SIFR

Intelligent Flow Regulator

Date: Mar. 2020

Version: Ver.B (English)

SHINI

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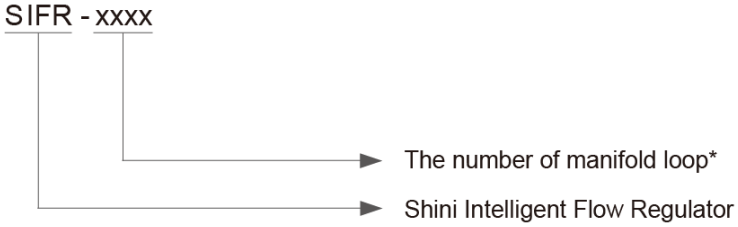
1. General Description

Read this manual carefully before operation to prevent damage of the machine or personal injuries.

SIFR series intelligent flow regulator is designed to work with water heater, water chiller or cooling tower that can connect with multiple mould interfaces. Its functions of temperature, flowrate monitoring and control can adapt to different working conditions.

Model: Intelligent Flow Regulator SIFR

1.1 Coding Principle



Notes: *

For example: The number of SIFR-200 manifold loop is 2, which is 2-in 2-out.

The number of SIFR-1000 manifold loop is 10, which is 10-in 10-out.

1.2 Feature

- Digital flow and temperature monitoring system is able to process real-time control of the flowrate, temperature in each pipe, which can display instant mould loop blockage to avoid the rejects.
- The regulating value in each return loop can control precise flowrate in each loop by adjusting different water loops.
- 7” touch panel presents clear display of simple operations.
- The display of graphic and numerical data enables more intuitive adjustment of the return loop.
- Alarms for real-time flowrate and temperature monitoring indicate abnormalities in the loop in time.
- RS485 communication interfaces make centralized monitoring with the host units available.

1.3 Options

- Quick hose connector M13.5×3/8”PT, quick air pipe connector Φ6-Φ16×3/8”PT and Teflon pipe connector 3/8” are optional
- Water inlet elbow of 3/4” Teflon pipe is optional
- Floor mount is optional

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

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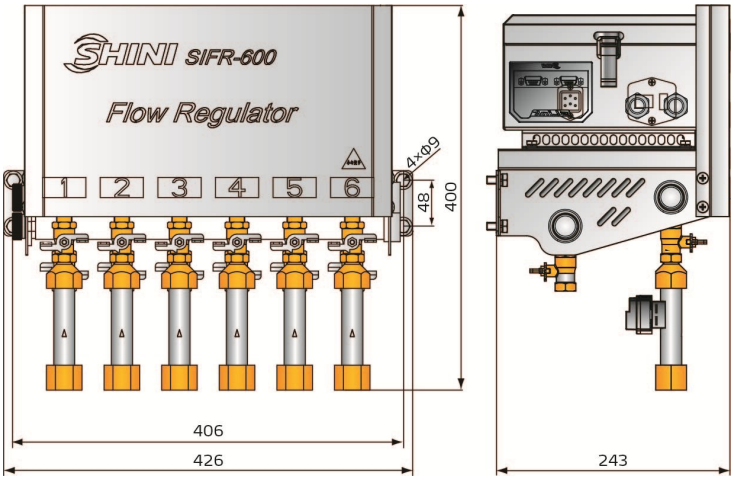
Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.：

Tel: (91) 250 3021 166

1.4 Technical Specifications



Picture 1-1：Out Dimensions

Table 1-1：Specifications

Item	Specifications
Version	B
Working temperature	0-120˚C
Measuring range	1-15 l/min
Working pressure	0~100˚C, max 16bar 100~120˚C, max 8bar
To mould/return mould	3/8”PT
Main pipe in/out	3/4”PT
Power	1Φ 230V,50/60Hz

Table 1-2：Installation Dimension Table

Model	SIFR-200	SIFR-400	SIFR-600	SIFR-800	SIFR-1000	SIFR-1200
Dimensions A(mm)	406	406	406	526	646	766

1.5 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of the machine or personal injuries.

1.5.1 Safety Signs and Labels

Danger!

The unit is designed to endure high temp, and high pressure. For safe operation, do not remove the covers or switches.

Attention!

The unit should be operated by qualified personnel only.
During operation, avoid wearing gloves or clothes that may cause danger.
Turn off main switch when power supply is off.
Stop the unit when there may be power supply problems caused by static electricity.
Put on safety gloves and shoes during installation or relocation.
Components from our company can only be used for replacement.

Warning!

Do not touch the switch with wet object or hands.
Do not use the machine before fully aware of its performance.
Be careful not to touch or hit the switch or sensor.
Please keep enough operation space, and keep away obstacles.
To avoid producing statics, clean the floor from oil or water to keep a dry environment.
Protect the machine against severe vibration or collision.
Do not remove safety signs or make it dirty.
Drunken, medicine-taking, or men without proper judgement should not operate the machine.

Warning！

High temperature, take care of hands! This label is attached on the surface

of heating parts.

1.6 Exemption Clause

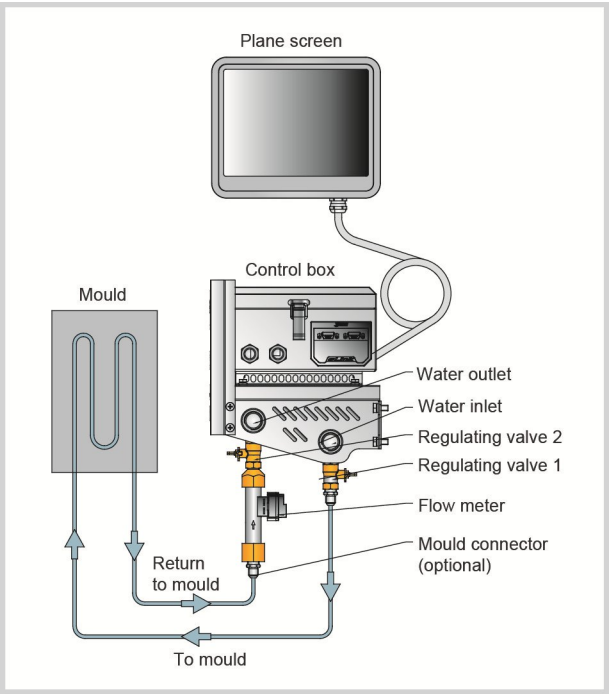
The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3. Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4. Employing consumables or oil media that are not appointed by Shini.

2. Structural Features and Working Principle

2.1 Working Principle



Picture 2-1：Working Principle

Circulating water enters the flow regulator through the water inlet.

Circulating water enters the mould via the regulating valve 1.

When circulating in mould, the water enters the flow monitor via the valve 2 of the regulator, and the water flowrate and temperature data are monitored by the electronic flow meter.

The circulating water then returns to the water heater, water chiller or cooling tower through water outlet.

The data detected by the flow meter will be connected to the panel screen in display.

3. Installation and Debugging

3.1 Attention

1) The maximum flow rate of the water inlet shall not be greater than the maximum throughput of the regulator (the maximum flow rate of each loop is 15L/min).
2) This regulator can only be used for water purification, not for other liquids or gases.
3) If the mould water flow demand is less than the flow rate of the water inlet, it is necessary to use pipelines to connect other pipes for shunt circulation.
4) The pressuer of the circulating water must be stable. Otherwise, it will result in flow fluctuation and error detection.
5) When connecting the main loop inlet and outlet, please distinguish the water input and output direction. If the water direction is wrong, it will cause detection error and lead to machine failure;
6) When used in the water circulation with many impurities, it must install the water purifier in front of the water inlet of the flow regulator.

3.2 Pipeline Connection

When connecting the pipe from the inlet to the mould, it must use two spanners to fix the side connector and fasten it. Otherwise, the machine will leak water.

3.3 Power Connectors

1) Confirm whether the connecting power supply matches the required specifications, and then connect the power wire.
2) The flow regulator is 1Φ230V;
3) Refer to the electrical wiring diagram to complete the electrical installation.

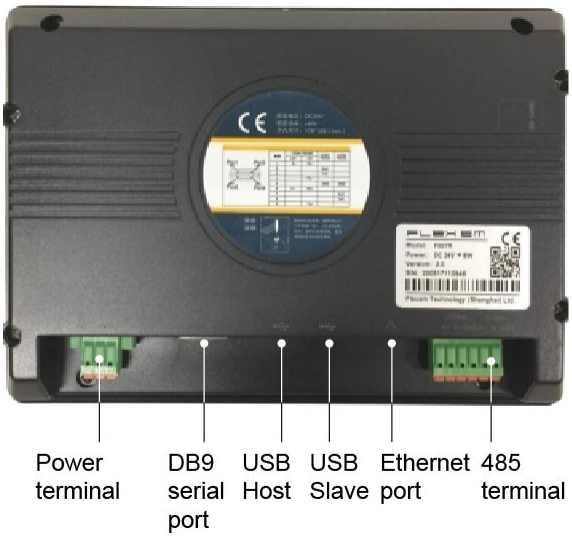
4. Operation

4.1 Operation Procedure for HMI

1) Do not use keen-edged object instead of hands to operate the touch screen, and prevent violent collision of it.
2) In a dry environment, static electricity may accumulate on the touch screen. Use a metal wire to discharge it before operating.
3) Use alcohol or eleoptene to wipe off the pollutants on the screen. Other solvent may cause the color of the screen to fade out.
4) Do not tear down any parts of the touch screen or take away any PCBs attached to it.

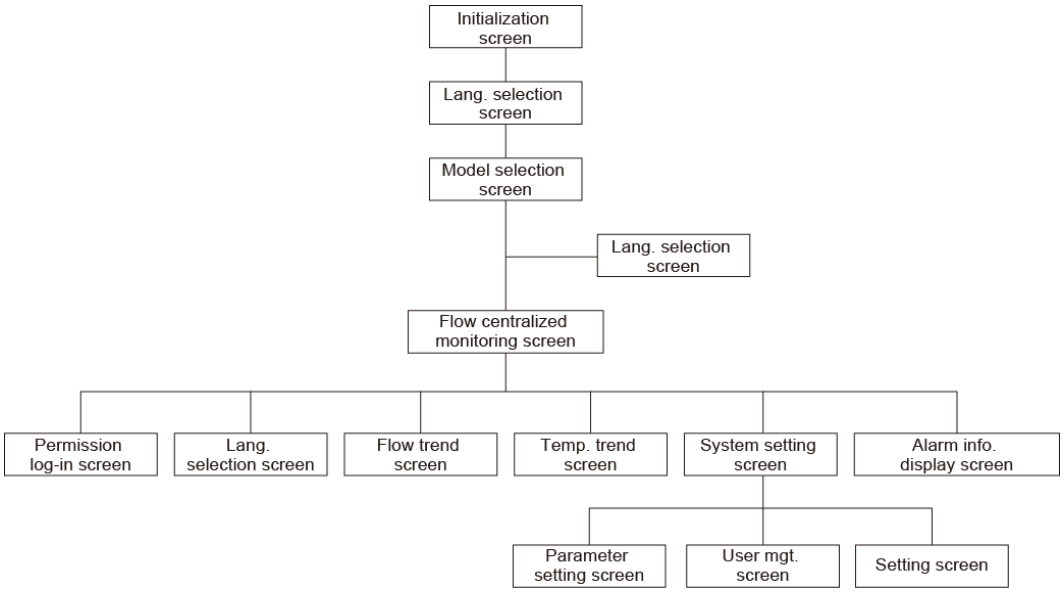
4.2 Description of touch screen

Pic. 4-1：Description of touch screen



Pic. 4-2：Terminal wiring behind the touch-panel resistive screen

4.3 System Operation Flow

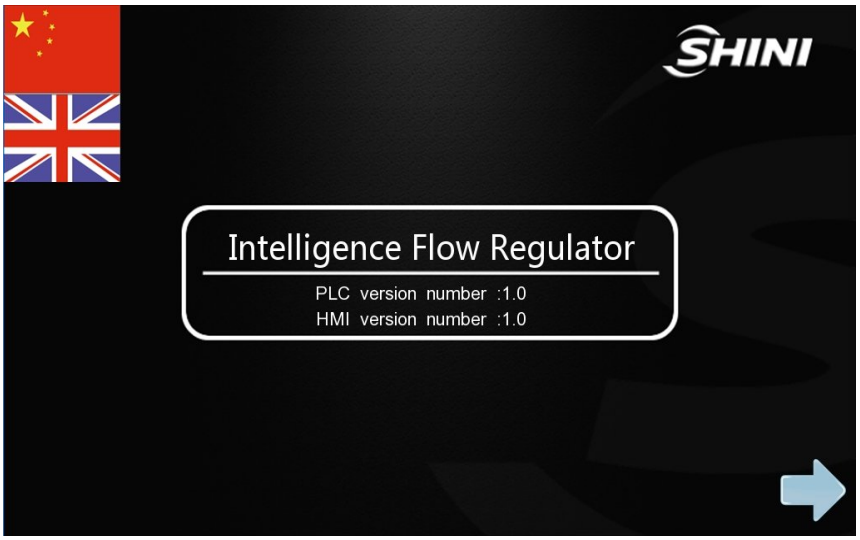


Pic. 4-3：System Flow Chart

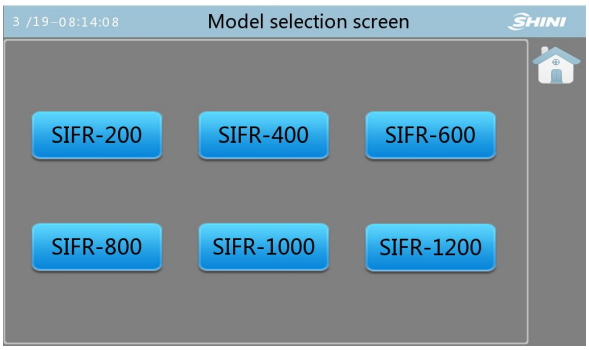
4.4 specification

4.4.1 System Initialization Screen

After the system powered on, the touch panel screen initializes, and it enters language selection screen, as shown below: Click the "Chinese" or “American” national flag on the upper screen to select the Chinese or English screen and then enter the model selection screen.



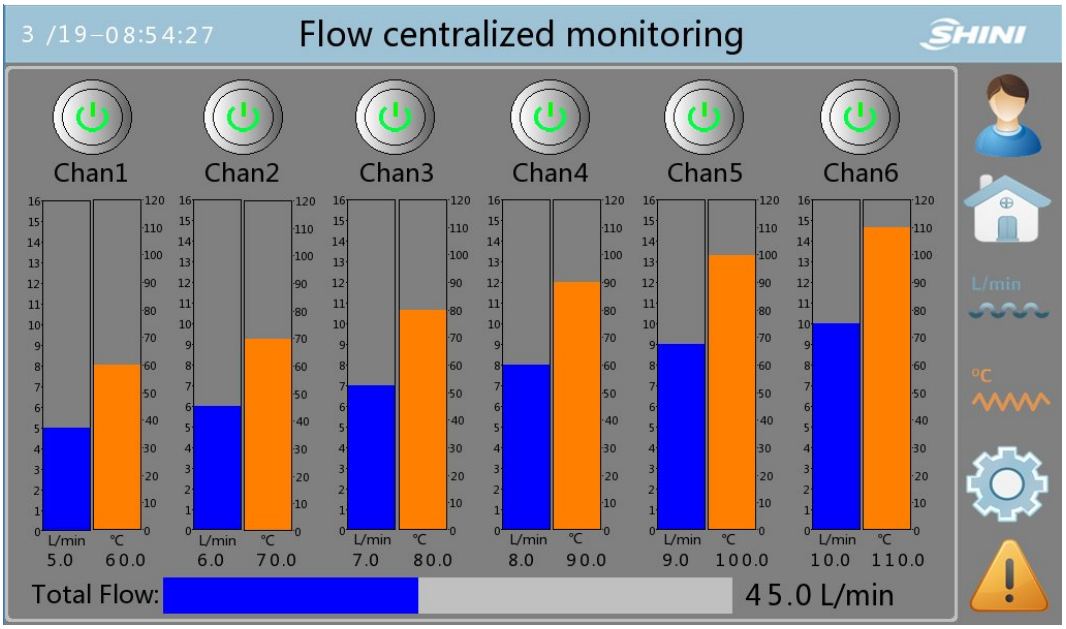
Pic. 4 4: Language selection screen



Pic. 4-5：Model selection screen

Take SIFR-600 as an example, and press 

key to select model SIFR-600, and then enter SIFR-600 flow centralized monitoring screen.

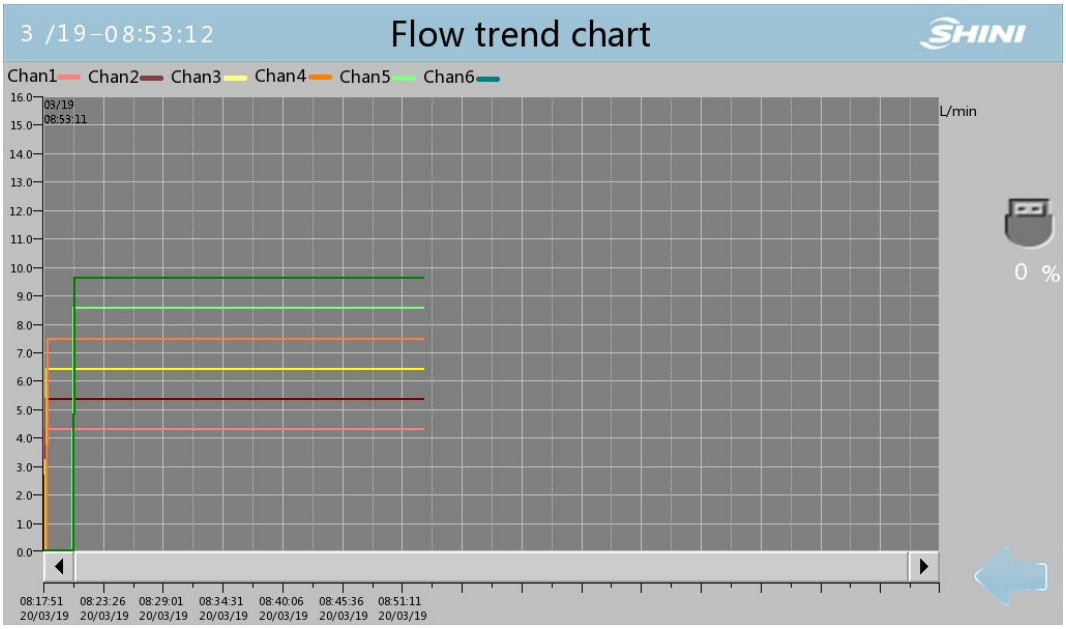


Pic. 4-6：Flow centralized monitoring screen

Press  key in the flow centralized monitoring screen to return to the language selection screen.

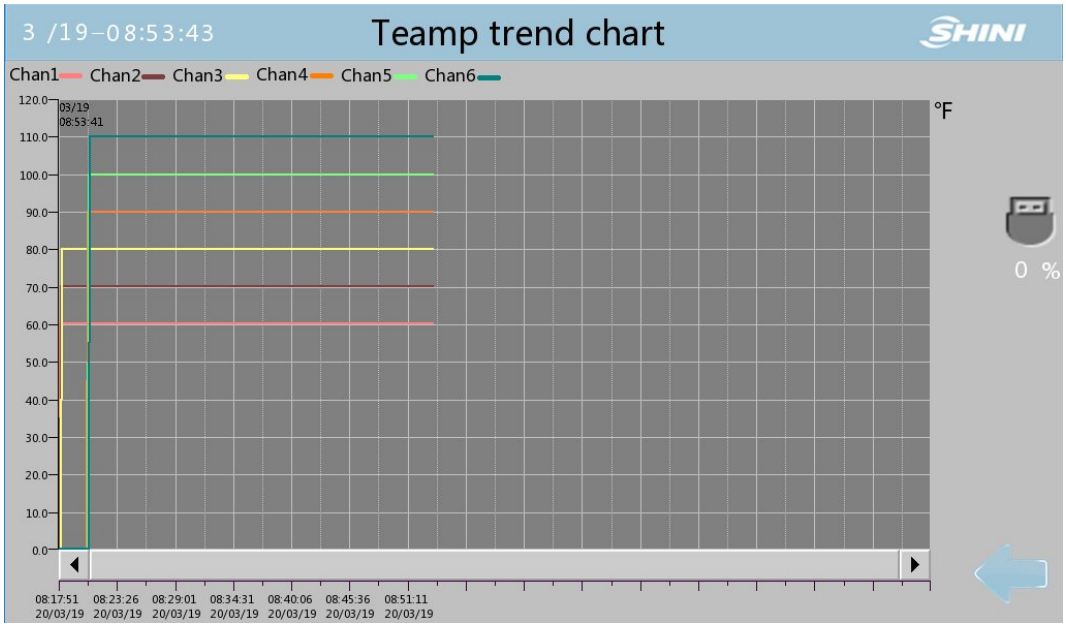
Press 

key in the flow centralized monitoring screen to enter the flow trend chart screen.



Pic. 4-7：Flow trend chart

Press  key in the flow centralized monitoring screen to enter the temperature trend screen.



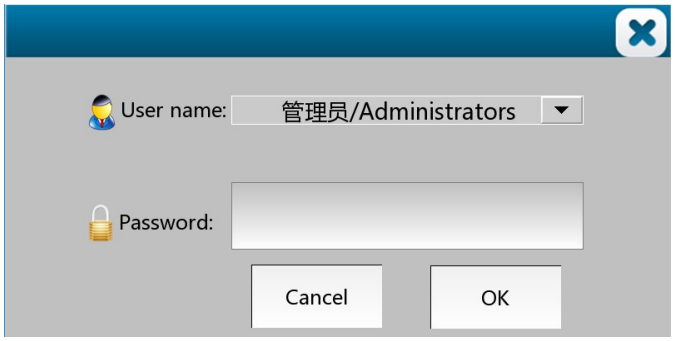
Pic. 4-8：Temp. trend chart screen

Press  key in the flow centralized monitoring screen to enter the alarm information screen.

Pic. 4-9：Alarms display screen

 is silence key；  is reset key;

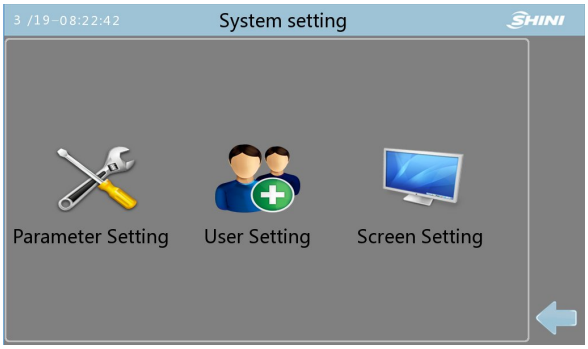
Press  key in the flow centralized mornitoring screen to enter user log-in screen.



Select username：shini　　Input passward：3588

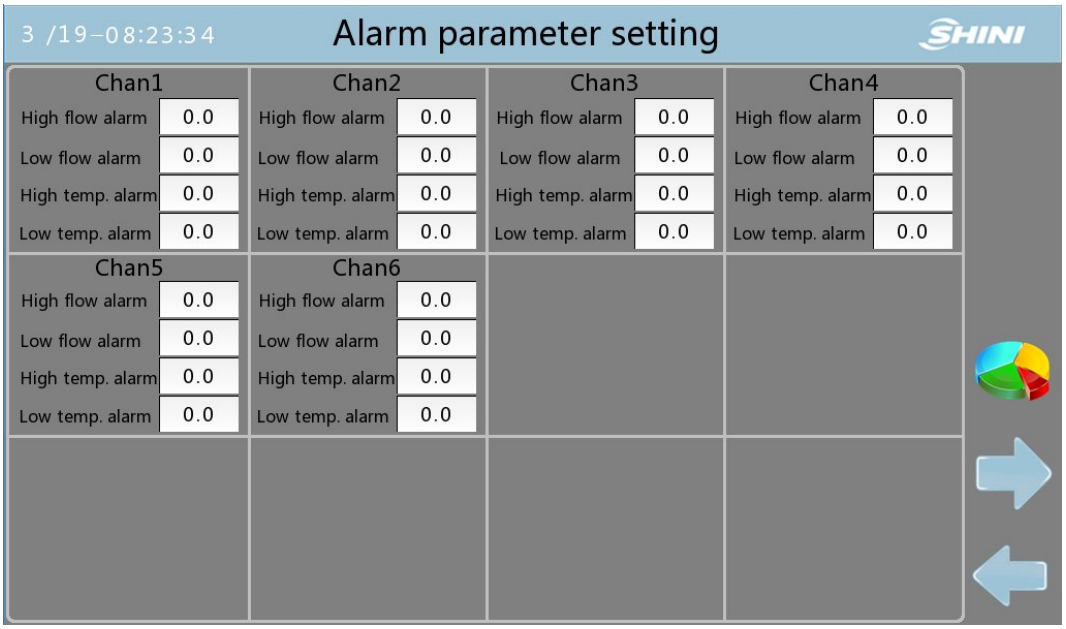
Pic. 4-10：　User log-in screen

Press  key in the flow centralized monitoring screen to enter the system setting screen.



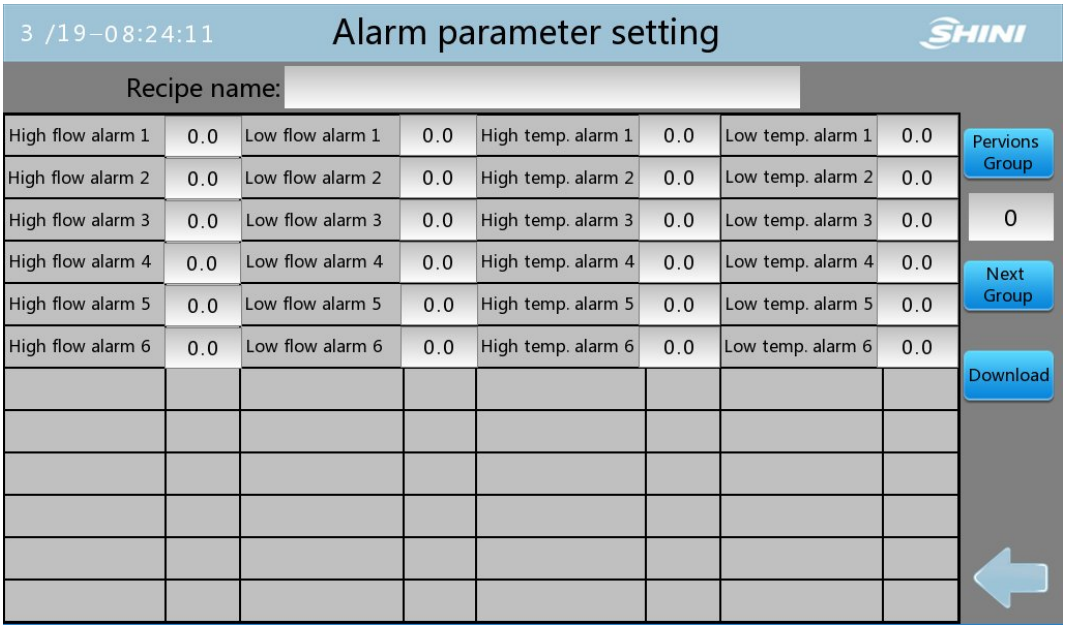
Pic. 4-11：System setting screen

Press  key in the system setting screen to enter the parameter setting screen. In this screen, the user can set the upper and lower limit alarm value of the flow and temperature.



Pic. 4-12：Alarm parameter setting screen

Press  key in the alarm recipe setting screen to enter the alarm parameter setting screen.



Pic. 4-13：Alarm recipe setting screen

Parameter recipe setting method:

1. Define a recipe name;
2. Set the alarm parameter value;
3. Press the download key to download to PLC;
4. Click Up and Down key to check or create the recipe in different groups with the same name and recipe in different groups with different names.

5. Trouble-shooting

Symptom	Possible causes	Solution
No screen display on the touch screen after power connection	The main power switch is broken Power circuit failure	Change the power switch Check the power circuit, and change the fuse
Flow/temp. “is 0”	Sensor broken Poor ground connection	Check the sensor circuit, and sensor Check whether the main power is connected to the ground properly

6. Maintenance and Repair

1) When inspecting the machine, it is necessary to cut off the power supply, discharge the pressure and water first, and ensure the inspection and maintenance space before operation.
2) In order to prolong the service life of the system and safety accidents, it must carry out regular inspection.
3) The monitoring components are plastic parts, please disassemble them strictly according to the requirement in order to avoid damage during maintenance.

6.1 Flow Regulator Disassembly

1) Loosen the left fixed nut on the water manifold, push the regulating water manifold to the right slightly, and then take out the water manifold.
2) Take out the middle clamp and the flow sensor vertically.

6.2 Flow Sensor

Remove the flow sensor from the regulator, and clean the sensor detection unit

6.3 Maintenance Schedule

6.3.1 General Machine Information

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____V Frequency _____ Hz Power _____ kW

6.3.2 Installation & Inspection

☐ Check the pipes are correctly connected.

Inspection of Electric Components

☐ Voltage _____V _____Hz

☐ Fuse melt current：1 Phase _____A 3 Phases _____ A

☐ Check phase sequence of the power supply.

6.3.3 Daily Checking

☐ Check the switch of the machine.
☐ Check all the electrical wires.

6.3.4 Weekly Checking

☐ Check loose eletrical connections.
☐ Check the flow sensor
☐ Check whether the pipe connector is loose

6.3.5 Monthly Checking

☐ Check the sensitivity of the flow sensor
☐ Clean the flow sensor

6.3.6 Half-yearly Checking

☐ Check whether the pipe connector is loose
☐ Check whether the indicator is working properly.
☐ Clean the circulation pipeline

6.3.7 Yearly Checking

☐ Check whether the pipeline is damaged or not
☐ Check whether all circuit connectors are in good condition