



Tip Temperature Display

Most conventional soldering systems provide temperature displays on their power units. The display is an indication of the operator set point, not the actual temperature measured by the internal temperature sensor. The actual temperature at the tip will differ from the heater temperature by an amount that is highly dependent upon the thermal resistance of the sensor and thermal losses of the tip. This variance introduces a degree of uncertainty into the soldering process.

Metcal's Connection Validation® SmartHeat® soldering systems feature a new solder tip temperature display. The solder tip temperature display is enabled by the combination of two technologies. SmartHeat® soldering systems **sense** the thermal load and instantly deliver the right amount of power directly to the joint. Power on Demand allows the user to solder and rework varying loads and only the power needed will be applied to the joint. Metcal has combined this Power on Demand technology with a globally patented (US 9,327,361 & US 9,516,762) intelligent soldering cartridge technology to provide a new soldering temperature display experience.

Metcal's heating technology incorporates multiple alloys to achieve 500, 600, 700, 800, and 900 temperature series heaters. The specific metallurgical properties define the maximum temperature achievable by the heater. This enables a customer to select the correct temperature range for the job by balancing performance versus risk factors like maximum board or component temperature, flux activation temperature, tip life, etc. During cartridge construction, each intelligent cartridge is programmed with key information which include values related to tip mass, thermal resistance, thermal efficiency, maximum achievable temperature, among others. Sensing the power requirements of the load and armed with the key cartridge information, the Connection Validation power supply calculates and displays the solder tip temperature. In fact, our solder tip temperature display achieves an accuracy of $\pm 2\%$ at idle for solder tip temperature. In addition to the real-time solder tip temperature display, the Connection Validation power supply does not require calibration as the temperature is calculated rather than relying on an imbedded sensor.

Metcal continues to lead the industry by providing a fast, safe and repeatable process with no manual adjustments required.