Digital Temperature Control Made Simple

A digital kiln or furnace uses only six basic parts to control heat. Understanding how they work simplifies trouble-shooting.

1. **Fuse**: Helps protect the controller from power surges.
2. **Transformer**: Reduces the power to 24 volts AC, which operates the controller.
3. **Digital controller**: Controls temperature and rate.
4. **Thermocouple**: Senses temperature. The tip protrudes into the firing chamber.
5. **Relay**: Turns the heating elements on and off. Receives a signal from the controller.
6. **Heating elements**: Reduces power to 24 volts AC, which operates the controller.

---

Kilns with one thermocouple: use center terminals. Observe color coding.

Two wires of dissimilar metal join together in the thermocouple tip. When heated, the wires produce a small voltage, which the controller interprets as a temperature.

---

**Top of Board**

**Fuse**
Located in the switch box, AGC ½ amp, 250 v. AC.

240 volts

240 volts

240 volts

240 volts

240 volts

---

**Sentry Digital Controller**

---

**Thermocouple**

**Relay**
The relay is a switch, which is triggered by the controller. A 12 volt signal from the controller energizes an electromagnet inside the relay. This closes the switch, sending power to the elements.

---

**Heating Element**

Power flows to the elements when the relay turns on.