Selecting a Pearson Current Monitor

1 Obtain a copy of the specification sheet that lists the standard and special order current monitors. These monitors are able to measure pulses, transients and continuous signals. They do not measure steady-state dc current.

2 The first four columns of the specification sheet give model number, output sensitivity and physical dimension information. The next four columns list the specs which apply to measuring pulses, and are referred to as time domain parameters. The final four columns list the specs which apply to measuring continuous sine-wave currents and are referred to as frequency domain parameters.

3 Determine if the application is to measure a pulse or continuous signal. If the signal is more complex, and rms, peak, dc or other limiting values are hard to determine, refer to Pearson Electronics Application Notes, or call our engineering department.

Pulse Signals

If single pulse, determine the approximate maximum peak current (amps) and the approximate maximum pulse length (seconds).

Compute the current-time product (amp-seconds). *To use a given model, both the maximum current and the current-time product should not exceed the spec sheet values.*

If repetitive pulses are to be measured, consult the Pearson Application Notes to be sure that the average dc level (zero frequency component) does not exceed the maximum allowable for that model.

If the rise-time of the signal pulse is known, it should be compared to the spec sheet value. The monitor should not be used for pulses that have a rise-time shorter than the value listed.

For a rectangular pulse the deviation from a perfectly flat top is given by the droop rate. Multiplying the pulse length (in microseconds) by the droop rate will yield the percentage deviation from the flat-top value at the end of the pulse.

Continuous Signals

Determine the approximate maximum sine-wave amplitude, I (amps), and the approximate minimum frequency, f (Hz).

Compute I/f (amps/Hz). *To use a given model, this should not exceed the spec sheet value.*

Compute the maximum rms current. *To use a given model, this should not exceed the spec sheet value.*

Determine if the frequency over which the monitor is to be used is within the range of the low and high 3 dB points. The accuracy of the monitor will decrease outside of this range.

4 If there are several monitors that satisfy the above criteria, a selection based on voltage output (sensitivity) and size can now be made. In the third column is given the output volts per primary amp to be measured. For example, a 1 milliamp signal will produce a 1 millivolt output for a monitor that has a 1 volt/amp output.

5 An often asked question concerns terminating the output of the monitor with a resistor. Since the monitor can be modeled as a voltage source in series with 50 Ohms, the addition of an external terminating resistance will decrease the output of the unit. For example, a 50 Ohm external termination would reduce the output to one-half.