +70°C ² (-13°F to + 158°F)	-40°C to +90°C ³ [-40°F to + 194°F]					

- 1) Others available on request
- 2) Up to 85°C depending on application
- 3) +120°C/+248°F upon request

EXAMPLES OF APPLICATIONS

- ► Appliance program selection
- ▶ Thermostat adjustment
- ► Timer and control relays
- ► Consumer electronics
- ▶ Power tool controls
- ► Test and measurement equipment



10mm carbon / cermet through-hole potentiometer

MECHANICAL SPECIFICATIONS

	PT-10	PTC-10					
Mechanical rotation angle ¹	235° ± 5°						
Electrical rotation angle ¹	220° ± 20°						
Torque Rotational Stop	0.4 to 2 Ncm (0.6 to 2.7 in-oz) > 5 Ncm (>7 in-oz)						
Push-pull force over the rotor	> 49N						
Life ²	Up to 100k cycles	Up to 10k cycles					

¹ Endless rotation available: ST-10; 2 Others check availability

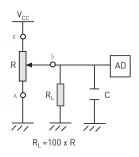
ENVIRONMENTAL TESTING

	Test method (CEI 393-1)	PT-10 ΔR(%)- Piher typical test results	PTC-10 ΔR(%) - Piher typical test results
Electrical life	1.000h at 50°C; 0.15W 1.000h at 70°C; 0.33W	±5% n/a	n/a ±2%
Mechanical life	1000 cycles at 10 to 15 cpm	±3 % (Rn < 1M)	±2%
Temperature coefficient	-25°C; +70°C -40°C; +90°C	±300 ppm/°C (Rn < 100K) n/a	n/a ±100 ppm/°C
Thermal cycling	16h at 85°C and 2h at -25°C 16h at 90°C and 2h at -40°C	±2.5% n/a	n/a ±2%
Damp heat	500h at 40°C and 95% relative humidity (RH)	±5%	±2%
Vibration	2h each plane at 10Hz - 55Hz	±2%	±2%
Storage	6 month at 23°C ±2°C and 50% RH	±2.5%	±2%

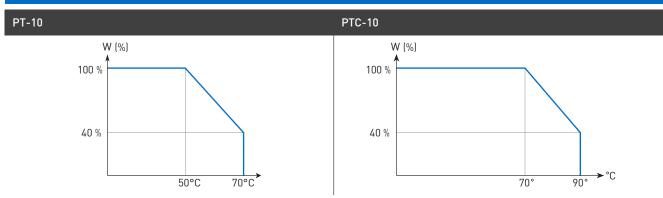
Out of range values may not comply with these results. Standard test conditions: temperature:23°C ±2°C and 45% to 70% RH

RECOMMENDED CONNECTIONS

Recommended connection circuit for a position sensor or control application (voltage divider circuit electronic design).



POWER RATING CURVE

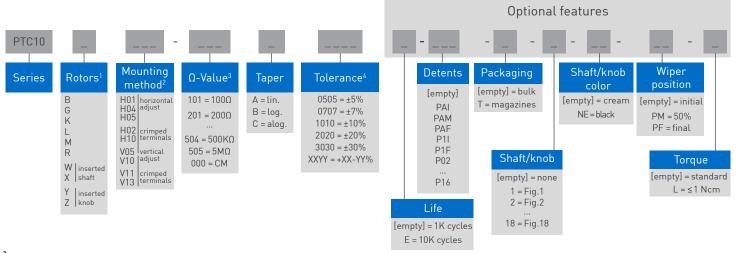


10mm carbon / cermet through-hole potentiometer

HOW TO ORDER Carbon potentiometer Optional features PT10 Mounting Cut track Detents Shaft/Knob Shaft/Knob Torque Ω-Value³ Taper Series method² color [empty] = standard [empty] [empty] [empty] = none 101 = 100Ω A = lin. [empty] horizontal adjust L = ≤1 Ncm 1 = Fig.1 PΔI H04 H05 H07 B = log.PCI Rotors¹ 201 = 200Ω 2 = Fig.2 IN = not colored PAM C = alog.PCF (natural) PAF Wiper BGKLMR 504 = 500KΩ NE = black P1I 18 = Fig.18 H02 crimped terminals position $505 = 5M\Omega$ Tolerance⁴ Life P1F CR = cream P02 [empty] = initial 000 = CM[empty] = 1K cycles $0505 = \pm 5\%$ PM = 50% P16 W | inserted X | shaft Y | inserted Z | knob Flammability6 $0707 = \pm 7\%$ E = 10K cycles 1010 = ±10% [empty] = standard Packaging⁵ $2020 = \pm 20\%$ I = non-flammable 3030 = +30%[empty] = bulk XXYY = +XX-YY%T = magazines

m check inventory

Cermet potentiometer



m check inventory

- 1. Rotors: "Z" adjustment only available on "H"-mounting versions. Rotor "G" only available in purple (color "VI")
- 2. Mounting method: "V05", "H07" terminals material: brass.
- 3. Ω Value: \underline{XXX} First two digits of Ω -value \underline{XXX} Number of zeros

000 = CM = switch SPDT version



- 4. Tolerance: for custom tolerances please contact info@piher.net
- 5. Packaging: available options depend on mounting method, see "available packaging option" below. Embossed tape packaging on request.
- 6. Non-flammable according to UL 94V-0: housing, rotor and shaft. PTC-10 made of non-flammable material by standard.

ORDER CODE EXAMPLES

PT10LH01-103A2020-S

10mm carbon potentiometer with white rotor "L" (arrow shape), H01 mounting method (horizontal adjustment), 10K value, linear taper and 20% resistive tolerance.

PTC10WV05-104A1010-9-NE

10mm cermet potentiometer with rotor "W" (pre-inserted shaft), V05 mounting method (vertical adjustment), 100K resistive value, linear taper, 10% resistive tolerance and black ref. "9" shaft.

10mm carbon / cermet through-hole potentiometer

STANDARD CONFIGURATION										
	PT-10	PTC-10								
Life	1.000 cycles									
Cut track	no	n/a								
Detents	none									
Packaging	bulk									
Shaft/knob/thumbwheel	none									
Non-flammability	no	yes								
Housing color	black	cream								
Rotor color	white	cream								
Shaft/knob/thumbwheel color (if applicable)	Not coloured (natural)	cream								
Wiper Position	initial									
Torque	0.4 to 2 Ncm									
Linearity*	not controlled									

^{*} Others upon request

ROTORS

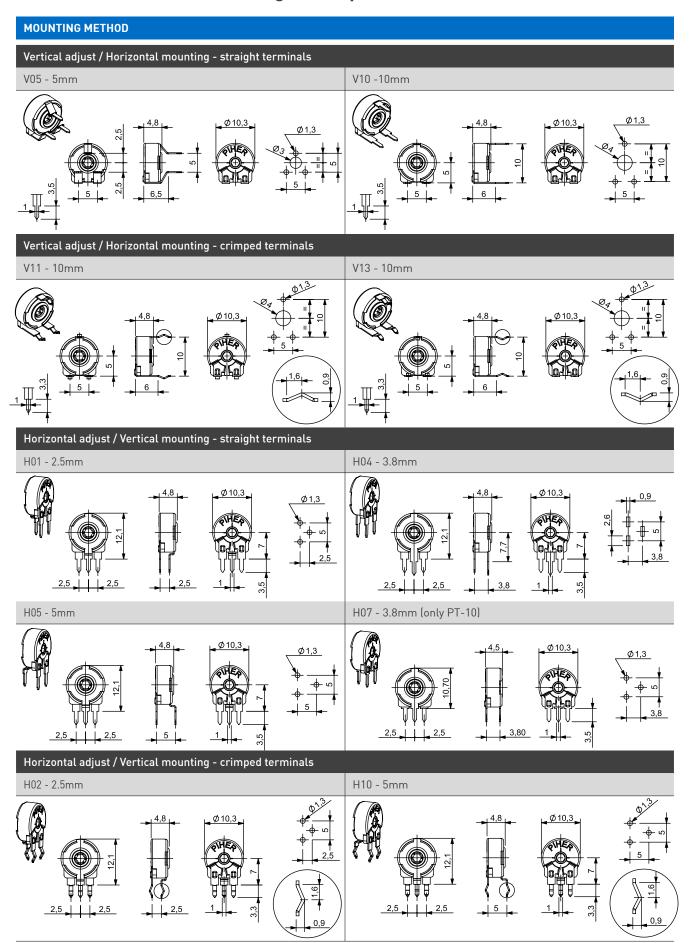
Without shaft or knob					
L Screwdriver	M Hexagonal	G Hexagonal	K Cross slot	R	В
1.0± 8.0	2 ±0.005	2 ±0.05	#0.1 #0.05 #0.22	Ø2 ±0.05	53.N.S

With inserted shaft		With inserted knob / thumbwheel								
X Adjustable from collector side	W Adjustable from terminal side	Y Adjustable from terminal side Default knob is Fig. 5 - Ref. 5034	Z Adjustable from collector side Default knob is Fig. 5 - Ref. 5034							
		0,8	6,5							

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



10mm carbon / cermet through-hole potentiometer



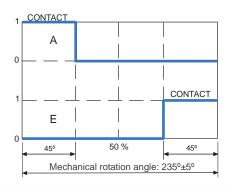
10mm carbon / cermet through-hole potentiometer

STANDARD RESISTANCE-VALUES AND TOLERANCES																													
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
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
Tolerance	20%												30)%															

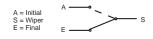
SWITCH VERSIONS AVAILABLE WITH OR WITHOUT DETENTS

A80 Switch code

Switch standard specification



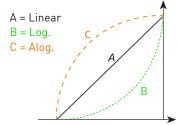
Power rating: 24V / 15mA ON position resistance: $\leq 5\Omega$ Insulation resistance: $\geq 30M\Omega$

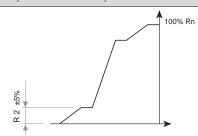


Contact Piher Sensing Systems for ordering information.

TAPERS

Standard Example: special custom taper





For more information on custom tapers contact Piher Sensing Systems.

CUT TRACKS (OPEN CIRCUIT DESIGN)

CCW on-of (A)

Cut track at the beginning of travel.

Cut track at the end of travel.

CW on-of (E)

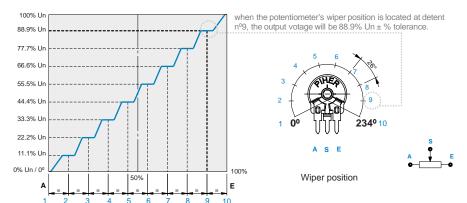
A E A S E

Other configurations available upon request. Cut Track not available for PTC-10.

10mm carbon / cermet through-hole potentiometer

DETENTS												
PAM	P1i	P1F	P02	P03	P04	P05	P06					
			X		XX	***	**					
P07	P08	P09	P10	P11	P12	P13	P16					
***	****	***	****	****	*****	******	美					
P	ΑI	PI	ID	PF	-D	PAF						
Wiper position B	В	A			A	Wiper position						
(wiper po	sitioned at initial)		A = 26°	(wiper positioned at final)								
	 Relative detent positions along total mechanical travel 											

STEPPED OUTPUTS / CONSTANT VALUE ZONES



Contact Piher Sensing Systems for ordering information

IMPROVED REPEATABILITY

Constant value zones can be combined with strategically located mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent position. This provides clear mechanical positions that are not only repeatable, but perfectly aligned electrical outputs at each of the (detent) angles. The detents also prevent output values from changing due to vibration or accidental rotor movements.

The result is a higher level of precision in controlling lighting, temperature, motor or other electronic control systems.

Standard mechanical life is 500 cycles.
Long life versions are available upon request and have the following characteristics at Ta: Potentiometers with 1 to 3 detents up to 10K cycles; Potentiometers with 4 and more detents up to 5K cycles
Please consult Piher Sensing Systems if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.
Different output voltage values can be matched at each detent position (see next section).
Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
For more than 16 detents versions please contact Piher Sensing Systems.

10mm carbon / cermet through-hole potentiometer

PACKAGING

Bulk



Dimensions (mm): 185x85x80

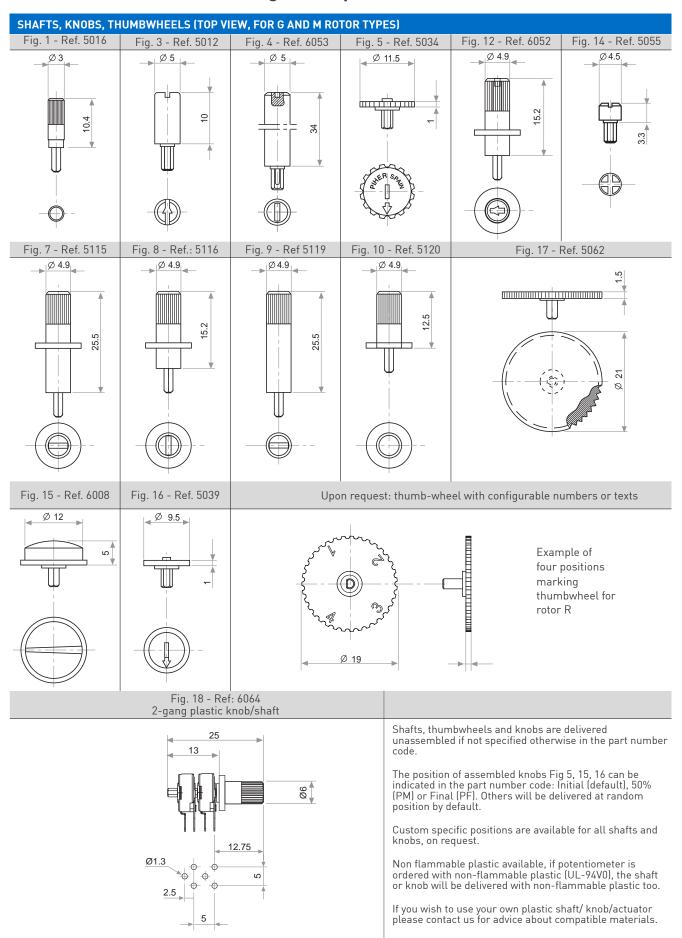
Without shaft: 1000 units per box With Thumbweel: 800 units per box With shaft: 400 units per box

Magazine for automatic insertion (50 units) Horizontal adjust Vertical adjust

AVAILABLE PACKAGING OPTIONS Terminal Style **Mounting Method Mounting Type** Bulk Magazine Х H04 Χ Χ Straight H05 Χ Χ Horizontal adjust H07 Χ Χ H02 Χ Χ Crimped H10 Х V05 Χ Straight V10 Χ Χ Vertical adjust V11 Х Χ Crimped V13 Χ

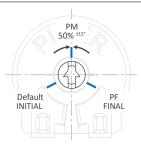
Rotor Type X, W, Y, Z only in bulk packaging. Embossed tape packaging on request.

10mm carbon / cermet through-hole potentiometer



10mm carbon / cermet through-hole potentiometer

POSITIONING



Default wiper position is initial. Custom delivery positions available on request.

Default wiper positioning tolerance is ±15 deg. Other tolerances available on request.

OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
 - Contactless (Hall-effect and Inductive Technology)
- ► Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirement
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global manufacturing, engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas,...) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation









Please always use the latest updated datasheets and 3D models published on our website.

Disclaimer:

The product information in this catalog is for reference purposes. Please consult for the most up to date and accurate design information. Piher Sensors & Controls S.A., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Piher"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product described herein.

for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product described herein.

Piher disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Piher's terms and conditions of sale, including but not limited to the warranty expressed therein, which apply to these products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Piher. The products shown herein are not designed for use in such applications of so entirely at their own risk and agree to fully indemnify Piher for any damages arising or resulting from such use or sale. Please contact authorized Piher personnel to obtain written terms and conditions regarding products designed for such applications. Product names and markings noted herein may be trademarks of their respective owners. Information contained in and/or attached to this catalog may be subject to export control regulations of the European Community, USA, or other countries. Each recipient of this document is responsible to ensure that usage and/or transfer of any information contained in this document complies with all relevant export control regulations. If you are in any doubt about the export control restrictions that apply to this information, please contact the sender immediately. For any Piher Exports, Note: All products / technologies are EAR99 Classified commodities. Exports from the United States are in accordance with the Export Administration Regulations. Diversion contrary to US law is prohibited.

CONTACT

Piher Sensing Systems

Polígono Industrial Municipal Vial T2, Nº22 31500 Tudela

Spain

sales@piher.net

+34 948 820 450



NEED QUICK HELP?

Our AI Virtual Assistant is available 24/7 to provide instant support—click here to chat now!





Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Amphenol:

XEJPL5119GR