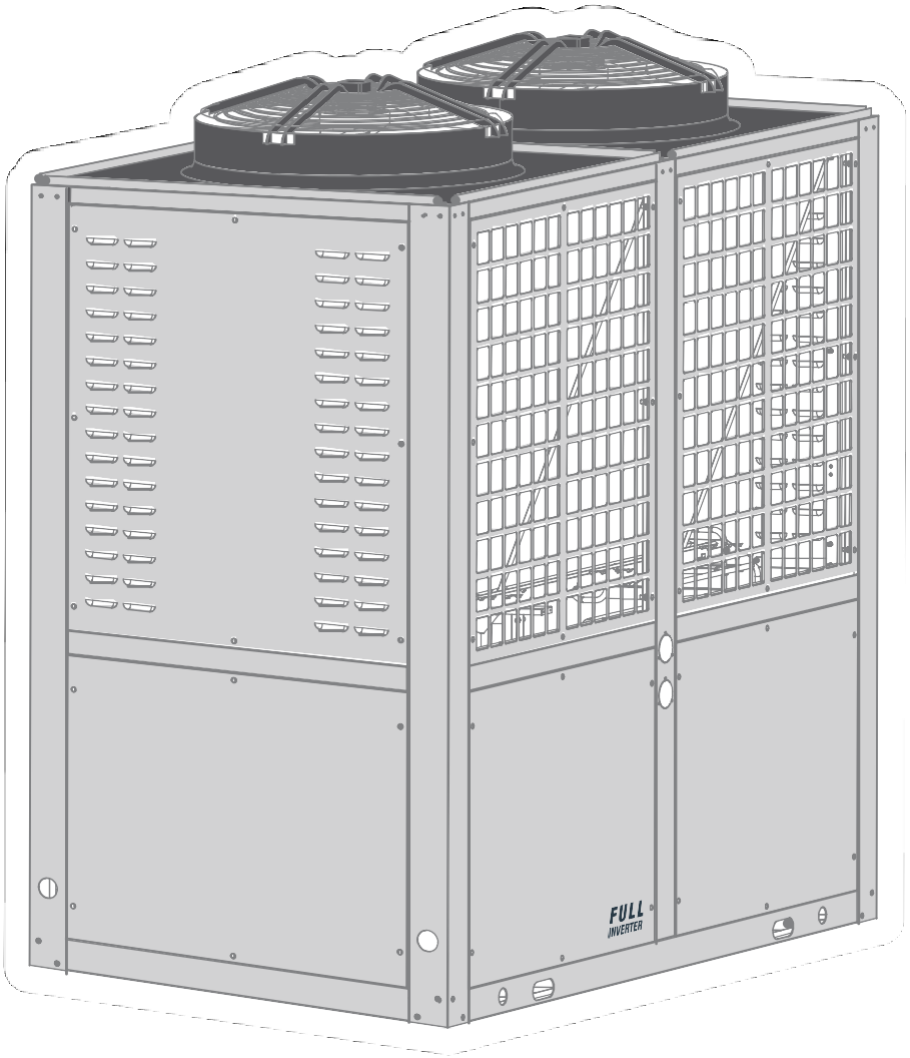
# INSTALLATION AND USER MANUAL

COMMERCIAL TYPE

FULL INVERTER SWIMMING POOL HEAT PUMP



*Dear customer,.*

*Thank you for your purchase and for the trust you place in our products.*

*Our p.roducts are the result of years ofresearch in the design and production of swimming pool heat pumps. Our ambition is to provide you with a quality product* ***with*** *exceptional performance.*

*We have compiled this manual with extreme care so that you can take full advantage of our heat pumps..*

# READ CAREFULLY

These installation instructions are an integral part of the product.
They must be given to the installer and retained by the user.

The indications and warnings contained in this manual must be read carefully and understood as they provide important information regarding the safe handling and operation of the heat pump

Keep this manual in an accessible place to facilitate future consultations.

The installation must be carried out by a qualified professional in accordance with current regulations and the manufacturer's instructions. An installation error can lead to physical injury to people or animals as well as mechanical damage for which the manufacturer cannot be held responsible.

**After unpacking the heat pump, please check the contents for any damage. Please also check that the pressure indicated by the manometer is above 80 psi, otherwise it may indicate a refrigerant leak.**

Before connecting the heat pump, make sure that the data provided by this manual is compatible with the actua-l installation conditions and does not exceed the maximum limits authorized for the product in question.

In the event of a fault and / or malfunction of the heat pump, the pow,er supply must be cut off and no attempt to repair the fault should be made.
Repair work should only be carried out by an authorized technical support service in using original spare parts. Failure to comply with the above clauses can have a negative influence on the safe operation of the heat pump.

To ensure the efficiency and proper functioning of the heat pump, it is important to ensure that it is regularly maintained in accordance with the instructions provided.

In the event that the heat pump is sold or transferred, always make sure that all the technical documentation is sent with the material to the new owner.

This heat pump is exclusively designed to heat a swimming pool. All other uses should be considered inappropriate, incorrect or even dangerous.

All contractual or extra-contractual responsibilities of the manufacturer / distributor will be considered null and void for damage caused by errors in installation or operation, or for failure to comply with the instructions provided by this manual or the standards of installation in force for the equipment covered by this document.

# Summary

# 1. Generality

## 1.1 General delivery conditions

All equipment, even postage and packaging paid, travels at the risk and peril of its recipient.

The person in charge of receiving the device must carry out a visual inspection to note any damag_e suffered by the heat pump during transport (refrigeration circuit, bodywork, electrical cabinet, chassis). The latter must make written reservations on the carrier's delivery note if he notices any damage caused during transport and confirm them within 48 hours by registered mail to the carrier.

The device must always be stored and transported in an upright position on a pallet and in the original packaging. If the device is stored or transported in a horizontal position, wait at least 24 hours before plugging it in.

## 1.2 Safety instructions

⚠ CAUTION :
Please read the safety instructions carefully before using the device.
Since the instructions given below are essential for safety, please adhere to them strictly.

*During installation and maintenance*

Only a qualified person can take over the installation, start-up, maintenance and troubleshooting, in accordance with current standards.

Before any intervention on the device (installation, commissioning, use, maintenance), the person in charge of these interventions must be familiar with all the instructions in the heat pump installation manual as well as the technical elements of the file.

Do not install the device near a source of heat, combustible materials, or a building air return vent.

If the installation is not located in a place with restricted access,the heat pump protection grid is mandatory.

Do not step on the piping during installation, troubleshooting and maintenance, as this can cause serious burns.

Before any intervention on the refrigeration circuit, stop the heat pump and wait a few minutes before installing the temperature or pressure sensors, otherwise serious burns may occur.

Check the refrigerant level when servicing the heat pump.

Check that the high and low pressure switches are correctly connected to the refrigeration circuit and that they cut the electrical circuit in the event of tripping during the annual leak check of the device.

Check that if there are no traces of corrosion or oil stains around the refrigeration components.

If the device is installed outdoors in an area subject to snowfall, a snow guard must be installed at least 2m above the device.

# 1. Generality

*When in use*

Never touch the fan while it is running, as this could cause serious injury.

Do not leave the heat pump within the reach of children, as this could cause serious injury from the fins of the heat exchanger.

Never put the unit in working order if there is no water in the pool or if the circulation pump is off.

Check the water flow monthly and clean the sand filter if necessary.

*When cleaning*

Switch off the power supply to the device.

Close the water inlet and outlet valves.

Do not put anything into the air or water inlet and outlet ports.

Do not rinse the device with plenty of water or high pressure, only use a suitable cleaner (CleanPac type).

*When troubleshooting*

Work on the refrigeration circuit must in accordance with current safety regulations.

The brazing operation is performed by the refrigeration engineer.

If you want to replace a faulty refrigeration component, please use only parts certified by our technical center.

If the pipe is replaced, only copper pipes that comply with the standard NF EN12735-1 can be used for troubleshooting.

## 1.3 Water treatment

Our pool heat pumps can be used with all types of water treatment.

However, it is imperative that the treatment system (Cl, pH,Br metering pumps and / or electrolyser) is installed after the heat pump in the hydraulic circuit.

To prevent damage to the heat pump, the pH of the water should be maintained between 6.9 and 8.0.

# 2. Description

## 2.1 Package contents

Heat pump unit.

Installation and user manual.

## 2.2 Main Features

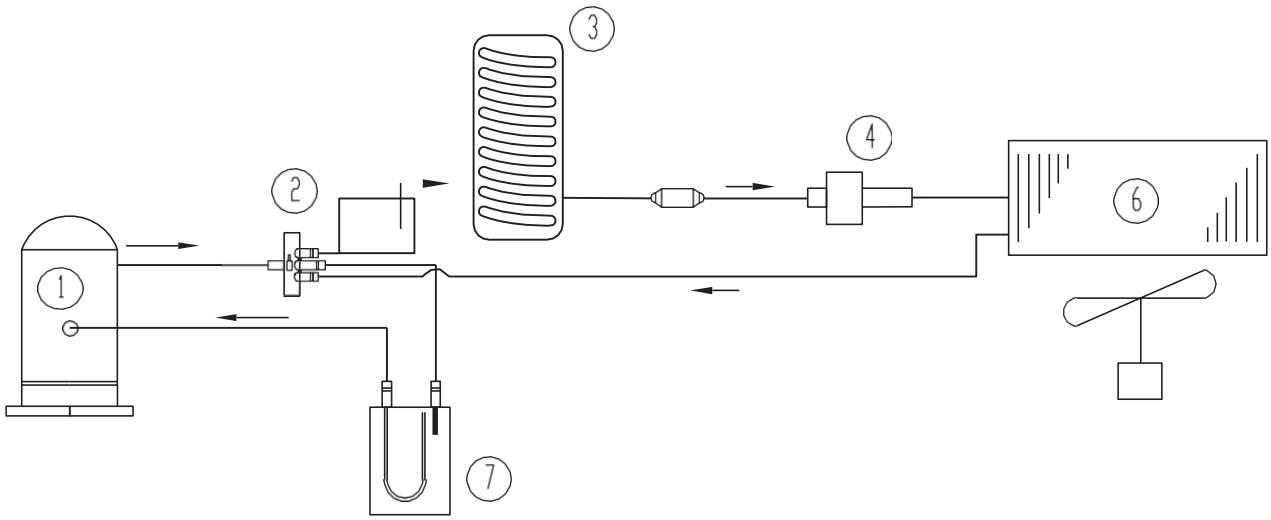
First of all, our heat pump has the following advantages:

- A CE and TÜV certified device, compliant with the European RoHS directive.
- High efficiency, saving up to 80% energy compared to a conventional heating system.
- A clean and efficient R32 ecological refrigerant.
- One (or more) reliable and efficient great brand compressor (s) .
- Large hydrophilic aluminum evaporators for low temperature use.
- Intuitive, easy-to-use remote control.
- Quiet design.
- Double antifreeze system to prevent frost damage:

  Revolutionary heat exchanger incorporating a patented antifreeze system,

  Intelligent monitoring system to preserve the piping and the lining without emptying the pool in winter.

## 2.3 Flowsheet diagram




1. Compressor
2. 4-way valve
3. Exchanger
4. Electronic expansion valve
5. Fan
6. Evaporator
7. Gas / liquid separation bottle

# 2. Description

## 2.4 Technical characteristics

| Test conditions | | VITO Aqua R32-70 | VITO Aqua R32-103 | VITO Aqua R32-136 |
|---|---|---|---|---|
| Air 26°C Water 26°C Hygro 80% | Max heating capacity. (kW) | 70 | 103 | 136 |
| | Min heating capacity (kW) | 16.5 | 24.8 | 32.4 |
| | Power Input (kW) | 10.80 1.11 | 15.80 1.63 | 20.77 2.14 |
| | COP | 16.11 6.98 | 16.09 6.96 | 16.15 6.99 |
| Air 15°C Water 26°C Hygro 70% | Max heating capacity. (kW) | 51 | 76 | 101 |
| | Min heating capacity (kW) | 12.1 | 18.3 | 23.9 |
| | Power Input (kW) | 10.24 1.6 | 15.29 2.42 | 22.24 3.15 |
| | COP | 7.52~4.96 | 7.55~4.96 | 7.58~4.99 |
| Air 6°C Water 26°C | Max heating capacity. (kW) | 47 | 68 | 92 |
| | Min heating capacity. (kW) | 11,2 | 15,9 | 21,8 |
| | Power Input (kW) | 11.78 1.89 | 17.09 2.70 | 22.94~3.66 |
| | COP | 5.92 3.99 | 5.89 3.98 | 5.95~4.01 |
| Air 35°C Water27°C | Max cooling capacity. (kW) | 38 | 58 | 76 |
| | Min cooling capacity. (kW) | 9.1 | 14,1 | 18.5 |
| | Power Input (kW) | 10.41~1.36 | 15.89~2.11 | 20.65~2.74 |
| | EER | 6.69~3.65 | 6.68~3.65 | 6.74~3.68 |
| Power Supply | | Three phase 380-415V/3N~50Hz | | |
| Heating water temperature range | | 15°C~40°C | | |
| Operating air temperature range | | -15°C~43°C | | |
| Max power Input (kw) | | 15,1 | 22,5 | 30,0 |
| Courant maximal (A) | | 26 | 38 | 54 |
| Water Flow Volume (m³/h) | | 20 | 30 | 40 |
| Refrigerant | | R32 | | |
| Decive dimensions L×W×H (mm ) | | 1416x752x1055 | 1250x1080x1870 | 2150x1080x2180 |
| Net Weight (kg) | | 280 | 460 | 810 |
| Noice at 1m (dBA) (3) | | <68 | <71 | <73 |
| Noice at 4m (dBA) (3) | | <58 | <60 | <62 |
| Noice at 10m (dBA) (3) | | <48 | <49 | <51 |
| Water connection (mm) | | 63 | 90 | 75 |
| Compressor Type | | Rotary inverter | | |
| Number of compressors | | 1 | 2 | 2 |
| Compressor brand | | Mitsubishi | | |
| Heat exchanger | | Titanium | | |

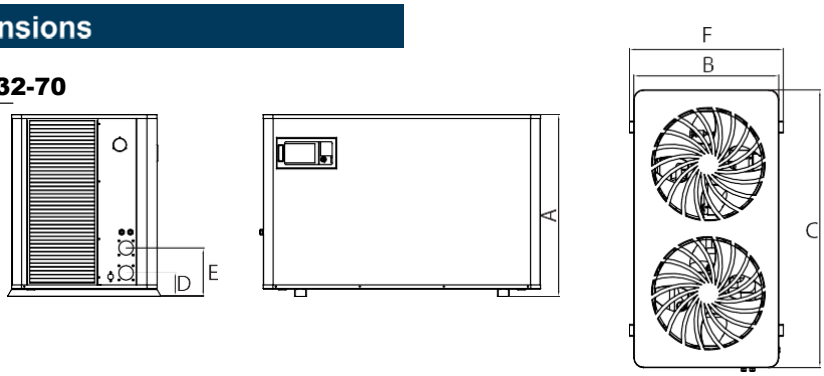
The technical characteristics of our heat pumps are given for information only, we reserve the right to modify these data without notice.

1、Ambient Technical
2、Initial water temperature
3、Noise at 1m , 4m, and 10m according to EN ISO 3741 and EN ISO 354

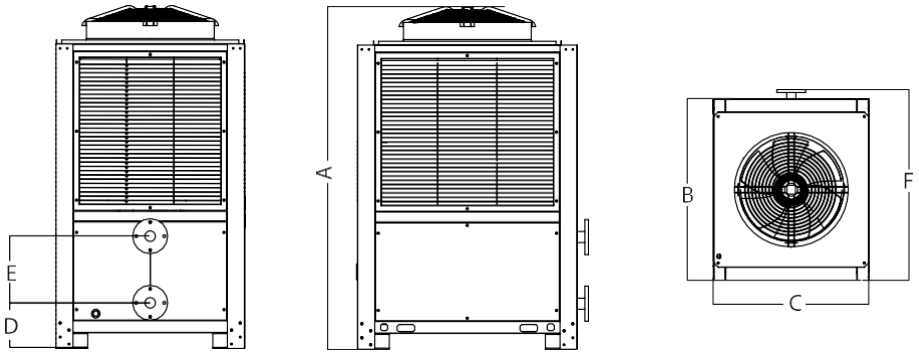
# 2. Description

## 2.5 Unit dimensions

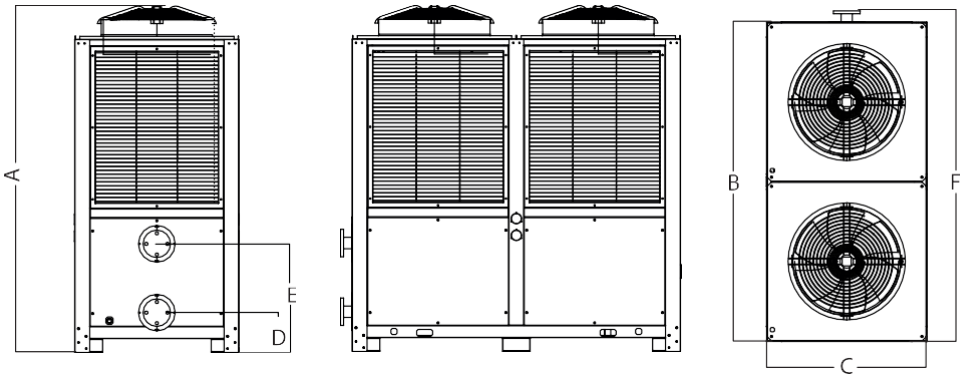
### VITO Aqua R32-70




### VITO Aqua R32-103




### VITO Aqua R32-136

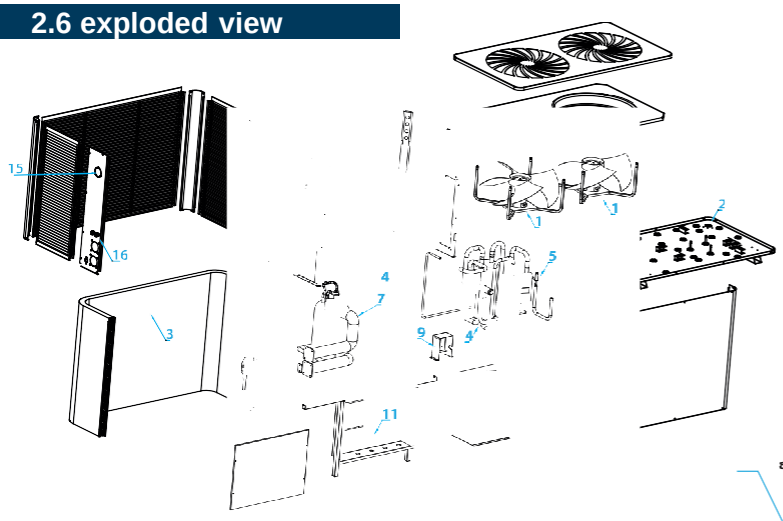



Dimensions en mm

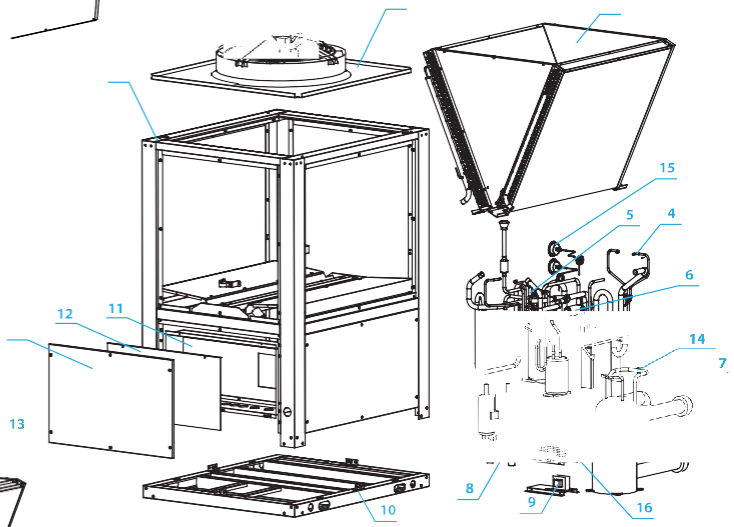
| Model | VITO Aqua R32-70 | VITO Aqua R32-103 | VITO Aqua R32-136 |
|---|---|---|---|
| A | 950.5 | 1955 | 2265 |
| B | 754 | 1252 | 2148 |
| C | 1448 | 1076 | 1076 |
| D | 124.5 | 170 | 260 |
| E | 254.5 | 380 | 450 |
| F | 800 | 1316 | 2224 |

# 2. Description

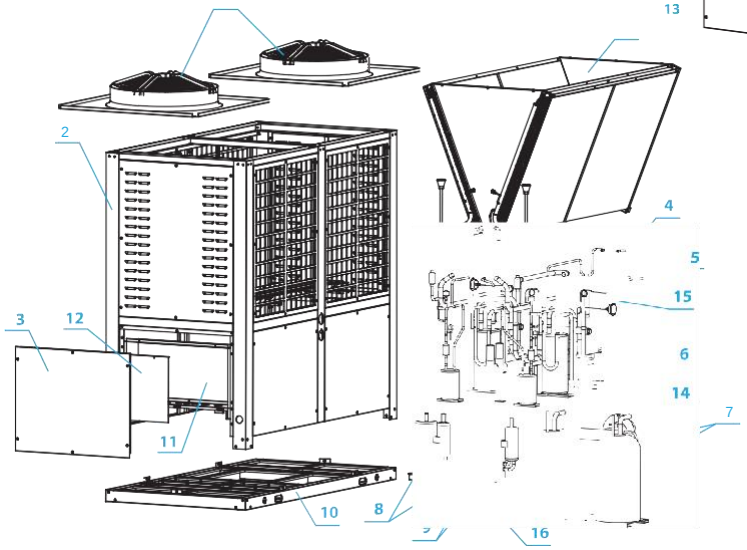
## 2.6 exploded view




**VITO Aqua R32-70**




**VITO Aqua R32-103**




**VITO Aqua R32-136**

1. Fan and motor
2. Base frame
3. Evaporator
4. gas pipe
5. Electronic expansion valve
6. 4-way valve
7. Heatexchanger
8. Compressor
9. Electric transformer
10. Bottom panel
11. Logic board box
12. Electrical box cover
13. Front panel
14. Water Flow Switch
15. Pressure gauge
16. Electrical terminal block

# 2. Description

## 2.7 Spare parts list

| VITO AQUA R32-70 | | | | | |
|---|---|---|---|---|---|
| | Parts name | Pcs | Brand | Model name | Factory code |
| 1 | Fan motor | 2 | | RD200HB2 | 13080004000131 |
| 2 | EEV | 1 | | UKV-32D210 | 13070002000310 |
| 3 | 4-way valve | 1 | | SHF-35B-79-01 | 13070002000847 |
| 4 | Heat exchanger | 1 | | Φ16*22m | 13170005000036 |
| 5 | Compressor | 1 | Mitsubshi | LVB65FAEMC | 13160001000136 |
| 6 | Water flow switch | 1 | | WFS27020PF70 | 13080003000929 |
| 7 | Pressure Gauge | 1 | | 0~6.5MPA | 16190001000044 |
| 8 | Controller | 1 | ZK | RCDF211283 | 13080007000341 |
| 9 | PCB board | 1 | ZK | RCDF211252 | 13080002000443 |
| | | | | | |
| VITO AQUA R32-103 | | | | | |
| | Parts name | Pcs | Brand | Model name | Factory code |
| 1 | Fan motor | 1 | | C-AS710B4-AL | 13080008000535 |
| 2 | EEV | 2 | | UKV-32D210 | 13070002000310 |
| 3 | 4-way valve | 2 | | STF-H0404 | 13070002000775 |
| 4 | Heat exchanger | 1 | | 4*Φ19*8m/ | 13170005000034 |
| 5 | Compressor | 2 | Mitsubshi | LVB53FCAMC/ | 13160001000140 |
| 6 | Water flow switch | 1 | | WFS27020PF70 | 13080003000929 |
| 7 | Pressure Gauge | 2 | | 0~6.5MPA | 16190001000044 |
| 8 | Controller | 1 | ZK | RCDF211284 | 13080007000342 |
| 9 | PCB board | 1 | ZK | RCDF211267 | 13080002000459 |
| | | | | | |
| VITO AQUA R32-136 | | | | | |
| | Parts name | Pcs | Brand | Model name | Factory code |
| 1 | Fan motor | 2 | | EC137-A710-003 | 13080008000786 |
| 2 | EEV | 2 | | UKV-32D210 | 13070002000310 |
| 3 | 4-way valve | 2 | | SHF-35B-79-0 | 13070002000847 |
| 4 | Heat exchanger | 1 | | Φ19 | 13170005000011 |
| 5 | Compressor | 2 | Mitsubshi | LVB65FAEMC | 13160001000136 |
| 6 | Water flow switch | 1 | | WFS27020PF70 | 13080003000929 |
| 7 | Pressure Gauge | 4 | | 0~6.5MPA | 16190001000044 |
| 8 | Controller | 1 | ZK | RCDF211284 | 13080007000342 |
| 9 | PCB board | 1 | ZK | RCDF211249 | 13080002000438 |

# 3. Installation

ATTENTION: Installation must be carried out by a qualified professional

This chapter is purely indicative and must be checked and adapted if necessary depending on the installation conditions.

## 3.1 Preparation

Material required for the installation of your heat pump:

A power cable adapted to the power of the device.

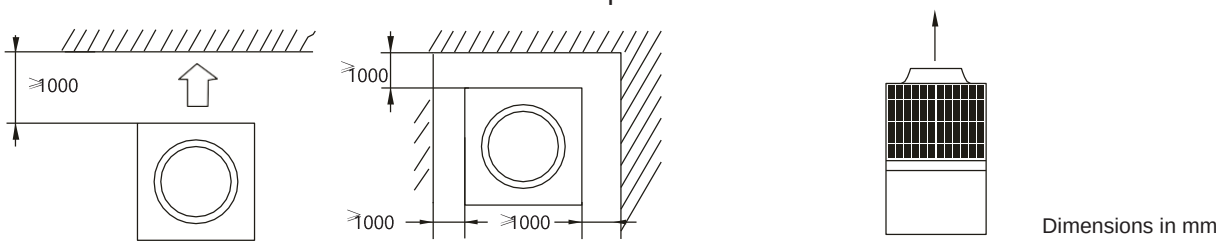
A By-Pass kit and a set of PVC tubes suitable for your installation as well as stripper, PVC glue and sandpaper.

Appropriate concrete blocks can be used to raise the device.

## 3.2 Location

Please observe the following rules for the choice of the location of the heat pump

1. The future location of the device must be easily accessible for easy operation and maintenance.
2. The device must be installed on the ground, ideally fixed on a level concrete floor. Make sure that the floor is sufficiently stable and can support the weight of the device.
3. A water drainage device must be provided near the appliance to preserve the area where it is installed.
4. If necessary, the device can be raised using suitable pedestals designed to support the weight of the device.
5. Check that the device is properly ventilated, air outlet is not directed towards the windows of neighboring buildings and that return of stale air is possible or not. In addition, allow sufficient space around the device for servicing and maintenance.
6. The device should not be installed in a place exposed to oil, flammable gases, corrosive products, sulphurous compounds or near high frequency equipment.
7. Do not install the device near a road or a path to avoid splashing mud.
8. To prevent neighborhood nuisances, make sure to install the device so that it is oriented towards the area least sensitive to noise.
9. Keep the device out of the reach of children as much as possible.




Dimensions in mm

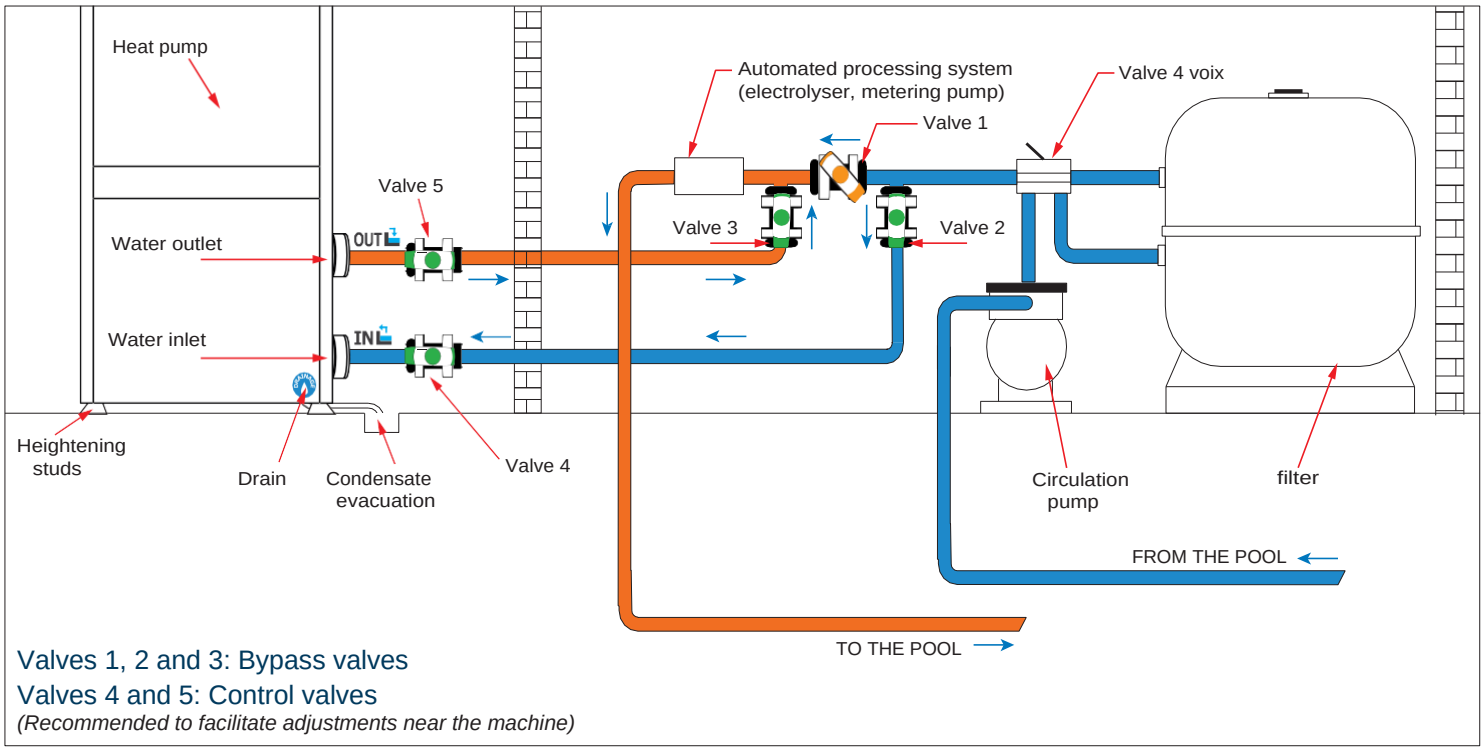
Do not put anything less than one meter in front of the heat pump.

Leave 100 cm of empty space on the sides and rear of the heat pump and free ventilation above

Do not leave any obstacles above or in front of the device!

# 3. Installation

## 3.3 Installation diagram




Valves 1, 2 and 3: Bypass valves

Valves 4 and 5: Control valves

*(Recommended to facilitate adjustments near the machine)*


## 3.4 Condensate evacuation

During operation, the heat pump is subject to condensation.
This will result in a flow of water, more or less important depending on the humidity level.
To guide this flow, we advise you to install a condensate drain (not supplied).
In order to obtain the best condensate discharge, the equipment must be level.

# 3. Installation

ATTENTION: Installation must be carried out by qualified professionals.

This chapter is purely indicative and must be checked and adapted if necessary depending on the installation conditions.

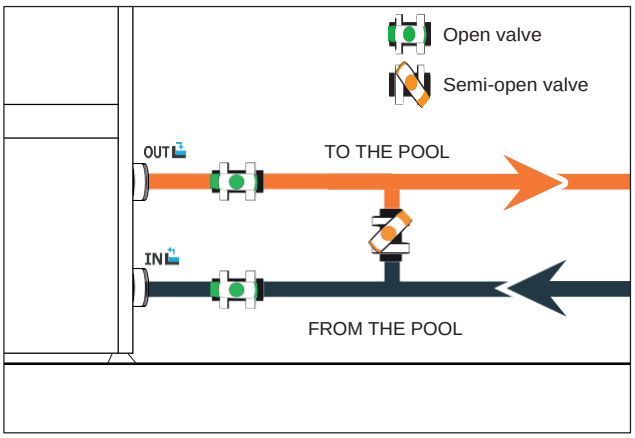
## 3.5 Hydraulic connection

### *By-Pass assembly*

The heat pump must be connected to the pool using a By-Pass assembly.

A By-Pass is an assembly made up of 3 valves making it possible to regulate the flow circulating in the heat pump.

During maintenance operations, the By-Pass allows the heat pump to be isolated from the circuit without stopping your installation.

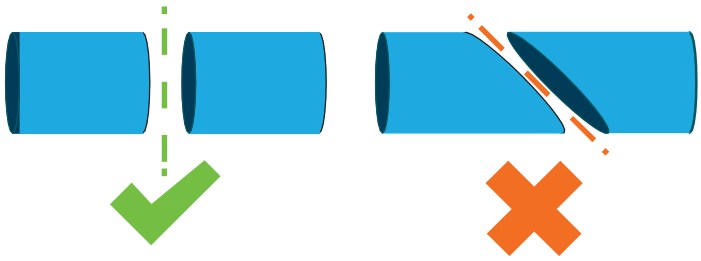



### *Making a hydraulic connection with the By-Pass kit*

ATTENTION : Do not allow water to flow into the hydraulic circuit for 2 hours after bonding

Step 1: Take the necessary measurements for cutting your pipes.

Step 2: Cut the PVC pipes with a saw, making a straight cut.



Step 3: Do not glue when assembling the hydraulic circuit to check whether it is fully suitable for your installation, and then remove the pipe to be connected.

Step 4: Deburr the ends of the cut pipes with sandpaper.

Step 5: Apply paint stripper to the ends of the pipes that are going to be connected

Step 6: Apply glue to the same position.

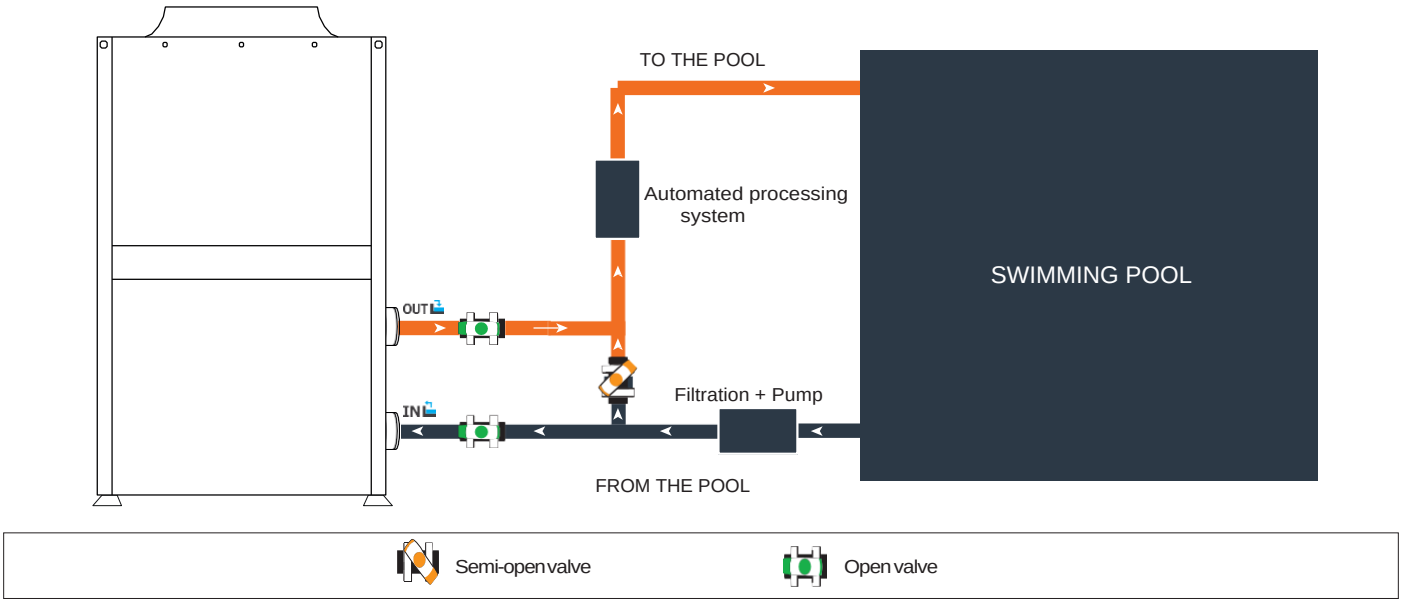
Step 7: Assemble the pipes.

Step 8: Clean the remaining glue on the PVC

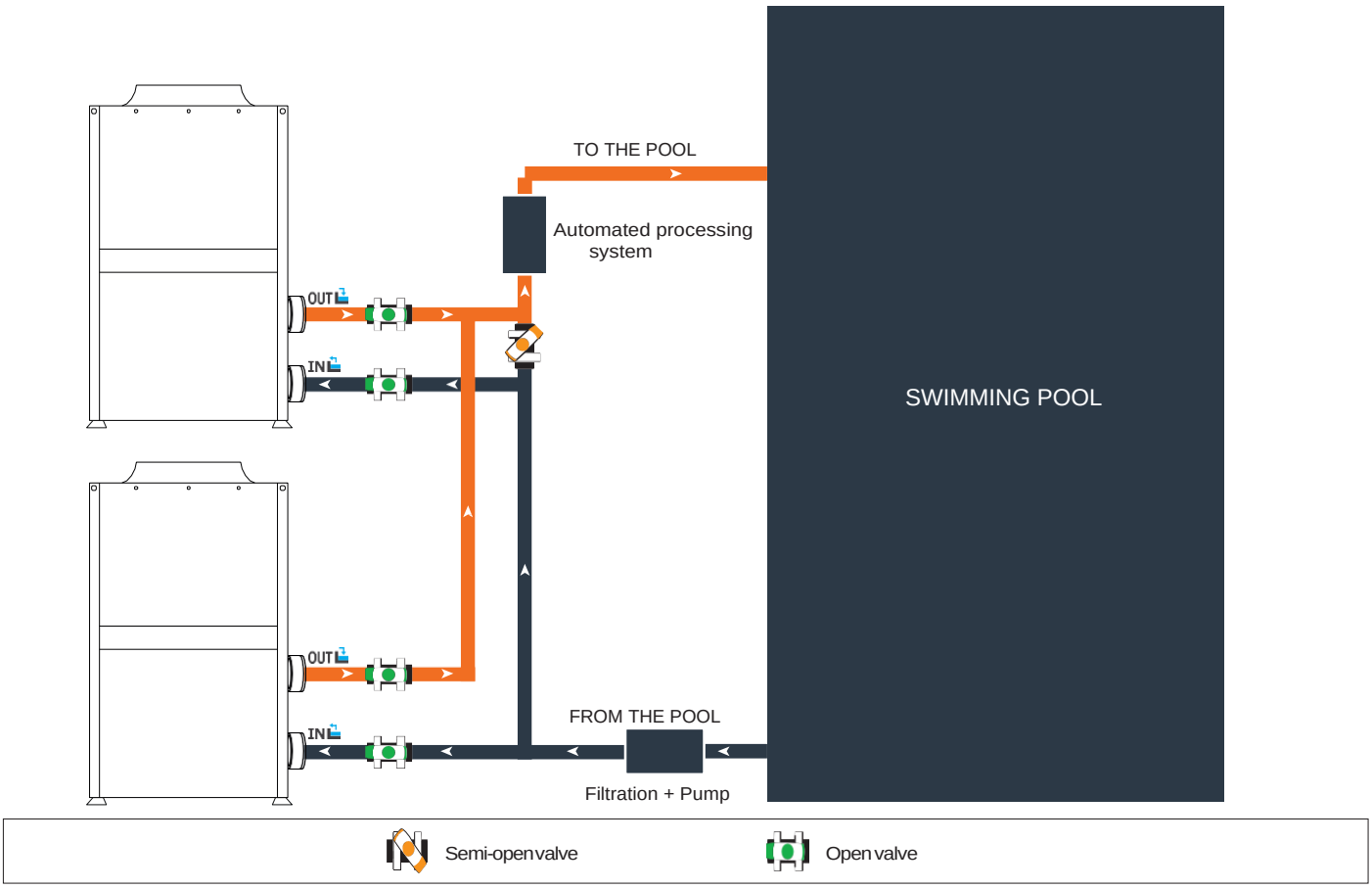
Step 9: Leave to dry for at least 2 hours before filling the hydraulic circuit with water

# 3. Installation

## By-Pass installation of a heat pump




## By-Pass installation of several heat pumps




The filter located upstream of the heat pump must be cleaned regularly so that the water in the circuit is clean and thus avoid operating problems related to dirt or clogging of the filter.

# 3. Installation

**ATTENTION: Installation must be carried out by qualified professionals.**

**This chapter is purely indicative and must be checked and adapted if necessary depending on the installation conditions.**

## 3.6 Electrical Installation

To operate safely and maintain the integrity of your electrical installation, the device must be connected to a general power supply in accordance with the following rules:

Upstream, the general power supply must be protected by a 30 mA differential switch.

The heat pump must be connected to a suitable curve D circuit breaker (see table below) in accordance with the standards and regulations in force in the country where the system is installed.

The power cable must be adapted according to the power of the device and the length of cable required for installation (see table below). The cable must be suitable for outdoor use.

In the case of a three-phase system, it is essential to respect the order of connection of the phases.
In the event of phase inversion, the heat pump compressor will not work.

In public places, the installation of an emergency stop button near the heat pump is mandatory.

The appliance is equipped with an anti-freeze system. Do not cut off the power supply,or the antifreeze system can not start.

| Model | Power Supply | Maximum current | Cable diameter 1 | Magneto-thermal protection (curve D) |
|---|---|---|---|---|
| VITO Aqua R32-070 | Three phase 380-415V/3N-50Hz | 27 A | RO2V 5x 6mm$^2$ | 32A |
| VITO Aqua R32-103 | | 39A | RO2V 5x 10mm$^2$ | 40A |
| VITO Aqua R32-136 | | 54A | RO2V 5x 16mm$^2$ | 60A |

[1] **Cable section intended for a maximum length of 10m.**
**Beyond that please seek the advice of an electrician.**

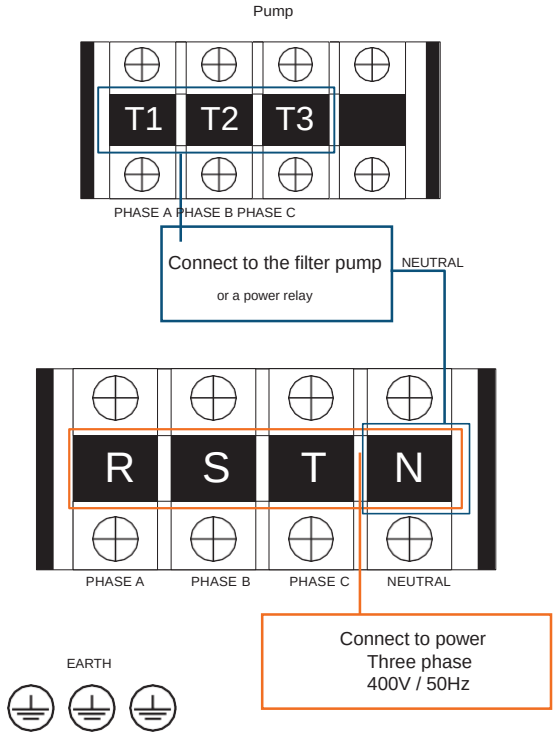
# 3. Installation

## 3.7 Electrical connection

⚠ ATTENTION : The power supply to the heat pump must be cut off before any intervention.

Please follow the electrical instructions below to connect the heat pump.

*Step 1 :* Remove the electrical panel using a screwdriver to access the electrical terminal block.
*Step 2 :* Insert the cable into the heat pump unit through the opening provided.
*Step 3 :* Connect the power cable to the terminal block according to the diagram below.




*ATTENTION : 400V power supply, Recover the earth on the power supply terminal block*

*Step 4 :* Close the heat pump panel carefully.

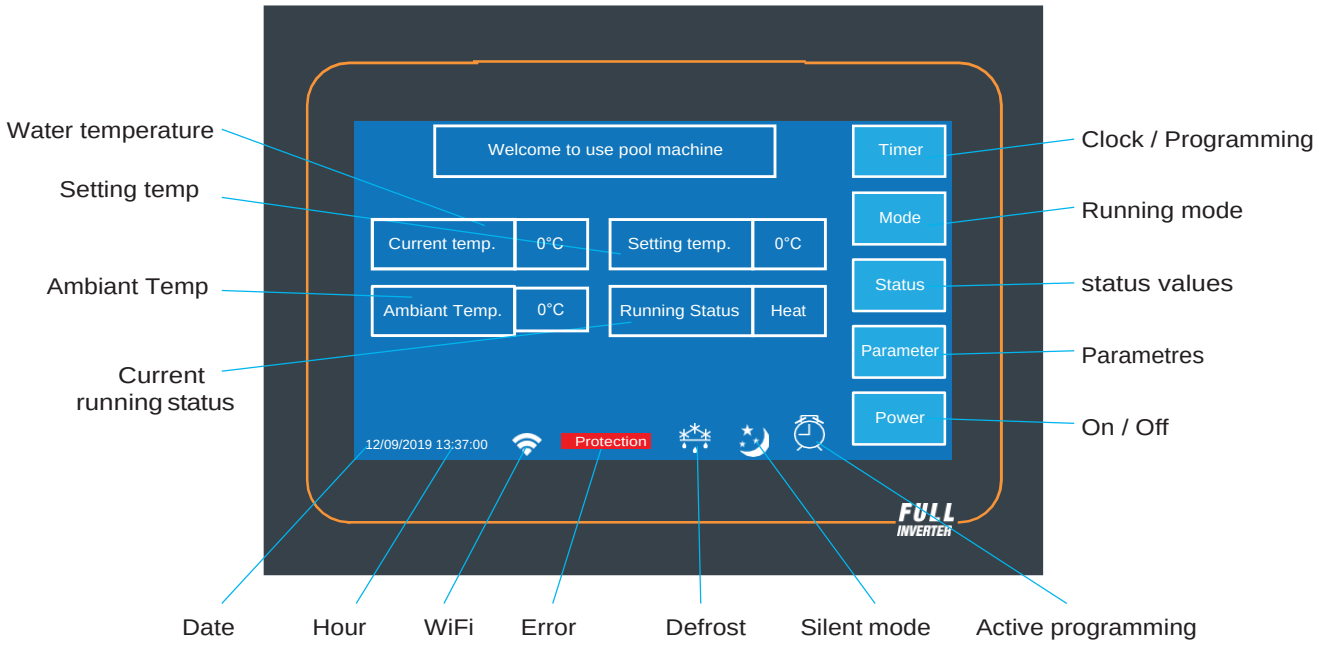
### *Control of a circulation pump*

Depending on the type of installation, you can also connect a circulation pump so that it works together with the heat pump.

⚠ ATTENTION : The control of a pump with a power greater than 5A (1000W) requires the use of a power relay.

# 4. Usage

## 4.1 Wired remote controller




## 4.2 Choice of operating mode

⚠ Before you start, make sure the filter pump is running and water is flowing through the heat pump.

Before setting your target temperature, you must first choose the operating mode of your heat pump:

Heat

*Heating Mode*
Choose the heating mode so that the heat pump heats the water in your pool.

Cool

*Cooling Mode*
Choose the cooling mode so that the heat pump cools the water in your pool.

*Silence Mode*
Activate this mode, to limit the noise of the heat pump, the heat pump automatically starts heating or cooling depending on the setting temperature.

*Defrost mode*
This pictogram is displayed when the heat pump is defrosting.

# 4. Usage

## 4.3 Standby Mode

*When the control panel is off:* Tap the screen once to light it up.

When the control panel is unlocked and no action is taken for 1 minute, the control panel automatically turns off.

## 4.4 Choice of operating mode

*Step 1 :* Enter into the main menu by unlocking the control panel.

*Step 2 :* Press the Mode button to change the operating mode.



## 4.5 Clock Setting

*Step 1 :* In the main panel, tap the clock.
at the bottom left of the screen.

*Step 2 :* Enter the current time and date.

*Step 3 :* Return to the main screen to validate the modification.

-


## 4.6 Setting the time schedule

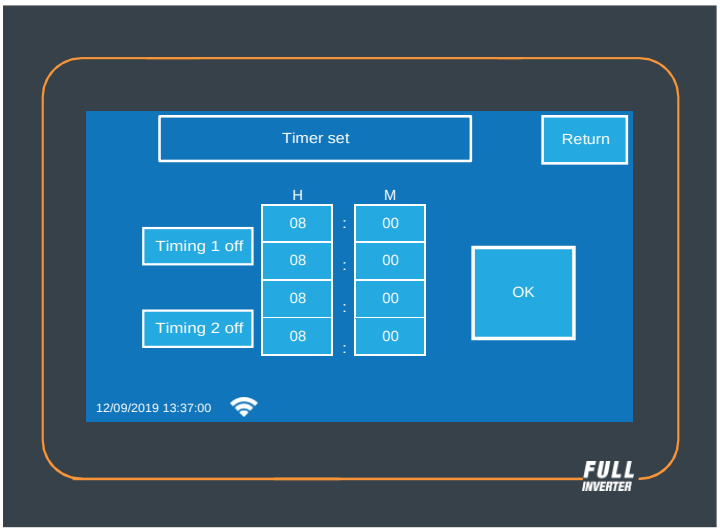
*Step 1 :* Go to the main menu by unlocking the control panel.

*Étape 2 :* Press Timer to enter in the configuration of the On / off groups.

*Étape 3 : Configure the switch-on time* route and stop for group 1 or 2 of timetables

Press OK then return to the menu

When programming is activated, the following pictogram is displayed on the main page



# 4. Usage

## 4.7 Activation of time programming

*Step 1 :* Go to the main menu by unlocking the control panel.

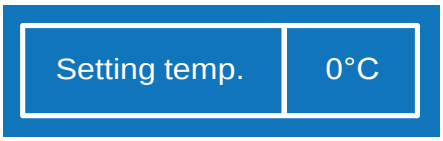
*Step 2 :* Press Timer 1 On / Off to activate or deactivate the programming

## 4.8 Adjust the setting temperature

*Step 1 :* Go to the main menu by unlocking the control panel.

*Step 2 :* Press "Setting Temp." to change the desired temperature

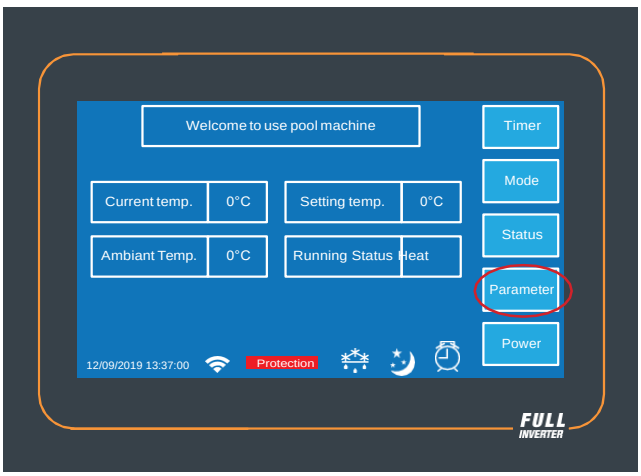
*Step 3 :* Press + or - to change the setting temperature

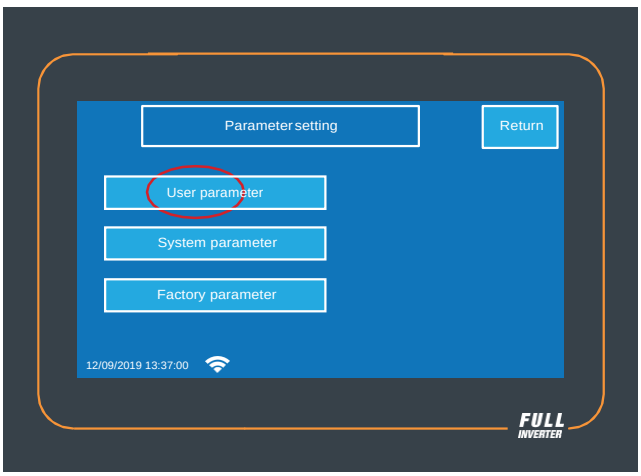



## 4.9 Parametertable

*Step 1 :* Go to the main menu by unlocking the control panel.

*Step 2 :* Press the "Parameter" button to access the various parameters.

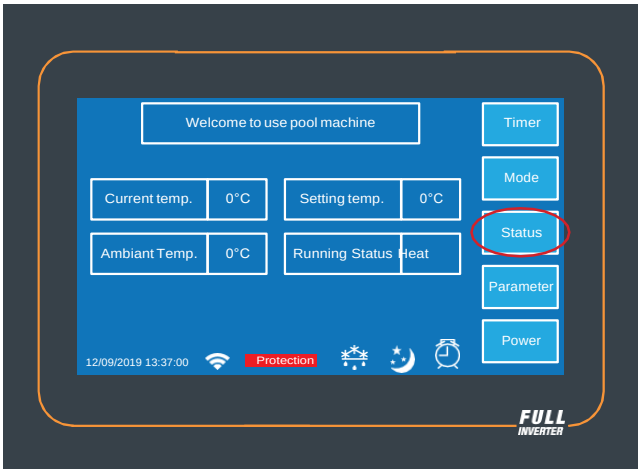



| Code | Item | Description | Setting range | Factory setting |
|---|---|---|---|---|
| P05 | Heating Setting Temp. | Heating temperature adjustment | 8°C ~ 28°C | 27°C |
| P04 | Cooling Setting Temp. | Cooling temperature adjustment | 15°C ~ 40°C | 27°C |
| P01 | Hystersis Temp. | Setting the trigger temperature delta | 1°C ~ 18°C | 1°C |
| P28 | Pump Mode | Control of the filtration pump | 0=stop; 1=Non-stop | 0 |

# 4. Usage

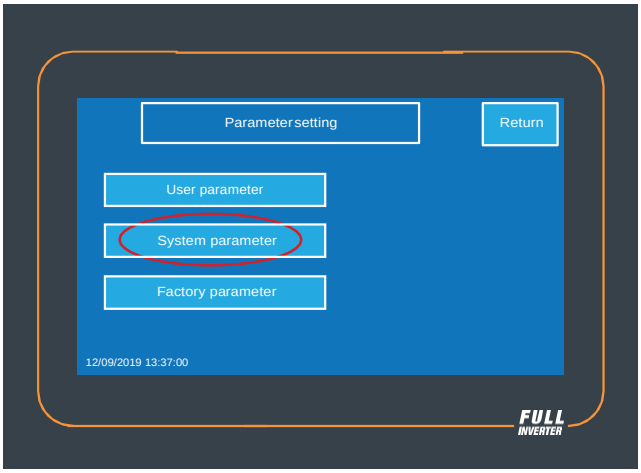
## 4.10 Status table




| Code | | Description |
|---|---|---|
| Current Temp. | Water inlet temperature | -30~99°C |
| Outlet Temp. | Water outlet temperature | -30~99°C |
| Ambient Temp. | Air temperature | -30~99°C |
| 1#Exhaust Temp. | Compressor 1 outlet temperature | 0~125°C |
| 1#Suction Temp. | Compressor 1 inlet temperature | -30~99°C |
| 1#Coil Temp. | Heat exchanger 1 inlet temperature | -30~99°C |
| 1#Inside Coil Temp. | Heat exchanger 1 outlet temperature | -30~99°C |
| 1#Opening of EEV | Opening of electronic valve 1 | |
| 1# Fan Speed | Fan 1 speed | |
| 1#Comp. Cur. | Compressor 1 speed | |
| 1#Fin Temp. | Heat exchanger 1 outlet temperature | |
| 1#DC Voltage | DC power supply voltage 1 | |
| 1#Operating Freq | Operating frequency 1 | |
| 2# Fan Speed | Fan 2 speed | |
| 2#Exhaust Temp. | Compressor 2 outlet temperature | 0~125°C |
| 2#Suction Temp. | Compressor 2 inlet temperature | -30~99°C |
| 2#Coil Temp. | Heat exchanger 2 inlet temperature | -30~99°C |
| 2#Inside Coil Temp. | Heat exchanger 2 outlet temperature | -30~99°C |
| 2#Opening of EEV | Opening the electronic valve 2 | |
| 2#Comp. Cur. | Compressor 2 speed | |
| 2#Fin Temp. | Heat exchanger 2 outlet temperature | |
| 2#DC Voltage | DC power supply voltage 2 | |
| 2#Operating Freq | Operating frequency 2 | |

# 4. Usage

## 4.11 System Parameter




| | Code | Description |
|---|---|---|
| P06 | Exhaust Temp.Too High | Compressor outlet temperature too high |
| P07 | Exhaust Recover Temp. | |
| P09 | Compensated Temp. | Adjustment of the coeff. temperature probe compensation |
| P11 | Defrost Intervals | Auto-activation time before the start of defrost |
| P12 | Defrost Temp. | Defrost temperature |
| P13 | Defrosting Max Time | Maximum defrost time |
| P14 | Exit Defrosting Temp. | Defrost deactivation temperature |
| P15 | Defrost A_C T | |
| P16 | Defrost Ambient Temp. | |
| P17 | EEV Cycle | |
| P18 | Heating Overheat | Overheating (heating mode) |
| P19 | Adjust EEV Temp. | Opening temperature of the expansion valve |
| P20 | Defrost EEV Opening | Opening of the expansion valve in defrost mode |
| P21 | EEV minimum opening | Minimum opening of the expansion valve |
| P22 | EEV Mode | Selection of the expansion valve mode |
| P23 | EEV Manual Steps | Manual step expansion valve |
| P24 | Cooling Overheat | Overheating (cooling mode) |
| P27 | Cooling EEV Mode | operating mode of the expansion valve (cooling mode) |
| | Lamp Panel Dispay | Backlight |

# 5. Commissioning

## 5.1 Commissioning

### *Terms of use*

For the heat pump to operate normally, the ambient air temperature must be includedbetween -7 ° C and 43 ° C.

### *Preliminary instructions*

Before commissioning the heat pump, please:

- ☒ Make sure the device is secure and stable.
- ☒ Check whether the pressure gauge reading is higher than 80 psi.
- ☒ Check whether the electric cables are securely attached to their connection terminals .
- ☒ Check the earth connection.
- ☒ Check that the hydraulic connections are properly tightened, and that there is no water leakage
- ☒ Check that the water is circulating well in the heat pump and that the flow is sufficient.
- ☒ Remove any unnecessary objects or tools from around the device.

### *Commissioning*

1. Switch on the appliance's power supply protection (differential switch and circuit breaker).
2. Activate the circulation pump if it is not controlled.
3. Check the opening of the By-Pass and the control valves.
4. Activate the heat pump.
5. Set the clock on the remote control.
6. Select the desired temperature using one of the remote control modes.
7. The heat pump compressor will activate after a few moments.

Here you just need to wait until the desired temperature is reached.

⚠ ATTENTION : Under normal conditions, a suitable heat pump can heat the pool water from 1 ° C to 2 ° C per day. It is therefore quite normal not to feel a temperature difference at the circuit outlet when the heat pump works.

A heated pool must be covered to prevent heat loss.

# 5. Commissioning

## 5.2 Control of a circulation pump

To use the servo mode, check that parameter 28 is set to 1.

If you have connected a circulation pump to terminals U, V and W (400V), this is automatically supplied when the heat pump is running.

When the heat pump is on standby, the circulation pump is supplied intermittently in order tocontrol the temperature of the pool water

**Control mode of the circulation pump**

When you turn on your heat pump, the circulation pump starts up and then 1 minute later, the heat pump compressor activates. When the heat pump stops working, its compressor and fan cut off, then after 30 seconds, the circulation pump stops. During the defrost mode, the circulation pump will continue to run regardless of the modes selected.

**Mode 0 :** By choosing this mode, the heat pump will automatically start the circulation pump continuously. Once the circulation pump is running, the heat pump will start up 1 minute later. Then, when the setting temperature is reached, the heat pump will stop its function but will not stop the circulation pump so that it ensures constant water circulation in your heat pump.

**Mode 1 (Default) :** This mode was designed to maintain the filtration of your pool without using the time slot programmer. When the set temperature is reached, the heat pump will go into standby, then after 30 seconds, the circulation pump will stop.

Then the circulation pump will be reactivated in special mode: 2 minutes on, 60 minutes off.

A temperature sensor, being placed in the heat exchanger compartment, this mode allows your heat pump to update the actual temperature of your pool every 60 minutes. This mode is therefore recommended.

It is only when the pool temperature drops by 1 ° C compared to the setting temperature, that the filtration pump and the heat pump will resume their normal operating mode.

## 5.3 Using the pressure gauge

The manometer is used to control the pressure of the refrigerant contained in the heat pump.

The values it indicates can be very different depending on the climate, temperature and atmospheric pressure.

When the heat pump is running:

*The pressure gauge needle indicates the pressure of the refrigerant.*
*Average use range between 250 and 400 PSI depending on ambient temperature and atmospheric press-ure.*

When the heat pump is stopped:

The needle indicates the same value as the ambient temperature (within a few degrees) and the corresponding atmospheric pressure (between 150 to 350 PSI maximum).

After a long period of disuse:

Check the pressure gauge before restarting the heat pump. This should read at least 80 PSI.

If the pressure in the manometer becomes too low, the heat pump will indicate an error message and automatically go into safety mode.

This means that a refrigerant leak has occurred and you must call a qualified technician to recharge it.

# 5. Commissioning

## 5.4 Frost Protection

ATTENTION : For the antifreeze program to work, the heat pump must be supplied with power and the circulation pump must be active. If the circulation pump is controlled by the heat pump, the latter will be automatically activated.

When the heat pump is on standby, two antifreeze modes can be started depending on the weather situation.

The system monitors the ambient temperature and the water temperature to activate the anti-freeze program if necessary.

First antifreeze system: :
When the outside temperature is lower than 2 ° C, the system starts the circulation pump for 5 minutes every 40 minutes. when the water outlet temperature is lower than 4 ° C, the circulation pump starts automatically.

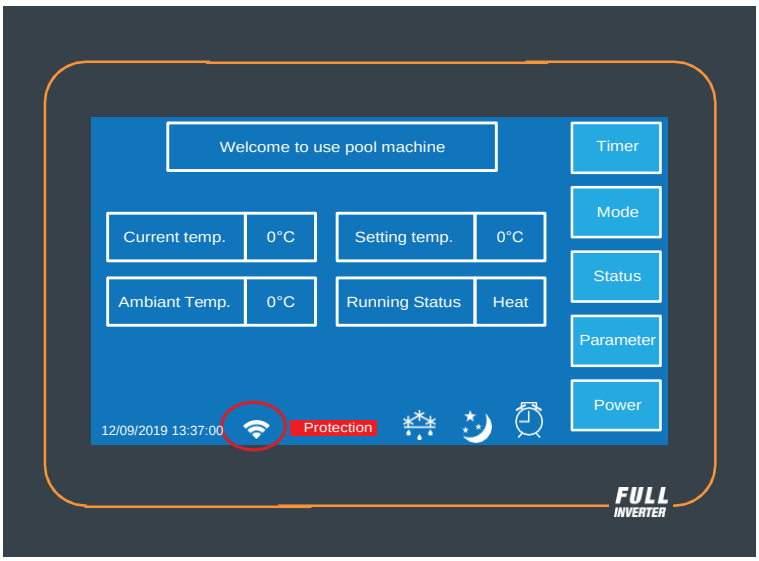
Second antifreeze system :
If the outside temperature is below 2 ° C and the water temperature is below 4 ° C, the heat pump switches to mode until the water temperature is above 15 ° C or the ambient temperature is above 8 ° C.

When the pump is in antifreeze mode, an E04 error is displayed if the water outlet temperature is less than 2 ° C. This code disappears when the outlet water temperature exceeds 4 ° C.

## 5.5 WiFI configuration

In the main interface, tap on the WiFi logo.
- «Smart configure»
This mode allows you to intelligently configure the WiFi connection. Once this mode is activated, the “WiFi” logo flashes. Launch your Tuya Smart application on your phone and connect to your heat pump.

- «AP Configure»
This mode creates a WiFi Hotspot. Connect your smartphone to the heat pump HotSpot then launch your Tuya Smart application.



# 5. Commissioning

## 5.5.1. Download & Installation of the "Tuya Smart" application

About the Tuya Smart app:

Remote control of your heat pump requires the creation of a "Tuya Smart" account.

The "Tuya Smart" application allows you to remotely control your home appliances. No matter wherever you are, you can add andcontrol multiple devices at the same time.

- Also compatible with Amazon Echo and Google Home (depending on the country).
- You can share the devices you have set up with other "Tuya Smart" accounts.
- Receive operational alerts in real time.
- Create scenarios with several devices, according to the weather data of the application (geolocation essential).

For more information, go to the "Help" section of the "Tuya Smart" application.

"Tuya Smart" application and services are provided by Hangzhou Tuya Technology Company. Our company cannot be heldresponsible for the operation of the "Tuya Smart" application. Our company has no visibility on your "Tuya Smart" account.

iOS :

Scan or search for “Tuya Smart” on the App Store to download the app:

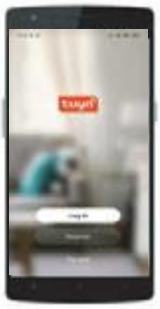
Tuya Smart

Download on App Store

Requires iOS 9.0 or later. Compatible with iPhone, iPad and iPod touch

Android :

Scan or search for “Tuya Smart” on Google Play to download the app:



Tuya Smart

Download on Google Play

Requires Android 4.1 or later.

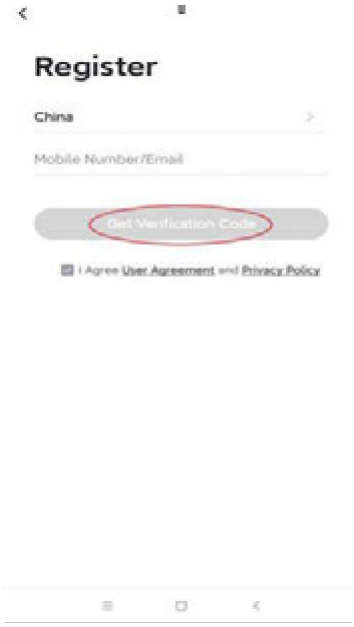
# 5. Commissioning

## 5.5.2. Application settings

*ATTENTION : Before starting, make sure you have downloaded the "Tuya Smart" application, that you are connected to your local WiFi network and that your heat pump is electrically powered and working.*

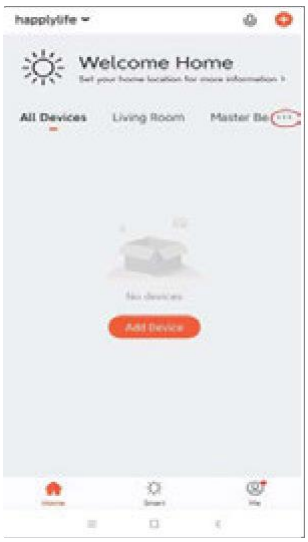
Remote control of your heat pump requires the creation of a “Tuya Smart” account. If youalready have a "Tuya Smart" account, please log in and go directly to step 3.

*Step 1 :* Press "Register" then select your registration mode "Email"or "Mobile N umber", a verification code will be sent to you.
Enter your email address or phone number then click on "Get verification code".


*Step 2 :* Enter the verification code received by email or phone to validate your account.
Congratulations, you are now part of the “Tuya Smart” community.

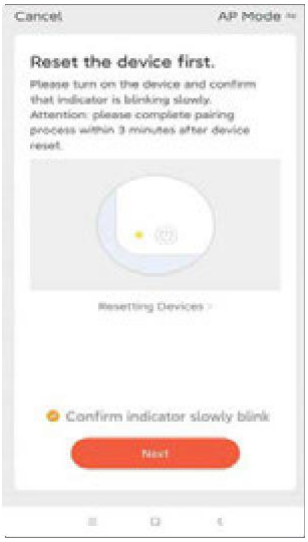
*Step 3: (recommended) :*Add a room by pressing "...", then press "Add room", now enter the name of the room to add ("Swimming pool" for example), then press "Save".





# 5. Commissioning

*Step 4 :* Now add a device to your "Pool" room :
Press "Add Device",or on"+", then “Others”, then select “Others (Wi-fi)”,
At this stage, leave your smartphone on the "Add Device” screen and go to the step of pairing the control box.

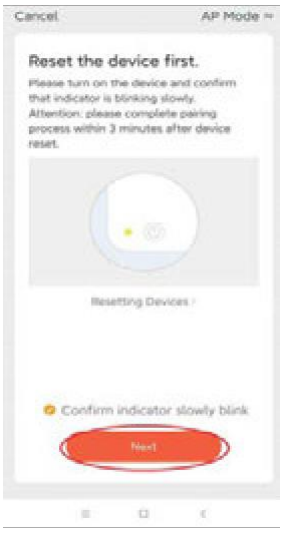



*Step 5 :* Activate pairing mode on your heat pump according to the following procedure:
Press the symbol

*Note : The flashing stops when the box is connected to WiFi*

*Step 6 :* Now activate pairing.
Choose the WiFi network to use, enter the password and press "Next ".

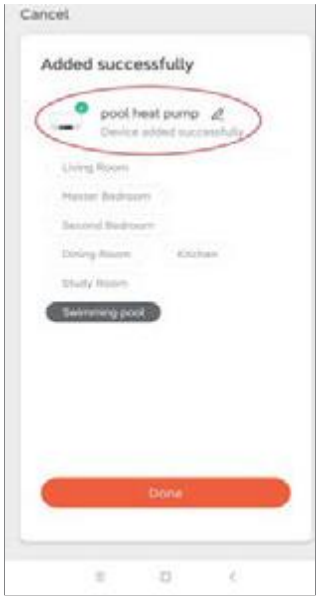
**ATTENTION : The "Tuya Smart" application only supports 2.4GHz WiFi networks.**
**If your WiFi network uses the 5GHz frequency, go to your home WiFi network interface to create a second 2.4GHz WiFi network (available for most Internet boxes, routers and WiFi access points).**

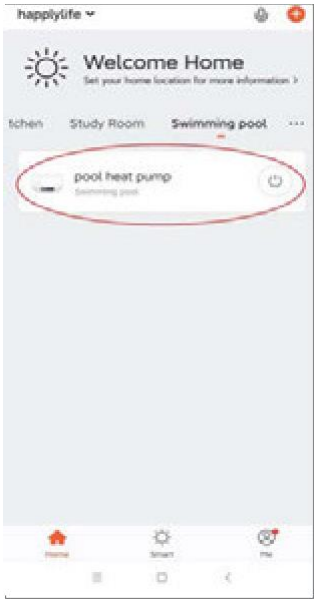


# 5. Commissioning

*Step 7 :* Pairing successful, you can rename your heat pump then press "Done".

Congratulations, your heat pump can now be controlled from your smartphone.




## 5.5.3. Piloting

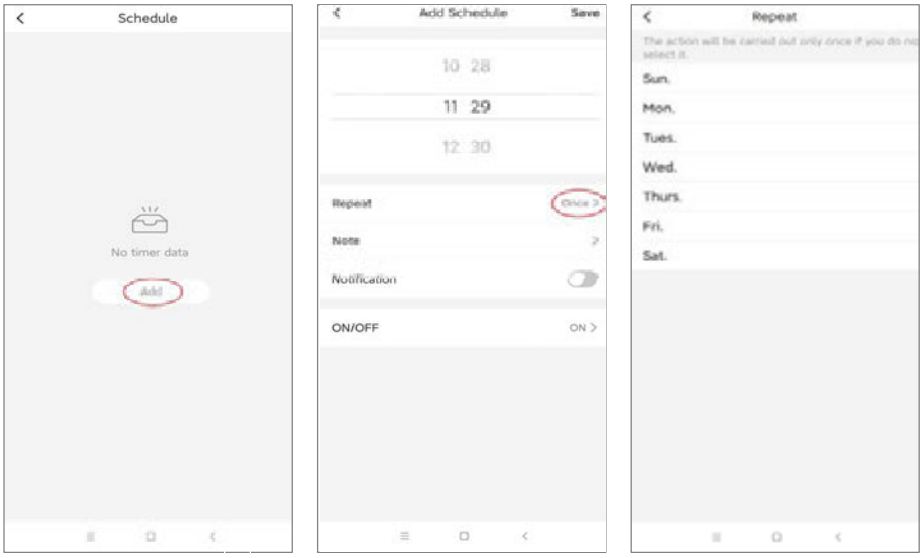
### Presentation of the user interface


1. Current pool temperature
2. Setting temperature
3. Current operating mode
4. Switch the heat pump on / off
5. Change the temperature
6. Change operating mode
7. Setting the operating ranges

# 5. Commissioning

## Configure the heat pump operating ranges

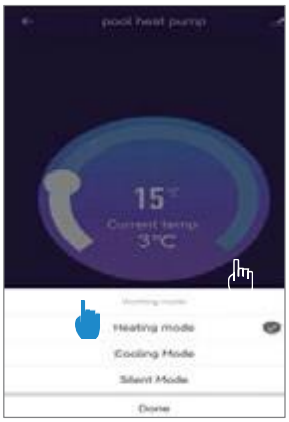
*Step 1 :* Create a time schedule, choose the time, the day (s) of the week concerned, and the action (turn on or off), then save.




*Step 2 :* To delete a time point, long press on it.

## Choose the operating modes

Case of an inverter heat pump :
You can choose between
Heating, Cooling Eco (Silent) modes




Available modes
Inverter heating
Inverter cooling
Eco(Silent)Inverter

# 6. Maintenance and Upkeep

## 6.1 Maintenance and upkeep

⚠ ATTENTION :Before carrying out any maintenance work on the device, make sure you have cut off the power supply.

Cleaning:

The heat pump housing should be cleaned with a damp cloth. The use of detergents or other household products could degrade the surface of the case and alter its properties.

The evaporator at the back of the heat pump can be carefully cleaned using a soft brush vacuum cleaner or a suitable cleaner (CleanPac type ).

Annual maintenance

The following operations must be carried out by a qualified person at least once per year.

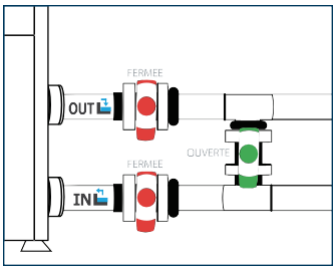
- ☒ Carry out safety check.
- ☒ Check that the electric cables are securely held.
- ☒ Check the connection of the masses to the earth.
- ☒ Check the condition of the pressure gauge and the presence of refrigerant.
- ☒ Cleaning the evaporators with a suitable product (CleanPac)

## 6.2 Wintering

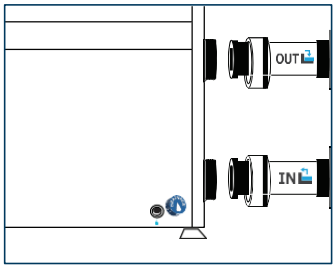
In low season, when the ambient temperature is lower than 3 ° C, a stopped heat pump must be wintered to avoid any damage caused by frost.

*Wintering in 4 steps*

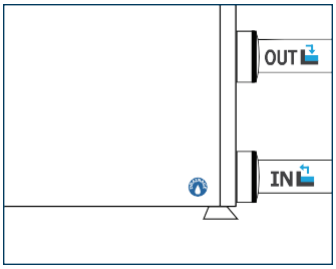

Step 1
Turn off the power to the heat pump.




Step 2
Open the By-Pass valve. Close the inlet and outlet valves.




Step 3
Unscrew the drain plug and the water pipes in order to drain all the water contained in the heat pump.




Step 4
Screw the drain plug and pipes back on or block them with rags to prevent foreign objects from entering the pipes.

⚠ If a circulation pump is slaved to the heat pump, please also drain the water in it.

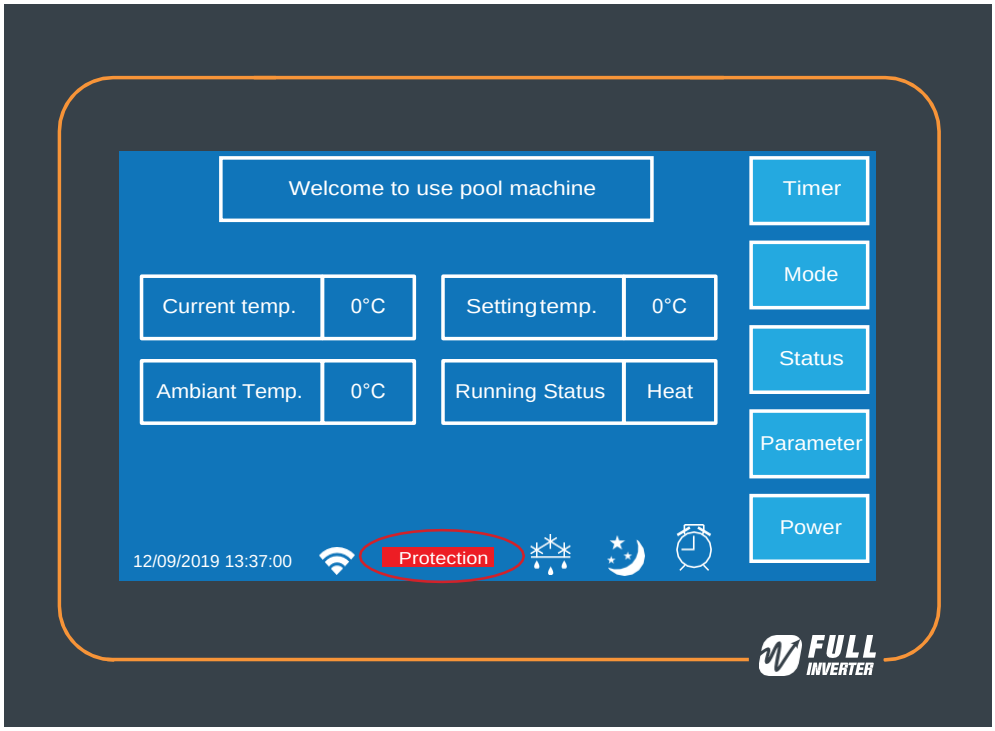
# 7. Troubleshooting

ATTENTION :
Under normal conditions, a suitable heat pump can heat the pool water from 1 ° C to 2 ° C per day. It is therefore quite normal not to feel a temperature difference at the circuit outlet when the heat pump is working.
A heated pool must be covered to prevent heat loss.

## 7.1 Faults and Anomalies

In the event of a problem, the heat pump screen displays the "Protection" symbol. Press the symbol to identify the problem.
To view the history of anomalies encountered, press "Status" then "Fault Query ".

Examples of error codes:



# 7. Troubleshooting

## 7.2 Codes erreurs

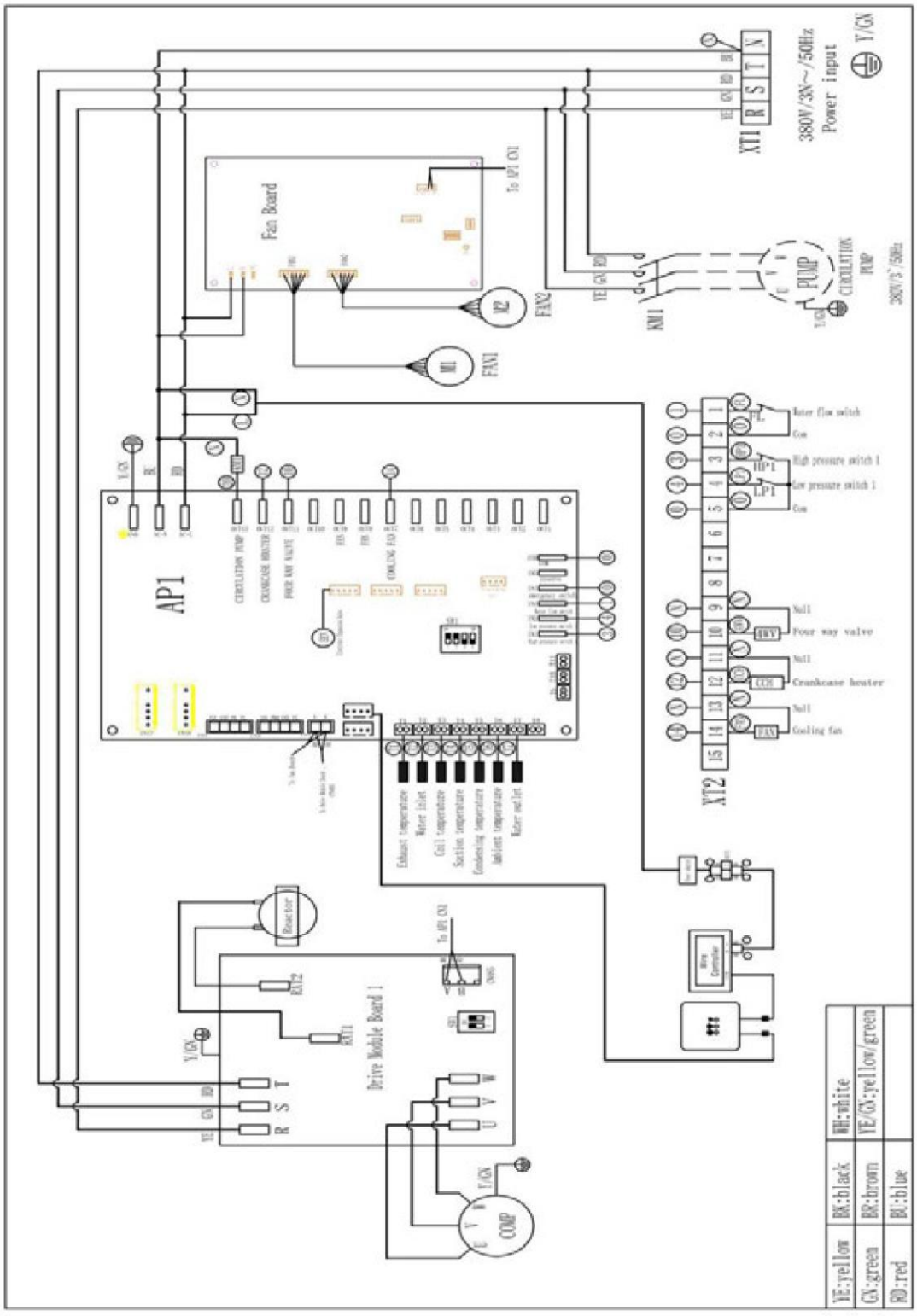
| Error | Error | | |
|---|---|---|---|
| Flow failure | Flow sensor failure | 1) The sensor is not properly connected | 1) Reconnect the sensor |
| | | 2) The sensor is defective | 2) Replace the sensor |
| | | 3) The electronic board is defective | 3) Replace the electronic board |
| Level 1 anti-freeze protection | Level 1 frost protection | The ambient temperature is too low | No action required |
| Level 2 anti-freeze protection | Level 2 frost protection | The ambient temperature is too low | No action required |
| High pressure 1 protection<br>High pressure 2 protection | Compressor 1 or 2 High Pressure Protection | 1) Insufficient water flow | 1) Check the operation of the water pump and the opening of the inlet / outlet valves of the By Pass |
| | | 2) 4-way valve defective or refrigerant overload | 2) Readjust the refrigerant charge |
| | | 3) The setting water temperature too high | 3) Set the target temperature 5 ° C above the current temperature then proceed in 5 ° C steps |
| | | 4) Pressure switch disconnected or defective | 4) Reconnect or replace the pressure switch |
| Low pressure 1 protection<br>Low pressure 2 protection | Compressor 1 or 2 Low Pressure Protection | 1) Not enough refrigerant | 1) Readjust the refrigerant charge |
| | | 2) 4-way valve defective | 2) Replace the valve |
| | | 3) Pressure switch disconnected or defective | 3) Reconnect or replace the pressure switch |
| | | 4) Defective electronic board | 4) Replace the electronic board |
| Connection failure between control main Program board and controller | Connection problem between the electronic board and controller | 1) Bad connection between the controller and the electronic board | 1) Check the connection cables between the remote controller and the electronic board |
| | | 2)Wired remote controller defective | 2) Replace the remote controller |
| | | 3) Defective electronic board | 3) Replace the electronic board |
| Exhaust temperature 1 over<br>Exhaust temperature 2 over | Compressor 1 or 2 outlet temperature too high | The heat pump does not work | Check that the filtration pump is working and the water flow is sufficient (bypass adjustment) |
| Water inlet sensor failure | Failture of the water inlet temperature sensor | 1) The sensor is not properly connected | 1) Reconnect the sensor |
| | | 2) The sensor is defective | 2) Replace the sensor |
| | | 3) The electronic board is defective | 3) Replace the electronic board |
| Outside coil sensor 1 failure<br>Outside coil sensor 2 failure<br>Exhaust sensor 1 failure<br>Exhaust sensor 2 failure | Evaporator 1 or 2 sensor failure<br>Compressor 1 or 2 output sensor failure | 1) The sensor is not properly connected | 1) Reconnect the sensor |
| | | 2) The sensor is defective | 2) Replace the sensor |
| Ambient temperature sensor failure | Ambient temperature sensor failure | 3) The electronic board is defective | 3) Replace the electronic board |
| Water outlet sensor failure | Water outlet temperature sensor failure | | |
| Suction pipe sensor 1 failure | Return air temperature sensor 1 failure | | |

# 7. Troubleshooting

| | | | |
|---|---|---|---|
| Suction pipe sensor 2 failure | Return air temperature sensor 2 failure | 1) The sensor is not properly connected | 1) Reconnect the sensor |
| | | 2) The sensor is defective | 2) Replace the sensor |
| | | 3) The electronic board is defectiv-e | 3) Remplace the electronic board |
| Outside coil temperature 1 over in Cooling Mode<br>Outside coil temperature 2 over in Cooling Mode | Temperature of evaporator 1 or 2 too high (> 60 ° C) for the cooling mode | The heat pump does not work | Check that the filtration pump is working and that the sensor is properly connected |
| Inside coil sensor 1 failure<br>Inside coil sensor 2 failure | Evaporator 1 or 2 sensor failure | 1) The sensor is not properly connected | 1) Reconnect the sensor |
| | | 2) The sensor is defective | 2) Replace the sensor |
| | | 3) The electronic card is defective | 3) Remplace the electronic board |
| Water outlet temperature lower in Cooling Mode | Water temperature too low at the exchanger outlet in the cooling mode | The heat pump does not work | Check that the filtration pump is working and that the water flow is sufficient (bypass adjustment) |
| Water outlet temperature over in Heat Mode | Water temperature too high at the exchanger outlet in the heating mode | | |
| Fan 1 fault<br>Fan 2 fault<br>EC Fan 1 fault | Fan 1 or 2 fault<br>EC fan failure | Bad connection | Reconnect the fan |
| | | The fan motor is defective | Replace motor |
| Connection failure between driver 1 and main Program board<br>Connection failure between driver 2 and main Program board | Inverter module 1 or 2 communication failure (alarm when the communication between the external card and the driver card is disconnected) | Module disconnected or defective | Reconnect or replace the Module |
| | | Defective module | Replace the module |
| Failure of frequency conver-sion module 1<br>Failure of frequency conver-sion module 2 | Frequency converter 1 or 2 failure | Module disconnected or defective | Reconnect or replace the Module |
| | | Defective module | Replace the module |

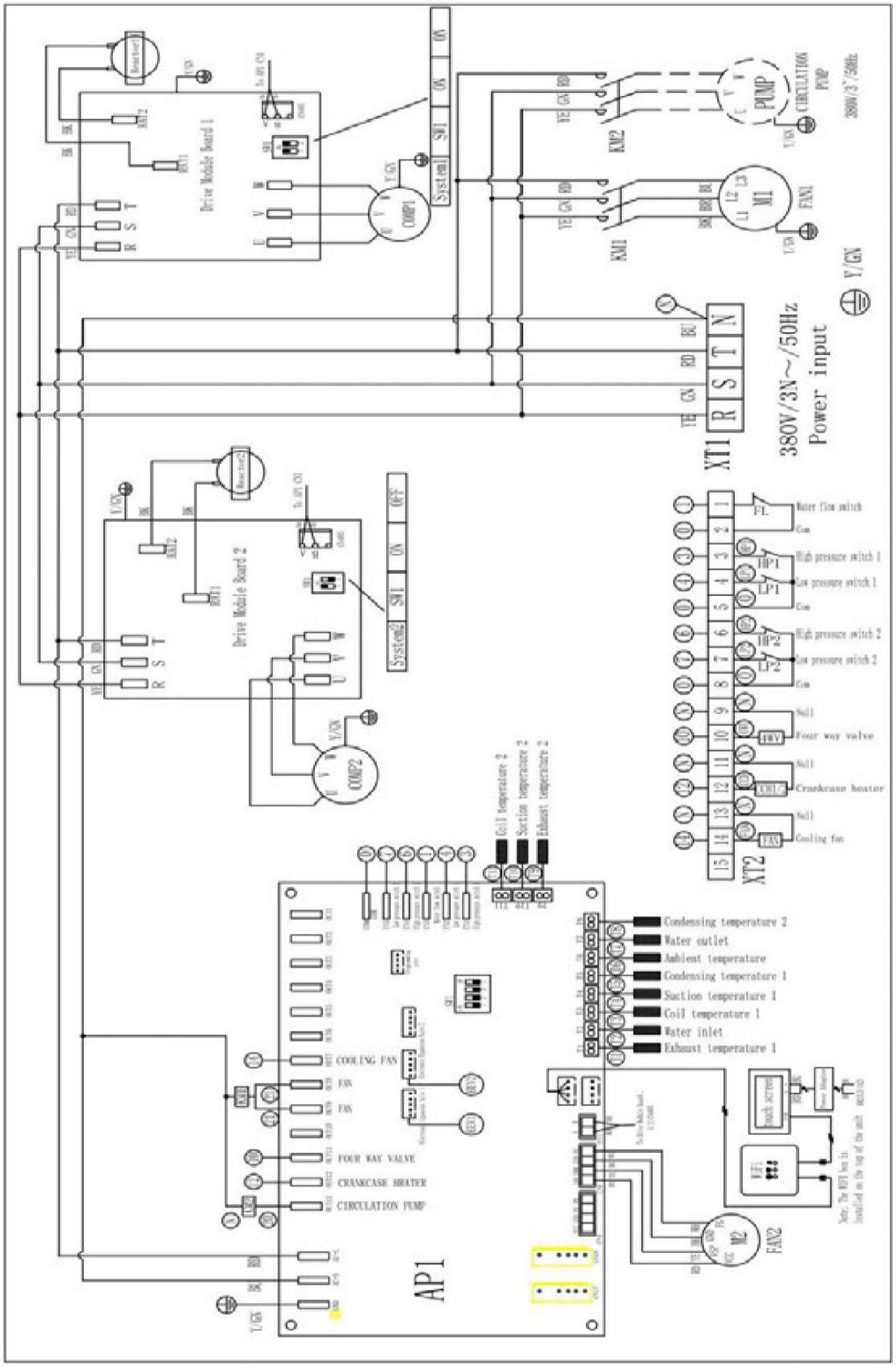
# 8. Appendice

## 8.1 Wiring diagrams

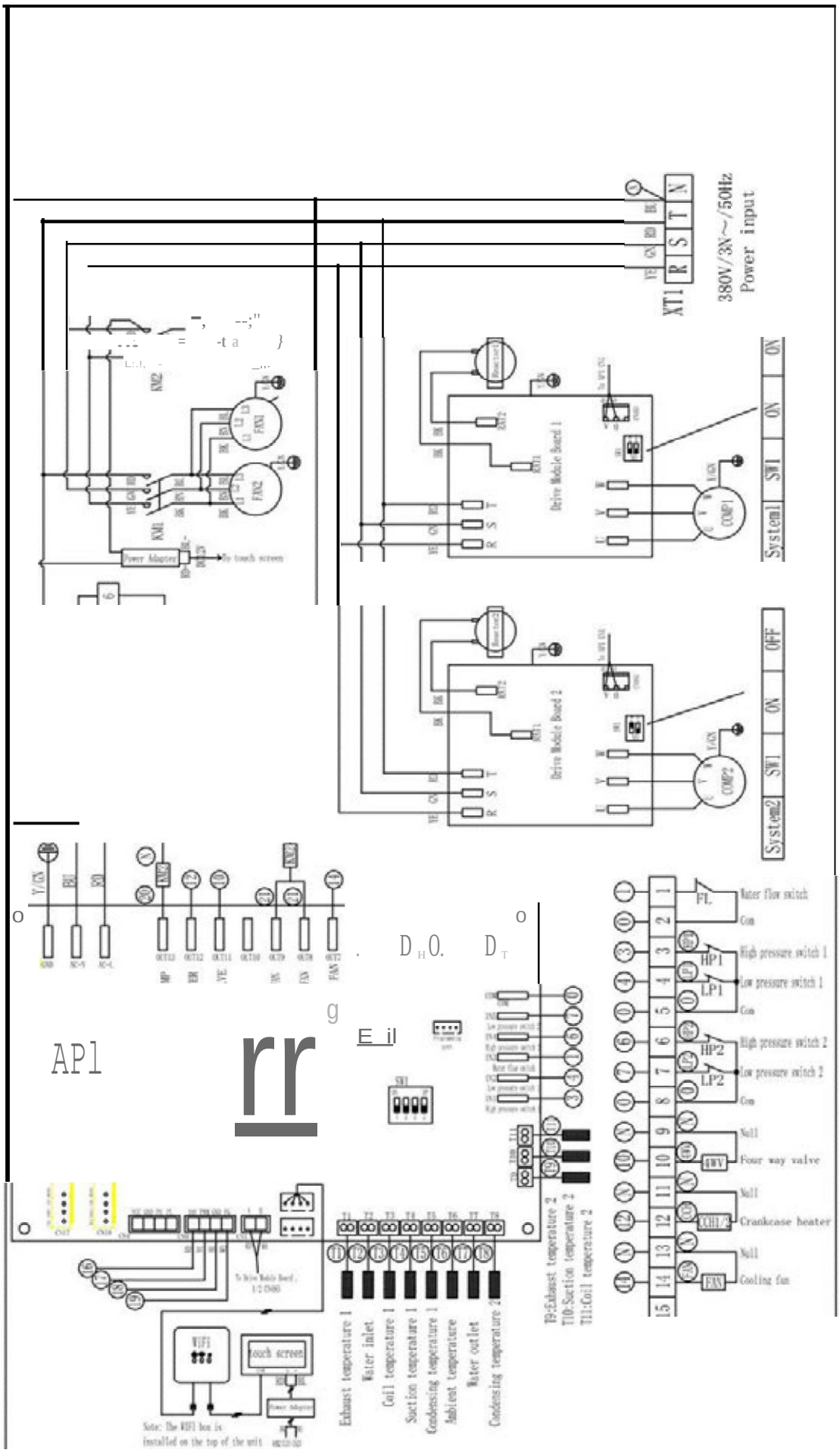



VITO Aqua R32-70

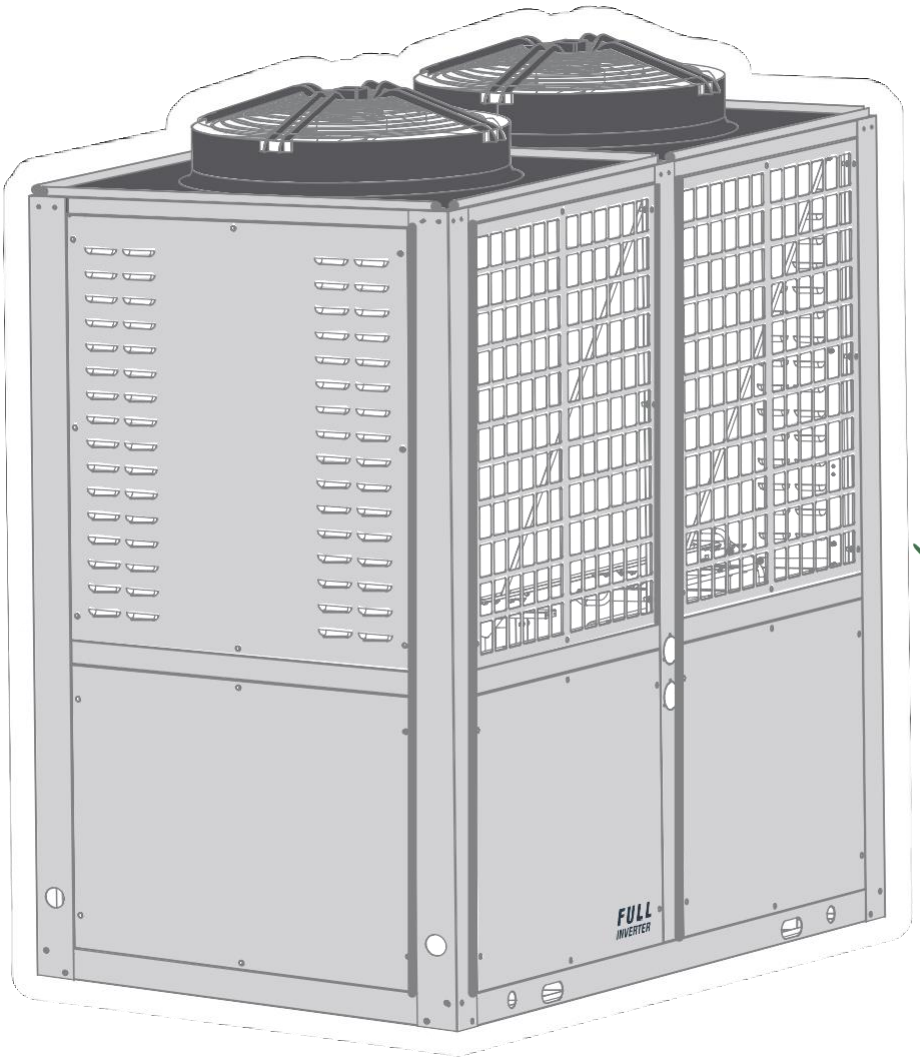
# 8. Appendice




VITO Aqua R32-103


380V/3N~/50Hz
Power input
XT1
R
S
T
N
Drive Module Board 1
Drive Module Board 2
COMP1
COMP2
System1
System2
SW1
ON
OFF
Power Adapter
To touch screen
Water flow switch
High pressure switch 1
Low pressure switch 1
High pressure switch 2
Low pressure switch 2
Four way valve
Crankcase heater
Cooling fan
Exhaust temperature 1
Water inlet
Coil temperature 1
Suction temperature 1
Condensing temperature 1
Ambient temperature
Water outlet
Condensing temperature 2
T9:Exhaust temperature 2
T10:Suction temperature 2
T11:Coil temperature 2
WIFI
Touch screen
Note: The WIFI box is installed on the top of the unit

FULL INVERTER




RoHS CE