



## General Information

CSI shunts are designed for use with 50 or 100 millivolt measuring instruments, calibrated in terms of the ampere ratings of the shunt. The accuracy of our shunts is better than  $\pm 1/4\%$  of the rated value and the temperature coefficient is  $\pm 0.000015$ .

It is important that the resistance be constant under different temperature conditions. It is usually assumed that the maximum temperature will be about  $80^{\circ}\text{C}$  and the usual range is  $40^{\circ}\text{--}60^{\circ}\text{C}$ .

**For continuous operation, it is recommended that shunts are not run at more than two-thirds (2/3) the rated current under normal conditions of use as per IEEE standards.**

If the shunt is used in an AC or pulse current environment make sure that the highest pulse current does not exceed the recommended two-thirds, the rated current for continuous operation. In this case the average millivolt reading using a rms meter will be proportional with the duty cycle of the AC current.

### Installation

By definition, a shunt is a resistor, and will generate heat with passage of current. Because of this, the resistance blades of the shunt should be mounted in a vertical position to promote free convectional flow of air. Where this mounting position is impractical and in installations where the shunt is in a confined location forced air cooling should be provided.

***Under no condition should the manganin shunt strip be allowed to surpass  $145^{\circ}\text{C}$ , as this will cause a permanent change in resistance.***

Shunts should be installed to protect them from damage by thermal expansion forces in the connecting bus bars or by short circuit forces. It should be recognized that shunts are inherently weaker than their current connections and that special flexibility may be needed at times.

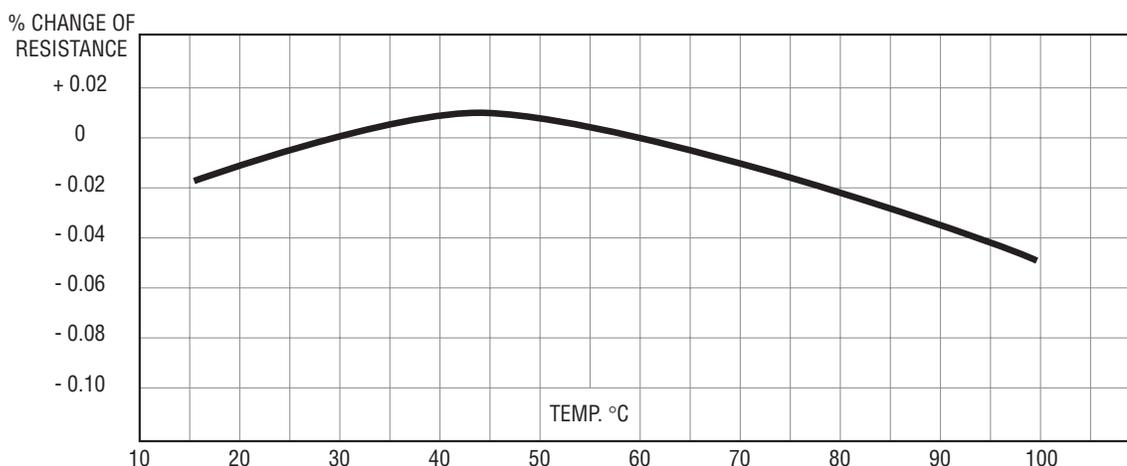
Where possible all shunts should be connected in the grounded side of the line. Portable type shunts, with an insulating base, when used on circuits above 750 volts should be mounted in the grounded side of the circuit.

Where more than one bus bar is to be connected to each end of a single terminal shunt, these bars should be distributed as equally as possible on each side of the shunt terminals.

### Leads

In some applications it is not feasible to mount the shunt close enough to the instrument to permit the use of the standard lead lengths. If longer lead lengths are necessary, the additional drop in the leads must be taken into consideration when ordering analog instruments.

## Characteristics of Manganin Shunt Cold Formed – Stress Relieved



Temperature coefficient of resistance:  $\pm 15\text{ppm}/^{\circ}\text{C}$ .