Testing Voltage

VOLTAGE MEASUREMENTS:

1. No load voltage measurement.

1 ph Outlet

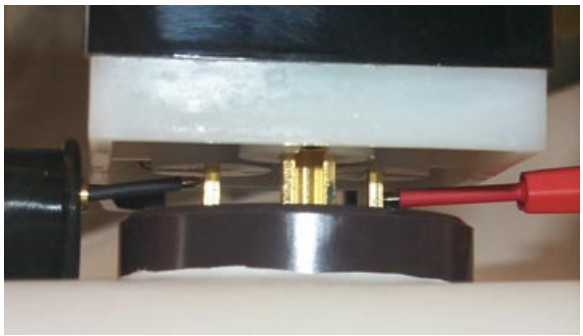
3 ph Outlet

Measure the voltage across the rectangular holes with your meter. Set the meter to a voltage setting that will handle the voltage you are measuring. The meter leads must make contact with the metal part of the receptacle in the rectangular holes. If the voltage is only 110-120 volts on a 208 or 240 volt supply then the ground wire may be hot. Measure the voltage from each hot to ground. You should find approximately 120 volts in both cases. If the voltage is 208/240 to ground then you have a hot ground wire.

Write down the exact voltage you measure for future reference. Ideally your no load voltage should be within 1% or 2% of the nominal voltage.

2. Voltage measurement under load.

Measure the voltage at the receptacle while the plug end is in the receptacle far enough to make contact but out far enough to get your meter leads on the flat blades of the plug. Be careful, this is live voltage and it is very easy to slip your meter leads and short them together or touch one of them to the metal receptacle plate which is ground. Grounding a hot lead will cause large sparks and probably trip your breaker!



(continued)

While you are measuring this voltage the kiln should be on. This voltage is the voltage under load and it is normally slightly lower than the voltage with no load. A 1% to 2% voltage drop is normal. A 3% drop in voltage is OK. More than 3% drop may cause problems with the kiln firing to the rated temperature. More than 5% drop and you may want to call your power company.

Three phase kilns.

Three phase kilns have three hot flat blades L1, L2, L3 and one ground. Measure the voltage across all combinations of flat blades L1 to L2, L1 to L3 and L2 to L3. All of these combinations should read the nominal 208 or 240 volts.

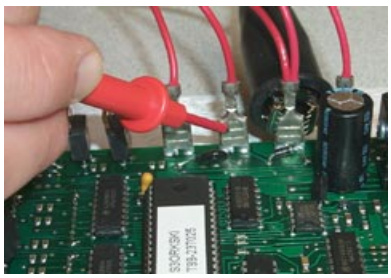
3. Measure the voltage at the elements.

On KilnMaster (KM) controlled kilns you can measure the voltage at the pigtails of the elements by unscrewing and swinging open the red control box. Program the kiln and carefully measure the voltage at the pigtails while the relays click on and off. See the RAMP / HOLD 9999 program to keep the relays on.

On the KS kilns manufactured after 1998 it is easy to unscrew the top and bottom boxes and swing them open to measure the voltage at the pigtails while the kiln is on. Otherwise it is very difficult and not recommended to measure the voltage at the elements.

4. Measure the voltage to the controller.

Unplug the kiln before performing this test. [See back side of a touchpad]



Measuring Controller Voltage

On KilnMaster controlled kilns manufactured after 1994 it is easy to unscrew the sheet metal screws that hold the touchpad to the red control box. On older models the screws are machine screws and require removing the insulating baffle to remove the nuts on the back side of the touchpad. There are 4 red wires connected to the back of the touchpad and two thermocouple wires. Number the red wires #1 through #4 starting at the connector closest to the top of the touchpad and going down. The #1 red wire connection is the 12 volts DC output to the relays. The voltage measured across #2 and #4 will be 24 volts AC. The #3 connector is the center tap of the transformer and will measure 0 volts AC or DC with reference to the chassis ground. If you do not find 24 volts AC measured from #2 to #4 then the transformer is defective or the red wires from the power cord to the bottom of the transformer is broken, disconnected or the fuse has blown.