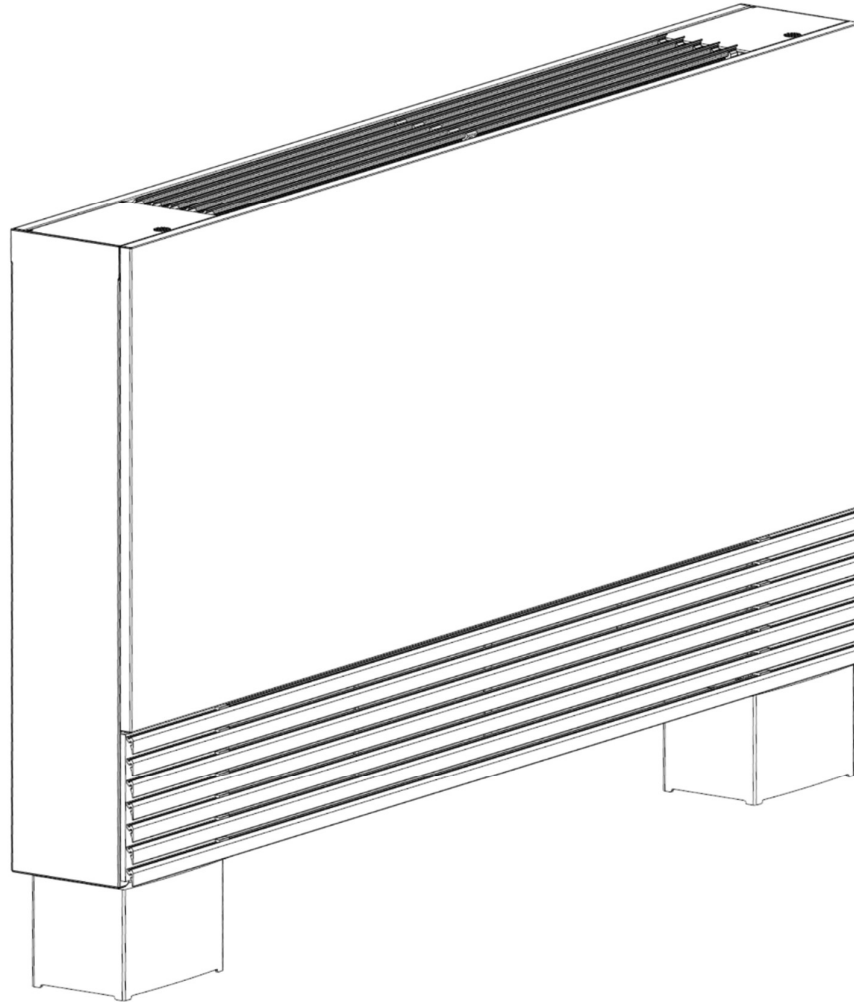


Ultra-Thin Hydronic Fan Coil Unit



Hydronic Coil designed to work with Low and Medium Temperature Hot Water 35 to 85°C (86 to 185°F) and Standard Chilled Water Temperature 3 to 12°C (37.4 to 53.6°F)

2 Pipe System – DC Five (5) Speeds Fan - Power Supply 120-230V/1PH/60HZ – Modbus Controller with RS485 Connection Port



Table of Contents

Introduction 3

Characteristics 3

Performance..... 4

Construction Features..... 4

Dimensions 5

Indoor Operating Conditions 6

Minimum Installation Clearances 6

Cleaning or replacing filter..... 6

Installation..... 6

Floor Mounted Installation:..... 7

Wall Mounted Installation:..... 8

Main Control Card: 8

Errors/Alarms Codes: 10

Limited Residential Warranty: 10

Operating the Fan Coil Unit: 11

Introduction

Hydro Solar Innovative Energy Ultra-Thin Hydronic Fan Coil Units (FCU) use forced air convection to either dissipate heat or extract heat from living space. Our FCUs have DC Fan Five (5) Speeds, which make them 30% more energy efficient than conventional 3 speeds FCUs. Fan Speed is controlled by an advanced Modbus control board, equipped with RS485 Modbus connection and 120V relay outputs for third party valve control. Hydronic Heating and Cooling coil are designed to work on low temperature hot water, which make them suitable to be combined with either air to water heat pumps or geothermal heat pumps. Their low noise, ultra-thin casing 130mm (5.12 inches), and attractive aesthetic look give these unit a competitive advantage over other FCU in the market.

Characteristics

1. Ultra-thin design with 130mm (5.12 inches) body depth.
2. Modern industrial style design, exquisite manufacturing technology and elegant surface. It suits to modern decoration style.
3. Uses crossflow heat exchange between water and air. High Air Flow with low noise operation.
4. Supply air flow grille has adjustable blades for manual adjustment of air flow direction.
5. Elegant Look & User-Friendly Smart LED temperature controller and screen.
6. Air Flow Freeze Protection. It shuts down the fan when water temperature circulating in the hydronic coil is too cold.
7. Easy to install and maintain.
8. The side metal plate can be removed prior of installation, which simplify pipe connection.
9. The filter of this product is easily accessible for cleaning and replacement.
10. 120V relay output for controlling 2-way or 3-way valves.
11. Can be installed floor mounted or wall mounted with or without legs.
12. Panasonic DC multiple speeds fan with integrated touch screen thermostat for fan control.
13. Supplied with a remote controller for remote monitoring.





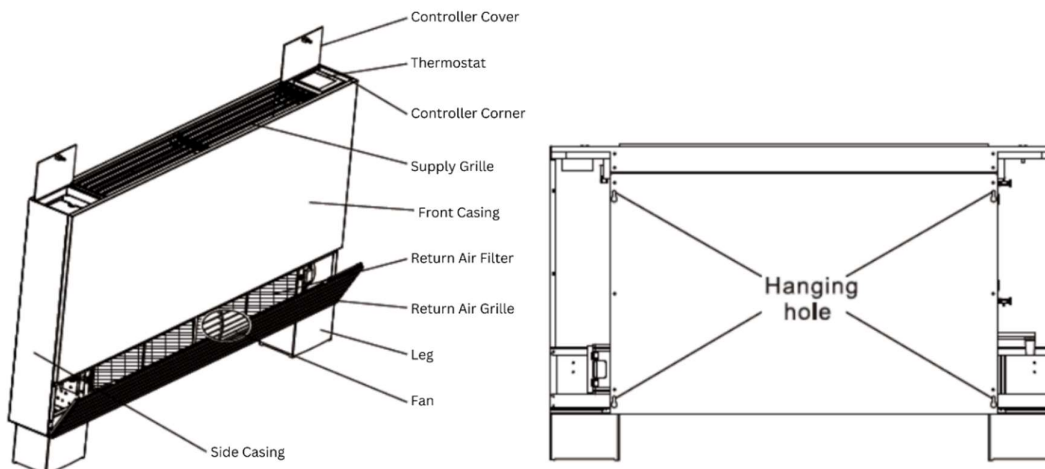
Performance

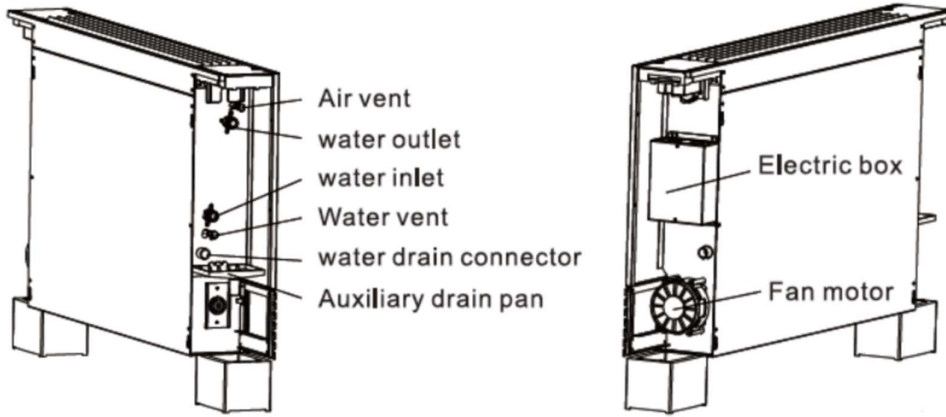
Model		PFP-030	PFP-050	PFP-070	PFP-100
Power supply		120-230V/60HZ/1PH			
Air Flow (High speed)	<i>m³/hr (ft³/min)</i>	200 (118)	300 (177)	400 (235)	500 (294)
Air Flow (Medium speed)	<i>m³/hr (ft³/min)</i>	150 (88)	220 (130)	300 (177)	380 (224)
Air Flow (Low speed)	<i>m³/hr (ft³/min)</i>	110 (65)	160 (94)	230 (135)	290 (171)
Cooling Capacity (High Speed)	<i>Watt (Btu/hr)</i>	1 000 (3 412)	1 800 (6 142)	2 400 (8 189)	3 000 (10 236)
Cooling Capacity (Medium Speed)	<i>Watt (Btu/hr)</i>	800 (2 730)	1 440 (4 913)	1 920 (6 551)	2 400 (8 189)
Cooling Capacity (Low Speed)	<i>Watt (Btu/hr)</i>	650 (2 218)	1 170 (3 992)	1 560 (5 323)	1 950 (6 654)
Heating capacity (1)	<i>Watt (Btu/hr)</i>	830 (2 832)	1532 (5 227)	1 950 (6 654)	2 525 (8 615)
Heating capacity (2)	<i>Watt (Btu/hr)</i>	991 (3 382)	1783 (6 084)	2 337 (7 974)	2 931 (10 000)
Heating capacity (3)	<i>Watt (Btu/hr)</i>	1 113 (3 798)	2003 (6 834)	2 626 (8 960)	3 293 (11 236)
Heating capacity (4)	<i>Watt (Btu/hr)</i>	1 250 (4 265)	2250 (7 677)	2 950 (10 065)	3 700 (12 624)
Sound Level (High Speed)	<i>dB(A)</i>	38	39	40	41
Sound Level (Medium Speed)	<i>dB(A)</i>	35	36	37	39
Sound Level (Low Speed)	<i>dB(A)</i>	32	33	34	36
Power input	<i>Watt</i>	15	18	20	26
Water Flow Rate	<i>m³/hr (US GPM)</i>	0.17 (0.75)	0.31 (1.37)	0.41 (1.81)	0.51 (2.25)
Friction Loss through water coil	<i>kPa (ft of Water)</i>	4 (1.34)	6 (2.01)	8 (2.68)	10 (3.35)
Water pipes connection (in)		1/2" Female NPT (right side)			
Coil	<i>Type</i>	High-efficiency copper coil with Hydrophilic aluminum fins			
Maximum working pressure	<i>Mpa (psi)</i>	1.6 (232) Max – 0.15 (22)			
Condensation pipe diameter	<i>mm (in)</i>	21 (3/4)			

Notes:

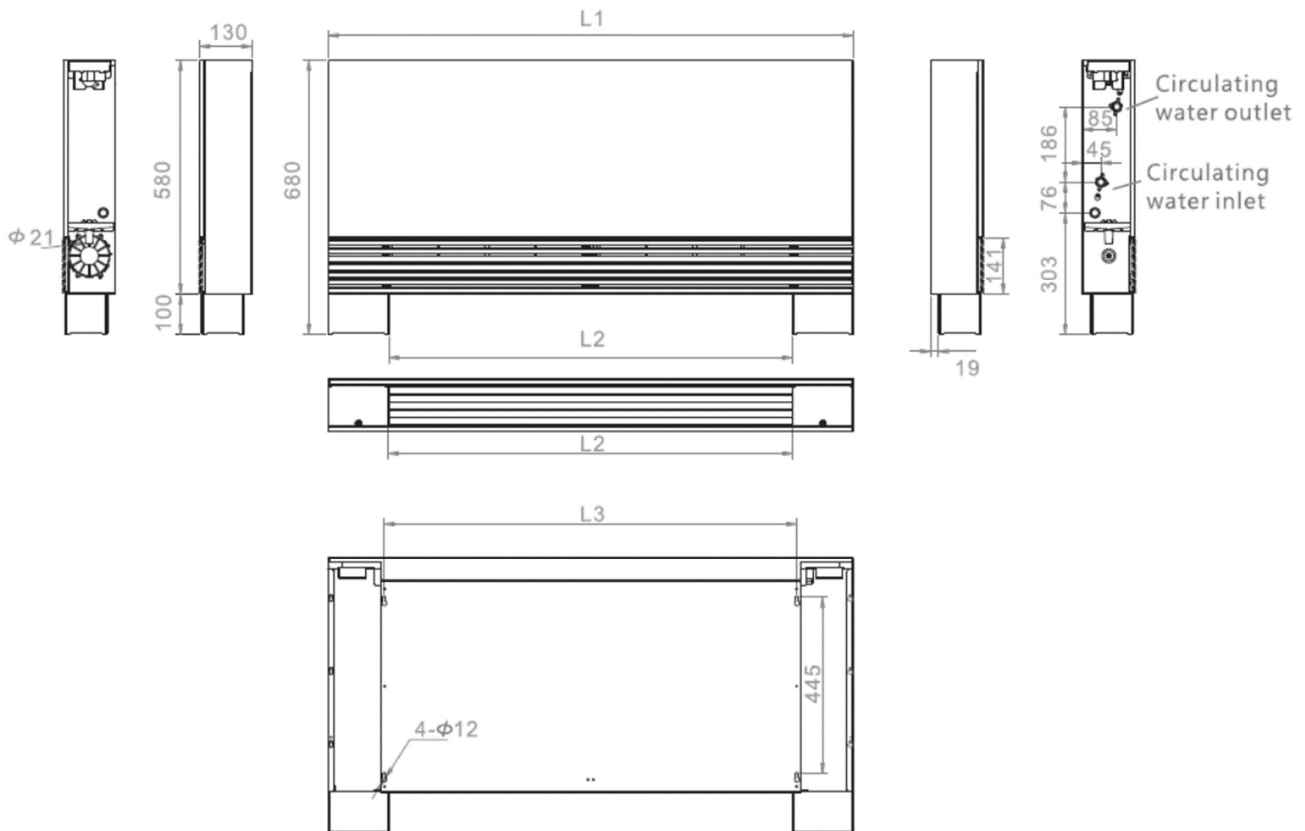
Operating Mode	Design Conditions
Cooling (All Speeds)	Water In/Out: 7/12°C – Entering Air Dry bulb 27°C / Wet bulb 19.5°C
Heating (1) – High Speed	Water In/Out: 35/30°C – Entering Air Dry bulb 20°C
Heating (2) – High Speed	Water In/Out: 40/35°C – Entering Air Dry bulb 20°C
Heating (3) – High Speed	Water In/Out: 45/40°C – Entering Air Dry bulb 20°C
Heating (4) – High Speed	Water In/Out: 50/45°C – Entering Air Dry bulb 20°C

Construction Features





Dimensions



Dimension	PFP-030	PFP-050	PFP-070	PFP-100
L1 mm (in)	700 (27.56)	900 (35.43)	1100 (43.30)	1300 (51.18)
L2 mm (in)	400 (15.74)	600 (23.62)	800 (31.49)	1000 (39.37)
L3 mm (in)	422 (16.61)	622 (24.48)	822 (32.36)	1022 (40.23)

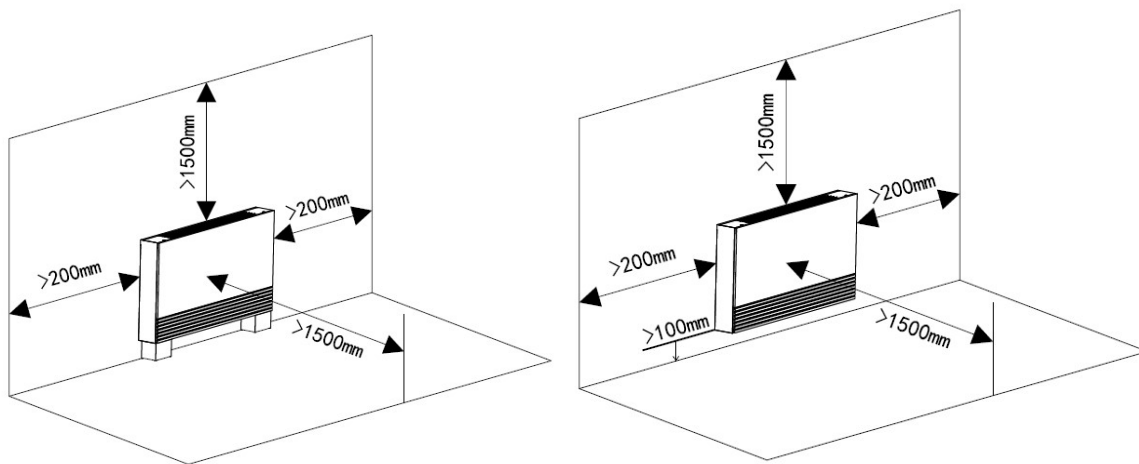
Indoor Operating Conditions

The below table defines the minimum and maximum temperatures of the room where FCU is located as well as Heat Transfer Fluid (HTF) minimum and maximum supply temperatures. When operating outside the below temperature ranges, FCU will shut down and controller will show corresponding alarm signal and alarm code

Operating Mode	Room Dry Bulb Temperature Range	Water Supply Temperature range
Cooling	17-32°C (62.6-89.6°F)	3-20°C (37.4-68°F)
Heating	5-30°C (41-86°F)	30-85°C (86-185°F)

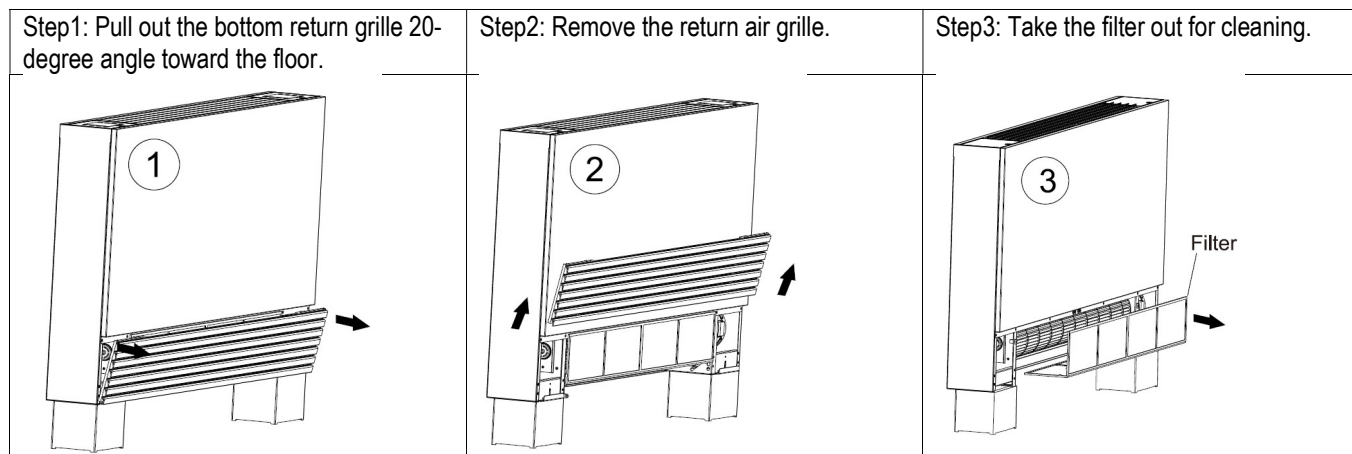
Minimum Installation Clearances

FCU shall be installed with enough space around it for both air circulation and proper maintenance. FCU can be floor or wall mounted as below:



Cleaning or replacing filter

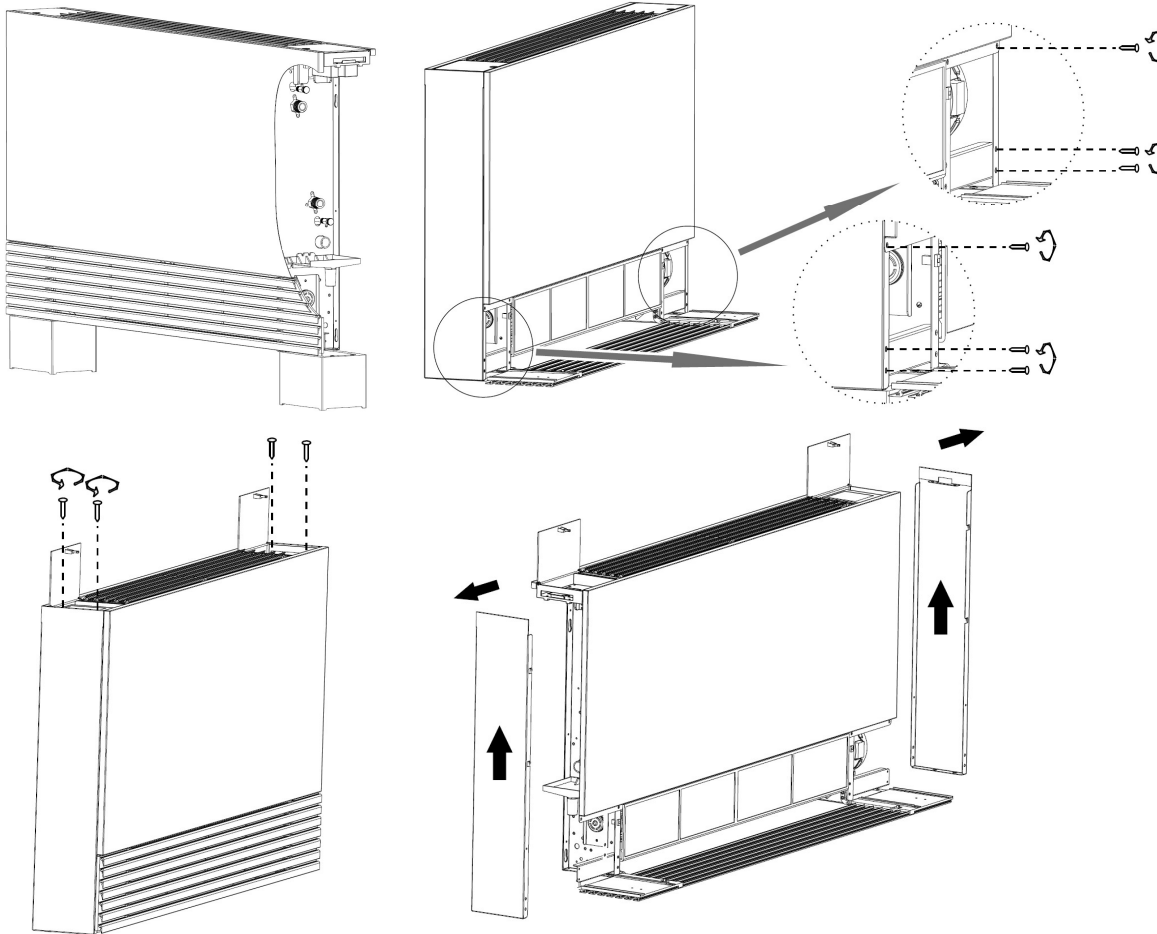
FCU is supplied with cleanable air filter. We recommend cleaning it once a month or more frequently if unit ins installed in a dusty environment. We Highly recommend turning off the machine before removing air filter.



Air filter can be cleaned either by blowing air on it or by washing it with water. Before re-installing filter in FCU, make sure it's clean and dry.

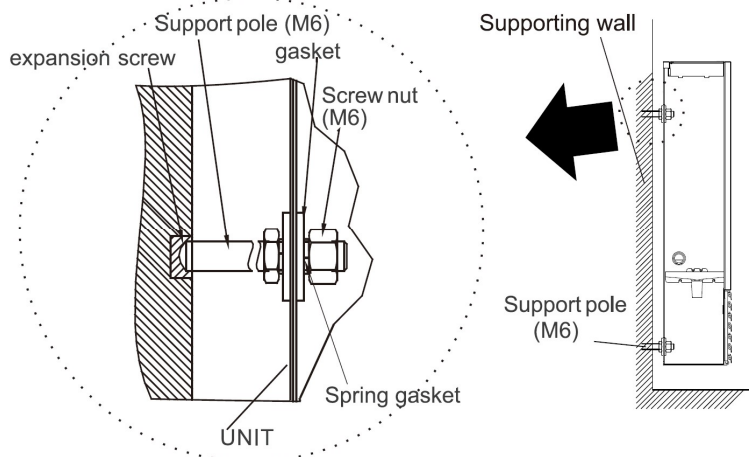
Installation

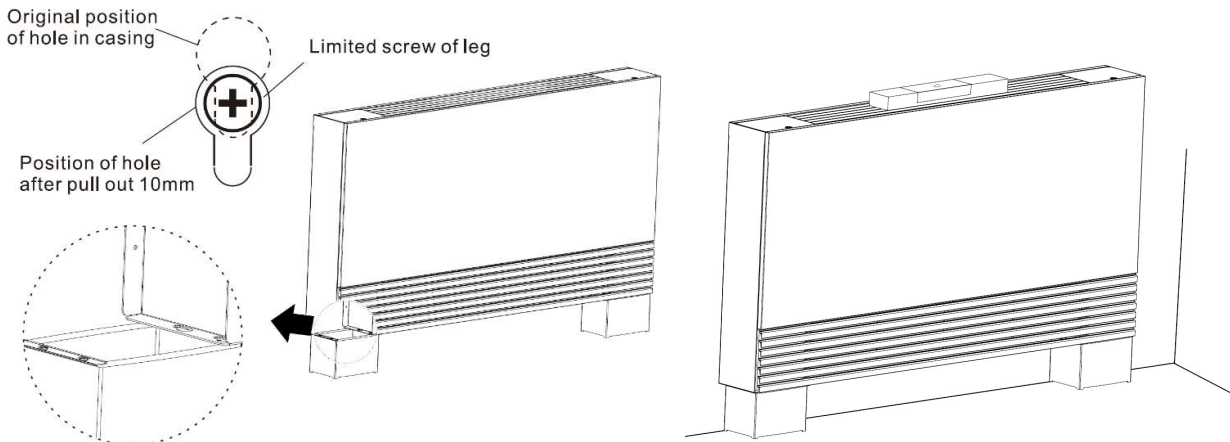
Installation shall be always carried out by a qualified technician, in compliance with applicable building code at the time of installation. Fan Coil Unit has its water connections at the right side (when standing up in front of the FCU) and its Fan Motor and electrical box at the left side.



Floor Mounted Installation:

FCU can be installed floor mounted with 2 legs (supplied with the unit). In this installation, the FCU will still be fixed to the wall:

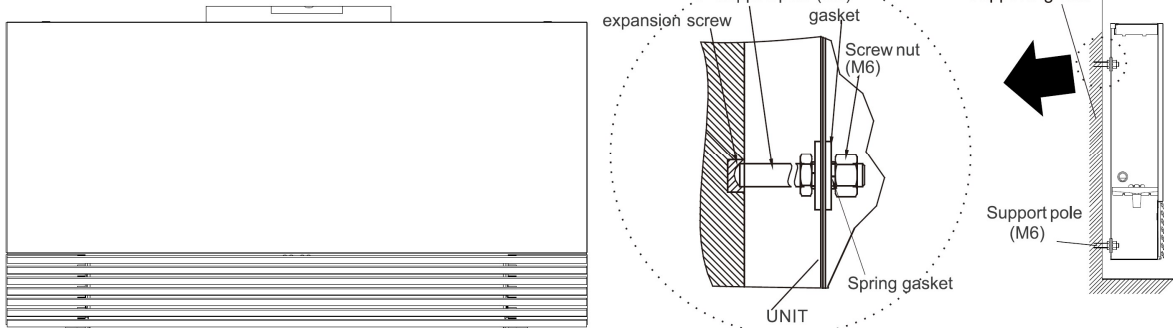




Wall Mounted Installation:

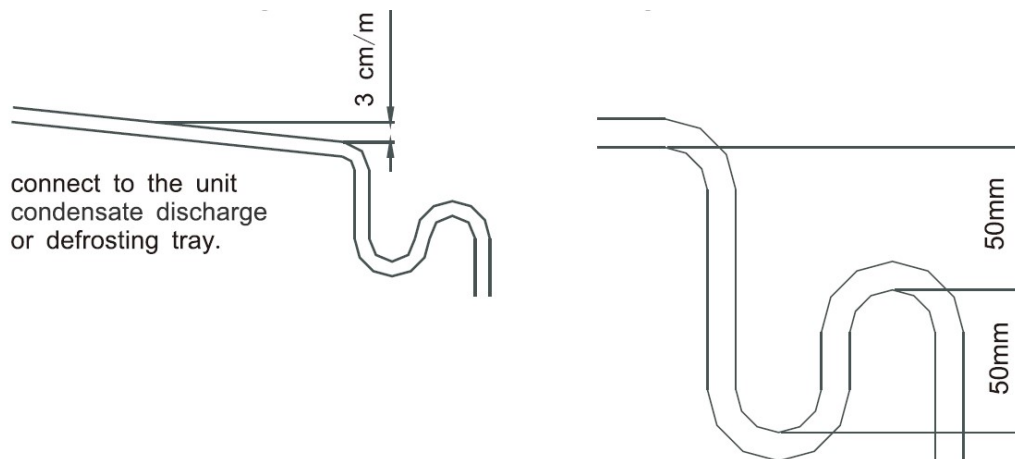
In this type of installation, FCU is wall mounted and legs supplied with the unit are not used.

Use a horizontal ruler to check the levelness of unit.

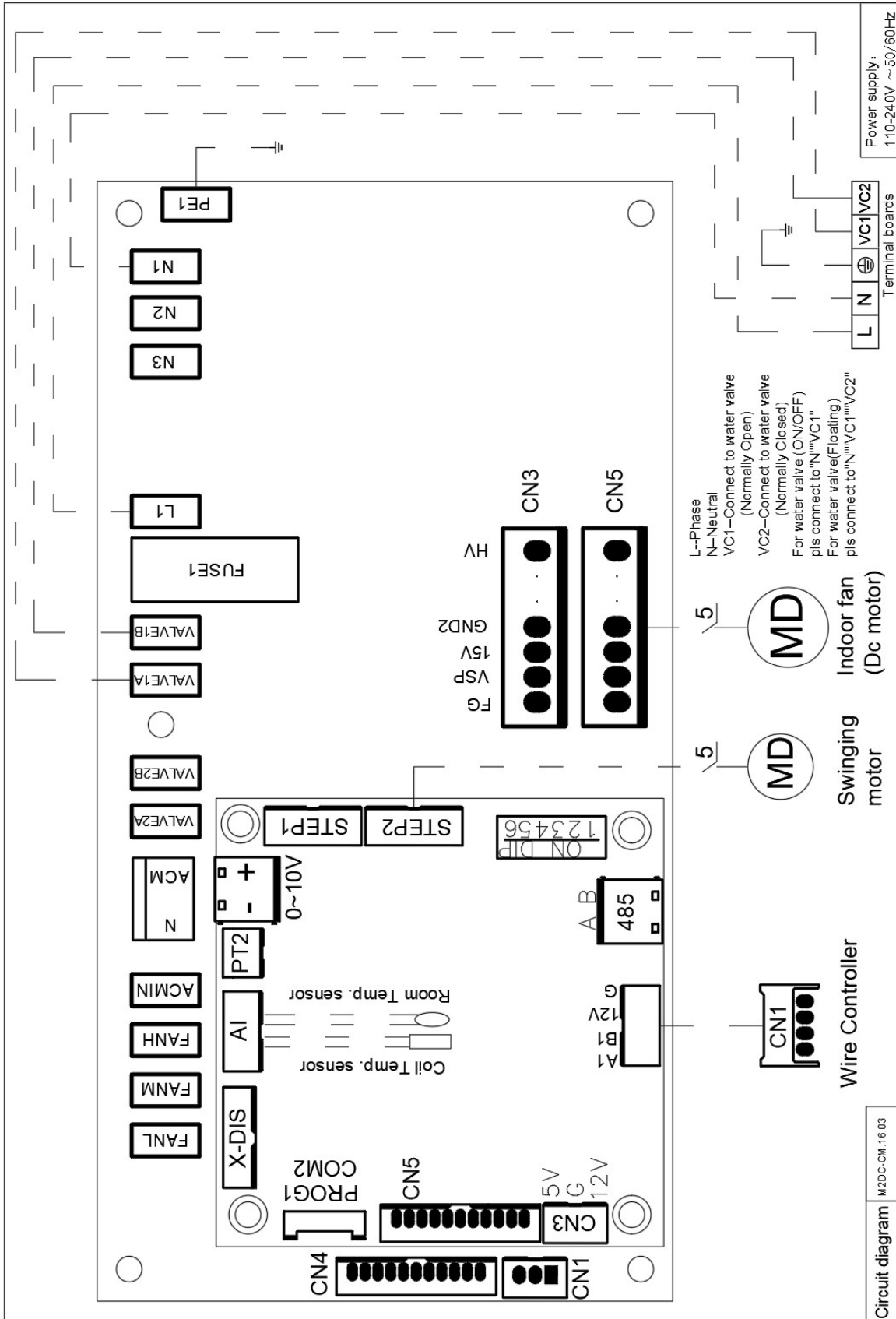


P-trap for condensate drain:

Condensate drain is essential for evacuation of condensate when FCU is running in cooling mode. A p trap shall be installed, as per the below picture when condensate water is drained into the sanitary sewage.



Main Control Card:



Circuit diagram M2DC-CM-1.6.03



RS485 connection port is for Modbus RTU, 8-bit data, 1-bit stop bit, no check bit, CRC check and baud rate 9600 bps.

Errors/Alarms Codes:

Control Panel Alarm Code	Description	Display Mode
E1	T1 Room Temperature sensor open or short circuit	Always ON
E2	T2 Entering Water Temperature sensor open or short circuit	ON for two (2) seconds every five (5) seconds.
E3	Not Applicable	
E4	Motor Fault	
E5	Communication failure	

Limited Residential Warranty:

Aqua Solanor Inc (Owner of **Hydro Solar Innovative Energy**) warrants that the Fan Coil Unit (FCU) supplied by it shall be free from defects in materials and workmanship for a period of **(1) One YEAR** after the date of installation or for a period of (1) One YEAR AND (30) THIRTY DAYS after the date of shipment, whichever occurs first.

Aqua Solanor Inc shall, at its option repair or replace any part or parts covered by this warranty which shall be returned to **Aqua Solanor Inc**, transportation charges prepaid (by customer), which, upon examination proves to be defective in materials or workmanship.

Replacement or repaired parts and components are warranted only for the remaining portion of the original warranty period.

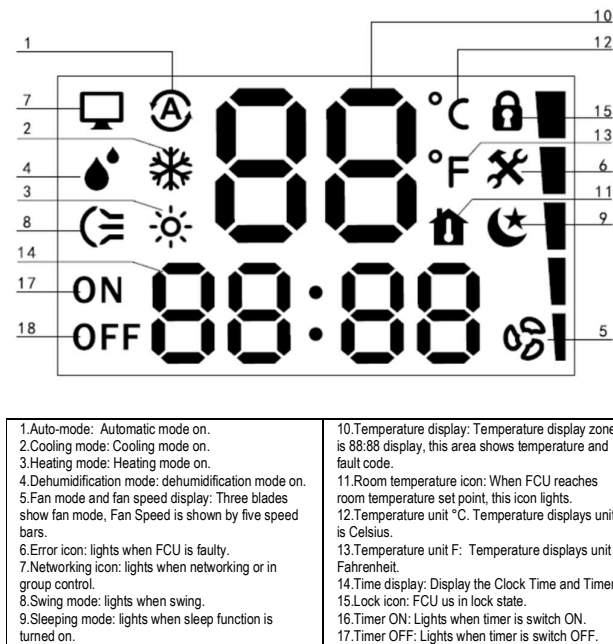
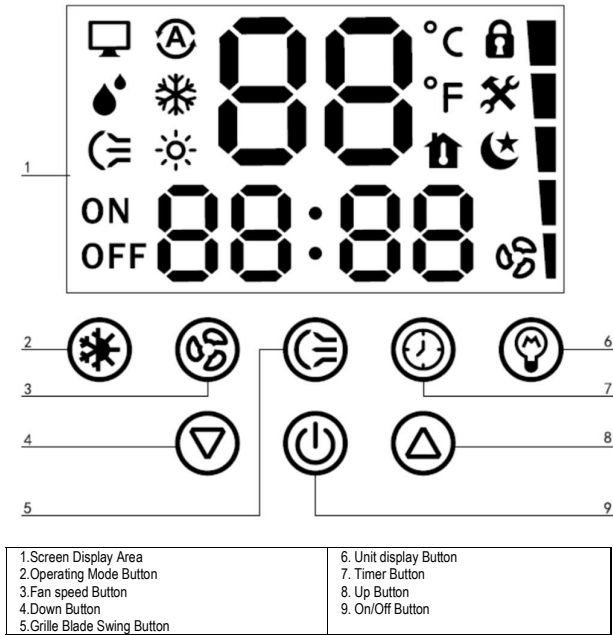
This warranty is subject to the following conditions:

1. The **Hydro Solar Innovative Energy** FCU must be properly installed and maintained in accordance with this installation and maintenance document and in compliance with Federal, Provincial, Municipal, and local codes and regulations.
2. The installer must be a certified qualified heat pump installer in the province/state where heat pump is installed. Failure to comply with this requirement will void this warranty.
3. It is the responsibility of the building or general contractor to supply temporary heat to the structure prior to occupancy. These FCUs are designed to provide heat only to the finished and insulated structure. Start-up of the unit shall not be scheduled prior to completion of construction and final Duct/Pipe installation for validation of this warranty.
4. It is the customer's responsibility to supply the proper quantity and quality of water.

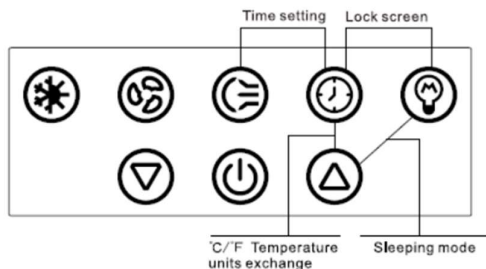
If the FCU, supplied by **Aqua Solanor Inc**, fails to conform to this warranty, **Aqua Solanor Inc** 's sole and exclusive liability shall be, at its option, to repair or replace any part or component which is returned by the customer during the applicable warranty period set forth above, provided that (1) **Aqua Solanor Inc** is promptly notified in writing upon discovery by the customer that such part or component fails to conform to this warranty. (2) The customer returns such part or component to **Aqua Solanor Inc**, transportation charges prepaid, within (30) thirty days of failure, and (3) **Aqua Solanor Inc**'s examination of such component shall disclose to its satisfaction that such part or component fails to meet this warranty and the alleged defects were not caused by accident, misuse, neglect, alteration, improper installation, repair, or improper testing.



Operating the Fan Coil Unit:



Combination Buttons



	ON/OFF: Press the ON/OFF button to turn FCU ON or OFF. Automatic mode is by default at first start-up, then the fan coil working at automatic fan speed, swing automatically. This button does not respond when FCU is OFF.
	UP Button: This button can be used to adjust hours and temperature settings upward. When adjusting temperature, press to set the temperature increase of 1°C; Press to increase 1 hour when adjusting hours; Press and hold for 3 seconds to confirm settings. This button does not respond when FCU is OFF.
	Down Button: This button can be used to adjust minutes and temperature. When adjusting temperature, press to set the temperature decrease of 1°C; Press to increase 1 minute when adjusting minutes. Press and hold this button for 3 seconds to confirm settings. This button does not respond when FCU is OFF.
	Fan Speed Button: Press this button to change the fan speed. The fan speed changed as: Automatic, Breeze-Low-Medium-High-Strong. The LCD display show the corresponding flow speed icon: . This button does not respond when FCU is OFF.
	Operating Mode Button: Press this key to change working mode of the fan coil unit. Possible operating modes are: Automatic / Cooling / Heating / Dehumidification / Fan. This button does not respond when FCU is OFF.
	Grille Blade Swing Button: Press this button to stop/start Grille Blades Swing. Press this button to stop the air deflector at current position during swing. Press this button to start swing when the air deflector is static. When swinging the LCD display will light this icon. This button does not respond when FCU is OFF.
	Unit display Button: When FCU is ON, LCD screen lights every icon and button at their corresponding settings and states. When FCU is turned OFF LCD screen shows only time, and this button is lit. Press this button to turn off the LCD screen and this button's light. Press any button to turn on the light.
	Timer button (short press) to set Time ON/OFF Intervals: Press this button to set "Time ON" interval when FCU is turned OFF. After pressing this button, time displays 88:88 and 'timer on' starts flashing. Then press 'up button' or 'down button' to set the time. Time setting will be saved after 10 seconds if no other button is pressed. 'Timer ON' and set time shows for 2 secs every 5 secs, hour shows 5 seconds and set time shows 2 seconds then "Time ON" setting is successful. User can set operating mode and temperature after "Time ON" interval is set. The corresponding icon shows 10 seconds after operation. If no operating mode is set after setting "Time ON" interval, the previous operating mode before turning FCU OFF is assigned to the "Time ON" interval. Double press this button to cancel Time ON. Press this button to set "Time OFF" interval when FCU is turned ON. After pressing this button, displays 88:88 and 'Timer OFF' starts flashing. Then press 'up button' or 'down button' to set the time. Time setting will be saved after 10 seconds if no other button is pressed. 'Timer OFF' and set time shows 2 secs every 5 seconds, hour shows 5 seconds and set time shows 2 secs then "Time OFF" setting is successful. Double press this button to cancel Time OFF.
	Timing Button (long press) to set Time ON/OFF Cycles: Periodic timing mode can be set when FCU is ON or OFF. First , press this button for 5 seconds to go to schedule periodic ON/OFF modes. "Time on" icon and 88:88 will start flashing, clock flashing and timer off icon shining. Second , press the up or down button to set "Time ON". After 10 seconds without pressing any button, "Time ON" is successful and controller switches to "Time OFF" Settings. Third , "Time OFF" icon and 88:88 will start flashing, clock flashing as well and "Time ON" icon shining. Fourth , press the up or down button to set "Time OFF". After 10 seconds without pressing any button, "Time OFF" is successful. Settings for Time ON, Time OFF and Clock are consequently displayed for 2, 2 and 5 seconds.
	Sleeping Button: When pressed, LCD display will show icon and Fan speed will turn to automatic speed and controller only add a sleeping mode function to the enabled operating mode. This button does not respond when FCU is OFF.
	Combined button for time setting: Press these two buttons simultaneously to set the time. Use 'up button' or 'down button' to set hours and minutes
	Combined button for lock screen: Press these two buttons to lock screen. The LCD display shows lock screen icon.
	Combined buttons for °C/°F temperature unit display: Press these two buttons to change the unit of the displayed temperature. Temperature range is 16°C-31°C (60°F-87°F). This button does not respond when FCU is OFF.