DC Inverter Air to Water Heat Pump

ULTIMA (R290)

Touchscreen Controller Instructions

202505-V3

Before operating this product, please read the instructions carefully and keep this manual for future use.

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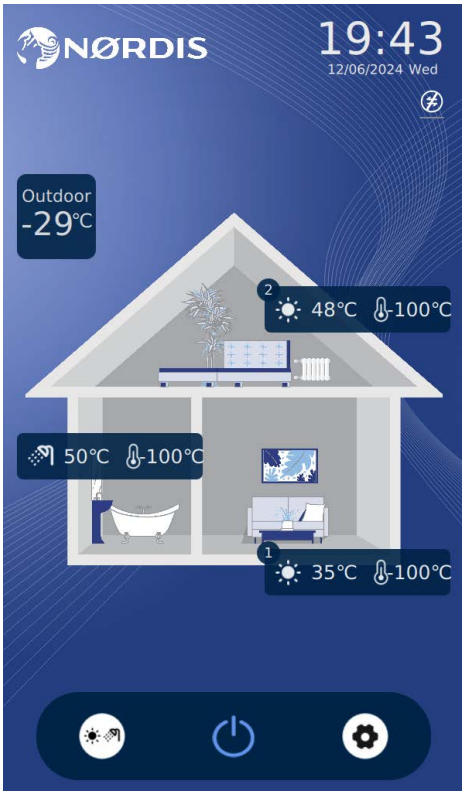
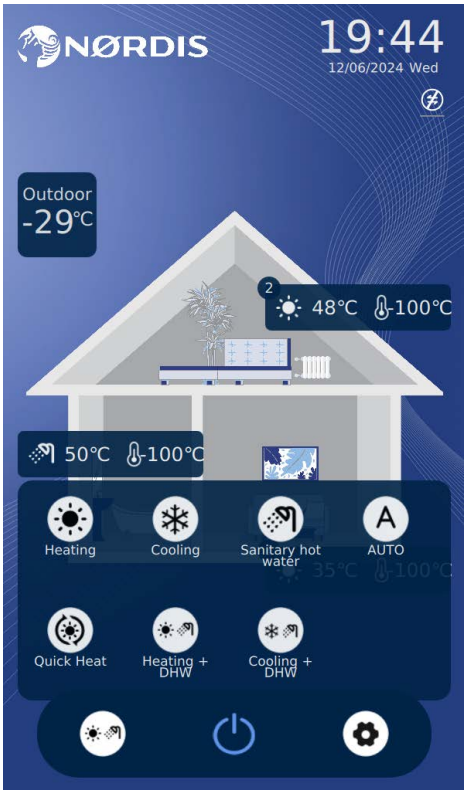
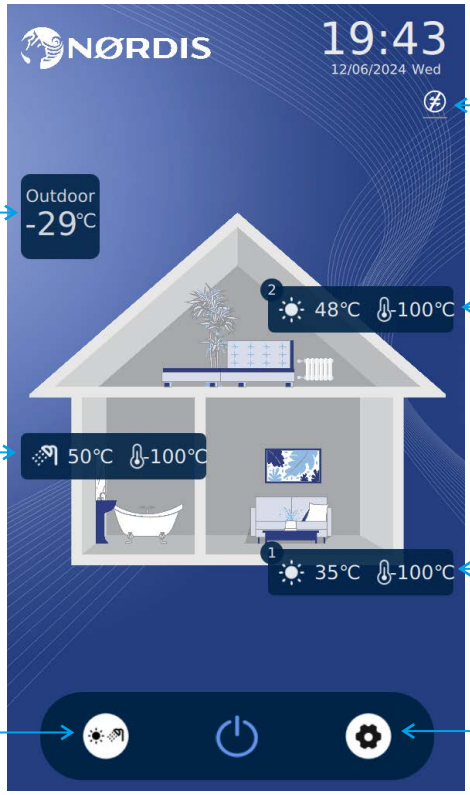
Main Page







Working states

Outdoor ambient temperature

Heating / Cooling Circuit 2
Set water temperature
Current water temperature

Sanitary Hot Water
Set hot water temperature
Current water temperature

Heating / Cooling Circuit 1
Set water temperature
Current water temperature

Set working modes

To Settings page

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Icon	Description
	Heating mode
	Cooling mode
	Sanitary hot water mode
	Anti-legionella mode is working
	Anti-legionella failed
	Sleep mode
	Low noise mode
	Vacation mode
	DHW ECO
ECO	Heating ECO
	SG-Ready 1
	SG-Ready 2
	SG-Ready 3
	SG-Ready 4

Icon	Description
	Electrical utility lock
	P0 circulation pump (integrated)
	P1 circulation pump (circuit 1)
	P2 circulation pump (circuit 2)
	P3 circulation pump (DHW recirculation)
	AH (Auxiliary Heater
	HBH (Heating Back-up Heater
	HWTBH (Hot Water Tank Back-up Heater
	Floor curing
	Error for system 1
	Error for system 2
	Communication normal 1
	Communication failed

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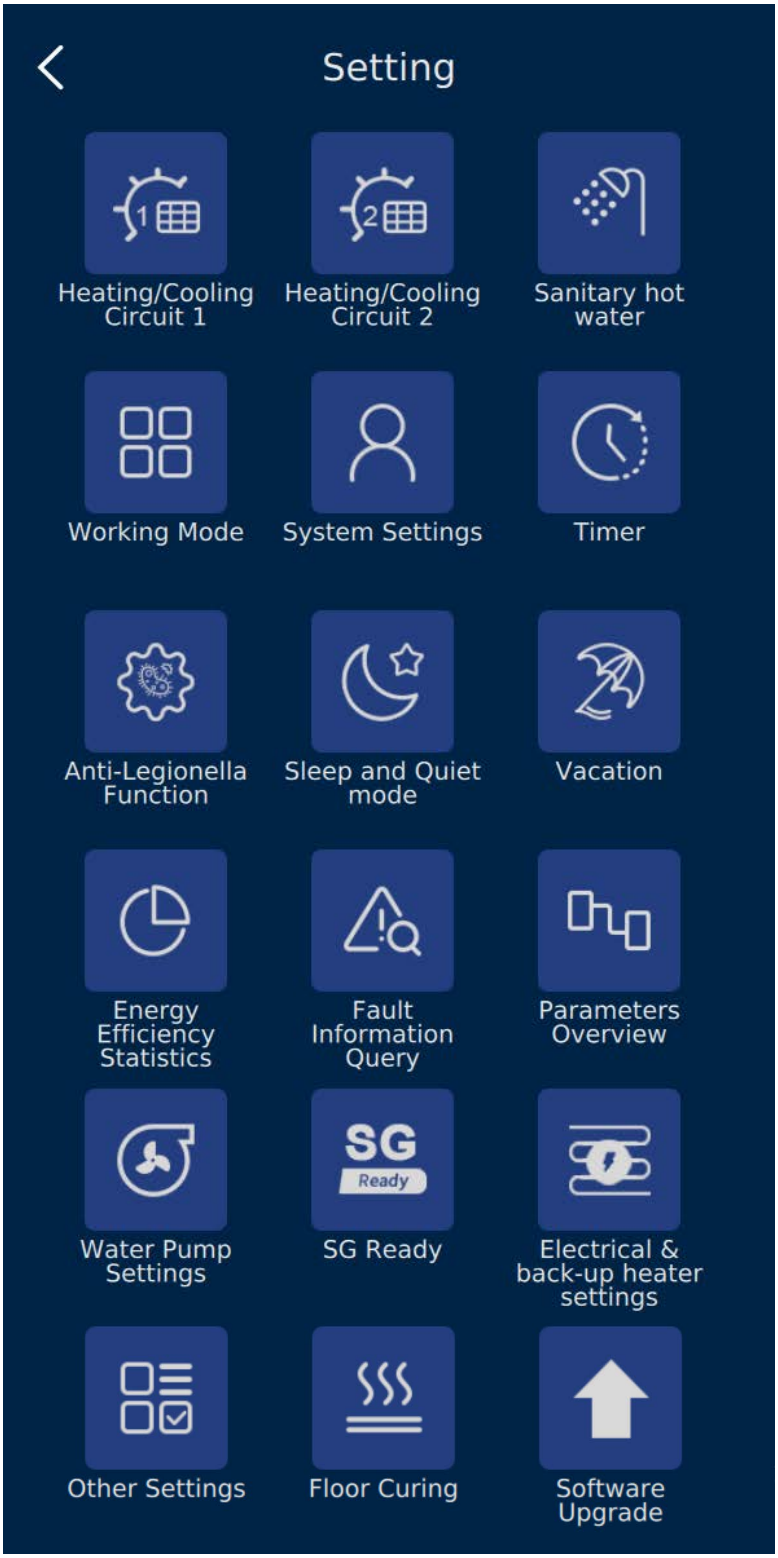
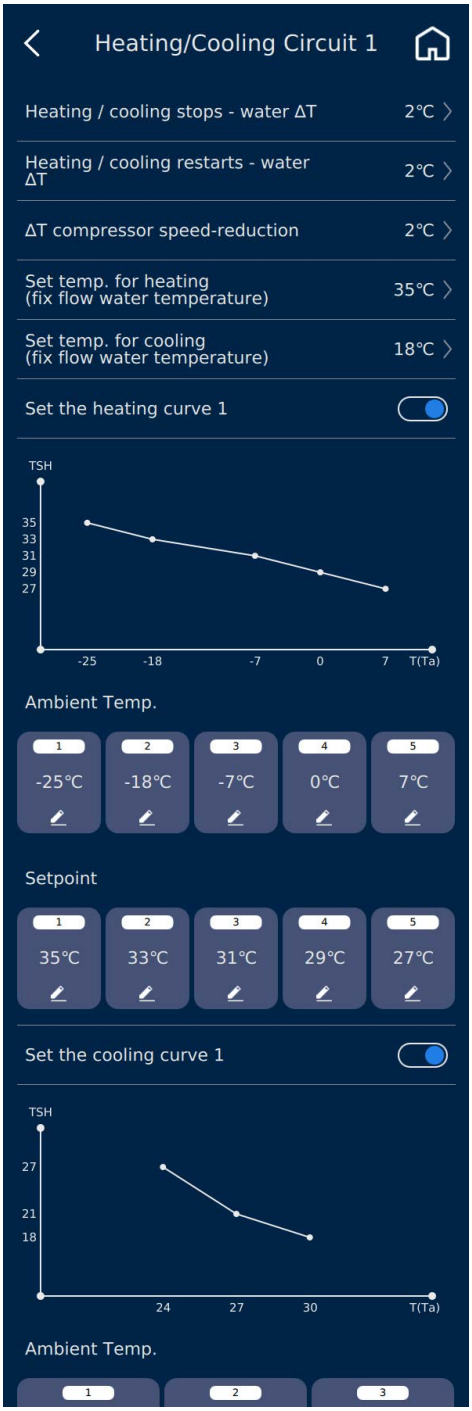
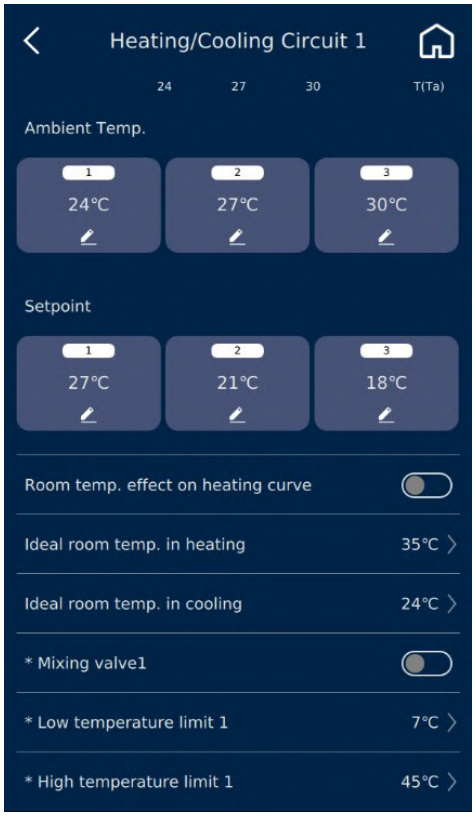


Touchscreen Controller Instructions

1. Heating/Cooling Circuit 1

Heating/Cooling Circuit 1





1.01) Heating / Cooling Stops based - Water ΔT

1.02) Heating / Cooling Restarts based - Water ΔT

ΔT is a temperature deviation value. Set ΔT to stop (1.01) or restart (1.02) the unit. Unit stops running when [Tset+ΔT] in heating operation, or when [Tset–ΔT] in cooling operation.

For example, in heating mode, if Tset = 48℃, while ΔT (1.01) = 2℃, and ΔT (1.02) = 1℃, when the water temperature is higher than 50℃ (48+2℃) , unit stops. When unit stops and the water temperature drops lower than 47℃ (48-1℃) , unit restarts.

Touchscreen Controller Instructions

1.03) ΔT Compressor Speed-Reduction

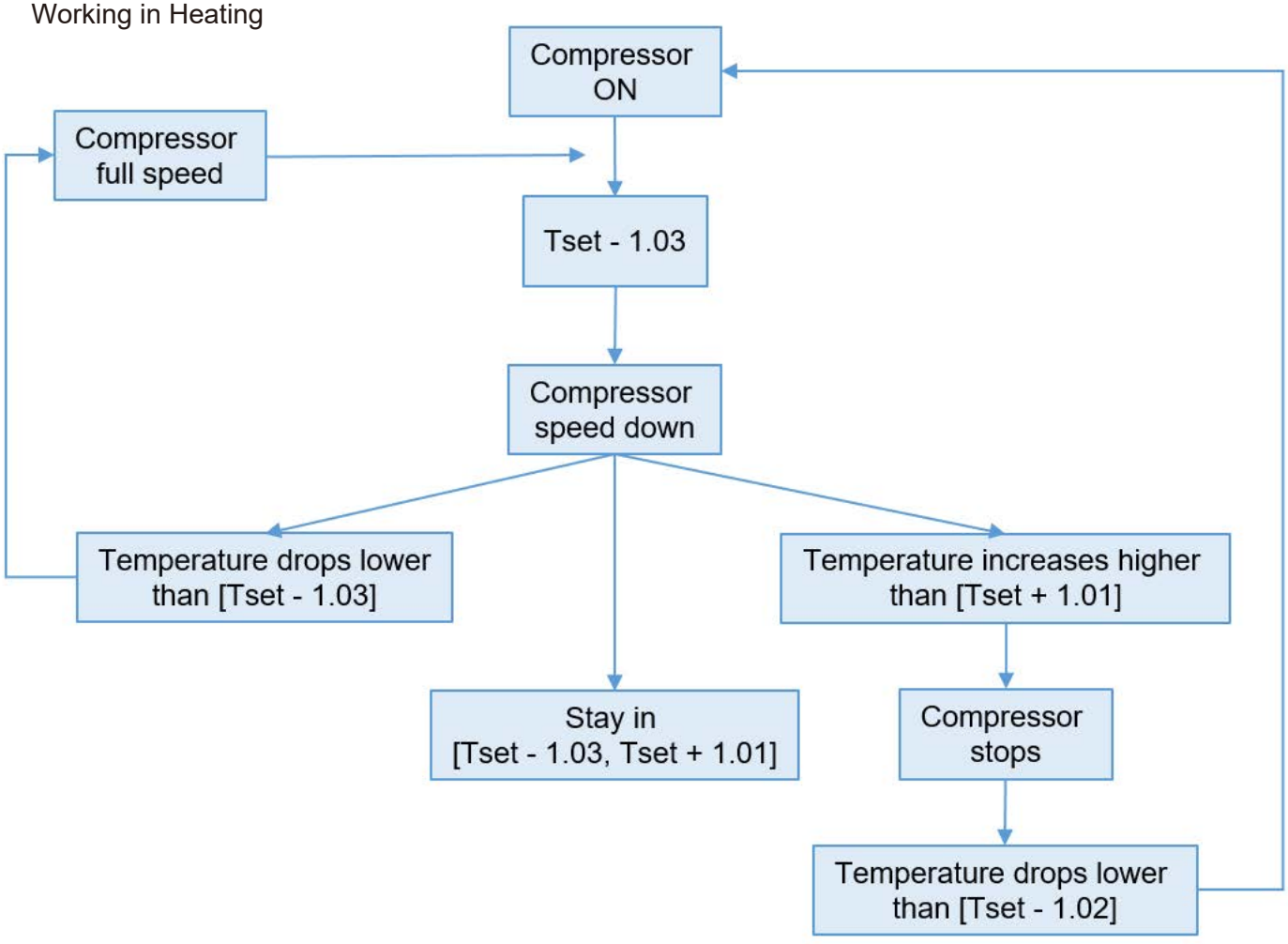
This parameter is used to set a temperature that compressor starts to slow down its speed. Normally if actual water temperature is lower than [Tset-ΔT] (in heating mode) or higher than [Tset+ΔT] (in cooling mode), compressor always works with its maximum allowable speed.

If real temperature is between [Tset-ΔT , Tset] in heating mode or [Tset, Tset+ΔT] in cooling mode, compressor will adjust frequency, to balance the total heating output and system heating load.

This setting is to balance the comfort and energy-saving demand. If this value is set too big, even if the room is not warm (or cool) enough, compressor will slow down its speed quite soon to save energy. If this value is set too small, even if the room is warm (or cool) enough, compressor will slow down its speed quite late, which consumes more power.

For example, in heating mode, if Tset=48°C and ΔT =2°C, compressor will work at maximum speed to get 46°C as soon as possible, then it will lower the speed. But if even the compressor works in its lowest allowable speed, the water temperature still goes over [Tset+ΔT], unit stops.

Working in Heating



1.04) Set temp. for heating (fix flow water temperature)

1.05) Set temp. for cooling (fix flow water temperature)

This option can be set only when "Water Temperature Control" is selected for "basic operation mode". If heating curve function is off, a fixed water temperature for heating can be set via "Set Temp For Heating" (1.04); If cooling curve function is off, a fixed water temperature for cooling can be set via "Set Temp For Cooling"(1.05).

1.06) Set the heating curve 1

Set whether heating curve 1 function is needed or not.

If heating curve function is off, set this parameter to off, then you can set a fixed water set temperature under heating mode via parameter "Set Temp For Heating".

If Heating Curve 1 is on, user can set this parameter to create a suitable curve which fits his house.

The horizontal coordinate is the ambient temperature and the vertical coordinate is the water temperature.

When the curve function is turned on, the system will use the water temperature corresponding to the current ambient temperature in the curve as the set temperature for heating in circuit 1.You can modify the data to get ideal curve.

1.07) Set the Cooling curve 1

Same as setting in 1.06, just modify heating to cooling mode.

1.08) Room temp. effect on heating curve

Turn ON/OFF this function, to decide if room temp. need to have a influence on heating curve or not.

1.09) Ideal room temp. in heating

1.10) Ideal room temp. in cooling

Set an ideal room temperature in heating (1.09) or in cooling (1.10).

When in Room Temperature Control mode, this parameter will also be the Room Set Temperature for heating (1.09) or cooling (1.10).

For example:

If 1.08 (Room temp. effect on heating curve) is on, the unit works in heating mode, water set temperature in the heating curve is 35°C, and room temperature is 27°C, while 1.09 (Ideal Room Temp. in Heating) is set to 22°C, then the unit will deduct (27°C-22°C) =5°C from water set temperature, which means unit will take (35°C-5°C) =30°C as the final set water temperature.

1.11) Mixing valve 1

Set whether circuit 1 has a mixing valve connected or not.

1.12) Low temperature limit1

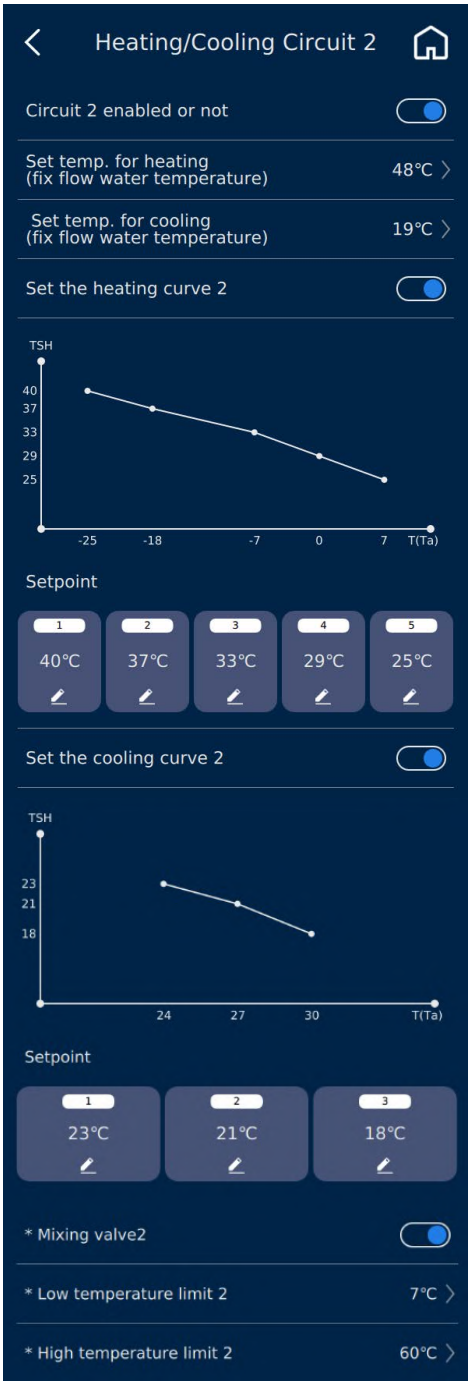
1.13) High temperature limit 1

These two parameters are used by the installer level, to set the set temperature range for circuit 1 for safety purpose.

Touchscreen Controller Instructions

2. Heating/Cooling Circuit 2

Heating/Cooling Circuit 2



2.01) Circuit 2 enabled or not

Set whether the system has the second circuit or not.

"Heating/Cooling Circuit 2" is allowed to operate when the house has two circuits.

2.02) Set temp. for heating (fix flow water temperature)

2.03) Set temp. for cooling (fix flow water temperature)

If heating curve function is disabled for circuit 2, a fixed value of set water temperature in heating mode (2.02) or cooling mode (2.03) can be set here.

2.04) Set the heating curve 2

Set whether heating curve 2 function is needed or not.

If heating curve function is off, set this parameter to off, then you can set a fixed water set temperature under heating mode via parameter "Set Temp For Heating".

If Heating Curve 2 is on, user can set this parameter to create a suitable curve which fits his house.

The horizontal coordinate is the ambient temperature and the vertical coordinate is the water temperature. When the curve function is turned on, the system will use the water temperature corresponding to the current ambient temperature in the curve as the set temperature for heating in circuit 1.

You can modify the values to get an ideal curve.

2.05) Set the Cooling curve 2

Same as setting in 2.04, just modify heating to cooling mode.

2.06) Mixing valve 2

Set whether circuit 2 has a mixing valve connected or not.

2.07) Low temperature limit 2

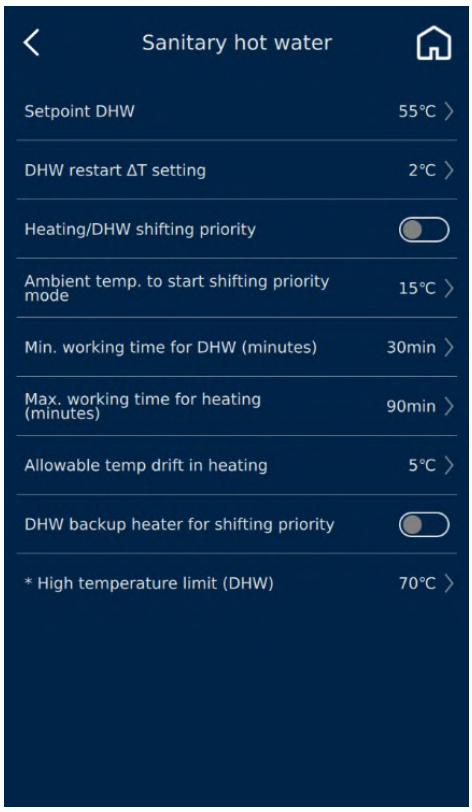
2.08) High temperature limit 2

These two parameters are used by the installer level, to set the set temperature range for circuit 2 for safety purpose.

Touchscreen Controller Instructions

3. Sanitary Hot Water

Sanitary hot water



3.01) Setpoint DHW

Set temperature for sanitary hot water.

3.02) DHW restart ΔT setting

Heat pump will restart to work for sanitary hot water after temperature drops below Tset-ΔT here.

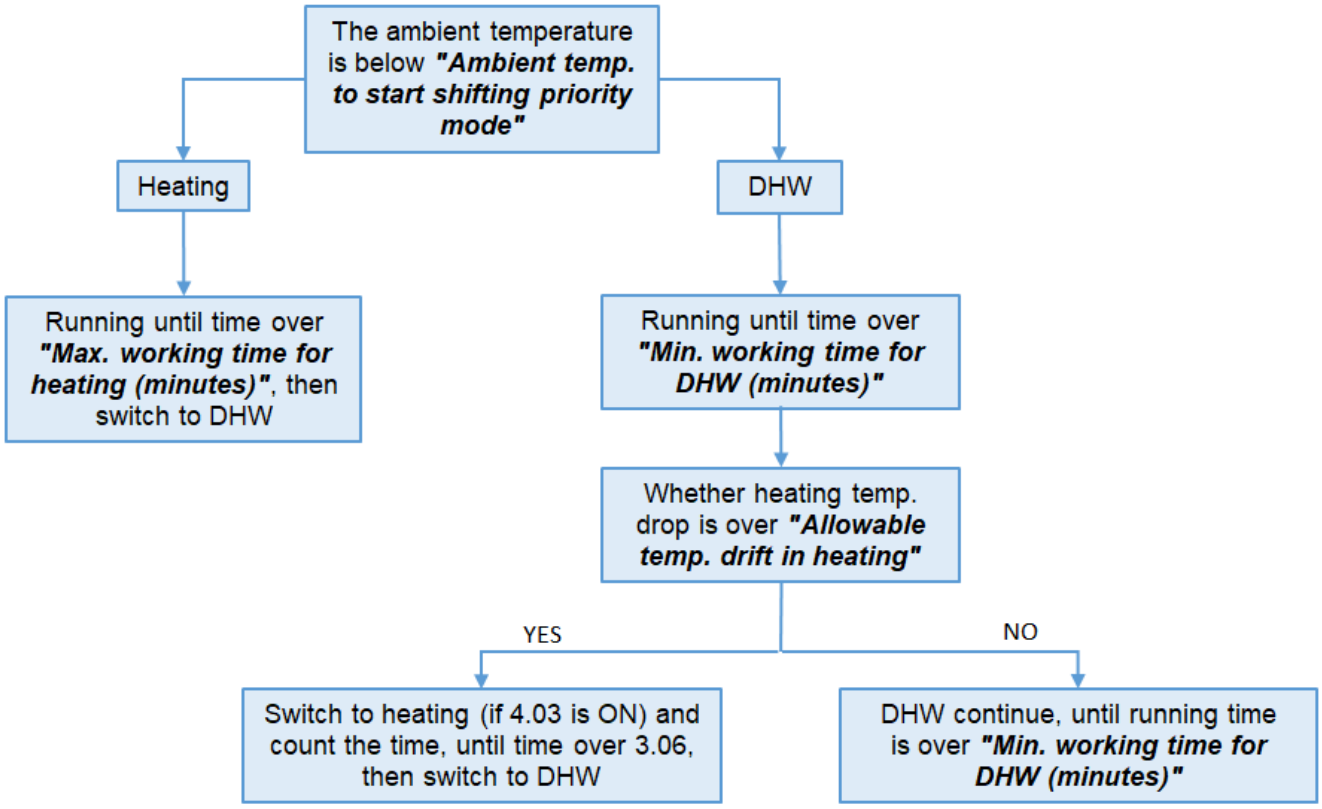
3.03) Heating/DHW shifting priority

Turn ON/OFF this function

Air to water heat pump is an equipment that absorbs heat from surrounding air, and transfers it to water. The lower the ambient temperature is, the less heat the unit absorbs. Performance of heat pump will reduce if ambient temperature drops and it takes longer time to heat up the sanitary hot water. At the same time, the lower ambient temperature it is, the more heating demand for the house. If the unit does not provide enough heat while it is working for hot water, the temperature inside the house may drop too much. So parameters 3.03~3.06 try to balance the demand for sanitary hot water and heating.

When this function is ON, AH (Auxiliary Heater) or HWTBH (Hot Water Tank Back-up Heater) or both, depending on their priority, will work individually or together to enhance heat pump's capacity in hot water mode to heat up the water as soon as possible.

Shifting priority logic:



3.04) Ambient temp. to start shifting priority mode

Set an ambient temperature which below it, this function starts to work.

3.05) Min. working time for DHW (minutes)

Under shifting priority mode, set the minimum working period for sanitary hot water mode.

3.06) Max. working time for heating (minutes)

Under shifting priority mode, if system switch from DHW to heating, this value depend the maximum working period for heating mode.

3.07) Allowable temp. drift in heating

Set allowable temperature drift in heating mode.

3.08) DHW backup heater for shifting priority

Working mode of HWTBH (Hot Water Tank Back-up Heater) in this function. If it is set ON, even if heat pump switch to house heating, HWTBH will keep on working to help the unit heat up hot water as soon as possible.

3.09) High temperature limit (DHW)

This parameter is used by the installer level, to set the temperature range for DHW for safety purpose.

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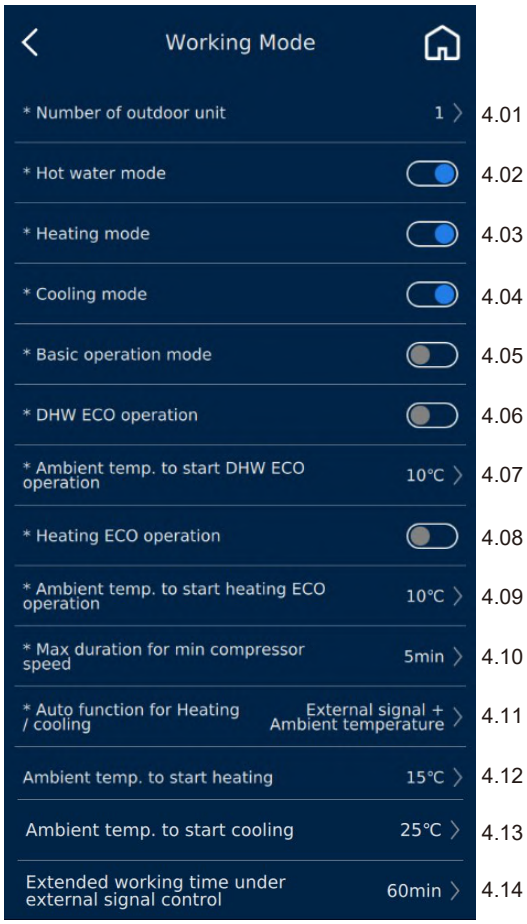
4. Working Mode

Working Mode



4.01) Number of outdoor unit

If system have more than 1 unit, please set the total QTY here.

4.02) Hot water mode

Set whether the system has sanitary hot water circuit or not. When unit works in Sanitary Water mode, 3-way valve leads water to HWT (hot water tank) automatically.

4.03) Heating

Set whether the system has water circuit for house heating or not. When unit works in heating mode, 3-way valve leads water to heating circuit automatically.

4.04) Cooling

Set whether the system has water circuit for house cooling or not. When unit works in cooling mode, 3-way valve leads water to cooling circuit automatically.

4.05) Basic operation mode

Set the basic operation mode, as "Water Temperature Control" (by default) or "Room Temperature Control".

Note: If set to "Room Temperature Control", heating curve function will not be activated.

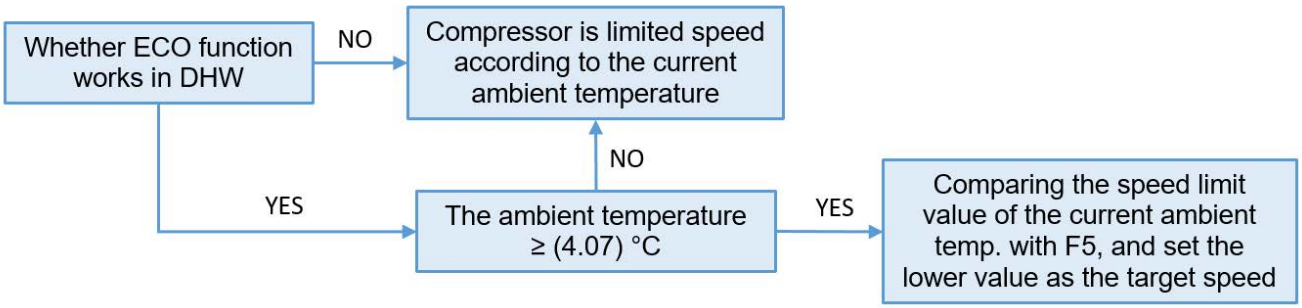
Touchscreen Controller Instructions

4.06) DHW ECO operation

When ambient temperature is not too low and the DHW demand is not too urgent, the output capacity of the heat pump can be appropriately reduced to obtain higher energy efficiency by reducing the compressor frequency in DHW mode. This function is set by the installer level. **4.07) Ambient temp. to start DHW ECO operation**

If ambient temp. is higher than this value, compressor will check current frequency with F5, and then work with a lower frequency.

The logic is:



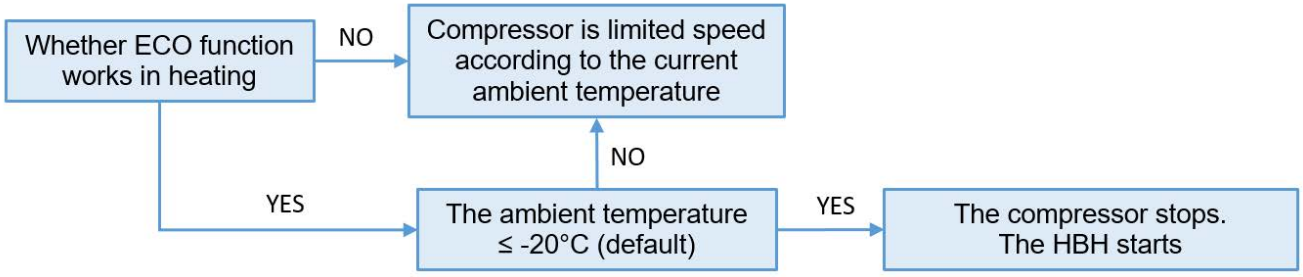
4.08) Heating ECO operation

If ambient temperature is too low, and this function is activated, the compressor will stop and HBH will work.

4.09) Ambient temp. to start heating ECO operation

Set the start ambient temperature of Heating ECO function. If the ambient temperature is lower than this value, the heat pump will shutdown and the auxiliary heater (HBH) starts.

The logic is:



4.10) Max duration for min. compressor speed

When unit output is higher than demand, compressor speed reduces.

If compressor has continuously worked at minimum speed F1 over this setting time, unit stops.

4.11) Auto function for Heating / cooling

This function allows the unit to start cooling or heating operations automatically, according to:

(1) If setting="Ambient Temp", system will automatically choose cooling or heating operation based on the outdoor ambient temperature, compared with parameter set in *"Ambient temp. to start heating"* (4.12) and *"Ambient temp. to start cooling"* (4.13).

(2) If setting="External Signal Control",an external room thermostat or central control system in the building can control the cooling or heating requirements by connecting it to the respective signal ports.

(3) If setting="Ambient Temp.+External Signal Control", unit will take both the ambient temperature and external signal into consideration for cooling or heating mode selection.

Note:

If parameter is set to OFF, then make sure that parameter (Heating Water Circuit) and (Cooling Water Circuit) are not set to ON simultaneously, as the system can not determine actual requirement, due to mode conflict. Also if "External Signal Control" is used to take control, please ensure that the external signal will not be activated at the cooling and heating ports at the same time.

4.12) Ambient temp. to start heating

For example, set value as 18°C, the system will start heating operation automatically when ambient temperature is lower than 18°C.

4.13) Ambient temp. to start cooling

For example, set value as 28°C, the system will start heating operation automatically when ambient temperature is higher than 28°C.

4.14) Extended working time under external signal control

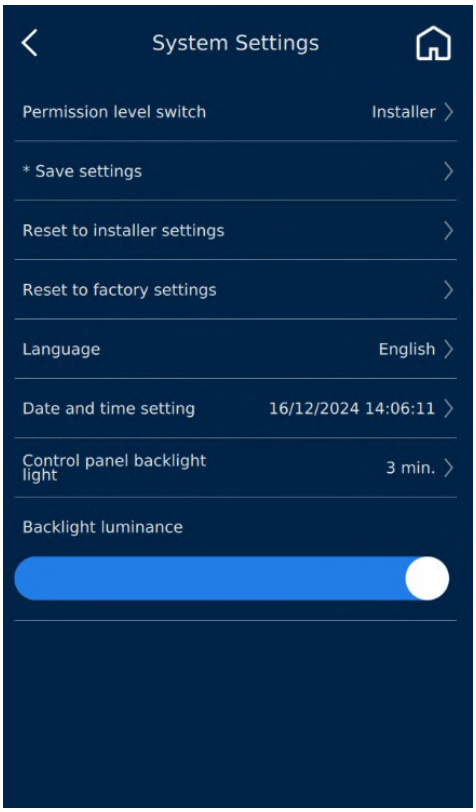
When the external signal controls heating and cooling operations of the unit, this setting is the heat pump OFF delay time after OFF signal.

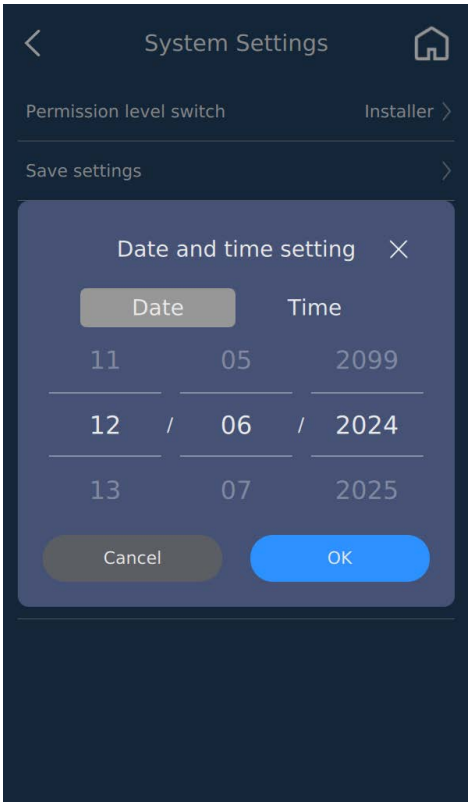
The unit keep running for some time to ensure overall room temp. instead of only the thermostat detecting temp. reaches the set value.

Touchscreen Controller Instructions

5. System Settings

System Settings





5.01) Permission level (End user / Installer)

For safety purposes, some parameters can only be adjusted under installer level. The permission level can be changed in this menu. A password for installer level is needed.

5.02) Save Settings

To save the current settings as "Installer Settings", so the user can load the saved settings into the system if needed.

5.03) Reset to installer settings

Loaded the saved "Installer Settings".

5.04) Reset to factory settings

Reset the whole system back to factory default settings.

Note: Saved "Installer Settings" will be cleared.

5.05) Language

Set system language.

5.06) Date and time setting

Set system date and time.

5.07) Controller panel backlight setting

Set the screen backlight or rest time.

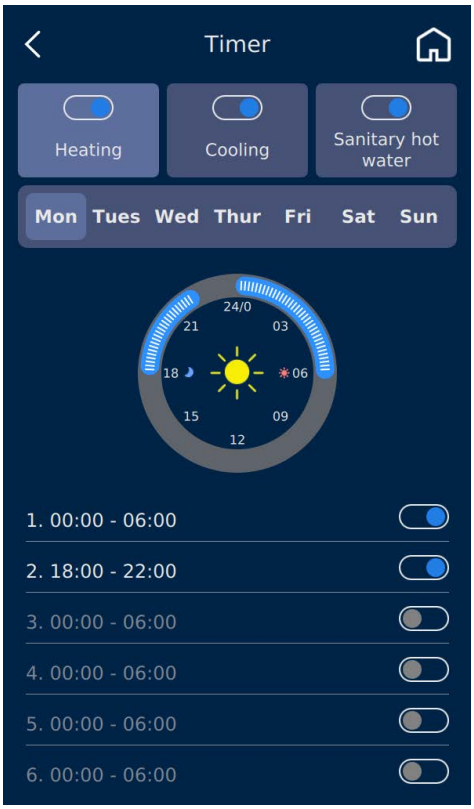
5.08) Backlight luminance

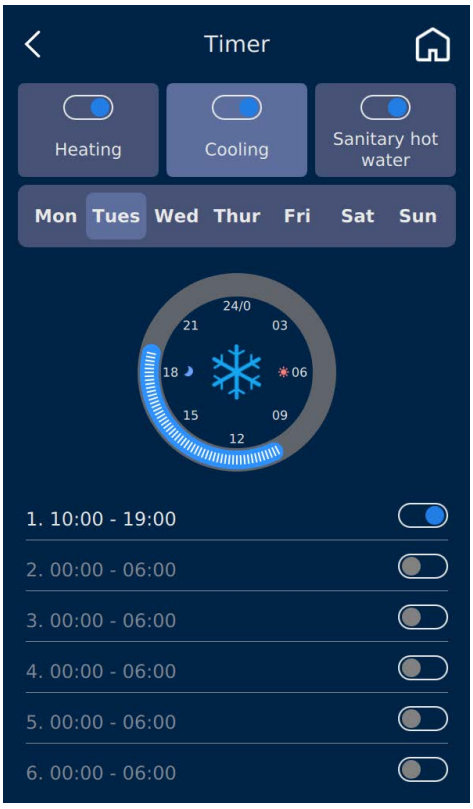
Set the screen brightness.

Touchscreen Controller Instructions

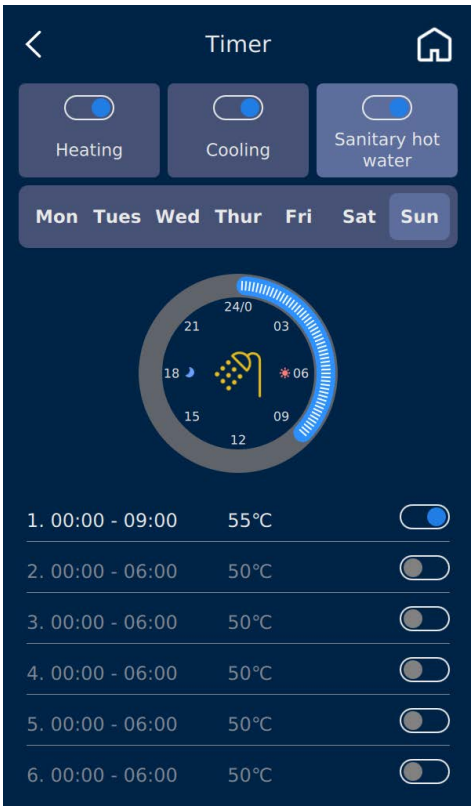
6. Timer

Timer





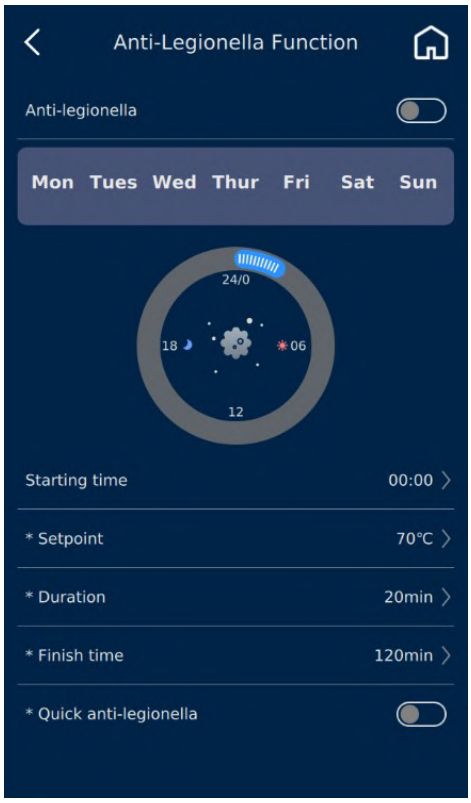
Set the timer for heating / cooling / DHW seperately.
You can select the day and the temperature in each mode.



Touchscreen Controller Instructions

7. Anti-Legionella

Anti-Legionella Function



When the Anti-Legionella function starts and is in the setting a timer of parameter 7.02, the unit will heat up DHW tank to the 7.03 temperature setpoint. When the water outlet temperature (TUO) reaches the unit's max. water outlet temperature (TUOmax), the compressor will stop, then the auxiliary heater (AH) and the DHW backup heater (HWTBH) will start to heat the DHW tank until the DHW temperature reaches the sterilization temperature.

The system will count the time for sterilization, if it is over "duration" that you set, then exit sterilization; When the sterilization function running time is greater than the maximum running time of 120 minutes, also exit sterilization, waiting for the next opening.

Note: Please always refer to local regulations for the correct usage of this function.

7.01) Anti-legionella program

Turn ON/OFF Anti-Legionella function.

7.02) Starting time

Set the start time for the Anti-Legionella function to run, which can only be set when 7.01 is turned on. Select weekday(s) for the start of Anti-Legionella operation.

7.03) Setpoint

Set the target sanitary hot water temperature for sterilization.

Please refer to the local regulation for the correct setting of this temperature.

7.04) Duration

Set for how long the unit should try to keep this set high temperature, to ensure the bacteria in the shower water tank can be killed.

7.05) Finish time

Set an ending time for this Sterilization function, even it is not finished successfully.
This time should be longer than what it is set in parameter 7.04.

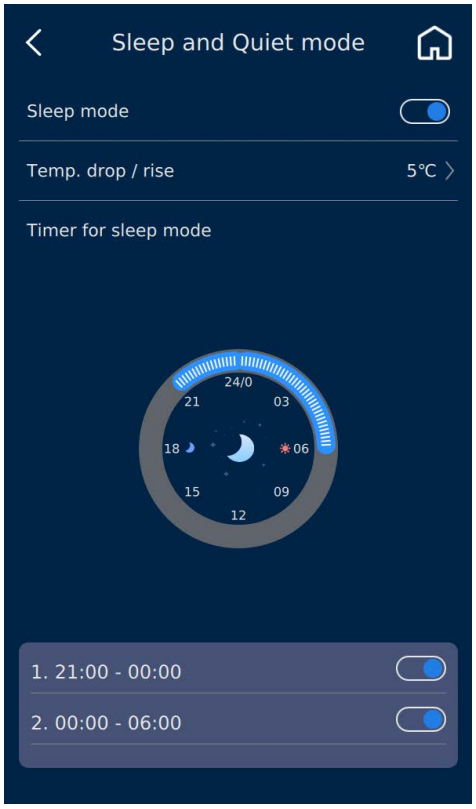
7.06) Quick anti-legionella

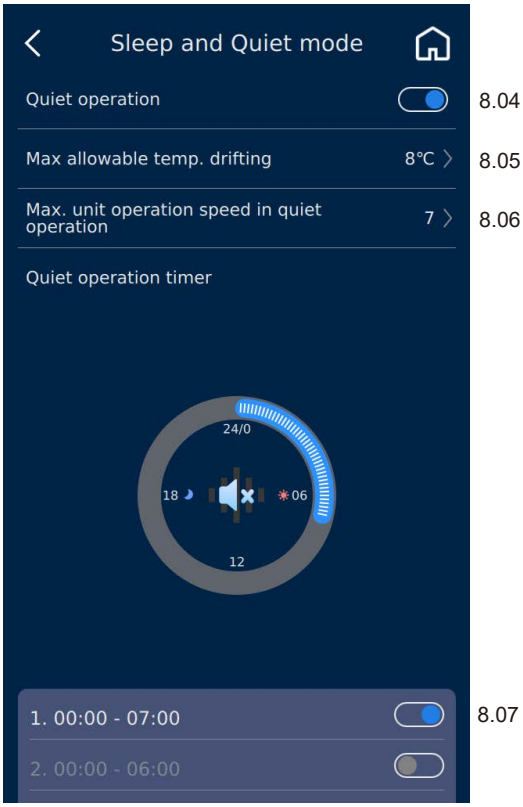
When this function is set not only the heat pump but also the 1st level electric heater will start from the beginning, to rise the water temperature quicker. If the target temperature and the set time are satistied, this function will exit automatically.

Touchscreen Controller Instructions

8. Sleep and Quiet mode

Sleep and Quiet mode





8.01) Sleep mode

Turn ON/OFF Sleep operation mode.

When the house heating demand can be lower, like sleep period or working time, a lower set temp. can be set here for better system consumption.

8.02) Temp. drop / rise

Set temperature drop (in heating) or increase (in cooling) based on standard set temperature during sleep mode.

8.03) Timer for sleep mode

Set a timer for Sleep mode.

Different time periods for every day in a week can be set.

8.04) Quiet operation

Turn ON/OFF quiet operation mode.

After activating this function and setting the time period for quiet operation, unit will reduce its noise level.

Note: Unit efficiency in Quiet Operation mode will be lower than standard working mode.

8.05) Max allowable temp. drifting

When the unit works in quiet mode, the output may drop because both the fan and the compressor may need to work at a lower speed. So, temperature in the system may drop (in heating) or increase (in cooling) due to the lower output.

The data set here is a temperature difference between set temperature and bearable temperature. If the current temperature is lower than Ts - 8.05, the unit will exit this Quiet Operation, to ensure a comfortable house temperature.

8.06) Max. unit operation speed in quiet operation

Set the max. compressor frequency limitation under quiet mode.

8.07) Quiet operation timer

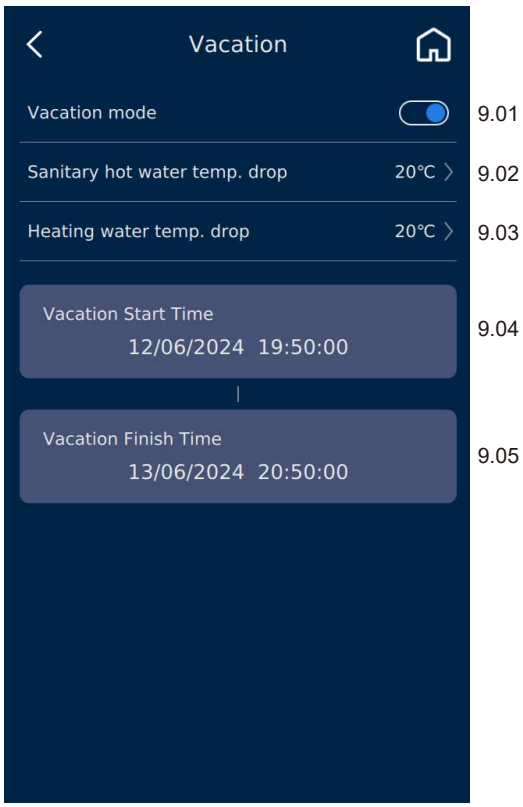
Set a working time period for Quiet Operation.

Different time periods for every day in a week can be set.

Touchscreen Controller Instructions

9. Vacation Mode

Vacation



If you need to be away from home for some days, use Vacation Mode function to save energy by keeping low heat.

9.01) Vacation mode

Turn ON/OFF Vacation mode.

9.02) Sanitary hot water temp. drop

Set an allowable temperature drop for sanitary hot water based on standard DHW set value during the set time for vacation mode.

9.03) Heating water temp. drop

Set an allowable temperature drop for heating based on standard DHW set value during the set time for vacation mode.

9.04) Vacation start time

Set the time and date when vacation starts.

9.05) Vacation finish time

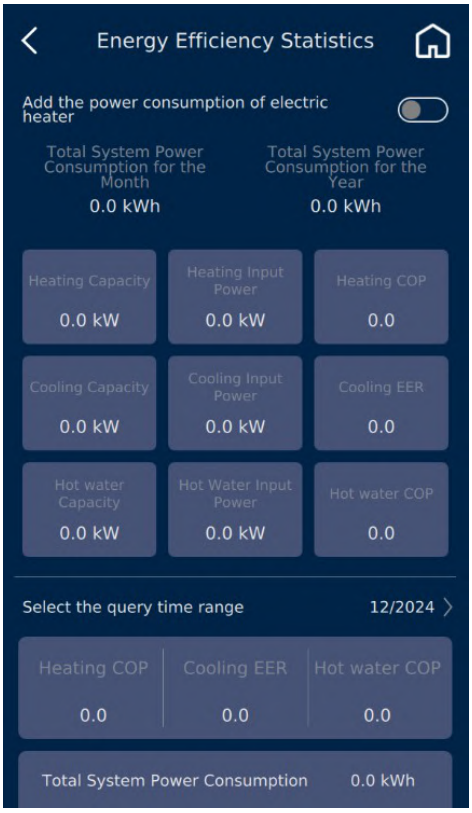
Set the time and date when vacation finishes.

After this time, the setting temperature of sanitary hot water and heating will restore.

Touchscreen Controller Instructions

10. Energy Efficiency Statistics

Energy Efficiency Statistics



10.01

The following is the system's energy efficiency information. You can view the current energy efficiency information as well as the historical energy efficiency information.
This menu is designed for viewing the power consumption and COP (optional) of the heat pump and system.

10.01) Add the power consumption of electric heater

Adds the power consumption of electric heaters to the total power consumption of the unit and gives the total COP etc.

Total system Power Consumption for the Month
Total system Power Consumption for the Year
Cooling/Heating/DHW output capacity
Cooling/Heating/DHW input power
Real-time COP (EER)

Select the query time range

Click through for historical energy efficiency information.

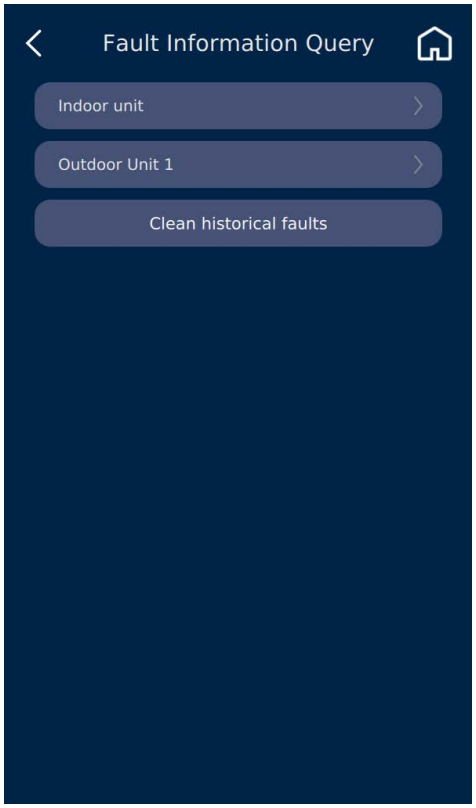
Click the "Month" button to choose to query energy efficiency data for a particular month; click the "Year" button to choose to query energy efficiency data for a particular year.

Total System COP
Total System Power Consumption
Accumulated Capacity

Touchscreen Controller Instructions

11. Fault Information Query

Fault Information Query



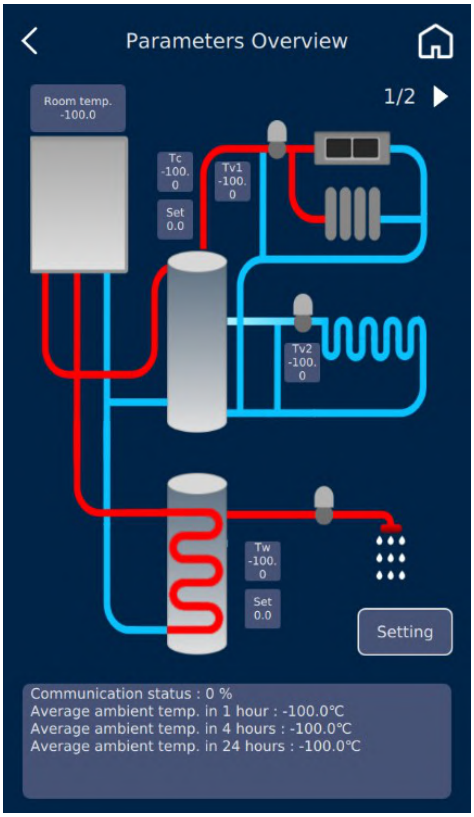
In 1st page, select unit(s) which reports error code. The system supports multi-unit cascade.
In 2nd page, check current fault or historical fault of the unit.

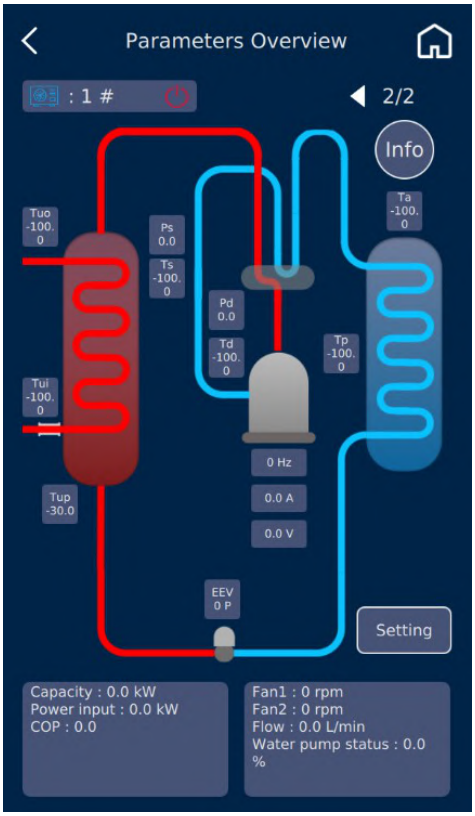
Note: Only after entering the "Installer" level, the historical fault can be checked and cleared.

Touchscreen Controller Instructions

12. Parameters Overview

Parameters Overview





Parameters overview of indoor and outdoor units.
Tuo: Heat exchanger water outlet temp.
Tui: Heat exchanger water return temp.
Tup: Internal coil temp.
Tw: Sanitary hot water temp.
Tc: Cooling/Heating water temp.
Ta: Ambient temp.
Pd: High pressure
Ps: Low pressure
Td: Compressor discharge temp.
Ts: Compressor suction temp.
Tp: Outdoor coil temp.
EEV: Electronic Expansion Valve opening value
Tv1: mixing temperature 1
Tv2: mixing temperature 2
Room temp. (Tr): Room temperature

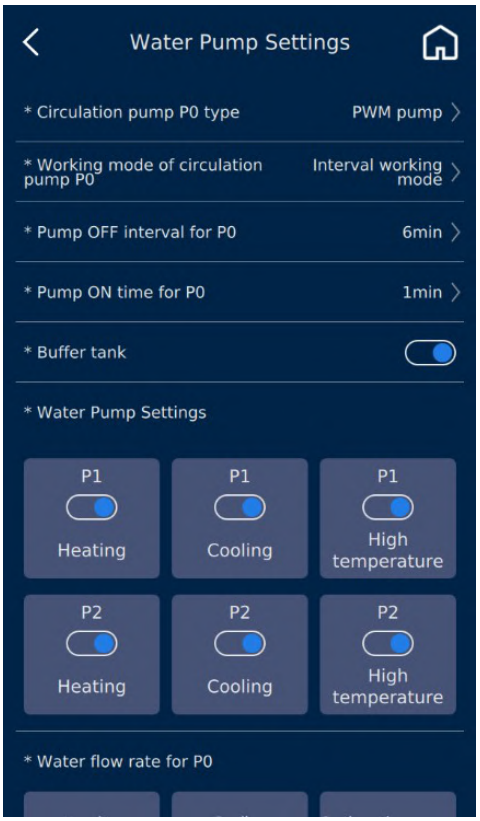
Communication status
Average ambient temperatures
Capacity
Power input
COP
Fan1/2 speed
Water flow
Water pump status

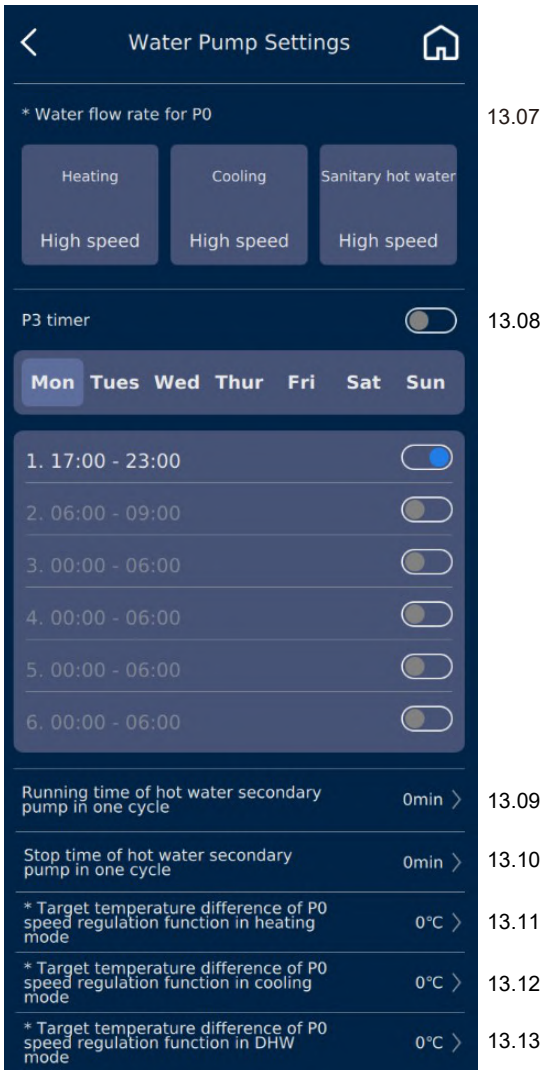
Note: The "Setting" button on this overview page can only be entered by "Installer" level.

Touchscreen Controller Instructions

13. Water Pump Settings

Water Pump Settings





13.01) Circulation pump P0 type

To set the type of circulation pump integrated in the unit (P0). It is set by installer level.

13.02) Working mode of circulation pump P0

To set the working mode of circulation pump for cooling/heating operation.

P0 can work as the following settings:

1. Interval working mode. In this setting, P0 stops after compressor stops, but runs for a while after stops for an interval period.

2. ON constantly. P0 will work constantly even if compressor stops after reaching the set temperature.

3. OFF with compressor. It means P0 stops after compressor stops.

Touchscreen Controller Instructions

13.03) Pump Off interval for P0

13.04) Pump On time for P0

If the unit circulation pump P0 working mode is set to "Interval working mode", the circulation pump stops after the compressor stops.

After it stops, it will run for *"Pump ON interval*" (13.04) time after every *"Pump OFF interval for P0"* (13.03) minutes stops.

13.05) Buffer tank

Set if there is a buffer tank installed in the system or not.

13.06) Water Pump Settings

These parameters are used for setting the working of external circulation pump P1 and P2, for heating/cooling circuit 1, and heating/cooling circuit 2.

If P1 activated to high temperature, means during "dual heating circuits" is set, P1 connects to higher water temp system. P2 works in the same way.

13.07) Water flow rate for P0

These parameters are used for controlling the speed of P0.

13.08) P3 timer

The days and times of operation of the hot water recirculation pump P3 (if installed) are set here.

13.09) Running time of hot water secondary pump in one cycle

Set the duration of operation of the P3 pump during one cycle.

13.10) Stop time of hot water secondary pump in one cycle

Set the duration of P3 pump inactivity during one cycle.

13.11) Target temperature difference of P0 speed regulation function in heating mode

Set the temperature difference for the control of the integrated circulation pump P0 according to the temperature difference of the inlet and outlet water in the heating mode.

13.12) Target temperature difference of P0 speed regulation function in cooling mode

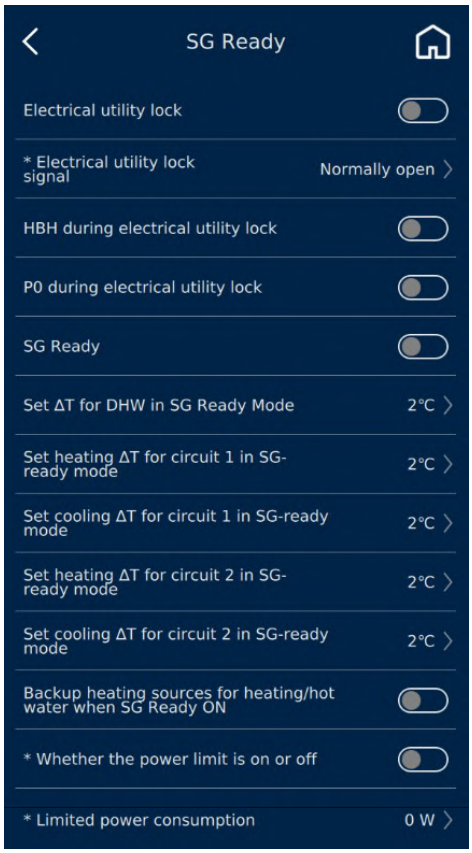
Set the temperature difference for the control of the integrated circulation pump P0 according to the temperature difference of the inlet and outlet water in the cooling mode.

13.13) Target temperature difference of P0 speed regulation function in DHW mode

Set the temperature difference for the control of the integrated circulation pump P0 according to the temperature difference of the inlet and outlet water in the DHW mode.

14. SG-ready

SG Ready



14.01
14.02
14.03
14.04
14.05
14.06
14.07
14.08
14.09
14.10
14.11
14.12
14.13

14.01) Electrical utility lock

Set ON/OFF electrical utility lock function.

14.02) Electrical utility lock signal

Set the type of signal from electricity company. “Normally Open” means when unit can work as normal when it gets ON signal, the unit should stop working when it receives an OFF signal.

“Normally Close”means the opposite.

14.03) HBH during electrical utility lock

Set whether turn on HBH (Heating Back-up Heater), when unit is blocked by Electrical Utility Lock. e.g. gas boiler.

14.04) P0 during electrical utility lock

Set the working of circulation pump when unit is blocked by Electrical Utility Lock.

If it's activated, the circulation pump will keep on working when compressor stops.

If it's not activated, the circulation pump will stop working when compressor stops.

14.05) SG-Ready

The smart grid will send two external signals to adjust heat pump's operation to match the state of the grid and shaving peaks/ filling valleys.

If the unit is supposed to adjust working during this period or need to turn on "SG-Ready" function, one can connect the signal from smart grid to this “SG-Ready” port and use the parameter setting to activate this function.

14.06) Set ΔT for DHW in SG Ready mode

Set this parameter to raise the setpoint in DHW mode when the SG Ready mode is activated and receive smart grid signal input 0:1 (SGA: open, SGB: closed) or 1:1 (SGA: closed, SGB: closed).

14.07) Set heating ΔT for circuit 1 in SG-Ready mode

Set this parameter to raise the setpoint in heating mode for circuit 1 when the SG Ready mode is activated and receive smart grid signal input 0:1 (SGA: open, SGB: closed) or 1:1 (SGA: closed, SGB: closed).

14.08) Set cooling ΔT for circuit 1 in SG-Ready mode

Set this parameter to reduce the setpoint in cooling mode for circuit 1 when the SG Ready mode is activated and receive smart grid signal input 0:1 (SGA: open, SGB: closed) or 1:1 (SGA: closed, SGB: closed).

14.09) Set heating ΔT for circuit 2 in SG-Ready mode

Set this parameter to raise the setpoint in heating mode for circuit 2 when the SG Ready mode is activated and receive smart grid signal input 0:1 (SGA: open, SGB: closed) or 1:1 (SGA: closed, SGB: closed).

14.10) Set cooling ΔT for circuit 2 in SG-Ready mode

Set this parameter to reduce the setpoint in cooling mode for circuit 2 when the SG Ready mode is activated and receive smart grid signal input 0:1 (SGA: open, SGB: closed) or 1:1 (SGA: closed, SGB: closed).

14.11) Backup heating sources for heating/hot water when SG Ready ON

The heating backup heater (HBH) and DHW backup heater (HWTBH) will startup immediately when unit receive smart grid signal input 1:1 (SGA: closed, SGB: closed).

14.12) Whether the power limit is on or off

Activate this parameter if energy is limited in SG-Ready mode

14.13) Limited power consumption

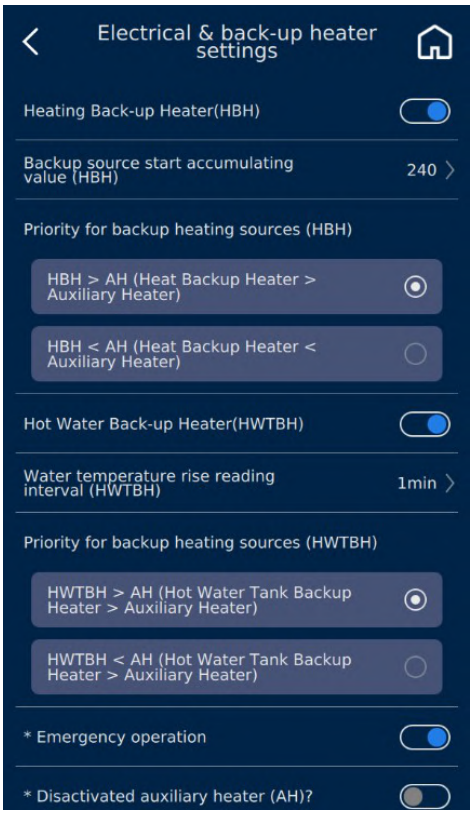
If 14.12 is enabled, specify the consumption limit.

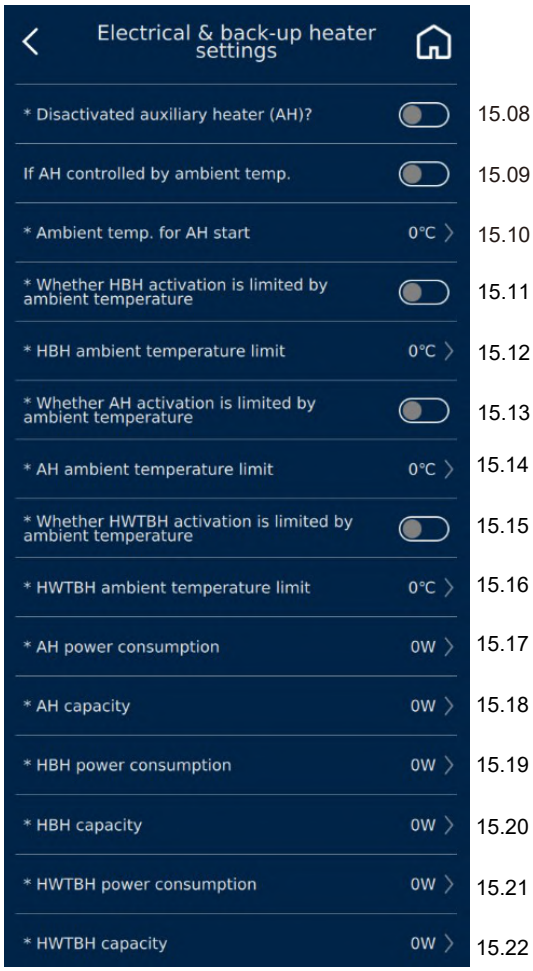
SGA	SGB	Status Icon	SG Ready operation requirement
0	0		The heat pump is operating normally
1	0		Insufficient energy from the grid necessitates a forced shutdown of the heat pump. After shutdown, the backup heater can be turned on.
0	1		Grid recommmends to consume more power by heat pump. The heat pump will automatically add a set temperature difference on the original set water temperature to get a new set point.
1	1		Grid produces too much power and has to be consumed by heat pump. At this time, heat pump will automatically adjust the set temperature to the maximum set temperature allowed by the system, and the electric heating can be turned on in order to consume more power from Grid.

Touchscreen Controller Instructions

15. Electrical & back-up heater settings

Electrical & back-up heater settings





AH - Auxiliary Heater (integrated)
HBH - Heating Back-up Heater
HWTBH - Hot Water Back-up Heater

15.01) Heating Back-up Heater (HBH)

Set whether the system has HBH (Heating Back-up Heater)

15.02) Backup source start accumulating value (HBH)

Accumulated value calculated between operation time and set temp. to start the HBH.

This is for adjusting how fast Backup Heating Sources for heating operation will be turned ON if heat pump unit can't provide enough power. The bigger the value is set, longer time it takes to start the HBH.

15.03) Priority for backup heating sources (HBH)

Set the priority of HBH compared with unit AH (Auxiliary Electric Heater inside the indoor unit). When unit works in heating, if heat pump unit can't provide enough power, it will turn on AH or HBH(which set to have the higher priority) automatically. If after AH or HBH is activated, the total output power is still insufficient, the unit will also turn on the lower priority backup heating source.

15.04) Hot Water Back-up Heater (HWTBH)

Set whether the system has HWTBH (Hot Water Tank Back-up Heater).

15.05) Water temperature rise reading interval (HWTBH)

Time interval for checking the temperature increase when unit works in DHW mode. If within this interval, DHW temperature can not increase for 1°C, unit will activate HWTBH.

15.06) Priority for backup heating sources (HWTBH)

Set the priority of HWTBH compared with unit AH (Auxiliary Electric Heater inside the indoor unit). When unit works in hot water, if heat pump unit can't provide enough power, it will turn on AH or HWTBH (which set to have the higher priority) automatically. If after AH or HWTBH is activated, the total output power is still insufficient, the unit will also turn on the lower priority backup heating source.

15.07) Emergency operation

When the heat pump fails to work, the unit should turn ON the backup heating system automatically.

Note: If this function is activated, the customer should check the working status of the heat pump occasionally, to ensure the heat pump is functioning well.

15.08) Disactivated auxiliary heater (AH)

This function sets whether the auxiliary heater is disactivated. The premise of choosing this option is setting "Heating backup heater (HBH)"=on. After turning on this function, the unit will not activate AH in heating mode.

15.09) If AH controlled by ambient temp.

This function sets whether the auxiliary heater (AH) is controlled by ambient temperature.

15.10) Ambient temp. for AH start

If setting *"If AH controlled by ambient temp."* (15.09) is ON, the auxiliary heater (AH) will only work when ambient temperature < setpoint 15.10 (HBH & HWTBH are still valid).

15.11) Whether HBH activation is limited by ambient temperature

This function sets whether the heating back-up heater (HBH) is limited by ambient temperature.

15.12) HBH ambient temperature limit

If 15.11 is activated, set ambient temperature limit here.

15.13) Whether AH activation is limited by ambient temperature

This function sets whether the auxiliary heater (AH) is limited by ambient temperature.

15.14) AH ambient temperature limit

If 15.13 is activated, set ambient temperature limit here.

15.15) Whether HWTBH activation is limited by ambient temperature

This function sets whether the hot water tank back-up heater (HWTBH) is limited by ambient temperature.

15.16) HWTBH ambient temperature limit

If 15.15 is activated, set ambient temperature limit here.

15.17) AH power consumption

If an additional heating source is connected to the heat pump and it is controlled by it as AH, enter the power consumption of the additional heating source here.

15.18) AH capacity

Enter the heating capacity of the additional heating source controlled as AH.

15.19) HBH power consumption

If an additional heating source is connected to the heat pump and it is controlled by it as HBH, enter the power consumption of the additional heating source here.

15.20) HBH capacity

Enter the heating capacity of the additional heating source controlled as HBH.

15.21) HWTBH power consumption

If an additional heating source is connected to the heat pump and it is controlled by it as HWTBH, enter the power consumption of the additional heating source here.

15.22) HWTBH capacity

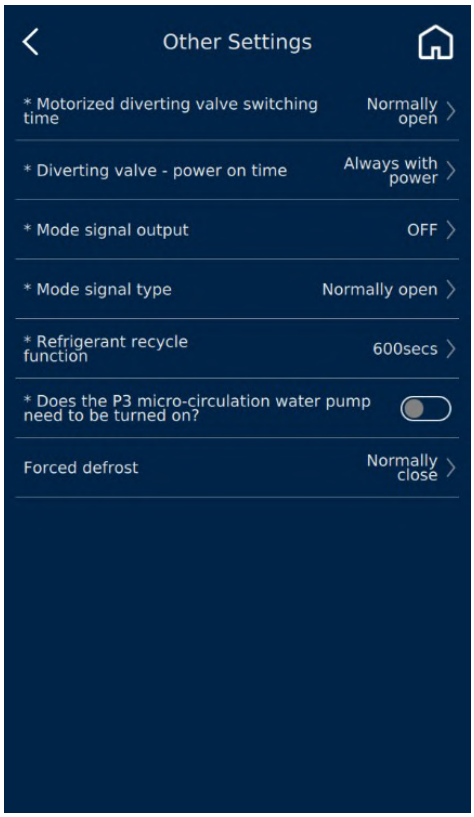
Enter the heating capacity of the additional heating source controlled as HWTBH.

Note: The data entered in 15.17~15.22 are taken into account when calculating the TOTAL power consumption of the system and the operating COP in "Energy Efficiency Statistics".

Touchscreen Controller Instructions

16. Other Settings

Other Settings



16.01) Motorized diverting valve switching time

Set the switching time of the motorized diverting valve spending on switching the water flow fully between DHW and Heating/Cooling circuit.

Note: This parameter must comply with the motorized diverting valve. Otherwise unit may not be able to work due to not enough water flow rate.

16.02) Diverting valve - power on time

Set how long the motorized diverting valve should be powered, for switching the water flow fully between DHW and Heating/Cooling circuit.

16.03) Mode signal output

This function is only used as the second signal output, and can be selected as cooling signal output or heating signal output, or invalid.

16.04) Mode signal type

16.05) Refrigerant recycle function

Recycle the refrigerant in the complete system into condensing unit for service purpose. When it is activated, unit will be forced to work in cooling mode for some time, to push all refrigerant gas back to outdoor unit.

16.06) Does the P3 micro-circulation water pump need to be turned on?

Set whether the hot water recirculation pump P3 is activated or not.

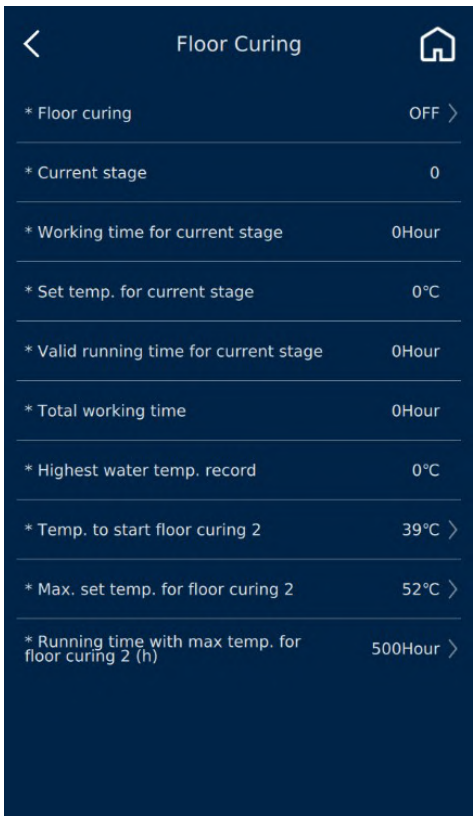
16.07) Forced defrost

This function cancels the interval time limits of standard "Smart defrost logic". Once the temperature conditions are met, it will start defrosting.

Touchscreen Controller Instructions

17. Floor Curing

Floor Curing



17.01) Floor Curing

Turn ON/OFF this function.

If this is a new house with new floor heating system installation, you can use this function to heat the humidity during the pipes. By heating for several rounds, it can check if there is any weakness during the pipes, and fix it before moving in the house.

17.02) Current stage

Floor curing has several stages, it means currently which stage it is.

17.03) Working time for current stage

Running time for this stage.

17.04) Set temp. for current stage

Set temp. for this stage.

17.05) Valid running time for current stage

This parameter is the valid running time during floor curing operation in current stage.

17.06) Total working time

This is a value for total running time of floor curing mode.

17.07) Highest water temp. record

This is a value for highest water temp. during floor curing mode.

17.08) Temp. to start floor curing 2

Floor curing 2 is another solution to heat the system.

17.09) Max. set temp. for floor curing 2

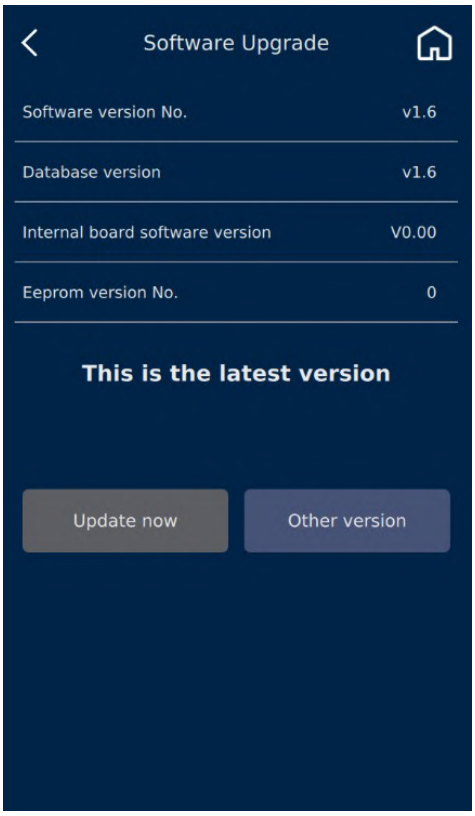
17.10) Running time with max temp. for floor curing 2 (h)

Set the start temperature, max temperature and lasting time for second-stage of Floor Curing operation.

Touchscreen Controller Instructions

18. Software Upgrade

Software Upgrade



This software upgrade can be easily done by a USB flash drive.

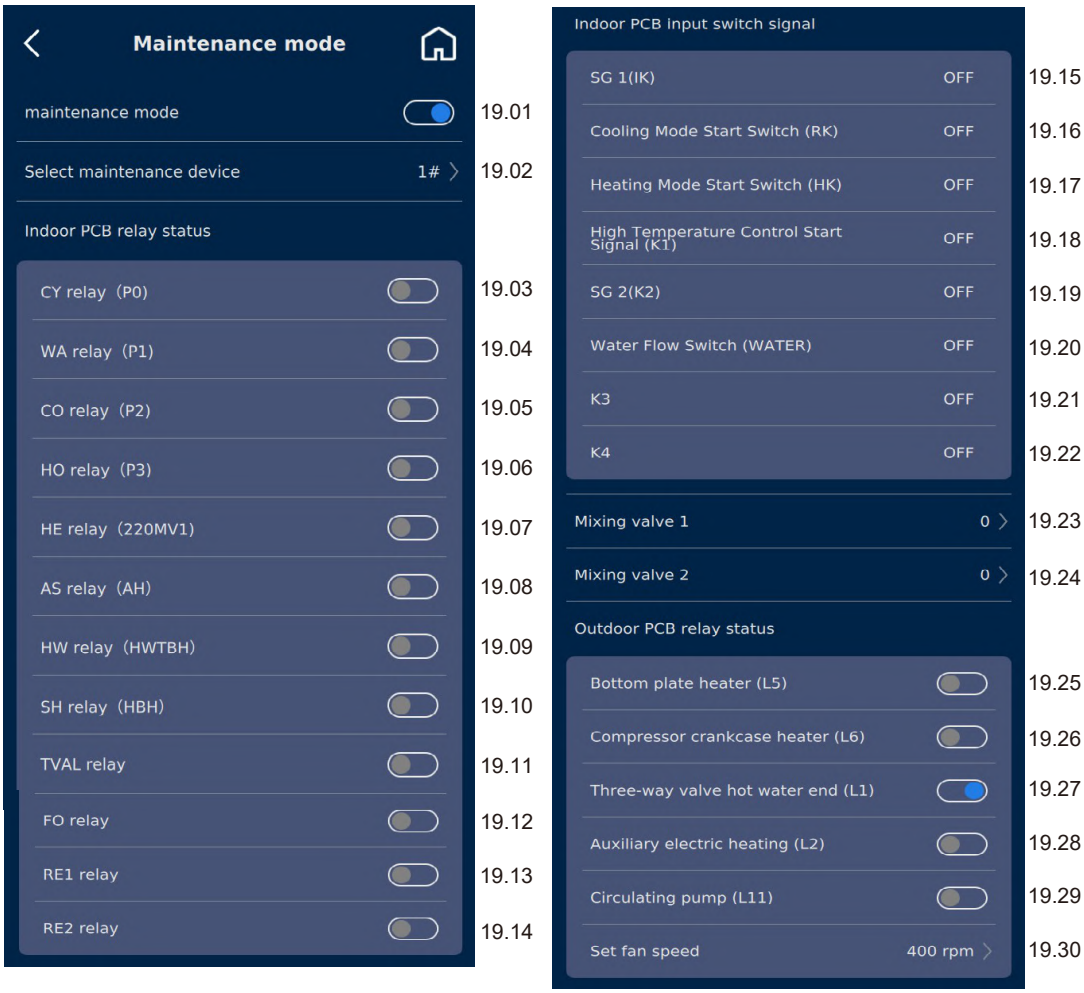
Copy the new program to a USB flash drive on computer, then insert the USB flash drive into the PCB of the operation panel.

Click "Update now", a window will pop up, select the program.

Touchscreen Controller Instructions

19. Maintenance mode

Maintenance mode

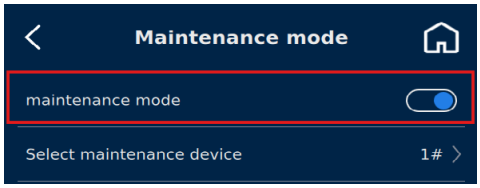


Program version requirements:
Controller program: V1.7 and above
Indoor PCB program: V1.08 and above

Maintenance is divided into 4 parts:

1. Indoor PCB relay ports
2. Indoor PCB switch signals
3. Indoor PCB mixing valves
4. Outdoor PCB relay & fan motor control

Maintenance mode needs installer level and above permissions.
To activate this mode, click into "Maintenance mode" (19.01) and enable it.



Touchscreen Controller Instructions

1. The indoor PCB relay inspection

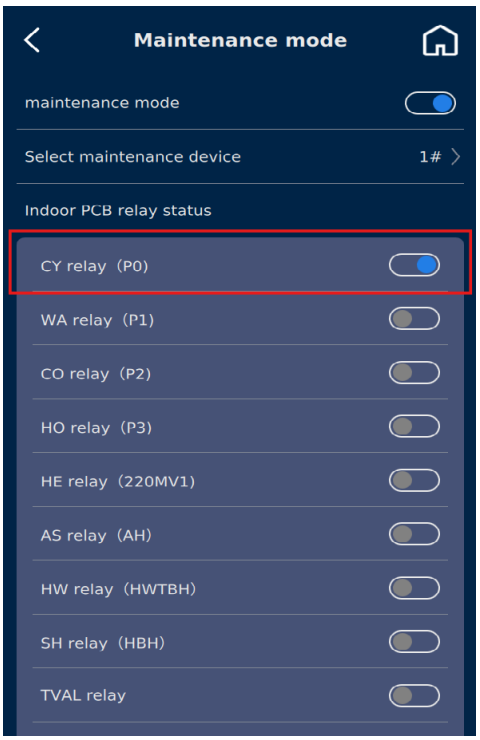
NOTE:: Please bring a load. If the voltage is not tested with a load, the detection may be inaccurate due to the capacitive electronic components on the PCB)

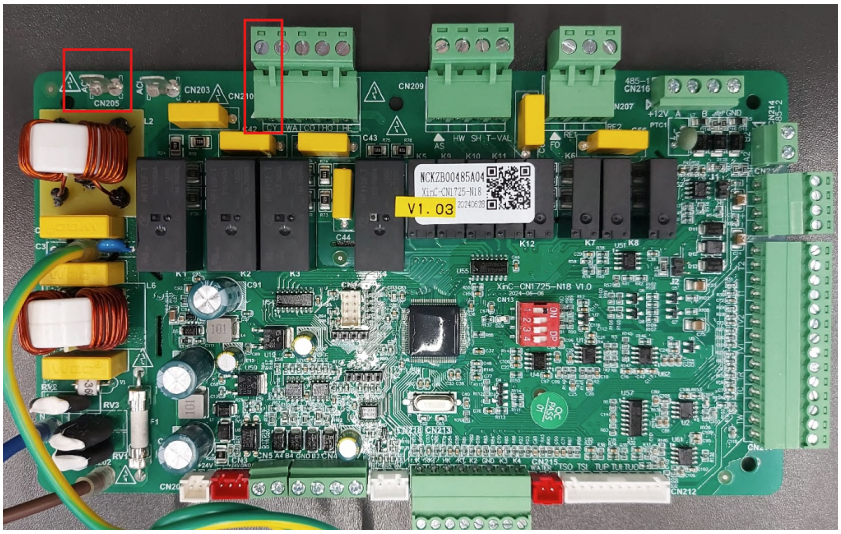
19.03	CY	Water pump	230V
19.04	WA	System A pump	230V
19.05	CO	System B pump	230V
19.06	HO	Hot water secondary pump	230V
19.07	HE	System A 220V mixing valve - Terminal B	230V
19.08	AS	Auxiliary electric heater for indoor unit	230V
19.09	HW	Domestic hot water electric heater	230V
19.10	SH	Backup heat source for heating	230V
19.11	T-VAL	Water circuit switches to the cooling end of 3-way valve	230V
19.12	FO	Alarm output	230V
19.13	RE1	System A 220V mixing valve - Terminal A	230V
19.14	RE2	Mode signal	230V

NOTE: When one of the AS/HW/SH relay outputs is switched on, in order to prevent the electric heater from dry burning, the CY/WA/CO relay will automatically output at the same time.

The example of troubleshooting the water pump port CY:

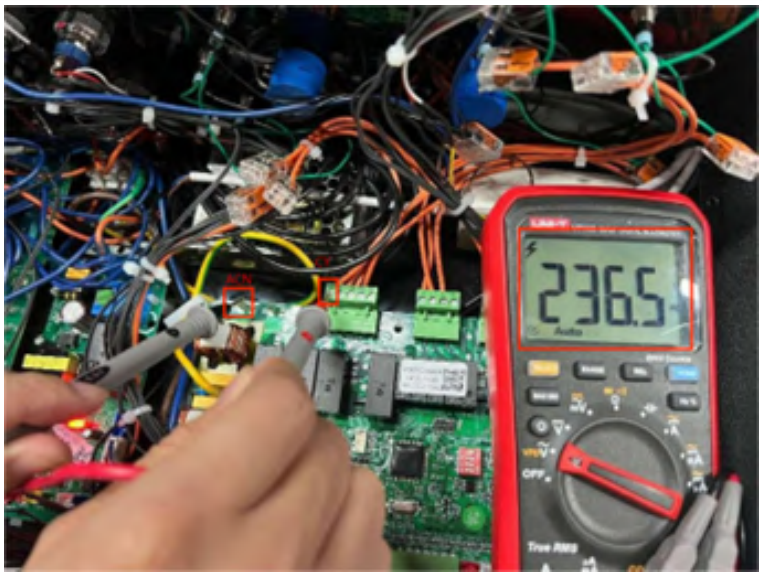
Open the CY relay (P0) (19.03):





Use the multimeter's AC gear to test whether the voltage at the CY (CN210) and ACN (CN205) ports is at 230V.

Touchscreen Controller Instructions



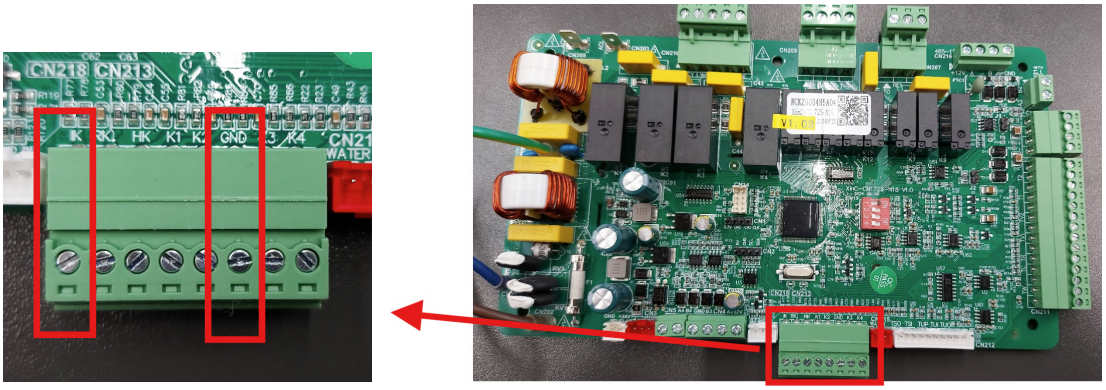
If CY (CN210) and ACN (CN205) port voltages are around 220V, it means the CY port is good. Then the water pump should be checked.

2. Indoor PCB switch signal inspection

If a close signal is given between the following ports and the GND port (that is, short circuit the following ports and the GND port), then after the indoor PCB detection,the corresponding port will show a signal.

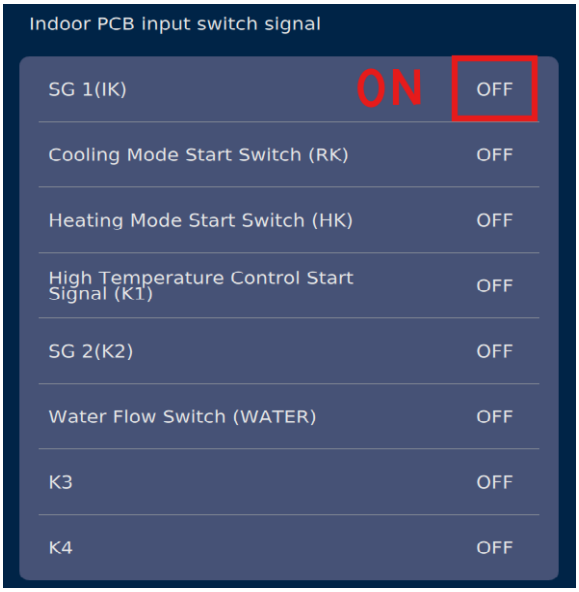
19.15	IK	Electrical utility lock switch (SG-Ready signal 1)
19.16	RK	Cooling mode switch
19.17	HK	Heating mode switch
19.18	K1	High temperature control signal
19.19	K2	SG-Ready signal 2
19.20	WATER	Water flow switch
19.21	K3	Reserved
19.22	K4	Reserved

The example of troubleshooting the SG-Ready1 port IK:



Touchscreen Controller Instructions

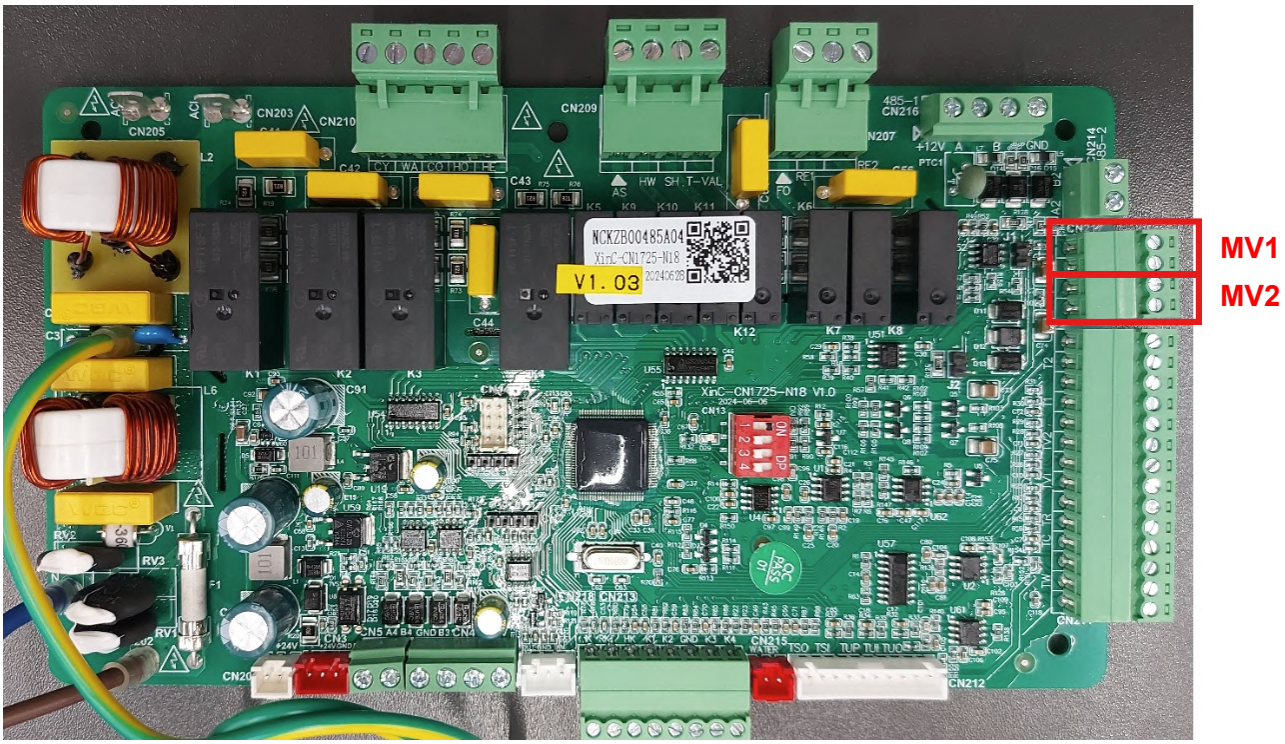
Use a wire to connect the IK (CN213) port and the GND (CN213) port, and check if there is a signal on the SG1 port. If yes, it means that this port is good.

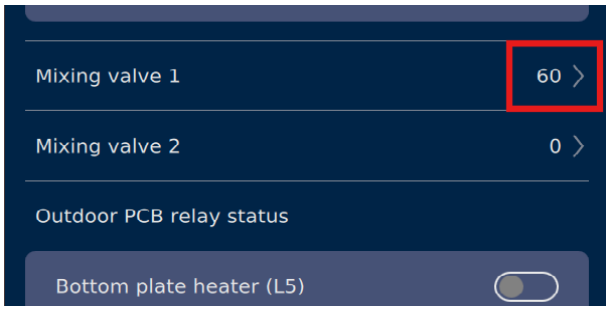


3. Mixing valve port

This port is used to adjust the opening of the mixing valve through 0-10V. You can set the opening here (range: 0-100), and then use the DC gear of the multimeter to test the mixing valve port on PCB. The opening and voltage value are linearly related.

For example, opening 20 = voltage 2V, opening 50 = voltage 5V.

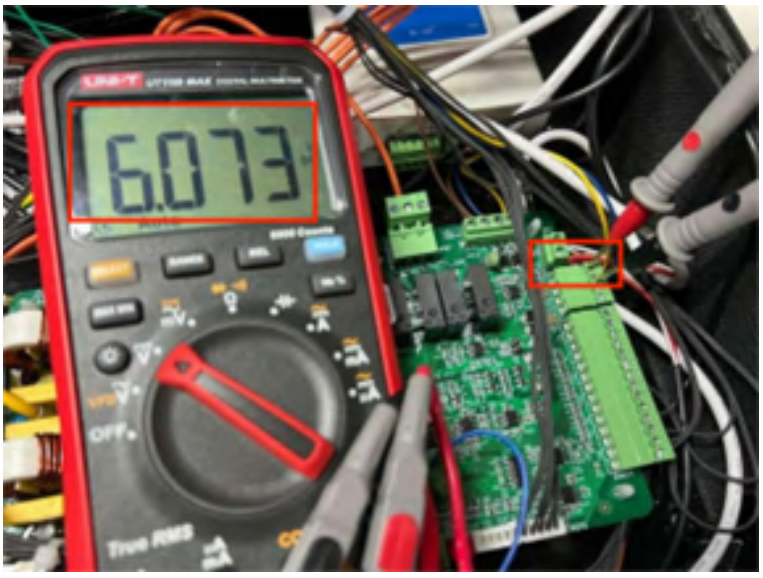




Take MV1 as an example and set to 60.

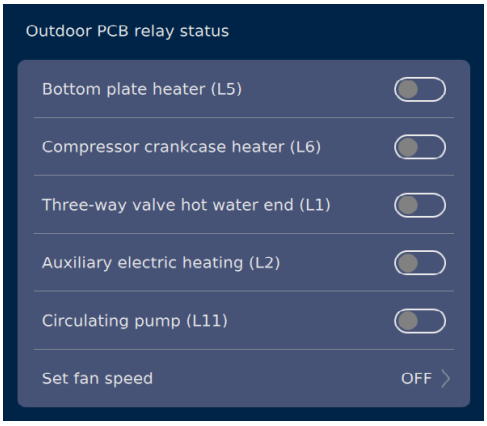
Touchscreen Controller Instructions

Turn your multimeter to DC voltage and measure the MV1 port. If this voltage is 6V, then the port is good.

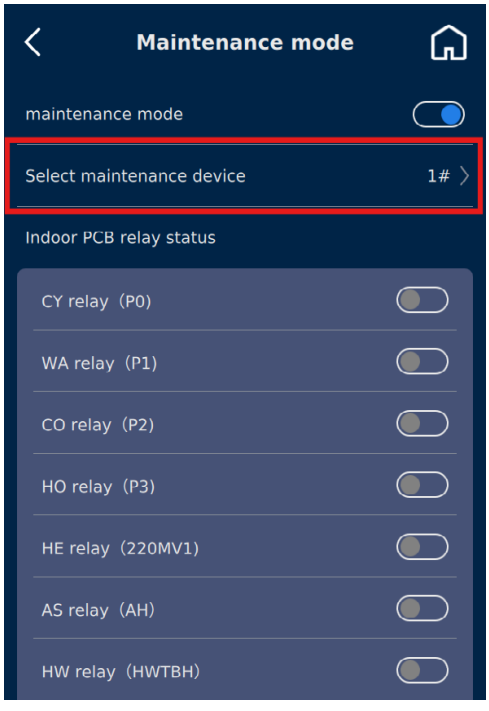


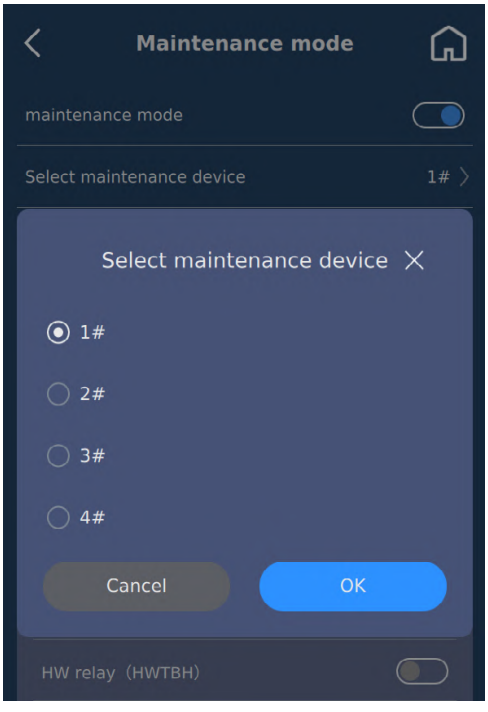
4. Outdoor PCB relay & fan motor control

(NOTE: Please bring a load. If the voltage is not tested with a load, the detection may be inaccurate due to the capacitive electronic components on the PCB)



If it is a cascade unit, select which unit you want to check and control.



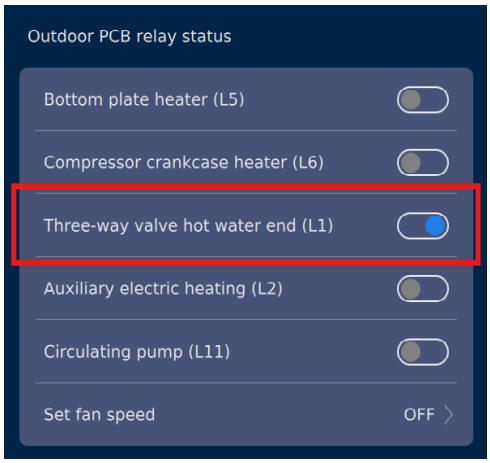


19.25	L1	Hot water end of three-way valve	230V
19.26	L2	Auxiliary electric heater	230V
19.27	L5	Bottom plate electric heater	230V
19.28	L6	Compressor crankcase electric heater	230V
19.29	RLY11	Water pump	230V

The detection of the outdoor PCB relays is the same as the indoor PCB relays. When the option is turned on, the corresponding relay is closed. Use the AC voltage gear of multimeter for detecting the voltage (RLY11: directly detect the two ports on the relay)

Example of troubleshooting the hot water 3-way valve port L1:

When this option is turned on, L1 relay is closed and the hot water end of the three-way valve is powered.

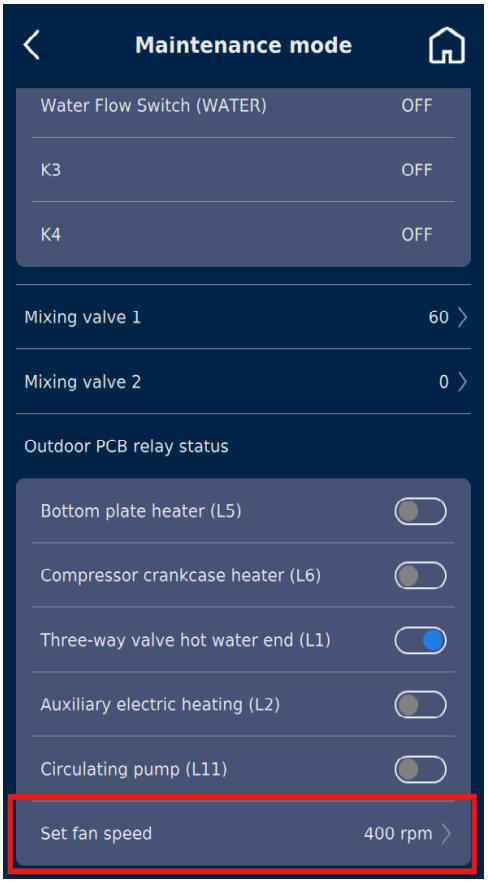


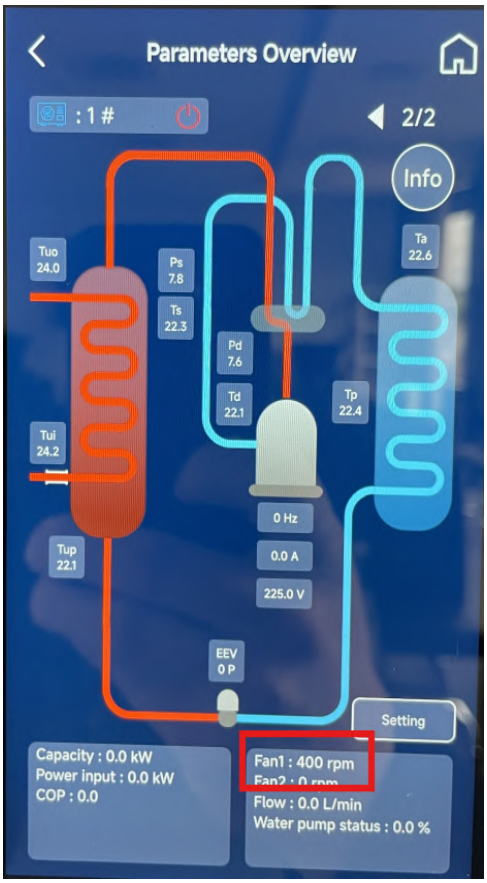
Use a multimeter with AC voltage to check if the voltage between L1 and AC-N is around 220V.

Touchscreen Controller Instructions

Checking the fan speed.

To check, set the fan speed here, and then observe the "Parameters Overview" page to see if the displayed speed is the same.

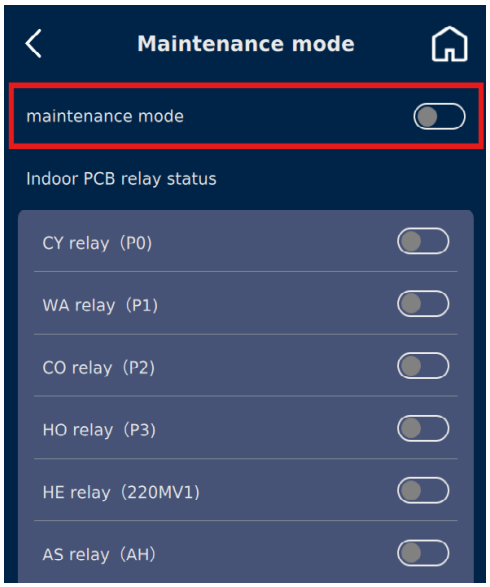


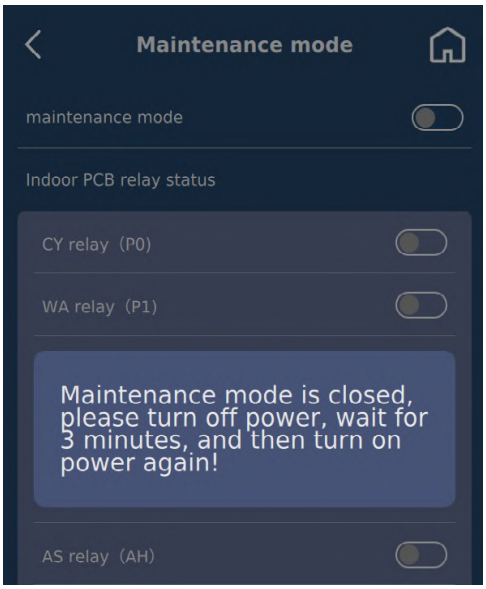


5. How to exit maintenance mode

Exit the maintenance mode option.

And cut the power of all equipment for 3 minutes and then re-power.





NOTES

NOTES

Thank you for purchasing our quality product. Please read this manual thoroughly before use, and follow the instructions carefully when operating the unit to prevent damage to either the device or persons.

Product specifications are subject to change with improvements, without prior notice. Please refer to the specification sticker on the unit for the most recent specifications.