

## Type 51 Series

### Key Features

- Choice of Shafts and Edgewheels
- SPST Switch Style
- Available in Distribution
- Automatic Machine Insertable Modules
- Eyelet or PC Terminations
- Linear and Non-Linear Laws
- Multi Gang Versions Available



The Type 51 Series from TE Connectivity offers a small, high quality potentiometer system. You can choose a standalone module or a conventional bush potentiometer with shaft. Advanced carbon polymer element technology potentiometers with or without switches are available to meet your every requirements.

### Characteristics - Electrical

|                               |                    |   |
|-------------------------------|--------------------|---|
| <b>Resistance Range</b>       | <b>Linear Law:</b> | 470 Ohm to 4.7 Megohm                     |
|                               | <b>Log Law:</b>    | 2.2K Ohm to 470K Ohm                      |
| <b>Resistance Values:</b>     |                    | 1.0, 2.2, 4.7 per decade                  |
| <b>Tolerance:</b>             |                    | ± 20% (tighter by selection)              |
| <b>Power Rating</b>           | <b>Linear Law:</b> | 0.2 Watt @ 40°C                           |
|                               | <b>Log Law:</b>    | 0.1 Watt @ 40°C                           |
| <b>Operating Voltage</b>      | <b>Linear Law:</b> | 350 VAC or 500 VDC maximum                |
|                               | <b>Log Law:</b>    | P maximum x R nominal                     |
| <b>Load Life:</b>             |                    | $\Delta R < 10\%$ after 1000 hours @ 70°C |
| <b>Rotational Life:</b>       |                    | $\sqrt{\Delta R} < 10\%$ @ 15,000 cycles  |
| <b>CRV (Linear Law):</b>      |                    | $\Delta R < 1\%$                          |
| <b>Isolation Voltage:</b>     |                    | 500 V dc                                  |
| <b>Insulation Resistance:</b> |                    | > 100 Megohm                              |

### Characteristics - Mechanical

|                           |                 |
|---------------------------|-----------------|
| <b>Angle of Rotation:</b> | 300° ± 2°       |
| <b>Rotational Torque:</b> | 10 mNm maximum  |
| <b>Stop Strength:</b>     | 400 mNm maximum |
| <b>Rotational Life:</b>   | 25,000 cycles   |

### Characteristics - Environmental

|                                 |                                |
|---------------------------------|--------------------------------|
| <b>Storage Temperature:</b>     | - 40°C to 85°C                 |
| <b>Operating Temperature:</b>   | - 25°C to 70°C                 |
| <b>Humidity:</b>                | < 15% $\Delta R$ RH 75% @ 35°C |
| <b>Temperature Coefficient:</b> | ± 500 PPM/°C @ -25 to 70°C     |
| <b>Climatic Category:</b>       | 25/070/10                      |

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### Characteristics - Switch

|                               |                       |
|-------------------------------|-----------------------|
| <b>Load Life:</b>             | 1000 Hours at 0.5 W   |
| <b>Contact Resistance:</b>    | < 20 milliohm initial |
| <b>Rating:</b>                | 3.5 Amp @ 14.4 VDC    |
| <b>Contact Configuration:</b> | SPST Off @ CCW E      |
| <b>On/Off Torque:</b>         | 30 mNm maximum        |
| <b>Operational Angle:</b>     | 30° maximum           |
| <b>Electrical Rotation:</b>   | 50° to 295°           |

### Soldering Condition

**This product has been designed for flow solder only.**

SOLDER BATH: 235°C +0°C/-5°C

IMMERSION TIME: 2 ±0.5 seconds

TEST CONDITIONS: IEC 391-1 clause 6.22.3

TEST METHOD: IEC 68-2

The Type 51 Series is designed for flow soldering only. If Hand Soldering is essential please take extreme care when applying solder.

Do not overheat the terminal by prolonged exposure to heat otherwise intermittent operation could result.

### Derating Curve



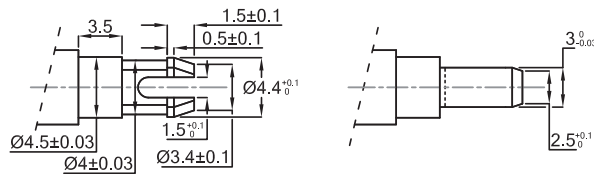
Dissipation as a function of temperature.

Potentiometers covered by this specification are derated from 100% rated dissipation at 40°C to zero dissipation at 100°C.

Linear Law 100% - 0.2W

Non-Linear Law 100% - 0.1W

### Snap-In Shafts and Edgewheels - For Standalone Modules



The diagram illustrates the snap-in part of a plastic actuator which can be used to rotate the Series 51 Standalone module.

### Accessory Options - For Standalone Modules

At the date of publication the following mould tools exist for plug in accessories:

|   |  |
|---|--|
| <b>Shafts 60 mm long x 6 mm diameter</b>              | with knurl end and screwdriver slot colour black |
| <b>Shafts 30 mm long x 6 mm diameter</b>              | with knurl end and screwdriver slot colour black |
| <b>Shafts 20 mm long x 6 mm diameter</b>              | with knurl end and screwdriver slot colour black |
| <b>Shafts 10 mm long x 6 mm diameter</b>              | with knurl end and screwdriver slot colour black |
| <b>Edgewheel for horizontal modules 25mm diameter</b> | colour black.                                    |

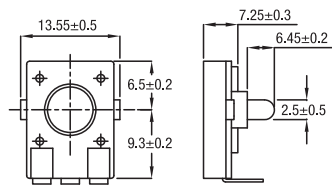
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### Thumbwheel Actuating Devices

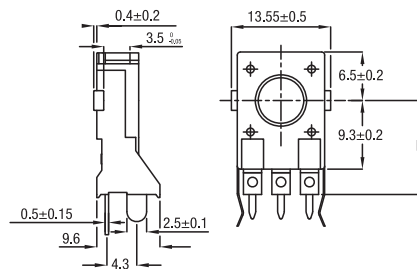


### Dimensions - Single Module

#### Type 51 Horizontal



#### Type 53 Vertical



### Dimensions - Potentiometer

#### Type 54 No Switch

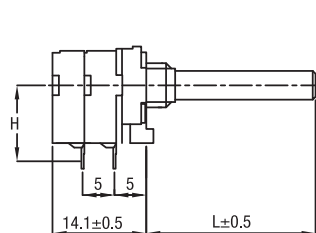


#### Type 56 with Switch



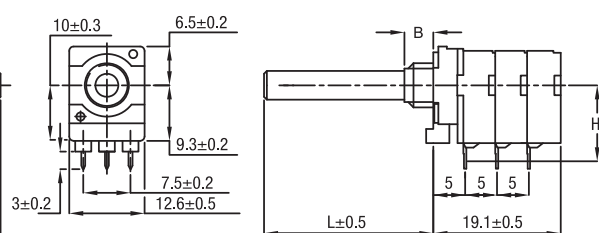
H - 10mm or 12.5mm to choice

#### Type 55 Dual Section



H - 10mm or 12.5mm to choice

#### Type 61 Triple Section



B - 5mm or 8mm

Type 61 has the same general dimensions as Type 55

## Type 51 Series

### Spindle Options - Potentiometers with Bush



### Panel Hole Data - Potentiometers with Bushes Required Mounting Holes in Chassis

For Single and Dual Gang Potentiometers with Mounting Bush M7 x 0.75mm.

Fix Potentiometer with Mounting Nut Supplied.  
Max. Torque for tightening - 1 Nm  
Thickness of Mounting Plate - 1mm



### How to Order

| 51                               | 102   | A  | 4                   | 20                     | PL                         |
|----------------------------------|---|--|---------------------|------------------------|----------------------------|
| Common Part                      | Value   | Resistance Law                           | Shaft Diameter      | Shaft Length           | Spindle Style              |
| 51<br>53<br>54<br>55<br>56<br>61 | The first two digits are significant figures of the resistance value and the third one denotes the number of zeros following.<br><br>e.g. 4K7: 472<br>47K: 473<br>470K: 474 | A - Linear<br>B - Log<br>C - Inverse Log | 4 - 4mm<br>6 - 6 mm | 20 - 20mm<br>30 - 30mm | PL - Plain<br>FL - Flatted |