MHP50
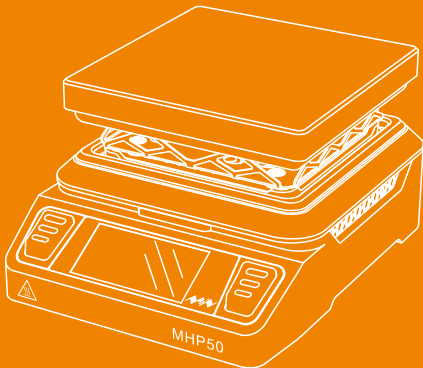
敏维®迷你恒温加热台
MINI HOT PLATE PREHEATER

使用前请先详细阅读此手册内容，本用户手册基于MHP50 DFU V1.00，APPV1.01。
Please read this manual before use. This user manual is based on MHP50
DFU V1.00, APP V1.01.

NOTICE

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

It must only be supplied at safety extra low voltage corresponding to the marking on the appliance.

WARNING:

This tool must be placed on its stand when not in use.

产品合格证
Product Certificate

本产品经检验合格，准予出厂。
This product has passed the quality inspection.

QC
PASS
检02

生产日期：_____   检验员QC：_____

广州易迪赛智能科技有限公司
Guangzhou e-Design Intelligent Technology Co., Ltd.

制造地址：广州市新塘镇上邵村环村路翰重工业园A栋5F
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Tel: 8620-83720503

Contents

Safety Instructions

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

General Safety

- Please only use reliable power adapters dedicated to this product or certified by your country/region (please refer to P26 for detailed power standards);
- Do not operate in a humid environment;
- Do not operate in flammable/explosive environments;
- Please keep the surface of the product clean and dry.

Warnings

When using MHP50,

- Please turn off the power when finishing using or leaving to prevent fire;
- After the power is turned on, the temperature of hot plate will reach 100°C-350°C (212°C-662°C), be careful to prevent burns;
- Do not soak the whole MHP50 in water or use it with wet hands to prevent leakage.

Precautions

- MHP50 is composed of precision components, please avoid falling.
- After 40 minutes of continuous use above 300°C, the temperature of the controller will reach 50°C~60°C;
- While MHP50 is heated, DO NOT touch hot plate, to avoid being burnt;
- While MHP50 is on, DO NOT remove/replace hot plate;
- For the first time using and reuse after long time storage, please preheat to at least 150°C for 3 minutes to dry the hot plate to ensure better performance. It is a normal phenomenon that the hot plate may generate a light smoke and steam due to the heating of heating elements;

- After heated, the hot plate's stainless steel heat insulation bracket may become yellowish, this is a normal phenomenon.

Use Responsibility Statements

For Any special, indirect, incidental or consequential damages or losses arising from any inappropriate use of the product 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.

Operating Environment

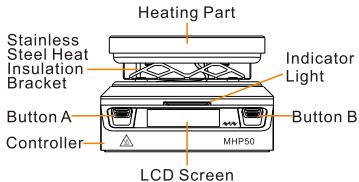| Operating Environment	Working state		Non-working State
Temperature	0°C~50°C		-20°C~60°C
Humidity	High temperature(40°C~50°C)	0%~60%RH	5%~60%RH
	Low temperature (0°C~40°C)	10%~90%RH	5%~90%RH

01 Product Introduction

MINIWARE Mini Hot Plate Preheater MHP50 is the second mini-sized intelligent constant temperature heating plate designed by e-Design after Mini Hot Plate Preheater MHP30. Its heating area has been increased from 3cm*3cm to 5cm*5cm, while retaining pocket size, suitable for a wider scope of application.

MHP50 has a flat sandwich shape and separate design that facilitates flexible replacement of controller and hot plate. MHP50 innovatively adds a high-speed cooling fan for heat dissipation that can smartly adjusts fan speed by temperature sensor and blows air to the heat filter piece of hot plate, and a unique air deflector helps deflect the hot air away with unnecessary heat, reducing the overall height of MHP50 to 3.7cm (1.46 inches), making it more stable, not easy to tip over, and more flexible in soldering operations while not affecting the overall performance. The controller is equipped with a 160*80 resolution color LCD display, which can clearly display device status. There are physical buttons on each end of the screen for quick setup. MHP50's hot plate uses two different materials for heating elements—brass plated with nano-ceramic coating, the same material as MHP30, special processed and easy to clean; aluminum alloy heating elements, a classic material and evenly heated . A futuristic stainless steel hollow bracket connects the heating part with the cold end circuit board that can be directly inserted into the controller.
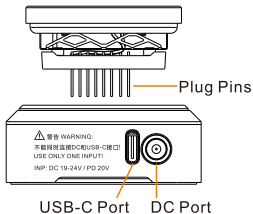
Besides inheriting MHP30's true color temperature lighting and excellent thermal performance, MHP50 has other hardware and functional improvements. MHP50 supports both DC and PD input modes—under DC5525 19-24V power input, the maximum power of MHP50 can reach 150W, while under PD 28V, 130W; it takes 150 seconds heating from room temperature (28°C) to 300°C at the fastest. In terms of firmware functions, MHP50 adds a heating curve function by which user can set different heating parameters by sections according to soldering needs to achieve a heating effect similar to that of a reflow oven. In addition, MHP50 also has intelligent functions such as preset temperature, overturn protection, auto power off brightness adjustment, firmware upgrade, etc. Users can turn on or off the corresponding functions as needed.

1.1 Buttons And Interface

Front (Whole device)：

Back (Separate)：

Heating Part

Stainless
Steel Heat
Insulation
Bracket

Indicator
Light

Button A

Button B

Controller

MHP50

LCD Screen

Plug Pins

⚠ 警告 WARNING:
不能同时连接DC和USB-C接口!
USE ONLY ONE INPUT!

INP: DC 19-24V / PD 20V

USB-C Port   DC Port

Controller Bottom：

MINIWARE

e-Design UK CA C€ FC

www.e-design.com.cn   Made in China

1.2 Performance Parameters

Screen		Color LCD (160*80 resolution)
Power Interface		USB Type-C (also for firmware upgrade)
		DC 5525
Hot Plate Material		AL50: Aluminum
		BS50: Brass with nano-ceramic coating
Size	Controller	L71.5mm*W55.5mm*H22.5mm
	Hot Plate	L50mm*W50mm*H29mm
Weight	Controller	78g
	Hot Plate	AL50: 60g, BS50: 87g

Heating Area	50mm*50mm
Temperature Range	100-350°C
Temperature Stability	±3%
Max Power	DC 5525 150W / PD 100W
Input Voltage	DC 19-24V / PD 20V (Use only one input)

1.3 Light Indicator

The true color light will change color with hot plate's temperature.

<50°C   Green   Yellow   White   Red   ≥200°C
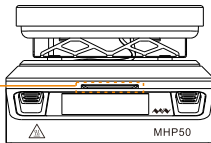
Light Color	Indication
Blue	Firmware upgrade
Red flash	Error, warning

Warning: Do not touch or replace hot plate after MHP50 is powered on to avoid burns!

02 Power Selection

MHP50 supports two power supply modes: DC and PD. When choosing a power adapter that complies with the PD fast charging protocol, please choose a PD power adapter that supports a minimum output of 20V 5A and a power cord that can pass 5A current for the best experience. When choosing a power adapter that supports DC5525 interface, please choose a 24V 6A power adapter for the best experience.
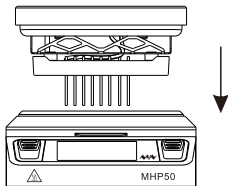
Device State	Input Mode	Max Power	Max Working Voltage
Heating	PD	130W	28V
	DC	150W	24V
Standby	PD/DC	≤0,3W	20V

Notice: DC and PD interface can not be used at the same time! The maximum power is 130W when powered by the PD protocol. The power supply and power cord need to support the PD3.1 protocol and have a 28V 5A power output.

03 How to Use

3.1 Installation

1) Insert the pins of hot plate into MHP50 controller;
2) Connect PD or DC 5525 power supply to MHP50. After being powered on, the device will enter standby state, user can enter different menu item interface for further operations.

3.2 Factory Settings

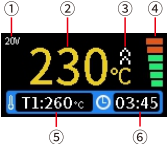| Default Temperature Unit	°C
Preset Working Temperature T1	220°C
Preset Working Temperature T2	250°C
Preset Working Temperature T3	300°C

3.3 Basic Operations

3.3.1 Boot Up Display

After power on, MHP50 will first display the brand icon and customized icon, and then enters the function menu item interface. User can select different function menu items by short pressing Button A/B, and long press Button A to enter the menu item.

MINIWARE	Brand icon, not modifiable
	Customized icon, modifiable; if not modified, it will display the brand icon by default
Heat	Heat (Default)
Menu	Menu
Info	Info
Reflow	Reflow (Heating Curve)

3.3.2 Heat

In standby state, short press Button A/B to select the heating menu item "Heat", and long press Button A to directly enter the heating state. The screen displays as follows:

①	Input voltage
②	Hot plate temperature
③	Current heating status (☆:heating/ ☆:cooling/ ☆:constant temperature)
④	Heating power bar (the current power ratio of the power adaptor)
⑤	Preset temperature T1/T2/T3
⑥	Heating time (MM:SS)

● **Heating and temperature adjustment**
   MHP50 has two ways to adjust temperature:

   When MHP50 is in heating state,
   1) Short press Button A to select preset temperature T1, T2 or T3, MHP50 will heat up to the preset temperature and enter constant temperature status automatically;
   2) Long press Button A to modify the current preset temperature, short press Button A/B to decrease or increase the temperature values (long press Button A/B for quick adjustment). Release the button, after 5 seconds it will return to heating state (this current preset temperature value will not be saved after power off).

● **How to return to the menu item interface in working state:**

   1) In working state, if the heating time of MHP50 exceeds the heating over time setting (can be modified, range 0~999 minutes), MHP50 will issue a "TIME OVER!" prompt and automatically return to the heating menu item interface;
   2) When the device is in working state, long press Button B to exit heating and return to the heating menu item interface.

● **How to shut down in standby state:**

   In the menu item interface, if there is no button operation for 10 minutes (default, can be modified) and the internal temperature of the hot plate is lower than 50°C, MHP50 will automatically shut down.
   Warning: Do not touch or replace hot plate after MHP50 is powered on to avoid burns!

● **In heating state, MHP50's button operations and functions are as follows:**

Functions	Button	Operations
Select preset temperature	Short press Button A	In heating state, short press Button A to switch Preset Temperature T1/T2/T3
Enter temperature adjustment	Long press Button A	In heating state, long press Button A to enter temperature adjustment

Functions	Button	Operations
Temperature adjustment	Short /Long press Button A/B	In temperature adjustment state, short press Button A/B to decrease or increase current preset temperature (long press for quick adjustment)
Back to standby state	Long press Button B	In heating state, long press Button B to exit heating and back to standby state
Recalculate heating time	Short press Button B	In heating state, short press Button B to recalculate heating time

3.3.3 Menu

In standby state, short press Button A/B to select the menu item "Menu", and long press Button A to enter menu.

● **Parameter Settings**

① In menu interface, short press Button A/B to select the items to be modified, long press Button A to enter modification mode;
② In the modification mode, short press Button A/B to select the set values (long press for quick adjustment); Once selection is completed, wait 5 seconds to automatically exit modification mode;
③ After setting is completed, long press Button B to save the modified values and return to menu item interface.

Note: If there is no operation for 8 seconds after entering each function interface, the device will automatically exit the interface, but the modified parameter values will not be saved.

● **Parameter Definitions**

Parameter		Name	Definition
T1_Temp	○T1_Temp ○T2_Temp ○T3_Temp 220℃ ○HotOvrTim	Preset Temperature T1	Range: 100~350℃ or 212~662°F, default 220℃

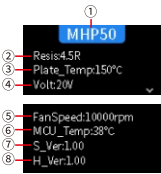| Parameter		Name	Definition
T2_Temp	T2_Temp 250°C	Preset Temperature T2	Range: 100~350°C or 212~662°F, default 220°C
T3_Temp	T3_Temp 300°C	Preset Temperature T3	Range: 100~350°C or 212~662°F, default 220°C
HotOvrTim	HotOvrTim 20	Heating over time	When the heating time exceeds this heating over time, MHP50 will issue a "TIME OVER!" prompt and automatically return to the heating menu item if the hot plate temperature is lower than 50°C. Range: 0 (OFF)~ 999 minutes, default 20 minutes
ShtDwnTim	ShtDwnTim 10	Shut down time	When there is no button operation within this shut down time and the hot plate temperature is lower than 50°C, MHP50 will automatically shut down. Range: 0 (OFF)~999 minutes, default 10 minutes
Backlight	Backlight 6	Backlight brightness	Range: 1~9 (bigger number means brighter setting), default 6
TiltAngle	TiltAngle 30	Tilt angle	Heating will stop when controller detects toppling or falling down angle exceeds this setting. Range: 20~50°, default 30°
Volume	Volume 3	Volume	Beeper volume. Range: 0~5 (bigger number means higher volume), default 3
TempUnit	TempUnit °C	Temperature unit	Temperature display unit, degree centigrade (°C) or Fahrenheit (°F), default °C

| Parameter		Name	Definition
PD_PwrMax		Max PD power Limit	Range: 0 (OFF) or 36~65W, default 0
DC_PwrMax		DC Power Limit	Range: 36~150W, Standard 150
TempCalib		Temperature Calibrated	Range: -50°C~20°C, default 0
Reflow		Reflow (heating curve)	Long press Button A to enter heating curve setting, detailed setting please refer to 3.3.5 Reflow (heating curve) for parameter definitions
Restore		Restore	Restore factory setting

3.3.4 Info

In standby state, short press Button A/B to select the menu item "Info", and long press Button A to view device information.

①	Device model
②	Hot plate internal resistance
③	Hot plate temperature
④	Current input voltage
⑤	Fan speed
⑥	MCU temperature
⑦	Software version
⑧	Hardware version

3.3.5 Reflow (Heating Curve)

In standby state, short press Button A/B to select the heating curve menu item "Reflow", long press Button A, and MHP50 will automatically heat according to the set heating curve parameters. The screen displays as follows:

Heat preservation zone   Soldering zone   Set
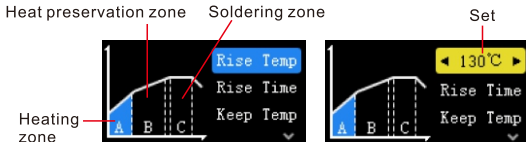
Heating zone

The heating curve function is divided into three controllable heating zones: heating zone, heat preservation zone and soldering zone. The target temperature and constant temperature time of each heating zone can be adjusted.

Note: The input power greatly affects the soldering effect of the heating curve. It is recommended to use a PD power supply of no less than 100W if a PD power adaptor is to be used.

● **Parameter Settings**

① In menu item interface, short press Button A/B to select the "Menu" menu item, and long press Button A to enter;

② In menu interface, short press Button A/B to select the "Reflow" parameter item, long press Button A to enter;

③ Short press Button A/B to select the parameter to be modified, long press Button A to enter modification mode;

④ In the modification mode, short press Button A/B to select the set values (long press for quick adjustment); Once selection is completed, wait 5 seconds to automatically exit modification mode;

⑤ After setting is completed, long press Button B to save the modified values and return to menu item interface.

Note: If there is no operation for 8 seconds after entering each function interface, the device will automatically exit the interface, but the modified parameter values will not be saved.

● **Parameter Settings**

Zones	Parameter	Name	Range
A	RiseTemp	Heating zone target temperature	130~170°C, default 150°C
A	RiseTime	Heating zone constant temperature time	60~90 seconds, default 80 seconds
B	KeepTemp	Heat preservation zone target temperature	150~220°C, default 170°C
B	KeepTime	Heat preservation zone constant temperature time	60~120 seconds, default 80 seconds
C	WeldTemp	Soldering zone target temperature	230~260°C, default 230°C
C	WeldTime	Soldering zone constant temperature time	30~180 seconds, default 80 seconds

3.4 Icons and warnings

In standby state, when MHP50 detects an abnormality in the device, different icon prompts will appear on the screen.

Icons	Definitions
🖥✗	Detect no hot plate
⚠	Hot plate over temperature
❄!	Detect no fan

In heating state, when heating is affected, the screen will pop up the current error prompts, the indicator light will flash in red, the beeper sound, and then the device stops heating and returns to standby state.

Warnings	Definitions
⚠ NO PLATE!	Detect no hot plate
⚠ OVER TEMP!	Controller internal over temperature
⚠ OVER TURN!	The device tips over (the prompt will be displayed until the device returns to the right position)
⚠ TIME OVER!	Heating over time (the heating time exceeds the set heating over time.
⚠ LOW VOLT!	Low input voltage

3.5 Configuration

1) Use a USB Type-C cable to connect MHP50 to the computer. The virtual disk "MHP50_APP" will appear on the computer, and the device will enter USB mode;
2) Open the CONFIG.TXT file in the virtual disk to modify the device parameters.

Parameter definitions are as follows:

Name	Definition	Default	Range
T1_Temp	Preset Temperature T1	220	°C: 100~350 or °F: 212~662
T2_Temp	Preset Temperature T2	250	°C: 100~350 or °F: 212~662
T3_Temp	Preset Temperature T3	300	°C: 100~350 or °F: 212~662
HotOvrTim	Heating Over Time	20	0 (OFF) ~999 (minutes)
ShtDwnTim	Shut Down Time	10	0 (OFF) ~999 (minutes)
Backlight	Backlight Brightness	6	1~9
TiltAngle	Tilt Angle	30	20~50 (degree)

Name	Definition	Default	Range
Volume	Volume	3	0~5
TempUnit	Temperature Unit	0	0:°C, 1:°F
PD_PwrMax	Max PD Power Limit	0	0 (OFF) or 36~65 (W)
DC_PwrMax	DC Power Limit	150	36~150 (W)
TempCalib	Temperature calibrated	0	Unmodifiable (it is recommended to modify it in the MHP50 menu)
RiseTemp	Heating zone target temperature	150	130~170 (°C)
RiseTime	Heating zone constant temperature time	80	60~90 (seconds)
KeepTemp	Heat preservation zone target temperature	170	150~220 (°C)
KeepTime	Heat preservation zone constant temperature time	80	60~120 (seconds)
WeldTemp	Soldering zone target temperature	230	230~260 (°C)
WeldTime	Soldering zone constant temperature time	80	30~180 (seconds)

04 Hot Plate

MHP50 provides two hot plates with different heat storage materials: aluminum alloy and brass plated with nano-ceramic coating. Due to the material characteristics, under the same power supply conditions, the heating time of the hot plate will be different, and user can purchase according to the actual needs and preferences.

4.1 Installation And Replacement
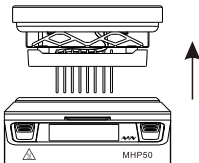
    1) Please make sure that the device is turned off before removing or replacing the hot plate;

    2) Pull the hot plate directly upwards. Insert the new hot plate's power pins correctly into the interface of the controller;

    3) Make sure that the hot plate is securely connected to controller before connecting to the power or computer. If the hot plate is not fully installed, red flash will appear and the beeper sound after the device is powered on, and the screen will display "NO PLATE!" warning.

4.2 Maintenance of Hot Plate

    1) Do not use rough, sharp materials or files to clean the surface of hot plate;

    2) For the first time using and reuse after long time storage, please preheat to at least 150°C for 3 minutes to dry the hot plate to ensure better performance. It is a normal phenomenon that the hot plate may generate a light smoke and steam due to the heating of heating elements.

    3) After heated, the hot plate's stainless steel heat insulation bracket may become yellowish, this is a normal phenomenon. User can clean the bracket with stainless steel detergent.

    4) Don't leave MHP50 in high temperature heating state for a long time to avoid dry burning.

Problem 1: No display on the screen after MHP50 is powered on.

Check 1: Make sure to use a USB Type-C to Type-C cable that can withstand 5A current and a PD standard protocol power supply, or a DC 5525 power adaptor to power MHP50;

Check 2: Connect MHP50 to computer, see if computer has a USB connection or MHP50 enters DFU mode.

Problem 2: MHP50's temperature jumps between the preset temperature.

Check 1: If the hot plate is used for the first time or stored in a humid environment, the hot plate can be in constant temperature after the hot plate is fully heated;

Check 2: Whether the hot plate has been fully installed;

Check 3: Whether the power cable is in poor contact.

Problem 3: MHP50 restarts automatically.

Check 1: If the power supply is in good connection and can output normally;

Check 2: If the performance of the power adaptor meets the input standards.

Problem 4: Screen shows "LOW VOLT!"

Check 1: If the performance of the power adaptor meets the input standards.

Problem 5: Screen shows "NO PLATE!"

Check 1: If the hot plate is fully installed;

Check 2: If the hot plate is in good contact.

6.1 After-Sales Service

One year of free warranty will be provided for Mini Hot Plate Preheater MHP50 controller, if the damage was not caused by false manipulation by the user. Please contact your seller for warranty details.

Hot plates are consumable products, once used, no replacement will be provided.

6.2 Firmware Upgrade

DFU (Device Firmware Upgrade) soft ware is a unique firmware upgrade software for e-Design products. User can easily upgrade product firmware via DFU software.

1.Visit www.e-design.com.cn and download the suitable MHP50 firmware (divided into UI and APP firmware) to your PC;

2.Hold MHP50's Button A and connect MHP50 to your PC with USB Type-C data cable, enter DFU mode. A display of "DFU Mode V1.00" will appear on MHP50's screen and a virtual disk "MHP50_DFU" will appear on your PC;

3.Copy the hex firmware to the root directory of that disk. When the extension of the firmware changes from "hex" to "rdy", disconnect USB to complete upgrade.

MHP50_DFU (G:)

MHP50_APP.hex
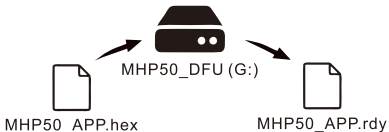
MHP50_APP.rdy

6.3 Changing Bootup Icon

1) Prepare a 160*80 pixel 16-bit (RGB565) BMP picture and set the file name to logoin.bmp;
2) Use a USB Type-C data cable to connect MHP50 controller to the computer and enter the virtual disk "MHP50_APP";
3) Copy the prepared picture to the root directory of the virtual disk and disconnect to complete the update.

07 Legal Statements

This device is complied with the regulation in the 15th part of FCC regulation. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including the interference that may cause undesired operation.

The CE mark is a registered trademark of European Community.
This CE mark shows that the product complies with all the relevant European Legal Directives.

UKCA (United Kingdom Conformity Assessed) mark is a certification mark for UK conformity. This device complies with the standard testing and certification under British regulations required for electrical and electronic products to enter theBritish market.

Please do not dispose of the product together with household garbage.
Please handle it according to your local laws and regulations.

保修条例 Warranty

1、本产品保修期为12个月。保修期内，产品在正确使用时发生故障或者损坏的，我司提供免费维修或更换。超出保修期限的，我司将视产品故障情况酌情收取维修成本费用。

   This Product has a 12-month warranty. During the warranty period, if Product fails or is damaged under correct operations, Product can be repaired or replaced for free. If the warranty period is exceeded, certain maintenance cost would be charged.

2、在产品保修期内，发生以下事项的，我司有权利酌情收取维修服务费或拒绝提供售后维修：
   (1) 不按照产品《使用须知》、《用户手册》正确使用产品而导致产品故障或者损坏的；
   (2) 擅自拆装、维修或改造而导致产品故障或者损坏的。

   During warranty period, if following occurs, certain maintenance cost will be charged or after-sale service might be even refused:
   (1) Failure to follow Safety Instructions or User Manual that results in product failure or damage;
   (2) Product failure or damage caused by unauthorized disassembly, repair or modification.

This device complies with part 15 of the FCC Rules. Operation is subjected to the following two conditions:
(1)This device may not cause harmful interference, and
(2)This device must accept any interference received, including interference that may cause undesired operation.

MINIWARE

S.N.:

QC
PASS

保 修 卡 Warranty Card

产品名称 Product Name:

Mini Hot Plate Preheater MHP50

客户信息 User File:

买家姓名 Buyer Name _____

邮箱 Email _____

联系电话 Contact Number _____

购买日期 Purchase Date _____

产品故障 Product Malfunctions _____

_____

温馨提示 Warm reminder:

1、请务必保留此保修卡以便提供售后服务，售后咨询可登录
www.morningtools.com；
Please keep this Warrenty Card and visit **www.morningtools.com** for
future customer service;

2、查看产品详情及《用户手册》可登录**www.e-design.com.cn**。
For product details and User Manual, please visit **www.e-design.com.cn**.

网站	技术论坛	公众号	微博
Website	Tech Forum	WeChat	Weibo

Instagram	Twitter	YouTube

Designed by ⊙ e-Design