

METICOM CTI Series Temperature & Sequential Valve Gate Controller

User Guide



WARRANTY

We warrant that this product will be free from defects in materials and workmanship for a period of two (2) years from the date of shipment. If any such product proves defective during this warranty period, we, at our option, either will repair the defective product without charge for parts and labor or will provide a replacement in exchange for the defective product.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. We shall not be obligated to furnish service under this warranty; a) to repair damage resulting from attempts by personnel other than our representatives to repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

This warranty excludes replacement of fuses, triac, calibration, contact points and damage to the module from the use of improper styles of fuses. The maximum allowable fuse rating is 15 amps. Lower ratings may be used for improved protection.

SAFETY

Our products have been designed to be safe and simple to operate. As with any electronic equipment, you must observe standard safety procedures to protect both yourself and the equipment.

- Read all the instructions before connecting power and turning on the system.
- Service and installation of this equipment should only be performed by qualified service personnel familiar with high voltage electrical circuits.
- All international and local electrical codes must be followed when connecting this equipment.
- Only persons with knowledge of the system's operation and capabilities should operate the system.
- Unless specifically explained in this manual or directed by us, do not attempt to repair the system yourself. Doing so could result in damage to the system, or serious personal injury.
- Do not apply voltage to a terminal that exceeds the range specified for that terminal.
- Do not connect thermocouples to any live areas of the heaters. Lock out and tag the controller and mold and make sure there is electrical insulation between the thermocouple and any live areas.
- Do not operate this product from a power source that applies more than the voltages specified.
- Do not operate this product with covers or panels removed. All unused slots of a main frame must be covered with the appropriately sized blank panels.
- Do not operate this product when wet.
- Do not operate this product in an explosive atmosphere.

CAUTION

- When turning on the system, you should turn on all circuit breakers before powering on the HMI. You may experience communication issues if you do not follow this sequence.
- After turning on the system ensure the fans are running.
- Never allow the fan inlets or outlets on the unit become blocked. If these become blocked insufficient airflow can cause damage to the system.
- When switching off the system, you must wait 30 seconds before switching on. You may experience communication issues if you do not follow this sequence.

Chapter 1 Introduction

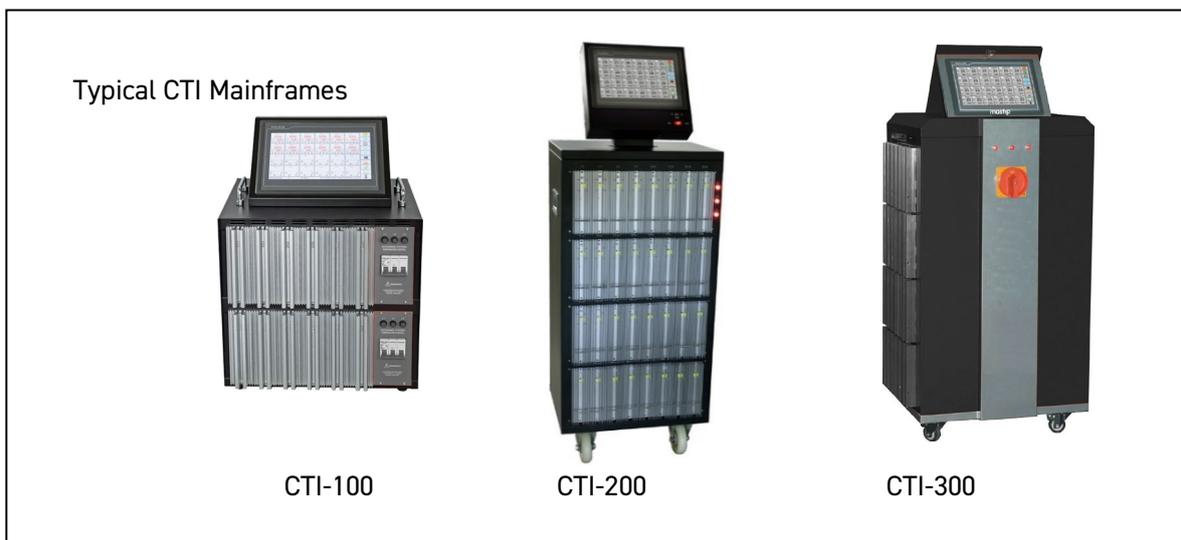
1.1 CTI Series Mainframe Configuration

The CTI controller series is made up of 3 different models of mainframes depending on the number of zones required. These are referred to as CTI-100, CTI-200, and CTI-300.

All the mainframes utilize the same temperature control module CTI-M2, and the same sequential valve gate control module CTI-V2.

Access to all user serviceable parts, such as fuses, are done through the front of the controller by loosening the upper and lower screws on each heat sink and removing the modules.

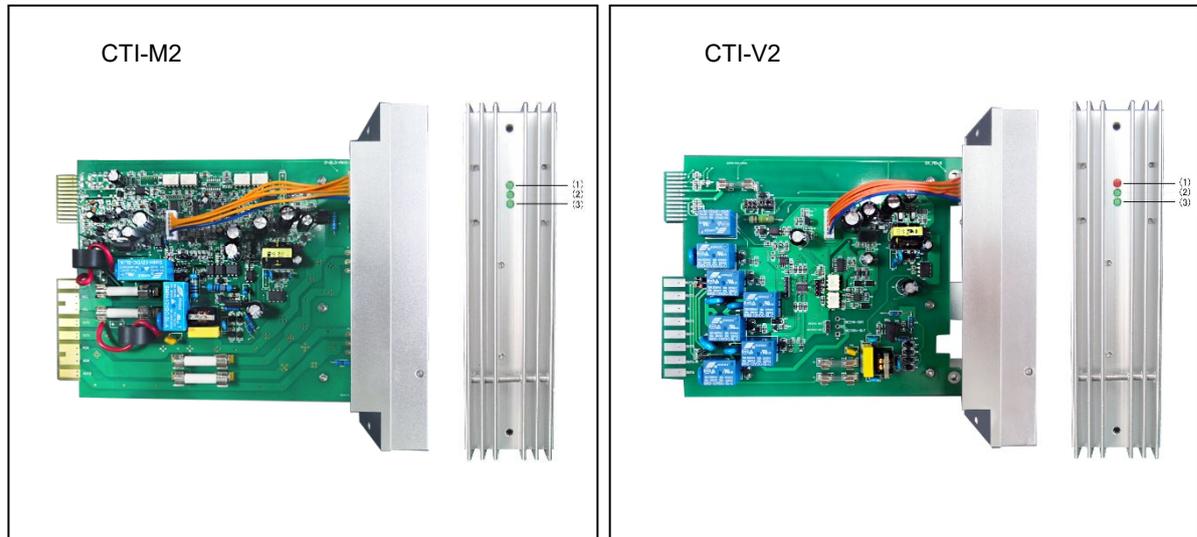
The connectors for the mold-power and thermocouple cables, and the connectors for valve gate control cables, are located at the rear of the mainframe.



1.2 Control Modules

The mainframes are available with 2 styles of control modules depending on requirements. The modules are fully interchangeable across all mainframe designs. The externally mounted heat sink and integrated design reduce maintenance cost and downtime.

Each CTI-M2 temperature control module comes standard with two zones at 15amps per zone. Each CTI-V2 sequential valve gate control module can control up to six valve gates each module. One or more power control modules are also required to supply power requirements to the system solenoid valves. The position and quantity of power control modules and valve gate control modules in the mainframe are configured depending on the initial specification request, and are fixed to the specific slot position.



- (1) Power indicator: **green** light when powered on.
- (2)&(3) Zone A & Zone B status indicator:
green – stop; **red** – running;
 blink fast – communicating with HMI;
green / red alternately: alarm

- (1) Power indicator.
- (2) Injection signal indicator.

1.3 Specifications

Model	CTI-100	CTI-200	CTI-300
User Interface	Full color LCD touch screen		
Display Size	7.0" / 10.2"	10.2"	
Max. Total Zones	32	80	120
Max. Temp. Zones	32	80	120
Max. Sequential Zones	24	24	
Power Supply	3-Ph+E (4 wire) 200-240Vac		
	3-Ph+N+E (5 wire) 380-415Vac		
Working Conditions	0~55°C (32~131°F), 10~80%RH (No condensing)		
Storage Conditions	-20~70°C (-4~158°F), 10~80%RH (No condensing)		
Temperature Control			

Control Mode	Auto-PID / Manual	Measurement Range	0~500°C (32~932°F)
Output Control	Zero Cross / Phase Angle	Setting Range	0~450°C (32~842°F)
Thermocouple	J or K-Type, software selectable	Temperature Unit	°F or °C, software selectable
Calibration Accuracy	±0.25% FS	Control Stability	±1 digit under steady state
Load Capacity	Rated 240Vac, 15A/zone	Overload Protection	Fuses on both heater legs
TC Connector	Various options available	Soft-Start	Uses low voltage for heater dehumidification
Mold Power Connector	Various options available		
Sequential Valve Gate Control			
Trigger Signal	DC24V or Dry contact	Trigger Mode	4 modes selectable
Screw Position Signal	DC 0~10V	Screw Position Unit	mm or inch
Control Mode	Auto / Manual	Time Resolution	1s, or 0.1s, or 0.01s
Output Signal	DC24V, or AC220V or Relay contact	Output Connector	Various options available

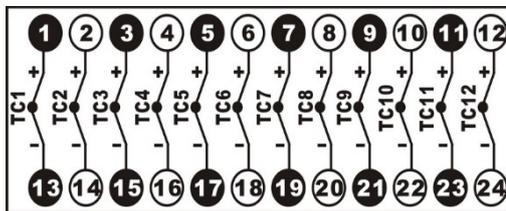
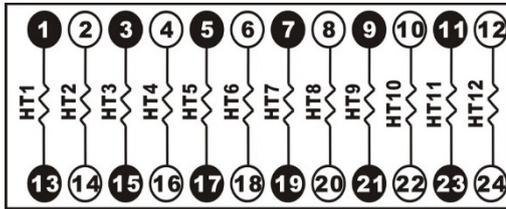
1.4 Features

Cabinet	HMI
Temperature only, Sequential Valve Gate only, or Combination of both	Full color LCD touch screen
Max. 120 zones	English/Spanish/Chinese
CE compliant	Fixed on mainframe or Stand-alone
Control Modules	Alarms & Protection
Control module	Thermocouple broken /reversed /shorted
2-zone per temperature module (15 Amp per zone)	Heater broken /shorted /oversize
6-gate per Sequential Valve Gate module	Temperature high / low
Other Functions	Fuse blown
Stopping system remotely (optional)	Heating invalid
Standby system remotely (optional)	Triac breakdown
All zones' temperature in tolerance output (optional)	Power supply over-voltage
Start sequence in group	Cabinet temperature over-setting
Sensor fault solution	Alarm output (optional)

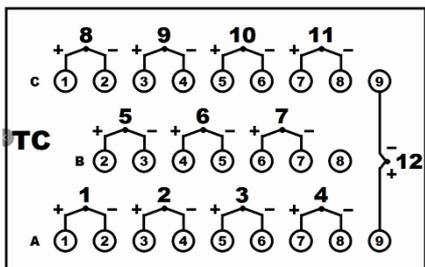
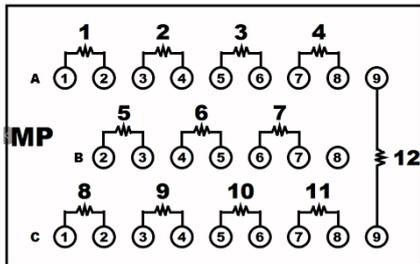
1.5 Typical Power and Thermocouple Output Connector Wiring

The system can be supplied with either European style or US style power and thermocouple mold connectors, typically wired as follows (custom wiring available)

Separate Power & Thermocouple Connectors (European style 24 pin series "E")



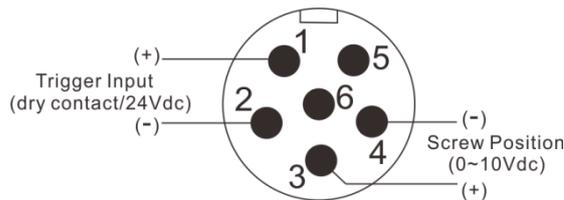
Separate Power & Thermocouple Connectors (US style 25 pin series "A")



1.6 Sequential Valve Gate Trigger & Output Connectors Wiring

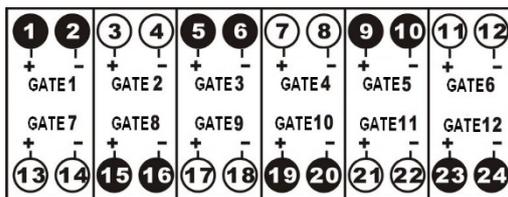
The valve gate sequence can be started by either a 24Vdc Trigger Input from the injection molding machine start cycle, or by a 0-10Vdc Screw Position source from the injection molding machine.

Valve Gate Input Wiring



Signal	Pins	Description	Type
Trigger Input	1 & 2	Sees a closed condition or DC24V as a signal to start the timer on the valve sequence	Normally Open Dry Contact Or DC24V
Screw Position	3 & 4	Accepts a voltage source input that relates to the main screw position. A calibration routine within the controller adjusts actual input to actual screw position.	0 to 10 Volts

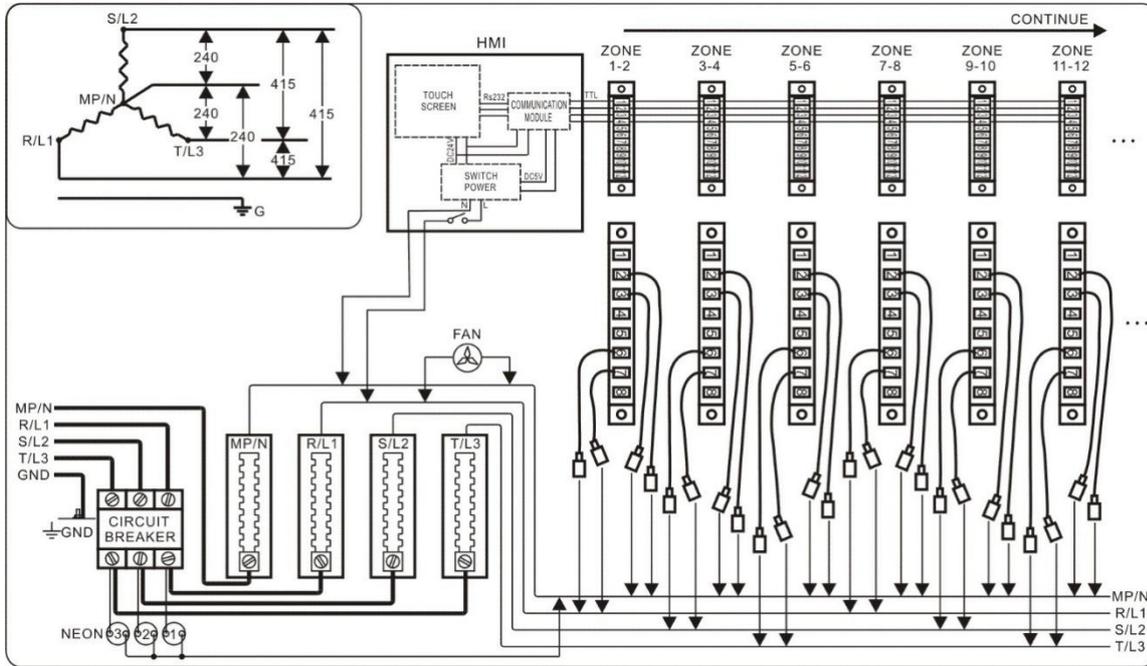
Valve Gate Output Wiring (European style 24 pin series "A")



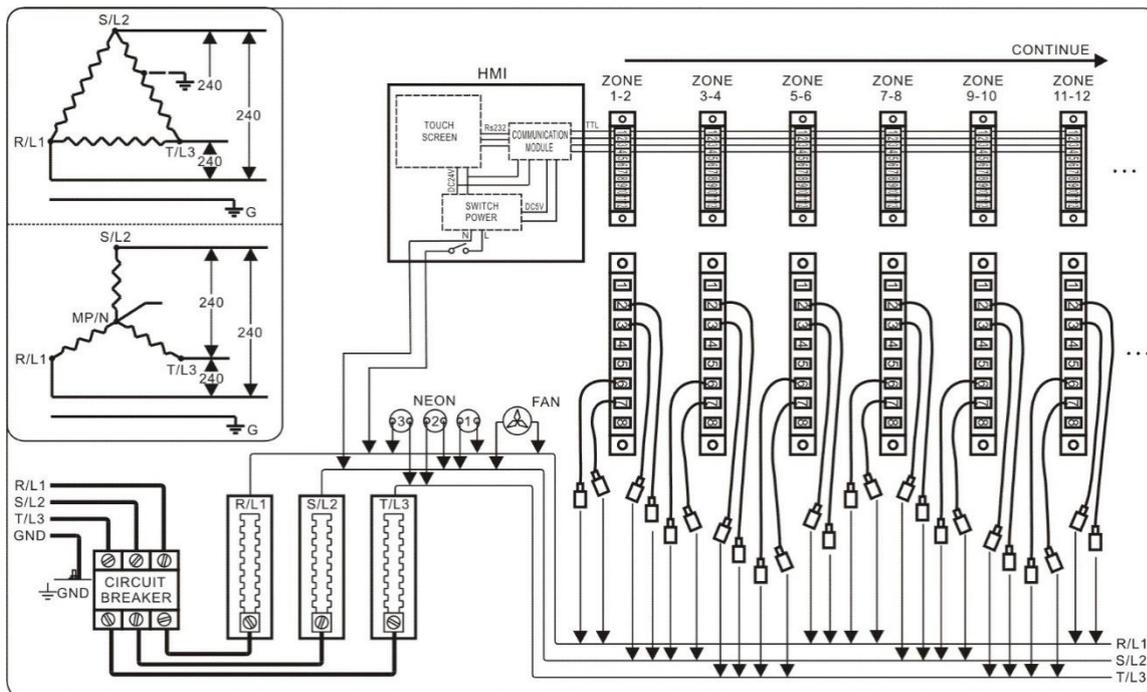
Power Input Wiring

The CTI temperature controllers can be connected to either 3-phase 4-wire Y / Δ type (200-240Vac) or 3-phase 5-wire Y type (380-415Vac) mains power supplies.

3-Ph+N+E (5 wire) 380-415Vac



3-Ph+E (4 wire) 200-240Vac

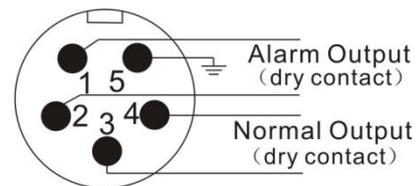
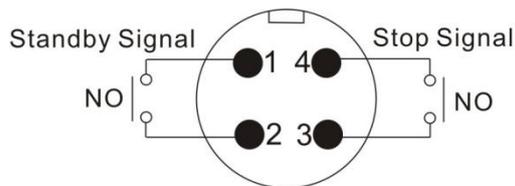


1.6 Remote Input & Alarm Output Connectors Wiring

(Where specified)

Remote Input Wiring

Alarm & Normal Output Wiring



Signal	Pins	Description	Type
Standby Signal	1 & 2	After a delay time (adjustable) since the contact is closed, the controller will work in standby mode until AUTO button is pressed on HMI.	Normally open dry contact
Stop Signal	3 & 4	When the contact is closed, the controller will stop running, same as pressing STOP button on HMI.	Normally open dry contact
Alarm Output	1 & 2	Contact is closed when any alarm happens, and it will be reset by silence button on the alarm history page.	Normally open dry contact 1A/250Vac
Normal Output	3 & 4	Contact is closed when all zones' temperature are in normal output tolerance.	Normally open dry contact 1A/250Vac

Chapter 2 Inspection & Installation

2.1 Unpacking and Inspection

1. After unpacking, inspect the mainframe and check for any damage that may have occurred during shipment.
2. Check the circuit breaker disconnect and neon phase voltage indicators for damage.
3. Check for proper operation of circuit breaker with no voltage applied.
4. Check connectors for any physical damage.
5. Check AC input power configuration matches the local power supply. The power specification label is located on the back cover of the mainframe's power input terminal block. The label indicates the input voltage configuration that was prewired at the factory.

6. Inspect the HMI and check for any damage that may have occurred during shipment.
7. Check power connector/cable and communication connector/cable of HMI for any physical damage.

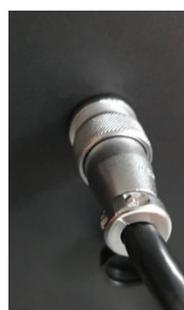
2.2 Mounting the HMI (only CTI-200 Series)

1. Connect the HMI's power cable and communication cable to corresponding plug on the mainframe.
2. Mount the HMI on the mainframe by screws provided.



2.3 Connecting the HMI (Standalone HMI only)

1. Place or mount the HMI on the position required.
2. Connect the HMI and the mainframe with communication cable.

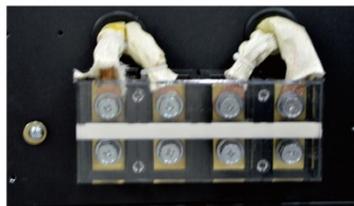


2.4 Connecting the Power Input Cable (CTI-200 / CTI-300)

1. Ensure the power input cable meets the international and local electrical code specifications.
2. Remove the metal cover of the power input terminal block by removing screws around its perimeter.
3. Remove the plastic panel of the terminal block.
4. Insert power input cable through access hole provided on the cover.
5. Connect AC input cord to the input terminal block as shown on the inner side of cover, according to the input voltage configuration you are attaching to.
6. Connect the earth cord to the ground terminal beside the input terminal block.
7. Cover the plastic panel on the terminal block.
8. Take up excess slack in cable and secure with strain relief clamp.
9. Mount the metal cover of the power input terminal block on the mainframe.



(1)



(2)



(3)



(4)



(5)

CAUTIONS!

Service and installation of this equipment should only be performed by qualified service personnel familiar with high voltage electrical circuits.

All international and local electrical codes must be followed when connecting this equipment.

Use O-type (ring) terminals on the power input cord connected to the terminal block.

Do not apply power to this cable or the unit when the back terminal block cover is removed.

Do not connect the power input cord to your power distribution system until the back terminal block cover is securely in place.

Ensure the chassis has been earth grounded before applying power.

Chapter 3 Connecting the System to the Mold

3.1 Prior to Start Up

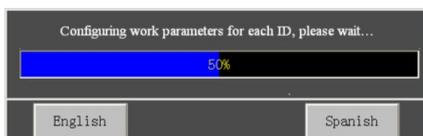
- Check that the system is completely disconnected from the power source.
- Clean up any water, oil, dirt, cleaning fluids etc. that may have spilled during a mold change or since the last production run.
- Check all the cable connections between the system and the mold. Make sure all the cables are free from wear or damage.
- Check that the earth/ground connection is in good condition. Verify the system and the mold have the same ground reference.
- Check the output power and thermocouple wiring configuration on the mainframe and cable is the same as on the mold.
- Confirm that the sequential valve gate power output meets the requirement of the solenoid valves.
- Confirm that the sequential valve gate trigger signal meets the requirement of the controller.

3.2 Verifying the Connection

1. Connect the mold power and thermocouple cables.
2. Connect the sequential trigger signal cable and output cable (if required).
3. Using an Ohmmeter, touch one test lead to the mold and the other to the mold ground terminal on the system. Resistance must be less than 1Ω .
4. Check all the circuit breakers and make sure they are in the OFF position prior to connection of the controller to the power source.

3.3 Startup Procedure Checklist

1. Connect the mold power and thermocouple cables, sequential control cables between the mold and controller (if required).
2. Connect the controller to the power source.
3. Switch the circuit breakers ON.
4. Turn on the HMI, then select the language.



5. Log in the system (if required).
6. Load a mold setup (if required).
7. Checking the mold setup zone by zone on HMI.
8. Correct any faults found during diagnostics.
9. Touch "Run" to start the system.
10. Check that the controller is functioning correctly.

IMPORTANT!

When switching off the system, wait 30 seconds before switching on again. System communication issues can be experienced if the system is turned off and on incorrectly.

Chapter 4 Operator Interface

4.1 Main Interface

The main interface is used to monitor, log in the system and general operations.

4.1.1 Temperature Control

Icon Button Mode, 24-zone per page, Resolution 0.1 is not checked

1 Auto 200 SV: 200 °C 10 % 0.5 A J	2 Auto 200 SV: 200 °C 10 % 0.5 A J	3 Auto 200 SV: 200 °C 10 % 0.5 A J	4 Auto 200 SV: 200 °C 10 % 0.5 A J	5 Auto 200 SV: 200 °C 10 % 0.5 A J	6 Auto 200 SV: 200 °C 10 % 0.5 A J	         	
7 Auto 200 SV: 200 °C 10 % 0.5 A J	8 Auto 200 SV: 200 °C 10 % 0.5 A J	9 Auto 200 SV: 200 °C 10 % 0.5 A J	10 Auto 200 SV: 200 °C 10 % 0.5 A J	11 Auto 200 SV: 200 °C 10 % 0.5 A J	12 Auto 200 SV: 200 °C 10 % 0.5 A J		
13 Auto 200 SV: 200 °C 10 % 0.5 A J	14 Auto 200 SV: 200 °C 10 % 0.5 A J	15 Auto 200 SV: 200 °C 10 % 0.5 A J	16 Auto 200 SV: 200 °C 10 % 0.5 A J	17 Auto 200 SV: 200 °C 10 % 0.5 A J	18 Auto 200 SV: 200 °C 10 % 0.5 A J		
19 Auto 200 SV: 200 °C 10 % 0.5 A J	20 Auto 200 SV: 200 °C 10 % 0.5 A J	21 Auto 200 SV: 200 °C 10 % 0.5 A J	22 Auto 200 SV: 200 °C 10 % 0.5 A J	23 Auto 200 SV: 200 °C 10 % 0.5 A J	24 Auto 200 SV: 200 °C 10 % 0.5 A J		
Pattern name:Null.		No Alarm.		A:229V	B:229V	C:229V	2018/1/8 18:18:18

Pattern file name

Alarm status

Appointed module's supply voltage

System time

e

per page, Resolution 0.1 is checked

1 Stop PV: 200.0 SV: 200 °C	2 Stop PV: 200.0 SV: 200 °C	3 Stop PV: 200.0 SV: 200 °C	4 Stop PV: 200.0 SV: 200 °C	5 Stop PV: 200.0 SV: 200 °C	6 Stop PV: 200.0 SV: 200 °C		
7 Stop PV: 200.0 SV: 200 °C	8 Stop PV: 200.0 SV: 200 °C	9 Stop PV: 200.0 SV: 200 °C	10 Stop PV: 200.0 SV: 200 °C	11 Stop PV: 200.0 SV: 200 °C	12 Stop PV: 200.0 SV: 200 °C		
13 Stop PV: 200.0 SV: 200 °C	14 Stop PV: 200.0 SV: 200 °C	15 Stop PV: 200.0 SV: 200 °C	16 Stop PV: 200.0 SV: 200 °C	17 Stop PV: 200.0 SV: 200 °C	18 Stop PV: 200.0 SV: 200 °C		
19 Stop PV: 200.0 SV: 200 °C	20 Stop PV: 200.0 SV: 200 °C	21 Stop PV: 200.0 SV: 200 °C	22 Stop PV: 200.0 SV: 200 °C	23 Stop PV: 200.0 SV: 200 °C	24 Stop PV: 200.0 SV: 200 °C		
25 Stop PV: 200.0 SV: 200 °C	26 Stop PV: 200.0 SV: 200 °C	27 Stop PV: 200.0 SV: 200 °C	28 Stop PV: 200.0 SV: 200 °C	29 Stop PV: 200.0 SV: 200 °C	30 Stop PV: 200.0 SV: 200 °C		
31 Stop PV: 200.0 SV: 200 °C	32 Stop PV: 200.0 SV: 200 °C	33 Stop PV: 200.0 SV: 200 °C	34 Stop PV: 200.0 SV: 200 °C	35 Stop PV: 200.0 SV: 200 °C	36 Stop PV: 200.0 SV: 200 °C		
37 Stop PV: 200.0 SV: 200 °C	38 Stop PV: 200.0 SV: 200 °C	39 Stop PV: 200.0 SV: 200 °C	40 Stop PV: 200.0 SV: 200 °C	41 Stop PV: 200.0 SV: 200 °C	42 Stop PV: 200.0 SV: 200 °C		
Pattern name:Null.		No Alarm.		A:229V	B:229V		C:229V

- **Function Button:** Icon mode is default setting. Text mode can be selected on system setting page.
- **24 or 42 zones per page:** 24-zone is the default setting, but can be changed on system setting page.
- **Resolution:** 1 is the default setting, 0.1 can be selected on system setting page.

1	2 Auto	3	4	5	6	7
	200		SV: 200 °C			
	10 %	0.5 A	J			

1 Manual	2 TC Broken	3 Stop	4 Stop
32	999	200	OFF
MAN: 5 %	SV: 200 °C	SV: 200 °C	SV: 200 °C
5 % 0.1 A J	0 % 0 A J	0 % 0 A J	0 % 0 A J

(1) Zone number.

(2) Zone status: alarm information is in red, e.g. No.2 zone.

(3) Actual Temperature (PV):

- resolution 0.1 can be selected on system setting page.
- displayed in red in stop state, e.g. No.3 zone.
- if thermocouple is open, 999 is displayed, e.g. No.2 zone.
- if zone is turned off, OFF is displayed in red, e.g. No.4 zone.
- reading blinks if there is a communication failure.
- click the PV value to set a zone's parameters and operate it.

(4) Setpoint (SV):

- temperature unit can be selected between Celsius and Fahrenheit by Engineer's security login.
- displayed in red in stop state, e.g. No.3 zone.
- output percent setting will be displayed in manual mode, e.g. No.1 zone.
- click setting value, output percent and load current can be alternated to show in 42-zone page.

(5) Power output % .

(6) **Sensor type:** can be selected between J-type and K-type thermocouple by Engineer's security login.

(7) Load current.

  **[Run]** (green)/**[Stop]** (red): Run or Stop temperature & valve gate control of all zones. In Stop mode, shows Run; and in Run mode, shows Stop.

 **[Auto]:** Places the temperature control of all zones in Auto mode.

 **[Standby]:** Places the temperature control of all zones in Standby mode. In this mode, the target is 70% of setpoint.

 **[PgUp]:** View the previous page.

 **[PgDn]:** View the next page. On the last page, you will see  **[SVG]**

 **[SVG]:** Shift to the sequential valve gate control interface.

 **[Graph]:** View the real-time or historical data curve.

 **[Alarm]:** View the alarm record.

 **[Group]:** Enter the group/global setting, pattern/mold files management, and language selected.

 **[System]:** Enter the system setting.

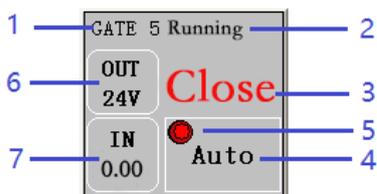
 **[Login]/[Logout]:** Log in/out of the system to achieve the different security authority.

4.1.2 Sequential Valve Gate Control

GATE 1 Running OUT 24V Close IN 0.00 Auto	GATE 2 Running OUT 24V Close IN 0.00 Auto	GATE 3 Running OUT 24V Close IN 0.00 Auto	GATE 4 Running OUT 24V Close IN 0.00 Auto	GATE 5 Running OUT 24V Close IN 0.00 Auto	GATE 6 Running OUT 24V Close IN 0.00 Auto	      TEST 	
GATE 7 Running OUT 24V Close IN 0.00 Auto	GATE 8 Running OUT 24V Close IN 0.00 Auto	GATE 9 Running OUT 24V Close IN 0.00 Auto	GATE10 Running OUT 24V Close IN 0.00 Auto	GATE11 Running OUT 24V Close IN 0.00 Auto	GATE12 Running OUT 24V Close IN 0.00 Auto		
GATE13 Running OUT 24V Open IN 0.00 Auto	GATE14 Running OUT 24V Open IN 0.00 Auto	GATE15 Running OUT 24V Open IN 0.00 Auto	GATE16 Running OUT 24V Open IN 0.00 Auto	GATE17 Running OUT 24V Open IN 0.00 Auto	GATE18 Running OUT 24V Open IN 0.00 Auto		
GATE19 Running OUT 24V Open IN 0.00 Auto	GATE20 Running OUT 24V Open IN 0.00 Auto	GATE21 Running OUT 24V Open IN 0.00 Auto	GATE22 Running OUT 24V Open IN 0.00 Auto	GATE23 Running OUT 24V Open IN 0.00 Auto	GATE24 Running OUT 220V Open IN 0.00 Auto		
Pattern name:Null		No Alarm.		A:229V	B:229V	C:229V	2018/1/8 18:18:18

(Icon Button Mode)

-   **[Run]** (green)/**[Stop]** (red): Run or Stop temperature & valve gate control of all zones. In Stop mode, shows Run; and in Run mode, shows Stop.
-  **[Auto]**: Place the sequential valve gate control of all zones in Auto mode.
-  **[Manual]**: Place the sequential valve gate control of all zones in Manual mode. In this mode, each valve gate can be opened or closed by manual.
-  **[Temp]**: Shift to the temperature control interface.
-  **[Graph]**: View the open & close sequence setting of all valve gates.
-  **[Group]**: Enter the group/global setting, pattern/mold files management, and language selected .
- TEST** **[TEST]**: Used to simulate the trigger signal to test all valve gates control.
-  **[Login]**/**[Logout]**: Log in/out the system to achieve the different security authority.



- (1) Gate Number.
- (2) Working Status.
- (3) Valve Gate Status:
Open, **Close** or **OFF** (when zone is set to off).
- (4) Control Mode: Auto or **Manual**.
In Manual mode, touch it to open/close gate.
- (5) Start Trigger Indicator: green-off, red-on.
- (6) Output signal: 24V or 220V (selected on modules)
- (7) Screw position: unit is mm or inch,
selected in screw position's calibration.

4.2 USB Port

The USB port on the CTI series is intended to be used to copy mold setup files to and from the system. The screen for importing or exporting mold setups is displayed in the Group Setup Screen.

These mold setup files can be copied to other CTI controllers that support the same file type.

The USB port is also be used to export the historical data record (in csv format) from the system. The screen for exporting data record is displayed in the History Data Curve Screen.

CAUTION!

Never power on the unit with a device in the USB port.

Never connect a powered USB hub or other device to the USB port.

Removing the USB disk from the system during a read or write operation could cause data corruption to the USB disk contents that could result in bad files or prevent the entire drive from being usable.

The following warnings and restrictions should be observed when using the USB port:

Only supports USB disks that use a File Allocation Table (FAT or FAT32) format.

Only supports USB versions 2.0 and 1.1.

Use an empty USB disk or one that contain as few files as possible.

Chapter 5 Security & System Setting

5.1 Login / Logout the System

To avoid accidental changes and protect the system data, the controller is set up with different operator levels which have different security authorities.

To achieve the corresponding authority, the operator should login the system by their security group name and password before operation.

The operator should also ensure they logout the system after completing any operations to avoid other people operating the controller by the incorrect security group.

In the absence of user login status, the main interface displays  **[Login]**. Touch it to open the Login screen, select the corresponding user group and input password to login the system.

In the status of the user login, the main interface shows  **[Logout]**. Touch it and the system opens a dialog box to confirm your operation. You can click **[Yes]** to logout the system.

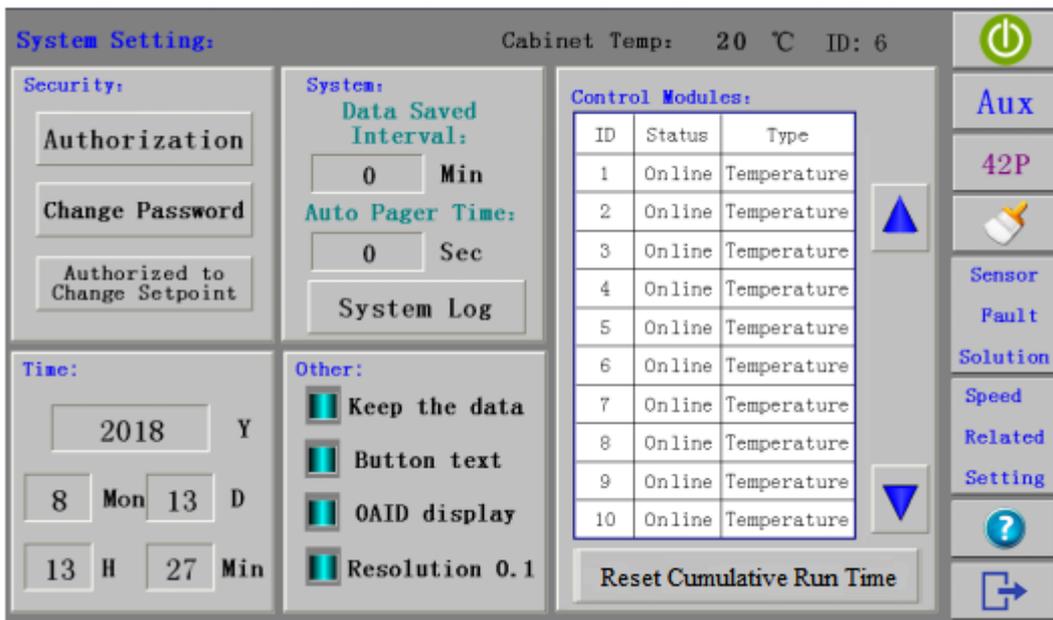
User's Authorities List

User Group	Authorities	Remarks
Non-Login	Select language. View data curve, alarm records. Mute alarms.	Authorized to Change Setpoint
	All authorities above. Run/Stop system or zone. Auto/Standby system. Change the zone temperature setpoint.	Everyone Can Change Setpoint
Operators	All authorities of Non-Login. Choose control mode. View module types and status. Set system time/ auto-pager time. Set login authority for operators. Check the system log. Clear all data records. Select display resolution, button mode, etc. Set temperature setpoint or unit globally.	Initial password is "1" for the user "Operator".

	Run/Stop/Set setpoint in group.	
Engineers	<p>All authorities of Operators.</p> <p>Modify all parameters of zones.</p> <p>Set sensor default solutions.</p> <p>Set heating speed related.</p> <p>Set data save interval time.</p> <p>All operations in global setting.</p>	Initial password is "654321" for the user "Engineer".
Administrators	<p>All authorities of Engineers.</p> <p>Manage the users and authorities.</p> <p>Select OAID display, used to maintenance.</p> <p>Auxiliary functions setting.</p>	Initial password for the user "Director" or "Administrator" is reserved. Please consult your dealer if necessary.

5.2 System Setting

Touch  [System] on the main interface of temperature control, then enter the System Setting Screen.



System Setting: Cabinet Temp: 20 °C ID: 6

Security:

- Authorization
- Change Password
- Authorized to Change Setpoint

System:

- Data Saved Interval: 0 Min
- Auto Pager Time: 0 Sec
- System Log

Control Modules:

ID	Status	Type
1	Online	Temperature
2	Online	Temperature
3	Online	Temperature
4	Online	Temperature
5	Online	Temperature
6	Online	Temperature
7	Online	Temperature
8	Online	Temperature
9	Online	Temperature
10	Online	Temperature

Time:

- 2018 Y
- 8 Mon 13 D
- 13 H 27 Min

Other:

- Keep the data
- Button text
- OAID display
- Resolution 0.1

Reset Cumulative Run Time

Aux

- 42P
- Sensor
- Fault
- Solution
- Speed
- Related
- Setting
- ?
-

5.2.1 Security

- **Authorization:** You can manage the users, include add, copy, and delete user.
You can also check the user's properties.

The user group name can be edited.

There are 3 User Groups: Operators, Engineers and Administrators.

Each group has different authorities, you can create more than one user in each group.

Operators: Authorized to use the functions related to production process.

Engineers: Authorized to use all functions except manage users and Clear or Auto-generate the Module's ID.

Administrators (the user group name cannot be deleted): All authorities.

- **Change Password:** You can change the password for the current user.



- **Authorized to Change Setpoint / Everyone Can Change Setpoint:**

Touch it to change the authority setting for operators login.

Display **Authorized to Change Setpoint:**

It means current setting is Everyone Can Change Setpoint.

Operators not logged in the system can run/stop the system and change the setpoint.

Display **Everyone Can Change Setpoint:**

It means current setting is Authorized to Change Setpoint.

Only the operator's login the system can run/stop the system and change the setpoint.

5.2.2 Time

For the system time initialization, the setting method is:

- 1) Click the parameter you wish to set, then input the value on the screen keyboard.

2) Click the **[OK]** to finish the modification.

NOTE: If there is no response after you click the parameter values, it indicates that this parameter cannot be modified.

5.2.3 Cabinet Temperature & ID

Display the current max. cold-junction temperature (ambient temperature in the cabinet) of all modules, and its zone number.

5.2.4 System

- **Data Saved Interval:** After the setting time, the system saves the data automatically.
0 min. means not to save the data, and you cannot see the history curve.
- **Auto Pager Time:** After the setting time, main interface displays the next page automatically.
0 sec. means not to auto pager.
- **System Log:** By clicking it, you can check the system operation log.

System operation log:

SN	Time	Operation	Operator
1	2017-04-06 16:01:04	System is powered on, start to run.	Not Login.

Config

Quit

5.2.5 Other ( blue – unchecked,  green – checked)

- **Keep the data:** Zones' work state (Auto or Manual, and power output % in manual mode) will be the same as previous when the system re-started.

- **Button text:** Function Buttons will display by TEXT mode instead of ICON mode.
- **OAID display:** Zone's original ID displayed, used for maintenance.
- **Resolution 0.1:** Present temperature's display resolution is 0.1.

5.2.6 Control Modules

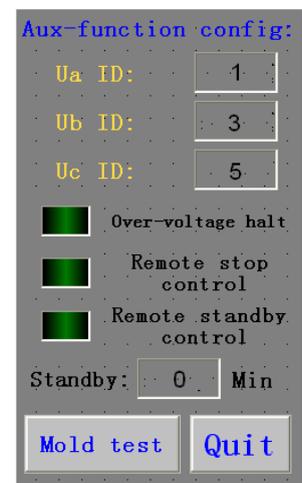
Display the communication status of each module and its type.

- **Reset Cumulative Run Time:** used for remote communication.

5.2.7 Auxiliary Functions (blue – unchecked, green – checked)

Touch **Aux** to enter Aux-function configuration page.

- **Appointed zone's number:**
The power supply voltage will be displayed in status bar on main interface.
- **Over voltage halt:**
When the power supply over voltage alarm is triggered the system will stop running.
- **Remote stop control:**
When the system receives an external stop signal it will stop running.
- **Remote standby control & Standby (delay) time:**
After the system receives an external standby signal it will work in standby mode until AUTO button is pressed on HMI.
- **Mold test:** reserved.



5.2.8 42-zone / 24-zone Display in One Page

Touch **42P** **24P** to alternate between 24-zone and 42-zone displayed in one page.

5.2.9 Clear Operation Log & Historical Data

Touch  **[Clear]** to clear all operation logs and all historical curve data.

5.2.10 Sensor Fault Solution

In case of a sensor failure you can appoint a zone as another zone's sensor reference to allow you to finish the production run. Typically, the sensors of these two zones are near and of the same watt as each other, such as 2 similar hot runner nozzles.

When the sensor of the zone (Major ID) fails the controller will use the temperature of the other zone (Related ID) to simulate the failed one.

This function can be enabled or disabled according to requirements.

1) Click the **[Sensor Fault Solution]** to enter its setting interface.

Sensor Fault Solution:

No. 1 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 2 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 3 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 4 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>
No. 5 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 6 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 7 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 8 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>
No. 9 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 10 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 11 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>	No. 12 Major ID: <input type="text" value="0"/> Related ID <input type="text" value="0"/>

Enable
 Disable

2) Set the Major ID and its Related ID. You can set up to 12 pairs.

3) Touch the **[Enable]** or **[Disable]** to activate or stop this function.

(blue – unchecked, green – checked)

4) Click **[Quit]** to close the interface.

5.2.11 Speed Related Setting

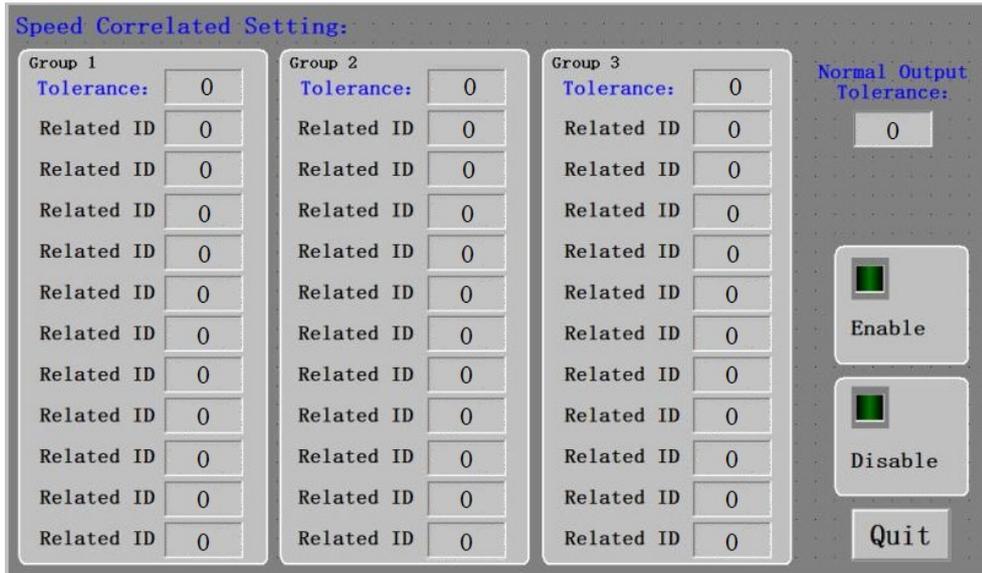
You can divide all zones into up to 4 groups (max.11 zones in each group, the zones not appointed will be in the last group). The groups will start to work one by one in turn.

When the system starts, the first group will start to work. When each zone's temperature arrives at the target range (the tolerance can be set), the next group will start to work, until all the groups are running.

Typically, the slower heating manifolds should be in the first group and the faster heating nozzles are in the last group.

This function can be enabled or disabled according to requirements.

1) Click the **[Speed Related Setting]** to enter its setting interface.



2) Appoint zones for each group.

If you need to divide all zones into 2 groups you can appoint zones for group 1, the remaining zones will be the second group.

3) Set the target tolerance for each group.

e.g. If you need the next group will work when each zone's temperature is not less 5 than its target, then you should set the tolerance to 5 for this group.

4) Touch the **[Enable]** or **[Disable]** to start or stop this function.

( blue - unchecked,  green - checked)

5) Click **[Quit]** closing this interface.

- **Normal Output Tolerance:** Normal output contact will be closed when all zones' temperature are in normal output tolerance.

5.2.12 Help

Touch  **[Help]** to get help on the operation.

5.2.13 Back

Touch  **[Exit]** to go back to the main interface.

Chapter 6 Temperature Control Operations

6.1 Control Modes

[Auto]:

This type of control is a “closed-loop” system and requires a thermocouple feedback signal.

The controller uses a PID algorithm to determine the required output power to hold the actual temperature value equal to the setpoint.

This mode is applied on all zones when the system starts to work.

[Standby]:

This type of control is similar to Auto mode. It is a “closed-loop” system and requires a thermocouple feedback signal.

The controller uses a PID algorithm to determine the required output power to hold the actual temperature value equal to standby temperature value (70% of setpoint).

[Manual]:

This type of control is an “open-loop” system and requires no thermocouple feedback signal.

The controller regulates output power according to the manual setting.

This mode only can be selected by zone setting.

Auto Tune function:

This function is for getting the optimal PID value for a system.

It is a “closed-loop” system and requires a thermocouple feedback signal.

Generally, AT function only needs to be executed when PID factory setting cannot meet the system requirements.

After finished auto tuning, the optimal PID value is saved, and the controller returns to Auto mode.

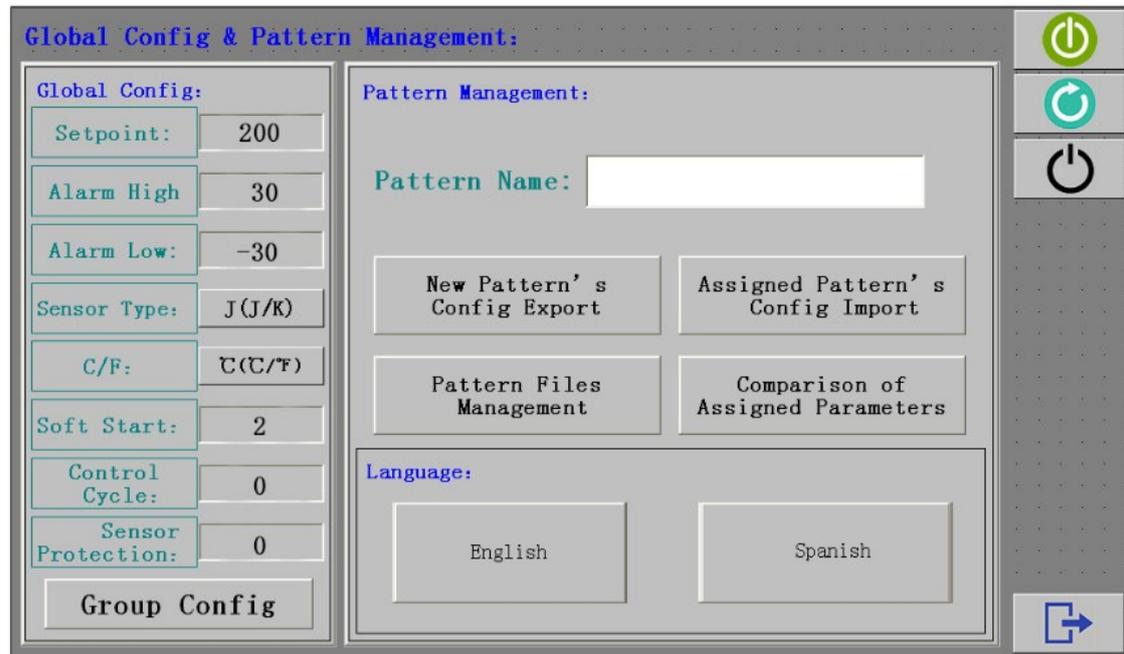
This function only can be selected by zone setting.

Note: To start PID auto-tuning function, present temperature value should be lower than set point.

Max Output	High limit of output percent, 0~99%. 0 – Off.
Rated Current	Rated load current (Amps). Alarms when the actual load current is over the setting.
Sensor Protection	Misconnection of heater & sensor diagnostic function. 0 – Off. 1 – Checking the heater after power on, if it's judged as sensor, controller will alarm and cut off output to protect it.
Load Check	Diagnostic function for heater. 0 – Off. 1~10 – Checking the load current when output is setting×10%, if the controller judges the heater fault, it will alarm and cut off output. Recommended setting is 3~5.
Max. Current	High limit of load current (Amps). When load current is higher than setting, controller will limit it by decreasing the power output.
Parameter	Description
Filter	To reduce the influence of interference. The larger the value is, the slower the controller responses. When it is too large, the controller may be out of control.
Load-short Sensitivity	Diagnostic sensitivity for load shorted, 0~100. The greater the value is, the lower the sensitivity. Recommended setting is 0.
Slow Heating	Heating speed slowing function. 0 – Off. 1 – On.
Heating Invalid Diagnostic Time	Diagnostic function for heating invalid. 0: Off. 1~999: When output percent is 100%, if the temperature does not rise in setting time (unit: minutes), the controller will alarm and adjust output percent to 0%.
Over-Voltage	Supply voltage high alarm setting, 6~30. When the power supply voltage is over about (setting×4.5+210)V, the controller will alarm and cut off output. Recommended setting is VoL=13 (over-voltage is about 270Vac).

6.4 Group Setting & Mold Patterns & Language selection

Touch  [Group] on the main interface, and then you can enter the Global Config & Pattern Management Screen.



6.4.1 Group Setting

Parameters for all zones can be changed at once using **Global Config**, or parameters for just zones with same background color can be changed at once by using **Group Config**.

6.4.1.1 Global Config

Parameters for all zones can be set all together.

- 1) Click the parameter value to be set, and then the keyboard will appear.
- 2) Input the required value.
- 3) Click **[OK]** to complete the setting.

NOTE: If there is no response when you click the parameter's value, it means this parameter cannot be changed or the authority security is not enough.

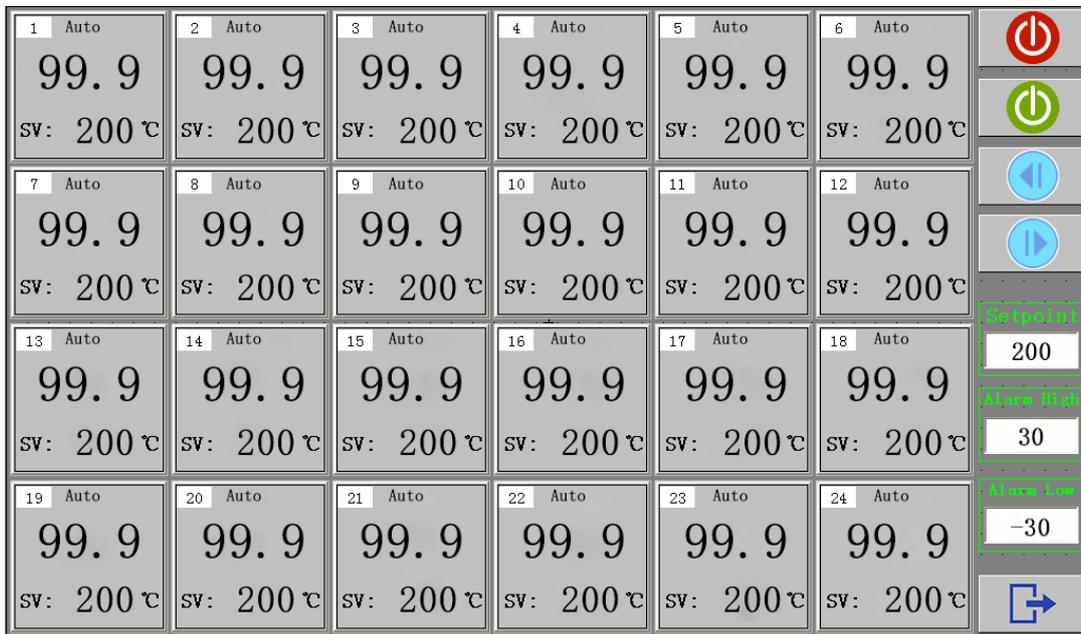
6.4.1.2 Group Config

Parameters for zones with the same background color can be set all together.

Comment: To set the background color of each zone, please refer to 6.5.3

- 1) Click **[Group Config]**, the background color window will appear.
- 2) Select the background color of zones you want to set parameters, the setting page will appear.

In this page the **[Run]** / **[Stop]** button only works for these zones.



- 3) Click the parameter's value needed to be set, and then the small keyboard will appear.
- 4) Input the required value.
- 5) Click **[OK]** to complete the setting.

NOTE: If there is no response when you click the parameter's value, it means this parameter cannot be changed or the authority is not enough.

6.4.2 Mold Patterns

You can manage the mold patterns by **Pattern Management**.

CTI can save maximum 24 sets mold parameters to local memory, as well as to USB disk.

You can import, export, and delete the pattern files, etc.

NOTE: The mold pattern file is a database file containing the control parameters of each zone.

6.4.2.1 New Pattern's Config Export

1. Enter a new Pattern Name in the box.

- Click the **[New Pattern's Config Export]** to save the settings of current online modules. Zones' On/Off state, auto/manual control mode, and the background color will be also saved in the pattern file.

NAME PATTERN CAREFULLY!

If the name of the new pattern is same as an existing pattern, the original file will be over-written by the new one.

6.4.2.2 Assigned Pattern's Config Import

- Click the **[Assigned Pattern's Config Import]** to enter the pattern files selected screen.



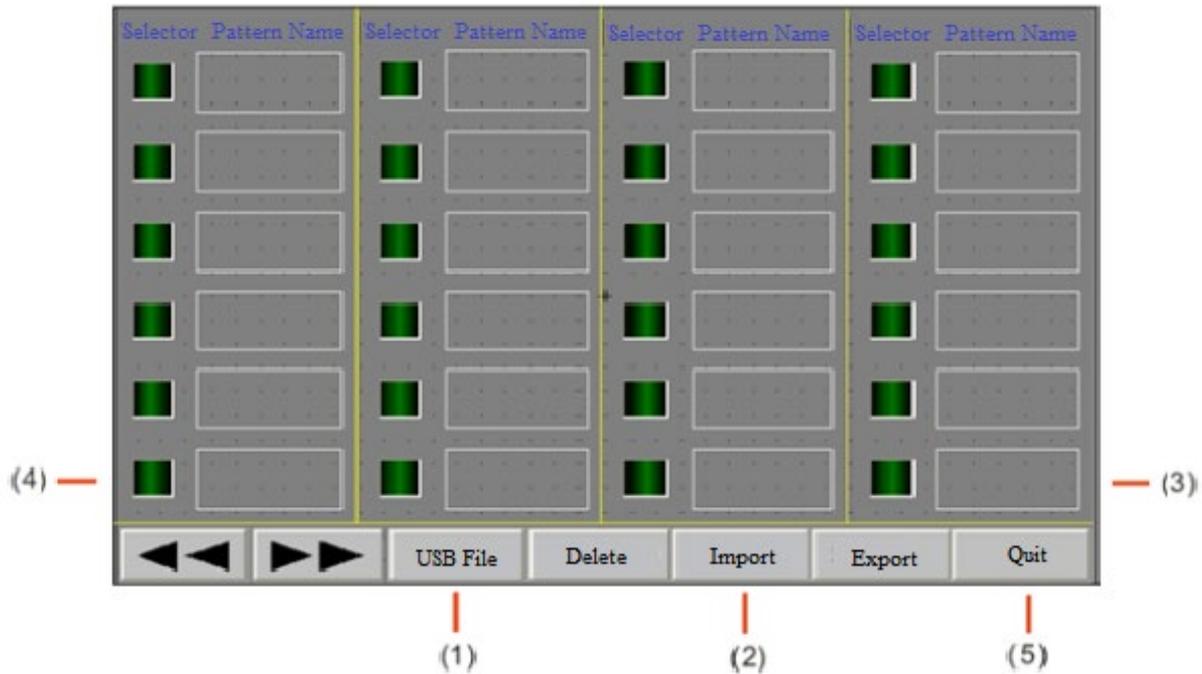
- Click  to select a pattern.
- Click **[OK]** to import the parameters in the pattern file to the online modules. The system will generate a report at the end of importing process.
- Click **[QUIT]** on the report page to close it.
- Click **[QUIT]** to go back to the Global Config & Pattern Management Screen.

All zones will work on new imported settings, and the pattern name will be showed in the status bar.

6.4.2.3 Pattern Files Management

Click the **[Pattern Files Management]** to enter the management screen.

You can browse the pattern files stored in a USB disk or in the local storage and manage these files.



- (1) File location selected: **[Local File]** or **[USB File]**.
- (2) **[Delete]**: to delete the selected file;
[Import]: to import the files selected from the USB disk to the local storage.
[Export]: to export the files selected from the local storage to the USB disk.
- (3) Pattern Name.
- (4) Pattern selector & indicator:
 blue – unchecked, green – checked.
- (5) **[Quit]**: back to the Global Config & Pattern Management Screen.

6.4.2.4 Comparison of Assigned Parameters

1. Enter the Pattern Name that needs to be compared.
2. Click the **[Comparison of Assigned Parameters]** to compare the parameters of the online modules with the parameters of the pattern file.

6.4.3 Language

You can change language by touch the related language button.

NOTE: You need to re-start HMI after changing the language, or some functions maybe abnormal.

6.4.4 Back

Touch  [Exit] to go back the main interface.

6.5 Zone Setting

Touch the Actual Temperature on the main interface, then enter Zone Parameters Setting Screen (different authority can see different parameters).

6.5.1 Non-Login Status (if everyone can change setpoint)



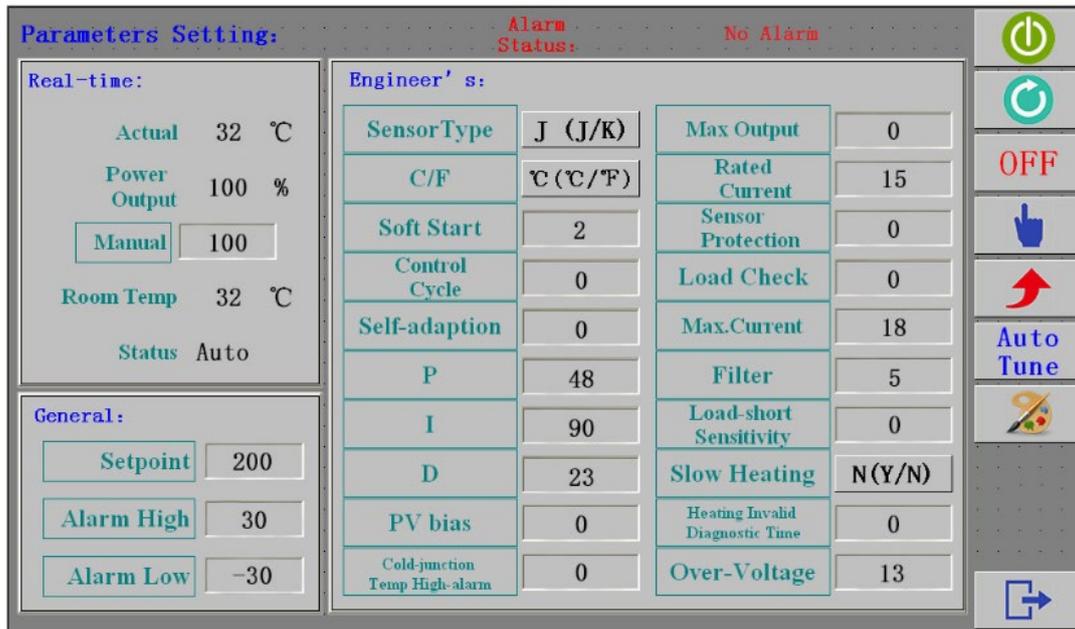
- Change Setpoint: by [<] [^] [v].
- Save the change and quit the setting: touch [SET].
- Run or Stop this zone: touch [Run] / [Stop].

6.5.2 Operators-Login Status

- Change Setpoint: click it to call up small keyboard.
- Run or Stop this zone: touch [Run]/[Stop].
- Change Control mode of this zone:
touch [Auto] or [Manual], and then confirm it.
- Set power output percent in Manual mode:
click it to call up small keyboard.
- Back to main interface: touch [Quit].



6.5.3 Engineers or Administrators Login Status



- **Change General and Engineer's parameter value:** click it to call up small keyboard.
- **Set output percent in Manual mode:** click the value of **Manual** to call up small keyboard.
- **Run or Stop this zone:** touch [Run] / [Stop].
- **Turn off or turn on this zone:** touch [OFF] / [ON]
- **Change Control mode of this zone (in running state):** touch [Auto] or [Manual].
- **Activate Boost function (fast heating speed):** touch [Boost], and the power output percent will be added 20% (max.100%) for 15s.
- **Start Auto-Tune this zone:** touch .
- **Select background color for this zone:** touch [Color].
- **Back to main interface:** touch [Exit].

6.6 Graph Display

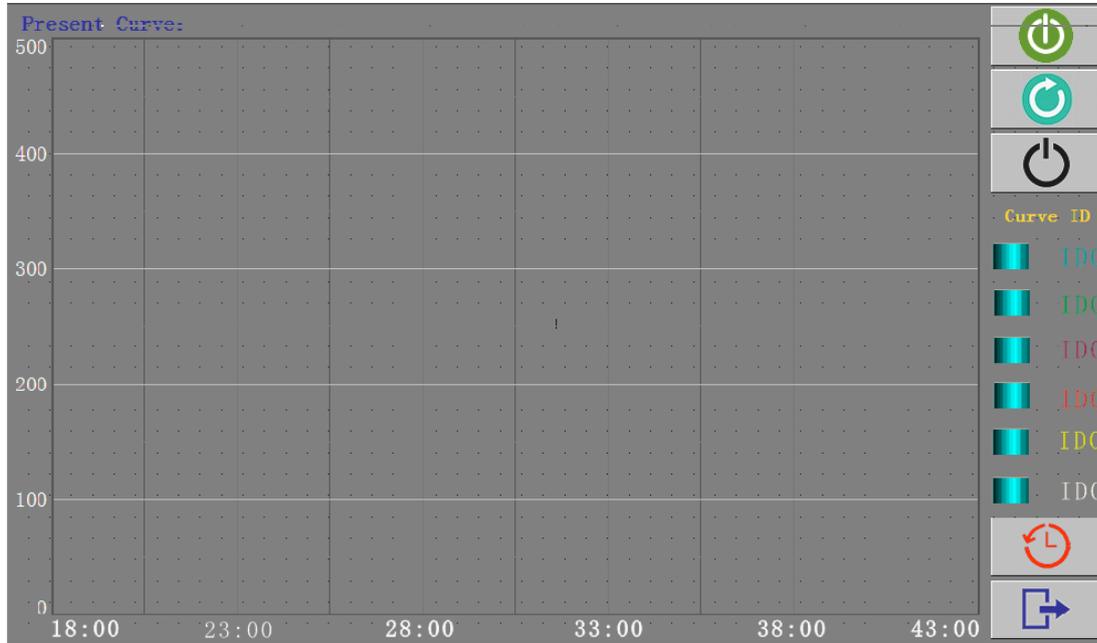
Touch [Graph] on the main interface to enter the Present Curve Display Screen.

You can select 6 zones to view the real-time curve.

And you can touch [History] on this screen to enter the History Curve Display.

And you can touch  [Exit] to go back to the main interface.

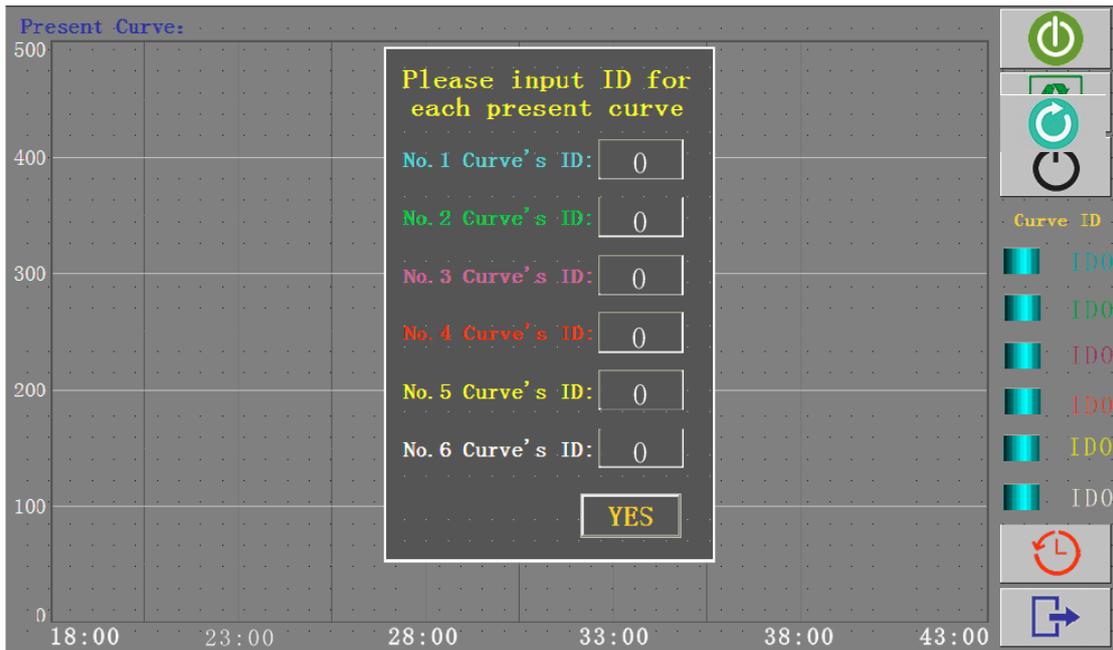
6.6.1 Present Curve (real-time)



6.6.1.1 Select Zone ID to View

On Present Curve Screen, you can view max. 6 zones.

- 1) Click the ID number to enter curve's ID selection mode.
- 2) Input the ID number which you want to view the curve, and then click **[YES]** to confirm.



6.6.1.2 Select the Curve Display

The box before the ID number is used to select the curve display.

You can click it.  Blue – unchecked,  green – checked.

The curve's color is same as the color of ID number.

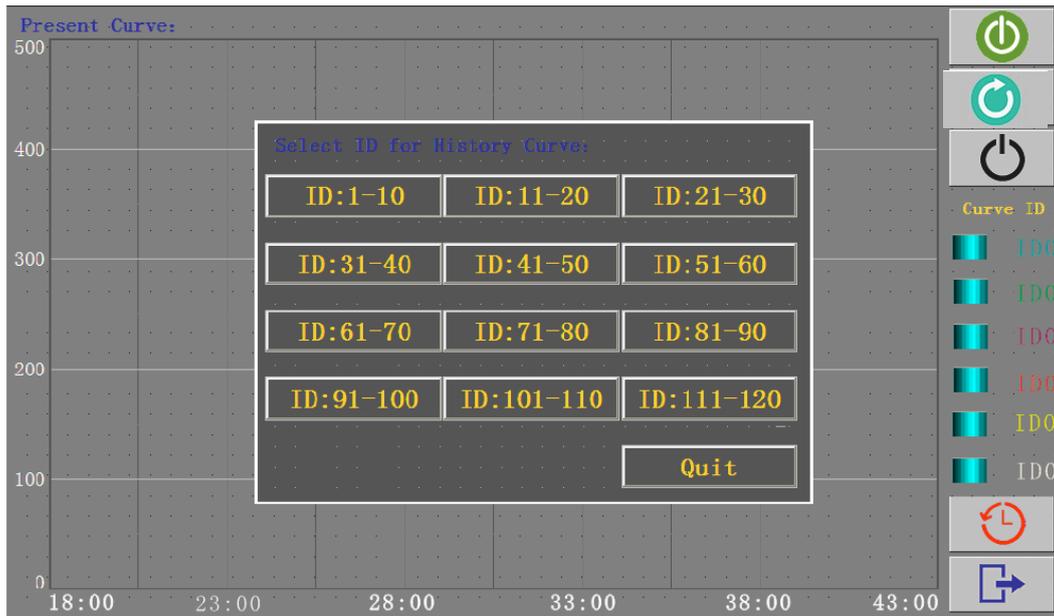
7.7.3 History Curve

The system default setting is not saving the temperature data. If you need to review the history curve or export the history data, you should set the Saved Interval time in System Setting.

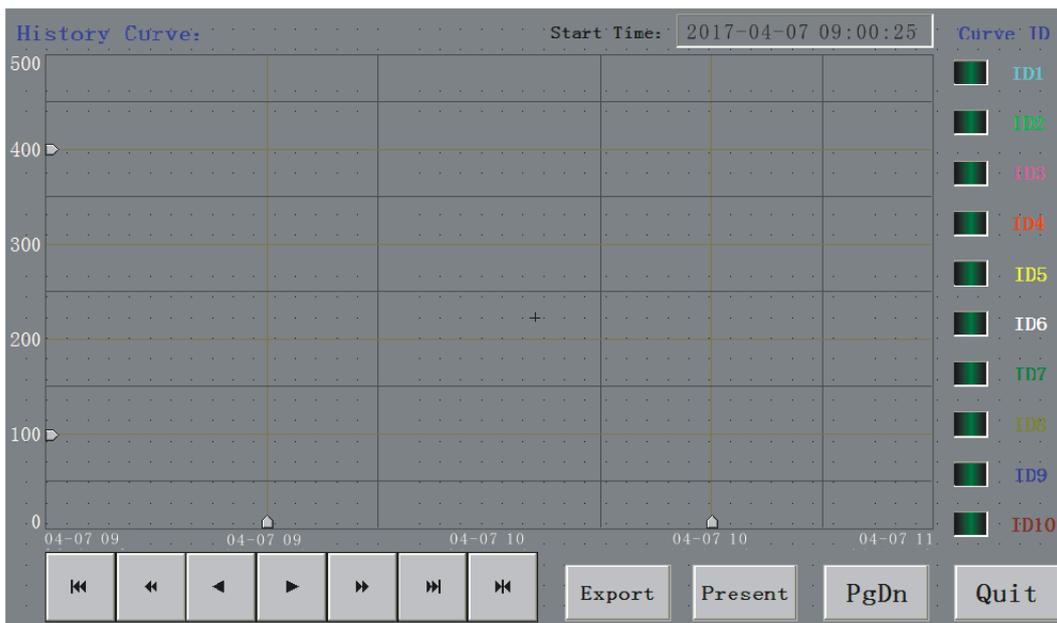
The system can save the temperature data in the latest 15~30 days.

6.6.2.1 Select Zone ID to View

When you touch  **[History]** on present curve screen, History Curve ID Selection interface will be displayed.



Each History Curve Screen can display 10 zones.
 You can select the ID group to view, or back to present curve by **[Quit]** .



6.6.2.2 Select the Curve Display

The box before the ID number is used to select the curve display.

You can click it.  Blue – unchecked,  green – checked.

The curve's color is same as the color of ID number.

6.6.2.3 Select the Curve Start Time

When you enter the History Curve Screen, the curve start time is 2 hours ago.

You can click the **Start Time** to input a new one (the time format should be same as the original one).

And you can select the start time by



	Select a specified time.		
	Forward 0.5 hour based on the curve		Backward 0.5 hour based on the curve
	Forward 1.0 hour based on the curve		Backward 1.0 hour based on the curve
	Forward 2.0 hour based on the curve		Backward 2.0 hour based on the curve

6.6.2.4 Zoom In & Zoom Out the Curve

You can adjust the scale of X/Y axis with the sliding bar, to zoom in or zoom out the curve.

6.6.2.5 View Other Zones

You can view the history curve of other zones by touching **[PgDn]** or **[PgUp]**.

In the first page, you will see the **[Present]** used to back to present curve screen.

6.6.2.6 Export the Historical Data

You can export the historical data record (in csv format) to USB disk by touching **[Export]**.

Notes:

Only supports USB disks that use a File Allocation Table (FAT or FAT32) format.

Only supports USB versions 2.0 and 1.1.

Use an empty USB disk or one that contain as few files as possible.

Do not remove the USB disk from the system during the writing operation.

6.6.2.7 Back to Present Curve

Touch the **[Quit]** to go back to the present curve screen.

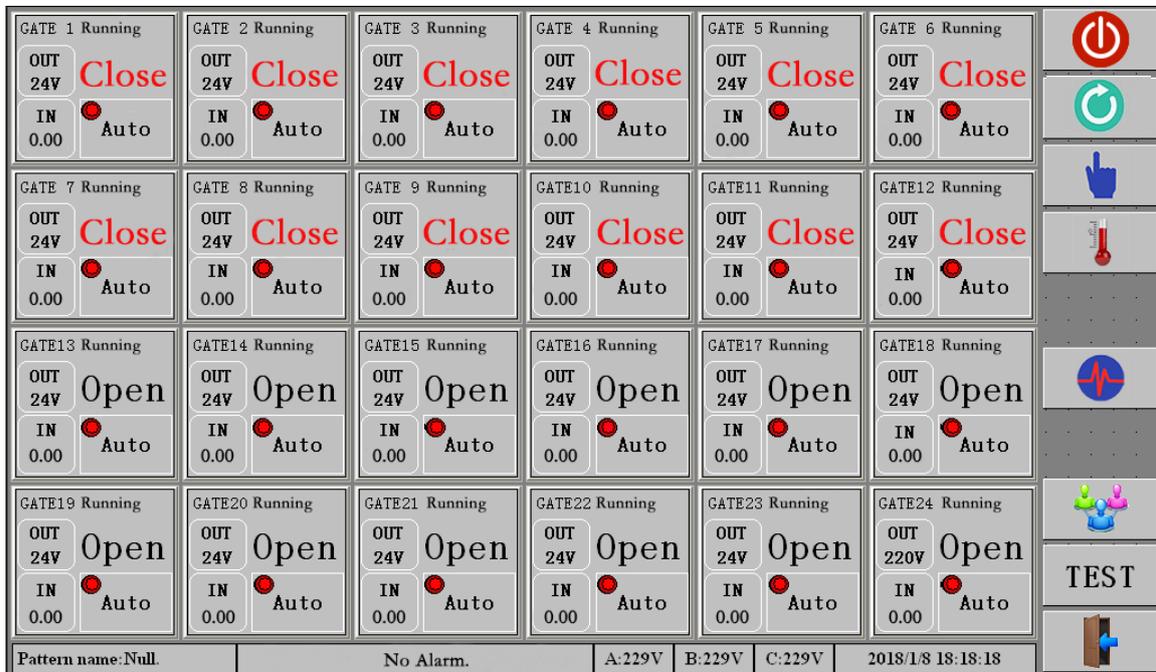
6.7.3 Alarm Status

Alarm	Alarm Description	Remark and Solution
T/C Broken	Thermocouple is broken or damaged.	Controller will shut off the output. Check the sensor or switch to manual mode.
T/C Reversed	Thermocouple is reversed.	Controller will shut off the output. Check the sensor or switch to manual mode.
T/C Error	Thermocouple is connected to controller's output terminals.	Related to parameter "Sensor Protection". Controller will shut off the output. Check the wiring. <i>It may cause a false alarm if the heater's power is large.</i>
Over Temp	PV temp is over high alarm value.	Alarm value = Setpoint + Alarm High. Controller will shut off the output. Check the controller & the sensor.
Under Temp	PV temp is under low alarm value.	Alarm value = Setpoint + Alarm Low. Check the system thermal insulation. Or switch to manual mode.
Load Broken	No heater is detected.	Related to parameter "Load Check". Controller will shut off the output. Check the heater.
Load Shorted	Heater is shorted.	Related to parameter "Load-short Sensitivity". Controller will shut off the output. Check the heater.
Triac	Triac is damaged or out of control.	Controller will shut off the output. Check the triac.
Overload	Load current is too high.	Related to parameter "Rated Current". Check the heater and the Rated current setting.
Fuse blown	Fuse is blown.	Check the heater and replace the fuse.

Heating invalid	Heater is working, but temperature does not rise.	<p>Related to parameter "Heating Invalid Diagnostic Time".</p> <p>Controller will adjust output percent to 0.</p> <p>Check the sensor condition, position, and wiring.</p>
Temp. twinkling	Communication between HMI and control module is failed	Check the module and communication wiring.
Over Voltage	Supply voltage is over alarm setting.	<p>Related to parameter "Over-Voltage".</p> <p>Check the power supply.</p>
Over Temp	Cold-junction Temperature is over alarm setting.	<p>Related to parameter "Cold-junction Temp High-alarm".</p> <p>Check the module and the fans of mainframe.</p>

Chapter 7 Sequential Valve Gate Control Operations

Touch  **[SVG]** on Temperature Control main interface, then you can enter Sequential Valve Gate Control main interface.



And touch  **[Temp]** on Sequential Valve Gate Control main interface, then you can enter Temperature Control main interface.

Notes: 1) Zone's output type is selected on modules with jumpers.

2) Input Screw position unit can be mm or inch, selected in screw position's setup (calibration).

7.1 Control Modes

 **[Auto]:**

This type of control is an auto system and requires a start trigger signal.

The controller will wait until it receives the start trigger after which it starts the timer from zero time position. From this point gates open and close according to the time or position settings that you have configured.

 **[Manual]:**

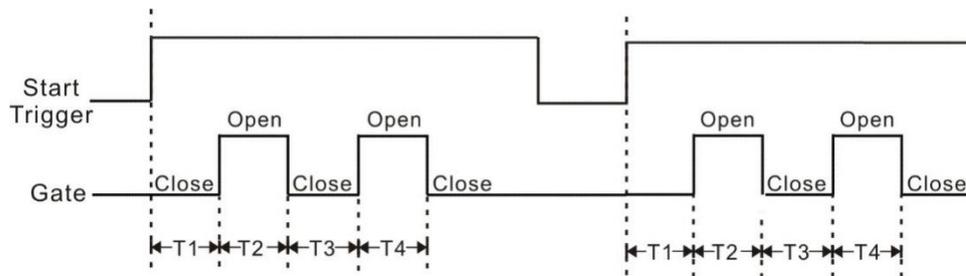
This type of control requires no start trigger signal.

Each gate can be opened or closed by touching **[MANUAL]**.

7.2 Start Trigger Modes

This Sequential Valve Gate controller supports gates open/close 1~2 times in a complete cycle.

If the start trigger duration time is longer than a complete cycle of gate open/close, then the control process is:



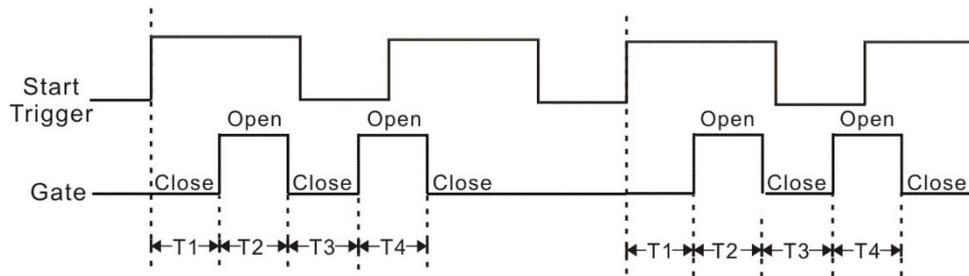
- 1) When the controller receives the start trigger, it starts the timer from the zero time position.
- 2) Gates open after T1 time (or screw position is T1) from the controller receives start trigger;
- 3) Gates close after T2 time (or screw position is T2) from the gates open;
- 4) Gates open again after T3 time (or screw position is T3) from the gates close;
- 5) Gates close after T4 time (or screw position is T4) from the gates open;
- 6) The controller waits a new start trigger.

If the start trigger time of duration is shorter than a complete cycle of gate open/close, then the control process has 4 modes selected by parameter "Input Type".:

Mode 0: Once the gate open/close cycle starts, it will ignore the new start trigger until the cycle ends.

The control process is similar to the start trigger time of duration is longer than a complete cycle of gate open/close.

Mode 0 (Input Type=0)

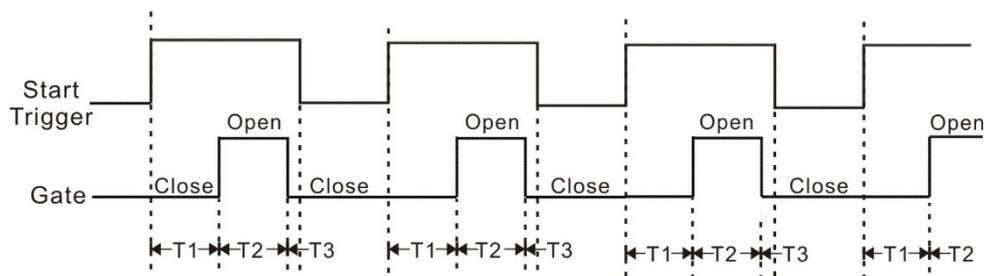


- 1) When the controller receives the start trigger, it starts the timer from the zero time position.
- 2) Gates open after T1 time (or screw position is T1) from the controller receives start trigger;
- 3) Gates close after T2 time (or screw position is T2) from the gates open;
- 4) Gates open again after T3 time (or screw position is T3) from the gates close;
- 5) Gates close after T4 time (or screw position is T4) from the gates open;
- 6) The controller waits a new start trigger.

Mode 1: The gate open/close cycle will be terminated and gate close when the start trigger ends.

The controller initializes the run timer when it receives the new start trigger.

Mode 1 (Input Type=1)



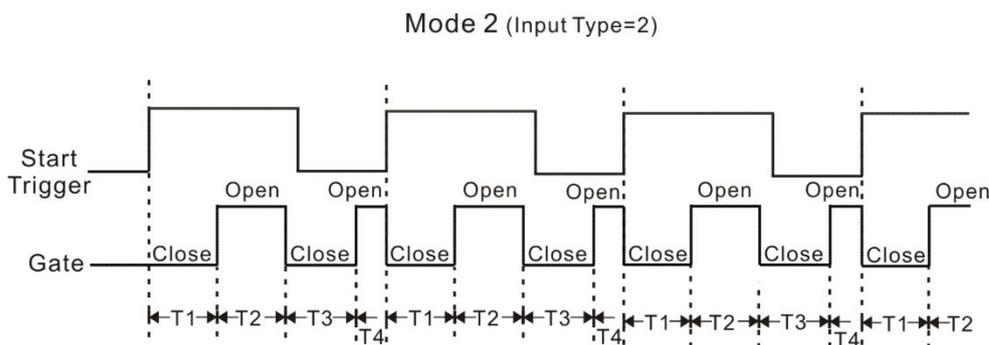
- 1) When the controller receives the start trigger, it starts the timer from the zero time position.
- 2) Gates open after T1 time (or screw position is T1) from the controller receives start trigger;
- 3) Gates close after T2 time (or screw position is T2) from the gates open;
- 4) Gates open again after T3 time (or screw position is T3) from the gates close;
- 5) Gates close after T4 time (or screw position is T4) from the gates open;

6) In the control process, when the start trigger ends, the gate open/close cycle will be terminated and gate close.

7) The controller waits a new start trigger.

Mode 2: The gate open/close cycle will be terminated and gate close when the new start trigger comes.

The controller initializes the run timer when it receives the new start trigger.



1) When the controller receives the start trigger, it starts the run timer from the zero time position.

2) Gates open after T1 time (or screw position is T1) from the controller receives start trigger;

3) Gates close after T2 time (or screw position is T2) from the gates open;

4) Gates open again after T3 time (or screw position is T3) from the gates close;

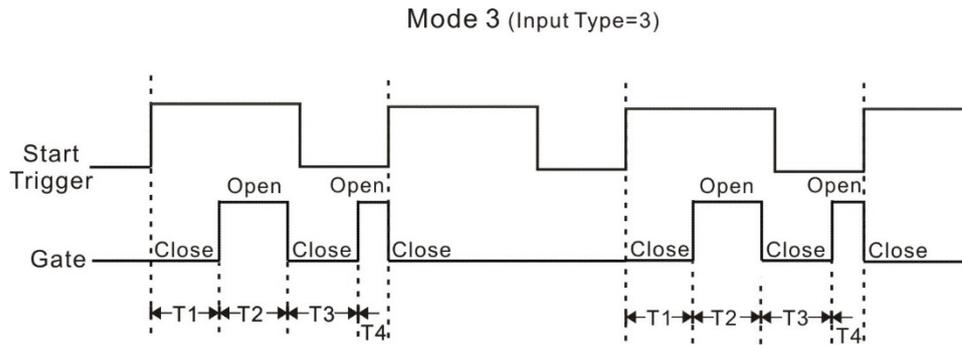
5) Gates close after T4 time (or screw position is T4) from the gates open;

6) In the control process, when the new start trigger comes, the gate open/close cycle will be terminated and gate close.

At the same time, the controller initializes the run timer to start a new gate open/close cycle.

Mode 3: The gate open/close cycle will be terminated and gate close when the new start trigger comes.

The controller initializes the run timer when it receives the next new start trigger.



- 1) When the controller receives the start trigger, it starts the run timer from the zero time position.
- 2) Gates open after T1 time (or screw position is T1) from the controller receives start trigger;
- 3) Gates close after T2 time (or screw position is T2) from the gates open;
- 4) Gates open again after T3 time (or screw position is T3) from the gates close;
- 5) Gates close after T4 time (or screw position is T4) from the gates open;
- 6) In the control process, when the new start trigger comes, the gate open/close cycle will be terminated and gate close.
- 7) The controller waits the next new start trigger.

7.3 Gate Open/Close Trigger Modes

You have two main options that you can use to set up gate opening and gate closing times.

- 1) **Time value only** – you can open and close the gate using a timer.
- 2) **Screw Position (and time)** – if you have position sensors that detect screw ram position and feed it back via an analogue (0–10Vdc) input, then you can set gate open and close relative to screw position. You can also use a combination of screw position and time.

7.4 Detail Parameters for Each Gate

Parameter	Description
T 1	Gate open delay time (or screw position) from the controller receives start trigger.
T 2	Gate open duration time (or screw position for gate closing).
T 3	Gate open again delay time (or screw position) from it close.

T 4	Gate open duration time (or screw position for gate closing).
Input Filter	Filter for start trigger, used to reduce the influence of interference. When it is too large, the controller cannot work normally.
Input Type	Start trigger modes selection.
Resolution	Resolution for Time (sec) / Screw position (mm/inch)

7.5 Gate Setup

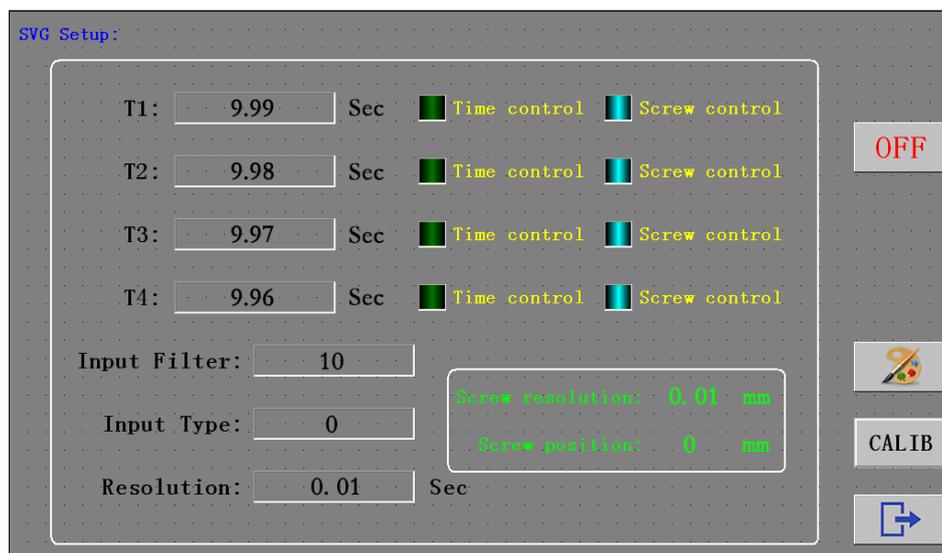
Touch the Gate Status “Open” or “Close” on the main interface, then you can enter Gate Setup Screen (different authority can see different parameters, and no parameter can be seen without login).

7.5.1 Operators-Login Status

- **Set T1 ~T4:**
click the value to call up small keyboard.
- **Back to main interface:** touch [Quit].



7.5.2 Engineers or Administrators Login Status



- **Screw Position Setup:** touch  to call up screw position setup screen.

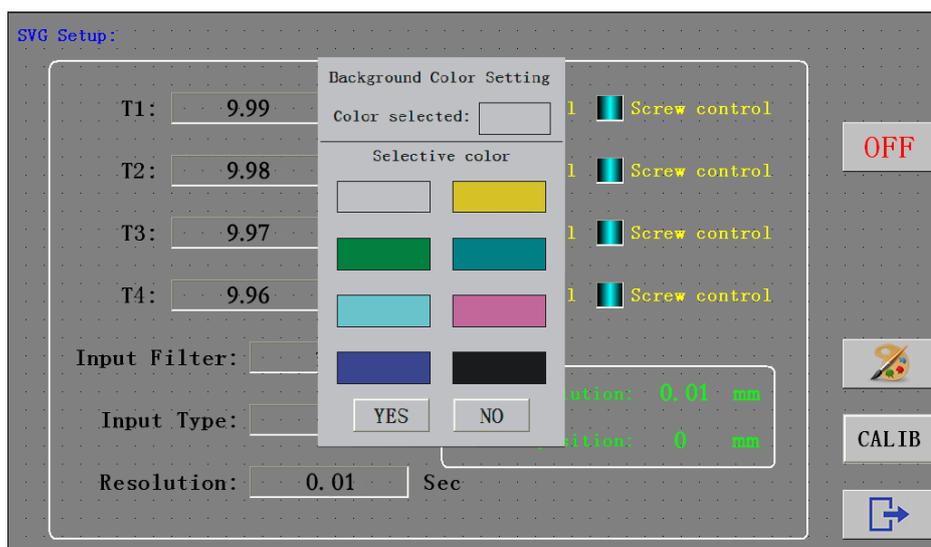


- 1) **Select screw position unit:** mm or inch, the green means selected.
- 2) **Set screw position resolution:** click the value to call up small keyboard, set 0.01, 0.1 or 1.
- 3) **Set screw forward & back position:** click the value to call up small keyboard.
- 4) **Calibrate screw forward & back position:** push the screw to forward position and touch **[Calibration]** forward; next push the screw to its back position and touch **[Calibration]** back.

You can repeat calibration if you feel that either position was incorrect.

When you are satisfied that all is good, touch **[Quit]** to set the figures and leave the screen.

- **Select background color of this gate:** touch  **[Color]** to call up background color setting.



Select a color you want to use as background of this gate, and then click [YES] to set the figures and leave the screen.

- **Turn off or turn on this zone:** touch [OFF] / [ON]
- **Set input filter:** click the value to call up small keyboard.
- **Set input type:** click the value to call up small keyboard.
- **Set time resolution:** click the value to call up small keyboard, set 0.01, 0.1 or 1.
- **Select gate open/close trigger modes:**
click the indicator of Time control or Screw control to select modes for T1~T4.
 blue - unchecked,  green - checked.
- **Set T1~T4:** click the value to call up small keyboard.
- **Back to main interface:** touch  [Exit].

7.6 Preview the Setting

Touch  [Graph] on the main interface, and then you can see the sequential chart of all gates open/close setting. You can compare and confirm the setting.

7.7 Test

Touch  on the main interface to simulate a start trigger, and then the controller will start a complete gate open/close cycle.

Chapter 8 Run/Stop System

8.1 Run System

Touch  [Run] on the main interface of temperature control or Sequential Valve Gate control to run the system.

Temperature Control

All zones start to work in Auto mode (disable keep the data in system setting) or the mode before power off (enable keep the data in system setting) except the module is turned off by zone setting.

- You can touch  [Standby] on the main interface to make all zones work in Standby mode.

- You can make a specified zone work in Standby mode by Zone Setting.
- You can make a specified zone work in Manual mode and set its power output by Zone Setting.
- You can Run or Stop a specified zone by Zone Setting.
- You can activate Boost or Auto-Tune function for a specified zone by Zone Setting.
- You can Run or Stop a group of zones with the same background color by Global Config.

Sequential Valve Gate Control

All zones start to work in Auto mode.

You can touch  **[Manual]** on the main interface to make all zones work in Manual mode.

In Manual mode, you can open or close each gate by touching **[MANULE]**.

8.2 Stop System

Touch  **[Stop]** on the main interface of temperature control or Sequential Valve Gate control to stop the system.

All modules stop working.

- You can Stop a specified zone by Zone Setting.
- You can Stop a group of zones with the same background color by Global Config.