MAXTHERMO-GITTA GROUP CORPORATION

Hot Runner Temperature Controller

MC-550 Operation Manual

Version：1011040001

http://www.maxthermo.com

To avoid injury or damage caused by improper operation , please follow The instruction and keep the instrument in a ventilated place to ensure its' stability.

CONTENT

MC-550 Hot Runner Temperature Controller Module

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1 Features

- Auto Error Display Function
- Auto / Manual / Standby Control Mode
- Auto Tuning / Self Tuning
- Thermocouple J or K Type Options
- Deviation High & Low Alarm
- Temperature Range：100~400 ℃ / 212~752 ℉
- Soft Start Function
- DPID Control

2 Specification

- Power Supply：AC 85V~250V, 50/60Hz
- Load Current Rating (A)：15A, 1650W (110V), 3300W (220V)
- Output：Pulse Width Modulation (PWM)
- Main Input：Thermocouple K, J type
- Temperature Range：100~400 ℃ / 212~752 ℉
- Control Mode：DPID
- Accuracy：≦±0.5%F.S. ±1dig.
- Work Temperature：-10℃~50℃
- Work Humidity：10%~80%RH (non-condensing)
- Size：177 x 50 x 193 mm (L x W x H)
- Weight：about 470g

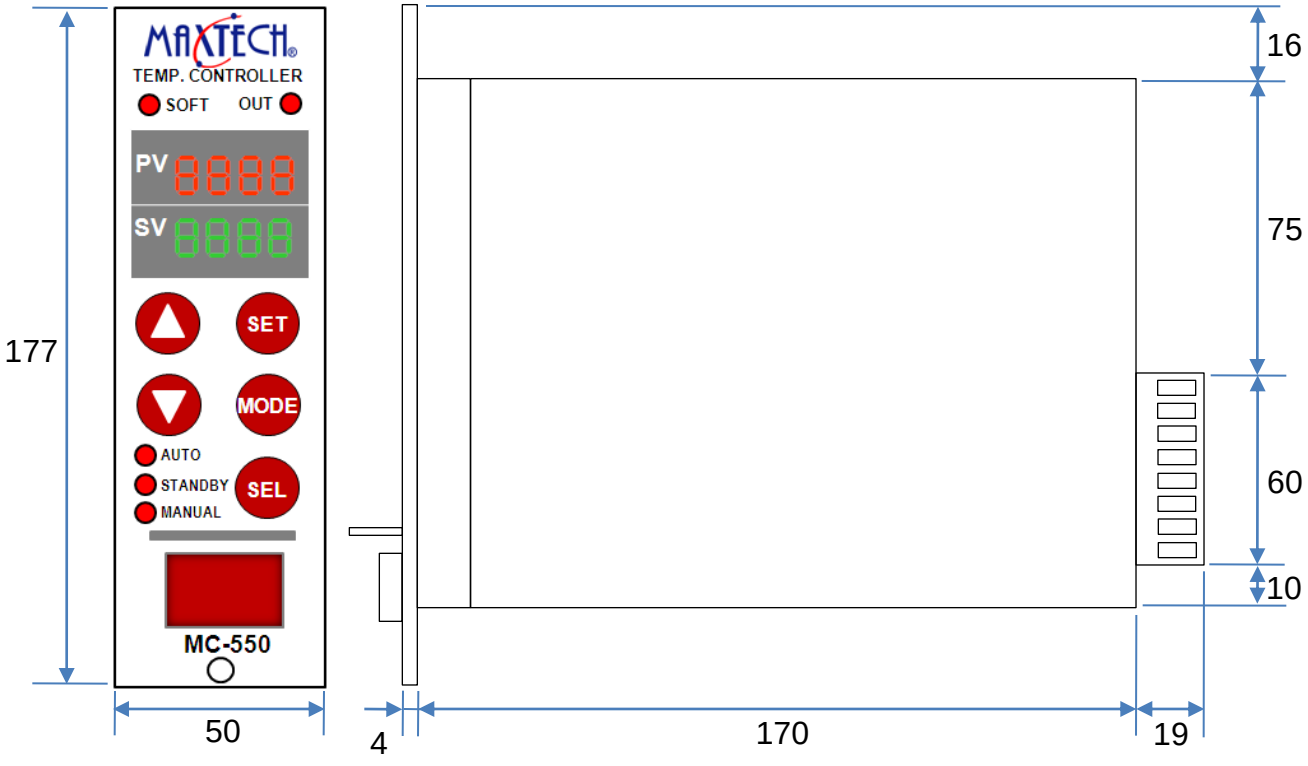
3 Panel

3-1 Panel Description

1.	SOFT	Soft Start Indicator (SOFT)： ‣ Continual “ON” is for performing soft function. ‣ Blinking per second is for performing DPID function. ‣ Blinking per 0.5 second is for performing auto tuning function.
2.	OUT	Output Indicator： “ON” is for performing output.
3.	PV	Present Value
4.	SV	Set Value
5.	UP	Increase Key
6.	SET	Set Key & Enter Key
7.	DOWN	Decrease Key
8.	MODE	Select Parameters
9.	AUTO	Auto Indicator
10.	SEL	SEL Key= Select Auto mode, Standby mode & Manual mode
11.	STANDBY	Standby Indicator
12.	MANUAL	Manual Indicator
13.	Module Handle	
14.	Module Power Switch	
15.	Module Screw	

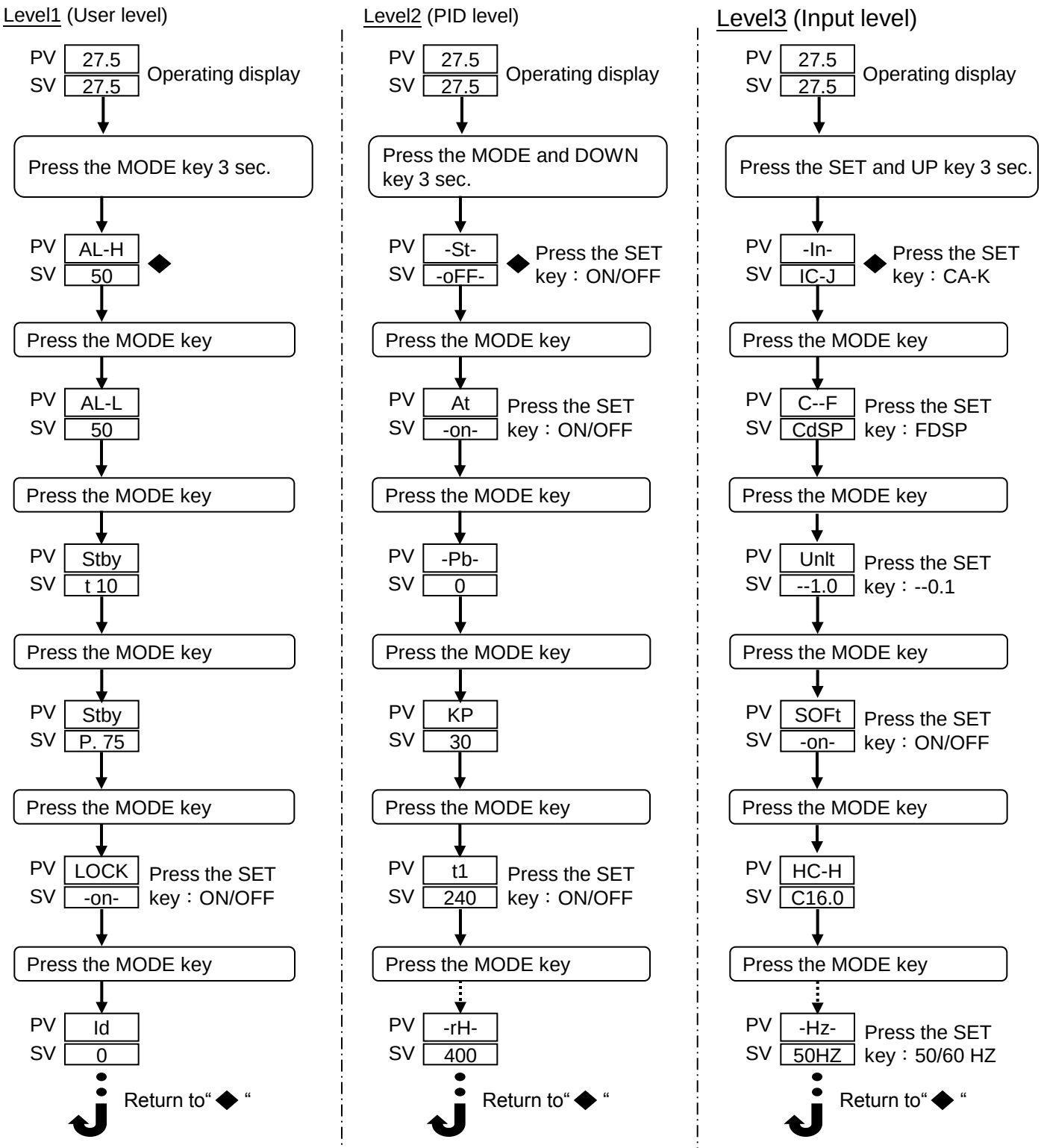
3-2 Panel Appearance & Dimension

Unit：mm



4 Operating Description

4-1 Parameter flow chart



4-2 Level Parameter Description

A. Level1 (User level)

Name		Range	Description	Ex-factory
AL-H	Deviation high alarm	0~50	When PV≧SV+(AL-H), SV display AL-H	50
AL-L	Deviation low alarm	-50~0	When PV≦SV-(AL-L), SV display AL-L	-50
Stby	Standby mode – time	1~999 min	Standby time setting	10
Stby	Standby mode – rate	0.00~0.99	The rate on the basis of SV can be set from 0.00~0.99 Ex. SV=200 , Stby=0.75 , Stby SV=150	0.75
LOCK	Function LOCK	ON / OFF	On : can't setting ; Off : can setting	Off
Id	ID Number	CH00~CH16	Communication address	CH00

B. Level2 (PID level)

Name		Range	Description	Ex-factory
ST	Self tuning	ON / OFF	Performing DPID tuning when power is " ON " (Under the status of Soft function " OFF ")	Off
At	Auto tuning	ON / OFF	On : Auto tuning function	On
Pb	PV offset	-100~100	When PV is not correct with SV, you can adjust this parameter with (+) or (-)	0
KP	Proportional band	0~400	-	30
tI	Integral time	0~9999	-	240
td	Derivative time	0~9999	-	60
Ar	Anti-reset windup	0~100	Setting range from 0~100 to limit integral	100
rAnP	Ramp	0~50	˚C / min. for soft start	20
FILt	Digital filter	0~255	-	200
oP.oU	Output percentage	0~100	When the sensor is broken or a short circuit happens，this shows the manual output percentage	50
rL	Low range setting	0~400	-	0
rH	High range setting	0~400	-	400

C. Level3 (Input level)

Name		Range	Description	Ex-factory
In	Input selection	K / J	Select the input range	J
C--F	Unit selection	˚C / ˚F	Range of setting : ˚C / ˚F	˚C
Unlt	Decimal point	1.0 / 0.1	Decimal setting	1.0
SOFT	Soft start	ON / OFF	On : Soft start (ST function : off)	On
HC-H	Load current high limit setting	0.0~16.0	When Load Current ≧ HC-H，SV Display=Ht.St and output off	16
HC-n	Load current low limit setting	0.0~16.0	When Load Current ≦ HC-n，SV Display=Ht.oP and output off	0.0
HZ	Output Hz selection	50Hz / 60Hz	Power frequency selection	50Hz

4-3 Control Modes

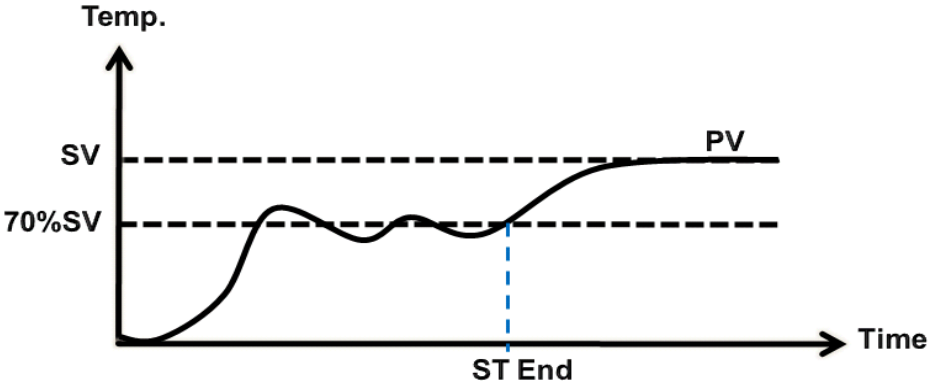
Press the SEL key for 3 seconds, the controller can be switched to the AUTO / STANBY / MANUAL modes.

AUTO Mode
- ※ Perform DPID function
- ※ Press the SET key to select SV value / Output percentage / Ampere.
- ※ Press MODE + SET key for 3 sec to start Auto Tuning function.

STANDBY Mode
- ※ When the STANDBY mode is working, the standby value of SV is required to set with corresponding " STANDBY time (stby-t)" and " STANDBY % (stby-p) ".
- ※ After the given STANDBY time, STANDBY Mode will return to AUTO Mode automatically.

MANUAL Mode
- ※ When MANUAL Mode is selected, it is able to change to MANUAL Mode automatically or by manual (When detecting a broken circuit of sensor).
- ※ Change the Output percentage by pressing ▲ or ▼ key.

4-4 Self Tuning Function



For example: When one user starts operating a new MC-550 Hot Runner Temp. Controller, and does not know how to set up Kp, tL, Td parameters, meanwhile, the mold temperature is PV < 70% SV. The ST function will be activated to process the auto tuning on Kp, tl, Td parameters and to implement DPID controlling.

Step 1: Press ▼ + MODE key for 3 sec to enter Level 2. (PV=ST)

Step 2: Press SET Key for setting ST=ON

Step 3: Press ▲ + SET key for 3 sec to enter Level 3. (PV=In)

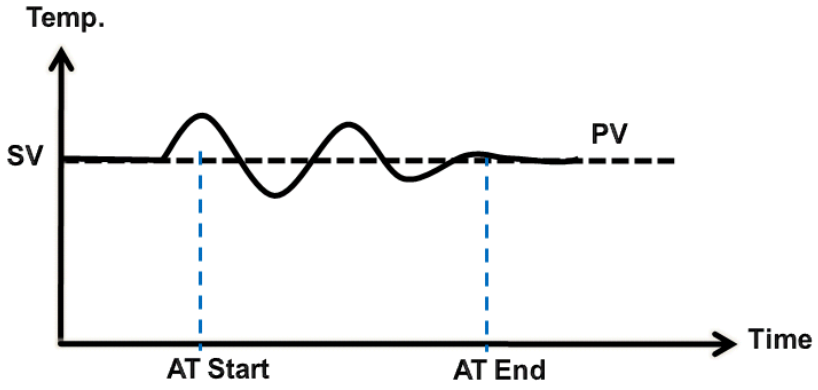
Step 4: Press MODE Key to find and set the parameter "SOFT = OFF"

Step 5: Press MODE key for 3 sec to retune.

Step 6: After the above 5 steps are done, please turn off the controllers and re-start the power. The controllers will automatically start "ST" function" in auto mode.

Step 7: When ST is processing, the "SOFT" light will flash per sec. When the "SOFT" light is off, the ST process is done.

4-5 Auto Tuning Function



For Example: If one MC-550 is out of control while the injection machine is working, the user can replace a new MC-550 on the machine. If after the replacement the control status is not as good as the previous MC-550 , it is recommended to activate the AT function. The controller will then practice auto tuning to set up Kp, tL , Td parameters and to implement DPID control.

Step 1: To make sure that in Auto Mode, there is no other function under working status.

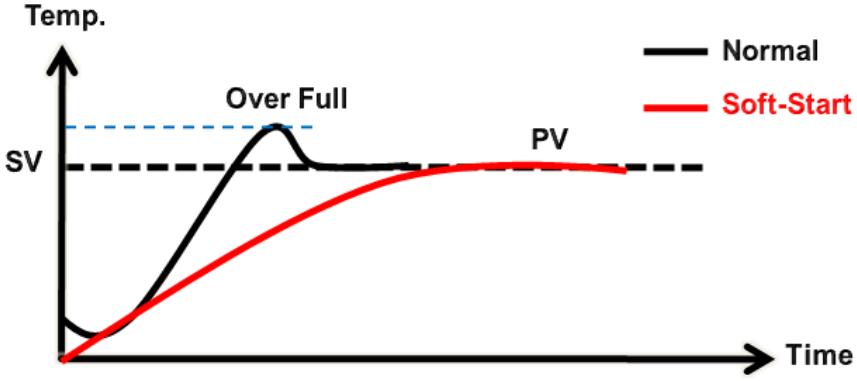
Step 2: Press ▼ + MODE key for 3 sec to enter Level 2 (PV=ST)

Step 3: Press MODE key to set the parameter “AT=ON”

Step 4: Press MODE key for 3 sec to return

Step 5: Press SET + MODE key for 3 sec till the “SOFT” light flash per 0.5 sec. When the “ SOFT “ light is off, the AT process is done.

4-6 Soft Start Function



For example: The Soft Start function is for setting the Ramp value to prevent the temperature from overshooting.

Step 1: Press ▲ + SET key for 3 sec to enter Level 3. (PV=In)

Step 2: Press MODE key to select “Soft” mode and set it to “on“

Step 3: Press ▼ + MODE key for 3 sec to enter Level 2. (PV=ST)

Step 4: Press SET key for setting ST=Off

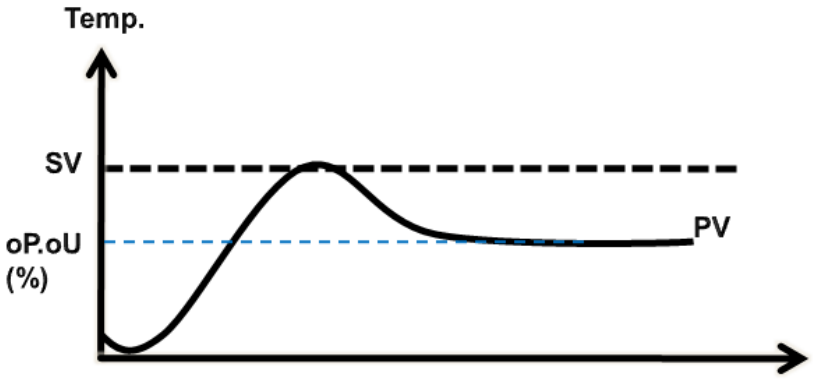
Step 5: Press MODE Key to set the parameter “rAnp”

Step 6: After the above steps are done, please turn off the controllers and re-start the power. The controllers will automatically start the soft start function in auto mode.

Step 7: When the soft start function is activated, the “Soft” light will be on continuously until the soft start process is done.

Remarks: To stop soft start function, please press ▲ or ▼ key for 3 sec.

4-7 Manual Function



For example: While a Thermocouple is broken on the machine, the controller will be switched to the Manual mode automatically . Before replacing a new thermocouple, please set up an output percentage value at discretion (according to the user's experience) to stabilize the output voltage for heaters. It can keep the mold in a stable temperature condition until the replacement process is completed.

(a) Manual Switch:

Step 1: Check whether the Auto Mode is off (judged by SOFT or AUTO light)

Step 2: Press SEL key for 3 sec to switch to the "Manual" mode. (PV=oP.oU)

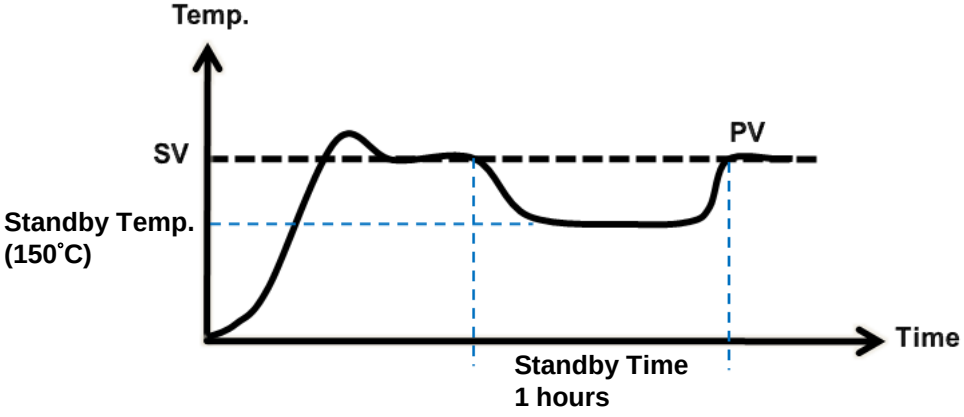
Step 3: Please adjust the demanded output percentage value by pressing ▲ or ▼ key

(b) Auto Switch:

Step 1: Set up your demanded output percentage. (oP.oU= 50 is pre-set ex-factory value.)

Step 2: When an input error happens, the controller will automatically be switched to the Manual model, and will control the output percentage according to the pre-set value.

4-8 Standby Function



For example: When the user is replacing a new mode on the machine , the STANDBY mode can be activated to prevent products from a deformed condition caused by a rapidly rising temperature.

Step 1: Press MODE key for 3 sec to enter Level 1. (PV= AL-H)

Step 2: Press MODE key to set the parameter Stby-t.

Step 3: Press MODE key again to set the parameter Stby-P

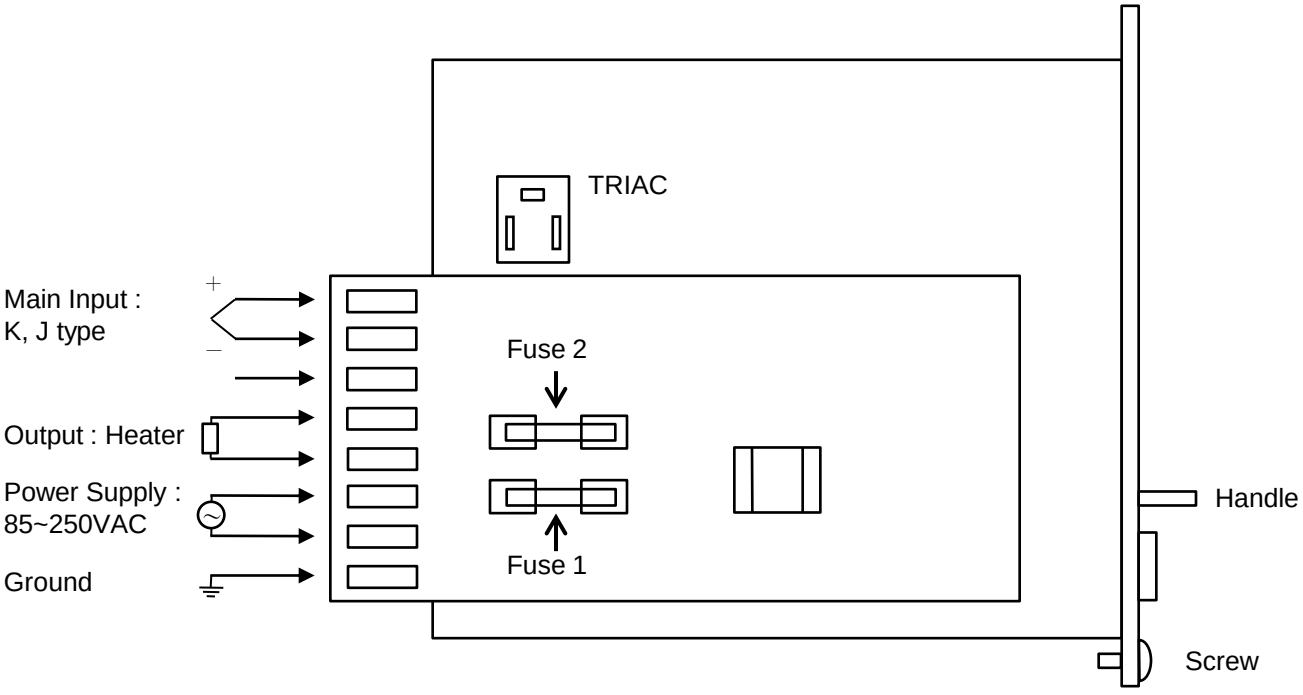
Step 4: After the above steps, please press MODE key for 3 sec to finalize the setting procedure.

Step 5: Press SEL key for 3 sec to switch to STANDBY mode.

4-9 Error Indication

No.	Parameter Display Code	Description	Solvent
1	tC . oP	Sensor open	Check wiring, change sensor
2	tC . rE	Sensor wiring opposite	Check wiring
3	AL-H	High alarm	Check sensor and heater, external wiring
4	AL-L	Low alarm	Check sensor and heater, external wiring
5	Ht . oP	Heater open	Check wiring, change heater
6	Ht . St	Heater short	Check wiring, change heater
7	FU-1	Fuse 1 broken	Change fuse 1 (250V 15A)
8	FU-2	Fuse 2 broken	Change fuse 2 (250V 15A)
9	Tr . St	Output short	Check wiring, change TRIAC

4-10 Wiring Diagram



5 Order Information

Model No.：MC-550