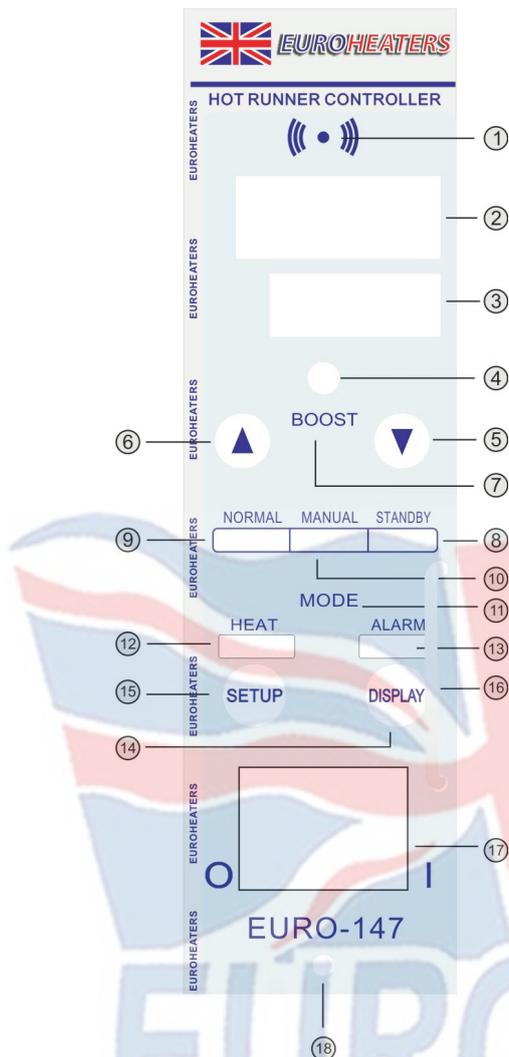


HOT RUNNER CARD DATA SHEET



- ① Buzzer
- ② To display the measured value PV, error codes and names of parameters
- ③ To display the set value SV, error codes and names of parameters
- ④ Thermal boost LED indicator
- ⑤ Temperature setup reduction key
- ⑥ Temperature setup increase key
- ⑦ Heating boost key
- ⑧ Standby mode LED indicator
- ⑨ Auto mode LED indicator
- ⑩ Manual mode LED indicator
- ⑪ Mode selection key
- ⑫ Hot wire heating LED indicator
- ⑬ Alarm LED indicator
- ⑭ Parameter display view key
- ⑮ Function selection key
- ⑯ Watch core handle
- ⑰ Power switch
- ⑱ Rivet

2. TEMPERATURE CONTROL PRINCIPLE OF TEMPERATURE-CONTROLLED CABINET

Temperature-controlled cabinet is a kind of device to keep the desired temperature constantly. It mainly detects the temperature of warming runner with the intelligent computer chip/ mobile control unit (MCU) inside the watch core, the intelligent computer will process the internal data and then output the current value in proper proportion so as to achieve the purpose of temperature control. The precision and stability of temperature control mainly depend on the following crucial factors:

1.- Temperature Measurement: The sampling period and parameters and data filtering treatment will determine the temperature; while the temperature compensation of metering circuit, etc. will determine the precision of temperature measurement;

2.-PID control: Via the output current proportion reflected by regulation and control, the relative parameters have the proportion phase, integral time and derivative time;

3.-PID control: Via the phase angle control, the relative parameters have the proportion integral time and derivative time;

4.-Self-regulation: To provide the functions of its leading factors by analyzing the condenser or hot wire and the thermal constant of dies, with latent hydraulic and exothermicity. So it can control temperature precisely however the environment varies.



5.-Output mode can vary as per the environment.

PWM (PIDD) mode: It can achieve the precise temperature control, however, the power noise is louder than that in SSR mode.

SSR (PID) mode: It can produce little current noise, but its ability of particular temperature control is worse than that in PWM mode.

3. WATCH CORE SPECIFICATIONS OF TEMPERATURE-CONTROLLED CABINET

- For indoors use:
 - Power input voltage: AC185V-245V, 50/60HZ, 15A
- Load: 15A, 100W-1650W;
- Output type: PWM (phase-shift pulse width modulation), SSR (solid state)
- Type of temperature detecting cable: J or K-type thermocouple
- Temperature control scope: 50C-550C
- Temperature stability: +0.5%
- Temperature control type: FUZZY+PIDD Artificial Intelligence + phase -shift control
- Automatic ambient temperature compensation of internal measuring loop
- Function of voltage input protection of watch core cable
- Function of hot wire protection
- Function of soft start to eliminate the die electric leakage caused by humidity
- F1, F2: 250V-15A (special fuse)
- F1A, F3: 250-1A

4. INTRODUCTION OF PRODUCT FUNCTION

- 1.- With FUZZY PIDD control technology and having not set PID parameters, it can automatically acclimatize it to any heating models and greatly improves the work capacity;
- 2.- 380 V input protection can present the controller from damaging by the wrong voltage input;
- 3.- With thermocouple protection function, this controller may automatically detect the hot wire and thermocouple so as to prevent the thermocouple from damaging by the wrong sensor input;
- 4.- With the function of hot wire output short protection, the controller will automatically close the output upon the short circuit of hot wire and loads to prevent the thermal runner system and controller from damaging;
- 5.- The function of automatic ambient temperature linearity compensation has enabled the temperature values of this controller more accurate;
- 6.- The automatic cooler end compensation of thermocouple can avoid the relative error caused by the variance of ambient temperature;
- 7.- Monitoring of the sensor errors:
The controller can detect the reverse and the open circuit of temperature sensor. Upon detecting the problems of sensors, the controller will operate according to the error types and modes of controller;
- 8.- Loop Break Detection of Measurement inside the Controller;
- 9.- Monitoring of heater current;
- 10.- Output Interruption Check;
- 11.- Ground Fault Detection Circuit;
- 12.- Temperature Deviation Alarms;



- 13.-Temperature BOOST Function);
- 14.- Manual power output mode;
- 15.- Software locking function;
- 16.- It supports collision-less transmission;
- 17.- The overall error message indication output enables you to find the current fault causes easily

5.- OPERATION MODE

5.1.- Automatic mode: Temperature may be set and it may be set automatically consistently with the set temperature in the normal operation modes.

- Setup display conversion: Press DISPLAY key, the set temperature display conversion is shown as below:

Set temperature]=>[output %]=>[Ampere A]=>[Set temperature]

- Temperature display conversion: Press SETUP key, The temperature display conversion of die will turn into the ambient temperature display:

[Die temperature=>[ambient temperature]=>[Die temperature;

- Temperature boost function: Press BOOST key for 15 seconds to increase the output by 20% and then it will resume to the normal temperature control output.
 - Temperature setup: The desired temperature values may be set via UP and DOWN keys.
 - Function lock: In any state of automatic mode, first click SETUP key and then DISPLAY key within 0.5 seconds to lock the functions; repeat the said steps to unlock functions;
- 1.- Successful lock: The display window on the panel will separately display LOCK, ON, then just press BOOST key and MODE key will disable the functions;
- 2.-Successful unlock: The display window on the panel will separately display LOCK, OFF, then just press SETUP key and DISPLAY key to enable the functions;

3.- Self-setting conversion of artificial intelligence and PID: In the normal operating state, just first press SETUP key, the display window on the panel will display AL-H, then press SETUP key for 6 times, the upper and lower display windows on the panel will separately display Ar, 2, press UP key, and the upper and lower display windows on the panel will separately display Ar,1 and it enters into PID self-setting mode; Press UP key again, the upper and lower display windows on the panel will separately display Ar,0 and the product will operate on the parameters saved after self-setting; press MODE key to return to the automatic mode (the default mode of product is artificial intelligence mode).

5.2.- Manual operation mode: Use UP and DOWN keys to regulate the power consumption output proportion randomly in time of emergency.

. In the automatic mode, press MODE key for 1 second to convert into manual mode.

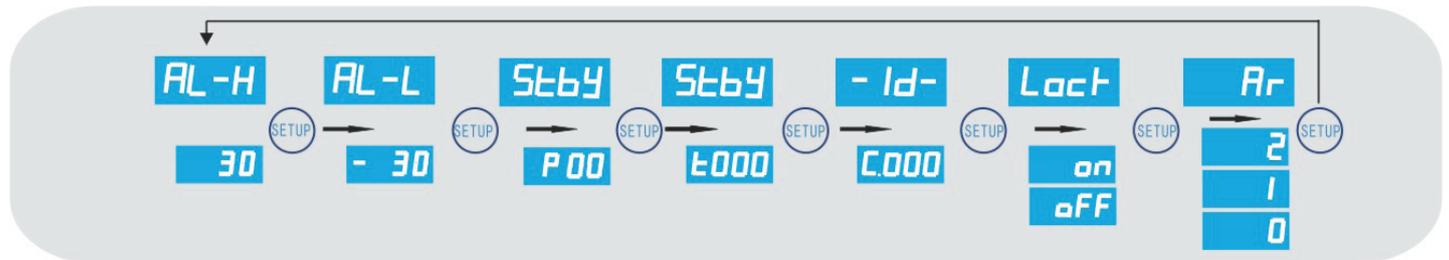
. If the sensor detects the breaking or short circuit of temperature detecting cable, it may automatically convert into manual mode in time of emergency.



5.3.- Standby mode: For cease production in the process and within the set time, just tune down the output power consumption to a certain special value.

- . In automatic mode, press MODE key twice, it will convert into standby mode for every 1 second.
- . In standby mode, change the temperature control into % (percentage 0-99) of the Set temperature in the automatic mode.
- . After standby state to the set time, the standby mode will automatically come into automatic mode

6 . BASIS SETTING MENU



- . UP and DOWN keys are used to modify the parameters.
- . Press MODE key for 1 second to return to the standby state.
- **6.1.- AL-H (Upper limit deviation temperature value)**
On the basis of set temperature, alarm will be activated if the temperature is higher than the upper limit deviation temperature value.

. Press SETUP key for 2 second, AL-H will appear on the upper display and the upper limit deviation temperature value will appear on the lower display.

. Press UP and DOWN key to set the upper limit deviation temperature value between 03-99 centigrade, the set value upon delivery is set as 30.

6.2.- AL-L (lower limit deviation temperature value)

On the basis of set temperature, alarm will be activated if the temperature is lower than the upper limit deviation temperature value.

. Press SETUP key for 2 second, AL-H will appear on the upper display;

. Press SETUP key for once, AL-L will appear on the upper display and the lower limit deviation temperature value will appear on the lower display.

. Press UP and DOWN key to set the lower limit deviation temperature value between (-99)- (-03) centigrade, the set value upon delivery is set as -30.

6.3- Standby setting

Standby temperature (P) setting

. Press SETUP key for 2 seconds till AL-H appears on the upper display;

. Press SETUP twice, Stdy will appear on the upper display, set temperature percentage (%) will appear on the lower display.

. Press UP and Down keys to set the values between 00-99%



Standby time (t) setting

- . Press SETUP key for 2 seconds till AL-H will appear on the upper display;
 - . Press SETUP key for three times, Stdy will appear on the upper display, Standby time will appear on the lower display.
 - . Press UP and Down keys to set the standby time between 1 second-9 hours and 59 minutes; if the standby time is set as 0, it indicates that it will stand by with limitless time till the user shifts to other operation modes, the value is set as 0 upon shipment.
- For example, set temperature (SV) as 300, standby time (t) as 1 hour, standby proportion (P) as 50%, the actual standby temperature is 150 centigrade.

6.4-ID CHANNEL (watch core address code)

This design is used for the overall monitoring of multiple temperature-controlled cabinets, the computer located in the monitoring room may use this ID to remotely control every watch core.

- . The integrated monitoring system shall be customized.
- . Press SETUP key for 2 seconds till AL-H will appear on the upper display.
- . Press SETUP key for 4 times, -ID-will appear on the upper display and at the same time, ID CHANNEL will appear on the lower display.
- . Press UP and DOWN keys, ID value may be set between 00-255, the value is set as 00 upon shipment.

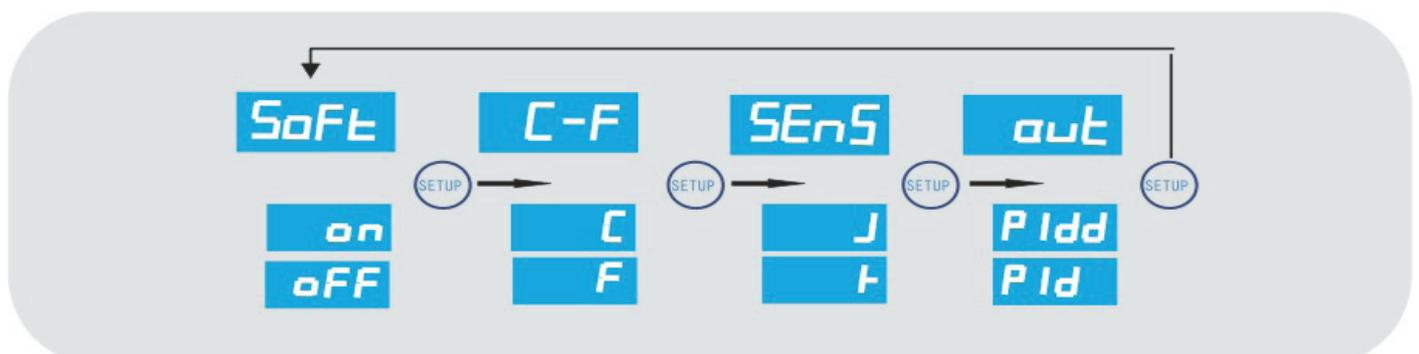
6.5.- LOCK (Function Menu Lock)

This function is mainly used for locking the function menu to prevent the parameters from incorrectly changed for the errors of users.

- . Press SETUP key for 2 seconds till AL-H will appear on the upper display.
- . Press SETUP key for 5 times, LOCK will appear on the upper display, at the same time, ON or OFF will appear on the lower display.
- . Press UP and DOWN keys to change the current values of LOCK status, the value is set as ON upon shipment.

7 FUNCTION SETTING MENU

Function Setting Menu icon setting must be completed under STANDBY status; namely 1 second for





- . In the meanwhile, press SETUP and MODE keys for 2 seconds.
- . SETUP is a key for menu selection, while UP and DOWN are keys for parameter modification.
- . Press MODE key for 1 second to return to standby state.
- . Setting must be completed when LOCK state is OFF.

7.1-SOFT (soft start setting)

Users are allowed to select the ON or OFF state of soft start;

. In the meanwhile, press SETUP and MODE keys for 2 seconds till SoFt appears on the upper display, N or OFF will appear on the lower display.

. Press UP and DOWN keys, select ON or OFF for soft start.

*Notes for soft start control:

7.1.1.- In ON of soft start state, the controller will operate the soft start when the startup temperature is lower than 93 Centigrade or 199.4 Fahrenheit.

7.1.2.- At the beginning, the controller will start to output 10% power consumption, then the soft start temperature will rise for an interval of every 10-60 seconds in the inverse ratio and the controller commences to automatically increase the output power consumption by 5%.

7.1.3.- In the course of soft start and upon the non-existence of electric leakage alarm message, the users may press BOOST key to exit from soft start state manually.

7.1.4.- In the course of normal operation of controller and upon the electric leakage of heater, the controller will automatically start up soft start to get rid of the electric leakage of hot wire caused by humidity; if electric leakage still exists after repeated soft start for 10 times, the controller will stop output till the trouble is removed;

7.2-Unit (temperature unit setting)

Users are allowed to select the unit used for temperature display;

. Press SETUP key for once, C-F appears on the upper display, C or F (temperature display unit) will appear on the lower display.

. Press UP and DOWN keys, then the types of temperature detecting cable may be changed into C for Centigrade or F for Fahrenheit.

7.3.-SENS (thermocouple type)

Users are allowed to select the type of temperature detecting cable used to measure the temperature of hot wire;

. Press SETUP twice, SEnS appears on the upper display, J type or K type (type of temperature detecting cable) will appear on the lower display

. Press UP and Down keys, the type of temperature detecting cable may be changed into J type or K type



7.4.-Out (to select output mode)

Users may select PIDD or PID output control mode according to the actual demands and requirements of clients.

.In the meanwhile, just press SETUP and MODE keys for 2 seconds till SoFt appears on the upperdisplay, ON or OFF will appear on the lower display. Press SETUP keys again twice, OUT appears onthe upper display, PID or PIDD (Output mode) will appear on the lower display.

. Press UP and DOWN keys, output mode may be changed into PID or PIDD.

Serial Number	Failure Sign	Failure Cause
1	TC OPEN	Sensor problem in open circuit
2	TC SHRT	Sensor problem in short circuit
3	TC REU	Anode and cathode of sensor problem are connected reversely
4	BAD TC	The hot wire and thermocouple are connected reversely
5	BAD SCR	Controllable silicon is damaged
6	HIGH VOL	Incorrect input voltage
7	BAD HEAT	Output in open circuit
8	OUT SHRT	Output in short circuit
9	ERR LPBR	Measurement loop break
10	ERR GFI	Error of electric leakage

EUROHEATERS



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