



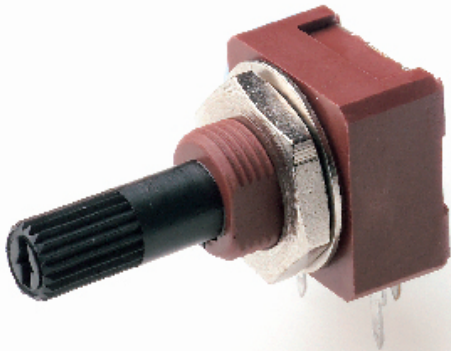
MCA14

Control
Carbon
Potentiometers
CA



MCE14

Control
Cermet
Potentiometers
CE





MCA14

14mm control carbon potentiometers with low cost plastic enclosure and shaft and protection type IP 5 (dust-proof).

Standard tapers available include linear, log and antilog. ACP can also study special requests.

Terminals are manufactured in tinned brass to guarantee better soldering and higher resistance to corrosion. They can be provided straight or crimped (with “snap in”), recommended to hold the potentiometer to the board prior to the soldering operation. SMD configuration can be available on request.

Our potentiometers can be manufactured in a wide range of possibilities regarding:

- Resistance value.
- Tolerance.
- Tapers / variation laws.
- Pitch.
- Positioning of the wiper (the standard is at 50%).
- Housing, rotor or accessory color.
- Mechanical life.
- Pause effect (up to 38 detents available).
- Self-extinguishable plastic parts according to UL 94 V-0.

Applications

- Electronic appliances: white and brown goods, small household appliances.
- Measurement and test equipment.
- Lighting regulation.



MCE14

14mm control cermet potentiometers with low cost plastic enclosure and shaft and protection type IP 5 (dust-proof). Self-extinguishable plastic parts according to UL 94 V-0.

Standard taper is linear. Log, Antilog and other tapers are available on request. Laser trimming equipment in-house, allowing for very low tolerances.

Terminals are manufactured in tinned brass to guarantee better soldering and higher resistance to corrosion. They can be provided straight or crimped (with “snap in”), recommended to hold the potentiometer to the board prior to the soldering operation. SMD configuration can be available on request.

Our potentiometers can be manufactured in a wide range of possibilities regarding:

- Resistance value.
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- Pitch.
- Positioning of the wiper (the standard is at 50%).
- Housing, rotor or accessory color.
- Mechanical life.
- Pause effect (up to 38 detents available).

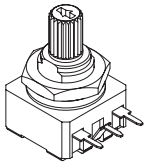
Applications

- Electronic appliances: white and brown goods, small household appliances.
- Measurement and test equipment.
- Lighting regulation.

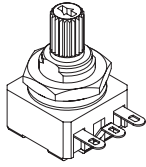
MCA14 MCE14

Models

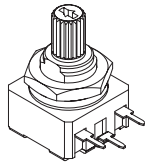
The color of the housing or rotor can be modified. SMD configuration can be available on request.



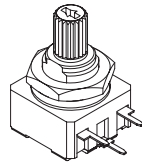
MCA14 H0
MCE14 H0



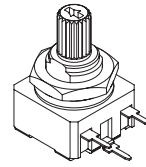
MCA14 HC0
MCE14 HC0



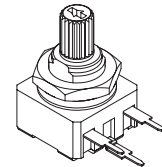
MCA14 H2,5
MCE14 H2,5



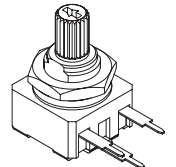
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MCE14 H4



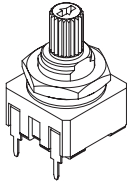
MCA14 H5
MCE14 H5



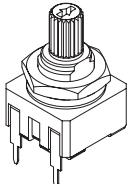
MCA14 HA5
MCE14 HA5



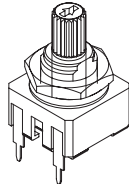
MCA14 HL5
MCE14 HL5



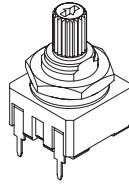
MCA14 V12,5
MCE14 V12,5



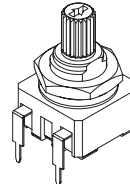
MCA14 VA12,5
MCE14 VA12,5



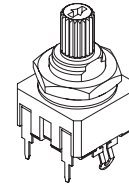
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MCE14 VL12,5



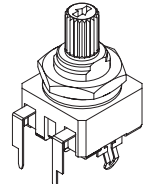
MCA14 V15
MCE14 V15



MCA14 V17,5
MCE14 V17,5



MCA14 VD7,5
MCE14 VD7,5



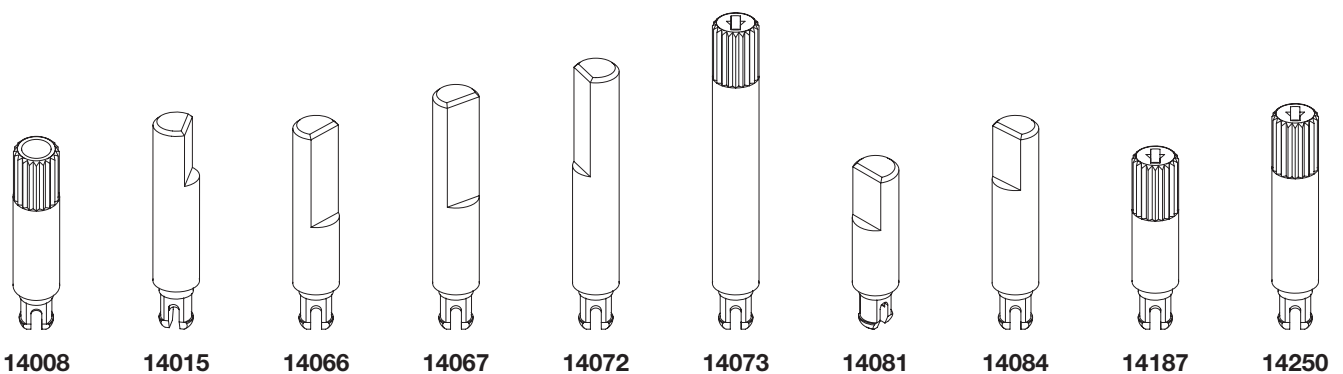
MCA14 VD11
MCE14 VD11

Shafts

Shafts are black by default. Other colors are available. ACP can also study special shafts. D dimension specified on drawings (end of catalogue).

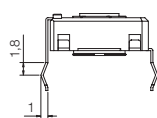
Shafts	D (±0,5mm)
14008	20,6
14015	20
14066	20,6
14067	24,8
14072	28,8

Shafts	D (±0,5mm)
14073	35,5
14081	15,2
14084	20,2
14187	15,6
14250	22

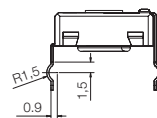


Terminals

By default, terminals are always straight for the 14mm size, as shown on the “models” menu. ACP can provide crimped terminals (with “snap in”), to better hold the component to the board prior to soldering.



SNP



SNR

Adjustment and orientation

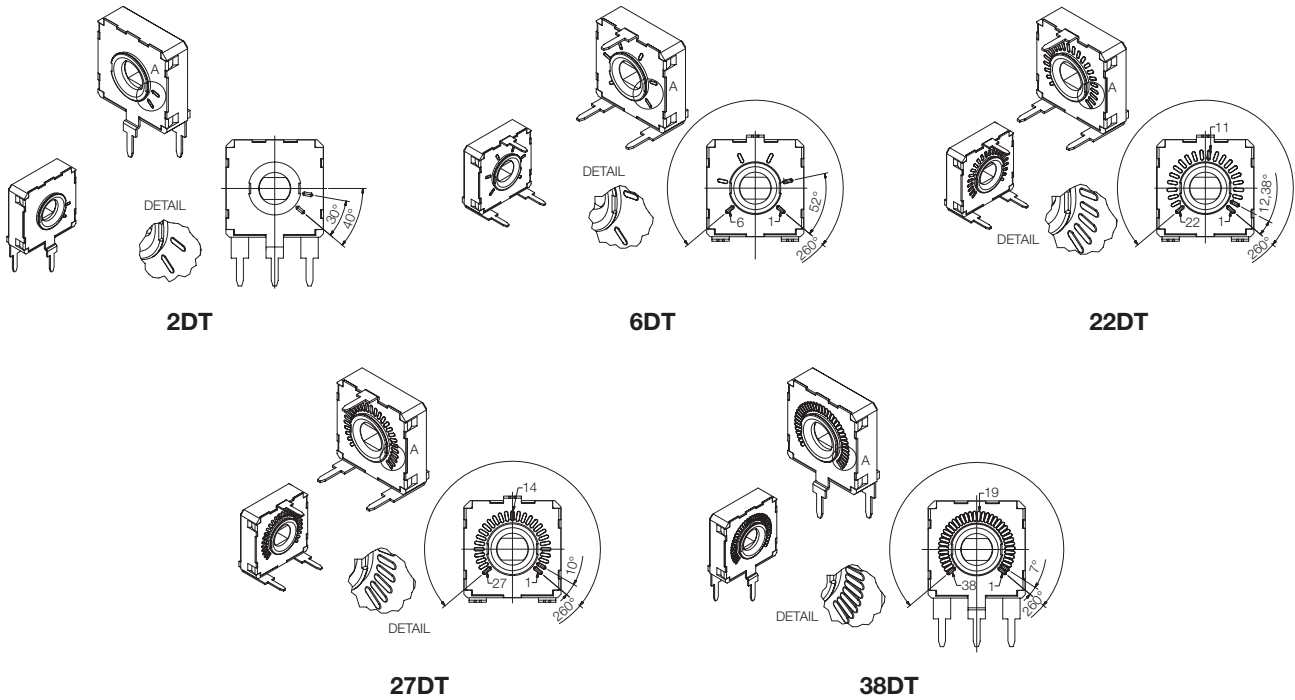
Should the shaft need to be positioned differently than shown on this catalogue, please, enclose a drawing.

Potentiometers with detents

ACP's "detent" feature (DT) is specially suitable for control applications. Our patented design has improved the features of these potentiometers:

- Longer mechanical life: >10.000cycles.
- More stable electrical parameters.
- Improved reliability and Contact Resistance Variation (CRV).
- Narrower tolerances for detent positioning.

Detents can be lighter or stronger, or even a combination of both feelings. Detents can be evenly distributed along the angle (standard), or tailored to match customers' request. They can also be combined with special tapers: constant value areas, different slopes, etc.
Examples:

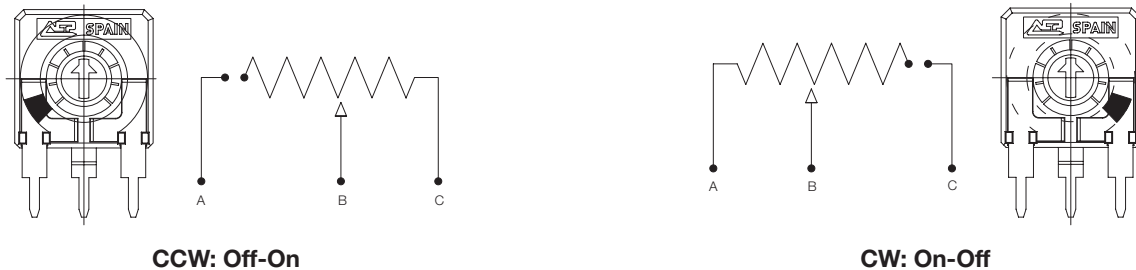


Potentiometers with cut track

The resistive element in this potentiometer has an area with very high resistive values, resulting in an open circuit. Recommended for lighting regulation.

With cut at the beginning of the track CCW: Off-On.

With cut at the end of track- CW: On-Off. Other positions available on request.





MCA14. Electric Specifications

These are standard features; other specifications can always be studied on request.

Range of resistance values Lin (A) Log (B) Antilog (C)	$100\Omega \leq R_n \leq 5M\Omega$ 1 K Ω ... 2,2 M Ω
Tolerance Special tolerances available on request	100 Ω ... 1M Ω $\pm 20\%$ >1M Ω ... 5M Ω $\pm 30\%$ Out of range: $R_n > 5M\Omega$: +50%, -30%
Variation laws	Lin (A) Log (B), Antilog (C) and other tapers available on request
Residual resistance	Lin (A), Log (B), Antilog (C) $\leq 5 \cdot 10^{-3} R_n$ Minimum value 2 Ω
CRV - Contact Resistance Variation (dynamic)	$\leq 3\% R_n$
CRV - Contact Resistance Variation (static)	$\leq 5\% R_n$
Maximum power dissipation at 40° C. Lin (A) Non Lin (B, C)	0,25W 0,13W
Maximum voltage at 40° C Lin (A) Non Lin (B, C)	250VDC 200VDC
Operating temperature	-25°C ... +70°C
Temperature coefficient	100 Ω - 10K Ω \rightarrow +200/ -300 ppm. >10K Ω - 5M Ω \rightarrow +200/ -500 ppm



MCA14. Mechanical Specifications

Resistive element	Carbon technology
Angle of rotation (mechanical)	265° \pm 5°
Wiper position	Middle position: 50% \pm 15°
Angle of rotation (electrical)	245° \pm 20°
Wiper torque	< 2 Ncm (0,4 ... 3,5Ncm for pots. with detents)
Mechanical life	10.000 cycles (more available on request)
Max. stop torque	15Ncm
Max. push/pull on shaft	50 N / 25 N
Max. torque on the nut	80 Ncm



MCA14. Test

Test // Conditions // Typical variation of Nominal Resistance

Damp heat // 500 h. at 40°C and 95% RH // +5%; -2%
Thermal cycles // 16h at 85°C, plus 2h at -25°C // $\pm 2,5\%$
Load life // 1.000 h. at 40°C // +0%; -5%
Mechanical life // 1000 cycles at 10 c.p.m. and at 23°C \pm 2°C // $\pm 3\%$
Soldering effect // 2 seconds at 350°C // $\pm 1\%$
Storage (3 years) // at 23°C \pm 2°C // $\pm 3\%$
For further information on tests, go to TESTS AND RELIABILITY on pages 10-11.



MCE14. Electric Specifications

These are standard features; other specifications can always be studied on request.

Range of resistance values Lin (A) Log (B) Antilog (C)	$100\Omega \leq R_n \leq 5M\Omega$ 1 K Ω ... 2,2 M Ω
Tolerance Special tolerances available on request	100 Ω ... 1M Ω $\pm 20\%$ >1M Ω ... 5M Ω $\pm 30\%$ Out of range: $R_n > 5M\Omega$: +50%, -30%
Variation laws	Lin (A) Log (B), Antilog (C) and other tapers available on request
Residual resistance	Lin (A), Log (B), Antilog (C) $\leq 5 \cdot 10^{-3} R_n$ Minimum value 2 Ω
CRV - Contact Resistance Variation (dynamic)	$\leq 3\% R_n$
CRV - Contact Resistance Variation (static)	$\leq 5\% R_n$
Maximum power dissipation at 70° C. Lin (A) Non Lin (B, C)	0,7W <i>See note 1</i>
Maximum voltage at 40° C Lin (A) Non Lin (B, C)	250VDC <i>See note 1</i>
Operating temperature	-40°C ... +125°C
Temperature coefficient	± 100 ppm.

Note 1: Value depends on taper, please, inquire.



MCE14. Mechanical Specifications

Resistive element	Cermet
Angle of rotation (mechanical)	265° \pm 5°
Wiper position	Middle position: 50% \pm 15°
Angle of rotation (electrical)	245° \pm 20°
Wiper torque	< 2 Ncm (0,4 ... 3,5Ncm for pots. with detents)
Mechanical life	10.000 cycles (more available on request)
Max. stop torque	15Ncm
Max. push/pull on shaft	50 N / 25 N
Max. torque on the nut	80 Ncm



MCE14. Test

Test // Conditions // Typical variation of Nominal Resistance

Damp heat // 500 h. at 40°C and 95% RH // +5%; -2%
Thermal cycles // 16h at 90°C, plus 2h at -40°C // $\pm 2\%$
Load life // 1.000 h. at 70°C // $\pm 2\%$
Mechanical life // 1000 cycles at 10 c.p.m. and at 23°C \pm 2°C // $\pm 2\%$
Soldering effect // 2 seconds at 350°C // $\pm 1\%$
Storage (3 years) // at 23°C \pm 2°C // $\pm 1\%$
For further information on tests, go to TESTS AND RELIABILITY on pages 10-11.

MCA14 MCE14 **HOW TO ORDER**

- **EXAMPLE: MCA14NH2,5-10K2020 SNP PI WT14187-BA**
- **EXAMPLE: MCE14NH2,5-10K2020 SNP PI WT14187-BA-V0**

Standard features								Extra features							Assembled accessory			
Series	Rotor	Model	Packg	Ohm value	Taper	Tol	Life	Track	Detents	Snip in	Housing	Rotor	Wiper	Lin	Assembly	Ref #	Color	Flam.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
MCA14/MCE14	N	H2,5		10K	A	2020				SNP			PI		WT	14187	-BA	

Standard configuration		Customized products	
Dimensions:	14mm	A drawing is requested to order a customized product. The code assigned will include all special specifications.	
Protection:	<ul style="list-style-type: none"> • MCA14: IP 5 (dust-proof) • MCE14: IP 5 (dust-proof) Self-extinguishable, to meet UL 94 V-0 	Series, rotor, model and total resistive value are given before the special code: MCA14PH2,5 10K CODE C00111.	
Substrate:	<ul style="list-style-type: none"> • MCA14: Carbon technology • MCE14: Cermet 		
Color:	<ul style="list-style-type: none"> • MCA14: Blue housing with white rotor, black shaft • MCE14: Brown housing with white rotor, black shaft 		
Packaging:	Blister		
Wiper position:	at 50% ±15°		
Mech. life:	10.000cycles		
Terminals:	Straight, without SNAP IN.		
Marking:	Resistive value marked on housing. Others on request.		

1 - Series

- MCA14
- MCE14

3 - Model and pitch

H0	HC0	H2,5	H4	H5	HA5	HL5
V12,5	VA12,5	VL12,5	V15	V17,5	VD7,5	VD11

5 - Resistance value

Taper:	Lin (A)	Log (B), Antilog (C)
Value Rn	100 Ω / 100 ... / ... 5 MΩ / 5M	1KΩ / 1K ... / ... 2,2 MΩ / 2M2

Other resistive values available on request.

7 - Tolerance

100 Ω ≤ Rn ≤ 1MΩ: ±20%	2020
1 MΩ ≤ Rn ≤ 5MΩ: ±30%	3030
For out of range values: Rn > 5MΩ, tol : +50% - 30%	5030

Special tolerances available: <5% ... 10%, etc.

9 - Cut track

At beginning of track, CCW: Off - On	PCI
At end of track, CW: On - Off	PCF

11 - Crimped terminals (SNAP IN)

SNAP IN P	SNP
SNAP IN R	SNR

2 - Rotors

N

4 - Packaging

Blister	84 units per blister
	420 units per box of 430 x 270 x 120

6 - Resistance law / taper

Lin - Linear	A
Log - Logarithmic	B (on request for CE)
Antilog - Antilogarithmic	C (on request for CE)
- Special tapers have codes assigned:	CODE YXXXXX

Please, indicate terminal position when ordering a special taper.

8 - Operating life (cycles)

Standard (10.000cycles)	(leave blank)
Long life: LV + the number of cycles. ex: LV45 for 45000 cycles ⁽¹⁾	LVXX: ex: LV45

(1) Others on request.

10 - Detents (DT)

One detent at the beginning	DTI
One detent at the end	DTF
X number of detents	XDT: 10DT

Detents readily available: 1, 2, 3, 4, 5, 6, 8, 9, 17, 22, 27, up to 38 -evenly distributed along 260°±3°-. Others on request.

12 - Housing color

- **MCA14:** standard is blue
- **MCE14:** standard is brown

With other colors -see color chart below-, for example, red CJ-color, ex: CJ-R0

13 - Rotor color

Standard is white	
With other colors -see color chart below-, for example, red	RT-color; ex: RT-RO

15 - Linearity

Independent linearity controlled & below x%, for example, 3%: LN3%	LNx%; ex: LN3%
Absolute linearity controlled & below x%	LAx%

17 - Flammability (according to UL 94 V-0)

• MCA14: Not self-extinguishable	(leave blank)
Self-extinguishable according to standard UL 94 (including all plastic parts of the potentiometer: rotor, housing and accessory. If only one part needs to be V0, please, inform)	-V0
• MCE14: All accessories assembled with cermet potentiometers will have the self-extinguishable property according to standard UL 94	-V0

14 - Wiper position

Standard is at 50% ± 15°	(leave blank)
Initial or CCW	PI
Final or CW	PF
Others: following clock positions; at 3hours: P3H	PXH, ex: P3H

16 - Assembled accessories

Assembled	WT
Shaft reference	14XXX Example: 14187
Color of shaft (standard is black)	-YY Example, white: BA

Color chart for rotor, housing and accessories

Black ⁽¹⁾	NE
White	BA
Neutral	IN
Transparent	TA
Red	RO
Green	VE
Yellow	AM
Blue	AZ
Grey	GS
Brown	MR

(1) Black is not an option for housings.

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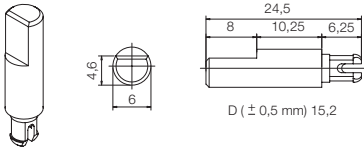
DRAWINGS MCA14 // MCE14

Tolerances 14 mm (in mm.):

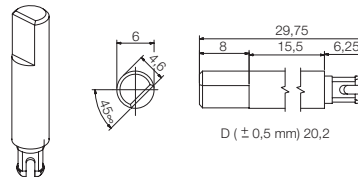
<1	±0,1
1...<10	±0,3
10...	±0,5

Shafts. MCA14 // MCE14

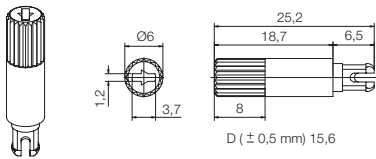
14081



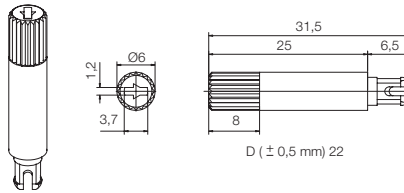
14084



14187

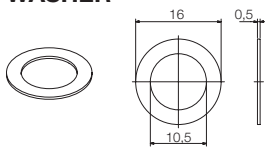


14250

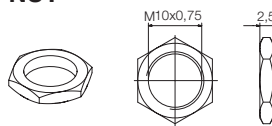


Washer and nut. MCA-14 // MCE-14 // COM MCA-14

WASHER



NUT



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