Selecting ANSI Class Metering Current Transformers

One of the most common uses of current transformers are in metering and power usage, where a 5 Amp secondary current transformer is applied to a panel meter or a power meter for displaying amperage or recording power. When extremely accurate measurement is required, or when revenue is generated from a power meter, ANSI class current transformers are generally selected. The following table describes the characteristics of the ANSI class transformer.

CURRENT RATIO	ANSI METERING CLASS @ 60 Hz				
	B0.1	**B0.2**	**B0.5**	**B0.9**	**B1.8**
50:5	0.3	0.6	0.9	1.2	2.4

BURDEN IN OHMS

TURNS RATIO

PERCENT ACCURACY

- The primary selection criteria is the burden placed on the secondary of the transformer. This is the impedance of the instrument that is connected to the transformer. This value is generally given in ohms or VA (volt-amps).
- For ANSI class transformers, the headings at the top of the table B0.1 through B1.8 organize the accuracy of the transformer according to the burden placed on the secondary. For example B0.1 means a burden of 0.l ohms.
- The accuracies listed under the burden values are given in percent. These values are for a full scale reading. Percent accuracy means that the reading received from the transformer at the burden listed will be within the percentage given of ideal. Hence, a 50 to 5 turns ratio transformer with 50 Amps through the window will output 5 amps +/- 0.3% in the secondary into a 0.1 ohm burden. The current in the secondary will be some where between 4.985 and 5.015 amps.
- When the instrument connected gives the burden to the transformer in VA (volt-amps) the table can be used to determine accuracy. Since the transformer has a 5 amp secondary, using Ohm's Law, the impedance can be determined. A burden of 5 VA must be equal to the current squared times the impedance in ohms. Thus, 5VA / (5X5) = 0.2 Ohms. Thus, the accuracy of this transformer-meter system would be 0.6%.
- If the impedance calculated or chosen falls between headings, use interpolation to determine accuracy.
- In general, the lower the burden, the higher the accuracy.
- It is critical to understand that the accuracy ratings are for a full scale reading. This accuracy will only be maintained from 20% full scale and up. Below this, and the accuracy worsens greatly. Always strive to select transformers so that the majority of readings will be within the 20 to 100% full scale range.