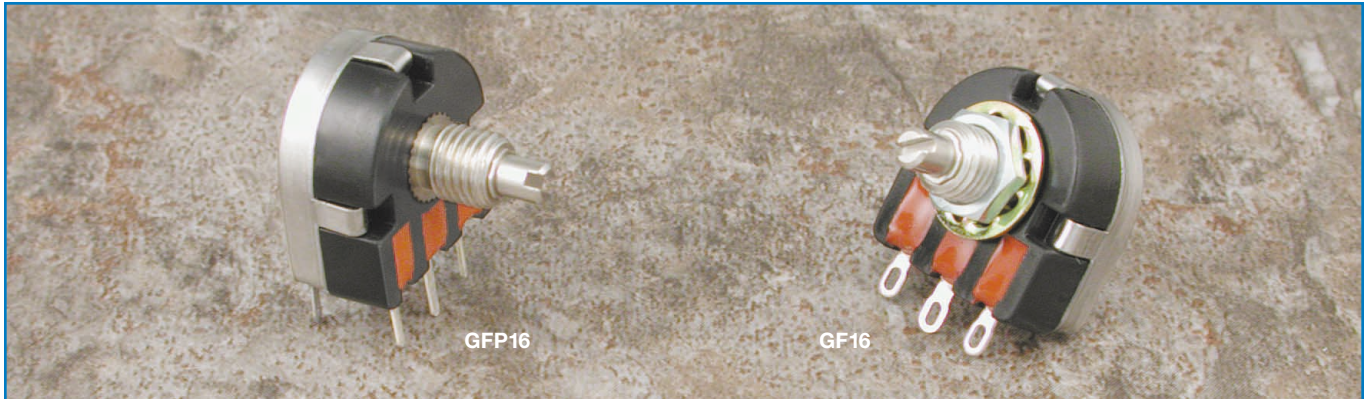


## 16mm Diameter, Single-Turn, Cermet Industrial Panel Controls



### Features

- 16mm diameter, single-turn industrial panel controls
- Cermet film element
- Single unit, single shaft
- Excellent environmental characteristics
- Wide temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Metal shaft and bushing
- Linear taper
- Shaft lock available
- Panel and PCB mounting styles
- Lug or right angle mount pin terminals
- 3.2mm diameter shafts in slot, flat or round end styles
- Standard 10mm or 15mm shaft length

### Specifications

#### Electrical

|                                  |   |
|----------------------------------|---|
| <b>Standard Resistance Range</b> | ..... 100 $\Omega$ to 1M $\Omega$   |
| <b>Resistance Tolerance</b>      | ..... $\pm 20\%$ standard<br>( $\pm 10\%$ special order)  |
| <b>End Resistance</b>            | ..... 3 $\Omega$ max.   |
| <b>Resistance Taper</b>          | ..... B = linear  |
| <b>Peak Noise (C.R.V.)</b>       | ..... 3% or 5 $\Omega$ , whichever is greater   |
| <b>Power Rating</b>              | ..... 0.5 watt at $+70^{\circ}\text{C}$ , 0 watt at $+120^{\circ}\text{C}$  |
| <b>Maximum Input Voltage</b>     | ..... 400VDC or power rating,<br>whichever is smaller   |
| <b>Temperature Coefficient</b>   | ..... $\pm 100$ ppm/ $^{\circ}\text{C}$ , 200 $\Omega$ to 500k $\Omega$<br>$\pm 250$ ppm/ $^{\circ}\text{C}$ , other values |
| <b>Insulation Resistance</b>     | ..... 500M $\Omega$ minimum at 500VDC   |
| <b>Dielectric Strength</b>       | ..... 500VAC, 1 minute  |

#### Mechanical

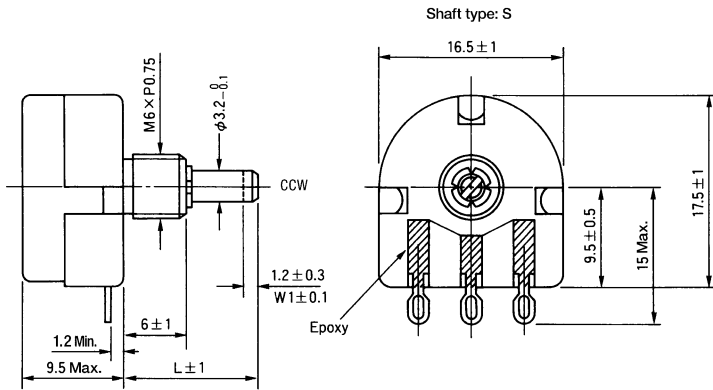
|                            |  |
|----------------------------|--|
| <b>Mechanical Travel</b>   | ..... $260^{\circ} \pm 10^{\circ}$   |
| <b>Shaft Torque</b>        | ..... 20 to 200 gf $\cdot$ cm (0.277 to 2.773 oz $\cdot$ in)                           |
| <b>Stop Strength</b>       | ..... 3 kgf $\cdot$ cm (41.59 oz $\cdot$ in) max.                                      |
| <b>Mounting Nut Torque</b> | ..... 10.2 kgf $\cdot$ cm (141.4 oz $\cdot$ in) max.                                   |
| <b>Solderability</b>       | ..... $235^{\circ}\text{C}$ , 5 seconds  |
| <b>Marking</b>             | ..... Model type, taper, resistance,<br>shaft type, terminal identification, date code |

#### Environmental

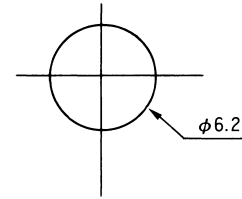
|                                  |   |
|----------------------------------|---|
| <b>Temperature Range</b>         | ..... $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$   |
| <b>High Temperature Exposure</b> | ..... $+120^{\circ}\text{C}$ , 250 hours<br>$\Delta\text{T/R} \leq \pm 4\%$   |
| <b>Load Life</b>                 | ..... $+70^{\circ}\text{C}$ , 1,000 hours with rated load<br>$\Delta\text{T/R} \leq \pm 5\%$                        |
| <b>Thermal Shock</b>             | ..... $-55^{\circ}\text{C} \sim +120^{\circ}\text{C}$ ,<br>5 cycles without load<br>$\Delta\text{T/R} \leq \pm 3\%$ |
| <b>Vibration</b>                 | ..... 10-55Hz, 1.5mm amplitude,<br>3 directions, 2 hours each<br>$\Delta\text{T/R} \leq \pm 2\%$                    |
| <b>Soldering Heat Resistance</b> | ..... $350^{\circ}\text{C}$ , 3 seconds<br>$\Delta\text{T/R} \leq \pm 1\%$  |
| <b>Rotational Life</b>           | ..... 15,000 cycles (500 cycles for shaft lock<br>models only) without load<br>$\Delta\text{T/R} \leq \pm 4\%$      |

$\Delta\text{T/R}$  = Total Resistance Change

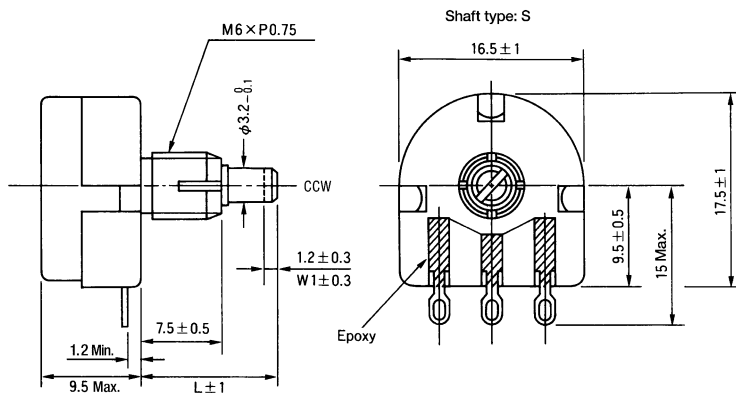
**GF16**  
**Panel Mount, Single Unit, Single Shaft**  
**Right Angle Ear-Lug Terminals, 3-Lug Inline Pattern**



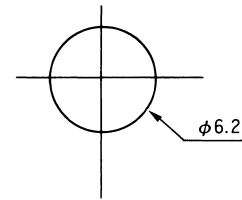
**Recommended Panel Mounting Hole**



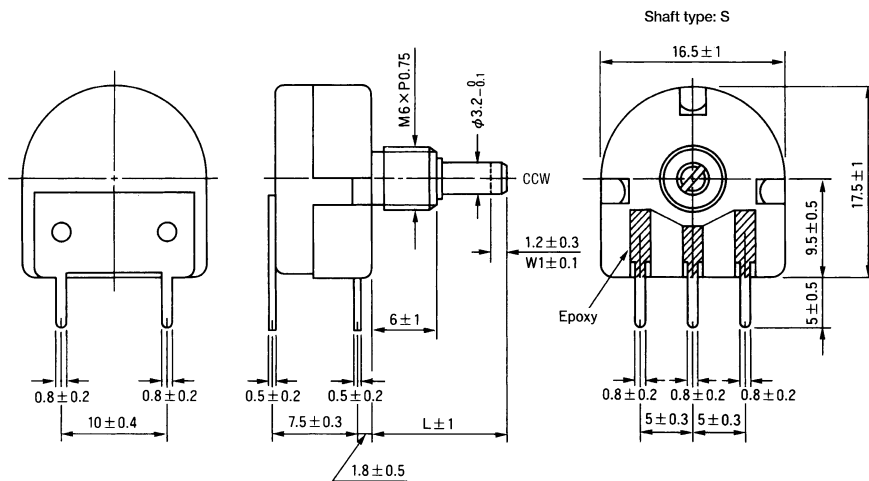
**GF16L**  
**Panel Mount, Single Unit, Single Shaft with Shaft Lock**  
**Right Angle Ear-Lug Terminals, 3-Lug Inline Pattern**



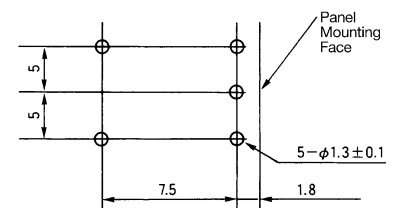
**Recommended Panel Mounting Hole**



**GF16**  
**PCB Mount, Single Unit, Single Shaft**  
**Right Angle Mount Pin Terminals, 3-Pin Inline Pattern, 2-Pin Rear Support Bracket**



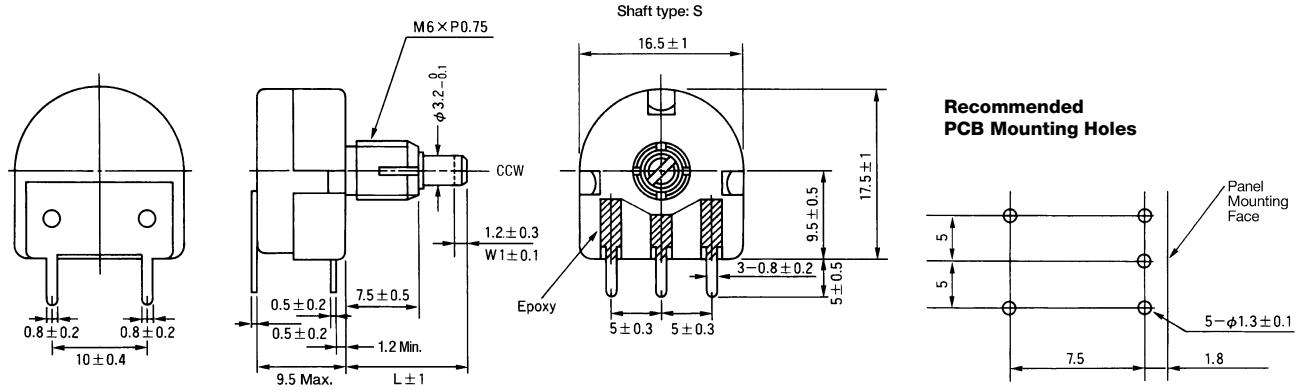
**Recommended PCB Mounting Holes**



**GF16L**

**PCB Mount, Single Unit, Single Shaft with Shaft Lock**

**Right Angle Mount Pin Terminals, 3-Pin Inline Pattern, 2-Pin Rear Support Bracket**



**GF P 16 L 10 S B 103 M**

NOTE: FMS = From Mounting Surface

- ➔ **Resistance Tolerance:** **M** = ±20% (standard).  
**K** = ±10% (special order).
- ➔ **Resistance Code:** Expressed in ohms. A three digit code where the first two digits are significant figures, and the third digit indicates the number of zeros that follow these figures (i.e., 100 = 10Ω; 101 = 100Ω; 102 = 1,000Ω; 103 = 10,000Ω; 105 = 1,000,000Ω). See table for standard resistance values.
- ➔ **Resistance Taper:** **B** = Linear.
- ➔ **Shaft End Style:** **S** = Slotted.  
**F** = Flatted.  
**R** = Round.
- ➔ **Standard Shaft Length:** **10** = 10mm FMS.  
**15** = 15mm FMS.  
Up to 30mm shaft length available (special order).
- ➔ **Shaft Lock:** **L** = With Shaft Lock.  
**Blank** = Without Shaft Lock.
- ➔ **Size:** **16** = 16mm Diameter.
- ➔ **Style:** **Blank** = Panel Mount, Single Unit, Single Shaft, Right Angle Ear-Lug Terminals, 3-Lug Inline Pattern.  
**P** = PCB Mount, Single Unit, Single Shaft, Right Angle Mount Pin Terminals, 3-Pin Inline Pattern, 2-Pin Rear Support Bracket.
- ➔ **TOCOS Series Name:** **GF** = Cermet Film Element.

**Standard Resistance Values and Part Numbering Codes**

**Standard Nominal Total Resistance Values and Part Numbering Codes**

| Resistance (Ω) | Code | Resistance (Ω) | Code | Resistance (Ω) | Code | Resistance (Ω) | Code | Resistance (Ω) | Code |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 100            | 101  | 1,000          | 102  | 10,000         | 103  | 100,000        | 104  | 1,000,000      | 105  |
| 200            | 201  | 2,000          | 202  | 20,000         | 203  | 200,000        | 204  |                |      |
| 500            | 501  | 5,000          | 502  | 50,000         | 503  | 500,000        | 504  |                |      |

**Refer to Shaft End Styles Specifications and Hardware Specifications for details and availability.**  
**For additional information, refer to Guidelines and Precautions for Using Panel Controls.**