KT-300D

Temperature Control Card

Date: Mar., 2020

Ver.: Ver.A (English)

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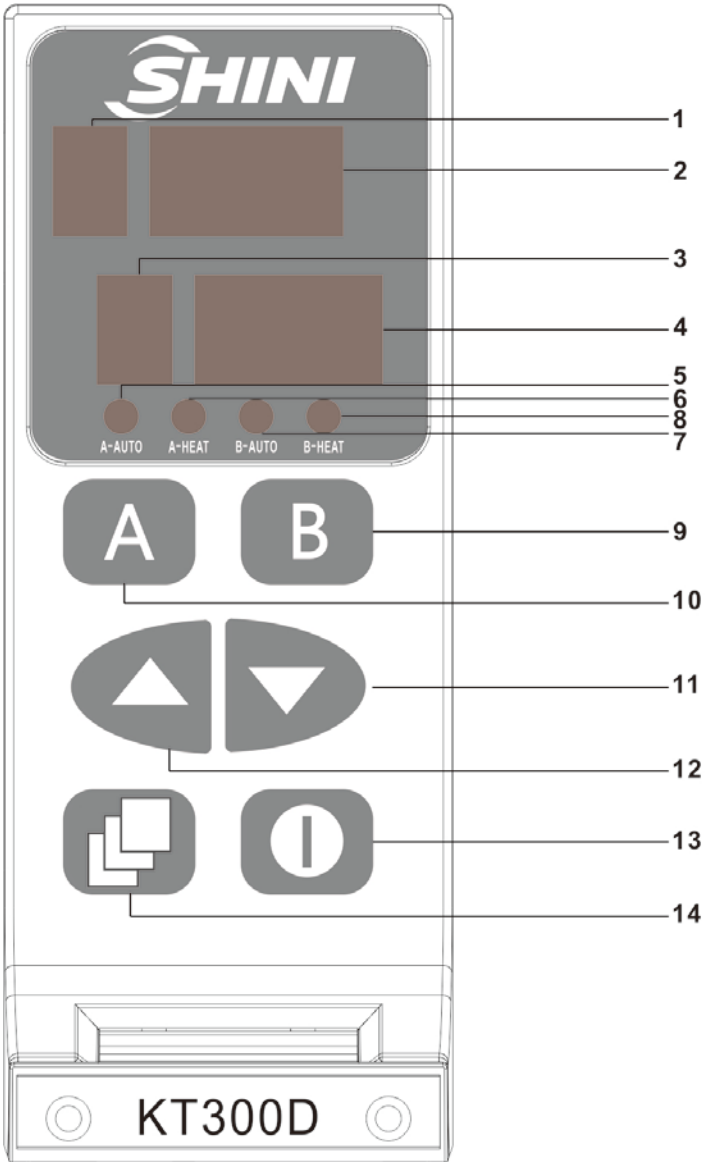

1. Zone 1code info.
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Picture 1-1: Panel Operation Instruction

2. Working Principle of the Temperature Control Box

Temperature control box is a device that can maintain constant temperature set by the customer, which mainly through internal microprocessor (MCU) to detect the temperature of heating elements. Then, it outputs appropriate proportional current value via the mcu processor, thus reaching the purpose of temperature control. The accuracy and stability of temperature control mainly depend on the following important factors:

1> Temperature measurement: sample period parameters, data filtering, circuit measuring, cold-end compensation, etc. to determine the temperature measurement accuracy;

2> OCR control: Output current proportion, relevant parameter's proportional, integral and differential time by adjusting;

3> PHA control: Control relevant parameter's proportional, integral and differential time through the phase angle.

4> Automatic adjustment: It can provide leading factors by analyzing the heating wire's capacitance and mold's thermal constant (has heating and cooling function), which helps to control the temperature accurately in any embient environment.

5> Output mode: Change according to the environment;

PWM(PHA) mode: It can reach accurate temperature control, but the power noise is greater that of SSR mode;

SSR (PID) mode: low current noise, but its temperature control ability is poor than that of PWM mode;

3. Temperature Control Box Meter Core Specification

1. Indoor use
2. Power input voltage: AC185V-245V,50/60HZ
3. Load: 15A,100W-3600W in each zone
4. Output type:PHA(phase shift pulse width regulation).OCR(solid state)
5. Temperature sensor type:J or K type temperature sensor
6. Temp. control range:50C-550C
7. Temp. stability:+0.5%
8. Temp. control type: FUZZY + PIDD artificial intelligence+ phase-shifting control
9. Automatic ambient temperature compensation of internal loop measurement
10. Soft start to eliminate mould leakage caused by moisture
11. F2,F3:250V-15A(Special fuse)
12. F1 :250-1A

4. Product Function Introduction

1> Adopt FUZZY PIDD control technology, and it can automatically suit any heating mode without setting PID parameters, greatly improving the working efficiency;

2> Adjust the parameters to select auto temp. compensation function that makes more accurate temperature value of the controller;

3> Temperature sensor error monitor;

The controller can detect the temperature sensor reverse direction and open circuit. When the temperature sensor fault is detected, the controller will act according to the error type and controller mode to automatically identify the temperature sensor and heater; There's alarm indication if there's wrong connection. The temperature sensor is protected with alarm indication;

4> Controller internal measurement broken loop detection;

5> Heater current monitoring;

6> Output disconnection inspection and output short circuit protection that protect temperature control card, and with alarm indication;

7> Temperature deviation error with and alarm indication;

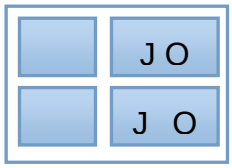
8> Manual power output mode;

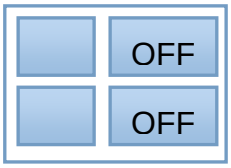
9> One-button standby function, one-button switch function;

10> Comprehensive error code output helps you find your problem easily;

5. Switch On/Off Operation

Turn on the power, and the screen initially displays the type of temperature sensor (J or K), and the unit of temperature (C or F), which displays OFF after 2s.





5.1 Zone 1 Startup

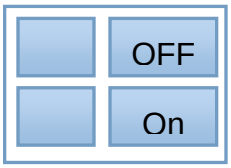
Press the button A for 3s, the upper screen displays ON, and zone 1 enters power on self-checking state (mainly to check whether the temperature sensor is open, reverse or failure; whether the heating wire is open or short

circuit; whether the silicon controlled is short circuit; and whether the protective tube is damaged;). When the self-checking is completed, the soft start is activated and corresponding zone 1 enters soft start state when the ambient temperature is less than 93 ℃. Otherwise it will enter the automatic state; If the self-checking is abnormal, the temperature control card will display the errors. Please refer to the error information table for the details;

5.2 Zone 2 Startup

Press the button 

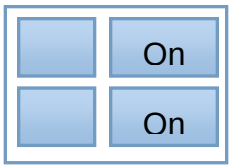
for 3s, the lower screen displays ON, and zone 2 enters power on self-checking state (mainly to check whether the temperature sensor is open, reverse or failure; whether the heating wire is open or short circuit; whether the silicon controlled is short circuit; and whether the protective tube is damaged;). When the self-checking is completed, the soft start is activated and corresponding zone 1 enters soft start state when the ambient temperature is less than 93 ℃. Otherwise it will enter the automatic state; If the self-checking is abnormal, the temperature control card will display the errors. Please refer to the error information table for the details;



5.3 Zone 1 and Zone 2 Synchronous Startup

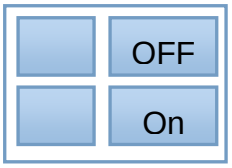
Press the key 
for 3s, and the upper and lower screens display ON, zone 1 and zone 2 enter the power on self-checking state synchronously (mainly to check whether the temperature sensor is open, reverse or failure; whether the heating wire is open or short circuit; whether the silicon controlled is short circuit; and whether the protective tube is damaged;). When the self-checking is completed, the soft start is activated and corresponding zone 1 and zone 2 enter soft start state when the ambient temperature is less than 93 ℃. Otherwise it will enter the automatic state. If the self-checking is abnormal, the temperature control card will display the errors. Please refer to the error

information table for the details;



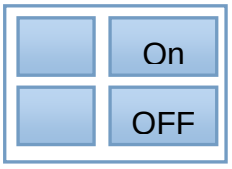
5.4 Zone 1 Shutdown

Zone 1 starts and displays the temperature, press key A for 3S, the upper screen displays OFF, zone 1 shuts down and stops working;



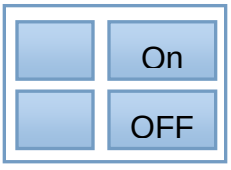
5.5 Zone 2 Shutdown

Zone 2 starts and displays the temperature, press key B for 3S, the upper screen displays OFF, zone 2 shuts down and stops working;



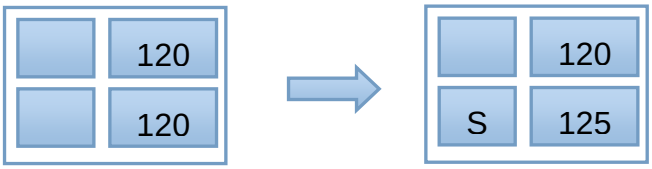
5.6 Zone 1 and Zone 2 Synchronous Shutdown

Press the button ⏻ for 3S, and the upper and lower screen display OFF, Zone 1 and Zone 2 shut down and stop working;

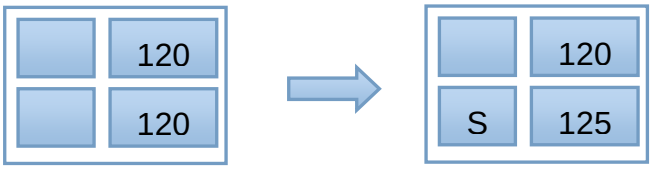


6. Operation Mode

>1Automatic mode: Under normal operation, the temperature can be set, which can be adjusted automatically to reach the set temperature. Zone 1 temperature setting in automatic mode: click or button to set required temperature, and click A button to enter temperature setting mode. At this time, the upper screen displays S and flashes. The value behind S is setting temperature value. Click or key to add or decrease the temperature value;

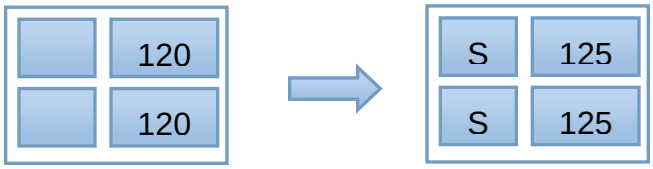


Zone 2's temperature setting in automatic mode: click or button to set required temperature, and click B button to enter temperature setting mode. At this time, the lower screen displays S and flashes. The value behind S is setting temperature value. Click or key to add or decrease the temperature value;



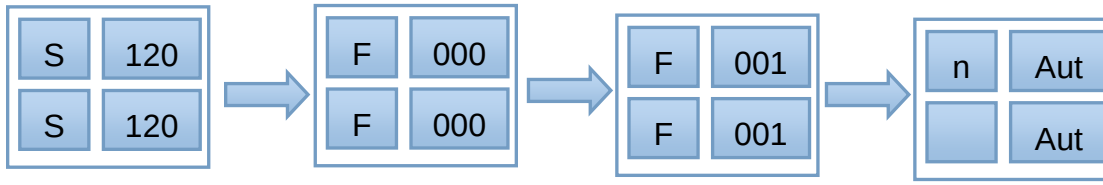
Zone 1 and zone 2's synchronous temperature setting in automatic mode: click or button to set required temperature, and click or button to enter temperature setting mode. At this time, the upper and

lower screens display S. The value behind S is setting temperature value. Click  or  key to add or decrease the temperature value;



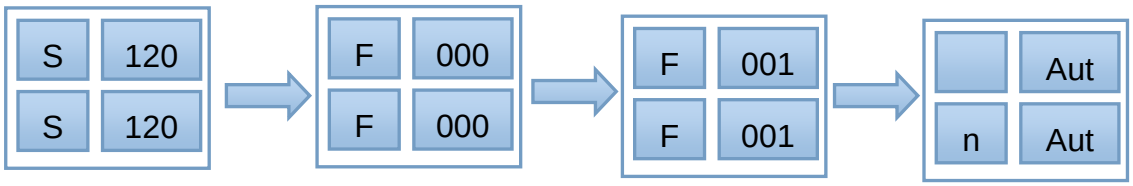
6.1 Working Mode Modification

Zone 1's working mode modification: Under normal working mode, click  button 5 times, and the screen displays F000. Then, click  button, the screen displays F001; press  and  button for 3S, the screen displays H30; Click  button 7 times, the screen displays nAut; Click  button, n flicks; Click  or  button to modify zone 1's working mode, which can shift between the auto mode (AUT), manual mode (Nan) and standby mode (STA) , and corresponding indicators will turn on.

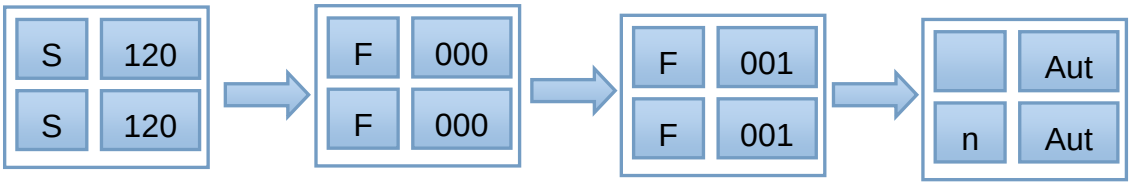


Zone 2's working mode modification: Under normal working mode, click  button 5 times, and the screen displays F000. Then, click  button, the screen displays F001; press  and  button for 3S, the screen displays H30; Click  button 7 times, the screen displays nAut; Click 

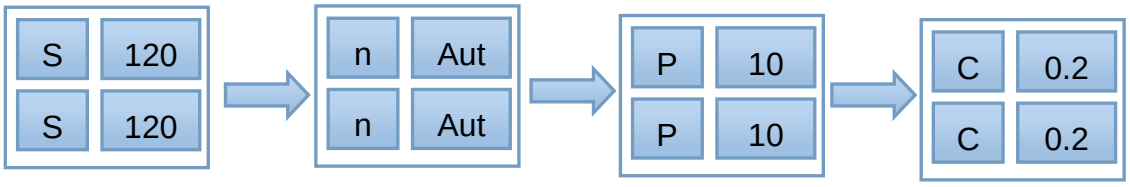
button, n flicks; Click or button to modify zone 2's working mode, which can shift between the auto mode (Aut), manual mode (Nan) and standby mode (StA) , and corresponding indicators will turn on.



Zone 1 and Zone 2's working mode modification: Under normal working mode, click button 5 times, and the screen displays F000. Then, click button, the screen displays F001; press A and B button for 3S, the screen displays H30; Click button 7 times, the screen displays nAut; Click or button to modify zone 1 and zone 2's working mode, which can shift between the auto mode (Aut), manual mode (Nan) and standby mode (StA) , and corresponding indicators will turn on.



Check the setting temperature, working mode, output current and output power of each zone: Check the set temperature, working mode, output current and output power of zone 1 and zone 2: click button to check the set temperature, working mode, output current and output power in turn.

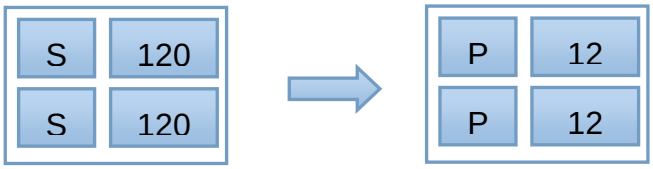


1> Manual Mode

In manual mode, click  3 times and the screen displays Pxx. Click  or  key to adjust the power output ratio in emergency situation.

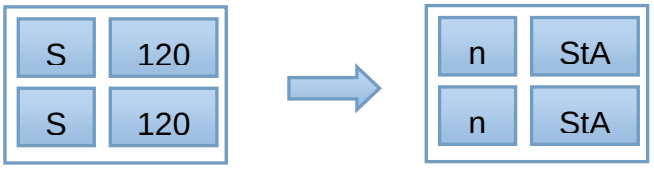
In the automatic mode, change it to manual mode as the working mode modification;

If the temperature sensor detects that the temperature sensor breaker or short circuit, it can be manually converted to manual mode in emergency situation;



2> Standby mode: If it needs to stop the production in certain period, adjust the output temperature to a specific value;

Convert it to standby mode as the working mode or press the  key and  key together for 3S to start one-button standby directly;



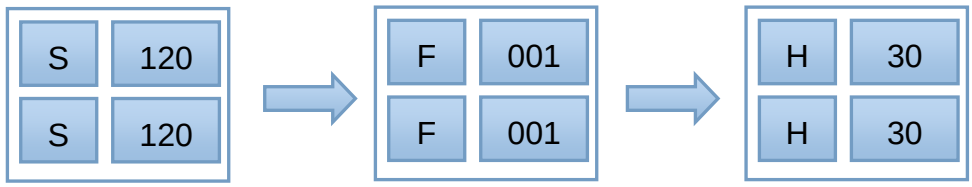
7. Parameter Setting

7.1 Parameter setting method

Under normal working mode, click  5 times, the screen displays F000;

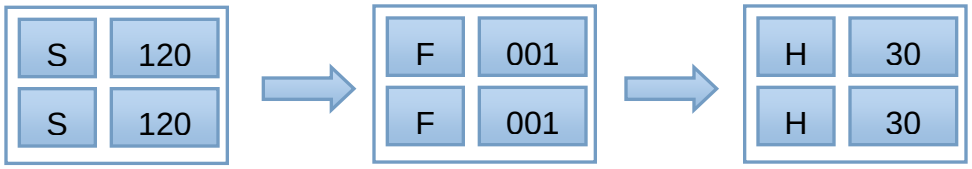
Then, click  button, the screen displays F001, and press  key and

B key for 3S, the screen displays H30 to enter parameter modification. Press key to exit parameter modification or press 5S to exit automatically;



7.1.1 >H（Upper limit deviation value）

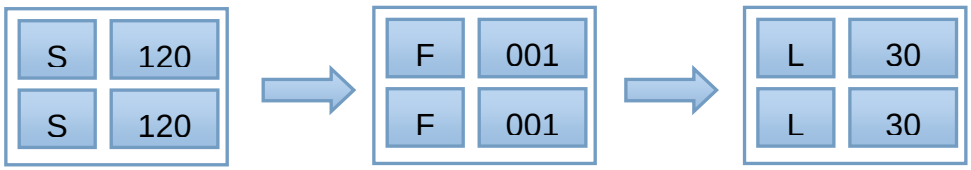
After setting the temperature, if the temp. is higher than set temp. value plus upper limit deviation value, the alarm will sound. Enter parameter setting, the screen displays H. Press or key together to modify the upper limit value. Click A key, H flickers on the upper screen. Press or key to modify the upper limit value of zone 1; Click B key, H flickers on the lower screen; Press or key to modify the upper limit value of zone 2, the deviation value can be set between 03-99 ℃, and the factory default is 30;



7.1.2 >L（Lower limit deviation value）

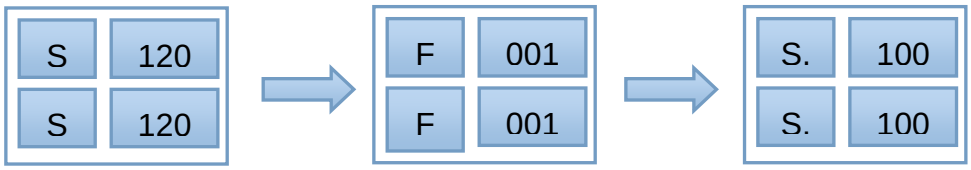
Enter parameter setting, the screen displays H. Click once, the screen displays L, and press or key together to modify the lower limit value of the zone 1 and zone 2; Click A key, L flickers on the upper screen.

Press or key to modify the lower limit value of zone 1; Click B key, L flickers on the lower screen; Press or key to modify the upper limit value of zone 2, the deviation value can be set between 03-99 ℃, and the factory default is 30;



7.1.3 >S（Standby Temperature Setting）

Enter parameter setting, the screen displays H. Click twice, the screen displays S, and press or key together to modify the standby temperature of the zone 1 and zone 2; Click A key, S flickers on the upper screen. Click or key to modify the standby temperature of zone 1; Click B key, S flickers on the lower screen; Press or key to modify the standby temperature of zone 2, the standby temperature can be set between 50-550 ℃, and the factory default is 100;

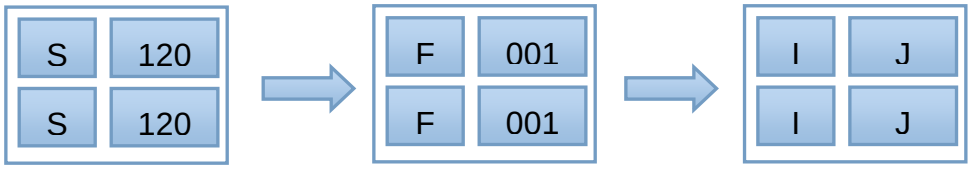


7.1.4 >i（Thermocouple type）

Enter parameter setting, the screen displays H. Click three times, the

screen displays i, and press or key together to modify J or K. Click A key, i flickers on the upper screen. Click B key, i flickers on the lower screen. Click or key to modify the thermocouple type of zone 2;

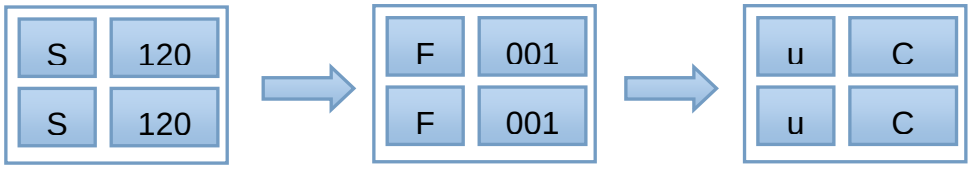
The thermocouple type is J or K;



7.1.5 >u（Temperature Unit）

Enter parameter setting, the screen displays H. Click four times, the screen displays u, and press or key together to modify the temperature unit of zone 1 and zone 2; Click A key, u flickers on the upper screen, and press or key to modify the temperature unit of zone 1; Click B key, u flickers on the lower screen. Click or key to modify the temperature unit of zone 2;

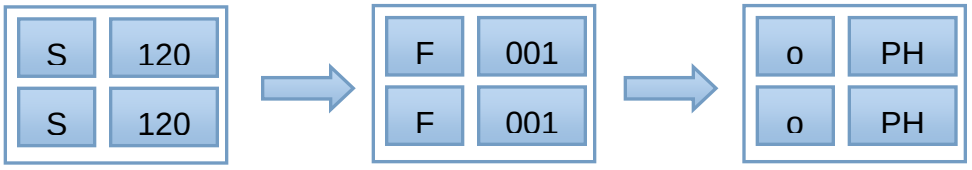
The temperature unit is ° C/℉;



7.1.6 >o（Output mode）

Enter parameter setting, the screen displays H. Click five times, the screen displays o, and press or key together to modify the output mode of zone 1 and zone 2; Click A key, o flickers on the upper screen, and press or key to modify the output mode of zone 1; Click B key, o flickers on the lower screen. Click or key to modify the output mode of zone 2;

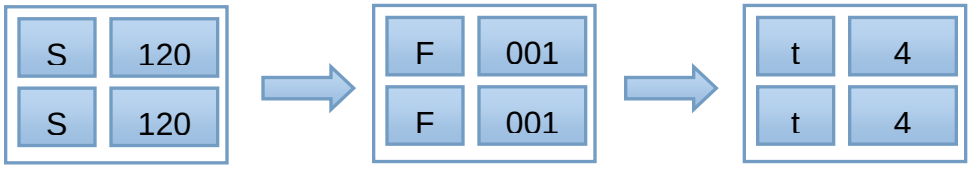
The output mode can be modified by the user is PHA (phase shift) or OCA (current), and the factory setting is PHA;



7.1.7 >t Soft start time setting

Enter parameter setting, the screen displays H. Click six times, the screen displays t, and press or key together to modify the soft start time of zone 1 and zone 2; Click A key, t flickers on the upper screen, and press or key to modify the soft start time of zone 1; Click B key, t

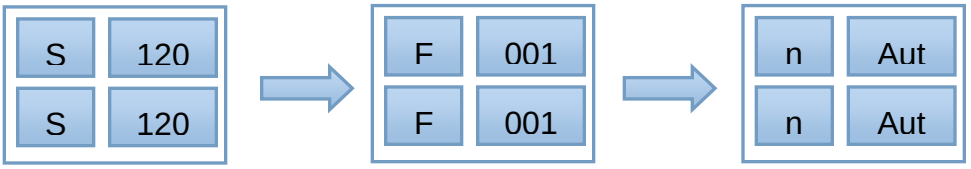
flickers on the lower screen, and click  or  key to modify the soft start time of zone 2;



7.1.8 >n Working mode setting

Enter parameter setting, the screen displays H. Click  seven times, the screen displays n, and press  or  key together to modify the working mode of zone 2; Click  key, n flickers on the upper screen, and press  or  key to modify the working mode of zone 1; Click  key, n flickers on the lower screen, and click  or  key to modify the working mode of zone 2;

Three working modes: auto mode (Aut), manual mode (Nan), standby mode (StA)



7.1.9 Error Table

Series No.	Errors	Description	Inspection Items
1	Otc	thermocouple open circuit	Use a multimeter to check whether the thermalcouple is open or not connected
2	Stc	thermocouple short circuit	Check whether the thermalcouple issqueezed.
3	Rtc	thermocouple reverse connected	Reconnect the thermocouple
4	Btc	thermocouple error	Check whether the heating wire and the thermocouple are connected wrongly
5	Otr	output open circuit	Use a multimeter to check whether the heating wire is open or fuse is broken
6	Str	output short circuit	Use a multimeter to check whether the heating wire is short circuilt

7.1.10 Factory Default Settings

No.	Menu	Set Value
1	Thermocouple model setting	J
2	Temperature unit setting	℃
3	Output mode	PHA
4	High temperature alarm	30℃
5	Low temperature alarm	-30℃
6	Soft start output time	4 mins.
7	Standby temp.	100℃
8	Set working temp.	120℃