

# **DSS 25-D**

## **Lead Free Soldering Station**

### **INSTRUCTION MANUAL**

Thank you for purchasing the unit. It is designed for lead free soldering. Please read this manual before operating the unit. Store this manual in a safe, easily accessible place for future reference.


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## I . Safety Instruction

### WARNING

In this instruction manual, " Warning"" Caution" and" Note" are defined as followings:

 WARNING: Misuse may potentially cause death of, or serious injury to the user.

 CAUTION: Misuse may potentially cause injury to the user or physical damage to the objects involved. For your own safety, be sure to comply with these precautions.

NOTE: A Note indicates a procedure or point that is important to the process being described.

### CAUTION

***When the power is on, the tip temperature is very high. Since mishandling may lead to burn or fire, be sure to comply with the following precautions:***

- Please avoid abuse of the equipment, and use the appliance only in the described manner.
- Do not touch the metallic parts near the tip.
- Do not use the product near flammable items.
- Advise other people in the work area that the unit can reach a very high temperature and should be considered potentially dangerous.
- While replace parts or install tips, turn the power off and allow the unit to cool to room temperature.

***To prevent damage to the unit and ensure a safe working environment, be sure to comply with the following precautions:***

- Appliance shall only be used with rated voltage and frequency. (Refer to the trademark back of equipment.)

- Don't use the appliance if it is damaged, especially the supply cord.
- This machine is equipped with a 3-wires grounding plug and must be plugged into a 3-terminal grounded socket. Do not modify plug or use an ungrounded power socket. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.
- Do not use the unit for other applications except soldering.
- Do not rap soldering iron against the workbench to shake off residual solder, otherwise the iron will be damaged by shocks.
- Do not modify the unit by yourselves.
- Use only genuine replacement parts.
- Do not wet the unit. When your hands are wet, don't use and disconnect the unit, or to pull the supply cord.
- The soldering process will produce smoke, so make sure the area is well ventilated.
- While using the unit, don't do anything which may cause bodily harm or physical damage.
- Children cannot recognize the danger of electrical appliances. Therefore use or keep the appliance only under supervision of adults and out of the reach from children.

5. Soldering Iron is portable and comfortable to use.

## II. Specification

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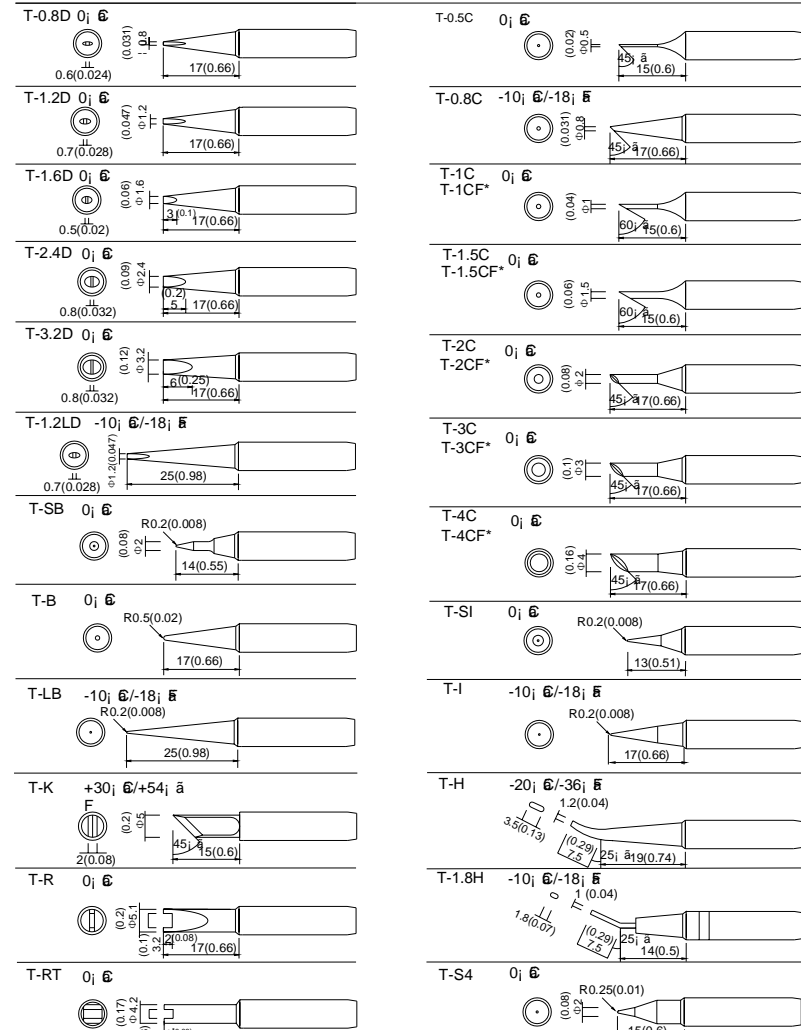
Power	230V
Power consumption	90W
Temperature Range	100°C~500°C (Decide by working mode)
Highest Ambient Temperature	40°C
Temperature Stability	± 2°C/Without air flow and no load
Tip to Ground Potential	<2mV
Tip to Ground Potential	<2mv (True RMS)
Heating Element	Electromagnetic heater
Handle Power Cord	1.2m ( The length can be decided by users )
Dimension	83(W)× 140(L)× 125(H) mm
Weight (not including handle length)	1.38Kg
Model of soldering Iron Handle	907G

\* The tip's temperature is measured by 191/192 thermometer.

\* Specifications and design subject above may be changed without notice.

## XI. TIPS

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## III. Characteristic

1. Display the temperature with the LED by microcomputer. Recovery of the temperature and caefactive is rapid and exactly. Especially it is suitable to the lead free soldering.
2. Ceramic heater with long lifetime.
3. Various types of tips are available and replace tips conveniently.
4. Digital calibration and operate conveniently and easy. Lock the calibration and the parameter setting with the password.

NOTE: the tips with “\*” mark are tinned only at the level.

If the resistance value is not normal, replace the heating element or sensor element.

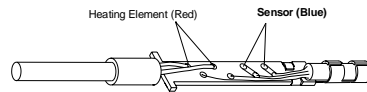
Refer to the instructions included with the replacement part.

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## 10.4 Measure the Resistance after Replacing

After replacing the heating element:

1. Measure the resistance value between pins 4 & 1 or 2, pins 5 & 1 or 2. If it is not  $\infty$ , the heating element and sensor are touching. This will damage the P.W.B.
2. Measure the resistance value “a”, “b” and “c” to confirm that the leads are not twisted and that the grounding wire is properly connected.



## IV. Connection & Operation the Soldering Iron

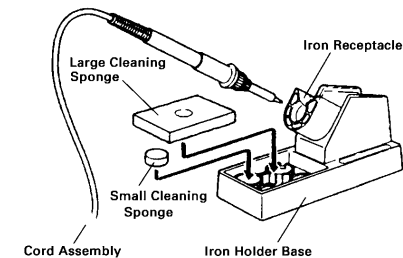
**⚠ CAUTION:** Before operation, please check whether the voltage accords with the rated voltage on the unit's nameplate.

### 4.1 Iron Holder and Sponge

**⚠ CAUTION:**

- The sponge is compressed. It will swell when moistened with water. Before using the unit, moisten the sponge with the water and squeeze it dry. Failure to do so may result in damage to the soldering tip.
- If the sponge becomes dry during working, add appropriate water.

1. Dampen the small cleaning sponge with water and then squeeze it dry.
2. Place the small sponge in groove of the iron holder base.
3. Add a little water to iron holder. The small sponge will absorb water to keep the large sponge around it wet at all times.
4. Dampen the large cleaning sponge and place it on the iron holder base.



### 4.2 Connection

**⚠ CAUTION:** Be sure to turn off the power switch before connecting or disconnecting the unit. Failure to do so may damage it.

1. Connect the connector of the iron handle cord to the socket on the front of the unit. Take notice of the inserting position about the connector.

2. Place the soldering iron into the iron holder.
3. Insert power plug into grounded power socket.
4. Turn on the power switch on the right side of the unit.

### 4.3 Operation of the Soldering Station

#### ⚠ CAUTION:

- *When the password is 000 or it has inputted right password, it can set the temperature real-time, or else, it cannot do the temperature setting and calibration.*
- *If the power supply is cut off when setting temperature, the setting value cannot be stored into the unit.*

#### 4.3.1 Temperature Setting

**Raise Temperature:** Click “▲” button and then the temperature will rise 1 °C, and the LED displays the current setting temperature. If pressing “▲” button not loosely at least one second, the setting temperature will rise rapidly. Loose the “▲” button when up to the needed temperature.

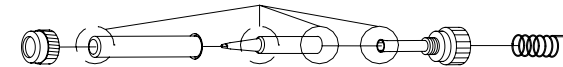
**Reduce Temperature:** Click “▼” button and then the temperature will drop 1 °C, and the LED displays the current setting temperature. If pressing “▼” button not loosely at least one second, the setting temperature will drop rapidly. Loose the “▼” button when down to the needed temperature.

#### 4.3.2 One Favorite Temperature Setting

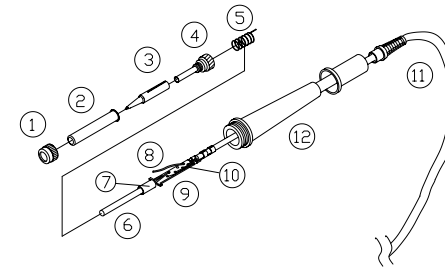
1. In the working state, press the “\*” button two times and then the LED will display one point’s temperature, which means it has been into the setting state of the favorite temperature and you can set three favorite temperatures.
2. After into the setting state of favorite temperature, by clicking “\*” button,

switch among the “three favorite temperatures”. Here, it can select one of they.

a.	Between pins 4&5 (Heating Element)	3~ 4 Ω (Normal)	
b.	Between pins 1&2 (Sensor)	43~ 58 Ω (Normal)	
c.	Between pins 3& Tip	Under 2 Ω	



### 10.2 Disassembling the Iron Handle



1. Turn the nut① counterclockwise and remove out the tip enclosure② and the tip③.
2. Turn the nipple④ counterclockwise and remove it from the iron.
3. Pull both the heating element⑥ and the cord assembly (11) out of the handle (12) (Towards the tip of the iron).
4. Pull out the spring⑤ from the D-type.

**NOTE:** *Do not use metal tools such as pliers to remove tip or Tip enclosure from the handle.*

### 10.3 Measure the Resistance before Replacing

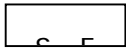
**NOTE:** *Measure the resistance when the heating element is at room temperature.*

1. Resistance value of heating element (Red) is 3~4 Ω (Ceramic heater).

2. Resistance value of sensor (Blue) is 43~58 Ω (Ceramic heater).
  - (1) Extend tip life by switch the system off when not in use.
  - (2) Don't apply pressure to the tip. More pressure does not equal more heat. To improve heat transfer, use solder to form a thermal bridge between the tip and the solder joint.

## IX. Error messages

Various error messages will be displayed when there is something wrong with the unit.



**Sensor error:** If there is a failure in the sensor or anywhere in the sensor circuit, “S-E” will be displayed and power to the soldering iron will be cut off.



**Heater error:** If power cannot be sent to the soldering iron, the display window will show “H-E”. This indicates the possibility of a heater malfunction.


## X. Check and Replace the Soldering Iron

When there is something wrong with the soldering iron, you can check and test it. If it is broken, replace the broken element.

### 10.1 Check the Soldering Iron

1. Pull out the plug and measure the resistance value between the pins of the connecting plug when the heating element cooling down to the room temperature.
2. If the values of ‘a’ and ‘b’ are different from the values in the following table, replace the heating element or sensor or cord assembly. Refer to the following steps.
3. If the value of ‘c’ is over the below value, remove lightly the oxidation in the

joint part of the tip and the heat element with sandpaper or steel wool.

3. After selecting one of the three favorite temperatures, click “▲” or “▼” button to set the favorite temperature at once. If not, it will return to working state about after about 2seconds.
4. Save the setting parameter by pressing the “\*” button and keeping until the LED displays “”, which means the favorite temperature setting is successful. If not, the setting temperature will not be saved.
5. In the password locking state, it cannot set the temperature, but it can select one favorite temperature among the three favorite temperatures. Firstly, once into the setting state of the favorite temperature, click “\*” button to select one point of them, and after about 2seconds, loosen the “\*” button. And then it returns to the work state, namely work at the selected favorite temperature.

### 4.3.3 Turn On /Off the Sound

1. In the working state, press the “▲” and “▼” buttons at the same time and keeping about 3seconds, when the LED displaying “ON”, which means the sound has been turned on. And when the LED displaying “OFF”, which means the sound has been turned off.
2. After the LED displays “ON”, it has sound when click the button. After the LED displays “OFF”, it is without sound when click the button.

### 4.3.4 Look the Setting Temperature

If you want to look the setting temperature during work, you can click “\*” button, the LED will display the current setting temperature. If you click the “\*” again, you can come into the one favorite temperatures setting (refer to 4.3.2).

## V. Parameter Setting


**NOTE:** *The initial password is “000”. Only when the inputting password is right*



*or the password is 000, it can enter into the parameter setting.*

## 5.1 Into the Parameter Setting by Inputting Password

### 5.1.1 Into the Password Setting

1. Turn off the power switch. And then press the “▲” & “▼” buttons simultaneously, afterwards, turn on the power switch.
2. It can loosen the “▲” & “▼” buttons until the LED shows  , Which means it has come into the parameter setting mode.

### 5.1.2 Input the Right Password

#### NOTE:

- *There are twice chances to input password if the inputting password for the first time is wrong.*
- *If the inputting password is wrong for the two times, it cannot come into the parameter setting, namely it cannot set the work mode and new password.*

1. After into the parameter setting mode, the LED displays “---” and the 100’s digit is bright, which means it needs to input the password.
2. Input password: Click the “▲” or “▼” button to input 100’s digit, and then click the “\*” button when displaying the selected value of 100’s digit. After that it comes into 10’s digit input. The inputting methods of the 10’s digit and 1’s digit are same with the 100’s digit.
3. If the inputting password is wrong for the first time, it comes into the password-inputting interface again and the window displays “---”. Input the password again as the step 2.
4. If the inputting passwords both are wrong, it cannot come into the

parameter setting and return to the work state directly.

5. If the inputting password is right, it comes into the parameter setting, firstly, work mode setting interface.

## 2. Why a “de-tinned” tip fails to work?

A de-tinned tip is one which cannot <sup>Page 7</sup> wet with solder. This exposes the plating to oxidation and degrades the heat transfer efficiency of the tip.

*The de-tinning is caused by:*

- (1) Failure to keep the tip covered with fresh solder while not in use.
- (2) High tip temperatures.
- (3) Insufficient melting in soldering operations.
- (4) Wiping the tip on dirty or dry sponges and rags. (Always use a clean, wet, industrial grade, sulfur-free sponge.)
- (5) Impurities in the solder, iron plating, or on the surfaces to be soldered.

## 3. To restore a de-tinned tip

- (1) Remove the tip from the solder handle and allow the tip to cool down.
- (2) Remove scale and oxides from the tinned area of the tip with 80-grit abrasive polyurethane foam stock or a 100-grit emery cloth.
- (3) Wrap rosin core solder ( $\varnothing 0.8\text{mm}$  diameter or larger) around the newly exposed iron surface, insert the tip into the handle, and turn on the power switch.

**NOTE: The de-tinned tips are preventable by proper daily care!**

## 4. Extending tip life

- (3) Tin the tip before and after each use. This protects the tip from oxidizing, and prolongs tip life.
- (4) Do the job at the lowest temperature. Lower temperatures decrease tip

oxidation and are easier on the components being joined.

- (5) Use fine point tips only when necessary. The plating on fine precision tips is less durable than the plating on blunter tips.
- (6) Do not use the tip as a prying tool. Bending the tip can cause the plating to crack, shortening tip life.
- (7) Use the minimum activation flux necessary to do the job. Higher activation flux is more corrosive to the tip plating.

## 2. Cleaning

Clean the tip regularly with a cleaning sponge, as oxides and carbides from the solder and flux can form impurities on the tip. These impurities can result in defective joints or reduce the tip's heat conductivity.

When using the soldering iron continuously, be sure to loosen the tip and remove all oxides least once a week.

This helps prevent reduction of the tip temperature.

## 3. When not in use

Never leave the soldering iron sitting at high temperature for long periods of time, as the tip's solder plating will be covered with oxide, which can greatly reduce the tip's heat conductivity.

## 4. After use

Wipe the tip and coat it with fresh solder. This helps to prevent tip oxidation.

## 8.2 Maintenance of the Tip

### 1. Inspect and Clean the Tip

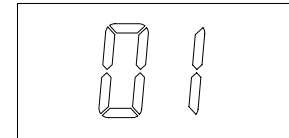
**⚠ CAUTION:** *Never file the tip to remove oxide.*

- (1) Set the temperature to 250°C.
- (2) When the temperature stabilizes, clean the tip with the cleaning sponge and check the condition of the tip.
- (3) If there is black oxide on the solder-plated portion of the tip, apply new solder (containing flux) and wipe the tip on the cleaning sponge. Repeat until the oxide is completely removed. Coat with new solder. The solder protects the tip from oxidation and prolongs the life of the tip.
- (4) If the tip is deformed or heavily eroded, replace it with a new one.

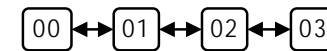
## 5.2 Set the Work Mode

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1. If the input password is right, it comes into the work mode setting and the LED displays the current work mode, such as the following picture:



2. Click the “▲” or “▼” button to select the work mode and the work mode changing sequence is as following:



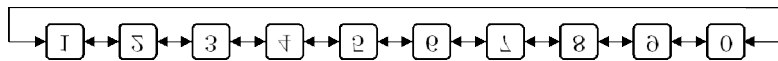
**Work Mode Table**

Work Mode	Temperature range
00	100°C-350°C
01	100°C-400°C
02	100°C-450°C
03	100°C-500°C

3. After selecting the work mode, click the “\*” button into the new password setting.

### 5.3 Set the New Password

1. Once into the new password setting, the LED displays “---”. After that, click the “▲” or “▼” button, the 100’s digit is bright.
2. At the time, click the “▲” or “▼” button to select the 100’s digit, and then click the “\*” button when displaying the selected value of 100’s digit. After that it comes into 10’s digit set. The setting methods of the 10’s digit and 1’s digit are same with the 100’s digit. Page 8



3. If the setting passwords are not same with each other, the LED displays “Err”, which means the password setting is not successfully, and return to the work state directly.
4. If the setting passwords are same with each other, the LED displays “LF”, which means the password setting is successfully, and then into the work state directly.

## VI. Temperature Calibration

The soldering iron should be calibrated after changing the iron, replacing the heating element or tip every time. The unit adopts digital calibration and input the revisionary value by pressing button.

**Method of recalibrating temperature: Use the thermometer to calibrate it, and it is precise comparatively.**

1. Set the temperature to a certain value.
2. When the temperature stabilizes, measure the tip’s temperature with

thermometer and write down the reading.

3. Press the “▲” & “▼” buttons simultaneously and then press “\*” button not loose, LED display “CAL” which means it has entered into the calibrating temperature mode.
4. At the moment, the 100’s digit becomes blight. Click the “▲” or “▼” button to select the value according to the reading of the thermometer and then click “\*” button to confirm it. Input the 10’s digit and 1’s digit as the method, after that, click “\*” button. Here, the calibration operation has been finished. If temperature is successful, the LED will display “LF” and then return to the work state.
5. If the temperature still has deflection, you can repeat calibration in accordance with above steps.

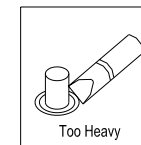
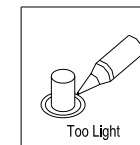
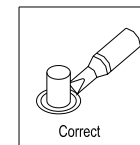
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#### NOTE:

- **Recommend using the tip thermometer for measuring the tip’s temperature.**
- **If the soldering station is locked by password, it will not be able to calibrate the temperature and it must input the right password.**

## VII. Select a Correct Tip

1. Select a tip that maximizes contact area between the tip and solder joint. Maximizing contact area gives the most efficient heat transfer, allowing operators to produce high quality solder joints quickly.
2. Select a tip that allows good access to the solder joint. Shorter tip lengths allow more precise control. Longer or angled tip may be needed for soldering densely populated boards.



## VIII. Use and Maintenance of the Tip

### 8.1 Use of the Tip

#### 1. Tip temperature

High soldering temperatures can degrade the tip. Use the lowest possible soldering temperature. The excellent thermal recovery characteristics ensure efficient and effective soldering event at low temperatures. This also protects the sensitive components from thermal damage.