Temperature controller

INSTRUCTION MANUAL

Type:DXC-TC

Products features

- **Technic patent**
  a.Heater short protection
  b.Malposition of heater and thermocouple
  c.380V input protection
- **Auto- tuning+phase angle fired wiring, To control precisely**
- **Softstart function for smoothly start-ups**
- **Mold doctor(troubleshoot hot runner mold)**
- **All standard size design,1-12zones cabinet are available**

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Contest

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1. Items to check before using controller & operate procedure

- Check the wiring status of the connector attached to the mold and the type of T/C.
- Check if the power lines are separated from the T/C lines and they are arranged in order.
- Check if the trunk specification fits to the controller.
- Check connection and wiring state of the trunk..
- Check resistance and insulation state of the heater, then check if T/C wire is disconnected.
- After the mold is fixed at the injection machine, connect the mold cable.
- Check if the Power Switches of the Main & Units are off.
- If Input Voltage (240V/380V)fits to the controller voltage specification,connect Power Cable. (Input power voltage is noted on the label of the controller case. If the power input voltage does not fit to that written on the label, ask a territory office and correct the controller wiring. False wiring can cause malfunction of the controller and damage on the unit).
- Ensure grounding wire of the controller. failure to do this (green line) can cause damage to fuse and Triac due to noise voltage.
- Turn on the Main Power Switch first.
- Then, turn on the Unit Power switch.
- Set up the appropriate temperature.
- Check if the desired temperature is reached and stabilized.

CAUTION : To prevent possible malfunction of the temperature control modules, the cooling fan MUST OPERATE AT ALL TIMES.

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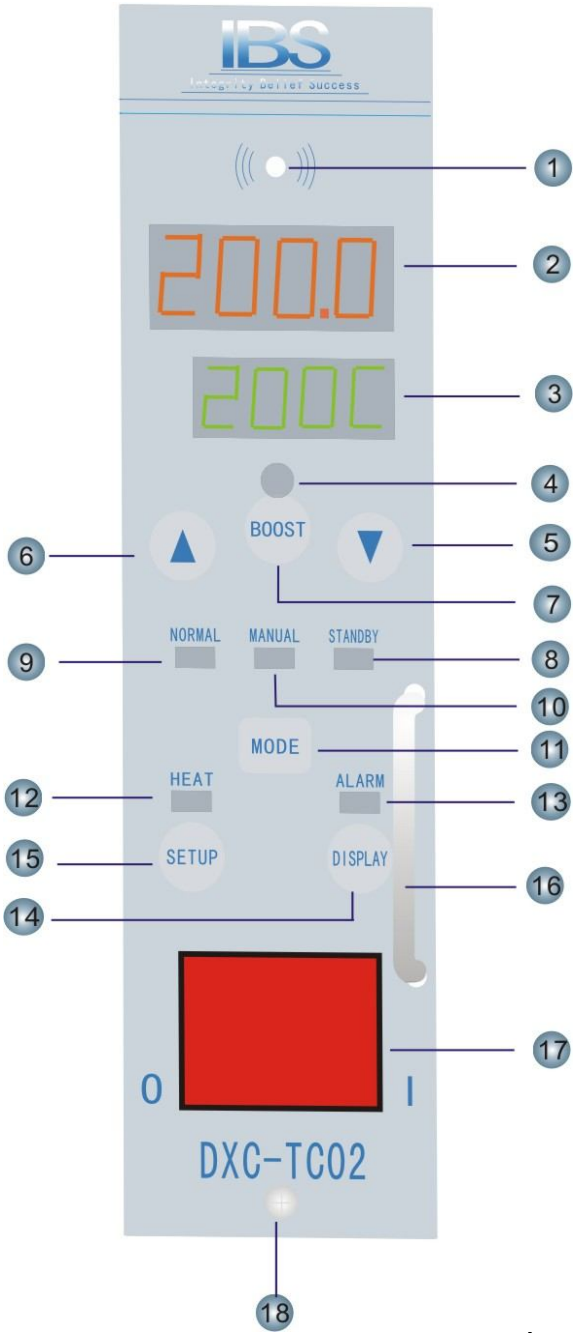
Panel description

- 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



3.Outline of Controller

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:

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

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4.Controller unit specification

- **For indoors use:**
- **Power input voltage: AC185V-245V, 50/60HZ, 15A**
- **Load: 15A, 100W-3650W;**
- **Output type: PWM (phase-shift pulse width modulation), SSR (solid state)**
- **Sensor Type: Thermocouple(J or K)**
- **Temperature control scope: 50℃-537 ℃**
- **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**

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FUNCTION DESCRIPTION

- 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;
- 380 V input protection can present the controller from damaging by the wrong voltage input;
- 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;
- With the function of heater 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;
- The function of automatic ambient temperature linearity compensation has enabled the temperature values of this controller more accurate;
- The automatic cooler end compensation of thermocouple can avoid the relative error caused by the variance of ambient temperature;
- 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.
- Loop Break Detection of Measurement inside the Controller;
- Monitoring of heater current;
- Output Interruption Check;
- Ground Fault Detection Circuit;
- Temperature Deviation Alarms;
- Temperature BOOST Function);
- Manual power output mode;
- Software locking function;
- It supports collision-less transmission;
- The overall error message indication output enables you to find the current fault causes easily

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OPERATION MODES

1.Auto mode: Normal operation mode in which the temperature is controlled and maintained automatically in accordance with the set degree

- **Set Disply conversion:**

  Press ***DISPLY*** set temperature display convert as below:

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

- **Temperature display conversion:**

  Press SET key, The mold temperature display convert to ambient temperature display:

  [Mold temperature]=>[ambient temperature]=>[Mold temperature]

- **Temperature BOOST function:**

  Press BOOST,the temperature output increase 20% for 15 secs,then recover to normal controlled temperature output.

- **Temperature set:**

  Press key ▲ and ▼ to set needed temperature value

- **Function lock:**

  In any time of Auto state,Press SET,then press DISPLAY in 0.5 sec,function will be locked.Repeat the steps,lock function released

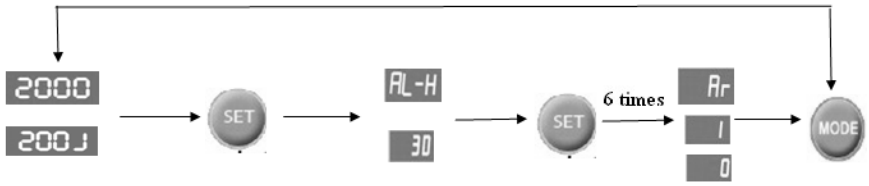
  Lock successful:

  Panel disply lock,on,then boost and mode loose function.

  unlock successful:

  Panel display lock,odd,then boost and mode function resume

  Auto tuning of AL and PID:



When enter to PID mode,the PV display TUN and shining,about 5-10 mins cannot operate.When modified to Ar,0.controller will work under the setted parameter.And press MODE back.

2.Manual mode:

Use ▲ and ▼ to regulate power output consumption percentage in emergency.

- In Auto Mode,press MODE for 1 sec to manual mode
- If sensor detects T/C open or TC short,Auto mode will convert to Manual mode

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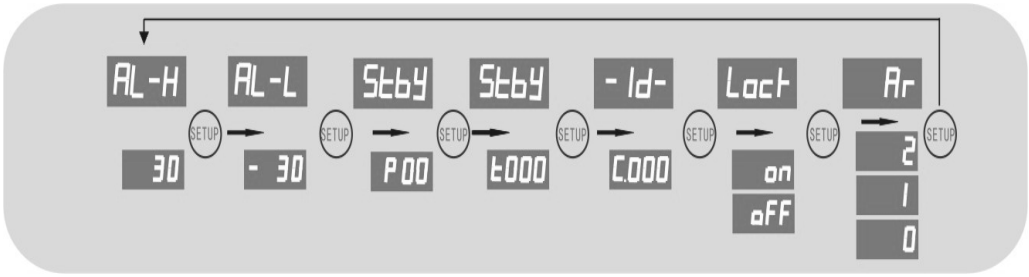
3.STBY MODE:

Reduce the Output Power to the Given Rate for the given time,When it is needed to stop production .

- In Auto mode,press MODE twice and each 1 secs convert to manual mode.
- Temperature setting value (SV) is changed into % rate on the basis of the Set Temperature during Stand-by mode is working.
- STAND-BY Mode will finish after the given time, and move into AUTO Mode

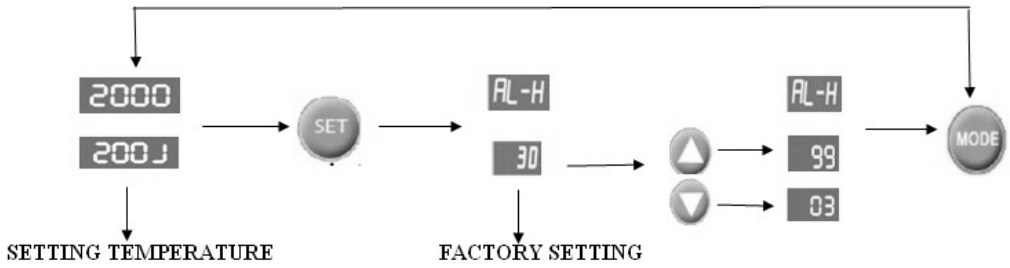
Menu Setting

•Basic setting menu



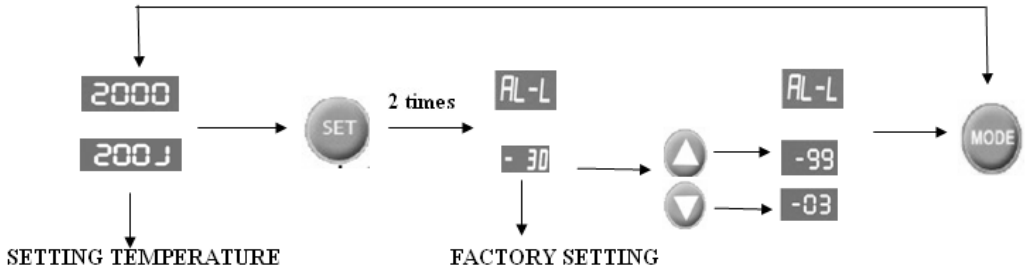
•1-1)AL-H(High alarm function)

•When temperature become higher than upper limited,AL-H function operate.The value range can be from 03-99,The process is like following:



1-2)AL-L(Low alarm function)

.When temperature become lower than lower limited,AL-L function operate.The value can be set through(-99)-(-03).



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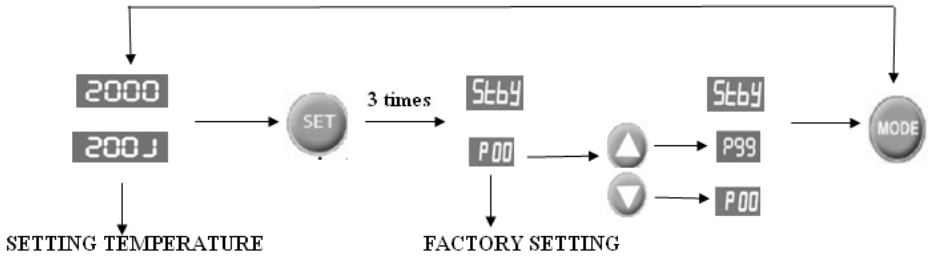
1-3)Standby setting

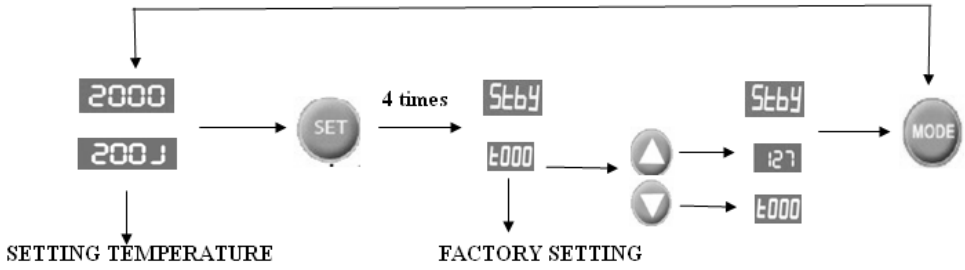
(1)Standby temperature(P)setting

The value can be set in the range of 00%-99% ,the process is like following:



(2) Standby time(t) setting

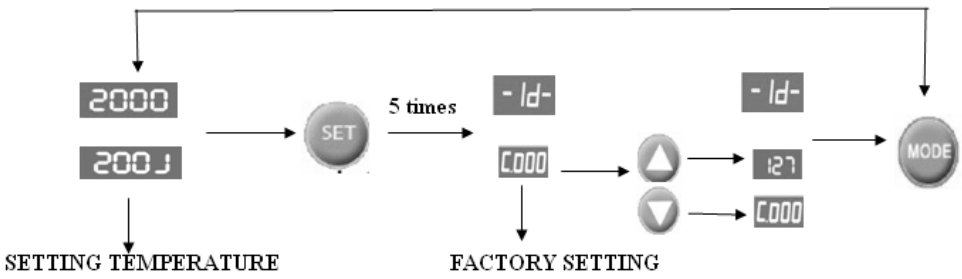
The process are like following:



FOR EXAMPLE:When setting temperature is 300,setting time is 1 hour,setting rate is 50%,the actual teperature will be 150 degree.

1-4)ID CHANEL(Watch core adress)

This design is for general control of multi zones,the monitor room computer can remote control the watch cores by the ID.(the general watching system need special design.)The process are like following:



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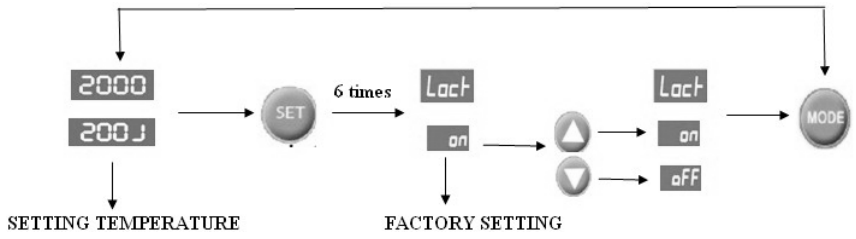
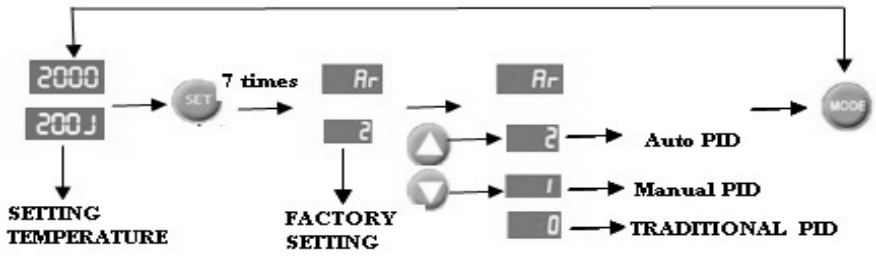
- **1-5)LOCK(Function menu lock)**

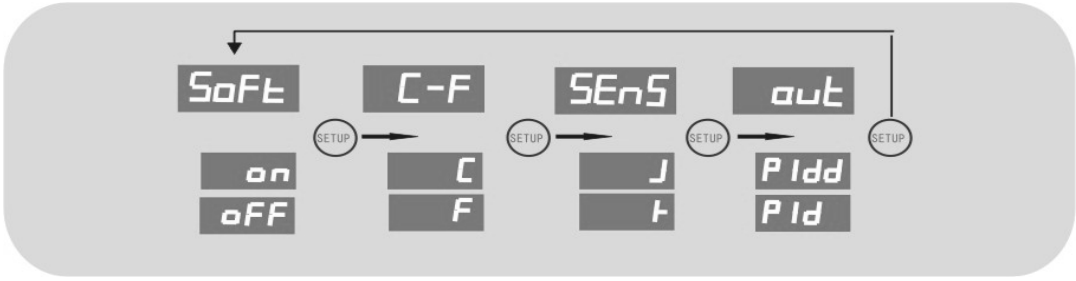
The function are mainly using on lock function menu to prevent wrong parameter convert from user's misplay



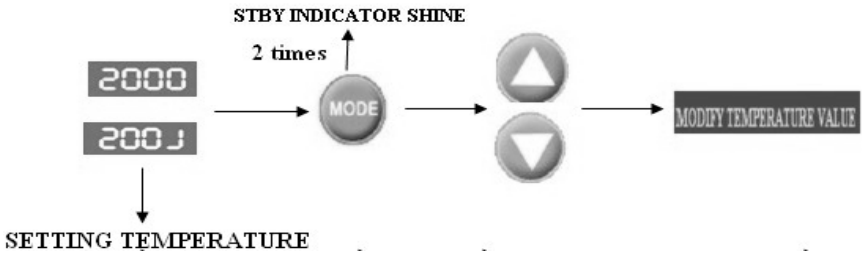
- **1-6)PID MODE SETTING**



Function Setting Menu



Menu setting must be under standy mode
Setting must LOCK off mode.



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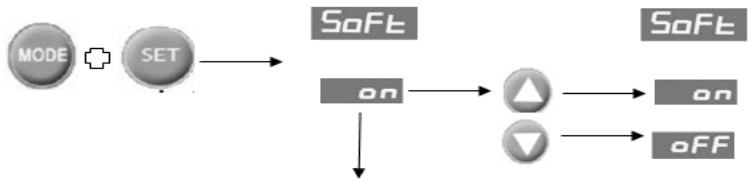
1-1). SoFt (Soft start setting)

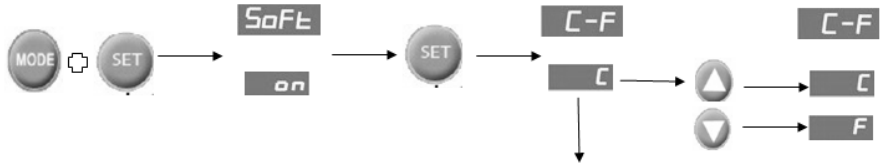


FACTORY SETTING

SoFt start control instruction:

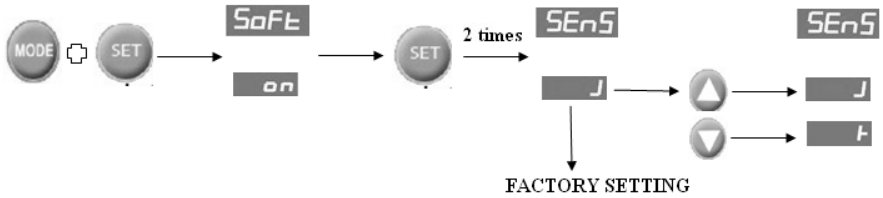
- Under state of SoFt ON mode,The startup temperature lower than 93℃ or 199.4℉,SoFt start operate.
- Cotroller start output 10% power consumption,then every 10-60 secs inverse ratio of the speed of soft temperature raising.the startup power consumption of the controller increase 5% automatically.
- During Soft start,if without creepage warm tips,Drop out SoFt through BOOST in MANUAL.
- When Controllers in normal operate,If creepage of heater,Controller will startup SoFt automatically to remove heater creepage by humid.

1-2). C-F (temperature unit setting)



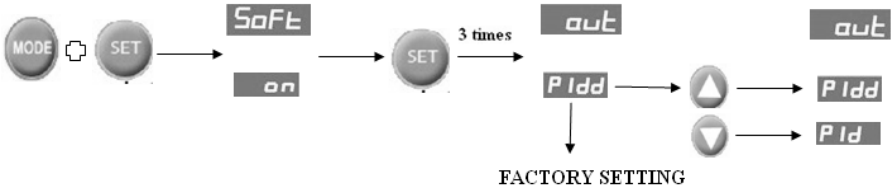
FACTORY SETTING

1-3).SENS(T/C type)



FACTORY SETTING

1-4).Output Mode



FACTORY SETTING

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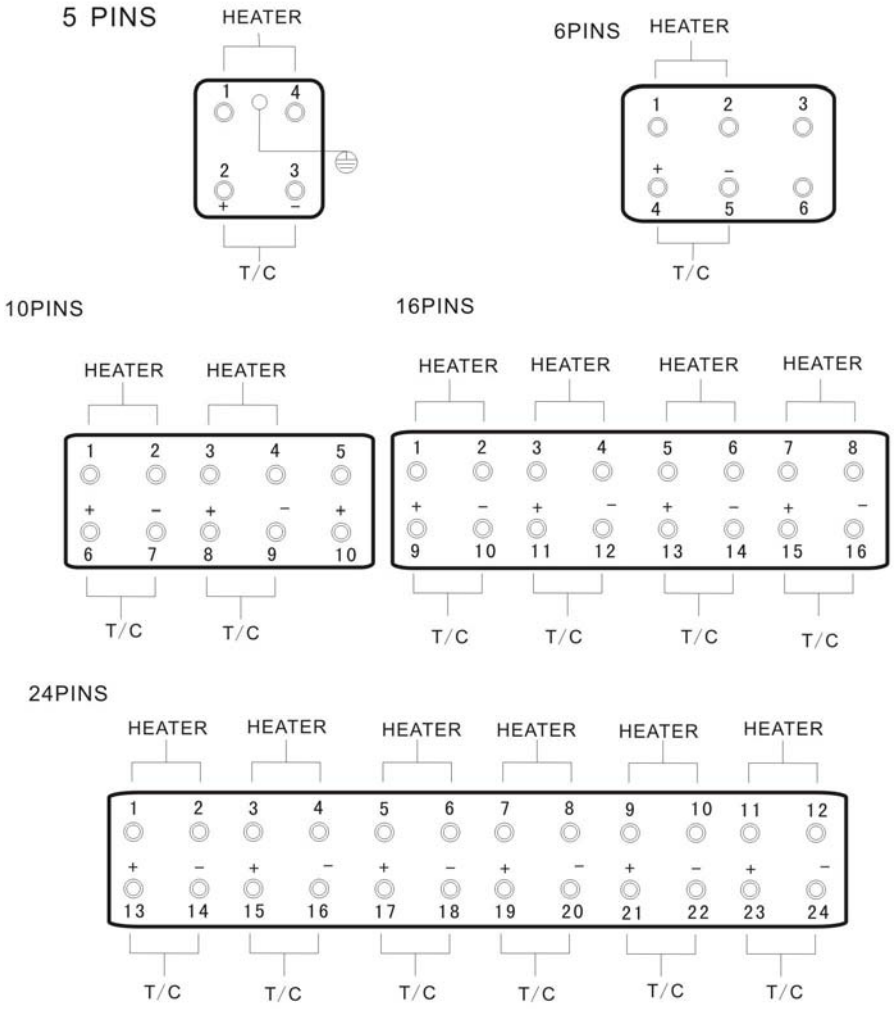
OUTPUT DIAGRAM

IBS WIRING DIAGRAM



WE CAN CUSTOMIZE ANY WIRING DIAGRAM
FOR ANY BRAND ACCORDING TO CUSTOMER' S NEEDS

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ERROR SIGNAL

No.	ERROR SIGNAL	DISCRIPTIONS	CHECK POINT
1	HIGH ouL	Wrong power supply	Check the wiring connection
2	out SHrt	Heater short	Check short circuit of heater of short in heater line with multimeter.
3	bAd tC	Reverse of T/C and heater	To correct connect in right position of Heater and T/C
4	HEAt oPEn	Heater disconnection	Check resistance of heater with multimeter. If break down,replace heater
5	tC oPEn	Sensor(T/C) disconnection	Check T/C with multimeter, When disconnecte,replace T/C
6	tC SHrt	T/C short	Check the connection of Thermocouple
7	tC rEu	Reverse of T/C	Check connection and change polarity of T/C at connector affactedto
8	bAd Scr	Triac break	Check pin in TRIAC 2 or 3 pins may short circuit
9	Err LPbr	Testing loop break	Need change the temperature card

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Factory setting table

No.	MENU	SETTING VALUE
1	SETTING TEMPERATURE	200C
2	AL-H	30C
3	AL-L	-30
4	STANDBY TEMPERATURE	P00
5	STANDBY TIME	T000
6	ID CHANNEL	C.000
7	LOCK	OFF
8	SOFTSTART	ON
9	TEMPERATURE UNIT	C
10	SENSOR TYPE	J
11	OUTPUT MODE	PIDD

----------END----------

- **THANKS FOR USING IBS CONTROLLING SYSTEM ! IF YOU HAVE ANY QUESTIONS ON OPERATION , PLEASE CONTACT WITH US!**

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