

## Application

UPI shunts are designed for use with 50,60,100 or 150 millivolt measuring instruments, calibrated in terms of the ampere ratings of the shunt. The accuracy of our shunts is better than 1.0% (0.5% optional) 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° C and the usual range is 40° - 60°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. By definition, a shunt is a resistor, and will generate heat with passage of current. Because of this, the resistance rods or blades of the shunt should be mounted in a 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 140°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. In some applications it is not feasible to mount the shunt close enough to the instrument to permit the use of standard lead lengths. If longer lead lengths are necessary, the additional drop in the leads must be taken into consideration.

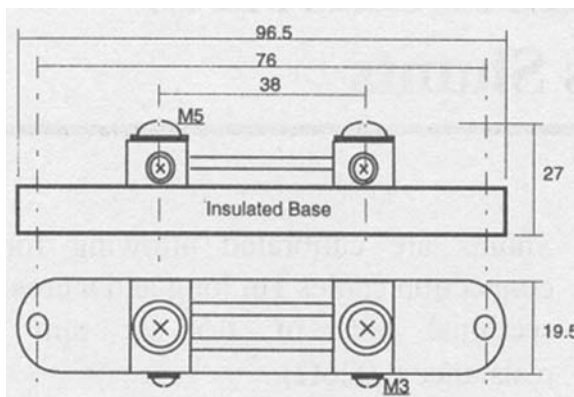
An Instrument Shunt is a type of resistor designed to be connected in parallel with a measuring device to extend the current range beyond a particular value for which the instrument is capable of measuring directly. Any shunt by definition is a resistor and will generate heat with the passage of current. Shunt ratings are established by finding the power required to achieve a specified manganin temperature rise in free air at certain predetermined conditions. When operating conditions are significantly different from the rating conditions, the shunt should be de-rated or up-rated accordingly to keep the manganin temperature within reasonable limits in order to prevent premature failure, reduced reliability, reduced rated accuracy or causing permanent change in resistance. UPI's standard shunts are rated to meet AS1042 and IEEE Standards. Selection of ratings should be based on operation at anormal current of 2/3 the rated value.

Ratings are based on mountings in accordance with Reference Test Conditions:

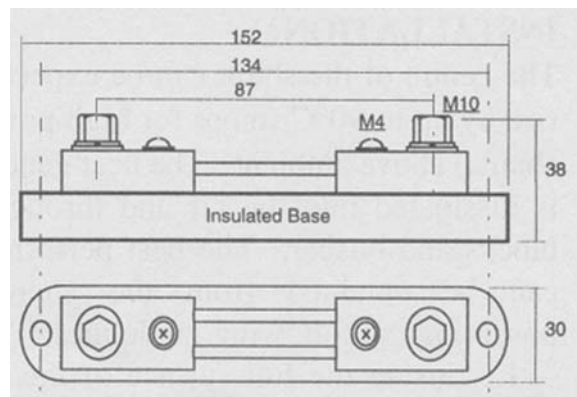
- o Reference Temperature: 25°C ( $\pm 2^\circ\text{C}$ )
- o Position: Current terminals and resistance rods/blades, allowing free air circulation
- o Connections: Tightly bolted using all terminals or tightly bolted to lugs with cables or proper cross-sections
- o Range from 1 to 12,000A

The following diagrams are for our standard 625 series. Mil std lightweight shunts are also available and shunts can be custom made to your specification.

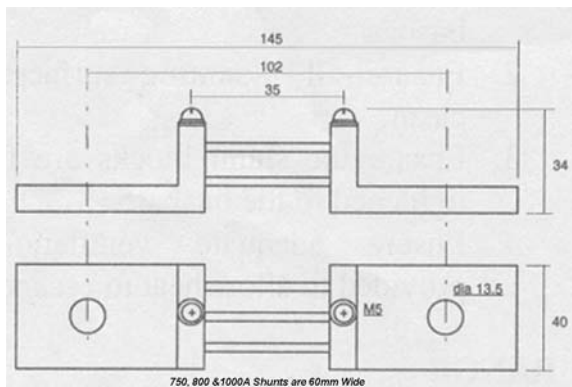
## Dimensions



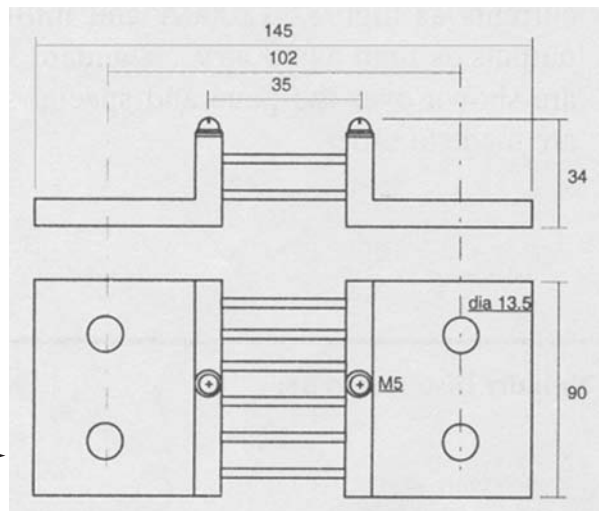
1~49A



50~150A



200~1000A



1001~2000A