# Heat Damage to FP-08450 Panel - Technical Note





The FP-08450 Control panel allows for 2 separate power inputs. A primary and backup supply. The voltage regulator checks the input supply voltage and takes operating power from the highest of the two available supplies. If the primary supply was 24vDC and the backup was 25vDC it would use the backup as the power source, and vice versa. This is an ongoing decision for the regulator, so that if the values were to change over time, it would revert to the highest voltage.

The FP-08450 Control panel specifies incoming voltage of 12-30vDC. The actual internal circuits of the panel run at 5vDC. The method of allowing the wide range of incoming voltage to the operating voltage, is using a micro voltage regulator. This converts the incoming voltage and throws of the balance of power as heat. As an example if the incoming voltage is 24vDC then the additional 19vDC is converted to heat energy. This heat energy is calculated as 19vDC multiplied by the 20 micro amps of current drawn by the panel in quiescent mode giving 380microwatts of heat energy.

The micro voltage regulator is rated up to 150deg C at the chip level, which is dispersed by the surrounding heat sink, and then the environmental air temperature. The chip is protected by a thermal shutdown at 150deg C, if it were to reach this temperature would shut down the regulator and therefore the control panel, and resume operation automatically once cooled.

The temperature of the panel is therefore affected by incoming voltage. Here are some comparable values of input voltage versus temperatures:

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| Input Voltage: | 24vDC | Internal Panel Temp: | 40deg C | External Panel Temp: | 25deg C |
| | 40vDC | | 65deg C | | 45deg C |

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