User Manual

T90A/B/C Smart Soldering Iron

Pocket Size Soldering Iron

User Manual

正点原子 ALIENTEK

USER MANUAL

OFFICIAL

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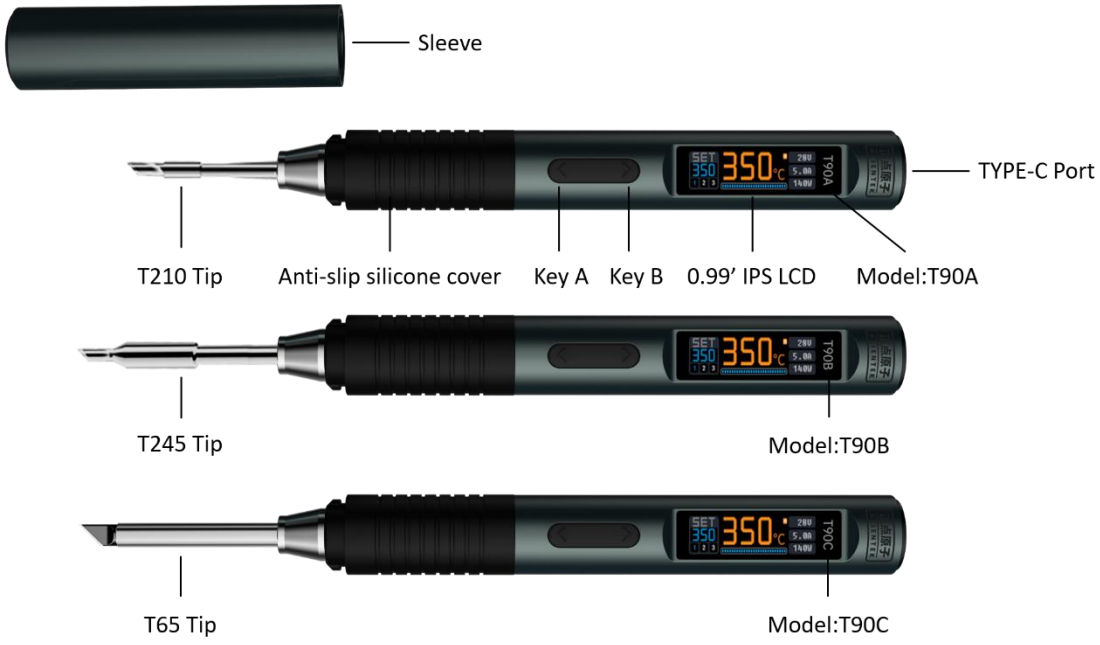
Thank you for purchasing this product. We recommend that you spend some time reading this user manual in order that you fully understand all the operational features it offers.

1. Description

T90A/B/C smart soldering iron is a multi-functional soldering iron, it has the following characteristics:

- Their corresponding iron tips types: T90A(T210)、T90B(T245)、T90C(T65)
- Use Type-C interface for power supply, support PD\QC fast charge protocol.
- Support 9~28V working voltage range.
- Heating power 18 ~ 140W adjustable.
- Use IPS LCD display, the effect is good.
- Fast heating, can melt tin in 2 .5 seconds (T90A @65W).
- Fast temperature recovery, no fear of large solder joints.
- Temperature control stability is 2%.
- Hand-held induction, smart sleep.
- Small size, easy to carry.
- Ergonomically designed handle, good grip.

2. Parts



Note: T90A/B/C models use different iron tips, and their iron tips are not interchangeable with each other!

3. Specifications

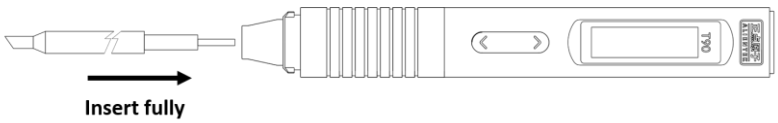
Model	T90A	T90B	T90C
Power port	Type-C		
Operating voltage	DC 9~28V		
Fast charging protocol	PD3.1/QC3.0		
Temperature Range	80~450°C		
Heating power	≈18~65W	≈18~140W	≈18~130W
Screen	0.99' IPS LCD(160*40 Pixel)		
Handle size	L178mm Ø16mm		
Overall weight	≈55g		
Tip type	T210	T245	T65
Resistance	2.1Ω	2.5Ω	6.0Ω
Melting time	≈2.5S(65W)	≈3.5S(140W)	≈5.0S(130W)

TIPS:

1. The T90A is recommended to operate at 65W. Exceeding this power rating may degrade the lifespan of the iron tips!
2. The T90C iron tip has a resistance of 6Ω. According to the formula $P = V^2/R$, when powered by 28V, its maximum heating power reaches 130W!

4. Installation

4.1 T90A\B Installation



4.2 T90C Installtion

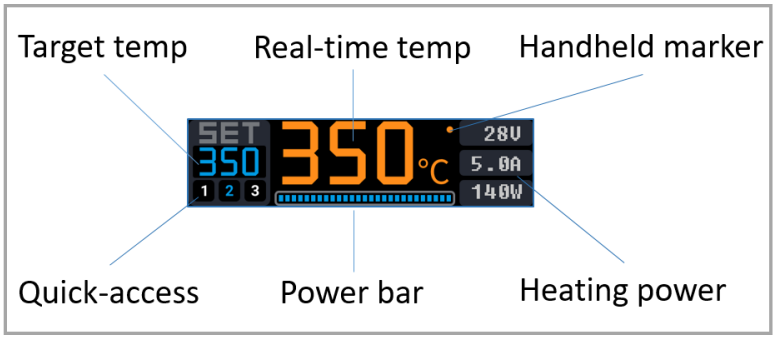
1. Open the silicone cover and loosen the screws

2. Insert the soldering iron tip

3. Locking screw

5. Interface

Main interface:

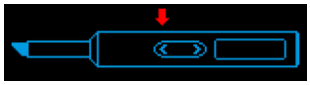


- Handheld marker: when the handheld is detected, the point shows, otherwise it will disappear.
- Heating power: display input voltage, heating current, heating power.
- Quick-access: Long-press button A to cycle through three preset temperature levels.

Warning interface:

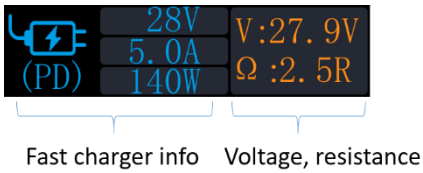
- No tip: Device failed to detect soldering iron tip.
- Vol low: Input voltage below 9V, heating function disabled.
- Tip res-Err: Abnormal resistance of iron tips.

Start heating:



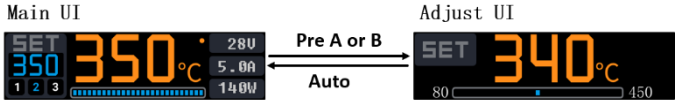
- Start heating prompts: Press button A to start heating.

Vol info:

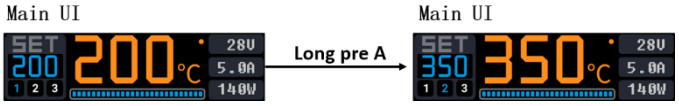


- Fast charger info: PD Input: Displays maximum output voltage, current, and power; QC Input: Only shows voltage.
- Voltage resistance: Display real-time voltage & measured Iron tip resistance.

6. Operation



Temperature adjustment: click A or B to enter the temperature adjustment UI. And release the button first, then click or long press to adjust the temperature. After the adjustment, automatically return after 3 seconds.



Quick-access: Long-press button A to cycle through three preset temperature levels. Preset temperature value: 200 350 450 ℃

Manual shutdown: Long press B to enter the standby UI, and the temperature will drop to 50 degrees, and then the machine will shut down.

Menu operation: click A and B at the same time to enter the menu. Click A and B to slide the menu, long press A to exit, long press B to enter the next menu.

Parameter setting: Click A and B to increase or decrease the parameter value, Long press B to save the parameters and exit, long press A will not save the parameters.

Power trim: On the power tuning interface, Step 1: Click A or B to select unit (include the unit\decade\OK). Step 2: Long press B to confirm selection and trim, long press A to deselect. Step 3: Select OK and long press B to save and exit.

7. System flow

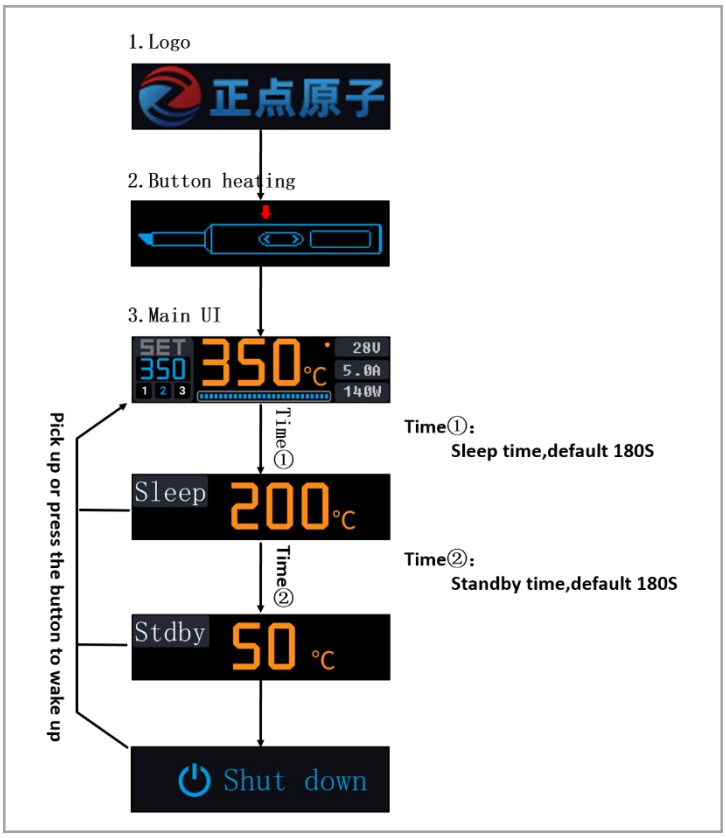


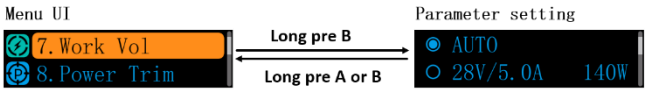
Figure 7-1 Work flow

After the T90A/B/C smart soldering iron is powered on, it displays the logo first, Then it is prompted to press the A button to enter the main UI (the button heating UI can be set to turn on or off in the menu. After turning on, the machine will directly enter the main UI). In the button heating UI, if the A button is not pressed within 10 seconds, it will automatically shut down. In main UI, which is in a normal working state. The running status can be divided into the following four types:

- **Working state (main UI):** The soldering iron is heated, and the temperature is constant at the user's set temperature. If the handle is not used for a period of time (timing 1: sleep time), it will enter the sleep state.
- **Sleep state:** The soldering iron is heated, and the temperature is constant at the sleep temperature (the default is 200°). It will exit the dormant state and return to the main UI when it senses the hand held or presses the button. Otherwise, after a period of time (timing 2: standby time), it will enter the standby state.
- **Standby state:** The soldering iron is not heated. In the same way, it will exit the dormant state and return to the main UI when it senses a hand held or presses a button. Otherwise, the temperature of the soldering iron tip will slowly drop, and when it drops to 50°C, it will enter the shutdown countdown state, and when the countdown ends, it will enter the screen off state.
- **Screen off state:** The soldering iron is not heating. In this state, the system is running with low energy consumption, and restarts when it senses a hand held or presses a button.

8. Working voltage

The host supports setting automatic and different levels of working voltage, with the default being automatic.



Automatic: When PD input, the host uses the maximum power of the fast charger for heating. When QC input, select one of 20V 1.5A/12V 2A/9V 2A for heating based on the maximum voltage. When using DC input, use 3A for heating.

Different voltage levels: such as 20V 3.3A 65W, the host obtains 20V from the fast charger and heating with a current of 3.3A. Note: Some fast charger are set to 20V, but in reality, only 12V is available. The host is still heating up at 3.3A and may restart. At this time, it is necessary to set the voltage back to 12V.

Note: Regardless of the method, heating restart can be performed by entering the menu settings for power adjustment. In addition, when the working voltage is selected as automatic, the power fine-tuning parameters will not be remembered after power failure!

9. Menu

There are 15 items in the menu. The definition, factory value and adjustable range of each item are shown in the table below:

Menu item	Definition	Default	Adjustable range
1.Vol Info	Display the maximum of charger, the real-time voltage, and the resistance of the tip.		
2.Temp Step	Temperature adjustment step value	10	5-25
3.Temp Preset	Quick Access Preset Temperatures	200℃ 350℃ 450℃	80℃-450℃
4.Sleep Temp③	Target temperature after entering sleep state	200℃	80℃-300℃
5.Sleep Time	The time for the handle to stand still and enter the sleep state from the working state	180 秒	0 -1200S --:(No sleep) 0S:(Sleep immediately)
6.Stdby Time	The time for the handle to stand still and enter the standby state from the sleep state	180 秒	0-1200S --:(No standby) 0S:(Standby immediately)
7.Work Vol①	Working voltage obtained from the fast charger and heating power of the corresponding voltage	Auto	● Auto ● 28V/5A 140W ● 20V/5A 100W ● 20V/3.3A 65W ● 12V/3.0A 36W ● 12V/2.0A 24W ● 9V/3.0A 27W ● 9V/2.0A 18W
8.Power trim②	Fine heating power, by adjusting the current	Auto	0.1A-6.0A
9.Temp Unit	Display temperature unit	℃	● Celsius(℃) ● Fahrenheit(℉)
10.Language	Language selection	Simplified Chinese	● Simplified Chinese ● English ● Traditional Chinese
11.Rota 180	Rotate the display by 180 degrees, to suitable for left-hand work mode	Rota 0	● Rota 0 ● Rota 180 ● Auto
12. Po_heat	Turn on and off heat immediately after power-on and the boot animation	Turn off	● Turn on ● Turn off

13.Temp Trim②	Fine tune the error between the actual temperature and the displayed temperature	0	-50~50 ℃
14.Restore	Restore the parameters to the factory state		
15.Ver Info	Show version		

Note:

① **The T90A is recommended for use at 65W, so the 140W and 100W options are not available.**

② **When auto voltage mode is active, power trim parameters will not be saved after shutdown.**

③ **Temperature trim method: in working condition, set the target temperature to 350℃, use the soldering iron thermometer to measure the actual temperature after the temperature is stable, record the error between the target temperature and the actual temperature (the value can be positive or negative), and then enter the menu Fill in the error in temp trim value.**

10. Firmware upgrade

Step 1: Scan the QR code below to download the latest firmware (e.g T90_APP. atk).

Step 2: Power off the device, press and hold the B button, then use the USB Type-c cable to connect to the computer, power on the device, about 4 seconds, the screen displays "Upgrade...", then release the button. The operation is shown in Figure 10-1 below:

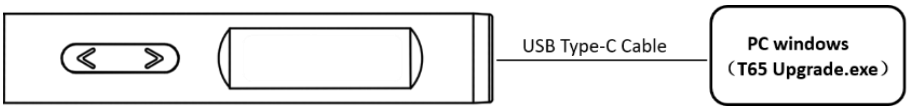


Figure 10-1 Connection

Step 3: Open the upgrade software, wait for the device to automatically connect, or click to re-connect. The connection is successful as shown in Figure 10-2 below:

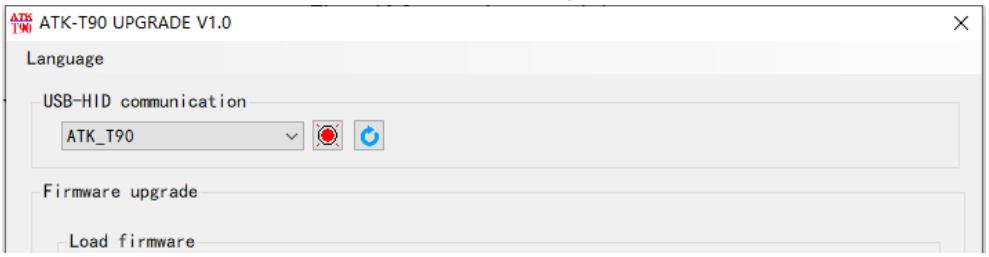


Figure 10-2 connection succeeded

Step 4: Select the local firmware, and load the T90_APP.atk file, click to start the upgrade and wait for the upgrade to complete. The operation is shown in Figure 10-3 below.

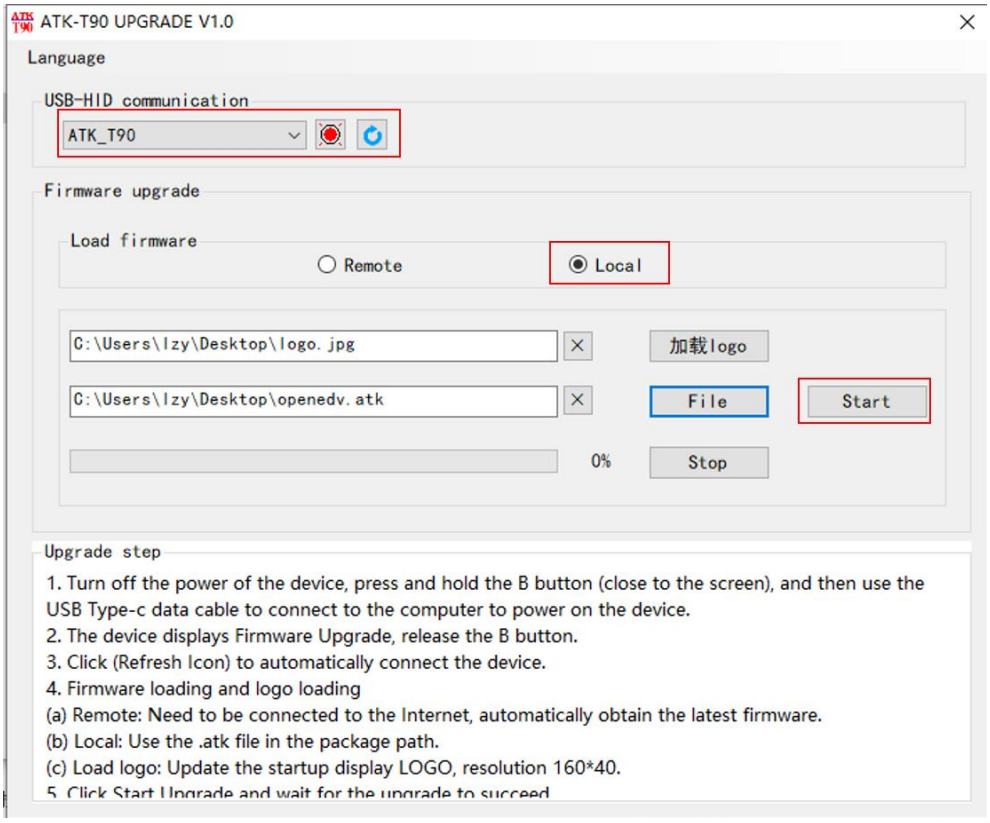


Figure 10-3 Firmware upgrade

11. Boot animation update

Step 1: Prepare an image with a resolution of 160*40.
Step2: Refer to the firmware upgrade procedures.

Tip: Firmware upgrade and boot animation update do not affect each other and can be upgraded separately. If you want to not display the boot animation, you can set the Po_heat option to on in the menu.

12. ESD SAFE

When using a fast charging adapter to power the soldering iron tip, there may be induced electricity. There will be no problem with soldering ordinary components, but some sensitive components may be damaged. When soldering sensitive components, there are two solutions to ensure ESD SAFE:

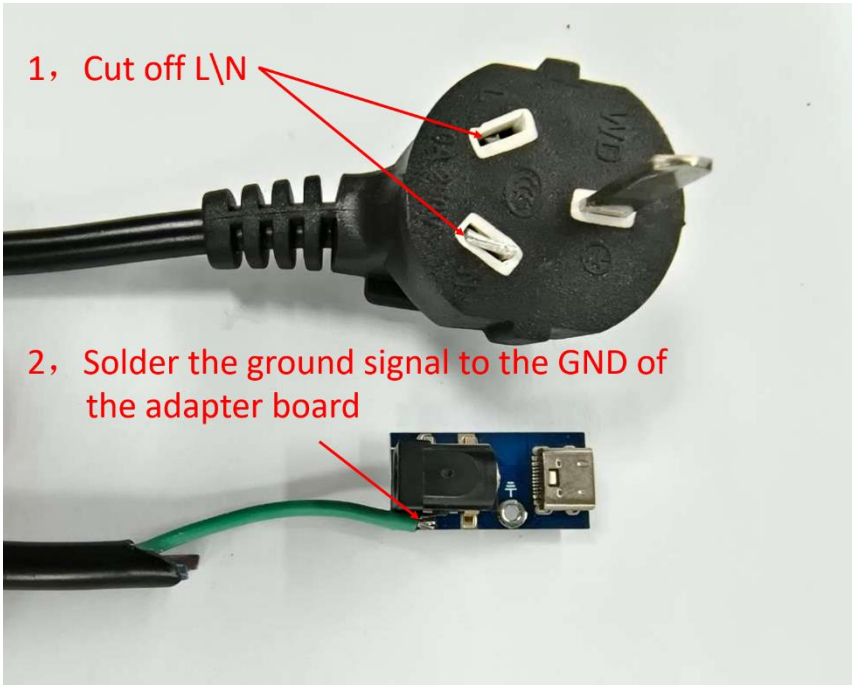
1. Use a fast charging power bank to power the device **(recommended)**.
2. Connect the device to the ground through an adapter board.

STEP:

a) Required materials: 1 power cord, 1 adapter board, 2 C2C cables

b) Cut off the L\N of the power cord and solder the ground wire to the GND of the adapter board.

As shown below:



c) Connect to the power strip, as shown below:

13. Maintenance

- **When the new tip is used for the first time, it is necessary to heat the tin to 250 ° C first to prevent dry burning oxidation!**
- **When the new tip is used for the first time, there will be a temperature jump problem, which will stabilize after a few hours of use!**
- After the soldering iron is used, apply proper tin to the tip of the soldering iron to prevent oxidation before disconnecting the power supply.
- The tip of the soldering iron works normally at a temperature of about 300 to 380 ° C. Do not use it for a long time (more than 420 ° C) to avoid the effect of dry burning on the life of the tip.
- Do not force the tip when welding.
- If the surface of the tip is not oxidized, use a cloth or other tool to carefully wipe the surface layer, then heat it to 200 ° C and immediately apply tin to the surface to prevent re-oxidation.
- Do not use wet sponge with bright water, semi-dry state is best, otherwise the soldering iron tip is easy to oxidize.
- Do not use flux containing chlorine or excessive acid to avoid corrosion of the surface

14. FAQ

The summary of common problems is shown in Table 12.1:

Problems and phenomena	Solution
Restarts when heating occurs	Check if the output power of the adapter is sufficient
Working voltage setting 20V, screen only displays 12V	Check the maximum output voltage of the adapter
Handheld sensing failure	Contact after-sales service

Table 12.1 Summary of issues

15. Serivices

1. After – sales Service:

T90A/B/C host has a one-year free warranty service in the case of non-artificial damage. Please contact the dealer for warranty service. Soldering tips are consumables, if there is no quality problem, once used they will not be returned.

2. Website

Download : www.alientek.com/download

Company : www.alientek.com

Aliexpress : www.aliexpress.com/store/1102909571

3. Contact US

E-mail : fae-smt@alientek.com