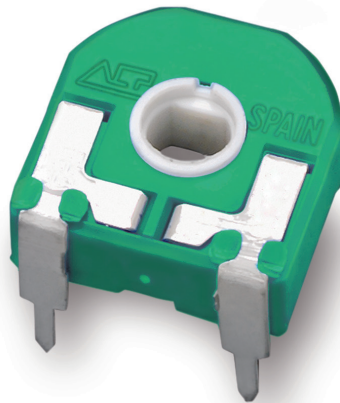
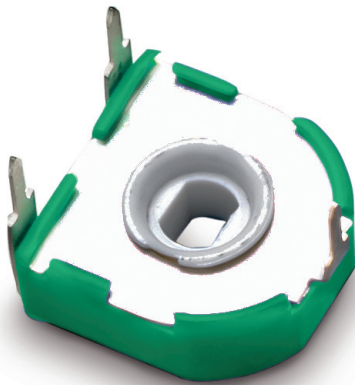


RSR14

Rotary Sensor



RSR14

This product family born as an alternative to the RS14 series when curved designs appear. Housing shape has been modified in order to set the product properly.

14mm Rotary Sensor appropriated for position sensing and control applications capable of withstanding high configurations of mechanical life.

- Standard: 100.000, 150.000 or 250.000 cycles
- Long life, up to 1 million turns (please, inquiry)

RSR14 has plastic housing and Ingress Protection rating type IP 54 (high level of protection against dust and also against water splashing), according to IEC 60529. Plastic materials can be self-extinguishable according to UL 94 V-0 under request.

Through-hole configurations is available; for SMD version, please inquire. Terminals and collector are manufactured in tinned brass, although versions with steel terminals are also available under request. Terminals for through-hole models can be provided straight or crimped, which helps hold the component to the PCB during soldering.

Standard taper is linear, with independent linearity of $\pm 3\%$. ACP can study other special tapers (even cut tracks, step curves with areas of constant value, etc), as well as more strict linearity.

Thumbwheels and shafts can be provided either separately or already inserted in the sensor. Our RSR14 can be manufactured in a wide range of possibilities regarding: resistance value, tolerance, tapers, pitch, positioning of the wiper, housing and rotor color.

Applications

- Household appliances: temperature control, position sensor.
- Automotive: position adjustment and sensing.
- Industrial controls.

RS14 HOW TO ORDER

EXAMPLE: **RSR14TV15-10KA3030 WT-14008-NE-V0**

| Standard features | | | | | | | | Extra features | | | | | | | Assembled accessory | | | |
|-------------------|-------|-------|--------|-----------|-------|------|------|----------------|---------|---------|---------|-------|-------|------|---------------------|--------|-------|-------|
| Series | Rotor | Model | Packg. | Ohm value | Taper | Tol. | Life | Track | Detents | Snap 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 | | | |
| RSR14 | T | V15 | | - 10K | A | 3030 | | | | | | | | | WT | -14008 | -NE | -V0 |

Standard configuration:

RSR14 Through-hole

| | |
|-----------------|--|
| Dimensions: | 14mm |
| Protection: | IP 54 (dust-proof) On request: Self-extinguishable, to meet UL 94 V-0 |
| Substrate: | Carbon technology |
| Color: | Green housing + white rotor |
| Packaging: | Bulk |
| Wiper position: | at 50% ±15° |
| Terminals: | Straight, without crimping. |
| Marking: | Resistive value marked on housing. Others on request. |

Customized products: A drawing is requested when ordering a customized product. Series, rotor, model and total resistive value are indicated before the code that includes all special specifications. Example: RSR14TV15-10K CODE C00111.

1 - Series

■ RSR14

2 - Rotors

F N T D Y Z

3 - Model and pitch

V15

4 - Packaging

Trough-hole

SMD models

Bulk (blank)...⁽¹⁾ (blank)...⁽¹⁾

(1) If blank, bulk packaging is implied. (2) N.A., Not Applicable: Tape and Reel packaging is only available for SMD terminals.

5 - Resistance value

10K

The RSR14 has 10K, linear taper and ±30% by default. Other resistive values, tolerances and tapers (log, antilog, cut tracks, constant value areas, etc.) can be studied on request. Please, enclose a drawing when ordering special tapers.

6 - Resistance law / taper

Lin - Linear A
- Special tapers have codes assigned: CODE YXXXXX

7 - Tolerance

±30%

3030

8 - Operating Life (Cycles)

Standard: 100.000 cycles: LV100
150.000 cycles: LV150
250.000 cycles: LV250
Long life: LV + number of cycles. i.e: LV100 for 300.000 cycles, LV300, LV1M LVXXX: ex: LV300

9 - Cut Track – Open circuit.

Open circuit at beginning of track, fully CCW PCI
Open circuit at end of track, fully CW PCF

10 - Detents (DT)

Not applicable for RSR14

11 - Terminals

SNAP IN P SNP
Shorter tip of terminal, TPXX, where XX is tip length (under request) TPXX, ex: TP25
Steel Terminals SH

12 - Housing

Color: For colors other than standard: -See color chart below- CJ-color, ex., red: CJ-RO

13 - Rotor

Color: For colors other than standard: -See color chart below- RT-color; ex., blue: RT-AZ

* Self-extinguishable property, V0, for housing and rotor:

By default, carbon is non self-extinguishable. Self-extinguishable property can be added. V0 means housing and rotor are V0. (blank)
If only the housing needs to be V0, then CJ-V0. CJ-V0, RT-V0
If only rotor: RT-V0

14 - Wiper

Wiper position (Standard: 50% ± 15°) (leave blank)

Initial or CCW PI

Final or CW PF

Others: following clock positions; at 3 hours: P3H PXH, ex: P3H

Wiper torque (Standard: <1.5Ncm) (leave blank)

Stronger or softer torque feeling is available on request.

15 - Linearity

Standard Independent linearity 3% LN3%

Other Independent linearity below x%, for example, 4%: LN4% LNx%; ex: LN4%

Absolute linearity controlled & below x% LAx%

Other features could be available on request, please, ask.

16 - Potentiometers with assembled accessories

Assembled from terminal side WT

Assembled from collector side WTI

Accessory Reference -XXXXX Example: 14117
See list of shafts and thumbwheels available

Color of shaft or thumbwheel -YY Example, white: BA

Non self-extinguishable. Self-extinguishable according to standard (leave blank) -V0
UL 94 (-V0 in box 17 modifies only the accessory, please, note.)

For ordering spare accessories: Accessory reference - color- flammability.
Ex. 14117-AZ-V0 is a blue self-extinguishable 14117 thumbwheel XXXX-YY-V0

Color chart for rotor, housing and accessories

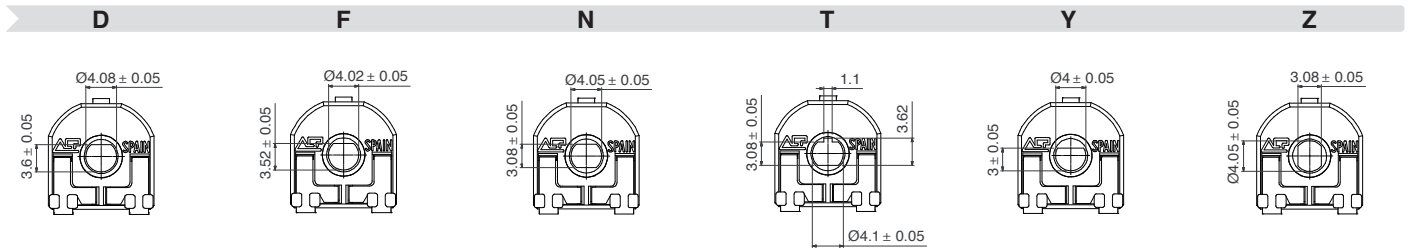
| | | | | | | | | | |
|----------------------|-------|---------|---------|-----|-------|--------|------|------|-------|
| Black ⁽¹⁾ | White | Neutral | Transp. | Red | Green | Yellow | Blue | Grey | Brown |
| NE | BA | IN | TA | RO | VE | AM | AZ | GS | MR |

(1) black is not an option for housings.

Rotors

T is the standard rotor for RSR14. Rotors are drawn in their standard positioning, 50% of rotation. Alternative delivery positioning can be requested.

Accessories in this catalogue are designed for N, Z and T rotors, unless otherwise stated. Other rotor styles, on request.

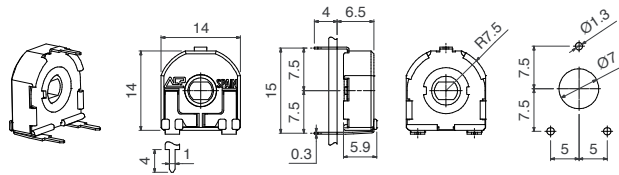


Standard color for F rotor is red

Models

All models shown here have the most common rotor for RSR14, the T rotor.

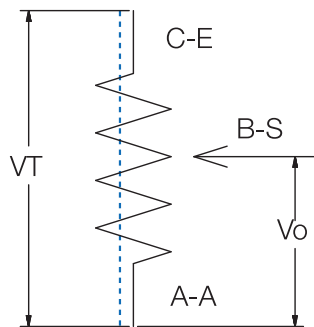
V15



Tapers

The standard taper is linear (A) and the standard ohm value is 10K, since a RSR14 will normally be used as a voltage divider. For other tapers, please, inquire.

Voltage Divider



Potentiometers with cut track

The cut track is an area with very high resistive value, resulting in an open circuit. It is widely used in lighting applications.

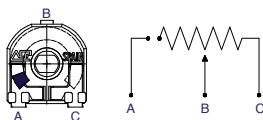
Mechanical life available with cut track needs to be confirmed case by case.

PCI = Cut at initial position, when the potentiometer is turned fully counter clockwise.

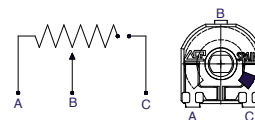
PCF = Cut at final position, when the potentiometer is turned fully clockwise.

Other positions are available on request.

PCI



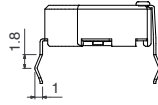
PCF



Terminals

By default, terminals are always straight, as shown on the “models” section. ACP can provide crimped terminals (with snap in, “SNP”) to better hold the component to the PCB during the soldering operation.

SNP

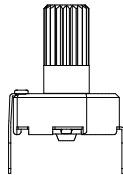


Shorter terminal tips are only available under request.

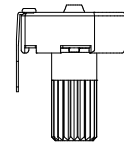
Possibilities for insertion of accessories

Accessories can be mounted on potentiometers through either the front side (WT) or the collector side (WTI). For the specific angular position of shafts with planes, a drawing with the exact position is requested.

WT Front side



WTI Collector side



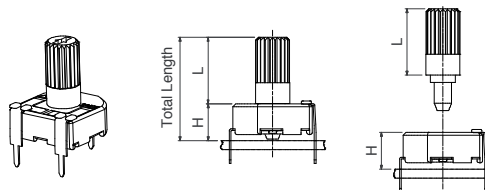
Shafts

Shafts are available in different colors (color chart in “how to order” section) and with self-extinguishable property, according to UL 94 V-0, under request. ACP can study special shaft designs.

Shafts can be sold separately or delivered already mounted on the potentiometer at ACP.

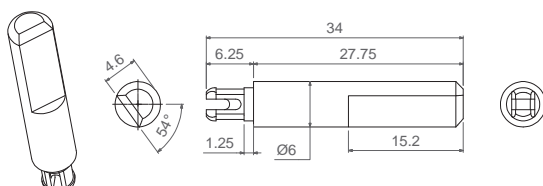
When a shaft is mounted on a potentiometer, the distance from the top of the potentiometer to the top of the shaft is marked with “L” in the table below, as shown in the drawings:

V potentiometer + shaft

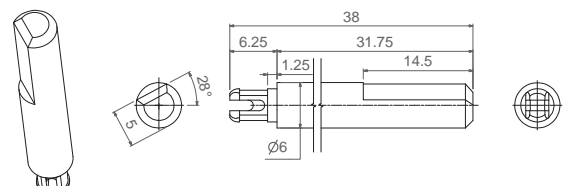


| | | | | | | | | | |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Shaft | 14117 | 14081 | 14187 | 14251 | 14067 | 14084 | 14250 | 14072 | 14073 |
| L Dimension | 11.70 | 18.25 | 18.75 | 18.75 | 27.75 | 23.50 | 25.00 | 31.75 | 38.50 |

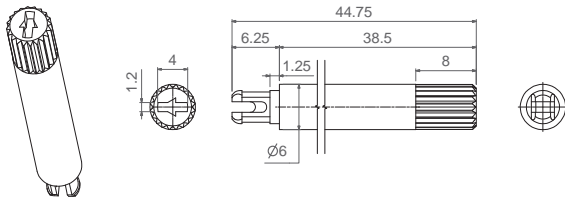
14067



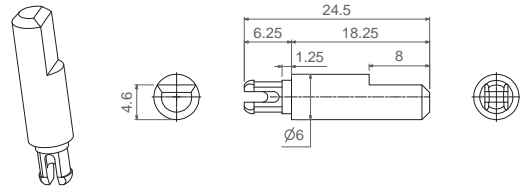
14072



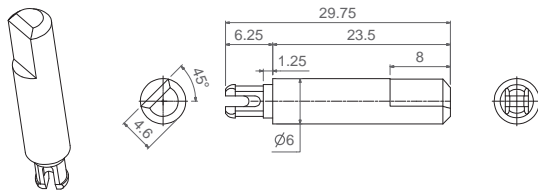
14073



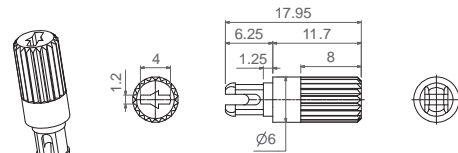
14081



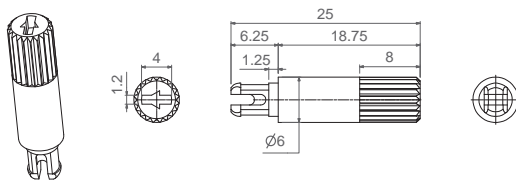
14084



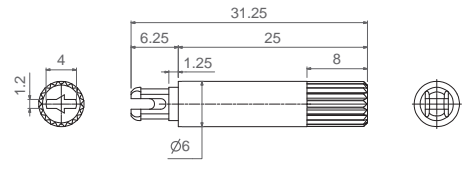
14117



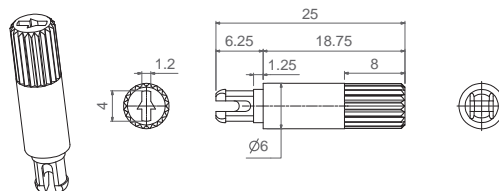
14187



14250



14251

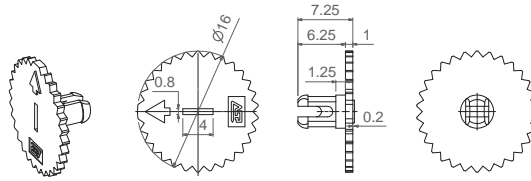


Thumbwheel

Thumbwheels are available in different colors (color chart in “how to order” section) and with self-extinguishable property according to UL 94 V-0, under request.

Thumbwheels can be mounted on the potentiometers at ACP or sold separately. ACP can study special thumbwheel designs.

14003



Packaging

Bulk packaging:

| RSR14 model | With shaft or thumbwheel inserted? | Pieces per small box (150 x 100 x 70) | Pieces per bigger box (250 x 150 x 70, CG on description) |
|-------------|---|---------------------------------------|---|
| V15 | None, only potentiometers. | 200 150 for models with* | 700 |
| | 14003, 14117 | 100 | 400 350 for models with* |
| | 14067, 14072, 14073, 14081, 14084, 14187, 14250. | 75 | To be determined. |

For models with * and an inserted accessory, please, inquire about the quantity per box in that case.

Electric Specifications

These are standard features; other specifications and out of range values can be studied on request.

RSR14 Through-hole

| | |
|--|---|
| Range of resistance values* Lin (A) | Standard value is 10K, as voltage divider use is supposed |
| Tolerance* | 30% |
| Variation laws | Lin (A). Other tapers available on request |
| Residual resistance | Minimum value 2Ω |
| CRV - Contact Resistance Variation (dynamic) | Lin (A) Electrical Angle 245°±20° ≤ 3%Rn. Other tapers, please inquire |
| CRV - Contact Resistance Variation (static) | Lin (A) Electrical Angle 245°±20° ≤ 5%Rn. Other tapers, please inquire |
| Maximum power dissipation** Lin (A) | at 50°C, 0.15W |
| Maximum voltage Lin (A) | 250VDC |
| Operating temperature | -25°C ... +85°C |
| Independent Linearity | 3% |
| Temperature coefficient 100Ω ≤ Rn ≤ 10KΩ 10KΩ < Rn ≤ 5MΩ | +200/ -300 ppm +200/ -500 ppm |

* Out of range ohm values and tolerances are available on request, please, inquire.

** Dissipation of special tapers will vary, please, inquire.

Mechanical Specifications

RSR14 Through-hole

| | |
|----------------------------------|---|
| Resistive element | Carbon technology |
| Angle of rotation (mechanical) | 265° ± 5° |
| Angle of rotation (electrical) | 245° ± 20° |
| Wiper standard delivery position | 50% ± 15° |
| Max. stop torque | 10 Ncm |
| Max. push/pull on rotor | 50 N |
| Wiper torque* | <1.5 Ncm |
| Mechanical life | Standard: 100.000. 150.000 and 250.000 cycles. Up to 1.000.000 cycles (please, inquiry). |

* Stronger or softer torque feeling is available on request.

Test results

The following typical test results (with 95% confidence) are given at 23°C ±2°C and 50% ±25% RH. Maximum linearity after mechanical tests: 4%.

RSR14 Through-hole

| | Test conditions | Typical variation of Rn |
|-------------------------|---|-------------------------|
| Damp heat | 500 h. at 40°C and 95% RH | ±20% |
| Temperature Coefficient | 16 h at 85°C, plus 2 h at -25°C | ±20% |
| Load life | 1.000 h. at 50°C | ±20% |
| Mechanical life | 150.000 cycles at 10 c.p.m. and at 23°C ± 2°C | ±20% |
| Storage (3 years) | 3 years at 23°C ± 2°C | ±3% |

Power derating curve:

