Internal Use Only

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MULTI V III

Heat Recovery Unit R410A

SERVICE MANUAL

MODEL : PRHR041/PRHR041A
PRHR031/PRHR031A
PRHR021/PRHR021A

CAUTION

Before Servicing the unit, read the safety precautions in General SVC manual.
Only for authorized service personnel.

TABLE OF CONTENTS

Safety Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

⚠WARNING	This symbol indicates the possibility of death or serious injury.
⚠CAUTION	This symbol indicates the possibility of injury or damage to properties only.

■ Meanings of symbols used in this manual are as shown below.

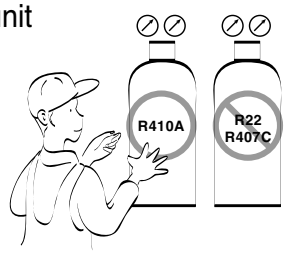
⃠	**Be sure not to do.**
❗	**Be sure to follow the instruction.**

⚠WARNING

■ Installation

When installing and moving the air conditioner to another site, do not charge it with a different refrigerant from the refrigerant specified on the unit

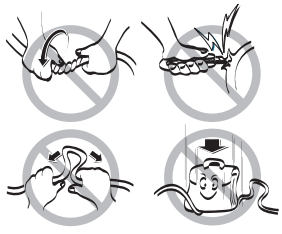
• If a different refrigerant or air is mixed with the original refrigerant, the refrigerant cycle may malfunction and the unit may be damaged.



■ Operation

Do not damage or use an unspecified power cord.

• There is risk of fire, electric shock, explosion, or injury.



Do not touch the power switch with wet hands.

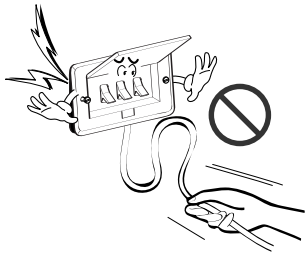
• There is risk of fire, electric shock, explosion, or injury.

⚠CAUTION

■ Operation

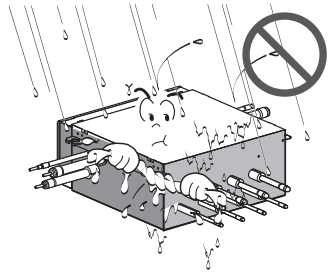
Make the connections securely so that the outside force of the cable may not be applied to the terminals.

• Inadequate connection and fastening may generate heat and cause a fire.



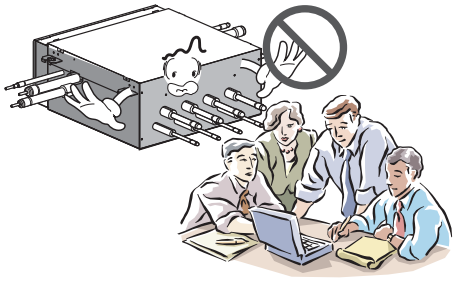
Avoid a place where rain may enter since the HR unit is for indoor

• There is risk of property damage, failure of product or electric shock.



Install the HR unit at a place in which it is not affected by operation mode changing noise.

• Installation within cell such as meeting room etc, may disturb business due to noise.



Part 1
General Information

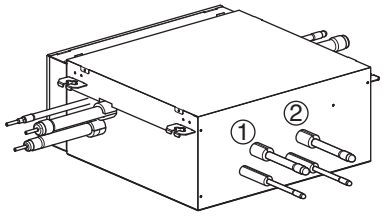
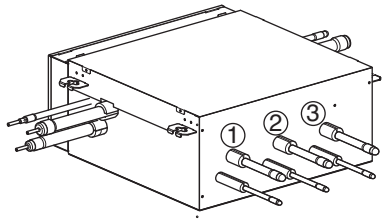
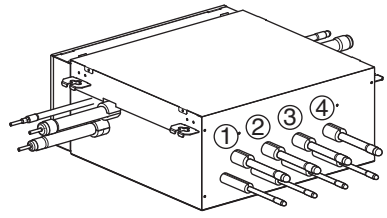
1. Model Names

1.1 HR Unit

Power Supply	2 branches	3 branches	4 branches
1Ø, 220-240V, 50Hz / 1Ø, 220V, 60Hz	PRHR021	PRHR031	PRHR041
1Ø, 208/230V, 60Hz	PRHR021A	PRHR031A	PRHR041A

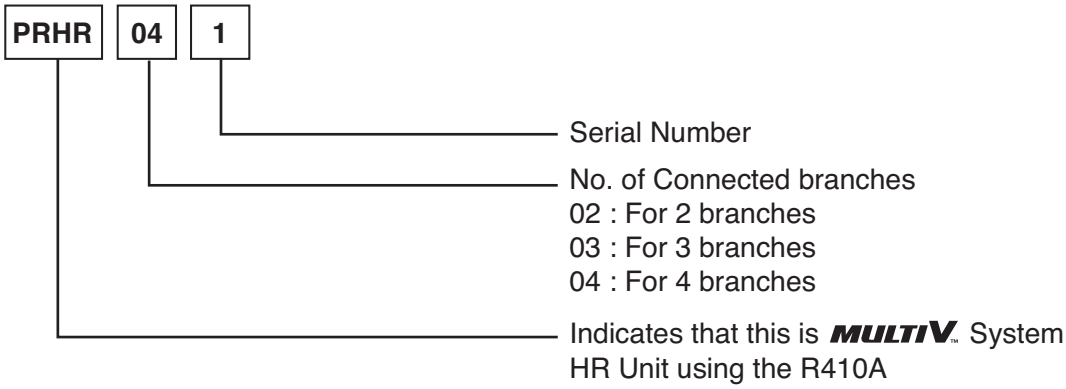
2. External Appearance

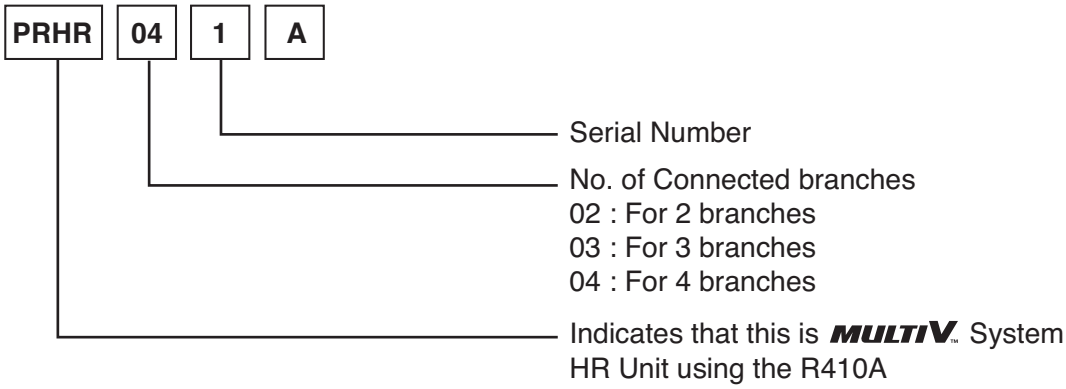
2.1 HR Unit

PRHR021/PRHR021A	PRHR031/PRHR031A	PRHR041/PRHR041A
 2 branches	 3 branches	 4 branches

3. Nomenclature

3.1 HR Unit





Part 2
HR Units

HR Units

Specifications

1. HR Unit

Model			PRHR021/PRHR021A	PRHR031/PRHR031A	PRHR041/PRHR041A
Max. Connectable No. of Indoor Units			16	24	32
Max. Connectable No. of Indoor Units of a branch			8	8	8
Net. Weight	kg		18	20	22
	lbs		39.7	44.1	48.5
Dimensions (WxHxD)	mm		801x218x617	801x218x617	801x218x617
	Inch		31.5x8.6x24.3	31.5x8.6x24.3	31.5x8.6x24.3
Casing			Galvanized steel plate		
Connecting Pipes	Indoor	Liquid Pipe [mm/inch]	Ø9.52[3/8]		
		Gas Pipe [mm/inch]	Ø15.88[5/8]		
	Outdoor	Liquid [mm/inch]	Ø9.52[3/8]	Ø12.7[1/2]	Ø15.88[5/8]
		Low Pressure [mm/inch]	Ø22.2[7/8]	Ø28.58[1 1/8]	Ø28.58[1 1/8]
		High Pressure [mm/inch]	Ø19.05[3/4]	Ø22.2[7/8]	Ø22.2[7/8]
Sound Absorbing Insulation Material			Polyethylene Foam		
Power Supply			1Ø, 220-240V, 50Hz / 1Ø, 220V, 60Hz(PRHR041, PRHR031, PRHR021) 1Ø, 208/230V, 60Hz(PRHR041A, PRHR031A, PRHR021A)		

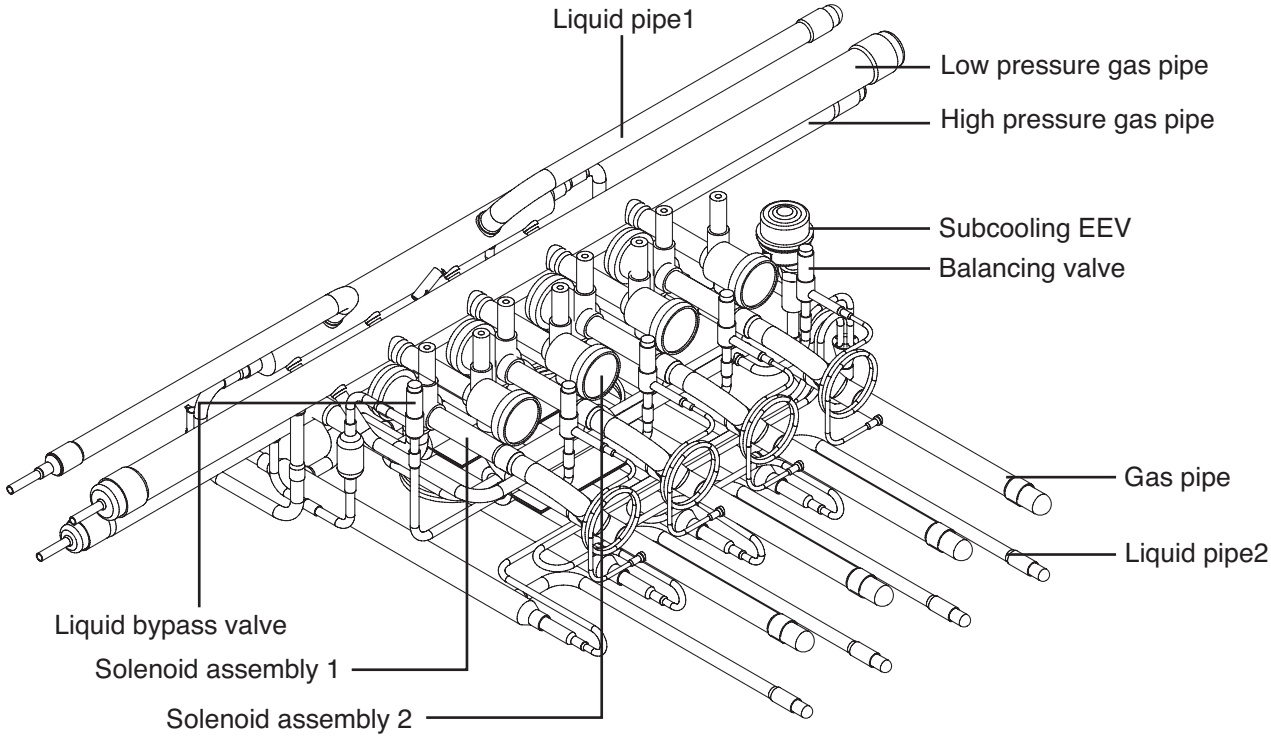
Notes:

1. Voltage range : Units are suitable for sue on electrical systems where voltage supplied to units terminals is not below or above listed range limits.
2. Maximum allowable voltage unbalance between phases is 2%

Parts Functions

1. Parts Functions

Parts name	Symbol	Major function
Low pressure gas pipe	LPGV	Pipe for low pressure gas
High pressure gas pipe	HPGV	Pipe for high pressure gas
Liquid pipe 1	LP1	Liquid pipe connected with outdoor unit
Liquid bypass valve	LBV	Prevent liquid charging
Solenoid assembly 1, 2	SOL1, 2	Control the path for heating or cooling
Liquid pipe 2	LP2	Liquid pipe connected with indoor unit
Gas pipe	GSP	Gas pipe connected with indoor unit
Balancing valve	BLV	Control the pressure between High and Low pressure pipe during operation switching
Subcooling EEV	SCEEV	Control the subcooling

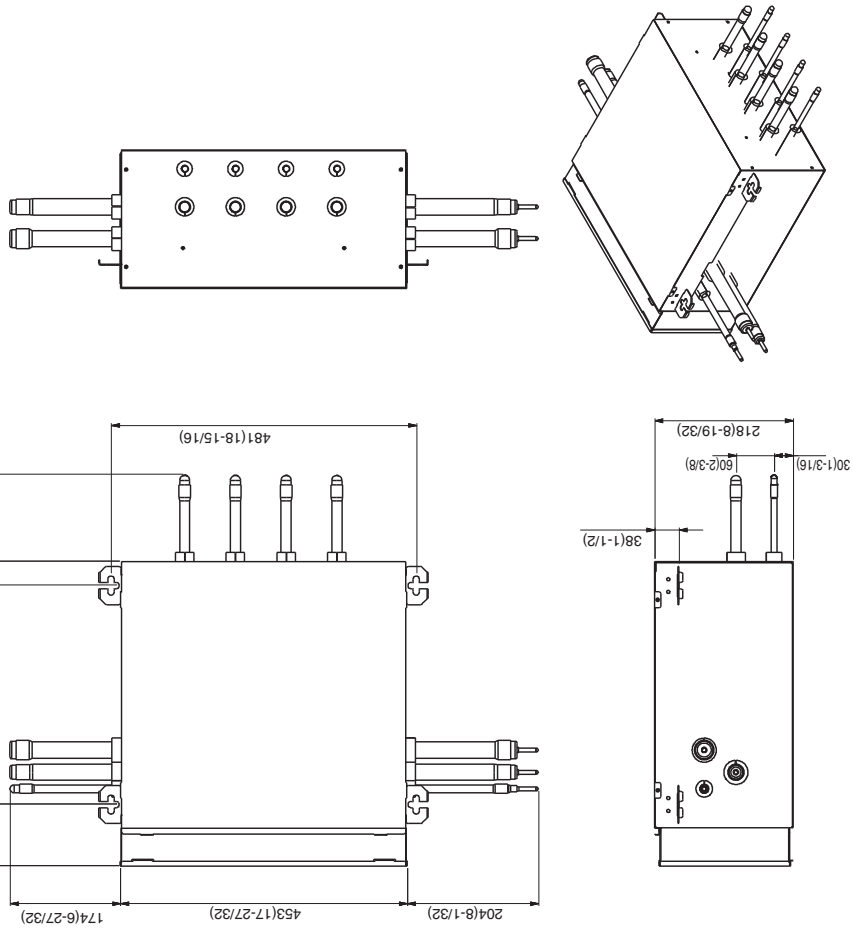


Dimensions

1. HR Units

Outdoor Unit

PRHR041/PRHR041A
PRHR031/PRHR031A
PRHR021/PRHR021A



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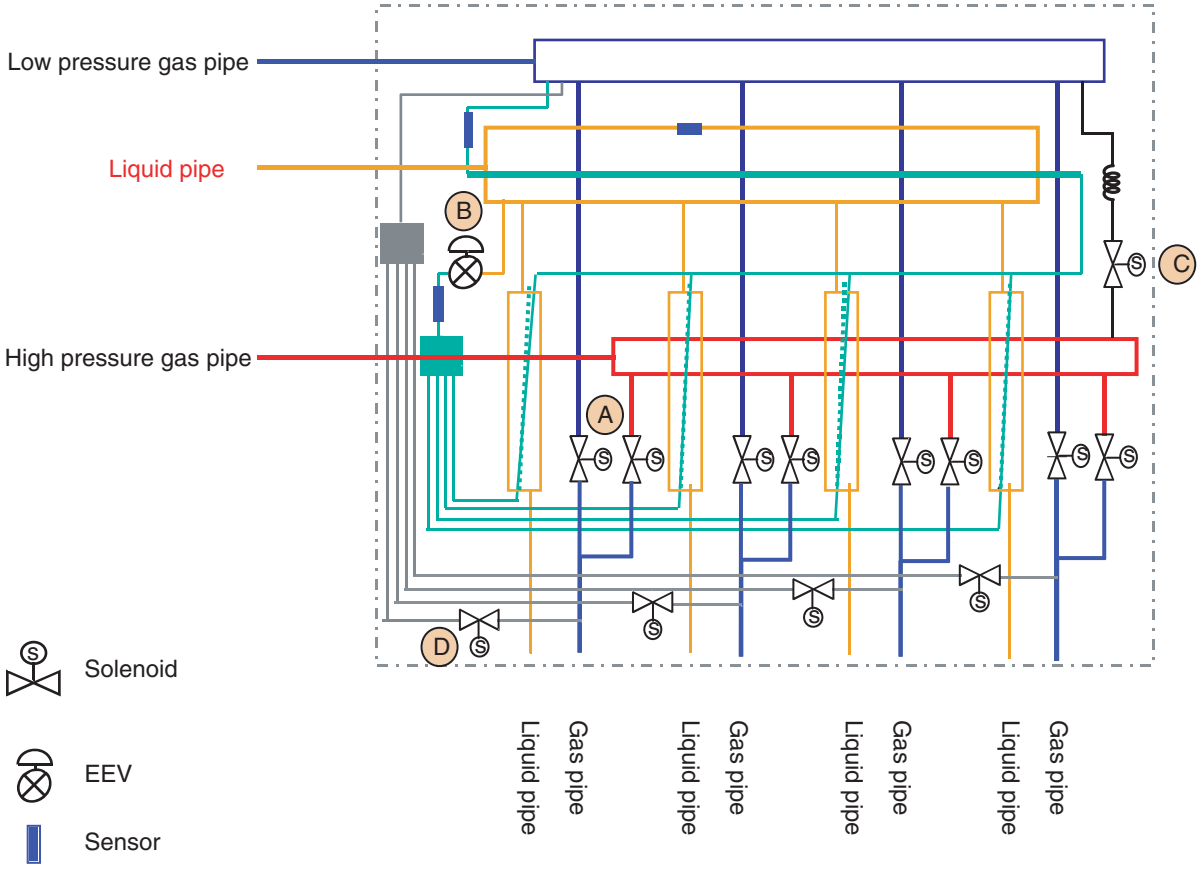
Piping Diagrams

1. HR Unit



Ⓐ : To be switched operation between cooling and heating by two Solenoid valve

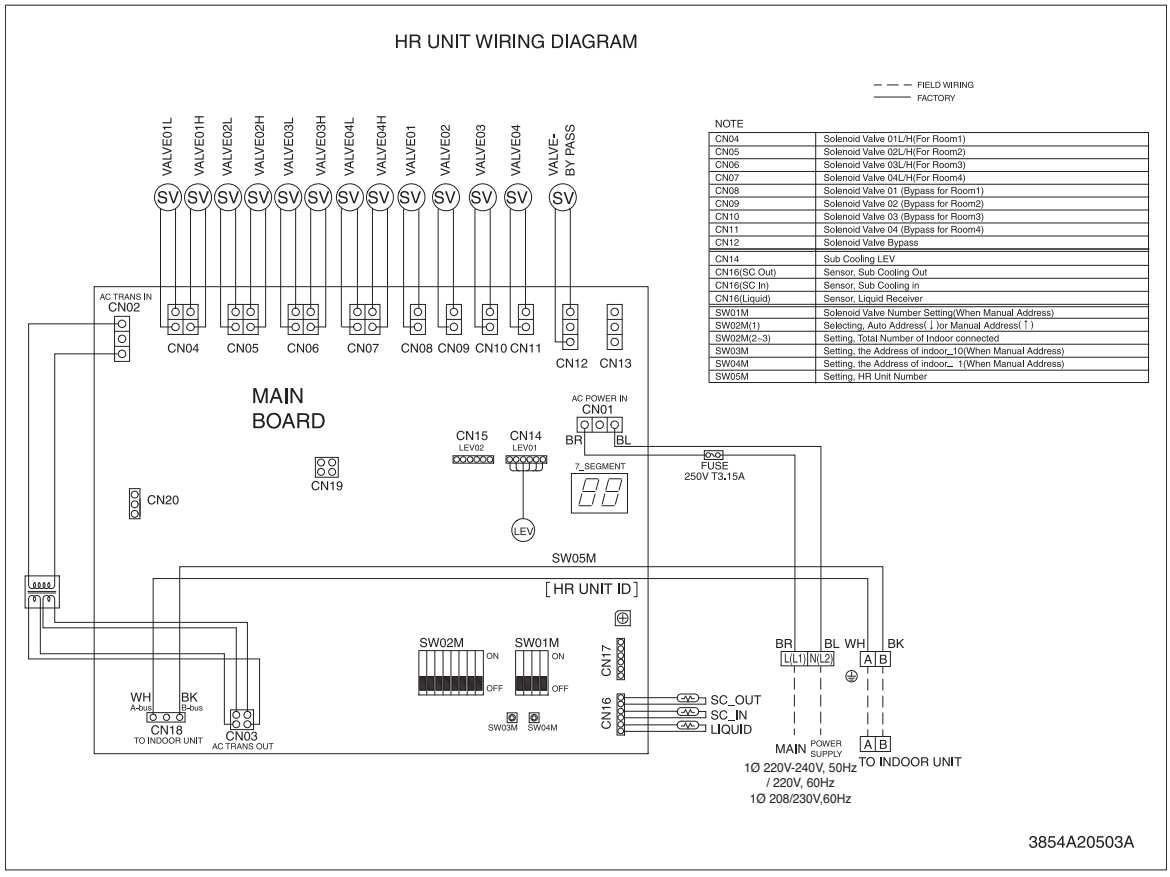
Ⓑ : To be used decreasing noise according to sub-cooling of inlet and outlet of indoor unit (Simultaneous operation)

Ⓒ : To prevent liquid charging between high pressure gas valve and HR unit at cooling mode

Ⓓ : To be controlled the pressure between high and low pressure pipe during operation switching

Wiring Diagrams

1. HR Units



CN04	Solenoid valve 01L/H(For room1)
CN05	Solenoid valve 02L/H(For room2)
CN06	Solenoid valve 03L/H(For room3)
CN07	Solenoid valve 04L/H(For room4)
CN08	Solenoid valve 01 (Bypass for room1)
CN09	Solenoid valve 02 (Bypass for room2)
CN10	Solenoid valve 03 (Bypass for room3)
CN11	Solenoid valve 04 (Bypass for room4)
CN12	Solenoid valve bypass
CN14	Sub cooling EEV
CN16(SC Out)	Sensor, sub cooling out
CN16(SC In)	Sensor, sub cooling in
CN18(Liquid)	Sensor, liquid receiver
SW01M	Solonoid valve number Setting(When manual address)
SW02M(1)	Selecting, auto address(↓) or manual address(↑)
SW02M(2~3)	Setting, total number of indoor connected
SW03M	Setting, the address of indoor_10(When manual address)
SW04M	Setting, the address of indoor_1(When manual address)
SW05M	Setting, HR unit number

Electric Characteristics

1. HR Units

Units				Power Supply		IFM		Input(W)	
Model	Hz	Volts	Voltage Range	MCA	MFA	kW	FLA	Cooling	Heating
PRHR021	50	220	Max: 242 Min: 198	0.1	15	-	-	14	14
PRHR031				0.15	15	-	-	21	21
PRHR041				0.2	15	-	-	28	28

Units				Power Supply		IFM		Input(W)	
Model	Hz	Volts	Voltage Range	MCA	MFA	kW	FLA	Cooling	Heating
PRHR021A	60	208/230	Max: 252 Min: 187	0.1	15	-	-	14	14
PRHR031A				0.15	15	-	-	21	21
PRHR041A				0.2	15	-	-	28	28

Symbols:

MCA: Minimum Circuit Amperes (A)
MFA : Maximum Fuse Amperes(see note 5)
kW : Fan Motor Rated Output(kW)
FLA : Full Load Amperes(A)
IFM : Indoor Fan Motor

Note :

1. Voltage Range
   Units are suitable for use on electrical system where voltage supplied to unit terminals is not below or above the listed range limits.
2. Maximum allowable voltage unbalance between phase is 2%.
3. MCA/MFA
   MCA = 1.25 x FLA
   MFA ≤ 4 x FLA
   (Next lower standard fuse rating. Minimum 15A)
4. Select wire size based on the MCA.
5. Instead of fuse, use Circuit Breaker.

Functions

1. Basic Control

1.1 Normal Operation

Actuator	Power on	Cooling operation	Heating operation	Stop state
High pressure gas valve	Close	Close	Open	Keep
Low pressure gas valve	After 30 sec. Open	Open	Close	Keep
Liquid valve	Close	Open	Close	Close

1.2 Starting Control(Heating Mode Only)

If the system is operated in the heating mode, all high pressure gas valves are opened

1.3 Valve Control

Mode change timer is calculated as Table 1, and valves are controlled by Mode change timer according to Table 2.

Table 1. Mode change timer calculation

Previous mode	Changing mode	Mode change timer
Stop or ventilation	Cooling or heating	120 sec
Cooling mode	Heating	180 sec
Heating mode	Cooling	120 sec
Cooling or heating	Stop or ventilation	During heating : 60 sec During cooling : 0 sec

Table 2. Valve control by mode change timer

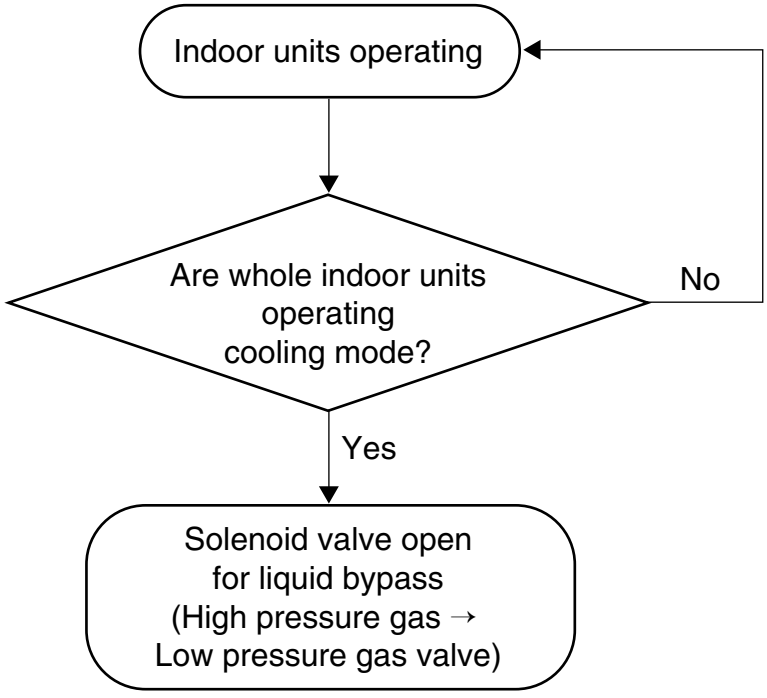
Operating mode	Mode change timer	H/P gas valve	L/P gas valve	Balancing valve
Cooling	120 ≤ timer	Keep	Keep	Close
	0 < timer < 120	Close	Close	Open
	timer = 0	Close	Open	Close
Heating	180 ≤ timer	Keep	Keep	Close
	0 < timer < 180	Close	Close	Close
	timer = 0	Open	Close	Close
Stop or ventilation	0 < timer ≤ 5	Cooling mode : Close	Keep	Close
	Timer = 0	Heating mode : Low pressure gas valve ➠ Close	Keep	Close

2. Special Control

2.1 Oil Return/Defrost Control

Component	Starting	Running	Ending
Inverter compressor	Stop	60 Hz	40 Hz
High pressure gas valve	Keep	Close	Open or Close
Low pressure gas valve	Keep	Open	Open or Close
Balancing valve	Open for 30s	Close	Close

2.2 Liquid Bypass Control



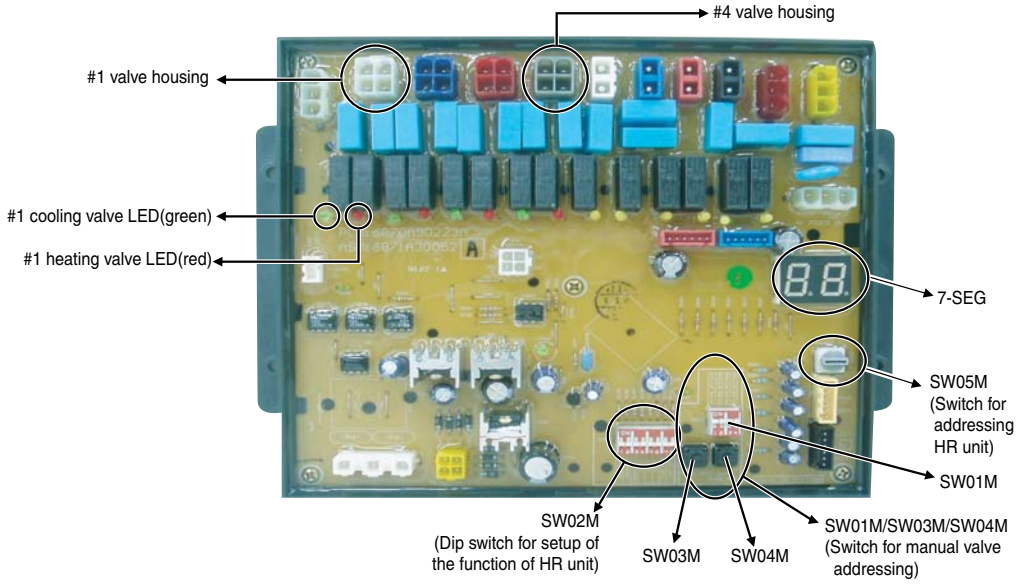
2.3 Subcooling EEV Control

Target : about 25°C
Subcooling EEV works with Fuzzy rules to keep the degree of subcooling at the outlet of subcooler during simultaneous operation
The degree of subcooler = T outlet of subcooler – T inlet of subcooler

Part 3
PCB Setting

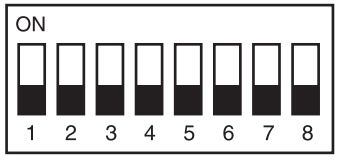
PCB Setting

HR Unit PCB



1. Switch for Setup of HR Unit

1. Main function of SW02M

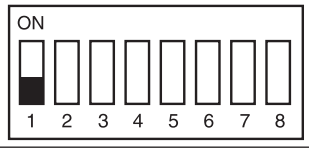


SW02M

ON S/W	Selection	
No.1	Method for pipe detection of an HR unit (Auto/Manual)	
No.2	Model of HR unit	
No.3	Model of HR unit	
No.4	Model of HR unit	
No.5	Valve group setting	
No.6	Valve group setting	
No.7	Use only in factory production (preset to “OFF”)	Zoning setting (“ON”)
No.8	Use only in factory production (preset to “OFF”)	

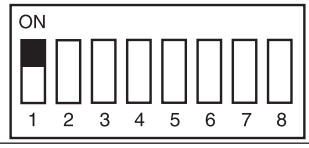
1) Selection of the method for pipe detection of an HR unit (Auto/Manual)

Switch No.1 Off



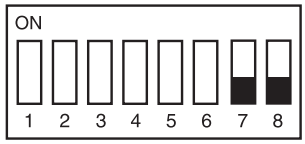
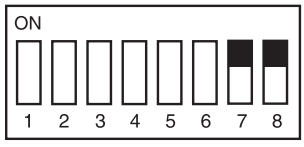
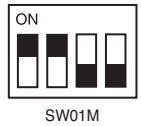
Auto

Switch No.1 On

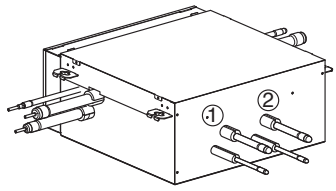
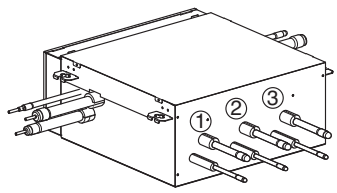
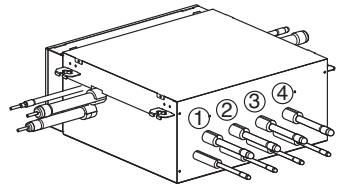
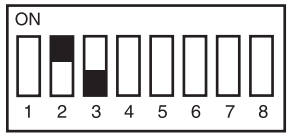
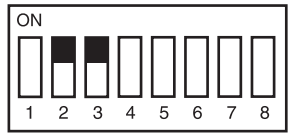
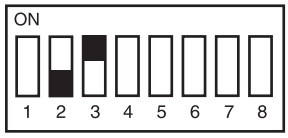
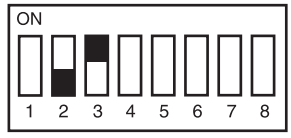
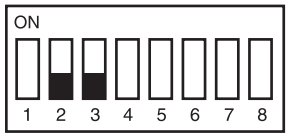
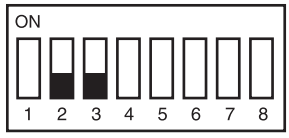
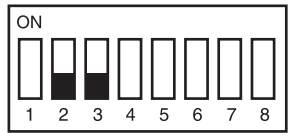
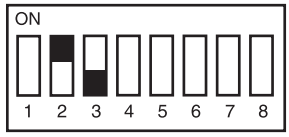
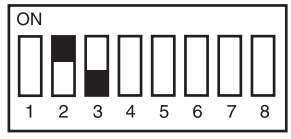
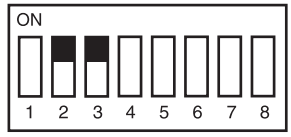


Manual

2) Setting the zoning control

	DIP S/W setting	
Normal control		 SW01M
Zoning control		 SW01M Turn the dip switch of the zoning branch on. EX) Branch 1,2 are zoning control.

3) Selection of the model of the HR unit

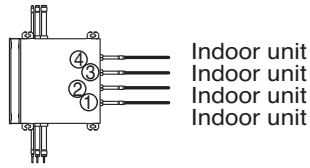
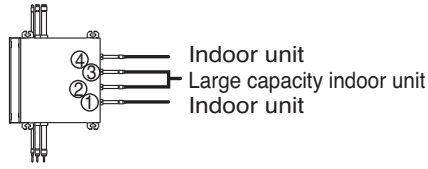
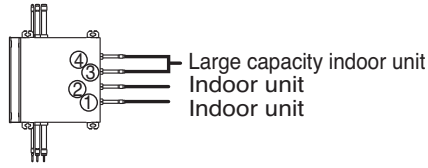
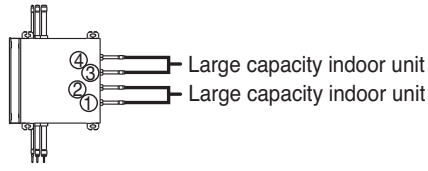
	 (For 2 branches) PRHR021/PRHR021A	 (For 3 branches) PRHR031/PRHR031A	 (For 4 branches) PRHR041/PRHR041A
Initial Setting			
1 branches Connected			
2 branches Connected			
3 branches Connected			
4 branches Connected			

❊ Each model is shipped with the switches No.2 and No.3 pre-adjusted as above in the factory.

WARNING

- If you want to use a PRHR031/PRHR031A for 2 branches HR unit after closing the 3rd pipes, set the dip switch for 2 branches HR unit.
- If you want to use a PRHR041/PRHR041A for 3 branches HR unit after closing the 4th pipes, set the dip switch for 3 branches HR unit.
- If you want to use a PRHR041/PRHR041A for 2 branches HR unit after closing the 3rd and 4th pipes, set the dip switch for 2 branches HR unit.
- The unused port must be closed with a copper cap, not with a plastic cap.

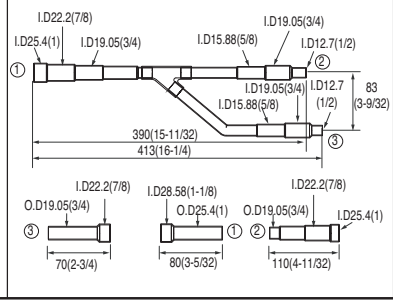
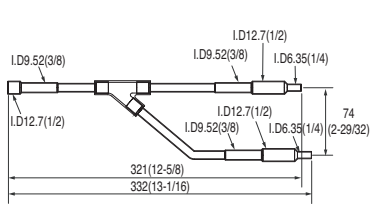
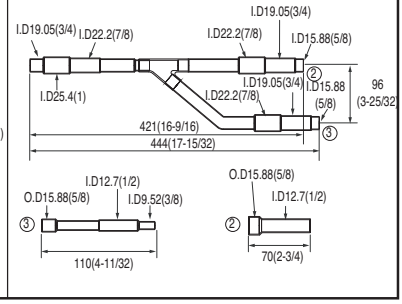
4) Setting the Valve group.

	Dip switch setting	Example
Not control		
No.1, 2 valve control		
No.2, 3 valve control		
No.3, 4 valve control		
No.1, 2 valve / No.3, 4 valve control		

Note:
If the large capacity indoor units are installed, below Y branch pipe should be used

✻ Y branch pipe

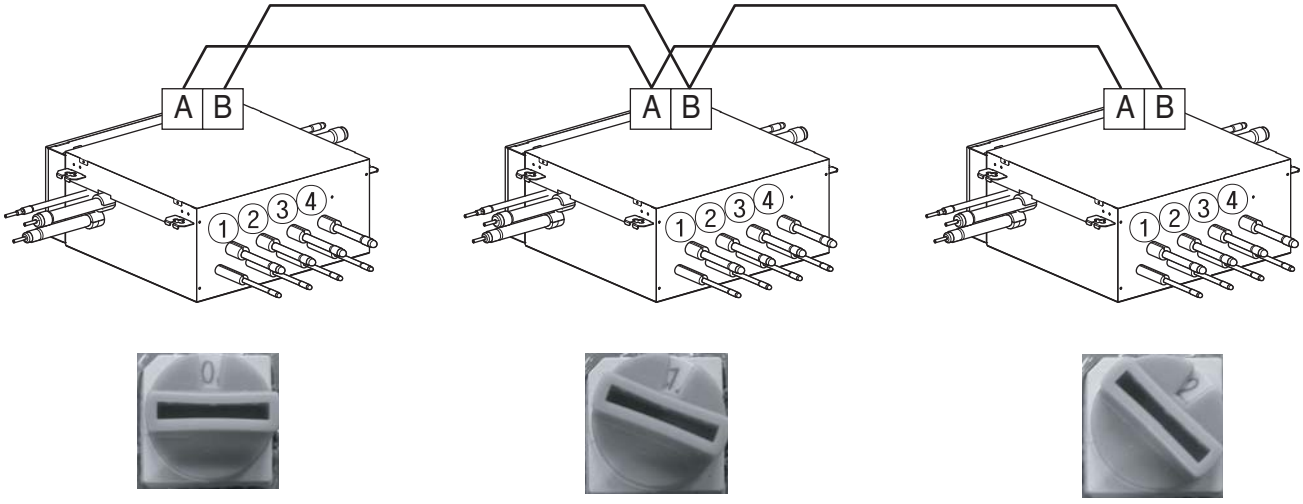
[Unit:mm(inch)]

Models	Low Pressure Gas Pipe	Liquid pipe	High Pressure Gas Pipe
ARBLB03321			

2. SW05M (Rotary switch for addressing HR unit)

Must be set to '0' when installing only one HR unit.
When installing multiple HR units, address the HR units with sequentially increasing numbers starting from '0'.

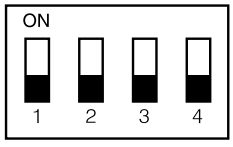
Ex) Installation of 3 HR units



3. SW01M/SW03M/SW04M (Dip switch and tact switch for manual valve addressing)

1) Normal setting (Non-Zoning setting)

- Used in manual addressing of the valve in the HR unit
- Set the address of the valve of the HR unit to the central control address of the connected indoor unit.
- SW01M: selection of the valve to address
  SW03M: increase in the digit of 10 of valve address
  SW04M: increase in the last digit of valve address
- Prerequisite for manual valve addressing : central control address of each indoor unit must be preset differently at its wired remote control.

	Switch No.	Setup
 SW01M	No.1	Manual addressing of valve #1
	No.2	Manual addressing of valve #2
	No.3	Manual addressing of valve #3
	No.4	Manual addressing of valve #4
SW03M 	SW03M	Increase in the digit of 10 of valve address
SW04M 	SW04M	Increase in the last digit of valve address

2) Zoning setting

- Set the address of the valve of the HR unit to the central control address of the connected indoor unit.
- SW01M : selection of the valve to address
  SW03M : increase in the digit of 10 of valve address
  SW04M : increase in the last digit of valve address
  SW05M :Rotary S/W
- Prerequisite for manual valve addressing : central control address of each indoor unit must be preset differently at its wired remote control.

	S/W No.	Setup
 SW01M	No.1	Manual addressing of valve #1
	No.2	Manual addressing of valve #2
	No.3	Manual addressing of valve #3
	No.4	Manual addressing of valve #4
SW03M 	SW03M	Increase in the digit of 10 of valve address
SW04M 	SW04M	Increase in the last digit of valve address
SW05M 	SW05M	Manual addressing of zoning indoor units

2. Method for Addressing of Indoor and HR Unit

1) Auto addressing for indoor unit
2) Auto pipe detection
3) Manual pipe detection(Execute in case of Auto pipe detection failure)

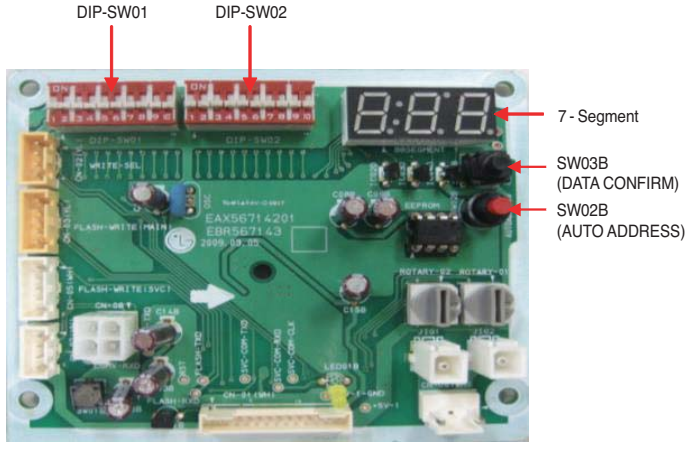
- Turn off all the indoor units before auto addressing.
  If indoor unit is operated, auto addressing would not be completed.

1) Auto addressing for indoor unit

- **The address of indoor units would be set by auto addressing**

1) Wait for 3 minutes after applying power supply (Master and Slave Outdoor unit, Indoor unit).
2) Press the switch of the outdoor unit for 10~15seconds until display 88.(SW02B).
3) A "88" is indicated on 7-segment LED of the outdoor unit PCB.
4) For completing addressing, 2~7 minutes are required depending on numbers of indoor unit connection set.
5) Numbers of inddor unit connection set whose addressing is completed are indicated for 30seconds on 7-segment LED of the oudoor unit PCB.
6) After completing addressing, address of each indoor unit is indicated on the wired remote control display window. (CH01, CH02, CH03, ... CH06: Indicated as numbers of indoor unit connection set).

■ **SUB PCB**



CAUTION

- **In replacement of the indoor unit PCB, always perform Auto addressing setting again (At that time, please check about using Independent power module to any indoor unit.)**
- **If power supply is not applied to the indoor unit, operation error occur.**
- **Auto addressing is only possible on the master Unit.**
- **Auto addressing has to be performed after 3 minutes to improve communication.**

2) Auto pipe detection

1) Turn No.1 of SW02M of HR unit PCB off.
2) Confirm that the setting of No.2, 3 of SW02M corresponds with the number of indoor units.
3) Reset the power of HR unit PCB
4) Turn on the No. 17 DIP S/W of main unit PCB when outdoor temperature is below 15°C(59°F)
   Turn on the No. 14, 17 DIP S/W of main unit PCB when outdoor temperature is over 15°C(59°F)
5) Reset the power of outdoor unit.
6) Wait for 3 minutes.
7) Press SW01V of the outdoor unit main PCB for 5 Seconds.
8) The number of connected HR unit is displayed.
   Ex) In case of installing four HR units : 04
9) Operated after 88 is displayed on 7-SEG of the outdoor unit main PCB.

10) Pipe detection proceed.
11) 5~30 minutes are required depending on the number of the indoor units and outdoor temperature.
12) The number of the indoor units installed is displayed on 7-SEG of the outdoor unit main PCB for about 1 minute
- For a HR unit, the number of the indoor units connected to each HR unit is displayed.
- '200' is displayed in case of auto pipe detection error, and auto detection is completed after '88' is disappeared.

❉ Auto pipe detection function : the function that sets connection relationship automatically between the indoor unit and HR unit.

⚠ WARNING

1. Execute auto addressing and auto pipe detection again whenever the indoor PCB and HR unit PCB is replaced.
• Operation error occurs unless power is applied to the indoor and HR units.
2. Error No.200 occurs if the number of connected indoor units and that of scanned indoor units are different.
3. When auto pipe detection fails, complete it with manual pipe detection (see Manual pipe detection).
4. When auto pipe detection addressing is completed normally, manual pipe detection is not required.
5. If you want to do auto pipe detection again after auto pipe detection fails, do after reset of outdoor unit by all means.
6. During 5 minutes after pipe detection is completed, do not turn off the main unit PCB to save the result of pipe detection automatically.

3) Manual pipe detection

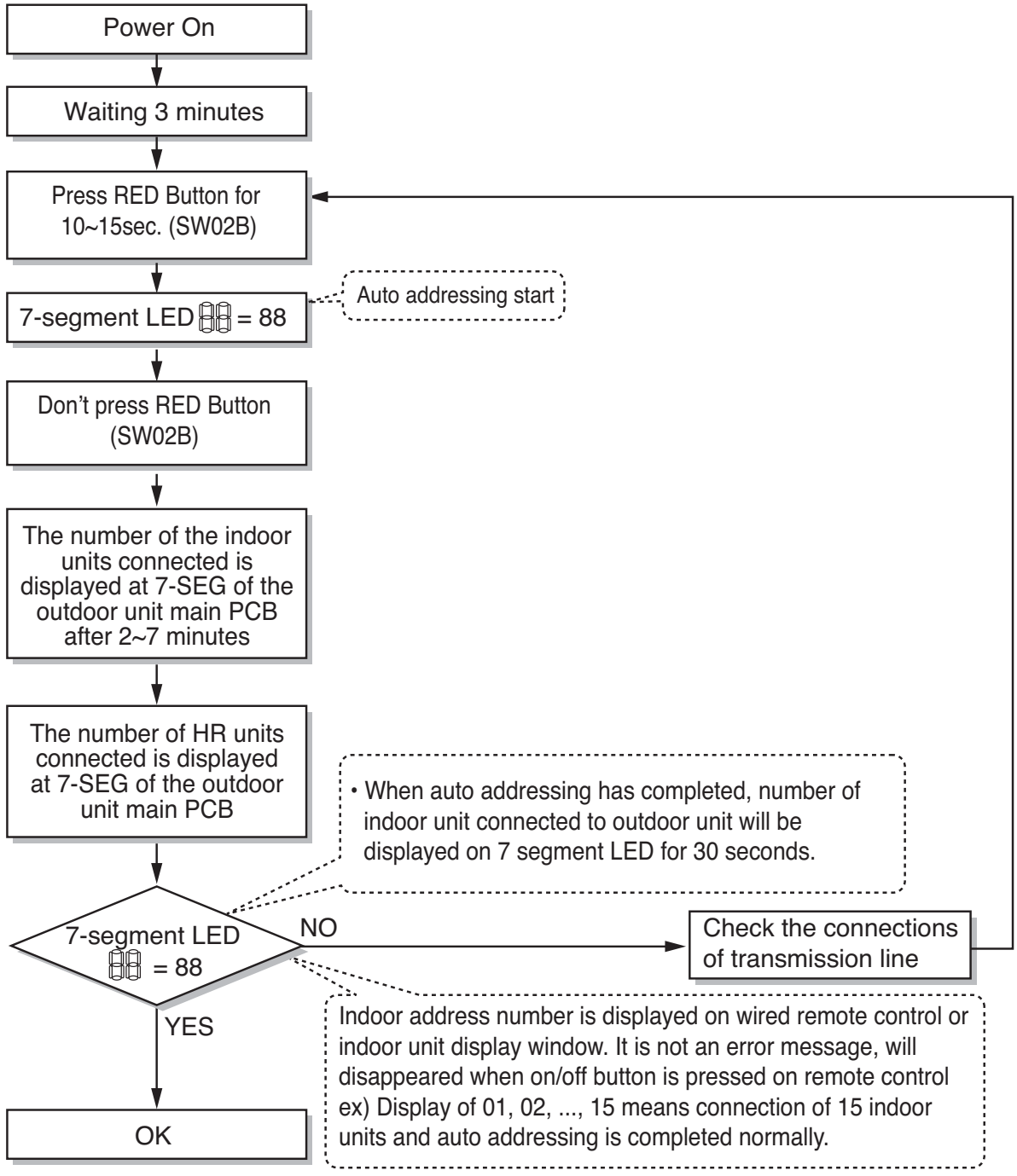
1) Enter the central control address into each indoor unit using its wired remote control.
2) Turn No.1 of SW02M of HR unit PCB on.
3) Reset the power of HR unit PCB.
4) On the HR unit PCB, manually set address of each valve of the HR unit to the central control address of the indoor unit connected to the valve.
5) Turn No.6 of SW03M of outdoor unit PCB on.
6) Reset the power of outdoor unit PCB.
7) The number of the indoor unit installed is displayed after about 5 minutes.
Ex) HR ➠ The number of the indoor
8) Turn No.6 of SW03M of outdoor unit PCB off.
9) Reset the power of outdoor unit PCB, HR unit.
10) Manual pipe detection is completed

⚠ WARNING

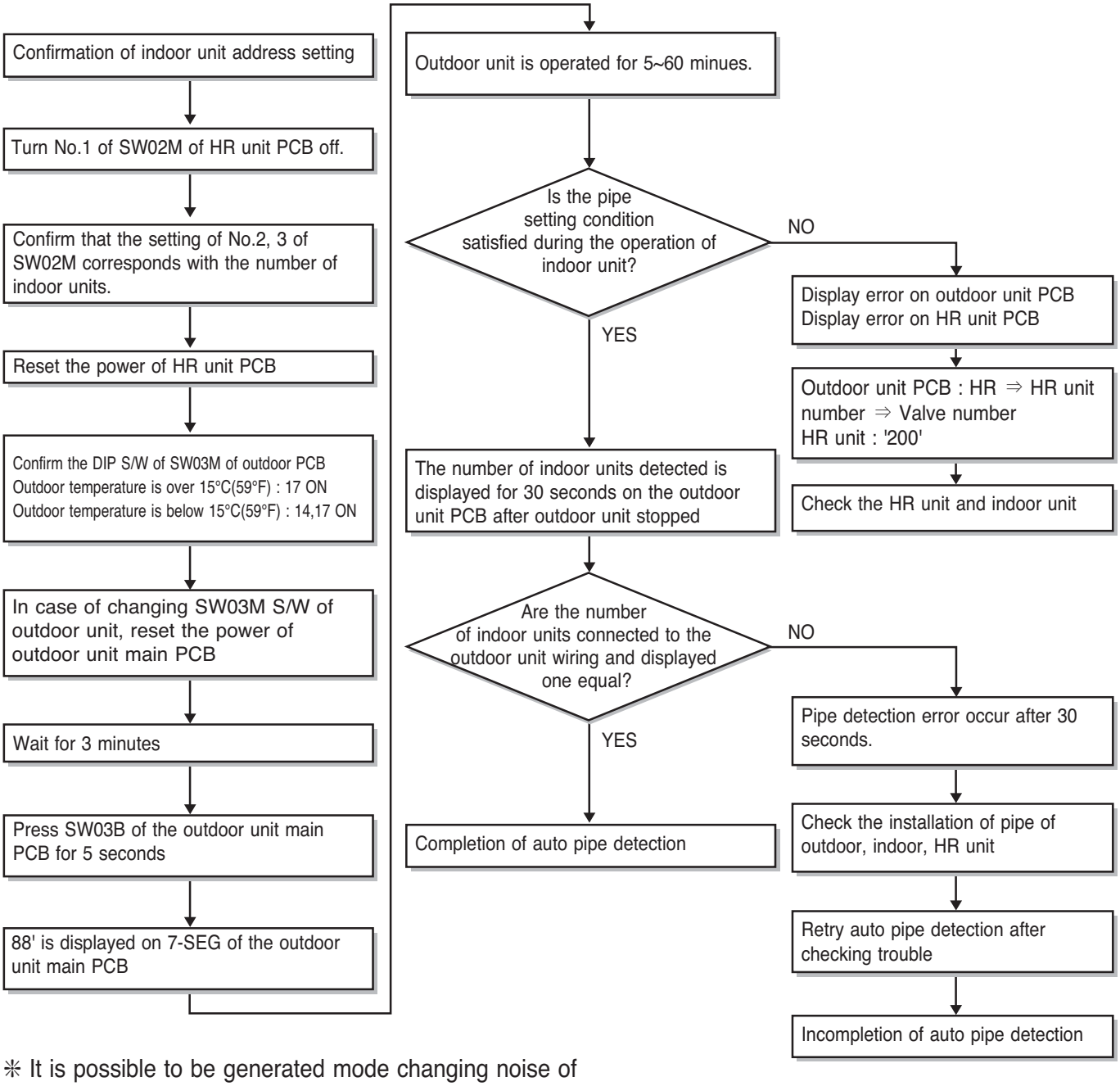
1. In case that central controller is not installed, remain the address data after installer sets central control address as he wants
2. In case that central controller is installed, there would be central control address in wired remote control of indoor unit.
3. In this case, set the HR unit manual pipe address according to central control address of indoor unit.
4. Pipe which is not connected with indoor unit should be set different address with pipe Connected with indoor unit.
(If addresses are piled up, corresponding valve is not working.
5. If you want to change the setting of manual pipe, you should do it on HR unit PCB.
6. If an error occurred, it means that manual pipe setting is not completed.
7. During 5 minutes after pipe detection is completed, do not turn off the main unit PCB to save the result of pipe detection automatically.

3. Flow Chart for Auto-Addressing of Indoor and HR Unit

1) Flow chart for auto addressing

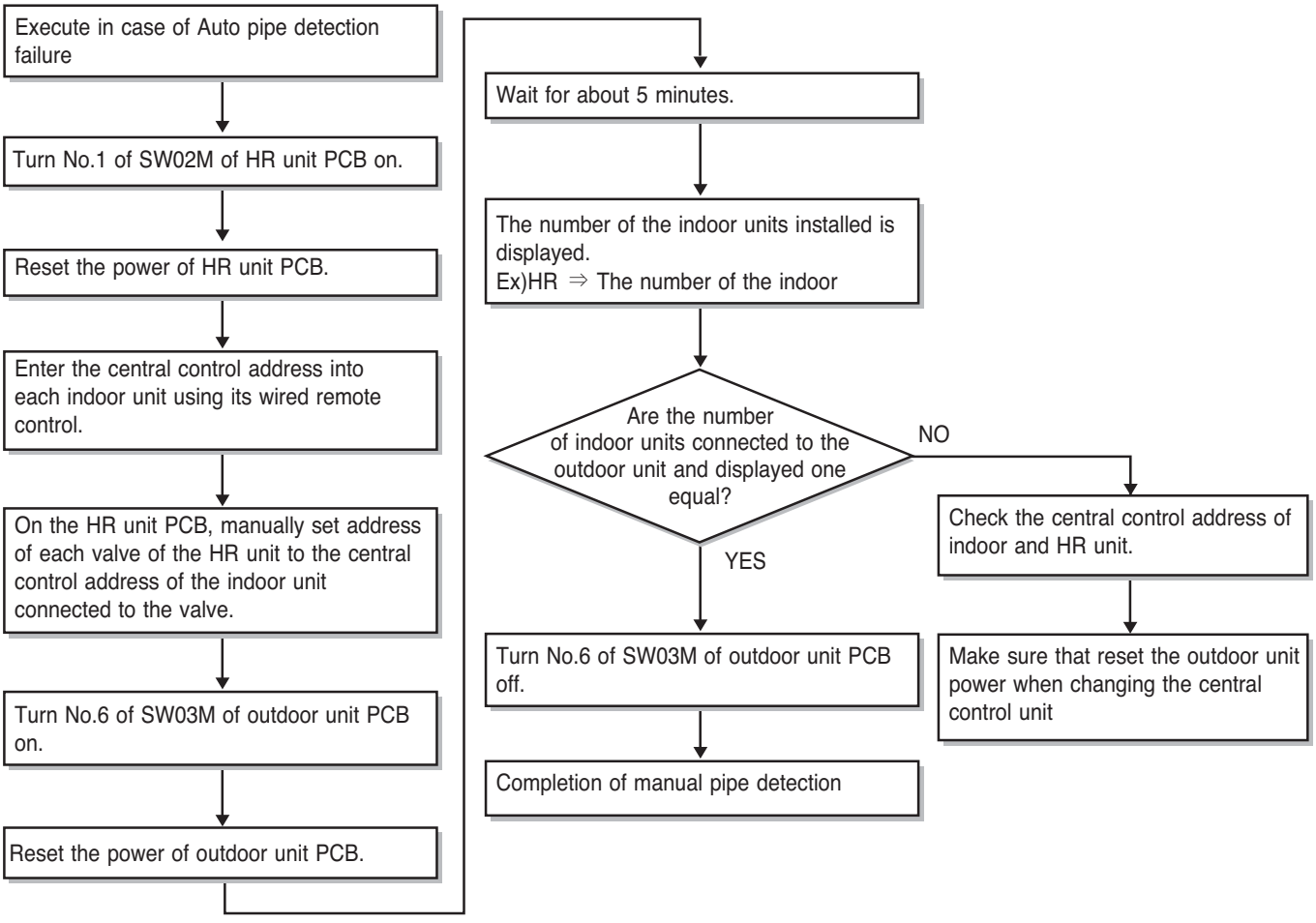


2) Flow chart for auto pipe detection



※ It is possible to be generated mode changing noise of heating and cooling which is normal.
There is no mode changing noise at normal operation.

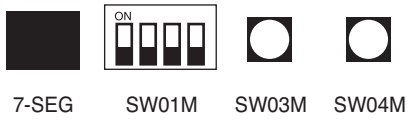
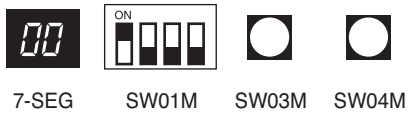
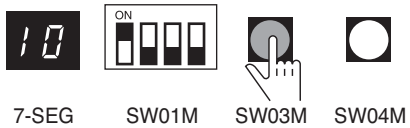
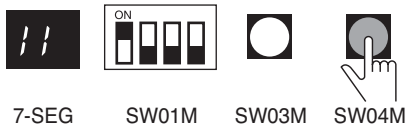
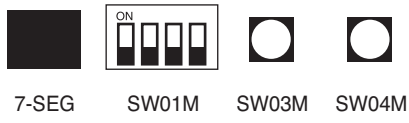
3) Flow chart for manual pipe detection



4. Example of Manual Valve Addressing(Non-Zoning setting)

(In case that an indoor unit of central control address "11" is connected to a valve #1 of an HR unit)

• Prerequisite for manual valve addressing: central control address of each indoor unit must be preset differently at its wired remote control

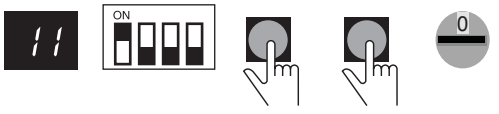
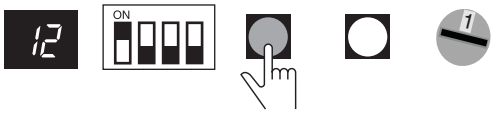
No.	Display and setup	Setup and Contents
1		• Operation: None • Display: None
2		• Operation: Turn dip S/W No.1 on to address valve #1 • Display: Existing value saved in EEPROM is displayed in 7-SEG.
3		• Operation: Set the digit of 10 to the number in Group High data of the wired remote control connected to the corresponding indoor unit to the valve #1 by pressing left tack S/W. • Display: Digit increasing with the times of pressing tack S/W is displayed in left 7-SEG
4		• Operation: Set the digit of 1 to the number in Group Low data of the wired remote control connected to the corresponding indoor unit to the valve #1 by pressing right tack S/W. • Display: Digit increasing with the times of pressing tack S/W is displayed in right 7-SEG
5		• Operation: Turn dip S/W No.1 off to save the address of valve #1 • Display: "11" displayed in 7-SEG disappears

- Above setup must be done for all HR unit valves.
- The valve that is not connected with any indoor unit should be addressed with any other number than used address numbers of the valves connected with indoor units.
  (The valves does not work if the address numbers are same.)

5. Example of manual valve addressing (Zoning setting)

(In case that an indoor unit of central control address "11" is connected to a valve #1 of an HR unit)
Zoning control is connecting 2 or more indoor units at one pipe of HR unit. In case of Zoning control, in order to set controls with multiple indoor units connection uses the rotary switch. Namely, only the rotary switch changes from same valve set condition and set indoor units connection.

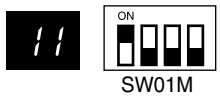
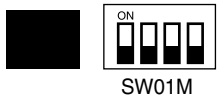
1) On dip switch of the corresponding valves and sets the rotary switch at 0.
2) Setting the number with tact switch.
3) In case of addition of indoor units to same port, increases 1 with the rotary switch and sets number with tact switch.
4) In case of checking the number which the corresponding valve is stored, turn on dip switch and set the number of rotary switch.
5) Indoor units set available 8 per a port(rotary switch 0~7), in case of setting above of 8 with rotary switch, it will display error.
6) Setting the rotary switch on original condition(HR unit number set conditions) after all finishing a piping setting.
7) The rotary switch set value of above number of indoor units which is connected with FF and prevents a malfunction.
(Example: The case where 3 indoor units is connected in piping 1, sets from rotary switch 0,1,2 and 3,4,5,6,7 with FF set)
• Prerequisite for manual valve addressing: central control address of each indoor unit must be preset differently at its wired remote control.

No.	Display and setup	Setup and Contents
1	 7-SEG SW01M SW03M SW04M SW05M	• Operation: None • Display: None
2	 7-SEG SW01M SW03M SW04M SW05M	• Operation : Turn dip S/W No.1 on to address valve #1 • Display : Existing value saved in EEPROM is displayed in 7-SEG.
3	 7-SEG SW01M SW03M SW04M SW05M	• Operation : Set the digit of 10(1) to the number in Group High data of the wired remote control connected to the corresponding indoor unit to the valve #1 by pressing left tack S/W. • Display : Digit increasing with the times of pressing tack S/W is displayed in left 7-SEG.
4	 7-SEG SW01M SW03M SW04M SW05M	• Operation : SW05M : 1 • Display : Display former value.
5	 7-SEG SW01M SW03M SW04M SW05M	• Operation : Setting No. using SW03M and SW04M, SW05M : 1 • Display : Display setting value.
6	 7-SEG SW01M SW03M SW04M SW05M	• Operation : Turn dip S/W No.1 off to save the address of valve #1 • Display : "11" displayed in 7-SEG disappears.
7	 7-SEG SW01M SW03M SW04M SW05M	• Operation : Return valve of addressing HR unit. • Display : None

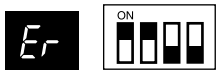
- Above setup must be done for all HR unit valves.
- The valve that is not connected with any indoor unit should be addressed with any other number than used address numbers of the valves connected with indoor units.(The valves does not work if the address numbers are same.)

6. Example of Checking Valve Address

(In case that an indoor unit of central control address "11" is connected to a valve #1 of an HR unit)

No.	Display and setup	Setup and contents
1		• Operation: Turn dip switch No.1 on. • Display: "11" is displayed in 7-SEG
2		• Operation: Turn dip switch No.1 on. • 7-SEG disappeared

7. Identification of Manual Valve ID (Address)

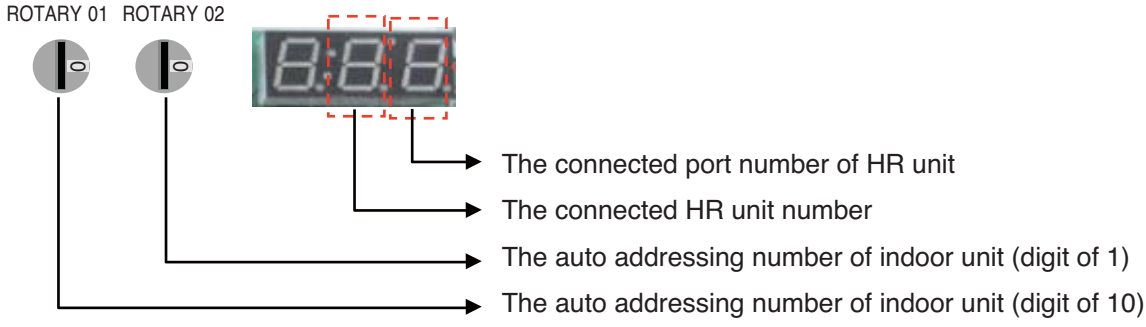
No.	Display and setup	Setup and contents
1		• Operation: more than 2 dip switches turned on. • Display: "Er" is displayed in 7-SEG

8. Method of checking the pipe detection result at outdoor unit

1) Wait for 5 minutes, after Pipe detection is completed.

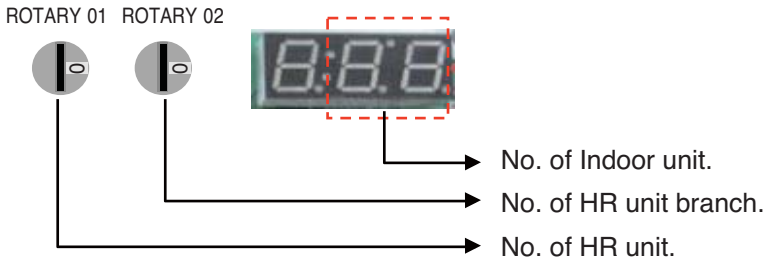
2) Turn on the No.10,14,16 DIP S/W of Sub PCB at master unit

3) Check the data on 7- segment, switching rotary 01,02.



9. Setting method of Master indoor unit in zoning

1. Turn dip switch 5,6,10 on at system off.
2. Set the left Ratary switch for HR unit.(Rotary switch No. "0" → HR unit No. "1")
3. Set the right Ratary switch for IDU unit.(Rotary switch No. "0" → HR unit branch No. "1")
4. Display the Master IDU No. of the HR unit on 7segment.(Default display is "00" on 7segment)
5. Press the black button.(The IDU No. increase every 1 second in the zoning)
6. Set the Master IDU(Press the red button during 1.5seconds stop twinkling)



CAUTION

- Waiting for 80seconds after power on.
- The zoning information and Master IDU information remove from EEPROM after Auto-addressing.
- If there is installed the central control, it is impossible setting of Master IDU in zoning.

Part 4
Trouble shooting guide

Trouble shooting guide

1. Self-diagnosis function

Self-Diagnosis Function

Error Indicator

- This function indicates types of failure in self-diagnosis and occurrence of failure for air condition.
- Error mark is displayed on display window of indoor units and wired remote controller, and 7-segment LED of outdoor unit control board as shown in the table.
- If more than two troubles occur simultaneously, lower number of error code is first displayed.
- After error occurrence, if error is released, error LED is also released simultaneously.

Error Display

1st,2nd LED of 7-segment indicates error number, 3rd LED indicates unit number.

Ex) 211 : No.21 error of master unit 213 : No.21 error of slave2 011 → 051 : No.105 error of master unit

❉ Refer to the DX-Venitilation manual for DX-Venitilation error code

Display					Title	Cause of Error
HR unit related error	2	0	0	1	Searching pipe Error	Failure of automatic addressing of valves
	2	0	1	C+ #HR	HR unit1 Liqiud sensor error	Liquid pipe sensor of HR unit open or short
	2	0	2	C+ #HR	HR unit1 Sub Cooling Pipe In sensor error	Sub Cooling Pipe In sensor of HR unit open or short
	2	0	3	C+ #HR	HR unit1 Sub Cooling Pipe Out sensor error	Sub Cooling Pipe Out sensor of HR unit. open or short
	2	0	4	C+ #HR	Communication error	Failing to receive HR unit signal at outdoor unit

C : HR unit

: HR unit Number

Error No.	Error type	Error point	Main reasons
2001 Master 21 ➔ 001	Pipe detection error	After the auto operation, if the number of the indoor units detected is different from the number communicating indoor unit	1. HR unit's power cable or communication cable connection defect 2. After auto-addressing, wrong address setting of the indoor unit (Defective indoor power / transmission error and PCB defect) 3. Wrong setting of the HR unit's rotary switch or dip switch 4. HR unit PCB defect

HR: Heat Recovery

■ Error diagnosis and countermeasure flow chart

1) Check the periodic blinking of the HR unit's green LED (transmission LED)

2) When green LED (communication LED) of HR unit blinks regularly,
   2.1) Check input power of HR unit.(220V±10%)
   2.2) After reset of power of outdoor, wait for more than 30 minutes, temperature of pipes will be cool down then, do auto-addressing
   2.2) While power of HR unit is on, check total indoors display 'CH05' or not.(Refer to CH05)

3) When green LED (communication LED) of HR unit blinks regularly, Check setting of rotary switch and dip switch, After reset of power of outdoor and HR unit, wait for more than 30 minutes, temperature of pipes will be cool dow then, do auto-addressing *

4) If indoor unit quantity is different between installed quantity and quantity which check thru piping searching, check pipe installation condition
   Outdoor unit ↔ HR unit ↔ Indoor unit

5) If indoor unit has not been connected to #1 valve of HR unit, set pipes of HR unit manually**

6) If it is not applied as above, set pipes of HR unit as manual

[NB] How to check display method of outdoor main PCB 7-segment ?:
'88' ➔ Indoor qty which check thru 'Auto-Addressing' ➔ '88' ➔ Indoor qty which check thru 'piping checking'

Error No.	Error type	Error point	Main reasons
201C#HR	HR unit liquid pipe temperature sensor error	Abnormal value of sensor measurement (Open / Short)	• Defective temperature sensor connection • Defective temperature sensor (Open/Short) • Defective outdoor unit PCB

Error No.	Error type	Error point	Main reasons
202C#HR	HR unit Sub-cooling inlet pipe temperature sensor error	Abnormal value of sensor measurement(Open / Short)	• Defective temperature sensor connection • Defective temperature sensor (Open/Short) • Defective outdoor unit PCB

Error No.	Error type	Error point	Main reasons
203C#HR	HR unit Sub-cooling discharge pipe temperature sensor error	Abnormal value of sensor measurement(Open / Short)	• Defective temperature sensor connection • Defective temperature sensor (Open/Short) • Defective outdoor unit PCB

■ Error diagnosis and countermeasure flow chart

1) Check connection condition of temperature sensor and lead cable

2) Is value of temperature sensor normal? If not replace sensor
   - Piping temperature sensor : 10°C = 10kΩ : 25°C= 5kΩ : 50°C= 1.8kΩ

3) If connection of sensor and value is correct, replace outdoor unit PCB

■ HR unit error display No.

HR Unit	HR #1	HR #2	HR #3	HR #4	HR #5	HR #6	HR #7	HR #8	HR #9	HR #10	HR #11	HR #12	HR #13	HR #14	HR #15	HR#16
Error display	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16

■ Example of HR unit error display.

#16 HR unit Sub-cooling inlet pipe temperature sensor error 200 ➔ C16 (Repeat)

C: HR unit

#: HR unit Nuber

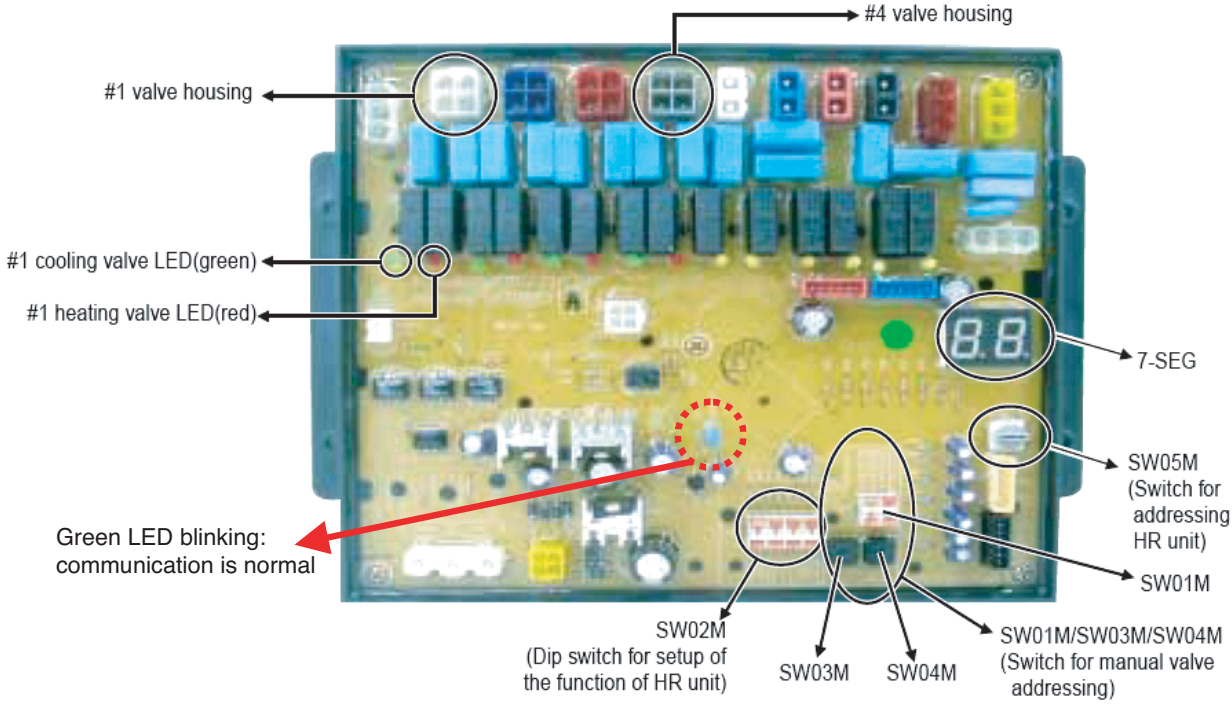
Error No.	Error type	Error point	Main reasons
204C#HR	Transmission error between the HR unit and outdoor unit	Transmission error between the HR unit and outdoor unit	1. Defective connection in HR unit power supply and communication connection 2. Wrong setting of the HR unit rotary switch and dip switch 3. Defective HR unit PCB

■ Error diagnosis and countermeasure flow chart

1) Check connection between power cables and communication cables, check communication green LED blink of HR unit PCB
2) If communication green LED blink of HR unit PCB is normal, check setting of rotary switch of HR unit and dip switch(Refer to CH200),
   Reset power of outdoor and HR unit
   (If communication error of HR unit occurs, it can't be released until reset of outdoor power)
3) If communication green LED blink of HR unit PCB is abnormal(not blinking,just on), check communication condition of total indoor units(Refer to CH05)
   If communication green LED blink of HR unit PCB is abnormal(not blinking, just on) even if communication condition is normal, replace HR unit PCB

[NB] If Indoor units/communication cables of HR unit and cables of power 220V has been changed each other, communication parts and indoor will be burnt

HR Unit PCB



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