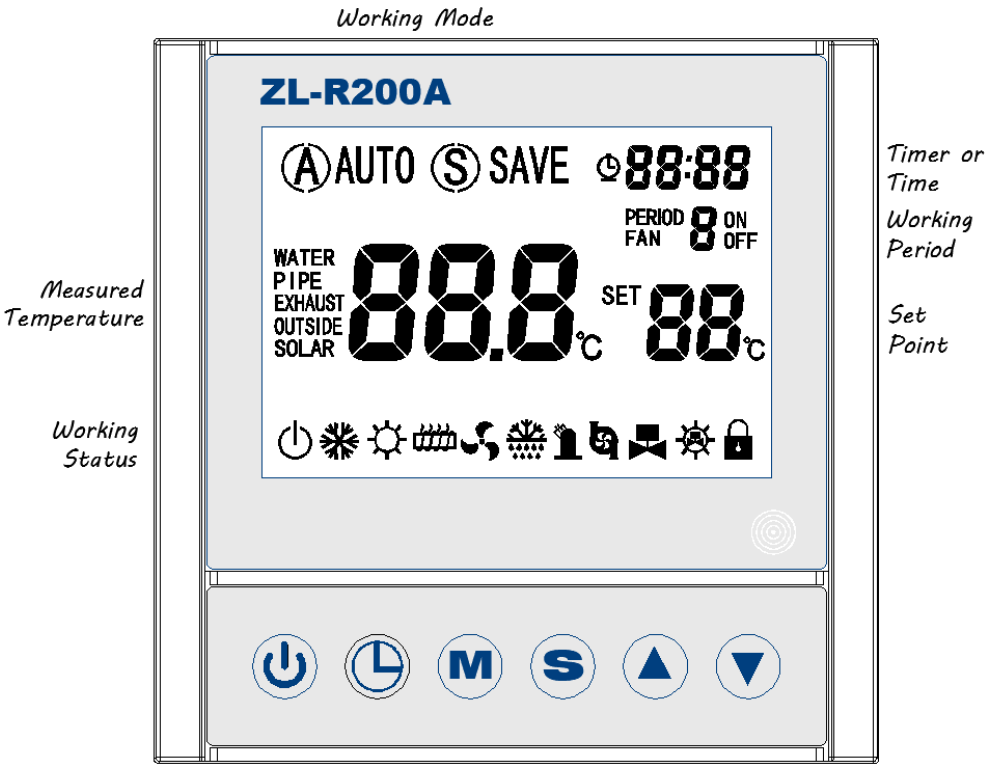
ZL-R200A Heat Pump Water Heater Controller
Instruction Manual V1.0b

Main Function

Auxiliary heating function
Water flowing warning
Ventilation pump control
Antifreeze function
Sensor failures action
Auto defrost function
Auto restart function
Exhaustion temperature protection
Compressor delay and pressure protection

Technical Specification

Sensor:
NTC 10K/3470
Set range:
20 ~ 60℃
Display range:
-40 ~ 130℃
Working temperature:
0 ~ 50℃
Storage temperature:
-10 ~ 60℃
Ambient humidity:
20 ~ 85%RH without dew
Power supply:
220Vac ±10% 50/60Hz
Load:
Compressor 15A
Heating 8A
Others 3A



Failure Code

No.	Code	Failure	No.	Code	Failure
1	E01	Water container sensor failure	5	E05	Water flow warning
2	E02	Pipe Coil sensor failure	6	E06	High/low pressure input warning
3	E03	Exhaustion sensor failure	7	E07	Data saving failure
4	E04	Outdoor sensor failure	8	E08	Communication failure

Display Indication

Icon	Display	Not shown	Icon	Displaying	Not shown
	Online	Offline		Compressor running	Compressor stop
	Heating	Not heating		Pump running	Pump stop
	Electrical heating	Electrical heater off		Four valves on	Four valves off
	Outdoor fan running	Outdoor fan stop		Locked	Unlocked
	Defrosting	Not defrosting now			

Key Operation

Temperature Inquiry

Press (S) key to check all sensors' temperature consecutively. The result keeps displaying for 3 seconds.

On/Off

Keep ⏻ key depressed for 3 seconds to switch between online and offline.

Set (water) Temperature (SP)

Press ▲ ▼ key to set temperature. Keep depressed can fast set. Factory default set is 40℃.

System Parameter Set

Keep S depressed for 3 seconds, the big digits show “P00” for password entering.

Press ▲ ▼ key to set password, press S to confirm.

If the password is wrong, exit. Else enter into parameter set status:

Press ▲ ▼ to select parameter. Press S to show the value of the parameter.

Press ▲ ▼ to set the value. Press S to return back to parameter selection.

Keep S depressed for 3 seconds to save the settings, and exit.

The status will exit, if there is no key operation for 15 seconds, and the settings will not be saved.

System Parameter Table:

No.	Code	Setting function	Range	Indication	Default
1	U01	Hysteresis	2 ~ 10℃		5
2	U30	Defrost start time	10 ~ 90 min		45
3	U31	Defrost start temperature	-9 ~ 0℃		-5
4	U32	Defrost stop temperature	2 ~ 30℃		10
5	U33	Maximum defrost time	2 ~ 15 min		8
6	U34	Valve mode	0 ~ 1	0: heat off, defrost on 1: heat on, defrost off	0
7	U50	Exhaust protection temperature	50 ~ 125℃		110
8	U51	High/low pressure warning mode	0 ~ 2	0: Disable 1: Closed when warning 2: Open when warning	0
9	U52	Water flowing switch mode	0 ~ 2	0: Disable 1: Effective when closed 2: Effective when open	0
10	U80	Auto restart function	0 ~ 1	0: Disable; 1: Enable	0
11	U81	Keypad lock	0 ~ 1	0: Unlocked; 1: Locked	0
12	U90	passwords	00 ~ 99		11

Working Mode

Press M to switch between “AUTO” and “SAVE” working mode.

“AUTO” mode: always heating according setting.

“SAVE” mode: only heating within three set periods.

When “Auto restart function” is disabled, it will be “AUTO” mode after power supplied.

Clock Setting

Press 🕒 key, the hour digits will blink, press ▲ ▼ key to set hour.

Press 🕒 key again, minute digits will blink, press ▲ ▼ key to set minute.

Press 🕒 key to exit.

Periods Setting for “SAVE” Mode

Keep 🕒 key depressed for 3 seconds to enter the period setting.

Press 🕒 key to select the period and on/off. Press ▲ ▼ to set the value of the time.

Keep 🕒 key depressed for 3 seconds to save the settings, and exit.

The status will exit, if there is no key operation for 15 seconds, and the settings will not be saved.

The maximum periods are 3. Every period has a on-time and a off-time.

If one period’s on-time = off-time = 0, this period will be shut off.

If one period’s off-time is earlier than its on-time, this off-time is the time of the 2nd day.

Keypad Lock

When U81 = 1, only ⏻ and S have reaction.

Control Function

Temperature Control

When T-water ≤ SP – U01, start heating.

When T-water ≥ SP, stop heating.

Heating start procedure:

Pump is on; 30 seconds later, outdoor fan is on, valve takes action; 30 seconds later, compressor is on.

Heating stop procedure:

Compress is off; 30 seconds later, outdoor fan is off, valve takes action; 30 seconds later, pump is off.

Note: the four-way valve works according to U34.

Aux Electrical Heater Control

If T-outdoor ≤ 10℃, and T-water ≤ 33℃, electrical heater starts.

If T-outdoor ≥ 12℃, or T-water ≥ 35℃, electrical heater stops.

Note: Heater will be on during defrosting.

Water Ventilation Pump Control

The pump will be on 60 seconds before the compressor is on, be off 60 seconds after the compressor is off.

The pump will always be on during defrosting.

If there is no water flowing for 10 seconds, stop compressor and heater, and keep warning.

When the water flowing restores, restore the system control

Avoid Freezing in Winter (in Offline Standby State)

When T-outdoor ≤ 2℃, start anti-freezing pumping, the pump run 3 minutes for every 30 minutes.

When T-outdoor ≥ 3℃, stop this anti-freezing protection pumping.

Auto Defrost

Start auto defrosting: When compressor has been running for U30, and if T-pipe ≤ U31, start defrosting.

Compressor and outdoor fan stop; 55 seconds later, valve acts; 5 seconds later, start compressor.

Stop defrosting: When T-pip ≥ U32, or the compressor has been running for U33, stop defrosting.

Stop compressor; 55 seconds later, valve acts; 5 seconds later, start heating control.

Defrost after turning the system online: When turn online, if the T-pipe ≤ U31, defrost 1st.

Timer Defrost

If pipe sensor fails， and the compressor has been running for U30, and

If outdoor sensor is ok, and T-outdoor ≤ U31, start defrosting.

If outdoor sensor fails, start defrosting.

Exhaustion Over Temperature Protection

During compressor is on, if T-exhaustion ≥ U50, stop compressor.

When T-exhaustion ≤ U50-10℃, stop protection, and start heating control again.

High/Low Pressure Warning and Protection

When compressor running, if the high/low pressure is effective for 15 seconds, start pressure protection:

Stop compressor, until the high/low pressure is not effective.

If the pressure protection occurs 3 times within an hour, or once high/low pressure effectiveness keeps for one hour, the controller will be in machine protection mode:

Never start heating again, until stop power supply and supply power again.

When compressor has just started, the high/low pressure is not check for 3 minutes.

Note: the high/low pressure mode is set in U51.

Compressor Delay Protection

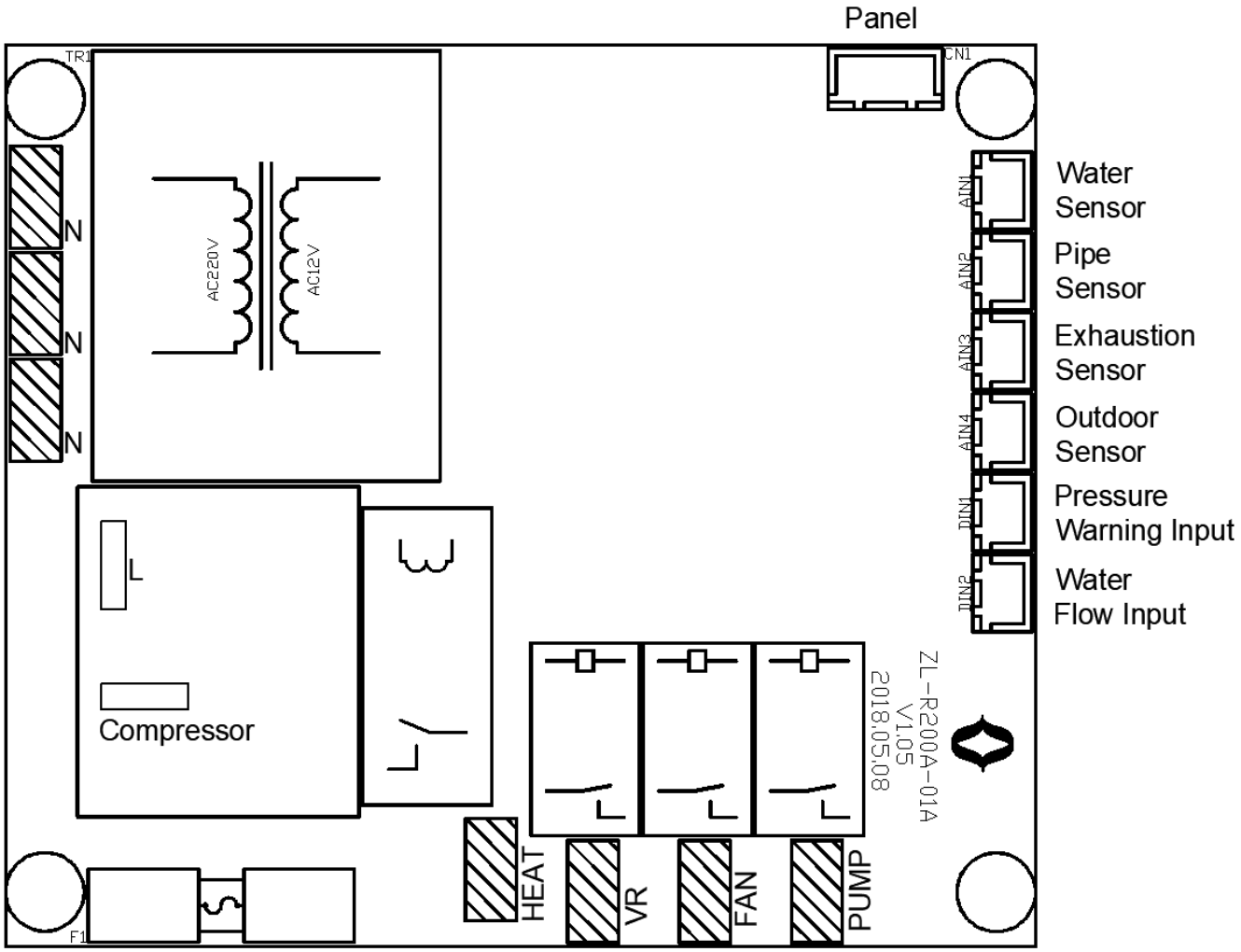
After power supplied, the compressor can start after 3 minutes.

After compressor stops, it can re-start 3 minutes later.

Water Sensor Failure Warning

When this sensor fails, system stops heating.

Wiring Diagram



Attention

Set U34 correctly, otherwise system does not work correctly.

The real clock can only keep running correctly for 72 hours after power supply loses.

All sensors must be installed at correct position.

Do not plug in/out panel bundle with power supplied.

Panel should be installed indoors, instead of outdoors.