

# Wiring

## R32 & R290

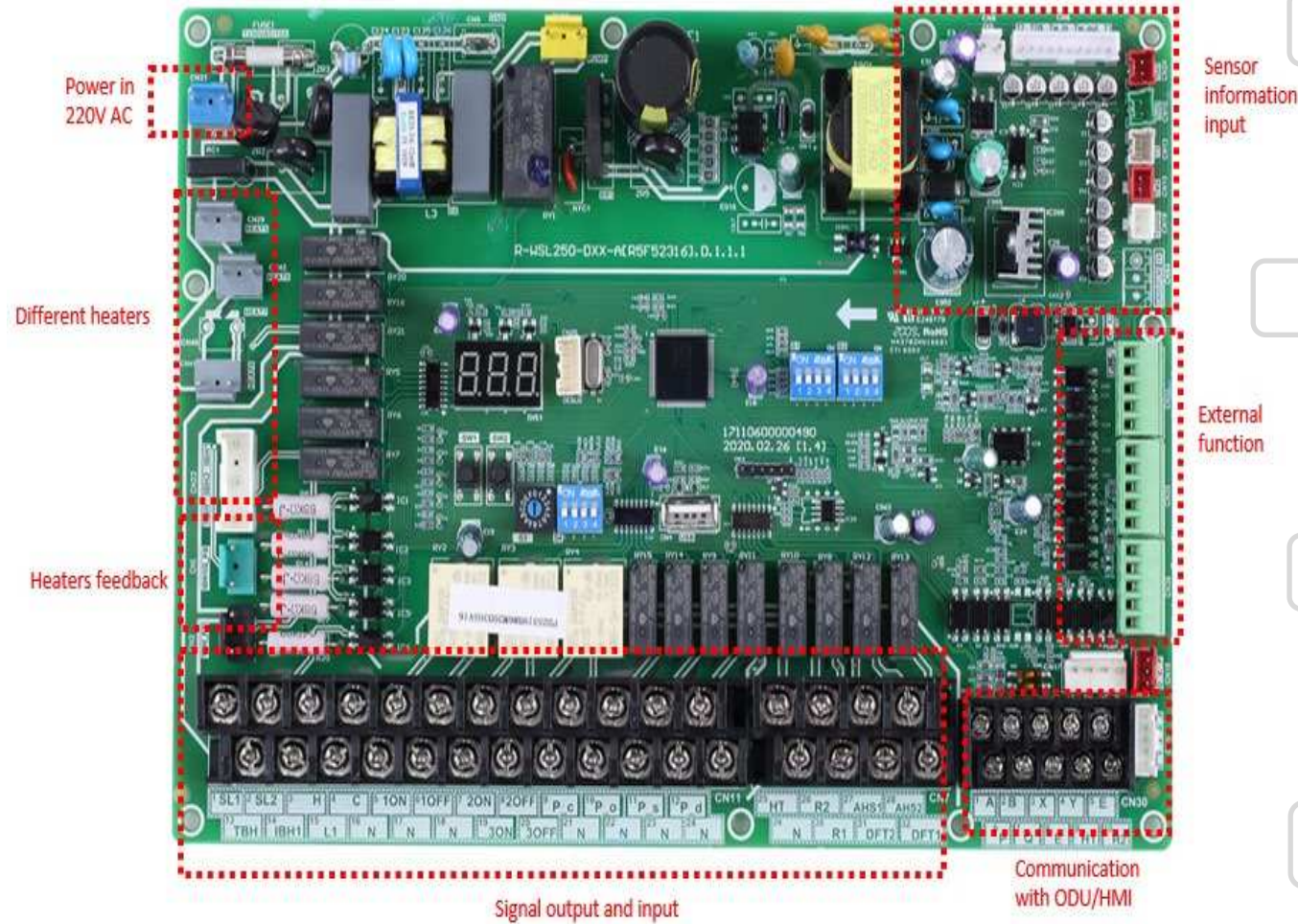
1. 3/2 Port Value (SV-1)
2. External Pump (O)
3. Third Party Room Thermostat (Heat Call)
4. Controller
5. DHW Sensor
6. TBT Sensor (if required)



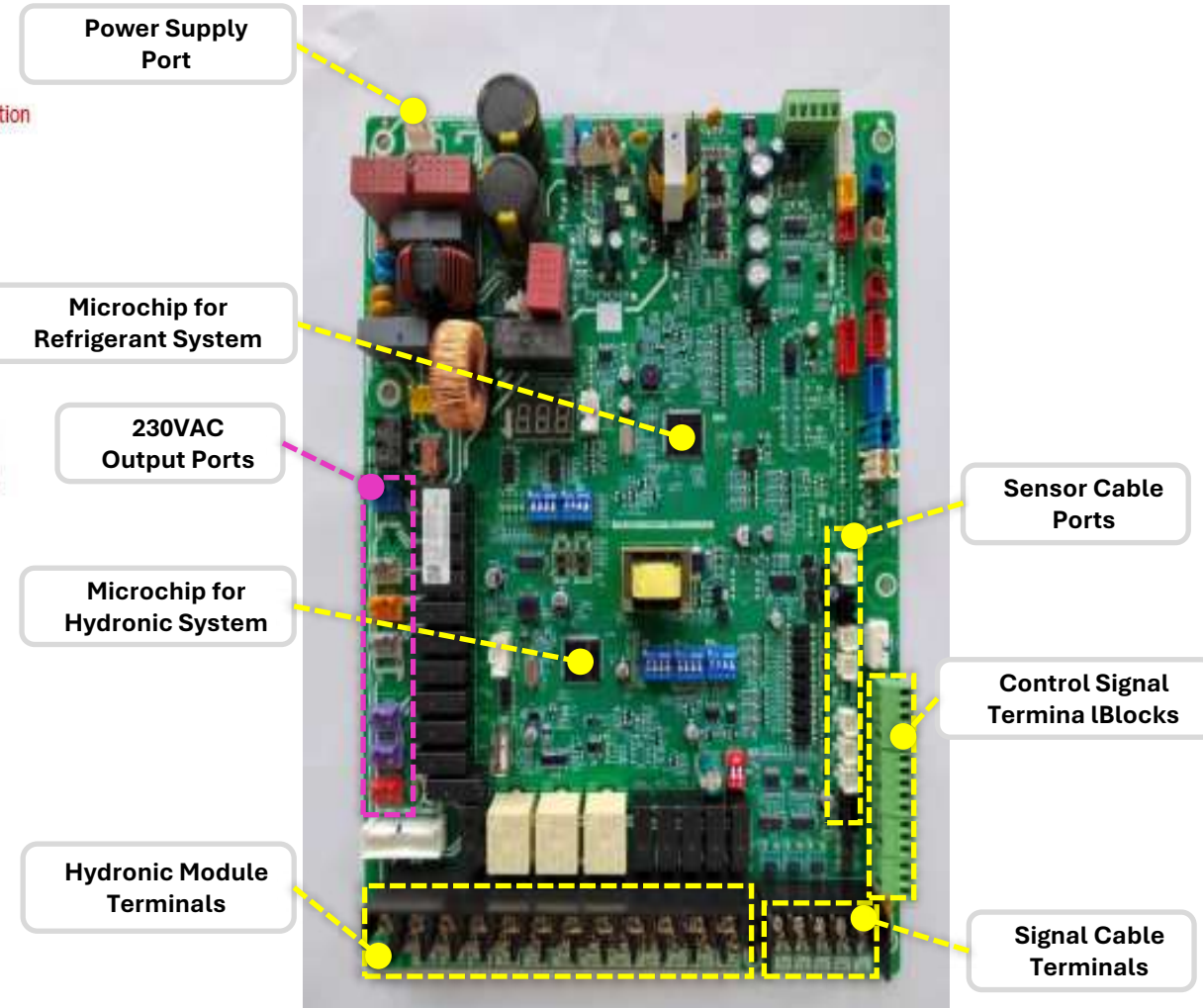
# R32 & R290 Hydroboard PCB



## R32



## R290



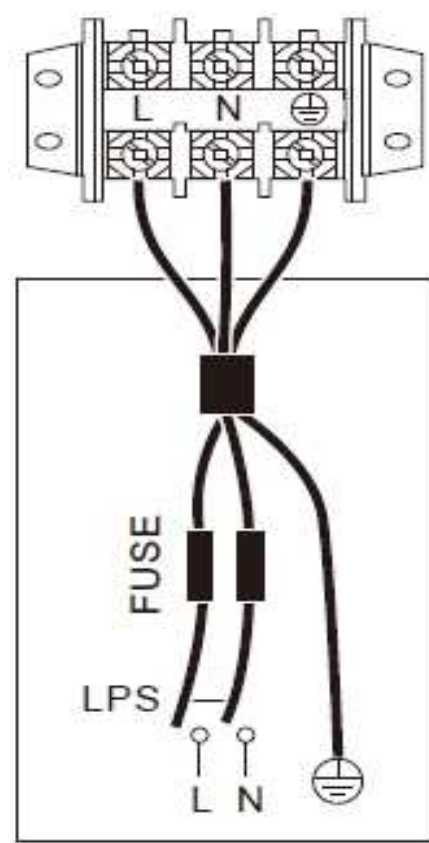


# R32 & R290

## Electric wiring

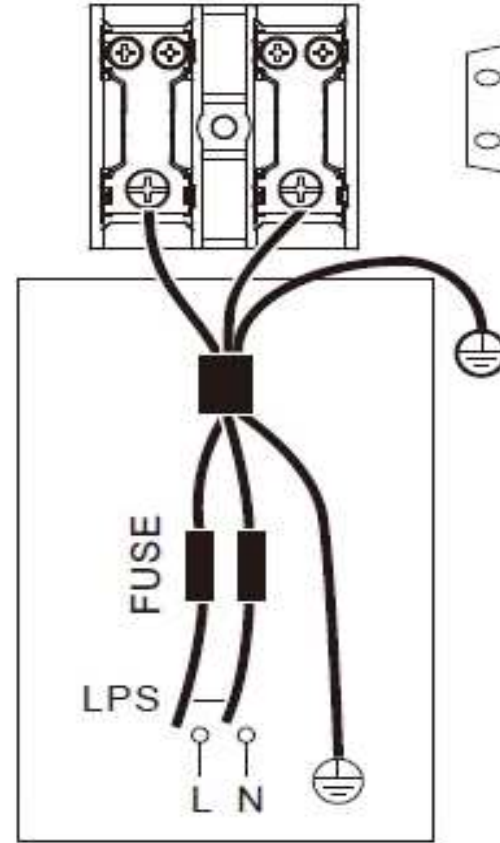


### Power supply for unit



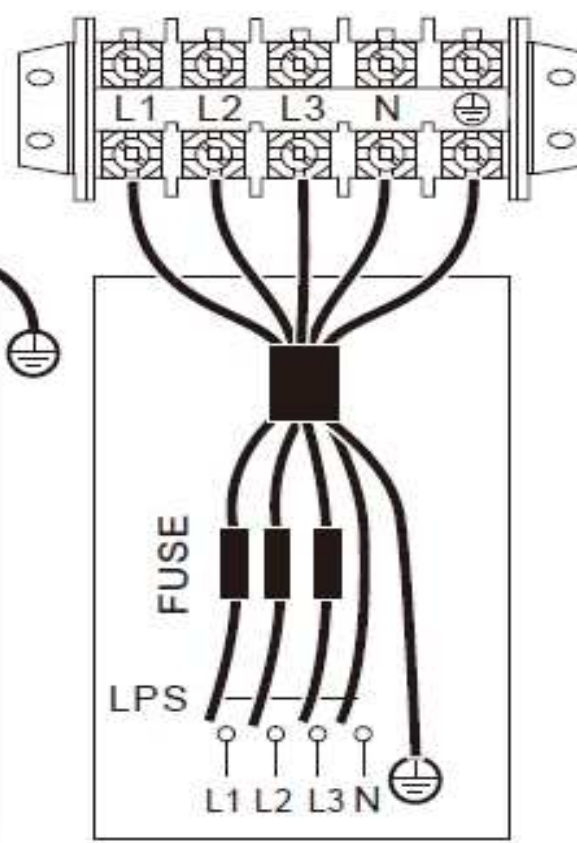
UNIT POWER SUPPLY

1-phase



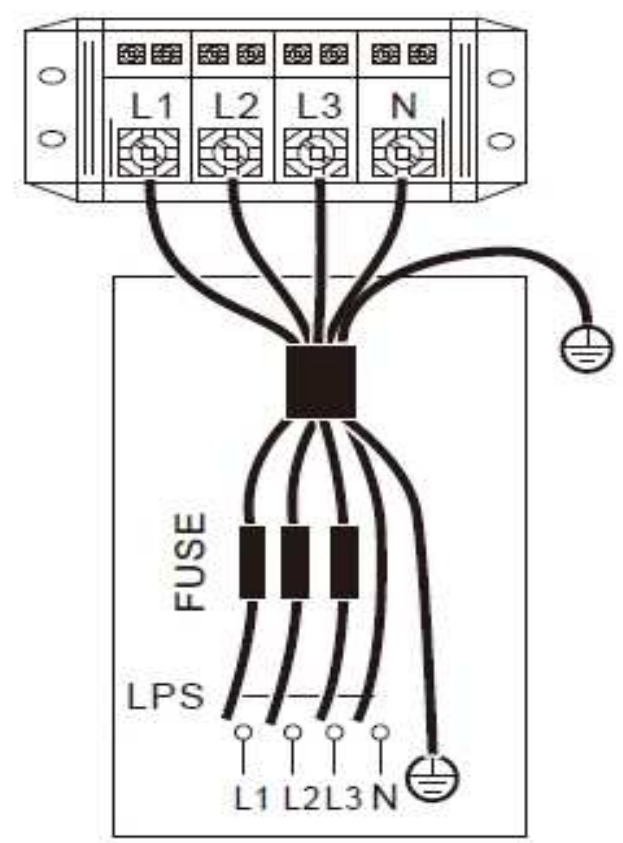
UNIT POWER SUPPLY

1-phase



UNIT POWER SUPPLY

3-phase



UNIT POWER SUPPLY

3-phase

# R32 & R290

## Electric wiring



### R32

1-phase 4-16kW standard and 3-phase 12-16kW standard

Unit	4kW	6kW	8kW	10kW	12kW	14kW	16kW	12kW 3-PH	14kW 3-PH	16kW 3-PH
Maximum overcurrent protector(MOP)(A)	18	18	19	19	30	30	30	14	14	14
Wiring size(mm <sup>2</sup> )	4.0	4.0	4.0	4.0	6.0	6.0	6.0	2.5	2.5	2.5

1-phase 4-16kW and 3-phase 12-16kW standard with backup heater 3kW (1-phase)

Unit	4kW	6kW	8kW	10kW	12kW	14kW	16kW	12kW 3-PH	14kW 3-PH	16kW 3-PH
Maximum overcurrent protector(MOP)(A)	31	31	32	32	43	43	43	27	27	27
Wiring size(mm <sup>2</sup> )	6.0	6.0	8.0	8.0	10.0	10.0	10.0	4.0	4.0	4.0

1-phase 8-16kW and 3-phase 12-16kW standard with backup heater 9kW(3-phase)

Unit	8kW	10kW	12kW	14kW	16kW	12kW 3-PH	14kW 3-PH	16kW 3-PH
Maximum overcurrent protector(MOP)(A)	32	32	43	43	43	27	27	27
Wiring size(mm <sup>2</sup> )	8.0	8.0	10.0	10.0	10.0	4.0	4.0	4.0

### R290

Unit	Power supply	Maximum circuit current (A)	Minimum wire size (mm <sup>2</sup> )
4 kW	220-240V~ 50 Hz	16	(2+PE) x (2.5-4)
6 kW		16	(2+PE) x (2.5-4)
8 kW		20	(2+PE) x (4-6)
10 kW		20	(2+PE) x (4-6)
12 kW		31	(2+PE) x (6-10)
14 kW		31	(2+PE) x (6-10)
16 kW		31	(2+PE) x (6-10)
12 kW 3PH	380-415V 3 N~50 Hz	11	(4+PE) x (2.5-4)
14 kW 3PH		11	(4+PE) x (2.5-4)
16 kW 3PH		11	(4+PE) x (2.5-4)

# Electric wiring 3<sup>RD</sup> party



## 3<sup>rd</sup> party capabilities

CN11	Print on PCB		Description
	1	SL1	Solar energy
	2	SL2	
	3	H	Room thermostat input ( high voltage)
	4	C	
	15	L1	
	5	1ON	SV1 (3-way valve)
	6	1OFF	
	16	N	
	7	1ON	SV2 (3-way valve)
	8	1OFF	
	17	N	
	9	P_c	Pumpc(zone2 pump)
	21	N	Outside circulation pump /zone1 pump
	10	P_o	
	22	N	Solar energy pump
	11	P_s	
	23	N	DHW pipe pump
	12	P_d	
	24	N	Tank booster heater
	13	TBH	
	16	N	External backup heater
	14	IBH1	
	17	N	SV3 (3-way valve)
	18	N	
	19	3ON	
	20	3OFF	

CN7	Print		Description
	26	R2	Compressor run
	30	R1	
	31	DTF2	Defrost run
	32	DTF1	
	25	HT	Antifreeze E-heating tape(external)
	29	N	
	27	AHS1	Additional heat source
	28	AHS2	

CN30	Print on PCB		Description
	1	A	CONNECT TO WIRE CONTROLLER
	2	B	
	3	X	
	4	Y	
	5	E	CONNECT TO OUTDOOR UNIT
	6	P	
	7	Q	
	8	E	Internal machine Parallel
	9	H1	
	10	H2	

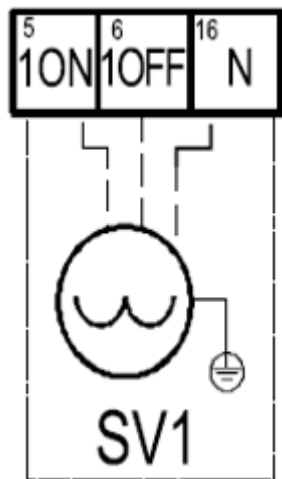
## M-Thermal Split

SV1、SV2、SV3、P\_O、P\_C、P\_S、SL1SL2、AHS、TBH、T1、T5、TW2、Tbt1、Tsolar and wired controller only need to be connected to corresponding terminals on main board of master unit.

# R32 & R290 3/2 Port valve



## R32



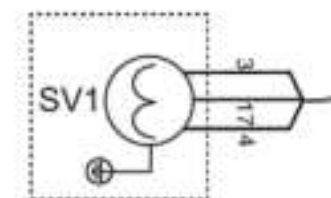
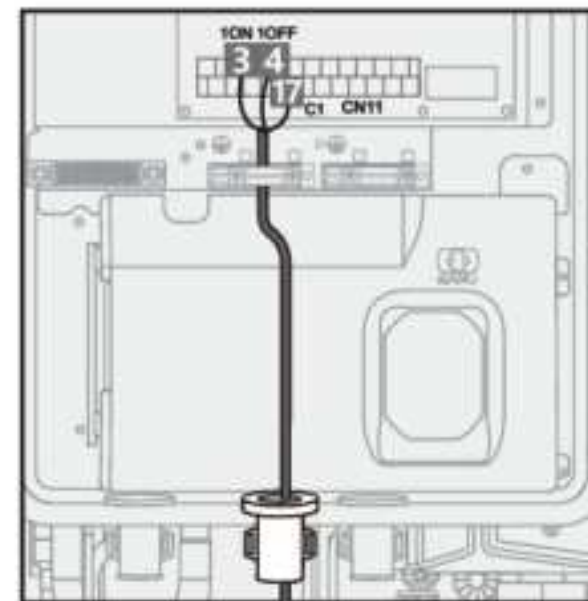
### 3 port valve Spring returned valve

5 Live - 16 Neutral. Is for DHW

### 3 port valve powered On/Off

5 Live DHW, 6 Live heating, Neutral 16

## R290



### 3 port valve Spring returned valve

3 Live - 17 Neutral. Is for DHW

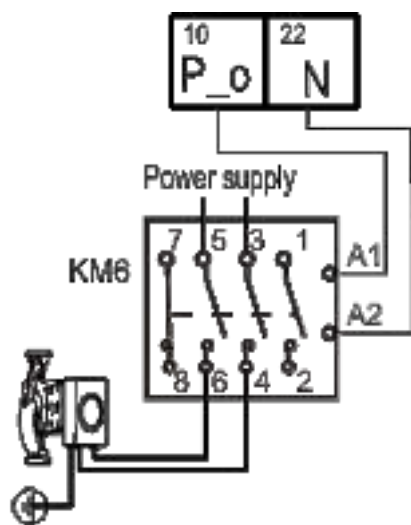
### 3 port valve powered On/Off

3 Live DHW, 4 Live heating, Neutral 17 (C1)

# R32 & R290 Pump (O)

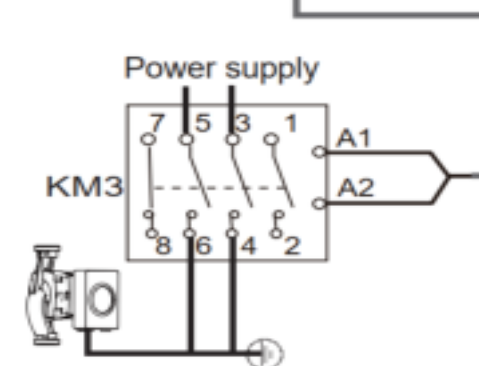
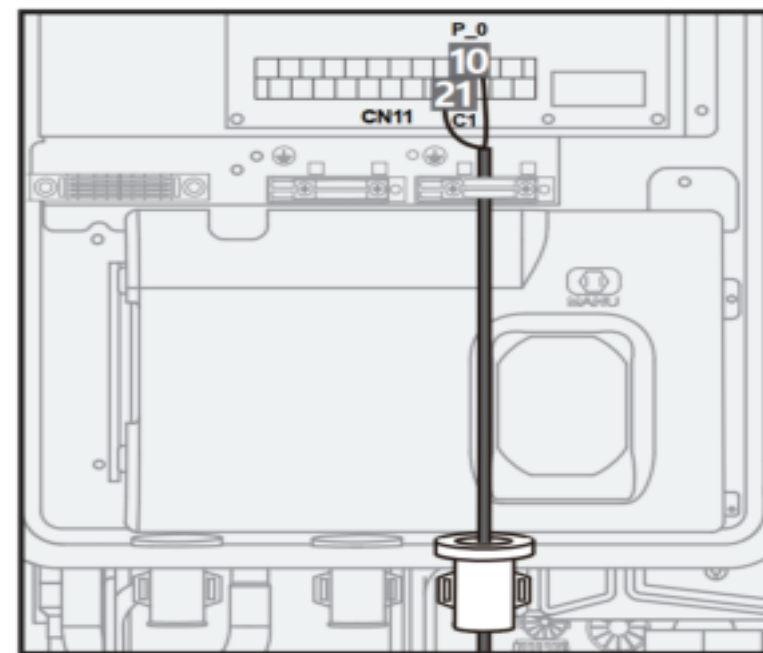


## R32 Pump (O)



Voltage	220-240VAC
Maximum running current(A)	0.2
Wiring size(mm <sup>2</sup> )	0.75
Control port signal type	Type 2

## R290 Pump O





# R32 & R290 TBH



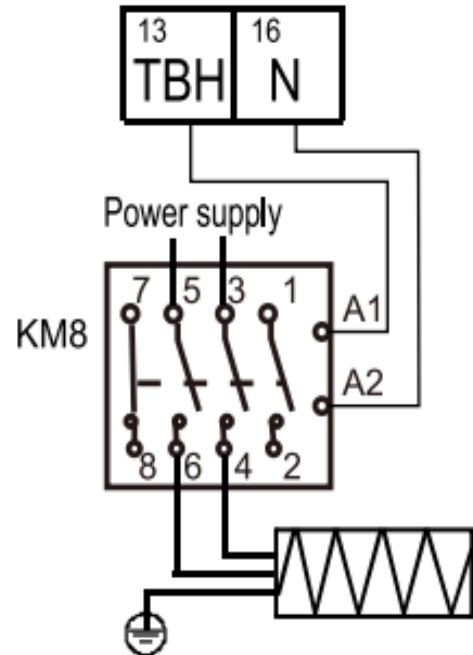
When the load current is greater than **0.2A**, the AC contactor must be used for connecting the load.

## R32 TBH

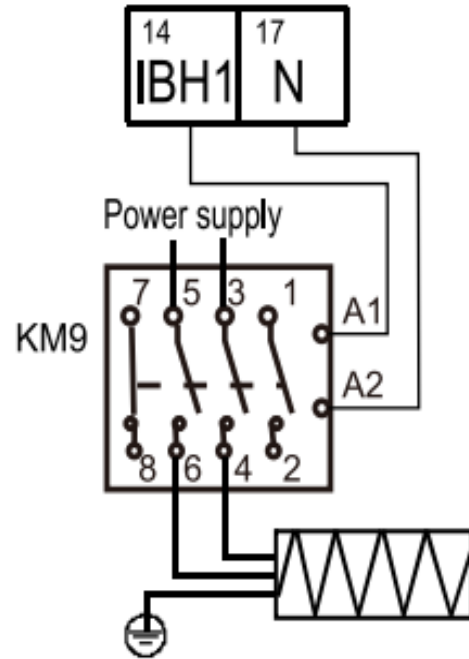
TBH/IBH1

(The current of load is  $\geq 0.2A$ , the AC contactor is required to be connected for the load)

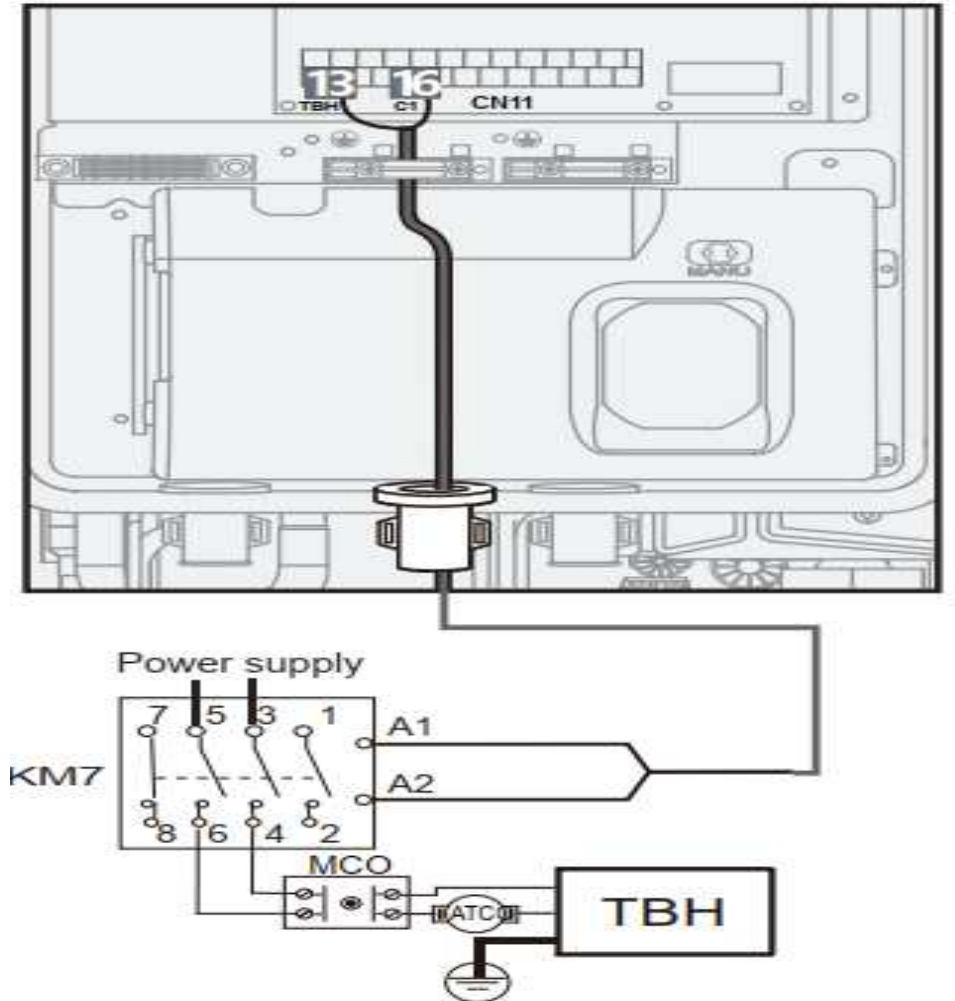
Electric heater for water tank



Internal electric heater 1



## R290 TBH





# Sensors

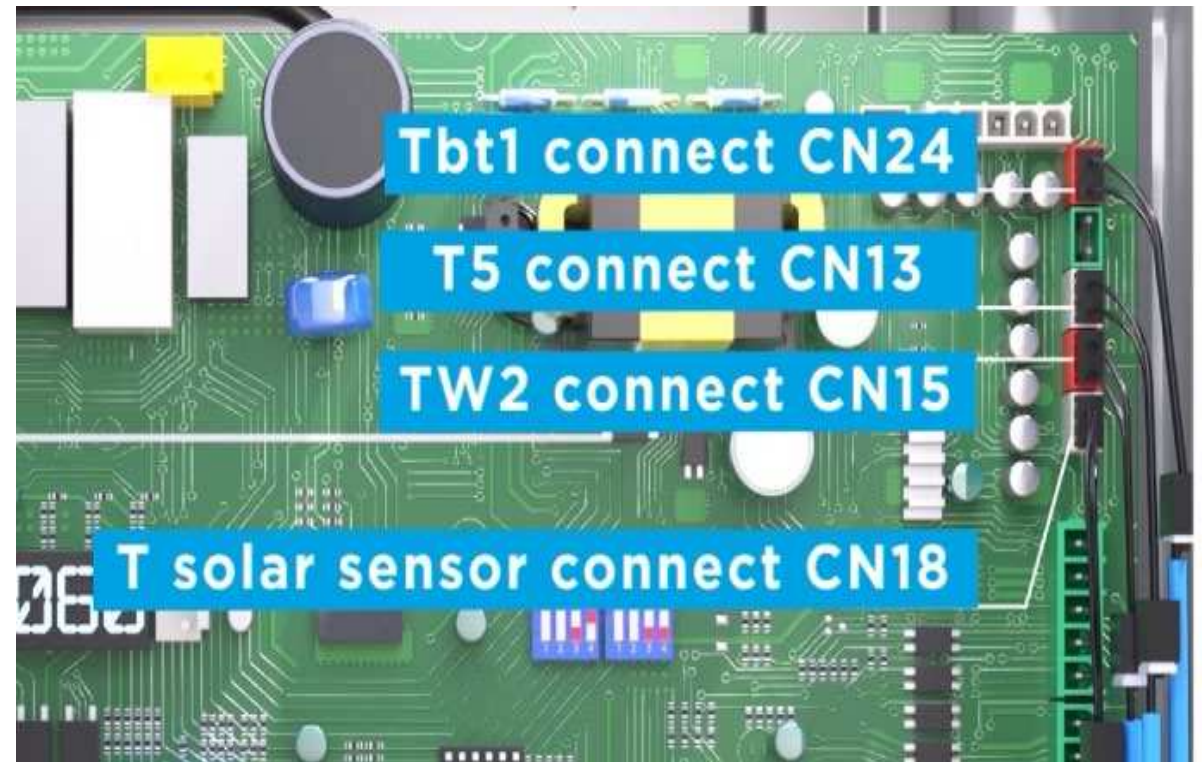


Tbt1: Water temp sensor of balance tank

Tw2: Water temp sensor of zone 2(floor heating loop)

T5: Water temp sensor of domestic water tank

Tsolar: Water temp sensor of Solar water temp

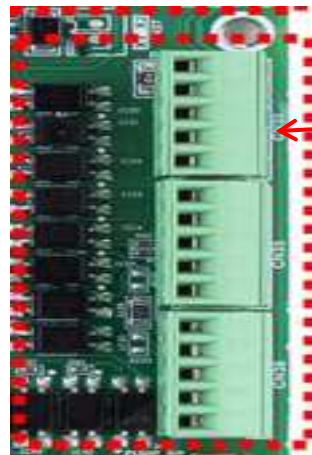
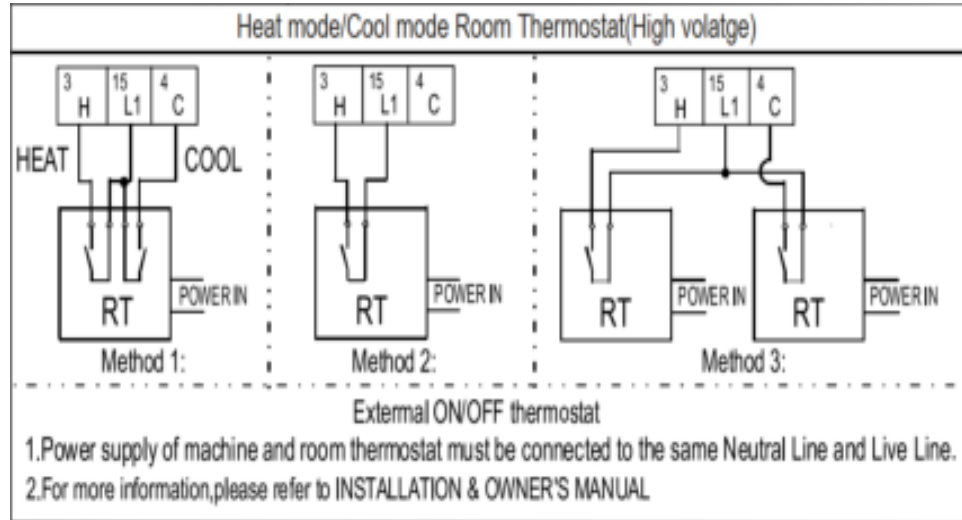


# R32 & R290 Wiring

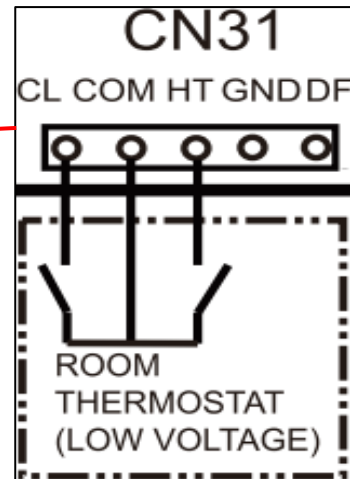
## Third party room control



### R32

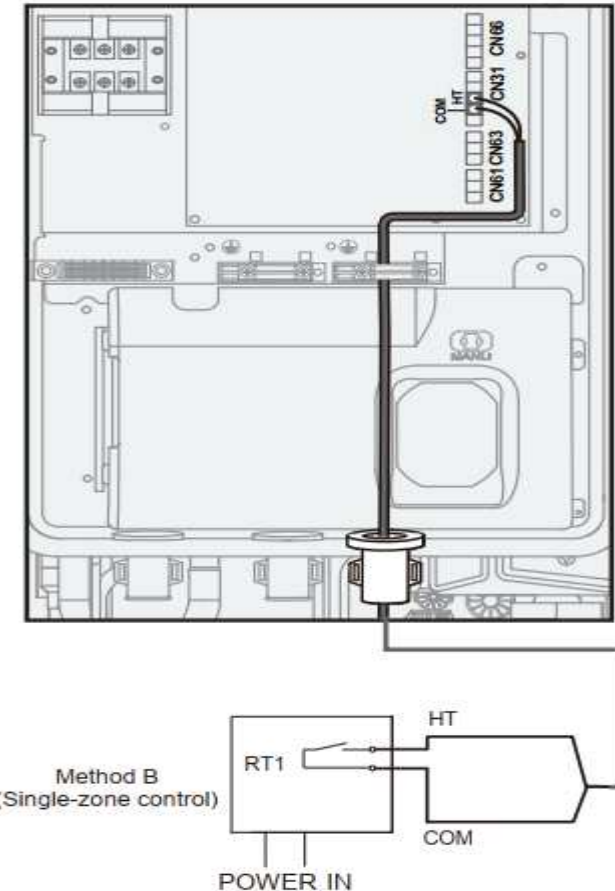


External  
function



### R290

The room thermostat must be **low-voltage**. To use a room stat with a 230v output a Relay is required



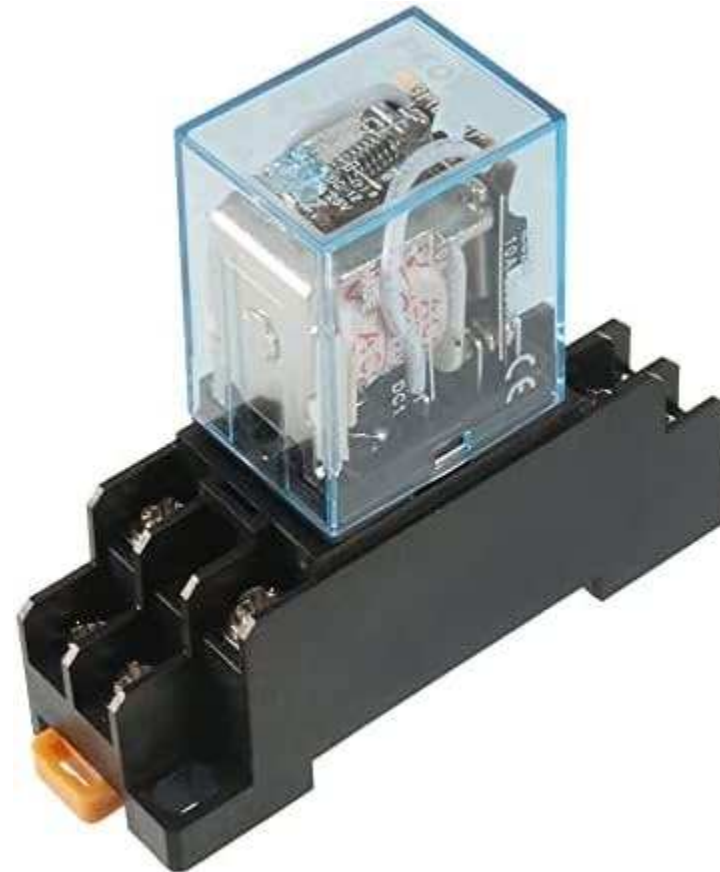
# Contactors/Relays



**Contactor**

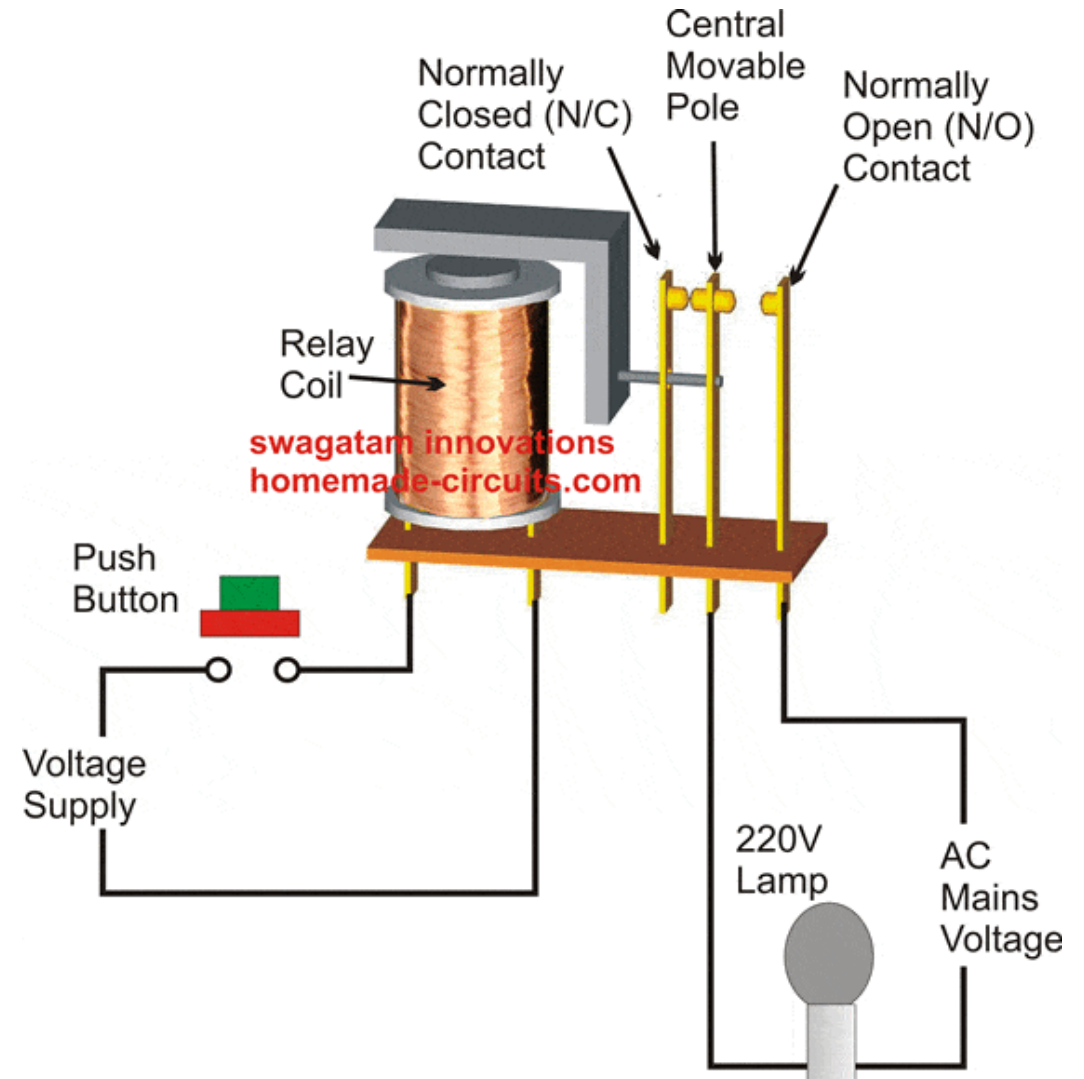
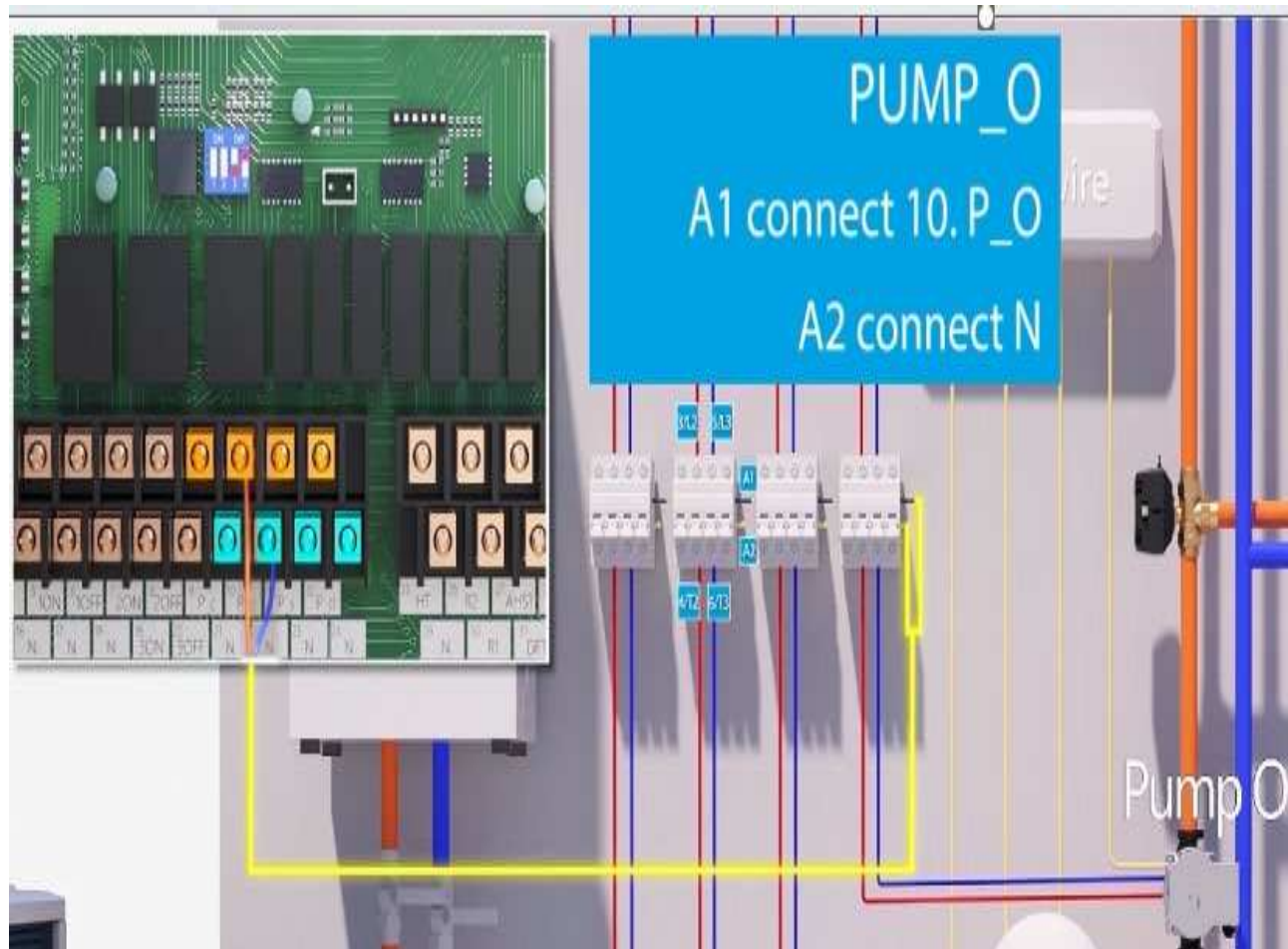


**Relay**





# Contactors/Relays

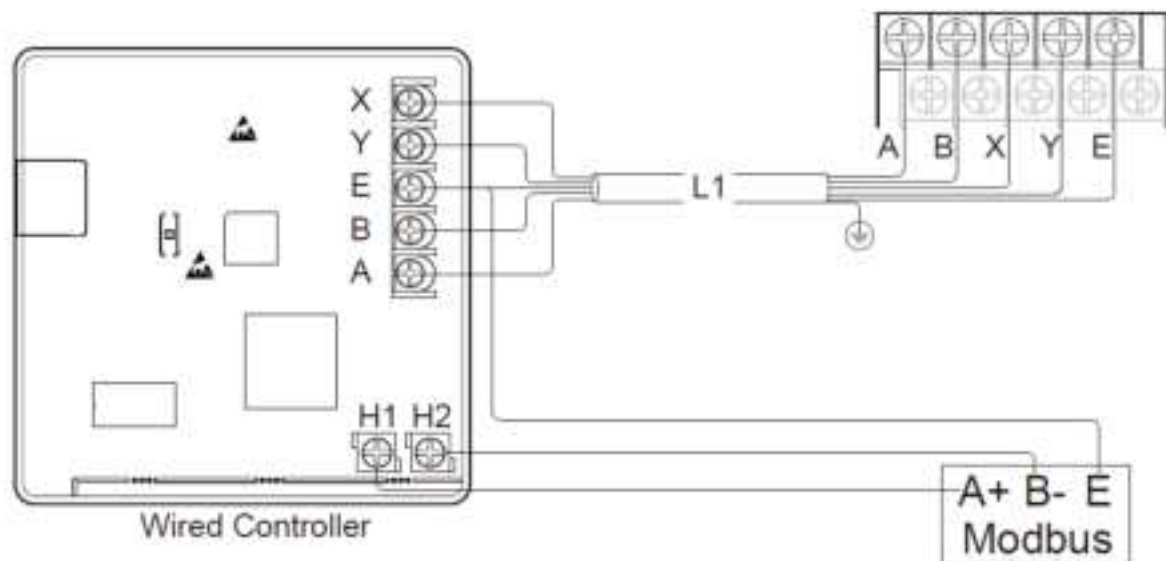




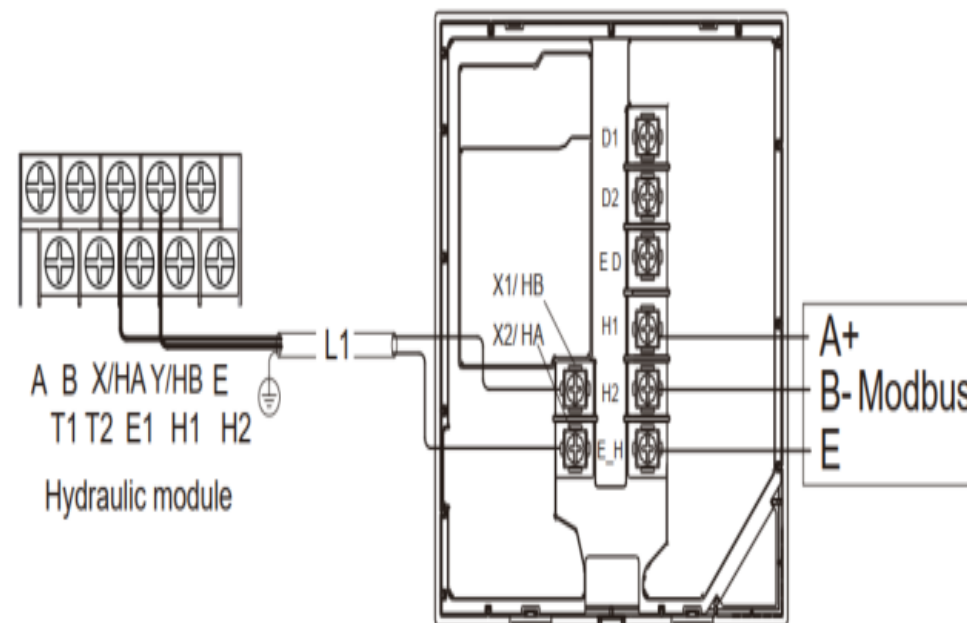
# R32 & R290 Controller wiring



## R32 (5 Core)



## R290 (2 Core)

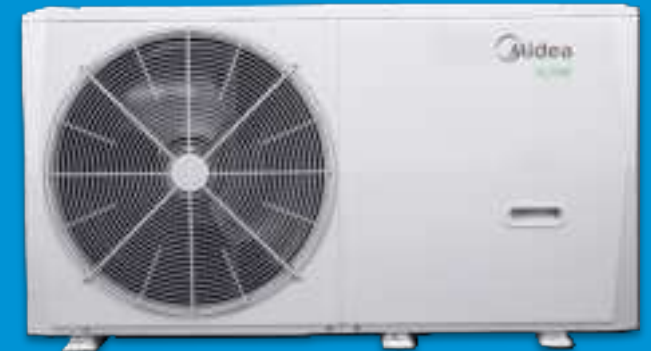


Input voltage (HA/HB)	18 VDC
Wire size	0.75 mm <sup>2</sup>
Wire type	2-core shielded twisted pair cable
Wire length	L1<50 m

# Commissioning

## R32 & R290

1. Serviceman & password
2. DHW set-up
3. Cooling mode
4. Heating set-up
5. Room thermostat
6. Test run
7. Climate curves
8. Operation parameters



# R32 & R290

## Serviceman's menu content



### R32 120F's Content

#### FOR SERVICEMAN

- 1 DHW MODE SETTING
- 2 COOL MODE SETTING
- 3 HEAT MODE SETTING
- 4 AUTO MODE SETTING
- 5 TEMP. TYPE SETTING
- 6 ROOM THERMOSTAT
- 7 OTHER HEATING SOURCE
- 8 HOLIDAY AWAY SETTING
- 9 SERVICE CALL
- 10 RESTORE FACTORY SETTINGS
- 11 TEST RUN
- 12 SPECIAL FUNCTION
- 13 AUTO RESTART
- 14 POWER INPUT LIMITATION
- 15 INPUT DEFINE
- 16 CASCADE SET
- 17 HMI ADDRESS SET



### R290 120L's Content

#### For serviceman

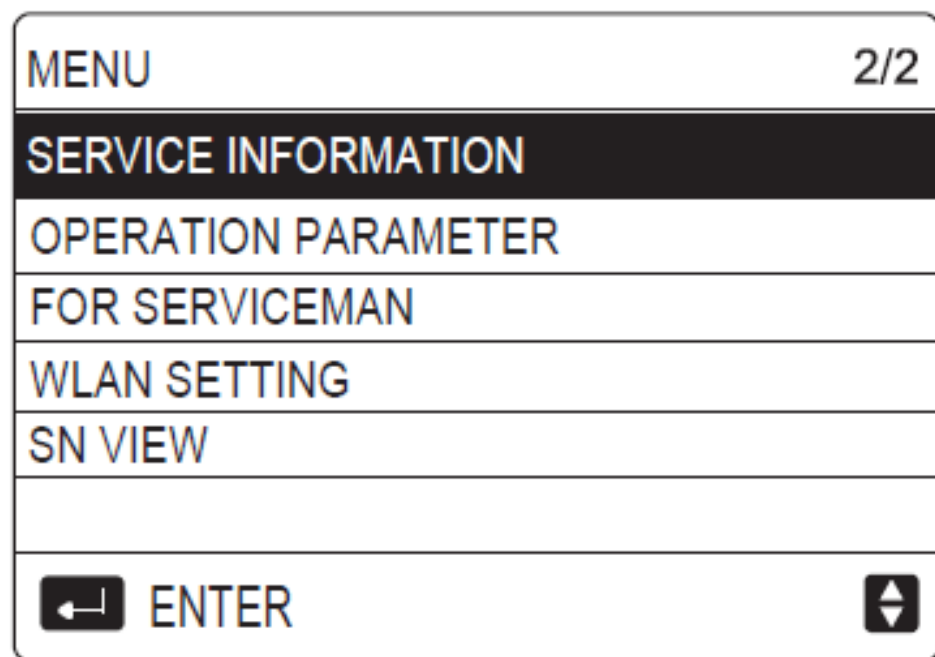
- 1 DHW setting
- 2 Cooling setting
- 3 Heating setting
- 4 Auto mode setting
- 5 Temp. type setting
- 6 Room thermostat setting
- 7 Other heating source
- 8 Holiday away setting
- 9 Service call
- 10 Restore factory setting
- 11 Test run
- 12 Special function
- 13 Auto restart
- 14 Power input limitation
- 15 Input define
- 16 Cascade setting
- 17 HMI address setting
- 18 Common setting

# R32 & R290

## Menu for serviceman

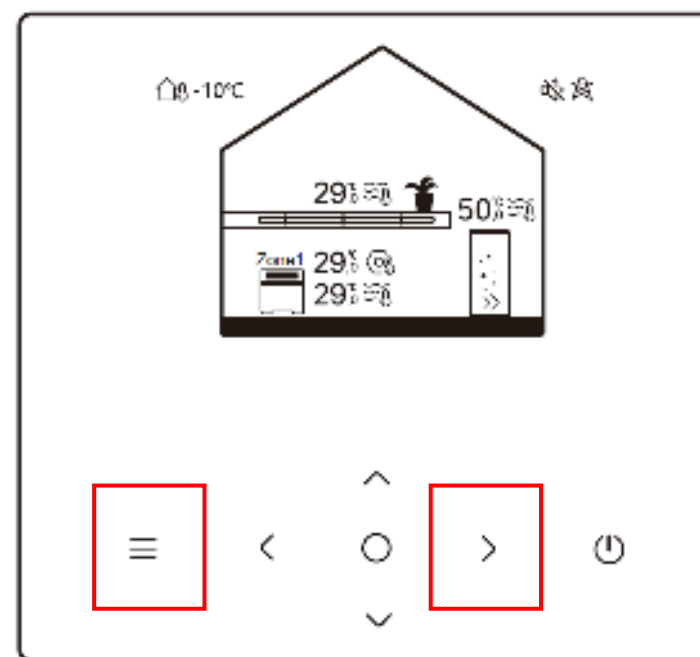


### R32



1. Menu
2. FOR SERVICEMAN
3. **PASSWORD - 234**

### R290



1. Please press this combine button hold for 3 seconds.
2. **PASSWORD - 234**



# R32 & R290

## Domestic hot water



### R32

1	DHW MODE SETTING	1/5
1.1	DHW MODE	YES
1.2	DISINFECT	YES
1.3	DHW PRIORITY	YES
1.4	DHW PUMP	YES
1.5	DHW PRIORITY TIME SET	NON
ADJUST		

DHW ON

1	DHW MODE SETTING	1/5
1.1	DHW MODE	YES
1.2	DISINFECT	YES
1.3	DHW PRIORITY	YES
1.4	DHW PUMP	YES
1.5	DHW PRIORITY TIME SET	NON
ADJUST		

DHW Priority ON

1	DHW MODE SETTING	2/5
1.6	dT5_ON	5°C
1.7	dT1S5	10°C
1.8	T4DHWMAX	43°C
1.9	T4DHWMIN	-10°C
1.10	t_INTERVAL_DHW	5 MIN
ADJUST		

Set To: 10°C

1	DHW MODE SETTING	2/5
1.6	dT5_ON	5°C
1.7	dT1S5	10°C
1.8	T4DHWMAX	43°C
1.9	T4DHWMIN	-10°C
1.10	t_INTERVAL_DHW	5 MIN
ADJUST		

Set To: 10°C

### R290

DHW setting	
DHW mode	1
Disinfect	0
DHW priority	1
Pump_D	1

DHW ON

DHW setting	
DHW mode	1
Disinfect	0
DHW priority	1
Pump_D	1

DHW Priority ON

DHW setting	
DHW priority time set	1
dT5_ON	10°C
dT1S5	10°C
T4DHWMAX	45°C

Set To: 10°C

DHW setting	
DHW priority time set	1
dT5_ON	10°C
dT1S5	10°C
T4DHWMAX	45°C

Set To: 10°C

# R32 & R290

## Domestic hot water



### R32

1 DHW MODE SETTING	2/5
1.6 dT5_ON	5 °C
1.7 dT1S5	10 °C
1.8 T4DHWMAX	43 °C
1.9 T4DHWMIN	-10 °C
1.10 t_INTERVAL_DHW	5 MIN
ADJUST	

Set To:  
Max: + 43°C  
Min: - 15°C

1 DHW MODE SETTING	4/5
1.16 t_DI_MAX	210 MIN
1.17 t_DHWHP_RESTRICT	30 MIN
1.18 t_DHWHP_MAX	120 MIN
1.19 PUMP_D TIMER	YES
1.20 PUMP_D RUNNING TIME	5 MIN
ADJUST	

T\_DHWHP Restrict Set to: 30 Min  
T\_DHWHP Max Set To: 60 Min

### R290

DHW setting	
DHW priority time set	1
dT5_ON	10 °C
dT1S5	10 °C
T4DHWMAX	45 °C

Set To: Max: + 43°C

DHW setting	
T4DHWMIN	-10 °C
t_INTERVAL_DHW	5 minutes
T5S_DISINFECT	65 °C
t_DI_HIGHTEMP.	15 minutes

Set To: Min: - 15°C

DHW setting	
t_DI_MAX	210 minutes
t_IDHWHP_RESTRICT	30 minutes
t_DHWHP_MAX	90 minutes
PUMP_DTIMER	1

T\_DHWHP Restrict Set to: 30 Min  
T\_DHWHP Max Set To: 60 Min

# R32 & R290

## Heating & Cooling



### R32

2 COOL MODE SETTING	1/3
2.1 COOL MODE	<b>YES</b>
2.2 t_T4_FRESH_C	2.0HRS
2.3 T4CMAX	43°C
2.4 T4CMIN	20°C
2.5 dT1SC	5°C
ADJUST	

Set To: NON

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	<b>YES</b>
3.2 t_T4_FRESH_H	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
3.5 dT1SH	5°C
ADJUST	

Set To: Yes

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	<b>YES</b>
3.2 t_T4_FRESH_H	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
3.5 dT1SH	5°C
ADJUST	

Leave @ 2Hrs

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	<b>YES</b>
3.2 t_T4_FRESH_H	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
3.5 dT1SH	5°C
ADJUST	

Ambient Working Temp

Set To: + 35°C

Set To: -25°C

### R290

Cooling setting	
Cool mode	1
t_T4_FRESH_C	0.5 hours
T4CMAX	52°C
T4CMIN	10°C

Set To: 0 (OFF)

Heating setting	
Heating mode	1
t_T4_FRESH_H	0.5hours
T4HMAX	25°C
T4HMIN	-15°C

Set To: 1 (ON)

Heating setting	
Heating mode	1
t_T4_FRESH_H	0.5hours
T4HMAX	25°C
T4HMIN	-15°C

Set To: 2Hrs

Heating setting	
Heating mode	1
t_T4_FRESH_H	0.5hours
T4HMAX	25°C
T4HMIN	-15°C

Ambient Working Temp

Set To: + 35°C

Set To: -25°C

# R32 & R290

## Heating & Cooling



### R32

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	<b>YES</b>
3.2 t_T4_FRESH_H	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
<b>3.5 dT1SH</b>	<b>5°C</b>
⬆️ ADJUST	⬅️

Set To: 5°C

3 HEAT MODE SETTING	2/3
3.6 dTSH	<b>2°C</b>
<b>3.7 t_INTERVAL_H</b>	<b>5MIN</b>
3.8 T1SetH1	35°C
3.9 T1SetH2	28°C
3.10 T4H1	-5°C
⬆️ ADJUST	⬅️

Set To: 5 Min

3 HEAT MODE SETTING	3/3
3.11 T4H2	<b>7°C</b>
<b>3.12 ZONE1 H-EMISSION</b>	<b>RAD.</b>
<b>3.13 ZONE2 H-EMISSION</b>	<b>FLH</b>
3.14 t_DELAY_PUMP	2MIN
⬆️ ADJUST	⬅️

Set To: Radiators/Underfloor

### R290

Heating setting	
dT1SH	5°C
dTSH	2°C
t_INTERVAL_H	5minutes
Zone 1 H-emission	0

Set To: 5°C

Heating setting	
dT1SH	5°C
dTSH	2°C
t_INTERVAL_H	5minutes
Zone 1 H-emission	0

Set To: 5 Min

Heating setting	
dT1SH	5°C
dTSH	2°C
t_INTERVAL_H	5minutes
Zone 1 H-emission	0

Set To: 3-Rads/2-underfloor



# R32 & R290 For serviceman

## 3<sup>rd</sup> party room stat or Midea controller



### R32

FOR SERVICEMAN	1/3
1. DHW MODE SETTING	
2. COOL MODE SETTING	
3. HEAT MODE SETTING	
4. AUTO MODE SETTING	
5. TEMP TYPE SETTING	
6. ROOM THERMOSTAT	
OK ENTER	↔

6 ROOM THERMOSTAT	
6.1 ROOM THERMOSTAT	YES
↕ ADJUST	

6 ROOM THERMOSTAT	
6.1 ROOM THERMOSTAT	NON
↕ ADJUST	

5 TEMP. TYPE SETTING	
5.1 WATER FLOW TEMP.	YES
5.2 ROOM TEMP.	NON
5.3 DOUBLE ZONE	NON
↕ ADJUST	↔

6. Room Thermostat :

For third party room stat: Set  
To: One Zone/Double Zone

To Use the Midea Controller as  
a room stat

When using the Midea  
controller as a room stat set:  
5.1 NON  
5.2 YES

### R290

Room thermostat setting
Room thermostat 1

Room Thermostat:

Room thermostat setting
Room thermostat 1

For third party room stat: Set  
To: 2 (One Zone) 3 (Double  
Zone)

Room thermostat setting
Room thermostat 1

To Use the Midea controller:  
Set To: 0

Temp. type setting
Water flow temp. 1
Room temp. 0
Double zone 1

When using the Midea  
Controller as a room stat set:  
WF - 0  
RT - 1

# Heat pump installation Wiring



## Minimum water volume

Check and ensure that the total water volume in the installation is at least 40 liters, excluding the internal water volume of the outdoor unit.

Unit	Minimum flow rate required
4-10 kW	0.40 m <sup>3</sup> /h
12-16 kW	0.70 m <sup>3</sup> /h

## Minimum flow rate

Check and ensure that the minimum flow rate in the installation is guaranteed in all conditions. This minimum flow rate is required during defrost/ backup he



# R32 & R290 Commissioning

## Test run



### Test run

- Unscrew the air purge valve at least 2 turns
- The AIR PURGE operation is used to remove air from the system. Before running AIR PURGE mode, make sure that the air purge valve is open.
- When the air purge operation starts, SV1 valve ON. 60 secs later the pump in the unit (PUMPI) operates for 10 min during which the flow switch does not work. After the pump stops, SV1 OFF and SV2 ON. 60 secs later both PUMPI and PUMPO operate until the air purge mode is OFF.
- CIRCULATION PUMP RUNNING is for checking whether the outside circulation pump can work normally.

11	TEST RUN
11.1	POINT CHECK
11.2	AIR PURGE
11.3	CIRCULATED PUMP RUNNING
11.4	COOL MODE RUNNING
11.5	HEAT MODE RUNNING
<div> ENTER </div>	

# R32 & R290

## For serviceman test run



### R32

11 TEST RUN

Active the settings and active the "TEST RUN"?

NO

YES

OK CONFIRM

11 TEST RUN

11.1 POINT CHECK

11.2 AIR PURGE

11.3 CIRCULATION PUMP RUNNING

11.4 COOL MODE RUNNING

11.5 HEAT MODE RUNNING

OK ENTER

11 TEST RUN

11.1 POINT CHECK

11.2 AIR PURGE

11.3 CIRCULATION PUMP RUNNING

11.4 COOL MODE RUNNING

11.5 HEAT MODE RUNNING

OK ENTER

11 TEST RUN	1/2
3-WAY VALVE 1	OFF
3-WAY VALVE 2	OFF
PUMP I	OFF
PUMP O	OFF
PUMP C	OFF
ON/OFF ON/OFF	

### R290

Test run

Point check

Air purge

Circulated pump running

Cooling running

Test run

Heating running

DHW running

Point check

SV2

SV3

Pump\_I

Pump\_O

Air purge

Air purge Pump\_I output 70%

Air purge running time 20 minutes

Status check