MINIWARE

敏维®无线焊台

Cordless Soldering Station TS1C

用户手册 V1.0

User Manual V1.0

使用前请仔细阅读本手册内容。本用户手册基于 TS1C DFU V1.00，APP V1.00。
Read this user manual carefully before use. This manual is based on TS1C DFU V1.00, APP V1.00.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction
- children being supervised not to play with the appliance

This product must only be supplied at SELV.

- 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

目录

安全声明 4

1 产品简介 5

2 按键与接口 7

3 电源选择 9

4 使用方法 10

5 烙铁头 16

6 常见问题 16

7 技术服务 18

8 法规标识 19

安全声明

使用产品前请仔细阅读本用户手册。用户手册中含有安全使用信息，并请妥善保存，以备日后查阅。用户可访问我司网站了解用户手册更新情况。

常规安全

- 请只使用本产品专用或经过所在国家/地区认证的电源适配器（详细电源标准请查阅 P5）；
- 请勿在潮湿环境下操作；
- 请勿在易燃易爆的环境中操作；
- 请保持产品表面清洁干燥。

注意事项

- 使用结束或需要离开时请关闭电源，慎防火灾；
- 接通电源后，工作中的烙铁头温度会达到 100℃～400℃（212℉～752℉），慎防烫伤；
- 在首次使用时，因电热原件烘热，烙铁头可能轻微发烟，属于正常现象。
- 切勿将 TS1C 整体泡入水中或双手湿水时使用，慎防漏电；
- TS1C 由精密元器件组成，避免跌落。

使用责任说明

凡因任何原因或推测而导致的任何特别、间接、附带或继起的损坏或损失，均由使用者负责。凡因私自拆装、改造产品而引起的损坏或损失，均由使用者负责。

请妥善保管本产品以免让儿童当作玩具，在无人看管的情况下使用本产品。

操作环境

操作环境	工作状态		非工作状态
温度	0°C～50°C		-20°C～60°C
湿度	高温	40°C～50°C，0%～60%RH	40°C to 60°C，5% to 60%RH
	低温	0°C~40°C，10%～90%RH	0°C~ 40°C，5%~90%RH

1 产品简介

MINIWARE 敏维®无线焊台 TS1C 是 e-Design 设计研发的首款基于 BLE4.2 蓝牙通讯的新型储能式智能台式焊接工具。TS1C 采用超级电容储能技术，有别于传统锂电池供电模式，为使用者带来硬核高科技无线焊接体验。

MINIWARE 敏维®无线焊台 TS1C 包含控制底座及烙铁手柄两部分。控制底座通过蓝牙通讯与烙铁手柄进行无线配对与通联，实现烙铁手柄的待机预热、温度调节、菜单设置、查看信息等复杂远程控制，并为烙铁手柄提供支架及充电功能。烙铁手柄使用 MINIWARE 3.5mm 音频接口烙铁头（通用 TS80/80P 系列烙铁头），可根据底座控制信号执行预热、恒温、调温等操作，通过手柄上的按键还可实现一键升温功能（强力模式），拥有过温保护、电容低压保护、充电保护等多项智能安全保障。

TS1C 整体设计简约流畅，酷感十足，控制底座采用 128*64 像素 OLED 屏幕，实时显示烙铁手柄状态，底座头部设有 USB Type-C 接口，可用于固件升级及接入 PD2 20V、最高 45W 的供电输入；底座底部设有 3 个拓展槽，可用于安装如海绵槽等不同配件，拓宽功能场景。TS1C 烙铁手柄采用人体工学设计，拥有良好的握持手感；手柄顶部设有用于固件升级的 USB Type-C 接口（需掀开不锈钢装饰片），可在紧急情况下用于独立供电；手柄内置高效储能超级电容，最高加热功率可达 36W，单次满电状态下可连续焊接 180 多个焊点（0805），其优秀的工作表现可助您显著提升工作效率。

- 新型高效超级电容储能技术，十万级充放电次数；
- 分体式+真无线，畅快体验无线焊接；BLE4.2 蓝牙通讯技术，实现远程控制与设置；

控制底座：

- 标准 PD2 20V 45W MAX 供电输入，过流安全保护；
- 128*64 像素 OLED 屏幕，实时显示烙铁手柄状态；
- 底座预热功能，提高加热效率；
- 远程控制与设置：温度调节、菜单设置、查看信息等；
- 充当烙铁手柄支架、充电底座；
- 底部设有 3 个拓展槽，可安装多款拓展配件（如海绵槽等）；

烙铁手柄：

- 内置 750F 超级电容，可通过控制底座充电（紧急情况下可使用 USB Type-C 接口供电）；
- 最高 36W 焊接功率，单次满电可连续焊接 180 多个焊点（0805）；

- 通用 MINIWARE 3.5mm 音频接口烙铁头（TS80/80P 系列烙铁头）；
- 一键升温功能（强力模式）；
- 多项智能安全保障：过温保护、电容低压保护、充电保护等。

1.1 性能参数

TS1C 控制底座：

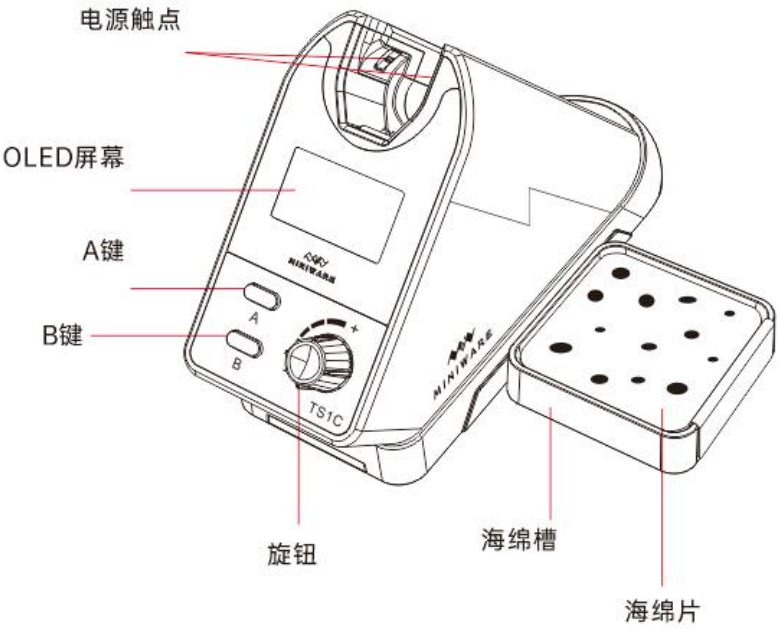
型号	TS1C-S
屏幕	128*64 像素单色 OLED
接口类型	USB TYPE-C
最大输入电压	PD2 20V
最大输入功率	45W
其他	底部设有三个拓展槽，可安装不同拓展配件
安全保护	过流保护
尺寸	底座：44.5*122*73（mm） 海绵槽：42*43（mm）
重量	186g（含标配海绵槽）

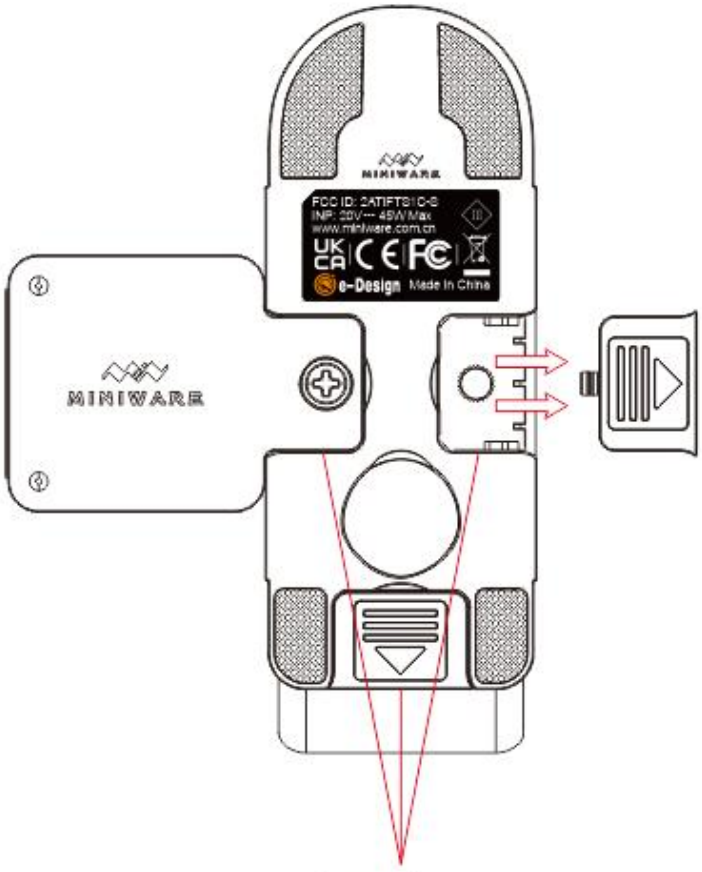
TS1C 烙铁手柄：

型号	TS1C-P
接口类型	USB TYPE-C
电容容量	750F
充电时间	7 分钟
最大加热功率	36W
温度范围	100~400℃（212℉～752℉）
温度稳定性	±3%
烙铁头	MINIWARE 3.5mm 音频接口烙铁头 （TS80/80P 烙铁头）
安全保护	电容低压保护，电容充电保护，过温保护
尺寸	ϕ23*133（mm）
重量	62g（不含烙铁头）

2 按键与接口

2.1 烙铁控制底座




MINIWARE
FCC ID: 2ATIFTS1C-S
INP: 20V⎓ 45W Max
www.miniware.com.cn
UK CA
e-Design
Made in China
MINIWARE

拓展槽*3

2.2 烙铁手柄

TS80/80P烙铁头
Boost键
指示灯
不锈钢装饰片
TS1C
MINIWARE
USB-C
USB Type-C接口(供电及固件升级)

2.3 指示灯

烙铁手柄尾部 LED 指示灯可提示手柄状态，其灯光状态及对应说明如下：

灯状态	说明
熄灭	烙铁手柄已关机或者电量耗尽
常亮	烙铁手柄处于正常工作状态
快闪	烙铁手柄处于低/超低电量状态
慢闪	烙铁手柄正在充电

3 电源选择

3.1 电源选择

无线焊台 TS1C 控制底座使用 USB Type-C 供电输入接口，可支持 PD2 20V 45W 或以上的 PD 电源（包括充电头、移动电源等）。控制底座拥有预热功能，烙铁手柄与底座配对并进入主界面后，烙铁手柄将自动预热至预设的预热温度并恒温。

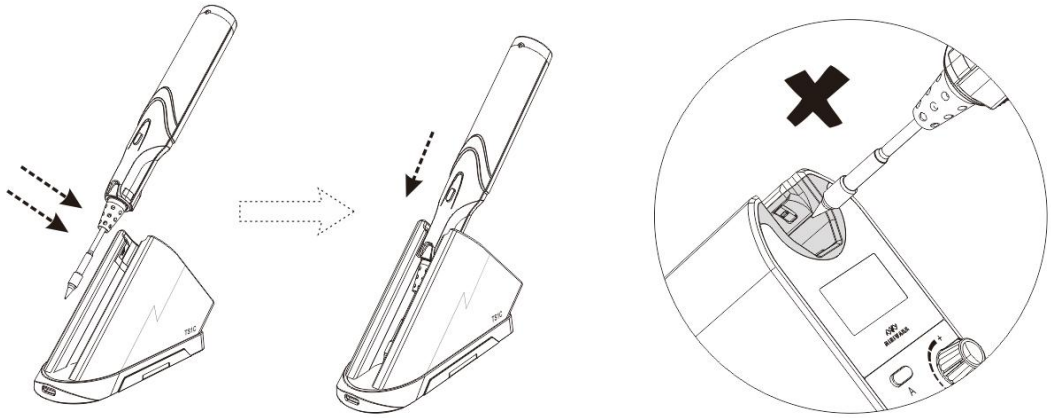
请选择支持 PD2 20V 45W 或以上档位的标准 PD 电源为控制底座供电：

工作电压	预热温度	从 25℃升温至预热温度所需的最快时间	从预热温度升温至 300℃所需的最快时间
20V	100℃	8s	12s
20V	150℃	12s	9s
20V	200℃	16s	6.5s
20V	250℃	20s	4s

3.2 放置与充电

TS1C 烙铁手柄可通过控制底座为内置电容充电。充电方法及状态如下：

1. 将烙铁手柄正确放置于底座手柄卡槽上。可先将烙铁头对准底座卡槽放入，再往前推入烙铁手柄，确保底座电源触点与烙铁手柄上的电源触点完全接触（这样的放置方式可防止高热的烙铁头烫伤卡槽正面的塑料部件）；



2. 烙铁手柄正确放置后，将自动通过底座充电，状态栏出现“ ”充电状态图标；

3. 每次焊接完成后，建议将烙铁手柄放回底座上充电。如烙铁手柄电量完全耗尽，需约 7 分钟再次充满电，建议充电至最少两格电量再进行焊接。

注：紧急情况下，烙铁手柄可通过顶部 USB Type-C 接口连接电源供电，供电输入参数与底座相同。

4 使用方法

4.1 开机与关机

开机：

TS1C 控制底座接入 PD 电源，控制底座通电后自动开机，屏幕将首先显示品牌图标、个性化图标，随后进入待机状态，显示待机菜单。TS1C 第一次开机使用时，屏幕将直接跳转至蓝牙连接页面（蓝牙连接操作请查看 4.2），连接成功后将显示待机菜单。

	开机图标	品牌图标，不可修改
		个性化图标，可修改；不修改时默认显示品牌图标
	待机菜单	A 键加热图标；按 A 键进入主界面
		B 键参数设置图标；按 B 键进入菜单设置

关机：shutdown:

1. 烙铁手柄已经放置在底座上时，断开底座电源，烙铁手柄将与底座一同关机；
2. 三连击烙铁手柄“BOOST”键可单独关闭烙铁手柄，烙铁手柄关机后将与底座断开连接。

4.2 蓝牙连接与断开

4.2.1 蓝牙连接

在第一次使用无线焊台 TS1C 时，需将烙铁手柄与控制底座进行蓝牙配对。

1）将手柄正确放置于控制底座上，以获得最佳蓝牙信号；

2）控制底座连接电源开机，底座屏幕显示开机图标后将直接进入蓝牙搜索界面；

3）通过旋钮选择想要连接的设备，按 B 键确认配对并返回待机菜单界面；

4）设备成功配对后，状态栏右上角将出现蓝牙标识，此时按控制底座 A 键可进入主界面，烙铁头开始预热；或按 B 键进入设置菜单设置参数。配对成功后再次使用时，按控制底座 A 键，手柄与底座将自动完成连接并进入主界面，预热烙铁头；

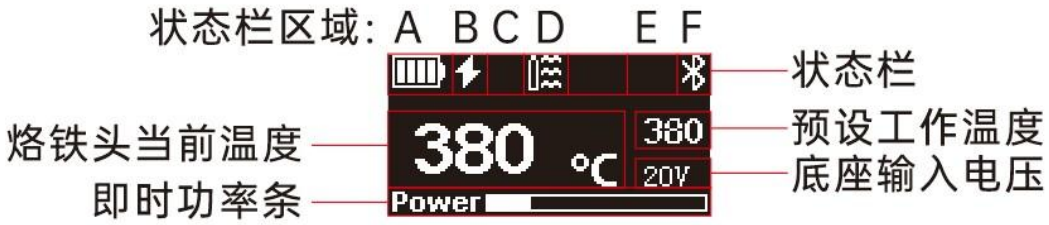
5）在主界面下，长按 B 键可查看蓝牙设备。如需连接其他蓝牙设备，可滚动拨轮选择，按 B 键确认连接或按 A 键退出。

4.2.2 蓝牙断开

如需断开烙铁手柄与控制底座的蓝牙连接或解除绑定，可在底座处于主界面时长按底座 A 键断开蓝牙连接。再次使用时需按 4.2.1 方法再次进行设备的蓝牙配对。

4.3 屏幕显示

4.3.1 主界面



4.3.2 状态栏

TS1C 烙铁手柄正确放置于控制底座上，或烙铁手柄与控制底座已成功进行蓝牙连接后，控制底座主界面状态栏将根据手柄的实际状态显示相应的图标。

状态栏图标说明：

区域	图标	名称	说明
A	/ /	手柄电量	显示当前烙铁手柄电量/低电量/超低电量；当烙铁手柄处于低/超低电量时，该图标将闪烁，屏幕出现低电量提示（详细请查看4.4.2）
B		手柄充电状态	表示烙铁手柄处于底座充电状态
C		休眠状态	该图标出现时表示烙铁手柄处于休眠模式*
D	/ /	手柄工作状态	显示当前烙铁手柄的工作状态：升温/降温/恒温
E	30℃	烙铁头状态	该图标仅在待机状态下显示，表示烙铁头温度
			该图标出现时表示手柄上的烙铁头连接不正常，请检查烙铁头是否已正确插入手柄或烙铁头是否异常**
F		蓝牙连接状态	烙铁手柄与控制底座处于蓝牙连接状态时，该图标常亮；否则不显示图标

* 当设备进入休眠模式时，烙铁头将自动降温至休眠温度并恒温。拿起烙铁手柄或按任意按键可激活。

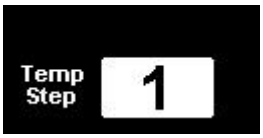
** 当设备检测到烙铁头异常时，除状态栏提示外，主界面将出现“NO TIP！”提示。

备注：如烙铁手柄未与控制底座进行蓝牙连接且未放置于底座上，屏幕状态栏将无状态图标显示（如下图）。

4.4 菜单设置

在主界面按控制底座 B 键可进入菜单设置，再次按 B 键循环切换菜单，旋动旋钮调节菜单设置值；设置完成后静待 5 秒或按 A 键确认返回主界面/待机页面。

快捷操作：在主界面下旋动控制底座旋钮可调节烙铁手柄工作温度。

菜单界面	菜单名称	说明	设置范围	默认值
	工作温度	烙铁手柄工作温度	100~400℃ （212℉~752℉）	300
	预热温度	烙铁手柄在控制底座上预热时的预热温度（不高于工作温度）	100~400℃ （212℉~752℉）	250
	睡眠温度	烙铁手柄静止不动一定时间后，手柄将进入睡眠模式，此时手柄将恒温在休眠温度	100~400℃ （212℉~752℉）	100
	睡眠时间	烙铁手柄从静止到进入睡眠模式的时间。移动烙铁手柄可唤醒。	30~900S （步长为 30） 30~900S	300
	待机时间	烙铁手柄从睡眠状态到进入待机状态（底座屏幕熄灭）的时间	30~900S （步长为 30）	300
	温度步进	使用控制底座调节温度时的数值跳变步长	1~25	1
	背光亮度	控制底座背光亮度	1~10	5

	温度单位	温度显示单位	℃/℉	℃
	设备版本信息	HW：硬件版本 FW：固件版本 S：控制底座 P：烙铁手柄	-	-

4.5 加热与调温

4.5.1 正常加热与调温操作

1. TS1C 控制底座接通电源后，已配对的控制底座与手柄将自动进行蓝牙连接（如第一次使用 TS1C，请参考 4.2 进行蓝牙配对操作）；控制底座与烙铁手柄连接成功后，可通过状态栏查看烙铁手柄状态；
2. 在待机界面按 A 键进入主界面，烙铁头开始预热；如需设置参数，可按 B 键可进入菜单设置；
3. 需要进行焊接时，直接从控制底座上拿起烙铁手柄，手柄将自动加热至预设工作温度；
4. 在工作状态下，旋动旋钮可调整工作温度；
5. 焊接完成后将手柄重新放置到控制底座上充电，烙铁手柄将自动调整至预热温度并恒温。

注意：当烙铁手柄与控制底座断开蓝牙连接时，手柄将停止加热。

4.5.2 一键升温强力模式

在烙铁手柄正常工作状态下，持续按住手柄上的“BOOST”键可进入一键升温强力模式，烙铁头温度将升温并恒定在 400℃。松开按键后，烙铁头温度回复至预设工作温度。.

4.5.3 低电量提醒

当烙铁手柄的电量过低时，控制底座屏幕上的电量图标将闪烁，主界面出现“Low Power!”低电量提示，蜂鸣器短鸣一声。此时烙铁手柄电量处于低电量状态，但仍能短时间恒温加热，请及时充电。

当烙铁手柄剩余电量已经无法保持恒温时，手柄进入超低电量状态。控制底座屏幕电量图标出现感叹号警示并闪烁，主界面出现“Heating Stop!”超低电量提醒，蜂鸣器将连续短鸣三声。

此时烙铁手柄将停止加热并逐渐降温，请将烙铁手柄放置回控制底座充电或使用 USB Type-C 电源线连接 PD 电源充电。

4.6 配置文件

使用 USB Type-C 数据线将控制底座与电脑连接，电脑将出现一个可移动硬盘，控制底座屏幕显示“CONFIG”。用户可通过对可移动硬盘内的 CONFIG.TXT 文件，修改 TS1C 的参数设置。.

配置文件参数说明如下：

参数	参数名称	释义	设置范围	默认值
Work_Temp	工作温度	烙铁手柄的工作温度，单位为℃/℉	℃：100-400 ℉：212-752	300
Preheat_Temp	预热温度	烙铁手柄在控制底座上预热时的预热温度（不高于工作温度），单位为℃/℉	℃：100-400 ℉：212-752	250
Sleep_Temp	休眠温度	烙铁手柄静止不动一定时间后，手柄将进入睡眠模式，此时手柄将恒温在休眠温度，单位为℃/℉	℃：100-400 ℉：212-752	100
Sleep_Time	休眠时间	烙铁手柄从静止到进入睡眠模式的时间，单位 S	30-900	300
Idle_Time	待机时间	烙铁手柄从睡眠状态到进入待机状态（底座屏幕熄灭）的时间，单位 S	30-900	300
Temp_Unit	温度单位	温度显示单位，摄氏度℃/华氏度℉	0:（℃） 1:（℉）	0
Temp_Step	温度步进	使用控制底座调节温度时的数值跳变步长	1-25	1
Back_Light	背光亮度	控制底座背光亮度	1-10	5
Version	版本信息	设备版本信息	无法修改	
Ble_Addr	蓝牙地址	蓝牙连接信息	设备自动生成	

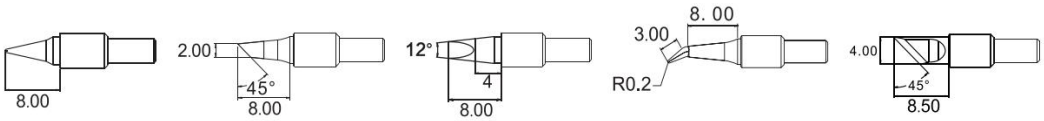
5 烙铁头

5.1 更换烙铁头

1. 请在断电后更换烙铁头；
2. 直接拔出原烙铁头，重新插入另一支烙铁头；
3. 可通过控制底座状态栏烙铁头图标及屏幕提示确认烙铁头是否已经安装好。如 TS1C 控制底座屏幕状态栏显示“ ”图标或出现“NO TIP!”提示，表示烙铁头未装牢固，请重新插入烙铁头。

5.2 烙铁头的选择

无线焊台 TS1C 适配同品牌的智能烙铁 TS80/80P 烙铁头。选择合适的烙铁头可使功效更高效。



TS-B02　　TS-BC02　　TS-D25　　TS-J02　　TS-K4

5.3 烙铁头的保养

1. 长时间不用时，建议让烙铁头适量上锡，防止氧化；
2. 请勿让烙铁头长时间处于高温加热状态，避免干烧；
3. 在焊接时，请勿给烙铁头施加太大压力摩擦焊点，避免烙铁头受损；
4. 绝对不允许使用粗糙的材料或锉刀清洁烙铁头；
5. 如果烙铁头表面已氧化不沾锡，用户可视需要使用 600～800 目的金钢砂布小心摩擦并用乙丙醇或相等的溶液清洁，加温至 200℃后立即沾锡以防止氧化；
6. 请勿使用含氯、酸过高的助焊剂，仅使用合成树脂或已活性化的树脂助焊剂。

6 常见问题

问题	检查与处理

控制底座连接电源后显示“CONFIG”	1. 所接入电源不支持 PD 供电协议，请更换合适的电源； 2. 所使用的电源线不支持 PD 供电协议，请更换合适的电源线； 3. 接口接触不良。
控制底座与手柄已成功进行蓝牙连接，但无温度显示/通过底座修改菜单设置手柄无响应	如果底座屏幕已显示蓝牙图标，可能为蓝牙通讯受阻，请请将手柄放置回底座，断开底座电源后重新上电。
烙铁手柄放置到控制底座后无响应	1. 检查烙铁手柄是否已经正确放置于控制底座上，底座屏幕状态栏是否出现闪电充电图标； 2. 烙铁手柄是否与电脑连接进入 DFU 模式？如是，请完成固件升级后再次放置于底座上。
烙铁手柄无法与控制底座进行蓝牙连接	1. 烙铁手柄是否与电脑连接进入 DFU 模式？如是，请完成固件升级再进行蓝牙连接； 2. 重新配对烙铁手柄与控制底座。蓝牙配对方法详见 4.2； 3. 当烙铁手柄电量过低时无法进行蓝牙连接，可让烙铁手柄正确置于控制底座充电或单独充电数分钟后再激活蓝牙连接。
烙铁手柄放置在控制底座上，状态栏只显示闪电充电图标，没有其他状态图标	1. 烙铁手柄是否已与控制底座进行了蓝牙配对？如未配对，请先进行蓝牙配对连接； 2. 拔出烙铁手柄重新放置于底座上；
烙铁手柄温度在预设温度左右跳动	1. 烙铁头是否第一次使用或者存放在潮湿环境中？待烙铁头充分加热后可恒温； 2. 烙铁头是否已插好； 3. 电源线是否接触不良。
烙铁头不沾锡	1. 烙铁头的温度是否超过 400℃； 2. 烙铁头是否未适当加锡； 3. 是否缺少助焊剂或使用纯度低或锡含量低的焊锡； 4. 是否曾使用含硫量高或干燥的海绵擦拭烙铁头； 5. 是否接触到有机物如塑料、矽（硅）质油脂或其他化学品。

7 技术服务

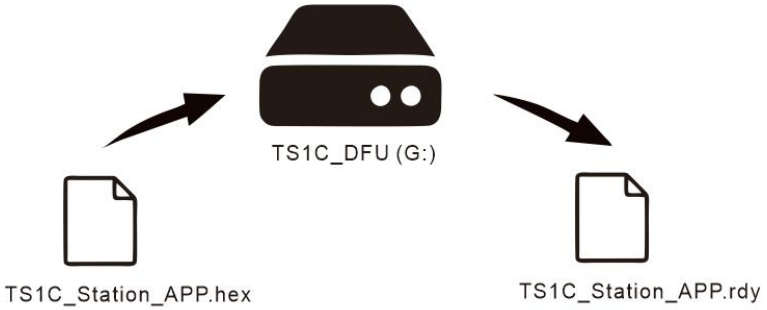
7.1 固件升级

7.1.1 控制底座固件升级

1. 访问 www.miniware.com.cn，将适用的 TS1C 控制底座固件下载至电脑；

2. 按住控制底座的 B 键，同时使用 USB Type-C 数据线将底座与电脑连接。电脑上将出现名为“TS1C DFU”的可移动硬盘，此时控制底座进入 DFU 模式，底座屏幕上显示“TS1C DFU”；

3. 把准备好的 hex 文件拷贝到该硬盘的根目录下，当文件后缀由.hex 改为.rdy 后，断开连接，完成控制底座固件升级。

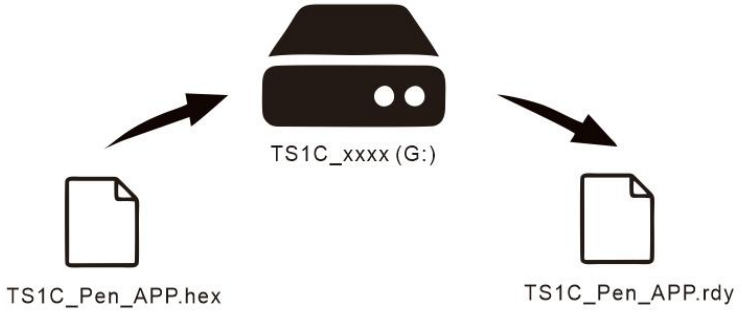


7.1.2 手柄固件升级

1. 访问 www.miniware.com.cn，将适用的 TS1C 烙铁手柄固件下载至电脑；

2. 按住烙铁手柄上的“Boost”键，同时使用 USB Type-C 数据线将手柄与电脑连接。当电脑上出现名为“TS1C_xxxx”的可移动硬盘后，松开“Boost”键，此时手柄进入 DFU 模式；

3. 把准备好的 hex 文件拷贝到该硬盘的根目录下，当文件后缀由.hex 改为.rdy 后，断开连接，完成控制手柄固件升级。



7.2 设置个性化开机图标

TS1C 控制底座可设置个性化开机图标，设置方法如下：

1. 准备一张 128*64 像素的单色位 BMP 图片，将图片文件名设置为 logoin.bmp；
2. 使用 USB TYPE-C 数据线将 TS1C 控制底座与电脑连接，电脑将出现可移动硬盘，进入硬盘；
3. 将准备好的图片拷贝至该硬盘的根目录下，断开 USB 连接连接完成个性化图标设置。

8 法规标识

此设备符合美国联邦通讯委员会FCC 规则第15 部分中的规范。操作设备须符合以下两个条件：
(1) 本设备不得引发干扰；(2) 本设备必须能承受其收到的任何干扰，包括可能导致意外操作的干扰。

CE 标记是欧洲共同体的注册商标。此CE 标记表示产品符合所有相关的欧洲法律规定。

UKCA（United Kingdom Conformity Assessed）标记是英国合格认定的认证标识。
本设备符合电子电气产品进入英国市场需要通过的英国法规下的标准测试认证。

本产品内包含电池和/或可回收电子部件。弃置产品时请勿与生活垃圾一起丢弃。请根据当地法律和法规进行处理。

Contents

Safety Instructions 4

1 Product Introduction 5

2 Buttons And Interface 7

3 Power Source 9

4 How to use 10

5 Soldering iron tips 16

6 FAQs 16

7 Technical Services 18

8 Legal Statements 19

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 P5 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.

Precautions

- Please turn off the power when finishing using or leaving to prevent fire;
- After the power is turned on, the temperature of soldering tip will reach 100° C-400° C (212° F-752° F), be careful to prevent burns;
- When using for the first time, due to the heating of the electric heating element, the soldering tip may smoke slightly, which is a normal phenomenon.
- Do not soak the whole TS1C in water or use it with wet hands to prevent leakage;
- TS1C is composed of precision components, please avoid falling.

Use Responsibility Statements

For Any special, indirect, incidental or consequential damages or losses arising from any cause or theory 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 to 50° C, 0% to 60%RH	40° C to 60° C, 5% to 60%RH
	Low temperature	0° C to 40° C, 10% to 90%RH	0° C to 40° C, 5% to 90%RH

1 Product Introduction

Designed and developed by e-Design, **MINIWARE Cordless Soldering Station TS1C** is the first new energy storage intelligent desktop soldering tool based on BLE4.2 Bluetooth communication. TS1C adopts supercapacitor energy storage technology, which is different from the traditional lithium battery power supply mode, bringing high-tech wireless soldering experience to users.

MINIWARE Cordless Soldering Station TS1C includes two parts: a control station and a soldering pen. The control station connects with the soldering pen via Bluetooth wireless pairing and communication, and realizes complex remote control such as standby preheating, temperature adjustment, menu setting, and viewing information and status, while working as a stand and charging station for the soldering pen. TS1C's soldering pen uses MINIWARE's 3.5mm audio interface soldering tip (TS80/80P soldering tip series), performs operations such as preheating, constant heating, and temperature adjustment according to the control signal from the station, and enters boost mode by holding the button on the pen. The soldering pen also holds multiple intelligent safety protections as over-temperature protection, capacitor low-voltage protection, and charging protection.

The overall design of TS1C is simple and smooth, hard core and handsome. The control station features 128*64 pixel OLED screen to display the soldering pen status in real time. The front of the station is equipped with a USB Type-C interface for standard PD2 20V, maximum 45W power input and firmware upgrade. In addition, there are 3 expansion slots at the bottom of the station, which can be used to install different accessories like sponge slot to offer more functional usage. TS1C soldering pen is ergonomically designed with a good grip; the top of the pen adopts a USB Type-C interface for firmware upgrade (under the stainless steel decorative piece), which can be used for power input in emergency cases; the pen has a built-in high-efficiency energy storage supercapacitor, with 36W maximum heating power, it can continuously solder more than 180 solder joints (0805) under a single full charge—TS1C's excellent performance will help you significantly improve work efficiency.

- New technology of high-efficient supercapacitor energy storage, rechargeable up to hundred thousand times;
- Separable structure + real cordless, providing smooth cordless soldering experience;

- Based on BLE4.2 Bluetooth communication, realizing remote control and setting;

Control Station:

- Standard PD2 20V 45W (MAX) power input, over current safety protection；
- 128*64 pixel OLED screen, display soldering pen status in real time;
- Control station preheating, improve heating efficiency;
- Remote control and setting: temperature regulating, menu setting, viewing device info and status, etc.;
- Work as soldering stand and charging station;
- Three expansion slots for multiple expandable accessories like sponge slot;

Soldering Pen:

- Built-in 750F high-efficiency energy storage supercapacitor, can be charged via control station (or via USB Type-C interface in emergency cases);；
- 36W maximum heating power, can solder more than 180 solder joints (0805) continuously under a single full charge;
- Compatible with MINIWARE 3.5mm audio interface soldering tip (TS80/80P soldering tip series);
- Boost mode (holding the button on the pen);
- Multiple intelligent safety protections: over-temperature protection, capacitor low-voltage protection, charging protection, etc.

1.1 Performance Parameters

TS1C Control Station:

Model	TS1C-S
Screen	128*64 pixel OLED
Interface	USB TYPE-C
Maximum input voltage	PD2 20V
Maximum input power	45W
Other	Three expansion slots for multiple expandable accessories
Safety protection	Over current protection

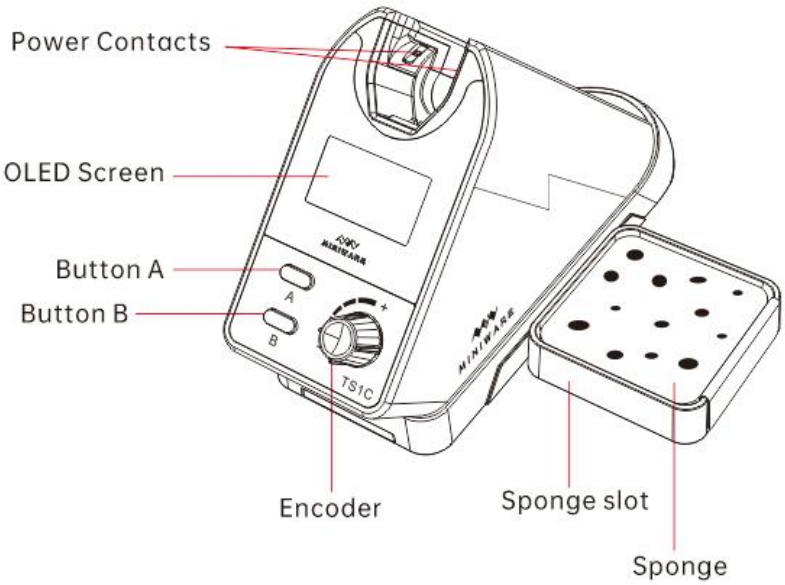
Size	Control Station: 44.5*122*73 (mm) Sponge Slot: 42*43 (mm)
Weight	186g (Including a sponge slot)

TS1C **Soldering Pen：**

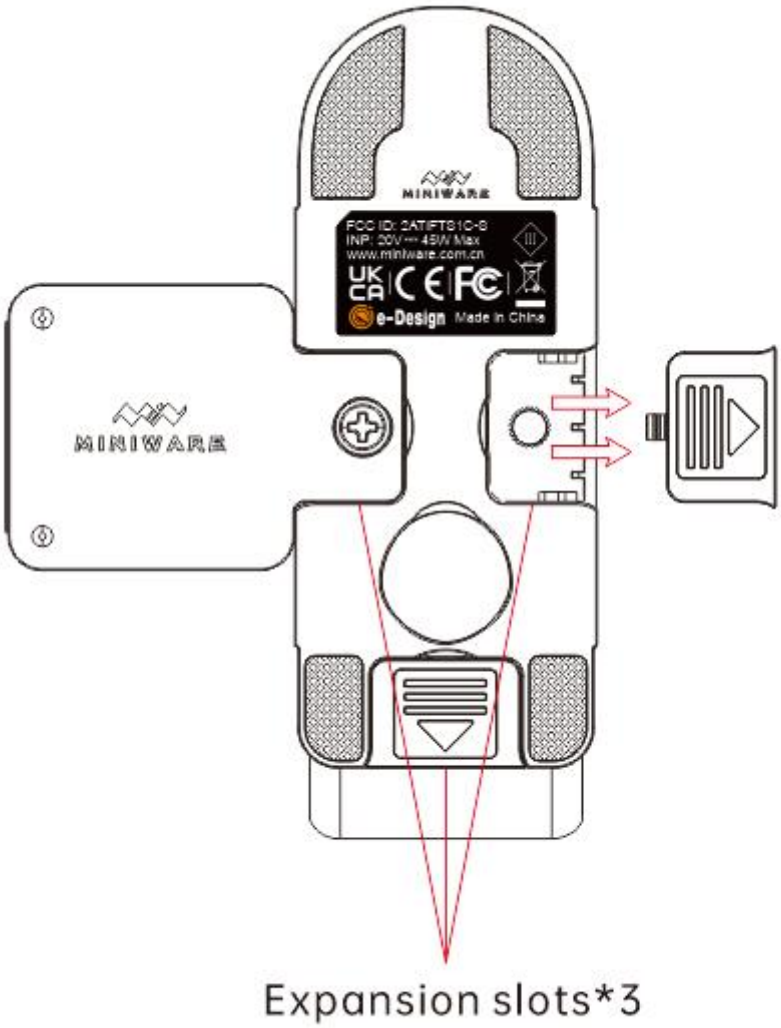
Model	TS1C-P
Interface	USB TYPE-C
Capacitance	750F
Charging time	7 minutes
Maximum heating power	36W
Temperature range	100~400℃（212℉～752℉）
Temperature stability	±3%
Soldering tip	MINIWARE 3.5mm audio interface soldering tip (TS80/80P soldering tip series)
Safety protection	Capacitor low voltage protection, capacitor charging protection, over temperature protection
Size	ϕ23*133（mm）
Weight	62g (without soldering tip)

2 Buttons And Interface

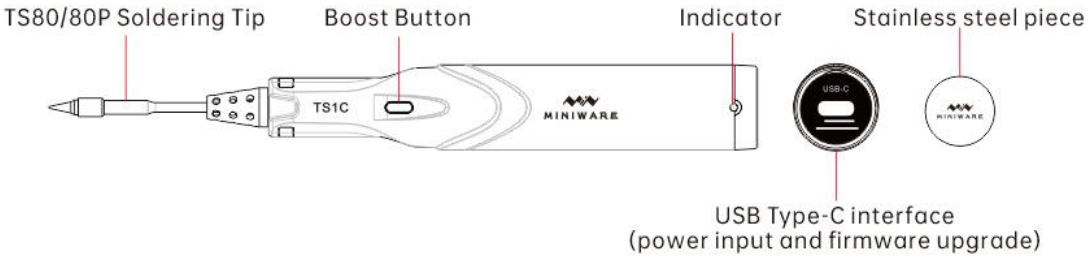
2.1 Soldering Control Station



USB Type-C interface (power input and firmware upgrade)



2.2 Soldering Pen



2.3 Indicator light

The LED indicator light at the tail of TS1C soldering pen can prompt the status of the pen. The light status and corresponding description are as follows:

Light status	Description
Off	Soldering pen is turned off or the battery has run out
Always on	Soldering pen is in normal working condition
Flash	Soldering pen is in a low/ultra-low battery state
Slow flash	Soldering pen is charging

3 Power Source

3.1 Power Source Selection

Cordless Soldering Station TS1C's control station uses a USB Type-C power supply input interface, which can support a PD power supply of PD2 20V 45W (MAX) or above (including charging plug, mobile power supply, etc.). The control station has a preheating function. After the soldering pen is paired with the station and enters the main interface, the soldering pen will automatically preheat to the preset preheating temperature and keep the temperature constant.

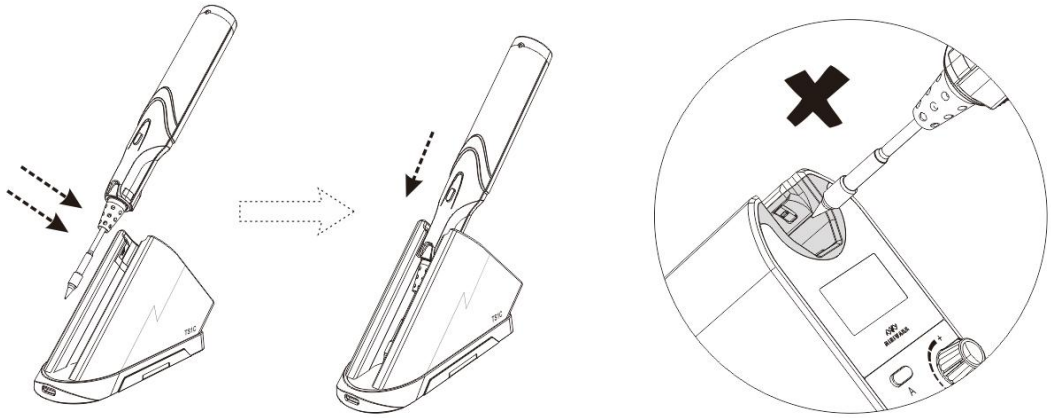
Please choose a standard PD power supply that supports PD2 20V 45W or above to power the control station:

Operating Voltage	Preheat temperature	The fastest time required to heat up from 25° C to preheat temperature	The fastest time required to heat up from preheating temperature to 300° C
20V	100℃	8s	12s
20V	150℃	12s	9s
20V	200℃	16s	6.5s
20V	250℃	20s	4s

3.2 Placement And Charging

The built-in capacitor of TS1C Soldering Pen can be charged through the control station. The charging method and status are as follows:

1. Place soldering pen correctly on the station's pen slot. Align the soldering tip with the long slot of the station and put it in, and then push the soldering pen forward to ensure that the power contact of the station is in full contact with the power contact on the soldering pen (this way of placing can avoid the hot tip damaging the plastic part near the slot front);



2. After the soldering pen is placed correctly, it will automatically charge through the station, and the charging status icon “ ” will appear in the status bar;

3. After each soldering is completed, it is recommended to put the soldering pen back on the station to charge. If the power of the soldering pen has completely run out, it takes about 7 minutes to fully charged again. It is recommended to charge it to at least two bars before soldering.

Note: In case of emergency, the soldering pen can be powered through the USB Type-C interface on the top, and the power input parameters are the same as those of the station.

4 How to use

4.1 Power On And Off

Power on:

When TS1C’s control station is connected to the PD power supply, it will automatically power on. The screen will first display the brand icon and customized icon, and then enter the standby state and display the standby menu. If TS1C is turned on for the first time, the screen will jump directly to the Bluetooth connection page (please refer to 4.2 for Bluetooth connection) after boot-up icons, and the standby menu will be displayed after the connection is successful.

	Boot-up icon	Brand icon, cannot be modified
		Customized icon, modifiable; if not modified, it will display the brand icon by default
	Standby menu	Button A for heating icon; press A to enter home in interface
		Button B for parameter setting icon; press B to enter menu setting

Power off:

1. If the soldering pen is already placed on the station, disconnect power supply of the station, so that the pen will shut down together with the station;
2. Triple-click the “BOOST” button of the soldering pen to turn off the soldering pen separately. After the pen is turned off, it will be disconnected from the station.

4.2 Bluetooth Connection And Disconnection

4.2.1 Bluetooth Connection

When using the cordless soldering station TS1C for the first time, you need to pair the soldering pen with the control station via Bluetooth.

1）Place the pen on the control station correctly for the best Bluetooth signal;

2）Turn on the control station by connecting to PD power supply. After the boot-up icon is displayed on the screen, it will directly enter the Bluetooth search interface;

3）Select the device to be connected by rolling the encoder, press B to confirm the pairing and return to standby menu interface;

4）After the device is successfully paired, a Bluetooth logo will appear in the upper right corner of the status bar. Press A on the control station to enter the home interface and preheat tip; or press B to enter setting menu to set parameters. When using it again after successful pairing, press A on the control station, the pen and the station will automatically complete the connection and enter the home interface to preheat the soldering tip；

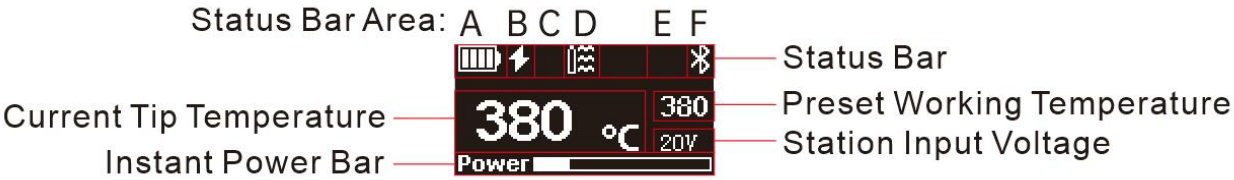
5）In Home interface, long press Button B to see Bluetooth devices. Roll Encoder to choose a new d evice if needed, press B to confirm pairing or press A to exit.

4.2.2 Bluetooth Disconnection

If you need to disconnect the Bluetooth connection or pairing between the soldering pen and station, long press A on the station to disconnect Bluetooth connection when the station is in the home interface. Next time using, it is necessary to Bluetooth pair the devices again (see 4.2.1).

4.3 Screen Display

4.3.1 Home interface



4.3.2 Status bar

When TS1C's soldering pen is correctly placed on the control station, or the soldering pen and the control station have been successfully connected by Bluetooth, the status bar on control station screen will display corresponding icons according to the actual status of the pen.

Status bar icons description:

Area	Icon	Name	Description
A	/ /	Soldering pen power	Display the current battery/low battery/ultra-low battery capacity of the soldering pen; when it is at low/ultra-low battery status, the icon will flash and a low battery prompt will appear on the screen (please refer to 4.4.2 for details)
B		Soldering pen charging status	Indicates that the soldering pen is in charging via the control station
C		Sleep mode	When this icon appears, the soldering pen is in sleep mode*
D	/ /	Pen working status	Display the current working status of the soldering pen: heating/cooling/constant temperature
E	30°C	Soldering tip status	This icon appears only in standby status, indicating the tip temperature
			When this icon appears, it means that the soldering tip on the pen is not connected properly, please check whether the soldering tip is inserted into the pen correctly or

			whether the soldering iron tip is abnormal**
F		Bluetooth connection status	When the soldering pen and the control station are in Bluetooth connection state, this icon is always on; otherwise, the icon will not be displayed

* When TS1C enters sleep mode, the soldering pen will automatically cool down to the sleep temperature and maintain a constant temperature. Pick up the soldering pen or press any button to activate.

** When TS1C detects that the soldering tip is abnormal, in addition to the prompt on the status bar, the home interface will display “NO TIP!”.

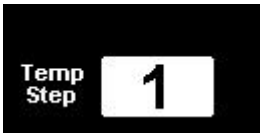
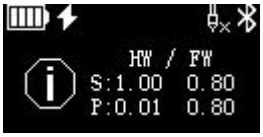
Note: If the soldering pen is not connected to the control station via Bluetooth and is not placed on the station, there will be no status icons displayed on the screen status bar (as shown in the figure below).

4.4 Menu Settings

On the home interface, press B on the control station to enter the menu setting, press B again to cycle through the menus, and roll encoder to adjust the setting value; wait for 5 seconds or press A to confirm and return to the home interface/standby page.

Shortcut: Roll the encoder on the control station in the home interface to adjust the working temperature of the soldering pen.

Menu Interface	Menu Name	Description	Setting Range	Defaults

	Working temperature	Working temperature of soldering pen	100~400℃（212℉~752℉）	300
	Preheat temperature	Preheat temperature of the soldering pen when it is preheated on the control station (not higher than the working temperature)	100~400℃（212℉~752℉）	250
	Sleep temperature	After the soldering pen stays static for a certain period of time, the pen will enter sleep mode, and the tip will be kept at the sleep temperature	100~400℃（212℉~752℉）	100
	Sleep time	Time needed for the soldering pen to go from static to sleep mode. Move the soldering pen to wake it up.	30~900S (with a step size of 30)	300
	Standby time	Time needed for the soldering pen to go from sleep to standby (station screen off)	30~900S (with a step size of 30)	300
	Temperature stepping	The value step size when using the control station to adjust the temperature	1~25	1
	Backlight brightness	Control station backlight brightness	1~10	5
	Temperature unit	Temperature display unit	℃/℉	℃
	Device version information	HW: hardware version FW: firmware version S: Control station P: Soldering pen	-	-

4.5 Heating And Temperature Adjustment

4.5.1 Normal heating and temperature adjustment operation

1. After TS1C's control station is powered on, the paired control station and the soldering pen will automatically connect via Bluetooth (if TS1C is being used for the first time, please refer to 4.2 for Bluetooth connection); after the station and the pen are successfully connected, you can read the status of the soldering pen in the status bar;
2. On standby interface, press A to enter home interface, the soldering tip will start to preheat; if you need to set parameters, press B to enter menu setting;
3. To start soldering, pick up the soldering pen from the control station, and the pen will automatically heat up to the preset working temperature;
4. In working state, directly rolling the encoder can adjust working temperature;
5. After the soldering is completed, put the pen back on the control station for charging, and it will automatically adjust to preheat temperature and keep the temperature constant.

Note: When Bluetooth is disconnected between the soldering pen and the control station, the pen will stop heating.

4.5.2 Boost mode

In normal working state, press and hold the "BOOST" button on the soldering pen to enter boost heating mode, and the tip temperature will rise and remain at 400° C. After releasing the button, the tip temperature will return to the preset working temperature.

4.5.3 Low battery

When the battery of the soldering pen is too low, the battery icon on the station screen will flash, the home interface will display "Low Power!" warning, and the buzzer will make a short beep. The battery of the soldering pen is in a low battery state, but it can still be heated at a constant temperature for a short time, please charge it in time.

When the remaining power of the battery can no longer maintain a constant temperature, the pen enters an ultra-low power state. The battery icon on the station screen will show an exclamation mark and flash, and the home interface will display "Heating Stop!" warning, and the buzzer will beep three times. The soldering pen will stop heating and gradually cool down. Please put the soldering pen back to the control station or use a USB Type-C cable to connect to PD power supply for charging.

4.6 Configuration

Use a USB Type-C data cable to connect the control station to PC, a removable hard disk will appear on the computer, and the screen of the control station will display “CONFIG”. Users can modify the parameter settings of TS1C through the CONFIG.TXT file in the removable hard disk.

The configuration file parameters are described as follows:

Parameter	Name	Description	Setting Range	Defaults
Work_Temp	Working temperature	The working temperature of the soldering pen, as in ℃/℉	℃: 100-400 ℉: 212-752	300
Preheat_Temp	Preheat temperature	Preheat temperature of the soldering pen when it is preheated on the control station (not higher than the working temperature), as in ℃/℉	℃: 100-400 ℉: 212-752	250
Sleep_Temp	Sleep temperature	After the soldering pen stays static for a certain period of time, the pen will enter sleep mode, and the tip will be kept at the sleep temperature, as in ℃/℉	℃: 100-400 ℉: 212-752	100
Sleep_Time	Sleep time	Time needed for the soldering pen to go from static to sleep mode. Move the soldering pen to wake it up, as in second	30-900	300
Idle_Time	Standby time	Time needed for the soldering pen to go from sleep to standby (station screen off), as in second	30-900	300
Temp_Unit	Temperature unit	Temperature display unit, as in ℃/℉	0: ℃ 1: ℉	0
Temp_Step	Temperature step	The value step size when using the control station to adjust the temperature	1-25	1
Back_Light	Backlight brightness	Control station backlight brightness	1-10	5

Version	Version Information	Device version information	Cannot be modified	-
Ble_Addr	Bluetooth address	Bluetooth connection information	Automatically generated by the device	-

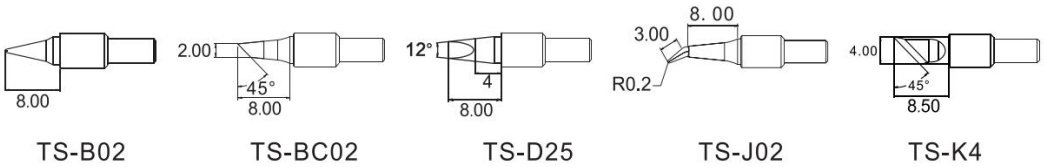
5 Soldering Tips

5.1 Replacing soldering tip

1. Please replace the soldering tip after power off;
2. Pull out the original soldering tip directly, and reinsert another soldering tip;
3. You can confirm whether the soldering tip has been installed correctly by reading the soldering tip icon in the status bar of the station and the screen prompt. If a “ ” icon is displayed on the status bar or a “NO TIP!” warning prompts, it means that the soldering tip is not firmly installed, please reinsert the soldering tip.

5.2 Selecting a soldering tip

Cordless Soldering Station TS1C is compatible with MINIWARE 3.5mm audio interface soldering tips, (the tips also used by MINIWARE Smart Soldering Iron TS80/80P). Choosing the right soldering iron tip can make your soldering more efficient.



5.3 Maintenance of soldering tips

1. When not in use for a long time, it is recommended to tin the tip of the soldering tip to prevent oxidation;
2. Do not let the soldering tip be heated at high temperature 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 been oxidized and does not stick to tin, User can carefully rub it with 600-800 mesh emery cloth and clean it with ethyl propanol or an equivalent solution, and immediately dip it in tin to prevent oxidation after heating to 200° C;

6. Do not use chlorine or high-acid flux, only use synthetic resin or activated resin flux.

6 FAQs

Question	Inspection & Solution
"CONFIG" is displayed after the control station is connected to the power supply	1. The connected power supply does not support PD power supply protocol, please replace it with a suitable power supply; 2. The power cable used does not support PD power supply protocol, please replace the appropriate power cable; 3. The interface is in bad contact.
The control station and the pen have been successfully connected via Bluetooth, but there is no temperature display/the pen does not respond when modifying the menu settings through the station	If the Bluetooth icon is displayed on the station screen, the Bluetooth communication may be blocked, please put the pen back to the station, disconnect the power of the station and then power on again.
The soldering pen does not respond after placing it on the control station	1. Check whether the soldering pen has been correctly placed on the control station, and whether the lightning charging icon appears in the status bar of the station screen; 2. Is the soldering pen connected to computer to enter DFU mode? If yes, please place it on the station again after completing firmware upgrade.
The soldering iron handle cannot connect to the control base via Bluetooth	1. Is the soldering pen connected to computer to enter DFU mode? If yes, please complete firmware upgrade before connecting Bluetooth; 2. Re-pair the soldering pen with the control station. For Bluetooth connection please see 4.2; 3. When the soldering pen is in low power state, Bluetooth connection may not be successful. Place the soldering pen on the control station or charge it alone for a few minutes before activating Bluetooth connection.
The soldering pen is placed on the control station, but the status bar only displays the lightning charging icon, no signs of other status icons	1. Has the soldering pen been Bluetooth paired with the control station? If not, please carry on Bluetooth connection first; 2. Pull out the soldering pen and place it on the station again;
The temperature of the soldering pen jumps around the preset	1. Is the soldering tip be used for the first time or stored in a humid environment? After the soldering tip is fully heated, the

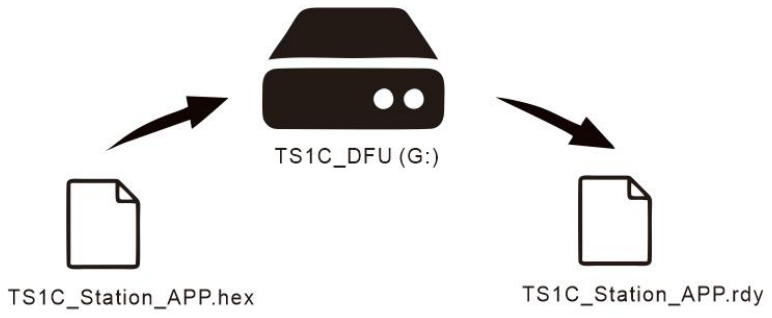
temperature	temperature will be stabilized; 2. Whether the soldering tip is firmly plugged in; 3. Whether the power cable is in bad contact.
The soldering tip does not stick to tin	1. Whether the tip temperature exceeds 400° C; 2. Whether the soldering tip is not properly tinned; 3. Whether there is a lack of flux or solder with low purity or low tin content; 4. Have you ever wiped the soldering tip with a high-sulfur or dry sponge; 5. Whether the soldering tip has come into contact with organic substances such as plastics, silicon grease or other chemicals.

7 Technical Services

7.1 Firmware upgrade

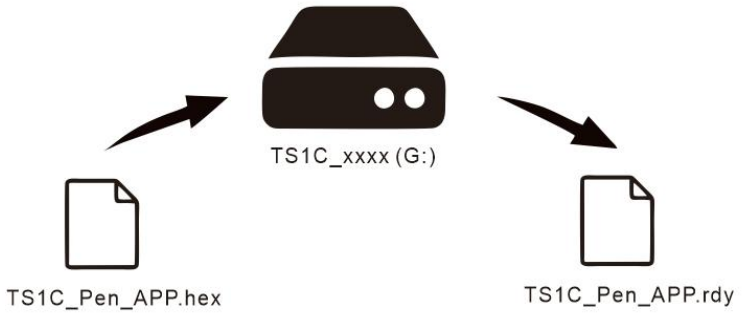
7.1.1 Control station firmware upgrade

1. Visit www.miniware.com.cn to download the applicable TS1C control station firmware to computer;
2. Press and hold Button B on the control station, and at the same time connect the station to the computer via a USB Type-C data cable. A removable hard disk named “TS1C DFU” will appear on the computer, thus the control station enters DFU mode, and “TS1C DFU” is displayed on the station screen;
3. Copy the prepared hex file to the root directory of the hard disk. When the file suffix changes from .hex to .rdy, disconnect USB connection to complete the firmware upgrade of the control station..



7.1.2 Soldering pen firmware upgrade

1. Visit www.miniware.com.cn to download the applicable TS1C soldering pen firmware to computer;
2. Press and hold “Boost” button of the soldering pen, and at the same time connect the pen to computer via a USB Type-C data cable. A removable hard disk named “TS1C_xxxx” will appear on the computer, release “Boost” button, and the pen enters DFU mode;
3. Copy the prepared hex file to the root directory of the hard disk. When the file suffix changes from .hex to .rdy, disconnect USB connection to complete the firmware upgrade of the soldering pen..



7.2 Customized boot-up icon

The boot-up icon of TS1C control station can be customized, and the setting method is as follows:

1. Prepare a 128*64 pixel monochrome BMP picture, and name the bmp file as logoin.bmp;
2. Connect TS1C control station to the computer via a USB TYPE-C data cable, a removable hard disk will appear on computer, click to enter the hard disk;
3. Copy the prepared bmp file to the root directory of the hard disk, disconnect USB connection to complete the customized icon setting.

8 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 the British market.

This product contains batteries and/or recyclable electronic parts. Please do not dispose of the product together with household garbage. Please handle it according to your local laws and regulations.