

ecodan[®]
Renewable Heating Technology

QAHV SETUP GUIDE



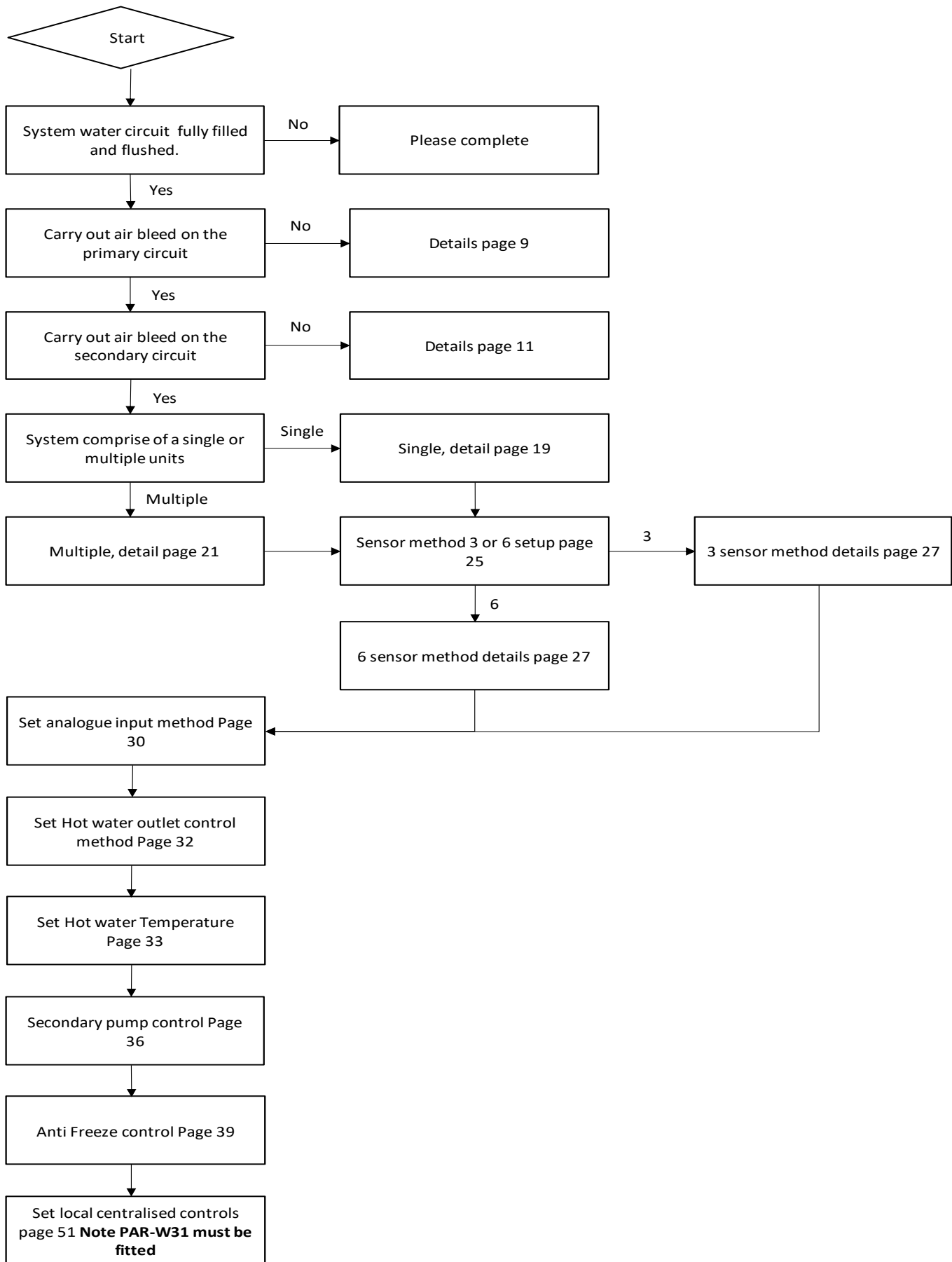
Version 1.2



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1. Commissioning Process flow chart

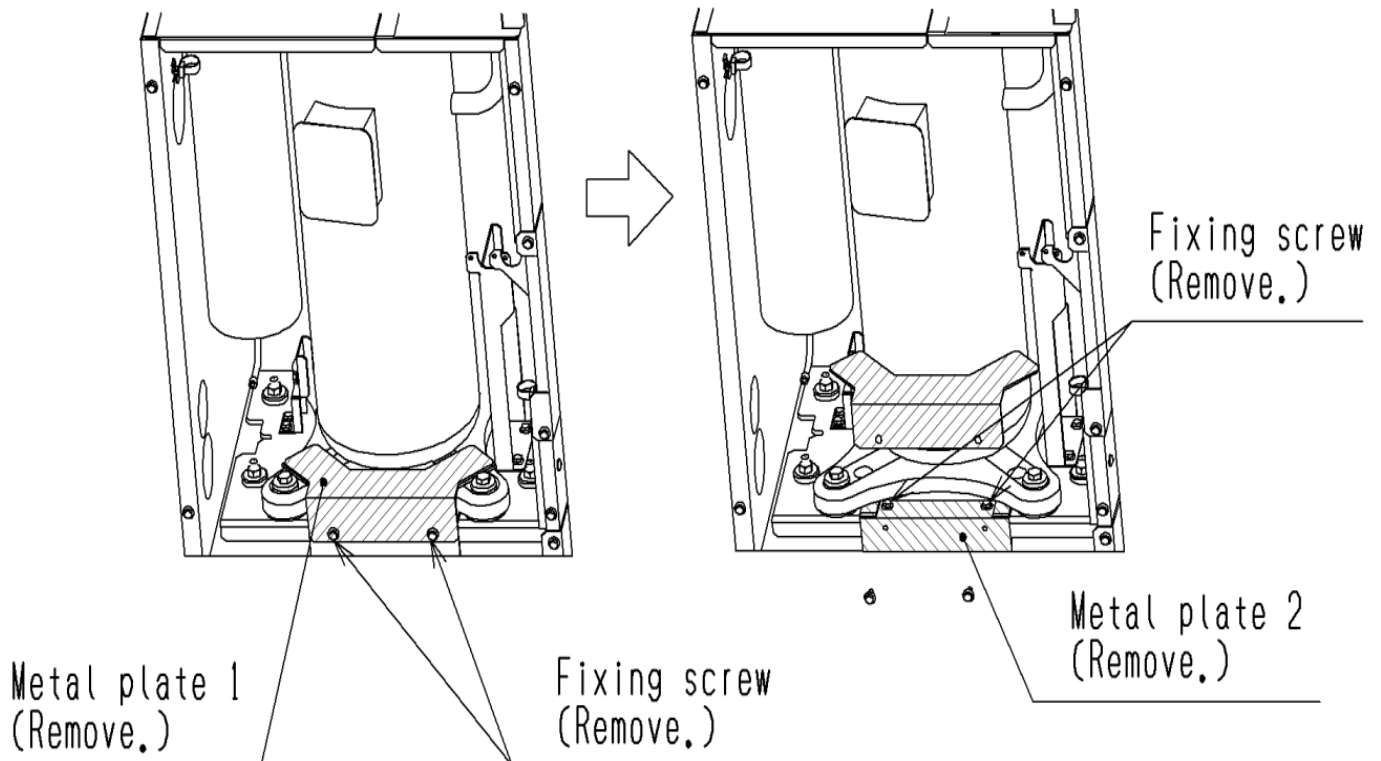


2. Transit Bolts

Notes for electricians



The metal plates are used only for transportation. Remove the metal plates before operating the unit to keep the unit from vibrating excessively.



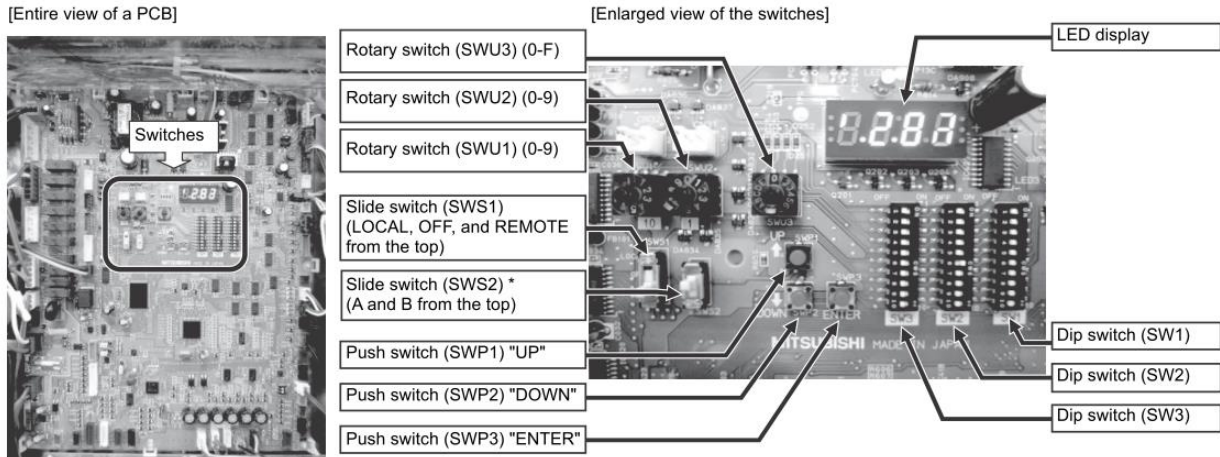
3. Dip switch settings table

SW	Function	Usage	Factory setting			Setting timing	
			MAIN circuit	OFF setting	ON setting		
SW1	1	Model setting	Depends on the unit	Leave the setting as it is.		At a reset	
	2						
	3						
	4						
	5						
	6	Test run setting Water flow rate adjustment	OFF	-	Operation during test run	Any time	
	7	Not used	OFF	Leave the setting as it is.		At a reset	
	8	Test run setting Primary water circuit air bleed operation	OFF	-	Operation during test run	Any time	
	9	Not used	OFF	Leave the setting as it is.			
	10	Model setting	ON	Leave the setting as it is.		At a reset	
SW2	1	Model setting	OFF	Leave the setting as it is.		At a reset	
	2	Model setting	OFF	Leave the setting as it is.		At a reset	
	3	Model setting	OFF	Leave the setting as it is.		At a reset	
	4	Model setting	OFF	Leave the setting as it is.		At a reset	
	5	Freeze-up protection method switching	OFF	Pump operation + heater energization	Compressor operation + heater energization	At a reset	
	6	Power supply option to the communication circuit	Switches between supplying or not supplying power to the communication circuit.	ON	Does not supply power to the communication circuit.	Supplies power to the communication circuit.	Any time
	7	Model setting	OFF	Leave the setting as it is.		At a reset	
	8	Model setting	OFF	Leave the setting as it is.		At a reset	
	9	① Individual/Multiple system ② AE connection	① Selects between individual and Multiple system ② Selects AE connection or not	OFF	Individual system	Multiple system or during AE connection	At a reset
	10	Display mode switch 7	This switch is used in combination with dip switches SW3-5 through 3-10 and push switches SWP 1, 2, and 3 to configure or view the settings when performing a test run or changing the system configuration.	OFF	Changes the 7-segment LED display mode.		Any time
SW3	1	Remote reset	Enables or disables the error to be reset from a remote location.	ON	Disables the error to be reset from a remote location.	Enables the error to be reset from a remote location.	At a reset
	2	Auto restart after power failure	Enables or disables the automatic restoration of operation after power failure (in the same mode as the unit was in before a power failure).	ON	An alarm will be issued when power is restored after a power outage. The alarm will be reset when the power is turned off and then turned back on.	Automatically restores operation after power failure.	Any time
	3	Test run setting Secondary water circuit air bleed operation	OFF	-	Operating during test run	Any time	
	4	Function switching (Do not change this setting.)		OFF	Leave the setting as it is.		At a reset
	5	Display mode switch 1	These switches are used in combination with dip switches SW2-5 and push switches SWP 1, 2, and 3 to configure or view the settings when performing a test run or changing the system configuration.	OFF	Changes the 7-segment LED display mode.		Any time
	6	Display mode switch 2		OFF	Changes the 7-segment LED display mode.		Any time
	7	Display mode switch 3		OFF	Changes the 7-segment LED display mode.		Any time
	8	Display mode switch 4		OFF	Changes the 7-segment LED display mode.		Any time
	9	Display mode switch 5		OFF	Changes the 7-segment LED display mode.		Any time
	10	Display mode switch 6		OFF	Changes the 7-segment LED display mode.		Any time

"-" in the table indicates that the function in the corresponding row will be disabled regardless of the actual switch setting. The factory setting for these items is OFF.

* If an error is occurring with the compressor when the dip switch SW2-5 is set to ON, the circulating pump or the compressor will not operate while the unit is operating in the freeze-up protection mode. Only the freeze-up protection heater will turn on.

Different types of switches on the PCB



During the trial run, set the slide switch SWS2 on the board within the control box to the lower position. It is set to the upper side by default to force the pump and compressor to stop to protect the pump from being harmed by the anti-freezing process if there is no water flowing or the valve is closed before the test run. Upper side: A (under preparation)

Lower side: B (auto)

Always set to the lower side.

*** Setting to the upper side forcefully stops the pump and compressor thus the unit does not operate.**

*** When SWS2 is set to the upper side, the display shows "P.OFF" and the setting cannot be made. When "P.OFF" appears, set SWS2 to the lower side.**

4. Table of settings items

Set the dip switches SW2 and SW3 as shown in the table below to set the value for the items in the "Setting item" column.

Dip switch settings	Setting item	Item code	Unit	Lower limit	Upper limit	Initial value	Setting value					Setting timing
							Three-sensor method Six-sensor method			Local control method		
							Main sensor	Sub sensor *3	Sub unit	Main unit	Sub unit	
SW2-10: OFF SW3-5, 6, 7: OFF SW3-8, 9, 10: ON	Unit address	105	-	1	8	2	*4	*4	*4	-	-	At a reset
	Number of connected units to M-NET	106	-	0	16	1		-	-			At a reset
	AE-200 connection (0: Not connected, 2: Connected)	107	-	0	2	0				-	-	At a reset
	Function 1 (Sub sensor: 2, Main sensor: 1, Sub unit: 0) *1	110	-	0	2	0	1	2	0	1	0	At a reset
	M-NET address of sub sensor (six-sensor method)	112	-	1	51	51	*3	-	-	-	-	At a reset
	Secondary control availability (0: Not available 1: Available)	121	-	0	1	0						At a reset
SW2-10: OFF SW3-5~8, 10: OFF SW3-9: ON	Model display	0	-	-	-	-	-	-	-	-	-	-
	Current time	1	Hour and minutes	0:00	23:59	-	*5	*5	*5			Any time
	Current inlet water temperature (display function only)	c01	°C	-	-	-	-	-	-	-	-	-
	Current outlet water temperature (display function only)	c02	°C	-	-	-	-	-	-	-	-	-
	Outdoor temperature (display function only)	c03	°C	-	-	-	-	-	-	-	-	-
	Storage tank water temperature (display function only)	c04	°C	-	-	-	-	-	-	-	-	-
	Demand control - maximum capacity setting	2	%	0	100	100						Operation SW is turned ON
	Outlet hot water temperature (boiling temperature)	9	°C	40	Secondary control disabled: 90.0 Secondary control enabled: 80.0	65	*5	*5	*5			Any time
	High- and low-pressure display interval of times	1051	Seconds	0	100	3						Operation SW is turned ON
Low noise operation - maximum capacity	1054	%	0	100	70						Operation SW is turned ON	
SW2-10: OFF SW3-5~7, 9, 10: OFF SW3-8: ON	Thermo-ON prohibition time Sjs1	1025	Seconds	0	480	60						Any time
	Sensor method setting (0: Local control, 1: Three-sensor, 2: Six-sensor)	1214	-	0	2	0	3-sensor: 1 6-sensor: 2	3-sensor: 1 6-sensor: 2	3-sensor: 1 6-sensor: 2	0	0	At a reset
	Mode 1 Thermo-ON thermistor selection	1500	-	1	Six-sensor system: 6 Other system: 3	3		-	-	-	-	Any time
	Mode 1 Thermo-OFF thermistor selection	1501	-	1	Six-sensor system: 6 Other system: 3	3		-	-	-	-	Any time
	Mode 2 Thermo-ON thermistor selection	1502	-	1	Six-sensor system: 6 Other system: 3	1		-	-	-	-	Any time
	Mode 2 Thermo-OFF thermistor selection	1503	-	1	Six-sensor system: 6 Other system: 3	2		-	-	-	-	Any time
	Mode 3 Thermo-ON thermistor selection	1504	-	1	Six-sensor system: 6 Other system: 3	1		-	-	-	-	Any time
	Mode 3 Thermo-OFF thermistor selection	1505	-	1	Six-sensor system: 6 Other system: 3	3		-	-	-	-	Any time
Number of water control modes *2	1507	-	1	3	1		-	-	-	-	Any time	

Dip switch settings	Setting item	Item code	Unit	Lower limit	Upper limit	Initial value	Setting value					Setting timing
							Three-sensor method			Local control method		
							Six-sensor method			Main unit	Sub unit	
Main sensor	Sub sensor *3	Sub unit	Main unit	Sub unit								
SW2-10: OFF SW3-5~7, 9, 10: OFF SW3-8: ON	Mode 1 Thermo differential value	1508	°C	0	30	10	*5	-	-	-	-	Any time
	Mode 2 Thermo differential value	1509	°C	0	30	10	*5	-	-	-	-	Any time
	Mode 3 Thermo differential value	1510	°C	0	30	10	*5	-	-	-	-	Any time
	Anti-freezing setting (0: Outdoor, 1: Indoor)	1514	-	0	1	0	*6	*6	*6	*6	*6	At a reset

-: No settings required

*1 Set to "1" when individual system and connected to AE-200.

*2 Set to "3" when using all modes (Mode 1,2, and 3).

Set to "2" when using mode 1 and mode 2.

Set to "1" when using mode 1.

*3 Only Six-sensor method

*4 Required only when AE-200 is connected.

*5 It can also be set with the PAR-W31MAA or AE-200.

*6 When secondary control is enabled.

5. Air bleed operation Primary Circuit

For each circuit, perform at least three sets of at least 5 minutes in duration. During the air bleeding operation, use the method below (*1) to display the water flow rate during operation and check it is stable

Step	Procedure	Operation & check point	Information						
1	Water Level check	Check the water level is full	-						
2	Power operation	Turn on power	If the start-up operation has not finished, SW2-9 and SW2-3 need to be set as a stopgap measure (see Note 1).						
3	PCB Dipswitch Set	Change the setting of SW 1-8 to ON <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="2">SW1</th> </tr> <tr> <th>8</th> <th>9</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>	SW1		8	9	ON	OFF	-
SW1									
8	9								
ON	OFF								
4	Operation	Set SWS1 from Remote to Local *When the pump has become quiet and the flow rate is stable end operation	Note, the compressor does not operate *The pump and Valve open to allow water flow						
5	Stop Operation	Change Dipswitch SW1-8 from On to Off Change SWS! From Local to Remote	The pump and valve will now close						

(Note 1) As a stopgap measure, change the settings of SW2-9 and SW2-3 as shown in the table below, then restart the power.

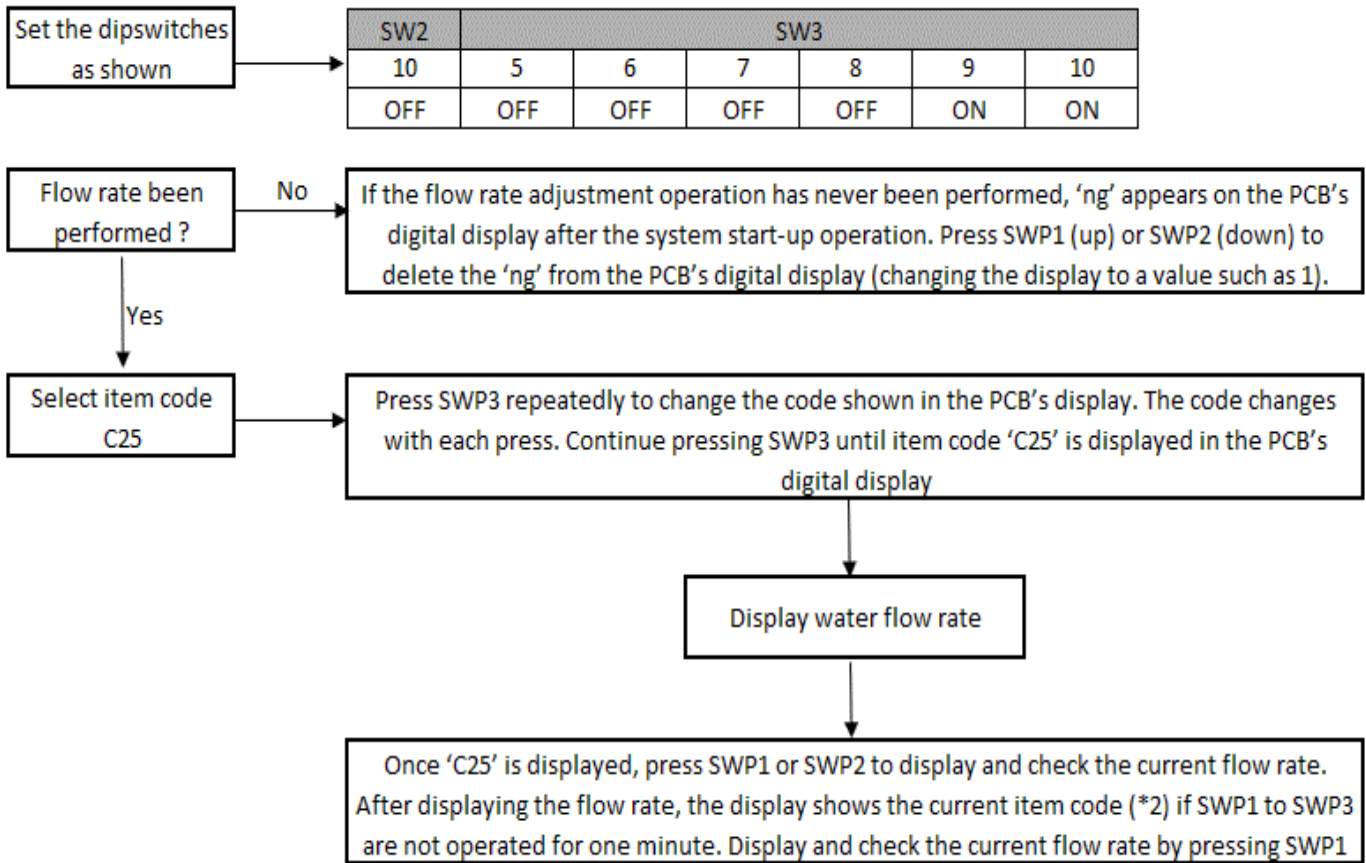
	Multiple change-over switch SW 2-9	Local/internal change-over switch SW 2-3
When start-up operation has NOT completed	OFF	ON
When start-up operation has completed	-	-

If water shutoff error 2601 occurs during the air bleeding operation, resolve the issue, then change the setting of PCB slide SWS1 from LOCAL to OFF, and back to LOCAL again. The air bleeding operation starts again.

(You can clear water shutoff error by turning the power OFF and ON again. The equipment enters standby mode in this case.)

(You can also clear water shutoff errors by changing the setting of PCB DIP SW1-8 or 1-9 from ON to OFF. Turning DIP SW1-8 OFF starts circulation heating circuit air bleeding (manual). Turning DIP SW1-9 OFF starts water supply circuit air bleeding (manual).)

Water flow rate display



6. Air bleed operation Secondary Circuit

For each circuit, perform at least three sets of at least 5 minutes in duration. During the air bleeding operation, use the method below **(*1)** to display the water flow rate during operation and check it is stable

Step	Procedure	Operation & check point	Information									
1	Water Level check	Check the water level is full	-									
2	Power operation	Turn on power	If the start-up operation has not finished, SW2-9 and SW2-3 need to be set as a stopgap measure (see Note 1).									
3	Operation procedure	Check the secondary side control is enabled	-									
4	PCB Dipswitch Set	Change the setting of SW 3-3 to ON <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">SW1</th> <th>SW3</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>9</td> <td>3</td> </tr> <tr> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> </tbody> </table>	SW1		SW3	8	9	3	OFF	OFF	ON	Make sure SWS2 is set to B
SW1		SW3										
8	9	3										
OFF	OFF	ON										
5	Operation	Set SWS1 from Remote to Local *When the pump has become quiet and the flow rate is stable end operation	Note, the compressor does not operate *The pump and Valve open to allow water flow									
6	Stop Operation	Change Dipswitch SW3-3 from On to Off Change SWS1 From Local to Remote	The pump and valve will now close									

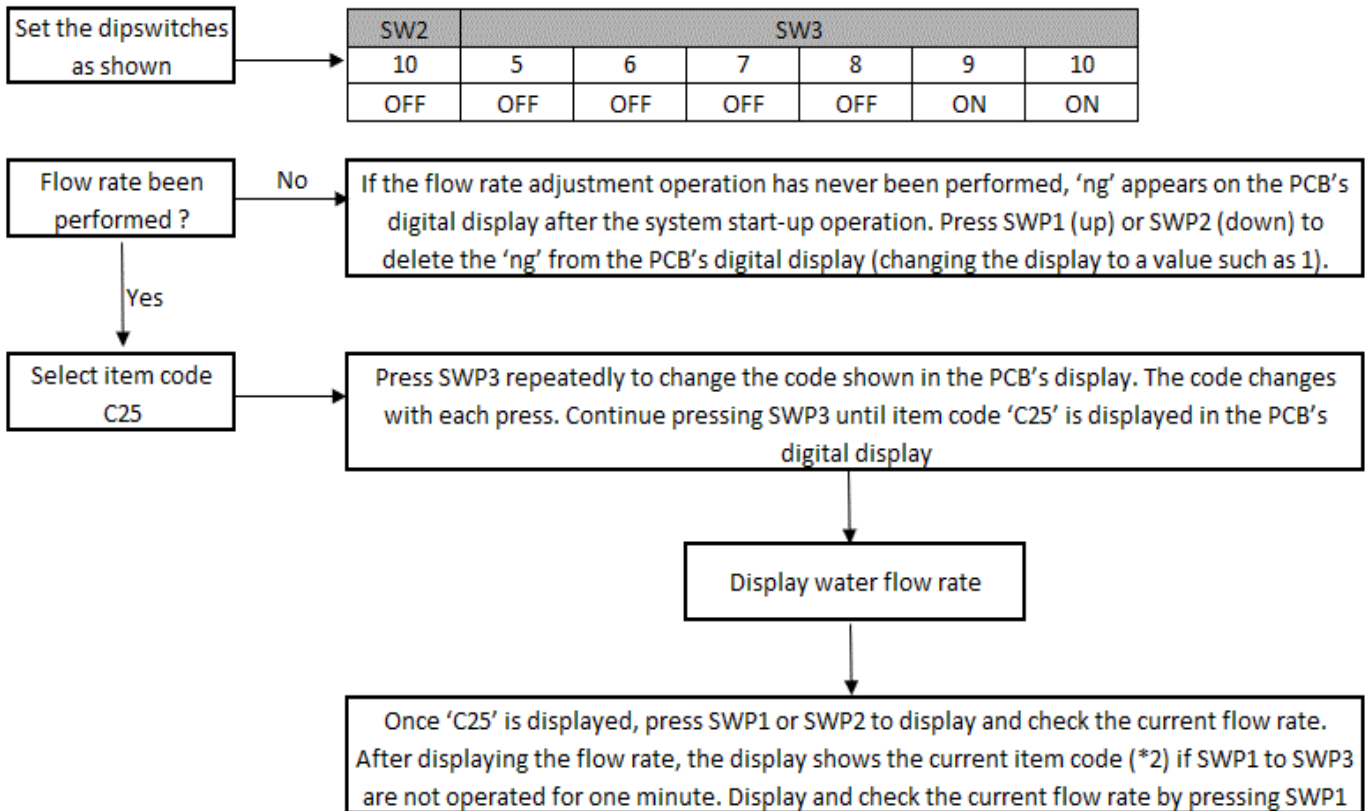
(Note 1) As a stopgap measure, change the settings of SW2-9 and SW2-3 as shown in the table below, then restart the power.

	Multiple change-over switch SW 2-9	Local/internal change-over switch SW 2-3
When start-up operation has NOT completed	OFF	ON
When start-up operation has completed	-	-

If water shutoff error 2601 occurs during the air bleeding operation, resolve the issue, then change the setting of PCB slide SWS1 from LOCAL to OFF, and back to LOCAL again. The air bleeding operation starts again.

(You can clear water shutoff error by turning the power OFF and ON again. The equipment enters standby mode in this case.) (You can also clear water shutoff errors by changing the setting of PCB DIP SW1-8 or 1-9 from ON to OFF. Turning DIP SW1-8 OFF starts circulation heating circuit air bleeding (manual). Turning DIP SW1-9 OFF starts water supply circuit air bleeding (manual).)

Water flow rate display



7. Water flow rate adjustment operation (when the secondary side control is disabled)

Table A

Step	Content	Procedure & check point	Information
1	Water level	Check the water level	
2	Power operation	Turn the power ON	If the start-up operation has not finished, SW2-9 and SW2-3 need to be set (see Note 1). If this flow rate adjustment operation has never been performed '---ng' is displayed.
3	Operation procedure	Change the setting of PCB slide SWS1 from REMOTE to LOCAL.	Set SWS2 to B (lower)
4	Operation procedure	Change the setting of SW1-6 from OFF to ON.	The pump operation and flow rate adjustment valve opening are automatically adjusted, and the flow rate is measured in 30 second intervals. You can check whether this flow rate adjustment operation has ended or is underway using NOT COMPLETED = [_ _ng] COMPLETED = [_ _g] IN OPERATION [_ing]
5	Stop operation	Change SW1-6 from ON to OFF Change SWS1 From LOCAL to REMOTE	-

Note 1

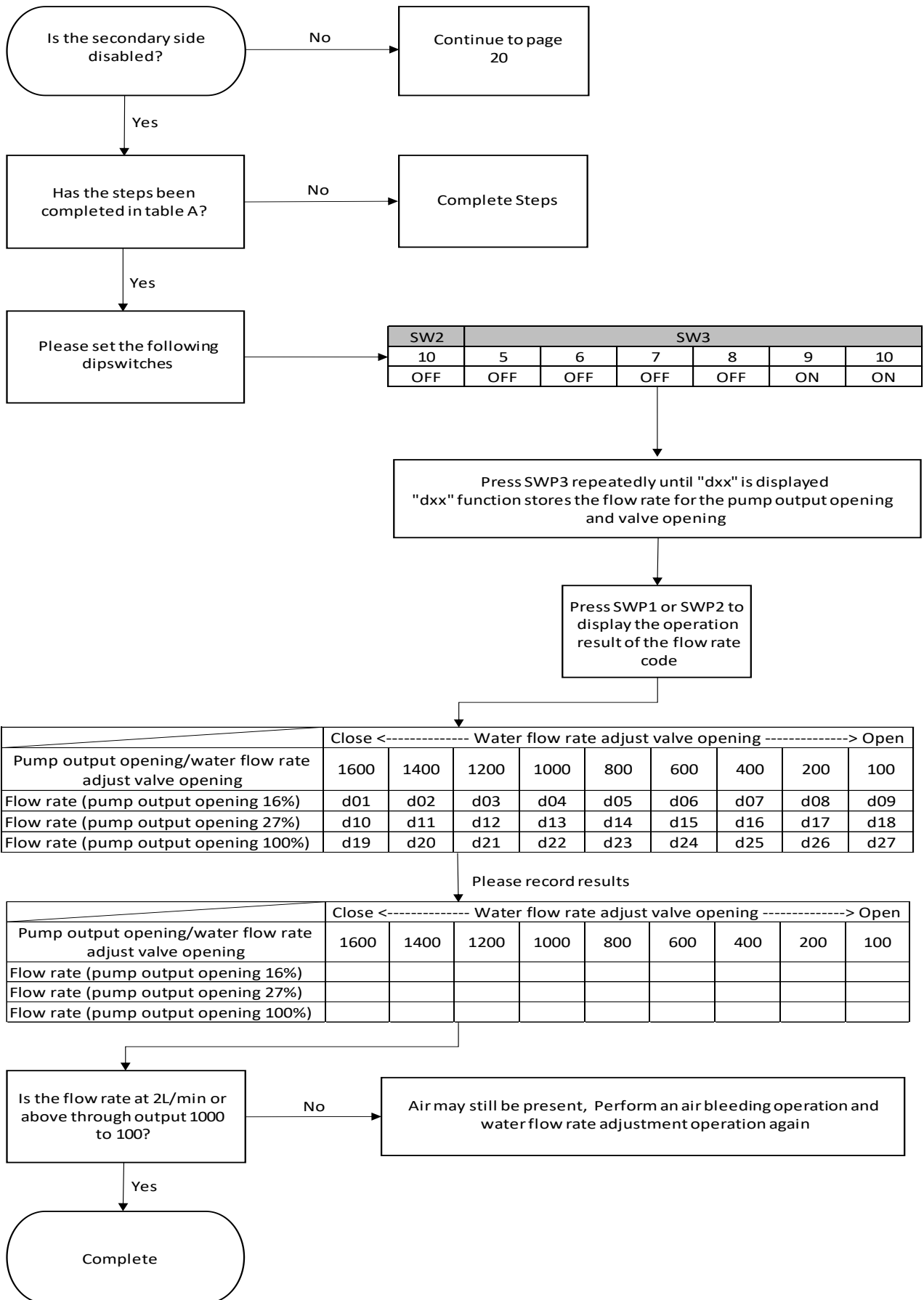
The table below shows the water flow rate adjustment operation status in 4 figures when the PCB DIP switch is set as shown in Note 2.

Water flow rate adjustment operation status	Display
Not completed	--ng
Completed	---g
In operation	-ing

Note 2

SW2	SW3					
-10	-5	-6	-7	-8	-9	-10
ON	OFF	OFF	OFF	ON	ON	OFF

Checking the flow rate after the flow rate adjustment operation



Note

Perform a water flow rate adjustment operation in a multiple-unit system at the same time.

When the pump output opening is 16 percent, and all of the values (item codes d01 through d09) are not "0."

The air isn't completely bled out.

8. Water flow rate adjustment operation (when the secondary side control is enabled)

Table B

Step	Content	Procedure & check point	Information
1	Water level	Check the water level	-
2	Power operation	Turn the power ON	If the start-up operation has not finished, SW2-9 and SW2-3 need to be set (see Note 1). If this flow rate adjustment operation has never been performed '---ng' is displayed.
3	Secondary side	Check secondary side is enabled	Ensure function code 121 is set to "1"
4	Operation procedure	Change the setting of PCB slide SWS1 from REMOTE to LOCAL.	Ensure SWS2 is set to B (lower)
5	Operation procedure	Change the setting of SW1-6 from OFF to ON.	The pump operation and flow rate adjustment valve opening are automatically adjusted, and the flow rate is measured in 30 second intervals. You can check whether this flow rate adjustment operation has ended or is underway using NOT COMPLETED = [_ _ng] COMPLETED = [_ _g] IN OPERATION [_ ing]
6	Stop operation	Change SW1-6 from ON to OFF Change SWS1 From LOCAL to REMOTE	-

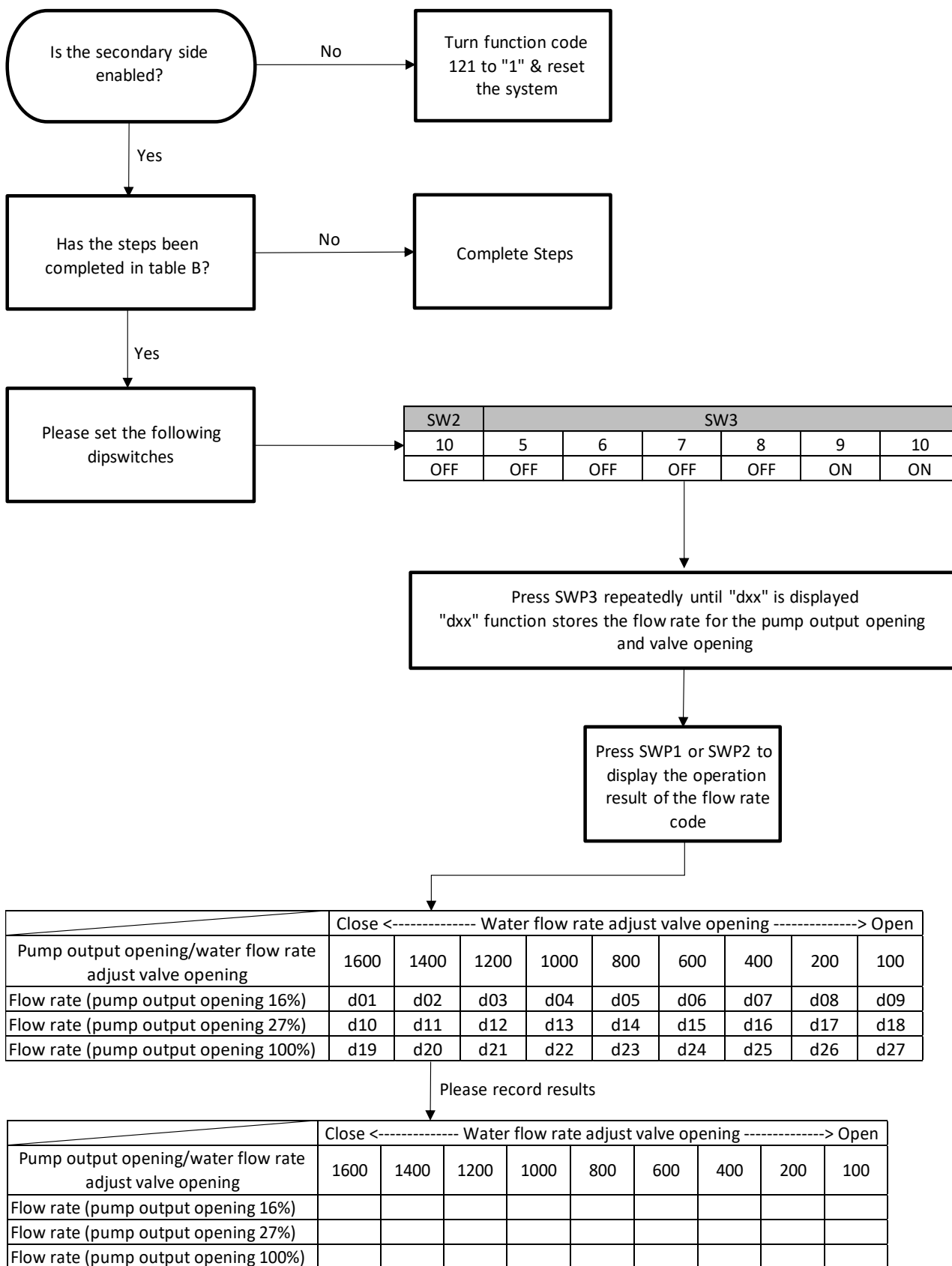
Note 1

The table below shows the water flow rate adjustment operation status in 4 figures when the PCB DIP switch is set as shown in Note 2.

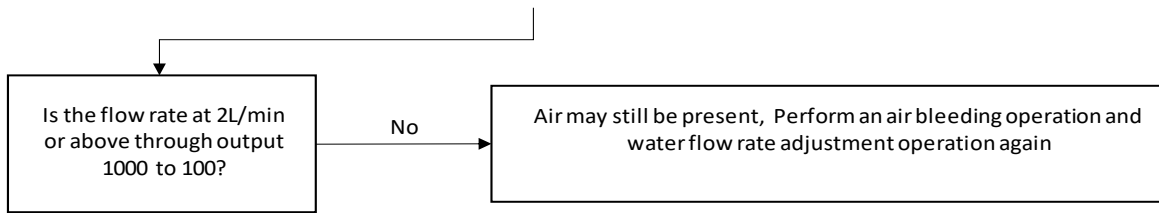
Water flow rate adjustment operation status	Display
Not completed	--ng
Completed	---g
In operation	-ing

Note 2

Checking the flow rate after the flow rate adjustment operation on secondary side



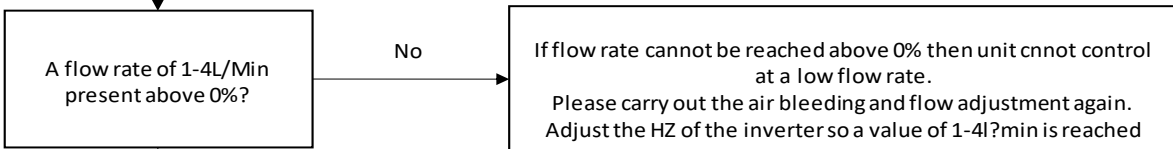
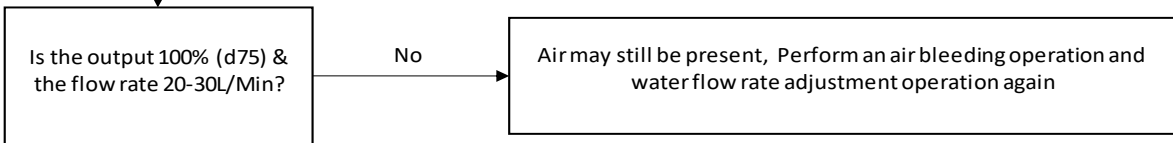
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Pump output value	0	5	10	15	20	25	30	35	40	45	50
Flow rate	d55	d56	d57	d58	d59	d60	d61	d62	d63	d64	d65
Pump output value	55	60	65	70	75	80	85	90	95	100	
Flow rate	d66	d67	d68	d69	d70	d71	d72	d73	d74	d75	

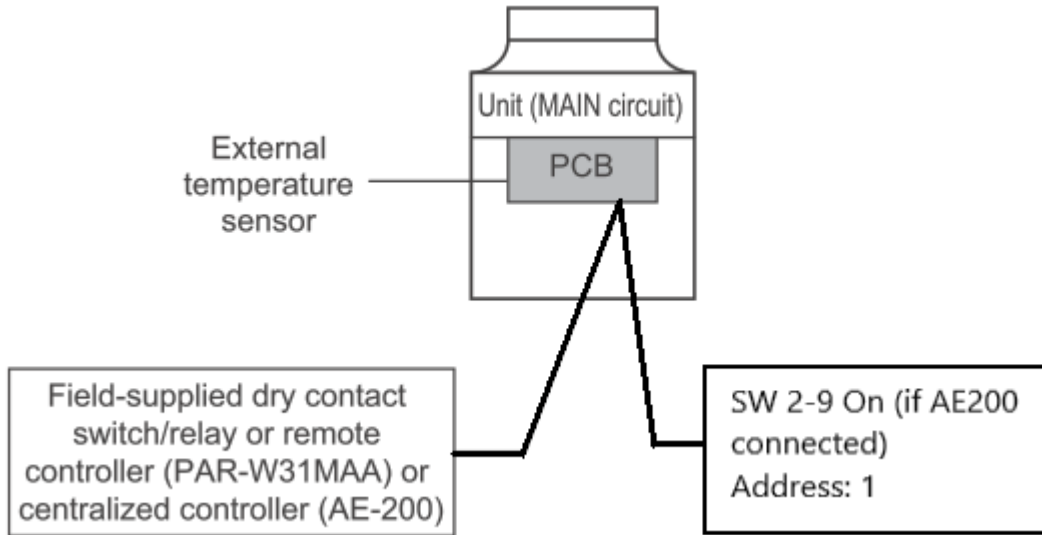
Please record results

Pump output value	0	5	10	15	20	25	30	35	40	45	50
Flow rate											
Pump output value	55	60	65	70	75	80	85	90	95	100	
Flow rate											

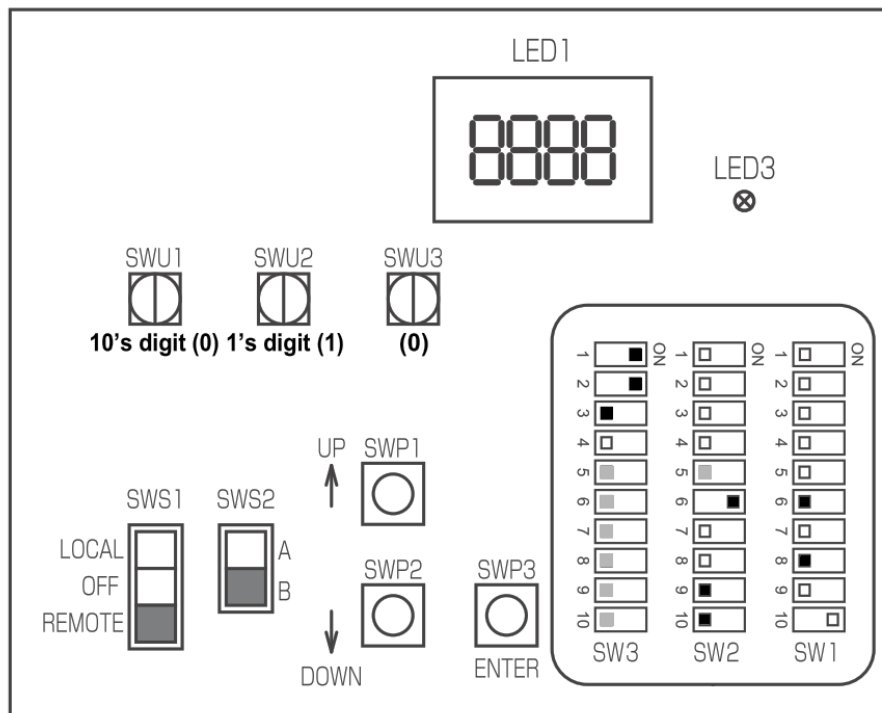


9. Individual System

M-Net and Addressing (Set as below) **N.B - POWER OFF ALL UNITS TO MAKE CHANGES**



Individual Unit - Dip Switches (Black indicates change, Grey indicates display mode or option, White leave as is).



When the power is switched on, the following codes will appear on the LED:

- [EEEE] will appear on LED1 in the circuit board
- [--ng] is displayed before the water flow rate adjustment operation is performed. Cancel the [--ng] display by using one of the following methods.
 - Press SWP3.
 - Press SWP1 or SWP2.

Set Dipswitches to

SW2	SW3					
10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	ON	ON

* [EEEE] will disappear, and an item code ([101]) will appear on LED1

- 1 Use SWP3 to toggle through the item codes and select an item code to change its current value. (The item codes will appear in the following order: [101]→[104]→[105]→[106]→ [107]....)

- 2 Following the steps above, set the value for the following items as necessary.

Item 101	Not Use
Item 104	Not Used
Item 105	When an AE200 & a PAR-31 are connected please change to "1", perform a power down & soft reset
Item 106	Total number of units in this system, leave as 1
Item 107	Please set to "2" when an AE200 is connected
Item 108	Not Used
Item 109	Not Used
Item 110	Function 1 ("1" when connected to AE-200)
Item 111	Not Used
Item 112 to 120	Not Used
Item 121	Secondary side control is enabled when "1" is set.

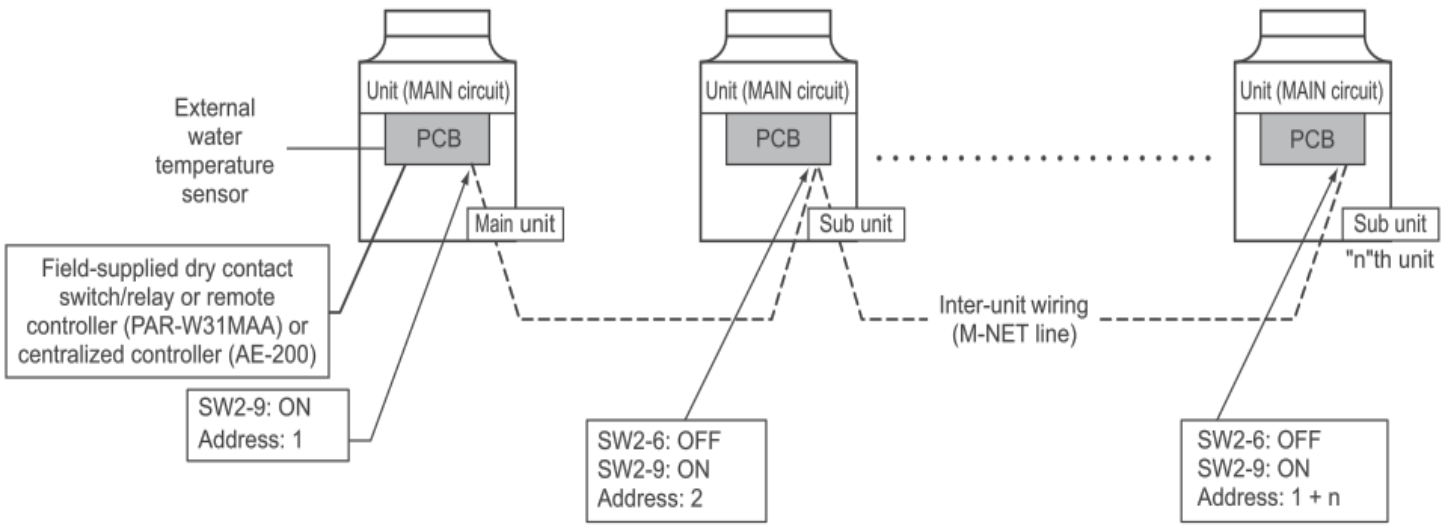
*Set SWS1 to OFF from the remote controller or with the local switch. Settings cannot be changed unless the ON/OFF switch is set to OFF. The new setting will not be saved unless a reset is performed.

Performing a soft reset

- (1) Set the rotary switch SWU3 to "F." [FFFF] will appear in the LED1.
- (2) Press and hold the push switch SWP3 for one second or longer.
 - While the system is starting up [9999] will appear on LED1.
 - When start-up is complete, a control property [0001] will appear.
 - Then, five seconds later, [FFFF] will appear.
- (3) Set the rotary switch SWU3 back to "0."
 - If the start-up process has already been completed, [FFFF] (instead of [EEEE]) will appear when the rotary switch SWU3 is set to "F."
 - [--ng] is displayed before the water flow rate adjustment operation is performed.

10. Multiple system

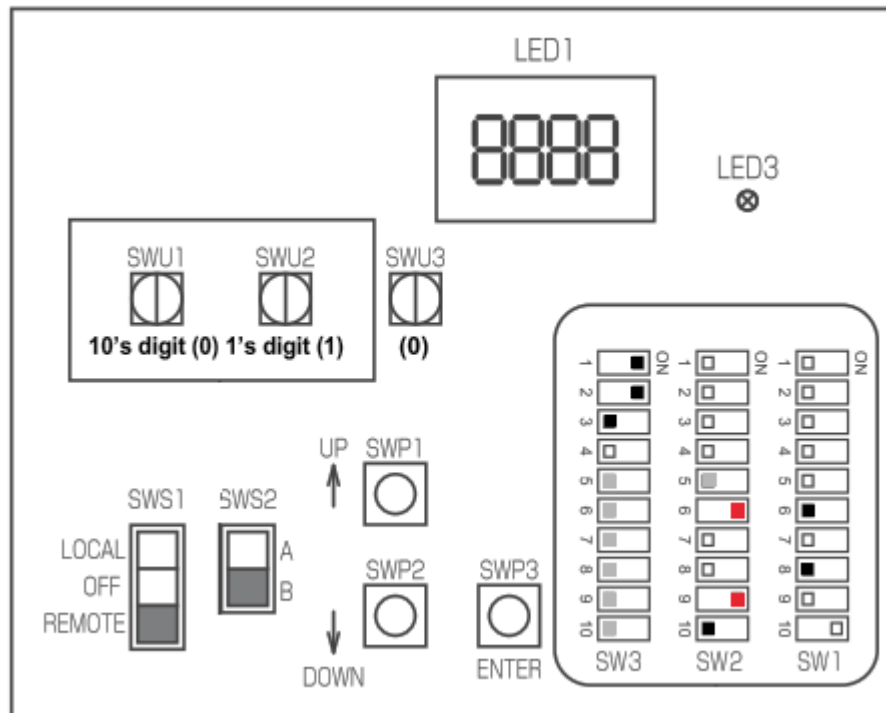
M-Net and Addressing (Set as below) **N.B - POWER OFF ALL UNITS TO MAKE CHANGES**



Setting the switches on the main unit

Set the dip switch SW2-9 to ON. (multiple unit control)

Dip Switches (Red indicates mandatory change, Black indicates change, Grey indicates display mode or option, White leave as is.)

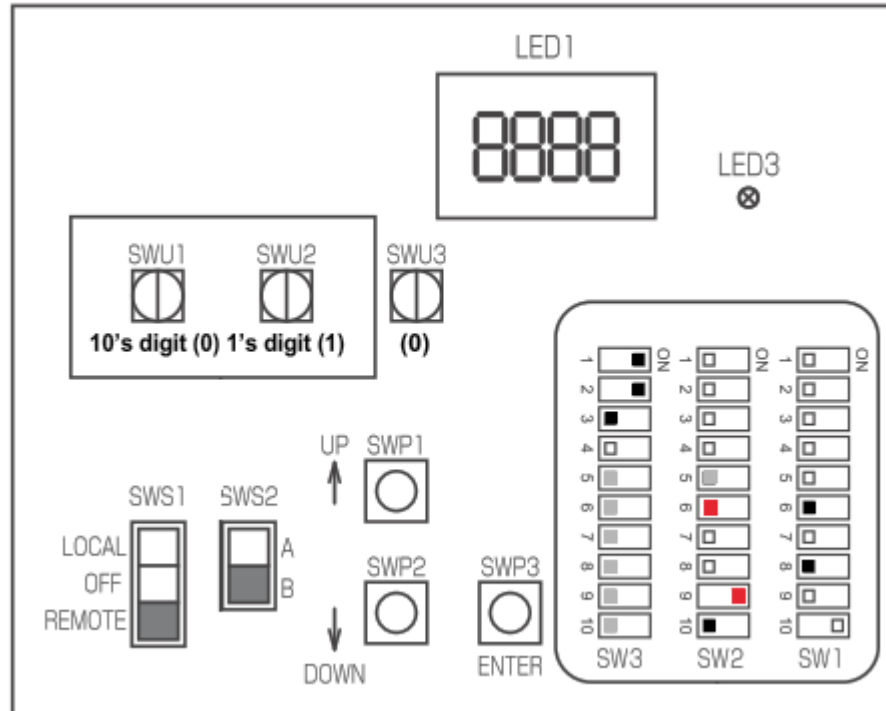


Setting the switches on all sub units

Set the dip switch SW2-9 to ON. (multiple unit control)

Set the dip switch SW2-6 to OFF. (power supply to communication circuit)

Dip Switches (Red indicates mandatory change, Black indicates change, Grey indicates display mode or option, White leave as is.)



Set Dipswitches to

SW2	SW3					
10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	ON	ON

* [EEEE] will disappear, and an item code ([101]) will appear on LED1

- 1 Use SWP3 to toggle through the item codes and select an item code to change its current value. (The item codes will appear in the following order: [101]→[104]→[105]→[106]→ [107]....)

2

Following the steps above, set the value for the following items as necessary.		Main	Sub
Item 101	Not Use	-	-
Item 104	Not Used	-	-
Item 105	When an AE200 & a PAR-31 are connected simultaneously change to "1", perform a power down & soft reset *5	✓	-
Item 106	Total number of units in this system, set to the amount of additional units connected(max 16) *1	✓	✓
Item 107	Please set to "2" when an AE200 is connected	✓	✓
Item 108	Not Used	-	-
Item 109	Not Used	-	-
Item 110	Own unit role*2	✓	✓
Item 111	Not Used	-	-
Item 112	M-NET address of sub sensor. (Six-sensor method) *3	✓	x
Item 113 to 120	Not Used	-	-
Item 121	Secondary side control is enabled when "1" is set.*4	✓	

*Set SWS1 to OFF from the remote controller or with the local switch. Settings cannot be changed unless the ON/OFF switch is set to OFF.

The new setting will not be saved unless a reset is performed.

*1 Enter the total number of units including the main unit. Applicable only to the main unit.

*2 0: Sub unit

1: Main sensor

2: Sub sensor (For six-sensor method)

*3 Set the address of the sub sensor (for six-sensor method.)

*4 0: Secondary side control disabled

1: Secondary side control enabled

*5 Is the power supply function setting for the remote control, If the AE200 is not used, the M-NET address will be numbered sequentially from 1.

The remote control address is shared with the M-NET address of the device, and no setting is required

When connecting to AE200, the M-NET address of the device is often not set from 1.

Step 1 Set SWS1 to OFF from the remote controller or with the local switch. Settings cannot be changed unless the ON/OFF switch is set to OFF.

Step 2 Set the dip switches on the circuit board as follows before making the settings for the items

SW2	SW3					
-10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	ON	ON

Step 3 Select the desired item with the push switch SWP3. The item codes shown in the table below will appear in order every time the push switch SWP3 is pressed. Use the push switches SWP1 and SWP2 to change the value of the selected item.

Press the push switches SWP1 (↑) or SWP2 (↓) to increase or decrease the value.

	Item code	Increments	Lower limit	Upper limit	initial value
Unit address	105	1	1	8	2
Total number of units in the system *1	106	1	0	16	1
AE-200 connection	107	2	0	2	0
Own unit role *2	110	1	0	2	0
Main sensor address	111	1	1	50	1
Sub sensor address *3	112	1	1	51	51
Secondary circuit control *4	121	1	0	1	0

*1 Enter the total number of units including the main unit. Applicable only to the main unit.

*2 0: Sub unit

1: Main sensor

2: Sub sensor (For six-sensor method)

*3 Set the address of the sub sensor for six-sensor method.

*4 0: Secondary side control disabled

1: Secondary side control enabled

Step 5 Press the push switch SWP3 to save the change. Press SWP3 once within one minute of changing the setting with SWP1 or SWP2 to save the setting. Once the new setting is saved, the display will stop blinking and stay lit. The display will, then, return to the item code display mode.

Step 6 Turn the power back on. Reset the system. **Note The new setting will not be saved unless a reset is performed.**

Performing a soft reset

- (1) Set the rotary switch SWU3 to "F." [FFFF] will appear in the LED1.
- (2) Press and hold the push switch SWP3 for one second or longer.
 - While the system is starting up [9999] will appear on LED1.
 - When start-up is complete, a control property [0001] will appear.
 - Then, five seconds later, [FFFF] will appear.
- (3) Set the rotary switch SWU3 back to "0."
 - If the start-up process has already been completed, [FFFF] (instead of [EEEE]) will appear when the rotary switch SWU3 is set to "F."
 - [--ng] is displayed before the water flow rate adjustment operation is performed.

11. Sensor method settings

Step 1 Set SWS1 to OFF from the remote controller or with the local switch.
Settings cannot be changed unless the ON/OFF switch is set to OFF.

Step 2 Set the dip switches on the circuit board as follows before making the settings for the items

SW2	SW3					
-10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	OFF	OFF

Step 3 Select the desired item with the push switch SWP3.
The item codes shown in the table below will appear in order every time the push switch

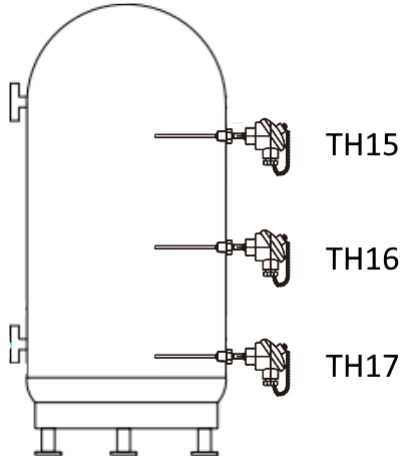
Step 4 Press the push switches SWP1 (↑) or SWP2 (↓) to increase or decrease the value.

Sensor method setting	Item code	Increments	Lower limit	Upper Limit
0: Local control method	1214	1	0	2
1: Three sensor method				
2: Six sensor method				

Step 5 Press the push switch SWP3 to save the change.
Press SWP3 once within one minute of changing the setting with SWP1 or SWP2 to save the setting.
Once the new setting is saved, the display will stop blinking and stay lit. The display will, then, return to the item code display mode.

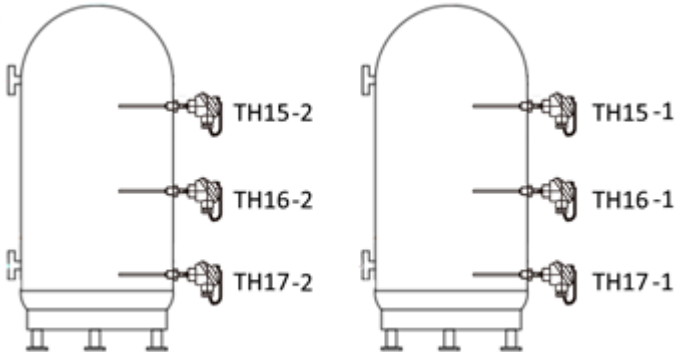
- * When using multiple units, configure the same settings for each unit.
- * When “Local control method” is selected, hot water storage operation ON/OFF control is performed by ON/OFF status of TB6 32-33.
- * **PAR-W31MAA must be installed**

Sensor locations



Sensor TH15 wires to terminal 25 and 26 on terminal TB5.
Sensor TH16 wires to terminal 27 and 28 on terminal TB5.
Sensor TH17 wires to terminal 27 and 30 on terminal TB5.

Sensors with 2 or more QAHV units



12. Three-sensor method or six-sensor method setting

Use the separately sold thermistor (TW-TH16E) to control the water temperature in the storage tank.

Step 1 Set SWS1 to OFF from the remote controller or with the local switch.
Settings cannot be changed unless the ON/OFF setting is set to OFF.

Step 2 Set the dip switches SW2 and SW3.

SW2	SW3					
-10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	ON	OFF	OFF

Step 3 Select the desired item with the push switch SWP3.
Item codes 1500 through 1510 relate to sensor method setting.
Press the push switch SWP3 to select an item code.
Use the push switches SWP1 and SWP2 to change the value of the selected item.
The value will keep blinking while it is being changed

Press the push switches SWP1 (↑) or SWP2 (↓) to increase or decrease the value.

Items that can be set	Item code	initial value	Unit	Limits & increments		
				Increments	Lower limit	Upper limit
Mode 1 Thermo-ON thermister selection	1500	3	-	1	1	3 (6*)
Mode 1 Thermo-OFF thermister selection	1501	3	-	1	1	3 (6*)
Mode 2 Thermo-ON thermister selection	1502	1	-	1	1	3 (6*)
Mode 2 Thermo-OFF thermister selection	1503	2	-	1	1	3 (6*)
Mode 3 Thermo-ON thermister selection	1504	1	-	1	1	3 (6*)
Mode 3 Thermo-OFF thermister selection	1505	3	-	1	1	3 (6*)
Number of water control modes	1507	1	-	1	1	3
Mode 1 thermo diff value	1508	10	°C	1	0	30
Mode 2 thermo diff value	1509	10	°C	1	0	30
Mode 3 thermo diff value	1510	10	°C	1	0	30

* Only for six-sensor method Thermistor number 1: TH15, 2: TH16, 3: TH17

* Set the item code 1507 to "3" when using all modes (Mode 1, 2, and 3).

Set the item code 1507 to "2" when using mode 1 and mode 2.

Set the item code 1507 to "1" when using mode 1.

Step 5 Press the push switch SWP3 to save the change.
Press SWP3 once within one minute of changing the setting with SWP1 or SWP2 to save the setting.
Once the new setting is saved, the display will stop blinking and stay lit. The display will, then,
return to the item code display mode.
If SWP3 is not pressed within one minute, the change will not be saved and the

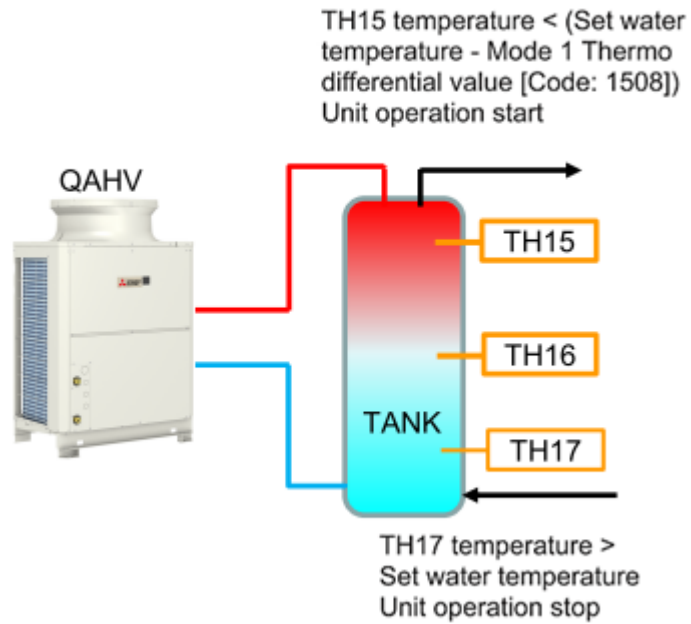
Usage example

Operation example (Three-sensor method - when a remote controller PAR-W31MAA is used)

Operation mode: Mode 1

Mode 1 Thermo-ON thermistor selection (Item code 1500): 1

Mode 1 Thermo-OFF thermistor selection (Item code 1501): 3



- * Set the operation mode and water temperature from the remote controller PAR-W31MAA.
- * Use the separately sold TW-TH16E temperature thermistor.
Two or more units are needed to use the six-sensor method.
- * Make sure to set the unit outlet hot water temperature.
- * Configure the thermo ON/OFF values based on system requirements

Referring to below, configure the settings for each unit according to the system.

Three-sensor method		<table border="1"> <thead> <tr> <th rowspan="2">Address</th> <th colspan="4">Item code</th> </tr> <tr> <th>106</th> <th>110</th> <th>111</th> <th>1214</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>3</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>3</td> <td>3</td> <td>0</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>* SW2-9: ON (When multiple units are connected)</p>	Address	Item code				106	110	111	1214	1	3	1	1	1	2	3	0	1	1	3	3	0	1	1														
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Address	Item code																																							
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Address	Item code																																							
	105	106	107	110	111	112	1214																																	
1	1	3	2	1	1	2	2																																	
2	2	3	2	2	1	-	2																																	
3	3	3	2	0	1	-	2																																	

13. Settings using Analogue input

Step 1 Set dip switches SW2, SW3, SW421-1, and SW421-2.To desired input

	SW421-1	SW421-2
4-20mA	ON	ON
0-10V	OFF	OFF
1-5V	OFF	ON
2-10V	OFF	OFF

Step 2 Select item code 1075 to set the desired analog input

	SW2	SW3					
	-10	5	6	7	8	9	10
Switch settings	OFF	OFF	OFF	OFF	OFF	ON	OFF

Step 3 Select the item to be set with push switch SWP3.

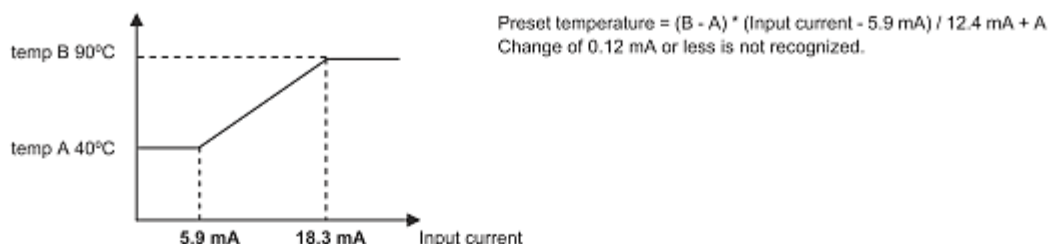
Step 4 Change the values with push switches SWP1 (↑) or SWP2 (↓).

Step 5 Press push switch SWP3 to select the item code.
Change the values with push switches SWP1 and SWP2.
Until the changed values are saved, the values will blink.

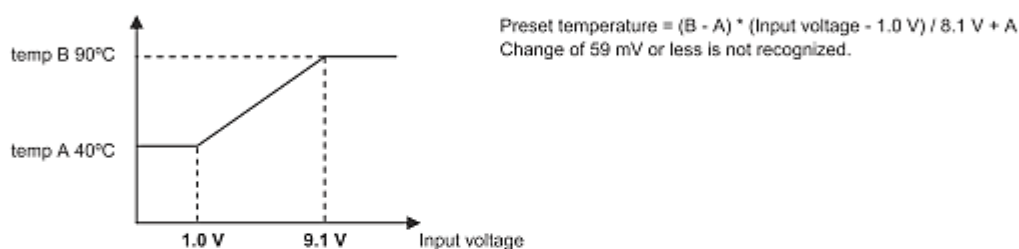
Items that can be set	Item code	Initial value	Unit	Setting			setting chnge from RC
				Increments	Lower limit	Upper limit	
Water temp setting type	1075	0	-	1	0	0	Not possible

Step 6 Press push switch SWP3 to save the changed value.

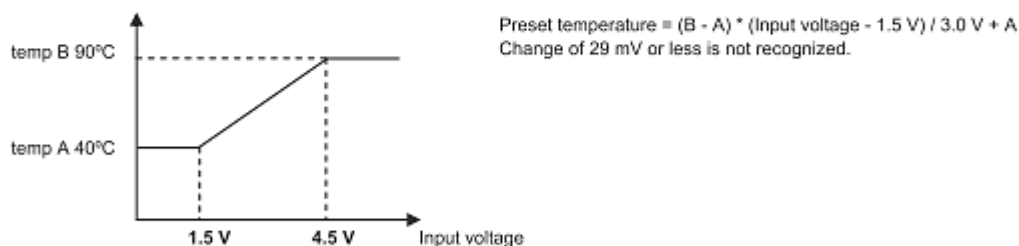
- When the water temperature setting input signal type is set to 0 (4-20 mA)
 - External analog input signal of between 5.9 and 18.3 mA: the preset temperature will be linearly interpolated



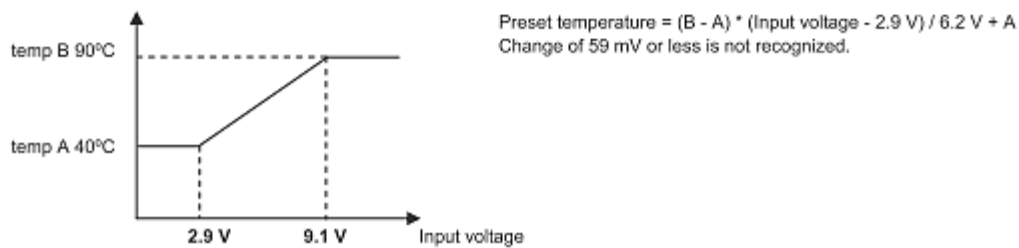
- When the water temperature setting input signal type is set to 1 (0-10 V)
 - External analog input signal of between 1.0 and 9.1 V: the preset temperature will be linearly interpolated.



- When the water temperature setting input signal type is set to 2 (1-5 V)
 - External analog input signal of between 1.5 and 4.5 V: the preset temperature will be linearly interpolated.



- When the water temperature setting input signal type is set to 3 (2-10 V)
 - External analog input signal of between 2.9 and 9.1 V: the preset temperature will be linearly interpolated.



14. Setting the outlet hot water temperature control method

Selecting the outlet hot water temperature setting method

Select one of the following three outlet hot water temperature setting methods.

Step 1 Set SWS1 to OFF from the remote controller or with the local switch.
Settings cannot be changed unless the ON/OFF switch is set to OFF.

Step 2 Set the dip switches on the circuit board as follows before making the settings for the items

SW2	SW3					
-10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	OFF	ON	OFF

Step 3 Select the desired item with the push switch SWP3.
Press the push switch SWP3 to select item code 2.
Press the push switches SWP1 or SWP2 to change the value of the selected item.
The value will keep blinking while it is being changed.

Step 4 Press the push switches SWP1 (↑) or SWP2 (↓) to increase or decrease the value.

Items that can be set	Item code	Initial value	Unit	Setting			Setting change from RC
				Increments	Lower limit	Upper limit	
Setting method selection	1073	0	-	1	0	2	Not possible

0: Outlet Hot Water Temp. input PCB or PAR-W31MAA or AE-200

1: Outlet Hot Water Temp. input IT terminal

2: Outlet Hot Water Temp. input 4-20 mA (Analog input)

Step 5 Press the push switch SWP3 to save the change.
Press SWP3 once within one minute of changing the setting with SWP1 or SWP2 to save the setting.
Once the new setting is saved, the display will stop blinking and stay lit. The display will, then, return to the item code display mode.

NOTE Configure the settings for all units even when controlling multiple units.

15. Outlet hot water temperature setting from PCB

Step 1 Set SWS1 to OFF from the remote controller or with the local switch.
Settings cannot be changed unless the ON/OFF switch is set to OFF.

Step 2 Set the dip switches on the circuit board as follows before making the settings for the items

SW2	SW3					
-10	5	6	7	8	9	10
OFF	OFF	OFF	OFF	OFF	ON	OFF

Step 3 Select the desired item with the push switch SWP3.
Press the push switch SWP3 to select item code 2.
Press the push switches SWP1 or SWP2 to change the value of the selected item.
The value will keep blinking while it is being changed.

Press the push switches SWP1 (↑) or SWP2 (↓) to increase or decrease the value.

Items that can be set	Item code	Initial value	Unit	Setting			Setting change from RC
				Increments	Lower limit	Upper limit	
outlet Hot water Temp	9	65	°C	0.5	40	*90(80)	Possible

* This becomes the secondary side outlet Temperature when the secondary side control is enabled
* Secondary control disabled: 90°C, Secondary control enable 80°C

Step 5 Press the push switch SWP3 to save the change.
Press SWP3 once within one minute of changing the setting with SWP1 or SWP2 to save the setting.
Once the new setting is saved, the display will stop blinking and stay lit. The display will, then, return to the item code display mode.

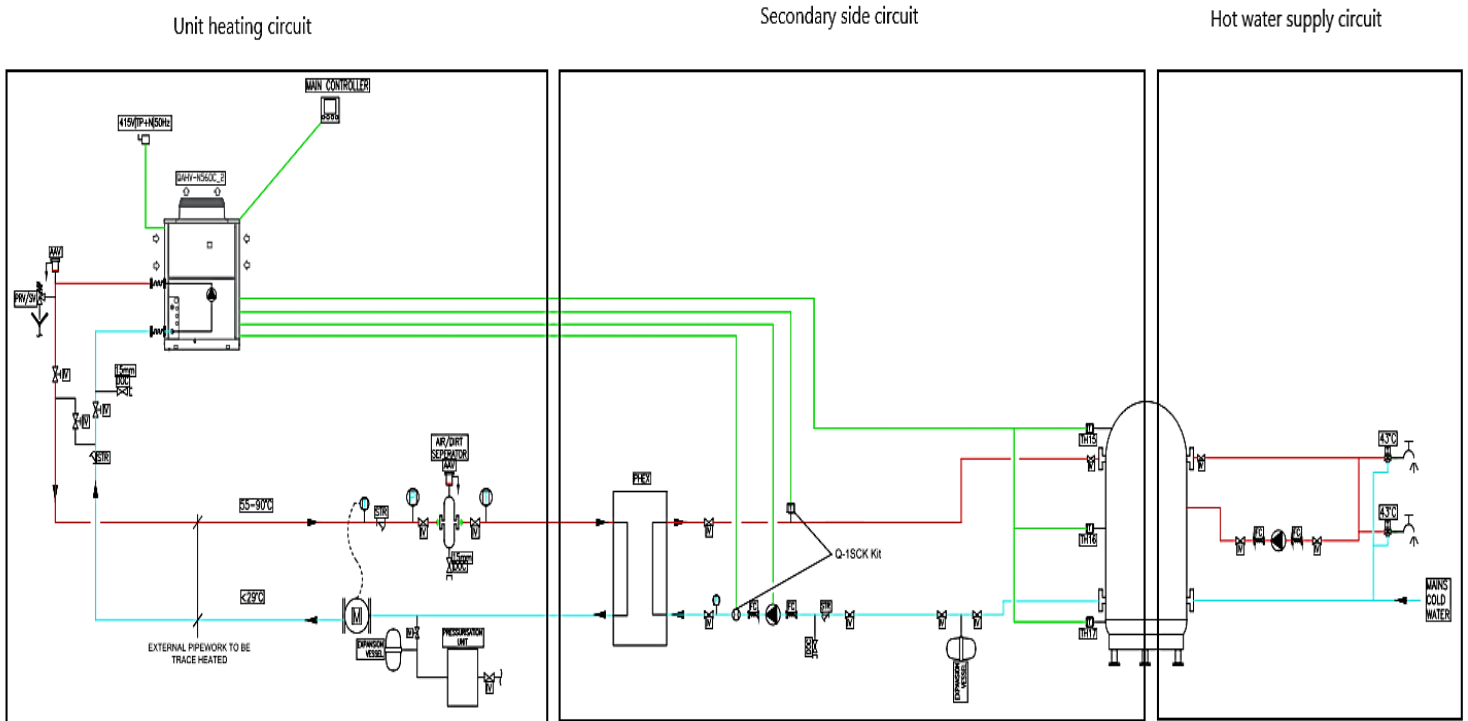
16. External I/O

Input type	Dry contact		ON (Close)	OFF (Open)	Terminal block/ connector	Three-sensor method Six-sensor method			Local control method	
						Main sensor	Sub sensor *2	Sub unit	Main unit	Sub unit
(a) UNIT OPERATION	Run/ Stop	The unit will go into operation when the water temperature drops below the preset temperature.	The unit will stop except when the unit is in the Anti-Freeze mode.		TB6 23-24	△*3	-	-	○	-
(b) FAN MODE	Forced/ Normal	The fan will remain in operation after the compressor has stopped (including when the OPERATION status is "STOP").	The fan will stop when the compressor stops.		TB5 34-35	△	-	-	△	-
(c) PEAK-DEMAND CONTROL	On/Off	The unit will operate at or below the maximum capacity level that was set for the Peak-demand control setting.	-		TB6 19-20	△	△	△	△	△
(d) Hot water storage mode	On/Off	Heating operation with the set outlet hot water temperature	Stop		TB6 32-33	△*3	-	-	○	-
(e) System error	On/Off	Normal	Error		CN14D 2-4	△	△	△	△	△
(f) Low-noise mode	On/Off	Operation using the set capacity as an upper limit	Normal operation		TB6 21-24	△	△	△	△	△
Analog					Terminal block/ connector	Main sensor	Sub sensor *2	Sub unit	Main unit	Sub unit
(g) WATER TEMP SETTING CONTROL	Water temperature control can be set by using the external analog input to the CN421 on the circuit board. One analog input type can be selected from the following types: 4–20 mA, 1–5 V, 0–10 V, or 2–10 V.				CN421 2(+)-3(-)	△	-	-	△	-
(h) EXTERNAL WATER SENSOR 1 (optional)	-				TB5 25-26	○	○	-	-	-
(i) EXTERNAL WATER SENSOR 2 (optional)	-				TB5 27-28	○	○	-	-	-
(j) EXTERNAL WATER SENSOR 3 (optional)	-				TB5 27-30	○	○	-	-	-
(k) EXTERNAL WATER SENSOR (secondary circuit)	-				TB5 T1-T2	○*4	○*4	○*4	○*4	○*4
(l) FLOW SENSOR (secondary circuit)	-				TB4 13-14-15	○*4	○*4	○*4	○*4	○*4
Output type	Contact type	Conditions in which the contact closes (turns on)	Conditions in which the contact opens (turns off)	Terminal block/ connector	Main sensor	Sub sensor *2	Sub unit	Main unit	Sub unit	
(m) EXTERNAL DEVICE SIGNAL (secondary circuit pump)	-				CN512 1-3	○*4	○*4	○*4	○*4	○*4
(n) EXTERNAL INV (flow adjustment device, secondary circuit)	-				TB6 10-11-12	○*4	○*4	○*4	○*4	○*4
(o) ERROR INDICATOR	Close/ Open	The unit has made an abnormal stop.	During normal operation	TB8 74-75	△	△	△	△	△	
(p) OPERATION INDICATOR	Close/ Open	The "Unit Operation" contact (item (a) above) or the ON/OFF button on the remote controller is ON.	The "Unit Operation" contact (item (a) above) or the ON/OFF button on the remote controller is OFF.	TB8 72-73	△	△	△	△	△	
(q) EMERGENCY SIGNAL	Close/ Open	Outside temperature is at or below 1°C	Outside temperature is at or above 3°C	CN512 5-7	△	△	△	△	△	
(r) EXTERNAL DEVICE CONNECTING TERMINAL	Close/ Open	During freeze-up protection operation During pump residue operation	Other than the items at left	TB8 86-87	△	△	△	△	△	
RC/SC/ M-NET	REMOTE CONTROLLER	PAR-W31MAA			TB5 RA-RB	△	-	-	-	-
	SYSTEM CONTROLLER	AE-200			TB7 MA-MB *1	△	-	-	-	-
	M-NET	-			TB3 MA-MB	○*5	○	○	○*5	○

○: Setting required △: Settings are required as needed -: No settings required

1. When AE-200 is connected, leave the power jumper on the outdoor unit as it is (Connected to CN41 at factory shipment). If the power jumper is connected to CN40, power will excessively be supplied, and AE-200 will not properly function.
2. Only Six-sensor method
3. Required if not connected to PAR-W31MAA or AE-200.
4. Required only when secondary control is enabled.
5. Required only when multiple units are connected.

17. Secondary side control



The secondary side describes the system where a PHEX is used to hydraulically separate the QAHV and the hot water tank.

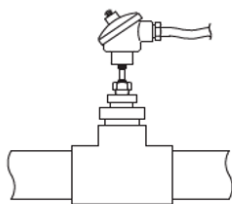
The temperature sensor and flow sensor are supplied as a kit (Q-1SCK)

External water temperature sensor TW-TH16-E

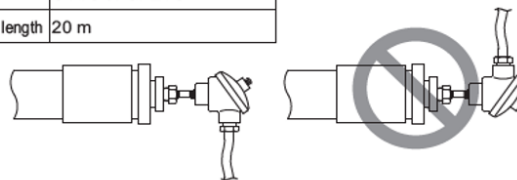
Shape	Specification
	<p>A: 157 mm B: 42 mm C: 54 mm D: 48 mm</p> <p>* The size and length noted are approximate.</p>

Wiring specifications

Size	2-core cable (Min. 1.25 mm ²)
Type	CVVS or CPEVS
Maximum length	20 m



Vertical installation

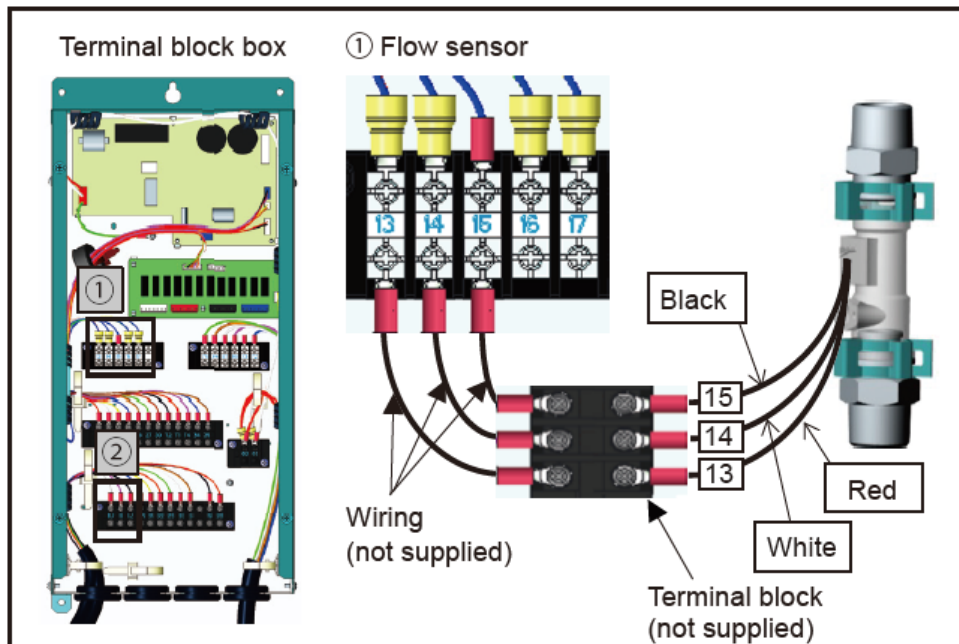
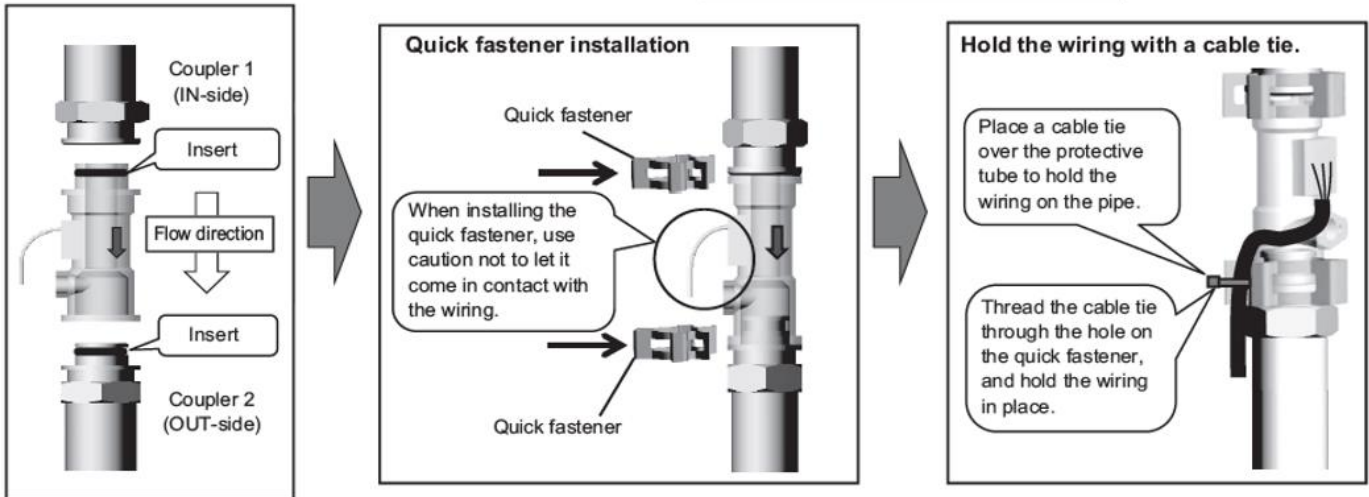
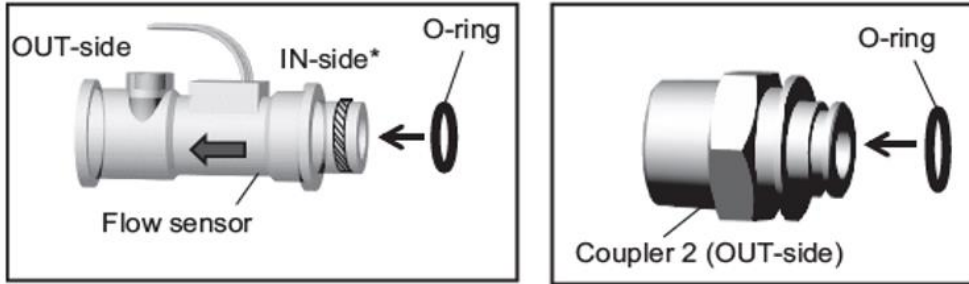


Horizontal installation

Flow sensor

Install the flow sensor vertically with the flow going from top to bottom

(1) Install an O-ring on the flow sensor and coupler 2 (OUT-side).



(13) 12.9 vdc constant

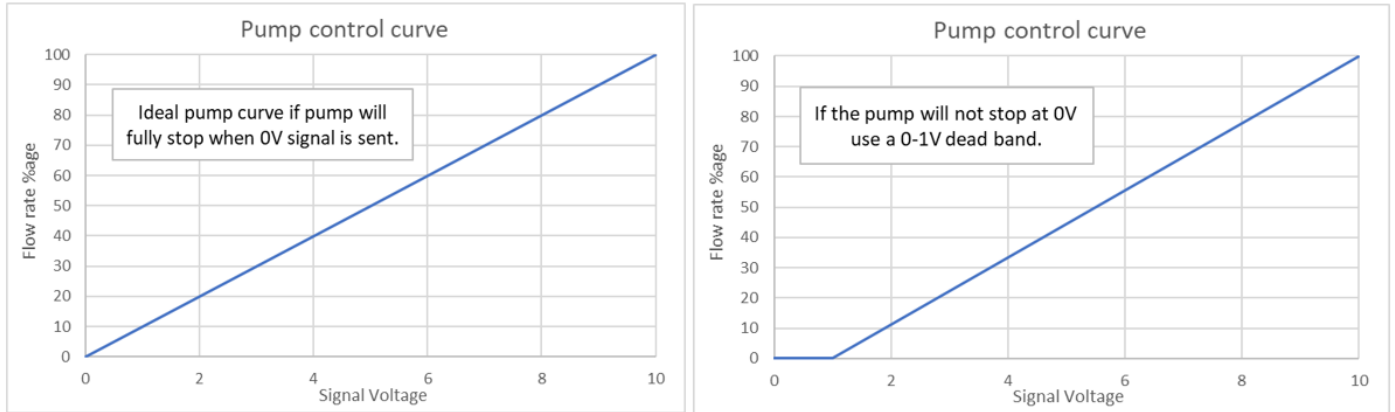
(14) 0 – 10 vdc

(15) 0 vdc

Secondary circuit pump

The secondary circuit pump is controlled by the QAHV output (TB6) +10V or +12V must be supplied to terminal 10 of TB6. A control signal is sent from the QAHV to the pump via terminal 11 of TB6, see below & the wiring section for details

The secondary circuit pump curve should be set up to control as below



*Most pumps have a 0-2V dead band, this will require changing as above. See table 2

The QAHV will send a 6% (1.12V) signal to the secondary circuit pump during flow rate adjustment operation.

If the low sensor does not detect a change in flow rate a 2501 error will be displayed.

Analogue output setting with 12V input. Table 1

Dipswitch Setting	Setting item	Item code	Unit	Lower limit	Upper limit	Initial value	Increments
SW 2-10: OFF SW 3-5,7.9.10: OFF	Lower analogue output limit when there is secondary side control *1	1515	V	0	4	0	0.1
SW3-8: ON	Change analogue input power source when there is secondary side control	1517	-	0	1	0	1

*1 code 1515 can be used to control start voltage of external water circulation pump

Pump input power control input/output. Table 2

Item code	Value	Setting	Description
1517	0	Setting for 10V input power source*1	For 0-10 V analog output control using an input power supply of 10 V.
	1	Setting for 12V input power source*2	For 2-10 V analog output control using an input power supply of 12 V. Set to 1 to use the equipment (inverter with a built-in pump, etc.) that requires an analog input voltage of 10 V. Note: The minimum allowable input voltage of the equipment to be connected to the analog output is 12 V.

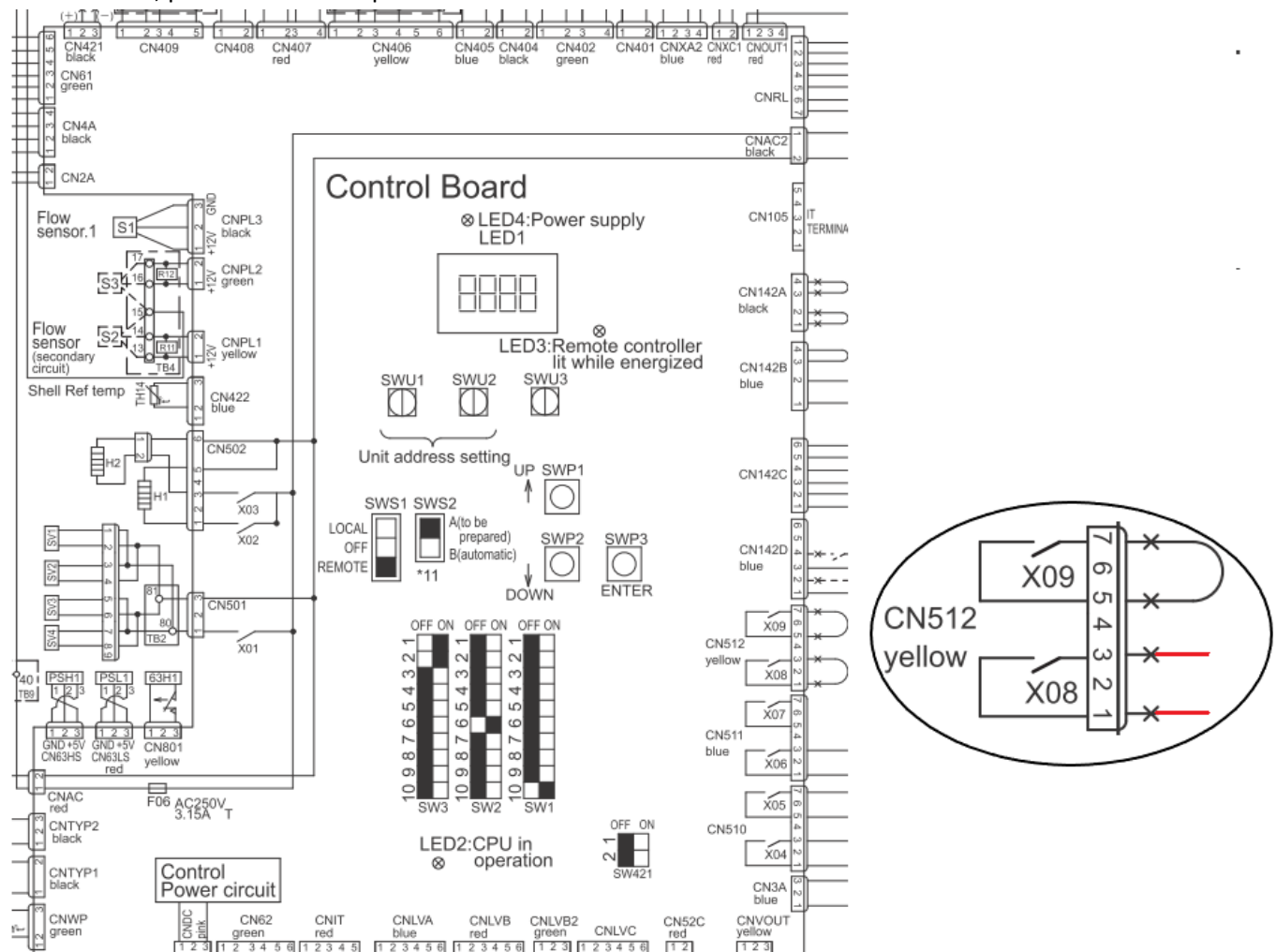
*1 analogue output voltage value may be reduced by around 20%

*2 Use this when the on-site pump inverter requires 10V analogue input

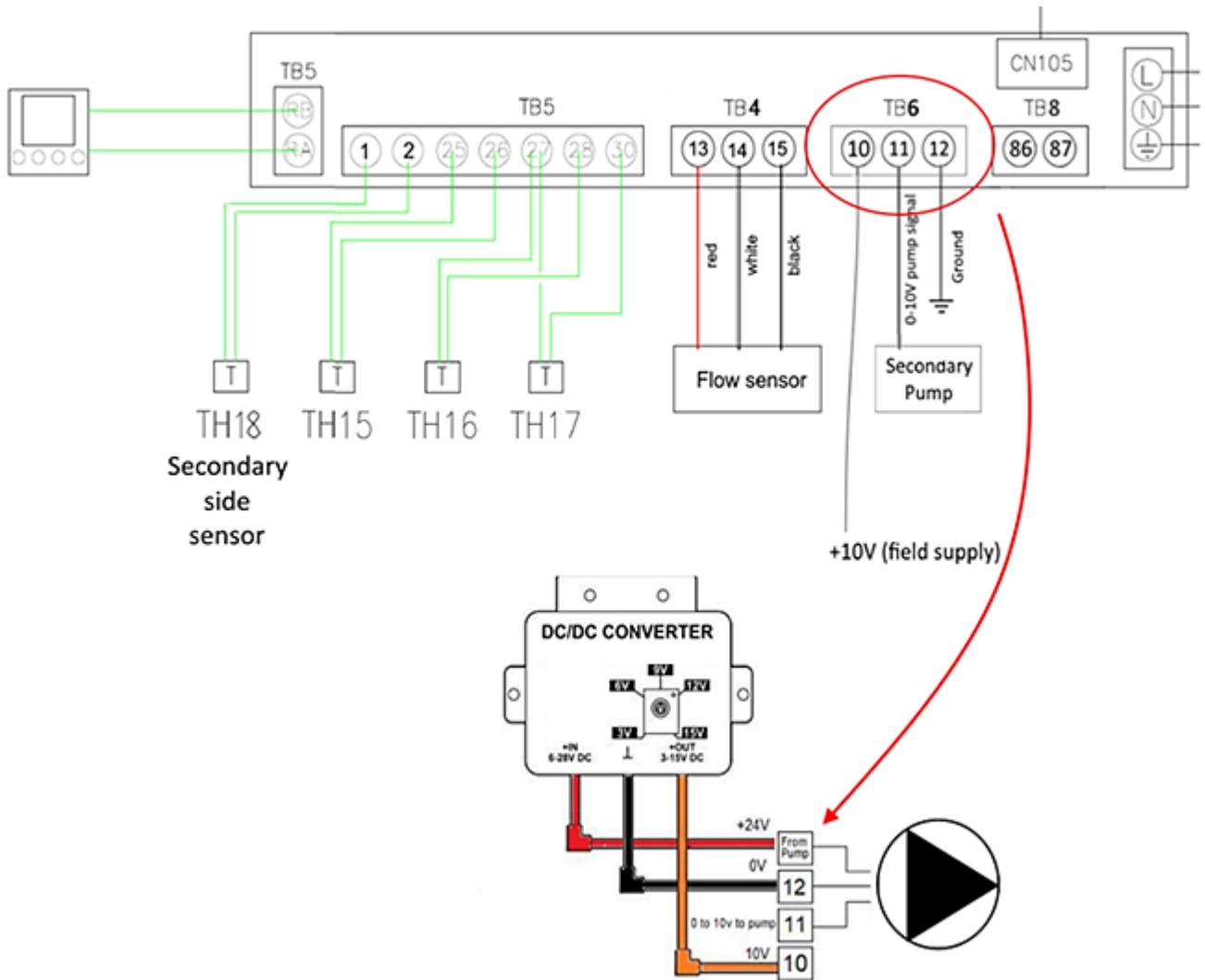
Do not exceed 0.05A/ 50mA

Please note some water circulating pump require an enable signal in addition to the 0-10V/2-10Vinput.

In this instance, please use CN512 pins 1&3



Pump wiring example where the pump can provide s 24V DC supply



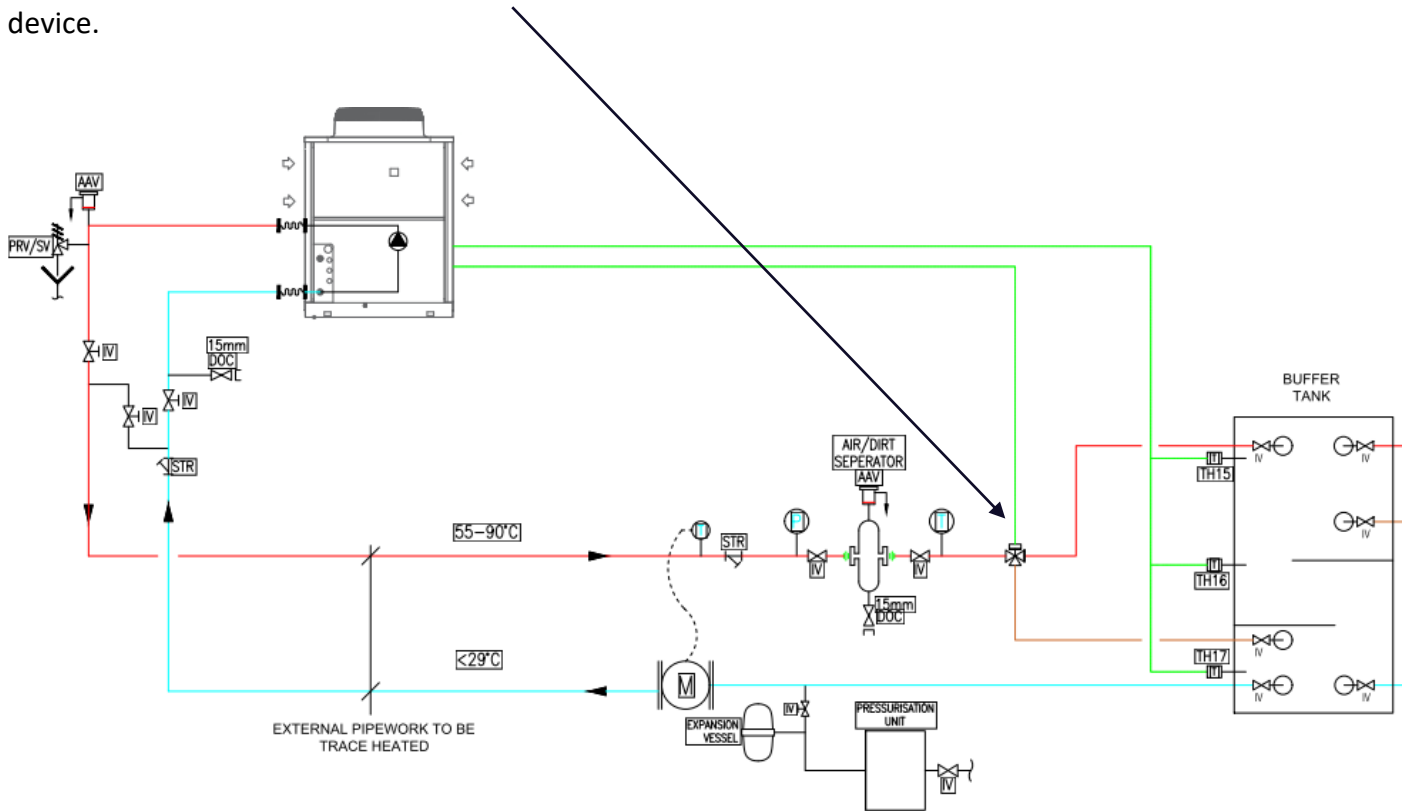
It is recommended to use a secondary pump with low voltage output power, more than 0.05A.

18. Anti-Freeze Control

Glycol **cannot** be used in QAHV primary circuits. Therefore, heating of the external pipe work is necessary, this can be achieved by trace heating or by utilizing the QAHV anti-freeze control method (This is the preferred method).

The Anti-freeze method is switched on by using SW2-5 ON

A Volt-free contact from TB8 terminals 86 & 87 enter a closed state, This then operates the 3-way valve to direct the cooled water, residual in the external pipework, back to the bottom of the warm cylinder. Furthermore, this can also be used to control a third-party anti-freeze device.



Anti-freeze control

Pump will be running to prevent from freezing

Pump ON: Outdoor temperature $< 1^{\circ}\text{C}$ and Inlet water temperature $< 3^{\circ}\text{C}$

Pump OFF: Outdoor temperature $> 3^{\circ}\text{C}$ or Inlet water temperature $> 5^{\circ}\text{C}$, the pump will operate for at least 3 minutes

The control method can be changed according to the system type at site. The following two items can be changed.

Prevent disturbance of thermal stratification in the tank

To prevent the disturbance of the thermal stratification in the tank while the load temperature is sufficiently high, set the item code 1514 to "1" so that the judgment criteria for starting the anti-freezing operation of the secondary side circuit matches with the secondary side circuit water temperature criteria.

Setting procedure and operation overview

Setting		Operation
Item code 1514	O (initial setting)	Performs anti-freezing operation in the secondary side circuit when the water temperature in the unit side circuit becomes the standard value or below.
	1	Performs anti-freezing operation in the secondary side circuit when the water temperature in the secondary side circuit becomes the standard value or below.

Purpose and application: Prevent piping freezing when the secondary side control is used

If the compressor is not operated during the anti-freezing operation in the secondary side control system, there is a risk of the piping of the primary side freezing, so set SW2-5 to "ON" so that the compressor runs during the anti-freezing operation.

Setting procedure and operation overview

Setting		Operation
SW2-5	OFF (Initial setting)	The compressor does not operate when the anti-freezing operation is performed. NOT RECOMMENDED unless other forms of antifreeze used
	ON	The compressor operates when the anti-freezing operation is performed

Considerations

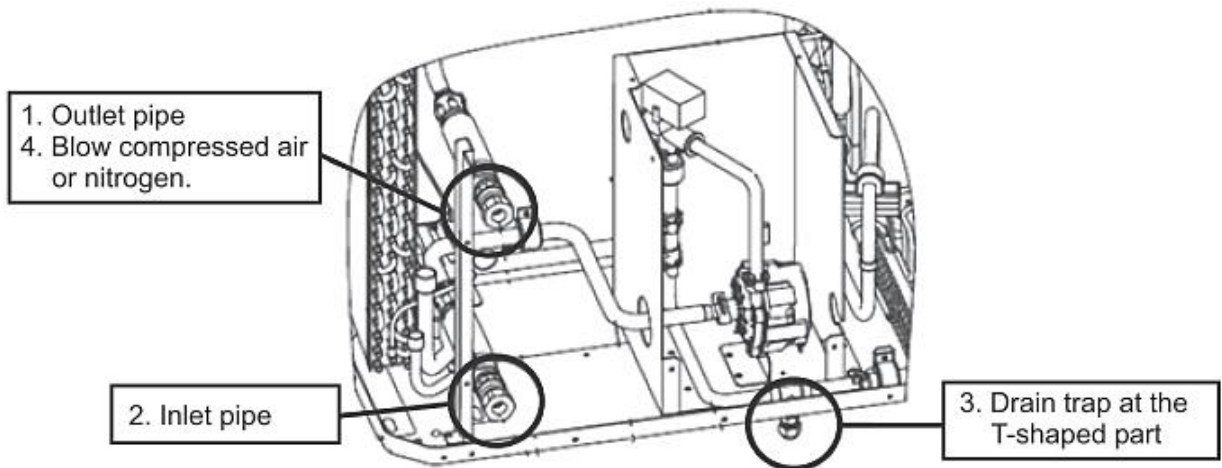
In cold areas (where the lowest outside temperature drops below freezing), if power is not supplied while the unit is stopped during winter, make sure to completely drain water from the piping. Failure to do so may cause the residual water to freeze, resulting in damage to the heat exchanger.

Before using the unit, perform a test run such as water fill test or air bleeding test again.

Drainage method

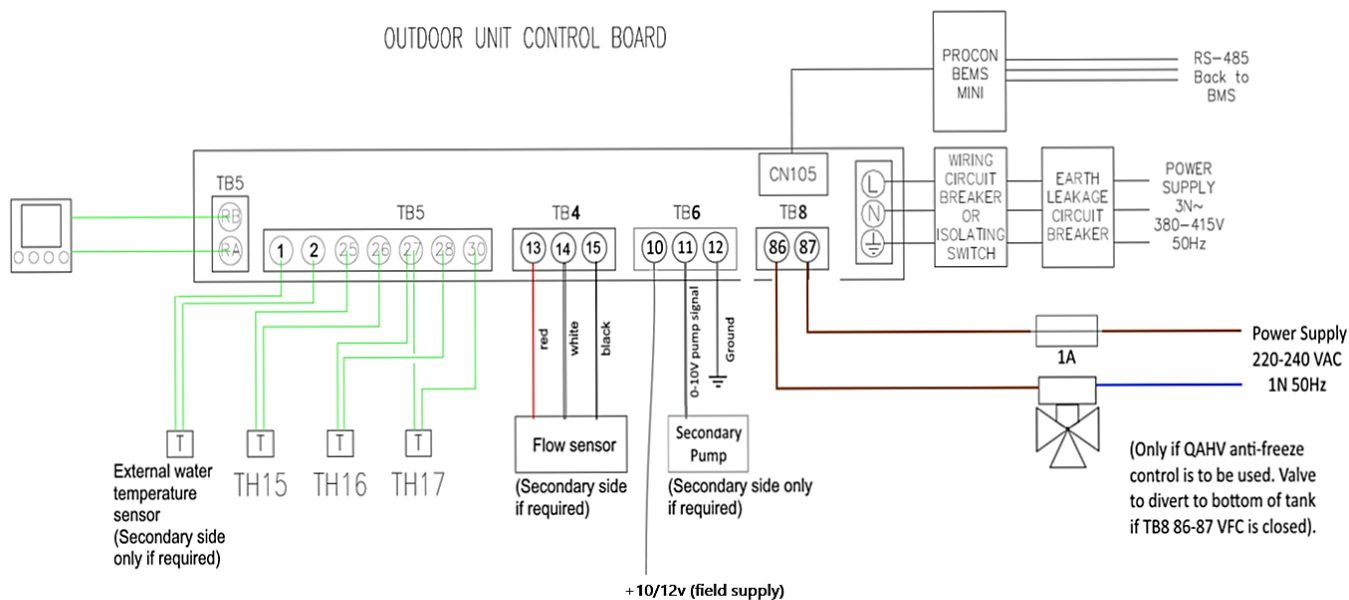
Procedure

1. Disconnect the outlet pipe.
2. Disconnect the inlet pipe.
3. Open the drain trap at the T-shaped part.
4. Completely remove water by blowing compressed air or nitrogen (cylinder) of 0.5 to 0.6 MPa into the outlet pipe.



If the water circulation pump is connected differently from the recommended way, make sure the circuit has some type of anti-freeze function. Glycol is **NOT** recommended due to change in viscosity/temperature relationship and the decomposition at high temperatures.

19. Wiring



Control cable specifications

Remote controller cable	Size	0.3 - 1.25 mm ² (Max. 200 m total)*2
	Recommended cable types	CVV
M-NET cable between units *1	Size	Min. 1.25 mm ² (Max. 120 m total)
	Recommended cable types	Shielded cable CVVS, CPEVS or MVVS
External input wire size		Min. 0.3 mm ²
External output wire size		1.25 mm ²

*1 Use a CVVS or CPEVS cable (Max. total length of 200 m) if there is a source of electrical interference near by (e.g., factory) or the total length of control wiring exceeds 120 m.

*2 When the wiring length exceeds 10 m, use wire of 1.25 mm².

External thermistor cable specifications

Size	2-core, 1.5mm
Cable type	CVVS OR CPEVS
Length	20m

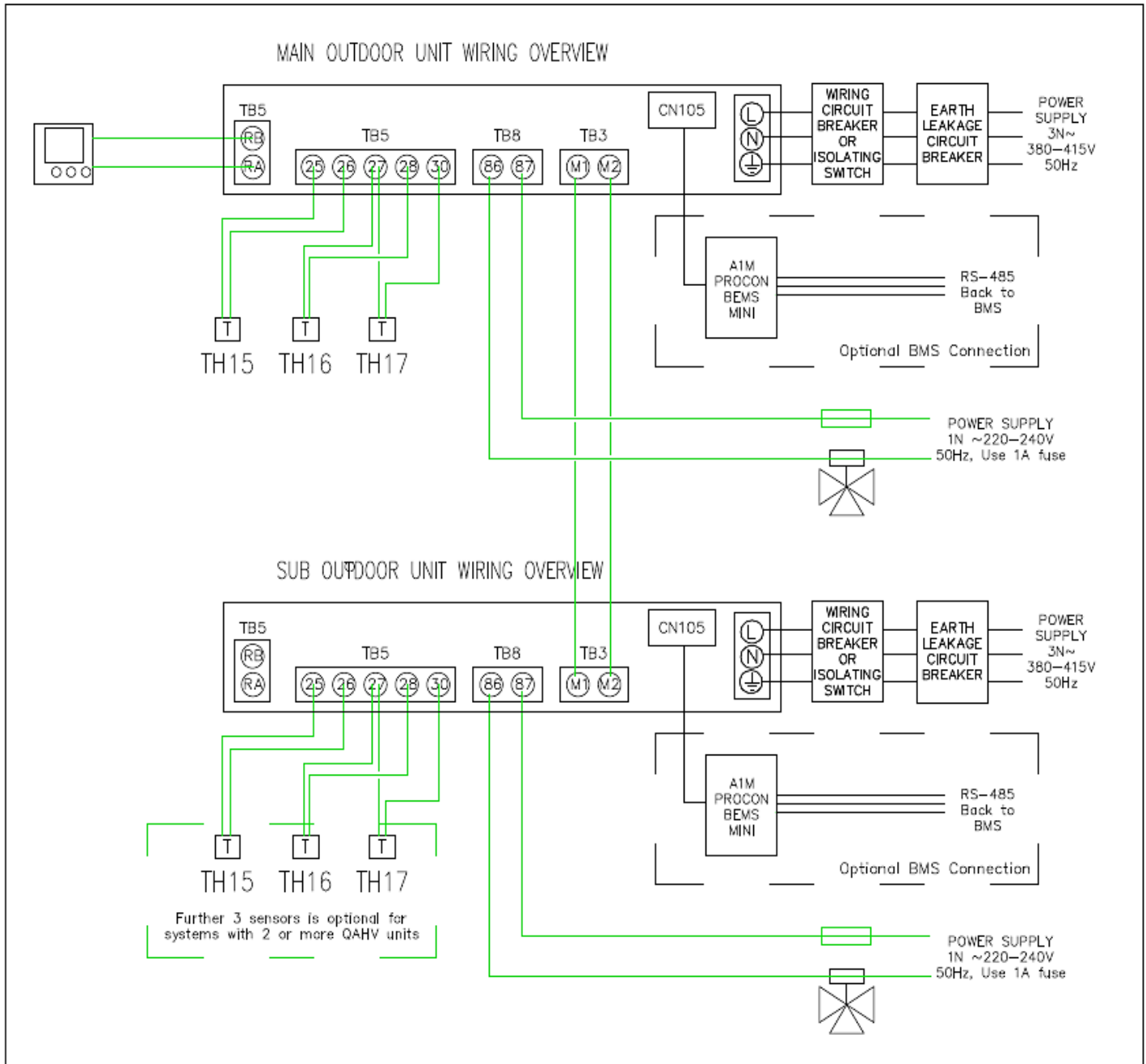
All electrical work must be carried out in accordance with the current version of BS7671

Please note:

Some secondary water circulating pumps require a volt free enable to operate.

Utilize pins 1&3 from CN512 on the QAHV to achieve this

Multiple units wiring



20. AE200

Please ensure item code 105 is set to “1” on the QAHV before proceeding

Touch [Initial Settings] in the menu bar, and then touch [HW Supply].

Set the address, group names, and detail settings for each group of HWHP (QAHV) unit that is connected to the AE-200/ EW-50. Touch [Save Settings] when done



1. Detail settings for HWHP (QAHV) units

In the [HW Supply] screen, touch the “Detail settings” button.

The detail settings window will appear.

Note: Only the “Detail settings” buttons for the HW Supply groups whose initial startup procedure have been completed are available for selection

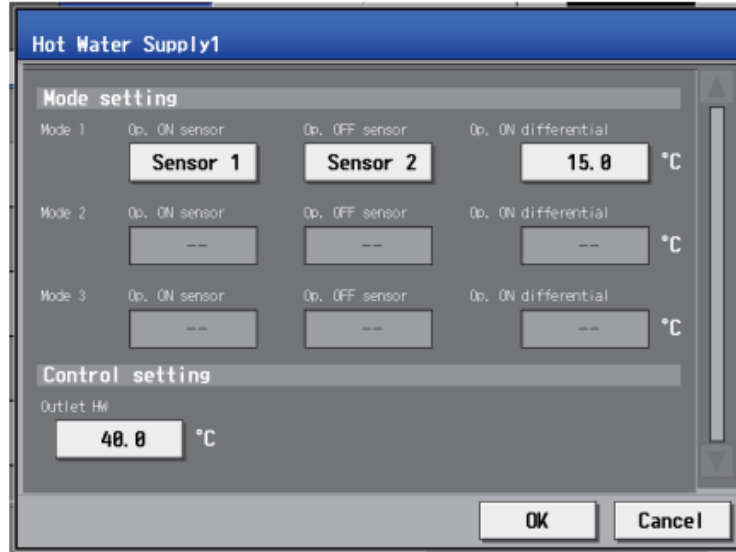
2. Set the settings that are related to operation modes under “Mode setting.”

Set the number corresponding to the sensor to be used to determine the “Thermo-ON” status under “Operation ON sensor.”

Set the number corresponding to the sensor to be used to determine the “Thermo-OFF” status under “Operation OFF sensor.”

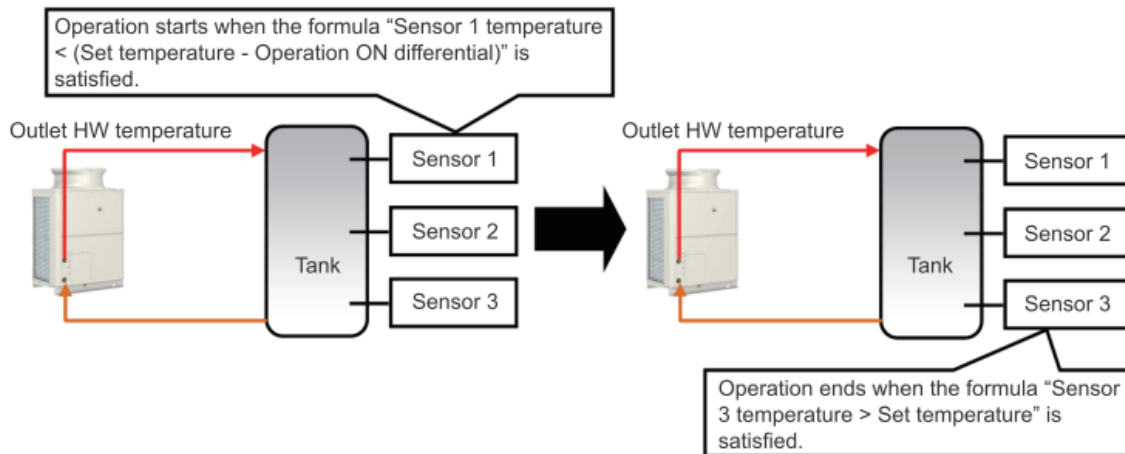
Set “Operation ON differential” to a temperature between 0.5°C (1°F) and 23.0°C (46°F).

Units will start operating when the differential between the set temperature and the temperature setting for “Operation ON sensor” exceeds the value set for “Operation ON differential.”

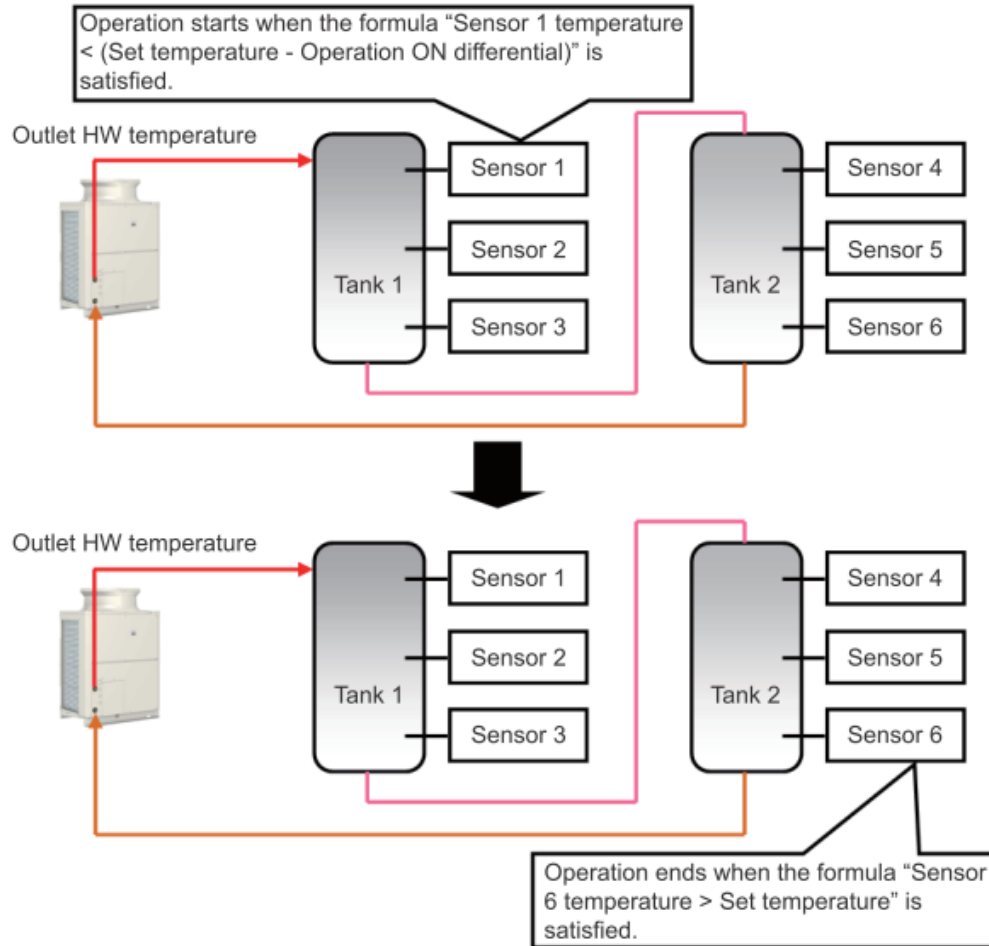


Note: Specify the “Operation ON sensor” with a number equal to or smaller than that of the “Operation OFF sensor.”

Note: Operation will be carried out as shown in the figure below when “Sensor 1” is set for “Operation ON sensor” and “Sensor 3” is set for “Operation OFF sensor” in [Mode setting] for 3-sensor-type model of units.



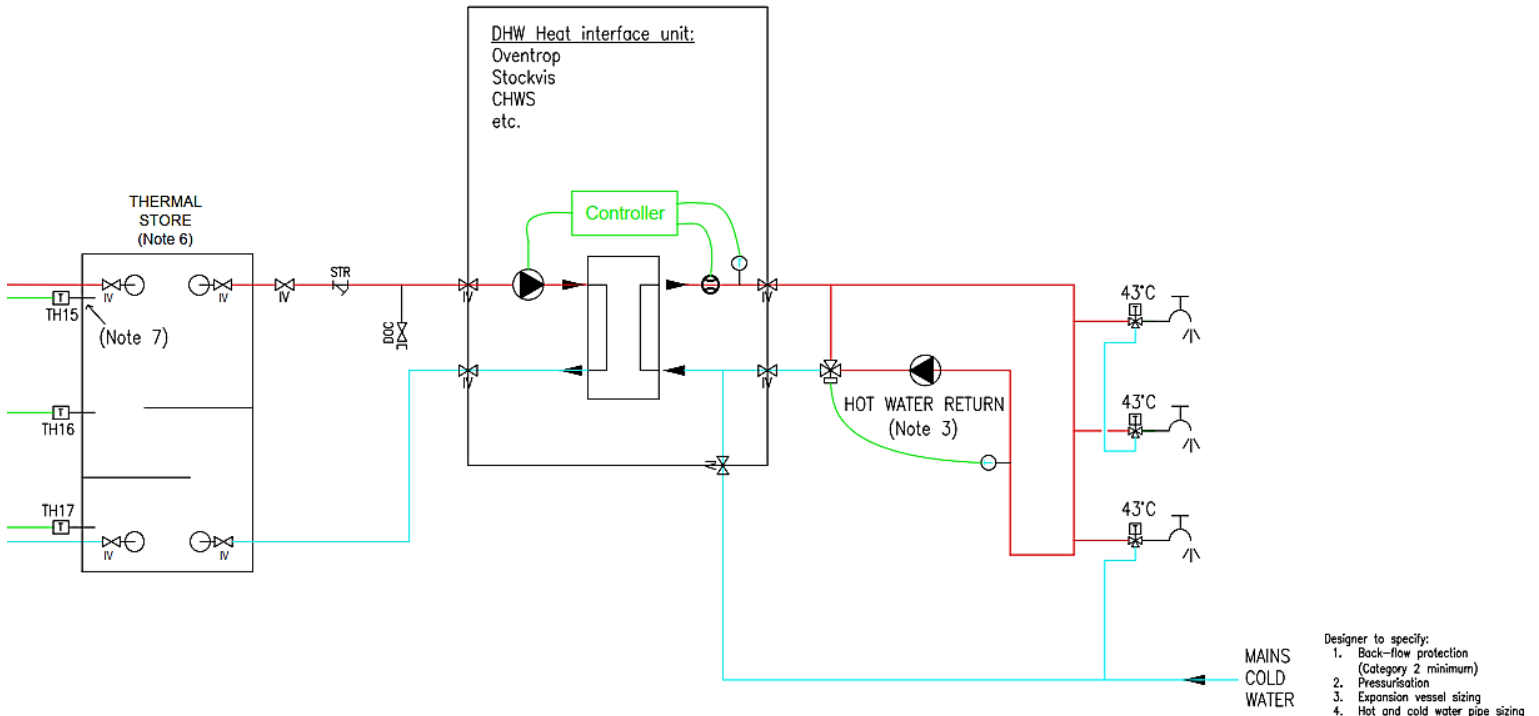
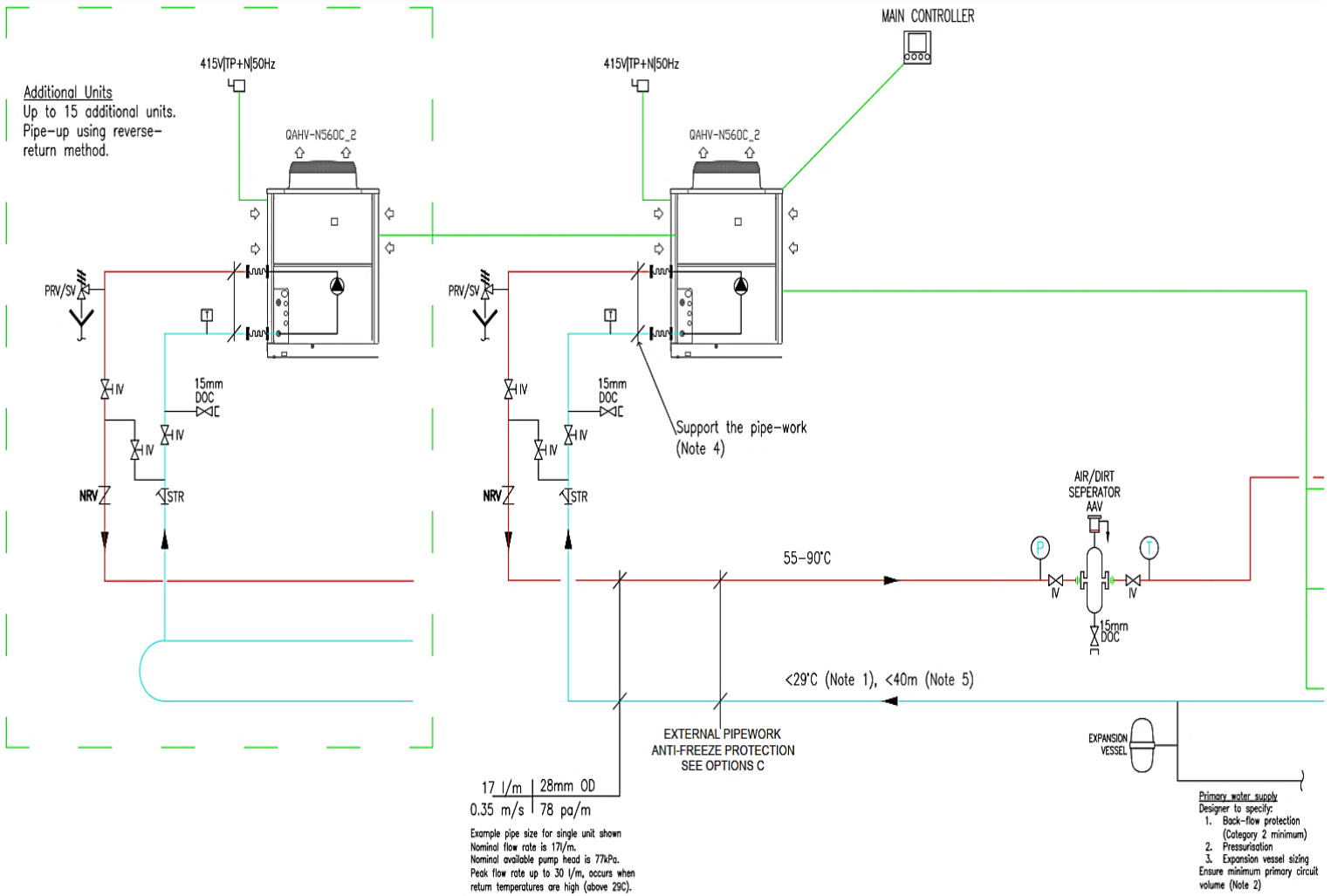
Note: Operation will be carried out as shown in the figure below when “Sensor 1” is set for “Operation ON sensor” and “Sensor 6” is set for “Operation OFF sensor” in [Mode setting] for 6-sensor-type model of units.



3. Set "Outlet HW" to a temperature between 40.0°C (104°F) and 90.0°C (194°F).
4. Touch [OK] to enable the settings.

Note: HWHP (QAHV) units cannot be registered from the Initial Setting Tool. Register the HWHP (QAHV) units on the LCD

21. Schematics



- Minimum primary water circuit volume is 40 litres
- Water pressure at the QAHV must be <5Bar
- Maximum flowrate in the primary & secondary circuit is 30L/Min
- Nominal primary circuit flow rate is 17L/M and can achieve a 77KPa head at this flow rate
- Size the primary system pressure drop at 77KPa and 17L/M.
- A total of 60m equivalent pipe length is available between the heat-pump and the hot water storage (or secondary plate heat exchanger). That is a total of 120m between the flow and the return. For every pair of bends (1 bend on the flow and 1 bend on the return), the maximum length must be reduced by 3.2m.

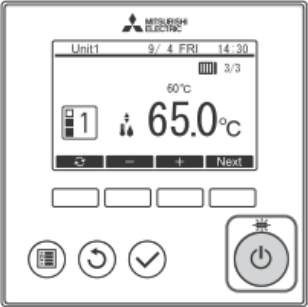
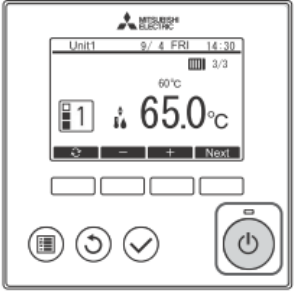
*Note this example the field supplied PHEX, and pumps are NOT controlled by the QAHV or ME equipment

Notes:

- Pumped return to enter in the bottom of the tank before the last tank to prevent de-stratification.
- Adequate provision should be made to prevent condensate from collecting around the outdoor units.
- It is the responsibility of the installing contractor to provide adequate protection against freezing of pipe work. If the water circuit freezes and damages the equipment the warranty will become void.
- All water systems should be designed, installed and commissioned in accordance with industry good practice guidelines, such as, but not limited to: BSRIA Guide BG2/2010 - Water System Commissioning, BSRIA Guide BG29/2011 - Pre-Commissioning of Pipework Systems, BSRIA Guide BG50/2013 - Water Treatment for Closed Heating & Cooling Systems, CIBSE Commissioning Code W - Water distribution systems, CIBSE Heat Networks: Code of Practice for the UK CP1 2015
- The contractor should make the necessary arrangements to ensure the design of the system meets the requirement of the application and comply with all current building regulations.
- All electrical work must be carried out in accordance with the current version of BS7671.
- Leave the main power switched on for at **least 12 hours** before turning on the Run/Stop switch that controls the unit on the on-site control panel to warm up the compressor. (The compressor will not be warmed up if initial settings have not been made. Make sure to make initial settings.)
- The unit features a circuit that protects the compressor from short cycling. Once the compressor stops, it will not start up again for up to 10 minutes. If the unit does not start when the ON/OFF switch is turned on, leave the switch turned on for 10 minutes. The unit will automatically start up within 10 minutes.

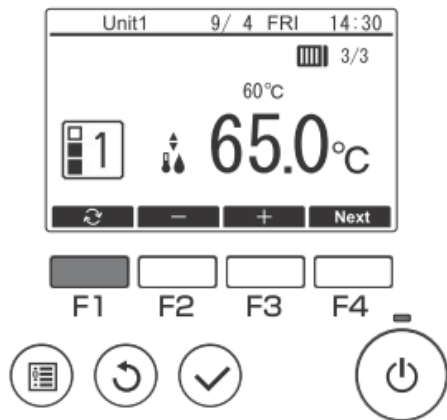
22. Remote Controller

Power ON/OFF

<p>During operation</p>		<p>Press the [ON/OFF] button. The ON/OFF lamp will light up in green, and the operation will start.</p>
<p>Stopping operation</p>		<p>Pressing the [ON/OFF] button brings up a confirmation screen. When it appears, press the [F3] button. The ON/OFF lamp will come off, and the operation will stop.</p>

Operation mode setting

Button operation



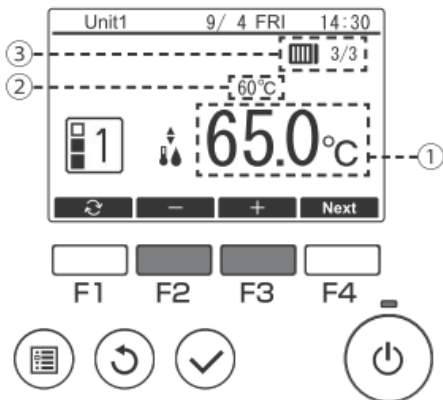
Press the [F1] button to go through the operation modes in the order of "Mode1, Mode2, and Mode3."

Select the desired operation mode



The number of modes can be set to the value which is smaller than the setting value of Item code 1507 (refer to page 26)

Set temperature setting



Press the [F2] button to decrease the set temperature and press the [F3] button to increase.

The temperature can be set to the value which is equal or smaller than the setting value of Item code 9 (refer to page 5) or Function setting No. 021 (refer to page 58).

① Set water temperature display the currently set thermo-OFF temperature is displayed.

② Control water temperature display

The thermistor temperature to be used for thermo-OFF is displayed.

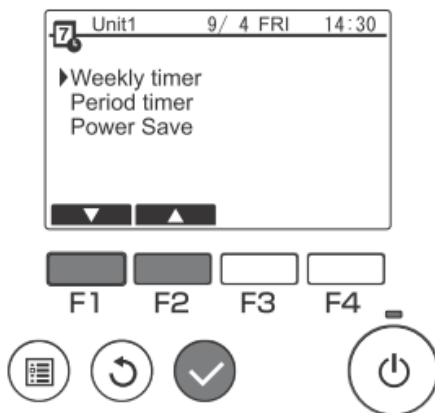
③ Number of units in operation/total number of units

The number of units currently in operation and the total number of units are displayed.

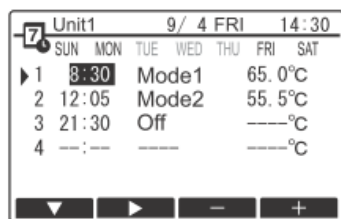
Weekly Timer

Following settings can be used to change the operating schedule according to the day of the week.

- Set the schedule for ON/OFF, operation mode and set temperature for each day of the week.



Select "Weekly timer" from the Schedule menu, and press the [Select] button



The Weekly timer screen will be displayed.

To check the operation settings:

Press the [F1] or [F2] button to check the settings from Monday to Sunday.

The [F4] button displays the following page.

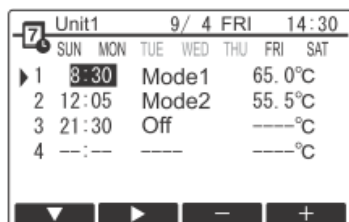
To change the operation settings:

Press the [F1] or [F2] button to select a day and then press the [F3]

button to

confirm the day to be set. (Multiple days can be selected.)

After selecting the desired day, press the [Select] button



The pattern setting screen will be displayed.

Press the [F1] button to select a pattern.

Press the [F2] button to select the item you want to change.

Press the [F3] or [F4] button to switch to the desired setting.

Time	Set in 5-minute increments. * Hold down the button to change the value continuously.
Operation mode, Off	The options available vary depending on the connected unit. * If you select an operation mode other than off, the connected unit will operate.
Set temperature	You can change the set temperature (in 0.5°C increments).

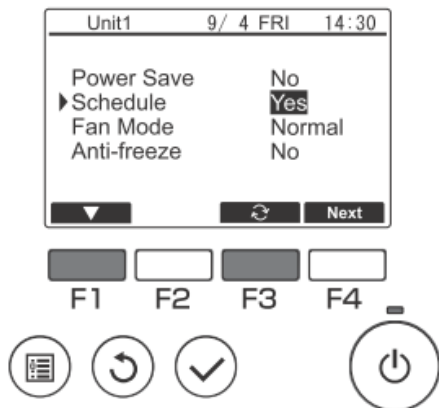
Weekly timer operation is disabled in the following situations:

- When Schedule is disabled
- On days when the period timer is also enabled

Weekly timer operation may not be executed depending on the system configuration.

Navigating through the screens

- To save the settings [Select] button
- To return to the Main display [Menu] button
- To return to the previous screen [Return] button



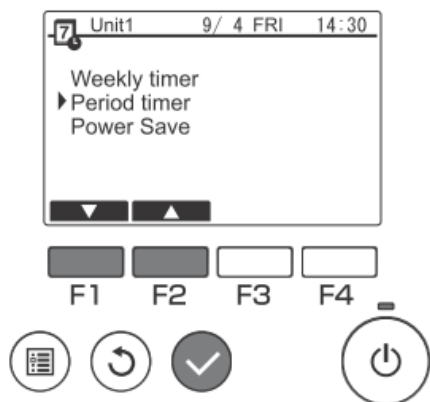
In the Operation setting screen, press the [F1] button to move the cursor to "Schedule".
Press the [F3] button to select "Yes".

Using period timer

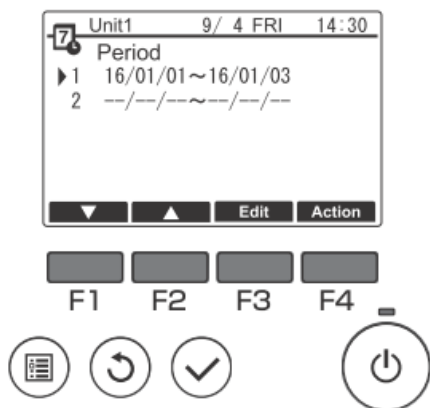
Function description

Following settings can be made to change the specified period and daily operating schedule.

- Set the schedule for ON/OFF, operation mode and set temperature.
- * If the periods specified in 1 and 2 overlap, only the period specified in 1 will be implemented.



Select "Period timer" from the Schedule menu, and press the [Select] button



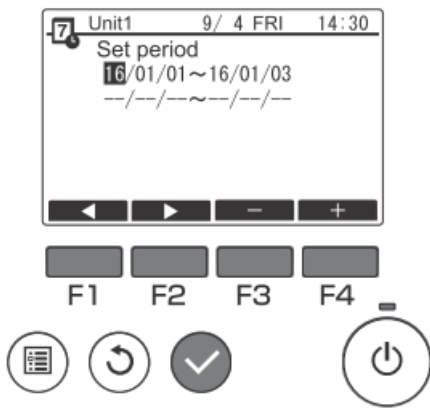
The suitable periods for the period timer will be displayed.

To set the period:

Press the [F1] or [F2] button to select the specified date and then press the [F3] button. ... Move to 3.

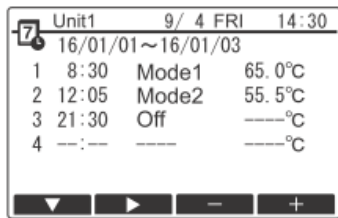
To set the operation:

Press the [F1] or [F2] button to select the specified date and then press the [F4] button. ... Move to 4.



The period setting screen will be displayed.

Press the [F1] or [F2] button to move to the item you want to change. Press the [F3] or [F4] button to change the start date and end date for the period timer and then press the [Select] button to update the setting.

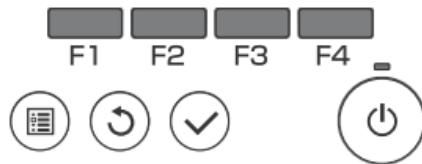


The pattern setting screen will be displayed.

* Refer to the section on Weekly timer for details on using the pattern setting screen.

Weekly timer operation will be disabled in the following situations:

- When Schedule is disabled



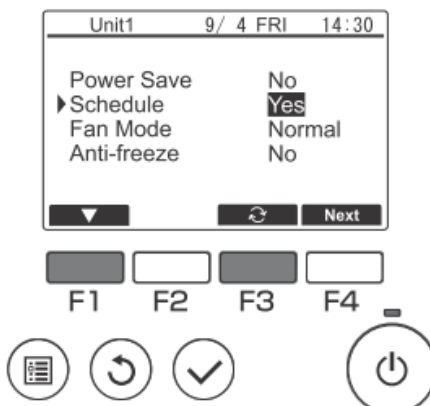
When Schedule is disabled with the centralized controller or the connected unit, Schedule settings cannot be made with the remote controller.

After switching to the desired setting, press the [Select] button.

A setting confirmation screen will appear.

Navigating through the screens

- To save the settings [Select] button
- To return to the Main display [Menu] button
- To return to the previous screen [Return] button



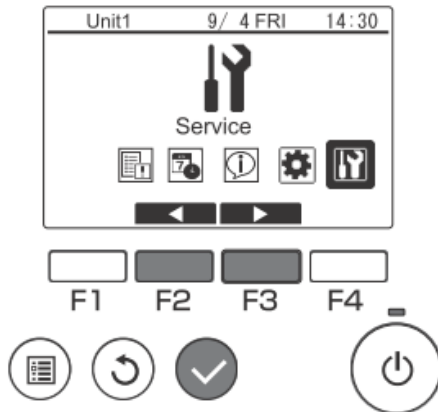
In the Operation setting screen, press the [F1] button to move the cursor to "Schedule".

Press the [F3] button to select "Yes".

Function setting

Sets the functions for each connected unit from the remote controller as required.

- Refer to the Installation Manual for the connected units for details on the connected unit settings at shipment, Function No. and the Data.
 - If the function settings change the connected unit functions, all the settings must be managed appropriately, such as by writing them down on paper.
-



Select "Service" from the Main menu and press the [Select] button.

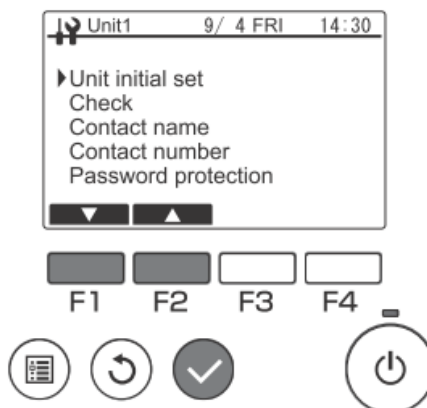


A password input screen will be displayed.

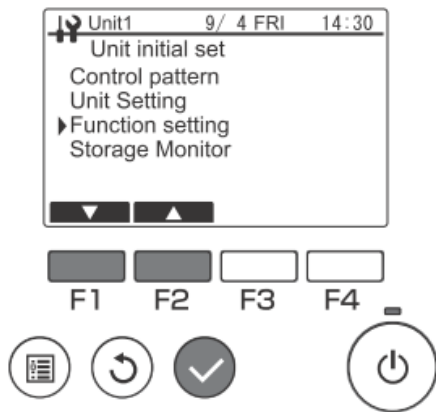
Enter the current maintenance password (a 4-digit number).

After entering the 4-digit password, press the [Select] button.

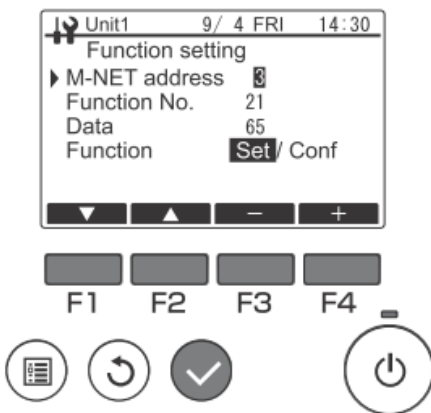
If the password is correct, the Service menu will be displayed.



Select "Unit initial set" from the Service menu and press the [Select] button.



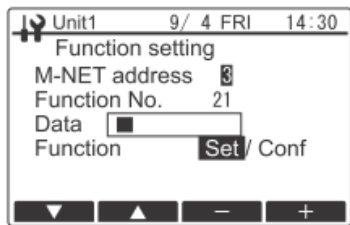
Select "Function setting" from the Unit initial set menu, and press the [Select] button.



The Function setting screen will be displayed.

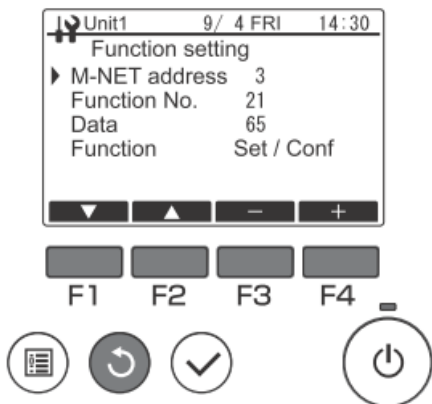
Press the [F1] or [F2] button to select the connected unit "M-NET address", "Function No." or "Data", and then press the [F3] or [F4] button to change to the desired setting.

After changing to the desired setting, press the [Select] button. The setting data transmission screen will be displayed.



To check the current settings, set the "M-NET address" or "Function No." of the connected unit to be checked, select "Conf" in "Function" and press the [Select] button.

The screen indicating that the confirmation is being processed will be displayed and the data will be displayed when checking is completed.



Once data transmission is completed, the screen indicating that the settings have been made will be displayed.

To continue making settings, press the [Return] button to return to the screen in "Unit initial set". Use the same procedure to set other connected unit and Data settings.

Navigating through the screens

- To return to the Service menu [Menu] button
- To return to the previous screen [Return] button

Function setting	Item
015	Mode 1 differential value (Schedule value)
016	Mode 2 differential value (Schedule value)
017	Mode 3 differential value (Schedule value)
021(*)	Outlet hot water temperature setting

* When setting the set temperature for Mode 1, Mode 2, or Mode 3 to 65°C or higher, the setting for Function No.21 is required.

* This setting will be used for the secondary side outlet hot water temperature when the secondary side control is enabled.

Operation status monitoring

Check the running information of each unit from the remote controller.



Select "Running information" from the main menu screen and press the [Select] button.

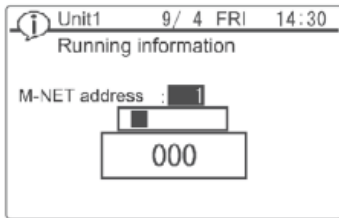


Set the desired M-NET address with the [F2] and [F3] buttons and press the [Select] button.



Enter a 3-digit running information number and press the [Select] button.

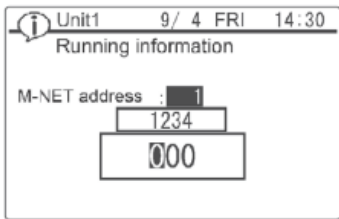
The setting information send screen appears.



When the information is sent successfully, the running information values appear in the result display screen.

To continue operation, press the [Return] button to return to the screen of the M-Net address.

Set other M-NET address and running information number using the same procedure.



Navigating through the screens

- To return to the Service menu [Menu] button
- To return to the previous screen [Return] button

Running information No.	Description	Remarks
001	High pressure operation data [$\times 0.1$ MPa]	Data of last hot water storage operation
002	Low pressure operation data [$\times 0.1$ MPa]	
003	Outlet hot water temperature operation data [$\times 0.1^{\circ}\text{C}$]	
004	Outdoor air temperature during operation [$\times 0.1^{\circ}\text{C}$]	
005	Total compressor operation time [$\times 10$ h]	
006	Outlet hot water temperature [$\times 0.1^{\circ}\text{C}$]	Current values
007	Inlet water temperature [$\times 0.1^{\circ}\text{C}$]	
008	High pressure [$\times 0.1$ MPa]	
009	Low pressure [$\times 0.1$ MPa]	
010	Discharge refrigerant temperature [$\times 0.1^{\circ}\text{C}$]	
011	Suction refrigerant temperature [$\times 0.1^{\circ}\text{C}$]	
012	Operating frequency [$\times 0.1$ Hz]	
013	Flow sensor [$\times 0.1$ L/min]	
016	Secondary side outlet water temperature [$\times 0.1^{\circ}\text{C}$]	
017	Secondary side flow sensor [$\times 0.1$ L/min]	
018	Secondary side pump output [%]	

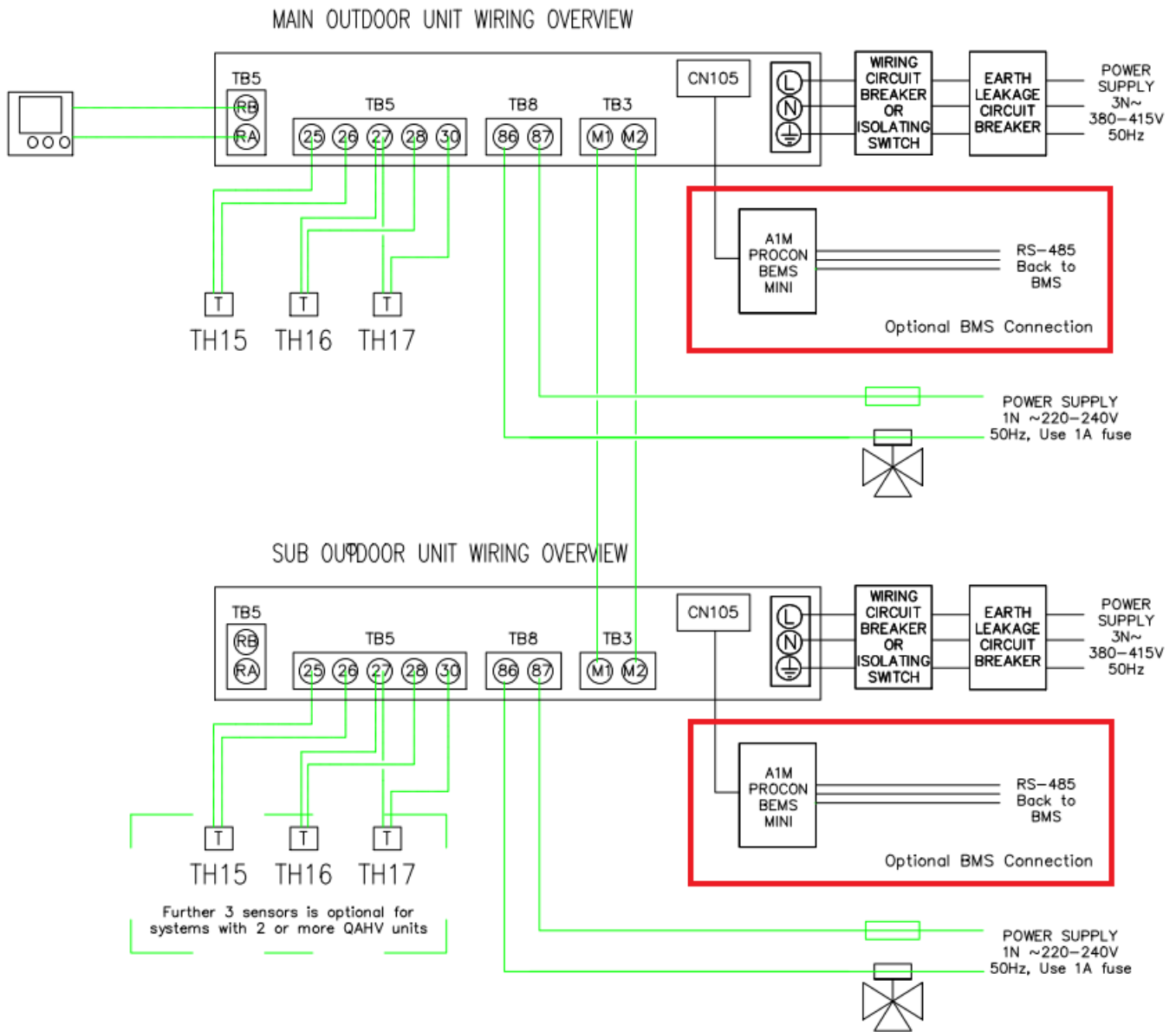
Example) No. 001

Remote control display: 38

Actual value: 3.8 MPa

23.Procon MelcoBems

When monitoring QAHV units with multiple units, it is necessary to connect to each of the multiple units.



Dipswitches

There is a bank of 8 DIP switches on the MelcoBEMS MINI (A1M) labeled 'CONFIGURATION'. These switches are used to configure communication settings and to enable some features.

Address

When Modbus RTU protocol has been selected. The node address is used as the Slave ID.

Any node address in the range 1 – 30 can be chosen using switches 1 – 5. The address is set in binary, where the switch positions have the following values:

Switch number	Value when switch is set to ON
1	1
2	2
3	4
4	8
5	16

To get the node address, add together the value for each switch set ON. For example, to set address 13, set switches 1, 3 and 4 ON ($1 + 4 + 8 = \text{address } 13$).

When all switches 1 – 5 are set to the ON position the node address is set in software by writing to a Modbus register.

Note: When all switches are set to the OFF position a node address of 1 is assumed.

Note: Each MelcoBEMS MINI (A1M) connected on the same RS-485 network must be set to a unique node address.

RS-485 communication settings

The RS-485 settings are set using DIP switch 6.

When the switch is in the OFF position the Baud Rate and Parity settings are set in software by writing to Modbus registers.

Switch 6	RS-485 communication setting
OFF	Baud Rate and Parity set in software
ON	9600 baud, no parity

Note: The number of data bits is fixed at 8 and the number of stop bits is fixed at 1.

Protocol Selection

Switch 7 **MUST** be set to ON. **THE QAHV is MODBUS ONLY**

Deadband mode

This is not used on this model