Catalog

MAC-C-2009

Air-Cooled Mini Chiller

Models: MAC 020-150 C/CR
M4AC 020-150 C/CR
M5AC 020-055CR

Engineered for flexibility and performance.™

McQuay® Air Conditioning

Table of Contents

This manual supercedes MAC-C-2008

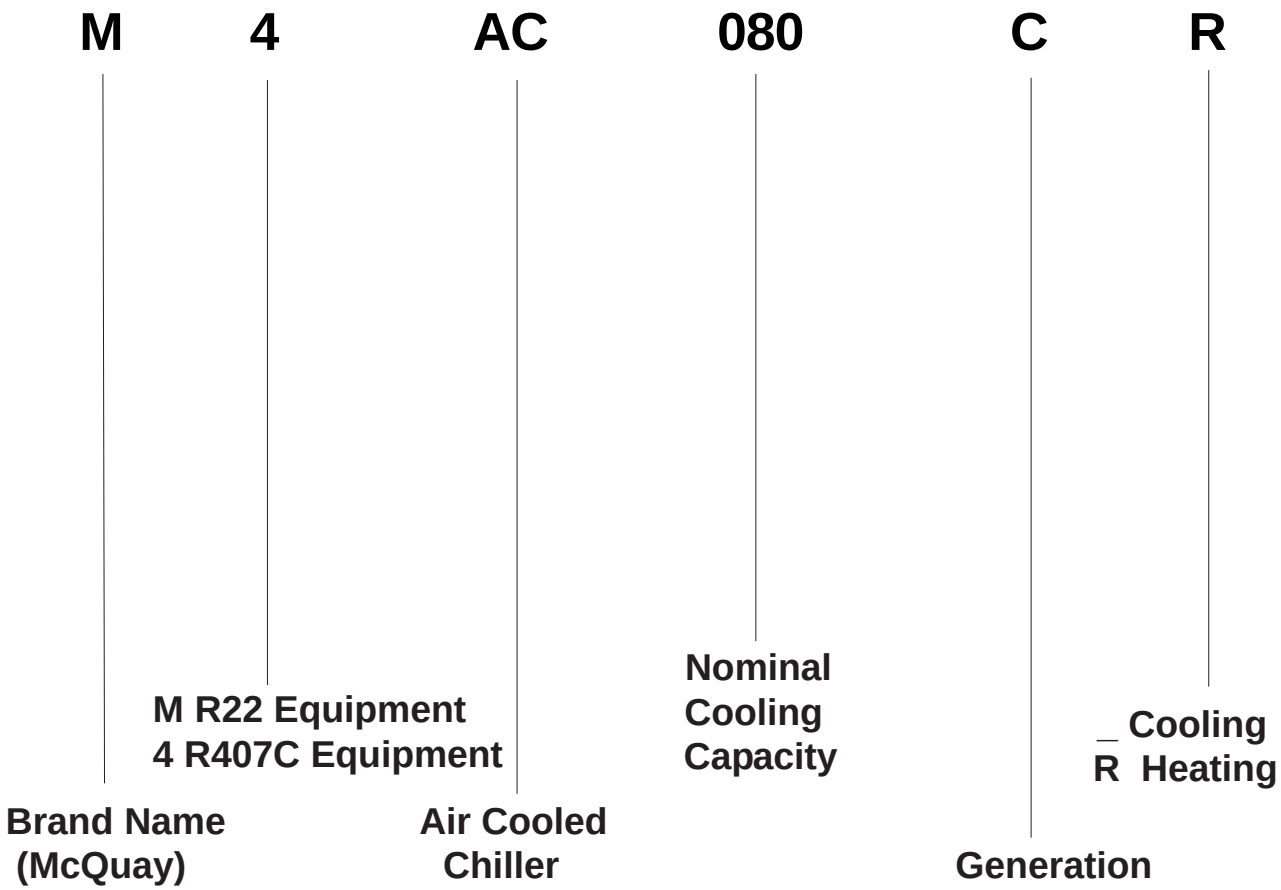
Note : Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.

Caution : Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

Warning : Moving machinery and electrical power hazard. May cause severe personnel injury or death. Disconnect and lock off power before servicing equipment.

CE

Nomenclature



Product Line Up

MAC-C/CR

Model name		Nomenclature	Classification															
			PCB - MC01	Magnetic contactor	LCD Panel - Chiller Panel	CE mark	Scroll compressor	Rotary compressor	Terminal block	Water tank + pump	Pump only	Expansion tank	Gold fin	Anti freeze & auto pump on	Phase protector	CCH (crank case heater)	Single phase fan motor	Capillary Tube
MAC	020C	AXAA	x	x	x	x		x	x	x		x		x				x
		AXAB	x	x	x	x		x	x	x		x	x	x				x
	025C	AXAA	x	x	x	x	x		x	x		x		x		x		x
		AXAB	x	x	x	x	x		x	x		x	x	x		x		x
	030C	AXAA	x	x	x	x	x		x	x		x		x		x		x
		AXAB	x	x	x	x	x		x	x		x	x	x		x		x
	040C	FXAA	x	x	x	x	x		x	x		x		x	x	x		x
		FXAB	x	x	x	x	x		x	x		x	x	x	x	x		x
	050C	FXAA	x	x	x	x	x		x	x		x		x	x	x		x
		FXAB	x	x	x	x	x		x	x		x	x	x	x	x		x
	060C	FXAA	x	x	x	x	x		x	x		x		x	x	x		x
		FXAB	x	x	x	x	x		x	x		x	x	x	x	x		x
	080C	FXAC	x	x	x	x	x		x		x	x	x	x	x	x		x
		FXAD	x	x	x	x	x		x		x	x		x	x	x	x	x
	100C	FXAC	x	x	x	x	x		x		x	x	x	x	x	x		x
		FXAD	x	x	x	x	x		x		x	x		x	x	x	x	x
	120C	FXAC	x	x	x	x	x		x		x	x	x	x	x	x		x
		FXAD	x	x	x	x	x		x		x	x		x	x	x	x	x
	150C	FXAC	x	x	x	x	x		x		x	x	x	x	x	x		x
		FXAD	x	x	x	x	x		x		x	x		x	x	x	x	x
	020CR	AXAA	x	x	x	x		x	x	x		x	x	x				x
	025CR	AXAA	x	x	x	x	x		x	x		x	x	x		x		x
	030CR	AXAA	x	x	x	x	x		x	x		x	x	x		x		x
	040CR	FXAA	x	x	x	x	x		x	x		x	x	x	x	x		x
	050CR	FXAA	x	x	x	x	x		x	x		x	x	x	x	x		x
	060CR	FXAA	x	x	x	x	x		x	x		x	x	x	x	x		x
	080CR	FXAC	x	x	x	x	x		x		x	x	x	x	x	x	x	x
	100CR	FXAC	x	x	x	x	x		x		x	x	x	x	x	x	x	x
	120CR	FXAC	x	x	x	x	x		x		x	x	x	x	x	x	x	x
	150CR	FXAC	x	x	x	x	x		x		x	x	x	x	x	x	x	x

M4AC-C/CR

Model name		Nomenclature	Classification																	
			PCB - MC01	Magnetic contactor	LCD Panel - Chiller Panel	CE mark	Scroll compressor	Rotary compressor	Isolator switch	Terminal block	Gold fin	Water tank + pump	Expansion tank	Pump only	Anti freeze & auto pump on	Phase protector	CCH (crank case heater)	Capillary Tube	TXV	Single phase fan motor
M4AC	020C	AXAA	x	x	x	x		x		x		x	x		x			x		
		AXAB	x	x	x	x		x		x	x	x	x		x			x		
	025C	AXAA	x	x	x	x	x			x		x	x		x		x	x		
		AXAB	x	x	x	x	x			x	x	x	x		x		x	x		
	030C	AXAA	x	x	x	x	x			x		x	x		x		x	x		
		AXAB	x	x	x	x	x			x	x	x	x		x		x	x		
	040C	FXAA	x	x	x	x	x			x		x	x		x	x	x	x		
		FXAB	x	x	x	x	x			x	x	x	x		x	x	x	x		
	050C	FXAA	x	x	x	x	x			x		x	x		x	x	x	x		
		FXAB	x	x	x	x	x			x	x	x	x		x	x	x	x		
	060C	FXAA	x	x	x	x	x			x		x	x		x	x	x	x		
		FXAB	x	x	x	x	x			x	x	x	x		x	x	x	x		
	080C	FXAG	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	100C	FXAG	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	120C	FXAG	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	150C	FXAG	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	020CR	AXAA	x	x	x	x		x		x	x	x	x		x			x		
	025CR	AXAA	x	x	x	x	x			x	x	x	x		x		x	x		
	030CR	AXAA	x	x	x	x	x			x	x	x	x		x		x	x		
	040CR	FXAA	x	x	x	x	x			x	x	x	x		x	x	x	x		
	050CR	FXAA	x	x	x	x	x			x	x	x	x		x	x	x	x		
	060CR	FXAA	x	x	x	x	x			x	x	x	x		x	x	x	x		
	080CR	FXAD	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	100CR	FXAD	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	120CR	FXAD	x	x	x	x	x		x		x		x	x	x	x	x	x		x
	150CR	FXAD	x	x	x	x	x		x		x		x	x	x	x	x	x		x

M5AC-CR

Model name		Nomenclature	Classification												
			PCB - MC01	Magnetic contactor	LCD Panel - Chiller Panel	CE mark	Rotary compressor	Terminal block	Gold fin	Water tank + pump	Expansion tank	Pump only	Anti freeze & auto pump on	Capillary Tube	TXV
M5AC	020CR	AXAA	x	x	x	x	x	x	x	x	x		x	x	
	025CR	AXAA	x	x	x	x	x	x	x	x	x		x	x	
	030CR	EXAA	x		x	x	x	x	x		x	x	x	x	x
	040CR	EXAA	x		x	x	x	x	x		x	x	x	x	x
	050CR	EXAA	x		x	x	x	x	x		x	x	x	x	x
	055CR	EXAA	x		x	x	x	x	x		x	x	x	x	x

Features

Refrigerant Circuit

Models MAC/M4AC080~150C/CR has been designed with two separate refrigerant circuits, i.e. it has two compressors. By doing so, the unit has part loading capabilities, i.e. 0-50-100% of rated capacity. This will improve the reliability and energy efficiency of the unit, especially during low loading operations. Each circuit is factory brazed and evacuated before accurately charged with refrigerant to ensure optimum performance. Because each circuit is separated, there is no danger of cross-contamination should either one of the compressor experiences a burnt-up. Each circuit is also equipped with a carefully sized thermostatic expansion valve (for cooling only units) to give optimum performance characteristic. For the heatpump version, the expansion process is done with capillary tubes.

Scroll Compressor

Scroll Compressors are used (for model which is available) for the units (MAC/M4AC020C/CR using rotary compressor) to give quiet and reliable performance over a wide operating temperature range. However, in order to protect the compressors from damage, a phase protector (for model which is available) is provided to prevent the compressors from rotating in the wrong directions.

Tandem Compressor

M5AC models are using R410A rotary compressors in tandem configuration. Tandem compressors are highly efficient and cost saving. It reduces mechanical losses, minimize gas flow losses and turbulence. There are 3 steps capacity loading (0-40-60-100%) for M5AC040/050CR and 2 steps capacity loading (0-50-100%) for M5AC030/055CR.

Condenser Fan Motor

Models MAC/M4AC080~150C/CR is equipped with two high air flow propeller fan blades which are made of metal. The fans are driven vertically by weather proof motors which are single phase type.

Evaporator

The heat exchanger is made of stainless steel plates closely arranged and brazed together (BPHE) to ensure high heat exchange efficiency. For models MAC/M4AC080~150C/CR, the water flow through the BPHE in a channel on its own, while because of the two compressors, the refrigerant flows through another two separate channels. The refrigeran t will either be in a counter-flow or parallel-flow with respect to the water, depending on the mode of operation (cooling or heating).

Safety Procetection

The safety protections provided for the mini chiller are:

a) High and low pressure switches
b) Differential water flow switch
c) Compressor, water pump and fan motor overload protectors
d) Anti-freeze protection sensor

During abnormal condition, chiller panel controller will turn off the unit and then display the faults of operation.

Water Tank And Piping Connection

The models M4AC/MAC080~150C/CR does not come with a water buffer tank. However, the unit does come with an 8 liters expansion tank. Besides that, an optional 135L hydraulic tank is also available.

The external water piping connection can be made either from the left or right side of the unit. Connection is done with Ø1-1/4 " female thread couplings for both supply and return pipes.

Meanwhile, MAC/M4AC020~060C/CR does come with a 22 L or 40 L (refer to specification) water buffer tank.

Antifreeze Protection

The chiller unit has several anti-freeze protection features:

1. **Brazed plate heat exchanger anti-freeze**
   The BPHE has a strip heater around it to prevent water freezing inside
2. **Auto mode**
   The chiller controller will force on the unit to the heat mode if the outdoor ambient air temperature becomes too cold.

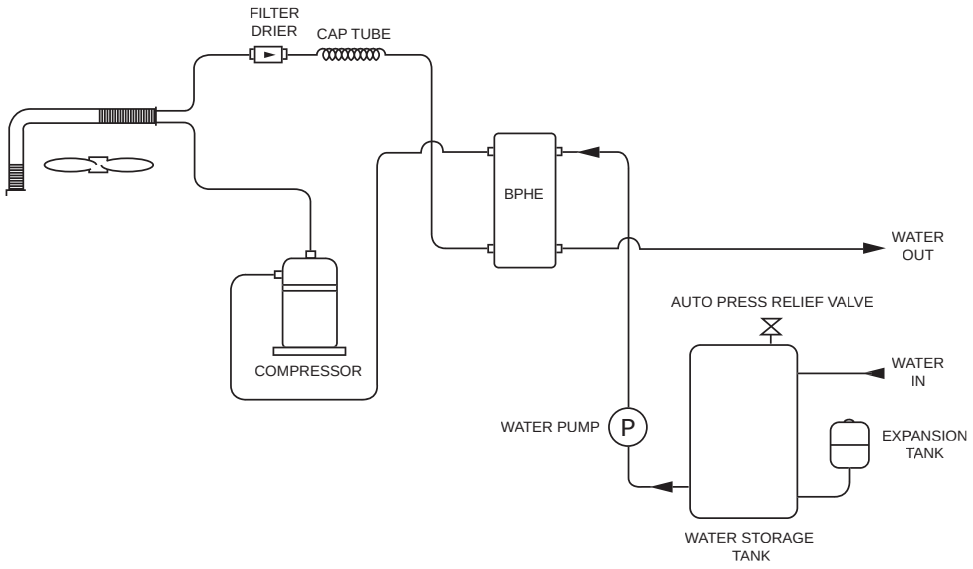
Maintenance

In order to facilitate of the controller, a rocker switch is provided to power-off the supply to the PCB. However, switching off the switch will not disconnect the main incoming power supply to the chiller unit.

Application Information

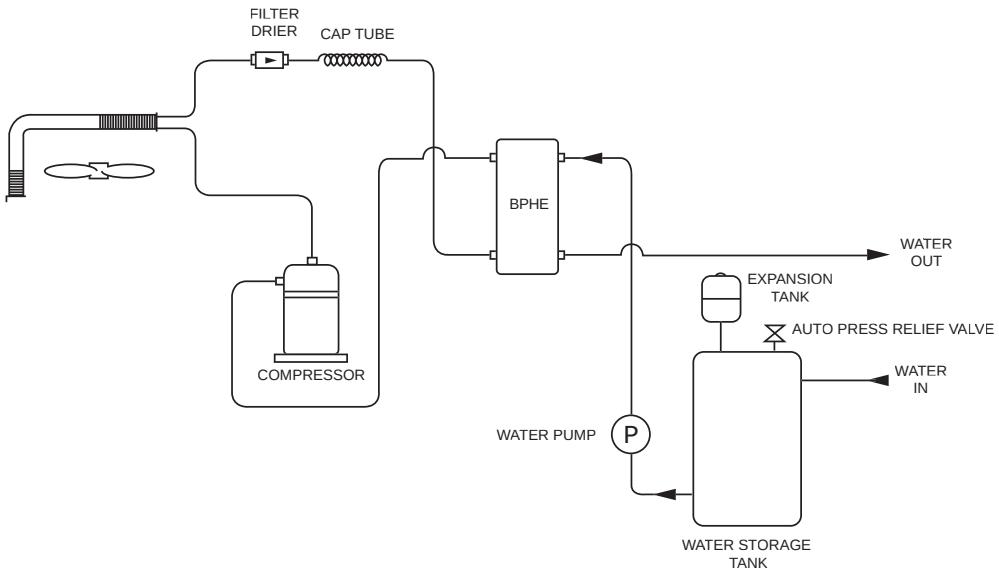
Refrigerant Circuit Diagram

M4AC / MAC 020C / 025C / 030C
Water / Refrigerant Circuit Diagram



PART NO : 70-03-4-0674(

M4AC / MAC 040C / 050C / 060C
Water / Refrigerant Circuit Diagram



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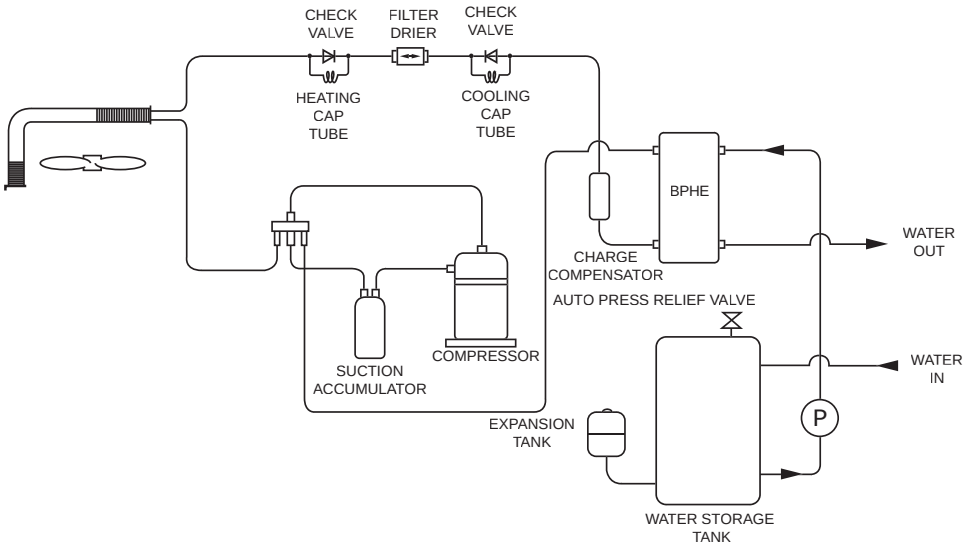
M4AC / MAC 020CR / 025CR / 030CR
Water / Refrigerant Circuit Diagram



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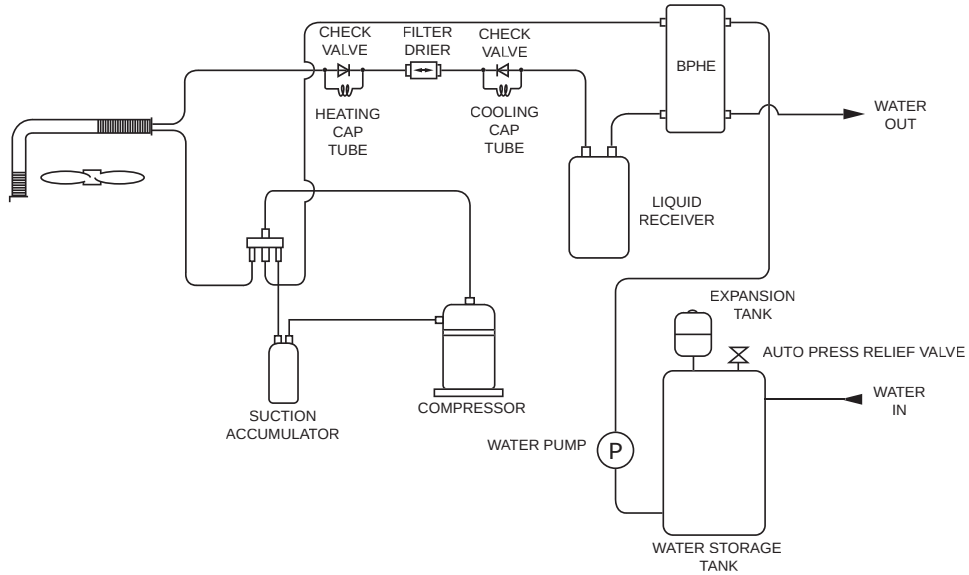
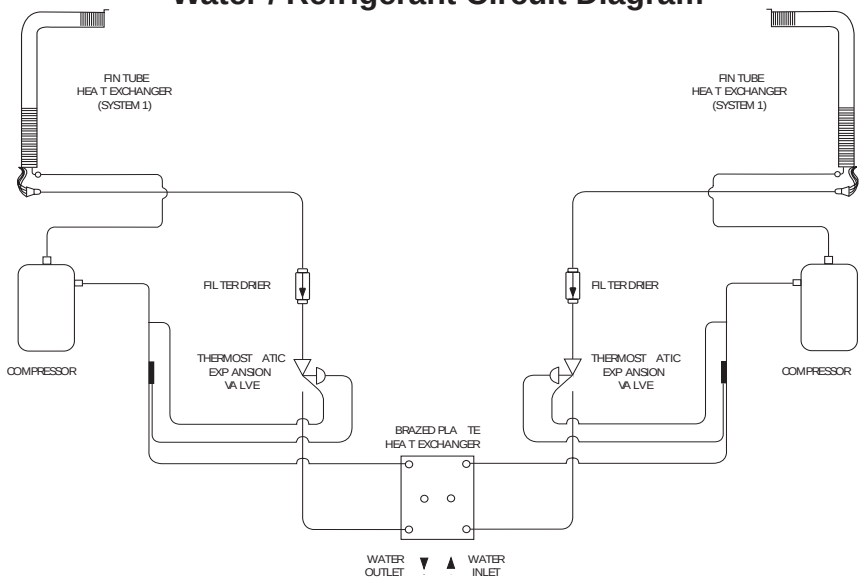
M4AC / MAC 040CR / 050CR / 060CR
Water / Refrigerant Circuit Diagram

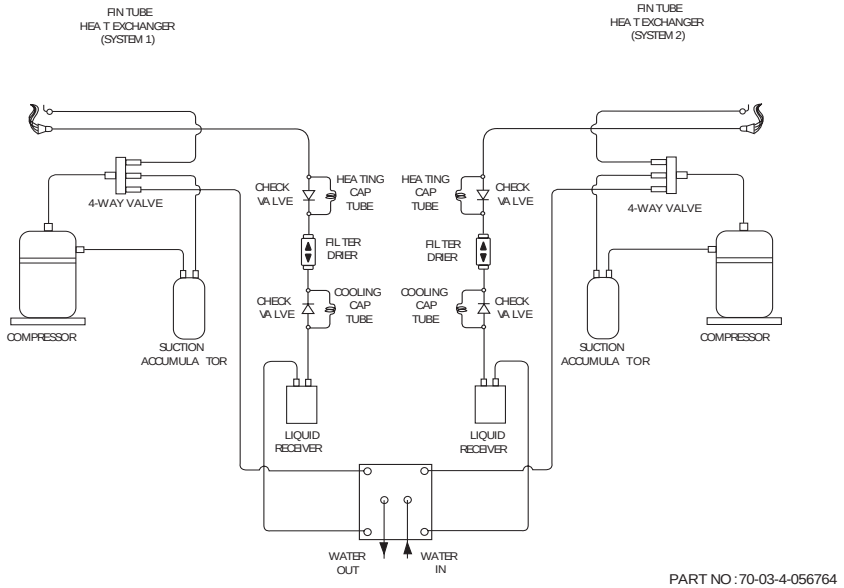


PART NO : 70-03-4-0674S

M4AC / MAC 080C / 100C / 120C / 150C
Water / Refrigerant Circuit Diagram

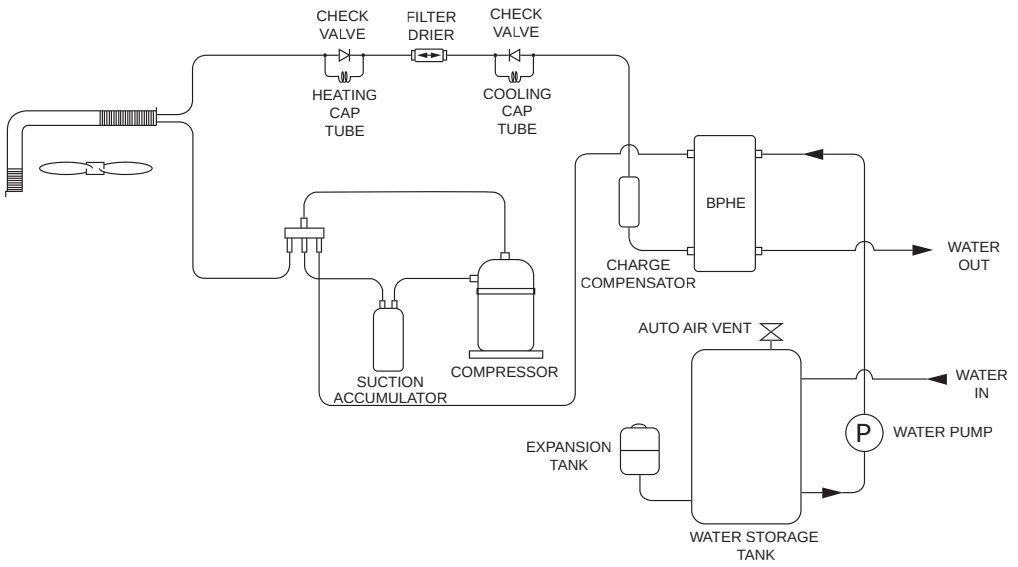


M4AC / MAC 080CR / 100CR / 120CR / 150CR
Water / Refrigerant Circuit Diagram



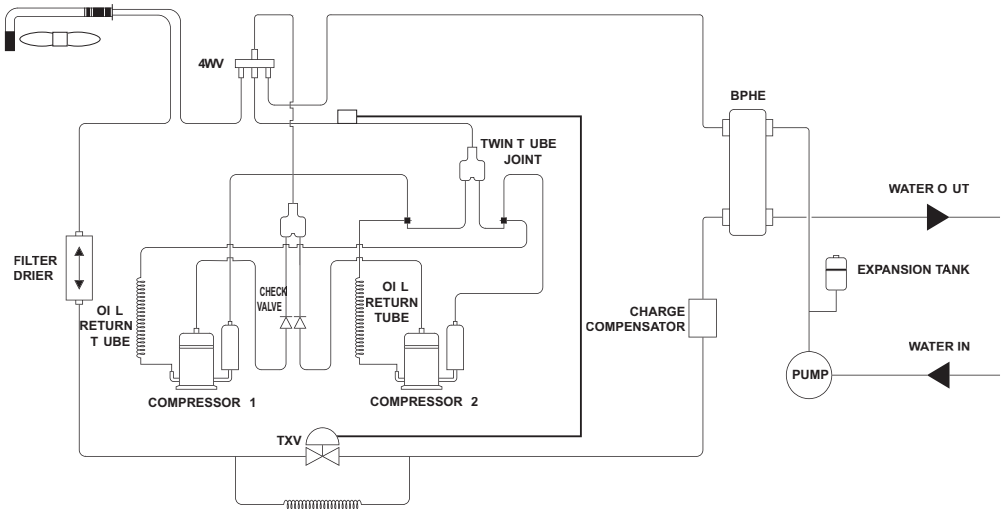
PART NO : 70-03-4-056764

M5AC 020CR / 025CR
Water / Refrigerant Circuit Diagram

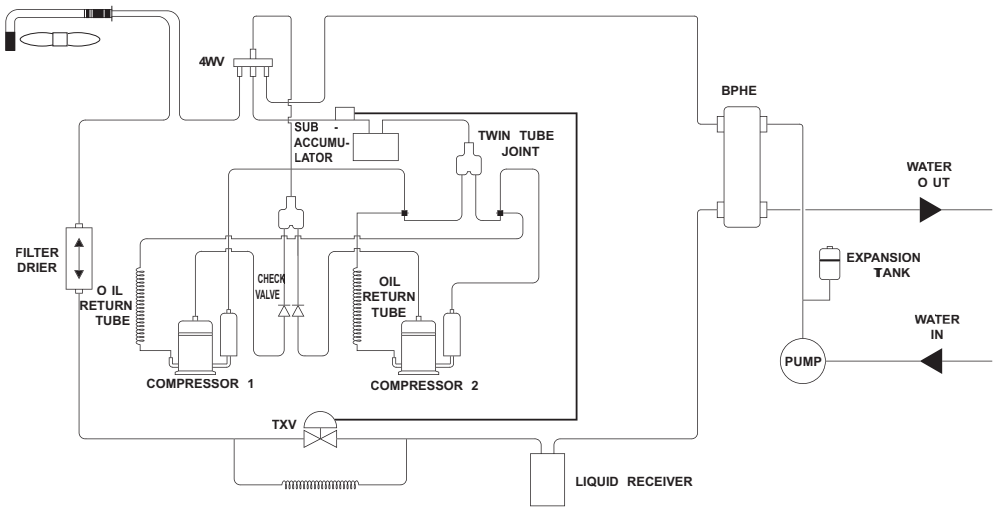


PART NO : 70-03-4-08054

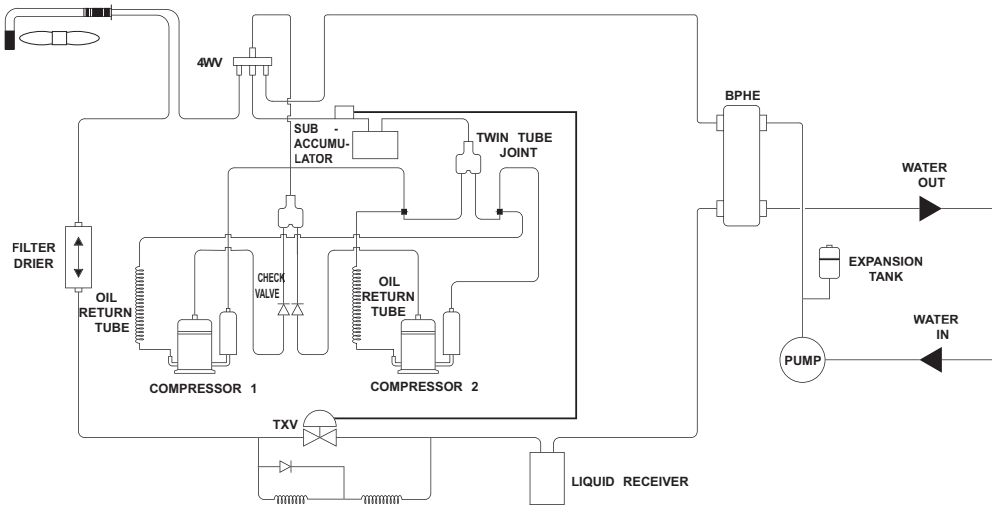
M5AC 030CR
Water / Refrigerant Circuit Diagram



M5AC 040 / 050CR
Water / Refrigerant Circuit Diagram



M5AC 055CR
Water / Refrigerant Circuit Diagram



Chiller Panel Controller

1. Safety Consideration

Only specially trained and technicians and installers are authorized to install and service this equipment..

1.1 General Installation Recommendations

- Only supply DC voltage (9-17V, typically 12V, maximum current 200mA) as a power source to the device.
- Input contact voltage supply should limit to 12VDC or 24VAC.
- Isolated all the low voltage wiring (communication bus, etc) from high voltage power supply wiring.

2. General Description

2.1 General

The chiller panel controller is designed to control the chiller operation. This device allows the user to have customized control for each connected unit.

2.2 Features

The requirements of user friendly and easy to use have been taken into account in designing this chiller panel controller. It can do the task as follow:

- Whole system configuration
- Unique parameter settings
- Operation status display
- Tracing fault record (easy in hardware troubleshooting)

The display is shown in an 8-lines graphical LCD display. There are 8 dedicated keys available in the panel,

- Menu selection
- Navigation on the screen
- Modification of the selected value

During first start-up, the panel will have a default configuration (timer schedule, set point, miscellaneous settings, etc) User can do the changes on that particular configuration later.

2.3 Panel Position

The chiller panel controller can be installed anywhere, as long as it is easy to accessed by authorized personnel.

The requirements of installation are:

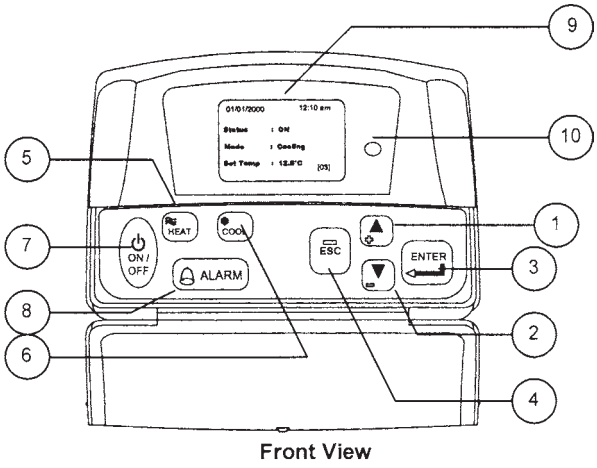
- Avoid exposure to shocks
- Avoid any source of electromagnetic pollution
- Avoid installation on uneven vertical surface

2.4 Operation Environmental Condition

- Temperature:
  -10°C to 65°C operating temperature
  -20°C to 85°C storage temperature

- Relative Humidity:
  0 to 95% non-condensing

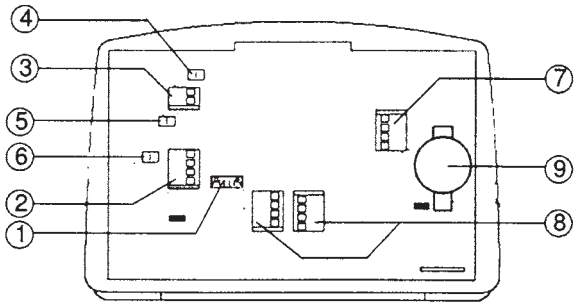
3. Hardware Description



Front View

Legend

1 & 2	Navigation key
3	Execute instruction key
4	Cancel instruction key
5	Switching to heat mode shortcut key
6	Switching to cool mode shortcut key
7	Toggle ON/OFF shortcut key
8	Show alarm key
9	Graphical LCD display
10	ON/OFF indicator



Back View

Legend

1 & 2	Chiller terminal unit connection
3	*Not available*
4	CMOS rset jumper (JH2)
5	Chiller bus resist or configuration (JH3)
6	*Not available*
7	*Not available*
8	*Not available*
9	*Not available*
10	Backup battery

3.1 Key Explanation

The 2 navigation keys permit item selection and modifying the selected value.

ENTER key is used to execute the navigation instruction

ESC key is used to cancel the navigation instruction

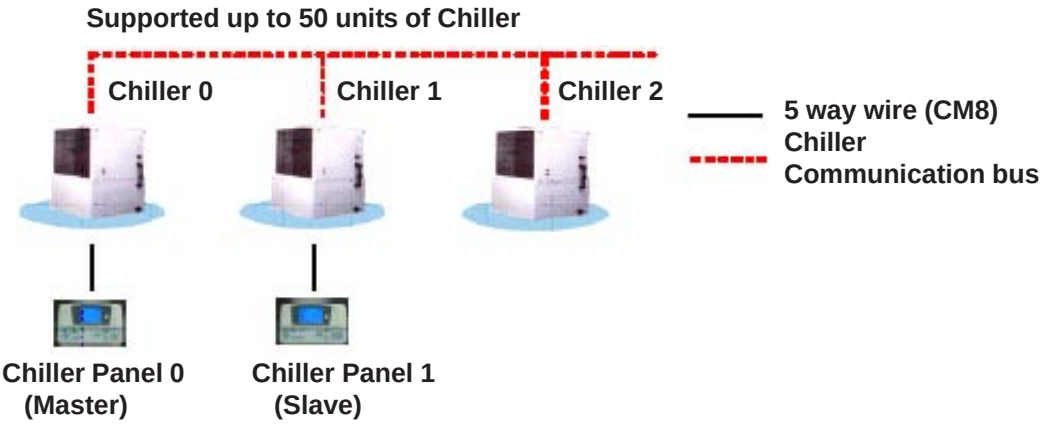
Shortcut key to switch the operation mode in the summary pages

Shortcut key to trigger ON/OFF in the summary pages

Shortcut key to show fault / alarm in the summary pages

4. Installation

4.1 Chiller Bus

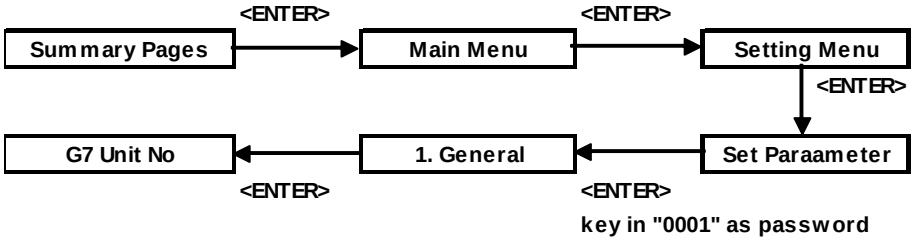


Chiller Network

Chiller panel needs to be energized with +12Vdc. The 5 way wires that provided is once on the easiest solution to establish a communication between the panel and chiller main board (CN8-CN8). If the 5-way wires socket has been occupied in main board, just using 2 insulation wired are needed to establish a communication between panel and chiller main board.

Chiller panel can support maximum up to 50 units of chiller. In the chiller network, duplication of main board unit address is not allowed. Each chiller main board should have their unique unit address (0-50).
For first time running, user need to assign a unique unit address to each main board in the chiller network. User should follow the procedure below:

- Only power ON one main board at once time. Make sure not others main boards are energize.
- By using the panel connected to the main board.



- Key in unique unit address and press ENTER to execute.
- De-energized the main board and repeat the procedures again all the main boards have been assigned a unique unit address.

IMPORTANT : Do not assign a same unit address to more than one chiller main board.

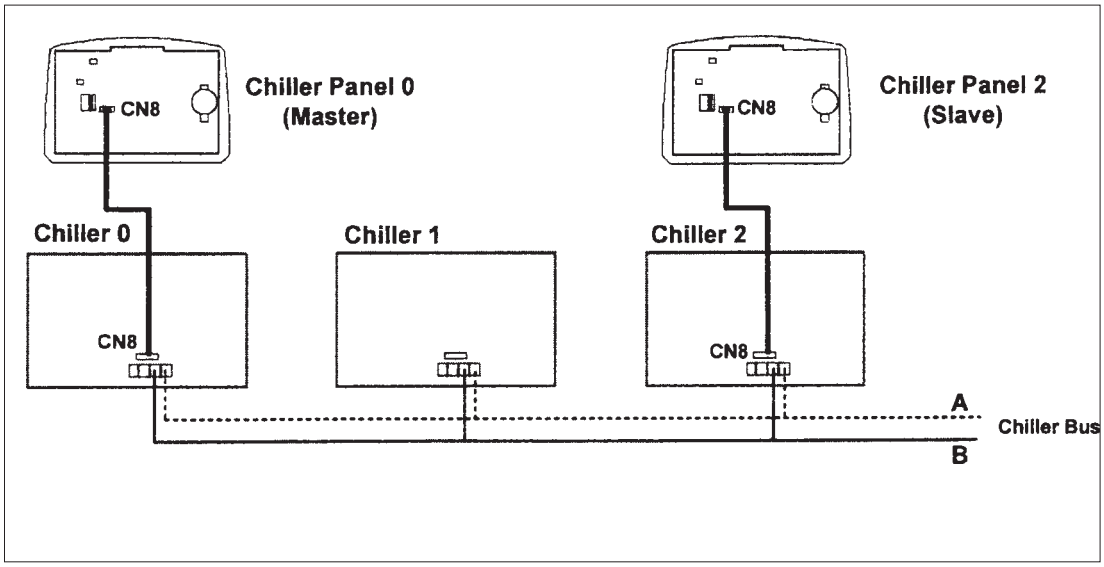
RECOMMENDATION : Please select a coherant model (G1 Model) to all the chiller main boards in the same network.

4.2 Others Configuration

- JH2 in chiller panel should let it open (put the jumper header on one pin only) all the time unless user need to do CMOS reset to that particular panel.
- JH3 should let it open (put the jumper header on one pin only) all the time as well.
- Remember to put in the coin cell battery on the panel. Without the backup battery, the panel will always reset the time to 12:00am, 1st Jan 2000.

4.3 Installation of the Chiller Panel Controller

- Disconnect the unit and ensure no others unit energy source that supplies the panel.
- Open the rear panel of the Chiller Panel (insert a 'flat-head' screwdriver in the top joint of main casing with rear panel to open the real panel).
- Pass the necessary wires of the panel across the large opening in the rear panel. Place the rear panel flat support against the wall and make marks on the wall through the four installation holes (inner and outer).
- Drill four appropriate holes in the marked places.
- Attach the rear panel to the wall and put on the screws on it. Ensure that all cables are passed through the hole of the rear panel.
- Connect the wires to the corresponding terminal according to the wiring bus network. The power supply and communication wires must be correctly connected to ensure that the panel works.
- Close the chiller panel (ensure the bottom joint is aligned for the casing, then complete others joint part. Ensure that the contacts at the back of the panel are aligned with each others).



Bus Wiring Diagram

5. Software Description

5.1 Introduction

The Chiller Panel Controller can be used to control / display the status of Chiller.

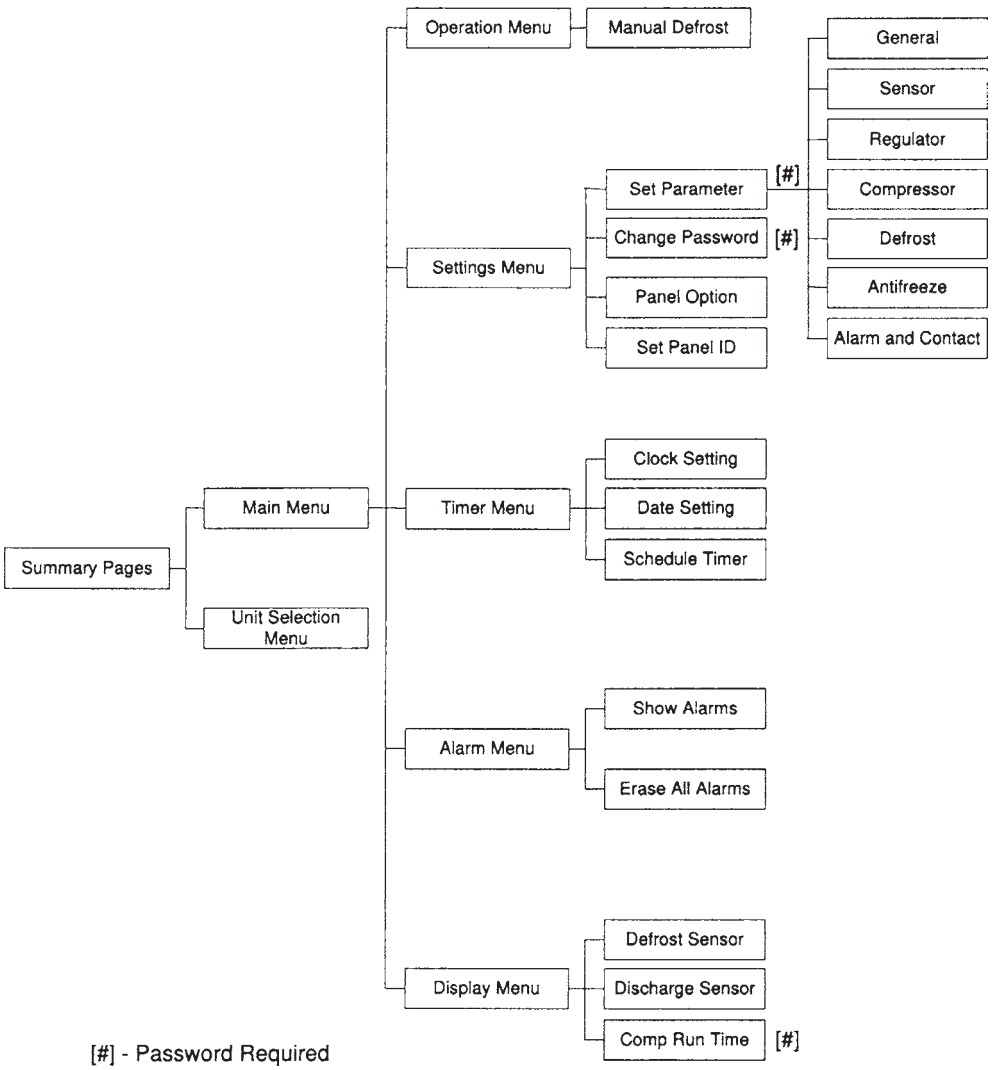
Status viewing:

- ON/OFF status
- Mode (Cooling / Heating/ Boiling)
- Mode set temperature
- Compressor status (ON/OFF/ DEFROST)
- Water in, Water Out, Outdoor air and Panel temperature
- Chiller model (Chiller, Heat Pump, Chiller/ Boiler, Chiller+Boiler, Heat Pump/Boiler, Heat Pump+ Boiler
- Advance parameter settings
- Defrost sensor temperatures
- Compressor discharge sensor temperatures
- Compressor run times
- Incoming alarm/ fault/ error

Status settings:

- ON/OFF switching
- Mode setting (Cooling / Heating/ Boiling)
- Mode set temperature
- Manual entering defrost
- Advance parameter settings
- Password changing
- Panel option setting (Backlight, Alarm Buzzer, Screen saver, Contrast, Brightness, temperature unit)
- Time and date settings
- Clearing compressor run time

5.2 Menu Structures



Menu Structure Diagram for Chiller

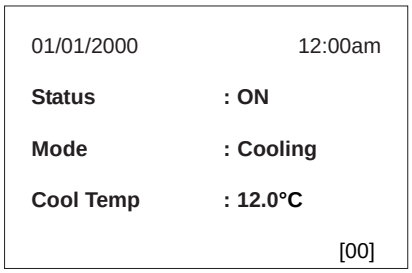
5.3 Chiller Menu Structure

5.31 Summary Pages

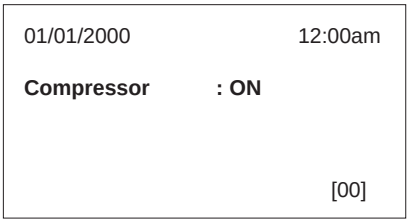
There are 4 pages in **[Summary Pages]**. Press **UP** or **DOWN** for page scrolling. Press **ENTER** to go to **[Main Menu]**. Time and date are shown on top of each page. Beside that, the bottom of each page shows current control unit of the Chiller.

For example: [00] - Chiller Panel controls Chiller ID 0 currently
[03] - Chiller Panel controls Chiller ID 3 currently
[All] - Chiller Panel controls all Chiller currently

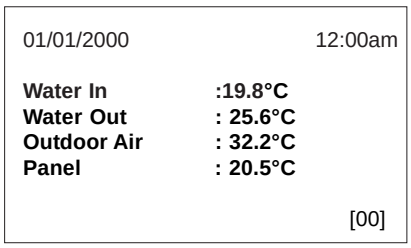
1st page: Display ON/OFF status, Mode settings and Temperature settings.



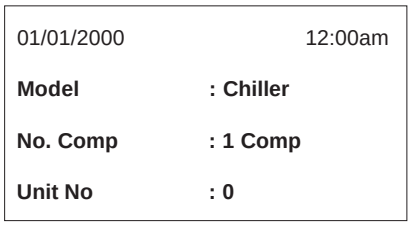
2nd page: Display Compressor status.



3rd page: Display Water In, Water Out, Outdoor air and Panel temperature

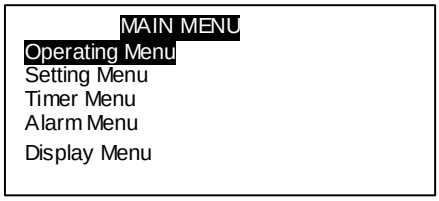


4th page: DisplayChiller model, Compressor No. and Chiller ID.



5.3.2 Main Menu

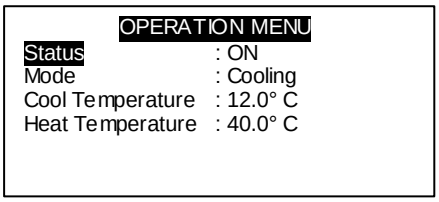
Press **ENTER** in **[Summary Pages]** to go into this menu



There are 5 sub menus in [**Main Menu].** Press **UP** or **DOWN** to select sub menus, **ENTER** to enter into the sub menu or press **ESC** to exit to **[Summary Pages]**

5.3.2.1 Operation Menu

Select [Operation Menu] in [Main Menu] and press ENTER to go into this menu.

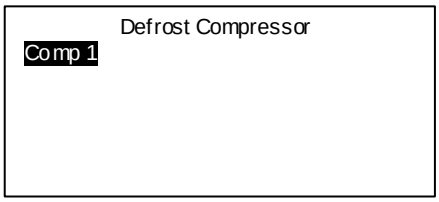


Some normal settings can be found here. Press **UP** or **DOWN** to select each settings, **ENTER** to start the setting or press **ESC** here to exit to **[Main Menu]**

Settings : -ON/OFF unit
- Mode changing (Cooling/ Heating/ Boiling)
- Cooling temperature setting
- Manual Defrost Selection

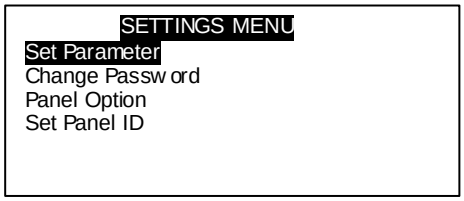
5.3.2.1.1 Manual Defrost

Select **[Manual Defrost]** in **[Operation Menu**] and press **ENTER** to go into this menu.



This menu lets user select one compressor to enter into defrost cycle manually, as long as the environment fulfill the defrost requirement.

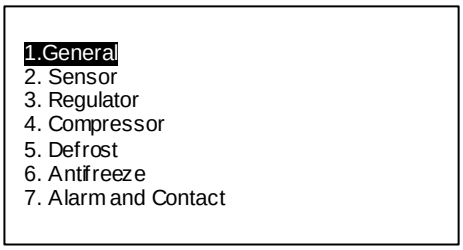
5.3.2.2 Settings Menu
Select **[Settings Menu]** in **[Main Menu]** and press **ENTER** to go into this menu.



Some advance settings can be found here. Press **UP** or **DOWN** to select settings, **ENTER** to start the setting or press ESC here to exit to **[Main Menu].**

Settings
- Set Parameter
- Password Changing
- Panel Option
- Set Panel ID

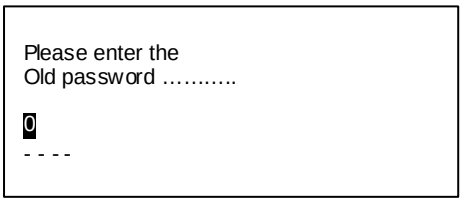
5.3.2.2.1 Set Parameter
Select **[Set Parameter]** in **[Settings Menu]** and press **ENTER** to go into this menu.



There are 7 groups of advance parameters for user to set in this menu, Press **UP** or **DOWN** to select the group, **ENTER** to go into the group or **ESC** to exit to **[Setting Menu]**.

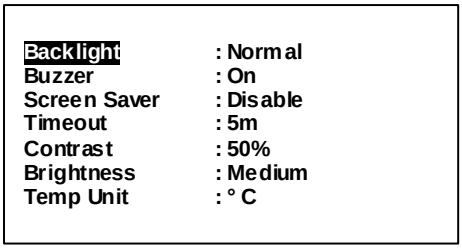
Settings:- General
- Sensor
- Regulator
- Compressor
- Defrost
- Antifreeze
- Alarm and Contact

5.3.2.2.2 Password Changing
Select **[Password Changing]** in **[Setting Menu]** and Press **ENTER** to go into this menu.



User can change the old password in this menu.
Press **ESC** to exit to **[Settings Menu]**.

5.3.2.2.3 Panel Option
Select **[Panel Option]** in **[Setting Menu]** and Press **ENTER** to go into this menu.

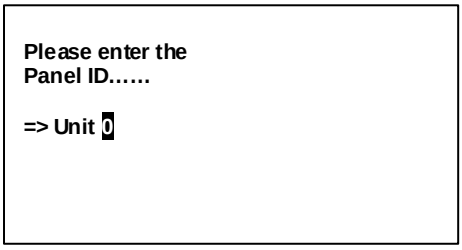


User can do some miscellaneous for the panel. These settings would not affect whole system performance.

Settings - Toggle Backlight
- Alarm Buzzer
- Enable / Disable Screen Saver
- Screen Saver timeout
- Contrast display
- Backlight brightness
- Temperature unit

Press **ESC** to exit to **[Settings Menu]**

5.3.2.2.4 Set Panel ID
Select **[Set Panel ID]** in **[Settings Menu]** and press **ENTER** to go into this menu.

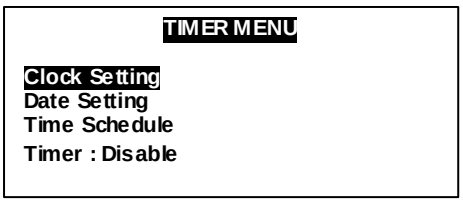


User can assign the ID no, to the panel.
Example: If ID no. 0 has been assigned, the panel acts like Master Panel Unit. It can choose to control each Chiller in the network.

If other ID no. (1-50) has been assigned, the panel acts like Slave Panel Unit. It is dedicated to one particular Chiller. It can only control the Chiller with same ID in the network.

Press **[ESC]** to exit to **[Settings Menu]**

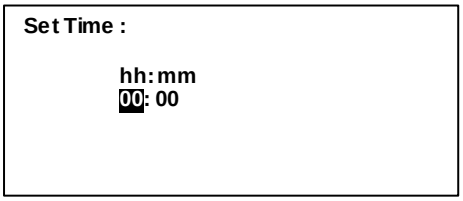
5.3.2.3 Time Menu
Select **[Time Menu]** in **[Main Menu]** and press **ENTER** to go into this menu.



All the timer/ schedule settings are included in this menu. Press **UP** or **DOWN** to select each settings. **ENTER** to start the setting or press **ESC** here to exit to **[Main Menu].**

Settings:
- Set Clock
- Set Date
- Set Schedule (7 days Programmable Timer)
- Enable/ Disable Timer Schedule

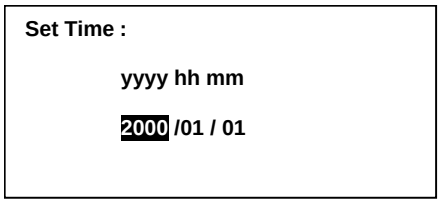
5.3.2.3.1 Set Clock
Select **[Clock Setting]** in **[Timer Menu]** and press **ENTER** to go into this menu.



User can set the time in this menu. The time setting is in 24-hour format.

Pres **[ESC]** to exit to **[Timer Menu].**

5.3.2.3.2 Set Date
Select **[Date Setting]** in **[Timer Menu]** and press **ENTER** to go into this menu.

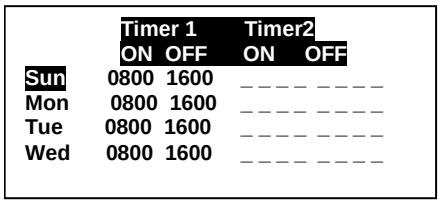


User can set the date in this menu. The date is set according to sequence below:

(year) / (month) / (day)

Press **[ESC]** to exit to **[Timer Menu]**.

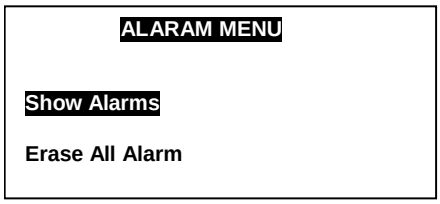
5.3.2.3.3 Set Schedule
Select **[Schedule Timer]** in **[Timer Menu]** and press **ENTER** to go into this menu.



This is the 7 days programmable timer schedule menu. There are 2 ON/OFF events in one day. User can choose to set each day of week (Sunday - Saturday) ON/OFF timer. Before this schedule carry their effect to the Chiller, user need to set the **[Timer]** in **[Timer Menu]** to enable.

Press **[ESC]** to exit to **[Timer Menu]**.

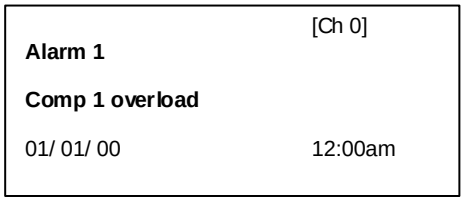
5.3.2.4 Alarm Menu
Select **[Alarm Menu]** in **[Main Menu]** and press **ENTER** to go into this menu.



This place keeps records for all previous occurred fault/ alarms. User can view the alarm history and clear that record (alarm history) as well. The panel can keep up to 20 fault/ alarm records.

Press **ESC** to exit to **[Main Menu]**

5.3.2.4.1 Show Alarms
Select **[Show Alarms]** in **[Alarm Menu]** and press **ENTER** to go into this menu.



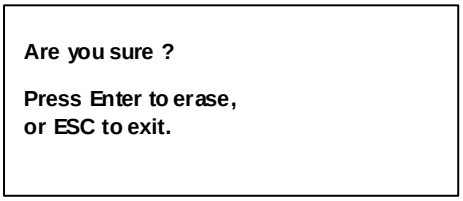
User can view all the fault/ alarm records in this menu.

The record shows
- Alarm type
- Alarm occurred date
- Alarm occurred time
- Alarm occurred unit (Chiller ID)

Beside that, user can erase the alarm record in this menu.

Press **[ESC]** to exit to **[Alarm Menu].**

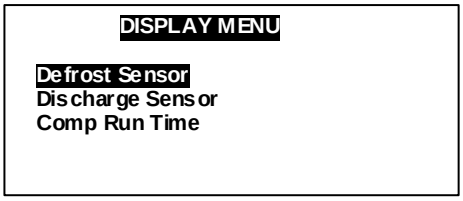
5.3.2.4.2 Erase All Alarms
Select **[Erase All Alarms]** in **[Alarm Menu]** and press **ENTER** to go into this menu.



User can rase all the alarm / fault records at once in this menu.

Press **[ESC]** to exit to **[Alarm Menu].**

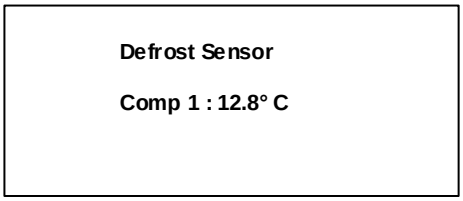
5.3.2.5 Dispaly Menu
Select **[Display Menu]** in **[Main Menu]** and press **ENTER** to go into this menu.



This menu display Defrost Sensor temperature, Compressor Discharge sensor temperature and Compressor Run Time. Beside that, user can clear each Compressor Run Time for Chiller.

Press **[ESC]** to exit to **[Main Menu]**

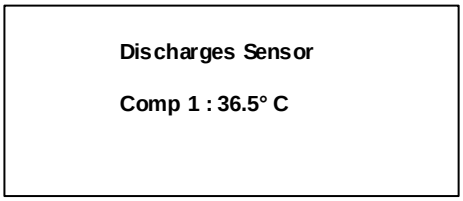
5.3.2.5.1 Defrost Sensor
Select **[Defrost Sensor]** in **[Display Menu]** and press **ENTER** to go into this menu.



User can view the defrost sensor temperature for each compressor in the Chiller.

Press **[ESC]** to exit to **[Display Menu]**

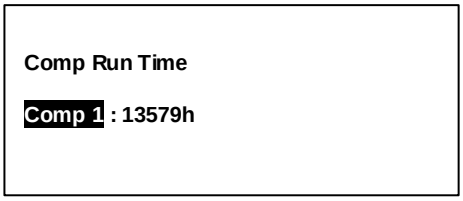
5.3.2.5.2 Discharge Sensor
Select **[Discharge Sensor]** in **[Display Menu]** and press **ENTER** to go into this menu.



User can view the discharge sensor temperature for each compressor in the Chiller.

Press **[ESC]** to exit to **[Display Menu]**.

5.3.2.5.3 Comp Run Time
Select **[Comp Run Time]** in **[Display Menu]** and press **ENTER** to go into this menu.



User can view the compressor run time for each compressor in the Chiller. Beside that, user can clear each compressor run time in this menu. User needs to key in the correct password before clearing the compressor run time.

Press **[ESC]** to exit to **[Display Menu]**.

6. Operation User Manual

6.1 Starting

Chiller panel can be set as Master or Slave panel unit. When the Panel ID is set to '0', it acts like a Master panel, whereas it is Slave panel if Panel ID is set to others number (1-50).

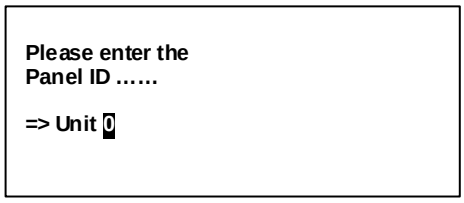
Chiller panel can control the Chiller if both ID no. (Panel ID and Chiller ID) are same.

For example: Panel ID 1 can only control Chiller ID 1

Master Panel can choose to control each Chiller or control all Chiller at once in the network.

For example : Panel ID 0 (master) can control Chiller ID 0 / ID 1/ ID 32 .... or all Chillers at once.

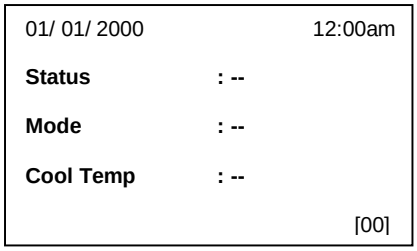
Panel ID can be set in **Set Panel ID** in **Settings Menu**.



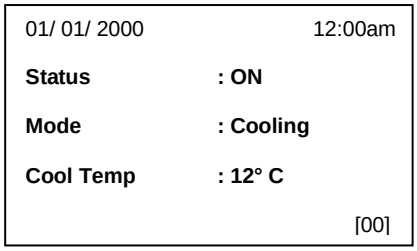
6.2 Chiller Operation Control

6.2.1 Starting

During power on for the Chiller Panel, it needs to take several times to collect information from the Chiller. At this time, all the status will show "--". Please ensure the particular Chiller exists in the network. When the process is completed, user can start to control the Chiller using the panel.



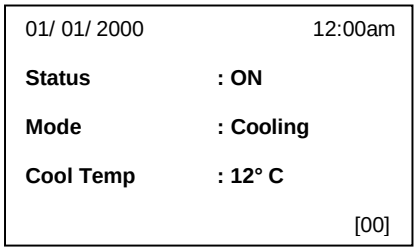
In gathering information process



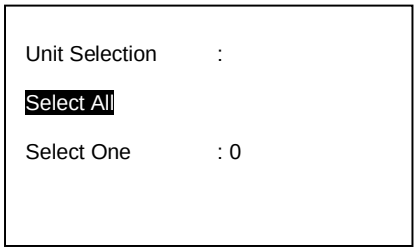
Gathering information completed

6.2.2 Changing Display Unit

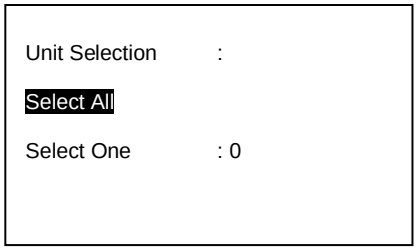
Chiller Panel (Master) can choose to choose to control / display each Chiller status. This can be done in **[Summary Pages]** only.



*In **[Summary Pages]**, press and hold **ENTER** buttom (1 second) to go into **[Unit Selection]** menu.*



*Select "**Select All**" and press **ENTER** if user want to control all Chilelr in the network, or select "**Select One**" to control a particular Chiller. Press ESC to exit to **[Summary Pages].***



*Select a Chiller ID via **UP** or **DOWN** and press **ENTER** to confirm or **ESC** to cancel.*

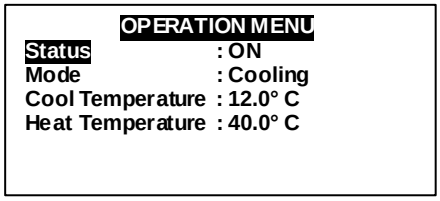
6.2.3 Switching ON/OFF

There are several ways to switch ON/OFF for the Chiller.

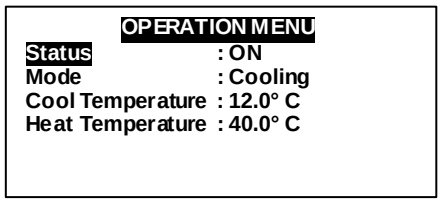
i) [Summary Pages]

Press and hold **ON/OFF** button (hold 1 second). Please note that the **ON/OFF** button will only function in **[Summary Pages].**

ii) [Operation Menu]



*In **[Operation Menu]**, select **"Status"** and press **ENTER.***



*Toggle **ON/OFF** via **UP** or **DOWN** button, and then press **ENTER** to confirm the change or **ESC** to cancel.*

iii) [Timer Menu]

7 days programmable time can turn chiller ON/OFF. User can set the schedule in this **[Timer Menu]**. Please refer **6.2.11 (page 27)** for schedule settings.

6.2.4 Switching Mode

There are several ways to switch the mode for the Chiller. Please take note that some mode cannot be set due to current Chiller model settings.

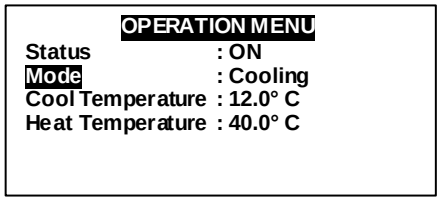
Chiller Model	Mode		
	Cooling	Heating	Boiling
Chiller	√	×	×
Heat Pump	√	√	×
Chiller / Boiler	√	×	√
Heat Pump /Boiler	√	√	√
Chiller + Boiler	√	×	Auto
Heat Pump + Boiler	√	√	Auto

√ - Allow to set
× - Not Allow to set
Auto - Turn ON automatically

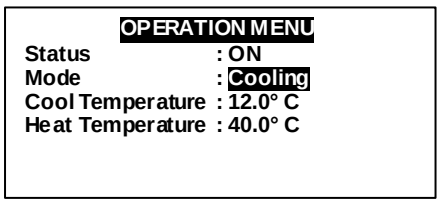
i) **[Summary Pages]**

Cooling - Press and hold **COOL** button.
Heating - Press and hold **HEAT** button (if it allows to set).
Boiling - Press and hold **HEAT** button again (if it allows to set).

ii) **[Operation Menu]**



*In **[Operation Menu]**, select "**Mode**" and press **ENTER** to start setting or **ESC** to exit to **[Main Menu]***



*Toggle **ON/OFF** via **UP** or **DOWN** button, and then press **ENTER** to confirm the change or **ESC** to cancel.*

6.2.5 Changing Mode Set Temperature

There are 2 ways to change the mode set temperature for the Chiller.

i) [Operation Menu]

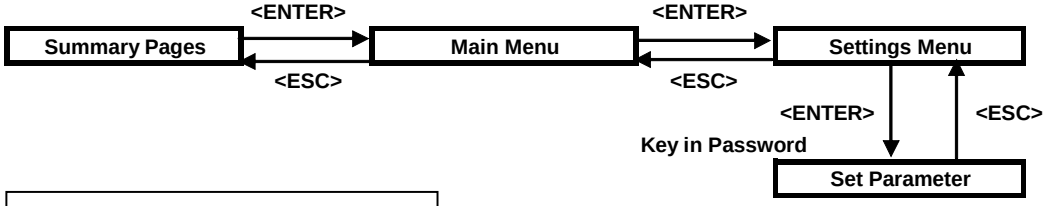
OPERATION MENU	
Status	: ON
Mode	: Cooling
Cool Temperature	: 12.0°C
Heat Temperature	: 40.0°C

*In **[Operation Menu]**, select "**Cool Temp" / "Heat Temp"** and press **ENTER** start setting or **ESC** to exit to **[Main Menu].***

OPERATION MENU	
Status	: ON
Mode	: Cooling
Cool Temperature	: 12.0°C
Heat Temperature	: 40.0°C

*Change value via **UP** or **DOWN** button, and then press **ENTER** to confirm the change or **ESC** to cancel.*

ii) [Set Parameter]



1. General
2. Sensor
3. Regulator
4. Compressor
5. Defrost
6. Antifreeze
7. Alarm and Contact

*In **[Set Parameter],** select "**Regulator"** and press **ENTER**. Press **ESC** tp exit to **[Main Menu]**.*

R1 Cool SP	: 12.0° C
R2 Cool Diff	: 3.0° C
R3 Heat SP	: 40.0° C
R4 Heat Diff	: 3.0° C
R5 Min Cool SP	: -20° C
R6 Max Cool SP	: 40° C
R7 Min Heat SP	: -20° C

*Select **"R3"/ "R5"** and press **ENTER** to start setting or **ESC** to exit to **[Set Parameter]** menu.*

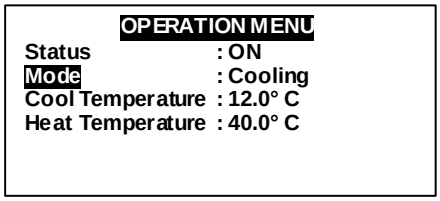
R1 Cool SP	: 12.0° C
R2 Cool Diff	: 3.0° C
R3 Heat SP	: 40.0° C
R4 Heat Diff	: 3.0° C
R5 Min Cool SP	: -20° C
R6 Max Cool SP	: 40° C
R7 Min Heat SP	: -20° C

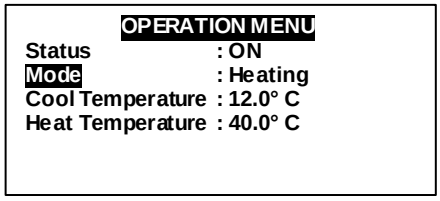
*Change value via **UP** or **DOWN** button. The boarderline is limited by **R5&R6** (cool), **R7&R8**(heat). Press **ENTER** to confirm or **ESC** to cancel.*

6.2.6 Manual Defrost

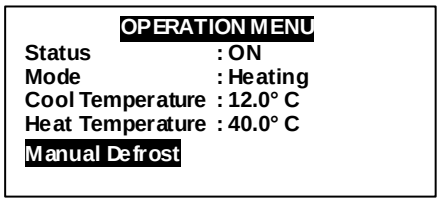
User can choose which compressor will go into manual defrost cycle by using the Chiller Panel, as long as the condition is fulfilled with defrost condition. This can be done in **[Operation Menu].**

Please take note that **"Manual Defrost"** option will only available in HEATING mode. It will disappear in COOLING/ BOILING mode.

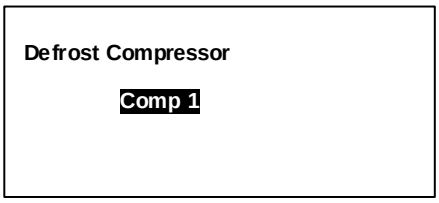




"Manual Defrost" *disappear when Chiller not in HEATING mode*



*In **[Operation Menu]**, select **[Manual Defrost]**, press **ENTER** to go into it, or ESC to exit to **[Main Menu]**.*

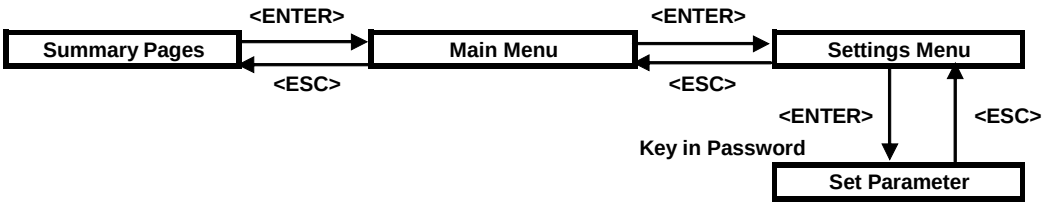


*Select which compressor to go into defrost cycle via **UP** or **DOWN** button. Press **ENTER** to confirm or **ESC** to exit to **[Operation Menu]**.*

6.2.7 Advance Parameter Settings

The Chiller Panel provide user a lot of advance parameter settings for the Chiller. The parameters are divided into 7 groups. There all are stored in **[Set Parameter]** menu and it is password-procteted layer in the panel.

**** CAUTION : INPROPER SETTINGS WILL CAUSE PERMANENT DAMAGE TO THE CHILLER !!!***



7 groups of Advance Parameter:

1) General

G1 Model	**: Chiller**
G2 No. Comp	**: 1 Comp**
G3 On/Off in	**: Disable**
G4 Col/ Heat In	**: Disable**
G5 Ext Alarm in	**: Disable**
G6 Water Sys	**: Isolated**
G7 Unit No	**: 0**

2) Sensor

S1 Water Enter	**: 0.0° C**
S2 Water Leave	**: 0.0° C**
S3 Air Sensor	**: 0.0° C**
S4 Defrost 1	**: 0.0° C**
S5 Defrost 2	**: 0.0° C**
S6 Defrost 3	**: 0.0° C**
S7 Defrost 4	**: 0.0° C**

S8 Cp Dish 1	**: 0.0° C**
S9 Cp Dish 2	**: 0.0° C**
S10 Cp Dish 3	**: 0.0° C**
S11 Cp Dish 4	**: 0.0° C**

3) Regulator

R1 Cool SP	**: 12.0° C**
R2 Cool Diff	**: 3.0° C**
R3 Heat SP	**: 40.0° C**
R4 Heat Diff	**: 3.0° C**
R5 Mix Cool SP	**: -20° C**
R6 Max Cool SP	**: 40° C**
R7 Min Heat SP	**: -20° C**

R8 Max Heat SP	**: 90° C**
R9 Ax Heat SP	**: 5.0° C**
R10 Ax Heat Diff	**: 2.0° C**
R11 Au Bo SP	**: 5.0° C**
R12 Au Bo Diff	**: 2.0° C**
R13 Au Bo Start	**: 30m**

4) Compressor

C1 Min Run	**: 12s**
C2 Min Stop	**: 240s**
C3 2On Interval	**: 360s**
C4 2Cp ON Dly	**: 15s**
C5 P-Cp ON Dly	**: 60s**
C6 Cp-P OFF Dly	**: 60s**
C7 Cp Cut Off	**: 120° C**

5) Condenser Defrost

D1 Start Temp	**: -3° C**
D2 End Temp	**: 14° C**
D3 Max Dura	**: 10m**
D4 Interval	**: 45m**
D5 Dly Bfr Def	**: 0s**
D6 Dly Aft Def	**: 0s**

6) Cool Mode Antifreeze

A1 Heater SP	**: 5° C**
A2 Heater Diff	**: 2.0° C**
A3 Sensor	**: Leave**
A4 Alarm SP	**: 3° C**
A5 Alarm Diff	**: 2.0° C**

7) Alarm and Contact

P1 FS Confirm	**: 5s**
P2 FS Delay	**: 180s**
P3 LP Delay	**: 30s**
P4 CO Reset	**: Manual**
P5 HP Rest	**: Auto**
P6 LP Reset	**: Auto**
P7 FO Reset	**: Manual**

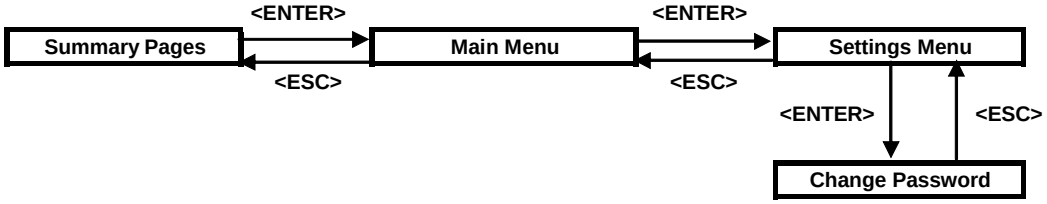
P8 RO Reset	**: Manual**
P9 FS Reset	**: Manual**
P10 Aux Reset	**: Manual**
P11 A/F Reset	**: Manual**
P12 CO Contact	**: Normal**
P13 HP Contact	**: Normal**
P14 LP Contact	**: Normal**

P15 FO Contact	**: Normal**
P16 PO Contact	**: Normal**
P17 FS Contact	**: Normal**
P18 EA Contact	**: Normal**
P19 DE Contact	**: Normal**

Please refer to **8. APPENDIX** for detail desciption.

6.2.8 Changing Password

For security purpose, some places in the panel are password-proctected. User can change the password at anytime.



Please enter the **Old password ----------** **0** **----**	*User needs to enter the old password in order to change the password.* *Change the 1st digit value via **UP** or **DOWN.** Press **ENTER** to start enter 2nd digit and the rest, or **ESC** to exit at anytime.*

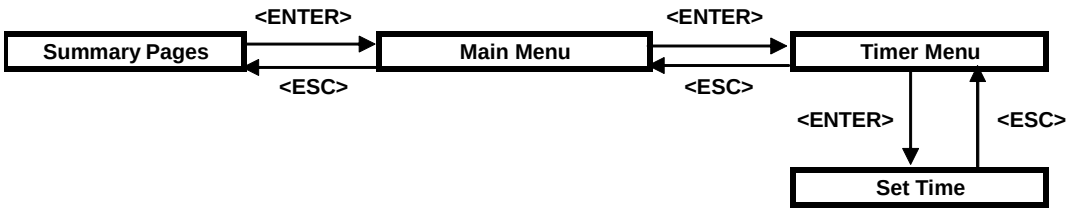
Password accepted . . . **Access granted !**	**Password error . . .** **Access denied !**
If password correct, this message will be shown and proceed to new password settings.	*If password not correct, this message will be shown and exit to **[settings Menu]***

Please enter the **New password ----------** **0** **----**	*Same as previous, **UP DOWN** to change value, **ENTER** to go to next digit, **ESC** to exit.* *User is not allowed to set the password to 0000.*

New password **Has been set …….**	**New password** **'0 0 0 0'** **Is not accepted ……..**
*If new password is accepted, this message will be shown and then exit to **[Settings Menu]**.*	*If new password is '0000', this message will be shown and then exit to **[Settings Menu]**. The password remains as previous.*

6.2.9 Clock Setting

User can set the clock for the panel.



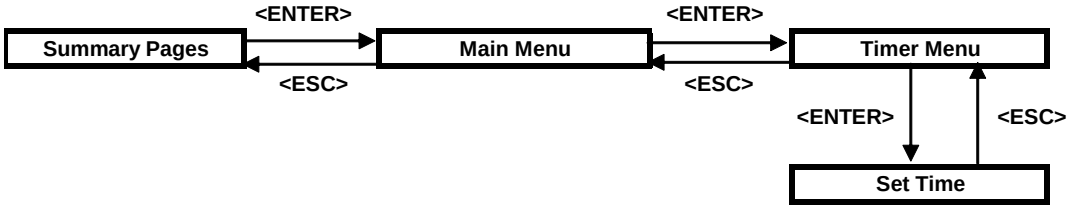
Set Time : hh mm 00 : 00

UP *or* ***DOWN*** *to change 'hour'.* ***ENTER*** *to set 'minute' or* ***ESC*** *to exit to* ***[Timer Menu].***

UP *or* ***DOWN*** *to change 'minute'.* ***ENTER*** *to confirm or* ***ESC*** *to set 'hour'again.*

6.4.10 Date Setting

User can set the date for the panel.



Set Time : yyyy hh mm 2000 /01 / 01

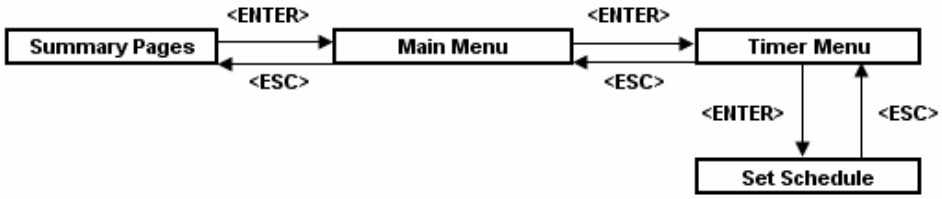
UP *or* ***DOWN*** *to change 'year'.* ***ENTER*** *to set 'month' or* ***ESC*** *to exit to [Timer Menu].*

UP *or* ***DOWN*** *to change 'month'.* ***ENTER*** *to set 'day' or* ***ESC*** *to set 'year' again.*

UP *or* ***DOWN*** *to change 'day'.* ***ENTER*** *to confirm or* ***ESC*** *to set 'month' again.*

6.2.11 7 days Programmable Setting

The are 2 ON/OFF events in one day for the schedule. This schedule is applicable to all the chillers in the network.



	Timer 1		Timer 2	
	ON	OFF	ON	OFF
Sun	0800	1600	_ _ _ _	_ _ _ _
Mon	0800	1600	_ _ _ _	_ _ _ _
Tue	0800	1600	_ _ _ _	_ _ _ _
Wed	0800	1600	_ _ _ _	_ _ _ _

UP or ***DOWN*** *select day of week,* ***ENTER*** *to select event or* ***ESC*** *to exit to* ***[Timer Menu]****.*

	Timer 1		Timer 2	
	ON	OFF	ON	OFF
Sun	0800	1600	_ _ _ _	_ _ _ _
Mon	0800	1600	_ _ _ _	_ _ _ _
Tue	0800	1600	_ _ _ _	_ _ _ _
Wed	0800	1600	_ _ _ _	_ _ _ _

UP *or* ***DOWN*** *select event.* ***ENTER*** *to start setting or* ***ESC*** *to back to select day of week.*

Event setting is same like time setting. User can disable the event by set it to '- - - -'

Before the schedule will carry the effect, user need to set **ENABLE** for "**TIMER**" in **[Timer Menu]**.

TIMER MENU

Set Time
Set Date
Set Schedule
Timer : Disable

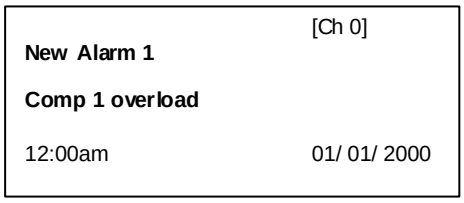
*Select "****Timer"*** *and press* ***ENTER*** *to start the settings.* ***UP*** *or* ***DOWN*** *to toggle Enable/ Disable,* ***ENTER*** *to confirm or* ***ESC*** *to cancel.*

6.2.12 Viewing Alarm / Erase Alarm Record

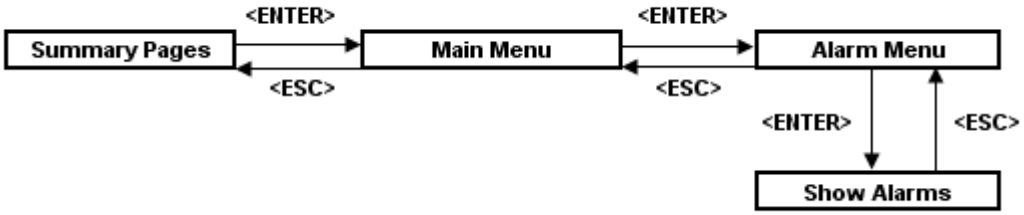
Whenever a new fault/ alarm is occurred, there will be a message pop up to show the fault/ alarm. Backlight will blinking with beeping sound (if "**Alarm Buzzer**" is set ON). If the fault/ alarm has not been dissolved from the Chiller, a sign **[A]** will be shown in the **[Summary Pages]**.(from pop up menu) automatically if the fault/ alarms have been dissolved.

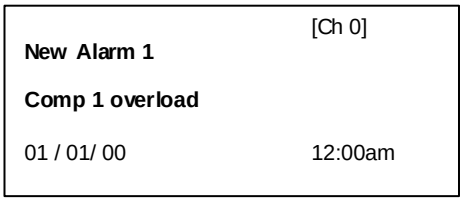
While the fault/ alarms have not been dissolved (sign **[A]**), user can check that fault/ alarm by to into [**Alarm Menu].** If all the fault/ alarm have been dissolved, user can view the fault/alarm historty records in **[Alarm Menu]** as well. Screen saver will be deactivated while all the alarms have not been dissolved.

If panel ID is set 0 (Master panel), it can receive and view all the fault / alarms from all chillers in the network.

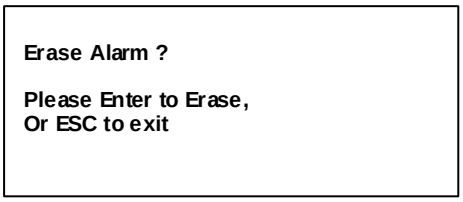


[Ch 0] show alarm occurred unit.
Press any button to stop backlight blinking and beeping.
*Press **ESC** again to exit to normal page.*





*Press **UP** or **DOWN** to scroll the record.*
*Press **ENTER** if user want to erase the reocrd, or **ESC** to exit to **[Alarm Menu]**.*

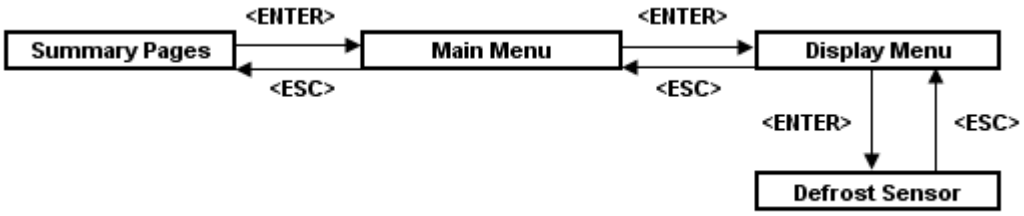


*Press **ENTER** to erase the alarm, or **ESC** to cancel.*

User can erase all the fault/ alarm record at once time through **[Erase All Alarm]** in **[Alarm Menu].**

6.2.13 Viewing Defrost Sensor Temperature

The Chiller Panel displays defrost sensor temperature for each compressor in **[Defrost Sensor]** in **[Display Menu]**.

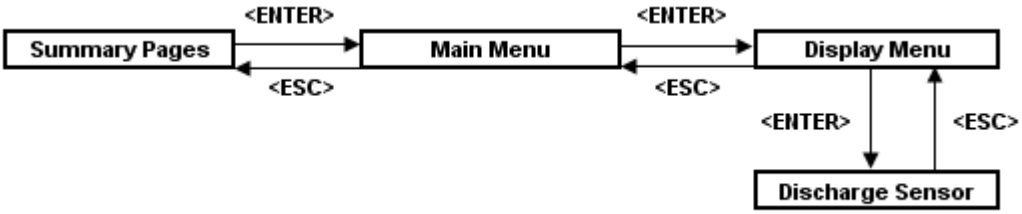


Defrost Sensor
Comp 1 : 12.8° C

*Press **ESC** to exit to **[Display Menu]***

6.2.14 Viewing Compressor Discharge Temperature

The Chiller Panel displays compressor discharge temperature for each compressor in **[Discharge Sensor]** in **[Display Menu]**.

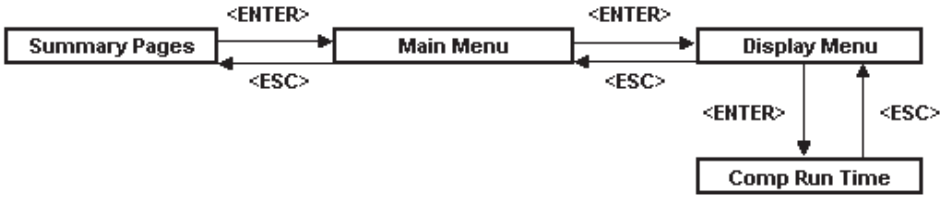


Discharge Sensor
Comp 1 : 36.5° C

*Press **ESC** to exit to **[Display Menu]***

6.2.15 Viewing/ Clear Compressor Run Time

User can view/ clear the compressor run time for the Chiller in **[Comp Run Time]** in **[Display Menu]**.



Comp Run Time **Comp 1 : 13579h**

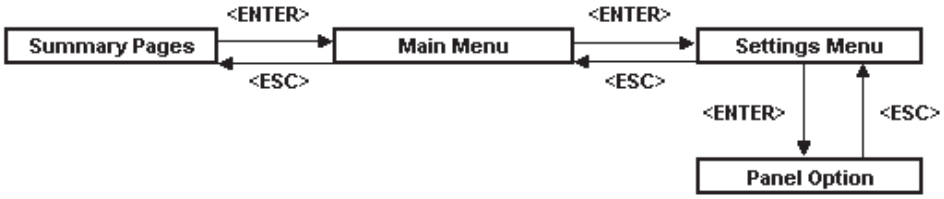
*Press **UP** or **DOWN** to select teh compressor. **ENTER** to start clear the run time, or **ESC** to exit to **[Display Menu].***

Clear Run Time ? **Press Enter to Clear** **Or ESC to exit.**

*Press **ENTER** and key in the password to confirm or **ESC** to cancel*

6.2.16 Miscellaneous Settings

User can do some miscellaneous settings to the panel.



Backlight	: Normal
Buzzer	: On
Screen Saver	: Disable
Timeout	: 5m
Contrast	: 50%
Brightness	: Medium
Temp Unit	: ° C

*Press **UP** or **DOWN** to select the item. **ENTER** to set, or **ESC** to exit to **[Settings Menu]**.*

*Press **UP** or **DOWN** to toggle the value. **ENTER** to confirm, or **ESC** to cancel.*

Parameter	Value	Description
Backlight	Normal	Turn ON backlight for 30s via key press
	Always	Always ON backlight
Buzzer	ON	Enable beeping sound when fault/ alarm occurred
	OFF	Disable beeping sound when fault/ alarm occurred
*Screen Saver	Enable	Show screen saver when timeout
	Disable	No screen save
*Timeout	1-30m	Timeout for showing screen saver
Contrast	0-100%	Adjust the contrast setting for the LCD panel
Brightness	OFF	No backlight
	Low, Medium, High	Adjust the backlight intensity
Temp Unit	°C	Display temperature in degree Celsius
	°F	Display temperature in degree Fahrenheit

* This product must be branded. Screen saver will be deactivated for brand less panel

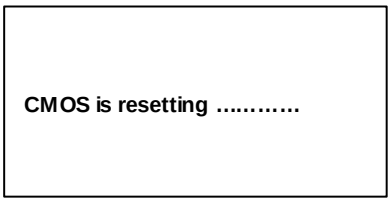
6.3 CMOS Reset

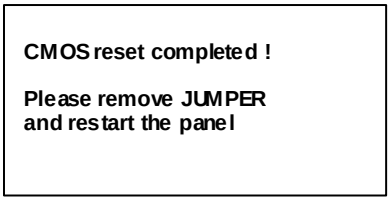
- CMOS reset allows user to reset some settings to default value such as:

  Password -> 0001
  Backlight -> Normal
  Buzzer -> ON
  Screen Saver -> Disable
  Timeout -> 5m
  Contrast -> 50%
  Brightness -> Medium
  Temp Unit -> C

- Procedures

  1. Power OFF the panel
  2. Close the jumper JH2 with the provided jumper header
  3. Power ON the panel and the LCD panel should display as follow:





  4. Remove the jumper header (put the jumper header on 1 pin only), power OFF and then power ON the panel.

7. Problem And Troubleshooting

	Symptoms	Possible Cause	Troubleshooting
1	Panel gets hot abnormally	- Wiring fault in 12VDC supply	- Change a new panel module and turn ON the unit again after the verification
2	The LCD no display (blank screen)	- Wiring fault in 12VDC supply - No power supply - Voltage supply too low - Module defective	- Correct the wiring problem - Check the wiring and supply 12VDC to panel - Check the power source - Change a new panel module
3	- -' for all status (quite a long time)	-Panel cannot/ not yet received the information from chiller or FCU completely - That particular unit address is not recognized by the panel - Module defective	- Ensure the selected unit exits in the network - Ensure the wiring is correct - Ensure the wiring is not defective -Ensure the wiring has been isolated from high power cable - Select a coherent unit address on the panel (refer to 6.2.2) - Change a new module
4	ON/ OFF, COOL or HEAT button not function	- Software limitation - Module defective	- Ensure it is pressed (hold 1s) in [Summary Pages] not in other menu. - Change a new module
5	Cannot switch to HEATING mode	- Software limitation	- Ensure this mode is available in current "Model" of Chiller, please refer to 6.2.4
6	Cannot switch to BOILING mode	- Software limitation	- Ensure this mode is available in current "Model" of Chiller, please refer to 6.2.4
7	No "Manual Defrost" item	- Software limitation	- Ensure current running mode is HEATING
8	Cannot step inside [Set Parameter]	- Software limitation. Panel has not received all the information from chiller completely	- Refer to symptoms 3
9	7 Days Programmable Timer not function	- Software limitation. User did not activate the schedule	Control of Chiller: - Ensure the "Timer" in [Timer Menu] is set ENABLE Control of Chiller: - Ensure the 'Timer" in [Operation Menu] is set ENABLE
10	No beeping sound when new alarm occurred	- Software limitation. User did not set ON to the alarm buzzer	- Ensure "Buzzer" in [Panel Option] is set ON
11	No screen saver after timeout	- Software limitation. User did not set ENABLE to the screen saver	- Ensure "Screen Saver" in [Panel Option] I set ENABLE
12	Time always reset to 12:00am, 1st Jan 2000	- No backup battery - Energy of the backup battery is low	- Replace coin cell battery
13	Panel stop operation. Whole operation freezing (hang)	- Unstable power supply - Energy of the backup battery is low	- Power off the panel. Take out the backup battery as well. Replace with a new 3V coil cell battery if necessary. Put back the backup battery into the panel and power on again

8. Appendix

	General	Type	Unit	Default	Min	Max	Resolution
G1	Model 0=Chiller 1=Heat pump, 2=Chiller/ Boiler, 3=Heat pump/ Boiler, 4=Chiller+Boiler 5=Heat pump+Boiller	F	Flag	4 (Chiller+Boiler)	0	2	1
G2	Number of compressor 1=1 compressor, 2=2 compressor, 3=3 compressor, 4=4 compressor	F	Flag	1	1	4	1
G3	On/Off input 0=disable, 1=enable	F	Flag	0 (disable)	0	1	1
G4	Coo/ Heat input 0=disable, 1=enable	F	Flag	0 (disable)	0	1	1
G5	External alarm input 0=disable, 1=enable	F	Flag	0 (disable)	0	1	1
G6	Water system for chiller network 0=independent, 1=modular	F	Flag	0 (disable)	0	1	1
G7	Unit number	F	Flag	0	0	50	1

	SENSOR	Type	Unit	Default	Min	Max	Resolution
S1	Entering water sensor calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S2	Leaving water sensor calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S3	Air sensor calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S4	Defrost(condenser) sensor 1 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S5	Defrost(condenser) sensor 2 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S6	Defrost(condenser) sensor 3 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S7	Defrost(condenser) sensor 4 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S8	Compressor discharge sensor 1 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S9	Compressor discharge sensor 2 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S10	Compressor discharge sensor 3 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1
S11	Compressor discharge sensor 4 calibration	U	°C (F)	0 (0)	-12 (21.6)	-12 (21.6)	0.1

	REGULATOR	Type	Unit	Default	Min	Max	Resolution
R1	Cooling set-point	D	°C (F)	12 (53.6)	R5	R6	0.1
R2	Cooling differential	U	°C (F)	1.5* (2.7)	0.4 (0.7)	10 (18)	0.1
R3	Heating set-point	D	°C (F)	40 (104)	R7	R8	0.1
R4	Heating differential	U	°C (F)	1.5* (2.7)	0.4 (0.7)	10 (18)	0.1
R5	Minimum Cooling set-point	U	°C (F)	7 (44.6)	-20 (-4)	R6	1
R6	Maximum Cooling set-point	U	°C (F)	20 (68)	R5	40 (104)	1
R7	Minimum Heating set-point	U	°C (F)	30 (68)	-20 (-4)	R8	1
R8	Maximum Heating set-point	U	°C (F)	50 (122)	R7	90 (194)	1
R9	Auxiliary heater set-point(threshold below below heating set-point)	U	°C (F)	5 (9)	0 (0)	40 (72)	0.1
R10	Auxiliary heater differential	U	°C (F)	2 (3.6)	0.4 (0.7)	10 (18)	0.1
R11	Auto boiler set-point(threshold below Heating set-point)	U	°C (F)	5 (9)	0 (0)	40 (72)	0.1
R12	Auto boiler differential	U	°C (F)	2 (3.6)	0.4 (0.7)	10 (18)	0.1
R13	Auto boiler start time threshold	U	min	30	0	199	1

	COMPRESSOR	Type	Unit	Default	Max	Min	Resolution
C1	Compressor minimum run time	U	sec	120	0	1990	10
C2	Compressor minimum stop time	U	sec	180	0	1990	10
C3	Time interval between two starts	U	sec	450	0	1990	10
C4	Start delay between two compressors	U	sec	15	0	199	1
C5	Pump on ? compressor on delay	U	sec	180	0	1990	10
C6	Comp off ? pump off delay	U	sec	60	0	199	10
C7	Discharge cut-off-set-point	U	°C (F)	120(248)	0 (32)	150 (302)	1

	CONDENSSOR	Type	Unit	Default	Max	Min	Resolution
D1	Start defrost temperature	U	°C (F)	0 (32)	-20 (-4)	D2	1
D2	End defrost temperature	U	°C (F)	14 (57)	D1	40 (104)	1
D3	Maximum duration of defrost cycle	U	min	10	1	40	1
D4	Defrost interval time	U	min	45	0	199	1
D5	Delay before defrosting	U	sec	0	0	1990	10
D6	Delay after defrosting	U	sec	120	0	1990	10

	COOL MODE ANTIFREEZE	Unit	Default	Min	Max	Resolution
A1	Antifreeze heater set-point	°C (F)	5 (41)	-40 (-40)	40 (104)	1
A2	Antifreeze heater differential	°C (F)	2 (3.6)	0.4 (0.7)	10 (18)	0.1
A3	Antifreeze sensor select 0=Leaving water, 1=Entering water	Flag	0 (leaving)	0	1	1
A4	Antifreeze alarm set-point	°C (F)	3 (37)	-40 (-40)	40(104)	1
A5	Antifreeze alarm differential	°C (F)	2 (3.6)	0.4 (0.7)	10 (18)	0.1

	ALARM AND CONTACT	Unit	Default	Min	Max	Resolution
P1	Flow switch confirmation time	sec	5	0	199	1
P2	Flow switch alarm delay at pump start	sec	120	0	199	1
P3	Low pressure alarm delay at compressor start up	sec	30	0	199	1
P4	Comp overload alarm reset type 0=Manual reset, 1=Auto reset	Flag	0 (manual)	0	1	1
P5	High pressure alarm reset type 0=Manual reset, 1=Auto reset	Flag	1 (auto)	0	1	1
P6	Low pressure alarm reset 0=Manual reset, 1=Auto reset	Flag	1 (auto)	0	1	1
P7	Fan overload alarm reset type 0=Manual reset, 1=Auto reset	Flag	1 (auto)	0	1	1
P8	Pump overload alarm reset type 0=Manual reset, 1=Auto reset	Flag	0 (manual)	0	1	1
P9	Flow switch alarm reset type 0=Manual reset, 1=Auto reset	Flag	0 (manual)	0	1	1
P10	Auxiliary alarm reset type 0=Manual reset, 1=Auto reset	Flag	1 (auto)	0	1	1
P11	Antifreeze alarm reset type 0=Manual reset, 1=Auto reset	Flag	1 (auto)	0	1	1
P12	Comp overload contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P13	High pressure contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P14	Low pressure contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P15	Fan overload contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P16	Pump overload contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P17	Flow switch contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P18	External alarm contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1
P19	Defrost end contact type 0=Normally close(NC) 1=Normally open(NO)	Flag	0 (NC)	0	1	1

Precautions and Installation

Special Precautions When Dealing With Refrigerant R407C Unit

1) What is new refrigerant R407C?

R407C is a zeotropic refrigerant mixture which has Zero Ozone Depletion Potential (ODP = 0) and thus conformed to the Montreal Protocol regulation. It requires Polyol-ester oil (POE) oil for its compressor's lubricant. Its refrigerant capacity and performance are about the same as the refrigerant R22.

2) Components

Mixture weight compositionR32(23%), R125(25%), R134a(52%)

3) Characteristic

- R407C liquid and vapor components have different compositions when the fluid evaporates or condenses. Hence, when leak occurs and only vapor leaks out, the composition of the refrigerant mixture left in the system will change and subsequently affect the system performance. **DO NOT** add new refrigerant to leaked system. It is recommended that the system should be evacuated thoroughly before recharging with R407C.
- When refrigerant R407C is used, the composition will differ depending on whether it is in gaseous or liquid phase. Hence when charging R407C, ensure that only liquid is being withdrawn from the cylinder or can. This is to make certain that only original composition of R407C is being charged into the system.
- POE oil is used as lubricant for R407C compressor, which is different from the mineral oil used for R22 compressor. Extra precaution must be taken not to expose the R407C system too long to moist air.

4) Check list before installation/servicing

- Tubing
  Refrigerant R407C is more easily affected by dust of moisture compared with R22, make sure to temporarily cover the ends of the tubing prior to installation
- Compressor oil
  No additional charge of compressor oil is permitted.
- Refrigerant
  No other refrigerant other that R407C
- Tools
  Tools specifically for R407C only (must not be used for R22 or other refrigerant)
  i) Manifold gauge and charging hose
  ii) Gas leak detector
  iii) Refrigerant cylinder/charging cylinder
  iv) Vacuum pump c/w adapter
  v) Flare tools
  vi) Refrigerant recovery machine

5) Handling and installation guidelines

Like R22 system, the handling and installation of R407C system are closely similar. All precautionary measures; such as ensuring no moisture, no dirt or chips in the system, clean brazing using nitrogen, and thorough leak check and vacuuming are equally important requirements. However, due to zeotropic nature of R407C and its hydroscopic POE oil, additional precautions must be taken to ensure optimum and trouble free system operation.

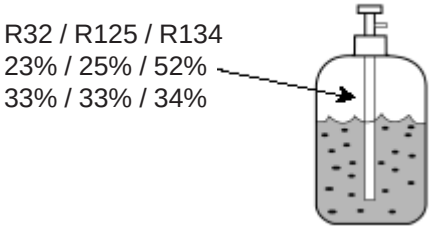
a) Filter dryer must be installed along the liquid line for all R407C air conditioners. This is to minimise the contamination of moisture and dirt in the refrigerant system. Filter dryer must be of molecular sieve type. For a heat pump system, install a two--way flow filter dryer along the liquid line.

b) During installation or servicing, avoid prolong exposure of the internal part of the refrigerant system to moist air. Residual POE oil in the piping and components can absorb moisture from the air.

c) Ensure that the compressor is not expose to open air for more than the recommended time specified by its manufacturer (typically less than 10 minutes). Removed the seal plugs only when the compressor is about to be brazed.

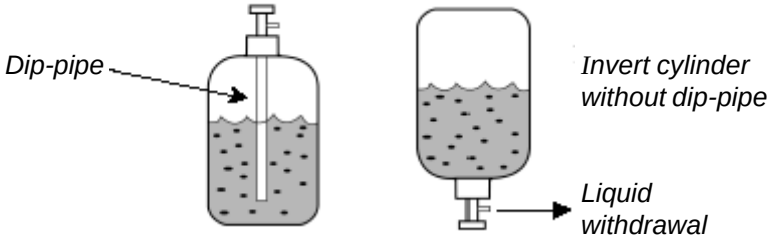
d) The system should be thoroughly vacuumed to 1.0 Pa (700mmHg) or lower. This vacuuming level is more stringent than R22 system so as to ensure no incompressible gas and moisture in the system.

e) When charging R407C, ensure that only liquid is being withdrawn from the cylinder or can. This is to ensure that only the original composition of R407C is being delivered into the system. The liquid composition can be different from the vapor composition.



Composition of R407C in vapour phase is different from liquid phase.

f) Normally, the R407C cylinder or can is being equipped with a dip pipe for liquid withdrawal. However, if the dip pipe is not available, invert the cylinder or can so as to withdraw liquid from the valve at the bottom.



g) When servicing leak, the top up method, commonly practiced for R22 system, is not recommended for R407C system. Unlike R22 where the refrigerant is of a single component, the composition of R407C, which made up of three different components, may have changed during the leak. Consequently, a top up may not ensure that the R407C in the system is of original composition. This composition shift may adversely affect the system performance. It is recommended that the system should be evacuated thoroughly before recharging with R407C.

Special Precautions When Dealing With Refrigerant R410A Unit

1) What Is New Refrigerant R410A?
R410A is a new HFC refrigerant which does not damage the ozone layer. The working pressure of this new refrigerant is 1.6 times higher than conventional refrigerant (R22), thus proper installation / servicing is essential.

2) Components
Mixture of composition by weight : R32(50%) and R125(50%)

3) Characteristic
- R410A liquid and vapor components have different compositions when the fluid evaporates or condenses. Hence, when leak occurs and only vapor leaks out, the composition of the refrigerant mixture left in the system will change and subsequently affect the system performance. **DO NOT** add new refrigerant to leaked system. It is recommended that the system be evacuated thoroughly before recharging with R410A.
- When refrigerant R410A is used, the composition will differ depending on whether it is in gaseous or liquid phase.
  Hence when charging R410A, ensure that only liquid is being withdrawn from the cylinder or can. This is to make certain that only original composition of R410A is being charged into the system.
- POE oil is used as lubricant for R410A compressor, which is different from the mineral oil used for R22 compressor.
  Extra precaution must be taken to avoid exposing the R410A system to moist air.

4) Check List Before Installation / Servicing
- Tubing
  Refrigerant R410A is more easily affected by dust or moisture compared with R22, make sure to temporarily cover the ends of the tubing prior to installation
- Compressor oil
  No additional charge of compressor oil is permitted.
- Refrigerant
  No other refrigerant other that R410A
- Tools (size of service port is different from R22 system)
  Tools specifically for R410A only (must not be used for R22 or other refrigerant)
  i) Gauge manifold and charging hose
  ii) Gas leak detector
  iii) Refrigerant cylinder/charging cylinder
  iv) Vacuum pump c/w adapter
  v) Flare tools
  vi) Refrigerant recovery machine

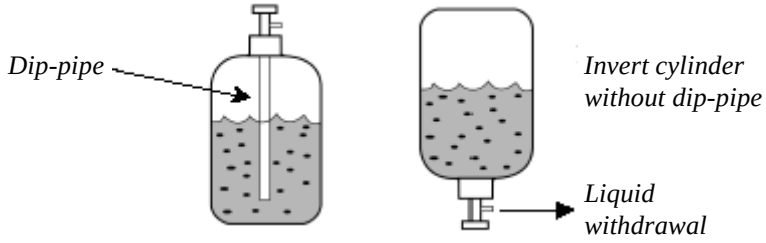
5) Handling And Installation Guidelines
Like R22 systems, the handling and installation of R410A system are closely similar. All precautionary measures; such as ensuring no moisture, no dirt or chips in the system, clean brazing using nitrogen, and thorough leak check and vacuuming are equally important requirements. However, due to its hydroscopic POE oil, additional precautions must be taken to ensure optimum and trouble-free system operation.

a) During installation or servicing, avoid prolong exposure of the internal part of the refrigerant system to moist air. Residual POE oil in the piping and components can absorb moisture from the air.

b) Ensure that the compressor is not expose to open air for more than the recommended time specified by its manufacturer (typically less than 10 minutes). Removed the seal-plugs only when the compressor is about to be brazed.

c) The system should be thoroughly vacuumed to 1.0 Pa (700mmHg) or lower. This vacuuming level is more stringent than R22 system so as to ensure no incompressible gas and moisture in the system.

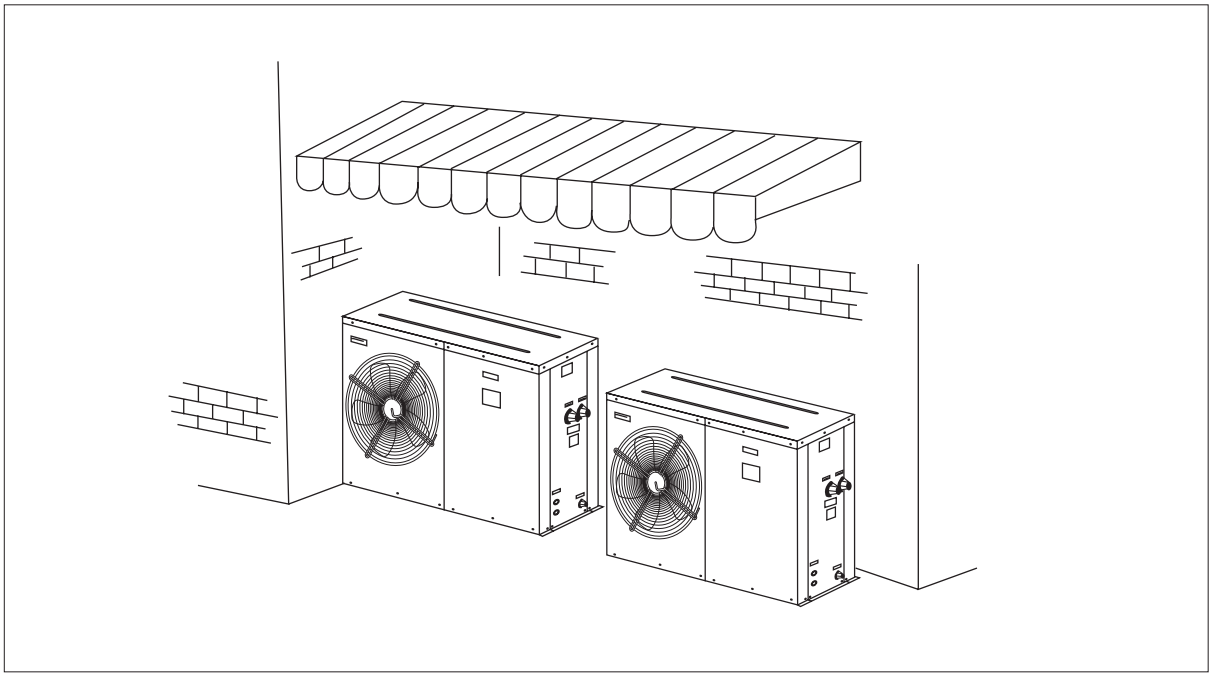
d) When charging R410A, ensure that only liquid is being withdrawn from the cylinder or can. This is to ensure that only the original composition of R410A is being delivered into the system. The liquid composition can be different from the vapor composition.



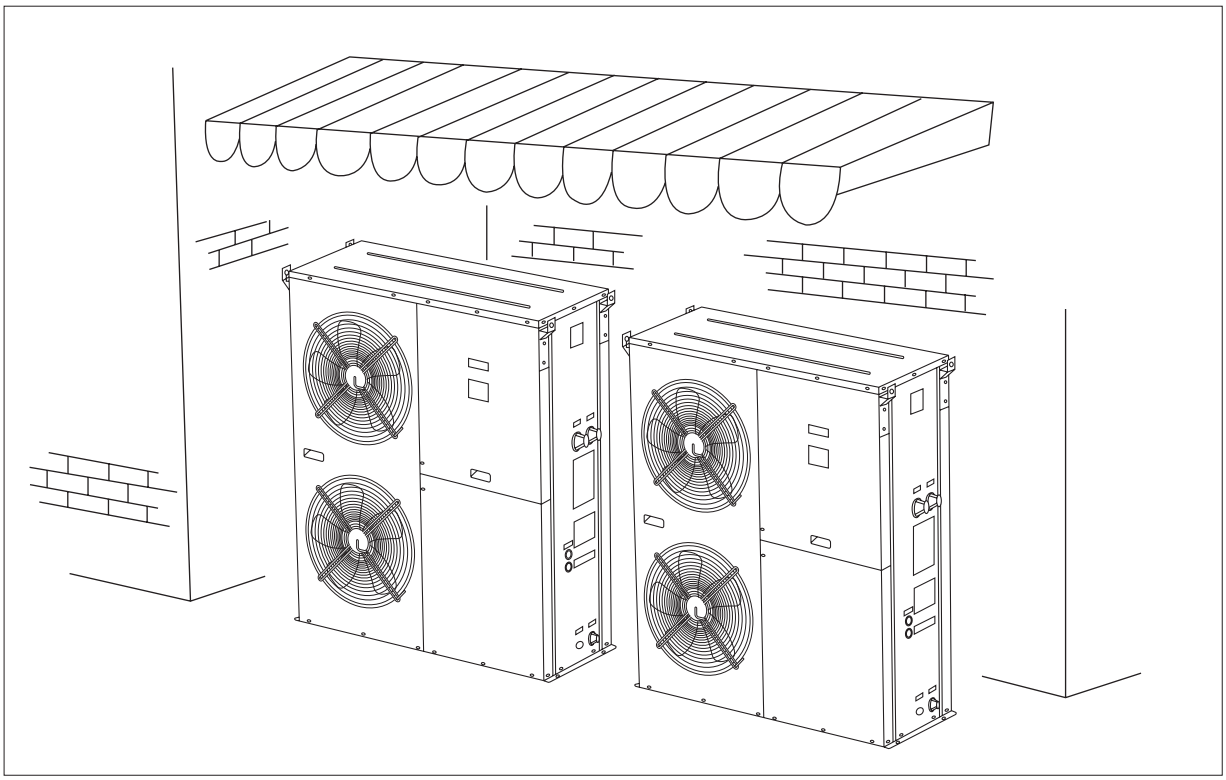
e) Normally, the R410A cylinder or can is being equipped with a dip-pipe for liquid withdrawal. However, if the dip-pipe is not available, invert the cylinder or can so as to withdraw liquid from the valve at the bottom.

Installations

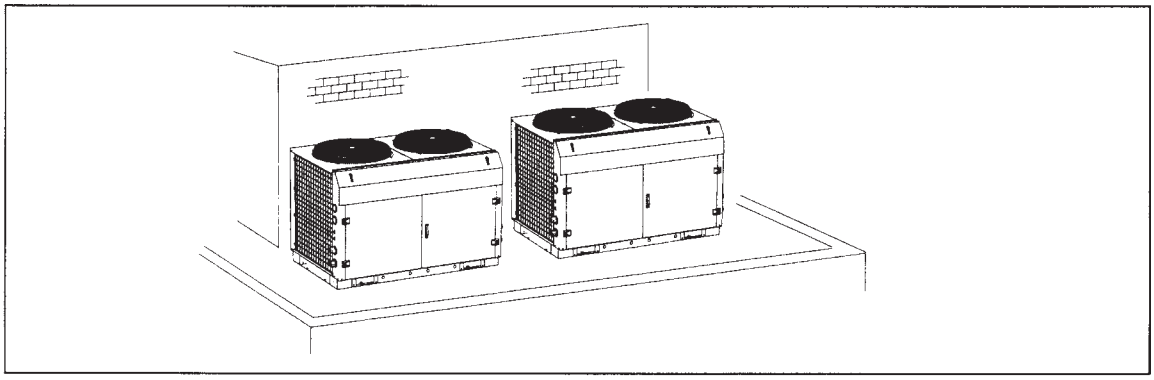
M4AC/ MAC 020/ 025/ 030 C/CR, M5AC 020 / 025 / 030CR

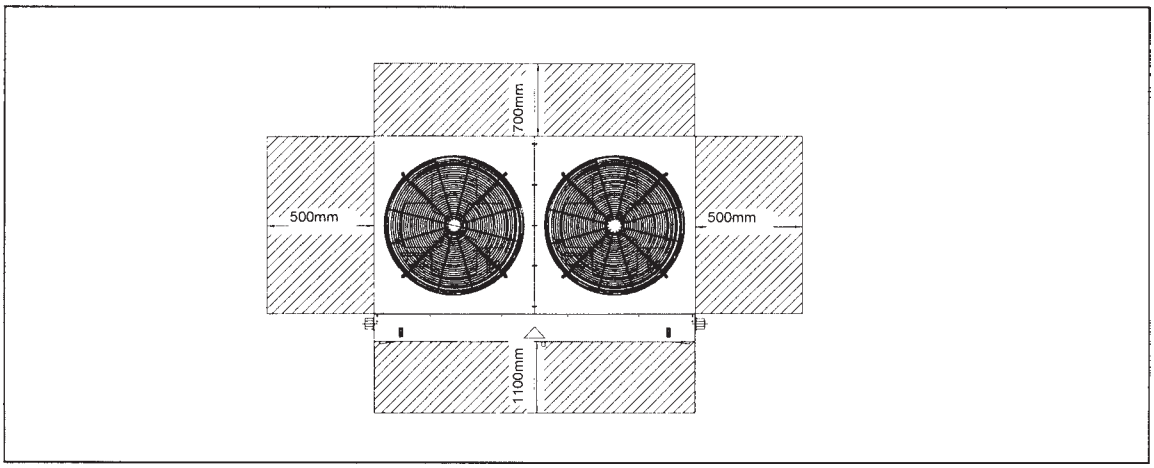


M4AC/ MAC 040/ 050/ 060 C/CR, M5AC 040 / 050 / 055 CR

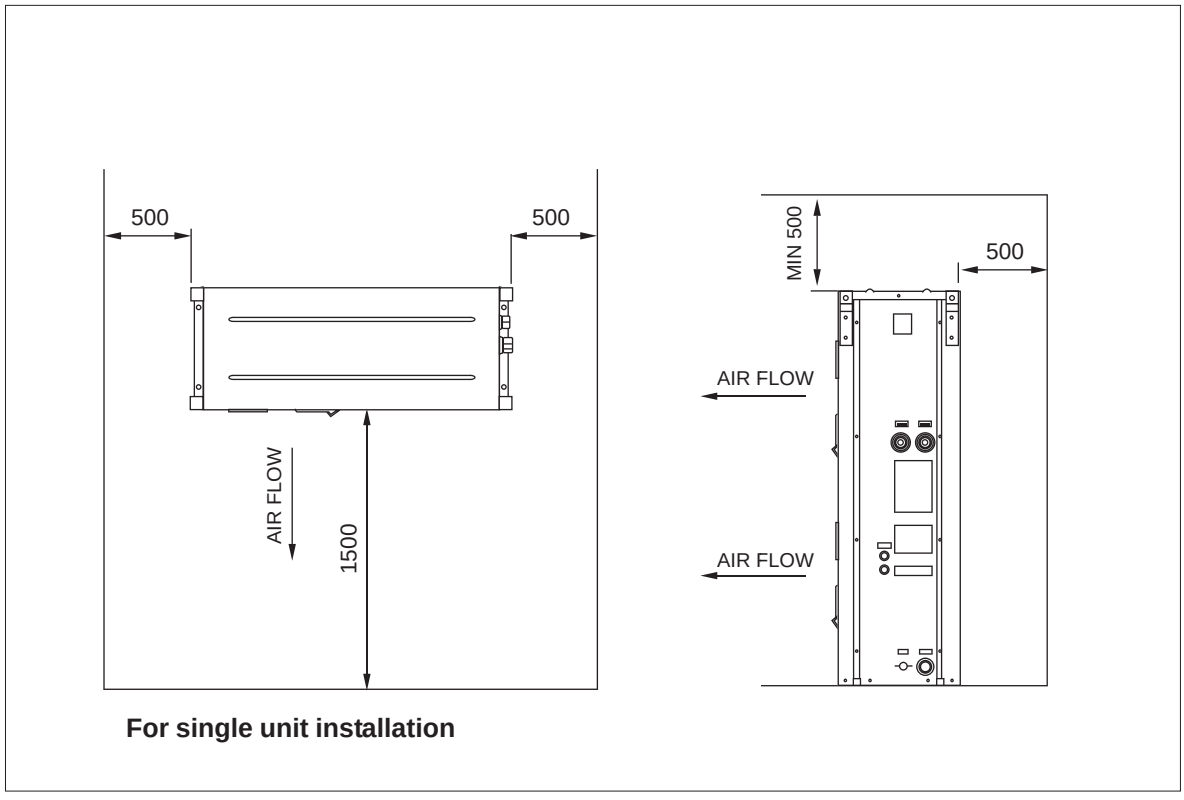


M4AC/ MAC 080/ 100/ 120/ 150 C/CR

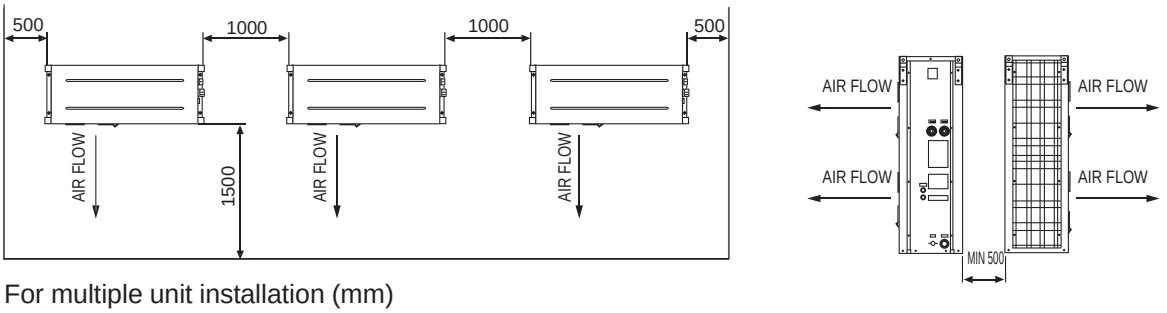




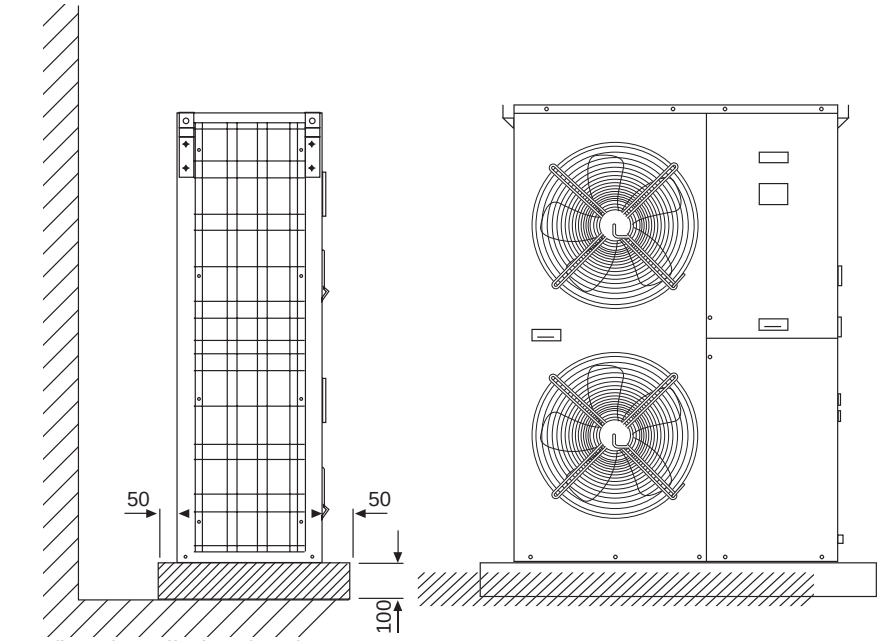
M4AC / MAC 020 / 025 / 030 / 040 / 050 / 060C/CR, M5AC 020 / 025 / 030 / 040 / 050 / 055CR



For single unit installation



For multiple unit installation (mm)



For floor installation (mm)

Safety Precautions

Before installing the air conditioner unit, please read the following safety precautions carefully

⚠ Warning

- Installation and maintenance should be performed by qualified persons who are familiar with local code and regulation, and experienced with this type of appliance.
- All field wiring must be installed in accordance with the national wiring regulation.
- Ensure that the rated voltage of the unit corresponds to that of the name plate before commencing wiring work according to the wiring diagram.
- The unit must be GROUNDED to prevent possible hazards due to installation failure.
- All electrical wiring must not touch the refrigerant piping, compressor or any moving parts of the fan motors.
- Confirm that the unit has been switched OFF before installing or servicing the unit.
- Do not touch the compressor or refrigerant piping without wearing gloves.

IMPORTANT

DO NOT INSTALL OR USE THE AIR CONDITIONER UNIT IN A LAUNDRY ROOM

Caution

Please take note of the following important points when installing.

- **Do not install the unit where leakage of flammable gas may occur.**

If gas leaks and accumulates around the unit, it may cause fire ignition.

- **Ensure that the drainage piping is connected properly.**

If the drainage piping is not connected properly, it may cause water leakage which will dampen the furniture.

- **Do not overcharge the unit.**

This unit is factory pre-charged. Overcharge will cause over-current or damage to the compressor.

- **Ensure that the units panel is closed after service or installation.**

Unsecured panels will cause unit to operate noisily.

Installation Location

- Installation work should be done by the authorized dealer or qualified contractor. Never install the unit yourself.
- Make sure there is sufficient airflow around the unit.
- Vibration isolator should be provided to reduce the vibration and noise of the unit.
- There should be sufficient space allocated for servicing and maintenance when installing the unit.

Transportation

- The unit should be lifted using a crane. Ensure that the hanger belts are not touching the coil, top panel and front panel (use protective panel) as shown in Figure 1.
- The bolt of the base and channel support can be removed after putting the unit on the fixed location.

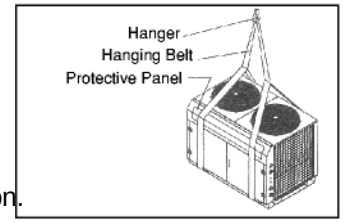
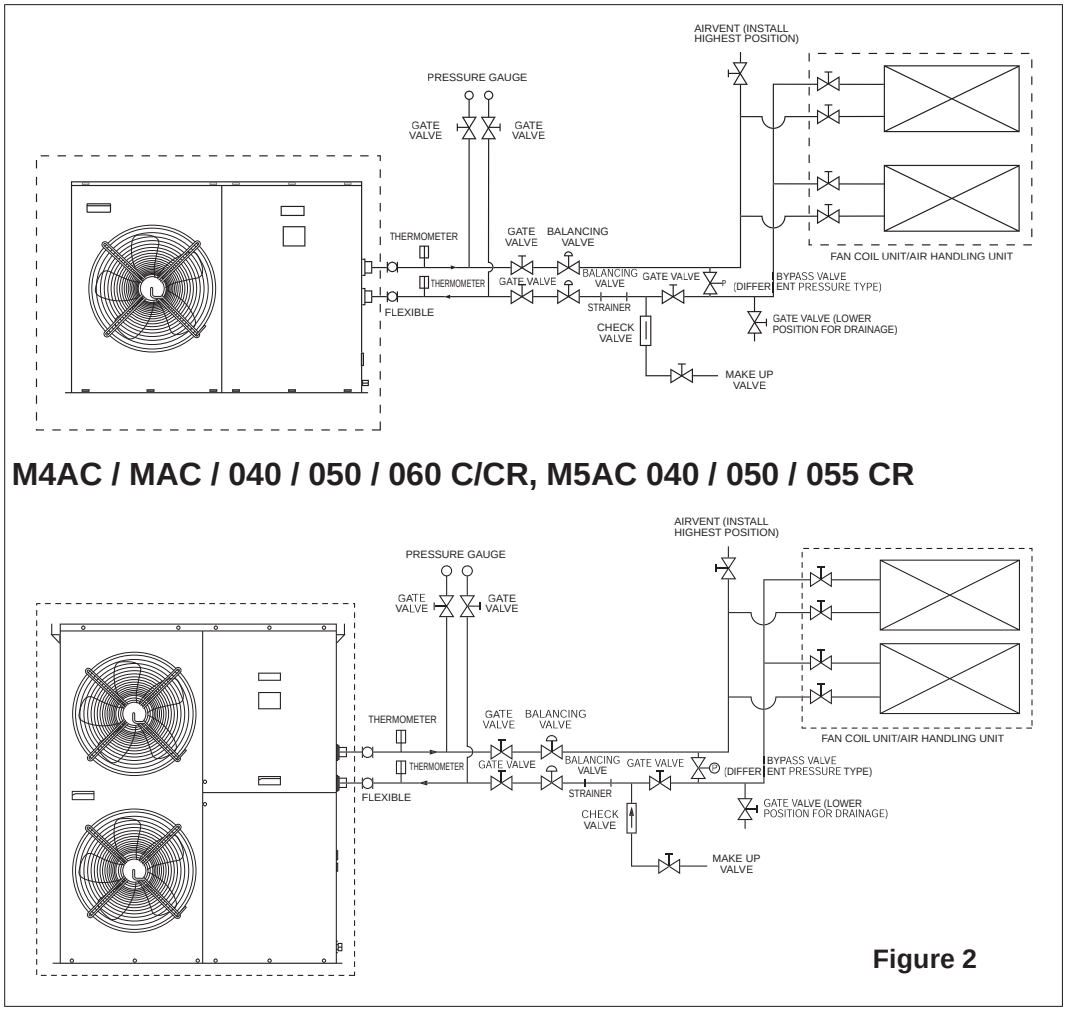


Figure 1

Water Piping and Fitting

- All water pipe must be insulated to prevent capacity losses and condensation.
- Install a 40-60 mesh strainer to ensure water quality is good.
- Water pipe recommended are black steel pipe and copper pipe.
- During installation, the piping of the unit should be clamp before rotating the installation pipe to reduce the moment induce on the unit piping.
- Users are recommended to install the pipe and accessories as shown in Figure 2 & 3.
- An air vent must be installed at the highest position, while a drainage plug at the lowest position of the water circuit. Open the air vent to release any air trap in the water circuit.
- Run the clean water through the water inlet and operate the pump to drain out the dirty water. Clean the strainer after running the pump for 30 minutes.
- Fill up the water circuit after connecting the pipes and equipment. Check water leakage at all connections and joints. Do not start the unit when the system is leaking.
- To optimize the capacity of the system, ensure that the system is free of air bubbles. The air trapped in the system would make the system unbalanced.

M4AC / MAC / 020 / 025 / 030 C/CR, M5AC 020 / 025 / 030 CR



M4AC / MAC / 040 / 050 / 060 C/CR, M5AC 040 / 050 / 055 CR

Figure 2

M4AC / MAC 080 / 100 / 120 / 150 C/CR

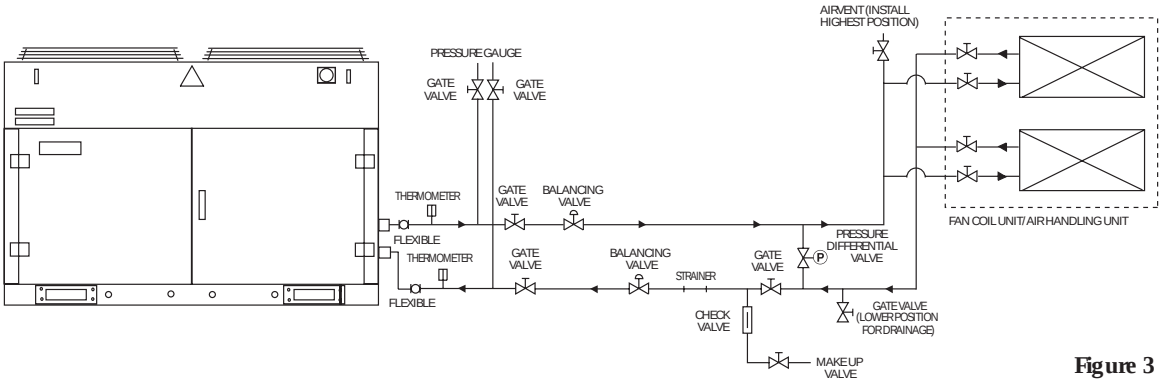


Figure 3

! CAUTION

- Do not allow water to remain in the water pipes if the unit is not operating for a long period. Water must be drained out if the unit is not running during winter. Failing to do so would cause the pipe to crack.
- Do not drink the chilled water in the unit.

Electrical And Wiring

- Refer to the wiring diagram provided on the unit when making electrical wiring.
- Install an isolator (optional) to prevent electrical shock.
- Do not ground any electrical equipment to the water piping.
- Operation of the mini chiller without any fan speed controller (Field supply) is limited to an ambient temperature of 20C. With the fan speed controller (Field supply), the unit is able to operate down to -5C.

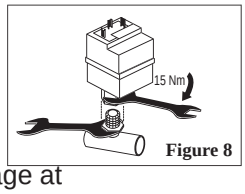
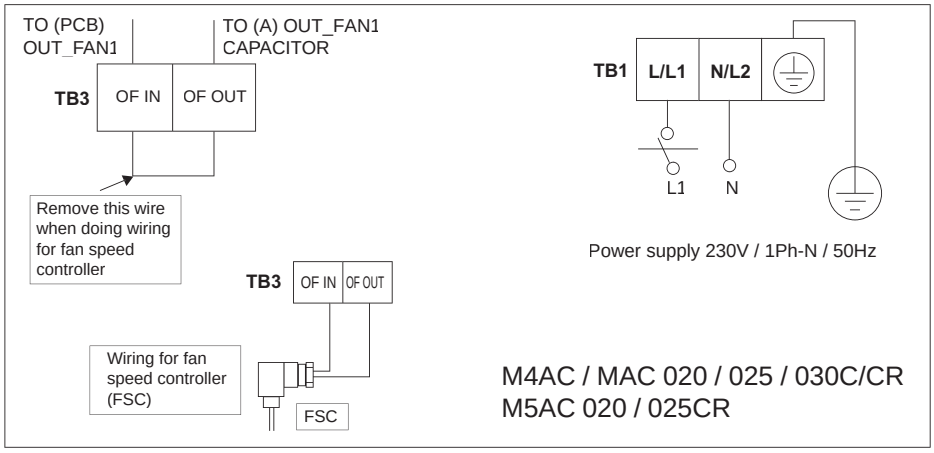
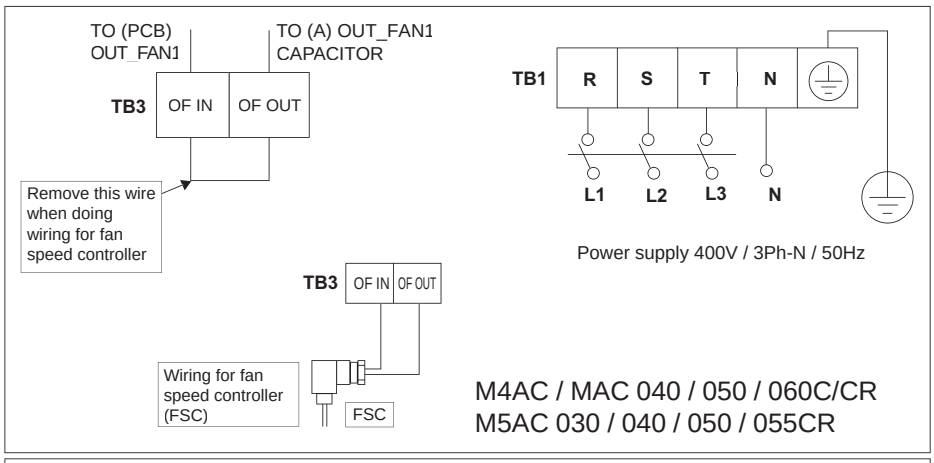
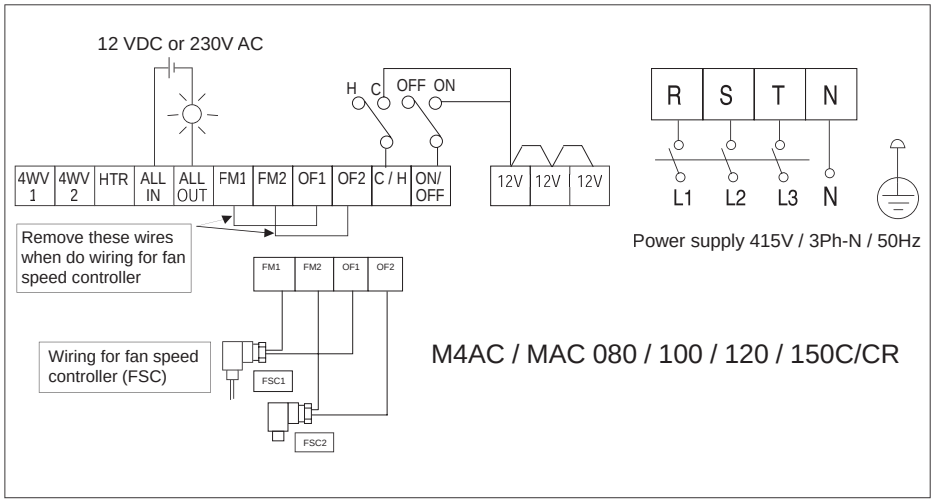


Figure 8

All mini chillers will have a 1/4” access valve provided for along the liquid line of the refrigerant circuit.This valve is for direct pressure connection to the fan speed controller. To install the fan speed controller, screw in the female adaptor to the 1/4” access valve. Use a pair of spanners to tighten properly(max. torque 15Nm). See Fig. 8. Ensure there is no leakage at the joint. Wire the fan speed controller to the terminal blocks.







Recommended fuse and cable sizes

Model	M4AC020C/CR MAC020C/CR	M4AC025C/CR MAC025C/CR	M4AC030C/CR MAC030C/CR	M4AC040C/CR MAC040C/CR
Voltage range **	220-240V/1Ph/50Hz + N + ⏚			380-415V/3Ph/50Hz + N + ⏚
Recommended fuse * A	27	38	45	22
Power supply cable size * mm^2	10	10	10	5
Numbers of conductor	3	3	3	5
Interconnection cable size * mm^2	1.5	1.5	1.5	1.5

Model	M4AC050C/CR MAC050C/CR	M4AC060C/CR MAC060C/CR
Voltage range **	380-415V/3Ph/50Hz + N + ⏚	
Recommended fuse * A	24	29
Power supply cable size * mm^2	5	5
Numbers of conductor	5	5
Interconnection cable size * mm^2	1.5	1.5

Model	M4AC080C/CR MAC080C/CR	M4AC100C/CR MAC100C/CR	M4AC120C/CR MAC120C/CR	M4AC150C/CR MAC150C/CR
Voltage range **	380-415V/3Ph/50Hz + N + ⏚			
Recommended fuse * A	35	40	50	60
Power supply cable size * mm^2	10	10	10	10
Numbers of conductor	5	5	5	5
Interconnection cable size * mm^2	1.5	1.5	1.5	1.5

Model	M5AC020CR	M5AC025CR	M5AC030CR	M5AC040CR
Voltage range **	220-240V/1Ph/50Hz + N + ⏚		380-415V/1Ph/50Hz + N + ⏚	
Recommended fuse * A	27	38	25	29
Power supply cable size * mm^2	10	10	10	10
Numbers of conductor	3	3	3	3
Interconnection cable size * mm^2	1.5	1.5	1.5	1.5

Model	M5AC050CR	M5AC055CR
Voltage range **	380-415V/1Ph/50Hz + N + ⏚	
Recommended fuse * A	33	36
Power supply cable size * mm^2	10	10
Numbers of conductor	3	3
Interconnection cable size * mm^2	1.5	1.5

IMPORTANT :

* The figures shown in the table are for information purpose only. They should be checked and selected to comply with the local/national codes of regulations. This is also subjected to the type of installation and conductors used.

** The appropriate voltage range should be checked with label data on the unit.

⚠ CAUTION

- All field wiring must be installed in accordance with the national wiring regulation.
- All the terminals and connections must be tightened. Improper connection and fastenings could cause electric shock, short circuit and fire.
- Ensure that the rated voltage of the unit corresponds to that of the name plate before commencing wiring work according to the wiring diagram.
- The unit mus be GROUNDED to prevent possible hazards due to insulation failure.
- All electrical wiring must not touch the refrigerant piping, compressor, pump, fan motor or any moving parts of the fan motors.
- Do not operate the chiller with wet hands. It would result in electric shock.
- Do not use fuse of different amperage than stated. Using wire etc. to replace a fuse could cause equipment damage or fire.

WARNING

- All terminals and connection must be tightened.
- Avoid any wires from touching the refrigerant pipe. Apply insulation if necessary.
- Avoid any wires from touching the moving components such as, fan motor, pump & compressor.

Water Piping System Setup

- Fill up the water circuit after connecing all the pipes and equipment. Perform leak checks for all connections and joints. Do not start the unit when the system is leaking.
- To optimize the capacity of the system, ensure that the system is free of air bubbles. The air trapped in the system would make the system unbalanced.
- Ensure that the water tank (optional) is not full. This is to ensure optimal performance of the mini chiller. If the pressure is too high, release the air trapped from the auto air vent (on the tank) and manual air vent (installed on the water system).

Refrigerant Circuit

- All mini chillers units are pre-charged with R22, R407C or R410A refrigerant. The only piping that needs to be done is the water piping from mini chiller (outdoor) to the fan coil unit (indoor).

Safety And Caution

It is advisable to read through all the safety precautions before installing and commissioning of the unit.

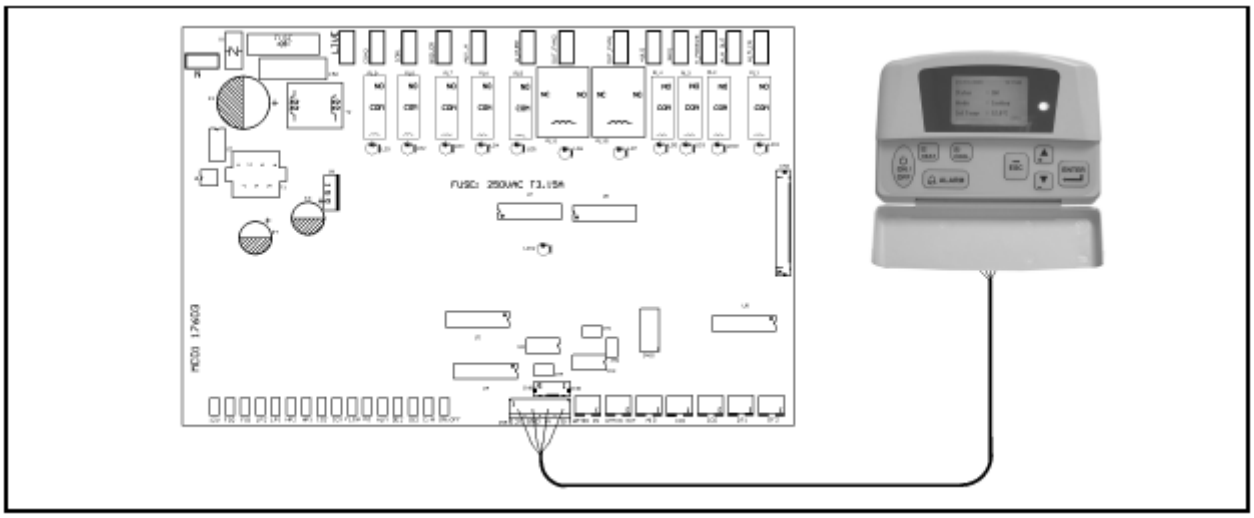
- Contact your dealer for installation, reinstallation or dismantling of unit. Improper handling of unit could result in leaks, electrical shock or unit malfunction.
- Use the controller handset to switch on/off the unit. Do not plug off the main power supply directly, it would cause the unit to breakdown.
- Improper connections and fastening could cause electric shock, short circuit and fire.
- Do not introduce foreign objects such as fingers, sticks etc. into the air inlet and outlet.
- Do not spray any chemical agents or flammable agents to the unit. It would cause fire or explosion.
- Do not climb or place objects on top of the mini chiller.
- Do not operate the chiller with wet hands. It would result in electric shock.
- Do not use fuse of different amperage than stated. Using wire, etc. to replace a fuse could cause equipment damage or fire.
- Provide proper grounding for the mini chiller. Do not connect the ground wire to gas piping, water piping, lighting rods or telephone ground wire. Improper grounding could cause electrical shock.
- Do not attempt to do any service or maintenance when unit is operating.
- Do not change the settings of the safety devices.
- Do not consume the chilled water in the unit.
- Do not allow water to remain in the water pipes if the unit is not operating for a long period. Water must be drained out if the unit is not running during winter. Failing to do so would cause the pipe to crack.
- Do not touch the aluminum fin coil. It would damage the coil or cause injury.

Caution

- R407C / R410A must be charged as liquid. Usually R407C / R410A cylinder is equipped with a dip-pipe for liquid withdrawal. If there is no dip-pipe, the cylinder should be inverted so as to withdraw liquid R407C / R410A from the valve.
- Do not top-up when servicing leak, as this will reduce the unit performance. Vacuum the unit thoroughly and then charge the unit with fresh R407C / R410A according to the amount recommended in the specification.

Control Operation Guide

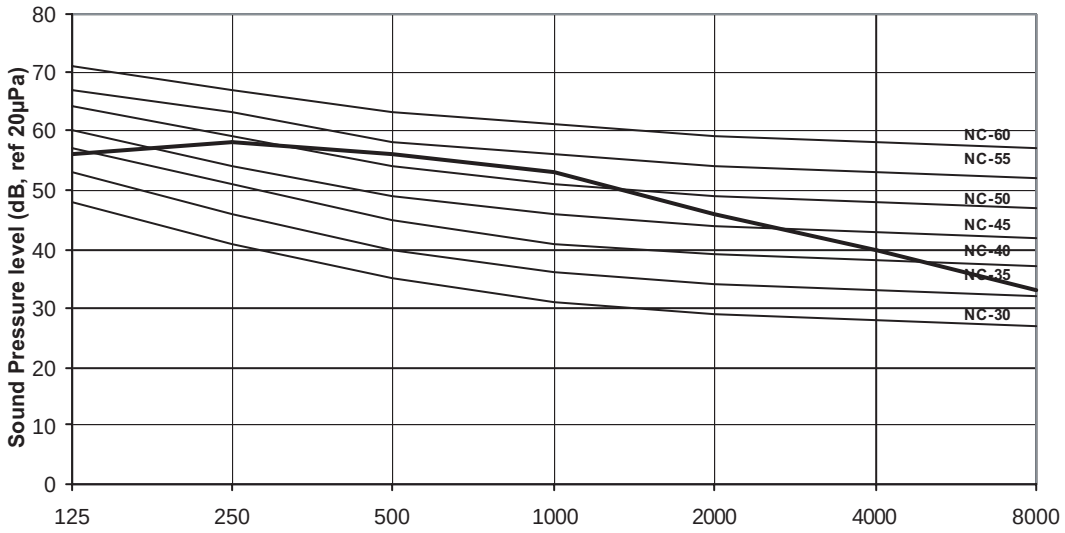
The unit is equipped with a microprocessor controller board. The microprocessor contorller is provided to give temperature control for the system by accurately measuring the ambient temperature, and controlling the water entering and water leaving temperature. The temperature setting in teh unit is preset in the factory. It is not recommended to chage the setting unless necessary. A wired contoller handset is connected to the microprocessor board. Every parameter setting and reading can be observed from the LCD of the handset.



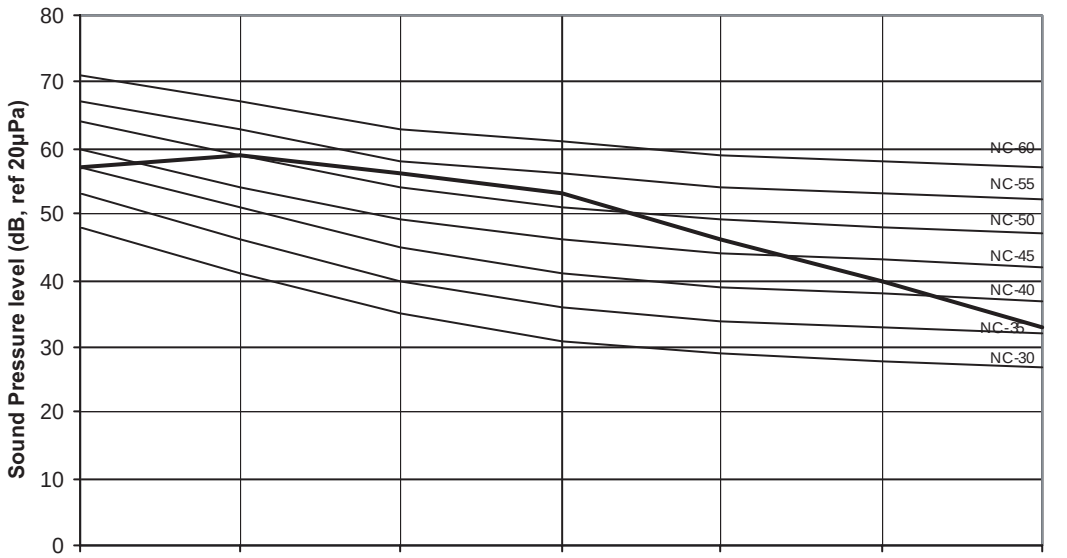
1. Handset location
   The handset is located on a metal bracket behind the right door panel.
2. LED Display (microprocessor board)
   The keypad LED will light up when the unit is turned on.
3. LCD display (contoller handset)
   During normal operations, the LCD can display the entering water temperature, the leaving water temperatur, the entering water setpoint temperature, compressor on or off status and outdoor air temperature. When malfunctioning occurred, the LCD would blink. The display would show the faulty parameter and the date and time of the occurance.
4. Controller functioning specification
   There is a 3 minute delay for the compressor and fan motor to restart (default setting). During defrosting, fan motor is not running.

Sound Data

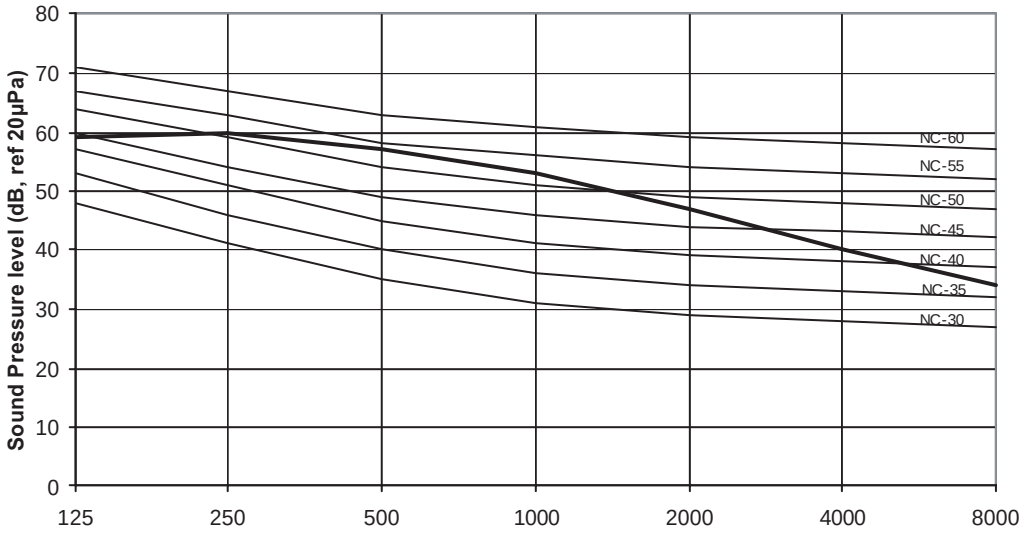
MAC/M4AC020C/CR, M5AC020CR NC CURVE



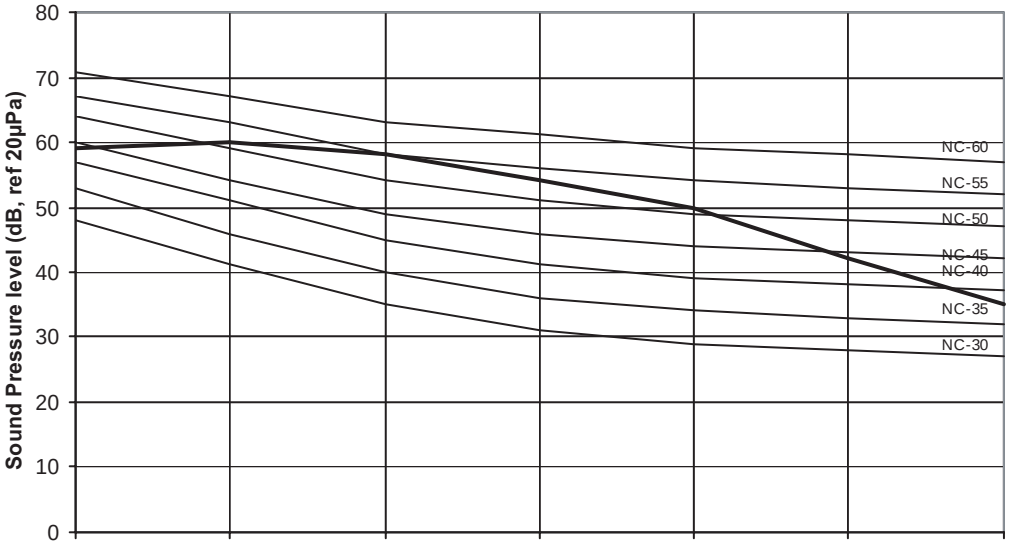
MAC/M4AC025C/CR, M5AC025CR NC CURVE



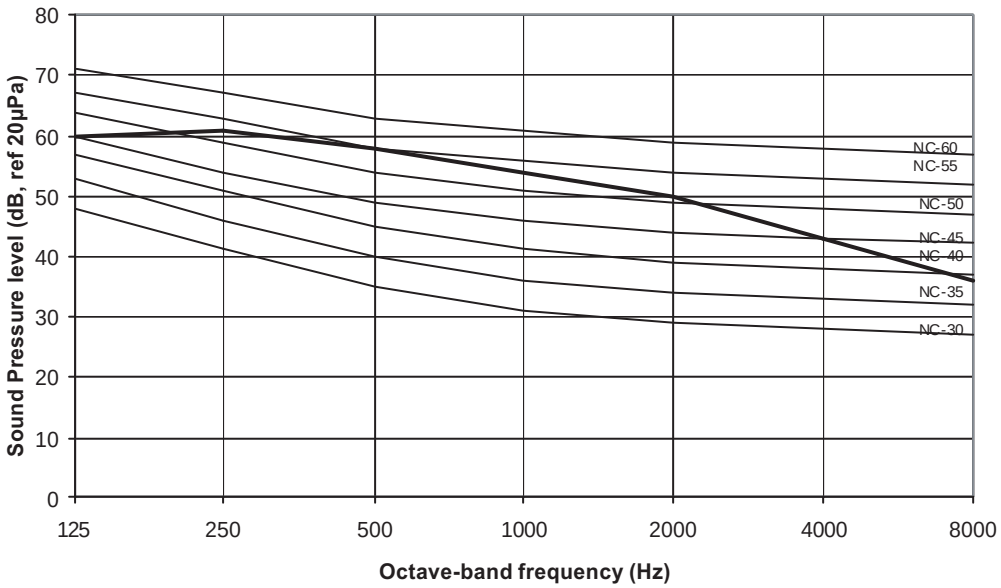
MAC/M4AC030C/CR NC CURVE



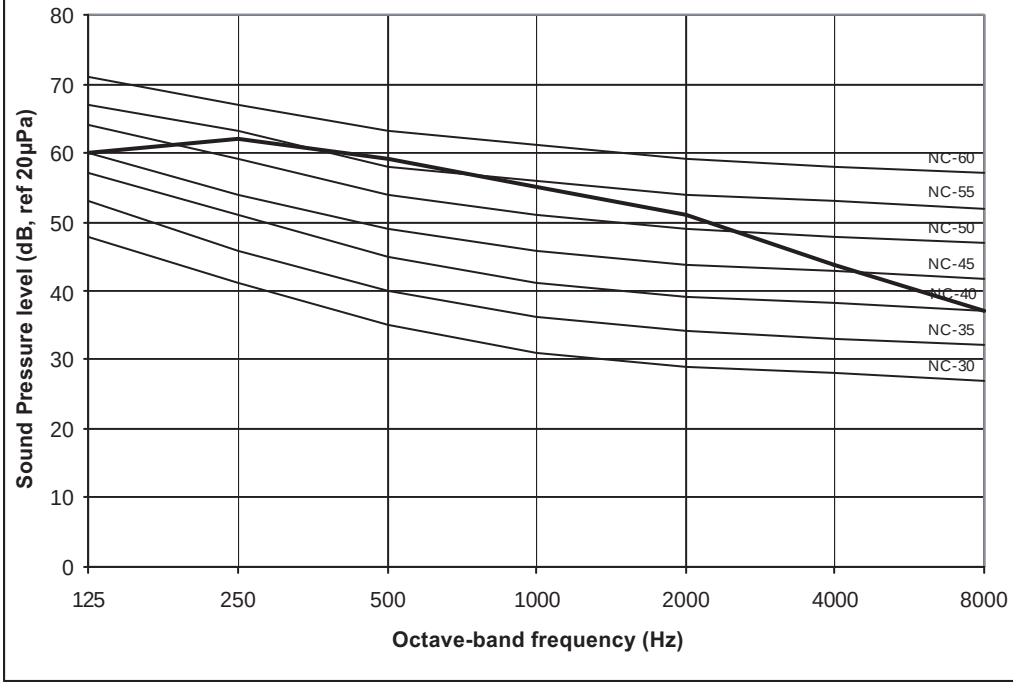
MAC/M4AC040C/CR NC CURVE



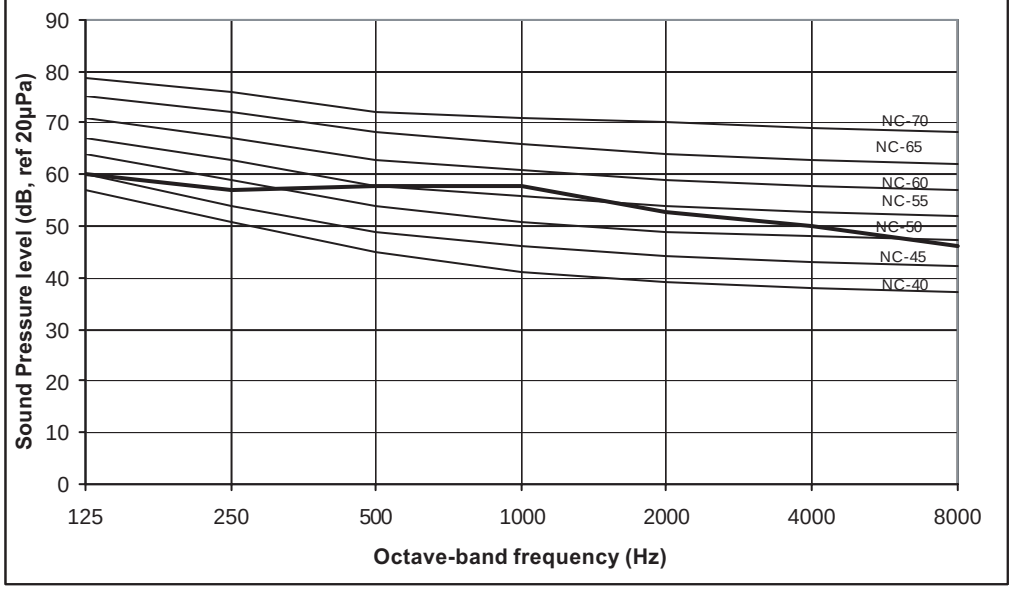
MAC/M4AC050C/CR NC CURVE



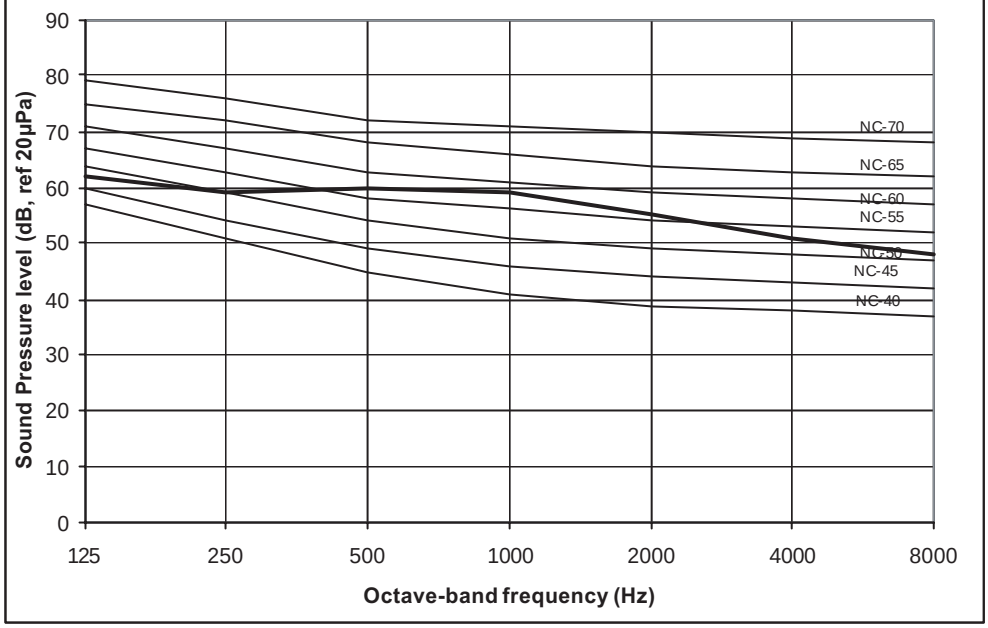
MAC/M4AC060C/CR NC CURVE



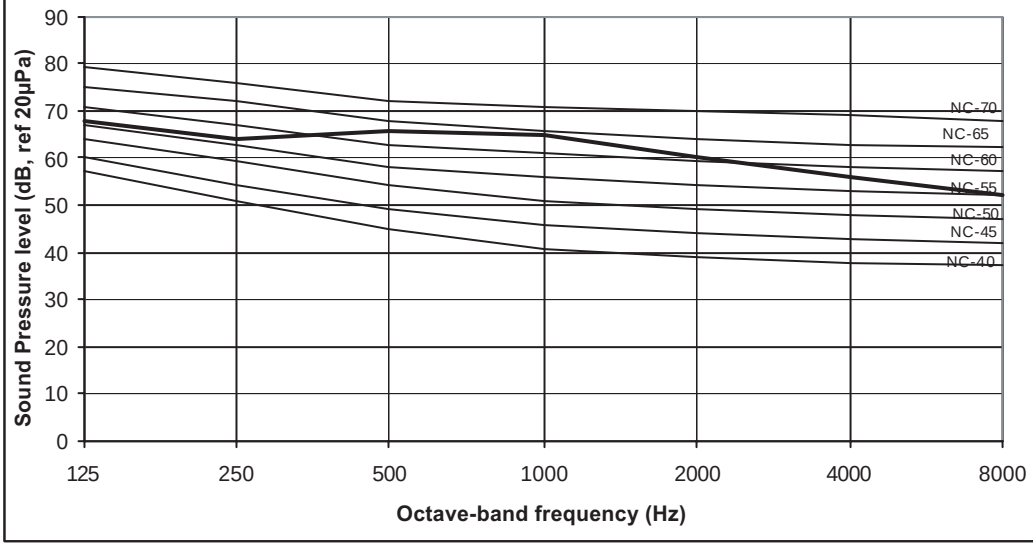
MAC/M4AC080C/CR NC CURVE



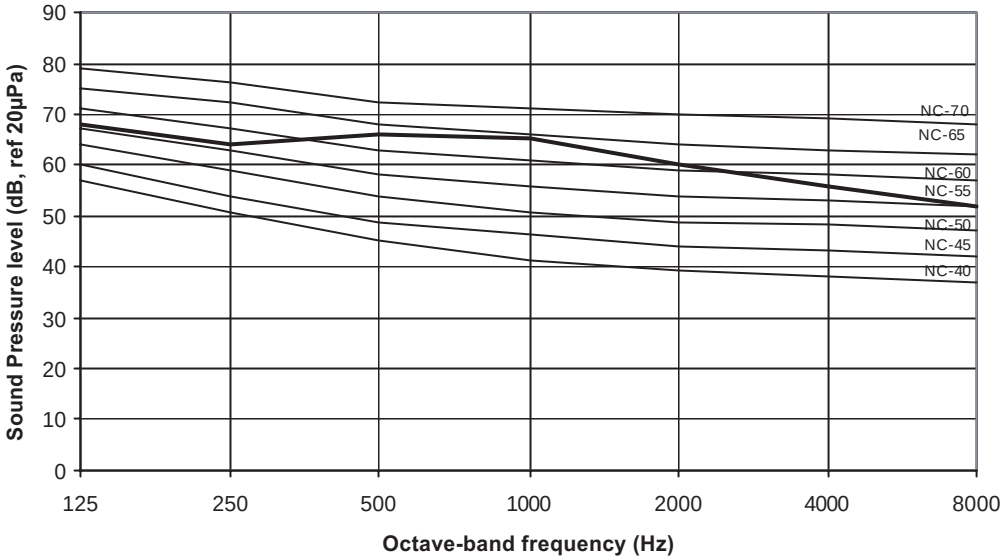
MAC/M4AC 100C/CR NC CURVE



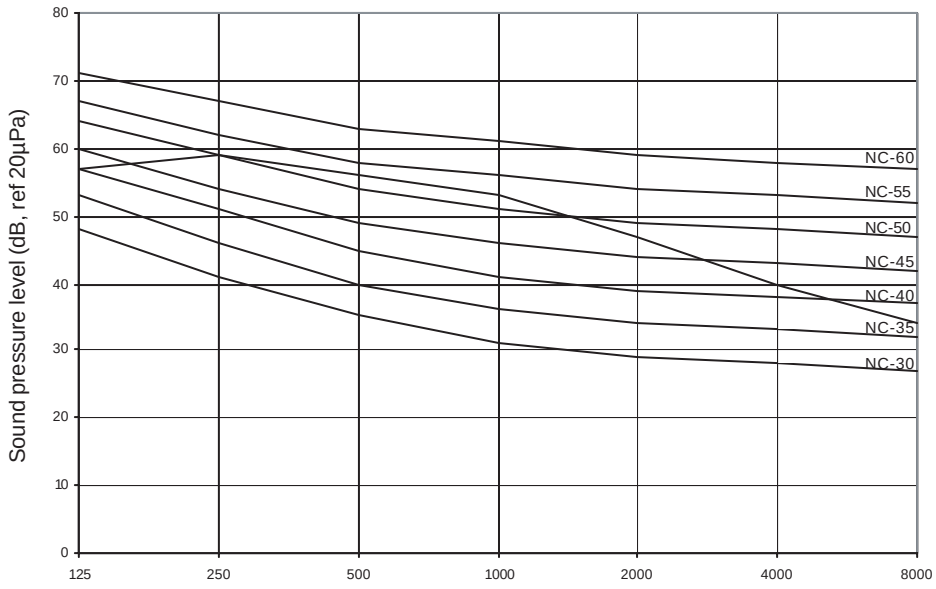
MAC/M4AC 120C/CR NC CURVE



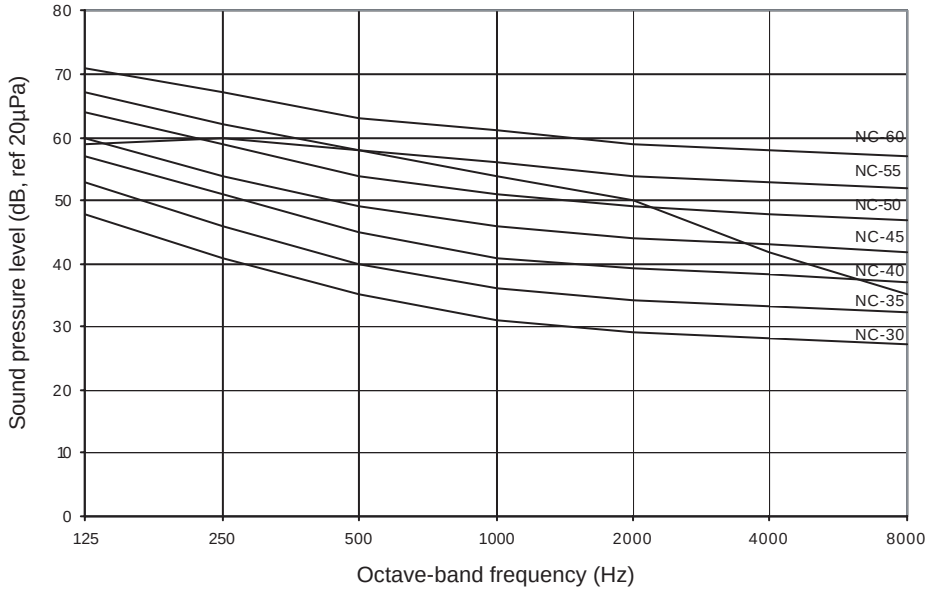
MAC/M4AC 150C/CR NC CURVE



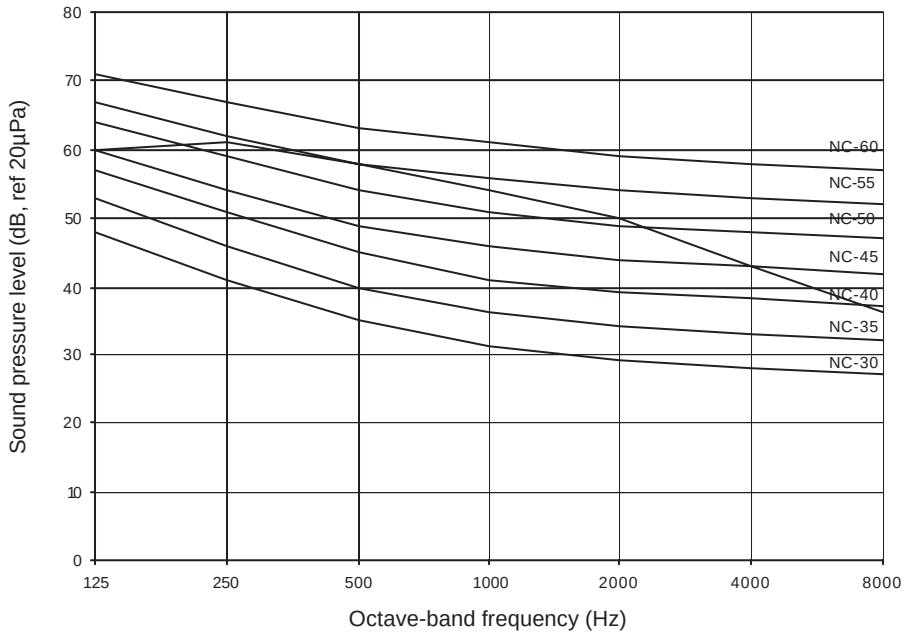
M5AC030C/CR NC CURVE



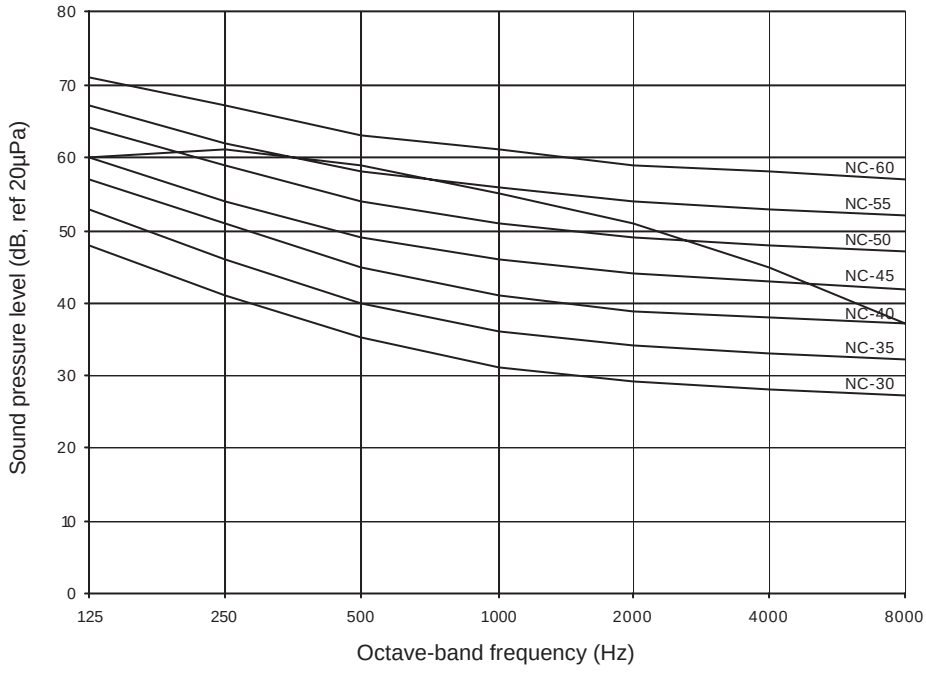
M5AC040C/CR NC CURVE



M5AC050C/CR NC CURVE



M5AC055C/CR NC CURVE



Selection Process

Water Pressure Drop vs Flow Rate

Model : MAC/M4AC020C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
0.6	117.0	12.0	105.0
0.8	115.0	25.0	90.0
1.0	114.0	34.0	80.0
1.2	112.0	50.0	62.0
1.4	108.0	59.9	48.1

Model : MAC/M4AC025C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
0.7	116.0	10.4	105.6
0.8	116.0	10.8	105.2
1.0	114.0	15.2	98.8
1.3	110.0	20.9	89.1
1.5	105.0	27.9	77.1
1.8	100.0	35.2	64.8

Model : MAC/M4AC030C/CR, M5AC030CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
0.9	115.0	7.4	107.6
1.2	112.0	12.3	99.7
1.5	105.0	19.6	85.4
1.8	98.0	29.4	68.6
2.1	90.0	36.8	53.2

Model : MAC/M4AC040C/CR, M5AC040CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
1.2	168.0	26.3	141.7
1.6	162.0	26.5	135.5
2.0	144.0	34.3	109.7
2.4	137.0	49.5	87.5
2.8	113.0	62.5	50.5

Model : MAC/M4AC050C/CR, M5AC050CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
1.5	163.0	15.0	148.0
2.0	144.0	25.7	118.3
2.5	126.0	39.4	86.6
3.0	107.0	52.6	54.4

Model : MAC/M4AC060C/CR, M5AC055CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
1.8	150.0	10.5	139.5
2.4	137.0	22.8	114.2
3.0	107.0	39.0	68.0
3.2	69.0	41.8	27.2

Model : MAC/M4AC080C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
2.4	300.0	18.7	281.3
3.2	270.0	32.6	237.4
4.0	260.0	49.3	210.7
4.8	230.0	69.6	160.4
5.6	200.0	93.5	106.5
6.4	175.0	121.0	54.0

Model : MAC/M4AC100C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
3.0	280.0	22.9	257.1
4.0	260.0	39.3	220.7
5.0	220.0	59.8	160.2
6.0	180.0	84.2	95.8
7.0	150.0	112.6	37.4

Model : MAC/M4AC120C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
3.0	280.0	16.6	263.4
4.0	270.0	28.6	241.4
5.0	260.0	43.6	216.4
6.0	250.0	61.5	188.5
7.0	230.0	82.4	147.6

Model : MAC/M4AC150C/CR

Water Flow m^3/hr	Pump Head kPa	System Head kPa	Available Head Presure kPa
3.0	280.0	13.8	266.2
4.0	270.0	23.7	246.3
5.0	260.0	36.0	224.0
6.0	250.0	50.7	199.3
7.0	230.0	67.8	162.2
8.0	210.0	87.1	122.9

Correction Factors With Glycol Use

	CAPACITY FACTOR			
	GLYCOL			
LWT/ deg C	10	20	30	40
-5		0.89	0.87	0.77
-3.9		0.9	0.876	0.781
-1.1	0.925	0.925	0.892	0.796
1.7	0.945	0.938	0.906	0.809
4.4	0.956	0.949	0.918	0.82
7.2	0.965	0.959	0.927	0.829
10	0.962	0.957	0.926	0.828

GYLCOL %	WATER FLOW	PRESSURE DROP
10	1.015	1.06
20	1.04	1.12
30	1.08	1.18
40	1.135	1.24

Engineering and Physical Data

General Data - R22 Cooling only

MODEL			MAC020C	MAC025C
NOMINAL COOLING CAPACITY		Btu/h	18000	23500
		W	5275	6887
NOMINAL TOTAL INPUT POWER		W	2669	2730
NOMINAL RUNNING CURRENT		A	12.6	12.6
POWER SOURCE		V/Ph/Hz	220-240 / 1 / 50	
REFRIGERANT TYPE			R22	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	800 / 31.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	958 / 37.7	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	116 / 256	123 / 271
SOUND PRESSURE LEVEL		dBA	57	57
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	0.25 / 0.9	0.33 / 1.2
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			1	1
HYDRAULIC KIT				
PUMP	TYPE		HIGH HEAD CIRCULATOR	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	0.25 / 0.9	0.33 / 1.2
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	m	9.2	9.5
TANK	MATERIAL		MILD STEEL COATED WITH ZING	
	CAPACITY/VOLUME	L / ft^3	22 / 0.78	
COMPRESSOR				
TYPE			ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	1.1 / 2.4	1.8 / 4.0

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Cooling only

MODEL			MAC030C	MAC040C
NOMINAL COOLING CAPACITY		Btu/h	27500	40000
		W	8059	11723
NOMINAL TOTAL INPUT POWER		W	3491	4470
NOMINAL RUNNING CURRENT		A	16.6	8.8
POWER SOURCE		V/Ph/Hz	220-240 / 1 / 50	380-415 / 3 / 50
REFRIGERANT TYPE			R22	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	800 / 31.5	1410 / 55.5
	WIDTH	mm/in	1160 / 45.7	1160 / 45.7
	DEPTH	mm/in	460 / 18.1	460 / 18.1
PACKING DIMENSION	HEIGHT	mm/in	958 / 37.7	1578 / 62.1
	WIDTH	mm/in	1309 / 51.5	1309 / 51.5
	DEPTH	mm/in	574 / 22.6	574 / 22.6
UNIT WEIGHT		kg/lb	128 / 282	195 / 430
SOUND PRESSURE LEVEL		dBA	58	60
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	0.39 / 1.4	0.56 / 2.0
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			1	2
HYDRAULIC KIT				
PUMP	TYPE		HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	0.39 / 1.4	0.56 / 2.0
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	m	9.6	9.7
TANK	MATERIAL		MILD STEEL COATED WITH ZING	
	CAPACITY/VOLUME	L / ft^3	22 / 0.78	40 / 1.41
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	1.6 / 3.5	2.7 / 6.0

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3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Cooling only

MODEL			MAC050C	MAC060C
NOMINAL COOLING CAPACITY		Btu/h	50000	53000
		W	14654	15533
NOMINAL TOTAL INPUT POWER		W	5245	6361
NOMINAL RUNNING CURRENT		A	9.3	12.3
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R22	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	1410 / 55.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	1578 / 62.1	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	196 / 432	203 / 448
SOUND PRESSURE LEVEL		dBA	60	61
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	0.70 / 2.5	0.74 / 2.7
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	0.70 / 2.5	0.74 / 2.7
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	m	7.5	8.3
TANK	MATERIAL		MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME	L / ft^3	40 / 1.41	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	3.1 / 6.8	3.1 / 6.8

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
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3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Cooling only

MODEL			MAC080C	MAC100C
NOMINAL COOLING CAPACITY		Btu/h	78000	93000
		W	22860	27257
NOMINAL TOTAL INPUT POWER		W	8667	10175
NOMINAL RUNNING CURRENT		A	16.3	17.0
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R22	
CONTROL			TXV	
UNIT DIMENSION	HEIGHT	mm/in	1245 / 49.0	
	WIDTH	mm/in	1500 / 59.1	
	DEPTH	mm/in	900 / 35.4	
PACKING DIMENSION	HEIGHT	mm/in	1452 / 57.2	
	WIDTH	mm/in	1732 / 68.2	
	DEPTH	mm/in	1032 / 40.6	
UNIT WEIGHT		kg/lb	340 / 750	350 / 772
SOUND PRESSURE LEVEL		dBA	65	66
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
PIPING	INSTALLATION PIPE CONNECITON	mm/in	42 / 1 1/4"	
	HEAD	m	21.6	18.7
TANK	MATERIAL		NA	
	CAPACITY/VOLUME	L / ft^3	NA	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	4.5 x2 / 9.9 x2	3.9 x2 / 8.6 x2

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3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Cooling only

MODEL			MAC120C	MAC150C
NOMINAL COOLING CAPACITY		Btu/h	116000	138000
		W	33998	40445
NOMINAL TOTAL INPUT POWER		W	11005	13779
NOMINAL RUNNING CURRENT		A	22.9	26.7
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R22	
CONTROL			TXV	
UNIT DIMENSION	HEIGHT	mm/in	1245 / 49.0	
	WIDTH	mm/in	1800 / 70.9	
	DEPTH	mm/in	1150 / 45.3	
PACKING DIMENSION	HEIGHT	mm/in	1452 / 57.2	
	WIDTH	mm/in	2032 / 80.0	
	DEPTH	mm/in	1282 / 50.5	
UNIT WEIGHT		kg/lb	460 / 1014	540 / 1190
SOUND PRESSURE LEVEL		dBA	67	69
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
PIPING	INSTALLATION PIPE CONNECITON	mm/in	42 / 1 1/4"	
	HEAD	m	19.2	16.5
TANK	MATERIAL		NA	
	CAPACITY/VOLUME	L / ft^3	NA	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	6.0 x2 / 13.2 x2	7.1 x2 / 15.7 x2

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3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Heat pump

MODEL			MAC020CR	MAC025CR
NOMINAL COOLING CAPACITY		Btu/h	18000	23000
		W	5275	6740
NOMINAL HEATING CAPACITY		Btu/h	22000	25000
		W	6448	7327
NOMINAL TOTAL INPUT POWER	COOLING	W	2599	2779
	HEATING	W	2770	2614
NOMINAL RUNNING CURRENT	COOLING	A	12.3	12.7
	HEATING	A	12.7	12.0
POWER SOURCE		V/Ph/Hz	220-240 / 1 / 50	
REFRIGERANT TYPE			R22	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	800 / 31.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	958 / 37.7	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	116 / 256	123 / 271
SOUND PRESSURE LEVEL		dBA	57	57
EVAPORATOR				
NOMINAL WATER FLOW	COOLING	l/s / m^3/hr	0.25 / 0.9	0.32 / 1.2
	HEATING	l/s / m^3/hr	0.31 / 1.1	0.35 / 1.3
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			1	1
HYDRAULIC KIT				
PUMP	TYPE		HIGH HEAD CIRCULATOR	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE COOLING	l/s / m^3/hr	0.25 / 0.9	0.32 / 1.2
	WATER FLOW RATE HEATING	l/s / m^3/hr	0.31 / 1.1	0.35 / 1.3
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD COOLING	m	9.2	9.6
	HEAD HEATING	m	7.2	9.1
TANK	MATERIAL		MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME	L / ft^3	22 / 0.78	
COMPRESSOR				
TYPE			ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	1.6 / 3.5	1.9 / 4.2

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Heat pump

MODEL				MAC030CR	MAC040CR
NOMINAL COOLING CAPACITY			Btu/h	27500	40000
			W	8060	11723
NOMINAL HEATING CAPACITY			Btu/h	31500	43000
			W	9232	12602
NOMINAL TOTAL INPUT POWER		COOLING	W	3541	4560
		HEATING	W	3561	4629
NOMINAL RUNNING CURRENT		COOLING	A	18.3	8.6
		HEATING	A	18.4	8.8
POWER SOURCE			V/Ph/Hz	220-240 / 1 / 50	380-415 / 3 / 50
REFRIGERANT TYPE				R22	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	800 / 31.5	1410 / 55.5
		WIDTH	mm/in	1160 / 45.7	1160 / 45.7
		DEPTH	mm/in	460 / 18.1	460 / 18.1
PACKING DIMENSION		HEIGHT	mm/in	958 / 37.7	1578 / 62.1
		WIDTH	mm/in	1309 / 51.5	1309 / 51.5
		DEPTH	mm/in	574 / 22.6	574 / 22.6
UNIT WEIGHT			kg/lb	128 / 282	195 / 430
SOUND PRESSURE LEVEL			dBA	58	60
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	0.39 / 1.4	0.56 / 2.0
		HEATING	l/s / m^3/hr	0.44 / 1.6	0.60 / 2.2
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.39 / 1.4	0.56 / 2.0
		HEATING	l/s / m^3/hr	0.44 / 1.6	0.60 / 2.2
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	9.5	9.7
		HEATING	m	8.2	8.8
TANK	MATERIAL			MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME		L / ft^3	22 / 0.78	40 / 1.41
COMPRESSOR					
TYPE				ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 100%	0 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	1.8 / 4.0	3.0 / 6.6

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Heat pump

MODEL			MAC050CR	MAC060CR
NOMINAL COOLING CAPACITY		Btu/h	46000	53000
		W	13481	15533
NOMINAL HEATING CAPACITY		Btu/h	52000	59000
		W	15240	17292
NOMINAL TOTAL INPUT POWER	COOLING	W	5046	6551
	HEATING	W	4999	6247
NOMINAL RUNNING CURRENT	COOLING	A	8.9	13.4
	HEATING	A	8.9	13.0
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R22	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	1410 / 55.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	1578 / 62.1	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	196 / 432	203 / 448
SOUND PRESSURE LEVEL		dBA	60	61
EVAPORATOR				
NOMINAL WATER FLOW	COOLING	l/s / m^3/hr	0.64 / 2.3	0.74 / 2.7
	HEATING	l/s / m^3/hr	0.73 / 2.6	0.83 / 3.0
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE COOLING	l/s / m^3/hr	0.64 / 2.3	0.74 / 2.7
	WATER FLOW RATE HEATING	l/s / m^3/hr	0.73 / 2.6	0.83 / 3.0
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD COOLING	m	9.0	8.4
	HEAD HEATING	m	6.3	5.1
TANK	MATERIAL		MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME	L / ft^3	40 / 1.41	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	3.7 / 8.2	4.0 / 8.8

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Heat pump

MODEL				MAC080CR	MAC100CR
NOMINAL COOLING CAPACITY			Btu/h	77000	94000
			W	22567	27549
NOMINAL HEATING CAPACITY			Btu/h	90000	110000
			W	26376	32239
NOMINAL TOTAL INPUT POWER		COOLING	W	9577	11255
		HEATING	W	9329	10759
NOMINAL RUNNING CURRENT		COOLING	A	16.3	18.3
		HEATING	A	15.7	17.4
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R22	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	1245 / 49.0	
		WIDTH	mm/in	1500 / 59.1	
		DEPTH	mm/in	900 / 35.4	
PACKING DIMENSION		HEIGHT	mm/in	1452 / 57.2	
		WIDTH	mm/in	1732 / 68.2	
		DEPTH	mm/in	1032 / 40.6	
UNIT WEIGHT			kg/lb	350 / 772	360 / 794
SOUND PRESSURE LEVEL			dBA	65	66
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
		HEATING	l/s / m^3/hr	1.14 / 4.1	1.37 / 4.9
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
		HEATING	l/s / m^3/hr	1.14 / 4.1	1.37 / 4.9
PIPING	INSTALLATION PIPE CONNECITON		mm/in	42 / 1 1/4"	
	HEAD	COOLING	m	21.8	18.3
		HEATING	m	18.0	13.4
TANK	MATERIAL			NA	
	CAPACITY/VOLUME		L / ft^3	NA	
COMPRESSOR					
TYPE				SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	4.3 x2 / 9.5 x2	4.5 x2 / 9.9 x2

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R22 Heat pump

MODEL				MAC120CR	MAC150CR
NOMINAL COOLING CAPACITY			Btu/h	113000	138000
			W	33118	40445
NOMINAL HEATING CAPACITY			Btu/h	120000	132000
			W	35169	38686
NOMINAL TOTAL INPUT POWER		COOLING	W	11714	13881
		HEATING	W	11948	14572
NOMINAL RUNNING CURRENT		COOLING	A	23.7	26.3
		HEATING	A	23.8	27.3
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R22	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	1245 / 49.0	
		WIDTH	mm/in	1800 / 70.9	
		DEPTH	mm/in	1150 / 45.3	
PACKING DIMENSION		HEIGHT	mm/in	1452 / 57.2	
		WIDTH	mm/in	2032 / 80.0	
		DEPTH	mm/in	1282 / 50.5	
UNIT WEIGHT			kg/lb	480 / 1058	560 / 1235
SOUND PRESSURE LEVEL			dBA	67	69
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
		HEATING	l/s / m^3/hr	1.79 / 6.4	2.10 / 7.6
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
		HEATING	l/s / m^3/hr	1.79 / 6.4	2.10 / 7.6
PIPING	INSTALLATION PIPE CONNECITON		mm/in	42 / 1 1/4"	
	HEAD	COOLING	m	19.7	16.5
		HEATING	m	18.4	17.4
TANK	MATERIAL			NA	
	CAPACITY/VOLUME		L / ft^3	NA	
COMPRESSOR					
TYPE				SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	7.6 x2 / 16.8 x2	6.5 x2 / 14.3 x2

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Cooling only

MODEL			M4AC020C	M4AC025C
NOMINAL COOLING CAPACITY		Btu/h	21000	23000
		W	6154	6740
NOMINAL TOTAL INPUT POWER		W	2617	2949
NOMINAL RUNNING CURRENT		A	12.5	13.6
POWER SOURCE		V/Ph/Hz	220-240 / 1 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	800 / 31.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	958 / 37.7	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	116 / 256	123 / 271
SOUND PRESSURE LEVEL		dBA	57	57
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	0.29 / 1.0	0.32 / 1.2
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			1	1
HYDRAULIC KIT				
PUMP	TYPE		HIGH HEAD CIRCULATOR	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	0.29 / 1.0	0.32 / 1.2
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	m	7.8	9.6
TANK	MATERIAL		MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME	L / ft^3	22 / 0.78	
COMPRESSOR				
TYPE			ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	1.1 / 2.4	1.9 / 4.2

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3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Cooling only

MODEL				M4AC030C	M4AC040C
NOMINAL COOLING CAPACITY			Btu/h	27000	40000
			W	7912	11723
NOMINAL TOTAL INPUT POWER			W	3679	4910
NOMINAL RUNNING CURRENT			A	17.4	9.3
POWER SOURCE			V/Ph/Hz	220-240 / 1 / 50	380-415 / 3 / 50
REFRIGERANT TYPE				R407C	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	800 / 31.5	1410 / 55.5
		WIDTH	mm/in	1160 / 45.7	1160 / 45.7
		DEPTH	mm/in	460 / 18.1	460 / 18.1
PACKING DIMENSION		HEIGHT	mm/in	958 / 37.7	1578 / 62.1
		WIDTH	mm/in	1309 / 51.5	1309 / 51.5
		DEPTH	mm/in	574 / 22.6	574 / 22.6
UNIT WEIGHT			kg/lb	128 / 282	195 / 430
SOUND PRESSURE LEVEL			dBA	58	60
EVAPORATOR					
NOMINAL WATER FLOW			l/s / m^3/hr	0.38 / 1.4	0.56 / 2.0
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				1	2
HYDRAULIC KIT					
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE		l/s / m^3/hr	0.38 / 1.4	0.56 / 2.0
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD		m	9.8	9.7
TANK	MATERIAL			MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME		L / ft^3	22 / 0.78	40 / 1.41
COMPRESSOR					
TYPE				SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 100%	0 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	1.7 / 3.7	3.4 / 7.5

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Cooling only

MODEL			M4AC050C	M4AC060C
NOMINAL COOLING CAPACITY		Btu/h	50000	52000
		W	14654	15240
NOMINAL TOTAL INPUT POWER		W	5955	6859
NOMINAL RUNNING CURRENT		A	10.2	12.9
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	1410 / 55.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	1578 / 62.1	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	196 / 432	203 / 448
SOUND PRESSURE LEVEL		dBA	60	61
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	0.70 / 2.5	0.73 / 2.6
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	0.70 / 2.5	0.73 / 2.6
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	m	7.5	8.7
TANK	MATERIAL		MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME	L / ft^3	40 / 1.41	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	3.4 / 7.5	3.5 / 7.6

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Cooling only

MODEL			M4AC080C	M4AC100C
NOMINAL COOLING CAPACITY		Btu/h	74000	88000
		W	21688	25791
NOMINAL TOTAL INPUT POWER		W	9463	10771
NOMINAL RUNNING CURRENT		A	17.3	18.0
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			TXV	
UNIT DIMENSION	HEIGHT	mm/in	1245 / 49.0	
	WIDTH	mm/in	1500 / 59.1	
	DEPTH	mm/in	900 / 35.4	
PACKING DIMENSION	HEIGHT	mm/in	1452 / 57.2	
	WIDTH	mm/in	1732 / 68.2	
	DEPTH	mm/in	1032 / 40.6	
UNIT WEIGHT		kg/lb	340 / 750	350 / 772
SOUND PRESSURE LEVEL		dBA	65	66
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
PIPING	INSTALLATION PIPE CONNECITON	mm/in	42 / 1 1/4"	
	HEAD	m	22.6	20.0
TANK	MATERIAL		NA	
	CAPACITY/VOLUME	L / ft^3	NA	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	4.0 x2 / 8.8 x2	3.9 x2 / 8.6 x2

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Cooling only

MODEL			M4AC120C	M4AC150C
NOMINAL COOLING CAPACITY		Btu/h	115000	13700
		W	33705	40152
NOMINAL TOTAL INPUT POWER		W	11805	14531
NOMINAL RUNNING CURRENT		A	23.6	27.9
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			TXV	
UNIT DIMENSION	HEIGHT	mm/in	1245 / 49.0	
	WIDTH	mm/in	1800 / 70.9	
	DEPTH	mm/in	1150 / 45.3	
PACKING DIMENSION	HEIGHT	mm/in	1452 / 57.2	
	WIDTH	mm/in	2032 / 80.0	
	DEPTH	mm/in	1282 / 50.5	
UNIT WEIGHT		kg/lb	460 / 1014	540 / 1190
SOUND PRESSURE LEVEL		dBA	67	69
EVAPORATOR				
NOMINAL WATER FLOW		l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
PIPING	INSTALLATION PIPE CONNECITON	mm/in	42 / 1 1/4"	
	HEAD	m	19.4	16.7
TANK	MATERIAL		NA	
	CAPACITY/VOLUME	L / ft^3	NA	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	5.6 x2 / 12.3 x2	6.0 x2 / 13.2 x2

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Heat pump

MODEL			M4AC020CR	M4AC025CR
NOMINAL COOLING CAPACITY		Btu/h	17000	22000
		W	4982	6448
NOMINAL HEATING CAPACITY		Btu/h	20000	25500
		W	5861	7474
NOMINAL TOTAL INPUT POWER	COOLING	W	2597	3076
	HEATING	W	2685	2745
NOMINAL RUNNING CURRENT	COOLING	A	12.6	14.3
	HEATING	A	13.0	14.1
POWER SOURCE		V/Ph/Hz	220-240 / 1 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	800 / 31.5	
	WIDTH	mm/in	1160 / 45.7	
	DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT	mm/in	958 / 37.7	
	WIDTH	mm/in	1309 / 51.5	
	DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT		kg/lb	116 / 256	123 / 271
SOUND PRESSURE LEVEL		dBA	57	57
EVAPORATOR				
NOMINAL WATER FLOW	COOLING	l/s / m^3/hr	0.24 / 0.9	0.31 / 1.1
	HEATING	l/s / m^3/hr	0.28 / 1.0	0.36 / 1.3
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			1	1
HYDRAULIC KIT				
PUMP	TYPE		HIGH HEAD CIRCULATOR	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.25 / 0.9	0.32 / 1.2
		HEATING	l/s / m^3/hr	0.31 / 1.1	0.35 / 1.3
PIPING	INSTALLATION PIPE CONNECITON	mm/in	25.4 / 1	
	HEAD	COOLING	m	9.7	9.8
		HEATING	m	8.0	9.0
TANK	MATERIAL		MILD STEEL COATED ZINC	
	CAPACITY/VOLUME	L / ft^3	22 / 0.78	
COMPRESSOR				
TYPE			ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 100%	0 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	1.5 / 3.3	1.8 / 4.0

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Heat pump

MODEL				M4AC030CR	M4AC040CR
NOMINAL COOLING CAPACITY			Btu/h	25000	40000
			W	7327	11723
NOMINAL HEATING CAPACITY			Btu/h	32500	45000
			W	9525	13188
NOMINAL TOTAL INPUT POWER		COOLING	W	3804	4820
		HEATING	W	4004	4994
NOMINAL RUNNING CURRENT		COOLING	A	19.2	9.1
		HEATING	A	20.0	9.2
POWER SOURCE			V/Ph/Hz	220-240 / 1 / 50	380-415 / 3 / 50
REFRIGERANT TYPE				R407C	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	800 / 31.5	1410 / 55.5
		WIDTH	mm/in	1160 / 45.7	1160 / 45.7
		DEPTH	mm/in	460 / 18.1	460 / 18.1
PACKING DIMENSION		HEIGHT	mm/in	958 / 37.7	1578 / 62.1
		WIDTH	mm/in	1309 / 51.5	1309 / 51.5
		DEPTH	mm/in	574 / 22.6	574 / 22.6
UNIT WEIGHT			kg/lb	128 / 282	195 / 430
SOUND PRESSURE LEVEL			dBA	58	60
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	0.35 / 1.3	0.56 / 2.0
		HEATING	l/s / m^3/hr	0.46 / 1.7	0.63 / 2.3
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.35 / 1.3	0.56 / 2.0
		HEATING	l/s / m^3/hr	0.46 / 1.7	0.63 / 2.3
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	10.2	9.7
		HEATING	m	7.9	7.9
TANK	MATERIAL			MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME		L / ft^3	22 / 0.78	40 / 1.41
COMPRESSOR					
TYPE				ROTARY	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 100%	0 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	1.6 / 3.5	3.0 / 6.6

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Heat pump

MODEL				M4AC050CR	M4AC060CR
NOMINAL COOLING CAPACITY			Btu/h	46000	51000
			W	13481	14947
NOMINAL HEATING CAPACITY			Btu/h	51000	60000
			W	14947	17584
NOMINAL TOTAL INPUT POWER		COOLING	W	5446	6507
		HEATING	W	5647	6268
NOMINAL RUNNING CURRENT		COOLING	A	9.5	12.7
		HEATING	A	9.8	12.6
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R407C	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	1410 / 55.5	
		WIDTH	mm/in	1160 / 45.7	
		DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION		HEIGHT	mm/in	1578 / 62.1	
		WIDTH	mm/in	1309 / 51.5	
		DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT			kg/lb	196 / 432	203 / 448
SOUND PRESSURE LEVEL			dBA	60	61
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	0.64 / 2.3	0.71 / 2.6
		HEATING	l/s / m^3/hr	0.71 / 2.6	0.84 / 3.0
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.64 / 2.3	0.71 / 2.6
		HEATING	l/s / m^3/hr	0.71 / 2.6	0.84 / 3.0
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	9.0	9.1
		HEATING	m	6.7	4.7
TANK	MATERIAL			MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME		L / ft^3	40 / 1.41	
COMPRESSOR					
TYPE				SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 100%	0 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	3.5 / 7.7	4.0 / 8.8

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Heat pump

MODEL			M4AC080CR	M4AC100CR
NOMINAL COOLING CAPACITY		Btu/h	74000	88000
		W	21688	25791
NOMINAL HEATING CAPACITY		Btu/h	90000	98000
		W	26377	28722
NOMINAL TOTAL INPUT POWER	COOLING	W	9946	11028
	HEATING	W	9975	11134
NOMINAL RUNNING CURRENT	COOLING	A	16.4	18.5
	HEATING	A	16.8	18.5
POWER SOURCE		V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE			R407C	
CONTROL			CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT	mm/in	1245 / 49.0	
	WIDTH	mm/in	1500 / 59.1	
	DEPTH	mm/in	900 / 35.4	
PACKING DIMENSION	HEIGHT	mm/in	1452 / 57.2	
	WIDTH	mm/in	1732 / 68.2	
	DEPTH	mm/in	1032 / 40.6	
UNIT WEIGHT		kg/lb	350 / 772	360 / 794
SOUND PRESSURE LEVEL		dBA	65	66
EVAPORATOR				
NOMINAL WATER FLOW	COOLING	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
	HEATING	l/s / m^3/hr	1.14 / 4.1	1.37 / 4.9
CONDENSER FAN				
TYPE/DRIVE			PROPELLER / DIRECT	
QUANTITY			2	2
HYDRAULIC KIT				
PUMP	TYPE		HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE	kPa / psi	1000 / 145	
	WATER FLOW RATE COOLING	l/s / m^3/hr	1.08 / 3.9	1.31 / 4.7
	WATER FLOW RATE HEATING	l/s / m^3/hr	1.14 / 4.1	1.37 / 4.9
PIPING	INSTALLATION PIPE CONNECITON	mm/in	42 / 1 1/4"	
	HEAD COOLING	m	22.5	20.0
	HEAD HEATING	m	18.0	17.1
TANK	MATERIAL		NA	
	CAPACITY/VOLUME	L / ft^3	NA	
COMPRESSOR				
TYPE			SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)			0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT				
CHARGING MASS		kg/lb	4.0 x2 / 8.8 x2	3.3 x2 / 7.3 x2

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R407C Heat pump

MODEL				M4AC120CR	M4AC150CR
NOMINAL COOLING CAPACITY			Btu/h	110000	130000
			W	32239	38101
NOMINAL HEATING CAPACITY			Btu/h	118000	144000
			W	34583	42204
NOMINAL TOTAL INPUT POWER		COOLING	W	12273	15151
		HEATING	W	12386	15824
NOMINAL RUNNING CURRENT		COOLING	A	24.2	27.8
		HEATING	A	23.8	29.0
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R407C	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION		HEIGHT	mm/in	1245 / 49.0	
		WIDTH	mm/in	1800 / 70.9	
		DEPTH	mm/in	1150 / 45.3	
PACKING DIMENSION		HEIGHT	mm/in	1452 / 57.2	
		WIDTH	mm/in	2032 / 80.0	
		DEPTH	mm/in	1282 / 50.5	
UNIT WEIGHT			kg/lb	480 / 1058	560 / 1235
SOUND PRESSURE LEVEL			dBA	67	69
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
		HEATING	l/s / m^3/hr	1.79 / 6.4	2.10 / 7.6
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	1.67 / 6.0	2.00 / 7.2
		HEATING	l/s / m^3/hr	1.79 / 6.4	2.10 / 7.6
PIPING	INSTALLATION PIPE CONNECITON		mm/in	42 / 1 1/4"	
	HEAD	COOLING	m	20.2	17.9
		HEATING	m	18.8	15.2
TANK	MATERIAL			NA	
	CAPACITY/VOLUME		L / ft^3	NA	
COMPRESSOR					
TYPE				SCROLL	SCROLL
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 50 - 100%	0 - 50 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	5.8 x2 / 12.8 x2	6.1 x2 / 13.4 x2

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R410A Heat pump

MODEL				M5AC020CR	M5AC025CR
NOMINAL COOLING CAPACITY			Btu/h	17000	21000
			W	4980	6150
NOMINAL HEATING CAPACITY			Btu/h	21500	25000
			W	6300	7330
NOMINAL TOTAL INPUT POWER	COOLING		W	2550	2760
	HEATING		W	2590	2790
NOMINAL RUNNING CURRENT	COOLING		A	11.9	12.7
	HEATING		A	12.1	12.9
POWER SOURCE			V/Ph/Hz	220-240 / 1 / 50	
REFRIGERANT TYPE				R410A	
CONTROL				CAPILLARY TUBE	
UNIT DIMENSION	HEIGHT		mm/in	800 / 31.5	
	WIDTH		mm/in	1160 / 45.7	
	DEPTH		mm/in	460 / 18.1	
PACKING DIMENSION	HEIGHT		mm/in	958 / 37.7	
	WIDTH		mm/in	1309 / 51.5	
	DEPTH		mm/in	574 / 22.6	
UNIT WEIGHT			kg/lb	125 / 276	165 / 364
SOUND PRESSURE LEVEL			dBA	57	57
EVAPORATOR					
NOMINAL WATER FLOW	COOLING		l/s / m^3/hr	0.23 / 0.84	0.28 / 1.00
	HEATING		l/s / m^3/hr	0.32 / 1.16	0.35 / 1.25
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				1	1
HYDRAULIC KIT					
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.23 / 0.84	0.28 / 1.00
		HEATING	l/s / m^3/hr	0.32 / 1.16	0.35 / 1.25
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	9.7	10.1
		HEATING	m	7.3	9.1
TANK	MATERIAL			MILD STEEL COATED WITH ZINC	
	CAPACITY/VOLUME		L / ft^3	22 / 0.78	
COMPRESSOR					
TYPE				ROTARY	ROTARY
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 100%	0 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	1.2 / 2.7	1.7 / 3.8

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R410A Heat pump

MODEL				M5AC030CR	M5AC040CR
NOMINAL COOLING CAPACITY			Btu/h	26800	37500
			W	7848	10981
NOMINAL HEATING CAPACITY			Btu/h	32500	40800
			W	9517	11947
NOMINAL TOTAL INPUT POWER		COOLING	W	3720	4330
		HEATING	W	3630	4490
NOMINAL RUNNING CURRENT		COOLING	A	16.7	20.3
		HEATING	A	16.3	21.0
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R410A	
CONTROL				CAPILLARY TUBE & TXV	
UNIT DIMENSION		HEIGHT	mm/in	790 / 31.1	1410 / 55.5
		WIDTH	mm/in	1010 / 39.8	1010 / 39.8
		DEPTH	mm/in	460 / 18.1	460 / 18.1
PACKING DIMENSION		HEIGHT	mm/in	958 / 37.7	1578 / 62.1
		WIDTH	mm/in	1204 / 47.4	1204 / 47.4
		DEPTH	mm/in	574 / 22.6	574 / 22.6
UNIT WEIGHT			kg/lb	125 / 276	165 / 364
SOUND PRESSURE LEVEL			dBA	58	60
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	0.42 / 1.5	0.53 / 1.9
		HEATING	l/s / m^3/hr		
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				1	2
HYDRAULIC KIT					
PUMP	TYPE			HIGH HEAD CIRCULATOR HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.42 / 1.5	0.53 / 1.9
		HEATING	l/s / m^3/hr		
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	9.7	10.6
		HEATING	m	7.9	9.4
TANK	MATERIAL			NA	
	CAPACITY/VOLUME		L / ft^3	NA	
COMPRESSOR					
TYPE				TANDEM ROTARY	TANDEM ROTARY
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 50 - 100%	0 - 40 - 60 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	2.2 / 4.9	3.6 / 7.8

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

General Data - R410A Heat pump

MODEL				M5AC050CR	M5AC055CR
NOMINAL COOLING CAPACITY			Btu/h	47000	50000
			W	13763	14641
NOMINAL HEATING CAPACITY			Btu/h	51000	55000
			W	14934	16105
NOMINAL TOTAL INPUT POWER		COOLING	W	5090	5890
		HEATING	W	5130	5990
NOMINAL RUNNING CURRENT		COOLING	A	23.0	27.3
		HEATING	A	23.5	27.7
POWER SOURCE			V/Ph/Hz	380-415 / 3 / 50	
REFRIGERANT TYPE				R410A	
CONTROL				CAPILLARY TUBE & TXV	
UNIT DIMENSION		HEIGHT	mm/in	1410 / 55.5	
		WIDTH	mm/in	1010 / 39.8	
		DEPTH	mm/in	460 / 18.1	
PACKING DIMENSION		HEIGHT	mm/in	1578 / 62.1	
		WIDTH	mm/in	1204 / 47.4	
		DEPTH	mm/in	574 / 22.6	
UNIT WEIGHT			kg/lb	167 / 368	173 / 381
SOUND PRESSURE LEVEL			dBA	60	60
EVAPORATOR					
NOMINAL WATER FLOW		COOLING	l/s / m^3/hr	0.64 / 2.3	0.72 / 2.6
		HEATING	l/s / m^3/hr		
CONDENSER FAN					
TYPE/DRIVE				PROPELLER / DIRECT	
QUANTITY				2	2
HYDRAULIC KIT					
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MAX. WATER OPER. PRESSURE		kPa / psi	1000 / 145	
	WATER FLOW RATE	COOLING	l/s / m^3/hr	0.64 / 2.3	0.72 / 2.6
		HEATING	l/s / m^3/hr		
PIPING	INSTALLATION PIPE CONNECITON		mm/in	25.4 / 1	
	HEAD	COOLING	m	8.6	9.5
		HEATING	m	6.8	7.1
TANK	MATERIAL			NA	
	CAPACITY/VOLUME		L / ft^3	NA	
COMPRESSOR					
TYPE				TANDEM ROTARY	TANDEM ROTARY
STAGE OF CAPACITY CONTROL (Btu/h)				0 - 40 - 60 - 100%	0 - 50 - 100%
REFRIGERANT					
CHARGING MASS			kg/lb	4.2 / 9.3	4.4 / 9.7

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.
2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 & ISO13253.
3) NOMINAL COOLING AND HEATING CAPACITY ARE BASED ON THE CONDITIONS BELOW :
a) COOLING - 12°C / 7°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 35°C AIR AMBIENT TEMPERATURE.
b) HEATING - 40°C / 45°C ENTERING / LEAVING EVAPORATOR WATER TEMPERATURE, 7°C AIR AMBIENT TEMPERATURE.
4) SOUND PRESSURE LEVEL ARE ACCORDING TO JIS B 8615 STANDARD. POSITION OF THE MEASUREMENT POINT IS 1m IN FRONT AND 1m BELOW THE UNIT.

Components Data - R22 Cooling only

MODEL				MAC020C	MAC025C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	1
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	1
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			ROTARY	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1130 / 38	1240 / 42
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	0.35 / 0.014
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.66 / 7.1	0.65 / 7.0
		ROW		1	2
		FIN PER INCH		20	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Cooling only

MODEL				MAC030C	MAC040C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1240 / 42	1950 / 66
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.65 / 7.0	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Cooling only

MODEL				MAC050C	MAC060C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1770 / 60	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	0.33 / 0.013
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.17 / 12.6	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Cooling only

MODEL				MAC080C	MAC100C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1950 / 66	1770 / 60
		COMP2	cm^3 / fl.oz.	1950 / 66	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.37 / 14.7	1.37 / 14.7
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Cooling only

MODEL				MAC120C	MAC150C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1770 / 60	2510 / 85
		COMP2	cm^3 / fl.oz.	1770 / 60	2510 / 85
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.79 / 19.3	1.79 / 19.3
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Heat pump

MODEL				MAC020CR	MAC025CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	1
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	1
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			ROTARY	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1130 / 38	1240 / 42
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	0.35 / 0.014
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.66 / 7.1	0.65 / 7.0
		ROW		1	2
		FIN PER INCH		20	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Heat pump

MODEL				MAC030CR	MAC040CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1240 / 42	1950 / 66
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.65 / 7.0	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Heat pump

MODEL				MAC050CR	MAC060CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT		cm^3 / fl.oz.	1770 / 60	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	0.33 / 0.013
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.17 / 12.6	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Heat pump

MODEL				MAC080CR	MAC100CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1950 / 66	1770 / 60
		COMP2	cm^3 / fl.oz.	1950 / 66	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.37 / 14.7	1.37 / 14.7
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R22 Heat pump

MODEL				MAC120CR	MAC150CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			MINERAL OIL	MINERAL OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1770 / 60	2510 / 85
		COMP2	cm^3 / fl.oz.	1770 / 60	2510 / 85
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.79 / 19.3	1.79 / 19.3
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Cooling only

MODEL				M4AC020C	M4AC025C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	1
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	1
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			ROTARY	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	700 / 24	1240 / 42
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	0.35 / 0.014
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.66 / 7.1	0.65 / 7.0
		ROW		1	2
		FIN PER INCH		20	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Cooling only

MODEL				M4AC030C	M4AC040C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	1240 / 42	1950 / 66
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.65 / 7.0	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Cooling only

MODEL				M4AC050C	M4AC060C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	1770 / 60	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	0.33 / 0.013
	FIN	MATERIAL		ALUMINIUM	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.17 / 12.6	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Cooling only

MODEL				M4AC080C	M4AC100C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1950 / 66	1770 / 60
		COMP2	cm^3 / fl.oz.	1950 / 66	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.37 / 14.7	1.37 / 14.7
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Cooling only

MODEL				M4AC120C	M4AC150C
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1770 / 60	2510 / 85
		COMP2	cm^3 / fl.oz.	1770 / 60	2510 / 85
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.79 / 19.3	1.79 / 19.3
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Components Data - R407C Heat pump

MODEL				M4AC020CR	M4AC025CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	1
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	1
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			ROTARY	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	700 / 24	1240 / 42
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	0.35 / 0.014
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.66 / 7.1	0.65 / 7.0
		ROW		1	2
		FIN PER INCH		20	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R407C Heat pump

MODEL				M4AC030CR	M4AC040CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	1240 / 42	1950 / 66
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.65 / 7.0	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	HORIZONTAL MULTISTAGE END-SUCTION
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R407C Heat pump

MODEL				M4AC050CR	M4AC060CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	1770 / 60	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.35 / 0.014	0.33 / 0.013
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.17 / 12.6	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R407C Heat pump

MODEL				M4AC080CR	M4AC100CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1950 / 66	1770 / 60
		COMP2	cm^3 / fl.oz.	1950 / 66	1770 / 60
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.37 / 14.7	1.37 / 14.7
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R407C Heat pump

MODEL				M4AC120CR	M4AC150CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			ALUMINIUM	
	DRIVE			DIRECT	
	DIAMETER		mm/in	609.6 / 24	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1770 / 60	2510 / 85
		COMP2	cm^3 / fl.oz.	1770 / 60	2510 / 85
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.33 / 0.013	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.79 / 19.3	1.79 / 19.3
		ROW		2	2
		FIN PER INCH		14	14
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R410A Heat pump

MODEL				M5AC020CR	M5AC025CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	1
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	1
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT		cm^3 / fl.oz.	1130 / 38	1130 / 38
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.37 / 0..015	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.66 / 7.1	0.65 / 7.0
		ROW		1	2
		FIN PER INCH		20	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HIGH HEAD CIRCULATOR	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R410A Heat pump

MODEL				M5AC030CR	M5AC040CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			1	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			1	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	670 / 23	670 / 23
		COMP2	cm^3 / fl.oz.	670 / 23	1130 / 38
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.37 / 0.015	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	0.65 / 7.0	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Components Data - R410A Heat pump

MODEL				M5AC050CR	M5AC055CR
CONDENSER FAN	TYPE			PROPELLER	
	Q'TY			2	2
	MATERIAL			STEEL PLATE	
	DRIVE			DIRECT	
	DIAMETER		mm/in	457.2 / 18	
CONDENSER FAN MOTOR	TYPE			INDUCTION	
	Q'TY			2	2
	INDEX OF PROTECTION (IP)			NA	NA
COMPRESSOR	TYPE			SCROLL	SCROLL
	OIL TYPE			POE OIL	POE OIL
	OIL AMOUNT	COMP1	cm^3 / fl.oz.	1130 / 38	1130 / 38
		COMP2	cm^3 / fl.oz.	1130 / 38	1130 / 38
CONDENSER COIL	TYPE			CROSS FINNED TUBES	
	TUBE	MATERIAL		SEAMLESS COPPER	
		DIAMETER	mm/in	9.52 / 3/8	
		THICKNESS	mm/in	0.37 / 0.015	
	FIN	MATERIAL		ALUMINIUM (HYDROPHILIC GOLD)	
		THICKNESS	mm/in	0.11 / 0.0043	
		FACE AREA	m^2 / ft^2	1.17 / 12.6	1.17 / 12.6
		ROW		2	2
		FIN PER INCH		16	16
BPHE	TYPE			BRAZED PLATE HEAT EXCHANGER	
	MATERIAL			STAINLESS STEEL	
PUMP	TYPE			HORIZONTAL MULTISTAGE END-SUCTION	
	MATERIAL			CAST IRON & STAINLESS STEEL	
CASING	MATERIAL			ELECTRO-GALVANIZED MILD STEEL	
	FINISH			POLYESTER POWDER	
	COLOUR			LIGHT GREY	

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Safety Devices - R22 Cooling only & Heat pump

MODEL				MAC020C/CR	MAC025C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	2939 / 426	2939 / 426
		CLOSE	kPa / psi	2415 / 350	2415 / 350
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	125 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				MAC030C/CR	MAC040C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	2939 / 426	2939 / 426
		CLOSE	kPa / psi	2415 / 350	2415 / 350
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	125 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			NA	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	NA	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				MAC050C/CR	MAC060C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	2939 / 426	2939 / 426
		CLOSE	kPa / psi	2415 / 350	2415 / 350
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	125 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

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Safety Devices - R22 Cooling only & Heat pump

MODEL				MAC080C/CR	MAC100C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	2939 / 426	2939 / 426
		CLOSE	kPa / psi	2415 / 350	2415 / 350
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	125 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				MAC120C/CR	MAC150C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	2939 / 426	2939 / 426
		CLOSE	kPa / psi	2415 / 350	2415 / 350
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	125 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

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Safety Devices - R407C Cooling only & Heat pump

MODEL				M4AC020C/CR	M4AC025C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	3243 / 470	3243 / 470
		CLOSE	kPa / psi	2650 / 384	2650 / 384
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				M4AC030C/CR	M4AC040C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	3243 / 470	3243 / 470
		CLOSE	kPa / psi	2650 / 384	2650 / 384
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING	°C / °F		110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				M4AC050C/CR	M4AC060C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	3243 / 470	3243 / 470
		CLOSE	kPa / psi	2650 / 384	2650 / 384
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING	°C / °F		110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Safety Devices - R407C Cooling only & Heat pump

MODEL				M4AC080C/CR	M4AC100C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	3243 / 470	3243 / 470
		CLOSE	kPa / psi	2650 / 384	2650 / 384
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				M4AC120C/CR	M4AC150C/CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	3243 / 470	3243 / 470
		CLOSE	kPa / psi	2650 / 384	2650 / 384
	LOW PRESSURE SWITCH (COOLING ONLY)	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	LOW PRESSURE SWITCH (HEAT PUMP)	TYPE		NC	NC
		OPEN	kPa / psi	48 / 7	48 / 7
		CLOSE	kPa / psi	152 / 22	152 / 22
	PHASE PROTECTION			BUILT IN ON BOARD	BUILT IN ON BOARD
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	DISCH. THERMOSTAT SETTING		°C / °F	110 / 230	110 / 230
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Safety Devices - R410A Heat pump

MODEL				M5AC030CR	M5AC040CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	4140 / 600	4140 / 600
		CLOSE	kPa / psi	3312 / 480	3312 / 480
	LOW PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

MODEL				M5AC050CR	M5AC055CR
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	4140 / 600	4140 / 600
		CLOSE	kPa / psi	3312 / 480	3312 / 480
	LOW PRESSURE SWITCH	TYPE		NC	NC
		OPEN	kPa / psi	124 / 18	124 / 18
		CLOSE	kPa / psi	193 / 28	193 / 28
	DIFFERENTIAL PRESSURE SWITCH			YES	YES
	ANTI-FREEZE PROTECTION SENSOR			YES	YES
	OVER PRESSURE RELIEF VALVE			YES	YES
	ANTI-FREEZE HEATER ON BPHE			YES	YES
	PUMP OLP			YES	YES
	COMPRESSOR OLP			YES	YES

1) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

Cooling Only
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW
MAC020C	4	4.62	2.18	4.49	2.32	4.30	2.49	4.25	2.60	3.92	2.84	3.84	2.91	3.60	3.09
	5	5.00	2.19	4.84	2.34	4.62	2.51	4.59	2.62	4.19	2.86	4.10	2.93	3.85	3.11
	6	5.38	2.21	5.18	2.35	4.94	2.53	4.88	2.64	4.46	2.88	4.36	2.95	4.10	3.13
	7	5.76	2.22	5.53	2.37	5.26	2.55	5.28	2.68	4.73	2.90	4.63	2.97	4.36	3.15
	8	6.13	2.24	5.88	2.39	5.59	2.56	5.44	2.68	5.00	2.92	4.89	2.99	4.61	3.17
	9	6.51	2.25	6.22	2.40	5.91	2.58	5.72	2.70	5.28	2.94	5.15	3.01	4.86	3.19
	10	6.89	2.27	6.57	2.42	6.23	2.60	5.94	2.72	5.55	2.96	5.41	3.03	5.11	3.21
MAC025C	4	8.52	1.90	7.65	2.13	6.72	2.37	5.94	2.60	4.85	2.84	3.92	3.08	3.64	3.12
	5	8.67	1.90	7.85	2.16	6.94	2.41	6.26	2.65	5.13	2.93	4.23	3.18	3.93	3.23
	6	8.83	1.91	8.04	2.19	7.17	2.46	6.55	2.69	5.41	3.01	4.54	3.28	4.23	3.34
	7	8.98	1.92	8.24	2.22	7.39	2.51	6.89	2.74	5.70	3.09	4.85	3.39	4.53	3.44
	8	9.14	1.93	8.44	2.24	7.62	2.56	7.12	2.78	5.98	3.18	5.16	3.49	4.83	3.55
	9	9.29	1.94	8.64	2.27	7.85	2.60	7.41	2.82	6.26	3.26	5.47	3.59	5.12	3.66
	10	9.45	1.95	8.84	2.30	8.07	2.65	7.67	2.86	6.55	3.35	5.78	3.70	5.42	3.76
MAC030C	4	8.85	2.43	8.05	2.80	7.25	3.16	6.59	3.40	5.65	3.90	5.33	4.05	4.69	4.34
	5	9.02	2.48	8.30	2.84	7.59	3.21	7.08	3.43	6.16	3.94	5.87	4.09	5.30	4.38
	6	9.18	2.53	8.55	2.89	7.92	3.26	7.45	3.46	6.67	3.98	6.41	4.13	5.91	4.42
	7	9.35	2.58	8.81	2.94	8.26	3.30	8.06	3.50	7.17	4.03	6.96	4.17	6.52	4.46
	8	9.52	2.62	9.06	2.99	8.60	3.35	8.18	3.53	7.68	4.07	7.50	4.21	7.13	4.50
	9	9.68	2.67	9.31	3.03	8.94	3.39	8.55	3.56	8.19	4.11	8.04	4.26	7.74	4.55
	10	9.85	2.72	9.56	3.08	9.27	3.44	8.79	3.59	8.70	4.16	8.58	4.30	8.35	4.59
MAC040C	4	11.73	3.14	11.22	3.34	10.62	3.79	10.25	4.03	9.41	4.68	9.17	4.86	8.55	5.55
	5	12.19	3.16	11.71	3.40	11.15	3.86	10.81	4.16	10.03	4.77	9.80	4.95	9.24	5.60
	6	12.65	3.17	12.19	3.46	11.68	3.93	11.36	4.29	10.64	4.85	10.43	5.04	9.93	5.65
	7	13.10	3.19	12.68	3.52	12.20	4.00	11.72	4.50	11.25	4.94	11.06	5.13	10.62	5.70
	8	13.56	3.21	13.16	3.58	12.73	4.06	12.47	4.25	11.87	5.03	11.70	5.22	11.30	5.76
	9	14.02	3.23	13.65	3.64	13.26	4.13	13.02	4.68	12.48	5.12	12.33	5.31	11.99	5.81
	10	14.48	3.24	14.14	3.70	13.79	4.20	13.58	4.81	13.10	5.20	12.96	5.40	12.68	5.86
MAC050C	4	15.57	3.68	14.46	4.20	13.35	4.73	12.56	5.21	11.13	5.80	10.68	6.02	9.79	6.48
	5	15.86	3.70	14.90	4.22	13.93	4.76	13.20	5.23	12.00	5.85	11.61	6.07	10.84	6.56
	6	16.16	3.73	15.33	4.24	14.51	4.79	13.84	5.24	12.87	5.91	12.54	6.13	11.88	6.64
	7	16.45	3.75	15.77	4.26	15.09	4.83	14.65	5.26	13.73	5.96	13.46	6.19	12.92	6.72
	8	16.74	3.77	16.21	4.28	15.67	4.86	15.12	5.28	14.60	6.01	14.39	6.24	13.96	6.80
	9	17.04	3.79	16.65	4.30	16.25	4.89	15.76	5.29	15.47	6.07	15.32	6.30	15.00	6.88
	10	17.33	3.81	17.08	4.32	16.83	4.92	16.40	5.31	16.34	6.12	16.24	6.36	16.05	6.96
MAC060C	4	16.18	4.47	15.25	5.12	14.32	5.77	13.42	6.32	12.46	7.07	11.53	7.72	11.34	7.85
	5	16.48	4.49	15.65	5.16	14.82	5.82	14.01	6.34	13.16	7.15	12.33	7.82	12.17	7.95
	6	16.77	4.52	16.05	5.20	15.32	5.88	14.59	6.36	13.87	7.24	13.14	7.91	12.99	8.05
	7	17.07	4.54	16.44	5.24	15.82	5.93	15.53	6.38	14.57	7.32	13.94	8.01	13.82	8.15
	8	17.37	4.57	16.84	5.28	16.32	5.98	15.77	6.40	15.27	7.40	14.75	8.10	14.65	8.25
	9	17.66	4.60	17.24	5.32	16.82	6.04	16.35	6.42	15.98	7.48	15.56	8.20	15.47	8.34
	10	17.96	4.62	17.64	5.36	17.32	6.09	16.94	6.44	16.68	7.56	16.36	8.29	16.30	8.44

Cooling Only
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW
MAC080C	5	25.18	4.31	24.03	4.95	22.87	5.59	21.71	6.23	19.66	6.94	18.83	7.23	17.19	7.80
	6	25.92	4.64	24.75	5.31	23.57	5.98	22.40	6.65	20.29	7.39	19.45	7.69	17.76	8.28
	7	26.15	4.83	25.05	5.55	23.96	6.28	22.86	7.00	20.86	7.77	20.05	8.08	18.45	8.69
	8	26.47	5.16	25.38	5.89	24.29	6.62	23.20	7.35	21.09	8.13	20.25	8.44	18.57	9.07
	9	27.30	5.58	26.15	6.35	24.99	7.11	23.84	7.88	21.60	8.66	20.70	8.98	18.91	9.61
	10	27.92	6.03	26.69	6.94	25.46	7.84	24.23	8.75	22.18	9.43	21.35	9.70	19.71	10.25
MAC100C	5	28.75	5.20	27.80	6.01	26.85	6.81	25.90	7.62	23.37	8.52	22.36	8.89	20.34	9.61
	6	29.62	5.56	28.65	6.42	27.68	7.28	26.71	8.13	24.11	9.06	23.07	9.43	20.98	10.17
	7	30.27	5.74	29.26	6.68	28.26	7.62	27.26	8.56	24.80	9.53	23.81	9.92	21.84	10.70
	8	30.50	6.20	29.56	7.13	28.61	8.06	27.67	8.99	25.07	9.97	24.03	10.37	21.95	11.15
	9	31.06	6.69	30.18	7.67	29.31	8.65	28.43	9.63	25.73	10.65	24.65	11.06	22.49	11.88
	10	31.90	7.23	30.90	8.39	29.90	9.54	28.90	10.70	26.28	11.58	25.23	11.93	23.13	12.64
MAC120C	5	35.67	6.29	34.55	6.99	33.43	7.69	32.30	8.39	30.05	9.38	29.15	9.78	27.35	10.56
	6	36.82	6.70	35.65	7.45	34.49	8.20	33.32	8.96	31.05	9.98	30.15	10.39	28.33	11.21
	7	37.12	7.11	36.08	7.88	35.04	8.66	34.00	9.43	31.79	10.57	30.91	11.03	29.14	11.94
	8	37.88	7.52	36.76	8.31	35.64	9.11	34.51	9.90	32.23	10.98	31.31	11.41	29.48	12.27
	9	38.53	8.01	37.51	8.88	36.49	9.75	35.46	10.61	33.02	11.72	32.04	12.17	30.09	13.06
	10	39.54	8.70	38.38	9.73	37.21	10.76	36.04	11.79	33.26	13.25	32.14	13.83	29.92	15.00
MAC150C	5	42.88	7.23	41.39	8.22	39.91	9.20	38.42	10.19	35.68	11.34	34.58	11.80	32.39	12.71
	6	44.19	7.81	42.58	8.83	40.97	9.85	39.36	10.88	36.72	12.04	35.67	12.51	33.56	13.44
	7	45.10	8.17	43.55	9.27	42.00	10.36	40.44	11.45	37.81	12.69	36.76	13.18	34.66	14.17
	8	45.54	8.67	44.04	9.79	42.54	10.90	41.05	12.02	38.24	13.22	37.12	13.70	34.88	14.66
	9	46.38	9.35	44.98	10.53	43.58	11.71	42.18	12.89	39.38	14.21	38.25	14.74	36.01	15.80
	10	47.57	10.12	45.90	11.52	44.24	12.92	42.57	14.31	39.99	15.32	38.96	15.73	36.90	16.53

Heatpump - Cooling Mode
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW
MAC020CR	4	4.62	2.12	4.49	2.26	4.30	2.43	4.25	2.53	3.92	2.77	3.84	2.83	3.60	3.01
	5	5.00	2.13	4.84	2.28	4.62	2.45	4.59	2.56	4.19	2.79	4.10	2.85	3.85	3.03
	6	5.38	2.15	5.18	2.29	4.94	2.46	4.88	2.58	4.46	2.80	4.36	2.87	4.10	3.05
	7	5.76	2.16	5.53	2.31	5.26	2.48	5.28	2.61	4.73	2.82	4.63	2.89	4.36	3.07
	8	6.13	2.18	5.88	2.32	5.59	2.50	5.44	2.61	5.00	2.84	4.89	2.91	4.61	3.08
	9	6.51	2.19	6.22	2.34	5.91	2.51	5.72	2.63	5.28	2.86	5.15	2.93	4.86	3.10
	10	6.89	2.21	6.57	2.36	6.23	2.53	5.94	2.65	5.55	2.88	5.41	2.95	5.11	3.12
MAC025CR	4	8.33	1.94	7.48	2.18	6.57	2.42	5.81	2.66	4.74	2.90	3.83	3.14	3.56	3.19
	5	8.48	1.95	7.68	2.21	6.79	2.47	6.12	2.71	5.02	2.99	4.13	3.25	3.85	3.30
	6	8.63	1.96	7.87	2.24	7.01	2.52	6.40	2.75	5.30	3.08	4.44	3.36	4.14	3.41
	7	8.78	1.97	8.06	2.26	7.23	2.56	6.74	2.80	5.57	3.16	4.74	3.46	4.43	3.52
	8	8.94	1.98	8.26	2.29	7.45	2.61	6.97	2.84	5.85	3.25	5.05	3.57	4.72	3.63
	9	9.09	1.99	8.45	2.32	7.68	2.66	7.25	2.88	6.13	3.33	5.35	3.67	5.01	3.74
	10	9.24	1.99	8.64	2.35	7.90	2.71	7.50	2.93	6.40	3.42	5.66	3.78	5.30	3.85
MAC030CR	4	9.66	2.46	8.75	2.84	7.84	3.21	6.91	3.45	6.01	3.95	5.65	4.10	4.91	4.40
	5	9.84	2.51	8.95	2.88	8.07	3.26	7.29	3.48	6.29	4.00	5.94	4.15	5.23	4.44
	6	10.01	2.56	9.15	2.93	8.30	3.30	7.61	3.51	6.58	4.04	6.24	4.19	5.55	4.48
	7	10.19	2.61	9.36	2.98	8.52	3.35	8.06	3.55	6.86	4.08	6.53	4.23	5.87	4.53
	8	10.36	2.66	9.56	3.03	8.75	3.40	8.25	3.58	7.15	4.13	6.83	4.28	6.18	4.57
	9	10.53	2.71	9.76	3.08	8.98	3.44	8.57	3.61	7.43	4.17	7.12	4.32	6.50	4.61
	10	10.71	2.76	9.96	3.13	9.21	3.49	8.83	3.64	7.72	4.22	7.42	4.36	6.82	4.65
MAC040CR	4	11.73	3.20	11.22	3.41	10.62	3.86	10.25	4.11	9.41	4.77	9.17	4.96	8.55	5.66
	5	12.19	3.22	11.71	3.47	11.15	3.93	10.81	4.24	10.03	4.86	9.80	5.05	9.24	5.71
	6	12.65	3.24	12.19	3.53	11.68	4.01	11.36	4.38	10.64	4.95	10.43	5.14	9.93	5.76
	7	13.10	3.26	12.68	3.59	12.20	4.08	11.72	4.59	11.25	5.04	11.06	5.23	10.62	5.82
	8	13.56	3.27	13.16	3.65	12.73	4.15	12.47	4.33	11.87	5.13	11.70	5.33	11.30	5.87
	9	14.02	3.29	13.65	3.72	13.26	4.22	13.02	4.78	12.48	5.22	12.33	5.42	11.99	5.92
	10	14.48	3.31	14.14	3.78	13.79	4.29	13.58	4.91	13.10	5.31	12.96	5.51	12.68	5.98
MAC050CR	4	14.33	3.55	13.31	4.04	12.28	4.56	11.55	5.03	10.24	5.59	9.83	5.80	9.01	6.24
	5	14.60	3.57	13.71	4.06	12.82	4.59	12.14	5.04	11.04	5.64	10.68	5.85	9.97	6.32
	6	14.87	3.59	14.11	4.08	13.35	4.62	12.73	5.06	11.84	5.69	11.54	5.91	10.93	6.40
	7	15.14	3.61	14.51	4.10	13.89	4.65	13.48	5.07	12.64	5.74	12.39	5.96	11.89	6.47
	8	15.41	3.63	14.91	4.12	14.42	4.68	13.91	5.08	13.44	5.80	13.24	6.02	12.85	6.55
	9	15.68	3.65	15.32	4.14	14.96	4.71	14.50	5.10	14.24	5.85	14.09	6.07	13.81	6.63
	10	15.94	3.67	15.72	4.17	15.49	4.74	15.09	5.11	15.04	5.90	14.95	6.13	14.76	6.71
MAC060CR	4	16.18	4.82	15.25	5.39	14.32	5.96	13.42	6.55	12.46	7.11	11.53	7.68	11.34	7.79
	5	16.48	4.83	15.65	5.40	14.82	5.97	14.01	6.56	13.16	7.11	12.33	7.68	12.17	7.80
	6	16.77	4.84	16.05	5.41	15.32	5.97	14.59	6.56	13.87	7.11	13.14	7.68	12.99	7.80
	7	17.07	4.85	16.44	5.41	15.82	5.98	15.53	6.57	14.57	7.12	13.94	7.69	13.82	7.80
	8	17.37	4.86	16.84	5.42	16.32	5.99	15.77	6.58	15.27	7.12	14.75	7.69	14.65	7.80
	9	17.66	4.87	17.24	5.43	16.82	6.00	16.35	6.58	15.98	7.12	15.56	7.69	15.47	7.80
	10	17.96	4.88	17.64	5.44	17.32	6.00	16.94	6.59	16.68	7.13	16.36	7.69	16.30	7.80

Heatpump - Cooling Mode
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW
MAC080CR	5	22.02	4.66	21.79	5.47	21.55	6.28	21.32	7.09	19.71	7.69	19.06	7.93	17.77	8.41
	6	22.75	5.02	22.52	5.87	22.29	6.72	22.06	7.57	20.38	8.14	19.71	8.37	18.37	8.83
	7	23.17	5.27	22.97	6.17	22.76	7.06	22.56	7.96	20.96	8.63	20.32	8.89	19.04	9.42
	8	23.59	5.58	23.39	6.51	23.19	7.44	22.98	8.37	21.34	8.96	20.68	9.20	19.36	9.68
	9	24.11	6.10	23.91	7.05	23.71	8.01	23.50	8.96	21.72	9.61	21.00	9.87	19.57	10.38
	10	24.75	6.53	24.60	7.67	24.46	8.81	24.32	9.96	22.45	10.41	21.70	10.59	20.21	10.95
MAC100CR	5	27.44	5.47	26.97	6.39	26.50	7.30	26.03	8.21	23.77	9.07	22.86	9.42	21.05	10.10
	6	27.69	5.87	27.44	6.84	27.19	7.80	26.93	8.77	24.67	9.65	23.77	10.00	21.96	10.71
	7	28.93	6.11	28.47	7.15	28.01	8.19	27.54	9.23	25.19	10.16	24.25	10.54	22.37	11.29
	8	29.46	6.54	28.99	7.59	28.53	8.64	28.07	9.69	25.64	10.59	24.67	10.95	22.74	11.68
	9	30.10	7.05	29.63	8.16	29.16	9.27	28.70	10.38	26.30	11.34	25.34	11.73	23.42	12.50
	10	30.96	7.63	30.53	8.93	30.11	10.23	29.69	11.53	27.20	12.32	26.20	12.64	24.21	13.27
MAC120CR	5	33.52	6.33	32.79	7.24	32.07	8.15	31.34	9.06	28.62	9.80	27.53	10.09	25.36	10.68
	6	34.25	6.82	33.64	7.77	33.04	8.72	32.43	9.67	29.69	10.39	28.60	10.68	26.41	11.26
	7	35.06	7.22	34.43	8.21	33.79	9.19	33.16	10.18	30.29	10.95	29.14	11.26	26.85	11.88
	8	35.48	7.61	34.91	8.64	34.35	9.66	33.79	10.69	30.72	11.41	29.49	11.70	27.03	12.28
	9	36.29	8.19	35.71	9.28	35.13	10.37	34.55	11.45	31.51	12.23	30.30	12.55	27.87	13.17
	10	37.60	8.87	36.98	10.15	36.36	11.44	35.74	12.72	32.60	13.29	31.34	13.52	28.82	13.97
MAC150CR	5	39.50	7.13	39.07	8.17	38.64	9.22	38.21	10.27	35.49	11.12	34.40	11.46	32.23	12.15
	6	40.91	7.66	40.45	8.76	39.99	9.86	39.53	10.96	36.69	11.84	35.55	12.20	33.27	12.91
	7	41.54	8.10	41.17	9.24	40.80	10.39	40.43	11.53	37.62	12.48	36.50	12.86	34.25	13.62
	8	42.64	8.55	42.15	9.73	41.67	10.92	41.19	12.10	38.12	13.01	36.89	13.38	34.43	14.11
	9	43.55	9.22	43.07	10.47	42.60	11.72	42.12	12.97	39.11	13.88	37.90	14.24	35.49	14.96
	10	45.07	9.97	44.57	11.45	44.07	12.93	43.58	14.41	40.46	15.10	39.21	15.38	36.71	15.93

Heatpump - Heating Mode
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)															
		-7		-5		0		4		7		10		15		21	
		HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW
MAC020CR	35	4.61	2.13	4.90	2.15	5.70	2.21	6.40	2.26	7.13	2.32	7.86	2.37	8.19	2.40	9.12	2.47
	40	4.18	2.27	4.47	2.30	5.29	2.37	6.00	2.44	6.88	2.50	7.49	2.57	7.83	2.60	8.87	2.70
	45	3.74	2.42	4.04	2.45	4.88	2.54	5.60	2.62	6.45	2.70	7.12	2.77	7.46	2.81	8.49	2.92
	50	3.31	2.57	3.62	2.60	4.46	2.71	5.20	2.79	6.08	2.87	6.75	2.98	7.10	3.02	8.11	3.14
	55	2.87	2.72	3.19	2.76	4.05	2.87	4.80	2.97	5.53	3.05	6.38	3.18	6.73	3.22	7.72	3.37
MAC025CR	35	5.31	2.05	5.46	2.04	6.26	2.04	7.02	2.05	7.75	2.05	8.48	2.05	8.81	2.05	9.69	2.06
	40	5.23	2.29	5.39	2.29	6.13	2.30	6.81	2.32	7.48	2.34	8.15	2.35	8.45	2.36	9.27	2.37
	45	5.15	2.54	5.32	2.54	5.99	2.57	6.61	2.60	7.33	2.63	7.82	2.65	8.10	2.66	8.85	2.69
	50	5.07	2.78	5.26	2.79	5.86	2.83	6.40	2.87	6.95	2.92	7.49	2.95	7.74	2.96	8.43	3.01
	55	5.00	3.03	5.19	3.04	5.73	3.10	6.19	3.15	6.68	3.21	7.17	3.25	7.39	3.27	8.01	3.33
MAC030CR	35	5.60	2.61	6.03	2.62	7.24	2.66	8.29	2.70	9.41	2.74	10.50	2.77	11.00	2.79	12.40	2.84
	40	5.44	3.00	5.89	3.02	7.11	3.07	8.17	3.11	9.27	3.15	10.39	3.19	10.89	3.21	12.31	3.26
	45	5.28	3.40	5.75	3.42	6.97	3.47	8.04	3.51	9.23	3.56	10.28	3.61	10.79	3.63	12.23	3.69
	50	5.12	3.79	5.60	3.81	6.84	3.87	7.91	3.92	8.97	3.97	10.17	4.02	10.69	4.05	12.14	4.11
	55	4.96	4.19	5.46	4.21	6.71	4.27	7.78	4.33	8.83	4.38	10.07	4.44	10.59	4.47	12.06	4.54
MAC040CR	35	8.49	3.32	9.05	3.35	10.55	3.46	11.87	3.55	13.59	3.67	14.62	3.75	15.25	3.79	17.00	3.91
	40	7.82	3.82	8.41	2.31	10.03	3.97	11.44	4.05	13.29	4.17	14.40	4.24	15.07	2.70	16.93	4.39
	45	7.15	4.33	7.78	4.39	9.51	4.48	11.02	4.55	12.60	4.65	14.17	4.73	14.89	4.76	16.85	4.87
	50	6.48	4.83	7.15	4.90	8.99	4.99	10.59	5.05	12.27	5.13	13.95	5.22	14.71	5.25	16.78	5.35
	55	5.81	5.35	6.52	5.42	8.47	5.50	10.17	5.55	11.95	5.63	13.73	5.71	14.54	5.74	16.70	5.84
MAC050CR	35	9.62	3.69	10.29	3.71	12.13	3.76	13.73	3.81	15.68	3.85	17.08	3.91	17.84	3.93	19.98	3.99
	40	9.50	4.32	10.17	4.33	12.00	4.37	13.60	4.40	15.48	4.44	16.95	4.47	17.72	4.48	19.85	4.52
	45	9.37	4.95	10.04	4.95	11.88	4.97	13.48	4.99	15.24	5.01	16.83	5.02	17.59	5.03	19.72	5.05
	50	9.25	5.59	9.92	5.57	11.75	5.57	13.35	5.58	15.09	5.62	16.70	5.58	17.46	5.58	19.59	5.57
	55	9.13	6.22	9.79	6.19	11.63	6.18	13.22	6.17	14.90	6.21	16.57	6.14	17.33	6.13	19.46	6.10
MAC060CR	35	12.42	5.20	13.06	5.21	14.79	5.23	16.31	5.25	18.07	5.27	19.48	5.28	20.20	5.29	22.22	5.32
	40	11.98	5.81	12.63	5.82	14.40	5.84	15.95	5.86	17.75	5.88	19.19	5.90	19.93	5.91	21.99	5.94
	45	11.54	6.42	12.20	6.43	14.01	6.45	15.59	6.47	17.29	6.26	18.90	6.52	19.66	6.53	21.77	6.56
	50	11.09	7.02	11.77	7.03	13.62	7.06	15.24	7.09	17.11	7.11	18.62	7.14	19.39	7.15	21.54	7.18
	55	10.65	7.63	11.34	7.64	13.23	7.67	14.88	7.70	16.79	7.73	18.33	7.75	19.12	7.77	21.32	7.80

Heatpump - Heating Mode
Refrigerant : R22

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)															
		-7		-5		0		4		7		10		15		21	
		HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW
MAC080CR	35	17.69	4.22	18.14	4.56	22.17	5.42	25.39	6.11	27.80	6.62	28.93	6.82	30.81	7.15	33.06	7.55
	40	17.28	4.78	17.70	5.13	21.57	6.02	24.67	6.73	27.00	7.27	28.14	7.37	30.04	7.55	32.32	7.77
	45	16.88	5.09	17.29	5.46	21.08	6.40	24.11	7.15	26.38	7.71	27.60	7.81	29.64	7.98	32.08	8.19
	50			16.72	5.50	20.50	6.54	23.53	7.38	25.80	8.01	27.00	8.13	28.99	8.34	31.39	8.58
	55			15.96	5.57	19.69	6.73	22.67	7.66	24.90	8.36	26.10	8.47	28.10	8.64		
MAC100CR	35	22.17	6.47	22.60	6.62	27.28	6.97	31.03	7.25	33.84	7.46	35.66	7.88	38.70	8.59	42.35	9.44
	40	21.68	7.31	22.07	7.43	26.57	7.74	30.17	7.99	32.87	8.18	34.76	8.51	37.90	9.07	41.66	9.73
	45	20.92	8.11	21.36	8.19	25.89	8.40	29.51	8.56	32.22	8.68	34.11	8.92	37.24	9.32	41.01	9.79
	50			20.83	8.29	25.31	8.59	28.89	8.84	31.58	9.02	33.38	9.36	36.37	9.94	39.96	10.63
	55			19.87	8.47	24.27	8.87	27.78	9.18	30.42	9.42	32.25	9.77	35.30	10.34		
MAC120CR	35	22.58	7.28	23.03	7.52	28.82	8.10	33.45	8.56	36.93	8.91	39.06	9.13	42.60	9.49	46.86	9.92
	40	21.27	8.24	22.17	8.46	27.88	9.00	32.44	9.44	35.87	9.76	38.02	9.86	41.62	10.02	45.93	10.21
	45	21.08	8.84	21.98	9.06	27.48	9.60	31.87	10.04	35.17	10.37	37.30	10.40	40.84	10.45	45.10	10.51
	50			21.19	9.33	26.72	9.93	31.15	10.41	34.47	10.77	36.60	10.88	40.17	11.06	44.44	11.28
	55			20.25	9.57	25.65	10.27	29.97	10.83	33.21	11.25	35.34	11.34	38.90	11.48		
MAC150CR	35	23.01	8.77	23.77	9.03	30.79	9.67	36.40	10.17	40.61	10.56	42.15	10.75	44.71	11.07	47.79	11.45
	40	21.92	9.93	23.19	10.16	29.97	10.75	35.39	11.22	39.45	11.58	41.08	11.61	43.78	11.68	47.02	11.76
	45	21.55	10.43	22.79	10.69	29.41	11.36	34.71	11.89	38.68	12.29	40.28	12.24	42.96	12.18	46.16	12.10
	50			22.19	10.87	28.74	11.66	33.98	12.29	37.91	12.77	39.41	12.82	41.90	12.91	44.89	13.02
	55			20.91	11.09	27.41	12.02	32.61	12.77	36.51	13.33	38.03	13.35	40.55	13.39		

Cooling Only
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW
M4AC020C	4	5.38	2.13	5.23	2.27	5.01	2.44	4.95	2.54	4.56	2.78	4.47	2.84	4.20	3.02
	5	5.82	2.14	5.63	2.28	5.38	2.45	5.35	2.57	4.88	2.80	4.78	2.86	4.49	3.04
	6	6.26	2.16	6.04	2.30	5.76	2.47	5.68	2.59	5.19	2.81	5.08	2.88	4.78	3.06
	7	6.70	2.17	6.44	2.32	6.13	2.49	6.15	2.62	5.51	2.83	5.39	2.90	5.07	3.08
	8	7.14	2.19	6.85	2.33	6.51	2.51	6.33	2.62	5.83	2.85	5.69	2.92	5.37	3.10
	9	7.59	2.20	7.25	2.35	6.88	2.52	6.66	2.64	6.14	2.87	6.00	2.94	5.66	3.12
	10	8.03	2.22	7.65	2.37	7.26	2.54	6.92	2.66	6.46	2.89	6.30	2.96	5.95	3.13
M4AC025C	4	8.33	2.05	7.48	2.30	6.57	2.56	5.81	2.81	4.74	3.07	3.83	3.32	3.56	3.38
	5	8.48	2.06	7.68	2.33	6.79	2.61	6.12	2.86	5.02	3.16	4.13	3.44	3.85	3.49
	6	8.63	2.07	7.87	2.36	7.01	2.66	6.40	2.91	5.30	3.25	4.44	3.55	4.14	3.61
	7	8.78	2.08	8.06	2.39	7.23	2.71	6.74	2.96	5.57	3.34	4.74	3.66	4.43	3.72
	8	8.94	2.09	8.26	2.42	7.45	2.76	6.97	3.00	5.85	3.43	5.05	3.77	4.72	3.84
	9	9.09	2.10	8.45	2.46	7.68	2.81	7.25	3.05	6.13	3.52	5.35	3.88	5.01	3.95
	10	9.24	2.11	8.64	2.49	7.90	2.86	7.50	3.09	6.40	3.62	5.66	3.99	5.30	4.07
M4AC030C	4	8.69	2.56	7.90	2.95	7.12	3.33	6.47	3.58	5.54	4.11	5.23	4.27	4.60	4.58
	5	8.85	2.61	8.15	3.00	7.45	3.38	6.95	3.62	6.04	4.16	5.76	4.31	5.20	4.62
	6	9.01	2.66	8.39	3.05	7.78	3.43	7.31	3.65	6.54	4.20	6.29	4.35	5.80	4.66
	7	9.18	2.72	8.64	3.10	8.11	3.48	7.91	3.69	7.04	4.25	6.83	4.40	6.40	4.71
	8	9.34	2.77	8.89	3.15	8.44	3.53	8.03	3.72	7.54	4.29	7.36	4.44	7.00	4.75
	9	9.50	2.82	9.14	3.20	8.77	3.58	8.39	3.75	8.04	4.34	7.89	4.49	7.60	4.79
	10	9.66	2.87	9.38	3.25	9.10	3.63	8.63	3.79	8.54	4.38	8.42	4.53	8.20	4.84
M4AC040C	4	11.73	3.45	11.22	3.67	10.62	4.16	10.25	4.42	9.41	5.14	9.17	5.33	8.55	6.09
	5	12.19	3.47	11.71	3.74	11.15	4.23	10.81	4.57	10.03	5.23	9.80	5.43	9.24	6.15
	6	12.65	3.48	12.19	3.80	11.68	4.31	11.36	4.71	10.64	5.33	10.43	5.53	9.93	6.20
	7	13.10	3.50	12.68	3.87	12.20	4.39	11.72	4.94	11.25	5.42	11.06	5.63	10.62	6.26
	8	13.56	3.52	13.16	3.93	12.73	4.46	12.47	4.66	11.87	5.52	11.70	5.73	11.30	6.32
	9	14.02	3.54	13.65	4.00	13.26	4.54	13.02	5.14	12.48	5.62	12.33	5.83	11.99	6.38
	10	14.48	3.56	14.14	4.06	13.79	4.61	13.58	5.28	13.10	5.71	12.96	5.93	12.68	6.43
M4AC050C	4	15.57	4.18	14.46	4.76	13.35	5.37	12.56	5.92	11.13	6.59	10.68	6.83	9.79	7.35
	5	15.86	4.20	14.90	4.79	13.93	5.41	13.20	5.94	12.00	6.65	11.61	6.89	10.84	7.44
	6	16.16	4.23	15.33	4.81	14.51	5.44	13.84	5.95	12.87	6.70	12.54	6.96	11.88	7.53
	7	16.45	4.25	15.77	4.83	15.09	5.48	14.65	5.97	13.73	6.76	13.46	7.02	12.92	7.62
	8	16.74	4.28	16.21	4.86	15.67	5.51	15.12	5.99	14.60	6.82	14.39	7.09	13.96	7.72
	9	17.04	4.30	16.65	4.88	16.25	5.55	15.76	6.00	15.47	6.88	15.32	7.15	15.00	7.81
	10	17.33	4.33	17.08	4.90	16.83	5.58	16.40	6.02	16.34	6.94	16.24	7.22	16.05	7.90
M4AC060C	4	15.88	4.82	14.97	5.52	14.05	6.22	13.17	6.82	12.23	7.63	11.31	8.33	11.13	8.47
	5	16.17	4.84	15.36	5.56	14.54	6.28	13.75	6.84	12.92	7.71	12.10	8.43	11.94	8.58
	6	16.46	4.87	15.75	5.60	15.03	6.34	14.32	6.86	13.61	7.80	12.89	8.53	12.75	8.68
	7	16.75	4.90	16.14	5.65	15.52	6.40	15.24	6.88	14.30	7.89	13.68	8.64	13.56	8.79
	8	17.04	4.93	16.53	5.69	16.01	6.45	15.47	6.90	14.99	7.98	14.47	8.74	14.37	8.89
	9	17.33	4.96	16.92	5.74	16.50	6.51	16.05	6.92	15.68	8.07	15.27	8.84	15.18	9.00
	10	17.62	4.99	17.31	5.78	17.00	6.57	16.62	6.94	16.37	8.15	16.06	8.94	15.99	9.10

Cooling Only
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW
M4AC080C	5	23.77	4.73	22.60	5.57	21.51	6.36	20.60	6.94	19.32	7.33	17.38	7.83	15.00	8.53
	6	24.46	5.09	23.29	6.00	22.37	6.83	21.25	7.41	19.97	7.80	18.00	8.30	15.50	9.05
	7	24.68	5.30	23.61	6.30	22.61	7.20	21.69	7.80	20.39	8.19	18.58	8.73	16.10	9.50
	8	24.98	5.66	23.89	6.68	22.91	7.59	22.01	8.19	20.79	8.58	18.70	9.09	16.20	9.91
	9	25.74	6.13	24.43	7.22	23.37	8.19	22.62	8.78	21.42	9.17	19.12	9.69	16.50	10.50
	10	26.34	6.61	25.05	7.79	23.86	8.82	22.99	9.75	22.05	9.79	19.80	10.30	17.20	11.20
M4AC100C	5	26.39	5.42	25.83	6.51	25.18	7.50	24.50	8.19	23.18	8.65	21.55	9.24	18.90	9.97
	6	27.19	5.80	26.63	7.01	26.19	8.05	25.27	8.74	23.97	9.20	22.32	9.79	19.50	10.55
	7	27.77	5.99	27.12	7.33	26.47	8.49	25.79	9.20	24.47	9.66	23.04	10.29	20.30	11.10
	8	27.98	6.47	27.41	7.80	26.83	8.95	26.18	9.66	24.95	10.12	23.19	10.72	20.40	11.57
	9	28.48	6.98	27.89	8.42	27.36	9.66	26.90	10.35	25.70	10.81	23.71	11.43	20.90	12.32
	10	29.27	7.53	28.65	9.09	27.93	10.40	27.34	11.50	26.46	11.55	24.55	12.15	21.50	13.11
M4AC120C	5	34.02	6.47	33.64	7.39	32.99	8.31	32.02	9.08	30.36	9.59	28.24	10.24	26.26	11.45
	6	35.12	6.89	34.70	7.94	34.31	8.93	33.03	9.69	31.38	10.20	29.25	10.85	27.20	12.15
	7	35.41	7.31	35.18	8.39	34.68	9.41	33.70	10.20	32.04	10.71	30.19	11.41	27.98	12.94
	8	36.12	7.74	35.71	8.86	35.14	9.92	34.21	10.71	32.67	11.22	30.39	11.88	28.31	13.30
	9	36.72	8.26	36.32	9.53	35.85	10.71	35.15	11.48	33.66	11.99	31.07	12.67	28.89	14.15
	10	37.71	8.94	37.30	10.30	36.60	11.53	35.72	12.75	34.65	12.80	32.18	13.47	29.92	15.00
M4AC150C	5	42.36	7.81	41.69	8.87	40.46	9.94	38.15	10.86	36.95	11.47	34.90	12.25	31.75	14.00
	6	43.67	8.45	42.98	9.57	42.04	10.68	39.36	11.59	38.19	12.20	36.14	12.98	32.90	14.80
	7	44.54	8.84	43.76	10.07	42.65	11.26	40.16	12.20	39.00	12.81	37.31	13.65	33.98	15.61
	8	44.97	9.38	44.25	10.65	43.09	11.87	40.76	12.81	39.76	13.42	37.55	14.21	34.20	16.15
	9	45.77	10.12	45.03	11.50	43.84	12.81	41.89	13.73	40.96	14.34	38.39	15.15	35.30	17.40
	10	47.00	10.94	46.24	12.41	44.88	13.79	42.57	15.25	42.17	15.31	39.76	16.12	36.18	18.21

Heatpump - Cooling Mode
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW
M4AC020CR	4	4.36	2.12	4.23	2.26	4.05	2.43	4.01	2.53	3.69	2.77	3.62	2.83	3.40	3.01
	5	4.71	2.13	4.56	2.28	4.36	2.45	4.33	2.56	3.95	2.79	3.87	2.85	3.63	3.03
	6	5.07	2.15	4.89	2.29	4.66	2.46	4.60	2.58	4.21	2.80	4.12	2.87	3.87	3.05
	7	5.43	2.16	5.22	2.31	4.96	2.48	4.98	2.61	4.46	2.82	4.36	2.89	4.11	3.07
	8	5.79	2.18	5.54	2.32	5.27	2.50	5.13	2.61	4.72	2.84	4.61	2.91	4.34	3.08
	9	6.14	2.19	5.87	2.34	5.57	2.51	5.39	2.63	4.98	2.86	4.86	2.93	4.58	3.10
	10	6.50	2.21	6.20	2.36	5.88	2.53	5.60	2.65	5.23	2.88	5.10	2.95	4.82	3.12
M4AC025CR	4	7.97	2.14	7.16	2.40	6.29	2.67	5.56	2.94	4.54	3.20	3.67	3.47	3.40	3.52
	5	8.12	2.15	7.35	2.44	6.50	2.72	5.86	2.99	4.80	3.30	3.96	3.59	3.68	3.64
	6	8.26	2.16	7.53	2.47	6.71	2.78	6.13	3.03	5.07	3.39	4.25	3.70	3.96	3.76
	7	8.41	2.17	7.72	2.50	6.92	2.83	6.45	3.09	5.33	3.49	4.54	3.82	4.24	3.88
	8	8.55	2.18	7.90	2.53	7.13	2.88	6.67	3.13	5.60	3.58	4.83	3.93	4.52	4.01
	9	8.70	2.19	8.09	2.56	7.35	2.93	6.94	3.18	5.86	3.68	5.12	4.05	4.80	4.13
	10	8.84	2.20	8.27	2.59	7.56	2.99	7.18	3.23	6.13	3.77	5.41	4.17	5.07	4.25
M4AC030CR	4	8.79	2.65	7.96	3.05	7.13	3.45	6.28	3.71	5.47	4.25	5.13	4.42	4.47	4.74
	5	8.95	2.70	8.14	3.10	7.34	3.50	6.63	3.74	5.72	4.30	5.40	4.46	4.76	4.78
	6	9.10	2.76	8.32	3.16	7.54	3.55	6.92	3.78	5.98	4.35	5.67	4.51	5.05	4.83
	7	9.26	2.81	8.51	3.21	7.75	3.60	7.33	3.82	6.24	4.40	5.94	4.55	5.34	4.87
	8	9.42	2.86	8.69	3.26	7.96	3.65	7.50	3.85	6.50	4.44	6.21	4.60	5.62	4.92
	9	9.58	2.92	8.87	3.31	8.17	3.70	7.80	3.88	6.76	4.49	6.48	4.65	5.91	4.96
	10	9.74	2.97	9.06	3.36	8.38	3.75	8.03	3.92	7.02	4.54	6.75	4.69	6.20	5.01
M4AC040CR	4	11.73	3.38	11.22	3.60	10.62	4.08	10.25	4.34	9.41	5.04	9.17	5.24	8.55	5.98
	5	12.19	3.40	11.71	3.67	11.15	4.16	10.81	4.48	10.03	5.14	9.80	5.33	9.24	6.03
	6	12.65	3.42	12.19	3.73	11.68	4.23	11.36	4.62	10.64	5.23	10.43	5.43	9.93	6.09
	7	13.10	3.44	12.68	3.80	12.20	4.31	11.72	4.85	11.25	5.33	11.06	5.53	10.62	6.15
	8	13.56	3.46	13.16	3.86	12.73	4.38	12.47	4.58	11.87	5.42	11.70	5.63	11.30	6.20
	9	14.02	3.48	13.65	3.93	13.26	4.46	13.02	5.05	12.48	5.51	12.33	5.73	11.99	6.26
	10	14.48	3.50	14.14	3.99	13.79	4.53	13.58	5.19	13.10	5.61	12.96	5.82	12.68	6.32
M4AC050CR	4	14.33	3.83	13.31	4.36	12.28	4.92	11.55	5.42	10.24	6.03	9.83	6.26	9.01	6.73
	5	14.60	3.85	13.71	4.38	12.82	4.95	12.14	5.44	11.04	6.09	10.68	6.32	9.97	6.82
	6	14.87	3.87	14.11	4.41	13.35	4.99	12.73	5.45	11.84	6.14	11.54	6.37	10.93	6.90
	7	15.14	3.90	14.51	4.43	13.89	5.02	13.48	5.47	12.64	6.20	12.39	6.43	11.89	6.99
	8	15.41	3.92	14.91	4.45	14.42	5.05	13.91	5.49	13.44	6.25	13.24	6.49	12.85	7.07
	9	15.68	3.94	15.32	4.47	14.96	5.08	14.50	5.50	14.24	6.31	14.09	6.55	13.81	7.15
	10	15.94	3.96	15.72	4.49	15.49	5.12	15.09	5.52	15.04	6.36	14.95	6.61	14.76	7.24
M4AC060CR	4	15.58	4.79	14.68	5.36	13.78	5.92	12.92	6.51	11.99	7.06	11.10	7.63	10.92	7.75
	5	15.86	4.80	15.06	5.36	14.27	5.93	13.48	6.52	12.67	7.07	11.87	7.64	11.71	7.75
	6	16.15	4.81	15.45	5.37	14.75	5.94	14.05	6.52	13.35	7.07	12.65	7.64	12.51	7.75
	7	16.43	4.82	15.83	5.38	15.23	5.95	14.95	6.53	14.02	7.07	13.42	7.64	13.30	7.75
	8	16.72	4.83	16.21	5.39	15.71	5.95	15.18	6.54	14.70	7.08	14.20	7.64	14.10	7.75
	9	17.00	4.84	16.60	5.40	16.19	5.96	15.74	6.54	15.38	7.08	14.97	7.64	14.89	7.76
	10	17.29	4.85	16.98	5.41	16.67	5.97	16.31	6.55	16.06	7.09	15.75	7.64	15.69	7.76

Heatpump - Cooling Mode
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW	COOL CAP. kW	COMP. INPUT kW
M4AC080CR	5	21.16	4.91	20.94	5.89	20.72	6.77	20.50	7.39	19.41	7.80	18.11	8.33	16.80	8.91
	6	21.86	5.30	21.64	6.34	21.43	7.26	21.21	7.89	20.13	8.30	18.87	8.83	17.36	9.35
	7	22.26	5.56	22.07	6.68	21.88	7.66	21.69	8.30	20.58	8.72	19.19	9.29	18.00	9.98
	8	22.66	5.89	22.48	7.06	22.29	8.07	22.10	8.72	20.93	9.13	19.52	9.67	18.30	10.25
	9	23.16	6.44	22.98	7.65	22.79	8.72	22.60	9.34	21.47	9.75	20.13	10.31	18.50	11.00
	10	23.77	6.88	23.64	8.24	23.51	9.38	23.38	10.38	22.12	10.42	20.82	10.96	19.10	11.60
M4AC100CR	5	25.80	5.63	25.33	6.91	24.85	8.02	24.37	8.76	23.08	9.25	21.54	9.88	20.00	10.47
	6	26.05	6.06	25.77	7.44	25.50	8.61	25.22	9.35	23.93	9.84	22.44	10.47	20.86	11.10
	7	27.21	6.30	26.73	7.81	26.26	9.08	25.79	9.84	24.48	10.33	22.83	11.01	21.25	11.70
	8	27.71	6.75	27.23	8.28	26.76	9.57	26.28	10.33	24.89	10.82	23.21	11.46	21.60	12.10
	9	28.30	7.28	27.83	8.94	27.35	10.34	26.87	11.07	25.53	11.56	23.93	12.22	22.25	12.95
	10	29.11	7.86	28.68	9.65	28.24	11.12	27.80	12.30	26.31	12.35	24.76	13.00	23.00	13.75
M4AC120CR	5	33.03	6.53	32.18	7.82	31.32	8.99	30.47	9.83	28.85	10.38	26.92	11.08	24.50	12.00
	6	33.75	7.04	33.01	8.43	32.27	9.66	31.53	10.49	29.92	11.04	28.05	11.75	25.52	12.65
	7	34.55	7.45	33.78	8.90	33.01	10.19	32.24	11.04	30.59	11.59	28.53	12.35	25.94	13.35
	8	34.96	7.86	34.26	9.40	33.55	10.74	32.85	11.59	31.11	12.14	29.02	12.86	26.12	13.80
	9	35.76	8.47	35.03	10.14	34.31	11.59	33.59	12.42	31.92	12.97	29.92	13.71	26.93	14.80
	10	37.05	9.14	36.28	10.95	35.52	12.48	34.75	13.80	32.88	13.86	30.95	14.58	27.85	15.70
M4AC150CR	5	38.26	8.27	37.51	9.53	36.75	10.75	36.00	11.75	34.09	12.41	31.81	13.25	30.82	14.44
	6	39.63	8.89	38.84	10.26	38.04	11.55	37.25	12.54	35.35	13.20	33.15	14.05	31.82	15.34
	7	40.23	9.40	39.52	10.82	38.81	12.17	38.10	13.20	36.15	13.86	33.72	14.78	32.75	16.18
	8	41.29	9.93	40.47	11.44	39.64	12.84	38.82	13.86	36.76	14.52	34.29	15.38	32.92	16.76
	9	42.18	10.71	41.35	12.35	40.52	13.86	39.70	14.85	37.72	15.51	35.35	16.39	33.94	17.78
	10	43.65	11.56	42.79	13.33	41.93	14.91	41.06	16.50	38.86	16.56	36.57	17.44	35.11	18.93

Heatpump - Heating Mode
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE ON CONDENSOR (°C)															
		-7		-5		0		4		7		10		15		21	
		HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW
M4AC020CR	35	4.19	2.12	4.45	2.14	5.18	2.20	5.81	2.25	6.48	2.31	6.71	2.33	7.44	2.39	8.29	2.46
	40	3.79	2.26	4.06	2.29	4.81	2.37	5.45	2.43	6.25	2.49	6.37	2.52	7.11	2.59	8.06	2.69
	45	3.40	2.41	3.67	2.44	4.43	2.53	5.09	2.61	5.86	2.69	6.02	2.71	6.78	2.80	7.71	2.91
	50	3.00	2.56	3.28	2.60	4.05	2.70	4.72	2.78	5.53	2.86	5.68	2.91	6.45	3.01	7.36	3.13
	55	2.61	2.71	2.89	2.75	3.68	2.86	4.36	2.96	5.03	3.04	5.33	3.10	6.12	3.21	7.02	3.35
M4AC025CR	35	5.41	2.14	5.56	2.13	6.38	2.13	7.16	2.14	7.90	2.14	8.16	2.14	8.98	2.15	9.87	2.15
	40	5.33	2.40	5.49	2.39	6.24	2.41	6.94	2.43	7.62	2.45	7.87	2.45	8.62	2.46	9.45	2.48
	45	5.25	2.66	5.43	2.66	6.11	2.69	6.73	2.72	7.47	2.75	7.57	2.75	8.25	2.78	9.02	2.82
	50	5.17	2.91	5.36	2.92	5.97	2.96	6.52	3.00	7.08	3.05	7.28	3.06	7.89	3.10	8.59	3.15
	55	5.09	3.17	5.29	3.18	5.83	3.24	6.31	3.29	6.81	3.36	6.98	3.36	7.53	3.42	8.16	3.48
M4AC030CR	35	5.78	2.93	6.23	2.95	7.47	2.99	8.56	3.03	9.72	3.08	10.11	3.09	11.35	3.14	12.80	3.19
	40	5.62	3.37	6.08	3.39	7.34	3.44	8.43	3.49	9.57	3.54	9.99	3.55	11.25	3.61	12.71	3.67
	45	5.45	3.82	5.93	3.84	7.20	3.90	8.30	3.95	9.53	4.00	9.87	4.02	11.14	4.08	12.63	4.14
	50	5.29	4.26	5.79	4.29	7.07	4.35	8.17	4.40	9.27	4.46	9.75	4.48	11.04	4.55	12.54	4.62
	55	5.12	4.71	5.64	4.73	6.93	4.80	8.03	4.86	9.11	4.92	9.64	4.95	10.93	5.02	12.45	5.10
M4AC040CR	35	8.89	3.57	9.47	3.61	11.05	3.73	12.42	3.83	14.23	3.96	14.38	3.97	15.96	4.08	17.80	4.22
	40	8.19	5.80	8.81	4.17	10.50	4.28	11.98	4.37	13.91	4.49	14.08	4.50	15.78	4.61	17.72	4.73
	45	7.49	4.66	8.15	4.73	9.96	4.83	11.53	4.91	13.19	5.01	13.78	5.03	15.59	5.13	17.64	5.25
	50	6.78	5.21	7.49	5.28	9.41	5.38	11.09	5.45	12.85	5.53	13.47	5.56	15.40	5.66	17.56	5.77
	55	6.08	5.76	6.83	5.84	8.87	5.93	10.64	5.98	12.51	6.07	13.17	6.10	15.22	6.18	17.48	6.29
M4AC050CR	35	9.44	4.17	10.10	4.19	11.90	4.25	13.47	4.30	15.38	4.35	15.70	4.38	17.50	4.44	19.60	4.51
	40	9.32	4.88	9.97	4.89	11.77	4.93	13.34	4.97	15.19	5.01	15.57	5.02	17.38	5.06	19.48	5.11
	45	9.20	5.59	9.85	5.60	11.65	5.62	13.22	5.64	14.95	5.66	15.45	5.66	17.25	5.68	19.35	5.70
	50	9.07	6.31	9.73	6.29	11.53	6.30	13.10	6.30	14.81	6.35	15.32	6.31	17.13	6.31	19.22	6.30
	55	8.95	7.03	9.61	7.00	11.41	6.98	12.97	6.97	14.61	7.02	15.20	6.95	17.00	6.93	19.09	6.89
M4AC060CR	35	12.63	5.22	13.28	5.23	15.04	5.25	16.58	5.27	18.37	5.28	18.77	5.29	20.53	5.31	22.59	5.33
	40	12.18	5.83	12.84	5.84	14.65	5.86	16.22	5.88	18.05	5.90	18.45	5.91	20.26	5.93	22.36	5.96
	45	11.73	6.44	12.40	6.45	14.25	6.47	15.85	6.49	17.58	6.28	18.14	6.53	19.99	6.55	22.13	6.58
	50	11.28	7.04	11.97	7.05	13.85	7.08	15.49	7.11	17.40	7.13	17.82	7.14	19.71	7.17	21.91	7.20
	55	10.83	7.65	11.53	7.66	13.45	7.69	15.13	7.72	17.07	7.75	17.51	7.76	19.44	7.79	21.68	7.83

Heatpump- Heating Mode
Refrigerant : R407C

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (°C)															
		-7		-5		0		4		7		10		15		21	
		HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW	HEATING CAP. kW	COMP. INPUT kW
M4AC080CR	35	17.10	6.40	18.61	6.52	25.11	6.69	26.90	6.86	27.70	7.18	28.28	7.69	29.54	8.19	33.60	8.45
	40	16.70	7.20	18.15	7.33	24.53	7.52	26.11	7.77	26.90	7.88	27.93	8.13	29.07	8.44	32.85	8.69
	45	16.30	7.70	17.73	7.80	24.00	7.94	25.56	8.15	26.38	8.36	27.38	8.53	28.54	8.90	32.60	9.16
	50			17.15	7.85	23.48	8.03	25.06	8.53	25.85	8.69	26.85	9.03	28.01	9.30	31.90	9.60
	55			16.37	7.95	22.42	8.18	24.40	8.78	24.90	9.07	26.11	9.22	27.22	9.61		
M4AC100CR	35	18.10	7.30	19.15	7.35	27.34	7.60	29.30	7.79	30.16	8.16	30.79	8.74	32.17	9.31	36.35	9.51
	40	17.70	8.10	18.70	8.26	26.71	8.55	28.43	8.84	29.30	8.95	30.42	9.23	31.65	9.60	35.76	9.80
	45	17.00	9.00	18.10	9.10	26.14	9.20	27.83	9.30	28.72	9.50	29.81	9.69	31.08	9.75	35.20	9.86
	50			17.65	9.21	25.56	9.50	27.29	9.69	28.15	9.87	29.24	10.26	30.50	10.56	34.30	10.70
	55			16.84	9.41	24.41	9.70	26.57	9.98	27.11	10.31	28.43	10.48	29.64	10.93		
M4AC120CR	35	19.90	8.30	22.71	8.38	32.92	8.64	35.27	8.86	36.31	9.28	37.07	9.94	38.73	10.58	42.60	10.90
	40	19.20	9.30	21.86	9.43	32.16	9.72	34.24	10.04	35.27	10.17	36.62	10.50	38.11	10.91	41.75	11.22
	45	18.80	10.00	21.68	10.10	31.47	10.40	33.51	10.53	34.58	10.80	35.90	11.02	37.42	11.20	41.00	11.55
	50			20.90	10.40	30.78	10.70	32.85	11.02	33.89	11.22	35.21	11.66	36.73	12.01	40.40	12.40
	55			19.97	10.67	29.40	11.00	31.99	11.34	32.65	11.72	34.24	11.91	35.69	12.42		
M4AC150CR	35	24.26	9.93	27.72	10.18	40.18	10.72	43.05	10.99	44.31	11.51	45.24	12.33	47.26	13.13	51.99	13.53
	40	23.73	11.22	27.04	11.46	39.25	12.06	41.78	12.47	43.05	12.63	44.70	13.02	46.51	13.54	51.16	13.90
	45	23.20	11.81	26.58	12.06	38.40	12.73	40.89	13.06	42.20	13.40	43.81	13.67	45.67	13.94	50.22	14.29
	50			25.87	12.26	37.56	12.90	40.10	13.67	41.36	13.93	42.96	14.47	44.81	14.90	48.84	15.39
	55			24.39	12.51	35.87	13.20	39.04	14.07	39.84	14.54	41.78	14.78	43.55	15.41		

Heatpump- Cooling Mode
Refrigerant : R410A

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (DB) ON CONDENSER (°C)													
		20		25		30		35		40		42		46	
		COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW	COOL CAP. kW	POWER INPUT kW
M5AC020CR	4	5.61	2.02	5.04	2.18	4.48	2.35	4.01	2.47	3.34	2.68	3.11	2.74	2.60	2.90
	5	6.13	2.04	5.49	2.20	4.86	2.37	4.35	2.50	3.59	2.70	3.33	2.76	2.78	2.92
	6	6.58	2.05	5.90	2.22	5.22	2.38	4.62	2.52	3.86	2.72	3.59	2.78	2.96	2.93
	7	7.03	2.07	6.30	2.24	5.58	2.40	4.98	2.55	4.12	2.74	3.83	2.81	3.14	2.95
	8	7.34	2.08	6.58	2.25	5.83	2.42	5.15	2.55	4.31	2.75	4.01	2.82	3.33	2.97
	9	7.85	2.10	7.04	2.27	6.22	2.43	5.42	2.57	4.60	2.77	4.27	2.84	3.51	2.99
	10	8.22	2.11	7.35	2.28	6.47	2.45	5.58	2.59	4.72	2.79	4.38	2.85	3.69	3.01
M5AC025CR	4	6.57	2.09	6.12	2.24	5.68	2.40	5.17	2.54	4.78	2.71	4.33	2.86	4.28	2.90
	5	6.95	2.12	6.50	2.28	6.04	2.43	5.49	2.56	5.12	2.75	4.66	2.90	4.62	2.95
	6	7.31	2.16	6.84	2.31	6.36	2.47	5.80	2.60	5.41	2.78	4.94	2.94	4.90	2.99
	7	7.72	2.19	7.24	2.35	6.76	2.51	6.15	2.59	5.79	2.82	5.31	2.98	5.29	3.05
	8	8.02	2.23	7.52	2.38	7.02	2.54	6.42	2.68	6.01	2.86	5.50	3.02	5.46	3.06
	9	8.38	2.26	7.86	2.42	7.34	2.58	6.72	2.72	6.30	2.90	5.78	3.05	5.74	3.10
	10	8.71	2.30	8.17	2.46	7.63	2.61	7.01	2.78	6.56	2.93	6.02	3.09	5.96	3.12
M5AC030CR	4	9.37	2.04	8.49	2.45	7.61	2.87	6.73	3.28	5.84	3.69	5.49	3.86	4.79	4.19
	5	9.83	2.06	8.92	2.48	8.01	2.90	7.10	3.31	6.19	3.73	5.82	3.90	5.10	4.23
	6	10.15	2.08	9.24	2.51	8.32	2.93	7.41	3.35	6.50	3.77	6.13	3.93	5.40	4.27
	7	10.76	2.11	9.79	2.53	8.82	2.96	7.85	3.38	6.88	3.80	6.49	3.97	5.71	4.31
	8	10.78	2.13	9.87	2.55	8.95	2.98	8.04	3.41	7.12	3.84	6.76	4.01	6.02	4.35
	9	11.10	2.15	10.18	2.58	9.27	3.01	8.35	3.44	7.43	3.87	7.07	4.04	6.33	4.39
	10	11.27	2.17	10.38	2.60	9.49	3.04	8.60	3.47	7.71	3.91	7.35	4.08	6.64	4.43
M5AC040CR	4	11.74	1.63	11.02	2.20	10.30	2.77	9.58	3.35	8.86	3.92	8.57	4.15	7.99	4.61
	5	11.95	2.07	11.31	2.54	10.67	3.01	10.04	3.48	9.40	3.95	9.14	4.14	8.63	4.52
	6	12.30	2.45	11.72	2.83	11.13	3.21	10.55	3.59	9.97	3.97	9.74	4.12	9.28	4.42
	7	12.36	2.94	11.89	3.21	11.42	3.47	10.95	3.74	10.48	4.01	10.29	4.11	9.92	4.33
	8	12.99	3.22	12.52	3.42	12.06	3.61	11.59	3.81	11.12	4.00	10.94	4.08	10.56	4.23
	9	13.34	3.61	12.93	3.71	12.52	3.81	12.11	3.91	11.70	4.02	11.53	4.06	11.20	4.14
	10	13.83	3.94	13.45	3.96	13.07	3.98	12.69	4.00	12.31	4.02	12.15	4.03	11.85	4.05
M5AC050CR	4	15.33	3.15	14.15	3.59	12.97	4.02	11.79	4.46	10.61	4.90	10.14	5.07	9.20	5.42
	5	15.55	3.17	14.51	3.60	13.48	4.04	12.45	4.47	11.42	4.91	11.00	5.08	10.18	5.43
	6	15.63	3.19	14.77	3.62	13.91	4.05	13.05	4.49	12.19	4.92	11.84	5.09	11.16	5.44
	7	15.98	3.21	15.24	3.64	14.50	4.07	13.76	4.50	13.02	4.93	12.73	5.10	12.13	5.45
	8	15.81	3.22	15.29	3.65	14.77	4.08	14.25	4.51	13.73	4.94	13.53	5.11	13.11	5.46
	9	15.89	3.24	15.55	3.67	15.20	4.10	14.85	4.53	14.51	4.95	14.37	5.12	14.09	5.47
	10	15.85	3.26	15.70	3.69	15.55	4.11	15.40	4.54	15.25	4.96	15.19	5.13	15.07	5.48
M5AC055CR	4	15.32	3.92	14.43	4.37	13.54	4.83	12.65	5.29	11.76	5.74	10.87	6.20	10.69	6.29
	5	15.83	3.93	14.99	4.38	14.15	4.84	13.31	5.29	12.48	5.74	11.64	6.20	11.47	6.29
	6	16.07	3.94	15.34	4.39	14.60	4.84	13.87	5.30	13.13	5.75	12.40	6.20	12.25	6.29
	7	16.84	3.95	16.11	4.40	15.37	4.85	14.64	5.30	13.91	5.75	13.17	6.20	13.03	6.29
	8	16.56	3.96	16.03	4.41	15.50	4.86	14.97	5.31	14.44	5.75	13.91	6.20	13.81	6.29
	9	16.81	3.97	16.38	4.42	15.95	4.86	15.53	5.31	15.10	5.76	14.67	6.21	14.58	6.29
	10	16.79	3.98	16.52	4.42	16.24	4.87	15.97	5.32	15.69	5.76	15.42	6.21	15.36	6.30

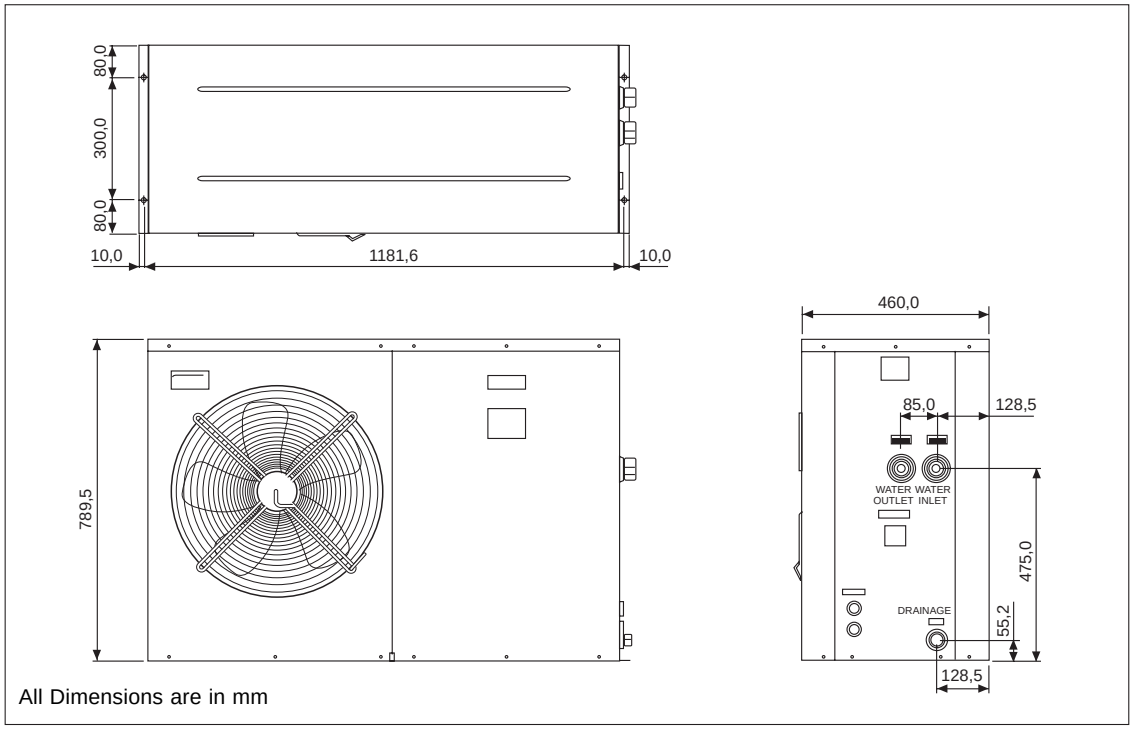
Heatpump- Heating Mode
Refrigerant : R410A

MODEL	LEAVING WATER TEMP (°C)	AMBIENT TEMPERATURE (DB) ON CONDENSOR (°C)															
		-7		-5		0		4		7		10		15		21	
		HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW	HEAT CAP. kW	POWER INPUT kW
M5AC020CR	35	2.30	2.14	4.59	2.30	4.66	2.32	4.61	2.32	6.45	2.48	4.81	2.33	4.66	2.32	5.26	2.31
	40	2.24	2.37	4.34	2.52	4.42	2.53	4.38	2.53	6.13	2.68	4.57	2.55	4.42	2.53	4.99	2.53
	45	2.17	2.55	4.12	2.72	4.21	2.73	4.17	2.73	5.84	2.89	4.35	2.74	4.21	2.73	4.75	2.73
	50	2.30	2.76	3.69	2.89	3.91	2.90	3.90	2.90	5.41	3.03	4.06	2.91	3.93	2.90	4.40	2.94
	55	1.78	2.91	3.57	3.09	3.62	3.10	3.59	3.10	5.02	3.27	3.74	3.12	3.62	3.10	4.09	3.10
M5AC025CR	35	3.85	2.14	5.92	2.29	6.00	2.29	5.96	2.28	7.68	2.40	6.14	2.30	6.00	2.29	5.94	2.32
	40	3.63	2.31	5.69	2.48	5.77	2.47	5.73	2.47	7.44	2.59	5.91	2.48	5.77	2.47	5.71	2.51
	45	3.62	2.49	5.26	2.67	5.63	2.66	5.77	2.65	7.33	2.79	5.69	2.67	5.55	2.66	6.10	2.70
	50	3.10	2.59	5.17	2.88	5.25	2.85	5.21	2.84	6.93	2.99	5.39	2.85	5.25	2.84	5.19	2.89
	55	2.84	2.83	4.90	3.04	4.99	3.03	4.95	3.02	6.66	3.18	5.13	3.04	4.99	3.03	4.93	3.08
M5AC030CR	35	4.69	2.37	7.43	2.46	7.54	2.46	7.48	2.46	9.77	2.53	7.73	2.47	7.54	2.46	8.27	2.48
	40	4.50	2.74	7.27	2.83	7.38	2.83	7.33	2.83	9.64	2.91	7.58	2.84	7.38	2.83	8.13	2.86
	45	4.31	3.10	7.12	3.20	7.23	3.21	7.18	3.20	9.52	3.29	7.43	3.21	7.23	3.21	7.99	3.23
	50	4.12	3.46	6.96	3.57	7.08	3.58	7.02	3.57	9.40	3.67	7.28	3.58	7.08	3.58	7.85	3.61
	55	3.93	3.82	6.81	3.94	6.93	3.95	6.87	3.95	9.27	4.05	7.13	3.96	6.93	3.95	7.70	3.98
M5AC040CR	35	6.75	2.71	9.88	2.90	10.00	2.91	9.94	2.91	12.88	3.09	10.22	2.92	10.00	2.91	10.85	2.96
	40	6.11	11.00	9.42	-4.53	9.55	1.19	9.49	5.05	12.60	3.50	9.79	13.01	9.55	11.98	10.45	14.07
	45	5.47	3.57	8.97	3.75	9.10	3.76	9.04	3.75	11.95	3.90	9.35	3.77	9.10	3.76	10.05	3.81
	50	4.83	4.01	8.51	4.18	8.65	4.18	8.58	4.18	11.65	4.32	8.91	4.20	8.65	4.18	9.65	4.23
	55	4.19	4.45	8.05	4.60	8.20	4.61	8.13	4.61	11.34	4.74	8.48	4.62	8.20	4.61	9.24	4.65
M5AC050CR	35	7.83	3.30	11.79	3.41	11.95	3.41	11.88	3.41	15.18	3.50	12.23	3.42	11.95	3.41	13.02	3.44
	40	7.71	3.89	11.67	3.96	11.83	3.96	11.75	3.96	15.06	4.02	12.11	3.97	11.83	3.96	12.90	3.98
	45	7.59	4.47	11.55	4.51	11.70	4.51	11.63	4.51	14.93	4.54	11.98	4.51	11.70	4.51	12.77	4.52
	50	7.47	5.06	11.42	5.06	11.58	5.06	11.51	5.06	14.81	5.06	11.86	5.06	11.58	5.06	12.65	5.06
	55	7.34	5.64	11.30	5.61	11.46	5.61	11.38	5.61	14.68	5.58	11.74	5.61	11.46	5.61	12.52	5.60
M5AC055CR	35	10.12	5.01	13.68	5.06	13.82	5.06	13.75	5.06	16.71	5.09	14.07	5.06	13.82	5.06	14.78	5.07
	40	9.68	5.60	13.31	5.64	13.45	5.65	13.38	5.65	16.41	5.69	13.71	5.65	13.45	5.65	14.43	5.66
	45	9.23	6.18	12.94	6.23	13.09	6.24	13.02	6.24	16.11	6.28	13.35	6.24	13.09	6.24	14.09	6.25
	50	8.78	6.76	12.57	6.82	12.72	6.82	12.65	6.82	15.81	6.87	12.99	6.83	12.72	6.82	13.74	6.84
	55	8.33	7.35	12.20	7.41	12.36	7.41	12.28	7.41	15.51	7.47	12.63	7.42	12.36	7.41	13.40	7.43

Dimensional Data

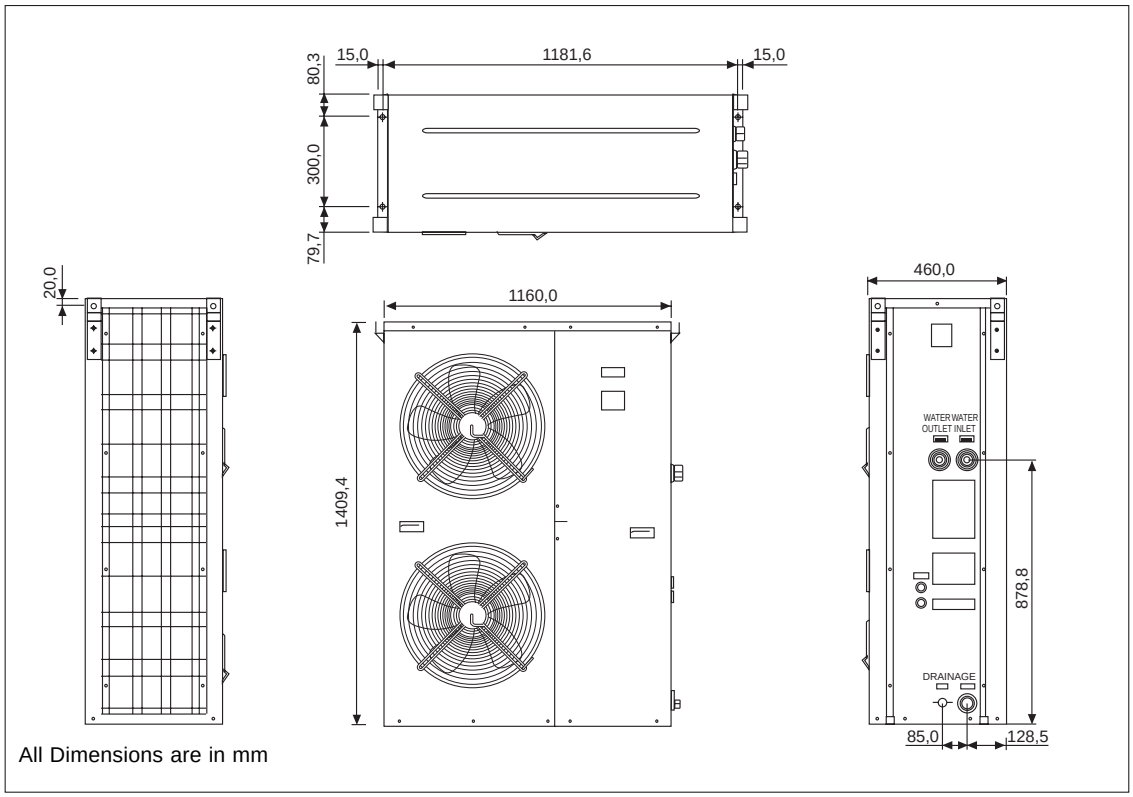
Outline and Dimension

Model : M4AC/ MAC020 / 025 / 030C/CR, M5AC020 / 025CR



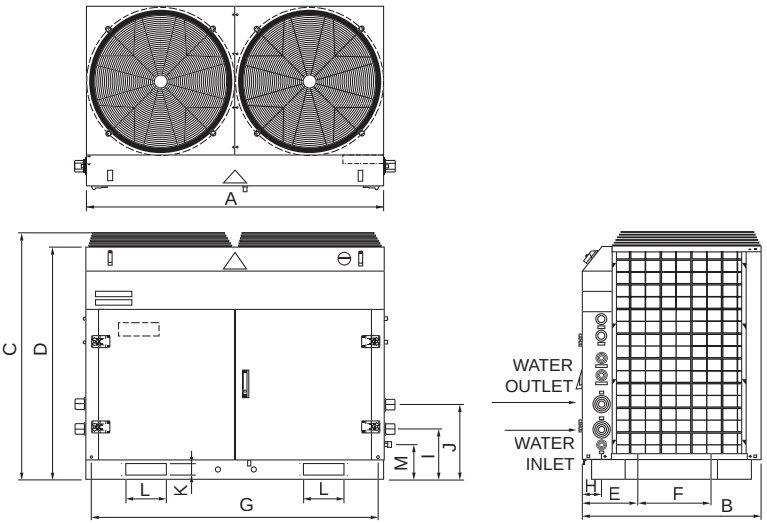
All Dimensions are in mm

Model : M4AC/ MAC040 / 050 / 060C/CR



All Dimensions are in mm

Model : M4AC/ MAC080 / 100 / 120 / 150C/CR

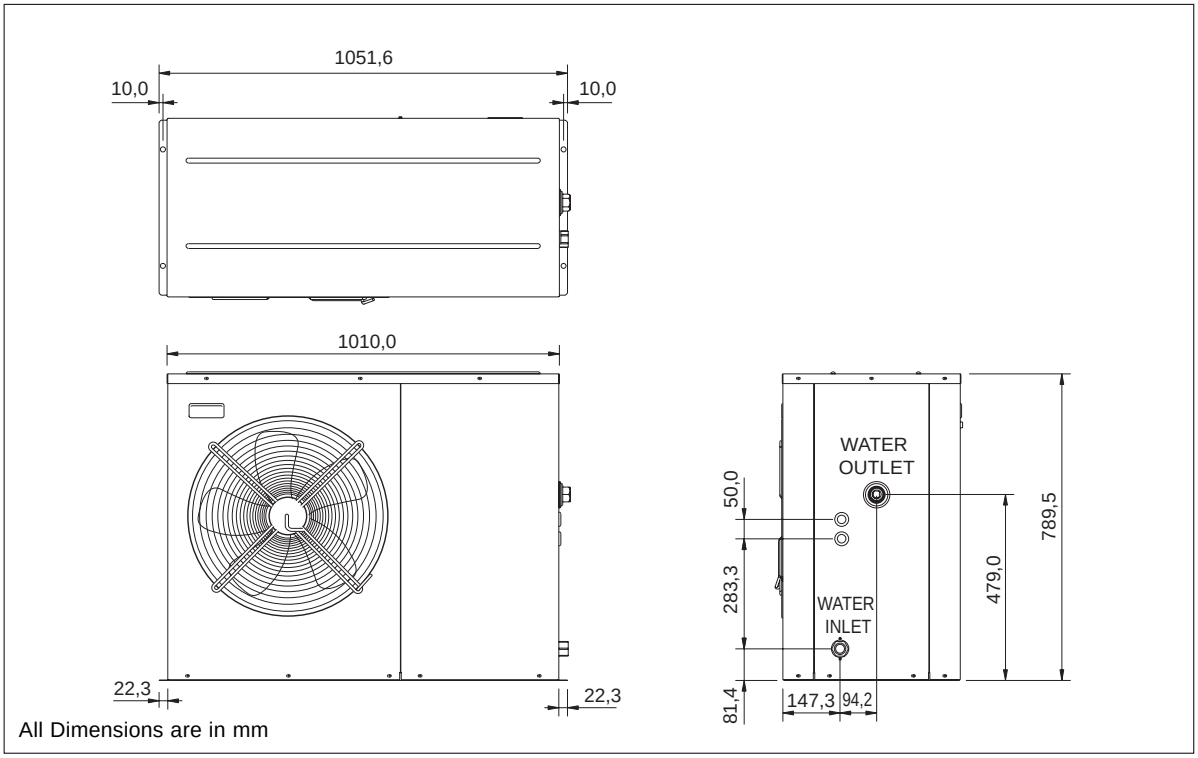


All Dimensions are in mm

Model	A	B	C	D	E	F	G
						Base Leg Hole	
M4AC/MAC080 C/CR	1500	900	1245	1190	297.5	307.5	1446
M4AC/MAC100 C/CR	1500	900	1245	1190	297.5	307.5	1446
M4AC/MAC120 C/CR	1800	1150	1245	1190	347.5	416	1776
M4AC/MAC150 C/CR	1800	1150	1245	1190	347.5	416	1776

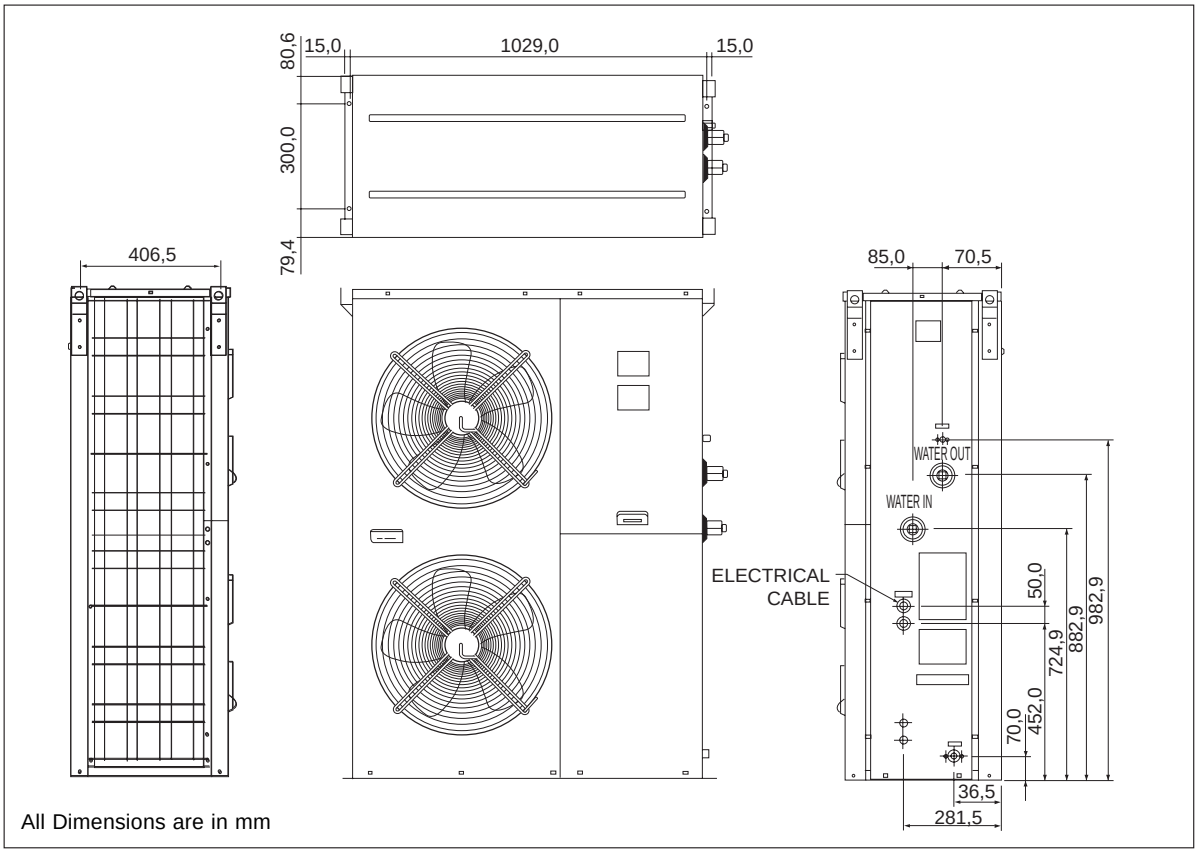
H	I	J	K	L	M
100	265	385	60	200	170
100	265	385	60	200	170
100	265	385	60	200	170
100	265	385	60	200	170

Model : M5AC030CR



All Dimensions are in mm

Model : M5AC040 / 050 / 055CR

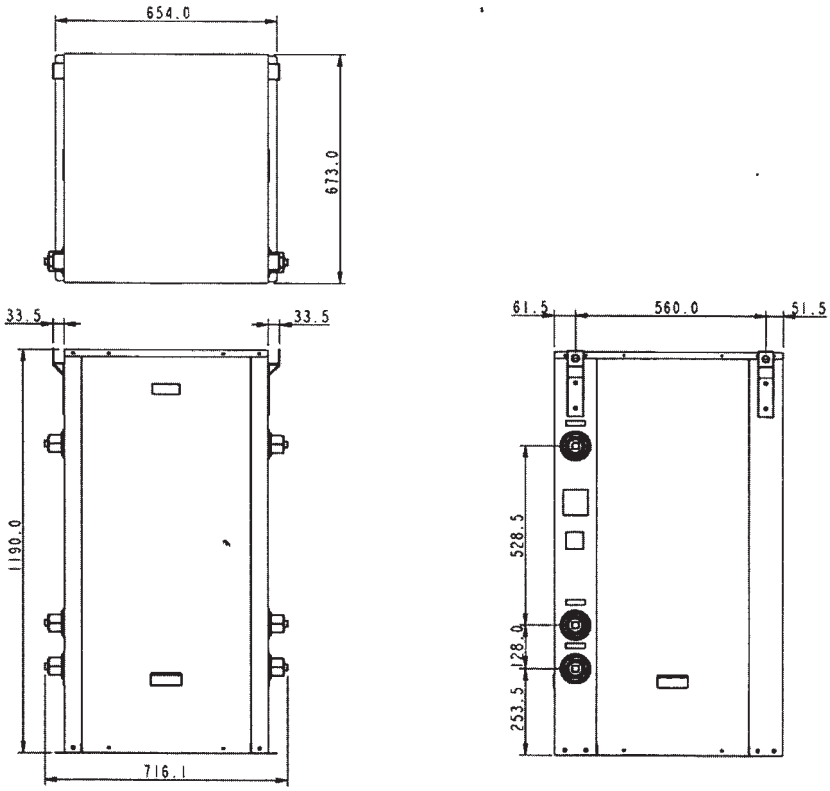


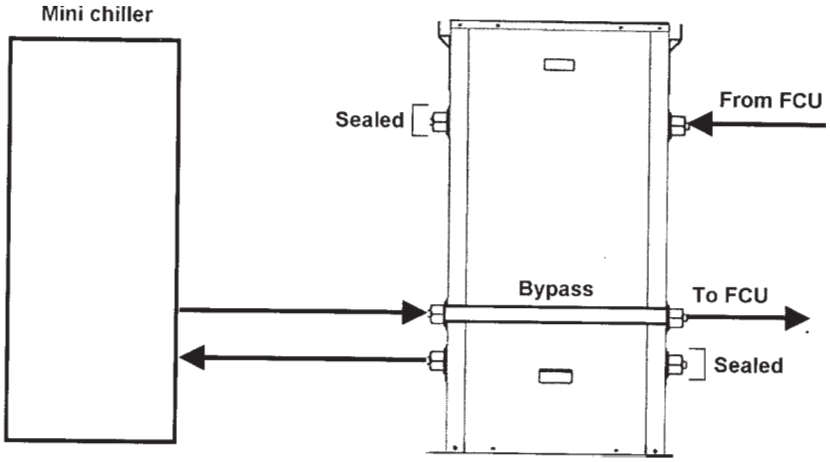
All Dimensions are in mm

Accessory Hydraulic Kit (Optional)

Hydraulic kit consists of 135L capacity water storage butffer tank, over pressure release value and drainage point.

Weight	= 92kg
Material of water tank	= Mild steel with 3mm thickness
Pipe Connection	= 1 - 1/4”
Type of pipes connection	= BSPF Female
Packing Dimension	= 838 (W) x 788 (D) x 1378 (H)





The buffer tank is installed at the water return path back to chiller. In order to let the connection look tidy, the tank has a bypass pipe (the center connection) to allow the pipe to be connected to FCU. The additional outlets are sealed (they are meant for installation at different side). Please refer to the expleded view.

Electrical Data

Electrical Data - R22 Cooling only

MODEL			MAC020C	MAC025C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	135
	RATED RUNNING CURRENT	A	0.67	0.67
	MOTOR OUTPUT	W	145	145
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR	µF	45	50
	RATED INPUT POWER	W	2359	2405
	RATED RUNNING CURRENT	A	11.20	11.10
	LOCKED ROTOR AMP.	A	67	82
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	175	190
	RATED RUNNING CURRENT	A	0.77	0.83

MODEL			MAC030C	MAC040C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	270
	RATED RUNNING CURRENT	A	0.67	1.34
	MOTOR OUTPUT	W	145	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	60	NA
	RATED INPUT POWER	W	3155	3880
	RATED RUNNING CURRENT	A	15.00	7.60
	LOCKED ROTOR AMP.	A	114	66
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	201	320
	RATED RUNNING CURRENT	A	0.88	0.71

MODEL			MAC050C	MAC060C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	270	270
	RATED RUNNING CURRENT	A	1.34	1.34
	MOTOR OUTPUT	W	145 x2	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	4630	5740
	RATED RUNNING CURRENT	A	8.10	11.10
	LOCKED ROTOR AMP.	A	74	101
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	345	351
	RATED RUNNING CURRENT	A	0.77	0.78

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Electrical Data - R22 Cooling only

MODEL			MAC080C	MAC100C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	565	565
	RATED RUNNING CURRENT	A	2.40	2.40
	MOTOR OUTPUT	W	120 x2	120 x2
	POLES		8	8
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	7052	8560
	RATED RUNNING CURRENT	A	14.00	14.70
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	66 / 66	74 / 74
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	1050	1050
	RATED RUNNING CURRENT	A	1.50	1.50

MODEL			MAC120C	MAC150C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	772	1532
	RATED RUNNING CURRENT	A	3.60	6.80
	MOTOR OUTPUT	W	200 x2	450 x2
	POLES		8	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	9433	11447
	RATED RUNNING CURRENT	A	19.70	22.40
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	101 / 101	95 / 95
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	800	800
	RATED RUNNING CURRENT	A	2.00	2.00

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Electrical Data - R22 Heat pump

MODEL			MAC020CR	MAC025CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	135
	RATED RUNNING CURRENT	A	0.67	0.67
	MOTOR OUTPUT	W	145	145
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR	µF	45	50
	RATED INPUT POWER (COOLING)	W	2289	2455
	RATED INPUT POWER (HEATING)	W	2379	2285
	RATED RUNNING CURRENT (COOLING)	A	10.90	11.20
	RATED RUNNING CURRENT (HEATING)	A	11.20	10.50
	LOCKED ROTOR AMP.	A	67	82
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER (COOLING)	W	175	189
	RATED INPUT POWER (HEATING)	W	186	194
	RATED RUNNING CURRENT (COOLING)	A	0.77	0.83
	RATED RUNNING CURRENT (HEATING)	A	0.82	0.85

MODEL			MAC030CR	MAC040CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	270
	RATED RUNNING CURRENT	A	0.67	1.34
	MOTOR OUTPUT	W	145	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	60	NA
	RATED INPUT POWER (COOLING)	W	3205	3970
	RATED INPUT POWER (HEATING)	W	3215	4030
	RATED RUNNING CURRENT (COOLING)	A	16.7	7.4
	RATED RUNNING CURRENT (HEATING)	A	16.8	7.6
	LOCKED ROTOR AMP.	A	114	66
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	201	320
	RATED INPUT POWER (HEATING)	W	211	329
	RATED RUNNING CURRENT (COOLING)	A	0.88	0.71
	RATED RUNNING CURRENT (HEATING)	A	0.93	0.73

MODEL			MAC050CR	MAC060CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	270	270
	RATED RUNNING CURRENT	A	1.34	1.34
	MOTOR OUTPUT	W	145 x2	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	4440	5930
	RATED INPUT POWER (HEATING)	W	4380	5620
	RATED RUNNING CURRENT (COOLING)	A	7.7	12.2
	RATED RUNNING CURRENT (HEATING)	A	7.7	11.8
	LOCKED ROTOR AMP.	A	74	101
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	336	351
	RATED INPUT POWER (HEATING)	W	349	357
	RATED RUNNING CURRENT (COOLING)	A	0.75	0.78
	RATED RUNNING CURRENT (HEATING)	A	0.77	0.79

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Electrical Data - R22 Heat pump

MODEL			MAC080CR	MAC100CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	565	565
	RATED RUNNING CURRENT	A	2.40	2.40
	MOTOR OUTPUT	W	120 x2	120 x2
	POLES		8	8
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	7962	9190
	RATED INPUT POWER (HEATING)	W	7714	8694
	RATED RUNNING CURRENT (COOLING)	A	14.00	16.00
	RATED RUNNING CURRENT (HEATING)	A	13.40	15.10
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	66 / 66	74 / 74
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	1050	1050
	RATED INPUT POWER (HEATING)	W	1050	1050
	RATED RUNNING CURRENT (COOLING)	A	1.50	1.50
	RATED RUNNING CURRENT (HEATING)	A	1.50	1.50

MODEL			MAC120CR	MAC150CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	772	1532
	RATED RUNNING CURRENT	A	3.60	6.80
	MOTOR OUTPUT	W	200 x2	450 x2
	POLES		8	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	10142	11549
	RATED INPUT POWER (HEATING)	W	10376	12240
	RATED RUNNING CURRENT (COOLING)	A	20.5	22.0
	RATED RUNNING CURRENT (HEATING)	A	20.6	23.0
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	101 / 101	95 / 95
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	800	800
	RATED INPUT POWER (HEATING)	W	800	800
	RATED RUNNING CURRENT (COOLING)	A	2.00	2.00
	RATED RUNNING CURRENT (HEATING)	A	2.00	2.00

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Electrical Data - R407C Cooling only

MODEL			M4AC020C	M4AC025C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	135
	RATED RUNNING CURRENT	A	0.67	0.67
	MOTOR OUTPUT	W	145	145
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR	µF	50	50
	RATED INPUT POWER	W	2299	2625
	RATED RUNNING CURRENT	A	11.00	12.10
	LOCKED ROTOR AMP.	A	58	82
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	183	189
	RATED RUNNING CURRENT	A	0.80	0.83

MODEL			M4AC030C	M4AC040C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	270
	RATED RUNNING CURRENT	A	0.67	1.34
	MOTOR OUTPUT	W	145	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	60	NA
	RATED INPUT POWER	W	3345	4320
	RATED RUNNING CURRENT	A	15.90	8.10
	LOCKED ROTOR AMP.	A	114	66
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	199	320
	RATED RUNNING CURRENT	A	0.87	0.71

MODEL			M4AC050C	M4AC060C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	270	270
	RATED RUNNING CURRENT	A	1.34	1.34
	MOTOR OUTPUT	W	145 x2	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	5340	6240
	RATED RUNNING CURRENT	A	9.00	11.70
	LOCKED ROTOR AMP.	A	74	101
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	345	349
	RATED RUNNING CURRENT	A	0.77	0.77

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Electrical Data - R407C Cooling only

MODEL			M4AC080C	M4AC100C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	565	565
	RATED RUNNING CURRENT	A	2.40	2.40
	MOTOR OUTPUT	W	120 x2	120 x2
	POLES		8	8
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	7848	9156
	RATED RUNNING CURRENT	A	15.00	15.70
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	66 / 66	74 / 74
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	1050	1050
	RATED RUNNING CURRENT	A	1.50	1.50

MODEL			M4AC120C	M4AC150C
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	772	1532
	RATED RUNNING CURRENT	A	3.60	6.80
	MOTOR OUTPUT	W	200 x2	450 x2
	POLES		8	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER	W	10233	12199
	RATED RUNNING CURRENT	A	20.40	23.60
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	101 / 101	95 / 95
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER	W	800	800
	RATED RUNNING CURRENT	A	2.00	2.00

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Electrical Data - R407C Heat pump

MODEL			M4AC020CR	M4AC025CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	135
	RATED RUNNING CURRENT	A	0.67	0.67
	MOTOR OUTPUT	W	145	145
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR	µF	50	50
	RATED INPUT POWER (COOLING)	W	2289	2755
	RATED INPUT POWER (HEATING)	W	2369	2415
	RATED RUNNING CURRENT (COOLING)	A	11.20	12.80
	RATED RUNNING CURRENT (HEATING)	A	11.50	12.60
	LOCKED ROTOR AMP.	A	58	82
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER (COOLING)	W	173	186
	RATED INPUT POWER (HEATING)	W	181	195
	RATED RUNNING CURRENT (COOLING)	A	0.76	0.82
	RATED RUNNING CURRENT (HEATING)	A	0.79	0.86

MODEL			M4AC030CR	M4AC040CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	270
	RATED RUNNING CURRENT	A	0.67	1.34
	MOTOR OUTPUT	W	145	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	60	NA
	RATED INPUT POWER (COOLING)	W	3475	4230
	RATED INPUT POWER (HEATING)	W	3655	4390
	RATED RUNNING CURRENT (COOLING)	A	17.7	7.9
	RATED RUNNING CURRENT (HEATING)	A	18.4	8.0
	LOCKED ROTOR AMP.	A	114	66
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	194	320
	RATED INPUT POWER (HEATING)	W	214	334
	RATED RUNNING CURRENT (COOLING)	A	0.85	0.71
	RATED RUNNING CURRENT (HEATING)	A	0.94	0.74

MODEL			M4AC050CR	M4AC060CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	270	270
	RATED RUNNING CURRENT	A	1.34	1.34
	MOTOR OUTPUT	W	145 x2	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	4840	5890
	RATED INPUT POWER (HEATING)	W	5030	5640
	RATED RUNNING CURRENT (COOLING)	A	8.3	11.5
	RATED RUNNING CURRENT (HEATING)	A	8.6	11.4
	LOCKED ROTOR AMP.	A	74	101
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	336	347
	RATED INPUT POWER (HEATING)	W	347	358
	RATED RUNNING CURRENT (COOLING)	A	0.75	0.77
	RATED RUNNING CURRENT (HEATING)	A	0.77	0.79

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Electrical Data - R407C Heat pump

MODEL			M4AC080CR	M4AC100CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	565	565
	RATED RUNNING CURRENT	A	2.40	2.40
	MOTOR OUTPUT	W	120 x2	120 x2
	POLES		8	8
COMPRESSOR	INSULATION GRADE		E	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	8331	9413
	RATED INPUT POWER (HEATING)	W	8360	9519
	RATED RUNNING CURRENT (COOLING)	A	14.10	16.20
	RATED RUNNING CURRENT (HEATING)	A	14.50	16.20
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	66 / 66	74 / 74
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	1050	1050
	RATED INPUT POWER (HEATING)	W	1050	1050
	RATED RUNNING CURRENT (COOLING)	A	1.50	1.50
	RATED RUNNING CURRENT (HEATING)	A	1.50	1.50

MODEL			M4AC120CR	M4AC150CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	772	1532
	RATED RUNNING CURRENT	A	3.60	6.80
	MOTOR OUTPUT	W	200 x2	450 x2
	POLES		8	6
COMPRESSOR	INSULATION GRADE		NA	NA
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	CAPACITOR	µF	NA	NA
	RATED INPUT POWER (COOLING)	W	10701	12819
	RATED INPUT POWER (HEATING)	W	10814	13492
	RATED RUNNING CURRENT (COOLING)	A	21.0	23.5
	RATED RUNNING CURRENT (HEATING)	A	20.6	24.7
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	101 / 101	95 / 95
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	380 - 415 / 3 / 50	380 - 415 / 3 / 50
	RATED INPUT POWER (COOLING)	W	800	800
	RATED INPUT POWER (HEATING)	W	800	800
	RATED RUNNING CURRENT (COOLING)	A	2.00	2.00
	RATED RUNNING CURRENT (HEATING)	A	2.00	2.00

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2) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151.

Electrical Data - R410A Heat pump

MODEL			M5AC020CR	M5AC025CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	135
	RATED RUNNING CURRENT	A	0.67	0.67
	MOTOR OUTPUT	W	145	145
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	E
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR	µF	45	50
	RATED INPUT POWER (COOLING)	W	2230	2430
	RATED INPUT POWER (HEATING)	W	2262	2446
	RATED RUNNING CURRENT (COOLING)	A	10.40	11.20
	RATED RUNNING CURRENT (HEATING)	A	10.50	11.30
	LOCKED ROTOR AMP.	A	67	68
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER (COOLING)	W	185	195
	RATED INPUT POWER (HEATING)	W	193	209
	RATED RUNNING CURRENT (COOLING)	A	0.82	0.86
	RATED RUNNING CURRENT (HEATING)	A	0.85	0.91

MODEL			M5AC030CR	M5AC040CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	135	270
	RATED RUNNING CURRENT	A	0.67	1.34
	MOTOR OUTPUT	W	145	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	E
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR (COMP1/COMP2)	µF	50 / 50	50 / 45
	RATED INPUT POWER (COOLING)	W	3375	3740
	RATED INPUT POWER (HEATING)	W	3285	3900
	RATED RUNNING CURRENT (COOLING)	A	15.1	17.4
	RATED RUNNING CURRENT (HEATING)	A	14.7	18.1
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	35 / 35	35 / 67
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER (COOLING)	W	210	320
	RATED INPUT POWER (HEATING)	W	210	320
	RATED RUNNING CURRENT (COOLING)	A	0.92	1.59
	RATED RUNNING CURRENT (HEATING)	A	0.92	1.59

MODEL			M5AC050CR	M5AC055CR
CONDENSER FAN MOTOR	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER	W	270	270
	RATED RUNNING CURRENT	A	1.34	1.34
	MOTOR OUTPUT	W	145 x2	145 x2
	POLES		6	6
COMPRESSOR	INSULATION GRADE		E	E
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	CAPACITOR (COMP1/COMP2)	µF	60 / 50	50 / 50
	RATED INPUT POWER (COOLING)	W	4500	5300
	RATED INPUT POWER (HEATING)	W	4540	5400
	RATED RUNNING CURRENT (COOLING)	A	20.1	24.4
	RATED RUNNING CURRENT (HEATING)	A	20.6	24.8
	LOCKED ROTOR AMP. (COMP1/COMP2)	A	58 / 68	68 / 68
WATER PUMP	INSULATION GRADE		F	F
	POWER SOURCE	V/Ph/Hz	220 - 240 / 1 / 50	220 - 240 / 1 / 50
	RATED INPUT POWER (COOLING)	W	320	320
	RATED INPUT POWER (HEATING)	W	320	320
	RATED RUNNING CURRENT (COOLING)	A	1.59	1.59
	RATED RUNNING CURRENT (HEATING)	A	1.59	1.59

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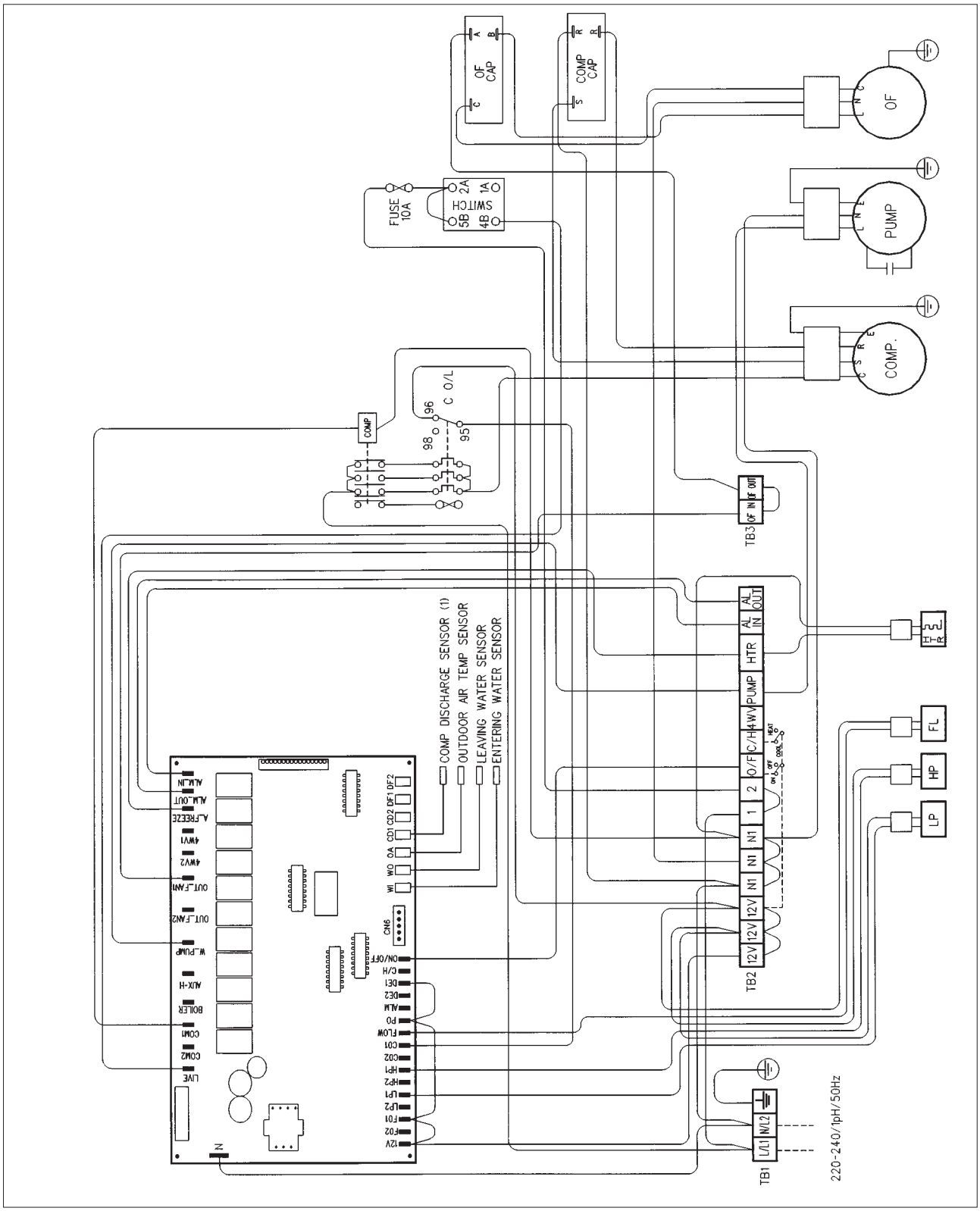
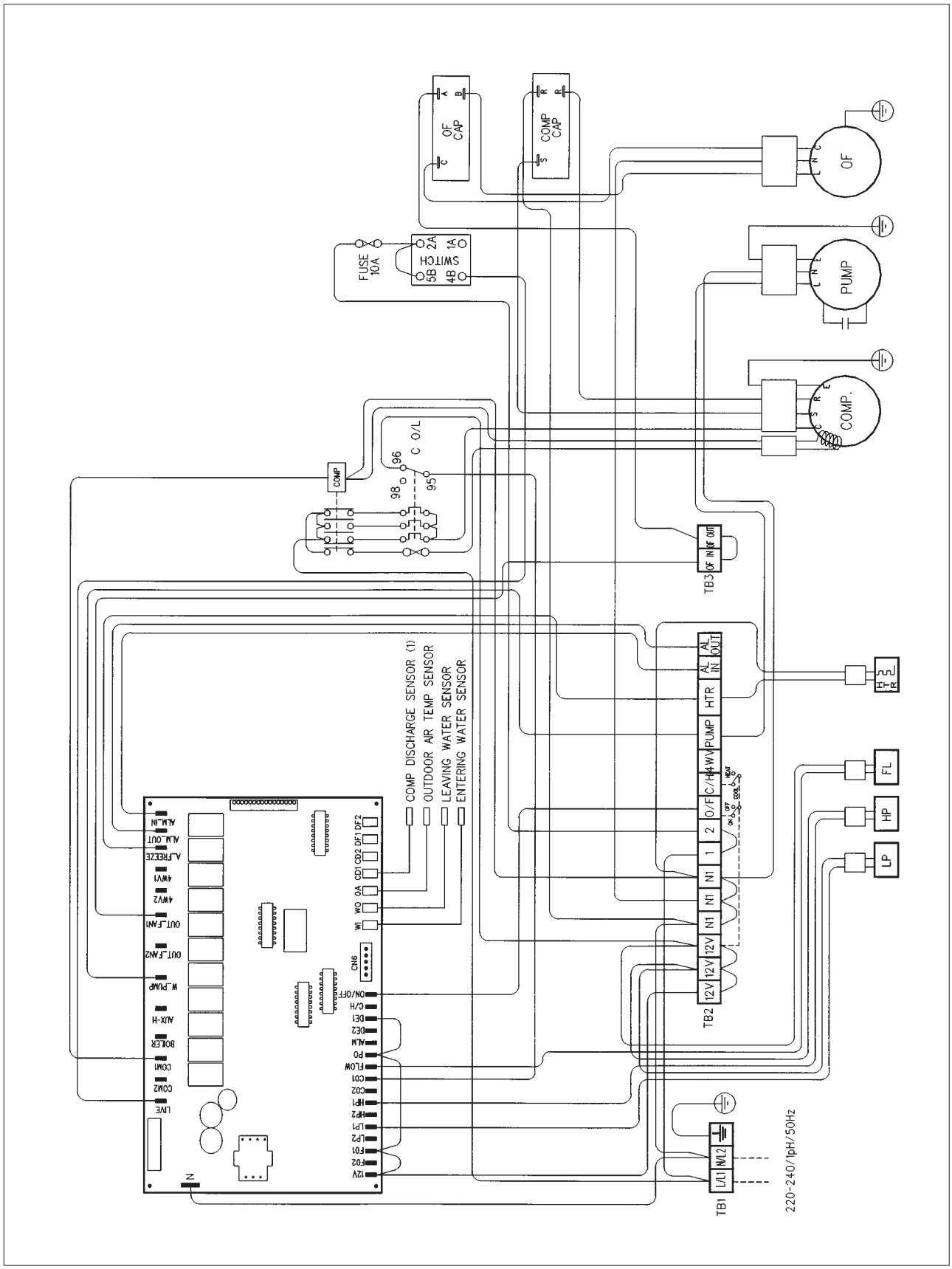
Wiring Diagrams

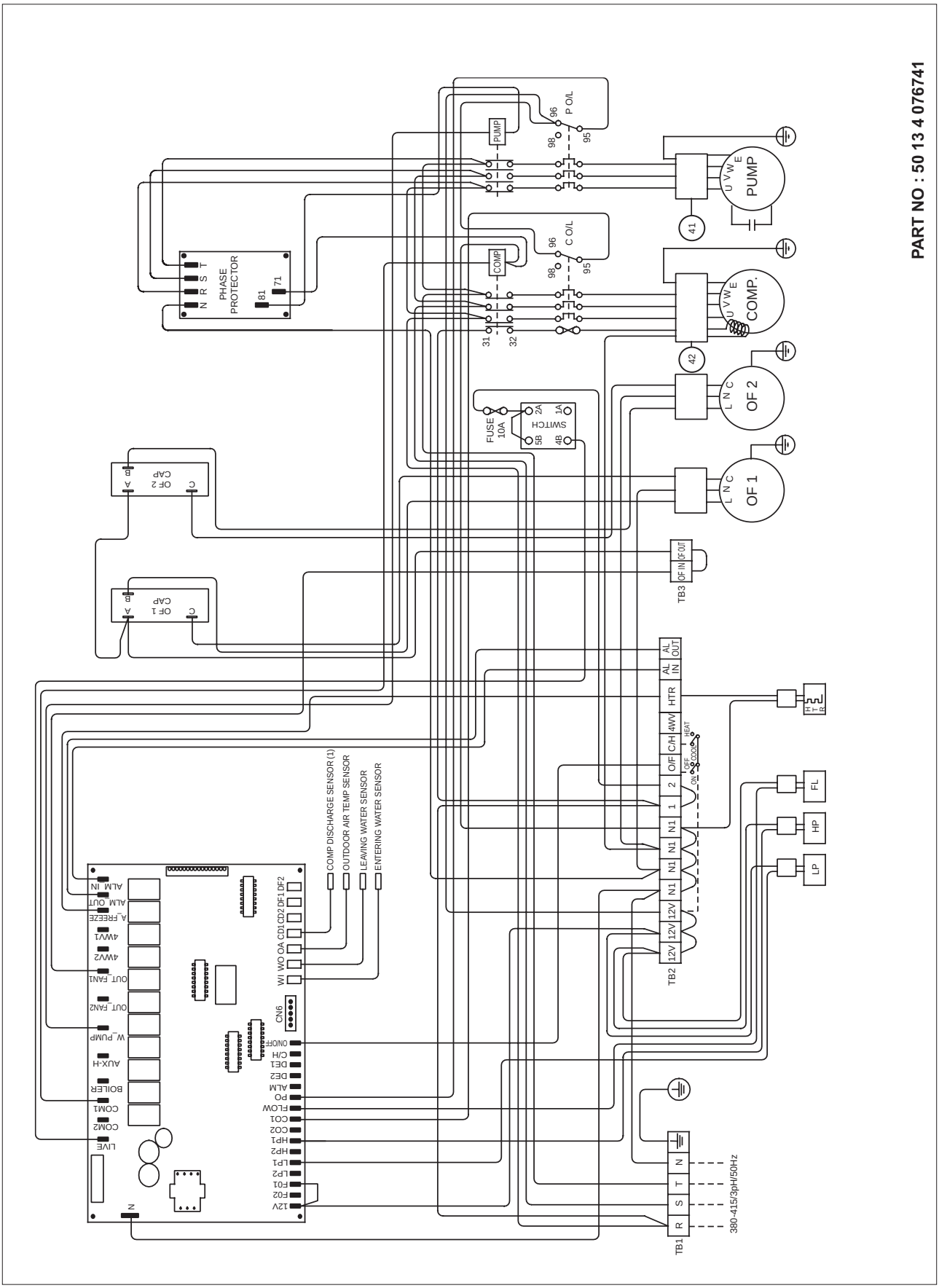
Model : M4AC/ MAC020C



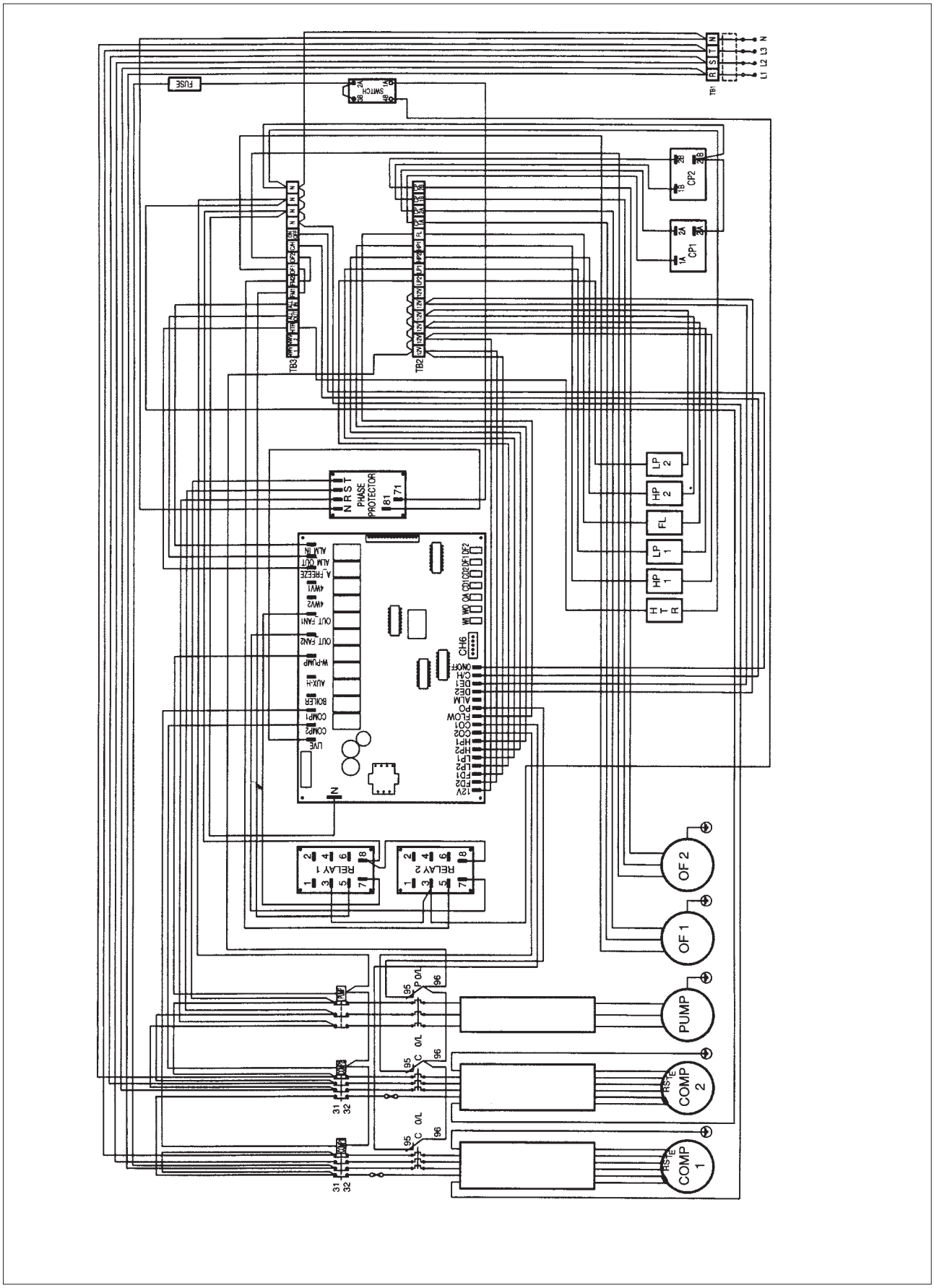
Model : M4AC/ MAC025 / 030C



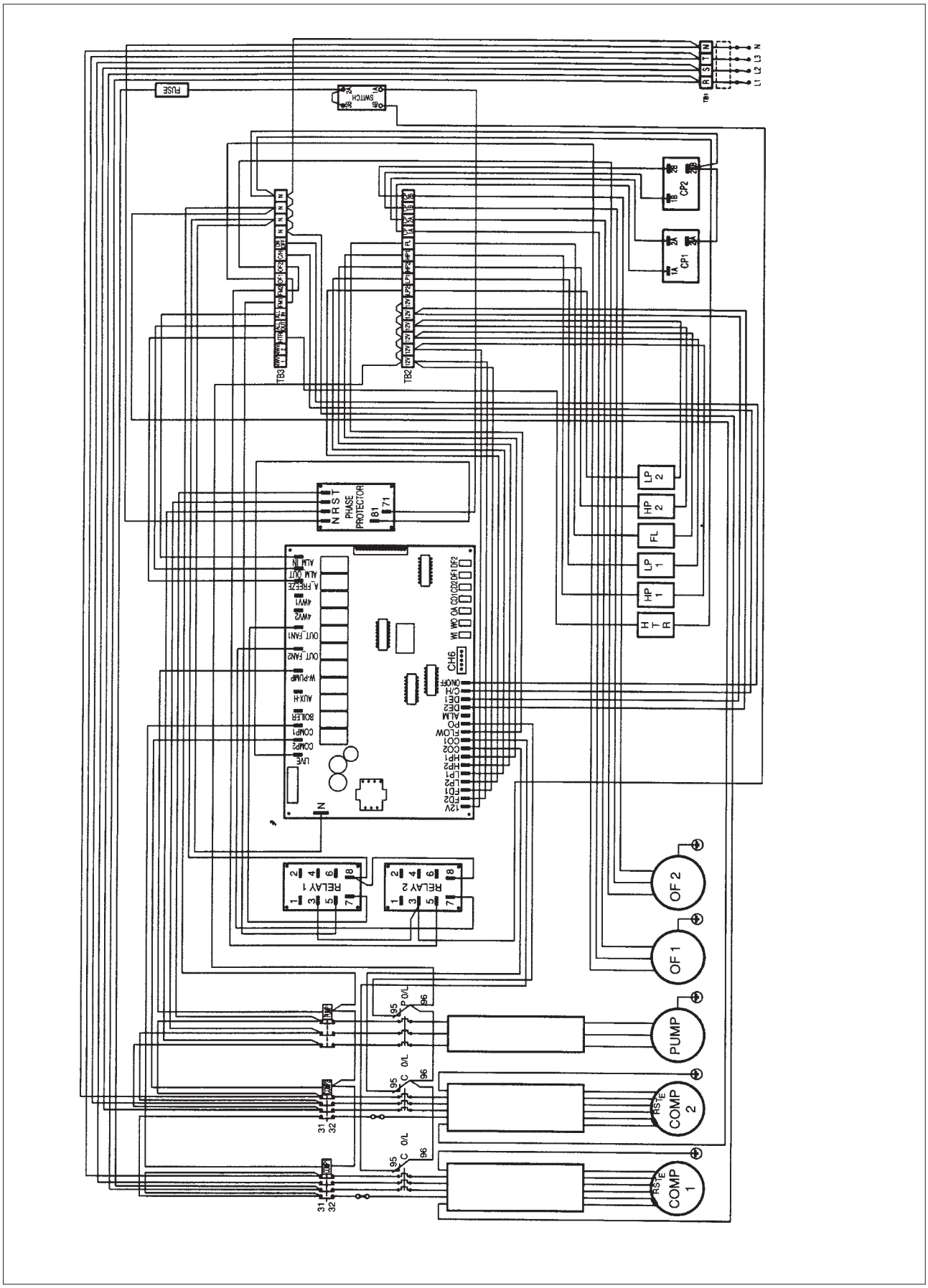
Model : M4AC/ MAC040 / 050 / 060C



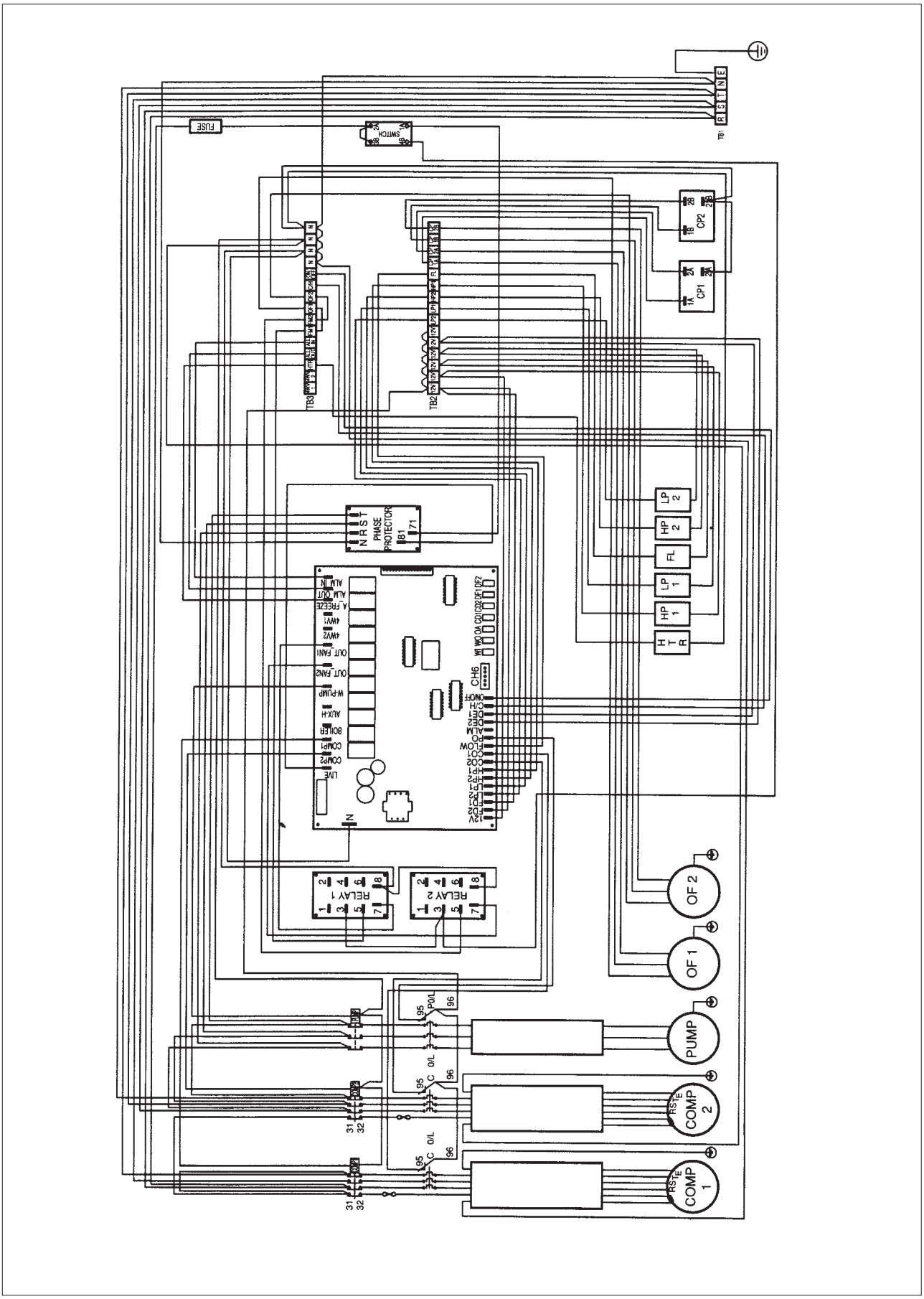
Model : M4AC/ MAC080 / 100C (With Isolated Switch)



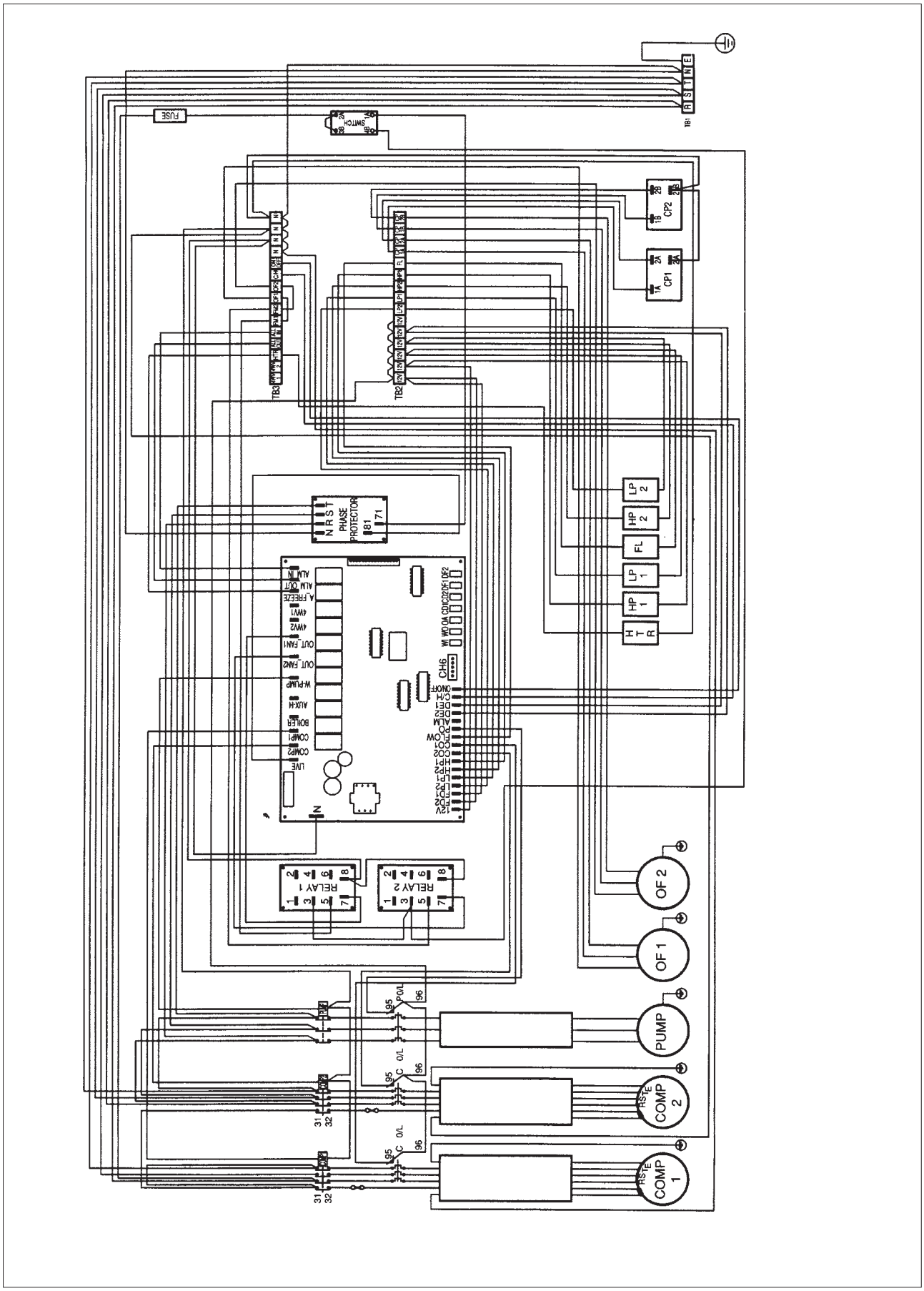
Model : M4AC / MAC 120/ 150C (With Isolated Switch)



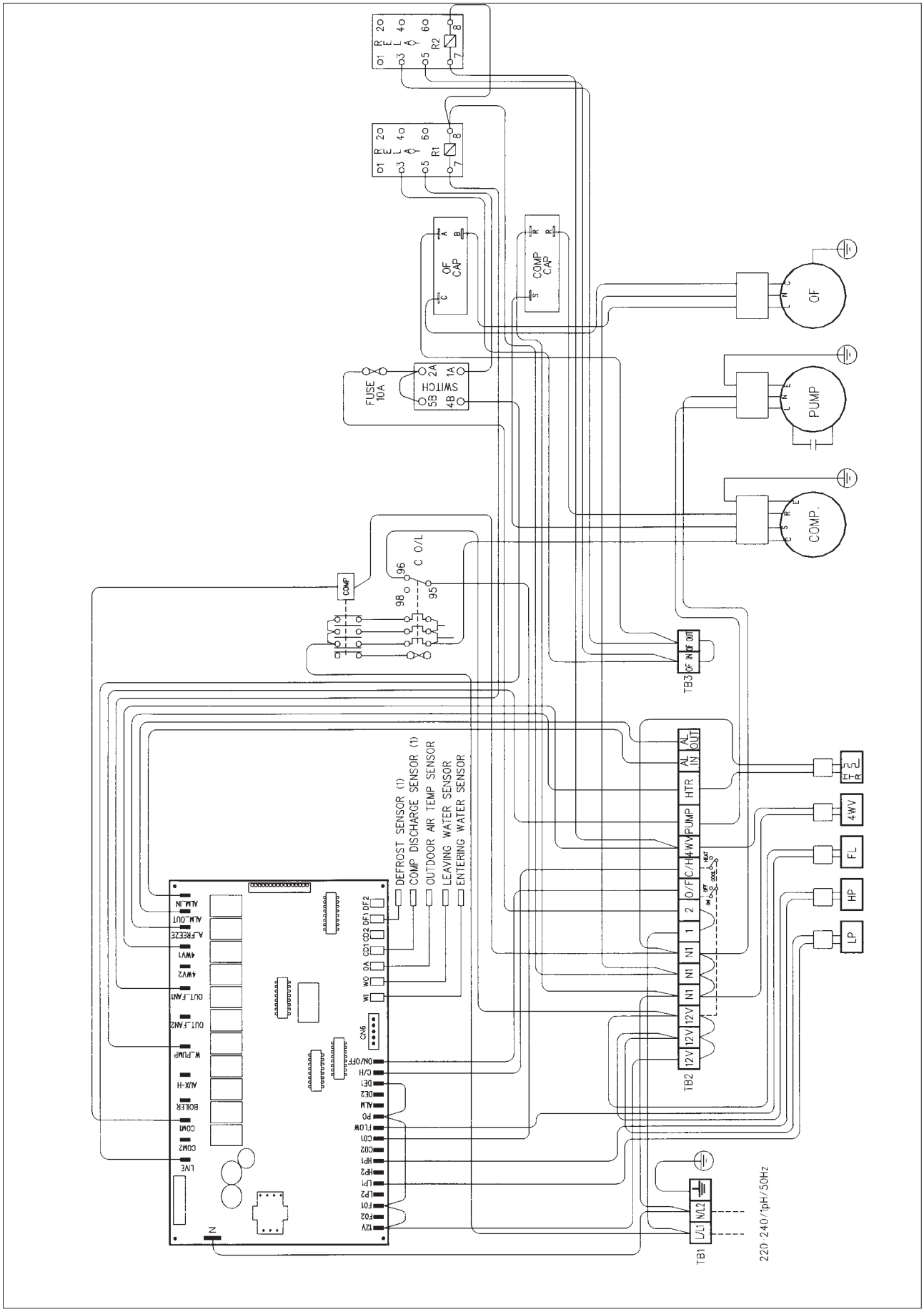
Model : M4AC/ MAC080 / 100C (With Terminal Block)



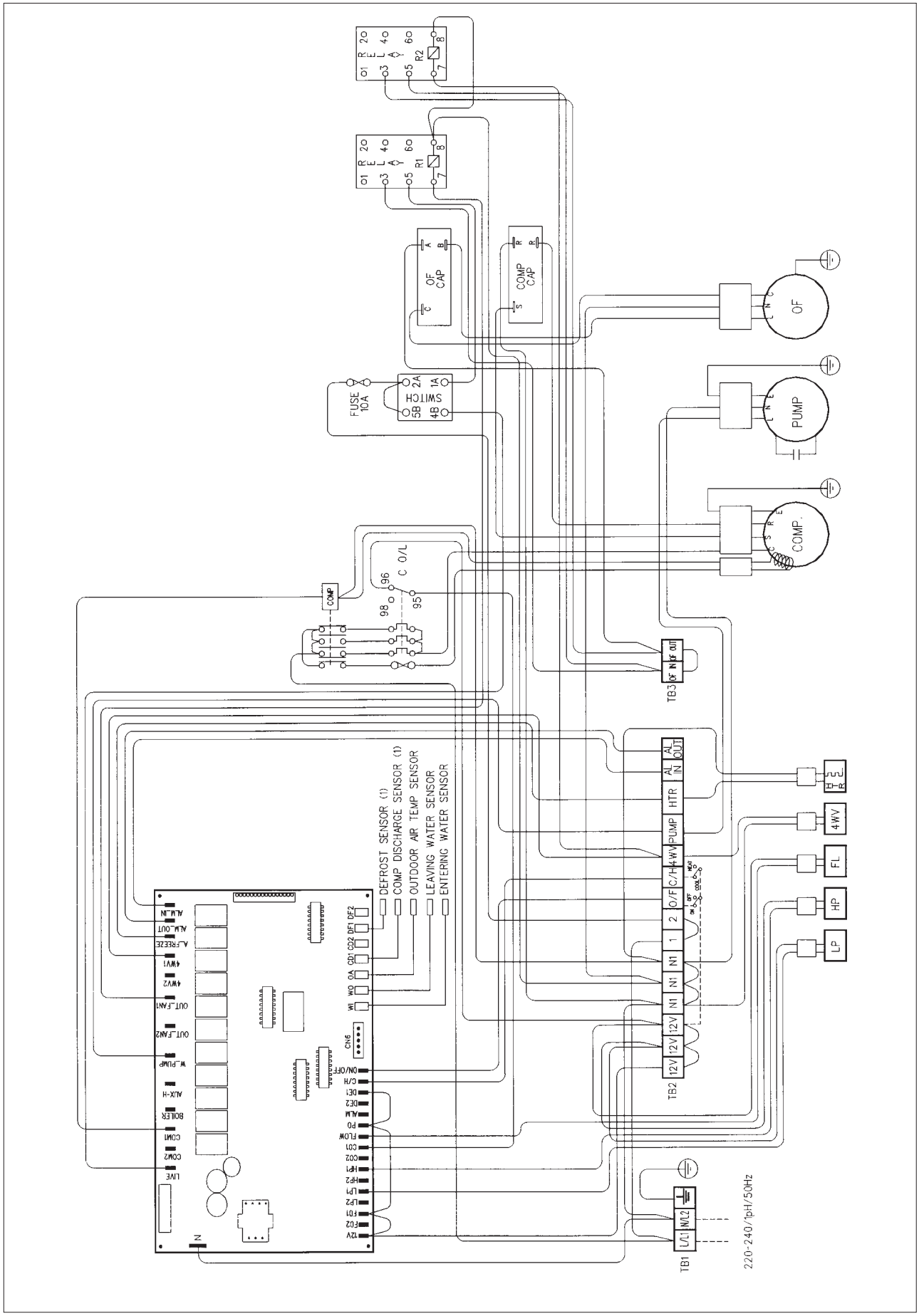
Model : M4AC / MAC 120 / 150C (With Terminal Block)



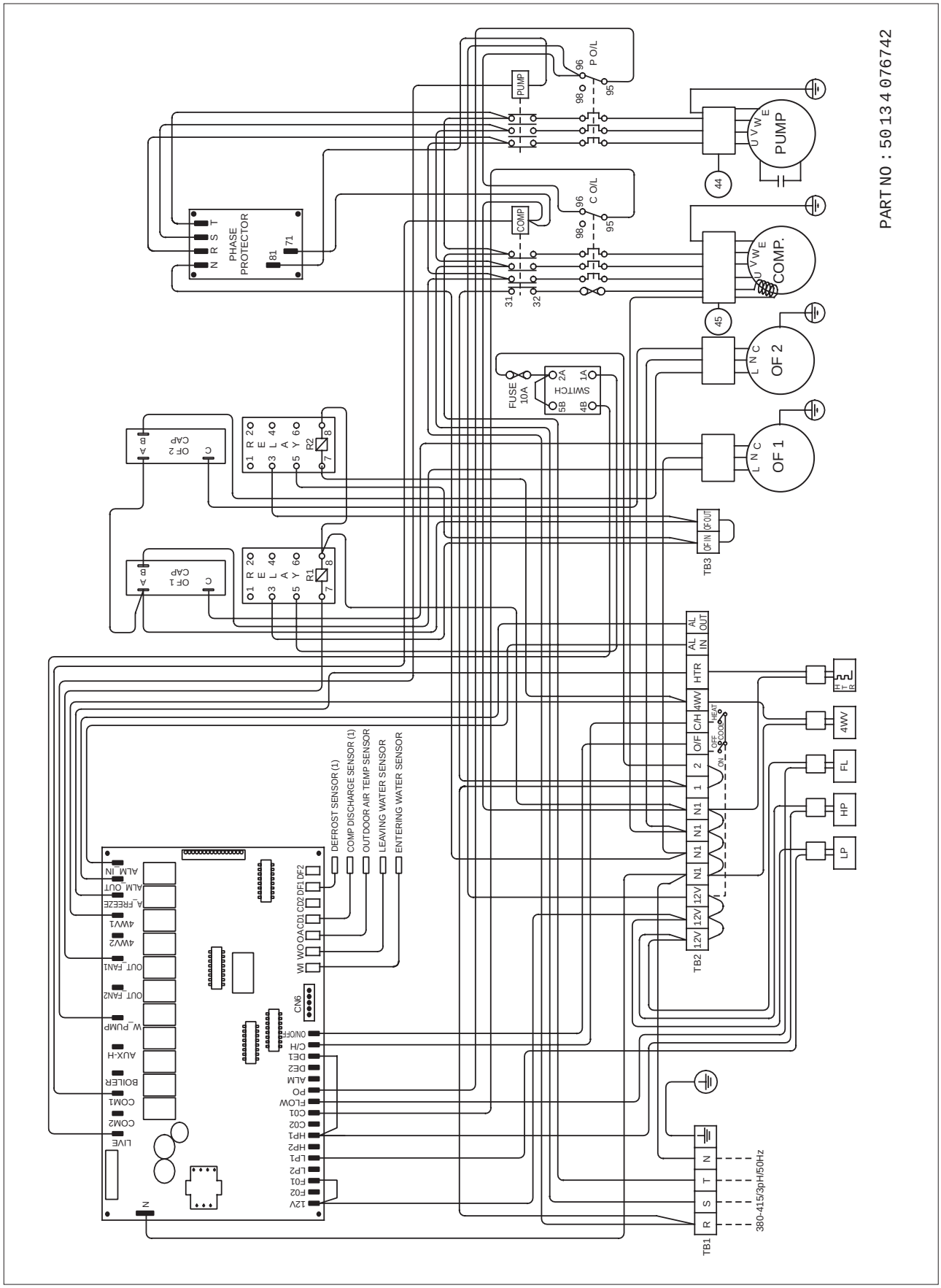
Model : M4AC020CR



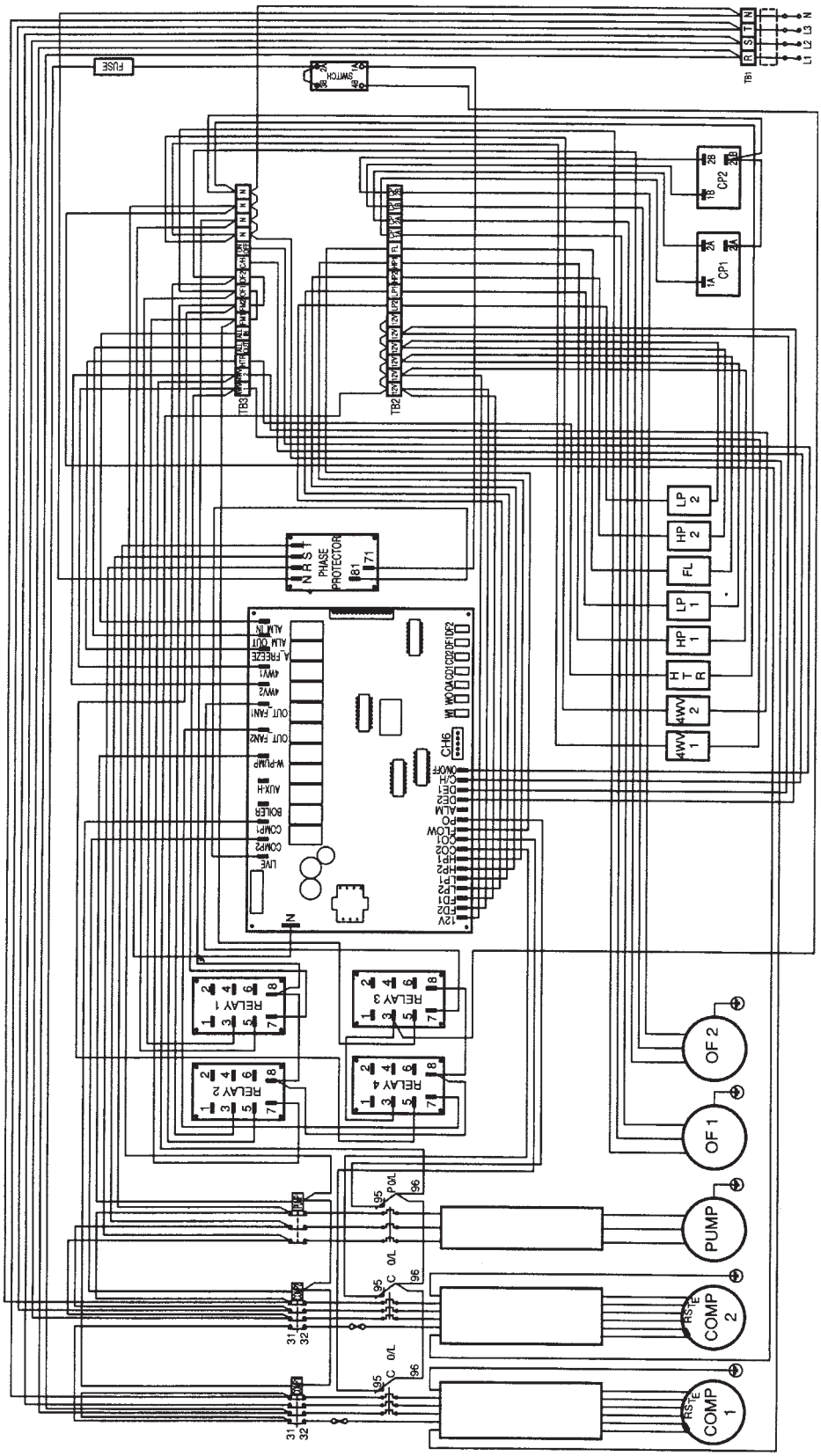
Model : M4AC / MAC 025 / 030CR



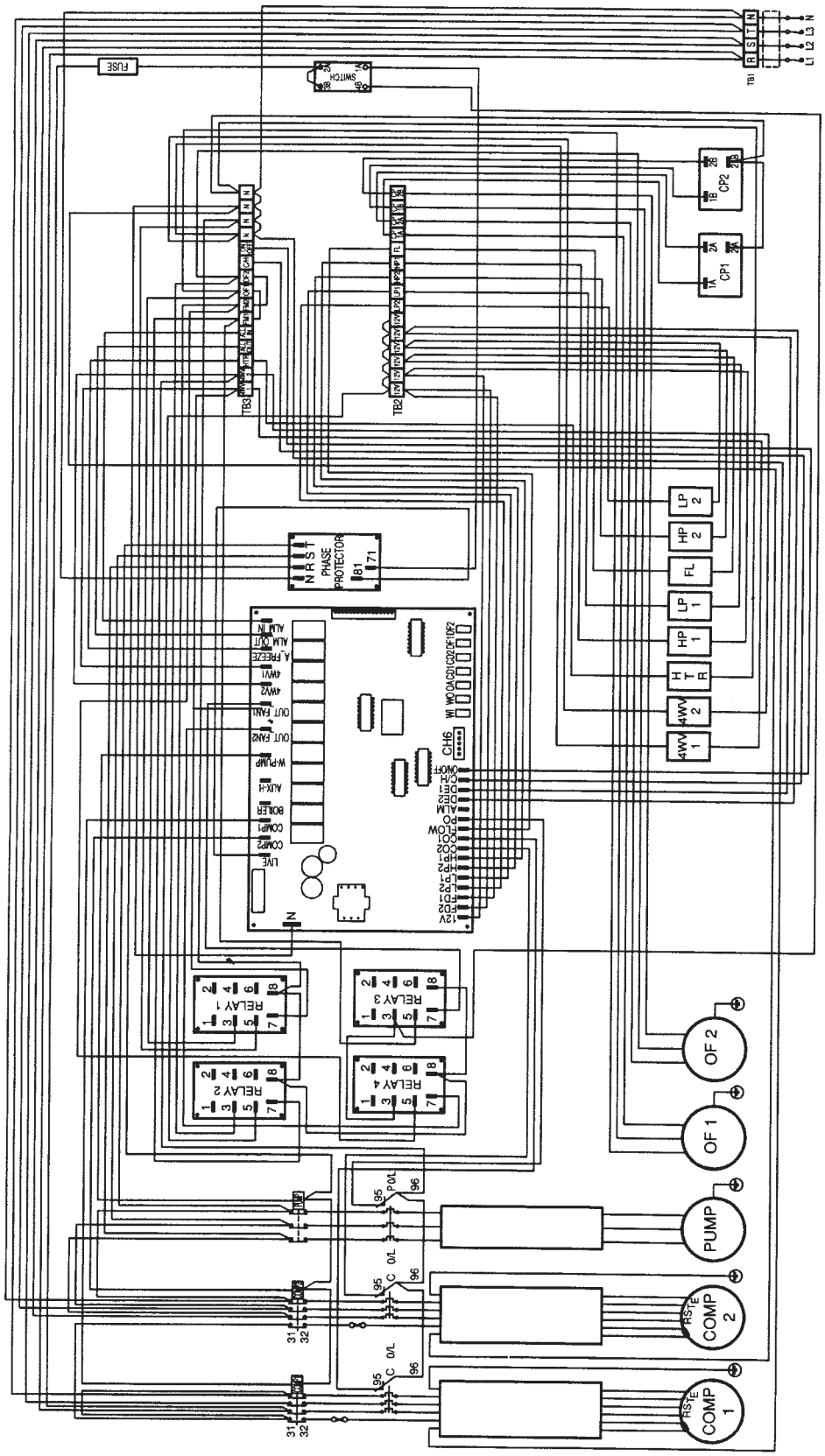
Model : M4AC / MAC 040 / 050 / 060CR



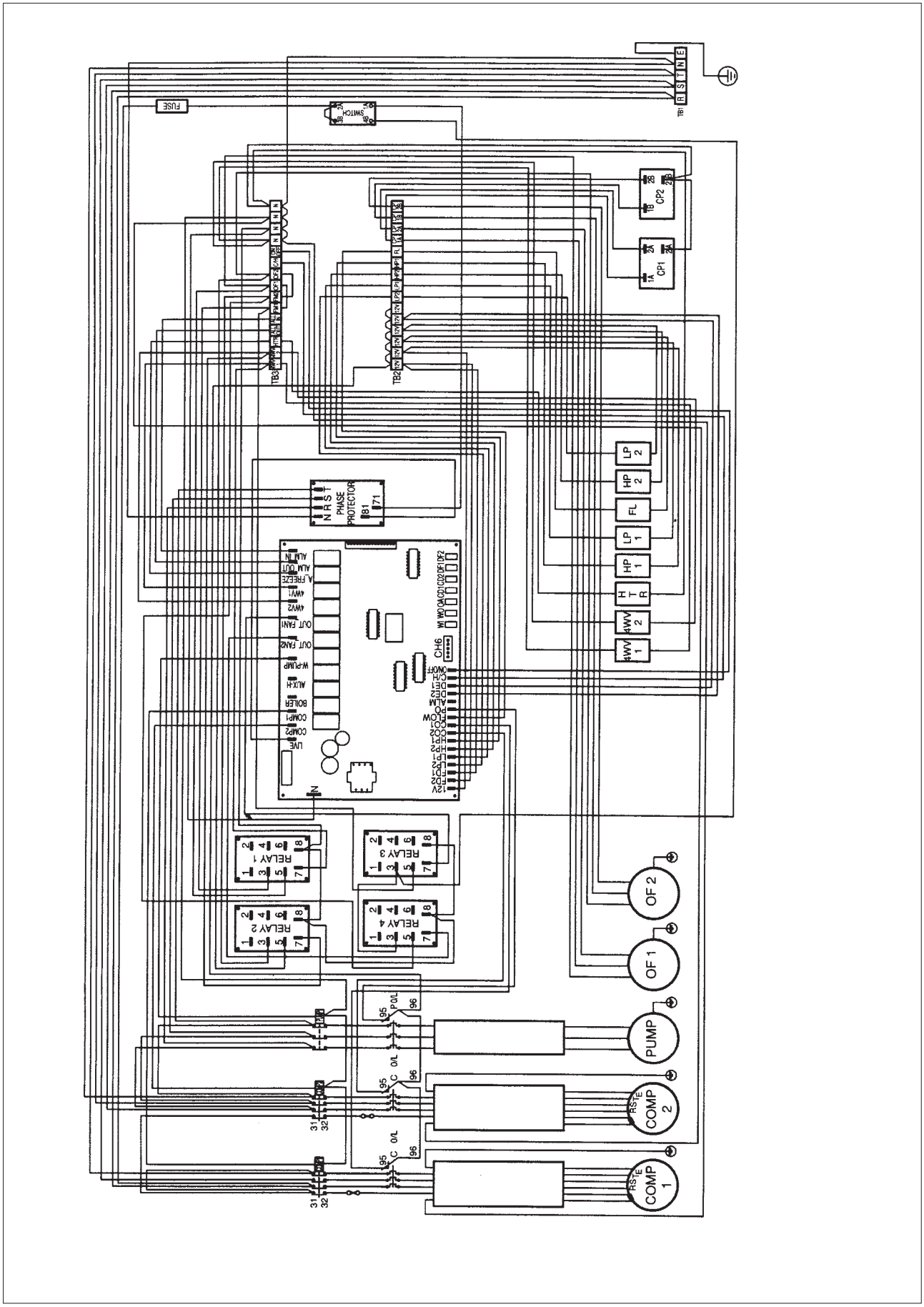
Model : M4AC / MAC 080 / 100CR (With Isolated Switch)



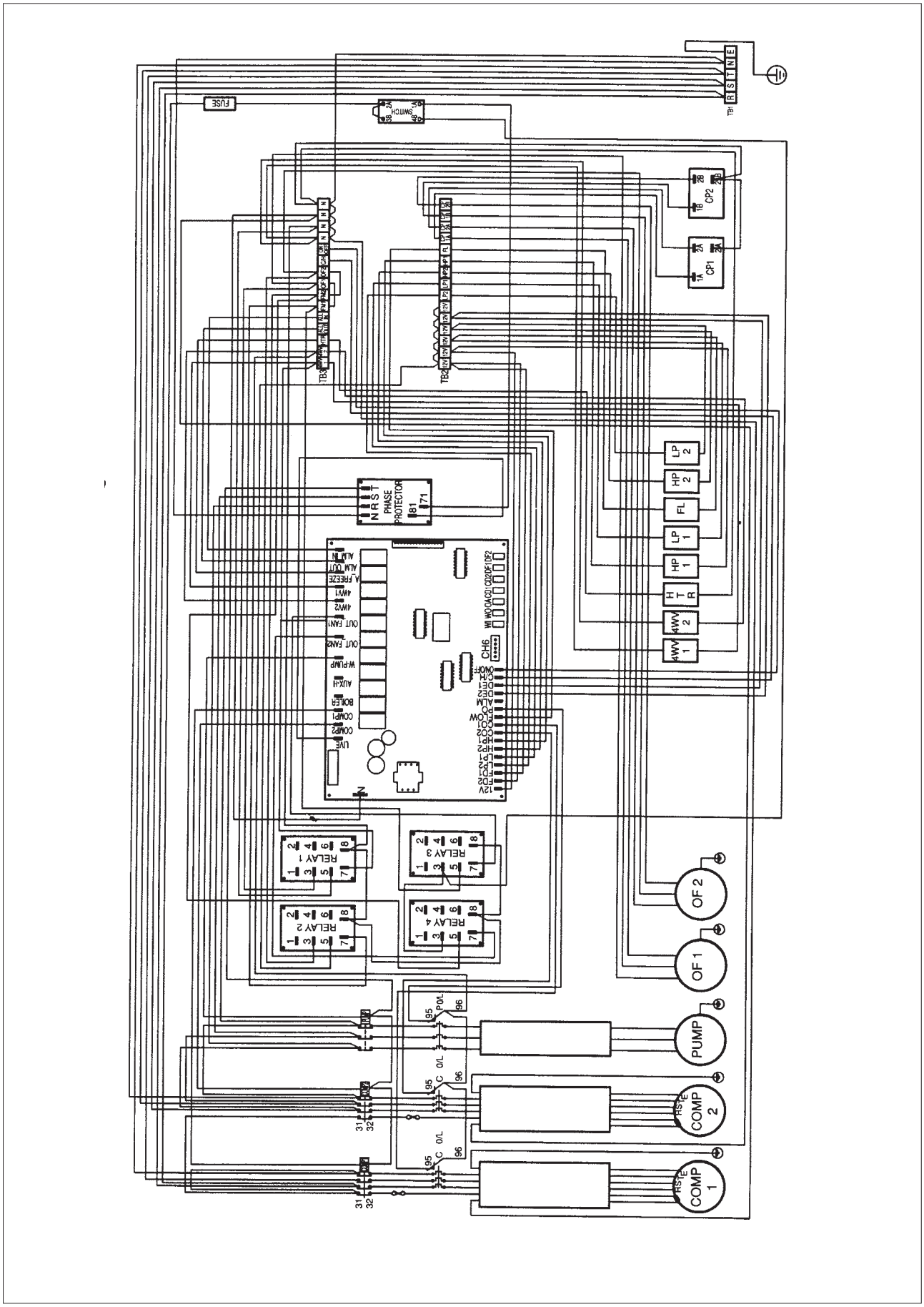
Model : M4AC / MAC 120 / 150CR (With Isolated Switch)



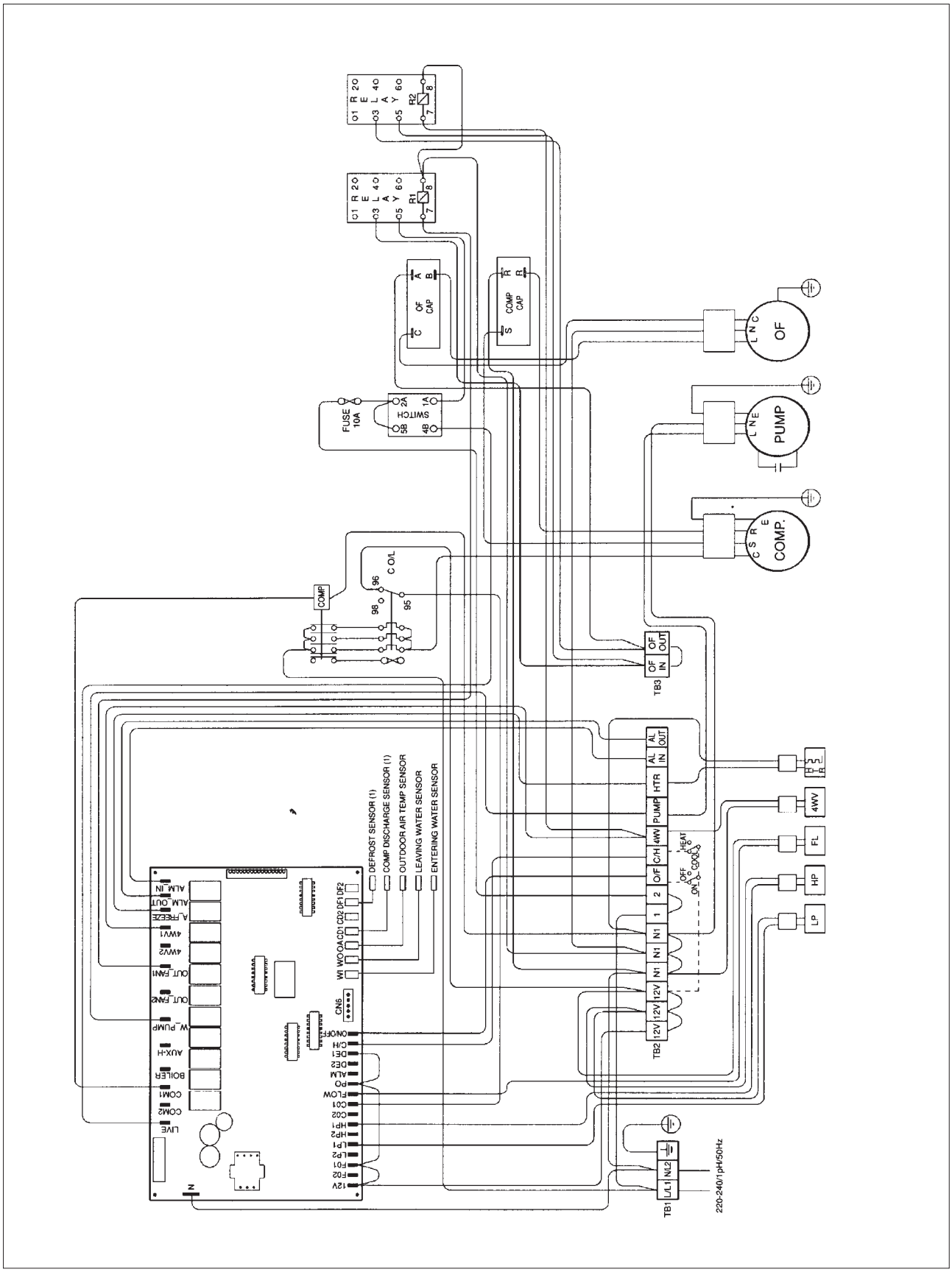
Model : M4AC / MAC 080 / 100CR (With Terminal Block)



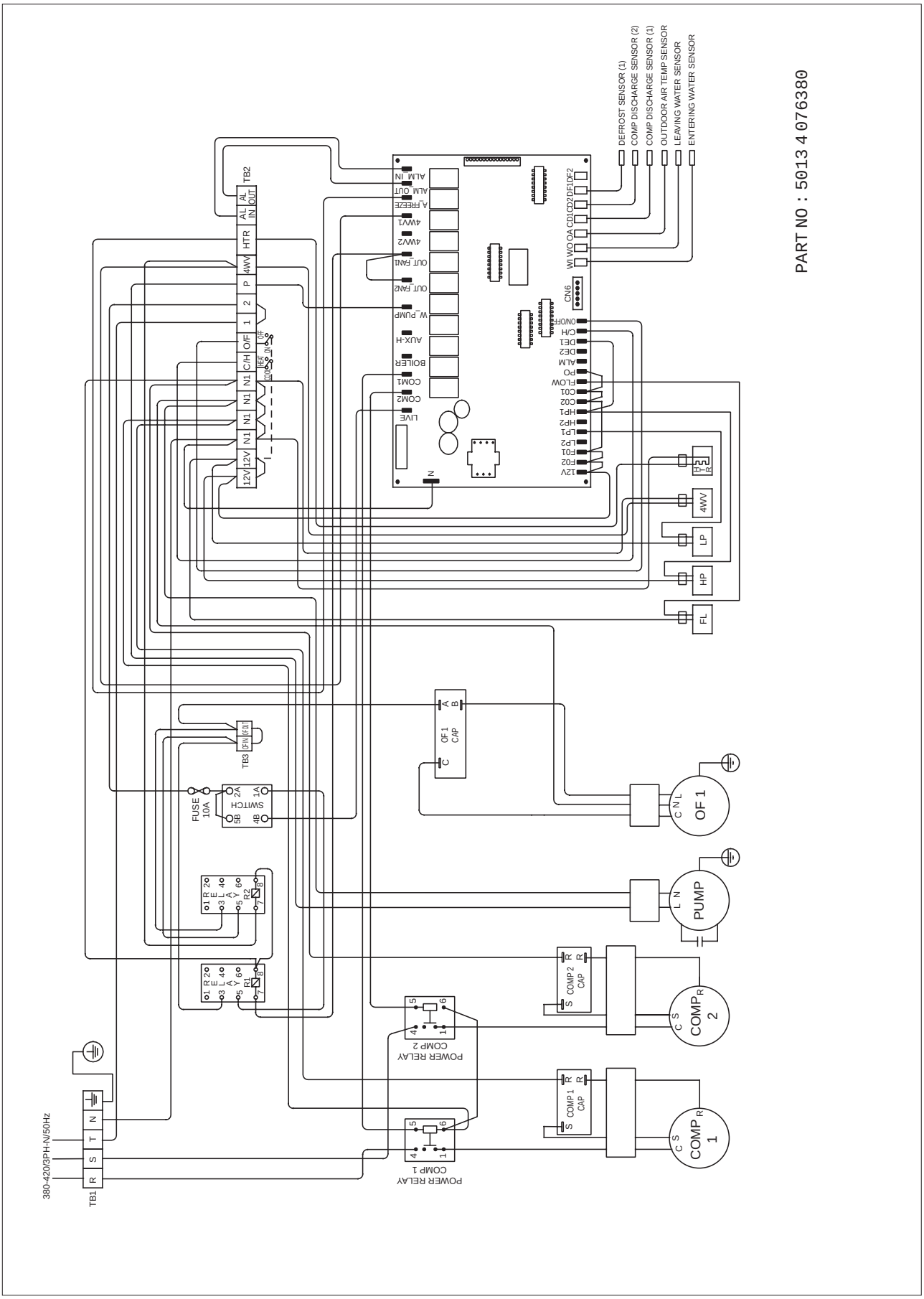
Model : M4AC / MAC 120 / 150CR (With Terminal Block)



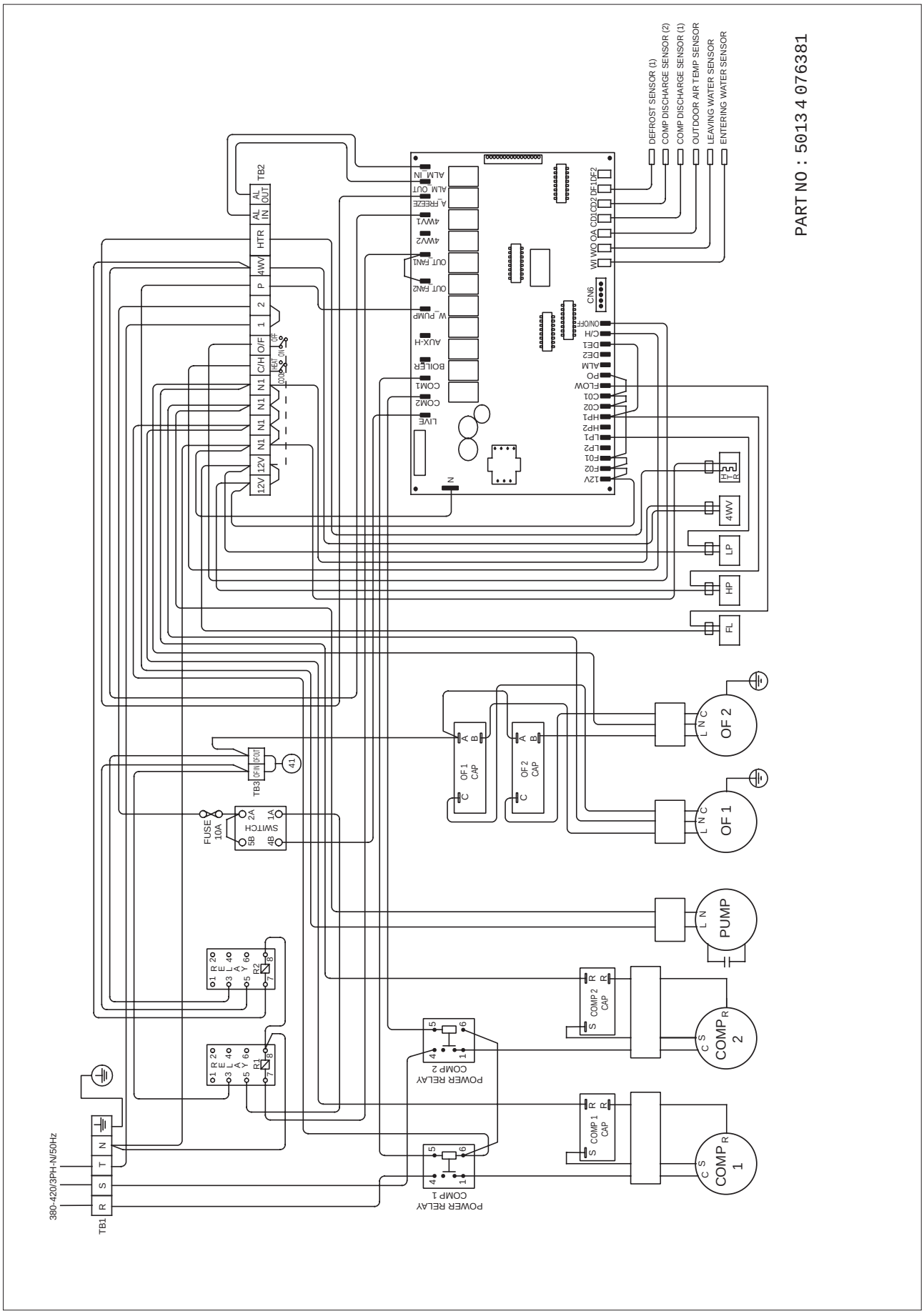
Model : M5AC020 / 025CR



Model : M5AC030CR



Model : M5AC040 / 050 / 055CR



Servicing And Maintenance

Servicing

Servicing or maintenance of these unit must be carried out by experienced personnel with specific training in refrigeration. Repeated check the safety devices and continuous cycling of control components must be analyzed and corrected before being reset.

The simple design of the refrigeration circuit totally eliminates potential problems during normal unit operation. No maintenance work is needed on the refrigeration circuit as long as the unit is operating normally.

Ease of maintenance has been taken into consideration during the design stage such that the unit is easily accessible for servicing and maintenance. By accessing from the front panel of the unit, servicing and maintenance operation can be done easily. The electrical components are especially easy to access since it is located in the terminal box on top of the front panel.

Under normal circumstances, these chiller require only a check and cleaning of air intake through the coil surface only. These can be done monthly or quarterly depending on the surrounding where the units are installed.

When the surrounding is very oily or dusty, then the coils must be regularly cleaned by a qualified air conditioner service technician to ensure sufficient cooling capacity and efficient unit operation. The normal life span might be shortened if no proper service is provided.

Maintenance

For consistent performance and durability, always conduct proper and regular maintenance to the unit.

For prolong period of operation time, the heat exchanger will become dirty impairing its effectiveness and reducing the performance of the units. Consult your local dealer about the cleaning of the heat exchanger.

No major maintenance or servicing needed for the internal water circuit in the unit except the water pump failure. It is advised that regular check on the filter to be conducted and change the water filter if the filter is dirty or choked.

Always check the water level in the system, in order to protect the moving components in the hydraulic kit from over heating and excessive wear.

Troubleshooting

When any malfunction is occurred, immediately switch off the power supply to the unit, and contact the local dealer, if necessary. Some simple troubleshooting tips are given below:

SYMPTONS	PROBLEM CAUSES	REMEDIAL ACTION
1. Compressor does not start.	• No power supply. • Fuses blown or automatic circuit break down open. • Defective contactor or coil. • Unit is stopped because safety device has tripped. • Loose wires. • Compressor faulty.	• Check power supply. • Look for short circuit or grounded wires in motor windings. Replace fuses and reset circuit breakers when the fault has been corrected. Check tightness and soundness of all electrical connections. • Repair or replace. • Determine the type of safety shut down and correct the default before the unit is restarted. • Check wire connections and tighten terminal screws. • Contact local dealer.
2. Fan does not work.	• No power supply. • Fan motor faulty.	• Check power supply. • Contact local dealer
3. Unit does work, but insufficient cooling.	• Thermostats setting too high. • Condenser coil dirty. • Obstacle blocking air inlet or outlet of the unit. • Insufficient refrigerant in the system. • Improper water flow rate, • Water in the system is contaminated.	• Reset thermostat. • Contact local dealer. • Remove obstacles. • Contact local dealer. • Contact local dealer. • Contact local dealer.
4. Flow switch error.	• No water in the system. • Low water level in the system.	• Check water supply. • Check water supply.

Phase Proctector (Optional)

The unit with Scroll Compressor can only rotate in one direction. For this reason, a protective device (phase proctector) is fitted to prevent incorrect wiring of the electrical phases. When the three phases are not connected correctly, the phase protector operates, and the unit will not start. This devise is located in the control box of model MAC/ M4AC080~150C/CR.

The following tables shows the LED indicator light for phase proctector under normal operation and fault coonditions.

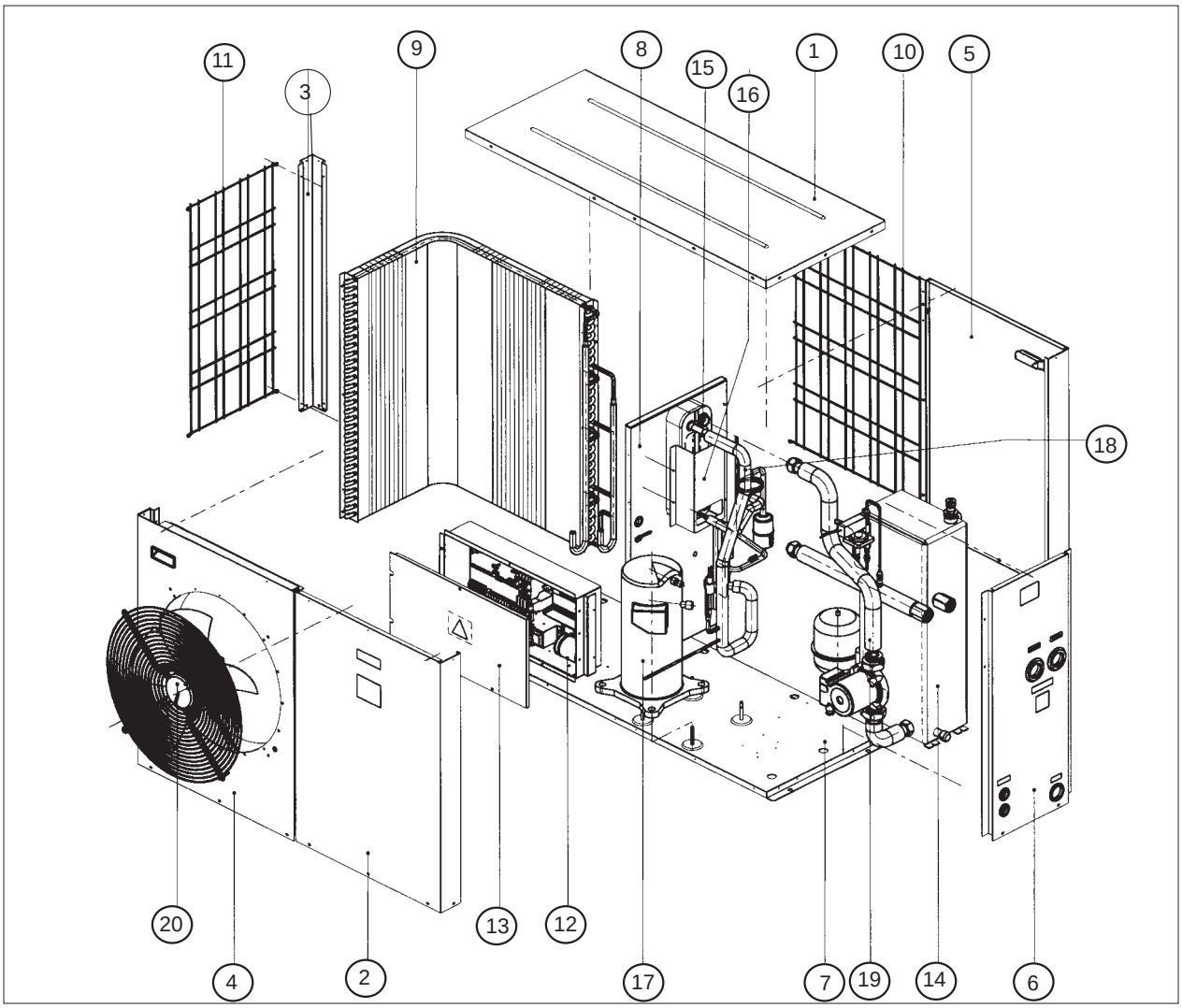
LED / Description	PW (Red)	P_R (Yellow)	P_S (Yellow)	P_T (Yellow)	Actions
Normal operation	○	●	●	●	-
Reverse phase	◑	◑	◑	◑	Swith off the unit. Check the 3 phase wiring.
T phase missing	◑	●	●	◑	Swith off the unit. Check the 3 phase wiring.
S phase missing	◑	●	◑	●	Swith off the unit. Check the 3 phase wiring.
R phase missing	●	●	●	●	Swith off the unit. Check the 3 phase wiring.
S & T phase missing +	◑	●	◑	◑	Swith off the unit. Check the 3 phase wiring.
Overload +	◑	●	●	●	High discharge temperature. Check the refrigerant system.
Sensor missing +	◑	○	○	○	Swtich off the unit. Plug in sensor.

○ On ● Off ◑ Fast Blink

Notes: 1. "+" indicates additional for PP01 phase proctector.
2. When R phase missing. no LED or buzzer will indicate the error, but relay 71 and 81 will cut off.

Exploded View and Part List

Model : MAC/ M4AC020 / 025/ 030C



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL		
			M(4)AC020C/CR	M(4)AC025C/CR	M(4)AC030C/CR
1	TOP PANEL	R01014058833	✓	✓	✓
2	STRUCTURE FRONT RIGHT	R01014058975	✓	✓	✓
3	PANEL SUPPORT PILLAR	R01014058974	✓	✓	✓
4	ASSY, PANEL ORIFICE	R50014060810	✓	✓	✓
5	STRUCTURE REAL RIGHT	R01014058976	✓	✓	✓
6	PANEL RIGHT	R01014058978	✓	✓	✓
7	ASSY BASE PAN	R50014061048	✓	-	-
	ASSY BASE PAN	R50014061049	-	✓	✓
8	PANEL PARTITION	R01014058980	✓	✓	✓
9	ASSY, COIL M(4)AC020C	R50024064810	✓	-	-
	ASSY, COIL M(4)AC020CR	R50024081356	✓	-	-
	ASSY, COIL M(4)AC025 C	R50024064816	-	✓	-
	ASSY, COIL M(4)AC025CR	R50024081358	-	✓	-
	ASSY, COIL M(4)AC030C	R50024064846	-	-	✓
	ASSY, COIL M(4)AC030CR	R50024081360	-	-	✓
10	COIL GUIDE BACK	R01024058986	✓	✓	✓
11	COIL GUIDE LEFT	R01024058985	✓	✓	✓
12	ASSY. CONTROL BOX	-	-	-	-
13	COVER, TERMINAL BOX	R01014064127	✓	✓	✓
14	WATER STORAGE TANK 22L	R50064061062	✓	✓	✓
15	HEAT EXCHANGER, BPHE	R02209018354	✓	-	-
	HEAT EXCHANGER, BPHE	R02209018356	-	✓	✓
16	CLAMP, BPHE	R01014061320	✓	-	-
	CLAMP, BPHE	R01014061322	-	✓	✓
17	COMPRESSOR MAC020C/CR	R04019019032	✓	-	-
	COMPRESSOR M4AC020C/CR	R04019010654	✓	-	-
	COMPRESSOR MAC025C/CR	R50049013221	-	✓	-
	COMPRESSOR M4AC025C/CR	R50049008112	-	✓	-
	COMPRESSOR MAC030C/CR	R50049018853	-	-	✓
	COMPRESSOR M4AC030C/CR	R50049018851	-	-	✓
18	ASSY, UNIT TUBING	-	-	-	-
19	ASSY, WATER PIPING	-	-	-	-
20	ASSY. FAN MOTOR	R50039019117	✓	✓	✓
PARTS NOT SHOWED IN DIAGRAM					
	FILTER DRIER M(4)AC020/25/30C	R02169018759	✓	✓	✓
	FILTER DRIER M(4)AC020/025/030CR	R02169018760	✓	✓	✓
	CONTROL MODULE, MC01 EC M(4)AC020/25/30C	R04084063454	✓	✓	✓
	CONTROL MODULE, MC01 HP M(4)AC020/025/030CR	R04084063455	✓	✓	✓
	TANK, EXPANSION 2 LITER	R05019018922	✓	✓	✓
	VAVLE, PRSS RELIFT	R05024050808	✓	✓	✓
	PUMP, WATER	R04139018353	✓	✓	✓

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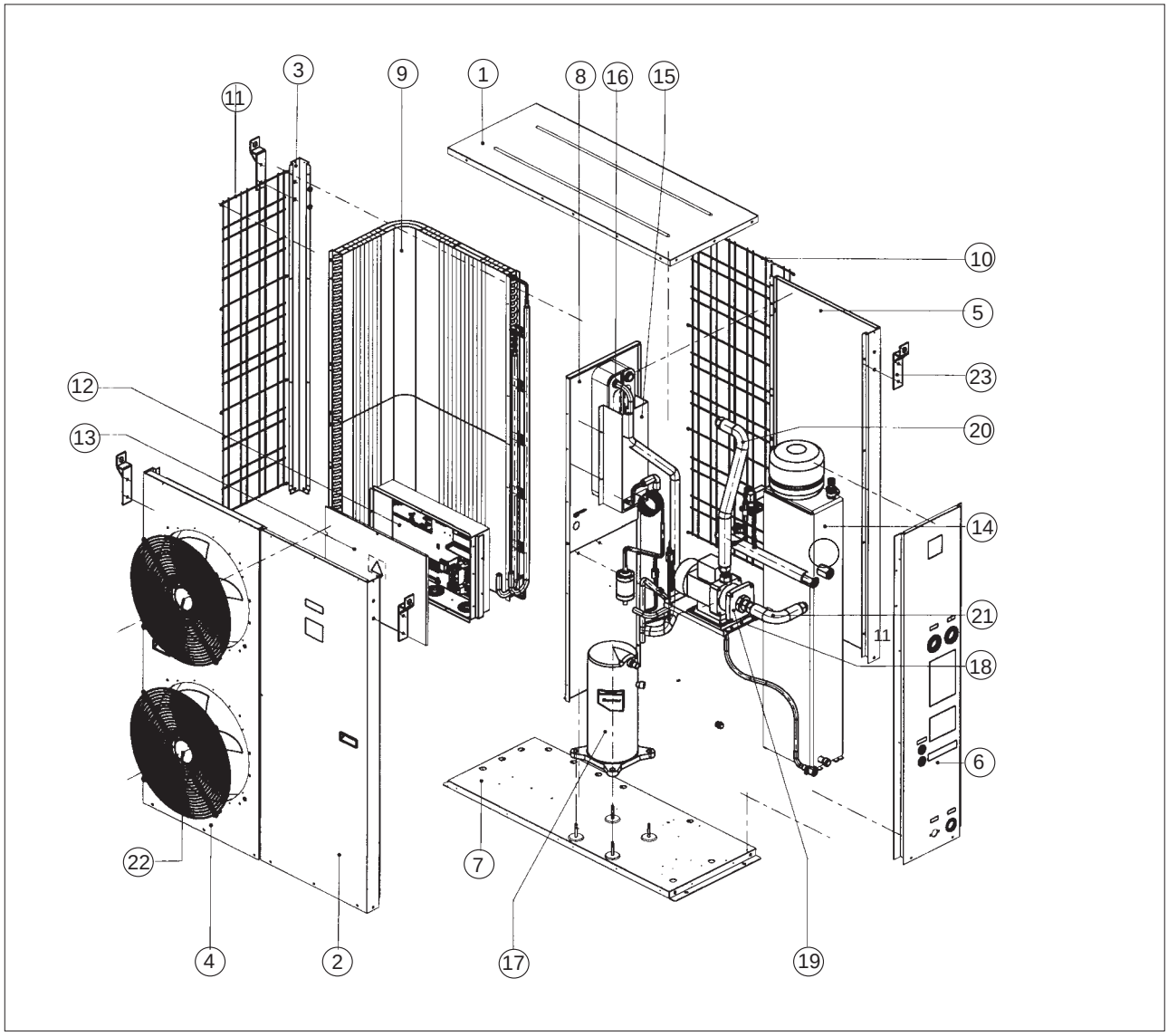
Model : MAC/ M4AC040 / 050 / 060C



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL		
			M(4)AC040C/CR	M(4)AC050C/CR	M(4)AC060C/CR
1	PANEL TOP	R01014058833	✓	✓	✓
2	ASSY STRUTURE FRONT RIGHT TOP	R50014078230	✓	✓	✓
3	PANEL, SUPPORT PILLAR	R01014058828	✓	✓	✓
4	PANEL ORIFICE	R50014060812	✓	✓	✓
5	ASSY STRUTURE REAR RIGHT	R50014062763	✓	✓	✓
6	PANEL, RIGHT	R01014058830	✓	✓	✓
7	ASSY, BASE PAN	R50014061520	✓	✓	✓
8	PANEL PARTITION	R01014058831	✓	✓	✓
9	ASSY COIL M(4)AC040/050C	R50024064859	✓	✓	-
	ASSY COIL M(4)AC040/050CR	R50024060027	✓	✓	-
	ASSY, COIL M(4)AC060C	R50024064864	-	-	✓
	ASSY, COIL M(4)AC060CR	R50024060026	-	-	✓
10	COIL GUARD	R01024058841	✓	✓	✓
11	COIL GUARD	R01024058840	✓	✓	✓
12	ASSY. CONTROL BOX	-	-	-	-
13	COVER, TERMINAL BOX	R01014063767	✓	✓	✓
14	ASSY, INS WATER STORAGE TANK 40L	R50064061154	✓	✓	✓
15	CLAMP, BPHE	R01014061746	✓	-	-
	CLAMP, BPHE	R01014061747	-	✓	-
	CLAMP, BPHE	R01014061748	-	-	✓
16	HEAT EXCHANGER, BPHE	R02209018404	✓	-	-
	HEAT EXCHANGER, BPHE	R02209018403	-	✓	-
	HEAT EXCHANGER, BPHE	R02209018405	-	-	✓
17	COMPRESSOR MAC040C/CR	R50049013223	✓	-	-
	COMPRESSOR M4AC040C/CR	R50049008114	✓	-	-
	COMPRESSOR MAC050C/CR	R50049004675	-	✓	-
	COMPRESSOR M4AC050C/CR	R50049012601	-	✓	-
	COMPRESSOR MAC060C/CR	R50049016337	-	-	✓
	COMPRESSOR M4AC060C/CR	R50049015682	-	-	✓
18	ASSY, PUMP BASE	R50014062970	✓	✓	✓
19	PUMP,WATER	R04139021339	✓	✓	✓
	PUMP,WATER	R04139018353	-	-	-
20	ASSY, UNIT TUBING	-	-	-	-
21	ASSY, WATER PIPING	-	-	-	-
22	ASSY, FAN MOTOR	R50039019117	✓	✓	✓
23	ASSY, S. HOISTING BRACKET	R50014022906	✓	✓	✓
PARTS NOT SHOWED IN DIAGRAM					
	CONTROL MODULE MC01 EC M(4)AC040/050/060C	R04084063454	✓	✓	✓
	CONTROL MODULE MC01 HP M(4)AC040/050/060CR	R04084063455	✓	✓	✓
	VALVE, PRESS RELIFT	R05024050808	✓	✓	✓
	TANK, EXPANSION 5 LITER	R05019018923	✓	✓	✓

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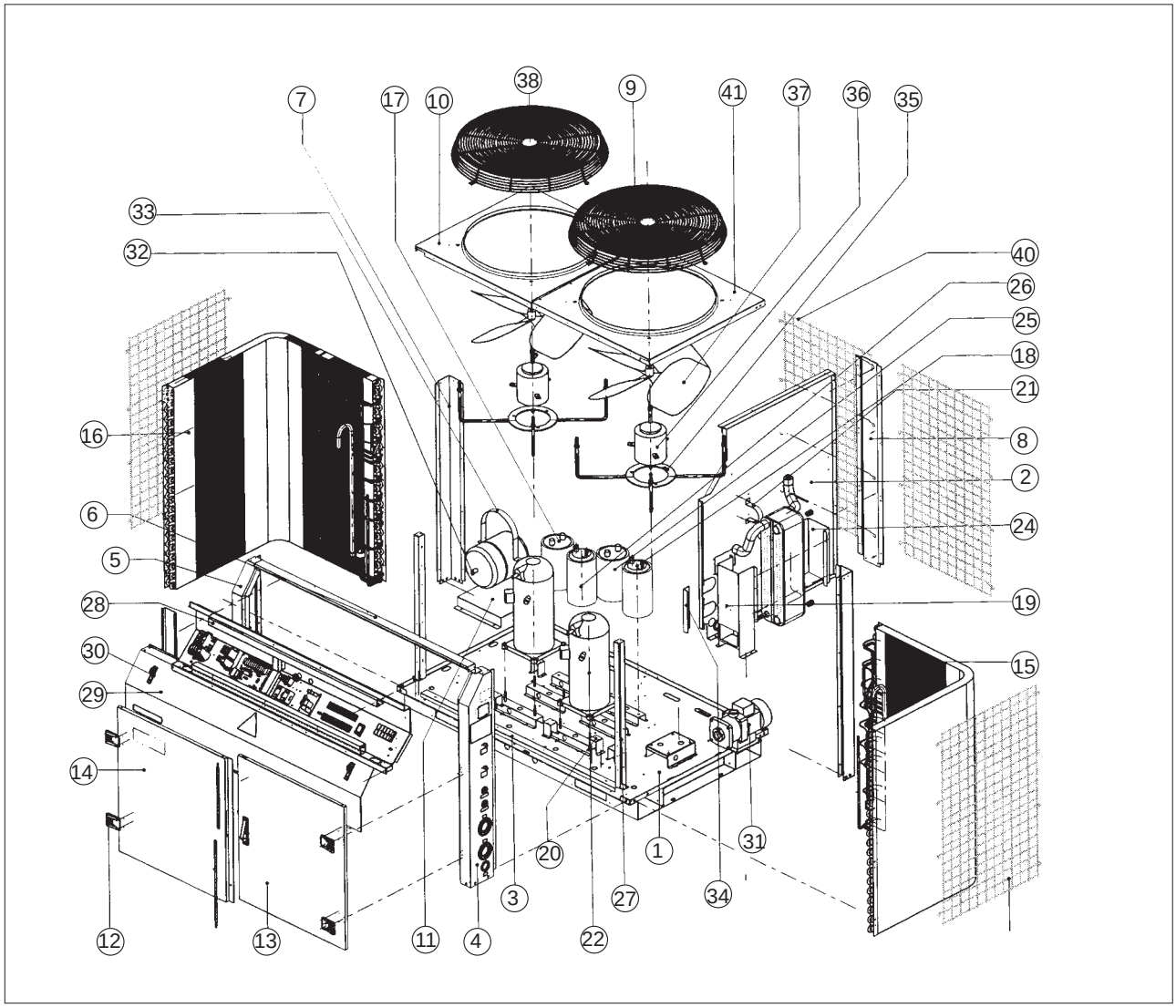
Model : M4AC/ MAC080 / 100C/CR



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL			
			M(4)AC080C	M(4)AC080CR	M(4)AC100C	MAC100CR
1	ASSY, BASE PAN	R50014055243	✓	✓	✓	✓
2	ASSY, INS PARTITION PANEL	-	-	-	-	-
3	SUPPORT, FLUTTED WIRE	-	-	-	-	-
4	ASSY, RIGHT PANEL	R50014085323	✓	✓	✓	✓
5	ASSY, LEFT PANEL	R50014085322	✓	✓	✓	✓
6	PANEL, SUPPORT FRONT	R01014082118	✓	✓	✓	✓
7	STRUCTURE BACK L/R	R01014054710	✓	✓	✓	✓
8	PANEL, COIL SUPPORT	R01014054711	✓	✓	✓	✓
9	PANEL, RIGHT ORIFICE	R01014082121	✓	✓	✓	✓
10	PANEL, LEFT ORIFICE	R01014082120	✓	✓	✓	✓
11	SUPPORT, EXPANSION TANK	R01014054712	✓	✓	✓	✓
12	DOOR HINGE	R01029016097	✓	✓	✓	✓
13	ASSY, DOOR PANEL RIGHT	R50014074752	✓	✓	✓	✓
14	ASSY, PANEL DOOR LEFT	R50014056078	✓	✓	✓	✓
15	ASSY, COIL RIGHT MAC080/100C	R50024059674	✓	-	✓	-
	ASSY, COIL RIGHT M4AC080/100C	R50024056222	✓	-	✓	-
	ASSY, COIL RIGHT M(4)AC080/100CR	R50024054901	-	✓	-	✓
16	ASSY, COIL LEFT MAC080/100C	R50024059673	✓	-	✓	-
	ASSY, COIL LEFT M4AC080/100C	R50024056221	✓	-	✓	-
	ASSY, COIL RIGHT M(4)AC080/100CR	R50024054900	-	✓	-	✓
17	ACCUMULATOR	-	-	-	-	-
18	LIQUID RECEIVER	-		-	-	-
19	BRACKET BPHE	R01014054725	✓	✓	✓	✓
20	SUPPORT, TUBE	-		-	-	-
21	CLIP, FILTER	-		-	-	-
22	COMPRESSOR MAC080C/CR	R50049013223	✓	✓	-	-
	COMPRESSOR M4AC080C/CR	R50049008114	✓	✓	-	-
	COMPRESSOR MAC100C/CR	R50049004675	-	-	✓	✓
	COMPRESSOR M4AC100C/CR	R50049012601	-	-	✓	✓
23	HEAT EXCHANGER M(4)AC080C/CR	R02209015978	✓	✓	-	-
	HEAT EXCHANGER M(4)AC100C/CR	R02209015977	-	-	✓	✓
24	CLAMP, BPHE M(4)AC080C/CR	R01014056545	✓	✓	-	-
	CLAMP, BPHE M(4)AC100C/CR	R01014056546	-	-	✓	✓
25	INS,ACCUMULATOR BODY	-	-	-	-	-
26	INS, LIQUID RECEIVER	-	-	-	-	-
27	PANEL, TERMINAL BOX SUPPORT	-	-	-	-	-
28	ASSY. CONTROL BOX	-	-	-	-	-
29	PANEL, FRONT MAC080/100C/CR	R01014082115	✓	✓	✓	✓
	PANEL, FRONT M4AC080/100C/CR	R01014082114	✓	✓	✓	✓
30	ASSY, PANEL HOOK	-	-	-	-	-
31	PUMP, WATER	R04139021185	✓	✓	✓	✓
32	EXPANSION TANK 8L	R05019001497	✓	✓	✓	✓
33	CLAMP, EXPANSION TANK	R01014054754	✓	✓	✓	✓
34	ASSY, PANEL PARTITION	R50014055238	✓	✓	✓	✓
35	BRACKET, FAN MOTOR	R01024055742	✓	✓	✓	✓
36	FAN MOTOR	R03039015508	✓	✓	✓	✓
37	FAN BLADE	R03029015512	✓	✓	✓	✓
38	FAN GUARD 24"	R01024055748	✓	✓	✓	✓
PARTS NOT SHOWED IN DIAGRAM						
	HANDSET, SM01XX (MCQUAY)	R04089019059	✓	✓	✓	✓
	CONTROL MODULE MC01 EC M(4)AC080/100C	R04084063465	✓	-	✓	-
	CONTROL MODULE MC01 HP M(4)AC080/100CR	R04084063456	-	✓	-	✓
	PHASE PROTECTOR	R04089018834	✓	✓	✓	✓
	LOW PRESSURE SWITCH M(4)AC080/100C	R04109015125	✓	-	✓	-
	LOW PRESSURE SWITCH M(4)AC080/100CR	R04109015400	-	✓	-	✓
	HIGH PRESSURE SWITCH MAC080/100C/CR	R04109015136	✓	✓	✓	✓
	HIGH PRESSURE SWITCH M4AC080/100C/CR	R04109018820	✓	✓	✓	✓
	FILTER DRIER M(4)AC080/100C	R02164028078	✓	-	✓	-
	FILTER DRIER M(4)AC080/100CR	R02164034987	-	✓	-	✓
	VALVE, TXV M(4)AC080/100C	R05019016742	✓	-	✓	-
	4 WAYS VALVE M(4)AC080/100CR	R05019002106	-	✓	-	✓

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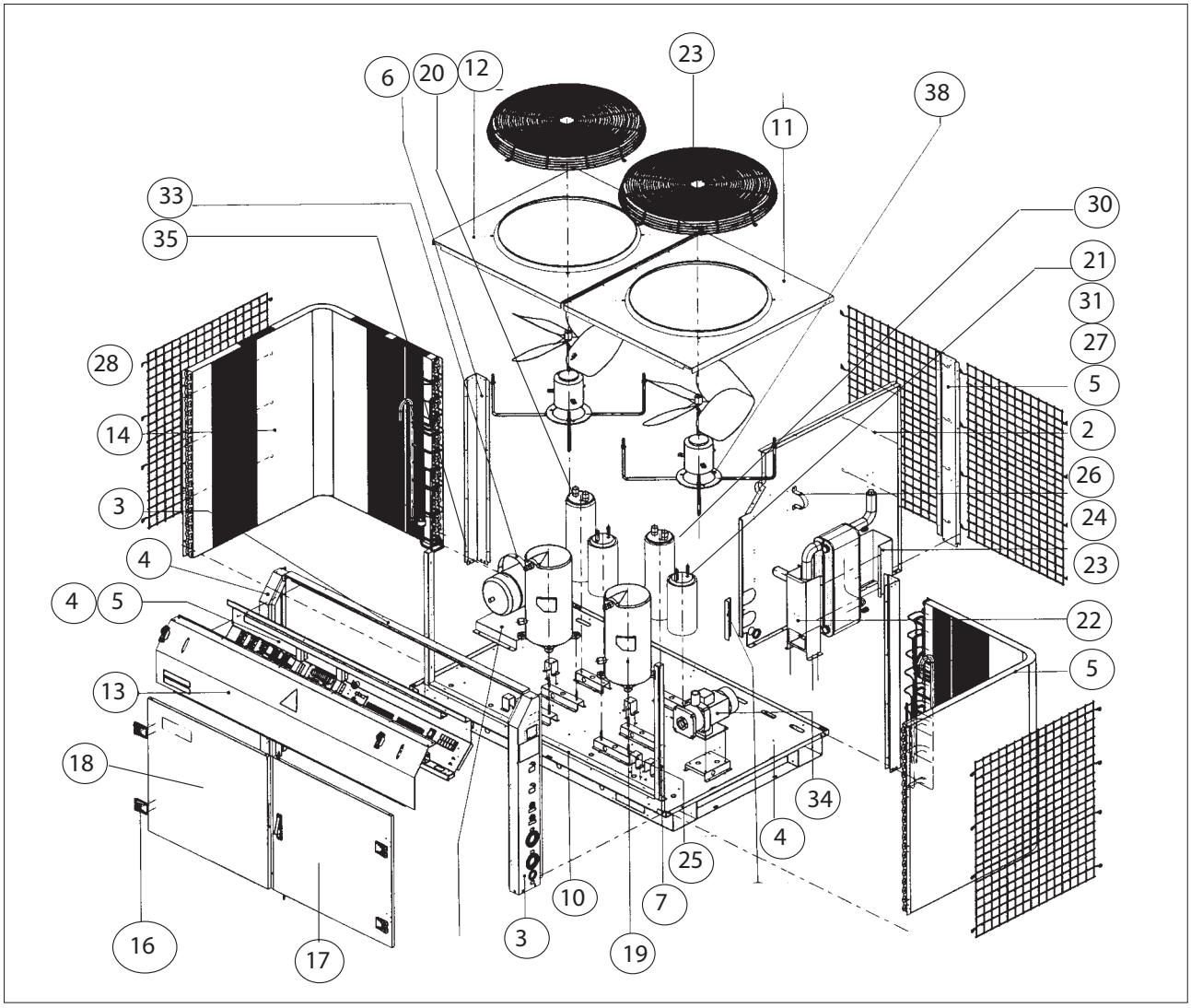
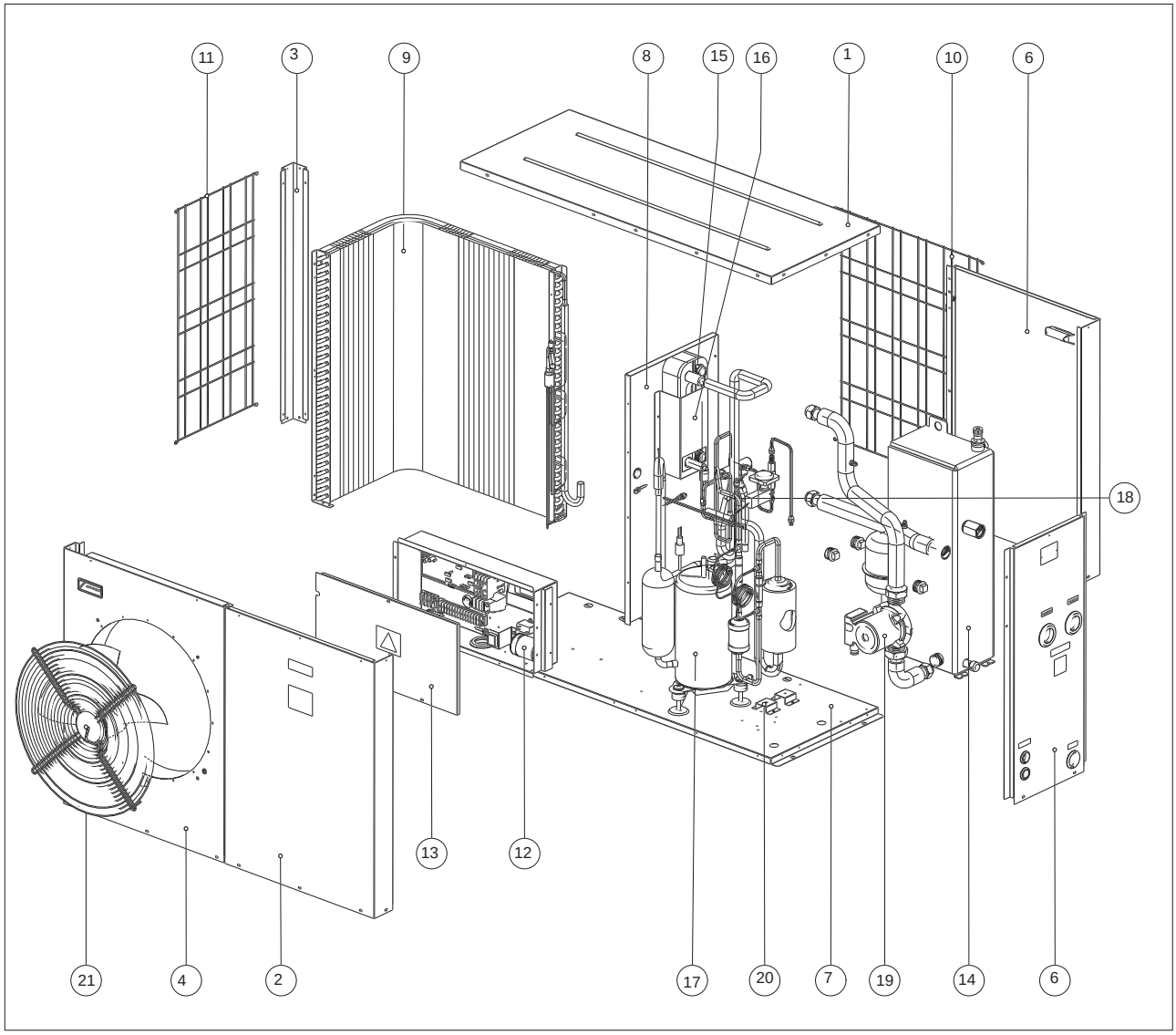
Model : M4AC/ MAC120 / 150C/CR



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL			
			M(4)AC120C	M(4)AC120CR	M(4)AC150C	M(4)AC150CR
1	ASSY, BASE PAN	R50014055342	✓	✓	✓	✓
2	ASSY, PANEL PARTITION	R50014055348	✓	✓	✓	✓
3	PANEL, SIDE RIGHT	R01014082113	✓	✓	✓	✓
4	PANEL, SIDE LEFT	R01014082112	✓	✓	✓	✓
5	PANEL, COIL SUPPORT	R01014054711	✓	✓	✓	✓
6	STRUCTURE BACK L/R	R01014054710	✓	✓	✓	✓
7	PANEL,CONTROL BOX SUPPORT	-	-	-	-	-
8	ASSY, CONTROL BOX MAIN	-	-	-	-	-
9	PANEL, SUPPORT FRONT	R01014082119	✓	✓	✓	✓
10	SUPPORT,WIRE FLUTTED	-	-	-	-	-
11	PANEL, RIGHT ORIFICE	R01014082123	✓	✓	✓	✓
12	PANEL, LEFT ORIFICE	R01014082122	✓	✓	✓	✓
13	PANEL, FRONT M4AC120/150C/CR	R01014082116	✓	✓	✓	✓
	PANEL, FRONT MAC120/150C/CR	R01014082117	✓	✓	✓	✓
14	ASSY, COIL LEFT MAC120/150C	R50024059678	✓	-	✓	-
	ASSY, COIL LEFT M4AC120/150C	R50024056228	✓	-	✓	-
	ASSY, COIL LEFT M(4)AC120/150CR	R50024054943	-	✓	-	✓
15	ASSY, COIL RIGHT MAC120/150C	R50024059679	✓	-	✓	-
	ASSY, COIL RIGHT M4AC120/150C	R50024056227	✓	-	✓	-
	ASSY, COIL RIGHT M(4)AC120/150CR	R50024054944	-	✓	-	✓
16	DOOR HINGE	R01029016097	✓	✓	✓	✓
17	ASSY, DOOR PANEL RIGHT	R50014074750	✓	✓	✓	✓
18	ASSY, PANEL DOOR LEFT	R50014055347	✓	✓	✓	✓
19	COMPRESSOR MAC120C/CR	R50049016337	✓	✓	-	-
	COMPRESSOR M4AC120C/CR	R50049015682	✓	✓	-	-
	COMPRESSOR MAC150C/CR	R50049004676	-	-	✓	✓
	COMPRESSOR M4AC150C/CR	R50049014526	-	-	✓	✓
20	ACCUMULATOR	-	-	-	-	-
21	LIQUID RECEIVER	-	-	-	-	-
22	BRACKET BPHE	R01014054725	✓	✓	✓	✓
23	HEAT EXCHANGER	R02209015975	✓	✓	-	-
	HEAT EXCHANGER	R02209015976	-	-	✓	✓
24	CLAMP, BPHE	R01014054741	✓	✓	-	-
	CLAMP, BPHE	R01014054740	-	-	✓	✓
25	SUPPORT, TUBE	-	-	-	-	-
26	CLIP, FILTER	-	-	-	-	-
27	COIL GUARD, BACK	-	-	-	-	-
28	COIL GUARD, L/R	-	-	-	-	-
29	FAN GUARD 26"	R01024055747	✓	✓	✓	✓
30	INS, ACCUMULATOR BODY	-	-	-	-	-
31	INS, LIQUID RECEIVER BODY	-	-	-	-	-
32	SUPPORT, EXPANSION TANK	R01014054712	✓	✓	✓	✓
33	CLAMP EXPANSION TANK	R01014054754	✓	✓	✓	✓
34	PUMP, WATER	R04139021186	✓	✓	✓	✓
35	EXPANSION TANK 8L	R05019001497	✓	✓	✓	✓
36	BRACKET, FAN MOTOR	R01024055741	✓	✓	✓	✓
37	FAN MOTOR	R03039018420	✓	✓	-	-
	FAN MOTOR	R03039018421	-	-	✓	✓
38	FAN BLADE	R03029015513	✓	✓	✓	✓
PARTS NOT SHOWED IN DIAGRAM						
	CONTROL MODULE MC01 EC M(4)AC120/150C	R04084063465	✓	-	✓	-
	CONTROL MODULE MC01 HP M(4)AC120/150CR	R04084063456	-	✓	-	✓
	HANDSET, SM01XX (MCQUAY)	R04089019059	✓	✓	✓	✓
	PHASE PROTECTOR	R04089018834	✓	✓	✓	✓
	LOW PRESSURE SWITCH	R04109015125	✓	-	✓	-
	LOW PRESSURE SWITCH	R04109015400	-	✓	-	✓
	HIGH PRESSURE SWITCH MAC120/150C/CR	R04109015136	✓	✓	✓	✓
	HIGH PRESSURE SWITCH M4AC120/150C/CR,	R04109018820	✓	✓	✓	✓
	FILTER DRIER	R02164028078	✓	-	✓	-
	FILTER DRIER	R02164034987	-	✓	-	✓
	4 WAY VALVE	R05019028873	-	✓	-	✓
	VALVE, TXV	R05019015478	✓	-	✓	-

1. ALL SPECIFICATION ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE

Model : M5AC 020 / 025CR



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL	
			M5AC020CR	M5AC025CR
1	PANEL, TOP	R01014058833	✓	✓
2	STRUCTURE, FRONT RIGHT	R01014058975	✓	✓
3	PANEL, SUPPORT PILLAR	R01014058974	✓	✓
4	ASSY, PANEL ORIFICE	R50014060810	✓	✓
5	STRUCTURE, REAR RIGHT	R01014058976	✓	✓
6	PANEL, RIGHT	R01014058978	✓	✓
7	ASSY, BASE PAN	R50014061048	✓	✓
8	PANEL, PARTITION	R01014058980	✓	✓
9	ASSY, COIL	R50024078423	✓	-
	ASSY, COIL	R50024078923	-	✓
10	COIL GUARD, BACK	R01024058986	✓	✓
11	COIL, GUARD LEFT	R01024058985	✓	✓
12	ASSY, CONTROL BOX	R50044066916	✓	-
	ASSY, CONTROL BOX	R50044080491	-	✓
13	COVER, TERMINAL BOX	R01014064127	✓	✓
14	ASSY, INS WATER STORAGE TANK 22L	R50064061062	✓	✓
15	HEAT EXCHANGER, BPHE	R02209024436	✓	
	HEAT EXCHANGER, BPHE	R02209022052	-	✓
16	CLAMP, BPHE	R01014061320	✓	-
	CLAMP, BPHE	R01014061321	-	✓
17	COMPRESSOR	R04019020449	✓	
	COMPRESSOR	R04019022149	-	✓
18	ASSY. UNIT TUBING	-	-	-
19	ASSY, WATER PIPING	-	-	-
20	SUPPORT, TUBE	R01014063180	✓	✓
21	ASSY,FAN MOTOR	R50039019117	✓	✓
PARTS NOT SHOWED IN DIAGRAM				
	TANK, EXPANSION 2 LITER	R05019018922	✓	✓
	FILTER DRIER	R02169018760	✓	✓
	PUMP,WATER	R04139018353	✓	✓
	VALVE, PRESS.RELIEF	R05024050808	✓	✓
	HANDLING HANDLE	R12014015328	✓	✓
	HANDSET, SM01XX (MCQUAY)	R04089019059	✓	✓
	DIFF.PRESSURE SWITCH	R04109014874	✓	✓
	ASSY, CAP TUBE HEATING	R50024079564	✓	-
	ASSY, CAP TUBE HEATING	R50024062717	-	✓
	ASSY, CAP TUBE COOLING	R50024079563	✓	-
	ASSY, CAP TUBE COOLING	R50024062696	-	✓
	CONTROL MODULE, MC01 HP	R04084063455	✓	✓
	CAPACITOR, CMPSR 3uF/440	R04029026757	✓	✓
	CAPACITOR, CMPSR 45uF/450VAC	R04029026778	✓	-
	VALVE, ACCESS ½"	R05019023908	✓	✓
	VALVE, ACCESS ¼"	R05014066271	✓	✓
	STICKER,LOGO MCQUAY	R08024067040	✓	✓

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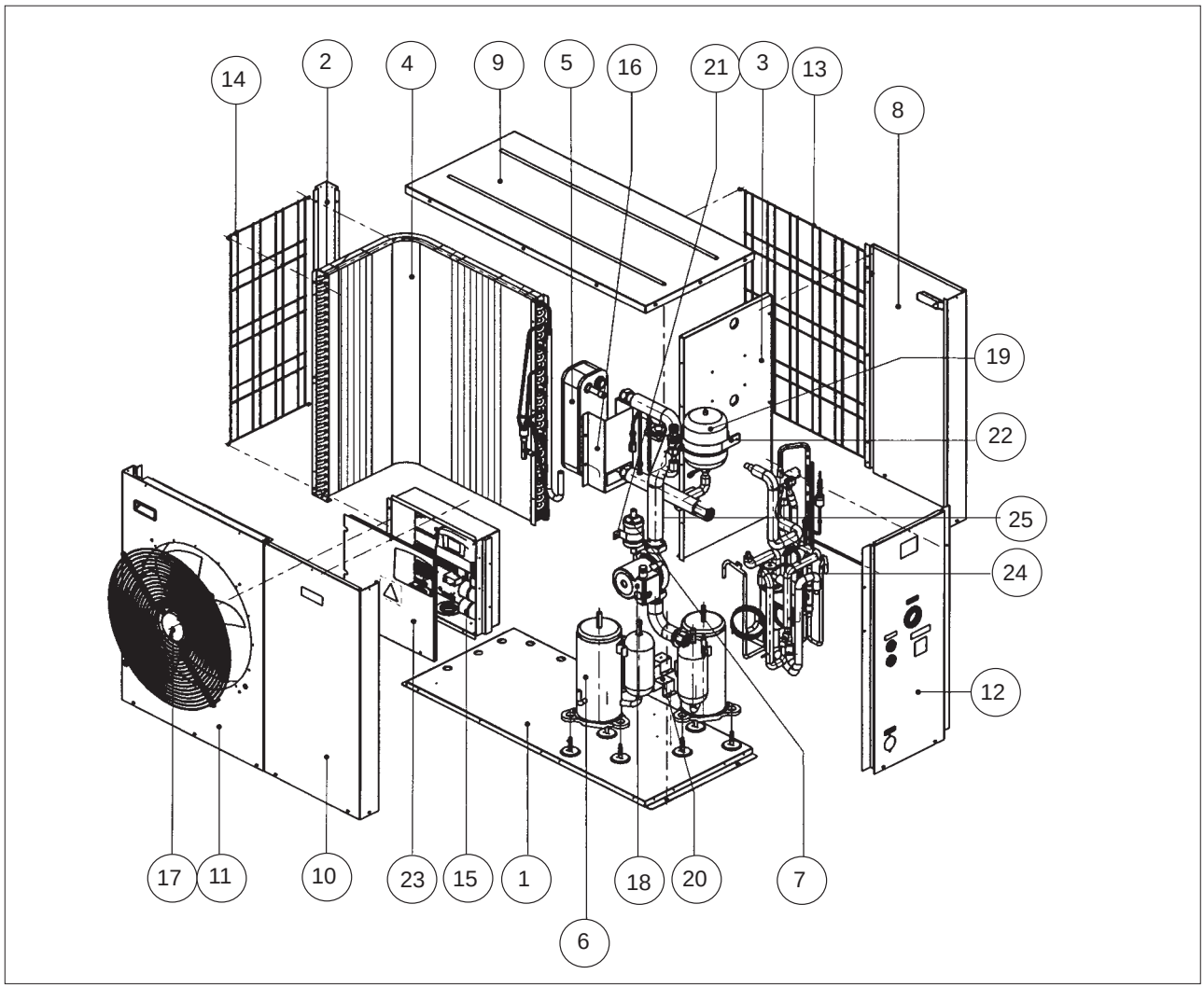
Model: M5AC030CR



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL
			M5AC030CR
1	ASSY, BASE PAN	R50014069928	✓
2	PANEL, SUPPORT PILLAR	R01014058974	✓
3	PANEL, PARTITION	R01014058980	✓
4	ASSY, COIL	R50024069941	✓
5	HEAT EXCHANGER, BPHE	R02209022052	✓
6	COMPRESSOR	R04019021176	✓
7	FILTER DRIER	R02169018760	✓
8	STRUCTURE, REAR RIGHT	R01014069935	✓
9	PANEL, TOP	R01014064936	✓
10	STRUCTURE, FRONT RIGHT 5AC030CR	R01014069936	✓
11	ASSY, PANEL ORIFICE	R50014060810	✓
12	PANEL, RIGHT	R01014069933	✓
13	COIL GUARD, BACK	R01024058986	✓
14	COIL, GUARD LEFT	R01024058985	✓
15	ASSY, CONTROL BOX	R50044076662	✓
16	CLAMP, BPHE	R01014061321	✓
17	ASSY, FAN MOTOR	R50039019117	✓
18	PUMP, WATER	R04139018353	✓
19	TANK, EXPANSION 2 LITER	R05019018922	✓
20	SUPPORT, TUBE	R01014071995	✓
21	CLIP, FILTER 5AC030CR	R01014071927	✓
22	CLAMP. EXPANSION TANK	R01014072222	✓
23	COVER, TERMINAL BOX	R01014069940	✓
24	ASSY, UNIT TUBING	R50024069943	✓
25	ASSY, WATER PIPING	R50024069949	✓
Parts Not in Diagram			
	CONTROL MODULE MC01 HP	R04084068700	✓
	HANDSET, WIRED SM01XX MCQUAY	A04089020999	✓
	STICKER,LOGO MCQUAY	A08024067040	✓

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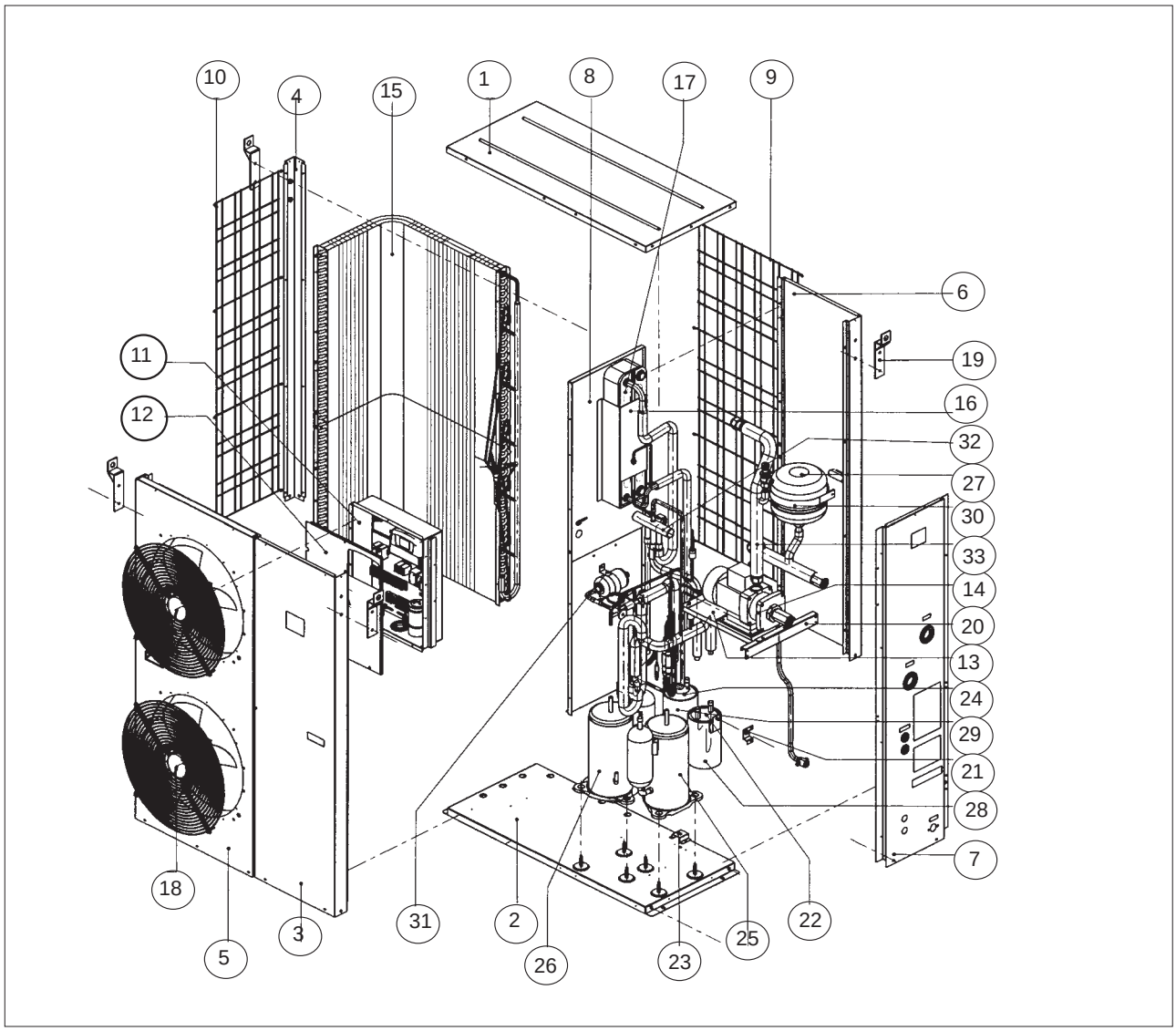
Model : M5AC040 / 050/ 055CR



ITEM	DESCRIPTION	PART NUMBER	RELATED MODEL		
			M5AC040CR	M5AC050CR	M5AC055CR
1	PANEL, TOP	R01014064936	✓	✓	✓
2	ASSY, BASE PAN	R50014061524	✓	-	-
	ASSY, BASE PAN	R50014065985	-	✓	✓
3	ASSY, STRUCTURE FRONT RIGHT TOP	R50014078915	✓	✓	✓
4	ASSY, SUPPORT PILLAR	R50014062762	✓	✓	✓
5	ASSY, PANEL ORIFICE	R50014060812	✓	✓	✓
6	ASSY, STRUCT. REAR RIGHT	R50014064939	✓	✓	✓
7	PANEL, RIGHT	R01014079937	✓	✓	✓
8	PANEL, PARTITION	R01014065858	✓	✓	✓
9	COIL GUARD, BACK	R01024058841	✓	✓	✓
10	COIL GUARD, LEFT	R01024058840	✓	✓	✓
11	ASSY, CONTROL BOX	R50044076664	-	✓	-
	ASSY, CONTROL BOX	R50044076665	-	-	✓
12	COVER, TERMINAL BOX	R01014065057	✓	✓	✓
13	ASSY, PUMP BASE	R50014065859	✓	✓	✓
14	PUMP, WATER	R04139020248	✓	✓	✓
15	ASSY,SOLENOID COIL	R50134065210	✓	✓	-
16	CLAMP, BPHE	R01014061746	✓	-	-
	CLAMP, BPHE	R01014061747	-	✓	-
	CLAMP, BPHE	R01014061748	-	-	✓
17	HEAT EXCHANGER,BPHE	R02209020577	✓	-	-
	HEAT EXCHANGER,BPHE	R02209020578	-	✓	-
	HEAT EXCHANGER,BPHE	R02209021556	-	-	✓
18	ASSY, FAN MOTOR	R50039019117	✓	✓	✓
19	ASSY, S. HOISTING BRACKET	R50014022906	✓	✓	✓
20	PLATE, PUMP SUPPORT	R01014061851	✓	✓	✓
21	SUPPORT, ACCUMULATOR	R01014067320	✓	✓	✓
22	ACCUMULATOR	R02119016393	✓	✓	✓
23	SUPPORT,ACCU & LIQUID RECEIVER	R01014059624	✓	✓	✓
24	LIQUID RECEIVER	R02119020906	✓	✓	✓
25	COMPRESSOR	R50049021175	-	✓	✓
	COMPRESSOR	R50049021179	✓	-	-
26	COMPRESSOR	R50049021177	✓	-	-
	COMPRESSOR	R50049021173	-	✓	-
27	TANK, EXPANSION 5 LITER	R05019018923	✓	-	✓
28	INS, ACCUMULATOR BODY	-	-	-	-
29	INS, LIQUID RECEIVER BODY	-	-	-	-
30	CLIP, EXPANSION TANK	R01014068177	✓	✓	✓
31	CLIP, FILTER	R01014071226	✓	✓	✓
32	ASSY, UNIT TUBING	R50024067840	✓	-	-
	ASSY, UNIT TUBING	R50024068183	-	✓	-
	ASSY, UNIT TUBING	R50024069541	-	-	✓
33	ASSY, WATER PIPING	R50024067637	✓	-	-
	ASSY, WATER PIPING	R50024067648	-	✓	-
	ASSY, WATER PIPING	R50024069491	-	-	✓
Parts Not in Diagram					
	CONTROL MODULE MC01 HP	R04084068700	✓	✓	✓
	HANDSET, WIRED SM01XX MCQUAY	R04089020999	✓	✓	✓
	FILTER DRIER	R02164034987	✓	✓	✓
	STICKER,LOGO MCQUAY	R08024067040	✓	✓	✓

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