sainSMART

e-Design

creative commons

Made in China

Instruction Manual

PRO 32

Contents

Safety Statement

1. General Safety

- Use only certified power source/adaptors from your region. (please refer to 3.0 for specifications)
- Do not operate in humid environment.
- Do not operate in inflammable/explosive environment.
- Keep the surface of the product clean and dry.

2. Working condition

Working condition	Requirement
Temperature	Operating Condition: from 0°C to +50°C
	Non-operating Condition: from -20°C to +60°C
Humidity	Operating Condition: from 40°C to 50°C,0% to 60% RH
	Operating Condition: from 0°C to 40°C,10% to 90% RH
	Non-operating Condition: from 40°C to 60°C,5% to 60%RH
	Non-operating Condition: Low temperature: from 0°C to 40°C, 5% to 90%RH

3. Warnings

When using Pro 32, Turn the power off when not in use,or left unattended.
When power is ON, tip temperatures will between 100°C~400°C (212°F~752°F), please be careful.
Please don't operate Pro 32 when it's wet or operate it with wet hands, which will cause an electric shock.

4. Cautions

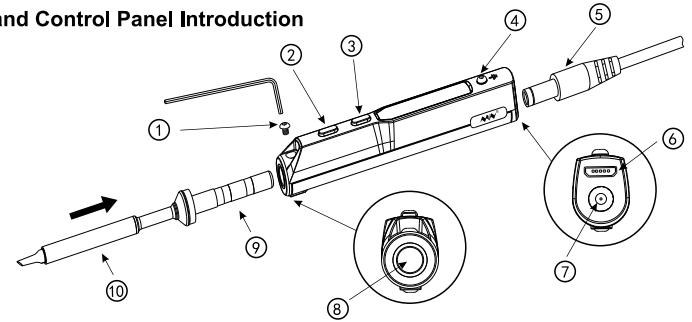
When using Pro 32
- The handle is constructed with precision, dropping shall be avoided.
- After continuous use up to 40 minutes, the handle surface temperature will reach 50°C~60°C.
- For the first time using, Pro 32 may generate a light smoke due to the heating of heating elements, which is a normal phenomenon.

5. Liability Statement

Any damage of the product,or losses related to the product damage, if it's man-caused,or assumed to be man-caused,the liability will belong to the user.

Overview

1. Ports and Control Panel Introduction



1.The tip setscrew	2.Button A	3.Button B	4.Ground cable fixing screw
5.Power connector	6.Micro USB	7.DC5525 12-24V port	8.Soldering tip port
9.Soldering tip connector	10.Soldering tip heating end		

2. Specifications

Screen		OLED
USB port		Micro USB
Power port		DC5525
Dimensions	Operation unit	Length:96mm，Diameter:16.5mm
	Heating unit	Length:72+33mm，Diameter:5.5mm
Weight		33g(power adaptor not included)

3. Operation Specifications

Power	65W
Temperature range	100°C~400°C（max）
Temperature stability	±2%
Operation temperature under heat	40°C
Soldering tip resistance to the ground	< 2 Ω

Power Adaptor Selection

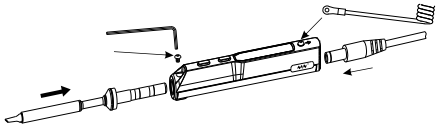
- Before connecting DC5525 (12-24V) power adaptor,check if the adaptor is in good condition as below standard.
- We would recommend the SainSmart 100-240V Input Power Supply 19V/2.1A for Pro32 as an accessory for Pro 32.

Operation voltage	Power	Electric current	Time required to increased tip temperature from 30℃ to 300℃
12V	17W	＞1.4A	40s
16V	30W	＞1.9A	20s
19V	40W	＞2.1A	15s
24V	65W	＞2.7A	11s

Operation

1. Pro 32 Installation

- Loosen the tip setscrew, insert the soldering tip connector and tighten the screw;



- Connect the ground wire to the ground wire setscrew;
- Connect the DC connector to Pro 32, connect the power cord and turn on the power accordingly.

Note: If the screen displays "sen-err" when it's plugged, means the soldering iron tip is not properly fixed, please re-install it properly.

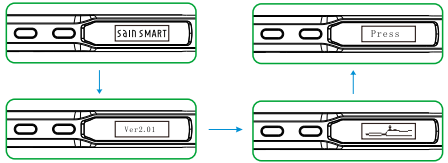
2. Default Settings

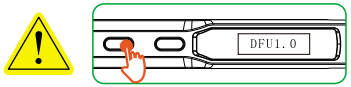
Default temperature unit	°C
Default temperature	300°C（Default）
Sleep mode temperature	200°C（Default）
Adjustable temperature range	100°C~400°C（Max）

3. Basic Control

a. Screen Display

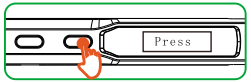
When plugged into DC12-24V power adaptor, Pro 32 will display its logo, Version number and its standby screen in sequence.



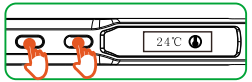


When plugging into DC 12-24V power adaport, pressing Button A at the sametime will enter DFU mode,"DFU1.0" will appear on OLED screen .
To exit DFU mode: unplug and plug in the device again without pressing any button ,then it will enter standby mode.

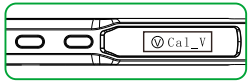
b. Automatic Calibration



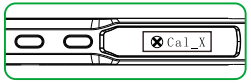
Press Button B in standby mode to enter the thermometer mode



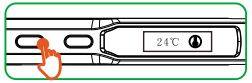
In thermometer mode, press 2 buttons at the same time to enter the calibration mode



Display shows when calibration is succedd.



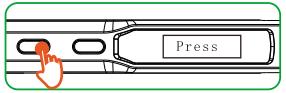
Display shows when calibration failed

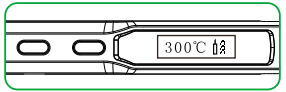


Long press any button to exit thermometer mode

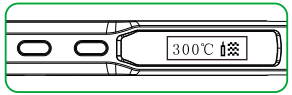
Note: Calibration shall be done when Pro32 in room temperature

c. Heating up

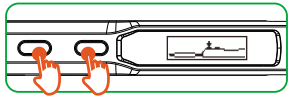




When pressing Button A in standby mode, Pro 32 will heat up to preset temperature

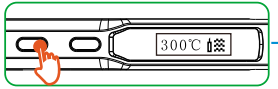


When OLED displays as picture, means it's ready for soldering

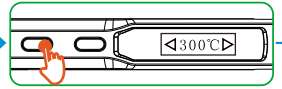


In operation mode, holding both buttons for 3 senconds will return to standby mode

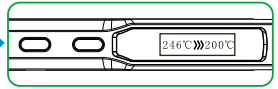
d. Temperature Adjustment



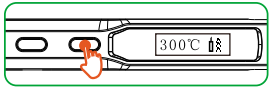
In standby mode, press Button A will enter preset temperature



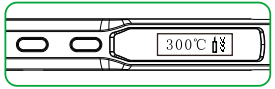
Temperature down: In temperature adjusting mode, hold Button A for at least 2 seconds, until display reads the temperature you want.



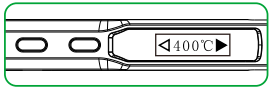
Release Button A when display reads the expected temperature, and Pro 32 will automatically adjust to it.

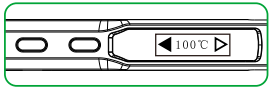


Temperature up: In temperature adjusting mode, hold Button B for at least 2 seconds, until display reads the temperature you want.



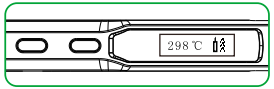
Release Button B when display reads the expected temperature, and Pro 32 will automatically adjust to it.





Note: When screen displays arrow pointing to left or right (◄ or ►) which means the adjustment has already reached its upper/lower limit temperature, settings will not be saved when power is off

Remark: Maximum temperature: 400°C/ Minimum temperature:100°C



When Pro 32 temperature stabilizes for 60 seconds, it will automaticall yenter feedback mode, temperature status will feedback every 5-8 seconds

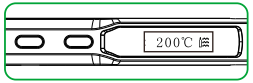
The last digit on the right end of the display shown as below

Arrows up-heating

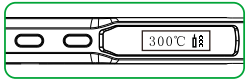
Arrows down-cooling

Horizontal lines-temperature stabilizeb

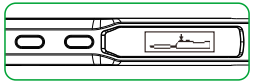
e. Sleep Mode

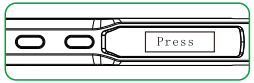


In operation mode, when leaving Pro 32 for more than 180 seconds (⏰3 minutes in Default) will trigger the sleep mode, and temperature will automactically adjust to preset sleep temperature.



When working, Pro 32 will restart to operation mode and temperature will automatically heat up to preset temperauture (300°C in Default).





In sleep mode, if it's not being operated for longer than the IDLE_TIME setting, Pro 32 will then enter the standby mode.

Note: IDLE_TIME can be adjusted (⏰ 6 minutes in Default).(Preset minimum IDLE time: 5 minutes)

4. System Parameters

Parameter	Explanation	Default	Adjustable range
T_Standby	Standby mode temerature	200°C	100°C~400°C
T_Work	Operating temperature	300°C	100°C~400°C
Wait_Time	Time from operation mode to sleep mode	180 seconds	60~9999 seconds
Idle_Time	Time from sleep mode to standby mode	360 seconds	300~9999 seconds
T_Step	When preset "1",each step will progress in 1,2,5,25; when preset 2-25, each step will progress according to settings	10	5-25
Turn_Off_v	When operation voltage is lower than default voltage Pro 32 will return to stadby mode	10V	9-12V
TempShowFlag	Temperature unit selection	°C	0 is °C, 1 is °F
ZeroP_Ad	Temperature calibration parameter, Pro 32 automatical adjustment		No manual setting required

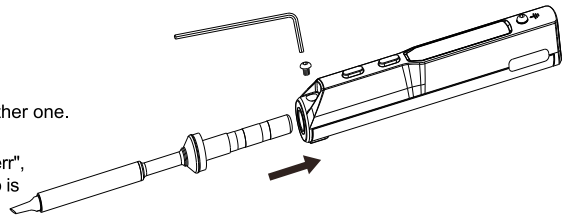
Notice: Preset parameter(s) will be updated to Pro 32 after saved.

Soldering Iron Tip

1. Changing Soldering Tips

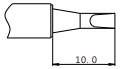
- Unplug Pro 32 before changing.
- Loosen the tip setscrew.
- Pull out the tip, replace with another one.
- Tighten the screw.

Note: When Pro 32 displays "sen-err", it means the soldering iron tip is not installed properly.

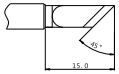


2. Choosing Soldering Iron Tips

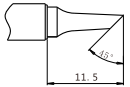
Note: Choosing the right tips will help you to work more efficient



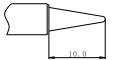
PR-D24



PR-K



PR-BC2



PR-B2

3. Soldering Iron Tip Maintenance

- Before switching off, wipe the tip's soldering side with some solder.
- Do not leave the tip in high temperature for long time, which may causeit burn out.
- Do not push too hard while soldering, which will damage the tip.
- Do not use rough material or files to clean the tip.
- If the tip surface is oxidized and makes it hard to apply solder on it, you may use 600~800 grit sandpaper to wipe the tip with Ethanol or Isopropyl alcohol, heat up to 200°C and apply solder immdeiately to avoid it oxidize again.
- Do not use Flux that contains high chlorine or acid, use only resin based flux.

4. Soldering Iron Tip Lifespan

Soldering iron tips lifespan is related to its maintenance and use intensity.

Trouble Shooting Guide

Problem 1:No Display	Check:If the cable is broken Check:Is there any data in USB mode Check:If the screen needs to be replaced

Problem 2: Every time when installing a new tip, the temperature status display random numbers	Means the machine is checking status, which is normal
Problem 3: Soldering iron restart automatically	Check 1:Is it properly plugged into the power source? Check 2:Is the voltage too low? (need to be set up in the config file)
Problem 4: Soldering iron is heating up and cooling down simultaneously	Check 1:Is the tip first time in use? Check 2:Is the power cord in loose or defective contact? Check 3:Is the tip overheating? Set the temperature in appropriate level Check 4:Is the soldering iron clean? refer to "Soldering iron tip maintenance"
Problem 5: OLED shows "Warning!"	Check 1: Is the Pro 32 overheating? Is Pro 32 temperature higher than the maximun operation temperature When temperature is lower than maximum operation temperature, the warning sign will disappear and it will return to operation mode

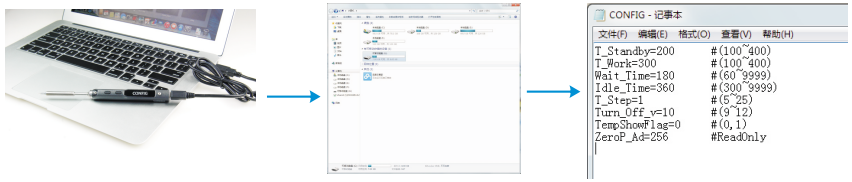
Problem 6:OLED displays"High-Vt"	Check:Is the voltage too high?(over 24V)
Problem 7:OLED displays "Sen-err"	Check 1:Is the soldering iron installed propely? Check 2:If check 1 passes, then replace the soldering iron tip
Problem 8: The tip doesn't stick to the solder	1.Tip temperature is over 400°C 2.The soldering side of the tip is not applied with solder properly 3.Lack of flux during operation 4.Rub the tip against dry or high sulfur sponge or fabric 5.Tip touched organic material like plastic,silicone oil or other chemicals 6.Using impure solder or solder that contains low proportion of tin
Problem 5: OLED shows "Warning!"	Checl:Is the voltage lower than default(10V) Wait until voltage recovers , it could work normally when the voltage is over 10V

Technical Support

1. Specific Parameter Intro

1 year of warranty will be provided for one year, if the damage was not caused by false manipulation by the user.Plesae contact your retailer for warranty detail Tips are consumables, once it's used, no replacement will be provided.

2. Default Parameter Setting



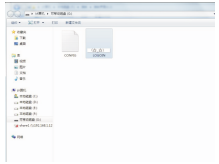
Connect Pro 32 to your PC with USB data cord, OLED will display "CONFIG" and means it's in setting mode. Open config.txt file from the USB drive, set the default parameters.

3. Firmware Update

- Visit www.miniware.com.cn and download the latest Pro 32 firmware to your PC.
- Connect Pro 32 to your PC with USB data cord,meanwhile,press Pro 32's Button A to enter DFU mode once a "DFU1.0" notice appears on the screen. A virtual disk with 8 serial numbers will appear on your PC.
- Copy the hex firmware to the root directory of that disk. When the extension of the firmware changes from "hex" to "rdy", disconnect USB and the firmware is upgraded.

4. Changing Boot Up Screen

Create your own 96*16 pixel image save as BMP in single color bitmap →



Copy the file to soldering iron's USB drive, change file name to "LOGOIN"

Legal State ments

1. Disposal

Do not dispose this product with domestic waste

Handling and recycle:Disposal of the product shall be manipulated according to laws and regulations in your area.

2. Statement of Fulfilling FCC Standard

This device fulfills part 15 of the FCC regulations Device must fulfill below 2 conditions:
a. Device must not generate interference
b. Device must be able to resist any interferences on it, including interferences that could cause dangerous manipulation

3. Statement of Fulfilling CE Standard

This is a trademark of Europe Union
This product with CE logo on it fulfills related Euro Union laws and regulations

Control Managerment

1. System status

```
25
26  u8 gCtrl_status = 1;
27  u16 gHt_flag = 0;
28  vs16 gTemp_data = 250;//25℃
```

CTRL.c ,Line 26

The global variable gCtrl_status represents the status, as defined in Line 26 of CTRL.c; it has 8 statuses, as follows: IDLE, THERMOMETER, TEMP_CTR (Temperature Control), WAIT, TEMP_SET (Temperature Setup), CONFIG (Configuration), MODE_CNG(Backup), and ALARM;

```
66  ********************************************
67  void Set_CtrlStatus(u8 status)
68  {
69      gCtrl_status = status;
70  }
```

CTRL.c ,Line 67

Switching status is achieved through the Set_CtrlStatus (U8 status) function;

```
56  ***********************************
57  u8 Get_CtrlStatus(void)
58  {
```

CTRL.c,Line 57

Reading of the present status is achieved through the Get_CtrlStatus (void) function.

2. Pro 32 status

By understanding of the status variable, and switching or reading the status functions, it is easy to switch between various statuses. The status control of Pro 32 is described in details as follows.

A. Initialized status

```
48      Clear_Screen();
49      Init_Gtime();
50      APP_Init();
51
```

Call this function at Line 50 of Main.c

```
114 ********************************************
115 void APP_Init(void)
116 {
117     int rev;
118
119     HEATING_TIMER = 0;   //initialize the timer
120     UI_TIMER = 0;   //initialize the timer
121
122     rev = Read_Vb(0); //read the voltage value
123     if(rev == 0)  Set_CtrlStatus(ALARM);//The voltage is too high voltage, enter the Alarm status
124     else if(rev >= 4) {//USB drive Configuration status
125         Set_LongKeyFlag(1);
126         Set_CtrlStatus(CONFIG);
127     } else {//The voltage is within the specified range, enter the normal initialized status
128         Set_CtrlStatus(IDLE);
129         G6_TIMER = device_info.idle_time;
130     }
131
132 }
133
134 /********************************************
```

UI.c,Line 115

```
201  返回参数: NULL
202  ************************************
203  void Status_Tran(void)//状态转换
204  {
```

After determining the initialized status, enter the status switching function: void Status_Tran (void)//Switching status is defined in Line 203 of CTRL.c, and consists of a switch, by different statuses, to different handling procedures.

CTRL.c ,Line 203

B. IDLE status

This status is the standby status and is displayed after powering on; when the voltage is too low, the system will return to the standby interface; after a period of dormancy, the system will go back to the standby interface .

```
211      case IDLE:
212          switch(Get_gKey()) {  //get keystoke
213          case KEY_V1: //short press button
214              if(gIs_restartkey != 1) {  //whether or not it is Soft Restart
215                  if(Read_Vb(1) < 4) {  //determine whether or not the voltage normal
216                  Set_CtrlStatus(TEMP_CTR); //set the temperature control status
217                  init_waitingtime    = 0; ///initialize the wait count
218                  TEMPSHOW_TIMER  = 0;//initialize the timer
219                  UI_TIMER = 0;
220                  G6_TIMER = 0;
```



```
221                  }
222              }
223              break;
224          case KEY_V2:  //single press B
225              if(gIs_restartkey != 1) {  //whether or not it is Soft Restart
226                  Set_CtrlStatus(THERMOMETER);//enter thermometer mode
227                  UI_TIMER = 0;
228                  Set_LongKeyFlag(1);//set the long press symbol
229              }
230              break;
231          case KEY_CN|KEY_V3: //AB press at the same time, no operation
232              break;
233          }
234          if(gIs_restartkey &&  (KD_TIMER == 0)) { //initialize the soft restart key status
235              gIs_restartkey = 0;
236              Set_gKey(NO_KEY);
237          }
238          if(Read_Vb(1) == 0){  //abnormal voltage
239              if(Get_UpdataFlag() == 1) Set_UpdataFlag(0);
240              Set_CtrlStatus(ALARM);  //enter the alarm status
241          }
242          if(gPre_status != WAIT && gPre_status != IDLE){ //screen saver, automatic black scre    en
243              G6_TIMER = device_info.idle_time;
244              Set_gKey(NO_KEY);
245              gPre_status = IDLE;
246          }
247          break;
```

C. TEMP_CTR status CTRL.c,Lines 248 to 309

Temperature Control status, a status in the process such as heating, cooling, and maintaining temperature: main operating status of the soldering iron.

```
285         }
286
287
288         mma_active = Get_MmaShift(); //get the sign showing whether the soldering iron is moving
289         if(mma_active == 0) {//soldering iron is waiting
290             if(init_waitingtime == 0) { //not waiting last time; initialize the time
291                 init_waitingtime     = 1;
292                 ENTER_WAIT_TIMER = device_info.wait_time;
293             }
294             if((init_waitingtime != 0) && (ENTER_WAIT_TIMER == 0)) { //the specified waiting time is up
295                 gHt_flag       = 0;
296                 UI_TIMER     = 0;
297                 Set_HeatingTime(0);
298                 Set_gKey(0);
299                 G6_TIMER = device_info.idle_time; //above are initialization-related signs and time
300                 Set_CtrlStatus(WAIT);
301             }
302         } else { //if the soldering iron moves, initialize the move sign
303             init_waitingtime = 0;
304         }
305         if(Get_AlarmType() > NORMAL_TEMP) { //alarm type is determined by the alarm status
306             if(Get_UpdataFlag() == 1) Set_UpdataFlag(0);
307             Set_CtrlStatus(ALARM); //enter the alarm status
308         }
309         break;
```


D. Wait status

CTRL.c ,Lines 310 to 353

After the system has been waiting for a period of time, it will enter sleep status; under sleep status, the temperature is the sleep temperature; if the sleep temperature is greater than the current temperature, the current temperature will be maintained as the sleep temperature.

```
310     case WAIT:
311         wk_temp = device_info.t_standby;
312         if(device_info.t_standby > device_info.t_work) {
313             wk_temp = device_info.t_work; //Sleep temperature is higher than the operating temperature, thus set the operating temperature as the sleep temperature
314         }
315         if(HEATING_TIMER == 0) {
316             gTemp_data     = Get_Temp(wk_temp);//get the current temperature
317             heat_timecnt  = Heating_Time(gTemp_data,wk_temp); //calculate the heating time according to the PID algorithm
318             Set_HeatingTime(heat_timecnt); //set the heating time
319             HEATING_TIMER = 30;
320         }
321
322         if(Read_Vb(1) >= 4) {//the voltage is too low; stop heating, and return to the standby interface
323             Set_HeatingTime(0);
324             Set_LongKeyFlag(0);
325             Set_CtrlStatus(IDLE);
326             G6_TIMER = device_info.idle_time;
327             gPre_status = WAIT;
328             gIs_restartkey = 1;
329             KD_TIMER = 50; // 2秒
330         }
331
332         if(G6_TIMER == 0) { //when the standby time arrives, enter standby
333             Set_HeatingTime(0);
334             Set_LongKeyFlag(0);
335             gIs_restartkey = 1;
336             KD_TIMER = 200; // 2秒
337             gPre_status = WAIT;
338             Set_CtrlStatus(IDLE); //return to standby
339         }
340
```

CTRL.c,Lines 310 to 353

After the system has been waiting for a period of time, it will enter sleep status; under sleep status, the temperature is the sleep temperature; if the sleep temperature is greater than the current temperature, the current temperature will be maintained as the sleep temperature.

```
341         mma_active = Get_MmaShift(); //read moving status of the soldering iron
342         if(mma_active == 1 || Get_gKey() != 0) {  //when the soldering iron is moving,
343             UI_TIMER       = 0;                   return to the temperature control status
344             G6_TIMER       = 0;
345             init_waitingtime = 0;
346             Set_CtrlStatus(TEMP_CTR); //return to the temperature control status
347         }
348
349         if(Get_AlarmType() > NORMAL_TEMP) {  //alarm type is determined by the alarm status
350             if(Get_UpdataFlag() == 1) Set_UpdataFlag(0);
351             Set_CtrlStatus(ALARM); //enter the alarm status
352         }
353         break;
```

E. TEMP_SET status CTRL.c ,Line 355

Temperature setup status is used to set up time; in temperature control status,long press any button to enter the Temperature setup status.

```
354     case TEMP_SET:
355         if(EFFECTIVE_KEY_TIMER == 0) {//when the time for temperature setup has been spent,
356             Set_CtrlStatus(TEMP_CTR); return to the temperature control status
357             TEMPSHOW_TIMER = 0;
358         }
359         break;
```



```
855 void Temp_SetProc(void)  Setup function is void Temp_SetProc (void);
856 {                          as defined in Line 855 of UI.c:
857     u8 theRoll_num = 3;
858     static u16 cont = 0;
859
860     if(device_info.t_step == 10)   cont = 1;  //Stepping increases with long press
861
862     if(EFFECTIVE_KEY_TIMER > 0) {
863         if(gCont != 0) { //setup interface comes out from the right to the left, only once
864             //设置界面从右往左出来
865             gCont = 0;
866             Set_LongKeyFlag(0);
867             Clear_Screen(); //refresh
868
869             Show_Set(); //display temperature
870         }
871         switch(Get_gKey()) {
872         case KEY_V1: //decrease, scroll down, and the present display disappears //the setup values appear
873             //增加,往下翻,当前的显示消失
874             //设置值出现
875             if(device_info.t_work > gSet_table[1]) { //greater than 100, setup can start
876                 gTempset_showctrl = 1;
877                 theRoll_num = Roll_Num(device_info.t_step,1);//calculate the setup value of the number
878                 while(Show_TempReverse(theRoll_num,16,1));//vertical scrolling      of rolling needed
879                 device_info.t_work = Calculation_TWork(1);//calculate the value after the reduction
880                 if(device_info.t_work < gSet_table[1]) device_info.t_work = gSet_table[1];
                    //if it is less than 100℃, set it to be 100℃
```

```
881                 gTempset_showctrl = 2;
882                 while(Show_TempReverse(theRoll_num,16,1)); //vertical scrolling
883                 Show_Triangle(1,0); //display key direction
884             }
885             if(device_info.t_work == gSet_table[1])  Show_Triangle(0,1);//show key direction
886             break;
887         case KEY_V2://increase, scroll up, and the present display disappears //the setup values appear
888             //减少,往上翻,当前的显示消失
889             //设置值出现
890             if(device_info.t_work < gSet_table[0]) {//the actual temperature is less than 400, and the
891                 gTempset_showctrl = 1;                                  temperature can increase
892                 theRoll_num = Roll_Num(device_info.t_step,0); //calculate the rolling character
893                 while(Show_TempReverse(theRoll_num,16,0)); //vertical scrolling
894                 device_info.t_work = Calculation_TWork(0);//calculate the value after the increase
895                 if(device_info.t_work > gSet_table[0]) device_info.t_work = gSet_table[0];
896                 gTempset_showctrl = 2;//if it is greater than 400 after the increase, set the value to 400
897                 while(Show_TempReverse(theRoll_num,16,0)); //vertical scrolling
898                 Show_Triangle(2,0); //show key direction
899             }
900
901             if(device_info.t_work == gSet_table[0])  Show_Triangle(0,2);//show key direction
902             break;
903         default:
904             break;
905     }
906     if(Get_gKey() > NO_KEY) { //calculation of the step length of increment
907         if(cont > 0 && EFFECTIVE_KEY_TIMER > 260) {
908             device_info.t_step = 10 +  cont * 50;
```



```
909             cont++;
910         }
911         EFFECTIVE_KEY_TIMER = 300;
912         Set_gKey(NO_KEY);
913     }
914     if(cont > 0 && EFFECTIVE_KEY_TIMER <= 260) {
915         device_info.t_step = 10;
916         cont = 1;
917     }
```

F. THERMOMETER status

CTRL.c ,Lines 360 to 390

The thermometer is of the thermocouple type; the resulting temperature is only a rough estimate, not very accurate.

```
360 case THERMOMETER:
361     if(KD_TIMER > 0) {
362         Set_gKey(NO_KEY);
363         break;
364     }
365     switch(Get_gKey()) { //determine the keystroke
366     case KEY_CN|KEY_V1:
367     case KEY_CN|KEY_V2: //return if it was a long press of any key
368         back_prestatus = 1;
369         break;
370     case KEY_CN|KEY_V3://temperature calibration
371         Zero_Calibration(); //0-point temperature calibration
372         if(Get_CalFlag() == 1) { //calibration succeeded, save the data
373             Disk_BuffInit();
374             Config_Analysis();//start the virtual USB drive
375         }
376         KD_TIMER = 200;
377         break;
378     default:
379         break;
380     }
381     if(back_prestatus == 1) { //long press any key to return to the standby stat
382         back_prestatus = 0;
383         Set_HeatingTime(0);
384         Set_CtrlStatus(IDLE);
385         gPre_status = THERMOMETER;
386         gIs_restartkey = 1;
387         Set_LongKeyFlag(0);
388         KD_TIMER = 50; //
389     }
390     break;
```

G. ALARM status

CTRL.c,Lines 392 to 419

The main function is to responds to the various alarm types.

```
392     switch(Get_AlarmType()) {  //alarm type
393     case HIGH_TEMP:
394     case SEN_ERR: //data about the soldering iron head can not be read
395         wk_temp      = device_info.t_work;
396         gTemp_data   = Get_Temp(wk_temp);
397         if(Get_AlarmType() == NORMAL_TEMP) {
398             Set_CtrlStatus(TEMP_CTR);
399             Set_UpdataFlag(0);
400         }
401         break;
402     case HIGH_VOLTAGE:
403     case LOW_VOLTAGE: 电压太低
404         if(Read_Vb(1) >= 1 && Read_Vb(1) <= 3) {//the voltage is normal; return to standby
405             Set_HeatingTime(0);                  status
406             Set_LongKeyFlag(0);
407             gIs_restartkey = 1;
408             UI_TIMER = 2; // 2秒
409             gPre_status = THERMOMETER;
410             Set_CtrlStatus(IDLE);
411         }
412         break;
413     }
414
415     if(Get_HeatingTime != 0) {
416         Set_HeatingTime(0) ;                          //马上停止加热
417         HEAT_OFF();
418     }
419     break;
```


3. Switching between the various statuses

A. Initialized status

```
123     if(rev == 0)  Set_CtrlStatus(ALARM);
```

UI.c, Line 123: Alarm status (ALARM) (high voltage)

```
126         Set_CtrlStatus(CONFIG);
```

UI.c, Line 126: USB drive configuration status (CONFIG) (voltage of 5V)

```
128         Set_CtrlStatus(IDLE);
```

UI.c, Line 128: Standby status (IDLE) (normal voltage)

Below is status switching from current status to other status.

B. Standby status (IDLE)

```
226                 Set_CtrlStatus(THERMOMETER);
```

CTRL.c, Line 226: Thermometer status (THERMOMETER) (press B key)

```
216                 Set_CtrlStatus(TEMP_CTR);
```

CTRL.c, Line 216: Temperature control status (TEMP_CTR) (press A key)

```
240             Set_CtrlStatus(ALARM);
```

CTRL.c, Line 240: Alarm status (ALARM) (errors in soldering iron head, voltage, temperature, etc.)

C. Temperature control status (TEMP_CTR)

CTRL.c, Line 253

```
253             Set_CtrlStatus(TEMP_SET);
```

Setup status (TEMP_SET) (long press any key)

CTRL.c, Line 307

```
307             Set_CtrlStatus(ALARM);
```

Alarm status (ALARM) (errors in soldering iron head, voltage, temperature, etc.)

CTRL.c, Line 300

```
300                 Set_CtrlStatus(WAIT);
```

Sleep status (WAIT) (waiting for a period of time)

CTRL.c, Lines 260 to 270

```
260             Set_CtrlStatus(IDLE);
261             gPre_status = TEMP_CTR;
262             gIs_restartkey = 1;
263             KD_TIMER = 50; //
264             break;
265         }
266
267         if(Read_Vb(1) >= 4) {
268             Set_HeatingTime(0);
269             Set_LongKeyFlag(0);
270             Set_CtrlStatus(IDLE);
```

Standby status (IDLE) (pressing two keys at the same time)

D. Sleep status (WAIT)

CTRL.c, Line 346

```
346             Set_CtrlStatus(TEMP_CTR);
```

Temperature control status (TEMP_CTR) (moving soldering iron)

CTRL.c, Line 251

```
251         case KEY_CN|KEY_V2:
```

Alarm status (ALARM) (errors in soldering iron head, voltage, temperature, etc.)

CTRL.c, Lines 325 to 338

```
325             Set_CtrlStatus(IDLE);
326             G6_TIMER = device_info.idle_time;
327             gPre_status = WAIT;
328             gIs_restartkey = 1;
329             KD_TIMER = 50; // 2秒
330         }
331
332         if(G6_TIMER == 0) { //进入待机
333             Set_HeatingTime(0);
334             Set_LongKeyFlag(0);
335             gIs_restartkey = 1;
336             KD_TIMER = 200; // 2秒
337             gPre_status = WAIT;
338             Set_CtrlStatus(IDLE);
```

Standby status (IDLE) (static through standby time)

E. Setup status (TEMP_SET)

CTRL.c, Line 356

```
356        Set_CtrlStatus(TEMP_CTR);
```

Temperature control status (TEMP_CTR) (No keystrokes for a few seconds)

F. Alarm status (ALARM)

CTRL.c, Line 410

```
410        Set_CtrlStatus(IDLE);
```

Standby status (IDLE) (after alarm is disarmed)

CTRL.c, Line 398

```
398        Set_CtrlStatus(TEMP_CTR);
```

Temperature control status (TEMP_CTR) (after alarm is disarmed)

G. Thermometer (THERMOMETER)

CTRL.c Line 384

```
384        Set_CtrlStatus(IDLE);
```

Standby status (IDLE) (long press any key)

H. Configuration status (CONFIG)

Enter the configuration file mode; it is not possible to switch to any other statuses.

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