

# SMD—2000A TABLE TOP REFLOW OVEN

## Operational Manual

Madell Technology Corporation  
<http://www.madelltech.com>



More and more surface mount devices (SMD) are used on electronic circuit boards. Large floor model reflow ovens are expensive and heavy, not suitable for prototype development and small production. SMD-2000A is specially developed to suit this market.

- Full automatic fuzzy logic temperature control.
- Back light LCD display.
- Can be used for any surface mount components.
- Can also be used for two sides PCB boards.
- Lead-free reflow ready.
- Great for repair preheating.
- Meets IPC standard.
- Temperature to 250°C.
- Working area: 400mmx350mmX30mm.
- External measurement: 600mm(w) x450mm (d) x500mm (h).
- Working cycle 5 minutes per board.
- Manual draw.
- Built in automatic air cool.
- One profile stored in EPROM.
- No programming necessary, no computer interface.
- No datalog.
- 3.5KW power, 220V.
- Weight: 32Kg without the packing material.

# Operation

## 1. Profile setting

The preheat and reflow temperatures and durations can be changed.

The reflow oven goes into profile setting mode after the “SET” key is pressed.

**LCD Display**

165°C (A)	150S(B)
220°C (C)	40S(D)
220°C (E)	10S(F)

Press the ▲ or the ▼ key to increment or decrement the highlighted number. Press the “SET” key again to switch to the next temperature or time. Press the “ENTER” key to finish the profiling process and to save the profile.

### Default settings:

Regular double side boards: 165°C---150S, 220°C--040S, 220°C-10S.

Multi-layer boards : 175°C---160S, 230°C--040S, 230°C--15S.

Aluminum, porcelain boards: 185°C-150S, 240°C-040S, 240°C-30S.

It may be necessary to adjust the temperatures and durations 2--4°C , 5–10S for different paste.

### Temperature and time ranges:

Preheat temperature (A): 150-190°C.

Preheat time (B): 100-160S.

Reflow 1 temperature (C): 215-250°C.

Reflow 1 time (D): 30-60S.

Reflow 2 temperature (E):  $\geq C$  (215-250°C).

Reflow 2 time (F): 10-50S.

Note:

1. Preheat temperature should be lower than reflow temperature.
2. Preheat time should be greater than preheat temperature-90 and less than 200S.

## 2. Temperature Sensor Handling

It is very important for the temperature sensor to have accurate reading to make perfect circuit boards. The sensor is supposed to touch the circuit board in the new SMD-2000A models. A convenient way to achieve this is to tape the sensor on to a heat sampling circuit board with the supplied heat resistant tape. This sampling board can be an unused circuit board which has the same layers and made with the same material as the board to be assembled. It reflects the same or very similar heat characteristics. The sensor can be taped on the working board directly if it is a one board only, or if the board is very big.

### **3. Reflow**

It is necessary to run the reflow oven one or two cycles to warm it up before every working shift.

Open the draw and gently place the circuit board on it. The circuit board should be placed in the center of the working area, leaving some distance from the front door. Push the draw into the heating area. Press the “Soldering” key. The LCD displays the board temperature as the heating progresses. The board is done when the reflow oven rings. Wait till the ring stops before taking out the board and starting another one.

### **4. Preheat**

This process is the same as the reflow process except that the board needs to be taken out as soon as the temperature reaches 220°C, before the normal reflow process is finished. The SMT parts can be removed from the board at this time.

### **5. Recommended Solder Paste**

The reflow oven does not come with solder paste.  
The following paste has been tested and recommended:

Kester Easy Profile 256, which can be found at [http://www.kester.com/en-us/products/prodcat\\_detail.aspx?pid=17](http://www.kester.com/en-us/products/prodcat_detail.aspx?pid=17).

### **6. Notice:**

1. It is necessary to tape the sensor on the circuit board for every reflow process, either on the same board, or another similar board.
2. Let the reflow oven cool down for 30 minutes after four hours of continues working.
3. Check the reflow oven heater tubes at least once a year.
4. Most solder paste should be stored in the refrigerator set at 2-8°C. Let it warm for 30 minutes at room temperature and stir thoroughly before use.

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