

User Manual

IR6500 V.2



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A. Safety Instructions

I. Electrical safety

- *Make sure the supply power voltage accord with the standards---- 220V-250V/50Hz alternating current before installing.*
- *To avoid possible electric shock caused serious damage, please disconnect the power cord from the outlet temporary before moving machines.*
- *If the machine damages, please contact us for maintenance. If the damage caused by the users when they dismantle or repair independently, they should take on the loss by themselves.*

II. Operating safety

- *Please carefully read the relevant information provided by the manual before starting using this product.*
- *Make sure the power cord has been properly connected properly before using the products.*
- *Installed the equipment in stable work platform to use, where the air mobility should be small as possible. Avoid it closing to air conditioners, fans and the other outlet.*
- *In case of electrical short-circuit, avoid the products contacting with water.*
- *Forbid using this equipment in flammable and explosive substances.*
- *The operators' hands or other parts of the body should maintain a safe distance from the heater. Forbid touching the heater to avoid scalding.*
- *If you have any technical questions or suggestions in the course of using this product, please contact with our technology department. We will try our best to solve.*

III. Environmental requirements of operation and conservation

1. Operation environment of products

- *Operation temperature:15 ~ 45 °C*
- *Operation humidity:5% to 95%, non-condensing*
- *Products should be kept in the air mobility of a smaller environment under the welding operation.*

2. Conservation environment of products

- *Storage temperature:-20 ~ 70 °C*
- *Storage humidity: 5% to 95%, non-condensing*

B. The parameters of IR6500 BGA Rework Station

| | |
|---|---|
| <i>Basic Parameters</i> | |
| <i>Heating</i> | <i>infrared heater</i> |
| <i>Dimension</i> | <i>L 495mm×W480mm×H420 mm</i> |
| <i>Weight</i> | <i>16.5kg</i> |
| <i>Total weight</i> | <i>≈18 kg, vary with the different need of the users</i> |
| <i>Electrical Parameters</i> | |
| <i>Power</i> | <i>220V AC</i> |
| <i>Upper Heating</i> | <i>imported infrared heater</i> |
| <i>Size of Upper heating</i> | <i>80mm×80 mm</i> |
| <i>Consumption of upper heating</i> | <i>≈450W</i> |
| <i>Bottom Heating</i> | <i>imported infrared heater</i> |
| <i>Size of Bottom heating</i> | <i>200 mm×240 mm</i> |
| <i>Consumption of Bottom heating</i> | <i>≈1800W</i> |
| <i>General power</i> | <i>2300W</i> |
| <i>Temperature Control</i> | |
| <i>Control mode of Upper</i> | <i>Independent temperature control, high-precision closed-loop control, precision ± 0.5%, Alarm, USB linked computer systems, curve control</i> |
| <i>Control mode of Bottom</i> | <i>Independent temperature control, high-precision closed-loop control, precision ±0.5%, NO Alarm, USB</i> |
| <i>Rework Function</i> | |
| <i>SMD</i> | <i>Suit for welding, remove or repair packaged devices such as BGA,PBGA,CSP,multi-layer substrates, EMI metallic shield product and solder/lead free Rework、welding</i> |
| <i>Size of applicable chips</i> | <i>≤70mm×70 mm</i> |
| <i>Size of applicable PCB</i> | <i>≤400mm×305 mm</i> |

C. Comparison

IR6500 V1 upgrade to IR6500 V2



1.bottom preheat area:180*180mm

2.pcb jig 4 pcs

3.connect only usb to usb

4.bottom only one pc fan

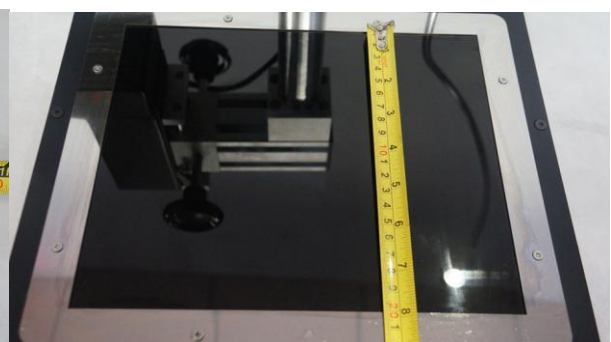


1.bottom preheat area:240*200mm

2.pcb jig 6 pcs

3.connect have rs232 to usb
or rs232 to rs232

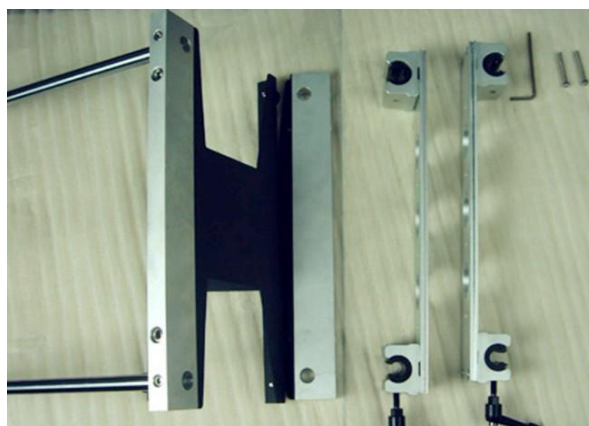
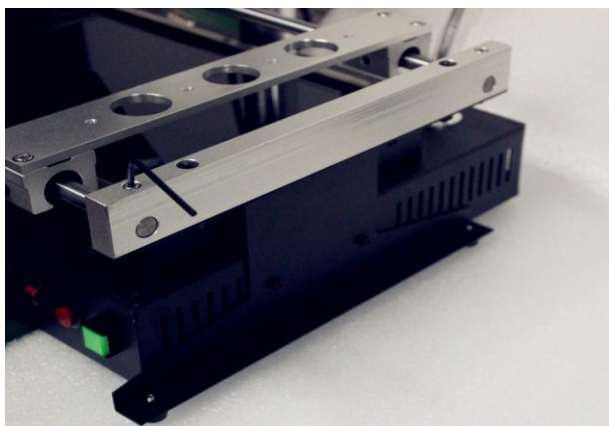
4.bottom have two pc fan



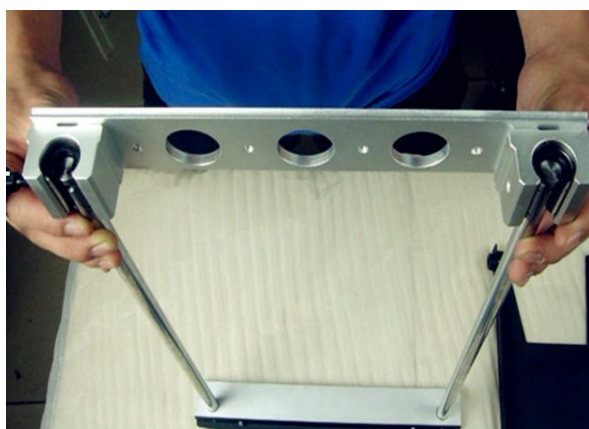
Self-help Install

(PCB Table)

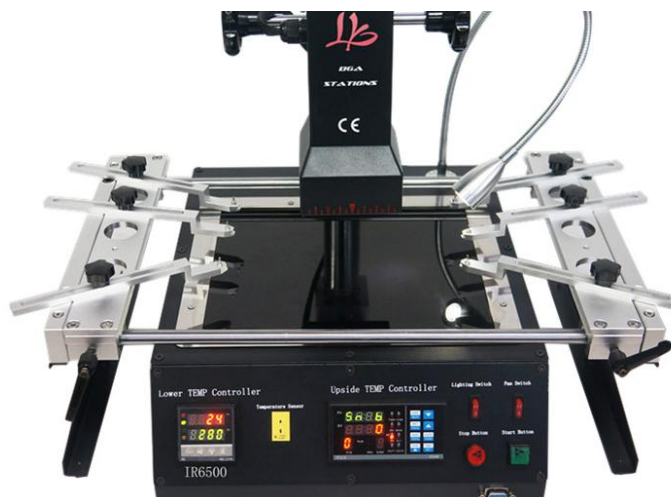
1. Installation side support.



2. Installation Slip.



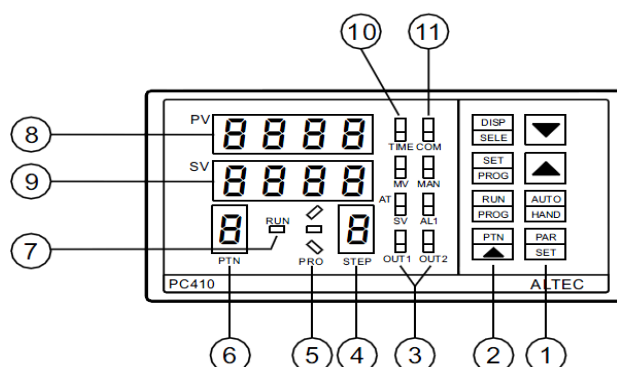
3. Installation side support.



D. Programmer/Controller General Description

Internal procedures controller has set more commonly used procedures section; do not easily attempt to modify the program parameters. Please click (PTN) keys chosen you need the procedures section !!!

The programmable controller contains an in-built set point generator in addition to the controller function. This set point generator can produce a temperature/time profile with 16 segments (0~9). When the program is running, the current set point from the set point generator is fed to the control algorithm. The current set point is continuously shown on the lower display. The sixteen segments are defined in the order: Ramp 1, Dwell period 1, Ramp 2, Dwell period 2..., and are executed in succession.



| S.N. | Item | Functions |
|------|-------------|--|
| ① | | Parameters setting key |
| | | (Up key) Increase value |
| | | (Down key) Decrease value |
| ② | | Selects the program pattern number |
| | | Starts/hold the program, changes the mode from fixed value control to program control |
| | | Program parameters setup |
| | | Changes the indication on SV/MV/TIME display |
| ③ | OUNT | Output indicator |
| ④ | STEP | Indicates the step number of program |
| ⑤ | PRO | (Program monitor indicator) During program control, ‘/’ is lit when the PV is rising During program control, ‘-’ is lit when the PV is constant During program control, ‘\’ is lit when the PV is falling |
| ⑥ | PTN | (Pattern number display) |

| | | |
|---|---------------------------|---|
| | | <i>Indicates the pattern number '0~9'</i> |
| ⑦ | RUN | <i>(Program control running indicator) The LED indicator is lit during program control</i> |
| ⑧ | PV | <i>(PV Display) Indicates the Process/Measured value</i> |
| ⑨ | SV | <i>It is lit when the Setting Value(SV) is being displayed on the lower display</i> |
| ⑩ | TIME MV SV | <i>(SV/MV/TIME display) It indicates the Setting Value(SV), Manipulating Value(MV), or Time(TIME) (The display content can be changed by the 'DISP/SELECT' key)</i> |
| ⑪ | ALI | <i>It is lit when the Alarm1 output is 'ON'</i> |
| | COM | <i>(Communication indicator) It flashes when the controller is in active communication with a host computer</i> |

Program Parameters Setting

Ramp Rate1: $r1$

A ramp consists of a slope(linear gradient) and a target set point. The control setpoint increases or decreases at a linear ramp rate from the actual measured value until a specified target setpoint is reached. The relative positions of the actual measured value and the target setpoint determine whether the slope of the ramp is positive or negative. Parameters R1, R2, R3... express the ramping rate in unites per minute (0.01~99.99), parameters L1, L2, L3... the appropriate target setpoint in display units.

If R1 = END, the program will be ended when the program runs to the slope.

Target Set point 1: $L1$

The target value to which the set point ramps when the programmer has been placed into RVN.

Dwell period 1: $d1$

In a Dwell period, the target set point, which has been attained, remains unchanged for a fixed period. All the dwell periods are defined by their duration in minutes with parameters D1, D2, D3...(0~9999). When the program is running, these parameter display the time remaining in the active dwell period. If the parameter equals zero, the dwell period is skipped.

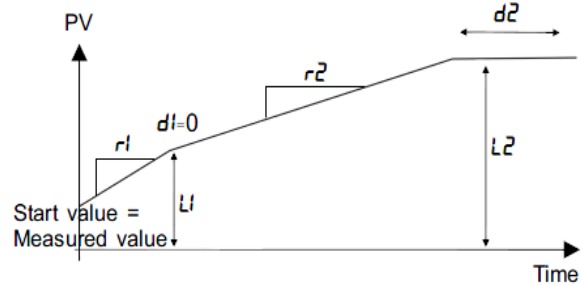
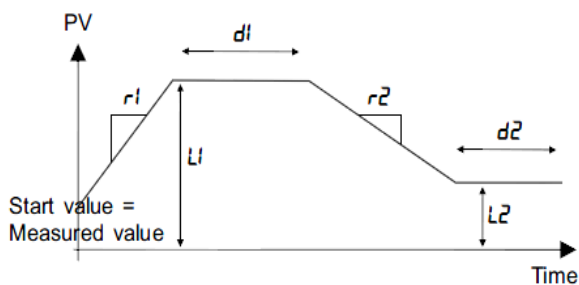
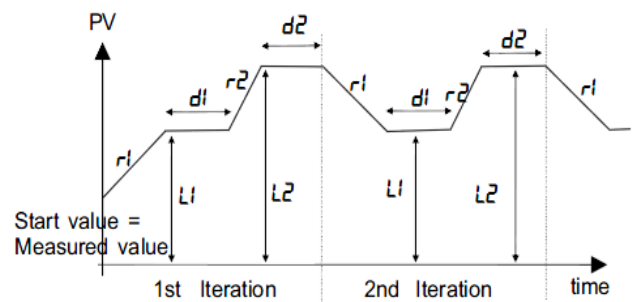
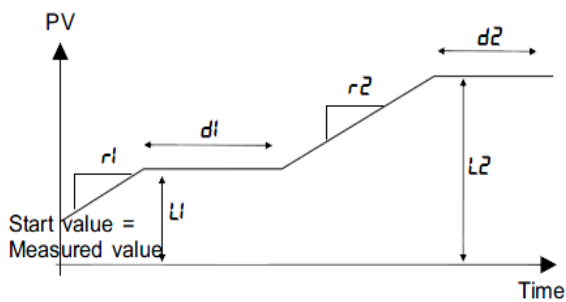
When the controller runs in the **PV** displaying status:

- 1). Select the target program pattern number with the **PTN/** key.
- 2). press **SET/PROG** key, the first program parameter appears in the upper display. The value associated with this parameter will be shown in the lower display.
- 3). Use **▲** and **▼** key to modify the value.
- 4). Press the **PAR/SET** key, the next parameter appears. At the same time, the modification has been saved in the memory. Use **▲** and **▼** key to modify the value.

Repeat this procedure till all the parameters are set. Or if there is no key operation within 16 seconds, the menu times out automatically.

Program Parameter List

| S.N. | Mnemonic | Parameter | Adjustable Range |
|------|----------|--|---|
| 1 | Lc | Program Loop Counter | 1~200, cont(continuous) |
| 2 | r1 | Ramp Rate 1 | End; STEP; 0.01~99.99 units/(min, sec) |
| 3 | L1 | Target Setpoint 1 | SP1 ~ SPH |
| 4 | d1 | Dwell Time 1 | 0 ~ 9999 min |
| 5 | r2 | Ramp Rate 2 | End; STEP; 0.01~99.99 units/(min, sec) |
| 6 | L2 | Target Setpoint 2 | SP1 ~ SPH |
| 7 | d2 | Dwell Time 2 | 0 ~ 9999 min |
| ... | ... | ... | ... |
| 8 | PL1 | ramp 1 and dwell 1 output power limit | 0.0~100% |
| 9 | PL2 | ramp 2 and dwell 2 output power limit | 0.0~100% |
| ... | ... | ... | ... |

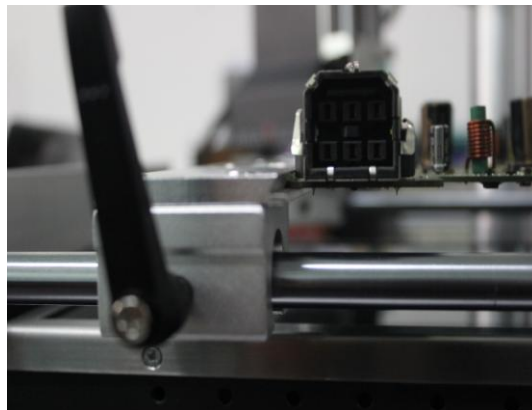
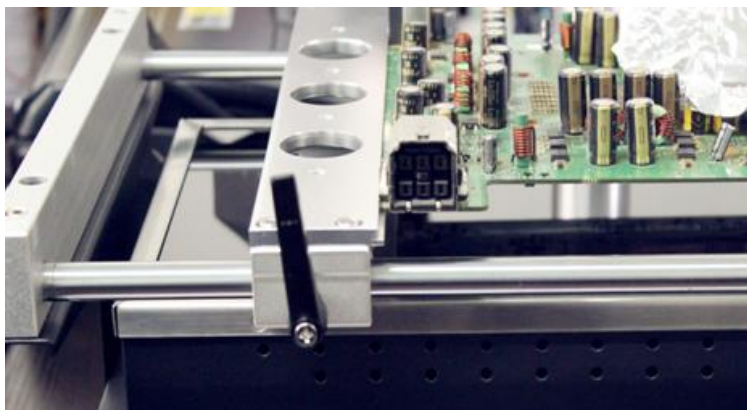


Program Examples

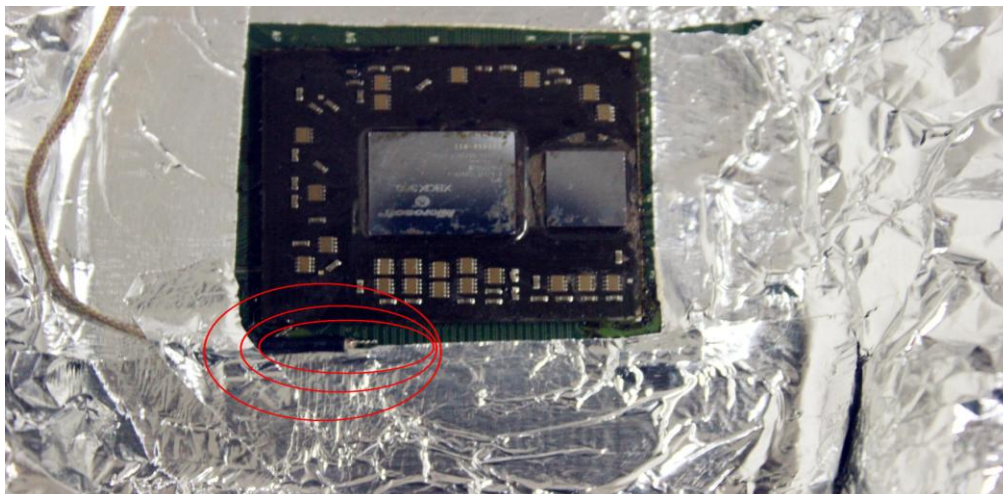
Rework Operation Steps

1、be all set

① Fixed motherboard



② shift sensor , sensor press close to BGA chip.



③ Adjust the height of heating head with adjustment knob (Prompt: BGA chip in the middle of heating head , heating head away from BGA chip ≈ 20mm.)

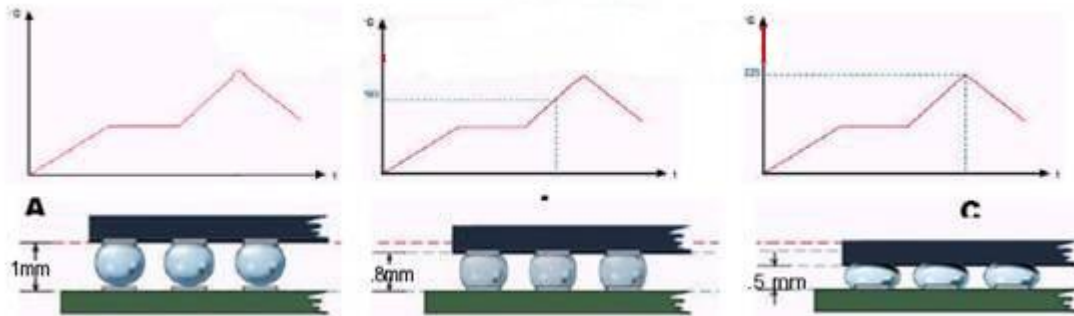


2、Start heating

- 1、Open power switch.
- 2、(**PIN**) Select the appropriate temperature program segment, and then press the start switch. In the operation can press the stop switch, stop operating.



- 3、After the program is running, repairing automatic alarm, and automatically cut off the heating power, this time you can check the following solder ball BGA chip is completely liquefied, BGA chips should be subject to settlement, floating state



3、Heating completed

- 1、Close Switch for top and bottom , Then Moving Heating head and Sensor
- 2、Remove motherboard , Clear insulating tape!
- 3、BGA Rework Station Cooled ,Then close Total Power!

E. Warning:

- ***If BGA Rework Station NO Cooling , Do not close the Total Power !***
- ***When the temperature is not cooled, do not touch heating module!***

Prompt

- 1、Installed the equipment in stable work platform to use where the air mobility should be small as possible .Avoid it closing to air conditioners, fans and the other outlet.
- 2、***LY IR6500*** Rework Station sensor Direct contact with motherboard, So Temperature display is Actual temperature。
- 3、In order to avoid damage to the motherboard capacitor, SO use insulation tape please , Maintenance completed ,then Removal of insulation tape , So as to avoid short-circuit!
- 4、After removal of BGA chip , PCB Bonding Pad Need to clean up , Avoid cold solder joint See BGA chip tin completely liquefied, Then To move the BGA chip, So as to avoid Bonding Pad Damage !
- 5、BGA chips should be subject to settlement, floating state Prohibited in all solder ball did not fully liquefied, by force if removal of chips, so as to avoid pad off, chip or motherboard scrap!
- 6、To improve success rate of Rework ,PCB and chips need drying and processing in principle, PCB board or chip moist heat process will occur in the burst phenomenon, the Rework process may hear the blasting sound of a minor。 According to actual situation Please, self-control.
- 7、PCB board heating time is too long or repeated several times the surface heating will lead to discoloration.
- 8、Users from modifying temperature parameters, Please use scrap PCB tested, Heating whole time about 10 seconds before the end of solder balls should be fully liquefied, f the liquefaction advanced or delayed,, ! Should be regulating up/down the temperature setting. So as to avoid heat damage to chips or low-temperature sealing-off。
- 9、The factory equipped with two sets of programmable temperature control table used parameters:

F.

Rework temperature curve to set examples

| 1. Lead Sn63Pb37 | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
|--|----------------|------------------------------|----------------------|------------------------------|-------------------------------|------------------------------|
| | <i>r1</i> | <i>0.45</i> | <i>L1</i> | <i>85</i> | <i>d1</i> | <i>85</i> |
| | <i>r2</i> | <i>1</i> | <i>L2</i> | <i>150</i> | <i>d2</i> | <i>40</i> |
| | <i>r3</i> | <i>1</i> | <i>L3</i> | <i>185</i> | <i>d3</i> | <i>40</i> |
| | | | | | | |
| 2. Lead-free Sn96.5Ag3Cu0.5 | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
| | <i>r1</i> | <i>0.45</i> | <i>L1</i> | <i>85</i> | <i>d1</i> | <i>92</i> |
| | <i>r2</i> | <i>1</i> | <i>L2</i> | <i>150</i> | <i>d2</i> | <i>40</i> |
| | <i>r3</i> | <i>1</i> | <i>L3</i> | <i>180</i> | <i>d3</i> | <i>40</i> |
| | <i>r4</i> | <i>1</i> | <i>L4</i> | <i>220</i> | <i>d4</i> | <i>40</i> |
| | | | | | | |
| 3. Lead (Computer) | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
| | <i>r1</i> | <i>0.5</i> | <i>L1</i> | <i>90</i> | <i>d1</i> | <i>90</i> |
| | <i>r2</i> | <i>0.85</i> | <i>L2</i> | <i>135</i> | <i>d2</i> | <i>45</i> |
| | <i>r3</i> | <i>0.8</i> | <i>L3</i> | <i>170</i> | <i>d3</i> | <i>40</i> |
| | <i>r4</i> | <i>1</i> | <i>L4</i> | <i>185</i> | <i>d4</i> | <i>45</i> |
| | | | | | | |
| 4. Lead-free (Computer) | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
| | <i>r1</i> | <i>0.45</i> | <i>L1</i> | <i>90</i> | <i>d1</i> | <i>90</i> |
| | <i>r2</i> | <i>1</i> | <i>L2</i> | <i>145</i> | <i>d2</i> | <i>40</i> |
| | <i>r3</i> | <i>1</i> | <i>L3</i> | <i>180</i> | <i>d3</i> | <i>50</i> |
| | <i>r4</i> | <i>1</i> | <i>L4</i> | <i>220</i> | <i>d4</i> | <i>45</i> |
| | | | | | | |
| 5. For XBOX | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
| | <i>r1</i> | <i>0.40</i> | <i>L1</i> | <i>90</i> | <i>d1</i> | <i>90</i> |
| | <i>r2</i> | <i>0.85</i> | <i>L2</i> | <i>135</i> | <i>d2</i> | <i>40</i> |
| | <i>r3</i> | <i>1</i> | <i>L3</i> | <i>170</i> | <i>d3</i> | <i>60</i> |
| | <i>r4</i> | <i>1</i> | <i>L4</i> | <i>220</i> | <i>d4</i> | <i>65</i> |
| | | | | | | |
| 6. For PS3 | <i>slope/S</i> | <i>numerical value ℃</i> | <i>temperature ℃</i> | <i>numerical value ℃</i> | <i>Temperature time S</i> | <i>numerical value S</i> |
| | <i>r1</i> | <i>0.40</i> | <i>L1</i> | <i>90</i> | <i>d1</i> | <i>90</i> |
| | <i>r2</i> | <i>0.85</i> | <i>L2</i> | <i>135</i> | <i>d2</i> | <i>45</i> |
| | <i>r3</i> | <i>1</i> | <i>L3</i> | <i>180</i> | <i>d3</i> | <i>60</i> |
| | <i>r4</i> | <i>1</i> | <i>L4</i> | <i>220</i> | <i>d4</i> | <i>65</i> |
| | | | | | | |