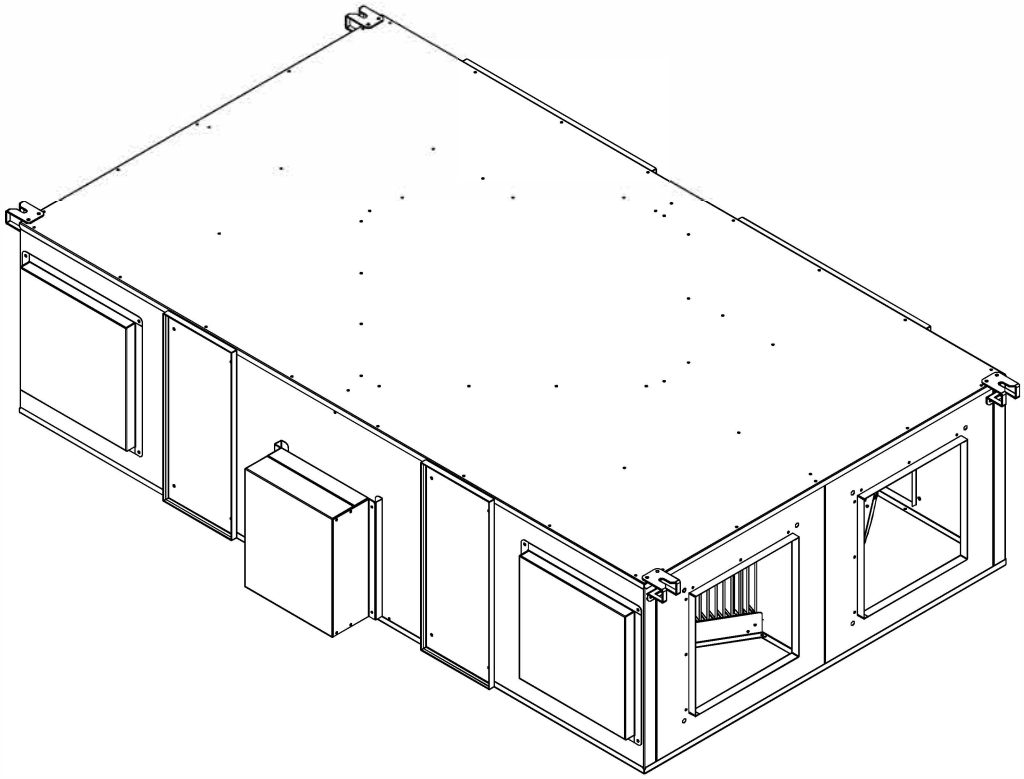
User's Manual

JAKKA heat recovery units
JRHB73 Series



JAK-KA®

Table Of Contects

- This product must not be disassembled under any circumstances. Only authorized repair technicians are qualified to conduct disassembly and repairs.
- Failure to heed this warning may result in fire, electrical shock or injury.

- Do not install this product in a refrigerated warehouse, heated swimming pool or other location where temperature and humidity are significantly different. (Failure to heed this warning may result in electrical shock or malfunctioning.)
- Do not install this product where it will be directly exposed to rain.

(Failure to heed this warning may result in electrical shock or malfunctioning.)

- Do not install this product in a location where acid, alkali or organic solvent vapors, paints or other toxic gases, gases containing corrosive components or high concentrations of oily smoke are present. (Failure to heed this warning may result not only in malfunctioning but also fire, power leakage and electrical shock.)
- Do not use this product outside the range of its rated voltage and control capacity. JRHB73/700 ~ JRHB73/5000 single phase (220-240V 50Hz); JRHB73/6000 three phase (380-400V 50Hz).

- Install this product in an environment where the temperature ranges from -10 °C to +40 °C and the relative humidity is less than 60%. If condensation is expected to form, heat up the fresh outside air by a duct heater etc.
- Select a position for introducing the outside air where no exhaust or combustion gases will be sucked into the fresh air duct and where it will not be covered by snow (Failure to ensure a supply of air can result in producing a state of Oxygen deficiency inside the room.)
- Select an adequately sturdy position for installing the product and install it properly and securely. (Injury may result if the product should fall.)
- Use the designated electrical wires for the terminal board connections and connect the wires securely so that they will not be disconnected. (Failure to ensure proper connections may result in fire.)

- When passing metal ducts through wooden buildings clad with metal laths, wire laths or metal, these ducts must be installed in such a way that they will not make electrical contact with metal laths, wire laths or metal sheets. (Power leakage can cause ignition.)
- The outside ducts must be tilted at a gradient(1/30 or more) downwards toward the outdoor area from the main unit, and properly insulated. (The entry of rain water may cause power leaks, fire or damage to household property.)
- Gloves should be worn during installation.

(Failure to heed this warning may result in injury.)

- A dedicated circuit breaker must be installed at the origin of mains power supply. This circuit breaker must be provided with a means for locking (lock and key).
- The body of the device, the room control panel and its cables must be at least 3 meters away from the high electromagnetic equipment or cables forming the area (Otherwise it may cause the device to malfunction or incorrect operation.)

- Connect the product properly to the ground.

(Malfunctioning or power leaks can cause electrical shock.)

- An isolator switch having a minimum contact gap of 3 mm in all poles must be provided as a means of disconnecting the power supply.

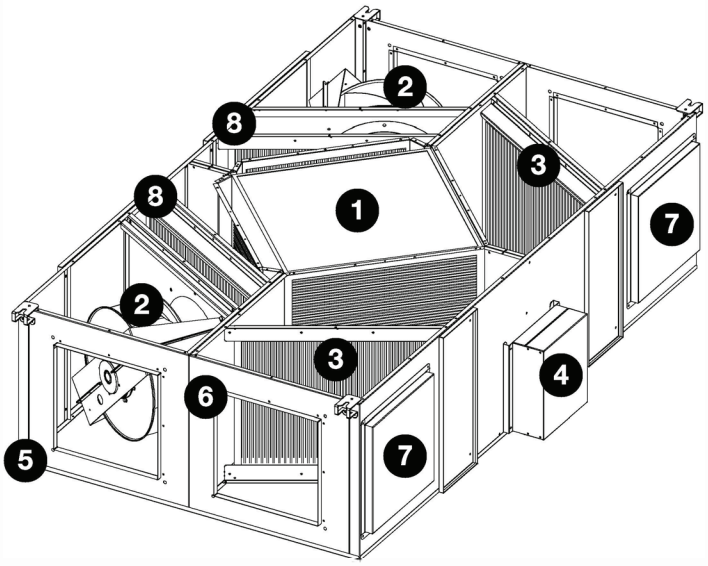
NOTE

▶ Control procedures required after commissioning and in case of a malfunction are listed below. In the event of further malfunction after initial controls, consult to our company.

CONTROL LIST

		✓
01	Make sure the unit receives power and grounding is done!	☐
02	Make sure the length of electric cables is correct! (Check for overheating on cables!)	☐
03	Check if the cables heading to the electrical box are shielded (protected against magnetic field) and shield is grounded. If not, replace!	☐
04	Check if the exhaust and supply filters are clean and make sure they do not prevent air flow!	☐
05	Make sure the drain hose is connected and check for any blockages through the drain line! If needed, clean it!	☐
06	Please check that the duct dimensions used in the duct system are correct and of the same dimension of the units duct connection. If wrong correct it with appropriate one.	☐
07	Make sure electrical connections are done as it is described in this manual. Make necessary corrections if there is any faulty connection.	☐
08	Make sure there is enough service space for installation. If not, repeat installation.	☐
09	In extremely cold climates in which freezing may occur on the heat recovery unit, use electric pre-heater at the fresh air suction to raise the air temperature to -8 °C or above.	☐
10	Check for unusual noise or vibration after the installation. If there is, control if anti-vibration pads are used.	☐

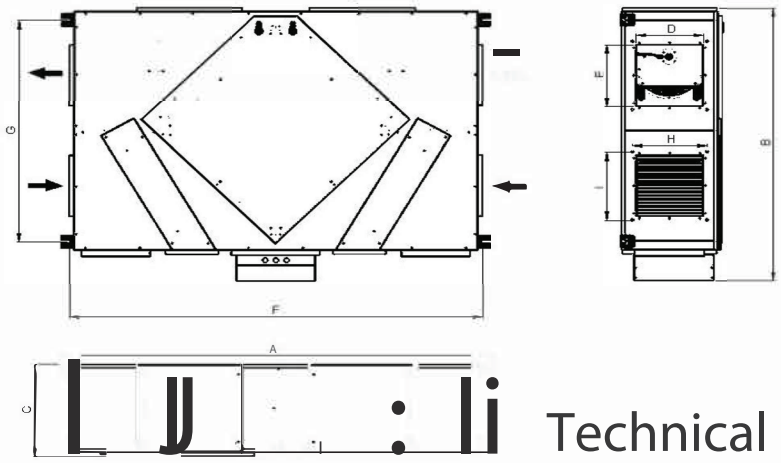
Components



1 Heat Exchanger
2 Fan
3 Filter
4 E-Box
5 Casing
6 Duct Connections
7 AlternativeDuct Connections
8 OptionalSecond Stage Filter

Dimensions

MODEL		Dimensions (mm)								
		A	B	C	D	E	F	G	H	I
JRHB73	10	1614	1115	380	250	250	1555	904	278	278
	20	1814	1295	548	350	350	1755	1084	378	378
	30	1912	1295	548	350	350	1853	1084	378	378
	40	1912	1346	588	400	400	1853	1135	428	428
	50	2082	1346	648	450	475	2023	1135	478	505
	60	2162	1446	838	450	540	2103	1236	478	573



Technical Specification

Model	JRHB 73					
Units	1000	2000	3000	4000	5000	6000
Mains Connection	1-230V50 Hz					3-400V 50 Hz
Working Range *	-12 / +40					
Performance Data						
Air Flow Rate (m^3/h)	1200	1950	2900	3980	4520	5550
Sound Level (dB(A))**	59	60	55	53	58	52
Electrical Data						
Fan Motor Power (kW)	0,44	0,65	1	1,2	1,3	1,9
Maximum Current (A)	1,8	2,9	4,6	4,8	5,4	3,8
General Data						
Weight (kg)	75	110	140	170	190	225
Filter Class	G4 / G4					
* With Electrical Preheater						
** Surrounding sound@ 3m Distance						

Checking Product Received

After receiving the product, inspect for any shipping damage. Claims for damage, either apparent or concealed, should be files immediately with the shipping company.

Check for the model number and electrical properties like power supply, voltage and frequency whether they fit your demand or not.

The installation and operation of the unit must be done as explained in this manual; the utilization of the unit other than those indicated in these instructions is not recommended.

Please contact your local agent for any discrepancy.

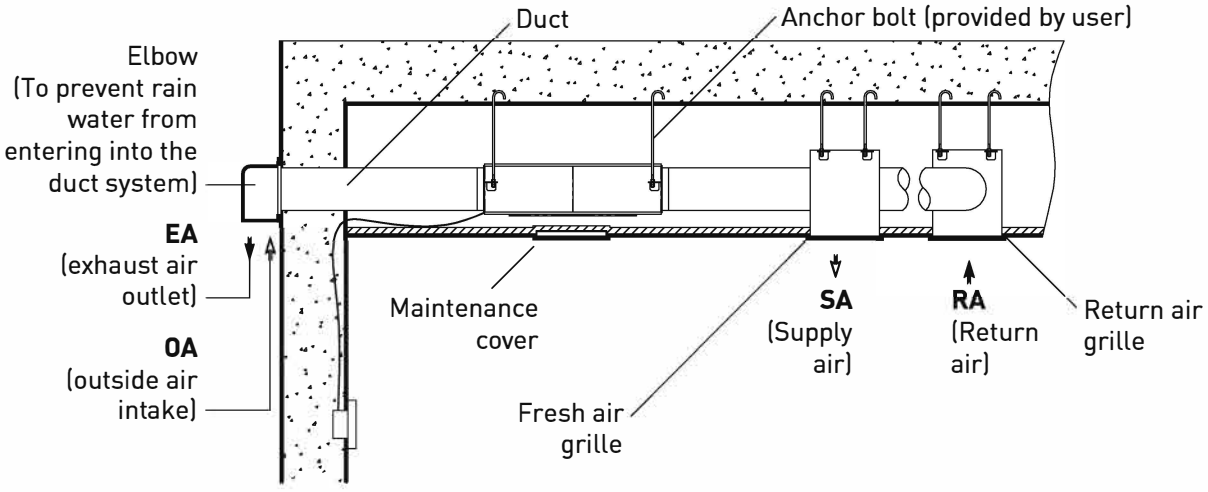
Our liability shall not cover any defects arose from the alterations performed by a customer without our written approval.

WARNING

- ▶ Do not perform installation work and electrical wiring connection without referring to the Installation and Operational Manual.
- ▶ Check that the ground wire is securely connected.
- ▶ Connect a fuse of specified capacity.

CAUTION

- ▶ Do not install the unit, remote controller and cable within approximately 3 meters from strong electromagnetic wave radiators.



Mounting the Appliance

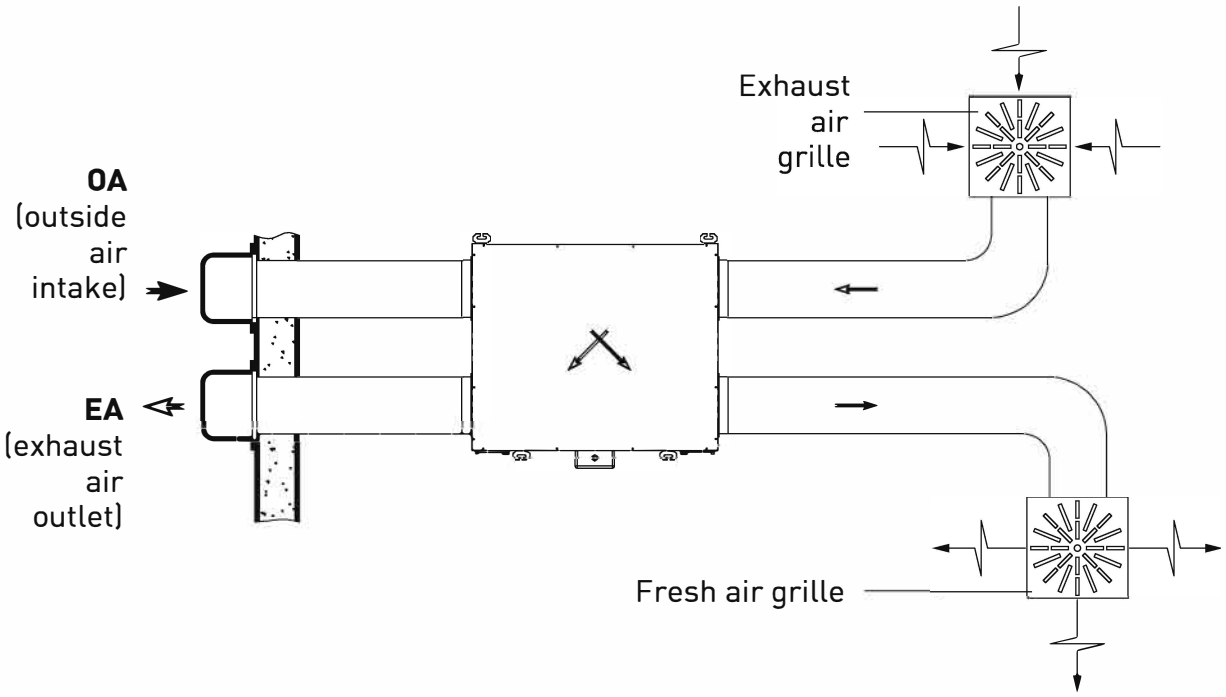
JRHB73 series appliances can directly be mounted on a vibration-free solid wall with the suspension parts supplied for installation purpose. The screws must be applied in a torque enough to secure a rigid connection. The other part is mounted to the wall and used as a hanger to fix the unit. Following aspects must be considered during mounting of the unit.

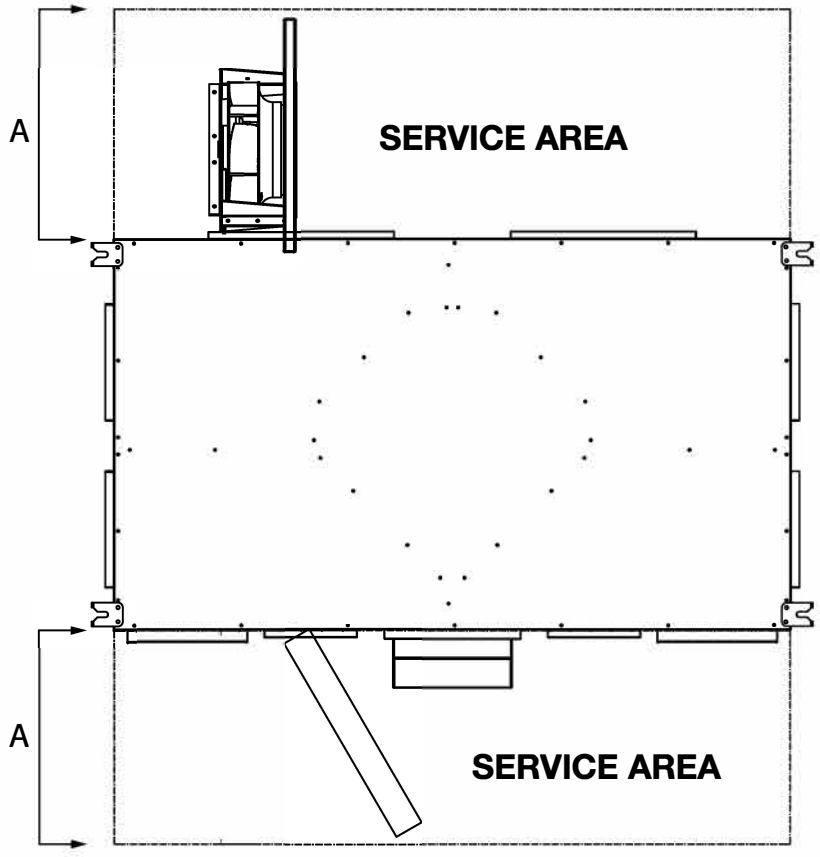
1 The appliance must be mounted level.

2 The installation space must be freezing free.

Connecting the ducts

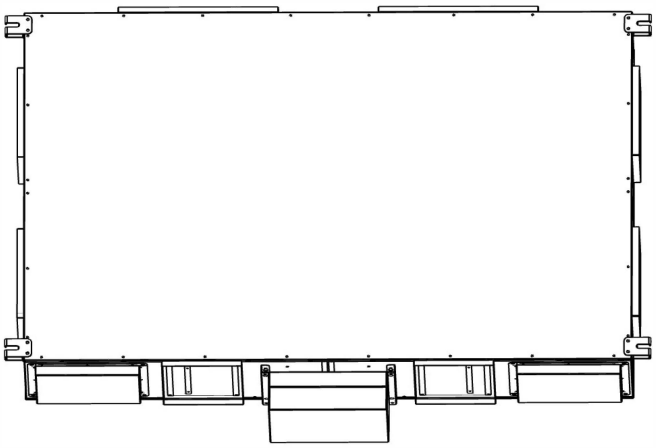
The duct connections in the unit are made of ABS material hence do not need additional insulation. After connecting the unit; make sure that there is no leakage between the duct connections of the unit and the duct. Use a duct tape where necessary.



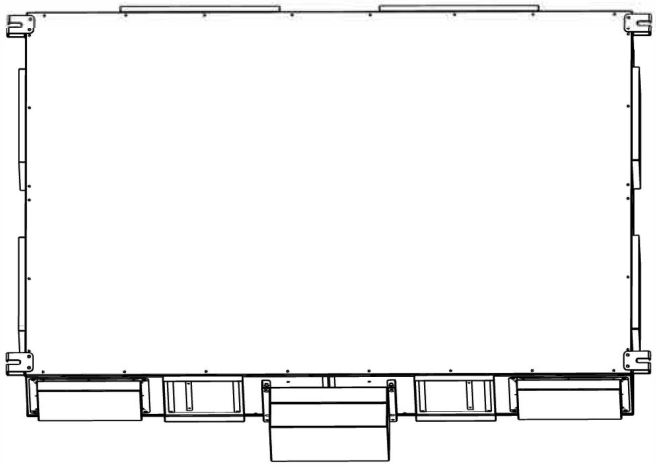


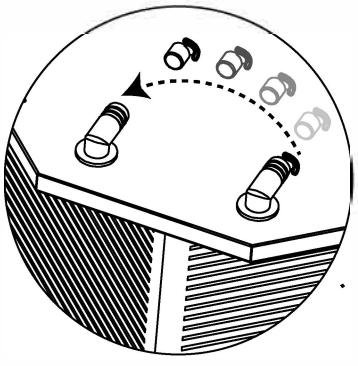
MODEL		DIMENSIONS
		A
		mm
JRHB73	700	355
	1200	410
	1500	460
	2000	510
	3000	560
	4000	600
	5000	600
	6000	660

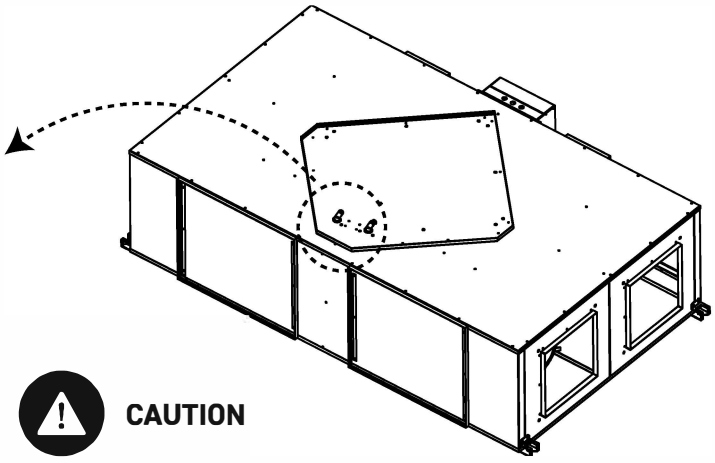
Left Side Installation (Default)



Right Side Installation







CAUTION

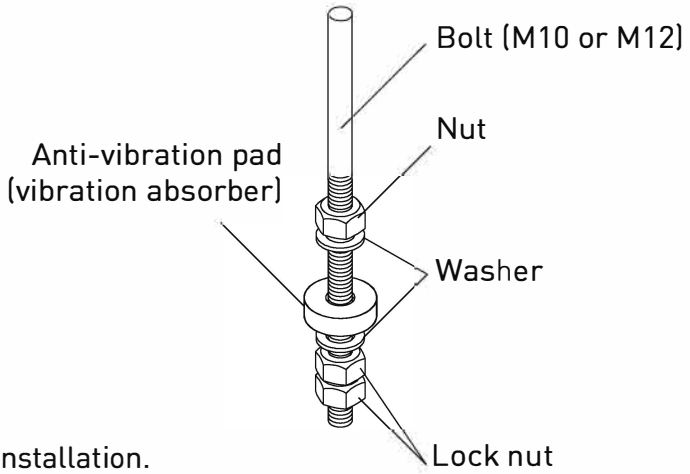
▶Install the drain plug on the side of the fresh air.

CAUTION

- Before connecting the ducts, check that no sawdust or any other foreign material (scaps of paper, vinyl, building material etc.) exist in the ducts.
- Make sure service doors open easily and fan/ filter can be pulled out.
- Pay attention to the warnings before connecting the units to ducts.

Preparation of roof bolts

Hang the rubber anti-vibration pad to the bolt and balance the unit so that it remain horizontally. Make sure the unit is attached securely with a lock nut.

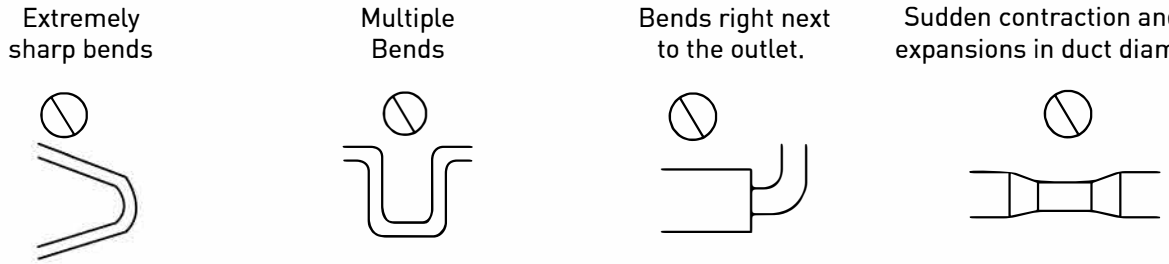


CAUTION

- Control the strength of the bolts before installation.

CAUTION

- Do not install the ducts as shown on the following figures. Doing so will increase the pressure drop, decrease the air volume from the unit and give rise to abnormal sounds.



The distribution ducts should be connected to the unit through rigid or semi flexible ducts in order to avoid abnormal sounds and vibration. Flexible ducts may also be used ensuring that the structure of the duct does not block the air stream and cause vibration. The unit is equipped with pre-drilled duct flanges made of ABS for distribution duct connections.

1 Set the supplied ABS-made duct adapter to each duct connection to assure a good junction of the ducts.
2 Fit the ducts securely into the duct connection flanges and wind Aluminum tape to prevent air leakages.
3 Suspend the ducts from the ceiling so that their weight will not be applied to the unit.
4 The outdoor ducts must be covered with heat insulating material in order to prevent forming of condensation.

WARNING

- Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout / tagout procedures to ensure the equipment cannot be inadvertently energized. Secure drive sheaves to ensure rotor cannot freewheel. Failure to secure drive sheaves or disconnect power before servicing could result in death or serious injury. If there is a heater, wait for the heater to cool.

Filter Maintenance

For best performance, clean up the air filters periodically. Best on every 3 operating months, or at least once per year.
Change filters after cleaning them 6 times, or earlier if necessary.

WARNING

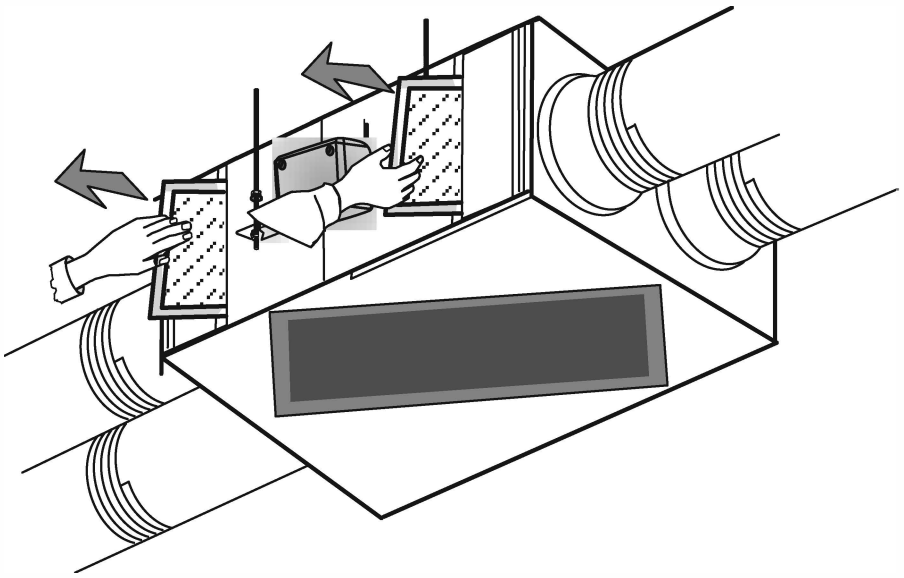
- Do not start system without air filters properly installed and inspection doors screwed. Otherwise, blockages in heat exchanger may occur.

HOW TO ACCESS FILTERS

STEP 1 ▶ To open the service door, remove out 4 screws on the service cover.

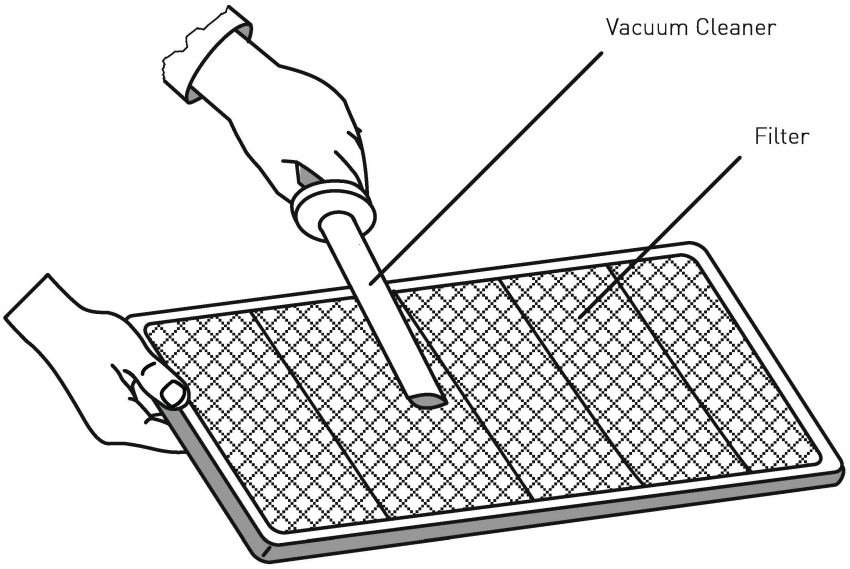
STEP 2 ▶ With the opened service door, the filter service holes for fresh air filter(s) and return air filter will be visible.

STEP 3 ▶ Remove the filter(s) as shown in the figure and do the maintenance as described in this manual.



NOTE

▶ JAKKA Controllers for this units have a preset timer to monitor filter occupancy according to factory set timer. Remote controller informs the user to check the filters. After the filters are cleaned by the user, filter warning alarm must be reset.



Clean the filter with a vacuum cleaner. To remove dense dust build-ups, prepare a solution with cold water and natural detergent or soap powder and submerge the filter in the solution. Later pull out the filter from the solution and leave it to dry. In any case, do not scrub or apply force on the filter material. After it is completely dry, mount the filter to the unit, close the service door and tighten the screws thoroughly.

NOTE

▶It may be handy to keep spare clean and dry filters for quick replacement of dirty filters to minimize unit downtime for filter maintenance.

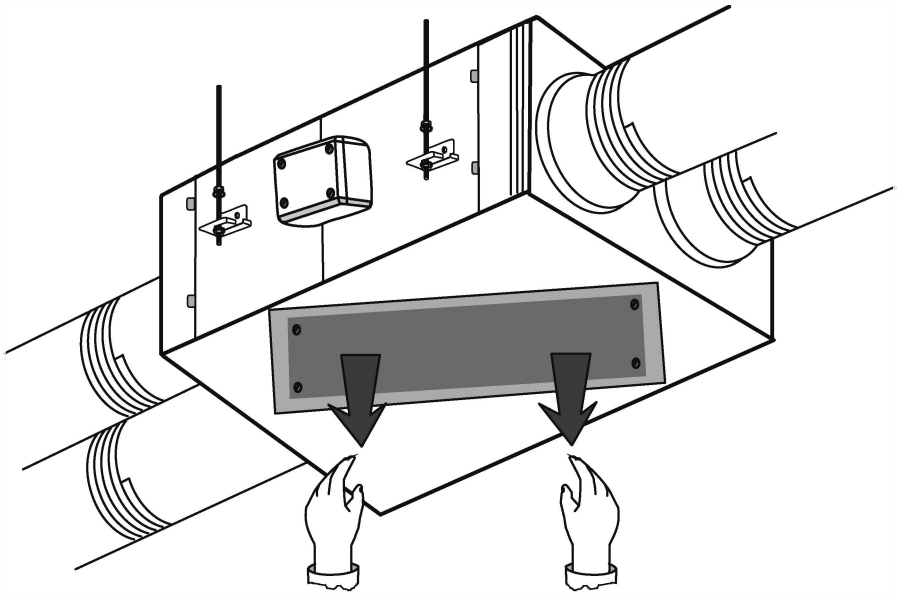
Exchanger Maintenance

For best performance, clean up the air exchanger periodically.
If the filters are maintained regularly, clean exchanger at least once in every two years.

HOW TO ACCESS EXCHANGER

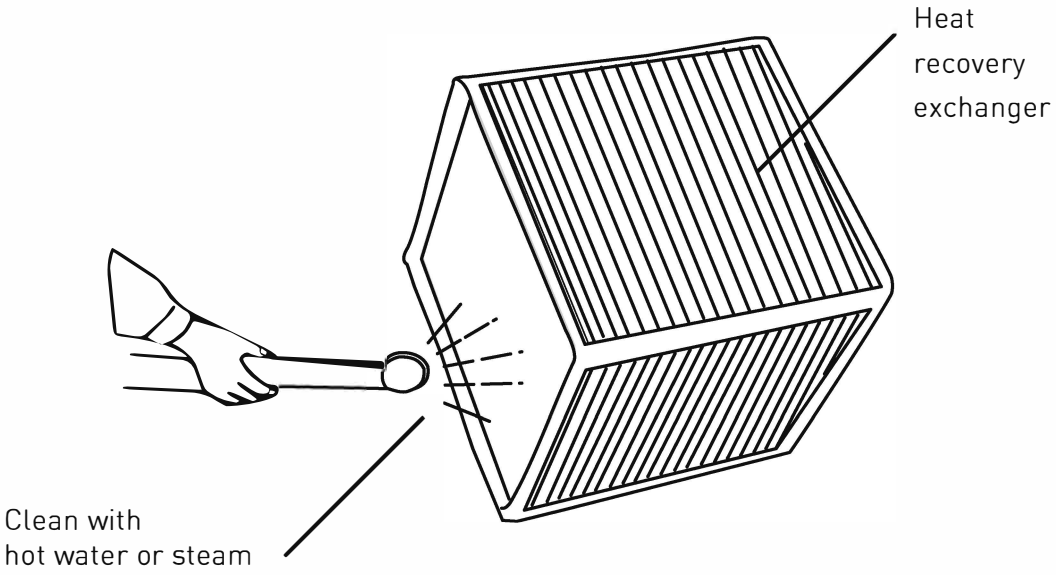
STEP 1 ▶ To open the service cover that is located on the bottom side of unit, unscrew and remove out 4 screws that secure the heat recovery exchanger service cover.

STEP 2 ▶ While performing removal of service cover make sure heat recovery exchanger does not fall down.



NOTE

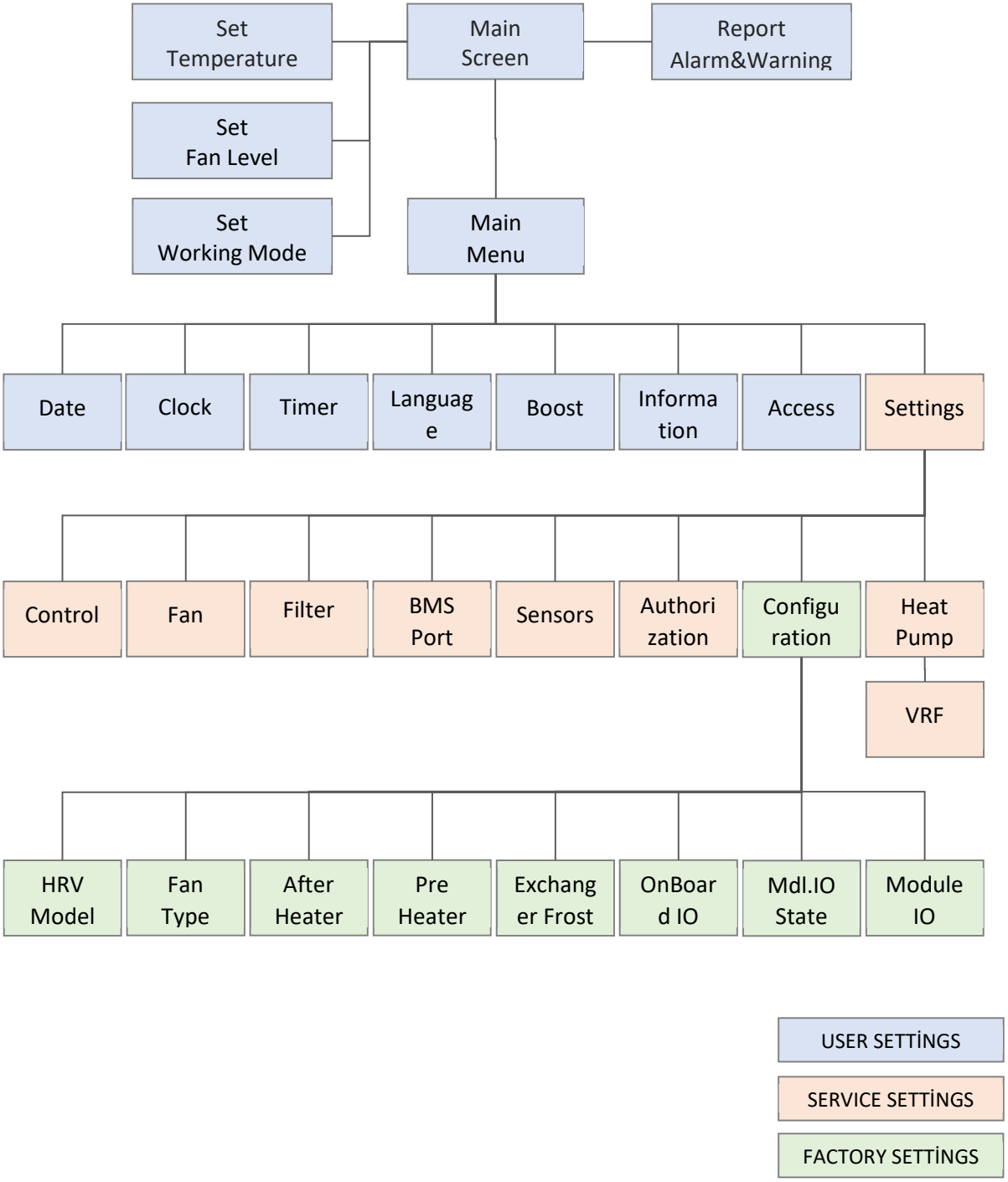
▶ Maximum mass of the exchanger is 22 kg.



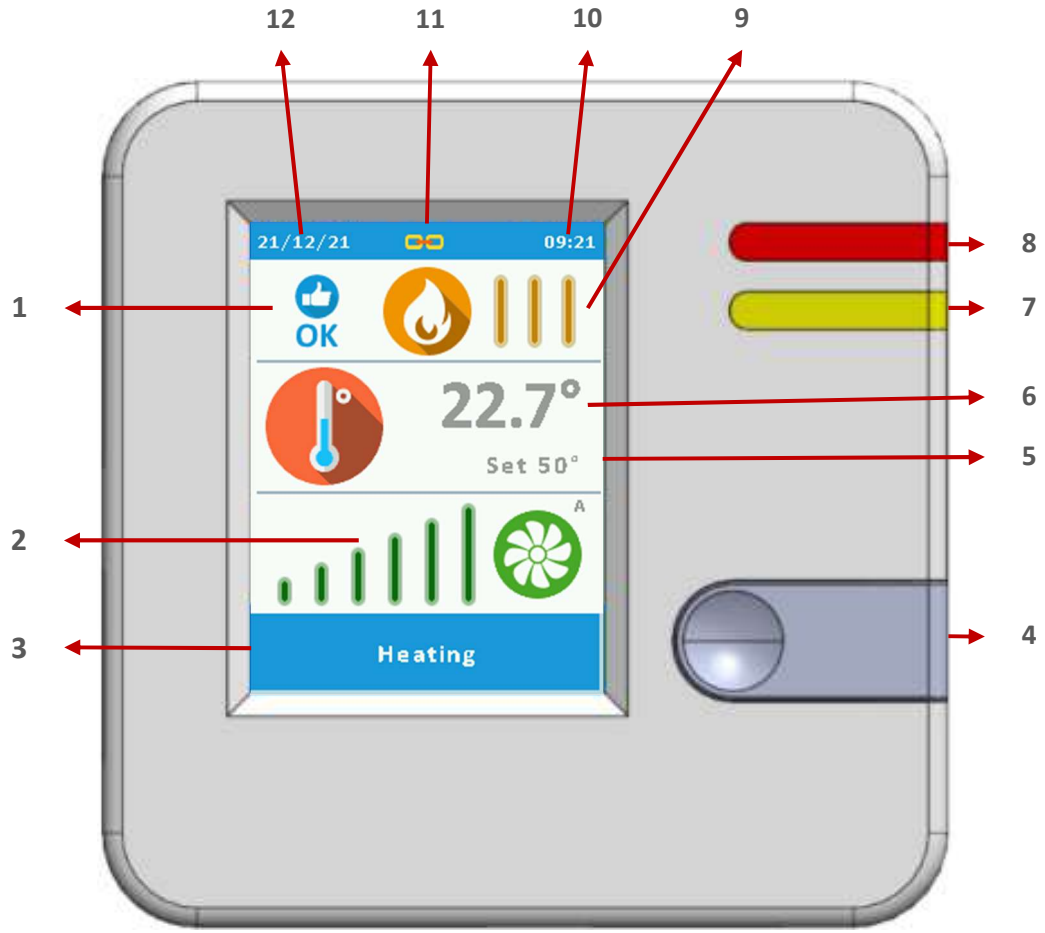
Clean the heat recovery exchanger with hot water or steam. Use natural detergent or soap powder if need be. Leave it to dry after cleaning and mount it to the unit after it is completely dry. Tighten the service cover screws thoroughly and make sure the heat recovery exchanger does not fall down.

Room controller instructions

1. Menu Tree



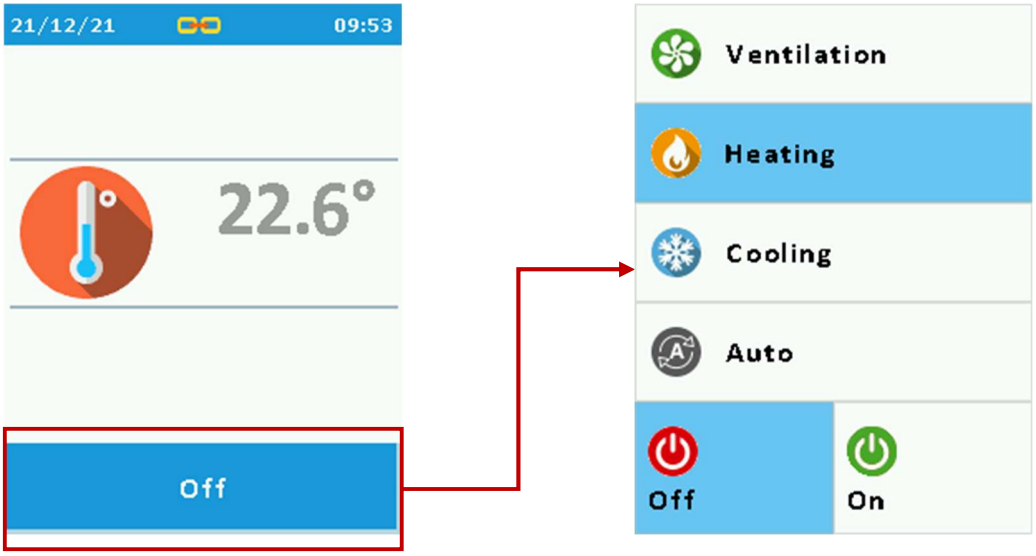
2. Main Screen



1	Warning And Alarm Report	**7**	Warning Indicator
2	Fan Speed Level	**8**	Power Indicator
3	Working Mode	**9**	Climate Level
4	Function Button	**10**	System Clock
5	Setting Temperature	**11**	Communication State
6	Measuring Temperature	**12**	System Date

Main Menu Screen is mainly start screen of system. You can reach all screen from Main Screen. This screen designed user friendly with text and icon. Users use this screen for general operations, Setting Temperature, Setting Fan Level, On/Off system and View Working State of system.

2.1. Working Mode



Entering this menu follow this steps;
- Open main screen
- Push blue button at bottom side of screen

In this menu you can set Climate Type;
- Ventilation
- Heating
- Cooling
- Auto

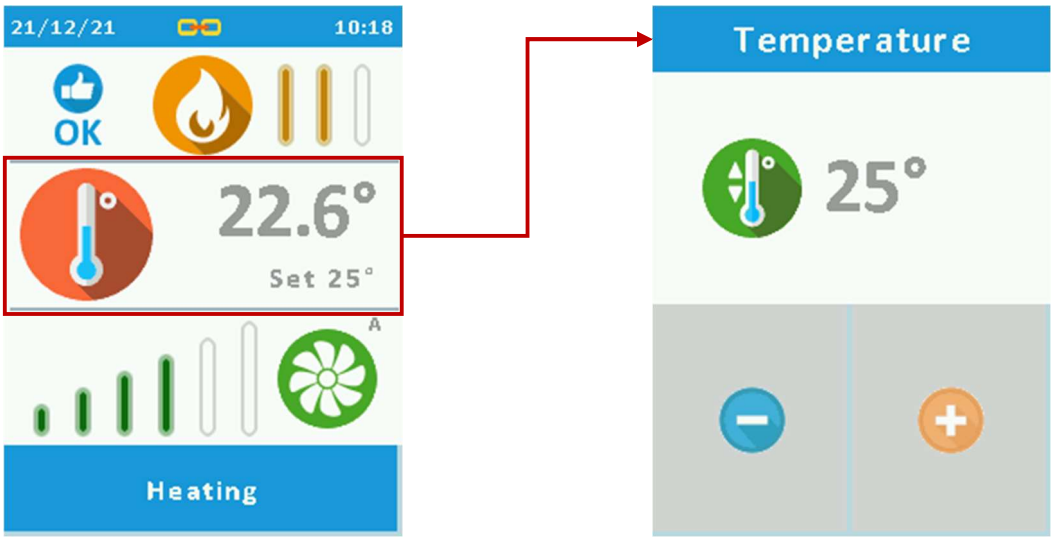
If you want to change Climate Type just push any Climate Types and see blue bar on it. When see blue bar means you selected.

And you can change system Working State ON and OFF.

If you want to change Working State just push ON or OFF buttons and see blue bar on it. When see blue bar means you selected.

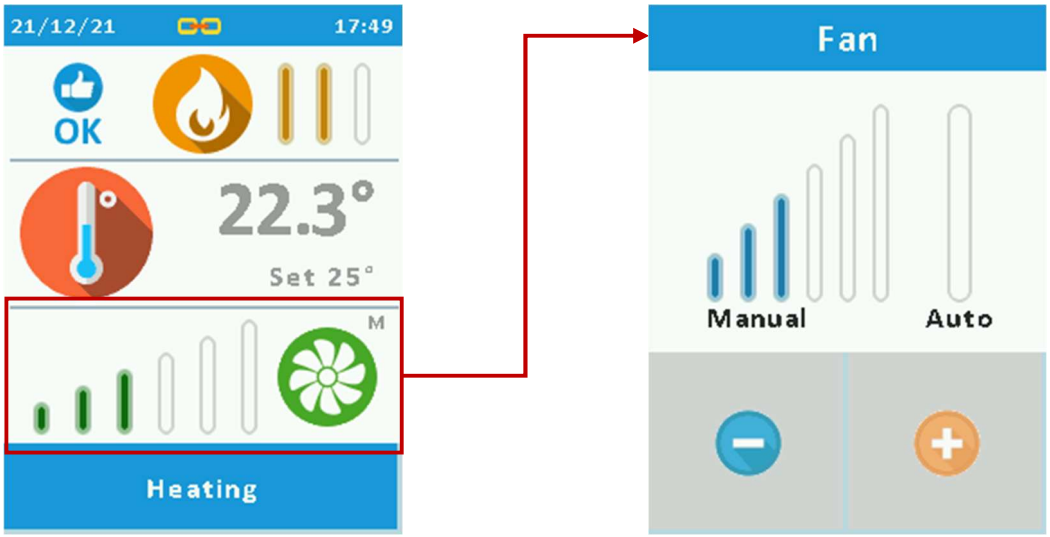
After that your selections will be saved when you push Function Button. Then you will return Main Screen and you will see your selections are working.

2.2. Set Temperature



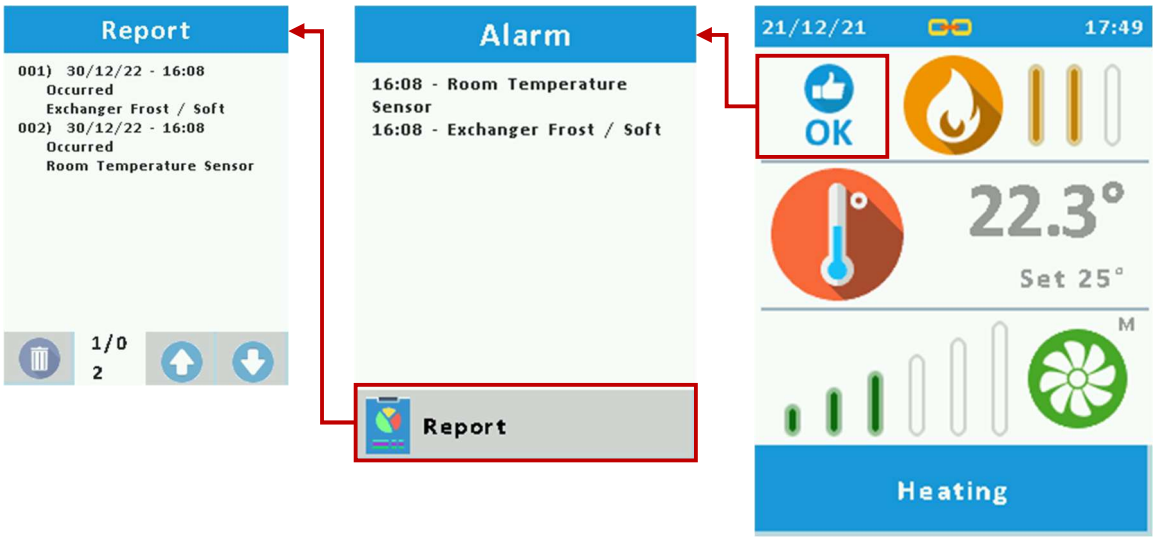
This setting is system working temperature.
At the Main Screen, there is Temperature icon. Push this icon area at the middle of screen and then enter the Set Temperature screen.
If you want to increase value, you can push "+" button once or continuous touch.
If you want to decrease value, you can push "-" button once or continuous touch.
You can enter 10°C to 50°C temperature.

2.3. Fan Level Set



This setting is fan speed.
At the Main Screen, there is Fan icon. Push this icon area at the bottom of screen and then enter the Fan Level Set screen.
If you want to increase level, you can push "+" button once touch.
If you want to decrease level, you can push "-" button once touch.
You can enter 1 to 6 level. If you want fan level automatically to control by pressure or air volume. You can make fan level Auto for this feature.

2.4. Warning And Alarm Report

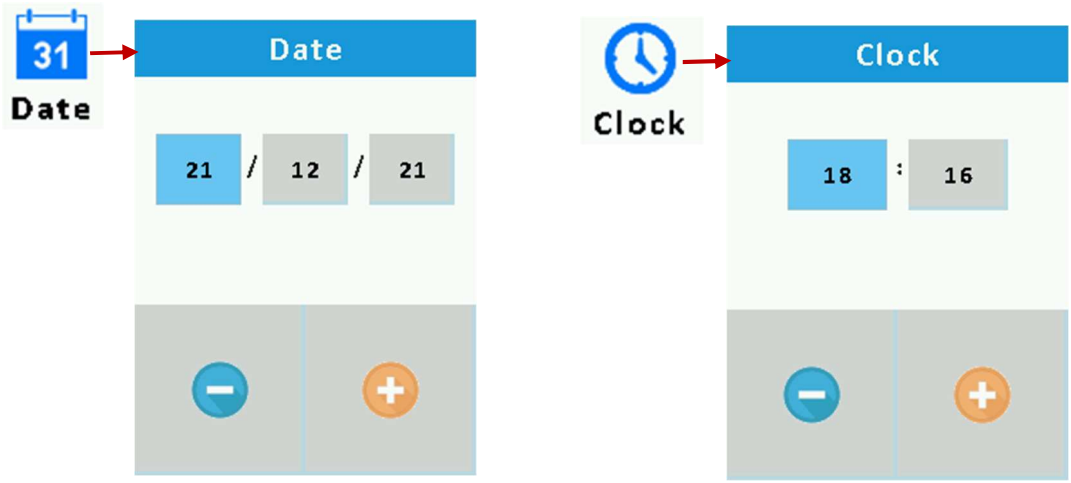


Warning and Alarm List		
Time (RTC)	ASP Tacho	Supply Air Temperature Sensor
Communication Panel/Controller	HeatPump Compr. Termic	Return Temperature Sensor
Communication BMS	HeatPump Pressure	Return Humidity Sensor
Communication Module IO	HeatPump Low Pressure	Return CO2 Sensor
Communication Cable Hum. Snr.	After Heater Termic	Return VOC Sensor
Communication Cable CO2 Snr.	After Heater Limit	Fresh Air Temperature Sensor
Communication Cable VOC Snr.	Pre Heater Termic	After Heater Temp. Sensor
Communication DPS1 Snr.	Pre Hater Limit	Pre Heater Temp. Sensor
Communication DPS2 Snr.	Filter Time Out	VNT Pressure Sensor
Fire	Filter Dirty	ASP Pressure Sensor
VNT Air Flow	VNT Filter Dirty	Device Turn ON
ASP Air Flow	ASP Filter Dirty	Device Turn OFF
Fan Error	Exchanger Frost	Device Wait Start
VNT Fan Error	Battery Frost	Exchanger Frost / Soft
ASP Fan Error	Battery Frost / Off	HeatPump Defrost
Fan Error / Off	VRF Defrost	Fan Boost Enable
VNT Fan Error / Off	No Control Temperature	Timer Enable
ASP Fan Error / Off	Panel Temperature Sensor	External Start
VNT Tacho	Room Temperature Sensor	

3. Main Menu

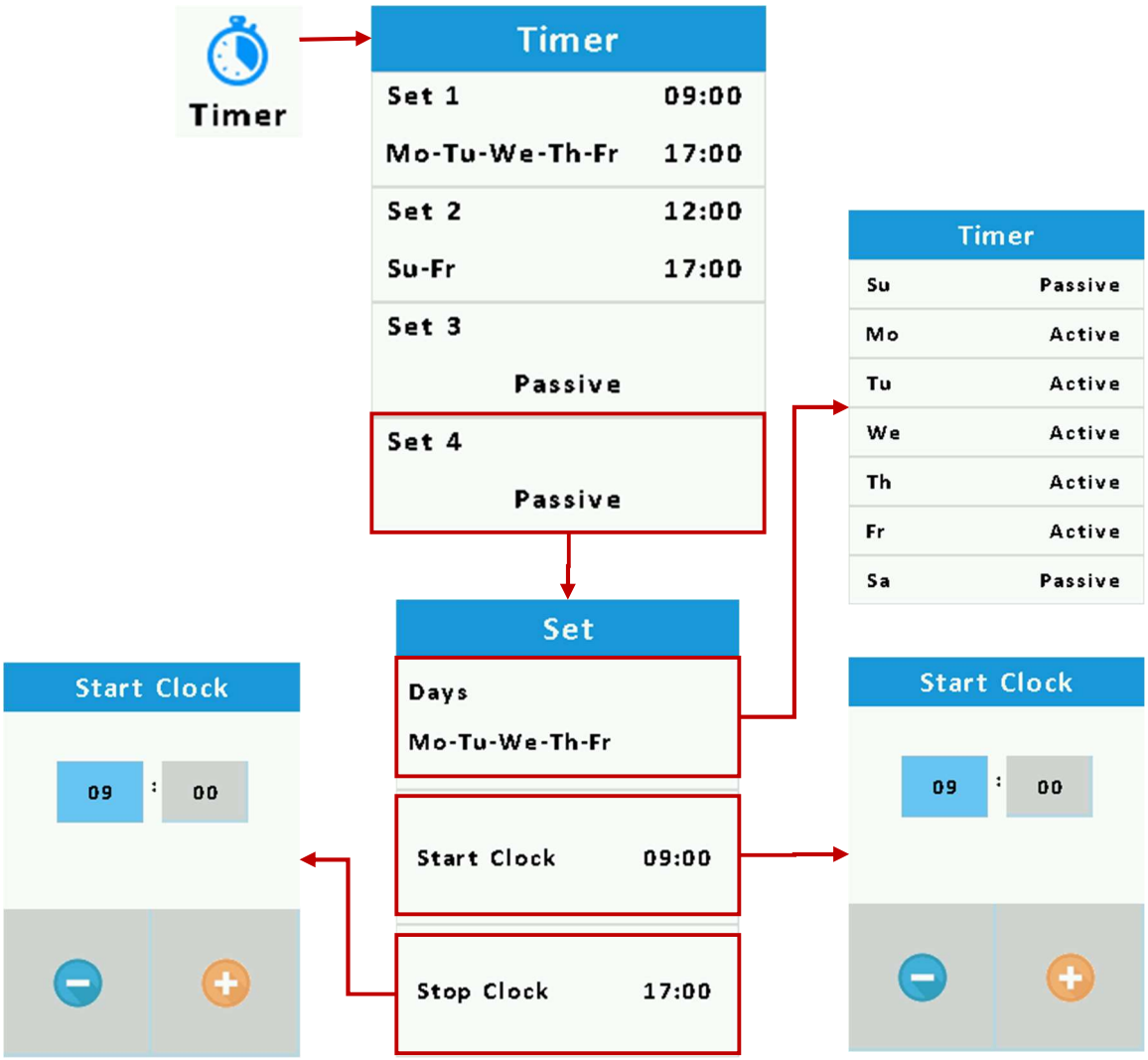
In this menu you can make system settings and you can enter service menu from this menu. If you want to enter this menu firstly you must at Main Screen and then you can enter with push Function Key right of screen than you can enter Main Menu.

3.1. Date and Clock



These settings are system real time clock settings.
This real time clock use for timer period and report of alarm and warning.
If you want to enter these menus, at Main Screen push function button than enter Main Menu and select Date or Clock symbol and push on symbols.
If you want to enter these settings, you can push “Date” and “Clock” icons at the Main Menu.
Which value you want to change, firstly push of value and see blue bar on it. After that you can push "-" for decreasing and push "+" for increasing value. İncrease and decrease button you can push once or continuously.
After that your settings will be saved when you push Function Button.

3.2. Timer Settings



These settings are working time period and day settings.
If you want to enter these menus, at Main Screen push function button than enter Main Menu and select Timer symbol and push on symbol.
There are 4 time period. Set 1, Set 2, Set 3 and Set 4.
These settings have days of week. Each day, you can make active or passive. And each settings have Star Clock and Stop Clock. With these settings you can make 4 working period time in day.

Note: If you set timer and time is in OFF period, you will see on main screen RED TIMER ICON and you can read info about system from report page. RED TIMER ICON means, the system is waiting for the ON time clock to starting. If you see GRAY TIMER ICON on main screen, system is ON time period and working.

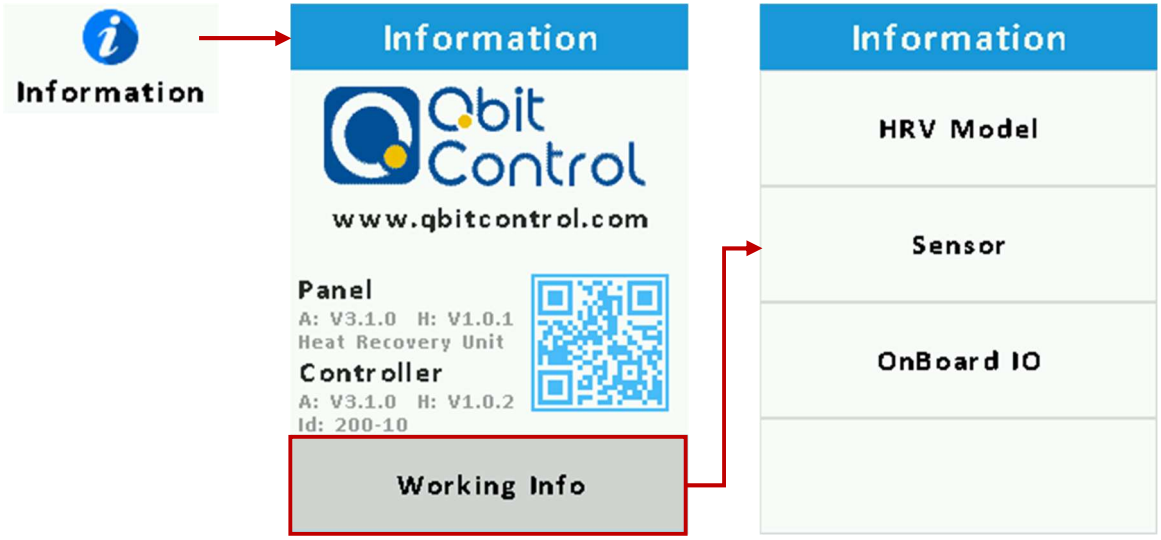
3.3. Language

This setting is use for all menu language and alarm report text.
You can enter this menu, at Main Screen push function button than enter Main Menu and select Language symbol and push on symbol. If you want to change Language, select any Language and push on it. When see blue bar means you selected. After that your selections will be saved when you push Function Button.

3.4. Boost

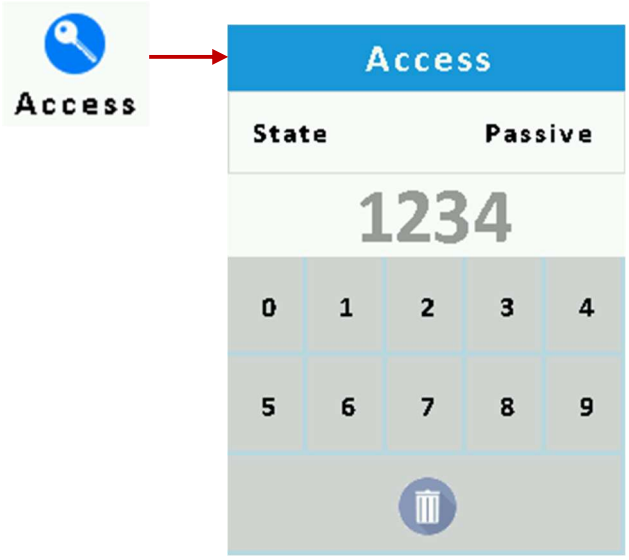
This setting use for fan run full level.
You can enter this menu, at Main Screen push function button than enter Main Menu and select Boost symbol and push on symbol. After that you will hear buzzer bib. This means your fan start running full level until 15 minutes. If you need full capacity working fan at a time you can push this button.

3.5. Information



In this menu you can see software version and working scenario configurations information. You can enter this menu, at Main Screen push function button than enter Main Menu and select Information symbol and push on symbol.

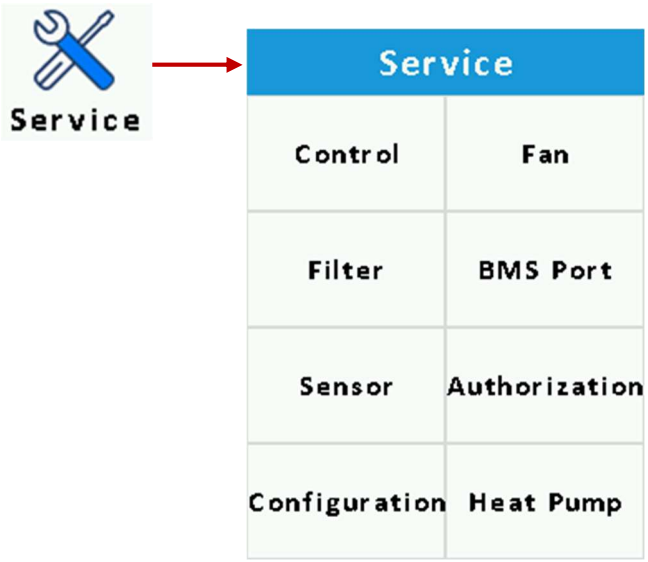
3.6. Access



This setting is user password. These settings come from the factory as passive and 1234. When active state of password, every setting page enter with this password number.

If forgot password, follow these steps;
- Power OFF system
- Hold down on function button at the right of screen
- Power ON system
- Access password is passive now
- You can enter Access menu and see password or change

4. Service Menu



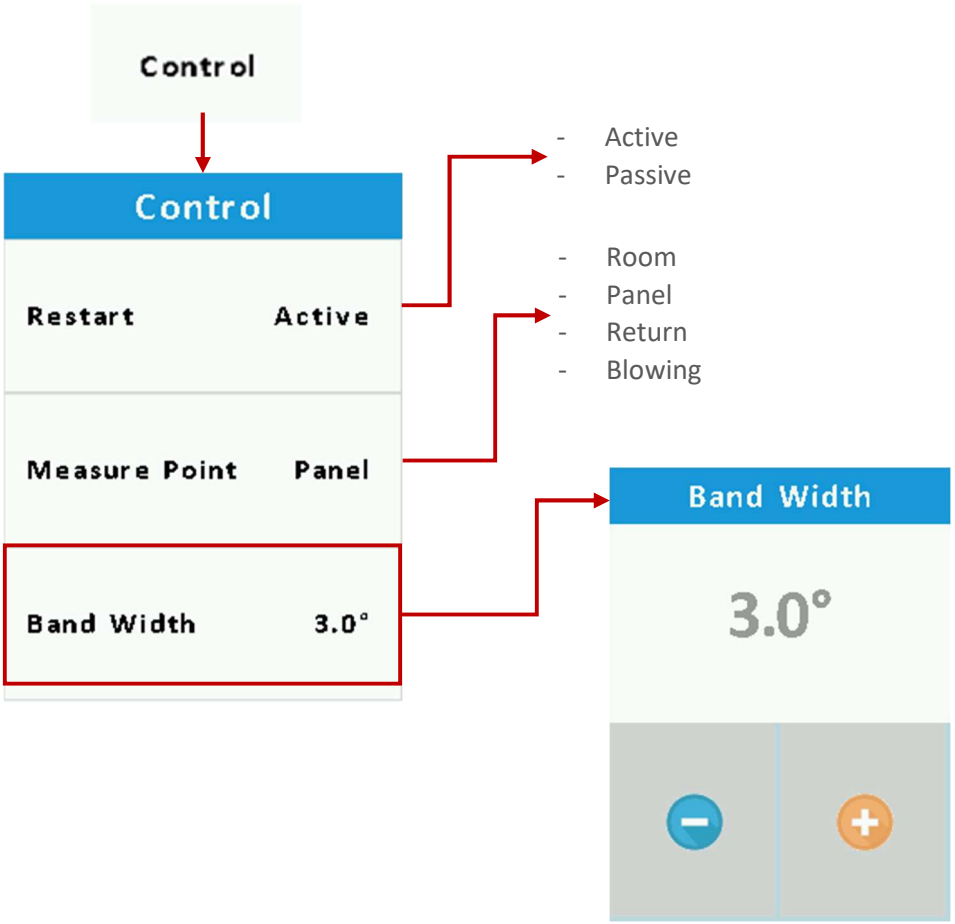
In this menu you can set Service Settings and you can enter factory Configuration mode from this menu.

If you want to enter this menu you must follow bottom steps;

- System working mode make OFF
- Open Main Screen
- Push 3 seconds on Function button
- Hear buzzer beep
- Enter Main Menu
- Push Service Button

Attention: This menu is only for service personnel. The user should not make any change in this menu.

4.1. Control Settings



Restart:

- If select Active, when system electricity off and on after that the system continues to work from where it left
- If select Passive, when system electricity off and on after that the system always start in off.

Measure Point:

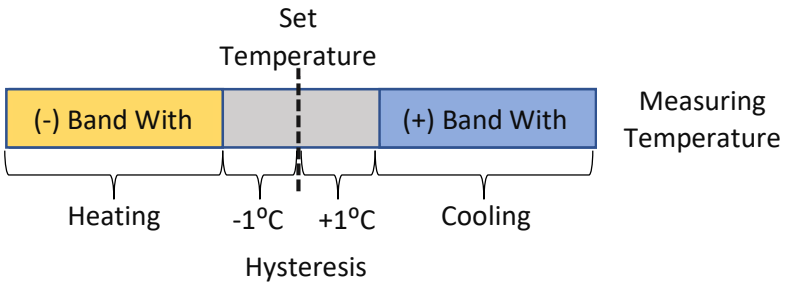
This is the temperature point to control.

Select which place do you need to control.

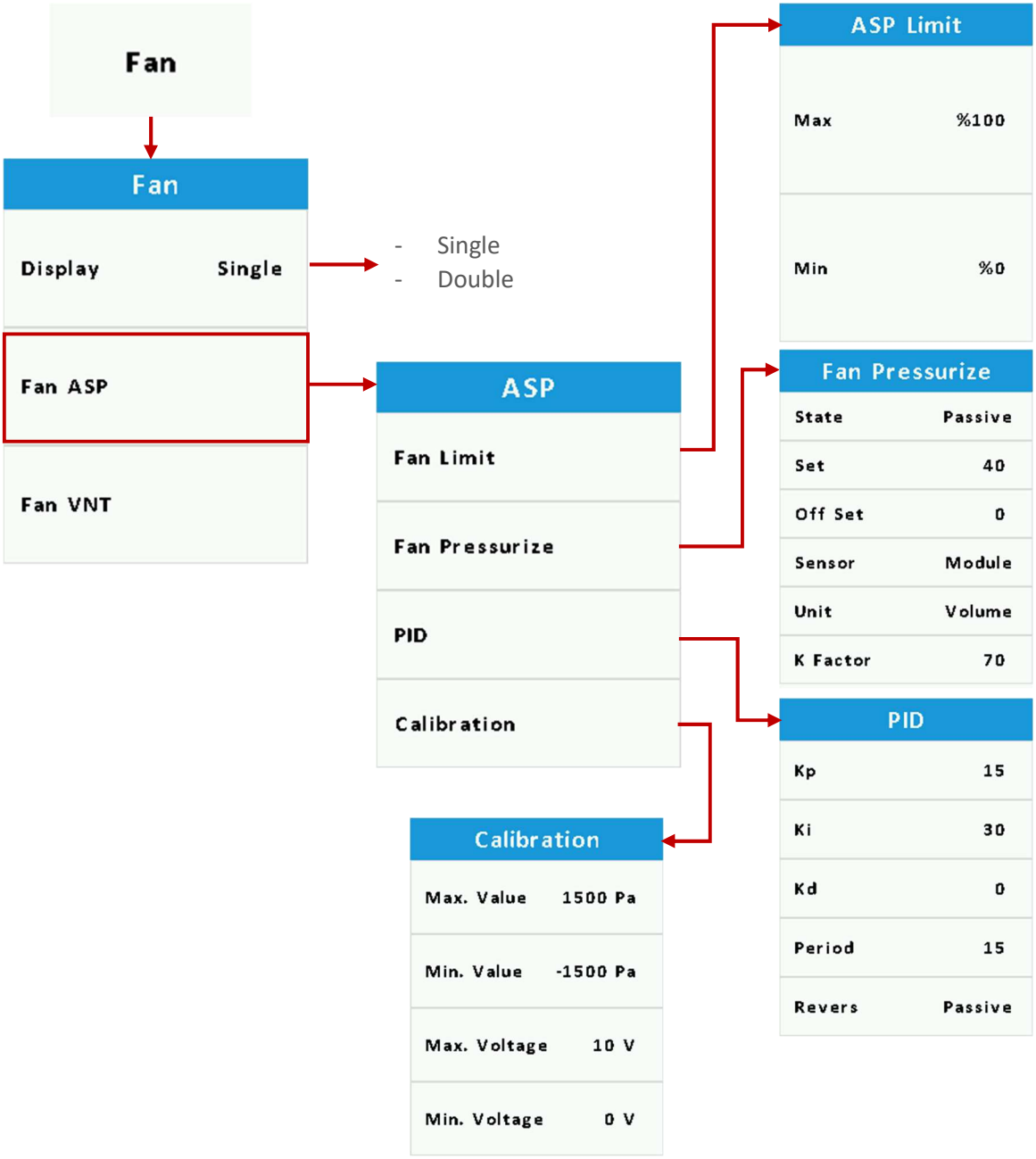
Note: The measure point temperature input you have selected must be assigned to the universal inputs. Note: This setting should be made by factory technicians.

Band Width:

This is the measure temperature and set temperature comparison range.



4.2. Fan Settings



In this menu you can set Aspiration and Ventilation Fans settings.

Fan Limit:

With these settings you give limit for fan speed working area.

Fan Pressurize & PID:

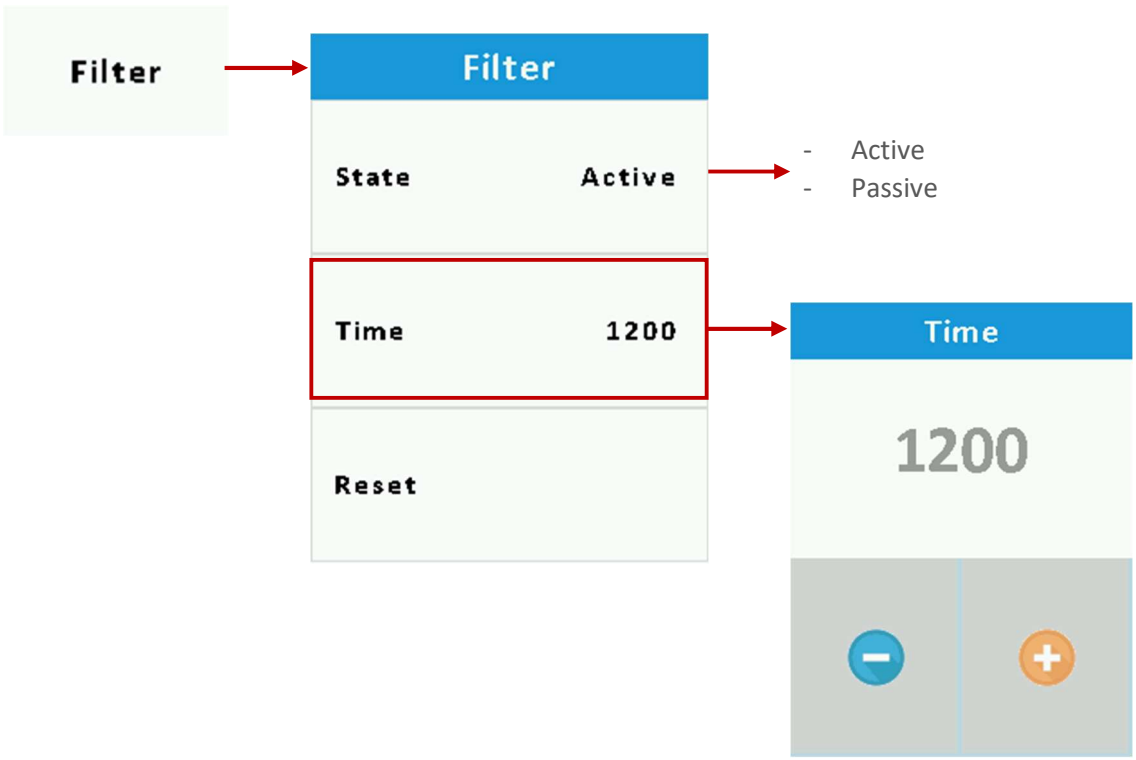
With these settings use for fan pressure or volume control.

Note: These settings work only fan auto mode.

Calibration:

If you have 0-10V pressure sensor, you can use these settings for calibration.

4.3. Filter Settings



The time counter settings use for Filter Dirty warning message,

State :

- If select Active, when system working time pass over Time value then get filter dirty warning.
- If select Passive, this feature will not work.

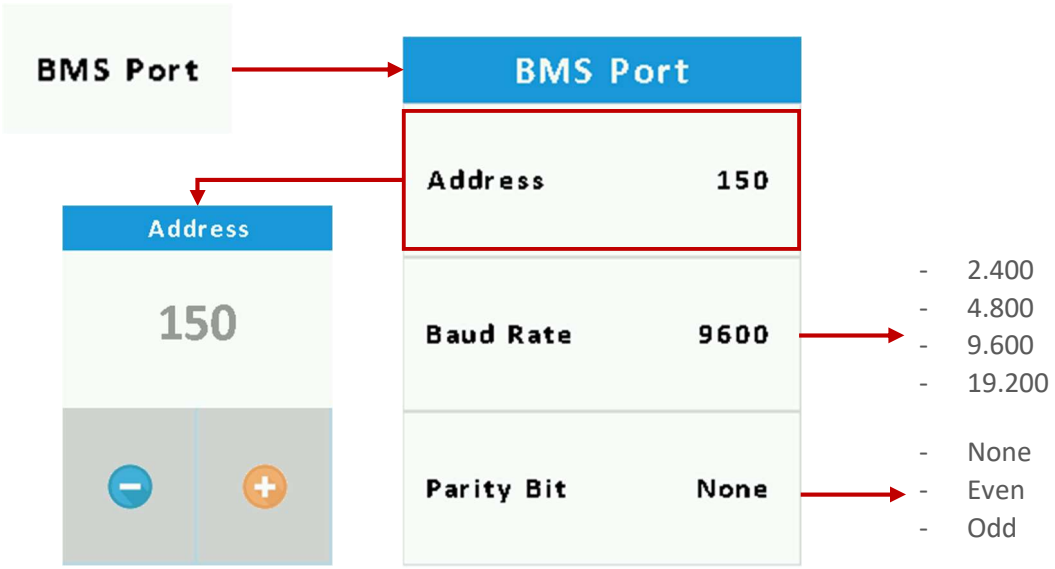
Time:

This time set use for time count. Enter time value in hour.

Reset:

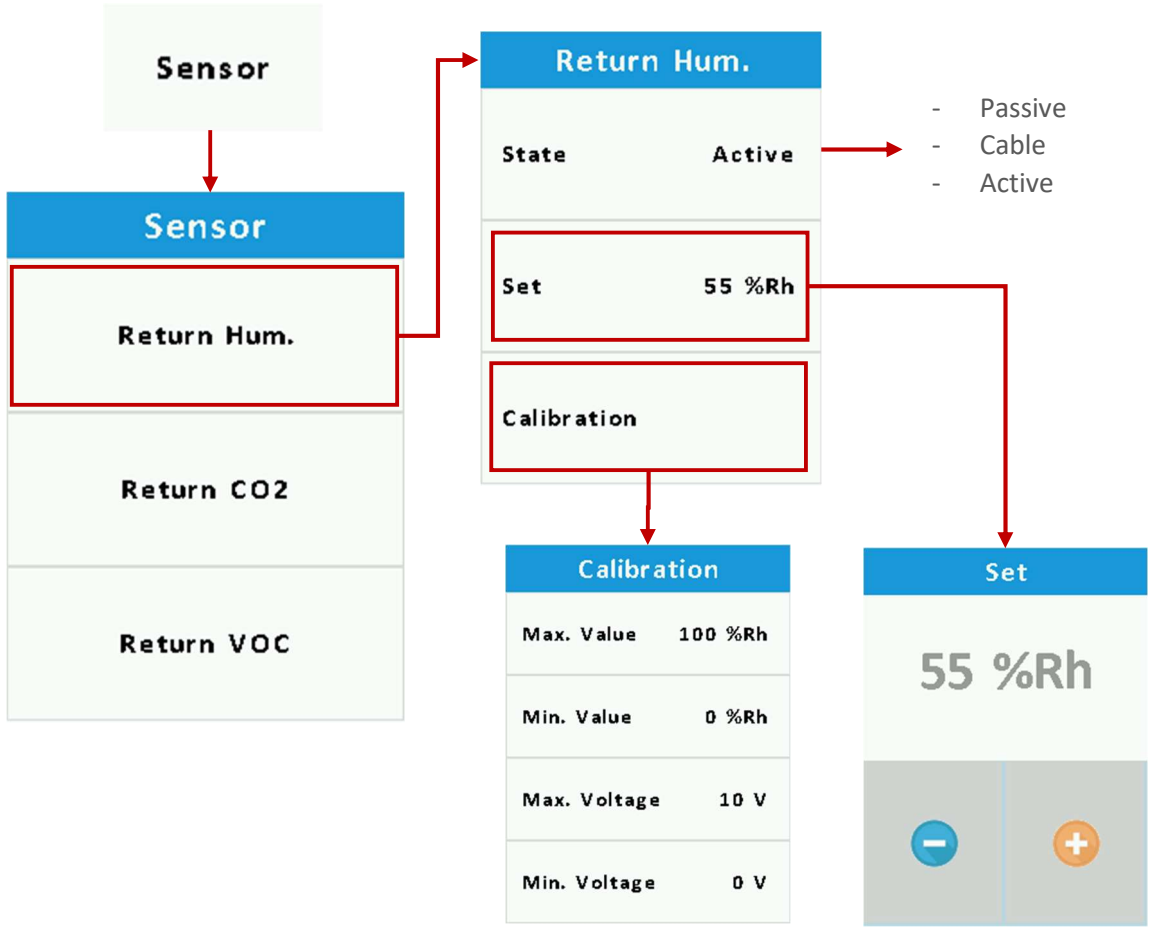
If occurs Filter Dirty Time warning, you can reset warning with this button.

4.4. BMS Communication Settings



These settings use for building management system connections.
You can set Address, Bound Rate and Parity Bit.
Note: If you want to use BMS Port, you must know registers address. You can get register address list from web or supplier.

4.5. Sensors Settings



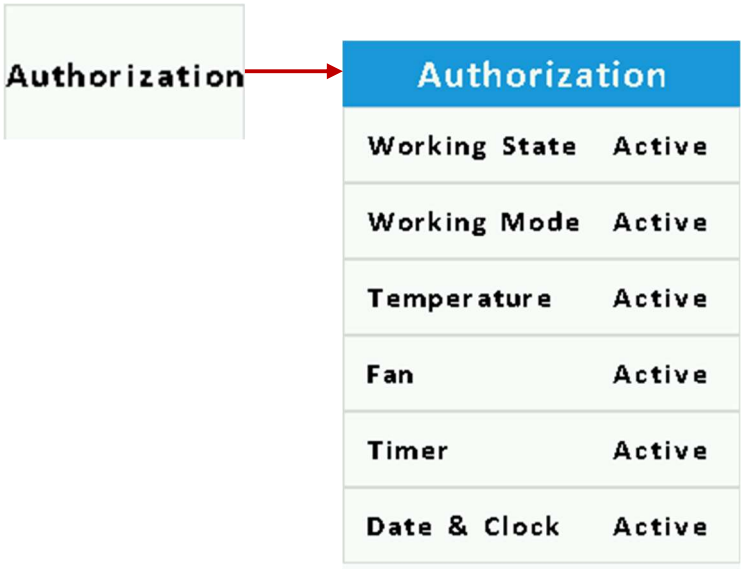
These setting use for active sensors. You can add sensor, calibrate, change set value.
There are three types of sensors.
- Humidity
- Carbon Dioxide
- Volatile Organic Compounds

State:
If you want to use sensor select connection type Cable or Active.
Cable type is our cost-effective sensor.
Active type is 0-10V outputs sensor.

Set:
Set is Fan full level working point.
If sensing value will be over of set, Fans run 6 level until measure value going down.

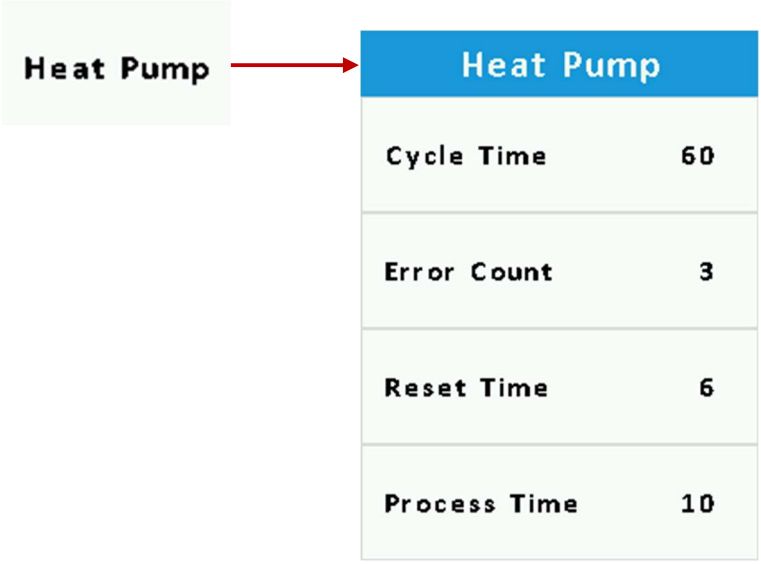
Calibration:
Calibrations settings use converting min and max sensor values to 0-10V.

4.6. User Authorization Settings



These setting use for user limit.
If Active user can be change setting, If Passive user cannot change setting.

4.7. Heat Pump Settings



These setting use for compressor.

Cycle Time:

Cycle times is heating to cooling and cooling to heating changing time.

Error Counter:

Error counter is low pressure error counter. With this counter, the system enter defrost mode.

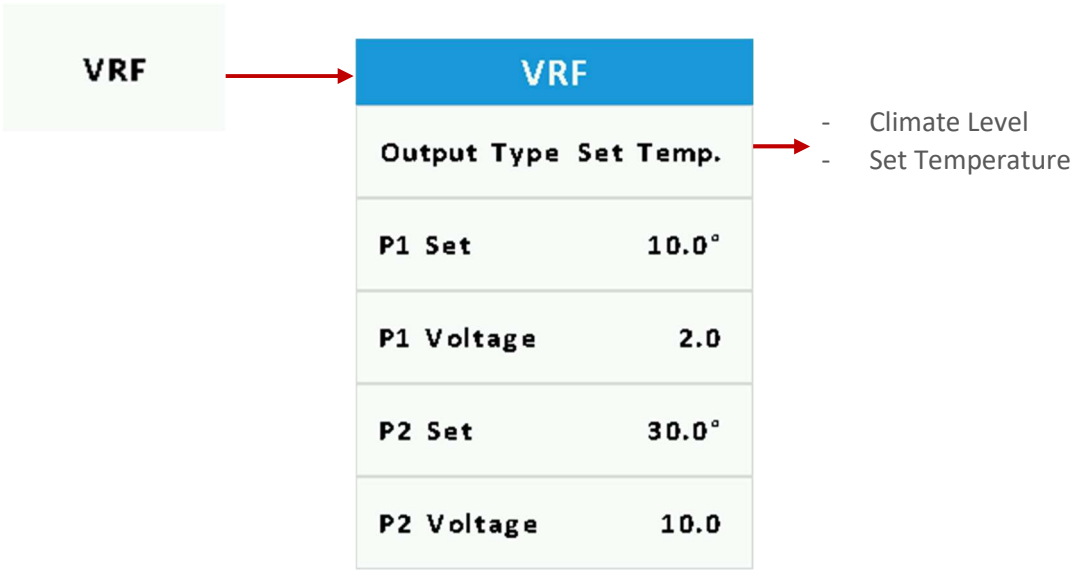
Reset Time:

This error use for automatically resetting error counter. If in this time, error counter not reach to count number automatically reset error counter make zero.

Process Time:

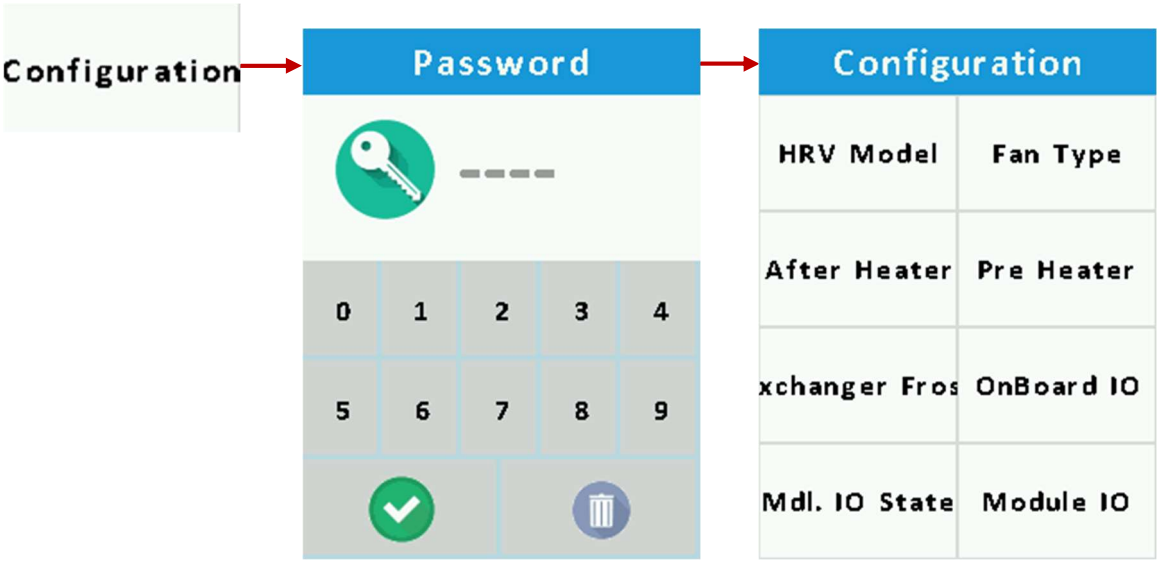
The system remains in defrost mode during this time.

4.8. VRF Settings

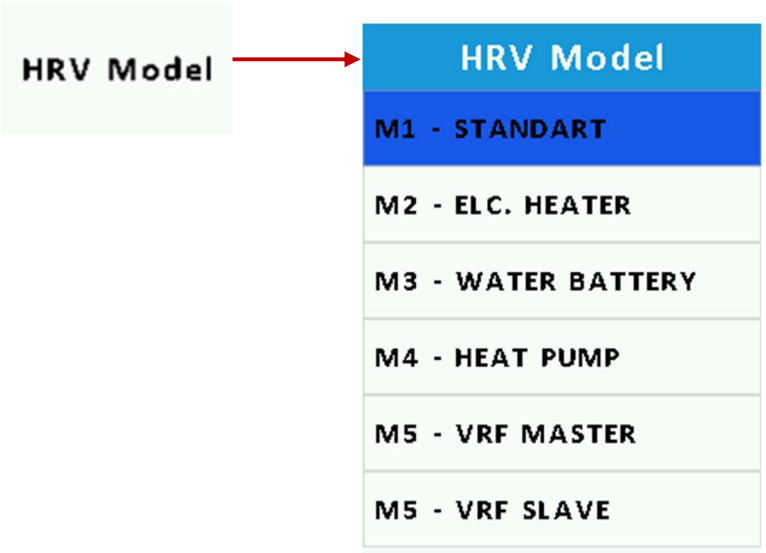


This setting is use for VRF AHU kit.
The system work with two type of AHU Kit
Climate level and Set level.
If you have Climate level working AHU Kit, you can select Output Type is Climate Level.
If you have Setting Temperature working AHU Kit, you can select Output Type is Set Temperature. After that you can calibrate Set Temperature 0-10V voltage outputs with P1 and P2 settings.

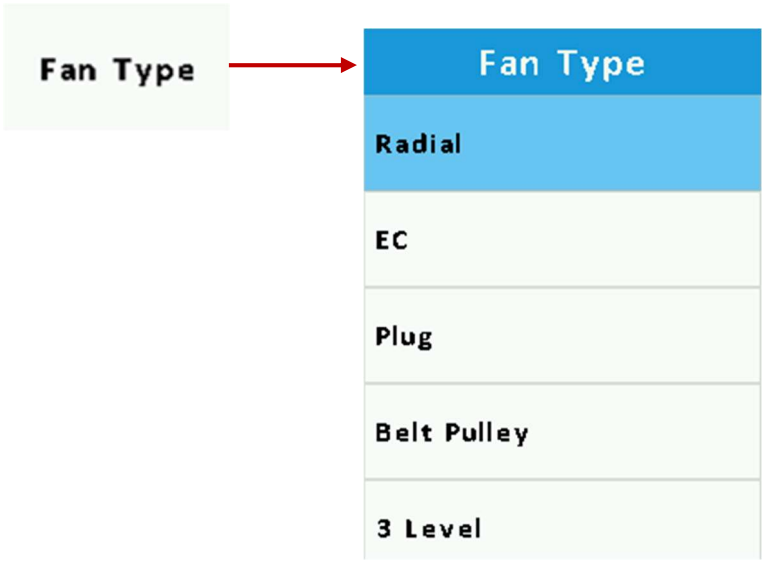
5. Configuration Menu



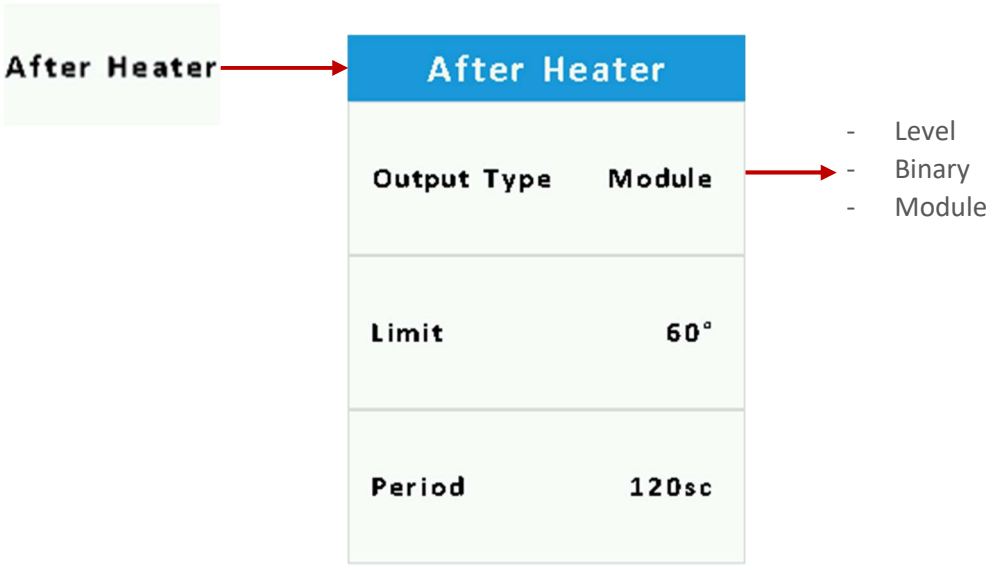
5.1. Scenario Model



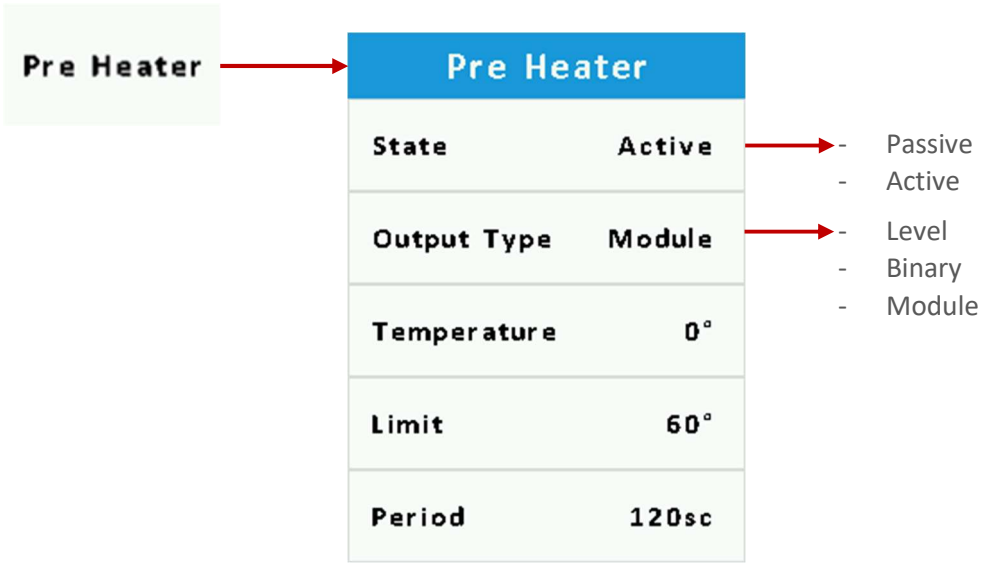
5.2. Fan Type



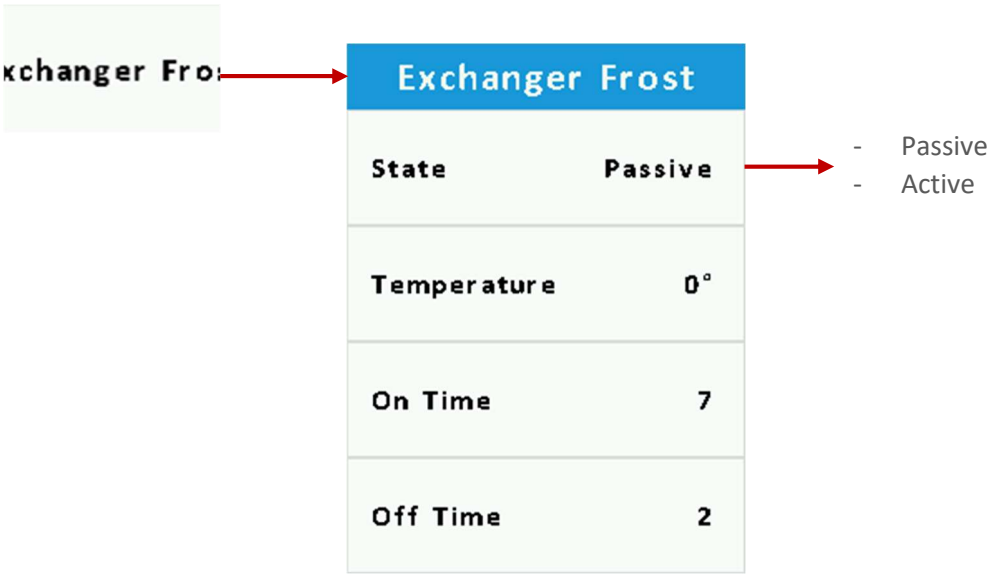
5.3. After Heater



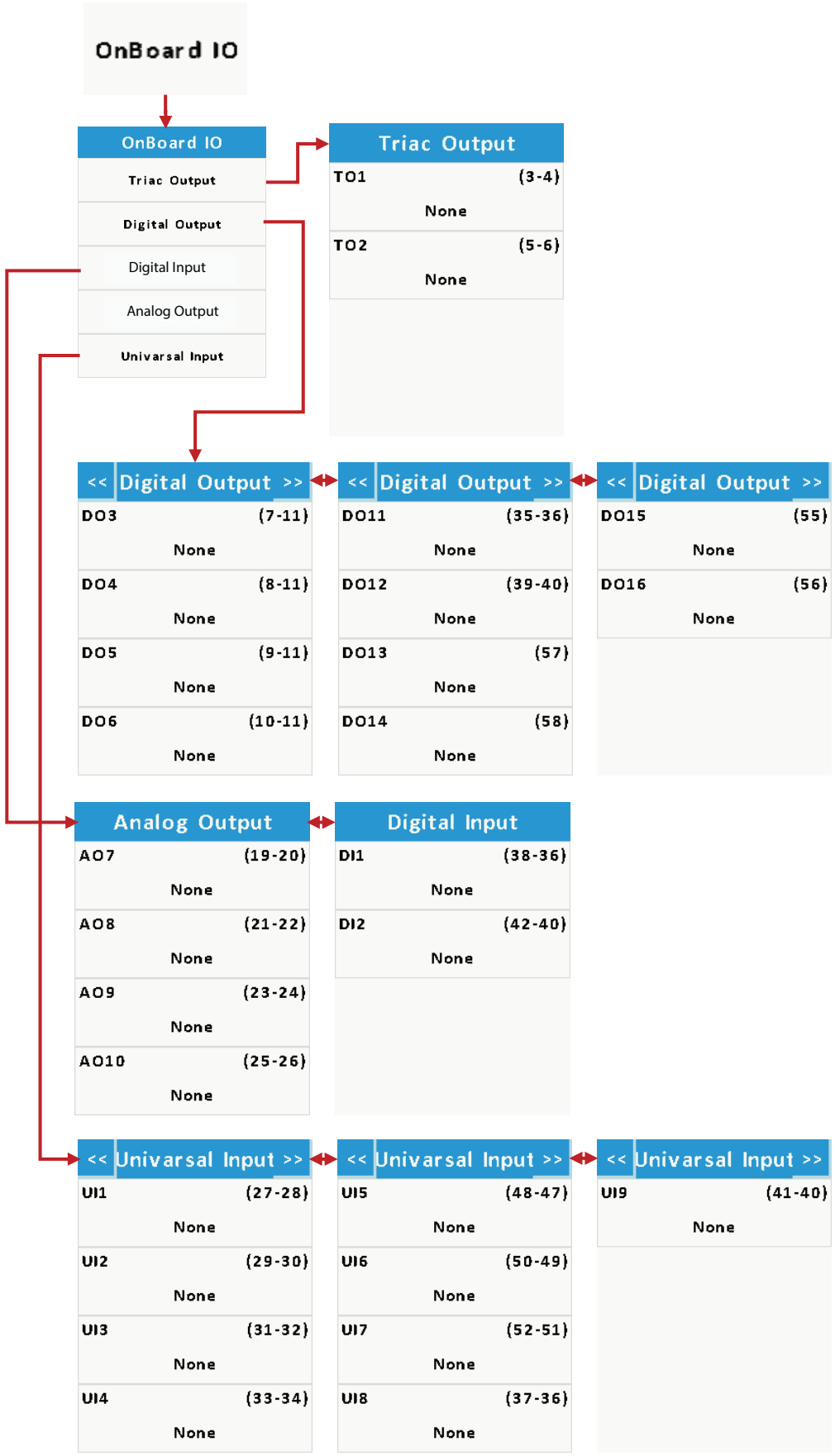
5.4. Pre Heater



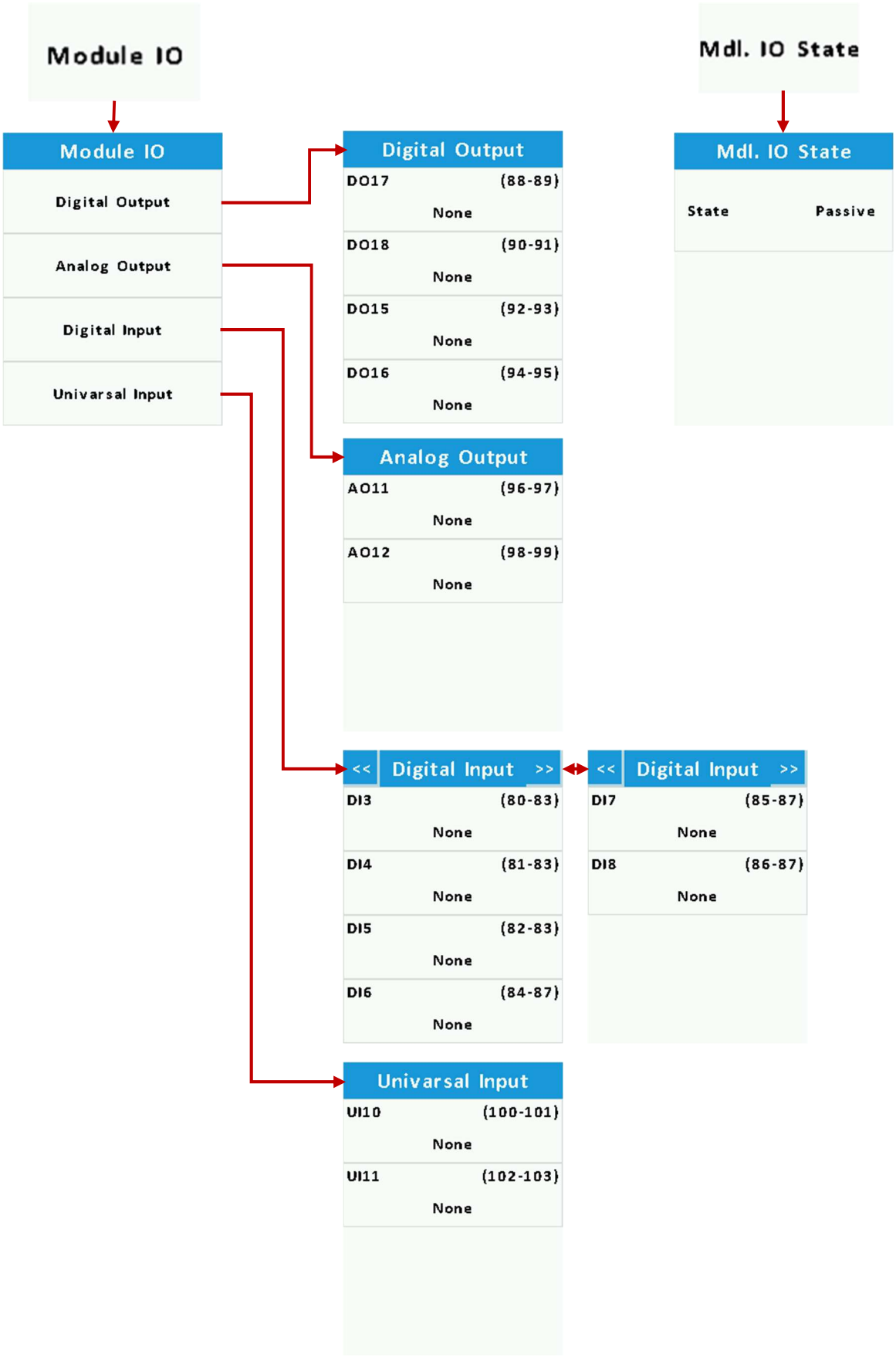
5.5. Exchanger Frost



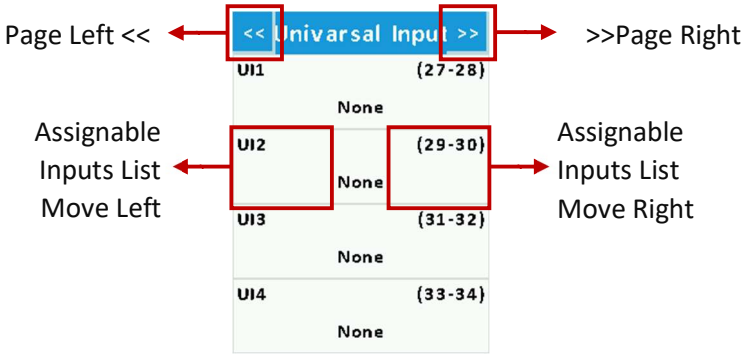
5.6. On Board Inputs and Outputs



5.7. External Module Inputs and Outputs

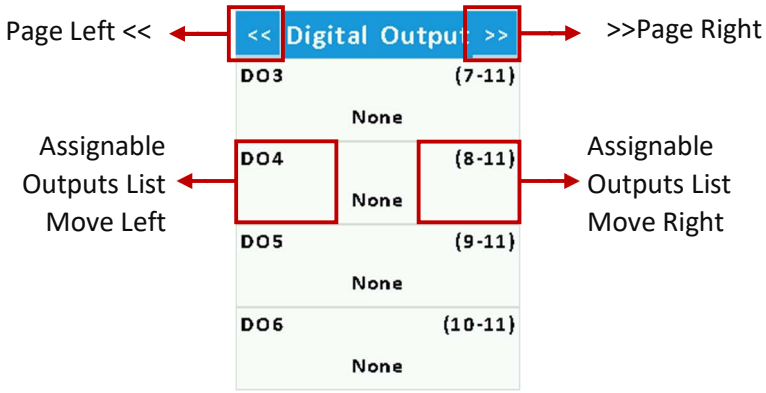


5.8. Assignable Inputs List



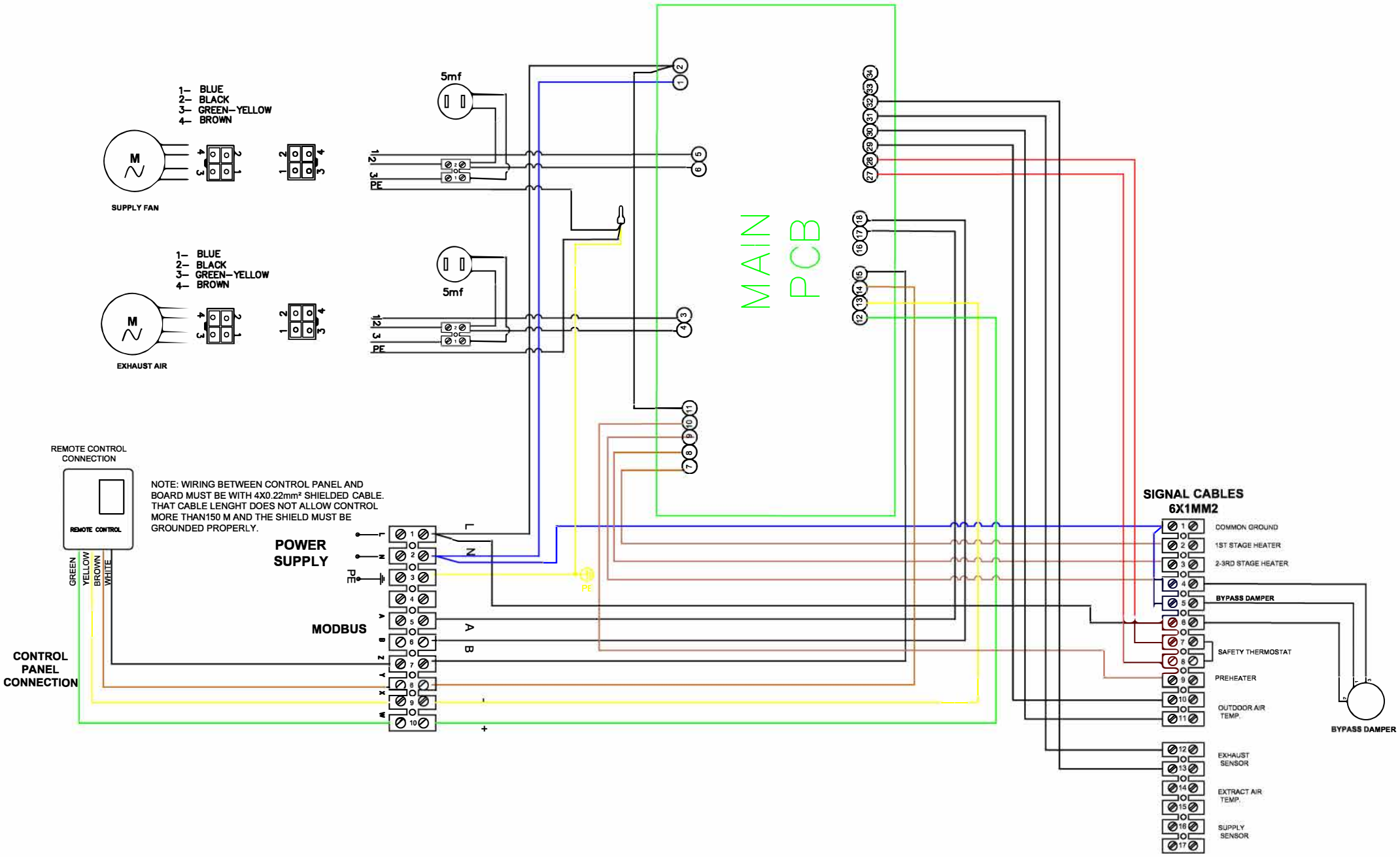
Digital Inputs	
Fire OFF	Compressor Pressures Error
Fire Ventilation	Compressor High Pressure Error
Fire Aspiration	Compressor Low Pressure Error
	Compressor Thermic Error
External Start	
	VRF AHU Kit Defrost
Fans Error	VRF AHU Kit Fan Low Speed
Ventilation Fan Error	VRF AHU Kit Fan Medium Speed
Aspiration Fan Error	VRF AHU Kit Fan High Speed
Fans Error Off (Fans Out OFF)	
Ventilation Fan Error OFF (VNT Out OFF)	Filter Dirty Pressure Switch
Aspiration Fan Error OFF (ASP Fan OFF)	Ventilation Filter Dirty Pressure Switch
Ventilation EC Fan Tacho	Aspiration Filter Dirty Pressure Switch
Aspiration EC Fan Tacho	
	Exchanger Frost Pressure Switch
Boost	
	Water Battery Frost Thermostat (Auto Reset)
After Heater Thermic Error	Water Battery Frost Thermostat OFF(Manuel Reset)
After Heater Limit Warning	
Pre Heater Thermic Error	Ventilation Fan Air Flow Pressure Swicth
Pre Heater Limit Warning	Aspiration Fan Air Flow Pressure Switch
Analog Inputs	
Ventilation Fan Air Pressure Sensor	
Aspiration Fan Air Pressure Sensor	
Room Temperature Sensor NTC10K	
Supply Air Temperature Sensor NTC10K	
Return Air Temperature Sensor NTC10K	
Return Air Humidity Sensor	
Return Air Carbon dioxide Sensor	
Return Air Volatile Organic Compounds Sensor	
Fresh Air Temperature Sensor NTC10K	
After Heater Limit Temperature Sensor NTC10K	
Pre Heater Limit Temperature Sensor NTC10K	

5.9. Assignable Outputs List

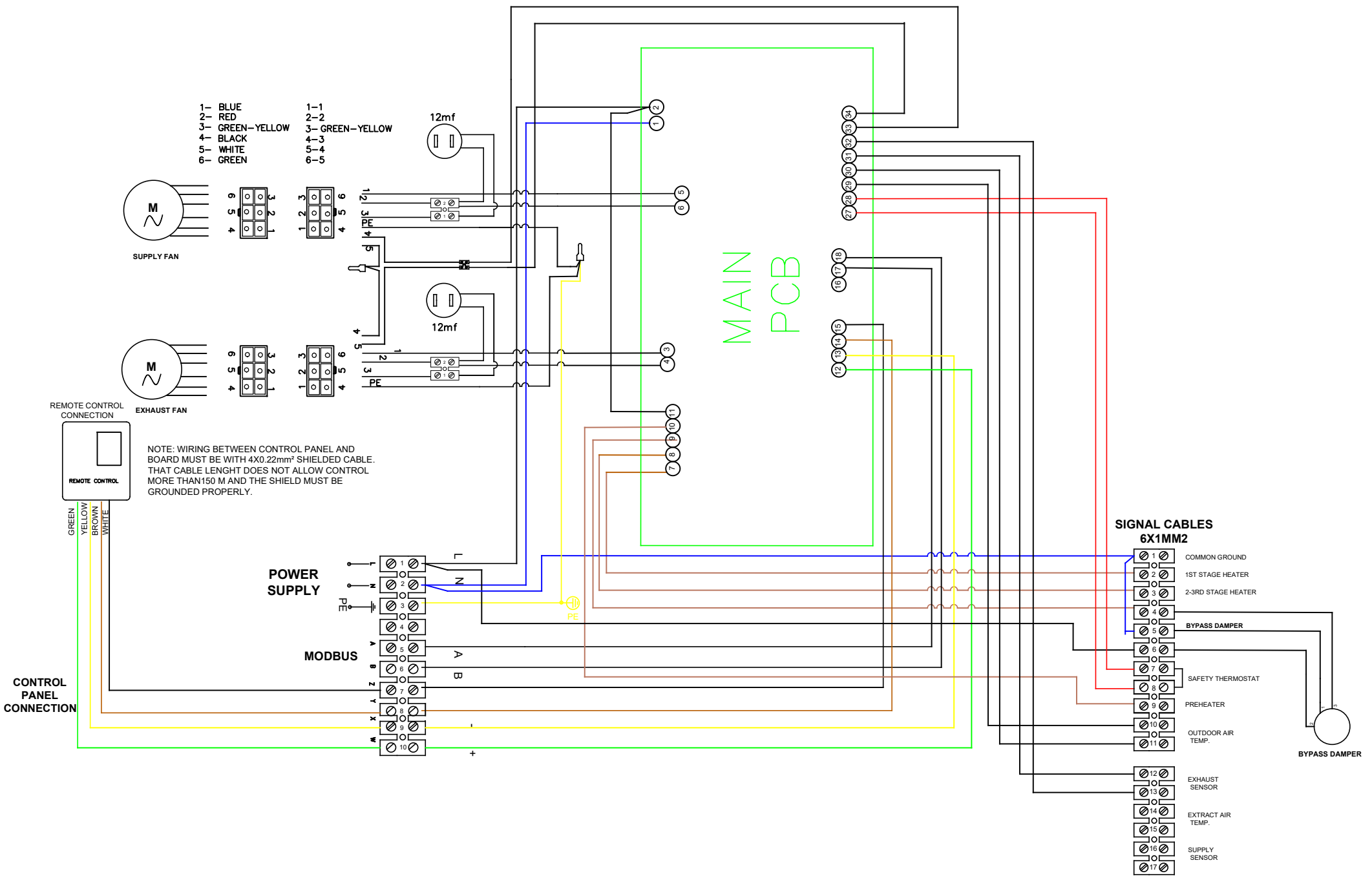


Triac Outputs	Digital Outputs	Analog Outputs
Ventilation Fan Level	Working State	Ventilation Fan Ration
Aspiration Fan Level	Alarm State	Aspiration Fan Ration
	Bypass Damper	Climate Ration
	Air Inlet Damper	Cooler Ration
	Cooler	Heater Ration
	Heater	
	Ventilating Fan Start	
	Aspiration Fan Start	
	Ventilation Fan Level 1	
	Ventilation Fan Level 2	
	Ventilation Fan Level 3	
	Aspiration Fan Level 1	
	Aspiration Fan Level 2	
	Aspiration Fan Level 3	
	After Heater Out 1	
	After Heater Out 2	
	After Heater Out 3	
	After Heater Out PWM	
	Pre Heater Out 1	
	Pre Heater Out 2	
	Pre Heater Out 3	
	Pre Heater Out PWM	
	Compressor	
	4 Way Valve	

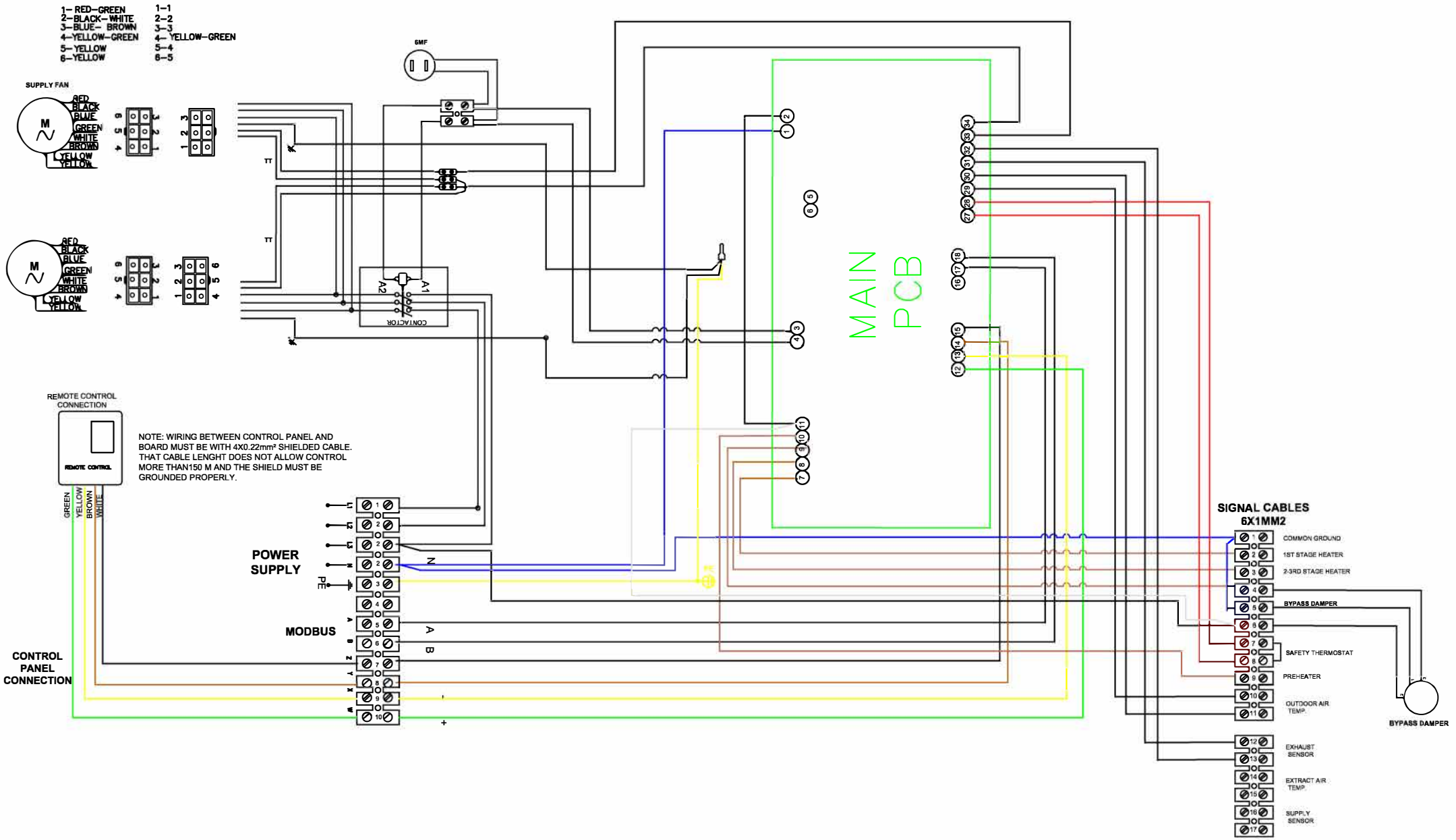
JRHB1000-2000 wiring diagram



JRHB3000-4000-5000 Wiring Diagram

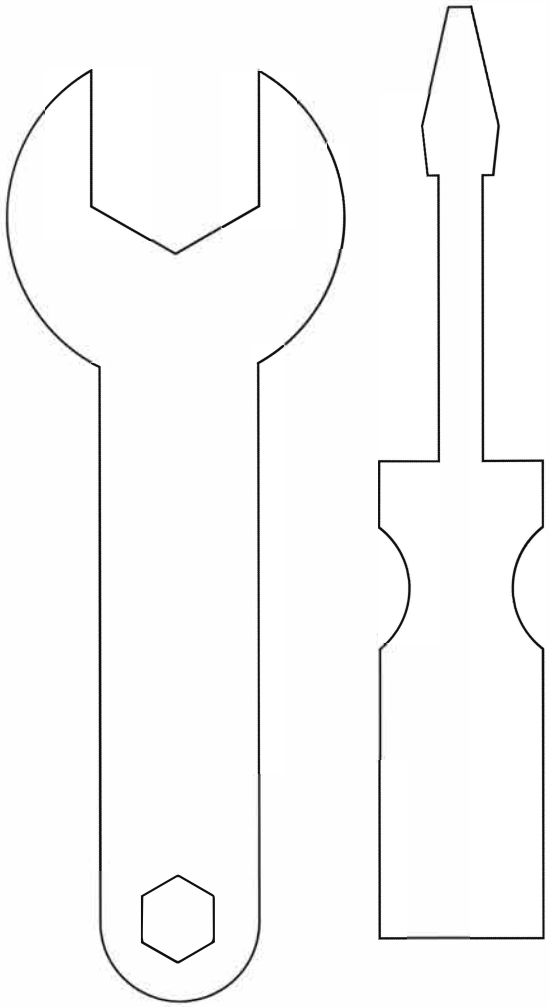


JRHB 6000 EC Fan Wiring Diagram



FAULT	REASON	SOLUTION
FANS DO NOT WORK	**a.** Power supply off	**a.** Turn on the power supply
	b. No signal from the control panel	**b.** Press the correct buttons of the control panel
	c. Incorrect or loose electrical connection	**c.** Connect connections correctly
	d. Motors in thermal protection mode ***e.** No signal from the frequency inverter	**d.** Check motor current ***e.** Check the error code on the frequency inverter's screen
FANS RETURN TO REVERSE DIRECTION	**a.** Phase connection is not correct	**a.** Make the correct phase connection
LOW AIR FLOW	**a.** Filters clogged or dirty.	**a.** Change or clean filters
	b. Air duct is clogged	**b.** Check the air ducts
	c. Channel connections are incomplete.	**c.** Check the duct system for leaks and complete the connections
HIGH AIR FLOW	**a.** Channel connections are incomplete.	**a.** Check the duct system for leaks and complete the connections
	b. Supply voltage is low	**b.** Measure the current drawn by the motor against overloading
	c. Grilles are not mounted	**c.** Mount the grilles
	d. Filters are not mounted	**d.** Mount the filters
DRAINAGE WATER CAN NOT BE DISCHARGED	**a.** Drainage plugged	**a.** Clean drain pipe
	b. Incorrect installation of drainage pipe.	**b.** Mount the drain pipe correctly

***Frequency inverters are accessory (Not included in standart equipment).**



▶ For Troubleshouting **Please Contact**

Boulevard Zoran Djindjic, 80, 11070 Novi Beograd
Tel: +381 11 2600 901 • Fax: +381 11 2600 906
www.jakkagroup.com • jakkagroup@jakkagroup.com

JAK·KA®
www.jakkagroup.com