

# N-15

15mm Carbon Position Sensor/ Potentiometer



## FEATURES

- Conceived and designed for easy customisation.
- SMD or Through-hole Mount.
- Endless Rotation (360°).
- Wide Electrical Angle (340° ± 10°).
- Extended Mechanical Life (100k cycles).
- Working Temperature Range (-40°C to +120°C).
- Low Profile (4.4 mm).
- Linearity ± 3% (standard).
- Embossed Tape or Bulk packaging.
- Reflow Soldering capability.
- Shaft insertable from both sides.
- Polarised "T" rotor (European Home Appliance standard).
- All PT/ PTC 15 shafts compatible.
- IP54 protection according to IEC 60529.

## STANDARD SPECIFICATIONS

Resistance values*:	5k to 100k
Tolerance:	± 30%
Nominal Power:	0.15 W @ 50°C
Linearity (absolute):	± 3%
Taper:	Linear
Mechanical Life**:	100K cycles
Temperature Range:	-40°C to +120°C
Mechanical Angle:	360°
Electrical Angle:	340° ± 10°
Rotational Torque:	≤ 20 mN.m
Max. Voltage:	250 VDC

\* Others check availability

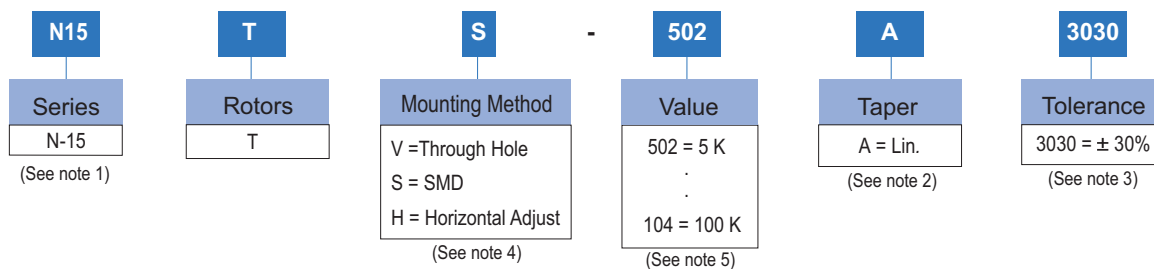
\*\* 200K cycles version available check availability. For higher mechanical life see the Z15 product.

## TYPICAL APPLICATIONS

The N15 series offers an SMD and Through Hole mount solution for the majority of **Position/Rotary Sensor** and **multi-purpose Control** applications such as:

- Automotive HVAC, Seat, Rear-view mirror actuator feedback sensors and HVAC Controls
- Temperature Control for Boilers, Wall Heaters, Showers, Radiators, Conventional and Microwave Ovens, Freezers...
- Timer & Function/Programme Select for Washing Machines, Dishwashers and all White Goods in general.
- Size and Position detectors

## HOW TO ORDER



### NOTES:

- (1) A wide variety of custom substrates available
- (2) Availability of a wide range of customised tapers and step curves
- (3) Optional precision laser-trimmed voltage divider calibration
- (4) Horizontal adjust versions will be studied case by case
- (5) Value Example: Code: 50 2 5K Ω  
 ↳ Numb of zeros  
 ↳ First two digits of the value.

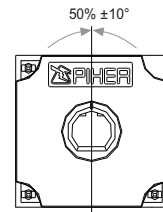
Shafts are not available mounted to the potentiometer and should be ordered separately

NOTE: The information contained here should be used for reference purposes only.

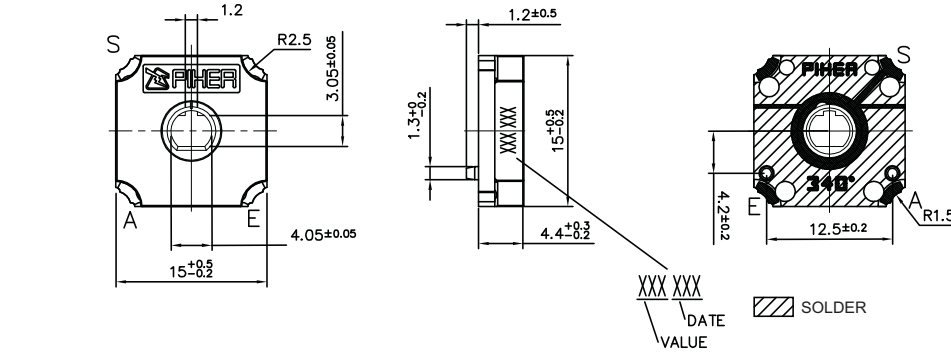
Wiper positioned at 50 % of the electrical angle.

N-15 T S + DRAWING NUMBER (Max. 16 digits)

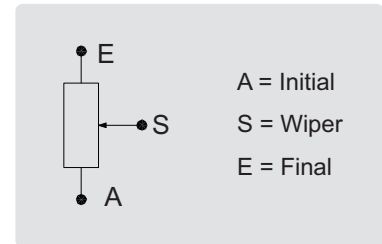
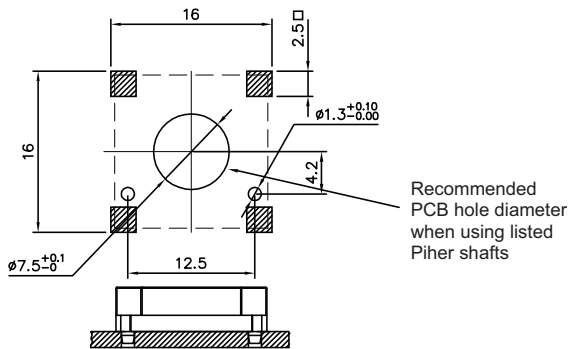
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.



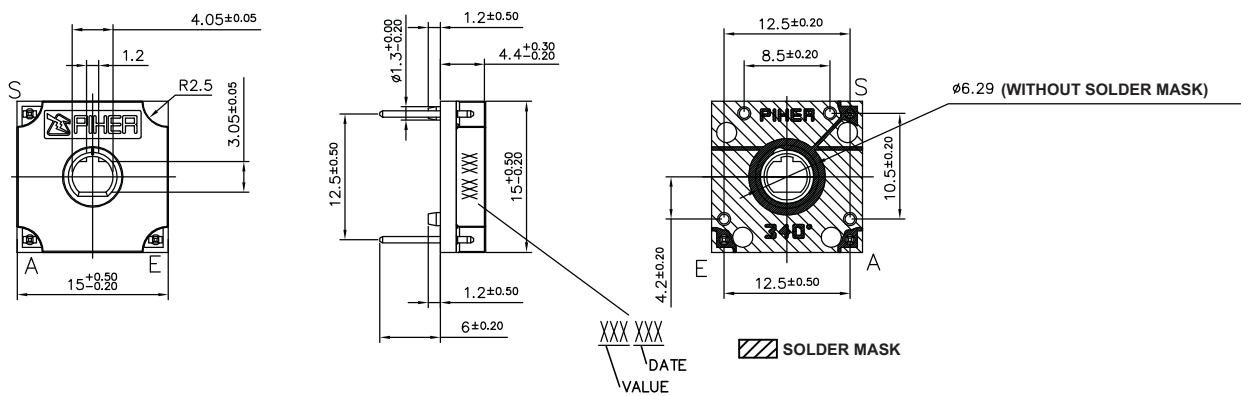
SMD MOUNT



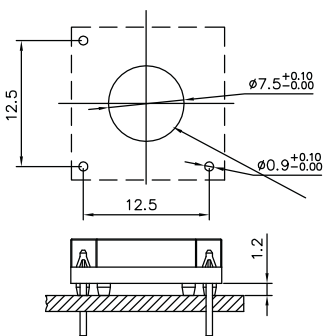
FOOT - PRINT



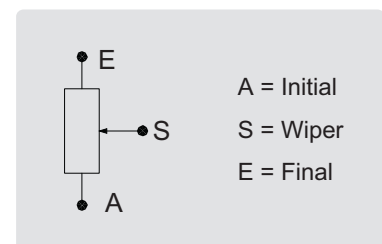
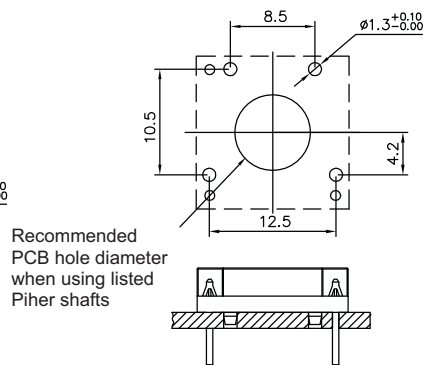
THROUGH HOLE MOUNT



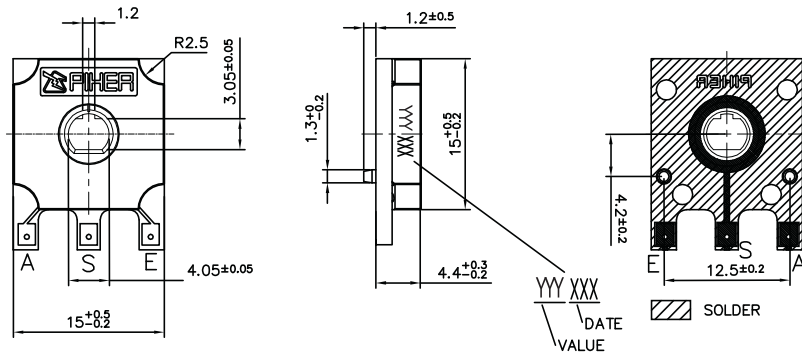
PCB HOLE LAYOUT 1



PCB HOLE LAYOUT 2



# HORIZONTAL ADJUST - VERTICAL MOUNT



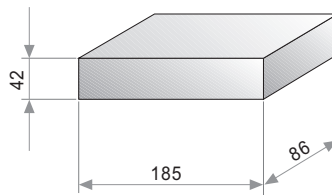
## TESTS

## TYPICAL VARIATIONS

ELECTRICAL LIFE	1.000 h. @ 50°C; 0.15 W	±40 %
MECHANICAL LIFE (CYCLES)	100,000 @ 20 CPM	±40 % (Rn < 100 K)
TEMPERATURE COEFFICIENT	-40°C to +120°C	±300 ppm (Rn < 100 K)
THERMAL CYCLING	10h. @ 120°C; 10h. @ -40°C	±40 %
DAMP HEAT	500 h. @ 40°C @ 95% HR	±40 %

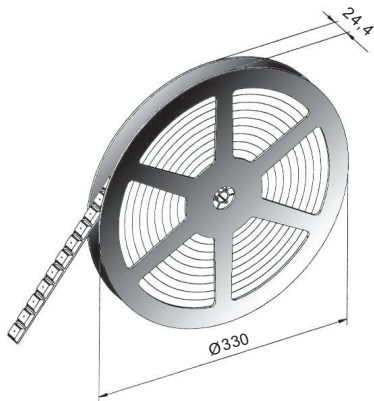
NOTE : Out of range values may not comply these results.

## PACKAGING



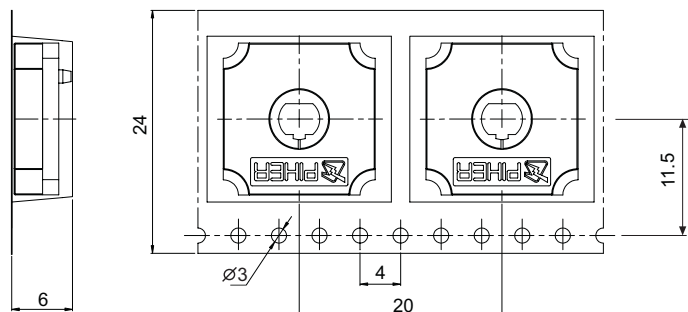
### BULK

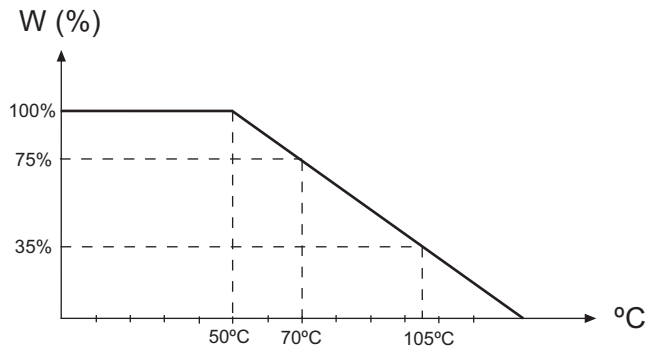
150 Units per box.  
Through hole version only



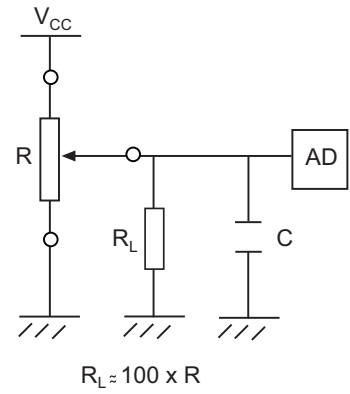
### EMBOSSSED TAPE

500 Units per Reel  
SMD version only





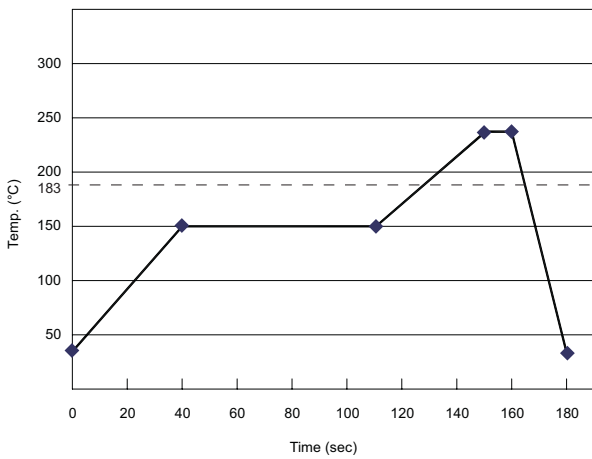
Recommended connection scheme for Piher's position sensors (voltage divider)



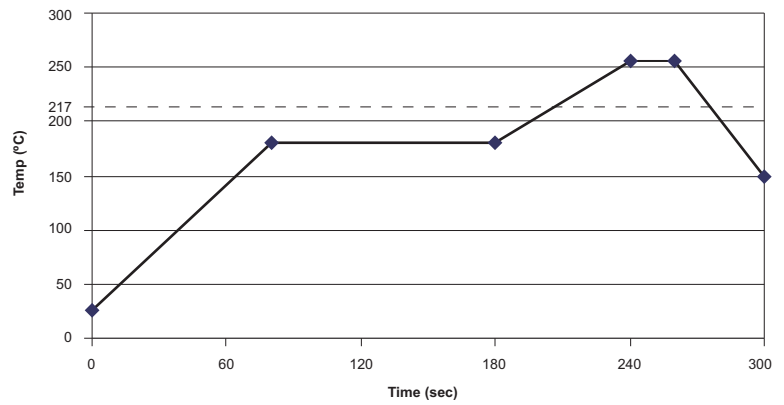
RECOMMENDED REFLOW PROFILE

SMD Types

SnPb Reflow Profile



Lead Free Reflow Profile



The recommended reflow profile is provided as a guideline. Optimal profile may differ due to oven type, assembly layout or other design or process variables. Customers should verify actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

SHAFTS

Hollow model shafts

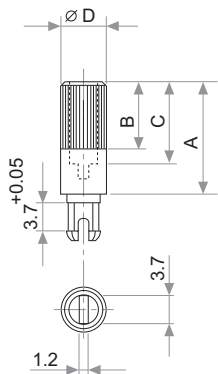


FIG.	A	B	C	D	Ref.
1	12	9	8	6	5272
2	19	9	15	6	5214
5	9.5	6.5	5.5	6	5208
9	35	9	15	6	5216
10	37.8	9	33.8	6	5218
11	35	25	15	6	5209
13	7.8	4.8	3.8	6	5265

Solid model shafts

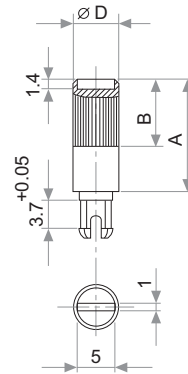


FIG.	A	B	D	Ref.
6	15	9	6	5219
7	16.8	9	6	5220
8	25.3	9	6	5207
12	46	5	6	5227

Slot (1 x 1.4) perpendicular to wiper position. Fig. 12 slot is on line with wiper position.

A = Length (FRS); B=Knurling length; C=Hollow depth; D=Shaft diameter; FRS=From rotor surface

Other shafts

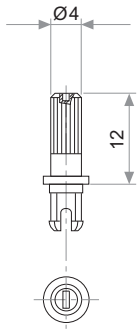


Fig. 3 / Ref. 5372

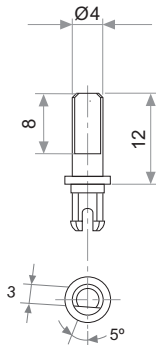


Fig. 15 / Ref. 5217

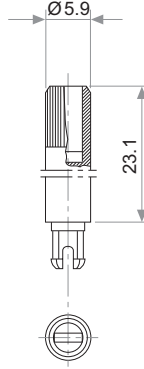


Fig. 17 / Ref. 5210

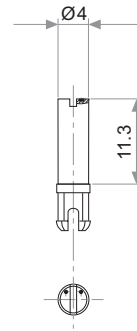


Fig. 18 / Ref. 5271

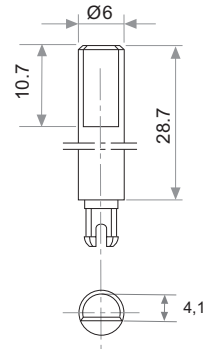


Fig. 19 / Ref. 6032\*

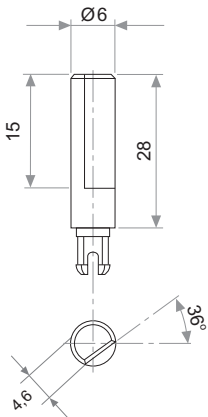


Fig. 20 / Ref. 5369\*

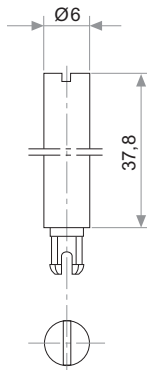


Fig. 21 / Ref. 6031\*

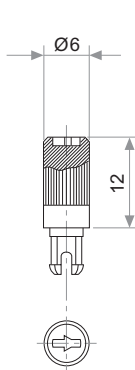


Fig. 22 / Ref. 6029

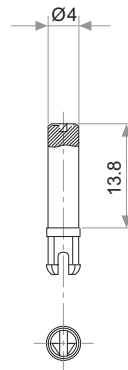


Fig. 23 / Ref. 6022

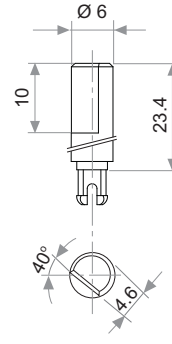


Fig. 29 / Ref. 6162

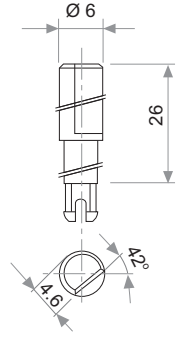


Fig. 25 / Ref. 6059

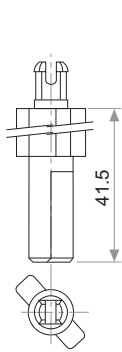


Fig. 27 / Ref. 5268\*

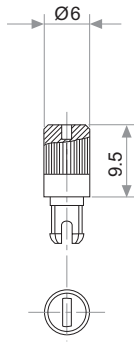


Fig. 28 / Ref. 6055

\* Not available in self extinguishable plastic

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