VRF
Technical Data Book
Control systems

SAMSUNG

2016.3

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INDIVIDUAL CONTROL SYSTEM

CENTRALIZED CONTROL SYSTEM

INTEGRATED MANAGEMENT SYSTEM

POWER CISTRIBUTION SYSTEM

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INDIVIDUAL CONTROL SYSTEM

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DVM CHILLER CONTROL SYSTEM

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VIII. DVM CHILLER control systems

1 Module control

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Overview of DVM S
New communication system diargram

DMS B-net (MIM-B17BN)
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S-NET3 (MST-P3P)

Ethernet

DMS2.5 (MIM-D01AN)

Control layer

Set layer

Max.16 outdoor units
Max. 128 indoor units (Includes ERV, MCU)

Max. 80 units
(Max. 64 Indoor units, Max 15 MCU, Max.16 ERV)

Max.16 Contollers

Max.16 Controllers

F1F2

R1R2

R1R2

CH1

Outdoor units

F3F4

Indoor units

Wired RC

Local layer Max.2 Wired RC
Max.16 indoor units

CH2

Outdoor units

CH3

Outdoor units

CH4

Outdoor units

CH5

Max. 8 PIMs

PIM (MIM-B16N)

- **Set Layer (F1F2)- Communication channel of Outdoor(Main) unit, Indoor unit and Set layer controller**
  - Set layer controller : OnOff controller (MCM-A202DN), Touch centralized controller (MCM-A300N), Wi-Fi kit (MIM-H03UN)

- **Control Layer(R1R2) - Communication channel of Outdoor(Main) unit and Control layer controller**
  - Control layer controller : OnOff controller (MCM-A202DN), Touch centralized controller (MCM-A300N), DMS2.5 (MIM-D01AN), BACnet GW (MIM-B17BN), LonWorks GW (MIM-B18BN)

- **Local Layer(F3F4) - Communication between indoor unit and Wired remote controller**
  - MWR-WE10N, MWR-SH00N, MWR-SH10N

- Case 1 > When DVM S is connected to conventional system

S-NET3 (MST-P3P)

DMS2 (MIM-D00A)

OnOff controller (MCM-A202D)

Interface module (MIM-B13E)

MIM-N01

DVM+4

DVM S

Conventional communication system

New communication System
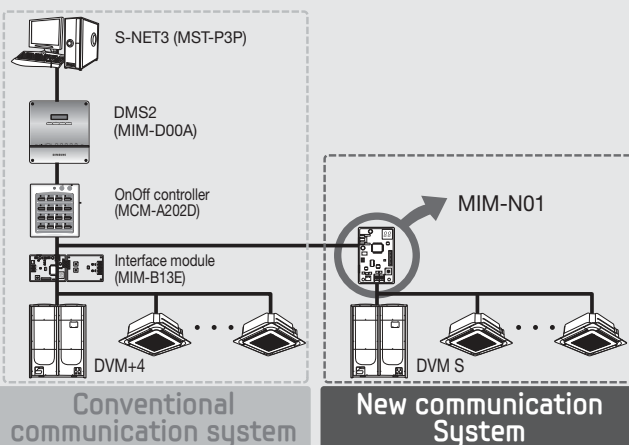
- Case 2 > When DVM+4 is connected to new system

S-NET3 (MST-P3P)

DMS2.5 (MIM-D01AN)

OnOff controller (MCM-A202DN)

MIM-N01

DVM S

DVM+4

New communication System

Conventional communication system
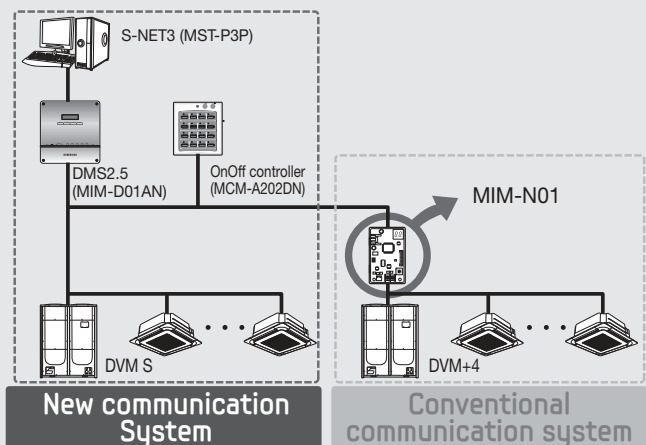
Compatibility table (New ↔ Conventional)

Product	Conventional communication SAC		Conventional communication Controller			
	Outdoor unit	Indoor unit	Interface module	OnOff Controller	DMS2 (BACnet GW/LonWorks GW)	S-NET mini
Wired remote controller (MWR-WE10N)						
Interface module II (MIM-N01)	●			●	●	●
Interface module III (MIM-N10) ✳				●	●	●
OnOff Controller (MCM-A202DN)						
DMS2.5 (MIM-D01AN)						
BACnet GW (MIM-B17BN)						
LonWorks GW (MIM-B18BN)						
PIM (MIM-B16N) ✳						
S-NET 3 (MST-S3P,D3P,P3P)					●	
Touch centralized controller (MCM-A300N)						
External contact interface module (MIM-B14)		●				
Receiver & display unit (MRK-A10N)						
Wireless remote controller (MR-DH(C)00)		●				
MTFC (MCM-C210N)						
S-Converter (MIM-C02N)	●					
Operation mode selection switch (MCM-C200)	●					
Wi-Fi kit (MIM-H03UN)						

(Left side label: New communication controller)

Product	New communication SAC		New communication Controller			
	Outdoor unit	Indoor unit	MIM-N00	MIM-N01	OnOff Controller	DMS2.5 (BACnet GW/LonWorks GW)
Wired remote controller (MWR-WE10N)		●				
Interface module II (MIM-N01)	●				●	●
Interface module III (MIM-N10) ✳					●	●
OnOff Controller (MCM-A202DN)	●	●		●	●	●
DMS2.5 (MIM-D01AN)	●			●	●	
BACnet GW (MIM-B17BN)	●			●	●	
LonWorks GW (MIM-B18BN)	●			●	●	
PIM (MIM-B16N) ✳						●
S-NET 3 (MST-S3P,D3P,P3P)						●
Touch centralized controller (MCM-A300N)	●	●		●	●	●
External contact interface module (MIM-B14)		●				
Receiver & display unit (MRK-A10N)		●				
Wireless remote controller (MR-DH(C)00)		●				
MTFC (MCM-C210N)		●				
S-Converter (MIM-C02N)	●					
Operation mode selection switch (MCM-C200)	●					
Wi-Fi kit (MIM-H03UN)	●				●	

(Left side label: New communication controller)

✳ MIM-N10 is only for ERV.

		Conventional communication SAC		Conventional communication Controller			
	Product	Outdoor unit	Indoor unit	Interface module	OnOff Controller	DMS2 (BACnet GW/ LonWorks GW)	S-NET mini
Conventional communication controller	Wired remote controller (MWR-WE10)		●				
	Interface module (MIM-B13D,E)	●			●	●	●
	OnOff controller (MCM-A202D)			●		●	●
	Function controller (MCM-A100)				●		
	DMS2 (MIM-D00A)			●	●		●
	BACnet GW (MIM-B17)			●	●		
	LonWorks GW (MIM-B18)			●	●		
	PIM (MIM-B16)					●	
	S-NET 3 (MST-S3P,D3P,P3P)					●	
	S-NET mini (MST-S3W)			●	●	●	
	External contact interface module (MIM-B14)		●				
	Receiver & display unit (MRK-A01)		●				
	Wireless remote controller (MR-DH(C)00)		●				
	Converter (MIM-C02)	●					
	Operation mode selection switch (MCM-C200)	●					

		New communication SAC		New communication Controller			
	Product	Outdoor unit	Indoor unit	MIM-N01	MIM-N10	OnOff Controller	DMS2.5 (BACnet GW/ LonWorks GW)
Conventional communication controller	Wired remote controller (MWR-WE10)						
	Interface module (MIM-B13D,E)						
	OnOff controller (MCM-A202D)			●	●		
	Function controller (MCM-A100)						
	DMS2 (MIM-D00A)			●	●		
	BACnet GW (MIM-B17)			●	●		
	LonWorks GW (MIM-B18)			●	●		
	PIM (MIM-B16)						▲
	S-NET 3 (MST-S3P,D3P,P3P)						●
	S-NET mini (MST-S3W)			●	●		
	External contact interface module (MIM-B14)		●				
	Receiver & display unit (MRK-A01)						
	Wireless remote controller (MR-DH(C)00)		●				
	Converter (MIM-C02)						
	Operation mode selection switch (MCM-C200)	●					

DVM CONTROL SYSTEMS

I. Individual Control Systems

I Individual control systems

1. Receiver & Display unit

☐ *MRK-A10N*

1) Features

Unit : mm(inch)

80(3.14) 24(0.94) 130(5.11) 4(0.15)
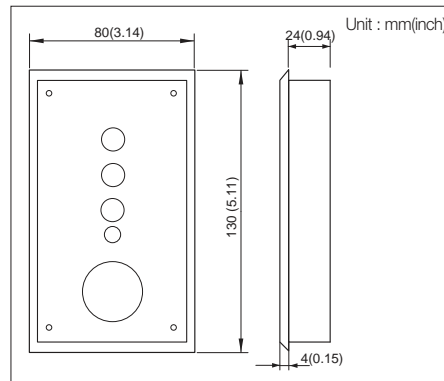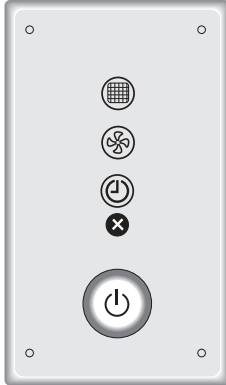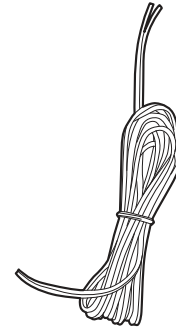
▶*Receiver wire*

Receiver & Display Unit

- Concealed wireless signal receiver
- Filter replacement sign
- Fan operation display

- Operation Timer setting display
- Operation On/Off button
- Operation On display LED (blue)
- Defrost operation display LED (red)

2) Wiring

- Connect one end of the receiver wire with the Receiver & Display unit PCB.
- Connect the other end of the receiver wire with the duct type indoor unit PCB.

Indoor unit PCB

Connector : 13Pin

Receiver & Display unit PCB
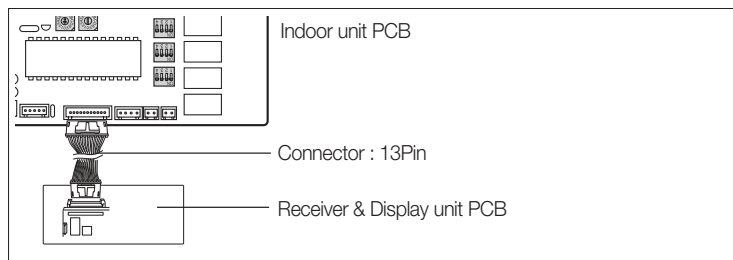
> ☑ *Note*
>
> ◆ Wire length: 10m(42.65ft)
> ◆ Receiver & Display unit is only available for a duct type indoor unit.

2. Wireless remote controller

☐ *MR-DH00*

1) Features

Easy and convenient operation control

- Operation ON/OFF control
- Fan speed control
- Operation temperature setting
- Filter replacement alarm reset
- Air swing control
- Simple On/Off timer
- Indoor unit option code setting

Unit : mm(inch)

49(1.92) 29(1.14) 138(5.43)
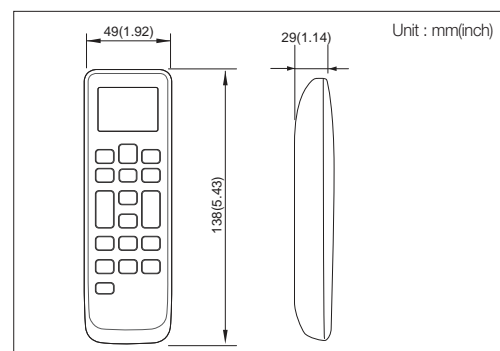
2) Description of parts
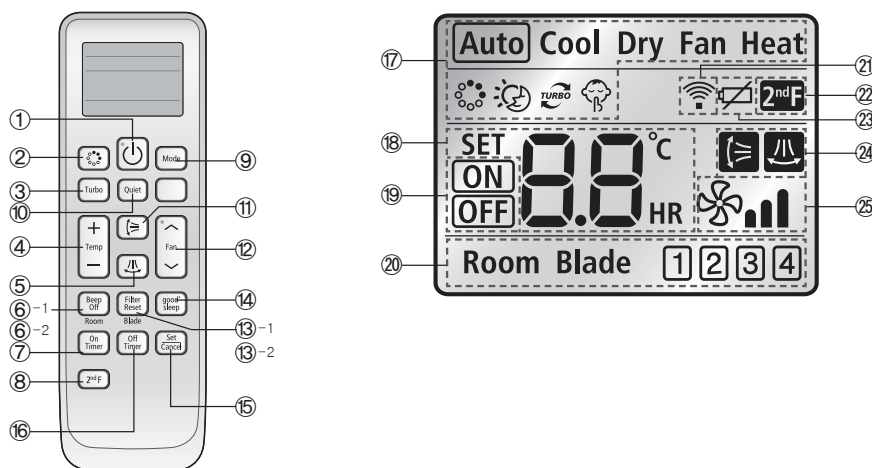
✳ ②, ⑥-1, ⑥-2, ⑧, ⑬-2, ⑳, ㉒ is only supported and available in certain indoor units.

No	Name	Description
①	On/Off button	Press this button to turn on/off the indoor unit.
②	S-Plasma ion button	Press this button to turn on/off the S-Plasma ion.
③	Turbo button	Press this button to cool your room quickly and powerfully.
④	Temp + - button	Press this button to increase/decrease the set temperature by 1°C(1°F).
⑤	Horizontal air swing button	Press this button to activate/deactivate horizontal air flow movement.
⑥-1	Beep Off button	Press this button to mute the beep sounds that occurs when pressing the button.
⑥-2	Room button	Press the 2ndF function button and press this button to control individual indoor unit or all indoor units at once.
⑦	On timer button	Press the button to set the On Timer on.
⑧	2ndF button	Press this button to select the function printed under the button. (Room, Blade function)
⑨	Mode button	Press this button to select one of the 5 operation modes. (Auto, Cool, Dry, Fan, Heat)
⑩	Quiet button	Press this button to select quiet mode.
⑪	Vertical air swing button	Press this button to activate/deactivate vertical air flow movement. (Not applicable to Duct type model)
⑫	Fan ∧ ∨ button	Press this button to select one of the fan speeds. (Auto, Low, Medium and High.)
⑬-1	Filter Reset button	Press this button to turn off the filter indicator light.
⑬-2	Blade button	Press the 2ndF function button and press this button to control individual blade unit or all blades at once.
⑭	good'sleep button	Press this button to set the good'sleep mode on.
⑮	Set/Cancel button	Press this button to set or cancel the On/Off Timer and good'sleep mode.
⑯	Off Timer button	Press this button to set the Off Timer on.
⑰	Operation mode indicator	Indicates the operation mode.
⑱	Set temperature & On/Off set time indicator	Basic – Indicates the set temperature. Timer setting – Indicates the On/Off set time.
⑲	On/Off timer indicator	Indicates the On/Off timer setting.
⑳	Room & Blade selection indicator	1) When [Beep off/Room] button is pressed after pressing the 2ndF button, "Room" indicator will be displayed with the selected indoor unit number. 2) When [Filter Reset/Blade] button is pressed after pressing the 2ndF button, "Blade" indicator will be displayed with the selected blade number.
㉑	Transmission indicator	Indicates when wireless signal is transmitted (by pressing any buttons).
㉒	2ndF indicator	Indicates when 2ndF button is pressed. You can select the second function (Selecting Room/Blade)
㉓	Low battery indicator	Indicates the battery life.
㉔	Air swing indicator	Indicates when vertical or horizontal air flow movement.
㉕	Fan speed indicator	Indicates the fan speed settings.

I Individual control systems

2. Wireless remote controller

1 *MR-DH00*

3) Additional function

(1) Option code setting

❶ Remove the batteries from the remote controller.

❷ Press the Temp [+] and [-] button at the same time and insert the batteries.

❸ Set the 2 digits of option code.
   If you press the Fan [^] button, you can change the right digit.
   If you press the Fan [∨] button, you can change the left digit.

❹ Press the [Mode] button to set the next 2 digits of option code.
   Input 20 digits in total.

❺ Press the ⏻ button more than twice to set the indoor unit option code.
   (When indoor unit option code is set, a beep will sound. When the setting is incorrect, all the LED on the indoor unit panel will flicker.)

※ Option code is composed with total of 24 digits including page number.
   From the wireless remote controller, enter the option code without
   page number.

Setting Ex.) Option code: 012345 – 16789A – 212345 – 36789A

Page 0   Page 1   Page 2   Page 3

Option code input mode

Fan [∧] – Right digit
Fan [∨] – Left digit

Press the [Mode] button
to set the next 2 digits.

If you press the [Mode] button after entering first
10 digits, On timer indicator will change to Off.

Press the [Power] button more than two times
towards the indoor unit.

2 *MR-EH00*

1) Features

Easy and convenient operation control

- Operation ON/OFF control
- Fan speed control
- Operation temperature setting
- Filter replacement alarm reset
- Air swing control
- Simple ON/OFF timer
- Indoor unit option code setting
- Option/Setting selection
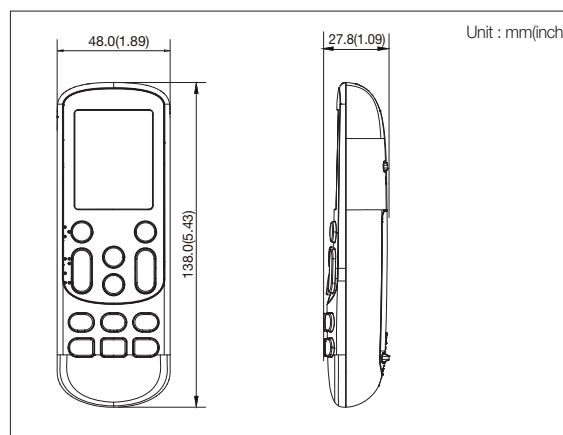
Unit : mm(inch)

48.0(1.89)   27.8(1.09)

138.0(5.43)

2) Description of parts
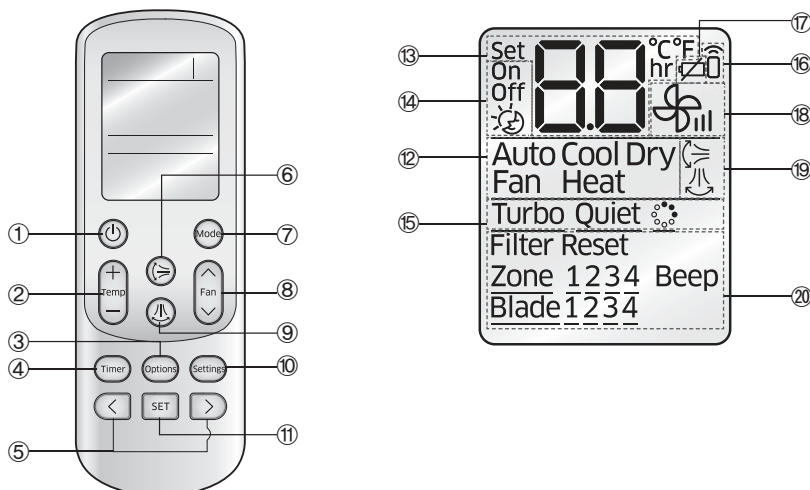
No	Name	Description
①	On/Off button	Press this button to turn On/Off the indoor unit.
②	Temperature button	Press this button to increase/decrease the set temperature by 1°C(1°F).
③	Option button	Selects options during operation
④	Timer button	Sets timer option.
⑤	Direction button	Moves to select and set an option.
⑥	Air flow direction (Up and down) button	Press this button to activate/deactivate vertical air flow movement. (Not applicable to Duct type model)
⑦	Operation mode button	Press this button to select one of the 5 operation modes. (Auto, Cool, Dry, Fan, Heat)
⑧	Fan speed button	Press this button to select one of the fan speeds. (Auto, Low, Medium and High.)
⑨	Air flow direction (Left and right) button	Press this button to activate/deactivate horizontal air flow movement.
⑩	[Setting] button	Selects settings.
⑪	Set/Cancel button	Selects or cancels an option.
⑫	Operation mode indicator	Indicates the operation mode.
⑬	Set temperature & On/Off set time indicator	Basic – Indicates the set temperature. Timer setting – Indicates the On/Off set time..
⑭	On/Off timer indicator	Indicates the On/Off timer setting.
⑮	[Option] indicator	Indicates the selected [Option] - Turbo, Quiet, SPI
⑯	Transmission indicator	Indicates when wireless signal is received (by pressing any buttons).
⑰	Low battery indicator	Indicates the battery life.
⑱	Fan speed indicator	Indicates the fan speed settings.
⑲	Air swing indicator	Indicates when vertical or horizontal air flow movement.
⑳	[Setting] indicator	Indicates the selected [Setting] - Filter reset, indoor unit selection, Beep, Bland selection

I Individual control systems

2. Wireless remote controller

② *MR-EH00*

3) Additional function
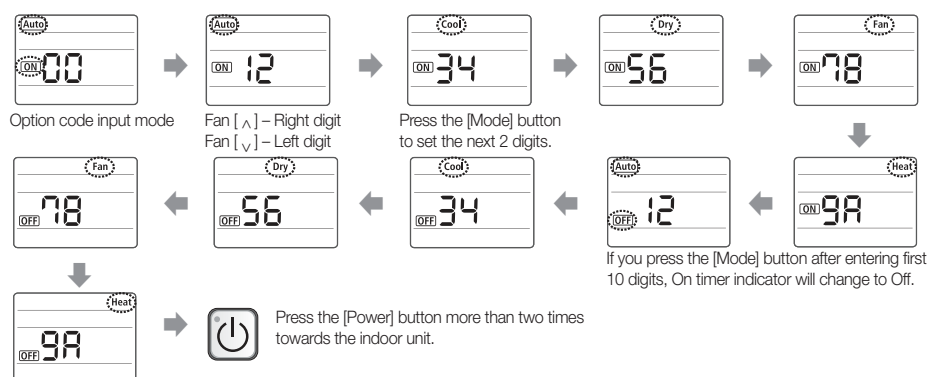
(1) Option code setting

❶ Remove the batteries from the remote controller.

❷ Press the Temp [+] and [-] button at the same time and insert the batteries.

❸ Set the 2 digits of option code.
If you press the Fan [∧] button, you can change the right digit.
If you press the Fan [∨] button, you can change the left digit.

❹ Press the [Mode] button to set the next 2 digits of option code.
Input 20 digits in total.

❺ Press the ⏻ button more than twice to set the indoor unit option code.
(When indoor unit option code is set, a beep will sound. When the setting is incorrect, all the LED on the indoor unit panel will flicker.)

※ Option code is composed with total of 24 digits including page number.
From the wireless remote controller, enter the option code without
page number.

Setting Ex.) Option code: 012345 – 16789A – 212345 – 36789A

Page 0   Page 1   Page 2   Page 3

On 00 Auto → On 12 Auto → On 34 Cool → On 56 Dry → On 78 Fan

Option code input mode | Fan [∧] – Right digit Fan [∨] – Left digit | Press the [Mode] button to set the next 2 digits.

Off 78 Fan ← Off 56 Dry ← Off 34 Cool ← Off 12 Auto ← On 9A Heat

If you press the [Mode] button after entering first 10 digits, On timer indicator will change to Off.

Off 9A Heat → ⏻ Press the [Power] button more than two times towards the indoor unit.

③ *AR-KH00U*

1) Features

Easy controlling with the wheel

• 360 cassette air flow direction control
• Operation ON/OFF control
• Fan speed control
• Operation temperature setting
• Filter replacement alarm reset
• Simple ON/OFF timer
• Indoor unit option code setting

Unit : mm(inch)

166(6.53)

57.5(2.26)   30.5(1.20)
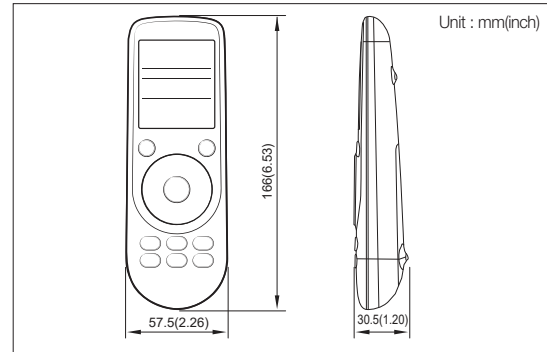
2) Description of parts
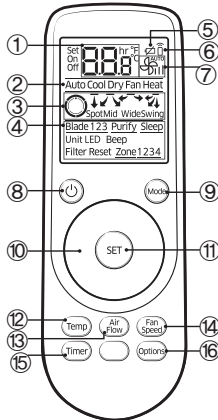
No	Name	Description
①	Set temperature/Timer indicator	Basic – Indicates the set temperature. Timer setting – Indicates the ON/OFF set time
②	Operation mode indicator	Indicates the operation mode
③	Air flo w direction indicator	Indicates the air flow direction (Spot, mid, wide, swing)
④	Options indicator	Indicates the option function setting. (Filter reset, Beep, Zone, etc).
⑤	Low battery indicator	Indicates the battery life.
⑥	Signal transmission indicator	Indicates when wireless signal is received. (by pressing any buttons)
⑦	Fan speed indicator	ndicates the fan speed setting.
⑧	Power button	Press the button to turn On/Off the indoor unit.
⑨	Mode button	Press the button to select operation mode. (Auto, Cool, Dry, Fan, Heat)
⑩	Wheel	You can control the set temperature, fan speed, and air flow direction by rotating the Wheel.
⑪	SET button	Press the button to confirm the selection.
⑫	Temperature button	If you press the button then the set temperature will be increased by 0.5°C(0.5°F)
⑬	Air flow direction button	Press the button to select air flow direction.
⑭	Fan speed button	Press the button to select fan speed.
⑮	Timer button	Press the button to set timer option
⑯	Options button	Press the button to select option function.

I Individual control systems

2. Wireless remote controller

③ *AR-KH00U*

3) Additional function

(1) Option code setting

Entering the mode for setting

Setting the option values

Mode button

Wheel

Temperature button

Timer button
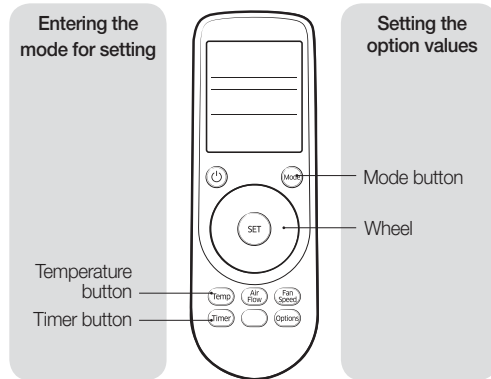
❶ Remove the batteries from the remote control.

❷ While holding down the (Temp) and (Timer) buttons simultaneously, insert the batteries into the remote control.

❸ Set the 2digits of option code
  - If you rotate the wheel counterclockwise, you can change the left digit.
  - If you rotate the wheel clockwise, you can change the right digit.

❹ Press the (Mode) button to set the next 2 digits of option code. Input 20 digits in total

❺ Press the (⏻) button more than twice to set the indoor unit option code.
  (When indoor unit option code is set, a beep will sound. When the setting is incorrect, indoor unit will display error.)
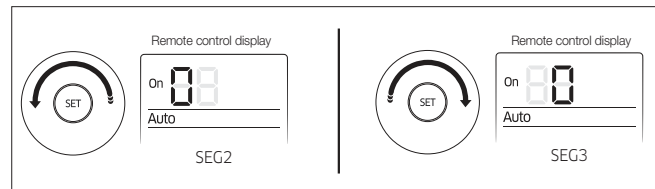
Remote control display

SET

On

Auto

SEG2

Remote control display

SET

On

Auto

SEG3

※ Option code is composed with total of 24 digits including page number. From the wireless remote controller, enter the option code without page number.

Setting Ex.) Option code: 012345 – 16789A – 212345 – 36789A

Page 0   Page 1   Page 2   Page 3

Auto

On 12 Auto

On 34 Cool

On 56 Dry

On 78 Fan

Option code input mode

Off 78 Fan

Off 56 Dry

Off 34 Cool

Off 12 Auto

On 9A Heat

Off 9A Heat
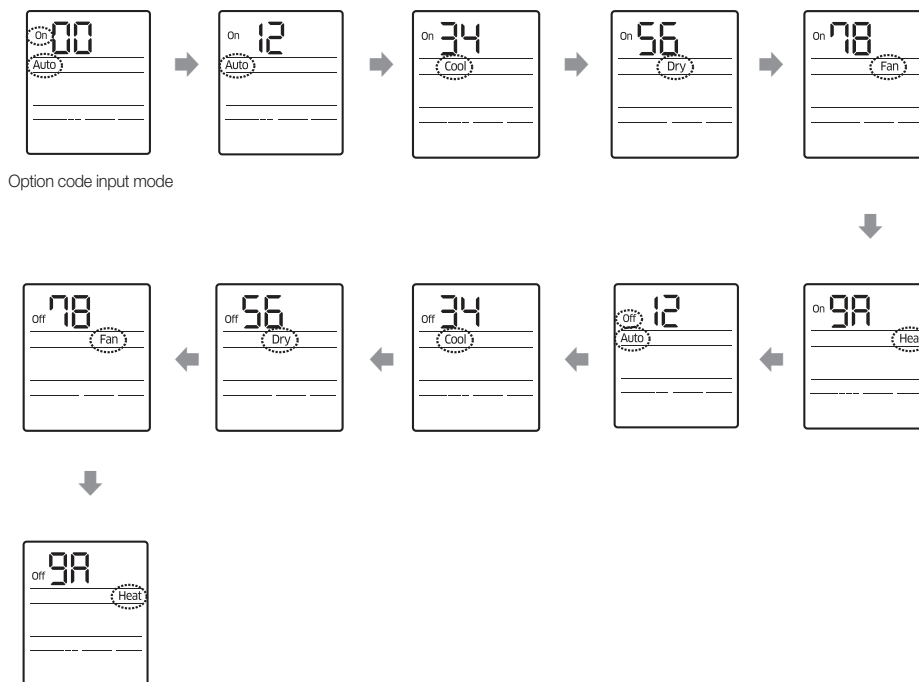
3. Wired remote controller

1 *MWR-WE10N*

1) Features

Unit : mm(inch)
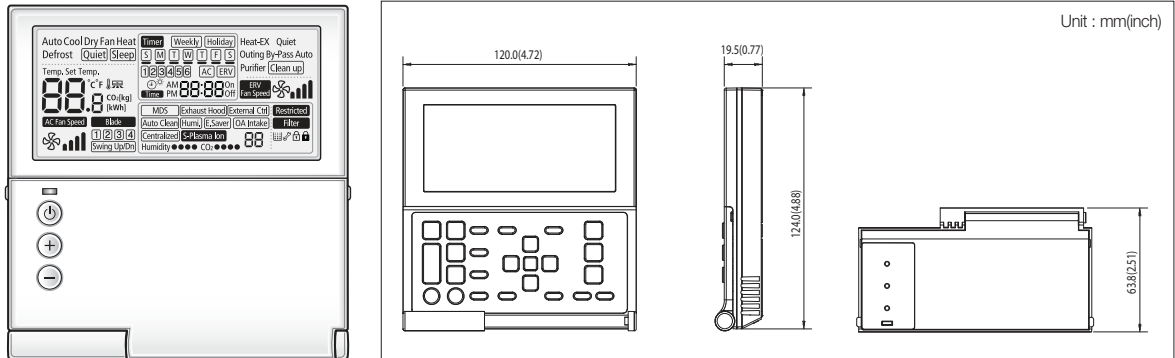
(1) Air conditioner / ERV control

- AC operation ON/OFF control
- AC operation mode, setting temperature, fan speed, air flow direction setting
- AC individual blade control
  (Function is available when indoor units support any of above functions)
- ERV operation ON/OFF control
- ERV operation mode, fan speed setting
- AC/ERV error monitoring
- Filter cleaning alert and reset alert time
- Individual/group control, indoor unit/ERV interlocking control
- Energy saving control
- Control maximum 16 "Indoor unit + ERV" in group with single wired remote controller

(2) Energy saving operation

- Upper/Lower temperature limit setting
- Automatic operation stop: Automatically stops the operation, when it is not used for certain period of time set by user

(3) Weekly operation schedule setting

- Weekly operating schedule (A/C only, ERV only, A/C+ERV)
- Able to set desired AC operation mode, setting temperature and fan speed to operate based on weekly reservation
- Able to apply schedule exception day

(4) User convenience function

- Child lock
- Different button permission levels
  (Operation mode, temperature setting, ON/OFF, fan speed)
- Real-time clock: Displays current time, day (Summer time support)
- Built-in room temperature sensor
- Service mode support
  - Indoor unit cycle data monitoring
  - Indoor unit option code setting and monitoring
  - Indoor unit address setting and monitoring

2) Product specification

Power Supply	DC12V
Power Consumption	2W
Operating Temperature range	0°C~40°C (32°F~104°F)
Operating Humidity range	30%RH~90%RH
Communication	2-wire PLC

Compatible product

Indoor unit	AM****N******Model
FCU KIT	MIM-F00N

19

I Individual control systems

3. Wired remote controller

1 *MWR-WE10N*

3) Description of parts

(1) Display

LED indicator (Green: Normal / Red: Need to be checked)

Operation On/Off button

Temperature setting button
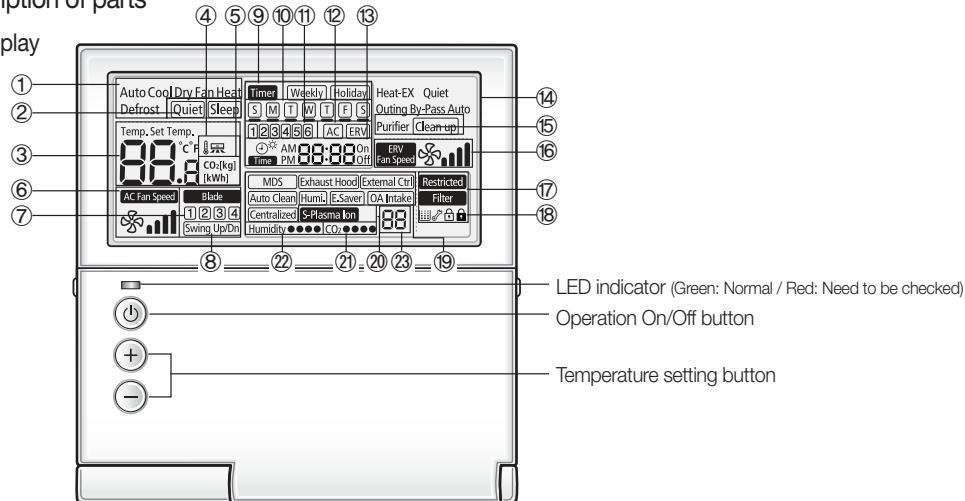
Classification		Indication	Function
Air conditioner related information	①	Auto Cool Dry Fan Heat Defrost	Displays air conditioner operation
	②	Quiet Sleep	Displays Quiet/Sleep operation
	③	Temp. Set Temp. 88.8 °C°F	Displays Indoor temperature/Set temperature
	④		Displays discharge temperature control
	⑤	88.8 °C CO_2[kg] [kWh]	Displays CO_2
	⑥	AC Fan Speed	Displays AC fan speed
	⑦	Blade 1 2 3 4	Displays Blade selection
	⑧	Swing Up/Dn	Displays Air swing(Up/Dn)
Schedule related information	⑨	Timer Weekly Holiday	Weekly schedule/Holiday setting displays
	⑩	S M T W T F S	Displays Current day(☐) or scheduled day(_)
	⑪	1 2 3 4 5 6	Displays Schedule number
	⑫	AC ERV	Displays Scheduled device selection
	⑬	AM 88:88 On Time PM Off	Displays Current time/daylight saving time/scheduled time
Ventilator (ERV) related information	⑭	Heat-EX Quiet Outing By-Pass Auto Purifier	Displays Ventilator(ERV) operation
	⑮	Clean up	Displays Clean up
	⑯	ERV Fan Speed	Displays Ventilator(ERV) fan speed
Common function related information	⑰	Restricted Filter	Displays Invalid operation /Filter cleaning (filter cleaning period)
	⑱		Displays Dust box cleaning alert/check/part lock / All lock
	⑲	MDS Exhaust Hood External Ctrl Auto Clean Humi. E.Saver OA Intake Centralized	Displays Motion detect sensor/Exhaust hood/External interconnection control/Auto clean/ Humidifying/Energy saving/Outdoor air supply intake/Centralized control
	⑳	S-Plasma Ion	Displays S-Plasma Ion
	㉑	CO_2 ●●●●	Displays Indoor CO_2 density
	㉒	Humidity ●●●●	Displays Indoor humidity
	㉓	88	Displays remaining time of the auto stop time / ERV delay time - Solid : Hour unit, Blinking : Minute unit

(2) Buttons
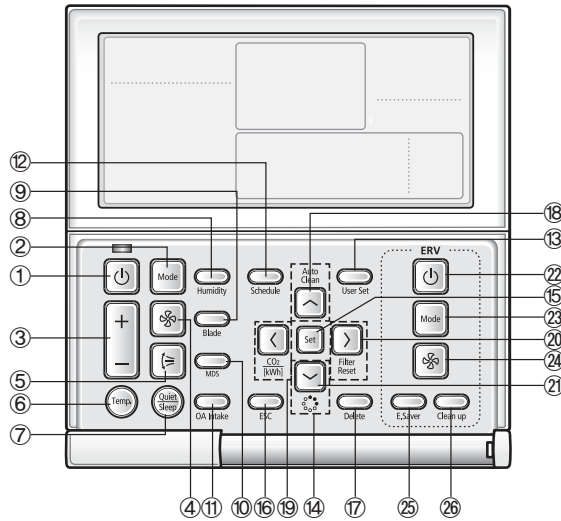
Classification	Button		Function
Air conditioner related button	①	Operation On/Off button	Turn the air conditioner power On/Off
	②	Mode button	Selects the desired air conditioner operation
	③	Temperature setting button	Sets the desired temperature
	④	Fan speed button	Changes the air conditioner's fan speed
	⑤	Air swing button	Changes the air flow direction to move upward or downward
	⑥	Temp. button	Checks the indoor temperature
	⑦	Quiet/Sleep button	Selects quiet or sleep operation for the air conditioner
	⑧	Humidity button	Turns the AHU humidifying function On/Off
	⑨	Blade button	Selects a blade for individual control
	⑩	MDS button	Set the power to automatically turn off if there is nobody in the room
	⑪	Outdoor air intake	Not support
Common function related button	⑫	Schedule Button	Select the schedule setting function
	⑬	User Set Button	Select the detailed setting function
	⑭	Navigational buttons	Move between items or change the item value
	⑮	Set button	Save new setting
	⑯	ESC button	Return to general mode from schedule and detailed setting screens
	⑰	Delete button	Cancel the schedule setting
	⑱	Auto Clean button	Use the auto cleaning function for your air conditioner
	⑲	CO_2/[kWh] button	Display the amount of CO_2 and the power consumption
	⑳	Filter Reset button	Turn off the filter cleaning displays (filter using time reset)
	㉑	S-Plasma Ion button	Choose the S-Plasma ion function
Ventilator (ERV) related buttons	㉒	Operation On/Off button	Turn the Ventilator(ERV) On/Off
	㉓	Mode button	Select the desired operation for the Ventilator(ERV)
	㉔	Fan speed button	Change the fan speed for your Ventilator(ERV)
	㉕	E. Saver button	Begin Energy Saving Operation
	㉖	Clean up button	Press to set air purification operation by in/out loading control

I Individual control systems

3. Wired remote controller

▢1 *MWR-WE10N*

3) Description of parts

(3) PCB
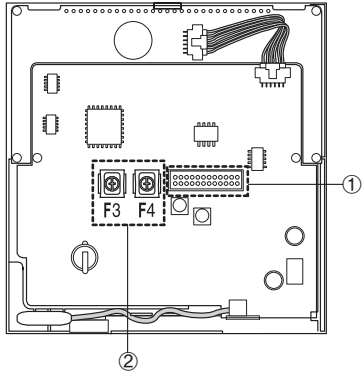
No.	Name	Description
①	Software upgrade connector	It is used to upgrade the software
②	Communication and power wiring terminal	Connection with indoor unit (F3/F4)

✳ MWR-WE10N uses 2-wire power line communication.

4) Option function

User setting mode

Main menu	Sub menu	Function		SEG Used	Default	Range	Unit
1		Auto stop time setting/checking		1,2	0	0~12 hours	1 hour
2		Temp limits [°C(°F)]	Lowest temperature	1,2	16 (61)	16~30°C (61~86°F)	1°C(1°F)
			Highest temperature	3,4	30 (86)	18~30°C (65~86°F)	1°C(1°F)
3		All lock		1	0	0 – Unlock, 1 - Lock	-
		Lock of partial button	On/Off button	2	0	0 – Unlock, 1 – Lock	-
			Mode button	3	0	0 – Unlock, 1 – Lock	-
			Temperature button	4	0	0 – Unlock, 1 – Lock	-
			Fan speed button	5	0	0 – Unlock, 1 – Lock	-
			Schedule button	6	0	0 – Unlock, 1 – Lock	-
4	1	Current date Setting (Year, Month, Date)		1,2/3,4 /5,6	10/01/01	00~99/1~12/1~31	YY/MM/ DD
	2	Current Time Setting (Day, Hour, Minute)		Day/ Am,Pm /1,2/3,4	Friday/ PM /12/00	Sun~Sat/AM~PM/0~12/0~59	Day/ Hour/ Minute
5	1	Summer Time Use and Setting Methods	Use of summer time (Y/N)	1	0	0 – No use, 1 – Use	-
			Summer Time Application Method	2	0	0 – Weekly, 1 – Daily	-
	2	Summer time use (Weekly) Start (? Month, ? th Sunday)		1,2/4	03/F	1~12th month / 1~4,F (last week)th week	-
	3	Summer time use (Weekly) End (? Month, ? th Sunday)		1,2/4	10/F	1~12th month / 1~4,F (last week)th week	-
	4	Summer time use (Daily) Start (? Month, ? th Sunday)		1,2/3,4	03/22	Jan~Dec /1~31th day	Month, date
	5	Summer time use (Daily) End (? Month, ? th Sunday)		1,2/3,4	09/22	Jan~Dec / 1~31th day	Month, date
6		Backlight Time Setting/Checking		1,2	5	0~30 sec	1sec
		Use of LED(Green) (Y/N)		3	1	0 – No use, 1 – use	-
		Use of LED (Red) (Y/N)		4	1	0 – No use, 1 – use	-
7		Ventilator (ERV) delay time setting/checking [When using Ventilator (ERV) interlocking control]	Ventilator(ERV) Delay Application (Y/N)	1	0	0 – No use, 1 – use	-
			Delay Time	3,4	30	30~60 minutes	1 minute
0		Reset to user mode defaults (except the current time)		1	0	0 – No use, 1 – Reset	-

▶ How to set the user mode

SEG Used

Main menu   Sub-menu   1 2 3 4   5 6

ERV
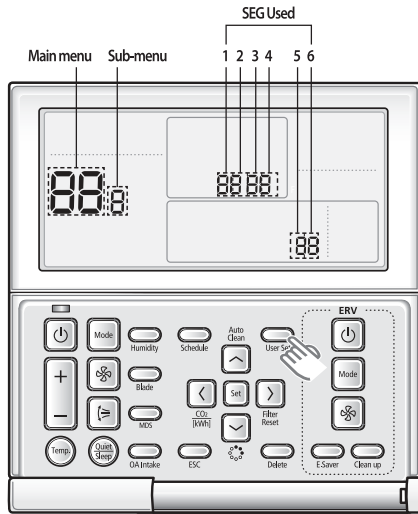
(1) If you want to set the detailed settings, press the [User Set] button.

• You will enter the User Set mode, and the [Main Menu] will be displayed.

(2) Refer to the Wired Remote Controller's user setting mode table on the previous page to select the desired menu.

• Using the [∧]/[∨] buttons, select a main menu number and press the [>] button to enter the sub-menu setting screen.

• Using the [∧]/[∨] buttons, select a sub-menu number and press the [>] button to enter the data setting screen.

• Once you have entered the setting screen, the current setting will be displayed.

• Refer to the chart for data setting.

• Using the [∧]/[∨] buttons, change the settings and press the [>] button to move to the next setting.

• Press the Set button to save the setting and exit to the sub-menu setting screen.

• Press the Esc button to exit to general mode.

☑ *Note*

◆ While setting the data, you can use the [∧]/[∨] buttons to set the range of SEG used.

◆ While configuring the setting, press the [Esc] button to exit to the sub-menu setting screen without saving the setting.

▶ Current time setting (Example)
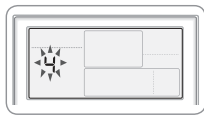
(1) Press the [User Set] button.

• (Main Menu) will be displayed, and you can press the [∧]/[∨] buttons to select No.4, which will set the current time.
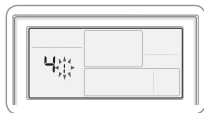
(2) Press the [>] button to select 'Year, Month, Date' in the [Sub-menu].

• Press the [∧]/[∨] buttons to select No. 1. You can modify the year/month/date setting.

(3) Press the [>] button to select the 'Year'.

• Press the [∧]/[∨] buttons to select the year ('00~'99).
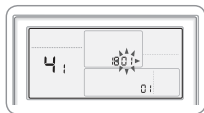
(4) Press the [>] button to select the 'Month'.

• Press the [∧]/[∨] buttons to select month(01~12).

(5) Press the [>] button to select the 'Day'.

• Press the [∧]/[∨] buttons to select day(01~31).
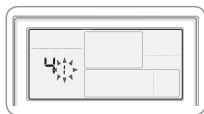
(6) Press the [Set] button to complete your setting of 'Year, Month, Day'.

• The setting changes will be applied and you can exit to the sub-menu.
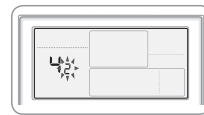
(7) In the sub-menu, select 'day, AM/PM, hour, minute'.

• Press the [∧]/[∨] buttons to select no. 2. You can set the 'day, AM/PM, hour, minute'.
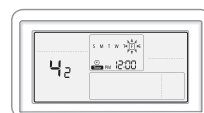
(8) Press the [>] button to select the 'Day'.

• Press the [∧]/[∨] buttons to select day (Sun~Sat).
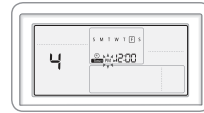
(9) Press the [>] button to select 'AM or PM'.

• Press the [∧]/[∨] buttons to toggle between AM and PM.
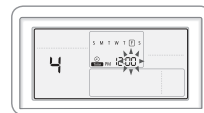
(10) Press the [>] button to select the 'Hour'.

• Press the [∧]/[∨] buttons to select the hour (01~12).

(11) Press the [>] button to select the 'Minute'.

• Press the [∧]/[∨] buttons to select minute (00~59).

(12) Press the [Set] button to complete the current time setting.

• The setting changes are applied and you can exit to general mode.

(13) Press the [Esc] button to exit to general mode.

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I Individual control systems

3. Wired remote controller

1 *MWR-WE10N*

4) Option function

Service mode

| Main menu	Sub menu	Function		SEG Used	Default	Range	Unit
1	1	Wired remote controller Option setting / checking (1)	Cooling / Heating selection	1	0	0-Cooling/Heating, 1-Cooling only	-
			Use of wireless remote controller	2	1	0-No use, 1-Use	-
			MAIN / SUB wired remote controller	3	0	0-MAIN, 1-SUB	-
			Temperature unit	4	0	0 – Celsius(°C), 1 – Fahrenheit(°F)	-
	2	Wired remote controller Option setting / checking (2)	Temperature sensor selection	1	0	0–Indoor unit, 1–Wired remote controller	-
			Use of average temperature	2	0	0-No use, 1-Use	-
			Use of Auto mode	3	1	0-No use, 1-Use	-
			Temperature display	4	0	0–Set temperature,1-Room temperature	-
			AC On/Off button function	5	0	0–Indoor unit+ERV, 1–Indoor unit only, 2–ERV only	-
	3	Blade setting / checking	Lock blade 1	1	0	0- Unlock, 1- Lock	-
			Lock blade 2	2	0	0- Unlock, 1- Lock	-
			Lock blade 3	3	0	0- Unlock, 1- Lock	-
			Lock blade 4	4	0	0- Unlock, 1- Lock	-
	4	ERV option Setting / checking	Use of By-pass mode	1	0	0-No use, 1-Use	
			Use of Auto mode	2	0	0-No use, 1-Use	
			Use of air purification mode	3	0	0-No use, 1-Use	
			Use of external control	4	0	0-No use, 1-Use	
	5	Room temperature compensation	Current room temperature	1, 2, 3	-	-9 ~ 40°C (15~104°F)	0.1°C
			Temperature compensation value	4,5,6	-	-9.9 ~ 9.9(°C)	0.1°C
	6	number of connected indoor units	Number of indoor units	1,2	0	0~16	-
			Number of ERVs	3,4	0	0~16	-
	7	Temperature increment/decrement unit (°C only)		1	-	0-1°C, 1-0.5°C, 2-0.1°C	-
	0	Factory option setting		1	-	0-Unchanged, 1-Factory setting	-
2	1	Software code		1~6	-	Software code	-
	2	Software version		1~6	-	Software version	-
3	1	Indoor unit room temperature		1,2,3	-	Room temperature	°C
	2	Indoor unit EVA IN temperature		1,2,3	-	EVA IN temperature	°C
	3	Indoor unit EVA OUT temperature		1,2,3	-	EVA OUT temperature	°C
	4	Indoor unit EEV step		1,2,3	-	EEV step	-
	5	Indoor unit option checking(1)	Use of central control	1	-	0-No use, 1-Use	-
			Use of drain pump	2	-	0-No use, 1-Use	-
			Use of electric heater	3	-	0-No use, 1-Use	-
			Use of hot water coil	4	-	0-No use, 1-Use	-
	6	Indoor unit option checking(2)	Use of external control	1	-	0-No use, 1-Use	-
			Use RPM compensation	2	-	0-No use, 1-Use	-
			Filter time	3	-	0-2000 hours, 1-1000 hours	-
			Heating temperature compensation	4	-	0-2°C, 1-5°C	-
			EEV stop step in heating	5	-	0-0/80 step, 1- 80 step	-
4	1	Indoor unit option setting 2)*	Indoor unit main address	1, 2	-	Main address(00H~4FH, Hexadecimal digits)	-
			Indoor unit setup address (Manual setting main address)	3, 4	-	Main address (00H~4FH, Hexadecimal digits)	-
			Indoor unit RMC address	5, 6	-	RMC address (00H~FEH, Hexadecimal digits)	-
	2	Indoor unit Product option code		1)*	-	Indoor unit option code	-
	3	Indoor unit INSTALL option		1)*	-	Refer to the indoor unit	-
	4	Indoor unit INSTALL option(2)		1)*	-	installation manual for details	-

Main menu	Sub menu	Function		SEG Used	Default	Range	Unit
5	1	AHU setting/ checking	Setting/checking the different value	1, 2	-	0~30	1
			RPM setting /checking	3, 4	-	0~25	1RPM
			Filter performance	5	-	0- Pre, 1-Medium performance, 2-High performance	-
			Humidity setting / checking	6	-	0-30, 1-40, 2-50	-
	2	Indoor unit, AHU discharge temperature setting /checking	Use of discharge temperature control	1	-	0-No use, 1-Use	-
			Cooling discharge temperature	3, 4	-	8~18°C(46~64°F)	1°C
			Heating discharge temperature	5, 6	-	30~43°C(86~109°F)	1°C
	3	Fresh Duct discharge temperature setting/ checking	Cooling discharge temperature	1, 2	-	15~25°C(59~77°F)	1°C
			Heating discharge temperature	3, 4	-	18~30°C(64~86°F)	1°C
6	1	ERV Plus setting / checking	Use of cold air prevention	1	-	0-No use, 1-Use	-
			Use of humidification when Heating thermo off	2	-	0-No use, 1-Use	-
			Use of fan operation in defrost	3	-	0-No use, 1-Use	-
			Use of humidification when Heating	4	-	0-No use, 1-Use	-
	2	ERV Plus temperature setting /checking	Cooling	1, 2	-	15~30°C(59~86°F)	1°C
			Heating	3, 4	-	15~30°C(59~86°F)	1°C
	3	ERV Plus Auto mode temperature setting /checking	Set temperature	1, 2	-	15~30°C(59~86°F)	1°C
			Set temperature difference	3, 4	-	5~15°C(41~59°F)	1°C
	4	Setting/checking the compensation temperature A under the Heating EEV control for ERV Plus		1, 2	-	0~10°C	1°C
		Checking the compensation temperature B under the Heating EEV control for ERV Plus		3, 4	-	0-Non use humidifier(0°C) 1-Use humidifier(10°C)	-
	5	ERV Plus fan RPM setting/checking	Air supply RPM	1, 2	-	10~27steps	1 RPM
			Air exhaustion RPM	3, 4	-	10~27steps	1 RPM
7	1	View master / checking (F3F4 line Indoor unit master)	Indoor unit view master setting/ checking	1, 2,3, 4,5,6	-	Address	-
	2		ERV unit view master setting/ checking	1, 2,3, 4,5,6	-	Address	-
	3	Mode master indoor unit setting/ checking (F1F2 line Indoor unit master) 3)*	Mode master indoor unit checking	1, 2,3, 4,5,6	-	Address	-
	4		Mode master indoor unit setting	1	-	0-No use, 1-Use, 2-Release	-
0	1	Reset	Factory setting	1	0	0-No use, 1-Reset	-
	2		Power master reset 4)*	1	0	0-No use, 1-Reset	-
	3		Addressing reset 5)*	1	0	0-No use, 1-Reset	-

1)* SEG1 means option setting page/ SEG2~6 means option code.

2)* If you enter Main menu #4, you must select the targeted indoor unit address and then select the sub menu.

3)* Mode master indoor unit : The indoor unit which can decide the operation mode. Other indoor unit follows Mode master indoor unit's operation mode.

4)* Power master reset : Setting for finding the most stable power supply indoor unit.

5)* It operates same as outdoor unit reset (K3 button)

Option Setting Page — Option Code

1 2 3 4 5 6
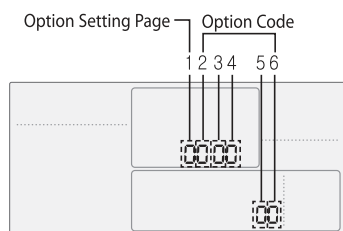
▶ To set 24 digit option

Page	Option Setting	How to move between pages
Page1	1~5th digit option	Press the [>] button to go to Page2.
Page2	6~10th digit option	Press the [>] button to go to Page3.
Page3	11~15th digit option	Press the [>] button to go to Page4.
Page4	16~20th digit option	Press the [>] button to go to Page5.
Page5	21~24th digit option	-

I Individual control systems

3. Wired remote controller

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4) Option function

Service mode

▶ How to set the service mode

SEG Used

Main menu   Sub-menu   1 2 3 4   5 6
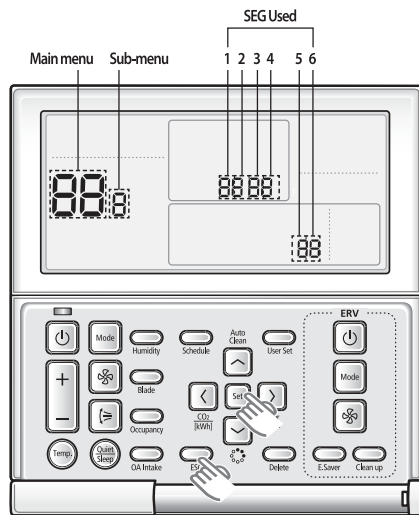
(1) If you want to use the various additional functions for your Wired Remote Controller, press the [Set] and [Esc] buttons at the same time for more than three seconds.

- You will enter the additional function settings, and the [main menu] will be displayed.

(2) Refer to the list of additional functions for your Wired Remote Controller on the next page, and select the desired menu.

- Using the [∧]/[∨] buttons, select a main menu number and press the [>] button to enter the sub-menu setting screen.
- Using the [∧]/[∨] buttons, select a sub-menu number and press the [>] button to enter data setting screen.
- When you enter the setting stage, the current setting will be displayed.
- Refer to the chart for data settings.
- Using the [∧]/[∨] buttons, select the settings. Press the [>] button to move to the next setting.
- Press the [Set] button to save the settings and exit to the sub-menu setting screen.
- Press the [Esc] button to exit to normal mode.

☑ *Note*

- While setting the data, you can use the [∧]/[∨] buttons to set the range of SEG
- While configuring the setting, press the [Esc] button to exit to the setting sub-menu without saving your changes.

▶ Example method of setting wired remote controller option

(1) Press the [Set] and [ESC] buttons at the same time for more than 3 seconds.

- When(Main menu) is displayed press the [∧]/[∨] button to select no.1.
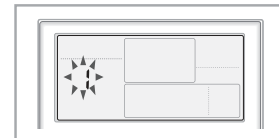
(2) Press the [>] button to select the number you will set.

- Press the [∧]/[∨] button and select no.1
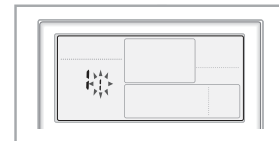
(3) Press the [>] button to enter the data setting stage.

- When you enter the setting stage, the current setting value will be displayed.

  ▶ Example of data setting stage display

  Data bit
  1 2 3 4
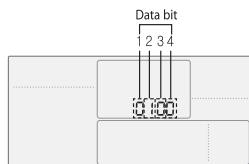
  SEG1: Heat pump indoor unit
  SEG2: Use wireless remote controller
  SEG3: Master wired remote controller
  SEG4: Temperature display – Celsius (°C)

(4) Press the [<]/[>] button to select the desired Data1.

- Press the [∧]/[∨] button to select no.1.
- The wired remote controller option is set from both cooling and heating to cooling only.

(5) Press [Set] button to complete the option setting.

- Save the setting value and exit to sub menu.

(6) Press [Esc] button to exit to normal mode.
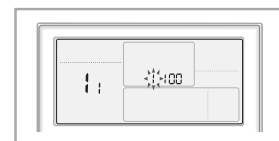
Built-in temperature sensor of wired remote controller

▶ Temperature control with built-in temperature sensor
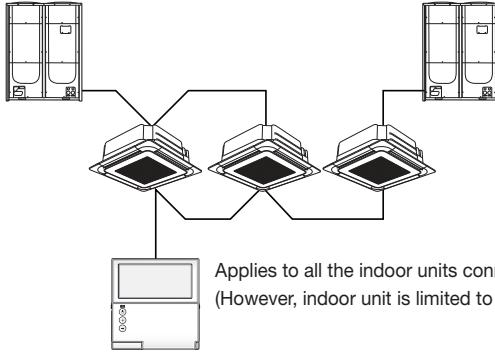
Applies to all the indoor units connected within a group.
(However, indoor unit is limited to DVM S series)

✳ Check the setting of the wired remote controller built-in sensor from the service menu.

Main menu	Sub menu	Function		Used SEG	Factory setting	Description	Unit
1	1	Wireless remote controller Option setting / checking (1)	Cooling / Heating selection	1	0	0-Cooling/Heating, 1-Cooling only	-
			Use of wireless remote controller	2	1	0-No use, 1-Use	-
			MAIN / SUB wired remote controller	3	0	0-MAIN, 1-SUB	-
			Temperature unit	4	0	0 – Celsius(°C), 1 – Fahrenheit(°F)	
	2	Wireless remote controller Option setting / checking (2)	Temperature sensor selection	1	0	0–Indoor unit, 1–Wired remote controller	-
			Use of average temperature	2	0	0-No use, 1-Use	-
			Use of Auto mode	3	1	0-No use, 1-Use	-
			Temperature display	4	0	0–Set temperature,1-Room temperature	-
			AC On/Off button function	5	0	0–Indoor unit+ERV, 1–Indoor unit only, 2–ERV only	-

▶ Heating mode temperature compensation
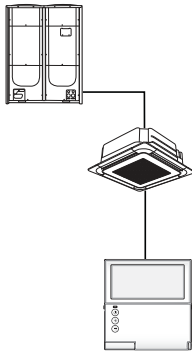
Indoor unit INSTALL option setting (Refer to indoor unit intallation manual)

SEG	Function	Value
21	Heating setting temperature compensation	1 – 2°C(°F) 2 - 5°C(°F)

☑ *Note*

♦ When built-in sensor of the wired remote controller is used, heating mode temperature compensation (+2°C or +5°C) will be reset to 0°C.

✳ If there is no option switch on the indoor unit PCB, check the setting of the heating temperature compensation from the service menu.

Main menu	Sub menu	Function		Used SEG	Factory setting	Description	Unit
3	6	Indoor unit option checking(2)	Use of external control	1	-	0-No use, 1-Use	-
			Use RPM compensation	2	-	0-No use, 1-Use	-
			Filter time	3	-	0-2000 hours, 1-1000 hours	-
			Heating temperature compensation	4	-	0-2°C(°F), 1-5°C(°F)	-
			EEV stop step in heating	5	-	0-0/80 step,1-80 step	-

I Individual control systems

3. Wired remote controller

□1 *MWR-WE10N*

4) Option function

Built-in temperature sensor of wired remote controller

▶ When communication error or power failure occurs while using built-in temperature sensor
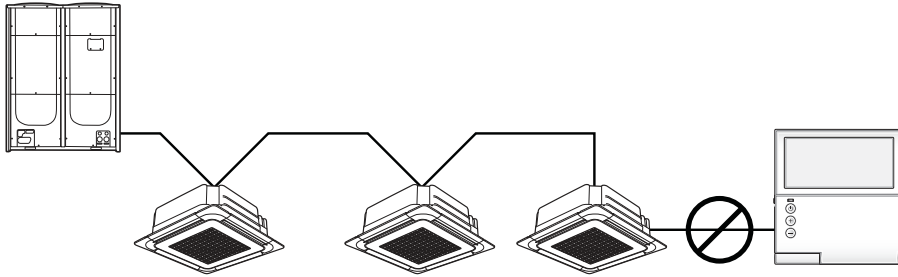
(1) When communication error occurs over 3 minutes,
  • Indoor unit ignores the built-in temperature sensor and use indoor unit temperature sensor.
  • Indoor unit applies the heating setting temperature compensation.(+2°C,+5°C)

(2) When communication resumes,
  • Built-in temperature use is recovered.
  • Setting must be done again to use the temperature compensation.

Energy saving operation mode

N(ERV) : N(Indoor unit)
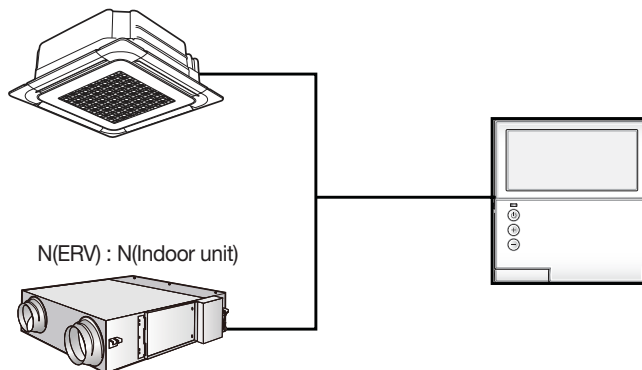
  ✳ Energy saving operation mode is available only when there is at least one indoor unit and ERV is connected.

• By comparing indoor room temperature, setting temperature and outdoor temperature, wired remote controller changes
  ERV operation mode and fan speed to minimize unnecessary outdoor unit operation.
• Energy saving operation is not available when ERV is not connected.
• Energy saving operation is not available when 'Centralized control' is set.
• Energy saving operation will not be executed when ERV is set to Outing mode or set in external interlocking mode.
• Temperature measurement is set as indoor unit temperature sensor as default, and it can be changed depending on the wired
  remote controller option setting.
• Basically room temperature value means indoor unit's sensor. But it can be changed depending on option setting. (External room
  sensor or Built-in sensor of wired remote controller)

5) Display

■ Error display

Error codes for the Wired Remote Controller and the product connected to the Wired Remote Controller will be displayed in the LCD display.
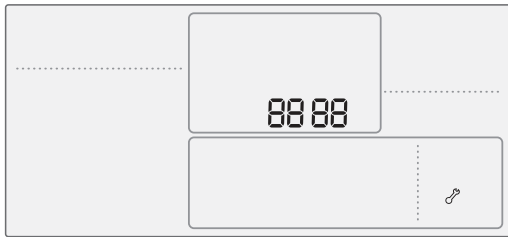
LCD Display

▶ When an Error Occurs in Your Indoor/Outdoor Units (Product Group Display : A20)

• The product address for the error will be displayed, followed by the error code.

Example : Error 121 occurred in indoor unit with main address no. 18 (decimal numbers).

Refers to the indoor unit   Outdoor unit address (Displayed in hexadecimal)   Indoor unit Main address (Displayed in hexadecimal)   Error code
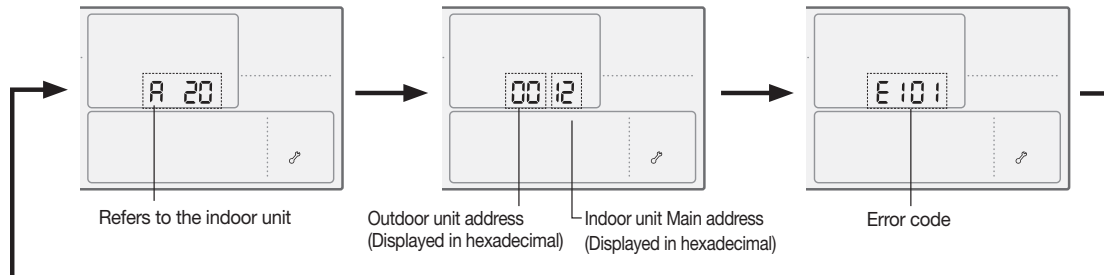
▶ When an Error Occurs in Your Ventilator(ERV) (Product Group Display : B30)

• The product address for the error will be displayed, followed by the error code.

Example : Error 121 occurred in indoor unit with main address no. 18 (decimal numbers).

Refers to the ERV unit   ERV unit Main address (Displayed in hexadecimal)   Error code
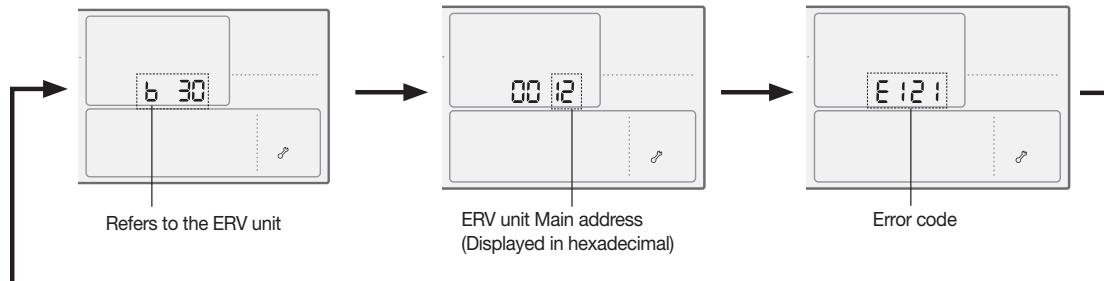
▶ When an Error Occurs in Your Wired Remote Controller

• Only an error code will be displayed. (No address will be displayed.)

Example : Error 601 has occurred at your Wired Remote Controller.

I Individual control systems

3. Wired remote controller

1 *MWR-WE10N*

5) Display

W ired remote controller error codes

Display	Description	Remarks
601	Communication error between wired remote controller and indoor/ERV units after successful communication	
602	No communication between Master (Main) and Slave(Sub) wired remote controllers	
604	No communication between wired remote controller and indoor/ERV units	
606	Wired remote controller is connected on F1/F2 channel	
607	Two or more wired remote controllers are set as Master (Main)	When using Master remote controller
608	No ERV unit installed for interlocking function	Detection available from both Master/ Slave wired remote controller
609	No indoor unit installed for interlocking function	When external interlocking control is in use
618	Over 16 indoor/ERV indoor units installed	
619	Indoor units of different temperature setting (°C/°F) connected to same wired remote controller	Detection available in Master wired remote controller
620	Wired remote controller(s) has different temperature unit setting with indoor unit(s)	
653	Temperature sensor Open/Short error	Detection available in models with temperature sensor
654	EEPROM error	

☑ *Note*

◆ For the error codes for your indoor/outdoor units and ventilator (ERV), refer to the installation manual of each device.

6) Communication diagram

| Individual control (1) | Control 1 indoor unit with 1 wired remote controller |

F1/F2

Outdoor unit

F3/F4

Indoor unit

Wired remote controller

Control	All connected indoor units
Display	Operation status of the connected indoor unit

| Group control (1) | Control multiple indoor units with 1 wired remote controller |

F1/F2   F1/F2

Outdoor unit

Indoor unit

F3/F4   Wired remote controller

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of View Master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

| Group control (2) | Control multiple indoor units connected to different outdoor units with 1 wired remote controller |

F1/F2

Outdoor unit

Outdoor unit

Wired remote controller

F3/F4

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of View Master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.

I Individual control systems

3. Wired remote controller

① *MWR-WE10N*

6) Communication diagram

Group control (3)	Control 1 or multiple indoor units with 2 wired remote controllers

Outdoor unit
F1/F2
F3/F4
Wired remote controller
Indoor unit
Master Slave Master Slave
※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of View Master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✳ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

Group control (4)	Control multiple indoor units connected to different outdoor units with 2 wired remote controller

Outdoor unit
F1/F2
F3/F4
Wired remote controller
Indoor unit
Outdoor unit
Master Slave
※ Maximum 16 indoor units can be connected

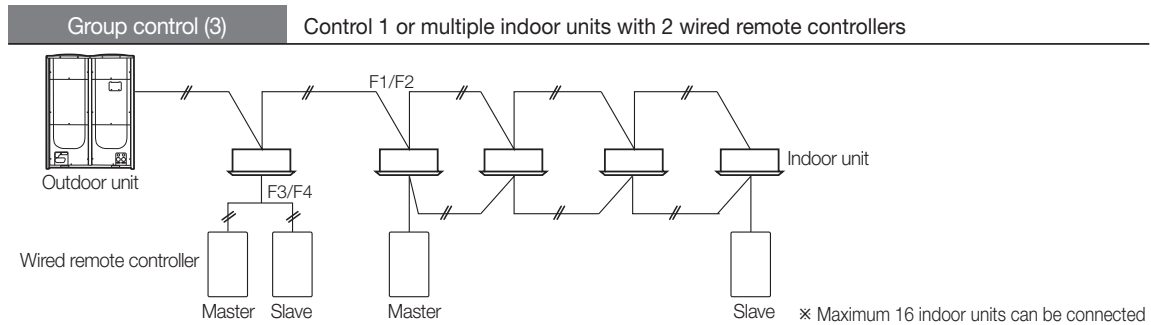| Control	All connected indoor units
Display	Priority 1. Display the status of View Master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✳ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.

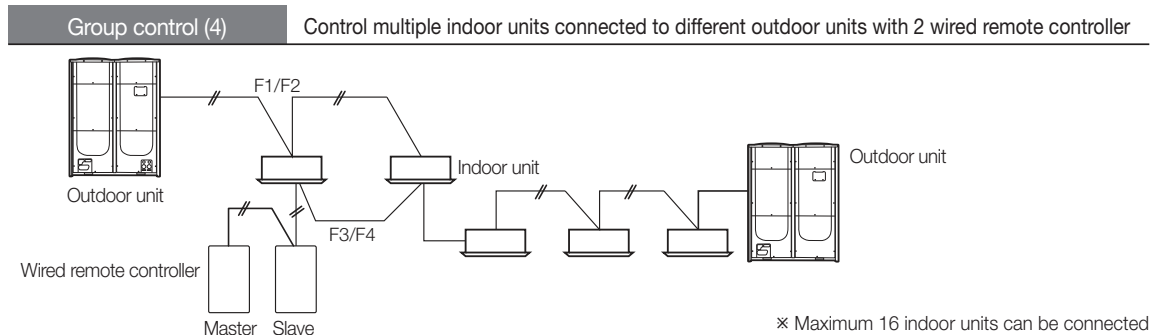Max. distance between the farthest indoor unit and wired remote controller : 100m(328ft)

100m(328ft)
Wired remote controller

② *MWR-SH00N*

1) Features

- Simplified wired remote controller
- AC operation ON/OFF control
- Fan speed control
- Setting operation mode and temperature
- Reset filter cleaning alert indicator
- Adjust air flow direction
- Operation on/off timer function

Unit : mm(inch)

122.0(4.80)

75.0(2.95)

16.6 (0.65)

2) Product specification

Power supply	DC 12 V
Power consumption	1.5 W
Operating temperature range	0°C~40°C (32°F~104°F)
Operating humidity range	30 % RH~90 % RH
Communication	2-wire PLC
Maximum length of connection	100 m (328ft)
Maximum number of controllable devices	16 indoor units

Compatible product

Indoor unit	AM✱✱✱✱N✱✱✱✱✱✱Model

I Individual control systems

3. Wired remote controller

2️⃣ *MWR-SH00N*

3) Description of parts

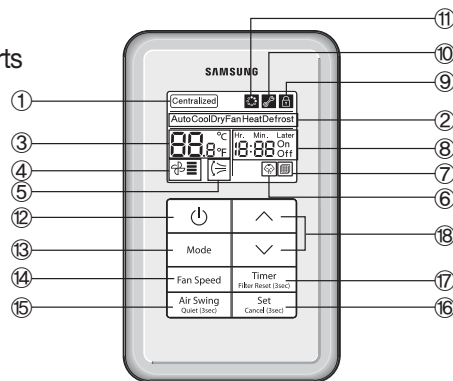| No.	Name	Description
①	Centralized control indicator	Indicator will be on when remote controller usage restriction is set. (Devices that support centralized control: OnOff controller, DMS2.5, Touch centralized controller etc.)
②	Operation mode indicator	Indicates current operation mode when the indoor unit is operating (Cool/Auto/Dry/Fan/Heat)
③	Set temperature indicator	Indicates the set temperature when the indoor unit turns on.
④	Fan speed indicator	Indicates the fan speed settings.
⑤	Air swing indicator	Indicates when vertical air swing is on.
⑥	Quiet mode indicator	Indicates when quiet mode is on.
⑦	Filter cleaning indicator	Indicates when preset filter cleaning period is passed.
⑧	Timer indicator	On : Indicates when On timer is set Off : Indicates when Off timer is set Hr. Min. Later : ① Timer mode – Displays the set time for On/Off timer (Min. 30 minutes ~ Max. 18 hours) ② General mode - Displays remaining time before Timer function will execute
⑨	Lock / Restricted indicator	This icon will be displayed when button is locked or when unavailable function (function which indoor unit does not support) is selected ① Icon On: All buttons are locked ② Icon blinks for 3 seconds: When partially locked button is pressed or unavailable function (function which indoor unit does not support) is selected
⑩	Inspection indicator	Indicates that inspection is required.
⑪	SPi indicator	Indicates that SPi or other cleaning function of the indoor unit is on.
⑫	On/Off button	Press this button to turn on/off the indoor unit.
⑬	Mode button	Press this button to select the desired operation mode. (Auto → Cool → Dry → Fan → Heat)
⑭	Fan speed button	Press this button to select one of the fan speeds from Auto, Low, Medium, High, Turbo. Available Fan Speed may differ depending on the operation mode of the indoor unit. Low → Medium → High → Turbo → Auto
⑮	Air swing button	Press this button to turn on/off the vertical air swing when the indoor unit supports vertical air swing movement.
⑯	Set/ Cancel button	This button can be used only for Timer, User mode, Service mode. *Short press: Set (Save) * Press and hold for 3 seconds: Cancel
⑰	Timer button / Filter reset button	*Short press: You can set the On/Off timer. * Press and hold for 3 seconds: Resets the filter cleaning alert indicator.
⑱	Temperature adjustment / Time adjustment button	① General mode Press this button to increase/decrease the set temperature by preset unit. * Short press - adjust the temperature by 1℃(℉) or 0.5℃(℉) or 0.1℃(℉) depending on the setting. * Press and hold – adjust the temperature by 1℃(℉) every 0.5 second ② Timer mode Press this button to increase/decrease the set time. * Up to 3 hours: Increase/decrease by 30 minute unit * Over 3 hours: Increase/decrease by 1 hour unit

PCB
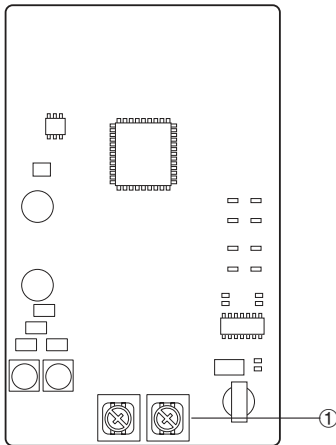
No.	Name	Description
①	Power/communication connection terminal	Connect to indoor unit (F3/F4)

4) Option function

User setting mode

▶ How to set

[User mode screen]

Press for more than 3 seconds simultaneously

Up
Down
Left — Right
Exit   Save
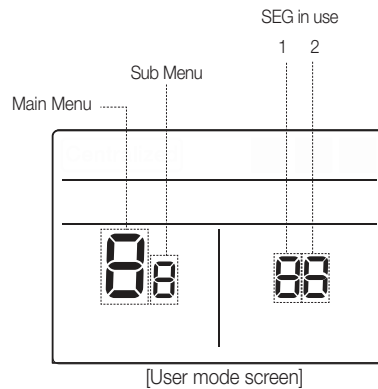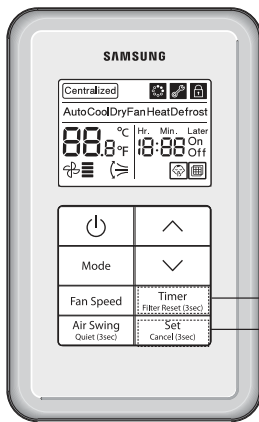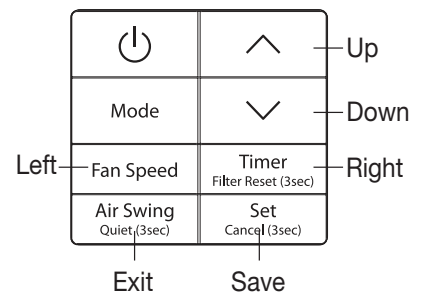
Main menu	Sub menu	Function		Default	Page in use	Range	Save
0	1	Reset User mode to default value		0	1	0 - Disabled, 1 - Reset	none
1	1	Lock all		0	1	0 - Unlock, 1 - Lock	o
	2	Partially lock buttons	Lock On/Off button	0	1	0 - Unlock, 1 - Lock	o
	3		Lock Mode button	0	1	0 - Unlock, 1 - Lock	o
	4		Lock Temperature adjustment button	0	1	0 - Unlock, 1 - Lock	o
	5		Lock Fan speed button	0	1	0 - Unlock, 1 - Lock	o
	6		Lock Timer button	0	1	0 - Unlock, 1 - Lock	o
2	1	Temperature restriction	Lower temperature	16	1	16~30	o
	2		Upper temperature	30	1	16~30	o

I Individual control systems

3. Wired remote controller

② *MWR-SH00N*

4) Option function

■ Service mode

▶ How to set

Main Menu
Sub Menu
SEG in use 1 2

Auto

On

[Service mode screen]

Press for more than 3 seconds simultaneously

Up — Down

Left — Right

Mode

Fan Speed Timer Filter Reset (3sec)

Air Swing Quiet (3sec) Set Cancel (3sec)

Exit   Save
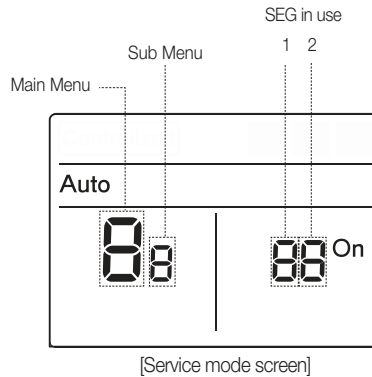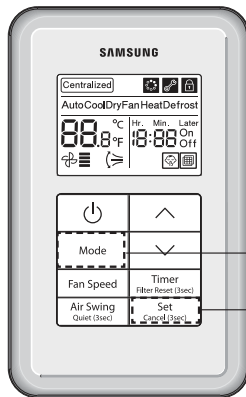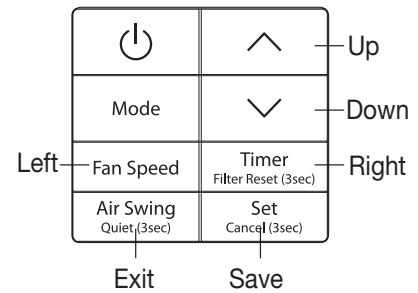
Page display

On	Page1	Page2	Page3	Page4	Page5
	Auto	Cool	Dry	Fan	Heat

Off	Page6	Page7	Page8	Page9	Page10
	Auto	Cool	Dry	Fan	Heat

| Main menu	Sub menu	Function		Default value	Page in use	Range
0	1	Reset	Reset the option setting of the wired remote controller to dafault value	0	1	0 - Disable, 1 - Reset
	2		Reset wired remote controller to factory default	0	1	0 - Disable, 1 - Reset
	3		Power Master Reset	0	1	0 - Disable, 1 - Reset
	4		Addressing Reset	0	1	0 - Disable, 1 - Reset
1	1	Wired remote controller information	Check the number of connected indoor units	0	1	0~16
	2		Check the number of connected ERV	0	1	0~16
	3		Check the MICOM code of wired remote controller	none	1~3	MICOM code
	4		Check the software version of the wired remote controller	none	1~3	Updated date
2	1	Address/ option setting	Target indoor unit address setting setting	View Master indoor unit	1~3	Select address from one of the connected indoor unit Display example) Page 1: 20 (Refers to indoor unit) Page 2: 00 (Outdoor unit addres) Page 3: 04 (Main address)
	2		Check/Set main address	Main address of Target indoor unit	1	Main address (00H~4FH, Hexadecimal digits)
	3		Check/Set RMC address	Main address of Target indoor unit	1	RMC(1): 0~F / RMC(2): 0~F (Hexadecimal number) 1)*
	4		Check/set the product option	Product option of target indoor unit	1~10	Option code
	5		Check/Set installation option (1)	Installation option of target indoor unit	1~10	Option code
	6		Check/Set installation option (2)	Installation option of target indoor unit (2)	1~10	Option code
3	1	Check/Set view master	Check/Set indoor unit view master	View Master indoor unit	1~3	Select address from one of the connected indoor unit (hexadecimal number)
	2		No function	-	1~3	-
4	1	Check/ Set Mode master indoor unit	Check the address of the mode Master indoor unit	none	1~3	Address of the mode Master indoor units
	2		Setting the mode Master indoor unit 2)*	none	1	0- Not set, 1-Set, 2-Cancel

1)* When RMC(1) is set as F, RCM(2) can be set up to E only.

2)* Mode master indoor unit : The indoor unit which can decide the operation mode. Other indoor unit will follow mode master indoor unit's operation mode.

Main menu	Sub menu	Function		Default value	Page in use	Range
5	1	Check/ Set option function of the wired remote controller	Set indoor unit for 'cooliing and heating' / 'cooling only'	0	1	0- Cooling and heating, 1-Cooling only
	2		Setting wireless remote controller usage restriction	1	1	0 - Disable, 1 - Enable
	3		Setting Master/Slave wired remote controller	0	1	0-Master, 1-Slave
	4		Setting auto operation usage	1	1	0 - Disable, 1 - Enable
	5		Temperature display Celsius(°C)/ Fahrenheit(°F)	0	1	0- Celsius (°C), 1-Fahrenheit (°F)
	6		Set unit for desired temperature (0,1,2) (Only available when temperature is displayed in Celsius (°C)	0	1	0- 1°C, 1-0.5°C, 2-0.1°C

Setting mode master indoor unit

F1/F2

Outdoor unit

F3/F4

Indoor unit

Wired remote controller
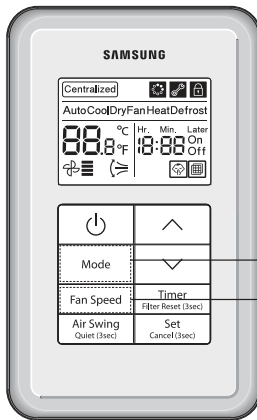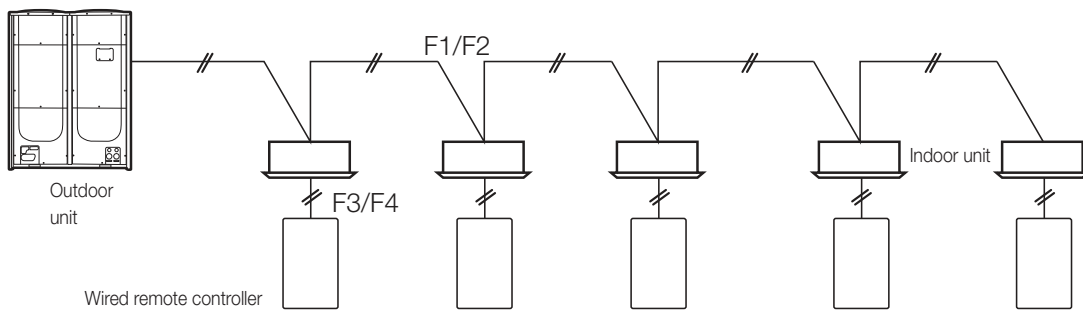
• Only when the wired remote controller is connected to an indoor unit directly (1:1 connection), you can set the mode master indoor unit that sets the operation mode of the outdoor unit.

Press and hold for over 5 seconds
the connected indoor unit will be set as Mode master indoor unit

Press and hold for over 5 seconds
Mode master indoor unit setting will be canceled

System reset

• Reset the power of the simplified wired remote controller
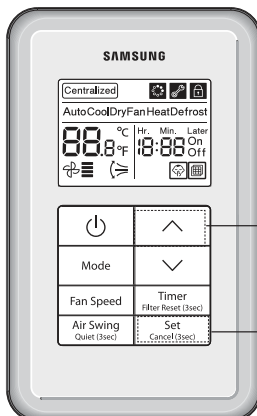
Press and hold for over
5 seconds Power reset

I Individual control systems

3. Wired remote controller

② *MWR-SH00N*

5) Display

■ Error display

- Error codes of for the simplified wired remote controller and the product connected to it will be displayed on the LCD display.

▶ When an error occurs in your indoor/outdoor units (Product group display: A20)
- Address of the product with error code and address will be displayed alternately.

  Example : Error 121 occurs for indoor unit No. 10 (Decimal digits)

A 20	0 00A	E 121
Refers to the indoor unit	Outdoor unit address (Displayed in hexadecimal) Indoor unit Main address (Displayed in hexadecimal)	Error code

▶ When an error occurs in your simplified wired remote controller
- Only an error code will be displayed. (No address will be displayed)

  Example : Error 601 has occurred on simplified remote controller

E 601

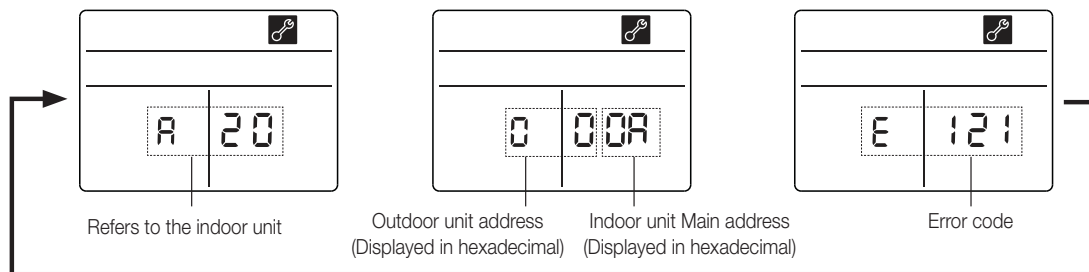| No.	Error code	Description of the error	Remarks
1	601	• Communication error between wired remote controller ↔ Indoor unit	-
2	602	• Communication error between Master ↔ Slave wired remote controller - Error is only detected on slave wired remote controller	-
3	604	• Communication tracking error between wired remote controller ↔ Indoor unit	-
4	618	• Exceeded maximum number of units (16 units)	-
5	627	• Two or more wired remote controllers are set as Slave	-
6	654	• Memory (external ROM) read/write error - This error is detected only during power reset. If error occurs on memory after power has turned on, it will not effect on operation of the wire remote controller display and therefore error code will not be displayed.	-

6) Communication diagram

Individual control (1) — Control 1 indoor unit with 1 wired remote controller

F1/F2

Outdoor unit

F3/F4

Indoor unit

Wired remote controller

Control	All connected indoor units
Display	Operation status of the connected indoor unit

Group control (1) — Control multiple indoor units with 1 wired remote controller

F1/F2   F1/F2

Outdoor unit

F3/F4   Wired remote controller

Indoor unit

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

Group control (2) — Control multiple indoor units connected to different outdoor units with 1 wired remote controller

F1/F2

Outdoor unit

Outdoor unit

F3/F4

Wired remote controller

※ Maximum 16 indoor units can be connected

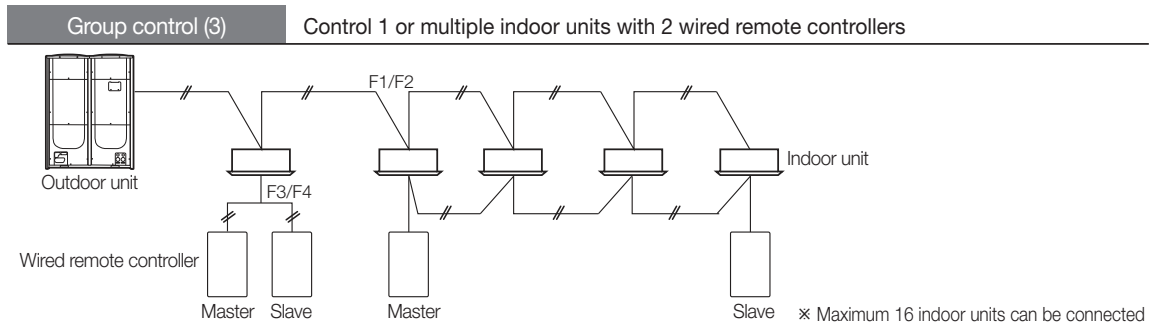| Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.
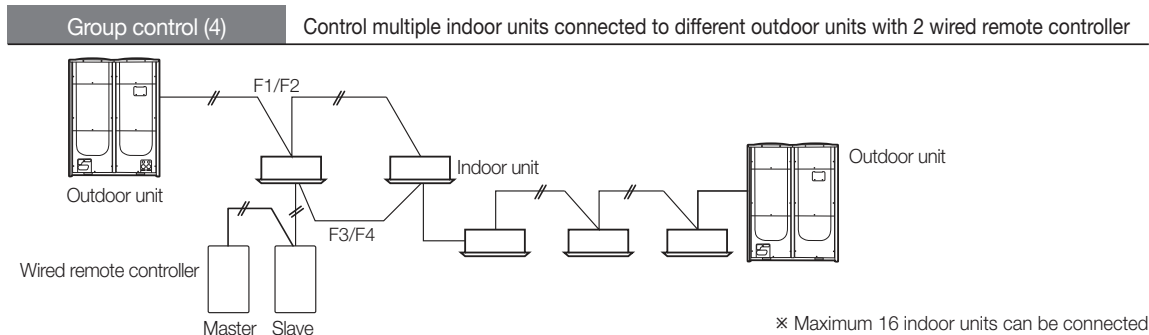
I Individual control systems

3. Wired remote controller

2️⃣ *MWR-SH00N*

6) Communication diagram

| Group control (3) | Control 1 or multiple indoor units with 2 wired remote controllers |

Outdoor unit
F1/F2
F3/F4
Indoor unit
Wired remote controller
Master Slave   Master   Slave
※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✴ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

| Group control (4) | Control multiple indoor units connected to different outdoor units with 2 wired remote controller |

F1/F2
Outdoor unit
Indoor unit
Outdoor unit
F3/F4
Wired remote controller
Master Slave
※ Maximum 16 indoor units can be connected

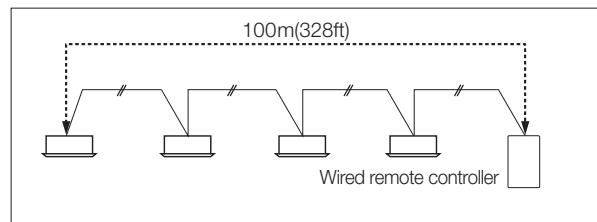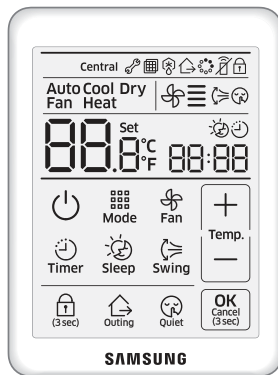| Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✴ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.

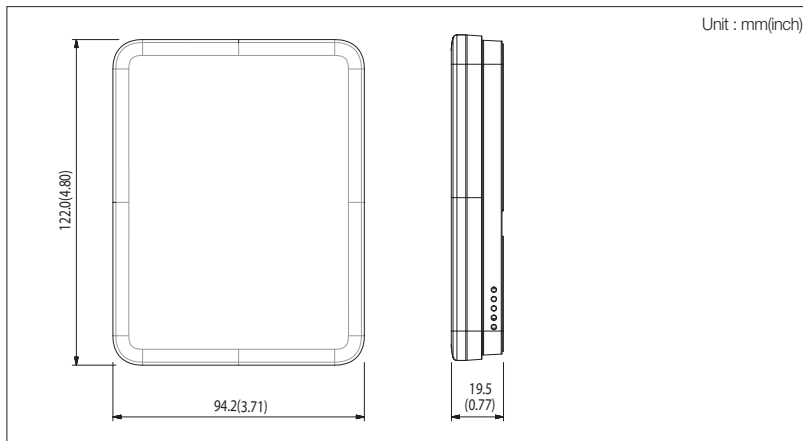Max. distance between the farthest indoor unit and wired remote controller : 100m(328ft)

100m(328ft)

Wired remote controller

③ *MWR-SH10N*

1) Features

- Touch screen wired remote controller
- IR receiver is included
- Quiet, Sleep, Outing mode
- AC operation ON/OFF control
- Fan speed control
- Setting operation mode and temperature.
- Reset filter cleaning alert indicator
- Operation on/off timer function.

Unit : mm(inch)

122.0(4.80)

94.2(3.71)

19.5
(0.77)

2) Product specification

|	
Power supply	DC 12 V
Power consumption	1.5 W
Operating temperature range	0°C~40°C (32°F~104°F)
Operating humidity range	30 % RH~90 % RH
Communication	2-wire PLC
Maximum length of connection	100 m (328ft)
Maximum number of controllable devices	16 indoor units

Compatible product

Indoor unit	AM✻✻✻✻N✻✻✻✻✻✻Model
FCU KIT	MIM-F00N

I Individual control systems

3. Wired remote controller

③ *MWR-SH10N*

3) Description of parts
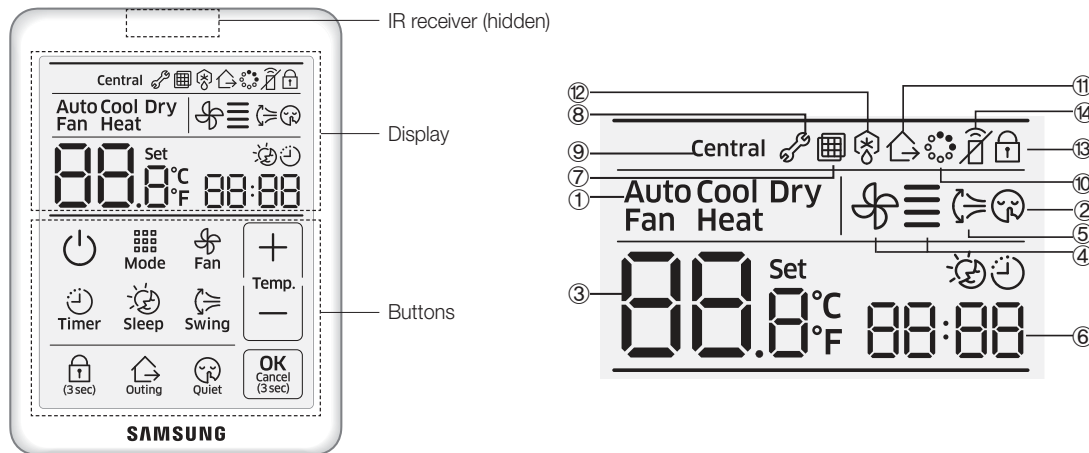
IR receiver (hidden)

Display

Buttons

No.	Name	Description
①	Operation mode indicator	Indicates current operation mode when the indoor unit is operating (Cool/Auto/Fan/Dry/Heat)
②	Quiet mode indicator	Indicates when Sleep mode is ON.
③	Temperature indicator	Indicates Indoor temperature/Set temperature
④	Fan speed indicator	Displays fan speed
⑤	Air swing direction indicator	Displays air swing (Up/Down)
⑥	Timer indicator	Displays ON/OFF time (scheduled time)
⑦	Filter cleaning indicator	Displays filter cleaning (filter cleaning period)
⑧	Inspection indicator	Displays check
⑨	Centralized control indicator	Indicator will be on when remote controller usage restriction is set. (Devices that support centralized control : OnOff controller, DMS, Touch centralized controller, etc.)
⑩	Virus doctor indicator	Displays when virus doctor in ON.
⑪	Outing mode indicator	Displays when outing mode in ON.
⑫	Defrost operation indicator	Displays defrost operation.
⑬	Locking/invalid operation indicator	Displays partial locking/all locking/invalid operation
⑭	IR receiver indicator	Displays IR receiver for wireless remote controller (Default : disuse, indication on)
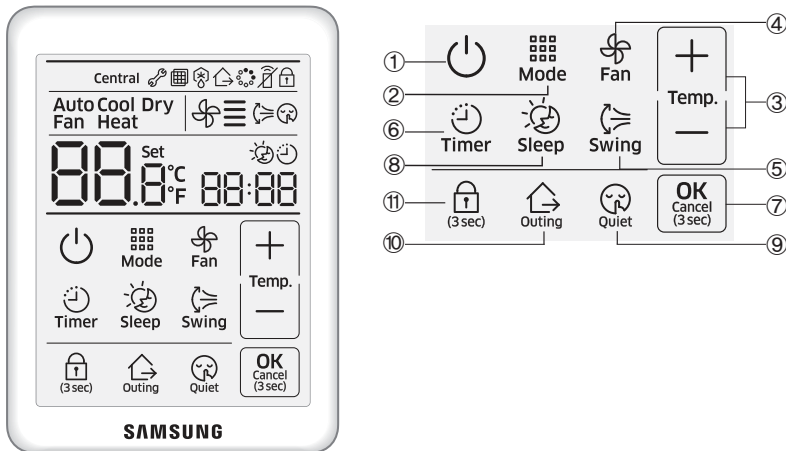
| No.	Name	Description
①	ON/OFF button	Turn the air conditioner power on/off
②	Mode button	Select a desired air conditioner operation
③	Temperature setting button	Set a desired temperature and adjust the time
④	Fan speed button	Change the air conditioner's fan speed
⑤	Air swing button	Select the air flow direction of the air conditioner
⑥	Timer button	Select the timer function
⑦	OK/Cancel button	Confirm or cancel (by pressing and holding the button for 3 seconds)
⑧	Sleep button	Select sleep operation for the air conditioner
⑨	Quiet button	Select quiet operation for the air conditioner
⑩	Outing button	Select outing operation for the air conditioner
⑪	Lock button	Lock the wired remote controller

I Individual control systems

3. Wired remote controller

③ *MWR-SH10N*

4) Option function

U ser setting mode

▶ How to set
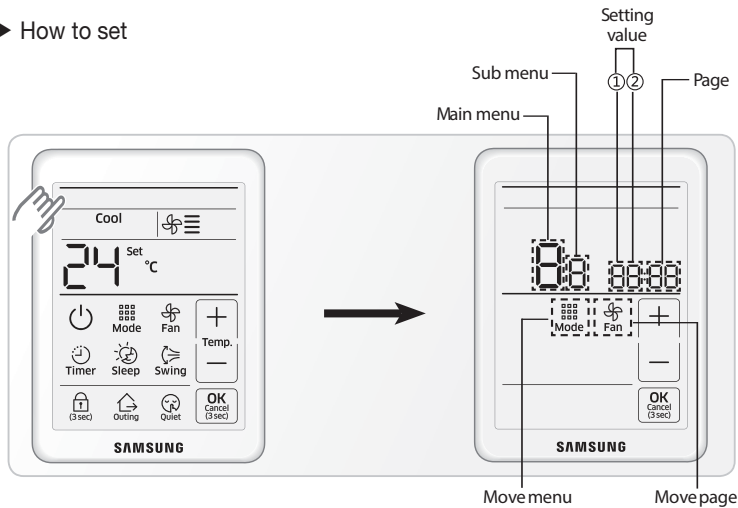
(1) If you want to use the various additional user functions for your wired remote controller, press the top left corner (hidden button) of the display for more than 3 seconds

- You will enter the additional function settings, and the main menu will be displayed

(2) Refer to the list of additional user functions for your wired remote controller on the next page, and select the desired menu

- Using the [+]/[-] buttons, select a main menu number and press the [Mode] button to enter the sub menu setting screen
- Using the [+]/[-] buttons, select a sub menu number and press the [Mode] button to enter data setting screen
- Using the [+]/[-] buttons, select the settings
- Press the [Fan] button to select page
- Press the [OK] button to save the current settings The [OK] button is invalid on the main menu or sub menu setting screen
- Press the [Cancel] button for more than 3 seconds to exit to normal mode without saving settings

Main menu	Sub menu	Function description		Setting value		Page	Save location
				Value	Factory default		
2	1	Temperature Limit	Lower limit	8 ~ 30 °C(47 ~ 86 °F)	8(47)	01	Wired remote controller
	2		Upper limit	8 ~ 30 °C(47 ~ 86 °F)	30(86)	01	Wired remote controller
	3	Set Outing Temperature	Cooling desire temperature on outing function	25 ~ 30 °C(77 ~ 86 °F)	27(81)	01	Wired remote controller
	4		Heating desire temperature on outing function	16 ~ 22 °C(61 ~ 72 °F)	16(61)	01	Wired remote controller
3	1	Lock of all buttons		0-Unlock, 1-Lock	0	01	Wired remote controller
	2	Partial Button Lock 1	Lock of operation ON/OFF button	0-Unlock, 1-Lock	0	01	Wired remote controller
			Lock of temperature setting buttons	0-Unlock, 1-Lock	0	02	Wired remote controller
			Lock of fan speed button	0-Unlock, 1-Lock	0	03	Wired remote controller
	3	Partial Button Lock 2	Lock of ON/OFF timer function button	0-Unlock, 1-Lock	0	01	Wired remote controller
			Lock of Swing function button	0-Unlock, 1-Lock	0	02	Wired remote controller
			Lock of Sleep function button	0-Unlock, 1-Lock	0	03	Wired remote controller
			Lock of Quiet function button	0-Unlock, 1-Lock	0	04	Wired remote controller
			Lock of Outing function button	0-Unlock, 1-Lock	0	05	Wired remote controller

Main menu	Sub menu	Function description		Setting value		Page	Save location
				Value	Factory default		
3	4	Operation Mode Partial Button Lock	Lock of operation mode button	0-Unlock, 1-Lock	0	01	Wired remote controller
			Hide of auto mode	0-Unlock, 1-Lock	0	02	Wired remote controller
			Hide of cool mode	0-Unlock, 1-Lock	0	03	Wired remote controller
			Hide of dry mode	0-Unlock, 1-Lock	0	04	Wired remote controller
			Hide of fan mode	0-Unlock, 1-Lock	0	05	Wired remote controller
			Hide of heat mode	0-Unlock, 1-Lock	0	06	Wired remote controller
6	1	Checking/setting of backlight time out		0~30 (Disuse in 0)	5	01	Wired remote controller (1 time use)
7	1	User Setting Function	Resetting filter cleaning alarm	0-No reset, 1-Reset	0	01	Wired remote controller
	2		Use of virus doctor	0-Disuse, 1-Use	0	01	Wired remote controller
	3		Use display of current temperature	0-Disuse, 1-Use	1	01	Wired remote controller
	4		Use of button melody	0-Disuse, 1-Use	1	01	Wired remote controller
	5		Use of IR receiver for wireless remote controller 1)*	0-Disuse, 1-Use	0	01	Wired remote controller
8	1	Setting/Checking Easy Tuning		-2 ~ +2	0	01	Wired remote controller (1 time use)
0	1	Reset to default value of user setting mode (except current time)		0-No reset, 1-Reset	0	01	Wired remote controller (1 time use)

1)* In case of duct type indoor unit, you can use wireless remote controller using IR receiver of this wired remote controller without "Display and receiver kit"

Service mode

▶ How to set
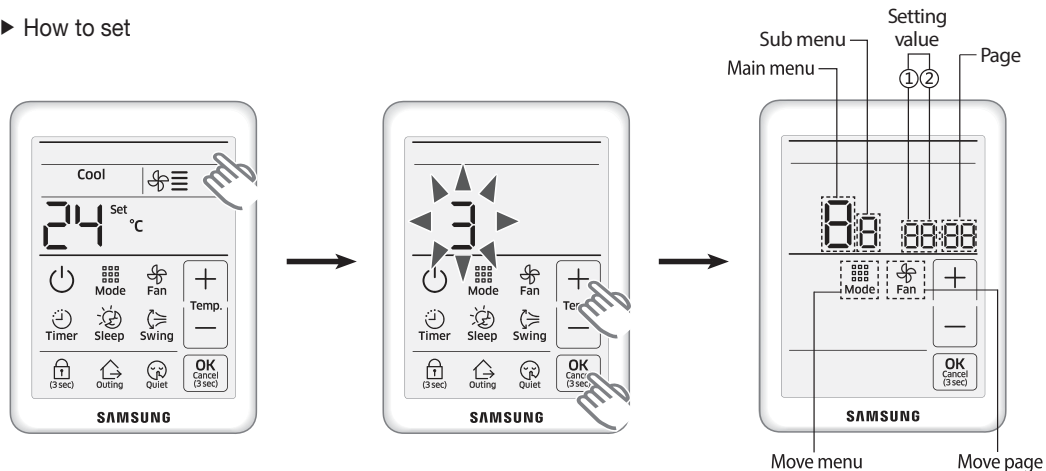
(1) If you want to use the various additional functions for your wired remote controller, press the top right corner (hidden button) of the display for more than 3 seconds and drop it. Then you can press [+]/[-] buttons and select No.3 and press [OK] button.

- You will enter the additional function settings, and the main menu will be displayed.
- If you select the other number and press [OK] button, then you can go back to the normal display.

(2) Refer to the list of additional functions for your wired remote controller on the next page, and select the desired menu.

- Using the [+]/[-] buttons, select a main menu number and press the [Mode] button to enter the sub-menu setting screen.
- Using the [+]/[-] buttons, select a sub menu number and press the [Mode] button to enter data setting screen.
- Using the [+]/[-] buttons, select the settings.
- Press the [Fan] button to select page.
- Press the [OK] button to save the current settings. the [OK] button is invalid on the main menu or sub menu setting screen.
- Press the [Cancel] button for more than 3 seconds to exit to normal mode without saving settings.

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I Individual control systems

3. Wired remote controller

③ *MWR-SH10N*

4) Option function

Service mode

▶ How to set

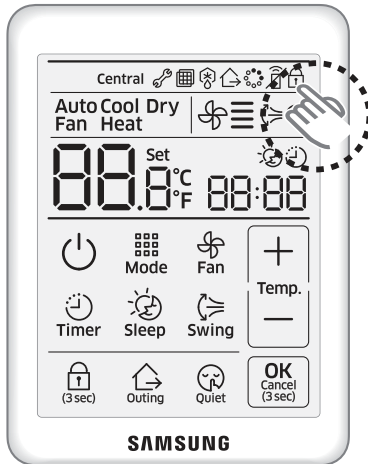| Main menu	Sub menu	Function description		Setting value		Page	Save location
				Value	Factory default		
1	1	Wired remote controller setting/ checking (1)	Cooling/Heating selection	0 - Cooling/Heating, 1 - Cooling only	0	01	Wired remote controller
			Use of wireless remote controller for indoor unit	0 - No use, 1 - Use	1	02	Wired remote controller
			Master/Slave wired remote controller	0 - Master, 1 - Slave	0	03	Wired remote controller
			Temperature unit	0 - Celsius(°C), 1 - Fahrenheit(°F)	0	04	Wired remote controller
	2	Wired remote controller setting/ checking (2)	Temperature sensor selection	0 - Indoor unit, 1-Wired remote controller	0	01	Wired remote controller
			Use of average temperature	0 - No use, 1 - Use	0	02	Wired remote controller
			Use of Auto mode	0 - No use, 1 - Use	1	03	Wired remote controller
			Temperature display	0 - Set temperature 1 - Room temperature 2 - Relative temperature 1)*	0	04	Wired remote controller
	5	Room temperature compensation 2)*	Temperature control reference	-9 ~ 40 °C (15.8 ~104 °F)	Current sensor temperature	01	Wired remote controller
			Temperature compensation value	-9.9 ~ 9.9 °C (14.2 ~49.8 °F)	0	02,03	Wired remote controller
	6	Number of connected units	Number of indoor units	0 ~ 16	0	01	None
	7	Temperature increment/decrement unit (°C only)		0 - 1 °C, 1 - 0.5 °C, 2 - 0.1 °C	0	01	Wired remote controller
	0	Factory option setting		0 - Unchanged, 1 - Factory setting	0	01	None
2	1	Software code		Software code	None	01~03	None
	2	Software version		Software version	None	01~03	None
4	1	Indoor unit address/ option setting/ checking 3)*	Target address setting	Target address of indoor unit (Example : 20 02 1F)	View master	01~03	None
	2		Main address setting/checking	0~4F (in hexadecimal digits)	Main address of target	01	None
	3		RMC address setting/checking	0x00~0xFE 4)*	RMC address of target	01	None
	4		Basic option setting/checking	Option code	Basic option of target	01~20 5)*	None
	5		Install option setting/checking	Option code	Install option of target	01~20 5)*	None
	6		Install(2) option setting/checking	Option code	Install(2) option of target	01~20 5)*	None

1)✳ Relative temperature means that the wired remote controller only displays the temperature increase or decrease (± 3) compared to the reference temperature. Reference temperature is determined by other controller's desired temperature setting.

(Example : DMS set 24 °C (75 °F) → 24 °C (75 °F) is reference temperature. Wired remote controller displays it as '0')

2)✳ Only the Celsius temperature unit is allowed when this function setting and checking in the service mode. For the Fahrenheit temperature, you need temperature conversion before this function setting and checking by the Celsius temperature unit.

3)✳ When setting the address/option, you can set the target indoor unit by selecting sub menu 1.

System reset

Central

Auto Cool Dry
Fan Heat

Set
℃
℉

Mode Fan Temp. +

Timer Sleep Swing

(3 sec) Outing Quiet OK Cancel (3 sec)

SAMSUNG

Press the top right corner (hidden button) of the display for more than 7 seconds.

• Your wired remote controller will be initialized, and the device will search for the indoor units connected to your wired remote controller again.

Outing operation

Outing function keeps minimum cooling/heating temperature of indoor on your absence.

1. Press the [Outing] button.
   • Outing indicator will be displayed.
2. When an air conditioner is turned off,
   • If indoor temperature has 5°C(9°F) difference with desired outing temperature, the air conditioner will be turned on automatically.
   • If indoor temperature is same as desired outing temperature, the air conditioner will be turned off automatically.
   • it is repeated depending on indoor temperature within 12 hours, and then outing function is canceled.

[Ex. Cooling]

Outing activating Temp.

Turn ON

△T=5°C

Room Temp.

Desired outing Temp. (User mode)

Temperature
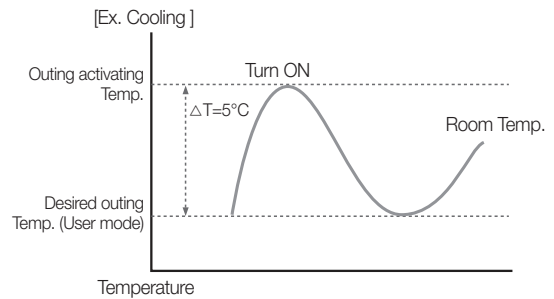
■ You can use outing function in only cool/heat mode.
■ The outing function will be active when indoor unit is turned off.
■ The outing function operates with low fan speed.
■ If there is any input button on your wired remote controller, outing function will be canceled.
■ If your indoor unit's status is changed, outing function will be canceled.
■ You can set the desired outing temperature on the user setting mode.
  <Outing temperature setting range>
  • Cool mode : 25~30°C (77~86°F), default : 27 °C (81°F)
  • Heat mode : 16~22°C (61~72°F), default : 16 °C (61°F)
■ You can use the outing function in the master wired remote controller. The slave wired remote controller just displays it for a outing function status of the master wired remote controller.
  • Press the [Outing] button on the slave wired remote controller, then the 🔒 will blink.
■ The outing function operation will be canceled if you change the master/slave setting on your wired remote controller.

I Individual control systems

3. Wired remote controller

③ *MWR-SH10N*

4) Option function

■ Errors displayed

Error codes for the wired remote controller and the indoor units connected to your wired remote controller will be displayed in the LCD display.
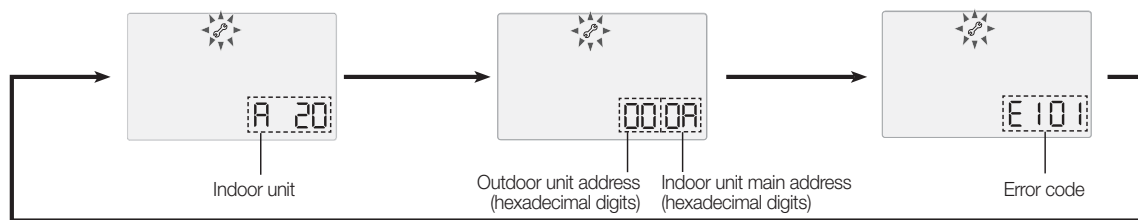
LCD Display

■ **When an error occurs in your indoor/outdoor units (product group display : A)**

• The product address for the error will be displayed, followed by the error code.

Example : Error 101 occurs for Indoor Unit no. 10 (decimal digits)

| Indoor unit | Outdoor unit address (hexadecimal digits) | Indoor unit main address (hexadecimal digits) | Error code |

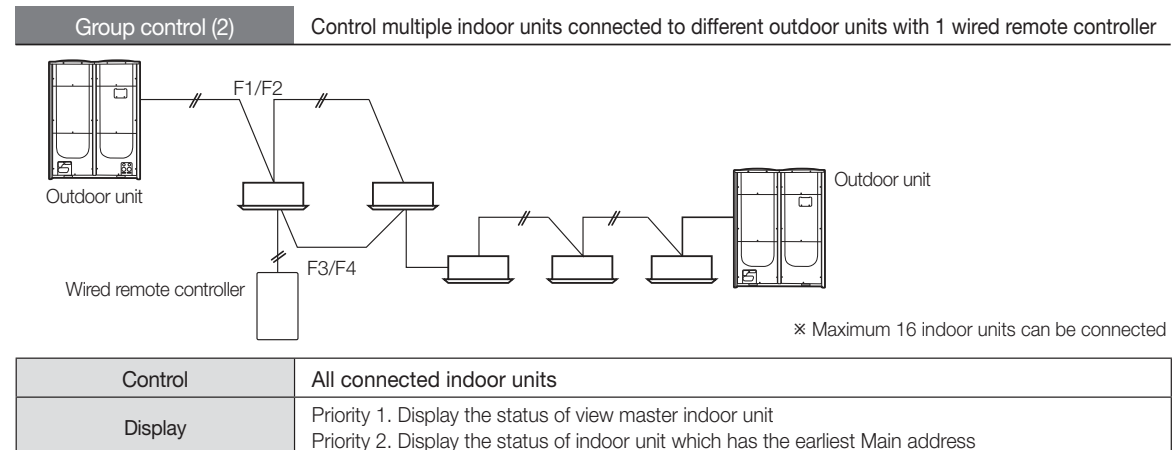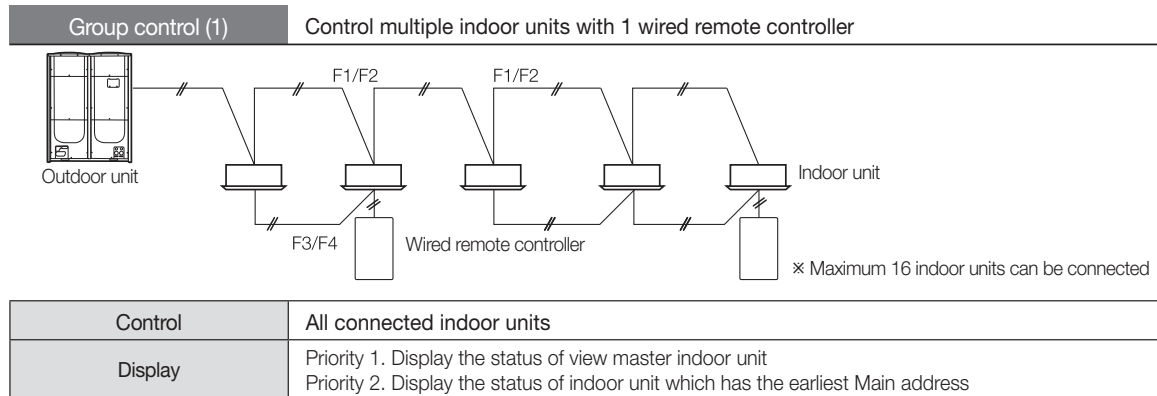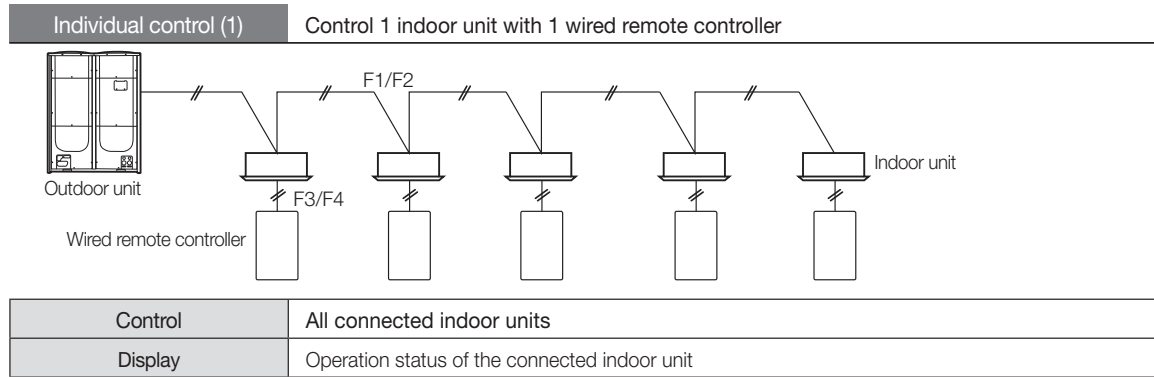■ **When an error occurs in your wired remote controller**

• Only an error code will be displayed. (No address will be displayed.)

Example : Error 601 has occurred at your wired remote controller.
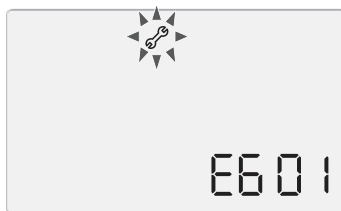
No.	Error code	Description of the error	Remarks
1	601	• Communication error between wired remote controller and indoor units (When communication is lost for over 3 minutes after detecting the indoor unit and the wired remote controller)	-
2	602	• No communication between Master(Main) and Slave(Sub) wired remote controllers	-
3	604	• No communication between wired remote controller and indoor units (Including communication error between indoor units and outdoor units)	-
4	618	• Exceeded maximum number of indoor unit connection (16 indoor units) • Reset is required after checking the number of indoor units	-
5	627	• Two or more wired remote controllers set as slave(sub)	-
6	653	• Temperature sensor open/short error	-
7	654	• EEPROM error	-

5) Communication diagram

| Individual control (1) | Control 1 indoor unit with 1 wired remote controller |

F1/F2

Outdoor unit

Indoor unit

F3/F4

Wired remote controller

Control	All connected indoor units
Display	Operation status of the connected indoor unit

| Group control (1) | Control multiple indoor units with 1 wired remote controller |

F1/F2   F1/F2

Outdoor unit

Indoor unit

F3/F4   Wired remote controller

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

| Group control (2) | Control multiple indoor units connected to different outdoor units with 1 wired remote controller |

F1/F2

Outdoor unit

Outdoor unit

F3/F4

Wired remote controller

※ Maximum 16 indoor units can be connected

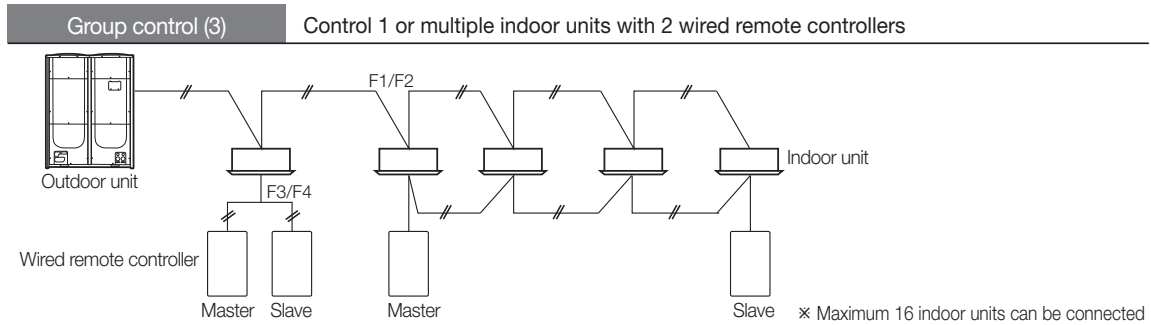| Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.
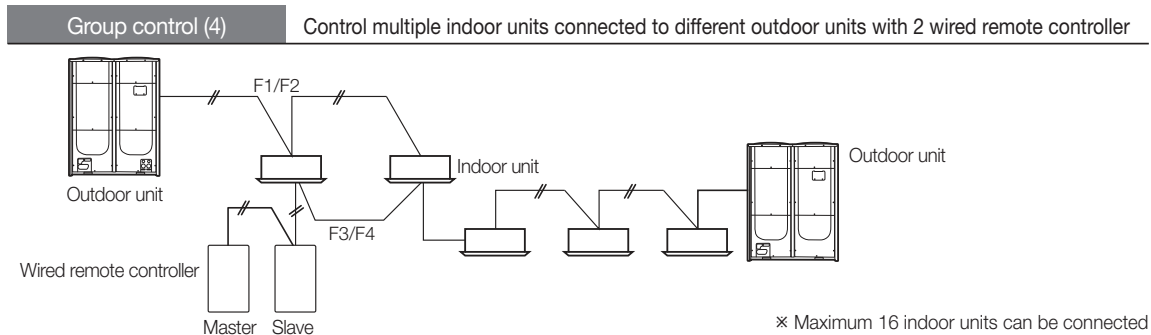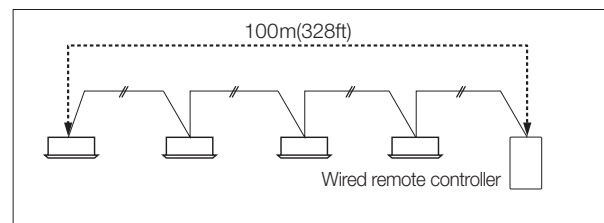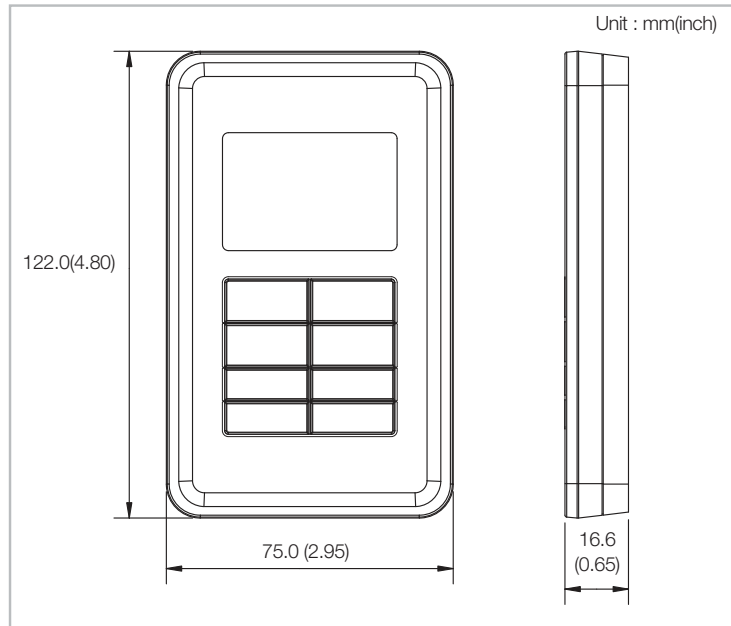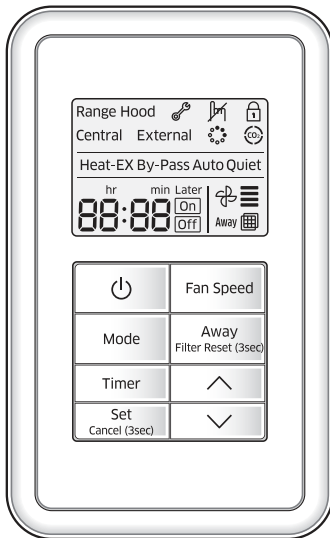
I Individual control systems

3. Wired remote controller

③ *MWR-SH10N*

6) Communication diagram

| Group control (3) | Control 1 or multiple indoor units with 2 wired remote controllers |

Outdoor unit
F1/F2
F3/F4
Indoor unit
Wired remote controller
Master Slave   Master   Slave

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✳ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

| Group control (4) | Control multiple indoor units connected to different outdoor units with 2 wired remote controller |

Outdoor unit
F1/F2
Indoor unit
Outdoor unit
F3/F4
Wired remote controller
Master Slave

※ Maximum 16 indoor units can be connected

Control	All connected indoor units
Display	Priority 1. Display the status of view master indoor unit Priority 2. Display the status of indoor unit which has the earliest Main address ✳ Two wired remote controllers identically display the operation status of the indoor unit according to above priority.

▶ Caution

When controlling group of indoor units connected to different outdoor unit, address of the each outdoor unit must be set differently.

Max. distance between the farthest indoor unit and wired remote controller : 100m(328ft)

100m(328ft)

Wired remote controller

4. ERV wired remote controller

❏ *MWR-VH12N*

1) Features

Unit : mm(inch)

122.0(4.80)

75.0 (2.95)

16.6
(0.65)

Range Hood
Central   External
Heat-EX By-Pass Auto Quiet
hr   min Later
88:88 On Off Away

- Wired remote controller for ERV
- ERV operation ON/OFF control
- Fan speed control
- Operation mode setting
- Filter replacement alarm reset
- Outing mode
- Simple On/Off timer

2) Product specification

Power supply	DC 12 V
Power consumption	1.5 W
Operating temperature range	0 °C~40 °C (32°F~104°F)
Operating humidity range	30 % RH~90 % RH
Communication	2-wire PLC
Maximum length of connection	100 m (328 ft)
Maximum number of controllable devices	16 ERVs

Compatible product

ERV	New communication ERV only

I Individual control systems

4. ERV wired remote controller

❏ *MWR-VH12N*

3) Description of parts

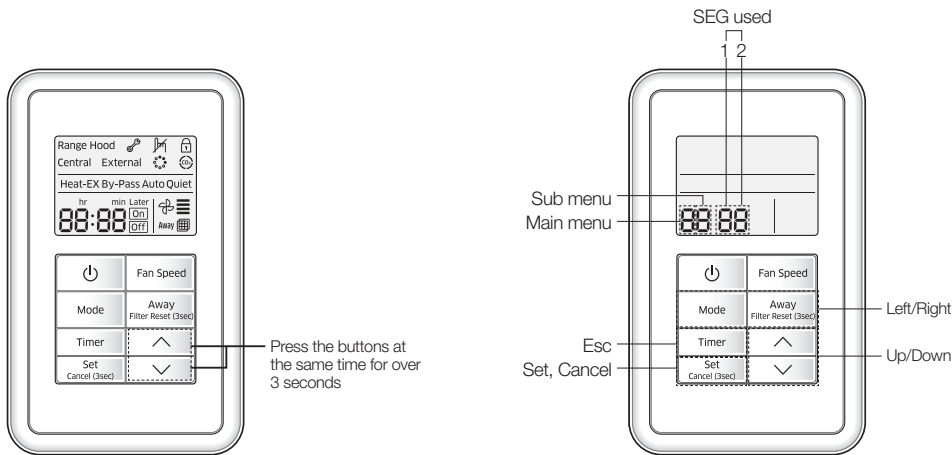| No.	Name	Description
①	Operation mode indicator	Indicates current operation mode when the ERV is operating. (Heat-EX/By-Pass/Auto/Quiet)
②	Timer indicator	On Indicates when On timer is set. Off Indicates when Off timer is set. hr min Later ① Timer mode – Displays the set time for On/Off timer. (Min. 30 minutes~Max. 24 hours) ② General mode – Displays remaining time before Timer function will execute.
③	Outing mode indicator	Indicates when outing mode is on.
④	Filter cleaning (period) indicator	Indicates when preset filter cleaning is required.
⑤	Fan speed indicator	Indicates current fan speed settings.
⑥	S-Plasma ion(SPI) indicator (optional)	Indicates when S-Plasma ion(SPI) function is on.
⑦	CO2 sensor indicator (optional)	Indicates indoor CO_2 density when the sensor is on. (If the ERV is operating.)
⑧	Inspection/Lock/Restricted indicator	Indicates that inspection is required. Indicates when an unavailable function which is not supported by indoor units is selected or when the button is locked. Indicates when all buttons are locked.
⑨	Exhaust hood/Centralized/External interlocking control indicator	Indicates when Exhaust hood/Centralized/External interlocking control is on.
⑩	On/Off button	To turn ERV on or off
⑪	Operation mode button	To select an operation mode (Heat-EX → By-pass → Auto → Quiet) ✻ Available operation mode is according to ERV View master.
⑫	Timer button	To set simple on/off timer or external interlocking delay
⑬	Set/Cancel button	To set or cancel the option ✻ Press and hold the button for over 3 seconds to cancel the timer.
⑭	Fan speed button	To select the fan speeds of indoor units ✻ Available fan speed differs depending on the operation mode in the following order; Low → Medium → High → Turbo → Auto.
⑮	Outing/Filter reset button	① To turn the outing mode on or off ② To turn the filter cleaning display off ✻ Press and hold the button for over 3 seconds to turn off the filter cleaning display.
⑯	Time adjustment button	To move to the last or the next items or change the set value ① Press the button to increase or decrease the set time during the timer is set. ✻ Up to 3 hours : Increase/decrease by 30 minute unit ✻ Over 3 hours : Increase/decrease by 1 hour unit ② Press the button to increase or decrease the set time during external interlocking delay is set. ✻ Set the time by 1 minute unit between 30 minutes and 1 hour.
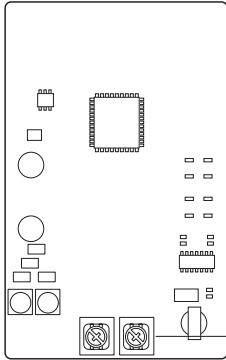
PCB

No.	Name	Description
①	Power/communication connection terminal	Connect to indoor unit (F3/F4)

4) Option function

User setting mode

▶ How to set

SEG used
1 2

Sub menu
Main menu

Esc
Set, Cancel

Left/Right
Up/Down

Press the buttons at
the same time for over
3 seconds

• SEG is divided as page according to displaying operation mode, [On], [Off] icon.

PAGE 1   PAGE 2   PAGE 3   PAGE 4   PAGE 5

Heat-EX   →   By-Pass   →   Auto   →   Quiet   →

00 On   00 On   00 On   00 On   00 On Away   →

PAGE 6   PAGE 7   PAGE 8   PAGE 9   PAGE 10

Heat-EX   →   By-Pass   →   Auto   →   Quiet   →

00 Off   00 Off   00 Off   00 Off   00 Off Away
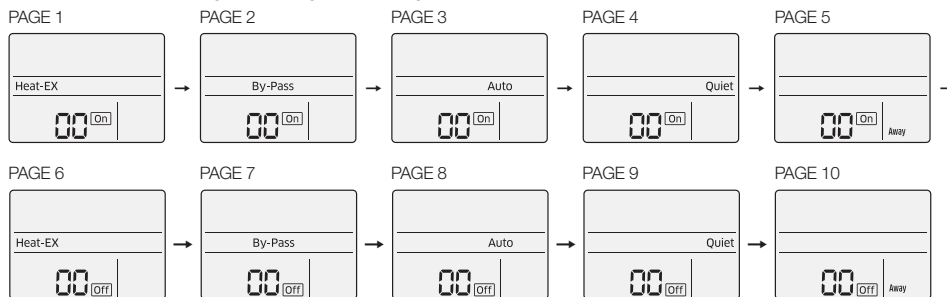
Main menu	Sub menu	Function		Default	SEG in use	Range	Remarks
0	1	Reset User mode to default value		0	1	0 - Disabled, 1 - Reset	
1	1		Lock all	0	1	0 - Unlock, 1 - Lock	
	2	Partially lock buttons	Lock On/Off button	0	1	0 - Unlock, 1 - Lock	
	3		Lock Mode button	0	1	0 - Unlock, 1 - Lock	
	4		Lock Fan speed button	0	1	0 - Unlock, 1 - Lock	
	5		Lock Timer button	0	1	0 - Unlock, 1 - Lock	

I Individual control systems

4. ERV wired remote controller

❑ *MWR-VH12N*

4) Option function

■ Service mode

▶ How to set

SEG used
1 2

Sub menu
Main menu

Press the buttons at the same time for over 3 seconds

Esc
Set, Cancel

Left/Right
Up/Down
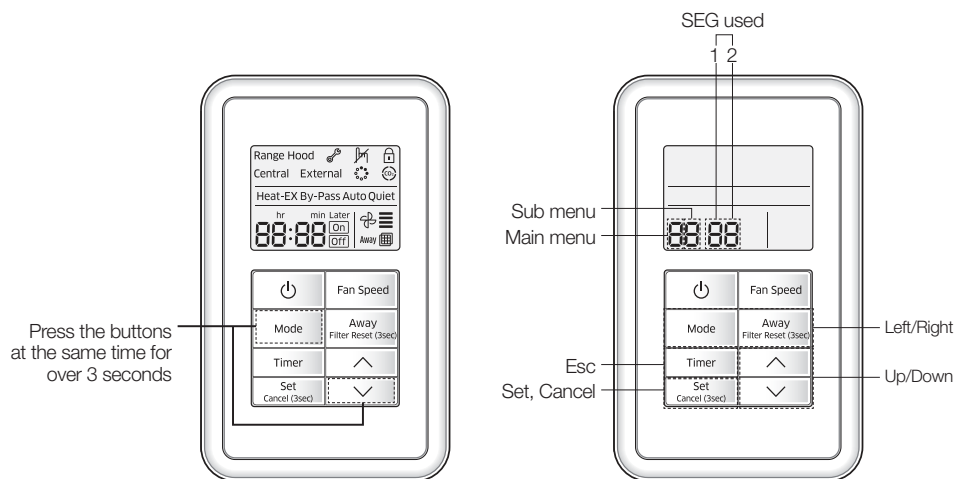
Main menu	Sub menu	Function		Default value	SEG in use	Range	Remarks
0	1	Reset	Reset the option setting of ERV wired remote controller to dafault value	0	1	0 - Disabled, 1 - Reset	
	2		Reset ERV wired remote controller to factory default	0	1	0 - Disabled, 1 - Reset	
	3		Power Master Reset[2]*	0	1	0 - Disabled, 1 - Reset	
	4		Addressing Reset	0	1	0 - Disabled, 1 - Reset	
1	1	ERV wired remote controller information	Check the number of connected indoor units	0	1	0~16	
	2		Check the number of connected ventilators(ERV)	0	1	0~16	
	3		Check the MICOM code of ERV wired remote controller	0	Page 1~3	MICOM code	
	4		Check the software version of ERV wired remote controller	0	Page 1~3	Updated date	
2	1	Address/option setting[1]*	Setting (Target)	ERV View Master	Page 1~3	Address of registered device Hexadecimal number[4]*	
	2		Check/Set main address	Main address of the target	1	Main address (00H~4FH, Hexadecimal digits)	
	3		Check/Set RMC address	RMC address of the target	1	Group address (00H~4FH, Hexadecimal digits)[3]*	
	4		Check/set the product option	Product option of the target	Page 1~10	Option code of indoor units or ventilators	
	5		Check/Set installation option (1)	Installation option 1 of the target	Page 1~10	Refer to installation manuals of connected indoor units or ventilations	
	6		Check/Set installation option (2)	Installation option 2 of the target	Page 1~10	Refer to installation manuals of connected indoor units or ventilations.	

Main menu	Sub menu	Function		Default value	SEG in use	Range	Remarks
3	1	Check/Set view master	Check/Set indoor unit view master	Indoor unit view Master	Page 1~3	Address of registered device Hexadecimal number[4]*	No function
	2		Check/Set ERV view master	ERV view master	Page 1~3	Address of registered device Hexadecimal number[4]*	
4	1	Check/Set option function of ERV wired remote controller	Setting Master/Slave ERV wired remote controller	0	1	0 - Master, 1 - Slave	
	2		Setting external interconnection control usage	0	1	0 - No use, 1 - Use	
5	1	Check/Set ventilator (ERV)	Air exhaust RPM	none	Page 1~2	0~9999	
	2		Air intake RPM	none	Page 1~2	0~9999	
	3		Indoor temperature	none	1	0~99	
	4		Outdoor temperature	none	1	0~99	
	5		Indoor humidity	none	1	0~99	
	6		Outdoor humidity	none	1	0~99	
	7		CO_2 sensor	none	Page 1~2	0~9999	
	8		FAN Step[5]*	none	1	0~31	

1)* You must select the targeted device in the sub menu 1 and then set the address/option.

2)* Power Master Reset is a setting for supplying the most stable power to the ERV wired remote controller when the controller is connected to multiple indoor units or ventilators as a group.

3)* RMC(1) : 0~F / RMC(2) : 0~F (Hexadecimal digits)
    RMC(2) can be set up to E only when RMC(1) is set as F.
    (RMC(1) : Group channel, RMC(2) : Group address)

4)* Displays ventilator address (Hexadecimal digits)
    Ex) 30 00 0B : 0B is ERV Main address.

5)* Fan Step can be set when only one ventilator is connected.

System reset

- Reset the power of the ERV wired remote controller.

Press and hold for over 5 seconds to power reset
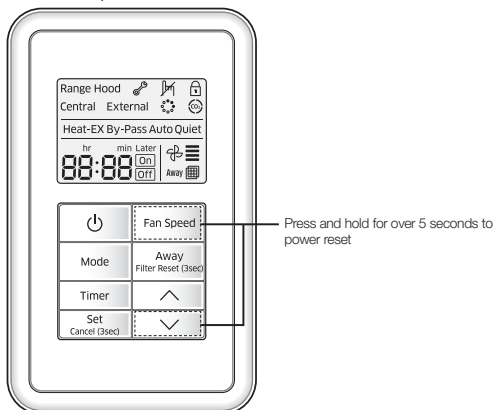
I Individual control systems

4. ERV wired remote controller

❑ *MWR-VH12N*

5) Display

▊rror display

Error codes for the ERV wired remote controller and the product connected to it will be displayed on the LCD display.

▶ When an error occurs in your indoor/outdoor units (Product group display : A20)

• Address of the product with error and the error code will be displayed alternately.
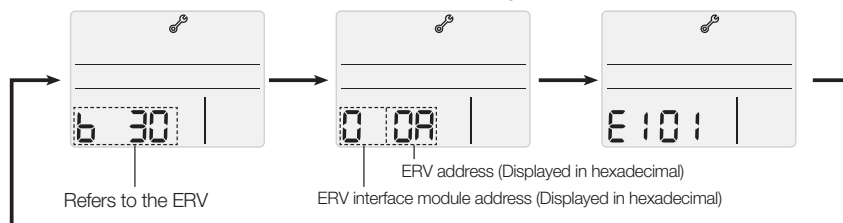
Example : Error 101 occurs for indoor unit No. 10 (Decimal digits)

A 20   →   0 0A   →   E101

Refers to the indoor unit

Indoor unit address
(Displayed in hexadecimal)
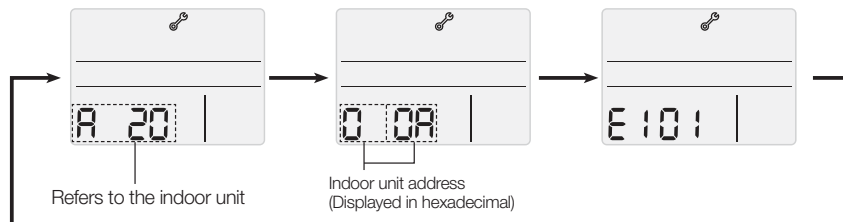
▶ When an error occurs in your ventilator(ERV) and ERV interface module (Product group display : b30)

• Address of the product with error and the error code will be displayed alternately.

Example : Error 101 occurs for ventilator(ERV) No. 10 (Decimal digits)

b 30   →   0 0A   →   E101

Refers to the ERV

ERV address (Displayed in hexadecimal)
ERV interface module address (Displayed in hexadecimal)

▶ When an error occurs in your ERV wired remote controller

• Only an error code will be displayed. (No address will be displayed.)

Example : Error 601 has occurred at your ERV wired remote controller.

E601
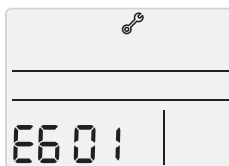
▊rror codes

Display	Description
604	• Tracking error between ERV wired remote controller and ventilator(ERV) for over 3 minutes
609	• No indoor unit installed for interlocking function
618	• Over 16 ERV/indoor units installed • The ERV wired remote controller must be reset after checking the number of installed ERV/indoor units
627	• Installation error in Slave ERV wired remote controller (When two or more slave ERV wired remote controllers are installed)
602	• No communication between Master and Slave wired remote controllers
601	• Communication error between ERV wired remote controller and ERV/indoor units (When there's no communication between the devices for 3 minutes after successful ERV wired remote controller tracking)
654	• EEPROM error

## 6) Connection diagram

Individual control	1 ERV, 1 wired remote controller

ERV

ERV

ERV

COM2(F3, F4)

COM2(F3, F4)

COM2(F3, F4)

ERV wired remote controller

ERV wired remote controller

ERV wired remote controller

Control	All connected ERVs
Display	Status of connected ERVs

Group control (1)	Control multiple ERVs with single wired remote controller

ERV

ERV

ERV

COM2(F3, F4)

COM2(F3, F4)

ERV wired remote controller

Control	All connected ERVs
Display	Priority 1. Display the operation status of View Master ERV Priority 2. Display the operation status of ERV which has the earliest Main address

Group control (2)	Control multiple ERVs connected to different ERV interface modules with single wired remote controller

ERV interface module

COM1(F1, F2)

ERV

ERV interface module

COM2(F3, F4)

COM1(F1, F2)

ERV

ERV wired remote controller

COM2(F3, F4)

Control	All connected ERVs
Display	Priority 1. Display the operation status of View Master ERV Priority 2. Display the operation status of ERV which has the earliest Main address

I Individual control systems

4. ERV wired remote controller

☐ *MWR-VH12N*

6) Connection diagram

| Mixed installation | Connect indoor units and ERVs to a single ERV wired remote controller |
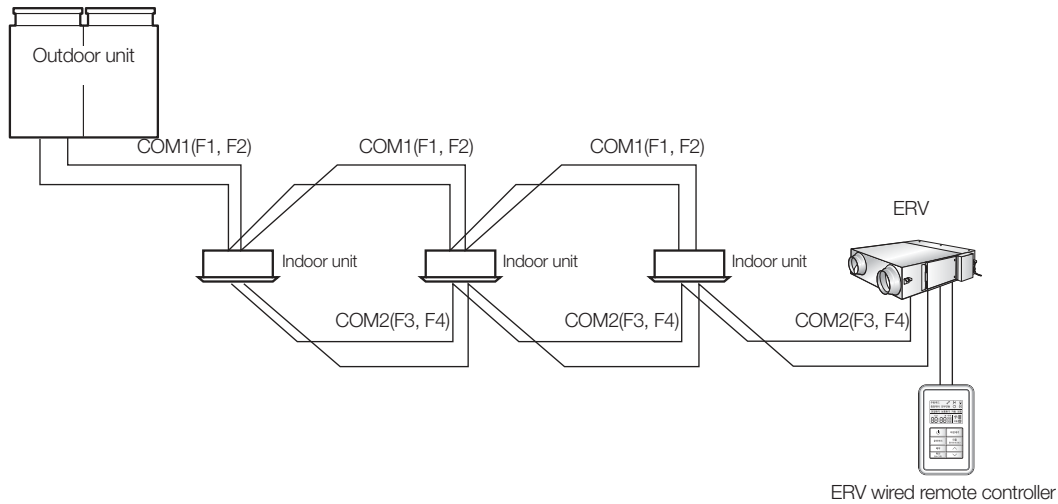
ERV wired remote controller

Control	All connected ERVs
Display	Priority 1. Display the operation status of View Master ERV Priority 2. Display the operation status of ERV which has the earliest Main address

▶ Caution

- Connect the devices as the above diagram for external interlocking control which interlock ERV On/Off with indoor unit On/Off.
- ERV wired remote controller cannot control indoor units.
- ERV wired remote controller and wired remote controller for indoor units cannot be connected at the same time. (AWR-WE10N etc.)

Maximum length of connection

Max. distance between the farthest ERV and wired remote controller : 100m (328ft)
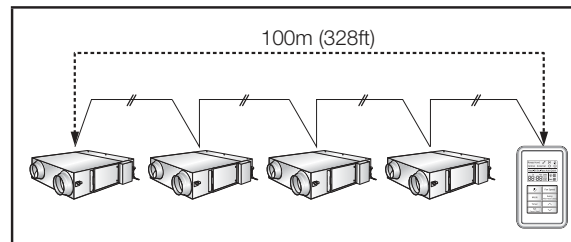
100m (328ft)

II. Centralized control systems

CENTRALIZED
CONTROL SYSTEMS

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II Centralized control systems

1. Interface module

❑ *MIM-N01*

1) Features
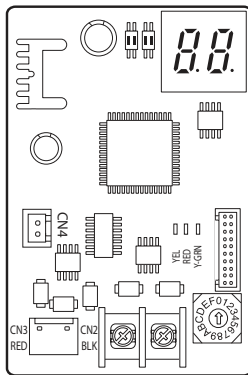
- Communication interface module between outdoor units and the upper level controller which has different communication type
- Connect 1 interface module to 1 outdoor unit
- Individual control - Maximum 48 indoor units
- Group control - Maximum 16 groups
- Detecting communication type automatically: Judge the communication type of upper level controller according to communication type of the outdoor unit
- Supported communication type
  1) Conventional communication outdoor unit ↔ New communication upper level controller
  2) New communication outdoor unit ↔ Conventional communication upper level controller
  ✻ This interface module does not support connection between
  Conventional communication outdoor unit ↔ Conventional communication upper level controller /
  New communication outdoor unit ↔ New communication upper level controller

Unit : mm(inch)

50(1.96)

80(3.14)

2) Product specification

Power Supply	DC12V
Power Consumption	2.4 W
Operating Temperature range	-10 °C~50 °C (14°F~122°F)
Operating Humidity range	10%RH~90%RH
Communication	RS485 x 2
Max.Communication Length	1000 M (3280 ft)
Maximum number of connection	1) New communication outdoor unit ↔ Conventional communication upper level controller • F1/F2 : 1 outdoor unit • R1/R2 : 1 upper level controller 2) Conventional communication outdoor unit ↔ New communication upper level controller • F1/F2 : 1 outdoor unit • R1/R2 : Total up to 16 upper level controllers (Only 1 DMS(2.0/2.5), BACnet/Lonworks Gateway connection is allowed)

Compatible Models

(1) New communication outdoor unit ↔ Conventional communication upper level controller

Outdoor unit	AM✳✳✳✳X✳✳✳✳✳✳
Upper level controller	① OnOff controller : MCM-A202D ② DMS2 : MIM-D00A ③ BACnet Gateway : MIM-B17 ④ Lonworks Gateway : MM-B18 ⑤ S-NET mini : MST-S3W

※ Function controller and S-NET 2 Plus are not supported.

- New communication Outdoor unit + MIM-N01 + MCM-A202D + Function controller (X)
- New communication Outdoor unit+ MIM-N01 + MCM-A202D + S-NET 2 Plus (X)

(2) Conventional communication outdoor unit ↔ New communication upper level controller

Outdoor unit	DVM Plus 4, 3, 2, CAC
Upper level controller	① OnOff Controller: MCM-A202DN ② DMS(2.0, 2.5) : MIM-D00AN, MIM-D01AN ③ BACnet gateway : MIM-B17N, MIM-B17BN ④ Lonworks gateway : MIM-B18N, MIM-B18BN ⑤ Touch centralized controller : MCM-A300N

3) Description of parts
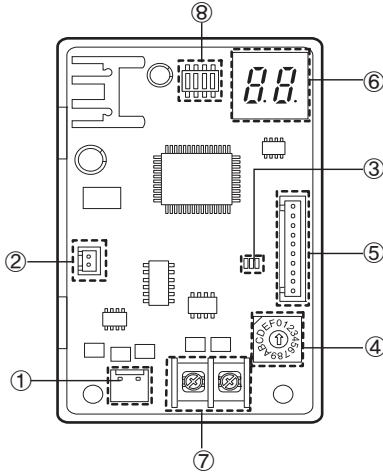
No.	Name	Description
①	F1/F2 communication connector	Communication connector that connects to outdoor unit / F1/F2
②	Power connector	DC 12V
③	Communication LED	Communication indicator LED (Left LED 3 : No function Middle LED 1 : Blinks during it communicates with upper level controller Right LED 2 : Blinks during it communicates with outdoor unit and indoor unit)
④	Address setting switch	Sets the address of interface module
⑤	Software update connector	Using this connector, Interface module software can be updated
⑥	7-segment	Displays the communication status between interface module and outdoor unit/ERV
⑦	Upper level controller communication channel	Communication connection channel to upper level controller R1/R2
⑧	DIP switch	(see sub-table below)

SW1	Description
1	On : Manual address setting / Off : Auto address setting
2	No function
3	No function
4	No function

☑ **Note**

◆ When connecting to the conventional communication controller, address must be set manually regardless to the SW1 setting. When setting the address manually, make sure to set the address that is not assigned to other deivce already.

◆ When connecting to the new communication controller, SW1 must be ON to set the address manually, and make sure to set the address that is not assigned to other compatible interface module or outdoor units.

II Centralized control systems

1. Interface module

□ *MIM-N01*

4) Connection diagram

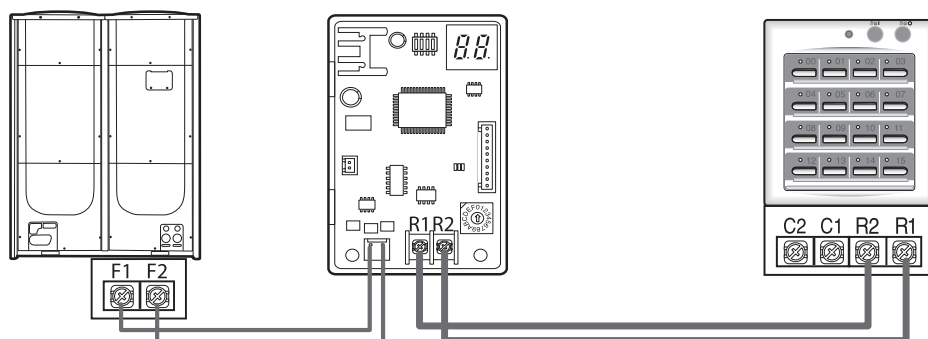N ew communication outdoor unit ↔ Conventional communication upper level controller

C1/C2   C1/C2

Conventional communication

R1/R2   R1/R2   R1/R2   New communication

MIM-N01   MIM-N01   MIM-N01   MIM-N01

F1/F2   F1/F2   F1/F2   F1/F2

C onventional communication outdoor unit ↔ New communication upper level controller

R1/R2

New communication

Conventional communication

MIM-N01   MIM-N01

F1/F2   F1/F2
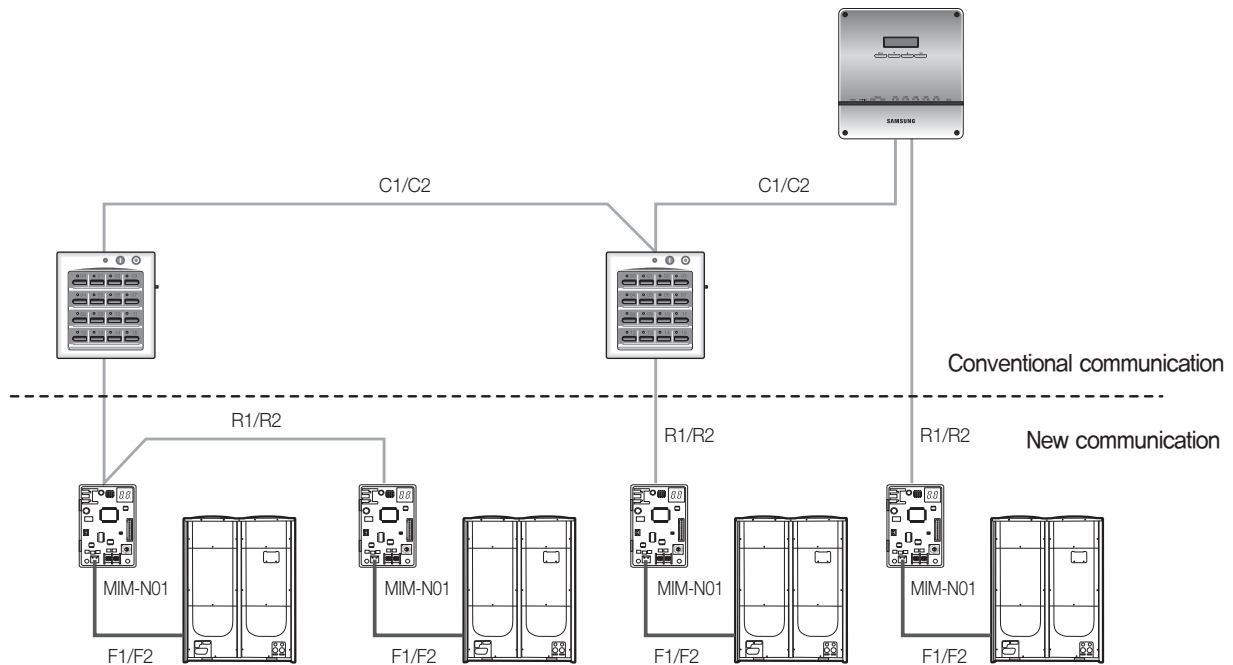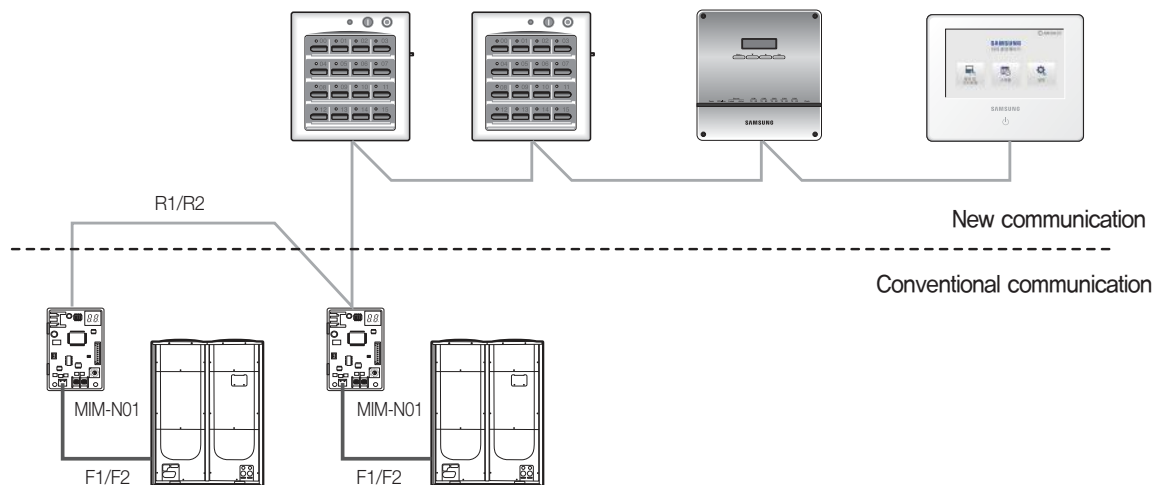
5) Connection

Connecting with OnOff controller

▶ Conventional communication outdoor unit ↔ New communication OnOff controller (MCM-A202DN)

▶ New communication outdoor unit ↔ Conventional communication OnOff controller (MCM-A202D)

Connecting to Touch centralized controller

▶ Conventional communication outdoor unit ↔ New communication Touch centralized controller (ACM-A300N)
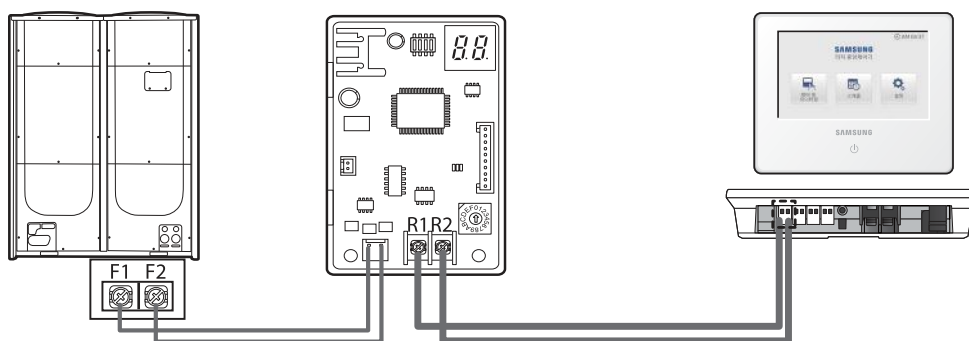
Connecting to DMS / BACnet GW / Lonwoks GW

▶ Conventional communication outdoor unit ↔ New communication DMS2.5 (MIM-D01AN) / BACnet GW (MIM-B17BN) / Lonworks GW (MIM-B18BN)

▶ New communication outdoor unit ↔ Conventional communication DMS2 (MIM-D00A) / BACnet GW (MIM-B17) / Lonworks GW (MIM-B18)
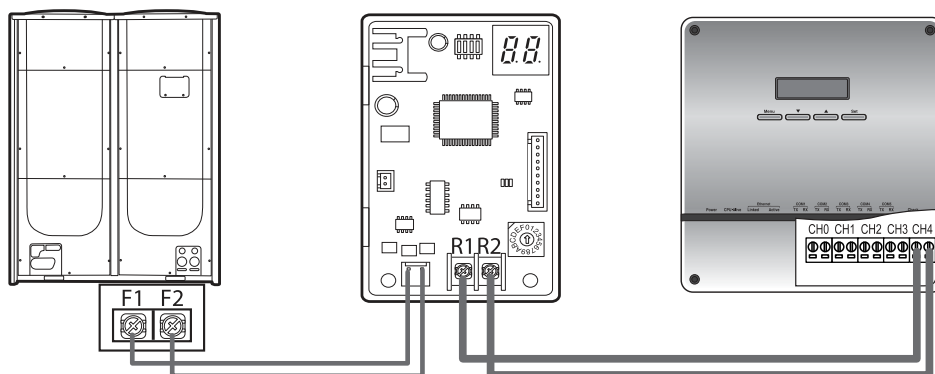
☑ **Note**

◆ When connecting AM✳✳✳✳X✳✳✳✳✳✳ outdoor unit and new communication controller, you don't have to connect them with MIM-N01.
◆ When connecting Conventional communication outdoor unit and controller (ex. MCM-A202D), MIM-B13D or MIM-B13E must be used.

II Centralized control systems

1. Interface module

❑ *MIM-N01*

6) Display

■ Checking the operation

| Software version is displayed after power is supplied | Display the set value of the rotary switch | Display the address of the interface module | Outdoor unit detected during tracking | Tracking completed |

✻ Displays the Main address of the communicating indoor units alternately [Displays the indoor unit that is set as (centralized control)]
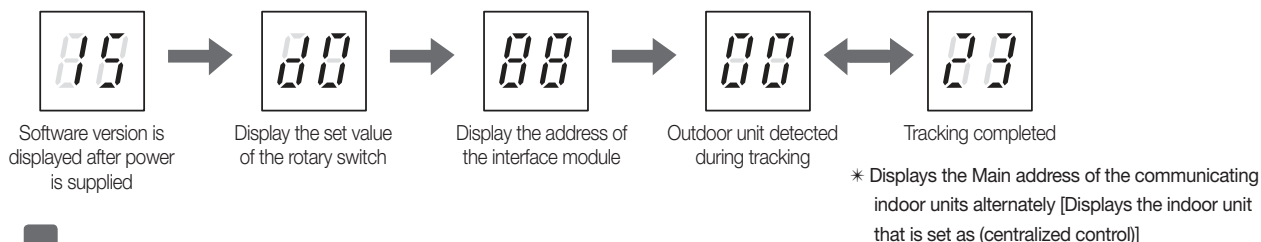
■ Error display

▶ Communication error between outdoor unit and the interface module
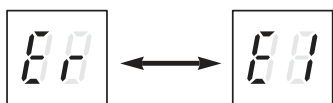
✻ FF will be displayed to the indoor unit that has lost communication during normal communication.

▶ Communication error between upper level controller and the interface module after tracking has been completed

✻ When E1, E2 occurs at the same time, only E1 will be displayed.

▶ Interface module tracking failure

(1) Communication error between conventional communication outdoor unit ↔ New communication upper level controller after tracking has been completed

• It will be displayed after failing 80 times of communication trial after interface module has started tracking (approximately 3 minutes)

(2) Communication error between New communication outdoor unit ↔ Conventional communication upper level controller after tracking has been completed

• It will be displayed after failing the tracking process over 10 minutes from the interface module has started tracking.

▶ When problem occurs on EEPROM

▶ When same address was assigned to more than one interface module (Only detected when new communication upper level controller is connected to conventional communication outdoor unit)
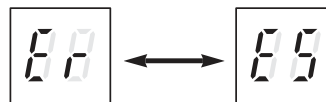
■ Error display table

Error	Display	Error Code	Display on new communication upper level controller	Display on Conventional communication upper level controller
EEPROM	Er-E4	E654	E654	-
Overlapped address	Er-E5	E108	E108	-
Tracking failure	Er-E3	E604	E201	-
Indoor unit communication error	Er-E1	E615	E201 or E101	E615
Outdoor unit communication error	Er-E1	E616	E202	E616
Upper level controller communication error (Conventional type)	Er-E2	-	-	-

2. ERV interface module

❏ *MIM-N10*

1) Features
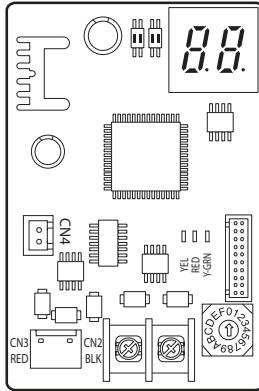
- Communication interface module between new communication ERV and controller
- Connect 1 ERV interface module to Max. 16 ERVs
- Individual control – Maximum 16 ERVs
- Group control – Maximum 16 groups
- Supported communication type
  1) Conventional communication ERV ↔ New communication upper level controller
  2) New communication ERV ↔ Conventional communication upper level controller
  3) New communication ERV ↔ New communication upper level controller
  ※ This interface module does not support connection between Conventional communication ERV ↔ Conventional communication upper level controller

Unit : mm(inch)

50(1.96)

80(3.14)

2) Product specification

Power Supply	DC12V
Power Consumption	2.4 W
Operating Temperature range	-10 °C~50 °C (14 °F~122 °F)
Operating Humidity range	10%RH~90%RH
Communication	RS485 x 2
Maximum Communication Length	1000 M (3280 ft)
Maximum number of connection	1) New communication ERV ↔ Conventional communication upper level controller 　　F1/F2 : 16 ERVs 　　R1/R2 : 1 upper level controller 2) Conventional communication ERV ↔ New communication upper level controller 　　F1/F2 : 16 ERVs 　　R1/R2 : Total up to 16 upper level controllers (Only 1 DMS(2.0/2.5), BACnet GW/ 　　　　　　Lonworks GW connection is allowed) 3) New communication ERV ↔ New communication upper level controller 　　F1/F2 : 16 ERVs 　　R1/R2 : Total up to 16 upper level controllers (Only 1 DMS(2.0/2.5), BACnet GW/ 　　　　　　Lonworks GW connection is allowed)

II Centralized control systems

2. ERV interface module

❏ *MIM-N10*

2) Product specification

Compatible Models

(1) New communication ERV ↔ Conventional communication upper level controller

ERV	New communication ERV
Upper level controller	① OnOff controller : MCM-A202D ② DMS2 : MIM-D00A ③ BACnet GW : MIM-B17 ④ Lonworks GW : MIM-B18 ⑤ S-NET mini : MST-S3W

✽ Function controller and S-NET 2 Plus are not supported.
- New communication ERV+ MIM-N10 + MCM-A202D + Function controller (X)
- New communication ERV + MIM-N10 + MCM-A202D + S-NET 2 Plus (X)

(2) Conventional communication ERV ↔ New communication upper level controller

ERV	Conventional communication ERV (Except mechanical ERV)
Upper level controller	① OnOff Controller: MCM-A202DN ② DMS(2.0, 2.5) : MIM-D00AN, MIM-D01AN ③ BACnet gateway : MIM-B17N, MIM-B17BN ④ Lonworks gateway : MIM-B18N, MIM-B18BN ⑤ Touch centralized controller : MCM-A300N

(3) New communication ERV ↔ New communication upper level controller

ERV	New communication ERV
Upper level controller	① OnOff controller : MCM-A202DN ② DMS(2.0, 2.5) : MIM-D00AN, MIM-D01AN ③ BACnet GW : MIM-B17N, MIM-17BN ④ Lonworks GW : MIM-B18N, MIM-18BN ⑤ S-NET mini : MST-S3W

3) Description of parts

No.	Name	Description
①	F1/F2 communication connector	Communication terminal that connects to outdoor unit / F1/F2 of ERV
②	Power connector	DC12V
③	Communication LED	Communication indicator LED (Left LED 3 : No function Middle RED : Blinks during it communicates with upper level controller Right Y-GRN : Blinks during it communicates with ERV)
④	Address setting switch	Sets the address of interface module
⑤	Software update connector	Using this connector, Interface module software can be updated
⑥	7-segment	Displays the communication status between interface module and ERV
⑦	Upper level controller communication channel	Communication terminal to upper level controller R1/R2
⑧	DIP switch	SW4 SW5 SW5 - No use (see table below)

SW5 - No use

SW4		Description
1		OFF (Auto address setting, switch must be down)
		ON (Manual address setting, switch must be up)
2		OFF (New communication upper level controller ↔ Conventional communication ERV) (Conventional communication upper level controller ↔ New communication ERV)
		ON (New communication upper level controller ↔ New communication ERV)

✽When upgrading the program, SW4-2 must be set to ON status before proceeding upgrade regardless of the installation condition.

- After completing the download, set the DIP switch #2 correctly according to installation condition before supplying the power.

☑ *Note*

♦ When connecting to the conventional communication controller, address must be set manually regardless to the SW1 setting. When setting the address manually, make sure to set the address that is not assigned to other deivce already.

♦ When connecting to the new communication controller, SW1 must be ON to set the address manually, and make sure to set the address that is not assigned to other compatible interface module or outdoor units.
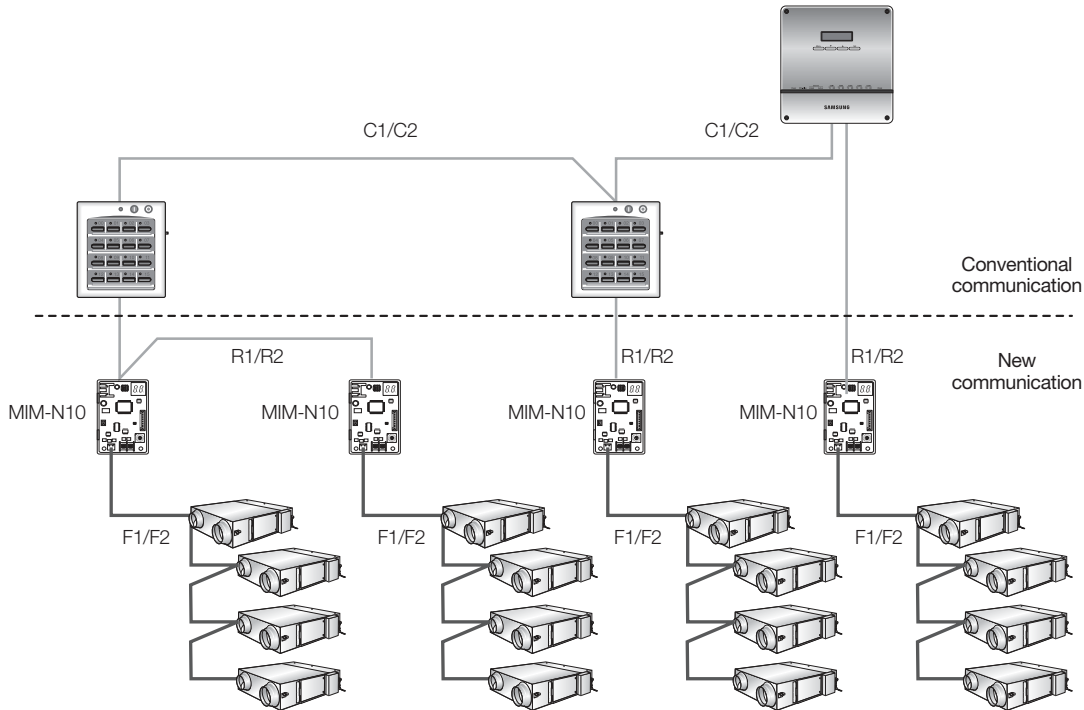
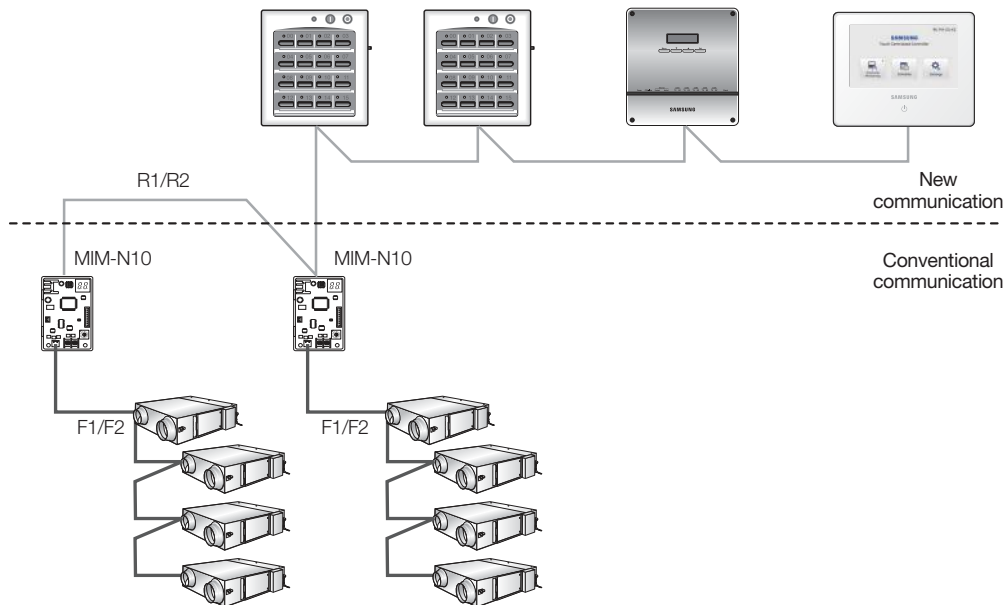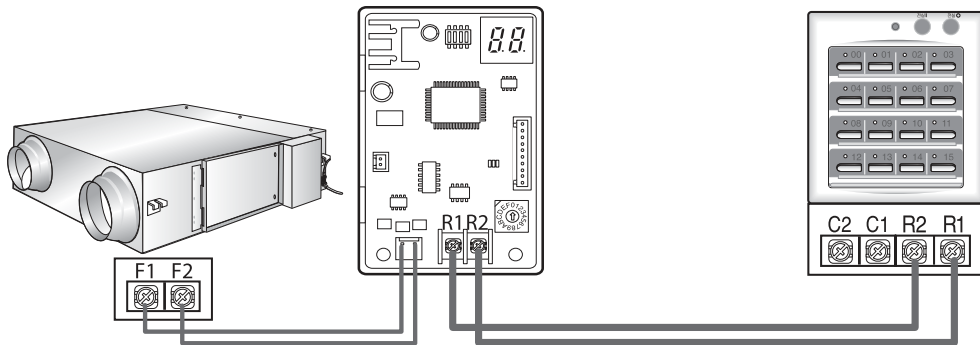# II Centralized control systems

2. ERV interface module

❏ *MIM-N10*

4) Connection diagram

N ew communication ERV ↔ Conventional communication upper level controller

C1/C2   C1/C2

Conventional
communication

R1/R2   R1/R2   R1/R2   New
communication

MIM-N10   MIM-N10   MIM-N10   MIM-N10

F1/F2   F1/F2   F1/F2   F1/F2

C onventional/new communication ERV ↔ New communication upper level controller

New
communication

R1/R2

Conventional
communication

MIM-N10   MIM-N10

F1/F2   F1/F2

5) Connection

Connecting with OnOff controller

▶ Conventional communication ERV ↔ New communication OnOff controller (MCM-A202DN)

▶ New communication ERV ↔ Conventional communication OnOff controller (MCM-A202D)

F1 F2   R1 R2   C2 C1 R2 R1

☑ *Note*

• When connecting conventional communication ERV and OnOff controller(MCM-A202D), MIM-B13D or MIM-B13E must be used.

II Centralized control systems

2. ERV Interface module

  ❑ *MIM-N10*

5) Connection

  ▌Connecting with Touch centralized controller

  ▶ Conventional communication ERV ↔ New communication Touch centralized controller (MCM-A300N)
  ▶ New communication ERV ↔ Conventional communication Touch centralized controller (MCM-A300N)
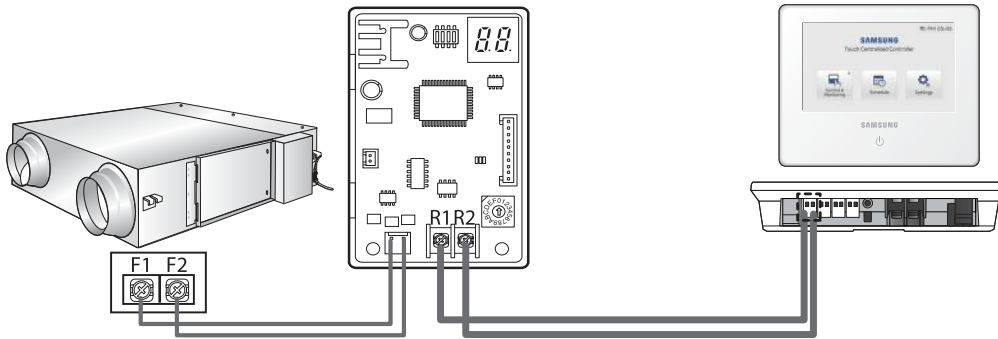
  ▌Connecting with DMS / BACnet GW / Lonwoks GW

  ▶ Conventional communication outdoor unit ↔ New communication DMS2.5(MIM-D01AN) / BACnet GW (MIM-B17BN) / Lonworks GW (MIM-B18BN)
  ▶ New communication outdoor unit ↔ Conventional communication DMS2(MIM-D00A) / BACnet GW (MIM-B17) / Lonworks GW (MIM-B18)
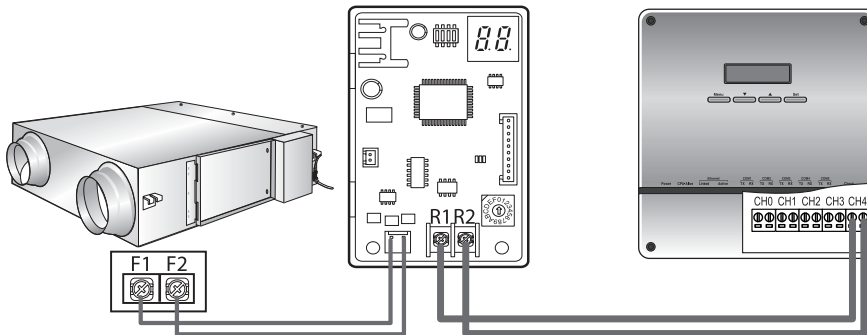
6) Checking the operation

1. When initializing power supply, $\boxed{00}$ will be indicated after indicating the program cord.
2. After receiving valid communication more than once, $\boxed{00}$ will be indicated.
3. When the communication is normal, the MAIN ADDRESS of the ventilator that can be controlled by the ERV interface module is indicated in order.
4. When there is no communication between the ventilaotr and the ERV interface module for more than 3 minutes, $Er \leftrightarrow E1$ will be indicated alternately.
5. When there is no communication between an ERV interface module and an upper level controller for more than 3minutes, $Er \leftrightarrow E2$ will be indicated alternately.
6. When the ERV interface module tracking is not complete, $Er \leftrightarrow E3$ will be indicated alternately.
7. When there's error on EEPROM of the ERV interface module, $Er \leftrightarrow E4$ will be indicated alternately.
8. When same address was set to multiple ERV interface modules, $Er \leftrightarrow E5$ will be indicated alternately.
9. When more than 16 ventilators are installed, $Er \leftrightarrow E6$ will be indicated alternately.
10. When ventilators and indoor units are installed together, $Er \leftrightarrow E7$ will be indicated alternately.

3. OnOff controller

☐ *MCM-A202DN*

1) Features
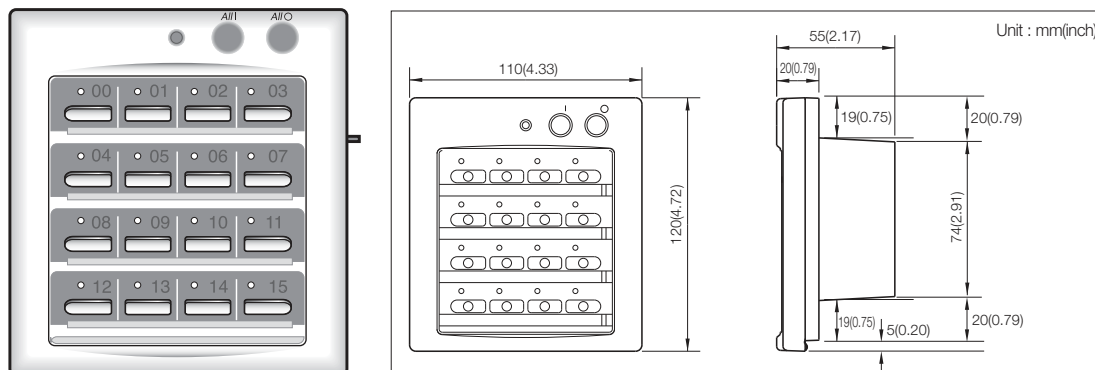
- Maximum 16-group controller (Max. 128 units)
- Whole/Group/Individual indoor unit control (On/Off)
- Restriction on the use of wireless/wired remote controllers and external contact control
- Cooling and heating mode control
- Indoor unit error display

2) Product specification

Power supply	AC200V~240V, 50/60Hz
Power consumption	8W
Operating Temperature range	0°C~40°C (32°F~104°F)
Operating Humidity range	30%RH~90%RH
Communication	RS485 x 1 (R1/R2)
Max. Communication length	1000M (3280ft)

Max. connectable number of device	Set layer	Device	Number
		Indoor units (including ERV, MCU)	80 (Maximum 64 indoor units, 16 ERVs and 15 MCUs)
		Outdoor unit	1
		OnOff controller	Total 16
		Touch centralized controller	
		Wi-Fi kit	
	Control layer	Device	Number
		Indoor units (including ERV, MCU)	128
		Outdoor unit (including compatible interface module MIM-N01)	16
		OnOff controller	16 (15 when DMS(2.0/2.5), BACnet gateway, LonWorks gateway is connected)
		Touch centralized controller	
		DMS2.5	Total 1
		BACnet GW	
		LonWorks GW	

Compatible product

Outdoor unit	AM✳✳✳✳X✳✳✳✳✳✳
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	DMS2.0, 2.5 (MIM-D00AN, MIM-D01AN)
	BACnet GW (MIM-B17N, MIM-B17BN)
	Lonworks GW (MIM-B18N, MIM-B18BN)

✳ Conventional communication outdoor unit requires interface module (MIM-N01) to establish connection

✳ MIM-B13D, MIM-B13E, MIM-B04A Interface modules cannot be connected.

✳ To connect ERV, MIM-N10 interface module is required.

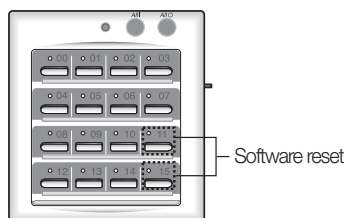# II Centralized control systems

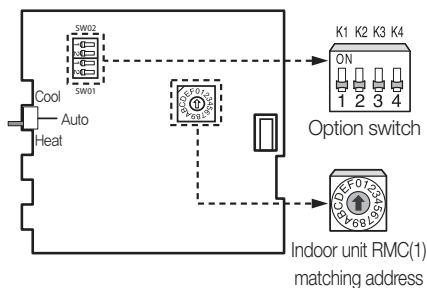## 3. OnOff controller

☐ *MCM-A202DN*

3) Description of parts
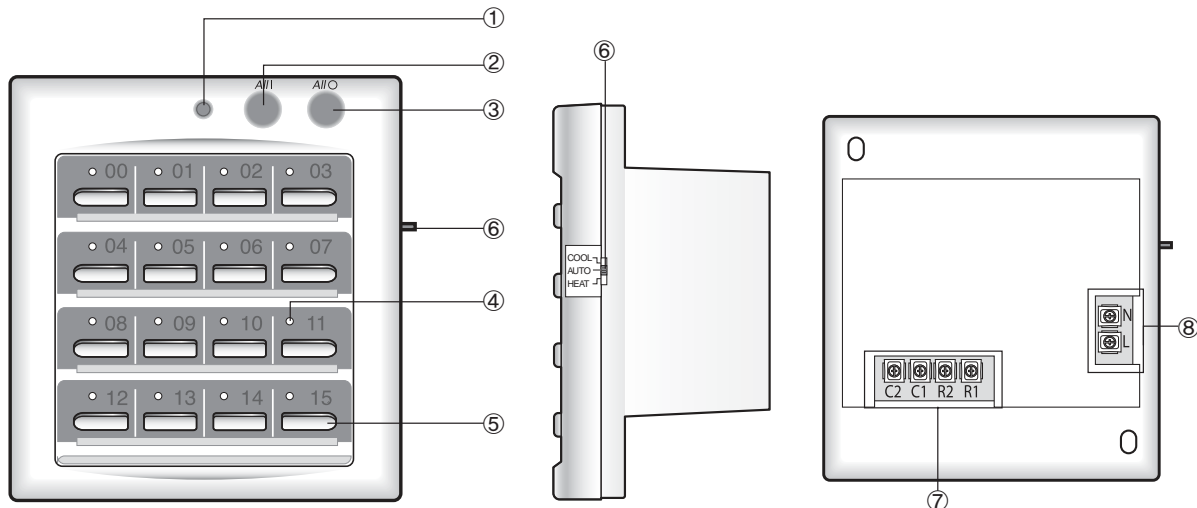
No.	Name	Description
①	Indoor unit operation LED	▪ It lights on when more than one indoor unit operates. ▪ It flickers during indoor unit tracking process after power reset.
②	All ON button	Press All ON button to turn on all the indoor units.
③	All OFF button	Press All OFF button to turn off all the indoor units.
④	Group indoor unit operation LED	▪ It lights on when one indoor unit of the group is operating. ▪ It also flickers when indoor unit has an error. ▪ During tracking indoor units, LED whose number is equivalent to indoor unit RMC(2) address flickers.
⑤	Indoor unit control button	Press each indoor unit button to control the equivalent unit operation.
⑥	Operation mode selection switch	Set operation mode selection switch to a certain mode and press indoor unit control button to control operation mode. Whenever pressing any button on the controller, set operation mode is delivered to the indoor unit.
⑦	Communication terminal	▪ C1 C2 : No function ▪ R1 R2 : Connect to Outdoor unit, DMS2, OnOff controller
⑧	Power terminal	AC200V~240V connection

☑ *Note*

◆ Press button 11 and button 15 together for 5 seconds to reset the OnOff controller.

Software reset

Address & option switch

SW02
SW01

Cool
Auto
Heat

Option switch

Indoor unit RMC(1)
matching address

K1 K2 K3 K4
ON
1 2 3 4

DIP SW		Description
K1	K2	Restriction setting on wired/wireless remote control use
OFF	OFF	Wired/Wireless remote control use is allowed all the time. Level 0
ON	OFF	Wired/Wireless remote control use is allowed only if indoor unit is ON by the OnOff controller. When indoor units are OFF by the OnOff controller, remote control use is prohibited. Level 1
OFF	ON	The use of wireless/wired remote controllers and external contact control is prohibited. Level 2
ON	ON	No function
K3		• OFF : OnOff controller use • ON : Not use Onoff controller (All buttons don't work)
K4		No function

4) Optional function

Remote control restriction

▶ LEVEL 0
• 'Allowed' remote controller

K1 K2 K3 K4
ON
1 2 3 4

▶ LEVEL 1
• Turned on by OnOff controller
  – 'Allowed'
• Turned off by OnOff controller
  – 'Prohibited'

K1 K2 K3 K4
ON
1 2 3 4

▶ LEVEL 2
• 'Prohibited' remote controller

K1 K2 K3 K4
ON
1 2 3 4
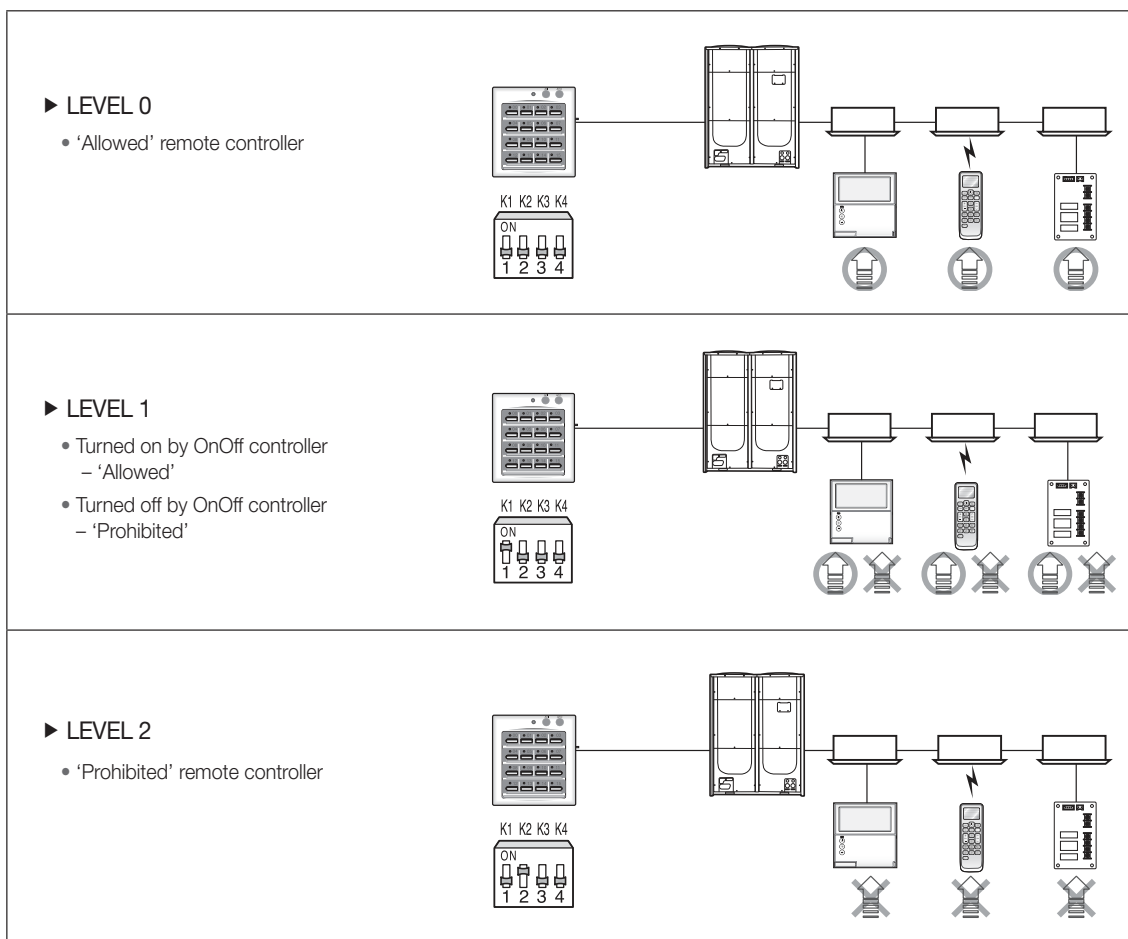
II Centralized control systems

3. OnOff controller

❑ *MCM-A202DN*

4) Optional function

■ Operation mode selection switch

It is mainly used to set indoor unit operation mode to Cooling, Heating or Auto.

COOL
AUTO
HEAT

Indoor unit 1   Indoor unit 2   Indoor unit 3
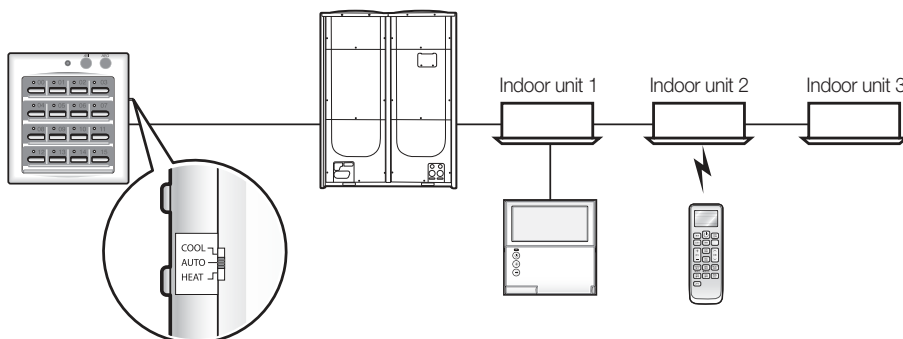
■ Indoor unit operation

- Cooling mode set → Cooling operation in last cooling set temperature, fan speed and fan direction
- Heating mode set → Heating operation in last heating set temperature, fan speed and fan direction
- Auto mode set → Indoor units keep their current operation mode, set temperature, fan speed and fan direction.

  ※ Operation mode selection switch doesn't lock the indoor unit operation mode.

5) Connection diagram

■ Set layer connection (F1/F2)

- When OnOff controller only controls indoor units of 1 outdoor unit, then it can be connected to F1/F2 line of outdoor unit or indoor unit.
- Max. 16 Controllers can be connected to same communication line.

✳ Connectable controller : OnOff controller (MCM-A202DN), Touch centralized controller (MCM-A300N), Wi-Fi kit (MIM-H03UN)

74
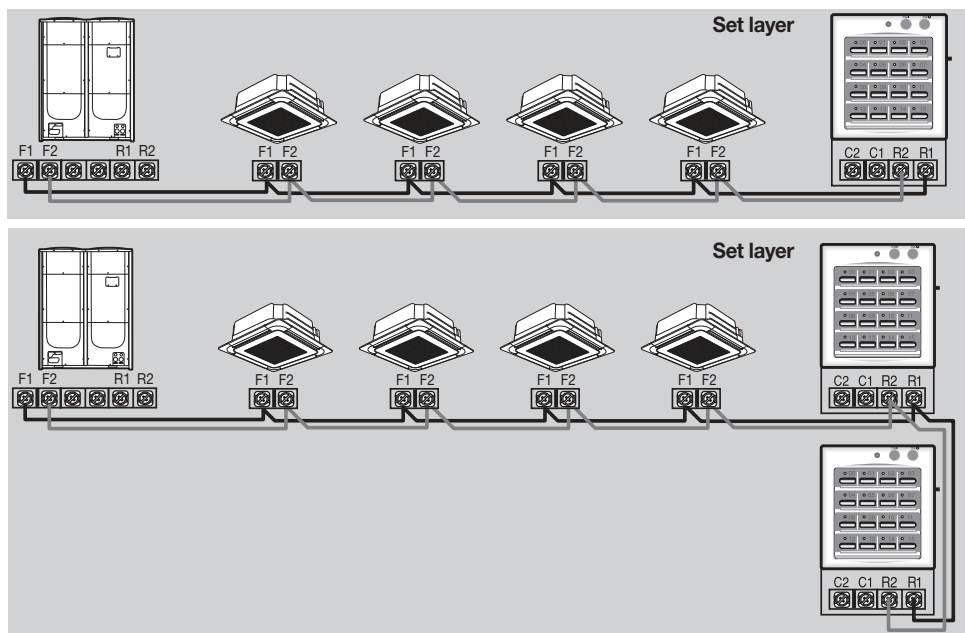
Control layer connection (R1/R2)

- New communication upper level controller
- Max. 16 Controllers can be connected to same communication line (In case of DMS2.5/BACnet gateway/LonWorks gateway connection, Max.15)
- Max. 16 outdoor units can be connected to same communication line (Includes interface module MIM-N01).

✳ Connectable controller : - Touch centralized controller (MCM-A300N).
- OnOff controller (MCM-A202DN).
- DMS2.5(MIM-D01AN), BACnet gateway (MIM-B17BN), LonWoks gateway (MIM-B18BN) : Only one of the three models.

(1) Connection with outdoor unit

- When OnOff controller controls indoor units of multiple outdoor units, then it should be connected to R1/R2 line of outdoor units.
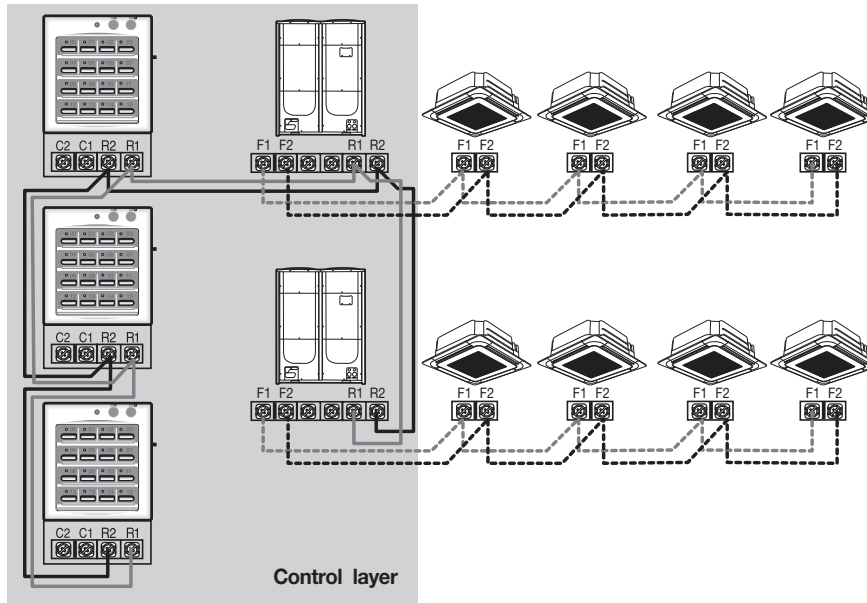
(2) Connection with DMS2.5/BACnet GW/Lonworks GW

▶ Case1
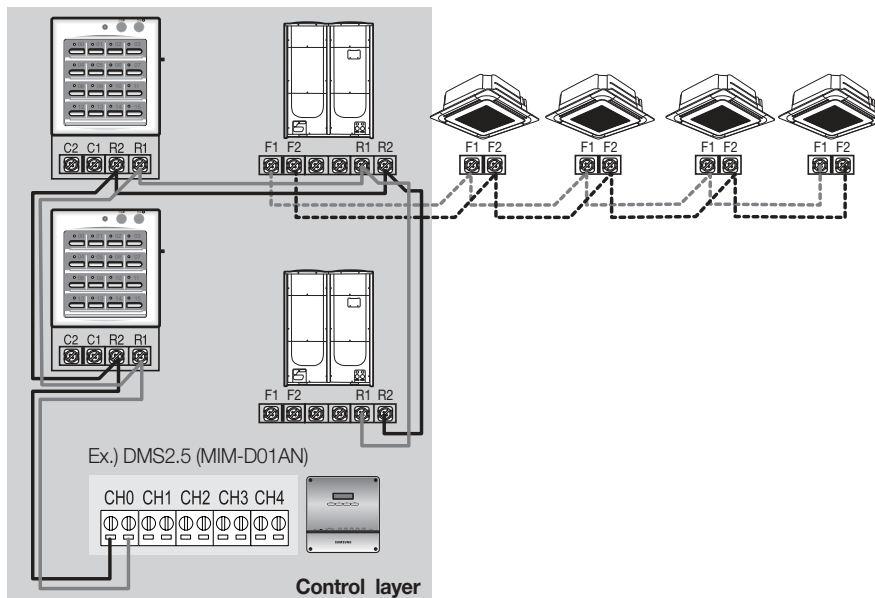
II Centralized control systems

3. OnOff controller

❑ *MCM-A202DN*

5) Connection diagram

■ Control layer connection (R1/R2)

(2) Connection with DMS2.5/BACnet GW/Lonworks GW

▶ Case2

C2 C1 R2 R1   F1 F2   R1 R2   F1 F2   F1 F2   F1 F2   F1 F2

C2 C1 R2 R1

F1 F2   R1 R2

C2 C1 R2 R1

Ex.) DMS2.5
(MIM-D01AN)

CH0 CH1 CH2 CH3 CH4

Control layer
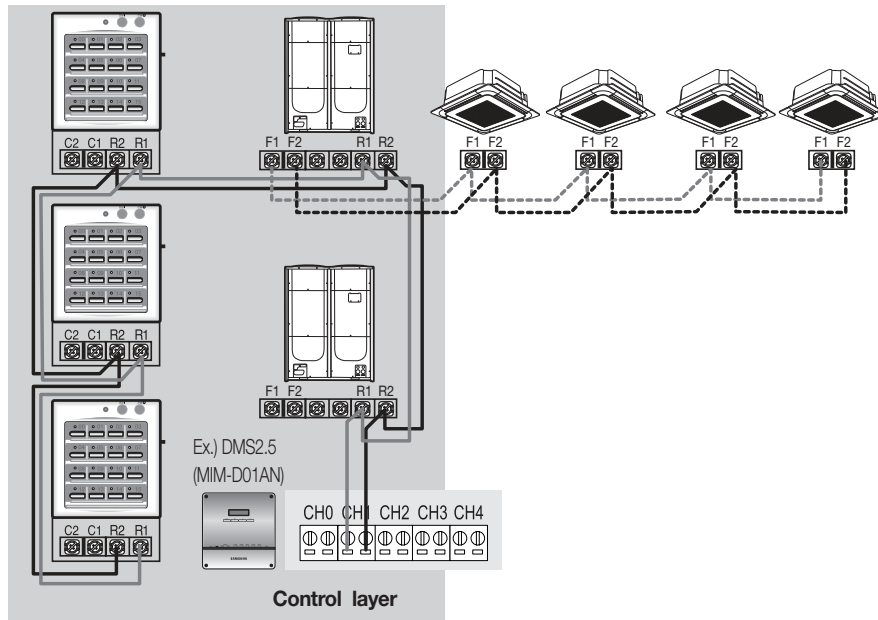
▶ Caution

• When OnOff controller is connected to Outdoor unit's F1/F2 line, you cannot connect DMS2.5 to OnOff controller's R1/R2 line.

Set layer

F1 F2   R1 R2   F1 F2   F1 F2   F1 F2   F1 F2   C2 C1 R2 R1

DMS2, BACnet gateway, LonWorks gateway must be
connected to Control layer

CH0 CH1 CH2 CH3 CH4

Ex.) DMS2.5 (MIM-D01AN)
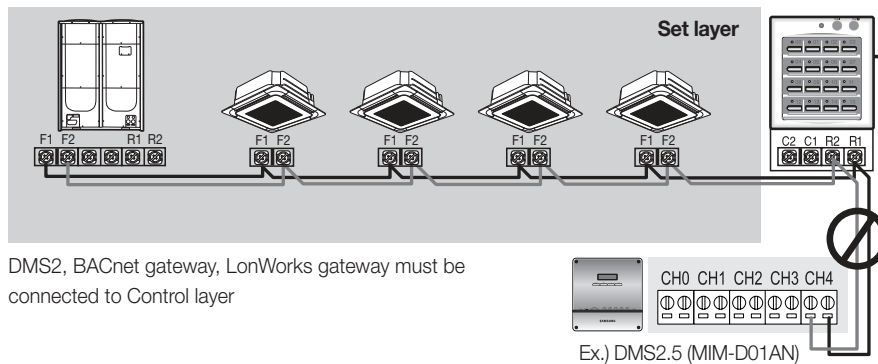
6) Display

Various LED display

After power reset to the OnOff controller, it carries out indoor unit tracking process.

Address : 1

R1/R2

Main : 0   Main : 1   Main : 2
RMC(1) : 1 RMC(1) : 1 RMC(1) : 1
RMC(2) : 0 RMC(2) : 1 RMC(2) : 2

R1/R2

Main : 0   Main : 1   Main : 2
RMC(1) : 1 RMC(1) : 1 RMC(1) : 1
RMC(2) : 3 RMC(2) : 4 RMC(2) : 5

R1/R2

Main : 0   Main : 1   Main : 2
RMC(1) : 2 RMC(1) : 2 RMC(1) : 2
RMC(2) : 6 RMC(2) : 7 RMC(2) : 8
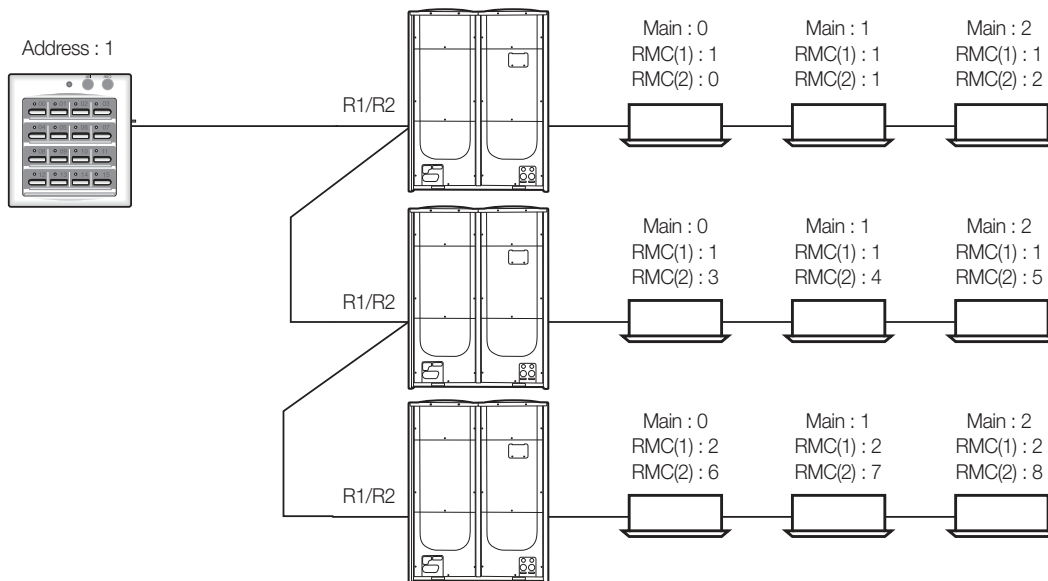
(1) OnOff controller only communicate with indoor units which has same RMC(1) address with OnOff
    controller's address.
(2) During tracking indoor units, LED whose number is equivalent to indoor unit RMC(2) address flickers.
    • In LED 00 → LED 01 → LED 02 → LED 03 → LED 04 → LED 05 order

II Centralized control systems

4. Touch centralized controller

❏ *MCM-A300N*

1) Features

- 7 inch touch LCD controller
- Controls maximum 128 indoor units
- Controls maximum 12 zones
- Schedule control, Indoor unit usage restriction, View indoor unit error history

2) Product specification

Power supply		AC200V~240V, 50/60Hz
Power consumption		110W
Operating temperature range		0°C~40°C (14°F~104°F)
Operating humidity range		30%RH~90%RH
Communication		RS485 x 1 (F1/F2 or R1/R2)
External communication port	Digital Output	1
	Digital Input	2
Maximum connection length	RS485	1000m(3280ft)
	Digital Output	100m(328ft)
	Digital Input	100m(328ft)
Max. connectable number of device	Set layer	
	Control layer	

Set layer

Device	Number
Indoor units (including ERV, MCU)	80 (Maximum 64 indoor units, 16 ERVs and 15 MCUs)
Outdoor unit	1
OnOff controller	Total 16
Touch centralized controller	
Wi-Fi kit	

Control layer

Device	Number
Indoor units (including ERV, MCU, FCU KIT)	128
Outdoor unit (including MIM-N01, MIM-N10, MIM-F10N, DVM CHILLLER unit)	16
OnOff controller	16 (15 when DMS2.5, BACnet gateway, LonWorks gateway is connected)
Touch centralized controller	
DMS2.5	Total 1
BACnet GW	
LonWorks GW	

Compatible product

Outdoor unit	AM✱✱✱✱X✱✱✱✱✱✱
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	DMS2.0, 2.5 (MIM-D00AN, MIM-D01AN)
	BACnet gateway (MIM-B17N, MIM-B17BN)
	Lonworks gateway (MIM-B18N, MIM-B18BN)

✳ Conventional communication outdoor unit requires interface module (MIM-N01) to establish connection

✳ MIM-B13D, MIM-B13E, MIM-B04A Interface modules cannot be connected.

✳ To connect ERV, MIM-N10 is required.

✳ To connect FCU KIT, MIM-F10N is required.

3) Description of parts

No.	Name	Description

①	LCD On/Off button and Indoor unit operation indicator	▪ Button : Turn on/off the LCD screen
		▪ Indicator
		  - Blue : Turns on if any one of the indoor unit is in operation.
		  - Red : Turns on if nay one of the indoor unit has an error

②	SD card slot	Use to back-up data on SD card or updating S/W
③	Power terminal	Connect AC 100~240 V, 50/60 Hz power
④	Reset button	Use to reset Touch centralized controller
⑤	DI-1 terminal	Terminal block for connecting digital input signal from 3rd party device.
⑥	DI-2 terminal	Terminal block for connecting digital input signal from 3rd party device.
⑦	DO Terminal	▪ Terminal block for digital output signal. - Short : When any one of indoor units turns On - Open :When all indoor units are off
⑧	485 communication terminal	▪ When connecting to set layer: Connect to outdoor unit or indoor unit (F1/F2) ▪ When connecting to control layer: Connect to outdoor unit, OnOff controller, Touch centralized controller or DMS2.5 (R1/R2)

II Centralized control systems

4. Touch centralized controller

❏ *MCM-A300N*

4) Connection diagram

S-NET 3

TCP/IP

Control layer

OnOff controller   OnOff controller

Touch centralized
controller

DMS2.5

RS485

Outdoor unit

Touch centralized
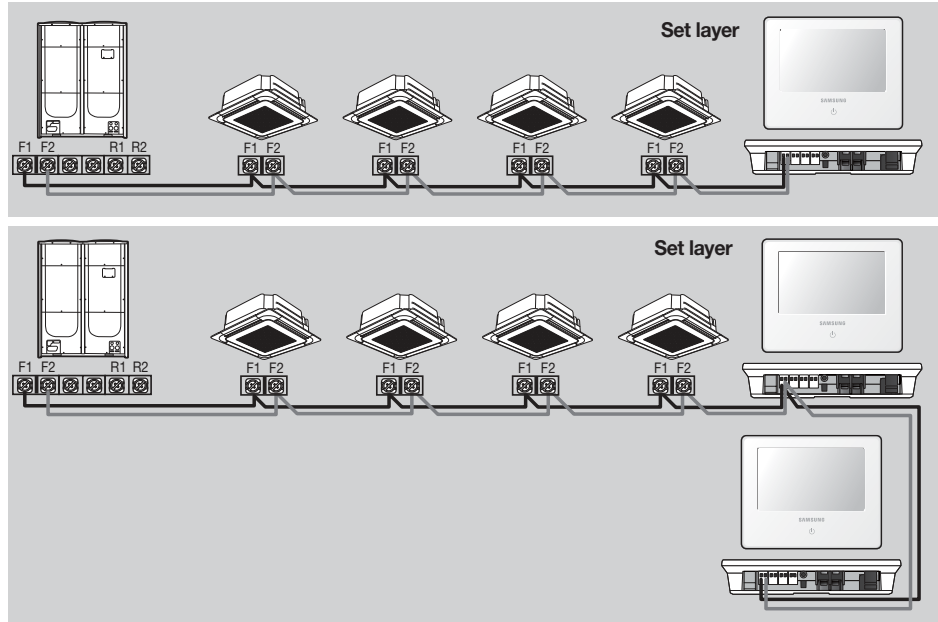controller

Maximum 128
indoor units
(DVM series)
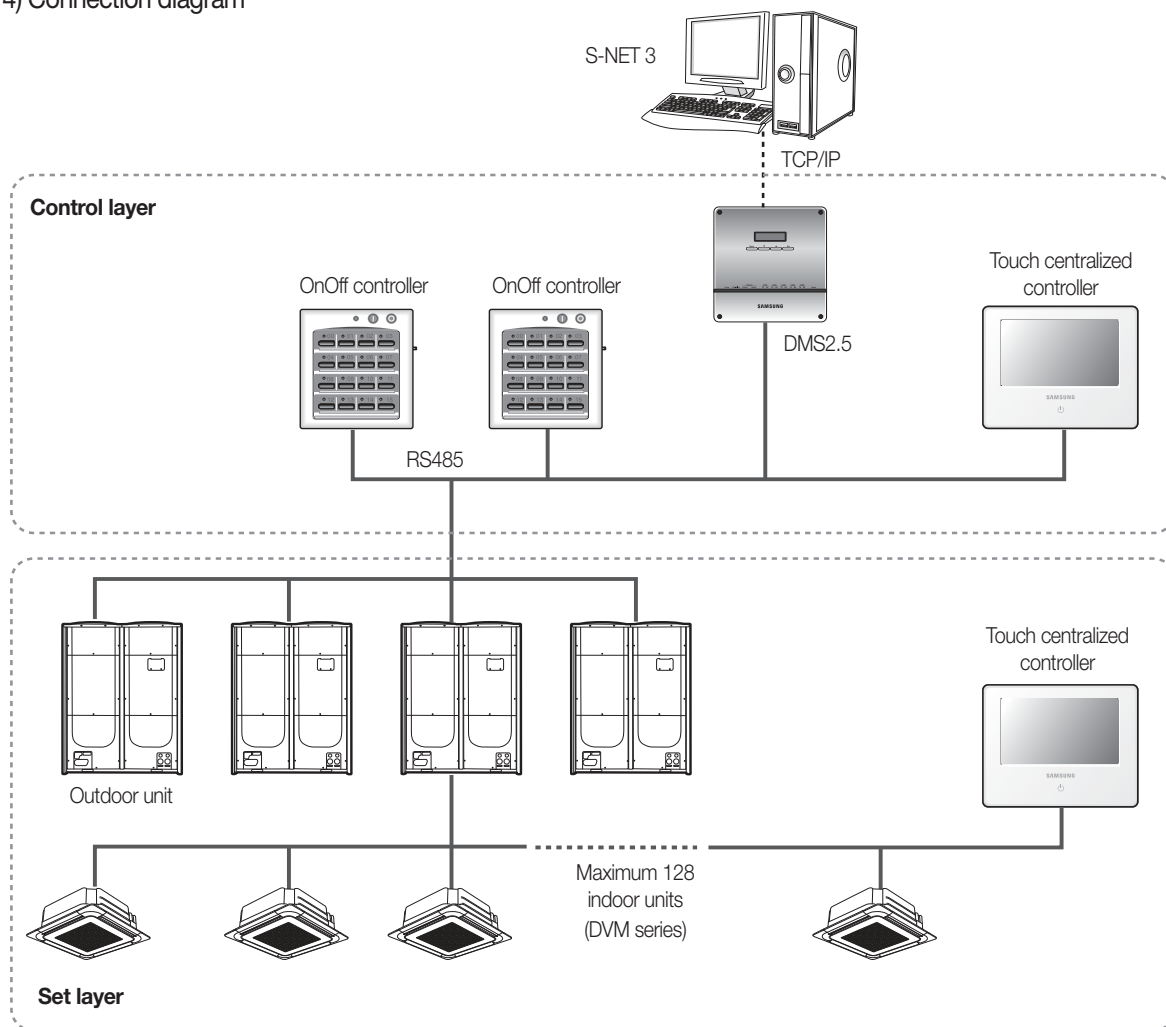
Set layer

5) Connection

Set layer connection (F1/F2)

- When Touch centralized controller only controls indoor units of 1 outdoor unit, then it can be connected to F1/F2 line of outdoor unit or indoor unit.
- Max. 16 Controllers can be connected to same communication line.

✳ Connectable controller : OnOff controller (MCM-A202DN), Touch centralized controller (MCM-A300N), Wi-Fi kit (MIM-H03UN)

Control layer connection (R1/R2)

- Max. 16 Controllers can be connected to same communication line (In case of DMS2/BACnet gateway/LonWorks gateway connection, Max.15)
- Max. 16 outdoor units can be connected to same communication line (Includes interface module MIM-N01).

✳ Connectable controller : - Touch centralized controller (MCM-A300N).
  - OnOff controller (MCM-A202DN).
  - DMS2.5(MIM-D01AN), BACnet gateway (MIM-B17BN), LonWoks gateway (MIM-B18BN) : Only one of the three models.

(1) Connection with outdoor unit

- When Touch centralized controller controls indoor units of multiple outdoor units, then it should be connected to R1/R2 line of outdoor units.
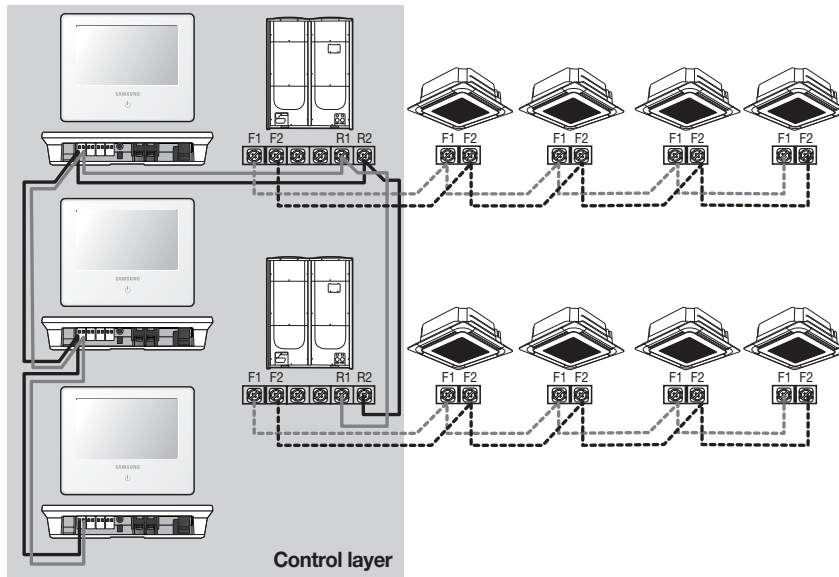
II Centralized control systems

4. Touch centralized controller

❏ *MCM-A300N*

5) Connection

Control layer connection (R1/R2)

(2) Connection with DMS2.5 / BACnet GW / Lonworks GW

▶ Case1

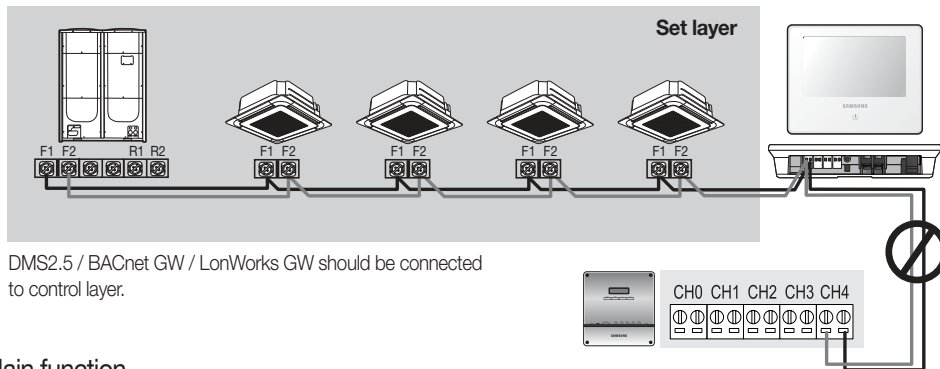Ex.) DMS2.5(MIM-D01AN)

CH0 CH1 CH2 CH3 CH4

Control layer

▶ Case2

Ex.) DMS2.5(MIM-D01AN)

CH0 CH1 CH2 CH3 CH4

Control layer
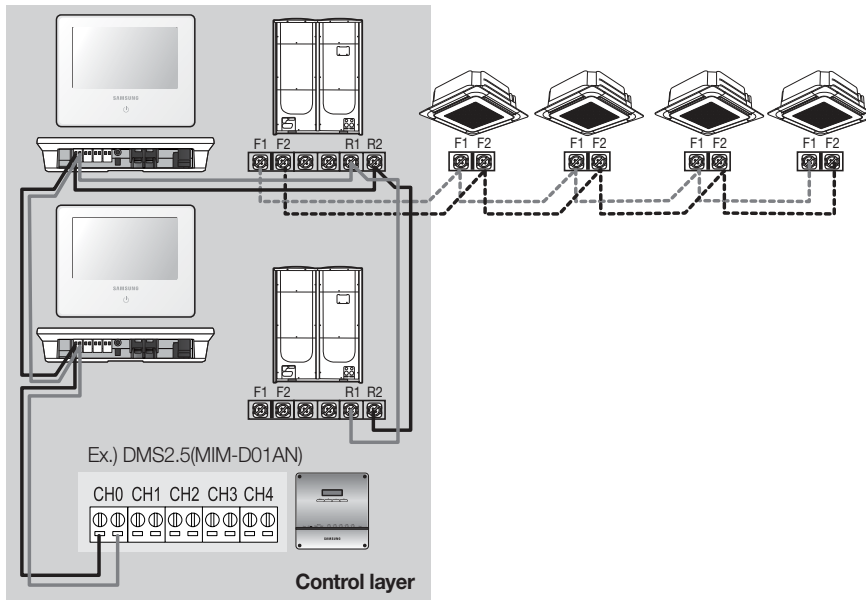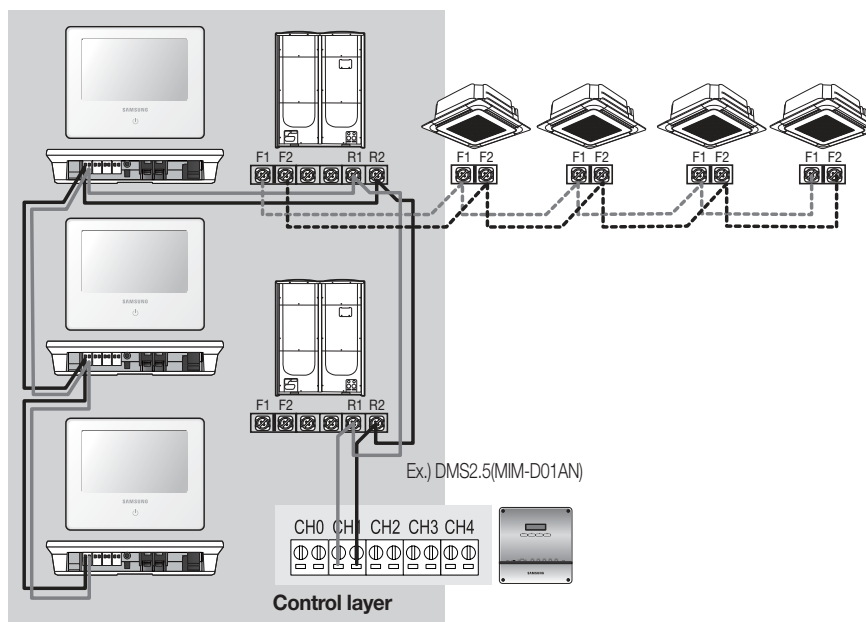
▶ Caution

• When Touch centralized controller is connected to Outdoor unit's F1/F2 line, DMS2, BACnet GW, LonWorks GW cannot be connected to same communication line.

Set layer

DMS2.5 / BACnet GW / LonWorks GW should be connected to control layer.

CH0 CH1 CH2 CH3 CH4

6) Main function

Zone control

• You can create a zone by grouping multiple indoor units
• Maximum 12 zones can be created (Total up to 128 indoor units)

• You can set the name of Zone/indoor unit
• You can set the zone icon for purpose of each zone.

Ⅱ Centralized control systems

4. Touch centralized controller

❑ *MCM-A300N*

6) Main function

Grouping indoor units

• Function to control and monitor multiple indoor units that are grouped and expressed as single indoor unit

Displays number of indoor units in a group

Displays number of indoor units in a group
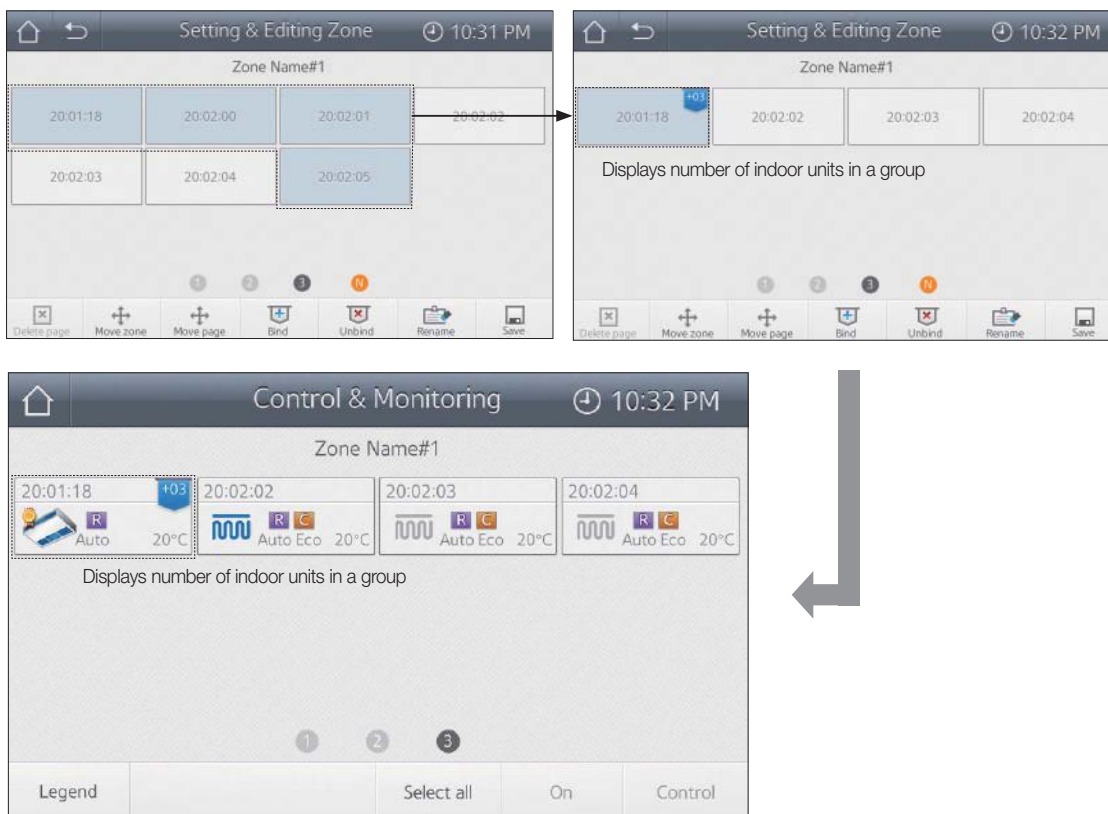
Schedule control
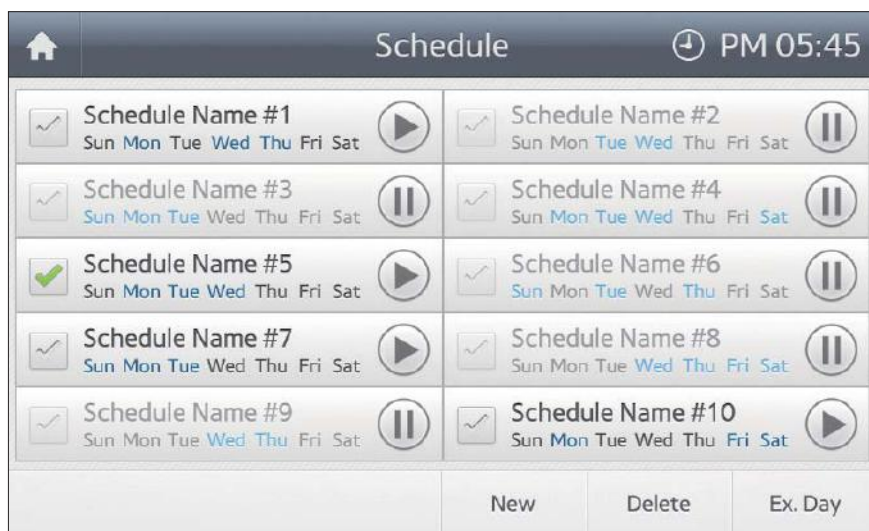
• Maximum 10 schedules can be created

84 • Excluded day setting is possible

Setting indoor unit usage restriction

(1) Cool lower limit/ Heat upper limit

- It can set the lower temperature limit in Cool mode and the upper temperature limit in Heat mode.
- This setting can be changed by other touch centralized controller and DMS2.5.

(2) Operation mode limit

- To prevent the wrong operation mode setting, it can limit the operation mode of indoor unit.
  - Cool only : Heat, Auto (Heat) operation mode is restricted
  - Heat only : Cool, Dry, Auto (Cool) operation mode is restricted
- This setting can be changed by other touch centralized controller and DMS2.5.

II Centralized control systems

4. Touch centralized controller

❑ *MCM-A300N*

6) Main function

L ock function

• You can lock the functions of Touch centralized controller.

(1) Screen lock

• You can lock the screen.
  Password is required when you try to use it.

(2) Operating panel lock

• You can set the access lock of each item of operating panel.
  The locked item will be deactivated.

(3) Menu lock

• You can set the access lock of each menu.
  Password is required when you try to use it.

Remote controller usage restriction

(1) Indoor unit operating panel
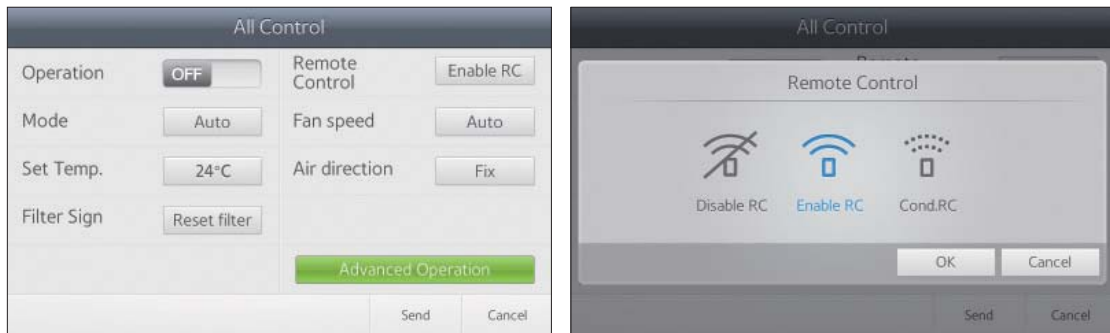
- You can set the controller restriction.
- You can set the type of controller which will be restricted when "Disable RC" is applied from operating panel.
  [Settings] → [Device settings] → [Control level]

(2) Device settings
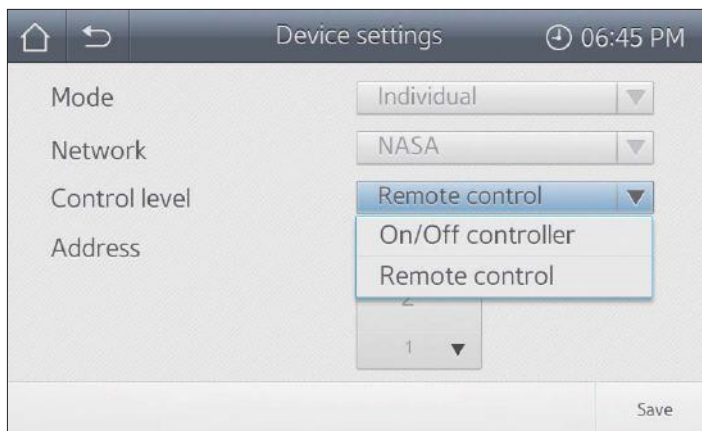
- You can set the type of controller which will be restricted when "Disable RC" is applied from operating panel.
  - Remote controller : Restrict wired/wireless remote controller usage, OnOff controller usage is possible
  - OnOff controller : Restricts wired/wireless remote controller and OnOff controller usage

II Centralized control systems

4. Touch centralized controller

❏ *MCM-A300N*

6) Main function

▌ Tracking

- Detects all the indoor and outdoor units that are connected to communication line of Touch centralized controller
- When multiple number of Touch centralized controller is connected together, you can use check box of S/H (Show/Hide) to select indoor units that will be controlled from each Touch centralized controller.
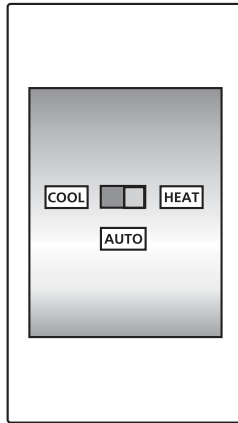
▌ Hiding indoor unit

- Indoor unit with no check mark on S/H (Show/Hide) check box, will not be controlled and monitored from the Touch centralized controller.

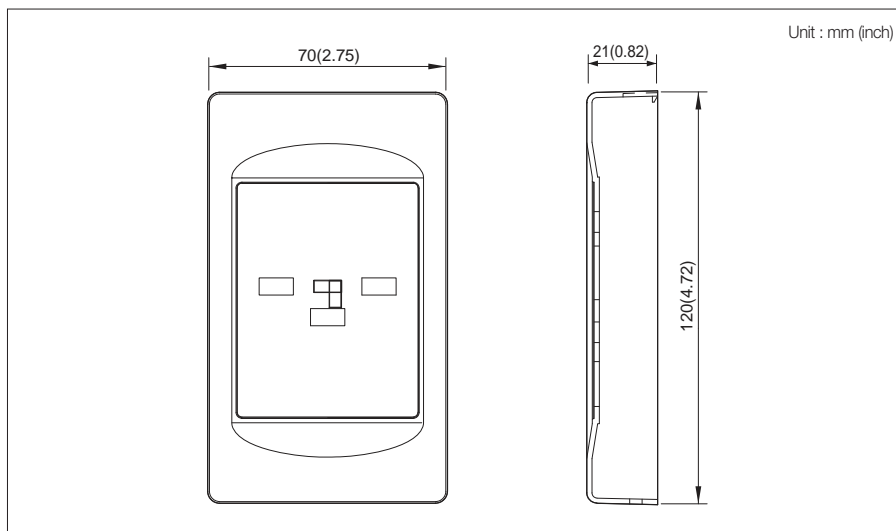## 5. Operation mode selection switch

❏ *MCM-C200*

1) Features

Operation mode selection switch

• Outdoor unit operation mode selection (Cooling, Heating or Auto)

※ Mixed operation mode protection

Unit : mm (inch)

70(2.75) 21(0.82) 120(4.72)

2) Installation

• 1 operation mode selection switch must be connected to 1 outdoor unit.

※ Max. distance between the outdoor unit PCB and the MCM-200: 100m(328ft)
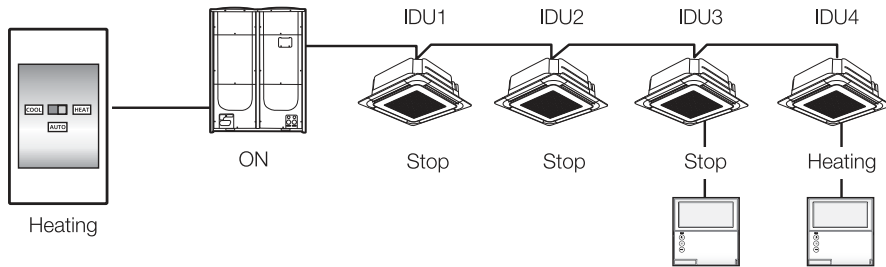
II Centralized control systems

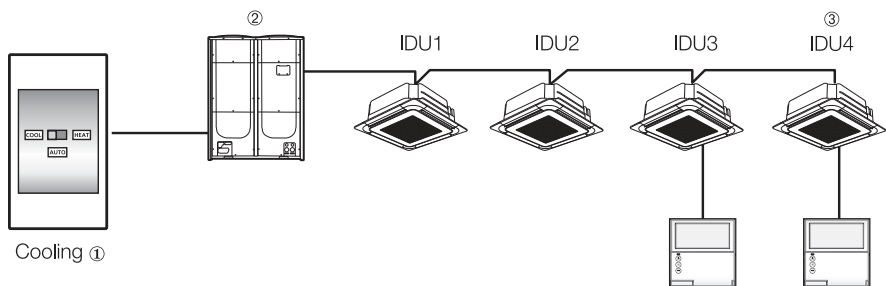## 5. Operation mode selection switch

❏ *MCM-C200*

3) Control example

Initial condition

• Cool/Heat Selector : Heating position
• IDU1, 2, 3 : Stop mode, IDU4 : Heating mode
• Compressor ON

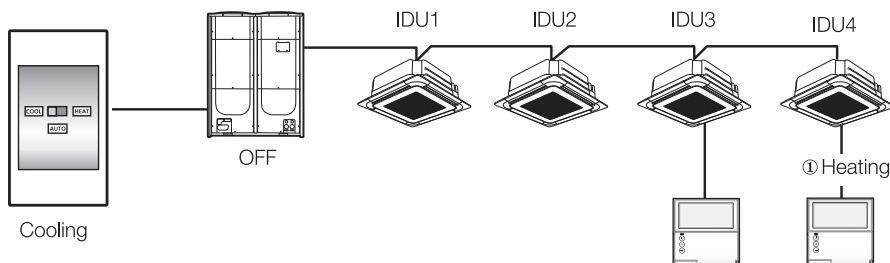| Sequence 1	Set the Cool/Heat selector to the Cooling position

	① Change Cool/Heat Selector to Cooling
Result	② Automatically compressor OFF
	③ Running IDU4 stops

Sequence 2	Set IDU4 to Heating with Remote controller

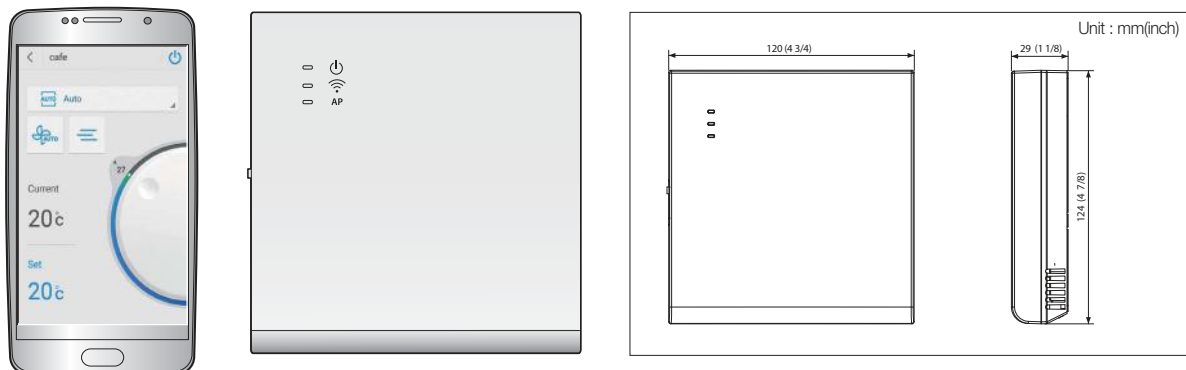| Result	① • IDU4 ignores Heating command
	• IDU4 keeps OFF status.

☑ *Note*

  ◆ Operation mode selection switch fixed indoor unit operation mode.
    → Indoor unit ignores opposite operation mode. (It will not accept the command and it will just beep shortly)

6. Wi-Fi kit

☐ *MIM-H03UN*

1) Features

Unit : mm(inch)

120 (4 3/4)   29 (1 1/8)   124 (4 7/8)

- Control and monitoring system air conditioner by mobile phone. (Max. 16 units)
- Weekly schedule setting
- Group control and monitoring (ON/OFF)
- Current/daily/weekly/monthly energy usage data of outdoor unit.
  (This function is available in certain outdoor unit model)

2) Product specification

Power supply		DC12V
Power consumption		6W
Operating temperature range		0°C~40°C (32°F~104°F)
Operating humidity range		30%RH~90%RH
Communication	Wired	RS485 (Communication with outdoor unit)
	Wireless	Wi-Fi 802.11b,g,n , 2.4 GHz (Communication with AP)
Maximum connection length	RS485	1,000m (3,280ft)
	Wi-Fi	100m (328ft) (It depends on AP specification)

Max. connectable number of device	Set layer	Device	Number
		Indoor units (Including ERV)	16 units. (In case of more than 16 units connection, it displays only 16 units in ascending order of main address.
		Outdoor units (Including ERV I/M MIM-N10)	1 unit
		✳Controller	16 units (Including Wi-Fi kit itself)

- Max.5 mobile app users per 1 Wi-Fi kit.
- Max.4 Wi-Fi kit registration per 1 user account.
✳ Controller : Controllers which can connect to Set layer (F1/F2) including Wi-Fi kit.

Compatible product

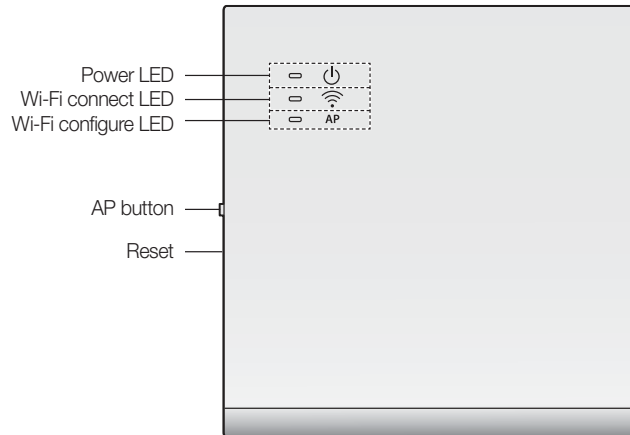| Outdoor unit	AM✳✳✳✳X✳✳✳✳✳
ERV	AN✳✳✳✳S✳✳✳✳✳
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	Wi-Fi kit (MIM-H03UN)

✳ ERV should connect MIM-N10 interface module to connect Wi-Fi kit.

II Centralized control systems

6. Wi-Fi kit

❏ *MIM-H03UN*

3) Description of parts

Power LED
Wi-Fi connect LED
Wi-Fi configure LED

AP button
Reset

▶ LED display information

No	LED information	Power	Wi-Fi Connect	Wi-Fi Configure
①	Initialized	ON	ON	ON
②	Normal	ON	ON	OFF
③	AP connection OK. but, internet is not connected	ON	Blinking	OFF
④	Air conditioner searching OK. but AP connection is not completed.	ON	OFF	OFF
⑤	Wi-Fi modem is in malfunction	Blinking	Blinking	Blinking
⑥	Searching AP (AP mode)	ON	OFF	ON
⑦	Searching air conditioner	Blinking	Blinking	OFF
⑧	No air conditioner information	Blinking	OFF	OFF
⑨	Inspecting network PBA	ON	Blinking	Blinking
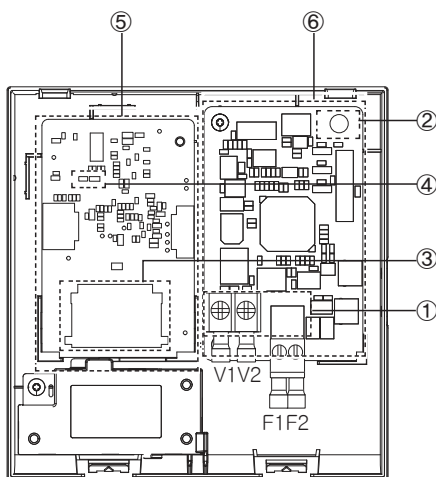
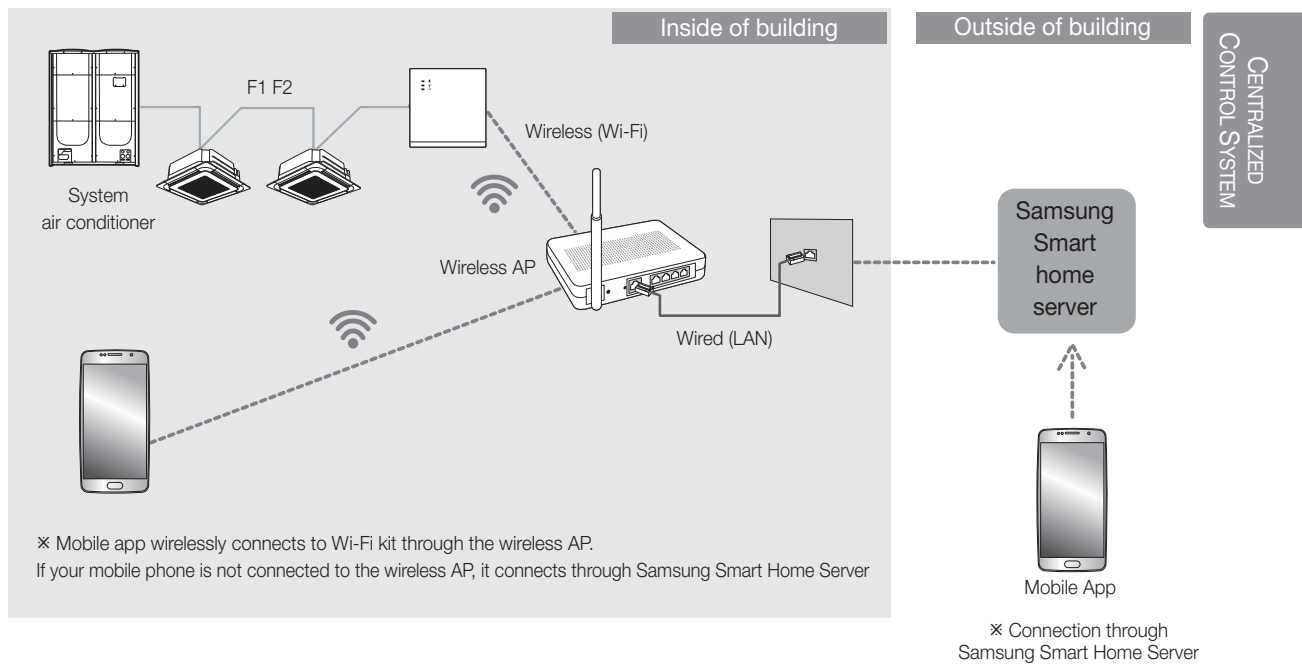| No.	Contents
①	Power/communication connection terminal
②	Tracking/Initializing button ✳
③	SD card slot
④	LED
⑤	Network PBA
⑥	Interface module PBA

✳ Tracking : Press button for 1 or more second.
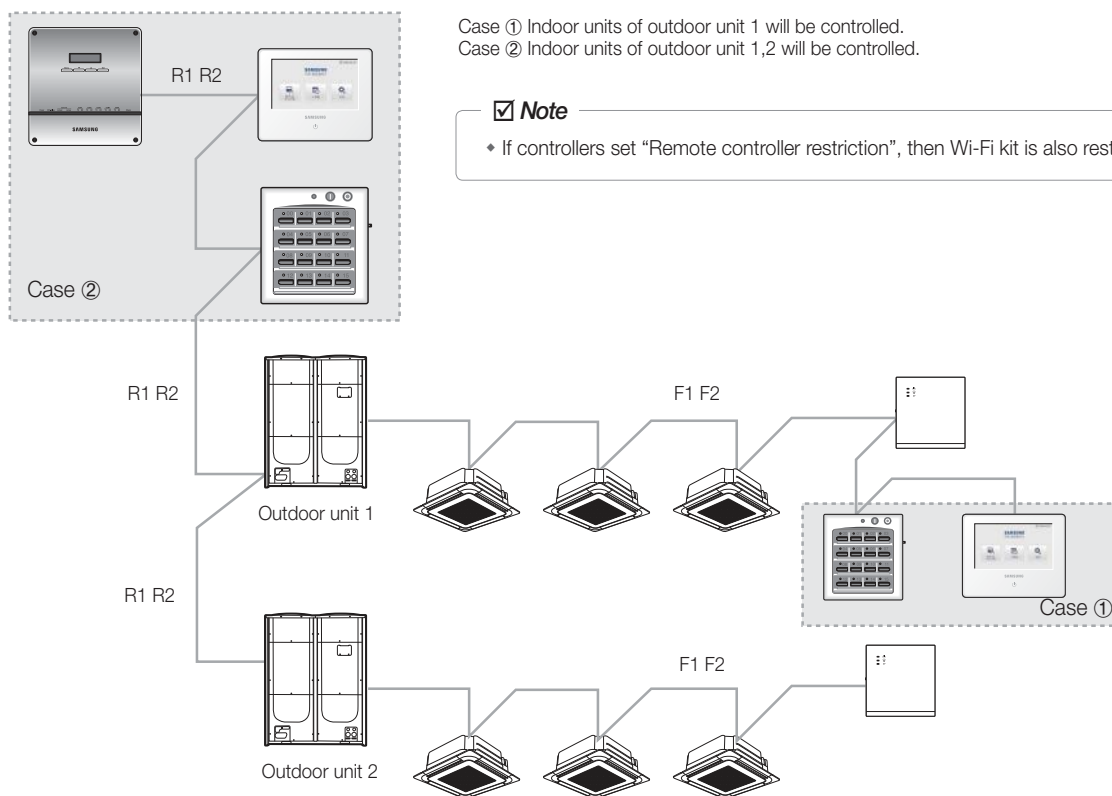 Initializing : Press button for more than 5 seconds

V1V2
F1F2

4) Connection diagram

Wi-Fi kit connection

Inside of building	Outside of building

F1 F2

Wireless (Wi-Fi)

System
air conditioner

Wireless AP

Wired (LAN)

Samsung
Smart
home
server

Mobile App

※ Mobile app wirelessly connects to Wi-Fi kit through the wireless AP.
If your mobile phone is not connected to the wireless AP, it connects through Samsung Smart Home Server

※ Connection through
Samsung Smart Home Server

Connection with controllers

R1 R2

Case ②

R1 R2

Outdoor unit 1

R1 R2

Outdoor unit 2

F1 F2

F1 F2

Case ①

Case ① Indoor units of outdoor unit 1 will be controlled.
Case ② Indoor units of outdoor unit 1,2 will be controlled.

☑ *Note*
- If controllers set "Remote controller restriction", then Wi-Fi kit is also restricted.
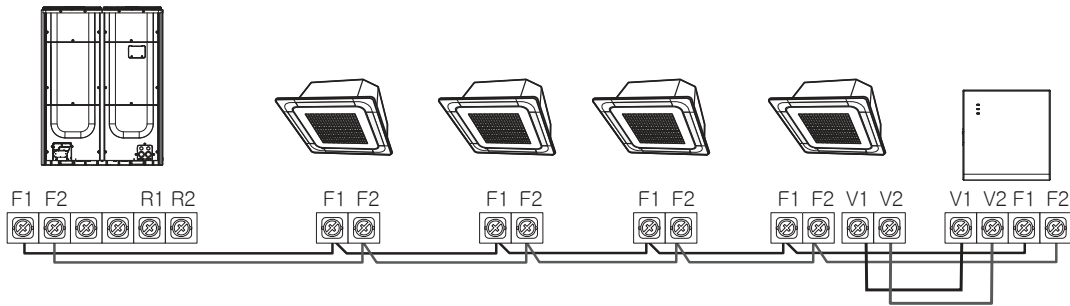
93

II Centralized control systems

6. Wi-Fi kit

❑ *MIM-H03UN*

5) Connection

S et layer connection (F1/F2) only

▶ Connecting the Wi-Fi kit to a multi type product

F1 F2   R1 R2   F1 F2   F1 F2   F1 F2   F1 F2 V1 V2   V1 V2 F1 F2

▶ Connecting the Wi-Fi kit to a single type product

F1 F2   F1 F2 V1 V2   V1 V2 F1 F2
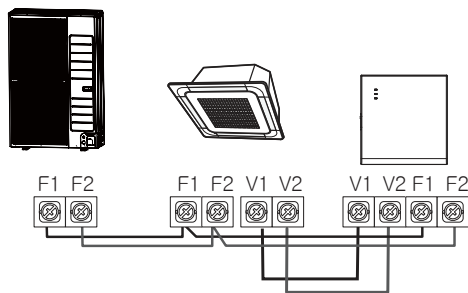
▶ Connecting the Wi-Fi kit to a ERV product

(CN4, Blue) (CN3, Red)
V1 V2 F1 F2   R1 R2   V1 V2 F1 F2   F1 F2   F1 F2   F1 F2 V1 V2   V1 V2 F1 F2
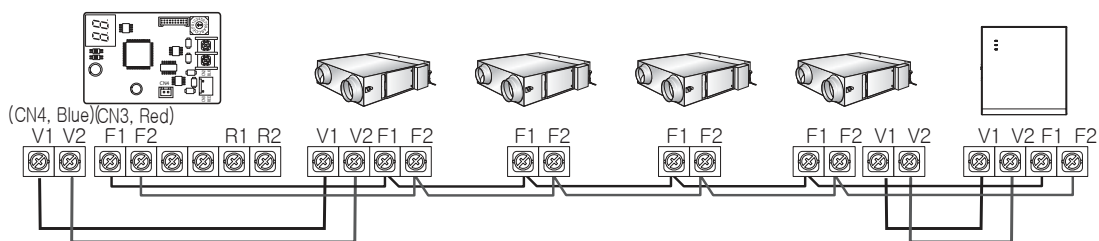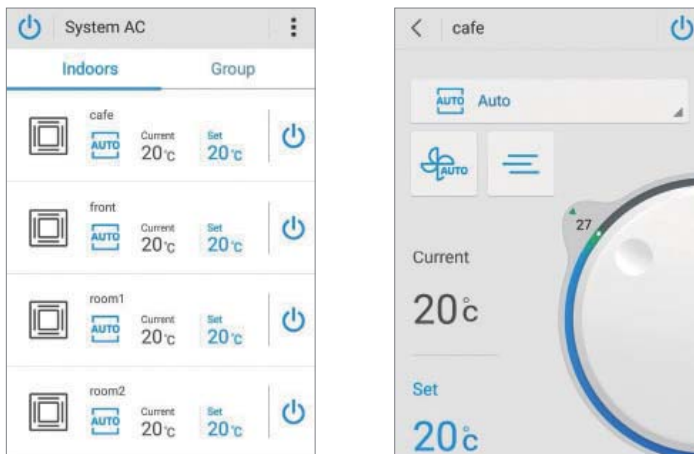
Caution

New communication applied unit only

6) Main function

### Control and monitoring by mobile phone

- You can control all connected indoor units of Wi-Fi kit (Max.16 units)
- You can turn ON/OFF all indoor units together.
- You can control individual indoor unit in detail.
  (Detailed settings : Operation ON/OFF, operation mode, temperature setting, fan speed, air flow direction)
- You can rename indoor units.

> ☑ *Note*
> ◆ In case of more than 16 units are connected, Wi-Fi kit displays only 16 units in ascending order of main address.

Group control
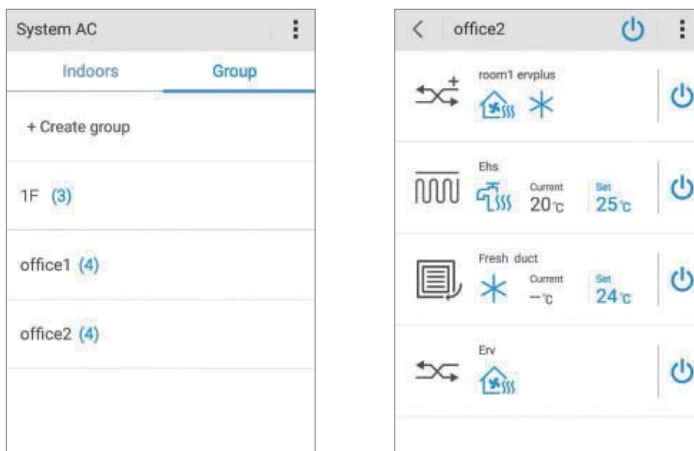
- You can create group. (Max.16 groups)
- You can turn ON/OFF all indoor units of group at once.
- If you select individual indoor unit of group, then you can control it in detail. (Detail setting : Operation ON/OFF, operation mode, temperature setting, fan speed, air flow direction)

# Ⅱ Centralized control systems

6. Wi-Fi kit

☐ *MIM-H03UN*

6) Main function

Schedule control

- You can set weekly schedule.
  (Max. 10 schedules. Possible to repeat it within the period)
- You can apply the schedule setting to multiple indoor units.
- You can set detailed operation if you set "On" schedule.
  (Operation mode, temperature setting)

Energy monitor

- You can check the current/daily/weekly/monthly energy usage data of outdoor unit.
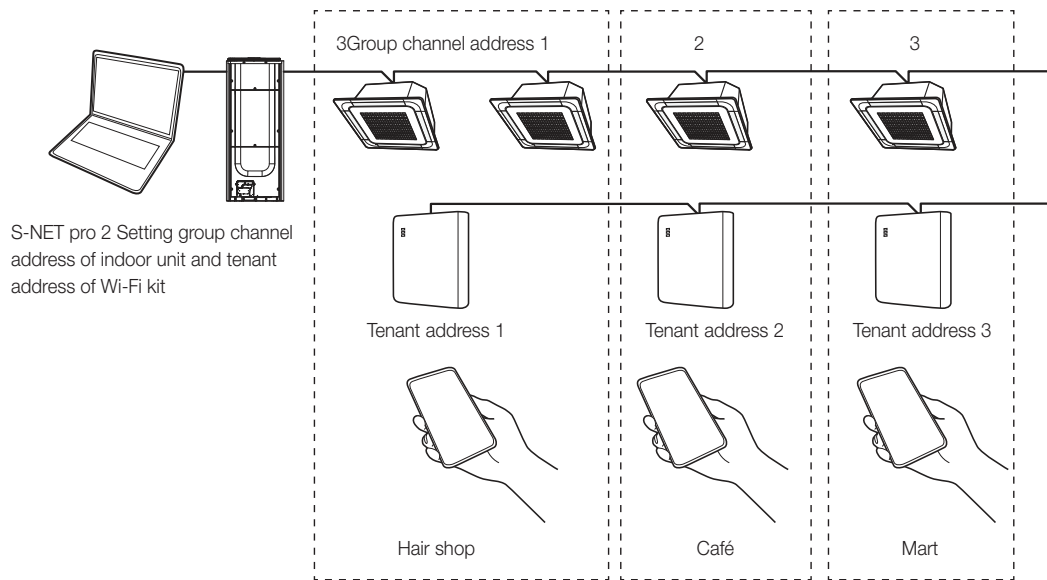 (This function is available in certain outdoor unit model)
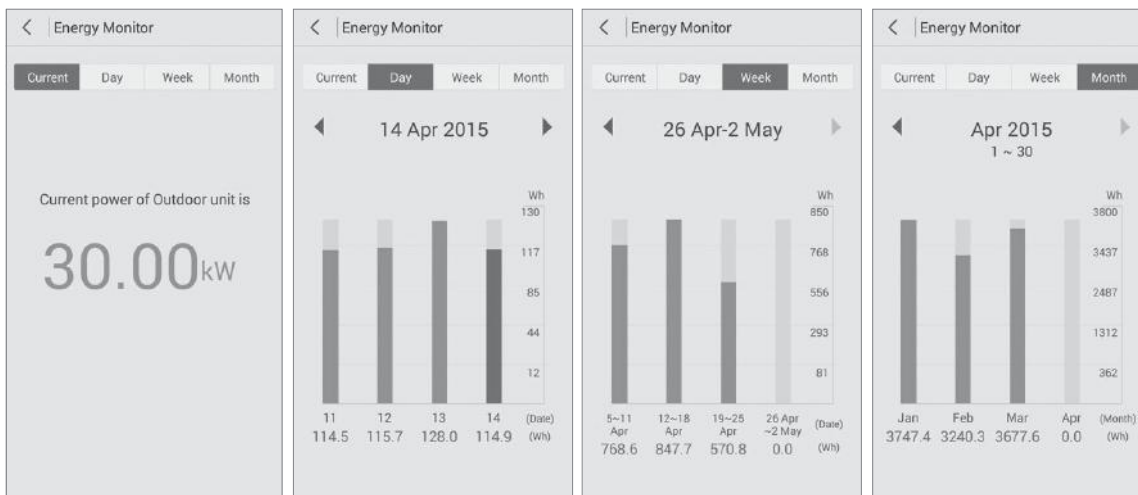
6) Main function

Setting individual usage of indoor unit

☑ *Note*
- ◆ Multi tenant function is to set controlling and monitoring of indoor units assigned to one group channel address (RMC1) by identical tenant address of Wi-Fi kit.

- For individual usage of indoor units connected to outdoor unit, installing multiple number of Wi-Fi kit allows classifying indoor units by group channel address (RMC1).
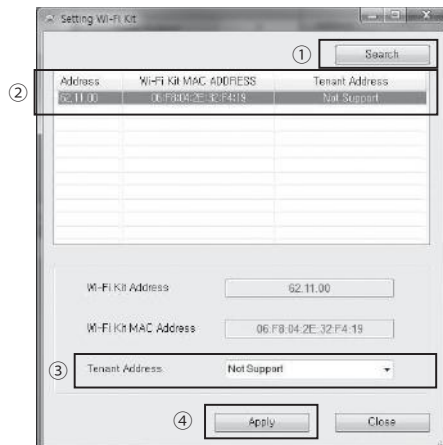
3Group channel address 1   2   3

S-NET pro 2 Setting group channel address of indoor unit and tenant address of Wi-Fi kit

Tenant address 1   Tenant address 2   Tenant address 3

Hair shop   Café   Mart

(1) Install Wi-Fi kits as number of groups to use.
- Maximum number of Wi-Fi kit that can be connected to outdoor unit module is 4.
- Maximum number of indoor unit installation that can be connected to Wi-Fi kit is 16.

☑ *Note*
- ◆ You can change names of each Wi-Fi kit on your smartphone. (Refer to page 20.) You cannot change names of other connected smartphones.

(2) Set tenant address to each Wi-Fi kit by Wi-Fi kit setting function on installation program (S-NET pro 2).

① Setting Wi-Fi Kit
① Search

② Address | Wi-Fi Kit MAC ADDRESS | Tenant Address
62.11.00 | 06.F8:04:2E:32:F4:19 | Not Support

Wi-Fi Kit Address   62.11.00
Wi-Fi Kit MAC Address   06.F8:04:2E:32:F4:19
③ Tenant Address   Not Support
④ Apply   Close

① Click Search to find connected Wi-Fi kits.

② Select one MAC address among searched Wi-Fi kits.
  - MAC address can be found on the label inside of Wi-Fi kit.

MAC: XXXXXXX
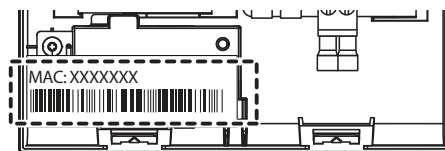
II Centralized control systems

6. Wi-Fi kit

❏ *MIM-H03UN*

6) Main function

Setting individual usage of indoor unit

③ Set tenant address. (Not Support, 0~F)
  - Enter tenant address to S-NET pro 2, and it will be applied as below.

Tenant address	Group channel address of indoor unit controlled by Wi-Fi kit
Not Support	Control all indoor units connected to outdoor unit
0	Control indoor units assigned to group channel address 0
1	Control indoor units assigned to group channel address 1
2	Control indoor units assigned to group channel address 2
3	Control indoor units assigned to group channel address 3
4	Control indoor units assigned to group channel address 4
5	Control indoor units assigned to group channel address 5
6	Control indoor units assigned to group channel address 6
7	Control indoor units assigned to group channel address 7
8	Control indoor units assigned to group channel address 8
9	Control indoor units assigned to group channel address 9
A	Control indoor units assigned to group channel address A
B	Control indoor units assigned to group channel address B
C	Control indoor units assigned to group channel address C
D	Control indoor units assigned to group channel address D
E	Control indoor units assigned to group channel address E
F	Control indoor units assigned to group channel address F

  - Ex.) If tenant address 2 is entered on Wi-Fi kit by S-NET pro 2, only indoor units assigned to 2 for RMC1 will be the target of controlling and monitoring.

④ Click Apply and the tenant address will be saved on Wi-Fi kit.

☑ *Note*

- ◆ Refer to "Setting an indoor unit address and installation option" in installation guide of indoor unit to set indoor unit group address. (SEG9: 1, SEG11: RMC1)
- ◆ If you want to reset the tenant address, please contact Samsung service center.
- ◆ To control all indoor units classified by tenant addresses with one smartphone, each Wi-Fi kit should be registered on the smartphone.
- ◆ When using multi tenant function by Wi-Fi kit, upper controllers other than OnOff controller (such as Touch centralized controller, DMS, etc.) can be installed at the same time.

---

6) Main function

> ☑ *Note*
>
> ◆ Data storage
>
> | Data | Location | |
> |---|---|---|
> | | Wi-Fi kit | Mobile phone |
> | Group information | - | O |
> | Indoor unit name | O | - |
> | Schedule setting | O | - |
> | Settings | △
(Set temp. unit / Set temp. scale) | △
(Heat temp. range) |
> | Device installation information
(Number of indoor unit, Address, etc) | O | - |
> | Energy usage of outdoor unit
(6 months) | O | - |
> | Connection information | O | O |
>
> ◆ Initialization
>
> 1) Initializing button : Reset to factory default state.
>
> 2) Mobile app deletion : Deletes every data relating Wi-Fi kit in mobile phone.
>
> ※ After initialization, you must register Wi-Fi kit to Mobile app again.

# DVM CONTROL SYSTEMS

III. Integrated management systems

INTEGRATED
MANAGEMENT SYSTEM

Ⅲ Integrated management systems

1. DMS2.5

☐ *MIM-D01AN*

1) Features

240(9.44)　　　　64.80(2.55)　　Unit : mm (inch)

255(10.03)

- Built-in web server for PC-independent management and remote access control
- Multiple upper-layer control access (S-NET 3, Web-client)
- Weekly/Daily schedule control
- Power distribution function (Excluding ERV, DVM CHILLER, FCU KIT)
- Current time management even during power failure (for 24 hours)
- Emergency stop function with simple contact interface

- Individual/Group control of up to 256 indoor units and ERV, AHU, DVM CHILLER, FCU kit
- User editable control logic
- Accessible level management
- Dynamic security management
- Operation & error history management
- Data storage in non-volatile memory & SD memory

▶ Caution
  - You cannot upgrade DMS 2.0 to DMS2.5 by software upgrade.

2) Product specification

Power	Source	DC Adaptor
	Input	100~240V AC (+-10%), 50/60Hz
	Output	12V 3A
Operating temperature range		-10°C ~ 50°C (14°F~122°F)
Operating humidity range		10%RH ~ 90%RH
Communication method		• Lower level : RS485 x 5 • Upper level : Ethernet 100 Base-T x 1
External connection port	Digital Output	10
	Digital Input	10
Maximum length of connection	RS485	1000 m (3280ft)
	Digital Output	100 m (328ft)
	Digital Input	100 m (328ft)
	Ethernet	100 m (328ft) : When there is no repeater

Max. connectable number of device	Control layer	Device	Numbers per each channel	Total number for 5 channels
		Indoor units (including ERV, MCU, FCU KIT)	128	256
		Outdoor unit (including MIM-N01, MIM-N10, MIM-F10N, DVM CHILLER unit)	16	80
		OnOff controller	Total 15	Total 75
		Touch centralized controller		
		PIM interface module (MIM-B16, MIM-B16N)	8	8

Compatible product

Outdoor unit	AM✶✶✶✶X✶✶✶✶✶✶
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	PIM interface module (MIM-B16, MIM-B16N)

✳ Conventional communication outdoor unit requires interface module(MIM-N01).

✳ MIM-B13D, MIM-B13E, MIM-B04A Interface modules cannot be connected.

✳ To connect ERV, MIM-N10 is required.

✳ To connect FCU KIT, MIM-F10N is required.

✳ Conventional PIM must connect to CH4(COM5) of DMS 2.5.

3) Description of parts

Front
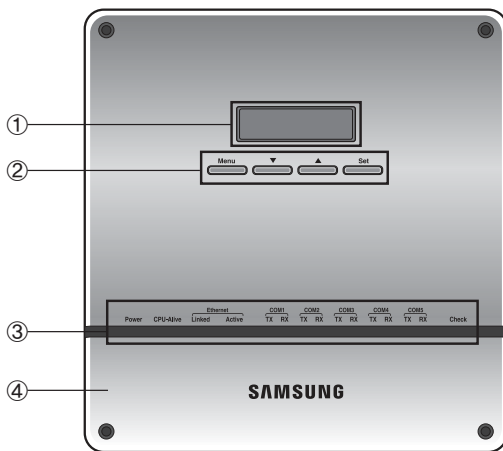
No	Name	Function
①	LCD display	Shows current time and IP address. Various messages will be displayed depending on button input.
②	LCD operation button	There are 4 buttons (Menu, ▼(Down), ▲(Up), Set) and you can access to menu and move, check the menu.
③	LED Indicator	Check 15 LED status such as Power, CPU-Alive, Ethernet-Linked/Active, COM1~5-TX/RX and Check
④	DMS2.5 Bottom cover	Unfasten 2 screws on the bottom and separate the bottom cover from DMS2.5. Then check cable connection part.

LED indicator

Item	Name	Status
Power	Power indicator	Turns blue when the power is supplied
CPU Alive	CPU operation indicator	Blinks in orange with 1 second intervals during normal operation
Ethernet - Linked	Internet connection indicator	Turns green during normal connection
Ethernet - Active	Internet data transmission/ reception indicator	Blinks in orange during normal transmission/ reception
COM1~5 - TX	OnOff controller/Outdoor unit data transmission indicator	Blinks in green during normal transmission
COM1~5 - RX	OnOff controller/Outdoor unit data reception indicator	Blinks in green during normal reception
Check	Indoor/outdoor unit/ error check indicator	Turns green when there is an error on more than one indoor/outdoor unit or in communication

ⅡⅡ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

3) Description of parts

Bottom

DI Terminal2
Connect Digital Input
: Channel 6~Channel10

DI Terminal1
Connect Digital Input
: Channel 1~Channel 5

Power Terminal
Connect DMS2.5 adapter

Reset Button
Reset DMS2.5

Serial Terminal
Service agent checks
error status

DO Terminal1
Connect Digital Output
: Channel 1~Channel 5

DO Terminal 2
Connect Digital Output
: Channel 6~Channel 10

RS485 Communication terminal
Connect for RS485
communication with devices
such as OnOff controller/
Outdoor units/PIM
Channel 0 ~ Channel 4

Cable tie groove
Arrange cables
connected to DMS2.5

LAN Terminal
Connect LAN cable

SD Card Socket
Socket for sub memory (SD or MMC)
(Sub memory is for DMS2.5 program update and set information saving)
※ Purchase SD card separately.

Menu and display

```
192.168.0.100  ← DMS2.5 IP
06:12:13(AM)   ← Current time
```

Menu   ▼   ▲   Set

Button	Detail description
LCD display	▪ General display : Displays IP address of the DMS2.5 and current time ▪ In Menu : Displays menu information and set value
Menu	▪ Access menu and select main menu ▪ Cancel menu setting
▼	▪ Move between menu ▪ Change the menu settings
▲	▪ Move between menu ▪ Change the menu settings
Set	▪ Access sub menu ▪ Save the change of menu settings

4) Connection diagram

▶ MIM-B16(PIM) should be connected to CH4(COM5) only.

▶ MIM-B16N(PIM) can be connected with outdoor units or controllers to same channel of DMS2.5.
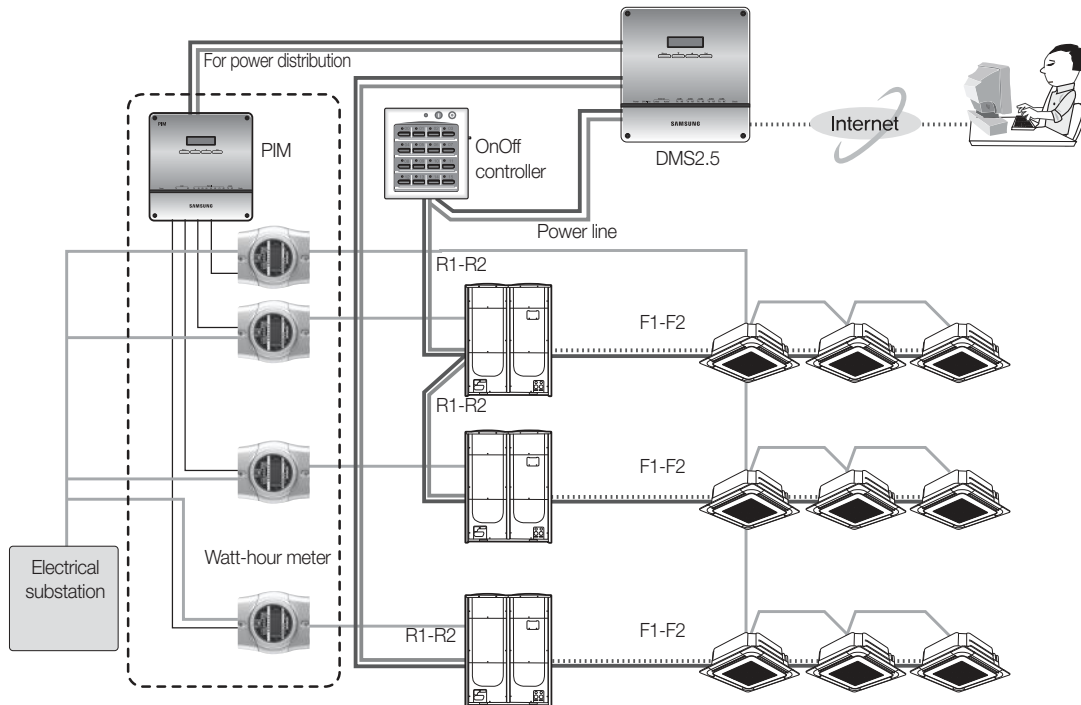
5) Wiring
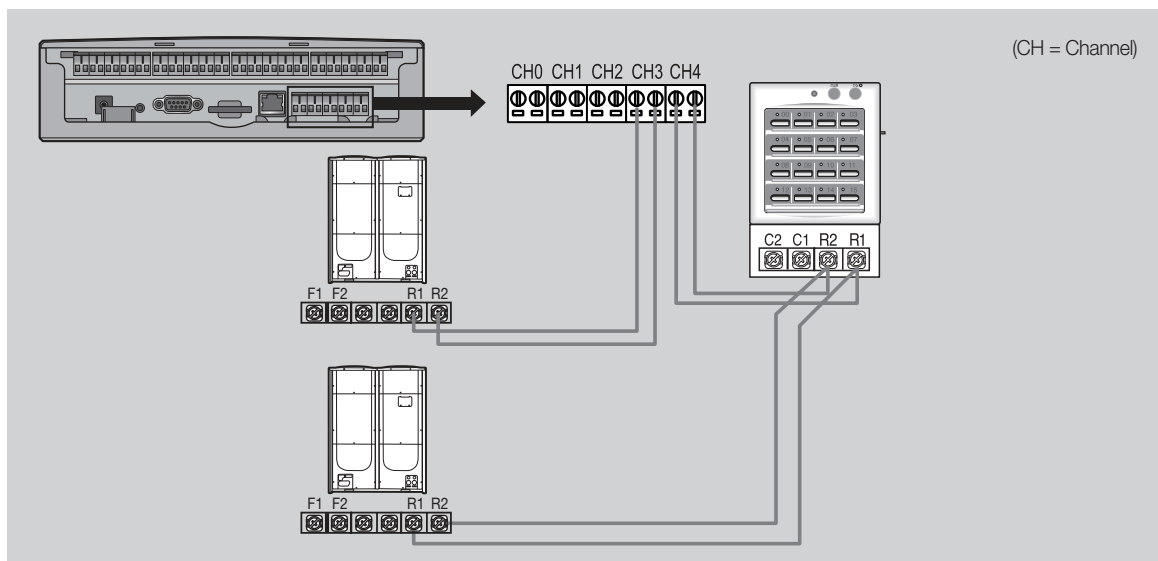
(CH = Channel)

(1) Connecting outdoor unit directly

• Maximum 16 outdoor units can be connected to each channel

• Total 80 outdoor units can be connected

(2) Connecting OnOff controller / Touch centralized controller

• Maximum 15 OnOff controller / Touch centralized controller can be connected to each channel

☑ *Note*

♦ DMS2.5 can connect outdoor unit and OnOff controller / Touch centralized controller at the same time.

♦ Outdoor unit and OnOff controller / Touch centralized controller can be connected to 1 communication channel at the same time.

III Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

5) Wiring

Connecting with outdoor unit
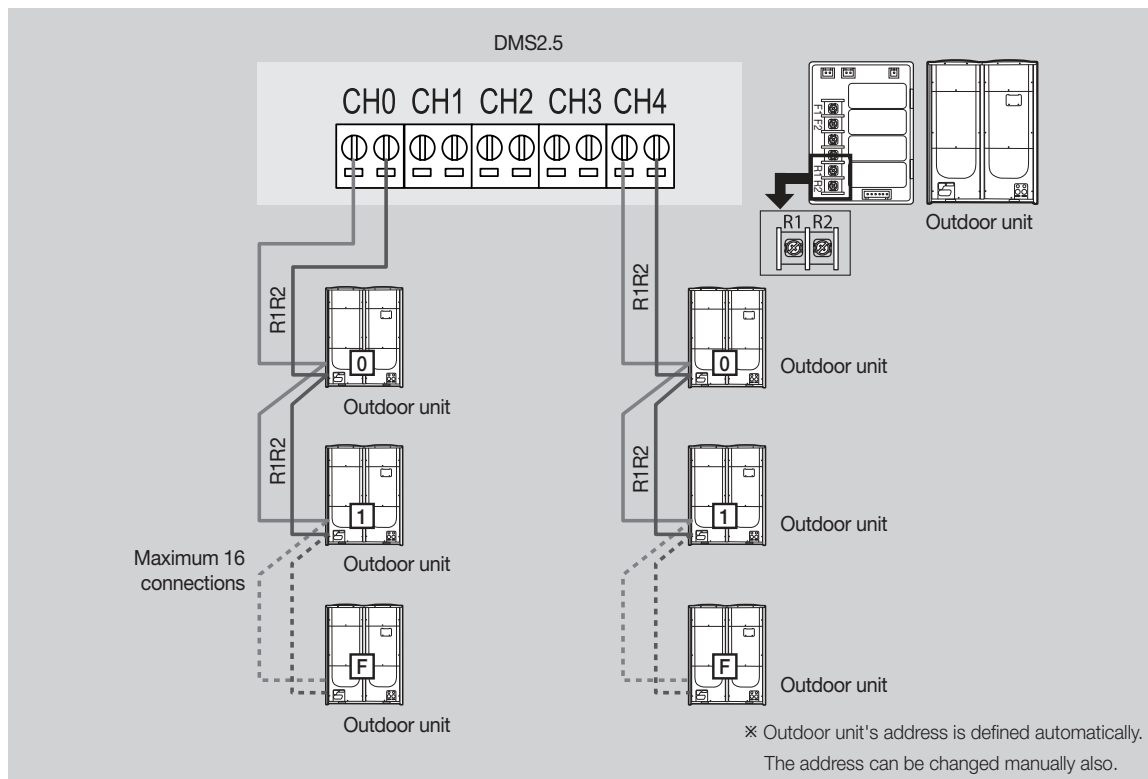
DMS2.5

CH0 CH1 CH2 CH3 CH4

R1R2

R1R2

R1 R2

Outdoor unit

0 — Outdoor unit

R1R2

1 — Outdoor unit

Maximum 16 connections

0 — Outdoor unit

R1R2

1 — Outdoor unit

F — Outdoor unit

F — Outdoor unit

Outdoor unit

※ Outdoor unit's address is defined automatically. The address can be changed manually also.

Connecting with OnOff controller / Touch centralized controller

DMS2.5

CH0 CH1 CH2 CH3 CH4

ex) OnOff controller

C2 C1 R2 R1

Maximum 15 OnOff controllers

Outdoor unit

R1R2

Outdoor unit

C2 C1 R2 R1

R1R2

Outdoor unit

Connecting with outdoor unit and OnOff controller / Touch centralized controller

Wiring distance

Network radius
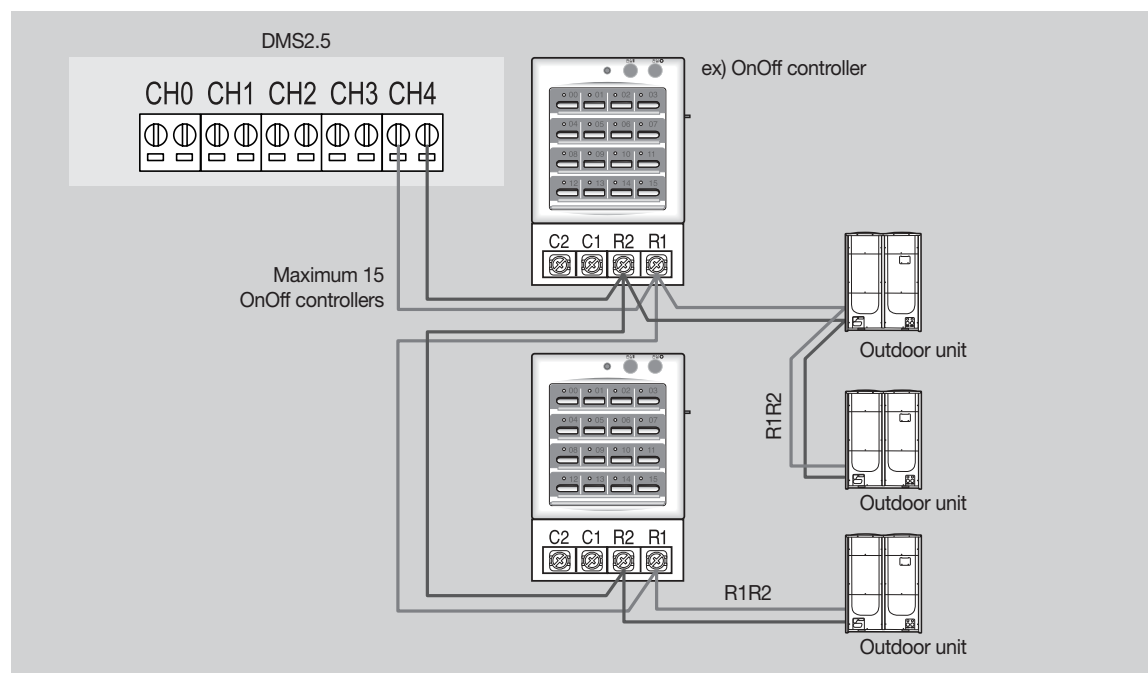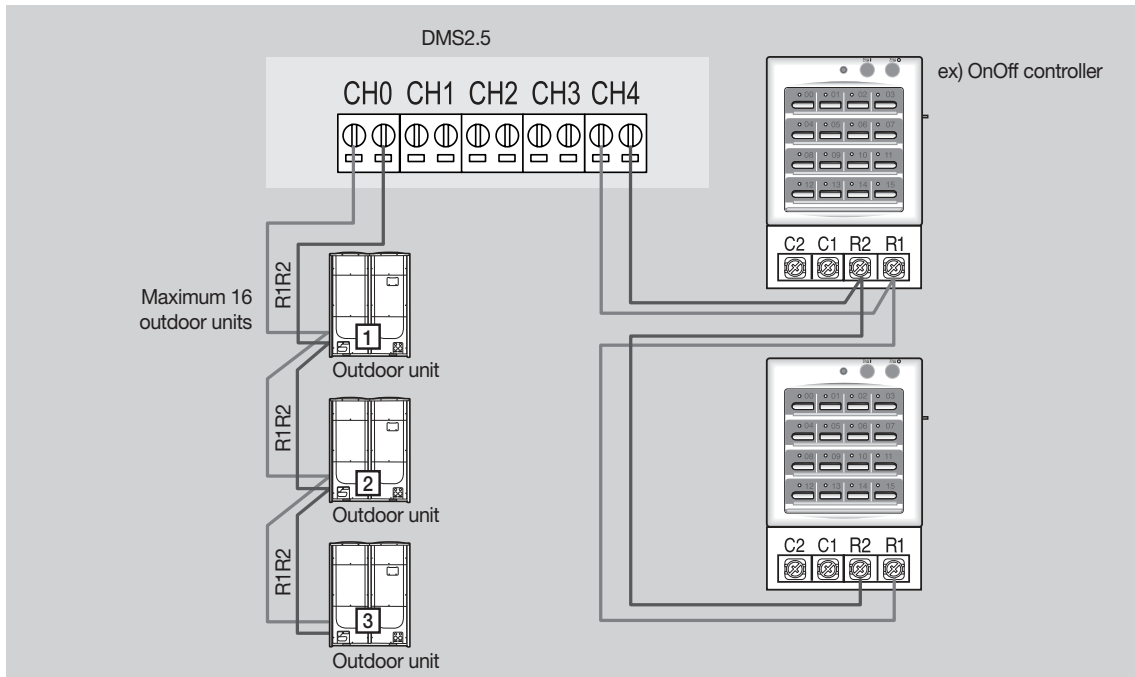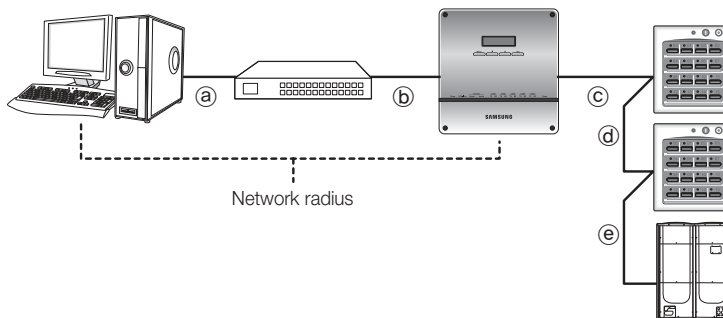
▶ **Distance between DMS2.5 and OnOff controller / Touch centralized controller /outdoor unit**

• Distance from the DMS2.5 to the furthest device cannot exceed 1000m(3280ft).

• ⓒ + ⓓ + ⓔ ≤ *1000m(3280ft)*

▶ **Distance between DMS2.5 and upper level controller**

• Since DMS2.5 supports 100 Base-T Ethernet, first repeater or upper level controller from the DMS2.5 cannot be further than 100m(328ft) (IEEE 802.3). Therefore, maximum network radius is restricted to 500m(1640ft).

ⓐ, ⓑ, ⓒ, ⓓ, ⓔ = *100m((328ft)*

HUB
Repeater

Maximum number of repeaters = 4

ⓐ 500m(1640ft)

107
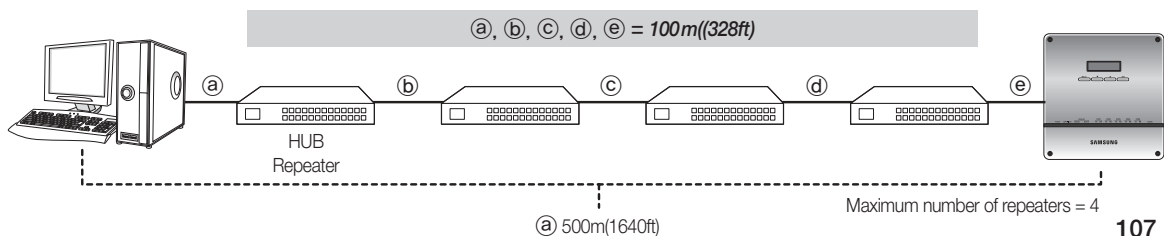
Ⅲ Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

6) Function

Tracking

▶ Tracking is an operation that finds devices which are connected to DMS2.5.
Through tracking operation, devices which are connected to DMS2.5 can recognize if they are connecting to DMS2.5.
To supervise and control system air conditioner using DMS2.5, tracking should be done first.

• When outdoor unit or controller is connected to channel, set as "NEW"
• When PIM(MIM-B16N) is connected to channel, set as "IM"
• PIM should be connected separately with outdoor unit or controllers.

▶ You can check the number of installed devices, address of the devices or rename the indoor unit after tracking is completed.

Indoor unit name
-> User can modify it.

Indoor unit address

Outdoor unit address

Channel number

Device type
16 : outdoor unit
32 : Indoor unit
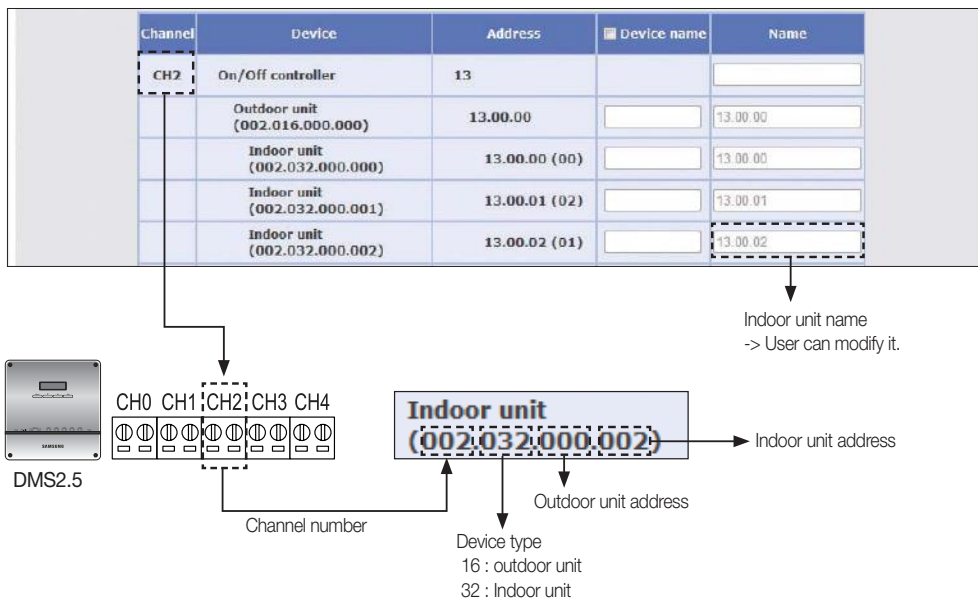
Control & monitoring

▶ DMS2.5 can control and monitor Max 256 devices. (Indoor unit, ERV, AHU, DVM CHILLER, FCU KIT)
 And it also controls and monitors external contact point (8 Digital input, 6 Digital output.)
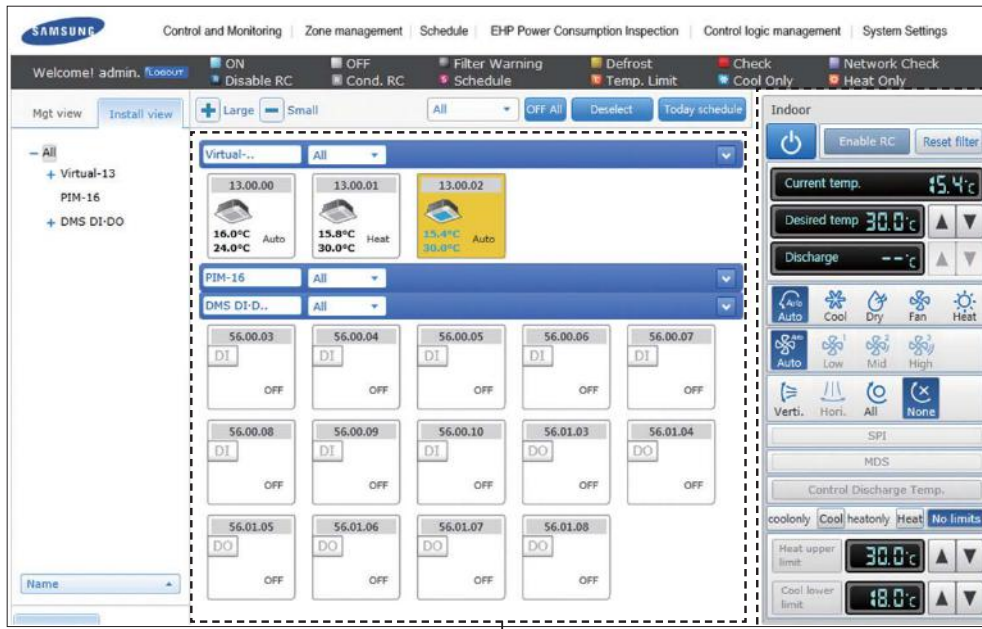
Monitoring
Indoor unit, ERV, AHU
External contact point

Control
Variable web remote controllers
depends on device type.

Multiple language support

▶ DMS2.5 (MIM-D01AN) supports 14 languages

Set silent contol

▶ DMS2.5(MIM-D01AN) can contol indoor unit without operation beeping sound using below setting option.

• Control and Monitoring: Select this if you want to control silently in 'Control and Monitoring' screen of DMS2.5.

• Schedule : Select this if you want to perform 'Schedule' silently.

• Control logic : Select this if you want to perform 'Control logic' silently.

Ⅲ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

OnOff controller restriction

▶ DMS2.5 (MIM-D01AN) can restrict OnOff controller, Touch centralized controller usage.

Set level control	
☐ Include the On/Off controller	
	Edit Save
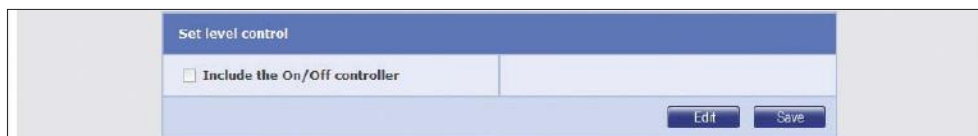
• Select this if you want to restrict controlling from OnOff controller and Touch centralized controller when you disable RC from the DMS2.5.

Contact point control

▶ You can select emergency operation pattern

Select the contact control pattern			
◉ Pattern1	○ Pattern2	○ Pattern3	○ Pattern4
			Edit Save

(1) Pattern 2
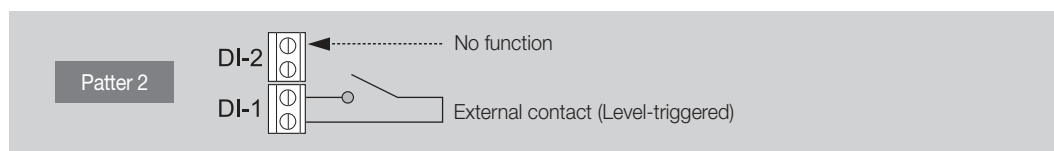
▶ Short external contact : Emergency stop
- Turns off all the indoor units when there is an ON signal input
- All the remote control use is disabled
- Control from S-NET3 is unavailable
- Disable schedule control

▶ Open external contact : Resume operation
- After Emergency stop, the indoor units stay in the current OFF states.
- All the remote control use is restored to the previous state.
- Schedule control is enabled again.

(2) Pattern 3
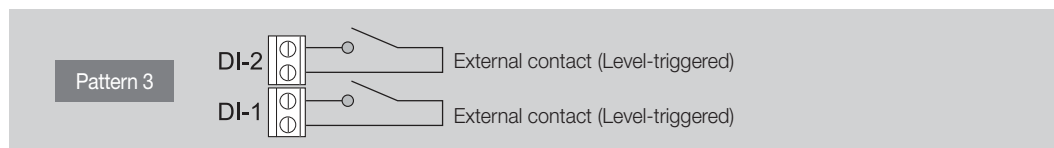
▶ External contact input to DI-1
- Short contact : Starts all indoor unit operation.
- Open contact : Stops all indoor unit operation.
- ※ Schedule control is not interrupted in Pattern 3.

▶ External contact input to DI-2
- Short contact : Disables the use of all wired/ wireless remote controllers.
- Open contact : Enables the use of all wired/ wireless remote controllers.

(3) Pattern 4
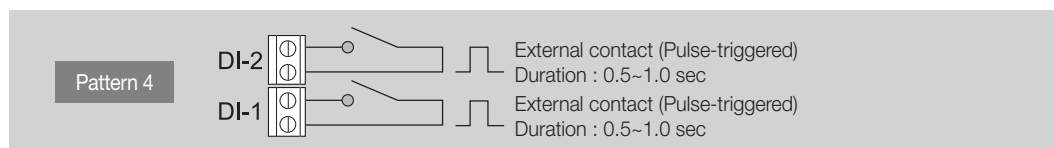
▶ External contact pulse input to DI-1
- Short pulse-triggered : Starts all indoor unit operation.
- ※ Schedule control is not interrupted in Pattern 4.

▶ External contact pulse input to DI-2
- Short pulse-triggered : Stops all indoor unit operation.

General external contact point control

DMS2.5 has Digital input/output ports to check the external device status or turn them On/Off through contact point.

Digital input — Channel 1 ... Channel 10 Channel 1 ... Channel 10 — Digital Output
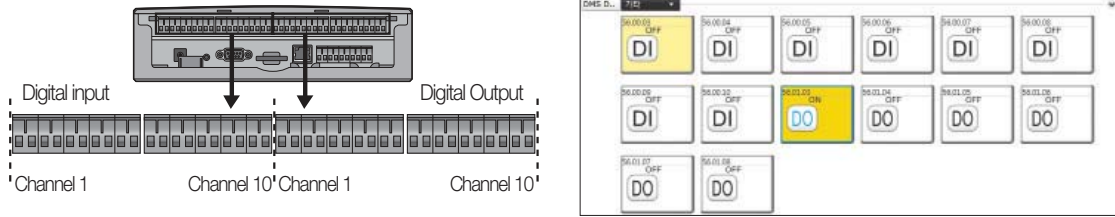
▶ DI : Voltage free contact signal input (Open / Short)
- Channel 1, Channel 2 is occupied with [Emergency stop] function.
- Channel 3~Channel 10 : DMS2.5 can monitor the contact signal input state of each channel

▶ DO : Contact signal output (DC 12V)
- Channel 1, Channel 2, Channel 9 and Channel 10 is occupied with other functions.
- Channel 3~Channel 8 : DMS2.5 can control contact signal output.

☑ *Note*
- DI 1, 2/ DO 1, 2, 9, 10 will be excluded from control and monitoring since it is being used by internal function of DMS2.5.

Indoor unit usage restriction

- Operation limit : To prevent the wrong operation mode setting, it can limit the operation mode of indoor unit.
- Temperature limit : It can set the lower temperature limit in Cool mode and the upper temperature limit in Heat mode.

❶ Indoor unit address
❷ Operation mode restriction
❸ Control mode
❹ Setting Upper temperature limit in Heating, Lower temperature limit in Cooling

❶ Check the indoor unit address.

Virtual OnOff controller (11~15. Depends on channel number) — 13.00.01 (02) — Outdoor unit / Indoor unit main address / Indoor unit group address (RMC(2))
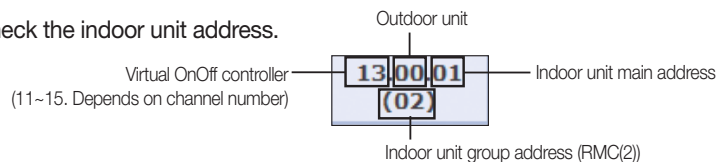
❷ Select the Limit mode
- Indoor units within same outdoor unit must be set in same limit mode.
- All indoor units of one outdoor unit set same operation mode restriction automatically.

❸ Control mode will be set automatically depends on the seleceted restricted mode
- Ex) When the restricted mode is set to [Cool-only] and then [Control mode] is set to [Cool] automatically
  If user set [Heating mode] using remote controller → Indoor unit ignores the command.

❹ Set the Upper temperature limit in Heating and Lower temperature limit in Cooling.
- Upper temperature limit in Heating and Lower temperature limit in Cooling can be set differently for each indoor unit.
  [Cooling：18℃~30 ℃ (64℉~86℉), Heating：16 ℃~30 ℃ (61℉~86℉)]

❚❚❚ Integrated management systems

1. DMS2.5

☐ *MIM-D01AN*

6) Function

❚ Logic control

What is logic control?

User can control the air conditioner, ERV, AHU and digital output depending on the conditions, such as room temperature and outdoor temperature, set by the user. Input condition can be used with parameter and it will be calculated with arithmetic equation. Schedule function executes operation by time but logic control executes operation according to the conditions that set by the user.

Examples of utilizing the logic control

Case 1) Government regulates the lowest room temperature to be 26ºC (78ºF) in public places. When the room temperature is lower than 26ºC (78ºF), administrator must turn off all the air conditioners in the area. Is there any way for the air conditioner to turn off automatically depending on the certain room temperature?

Case2) During spring and fall, it is cold in the morning and warm in the afternoon. Therefore, I'm using the air conditioner in heating mode in the morning and cooling mode in the afternoon. Can I set the air conditioner to change operation mode automatically depending on the outdoor temperature?

Case 3) I'm using air conditioner with ERV. In the days with the outdoor temperature relatively lower than the indoor, I want to use ERV instead of the air conditioner to ventilate and minimize the air conditioner use. Is there any way to set the air conditioner or ERV to operate appropriately and automatically depending on the temperature?

	Input				
	Compound factor	Factor	Comparison operator	Standard value	Duration (minute)
		Select a factor	= ▼	⦿ None ▼ ○ Select a factor	⦿Cancel ○Apply 1 ▼
☐	AND ▼	Select a factor	= ▼	⦿ None ▼ ○ Select a factor	⦿Cancel ○Apply 1 ▼
☐	AND ▼	Select a factor	= ▼	⦿ None ▼ ○ Select a factor	⦿Cancel ○Apply 1 ▼

	Output	
☐	Factor	Command
	Select a factor	⦿ None ▼ ○ Select a factor
☐	Select a factor	⦿ None ▼ ○ Select a factor
☐	Select a factor	⦿ None ▼ ○ Select a factor

Add   Delete

Input

1. Select the factor to input condition
   ▪ Device, factor

2. Edit the condition
   ▪ Compound factor
   ▪ Comparison operator
   ▪ Standard value
   ▪ Duration

➡

Output

1. Select output factor
   ▪ Device, factor

2. Edit output
   ▪ Create control

Edit factor		
Single factor	Power Current temp. Desired temp. Outdoor temp. Mode Fan speed Air flow Enable/Disable RC	
Arithmetic factor	+ -	Current temp. Desired temp. Outdoor temp.
Function factor	Average	Current temp. Desired temp. Outdoor temp.

Compound factor
AND
OR

Comparison operator
=
=>
=<
>
<
≠

Command
Power
Desired temp.
Mode
Fan speed
Air swing
Enable/Disable RC

(1) Editing input factor

| ① Click "Select a factor". | ➡ | ② Select type of the factor | ➡ | ③ Click "Select a device" |

⬇

| ⑥ Click "Apply". | ⬅ | ⑤ Select a detail item | ⬅ | ④ Select the device from the list. |

⬇

| ⑦ Select the comparison operator | ➡ | ⑧ Select a standard value | ➡ | ⑨ Select the duration |

▶ Single factor : 1 device and 1 factor.

▶ Arithmetic : It means 2 devices are connected by arithmetic operator.

▶ Function : Use average value of various conditions from the device and create it as a factor.

ⅡⅡ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

Logic control

(1) Editing input factor

Compound factor	Factor	Comparison operator	Standard value		Duration (minute)
	00.00.00.Outside temp.	= ▾	⊙ ◯ Select a factor		⊙ Cancel ◯ Apply 1 ▾
☐ AND ▾	Select a factor	= / => / =< / < / > / ≠	⊙ None ▾ ◯ Select a factor		⊙ Cancel ◯ Apply 1 ▾
☐ OR	Select a factor		⊙ None ▾ ◯ Select a factor		⊙ Cancel ◯ Apply 1 ▾

- Compound factor : AND, OR, No selection
  Ex) Apply 'AND' or 'OR' to 3 factors
    → (input 1) And (input 2) OR (input 3)
- Comparison operator : =, =>, =<, <, >, ≠
- Standard value : Standard value of the factor
  Ex) When the factor is "Outdoor temperature of the indoor unit number 00", then standard value is value of the "Outdoor temperature".
    → "Outdoor temperature of the indoor unit number 00" > 20
- Duration : Duration can be set between 1~60 min.

Item	Comparison operator	Standard value
Power	=, ≠	On, Off
Current temp	=, =>, =<, <, >, ≠	Temperature value (number)
Desired temp	=, =>, =<, <, >, ≠	Temperature value (number)
Outside temp	=, =>, =<, <, >, ≠	Temperature value (number)
Mode	=, ≠	Auto, Cool, Dry, Fan, Heat
Fan speed	=, ≠	Auto, Low, Med, High
Air flow	=, ≠	Vertical, Horizontal, All, None
Enable RC	=, ≠	ON, OFF, Level 1

(2) Editing output factor

① Click "Select a factor".	➡	② Click "Select a device".	➡	③ Select the device from the list.
				⬇
⑥ Select "Command".	⬅	⑤ Click "Apply".	⬅	④ Select a detail item to control.
⬇				
⑦ Click "Save".				

(3) Control example – Setting

Ex) Set the ERV to turn off together when the indoor unit turns off

❶ Click [Control logic management] → [Setting control logic] from DMS2.5 menu. Click [Register] to create new control logic.

❷ Enter Name, period/day and time for new control logic.

❸ **Create input condition :** Click [Select a factor] from the 'Input' window.

Ⅲ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

Logic control

(3) Control example – Setting

❹ Click [Select a device], then [Device selection] window will pop up.
Select a indoor unit to apply the new control logic.

❺ **Create input condition :** When the device is selected, click [Power] and click [Apply].
※ [Power] means the operation state (On/Off).

❻ **Create input condition :** Select '=' as a comparison operator and select "Off" as a standard value.

• Meaning: Execute output control when 00.00.00 device is off.

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❼ **Create output :** From the output window, select the device to apply the control when input condition is satisfied.
Click [Apply] when selection is completed.

❽ **Create output :** Select "Power" as a factor of the selected device and click [Apply].

❾ **Create output :** From the output window, select the control to be executed when input condition is satisfied.

• Turn off the ERV no. 0

❿ Click [Save] when the setting is completed.

⓫ To apply the new logic control, select the created logic and click [Apply].

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1. DMS2.5

❑ *MIM-D01AN*

6) Function

▌Logic control

(4) Control example – Control logic

Ex) Control logic 1 : Turn on 4 indoor units when outdoor temperature is 30°C or higher.
   Control logic 2 : Turn off 4 indoor units when outdoor temperature is 26°C.

Control logic 1

Name	PowerOn_Temp30
Period	2010 ⌄ 3 ⌄ 23 ⌄ – 2011 ⌄ 3 ⌄ 23 ⌄
Day	☐ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☐ Sat ☐ Daily
Time	8 ⌄ : 0 ⌄ – 18 ⌄ : 0 ⌄

Input

	Compound factor	Factor	Comparison operator	Standard value	Duration (minute)
		00.00.00.Outdoor temp.	=> ⌄	⊙ 30 ○ Select a factor	○ Cancel ⊙ Apply 5 ⌄
☐	AND ⌄	Select a factor	= ⌄	⊙ None ⌄ ○ Select a factor	⊙ Cancel ○ Apply 1 ⌄
☐	AND ⌄	Select a factor	= ⌄	⊙ None ⌄ ○ Select a factor	⊙ Cancel ○ Apply 1 ⌄

Output

☑	Factor	Command	
	00.00.00.Power	⊙ On ⌄	○ Select a factor
☑	00.00.01.Power	⊙ On ⌄	○ Select a factor
☑	00.00.02.Power	⊙ On ⌄	○ Select a factor
☑	00.00.03.Power	⊙ On ⌄	○ Select a factor

❶ **Input :** When outdoor temperature is 30°C (86°F) or higher.   ❷ When condition 1 lasted for 5 miniute.   ❸ **Output :** Turn on 4 indoor units.

Control logic 2

Name	PowerOff_Temp26
Period	2010 ⌄ 3 ⌄ 23 ⌄ – 2011 ⌄ 3 ⌄ 23 ⌄
Day	☐ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☐ Sat ☐ Daily
Time	8 ⌄ : 0 ⌄ – 18 ⌄ : 0 ⌄

Input

	Compound factor	Factor	Comparison operator	Standard value	Duration (minute)
		00.00.00.Outdoor temp.	=< ⌄	⊙ 26 ○ Select a factor	⊙ Cancel ○ Apply 1 ⌄
☐	AND ⌄	Select a factor	= ⌄	⊙ None ⌄ ○ Select a factor	⊙ Cancel ○ Apply 1 ⌄
☐	AND ⌄	Select a factor	= ⌄	⊙ None ⌄ ○ Select a factor	⊙ Cancel ○ Apply 1 ⌄

Output

☑	Factor	Command	
	00.00.00.Power	⊙ Off ⌄	○ Select a factor
☑	00.00.01.Power	⊙ Off ⌄	○ Select a factor
☑	00.00.02.Power	⊙ Off ⌄	○ Select a factor
☑	00.00.03.Power	⊙ Off ⌄	○ Select a factor

❶ **Input :** When outdoor temperature is 26°C(78°F) or lower.   ❷ **Output :** Turn off 4 indoor units.

Register control logic

Setting control logic

☑	No.	Name	Period	Days	Time	Apply	Run
☑	1	PowerOn_Temp30	2011-01-19 ~ 2012-01-19	Daily	00:00 ~ 24:00	No	No
☑	2 ?	PowerOff_Temp26	2011-01-19 ~ 2012-01-19	Daily	00:00 ~ 24:00	No	No

❶ Click

[Register] [Edit] [Delete] [Copy] [Apply] [Not apply]

❷ Click

Control logic applied

Setting control logic

☑	No.	Name	Period	Days	Time	Apply	Run
☐	1	PowerOn_Temp30	2011-01-19 ~ 2012-01-19	Daily	00:00 ~ 24:00	Yes	No
☐	2	PowerOff_Temp26	2011-01-19 ~ 2012-01-19	Daily	00:00 ~ 24:00	Yes	No

[Register] [Edit] [Delete] [Copy] [Apply] [Not apply]

Application completed

❘❘❘ Integrated management systems

1. DMS2.5

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6) Function

■ Power distribution

• Where does power consumption occurs?

Outdoor unit fan

Compressor   Outdoor unit PCB   Indoor unit PCB   Indoor unit fan

System power consumption includes:
1. **Main power -** Compressor operation power
2. **Fan power** - Indoor/Outdoor unit fan operation
3. **Stand-by power** - Preheating coil power, Indoor/Outdoor PCB power
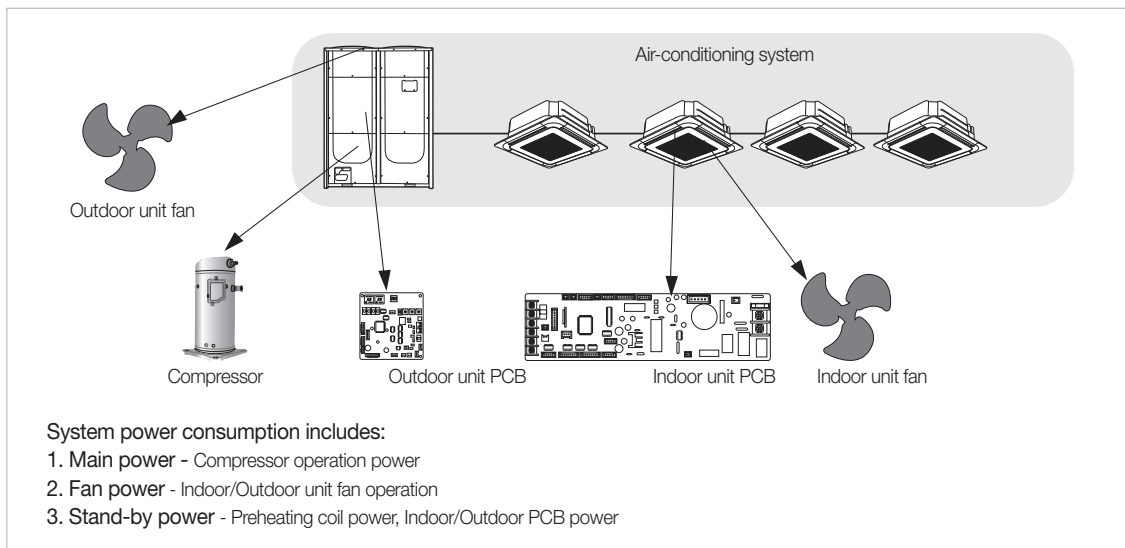
(1) DMS2.5 power distribution theory

All the system information of power and indoor/outdoor operation is always monitored by the DMS2.5 for power distribution calculation.

IDU: Indoor unit

$$\text{IDU A's electric power consumption} = \text{Total power consumption} \times \frac{\text{Demand capacity of IDU A}}{\text{Total demand capacity of all IDUs}}$$

Here, Demand capacity = Main capacity + Fan capacity + Stand-by capacity
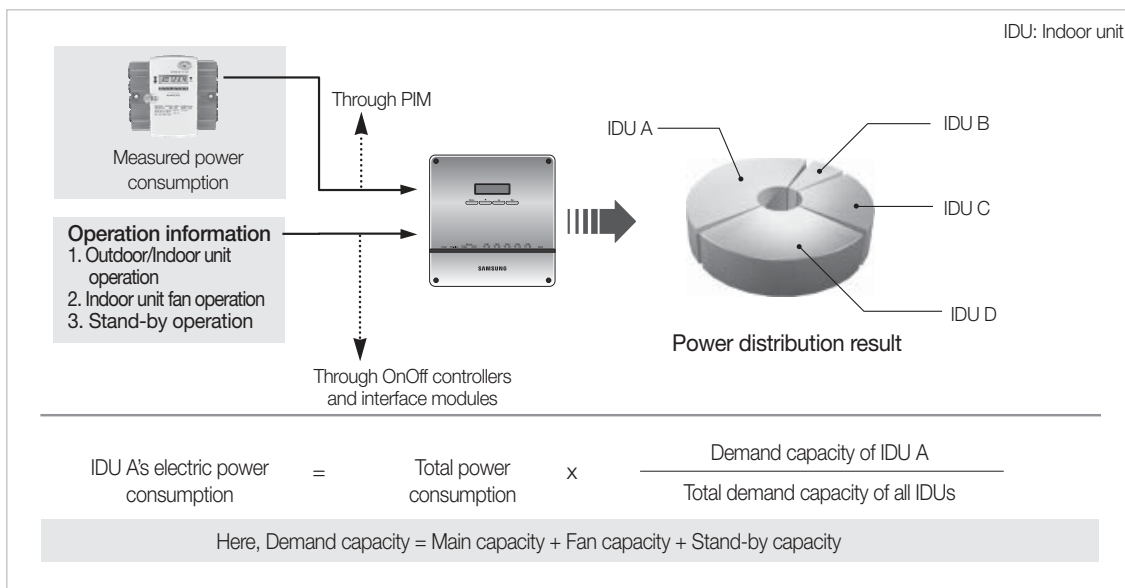
☑ *Note*

◆ Demand capacity means the value that parameters of different units like required power and refrigerant amount are transformed into as a common number to make easy algebraic calculation.
◆ Power distribution is not supported to ERV, DVM CHILLER, FCU KIT.
◆ You can check DVM CHILLER's power consumption in the meter history menu.
  (PIM and watt-hour meter must be connected)

(2) Main capacity

This is determined dynamically with the combination of various refrigerating parameters such as difference between room and set temperature or evaporator input/output temperature.

These parameters, as a result, determine the refrigerant amount flowing into the indoor unit by controlling EEV steps.

(3) Fan capacity

This is constant value for indoor unit models. It differs depending on indoor units of different capacity.

When the indoor unit starts Cooling, Heating, Auto and Fan modes, fan capacity values of the indoor units are always monitored by the DMS2.5. DMS2.5 gathers capacity of zero value when they stop operating.

(4) Stand-by capacity

Stand-by capacity is constant for all indoor units regardless of their operations. Since stand-by power is consumed all the time by PCBs and preheating coils in the outdoor unit, whose value is monitored with the same fraction which is relatively small compared to main capacity or fan capacity.

(5) What if the room temperature begins to reach the set temperature?

If the room temperature begins to reach the set temperature, the indoor unit does not have to extract the full refrigerant amount to keep the set condition. Capacity from the indoor unit goes down to indicate the outdoor unit that it does not need refrigerant at the full capacity state.

When the room temperature has reached the set temperature, there is no need to pump the refrigerant into the indoor unit. Indoor unit goes into the thermally OFF state and sends capacity of zero value to the outdoor unit and the DMS2.5, which results in fan or stand-by power distribution only.

(6) Capacity accumulation and power distribution

DMS2.5 gathers power consumption and capacity values during one-day.
At midnight, 1-day power consumption is distributed to the indoor units using the gathered information.

00:00   24-hour   24:00

During 24 hours,
1. Reads every indoor unit operation
2. Reads watt-hour meter value
3. Accumulates 3 capacity values

1. Calculates consumed power for 1 day.
2. Calculates accumulated capacity values
3. Distributes 1-day power consumption
4. Clears accumulated capacity values
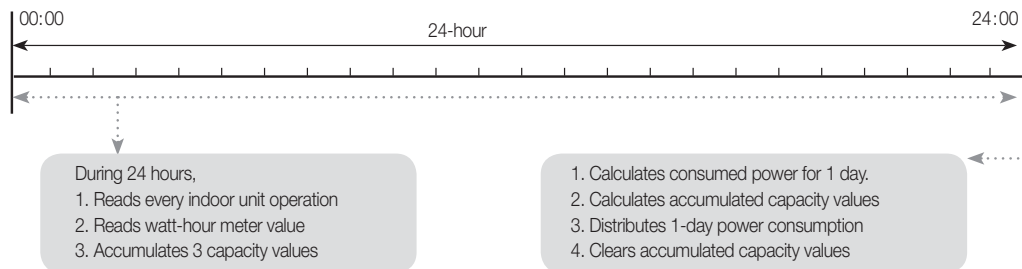
(7) Undesirable situation protection

Even when there occurred communication error between the DMS2.5 and PIM or DMS2.5 can no longer gather power consumption, DMS2.5 stores power distribution ratio for all indoor units. As soon as communication between them resumes and power information is transmitted to the DMS2.5, power distribution during the interrupted period is recovered as normal condition.

(8) Not equal stand-by power distribution (In case all the indoor units are stopped)

Since there always exists error in each power consumption amount, distributed stand-by power may not be equal for different air-conditioning system. But the difference is so small that it is negligible.

$B = C, D = E$
$B \neq D$
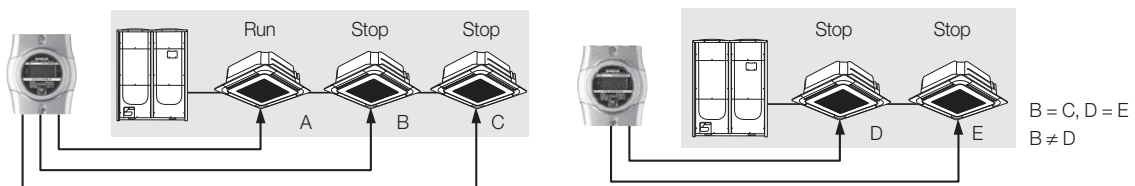
Ⅲ Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

6) Function

Power distribution

Power distribution equation
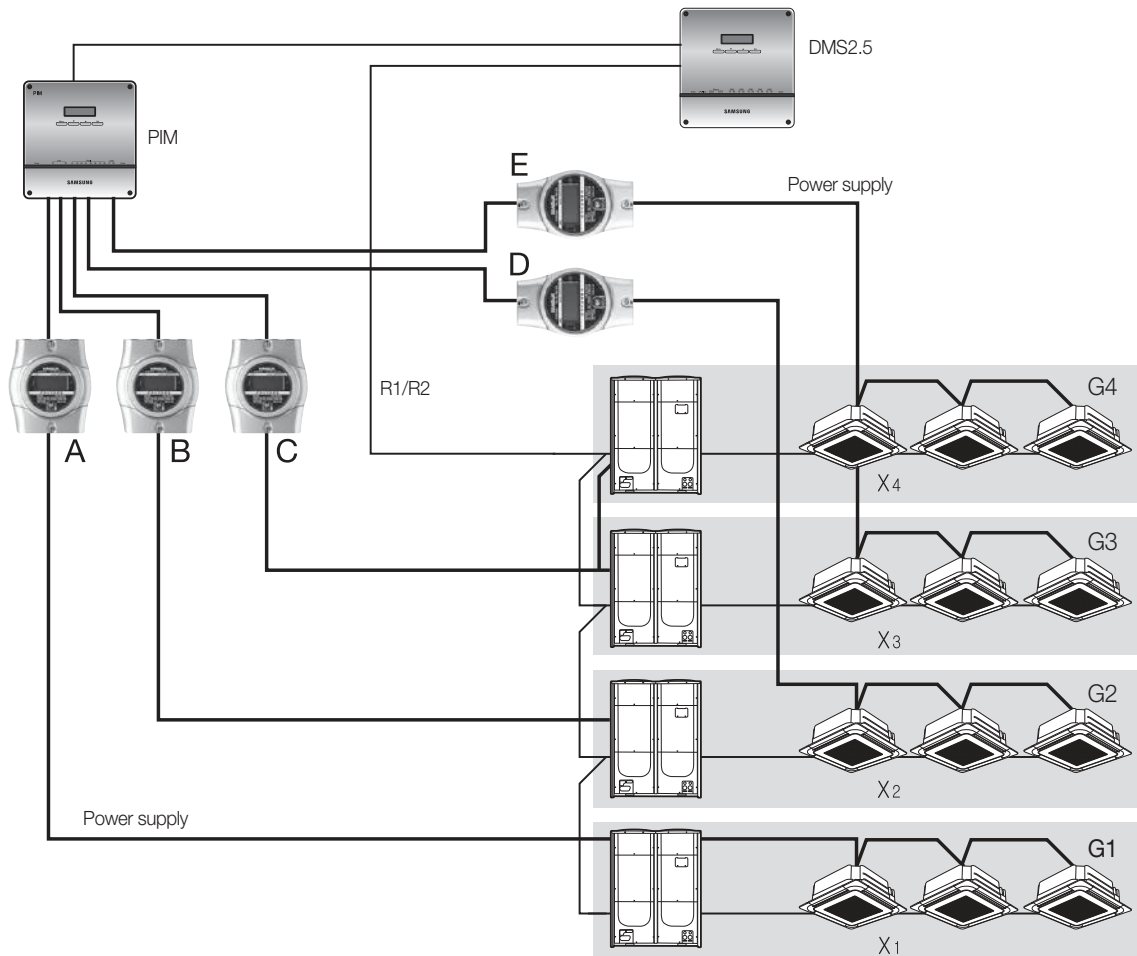
▶ When configuring the DMS2.5 and the whole system, mapping of watt-hour meters for indoor/outdoor units must be precisely assigned for correct power distribution.

$$\text{Indoor unit power X in G1} = \text{Watt-hour A} \times \frac{\text{Main + Fan + Stand-by capacity of indoor unit X}}{\text{Total capacity of G1}}$$

$$\text{Indoor unit power X in G2} = \text{Watt-hour B} \times \frac{\text{Main + Fan + Stand-by capacity of indoor unit X}}{\text{Total capacity of G2}}$$

$$+ \text{Watt-hour D} \times \frac{\text{Fan + Stand-by capacity of indoor unit X}}{\text{Total Fan/Stand-by capacity of G2}}$$

$$\text{Indoor unit power X in G3+G4} = \text{Watt-hour C} \times \frac{\text{Main + Fan + Stand-by capacity of indoor unit X}}{\text{Total capacity of G3 + G4}}$$

$$+ \text{Watt-hour E} \times \frac{\text{Fan + Stand-by capacity of indoor unit X}}{\text{Total Fan/Stand-by capacity of G3 + G4}}$$

Example

Suppose capacity values accumulated at 24:00 during one whole day is as follows.

360kWh consumed
(outdoor + indoor)

Strong cooling — A
Week cooling — B
Fan mode — C
Stop — D

A
Main capacity = 105
Fan capacity = 20
Stand-by capacity = 5
Sum = 130

B
Main capacity = 60
Fan capacity = 20
Stand-by capacity = 5
Sum = 85

C
Main capacity = 0
Fan capacity = 20
Stand-by capacity = 5
Sum = 25

D
Main capacity = 0
Fan capacity = 0
Stand-by capacity = 5
Sum = 5
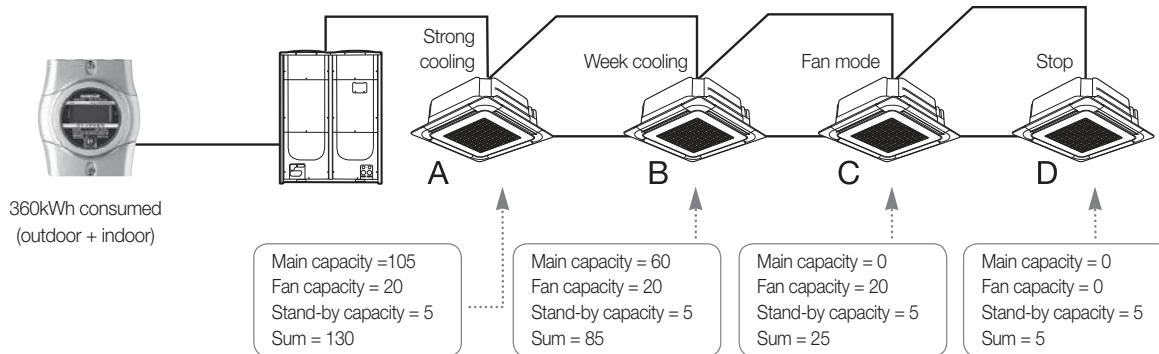
$$\text{Pd of Indoor unit A} = \frac{\text{Indoor unit capacity}}{\text{Total capacity}} \times \text{Total kWh} = \frac{130 \times 360}{130 + 85 + 25 + 5} = 192.020 \text{ kWh}$$

$$\text{Pd of Indoor unit B} = \frac{85 \times 360}{130 + 85 + 25 + 5} = 124.900 \text{ kWh}$$

$$\text{Pd of Indoor unit C} = \frac{25 \times 360}{130 + 85 + 25 + 5} = 36.735 \text{ kWh}$$

$$\text{Pd of Indoor unit D} = \frac{5 \times 360}{130 + 85 + 25 + 5} = 7.347 \text{ kWh}$$

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1. DMS2.5

❑ *MIM-D01AN*

6) Function

▮ Power distribution

Installation example (Allowed)
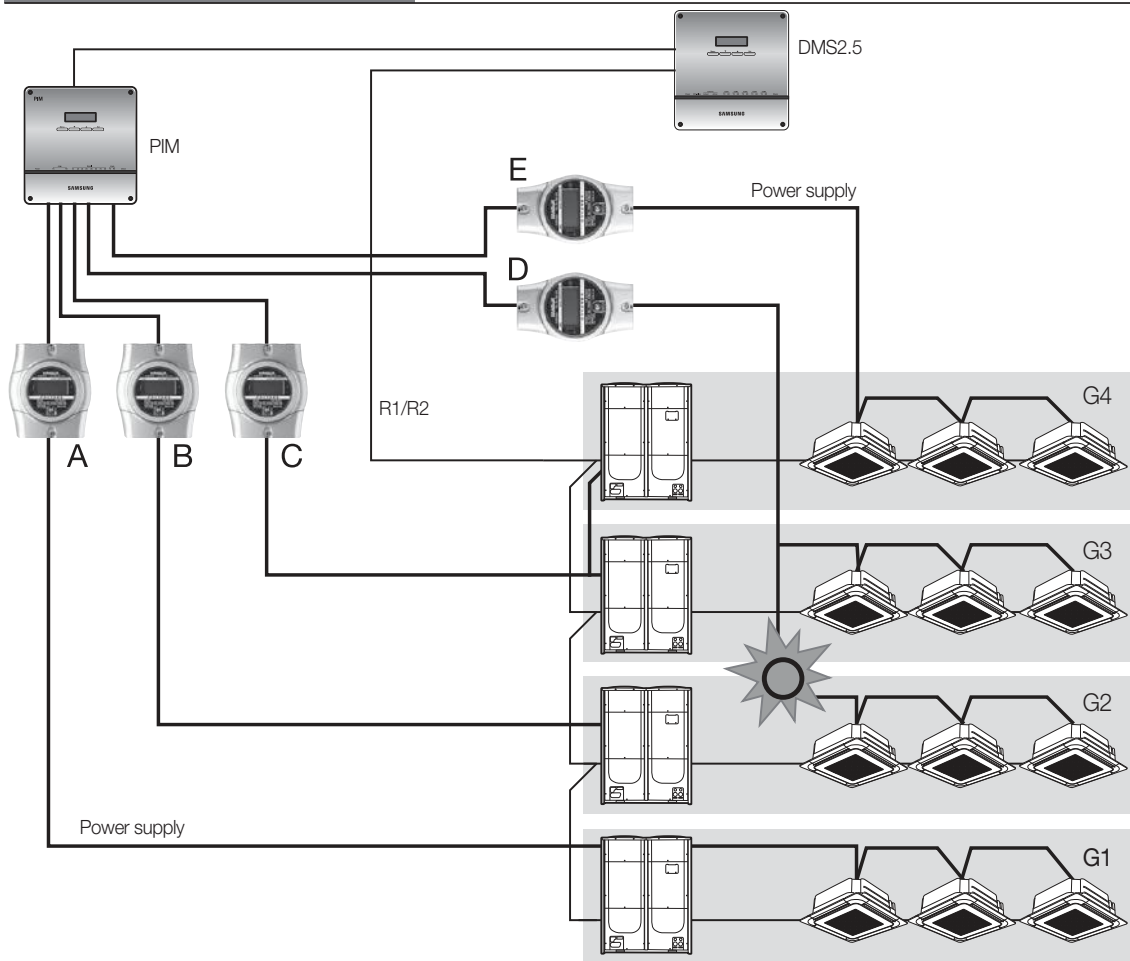
Mapping watt-hour meters to indoor/outdoor units

- Watt-hour meter A is mapped to all indoor/outdoor units in G1.

- Watt-hour meter B is mapped to the outdoor unit in G2.

- Watt-hour meter C is mapped to the outdoor units in G3 and G4.

- Watt-hour meter D is mapped to the indoor units in G2 + G3.

- Watt-hour meter E is mapped to the indoor units in G4.

※ Installation above is allowed with proper mapping configuration.

☑ *Note*
- ◆ Watt-hour meter can be shared to the multiple indoor/outdoor systems.

Installation example (Not allowed)

All indoor units in one outdoor unit must have the same power source.

• Installation above cannot be available for the reason that one indoor unit in G1 has different power source from the other indoor units.
  In this case, fractional power of D consumed by the separate-powered indoor unit in G1 is distributed to the indoor units in G2 and G3.

▥ Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

6) Function

▮ Power distribution

(10) Setting the inspection section

If you want to check the distribution result by time period, set the time section.
You must use S-NET3 to check the distribution result by time period.

(11) Setting the power distribution environment

This is important task for checking precise energy consumption of the outdoor/indoor unit. Each watt-hour meter connected to outdoor unit must be checked for which channel of the PIM interface module it is connected.
Then PIM channel must be set according to the outdoor unit.

Indoor units must be checked which watt-hour meter it is connected to and then PIM channel of the corresponding watt-hour meter must be set according to indoor unit PIM channel as shown below.

Channel setting by indoor unit

Indoor unit address	Indoor unit name	Outdoor unit SIM / PIM channel				Indoor unit SIM / PIM channel	Outdoor unit virtual channel	Indoor unit virtual channel
		Channel1	Channel2	Channel3	Channel4			
13.00.00	13.00.00	16.1				16.3		
13.00.01	13.00.01	16.1				16.3		
13.00.02	13.00.02	16.1				16.3		
13.01.00	13.01.00	16.2				16.4		
13.01.01	13.01.01	16.2				16.4		
13.01.02	13.01.02	16.2				16.4		

Example of watt hour meter installation ❶ | Installing watt-hour meter to outdoor/ indoor unit

Main circuit breaker

PIM

Address 0

Watt-hour meter A ➜ CH1
Watt-hour meter B ➜ CH2
Watt-hour meter C ➜ CH3
Watt-hour meter D ➜ CH4

A/B

R1/R2

A   B   C   D

1 phase power

0   1   2

F1/F2

Pipe connection

R1/R2

0   1   2

F1/F2

3 phase power

Pipe connection

Channel setting by indoor unit								
Indoor unit address	Indoor unit name	Outdoor unit SIM / PIM channel				Indoor unit SIM / PIM channel	Outdoor unit virtual channel	Indoor unit virtual channel
		Channel1	Channel2	Channel3	Channel4			
13.00.00	13.00.00	16.1				16.3		
13.00.01	13.00.01	16.1				16.3		
13.00.02	13.00.02	16.1				16.3		
13.01.00	13.01.00	16.2				16.4		
13.01.01	13.01.01	16.2				16.4		
13.01.02	13.01.02	16.2				16.4		

※ Connect appropriate watt-hour meter to outdoor/ indoor unit.

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1. DMS2.5

☐ *MIM-D01AN*

6) Function

Power distribution

| Example of watt hour meter installation ❷ | Installing 1 watt-hour meter to all indoor units |

Main circuit breaker

PIM

Address 0

Watt-hour meter A ➜ CH1
Watt-hour meter B ➜ CH2
Watt-hour meter C ➜ CH3
Watt-hour meter D ➜ CH4

A/B

R1/R2

1 phase power

0   1   2

F1/F2

Pipe connection

R1/R2

0   1   2

F1/F2

Pipe connection

3 phase power

Channel setting by indoor unit

Indoor unit address	Indoor unit name	Outdoor unit SIM / PIM channel				Indoor unit SIM / PIM channel	Outdoor unit virtual channel	Indoor unit virtual channel
		Channel1	Channel2	Channel3	Channel4			
13.00.00	13.00.00	16.1				16.3		
13.00.01	13.00.01	16.1				16.3		
13.00.02	13.00.02	16.1				16.3		
13.01.00	13.01.00	16.2				16.3		
13.01.01	13.01.01	16.2				16.3		
13.01.02	13.01.02	16.2				16.3		

Since all indoor units are connected to 1 watt-hour meter, PIM channel address of all indoor units is same.

Example of watt hour meter installation ❸ | Using CT watt-hour meter to and outdoor unit

Main circuit breaker

PIM

Address 0

R1/R2

R S T N

5 : 1

5 : 1

5 : 1

CT-type watt-hour meter

3 phase 4 wire voltage

Watt-hour meter A ➜ CH1
Watt-hour meter B ➜ CH2
Watt-hour meter C ➜ CH3
Watt-hour meter D ➜ CH4

A   B   C   D

R1/R2

1 phase power

0   1   2

F1/F2

Pipe
connection

R1/R2

0   1   2

F1/F2

Pipe
connection

3 phase power

Setting and checking watt-hour meter			Kilowatthour history
SIM / PIM Channel	Name	CT proportion	Watt-hour meter value (kWh)
16.1	16.1	5	100.0
16.2	16.2	5	100.0
16.3	16.3	1	100.0
16.4	16.4	1	100.0
16.5	16.5	1	100.0
16.6	16.6	1	100.0
16.7	16.7	1	100.0
16.8	16.8	1	100.0

[Setting and checking
watt-hour meter]
From the menu, CT
proportion of the CT
watt-hour meter must
be entered.

☑ *Note*

• After entering CT proportion of the CT watt-hour meter, watt-hour meter must be set to correct outdoor/indoor units
from the [Channel setting by indoor unit] window.

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Ⅲ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

■ Power distribution

Checking the watt-hour meter connection

Kilowatthour history of the watt-hour meter, connected to each PIM interface module, can be checked.
Maximum 365 days worth of Kilowatthour history can be checked.

Setting and checking watt-hour meter			Kilowatthour history
SIM / PIM Channel	**Name**	**CT proportion**	**Watt-hour meter value (kWh)**
16.1	16.1	5	100.0
16.2	16.2	5	100.0
16.3	16.3	1	100.0
16.4	16.4	1	100.0
16.5	16.5	1	100.0
16.6	16.6	1	100.0
16.7	16.7	1	100.0
16.8	16.8	1	100.0

SIM / PIM Address 16   Kilowatthour setting & inquiry
2011 1 15 ~ 2011 1 18   Check

Date	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
2011-01-15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011-01-16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011-01-17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011-01-18	1940.9	240.4	3199.7	299.9	0.0	0.0	0.0	0.0

Setting virtual watt-hour meter

When watt-hour meter or PIM interface module is not installed to a watt-hour meter channel, virtual channel can be used to manually distribute the power distribution

Setting and checking virtual channel

Virtual Channel	Name
24.1	24.1
24.2	24.2
24.3	24.3
24.4	24.4
24.5	24.5
31.11	31.11
31.12	31.12
31.13	31.13
31.14	31.14
31.15	31.15
31.16	31.16

Edit   Save

- Maximum 128 virtual channel can be used.
- Address of the virtual channel will be displayed as following.
  (24~31).(1~16)

Channel setting by indoor unit

Indoor unit address	Indoor unit name	Outdoor unit SIM / PIM channel				Indoor unit SIM / PIM channel	Outdoor unit virtual channel	Indoor unit virtual channel
		Channel1	Channel2	Channel3	Channel4			
13.00.00	13.00.00						24.1	24.3
13.00.01	13.00.01						24.1	24.3
13.00.02	13.00.02						24.1	24.3
13.01.00	13.01.00						24.2	24.4
13.01.01	13.01.01						24.2	24.4
13.01.02	13.01.02						24.2	24.4

☑ *Note*

- When PIM interface module is not installed, PIM channel of the outdoor/indoor unit will be inactive.

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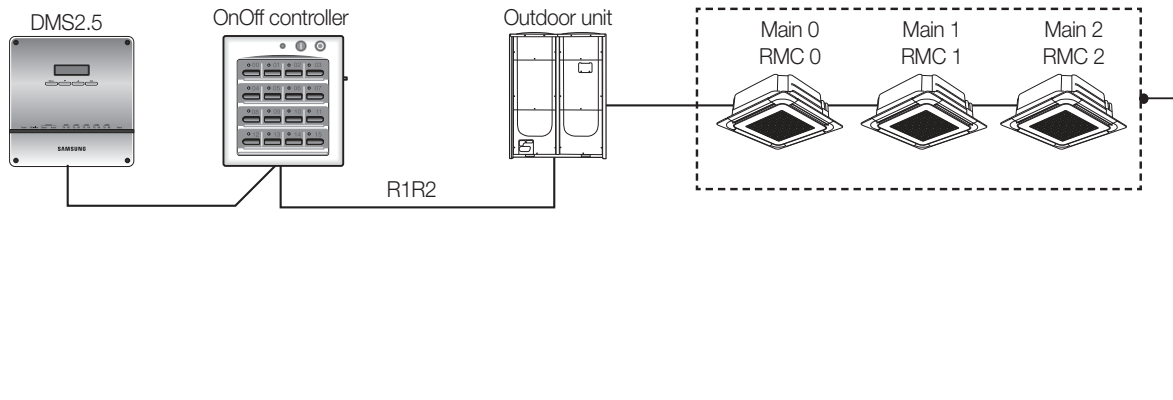# Ⅲ Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

■ Power distribution

Caution

Power distribution function is only supported to air conditioners and AHU. ERV is not supported.

Only applies to indoor unit

User authorization management

Menu	Admin	Manager	Regular user
Control and Monitoring	☑	☑	☑
Zone management	☑	☑	☐
Schedule	☑	☑	☐
EHP Power Consumption Inspection	☑	☑	☐
Control logic management	☑	☑	☐
System Settings	☑	☑	☐

Save Initialize

- **Admin (Administrator) :** Can access all menus, accessible menu cannot be changed
- **Manager :** Default setting – Can access all menus, accessible menu can be changed.
- **Regular user :** Default setting – Can access [Control and monitoring] menu only.

Editing user authorization

Menu	Admin	Manager	Regular user
Control and Monitoring	☑	☑	☑
Zone management	☑	☐	☐
Schedule	☑	☐	☐
EHP Power Consumption Inspection	☑	☐	☐
Control logic management	☑	☑	☐
System Settings	☑	☑	☐

Save Initialize

- Accessible menu authorization of manager is editable.
  Select/deselect the checkbox of the function and save the setting to change the authorization.

III Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

User management

▶ You can add or delete the user who access DMS2.5 through web.

▶ Authorization of the added user can be set from [Admin], [Manager], [Regular user].

Zone management

• Zone edit: User can arrange the indoor units for convenient management.
• Setting the user authorization: Can restrict accessible indoor units depending on the user ID.
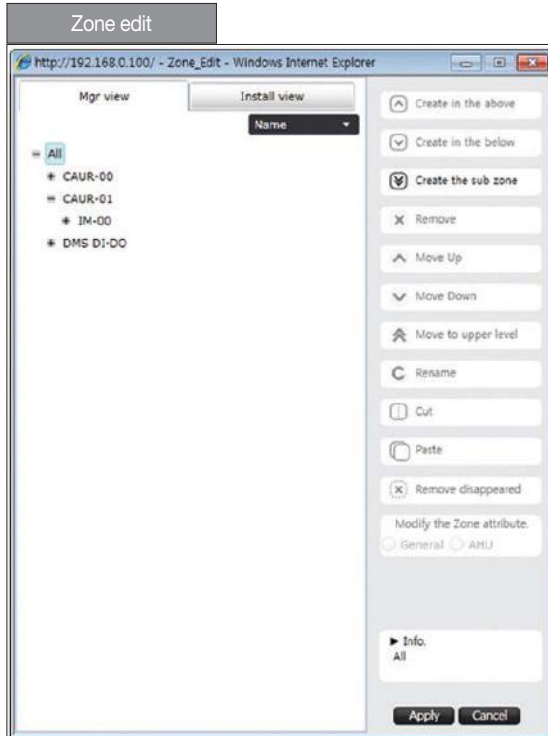
Zone edit

Initial setting
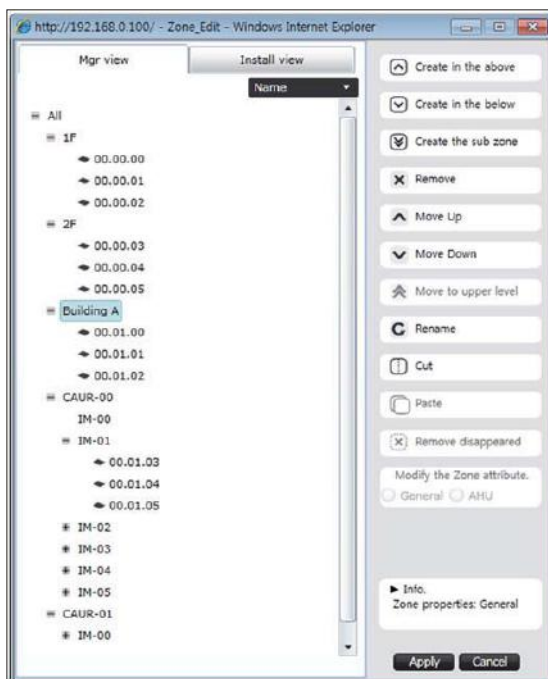
Zone edit :
▪ Add, delete zone
▪ Change name
▪ Move indoor unit

III Integrated management systems

1. DMS2.5

❏ *MIM-D01AN*

6) Function

▐ Zone management

Setting the user authorization

▶ Authorization to control and monitor a zone of indoor units can be assigned according to User ID

❶ Select the zone and select a user ID who can access the zone.
  • Access authorization can be set by zone.

❷ After setting, click [Save] to complete the authorization setting.

▶ User access authorization applies to all indoor units of the zone in same manager.

Control for vacant room

- It is the function to keep the room temperature when user goes out for a while.
- User can set the detail operation of [Unoccupied room control] using DMS2.5 or S-NET pro2.

※ **Applicable indoor unit and controller**
  - Indoor unit : New communication applied DVM indoor unit. (Software version check is required)
  - FCU KIT : MIM-F00N

(1) Diagram
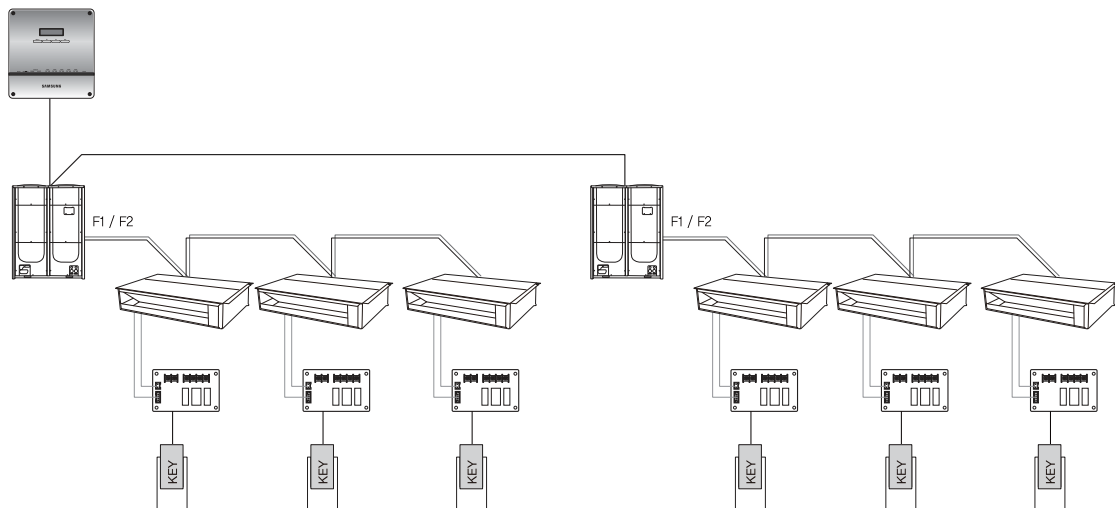
(2) Requirement

- To use this function, external contact interface module (MIM-B14) should be installed to indoor unit.
- Installation option code of indoor unit [SEG14] should be set

Ⅲ Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

6) Function

Control for vacant room

(3) Setting

• [Control and Monitoring] > [Occupied/Vacant room control] menu
- You can see indoor units which can support [Vacant room control]

• Set [Apply]
- Enable : Indoor unit operates as [Vacant room control] when contact status is open.
- Disable: Indoor unit stops when contact status is open.

• Set detail operation
- Mode, Desired temperature, fan speed
- Setting value is saved in indoor unit memory.
   (The setting value will be maintained in case of power failure or DMS2.5 removal)

Pre-heating/Pre-cooing control for occupied room

- This is a function to detect a user entrance (via an external contact) and to automatically perform the pre-heating, pre-cooling.
- It applies when the contact state of MIM-B14 which is connected to the indoor unit is Close.
- Detailed pre-operation settings is set by DMS2.5 or S-NET Pro2.
- Occupied and unoccupied control can be used at the same time..

※ **Applicable indoor unit and controller**
- Indoor unit : New communication SINGLE indoor unit
- Controller : DMS 2.5, S-NET pro2

(1) Diagram
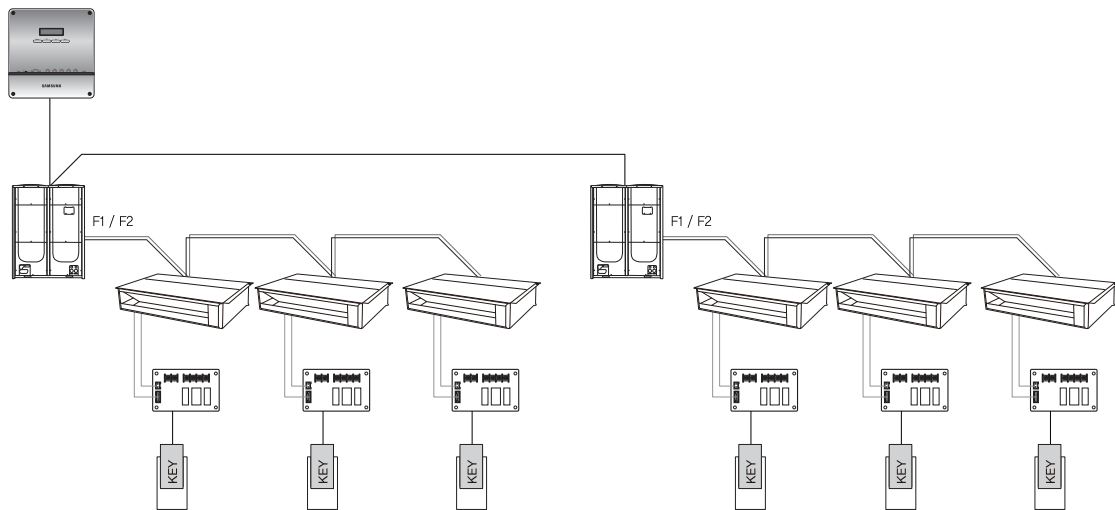
(2) Requirement
- To use this function, external contact interface module (MIM-B14) should be installed to indoor unit

(3) Setting

Occupied room control					Vacant room
Address	Name	Mode	Desired temp.	Fan speed	Apply
All	All	▾	℃	▾	
15.07.00	15.07.00	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.07.01	15.07.01	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.07.02	15.07.02	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.07.03	15.07.03	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.09.00	15.09.00	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.09.01	15.09.01	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable
15.09.02	15.09.02	Auto ▾	0.0 ℃	Auto ▾	◉ Disable ○ Enable

Edit   Save

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Ⅲ Integrated management systems

1. DMS2.5

❑ *MIM-D01AN*

6) Function

Pre-heating/Pre-cooing control for occupied room

(3) Setting

- • [Control and Monitoring] > [Occupied/Vacant room control] menu]
- - You can see indoor units which can support [Occupied room control]

- • Set [Apply]
- - Enable : Indoor unit operates as [Occupied room control] when contact status is close.
- - Disable : Indoor unit operates depending on indoor units' option setting when contact status is close.

- • Set detail operation
- - Mode, Desired temperature, fan speed.
- - Setting value is saves in indoor unit memory.
  (The setting value will be maintained in case of power failure or DMS 2.5 removal)

☑ *Note*

[Operation depending on Unoccupied/vacant room setting]

CASE	Install option SEG14	DMS2.5/ S-NET pro2		Operation		
SEG	on	Unoccupied room mode	Occupied mode	Contact = Close	Contact = Open	Use of R/C when Contact = open
1	1 (On/Off)	Use	Use	Turn On as [Occupied room mode]	Operates as [Vacant room mode]	O
2			No use	Turn On as previous setting	Operates as [Vacant room mode]	O
3		No use	Use	Turn On as [Unoccupied room mode]	Off	O
4			No use	Turn On as previous setting	Off	O
5	2 (Off only)	Use	Use	Turn On as [Occupied room mode]	Operates as [Vacant room mode]	X
6			No use	Stay Off	Operates as [Vacant room mode]	X
7		No use	Use	Turn On as [Occupied room mode]	Off	X
8			No use	Stay Off	Off	X
9	3 (Window)	Use	Use	Turn On as [Occupied room mode] Or Off	Operates as [Vacant room mode]	X
10			No use	Operate as last status before [Contact = Open]	Operates as [Vacant room mode]	X
11		No use	Use	Turn On as [Occupied room mode] Or Off	Off	X
12			No use	Operate as last status before [Contact = Open]	Off	X

2. S-NET3

❏ *MST-P3P*

1) Features
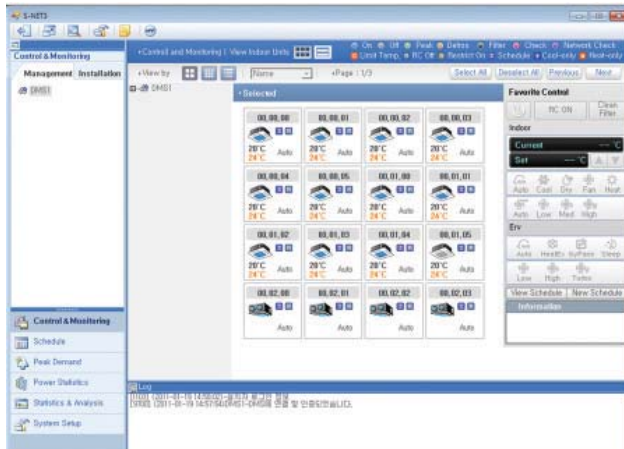
PC program designed to manage system air conditioners in a large site.

- Max. 16 DMS(2.0, 2.5) connection
- Max. 4,096 indoor unit controlling and monitoring
- Integrated management of indoor units, ventilators and AHU(Excluding DVM CHILLER, FCU KIT)
- Manages operation and error history
- Check indoor/outdoor unit cycle data
- Integrated management of peak control in single program

2) PC specifications

Item	Model	Details
PC	CPU	Pentium 4 or above
	Memory	More than 512MB
	HDD	More than 1Gbyte space available
	Network	10/100M
OS	-	Windows NT, Windows 2000, Windows XP, Windows VISTA, Windows 7

Compatible product

DMS	DMS2(MIM-D00AN), DMS2.5(MIM-D01AN)

☑ *Note*

Model	MST-P3P
Number of connection	Max. 16 DMSs

3) System connection
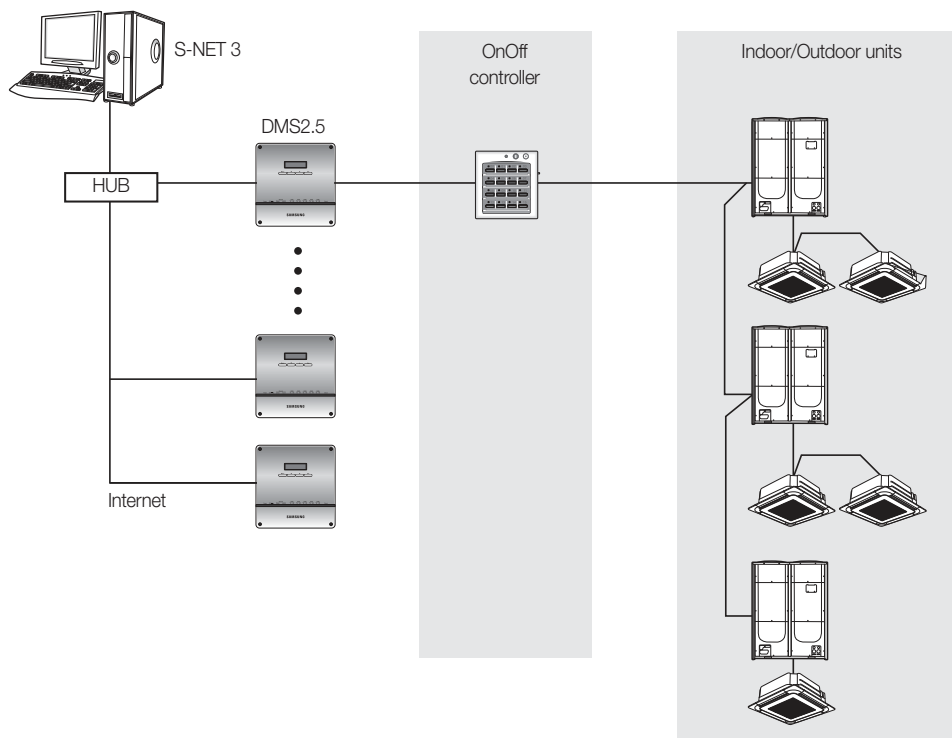
III Integrated management systems

2. S-NET3

❏ *MST-P3P*

4) Function

(1) S-NET3 function description

Control & Monitoring	View the management structure	Control and monitor the indoor units (max. 4,096 units).
	View the installation structure	Check and refer the state of various devices such as indoor/outdoor units, OnOff controller, and I/M.
	Indoor unit/ERV control	Set the operation mode, temperature, fan speed, and fan direction of indoor unit/ERV.
	Indoor unit/ERV monitoring	Monitor the status of indoor unit/ERV.
	View outdoor unit	Check the outdoor unit's cycle data and the cycle data of the linked indoor units.
	View DMS2.5	Check the status data of the control unit linked to DMS2.5.
Schedule	Create new schedule	Set new schedule.
	View schedule	Check the schedule of the selected indoor unit.
	Start/Stop schedule	Start/Stop schedule application.
	Store/Call schedule	Store/Call a prepared schedule.
	View daily schedule	Confirm each schedule by date.
	Set common exception date	Set the date which schedule operation is not applied on.
Usage time and power	Usage time and power	Check the usage time and power for total, group, and individual indoor units.
	Power consumption report	For preparing the report on the power consumption by each indoor unit for the period set.
	Power distribution management group edition	Edit an indoor unit's power management structure
	Set the electricity rate section	Set up to 3 sections for electricity billing management.
Statistics and analysis	Indoor unit status	Check the status of indoor unit operation / temperature setting per period.
	Usage time and power	Check the usage time and power for total, group, and individual indoor units.
	Indoor unit usage	The usage ratio of all indoor units for a specific period.
System management	Set environment	Set the environment related to S-NET3 (password, language, temperature unit).
	Set DMS2.5	Set the DMS2.5 to connect with S-NET3.
	Refer event log	Refer the warning, error, data of indoor units.
	Renew installed device information	Modify S-NET3 data if installation data has been changed.
	DMS2.5 backup/restore	Backup the data of DMS2.5 connected to S-NET3.
	S-NET3 backup/restore	Backup the data of S-NET3.

(2) User functions

Manage a range of functions accessible to different types of users such as regular user, administrator and installer.

	User	Administrator	Installer
View the total indoor unit	O	O	O
Structure editing	X	O	O
The list of installed devices	X	O	O
Whole indoor unit stop	O	O	O
Indoor unit/ERV control/Monitoring	O	O	O
View the management structure	O	O	O
View the installation structure	X	O	O
View outdoor units, DMS2.5	X	O	O
Schedule	X	O	O
Indoor unit operation setting	X	X	O
Usage time and power	X	O	O
Power consumption report	X	O	O
Power distribution management group edit	X	O	O
Power distribution section setting	X	X	O
Statistics/Analysis	X	O	O
S-NET3 setting	X	O	O
DMS2.5 setting	X	X	O
Event log reference	X	O	O
Tracking	X	X	O
DMS2.5 restoration	X	X	O
DMS2.5 backup	X	O	O
S-NET3 restoration/backup	X	O	O

5) Detail function description

(1) S-NET3 display

Log-in

Select user

Select administrator

Select installer

Password input

Login button

Ⅲ Integrated management systems

2. S-NET3

❑ *MST-P3P*

5) Detail function description

(1) S-NET3 display

Control and monitoring

Management structure monitoring window

Control monitoring window

Management structure/Installation structure display window

Move to Indoor unit control window

Indoor unit control

ERV control

Main menu window

Log/error display window

Installation structure window

Select the installation structure tab then select DMS2.5 connected to S-NET3; it is possible to see the program version, status of the selected DMS2.5, the program version and communication status of OnOff controller.

If indoor or outdoor unit is selected at the installation structure, it is possible to check the hardware information of the selected device.
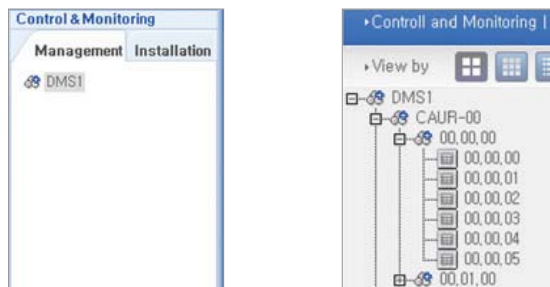
Selecting management structure

Selecting installation structure

▶ When DMS2.5 & OnOff controller are selected.
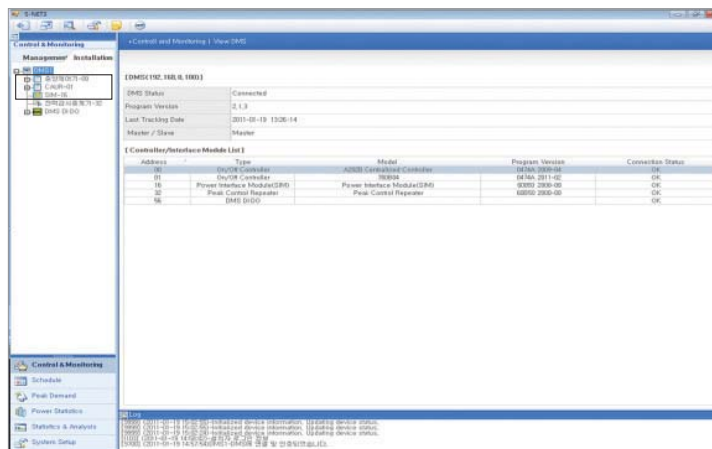
- DMS2.5 status, DMS2.5 program version, last tracking date and Master/Slave setting state.

- Displays model name, software version, communication state of centralized controller, PIM.

Installation structure window

▶ When outdoor unit is selected

• Outdoor unit cycle data, outdoor unit model, interface module model and interface module program version is displayed.

▶ When indoor unit is selected

• Indoor unit operation status, indoor unit cycle data and indoor unit model code is displayed.

Ⅲ Integrated management systems

2. S-NET3

❑ *MST-P3P*

5) Detail function description

(1) S-NET3 display

Installation structure window

▶ When DI is selected

▶ When DO is selected

Control

- Control indoor unit/ERV through the control window that appears on the screen.
- Control total indoor units, the operation mode of indoor units, multiple selection, temperature, fan speed, and fan direction.
- Set Upper/Lower temperature limit so that temperature cannot be set outside of the limited temperature range.
- Enable/disable remote control usage.
- Check the schedule of the selected indoor unit.

▶ Deselect device

Favorite Control

| RC ON | Clean Filter |

Indoor

Current --- °C
Set --- °C ▲ ▼

Auto Cool Dry Fan Heat
Auto Low Med High

Erv

Auto HeatEx byPass Sleep
Low High Turbo

View Schedule | New Schedule
Information

▶ Selecting indoor unit and ERV together

00.00.04
20°C / 24°C Auto

00.01.04
20°C / 24°C Auto

00.02.04
Auto

Favorite Control

| RC OFF | Clean Filter |

Indoor

Current 20 °C
Set 24 °C ▲ ▼

Auto Cool Dry Fan Heat
Auto Low Med High

Erv

Auto HeatEx byPass Sleep
Low High Turbo

View Schedule | New Schedule
Information

▶ Selecting indoor unit

00.00.00
24°C / 24°C Cool

Indoor Control

| RC ON | Clean Filter |

Current 24 °C
Set 24 °C ▲ ▼

Auto Cool Dry Fan Heat
Auto Low Med High
U/D L/R All Fix

Cool Only | Cool Fan | Heat Only | Heat Fan | No Limit

H.U. Temp. 16 °C ▲ ▼
C.L Temp. 18 °C ▲ ▼

View Schedule | New Schedule
Information

▶ Selecting ERV

00.02.04
Auto

ERV

| RC OFF | Clean Filter |

Auto HeatEx byPass Sleep
Low High Turbo

View Schedule | New Schedule
Information

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Ⅲ Integrated management systems

2. S-NET3

❏ *MST-P3P*

5) Detail function description

(1) S-NET3 display

<div style="background:#ddd">Schedule control</div>

❶ Schedule setting
- Able to set a schedule to control indoor units and ERVs. (creating, modifying, deleting).
- Able to set weekly, daily, one day schedule.
- Able to control the operation mode, temperature setting, fan speed, fan direction during the schedule control.

Schedule list window

Schedule display window
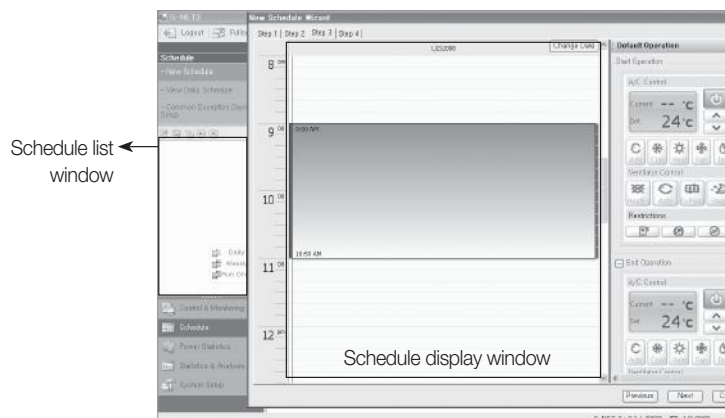
※ Easy schedule control for user with the wizard method (step-by-step setting).

▶ The 1st step (select a schedule mode)

One day only   Repeat daily   Repeat weekly
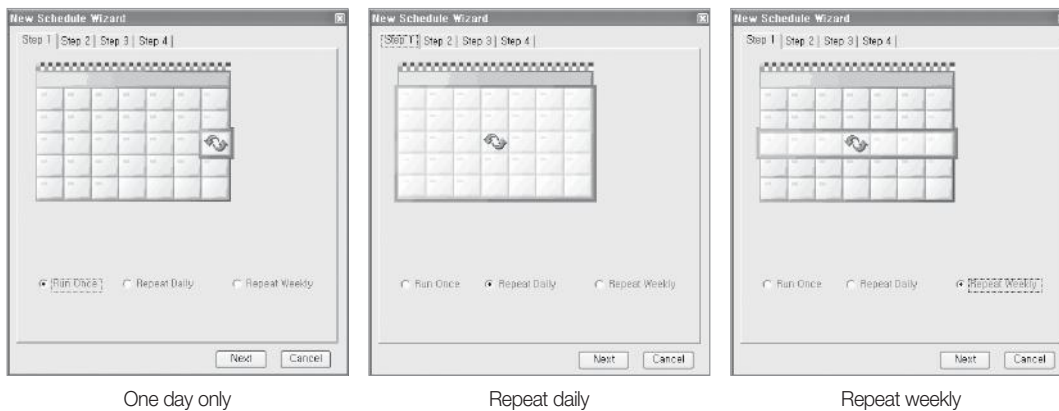
▶ The 2nd step (select the indoor units to apply a schedule to)
- Display the total indoor units in S-NET3.
- Able to select individual indoor units, OnOff controller, DMS2.5.
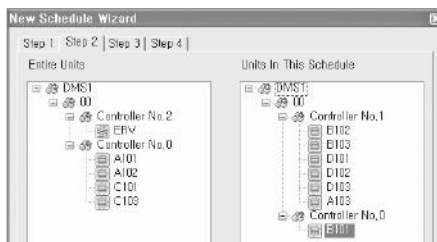
Schedule control

▶ The 3rd step (schedule operation setting)
  • Set up time by dragging on the time table.
  • Set the schedule with the control panel on the right. (Operation mode. temperature setting, fan speed, fan direction and remote control use).
  • Click the schedule time setup window to display a schedule modification window (able to modify a schedule time, operation mode and temperature setting).

Control panel

Click twice

Time setting by dragging
(based on 30-min. unit)

Time modification
(based on minutes)
Temperature setting
Operation mode
Remote control use

Schedule modification panel
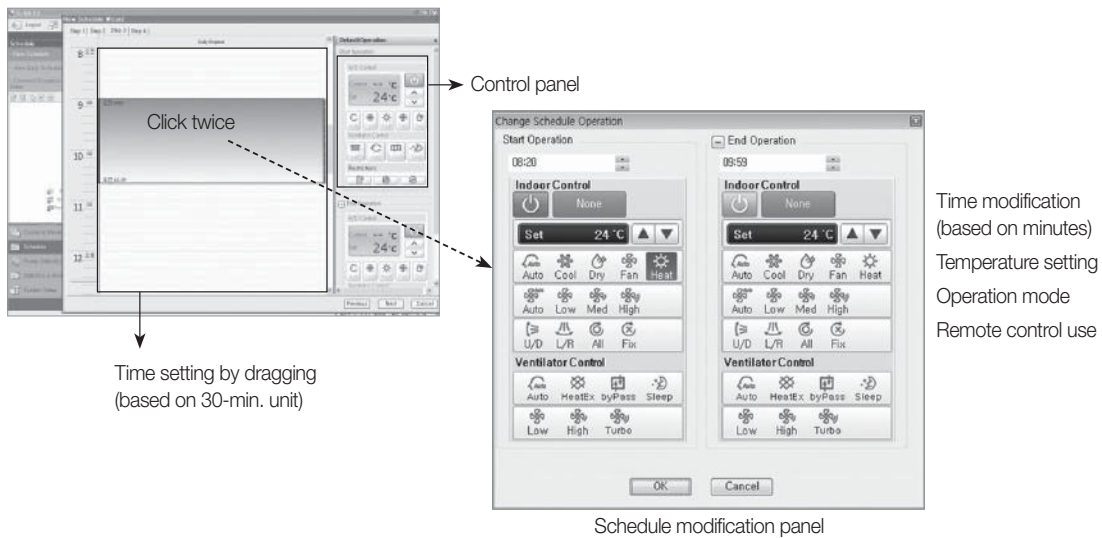
▶ The 4th step (Schedule period and exception date setting)
  • Click the date on the calendar to set the date (once selected, the designated date is displayed in red).

Schedule name

Schedule period setting

Schedule exception
date setting
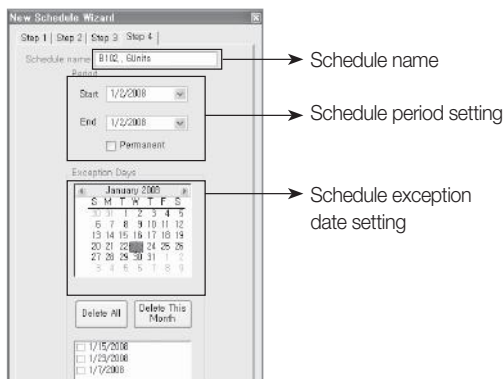
▶ Schedule setting completion
  • Displays a schedule list to be automatically applied to the schedule
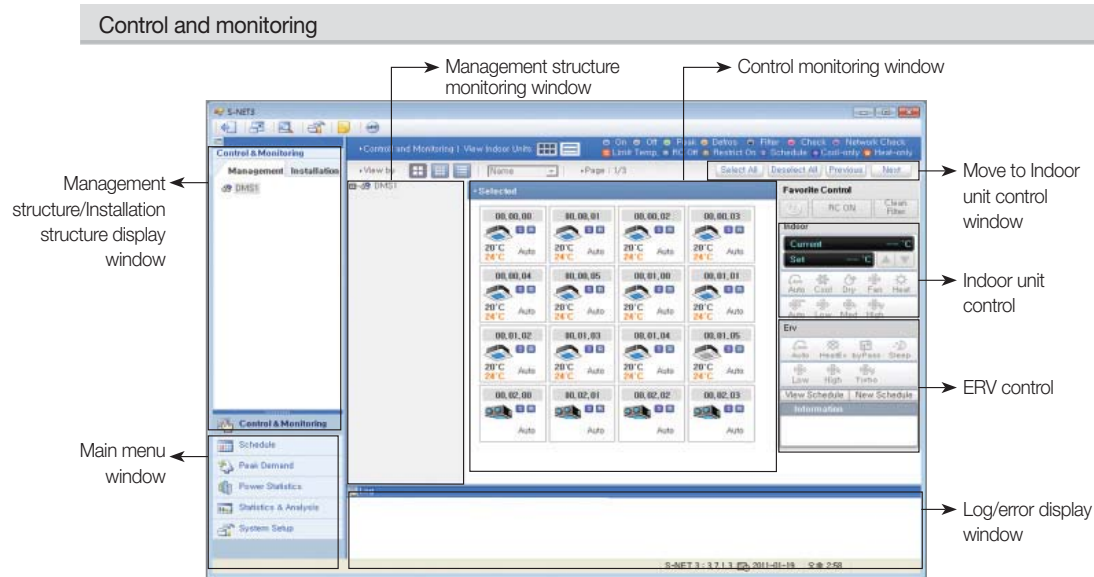
Display the name of
set schedule.

Display set schedule

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Ⅲ Integrated management systems

2. S-NET3

❑ *MST-P3P*

5) Detail function description

(1) S-NET3 display

Schedule control

❷ Schedule modification

- Click the set schedule display window twice to display the modification panel.
  Then it is possible to modify various functions such as schedule time, operation mode and temperature setting.
- Able to carry out various functions such as a schedule name change, schedule delete, indoor unit addition and deletion with the icons on the left menu window.

→ Add/ Delete indoor unit for schedule control.

→ Delete a set schedule.

→ Modify a schedule name.

Usage time and power consumption

❶ Usage time and power

- Able to search for the power consumption and usage time by different conditions including the total indoor units applied to S-NET3, OnOff controller, individual indoor unit.OnOff controller, individual indoor unit.
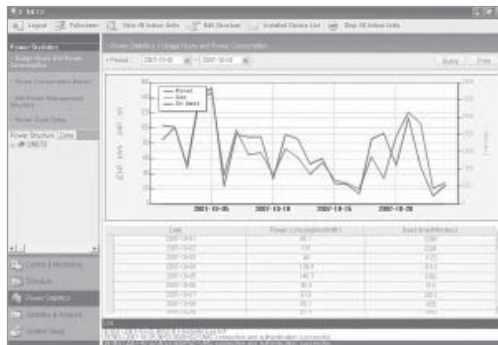
Total indoor unit usage reference
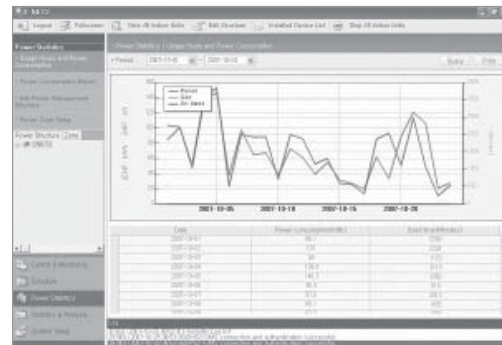
Individual indoor unit usage reference

❷ Power consumption report

- Able to print out the amount of power consumed for a specific period of time in the form of report.
- The applicable formats include PDF, TXT, HTML, CSV, MHT, EXCEL, graphic documents.
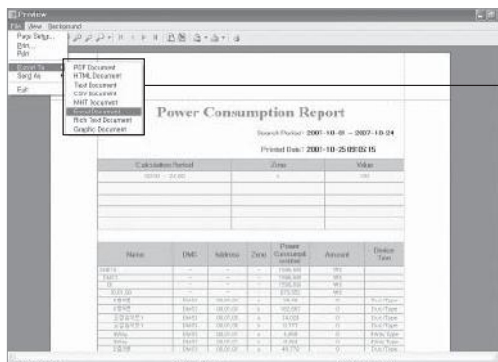
→ Types of document to be stored

Usage time and power consumption

❸ Power management structure editing

- Just as the structural editing at the monitoring, power management can be restructured to ensure greater convenience for administrators.
- Once the power management structure is edited, power consumption report and usage can be referred in the edited formats.

→ Power structure editing menu

→ Power structure editing window
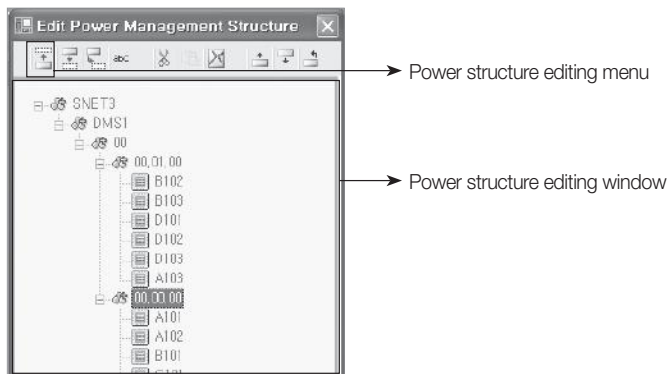
❹ Power section setting

- It can be referred and divided into max. 3 sections for power consumption reference.
- It is possible to refer or prepare reports for usage time and power consumption by dividing section by each hour.

Able to adjust the sections by inputting relevant time.

ⓛⓘⓘ Integrated management systems

2. S-NET3

❑ *MST-P3P*

5) Detail function description

(1) S-NET3 display

Statistics and analysis

❶ Indoor unit status
- Able to see the operation status of selected indoor units and room temperature for the present and the past.
- Able to refer to the operation status for the last two days. If the reference day is out of range, an error message window will appear.

Hourly indoor unit operation and temperature display

Select indoor unit

Display errors if the wrong period has been set
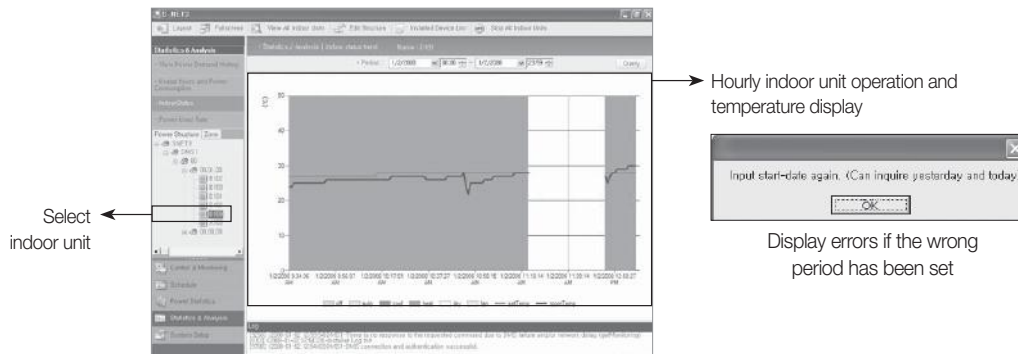
❷ Power consumption of indoor units
- Displays the use time and power consumption ratios for the indoor units connected to each DMS2.5.

Period reference

DMS2.5 selection

System management

❶ Environment setting

- Set the environment of S-NET3.
- Set administrator password, language, temperature unit, default value for indoor unit, etc.
- Determine if peak power will be displayed or not in the menu setting (Korean market only).

→ Language setting

→ Log date view setting

→ Temperature unit setting : It is set automatically
depending on indoor unit.
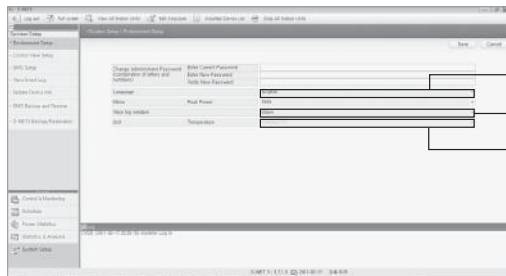
❷ DMS2.5 setting

- Set the DMS2.5 to connect with S-NET3.
- Click 'save' after inputting IP and passwords (1) and it will attempt to make communication with S-NET3 and DMS2.5 then display normal when communication is made.

→ DMS2.5 setup window

When a DMS2.5 to connect with
S-NET3 is added

DMS2.5 time setting

Password input

DMS2.5's access IP input
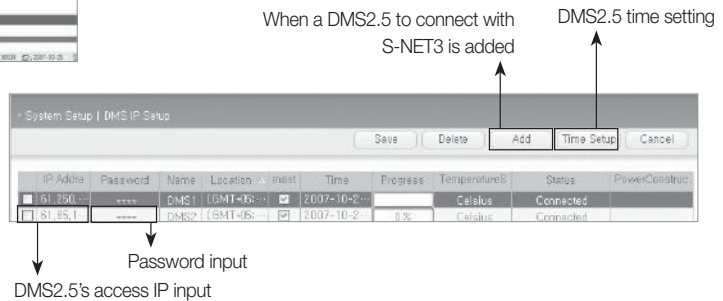
☑ *Note*

- ◆ DMS2.5 has two passwords. One is a password needed to connect to a DMS2.5 web client (set at the user management), the other is necessary to make access to S-NET3 (set at the system environment).
- ◆ When the wrong password for S-NET3 is input, a message indicating DMS2.5 – account recognition failure appears.

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Ⅲ Integrated management systems

2. S-NET3

❏ *MST-P3P*

5) Detail function description

(1) S-NET3 display

System management

❸ View event log
  • Able to check various information such as indoor/outdoor units connected to S-NET3, control device error/warning, information details by date.

➤ Set the list of events
➤ Query period setting

➤ Event display
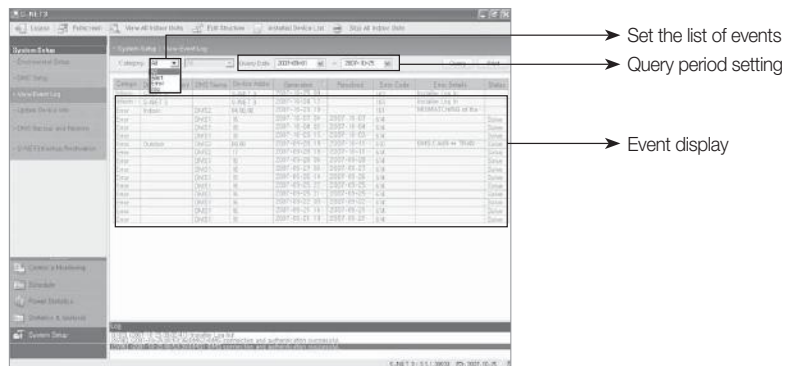
❹ Information update of the installed device
  • Able to carry out information update or tracking for the installed device.
  • Tracking involves receiving data from DMS2.5 after tracking it so as to renew data, whereas data renewal involves correcting data from DMS2.5 after receiving data without DMS2.5 tracking.
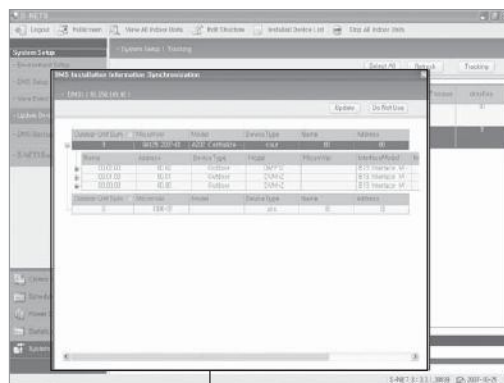
List of control devices connected to DMS2.5
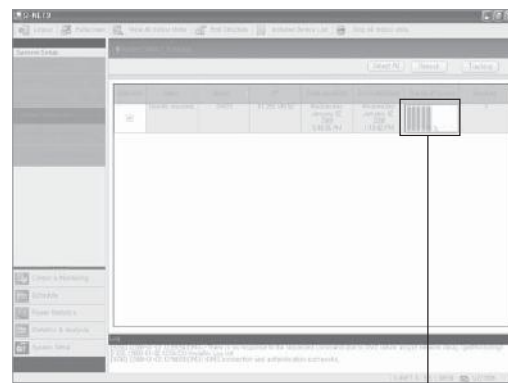
Tracking is under way

❺ DMS2.5 backup and restoration

- Able to backup and restore the DMS2.5 data connected to S-NET3.
- Backup refers to activities of storing data in the data folder in PC.

Select all DMS2.5s

Backup

Restoration

Indicate a backup file including the directory path

Indicate a backup date
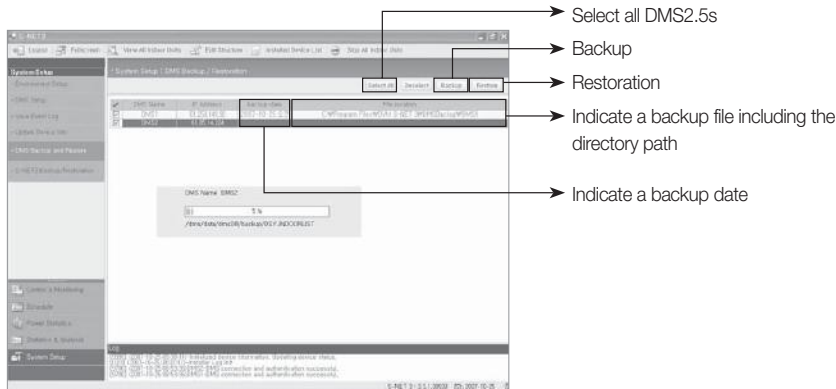
❻ S-NET3 backup and restoration

- Able to backup and restore data of S-NET3.
- Backup involves in backing up all data in S-NET3. Thus, if backup data is restored in a PC where S-NET3 is installed, it will produce the same environment that is previously used.
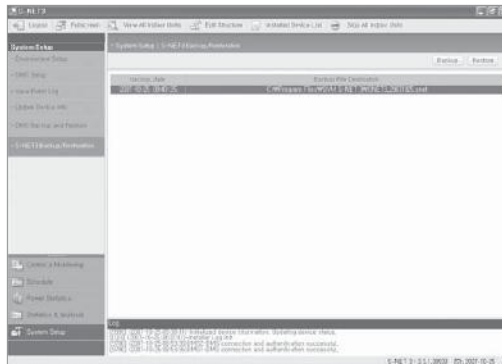
Ⅲ Integrated management systems

2. S-NET3

❑ *MST-P3P*

5) Detail function description

(2) S-NET3 log information

Log	Contents
E9000	Connection impossible
E9001	Connection denied
E9002	Connection finished
E9010	WINK denied
E9011	DMS2.5 password authentication failure
E9012	Serial exchange failure
E9100	General error on instruction transmission
E9150	Attempt to transmit to a DMS2.5 not in connection
E9151	Attempt to transmit to a DMS2.5 not registered
E9200	General error on response acceptance
E9250	There is no response to the requested command due to DMS2.5 failure and/or network delay
E9300	XML generating
E9400	XML parsing
E9401	Installation information on S-NET3 and DMS2.5 does not match, check tracking information
E9999	Initialized device information updating device status
I101	Common user log in
I102	Administrator user log in
I103	Installer log in
I104	Log in
I105	Log out
I201	Tracking
I202	Request to tracking
I301	Request to schedule change
I801	Insert DMS2.5
I802	Delete DMS2.5
I803	DMS2.5 time setting
I9700	DMS2.5 connection and authorization successful
I9701	Reconnection
I9801	Emergency stop

IV. Power distribution system

Ⅳ Power distribution system

1. Electricity meter interface module

❏ *MIM-B16N*

1) Features
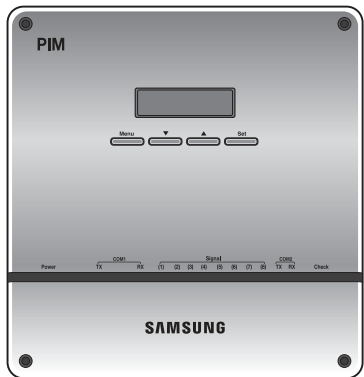
- Pulse output electricity meter interface unit (max. 8 meters)
- 8-channel energy consumption display in real time
- System configuration with button manipulation
- Various text messages in LCD
- Current communication state indication

Unit : mm(inch)

Front view   Side view
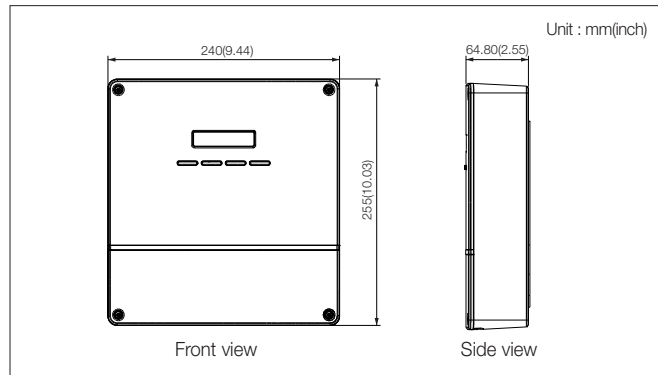
Power supply (adapter)	Input : 100~240V AC, 50/60Hz, 1.0A Output : 12V DC, 3.0A
Operating temperature range	-10ºC ~ 50ºC (14ºF~122ºF)
Operating humidity range	10%RH~90%RH
Maximum wiring length	DMS2.5 : 1000m (3280ft) Electricity meter : 200m (656ft)
Number of interfaces	Electricity meter : max. 8 units DMS2.5 : 1 unit

2) Display and buttons
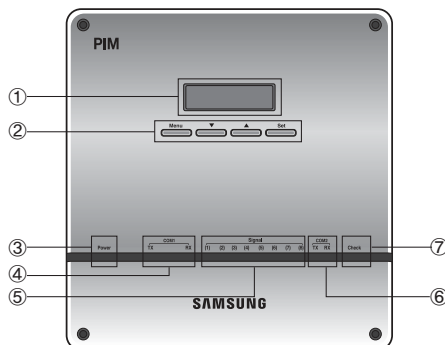
No.	Name	Description
①	LCD window	Information on current electricity readings, settings and operation state is displayed (16 character x 2 line LCD).
②	Menu button	Various menus are selected to monitor current electricity readings, to make configuration settings for electricity meters, and to check the error/settings.
③	Power (blue)	It's ON when power is supplied normally.
④	Communication (orange)	It blinks when communication between DMS2 and MIM-B16N normally works.
⑤	Pulse input (orange)	Each of the 8 LEDs blinks whenever a pulse from an electricity meter is detected.
⑥	Communication (orange)	Reserved
⑦	Check	It's ON when errors occur in communication or pulse input from electricity meters.

3) Connectors
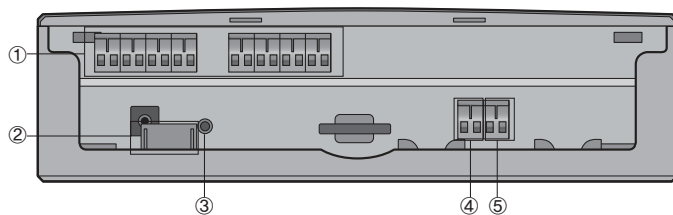
No.	Name	Description
①	Pulse input terminals	8 terminals are allocated to interface pulse-type electricity meters. Each terminal is seen with a dedicated address on DMS2.
②	Power input	Power supply via the power adapter.
③	Reset button	Press the button to reset the MIM-B16N.
④	COM1	Connection terminal for RS485 communication with DMS2.
⑤	COM2	Reserved

4) Address & option switches
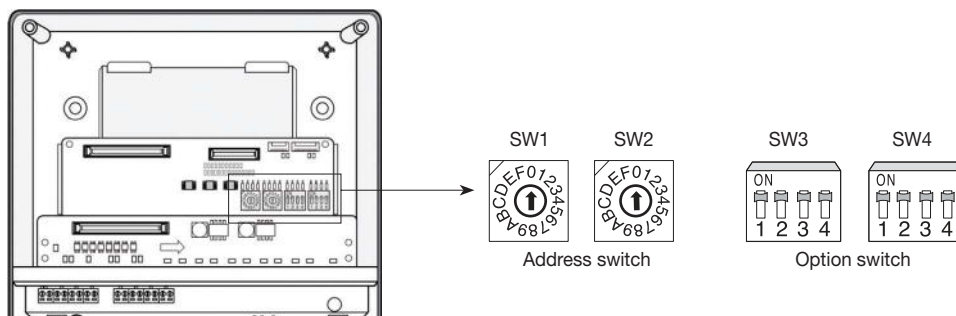
No	Name	Description
1	SW1	No function
2	SW2	MIM-B16N address switch. Address greater than 7 (8~F) is not recognized.
3	SW3	No function
4	SW4	No function

Ⅳ Power distribution system

1. Electricity meter interface module

❏ *MIM-B16N*

5) Specifications on electricity meter

- **Current flow on output :** Current-sinking
- **Pulse rate :**
  - Power meter : 1 ~10000 Wh/pulse (no decimal pulse rate allowed)
  - Gas meter : 0.001~10 m^3/pulse
  - Water meter : 1 ~ 10000 liter/pulse (no decimal pulse rate allowed)
- **Pulse width :** 20 ~ 1000 ms with +/- 5% tolerance (no decimal pulse rate allowed)
- **Time interval between pulses :** min. 3ms
- **Allowable current sinking :** min. 15mA
- **Withstanding voltage :** min. 15V DC
- **Interface circuitry :** Electronic isolation circuitry recommended, no voltage output

Pulse generation from electricity meter

Current sink

Current source

Current flow(max. 15mA)

Current flow

Waveform of CH1~8

Over 4ms

20~1000ms
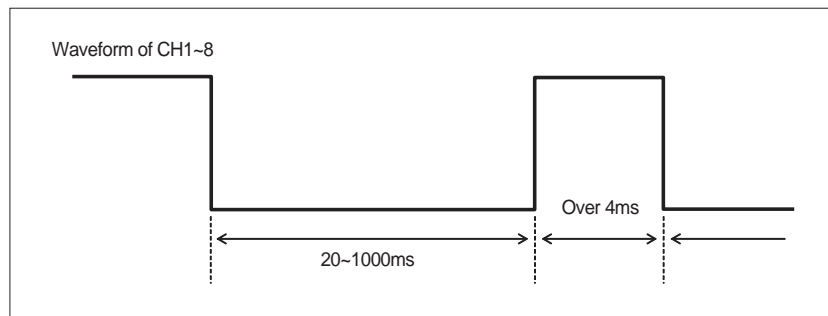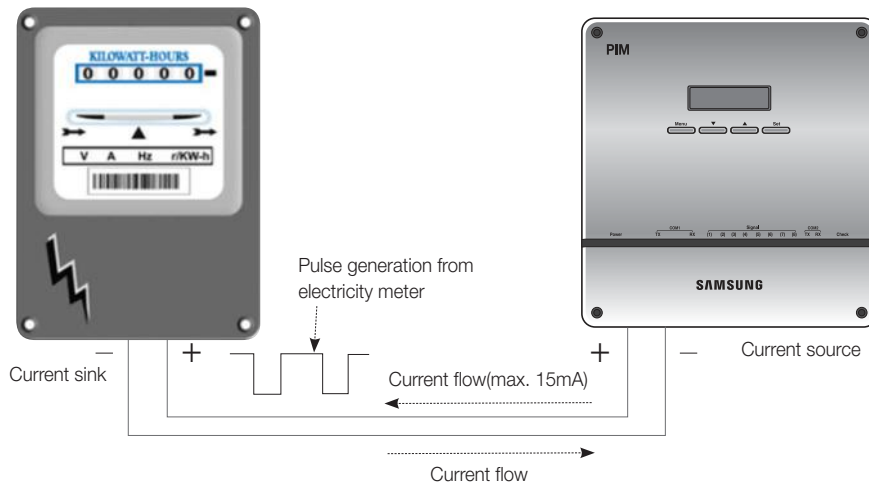
☑ *Note*

- Interface circuitry of an electricity meter has to withstand min. 15mA and min. 15V DC, both of which are applied by MIM-B16N.
- Even though MIM-B16N interface circuitry is realized with electric isolation components, it's highly recommended that interface circuitry of an electricity meter be designed with isolation to ensure robustness from contact spike or electric interference during wiring.

6) Installation

MIM-B16N must not be installed in a way that power to MIM-B16N is off when one of the over-current circuit breakers is switched off. Power supply to MIM-B16N must be off only when all the power supplies to refrigerant systems whose power consumptions are monitored by the MIM-B16N are cut off. This is because every pulse from electricity meters of some alive refrigerant systems must be sensed normally even if power supplies to other refrigerant systems have troubles.

• Example 1) When the circuit breaker, CM1 is switched off for some reason while the others are still on, pulses from the electricity meters, EM1, EM2 and EM3 are not calculated by MIM-B16N, whose power is off by the CM1. This installation could lead to errors in electricity billing function when power interruption in local areas occurs.
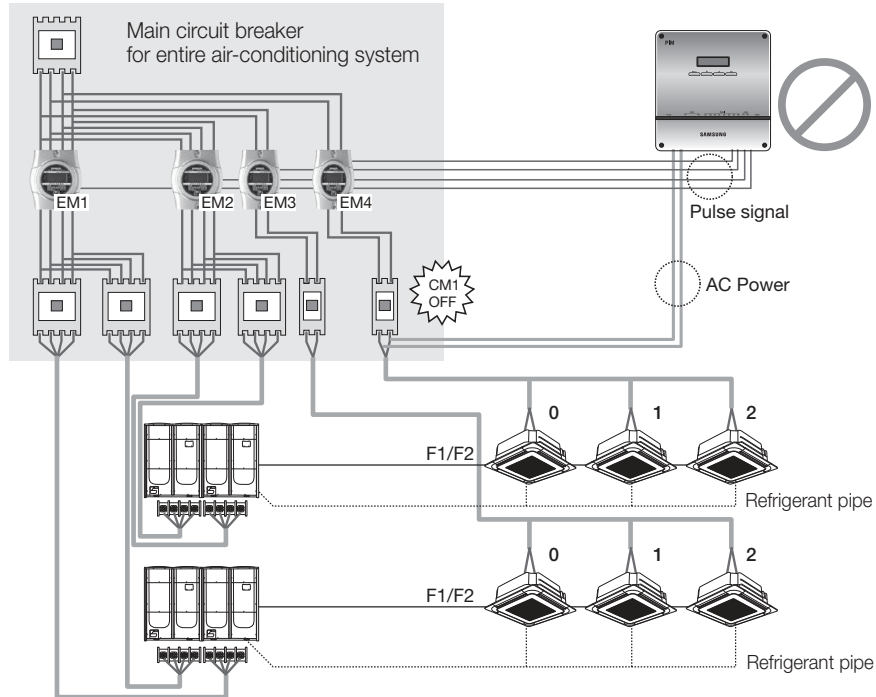
• Example 2) Even when the circuit breaker, CM1 is switched off while the others are on, pulses from the electricity meters, EM1, EM2 and EM3 are still calculated by MIM-B16N, whose power is not interrupted by CM1.
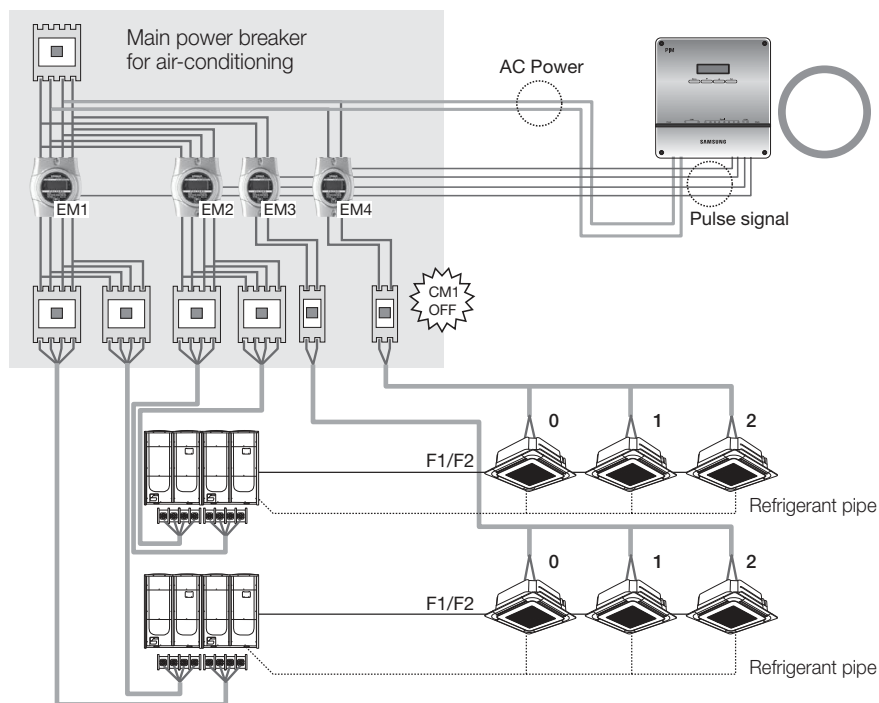
IV Power distribution system

1. Electricity meter interface module

❏ *MIM-B16N*

7) Wiring

▶ Wiring to electricity meter

- Attention must be paid to make polarized connection between an electricity meter and MIM-B16N with correct specifications on wires.

Pulse-type electricity meter   MIM-B16N

Typical interface circuitry

Cable : Unshielded 2-wire 0.75mm² VCTF or equivalent
Length : Max. 200m (656ft)
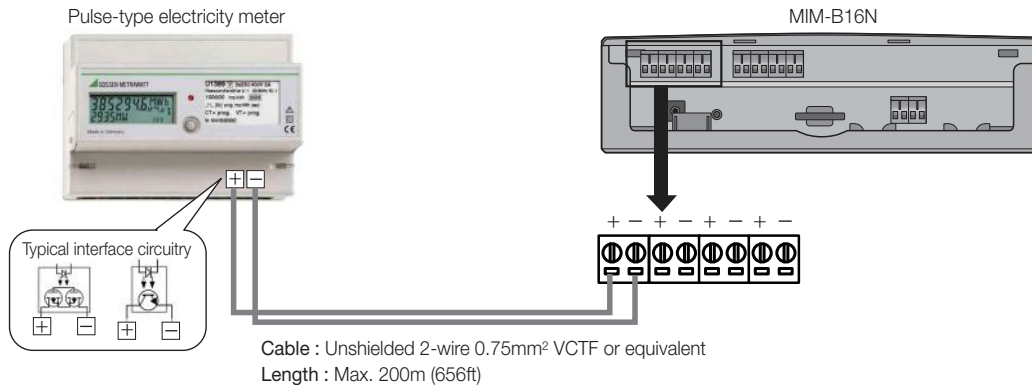
▶ Wiring to DMS2.5

- Make sure that communication cable is wired between DMS2.5 and MIM-B16N with the right polarity.

DMS2.5(MIM-D01AN)   MIM-B16N

→ to another MIM-B16N

Cable : Unshielded 2-wire 0.75~1.5mm² VCTF or equivalent
Length : Max. 1000m (3280ft)
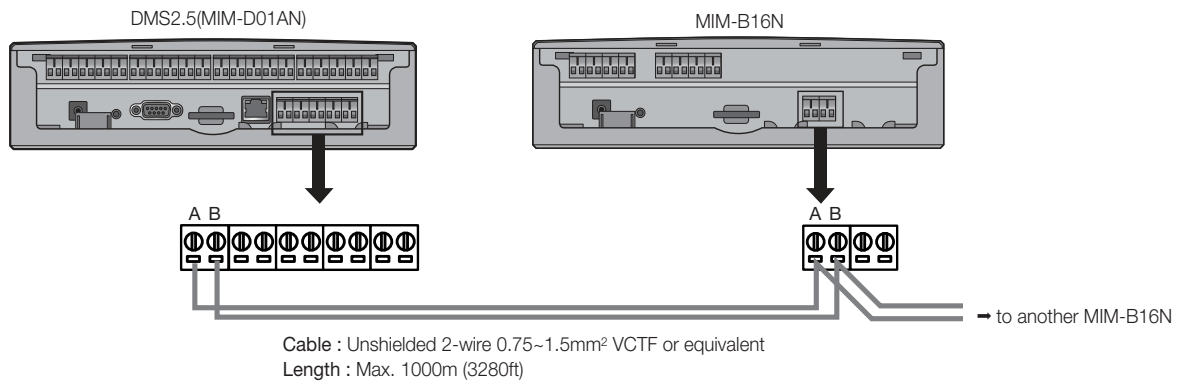
▶ Caution

- MIM-B16N can be connected with outdoor units/controllers to same channel of DMS2.5.

  Ex) DMS2.5 CH1 : PIM + Outdoor unit (O)
  PIM + Touch controller (O)

  ✻ Outdoor unit or Controller should be new communication applied products.
  ✻ MIM-B16 should be connected to dedicated channel of DMS2.5.

8) Address assignment

Each of the electricity meters is assigned with the dedicated address depending on MIM-B16N address setting and the position of the pulse input terminals.
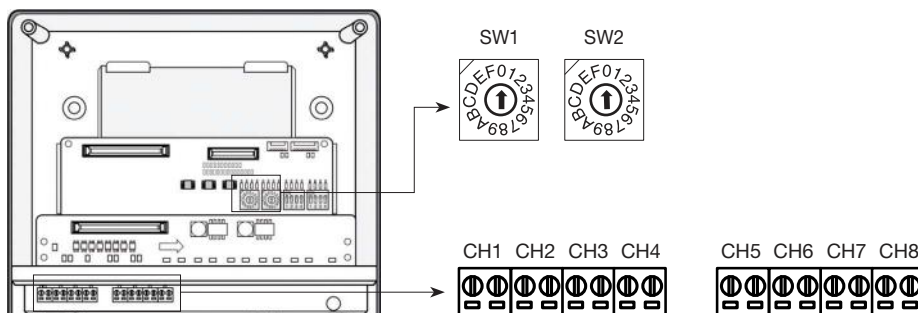
▶ Electricity meter address assignment table

SW2	Pulse input terminal							
	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
0	16.01	16.02	16.03	16.04	16.05	16.06	16.07	16.08
1	17.01	17.02	17.03	17.04	17.05	17.06	17.07	17.08
2	18.01	18.02	18.03	18.04	18.05	18.06	18.07	18.08
3	19.01	19.02	19.03	19.04	19.05	19.06	19.07	19.08
4	20.01	20.02	20.03	20.04	20.05	20.06	20.07	20.08
5	21.01	21.02	21.03	21.04	21.05	21.06	21.07	21.08
6	22.01	22.02	22.03	22.04	22.05	22.06	22.07	22.08
7	23.01	23.02	23.03	23.04	23.05	23.06	23.07	23.08
8~15	Not recognized							

9) MIM-B16N menu structure
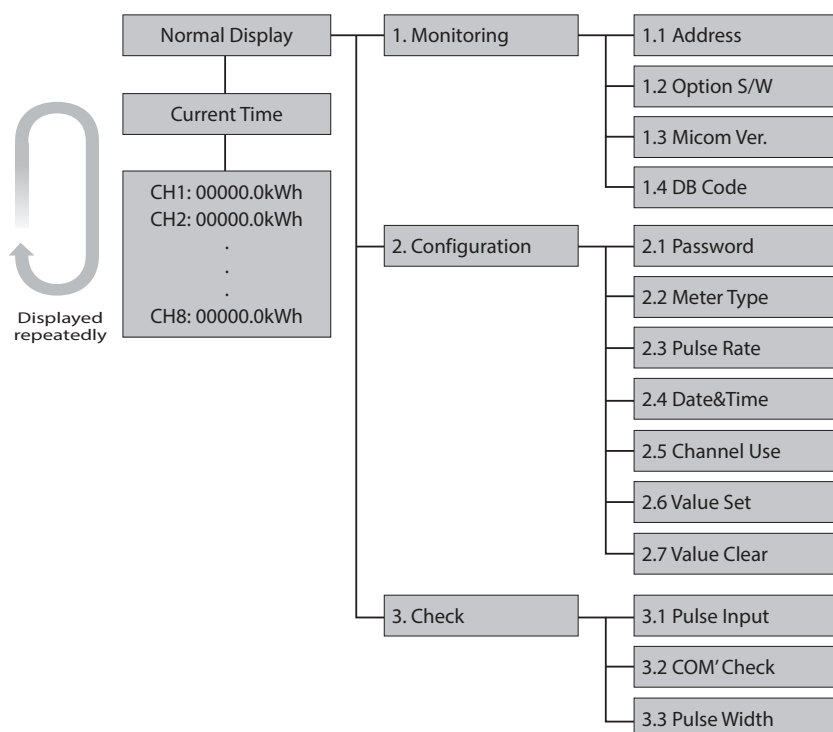
Ⅳ Power distribution system
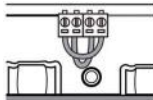
1. Electricity meter interface module

❑ *MIM-B16N*

9) MIM-B16N menu structure

Main menu	Sub menu	Description
Monitoring	PIM Address	The MIM-B16N address is displayed with the physical address SW2 added by 30H on the LCD window. Ex) | LCD	SW2 setting
---	---
30H	0
31H	1
…	…

37H	7	
		
		`1.Monitoring`
		`1.1 Address`
		
		`1.1 Address`
		`58 30 FF`
		
		PIM Address Fixed

	Option SW	Option switch setting to ON is displayed with the position number at the corresponding positions while setting to OFF is shown with the mark 'X'.
		Ex)
		`1.2 Option S/W`
		`1X`
		
		Example display : 1X
		• Option switch 1 : On
		• Option switch 2 : Off

	Micom version	It displays PIM software version.
		Ex)
		`1.3 Micom Ver.`
		`130123`

	DB Code	It displays PIM software DB code.
		Ex)
		`1.4 DB Code`
		`DB91-01128A`

Configuration	Password	The password, which is asked to enter to change the configuration setting, is used to prevent unauthorized persons from accessing MIM-B16N. Factory setting is '0000'.
		Ex)
		`Enter your P/W`
		`0:0:0:0`

	Meter type	You can select each channel's meter type. -Default value: Power Meter -Type: Power Meter, Gas meter, Water Meter
	Pulse Width	You can set pulse rate of meter which connected to each channel. [Range] Power meter : 1 ~10000 Wh/pulse (No decimal pulse rate allowed) Gas meter : 0.001~10 m^3/pulse Water meter : 1 ~ 10000 liter/pulse (No decimal pulse rate allowed)
	Date & time	You can set current date and time.
	Channel use	You can set Enable/Disable state of each channel. If you set "Disable", then PIM doesn't display meter value of the disabled channel.
	Value set	Initial meter value must be set as a starting point for each of the enabled interface channels.
	Value clear	Each or all the initial meter values are cleared when selected.

Main menu	Sub menu	Description
Check	Pulse Input	When pulse input is detected during the test period, the channel numbers are displayed. Otherwise, the character 'X' is displayed on the corresponding channel position. **All Check End** **X2XX5X7X**
	COM Check	Make a loopback connection between COM1 and COM2 to check if the DMS2.5 communication channel is working or not. Care must be taken for the connection polarity. When the COM1 communication channel is normal, the message 'OK' is displayed on the LCD window.
	Pulse Width	It checks if the pulse width values of actually connected meter are valid or not. • OK : When the pulse is valid (pulse is valid when high pulse is between 20 ~ 1000msec), OK (M:####msec) will be displayed. #### represents the duration of the high pulse. • NG : When the pulse is invalid (pulse is valid when high pulse is between 20 ~1000msec), or when there is no pulse inputs for 10 seconds), NG (M: 0000msec) will be displayed. - PIM does not calculate the energy consumption during the checking process. The calculation will start after the check and returning to the upper menu. **3.3 Pulse Width** **CH1 Check OK** **CH1 Check Start** **Checking...** **CH1 Check End** **NG (M:0000msec)**

Ⅳ Power distribution system

1. Electricity meter interface module

❏ *MIM-B16N*

10) Setting parameters on DMS2.5 (MIM-D01AN)

▶ The following parameters for MIM-B16N can be also set and monitored on DMS2.5 (MIM-D01AN)

• Meter value, Meter type/pulse rate, Channel status, Time setting, PIM password

[Tracking result page --> PIM "Setting"]

✱ DMS2.5 setting for MIM-B16N parameters

11) Error code

Error code	Description
E613	Error which occurs when there is no communication between DMS and PIM/SIM for 15 minutes.
E632	• Error which occurs when the pulse was input differently from the PIM setting. • (If the pulse was inputted at the value outside of 10 ms ~ 1500 ms range for more than 15 times or when high pulse was inputted for over 3 minutes)
E654	Memory Read/Write error.
E108	Error which occurs when same address was assigned to different devices.

V. External control systems

EXTERNAL
CONTROL SYSTEMS

V External control systems

1. External contact interface module

❏ *MIM-B14*

1) Features

Unit : mm(inch)
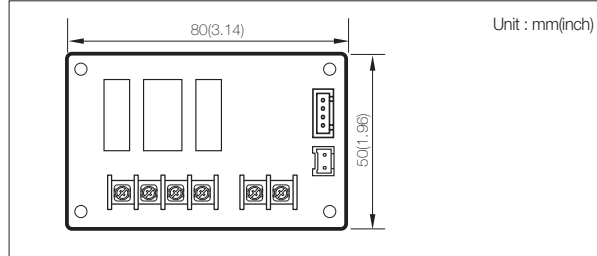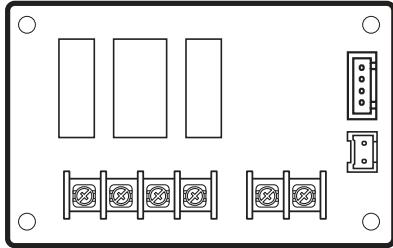
Interlock DVM air-conditioner with external controller

- Indoor unit On/Off control by the external contact (Usable equipment: Card-key, Timer, Sensor)
- Output the indoor unit thermo ON/OFF state and operation status
- Output the indoor unit error state

2) Description of parts
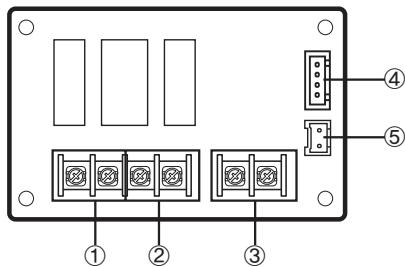
No.	Input/Output	Contact rating	Operation
①	Error state	220V AC, 3A	Normal : Close, Error : Open
②	Indoor unit Thermo On/Off or Operation State output (It depends on indoor unit's INSTALL option setting SEG 15.)	220V AC, 3A	[Output signal] SEG 15 = 0　　Thermo On/Off SEG 15 =1　　Operation On/Off (On : contact close, Off : contact open)
③	Operation signal input load	5V DC, 5mA	-
④	Connector for indoor unit	-	-
⑤	Connector for indoor unit	-	-

3) Installation

External contact line wiring
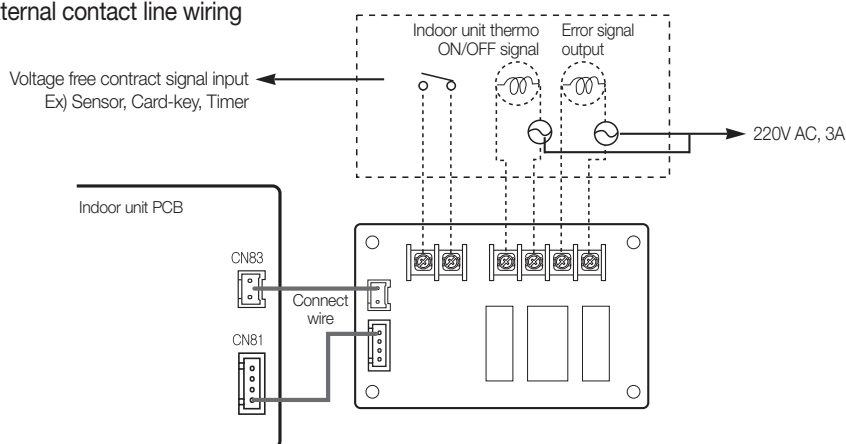
┌─ ☑ *Note* ─────────────────────────────

- External operation input load: 5V DC/5mA.
- The length of wiring between MIM-B14 and external control equipment is 100m(328ft) max.
- To use external contact control system, indoor unit's INSTALL option setting is required. (Refer to indoor unit installation manual)
  ✻ SEG 14 - External control setting (Default : No use)
- After installed, the first operation will be conducted with Auto mode, Set temp. 24°C(75°F), Auto Fan speed.
- If the indoor unit in OFF status is turned ON through external contact signal; it will operate in the last operation status before it was turned off.

4) Control

Timing diagram for external contact control
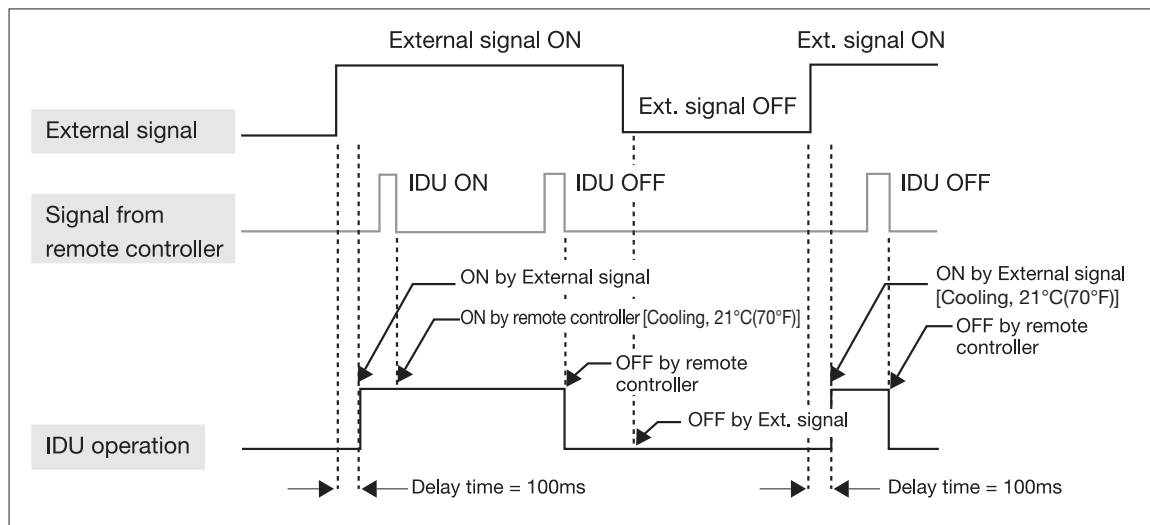
Ex1)

☑ *Note*

* IDU stands for Indoor Unit.
  No prioritized operation between the R/C and the external contact I/M.

Ex2)

☑ *Note*

* IDU stands for Indoor Unit.
  After power reset, indoor unit operates as previous state. (IDU has power recovery function)

4) Control

Timing diagram for external contact control

Ex1)

External signal ON   Ext. signal ON

Ext. signal OFF

External signal

IDU ON   IDU OFF   IDU OFF

Signal from remote controller

ON by External signal
ON by remote controller [Cooling, 21°C(70°F)]
ON by External signal [Cooling, 21°C(70°F)]
OFF by remote controller
OFF by remote controller
OFF by Ext. signal

IDU operation

Delay time = 100ms   Delay time = 100ms

☑ *Note*

* IDU stands for Indoor Unit.
  No prioritized operation between the R/C and the external contact I/M.

Ex2)

External signal ON

Power failure   Power recover   Ext. signal OFF

External signal

IDU ON   IDU OFF

Signal from remote controller

ON by External signal
ON by remote controller [Cooling, 21°C(70°F)]
OFF by power reset
After power reset, IDU start as previous operation state before power reset [Cooling, 21°C(70°F)]
OFF by Ext. signal

IDU operation

Delay time = 100ms   Delay time = 100ms

☑ *Note*

* IDU stands for Indoor Unit.
  After power reset, indoor unit operates as previous state. (IDU has power recovery function)

V External control systems

1. External contact interface module

☐ *MIM-B14*

4) Control

Ex3)

External signal	External signal ON ⋯ External signal OFF ⋯ External signal ON
Signal from remote controller	IDU ON ⋯ Power failure / Power recover
	ON by External signal ON by remote controller [Cooling, 21°C(70°F)] OFF by Ext. signal ON by External sigr [Auto, 24°C(75°F)]
IDU operation	Delay time = 100ms ⋯ Delay time = 100m
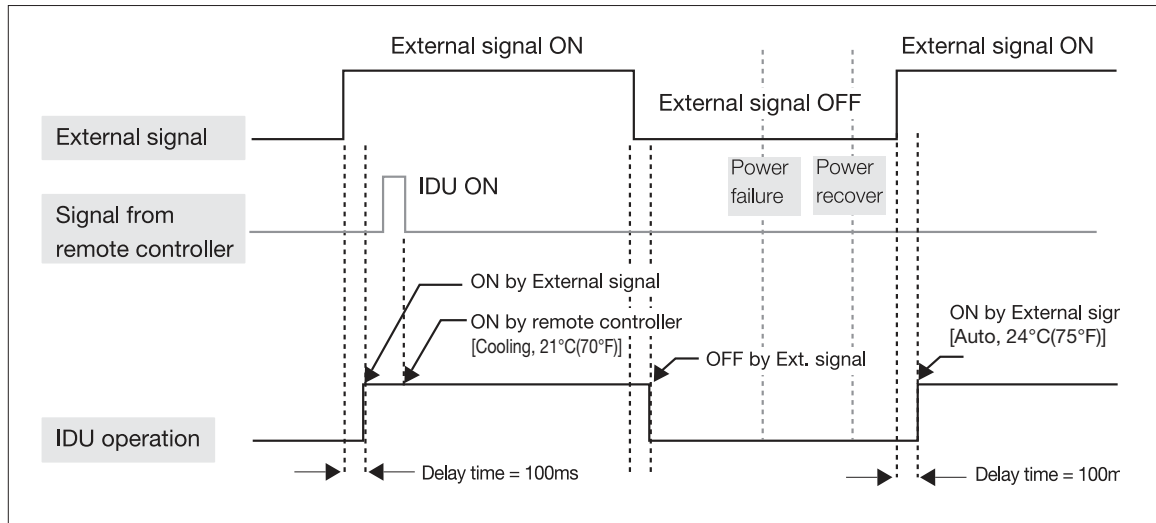
☑ *Note*

◆ IDU stands for Indoor Unit.
  After power reset, if IDU is turn ON by external contact, it starts as Auto mode, 24ºC(75ºF), Auto fan speed.

Ex4)
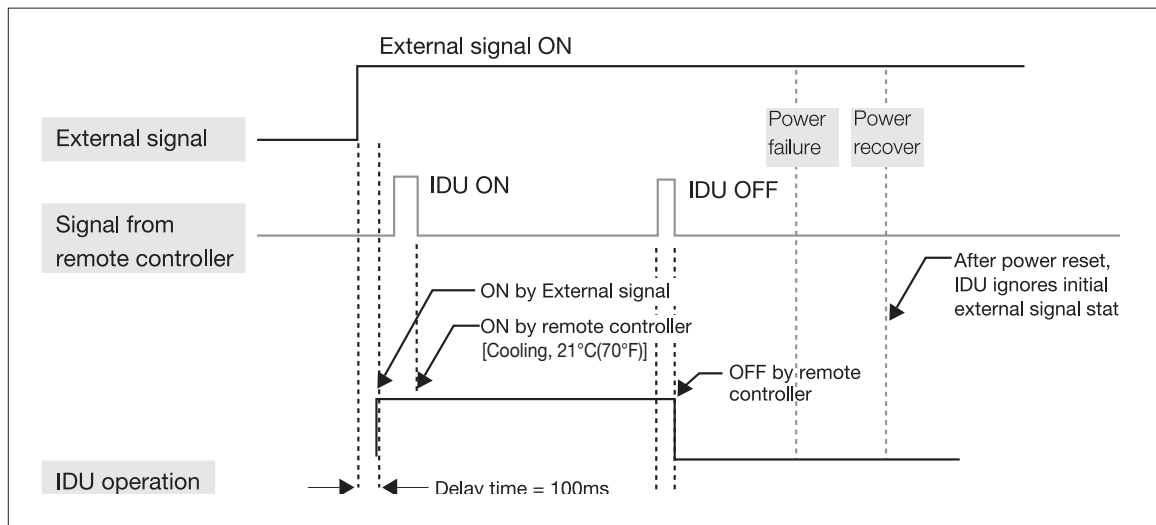
External signal	External signal ON
Signal from remote controller	IDU ON ⋯ IDU OFF ⋯ Power failure / Power recover
	ON by External signal ON by remote controller [Cooling, 21°C(70°F)] OFF by remote controller After power reset, IDU ignores initial external signal stat
IDU operation	Delay time = 100ms

☑ *Note*

◆ IDU stands for Indoor Unit.
  After power reset, IDU ignores initial external signal state.

▶ Operation input

It is possible to set the method of indoor unit control by external contact signal.

• Method 1. Turn On/Off the indoor units by external contact signal
• Method 2. Set standby/Turn Off the indoor unit by external contact signal
• Method 3. Return to the last status / Turn Off the indoor unit by external contract signal

	Method 1	Method 2	Method 3
Indoor unit INSTALL option setting (Refer to inidoor unit installation manual)	SEG 14 = 1	SEG 14 = 2	SEG 14 = 3
Indoor unit operation by external contact	Short ➙ Indoor unit On Open ➙ Indoor unit Off	Short ➙ Standby Open ➙ Indoor unit Off	Short ➙ Return to the last status of indoor unit Open ➙ Indoor unit Off
Remote controller use	Short ➙ Available Open ➙ Available	Short ➙ Available Open ➙ Unavailable	Short ➙ Available Open ➙ Unavailable

▶ Operation output

	DVM S series indoor unit	
Output signal	SEG 15 = 0 SEG 15 = 1	Thermo On/Off Operation On/Off
Output signal delay time	None	
Error signal		

• Thermo off : Status where refrigerant is not flowing in either cooling/heating operation because desired temperature has been reached.

$\boxed{V}$ External control systems

2. Multi tenant function controller (MTFC)

❏ *MCM-C210N*

1) Features

Unit : mm(inch)

110(4.33)

75(2.95)
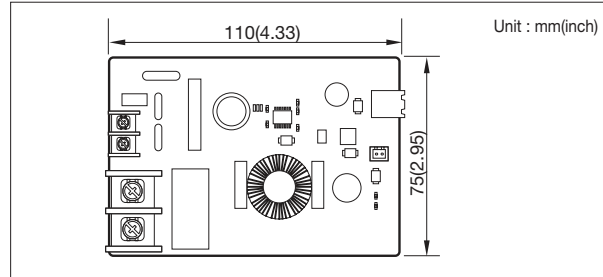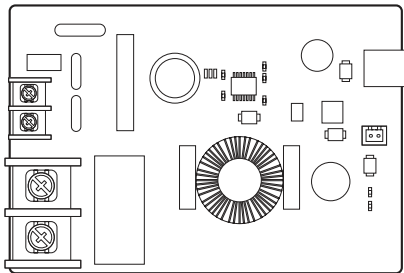
- Multi tenant function controller is an auxiliary power supply device which allows indoor unit to turn off (close EEV) normally and maintain communication when main power supply is cut.
- It is used in site such as hotel where individual power is supplied to the indoor unit

✽ To intall the MTFC, connection cable for the power, transformer and the IP (Ingress Protection) box must be purchased separately at the installation site.

✽ Specification of the transformer: UL Standard, Class2, 24Vac ±15% 50/60 Hz

2) Product specification

Power supply	AC 24V
	50/60 Hz
Power consumption	10W
Operating temperature range	-10°C ~ 50°C (14°F ~ 122°F)
Operating humidity range	10 % RH~90 % RH
Maximum length of connection	3 m (9.84)
Number of control devices	1 indoor unit

3) Description of parts

No.	Name	Description
①	Terminal for auxiliary power	Connect AC 24 V power
②	Terminal for indoor unit power connection	To check for AC single phase power cut-off of the indoor unit, connect the power cable to the multi tenant function controller.
③	DC 12 V output terminal	Terminal which supplies DC 12 V to indoor unit
④	DC 5V output terminal	Terminal which supplies DC 5V to indoor unit
⑤	Operation status indicator LED	• **LED ON :** When AC single phase power for indoor unit is cut-off and DC 12 V, DC 5 V is output normally from the multi tenant function controller • **LED OFF :** When AC single phase is supplied normally to the indoor unit

4) Connection diagram

- ELCB AC 380V
- ELCB AC single phase power
- AC 24 V transformer
- MTFC DC 5V DC 12V
- Outdoor unit
- Indoor unit DC 5V DC 12V
- F1/F2
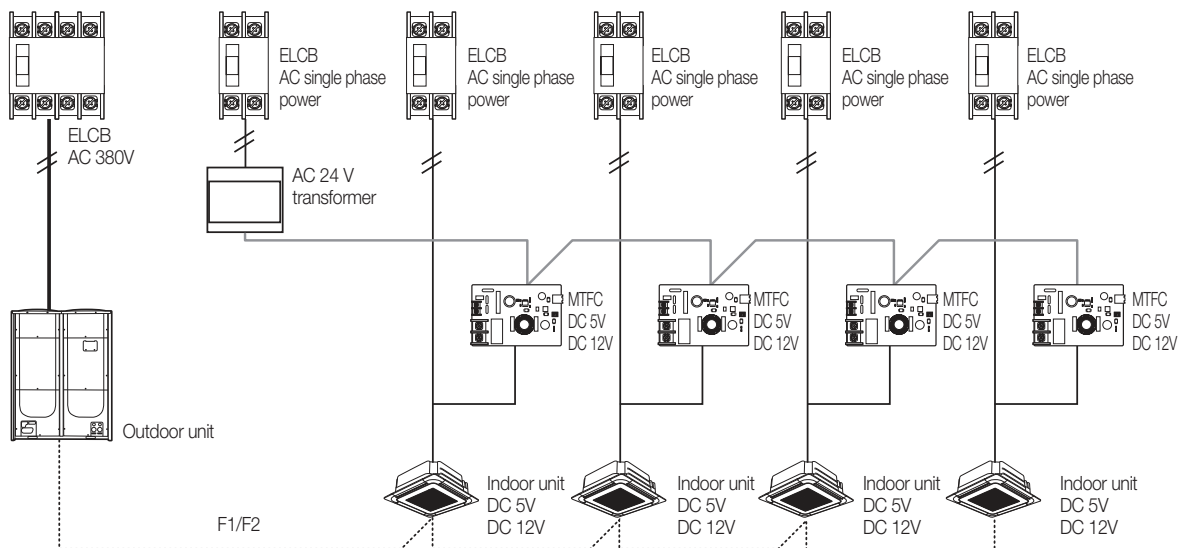
5) Connecting

- UL Standard, Class 2, 24 VAC
- 24 Vac
- 24 Vac ±15 % 50/60 Hz
- Indoor unit AC Power
- Indoor unit PCB
- F1 F2 V1 V2 F3 F4
- DC Power cable (12V)
- DC Power cable (5V)
- Indoor unit PCB download
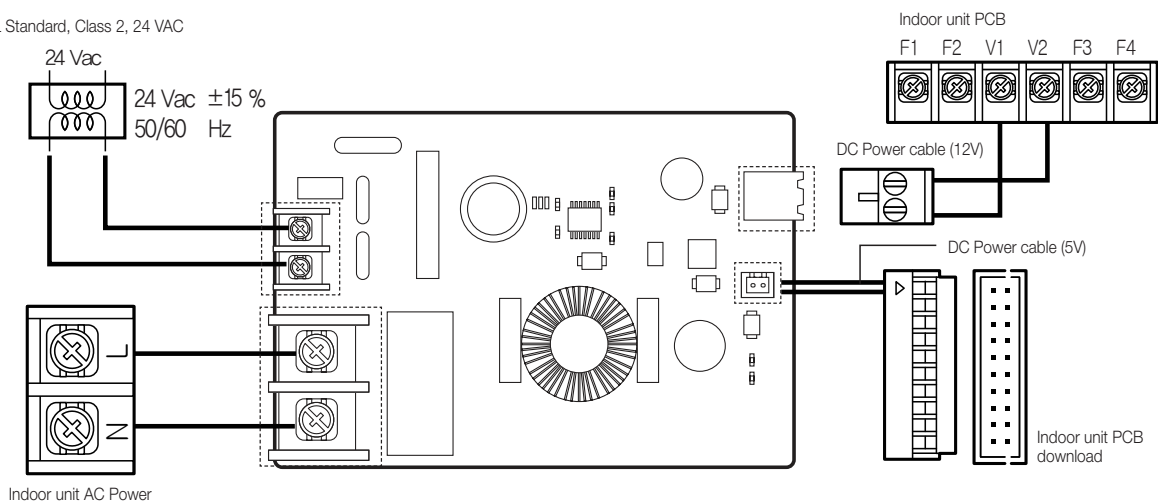
V External control systems

2. Multi tenant function controller

❏ *MCM-C210N*

6) Main fucntion

▶ Multi tenant function controller operation

- When AC power (that is supplied to indoor unit) is cut-off, it supplies auxiliary power (DC 12 V, DC 5 V) to the indoor unit.
- When AC power (that is supplied to indoor unit) is supplied normally, it cuts-off the auxiliary power (DC 12 V, DC 5 V) to the indoor unit.

▶ Detail information of the indoor unit when the power is supplied by MTFC

Item	Operation	Detail information
Indoor unti operation	OFF	Remain indoor unit in off status, turning on is not possible
EEV control	Close	Operation off, follows indoor unit's EEV control
Self error diagnosis	Operating	Detects error such as EEV close/open by executing self-diagnosis
Displaying error on panel display	Display partially	Case 1) The errors of itself : it displays. Case 2) The errors of the other units : it doesn't display.
Oepration of the connected wired remote controller	OFF	Power cut (not working)
Panel display	All off	All LEDs is off
Input outdoor unit key mode (Test run)	Not operating	The others are operated except the indoor unit in MTFC mode
Controlliing from the control device	Not operating	Remain off status, turning on is not possible
Setting option code	Not operating	Option setting from wireles remote controller, wired remote controller and S-NET Pro etc is not possible
Recognition of MTFC status	Possible only through S-NET Pro 2	Using S-NET Pro2, user can check MTFC working status
Beep	Not operating	-

▶ When AC single phase power is normally supplied to indoor unit

- Indoor unit operates normally.

▶ Caution

- Wired remote controller for group control cannot be installed to an indoor unit which Multi Tenant Function controller was installed.
- EEV operation of the stopped Heat mode will be controlled in same condition as noise reduction control option when Multi Tenant Function Controller operates.
- If the Multi Tenant Function Controller operates while multiple indoor units are working in mixed operation mode (cooling and heating at the same time), dew may form on the indoor unit fan.

VI. Building management systems

BUILDING
MANAGEMENT SYSTEM

Ⅵ Building management system

1. DMS L-net (Lonworks GW)

☐ *MIM-B18BN*

1) Features
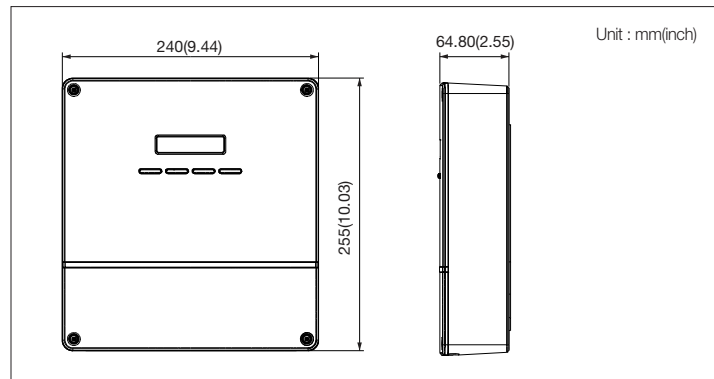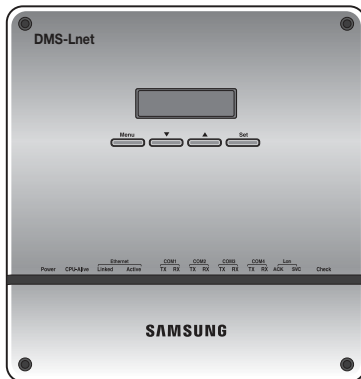
- For LonWork protocol system.
- Support DMS2.5 control function at the same time.

2) Product specification

Power supply	Source	DC Adaptor
	Input	100~240VAC (±10%), 50/60Hz
	Output	12V 3A
Operating temperature range		-10°C ~ 50°C (14°F~122°F)
Operating humidity range		10%RH ~ 90%RH
Communication connection		Lower layer : RS485 x 5 Upper layer : Ethernet 100Base-T x 1 LonWorks layer : TP/FT-10A(Free topology 78kbps)
External connection port	Digital Output	8
	Digital Input	10
Maximum length of connection	RS485	1000m (3280ft)
	Digital Output	100m (328ft)
	Digital Input	100m (328ft)
	Ethernet	100m (328ft) : When there is no repeater
	LonWorks	500m (1640ft) : When connecting with Bus type : 2700m (8858ft)

Max. connectable number of device	Control layer	Device	Numbers per each channel	Total number for 5 channels
		Indoor units (including ERV, MCU, FCU KIT)	128	128
		Outdoor unit (including MIM-N01, MIM-N10, MIM-F10N, DVM CHILLER unit)	16	80
		OnOff controller	Total 15	Total 75
		Touch centralized controller		
		PIM interface module (MIM-B16, MIM-B16N)	8	8

Compatible product

Outdoor unit	AM✳✳✳✳X✳✳✳✳✳✳
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	PIM interface module (MIM-B16, MIM-B16N)

✶ Conventional communication outdoor unit requires compatible interface module (MIM-N01) to establish connection

✶ MIM-B13D, MIM-B13E, MIM-B04A Interface modules cannot be connected.

✶ To connect ERV, MIM-N10 is required.

✶ To connect FCU KIT, MIM-F10N is required.

✶ Conventional PIM must connect to CH4(COM5) of DMS 2.5.

3) Description of parts

Front

No	Name	Function
①	LCD display	Displays current time or menu.
②	Menu button	Access the setting menu.
	▲/▼ button	Select function or setting item in the setting menu.
	Set button	Enter or check setting item in the setting menu.
③	Bottom cover	Unscrew 2 screws on the bottom to remove the cover and check the cable connections.

LED indicator

No.	Item	Name	Status
①	Power	Power indicator	Turns blue when the power is supplied.
②	CPU Alive	CPU operation indicator	Blinks in orange with 1 second intervals during normal operation.
③	Ethernet-Linked	Internet connection indicator	Turns green during normal connection.
④	Ethernet-Active	Internet data transmission/reception indicator	Blinks in orange during normal transmission/reception.
⑤	COM1~4-TX	Channel 1~4 OnOff controller/Interface module Data transmission indicator	Blinks in green during normal transmission.
⑥	COM1~4-RX	Channel 1~4 OnOff controller/interface module Data reception indicator	Blinks in green during normal reception.
⑦	Lon ACK	LonWorks data reception indicator	Blinks in green during normal reception.
⑧	Lon SVC	LonWorks device status indicator	Blinks in green during un-configured.
⑨	Check	Indoor/Outdoor unit communication status indicator	Turns green when there is an error on more than one indoor/outdoor unit or in communication.

VI Building management system

1. DMS L-net (Lonworks GW)

❏ *MIM-B18BN*

3) Description of parts

Bottom

DI terminal 1   DI terminal 2   DO terminal 3   DO terminal 4   Lon terminal   RS485 Communication terminal

Power terminal   Serial terminal   Ethernet terminal

Reset button   SD card socket   Cable tie groove
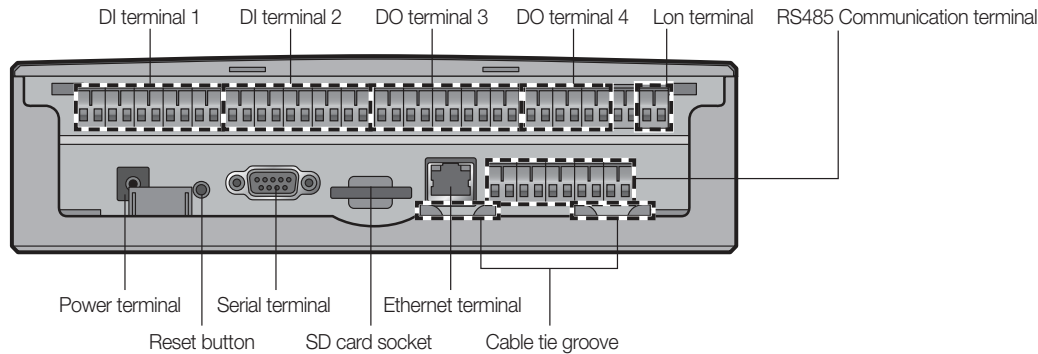
Name	Description
DI terminal 1	Digital Input connection terminal, Channel1~Channel5
DI terminal 2	Digital Input connection terminal, Channel6~Channel10
DO terminal 3	Digital Output connection terminal, Channel1~Channel5
DO terminal 4	Digital Output connection terminal, Channel6~Channel8
Lon terminal	Terminal Block for LonWorks communication (TP/FT-10)
Reset button	Reset LonWorks Gateway
Serial terminal	Service check port
SD card socket	Sub memory (for program update and set information saving) socket
RS485 communication terminal	RS485 port for communication with OnOff controller / interface module
Ethernet Terminal	Connect LAN cable
Cable tie groove	Groove for arranging cables

4) Connection diagram

▶ MIM-B16(PIM) should be connected to CH4(COM5) only.

▶ MIM-B16N(PIM) can be connected with outdoor units or controllers to same channel of DMS2.5.
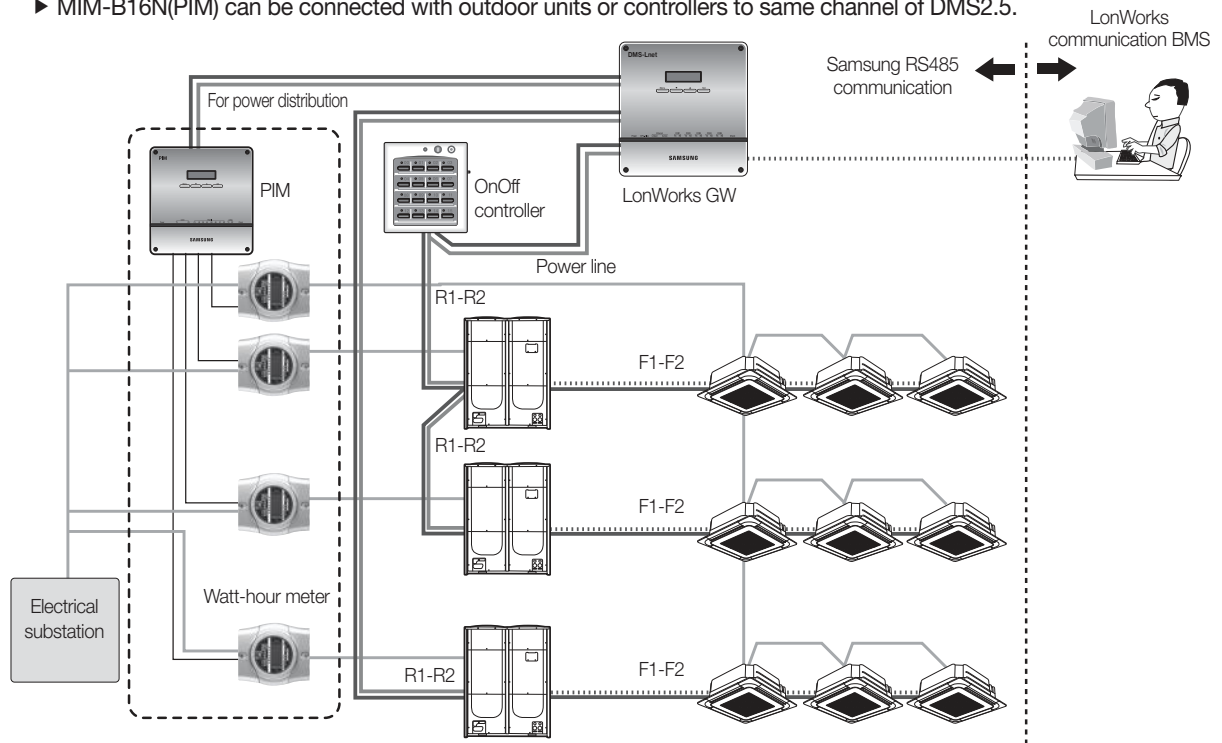
5) Wiring

(1) Connecting outdoor unit directly

- Maximum 16 outdoor units can be connected to each channel
- Total 80 outdoor units can be connected

(2) Connecting OnOff controller/Touch centralized controller

- Maximum 15 OnOff controller/Touch centralized controller can be connected to each channel

> ☑ *Note*
> ---
> - LonWorks GW can connect outdoor unit and OnOff controller/Touch centralized controller at the same time.
> - Outdoor unit and OnOff controller/Touch centralized controller can be connected to 1 communication channel at the same time.

VI Building management system

1. DMS L-net (Lonworks GW)

❏ *MIM-B18BN*

5) Wiring

■ Connecting with outdoor unit

LonWorks GW

CH0 CH1 CH2 CH3 CH4

R1R2

R1R2

R1 R2

Outdoor unit

0 Outdoor unit

0 Outdoor unit

R1R2

R1R2

1 Outdoor unit

1 Outdoor unit

Maximum 16 connections

F Outdoor unit

F Outdoor unit

Outdoor unit

※ Outdoor unit's address is defined automatically.
The address can be changed manually also.

■ Connecting with OnOff controller

LonWorks GW

CH0 CH1 CH2 CH3 CH4

Maximum 15 OnOff controllers

C2 C1 R2 R1

Outdoor unit

R1R2

Outdoor unit

C2 C1 R2 R1

R1R2

Outdoor unit

Connecting with outdoor unit and OnOff controller

LonWorks GW

CH0 CH1 CH2 CH3 CH4

Maximum 16
outdoor units

R1R2

1
Outdoor unit

R1R2

2
Outdoor unit

R1R2

3
Outdoor unit

C2 C1 R2 R1

C2 C1 R2 R1

Wiring distance

ⓐ   ⓑ   ⓒ   ⓓ   ⓔ

Network radius

▶ Distance between LonWorks GW and OnOff controller/outdoor unit
  • Distance from the LonWorks GW to the furthest device cannot exceed 1000m(3280ft).
  • ⓒ + ⓓ + ⓔ ≤ *1000m(3280ft)*

▶ Distance between LonWorks GW and upper level controller
  • Since LonWorks GW supports 100 Base-T Ethernet, first repeater or upper level controller from the LonWorks GW cannot be further than 100m(328ft) (IEEE 802.3). Therefore, maximum network radius is restricted to 500m(1640ft).

ⓐ, ⓑ, ⓒ, ⓓ, ⓔ = *100m(328ft)*

ⓐ   ⓑ   ⓒ   ⓓ   ⓔ

HUB
Repeater

Maximum number of repeaters = 4

ⓐ 500m(1640ft)
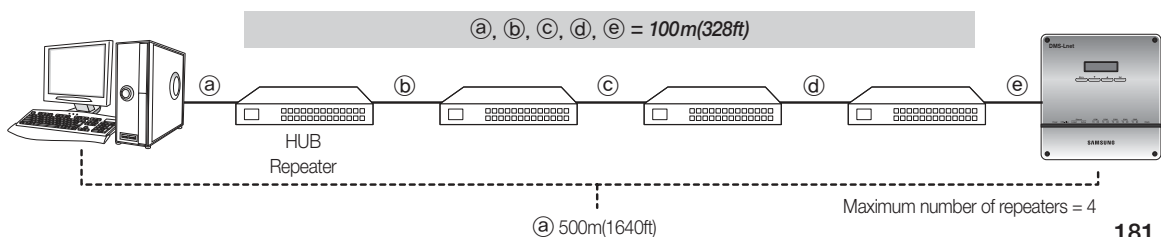
VI Building management system

1. DMS L-net (Lonworks GW)

❑ *MIM-B18BN*

6) Commission

- For Commission operation with BMS, press the [Set] button for more than 3 seconds.

- When you press Service Pin, Neuron ID will be sent and [SVC] LED of the front panel will be lit up for a second.
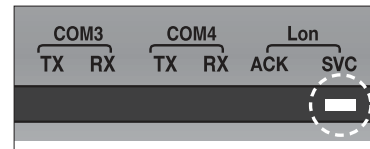
7) Standard program identifier (SPID)

- Manufacturers : Samsung Electronics Co., Ltd. MID: 191
- Device Classes : 70.00 - Gateways   72.80 --- HVAC Gateways
- Usage (Device Subclass) : Utility {11}
- Channel Types : TP/FT-10   {ID : 4}

Object Types	Description	SFPT Name
8500	SCC – Generic	SFPTspaceComfortController

※ Program ID : 90:00:BF:48:50:0B:04:00

8) Item summary

Item		Function
Control & Monitoring	Common	Operation On/Off
		Operation mode
		Air flow direction
		Fan speed
		Device error information
		Model, address, type information
	Indoor unit AHU	Set temperature
		Indoor temperature
		Filter replacement alert/ reset
		Remote controller level
		Thermostat information
		Operation restriction setting (Cooling/Heating)
		Setting lowest temperature/ restriction
		Setting highest temperature/ restriction
		Power consumption
	Additional functions	Operation time
		Emergency stop
		DMS2.5 DI/DO
		DMS2.5 lock
		DMS2.5 error information
		System error information

9) Network variable

(1) Indoor unit/ ERV/ AHU kit object

No.	Name	Type	M/O	Description
1	nviONOff	SNVT_switch	O	ON/OFF command
2	NviApplicMode	SNVT_hvac_mode	O	Setting operating mode
3	nviSetpoint	SNVT_temp_p	O	Setting desire temperature
4	nviFanStatus	SNVT_switch	O	Setting fan speed
5	nviERVMode	SNVT_count	O	Setting ERV operation mode
6	nviFilterReset	SNVT_switch	O	Filter reset command
7	nviUserLockout	SNVT_switch	O	Setting the restriction of remote control use
8	nviOccOpMode	SNVT_switch	O	Setting cooling only mode / heating only mode
9	nviCoolTempLock	SNVT_switch	O	Setting the low temperature limit
10	nviHeatTempLock	SNVT_switch	O	Setting the high temperature limit
11	nvoSpaceTemp	SNVT_temp_p	M	Display indoor temperature
12	nvoApplicMode	SNVT_hvac_mode	O	Display operating mode
13	nvoSetpoint	SNVT_temp_p	O	Display desire temperature
14	nvoOnOff	SNVT_switch	O	Display ON/OFF status
15	nvoFanStatus	SNVT_switch	O	Display fan speed
16	nvoERVMode	SNVT_count	O	Display ERV operating mode
17	nvoErrorCode	SNVT_count	O	Display Error code
18	nvoDeviceAlarm	SNVT_state	O	Remote control lock, Filter sign, Thermo ON/OFF, Error occurrence status display
19	nvoOccOpMode	SNVT_switch	O	Cooling only/Heating only setup status display
20	nvoCoolTempLock	SNVT_switch	O	Display low temperature limit setting status
21	nvoHeatTempLock	SNVT_switch	O	Display high temperature limit setting status
22	nvoUserLockout	SNVT_switch	O	Display the restriction of remote control use
23	nvoEnergyConp	SNVT_elec_kwh_l	O	Display electricity usage (Time Period)
24	nvoEnergyCon	SNVT_elec_kwh_l	O	Display electricity usage (Basic date)
25	nvoRuntimep	SNVT_time_hour	O	Display used hours (Period)
26	nvoRuntime	SNVT_time_hour	O	Display used hours (Basic date)
27	nvoDevListDesc	SNVT_str_asc	O	Indoor unit HW information

(2) DVM system object

No.	Name	Type	M/O	Description
1	nviDigitalOut[6]	SNVT_ switch	O	Control Digital output of DMS
2	nviAllOff	SNVT_hvac_emerg	O	Control all indoor unit / ERV OFF
3	nvoDigitalOut[6]	SNVT_ switch	O	Display Digital output status of DMS
4	nvoDigitalIn[8]	SNVT_ switch	O	Display Digital input status of DMS
5	nvoSystemLock	SNVT_ switch	O	Display System Lock status of DMS
6	nvoDMS2Alarm	SNVT_ count	O	Display communication error of the sub device connected to DMS
7	nvoSystemAlarm	SNVT_ count	O	

(3) Configuration properties

No.	Name	Type	M/O	Description
1	nciSndHrtBt	SNVT_time_sec SCPTmaxSendTime	O	Send Heartbeat
2	nciMinOutTm	SNVT_time_sec SCPTminSendTime	O	Minimum Send Time
3	nciMinDeltaTemp	SNVT_temp_p SCPTminDeltaTemp	O	Min. difference before update
4	nciDelayStatrup	SNVT_time_sec SCPTpwrupDelay	O	Delay time after a power-up

Ⅵ Building management system

1. DMS L-net (Lonworks GW)

▢ *MIM-B18BN*

10) Network parameter chart

(1) Indoor unit/ ERV/ AHU kit object

SSACIndoor[nn](objectid=1-128)

| nviOnOff SNVT_switch |
| nviApplicMode SNVT_hvac_mode |
| nviSetPoint SNVT_temp_p |
| nviFanStatus SNVT_switch |
| nviERVMode SNVT_count |
| nviFilterReset SNVT_switch |
| nviUserLockout SNVT_switch |
| nviOccOpMode SNVT_switch |
| nviCoolTempLock SNVT_switch |
| nviHeatTempLock SNVT_switch |

| nvoSpaceTemp SNVT_temp_p |
| nvoApplicMode SNVT_hvac_mode |
| nvoSetPoint SNVT_temp_p |
| nvoOnOff SNVT_switch |
| nvoFanStatus SNVT_switch |
| nvoERVMode SNVT_count |
| nvoErrorCode SNVT_count |
| nvoDeviceAlarm SNVT_state |
| nvoOccOpMode SNVT_switch |
| nvoCoolTempLock SNVT_switch |
| nvoHeatTempLock SNVT_switch |
| nvoUserLockout SNVT_switch |
| nvoEnergyConp SNVT_elec_kwh_l |
| nvoEnergyCon SNVT_elec_kwh_l |
| nvoRuntimep SNVT_time_hour |
| nvoRuntime SNVT_time_hour |
| nvoDevListDesc SNVT_str_asc |

(2) DMS system object

SSACSystem(objectid=129)

| nviDigitalOut[6]_switch |
| nviAllOff SNVT_hvac_emerg |

| nvoDigitalOut[6] SNVT_switch |
| nvoDigitalIn[8] SNVT_switch |
| nvoSystemLock SNVT_switch |
| nvoDMS2Alarm SNVT_count |
| nvoSystemAlarm SNVT_count |

Configuration Properties

nciSndHrtBt
nciMinOutTm
nciMinDelta Temp
nciDelayStartup

11) Network variable list

• Supported NV (Network Variable) is different depending on the connected devices.

No.	NV Name	Description	Indoor	ERV	AHU Kit
1	nviOnOff	ON/OFF command	O	O	O
2	nviApplicMode	Setting operating mode	O	X	O
3	nviSetpoint	Setting desirable temperature	O	X	O
4	nviFanStatus	Setting fan swing and speed	O	O	X
5	nviERVMode	Setting ERV operation mode	X	O	X
6	nviFilterReset	Filter reset command	O	O	O
7	nviUserLockout	Setting the restriction of remote control use	O	O	O
8	nviOccOpMode	Setting cooling only mode / Setting heating only mode	O	X	O
9	nviCoolTempLock	Setting the low temperature limit	O	X	O
10	nviHeatTempLock	Setting the high temperature limit	O	X	O
11	nvoSpaceTemp	Display indoor temperature	O	X	O
12	nvoApplicMode	Display operating mode	O	X	O
13	nvoSetpoint	Display desire temperature	O	X	O
14	nvoOnOff	Display ON/OFF status	O	O	O
15	nvoFanStatus	Display wind speed and direction	O	O	X
16	nvoERVMode	Display ERV operating mode	X	O	X
17	nvoErrorCode	Display Error code	O	O	O
18	nvoDeviceAlarm	Remote control Lock, Filter Sign, Thermo ON/OFF, Error occurrence status display	O	O	O
19	nvoOccOpMode	Cooling only/Heating only setup status display	O	X	O
20	nvoCoolTempLock	Low temperature limit setting status display	O	X	O
21	nvoHeatTempLock	High temperature limit setting status display	O	X	O
22	nvoUserLockout	Display the restriction of remote control use	O	O	O
23	nvoEnergyConp	Display electricity usage	O	X	X
24	nvoEnergyCon	Monitor total electricity usage	O	X	X
25	nvoRuntimep	Display used hours (Period)	O	X	O
26	nvoRuntime	Monitor total operation hours	O	X	O
27	nvoDevListDesc	The summary of device information (Model, Address, Operation Status)	O	O	O

VI Building management system

1. DMS L-net (Lonworks GW)

❏ *MIM-B18BN*

12) Detail description of network variable

(1) Indoor unit/ ERV/ AHU kit object

1-1. nvoSpaceTemp(11)

Description	Indoor temperature
SNVT Type	SNVT_temp_p: Signed Long, 2 bytes
Value and operation	Range : -10.0°C(-14.0°F) ~ 0.0°C(32.0°F)

1-2. nvoApplicMode(12), nviApplicMode(2)

Description	Operation Mode status
SNVT Type	SNVT_hvac_mode: Enumeration(hvac_t)
Value and operation	0: HVAC_AUTO 1: HVAC_HEAT 3: HVAC_COOL 6: HVAC_OFF 9: HVAC_FAN_ONLY 14: HVAC_DEHUMID

✳ Invalid Value: Automatically set as HVAC_AUTO

1-3. nvoSetpoint(13), nviSetpoint(3)

Description	Set Temperature
SNVT Type	SNVT_temp_p: Signed Long, 2 bytes
Value and operation	Cool : 18.0°C(64.4°F) ~ 30.0°C(86.0°F), Heat : 16.0°C(60.8°F) ~ 30.0°C(86.0°F)

✳ Invalid Value: Automatically set up as minimum or maximum value.

✳ When setting temperature, only an integer value is applied. A decimal point is ignored.

1-4. nvoOnOff(14), nviOnOff(1)

Description	Power ON/OFF status		
SNVT Type	SNVT_switch: Unsigned/signed Short		
Value and operation		Value	State
	OFF	0.0	0
	ON	100.0	1

1-5. nvoFanStatus(15), nviFanStatus(4)

Description	Fan Speed and direction		
SNVT Type	SNVT_switch: Unsigned/signed Short		
Value and operation		Value	State
	Auto	0.0	-
	Low	1.0	-
	Mid	2.0	-
	High	3.0	-
	Eco	4.0	-
	Turbo	5.0	-
	Auto	Any>5.0	
	Stop	-	0
	Up-Down	-	1

✳ Supporting modes are different according to indoor units.
- Indoor unit: Auto, Low, Mid, High
- ERV : Mid, High, Turbo
- AHU Kit: High

✳ When an indoor unit operation mode is Auto or Dehumid, Fan speed is controlled as 'Auto'.

✳ When an indoor unit operation mode is FAN ONLY, 'Auto'cannot be controlled by Fan speed.

1-6. nvoERVMode(16), nviERVMode(5)

Description	ERV Operation Mode
SNVT Type	SNVT_count: Unsigned Long, 2 bytes
Value and operation	(0: Auto) 1: H/R (2: Air purification) 3: Sleep 4: Normal

✳ ( ) : Function that is not supported now.

1-7. nvoErrorCode(17)

Description	Error Code
SNVT Type	SNVT_count: Unsigned Long, 2 bytes
Value and operation	Valid Range: 0 ~ 999 00 00 → No Error Refer to list of Error code

1-8. nvoDeviceAlarm(18)

Description	1. Remote control restriction status 2. Filter alert status 3. Thermo On/Off status 4. Error alert Status				
SNVT Type	SNVT_state: 16 Unsigned Bitfields				
Value and operation	Byte	Bit9	Bit8	Operation	Remark

Flags_1:

Byte	Bit9	Bit8	Operation	Remark
Flags_1	0	0	Unlock	nvo User Lockout
	0	1	Level1	
	1	0	Lock	

Flags_2:

Byte	Bit	value	Operation	Remark
Flags_2	2	0	No alarm	nvo Filter Alarm
		1	Alarm	
	1	0	Thermo Off	Thermo On/Off
		1	Thermo On	
	0	0	No Error	nvo Error Code
		1	Error	

1-9. nvoOccOpMode(19), nviOccOpModeCmd(8)

Description	Operation Mode restriction		
SNVT Type	SNVT_switch: Unsigned/singed Short		
Value and operation		Value	State
	Unlock	0.0	0
	Cool only	1.0	1
	Heat only	2.0	1

1-10. nvoCoolTempLock(20), nviCoolTempLock(9)

Description	Setting/monitoring Lower limit temperature and function toggle		
SNVT Type	SNVT_switch: Unsigned/singed Short		
Value and operation	Operation	Value	State
	Unlock	18.0 ~ 30.0	0
	Lock	18.0 ~ 30.0	1
	Cool : 18.0°C(64.4°F) ~ 30.0°C(86.0°F)		

1-11. nvoHeatTempLock(21), nviHeatTempLock(10)

Description	Setting/monitoring upper limit temperature and function toggle		
SNVT Type	SNVT_switch: Unsigned/signed Short		
Value and operation	Operation	Value	State
	Unlock	16.0 ~ 30.0	0
	Lock	16.0 ~ 30.0	1
	Heat : 16.0°C(60.8°F) ~ 30.0°C(86.0°F)		

1-12. nvoEnergyConp(23)

Description	Electric consumption value within the period
SNVT Type	SNVT_elec_kwh_l: Signed Quad, 4bytes
Value and operation	Raw range: 0 ~ 999999 Resolution: 0.1

1-13. nvoEnergyCon(24)

Description	Electric consumption value after baselin
SNVT Type	SNVT_elec_kwh_l: Signed Quad, 4bytes
Value and operation	Raw range: 0 ~ 999999 Resolution: 0.1

1-14. nvoRunTimep(25)

Description	Indoor unit usage within the period
SNVT Type	SNVT_time_hour: Signed Long, 2bytes
Value and operation	Raw range: 0 ~ 65535

1-15. nvoRunTime(26)

Description	Indoor unit usage after baseline
SNVT Type	SNVT_time_hour: Signed Long, 2bytes
Value and operation	Raw range: 0 ~ 65535

✳ Energy consumption and Runtime are the accumulated value during the user setting period.

✳ The data above is for reference so you can not use them for official billing.

1-15. nviFilterReset(6)

Description	Filter alert reset			
SNVT Type	SNVT_switch: Unsigned/singed Short			
Value and operation	Value	State	Operation	remark
	0.0	0	No Action	
	100.0	1	Filter Reset	

1-15. nviUserLockout(7), nvoUserLockout(22)

Description	Remote control restriction			
SNVT Type	SNVT_switch: Unsigned/singed Short			
Value and operation	Value	State	Operation	remark
	0.0	0	Unlock	
	100.0	1	Level 1	
	100.0	2	Lock	

1-15. nvoDevListDesc(27)

Description	Device Information
SNVT Type	SNVT_str_asc: Unsigned Character Array, 31bytes
Value and operation	Refer to Expansion of nvoDevListDesc

Ⅵ Building management system

1. DMS L-net (Lonworks GW)

❑ *MIM-B18BN*

12) Detail description of network variable

(1) Indoor unit/ ERV/ AHU kit object

2-17. Expansion of nvoDevListDesc

		desription	character	value
ascii.	[0]	Model information	Alphabet or digit	
	[1]		Alphabet or digit	
	[2]		Alphabet or digit	
	[3]		Alphabet or digit	
	[4]		Alphabet or digit	
	[5]		Alphabet or digit	
	[6]	Separator	Underbar(_)	095
	[7]	Centralized controller address	Alphabet or digit	
	[8]		Alphabet or digit	
	[9]	Separator	Period(.)	046
	[10]	Interface Module address	Alphabet or digit	
	[11]		Alphabet or digit	
	[12]	Separator	Period(.)	046
	[13]	Indoor Unit Address	Alphabet or digit	
	[14]		Alphabet or digit	
	[15]	Separator	Underbar(_)	095
	[16]	Unit type	0: indoor unit, 1: AHU, 2: ERV	
	[17]	Separator	Underbar(_)	095
	[18]	Operation mode	DMS Format 0: Auto, 1: Cool, 2: Dehumid, 3: Fan, 4: Heat	
	[19]	ON/OFF	0, 1	
	[20]	Fan speed	0, 1, 2, 3, 4, 5	
	[21]	Fan Swing	0, 1	
	[22]	Error	0, 1	
	[23]	Separator	Underbar(_)	095
	[24]	setPoint temperate	Second significant digit	
	[25]		First significant digit	
	[26]		First decimal place	
	[27]	Space temperate(*)	Second significant digit	
	[28]		First significant digit	
	[29]		First decimal place	
	[30]	Null padding	0	048

(✶) If the value is a negative number, it is displayed as sign, 10-digit, single-digit.

(2) DMS System object

2-1. nvoDigitalOut(3), nviDigitalOut(1)

Description	Digital output status on DMS		
SNVT Type	SNVT_switch: Unsigned/singed Short		
Value and operation		Value	State
	OFF	0.0	0
	ON	100.0	1

2-2. nvoDigitalIn(4)

Description	Digital Input status on DMS		
SNVT Type	SNVT_switch: Unsigned/singed Short		
Value and operation		Value	State
	OFF	0.0	0
	ON	100.0	1

2-3. nvoSystemLock(5)

Description	System lock status of DMS(only monitoring available)		
SNVT Type	SNVT_switch: Unsigned/singed Short		
Value and operation		Value	State
	Unlock	0.0	0
	Lock	100.0	1

2-4. nvoDMSAlarm(6)

Description	DMS Alarm
SNVT Type	SNVT_count : Unsigned Long, 2 bytes
Value and operation	0 : Normal 8 : Emergency stop 105 : Tracing in progress 108 : Tracking failed 109 : Lon Module ↔ DMS2.5 communication Error 110 : Object ID Update

2-5. nvoSystemAlarm(7)

Description	SIM/PIM Communication Error Code
SNVT Type	SNVT_count: Unsigned Long, 2 bytes
Value and operation	SIM/PIM Communication Error Refer to list of Error code

2-6. nviAllOff(2)

Description	All indoor units turn off
SNVT Type	Enumeration, emerg_t
Value and operation	0 : EMERG_NORMAL 4 : EMERG_SHUTDOWN

VI Building management system

2. DMS B-net (BACnet GW)

❏ *MIM-B17BN*

1) Features

Unit : mm (inch)
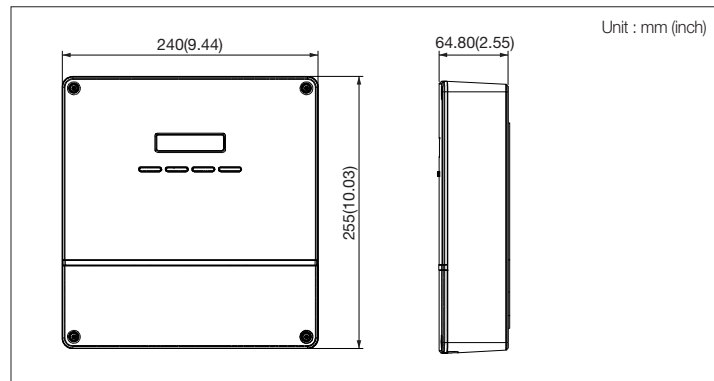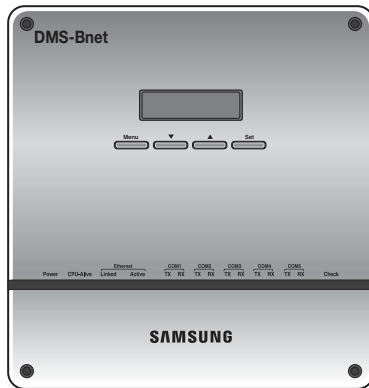
• For BACnet protocol system Support DMS2.5 control function at the same time.

2) Product specification

Power supply	Source	DC Adaptor
	Input	100~240VAC (±10%), 50/60Hz
	Output	12V 3A
Operating temperature range		-10°C ~ 50°C (14°F~122°F)
Operating humidity range		10%RH ~ 90%RH
Communication connection		Lower layer : RS485 x 5 Upper layer : Ethernet 100Base-T x 1(BACnet IP)
External connection port	Digital Output	10
	Digital Input	10
Maximum length of connection	RS485	1000m (3280ft)
	Digital Output	100m (328ft)
	Digital Input	100m (328ft)
	Ethernet	100m (3280ft) : When there is no repeater

		Device	Numbers per each channel	Total number for 5 channels
Max. connectable number of device	Control layer	Indoor units (including ERV, MCU, FCU KIT)	128	256
		Outdoor unit (including MIM-N01, MIM-N10, MIM-F10N, DVM CHILLER unit)	16	80
		OnOff controller	Total 15	Total 75
		Touch centralized controller		
		PIM interface module (MIM-B16, MIM-B16N)	8	8

Compatible product

Outdoor unit	AM✳✳✳✳X✳✳✳✳✳✳
Controller	OnOff controller (MCM-A202DN)
	Touch centralized controller (MCM-A300N)
	PIM interface module (MIM-B16, MIM-B16N)

✳ Conventional communication outdoor unit requires compatible interface module (MIM-N01) to establish connection

✳ MIM-B13D, MIM-B13E, MIM-B04A Interface modules cannot be connected.

✳ To connect ERV, MIM-N10 is required.

✳ To connect FCU KIT, MIM-F10N is required.

✳ Conventional PIM must connect to CH4(COM5) of DMS2.5.

3) Description of parts

(1) Front

No	Name	Function
①	LCD display	Displays current time or menu
②	Menu button	Access the setting menu
	▲/▼ button	Select function or setting item in the setting menu
	Set button	Enter or check setting item in the setting menu
③	Bottom cover	Unscrew 2 screws on the bottom to remove the cover and check the cable connections

(2) LED indicator

No.	Item	Name	Status
①	Power	Power indicator	Turns blue when the power is supplied
②	CPU Alive	CPU operation indicator	Blinks in orange with 1 second intervals during normal operation
③	Ethernet–Linked	Internet connection indicator	Turns green during normal connection
④	Ethernet–Active	Internet data transmission/reception indicator	Blinks in orange during normal transmission/reception
⑤	COM1~5 – TX	Channel 1~5 OnOff controller/Interface module Data transmission indicator	Blinks in green during normal transmission
⑥	COM1~5 – RX	Channel 1~5 OnOff controller/interface module Data reception indicator	Blinks in green during normal reception
⑦	Check	Indoor/Outdoor unit Communication status indicator	Turns green when communication error occurs

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❏ *MIM-B17BN*

3) Description of parts

(3) Bottom
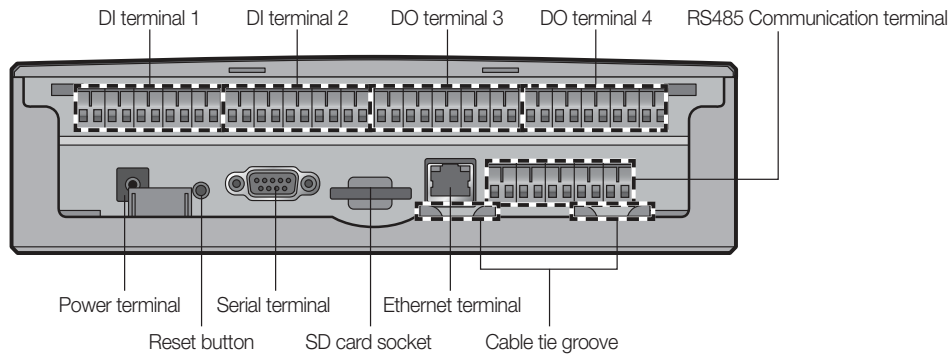
DI terminal 1   DI terminal 2   DO terminal 3   DO terminal 4   RS485 Communication terminal

Power terminal   Serial terminal   Ethernet terminal

Reset button   SD card socket   Cable tie groove

Name	Description
DI terminal 1	Digital Input connection terminal, Channel 1~Channel 5
DI terminal 2	Digital Input connection terminal, Channel 6~Channel 10
DO terminal 3	Digital Output connection terminal, Channel 1~Channel 5
DO terminal 4	Digital Output connection terminal, Channel 6~Channel 8
Reset button	Reset BACnet Gateway
Serial terminal	Sevice check port
SD card socket	Sub memory (for program update and set information saving) socket
RS485 communication terminal	RS485 port for communication with OnOff controller / interface module
Ethernet Terminal	Connect LAN cable
Cable tie groove	Groove for arranging cables

4) Connection diagram

▶ MIM-B16(PIM) should be connected to CH4(COM5) of DMS2.5.

▶ MIM-B16N(PIM) can be connected with outdoor units or controllers to same channel of DMS2.5.
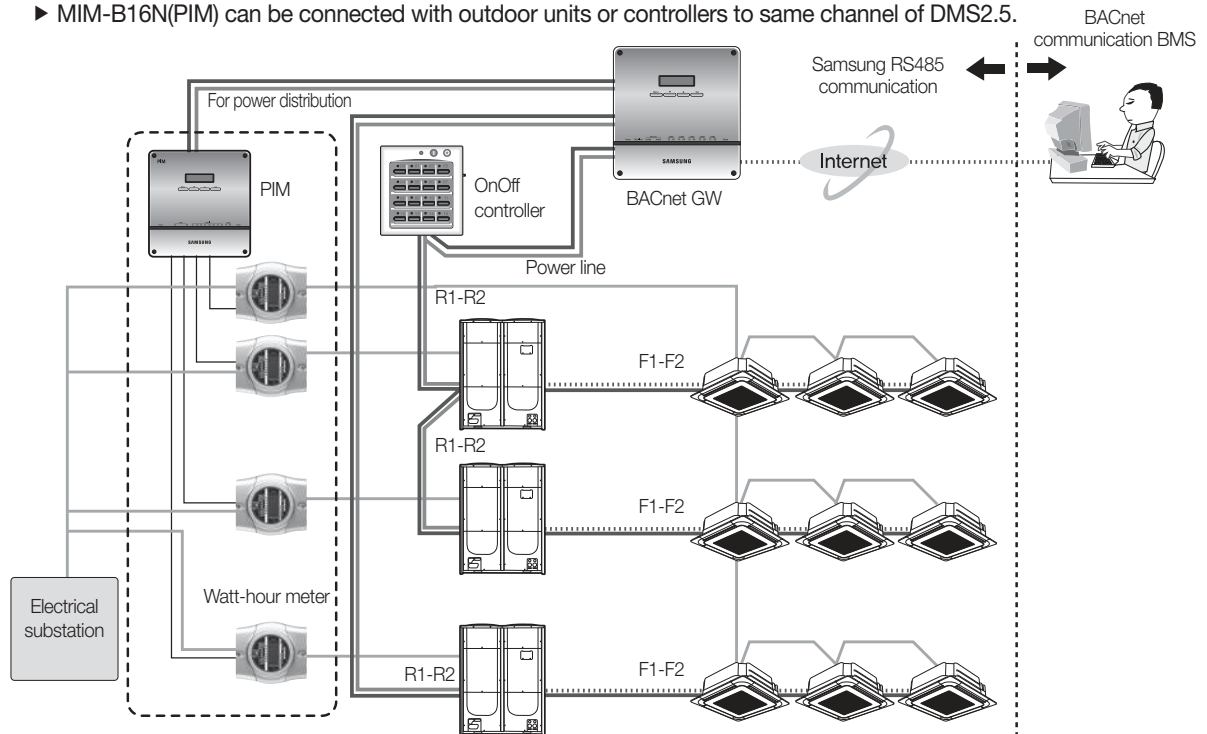
5) Wiring
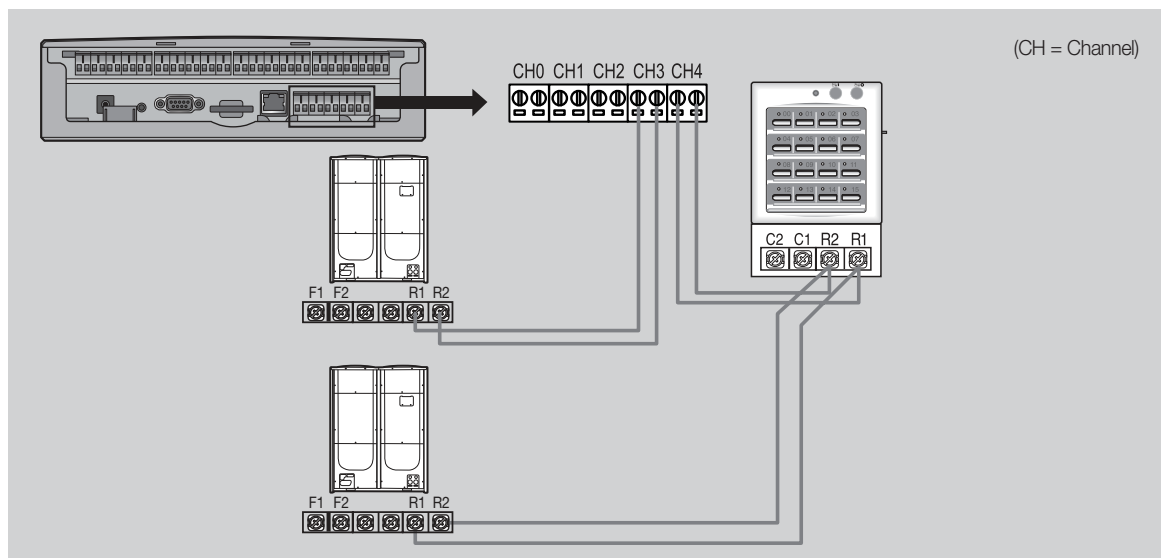
(CH = Channel)

(1) Connecting outdoor unit directly

• Maximum 16 outdoor units can be connected to each channel
• Total 80 outdoor units can be connected

(2) Connecting OnOff controller/Touch centralized controller

• Maximum 15 OnOff controller/Touch centralized controller can be connected to each channel

☑ *Note*

 ◆ BACnet GW can connect outdoor unit and OnOff controller/Touch centralized controller at the same time.
 ◆ Outdoor unit and OnOff controller/Touch centralized controller can be connected to 1 communication channel at the same time.

VI Building management system

2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

5) Wiring

Connecting with outdoor unit

※ Outdoor unit's address is defined automatically.
The address can be changed manually also.
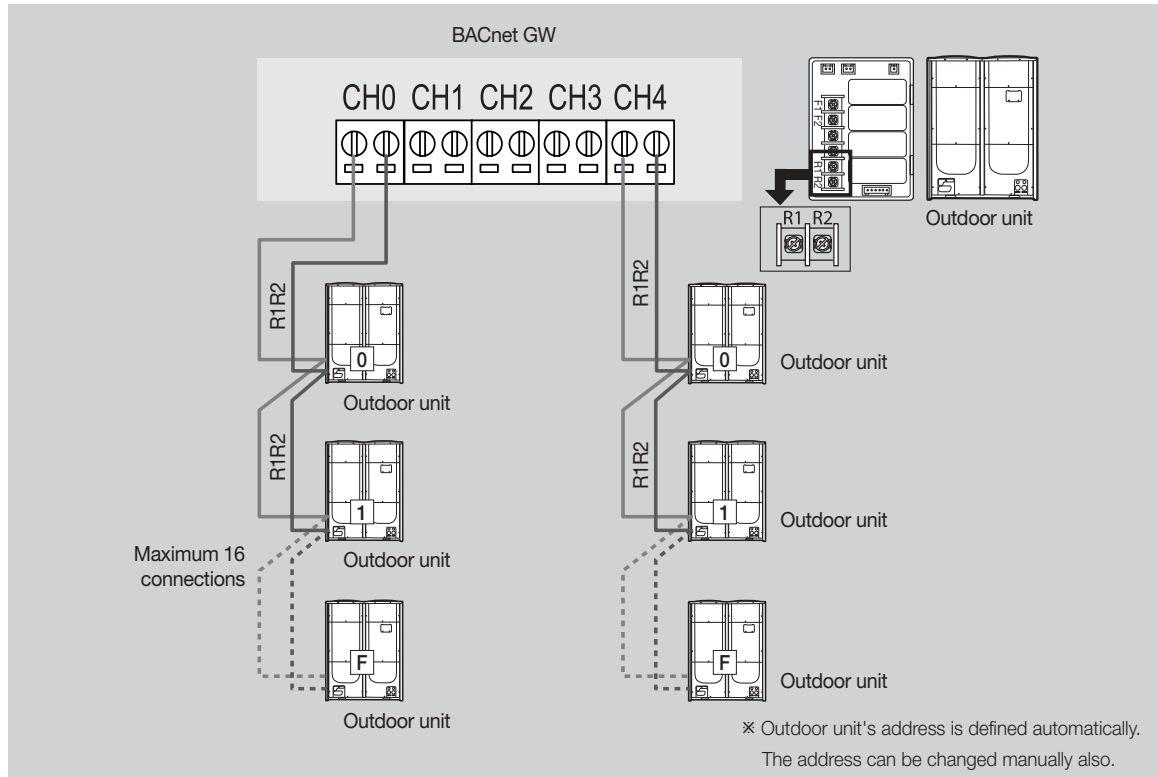
Connecting with OnOff controller
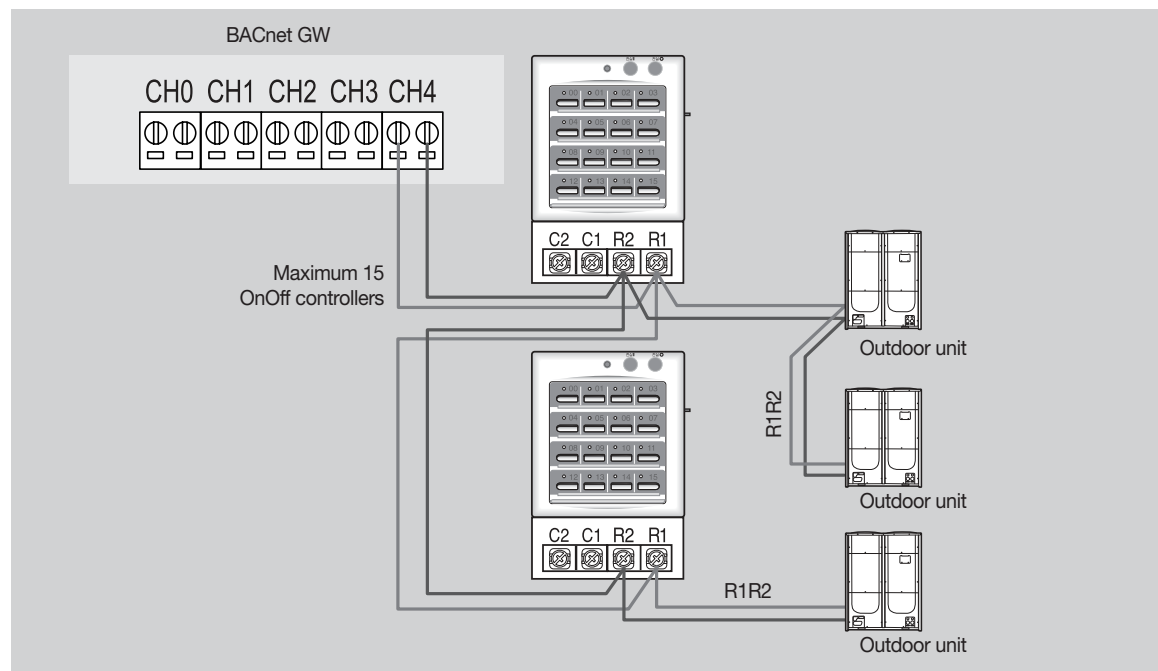
■ Connecting with outdoor unit and OnOff controller

■ Wiring distance

Network radius

bms
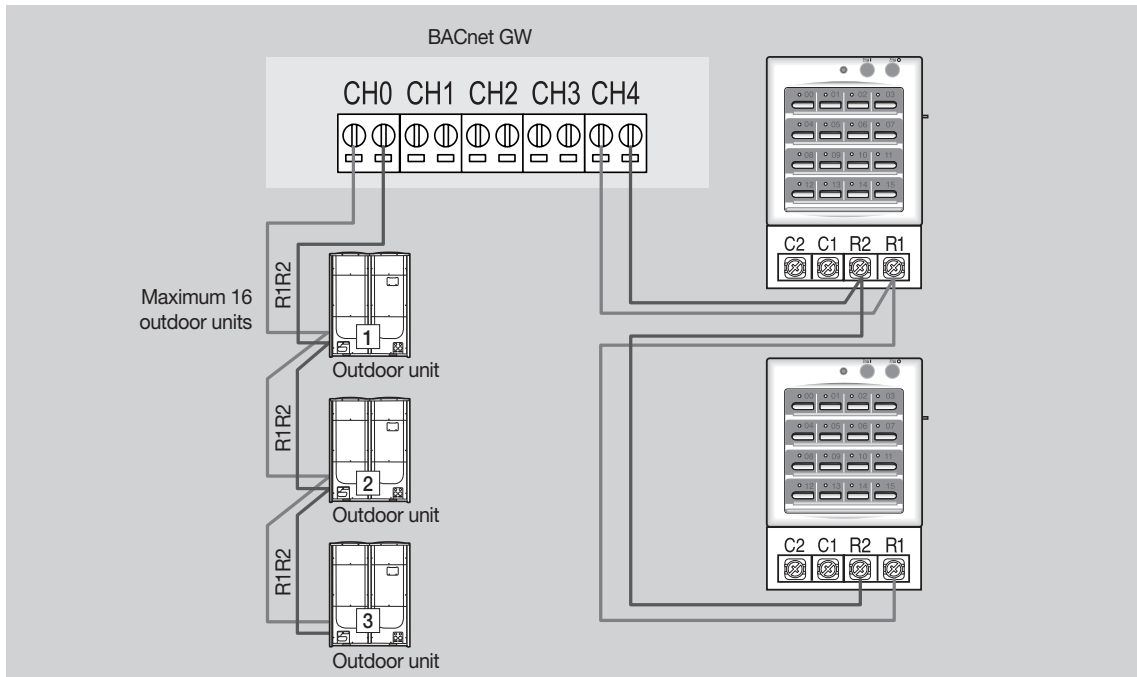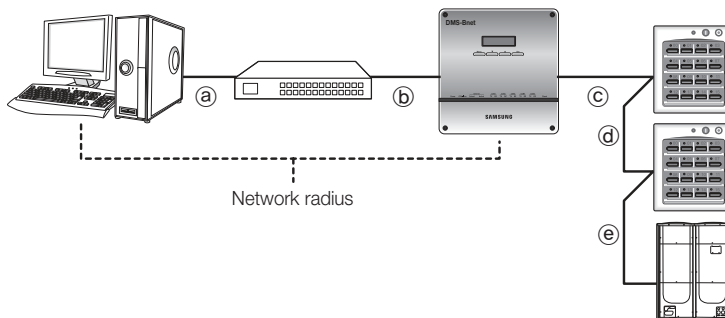
▶ **Distance between BACnet GW and OnOff controller/outdoor unit**
- Distance from the BACnet GW to the furthest device cannot exceed 1000m(3280ft).
- $ⓒ + ⓓ + ⓔ \leq 1000\,m(3280ft)$

▶ **Distance between BACnet GW and upper level controller**
- Since BACnet GW supports 100 Base-T Ethernet, first repeater or upper level controller from the BACnet GW cannot be further than 100m(328ft) (IEEE 802.3). Therefore, maximum network radius is restricted to 500m(1640ft).

$ⓐ, ⓑ, ⓒ, ⓓ, ⓔ = 100\,m(328ft)$

HUB
Repeater

Maximum number of repeaters = 4

ⓐ 500m(1640ft)

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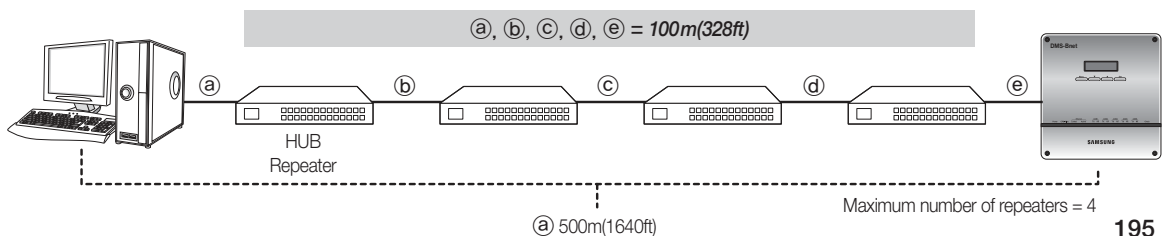
VI Building management system

2. DMS B-net (BACnet GW)

❏ *MIM-B17BN*

6) Description of device ID

Item	DNET – Range [Digit 2]	CPP – Range [Digit 3]	INDOOR – Range [Digit 2]
OnOff Controller	1~40	000~015	64
PIM	1~40	100~115	64
DMS DI/DO	1~40	300~315	64
Interface Module	1~40	400~655 (16 x 16)	64
Indoor Unit, ERV AHU kit, EHS	1~40	400~655	0~63
Gateway	1~40	900	64

Ex)
- Indoor Unit
- DNET (Gateway number) : 9
- Indoor Unit Address: 01.01.32
- Device ID: 941732

Device Instance Number (Gateway ID)   Indoor unit main address

9   417   32

400 + 1 x 16 + 1 = 417

OnOff controller address —   — Interface module address
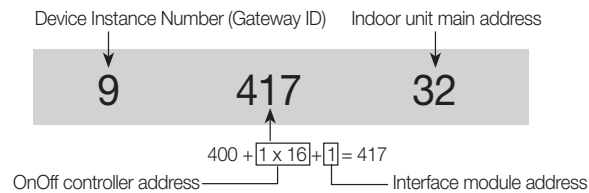
Checking device ID from BACnet Gateway

- Click 'Object ID' from the 'Object ID' column.
  Detail information window will appear and detail information will be displayed.

7) Object list

(1) Indoor unit

Single indoor unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit Inactive Text-1	Status value Active Text-2	Text-3	Text-4	Text-5
1	Indoor Temperature	AI	AC_RoomTemp_xx_xxxxxx	°C(°F)				
2	Set temperature	AV	AC_Temp_Set_xx_xxxxxx	°C(°F)				
3	Setting lower temperature limit	AV	AC_Cool_LimitTemp_xx_xxxxxx	°C(°F)				
4	Setting upper temperature limit	AV	AC_Heat_LimitTemp_xx_xxxxxx	°C(°F)				
5	The power value of an indoor unit after the basic date	AI	AC_Baseline_kWh_xx_xxxxxx	kWh				
6	The number of hours usage of an indoor unit after the basic date	AI	AC_Baseline_Minute_xx_xxxxxx	Minute				
7	Power value within period	AI	AC_Period_kWh_xx_xxxxxx	kWh				
8	The number of hours usage of an indoor unit within period	AI	AC_Period_Minute_xx_xxxxxx	Minute				
9[**]	Power On/Off	BV	AC_Power_xx_xxxxxx	Off	On			
10	Applying lower temperature limit setting	BV	AC_Cool_Limit_set_xx_xxxxxx	False	True			
11	Applying upper temperature limit setting	BV	AC_Heat_Limit_set_xx_xxxxxx	False	True			
12[**]	Filter sign status	BI	AC_FilterSign_xx_xxxxxx	False	True			
13[**]	Filter sign reset	BO	AC_FilterSign_Reset_xx_xxxxxx	False	True			
14[**]	Operation mode status	MV	AC_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	Fan	Dry
15	Fan speed status	MV	AC_FanSpeed_xx_xxxxxx	Auto	Low	Mid	High	
16	Air flow direction status	MV	AC_FanFlow_xx_xxxxxx	None	Vertical	Horizon	All	
17[**]	Operation mode limit status	MV	AC_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only		
18[**]	Remote controller limit status	MV	AC_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC		
19[**]	Integrated error code of both indoor unit and outdoor unit	AI	AC_Error_Code_xx_xxxxxx	Refer to Samsung integrated error code list				
20[*]	SPI setting	BV	AC_SPI_xx_xxxxxx	False	True			
21[*]	HumanSensor setting	BV	AC_MDS_xx_xxxxxx	False	True			
22[**]	AC Indoor Notify	NC	AC_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)				
23[**]	Discharge cooling set temperature	AV	AC_DisCoolTemp_Set_xx_xxxxxx	°C(°F)				
24[**]	Discharge heating set temperatrue	AV	AC_DisHeatTemp_Set_xx_xxxxxx	°C(°F)				
25[**]	Discharge current temperature	AI	AC_DisCurrentTemp_xx_xxxxxx	°C(°F)				

※ Temperature setting range can be different depending on the model and the common range is as follows:

Auto : 18~30℃(64~86℉)

Cool : 18~30℃(64~86℉)

Heat : 16~30℃(60~86℉)

Fan : Temperature cannot be adjusted

Dry : 18~30℃(64~86℉)

[*] Mark is optionally supported. For a fresh duct, [**] mark is supported.

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

7) Object list

(2) AHU kit

Single AHU unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit Inactive Text-1	Status value Active Text-2	Text-3	Text-4	Text-5
1	Indoor Temperature	AI	AHU_RoomTemp_xx_xxxxxx	°C(°F)				
2	Set temperature	AV	AHU_Temp_Set_xx_xxxxxx	°C(°F)				
3	Setting lower temperature limit	AV	AHU_Cool_LimitTemp_xx_xxxxxx	°C(°F)				
4	Setting upper temperature limit	AV	AHU_Heat_LimitTemp_xx_xxxxxx	°C(°F)				
5	The power value of an indoor unit after the basic date	AI	AHU_Baseline_kWh_xx_xxxxxx	kWh				
6	The number of hours usage of an indoor unit after the basic date	AI	AHU_Baseline_Minute_xx_xxxxxx	Minute				
7	Power value within period	AI	AHU_Period_kWh_xx_xxxxxx	kWh				
8	The number of hours usage of an indoor unit within period	AI	AHU_Period_Minute_xx_xxxxxx	Minute				
9	Power On/Off	BV	AHU_Power_xx_xxxxxx	Off	On			
10	Applying lower temperature limit setting	BV	AHU_Cool_Limit_set_xx_xxxxxx	False	True			
11	Applying upper temperature limit setting	BV	AHU_Heat_Limit_set_xx_xxxxxx	False	True			
12	Filter sign status	BI	AHU_FilterSign_xx_xxxxxx	False	True			
13	Filter sign reset	BO	AHU_FilterSign_Reset_xx_xxxxxx	False	True			
14	Operation mode status	MV	AHU_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	Fan	Dry
15	Operation mode limit status	MV	AHU_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only		
16	Remote controller limit status	MV	AHU_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC		
17	Integrated error code of both indoor unit and outdoor unit	AI	AHU_Error_Code_xx_xxxxxx	Refer to Samsung integrated error code list				
18(*)	Discharge cooling set temperature	AV	AHU_DisCoolSetTemp_xx_xxxxxx	°C(°F)				
19(*)	Discharge heating set temperature	AV	AHU_DisHeatSetTemp_xx_xxxxxx	°C(°F)				
20(*)	Discharge current temperature	AI	AHU_Dis_CurrentTemp_xx_xxxxxx	°C(°F)				
21(*)	Humidification setting	BV	AHU_Humidification_xx_xxxxxx	Off	On			
22(*)	Outdoor air intake setting	BV	AHU_OAIntake_xx_xxxxxx	Off	On			
23(*)	Outdoor cooling setting	BV	AHU_OutdoorCool_xx_xxxxxx	Off	On			
24(*)	Fan speed status	MV	AHU_FanSpeed_xx_xxxxxx	Low	Mid	High		
25(*)	Set humidity status	MV	AHU_SetHumidity_xx_xxxxxx	Low	Mid	High		
26(*)	Current humidity status	MI	AHU_CurrentHumidity_xx_xxxxxx	Low	Mid	High		
27	AHU Notify	NC	AHU_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)				

(*) Mark is not supported.

(3) ERV, ERV Plus

Single ERV or ERV Plus unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value			
				Inactive	Active			
				Text-1	Text-2	Text-3	Text-4	Text-5
1	Power On/Off operation	BV	ERV_Power_xx_xxxxxx	Off	On			
2	Filter sign status	BI	ERV_FilterSign_xx_xxxxxx	False	True			
3	Filter sign reset	BO	ERV_FilterSign_Reset_xx_xxxxxx	False	True			
4	Operation mode status	MV	ERV_Operation_Mode_xx_xxxxxx	Auto	HeatEx	Bypass	Sleep	
5	Fan speed status	MV	ERV_FanSpeed_xx_xxxxxx	Low	High	Turbo		
6	Remote controller limit status	MV	ERV_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC		
7	Integrated error code of ERV unit	AI	ERV_Error_Code_xx_xxxxxx					
8(*)	The power value of an ERV Plus unit after the basic date	AI	ERV_Plus_Baseline_kWh_xx_xxxxxx	kWh				
9(*)	The number of hours usage of an ERV Plus unit after the basic date	AI	ERV_Plus_Baseline_Minute_xx_xxxxxx	Minute				
10(*)	Power value within period	AI	ERV_Plus_Period_kWh_xx_xxxxxx	kWh				
11(*)	The number of hours usage of an ERV Plus unit within period	AI	ERV_Plus_Period_Minute_xx_xxxxxx	Minute				
12(*)	ERV Plus operation mode status	MV	ERV_Plus_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	Off	
13(*)	ERV Plus operation mode limit status	MV	ERV_Plus_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only		
14(*)	ERV Notify	NC	ERV_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)				

(*) Mark is optionally supported.

(4) DVM CHILLER

Single DVM CHILLER Unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value			
				Inactive	Active			
				Text-1	Text-2	Text-3	Text-4	Text-5
1	Chilled Water Temperature	AI	MC_WaterTemp_xx_xxxxxx	°C(°F)				
2	Set temperature	AV	MC_WaterTemp_Set_xx_xxxxxx	°C(°F)				
3	Demand limit setting	AV	MC_Demand_Set_xx_xxxxxx	%				
4	The number of hours usage of an indoor unit after the basic date	AI	MC_Baseline_Minute_xx_xxxxxx	Minute				
5	The number of hours usage of an indoor unit within peirod	AI	MC_Period_Minute_xx_xxxxxx	Minute				
6	Power On/Off operation	BV	MC_Power_xx_xxxxxx	Off	On			
7	Water Law	BO	MC_Water_Law_xx_xxxxxx	False	True			
8	Quiet	BV	MC_Quiet_xx_xxxxxx	Off	On			
9	Forced Fan	BV	MC_Forced_Fan_xx_xxxxxx	Off	On			
10	Operation mode status	MV	MC_Operation_Mode_xx_xxxxxx	Cool	Heat	Cool Storage	Hot Water	
11	Remote controller limit status	MV	MC_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC		
12	Integrated error code	AI	MC_Error_Code_xx_xxxxxx					
13	DVM CHILLER Notify	NC	MC_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)				

BACnet Device Object does not support master function of DVM CHILLER.

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2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

7) Object list

(4) EHS

Instance Number	Object	Object Type	Object Name	Unit	Status value		
				Inactive	Active		
				Text-1	Text-2	Text-3	Text-4
1	Room temperature	AI	EHS_RoomTemp_xx_xxxxxx	°C(°F)			
2	Set temperature	AV	EHS_Temp_Set_xx_xxxxxx	°C(°F)	Use when displayed temperature type is set to 'Room'.		
3	Set temperature of water out	AV	EHS_WaterOutTemp_Set_xx_xxxxxx	°C(°F)	Use when displayed temperature type is set to 'WaterOut'.		
4	Set temperature of hot water	AV	EHS_HotWaterTemp_Set_xx_xxxxxx	°C(°F)			
5	Setting lower temperature limit	AV	EHS_Cool_LimitTemp_xx_xxxxxx	°C(°F)	Use when displayed temperature type is set to 'Room'.		
6	Setting upper temperature limit	AV	EHS_Heat_LimitTemp_xx_xxxxxx	°C(°F)	Use when displayed temperature type is set to 'Room'.		
7	Lower temperature limit for water out	AV	EHS_WOCoolLimitTemp_xx_xxxxxx	°C(°F)			
8	Upper temperature limit for water out	AV	EHS_WOHeatLimitTemp_xx_xxxxxx	°C(°F)			
9	Upper temperature limit for hot water	AV	EHS_WTHeatLimitTemp_xx_xxxxxx	°C(°F)			
10	The power value after the basic date	AI	EHS_Baseline_kWh_xx_xxxxxx	kWh			
11	The number of hours usage of an indoor unit after the basic date	AI	EHS_Baseline_Minute_xx_xxxxxx	Minute			
12	Power value within period	AI	EHS_Period_kWh_xx_xxxxxx	kWh			
13	The number of hours usage of an indoor unit within period	AI	EHS_Period_Minute_xx_xxxxxx	Minute			
14	Current temperature of water out	AI	EHS_WOCurrentTemp_xx_xxxxxx	°C(°F)			
15	Current temperature of hot water	AI	EHS_HotWaterTemp_xx_xxxxxx	°C(°F)			
16	Displayed temperature type	BI	EHS_ControlTempType_xx_xxxxxx	Room	WaterOut		
17	Thermostat usage	BI	EHS_Thermostat_xx_xxxxxx	False	True		
18	Outing	BI	EHS_GoOut_xx_xxxxxx	Off	On		
19	Power On/Off	BV	EHS_Power_xx_xxxxxx	Off	On		
20	Setting lower temperature limit	BV	EHS_Cool_LimitTemp_Set_xx_xxxxxx	False	True	Use when displayed temperature type is set to 'Room'.	
21	Setting upper temperature limit	BV	EHS_Heat_LimitTemp_Set_xx_xxxxxx	False	True	Use when displayed temperature type is set to 'Room'.	
22	Apply lower temperature limit for water out	BV	EHS_WOCoolLimitFlag_xx_xxxxxx	False	True	Use when displayed temperature type is set to 'WaterOut'.	
23	Apply upper temperature limit for water out	BV	EHS_WOHeatLimitFlag_xx_xxxxxx	False	True	Use when displayed temperature type is set to 'WaterOut'.	
24	Apply upper temperature limit for hot water	BV	EHS_WTHeatLimitFlag_xx_xxxxxx	False	True		
25	On/Off status of hot water mode	BV	EHS_HotWater_Power_xx_xxxxxx	Off	On		
26	Status of quiet operation	BV	EHS_Sleep_xx_xxxxxx	Off	On		
27	Operation mode status	MV	EHS_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	
28	Operation mode limit status	MV	EHS_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only	
29	Remote controller limit status	MV	EHS_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC	
30	Status of hot water operation mode	MV	EHS_HotWater_Mode_xx_xxxxxx	* Force	Eco	Standard	Power
31	Integrated error code of both indoor unit and outdoor unit	AI	EHS_Error_Code_xx_xxxxxx				
32	EHS notify	NC	EHS_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)			

Force hot water mode (* marked) will be supported later. It is the point list of Hydro Unit and Hydro Unit HT.

(5) SIM (PIM)

Single SIM (PIM) has following point list.

Instance Number	Object	Object Type	Object Name	Status value
1	SIM (PIM) error code	AI	SIM_Error_Code_xx_xx	Refer to list of error code
2	SIM (PIM) Notify	NC	SIM_Notify_xx_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(6) OnOff Controller

Single OnOff Controller has following point list.

Instance Number	Object	Object Type	Object Name	Status value
1	OnOff Controller error code	AI	Central_Error_Code_xx_xx	Refer to the list of the integrated error code
2	OnOff Controller notify	NC	Central_Notify_xx_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(7) Interface module (Outdoor unit)

Single Interface(Outdoor unit) module has following point list.

Instance Number	Object	Object Type	Object Name	Unit Inactive Text-1	Status value Active Text-2	Text-3	Text-4	Text-5
1	Outside temperature	AI	ODU_Outside_Temp_xx_xxxx	°C(°F)				
2(*)	Cool capacity compensation	AV	ODU_Cool_Compensation_xx_xxxx	0 : 5~7°C(41~45°F) / 1 : 7~9°C(41~48°F) / 2 : 9~11°C(48~52°F) / 3 : 10~12°C(50~54°F) / 4 : 11~13°C(52~55°F) / 5 : 12~14°C(54~57°F) / 6 : 13~15°C(55~59°F) / 14 : Auto control (from ODU)				
3(*)	Heat capacity compensation	AV	ODU_Heat_Compensation_xx_xxxx	0 : 25kg/cm² / 1 : 26kg/cm² / 2 : 27kg/cm² / 3 : 28kg/cm² / 4 : 29kg/cm² / 5 : 30kg/cm² / 6 : 31kg/cm² / 7 : 32kg/cm² / 8 : 33kg/cm² / 14 : Auto control (from ODU)				
4	Compressor status	BI	ODU_Comp_Status_xx_xxxx	False	True			
5	Interface module error code	AI	Repeater_Error_Code_xx_xxxx	Refer to the list of the integrated error code				
6	Interface module notify	NC	IM_Notify_xx_xxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)				

(*) Mark is optionally supported.

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

7) Object list

(8) BACnet Gateway

BACnet Gateway has following point list.

Instance Number	Control and Monitoring	Object Type	Object Name	Status value
1	All device OFF	BO	ALL_OFF_xx	Inactive : All devices Off
1	DMS2.5 Status	AI	DMS2_Status_xx	0: Normal, 8: Emergency stop, 105 : Tracking in progress, 108 : Tracking failed 109 : DMS2.5 ↔ BACnet Communication failed
1	BACnet error code	AI	BACnetApp_Error_Code_xx	BACnet error code
2	Gateway Notify	NC	GW_Notify_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(9) Digital input / output

Digital input / output Gateway has following point list.

| Instance Number	Object	Object Type	Object Name	Unit Inactive Text-1	Status value Active Text-2	Text-3	Text-4	Text-5
1	Digital Input 1	BI	DI_01_xx_xx (BACnet Gateway Reserved)	Off	On			
2	Digital Input 2	BI	DI_02_xx_xx (BACnet Gateway Reserved)	Off	On			
3	Digital Input 3	BI	DI_03_xx_xx	Off	On			
4	Digital Input 4	BI	DI_04_xx_xx	Off	On			
5	Digital Input 5	BI	DI_05_xx_xx	Off	On			
6	Digital Input 6	BI	DI_06_xx_xx	Off	On			
7	Digital Input 7	BI	DI_07_xx_xx	Off	On			
8	Digital Input 8	BI	DI_08_xx_xx	Off	On			
9	Digital Input 9	BI	DI_09_xx_xx	Off	On			
10	Digital Input 10	BI	DI_10_xx_xx	Off	On			
11	Digital Output 1	BO	DO_01_xx_xx (BACnet Gateway Reserved)	Off	On			
12	Digital Output 2	BO	DO_02_xx_xx (BACnet Gateway Reserved)	Off	On			
13	Digital Output 3	BO	DO_03_xx_xx	Off	On			
14	Digital Output 4	BO	DO_04_xx_xx	Off	On			
15	Digital Output 5	BO	DO_05_xx_xx	Off	On			
16	Digital Output 6	BO	DO_06_xx_xx	Off	On			
17	Digital Output 7	BO	DO_07_xx_xx	Off	On			
18	Digital Output 8	BO	DO_08_xx_xx	Off	On			

▶ Caution

- You may use ALL_OFF command to turn on all the indoor units but it is not recommended.
- If communication error occurs on devices such as SIM/OnOff Controller/Interface Module etc, other functions such as power distribution may also create a problem. You must have BMS system to check the errors and you must take action immediately.

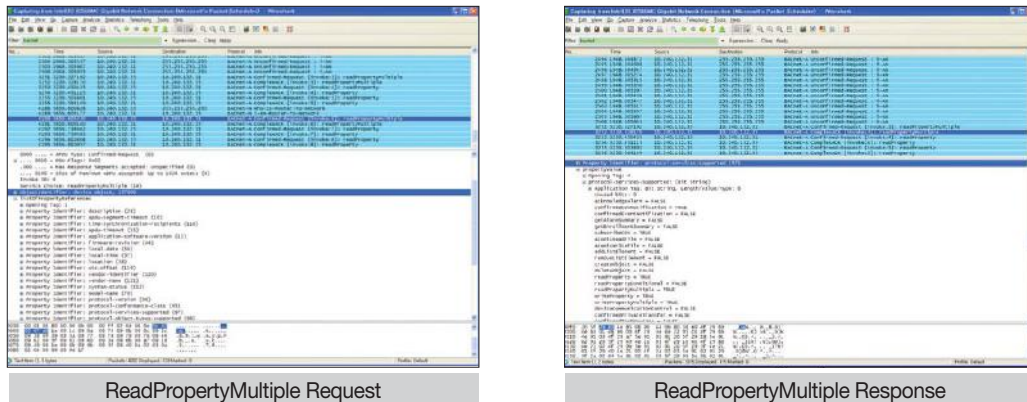## 8) Checking BACnet communication through Wireshark

(1) Who-is (I-Am)

- After device instance numbers have been automatically assigned, Who-is command which is requested in the Wireshark will be replied by i-am from the devices.
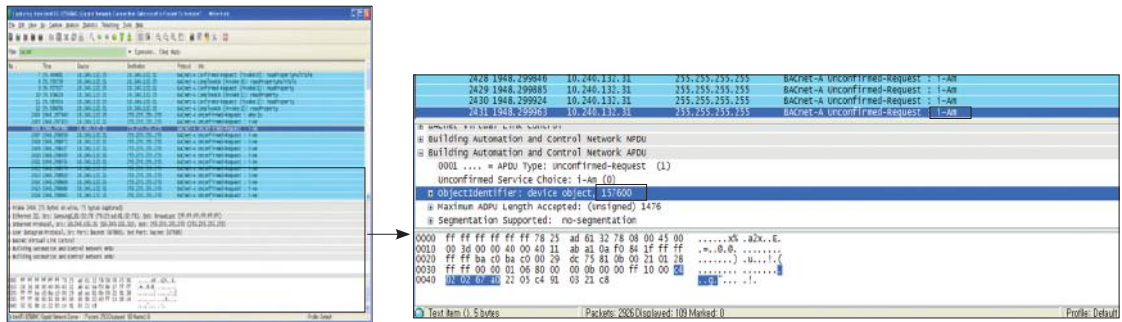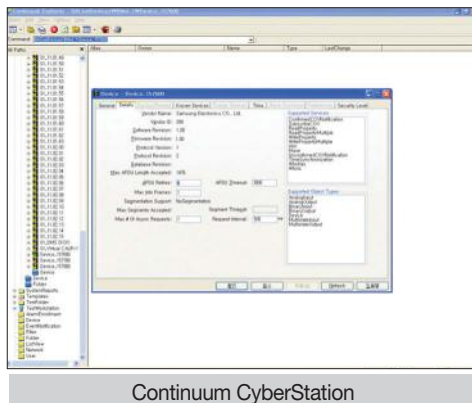

(2) ReadPropertyMultiple

- Request all status datas.
- Device description, BACnet network number device node ID, status, BACnet MAC address version, Max APDU length accepted, APDU retries, timeout, supported services, supported object types and so on.

ReadPropertyMultiple Request

ReadPropertyMultiple Response

Continuum CyberStation

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

8) Checking BACnet communication through Wireshark

(3) ReadPropertyMultiple

• Object_MultiStateInput

Request

Response

(4) WriteProperty

• Change the FanSpeed from Auto to Low
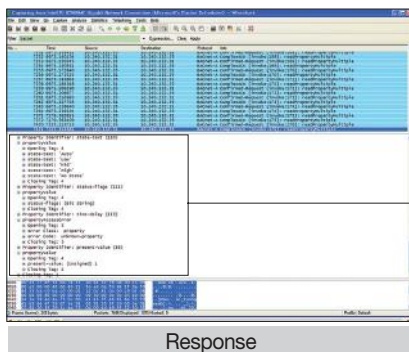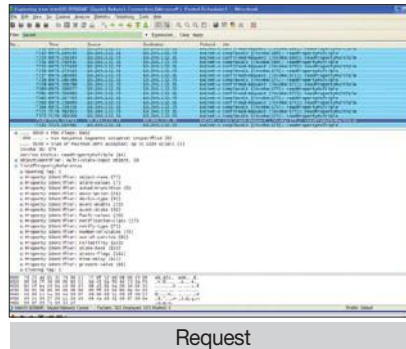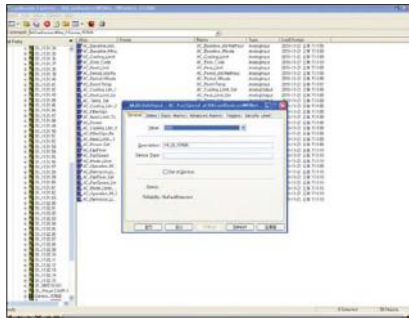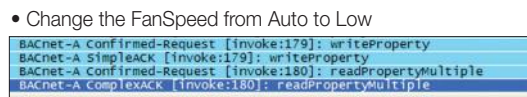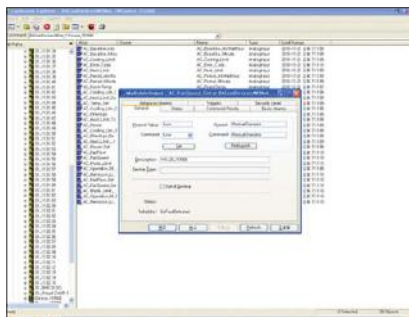
1. Request - WriteProperty (FanSpeed 'Auto' ➜ 'Low')
2. Response - SimpleACK
3. Request - ReadPropertyMultiple (FanSpeed)
4. Response – ReadPropertyMultiple (FanSpeed 'Low')
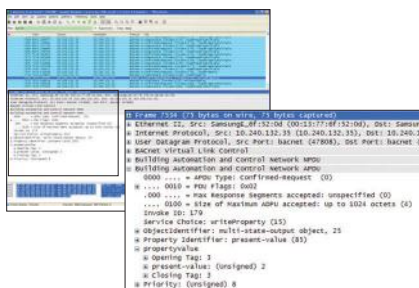
WriteProperty

ReadPropertyMultiple

(5) Subscribe COV

Request

```
⊞ User Datagram Protocol, Src Port: bacnet (47808), Dst Port: bacnet (47808)
⊞ BACnet Virtual Link Control
⊟ Building Automation and Control Network NPDU
     Version: 0x01 (ASHRAE 135-1995)
   ⊞ Control: 0x24
     Destination Network Address: 1
     Destination MAC Layer Address Length: 6
     Destination ISO 8802-3 MAC Address: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
     Hop Count: 255
⊟ Building Automation and Control Network APDU
     0000 .... = APDU Type: Confirmed-Request  (0)
   ⊞ .... 0010 = PDU Flags: 0x02
     .000 .... = Max Response Segments accepted: unspecified (0)
     .... 0100 = Size of Maximum ADPU accepted: Up to 1024 octets (4)
     Invoke ID: 121
     Service Choice: subscribeCOV (5)
   ⊞ subscriber Process Id: (Unsigned) 100
   ⊞ ObjectIdentifier: analog-input object, 7
   ⊞ issue Confirmed Notifications: TRUE
   ⊞ life time (hh.mm.ss): 0.20.00
```


Response

```
⊞ User Datagram Protocol, Src Port: bacnet (47808),
⊞ BACnet Virtual Link Control
⊟ Building Automation and Control Network NPDU
     Version: 0x01 (ASHRAE 135-1995)
   ⊞ Control: 0x08
     Source Network Address: 1
     Source MAC Layer Address Length: 6
     SADR: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
⊟ Building Automation and Control Network APDU
     0010 .... = APDU Type: SimpleACK  (2)
     Invoke ID: 121
     Service Choice: subscribeCOV (5)
```

(6) COV Notification

Notification

```
⊟ Building Automation and Control Network APDU
     0000 .... = APDU Type: Confirmed-Request  (0)
   ⊞ .... 0000 = PDU Flags: 0x00
     .000 .... = Max Response Segments accepted: unspecified (0)
     .... 0101 = Size of Maximum ADPU accepted: Up to 1476 octets (Fits in an ISO 8802-3 frame) (5)
     Invoke ID: 119
     Service Choice: confirmedCOVNotification (1)
     ProcessIdentifier: 100
   ⊞ ObjectIdentifier: device object, 157601
   ⊞ ObjectIdentifier: analog-input object, 1
   ⊞ Time remaining (hh.mm.ss): 0.19.59
   ⊟ list of values
     ⊞ Opening Tag: 4
     ⊟ Property Identifier: present-value (85)
       ⊟ propertyValue
         ⊞ Opening Tag: 2
         ⊞ present-value: 20.000000 (Real)
         ⊞ Closing Tag: 2
     ⊞ Property Identifier: status-flags (111)
       ⊟ propertyValue
         ⊞ Opening Tag: 2
         ⊞ status-flags: (Bit String)
         ⊞ Closing Tag: 2
     ⊞ Closing Tag: 4
```


Response

```
⊞ BACnet Virtual Link Control
⊟ Building Automation and Control Network NPDU
     Version: 0x01 (ASHRAE 135-1995)
   ⊞ Control: 0x20
     Destination Network Address: 1
     Destination MAC Layer Address Length: 6
     Destination ISO 8802-3 MAC Address: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
     Hop Count: 255
⊟ Building Automation and Control Network APDU
     0010 .... = APDU Type: SimpleACK  (2)
     Invoke ID: 119
     Service Choice: confirmedCOVNotification (1)
```
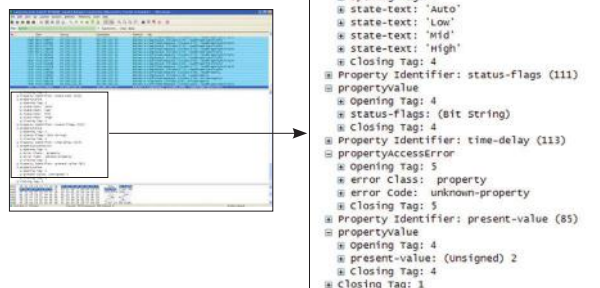
Ⅵ Building management system

2. DMS B-net (BACnet GW)

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9) Standard object type

Object Type	Support	Description
Analog Input	■	[Indoor temperature], [The power value after the basic date], [The number of hours usage of an indoor unit after the basic date], [Power value within period], [The number of hours usage of an indoor unit within period], [Indoor unit error code], [AHU error code], [ERV error code], [AHU error code], [ERV error code], [Centralized controller error code], [Interface module error code], [SIM interface module error code], [DMS status], [DMS error], [Discharge current temperature], [Outside temperature]
Analog Output	☐	
Analog Value	■	[Set temperature], [Setting lower temperature limit], [Setting upper temperature limit], [Discharge cooling set temperature], [Discharge heating set temperature], [Cool capacity compensation], [Heat capacity compensation]
Averaging	☐	
Binary Input	■	[DI], [Filter sign status], [Compressor status]
Binary Output	■	[DO], [Filter sign reset], [All Device off]
Binary Value	■	[Power Onoff control], [Setting the fucntion of limiting lower temperature] [Setting the function of limiting upper temperatue], [SPI setting], [HumanSensor setting], [Humidification setting], [Outdoor air intake setting], [Ourdoor cooling setting]
Calendar	☐	
Command	☐	
Device	■	[DMS], [A/C Indoor Unit], [ERV], [AHU], [SIM], [Centralized controller], [Interface module], [DDC]
Event Enrollment	☐	
File	☐	
Group	☐	
Life Safety Point	☐	
Life Safety Zone	☐	
Loop	☐	
Multi-state Input	■	[Current humidity status]
Multi-state Output	☐	
Multi-state Value	■	[Operation mode control], [Fan speed control], [Air flow direction control], [Setting Cool only/ Heat only/ No Limit], [Control Enable RC/ Disable RC /Level1], [Set humidity status]
Notification Class	■	[AC Indoor Notify], [ERV Notify], [AHU Notify], [Centralized Controller Notify], [Interface Module Notify], [SIM Notify], [Gateway Notify]
Program	☐	
Pulse Converter	☐	
Schedule	☐	
Trend Log	☐	
Access Door	☐	
Event Log	☐	
Load Control	☐	
Structured View	☐	
Trend Log Multiple	☐	

10) Property support specification

(1) Device property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	Individual identifier
2	Object name	CharaterString	R	V	SAMSUNG DVM Gateway
3	Object type	BACnetObjectType	R	V	DEVICE
4	System status	BACnetDeviceStatus	R	V	During communication: "OPERATIONAL" Error with DMS2.5: "NON_OPERATIONAL"
5	Vendor name	CharacterString	R	V	Samsung Electronics CO., Ltd.
6	Vendor identifier	Unsigned16	R	V	200
7	Model name	CharterString	R	V	MIM-B17BN
8	Firmware revision	CharterString	R	V	1.20
9	Application software version	CharterString	R	V	1.20
10	Location	CharterString	O		X
11	Description	CharterString	O	V	DMS2_BACnetIP [ver 1.00]
12	Protocol version	Unsigned	R	V	2.00
13	Protocol conformance class	Unsigned(1..6)	R		X
14	Protocol services supported	BACnetServicesSupported	R	V	For each device
15	Protocol object types supported	BACnetObjectTypesSupported	R	V	For each device
16	Object list	BACnetidentifier BACnet sequence [N]	R	V	For each device
17	Max APDU length accepted	Unsigned	R	V	1476
18	Segmentation supported	BACnetSegmentation	R	V	NO-SEGMENTATION
19	VT classes supported	BACnetVTClass	O(1)		X
20	Active VT sessions	BACnetVTSessions	O(1)		X
21	Local time	Time	O	V	Supported
22	Local date	Date	O	V	Supported
23	UTC offset	INTEGER	O		X
24	Daylight savings timeout	BOOLEAN	O		X
25	APDU segment timeout	Unsigned	O(2)		X
26	APDU timeout	Unsigned	R	V	3000
27	Number of APDU retries	Unsigned	R	V	3
28	List of session keys	BACnetSessionKey	O		X
29	Time synchronization recipients	BACnetRecipient	O(3)		X
30	Max master	Unsigned(1..127)	O(4)	V	X
31	Max info frames	Unsigned	O(4)	V	X
32	Device address binding	BACnetAddressBinding	R	V	X
33	Protocol revision	Unsigned	R	V	2

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❑ *MIM-B17BN*

10) Property support specification

(2) Analog Input Property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	REAL	R(1)	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_ FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Update interval	Unsigned	O		
12	Units	BACnetEngineeringUnits	R	V	
13	Min pres value	REAL	O	V	
14	Max Pres Value	REAL	O	V	
15	Resolution	REAL	O		
16	COV increment	REAL	O[2]	V	
17	Time delay	Unsigned	O[3]		
18	Notification class	Unsigned	O[3]		
19	High limit	REAL	O[3]		
20	Low limit	REAL	O[3]		
21	Deadband	REAL	O[3]		
22	Limit Enable	BACnetLimitEnable	O[3]		
23	Event enable	BACnetEventTransitionBits	O[3]		
24	Acked transition	BACnetEventTransitionBits	O[3]		
25	Notify type	BACnetNotifyType	O[3]		

(3) Analog output property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	REAL	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_ FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Units	BACnetEngineeringUnits	R	V	
12	Min pres value	REAL	O	V	
13	Max Pres Value	REAL	O	V	
14	Resolution	REAL	O		
15	Priority array	BACnetPriorityArray	R	V	
16	Relinquish default	REAL	R	V	
17	COV increment	REAL	O[1]		
18	Time Delay	Unsigned	O[2]		
19	Notification class	Unsigned	O[2]		
20	High limit	REAL	O[2]		
21	Low limit	REAL	O[2]		
22	Deadband	REAL	O[2]		
23	Limit enable	BACnetLimitEnable	O[2]		
24	Event Enable	BACnetEventTransitionBits	O[2]		
25	Acked transition	BACnetEventTransitionBits	O[2]		
25	Notify type	BACnetNotifyType	O[2]		

VI Building management system

2. DMS B-net (BACnet GW)

❏ *MIM-B17BN*

10) Property support specification

(4) Binary input property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	BACnetBinaryPV	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_ FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Polarity	BACnetPolarity	R	V	
12	Inactive text	CharacterString	O[(1)]	V	New
13	Active text	CharacterString	O[(1)]	V	New
14	Change of state time	BACnetDateTime	O[(2)]		
15	Change of state count	Unsigned	O[(2)]		
16	Time of state count reset	BACnetDateTime	O[(2)] O[(3)]		
17	Elapsed active time	Unsigned32	O[(3)]		
18	Time of active time reset	BACnetDate Time	O		
19	Time delay	Unsigned	O[(4)]		
20	Notification class	Unsigned	O[(4)]		
21	Alarm value	BACnetBinaryPV	O[(4)]		
22	Event enable	BACnetEventTransitionBits	O[(4)]		
23	Acked transition	BACnetEventTransitionBits	O[(4)]		
24	Notify type	BACnetNotifyType	O[(4)]		

(5) Binary output property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	BACnetBinaryPV	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag ➞ True OUT_OF_SERVICE ➞ TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag ➞ TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error ➞ COMMUNICATION_ FAILURE General error ➞ Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error ➞ TRUE
11	Polarity	BACnetPolarity	R	V	
12	Inactive text	CharacterString	O(1)	V	
13	Active text	CharacterString	O(1)	V	
14	Change of state time	BACnetDateTime	O(2)		
15	Change of state count	Unsigned	O(2)	V	
16	Time of State count reset	BACnetDateTime	O(2) O(3)	V	
17	Elapsed active time	Unsigned32	O(3)		
18	Time of active time reset	BACnetDate Time	O		
19	Minimum off time	Unsigned32	O		
20	Minimum on time	Unsigned32	O		
21	Priority array	BACnetPriorityArray	R		
22	Relinquish default	BACnetBinaryPV	R		
23	Time delay	Unsigned	O(4)		
24	Notification class	Unsigned	O(4)		
25	Alarm value	BACnetBinaryPV	O(4)		
26	Event enable	BACnetEventTransitionBits	O(4)		
27	Acked transition	BACnetEventTransitionBits	O(4)		
28	Notify type	BACnetNotifyType	O(4)		

Ⅵ Building management system

2. DMS B-net (BACnet GW)

❏ *MIM-B17BN*

10) Property support specification

(6) Multi-state input property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	Unsigned	R(1)	V	
5	Description	CharacterString	O	V	M_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag ➝ True OUT_OF_SERVICE ➝ TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag ➝ TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error ➝ COMMUNICATION_ FAILURE General error ➝ Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error ➝ TRUE
11	Number of states	Unsigned	R	V	
12	State text	BACnet sequence of characterString	O	V	
13	Time delay	Unsigned	O(2)		
14	Notification class	Unsigned	O(2)		
15	Alarm values	Unsigned list	O(2)		
16	Fault values	Unsigned list	O(2)		
17	Event enable	BACnetEventTransitionBits	O(2)		
18	Acked transition	BACnetEventTransitionBits	O(2)		
19	Notify type	BACnetNotifyType	O(2)		

(7) Multi-state output property

	Property identifier	Property data	Check code	Support	DMS2.5
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	Unsigned	R(1)	V	
5	Description	CharacterString	O	V	M_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Number of states	Unsigned	R	V	
12	State text	BACnet arrangement of CharacterString	O	V	
13	Time delay	Unsigned	O(2)		
14	Notification class	Unsigned	O(2)		
15	Alarm values	Unsigned list	O(2)		
16	Fault values	Unsigned list	O(2)		
17	Event enable	BACnetEventTransitionBits	O(2)		
18	Acked transition	BACnetEventTransitionBits	O(2)		
19	Notify type	BACnetNotifyType	O(2)		

DVM CONTROL SYSTEMS

VII. Test run tool for system air contioner installation

VII Test run tool for system air conditioner installation

1. S-Checker

❑ *MIM-C10N*

1) Features

• Execute test run for Samsung system air conditioner and inspects the parts (EEV, Sensor).

• It can be linked with mobile application to allow saving and monitoring data of the test run.

2) Product specification

Power supply			10 0V~240 V AC, 50/60Hz
Power consumption			Below 30W
Operating temperature range			0°C~40°C (32°F~104°F)
Operating humidity range			0%RH~90%RH
Communication	RS485	Port Q'ty	1
	Wi-Fi	Supportablity	Supported
Maximum number of controllable devices	RS485	m(ft)	1,000 (3280)
	Indoor unit	EA	64
	Outdoor unit	EA	1

✽ Supported specification of the mobile application : - Resolution over 800 X 480, optimized at 1280 X 720

- OS : Android 2.3~4.12

Compatible product

Outdoor unit	AM✽✽✽✽X✽✽✽✽✽✽Model
Indoor unit	AM✽✽✽✽N✽✽✽✽✽✽Model

3) Description of parts

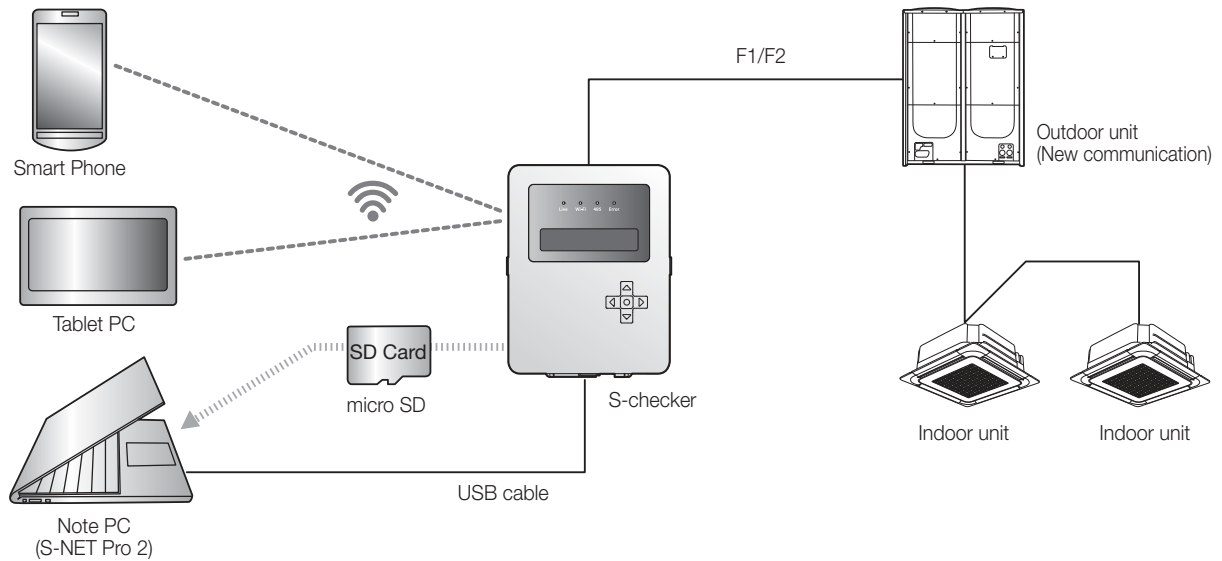| No.	Name	Description
①	Reset button	Use to reset S-checker
②	Power button	Use to turn on/off the power for S-checker.
③	Report button	Use to create report for test run.
④	Temperature sensor inpsection connector 1	Connector for temperature sensor that is connected to pitch 250 pin connector. Temperature value can be checked from the S-checker by connecting the temperature sensor directly.
⑤	Temperature sensor inpsection connector 2	Connector for temperature sensor that is connected to pitch 200 pin connector Temperature value can be checked from the S-checker by connecting the temperature sensor directly
⑥	Pressure sensor inspection connector (4 pin)	Connector for connecting high/low pressure sensor of the outdoor unit. Pressure value can be checked from the S-checker by connecting the temperature sensor directly.
⑦	System operation status LED	Turns on when the S-Checker is operating normally.
⑧	Wi-Fi connection LED	Turns on when the data is being tranmitted to mobile through Wi-Fi
⑨	RS-485 operation status LED	Turns on when data is transmitted and received through RS-485 communication
⑩	System Error LED	Turns on when error occurs on S-checker.
⑪	LCD display	Check the current information and the items in menu that can be selected by menu buttons.
⑫	Menu buttons	Use to move and select from menu.
⑬	USB for S-Net Pro 2	Mini USB for connecting with S-NET Pro 2.
⑭	USB for system	Use to download program etc.
⑮	IR tranceiver	Use to transmit IR.
⑯	Micro SD slot	Slot to insert Micro SD card.
⑰	PBA download connector	Use to download S-checker through PC.
⑱	EEV inspection connector 1 (5 Pin)	Check for error on EEV sensor 1, CAM Type (5 Pin)
⑲	EEV inspection connector 2 (6 Pin)	Check for error on EEV sensor 2, EDM Type (6 Pin)
⑳	DC 12 V adapter	Use to connect independent 12 V power.
㉑	DC 12 V connector	Connector to use 12V power from air-conditioner
㉒	RS-485 connector	Connector for RS-485 communication.

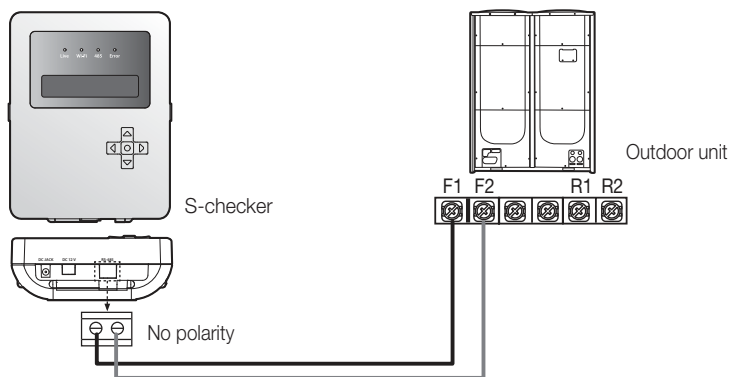# VII Test run tool for system air conditioner installation

1. S-Checker

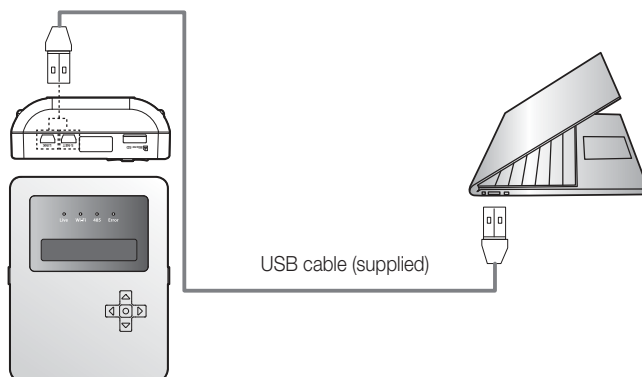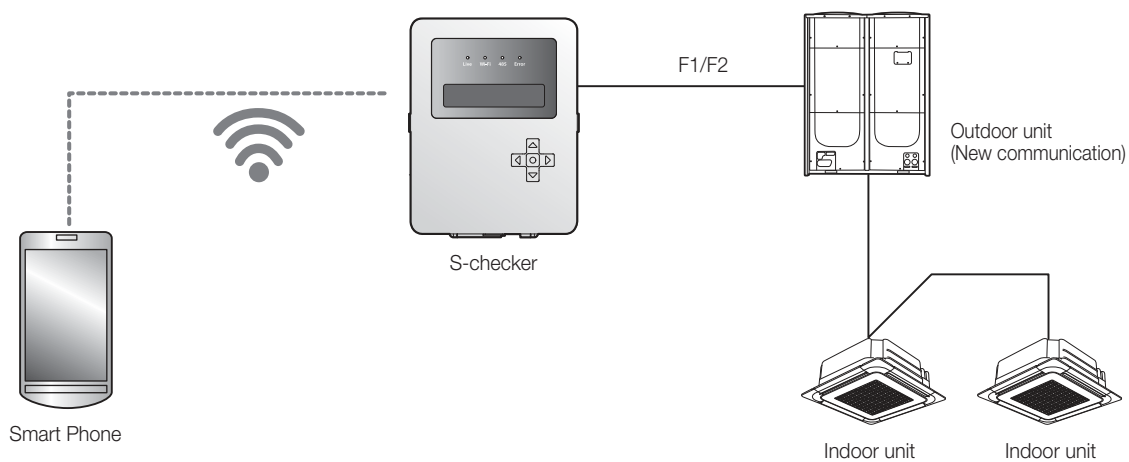☐ *MIM-C10N*

4) Connection diagram

Smart Phone

Tablet PC

SD Card

micro SD

S-checker

Note PC
(S-NET Pro 2)

USB cable

F1/F2

Outdoor unit
(New communication)

Indoor unit

Indoor unit

5) Connecting

Connecting with outdoor unit

S-checker

No polarity

Outdoor unit

F1 F2   R1 R2

Connecting with S-NET Pro 2

USB cable (supplied)

Connecting with mobile device

F1/F2

Outdoor unit
(New communication)

S-checker

Smart Phone

Indoor unit   Indoor unit

▶ Method 1- Search for S-Checker
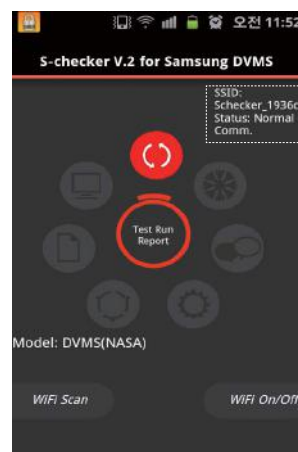
▶ Method 2- Scan from mobile application
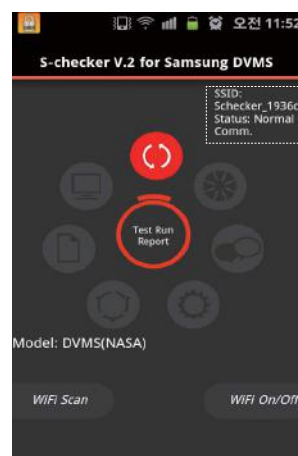
VII Test run tool for system air conditioner installation

1. S-Checker

☐ *MIM-C10N*

6) Main function

▌Test run report

• Test run report menu will inspect the system in real time and notify the result.

• After completing the test run report, data will be saved on the folder (name : mBiss) of mobile device as csv and pdf file.

Section	Function
Inspection step for test run	During outdoor unit test run, test run prgress will be displayed in the progress bar on top part.
Items for test run	Status for items of test run will be displayed and 'NG' will be displayed for undetermined items.
Input site information	Install engineer can input the site information
Create test run report	**Make Test Run File :** Saves EEPROM data on S-Checker. When saving is completed "LOG: Ready to make Report" message will appear. **Make Report :** Creates Test Run Report. Progress can be checked from "LOG: Making Test Run Report. Progress is X.X%" message.

▌Display of the cycle information

• Cycle Info : it displays cycle data of the indoor and outdoor unit.
  (Displayed item is same as S-NET Pro 2)

[Cycle info : Outdoor unit]
Displays the cycle information of the connected outdoor unit.

[Cycle info : Indoor unit]
Displays the cycle information of the connected indoor unit. Maximum of 64 indoor units' data can be displayed.

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Install monitoring

• It displays the installation information of the outdoor unit and indoor unit.

Install monitor: Outdoor unit

Install monitor: Indoor unit

Checking the status of device

• You can connect pressure sensor, temperature sensor, EEV connector (that is connected to the PBA of indoor and outdoor unit) to the terminal on the S-checker and check the status of the device.

Type of sensor	Displayed contents
Temperature sensor	Resistence value, displays temperature
Pressure sensor	Voltage value, displays pressure

EEV drive information	Related information during driving
Full Open	Control + 15 more than real maximum value
Full Close	Control the opening of EEV as 0

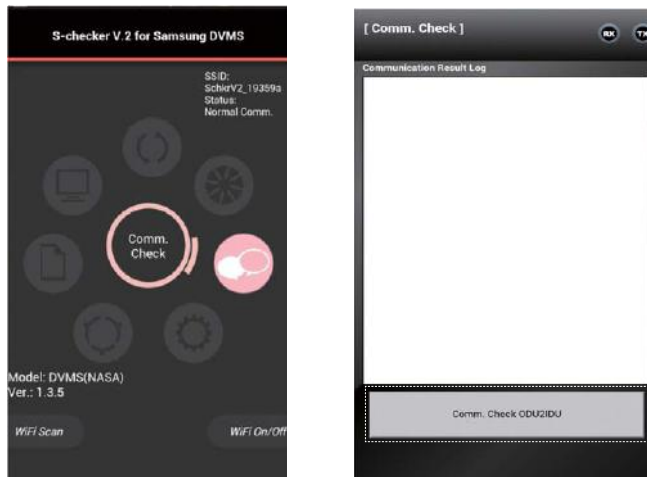※ When control EEV, you can connect only Direct Acting Type or Gear Type

Ⅶ Test run tool for system air conditioner installation

1. S-Checker

☐ *MIM-C10N*

6) Main function

■ Checking the communication

• Through Comm. Check menu, communication status between indoor/outdoor unit can be checked.
• Indoor unit can be connected to S-checker alone without outdoor unit, to check the communication status of indoor unit.

■ Setting the indoor unit option

• You can check the option code of indoor unit from the S-checker.
• Option code setting can be applied to multiple numbers of indoor unit at once.

Other functions

- A/C S/W Upgrade: Firmware for indoor and outdoor unit of system air conditioner can be upgraded.
- Unit control: This function restricts general operation if auto trial operation is incompleted.
- Refrigerant check: This is a detect function according to piping option which calculates the amount of refrigerant to see if it's adequate.

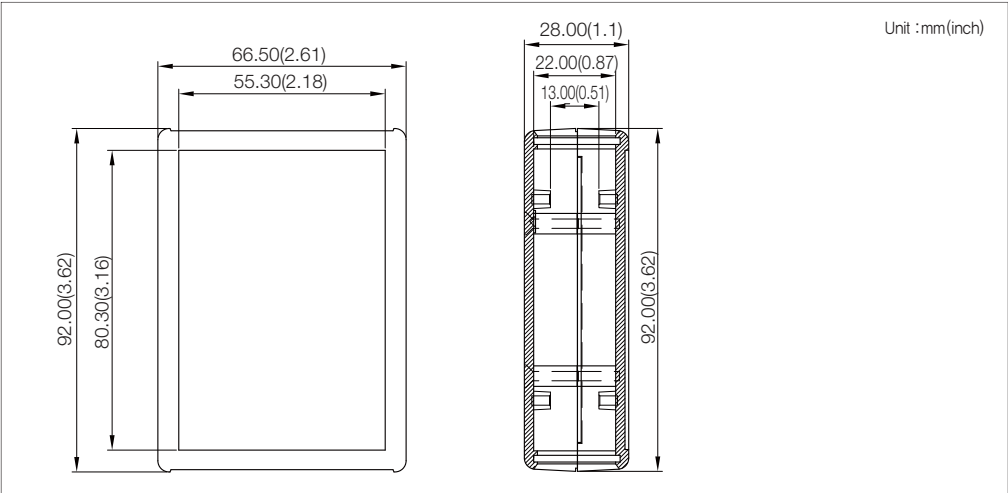# VII Test run tool for system air conditioner installation

2. S-Converter

☐ *MIM-C02N*

1) Features

- Communication converting module to connect Samsung system air conditioner to a PC.
- Main purpose for use
  - To coonect with test run program

[Test run program]
· **S-NET Pro :** Conventional communication
· **S-NET Pro 2 :** New communication

2) Product specification

Power supply			DC 5 V, below 500 mA
Power consumption			Below 3 W
Operating temperature range			0°C~40°C (32°F~104°F)
Operating humidity range			0%RH~90%RH
Communication	RS485	Port Q'ty	1
Maximum length of connection	RS485	m(ft)	1000 (3280)

3) Description of parts
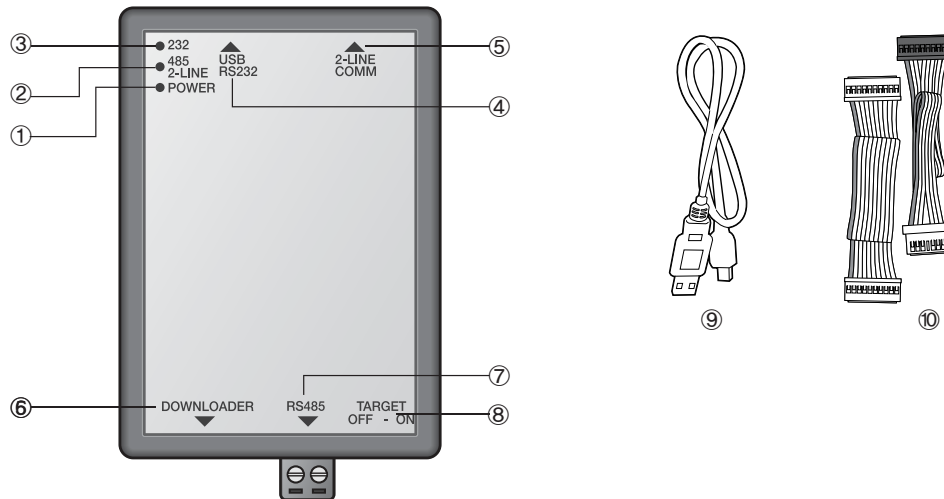
| No.	Name	Description
①	Power LED	Display power status
②	485 communication / 2 line communication LED	Displays communication status when outdoor uint 2 line remote controller is connected
③	232 LED	Displays communication status with the PC
④	USB-RS232 connection terminal	Connection terminal for communication with the PC
⑤	2 line communication connection terminal	Only applies to new communication indoor unit 2 line communication connection terminal between indoor unit - wired remote controller (For R&D testing)
⑥	Downloader connection terminal	PBA download connection terminal
⑦	RS485 communication connection terminal	Conenction cable for connecting with indoor/outdoor unit's F1, F2 communication terminal
⑧	TARGET OFF – ON button	Only used when S-converter is used as SW downloader for the product - If the S-Converter supplies the power through the PBA of the product that will download the SW, this button resets the power that was supplied through the S-Converter
⑨	USB-to-232 cable	Cable that connects S-Converter and PC
⑩	SW downloader cable	Only used when S-converter is used as SW downloader for the product - Connect S-Converter (20 Pin) and the downloader terminal (10 Pin, 7 Pin) of the product's PCB

4) Connection diagram
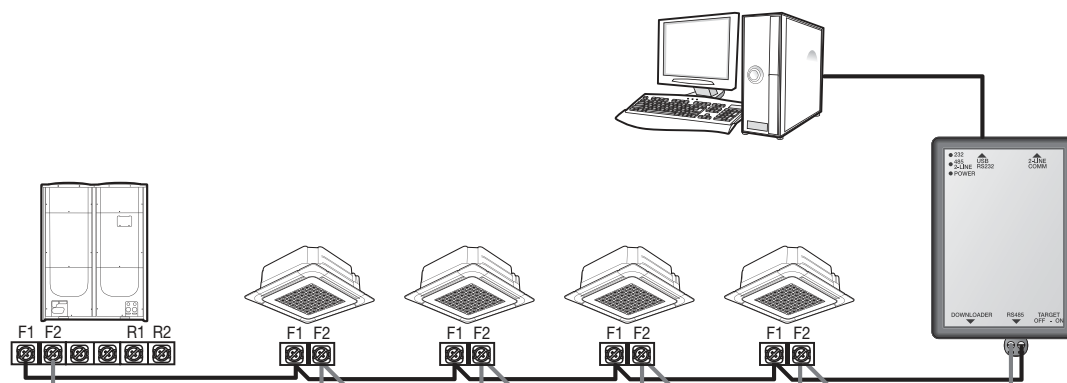
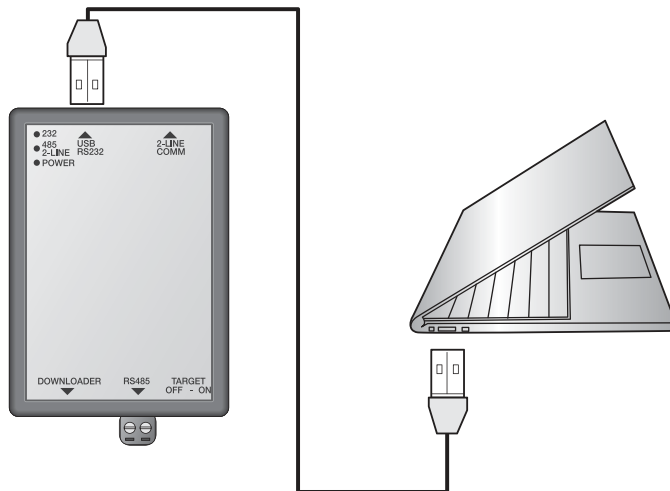# VII Test run tool for system air conditioner installation

2. S-Converter

☐ *MIM-C02N*

5) Connecting

C onnecting with outdoor unit

F1 F2   R1 R2
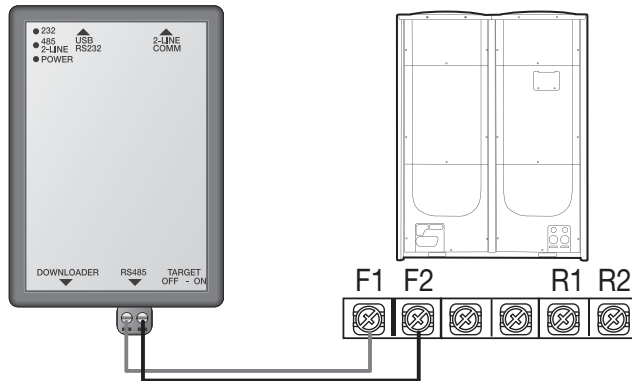
C onnecting with PC

6) Display

(1) POWER LED
- When connected to Conventional communication outdoor unit - LED blinks
- When connected to new communication outdoor unit - LED is on

(2) 232 LED
- LED blinks every time control signal is transmitted from the Test run program
- If the LED doesn't blink even though the test run program sends control command, check if the program is appropriate for the communication type (Conventional communication/new communication)

(3) 485/ 2-LINE LED
- LED blinks when the data is being transmitted from the 485 or 2-line communication device
  - ※ 485 communication cable - outdoor unit connection (Connects test run program)
    2-line communication device - wired remote controller connection (connects program for the developer)
- If the LED doesn't turn on, check if the communication cable is disconnected/short or check if the device is appropriate for the communication type (Conventional communication/new communication)

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VIII. DVM CHILLER control system

VIII DVM CHILLER control system

1. Module control

❑ *MCM-A00N*

1) Features
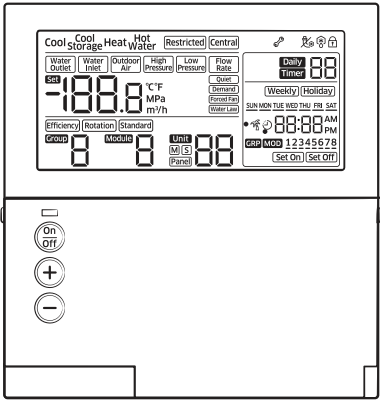
- DVM CHILLER On / Off control (Module / Group)
- Operation mode, water outlet temperature setting
- Optional operation setting
- Module/Group setting
- Weekly operation schedule setting
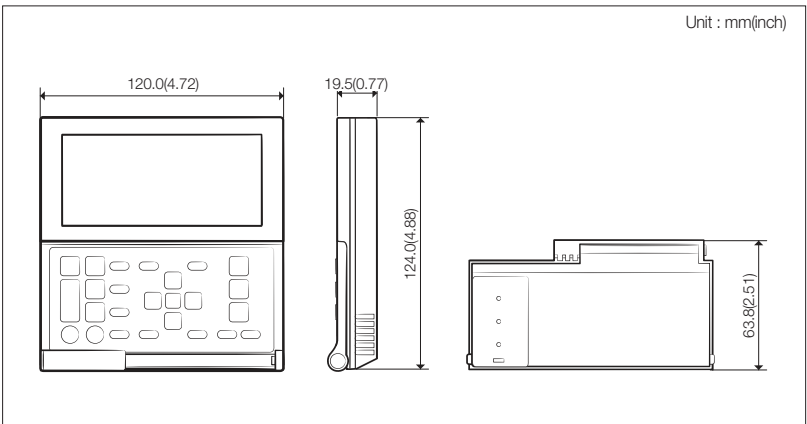
Unit : mm(inch)

2) Product specification

Power Supply	DC12V
Power Consumption	2W
Operating Temperature range	0°C~40°C (32°F~104°F)
Operating Humidity range	30%RH~90%RH
Communication	2-wire PLC
Max. Communication length	200m (656ft)
Max. Number of connection	16 DVM CHILLER units

3) Description of parts

(1) Display

No.	Display	Function
①	Cool Cool Storage Heat Hot Water	• Displays the operation mode.
②	Water Outlet / Water Inlet / Outdoor Air / High Pressure / Low Pressure / Flow Rate Set -188.8 ℃°F MPa m³/h	• Displays the set or current water temperature (°C, °F). **NOTE** - Press [Temp +/-] button to display the set water temperature for 3 seconds. - The default is the current water temperature, and it can be changed into the set water temperature in the service setting mode. - The display will show Lo when the value can be displayed (-199 ~ 199) or show HI when it cannot be displayed. • Displays the current temperature (°C, °F) of water inlet or outdoor air. • Displays the current high or low pressure (MPa) of refrigerant. • Displays the current water flow rate (m3/h).
③	Quiet / Demand / Forced Fan / Water Law	• Displays the selected applied operation.
④	Efficiency Rotation Standard	• Displays the operation pattern by each module and group.
⑤	Group 8	• Displays the group from 1 to 4.
⑥	Module 8	• Displays the module from 1 to 8.
⑦	Unit M S Panel 88	• Displays the unit from 0 to 15 (maximum 16). • Displays Master or Slave. • Displayed when setting the Panel control function from a certain unit. - Panel control function is to set the unit to control the operation itself, so the operation cannot be controlled from the module control if this function is set.
⑧	Restricted	• Displayed when button input is restricted. • Restricted display will appear when the buttons are restricted due to central control or when a combined operation cannot be performed. **NOTE** • The module control will be restricted in the following cases. Example1 : Displayed when pressing [Mode] button in the central control. Example2 : Displayed when setting the button lock function and then pressing [Mode] button in the service mode

VIII DVM CHILLER control system

1. Module control
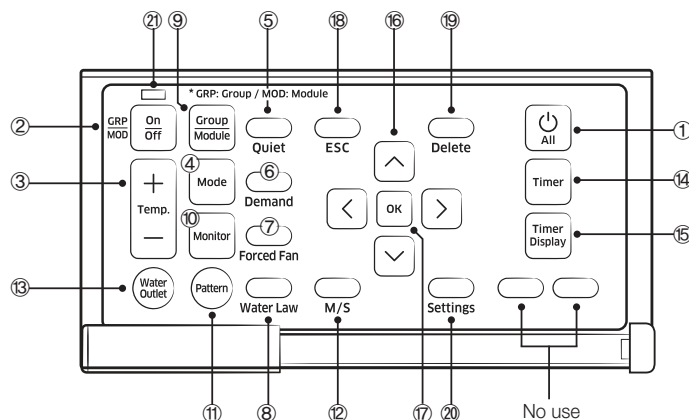
☐ *MCM-A00N*

3) Description of parts

(1) Display

No.	Display	Function
⑨	Central	• Displayed when setting the central control. **NOTE** - Central display will appear when the module control is controlled by the central control room of the building or by the upper level control such as a central control or a DMS etc. In this case, timer and all functions will be operated by the upper level control.
⑩	🔧	• Displayed when an error occurs in a product or a module control. **NOTE** - Blinked when an error occurs in a product or a module control, followed by the error code. - It will disappear when all errors is solved.
⑪	❄	• Displayed when a pump operates automatically to keep the pipes from freezing.
⑫	❄	• Displayed when the defrost function operates. **NOTE** - Defrost function is to remove frost on the outdoor unit during operating the heat mode.
⑬	🔒	• Displayed when selecting the button lock function. **NOTE** - To lock the buttons of the module control, press Settings button.
⑭	Daily Timer 88	• Displays the number of daily or entire timers.
⑮	Weekly Holiday	• Displays weekly timer or holiday setting.
⑯	SUN MON TUE WED THU FRI SAT	• Displayed days of week while setting weekly or daily timer or displaying the set timer.
⑰	🌴	• Displayed when the summer time function is set.
⑱	🕐	• Displayed when setting the off timer for the entire DVM CHILLER in the additional function. Time for the off timer function can be set to maximum 23 hours. **NOTE** - The current time will be displayed if there is more than an hour until the set time. - The remaining time will be displayed and the off timer display will appear if there is less than an hour until the set time.
⑲	88:88 AM PM	• Displays the current time or the set time.
⑳	GRP MOD 12345678	• Displayed when selecting a group or a module while setting the weekly timer. (Group : 1 ~ 4, Module : 1 ~ 8)
㉑	Set On Set Off	• Displayed Set on or Set off while setting or displaying timer.

☑ *Note*

◆ If you set the input method as external contract control in the option setting of DVM CHILLER, the module control cannot control the units.

 - When pressing GRP/MOD , On/Off , Mode , or +Temp- . button on the module control, the displays will appear on the display but the DVM CHILLER will not operate.

◆ The module control cannot sense the indoor temperature.

◆ The module control does not control the midnight electricity's time or the cool storage tank.

(2) Buttons

Classification		Indication		Function
Start/ Stop	①	⏻ All	All start/stop button	• Turns on or off all the DVM CHILLERs. • You can turn on or off all the connected modules and groups. **NOTE** - When turning off all units and turn them back on, the units will operate in a previously selected mode.
	②	GRP MOD On Off	On/Off button	• Turns on or off a group or a module individually. • When a module or a group is turned off, temperature or mode displays will not appear. **NOTE** - When turning off a module or a group and turn it back on, each module or group will operate in a previously selected mode.
Basic operation	③	+ Temp. −	Temp. adjustment button	• Adjusts the desired water temperature. **NOTE** - For celsius, the set water temperature can be adjusted by 1, 0.5, or 0.1 °C depending on the set value in the service mode. For fahrenheit, it can be adjusted by 1 °F. - If you press and hold the button, it will be adjusted by 1 °C/1 °F.
	④	Mode	Operation mode button	• Selects the desired operation mode.
Applied operation	⑤	Quiet	Quiet button	• Selects the quiet function.
	⑥	Demand	Demand button	• Selects the demand function.
	⑦	Forced Fan	Snow prevention button	• Selects the snow prevention function.
	⑧	Water Law	Water law button	• Selects the water law function.

VIII DVM CHILLER control system

1. Module control

☐ *MCM-A00N*

3) Description of parts

(2) Buttons

Classification		Indication		Function
Option change function	⑨	Group Module	Group/ Module button	• Selects a group or module control.
	⑩	Monitor	Monitor button	• Shows the result of monitoring water outlet, water inlet, outdoor air, high and low pressure of refrigerant, and water flow rate.
	⑪	Pattern	Pattern button	• Sets the operation pattern when controlling the DVM CHILLER by groups or modules.
	⑫	M/S	M/S button	• Sets Master or Slave units.
	⑬	Water Outlet	Water outlet button	• When pressing the water outlet button while the display shows the pressure of refrigerant or the water inlet temperature, the water outlet temperature will be displayed.
Timer function	⑭	Timer	Timer button	• Sets the weekly On/Off timer. **NOTE** - The timer can be set up to maximum 40 timers.
	⑮	Timer Display	Timer display button	• Checks the timer already set. **NOTE** - You can check the timer by numbers or days of the week.
Common function	⑯	⌃ ⌄ ⟨ ⟩	Up, down, left, right button	• Moves from stage to stage or changes the set value.
	⑰	OK	OK button	• Selects the stage or saves the setting.
	⑱	ESC	ESC button	• Exits to normal mode without saving your changes while setting the timer or the additional function.
	⑲	Delete	Delete button	• Deletes the timer. **NOTE** • Press button for 3 seconds to delete all the timers while the display shows the timers.
	⑳	Settings	Settings button	• Enters the additional function setting screen.
LED	㉑	▭	LAMP	• Displays the on/off status of the module or the group on the display. - On : green LED is turned on - Off : green LED is turned off - Error : red LED is blinking **NOTE** - When one of the modules or groups are operating, the green LED is turned on. - When a certain module or group needs to be inspected, the led LED is blinked.

☑ *Note*

◆ Mode, temperature, or etc. can be set when only the module control is turned on.

◆ GRP MOD , On Off , ⏻ All , Group Module , Quiet↑ , Demand↑ , Water Law↑ , Forced Fan↑ , Settings↑ , Timer↑ , Timer Display , ESC + OK , ESC + Delete buttons can be used when the module control is turned off.

4) Connection diagram

1 : 1 connection

1 : N connection

Max. 16 CHILLERs can be connected 1 Module control

[Module or group operation]

- Module/group operation is to combine multiple CHILLERs in modules or groups of a single water pipe system and to operate them depending on the working condition.

- A single module control can control a maximum of 16 DVM CHILLERs (0 ~ 15). DVM CHILLER can have a maximum of 8 modules (1 ~ 8) and 4 groups (1 ~4).
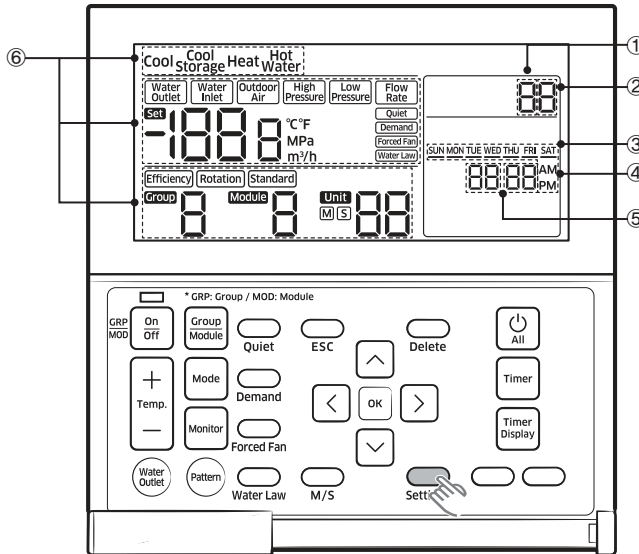 A maximum of 8 units can be connected to a module, and a maximum of 8 modules can be connected to a group.

VIII DVM CHILLER control system

1. Module control

☐ *MCM-A00N*

5) Optional function

Additional setting mode

▶ How to set "Additional setting mode"

- Press "Settings" to enter "Additional setting mode"

No	Name	Description
①	Main menu	Displays main menu value of the service mode table.
②	Sub menu	Displays sub menu value of the service mode table.
③	Page	Displays Page value of the service mode table.
④	Data Segment	Displays Data value of the service mode table.
⑤	Synchronized segment for setting the current time	Displays the data value of the Page on the left side of the LCD at the same time.
⑥	The status of each unit	Displays the status of each unit when selecting the monitoring function by each unit in the user mode.

Main menu	Sub menu	Function		Initial value	Page	Range	Save
1	1	Off timer		0	1	00 ~ 12 hour(s) (by an hour)	Save
3	1	Lock all		0	1	0 - Unlock, 1 - Lock	Save
	2	Lock timer		0	1	0 - Unlock, 1 - Lock	Save
4	1	Set today's date	(yy) year	-	1	00 ~ 99	Save
			(mm) month	-	2	01 ~ 12	Save
			(dd) day	-	3	01 ~ 31	Save
			week) day of week	-	4	Sun. ~ Sat. (0 ~ 6)	Save
	2	Set the current time	Hour : Minute	-	-	Setting range of hour • 12-hours : (AM/PM) 01 ~ 12 • 24-hours : (AM+PM) 00 ~ 23 • Setting range of minute : 0 ~ 59	Save

A dditional setting mode

Main menu	Sub menu	Function		Initial value	Page	Range	Save
5	1	Use and set the summer time function	Use the summer time function or not	0	1	0 - No use, 1 - Use	Save
			Set the summer time type	0	2	0 - by a week, 1 - by a day	Save
	2	Start the summer time function (by a week)	Month	3	1	01 ~ 12 (Jan. ~ Dec.)	Save
			Sunday on the selected week	F	2	1 ~ 4 (week) or F - the last week	Save
	3	End the summer time function (by a week)	Month	10	1	01 ~ 12 (Jan. ~ Dec.)	Save
			Sunday on the selected week	F	2	1 ~ 4 (week) or F - the last week	Save
	4	Start the summer time function (by a day)	(mm) month	3	1	01 ~ 12 (Jan. ~ Dec.)	Save
			(dd) day	22	2	01 ~ 31 (day)	Save
	5	End the summer time function (by a day)	(mm) month	9	1	01 ~ 12 (Jan. ~ Dec.)	Save
			(dd) day	22	2	01 ~ 31 (day)	Save
6	1	Set/check the time for backlight		5	1	00 ~ 30 (second) (Disuse when it is 00)	Save
	2	Use LED (green) or not		1	1	0 - No use, 1 - Use	Save
	3	Use LED (red) or not		1	1	0 - No use, 1 - Use	Save
9	1	User setting functions	Display the operating status by units [1]*	The smallest unit number	1	00 ~ 15	-
	2	User setting functions	Display the number of temperature control devices/thermostats	The number of the temperature control devices/ thermostats	1	00 ~ 16	-
0	1	Reset to the default value of user mode (except the current time)		0	1	0 - No use, 1 - Reset	-

[1]* You can check the status of units connected to the module control.

• When pressing [Monitor] button after selecting the unit number, you can change the status of the selected unit. (Water Outlet →
Water Inlet → Outdoor Air → High Pressure → Low Pressure → Flow Rate →).
Press [∨], [∧] button to change the unit number .
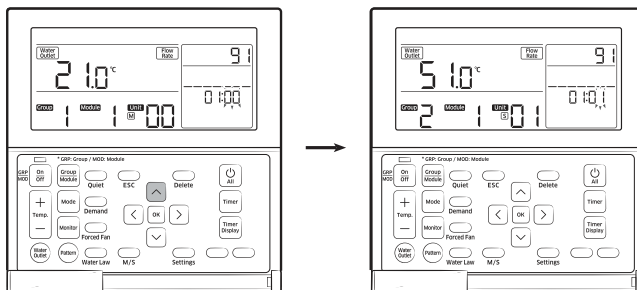
☑ *Note*

♦ The summer time is to put the clock ahead an hour earlier than standard time in summer.

VIII DVM CHILLER control system

1. Module control

☐ *MCM-A00N*

5) Optional function

Service mode

▶ How to set the service mode

(1) Start the service mode.

� ＋ OK **Press for over 3 seconds**
ESC

▶ Caution
 • To make it work correctly, you have to press
   the center of the buttons at the same time.

(2) Select a main menu number.

∧ / ∨ ▶ **Select a main menu number**

(3) Select a sub menu number.

⟩ ▶ ∧ / ∨ ▶ **Select a sub menu number**

(4) Select a Page number.
 • When changing a Page number, the display will show
   the set data value of the Page.

⟩ ▶ ∧ / ∨ ▶ **Select a Page number**

(5) Set Data value.
 • Refer to the table in "Service setting mode" for
   setting each data.

⟩ ▶ ∧ / ∨ ▶ **Adjust the data value**

(6) Save the data setting value.

OK

(7) Complete the service mode.

⌐
ESC

☑ *Note*

 ◆ If the current setting stage is in the main menu when
   pressing button, the service mode will be completed.
   If not, the stage will move to the main menu.

No	Name	Description
①	Main menu	Displays main menu value of the service mode table.
②	Sub menu	Displays sub menu value of the service mode table.
③	Page	Displays Page value of the service mode table.
④	Data Segment	Displays Data value of the service mode table.
⑤	Synchronized segment for setting the current time	Displays the data value of the Page on the left side of the LCD at the same time.

Service setting mode

- After saving the setting, the DVM CHILLERs and the module control may be initialized if it is necessary.
- When entering the service mode during the tracking, you can enter the Data stage on the Main menu 4,5,6,9 (Save at DVM CHILLER) but you cannot change the setting.
  - The display will show Restricted if you press ⊠ button.
  - The display shows only the collected data during the tracking.

Main menu	Sub menu	Function		Default value	Page	Data Segment	Save
1	1	Option setting/ checking	DVM CHILLER cooling and heating/ only cooling	0	1	0 - Cooling and heating, 1 - Only cooling	Save at Module control
			Temperature unit display (°C)/(°F)	0	2	0 - Celsius (°C), 1 - Fahrenheit (°F)	Save at Module control
	2	Option setting/ checking 2	Temperature display set temperature/ water temperature (Setting the module control's temperature display value)	1	1	0 - Set temperature 1 - current water outlet temperature (Default value)	Save at Module control
	6	Number of connected units	Number of DVM CHILLERs	0	1	00 ~ 16	-
	7	Setting the unit of the desired temperature (Available only when the temperature display is °C.)		0	1	0 - 1 1 - 0.5 2 - 0.1	Save at Module control
	8	Setting type of time		0	1	0 - 12-hours, 1 - 24-hours	Save at Module control
	9	Check for timer IC error		0	1	0 - Normal, 1 - Error	-
	0	Initializing service mode setting value		0	1	0 - Disuse, 1 - Reset	-
2	1	Checking micom codes of the module control		-	1 ~ 3	Micom code	-
	2	Checking the version information of the module control program		-	1 ~ 3	Modified date	-
4	1	Setting DVM CHILLE number/ option 1)*	Setting a targeted DVM CHILLER	View Master	1	A registered unit number	-
	4		Setting/checking basic options	Basic options of the target	1 ~ 20	Option code	Save at DVM CHILLER
	5		Setting/Checking installation options	Installation options of the target	1 ~ 20	Option code	Save at DVM CHILLER
	6		Setting/Checking installation options 2	Installation options 2 of the target	1 ~ 20	Option code	Save at DVM CHILLER

VIII DVM CHILLER control system

1. Module control

☐ *MCM-A00N*

5) Optional function

Service setting mode

Main menu	Sub menu	Function	Default value	Page	Data Segment	Save
5	1	Demand level [2]*	-	Module number	0 - Default value (100 %) 1 - 95 % 2 - 90 % 3 - 85 % 4 - 80 % 5 - 75 % 6 - 70 % 7 - 65 % 8 - 60 % 9 - 55 % 10 - 50 % 11 - Not applied (unrestricted)	Save at DVM CHILLER
	2	Quiet operation level [3]*	-	Module number	0 - Default value (100 %) 1 - Level1 2 - Level2 3 - Level3	Save at DVM CHILLER
	3	Standard for Water law [4]*	-	Main unit number [5]*	Standard for Water Law temperature 0 : Based on outdoor temperature / 1 : Based on room temperature	Save at DVM CHILLER
	4	AirCool1 (for Water law)	-	Main unit number [5]*	Outdoor temperature standard 1 [0 ~ 20°C(32 ~ 68°F)] in cooling mode	Save at DVM CHILLER
	5	AirCool2 (for Water law)	-	Main unit number [5]*	Outdoor temperature standard 2 [30 ~ 40 °C(86 ~ 104°F)] in cooling mode	Save at DVM CHILLER
	6	RoomCool1 (for Water law)	-	Main unit number [5]*	Room temperature standard 1 [15 ~ 24 °C(59 ~ 75°F)] in cooling mode	Save at DVM CHILLER
	7	RoomCool2 (for Water law)	-	Main unit number [5]*	Room temperature standard 2 [25 ~ 35 °C(77 ~ 95°F)] in cooling mode	Save at DVM CHILLER
	8	Tcool1 (for Water law)	-	Main unit number [5]*	Cooling set temperature standard 1 [-10 ~ 25 °C(14 ~ 77°F)] in cooling mode	Save at DVM CHILLER
	9	Tcool2 (for Water law)	-	Main unit number [5]*	Cooling set temperature standard 2 [-10 ~ 25 °C(14 ~ 77°F)] in cooling mode	Save at DVM CHILLER

The Function column for sub menus 1–9 spans: "Setting DVM CHILLER detailed setting"

Main menu	Sub menu	Function		Default value	Page	Data Segment	Save
6	1	DVM CHILLER detailed setting 2	AirHeat1 (for Water law)	-	Main unit number [5]*	Outdoor temperature standard 1 [-20 ~ 5°C(-4 ~ 41°F)] in heating mode	Save at DVM CHILLER
	2		AirHeat2 (for Water law)	-	Main unit number [5]*	Outdoor temperature standard 2 [10 ~ 20°C(50 ~ 68°F)] in heating mode	Save at DVM CHILLER
	3		RoomHeat1 (for Water law)	-	Main unit number [5]*	Room temperature standard 1[15 ~ 24°C(59 ~ 75°F)] in heating mode	Save at DVM CHILLER
	4		RoomHeat2 (for Water law)	-	Main unit number [5]*	Room temperature standard 2 [25 ~ 35°C(77 ~ 95°F)] in heating mode	Save at DVM CHILLER
	5		Theat1 (for Water law)	-	Main unit number [5]*	Heating set temperature standard 1 [35 ~ 55°C(95 ~ 131°F)] in heating mode	Save at DVM CHILLER
	6		Theat2 (for Water law)	-	Main unit number [5]*	Heating set temperature standard 2 [35 ~ 55°C(95 ~ 131°F)] in heating mode	Save at DVM CHILLER
	9		Operation pattern for modules (When operating standard pattern by a group) [6]*	-	Module number	0 - Standard 1 - Rotation 2 - Efficiency	Save at DVM CHILLER
9	1	Set groups/ modules [7]*	Assign modules/ groups to units	-	Unit number	Group(1 ~ 4) / module (1 ~ 8) / not set '-'	Save at DVM CHILLER
	2	Set a main unit [7]*	Set a main unit for modules	- / - / unit	Module number	Unit number of the selected module	Save at DVM CHILLER
	3		Set a main unit for groups	-	Group number	Unit number of the selected group	Save at DVM CHILLER
	4	Device option	Use Cool storage mode	-	1	0 - Disable, 1 - Enable	Save at DVM CHILLER
	5		Use Hot water mode	-	1	0 - Disable, 1 - Enable	Save at DVM CHILLER
	6	Set a backup module [8]*	Set a backup module	-	Group number	0 – Disable, 1 ~ 8 – The unit number of the selected module	Save at DVM CHILLER
0	1	Reset	Initialize factory setting of the module control (Initialize user/ service mode setting value)	0	1	0 - No use, 1 - Reset	-
	2		Initialize power master [9]*	0	1	0 - No use, 1 - Reset	-
	3		Initialize DVM CHILLER and module control's addressing	0	1	0 - No use, 1 - Reset	-

VIII DVM CHILLER control system

1. Module control

❑ *MCM-A00N*

5) Optional function

Service setting mode

1)* • In 4-1 menu, the units connected to the module control will be displayed. Select the unit that you want to set and then move to 4-4, 5, 6 menu.

2)* • Set a current limit rate. If you set the value less than 100 %, performance may decrease.

3)* • Set a level of the Quiet mode. Level3 is the lowest, performance and efficiency may decrease if the Quiet mode operates.

4)* • Select a standard for Water law when operating cooling or heating. Water law is to change the water outlet temperature, considering demand load changes according to outdoor or indoor temperature.
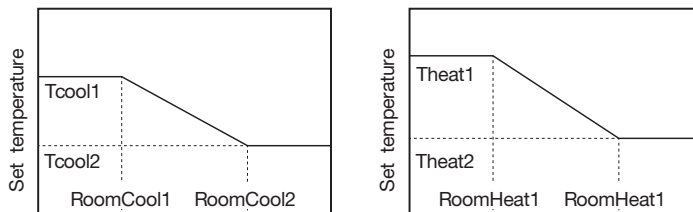
   - According to outdoor temperature
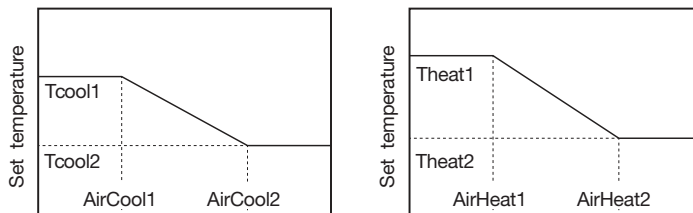
> ☑ *Note*
> ◆ If the unit is not a low temperature water model, the set temperature decided by the Water law control will not decease below 5°C(41°F).

   - According to indoor temperatrue (when using an external temperature sensor)

> ☑ *Note*
> ◆ If the unit is not a low temperature water model, the set temperature decided by the Water law control will not decease below 5°C(41°F).

5)* • A main unit of a gourp or a module will be displayed.

   • When setting a group, the value for a main unit of the group must be set.

6)* • When setting "Standard pattern" for a group, you must set an operation pattern for each module in the group.

7)* • Only when completing setting a group or a module and their main units, the module control will operate properly.
   - When completing the a group or a module setting and then exiting from service mode, the module control will be initialized and the tracking will be performed again.

8)* • If a backup unit is selected, the unit will operate depending on the standards for DVM CHILLER.

   • A backup module does not operate in the normal operation condition. If performance by operating the normal modules is not enough, the backup module will operate.

9)* • Power Master Reset is a setting needed to supply optimized power to the module control when multiple DVM CHILLERs are connected to the module control.

2. FCU KIT

❑ MIM-F00N

1) Features

Unit : mm(inch)

200(7.87) 270(10.62) 225(8.85)

87.4 (3.44) 20(0.79)
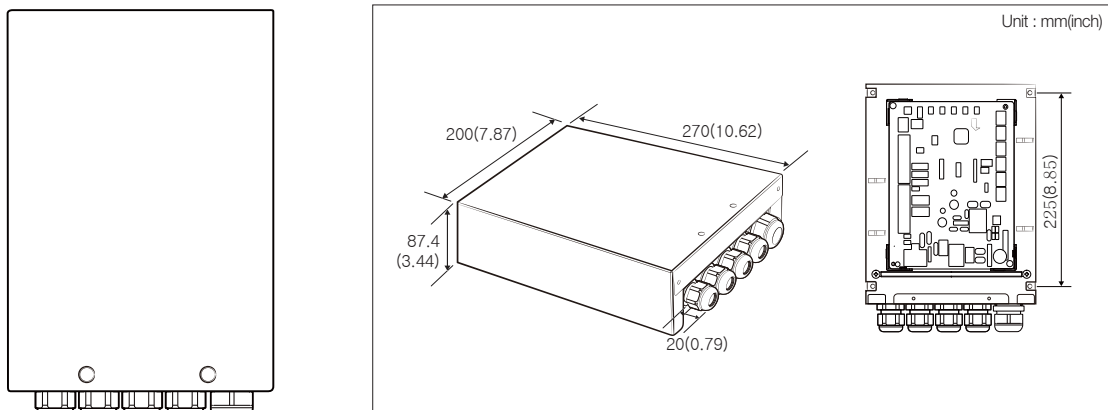
- Communication and control interfacing kit between 3rd party FCU and Samsung control system.
- Possible to use wired remote controller
- Possible to use DMS2.5, Touch centralized controller.
- Provides external contact input
- Outputs control signal for FCU fan.
- Outputs control signal for Water valve .

2) Product specification

Communication	RS485 x 1 (F1/F2) 2-wire PLC x 1 (F3/F4)
Max. length of connection	RS485 – 1000m(3280ft) 2-wire PLC - 100m(328ft)

Power & cable specification

▶ Europe

Power Supply	Power cable	Ground wire	Communication cable	ELCB
AC220 - 240V~ 50Hz, 1Ph	Min. 2.5 mm^2 (0.0039 inch^2)	Min. 2.5 mm^2 (0.0039 inch^2)	Min. 0.75 mm^2(0.0012 inch^2)	15A

Part	Rated Capacity
Fan (High, Mid, Low)	AC220 - 240V~ 50Hz, 1Ph, 1A
Water Valve	AC220 - 240V~ 50Hz, 1Ph, 0.5A

▶ USA

Power Supply	MCA	MOP
AC 208 - 230 V~ 60 Hz, 1 Ph	2.75	15A

Part	Rated Capacity
Fan (High, Mid, Low)	AC208 - 230V~ 60Hz, 1Ph, 1A
Water Valve	AC208 - 230V~ 60Hz, 1Ph, 0.5A

VIII DVM CHILLER control system

2. FCU KIT

❑ *MIM-F00N*

2) Product specification
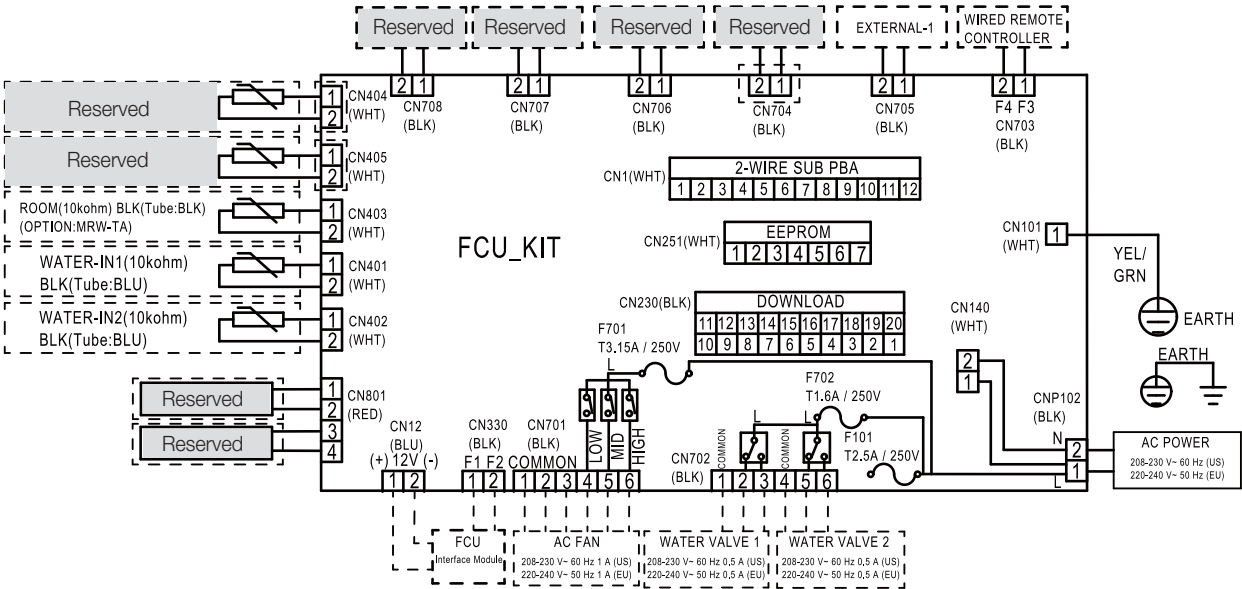
Power & cable specification

▶ DC Wire

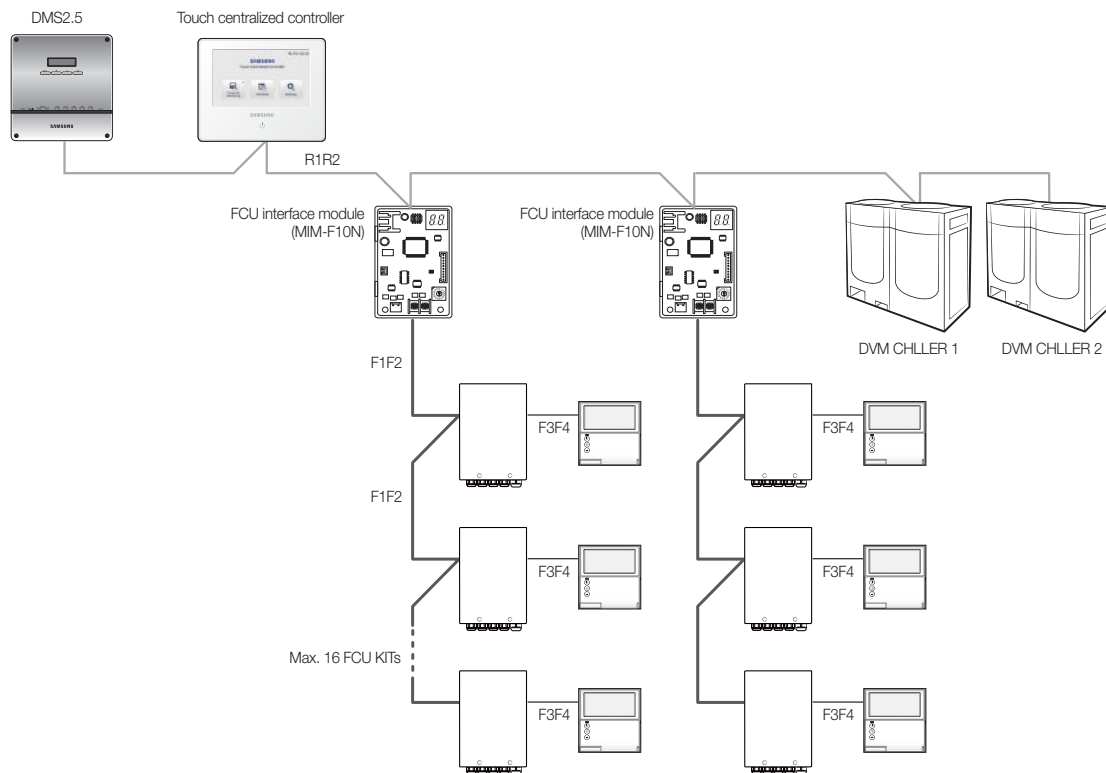| Part	Rated Capacity
Remote controller	DC 12V
External contact	Zero voltage contact input
Communication cable	DC 12V
Sensor cable	NTC./10 kΩ 25°C

Compatible controller

Wired remote controller	MWR-WE10N, MWR-SH10N
Interface module	MIM-F10N
DMS2.5	MIM-D01AN
BACnet GW	MIM-B17BN
LonWorks GW	MIM-B18BN

3) Description of parts

Electrical wiring diagram

4) Connection diagram

DMS2.5

Touch centralized controller

R1R2

FCU interface module (MIM-F10N)

FCU interface module (MIM-F10N)

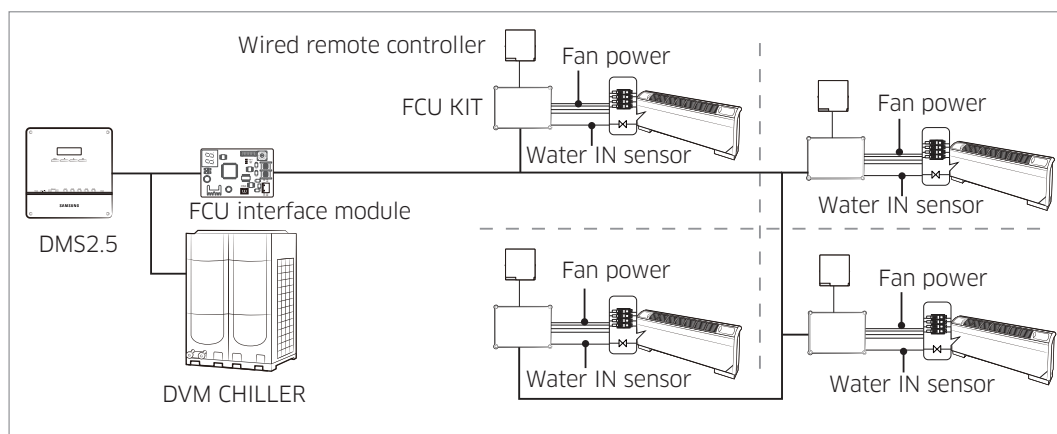DVM CHLLER 1   DVM CHLLER 2

F1F2

F3F4

F1F2

F3F4

Max. 16 FCU KITs

F3F4

F3F4

F3F4

Individual control of FCU

- Install FCU and FCU KIT by 1 to 1.

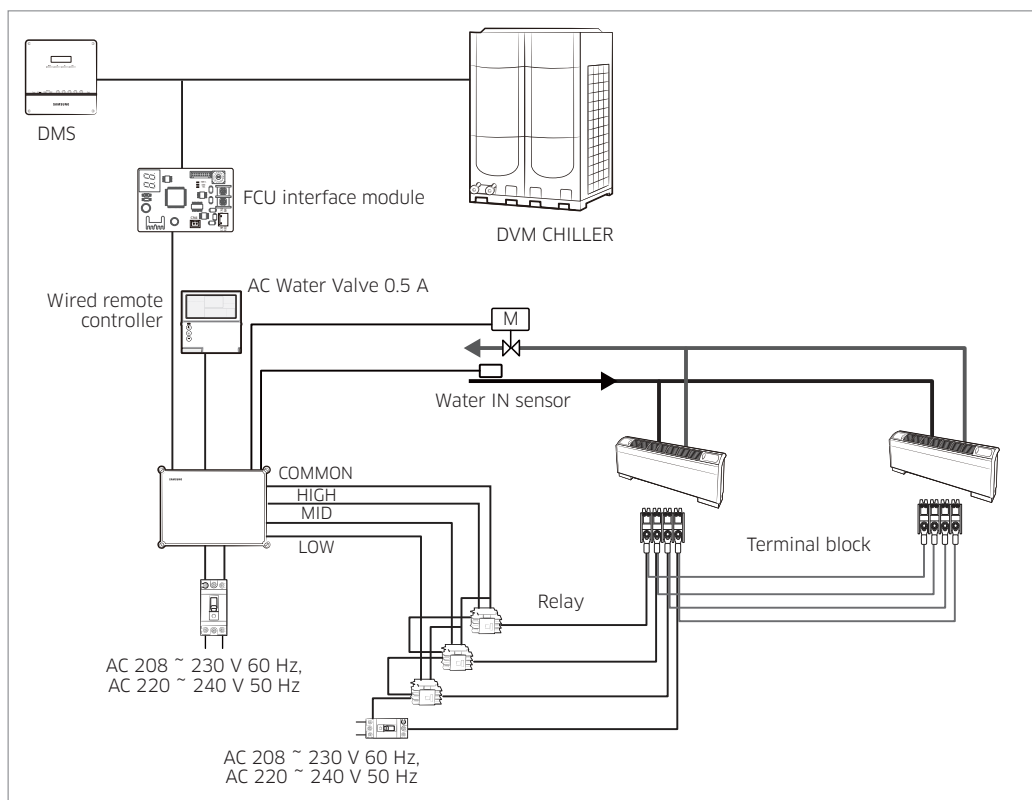- Maximum number of FCU KITs that can be installed to a FCU interface module is 16.

Wired remote controller

Fan power

FCU KIT

Fan power

DMS2.5

FCU interface module

Water IN sensor

Water IN sensor

Fan power

Fan power

DVM CHILLER

Water IN sensor

Water IN sensor

- Indoor temperature sensor must be installed to control FCU. Use either wired remote controller built-in sensor or external room sensor (MRW-TA).

  – Option setting value should be changed in service setting mode of wired remote controller after installing the remote controller. (Main menu 1, Sub menu 1, SEG 1, value 1)

  – In case of using external temperature sensor (optional), value of SEG24 (FCU KIT external indoor temperature sensor) of 05 series installation option should be set as 1.

- Water sensor should be attached to inlet pipe (1) for 2 pipe system (Water In), and each inlet pipe (2) for 4 pipe system (Cooling pipe In Heating pipe In).

- Maximum number of FCU KITs that can be installed and controlled simultaneously by a wired remote controller is 16.
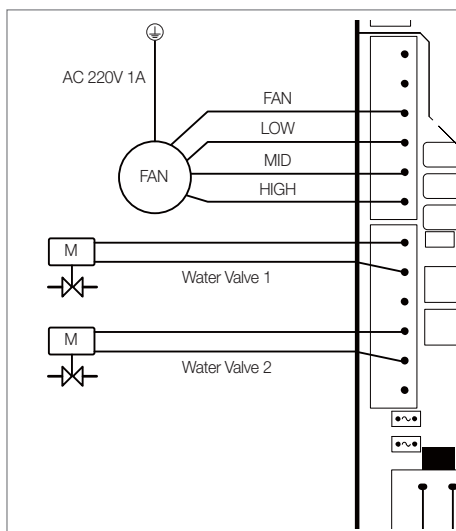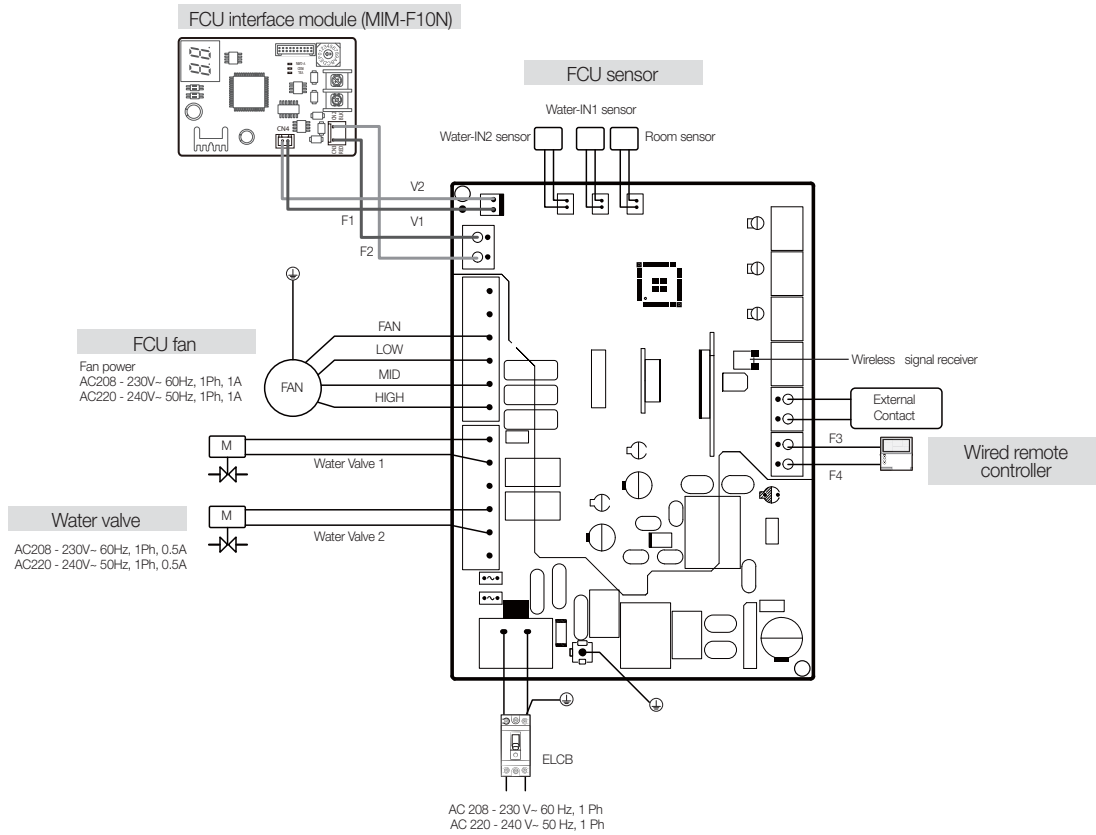
VIII DVM CHILLER control system

2. FCU KIT

❑ *MIM-F00N*

4) Connection diagram

■ Integrated control of FCU

• Install FCUs and FCU KIT by multiple FCUs to 1 FCU KIT.

DMS

FCU interface module

DVM CHILLER

Wired remote controller

AC Water Valve 0.5 A

M

Water IN sensor

COMMON
HIGH
MID
LOW

Terminal block

Relay

AC 208 ~ 230 V 60 Hz,
AC 220 ~ 240 V 50 Hz

AC 208 ~ 230 V 60 Hz,
AC 220 ~ 240 V 50 Hz

• National electric appliance safety standard should be applied for relay installation and capacity and power cable connection of FCU terminal block.

5) Wiring

FCU interface module (MIM-F10N)

FCU sensor

Water-IN2 sensor   Water-IN1 sensor   Room sensor

V2
F1   V1
F2

FCU fan
Fan power
AC208 - 230V~ 60Hz, 1Ph, 1A
AC220 - 240V~ 50Hz, 1Ph, 1A

FAN
LOW
MID
HIGH

FAN

Wireless   signal receiver

External
Contact

M
Water Valve 1

F3
F4

Wired remote
controller

Water valve
AC208 - 230V~ 60Hz, 1Ph, 0.5A
AC220 - 240V~ 50Hz, 1Ph, 0.5A

M
Water Valve 2

ELCB

AC 208 - 230 V~ 60 Hz, 1 Ph
AC 220 - 240 V~ 50 Hz, 1 Ph

AC 220V 1A

FAN
LOW
MID
HIGH

FAN

M
Water Valve 1

M
Water Valve 2

▊Fan : Must use below specification fan.
- For direct power supply from FCU KIT, fan motor must work at AC 208 - 230 V~ 60 Hz, AC 220 - 240 V~ 50 Hz and 1 A or low. Otherwise, install relay for external power suppy to the fan motor

▊Water Valve : 2 Way or3 Way solenoid valve
- 2/3 way solenoid valve is a type that works at AC 208 - 230 V~ 60 Hz, AC 220 - 240 V~ 50 Hz and supports product with 0.5 A or low.

Pipe type	Power output according to operatoin mode		AC 220 V output (Max 0.5 A)	Note
2-pipe	Cooling/ Heating	Thermo ON	1-2	Normal Close Type
		Thermo OFF	1-3	Normal Close Type
4-pipe	Cooling	Thermo ON	1-2	Normal Close Type
		Thermo OFF	1-3	Normal Close Type
	Heating	Thermo ON	4-5	Normal Close Type
		Thermo OFF	4-6	Normal Close Type

- Connect 3 Way valve power cable according to value of operation mode power output.
- Select each valve that is below 0.5 A of operation current.
- Installation option setting(05series, SEG14) is required to define 2 pipe or 4 pipe system.
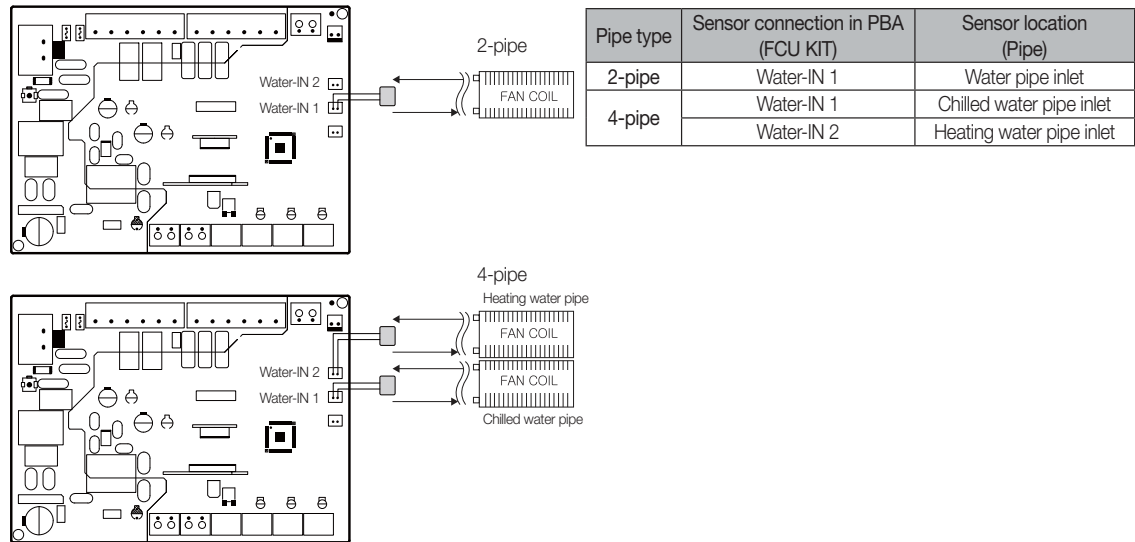
VIII DVM CHILLER control system

2. FCU KIT

☐ *MIM-F00N*

5) Wiring

Water IN sensor

- When using 4-pipe system, set SEG14 of 05 series installation option as 1.
- In case of opposite installation of water pipe 1, 2 sensor in 4 pipe system, error(pipe block) will be occurred in 30minutes of operation(E992 or E993).
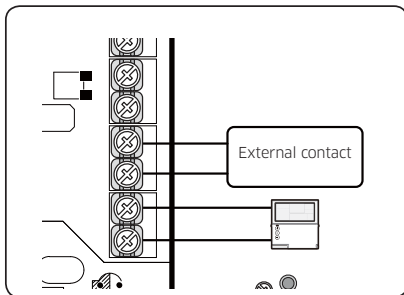

Pipe type	Sensor connection in PBA (FCU KIT)	Sensor location (Pipe)
2-pipe	Water-IN 1	Water pipe inlet
4-pipe	Water-IN 1	Chilled water pipe inlet
	Water-IN 2	Heating water pipe inlet

Wired remote controller

- 1 FCU KIT can connect 1 wired remote controller.
- 1 wired remote controller can connect Max.16 FCU KITs.

※ Wired remote controller can control below function of FCU KIT.
- On/Off
- Operation mode
- Temperature setting
- Fans speed. (High, Mid, Low)
- Schedule

FCU interface module

- 1 FCU interface module can connect Max.16 FCU KITs.

## External contact connection

- In case of connecting external contact, set SEG14 of installation option according to the table.

Installation option SEG14	External contact status	
	Open	Close
0	Disuse	Disuse
1	FCU OFF, remote control possible	ON, remote control possible
2	FCU OFF, remote control impossible	Remain OFF, remote control possible
3	FCU OFF, remote control impossible	Remain operation status of FCU before external contact open • Operation ON of FCU before external contact open: FCU ON • Operation OFF of FCU before external contact open: FCU OFF • Remote control possible

Option room sensor (Model: MRW-TA)

- In case of installing room sensor as option, set installation option according to the table.
  (05series, SEG24 = 1)

Room sensor (optional)
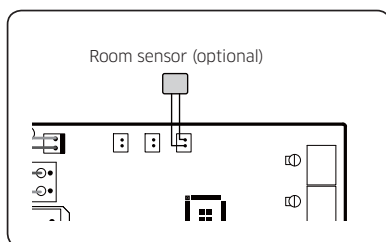
▶ Caution

- Use either wired remote controller with built-in room sensor or external room sensor (MRW-TA) must be installed.
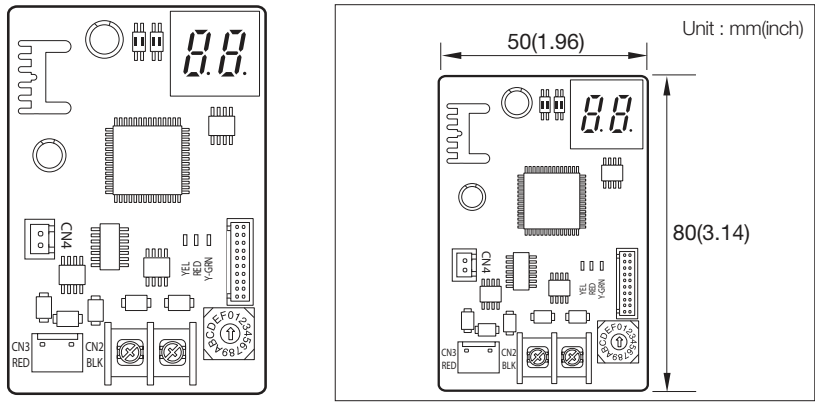
VIII DVM CHILLER control system

3. FCU interface module

▢ *MIM-F10N*

1) Features

• Communication interface module between FCU KIT and upper level controller.
• Connect 1 FCU interface module to Max. 16 FCU KITs.
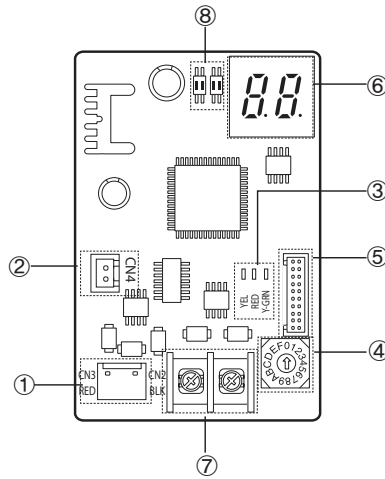• Supports FCU KIT only

2) Product specification

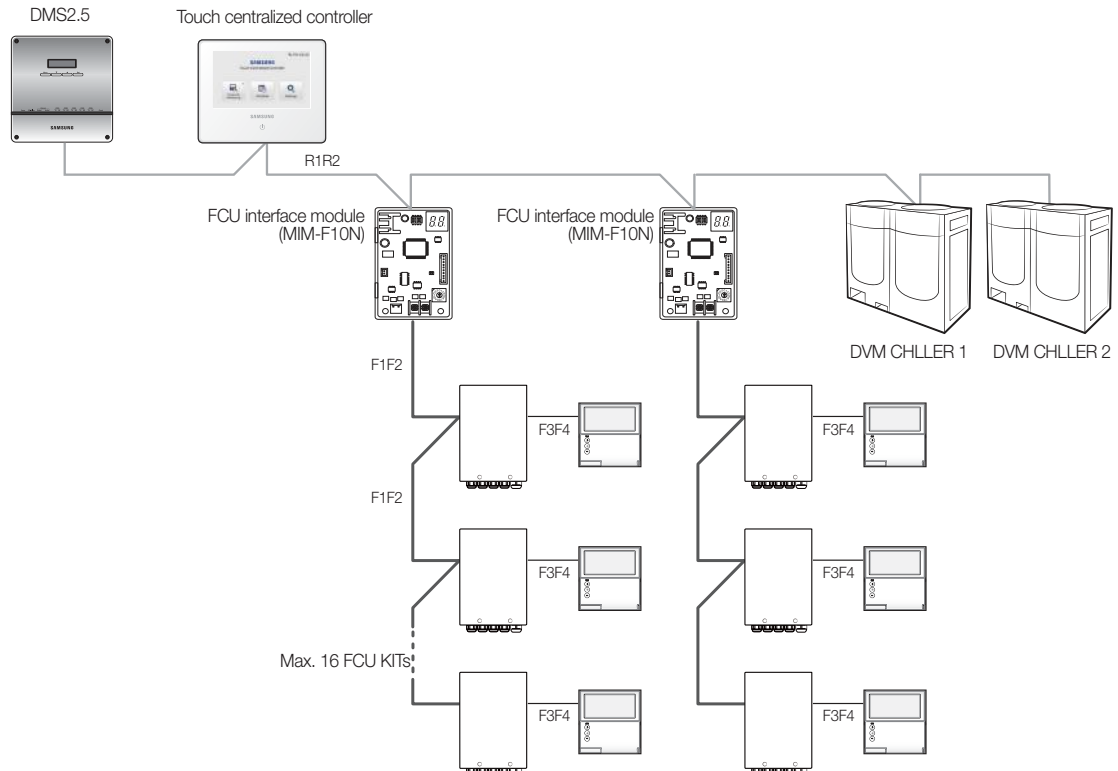|	
Power Supply	DC12V
Power Consumption	1W
Operating Temperature range	-10 °C~50 °C (14 °F~122 °F)
Operating Humidity range	10%RH~90%RH
Communication	RS485 x 2
Maximum Communication Length	1000 M (3280 ft)
Maximum number of connection	• F1/F2 : 16 FCU KITs • R1/R2 : Total up to 16 upper level controllers (Only 1 DMS 2.5, BACnet GW/ LonWorks GW connection is allowed)

Compatible Models

FCU KIT	MIM-F00N
Upper level controller	① DMS2.5 : MIM-D01AN ② BACnet GW : MIM-B17BN ③ Lonworks GW : MIM-B18BN ④ Touch centralized controller : MCM-A300N

3) Description of parts

No.	Name	Description
①	F1/F2 communication connector	Communication terminal that connects to F1/F2 of FCU KIT
②	Power connector	DC12V
③	Communication LED	Communication indicator LED (Left LED3 : No function Middle RED : Blinks during it communicates with upper level controller Right Y-GRN : Blinks during it communicates with FCU KIT)
④	Address setting switch	Sets the address of interface module
⑤	Software update connector	Using this connector, interface module software can be updates
⑥	7-segment	Displays the communication status between interface module and FCU KIT
⑦	Upper level controller communication channel	Communication terminal to upper level controller R1/R2
⑧	DIP switch	SW4 SW5 SW5 - No use

| SW4	Description
1	OFF- Auto address setting (Random address), Switch must be down ON-Manual address setting (Assigns FCU interface module's address according to address setting switch), Switch must be up
2	No function

4) Connection diagram

DMS2.5   Touch centralized controller

R1R2

FCU interface module (MIM-F10N)   FCU interface module (MIM-F10N)

DVM CHLLER 1   DVM CHLLER 2

F1F2

F3F4   F3F4

F1F2

F3F4   F3F4

Max. 16 FCU KITs

F3F4   F3F4

VIII DVM CHILLER control system

3. FCU interface module

☐ *MIM-F10N*

5) Connection

Connecting with Touch centralized controller

MIM-F10N   Touch centralized controller
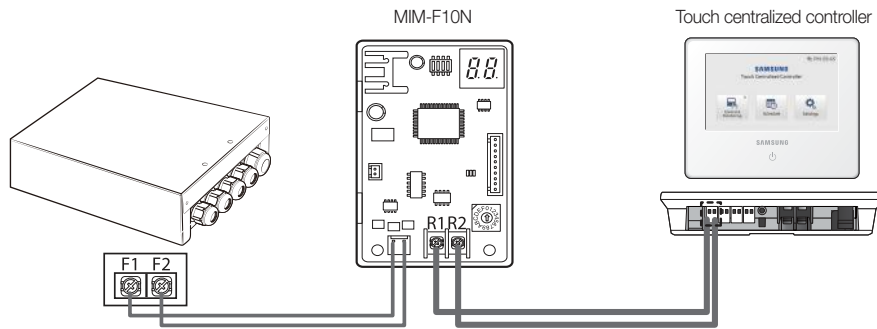
Connecting with with DMS2.5/ BACnet GW / Lonworks GW

MIM-F10N   DMS 2.5
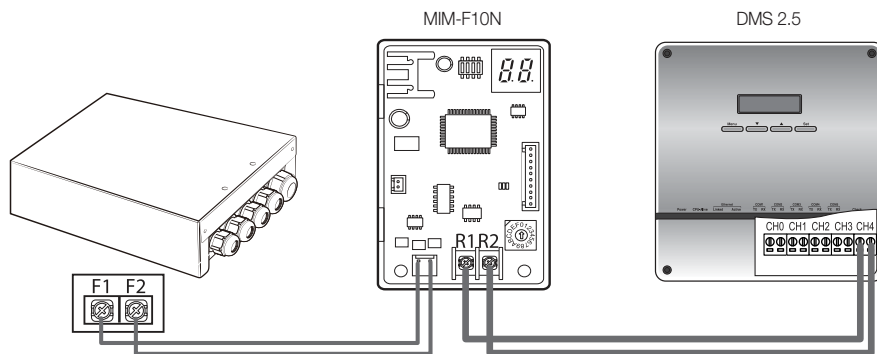
6) Display

1. When initializing power supply, 𝟾𝟾 will be indicated after indicating the program cord.
2. After receiving valid communication more than once, 𝟶𝟶 will be indicated.
3. When the communication is normal, the MAIN ADDRESS of the FCU KIT that can be controlled by the FCU interface module is indicated in order.
4. When there is no communication between the FCU KIT and the FCU interface module for more than 3 minutes, 𝐸𝑟 ↔ 𝐸1 will be indicated alternately.
5. When the FCU interface module tracking is not complete, 𝐸𝑟 ↔ 𝐸3 will be indicated alternately.
6. When there's error on EEPROM of the FCU interface module, 𝐸𝑟 ↔ 𝐸4 will be indicated alternately.
7. When same address was set to multiple FCU interface modules, 𝐸𝑟 ↔ 𝐸5 will be indicated alternately.
8. When more than 16 FCU KITs are installed, 𝐸𝑟 ↔ 𝐸6 will be indicated alternately.
9. When FCU KIT and indoor units are installed together, 𝐸𝑟 ↔ 𝐸7 will be indicated alternately.

MEMO