SERVICE MANUAL

AIR TO WATER HEAT PUMP
HEATING AND COOLING
MONOBLOC TYPE DC INVERTER

AEYC-0643XU-CH
AEYC-1043XU-CH
AEYC-1242XU-CH
AEYC-1643XU-CH

CONTENTS

Specifications

Model		0643XU	1043XU	1242XU	1643XU
Type		Heating and Cooling Monobloc Type DC Inverter (Reverse cycle)			
Power		1N ~ 230V 50Hz			
Heating (*)					
Capacity	[kW]	6.0	10.0	12.0	16.0
Power Input	[kW]	1.43	2.28	2.79	3.72
Running Current (MAX.)	[A]	6.3(11.2)	10.1(17.5)	12.2(23.0)	16.3(25.3)
COP		4.20	4.39	4.30	4.30
Cooling (*)					
Capacity	[kW]	5.0	8.0	12.0	16.0
Power Input	[kW]	1.28	2.28	3.16	4.10
Running Current (MAX.)	[A]	5.6(8.1)	10.0(11.6)	13.8(20.2)	17.8(23.0)
EER		3.91	3.51	3.80	3.90
MAX. Pressure	[MPa]	4.2			
Refrigerant (R32)	[kg]	0.80	1.55	2.20	2.80
Dimentions & Weight (NET)					
Height	[mm]	675	882	1,418	1,418
Width	[mm]	825	850	1,000	1,000
Depth	[mm]	300	330	330	330
Weight	[kg]	50	69	98	116
Temperature Range					
Outdoor Temperature					
Heating	[°C]	–20 to 43			
Cooling	[°C]	8 to 43			
Inlet Water Temperature	[°C]	18 to 55			
Water Pressure	[MPa]	0.1 to 0.3			

• Specifications are subject to change without notice.

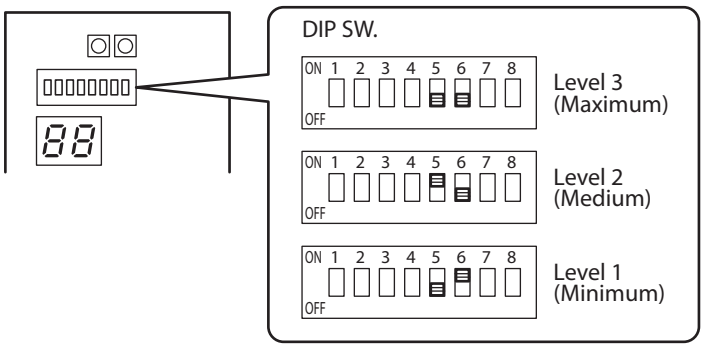
(*) Rating condition Heating : Outdoor temperature DB/WB 7°C/6°C, Leaving water temperature 35°C
Cooling : Outdoor temperature 35°C, Leaving water temperature 18°C

• Acoustic Noise Information : The maximum sound pressure level is less than 70 dB (A).
According to IEC 704-1 and ISO 3744.

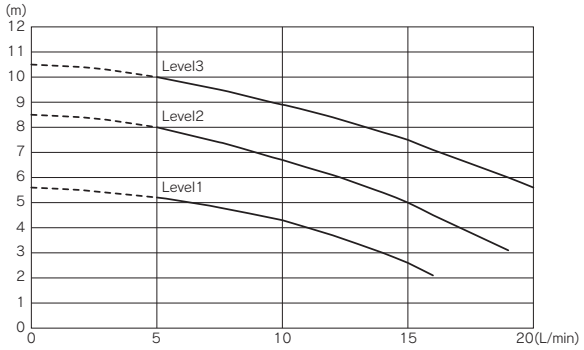
• If the air to water heat pump is operated under higher temperature conditions than those listed, the built-in protection circuit may operate to prevent internal circuit damage. Also, during Cooling modes, if the unit is used under conditions of lower temperatures than those listed above, it may freeze, leading to water leakage and other damage.

Pressures and quantity available at heat pump outlet

Main water pump in the unit has 3 levels of speed.
Factory default value is level 3.
Select dip switch 5 and 6 of DIP SW. on PCB(Terminal) to change the setting.



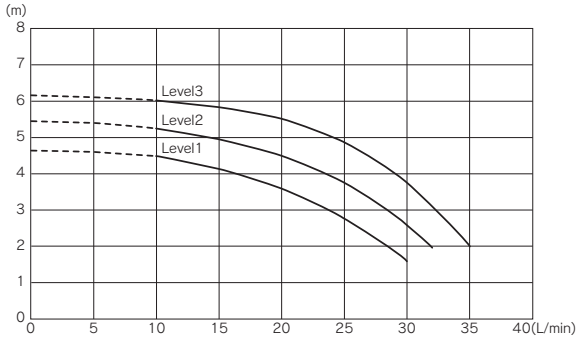
AEYC-0643XU



⚠ CAUTION

The quantity should not be less than 5L/min.
Insufficient water flow may damage the water circulating circuit.

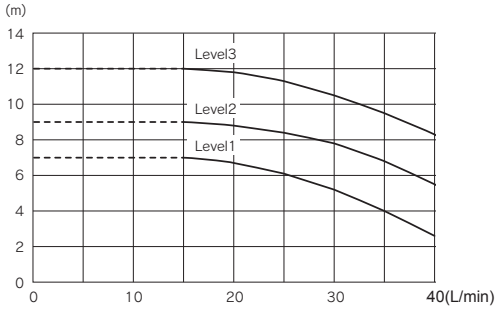
AEYC-1043XU



⚠ CAUTION

The quantity should not be less than 10L/min.
Insufficient water flow may damage the water circulating circuit.

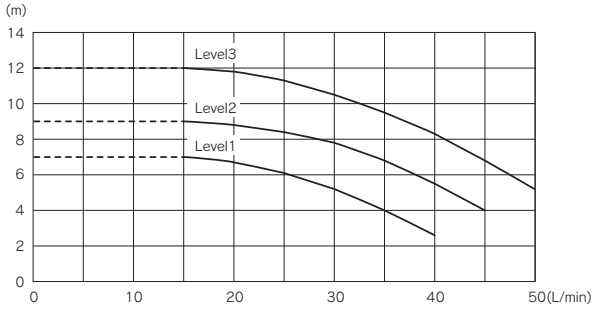
AEYC-1242XU



⚠ CAUTION

The quantity should not be less than 15L/min.
Insufficient water flow may damage the water circulating circuit.

AEYC-1643XU

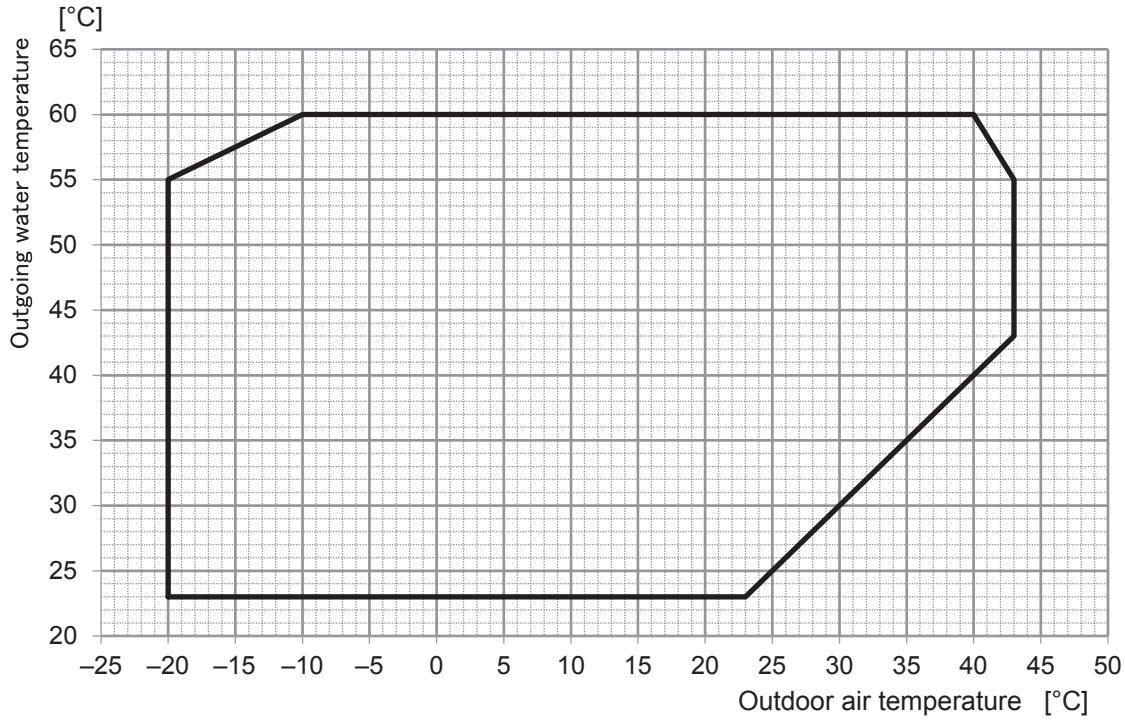


⚠ CAUTION

The quantity should not be less than 15L/min.
Insufficient water flow may damage the water circulating circuit.

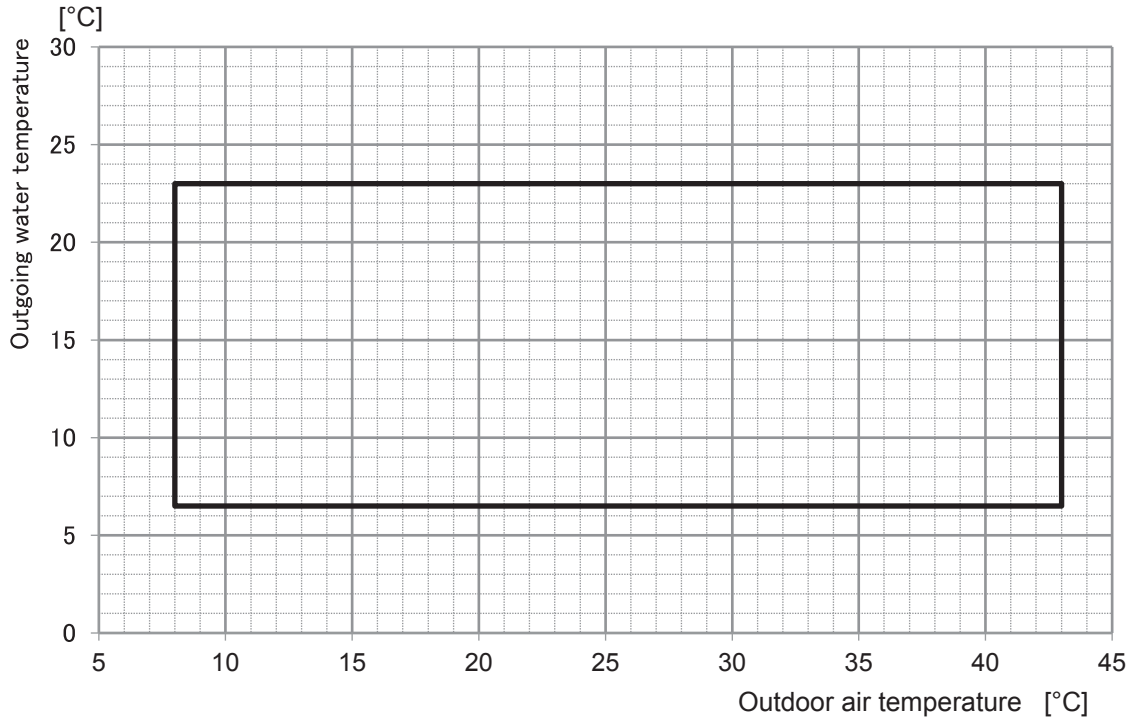
Operating range

Heating



Return water temperature in Heating : Maximum = 55°C, Minimum = 18°C

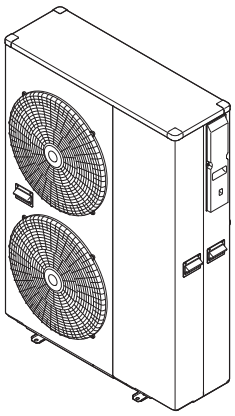
Cooling



Return water temperature in Cooling : Maximum = 28°C, Minimum = 11.5°C

Functions

Heat pump unit



Operation mode

Heating mode (DHW mode)
Cooling mode

Inverter control

Inverter control reduce the ON/OFF times of compressor, so can keep the water temperature changeless during operation.

Electricity consumption

Inverter control can operate with less electricity consumption than normal air to water heat pump.

Defrost control

For outdoor heat exchanger of HP unit, defrosting operation is controlled by the temperature of outdoor heat exchanger sensed by the thermistor.

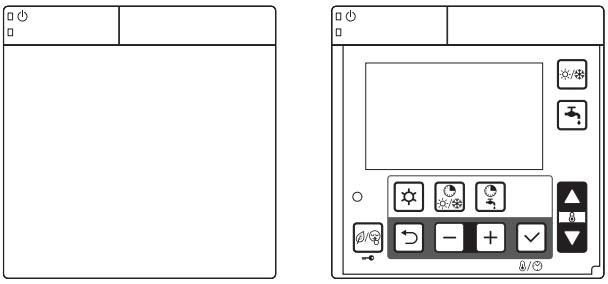
Anti-freezing control

For the circulation water, Anti-freeze operation automatically starts when the outdoor temperature is lower than 2°C.
For bottom panel of unit, defrosting heater installed at the inner bottom of the unit is controlled by the temperature of outdoor.

Time delay safety control

Restarting is inhibited for approximately 3 minutes.

Remote controller



ON/OFF

ON/OFF the HP unit

Operation mode selection

Heating/Cooling
DHW production
Low tariff
Night mode

Time band operation

Heating/Cooling
DHW production
Low tariff
Night mode

Setting change selection

Clock adjustment
Time band setting
Temperature setting
Parameter setting

Display

Operation and functions
Temperature and humidity
Day and clock
Time band setting by circle graph
Error code

Sensor

Room air temperature probe on board

Access limitation

There are 3 levels of access limitation for parameter settings.
U=User Level (accessible to End User, Installer and Service staff)
I =Installer Level (accessible to Installer and Service staff)
S=Service Level (accessible to Service staff only)

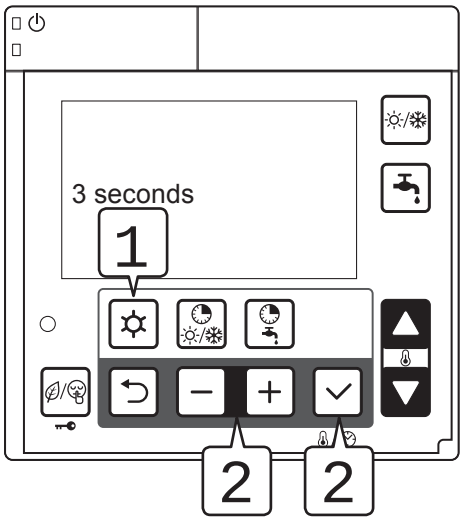
Note: The parameter of SERVICE level includes important setting values relevant to the system and the control and the operation of HP unit.

⚠ Warning

The change of parameter setting value of Service level is not allowed. The improper change of setting value might cause system operation failures or unit failures.

Procedure for accessing the Parameter setting menu

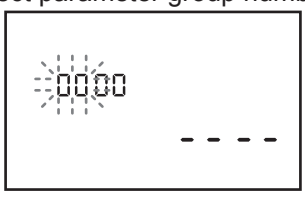
USER level



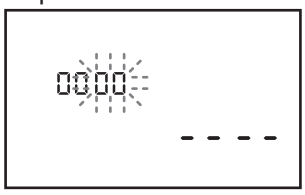
1 Press the Menu buttons for 3 seconds.

2 Parameter number “0000” and parameter value “- - - -” will be displayed in the display. Among 4 digits of parameter numbers, 2 digits of them which indicates group or code numbers will be flashed.
Press **-** or **+** button to switch the flashing 2 digits from left 2 showing group numbers to right 2 showing code numbers.

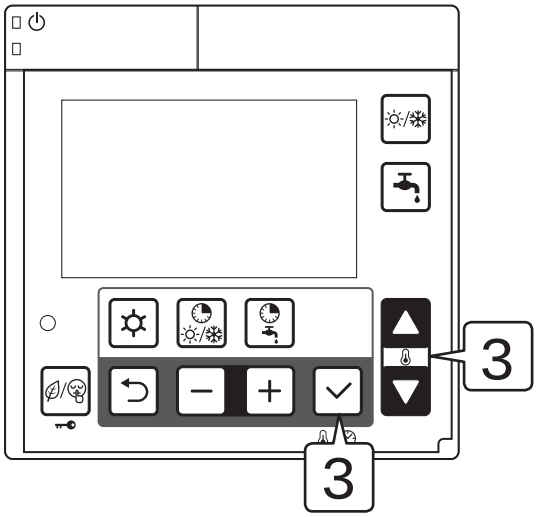
Select parameter group numbers



Select parameter code numbers



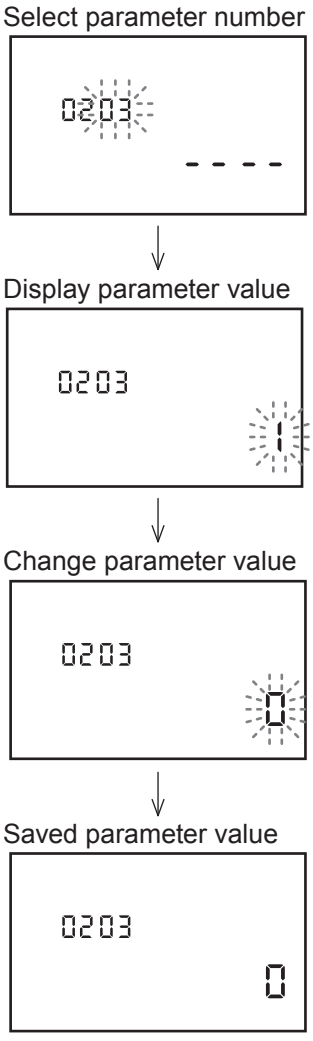
Note1: The Parameter setting menu can be set using the Master Remote controller. The Slave Remote controller cannot be used for this.

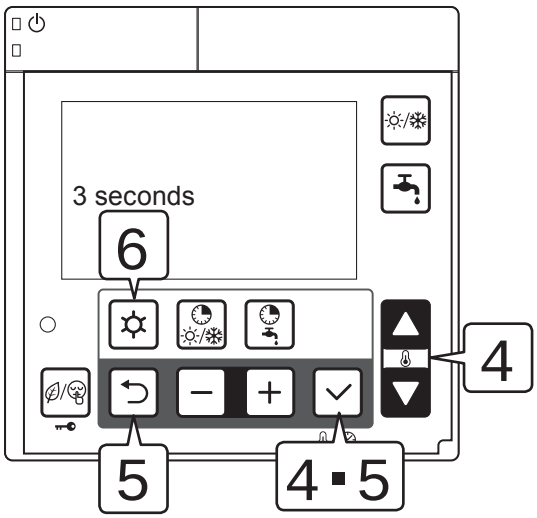


3 Select the group and code numbers by pressing the Up or Down button, and press Set button to display the parameter value in the display.

If invalid parameters (the value which is not on the parameter list or not accessible due to INSTALLER level) are entered and Set button is pressed, the indication “- - - - ” is displayed.

Press the Return button to return to the previous item.



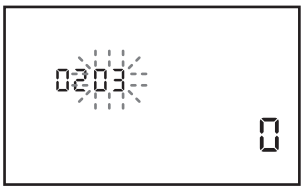


4 When it is possible to change the parameter setting items, the displayed current parameter value will blink.
Change the number in the same manner as in step **3**. When the Set button is pressed, the number is saved and updated accordingly.
The number stops blinking and remains on continuously.

For unchangeable items (read-only items), the number displayed remains on, then pressing the Set button does not affect the display.

5 Press the Return or Set button, the parameter code numbers blinks.
To access other parameter code numbers without an interval, repeat the same steps.

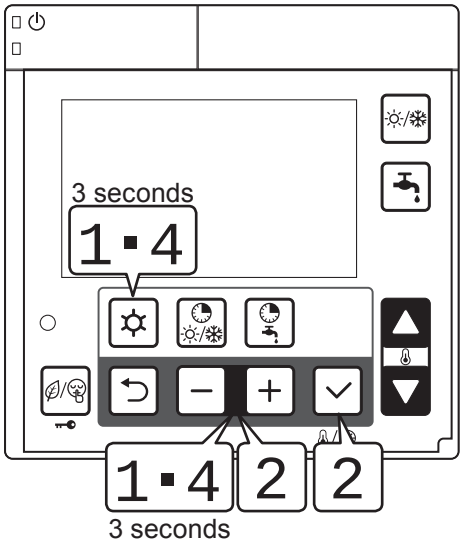
Return to select parameter code numbers



6 To return to normal operation, press and hold the Menu button for 3 seconds, or simply do nothing for approximately 10 minutes.

Parameter setting

INSTALLER level

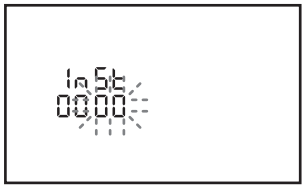


1 Press the Menu, -, and + buttons simultaneously for 3 seconds.

2 “InSt” and parameter number “0000” and parameter value “- - - -” will be displayed in the display.
Among 4 digits of parameter numbers, 2 digits of them which indicates group or code numbers will be flashed.
Press “ - or + button” to switch the flashing 2 digits from left 2 showing group numbers to right 2 showing code numbers.

Select parameter group numbers

Select parameter code numbers

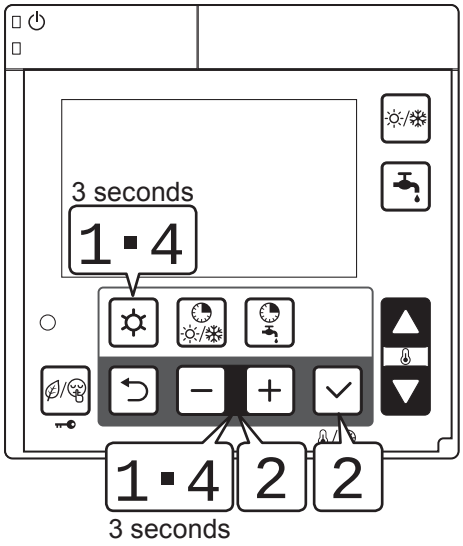


3 In INSTALLER level, more parameters than USER level can be accessed.
The procedures of setting parameters are same as USER level.
If invalid parameters (the value which is not on the parameter list or not accessible level) are entered and Set button is pressed, the indication “- - - - ” is displayed.
Press the Return button to return to the previous item.

4 To return to normal operation, press and hold the Menu, - and + button for 3 seconds, or simply do nothing for approximately 10 minutes.

Note1: The Parameter setting menu can be set using the Master Remote controller. The Slave Remote controller cannot be used for this.

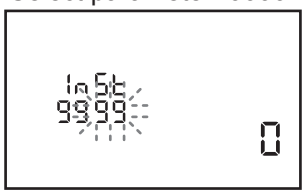
SERVICE level



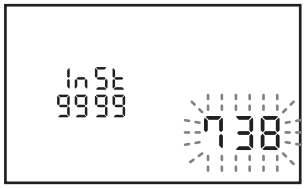
1 Press the Menu, -, and + buttons simultaneously for 3 seconds.
The INSTALLER level setting menu will be displayed in the display.

2 Enter the password to access the SERVICE level, specify parameter number "9999" and enter password "738", and press the Set button to confirm entry of the password.

Select parameter “9999”



Input password “738”



Enter the SERVICE level

3 “SErv” (means SERVICE) will be displayed in the position of room temperature display.
In SERVICE level, all parameters can be accessed. The procedures of setting parameters are same as INSTALLER level.

4 To return to normal operation, press and hold the Menu, -, and + for 3 seconds, or simply do nothing for approximately 10 minutes.

Procedure for resetting parameters
In SERVICE level, all parameters can be reset to the default when the Low tariff/Night mode button is pressed and held for 10 seconds.

Parameter

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	99	99	Password to enter Service level Input “738”, enable to access Service level menu	0	0	9999	-	

Parameter table

Parameter numbers are 4 digit formation. Two digits at the beginning define the group (refer to lower list).

Parameter number of group

- 01 : Read value of conditions and settings (Read only)
- 02 : Remote controller
- 04 : Fan coil system
- 11 : Time bands settings of Heating/Cooling (Zone1)
- 12 : Time bands settings of Heating/Cooling (Zone2)
- 13 : Time bands settings of DHW
- 21 : Water temperature set points of Heating/Cooling
- 31 : DHW (Domestic Hot Water)
- 41 : HP unit
- 42 : Water pump
- 43 : Frost protection
- 44 : Dehumidifier
- 45 : Mixing valve, 3way valve
- 46 : Backup heater
- 47 : EHS (External heat source)
- 51 : Input/Output

Read value of conditions and settings (Read only)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
U	01	00	Return water temperature	-	-20	100	1°C	monitor display No.d0
U	01	01	Compressor operating frequency	-	0	200	1Hz	monitor display No.d1
U	01	02	Discharge temperature	-	-20	150	1°C	monitor display No.d2
U	01	03	Current consumption value	-	0	9900	100W	monitor display No.d3
U	01	04	Fan control number of rotation	-	0	1000	10rpm	
U	01	05	Defrost temperature	-	-20	100	1°C	monitor display No.d5
U	01	06	Outdoor air temperature	-	-20	100	1°C	monitor display No.d6
U	01	07	Water pump control number of rotation	-	0	9900	100rpm	monitor display No.d7
U	01	08	Suction temperature	-	-20	100	1°C	monitor display No.d8
U	01	09	Outgoing water temperature	-	-20	100	1°C	monitor display No.d9
U	01	10	Selected operating mode 0=Heating/Cooling OFF 1=Heating 2=Cooling	0	0	2	-	Set by Remote control ler or remote contact
U	01	11	Room air set temperature of Zone1(Master)	25.0	12.0	40.0	0.5°C	Set by Master Remote controller
U	01	12	Room air set temperature of Zone2(Slave)	25.0	12.0	40.0	0.5°C	Set by Slave Remote controller
U	01	13	Selected DHW operating mode 0=disable 1=Comfort 2=Economy 3=Force	0	0	3	-	Set by Remote controller
U	01	14	Day 0=Monday, 1=Tuesday, 2=Wednesday, 3=Thursday, 4=Friday,5=Saturday, 6=Sunday	0	0	6	-	
U	01	15	Clock	12:00	0:00	23:59	1min	
U	01	16	Heating/Cooling time bands setting Zone1 0=disable 1=active (Comfort or Economy)	0	0	1	-	
U	01	17	Heating/Cooling time bands setting Zone2 0=disable 1=active (Comfort or Economy)	0	0	1	-	
U	01	18	DHW time band setting 0=disable 1=enable	0	0	1	-	

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
U	01	19	Low tariff and Night mode setting 0=disable 1=Low tariff 2=Night mode 3=Low tariff and Night mode	0	0	3	-	Set by Remote controller or remote contact
U	01	20	Room relative humidity value	-	0	100	1%	
I	01	21	Integration electricity time	-	0	9999	x100Hr	
I	01	22	Integration operation time	-	0	9999	x100Hr	
I	01	23	Integration Heating operation time	-	0	9999	x100Hr	
I	01	24	Integration Cooling operation time	-	0	9999	x100Hr	
I	01	25	Integration DHW operation time	-	0	9999	x100Hr	
I	01	26	Software version number of Main PCB	-	0	9999	-	
I	01	27	Software version number of Control PCB	-	0	9999	-	
I	01	28	Software version number of Remote controller (Master)	-	0	9999	-	
I	01	29	Software version number of Remote controller (Slave)	-	0	9999	-	
I	01	31	DHW tank temperature (Terminal 7-8)	-	-20.0	100.0	0.5°C	
I	01	32	Outdoor air temperature (Terminal 9-10)	-	-20.0	100.0	0.5°C	
I	01	33	Buffer tank temperature (Terminal 11-12)	-	-20.0	100.0	0.5°C	
I	01	34	Mix water temperature (Terminal 13-14)	-	-20.0	100.0	0.5°C	
I	01	35	Humidity sensor (Terminal 17-18)	-	0	100	1%	
I	01	36	DHW remote contact (Terminal 18-19) 0=open 1=close	-	0	1	-	
I	01	37	Configurable input (Terminal 20-21) 0=open 1=close	-	0	1	-	
I	01	38	Dual set point control (Terminal 22-23) 0=open 1=close	-	0	1	-	
I	01	39	Heating/Cooling mode remote contact (Terminal 24-25) 0=open 1=close	-	0	1	-	
I	01	40	Flow switch (Terminal 26-27) 0=open 1=close	-	0	1	-	
I	01	41	Night mode (Terminal 28-29) 0=open 1=close	-	0	1	-	
I	01	42	Low tariff (Terminal 30-31) 0=open 1=close	-	0	1	-	
S	01	50	Current error code	- -	-	-	-	Error log display If there are no error codes,"- -" is displayed
S	01	51	Error code once before	- -	-	-	-	
S	01	52	Error code twice before	- -	-	-	-	
S	01	53	Error code three times before	- -	-	-	-	
S	01	54	Error code four times before	- -	-	-	-	
S	01	55	Error code five times before	- -	-	-	-	
S	01	56	Error code six times before	- -	-	-	-	
S	01	57	Error code seven times before	- -	-	-	-	
S	01	58	Error code eight times before	- -	-	-	-	
S	01	59	Error code nine times before	- -	-	-	-	
S	01	60	Error code ten times before	- -	-	-	-	
S	01	61	Erase error history 0=Maintenance 1=Erase history	0	0	1	-	
U	01	72	Plate heat exchanger temperature	-	-20.0	100.0	1°C	monitor display No.d4

Remote controller

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	02	01	Adjust the temperature read by the sensor in Remote controller	0	-5.0	5.0	0.1°C	Master Remote controller
U	02	02	Sound ON/OFF of buzzer 0=OFF 1=ON	1	0	1	-	
U	02	03	Back light display at door open 0=OFF 1=ON	1	0	1	-	
U	02	04	Time to turn off the back light	60	10	300	10sec	
U	02	05	Time to back to normal indication	120	10	300	10sec	
U	02	06	Long pressing time to accept the button	3	2	5	1sec	Master/Slave Remote controller
S	02	07	Long pressing time to accept the button Reset parameters by Key lock button	10	2	10	1sec	Master remote controller
I	02	11	Adjust the temperature read by the sensor in Remote controller	0	-5.0	5.0	0.1°C	Slave Remote controller
U	02	12	Sound ON/OFF of buzzer 0=OFF 1=ON	1	0	1	-	
U	02	13	Back light display at door open 0=OFF 1=ON	1	0	1	-	
U	02	14	Time to turn off the back light	60	10	300	10sec	
U	02	15	Time to back to normal indication	120	10	300	10sec	

Heat pump unit

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
S	03	00	Operation at the time of reboot after blackout 0=disable 1=enable	1	0	1	-	However, this is only when the time of blackout are within the set time of next parameter
S	03	01	The time of blackout available to restart in the same condition as before the blackout at recovery time from the blackout	24:00	0:00	24:00	15min	

Fan coil system

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	04	00	Which Remote controller will measure the Room air temperature to stop Fan coil System 0=Master Remote controller 1=Slave Remote controller 2=Master or Slave Remote controller	0	0	2	-	
I	04	01	Hysteresis of Room air temperature to restart Fan coil system	1.0	0.5	10.0	0.5°C	

Time bands settings of Heating/Cooling (Zone1)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	11	00	Time band is ON/OFF on Monday 0=OFF 1=ON	0	0	1	-	
I	11	01	Comfort room set temperature on Monday	20.0	12.0	40.0	0.5°C	
I	11	02	Economy room set temperature on Monday	18.0	12.0	40.0	0.5°C	
I	11	03	1st ON time on Monday	0:00	0:00	24:00	15min	
I	11	04	1st OFF time on Monday	0:00	0:00	24:00	15min	
I	11	05	2nd ON time on Monday	0:00	0:00	24:00	15min	
I	11	06	2nd OFF time on Monday	0:00	0:00	24:00	15min	
I	11	07	3rd ON time on Monday	0:00	0:00	24:00	15min	
I	11	08	3rd OFF time on Monday	0:00	0:00	24:00	15min	
I	11	10	Time band is ON/OFF on Tuesday 0=OFF 1=ON	0	0	1	-	
I	11	11	Comfort room set temperature on Tuesday	20.0	12.0	40.0	0.5°C	
I	11	12	Economy room set temperature on Tuesday	18.0	12.0	40.0	0.5°C	
I	11	13	1st ON time on Tuesday	0:00	0:00	24:00	15min	
I	11	14	1st OFF time on Tuesday	0:00	0:00	24:00	15min	
I	11	15	2nd ON time on Tuesday	0:00	0:00	24:00	15min	
I	11	16	2nd OFF time on Tuesday	0:00	0:00	24:00	15min	
I	11	17	3rd ON time on Tuesday	0:00	0:00	24:00	15min	
I	11	18	3rd OFF time on Tuesday	0:00	0:00	24:00	15min	
I	11	20	Time band is ON/OFF on Wednesday 0=OFF 1=ON	0	0	1	-	
I	11	21	Comfort room set temperature on Wednesday	20.0	12.0	40.0	0.5°C	
I	11	22	Economy room set temperature on Wednesday	18.0	12.0	40.0	0.5°C	
I	11	23	1st ON time on Wednesday	0:00	0:00	24:00	15min	
I	11	24	1st OFF time on Wednesday	0:00	0:00	24:00	15min	
I	11	25	2nd ON time on Wednesday	0:00	0:00	24:00	15min	
I	11	26	2nd OFF time on Wednesday	0:00	0:00	24:00	15min	
I	11	27	3rd ON time on Wednesday	0:00	0:00	24:00	15min	
I	11	28	3rd OFF time on Wednesday	0:00	0:00	24:00	15min	
I	11	30	Time band is ON/OFF on Thursday 0=OFF 1=ON	0	0	1	-	
I	11	31	Comfort room set temperature on Thursday	20.0	12.0	40.0	0.5°C	
I	11	32	Economy room set temperature on Thursday	18.0	12.0	40.0	0.5°C	
I	11	33	1st ON time on Thursday	0:00	0:00	24:00	15min	
I	11	34	1st OFF time on Thursday	0:00	0:00	24:00	15min	
I	11	35	2nd ON time on Thursday	0:00	0:00	24:00	15min	
I	11	36	2nd OFF time on Thursday	0:00	0:00	24:00	15min	
I	11	37	3rd ON time on Thursday	0:00	0:00	24:00	15min	
I	11	38	3rd OFF time on Thursday	0:00	0:00	24:00	15min	
I	11	40	Time band is ON/OFF on Friday 0=OFF 1=ON	0	0	1	-	
I	11	41	Comfort room set temperature on Friday	20.0	12.0	40.0	0.5°C	
I	11	42	Economy room set temperature on Friday	18.0	12.0	40.0	0.5°C	
I	11	43	1st ON time on Friday	0:00	0:00	24:00	15min	
I	11	44	1st OFF time on Friday	0:00	0:00	24:00	15min	
I	11	45	2nd ON time on Friday	0:00	0:00	24:00	15min	
I	11	46	2nd OFF time on Friday	0:00	0:00	24:00	15min	
I	11	47	3rd ON time on Friday	0:00	0:00	24:00	15min	
I	11	48	3rd OFF time on Friday	0:00	0:00	24:00	15min	

Time bands settings of Heating/Cooling (Zone1)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	11	50	Time band is ON/OFF on Saturday 0=OFF 1=ON	0	0	1	-	
I	11	51	Comfort room set temperature on Saturday	20.0	12.0	40.0	0.5°C	
I	11	52	Economy room set temperature on Saturday	18.0	12.0	40.0	0.5°C	
I	11	53	1st ON time on Saturday	0:00	0:00	24:00	15min	
I	11	54	1st OFF time on Saturday	0:00	0:00	24:00	15min	
I	11	55	2nd ON time on Saturday	0:00	0:00	24:00	15min	
I	11	56	2nd OFF time on Saturday	0:00	0:00	24:00	15min	
I	11	57	3rd ON time on Saturday	0:00	0:00	24:00	15min	
I	11	58	3rd OFF time on Saturday	0:00	0:00	24:00	15min	
I	11	60	Time band is ON/OFF on Sunday 0=OFF 1=ON	0	0	1	-	
I	11	61	Comfort room set temperature on Sunday	20.0	12.0	40.0	0.5°C	
I	11	62	Economy room set temperature on Sunday	18.0	12.0	40.0	0.5°C	
I	11	63	1st ON time on Sunday	0:00	0:00	24:00	15min	
I	11	64	1st OFF time on Sunday	0:00	0:00	24:00	15min	
I	11	65	2nd ON time on Sunday	0:00	0:00	24:00	15min	
I	11	66	2nd OFF time on Sunday	0:00	0:00	24:00	15min	
I	11	67	3rd ON time on Sunday	0:00	0:00	24:00	15min	
I	11	68	3rd OFF time on Sunday	0:00	0:00	24:00	15min	
I	11	70	Time band is ON/OFF on Weekday (5days) 0=OFF 1=ON	0	0	1	-	
I	11	71	Comfort room set temperature on Weekday (5days)	20.0	12.0	40.0	0.5°C	
I	11	72	Economy room set temperature on Weekday (5days)	18.0	12.0	40.0	0.5°C	
I	11	73	1st ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	74	1st OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	75	2nd ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	76	2nd OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	77	3rd ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	78	3rd OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	11	80	Time band is ON/OFF on Weekend (2days) 0=OFF 1=ON	0	0	1	-	
I	11	81	Comfort room set temperature on Weekend (2days)	20.0	12.0	40.0	0.5°C	
I	11	82	Economy room set temperature on Weekend (2days)	18.0	12.0	40.0	0.5°C	
I	11	83	1st ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	84	1st OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	85	2nd ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	86	2nd OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	87	3rd ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	88	3rd OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	11	90	Time band is ON/OFF on Everyday (7days) 0=OFF 1=ON	0	0	1	-	
I	11	91	Comfort room set temperature on Everyday (7days)	20.0	12.0	40.0	0.5°C	
I	11	92	Economy room set temperature on Everyday (7days)	18.0	12.0	40.0	0.5°C	
I	11	93	1st ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	11	94	1st OFF time on Everyday (7days)	0:00	0:00	24:00	15min	
I	11	95	2nd ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	11	96	2nd OFF time on Everyday (7days)	0:00	0:00	24:00	15min	
I	11	97	3rd ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	11	98	3rd OFF time on Everyday (7days)	0:00	0:00	24:00	15min	

Time bands settings of Heating/Cooling (Zone2)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	12	00	Time band is ON/OFF on Monday 0=OFF 1=ON	0	0	1	-	
I	12	01	Comfort room set temperature on Monday	20.0	12.0	40.0	0.5°C	
I	12	02	Economy room set temperature on Monday	18.0	12.0	40.0	0.5°C	
I	12	03	1st ON time on Monday	0:00	0:00	24:00	15min	
I	12	04	1st OFF time on Monday	0:00	0:00	24:00	15min	
I	12	05	2nd ON time on Monday	0:00	0:00	24:00	15min	
I	12	06	2nd OFF time on Monday	0:00	0:00	24:00	15min	
I	12	07	3rd ON time on Monday	0:00	0:00	24:00	15min	
I	12	08	3rd OFF time on Monday	0:00	0:00	24:00	15min	
I	12	10	Time band is ON/OFF on Tuesday 0=OFF 1=ON	0	0	1	-	
I	12	11	Comfort room set temperature on Tuesday	20.0	12.0	40.0	0.5°C	
I	12	12	Economy room set temperature on Tuesday	18.0	12.0	40.0	0.5°C	
I	12	13	1st ON time on Tuesday	0:00	0:00	24:00	15min	
I	12	14	1st OFF time on Tuesday	0:00	0:00	24:00	15min	
I	12	15	2nd ON time on Tuesday	0:00	0:00	24:00	15min	
I	12	16	2nd OFF time on Tuesday	0:00	0:00	24:00	15min	
I	12	17	3rd ON time on Tuesday	0:00	0:00	24:00	15min	
I	12	18	3rd OFF time on Tuesday	0:00	0:00	24:00	15min	
I	12	20	Time band is ON/OFF on Wednesday 0=OFF 1=ON	0	0	1	-	
I	12	21	Comfort room set temperature on Wednesday	20.0	12.0	40.0	0.5°C	
I	12	22	Economy room set temperature on Wednesday	18.0	12.0	40.0	0.5°C	
I	12	23	1st ON time on Wednesday	0:00	0:00	24:00	15min	
I	12	24	1st OFF time on Wednesday	0:00	0:00	24:00	15min	
I	12	25	2nd ON time on Wednesday	0:00	0:00	24:00	15min	
I	12	26	2nd OFF time on Wednesday	0:00	0:00	24:00	15min	
I	12	27	3rd ON time on Wednesday	0:00	0:00	24:00	15min	
I	12	28	3rd OFF time on Wednesday	0:00	0:00	24:00	15min	
I	12	30	Time band is ON/OFF on Thursday 0=OFF 1=ON	0	0	1	-	
I	12	31	Comfort room set temperature on Thursday	20.0	12.0	40.0	0.5°C	
I	12	32	Economy room set temperature on Thursday	18.0	12.0	40.0	0.5°C	
I	12	33	1st ON time on Thursday	0:00	0:00	24:00	15min	
I	12	34	1st OFF time on Thursday	0:00	0:00	24:00	15min	
I	12	35	2nd ON time on Thursday	0:00	0:00	24:00	15min	
I	12	36	2nd OFF time on Thursday	0:00	0:00	24:00	15min	
I	12	37	3rd ON time on Thursday	0:00	0:00	24:00	15min	
I	12	38	3rd OFF time on Thursday	0:00	0:00	24:00	15min	
I	12	40	Time band is ON/OFF on Friday 0=OFF 1=ON	0	0	1	-	
I	12	41	Comfort room set temperature on Friday	20.0	12.0	40.0	0.5°C	
I	12	42	Economy room set temperature on Friday	18.0	12.0	40.0	0.5°C	
I	12	43	1st ON time on Friday	0:00	0:00	24:00	15min	
I	12	44	1st OFF time on Friday	0:00	0:00	24:00	15min	
I	12	45	2nd ON time on Friday	0:00	0:00	24:00	15min	
I	12	46	2nd OFF time on Friday	0:00	0:00	24:00	15min	
I	12	47	3rd ON time on Friday	0:00	0:00	24:00	15min	
I	12	48	3rd OFF time on Friday	0:00	0:00	24:00	15min	

Time bands settings of Heating/Cooling (Zone2)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	12	50	Time band is ON/OFF on Saturday 0=OFF 1=ON	0	0	1	-	
I	12	51	Comfort room set temperature on Saturday	20.0	12.0	40.0	0.5°C	
I	12	52	Economy room set temperature on Saturday	18.0	12.0	40.0	0.5°C	
I	12	53	1st ON time on Saturday	0:00	0:00	24:00	15min	
I	12	54	1st OFF time on Saturday	0:00	0:00	24:00	15min	
I	12	55	2nd ON time on Saturday	0:00	0:00	24:00	15min	
I	12	56	2nd OFF time on Saturday	0:00	0:00	24:00	15min	
I	12	57	3rd ON time on Saturday	0:00	0:00	24:00	15min	
I	12	58	3rd OFF time on Saturday	0:00	0:00	24:00	15min	
I	12	60	Time band is ON/OFF on Sunday 0=OFF 1=ON	0	0	1	-	
I	12	61	Comfort room set temperature on Sunday	20.0	12.0	40.0	0.5°C	
I	12	62	Economy room set temperature on Sunday	18.0	12.0	40.0	0.5°C	
I	12	63	1st ON time on Sunday	0:00	0:00	24:00	15min	
I	12	64	1st OFF time on Sunday	0:00	0:00	24:00	15min	
I	12	65	2nd ON time on Sunday	0:00	0:00	24:00	15min	
I	12	66	2nd OFF time on Sunday	0:00	0:00	24:00	15min	
I	12	67	3rd ON time on Sunday	0:00	0:00	24:00	15min	
I	12	68	3rd OFF time on Sunday	0:00	0:00	24:00	15min	
I	12	70	Time band is ON/OFF on Weekday (5days) 0=OFF 1=ON	0	0	1	-	
I	12	71	Comfort room set temperature on Weekday (5days)	20.0	12.0	40.0	0.5°C	
I	12	72	Economy room set temperature on Weekday (5days)	18.0	12.0	40.0	0.5°C	
I	12	73	1st ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	74	1st OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	75	2nd ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	76	2nd OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	77	3rd ON time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	78	3rd OFF time on Weekday (5days)	0:00	0:00	24:00	15min	
I	12	80	Time band is ON/OFF on Weekend (2days) 0=OFF 1=ON	0	0	1	-	
I	12	81	Comfort room set temperature on Weekend (2days)	20.0	12.0	40.0	0.5°C	
I	12	82	Economy room set temperature on Weekend (2days)	18.0	12.0	40.0	0.5°C	
I	12	83	1st ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	84	1st OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	85	2nd ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	86	2nd OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	87	3rd ON time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	88	3rd OFF time on Weekend (2days)	0:00	0:00	24:00	15min	
I	12	90	Time band is ON/OFF on Everyday (7days) 0=OFF 1=ON	0	0	1	-	
I	12	91	Comfort room set temperature on Everyday (7days)	20.0	12.0	40.0	0.5°C	
I	12	92	Economy room set temperature on Everyday (7days)	18.0	12.0	40.0	0.5°C	
I	12	93	1st ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	12	94	1st OFF time on Everyday (7days)	0:00	0:00	24:00	15min	
I	12	95	2nd ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	12	96	2nd OFF time on Everyday (7days)	0:00	0:00	24:00	15min	
I	12	97	3rd ON time on Everyday (7days)	0:00	0:00	24:00	15min	
I	12	98	3rd OFF time on Everyday (7days)	0:00	0:00	24:00	15min	

Time bands settings of DHW

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	13	01	DHW Comfort 1st ON time	0:00	0:00	24:00	15min	
I	13	02	DHW Comfort 1st OFF time	0:00	0:00	24:00	15min	
I	13	03	DHW Comfort 2nd ON time	0:00	0:00	24:00	15min	
I	13	04	DHW Comfort 2nd OFF time	0:00	0:00	24:00	15min	
I	13	05	DHW Comfort 3rd ON time	0:00	0:00	24:00	15min	
I	13	06	DHW Comfort 3rd OFF time	0:00	0:00	24:00	15min	
I	13	11	Low tariff 1st ON time	0:00	0:00	24:00	15min	
I	13	12	Low tariff 1st OFF time	0:00	0:00	24:00	15min	
I	13	13	Low tariff 2nd ON time	0:00	0:00	24:00	15min	
I	13	14	Low tariff 2nd OFF time	0:00	0:00	24:00	15min	
I	13	15	Low tariff 3rd ON time	0:00	0:00	24:00	15min	
I	13	16	Low tariff 3rd OFF time	0:00	0:00	24:00	15min	
I	13	21	Night mode 1st ON time	0:00	0:00	24:00	15min	
I	13	22	Night mode 1st OFF time	0:00	0:00	24:00	15min	
I	13	23	Night mode 2nd ON time	0:00	0:00	24:00	15min	
I	13	24	Night mode 2nd OFF time	0:00	0:00	24:00	15min	
I	13	25	Night mode 3rd ON time	0:00	0:00	24:00	15min	
I	13	26	Night mode 3rd OFF time	0:00	0:00	24:00	15min	

Water temperature set points of Heating/Cooling

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	21	00	Heating Zone1, enable Outgoing water set point 0=Fixed set point 1=Climatic curve	0	0	1	-	
I	21	01	Heating Zone1, Fixed Outgoing water set point in Heating	45.0	23.0	60.0	0.5°C	
I	21	02	Max. Outgoing water temperature in Heating mode (Tm1) Zone1	45.0	23.0	60.0	0.5°C	
I	21	03	Min. Outgoing water temperature in Heating mode (Tm2) Zone1	30.0	23.0	60.0	0.5°C	
I	21	04	Min. Outdoor air temperature corresponding to max. Outgoing water temperature (Te1) Zone1	0.0	-20.0	50.0	0.5°C	
I	21	05	Max. Outdoor air temperature corresponding to max. Outgoing water temperature (Te2) Zone1	20.0	0.0	40.0	0.5°C	
I	21	10	Heating Zone2, enable Outgoing water set point 0=Fixed set point 1=Climatic curve enabled	0	0	1	-	
I	21	11	Heating Zone2, Fixed Outgoing water set point in Heating.	45.0	23.0	60.0	0.5°C	
I	21	12	Max. Outgoing water temperature in Heating mode (Tm1) Zone2	45.0	23.0	60.0	0.5°C	
I	21	13	Min. Outgoing water temperature in Heating mode (Tm2) Zone2	30.0	23.0	60.0	0.5°C	
I	21	14	Min. Outdoor air temperature corresponding to max. Outgoing water temperature (Te1) Zone2	0.0	-20.0	50.0	0.5°C	
I	21	15	Max. Outdoor air temperature corresponding to max. Outgoing water temperature (Te2) Zone2	20.0	0.0	40.0	0.5°C	
I	21	20	Cooling Zone1, enable Outgoing water set point 0=Fixed set point 1=Climatic curve enabled	0	0	1	-	
I	21	21	Cooling Zone1, Fixed Outgoing water set point in Cooling	7.0	7.0	23.0	0.5°C	
I	21	22	Max. Outgoing water temperature in Cooling mode (Tm1) Zone1	20.0	7.0	23.0	0.5°C	
I	21	23	Min. Outgoing water temperature in Cooling mode (Tm2) Zone1	18.0	7.0	23.0	0.5°C	

Water temperature set points of Heating/Cooling

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	21	24	Min. Outdoor air temperature corresponding to max. Outgoing water temperature (Te1) Zone1	25.0	0.0	50.0	0.5°C	
I	21	25	Max. Outdoor air temperature corresponding to max. Outgoing water temperature (Te2) Zone1	35.0	0.0	50.0	0.5°C	
I	21	30	Cooling Zone2, enable Outgoing water set point 0=Fixed set point 1=Climatic Curve Enabled	0	0	1	-	
I	21	31	Cooling Zone2, Fixed Outgoing water set point in Cooling	7.0	7.0	23.0	0.5°C	
I	21	32	Max. Outgoing water temperature in Cooling mode (Tm1) Zone2	20.0	7.0	23.0	0.5°C	
I	21	33	Min. Outgoing water temperature in Cooling mode (Tm2) Zone2	18.0	7.0	23.0	0.5°C	
I	21	34	Min. Outdoor air temperature corresponding to max. Outgoing water temperature (Te1) Zone2	25.0	0.0	50.0	0.5°C	
I	21	35	Max. Outdoor air temperature corresponding to max. Outgoing water temperature (Te2) Zone2	35.0	0.0	50.0	0.5°C	
I	21	41	Hysteresis of water set point in Heating and DHW	8.0	0.5	10.0	0.5°C	
I	21	42	Hysteresis of water set point in Cooling	8.0	0.5	10.0	0.5°C	
I	21	51	Low tariff deferential water set point for Heating	5.0	0.0	60.0	0.5°C	
I	21	52	Low tariff deferential water set point for Cooling	5.0	0.0	60.0	0.5°C	
I	21	61	Buffer tank set point for Heating	45.0	23.0	60.0	0.5°C	
I	21	62	Buffer tank set point for Cooling	7.0	7.0	23.0	0.5°C	

DHW (Domestic Hot Water)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	31	01	DHW production priority setting 0=DHW is unavailable 1=DHW is available, and priority DHW over space Heating 2=DHW is available, and priority space Heating over DHW	0	0	2	-	
I	31	02	Type of configuration to heat the DHW 0=Heat pump + Heater 1=Heat pump only 2=Heater only	1	0	2	-	
I	31	11	DHW Comfort set temperature	50.0	40.0	60.0	0.5°C	
I	31	12	DHW Economy set temperature	40.0	30.0	50.0	0.5°C	
I	31	13	DHW set point hysteresis	3.0	0.5	10.0	0.5°C	
I	31	14	DHW Over boost mode set point	60.0	50.0	90.0	0.5°C	
I	31	15	DHW Over boost mode set point hysteresis	5.0	0.5	10.0	0.5°C	
I	31	21	Max. time for DHW request	60	0	900	1min	
I	31	22	Min. time for space Heating/Cooling	15	0	900	1min	
S	31	31	Delay time on DHW heater from OFF compressor	30	0	900	1sec	fixed value
I	31	32	Conditions to be available DHW heaters 0=always enabled 1=depends on Outdoor air temperature	1	0	1	-	
I	31	33	Outdoor air temperature to enable DHW heaters	-5.0	-20.0	20.0	0.5°C	
I	31	34	Outdoor air temperature hysteresis to disable DHW heaters	5.0	0.5	10.0	0.5°C	
I	31	40	Anti-legionella function 0=disable 1=enable	0	0	1	-	
I	31	41	Anti-legionella operation day of week 0=Mon, 1=Tue, 2=Wed, 3=Thu, 4=Fri, 5=Sat, 6=Sun	0	0	6	-	
I	31	42	Start time of the day at which the DHW should be heated for Anti-legionella	1:00	0:00	23:00	1:00	

DHW (Domestic Hot Water)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
S	31	43	Interval time period defining how long the set point	10	0	60	1min	fixed value
S	31	44	Anti-legionella set point	65.0	60.0	75.0	0.5°C	
S	31	45	Anti-legionella hysteresis	5.0	0.5	10.0	0.5°C	
S	31	46	Number of cycles to alarm which the legionella prevention cycle in time, determine alarm	3	1	5	-	
S	31	47	Max. time that if cannot complete the Legionella prevention cycle in time, determined alarm	2:00	1:00	3:00	15min	

HP unit

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	41	00	The HP unit turns ON/OFF based on 0=Room set point 1=Water set point	1	0	1	-	
I	41	01	Hysteresis of Heating Room air set point	0.5	0.5	5.0	0.5°C	
I	41	02	Hysteresis of Cooling Room air set point	0.5	0.5	5.0	0.5°C	
I	41	11	Max. frequency of Night mode	80	50	100	5%	
I	41	21	Min. time compressor ON – OFF time	0	0	0	1sec	
I	41	22	Delay time pump OFF from compressor OFF	30	0	900	1sec	
I	41	23	Delay time compressor ON from pump ON	30	0	900	1sec	
S	41	30	Max. Outgoing water set point in Heating and DHW	60.0	23.0	60.0	0.5°C	
S	41	31	Min. Outgoing water set point in Cooling	7.0	7.0	23.0	0.5°C	
S	41	32	The number of retry to attenuate Outgoing water set point	3	1	5	-	
S	41	33	Max. Outdoor air temperature of operation limits	-5.0	-20.0	0.0	0.5°C	
S	41	34	Min. Outdoor air temperature of operation limits	-20.0	-20.0	0.0	0.5°C	
S	41	35	Outgoing water set point of operation limits	55.0	23.0	60.0	0.5°C	

Water pump

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	42	00	Type of configuration of Main water pump 0=always ON 1=ON/OFF based on Buffer tank temperature 2=ON/OFF based on Sniffing cycles	0	0	2	-	To be set to the following combinations Par5111=0 →Par4200=0 or 2 Par5111=1 →Par4200=0 or 1 or 2
I	42	01	Time ON Main water pump for Sniffing cycle	3	1	15	1min	
I	42	02	Time OFF Main water pump	5	5	30	1min	
I	42	03	Delay time OFF Main water pump from OFF compressor	3	1	15	1min	
I	42	11	OFF time for Unlock pump function start	48	0	240	1Hr	
I	42	12	Time ON Main water pump for Unlock pump function	5	0	10	1sec	
I	42	13	Time ON water pump1 for Unlock pump function	5	0	10	1sec	
I	42	14	Time ON water pump2 for Unlock pump function	5	0	10	1sec	

Water pump

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	42	20	Type of operation of additional water pump 0=disable 1=depending on Main water pump setting 2=depending on Main water pump setting but always OFF when the DHW mode is activated 3=always ON, apart if any alarms are activated or if the HP unit is in OFF mode 4=ON/OFF based on Room air temperature	0	0	4	-	

Frost protection

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
S	43	00	Frost protection on room temperature 0=disable 1=enable	1	0	1	-	
I	43	01	Start temperature of Frost protection on Room air temperature	14.0	0.0	40.0	0.5°C	
I	43	02	Hysteresis of Room air temperature of Frost protection	1.0	0.5	5.0	0.5°C	
I	43	03	Water temperature of Frost protection	35.0	10.0	60.0	0.5°C	
I	43	04	Delay time OFF Main water pump from OFF Frost protection operation function	30	0	120	1sec	
S	43	10	Frost protection by Outdoor air temperature 0=disable 1=enable	1	0	1	-	
I	43	11	Start temperature of Frost protection on Outdoor air temperature	4.0	0.0	10.0	0.5°C	
I	43	12	Hysteresis of Outdoor air temperature	3.0	0.5	5.0	0.5°C	
I	43	13	Backup heater set point during Frost protection	4.0	0.0	10.0	0.5°C	
I	43	14	Hysteresis of Outgoing water temperature	3.0	0.5	5.0	0.5°C	
S	43	20	Frost protection based on Outgoing water temperature 0=disable 1=enable	1	0	1	-	
I	43	21	Start temperature of Frost protection on Outgoing water temperature	4.0	0.0	10.0	0.5°C	
I	43	22	Hysteresis of Outgoing water temperature	3.0	0.5	5.0	0.5°C	
S	43	30	DHW storage frost protection 0=disable 1=enable	1	0	1	-	
I	43	31	Start temperature of Frost protection on DHW tank temperature	5.0	0.0	60.0	0.5°C	
I	43	32	Hysteresis of DHW tank temperature	3.0	0.5	5.0	0.5°C	
S	43	40	Secondary system circuit frost protection 0=disable 1=enable	1	0	1	-	

Dehumidifier

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	44	01	Room relative humidity value	60	0	100	1%	
I	44	02	Hysteresis value	10	1	100	1%	
I	44	03	Humidity sensor property, Voltage value1	0.0	0.0	10.0	0.1V	
I	44	04	Humidity sensor property, Voltage value2	10.0	0.0	10.0	0.1V	
I	44	05	Humidity sensor property, Function value1	0	0	100	1%	
I	44	06	Humidity sensor property, Function value2	100	0	100	1%	
I	44	10	Compensation for room humidity 0=disable 1=enable	1	0	1	-	

Dehumidifier

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	44	11	Room relative humidity value to start increasing Outgoing water temperature set point	55	0	100	1%	
I	44	12	Max. Outgoing temperature hysteresis corresponding to 100% relative humidity	10.0	0.5	20.0	0.5°C	

Mixing valve, 3way valve

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	45	01	Mixing valve runtime (from the fully closed to the fully open position)	120	0	900	10sec	
S	45	02	Mixing valve integral factor	60	0	900	10sec	
S	45	03	Max. water temperature in mixing circuit	50.0	0.0	60.0	0.5°C	
I	45	11	3way valve change over time	60	1	900	1sec	
S	45	21	Flow switch alarm delay time at pump start up	15	0	900	1sec	
S	45	22	Flow switch alarm delay time in steady operation of the water pump	2	0	900	1sec	
S	45	23	The number of retry until displaying alarm	5	0	10	1	
S	45	24	The time of repeating retry until displaying alarm	60	0	120	1min	
S	45	25	Time to display alarm when flow switch OFF is detected repeatedly	120	0	900	1sec	

Backup heater

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	46	00	Backup heater type of function 0=disable 1=Replacement mode 2=Emergency mode 3=Supplementary mode	0	0	3	-	Par4600 and Par4700 are synchronized Par4600=1, 2, 3 →Par4700=0 Par4700=1, 2 →Par4600=0
I	46	01	Manual water set point	50.0	40.0	60.0	0.5°C	
I	46	02	Manual water temperature hysteresis	5.0	0.5	10.0	0.5°C	
S	46	03	Delay time of the heater OFF that avoid flow switch alarm	10	1	60	1sec	
I	46	04	Heater activation delay time	5	0	900	1min	
I	46	05	Integration time for starting heaters	600	0	900	°C×sec	(Outgoing water temperature – Actual temperature) x Integration time calculate every 1sec.
I	46	10	Conditions to be available Backup heaters 0=always enabled 1=depends on Outdoor air temperature	1	0	1	-	
I	46	11	Outdoor air temperature to enable Backup heaters and disable compressor	-5.0	-20.0	20.0	0.5°C	
I	46	12	Outdoor air temperature hysteresis to disable Backup heaters and enable compressor	5.0	0.5	10.0	0.5°C	
I	46	13	Outdoor air temperature to enable Backup heaters (Supplementary mode)	5.0	-20.0	20.0	0.5°C	
I	46	14	Outdoor air temperature hysteresis to disable Backup heaters (Supplementary mode)	5.0	0.5	10.0	0.5°C	
I	46	20	Freeze protection functions 0=disable 1=enabled during Start-up 2=enabled during Defrost 3=enabled during Start-up and Defrost	0	0	3	-	
I	46	21	Outgoing water temperature set point during Start-up	8.0	0.0	60.0	0.5°C	
I	46	22	Hysteresis water temperature set point during Start-up	5.0	0.5	10.0	0.5°C	
I	46	23	Outgoing water temperature set point during Defrost	24.0	10.0	50.0	0.5°C	
I	46	24	Hysteresis water temperature set point during Defrost	5.0	0.5	10.0	0.5°C	

EHS (External heat source)

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	47	00	EHS type of function 0=disable 1=Replacement mode 2=Supplementary mode	0	0	2	-	Par4600 and Par4700 are synchronized Par4600=1, 2, 3 →Par4700=0 Par4700=1, 2 →Par4600=0
I	47	01	Conditions to be available EHS 0=always enabled 1=depends on Outdoor air temperature	1	0	1	-	
I	47	02	Outdoor air temperature to enable EHS and disable compressor	-5.0	-20.0	20.0	0.5°C	
I	47	03	Outdoor air temperature hysteresis to disable EHS and enable compressor	5.0	0.5	10.0	0.5°C	
I	47	04	Outdoor air temperature to enable EHS (Supplementary mode)	5.0	-20.0	20.0	0.5°C	
I	47	05	Outdoor air temperature hysteresis to disable EHS (Supplementary mode)	5.0	0.5	10.0	0.5°C	
I	47	06	EHS activation delay time	5	0	900	1min	
I	47	07	Integration time for starting EHS	600	0	900	°C×sec	(Outgoing water temperature – Actual temperature) x Integration time Calculate every 1 sec

Input/Output

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	51	01	Terminal 1-2-3 : Remote Controller 1=enable	1	1	1	-	
I	51	04	Terminal 4-5-6 : 3way mixing valve 0=disable 1=enable	0	0	1	-	
I	51	07	Terminal 7-8 : DHW tank temperature probe 0=disable 1=enable	0	0	1	-	
I	51	09	Terminal 9-10 : Outdoor air temperature probe (additional) 0=disable 1=enable	0	0	1	-	
I	51	11	Terminal 11-12 : Buffer tank temperature probe 0=disable 1=enable	0	0	1	-	To be set to the following combinations Par5111=0 →Par4200=0 or 2 Par5111=1 →Par4200=0 ~ 7
I	51	13	Terminal 13-14 : Mix Water temperature probe 0=disable 1=enable	0	0	1	-	
I	51	15	Terminal 15-16-32 : RS485 Mod Bus 0=disable 1=enable	1	0	1	-	
I	51	17	Terminal 17-18 : Humidity sensor 0=disable 1=enable	0	0	1	-	
I	51	19	Terminal 19-18 : DHW remote contact 0=disable (Remote controller only) 1=enable	0	0	1	-	
I	51	20	Terminal 20-21 : ON/OFF remote contact or EHS Alarm input 0=disable (Remote controller only) 1=ON/OFF remote contact 2=EHS Alarm input	0	0	2	-	ON/OFF by Remote controller 0=enable 1=ON/disable OFF/enable 2=enable

Input/Output

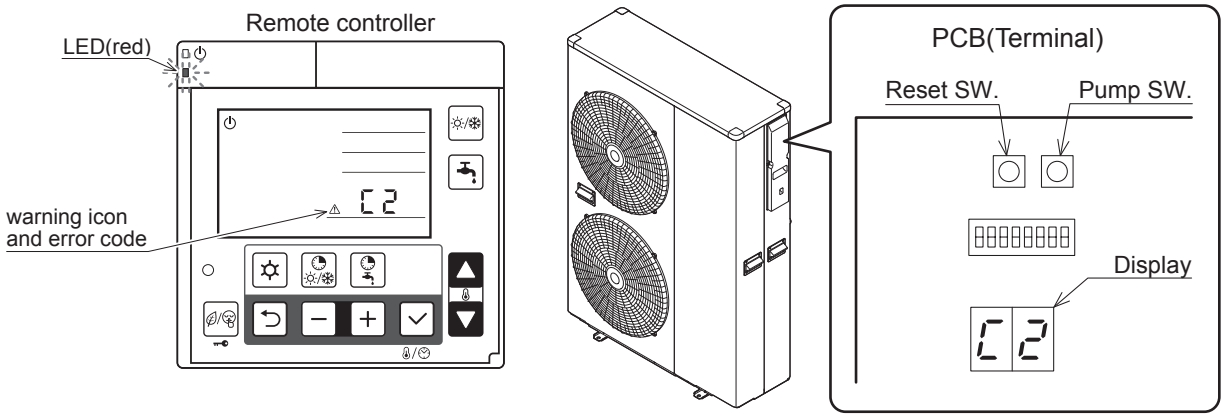
Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
I	51	22	Terminal 22-23 : Dual set point control 0=disable 1=enable	1	0	1	-	
I	51	24	Terminal 24-25 : Heating/Cooling mode remote contact 0=disable (Remote controller only) 1=Cooling is CLOSE contact, Heating is OPEN contact. 2=Cooling is OPEN contact, Heating is CLOSE contact	0	0	2	-	
I	51	26	Terminal 26-27 : Flow switch 0=disable 1=enable	1	0	1	-	
I	51	28	Terminal 28-29 : Night mode 0=disable (Remote controller only) 1=enable	0	0	1	-	Par5128 and Par5130 are synchronized in the same value
I	51	30	Terminal 30-31 : Low tariff 0=disable (Remote controller only) 1=enable	0	0	1	-	
I	51	41	Terminal 41-42 : EHS (External heat source for space heating) 0=disable 1=enable	0	0	1	-	
I	51	43	Terminal 43-44 : Heating/Cooling mode output 0=disable 1=Indication of Cooling mode (CLOSE=Cooling) 2=indication of Heating mode (CLOSE=Heating)	0	0	2	-	
I	51	45	Terminal 45 : Dehumidifier 0=disable 1=enable	0	0	1	-	
I	51	46	Terminal 46 : DHW Electric heater or Backup heater 0=DHW Electric heater 1=Backup heater	0	0	1	-	
I	51	47	Terminal 47 : Alarm (Configurable output) 0=disable 1=Alarm 2=Ambient temperature reached	0	0	2	-	
I	51	48	Terminal 48 : Pump1 0=disable 1=1st Additional water pump1 for Zone1	0	0	1	-	
I	51	49	Terminal 49 : Pump2 0=disable 1=2nd Additional water pump2 for Zone2	0	0	1	-	
I	51	50	Terminal 50-51-52 : DHW 3way valve 1=enable	1	1	1	-	

Modbus RS485 setting

Level	Parameter		Function description	Display & Input value				Remarks
	Group	Code		Default	min.	Max.	Unit	
S	52	01	Address BMS	1	1	207	-	
S	52	02	Baud rate 0=1200bps 1=2400bps 2=4800bps 3=9600bps 4=19200bps	4	0	4	-	
S	52	03	Stop bit	2	1	2	-	
S	52	04	Parity mode 0=Even 1=Odd 2=None	2	0	2	-	

Error code display

In the event that an error is detected, the error code will be displayed in Remote controller and PCB (Terminal) display.
As for the display in Remote controller, LED (red) on ON/OFF switch will be flashed, and warning icon and 2 or 3digits error code will be displayed on LCD screen. Error code (2digits) will be displayed on the PCB (Terminal) display.



Error history display

• The previous 10 error codes can be displayed on PCB (Terminal) display.

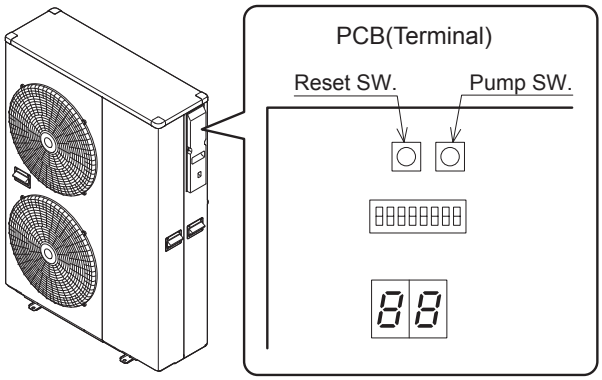
Procedure to display on PCB(Terminal) display

• Press Pump SW and Reset SW on PCB (Terminal) at the same time for 5 seconds, error history order and error code will be displayed alternately. The first one is the latest error code.
• Press Pump SW to go up the history order and it is up to 10th error code then go back to the latest error code.
• When there is no error history, “--” will be displayed.

If no operation is carried out for 5 minutes, or the same procedure is operated to display error history, the display returns to normal display.

Deletion of the error history

• During error code displaying, press Reset SW for 10 seconds to delete the error history.



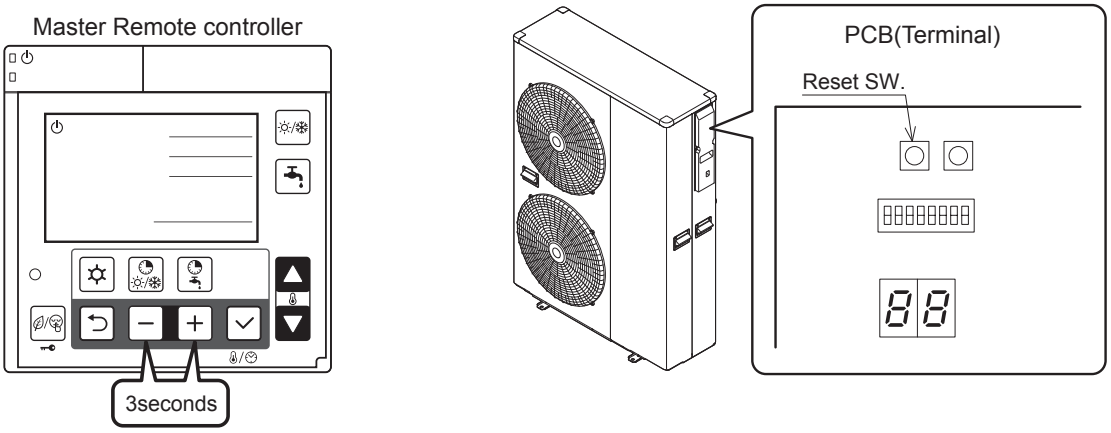
Method of reset error code display

The procedure to reset the error display differs by error codes and there are 3 types to reset; Auto, Power OFF, and Manual.
See “List of Error codes” for the procedure to reset each error code.

Auto : Automatically. Once it returns to normal condition, the error will be reset.
When the unit stops, it may be unable to reset automatically. Then, it shall be reset manually.

Power OFF : Manually. If HP unit returns to normal condition, turn OFF the power supply once and turn ON again, then the error will be reset.

Manual : Manually. To reset the error, press – and + button of the Master Remote controller at the same time for 3 seconds, or press Reset SW on the PCB (Terminal).
It is possible to reset by turning OFF → ON of power supply.



List of Error codes

HP unit alarms

Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
—	—	Power supply	Check the power supply	Confirm the power supply	—	—
		Fuse CF1 (0643XU : 250V 15A / 1043XU : 250V 25A / 1242XU : 250V T30A / 1643XU : 250V T30A)	Check the electric continuity of Fuse CF1 by tester	If CF1 is blown, PCB (Main) should be replaced	Fig. 1	
		Fuse CF3 (250V 3A)	Check the electric continuity of Fuse CF3 by tester	If CF3 is blown, PCB (Main) should be replaced	Fig. 1	
		Fuse CF4 (0643XU : 250V 3A / 1043XU : 250V 3A)	Check the electric continuity of Fuse CF4 by tester	If CF4 is blown, PCB (Main) should be replaced	Fig. 1	
		PCB (Main)	Other than described above	PCB (Main) should be replaced	—	
A0	DC voltage error	Fan motor	Operate without lead wire for Fan motor Check the electric continuity of Fuse by tester	If the same error code appears again, PCB (Main) or Pump should be replaced If other error codes appear, Fan motor should be replaced	—	Power OFF
		Fuse CF6 (1242XU : 250V T3.15A / 1643XU : 250V T3.15A)		If CF6 is blown,it should be replaced	Fig. 2	
		Fuse CF7 (1043XU : 250V T3.15A / 1242XU : 250V T3.15A / 1643XU : 250V T3.15A)		If CF7 is blown,it should be replaced	Fig. 2	
		Pump	Operate without lead wire for Pump	If the same error code appears again, PCB (Main) or Fan motor should be replaced If other error codes appear, Pump should be replaced	—	
		Reactor	Check the resistance by tester (0.1Ω at 20°C)	If the reactor is faulty, it should be replaced	—	
		PCB (Main)	Check the voltage of Fan motor by tester Check the voltage of Pump by tester	If the voltage is abnormal, PCB (Main) should be replaced	Fig. 2,4	
		Power supply	Check the power supply	Confirm the power supply	—	
A1	Discharge temperature error	Sensor, Temp. Discharge	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 2	Auto
		Gas leakage	Check the service valve and refrigerant circuit (pipe)	Collect refrigerant once, then recharge with prescribed mass	—	
A2	Protective action against excess Current DC current detection	Unreasonable operation under/overload	Check the place of installation (blockage of air inlet & outlet) Check the excess gas	Ensure the installation position to avoid blockage of air inlet & outlet	—	Manual
				If excess gas is observed, collect all refrigerant once, then recharge with prescribed mass		
		Drop of power voltage	Check the power voltage (230V)	Confirm the power supply voltage (230V)		
		PCB (Main)	Operate without the junction connector of Compressor lead wire	If the same error code appears again, PCB (Main) should be replaced		
		Momentary stop of power (In case of lightning)	—	Restart operation		
		Compressor	Other than described above	Compressor should be replaced		
A3	CT disconnection	PCB (Main)	—	PCB (Main) should be replaced	—	

Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
A4	Protective action against excess Current AC current detection	Unreasonable operation under/overload	Check the place of installation (blockage of air inlet & outlet) Check the excess gas	Ensure the installation position to avoid blockage of air inlet & outlet	—	Manual
				If excess gas is observed, collect all refrigerant once, then recharge with prescribed mass		
		Drop of power voltage	Check the power voltage (230V)	Confirm the power supply voltage (230V)		
		Momentary stop of power (In case of lightning)	—	Restart operation		
A5	Abnormal revolution of Compressor	Unreasonable operation under/overload	Check the place of installation (blockage of air inlet & outlet) Check the excess gas	Ensure the installation position to avoid blockage of air inlet & outlet	—	
				If excess gas is observed, collect all refrigerant once, then recharge with prescribed mass		
		Drop of power voltage	Check the power voltage (230V)	Confirm the power supply voltage (230V)		
		Fuse CF6 (0643XU : 250V 15A 1043XU : 250V 25A)	Check the electric continuity Fuse CF6 by tester	If CF6 is blown, PCB (Main) should be replaced	Fig. 3	
		Clogged the water Pump and/or water circuit	Check the Pump and water circuit	Remove the blockage, then restart operation	—	
		Drop of power voltage	Check the power voltage (230V) during operation	Confirm the power supply voltage (230V)		
		Momentary stop of power (In case of lightning)	—	Restart operation		
		Compressor or PCB (Main)	Other than described above	Compressor should be replaced		
A6	Suction temp. sensor error	Sensor, Temp. Suction	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	Auto
A7	Defrost temp. sensor error	Sensor, Temp. Defrost	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	
A8	Discharge temp. sensor error	Sensor, Temp. Discharge	Check the resistance by tester (*1)	If the sensor is faulty, it should be replaced	Table 2	
C1	Upper Fan motor error (1242XU 1643XU)	Fuse CF7 (250V T3.15A)	Check the electric continuity Fuse CF7 by tester	If CF7 is blown, Fan motor and CF7 should be replaced If CF7 is not blown, check the voltage of Fan motor If the voltage is normal, Fan motor should be replaced If the voltage is abnormal, PCB (Main) should be replaced	Fig. 2	Manual
		Fan motor (*2)				
		PCB (Main)				
C2	Outdoor temp. sensor error	Sensor, Temp. Outdoor	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 1	Auto

(*1) In case of detecting open circuit of the discharge temperature sensor, error display appears 10 minutes after start operating.
In case of detecting short circuit of the discharge temperature sensor, error display appears immediately.
(*2) When checking fan motor and/or pump, turn OFF the power supply completely and check at their terminal or connector.

Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
C3	Fan motor error (0643XU 1043XU) Lower Fan motor error (1242XU 1643XU)	Fan motor	Check the voltage of Fan motor by tester	If the voltage is normal, Fan motor should be replaced If the voltage is normal, PCB (Main) should be replaced	Fig. 2	Manual
		PCB (Main)				
		Fuse CF6 (1242XU:250V T3.15A 1643XU:250V T3.15A)	Check the electric continuity of Fuse CF6 by tester	If CF6 is blown, it should be replaced		
		Fuse CF7 (1043XU : 250V T3.15A)	Check the electric continuity of Fuse CF7 by tester	If CF7 is blown, it should be replaced		
C4	Rise of temperature of PCB (Main) (above 110°C)	Miss-installation	Check the place of installation (blockage of air inlet & outlet)	Ensure the installation position to avoid blockage of air inlet & outlet	—	
		Sensor, Temp. PCB (Main)	—	PCB (Main) should be replaced		
C5	PCB (Main) sensor error	Sensor, Temp. PCB (Main)	—	PCB (Main) should be replaced	—	Auto
C6	PCB (Main) error	PCB (Main)	—	PCB (Main) should be replaced	—	Power OFF
C7	PCB (Controller) serial error	Miss wiring or rare contact [PCB (Main) - PCB (Controller) connecting cable]	Check the wiring connection and rare contact	After correcting miss wiring, restart operation	—	Auto
		PCB (Controller)	Other than described above	PCB (Controller) should be replaced		
		PCB (Main)	Other than described above	PCB (Main) should be replaced		
		EARTH WIRE	—	Check if earth wire is properly installed		
C8	PCB (Main) error	PCB (Main)	Turn off the power supply, wait for about 3 minutes, then power up again	If the same error code appears, PCB (Main) should be replaced	—	Power OFF
			Check loose cable connections and contacts of reactor			
E4	Outgoing water temp. sensor error	Sensor, Temp. Outgoing water	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 4	Auto
E5	Return water temp. sensor error	Sensor, Temp. Return water	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 4	
E6	Plate heat exchanger temp. sensor error	Sensor, Temp. Plate heat exchanger	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	
FU	High pressure switch is operating	Outside air recirculation	Check the place of installation (blockage of air inlet & outlet)	Make sure the position doesn't block the air inlet and outlet	—	Manual
		Clogged water circuit	Check temperature difference of Outgoing/Return water (see Monitor display function) Large difference means flow rate is too low	Remove the blockage, then restart operation		
P1	Pump error	Pump (*2)	Check the voltage of Pump	If the voltage is normal, Pump should be replaced If the voltage is abnormal, PCB (Main) should be replaced	Fig. 4	
		PCB (Main)				
		Clogged the water Pump and/or water circuit	Check the pump and water circuit	Remove the blockage, then restart operation	—	
P3	High pressure switch error	High pressure switch	Check loose cable connections and contacts	If the same error code appears, high pressure switch should be replaced	—	Power OFF

Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
U1	Compressor overheat protection relay operation (1643XU)	Compressor overheat protection relay	Check the resistance by tester	If Compressor overheat protection relay blown, it should be replaced	Fig. 8	Manual
		Gas leakage	Check the service valve and refrigerant circuit (pipe)	Correct refrigerant once, then recharge with prescribed mass	—	
	— (1242XU)	—	—	PCB(Main) should be replaced	—	—
Not cool down Not warm up		Fuse CF2 (0643XU : 250V T3.15A 1043XU : 250V T3.15A 1242XU : 250V T5A 1643XU : 250V T5A)	Check the electric continuity of Fuse CF2 by tester	If CF2 is blown,it should be replaced and check the resistance of 4way valve and the resistance of Defrost heater by tester	Fig. 7	—
		4way valve	Check the resistance of 4way valve by tester	If 4way valve is blown,it should be replaced	Fig. 5	
		Defrost heater	Check the resistance of Defrost heater by tester	If Defrost heater is blown,it should be replaced	Fig. 6	
		Short cycle (insufficient air circulation)	Check the blockage of air inlet & outlet	Ensure the installation position to avoid blockage of air inlet & outlet	—	
		Sensor,Temp. Outgoing water and Return water	Check the resistance by tester	If any of these sensors is faulty, it should be replaced	Table 4	
		Gas leakage	Check the service valve and refrigerant circuit (pipe)	After fixing the leakage point,collect the refrigerant once,then recharge with prescribed mass	—	
		Clogged water circuit	Check temperature difference of Outgoing/Return water (see Monitor display function) Large difference means flow rate is too low	Remove the blockage,then restart operation	—	
		Electric expansion vessel	Check the resistance of Electric expansion vessel	If Electric expansion vessel is blown, it should be replaced	—	

PCB(Controller) and PCB(Terminal) alarms

Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
L0	EEPROM error	PCB(Controller) and PCB(EEPROM)	—	PCB(Controller) and PCB(EEPROM) should be replaced	—	Power OFF
L1	DHW temp. sensor error	Sensor,Temp. DHW tank	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	Auto
L2	Outdoor temp. sensor error	Sensor,Temp.Outdoor (Additional)	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 5	
L3	Buffer temp. sensor error	Sensor,Temp. Buffer tank	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	
L4	Mix water temp. sensor error	Sensor,Temp. Mix water	Check the resistance by tester	If the sensor is faulty, it should be replaced	Table 3	
L5	Humidity sensor error	Sensor, Humidity	Check the resistance by tester	If the sensor is faulty, it should be replaced	Fig. 9	Manual
L6	Flow switch error	Clogged the water pump and/or water circuit	Check the pump and the water circuit	Remove any obstructions, clean the water filter, unblock the pump	—	
		Flow switch	Other than described above	Flow switch should be replaced		
L7	Mixing valve error	Clogged the water pump and/or water circuit	Check the pump and the water circuit	Remove any obstructions,clean the water filter, unblock the pump	—	
		PCB(Terminal)	Check the voltage by tester	PCB(Terminal) should be replaced	Fig. 10,11	
		Mixing valve	Other than described above	Mixing valve should be replaced	—	

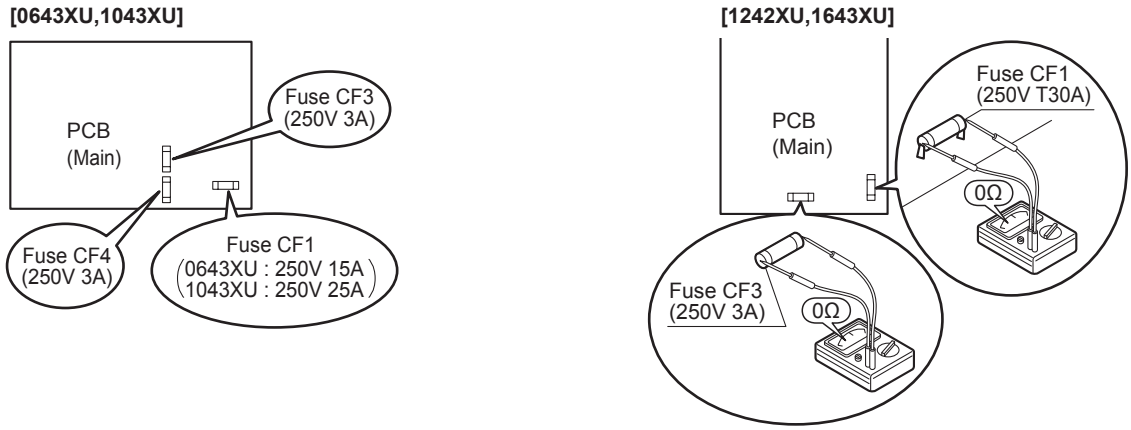
Error codes	Appearance, Portion, Parts seemed wrong		Method of check	Troubleshooting	Figure/ Table	Error reset
L8	Room temp. (Master Remote controller) error	Sensor,Temp.Room (Master Remote controller)	—	Master Remote controller should be replaced	—	Auto
L9	Room temp. (Slave Remote controller) error	Sensor,Temp.Room (Slave Remote controller)	—	Slave Remote controller should be replaced	—	
LC	Anti Legionella Function Not completed	DHW used during Anti Legionella	Check if DHW used during Anti Legionella	Restart operation, don't use much DHW during Anti Legionella	—	Auto(*3) Manual
		Clogged the water pump and/or water circuit	Check the pump and the water circuit	Remove any obstructions, clean the water filter, unblock the pump		
		Heat source setting failure	Check parameter and heat source	After correcting parameter settings or replace heat source		
740	Master Remote controller communication error	・Incorrect Master Remote controller wiring or Dip SW setting ・Loose interface connection cable or contacts	Check loose cable connections and contacts Check Dip SW setting (Back side of Remote controller)	After having corrected the wiring and Dip SW setting, restart operation	—	Auto
		Master Remote controller	Other than described above	Master Remote controller should be replaced		
		PCB(Controller)	Other than described above	PCB(Controller) should be replaced		
750	Slave Remote controller communication error	・Incorrect Slave Remote controller wiring or Dip SW setting ・Loose interface connection cable or contacts	Check loose cable connections and contacts Check Dip SW setting (Back side of Remote controller)	After having corrected the wiring and Dip SW setting,restart operation	—	Auto
		Slave Remote controller	Other than described above	Slave Remote controller should be replaced		
		PCB(Controller)	Other than described above	PCB(Controller) should be replaced		
E8	Remote controller communication error	・Incorrect Remote controller wiring ・Loose interface connection cable or contacts	Check loose cable connections and contacts	After having corrected the wiring, restart operation	—	
		Master or Slave Remote controller	Other than described above	Master or Slave Remote controller should be replaced		
		PCB(Controller)	Other than described above	PCB(Controller) should be replaced		
F5	PCB (Main) Communication error	・Incorrect PCB(Main) wiring ・Loose interface connection cable or contacts	Check loose cable connections and contacts	After having corrected the wiring, restart operation	—	
		PCB(Main)	Other than described above	PCB(Main) should be replaced		
		PCB(Controller)	Other than described above	PCB(Controller) should be replaced		
PCB(Terminal) can't be operated PCB(Terminal) doesn't display anything		Lead wire of PCB(Terminal)	Check lead wires are connected to the connectors properly	Connect the connectors to both PCB(Terminal) and PCB(Controller) steadily	—	—
			Ensure that there is no disconnection for the lead wires	Lead wires should be replaced		
		PCB(Terminal)	Other than described above	PCB(Terminal) should be replaced		
		PCB(Controller)	Other than described above	PCB(Controller) should be replaced		

(*3) When Anti Legionella Function has been completed, alarm display will reset automatically.

Check and troubleshooting

Method of check Voltage, Resistance, Continuity

[Fig. 1] Continuity of current Fuse on the PCB (Main)



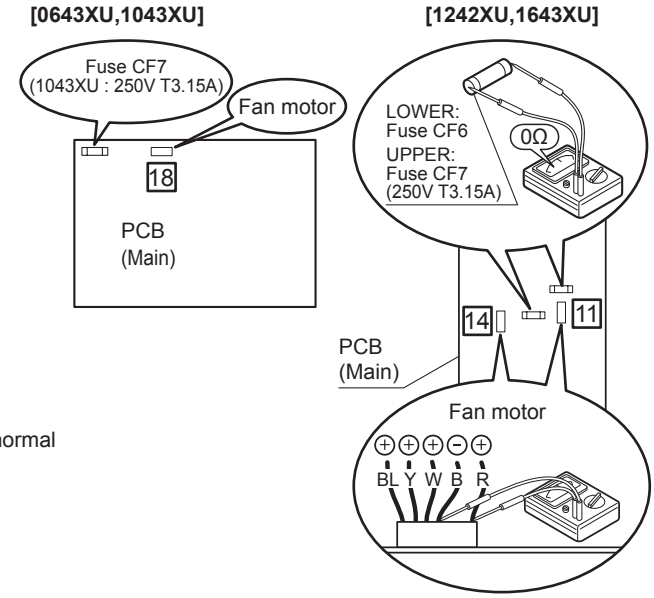
[Fig. 2] Voltage of Fan motor on the PCB (Main)

Fan motor (0643XU,1043XU)
Measure voltage between the connector pins of connector 18.
Connector 18 shall be checked during Heating or Cooling operation.
Measure voltage as follows without taking off the connector 18.

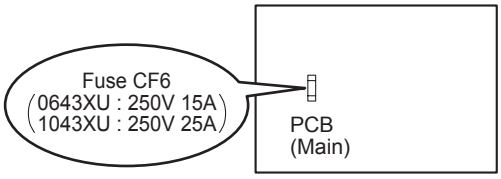
LOWER Fan motor (1242XU,1643XU)
Measure voltage between the connector pins of connector 11.
Connector 11 shall be checked during Heating or Cooling operation.
Measure voltage as follows without taking off the connector 11.

UPPER Fan motor (1242XU,1643XU)
Measure voltage between the connector pins of connector 14.
Connector 14 shall be checked during Heating or Cooling operation.
Measure voltage as follows without taking off the connector 14.

Between red ⊕ and black ⊖, approx. DC200~370V
Between yellow ⊕ and black ⊖, approx. DC3~7V
Between white ⊕ and black ⊖, approx. DC15V
] PCB (Main) is normal



[Fig. 3] Continuity of current Fuse on the PCB (Main)



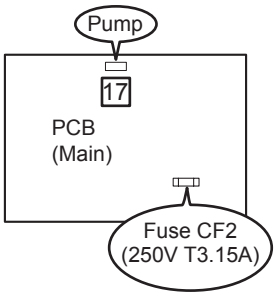
[Fig. 4] Voltage of Pump on the PCB (Main)

Pump (0643XU,1043XU)
Measure voltage between the connector pins of connector 17.
Connector 17 shall be checked during Heating or Cooling operation.
Measure voltage as follows without taking off the connector 17.

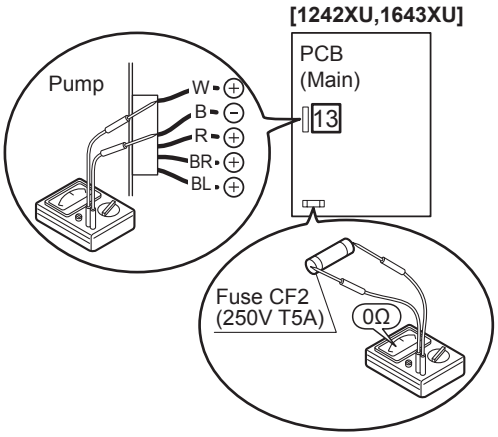
Pump (1242XU,1643XU)
Measure voltage between the connector pins of connector 13.
Connector 13 shall be checked during Heating or Cooling operation.
Measure voltage as follows without taking off the connector 13.

Between white ⊕ and black ⊖,approx. AC200~370V
Between brown ⊕ and black ⊖,approx. DC3~7V
Between red ⊕ and black ⊖,approx. DC15V
] PCB (Main) is normal

[0643XU,1043XU]



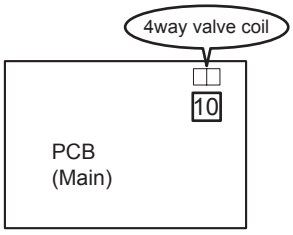
[1242XU,1643XU]



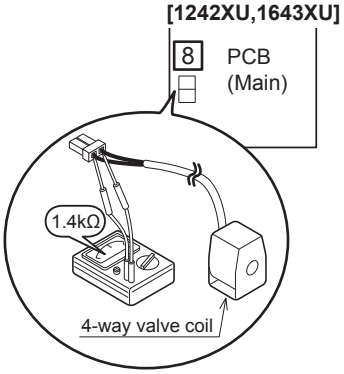
[Fig. 5] Resistance of the 4way valve coil

Take off the connector and check the resistance 4way valve coil.

[0643XU,1043XU]

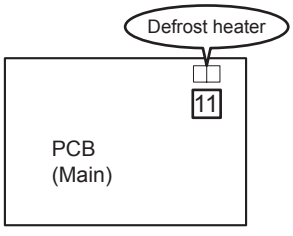


[1242XU,1643XU]

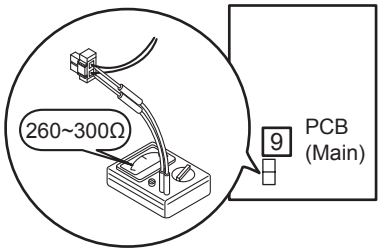


[Fig. 6] Resistance of the Defrost heater

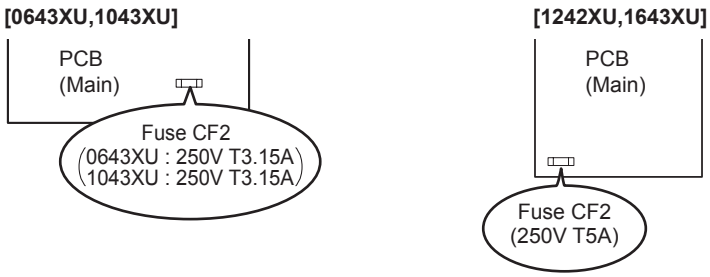
[0643XU,1043XU]



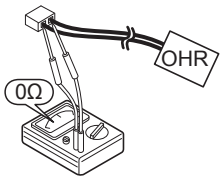
[1242XU,1643XU]



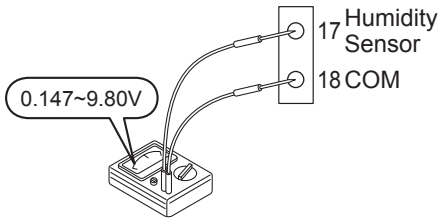
[Fig. 7] Continuity of current Fuse on the PCB (Main)



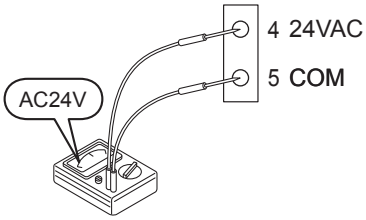
[Fig. 8] Resistance of the Compressor overheat protection relay



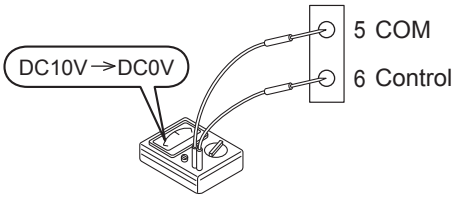
[Fig. 9] Voltage of humidity sensor



[Fig. 10] Voltage of 3way mixing valve (24VAC)



[Fig. 11] Voltage of 3way mixing valve (control)



Normal operation during the Heating mode;
The voltage of 3way mixing valve decreases from 10V toward 0V in case that the mixed water temperature is higher than the water set point.

Normal operation during the Cooling mode;
The voltage of 3way mixing valve decreases from 10V toward 0V in case that the mixed water temperature is lower than the water set point.

Electric character of the sensors

[Table 1] Sensor, temp. Outdoor (HP unit)

Temp.(°C)	Resistance(kΩ)
0	31
5	24
10	19
15	15
20	12
25	10
30	8.2
35	6.7
40	5.5
45	4.6
50	3.8
55	3.2

[Table 2] Sensor, temp. Discharge

Temp.(°C)	Resistance(kΩ)
10	100
20	64
35	33
40	27
50	18
80	6.4

[Table 3] Sensor, temp. Suction/Defrost/Plate heat exchanger Sensor, temp. DHW tank/Buffer tank/Mix water

Temp.(°C)	Resistance(kΩ)
0	29
5	23
10	19
15	15
20	12
25	10
30	8.3
35	6.9
40	5.7
45	4.8
50	4.1
55	3.4

[Table 4] Sensor, temp. Outgoing water/Return water

Temp.(°C)	Resistance(kΩ)
0	25
10	16
20	10
30	7.0
40	4.9
50	3.5
60	2.5

[Table 5] Sensor, temp. Outdoor (Additional)

Temp.(°C)	Resistance(kΩ)
-20	107
-15	79
-10	59
-5	44
0	34
5	26
10	20
15	16
20	13
25	10
30	8.0
35	6.5
40	5.3
45	4.3
50	3.6

Monitor display function

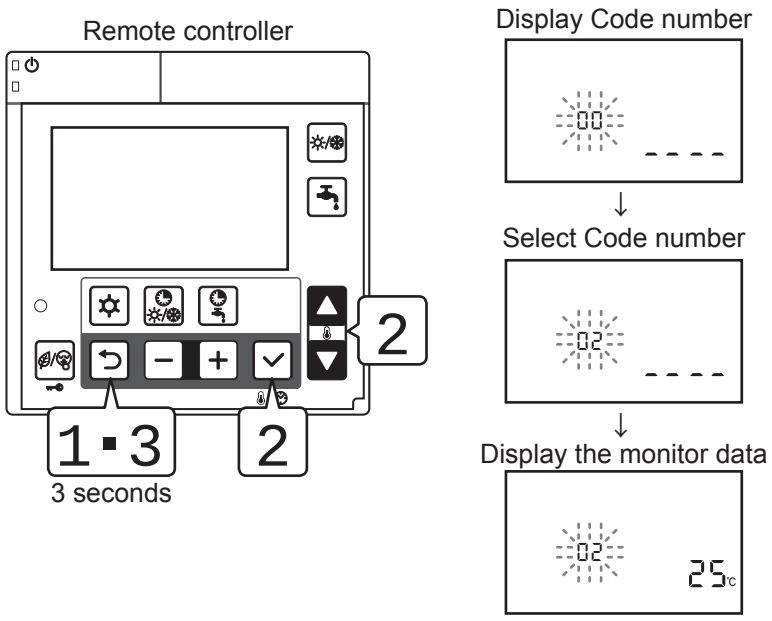
• The conditions and settings of HP unit can be displayed on Remote controller or PCB (Terminal) display.

Display on Remote controller

1. Press Return button for 3 seconds to enter monitor mode and display USER level value of parameter group 01. 2 digits (Code No. of parameter group 01 : default value is 00) will be displayed on the left of Remote controller screen. And its parameter value will displayed on the right of the screen (default value is ----.)

2. Push Up&Down button to change Code numbers, and push Set button to display the parameter value.

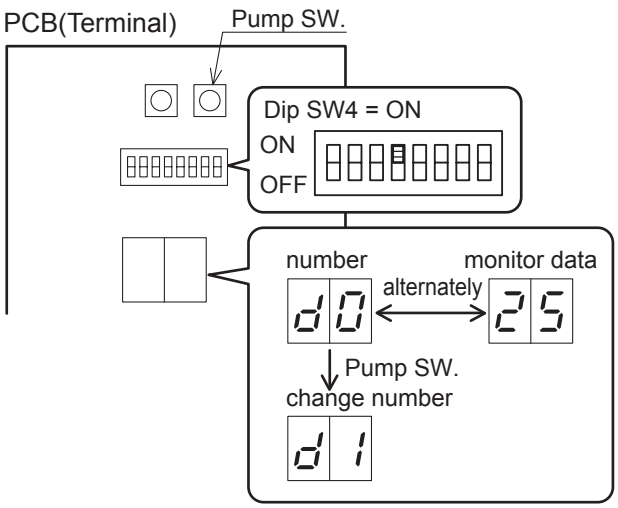
3. To return to normal display, press and hold the “Return” button for 3 seconds, or simply do nothing and leave it for about 10 minutes.



Display on PCB (Terminal) display

• Turn ON the Dip SW4 on the PCB (Terminal) to display the monitor number and monitor data alternately.
• Push the Pump SW. of the PCB (Terminal) to switch the display number alternately.

• To return to normal display, turn OFF the Dip SW4.



Monitor display

PCB (Terminal)	Remote controller		Function description	Display & Input value				Remarks
Number	Parameter			Default	min.	Max.	Unit	
d0	01	00	Circulating water return temperature	-	-20	100	1°C	
d1	01	01	Compressor operating frequency	-	0	200	1Hz	
d2	01	02	Discharge temperature	-	-20	150	1°C	
d3	01	03	Current consumption value	-	0	9900	100W	
—	01	04	Fan control number of rotation	-	0	1000	10rpm	
d5	01	05	Defrost temperature	-	-20	100	1°C	
d6	01	06	Outdoor air temperature	-	-20	100	1°C	
d7	01	07	Water pump control number of rotation	-	0	9900	100rpm	
d8	01	08	Suction temperature	-	-20	100	1°C	
d9	01	09	Circulating water outgoing temperature	-	-20	100	1°C	
—	01	10	Selected operating mode 0=Heating/Cooling OFF 1=Heating 2=Cooling	0	0	2	-	Set by Remote controller or remote contact
	01	11	Room set temperature of Zone1(Master)	25.0	12.0	40.0	0.5°C	Set by Master Remote controller
	01	12	Room set temperature of Zone2(Slave)	25.0	12.0	40.0	0.5°C	Set by Slave Remote controller
	01	13	Selected DHW operating mode 0=disable 1=Comfort 2=Economy 3=Force	0	1	3	-	Set by Remote controller
	01	14	Day 0=Monday, 1=Tuesday, 2=Wednesday, 3=Thursday, 4=Friday,5=Saturday, 6=Sunday	0	0	6	-	
	01	15	Clock	12:00	0:00	23:59	1min	
	01	16	Heating/Cooling time bands setting Zone1 0=disable 1=active	0	0	1	-	
	01	17	Heating/Cooling time bands setting Zone2 0=disable 1=active	0	0	1	-	
	01	18	DHW time band setting 0=disable 1=enable	0	0	1	-	
	01	19	Low tariff and Night mode setting 0=disable 1=Low tariff 2=Night mode 3=Low tariff and Night mode	0	0	3	-	Set by Remote controller or remote contact
	01	20	Room relative humidity value	-	0	100	1%	
d4	01	72	Plate heat exchanger temperature	-	-20	100	1°C	

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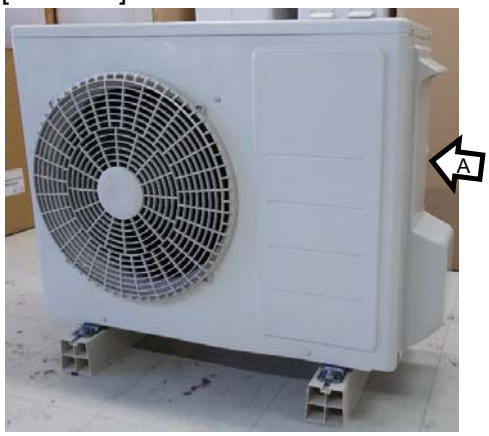
How to detach the PCB(MAIN)

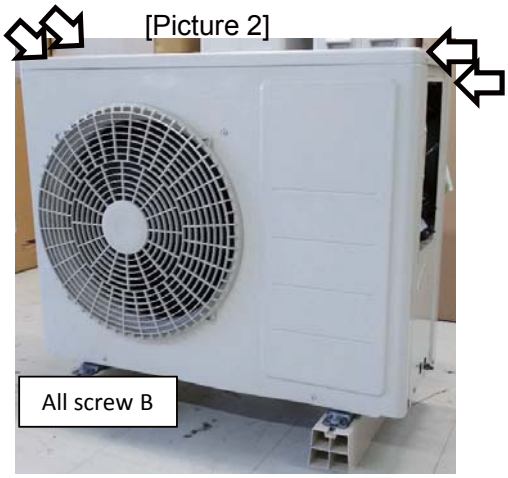
⚠ Be careful about electric shock when replacing the PCB.
⚠ Turn OFF the unit before replacing the PCB.
⚠ Wait for at least 5 mins. after turning OFF the power and before servicing.

1. Unscrew (1pc) [See Picture 1] and detach the WIRING LID.
2. Unscrew (4pcs) [See Picture 2] and detach the TOP PANEL.
3. Unscrew (5pcs) [See Picture 3] and detach the FRONT PANEL.
4. Take only the FAN MOTOR lead wires away from the wire bundled with the cord clamp. [See Picture 4-1, 4-2]
   Be sure to confirm the voltage between the connector pins (white ⊕ and black ⊖) of pump connector with the tester before disconnecting the lead wires. It should be less than DC 10V.
   [See Picture 4-1, 4-3, 4-4]

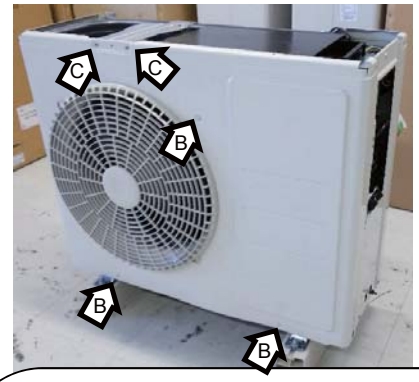
[Picture 1]



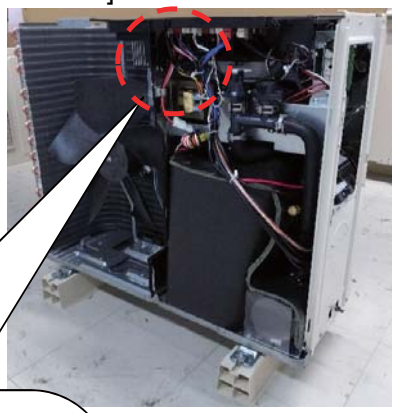
[Picture 2]



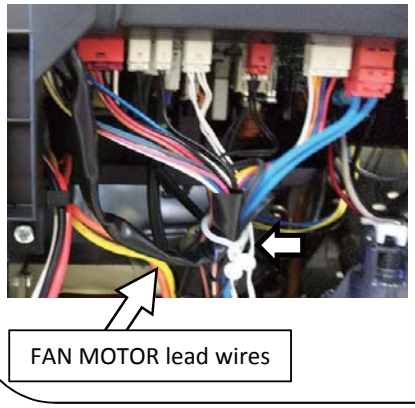
[Picture 3]



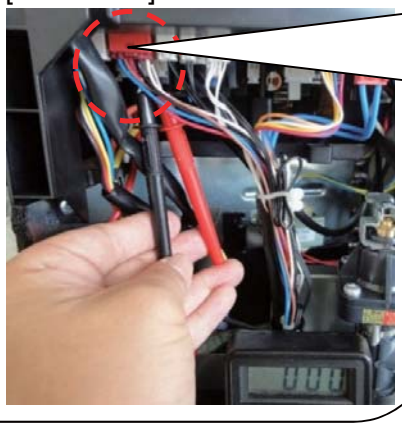
[Picture 4-1]



[Picture 4-2]



[Picture 4-3]



[Picture 4-4]

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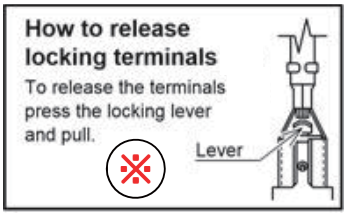
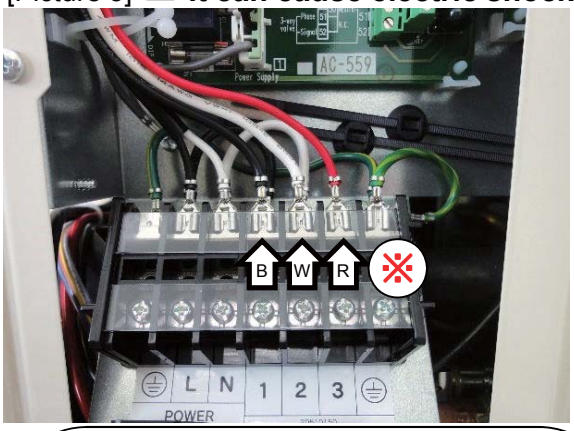
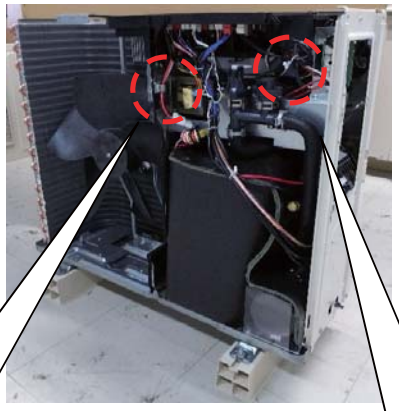
5. Disconnect 3 lead wires (black(B), white(W), red(R)) from the TERMINAL BLOCK. [See Picture 5]
6. Unscrew (2pcs). [See Picture 6-2 ①, 6-3 ②]
   Unscrew and disconnect the gray(G) lead wire. [See Picture 6-3 ③]
   Take only 4 lead wires ((B), (W), (R), (G)) away from the wires bundled with the cord clamp.
   [See Picture 6-3 ④]
7. Disconnect all lead wires connected to PCB(MAIN). [See Picture 7]
8. Disconnect 5 lead wires. [See Picture 8-1 ①, ②]
   Release the cord clamp, and unhang 3 lead wires. [See Picture 8-2]



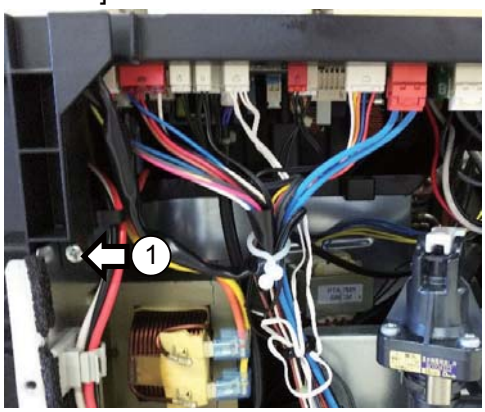
[Picture 5] ⚠ **It can cause electric shock.**



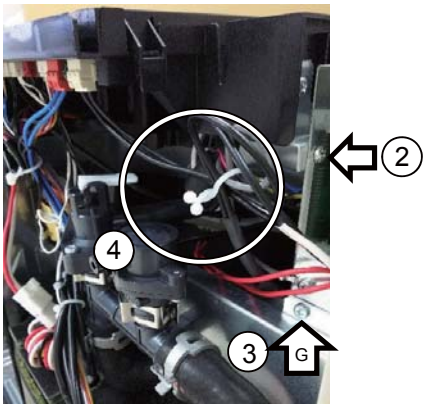
[Picture 6-1]



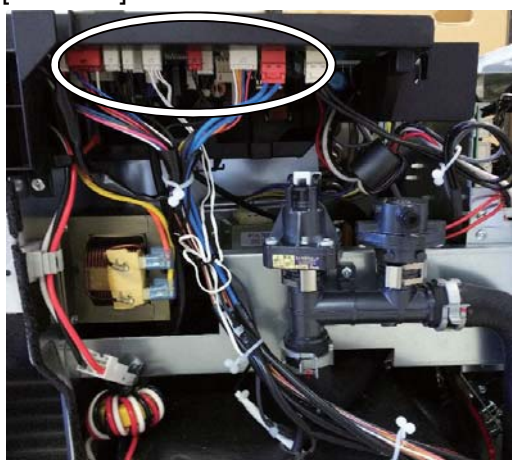
[Picture 6-2]



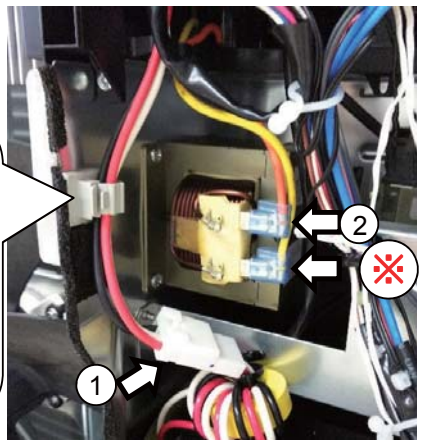
[Picture 6-3]



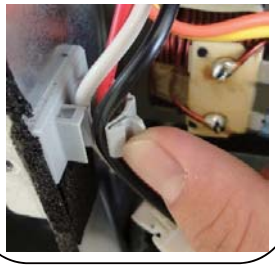
[Picture 7]



[Picture 8-1]



[Picture 8-2]



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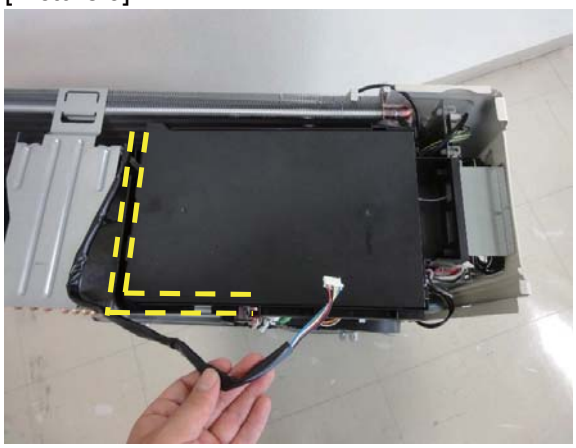
9. Pull out the FAN MOTOR lead wires located along the groove of the CASE OF PCB. [See Picture 9]
10. Take out the CASE OF PCB lifting it up. [See Picture 10]
11. Release the 4 hooks and detach the CASE OF PCB (COVER). [See Picture 11]
12. Unscrew (1pc) and disconnect the gray wire from CASE OF PCB. [See Picture 12]
13. Unscrew (1pc) and release the 6 hooks. [See Picture 13]
14. Detach the PCB (MAIN) from the CASE OF PCB. [See Picture 14]

[Picture 9]

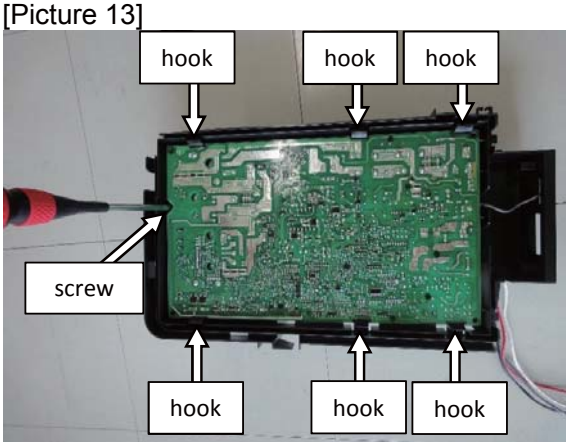


[Picture 10]

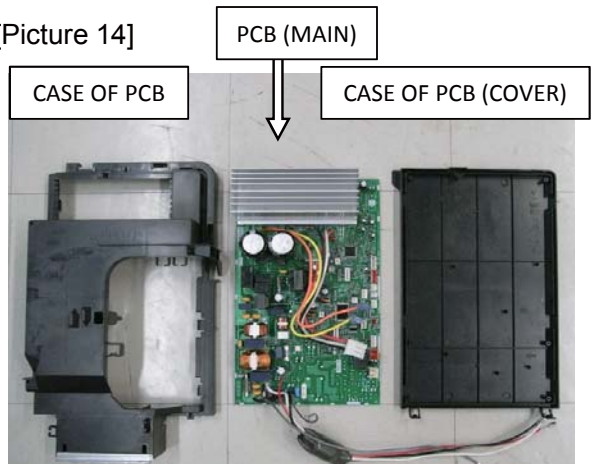
[Picture 11]

[Picture 12]

[Picture 13]



[Picture 14]



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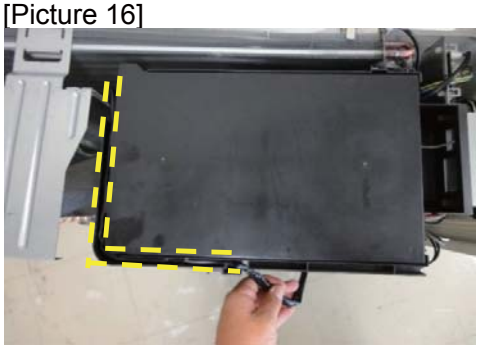
How to assemble the PCB(MAIN)

・When attaching the new PCB, take the reverse procedure of "HOW TO DETACH PCB(MAIN)".
・Be sure to use the same screws into the original holes.

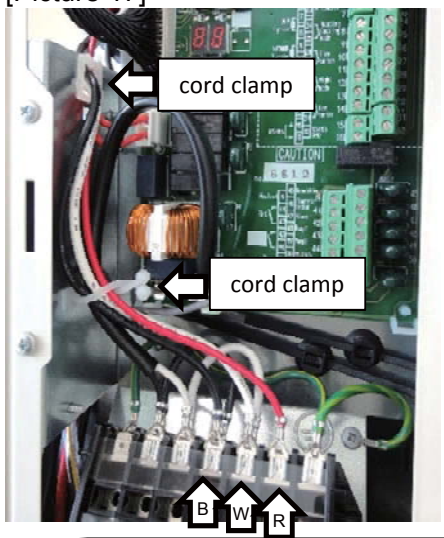
15. Be sure to screw and connect the gray wire to the CASE OF PCB. [See Picture 15]
16. Be sure to tuck the FAN MOTOR lead wires along the groove of the CASE OF PCB. [See Picture 16]
17. After connecting the 3 lead wires ((B), (W), (R)) to the TERMINAL BLOCK, bind by 2 cord clamps. [See Picture 17]
18. Be sure to screw (2pcs) [See Picture 18 ①], and connect the gray(G) lead wire. [See Picture 18 ②]
19. Bind 3 lead wires (black, white, red) with the cord clamp and hang them on the left hook, and hang 2 lead wires (yellow, orange) on the right hook. [See Picture 19 ①]
    Be sure to bind the FAN MOTOR lead wires with the cord clamp as they were. [See Picture 19 ②]
20. Hang 4 lead wires ((B), (W), (R), (G)) on the hooks in the bottom of the CASE OF PCB. [See Picture 20 ①]
    Get 4 lead wires ((B), (W), (R), (G)) back to the bundle of lead wires and clamp. [See Picture 20 ②]

[Picture 15]

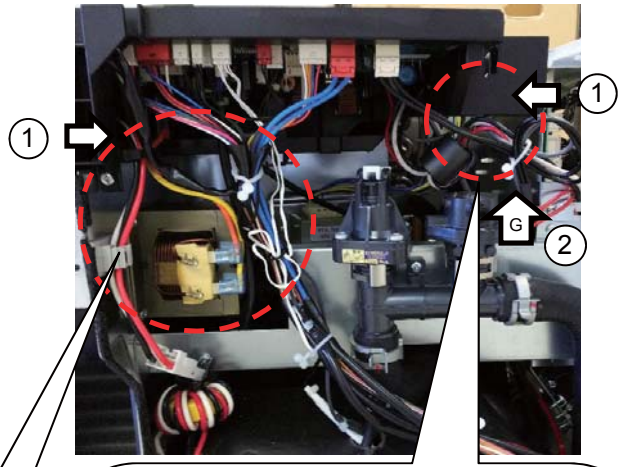
[Picture 16]



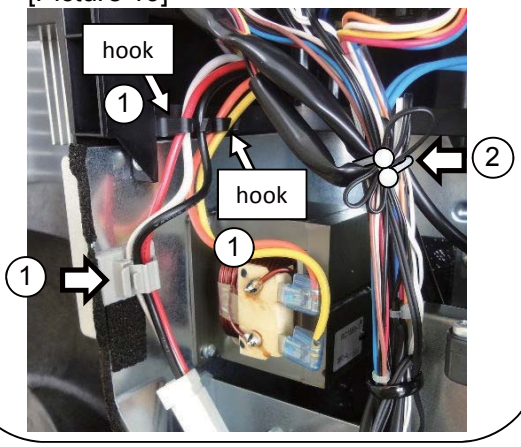
[Picture 17]



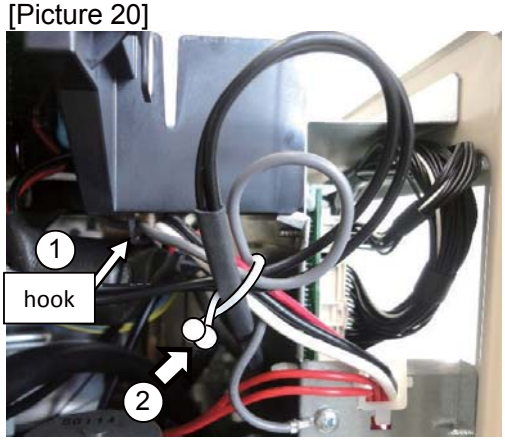
[Picture 18]



[Picture 19]



[Picture 20]



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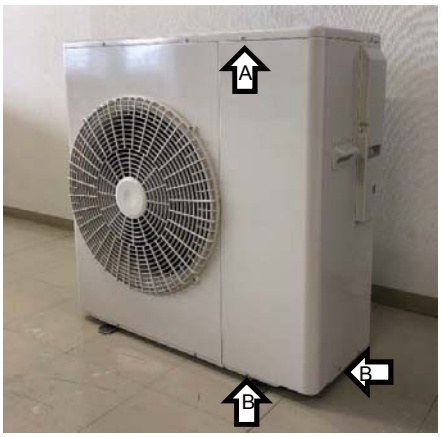
How to detach the PCB(MAIN)

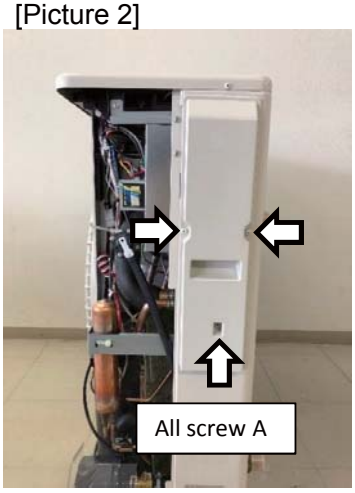
⚠ Be careful about electric shock when replacing the PCB.
⚠ Turn OFF the unit before replacing the PCB.
⚠ Wait for at least 5 mins. after turning OFF the power and before servicing.

1. Unscrew (3pcs) [See Picture 1] and detach the FRONT PANEL (RIGHT) pulling it down.
2. Unscrew (3pcs) [See Picture 2] and detach the WIRING LID.
3. Unscrew (4pcs) [See Picture 3] and detach the TOP PANEL.
4. **Be sure to confirm the voltage between the connector pins (white ⊕ and black ⊖) of pump connector with the tester before disconnecting the lead wires. It should be less than DC 10V. [See Picture 4-1, 4-2, 4-3]**

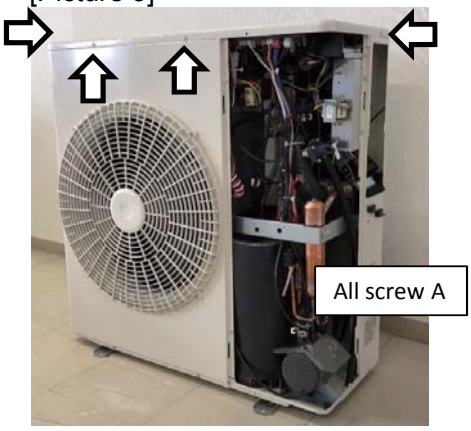
[Picture 1]



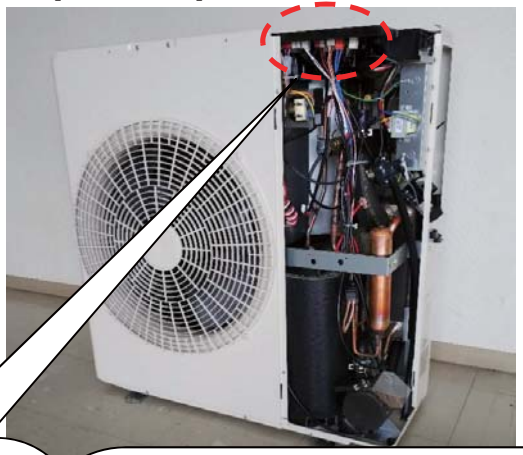
[Picture 2]



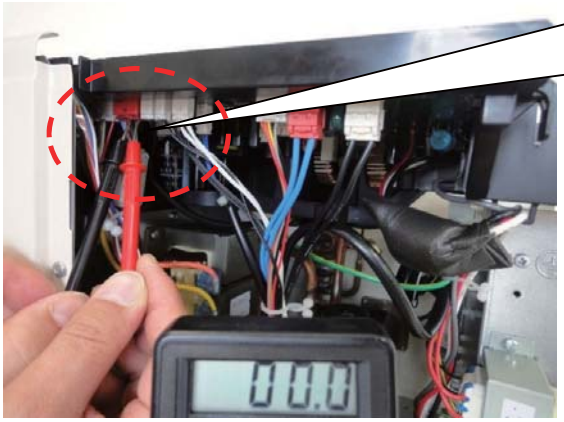
[Picture 3]



[Picture 4-1]



[Picture 4-2]



[Picture 4-3]

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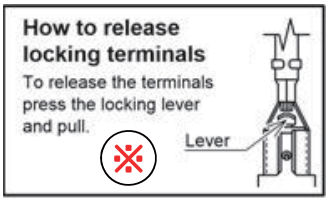
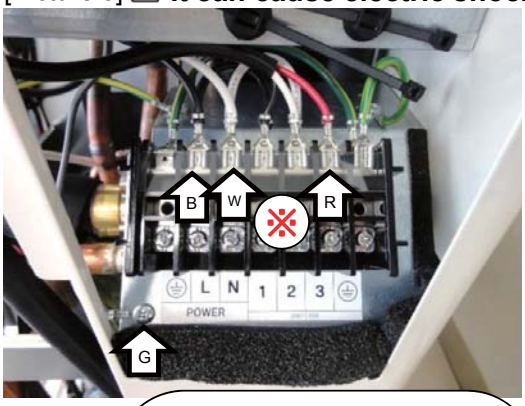
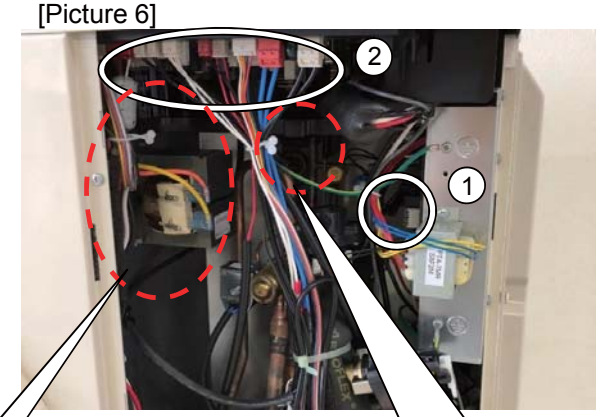
5. Disconnect 3 lead wires (black(B), white(W), red(R)) from the TERMINAL BLOCK.
   Unscrew and disconnect the gray(G) lead wire. [See Picture 5]
6. Take only 4 lead wires ((B), (W), (R), (G)) away from the wires bundled with the cord clamp.
   [See Picture 6 ①]
   Disconnect all lead wires connected to PCB(MAIN). [See Picture 6 ②]
7. Remove the cord clamp from the FAN MOTOR lead wires. [See Picture 7 ①]
   Disconnect 5 lead wires. [See Picture 7 ②, ③]
8. Unhang 2 lead wires from the hooks at the bottom of the CASE OF PCB.
   [See Picture 8]
9. Unscrew (2pcs) before detaching the CASE OF PCB. [See Picture 9-1, 9-2]



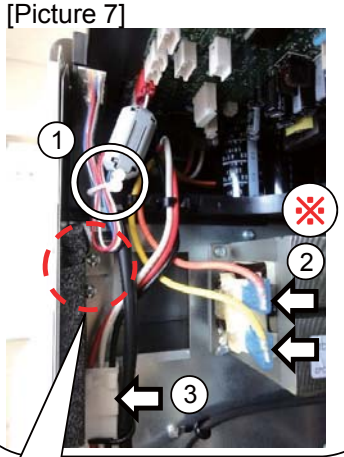
[Picture 5] ⚠ **It can cause electric shock.**



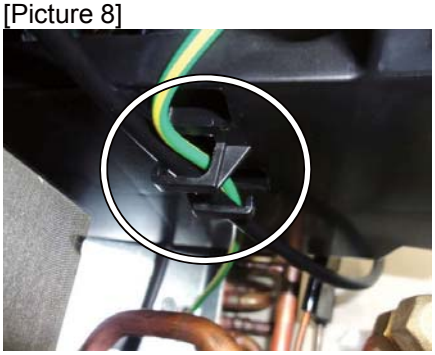
[Picture 6]



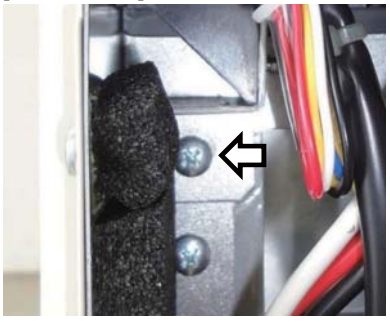
[Picture 7]



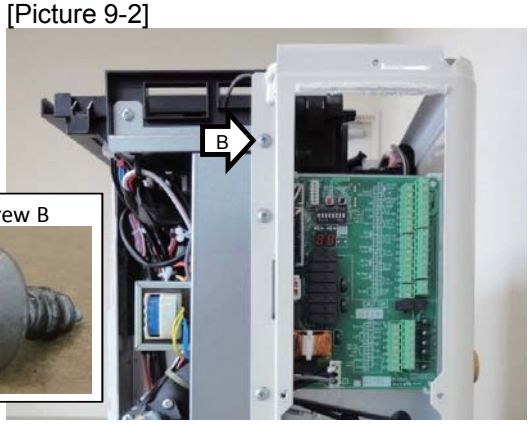
[Picture 8]



[Picture 9-1]



[Picture 9-2]



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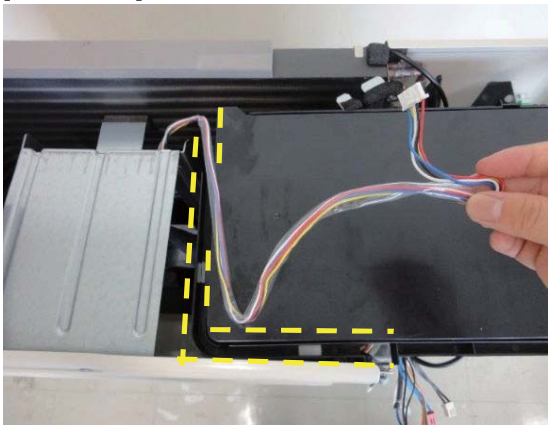
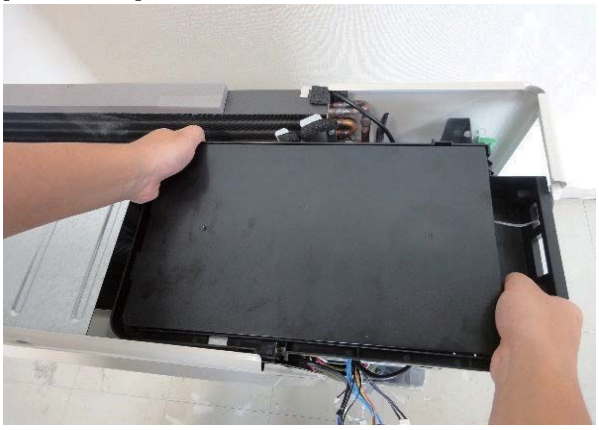
10. Pull out the FAN MOTOR lead wires located along the groove of the CASE OF PCB. [See Picture 10]
11. Take out the CASE OF PCB lifting it up. [See Picture 11]
12. Release the 4 hooks and detach the CASE OF PCB (COVER). [See Picture 12]
13. Unscrew (1pc) and disconnect the gray wire from CASE OF PCB. [See Picture 13]
14. Unscrew (1pc) and release the 6 hooks. [See Picture 14]
15. Detach the PCB (MAIN) from the CASE OF PCB. [See Picture 15]

[Picture 10]



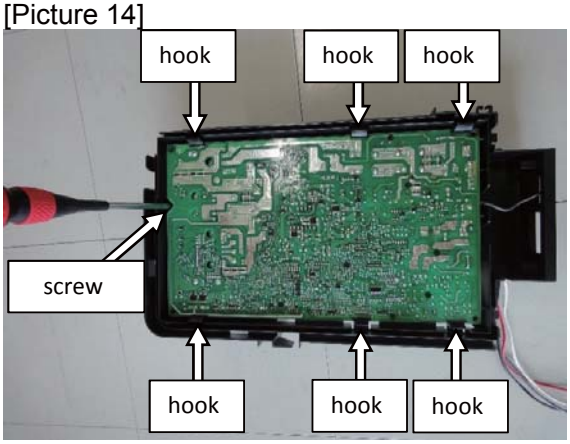
[Picture 11]



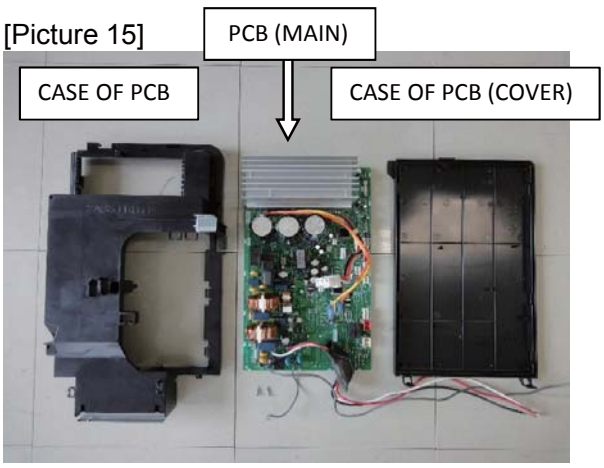
[Picture 12]

[Picture 13]

[Picture 14]



[Picture 15]



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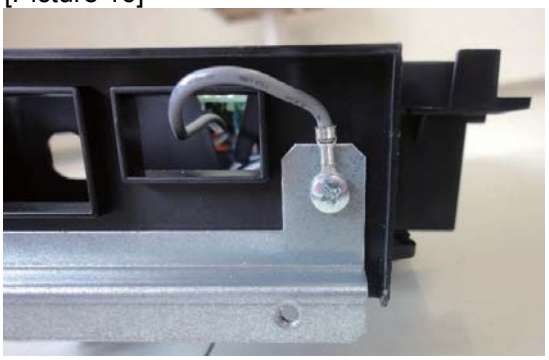
How to assemble the PCB(MAIN)

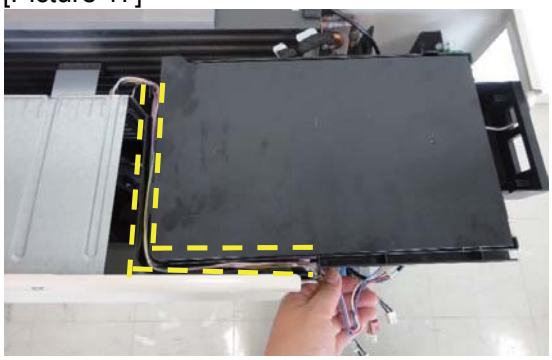
・When attaching the new PCB, take the reverse procedure of "HOW TO DETACH PCB(MAIN)".
・Be sure to use the same screws into the original holes.

16. Be sure to screw and connect the gray wire to the CASE OF PCB. [See Picture 16]
17. Be sure to tuck the FAN MOTOR lead wires along the groove of the CASE OF PCB. [See Picture 17]
18. Fold the FAN MOTOR lead wires in two and bind them with the PUMP lead wires by the cord clamp. [See Picture 18 ①]
    Get 4 lead wires ((B), (W), (R), (G)) back to the bundle of lead wires and clamp (Reverse procedure of 6). [See Picture 18 ②]
19. Hang 4 lead wires ((B), (W), (R), (G)) on the hook of the CASE OF PCB as they were. [See Picture 19]
20. Hang 3 lead wires (black, white, red) on the right hook, and hang 2 lead wires (yellow, orange) on the left hook. Then, 3 lead wires (black, white, red) should be located forward of 2 lead wires (yellow, orange) in a crossed position. [See Picture 20]
21. Hang 2 lead wires (yellow/green, black) on the hooks in the bottom of the CASE OF PCB. [See Picture 21]

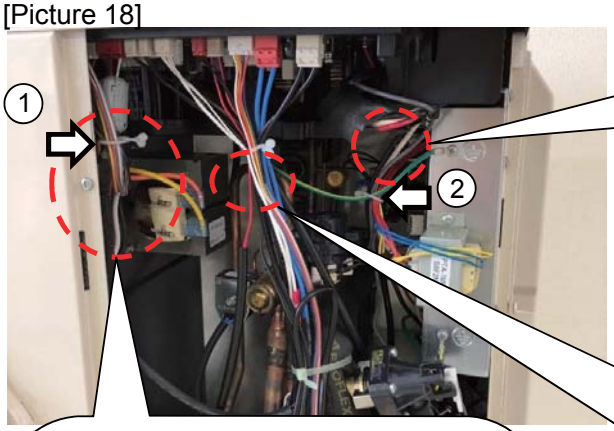
[Picture 16]



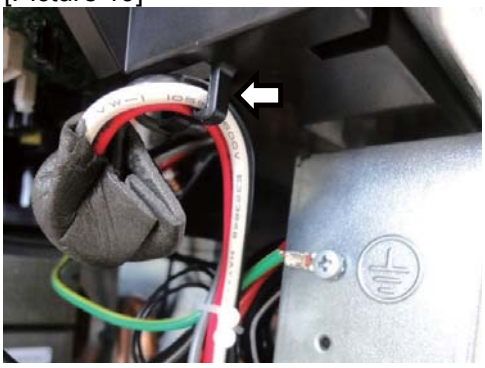
[Picture 17]



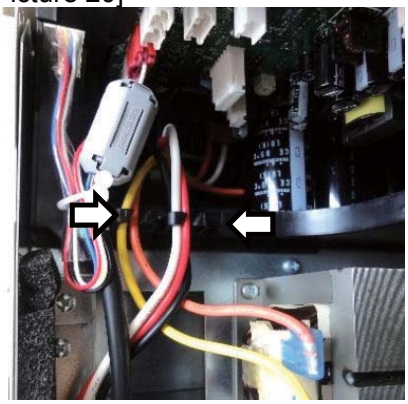
[Picture 18]



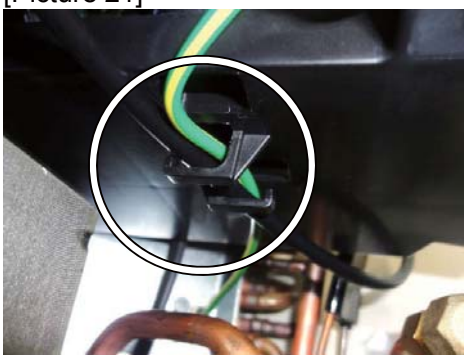
[Picture 19]



[Picture 20]



[Picture 21]



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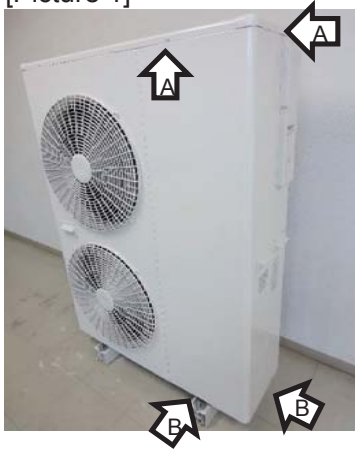
How to detach the PCB(MAIN)

⚠ Be careful about electric shock when replacing PCB.
⚠ Before replacing the PCB, please turn OFF the unit.
⚠ Wait at least 5 min. after turning OFF the power before servicing.

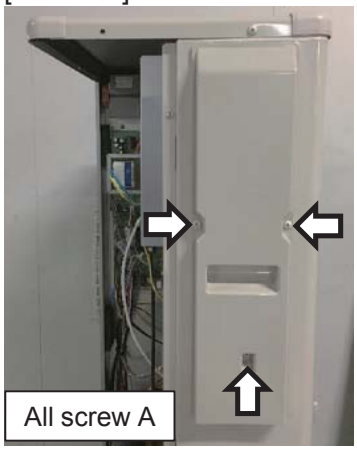
1. Unscrew (4pcs) [See Picture 1]
2. Detach the FRONT PANEL (RIGHT) pulling it down. [See Picture 2]
3. Unscrew (3pcs) [See Picture 3] and detach the WIRING LID.
4. **Be sure to confirm the voltage between the connector pins (white ⊕ and black ⊖) of pump connector with the tester before disconnecting the lead wires. It should be less than DC 10V. [See Picture 4-1, 4-2, 4-3]**

[Picture 1]

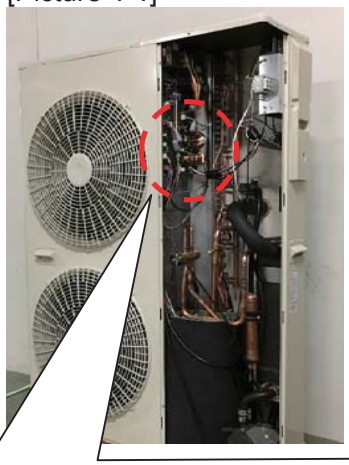


[Picture 2]

[Picture 3]

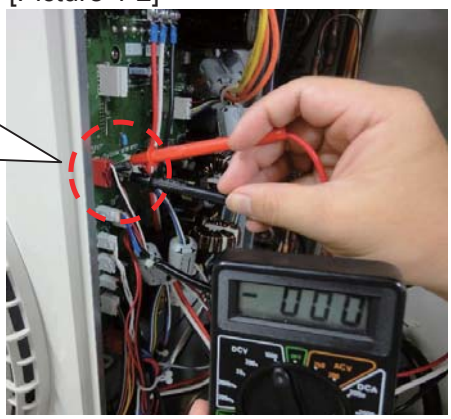


[Picture 4-1]



[Picture 4-3]

[Picture 4-2]



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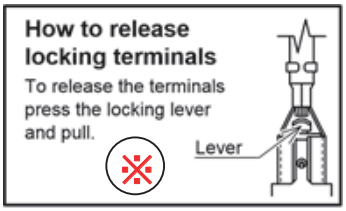
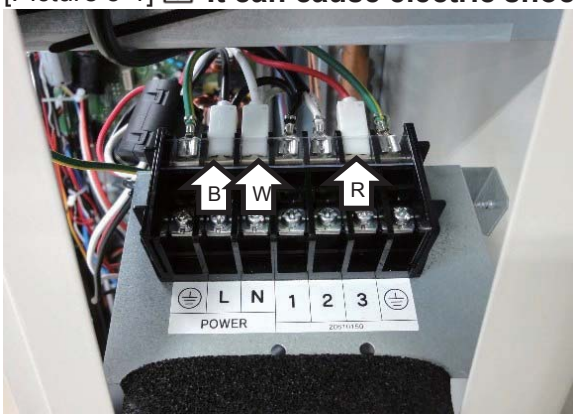
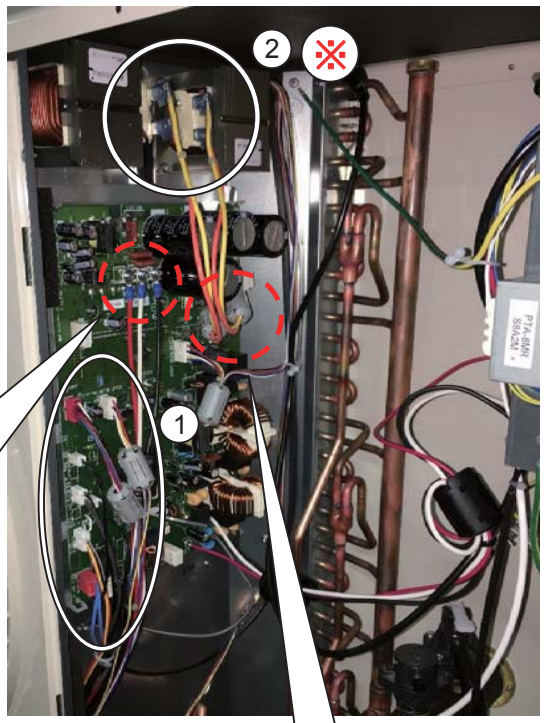
5. Disconnect 3 lead wires (black(B), white(W), red(R)) from the TERMINAL BLOCK.
   When disconnecting these lead wires, pull them out gripping the plastic cover. [See Picture 5-1]
6. Disconnect all lead wires connected to PCB(MAIN). [See Picture 6 ①]
   And disconnect 4 lead wires (2 yellows, 2 oranges) from the REACTOR. [See Picture 6 ②]
7. Unscrew and disconnect 3 lead wires. [See Picture 7]
   (Be careful not to drop the screws, as it's difficult to pick them up structurally.)
8. Take only 4 lead wires of the REACTOR away from the wires bundled with the cord clamp.
   Then, disconnect the FAN MOTOR (LOWER) lead wires. [See Picture 8]



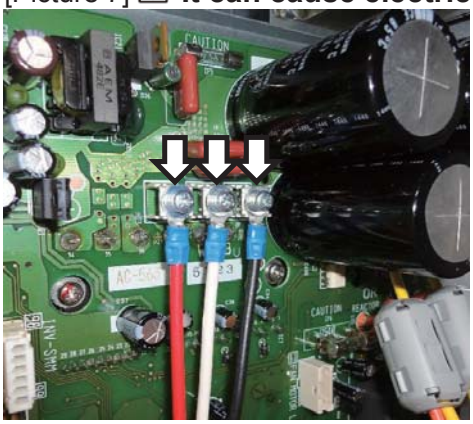
[Picture 5-1] ⚠ **It can cause electric shock.**



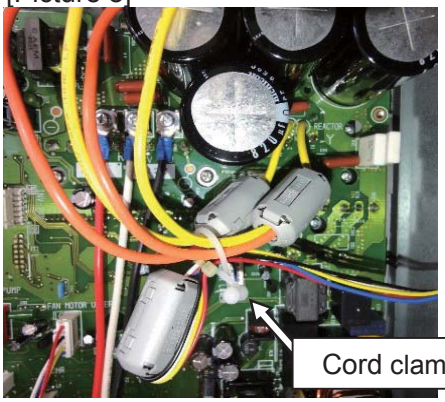
[Picture 6]



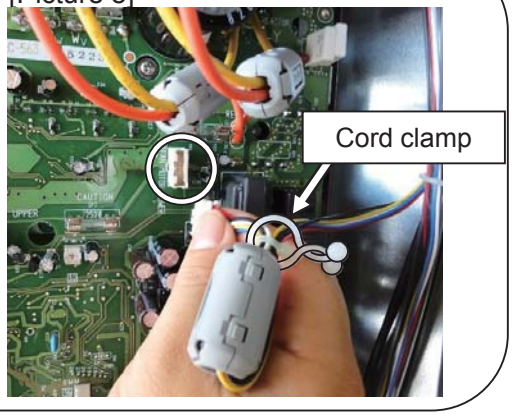
[Picture 7] ⚠ **It can cause electric shock.**



[Picture 8]



[Picture 8]



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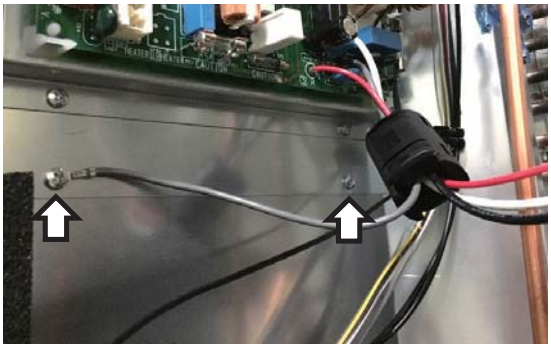
9. Unscrew (4pcs) . [See Picture 9-1, 9-2, 9-3]
   (Be careful not to drop the screws, as it's difficult to pick them up structurally.)
10. Slide the PCB (MAIN) to the TERMINAL BLOCK side.
    Detach the PCB (MAIN) with care as it is heavy. [See Picture 10]

[Picture 9-1]

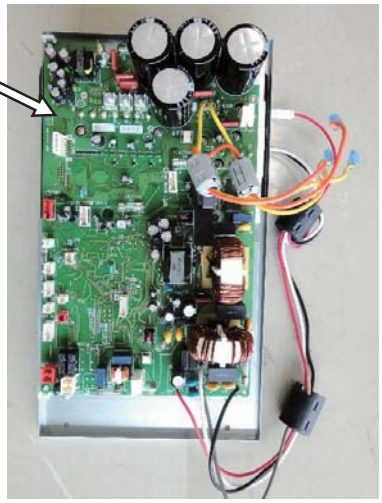
[Picture 9-2]

[Picture 9-3]



[Picture 10]

PCB (MAIN)



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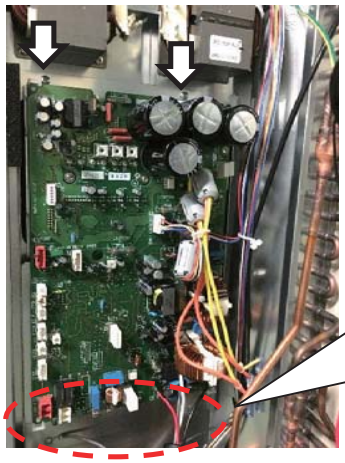
How to assemble the PCB(MAIN)

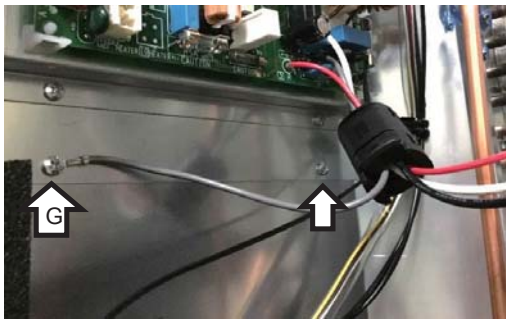
・When attaching the new PCB, take the reverse procedure of "HOW TO DETACH THE PCB (MAIN)".
・Be sure to put the screws back in place.

11. Be sure to screw (4pcs) the PCB (MAIN) ASSY [See Picture 11-1],
    by connecting the gray(G) lead wire. [See Picture 11-2]
12. Bind the FAN MOTOR lead wires with 4 lead wires (2 yellows, 2 oranges) by the cord clamp
    (Reverse procedure of 8). [See Picture 12-2]
    In order to prevent the noise generation, keep a distance between FAN WIRE and SW Trans.
13. After connecting 3 lead wires (black, white, red) to the TERMINAL BLOCK,
    bind and fix them with the screwed cord clamp at the PCB (MAIN) side. [See Picture 13]

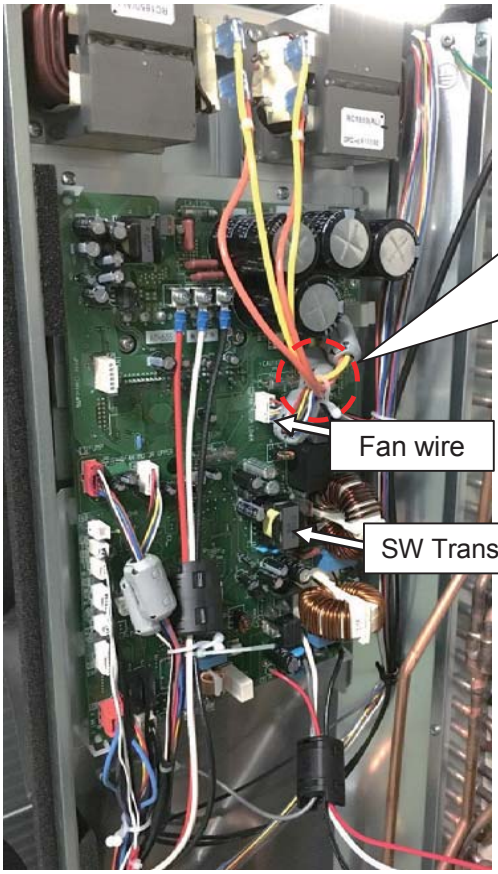
[Picture 11-1]



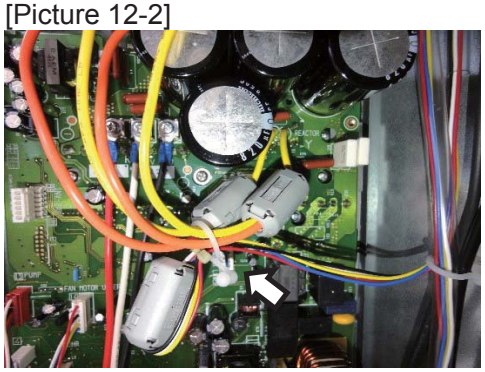
[Picture 11-2]



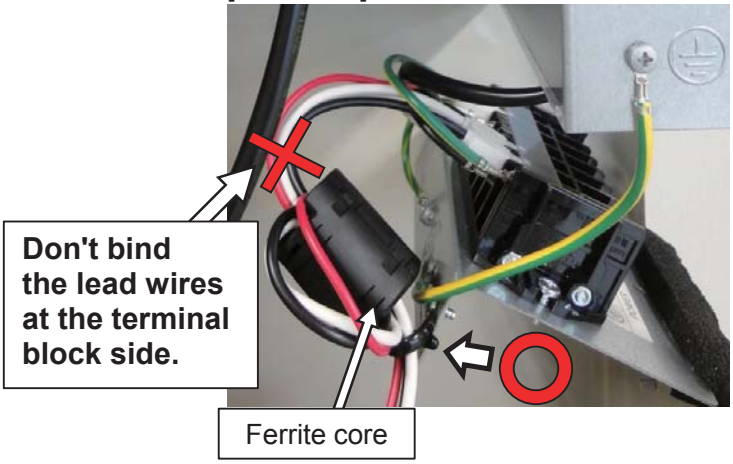
[Picture 12-1]



[Picture 12-2]



[Picture 13]



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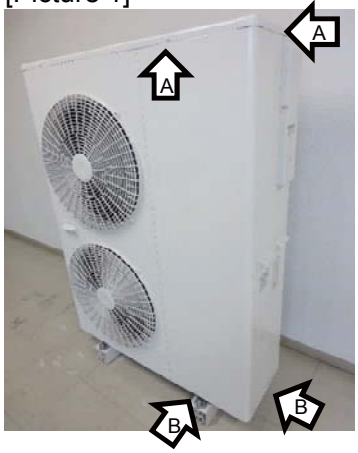
How to detach the PCB(MAIN)

⚠ **Be careful about electric shock when replacing PCB.**
⚠ **Before replacing the PCB, please turn OFF the unit.**
⚠ **Wait for at least 5 mins. after turning OFF the power and before servicing.**

1. Unscrew (4pcs) [See Picture 1]
2. Detach the FRONT PANEL (RIGHT) pulling it down. [See Picture 2]
3. Unscrew (3pcs) [See Picture 3] and detach the WIRING LID.
4. **Be sure to confirm the voltage between the connector pins (white ⊕ and black ⊖) of pump connector with the tester before disconnecting the lead wires. It should be less than DC 10V. [See Picture 4-1, 4-2, 4-3]**

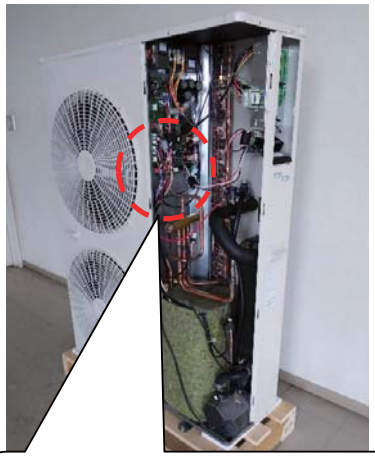
[Picture 1]



[Picture 2]

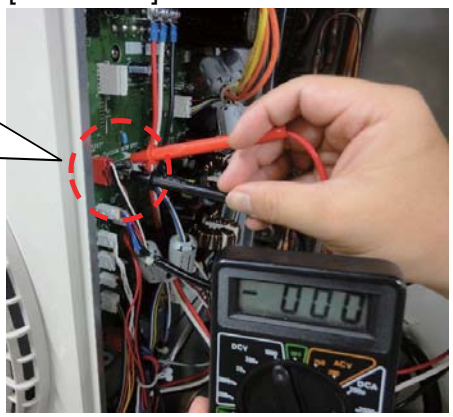
[Picture 3]

[Picture 4-1]



[Picture 4-3]

[Picture 4-2]



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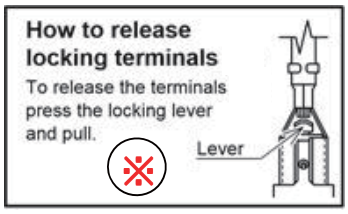
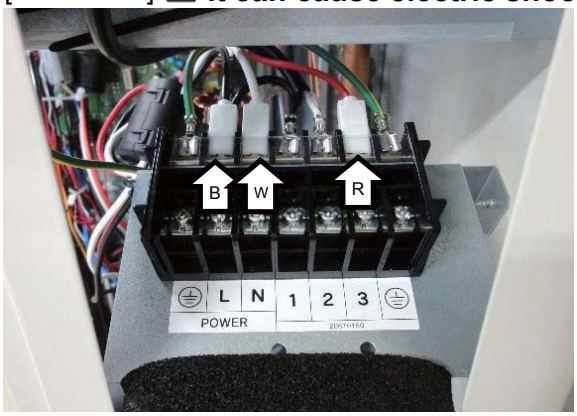
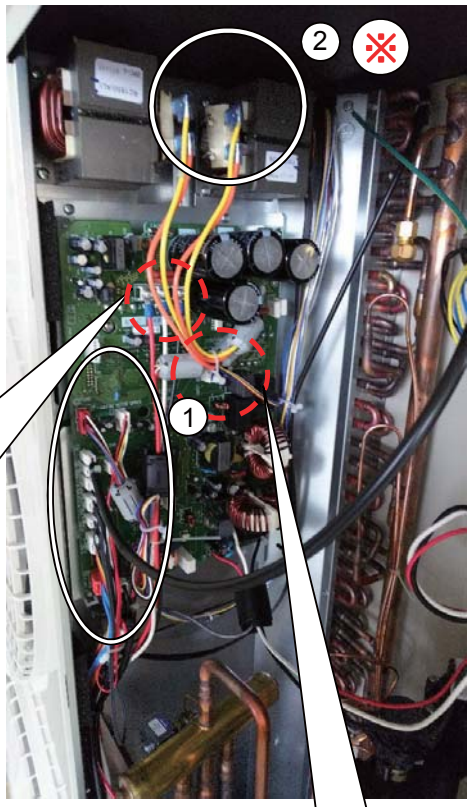
5. Disconnect 3 lead wires (black(B), white(W), red(R)) from the TERMINAL BLOCK.
   When disconnecting these lead wires, pull them out gripping the plastic cover. [See Picture 5-1]
6. Disconnect all lead wires connected to PCB(MAIN). [See Picture 6 ①]
   And disconnect 4 lead wires (2 yellows, 2 oranges) from the REACTOR. [See Picture 6 ②]
7. Unscrew and disconnect 3 lead wires. [See Picture 7]
   (Be careful not to drop the screws, as it's difficult to pick them up structurally.)
8. Take only 4 lead wires of the REACTOR away from the wires bundled with the cord clamp.
   Then, disconnect the FAN MOTOR (LOWER) lead wires. [See Picture 8]



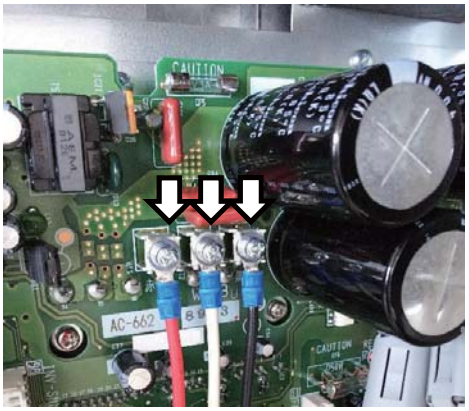
[Picture 5-1] ⚠ **It can cause electric shock.**



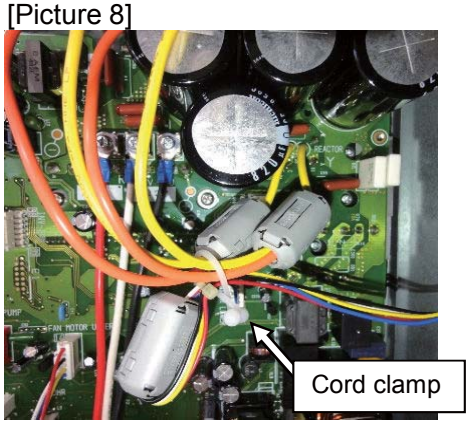
[Picture 6]



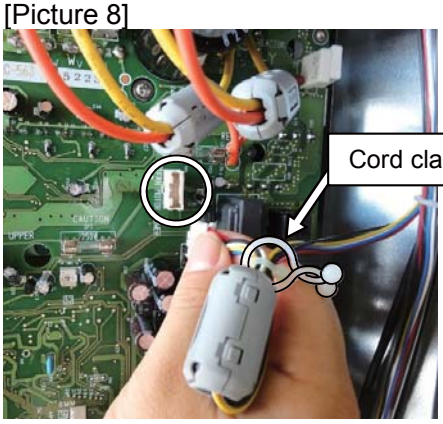
[Picture 7] ⚠ **It can cause electric shock.**



[Picture 8]



[Picture 8]



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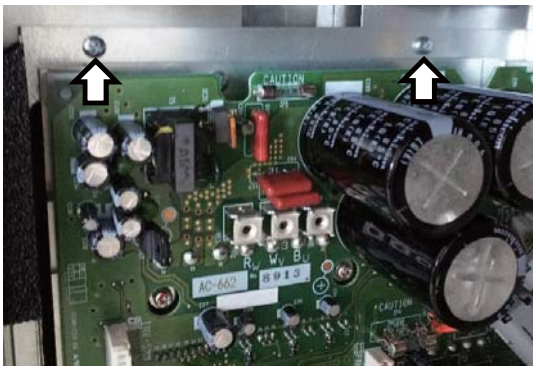
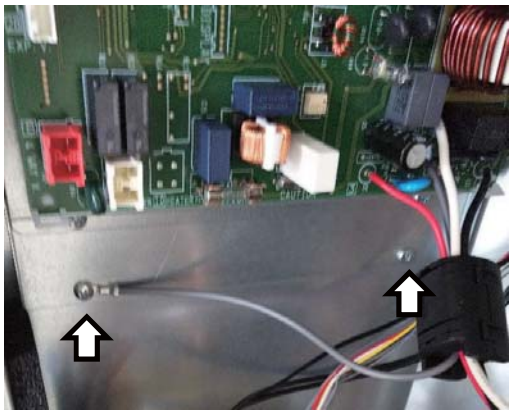
9. Unscrew (4pcs) . [See Picture 9-1, 9-2, 9-3]
   (Be careful not to drop the screws, as it's difficult to pick them up structurally.)
10. Slide the PCB (MAIN) to the TERMINAL BLOCK side.
    Detach the PCB (MAIN) with care as it is heavy. [See Picture 10]

[Picture 9-1]

[Picture 9-2]

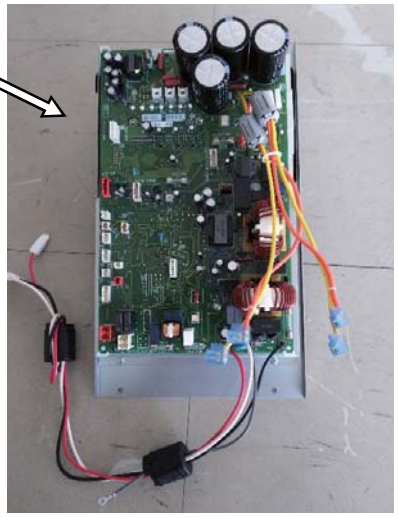


[Picture 9-3]



[Picture 10]

PCB (MAIN)



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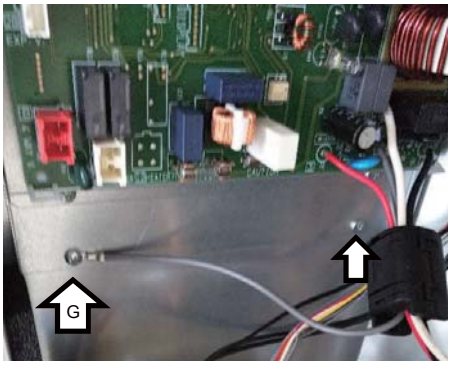
How to assemble the PCB(MAIN)

・When attaching the new PCB, take the reverse procedure of "HOW TO DETACH THE PCB (MAIN)".
・Be sure to put the screws back in place.

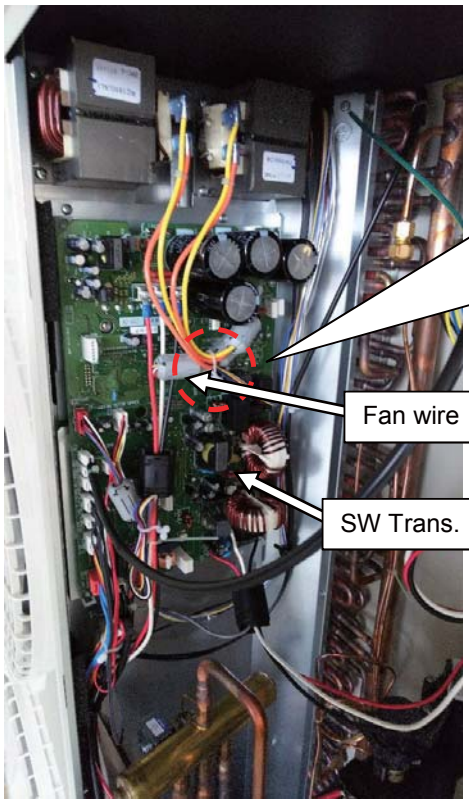
11. Be sure to screw (4pcs) the PCB (MAIN) ASSY [See Picture 12-1],
    by connecting the gray(G) lead wire. [See Picture 12-2]
12. Bind the FAN MOTOR lead wires with 4 lead wires (2 yellows, 2 oranges) by the cord clamp
    (Reverse procedure of 8). [See Picture 13-2]
    In order to prevent the noise generation, keep a distance between FAN WIRE and SW Trans.
13. After connecting 3 lead wires (black, white, red) to the TERMINAL BLOCK,
    bind and fix them with the screwed cord clamp at the PCB (MAIN) side. [See Picture 14]

[Picture 12-1]

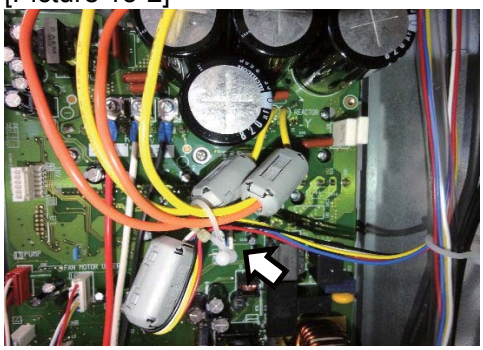
[Picture 12-2]



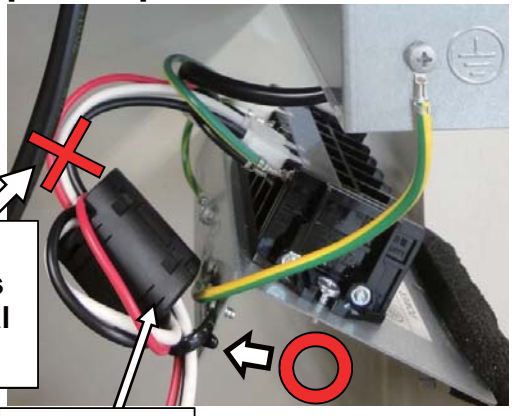
[Picture 13-1]



[Picture 13-2]

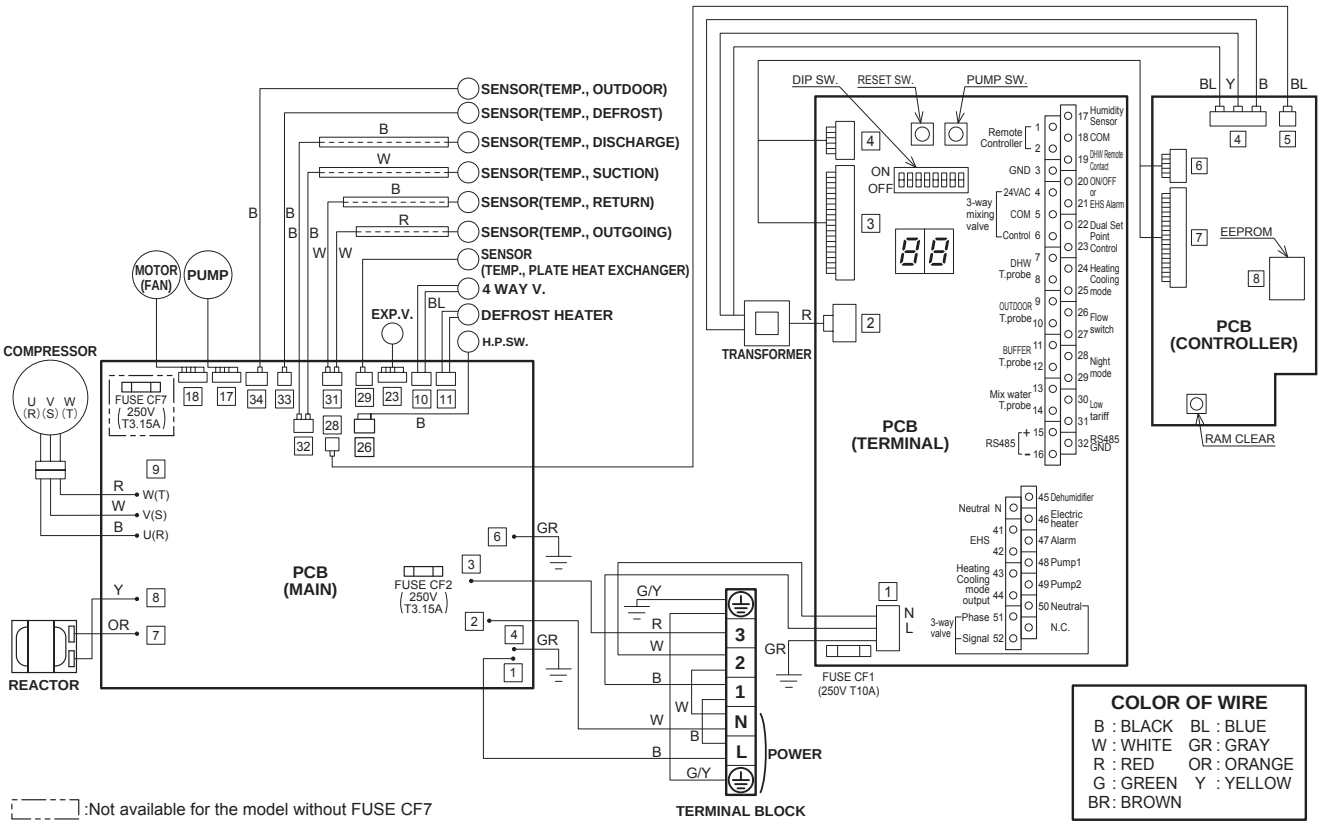


[Picture 14]



Wiring diagram

AEYC-0643XU-CH
AEYC-1043XU-CH



COLOR OF WIRE

B : BLACK	BL : BLUE
W : WHITE	GR : GRAY
R : RED	OR : ORANGE
G : GREEN	Y : YELLOW
BR: BROWN	

⚠ WARNING !

⚠ Electric Shock !

Warning when you fix electric components !

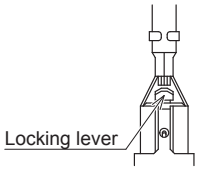
- **Don't touch electrically charged parts, as electric shock may occur even if they are switched off.**
- **Be sure to wait at least 5 min. after turning off the power and to confirm the voltage between the connector pins of pump connector 17 [between white ⊕ and black ⊖] is less than DC10V with a tester before servicing.**

⚠Caution ⚠Electric Shock High Voltage

- **Do not touch any part of the electric circuit (including the wiring of thermistor and others), as it has high voltage against the ground.**
- **Pay attention not to damage the insulated wire when you tighten the screw, as the exposed wire may cause electric shock or malfunction.**
- **Do not ground the oscilloscope when you operate. You might destroy it. Also do not touch any metal part of the oscilloscope while operating.**

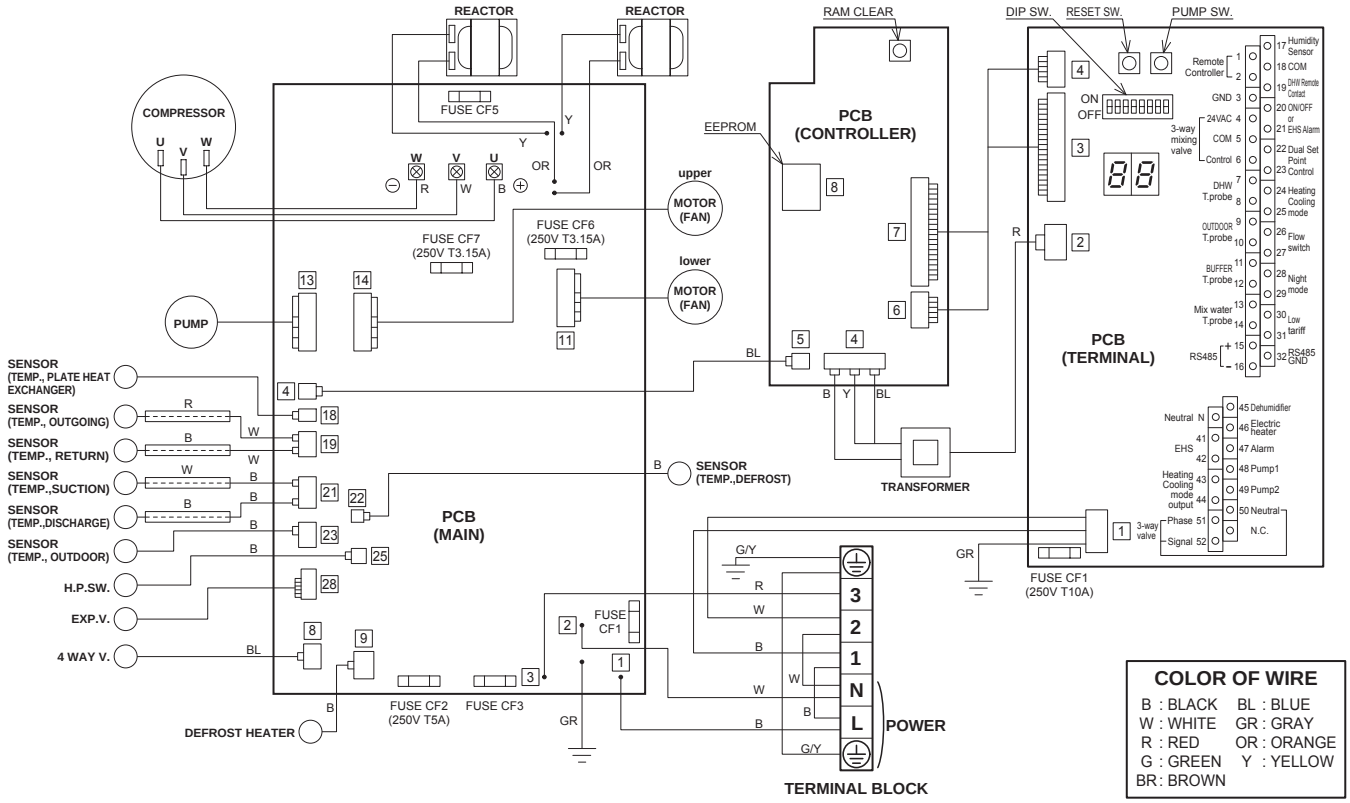
How to detach locking terminal

Pull off while pressing the locking lever.



Wiring diagram

AEYC-1242XU-CH



COLOR OF WIRE

B : BLACK	BL : BLUE
W : WHITE	GR : GRAY
R : RED	OR : ORANGE
G : GREEN	Y : YELLOW
BR : BROWN	

⚠WARNING !

⚠Electric Shock !

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- Be sure to wait at least 5 mitutes after turning off the power and to confirm the voltage between ⊕ and ⊖ is less than DC10V with a tester before servicing.

⚠Caution ⚠Electric Shock High Voltage

- Do not touch any part of the electric circuit (including the wiring of thermistor and others), as it has high voltage against the ground.
- Pay attention not to damage the insulated wire when you tighten the screw, as the exposed wire may cause electric shock or malfunction.
- Do not ground the oscilloscope when you operate. You might destroy it. Also do not touch any metal part of the oscilloscope while operating.

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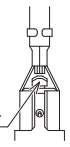
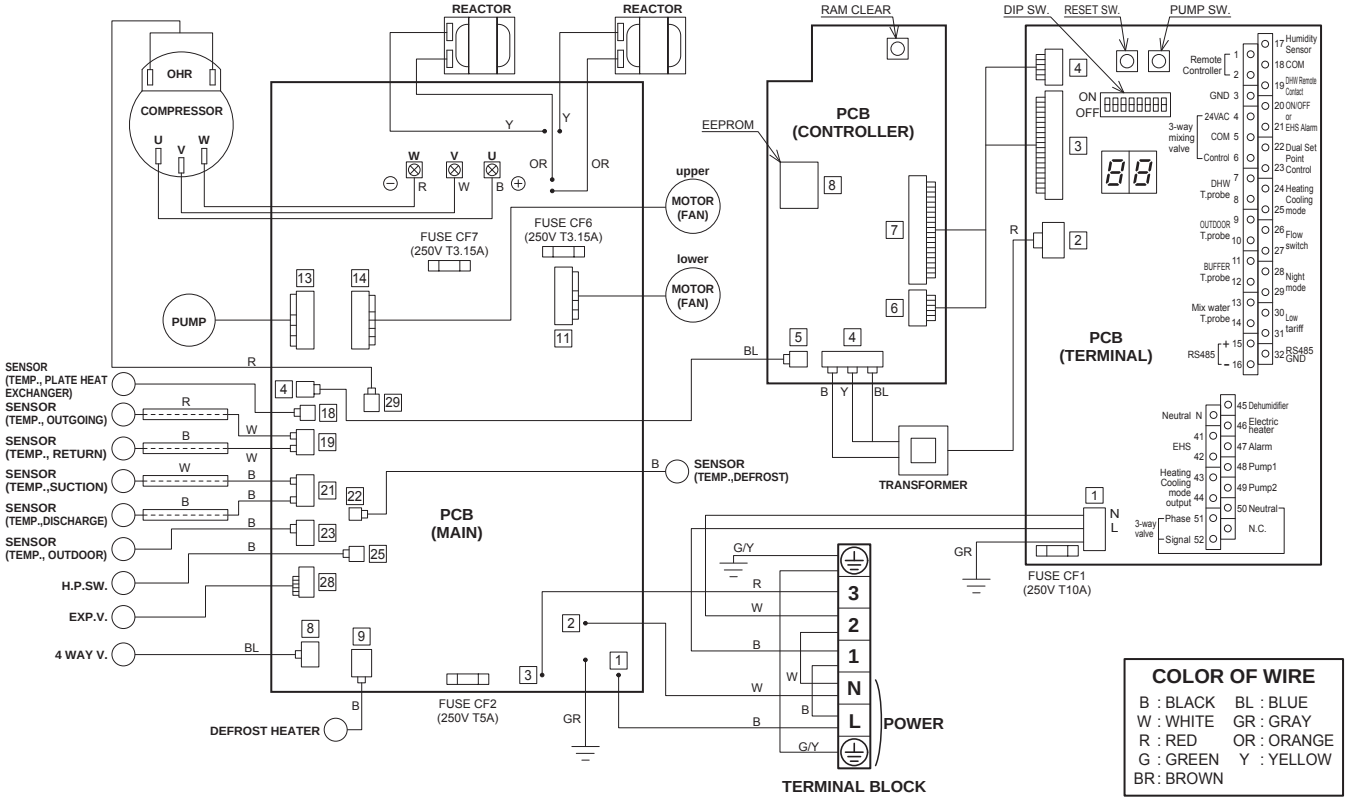


Wiring diagram

AEYC-1643XU-CH



COLOR OF WIRE	
B : BLACK	BL : BLUE
W : WHITE	GR : GRAY
R : RED	OR : ORANGE
G : GREEN	Y : YELLOW
BR : BROWN	

⚠WARNING !

⚠Electric Shock !

Warning when you fix electric components !

- Don't touch electrically charged parts, as electric shock may occur even if they are switched off.
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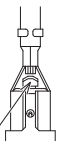
How to detach locking terminal

Pull off while pressing the locking lever.



PCB(Terminal) Input/Output

Serial connections

Terminal	Function	Analogue Input	Remarks
1 - 2 - 3	Remote Controller	1=S1, 2=S2, 3=GND	Wire length is maximum 100m with 1mm^2 shielded cables.
15 - 16 - 32	RS485 Mod Bus	15=+, 16=-, 32=GND	

Analogue/Digital INPUTS

Terminal	Function	Analogue Input	Digital Input
9 - 10	Outdoor air temperature probe (additional probe than the probe positioned on the HP unit)	NTC Resistance R25=10kΩ +/-1% B25/85=3970K +/-1%	
7 - 8	DHW tank temperature probe	NTC Resistance R25=10kΩ +/-1% B25/85=3435K +/-1%	
11 - 12	Buffer tank temperature probe		
13 - 14	Mix Water temperature probe		
17 - 18	Humidity Sensor	0-10V DC	
19 - 18	DHW remote contact		Voltage free contact 12V10mA
20 - 21	Configurable input: -ON/OFF remote contact -EHS Alarm		
22 - 23	Dual Set Point Control		
24 - 25	Heating/Cooling mode remote contact		
26 - 27	Flow switch		
28 - 29	Night mode		
30 - 31	Low tariff		

Analogue/Digital OUTPUTS

Terminal	Function	Analogue Output	Digital Output
4 - 5 - 6	3way mixing valve	6=0-10V DC (control)	4-5 =24V AC
N	Neutral		1ph 230V, 1A Neutral
41 - 42	EHS (External heat source for space heating)		1ph 230V, 1A (in case of coil relay 40mA)
43 - 44	Heating/Cooling mode output		
45	Dehumidifier		
46	Electric heater for DHW or Backup heater		
47	Alarm (Configurable output) - Alarm - Ambient temperature reached		
48	Pump1 (1st Additional water pump)		
49	Pump2 (2nd Additional water pump)		
50 - 51 - 52	DHW 3way valve		1ph 230V, 1A 50=Neutral, 51=Phase, 52=Signal

⚠ WARNING

Before performing any maintenance make sure you have removed the power acting on the switch.
- Check that the staff wears suitable individual protection devices.
- The extraordinary maintenance operations must be performed by qualified staff.
- The Heat pump contains refrigerant that requires special disposal.
- On conclusion of its useful life, remove the air conditioner with caution.
- The HP unit must be taken to a relevant collection centre or the dealer, which will dispose of it correctly and suitably.

Do not use the followings for cleaning

Gasoline, benzine, thinner or cleanser may damage the coating of the unit.

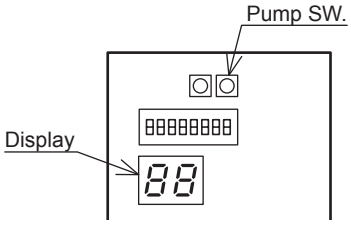
Hot water over 40°C (104°F) may be caused discoloring or deformation.

Replacing the circulating water

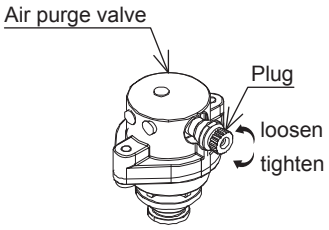
- For the circulating water, use anti-freeze. Replace it every few years.
  The replacement period depends on the type of anti-freeze. Ask at the store where you purchase your anti-freeze.
- For anti-freeze, always use our genuine anti-freeze.
  Do not use anti-freeze from another company or old anti-freeze. Never mix anti-freeze.
  Also, do not dilute anti-freeze.
  Not only can this make normal operation impossible but it can cause reduced performance or breakdown.

Water loading and air bleeding in the hydraulic circuit

When Pump SW on the PCB (Terminal) is pressed, the water pump comes into operation to circulate water.
Each digital segment on the right side of the PCB (Terminal) lights up sequentially during pump operation.
The pump is stopped automatically after 10 minutes of operation. If air could not be released this way from the water circuit, then press Pump SW again after the pump has stopped. If you want to stop the pump before it stops automatically, press Pump SW again.

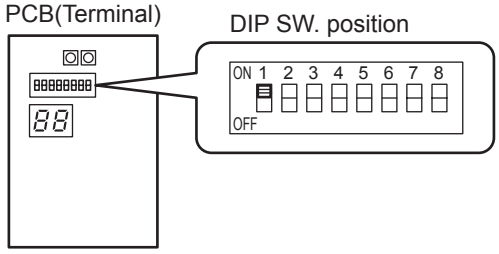


1) Connect the water supply to a drain and fill valve.
2) Loosen the plug a little to take the air out of the circulating water pipe through the air purge valve. The plug doesn't have to be removed. Be careful not to loose it.
3) Fill with water until the manometer indicates a pressure of approximately 2.0 bar. Remove air in the circuit as much as possible using the air purge valves.
4) After the air is all purged from the system, tighten the plug again.



Anti-freeze function setting

If the circulation water is mixed with a certain quantity of inhibited monoethylene glycol, then the anti-freeze function is not necessary.
To disable the anti-freeze function, access the PCB (Terminal) and set “Dip SW1” to OFF.
Remove the wiring lid to access the PCB (Terminal).
“Dip SW1” factory default setting is ON, so the anti-freeze function is enabled.



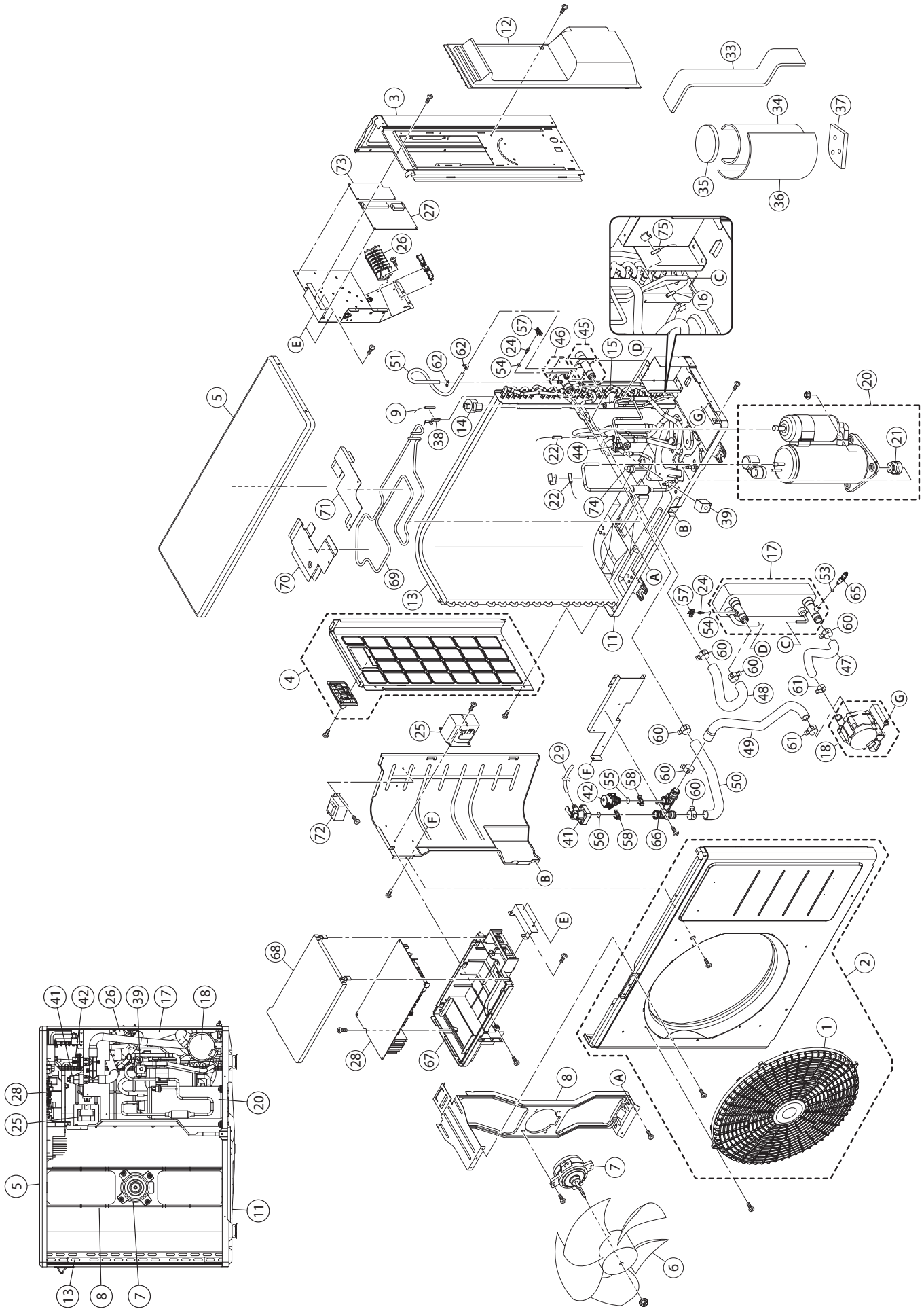
Anti-freeze concentration in the system

	% Monoethylene glycol inhibitor	10%	20%	30%	40%
	Freezing temperature *	-4°C	-9°C	-15°C	-23°C
Correction factor	Capacity	0,996	0,991	0,983	0,974
	Power absorbed	0,990	0,978	0,964	1,008
	Pressure drop	1,003	1,010	1,020	1,033

(*) The temperature values are indicative. Always refer to the temperatures given for the specific product used.

Exploded view and Parts list

AEYC-0643XU-CH



Exploded view and Parts list

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No.	PARTS NAME	PARTS No.
1	OUTLET GRILLE	887480
2	FRONT PANEL ASSY.	887481
3	RIGHT SIDE PANEL	885286
4	LEFT SIDE PANEL ASSY.	883741
5	TOP PANEL	884558
6	PROPELLER FAN	922330
7	MOTOR	944204
8	BRACKET, MOTOR	937023
9	SENSOR (TEMP. OUTDOOR)	883780
11	BOTTOM PANEL ASSY. WITHOUT HEATER)	887482
12	WIRING LID ASSY.	937262
13	CONDENSER ASSY.	883743
14	COIL, EXPANSION VALVE	937196
15	EXPANSION VALVE	922928
16	SENSOR (TEMP. DEFROST)	937014
17	HEAT EXCHANGER ASSY.	887485
18	PUMP ASSY.	885394
20	COMPRESSOR	887483
21	VIBRATION PROOF RUBBER	887484
22	SENSOR (TEMP. DISCHARGE/SUCTION)	937013
24	SENSOR (TEMP. WATER)	937193
25	REACTOR	927200
26	TERMINAL BLOCK	885263
27	PCB (TERMINAL)	885887
28	PCB (MAIN)	887479
29	RUBBER HOSE(FOR RELIEF VALVE)	883784
33	SOUND PROOF MATERIAL 1	883791
34	SOUND PROOF MATERIAL 2	887486
35	SOUND PROOF MATERIAL 3	883793
36	SOUND PROOF MATERIAL 4	883794
37	SOUND PROOF MATERIAL 5	887487
38	OUTDOOR THERMISTOR HOLDER	937016
39	COIL, 4-WAY VALVE	883796
41	RELIEF VALVE	883798
42	AIR PURGE VALVE	885266
44	4-WAY VALVE	927359
45	CIRCULATING WATER OUTGOING PORT ASSY.	884560
46	CIRCULATING WATER RETURN PORT ASSY.	883778
47	RUBBER HOSE 1	883786
48	RUBBER HOSE 8	884561
49	RUBBER HOSE 3	885396
50	RUBBER HOSE 4	885397
51	RUBBER HOSE 6	883790
53	O RING (P3)	807209
54	O RING (P4)	807207
55	O RING (P12.5)	808972

Exploded view and Parts list

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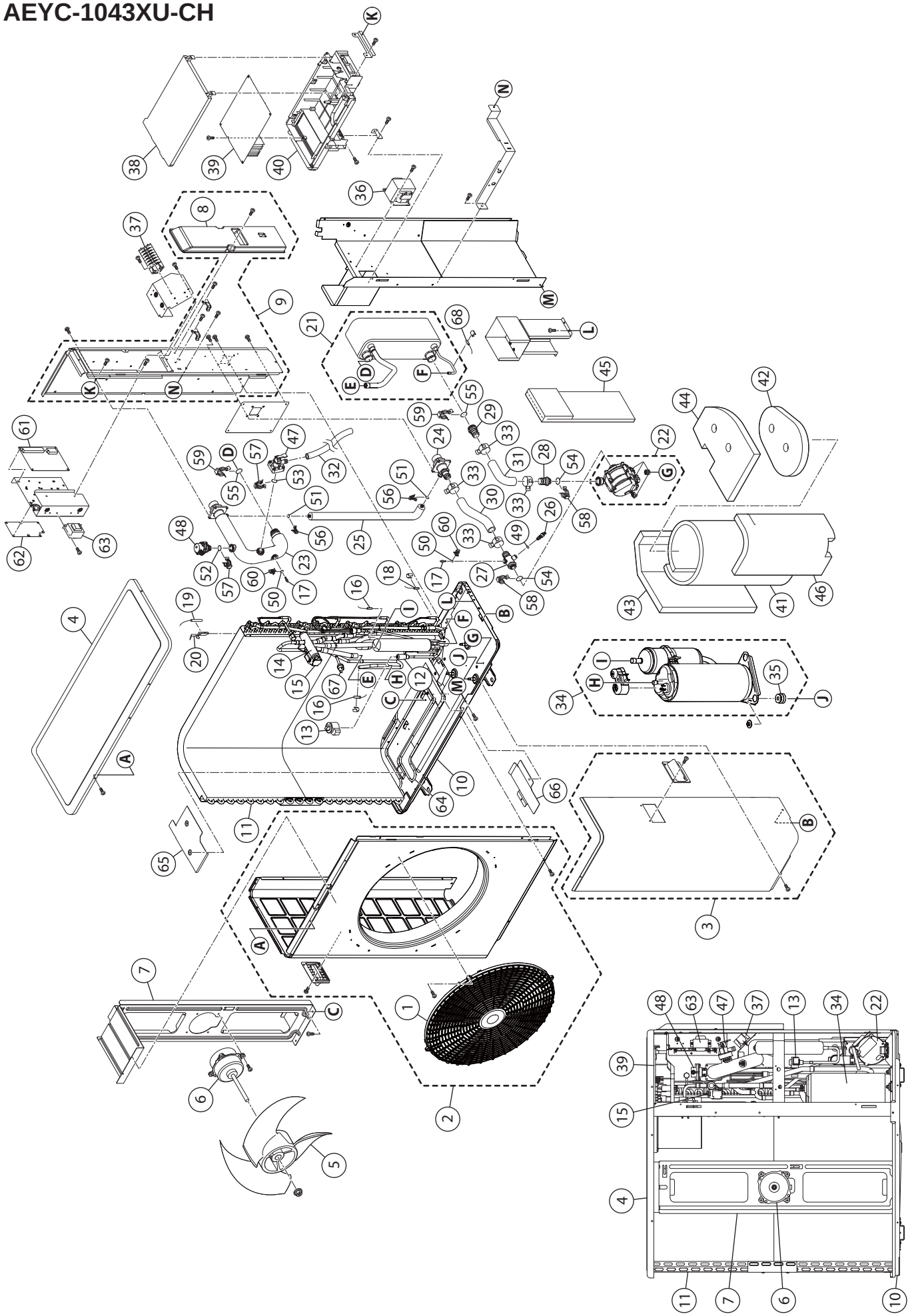
No.	PARTS NAME	PARTS No.
56	O RING (P14)	910164
57	QUICK FASTENER(FOR SENSOR TEMP. WATER)	922174
58	QUICK FASTENER (12.7)	790706
60	HOSE BAND	937221
61	HOSE BAND	886472
62	HOSE BAND	934914
65	DRAIN PLUG	885519
66	CIRCULATING WATER CONNECTION COUPLING	885395
67	CASE OF PCB	883847
68	CASE OF PCB (COVER)	885393
69	DEFROST HEATER	884211
70	DEFROST HEATER HOLDER 1	884212
71	DEFROST HEATER HOLDER 2	884213
72	POWER TRANSFORMER	885264
73	PCB (CONTROLLER)	885253
74	HIGH PRESSURE SWITCH	884120
75	PLATE HEAT EXCHANGER SENSOR (COOLING MODE ONLY)	887488
	BACK GRILL	885782
	LEAD WIRE FOR PUMP	886681

Exploded view and Parts list

AEYC-1043XU-CH



Exploded view and Parts list

AEYC-1043XU-CH

No.	PARTS NAME	PARTS No.
1	OUTLET GRILLE	938106
2	FRONT PANEL ASSY. (LEFT)	887490
3	FRONT PANEL ASSY. (RIGHT)	887491
4	TOP PANEL ASSY.	885504
5	PROPELLER FAN	934945
6	MOTOR	885510
7	BRACKET, MOTOR	934947
8	WIRING LID	885507
9	BACK PANEL ASSY.	885505
10	BOTTOM PANEL ASSY. (WITHOUT HEATER)	887492
11	CONDENSER ASSY.	883634
12	EXPANSION VALVE	922928
13	COIL, EXPANSION VALVE	937196
14	4-WAY VALVE	938113
15	COIL, 4-WAY VALVE	883796
16	SENSOR (TEMP. DISCHARGE & SUCTION)	937013
17	SENSOR (TEMP. CIRCULATING WATER)	885265
18	SENSOR (TEMP. DEFROST)	937014
19	SENSOR (TEMP. OUTDOOR)	883780
20	OUTDOOR THERMISTOR HOLDER	937016
21	HEAT EXCHANGER ASSY.	887494
22	PUMP ASSY.	885512
23	CIRCULATING WATER PIPE ASSY.	885513
24	CIRCULATING WATER RETURN PORT	885514
25	BYPASS PIPE ASSY.	885515
26	DRAIN PLUG	885519
27	HOSE COUPLING 1 ASSY. (PUMP INLET)	885516
28	HOSE COUPLING 2 (PUMP OUTLET)	885271
29	HOSE COUPLING 3 (HEAT EXCHANGER)	885272
30	RUBBER HOSE (PUMP INLET WATER)	885273
31	RUBBER HOSE (PUMP OUTLET WATER)	885517
32	RUBBER HOSE (FOR RELIEF VALVE)	885520
33	HOSE BAND	937221
34	COMPRESSOR	887493
35	VIBRATION PROOF RUBBER	887598
36	REACTOR	885259
37	TERMINAL BLOCK	885263
38	CASE OF PCB (COVER)	885393
39	PCB (MAIN)	887536
40	CASE OF PCB	883847
41	SOUND PROOF MATERIAL 1	887495
42	SOUND PROOF MATERIAL 2	883883
43	SOUND PROOF MATERIAL 3	883884
44	SOUND PROOF MATERIAL 4	883885
45	SOUND PROOF MATERIAL 5	884582

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No.	PARTS NAME	PARTS No.
46	SOUND PROOF MATERIAL 6	885518
47	RELIEF VALVE	883798
48	AIR PURGE VALVE	885266
49	O RING (P3)	807209
50	O RING (P4)	807207
51	O RING (P6)	807205
52	O RING (P12.5)	808972
53	O RING (P14)	910164
54	O RING (P16)	807213
55	O RING (P22)	886473
56	QUICK FASTENER	885745
57	QUICK FASTENER (12.7)	790706
58	QUICK FASTENER (16A)	963516
59	QUICK FASTENER (16B)	884148
60	QUICK FASTENER (SENSOR TEMP. WATER)	922174
61	PCB (TERMINAL)	885887
62	PCB (CONTROLLER)	885253
63	POWER TRANSFORMER	885264
64	DEFROST HEATER	885508
65	DEFROST HEATER HOLDER 1	884163
66	DEFROST HEATER HOLDER 2	884132
67	HIGH PRESSURE SWITCH	884120
68	PLATE HEAT EXCHANGER SENSOR (COOLING MODE ONLY)	887488
	BACK GRILL	885781
	LEAD WIRE FOR PUMP	886680

Exploded view and Parts list

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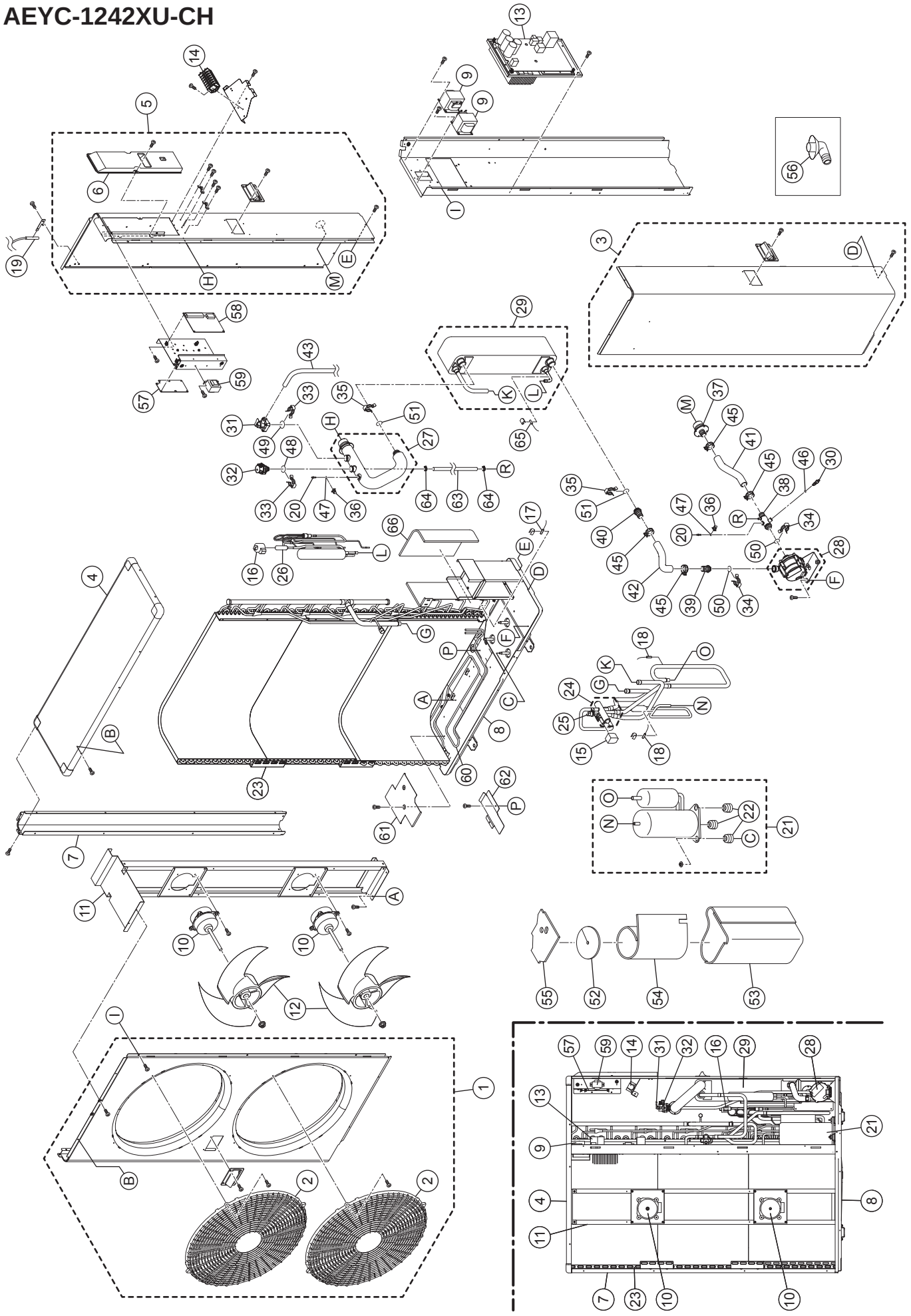

Exploded view and Parts list

AEYC-1242XU-CH

No.	PARTS NAME	PARTS No.
1	FRONT PANEL ASSY. (LEFT)	885255
2	OUTLET GRILLE	938106
3	FRONT PANEL ASSY. (RIGHT)	887462
4	TOP PANEL ASSY.	884552
5	BACK PANEL ASSY. (RIGHT)	887295
6	WIRING LID	884129
7	BACK PANEL (LEFT)	884126
8	BOTTOM PANEL ASSY. (WITHOUT HEATER)	887227
9	REACTOR	885259
10	MOTOR	885260
11	BRACKET, MOTOR	885261
12	PROPELLER FAN	938112
13	PCB (MAIN) ASSY.	887228
14	TERMINAL BLOCK	885263
15	COIL, 4-WAY VALVE	883796
16	COIL, EXPANSION VALVE	884119
17	SENSOR (TEMP. DEFROST)	887229
18	SENSOR (TEMP. DISCHARGE & SUCTION)	884139
19	SENSOR (TEMP. OUTDOOR)	884140
20	SENSOR (TEMP. WATER)	885265
21	COMPRESSOR	887230
22	VIBRATION PROOF RUBBER	887231
23	CONDENSER ASSY.	887232
24	4-WAY VALVE	938113
25	HIGH PRESSURE SWITCH	884120
26	EXPANSION VALVE	885511
27	CIRCULATING WATER PIPE ASSY.	885267
28	PUMP ASSY.	885268
29	HEAT EXCHANGER ASSY.	887291
30	DRAIN PLUG	885519
31	RELIEF VALVE	883798
32	AIR PURGE VALVE	885266
33	QUICK FASTENER (12.7)	790706
34	QUICK FASTENER (16A)	963516
35	QUICK FASTENER (16B)	884148
36	QUICK FASTENER (SENSOR TEMP. WATER)	883848
37	CIRCULATING WATER RETURN PORT	885269
38	HOSE COUPLING 1 ASSY. (PUMP INLET)	885270
39	HOSE COUPLING 2 (PUMP OUTLET)	885271
40	HOSE COUPLING 3 (HEAT EXCHANGER)	885272
41	RUBBER HOSE (PUMP INLET)	885273
42	RUBBER HOSE (PUMP OUTLET)	885274
43	RUBBER HOSE (RELIEF VALVE)	934970
45	HOSE BAND	937221
46	O RING (P3)	807209
47	O RING (P4)	807207
48	O RING (P12.5)	808972

Exploded view and Parts list

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No.	PARTS NAME	PARTS No.
49	O RING (P14)	910164
50	O RING (P16)	807213
51	O RING (P22)	886473
52	SOUND PROOF MATERIAL 1	887233
53	SOUND PROOF MATERIAL 2	887234
54	SOUND PROOF MATERIAL 3	887235
55	SOUND PROOF MATERIAL 4	887236
56	DRAIN ELBOW	881618
57	PCB (CONTROLLER)	885253
58	PCB (TERMINAL)	885254
59	POWER TRANSFORMER	885264
60	DEFROST HEATER	884130
61	DEFROST HEATER HOLDER 1	884131
62	DEFROST HEATER HOLDER 2	884132
63	RUBBER HOSE	885275
64	HOSE BAND	934914
65	PLATE HEAT EXCHANGER SENSOR (COOLING MODE ONLY)	887193
66	SOUND PROOF MATERIAL 5	887296

Exploded view and Parts list

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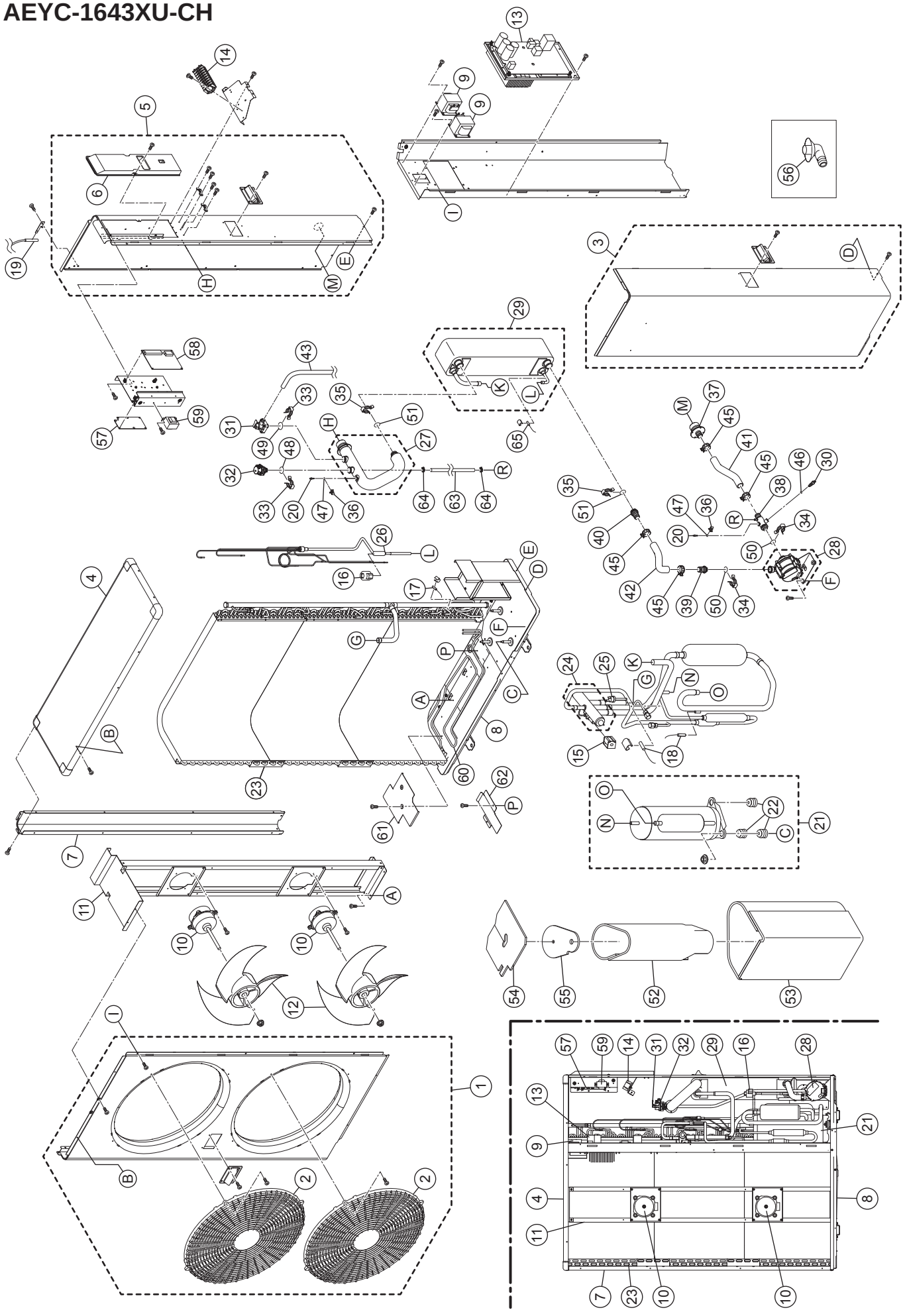

Exploded view and Parts list

AEYC-1643XU-CH

No.	PARTS NAME	PARTS No.
1	FRONT PANEL ASSY. (LEFT)	885255
2	OUTLET GRILLE	938106
3	FRONT PANEL ASSY. (RIGHT)	887497
4	TOP PANEL ASSY.	884552
5	BACK PANEL ASSY. (RIGHT)	887295
6	WIRING LID	884129
7	BACK PANEL (LEFT)	884126
8	BOTTOM PANEL ASSY. (WITHOUT HEATER)	887192
9	REACTOR	885259
10	MOTOR	885260
11	BRACKET, MOTOR	885261
12	PROPELLER FAN	938112
13	PCB (MAIN) ASSY.	887496
14	TERMINAL BLOCK	885263
15	COIL, 4-WAY VALVE	883796
16	COIL, EXPANSION VALVE	884119
17	SENSOR (TEMP. DEFROST)	937014
18	SENSOR (TEMP. DISCHARGE & SUCTION)	884139
19	SENSOR (TEMP. OUTDOOR)	884140
20	SENSOR (TEMP. WATER)	885265
21	COMPRESSOR	887498
22	VIBRATION PROOF RUBBER	884135
23	CONDENSER ASSY.	887195
24	4-WAY VALVE	884117
25	HIGH PRESSURE SWITCH	884120
26	EXPANSION VALVE	884118
27	CIRCULATING WATER PIPE ASSY.	885267
28	PUMP ASSY.	885268
29	HEAT EXCHANGER ASSY.	885262
30	DRAIN PLUG	885519
31	RELIEF VALVE	883798
32	AIR PURGE VALVE	885266
33	QUICK FASTENER (12.7)	790706
34	QUICK FASTENER (16A)	963516
35	QUICK FASTENER (16B)	884148
36	QUICK FASTENER (SENSOR TEMP. WATER)	883848
37	CIRCULATING WATER RETURN PORT	885269
38	HOSE COUPLING 1 ASSY. (PUMP INPUT)	885270
39	HOSE COUPLING 2 (PUMP OUTPUT)	885271
40	HOSE COUPLING 3 (HEAT EXCHANGER)	885272
41	RUBBER HOSE (PUMP INPUT)	885273
42	RUBBER HOSE (PUMP OUTPUT)	885274
43	RUBBER HOSE (RELIEF VALVE)	934970
45	HOSE BAND	937221
46	O RING (P3)	807209

AEYC-1643XU-CH

No.	PARTS NAME	PARTS No.
47	O RING (P4)	807207
48	O RING (P12.5)	808972
49	O RING (P14)	910164
50	O RING (P16)	807213
51	O RING (P22)	886473
52	SOUND PROOF MATERIAL 1	887196
53	SOUND PROOF MATERIAL 2	887197
54	SOUND PROOF MATERIAL 3	887198
55	SOUND PROOF MATERIAL 4	887199
56	DRAIN ELBOW	881618
57	PCB (CONTROLLER)	885253
58	PCB (TERMINAL)	885887
59	POWER TRANSFORMER	885264
60	DEFROST HEATER	884130
61	DEFROST HEATER HOLDER 1	884131
62	DEFROST HEATER HOLDER 2	884132
63	RUBBER HOSE	885275
64	HOSE BAND	934914
65	PLATE HEAT EXCHANGER SENSOR (COOLING MODE ONLY)	887193
	CORNER COVER SET (TOP PANEL)	885783
	SIDE GRILL	885600
	BACK GRILL	885599
	LEAD WIRE FOR PUMP	886679