INTELLIGENT LEAD FREE SOLDERING STATION

High Frequency Heating Instant Temperature Rise

User Manual

Notes:

- This is an electrical product, so we shall observe the safety precautions to avoid accidents.
- This Manual indicates the important precautions for preventing accidents and use methods of this product. Please read this Manual carefully to use this product safely.
- After reading, please keep it properly for easy reference.

Measurement of the resistance values of heating element and sensor

When the heating element is cooled to the room temperature, measure the resistance values of the heating element and sensor by referring to ■ Resistance value of the soldering iron.

Inspection after replacing the heating element

After replacing the heating element, please check the following:

1. Measure the resistance value between the 1st and 4th or 5th pins, between the 1st or 2nd pins and the 3rd pins, and between the 4th or 2nd and 3rd pins, which shall be ∞. If it is not ∞, it indicates that the heating element is touching the sensor or housing, which will prevent the soldering station from working normally.
2. Measure the resistance values of a, b, and c to ensure that the leads are not twisted, and the ground lead is properly connected.

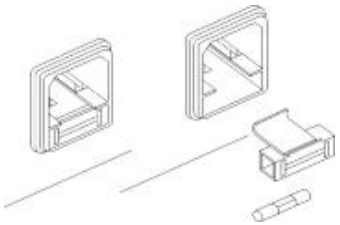
Damaged high-frequency soldering iron wire

There are two methods for testing high-frequency soldering iron power supply:

1. Turn on the soldering station power supply. Shake or entangle different parts of high-frequency soldering iron wires (including elastic parts). If the LED indicator of the heater flashes, the wires should be replaced.
2. Test the resistance between the high-frequency soldering iron plug pin and the terminal board wire. The resistance between pins 1, 2 − sensor, pin 3 − shielding wire, pins 4, 5 − heating core shall be <1 Ω. If it exceeds 1 Ω or is ∞, the wire should be replaced.

Replacement of fuse

1. Unplug the power plug from the power socket.
2. Remove the fuse box.
3. Remove the faulty fuse.
4. Replace with a new fuse (2 A/250 V).
5. Install the fuse box.



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Safety precautions

⚠ Warnings:

Non-professionals are not allowed to disassemble or refit internal components without authorization to avoid personal injury. Otherwise, we won't be liable for any consequences.

- Before use, please read the instructions and operations in this Manual in detail!
- Before connecting the body power plug to the power socket, please make sure that the voltage of this soldering station meets your local applicable voltage to avoid permanent damage to the soldering station.
- Please set the power socket in a place that you can reach it easily by hand, ensuring that the power supply is grounded.
- Do not place any heavy objects on the power cord. In case of any damage to the power cord, please turn off the power immediately and replace the power cord.
- If it is not used for a long time, please make sure to turn off the power of the machine and unplug it to ensure safety.
- When being used, the soldering iron is in a high temperature state. Therefore, do not touch the solder tip and the metal parts of the soldering iron.
- Shut down the machine and replace the solder tip after the high-frequency soldering iron is cooled to room temperature.
- Do not change the internal components of the soldering station without authorization.
- Please replace the components with the original accessories.
- Do not wet the soldering station or touch it when your hands are wet.
- During soldering, there will be smoke, so good ventilation facilities shall be equipped in the use environment.

※ We reserve the right of design changes and final interpretation of the product. The pictures in this Manual are for reference only, and the product in kind shall prevail.

Fault 8: Unable to set temperature

1. Check if the temperature of the solder tip exceeds the rated temperature of the high-frequency soldering iron. If so, the high-frequency soldering iron is in a protected state, and cannot be set to a higher temperature.
2. Due to an incorrect operation, the high-frequency soldering iron is in a program protection state. Please restart.

How to check whether the heater, sensor components, and assembly wires are damaged

Unplug the plug and test the resistance between the pins of the plug as follows:

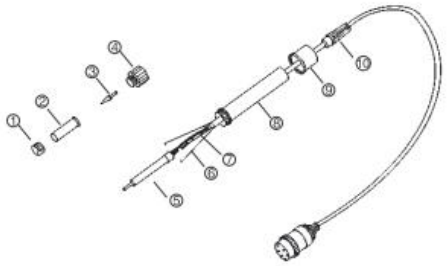
If the resistance value between "a" and "b" is different from the resistance value in the table below, it is necessary to replace the heating element (sensor) or wire by referring to ■ Removal of high-frequency soldering iron. If the resistance value of "c" is greater than the resistance value in the table below, the oxide layer in the area shown in the following figure should be gently wiped off with sandpaper or steel wool.

a.	Between the 4th and 5th pins (heating element)	<1 Ω (normal)
b.	Between the 1st and 2nd pins (sensor)	<10 Ω (normal)
c.	Between the 3rd pin and the high-frequency solder tip	Below 2 Ω

Damaged heating parts and sensor parts

A. Removal of high-frequency soldering iron

1. Twist off nut ① counterclockwise and remove the high-frequency soldering iron sheath ② soldering iron tip ③.
2. Twist off the adapter sleeve ④ counterclockwise and pull it out of the high-frequency soldering iron.
3. Remove the heating element ⑤ and wire from the high-frequency soldering iron ⑧ (pull them out towards the direction of the high-frequency soldering iron).
4. Do not use metal tools (such as pliers), but use an anti-scald pad to pull the heating element out of the handle.



2. Check if the fuse is blown. If so, determine the fusing cause, and replace it with a new one. The following will cause blowout:

- Whether there is a short circuit inside the soldering iron;
- Whether the ground lead contacts the heating element;
- Whether the leads of the heating element are twisted or short-circuited;

3. Check if the wires are damaged. If so, replace them with new ones.

Fault 2: The high-frequency soldering iron does not heat up, and the sensor or heater displays in error

1. Check if the soldering iron and the gang socket are loose. If so, reconnect them.
2. Check if the wires and connecting plugs are damaged by referring to ■ Damaged high-frequency soldering iron wire.
3. Check the sensing element. referring to ■ Damaged heating parts and sensor parts.

Fault 3: The high-frequency soldering iron heats up off and on

1. Check if the wires and connecting plugs are loose. If so, reconnect them.
2. Check if the soldering iron wire is damaged by referring to ■ Damaged high-frequency soldering iron wire.

Fault 4: The solder tip cannot be stained with tin

1. Check if the temperature of the soldering iron is too high. If so, reset an appropriate temperature.
2. Check if the soldering iron has been cleaned thoroughly by referring to ■ Damaged high-frequency soldering iron wire.

Fault 5: The high-frequency soldering iron temperature is too low

1. Check if the soldering iron can derive oxides by referring to ■ Inspection and cleaning of the high-frequency soldering iron.
2. Check if the soldering iron is properly corrected. If not, please correct again.

Fault 6: The heater is damaged H − E display

1. Check if there is a solder tip on the high-frequency soldering iron. If not, please install a suitable solder tip.
2. Check if the soldering iron wire is damaged by referring to ■ Damaged high-frequency soldering iron wire.
3. Check if the heating element is damaged by referring to ■ Damaged heating and sensor parts.

Fault 7: Temperature display flashes

1. Check if the soldering iron wire is damaged by referring to ■ Damaged high-frequency soldering iron wire.
2. Check if the soldering point is too large. If so, please use a higher power soldering station.

Packing list

Name list	Quantity
Console	1 PC
High-frequency soldering iron	1 PC
Soldering iron stand (including copper wire cleaning ball/sponge)	1 PC
Power cord	1 PC
Ground lead	1 PC
User Manual	1 PC
Warranty card	1 PC

Specification

Name	Intelligent Lead Free Soldering Station
Maximum power	130 W
Input voltage	□ AC 220 V □ AC 110 V
Output voltage	36 V
Temperature range	[Refer to P7 Work Mode Table]
Temperature stability	±2°C (indoor environment, no load)
Housing material	Aluminum alloy
External volume	130 mm × 165 mm × 230 mm

High-frequency soldering iron handle

Rated voltage	36 V
Between the solder tip and ground resistance	Below 2 Ω
Between the solder tip and ground potential	Below 2 mV
Heating element	High frequency eddy current type
Wire installation	1.2 m
Handle length (excluding wire)	120 mm
Reset	3.5 Kg

- The temperature of the soldering iron tip is measured with a 191/192 thermometer.
- The above specifications and designs are subject to change without prior notice.

Part name

Installation and use of the soldering station

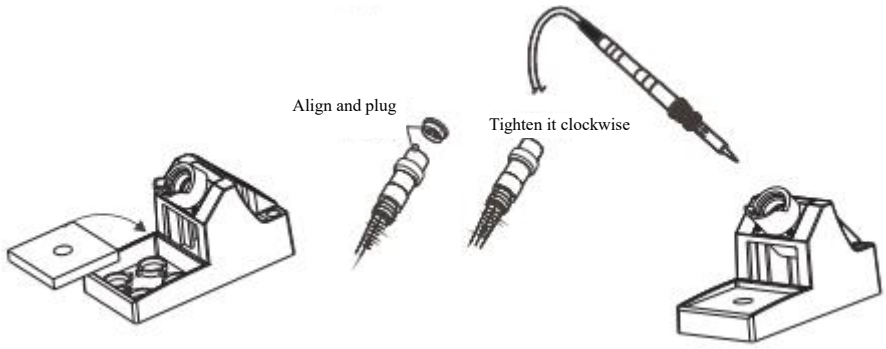
⚠ Note: When connecting or disconnecting the soldering station, be sure to turn off the power switch to avoid damaging the soldering station.

High-frequency soldering iron stand

1. Remove the soldering iron stand from the packing box and place it in a suitable position vertically, so that the cleaning sponge faces the operator.
2. Place the cleaning sponge on the stand (as shown in Figure 2), add an appropriate amount of water to facilitate it to wipe and cleaning the high-frequency soldering iron.

Connection

3. Connect the assembly wire to the soldering station socket (as shown in Figure 3).
4. Place the high-frequency soldering iron on the high-frequency soldering iron stand.



Extend the lifetime of solder tip

1. Soak fresh soldering tin after each use, which can prevent oxidation of the solder tip and extend its lifetime.
2. Try to solder at lower temperature when working.
3. Only use fine solder tip when necessary, because the coating of fine solder tip is not as durable as that of rough solder tip.
4. Do not use a solder tip as a detection tool, because bending the solder tip will crack the coating and shorten its lifetime.
5. Try to use rosin flux with less activity as the highly active rosin will accelerate the corrosion of the soldering iron coating.
6. Try to turn off the power as much as possible when not using the soldering iron to extend its lifetime.
7. Do not exert heavy pressure on the solder tip. To improve heat transfer, the soldering tin must be melted to form a soldering tin bridge between the solder tip and the soldering point for heat transfer.
8. A clean copper wire ball shall be used. Compared to a wet sponge, it is less prone to oxidation (water is an oxidant), which greatly improves the lifetime of solder tip.

Error mark

When there is a problem with the soldering station, error markers will be displayed. If the following markings are displayed, please refer to the troubleshooting guide.

S-E sensor error

If the sensor or any part of the sensor circuit fails, the display window will display S-E , and the current transmitted to the high-frequency soldering iron will be cut off.

H-E heating element error

If the temperature of the high-frequency soldering iron does not rise, the window will display H-E , indicating that the heating core may have been damaged.

Note: When the working voltage is not within the standard voltage range or the power is greater than 190 W, H-E will be displayed.

Troubleshooting

⚠ Warning: Power supply should be turned off before maintenance, otherwise electric shock may occur. If the power supply is damaged, it should be repaired by the manufacturer or its service agent or similarly qualified personnel to avoid physical injury or damage to the soldering station.

Fault 1: The soldering station cannot be operated

1. Check if the power cord is loose. If so, plug it properly.

Maintenance of the solder tip

Inspection and cleaning of the soldering iron

1. Set the temperature to 350°C.
2. After the temperature stabilizes, clean the high-frequency soldering iron with a cleaning steel wool and check the condition of the high-frequency soldering iron.
3. If the tinned solder tip contains black oxide, apply a new tin layer and clean the solder tip with a clean steel wool. Repeat the cleaning process until the oxide is completely removed, and then apply a new tin layer.
4. If the solder tip is deformed or damaged, it must be replaced with a new one.

⚠ Note: Do not remove the oxide on the high-frequency soldering iron with a file. Proper daily maintenance will effectively contribute to tin the solder tip.

A solder tip that is not tinned shall not be used for soldering. A solder tip that is not tinned refers to the solder tip that cannot be soaked with soldering tin. This is caused by the fact that the exposed coating is oxidized and falls off, making the solder tip cannot be tinned.

The solder tip that is not tinned is caused by the following reasons:

- The surface of the solder tip is not clean, the solder or iron plating is impure, and there are oxides on the solder side.
- When the soldering iron is not in use at high temperatures, the tinned end of the solder tip is not covered with the soldering tin.
- The solder tip has been in an excessively high temperature state for a long time.
- Scrub the solder tip with dry or unclean sponge or cloth (clean and moist industrial grade sulfur-free sponge or copper wire ball shall be used).

Restore a solder tip that is not tinned

1. Remove the solder tip from the soldering iron after it is cooled down.
2. Use 80# polyurethane grinding foam block or 100# emery paper to remove the dirt and oxide on the tinned surface of the solder tip.
3. Install the high-frequency soldering iron into the soldering iron and wrap the new exposed tinned surface of solder tip with a tin wire containing rosin (0.8 mm or above), and turn on the soldering station power.

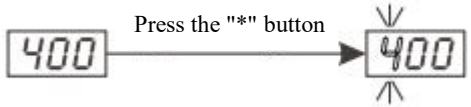
5. Plug the power plug into the power socket and make sure to ground it.
6. After confirming that the high-frequency soldering iron is installed with a solder tip, turn on the power switch.
7. Preset the temperature to 320°C, and the heating indicator will flash when the temperature stabilizes.

Temperature setting

Setting of conventional temperature.

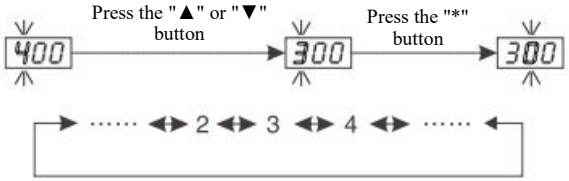
⚠ Note: Confirm that the soldering station is in a temperature adjustable state (the password entered is correct, or the password is the original password). When setting the temperature, the soldering station controls the temperature normally.

1. Press and hold the "*" button for at least 1s, the leftmost digit (hundred digit) will flash, indicating that the soldering station temperature is in the setting mode, and the hundred digit can be adjusted.



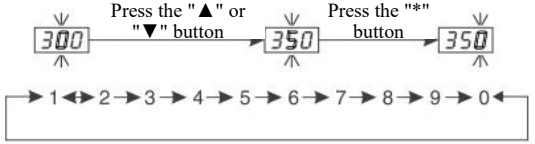
For example: Change 400°C to 350°C

2. Select the desired value to replace the hundred digit, and use the "▲" or "▼" button to change the displayed value as shown in the following figure:



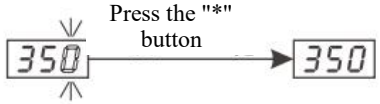
When the desired number is displayed, press the "*" button and the middle digit (ten digit) will start to flash, indicating that the ten digit can be set.

3. Select the desired value to replace the ten digit, and use the "▲" or "▼" button to change the displayed value as shown in the following figure:



Press the "*" button, the right digit (single digit) starts to flash, indicating that the single digit can be set.

4. Select the desired value to replace the single digit, use the "▲" or "▼" button to change the displayed value, press the "*" button as shown in the above figure to select the ten digit



Here, press the "*" button

a) Input the set temperature into internal memory
b) Display the set temperature
c) Start heating control

Note: If the power switch is turned off when setting the temperature, the set value will not be stored in memory. If the set temperature value exceeds the settable range, the display window will return to the hundred digit and flash. If this situation occurs, please re-enter the correct temperature value.

Instant temperature setting

Temperature rise

Directly press the "▲" button, the set temperature will rise by 1°C, and the display window will display the set temperature, after releasing the "▲" button, the display window will delay the display of the set temperature for about 2s, if press the "▲" button again within 2s of delay, the set temperature will rise by another 1°C; if press the "▲" button and hold for at least 2s, the set temperature will rise rapidly until the desired set temperature is reached, and the release the "▲" button.

Temperature drop

Directly press the "▼" button, the set temperature will drop by 1°C, and the display window will display the set temperature, after releasing the "▲" button, the display window will delay the display of the set temperature for about 2s, if press the "▲" button again within 2s of delay, the set temperature will rise by another 1°C; if press the "▲" button and hold for at least 2s, the set temperature will rise rapidly until the desired set temperature is reached, and the release the "▲" button.

Parameters

The soldering uses the following parameters, which can be adjusted.

Password setting

The original password for the memory of the soldering station is "000". In this state, the temperature setting of the soldering station is allowed. If temperature adjustment is restricted, the password must be changed.

Use of the high-frequency soldering iron

Selection of suitable solder tip

1. A solder tip with the maximum contact area with the soldering point shall be selected, which can generate the most effective heat transfer and enable the operators to quickly solder high-quality soldering points.
2. A solder tip with a good path to transfer heat to the soldering points shall be selected. A shorter solder tip can be controlled more precisely, while a longer or angled solder tip can facilitate the soldering of dense circuit boards.

Temperature of high-frequency soldering iron

Excessive temperature can shorten the service life of the solder tip, so the lowest possible temperature shall be chosen. This high-frequency soldering iron has excellent temperature recovery ability, and can be used for quality soldering at lower temperatures, which can protect temperature sensitive devices.

Calibration of the high-frequency soldering iron temperature

Every time the soldering iron, heating element, or solder tip is replaced, the high-frequency soldering iron temperature shall be recalibrated. The temperature of the high-frequency soldering iron shall be recalibrated with a soldering iron thermometer, which is more accurate.

Calibration with high-frequency soldering iron thermometer

1. Set the temperature to 350°C.
2. When the temperature is stable, remove the calibration meter CAL round plug.
3. When the temperature is stable, measure the heater tip temperature with a soldering iron temperature tester, and keep the reading value.
4. Press and hold the "*" button, and then simultaneously press the "▲" and "▼" buttons, the soldering station enters the temperature calibration mode. At this time, the LED displays the hundred digit of the temperature and flashes. Press the "▲" and "▼" buttons for numerical value selection, press the "*" button for numerical digit selection, enter the reading value of the temperature tester using the same method as the "conventional temperature setting". After entry, press the "*" button to complete the temperature calibration of the soldering iron.
5. If there is still an error in temperature, repeat the calibration.

* We recommend 191/192 thermometer to measure the temperature of the high-frequency solder tip.
* If the password is locked, the temperature cannot be calibrated and the correct password must be entered before proceeding.

Cleaning

The high-frequency soldering iron shall be cleaned regularly with a cleaning ball. After soldering, the oxides and carbides derived from the residual flux of the high-frequency soldering iron can damage the solder tip to cause poor soldering, or reduce the thermal conductivity of the solder tip. After use, the high-frequency soldering iron shall be wiped clean and tinned to prevent oxidation of the solder tip under high temperature conditions and reducing the thermal conductivity.

5. Use methods

A. Use methods

- Auto mode: When the tin feeding switch is pressed, the tin wire will be automatically fed within the set time and speed.
- Manual mode: When the tin feeding switch is pressed, the tin wire will be transport by the set speed.

B. Tin feeding position adjustment

- When the tin wire is inside the guide tube, pull it back to the position outside the guide tube before adjusting it.

1. Loosen the fixing nut of the guide tube, rotate the guide tube to adjust the position of the guide nozzle, and then tighten the fixing nut of the guide tube.

> ⚠ **Notes:**
>
> ■ Do not tighten the fixing nut of the guide tube with forcibly, otherwise it may damage the guide tube;
>
> ■ Adjust after cooling to avoid scald.

C. Setting of tin feeding time and speed

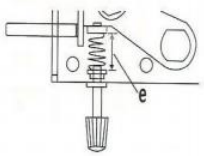
- Set the speed first and then the time. Both AUTO and MANUAL modes are effective during speed setting. But only the AUTO mode is effective for time setting.

D. Tin return adjustment

- After conveying the tin wire, tin return can be set at a specific distance, so simple robot operations can be utilized. The tin return amount can be adjusted between 0 mm−5 mm. If the amount of tin returned exceeds the limit, it must be recovered. Please set a small amount of tin return. If the tin return line guide nozzle reaches the guide tube, the flux is easy to deposit at this point, and this should not happen. Insert a straight screwdriver into the console adjustment hole to adjust the tin return line with the small amount turned to the left and the large amount turned to the right.

E. Tension adjustment

- When adjusting the tension, do not let the gear loose when conveying the tin wire, and do not convey tin solder when the tin wire is clogged, causing the gear to slip. Set a relatively loose tension gear, so that the fine tin wire (diameter: 0.6 mm, 0.8 mm, 1.6 mm) can also be conveyed. Please refer to the figure below.



Tin wire diameter	e
φ0.6	Maximum
φ1.0	About 14 mm
φ1.6	About 10 mm

Password setting

1. Turn off the power supply, press the "▲" and "▼" buttons simultaneously, and then turn on the power supply.
2. Press and hold the "▲" and "▼" buttons until C is displayed.
3. When the window displays C, the soldering station enters parameter setting mode.

Entry of original password

4. Press the "*" button, the window displays ---, the leftmost hundred digit flashes, indicating that the soldering station has entered the password setting mode. The hundred digit can be adjusted, the displayed value will be changed by using the "▲" and "▼" buttons. The method for setting the password is the same as the "conventional temperature setting" method.

Note: Press the "*" button after selecting the three digits of the password.

Incorrect password entered

5. If the soldering station enters normal working state after displaying the current set value in the display window for 1s, it indicates that the password is incorrect, and the temperature will not be able to proceed.

Correct password entered

6. If the display window displays 0F, it indicates that the entered password is correct. After about 6s of display, the soldering station enters a normal state and the temperature setting will be allowed.

New password entry

7. If the display window displays 0F, press the "*" button, and the window displays ---, it indicates that the soldering station enters a new password entry state. Pressing the "▲" or "▼" button will change the displayed value, as shown in "General setting of temperature".
8. After selecting the three digits, press the "*" button, and the display window will display --- again. Now, it is necessary to enter the password again in the same way for confirmation.
9. If the last two new passwords entered are the same, press the "*" button to modify the password successfully, and the new password will be stored in the memory.
10. If the last two passwords entered are different, press the "*" button, the window will display ---, and the soldering station must rewrite the new password (refer to steps 8−9) until the last two passwords are the same to successfully modify the password.

Note: The valid characters for the password are numbers from 0 to 9, otherwise, the entered password will be invalid.

Work mode setting

When the display window displays [0F], simultaneously press the "▲" and "▼" buttons, the window will display [X], it indicates that the soldering station has entered the work mode setting state. Pressing the "▲" or "▼" buttons will change the display value, and the sequence of numbers is changed as follows:

After determining the work mode, press the "*" button to store the selected work mode in the memory. The meaning of the displayed numbers is detailed in the "work mode" instruction table.

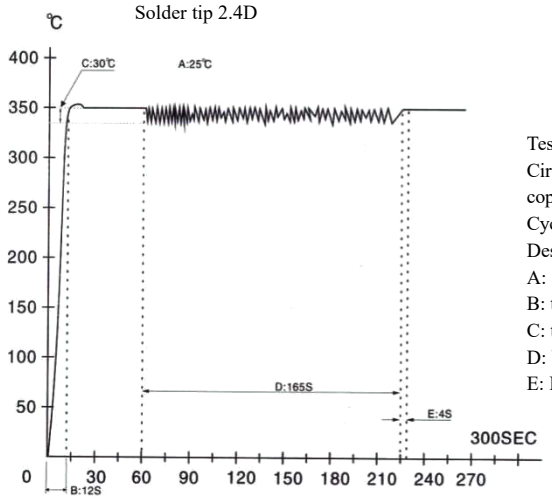
Note: "X" indicates the number of the original work mode.

Warning: High temperature operation can cause severe oxidation and damage to the heating element and solder tip, shortening the service life. Therefore, please be cautious when carrying out high-temperature operations and perform low-temperature soldering as much as possible.

Work mode table

Work Mode	Selected Handle Type	Adjustable Temperature Range	Remarks
0	Electromagnetic soldering iron	200°C–420°C	With sleep mode and automatic shutdown mode
1	Electromagnetic soldering iron	200°C–420°C	With sleep mode and automatic shutdown mode
2	Electromagnetic tweezer soldering iron or special large soldering iron tip	200°C–420°C	With sleep mode and automatic shutdown mode
3	Electromagnetic tweezer wire stripping pliers	50°C–600°C	With sleep mode and automatic shutdown mode
4	Electromagnetic soldering iron	50°C–420°C	With sleep mode and automatic shutdown mode
5	Electromagnetic soldering iron	50°C–420°C	With sleep mode and automatic shutdown mode
6	Electromagnetic soldering iron	200°C–480°C	With sleep mode and automatic shutdown mode
7	Electromagnetic soldering iron	200°C–480°C	With sleep mode and automatic shutdown mode
0.	Electromagnetic soldering iron	200°C–420°C	With no sleep mode and automatic shutdown mode
1.	Electromagnetic soldering iron	200°C–420°C	With no sleep mode and automatic shutdown mode
2.	Electromagnetic tweezer soldering iron or special large soldering iron tip	200°C–420°C	With no sleep mode and automatic shutdown mode
3.	Electromagnetic tweezer wire stripping pliers	50°C–600°C	With no sleep mode and automatic shutdown mode
4.	Electromagnetic soldering iron	50°C–420°C	With no sleep mode and automatic shutdown mode
5.	Electromagnetic soldering iron	50°C–420°C	With no sleep mode and automatic shutdown mode
6.	Electromagnetic soldering iron	200°C–480°C	With no sleep mode and automatic shutdown mode
7.	Electromagnetic soldering iron	200°C–480°C	With no sleep mode and automatic shutdown mode

Temperature and heat recovery curve



Test conditions
Circuit board: phenolic coated copper plate
Cycle: one spot soldering/3s
Descriptions
A: ambient temperature
B: temperature rise time
C: temperature drop
D: Working time
E: Heat recovery time

Temperature recovery characteristic curve

Sleep

If the sleep mode and work mode are selected, and the soldering iron is not used for 20 minutes, the power supply to the soldering iron will decrease and [---] will be displayed, this state can be called sleep. When the soldering station is in sleep mode, the temperature of the soldering iron tip will decrease to 200°C (if the set working temperature is greater than or equal to 200°C) or 50°C (if the working temperature drops to below 200°C), and this temperature will be maintained until the soldering iron station returns to work.

Two ways to wake up:

1. Press any button;
2. Turn off the soldering station power and then turn on the power;
3. Pick up the soldering iron (handle).

If the soldering station enters the sleep mode for 40 minutes without waking up, the power supply to the soldering station will be automatically cut off, and the display window will have no display.