What is a Power Meter Element?
To display power, a meter measures various voltages and currents in a circuit. For two-wire, single phase AC, voltage is measured line-line (or line-neutral), either directly or using a potential transformer. Line current is measured directly or through a current transformer, as shown in the diagram. The combination of one voltage measurement and one current measurement means this meter has one element. A 3-wire, single phase AC circuit requires two voltage measurements (L1-N & L2-N) and two current measurements. This is a two element meter.

Measuring power in a 3-wire, three phase delta circuit requires two phase to phase voltage measurements (e.g. L1-L2 and L3-L1) plus two line currents. This is also a two element configuration. A 4-wire, three phase WYE circuit can be measured with a three element meter. It reads each line voltage with respect to neutral and each line current. Some meters can also calculate power in this circuit with only two voltage readings. This is a 2½ element configuration.

In addition to the proper voltage and current levels, a power meter must have the right number of elements for the system configuration to be monitored.

Handheld Micro-ohmmeter
The new Megger MOM2 Micro-ohmmeter is a handheld unit that delivers up to 220 amps and measures the resistance of circuit breakers, bus-bar joints and other high current links. It is designed for ease of use, with one button test initiation and autoranging from 1µΩ resolution to 1000mΩ full scale. Measurements are made using the Dual-Ground™ method, where the test object is grounded on both sides throughout the test for faster and safer workflow. The conventional test method, with one side grounded, is also supported (optional cable kit required).

The innovative MOM2 uses ultra capacitor technology (patent pending) to generate the high test currents. It will perform a full day’s testing without a recharge of the internal batteries. 190 test results can be stored & transferred to a PC over a Bluetooth link.
Each MOM2 includes 4 foot heavy duty Kelvin test leads, transport case, charger, rubber holster, carrying strap, belt clip & PC software.

Data Sheet  Other Megger Low Resistance Testers

Temperature Control with a Digital Panel Meter
For many temperature control applications, simple on/off control of heating and cooling equipment provides adequate regulation. A digital panel meter (DPM) with two relay outputs can be easily configured for this task. The temperature sensor is typically a thermocouple or RTD. A heater is connected to the low relay and activates when the temperature is below the low setpoint. A compressor is connected to the high relay and activates when the temperature is above the high setpoint.

Circuitry in the meter converts the temperature sensor signal to a digital value, displays it and compares it to preset high and low temperature setpoints. These limits can be selected to provide a narrow or wide band where neither output is on. Adjustable hysteresis and on/off delays provides even more flexibility to tailor the temperature regulation.

Faster ramp-up and ramp-down can be achieved using two stage heating, two stage cooling and 4 setpoint relays. This also allows use of smaller capacity units to maintain a temperature setting, which yields smoother control and energy savings. DPMs

DPMs have other features useful in this application, such as display and setpoint resolution to 0.1º, variable reading rate, selectable noise filtering and a digital or analog output for remote monitoring. Digital Bargraph meters can also be used for temperature control, with the added benefit of a proportional bar & setpoint display.

DIN Style Analog Panel Meters
Yokogawa offers an extensive family of 72mm & 96mm DIN panel meters for new and replacement applications. Voltmeters and ammeters are available in either taut band or pivot & jewel construction with a 1.5 accuracy class.

Self-contained DC ammeter models cover 10µA to 30A full scale. Self-contained DC voltmeters are offered from 0.5V to 600V full scale. Shunt and transformer rated units can be specified, as well as center zero and suppressed zero (e.g. 4-20mA) styles.

The AC meters include both rectifier and moving coil types. Self contained AC ammeters go from 200µA to 30A full scale; AC voltmeters from 3V to 600V. Yokogawa also offers AC styles for use with external current transformers and potential transformers.

Line Frequency meters are available for 50/60 Hz and 100-230V systems. Watt, VAR & Power Factor meters can be ordered self-contained in the 96mm size. The 72mm size is supplied with an external transducer. Both sizes have 1Ø2W, 3Ø3W and 3Ø4W versions.