CONTENTS

NOTICE

This device is intended for use by individuals aged 14 years and above. Persons lacking experience or knowledge should only use the device under the supervision or guidance of someone familiar with its proper use. Familiarize yourself with the safety instructions and potential hazards of this product before use.

Children must not use this product without supervision. This device must only be powered by a power source that meets the specifications indicated on the product.

Warning:

Ensure the tool is placed on a stable table or countertop during use. When not in use, store it carefully to prevent damage or accidents.

01 Safety Instructions

Please read the user manual carefully before using the product. The user manual contains information on safe use and please keep it properly for future reference. Users can visit our website to learn about updates to the user manual.

1.1 Warnings

When using the TS1M multi-function mini soldering station (hereinafter referred to as " TS1M ") , please be sure to observe the following matters:

- Be sure to turn off the power when you finish using it or before leaving. Before the device is completely cooled. Do not cover flammable materials to prevent fire.
- When the power is on, the temperature of the soldering iron tip can reach 100℃ ~ 450℃. Do not touch the soldering iron tip and high-temperature parts to prevent burns.
- Do not immerse the TS1M host or handle in water, or operate the device with wet hands to prevent damage to the device and the risk of electric shock.
- Please use a power socket and power cord with good grounding protection to ensure electrical safety.

1.2 Precautions

- The TS1M control terminal is composed of precision components. Avoid dropping it to prevent damage.
- After the TS1M is used continuously at full power for about 40 minutes at 350 ℃ or higher, the temperature of the soldering iron handle may rise to about 50 ℃ ~ 60 ℃.
- When used for the first time, the soldering iron tip may emit slight smoke due to the heating element, which is normal.

1.3 Electrostatic protection

When using the equipment, the soldering iron tip may have induced electricity / static electricity. Generally, there will be no problem with soldering components, but some sensitive components may be damaged. When soldering sensitive components, you can refer to the

following solutions:

- For scenarios with high requirements for electrostatic protection, it is recommended to use a three-pin DC power supply with grounding protection function, and ensure that the ground terminal of the power supply is reliably connected to the ground. Or use a mobile power supply for power supply.
- If the conditions limit the use of a charging head, please use a dedicated grounding wire, reliably connect one end of it to the charging head, and reliably connect the other end of the grounding wire to the grounding point. At the same time, it is necessary to verify that the grounding resistance meets the anti-static standard requirements to ensure the formation of a stable electrostatic discharge circuit.

1.4 Operating Environment

	Working State		Non-working State
Temperature	+0 ℃ ~ +50 ℃		-20 ℃ ~ +60 ℃
Relative Temperature	High Temperature	40 ℃~50 ℃ 0%~60%RH	40 ℃~60 ℃ 5%~60%RH
	Low Temperature	0 ℃~40 ℃ 10%~90%RH	0 ℃~40 ℃ 5%~90%RH

1.5 Liability Statements

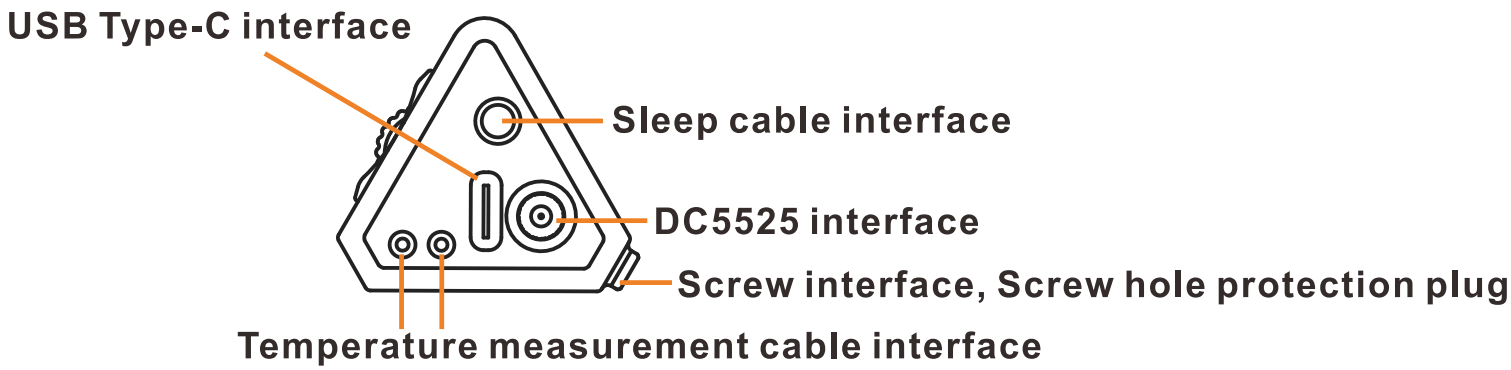
- The company shall not be liable for any special, indirect, incidental or consequential damage or loss caused by failure to follow the contents of this manual (including but not limited to safety statements, operating environment, warnings, precautions, electrostatic protection, etc.) to operate the product, regardless of the cause or speculation, and the risk of such loss or damage shall be borne by the user.
- Any damage or loss caused by unauthorized disassembly and modification of the product shall be borne by the user.
- Please keep this product properly to prevent children from using it as a toy without supervision.

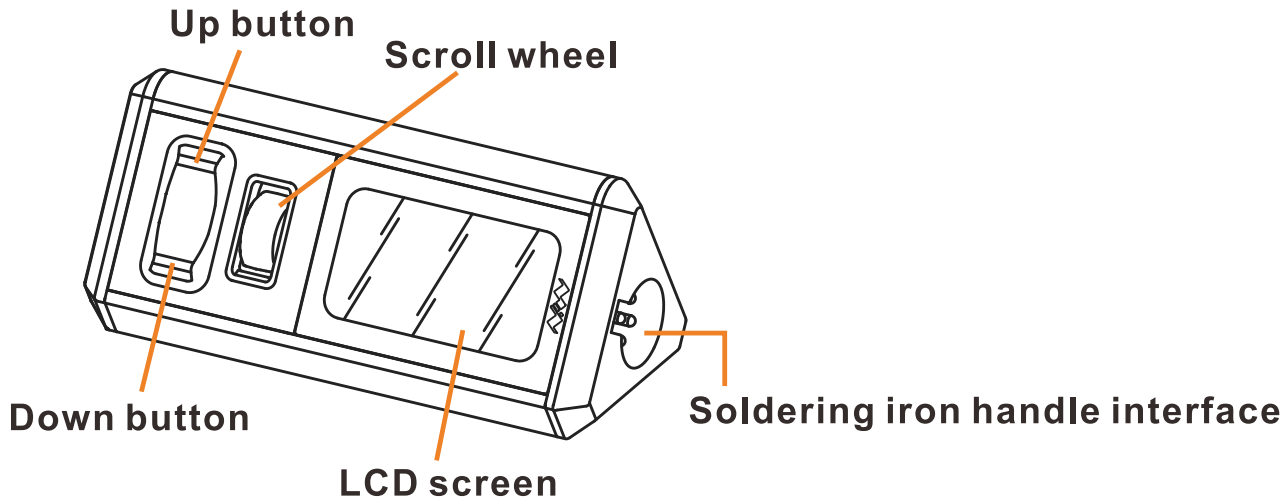
02 Product Overview

The TS1M multi-function mini soldering station supports dual power supply mode and is compatible with the PD3.1 fast charging protocol (12-28V voltage, maximum 140W power) ; when using DC power supply, the maximum power can be increased to 200W (12-28V). The temperature control range covers 100-450°C, which is suitable for multiple Soldering scenarios. The device supports external thermocouple temperature measurement function, further expanding the application scenarios of welding and temperature monitoring. In addition, TS1M is compatible with the 115 series, 210 series, 245 series and MINIWARE digital handle series, realizing one machine for multiple uses and meeting long-term use needs.

The TS1M multi-function mini soldering station adopts a non-traditional design with a compact triangular body structure. The edges and corners are polished to retain the sense of geometric lines and have a good grip. A universal screw interface is set on the back to support external expansion. Equipped with a 1.47-inch 320×172 Pixel true color screen, the interface is simple, and the temperature is displayed in real time. The scroll wheel + double button design is easy to use. Built-in simplified Chinese / English / Russian / German multi-language, the same firmware can be switched freely to adapt to users in different regions. The screen supports flipping to adapt to left-handed usage habits. In addition, the device can be upgraded through computer firmware, and supports modifying parameters in TXT documents to improve usage flexibility.

2.1 Interface and button introduction





2.2 Product Parameters

Screen	LCD 320*172 Pixel	
USB Interface	USB Type-C	
Power Interface	DC5525, USB Type-C	
Working Voltage	12-28V	
Max Power	DC5525 (Positive inside and negative outside)	200W
	USB Type-C	140W (PD 3.1)
Dimension	Length: 79mm; Width: 33.5mm; Height: 35.9mm	
Weight	54.40g	

2.3 Working Parameters

Working voltage	12 - 28V
Max Power	115 Series: 35W
	210 Series: 100W
	245 Series: 100W

Temperature control range	100°C - 450°C
Temperature stability	±3%
Soldering tip to ground resistance	115 Series: < 2Ω
	210 Series: < 2Ω
	245 Series: < 2Ω

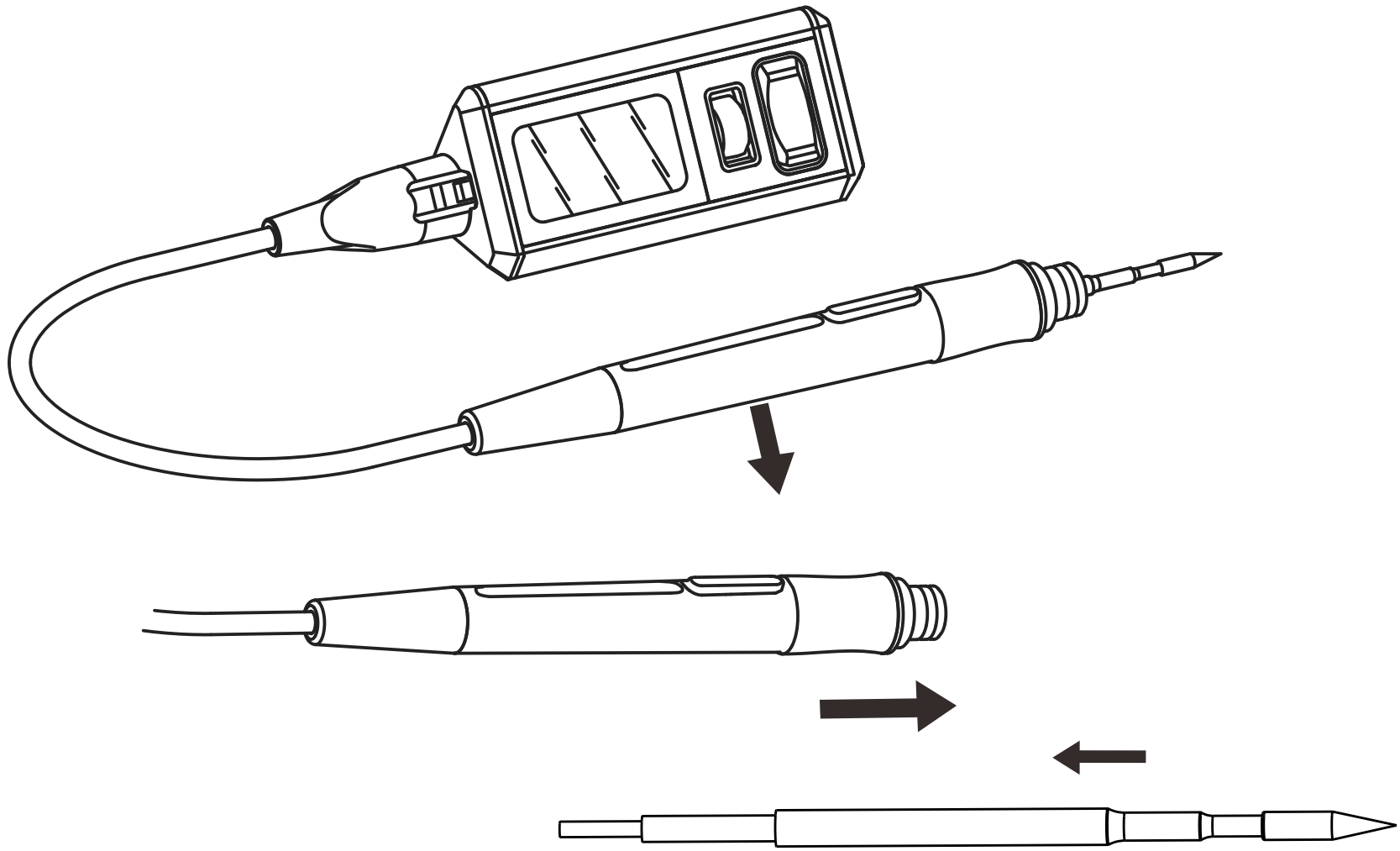
Soldering Handle Type	Max Power	Working Voltage	Working Current	Minimum time from room temperature to 300 degrees
245 Series	200W	28V	7.14A	3S
210 Series	100W	28V	5.37A	2S
115 Series	35W	28V	1.25A	2S

Note: The above data are internal data of MNIWARE laboratory and are for reference only !

03 Installation Instructions

- Insert the soldering iron tip into the soldering iron handle, and then insert the soldering iron handle connection end into the TS1M control end;
- If you need to measure temperature or sleep, please connect the temperature measurement cable or sleep cable;
- Connect the USB Type-C power cable or DC power cable to the power interface of the TS1M control end (note that the two power supply methods cannot be used at the same time) , turn on the power, and follow the on-screen prompts.

Note: If TS1M prompts "  " after power-on, it indicates that the soldering iron tip is not installed firmly. Please reinstall the soldering iron tip or soldering iron handle.

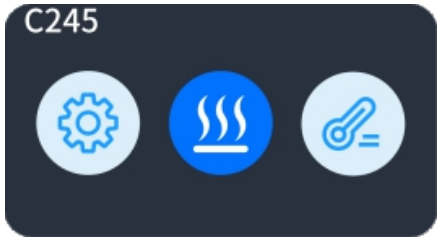


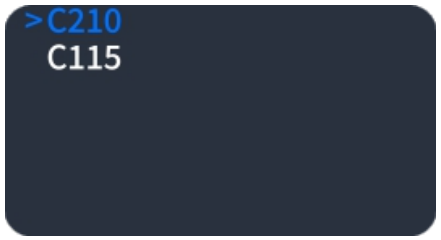
04 Operation

4.1 Interface

4.1.1 Standby interface

After the power is turned on, the TS1M will display the product logo and the standby interface in sequence.

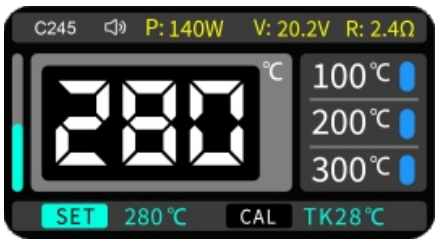


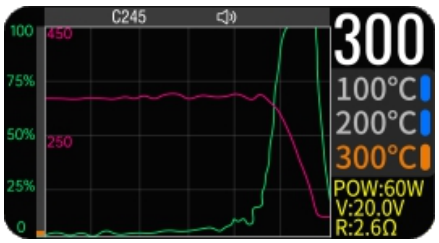


When a 210 or 115 series soldering iron handle is inserted, the system will automatically pop up the handle type selection interface, and the user needs to confirm according to the actual model; if other compatible handles（such as 245 series, etc.）are inserted, the host will automatically identify and complete the matching without manual operation.

4.1.2 Heating interface

After entering the working state, the heating interface defaults to waveform display mode. Short press the scroll wheel button to switch between waveform display and pure digital display mode with one click.





Heating interface parameter interpretation

Parameter symbol	Parameter name	Meaning description
P	Power	Current working power
V	Voltage	Current working voltage
R	Resistance	Current impedance of heating core
CAL	Calibration	Temperature calibration compensation value

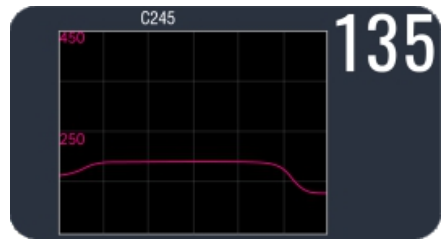
Parameter symbol	Parameter name	Meaning description
Tk	External Temp	External sensor measurement temperature
Tr	Reference Temp	Cold end reference point temperature

4.1.3 Temperature measurement interface

Long press the up button: exit the temperature measurement mode and return to the upper interface.

Short press the scroll wheel button: pause / resume real-time waveform update.

Long press the scroll wheel button: clear the current waveform data.



4.1.4 Menu interface

Enter the settings menu from the standby interface:

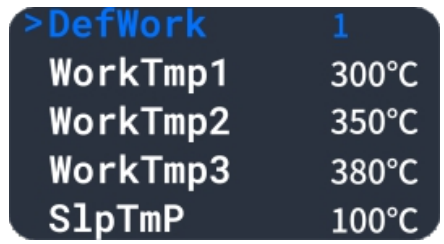
Roll the wheel: In the standby interface, roll the wheel to select the "settings" icon.

Enter the menu: Short press the wheel button or the down button to confirm and enter the settings menu.

Navigate and modify in the settings menu:

Roll to select: Roll the wheel to browse the menu options and select the item to be modified.

Enter adjustment: Short press the down button or short press the wheel button to confirm the selection and enter the parameter adjustment interface of the item.

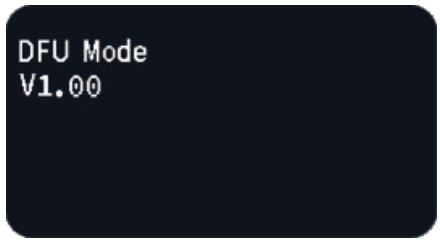


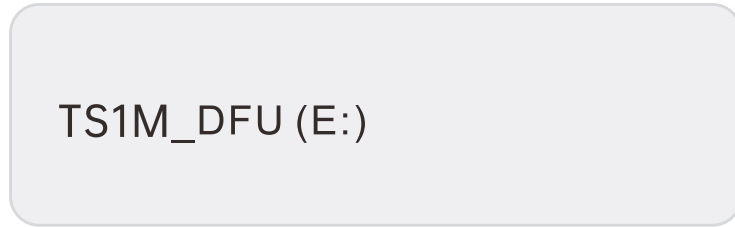
4.1.5 DFU interface

Enter DFU mode:

1. **Preparation:** Keep pressing the scroll wheel button.
2. **Connect to computer:** While keeping pressing the scroll wheel button, connect the device to the computer via USB Type-C data cable.
3. Mode confirmation: After successfully entering DFU mode, the TS1M screen displays the "DFU Mode" logo.

Exit DFU mode: Disconnect the device power supply without pressing any buttons. After reconnecting the power supply, the device will automatically enter standby mode.





4.2 Basic Operation

4.2.1 Heating operation

Start heating from the standby interface

1. Select the heating function: In the standby interface, scroll the wheel to select the "Heating" icon.
2. Start the temperature control mode: Short press the scroll wheel or the down button to confirm, the device enters the temperature control mode and automatically heats up to the preset temperature.
3. Exit heating (temperature control mode) : In the temperature control mode, press and hold the up button for about 3 seconds, the setting will stop heating and return to the standby interface.

Quickly start heating from the settings menu:

Quick entry: In the settings main menu interface, press and hold the scroll wheel for about 3 seconds to directly enter the temperature control mode (the device also starts to heat up to the preset temperature) .

4.2.2 Temperature control operation

Adjust the preset temperature in temperature control mode:

1. Switch the preset temperature gear: **Short press the down button or the up button** to switch the preset temperature gear (such as working temperature 1 / 2 / 3).
2. **Gear status indication:** The currently selected gear is displayed in **orange**, and the unselected gear is displayed in **gray**.
3. **Temporary temperature adjustment: Turn the wheel up** to temporarily increase the target temperature, and **turn the wheel down** to temporarily lower the target temperature.
4. **Temperature display:** The temporarily set target temperature value is displayed in **orange**, and the current actual working temperature is displayed in **white**.
5. **Switch display mode: Short press the wheel button** to switch between the waveform display interface and the pure digital display interface with one click.

Modify the preset temperature value in the settings menu:

1. **Enter the preset temperature adjustment:** In the settings menu, scroll the wheel to select the target preset temperature (such as "Working Temperature 1", "Working Temperature 2" or "Working Temperature 3"), **short press the down button or the scroll wheel to confirm**, and enter the temperature adjustment interface of this item.
2. **Adjust the preset temperature value:** In the adjustment interface, **turn the scroll wheel up** to increase the preset temperature value, and **turn the scroll wheel down** to decrease the preset temperature value.
3. **Confirm or cancel the modification:**

   Confirm the modification: Short press the up button or the scroll wheel to confirm and save the current setting value

   Cancel the modification: Long press the up button or the scroll wheel for about 3 seconds to abandon the modification and restore the temperature value before this adjustment.

   Automatic save: After exiting this menu item (whether confirming or canceling the exit) , the device automatically saves all effective preset temperature values.

4.2.3 Parameter settings

1. Enter the settings and modify parameters from the standby interface:

1) Enter the settings menu: In the standby interface, scroll the wheel to select the "Settings" icon, **short press the scroll wheel or the down button to confirm**, and enter the settings menu.

2) **Select the setting item:** Scroll the wheel to browse the menu options, move to the target setting item, **short press the down button or the scroll wheel** to confirm, and enter the parameter adjustment interface of the item.

3) **Adjust the parameter value: In the parameter adjustment interface,**
turn the wheel up: increase the parameter value, **turn the wheel down:** decrease the parameter value;

4) **Confirm or cancel the modification:**
Confirm the modification: Short press the up button or the scroll wheel to confirm and save the current setting value.
Cancel the modification: Long press the up button or the **scroll wheel for about 3 seconds** to **abandon** the modification and restore the parameter value before this adjustment.

5) **Exit the settings menu and save:** At any menu level, long press the **up button for about 3 seconds** to exit the entire settings menu and return to the standby interface.
Automatic save mechanism: After exiting the settings menu, the device automatically saves all confirmed modified parameter values.

6) **Intelligent state memory:** When returning to the standby interface, the system will prioritize returning to the "heating" icon, allowing users to quickly start heating.
In the heating interface, press and hold the **scroll wheel for about 3 seconds** to directly enter the main settings menu.

4.2.4 Thermometer function

Usage steps:

1. **Connect the temperature probe:** insert the external thermocouple temperature probe into the corresponding interface of the TS1M device.

2. **Start the temperature measurement mode:** In the standby interface, scroll the wheel to select the "temperature measurement" icon, **short press the down button or the scroll wheel button to confirm**, **the device** enters the temperature measurement mode, and the interface displays the real-time temperature waveform / data.

3. **Temperature measurement mode operation:**

Exit temperature measurement: In the temperature measurement interface, **press and hold the up button for about 3 seconds**, **the device will exit** the temperature measurement mode and return to the standby interface.

Pause / resume waveform update: **Short press the scroll wheel button** to pause the real-time update of the waveform; short press the scroll wheel button again to resume the update. Clear waveform data: Long press the **scroll wheel button for about 3 seconds** to clear the currently displayed waveform data (can also be operated in the pause state).

4.2.5 Sleep state operation

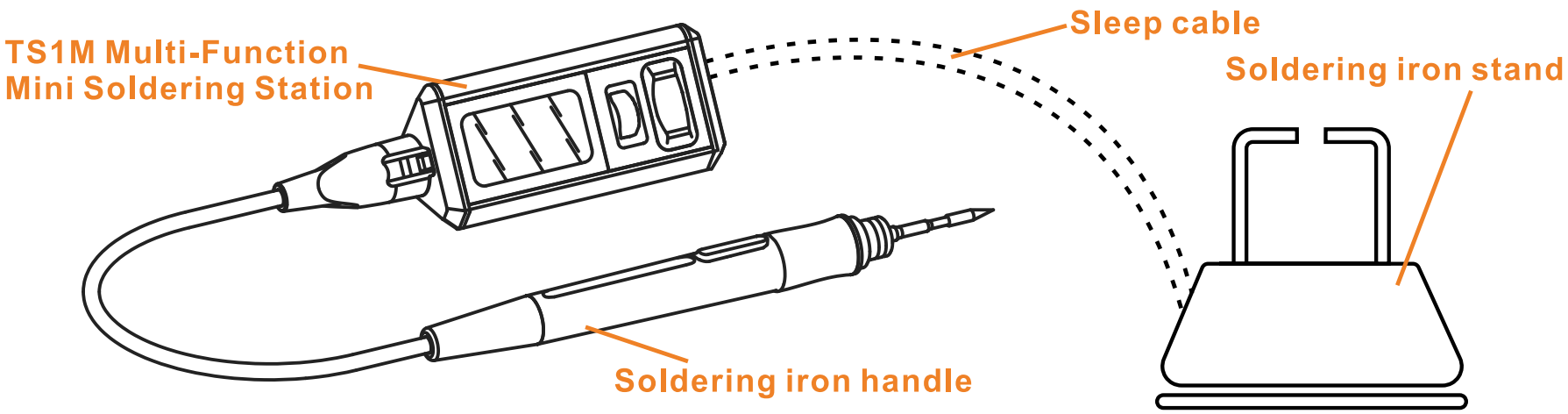
1. **Basic sleep and recovery (applicable to all compatible handles):**

Enter sleep: In the temperature control state, put the soldering iron handle **into the soldering iron stand**, the device will **automatically enter the sleep state**, and the temperature of the soldering iron tip will drop directly to the preset sleep temperature.

Exit sleep and resume work: When the handle is **taken out of the soldering iron stand**, the device will **automatically exit the sleep state, restore the temperature control mode**, and heat up to the set temperature.

Enter standby after sleep timeout: In the sleep state, if the device continues to be stationary and reaches the preset standby time, it will **automatically enter the standby state**.

Note: Use the sleep connection cable included in the product package to connect the TS1M controller and the soldering iron stand, and then put the soldering iron handle into the connected soldering iron stand to realize the sleep function.



2. **Automatic sleep of digital handle**

Applicable **to MINIWARE digital handle (not 115, 210, 245 series analog handle):**
Automatically enter sleep: In temperature control mode, if the handle is **not operated for a long time** and reaches the preset sleep time, the device will **automatically enter sleep (no need to place the sleep seat) , and the interface will switch to the sleep interface.**
Sleep timeout enters standby: In the automatic sleep state, if it is left still for a preset standby time, the device will automatically enter standby state.

4.2.6 Calibration

TS1M uses thermocouple temperature measurement and calibration functions. To ensure measurement accuracy, the temperature measuring wire must be used in a standardized manner: the surface of the soldering iron tip must be evenly covered with solder, and the temperature measuring end of the external thermocouple must be completely embedded in the tin layer and fully in contact with the surface/interior of the material being measured to achieve accurate temperature measurement.

1. Manual calibration operation process

1) After entering the temperature control mode, set the preset target temperature to 350℃;
2) Apply a layer of solder evenly on the surface of the soldering iron tip (to ensure uniform heat conduction) ;

3) Fit the external thermocouple temperature measuring end tightly to the soldering iron tip and wait for the temperature to stabilize (about 10-20 seconds) ;

4) Observe the real-time temperature value in the lower right corner of the screen and calculate the difference between it and the set value of 350℃;

5) Enter the device setting menu, select the "Temperature Calibration" function, and enter the manual compensation value according to the difference to complete the calibration.

2. Instructions for automatic calibration

1) Ensure that the external thermocouple temperature measuring end fits tightly with the soldering iron tip, and evenly apply solder on the surface of the soldering iron tip;

2) After the device status is stable, short press the wheel button to digital interface and long press the down button (the specific duration is subject to the device prompt), the host will automatically perform temperature calibration, please keep the posture balanced until " Calibration successful " is displayed; If " Calibration failed " is displayed, please recalibrate;

3.) After automatic calibration, the compensation temperature cannot be manually modified. If you need to clear the compensation temperature of automatic calibration, it is recommended to restore the factory settings.

Note: The 4mm banana plug is a sleep cable interface and has no grounding function. Please do not connect it incorrectly!

4.2.7 Personalized interface

When the host **automatically switches from sleep mode to standby mode**, the system will check whether there is a user-defined image file. If there is an image named TS1Mback.BMP in the root directory, the system will **automatically load and display the custom image as the standby interface**; If the TS1Mback.BMP file is not detected, **the default MINIWARE Logo animation interface will be displayed**.

4.2.8 Screen off

When TS1M is in standby mode, if there is no user operation for 10 minutes (default setting, unmodifiable), it will automatically enter the screen-off state; or after the device displays the personalized logo interface, if there is no user operation for 10 minutes, it will automatically enter the screen-off state.

4.3 Menu Explanation

Parameter name	Interpretation	Factory settings	Adjustable range
Def Work	When heating up, the default working position	1	1 ~ 3
Work Tmp 1	Operating temperature 1	300 °C	100 °C ~ 450 °C
Work Tmp 2	Operating temperature 2	350 °C	100 °C ~ 450 °C
Work Tmp 3	Operating temperature 3	380 °C	100 °C ~ 450 °C
Boost temperature	Use the digital handle to boost temperature(This option menu will only appear if you insert a digital handle)	400 °C	100 °C ~ 450 °C
Slp Tmp	When entering sleep mode, the temperature of the soldering	100 °C	100 °C ~ 180 °C
Tmp Cal	Temperature calibration compensation value	0 °C	-60 °C ~ 20 °C
Slp Tme	When the soldering iron is not in use, the waiting time to enter the sleep mode.	180 S	100 S ~ 1800 S
Standby	In sleep mode, the waiting time to return to the standby interface	10 m	10 m ~ 100 m
Tmp Stp	Step value when adjusting temperature	5	10 ~ 30

Parameter name	Interpretation	Factory settings	Adjustable range
Bk Lght	Screen brightness	8	1 ~ 10
Pwr Set	Power settings for heating up different types of soldering irons	245: 140 W	30 W ~ 200 W
		210: 65 W	30 W ~ 100 W
		115: 35 W	25 W ~ 35 W
Tmp Typ	Temperature display units, Celsius and Fahrenheit	0	0: ℃ , 1: °F
Vol	Buzzer sound volume	3	0 ~ 5
Lang Sel	The language type displayed	CN	CN, EN, DE, RU
LVP	The minimum voltage limit for different types of soldering to heat up under DC power supply	245: 11 V	11 V ~ 21 V
		210: 6 V	6 V ~ 21 V
		115: 6 V	6 V ~ 21 V
Flip Det	Screen display, button reverse detection	ON	ON; OFF
TipTyp	C245 automatic identification (C210, C115 manual selection)		
Info	Display soldering iron model, resistance value, voltage, temperature, software version, hardware version		
Rst Fac	Factory Reset		Cancel, Confirm

4.4 Config file

Parameter name	Interpretation	Factory settings	Adjustable range
Default Temp	Default temperature position	1	1 ~ 3
Work Temp 1	Operating temperature 1	300 ℃	℃: 100 ~ 450 °F: 212 ~ 842

Parameter name	Interpretation	Factory settings	Adjustable range
Work Temp 2	Operating temperature 2	350 °C	°C: 100 ~ 450 °F: 212 ~ 842
Work Temp 3	Operating temperature 3	380 °C	°C: 100 ~ 450 °F: 212 ~ 842
Boost Temp	Boost temperature	350 °C	°C: 100 ~ 450 °F: 212 ~ 842
Sleep Temp	Sleeping temperature	100 °C	°C: 100 ~ 180 °F: 212 ~ 356
Sleep Time	Sleeping time	180 S	0 ~ 1800 S
Idle Time	Standby time	10 min	10 min ~ 120 min
Temp Step	Temperature step	5	1 ~ 30
Back Light	Background brightness	8	1 ~ 10
Temp Type	Temperature Type	0	0: °C, 1: °F
Beep Volume	Volume	3	0 ~ 5
Language	Language	1	0 ~ 4 (0: EN, 1:CN, 2:DE, 3:RU)
Low Vol Protect	Low voltage protection	6 V	6 V ~ 21 V
Flip Over	Flip	1	0~1 (0: Turn off detection, 1: Turn on detection)
Max Pow_245	245 Power Limit	140 W	30 W ~ 200 W
Max Pow_210	210 Power Limit	65 W	30 W ~ 100 W
Max Pow_115	115 Power Limit	35 W	25 W ~ 35 W
Calibra Val_245	245 Temperature calibration value	0	°C : - 60 ~ 20 °F : - 76 ~ 68
Calibra Val_210	210 Temperature calibration value	0	°C : - 60 ~ 20 °F : - 76 ~ 68
Calibra Val_115	115 Temperature calibration value	0	°C : - 60 ~ 20 °F : - 76 ~ 68

05 Soldering Tip

5.1 Soldering Tip Selection

210-KU 210-I 210-IS 245-K 245-BC2 245-D24

5.1 Tip Maintenance

1) When not in use for a long time, it is recommended to tin the soldering tip appropriately to prevent oxidation.
2) Do not keep the soldering tip in a high temperature state for a long time to avoid dry burning.
3) When soldering, do not apply too much pressure to the soldering tip to rub the solder joint to avoid damage to the soldering tip.
4) It is absolutely not allowed to use rough materials or files to clean the soldering tip.
5) If the surface of the soldering tip has oxidized and does not stick to tin, the user can use 600~800 mesh diamond cloth to carefully rub and clean it with ethylene propylene alcohol or an equivalent solution as needed.
6) After heating to 200℃, immediately tin it to prevent oxidation.
7) Do not use flux containing too much chlorine or acid, only use synthetic resin or activated resin flux.

06 Technical Support

Welcome to www.miniware.com.cn for product support, including user manuals, firmware updates, usage tips and the latest news.

6.1 Common Problem Solving

Problem 1: The screen does not display.

Check 1: Is the power plugged in properly or is the cable damaged.

Check 2: Does the removable hard disk appear when connected to the computer.

Problem 2: The soldering iron automatically restarts.

Check 1: Is the power supply not properly plugged in.

Check 2: Is the voltage too low. (You can check the minimum voltage set in the configuration file)

Question 3: Is the soldering iron tip intermittently heated or the temperature fluctuates.

Check 1: Is the soldering iron tip used for the first time.

Check 2: Is the power cord in poor contact.

Check 3: Is the soldering iron tip too hot. Set a suitable temperature.

Check 4: Has the soldering iron tip been cleaned. Refer to “Soldering Iron Tip Care and Use” .

Question 4: Standby screen display “  **”**

Check 1: Is the temperature of the soldering iron tip above 50°C. If the temperature drops below 50°C, the system will automatically exit the alarm state;

Question 5: Standby screen display “ 

”

Check 1: Is the voltage too low. (Voltage < low voltage protection) to see if the power supply needs to be replaced.

Question 6: Standby screen displays “  **”**

Check 1: Is there any problem with the soldering iron tip. Is it firmly plugged in.

Check 2: If Check 1 passes, the soldering iron tip needs to be replaced.

Question 7: When the TS1M is in normal use, it returns to the standby screen.

Check 1: Is the voltage lower than the low voltage protection voltage. When the voltage rises back to above the low voltage protection voltage, it can be used normally.

Question 8: The soldering iron tip is not tinned.

1. Is the temperature of the soldering iron tip over 400°C.
2. Is the soldering iron tip not properly tinned.
3. Is there a lack of flux during soldering, detinning, repair, and re-soldering.
4. Has a sponge or rag with high sulfur content or dryness been used to wipe the soldering iron tip.
5. Has it been exposed to organic matter such as plastics, silicone grease and other chemicals.
6. Has impure and low-tin solder been used.

6.2 Service & Upgrades

6.2.1 Firmware Update

1. Download the firmware: Visit the official website www.miniware.com.cn, download the firmware file for TS1M, and save it to your computer.
2. Enter DFU mode: Press and hold the scroll wheel button of TS1M and connect TS1M to the computer using a USB cable. At this time, "DFU MODE" will be displayed on the TS1M screen, indicating that the device has successfully entered DFU mode. At the same time, the computer will recognize a removable disk named "TS1M_DFU".
3. Complete the firmware upgrade: copy the downloaded hex firmware file to the root directory of the "TS1M_DFU" disk. When the TS1M screen displays "Update completed", it means the firmware upgrade is complete. At this point, you can safely disconnect the USB connection and the device will automatically reboot and apply the new firmware.