

LG

II Inverter SINGLE A™

Heat pump 50Hz/R410A
5CSL0-02E(Replace:5CSL0-02D)

TOTAL HVAC SOLUTION PROVIDER

ENGINEERING PRODUCT DATA BOOK





Part 1 General information

Part 2 Product data

Part 3 Design and installation

Part 4 Accessories

Preface

New era brings the more sophisticated and advanced buildings which in turn demands for specialized and optimized direct expansion air conditioning systems. Also energy efficiency, environment friendly, low noise and low maintenance cost are the features which are essential for these systems.

As a part of vertical integration LG makes all the key components in house, which gives an edge to LG to make better and latest technology products with best quality in optimized time.

H_{inverter} SINGLE A systems with are equipped with DC inverter technology and R410A refrigerant which is perfect solution to various installation locations.

LG **H_{inverter} SINGLE A** system consists of a single common outdoor unit for single indoor unit, such as ceiling cassette, ceiling suspended, and ceiling concealed duct(H). Synchro operation is solution to customer with reasonable prices.

It uses 2,3 or 4 indoor units with one outdoor unit.

Each indoor units are running as one cycle with same mode(cooling or heating).

It helps same air distribution all around the middle or larger room(office or open places) even in irregualr shaped spaces.

The total capacity based on ODU for Synchro operation are the same as for the fixed combinations.

This Engineering product data book incorporates information about the product itself, its installation and designing for

H_{inverter} SINGLE A system.

The comprehensive study of this book will improve your knowledge about the system and its application in details.

LG Electronics Inc.
Air Conditioning and Energy Solution Company






Part 1 General information

- 1. Model line up**
- 2. Nomenclature**
- 3. Features**
- 4. Control system**
- 5. Combination**

1. Model line up

1.1 Indoor units


Category	Type	Chassis	Model Name Capacity, kW							
			3.5	5.0	6.0	7.0	10.0	12.5	13.4	
Ceiling cassette	4way		TP	ATNH12GPLE1 [UT12H NP1]	ATNH18GPLE1 [UT18H NP1]					
			TN			ATNH21GNLE1 [UT21H NN1]	ATNH24GNLE1 [UT24H NN1]			
			TM					ATNH36GMLE1 [UT36H NM1]	ATNH42GMLE1 [UT42H NM1]	ATNH48GMLE1 [UT48H NM1]
Ceiling concealed duct			BG		ABNH18GGLA1 [UB18H NG1]	ABNH21GGLA1 [UB21H NG1]	ABNH24GGLA1 [UB24H NG1]			
			BR					ABNH36GRLA1 [UB36H NR1]	ABNH42GRLA1 [UB42H NR1]	ABNH48GRLA1 [UB48H NR1]
Ceiling suspended			VJ	UVNH12GJLA1 [UV12H NJ1]	UVNH18GJLA1 [UV18H NJ1]					
			VK			UVNH21GKLA1 [UV21H NK1]	UVNH24GKLA1 [UV24H NK1]			
			VL					UVNH36GLLA1 [UV36H NL1]	UVNH42GLLA1 [UV42H NL1]	UVNH48GLLA1 [UV48H NL1]

1. Model line up


1.2 Outdoor units

DC Inverter High Efficiency models (1Ø)

DC Inverter super		AUUW126DH1 [UU12WH UE1]	AUUW186DH1 [UU18WH UE1]	AUUW216DH1 [UU21WH U41]	AUUW246DH1 [UU24WH U41]
Total capacity index of connectable indoor units	kW	3.5	5.0	6.0	7.0
Power supply		1Ø, 220-240V, 50Hz			
Chassis					

DC Inverter super		AUUW366DH1 [UU36WH U31]	AUUW426DH1 [UU42WH U31]	AUUW486DH1 [UU48WH U31]
Total capacity index of connectable indoor units	kW	10.0	12.5	13.4
Power supply		1Ø, 220-240V, 50Hz		
Chassis				

DC Inverter High Efficiency models (3Ø)

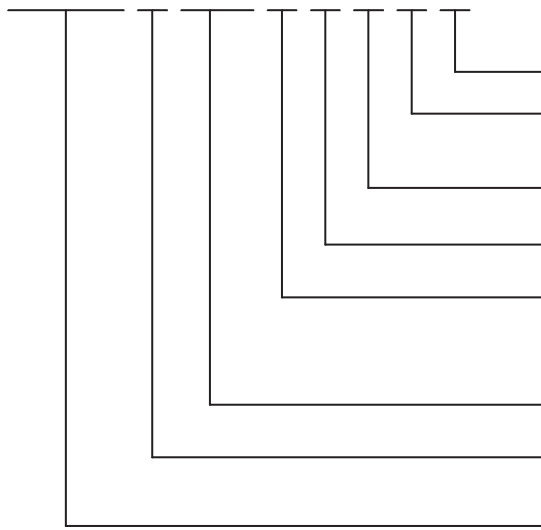
DC Inverter super		AUUW368DH1 [UU37WH U31]	AUUW428DH1 [UU43WH U31]	AUUW488DH1 [UU49WH U31]
Total capacity index of connectable indoor units	kW	10.0	12.5	13.4
Power supply		3Ø, 380-415V, 50Hz		
Chassis				

2. Nomenclature

Global Model Name

2.1 Indoor units

A T N H 24 G N L E 1



Serial Number

Functions

A : Basic C : Plasma Air Purifier E: Elevation grille

Look : Basic

Chassis Name

Electrical Ratings

6:1Ø,220V-240V,50Hz 8:3 Ø,380V-415V,50Hz

G: 1Ø 220V-240V, 50/60Hz

Capacity Code based on 'kBtu/h' units

Model Type

C: Cooling Only H: Heat Pump

R410A Single A Indoor Unit

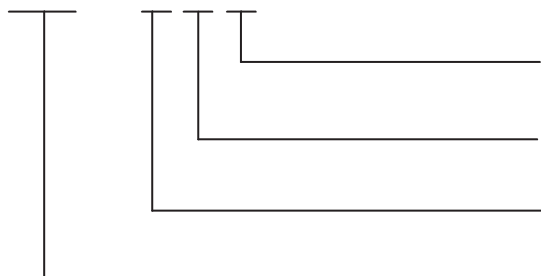
ATN : Single A Ceiling Cassette Type Indoor Unit made in Korea

ABN : Single A Ceiling Concealed Duct Type Indoor Unit made in Korea

UVN : Single A Ceiling Suspended Type Indoor Unit made in China

2.2 Decoration panel(For ceiling cassette models)

P T - U M C



Functions

A: Basic C:For Indoor Unit with Plasma Air Purifier.

Indoor Unit Chassis

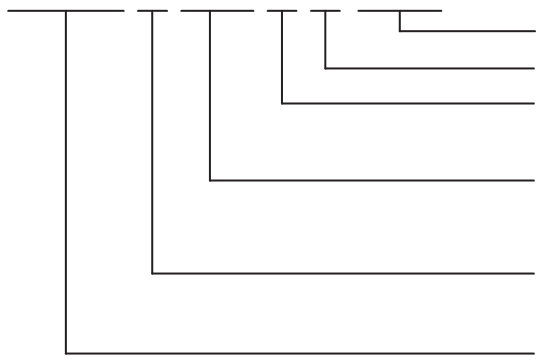
Model Type

C : Cooling Only H : Heat Pump U: Single A

Decoration Panel of Ceiling Cassette Type Indoor Unit

2.3 Outdoor units

A U U W 24 6 D H 1



High COP Series

Serial Number

Electric Standard (Phase, Volts, Freq)

6:1 Ø,220V-240V,50Hz 8:3 Ø,380V-415V,50Hz

Capacity Code based on 'kBtu/h' units

Model Type

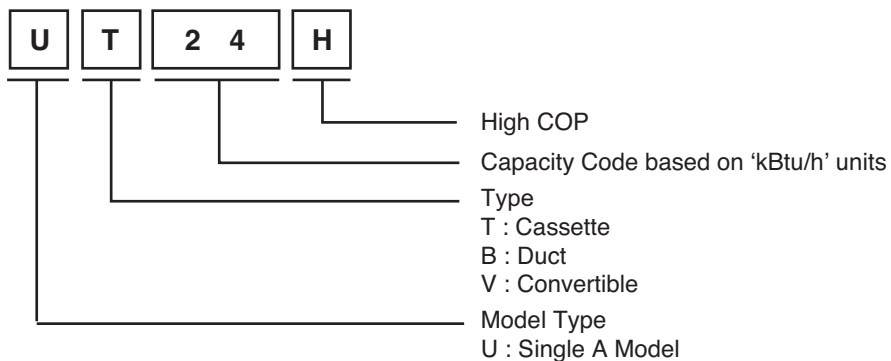
C : Cooling Only H : Heat Pump W: Inverter Heat Pump

R410A Single A Outdoor Unit

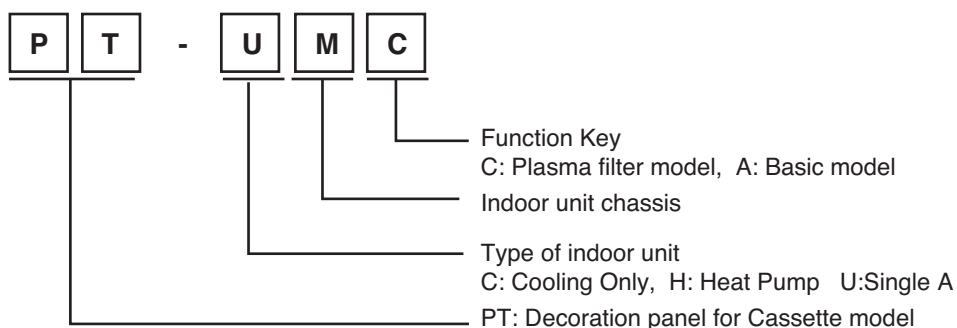
2. Nomenclature

Europe Model Name

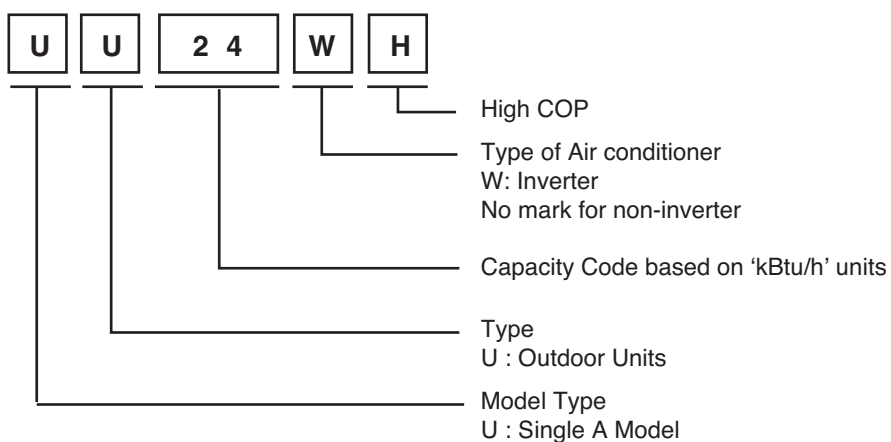
2.4 Indoor units



Decoration panel



2.5 Outdoor units



3. Features

3.1 What's H_{Inverter} SINGLE A™



- **Various IDU combination**

Ceiling Cassette , Ceiling Concealed Duct, Ceiling suspended

- **Wide capacity range**

Indoor range : 3.5~13.4 kW

Outdoor range : 3.5~13.4 kW

- **Convenient control**

Wired remote control

Central controller

- **Long and high elevation piping**

- **Wide operation range**

Cooling : -10~48 °CDB

Heating : -18~18 °CWB

3. Features

3.2 Technologies

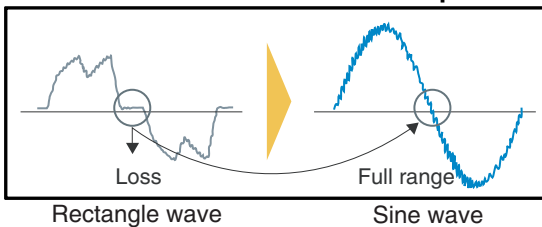
Inverter Technology

With the advancement of inverter technology comes more silent, economical and powerful air conditioning systems.

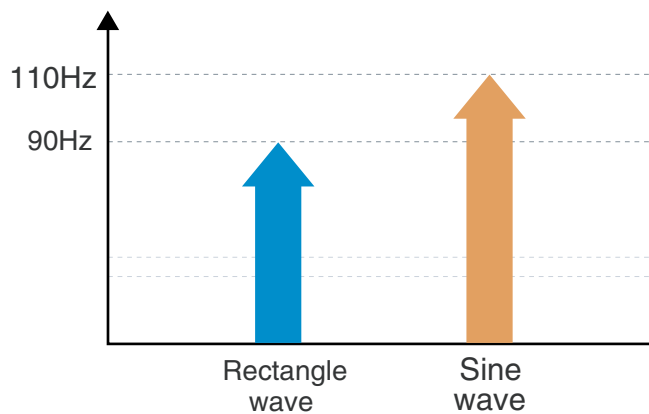
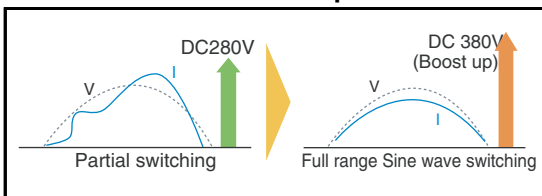
Step-up Inverter by the PFC & the Sine Wave Control Technology (PFC :Power Factor Correction)

The LG air conditioner is manufactured using the PFC and the sine wave technology. By the PFC control, raising the operating voltage from the existing DC 280V to DC 380V can be done. Thereby, it makes the operation smooth in a high-frequency area. The sine wave control enables soft operation in a low frequency area, thereby expanding the product's operating range. This also markedly improves the product's energy efficiency.

• Sine wave Control in BLDC Compressor

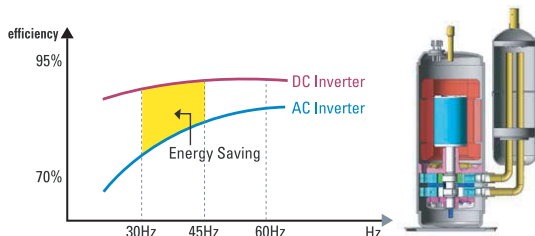


• PFC Control in Power Input



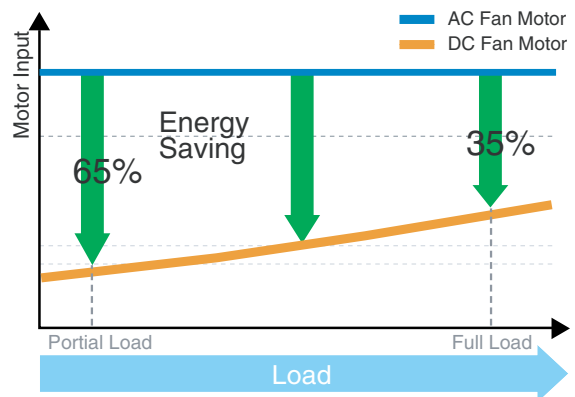
Powerful BLDC Compressor

The LG inverter air conditioner comes with a BLDC compressor that uses a strong neodymium magnet. Its compressor thus has improved efficiency compared with AC inverter. Notably, during partial-load operation (30-45 Hz), the efficiency of the compressor motor of the LG inverter air conditioner increases, as opposed to the existing AC motors, and the subcooling effects of the bigger condenser will further increase the product's energy consumption efficiency.



BLDC Fan motor

BLDC fan motor offers additional energy saving in operating mode. Compared with AC motors, BLDC fan motor can cut energy by 35% at full velocity. AC motor is operating at full velocity only, but BLDC Motor can change velocity according to load. Energy efficiency levels at low velocities in particular have been improved by 65%.

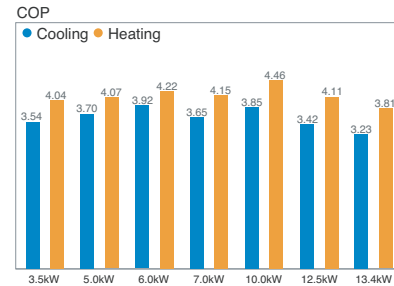


3. Features

Top Class COP

- DC Inverter Compressor
- BLDC Fan Motor
- Testing Combinations

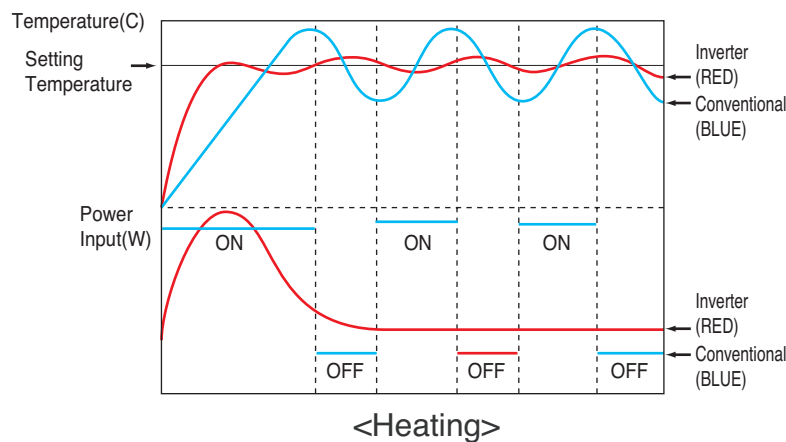
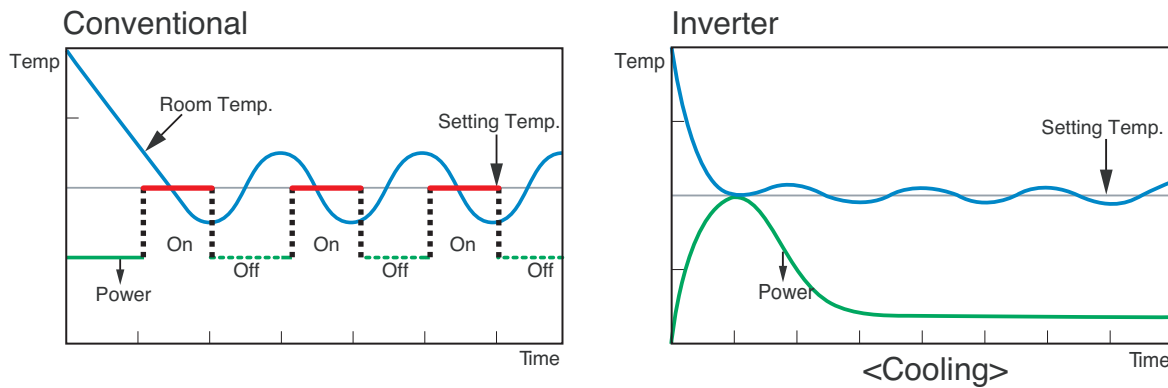
Capacity	3.5kW	5.0kW	6.0kW	7.0kW	10.0kW	12.5kW	13.4kW
INDOOR	UT12H	UT18H	UT21H	UT24H	UT36H	UT42H	UT48H
OUTDOOR	UU12WH	UU18WH	UU21WH	UU24WH	UU36WH	UU42WH	UU48WH



Comfortable with Fast Cooling & Heating Performance

When the air conditioner is initially activated to either heat or cool, the compressor will operate at maximum speed to reach the desired temperature quickly.

Once the desired temperature is achieved, unlike conventional air conditioners that turn the compressor on and off, LG inverter units constantly adjust and vary the compressor speed to maintain the desired temperature with minimal fluctuation to ensure that your comfort is not compromised.



3. Features

3.3 Indoor units

Ceiling Cassette – 4 way

- Compact design and easy installation
- Low noise
- Hygienic and easy-to-clean filter
- 2-thermistor(unit body and remote controller)
- Jet cool
- Plasma air purifying system(Accessory)
- High head drain pump(700mm)
- High-ceiling corresponding operation
- LCD wired remote controller
- Wireless remote controller(Accessory)



• New Wired Remote Controller

The wired remote controller with a large wide LCD screen featuring large font letters and a 4-direction key control enables the user more convenient control of operational conditions of the indoor unit.



PQRCVSL0



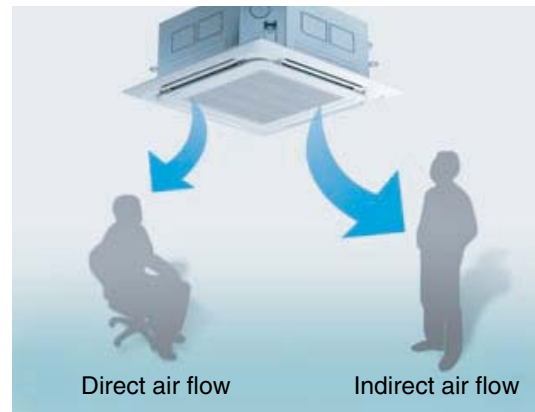
PQRCVSL0QW

- Backlight LCD
- Big Font to see even from a distance
- Large wide LCD for easy check
- Easy installation

• 4 Vane Independent Operation

Vane angle control satisfies both users who like direct wind or indirect wind. And also it prevents cold air draft.

- This function can be controlled with new wired remote controller



3. Features

All vane operation



Individual vane operation

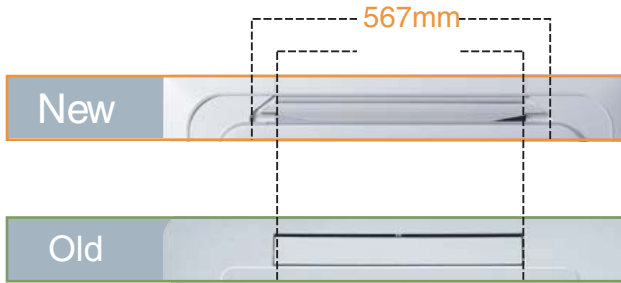


Individual vane angle control



• **Wide Jet Air Flow**

Improved wide and narrow vane will provide comfortable temperature distribution without air flow dead zone.



80mm Wider!!

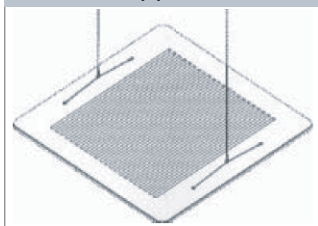
• **Elevation Grille (Accessory :PTEGMO)**

Easy filter cleaning with elevation grille

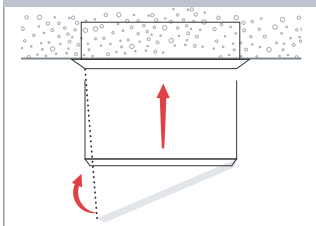
- Installed inside main body
- Auto horizontal level
- 4 points support
- Memory for user's level
- Max.4.5m length



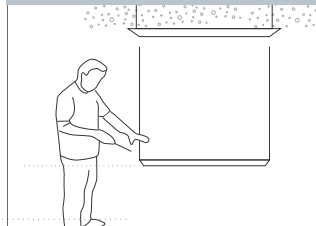
4-Point Support Structure



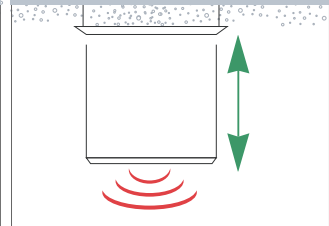
Auto Horizontal Control



Memory for user's level



Auto bottom detection



3. Features

• **Slim & Compact size**

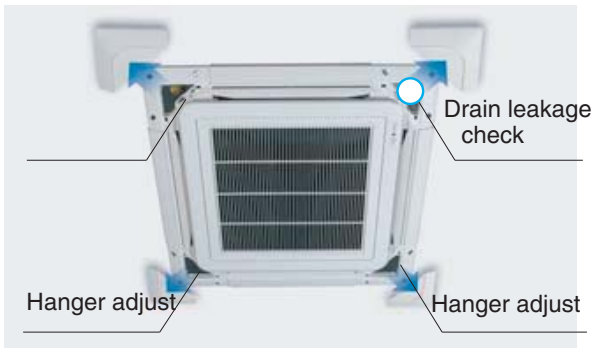
The indoor unit with slim and compact size enables successful installation in confined spaces.



Model	Size
UT12H, UT18H	204mm
UT21H, UT24H	246mm
UT36H, UT42H, UT48H	288mm

• **Convenient Installation**

Easy installation with corner detachable decoration panel.



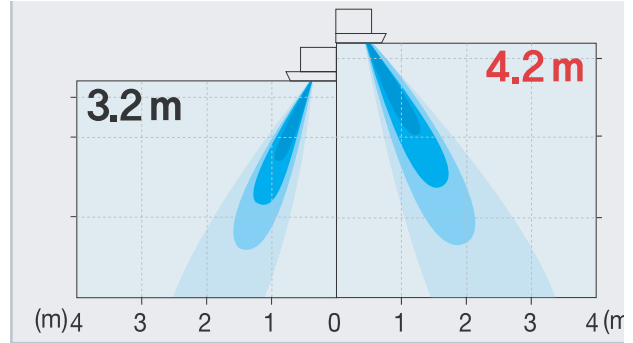
• **One touch type Panel**

It provides easy installation with a one-touch detachable panel.



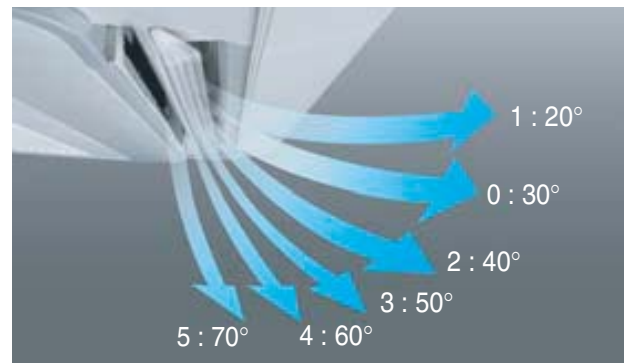
• **Extra high ceiling mode**

A 4.2m maximum high ceiling mode is available with the support of the indoor unit fan position control algorithm design. This setting offers a reduction of draughts.



• **Independent Automatic Vane Control**

One motor per vane is adopted to control each of four vane independently, freely controlling air current according to situations.



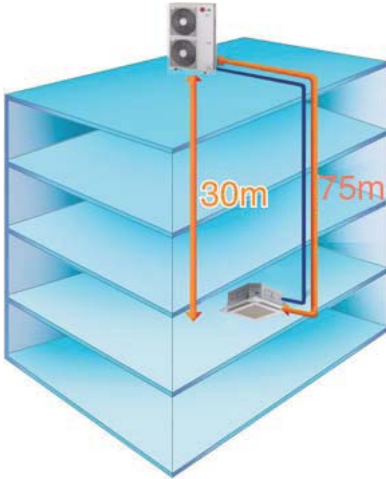
• **Two Thermistor Control**

There may be a significant difference between the temperature taken at the installed product and indoor temperature. Two thermistor control provides option to control temperature by referring any of the two temperatures. With the help of the slide switch at the back of the LCD wired remote controller, selection of the desired thermistor for controlling the unit can be done. One thermistor is in the Indoor unit & the other one is in the LCD wired remote.

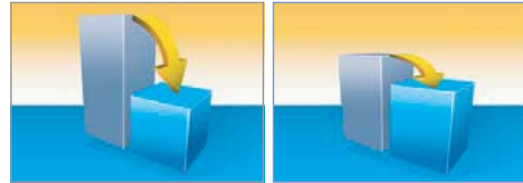
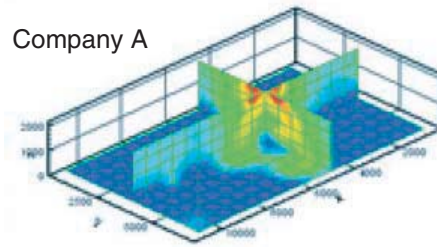
3. Features

• **Long Distance, High Elevation Piping**

LG air conditioners can be installed for long distance (up to 75m) and high elevation applications (up to 30m).



Company A



Vertical Temp. Differences Horizontal Temp. Differences

• **Weekly Program**

The operator can set an On/Off reservation of the air conditioner for a period of one week.

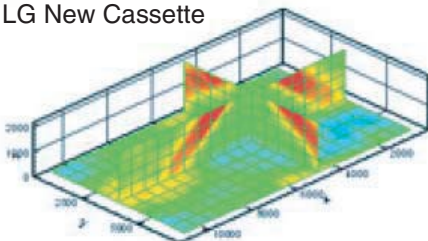
LCD Wired Remote Controller

- 24-Hour ON/OFF Timer in 1 hour intervals
- TEST RUN Mode
- Self-Diagnosis function
- 4-Step Fan Speed selection
- Operation Indication
- Room Temperature Display
- Only 20mm thickness

• **Swirl Swing**

Swirl swing distributes air evenly throughout the room to ensure a more comfortable conditioned environment by adjusting the movement of the louvers.

LG New Cassette



• **Design to Reduce the Ceiling Stains**

The new outlet design can reduce ceiling contamination from air current flowing along the ceiling.



Existing type



Ceiling pollutions prevention type

3. Features

• **Group Control**

1) Operation Summary

- Where several products are linked, one specific control device can control a specific number of products.

2) Specific Operation

- Connecting line is linked to each of the indoor equipments for communication. A specific control device is connected to each of them and this control device can control the same function.
- Group control function is enabled by dip switches in the wired remote control. At this time, the main system will not respond in order to prevent data collision.
- While executing group control command, use the random data(0-3minutes) in the main body of indoor equipment for limiting starting current.
- Control device can control up to 16 indoor equipments.



• **Cassette Cover (Accessory : PTDCQ / PTDCM)**

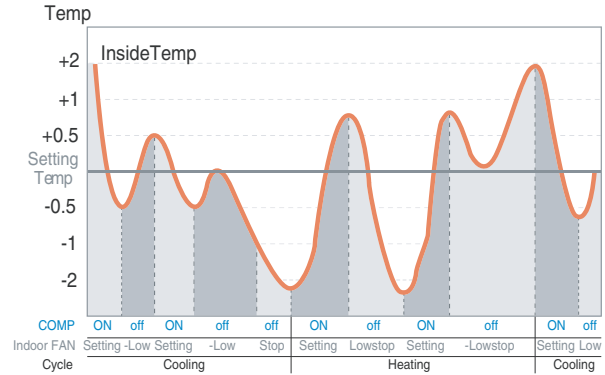
- Maintains the ceiling elegance.
- Covers the side area of cassette.
 - Gives elegant looks.
 - Light weight.
 - Suitable when false ceiling is unavailable.



• **Auto Changeover**

With reverse cycle models, the air conditioner will switch automatically from cooling to heating modes depending on the set temperature.

- Initial Setting Temp :18 °C: (Memory the final setting temp)
- Control of setting temp. Wired Remoted Controller:18~30 °C
Reset Button in indoor unit: finally memorized temp.
Wireless Remoted Controller: 23~27



3. Features

Ceiling Concealed Duct

- Compact design and easy installation
- BLDC Fan motor
- 2-thermistor control (unit body and remote controller)
- Picto wired remote controller
- Wireless remote controller(Accessory)
- High head drain pump
- Zone controller(Accessory)



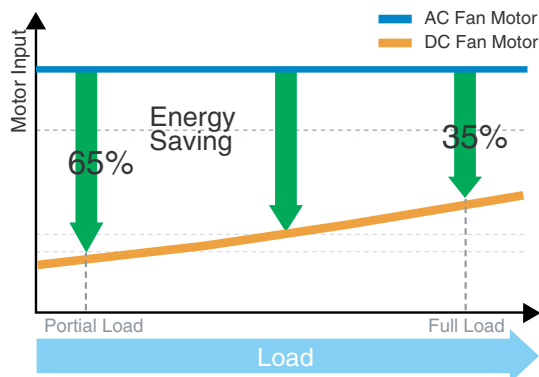
• E.S.P : External Static Pressure

Always air volume and sound kept as design regardless of E.S.P change using this technology, you can.

- Optimize Duct work Installation
- Keep Capacity & Sound level as desired
- Simplify model numbers

BLDC Fan motor

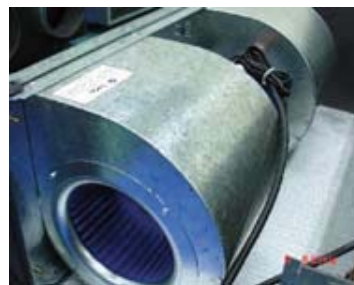
BLDC fan motor offers additional energy saving in operating mode. Compared with AC motors, BLDC fan motor can cut energy by 35%at full velocity. AC motor is operating at full velocity only, but BLDC Motor can change velocity according to load. Energy efficiency levels at low velocities in particular have been improved by 65%.



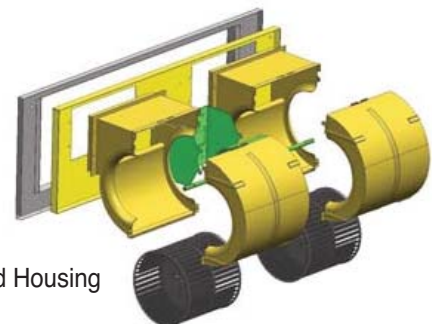
• Quiet Operation & Easy Service

A lightweight plastic blower and housing makes air conditioning operation quiet and backup servicing more convenient.

The new fan housing can be easily dismantled for convenient servicing and maintenance. The fan motor can be removed without the need to remove the complete fan direct assembly.



Conventional



LG Fan and Housing

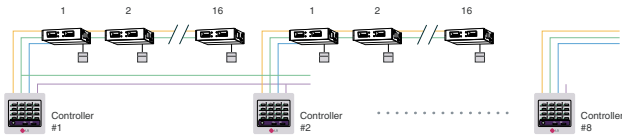
3. Features

• Central Controller

Operation Summary

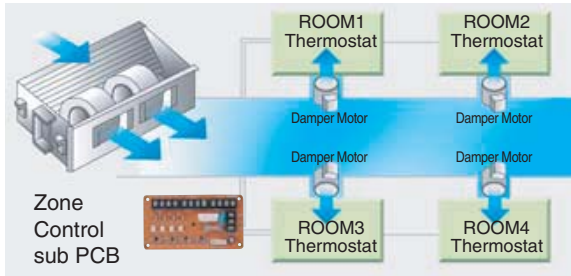
LG units come with advanced control options, take for instance the Central Controller. Designed for the commercial application, where multiple Air Conditioning units have been installed.

You can control or fault find up to 16~2048 Air Conditioning units (via 8 separate controllers) individually or all together.



• Zone Controller

This feature can be used to control the operation of the Air Conditioning Unit where each zone (maximum of 4 zones) has a separate thermostat and damper motor, your Air Conditioning Specialist can advise you if you require a VAV (Variable Air Volume) Installation in your home / office, as well as providing a quotation for Installation (including the supply of thermostats and damper motors).



ABZCA

• Weekly Program

The operator can set an On/Off reservation of the air conditioner for a period of one week.

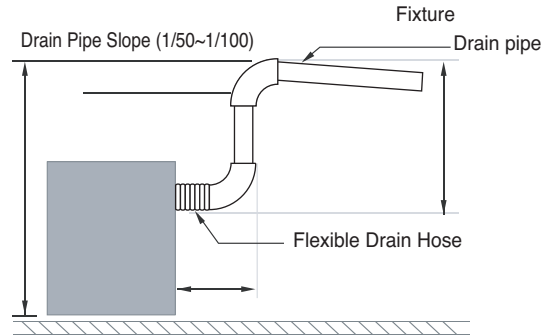
Picto wired remote controller

- 24-Hour ON/OFF Timer in 1 hour intervals
- TEST RUN Mode
- Self-Diagnosis function
- 3-Step Fan Speed selection
- Operation Indication
- Room Temperature Display
- Only 20mm thick



• High Head Drain Pump

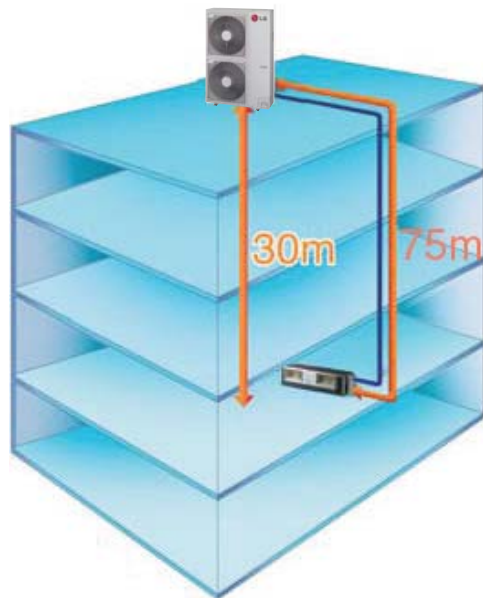
Auxiliary Drain Pump automatically drains water. A standard drain-head height of up to 700mm is possible, creating the ideal solution for perfect water drainage.



ABDPG

• Long Distance, High Elevation Piping

Our LG Air Conditioners are possible to be installed a long distance (Max 75m) that is included High Elevation (30m)



Ceiling Suspended

950 x 220 x 650 (UV12H/UV18H)



1350 x 220 x 650 (UV21H/UV24H)



1750 x 220 x 650 (UV36H / UV42H / UV48H)

Customize size and weight

- Weight : 45kg, 35kg, 25kg
- Volume : 100%, 78%, 56%

Natural CHAOS wind

- It swings at an angle, thus minimizing the difference in indoor temperatures and allowing air in every corner of the room.

Auto air flow direction (up&down)

- The air flow direction can be adjusted as desired by using the remote controller.
- This is effective when you want to cool yourself directly.

3. Features


3.4 Outdoor units

DC Inverter High efficiency


- Top class EER/COP
- New plastic grille design, new ODU (3.5~13.4 kW)
- High efficiency technology
- Power operation and energy saving
- Low noise level

DC Inverter High Efficiency models (1Ø)

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Total capacity index of connectable indoor units	kW	3.5	5.0	6.0	7.0
Power supply		1Ø, 220-240V, 50Hz			
Chassis					



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Total capacity index of connectable indoor units	kW	10.0	12.5	13.4
Power supply		1Ø, 220-240V, 50Hz		
Chassis				

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Total capacity index of connectable indoor units	kW	10.0	12.5	13.4
Power supply		3Ø, 380-415V, 50Hz		
Chassis				

4. Control system

4.1 Wide Remote controller (PQRCVSL0/PQRCVSL0QW)

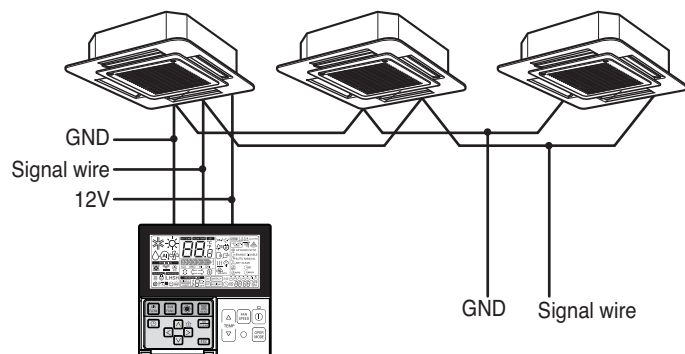
Item	Model name	Image	Function	Applicable model
Wired remote controller	PQRCVSL0 PQRCVSL0QW		<ul style="list-style-type: none"> • On/off, fan speed, mode, tempeture • Room tempeture • Fan, plasma, swirl swing • Automatic • Vane control • ESP function • Reservation(simple/weekly) • Simple reservation • Timer function • Auto swing, child lock • 4 Vane independent operation • Backlight LCD 	Ceiling cassette Ceiling Concealed duct
Wireless Remote Controller	PQWRHDF0		<ul style="list-style-type: none"> • On/Off , Fan speed , Mode , Temperature Selection • Room temperature checking • Chaos swing / Jet cool • On/Off timer • Sleep mode auto • Main / Sub setting of indoor units (For override function) 	Ceiling Suspended

* For detail information, refer to the accessory part of design & installation book.

4.2 Wide Remote controller (PQRCVSL0/PQRCVSL0QW) installation guide

1. When installing more than 2 units of air conditioner to one wired remote controller, please connect as the right figure.

- If it is not event communication indoor unit, set the unit as slave.
- Check for event communication through the product manual.

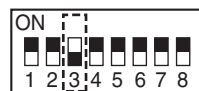


When controlling multiple indoor units with event communication function with one remote controller, you must change the master/slave setting from the indoor unit.

- Indoor units, the master/slave configuration of the product after completion of indoor unit power 'OFF' and then 'ON' the power after 1 minutes elapsed sign up.
- For ceiling type cassette and duct product group, change the switch setting of the indoor PCB.



#3 switch OFF: Master
(Factory default setting)



#3 switch ON: Slave

4. Control system

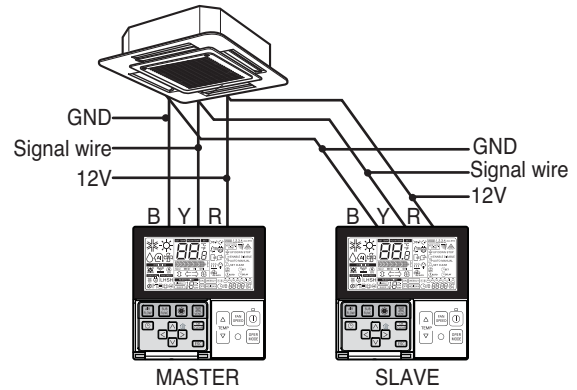
- For wall-mount type and stand type product, change the master/slave setting with the wireless remote controller. (Refer to wireless remote controller manual for detail)

※ When installing 2 remote controllers to one indoor unit with event communication function, set the master/slave of the remote controller. (Refer to remote controller master/slave selection)

When controlling the group, some functions excluding basic operation setting, fan level Min/Mid/Max, remote controller lock setting and time setting may be limited.

2. When installing more than 2 wired remote controllers to one air conditioner, please connect as the right picture.

- When installing more than 2 units of wired remote controller to one air conditioner, set one wired remote controller as master and the others all as slaves, as shown in the right picture.
- You cannot control the group as shown in the right for some products.
- Refer to the product manual for more detail.



<When simultaneously connecting 2 sets of wired remote controller>

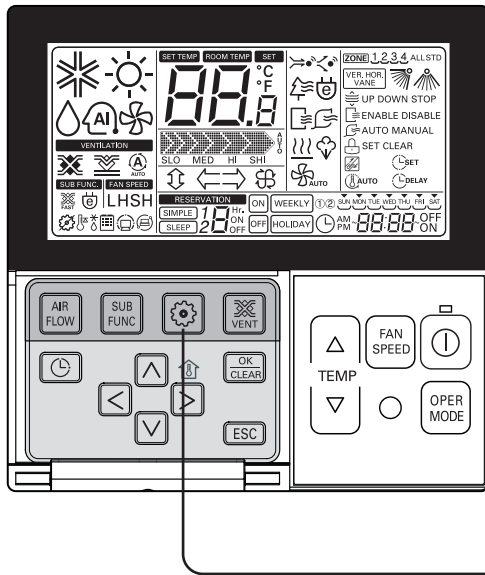
- When controlling in groups, set the master/slaver of the remote controller. Refer to Installer setting section on how to set master/slave for more detail.


4. Control system

Installer Setting -How to enter installer setting mode


! CAUTION

Installer setting mode is to set the detail function of the remote controller. If the installer setting mode is not set correctly, it can cause problems to the product, user injury or property damage. This must be set by a certificated installer, and any installation or change that is carried out by a non-certificated person should be responsible for the results. In this case, free service cannot be provided.



- 1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

- 2 When you enter the setting mode initially, Function code is displayed on the bottom of the LCD screen.


 Function Code Value

• Some categories of the menu may not be displayed according to the function of the product, or the menu name may be different.

4. Control system

<Installer Setting Code Table>

No.	Function	Code	Value
1	Test Run	01	01:Set
2	Address Setting	02	00~FF : Address
3	E.S.P. Value	03	<ESP Step> <ESP Value> 01:VeryLow 0 ~ 255 02:Low 03:Med 0300:155 04:High 05:Very High <div style="display: flex; justify-content: center; gap: 50px; margin-top: 5px;"> ↓ ↓ ↓</div> Function Code ESP step ESP value
4	Thermistor	04	01:Remo 02:Indoor 03:2TH
5	Ceiling Height	05	01:Med 02:Low 03:High 04:Very High
6	Static Pressure	06	01:V-H 02:F-H 03:V-L 04:F-L
7	Group Setting	07	00:Slave 01:Master
8	Override Setting	08	00:Slave 01:Master
9	Dry Contact	09	00:OFF 01:ON
10	Release 3 Min. Delay	10	01:Set
11	Zone State	11	01:Variable 02:Fixed
12	Celsius Fahrenheit Switching	12	00:Celsius (Optimized only for U.S.A) 01: Fahrenheit
13	Zone Type	13	00:Old 01:New
14	Zone Number	14	02~04(Zone number)
15	Plasma	20	00: Not Installed 01: Installed
16	Electric heater	21	
17	Humidifier	22	
18	Elevation Grill	23	
19	Ventilation Kit	24	

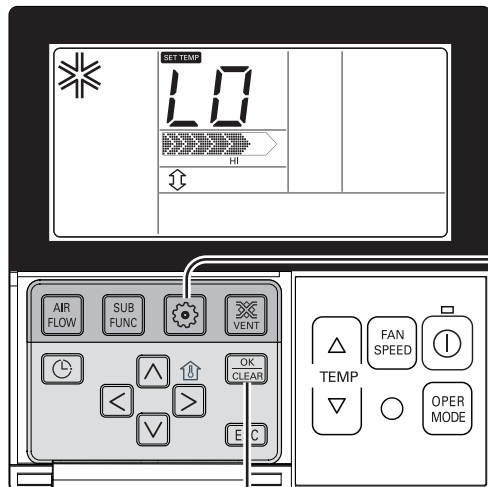
* Some contents may not be displayed depending on the product function


4. Control system

Installer Setting -Test Run Mode

After installing the product, you must run a Test Run mode.

For details related to this operation, refer to the product manual.

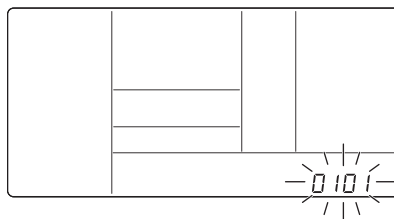


1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.

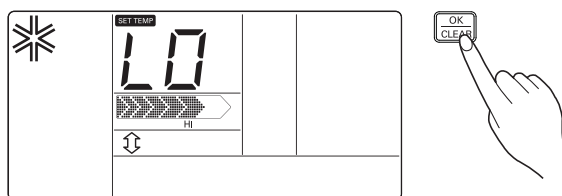
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.
- Please cancel the right and left of wind direction for RAC product.



2 Setup figure '01' blinks at the lower part of indication window.



3 Press  button to start.

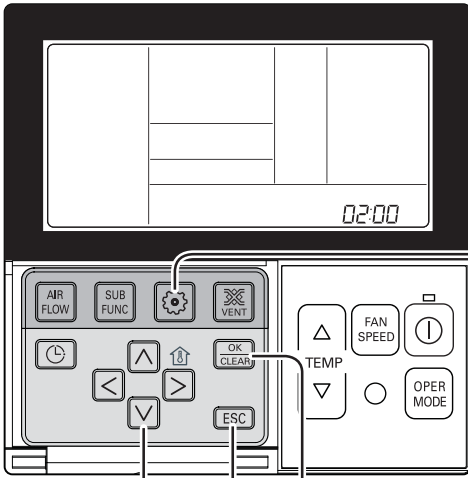



4 During the test run, pressing the below button will exit the test run.

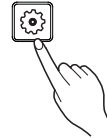
- Select operation, temperature up/down, wind flow control, wind direction, start/stop button.


4. Control system

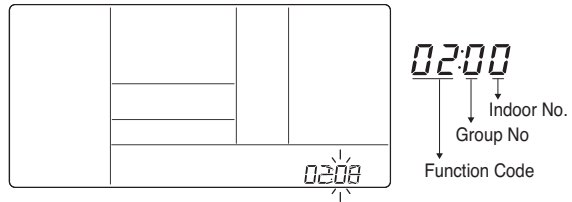
Installer Setting - Setting Address of Central Control





1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

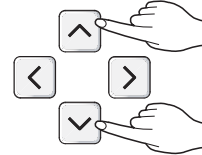




2 If entering into address setup mode by using  button, it indicates as picture below.



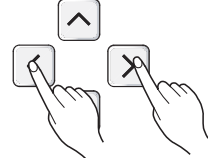
3 Set Group No. by pressing   button. (0~F)



02:F0



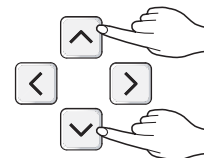
4 Move to Indoor No. setting option by pressing   button.

02:F0



5 Set Indoor No. by pressing   button.


02:F5



6 Press  button to save.

02:F5



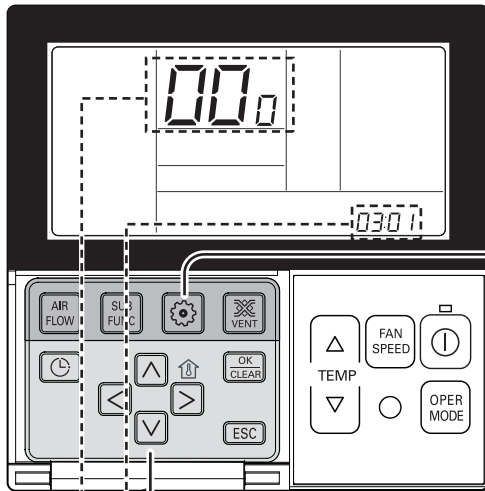
7 Pressing  button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

4. Control system

Installer Setting -E.S.P.

This is the function that decides the strength of the wind for each wind level and because this function is to make the installation easier.

- If you set ESP incorrectly, the air conditioner may malfunction.
- This setting must be carried out by a certificated-technician.



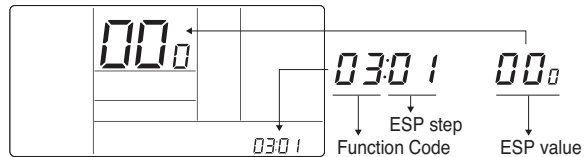
Function code,
ESP code

ESP value

1 If pressing button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

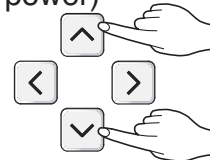


2 If entering into ESP setup mode by using button, it indicates as the picture below.



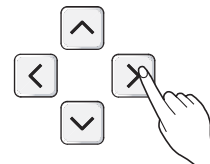
3 Select ESP fan step by pressing button. (01: very low, 02: low, 03: medium, 04: high, 05: power)

0301



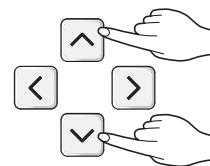
4 Move to ESP value setting by pressing button.
(It is 000 when delivering from the warehouse.)

0301 00

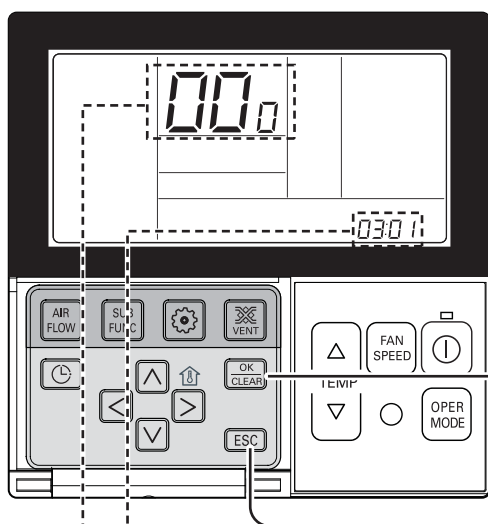


5 Press button to setup ESP value.

(It is possible to setup ESP value from 1 to 255, and 1 is the smallest and 255 is the biggest.)



4. Control system



Function code,
ESP code

ESP value

6 Select ESP fan step again by using button and setup ESP value, as No. 4 and 5, that corresponds each wind flow

7 Press button to save.

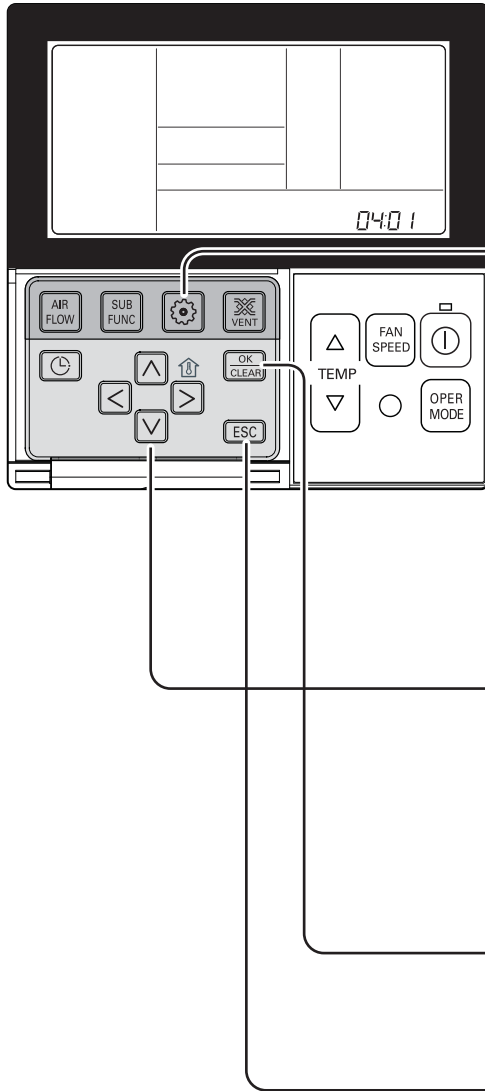


8 Press button to exit.
 * After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
 * When exiting without pressing set button, the manipulated value is not reflected.

- Please be careful not to change the ESP value for each fan step.
- It does not work to setup ESP value for very low/power step for some products.
- ESP value is available for specific range belongs to the product.

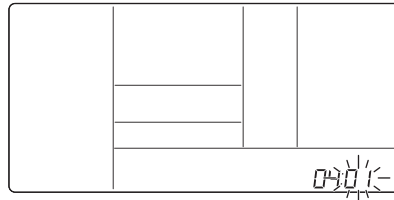
4. Control system

Installer Setting -Thermistor



1 If pressing button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

2 If moving to room temperature perception sensor selection menu by pressing button, it indicates as picture below.



3 Set Thermistor value by pressing button. (01: Remote Controller, 02: Indoor, 03: 2TH)

Function Code Thermistor setting

4 Press button to save.

5 Pressing button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

<Thermistor Table>

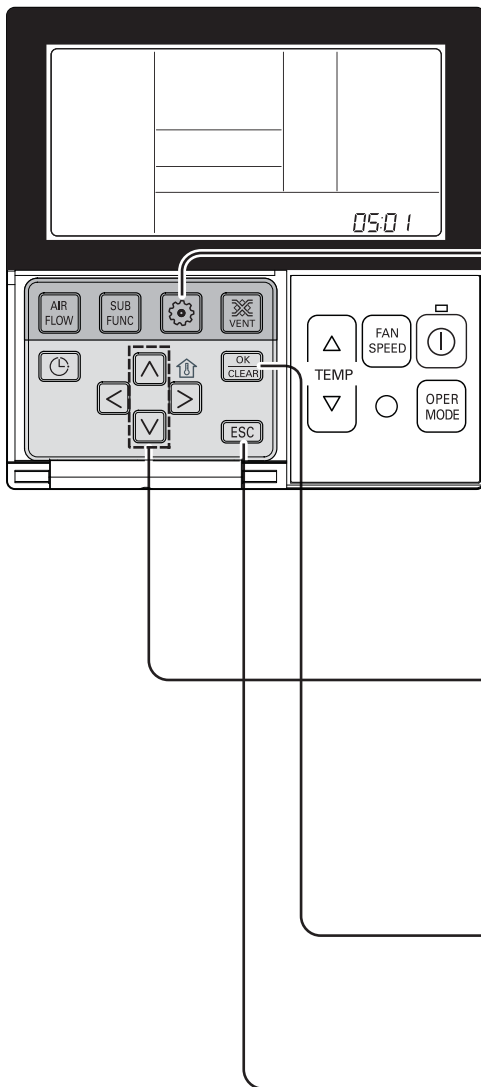
Temperature sensor selection		Function
01	Remote controller	Operation in remote controller temperature sensor
02	Indoor unit	Operation in indoor unit temperature sensor
03	2TH	Cooling Operation of higher temperature by comparing indoor unit's and wired remote controller's temperature. (There are products that operate at a lower temperature.)
		Heating Operation of lower temperature by comparing indoor unit's and wired remote controller's temperature.

* The function of 2TH has different operation characteristics according to the product.

4. Control system

Installer Setting -Ceiling Height Selection

This function is to adjust FAN Airflow rate according to ceiling height (For ceiling type product)



- 1** If pressing button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.
- 2** If moving to ceiling height selection menu by pressing button, it indicates as picture below.
- 3** Select ceiling height value by pressing button. (01:Low, 02:Standard, 03:High,

Function Code Thermistor setting
- 4** Press button to save.
- 5** Pressing button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

<Ceiling Height Selection Table>

Ceiling Height Level		Description
01	Low	Decrease the indoor airflow rate 1 step from standard level
02	Standard	Set the indoor airflow rate as standard level
03	High	Increase indoor airflow rate 1 step from standard level
04	Very high	Increase indoor airflow rate 2 steps from standard level

- Ceiling height setting is available only for some products.
- Ceiling height of 'Very high' function may not exist depending on the indoor unit.
- Refer to the product manual for more details.

4. Control system

Installer Setting -Static Pressure Setting

This function is applied to only duct type. Setting this in other cases will cause malfunction.

- 1** Press button for 4 seconds to enter the installer setting mode until timer segment displays “01:01”.
- 2** If pressing button repeatedly, it moves to static pressure selection menu as picture below.
- 3** Select static pressure by pressing button.
(01:V-H, 02:F-H, 03:V-L, 04:F-L)
- 4** Press button to save.
- 5** Pressing button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

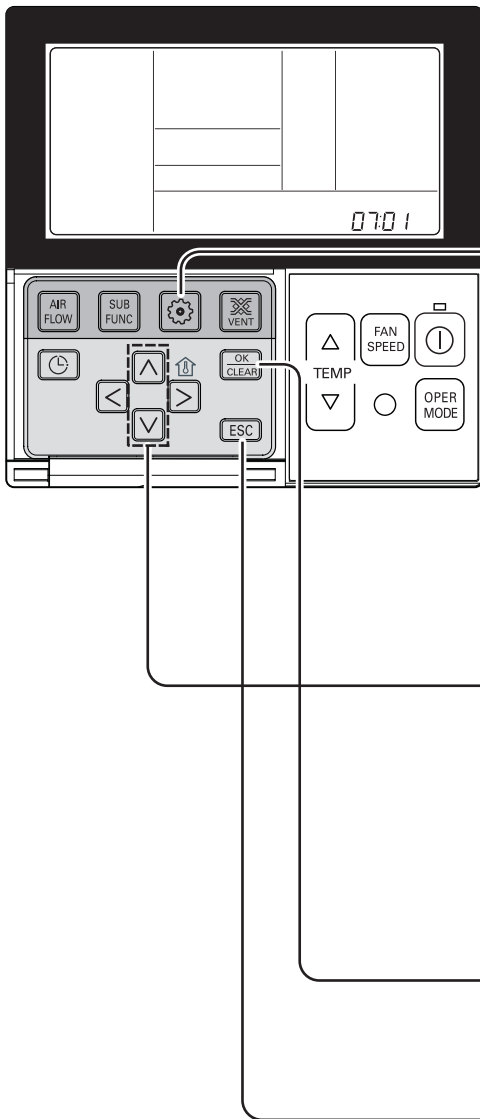
<Static Pressure Setting Table>


Pressure selection		Function	
		Zone state	ESP standard value
01	V-H	Variable	High
02	F-H	Fixed	High
03	V-L	Variable	Low
04	F-L	Fixed	Low

4. Control system


Installer Setting-Group Setting

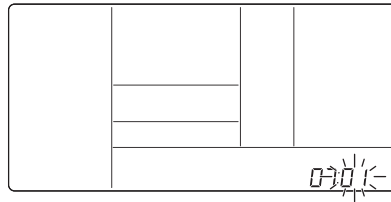
It is a function for settings in group control, or 2-remote controller control.





1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

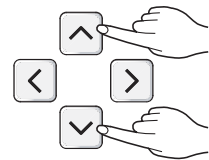


2 If pressing  button repeatedly, it moves to master/slave selection menu as picture below.



3 Select Master/ Slave by pressing   button.
(00: Slave, 01: Master)


07:01
↓ ↓
Function Code Master/Slave value



4 Press  button to save.

07:01



5 Pressing  button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

Remote controller	Function
Master	Indoor unit operates based on master remote controller at group control. (Master is set when delivering from the warehouse.)
Slave	Setup all remote controllers except one master remote controller to slave at group control

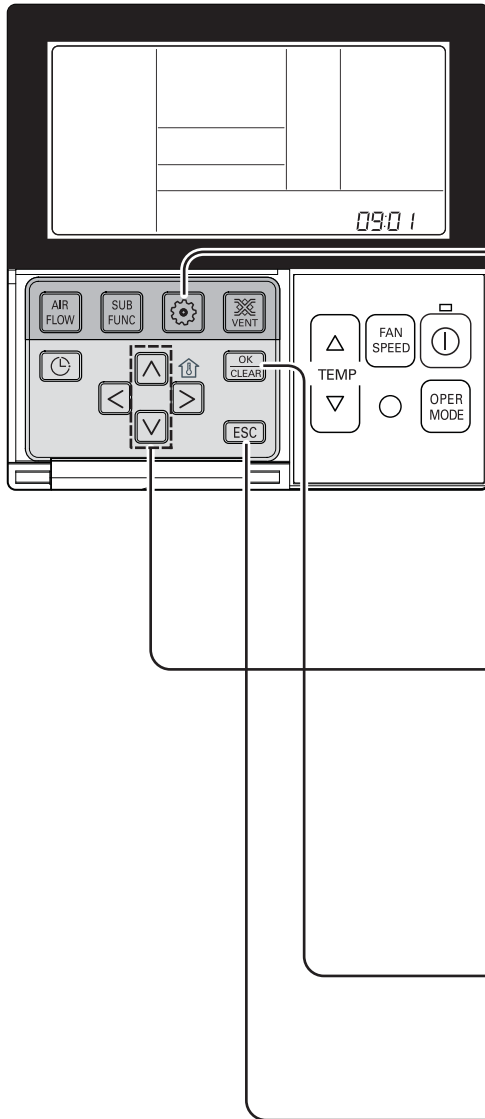
* Refer to the 'group control' part for details


• When controlling in groups, basic operation settings, airflow strength weak/medium/strong, lock setting of the remote controller, time settings, and other functions may be restricted.

4. Control system


Installer Setting-Dry Contact Mode Setting

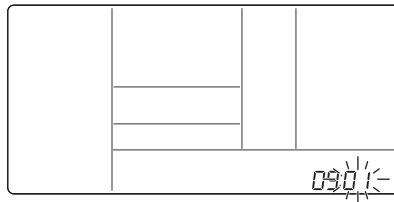
Dry contact function is the function that is possible to use only when dry contact equipment is separately purchased/setup.





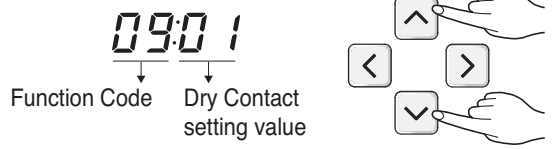
1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.





2 If pressing  button repeatedly, it moves to remote controller dry contact mode setup menu as picture below.




3 Select Dry contact setting by pressing button.  
(00 : Automatic, 01 : manual)



4 Press  button to save. 



5 Pressing  button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

► What is Dry Contact?

Like hotel card key and body perception sensor, it is the signal of the point of contact when using air-conditioner by interlocking.

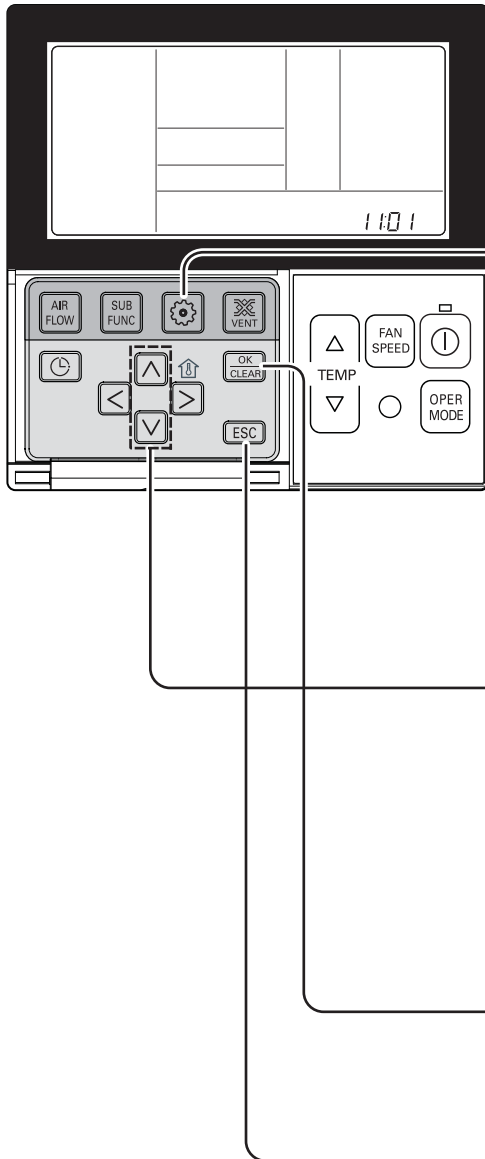
• Please refer to dry contact manual for more details.


4. Control system

Installer Setting-Zone State Setting


It is the function to setup indoor unit's wind flow to variable or fixed.

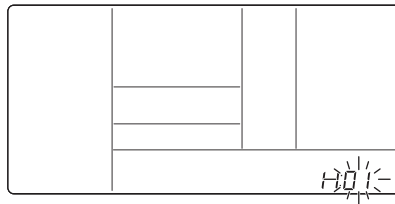
- Variable : Comp ON, setup airflow. Comp OFF, weak wind
- Fixed : Comp ON, setup airflow. Comp OFF, setup airflow





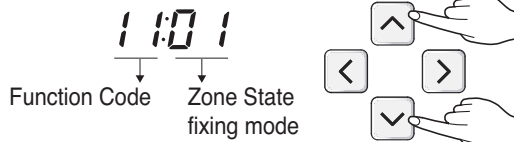
1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.



2 If moving to ceiling height selection menu by pressing  button, it indicates as picture below.




3 Select Zone State rate fixing mode by pressing   button.
(01: Variable, 02: Fixed)



4 Press  button to save.

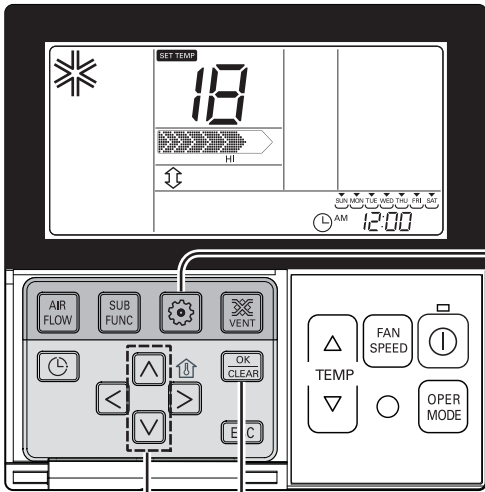



5 Pressing  button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

4. Control system

Installer Setting-Celsius / Fahrenheit Switching

This function is used for switching the display between Celsius and Fahrenheit.
(Optimized only for U.S.A)



1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode.
Please press more than 3 seconds for sure.





2 Repeat pressing  button to select Function code 12.

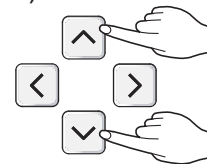
12:00

Function Code conversion mode value

Ex) Fahrenheit Setting

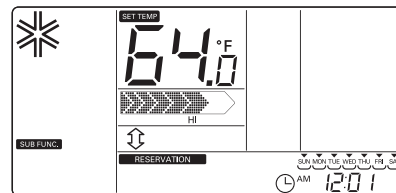
3 Select Temperature unit mode by pressing   button.
(00: Celsius, 01: Fahrenheit)


12:01




4 Press  button to save or release.

12:01



5 Press  button to exit or system will automatically exit after 25 seconds without any input.

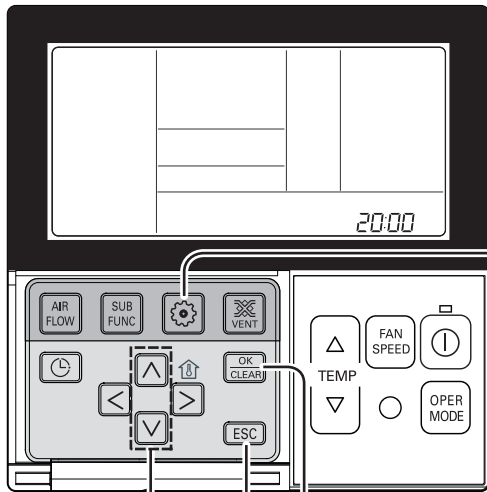



* Whenever press   button in Fahrenheit mode, the temperature will increase/drop 2 degrees.


4. Control system


Installer Setting -Optional Function Setting

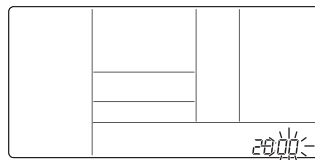
Setting feature for indoor unit when air cleaning / heater / humidifier / Up/down grill / Ventilation KIT is newly installed, or installed unit is removed.





1 If pressing  button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

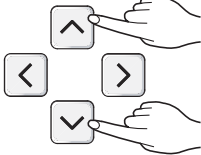


2 If pressing  button repeatedly, it moves to the selected option function code as picture below.




Function	Code
Plasma purification	20
Electric heater	21
Dehumidifier	22
Elevation grill	23
Ventilation kit	24


3 Select existing condition of each mode by pressing   button.
(00: not installed, 01 : installed)




20:01

Function Code Existing condition

4 Press  button to save.



5 Pressing  button will exit settings mode.
* After setup, it automatically gets out of setup mode if there is no button input for 25 seconds.
* When exiting without pressing set button, the manipulated value is not reflected.

5. Combination


5.1 Outdoor units selection

In general, outdoor unit may be selected as follows, though the location of the unit, and usage of the room, etc. should be considered.

The combination of indoor and outdoor unit was to be decided that the sum of indoor unit capacity index should be smaller than the max. combination capacity of outdoor unit. Up to 2 ~ 4 indoor units can be connected to one outdoor unit. It is recommended to choose a large capacity outdoor unit if the installation space is large enough.

5.2 Combination of indoor and outdoor unit

Outdoor Units

LG's  system consist of one outdoor unit which can match with Four different indoor units as individual system.

Category	Outdoor unit		Indoor unit		
	1Ø	3Ø	Type		
			Ceiling Cassette	Ceiling Concealed duct	Ceiling suspended
High Efficiency Model Line up	AUW126DH1 [UU12WH UE1]	-	ATNH12GPLE1 [UT12H NP1]	-	UVNH12GJLA1 [UV12H NJ1]
	AUW186DH1 [UU18WH UE1]	-	ATNH18GPLE1 [UT18H NP1]	ABNH18GGLA1 [UB18H NG1]	UVNH18GJLA1 [UV18H NJ1]
	AUW216DH1 [UU21WH U41]	-	ATNH21GNLE1 [UT21H NN1]	ABNH21GGLA1 [UB21H NG1]	UVNH21GKLA1 [UV21H NK1]
	AUW246DH1 [UU24WH U41]	-	ATNH24GNLE1 [UT24H NN1]	ABNH24GGLA1 [UB24H NG1]	UVNH24GKLA1 [UV24H NK1]
	AUW366DH1 [UU36WH U31]	AUW368DH1 [UU37WH U31]	ATNH36GMLE1 [UT36H NM1]	ABNH36GRLA1 [UB36H NR1]	UVNH36GLLA1 [UV36H NL1]
	AUW426DH1 [UU42WH U31]	AUW428DH1 [UU43WH U31]	ATNH42GMLE1 [UT42H NM1]	ABNH42GRLA1 [UB42H NR1]	UVNH42GLLA1 [UV42H NL1]
	AUW486DH1 [UU48WH U31]	AUW488DH1 [UU49WH U31]	ATNH48GMLE1 [UT48H NM1]	ABNH48GRLA1 [UB48H NR1]	UVNH48GLLA1 [UV48H NL1]

Part 2 Product data

- **Indoor units**
- **Outdoor unit**

HInverter SINGLE A™

■ Indoor units

1. Ceiling cassette 4-way
2. Ceiling concealed duct
3. Ceiling suspended

1. Ceiling cassette 4-way

1.1 List of functions

Category	Functions	ATNH12GPLE1 [UT12H NP1], ATNH18GPLE1 [UT18H NP1] ATNH21GNLE1 [UT21H NN1], ATNH24GNLE1 [UT24H NN1] ATNH36GMLE1 [UT36H NM1], TNH42GMLE1 [UT42H NM1] ATNH48GMLE1 [UT48H NM1]
Air flow	Air supply outlet	4
	Airflow direction control (left & right)	X
	Airflow direction control (up & down)	Auto
	Auto swing (left & right)	X
	Auto swing (up & down)	O
	Airflow steps (fan/cool/heat)	4 / 5 / 4
	Chaos wind(auto wind)	O
	Jet cool/heat	O / X
Air purifying	Swirl wind	O
	Triple filter (Deodorizing)	X
	Plasma air purifier	PTPKM0
	Allergy Safe filter	X
Installation	Long-life prefilter (washable / anti-fungus)	O
	Drain pump	O
	E.S.P. control*	O
	Electric heater	X
	High ceiling operation*	O
Reliability	Auto Elevation Grille*	O
	Hot start	O
	Self diagnosis	O
Convenience	Soft dry operation	O
	Auto changeover	O
	Auto cleaning	X
	Auto operation(artificial intelligence)	X
	Auto Restart	O
	Child lock*	O
	Forced operation	O
	Group control*	O
	Sleep mode	O
	Timer(on/off)	O
	Timer(weekly)*	O
Individual control	Two thermistor control*	O
	Standard Wired remote controller	O
	Deluxe wired remote controller	PQRCUDS0 / PQRCUDS0B / PQRCUDS0S
	Simple wired remote controller	PQRCVCL0Q / PQRCVCL0QW
	Simple Wired remote controller(for hotel use)	PQRCHCA0Q / PQRCHCA0QW
Network	Wireless remote controller	PQWRHDF0
	General central controller (Non LGAP)	X
	Network Solution(LGAP)	O
	Dry contact	PQDSA(1)/PQDSB(1) / PQDSBC
Special function kit	PI 485(for Indoor Unit)	X
	Zone controller	X
	CTI(Communication transfer interface)	X
Others	Electronic thermostat	X
	Remote temperature sensor	X
	Group control wrie	PZCWRCG3
	Telecom shelter controller	X

Note:

1. * : These functions need to connect the wired remote controller.

2. Dry contact, Zone controller, Wireless remote controller, Auto changeover functions are not available when connected with synchro combination.

O: Applied, X: Not applied

Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

1. Ceiling cassette 4-way

1.2 Specifications

Model Name			ATNH12GPLE1 [UT12H NP1]	ATNH18GPLE1 [UT18H NP1]	ATNH21GNLE1 [UT21H NN1]
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Power Input			W	30	80
Running Current			A	0.60	0.60
Casing Color			-	White	White
Dimensions	Body	W x H x D	mm	840 x 204 x 840	840 x 204 x 840
		W x H x D	inch	33-1/16 x 8-1/32 x 33-1/16	33-1/16 x 8-1/32 x 33-1/16
Net Weight			kg (lbs)	21.0 (46.3)	23.5 (51.8)
Heat Exchanger			(Row x Column x Fins per inch) x No.	(2 x 8 x 19) x 1	(2 x 10 x 19) x 1
Fan	Type		-	Turbo Fan	Turbo Fan
	Air Flow Rate	H / M / L	m ³ /min	13.0 / 12.0 / 10.0	17.0 / 15.0 / 13.0
		H / M / L	ft ³ /min	459 / 424 / 353	600 / 530 / 459
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	60 x 1	124 x 1
Dehumidification Rate			l / h (pts/h)	1.3 (2.8)	2.1 (4.5)
Sound Pressure Level			H / M / L	35 / 33 / 31	40 / 38 / 36
Sound Power Level			Max.	44	54
Piping Connections	Liquid		mm(inch)	Ø 6.35 (1/4)	Ø 9.52 (3/8)
	Gas		mm(inch)	Ø 9.52 (3/8)	Ø 12.7 (1/2)
	Drain (O.D. / I.D.)		mm(inch)	Ø 32.0 / 25.0	Ø 32.0 / 25.0
Safety Devices			-	Fuse	Fuse
			-	Thermal Protector for Fan Motor	
Power and Communication Cable (included Earth)			No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)
Decoration Panel	Model Name		-	PT-UMC(1)	PT-UMC(1)
	Casing Color		-	White	White
	Dimensions	W x H x D	mm	950 x 25 x 950	950 x 25 x 950
		W x H x D	inch	37-13/32 x 31/32 x 37-13/32	37-13/32 x 31/32 x 37-13/32
Net weight			kg (lbs)	5.0 (11.0)	

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.
4. Without optional accessories(i.e. Plasma kit, elevation grille etc.) and with maximum airvolume (Cassette type is using PQRCVSL0)

1. Ceiling cassette 4-way

Model Name			ATNH24GNLE1 [UT24H NN1]	ATNH36GMLE1 [UT36H NM1]
Power Supply			V, Ø, Hz	220-240, 1, 50
Power Input			W	120
Running Current			A	0.60
Casing Color			-	White
Dimensions	Body	W x H x D	mm	840 x 246 x 840
		W x H x D	inch	33-1/16 x 9-11/16 x 33-1/16
Net Weight			kg (lbs)	23.5 (51.8)
Heat Exchanger	#1_(Row x Column x Fins per inch) x No.		-	(2 x 10 x 19) x 1
	#2_(Row x Column x Fins per inch) x No.		-	(1 x 10 x 19) x 1
Fan	Type		-	Turbo Fan
	Air Flow Rate	H / M / L	m ³ /min	21.0 / 18.0 / 16.0
		H / M / L	ft ³ /min	742 / 636 / 565
Fan Motor	Type		-	BLDC
	Output		W x No.	124 x 1
Dehumidification Rate			l / h (pts/h)	2.7 (5.7)
Sound Pressure Level		H / M / L	dB(A)	40 / 38 / 36
Sound Power Level		Max.	dB(A)	59
Piping Connections	Liquid		mm(inch)	Ø 9.52 (3/8)
	Gas		mm(inch)	Ø 15.88 (5/8)
	Drain (O.D. / I.D.)		mm(inch)	Ø 32.0 / 25.0
Safety Devices			-	Fuse
			-	Thermal Protector for Fan Motor
Power and Communication Cable (included Earth)			No. x mm ² (AWG)	4C x 0.75 (18)
Decoration Panel	Model Name		-	PT-UMC(1)
	Casing Color		-	White
	Dimensions	W x H x D	mm	950 x 25 x 950
		W x H x D	inch	37-13/32 x 31/32 x 37-13/32
	Net weight		kg (lbs)	5.0 (11.0)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.
4. Without optional accessories(i.e. Plasma kit, elevation grille etc.) and with maximum airvolume (Cassette type is using PQRCVSL0)

1. Ceiling cassette 4-way

Model Nameg			ATNH42GMLE1 [UT42H NM1]	ATNH48GMLE1 [UT48H NM1]
Power Supply		V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Power Input		W	210	210
Running Current		A	0.72	0.72
Casing Color		-	White	White
Dimensions	Body	W x H x D	mm	840 x 288 x 840
		W x H x D	inch	33-1/16 x 11-11/32 x 33-1/16
Net Weight		kg (lbs)	28.0 (61.7)	28.0 (61.7)
Heat Exchanger	#1_(Row x Column x Fins per inch) x No.		-	(2 x 12 x 19) x 1
	#2_(Row x Column x Fins per inch) x No.		-	(1 x 10 x 19) x 1
Fan	Type		-	Turbo Fan
	Air Flow Rate	H / M / L	m ³ /min	32.0 / 26.7 / 21.5
		H / M / L	ft ³ /min	1,130 / 943 / 759
Fan Motor	Type		-	BLDC
	Output		W x No.	124 x 1
Dehumidification Rate		l / h (pts/h)	3.6 (7.7)	3.6 (7.7)
Sound Pressure Level		H / M / L	dB(A)	47 / 45 / 42
Sound Power Level		Max.	dB(A)	62
Piping	Liquid	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Connections	Gas		mm(inch)	Ø 15.88 (5/8)
	Drain (O.D. / I.D.)		mm(inch)	Ø 32.0 / 25.0
Safety Devices		-	Fuse	Fuse
		-	Thermal Protector for Fan Motor	Thermal Protector for Fan Motor
Power and Communication Cable (included Earth)		No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)
Decoration Panel	Model Name		-	PT-UMC(1)
	Casing Color		-	White
	Dimensions	W x H x D	mm	950 x 25 x 950
		W x H x D	inch	37-13/32 x 31/32 x 37-13/32
Net weight		kg (lbs)	5.0 (11.0)	5.0 (11.0)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.
4. Without optional accessories(i.e. Plasma kit, elevation grille etc.) and with maximum airvolume (Cassette type is using PQRCVSL0)

1. Ceiling cassette 4-way

1.3 Dimensions

<p>Ceiling Cassette 4-way</p> <p>ATNH12GPLE1[UT12H NP1] ATNH18GPLE1[UT18H NP1]</p>																												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Part Name</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Decoration panel</td> <td>PT-UJC</td> </tr> <tr> <td>2</td> <td>air suction grille</td> <td></td> </tr> <tr> <td>3</td> <td>Air discharge grille</td> <td></td> </tr> <tr> <td>4</td> <td>Gas pipe connection</td> <td></td> </tr> <tr> <td>5</td> <td>Liquid pipe connection</td> <td></td> </tr> <tr> <td>6</td> <td>Drain pipe connection</td> <td></td> </tr> <tr> <td>7</td> <td>Power supply connection</td> <td></td> </tr> <tr> <td>8</td> <td>Fresh air connection</td> <td>Ø70</td> </tr> </tbody> </table>	No.	Part Name	Remark	1	Decoration panel	PT-UJC	2	air suction grille		3	Air discharge grille		4	Gas pipe connection		5	Liquid pipe connection		6	Drain pipe connection		7	Power supply connection		8	Fresh air connection	Ø70
No.	Part Name	Remark																										
1	Decoration panel	PT-UJC																										
2	air suction grille																											
3	Air discharge grille																											
4	Gas pipe connection																											
5	Liquid pipe connection																											
6	Drain pipe connection																											
7	Power supply connection																											
8	Fresh air connection	Ø70																										
<p>Note</p> <ol style="list-style-type: none"> Unit should be installed in compliance with the installation manual in the product box. Unit shall be grounded in accordance with the local regulations or applicable national codes. The unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit. 																												
<p>[Unit : mm]</p>																												
<p>76, Seongsan-dong, Changwon City, Gyeongnam, 641-713, Korea www.lge.com/airconditioner</p>																												
<p>LG Electronics</p>																												
<p>CHASSIS CODE: TP</p>																												

1. Ceiling cassette 4-way

Ceiling Cassette 4-way

ATNH21GNLE1[UT21H NN1]
ATNH24GNLE1[UT24H NN1]

No.	Part Name	Remark
1	Decoration panel	PT-UJMC
2	air suction grille	
3	Air discharge grille	
4	Gas pipe connection	
5	Liquid pipe connection	
6	Drain pipe connection	
7	Power supply connection	
8	Fresh air connection	Ø70

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit shall be grounded in accordance with the local regulations or applicable national codes.
- The unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.

[Unit : mm]

76, Seongsan-dong, Changwon City, Gyeongnam,
641-713, Korea
www.lge.com/airconditioner

CHASSIS CODE: TN

1. Ceiling cassette 4-way

<p>Ceiling Cassette 4-way</p> <p>ATNH36GMLE1[UT36H NM1] ATNH42GMLE1[UT42H NM1] ATNH48GMLE1[UT48H NM1]</p>		
No.	Part Name	Remark
1	Decoration panel	PT-U/MC
2	air suction grille	
3	Air discharge grille	
4	Gas pipe connection	
5	Liquid pipe connection	
6	Drain pipe connection	
7	Power supply connection	
8	Fresh air connection	Ø70

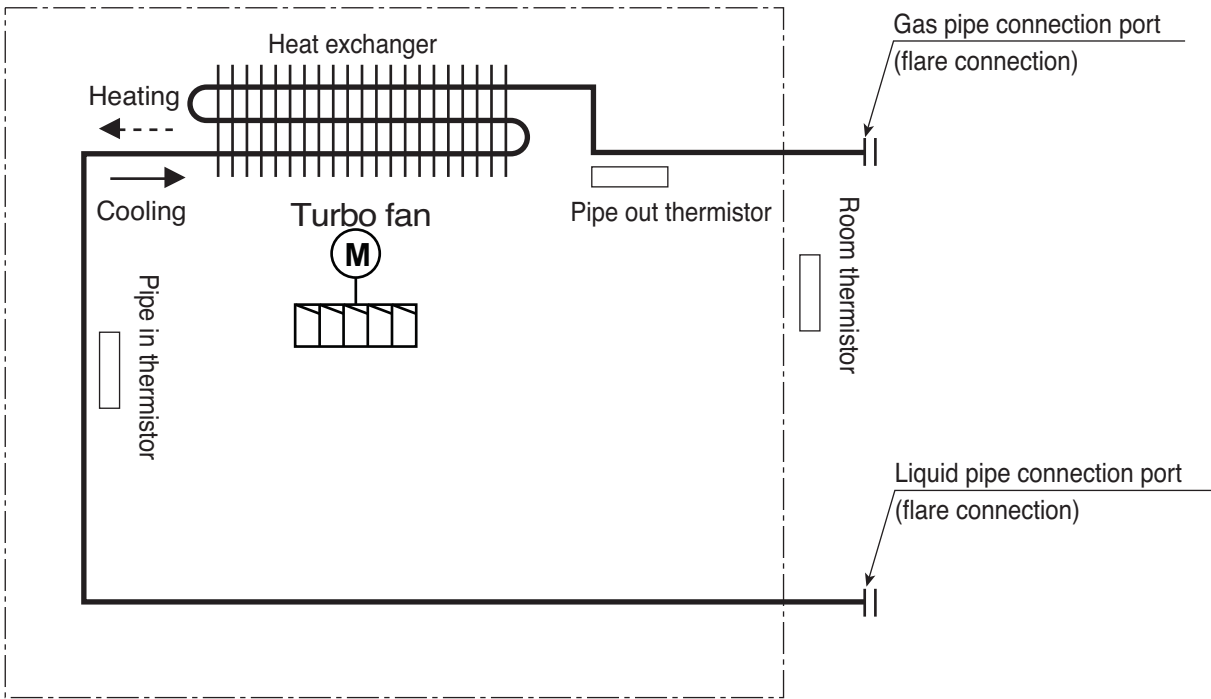
[Unit : mm]

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit shall be grounded in accordance with the local regulations or applicable national codes.
- The Unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.

1. Ceiling cassette 4-way

1.4 Piping diagrams



Part 2 Product data_Indoor units

■ Refrigerant pipe connection port diameters

[Unit: mm(inch)]

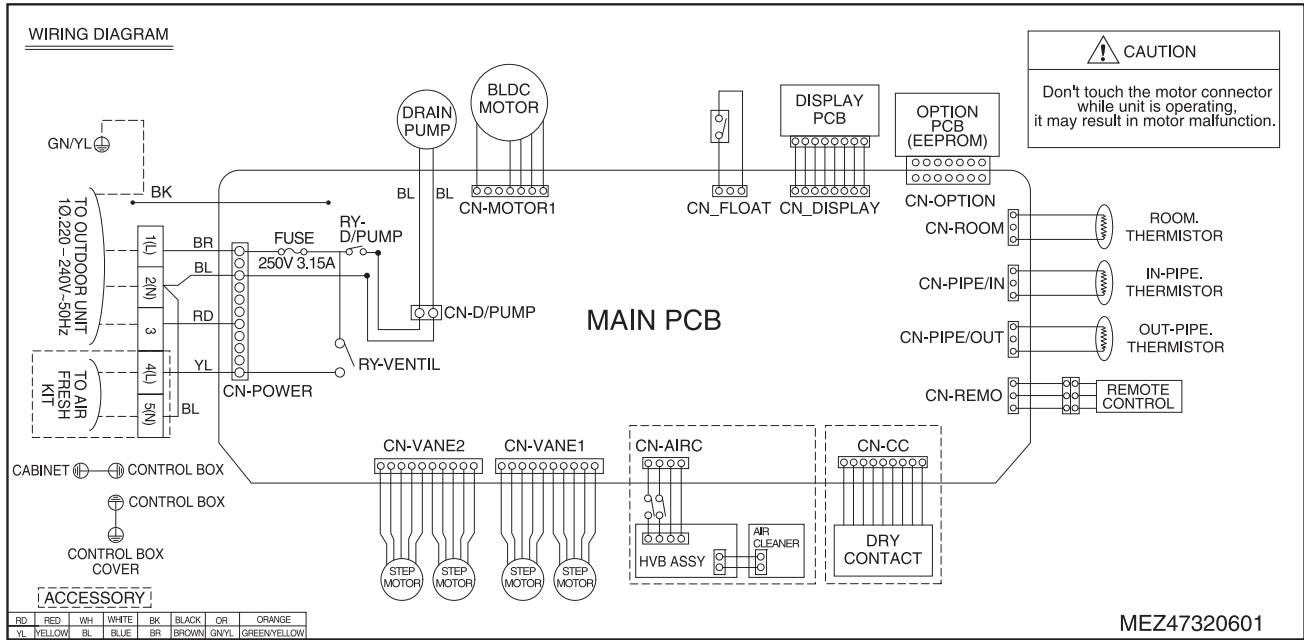
Model	Gas	Liquid
ATNH12GPLE1	Ø9.52(3/8)	Ø6.35(1/4)
ATNH18GPLE1	Ø12.7(1/2)	Ø6.35(1/4)
ATNH21GNLE1	Ø15.88(5/8)	Ø9.52(3/8)
ATNH24GNLE1		
ATNH36GMLE1		
ATNH42GMLE1		
ATNH48GMLE1		

1. Ceiling cassette 4-way

1.5 Wiring diagrams

1) Wiring diagrams

Model : ATNH12GPLE1, ATNH18GPLE1 , ATNH21GNLE1, ATNH24GNLE1, ATNH36GMLE1, ATNH42GMLE1, ATNH48GMLE1



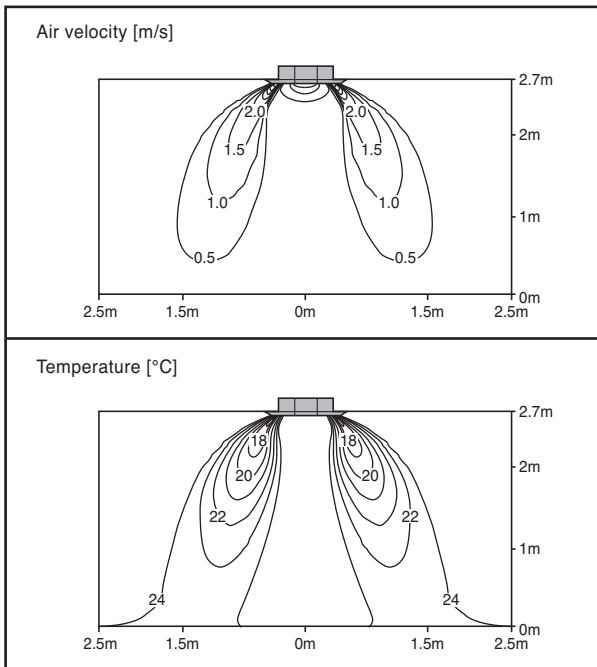
1. Ceiling cassette 4-way

1.6 Air flow and temperature distributions (reference data)

Model : 3.5kW

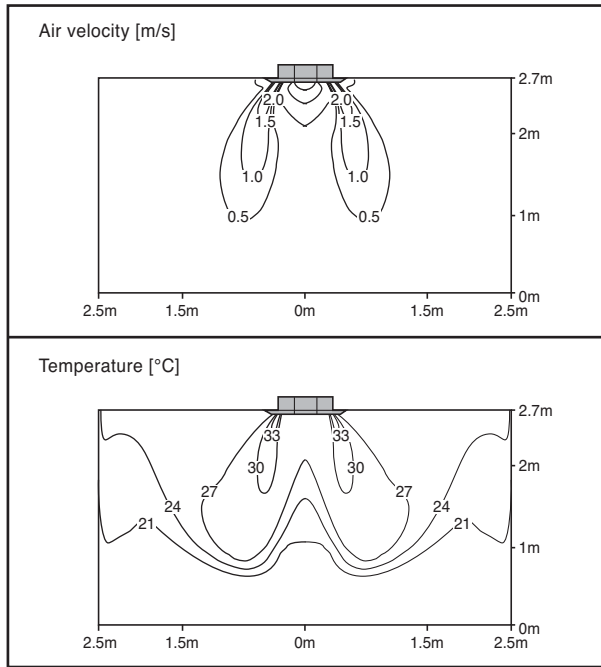
Cooling

Discharge angle: 40°



Heating

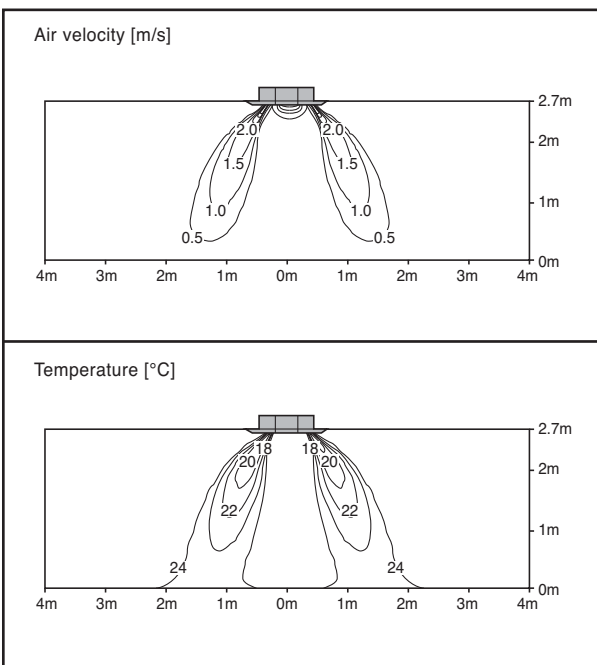
Discharge angle: 50°



Model : 5.0kW

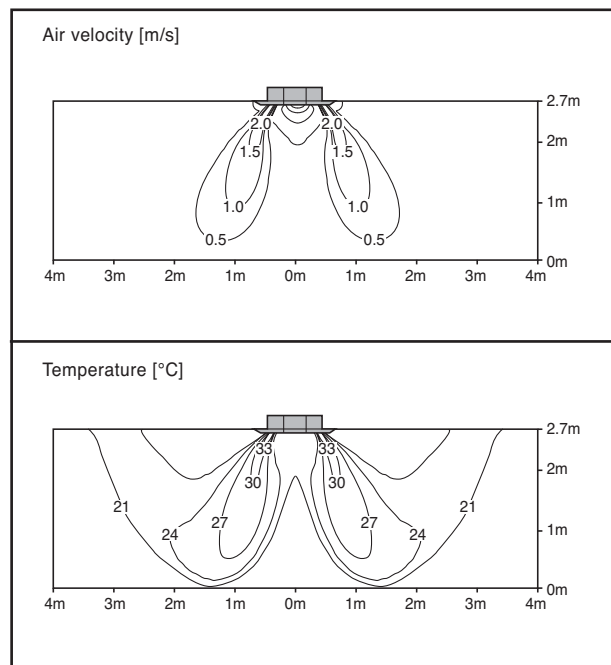
Cooling

Discharge angle: 40°



Heating

Discharge angle: 50°

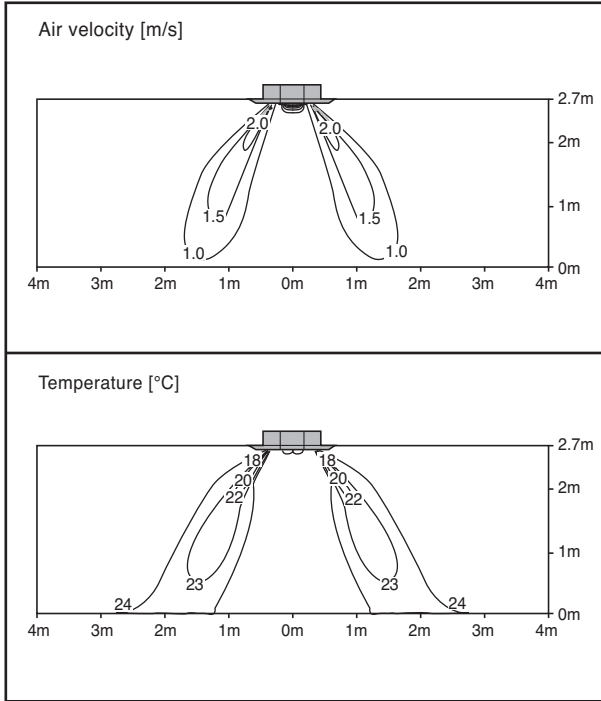


1. Ceiling cassette 4-way

Model : 6.0kW/7.1kW

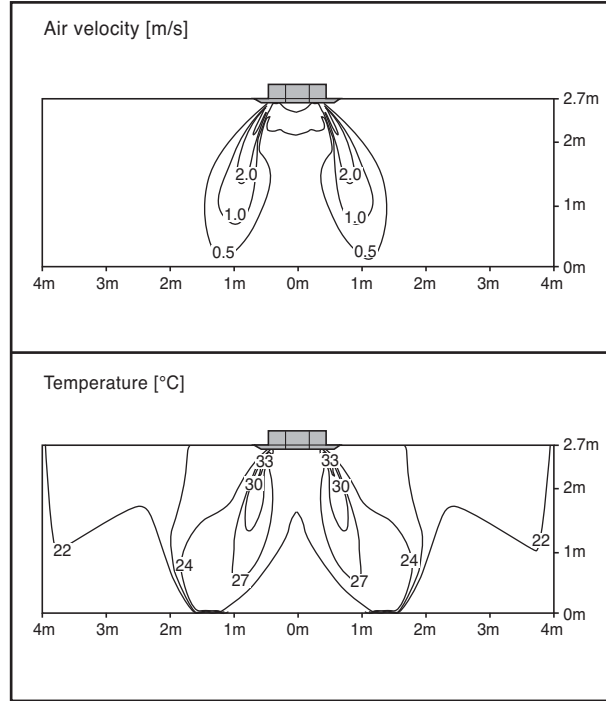
Cooling

Discharge angle: 40°



Heating

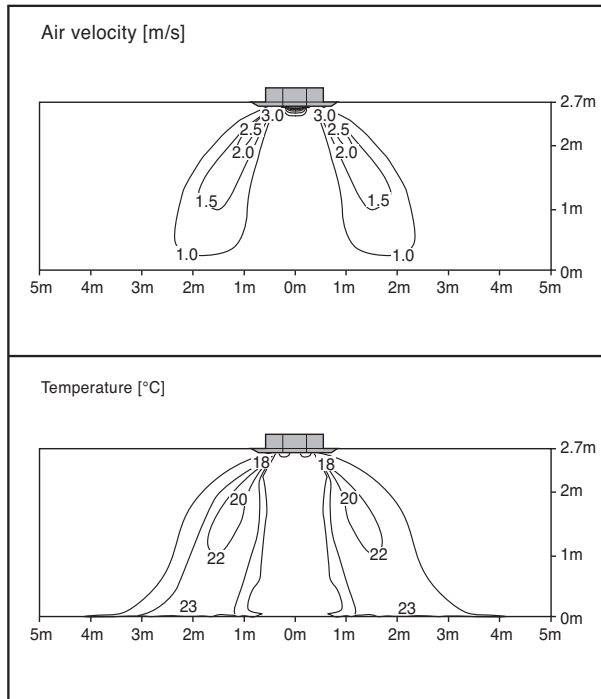
Discharge angle: 50°



Model : 10.0kW

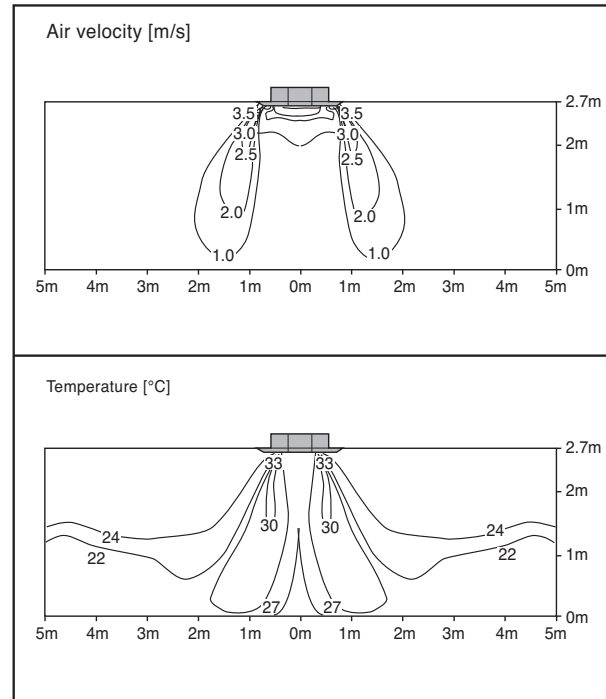
Cooling

Discharge angle: 40°



Heating

Discharge angle: 50°

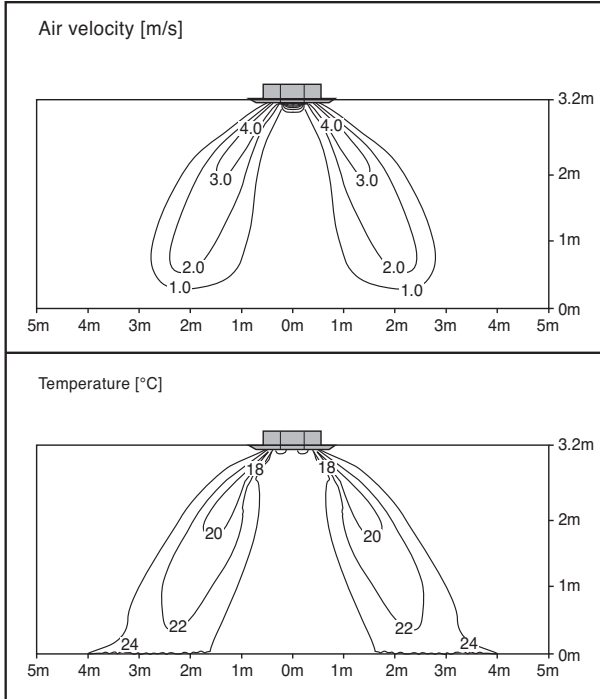


1. Ceiling cassette 4-way

Model : 12.5kW

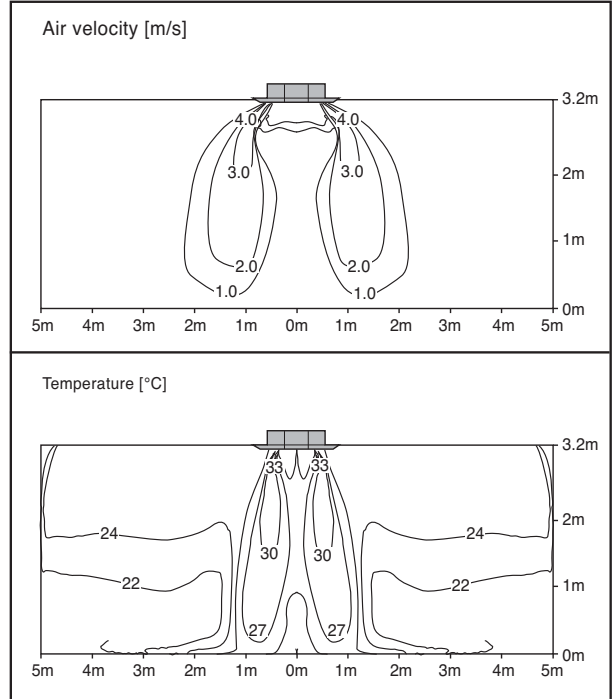
Cooling

Discharge angle: 40°



Heating

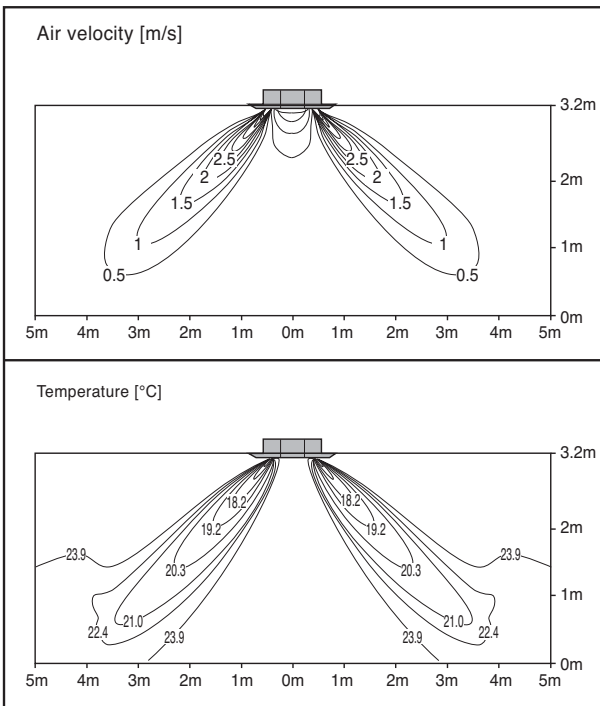
Discharge angle: 50°



Model : 13.4kW

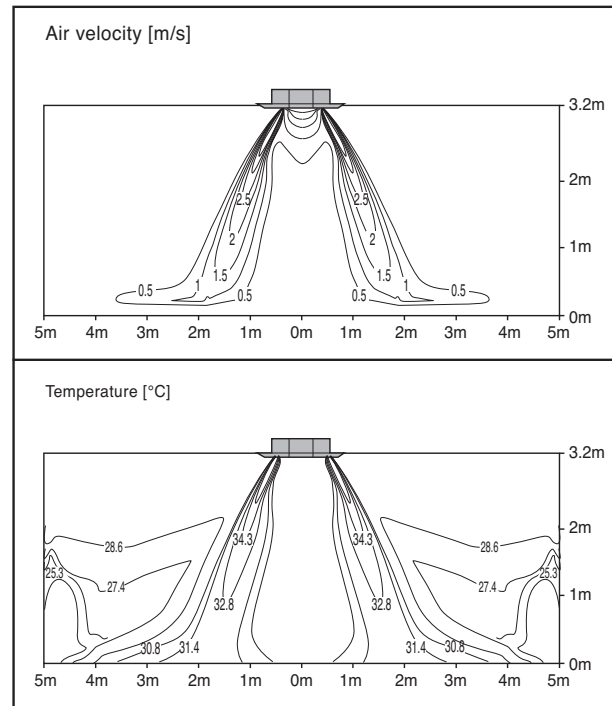
Cooling

Discharge angle: 40°



Heating

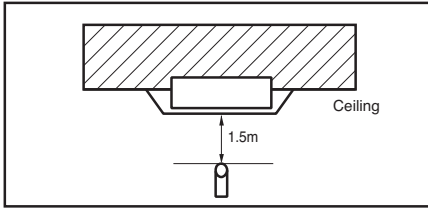
Discharge angle: 50°



1. Ceiling cassette 4-way

1.7 Sound levels

Overall

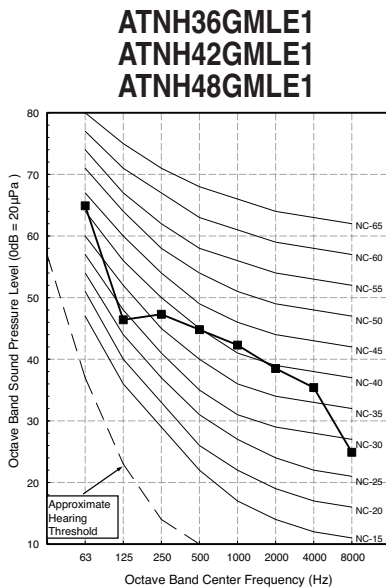
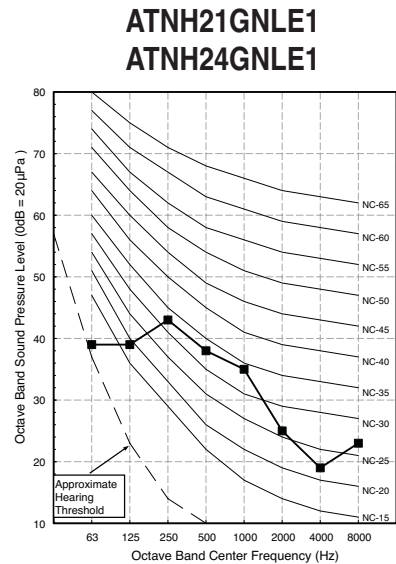
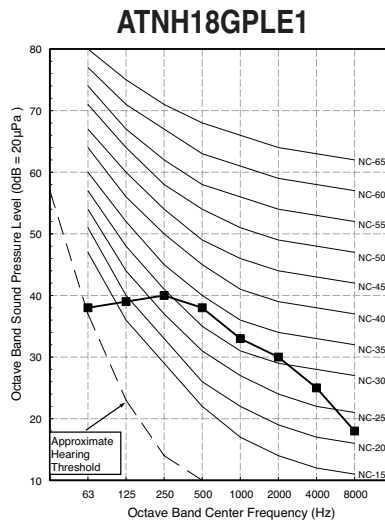
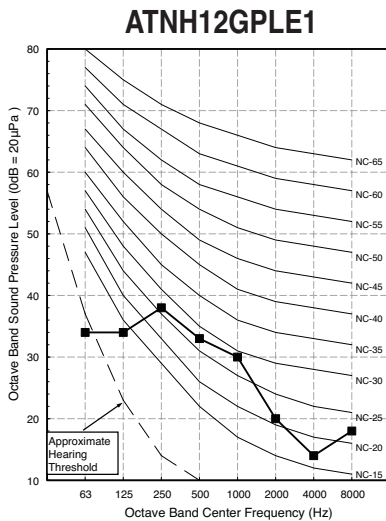


Notes:

- Sound measured at 1.5m below the center of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure 0dB = 20μPa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

Model	Sound Level(H/M/L) [dB(A)+3]		
	H	M	L
ATNH12GPLE1[UT12H NP1]	35	33	31
ATNH18GPLE1[UT18H NP1]	39	37	34
ATNH21GNLE1[UT21H NN1]	40	38	36
ATNH24GNLE1[UT24H NN1]	40	38	36
ATNH36GMLE1[UT36H NM1]	47	45	42
ATNH42GMLE1[UT42H NM1]	47	45	42
ATNH48GMLE1[UT48H NM1]	47	45	42

Sound pressure level



2. Ceiling concealed duct

2.1 List of functions

Category	Functions	ABNH18GGLA1 [UB18H NG1], ABNH21GGLA1 [UB21H NG1] ABNH24GGLA1 [UB24H NG1], ABNH36GRLA1 [UB36H NR1] ABNH42GRLA1 [UB42H NR1], ABNH48GRLA1 [UB48H NR1]
Air flow	Air supply outlet	1
	Airflow direction control (left & right)	X
	Airflow direction control (up & down)	X
	Auto swing (left & right)	X
	Auto swing (up & down)	X
	Airflow steps (fan/cool/heat)	3 / 3 / 3
	Chaos wind(auto wind)	X
	Jet cool/heat	X / X
	Swirl wind	X
Air purifying	Triple filter (Deodorizing)	X
	Plasma air purifier	X
	Allergy Safe filter	X
	Long-life prefilter (washable / anti-fungus)	O
Installation	Drain pump	O
	E.S.P. control*	O
	Electric heater	X
	High ceiling operation*	X
Reliability	Auto Elevation Grille*	X
	Hot start	O
	Self diagnosis	O
	Soft dry operation	O
Convenience	Auto changeover	O
	Auto cleaning	X
	Auto operation(artificial intelligence)	X
	Auto Restart	O
	Child lock*	O
	Forced operation	X
	Group control*	O
	Sleep mode	X
	Timer(on/off)	O
	Timer(weekly)*	X
Individual control	Two thermistor control*	O
	Standard Wired remote controller	O
	Deluxe wired remote controller	X
	Simple wired remote controller	X
	Simple Wired remote controller(for hotel use)	X
Network function	Wireless remote controller	PQWRHDF0
	General central controller (Non LGAP)	X
	Network Solution(LGAP)	O
	Dry contact	PQDSA(1)/PQDSB(1) / PQDSBC
Special function kit	PI 485(for Indoor Unit)	X
	Zone controller	ABZCA
	CTI(Communication transfer interface)	X
Others	Electronic thermostat	X
	Remote temperature sensor	PQRSTA0
	Group control wrie	PZCWRCG3
	Telecom shelter controller	X

Note:

- * : These functions need to connect the wired remote controller.
- Dry contact, Zone controller, Wireless remote controller, Auto changeover functions are not available when connected with synchro combination.
O: Applied, X: Not applied
Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

2. Ceiling concealed duct

2.2 Specifications

Model Name				ABNH18GGLA1 [UB18H NG1]	ABNH21GGLA1 [UB21H NG1]	ABNH24GGLA1 [UB24H NG1]	
Power Supply		V, Ø, Hz		220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	
Power Input		W		100	120	120	
Running Current		A		0.50	0.90	0.90	
Dimensions	Body	W x H x D	mm	1,182 x 298 x 450	1,182 x 298 x 450	1,182 x 298 x 450	
		W x H x D	inch	46-17/32 x 11-23/32 x 17-23/32	46-17/32 x 11-23/32 x 17-23/32	46-17/32 x 11-23/32 x 17-23/32	
Net Weight	Body	kg (lbs)		34.0 (75.0)	35.0 (77.2)	35.0 (77.2)	
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(3 x 12 x 21) x 1	(3 x 10 x 19) x 1	(3 x 10 x 19) x 1	
Fan	Type		-	Sirocco	Sirocco	Sirocco	
	Air Flow Rate	High-static Mode (Factory Set)	H / M / L	m ³ /min	17.0 / 15.0 / 13.0	25.0 / 20.0 / 14.0	25.0 / 20.0 / 14.0
			H / M / L	ft ³ /min	600 / 530 / 459	883 / 706 / 494	883 / 706 / 494
		External Static Pressure	Pa (mmAq)	78 (8)	78 (8)	78 (8)	
Fan Motor	Type		-	BLDC	BLDC	BLDC	
	Output		W x No.	154 x 1	154 x 1	154 x 1	
Dehumidification Rate			l / h (pts/h)	1.2 (2.6)	0.4 (0.8)	1.4 (2.9)	
Sound Pressure Level	H / M / L		dB(A)	30 / 28 / 27	37 / 33 / 29	37 / 33 / 29	
Sound Power Level	Max.		dB(A)	56	60	60	
Piping Connections	Liquid		mm(inch)	Ø 6.35 (1/4)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	
	Gas		mm(inch)	Ø 12.7 (1/2)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	
	Drain (O.D. / I.D.)		mm(inch)	Ø 32.0 / 25.0	Ø 32.0 / 25.0	Ø 32.0 / 25.0	
Safety Devices			-	Fuse	Fuse	Fuse	
			-	Thermal Protector for Fan Motor			
Power and Communication Cable (included Earth)			No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)	4C x 0.75 (18)	

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

2. Ceiling concealed duct

Model Name				ABNH36GRLA1 [UB36H NR1]	ABNH42GRLA1 [UB42H NR1]	ABNH48GRLA1 [UB48H NR1]	
Power Supply		V, Ø, Hz		220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	
Power Input		W		170	210	210	
Running Current		A		1.20	1.20	1.20	
Dimensions	Body	W x H x D	mm	1,230 x 380 x 590	1,230 x 380 x 590	1,230 x 380 x 590	
		W x H x D	inch	48-7/16 x 14-31/32 x 23-7/32	48-7/16 x 14-31/32 x 23-7/32	48-7/16 x 14-31/32 x 23-7/32	
Net Weight	Body		kg (lbs)	53.0 (116.8)	53.0 (116.8)	53.0 (116.8)	
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(3 x 13 x 19) x 1	(3 x 13 x 19) x 1	(3 x 13 x 19) x 1	
Fan	Type		-	Sirocco	Sirocco	Sirocco	
	Air Flow Rate	High-static Mode (Factory Set)	H / M / L	m ³ /min	34.0 / 27.0 / 20.0	37.0 / 31.0 / 24.0	40.0 / 34.0 / 28.0
			H / M / L	ft ³ /min	1,201 / 954 / 706	1,307 / 1,095 / 848	1,413 / 1,201 / 989
		External Static Pressure	Pa (mmAq)	78 (8)	78 (8)	78 (8)	
Fan Motor	Type		-	BLDC	BLDC	BLDC	
	Output		W x No.	350 x 1	350 x 1	350 x 1	
Dehumidification Rate		? /h (pts/h)		4.0 (8.5)	5.0 (10.6)	5.0 (10.6)	
Sound Pressure Level		H / M / L		38 / 37 / 36	39 / 38 / 37	39 / 38 / 37	
Sound Power Level		Max.		61	64	64	
Piping Connections	Liquid		mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	
	Gas		mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	
	Drain (O.D. / I.D.)		mm(inch)	Ø 32.0 / 25.0	Ø 32.0 / 25.0	Ø 32.0 / 25.0	
Safety Devices				-	Fuse	Fuse	
				-	Thermal Protector for Fan Motor		
Power and Communication Cable (included Earth)		No. x mm ² (AWG)		4C x 0.75 (18)	4C x 0.75 (18)	4C x 0.75 (18)	

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

2. Ceiling concealed duct

2.3 Dimensions

CEILING CONCEALED DUCT

ABNH18GGLA1[UB18H NG1]
ABNH21GGLA1[UB21H NG1]
ABNH24GGLA1[UB24H NG1]

(unit : mm)

Number	Name	Description
1	Liquid pipe connection	
2	Gas pipe connection	
3	Drain pipe connection	
4	Power supply connection	
5	Air discharge	
6	Air suction	

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit shall be grounded in accordance with the local regulations or applicable national codes.
- The Unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.
- ↗ The direction of airflow.

[Unit : mm]

76, Seongsan-dong, Changwon City, Gyeongnam,
641-713, Korea
www.lge.com/airconditioner

CHASSIS CODE: BG

2. Ceiling concealed duct

CEILING CONCEALED DUCT	
ABNH36GRLA1[U]B36H NR1] ABNH42GRLA1[U]B42H NR1] ABNH48GRLA1[U]B48H NR1]	(unit : mm)

Number	Name	Description
1	Liquid pipe connection	
2	Gas pipe connection	
3	Drain pipe connection	
4	Power supply connection	
5	Air discharge	
6	Air suction	

Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit shall be grounded in accordance with the local regulations or applicable national codes.
3. The Unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.
4. The direction of airflow.

[Unit : mm]

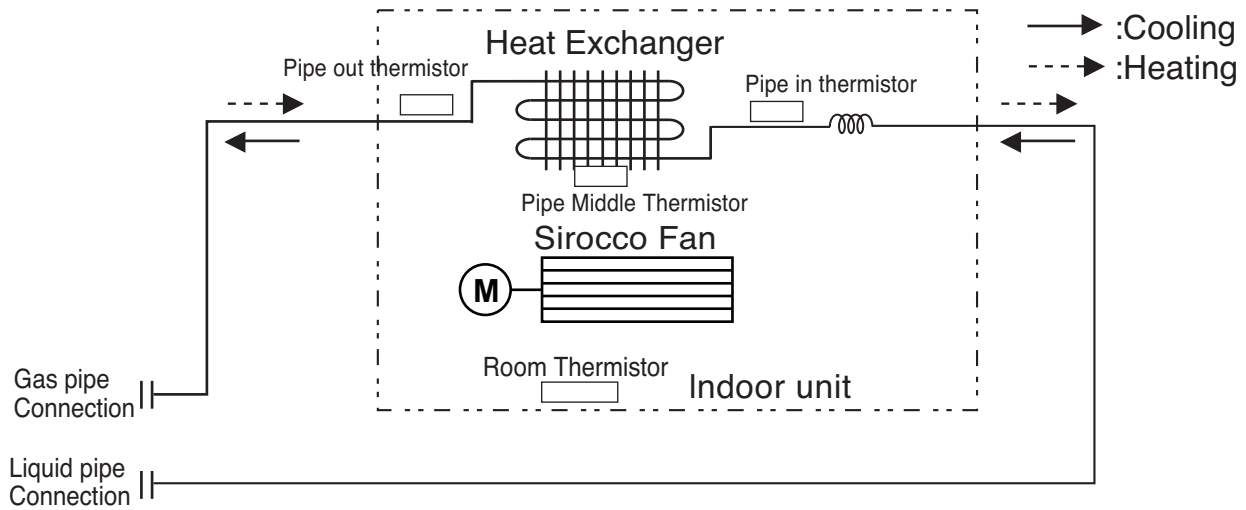
LG Electronics

CHASSIS CODE: BR

76, Seongsan-dong, Changwon City, Gyeongnam,
641-713, Korea
www.lge.com/airconditioner

2. Ceiling concealed duct

2.4 Piping diagrams



■ Refrigerant pipe connection port diameters

[Unit: mm(inch)]

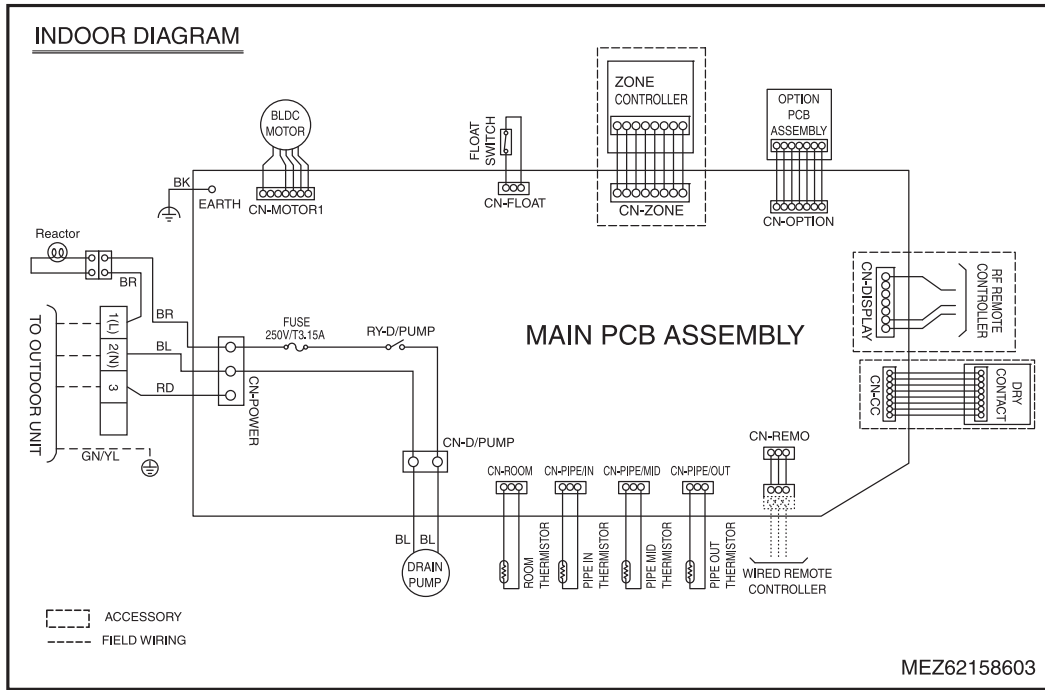
Model	Gas	Liquid
ABNH18GGLA1	Ø12.7(1/2)	Ø6.35(1/4)
ABNH21GGLA1	Ø15.88(5/8)	Ø9.52(3/8)
ABNH24GGLA1		
ABNH36GRLA1		
ABNH42GRLA1		
ABNH48GRLA1		

2. Ceiling concealed duct

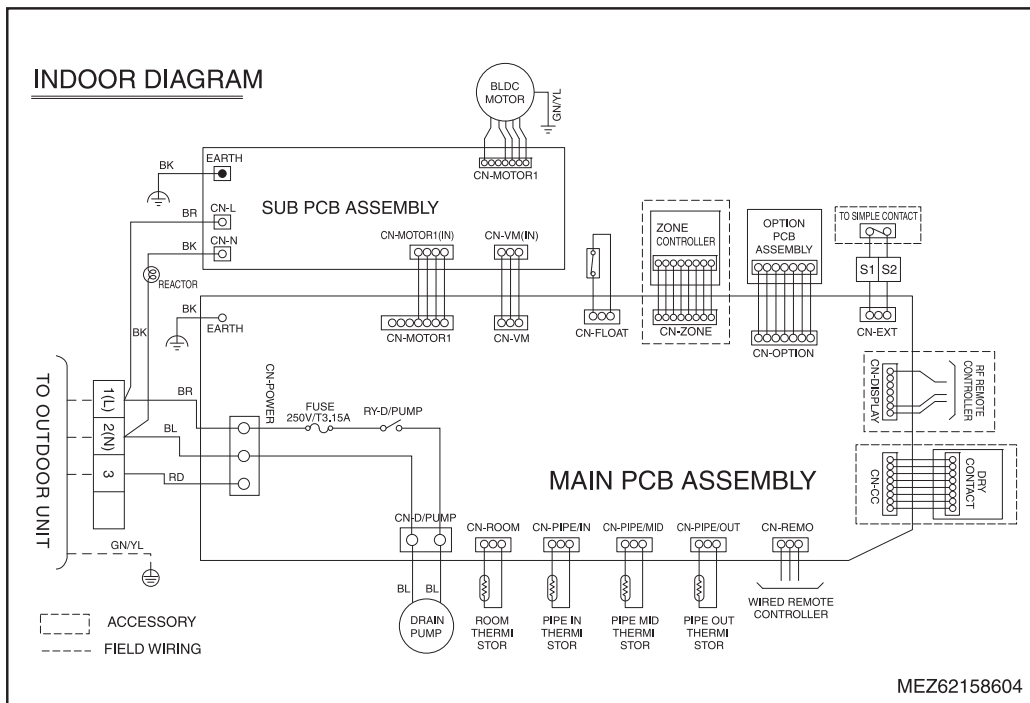
2.5 Wiring diagrams

1) Wiring diagrams

MODEL : ABNH18GGLA1, ABNH21GGLA1, ABNH24GGLA1



MODEL : ABNH36GRLA1, ABNH42GRLA1, ABNH48GRLA1



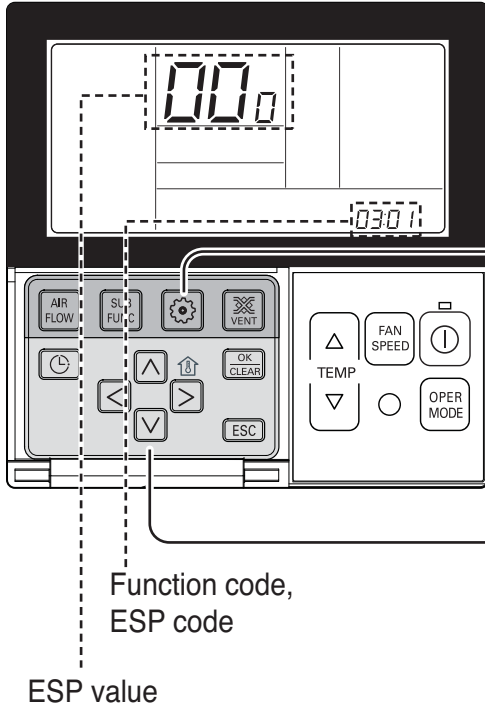
2. Ceiling concealed duct

2.6 How to Set E.S.P?

What is an E.S.P function?

This is the function that decides the strength of the wind for each wind level and because this function is to make the installation easier.

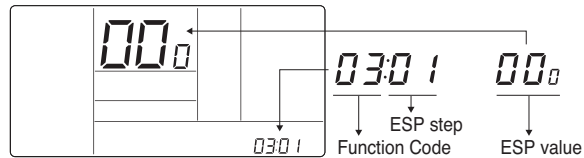
- If you set ESP incorrectly, the air conditioner may malfunction.
- This setting must be carried out by a certificated-technician.



1 If pressing button long for 3 seconds, it enters into remote controller setter setup mode.
- If pressing once shortly, it enters into user setup mode. Please press more than 3 seconds for sure.

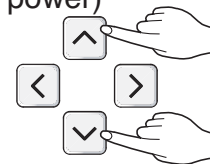


2 If entering into ESP setup mode by using button, it indicates as the picture below.



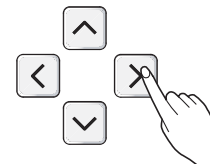
3 Select ESP fan step by pressing button. (01: very low, 02: low, 03: medium, 04: high, 05: power)

0301

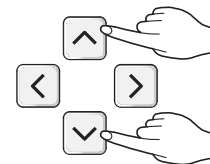


4 Move to ESP value setting by pressing button.
(It is 000 when delivering from the warehouse.)

0301 00



5 Press button to setup ESP value.
(It is possible to setup ESP value from 1 to 255, and 1 is the smallest and 255 is the biggest.)



- When setting ESP value on the product without very weak wind or power wind function, it may not work.

2. Ceiling concealed duct

2.7 External Static Pressure (E.S.P) & Air Flow

ABNH18GGLA1

(Unit: CMM)

Setting Value	Static Pressure[mmAq(Pa)]				
	2.5(25)	4(39)	6(59)	8(78)	10(98)
80	14.8	-	-	-	-
90	19.5	15.2	-	-	-
100	24.1	20.1	14.5	-	-
110	28.8	25.0	20.1	14.4	-
120	33.4	29.9	25.8	20.2	14.9
130	-	34.8	31.5	25.9	20.7

ABNH21GGLA1, ABNH24GGLA1

(Unit: CMM)

Setting Value	Static Pressure[mmAq(Pa)]				
	2.5(25)	4(39)	6(59)	8(78)	10(98)
80	14.8	-	-	-	-
90	19.0	14.4	-	-	-
100	23.3	19.7	13.9	-	-
110	26.9	24.3	19.8	14.1	-
120	31.2	28.2	25.2	20.1	14.4
130	34.9	32.4	29.5	25.4	20.5

ABNH36GRLA1

(Unit: CMM)

Setting Value	Static Pressure(mmAq)				
	4(39)	6(59)	8(78)	10(98)	12(118)
75	30.31	23.17	-	-	-
80	35.66	27.36	17.12	-	-
85	39.55	34.32	25.49	15.52	-
90	43.46	39.45	31.11	22.86	10.98
95	47.75	43.62	37.17	30.02	18.52
100	-	-	42.94	36.65	29.61
105	-	-	-	42.95	36.17

ABNH42GRLA1 , ABNH48GRLA1

(Unit: CMM)

Setting Value	Static Pressure[mmAq(Pa)]				
	5(49)	6(59)	8(78)	10(98)	12(118)
75	27.35	23.17	-	-	-
80	32.03	27.36	17.12	-	-
85	36.82	34.32	25.49	15.52	-
90	41.62	39.45	31.11	22.36	10.98
95	45.74	43.62	37.17	30.02	18.52
100	-	-	42.94	36.65	29.61
105	-	-	-	42.95	36.17
110	-	-	-	-	42.41

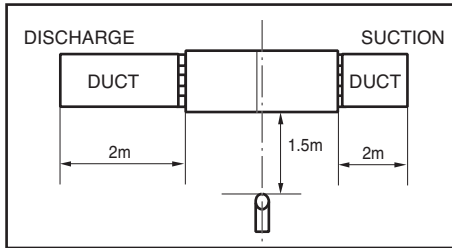
2. Ceiling concealed duct

Model	Mode		Set value	Standard ESP(mmAq(Pa))	CMM	Lower Limit of External Static Pressure(mmAq(Pa))	Upper Limit of External Static Pressure(mmAq(Pa))
ABNH18GGLA1	High (factory set)	HI	114	8(78)	17	2.5(25)	10(98)
		Mid	111		15		
		Low	108		13		
	Standard	HI	105	6(59)	17		
		Mid	101		15		
		Low	98		13		
ABNH21GGLA1	High (factory set)	HI	127	8(78)	25	2.5(25)	10(98)
		Mid	121		20		
		Low	109		14		
	Standard	HI	119	6(59)	25		
		Mid	113		20		
		Low	101		14		
ABNH24GGLA1	High (factory set)	HI	127	8(78)	25	2.5(25)	10(98)
		Mid	121		20		
		Low	109		14		
	Standard	HI	119	6(59)	25		
		Mid	113		20		
		Low	101		14		
ABNH36GRLA1	High (factory set)	HI	94	8(78)	38	4(39)	12(118)
		Mid	88		28		
		Low	81		19		
	Standard	HI	86	6(59)	34		
		Mid	79		27		
		Low	73		20		
ABNH42GRLA1	High (factory set)	HI	97	8(78)	40	5(49)	12(118)
		Mid	91		32		
		Low	85		25		
	Standard	HI	88	6(59)	37		
		Mid	83		31		
		Low	76		24		
ABNH48GRLA1	High (factory set)	HI	100	8(78)	43	5(49)	12(118)
		Mid	94		38		
		Low	88		28		
	Standard	HI	91	6(59)	40		
		Mid	86		34		
		Low	80		28		

2. Ceiling concealed duct

2.8 Sound levels

overall



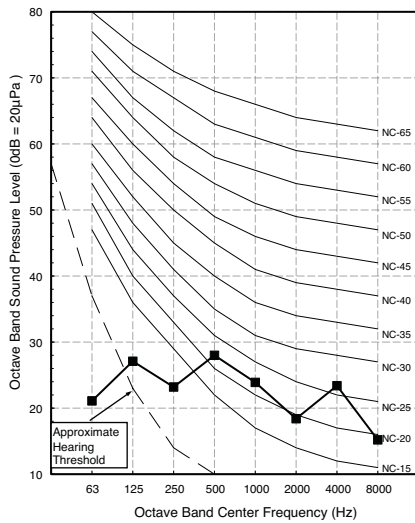
Notes:

- Data is valid at nominal operation condition
- Reference acoustic pressure 0dB = 20Pa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

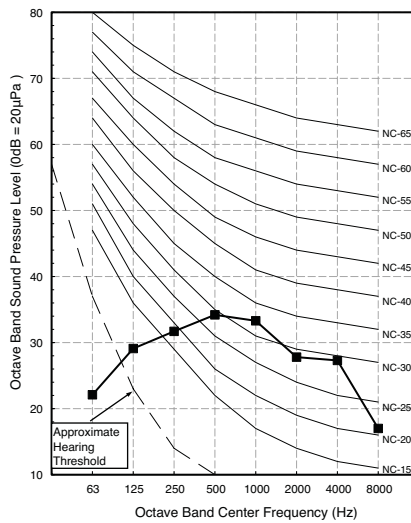
Model	Sound Level(H/M/L) [dB(A)+3]		
	H	M	L
ABNH18GGLA1[UB18H NG1]	30	28	27
ABNH21GGLA1[UB21H NG1]	37	33	29
ABNH24GGLA1[UB24H NG1]	37	33	29
ABNH36GRLA1[UB36H NR1]	38	37	36
ABNH42GRLA1[UB42H NR1]	39	38	37
ABNH48GRLA1[UB48H NR1]	39	38	37

Sound pressure level

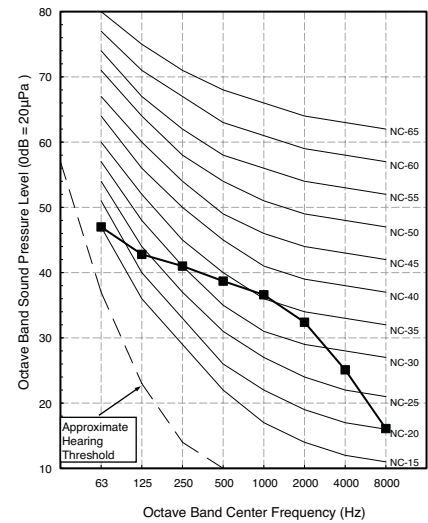
ABNH18GGLA1



**ABNH21GGLA1
ABNH24GGLA1**



**ABNH36GRLA1
ABNH42GRLA1
ABNH48GRLA1**



3. Ceiling Suspended

3.1 List of functions

Category	Functions	UVNH12GJLA1 [UV12H NJ1], UVNH18GJLA1 [UV18H NJ1] UVNH21GKLA1 [UV21H NK1], UVNH24GKLA1 [UV24H NK1] UVNH36GLLA1 [UV36H NL1], UVNH42GLLA1 [UV42H NL1] UVNH48GLLA1 [UV48H NL1]
Air flow	Air supply outlet	1
	Airflow direction control (left & right)	Manual
	Airflow direction control (up & down)	Auto
	Auto swing (left & right)	X
	Auto swing (up & down)	O
	Airflow steps (fan/cool/heat)	4 / 5 / 4
	Chaos wind(auto wind)	X
	Jet cool/heat	O / X
	Swirl wind	X
Air purifying	Triple filter (Deodorizing)	X
	Plasma air purifier	X
	Allergy Safe filter	X
	Long-life prefilter (washable / anti-fungus)	O
Installation	Drain pump	X
	E.S.P. control*	X
	Electric heater	X
	High ceiling operation*	X
Reliability	Auto Elevation Grille*	X
	Hot start	O
	Self diagnosis	O
Convenience	Soft dry operation	O
	Auto changeover	O
	Auto cleaning	X
	Auto operation(artificial intelligence)	X
	Auto Restart	O
	Child lock*	O
	Forced operation	O
	Group control*	O
	Sleep mode	X
	Timer(on/off)	O
Timer(weekly)*	O	
Individual control	Two thermistor control*	O
	Standard Wired remote controller	PQRCVSL0/PQRCVSL0QW
	Deluxe wired remote controller	X
	Simple wired remote controller	X
	Simple Wired remote controller(for hotel use)	X
Network function	Wireless remote controller	O
	General central controller (Non LGAP)	X
	Network Solution(LGAP)	O
	Dry contact	PQDSA(1)/PQDSB(1) / PQDSBC
Special function kit	PI 485(for Indoor Unit)	X
	Zone controller	X
	CTI(Communication transfer interface)	X
Others	Electronic thermostat	X
	Remote temperature sensor	X
	Group control wrie	PZCWRG3
	Telecom shelter controller	X

Note:

1. * : These functions need to connect the wired remote controller.

2. Dry contact, Zone controller, Wireless remote controller, Auto changeover functions are not available when connected with synchro combination.

O: Applied, X: Not applied

Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

3. Ceiling Suspended

3.2 Specifications

Model Name			UVNH12GJLA1 [UV12H NJ1]	UVNH18GJLA1 [UV18H NJ1]	UVNH21GKLA1 [UV21H NK1]	
Power Supply		V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	
Power Input		W	60	70	80	
Running Current		A	0.60	0.60	0.70	
Casing Color		-	White	White	White	
Dimensions	Body	W x H x D	mm	950 x 650 x 220	950 x 650 x 220	1,350 x 650 x 220
		W x H x D	inch	37-13/32 x 25-19/32 x 8-21/32	37-13/32 x 25-19/32 x 8-21/32	53-5/32 x 25-19/32 x 8-21/32
Net Weight		kg (lbs)	24.6 (54.2)	24.6 (54.2)	35 (77.2)	
Heat Exchanger		(Row x Column x Fins per inch) x No.	-	(2 x 14 x 17) x 1	(2 x 14 x 17) x 1	(3 x 14 x 17) x 1
Fan	Type		-	Sirroco	Sirroco	Sirroco
	Air Flow Rate	H / M / L	m ³ /min	12.4 / 11.4 / 10.4	13.9 / 12.9 / 11.9	20.4 / 18.8 / 17.2
		H / M / L	ft ³ /min	438 / 403 / 367	491 / 456 / 420	720 / 664 / 607
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	154 x 1	154 x 1	(154 x 1) + (90 x 1)
Dehumidification Rate		l / h (pts/h)	0.6 (1.2)	1.6 (3.5)	1.9 (4.0)	
Sound Pressure Level		H / M / L	dB(A)	42 / 40 / 39	45 / 43 / 41	44 / 42 / 41
Sound Power Level		Max.	dB(A)	56	60	60
Piping Connections	Liquid		mm(inch)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.52 (3/8)
	Gas		mm(inch)	Ø 9.52 (3/8)	Ø 12.7 (1/2)	Ø 15.88 (5/8)
	Drain (O.D. / I.D.)		mm(inch)	Ø 21.5 / 16.0	Ø 21.5 / 16.0	Ø 21.5 / 16.0
Safety Devices		-	Fuse	Fuse	Fuse	
		-	Thermal Protector for Fan Motor			
Power and Communication Cable(included Earth)		No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)	4C x 0.75 (18)	

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

3. Ceiling Suspended

Model Name			UVNH24GKLA1 [UV24H NK1]	UVNH36GLLA1 [UV36H NL1]
Power Supply		V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Power Input		W	90	130
Running Current		A	0.70	0.90
Casing Color		-	White	White
Dimensions	Body	W x H x D	mm	1,350 x 650 x 220
		W x H x D	inch	53-5/32 x 25-19/32 x 8-21/32
Net Weight		kg (lbs)	35 (77.2)	45 (99.2)
Heat Exchanger		(Row x Column x Fins per inch) x No.	-	(3 x 14 x 17) x 1
Fan	Type		-	Sirroco
	Air Flow Rate	H / M / L	m ³ /min	21.4 / 19.8 / 18.2
		H / M / L	ft ³ /min	756 / 699 / 643
Fan Motor	Type		-	BLDC
	Output		W x No.	(154 x 1) + (90 x 1)
Dehumidification Rate		l / h (pts/h)	1.9 (4.0)	2.9 (6.2)
Sound Pressure Level		H / M / L	dB(A)	45 / 44 / 41
Sound Power Level		Max.	dB(A)	60
Piping Connections	Liquid		mm(inch)	Ø 9.52 (3/8)
	Gas		mm(inch)	Ø 15.88 (5/8)
	Drain (O.D. / I.D.)		mm(inch)	Ø 21.5 / 16.0
Safety Devices		-	Fuse	Fuse
		-	Thermal Protector for Fan Motor	Thermal Protector for Fan Motor
Power and Communication Cable(included Earth)		No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

3. Ceiling Suspended

Model Name			UVNH42GLLA1 [UV42H NL1]	UVNH48GLLA1 [UV48H NL1]
Power Supply		V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Power Input		W	140	150
Running Current		A	0.90	0.90
Casing Color		-	White	White
Dimensions	Body	W x H x D	mm	1,750 x 650 x 220
		W x H x D	inch	68-29/32 x 25-19/32 x 8-21/32
Net Weight		kg (lbs)	45 (99.2)	45 (99.2)
Heat Exchanger		(Row x Column x Fins per inch) x No.	(3 x 14 x 17) x 1	(3 x 14 x 17) x 1
Fan	Type		-	Sirroco
	Air Flow Rate	H / M / L	m ³ /min	30.0 / 28.3 / 26.6
		H / M / L	ft ³ /min	1,060 / 999 / 939
Fan Motor	Type		-	BLDC
	Output		W x No.	154 x 2
Dehumidification Rate		l / h (pts/h)	4.8 (10.1)	5.1 (10.7)
Sound Pressure Level		H / M / L	dB(A)	47 / 46 / 44
Sound Power Level		Max.	dB(A)	63
Piping Connections	Liquid		mm(inch)	Ø 9.52 (3/8)
	Gas		mm(inch)	Ø 15.88 (5/8)
	Drain (O.D. / I.D.)		mm(inch)	Ø 21.5 / 16.0
Safety Devices		-	Fuse	Fuse
		-	Thermal Protector for Fan Motor	Thermal Protector for Fan Motor
Power and Communication Cable(included Earth)		No. x mm ² (AWG)	4C x 0.75 (18)	4C x 0.75 (18)

Note :

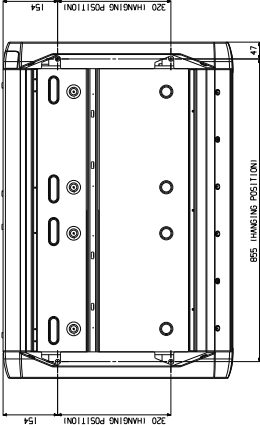

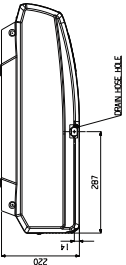
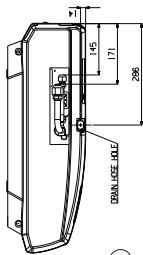
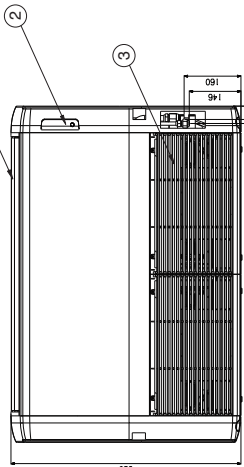
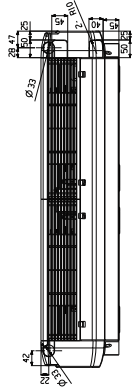
1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

3. Ceiling Suspended

3.3 Dimensions

Ceiling Suspended	
UVNH12GJLA1 [UV12H NJ1] UVNH18GJLA1 [UV18H NJ1]	


No.	Part Name	Remark
1	Front air discharge grille	
2	Display & signal receiver	
3	Air suction grille	

[Unit : mm]

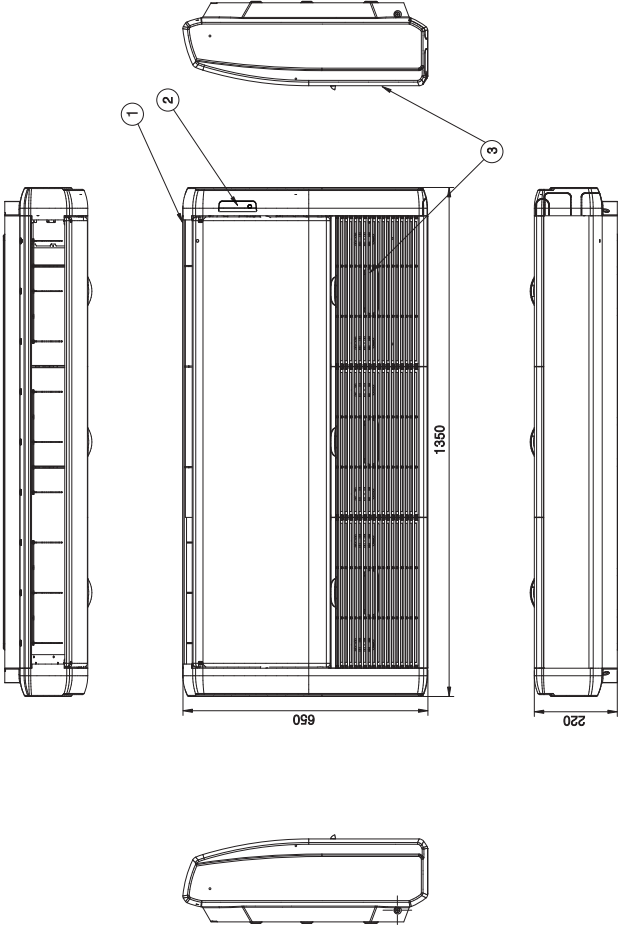
Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit shall be grounded in accordance with the local regulations or applicable national codes.
- The unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.

 LG Electronics	CHASSIS CODE: VJ
76, Seongsan-dong, Changwon City, Gyeongnam, 641-713, Korea www.lge.com/airconditioner	

3. Ceiling Suspended

	Ceiling Suspended	
	UVNH21GKLA1 [UV21H NK1] UVNH24GKLA1 [UV24H NK1]	



No.	Part Name	Remark
1	Front air discharge grille	
2	Display & signal receiver	
3	Air suction grille	

■ Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit shall be grounded in accordance with the local regulations or applicable national codes.
3. The Unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.

[Unit : mm]



LG Electronics

76, Seongsan-dong, Changwon City, Gyeongnam,
641-713, Korea
www.lge.com/airconditioner

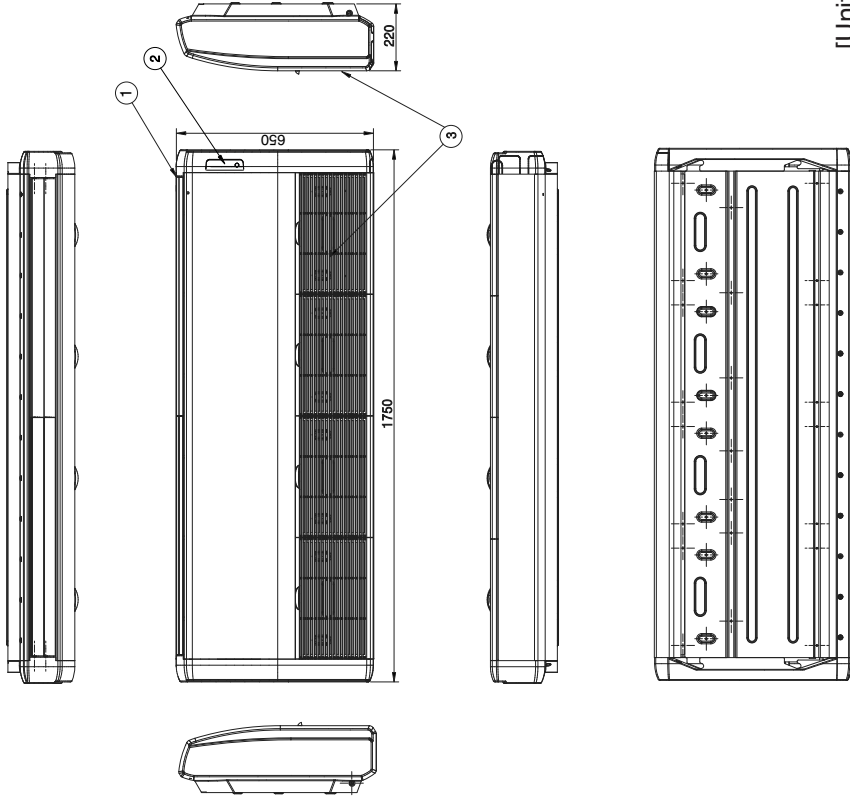
CHASSIS CODE: VK

3. Ceiling Suspended

Ceiling Suspended

UVNH36GLLA1 [UV36H NL1]
 UVNH42GLLA1 [UV42H NL1]
 UVNH48GLLA1 [UV48H NL1]

No.	Part Name	Remark
1	Front air discharge grille	
2	Display & signal receiver	
3	Air suction grille	



[Unit : mm]

■ Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit shall be grounded in accordance with the local regulations or applicable national codes.
3. The Unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit.



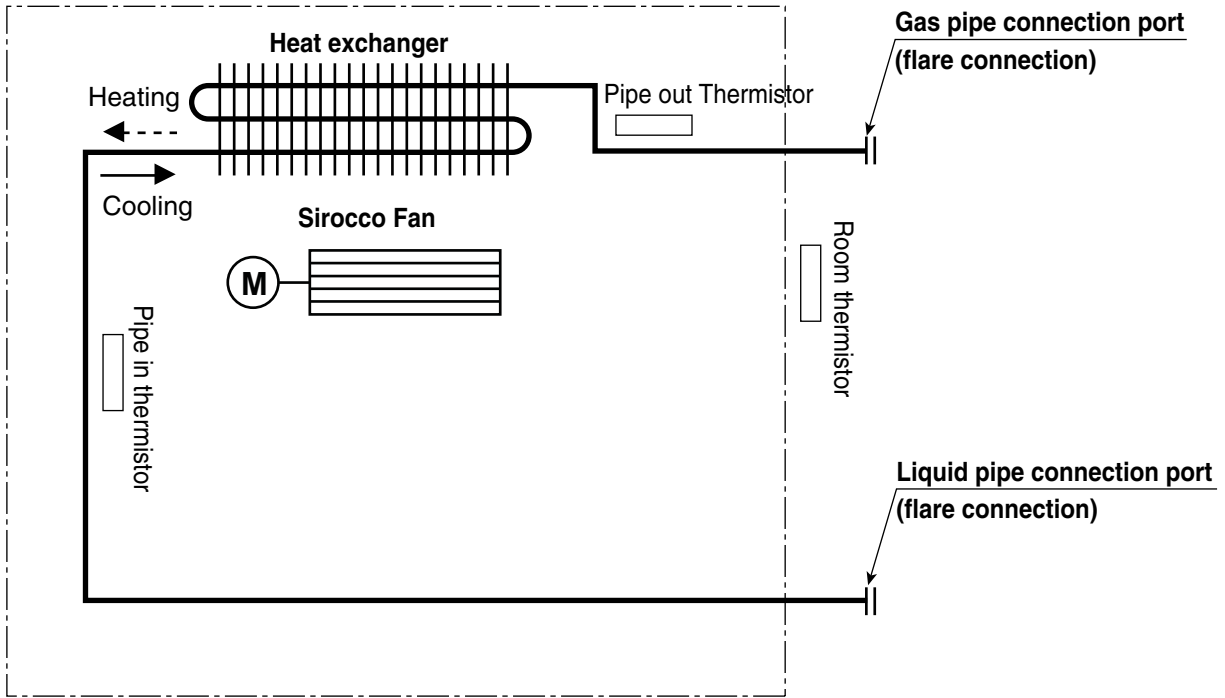
LG Electronics

76, Seongsan-dong, Changwon City, Gyeongnam,
 641-713, Korea
www.lge.com/airconditioner

CHASSIS CODE: VL

3. Ceiling Suspended

3.4 Piping diagrams



Part 2 Product data_Indoor units

■ Refrigerant pipe connection port diameters

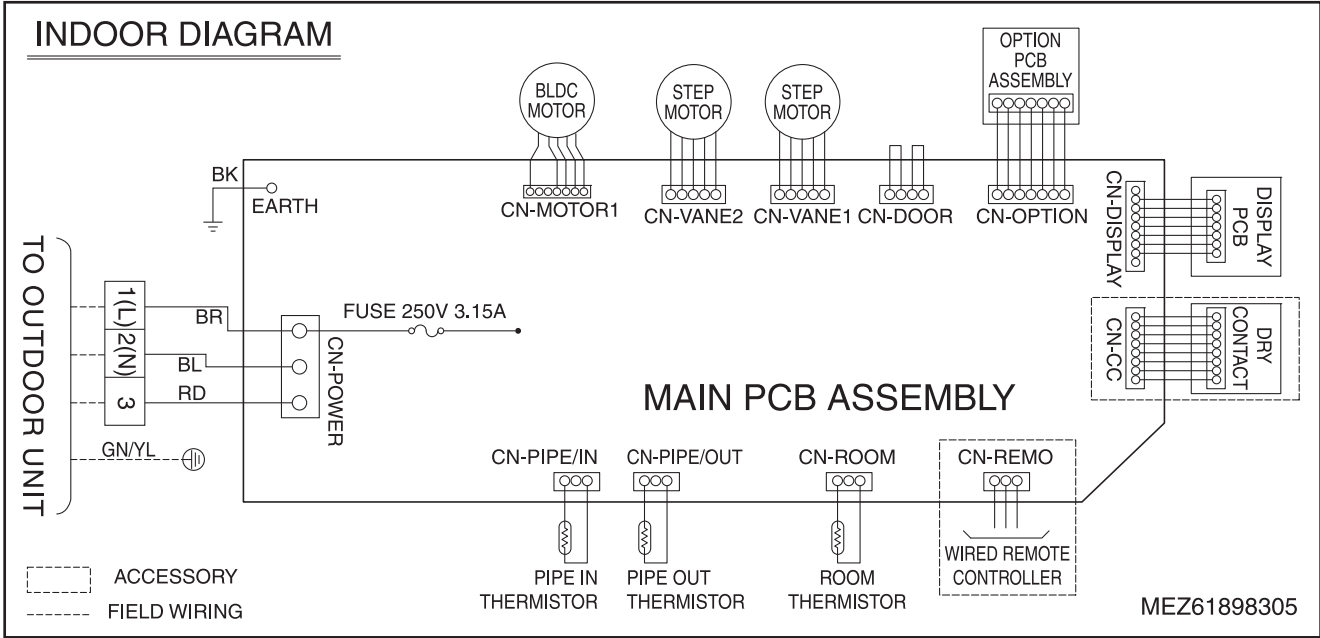
[Unit: mm(inch)]

Model	Gas	Liquid
UVNH12GJLA1	Ø9.52(3/8)	Ø6.35(1/4)
UVNH18GJLA1	Ø12.7(1/2)	Ø6.35(1/4)
UVNH21GKLA1	Ø15.88(5/8)	Ø9.52(3/8)
UVNH24GKLA1	Ø15.88(5/8)	Ø9.52(3/8)
UVNH36GLLA1	Ø15.88(5/8)	Ø9.52(3/8)
UVNH42GLLA1	Ø15.88(5/8)	Ø9.52(3/8)
UVNH48GLLA1	Ø15.88(5/8)	Ø9.52(3/8)

3. Ceiling Suspended

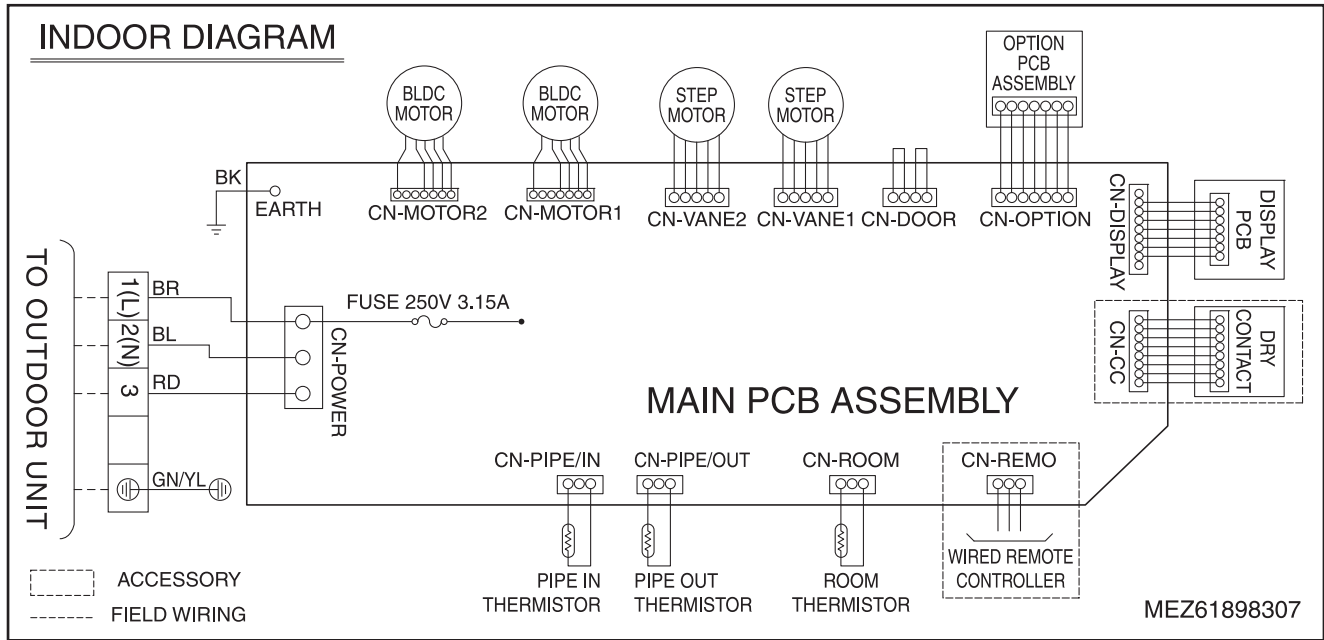
3.5 Wiring diagrams

Model : UVNH12GJLA1, UVNH18GJLA1



3. Ceiling Suspended

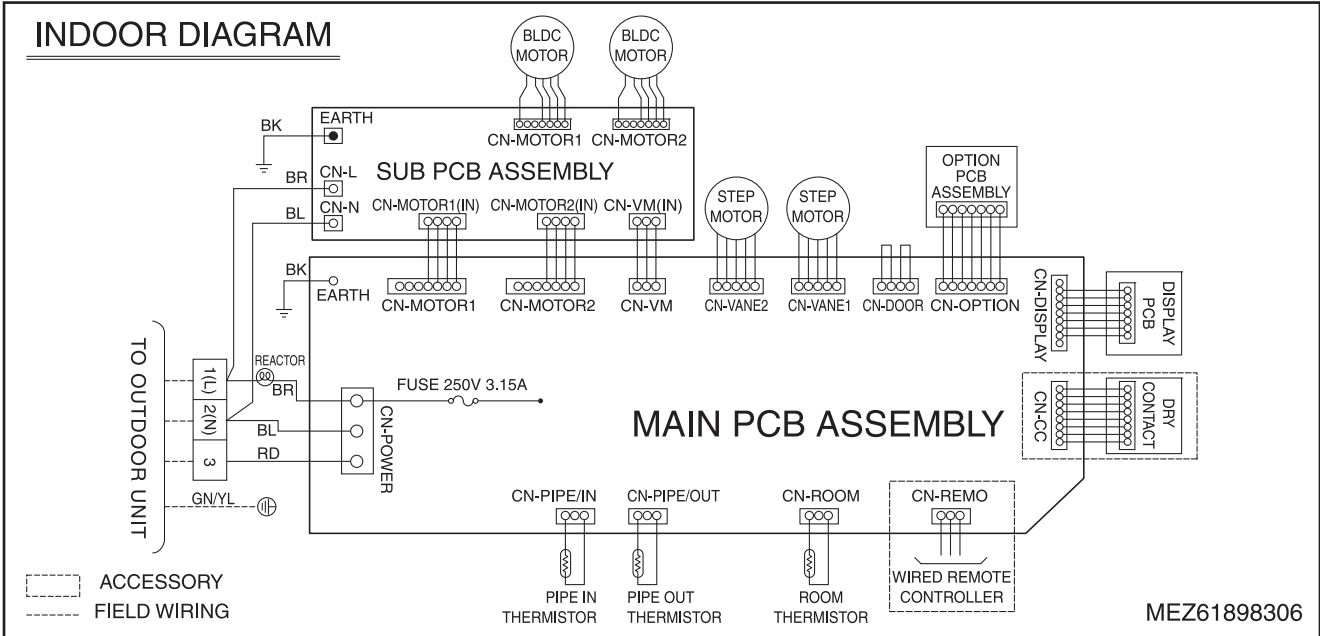
Model : UVNH21GKLA1, UVNH24GKLA1



Part 2 Product data_Indoor units

3. Ceiling Suspended

Model : UVNH36GLLA1, UVNH42GLLA1, UVNH48GLLA1



3. Ceiling Suspended

3.6 Air flow and temperature distributions (reference data)

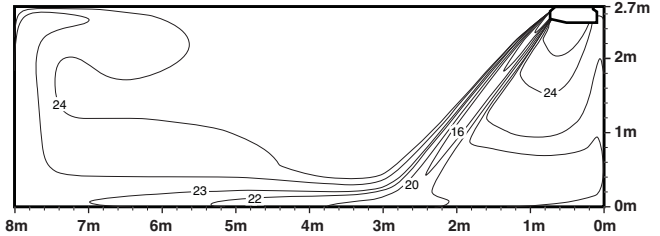
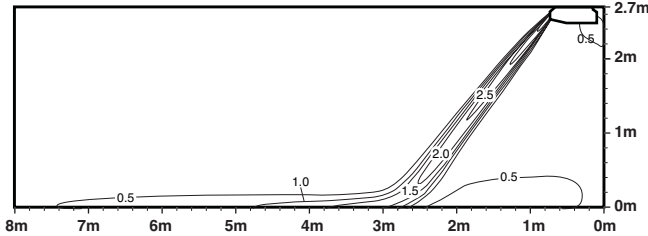
Models : 3.5kW

<Cooling Operation>

Air Flow Direction : 40 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)

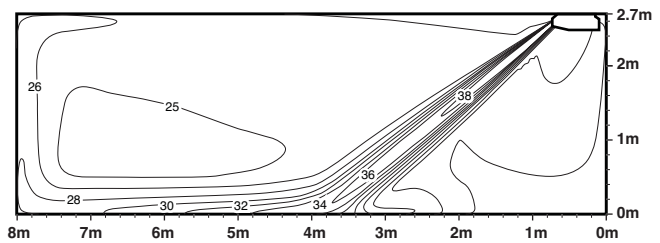
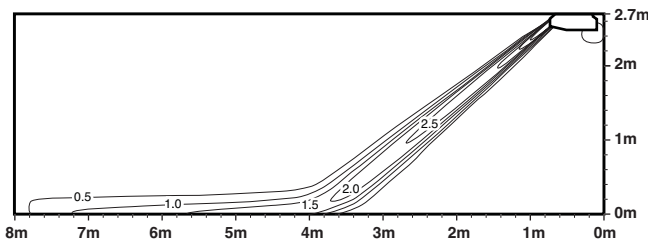


<Heating Operation>

Air Flow Direction : 50 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)



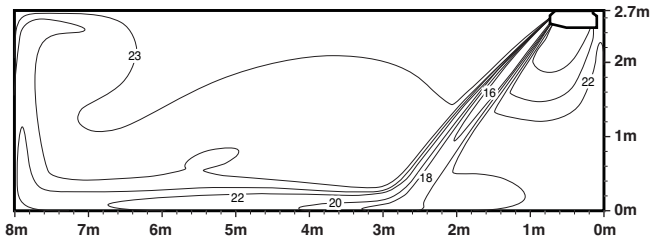
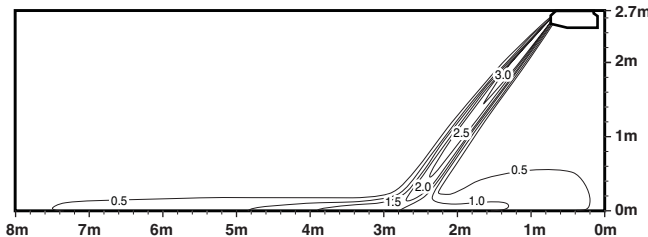
Models : 5.0kW

<Cooling Operation>

Air Flow Direction : 40 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)

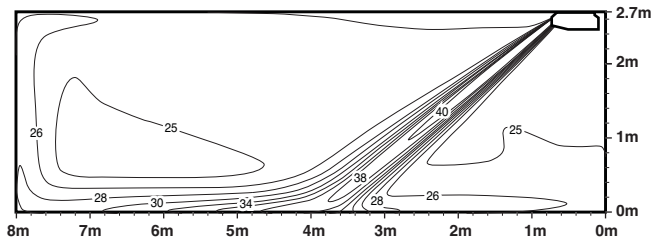
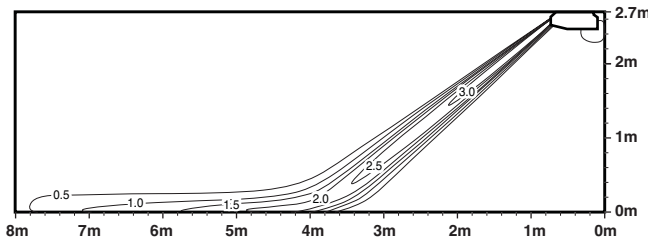


<Heating Operation>

Air Flow Direction : 50 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)



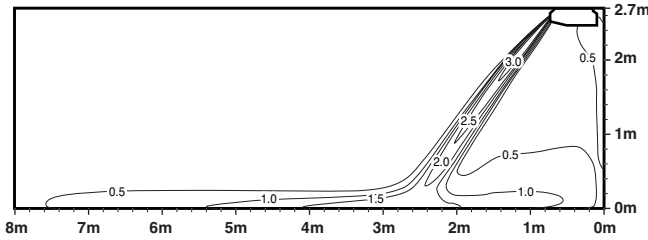
3. Ceiling Suspended

Models : 6.0kW

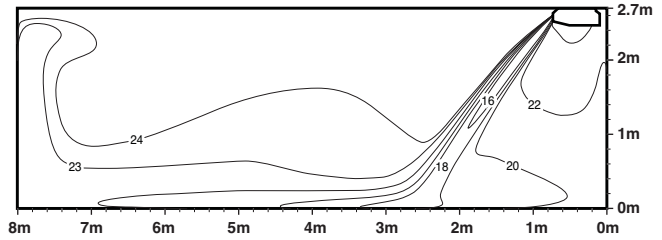
<Cooling Operation>

Air Flow Direction : 40 °(downward)

Air Velocity Distribution(m/s)



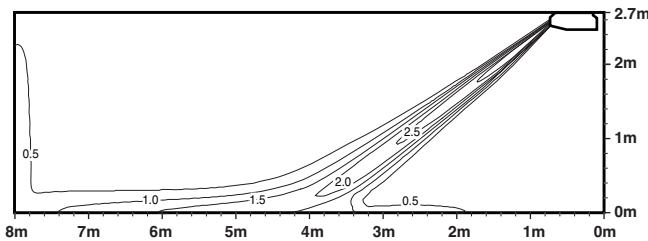
Temperature Distribution(°C)



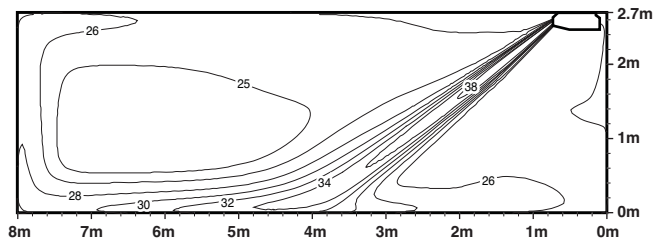
<Heating Operation>

Air Flow Direction : 50 °(downward)

Air Velocity Distribution(m/s)



Temperature Distribution(°C)

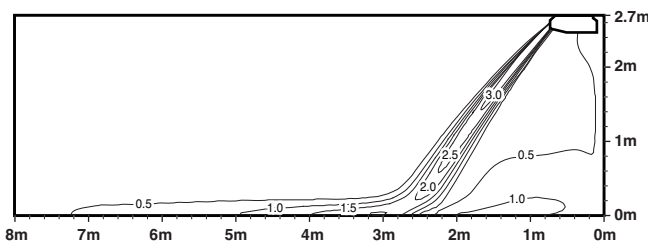


Models : 7.0kW

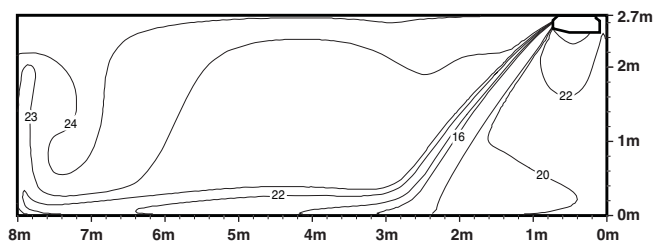
<Cooling Operation>

Air Flow Direction : 40 °(downward)

Air Velocity Distribution(m/s)



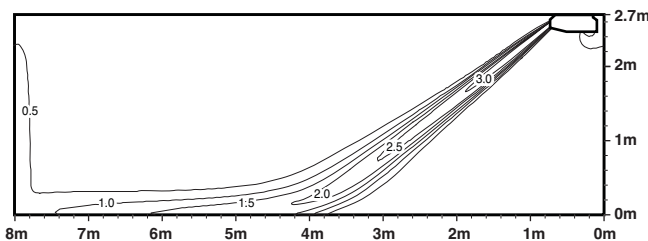
Temperature Distribution(°C)



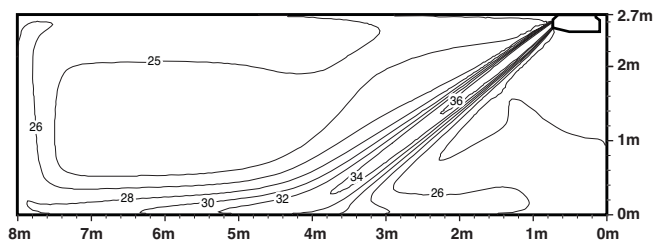
<Heating Operation>

Air Flow Direction : 50 °(downward)

Air Velocity Distribution(m/s)



Temperature Distribution(°C)



3. Ceiling Suspended

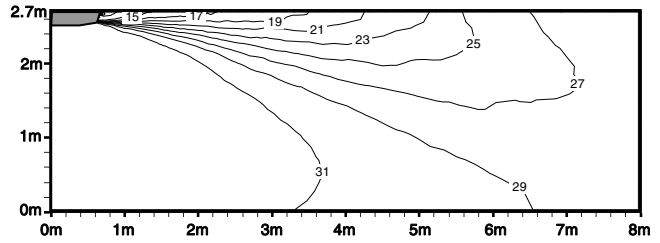
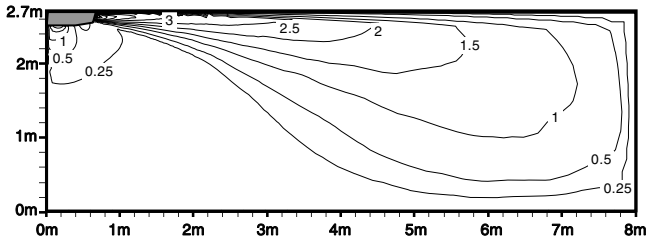
Models : 10.0kW

<Cooling Operation>

Air Flow Direction :10 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)

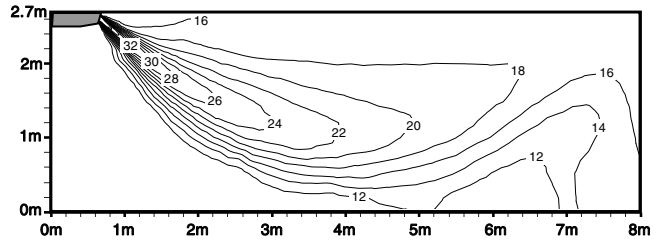
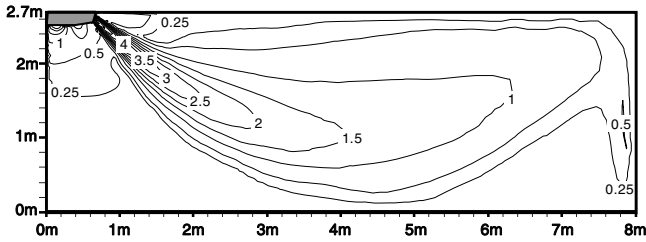


<Heating Operation>

Air Flow Direction :45 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)



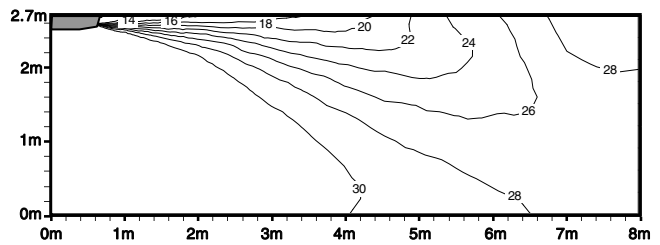
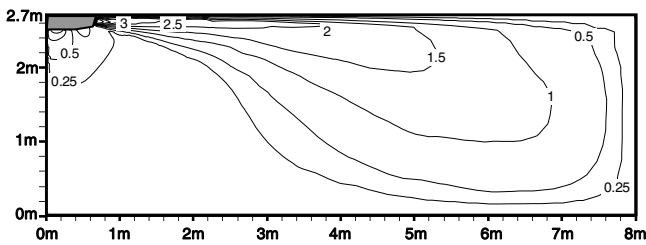
Models : 12.5kW

<Cooling Operation>

Air Flow Direction :10 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)

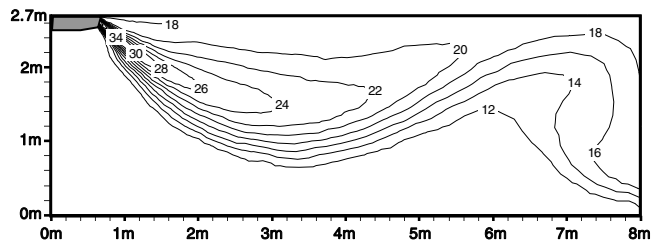
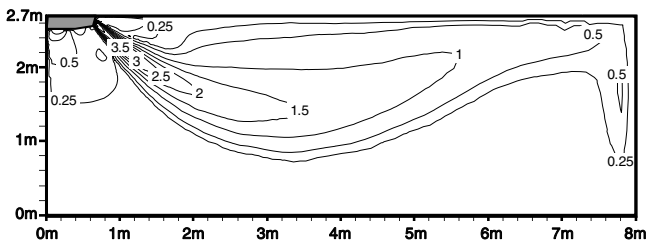


<Heating Operation>

Air Flow Direction :45 °(downward)

Air Velocity Distribution(m/s)

Temperature Distribution(°C)



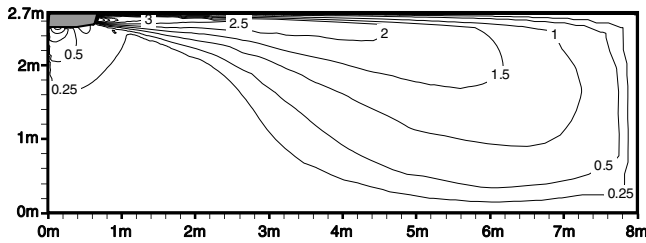
3. Ceiling Suspended

Models : 13.3kW

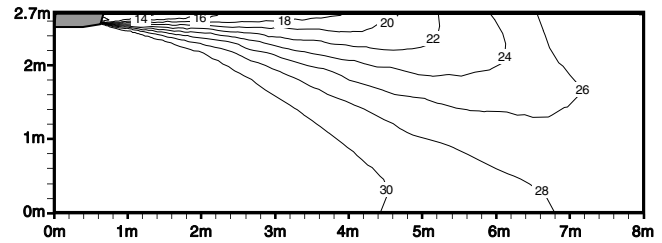
<Cooling Operation>

Air Flow Direction :10 °(downward)

Air Velocity Distribution(m/s)



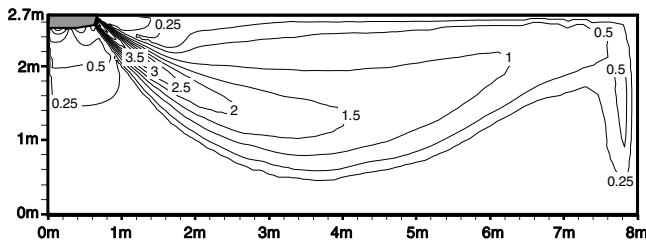
Temperature Distribution(°C)



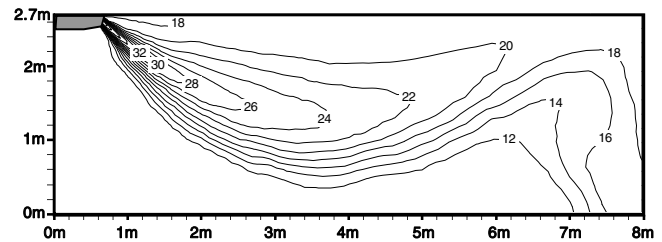
<Heating Operation>

Air Flow Direction :45 °(downward)

Air Velocity Distribution(m/s)



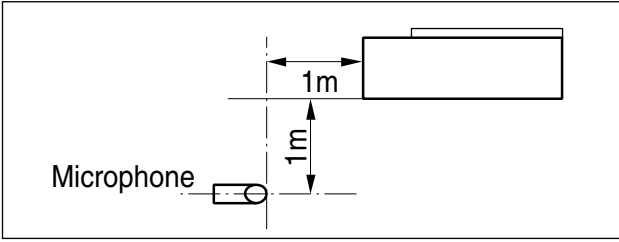
Temperature Distribution(°C)



3. Ceiling Suspended

3.7 Sound levels

Overall



Notes:

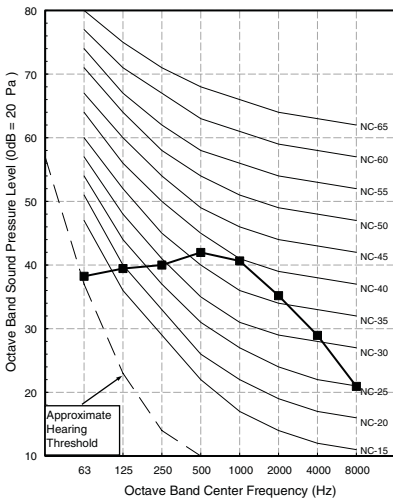
- Data is valid at nominal operation condition
- Reference acoustic pressure 0dB = 20Pa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

Model	Sound Level [dB(A)+3]		
	H	M	L
UVNH12GJLA1[UV12H NJ1]	42	40	39
UVNH18GJLA1[UV18H NJ1]	45	43	41
UVNH21GKLA1[UV21H NK1]	44	42	41
UVNH24GKLA1[UV24H NK1]	45	44	41
UVNH36GLLA1[UV36H NL1]	46	44	43
UVNH42GLLA1[UV42H NL1]	47	46	44
UVNH48GLLA1[UV48H NL1]	48	47	45

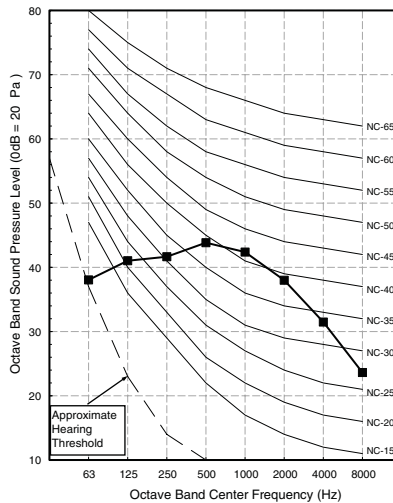
Part 2 Product data Indoor units

Sound Pressure Level

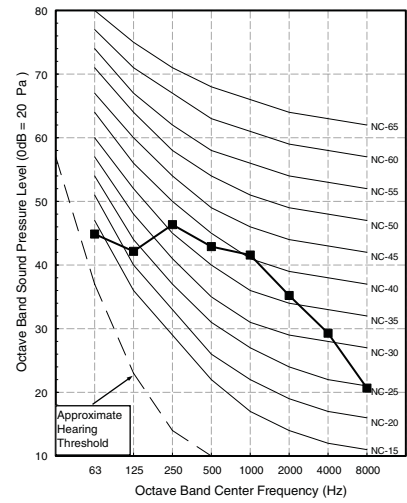
UVNH12GJLA1



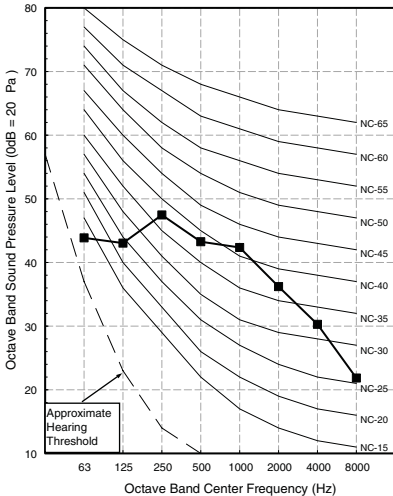
UVNH18GJLA1



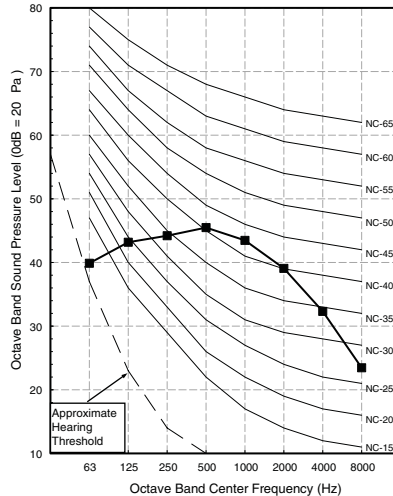
UVNH21GKLA1



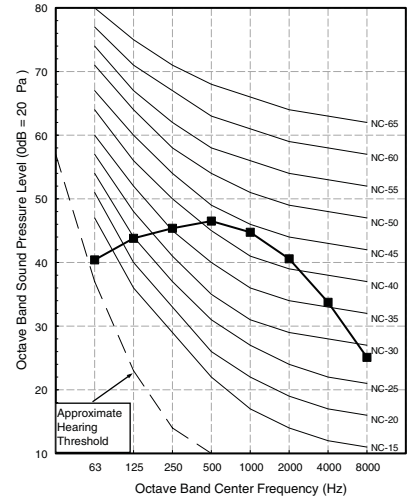
UVNH24GKLA1



UVNH36GLLA1

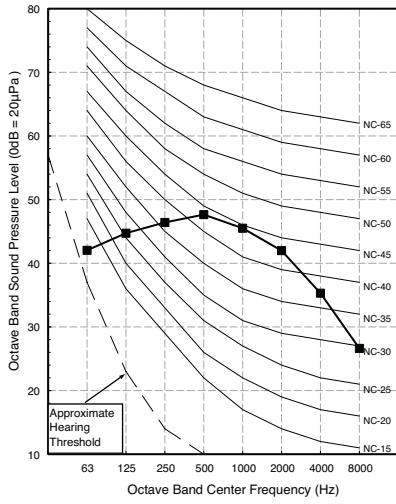


UVNH42GLLA1



3. Ceiling Suspended

UVNH48GLLA1



■ **Outdoor unit**

1. **DC Inverter High (1Ø, 3Ø)**
2. **DC Inverter High - Synchro (1Ø, 3Ø)**

1. DC Inverter High

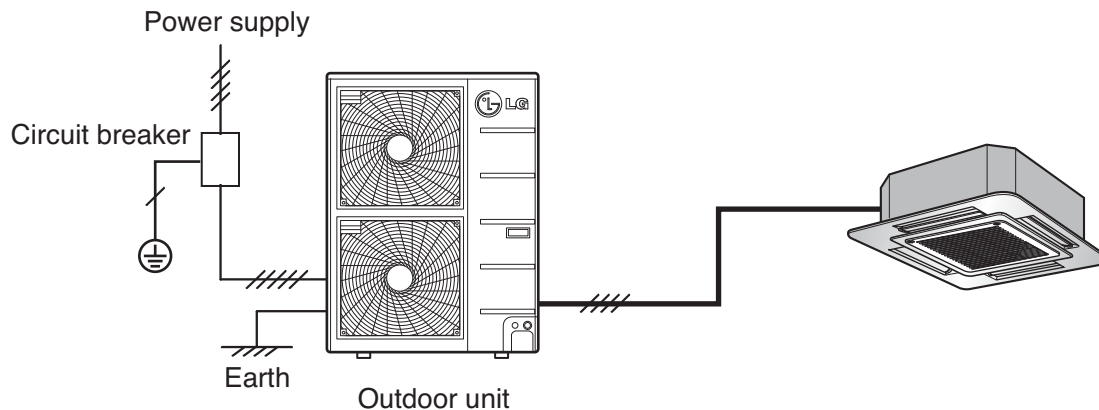
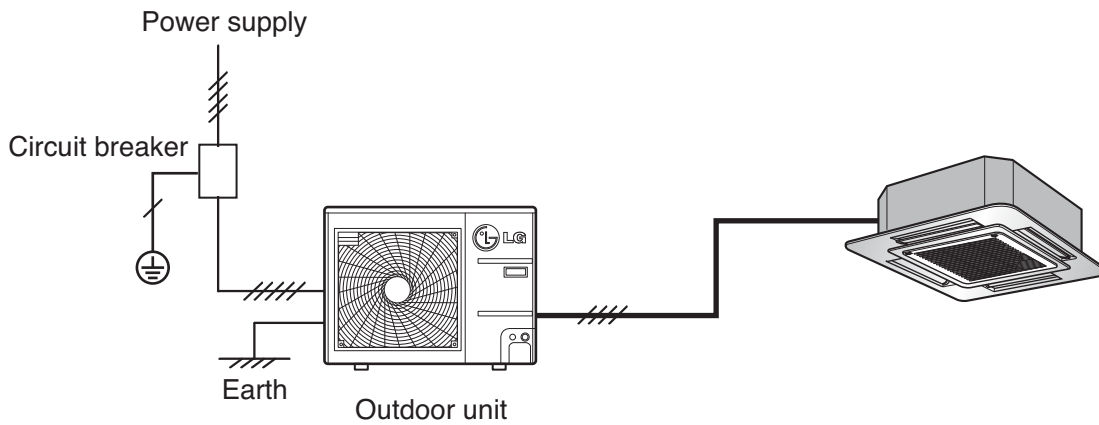
1.1 DC Inverter High Efficiency models

1.1.1 Power supply

Type	Outdoor unit	Capacity (kW)	Circuit breaker capacity	Power supply
High Efficiency Inverter	AUUW126DH1[UU12WH UE1]	3.5	20A	1Ø, 220-240V, 50Hz
	AUUW186DH1[UU18WH UE1]	5.0		
	AUUW216DH1[UU21WH U41]	6.0		
	AUUW246DH1[UU24WH U41]	7.0		
	AUUW366DH1[UU36WH U31]	10.0	40A	
	AUUW426DH1[UU42WH U31]	12.5		
	AUUW486DH1[UU48WH U31]	13.4		
High Efficiency Inverter(3Ø)	AUUW368DH1 [UU37WH U31]	10.0	15A	3Ø 380-415V, 50Hz
	AUUW428DH1 [UU43WH U31]	12.5		
	AUUW488DH1 [UU49WH U31]	13.4		

External wiring procedure

- The power supply work is needed only to the outdoor unit. The power supply to the indoor unit is conducted through the transmission wiring. Therefore, the power supply work can be carried out at just one place of the outdoor unit. It will contribute to simplify the work procedure and to save cost.
- Wiring cable size must comply with the applicable local and national code.



1. DC Inverter High

1.2 List of functions

DC Inverter High Efficiency models (1Ø)

Category	Functions	Remark
Reliability	Defrost / Deicing	O
	High pressure switch	X
	Low pressure switch	X
	Phase protection	X
	Restart delay (3-minutes)	O
	Self diagnosis	O
	Soft start	O
	Test function	X
Convenience	Night Silent Operation	O
Network function	Network solution(LGAP)	O

Device	Remark	
Central Controller	Simple Controller	PQCSB101S0
	Function controller	PQCSB101S0 + PQCSC101S0
	Function Scheduler	PQCSB101S0 + PQCSD130A0
	AC Ez	PQCSZ250S0
	AC Smart II *	PQCSW320A1E
	Option Kit (SD card type)	PQCSE341A0 / PQCSE342A0
	ACP(Advanced Control Platform)	PQCPA11A0E / PQCPB11A0E
	AC Manager	PQCSS520A0E
	PI485	PMNFP14A0/PMNFP14A1
	DO(Digital Output) Kit	PQNFP00T0
BNU (Building Network Unit)	LONWORKS Gateway	PQNFB16A1
	BACnet Gateway	PQNFB17B0
Installation	Y branch	Accessory
	Header branch	Accessory
	Air Guide	X
PDI(power distribution indicator)		X
ODU Dry Contact		X
Low Ambient Kit		O (Logical operation)

Notes

1. * : AC Smart II is not available when connected with synchro combination.

O : Applied, X : Not applied

Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package

1. DC Inverter High

DC Inverter High Efficiency models (3Ø)

Category	Functions	Remark
Reliability	Defrost / Deicing	O
	High pressure switch	X
	Low pressure switch	X
	Phase protection	O
	Restart delay (3-minutes)	O
	Release Control	O
	Self diagnosis	O
	Soft start	O
	Test function	X
Convenience	Night Silent Operation	O
CAC network function	Network solution(LGAP)	O

Device	Remark	
Central Controller	Simple Controller	PQCSB101S0
	Function controller	PQCSB101S0 + PQCSC101S0
	Function Scheduler	PQCSB101S0 + PQCSD130A0
	AC Ez	PQCSZ250S0
	AC Smart II *	PQCSW320A1E
	Option Kit (SD card type)	PQCSE341A0 / PQCSE342A0
	ACP(Advanced Control Platform)	PQCPA11A0E / PQCPB11A0E
	AC Manager	PQCSS520A0E
	PI485	PMNFP14A0/PMNFP14A1
	DO(Digital Output) Kit	PQNFP00T0
BNU (Building Network Unit)	LONWORKS Gateway	PQNFB16A1
	BACnet Gateway	PQNFB17B0
Installation	Y branch	Accessory
	Header branch	Accessory
	Air Guide	X
PDI(power distribution indicator)	X	
ODU Dry Contact	O(on/off control)	
Low Ambient Kit	O (Logical operation)	

Notes

1. * : AC Smart II is not available when connected with synchro combination.

O : Applied, X : Not applied

Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package

1. DC Inverter High

1.3 Specifications

DC Inverter High Efficiency models (1Ø)

Combination	Outdoor unit			AUUW186DH1 [UU18WH UE1]	AUUW216DH1 [UU21WH U41]	AUUW246DH1 [UU24WH U41]
	Indoor unit			ABNH18GGLA1 [UB18H NG1]	ABNH21GGLA1 [UB21H NG1]	ABNH24GGLA1 [UB24H NG1]
Capacity	Cooling	Min.~Rated~Max.	kW	2.50 ~ 5.00 ~ 6.00	2.40 ~ 6.00 ~ 6.60	2.84 ~ 7.10 ~ 7.81
		Min.~Rated~Max.	Btu/h	8,500 ~ 17,100 ~ 20,500	8,200 ~ 20,500 ~ 22,500	9,700 ~ 24,200 ~ 26,700
	Heating	Min.~Rated~Max.	kW	3.00 ~ 6.00 ~ 7.20	2.80 ~ 7.00 ~ 7.70	3.20 ~ 8.00 ~ 8.80
		Min.~Rated~Max.	Btu/h	10,200 ~ 20,500 ~ 24,600	9,600 ~ 23,900 ~ 26,300	10,900 ~ 27,300 ~ 30,000
Power Input	Cooling	Rated~Max.	kW	1.35 ~ 2.03	1.73 ~ 2.25	2.09 ~ 2.97
	Heating	Rated~Max.	kW	1.49 ~ 2.29	1.74 ~ 2.01	1.99 ~ 2.23
Running Current	Cooling	Rated	A	6.0	7.6	9.5
	Heating	Rated	A	6.7	7.7	9.0
SEER / SCOP			Wh / Wh	5.31 / 4.11	5.61 / 4.01	5.61 / 4.01
Energy Label (Seasonal)	Cooling / Heating		-	A / A+	A+ / A+	A+ / A+
Annual Energy Consumption	Cooling / Heating		kWh	330 / 1,878	375 / 2,450	444 / 2,520

Combination	Outdoor unit			AUUW126DH1 [UU12WH UE1]	AUUW186DH1 [UU18WH UE1]	AUUW216DH1 [UU21WH U41]	AUUW246DH1 [UU24WH U41]
	Indoor unit			ATNH12GPLE1 [UT12H NP1]	ATNH18GPLE1 [UT18H NP1]	ATNH21GNLE1 [UT21H NN1]	ATNH24GNLE1 [UT24H NN1]
Capacity	Cooling	Min.~Rated~Max.	kW	1.40 ~ 3.50 ~ 4.20	2.00 ~ 5.00 ~ 5.50	2.80 ~ 6.00 ~ 8.00	2.80 ~ 7.00 ~ 8.40
		Min.~Rated~Max.	Btu/h	4,800 ~ 11,900 ~ 14,300	6,800 ~ 17,100 ~ 18,800	9,600 ~ 20,500 ~ 27,300	9,600 ~ 23,900 ~ 28,700
	Heating	Min.~Rated~Max.	kW	1.60 ~ 4.20 ~ 5.00	2.20 ~ 5.50 ~ 6.05	3.20 ~ 7.00 ~ 9.00	3.20 ~ 8.00 ~ 9.40
		Min.~Rated~Max.	Btu/h	5,500 ~ 14,300 ~ 17,100	7,500 ~ 18,800 ~ 20,600	10,900 ~ 23,900 ~ 30,700	10,900 ~ 27,300 ~ 32,100
Power Input	Cooling	Rated~Max.	kW	0.99 ~ 1.44	1.35 ~ 1.89	1.53 ~ 2.60	1.92 ~ 2.93
	Heating	Rated~Max.	kW	1.04 ~ 1.60	1.35 ~ 2.02	1.66 ~ 2.70	1.93 ~ 2.90
Running Current	Cooling	Rated	A	4.4	6.0	7.6	9.5
	Heating	Rated	A	4.6	6.7	7.7	9.0
SEER / SCOP			Wh / Wh	6.11 / 4.11	5.81 / 4.01	5.81 / 4.11	5.81 / 4.11
Energy Label (Seasonal)	Cooling / Heating		-	A++ / A+	A+ / A+	A+ / A+	A+ / A+
Annual Energy Consumption	Cooling / Heating		kWh	201 / 1,366	302 / 1,750	362 / 2,390	422 / 2,459

Note :

1. All data are based on the following conditions:

- Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
- Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Piping Length : Interconnected Pipe Length = 5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Due to our policy of innovation some specifications may be changed without notifications.

1. DC Inverter High

Combination	Outdoor unit			AUUW126DH1 [UU12WH UE1]	AUUW186DH1 [UU18WH UE1]	AUUW216DH1 [UU21WH U41]	AUUW246DH1 [UU24WH U41]
	Indoor unit			UVNH12GJLA1 [UV12H NJ1]	UVNH18GJLA1 [UV18H NJ1]	UVNH21GKLA1 [UV21H NK1]	UVNH24GKLA1 [UV24H NK1]
Capacity	Cooling	Min.~Rated~Max.	kW	1.40 ~ 3.50 ~ 4.20	2.00 ~ 5.00 ~ 5.50	2.80 ~ 6.00 ~ 8.00	2.80 ~ 7.00 ~ 8.40
		Min.~Rated~Max.	Btu/h	4,800 ~ 11,900 ~ 14,300	6,800 ~ 17,100 ~ 18,800	9,600 ~ 20,500 ~ 27,300	9,600 ~ 23,900 ~ 28,700
	Heating	Min.~Rated~Max.	kW	1.60 ~ 4.00 ~ 4.80	2.20 ~ 5.40 ~ 6.10	3.10 ~ 7.00 ~ 9.00	3.20 ~ 7.70 ~ 9.20
		Min.~Rated~Max.	Btu/h	5,500 ~ 13,600 ~ 16,400	7,500 ~ 18,400 ~ 20,800	10,600 ~ 23,900 ~ 30,700	10,900 ~ 26,300 ~ 31,400
Power Input	Cooling	Rated~Max.	kW	1.03 ~ 1.42	1.31 ~ 1.87	1.60 ~ 2.64	1.94 ~ 2.81
	Heating	Rated~Max.	kW	1.05 ~ 1.78	1.49 ~ 2.20	1.66 ~ 2.80	1.92 ~ 3.00
Running Current	Cooling	Rated	A	4.4	6.0	7.6	9.5
	Heating	Rated	A	4.6	6.7	7.7	9.0
SEER / SCOP			Wh / Wh	5.31 / 4.01	5.21 / 3.81	5.31 / 4.01	5.31 / 4.01
Energy Label (Seasonal)	Cooling / Heating		-	A / A+	A / A	A / A+	A / A+
Annual Energy Consumption	Cooling / Heating		kWh	231 / 1,400	337 / 1,953	396 / 2,450	462 / 2,520

Combination	Outdoor unit			AUUW366DH1 [UU36WH U31]	AUUW426DH1 [UU42WH U31]	AUUW486DH1 [UU48WH U31]
	Indoor unit			ABNH36GRLA1 [UB36H NR1]	ABNH42GRLA1 [UB42H NR1]	ABNH48GRLA1 [UB48H NR1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.80 ~ 10.0 ~ 14.1	5.00 ~ 12.5 ~ 15.0	5.60 ~ 13.4 ~ 16.0
		Min.~Rated~Max.	Btu/h	16,400 ~ 34,100 ~ 48,100	17,100 ~ 42,700 ~ 51,200	19,100 ~ 45,700 ~ 54,600
	Heating	Min.~Rated~Max.	kW	5.20 ~ 11.2 ~ 14.5	5.60 ~ 14.0 ~ 17.6	6.60 ~ 15.5 ~ 18.5
		Min.~Rated~Max.	Btu/h	17,700 ~ 38,200 ~ 49,500	19,100 ~ 47,800 ~ 60,100	22,500 ~ 52,900 ~ 63,100
Power Input	Cooling	Rated~Max.	kW	2.69 ~ 4.71	3.67 ~ 5.14	4.15 ~ 5.56
	Heating	Rated~Max.	kW	2.51 ~ 4.20	3.25 ~ 4.70	3.82 ~ 5.00
Running Current	Cooling	Rated	A	11.5	16.8	18.7
	Heating	Rated	A	11.3	15.0	18.0
SEER / SCOP			Wh / Wh	5.31 / 4.01	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	660 / 3,955	-	-

Note :

1. All data are based on the following conditions:

- Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
- Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Piping Length : Interconnected Pipe Length = 5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Due to our policy of innovation some specifications may be changed without notifications.

1. DC Inverter High

Combination	Outdoor unit			AUUW366DH1 [UU36WH U31]	AUUW426DH1 [UU42WH U31]	AUUW486DH1 [UU48WH U31]
	Indoor unit			ATNH36GMLE1 [UT36H NM1]	ATNH42GMLE1 [UT42H NM1]	ATNH48GMLE1 [UT48H NM1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.50 ~ 10.0 ~ 13.0	5.00 ~ 12.5 ~ 14.9	5.50 ~ 1.34 ~ 1.60
		Min.~Rated~Max.	Btu/h	15,400 ~ 34,100 ~ 44,400	17,100 ~ 42,700 ~ 50,800	18,800 ~ 4,600 ~ 5,500
	Heating	Min.~Rated~Max.	kW	4.90 ~ 11.2 ~ 14.0	5.50 ~ 14.0 ~ 16.8	6.40 ~ 15.5 ~ 17.9
		Min.~Rated~Max.	Btu/h	16,700 ~ 38,200 ~ 47,800	18,800 ~ 47,800 ~ 57,300	21,800 ~ 52,900 ~ 61,100
Power Input	Cooling	Rated~Max.	kW	2.60 ~ 4.42	3.66 ~ 5.12	4.15 ~ 5.56
	Heating	Rated~Max.	kW	2.51 ~ 4.60	3.41 ~ 5.03	4.07 ~ 5.40
Running Current	Cooling	Rated	A	11.5	16.8	18.7
	Heating	Rated	A	11.3	15.0	18.0
SEER / SCOP			Wh / Wh	5.61 / 4.11	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A+ / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	625 / 3,859	-	-

Combination	Outdoor unit			AUUW366DH1 [UU36WH U31]	AUUW426DH1 [UU42WH U31]	AUUW486DH1 [UU48WH U31]
	Indoor unit			UVNH36GLLA1 [UV36H NL1]	UVNH42GLLA1 [UV42H NL1]	UVNH48GLLA1 [UV48H NL1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.30 ~ 10.0 ~ 12.4	5.00 ~ 12.5 ~ 14.9	5.40 ~ 13.3 ~ 16.1
		Min.~Rated~Max.	Btu/h	14,700 ~ 34,100 ~ 42,300	17,100 ~ 42,700 ~ 50,800	18,400 ~ 45,400 ~ 54,900
	Heating	Min.~Rated~Max.	kW	4.20 ~ 10.5 ~ 13.7	5.40 ~ 13.6 ~ 16.3	6.20 ~ 15.0 ~ 17.8
		Min.~Rated~Max.	Btu/h	14,300 ~ 35,800 ~ 46,800	18,400 ~ 46,400 ~ 55,600	21,200 ~ 51,200 ~ 60,700
Power Input	Cooling	Rated~Max.	kW	2.77 ~ 4.16	3.89 ~ 5.06	4.42 ~ 5.75
	Heating	Rated~Max.	kW	2.62 ~ 4.70	3.57 ~ 5.20	5.16 ~ 5.60
Running Current	Cooling	Rated	A	11.5	16.8	18.7
	Heating	Rated	A	11.3	15.0	18.0
SEER / SCOP			Wh / Wh	5.61 / 4.11	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A+ / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	625 / 3,859	-	-

Note :

- All data are based on the following conditions:
 - Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
 - Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
 - Piping Length : Interconnected Pipe Length = 5m
 - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
- Due to our policy of innovation some specifications may be changed without notifications.

1. DC Inverter High

Model Names			AUUW126DH1 [UU12WH UE1]	AUUW186DH1 [UU18WH UE1]	AUUW216DH1 [UU21WH U41]	
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50
Starting Current	Cooling	Max.	A	-	-	-
	Heating	Max.	A	-	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm ² (AWG)	3C x 2.5 (12)	3C x 2.5 (12)	3C x 2.5 (12)
Casing Color			-	Warm Gray	Warm Gray	Warm Gray
Dimensions		W x H x D	mm	870 x 655 x 320	870 x 808 x 320	950 x 834 x 330
		W x H x D	inch	34-1/4 x 25-25/32 x 12-19/32	34-1/4 x 31-13/16 x 12-19/32	37-13/32 x 32-27/32 x 13
Net Weight			kg (lbs)	46 (101.4)	58 (127.9)	63 (138.9)
Compressor	Type		-	Twin Rotary	Twin Rotary	Twin Rotary
	Model		Model x No.	GKT141DAA x 1	GJT240DAA x 1	GJT240DAA x 1
	Motor type		-	BLDC	BLDC	BLDC
Refrigerant	Type		-	R410A	R410A	R410A
	Precharged Amount		g (oz)	1,250	2,000	2,200
	Chargeless-Pipe Length		m (ft)	10.0 (32.8)	10.0 (32.8)	10.0 (32.8)
	Additional Charging Volume		g/m (oz/ft)	20 (0.22)	20 (0.22)	40 (0.43)
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D	FVC68D	FVC68D
	Charged volume		cc x No.	570 x 1	900 x 1	900 x 1
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(2 x 28 x 18) x 1	(2 x 36 x 18) x 1	(2 x 38 x 17) x 1
Fan	Type		-	Propeller	Propeller	Propeller
	Air Flow Rate		m ³ /min x No.	50 x 1	58 x 1	58 x 1
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	83 x 1	124 x 1	124 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	48	47	47
	Heating	Rated	dB(A)	48	50	50
Sound Power Level		Max.	dB(A)	60	60	62
Piping Connections	Liquid	Outer Dia.	mm(inch)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.52 (3/8)
	Gas	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 12.7 (1/2)	Ø 15.88 (5/8)
Piping Length		Max.	m (ft)	30 (98.4)	50 (164.0)	50 (164.0)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	20 (65.6)	30 (98.4)	30 (98.4)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)
	Heating	Min. ~ Max.	°C WB (°F WB)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

1. DC Inverter High

Model Names				AUUW246DH1 [UU24WH U41]	AUUW366DH1 [UU36WH U31]
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Starting Current	Cooling	Max.	A	-	-
	Heating	Max.	A	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm ² (AWG)	3C x 2.5 (12)	3C x 5.0 (12)
Casing Color			-	Warm Gray	Warm Gray
Dimensions		W x H x D	mm	950 x 834 x 330	950 x 1,380 x 330
		W x H x D	inch	37-13/32 x 32-27/32 x 13	37-13/32 x 54-11/32 x 13
Net Weight			kg (lbs)	63 (138.9)	103 (227.1)
Compressor	Type		-	Twin Rotary	Twin Rotary
	Model		Model x No.	GJT240DAA x 1	GPT425DBA x 1
	Motor type		-	BLDC	BLDC
Refrigerant	Type		-	R410A	R410A
	Precharged Amount		g (oz)	2,200	3,600
	Chargeless-Pipe Length		m (ft)	10.0 (32.8)	7.5 (24.6)
	Additional Charging Volume		g/m (oz/ft)	40 (0.43)	40 (0.43)
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged volume		cc x No.	900 x 1	1,300 x 1
Heat Exchanger			(Row x Column x Fins per inch) x No.	(2 x 38 x 17) x 1	(2 x 32 x 17) x 2
Fan	Type		-	Propeller	Propeller
	Air Flow Rate		m ³ /min x No.	58 x 1	55 x 2
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124 x 1	124 x 2
Sound Pressure Level	Cooling	Rated	dB(A)	47	51
	Heating	Rated	dB(A)	50	53
Sound Power Level			Max.	dB(A)	63
Piping Connections	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length			Max.	m (ft)	50 (164.0)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit		Max.	m (ft)	30 (98.4)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)
	Heating	Min. ~ Max.	°C WB (°F WB)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

1. DC Inverter High

Model Names				AUW426DH1 [UU42WH U31]	AUW486DH1 [UU48WH U31]
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Starting Current	Cooling	Max.	A	-	-
	Heating	Max.	A	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm ² (AWG)	3C x 5.0 (12)	3C x 5.0 (12)
Casing Color			-	Warm Gray	Warm Gray
Dimensions		W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330
		W x H x D	inch	37-13/32 x 54-11/32 x 13	37-13/32 x 54-11/32 x 13
Net Weight			kg (lbs)	103 (227.1)	103 (227.1)
Compressor	Type		-	Twin Rotary	Twin Rotary
	Model		Model x No.	GPT425DBA x 1	GPT425DBA x 1
	Motor type		-	BLDC	BLDC
Refrigerant	Type		-	R410A	R410A
	Precharged Amount		g (oz)	3,600	3,600
	Chargeless-Pipe Length		m (ft)	7.5 (24.6)	7.5 (24.6)
	Additional Charging Volume		g/m (oz/ft)	40 (0.43)	40 (0.43)
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged volume		cc x No.	1,300 x 1	1,300 x 1
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(2 x 32 x 17) x 2	(2 x 32 x 17) x 2
Fan	Type		-	Propeller	Propeller
	Air Flow Rate		m ³ /min x No.	55 x 2	55 x 2
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124 x 2	124 x 2
Sound Pressure Level	Cooling	Rated	dB(A)	51	51
	Heating	Rated	dB(A)	53	53
Sound Power Level		Max.	dB(A)	66	66
Piping Connections	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Max.	m (ft)	75 (246.1)	75 (246.1)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	30 (98.4)	30 (98.4)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)
	Heating	Min. ~ Max.	°C WB (°F WB)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

1. DC Inverter High

DC Inverter High Efficiency models (3Ø)

Combination	Outdoor unit			AUUW368DH1 [UU37WH U31]	AUUW428DH1 [UU43WH U31]	AUUW488DH1 [UU49WH U31]
	Indoor unit			ABNH36GRLA1 [UB36H NR1]	ABNH42GRLA1 [UB42H NR1]	ABNH48GRLA1 [UB48H NR1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.80 ~ 10.0 ~ 14.1	5.00 ~ 12.5 ~ 15.0	5.60 ~ 13.4 ~ 16.0
		Min.~Rated~Max.	Btu/h	16,400 ~ 34,100 ~ 48,100	17,100 ~ 42,700 ~ 51,200	19,100 ~ 45,700 ~ 54,600
	Heating	Min.~Rated~Max.	kW	5.20 ~ 11.2 ~ 14.5	5.60 ~ 14.0 ~ 17.6	6.60 ~ 15.5 ~ 18.5
		Min.~Rated~Max.	Btu/h	17,700 ~ 38,200 ~ 49,500	19,100 ~ 47,800 ~ 60,100	22,500 ~ 52,900 ~ 63,100
Power Input	Cooling	Rated~Max.	kW	2.69 ~ 4.71	3.67 ~ 5.14	4.15 ~ 5.56
	Heating	Rated~Max.	kW	2.51 ~ 5.00	3.25 ~ 4.70	3.82 ~ 4.20
Running Current	Cooling	Rated	A	4.2	6.0	6.7
	Heating	Rated	A	4.1	5.7	6.5
SEER / SCOP			Wh / Wh	5.31 / 4.01	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	660 / 3,955	-	-

Combination	Outdoor unit			AUUW368DH1 [UU37WH U31]	AUUW428DH1 [UU43WH U31]	AUUW488DH1 [UU49WH U31]
	Indoor unit			ATNH36GMLE1 [UT36H NM1]	ATNH42GMLE1 [UT42H NM1]	ATNH48GMLE1 [UT48H NM1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.50 ~ 10.0 ~ 13.0	5.00 ~ 12.5 ~ 14.9	5.50 ~ 13.4 ~ 16.0
		Min.~Rated~Max.	Btu/h	15,400 ~ 34,100 ~ 44,400	17,100 ~ 42,700 ~ 50,800	18,800 ~ 45,700 ~ 54,600
	Heating	Min.~Rated~Max.	kW	4.20 ~ 11.2 ~ 13.7	5.40 ~ 14.0 ~ 16.3	6.20 ~ 15.5 ~ 17.8
		Min.~Rated~Max.	Btu/h	14,300 ~ 38,200 ~ 46,800	18,400 ~ 47,800 ~ 55,600	21,200 ~ 52,900 ~ 60,700
Power Input	Cooling	Rated~Max.	kW	2.60 ~ 4.42	1.15 ~ 4.18 ~ 5.60	3.70 ~ 5.18
	Heating	Rated~Max.	kW	2.57 ~ 4.60	1.10 ~ 4.20 ~ 5.40	3.49 ~ 5.13
Running Current	Cooling	Rated	A	4.2	6.0	6.7
	Heating	Rated	A	4.1	5.7	6.5
SEER / SCOP			Wh / Wh	5.61 / 4.01	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A+ / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	625 / 3,955	-	-

Note :

- All data are based on the following conditions:
 - Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
 - Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
 - Piping Length : Interconnected Pipe Length = 5m
 - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
- Due to our policy of innovation some specifications may be changed without notifications.

1. DC Inverter High

Combination	Outdoor unit			AUUW368DH1 [UU37WH U31]	AUUW428DH1 [UU43WH U31]	AUUW488DH1 [UU49WH U31]
	Indoor unit			UVNH36GLLA1 [UV36H NL1]	UVNH42GLLA1 [UV42H NL1]	UVNH48GLLA1 [UV48H NL1]
Capacity	Cooling	Min.~Rated~Max.	kW	4.30 ~ 10.0 ~ 12.4	5.00 ~ 12.5 ~ 14.9	5.40 ~ 13.3 ~ 16.1
		Min.~Rated~Max.	Btu/h	14,700 ~ 34,100 ~ 42,300	17,100 ~ 42,700 ~ 50,800	18,400 ~ 45,400 ~ 54,900
	Heating	Min.~Rated~Max.	kW	4.20 ~ 10.5 ~ 13.7	5.40 ~ 13.6 ~ 16.3	6.20 ~ 15.0 ~ 17.8
		Min.~Rated~Max.	Btu/h	14,300 ~ 35,800 ~ 46,800	18,400 ~ 46,400 ~ 55,600	21,200 ~ 51,200 ~ 60,700
Power Input	Cooling	Rated~Max.	kW	2.77 ~ 4.16	3.89 ~ 5.06	4.42 ~ 5.75
	Heating	Rated~Max.	kW	2.62 ~ 4.70	3.57 ~ 5.20	4.16 ~ 5.60
Running Current	Cooling	Rated	A	4.2	6.0	6.7
	Heating	Rated	A	4.1	5.7	6.5
SEER / SCOP			Wh / Wh	5.31 / 4.01	-	-
Energy Label (Seasonal)	Cooling / Heating		-	A+ / A+	-	-
Annual Energy Consumption	Cooling / Heating		kWh	660 / 3,955	-	-

Note :

1. All data are based on the following conditions:

- Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
- Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Piping Length : Interconnected Pipe Length = 5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Due to our policy of innovation some specifications may be changed without notifications.

1. DC Inverter High

Model Names			AUUW368DH1 [UU37WH U31]	AUUW428DH1 [UU43WH U31]	AUUW488DH1 [UU49WH U31]	
Power Supply			V, Ø, Hz	380-415, 3, 50	380-415, 3, 50	380-415, 3, 50
Starting Current	Cooling	Max.	A	-	-	-
	Heating	Max.	A	-	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm ² (AWG)	5C x 2.5 (12)	5C x 2.5 (12)	5C x 2.5 (12)
Casing Color			-	Warm Gray	Warm Gray	Warm Gray
Dimensions		W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330	950 x 1,380 x 330
		W x H x D	inch	37-13/32 x 54-11/32 x 13	37-13/32 x 54-11/32 x 13	37-13/32 x 54-11/32 x 13
Net Weight			kg (lbs)	103 (227.1)	103 (227.1)	103 (227.1)
Compressor	Type		-	Twin Rotary	Twin Rotary	Twin Rotary
	Model		Model x No.	GPT425DAA x 1	GPT425DAA x 1	GPT425DAA x 1
	Motor type		-	BLDC	BLDC	BLDC
Refrigerant	Type		-	R410A	R410A	R410A
	Precharged Amount		g (oz)	3,600	3,600	3,600
	Chargeless-Pipe Length		m (ft)	7.5 (24.6)	7.5 (24.6)	7.5 (24.6)
	Additional Charging Volume		g/m (oz/ft)	40 (0.43)	40 (0.43)	40 (0.43)
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D	FVC68D	FVC68D
	Charged volume		cc x No.	1,300 x 1	1,300 x 1	1,300 x 1
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(2 x 32 x 16) x 2	(2 x 32 x 16) x 2	(2 x 32 x 16) x 2
Fan	Type		-	Propeller	Propeller	Propeller
	Air Flow Rate		m ³ /min x No.	55 x 2	55 x 2	55 x 2
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	124 x 2	124 x 2	124 x 2
Sound Pressure Level	Cooling	Rated	dB(A)	51	51	51
	Heating	Rated	dB(A)	53	53	53
Sound Power Level		Max.	dB(A)	65	66	66
Piping Connections	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Max.	m (ft)	75 (246.1)	75 (246.1)	75 (246.1)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	30 (98.4)	30 (98.4)	30 (98.4)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)	-10 (14.0) ~ 48 (118.4)
	Heating	Min. ~ Max.	°C WB (°F WB)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)	-18 (-0.4) ~ 18 (64.4)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notifications.
3. Sound Level Values are measured at Anechoic chamber.
Therefore, these values can be increased owing to ambient conditions during operation.

1. DC Inverter High

1.4 Dimensions

OUTDOOR UNIT	AUUW126DH1[UU12WH UE1]		
---------------------	------------------------	--	--

No.	Part Name	Remark
1	Air discharge grille	
2	Gas pipe connection	
3	Liquid pipe connection	
4	Power & transmission connection	
5	Earth screw	
6	SVC valve cover	

[Unit : mm]

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit should be grounded in accordance with the local regulations or applicable national codes.
- All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
- Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.

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	CHASSIS CODE: UE
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1. DC Inverter High

OUTDOOR UNIT	AUUW186DH1[UJ18WH UE1]		
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No.	Part Name	Remark
1	Air discharge grille	
2	Gas pipe connection	
3	Liquid pipe connection	
4	Power & transmission connection	
5	Earth screw	
6	SVC valve cover	

[Unit : mm]

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit should be grounded in accordance with the local regulations or applicable national codes.
- All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
- Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.



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CHASSIS CODE: UE1

1. DC Inverter High

OUTDOOR UNIT	AUUW216DH1[UJ21WH U41] AUUW246DH1[UJ24WH U41]				
Item No.	Part Name	Remark			
1	Air discharge grille				
2	Gas pipe connection				
3	Liquid pipe connection				
4	Power & transmission connection				
5	Earth screw				

390
360
330

834
809
165
620
950
364

390

[Unit : mm]

Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
4. Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.

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CHASSIS CODE: U4

1. DC Inverter High

OUTDOOR UNIT	
AUUW366DH1[UU36WH U31] AUUW426DH1[UU42WH U31] AUUW486DH1[UU48WH U31] AUUW368DH1[UU37WH U31] AUUW428DH1[UU43WH U31] AUUW488DH1[UU49WH U31]	

No.	Part Name	Remark
1	Air discharge grille	
2	Gas pipe connection	
3	Liquid pipe connection	
4	Power & transmission connection	

Note

- Unit should be installed in compliance with the installation manual in the product box.
- Unit should be grounded in accordance with the local regulations or applicable national codes.
- All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
- Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.

[Unit : mm]

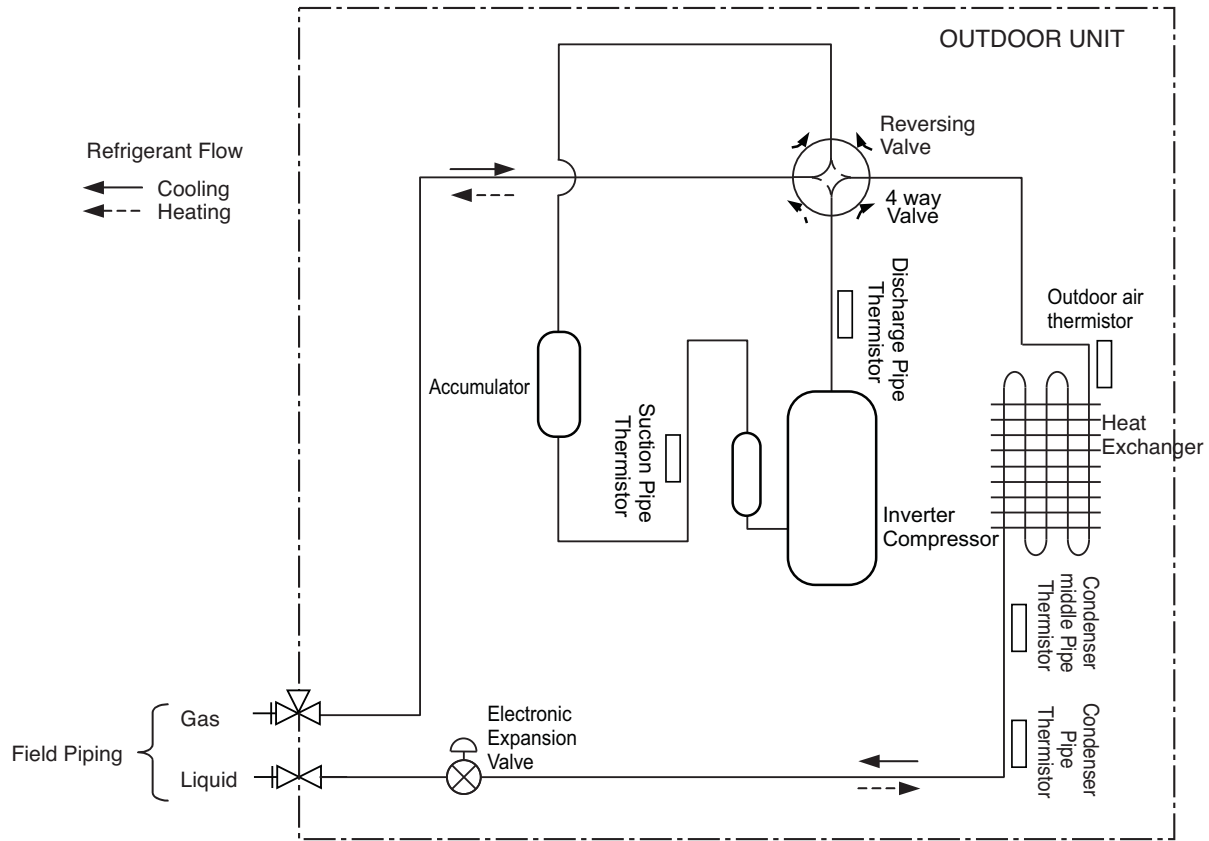
4-holes for anchor bolts

CHASSIS CODE: U3

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1. DC Inverter High

1.5 Piping diagrams



[Unit: mm(inch)]

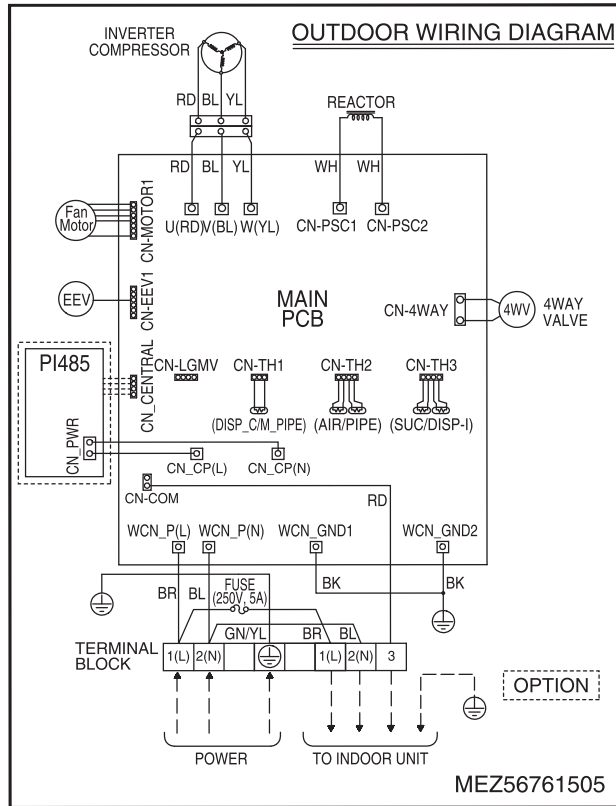
Model	Gas	Liquid
AUW126DH1	Ø9.52(3/8)	Ø6.35(1/4)
AUW186DH1	Ø12.7(1/2)	Ø6.35(1/4)
AUW216DH1	Ø15.88(5/8)	Ø9.52(3/8)
AUW246DH1		
AUW366DH1/AUW368DH1		
AUW426DH1/AUW428DH1		
AUW486DH1/AUW488DH1		

1. DC Inverter High

1.6 Wiring diagrams

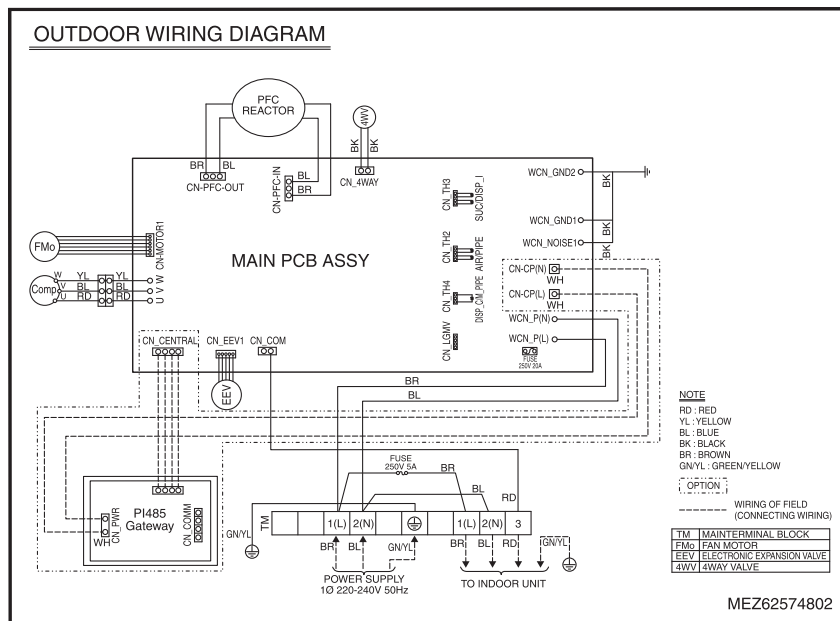
1) Wiring diagrams

MODEL : AUUW126DH1



Part 2 Product data_Outdoor unit

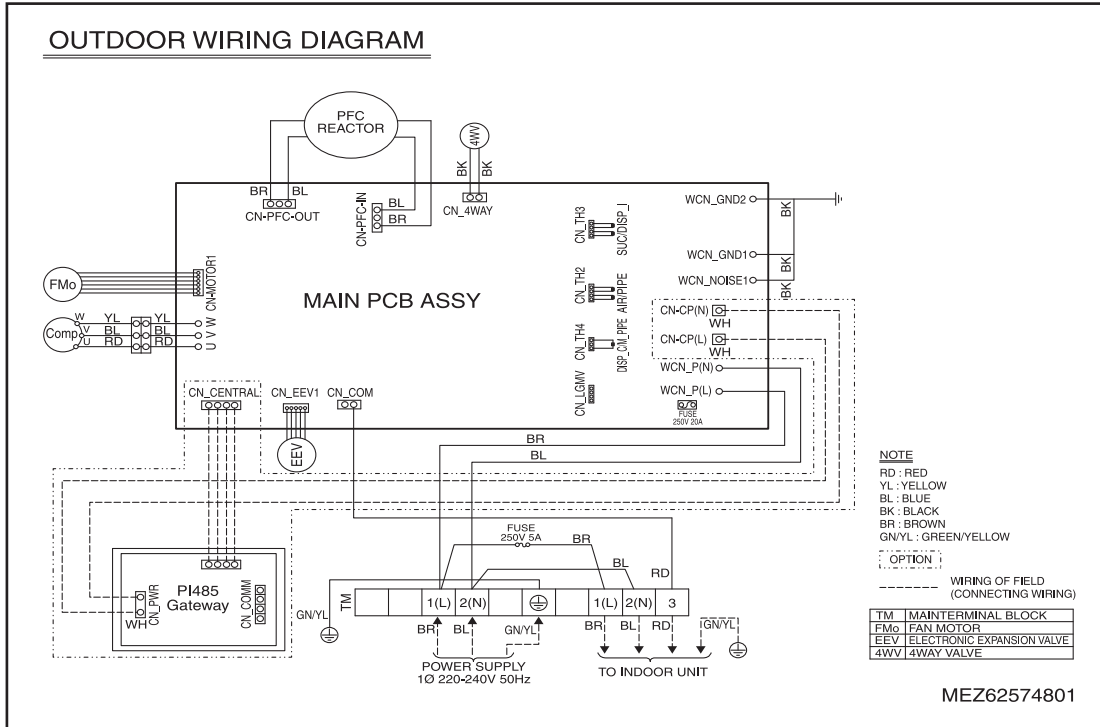
MODEL : AUUW186DH



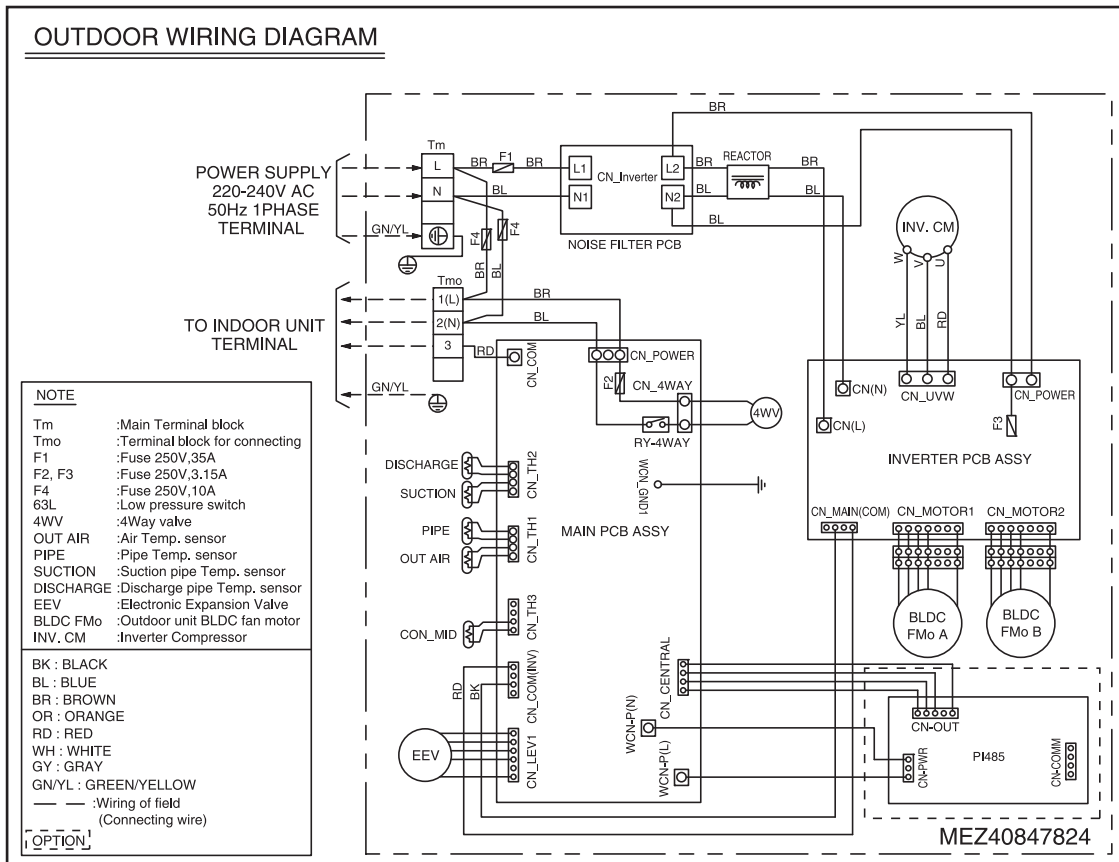
1. DC Inverter High

MODEL : AUUW216DH1,AUUW246DH1

Part 2 Product data_ Outdoor unit

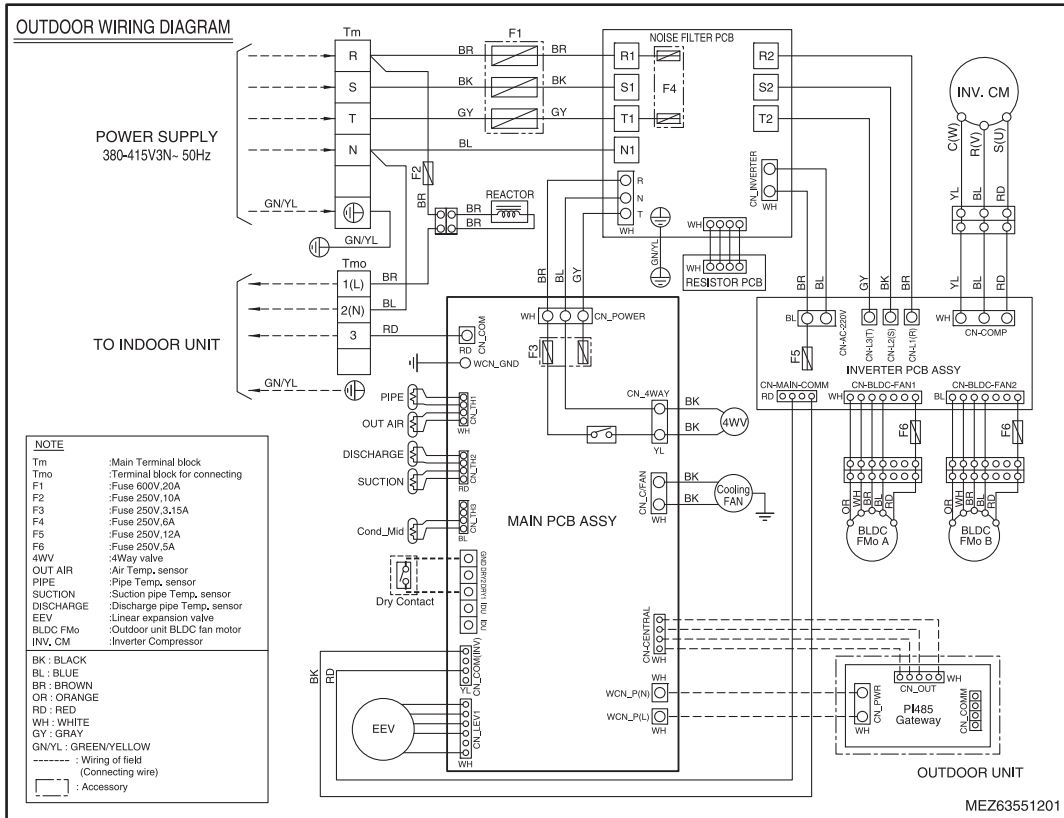


MODEL : AUUW366DH1,AUUW426DH1,AUUW486DH1



1. DC Inverter High

MODEL : AUUW368DH1,AUUW428DH1,AUUW488DH1



Part 2 Product data Outdoor unit

1. DC Inverter High

1.7 Capacity tables

-All of the following tables show max capacity and power input.

-Refer to 1.3 Specifications for rated capacity and power input

**Models : AUUW126DH1 + ATNH12GPLE1 , UVNH12GJLA1
[UU12WH UE1] [UT12H NP1] [UV12H NJ1]**

• Cooling Capacity

Model	ATNH12GPLE1[UT12H NP1]
AFR	13

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	4.12	3.27	0.80	3.94	3.16	0.83	3.70	3.03	1.12	3.59	2.93	1.24	3.43	2.84	1.37	3.33	2.74	1.34	3.24	2.66	1.20
16.0	22.0	4.37	3.31	1.08	4.19	3.21	1.09	3.95	3.09	1.32	3.84	2.99	1.41	3.68	2.91	1.47	3.58	2.81	1.40	3.49	2.73	1.22
18.0	25.0	4.63	3.34	1.17	4.44	3.24	1.17	4.20	3.13	1.38	4.09	3.04	1.44	3.93	2.96	1.49	3.83	2.87	1.40	3.74	2.79	1.19
19.0	27.0	4.75	3.37	1.18	4.57	3.27	1.19	4.33	3.17	1.40	4.20	3.07	1.44	4.05	3.00	1.50	3.96	2.91	1.40	3.86	2.83	1.18
22.0	30.0	5.13	3.43	1.18	4.95	3.35	1.21	4.70	3.25	1.43	4.59	3.16	1.51	4.43	3.10	1.52	4.33	3.01	1.41	4.24	2.93	1.18
24.0	32.0	5.39	3.50	1.17	5.20	3.42	1.22	4.95	3.33	1.46	4.83	3.24	1.54	4.68	3.17	1.55	4.58	3.09	1.44	4.49	3.01	1.21

Model	UVNH12GJLA1[UV12 NJ1]
AFR	12.4

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	4.12	3.49	0.78	3.94	3.38	0.82	3.70	3.24	1.10	3.59	3.13	1.23	3.43	3.04	1.35	3.33	2.93	1.32	3.24	2.84	1.19
16.0	22.0	4.37	3.54	1.06	4.19	3.43	1.07	3.95	3.30	1.30	3.84	3.20	1.39	3.68	3.11	1.45	3.58	3.00	1.38	3.49	2.92	1.20
18.0	25.0	4.63	3.57	1.15	4.44	3.47	1.16	4.20	3.35	1.36	4.09	3.25	1.42	3.93	3.16	1.47	3.83	3.06	1.38	3.74	2.98	1.17
19.0	27.0	4.75	3.60	1.16	4.57	3.50	1.17	4.33	3.39	1.38	4.20	3.28	1.42	4.05	3.21	1.48	3.96	3.11	1.38	3.86	3.02	1.16
22.0	30.0	5.13	3.67	1.16	4.95	3.58	1.19	4.70	3.48	1.41	4.59	3.38	1.49	4.43	3.31	1.50	4.33	3.21	1.39	4.24	3.13	1.16
24.0	32.0	5.39	3.74	1.16	5.20	3.65	1.20	4.95	3.55	1.44	4.83	3.46	1.52	4.68	3.39	1.53	4.58	3.30	1.42	4.49	3.22	1.19

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
SHC : Sensible Heating Capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
- Heating mode Outdoor conditions : 85%RH.
However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
- Interconnecting Piping Length : 5m
- Level Difference : Zero.

1. DC Inverter High

• Heating Capacity

Model	ATNH12GPLE1[UT12H NP1]
AFR	13

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	3.66	1.76	3.83	1.81	4.29	1.71	4.67	1.62	5.08	1.53	5.41	1.49	5.56	1.42
18.0	3.63	1.79	3.82	1.85	4.30	1.76	4.66	1.67	5.05	1.57	5.35	1.52	5.54	1.43
20.0	3.60	1.82	3.82	1.90	4.30	1.81	4.65	1.71	5.00	1.60	5.31	1.54	5.55	1.44
21.0	3.59	1.84	3.82	1.93	4.30	1.83	4.64	1.73	4.97	1.62	5.31	1.56	5.52	1.44
22.0	3.58	1.86	3.82	1.96	4.30	1.86	4.63	1.76	4.93	1.63	5.30	1.56	5.47	1.44
24.0	3.54	1.91	3.78	2.01	4.25	1.91	4.59	1.80	4.89	1.66	5.22	1.58	5.41	1.45

Model	UVNH12GJLA1[UV12 NJ1]
AFR	12.4

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	3.51	1.96	3.65	2.01	4.12	1.90	4.48	1.81	4.88	1.70	5.20	1.66	5.34	1.58
18.0	3.48	1.99	3.64	2.06	4.13	1.96	4.48	1.86	4.85	1.75	5.13	1.69	5.32	1.59
20.0	3.46	2.03	3.64	2.11	4.13	2.01	4.46	1.90	4.80	1.78	5.10	1.72	5.33	1.60
21.0	3.45	2.05	3.64	2.14	4.13	2.04	4.45	1.93	4.77	1.80	5.10	1.73	5.30	1.61
22.0	3.44	2.07	3.64	2.18	4.13	2.07	4.44	1.95	4.73	1.81	5.09	1.74	5.25	1.61
24.0	3.40	2.12	3.60	2.24	4.08	2.12	4.41	2.00	4.70	1.84	5.01	1.75	5.19	1.62

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
|--|
| |
|--|

 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH. However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

**Models : AUUW186DH1 + ABNH18GGLA1, ATNH18GPLE1, UVNH18GJLA1
[UU18WH UE1] [UB18H NG1] [UT18H NP1] [UV18H NJ1]**

• Cooling Capacity

Model	ABNH18GGLA1[UB18H NG1]
AFR	17

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	5.88	5.18	1.12	5.63	5.01	1.17	5.28	4.81	1.57	5.12	4.64	1.75	4.90	4.50	1.93	4.76	4.34	1.89	4.63	4.21	1.69
16.0	22.0	6.25	5.24	1.52	5.99	5.09	1.53	5.64	4.90	1.85	5.48	4.74	1.99	5.25	4.61	2.08	5.12	4.46	1.98	4.99	4.33	1.72
18.0	25.0	6.61	5.29	1.64	6.35	5.14	1.65	6.00	4.97	1.95	5.84	4.81	2.03	5.61	4.69	2.11	5.48	4.55	1.97	5.34	4.42	1.67
19.0	27.0	6.79	5.34	1.66	6.53	5.19	1.68	6.18	5.02	1.97	6.00	4.86	2.03	5.79	4.76	2.11	5.66	4.61	1.97	5.52	4.49	1.66
22.0	30.0	7.33	5.44	1.66	7.07	5.31	1.71	6.72	5.16	2.02	6.55	5.01	2.13	6.33	4.91	2.14	6.19	4.76	1.99	6.06	4.65	1.66
24.0	32.0	7.69	5.54	1.65	7.43	5.42	1.72	7.08	5.27	2.05	6.91	5.13	2.17	6.68	5.03	2.19	6.55	4.89	2.03	6.41	4.78	1.70

Model	ATNH18GPLE1[UT18H NP1]
AFR	17

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	5.39	4.34	1.04	5.16	4.19	1.09	4.84	4.03	1.46	4.70	3.89	1.63	4.49	3.77	1.79	4.37	3.64	1.76	4.24	3.53	1.58
16.0	22.0	5.72	4.39	1.42	5.49	4.26	1.43	5.17	4.10	1.73	5.02	3.97	1.85	4.82	3.86	1.93	4.69	3.73	1.84	4.57	3.62	1.60
18.0	25.0	6.06	4.43	1.53	5.82	4.31	1.54	5.50	4.16	1.81	5.35	4.03	1.89	5.14	3.93	1.96	5.02	3.81	1.84	4.90	3.70	1.56
19.0	27.0	6.22	4.47	1.55	5.98	4.35	1.56	5.67	4.21	1.83	5.50	4.07	1.89	5.31	3.98	1.97	5.18	3.86	1.83	5.06	3.76	1.54
22.0	30.0	6.72	4.56	1.55	6.48	4.45	1.59	6.16	4.32	1.88	6.00	4.20	1.98	5.80	4.11	2.00	5.67	3.99	1.85	5.55	3.89	1.55
24.0	32.0	7.05	4.64	1.54	6.81	4.53	1.60	6.49	4.42	1.91	6.33	4.29	2.02	6.13	4.21	2.04	6.00	4.10	1.89	5.88	4.00	1.58

Model	UVNH18GJLA1[UV18H NJ1]
AFR	13.9

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	5.39	4.28	1.03	5.16	4.14	1.08	4.84	3.97	1.45	4.70	3.84	1.62	4.49	3.72	1.78	4.37	3.59	1.74	4.24	3.48	1.56
16.0	22.0	5.72	4.33	1.40	5.49	4.20	1.41	5.17	4.05	1.71	5.02	3.92	1.84	4.82	3.81	1.91	4.69	3.68	1.82	4.57	3.58	1.58
18.0	25.0	6.06	4.37	1.51	5.82	4.25	1.52	5.50	4.10	1.79	5.35	3.98	1.87	5.14	3.88	1.94	5.02	3.76	1.82	4.90	3.65	1.54
19.0	27.0	6.22	4.41	1.53	5.98	4.29	1.55	5.67	4.15	1.81	5.50	4.02	1.87	5.31	3.93	1.94	5.18	3.81	1.81	5.06	3.71	1.53
22.0	30.0	6.72	4.50	1.53	6.48	4.39	1.57	6.16	4.26	1.86	6.00	4.14	1.96	5.80	4.05	1.98	5.67	3.94	1.83	5.55	3.84	1.53
24.0	32.0	7.05	4.58	1.52	6.81	4.47	1.59	6.49	4.36	1.89	6.33	4.24	2.00	6.13	4.16	2.02	6.00	4.04	1.87	5.88	3.95	1.57

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

• Heating Capacity

Model	ABNH18GGLA1[UB18H NG1]
AFR	17

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	5.12	2.53	5.47	2.59	6.25	2.44	6.72	2.32	7.32	2.19	7.80	2.14	8.01	2.03
18.0	5.08	2.56	5.46	2.65	6.26	2.52	6.71	2.39	7.27	2.24	7.70	2.18	7.98	2.05
20.0	5.04	2.61	5.46	2.72	6.26	2.59	6.70	2.45	7.20	2.29	7.65	2.21	7.99	2.06
21.0	5.03	2.63	5.46	2.76	6.26	2.62	6.68	2.48	7.15	2.31	7.65	2.23	7.94	2.07
22.0	5.02	2.66	5.46	2.80	6.26	2.66	6.66	2.51	7.10	2.33	7.64	2.24	7.88	2.07
24.0	4.96	2.73	5.41	2.88	6.19	2.73	6.61	2.57	7.05	2.37	7.51	2.26	7.78	2.08

Model	ATNH18GPLE1[UT18H NP1]
AFR	17

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	4.43	2.23	4.90	2.28	5.62	2.16	5.77	2.05	6.15	1.93	6.55	1.88	6.73	1.79
18.0	4.39	2.26	4.90	2.34	5.63	2.22	5.76	2.11	6.11	1.98	6.47	1.92	6.70	1.81
20.0	4.36	2.30	4.90	2.40	5.63	2.28	5.75	2.16	6.05	2.02	6.43	1.95	6.72	1.82
21.0	4.34	2.32	4.90	2.43	5.63	2.31	5.74	2.19	6.01	2.04	6.43	1.96	6.67	1.82
22.0	4.34	2.35	4.90	2.47	5.63	2.35	5.72	2.22	5.97	2.05	6.42	1.97	6.62	1.82
24.0	4.28	2.41	4.85	2.54	5.56	2.41	5.67	2.27	5.92	2.09	6.31	1.99	6.54	1.83

Model	UVNH18GJLA1[UV18H NJ1]
AFR	13.9

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	4.46	2.43	4.81	2.49	5.66	2.35	5.82	2.23	6.20	2.10	6.61	2.05	6.78	1.95
18.0	4.42	2.46	4.81	2.55	5.67	2.42	5.81	2.29	6.16	2.16	6.52	2.09	6.76	1.97
20.0	4.39	2.51	4.81	2.61	5.67	2.49	5.80	2.35	6.10	2.20	6.48	2.12	6.77	1.98
21.0	4.38	2.53	4.81	2.65	5.67	2.52	5.78	2.38	6.06	2.22	6.48	2.14	6.73	1.98
22.0	4.37	2.56	4.81	2.69	5.67	2.56	5.77	2.42	6.02	2.24	6.47	2.15	6.67	1.98
24.0	4.32	2.62	4.76	2.77	5.60	2.62	5.72	2.47	5.97	2.28	6.36	2.17	6.59	2.00

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

**Models : AUUW216DH1 + ABNH21GGLA1, ATNH21GNLE1, UVNH21GKLA1
[UU21WH U41] [UB21H NG1] [UT21H NN1] [UV21H NK1]**

• Cooling Capacity

Model	ABNH21GGLA1[UB21H NG1]
AFR	25

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	6.47	6.47	1.24	6.19	6.19	1.30	5.81	5.81	1.74	5.63	5.63	1.95	5.39	5.39	2.14	5.24	5.24	2.09	5.09	5.09	1.88
16.0	22.0	6.87	6.69	1.69	6.59	6.49	1.70	6.21	6.21	2.06	6.03	6.03	2.21	5.78	5.78	2.30	5.63	5.63	2.19	5.48	5.48	1.90
18.0	25.0	7.27	6.75	1.82	6.98	6.56	1.83	6.60	6.34	2.16	6.42	6.15	2.25	6.17	5.99	2.33	6.02	5.80	2.19	5.88	5.64	1.86
19.0	27.0	7.47	6.81	1.84	7.18	6.63	1.86	6.80	6.41	2.18	6.60	6.20	2.25	6.37	6.07	2.34	6.22	5.88	2.18	6.07	5.73	1.84
22.0	30.0	8.07	6.95	1.84	7.78	6.78	1.89	7.39	6.58	2.23	7.21	6.40	2.36	6.96	6.26	2.38	6.81	6.08	2.20	6.66	5.93	1.84
24.0	32.0	8.46	7.08	1.83	8.17	6.91	1.91	7.78	6.73	2.28	7.60	6.55	2.41	7.35	6.42	2.43	7.20	6.24	2.25	7.05	6.10	1.88

Model	ATNH21GNLE1[UT21H NN1]
AFR	21

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	7.84	6.31	1.44	7.50	6.10	1.50	7.04	5.86	2.01	6.83	5.66	2.25	6.53	5.49	2.47	6.35	5.29	2.42	6.17	5.13	2.17
16.0	22.0	8.33	6.39	1.95	7.98	6.20	1.96	7.52	5.97	2.38	7.31	5.78	2.55	7.01	5.62	2.66	6.83	5.43	2.53	6.65	5.27	2.20
18.0	25.0	8.81	6.44	2.11	8.46	6.26	2.12	8.00	6.05	2.49	7.78	5.86	2.60	7.48	5.72	2.70	7.30	5.54	2.53	7.12	5.39	2.14
19.0	27.0	9.05	6.50	2.13	8.70	6.32	2.15	8.24	6.12	2.52	8.00	5.92	2.60	7.72	5.79	2.70	7.54	5.61	2.52	7.36	5.46	2.12
22.0	30.0	9.78	6.63	2.13	9.43	6.47	2.19	8.96	6.28	2.58	8.73	6.10	2.73	8.43	5.98	2.75	8.25	5.80	2.55	8.07	5.66	2.13
24.0	32.0	10.26	6.75	2.12	9.91	6.60	2.20	9.44	6.42	2.63	9.21	6.25	2.78	8.91	6.13	2.81	8.73	5.96	2.60	8.55	5.82	2.18

Model	UVNH21GKLA1[UV21H NK1]
AFR	20.4

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	7.84	6.56	1.46	7.50	6.35	1.52	7.04	6.09	2.05	6.83	5.89	2.28	6.53	5.71	2.51	6.35	5.51	2.46	6.17	5.34	2.20
16.0	22.0	8.33	6.65	1.98	7.98	6.45	1.99	7.52	6.21	2.41	7.31	6.01	2.59	7.01	5.84	2.70	6.83	5.65	2.57	6.65	5.49	2.23
18.0	25.0	8.81	6.70	2.14	8.46	6.52	2.15	8.00	6.30	2.53	7.78	6.10	2.64	7.48	5.95	2.74	7.30	5.76	2.57	7.12	5.60	2.18
19.0	27.0	9.05	6.76	2.16	8.70	6.58	2.18	8.24	6.37	2.56	8.00	6.16	2.64	7.72	6.03	2.75	7.54	5.84	2.56	7.36	5.69	2.16
22.0	30.0	9.78	6.90	2.16	9.43	6.73	2.22	8.96	6.54	2.62	8.73	6.35	2.77	8.43	6.22	2.79	8.25	6.04	2.59	8.07	5.89	2.16
24.0	32.0	10.26	7.03	2.15	9.91	6.86	2.24	9.44	6.68	2.67	9.21	6.50	2.82	8.91	6.38	2.85	8.73	6.20	2.64	8.55	6.05	2.21

• Symbol

- AFR : Air flow rate [m³/min]
- DB : Dry bulb temperature [°C]
- WB : Wet bulb temperature [°C]
- TC : Total capacity [kW]
- SHC : Sensible Heating Capacity [kW]
- PI : Power Input [kW]
(Comp.+ indoor fan motor+outdoor fan motor)

• Notes

1. All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
2. indicates maximum capacity at the standard temperature condition.
- Heating mode Outdoor conditions : 85%RH.
However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
3. Direct interpolation is permissible. Do not extrapolate.
4. Capacities are based on the following conditions:
- Interconnecting Piping Length : 5m
- Level Difference : Zero.

1. DC Inverter High

• Heating Capacity

Model	ABNH21GGLA1[UB21H NG1]
AFR	25

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	6.11	2.22	6.52	2.27	7.23	2.14	7.42	2.04	7.83	1.92	8.34	1.87	8.56	1.78
18.0	6.05	2.25	6.51	2.33	7.24	2.21	7.41	2.09	7.77	1.97	8.23	1.91	8.53	1.80
20.0	6.01	2.29	6.51	2.39	7.24	2.27	7.39	2.15	7.70	2.01	8.18	1.94	8.55	1.81
21.0	5.99	2.31	6.51	2.42	7.24	2.30	7.38	2.18	7.65	2.03	8.18	1.95	8.49	1.81
22.0	5.98	2.34	6.51	2.46	7.24	2.33	7.36	2.21	7.60	2.04	8.17	1.96	8.42	1.81
24.0	5.91	2.40	6.45	2.53	7.15	2.40	7.30	2.26	7.54	2.08	8.03	1.98	8.32	1.83

Model	ATNH21GNLE1[UT21H NN1]
AFR	21

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	5.95	2.98	6.45	3.05	7.55	2.88	8.40	2.74	9.15	2.58	9.75	2.52	10.01	2.39
18.0	5.89	3.02	6.44	3.13	7.56	2.97	8.39	2.81	9.09	2.65	9.62	2.57	9.97	2.42
20.0	5.85	3.08	6.44	3.20	7.56	3.05	8.37	2.89	9.00	2.70	9.56	2.61	9.99	2.43
21.0	5.83	3.10	6.44	3.25	7.56	3.09	8.35	2.93	8.94	2.73	9.56	2.62	9.93	2.44
22.0	5.82	3.14	6.44	3.30	7.56	3.14	8.33	2.96	8.88	2.75	9.55	2.64	9.85	2.44
24.0	5.75	3.22	6.38	3.39	7.47	3.22	8.26	3.03	8.81	2.79	9.39	2.66	9.73	2.45

Model	UVNH21GKLA1[UV21H NK1]
AFR	20.4

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	5.95	3.09	6.45	3.17	7.55	2.99	8.40	2.84	9.15	2.68	9.75	2.61	10.01	2.48
18.0	5.89	3.13	6.44	3.25	7.56	3.08	8.39	2.92	9.09	2.74	9.62	2.66	9.97	2.51
20.0	5.85	3.19	6.44	3.32	7.56	3.16	8.37	3.00	9.00	2.80	9.56	2.70	9.99	2.52
21.0	5.83	3.22	6.44	3.37	7.56	3.21	8.35	3.04	8.94	2.83	9.56	2.72	9.93	2.53
22.0	5.82	3.26	6.44	3.42	7.56	3.25	8.33	3.07	8.88	2.85	9.55	2.73	9.85	2.53
24.0	5.75	3.34	6.38	3.52	7.47	3.34	8.26	3.14	8.81	2.90	9.39	2.76	9.73	2.54

• Symbol

AFR : Air flow rate	[m³/min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 - However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

**Models : AUUW246DH1 + ABNH24GGLA1, ATNH24GNLE1, UVNH24GKLA1
[UU24WH U41] [UB24H NG1] [UT24H NN1] [UV24H NK1]**

• **Cooling Capacity**

Model	ABNH24GGLA1[UB24H NG1]
AFR	25

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	7.66	7.15	1.49	7.32	6.92	1.56	6.88	6.64	2.09	6.67	6.42	2.33	6.38	6.22	2.56	6.20	6.00	2.51	6.02	5.82	2.25
16.0	22.0	8.13	7.25	2.02	7.79	7.03	2.04	7.34	6.77	2.47	7.13	6.55	2.65	6.84	6.37	2.76	6.66	6.16	2.63	6.49	5.98	2.28
18.0	25.0	8.60	7.31	2.19	8.26	7.11	2.20	7.81	6.86	2.59	7.60	6.65	2.70	7.30	6.49	2.80	7.13	6.28	2.62	6.95	6.11	2.23
19.0	27.0	8.84	7.37	2.21	8.50	7.17	2.23	8.04	6.94	2.62	7.81	6.72	2.70	7.54	6.57	2.81	7.36	6.37	2.62	7.19	6.20	2.21
22.0	30.0	9.54	7.52	2.21	9.20	7.34	2.27	8.74	7.13	2.68	8.53	6.92	2.83	8.23	6.78	2.85	8.06	6.58	2.64	7.88	6.42	2.21
24.0	32.0	10.02	7.66	2.20	9.67	7.48	2.29	9.21	7.29	2.73	8.99	7.09	2.89	8.70	6.95	2.91	8.52	6.76	2.70	8.35	6.60	2.26

Model	ATNH24GNLE1[UT24H NN1]
AFR	21

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	8.24	6.44	1.62	7.88	6.23	1.69	7.40	5.98	2.27	7.17	5.78	2.53	6.86	5.60	2.78	6.67	5.41	2.73	6.48	5.24	2.45
16.0	22.0	8.74	6.53	2.19	8.38	6.33	2.21	7.90	6.10	2.68	7.67	5.90	2.88	7.36	5.74	3.00	7.17	5.55	2.85	6.98	5.39	2.48
18.0	25.0	9.25	6.58	2.37	8.89	6.40	2.39	8.40	6.18	2.81	8.17	5.99	2.93	7.86	5.84	3.04	7.67	5.66	2.85	7.48	5.50	2.42
19.0	27.0	9.50	6.64	2.40	9.14	6.46	2.42	8.65	6.25	2.84	8.40	6.05	2.93	8.11	5.92	3.05	7.92	5.74	2.84	7.73	5.58	2.39
22.0	30.0	10.26	6.77	2.40	9.90	6.61	2.46	9.41	6.42	2.91	9.17	6.23	3.07	8.86	6.11	3.10	8.67	5.93	2.87	8.48	5.78	2.40
24.0	32.0	10.77	6.90	2.39	10.40	6.74	2.48	9.91	6.56	2.96	9.67	6.38	3.13	9.36	6.26	3.16	9.17	6.09	2.93	8.98	5.94	2.45

Model	UVNH24GKLA1[UV24H NK1]
AFR	21.4

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	8.24	6.71	1.55	7.88	6.49	1.62	7.40	6.23	2.18	7.17	6.02	2.43	6.86	5.84	2.67	6.67	5.63	2.61	6.48	5.46	2.35
16.0	22.0	8.74	6.80	2.10	8.38	6.59	2.12	7.90	6.35	2.57	7.67	6.15	2.76	7.36	5.98	2.87	7.17	5.78	2.74	6.98	5.61	2.37
18.0	25.0	9.25	6.86	2.28	8.89	6.66	2.29	8.40	6.44	2.70	8.17	6.24	2.81	7.86	6.09	2.91	7.67	5.89	2.73	7.48	5.73	2.32
19.0	27.0	9.50	6.92	2.30	9.14	6.73	2.32	8.65	6.51	2.73	8.40	6.30	2.81	8.11	6.16	2.92	7.92	5.97	2.73	7.73	5.81	2.30
22.0	30.0	10.26	7.06	2.30	9.90	6.88	2.36	9.41	6.68	2.79	9.17	6.49	2.95	8.86	6.36	2.97	8.67	6.18	2.75	8.48	6.02	2.30
24.0	32.0	10.77	7.19	2.29	10.40	7.02	2.38	9.91	6.83	2.84	9.67	6.65	3.00	9.36	6.52	3.03	9.17	6.34	2.81	8.98	6.19	2.35

• **Symbol**

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• **Notes**

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

• Heating Capacity

Model	ABNH24GGLA1[UB24H NG1]
AFR	25

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	6.98	2.46	7.45	2.52	8.26	2.38	8.48	2.26	8.95	2.13	9.53	2.08	9.78	1.97
18.0	6.91	2.50	7.44	2.58	8.27	2.45	8.47	2.32	8.89	2.19	9.41	2.12	9.75	2.00
20.0	6.86	2.54	7.44	2.65	8.27	2.52	8.45	2.39	8.80	2.23	9.35	2.15	9.77	2.01
21.0	6.85	2.56	7.44	2.69	8.27	2.55	8.43	2.42	8.74	2.25	9.35	2.17	9.71	2.01
22.0	6.83	2.59	7.44	2.72	8.27	2.59	8.41	2.45	8.68	2.27	9.34	2.18	9.63	2.01
24.0	6.75	2.66	7.37	2.80	8.17	2.66	8.34	2.50	8.61	2.31	9.18	2.20	9.51	2.03

Model	ATNH24GNLE1[UT24H NN1]
AFR	21

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	6.88	3.20	7.37	3.28	8.26	3.09	8.68	2.94	9.56	2.77	10.18	2.70	10.45	2.57
18.0	6.82	3.25	7.36	3.36	8.27	3.19	8.67	3.02	9.49	2.84	10.05	2.76	10.42	2.60
20.0	6.77	3.30	7.36	3.44	8.27	3.28	8.65	3.10	9.40	2.90	9.98	2.80	10.43	2.61
21.0	6.75	3.33	7.36	3.49	8.27	3.32	8.63	3.14	9.34	2.93	9.98	2.82	10.37	2.62
22.0	6.74	3.37	7.36	3.54	8.27	3.37	8.61	3.18	9.27	2.95	9.97	2.83	10.28	2.62
24.0	6.66	3.46	7.29	3.64	8.17	3.46	8.54	3.26	9.20	3.00	9.81	2.86	10.16	2.63

Model	UVNH24GKLA1[UV24H NK1]
AFR	21.4

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	6.73	3.31	7.10	3.39	8.08	3.20	8.49	3.04	9.35	2.87	9.96	2.80	10.23	2.66
18.0	6.67	3.36	7.08	3.48	8.10	3.30	8.49	3.13	9.29	2.94	9.84	2.85	10.20	2.69
20.0	6.62	3.42	7.08	3.56	8.10	3.39	8.46	3.21	9.20	3.00	9.77	2.90	10.21	2.70
21.0	6.61	3.45	7.08	3.61	8.10	3.44	8.45	3.25	9.14	3.03	9.77	2.92	10.15	2.71
22.0	6.60	3.49	7.08	3.67	8.10	3.48	8.42	3.29	9.08	3.05	9.76	2.93	10.06	2.71
24.0	6.51	3.58	7.01	3.77	8.00	3.58	8.36	3.37	9.00	3.10	9.60	2.96	9.95	2.72

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH. However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

**Models : AUUW366DH1 + ABNH36GRLA1 , ATNH36GMLE1, UVNH36GLLA1
[UU36WH U31] [UB36H NR1] [UT36H NM1] [UV36H NL1]**

• Cooling Capacity

Model	ABNH36GRLA1[UB36H NR1]
AFR	34

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	13.83	13.83	2.60	13.22	13.22	2.72	12.42	12.42	3.65	12.04	12.04	4.07	11.51	11.51	4.47	11.19	11.19	4.38	10.88	10.88	3.93
16.0	22.0	14.68	14.61	3.53	14.07	14.07	3.56	13.26	13.26	4.30	12.88	12.88	4.62	12.35	12.35	4.82	12.03	12.03	4.58	11.72	11.72	3.98
18.0	25.0	15.53	14.73	3.81	14.92	14.32	3.84	14.10	13.83	4.52	13.72	13.41	4.71	13.19	13.07	4.89	12.87	12.66	4.58	12.55	12.31	3.89
19.0	27.0	15.95	14.86	3.86	15.34	14.46	3.89	14.52	13.99	4.57	14.10	13.54	4.71	13.61	13.25	4.90	13.29	12.84	4.57	12.97	12.49	3.85
22.0	30.0	17.23	15.16	3.86	16.61	14.78	3.96	15.79	14.36	4.68	15.39	13.95	4.94	14.86	13.66	4.98	14.55	13.27	4.61	14.23	12.94	3.85
24.0	32.0	18.08	15.44	3.83	17.46	15.08	3.99	16.63	14.68	4.76	16.23	14.28	5.04	15.70	14.01	5.08	15.39	13.62	4.72	15.07	13.30	3.94

Model	ATNH36GMLE1[UT36H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	12.75	12.05	2.44	12.19	11.66	2.55	11.45	11.19	3.42	11.10	10.81	3.82	10.61	10.48	4.20	10.32	10.11	4.11	10.03	9.80	3.69
16.0	22.0	13.53	12.20	3.31	12.97	11.84	3.34	12.22	11.40	4.04	11.87	11.03	4.34	11.39	10.73	4.52	11.09	10.37	4.30	10.80	10.07	3.73
18.0	25.0	14.32	12.31	3.58	13.75	11.96	3.60	13.00	11.56	4.24	12.65	11.20	4.42	12.16	10.92	4.58	11.87	10.58	4.30	11.57	10.29	3.65
19.0	27.0	14.71	12.42	3.62	14.14	12.08	3.65	13.39	11.69	4.29	13.00	11.31	4.42	12.55	11.07	4.60	12.25	10.72	4.29	11.96	10.44	3.61
22.0	30.0	15.89	12.67	3.62	15.32	12.35	3.71	14.56	12.00	4.39	14.19	11.66	4.63	13.71	11.42	4.67	13.41	11.09	4.33	13.12	10.81	3.61
24.0	32.0	16.67	12.90	3.60	16.10	12.60	3.75	15.33	12.27	4.47	14.96	11.93	4.73	14.48	11.71	4.77	14.19	11.38	4.43	13.89	11.12	3.70

Model	UVNH36GLLA1[UV36H NL1]
AFR	28.6

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	12.16	10.04	2.30	11.63	9.71	2.40	10.92	9.32	3.22	10.59	9.01	3.60	10.12	8.73	3.95	9.84	8.43	3.87	9.57	8.16	3.47
16.0	22.0	12.91	10.17	3.12	12.37	9.86	3.14	11.66	9.50	3.80	11.32	9.19	4.08	10.86	8.94	4.26	10.58	8.64	4.05	10.30	8.39	3.51
18.0	25.0	13.66	10.26	3.37	13.12	9.97	3.39	12.40	9.63	3.99	12.06	9.34	4.16	11.60	9.10	4.32	11.32	8.81	4.04	11.04	8.57	3.43
19.0	27.0	14.03	10.35	3.41	13.49	10.07	3.44	12.77	9.74	4.04	12.40	9.42	4.16	11.97	9.22	4.33	11.69	8.94	4.03	11.41	8.70	3.40
22.0	30.0	15.15	10.55	3.41	14.61	10.29	3.50	13.88	10.00	4.13	13.54	9.72	4.36	13.07	9.51	4.39	12.79	9.24	4.07	12.52	9.01	3.40
24.0	32.0	15.90	10.75	3.39	15.35	10.50	3.53	14.63	10.22	4.21	14.27	9.94	4.45	13.81	9.76	4.49	13.53	9.48	4.17	13.25	9.26	3.48

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1 x2
Cooling	2.98	2.93	3.2

(Trio)

Model	UT18H NP1x3
Cooling	3.39

Air flow rate is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1
AFR	17*2	17*2	13.9*2

(Trio)

Model	UT18H NP1x3
AFR	13*3

1. DC Inverter High

• Heating Capacity

Model	ABNH36GRLA1[UB36H NR1]
AFR	34

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.88	4.63	10.32	4.75	12.60	4.48	13.10	4.26	14.74	4.01	15.70	3.92	16.12	3.72
18.0	9.78	4.70	10.30	4.87	12.62	4.61	13.09	4.38	14.64	4.12	15.50	3.99	16.07	3.76
20.0	9.72	4.79	10.30	4.99	12.62	4.75	13.05	4.49	14.50	4.20	15.40	4.05	16.10	3.78
21.0	9.69	4.83	10.30	5.06	12.62	4.81	13.02	4.55	14.41	4.24	15.40	4.08	16.00	3.79
22.0	9.67	4.88	10.30	5.13	12.62	4.88	12.99	4.61	14.30	4.27	15.38	4.10	15.86	3.79
24.0	9.55	5.01	10.20	5.28	12.46	5.01	12.88	4.72	14.19	4.34	15.13	4.14	15.68	3.81

Model	ATNH36GMLE1[UT36H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.25	5.07	10.10	5.20	11.74	4.91	12.93	4.67	14.23	4.40	15.16	4.29	15.57	4.07
18.0	9.16	5.15	10.08	5.33	11.76	5.05	12.92	4.79	14.14	4.51	14.97	4.38	15.51	4.12
20.0	9.10	5.24	10.08	5.46	11.76	5.20	12.88	4.92	14.00	4.60	14.87	4.44	15.54	4.14
21.0	9.08	5.29	10.08	5.54	11.76	5.27	12.85	4.99	13.91	4.65	14.87	4.47	15.45	4.15
22.0	9.06	5.35	10.08	5.62	11.76	5.34	12.82	5.05	13.81	4.68	14.85	4.49	15.32	4.15
24.0	8.95	5.49	9.98	5.78	11.62	5.49	12.72	5.17	13.70	4.76	14.61	4.53	15.14	4.18

Model	UVNH36GLLA1[UV36H NL1]
AFR	28.6

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.05	5.18	9.47	5.32	11.49	5.02	12.65	4.77	13.93	4.49	14.84	4.38	15.23	4.16
18.0	8.97	5.26	9.45	5.45	11.51	5.16	12.64	4.90	13.83	4.61	14.65	4.47	15.18	4.21
20.0	8.91	5.36	9.45	5.58	11.51	5.31	12.60	5.03	13.70	4.70	14.55	4.54	15.21	4.23
21.0	8.88	5.40	9.45	5.66	11.51	5.38	12.58	5.09	13.61	4.75	14.55	4.57	15.11	4.24
22.0	8.87	5.47	9.45	5.74	11.51	5.46	12.54	5.16	13.51	4.78	14.53	4.59	14.99	4.24
24.0	8.76	5.61	9.36	5.91	11.37	5.61	12.44	5.28	13.41	4.86	14.29	4.63	14.81	4.27

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1 x2
Heating	2.98	3.21	3.5

(Trio)

Model	UT18H NP1x3
Heating	3.39

Air flow rate is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1
AFR	17*2	17*2	13.9*2

(Trio)

Model	UT18H NP1x3
AFR	13*3

1. DC Inverter High

**Models : AUUW426DH1 + ABNH42GRLA1 , ATNH42GMLE1, UVNH42GLLA1
[UU42WH U31] [UB42H NR1] [UT42H NM1] [UV42H NL1]**

• Cooling Capacity

Model	ABNH42GRLA1[UB42H NR1]
AFR	37

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.71	14.71	2.84	14.07	14.07	2.97	13.21	13.21	3.98	12.81	12.81	4.44	12.25	12.25	4.88	11.91	11.91	4.78	11.57	11.57	4.29
16.0	22.0	15.61	15.22	3.85	14.97	14.76	3.88	14.11	14.11	4.70	13.70	13.70	5.04	13.14	13.14	5.26	12.80	12.80	5.00	12.46	12.46	4.34
18.0	25.0	16.52	15.35	4.16	15.87	14.92	4.19	15.00	14.41	4.93	14.59	13.97	5.14	14.03	13.62	5.33	13.69	13.19	5.00	13.36	12.83	4.24
19.0	27.0	16.97	15.48	4.21	16.32	15.06	4.25	15.45	14.57	4.99	15.00	14.10	5.14	14.48	13.80	5.35	14.14	13.37	4.99	13.80	13.01	4.20
22.0	30.0	18.33	15.79	4.21	17.67	15.40	4.32	16.80	14.96	5.10	16.38	14.54	5.39	15.81	14.23	5.43	15.48	13.82	5.03	15.14	13.48	4.20
24.0	32.0	19.24	16.08	4.18	18.57	15.71	4.36	17.69	15.30	5.20	17.27	14.88	5.50	16.71	14.60	5.55	16.37	14.19	5.15	16.03	13.86	4.30

Model	ATNH42GMLE1[UT42H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.61	12.38	2.83	13.97	11.98	2.95	13.12	11.50	3.97	12.72	11.11	4.43	12.16	10.77	4.86	11.83	10.39	4.76	11.49	10.07	4.27
16.0	22.0	15.51	12.54	3.83	14.87	12.16	3.87	14.01	11.72	4.68	13.61	11.34	5.03	13.05	11.03	5.24	12.72	10.66	4.98	12.38	10.35	4.33
18.0	25.0	16.41	12.65	4.15	15.76	12.29	4.17	14.90	11.88	4.91	14.49	11.51	5.12	13.94	11.23	5.31	13.60	10.87	4.98	13.27	10.57	4.22
19.0	27.0	16.86	12.76	4.19	16.21	12.41	4.23	15.35	12.01	4.97	14.90	11.62	5.12	14.38	11.37	5.33	14.04	11.02	4.97	13.71	10.73	4.18
22.0	30.0	18.21	13.02	4.19	17.55	12.69	4.30	16.68	12.33	5.08	16.27	11.98	5.37	15.71	11.73	5.41	15.37	11.39	5.01	15.04	11.11	4.19
24.0	32.0	19.11	13.26	4.17	18.45	12.95	4.34	17.57	12.61	5.18	17.15	12.26	5.48	16.59	12.03	5.52	16.26	11.70	5.13	15.93	11.42	4.29

Model	UVNH42GLLA1[UV42H NL1]
AFR	30

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.61	11.43	2.79	13.97	11.06	2.92	13.12	10.61	3.92	12.72	10.25	4.37	12.16	9.94	4.80	11.83	9.59	4.71	11.49	9.29	4.22
16.0	22.0	15.51	11.58	3.79	14.87	11.23	3.82	14.01	10.81	4.62	13.61	10.47	4.97	13.05	10.18	5.18	12.72	9.84	4.93	12.38	9.55	4.28
18.0	25.0	16.41	11.68	4.10	15.76	11.35	4.12	14.90	10.96	4.85	14.49	10.63	5.06	13.94	10.36	5.25	13.60	10.03	4.92	13.27	9.76	4.17
19.0	27.0	16.86	11.78	4.14	16.21	11.46	4.18	15.35	11.09	4.91	14.90	10.73	5.06	14.38	10.50	5.26	14.04	10.17	4.91	13.71	9.90	4.13
22.0	30.0	18.21	12.01	4.14	17.55	11.72	4.25	16.68	11.38	5.02	16.27	11.06	5.30	15.71	10.83	5.35	15.37	10.52	4.96	15.04	10.26	4.14
24.0	32.0	19.11	12.24	4.12	18.45	11.95	4.29	17.57	11.64	5.12	17.15	11.32	5.41	16.59	11.11	5.46	16.26	10.80	5.07	15.93	10.54	4.24

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	4.15	3.88	4.33

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.4	4.74

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	21*2	25*2	20.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

• Heating Capacity

Model	ABNH42GRLA1[UB42H NR1]
AFR	37

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	12.52	5.18	13.04	5.32	15.29	5.02	16.25	4.77	17.90	4.49	19.06	4.38	19.57	4.16
18.0	12.41	5.26	13.02	5.45	15.31	5.16	16.24	4.90	17.77	4.61	18.82	4.47	19.50	4.21
20.0	12.32	5.36	13.02	5.58	15.31	5.31	16.19	5.03	17.60	4.70	18.69	4.54	19.54	4.23
21.0	12.29	5.40	13.02	5.66	15.31	5.38	16.16	5.09	17.49	4.75	18.69	4.57	19.42	4.24
22.0	12.27	5.47	13.02	5.74	15.31	5.46	16.11	5.16	17.36	4.78	18.67	4.59	19.25	4.24
24.0	12.12	5.61	12.89	5.91	15.13	5.61	15.99	5.28	17.23	4.86	18.36	4.63	19.03	4.27

Model	ATNH42GMLE1[UT42H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	12.13	5.55	12.76	5.69	14.59	5.37	15.68	5.10	17.08	4.81	18.19	4.69	18.68	4.45
18.0	12.01	5.63	12.74	5.83	14.62	5.53	15.67	5.24	16.96	4.93	17.96	4.78	18.62	4.51
20.0	11.93	5.73	12.74	5.97	14.62	5.68	15.62	5.38	16.80	5.03	17.84	4.85	18.65	4.53
21.0	11.90	5.78	12.74	6.06	14.62	5.76	15.59	5.45	16.69	5.08	17.84	4.89	18.53	4.54
22.0	11.88	5.85	12.74	6.15	14.62	5.84	15.55	5.52	16.57	5.12	17.82	4.91	18.38	4.54
24.0	11.73	6.00	12.62	6.32	14.44	6.00	15.43	5.65	16.44	5.20	17.53	4.96	18.16	4.57

Model	UVNH42GLLA1[UV42H NL1]
AFR	30

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	11.76	5.74	12.40	5.88	14.16	5.55	15.21	5.27	16.57	4.97	17.65	4.85	18.12	4.61
18.0	11.65	5.82	12.38	6.03	14.18	5.71	15.20	5.42	16.46	5.10	17.43	4.95	18.06	4.66
20.0	11.57	5.93	12.38	6.17	14.18	5.88	15.16	5.56	16.30	5.20	17.31	5.02	18.09	4.68
21.0	11.54	5.98	12.38	6.26	14.18	5.96	15.13	5.64	16.19	5.25	17.31	5.05	17.98	4.69
22.0	11.52	6.05	12.38	6.35	14.18	6.04	15.08	5.71	16.08	5.29	17.29	5.08	17.83	4.69
24.0	11.38	6.20	12.25	6.54	14.01	6.20	14.97	5.84	15.95	5.38	17.00	5.13	17.62	4.72

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
|--|
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	4.15	3.9	4.8

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.82	4.98

(Quartet)

Model	UT12H NP1x4
Cooling	4.64

Air flow rate is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
AFR	21*2	25*2	20.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

**Models : AUUW486DH1 + ABNH48GRLA1, ATNH48GMLE1, UVNH48GLLA1
[UU48WH U31] [UB48H NR1] [UT48H NM1] [UV48H NL1]**

• Cooling Capacity

Model	ABNH48GRLA1[UB48H NR1]
AFR	34

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.69	15.34	3.07	15.01	14.84	3.21	14.09	14.09	4.31	13.66	13.66	4.81	13.06	13.06	5.28	12.70	12.70	5.17	12.34	12.34	4.64
16.0	22.0	16.65	15.54	4.16	15.97	15.07	4.20	15.05	14.52	5.08	14.61	14.05	5.46	14.01	13.66	5.69	13.65	13.21	5.41	13.29	12.82	4.70
18.0	25.0	17.62	15.67	4.50	16.93	15.23	4.53	16.00	14.72	5.33	15.56	14.27	5.56	14.96	13.91	5.77	14.61	13.47	5.40	14.25	13.10	4.59
19.0	27.0	18.10	15.81	4.55	17.41	15.38	4.59	16.48	14.88	5.39	16.00	14.40	5.56	15.44	14.09	5.78	15.08	13.65	5.39	14.72	13.29	4.54
22.0	30.0	19.55	16.13	4.55	18.85	15.73	4.67	17.92	15.28	5.52	17.47	14.84	5.83	16.87	14.54	5.87	16.51	14.12	5.45	16.15	13.77	4.55
24.0	32.0	20.52	16.43	4.53	19.81	16.04	4.71	18.87	15.62	5.62	18.42	15.19	5.95	17.82	14.91	6.00	17.46	14.49	5.57	17.10	14.15	4.65

Model	ATNH48GMLE1[UT48H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.69	12.78	3.07	15.01	12.37	3.21	14.09	11.87	4.31	13.66	11.47	4.81	13.06	11.12	5.28	12.70	10.73	5.17	12.34	10.39	4.64
16.0	22.0	16.65	12.95	4.16	15.97	12.56	4.20	15.05	12.10	5.08	14.61	11.71	5.46	14.01	11.38	5.69	13.65	11.01	5.41	13.29	10.69	4.70
18.0	25.0	17.62	13.06	4.50	16.93	12.69	4.53	16.00	12.26	5.33	15.56	11.89	5.56	14.96	11.59	5.77	14.61	11.22	5.40	14.25	10.92	4.59
19.0	27.0	18.10	13.18	4.55	17.41	12.82	4.59	16.48	12.40	5.39	16.00	12.00	5.56	15.44	11.74	5.78	15.08	11.38	5.39	14.72	11.08	4.54
22.0	30.0	19.55	13.44	4.55	18.85	13.11	4.67	17.92	12.73	5.52	17.47	12.37	5.83	16.87	12.11	5.87	16.51	11.76	5.45	16.15	11.47	4.55
24.0	32.0	20.52	13.69	4.53	19.81	13.37	4.71	18.87	13.02	5.62	18.42	12.66	5.95	17.82	12.42	6.00	17.46	12.08	5.57	17.10	11.79	4.65

Model	UVNH48GLLA1[UV48H NL1]
AFR	31.5

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.79	12.35	3.18	15.10	11.95	3.32	14.18	11.47	4.46	13.75	11.08	4.97	13.14	10.74	5.46	12.78	10.36	5.35	12.42	10.04	4.80
16.0	22.0	16.76	12.51	4.31	16.07	12.13	4.34	15.14	11.68	5.25	14.70	11.31	5.64	14.10	11.00	5.88	13.74	10.63	5.60	13.38	10.32	4.86
18.0	25.0	17.73	12.62	4.66	17.03	12.26	4.68	16.10	11.85	5.52	15.66	11.48	5.75	15.06	11.20	5.96	14.70	10.84	5.59	14.34	10.54	4.74
19.0	27.0	18.22	12.73	4.71	17.52	12.38	4.75	16.58	11.98	5.58	16.10	11.59	5.75	15.54	11.34	5.98	15.18	10.99	5.58	14.81	10.70	4.70
22.0	30.0	19.67	12.98	4.71	18.97	12.66	4.83	18.03	12.30	5.71	17.58	11.95	6.03	16.97	11.70	6.07	16.61	11.36	5.63	16.25	11.08	4.70
24.0	32.0	20.65	13.22	4.68	19.94	12.92	4.87	18.99	12.58	5.81	18.53	12.23	6.15	17.93	12.00	6.20	17.57	11.67	5.76	17.21	11.39	4.81

• Symbol

AFR : Air flow rate	[m³/min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
SHC : Sensible Heating Capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
- Heating mode Outdoor conditions : 85%RH.
However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
- Interconnecting Piping Length : 5m
- Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
Cooling	4.15	3.88	4.33

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.4	4.74

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
AFR	21*2	25*2	21.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

• Heating Capacity

Model	ABNH48GRLA1[UB48H NR1]
AFR	34

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.73	5.51	14.28	5.66	16.26	5.34	17.27	5.07	18.81	4.78	20.03	4.66	20.57	4.43
18.0	13.60	5.60	14.26	5.80	16.28	5.49	17.25	5.21	18.68	4.90	19.78	4.76	20.50	4.48
20.0	13.51	5.70	14.26	5.94	16.28	5.65	17.21	5.35	18.50	5.00	19.65	4.83	20.54	4.50
21.0	13.47	5.75	14.26	6.02	16.28	5.73	17.17	5.42	18.38	5.05	19.65	4.86	20.41	4.51
22.0	13.45	5.81	14.26	6.11	16.28	5.81	17.12	5.49	18.25	5.09	19.62	4.88	20.24	4.51
24.0	13.28	5.96	14.12	6.28	16.08	5.96	16.99	5.61	18.11	5.17	19.30	4.93	20.00	4.54

Model	ATNH48GMLE1[UT48H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.28	5.96	14.28	6.11	15.91	5.76	16.71	5.48	18.20	5.16	19.38	5.04	19.90	4.78
18.0	13.16	6.05	14.26	6.26	15.93	5.93	16.69	5.63	18.07	5.29	19.14	5.14	19.84	4.84
20.0	13.07	6.15	14.26	6.41	15.93	6.10	16.65	5.78	17.90	5.40	19.01	5.21	19.87	4.86
21.0	13.03	6.21	14.26	6.50	15.93	6.19	16.61	5.85	17.78	5.45	19.01	5.25	19.75	4.87
22.0	13.01	6.28	14.26	6.60	15.93	6.27	16.56	5.93	17.66	5.49	18.99	5.27	19.58	4.87
24.0	12.85	6.44	14.12	6.79	15.74	6.44	16.44	6.06	17.52	5.59	18.67	5.32	19.35	4.90

Model	UVNH48GLLA1[UV48H NL1]
AFR	31.5

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.21	6.18	13.82	6.33	15.82	5.98	16.61	5.68	18.10	5.35	19.28	5.22	19.79	4.96
18.0	13.08	6.27	13.80	6.49	15.84	6.15	16.60	5.84	17.97	5.49	19.03	5.33	19.73	5.02
20.0	12.99	6.38	13.80	6.65	15.84	6.33	16.55	5.99	17.80	5.60	18.91	5.40	19.76	5.04
21.0	12.96	6.44	13.80	6.74	15.84	6.42	16.52	6.07	17.69	5.66	18.91	5.44	19.64	5.05
22.0	12.94	6.51	13.80	6.84	15.84	6.50	16.47	6.15	17.56	5.70	18.88	5.47	19.47	5.05
24.0	12.78	6.68	13.66	7.04	15.65	6.68	16.34	6.29	17.42	5.79	18.57	5.52	19.24	5.09

• Symbol

AFR : Air flow rate	[m³/min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
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| |
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 - However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
Cooling	4.64	4.4	4.8

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.82	4.98

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
AFR	21*2	25*2	21.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

**Models : AUUW368DH1 + ABNH36GRLA1 , ATNH36GMLE1, UVNH36GLLA1
[UU37WH U31] [UB36H NR1] [UT36H NM1] [UV36H NL1]**

• Cooling Capacity

Model	ABNH36GRLA1[UB36H NR1]
AFR	34

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	13.83	13.83	2.60	13.22	13.22	2.72	12.42	12.42	3.65	12.04	12.04	4.07	11.51	11.51	4.47	11.19	11.19	4.38	10.88	10.88	3.93
16.0	22.0	14.68	14.61	3.53	14.07	14.07	3.56	13.26	13.26	4.30	12.88	12.88	4.62	12.35	12.35	4.82	12.03	12.03	4.58	11.72	11.72	3.98
18.0	25.0	15.53	14.73	3.81	14.92	14.32	3.84	14.10	13.83	4.52	13.72	13.41	4.71	13.19	13.07	4.89	12.87	12.66	4.58	12.55	12.31	3.89
19.0	27.0	15.95	14.86	3.86	15.34	14.46	3.89	14.52	13.99	4.57	14.10	13.54	4.71	13.61	13.25	4.90	13.29	12.84	4.57	12.97	12.49	3.85
22.0	30.0	17.23	15.16	3.86	16.61	14.78	3.96	15.79	14.36	4.68	15.39	13.95	4.94	14.86	13.66	4.98	14.55	13.27	4.61	14.23	12.94	3.85
24.0	32.0	18.08	15.44	3.83	17.46	15.08	3.99	16.63	14.68	4.76	16.23	14.28	5.04	15.70	14.01	5.08	15.39	13.62	4.72	15.07	13.30	3.94

Model	ATNH36GMLE1[UT36H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	12.75	12.05	2.44	12.19	11.66	2.55	11.45	11.19	3.42	11.10	10.81	3.82	10.61	10.48	4.20	10.32	10.11	4.11	10.03	9.80	3.69
16.0	22.0	13.53	12.20	3.31	12.97	11.84	3.34	12.22	11.40	4.04	11.87	11.03	4.34	11.39	10.73	4.52	11.09	10.37	4.30	10.80	10.07	3.73
18.0	25.0	14.32	12.31	3.58	13.75	11.96	3.60	13.00	11.56	4.24	12.65	11.20	4.42	12.16	10.92	4.58	11.87	10.58	4.30	11.57	10.29	3.65
19.0	27.0	14.71	12.42	3.62	14.14	12.08	3.65	13.39	11.69	4.29	13.00	11.31	4.42	12.55	11.07	4.60	12.25	10.72	4.29	11.96	10.44	3.61
22.0	30.0	15.89	12.67	3.62	15.32	12.35	3.71	14.56	12.00	4.39	14.19	11.66	4.63	13.71	11.42	4.67	13.41	11.09	4.33	13.12	10.81	3.61
24.0	32.0	16.67	12.90	3.60	16.10	12.60	3.75	15.33	12.27	4.47	14.96	11.93	4.73	14.48	11.71	4.77	14.19	11.38	4.43	13.89	11.12	3.70

Model	UVNH36GLLA1[UV36H NL1]
AFR	28.6

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	12.16	10.04	2.30	11.63	9.71	2.40	10.92	9.32	3.22	10.59	9.01	3.60	10.12	8.73	3.95	9.84	8.43	3.87	9.57	8.16	3.47
16.0	22.0	12.91	10.17	3.12	12.37	9.86	3.14	11.66	9.50	3.80	11.32	9.19	4.08	10.86	8.94	4.26	10.58	8.64	4.05	10.30	8.39	3.51
18.0	25.0	13.66	10.26	3.37	13.12	9.97	3.39	12.40	9.63	3.99	12.06	9.34	4.16	11.60	9.10	4.32	11.32	8.81	4.04	11.04	8.57	3.43
19.0	27.0	14.03	10.35	3.41	13.49	10.07	3.44	12.77	9.74	4.04	12.40	9.42	4.16	11.97	9.22	4.33	11.69	8.94	4.03	11.41	8.70	3.40
22.0	30.0	15.15	10.55	3.41	14.61	10.29	3.50	13.88	10.00	4.13	13.54	9.72	4.36	13.07	9.51	4.39	12.79	9.24	4.07	12.52	9.01	3.40
24.0	32.0	15.90	10.75	3.39	15.35	10.50	3.53	14.63	10.22	4.21	14.27	9.94	4.45	13.81	9.76	4.49	13.53	9.48	4.17	13.25	9.26	3.48

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1 x2
Cooling	2.98	2.93	3.2

(Trio)

Model	UT18H NP1x3
Cooling	3.39

Air flow rate is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1
AFR	17*2	17*2	13.9*2

(Trio)

Model	UT18H NP1x3
AFR	13*3

1. DC Inverter High

• Heating Capacity

Model	ABNH36GRLA1[UB36H NR1]
AFR	34

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.88	4.63	10.32	4.75	12.60	4.48	13.10	4.26	14.74	4.01	15.70	3.92	16.12	3.72
18.0	9.78	4.70	10.30	4.87	12.62	4.61	13.09	4.38	14.64	4.12	15.50	3.99	16.07	3.76
20.0	9.72	4.79	10.30	4.99	12.62	4.75	13.05	4.49	14.50	4.20	15.40	4.05	16.10	3.78
21.0	9.69	4.83	10.30	5.06	12.62	4.81	13.02	4.55	14.41	4.24	15.40	4.08	16.00	3.79
22.0	9.67	4.88	10.30	5.13	12.62	4.88	12.99	4.61	14.30	4.27	15.38	4.10	15.86	3.79
24.0	9.55	5.01	10.20	5.28	12.46	5.01	12.88	4.72	14.19	4.34	15.13	4.14	15.68	3.81

Model	ATNH36GMLE1[UT36H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.05	5.07	10.10	5.20	11.49	4.91	12.65	4.67	13.93	4.40	14.84	4.29	15.23	4.07
18.0	8.97	5.15	10.08	5.33	11.51	5.05	12.64	4.79	13.83	4.51	14.65	4.38	15.18	4.12
20.0	8.91	5.24	10.08	5.46	11.51	5.20	12.60	4.92	13.70	4.60	14.55	4.44	15.21	4.14
21.0	8.88	5.29	10.08	5.54	11.51	5.27	12.58	4.99	13.61	4.65	14.55	4.47	15.11	4.15
22.0	8.87	5.35	10.08	5.62	11.51	5.34	12.54	5.05	13.51	4.68	14.53	4.49	14.99	4.15
24.0	8.76	5.49	9.98	5.78	11.37	5.49	12.44	5.17	13.41	4.76	14.29	4.53	14.81	4.18

Model	UVNH36GLLA1[UV36H NL1]
AFR	28.6

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	9.05	5.18	9.47	5.32	11.49	5.02	12.65	4.77	13.93	4.49	14.84	4.38	15.23	4.16
18.0	8.97	5.26	9.45	5.45	11.51	5.16	12.64	4.90	13.83	4.61	14.65	4.47	15.18	4.21
20.0	8.91	5.36	9.45	5.58	11.51	5.31	12.60	5.03	13.70	4.70	14.55	4.54	15.21	4.23
21.0	8.88	5.40	9.45	5.66	11.51	5.38	12.58	5.09	13.61	4.75	14.55	4.57	15.11	4.24
22.0	8.87	5.47	9.45	5.74	11.51	5.46	12.54	5.16	13.51	4.78	14.53	4.59	14.99	4.24
24.0	8.76	5.61	9.36	5.91	11.37	5.61	12.44	5.28	13.41	4.86	14.29	4.63	14.81	4.27

• Symbol

AFR : Air flow rate	[m³/min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
|--|
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 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH. However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1 x2
Heating	2.98	3.21	3.5

(Trio)

Model	UT18H NP1x3
Heating	3.39

Air flow rate is tabulated below

(Duo)

Model	UT18H NP1x2	UB18H NG1x2	UV18H NJ1
AFR	17*2	17*2	13.9*2

(Trio)

Model	UT18H NP1x3
AFR	13*3

1. DC Inverter High

**Models : AUUW428DH1 + ABNH42GRLA1 , ATNH42GMLE1, UVNH42GLLA1
[UU43WH U31] [UB42H NR1] [UT42H NM1] [UV42H NL1]**

• Cooling Capacity

Model	ABNH42GRLA1[UB42H NR1]
AFR	37

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.71	14.71	2.84	14.07	14.07	2.97	13.21	13.21	3.98	12.81	12.81	4.44	12.25	12.25	4.88	11.91	11.91	4.78	11.57	11.57	4.29
16.0	22.0	15.61	15.22	3.85	14.97	14.76	3.88	14.11	14.11	4.70	13.70	13.70	5.04	13.14	13.14	5.26	12.80	12.80	5.00	12.46	12.46	4.34
18.0	25.0	16.52	15.35	4.16	15.87	14.92	4.19	15.00	14.41	4.93	14.59	13.97	5.14	14.03	13.62	5.33	13.69	13.19	5.00	13.36	12.83	4.24
19.0	27.0	16.97	15.48	4.21	16.32	15.06	4.25	15.45	14.57	4.99	15.00	14.10	5.14	14.48	13.80	5.35	14.14	13.37	4.99	13.80	13.01	4.20
22.0	30.0	18.33	15.79	4.21	17.67	15.40	4.32	16.80	14.96	5.10	16.38	14.54	5.39	15.81	14.23	5.43	15.48	13.82	5.03	15.14	13.48	4.20
24.0	32.0	19.24	16.08	4.18	18.57	15.71	4.36	17.69	15.30	5.20	17.27	14.88	5.50	16.71	14.60	5.55	16.37	14.19	5.15	16.03	13.86	4.30

Model	ATNH42GMLE1[UT42H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.61	12.38	2.86	13.97	11.98	2.99	13.12	11.50	4.01	12.72	11.11	4.48	12.16	10.77	4.92	11.83	10.39	4.82	11.49	10.07	4.32
16.0	22.0	15.51	12.54	3.88	14.87	12.16	3.91	14.01	11.72	4.73	13.61	11.34	5.08	13.05	11.03	5.30	12.72	10.66	5.04	12.38	10.35	4.38
18.0	25.0	16.41	12.65	4.19	15.76	12.29	4.22	14.90	11.88	4.97	14.49	11.51	5.18	13.94	11.23	5.37	13.60	10.87	5.03	13.27	10.57	4.27
19.0	27.0	16.86	12.76	4.24	16.21	12.41	4.28	15.35	12.01	5.02	14.90	11.62	5.18	14.38	11.37	5.39	14.04	11.02	5.02	13.71	10.73	4.23
22.0	30.0	18.21	13.02	4.24	17.55	12.69	4.35	16.68	12.33	5.14	16.27	11.98	5.43	15.71	11.73	5.47	15.37	11.39	5.07	15.04	11.11	4.23
24.0	32.0	19.11	13.26	4.22	18.45	12.95	4.39	17.57	12.61	5.24	17.15	12.26	5.54	16.59	12.03	5.59	16.26	11.70	5.19	15.93	11.42	4.34

Model	UVNH42GLLA1[UV42H NL1]
AFR	30

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	14.61	11.43	2.79	13.97	11.06	2.92	13.12	10.61	3.92	12.72	10.25	4.37	12.16	9.94	4.80	11.83	9.59	4.71	11.49	9.29	4.22
16.0	22.0	15.51	11.58	3.79	14.87	11.23	3.82	14.01	10.81	4.62	13.61	10.47	4.97	13.05	10.18	5.18	12.72	9.84	4.93	12.38	9.55	4.28
18.0	25.0	16.41	11.68	4.10	15.76	11.35	4.12	14.90	10.96	4.85	14.49	10.63	5.06	13.94	10.36	5.25	13.60	10.03	4.92	13.27	9.76	4.17
19.0	27.0	16.86	11.78	4.14	16.21	11.46	4.18	15.35	11.09	4.91	14.90	10.73	5.06	14.38	10.50	5.26	14.04	10.17	4.91	13.71	9.90	4.13
22.0	30.0	18.21	12.01	4.14	17.55	11.72	4.25	16.68	11.38	5.02	16.27	11.06	5.30	15.71	10.83	5.35	15.37	10.52	4.96	15.04	10.26	4.14
24.0	32.0	19.11	12.24	4.12	18.45	11.95	4.29	17.57	11.64	5.12	17.15	11.32	5.41	16.59	11.11	5.46	16.26	10.80	5.07	15.93	10.54	4.24

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	4.15	3.88	4.33

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.4	4.74

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	21*2	25*2	20.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

• Heating Capacity

Model	ABNH42GRLA1[UB42H NR1]
AFR	37

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	12.52	5.18	13.04	5.32	15.29	5.02	16.25	4.77	17.90	4.49	19.06	4.38	19.57	4.16
18.0	12.41	5.26	13.02	5.45	15.31	5.16	16.24	4.90	17.77	4.61	18.82	4.47	19.50	4.21
20.0	12.32	5.36	13.02	5.58	15.31	5.31	16.19	5.03	17.60	4.70	18.69	4.54	19.54	4.23
21.0	12.29	5.40	13.02	5.66	15.31	5.38	16.16	5.09	17.49	4.75	18.69	4.57	19.42	4.24
22.0	12.27	5.47	13.02	5.74	15.31	5.46	16.11	5.16	17.36	4.78	18.67	4.59	19.25	4.24
24.0	12.12	5.61	12.89	5.91	15.13	5.61	15.99	5.28	17.23	4.86	18.36	4.63	19.03	4.27

Model	ATNH42GMLE1[UT42H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	11.76	5.66	12.76	5.80	14.16	5.47	15.21	5.20	16.57	4.90	17.65	4.79	18.12	4.54
18.0	11.65	5.74	12.74	5.95	14.18	5.64	15.20	5.35	16.46	5.03	17.43	4.88	18.06	4.60
20.0	11.57	5.85	12.74	6.09	14.18	5.80	15.16	5.49	16.30	5.13	17.31	4.95	18.09	4.62
21.0	11.54	5.90	12.74	6.18	14.18	5.88	15.13	5.56	16.19	5.18	17.31	4.99	17.98	4.63
22.0	11.52	5.97	12.74	6.27	14.18	5.96	15.08	5.63	16.08	5.22	17.29	5.01	17.83	4.63
24.0	11.38	6.12	12.62	6.45	14.01	6.12	14.97	5.76	15.95	5.31	17.00	5.06	17.62	4.66

Model	UVNH42GLLA1[UV42H NL1]
AFR	30

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	11.76	5.74	12.40	5.88	14.16	5.55	15.21	5.27	16.57	4.97	17.65	4.85	18.12	4.61
18.0	11.65	5.82	12.38	6.03	14.18	5.71	15.20	5.42	16.46	5.10	17.43	4.95	18.06	4.66
20.0	11.57	5.93	12.38	6.17	14.18	5.88	15.16	5.56	16.30	5.20	17.31	5.02	18.09	4.68
21.0	11.54	5.98	12.38	6.26	14.18	5.96	15.13	5.64	16.19	5.25	17.31	5.05	17.98	4.69
22.0	11.52	6.05	12.38	6.35	14.18	6.04	15.08	5.71	16.08	5.29	17.29	5.08	17.83	4.69
24.0	11.38	6.20	12.25	6.54	14.01	6.20	14.97	5.84	15.95	5.38	17.00	5.13	17.62	4.72

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH.
 - However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
Cooling	4.15	3.9	4.8

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.82	4.98

(Quartet)

Model	UT12H NP1x4
Cooling	4.64

Air flow rate is tabulated below

(Duo)

Model	UT21H NN1x2	UB21H NG1x2	UV21H NK1 x2
AFR	21*2	25*2	20.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

**Models : AUUW488DH1 + ABNH48GRLA1, ATNH48GMLE1, UVNH48GLLA1
[UU49WH U31] [UB48H NR1] [UT48H NM1] [UV48H NL1]**

• Cooling Capacity

Model	ABNH48GRLA1[UB48H NR1]
AFR	34

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.69	15.34	3.07	15.01	14.84	3.21	14.09	14.09	4.31	13.66	13.66	4.81	13.06	13.06	5.28	12.70	12.70	5.17	12.34	12.34	4.64
16.0	22.0	16.65	15.54	4.16	15.97	15.07	4.20	15.05	14.52	5.08	14.61	14.05	5.46	14.01	13.66	5.69	13.65	13.21	5.41	13.29	12.82	4.70
18.0	25.0	17.62	15.67	4.50	16.93	15.23	4.53	16.00	14.72	5.33	15.56	14.27	5.56	14.96	13.91	5.77	14.61	13.47	5.40	14.25	13.10	4.59
19.0	27.0	18.10	15.81	4.55	17.41	15.38	4.59	16.48	14.88	5.39	16.00	14.40	5.56	15.44	14.09	5.78	15.08	13.65	5.39	14.72	13.29	4.54
22.0	30.0	19.55	16.13	4.55	18.85	15.73	4.67	17.92	15.28	5.52	17.47	14.84	5.83	16.87	14.54	5.87	16.51	14.12	5.45	16.15	13.77	4.55
24.0	32.0	20.52	16.43	4.53	19.81	16.04	4.71	18.87	15.62	5.62	18.42	15.19	5.95	17.82	14.91	6.00	17.46	14.49	5.57	17.10	14.15	4.65

Model	ATNH48GMLE1[UT48H NM1]
AFR	32

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.69	12.78	3.09	15.01	12.37	3.23	14.09	11.87	4.34	13.66	11.47	4.84	13.06	11.12	5.32	12.70	10.73	5.21	12.34	10.39	4.67
16.0	22.0	16.65	12.95	4.19	15.97	12.56	4.23	15.05	12.10	5.12	14.61	11.71	5.50	14.01	11.38	5.73	13.65	11.01	5.45	13.29	10.69	4.73
18.0	25.0	17.62	13.06	4.53	16.93	12.69	4.56	16.00	12.26	5.37	15.56	11.89	5.60	14.96	11.59	5.81	14.61	11.22	5.44	14.25	10.92	4.62
19.0	27.0	18.10	13.18	4.59	17.41	12.82	4.63	16.48	12.40	5.43	16.00	12.00	5.60	15.44	11.74	5.82	15.08	11.38	5.43	14.72	11.08	4.58
22.0	30.0	19.55	13.44	4.59	18.85	13.11	4.71	17.92	12.73	5.56	17.47	12.37	5.87	16.87	12.11	5.92	16.51	11.76	5.48	16.15	11.47	4.58
24.0	32.0	20.52	13.69	4.56	19.81	13.37	4.75	18.87	13.02	5.66	18.42	12.66	5.99	17.82	12.42	6.04	17.46	12.08	5.61	17.10	11.79	4.69

Model	UVNH48GLLA1[UV48H NL1]
AFR	31.5

Indoor Air Temperature		Outdoor Air Temperature : °CDB																				
		20			25			32			35			40			43			46		
°CWB	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
14.0	20.0	15.79	12.35	3.18	15.10	11.95	3.32	14.18	11.47	4.46	13.75	11.08	4.97	13.14	10.74	5.46	12.78	10.36	5.35	12.42	10.04	4.80
16.0	22.0	16.76	12.51	4.31	16.07	12.13	4.34	15.14	11.68	5.25	14.70	11.31	5.64	14.10	11.00	5.88	13.74	10.63	5.60	13.38	10.32	4.86
18.0	25.0	17.73	12.62	4.66	17.03	12.26	4.68	16.10	11.85	5.52	15.66	11.48	5.75	15.06	11.20	5.96	14.70	10.84	5.59	14.34	10.54	4.74
19.0	27.0	18.22	12.73	4.71	17.52	12.38	4.75	16.58	11.98	5.58	16.10	11.59	5.75	15.54	11.34	5.98	15.18	10.99	5.58	14.81	10.70	4.70
22.0	30.0	19.67	12.98	4.71	18.97	12.66	4.83	18.03	12.30	5.71	17.58	11.95	6.03	16.97	11.70	6.07	16.61	11.36	5.63	16.25	11.08	4.70
24.0	32.0	20.65	13.22	4.68	19.94	12.92	4.87	18.99	12.58	5.81	18.53	12.23	6.15	17.93	12.00	6.20	17.57	11.67	5.76	17.21	11.39	4.81

• Symbol

AFR : Air flow rate	[m³/min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
SHC : Sensible Heating Capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- indicates maximum capacity at the standard temperature condition.
- Heating mode Outdoor conditions : 85%RH.
However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
- Interconnecting Piping Length : 5m
- Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
Cooling	4.15	3.88	4.33

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.4	4.74

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
AFR	21*2	25*2	21.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

• Heating Capacity

Model	ABNH48GRLA1[UB48H NR1]
AFR	34

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.73	5.51	14.28	5.66	16.26	5.34	17.27	5.07	18.81	4.78	20.03	4.66	20.57	4.43
18.0	13.60	5.60	14.26	5.80	16.28	5.49	17.25	5.21	18.68	4.90	19.78	4.76	20.50	4.48
20.0	13.51	5.70	14.26	5.94	16.28	5.65	17.21	5.35	18.50	5.00	19.65	4.83	20.54	4.50
21.0	13.47	5.75	14.26	6.02	16.28	5.73	17.17	5.42	18.38	5.05	19.65	4.86	20.41	4.51
22.0	13.45	5.81	14.26	6.11	16.28	5.81	17.12	5.49	18.25	5.09	19.62	4.88	20.24	4.51
24.0	13.28	5.96	14.12	6.28	16.08	5.96	16.99	5.61	18.11	5.17	19.30	4.93	20.00	4.54

Model	ATNH48GMLE1[UT48H NM1]
AFR	32

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.21	5.96	14.28	6.11	15.82	5.76	16.61	5.48	18.10	5.16	19.28	5.04	19.79	4.78
18.0	13.08	6.05	14.26	6.26	15.84	5.93	16.60	5.63	17.97	5.29	19.03	5.14	19.73	4.84
20.0	12.99	6.15	14.26	6.41	15.84	6.10	16.55	5.78	17.80	5.40	18.91	5.21	19.76	4.86
21.0	12.96	6.21	14.26	6.50	15.84	6.19	16.52	5.85	17.69	5.45	18.91	5.25	19.64	4.87
22.0	12.94	6.28	14.26	6.60	15.84	6.27	16.47	5.93	17.56	5.49	18.88	5.27	19.47	4.87
24.0	12.78	6.44	14.12	6.79	15.65	6.44	16.34	6.06	17.42	5.59	18.57	5.32	19.24	4.90

Model	UVNH48GLLA1[UV48H NL1]
AFR	31.5

Indoor Air Temperature	Outdoor Air Temperature : °CWB													
	-15		-10		-5		0		6		10		15	
°CDB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
16.0	13.21	6.18	13.82	6.33	15.82	5.98	16.61	5.68	18.10	5.35	19.28	5.22	19.79	4.96
18.0	13.08	6.27	13.80	6.49	15.84	6.15	16.60	5.84	17.97	5.49	19.03	5.33	19.73	5.02
20.0	12.99	6.38	13.80	6.65	15.84	6.33	16.55	5.99	17.80	5.60	18.91	5.40	19.76	5.04
21.0	12.96	6.44	13.80	6.74	15.84	6.42	16.52	6.07	17.69	5.66	18.91	5.44	19.64	5.05
22.0	12.94	6.51	13.80	6.84	15.84	6.50	16.47	6.15	17.56	5.70	18.88	5.47	19.47	5.05
24.0	12.78	6.68	13.66	7.04	15.65	6.68	16.34	6.29	17.42	5.79	18.57	5.52	19.24	5.09

• Symbol

AFR : Air flow rate	[m ³ /min]
DB : Dry bulb temperature	[°C]
WB : Wet bulb temperature	[°C]
TC : Total capacity	[kW]
PI : Power Input	[kW]
(Comp.+ indoor fan motor+outdoor fan motor)	

• Notes

- All capacities are net. A deduction (cooling mode) or an addition (heating mode) of Capacity due to operating heat of indoor unit motor is reflected.
- | |
|--|
| |
|--|

 indicates maximum capacity at the standard temperature condition.
 - Heating mode Outdoor conditions : 85%RH. However, the condition on nominal capacity is 7°CDB/6°CWB(44.6° FDB/42.8° FWB)
- Direct interpolation is permissible. Do not extrapolate.
- Capacities are based on the following conditions:
 - Interconnecting Piping Length : 5m
 - Level Difference : Zero.

1. DC Inverter High

Rated power input of each model is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
Cooling	4.64	4.4	4.8

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
Cooling	4.47	4.82	4.98

(Quartet)

Model	UT12H NP1x4
Cooling	4.52

Air flow rate is tabulated below

(Duo)

Model	UT24H NN1x2	UB24H NG1x2	UV24H NK1 x2
AFR	21*2	25*2	21.4*2

(Trio)

Model	UT18H NP1x3	UUB18H NG1x3	UV18H NJ1 x3
AFR	17*3	17*3	13.9*3

(Quartet)

Model	UT12H NP1x4
AFR	13*4

1. DC Inverter High

1.8 Capacity coefficient factor

1) Rate of change in capacity due to the main piping length

Rate of change in cooling capacity

Main piping length(m)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Rate of change in capacity(%)	3.5 kW	100	98.8	97.6	96.4	95.2	94	-	-	-	-	-	-	-	-
	5.0 kW	100	99.2	98.4	97.6	96.8	96	95.2	94.4	93.6	92.8	-	-	-	-
	6.0 kW	100	99.2	98.4	97.6	96.8	96	95.2	94.4	93.6	92.8	-	-	-	-
	7.0 kW	100	99.2	98.4	97.6	96.8	96	95.2	94.4	93.6	92.8	-	-	-	-
	10kW,12.5kW,13.4kW	100	99.3	97.9	96.6	95	93.8	92.4	91.1	89.7	88.4	87.1	85.8	84.4	83.1	81.8

Rate of change in heating capacity

Main piping length(m)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Rate of change in capacity(%)	3.5 kW	100	98.5	97	95.5	94	92.5	-	-	-	-	-	-	-	-
	5.0 kW	100	99.3	98.6	97.9	97.2	96.5	95.8	95.1	94.4	93.7	-	-	-	-
	6.0 kW	100	99.3	98.6	97.9	97.2	96.5	95.8	95.1	94.4	93.7	-	-	-	-
	7.0 kW	100	99.3	98.6	97.9	97.2	96.5	95.8	95.1	94.4	93.7	-	-	-	-
	10kW,12.5kW,13.4kW	100	99.7	99.2	98.7	98.2	97.7	97.2	96.6	96.1	95.6	95.1	94.6	94.1	93.6	93.1

2) Calculation of actual system capacity

① Outdoor unit rated capacity

$$Q_{odu(rated)} \text{ [from specification table]}$$

② Outdoor unit capacity at T_i , T_o temperature.

$$Q_{odu(T_i, T_o)} \text{ [from capacity table]}$$

③ Outdoor unit capacity coefficient factor

$$F_{(T_i, T_o)} = Q_{odu(T_i, T_o)} / Q_{odu(rated)}$$

④ Piping correction factor [from capacity coefficient factor table]

$F_{main}(\text{length, elevation})$ for main piping length or elevation

$F_{branch}(\text{length, elevation})$ for branch piping length or elevation

⑤ Individual indoor unit combinational capacity

$$Q_{idu(combi)} = Q_{odu(rated)} \times Q_{idu(rated)} / Q_{idu(rated-total)}$$

⑥ Individual indoor unit actual capacity

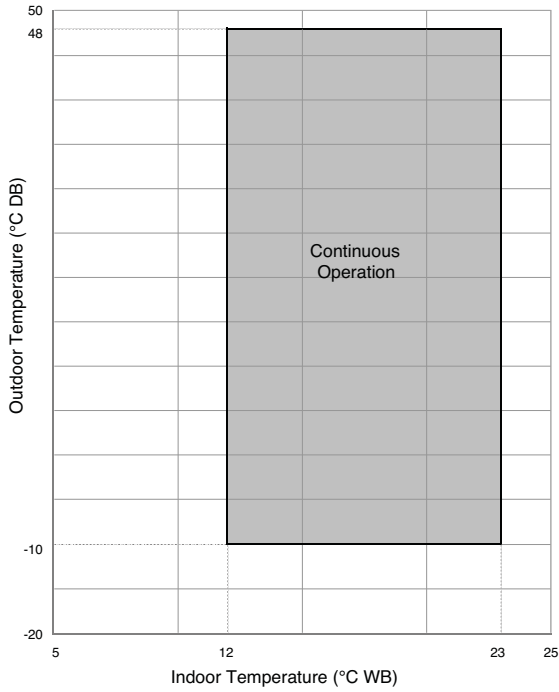
$$Q_{idu(actual)} = Q_{odu(combi)} \times F_{(T_i, T_o)} \times F_{main(\text{length, elevation})} \times F_{branch(\text{length, elevation})}$$

- Outdoor unit model : AUUW186DH1[UU18WH UE1]
- Indoor units : AUUW186DH1[UU18WH UE1]: 5.0 kW
- Outdoor temperature : 40.0°CDB
- Indoor temperature: 19.0°CWB
- Main piping length(O/D to BD):15m
- Indoor unit actual cooling capacity in A room?
 - $Q_{odu(rated)} : 3.40\text{kW}$
 - $Q_{odu(T_i, T_o)} : 3.28 \text{ kW}$
 - $F_{(T_i, T_o)} : 3.28 / 3.40 = 96.47\%$
 - $F_{main(\text{length, elevation})} = 99.3\%$
 - $Q_{idu(actual)} = 3.4\text{kW} \times 0.9647 \times 0.993 = 3.257\text{kW}$

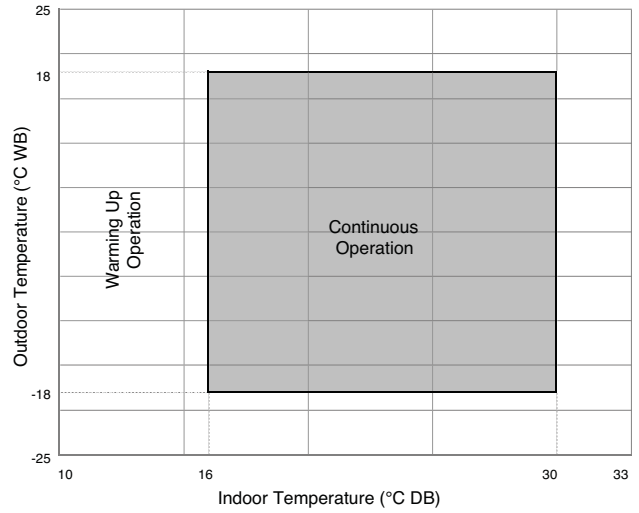
1. DC Inverter High

1.9 Operation range

Cooling



Heating



1. DC Inverter High

1.10 Electric characteristics

Unit					Power		Compressor		OFM	
Model	Type	Hz	Voltage	Voltage range	MCA	MOP	MSC	RLA	kW	FLA
AUUW126DH1[UJ12WH UE1]	1 Phase inverter	50	220-240	Min. : 198 Max. : 264	7.45	12.45	-	5.00	0.12	0.60
AUUW186DH1[UJ18WH UE1]					12.38	20.48	-	8.10	0.12	1.65
AUUW216DH1[UJ21WH U41]					12.68	20.78	-	8.10	0.12	1.65
AUUW246DH1[UJ24WH U41]					12.68	20.78	-	8.10	0.12	1.65
AUUW366DH1[UJ36WH U31]					21.53	36.83	-	15.30	0.25	1.20
AUUW426DH1[UJ42WH U31]					21.53	36.83	-	15.30	0.25	1.20
AUUW486DH1[UJ48WH U31]					21.53	36.83	-	15.30	0.25	1.20
AUUW368DH1[UJ37WH U31]	3 Phase inverter	50	380~415	Min. : 352 Max. : 457	11.66	19.07	-	7.41	0.24	1.20
AUUW428DH1[UJ43WH U31]					11.66	19.07	-	7.41	0.24	1.20
AUUW488DH1[UJ49WH U31]					11.66	19.07	-	7.41	0.24	1.20

Notes :

- Voltage range
Voltage supplied to the unit terminals should be within the minimum and maximum range
- Maximum allowable voltage unbalance between phase is 2 %
- MCA / MOP
 $MCA = (1.25 \times Load1) + Load2 + Load3$
 $MOP = (2.25 \times Load1) + Load2 + Load3$
 - Load1 : Rated running current of largest motor (compressor or other motor)
 - Load2 : sum of current for all other motors
 - Load3 : any other load rated 1.0A or more
- Select wire spec. based on the MCA
- Recommended circuit breaker is ELCB (Earth Leakage circuit breaker)
- MSC & RLA are measured as the compressor only test condition.
- OFM is measured as the outdoor unit test condition

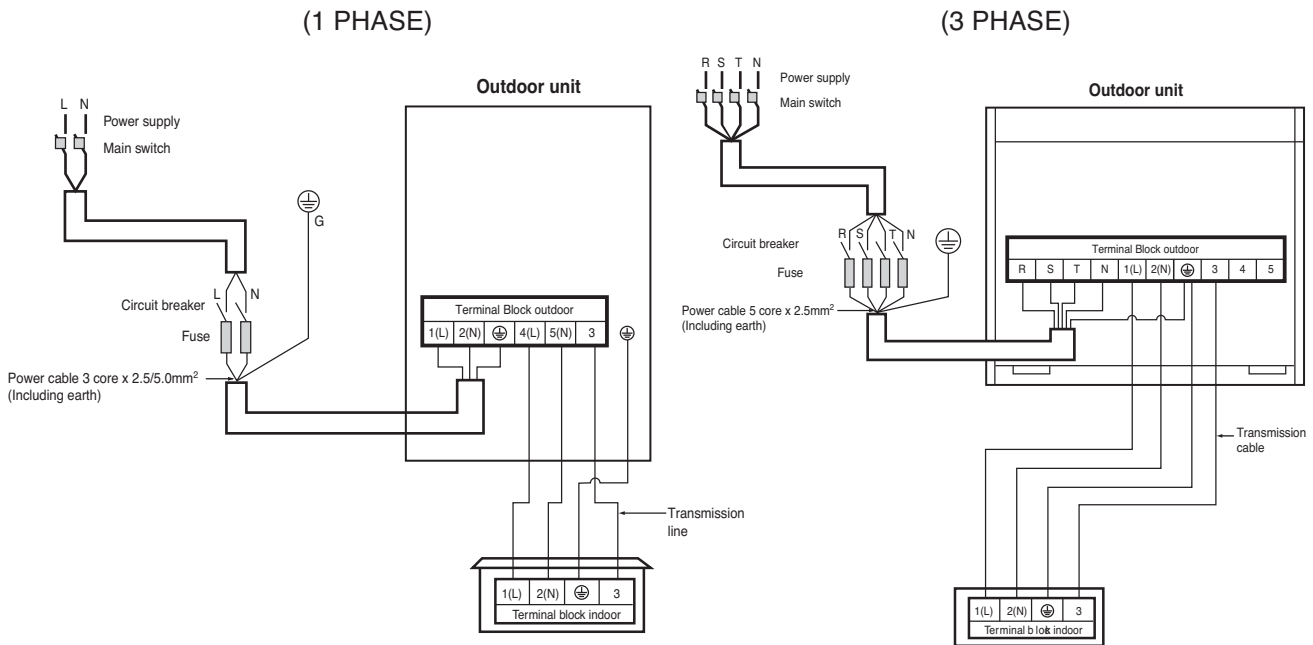
MCA : Minimum Circuit Amperes (A)
 MOP : Maximum rating over current protective device
 MSC : Maximum Starting Current
 RLA : Rated Load Amperes (A)
 OFM : Outdoor Fan Motor
 kW : Fan Motor rated output (kW)
 FLA : Full Load Amperes (A)

1. DC Inverter High

1.11 Field wiring diagrams

DC Inverter High Efficiency models

1. All wiring must comply with LOCAL REGULATIONS.
2. Select a power source that is capable of supplying the current as required by the air conditioner.
3. Feed the power source to the unit via a distribution switch board designed for this purpose.
4. The terminal screws inside the control box may be loose due to vibration during transport.
Check the screws for loose connection.
(Running the air conditioner with loose connection can overload and damage electrical components.)
5. Always ground the air conditioner with a grounding wire and connector to meet the LOCAL REGULATION.



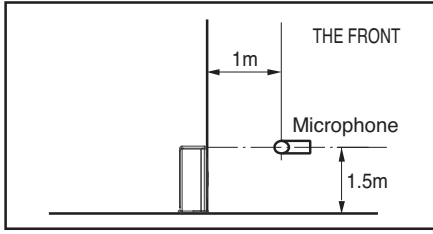
Notes:

1. All wirings, components and materials to be procured on the site should be according to the standard
2. Use copper conductor only
3. Install circuit breaker for safety
4. Unit should be grounded in compliance with the applicable local and national codes
5. Wiring cable size must comply with the applicable local and national code.

1. DC Inverter High

1.12 Sound levels

Overall



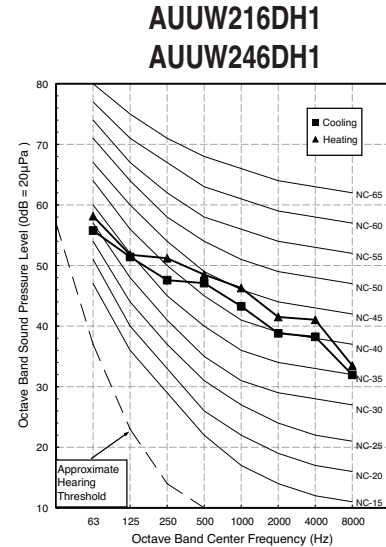
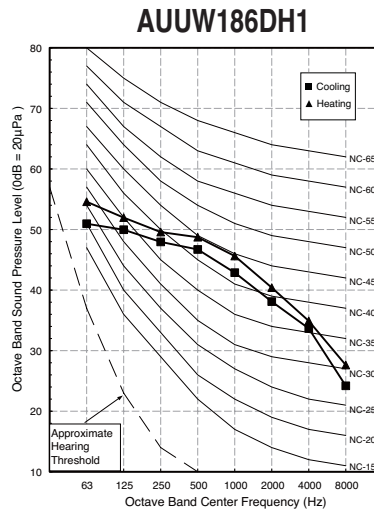
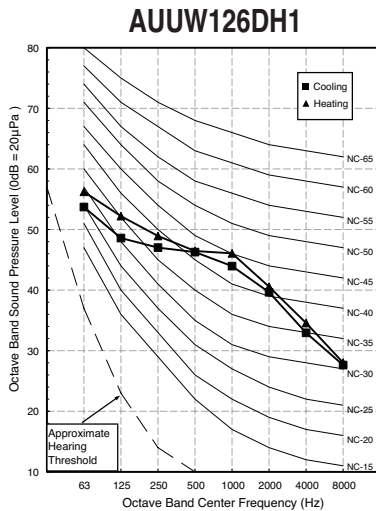
Notes:

- Sound measured at 1.5m away from the center of the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure 0dB=20μPa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

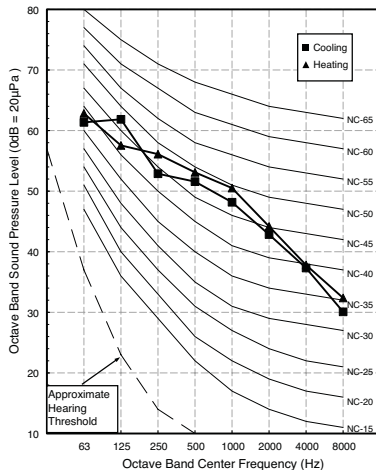
Model	Sound Level [dB(A)+3]	
	Cooling	Heating
AUW126DH1[UU12WH UE1]	48	48
AUW186DH1[UU18WH UE1]	47	50
AUW216DH1[UU21WH U41]	47	50
AUW246DH1[UU24WH U41]	47	50
AUW366DH1[UU36WH U31]	51	53
AUW426DH1[UU42WH U31]	51	53
AUW486DH1[UU48WH U31]	51	53

Model	Sound Level [dB(A)+3]	
	Cooling	Heating
AUW368DH1[UU37WH U31]	51	53
AUW428DH1[UU43WH U31]	51	53
AUW488DH1[UU49WH U31]	51	53

Sound pressure level



AUW366DH1 AUW368DH1
AUW426DH1 AUW428DH1
AUW486DH1 AUW488DH1



2. DC Inverter High-Synchro

2.1 DC Inverter High-Synchro

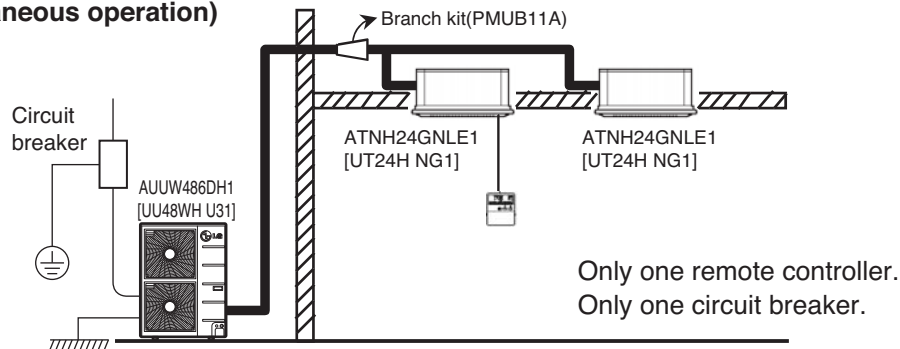
2.1.1 Power supply

Type	Outdoor unit	Capacity (kW)	Circuit breaker capacity	Power supply
1 Phase Inverter	AUW366DH1[UU36WH U31]	10.0	40A	1Φ, 220-240V, 50Hz
	AUW426DH1[UU42WH U31]	12.5		
	AUW486DH1[UU48WH U31]	13.4		
3 Phase Inverter	AUW368DH1[UU37WH U31]	10.0	15A	3Φ, 380~415V, 50Hz
	AUW428DH1[UU43WH U31]	12.5		
	AUW488DH1[UU49WH U31]	13.4		

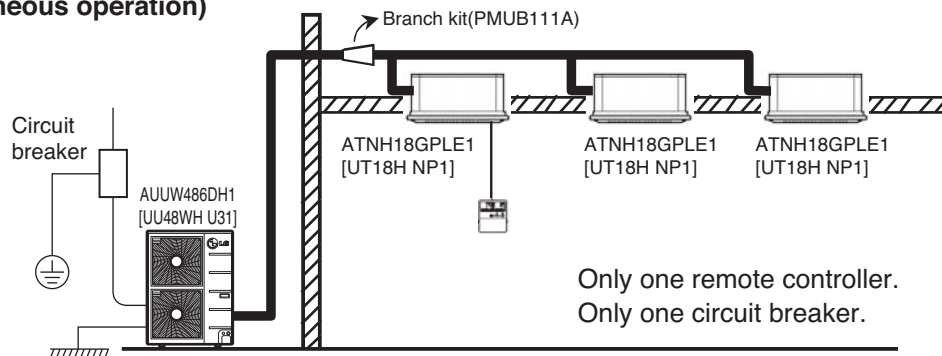
External wiring procedure

- The power supply work is needed only to the outdoor unit. The power supply to the indoor unit is conducted through the transmission wiring. Therefore, the power supply work can be carried out at just one place of the outdoor unit. It will contribute to simplify the work procedure and to save cost.
- Wiring cable size must comply with the applicable local and national code.

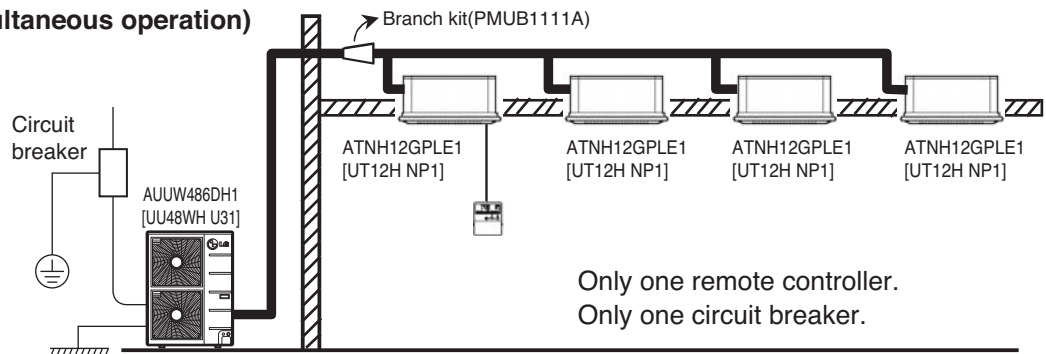
(Ex. Duo simultaneous operation)



(Ex. Trio simultaneous operation)



(Ex. Quartet simultaneous operation)



2. DC Inverter High-Synchro

2.2 Combination table

Possible combinations

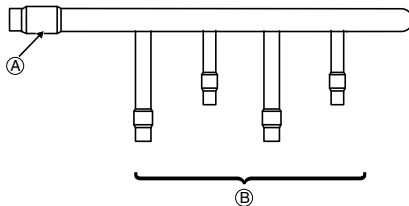
		Possible combination of indoor units								
		Synchro								
		Duo			Trio			Quartet		
IDU : INDOOR UNIT ODU : OUTDOOR UNIT BD : BRANACH DISTRIBUTOR UNIT REMO : WIRED REMOTE CONTROLLER										
MODEL	Cassette	Duct	Convertible	Cassette	Duct	Convertible	Cassette	Duct	Convertible	
UU36WH/UU37WH	UT18H NP1*2	UB18H NG1*2	UV18H NJ1*2	UT12H NP1*3	-	UV12H NJ1*3	-	-	-	
UU42WH/UU43WH	UT21H NN1*2	UB21H NG1*2	UV21H NJ1*2	UT18H NP1*3	UB18H NG1*3	UV18H NJ1*3	UT12H NP1*4	-	-	
UU48WH/UU49WH	UT24H NN1*2	UB24H NG1*2	UV24H NJ1*2	UT18H NP1*3	UB18H NG1*3	UV18H NJ1*3	UT12H NP1*4	-	-	
Applied Accessories	BDunit	PMUB11A			PMUB111A			PMUB1111A		
	Simple central controller**	PQCSB101S0								
	Function controller**	PQCSC101S0								

Notes :

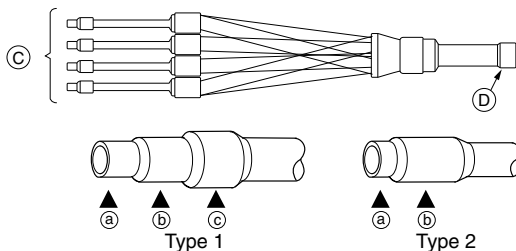
- Possible indoor units: **H_{inverter} SINGLE A_{...}** indoor unit series
 - Dry contact & Zone control & Auto changeover is not available which is connected with synchro.
 - When using synchro operation
 - Do not use wireless remote controller
 - Use only one wired remote controller in the indoor units.
 - Use central and function controller "PQCSB101S0" & "PQCSC101S0" only
- Between units are the required Branch kits mentioned, that are necessary to install the combination.

Indoor Classification	Model Name	Capacity Ratio(%)
2 Units	PMUB11A	50:50 (1:1)
3 Units	PMUB111A	33:33:33 (1:1:1)
4 Units	PMUB1111A	25:25:25:25(1:1:1:1)

(Gas pipe)



(Liquid pipe)



Unit : mm(inch)

(I.D)	a	b	c	Type
A	Ø15.88(5/8)	Ø19.05(3/4)	Ø25.4(1)	1
B	Ø9.52(3/8) Ø12.7(1/2)	Ø12.7(1/2) Ø15.88(5/8)	-	2
C	Ø6.35(1/4)	Ø9.52(3/8)	-	2
D	Ø9.52(3/8)	Ø12.7(1/2)	-	2

2. DC Inverter High-Synchro

2.3 Branch kit

Models : PMUB11A, PMUB111A, PMUB1111A

Picture



Gas pipe

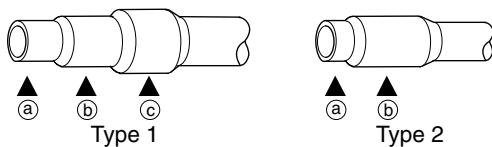
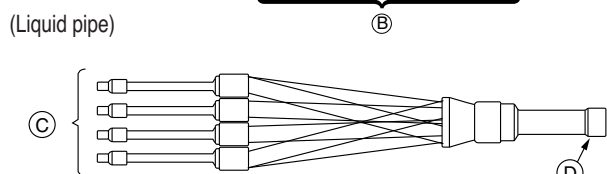
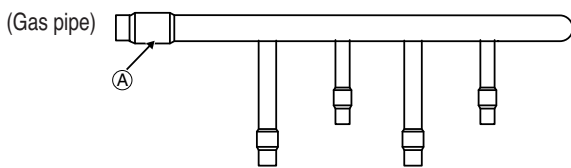
Liquid pipe

Features

Connectable of indoor units	Models	Gas pipe	Liquid pipe
2 Units	PMUB 11A	(1:1)	(1:1)
3 Units	PMUB 111A	(1:1:1)	(1:1:1)
4 Units	PMUB 1111A	(1:1:1:1)	(1:1:1:1)

Between units are the required Branch kits mentioned, that are necessary to install the combination.

Indoor Classification	Model Name	Capacity Ratio(%)
2 Units	PMUB11A	50:50 (1:1)
3 Units	PMUB111A	33:33:33 (1:1:1)
4 UnitsPMUB1111A	25:25:25:25(1:1:1:1)	



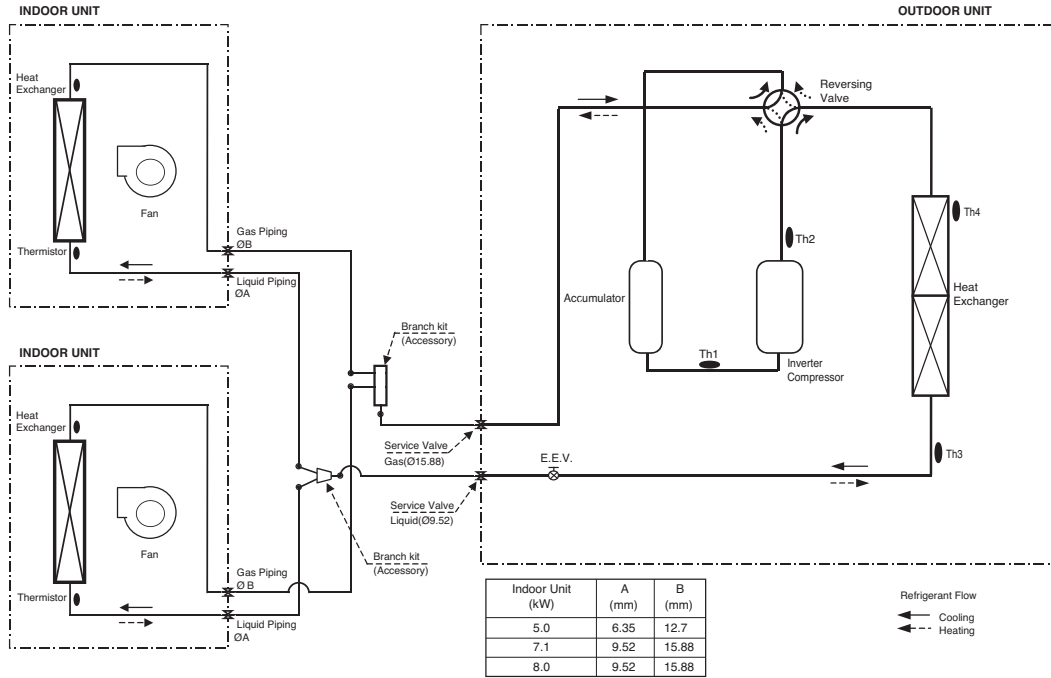
Unit : mm(inch)

(I.D)	a	b	c	Type
A	Ø15.88(5/8)	Ø19.05(3/4)	Ø25.4(1)	1
B	Ø9.52(3/8) Ø12.7(1/2)	Ø12.7(1/2) Ø15.88(5/8)	-	2
C	Ø6.35(1/4)	Ø9.52(3/8)	-	2
D	Ø9.52(3/8)	Ø12.7(1/2)	-	2

2. DC Inverter High-Synchro

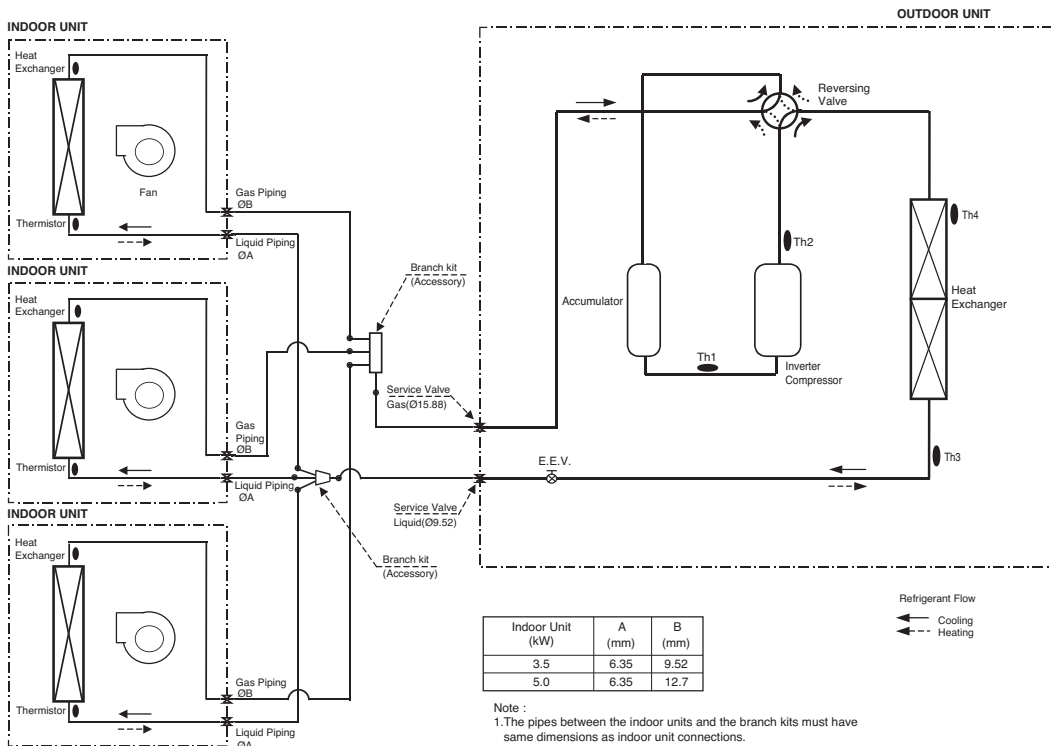
2.4 Piping diagrams

Models : "Synchro" Duo - AUUW366DH1[UU36WH U31], AUUW426DH1[UU42WH U31], UUUW486DH1[UU48WH U31]
 AUUW368DH1[UU37WH U31], AUUW428DH1[UU43WH U31], AUUW488DH1[UU49WH U31]



Note :
 1. The pipes between the indoor units and the branch kits must have same dimensions as indoor unit connections.

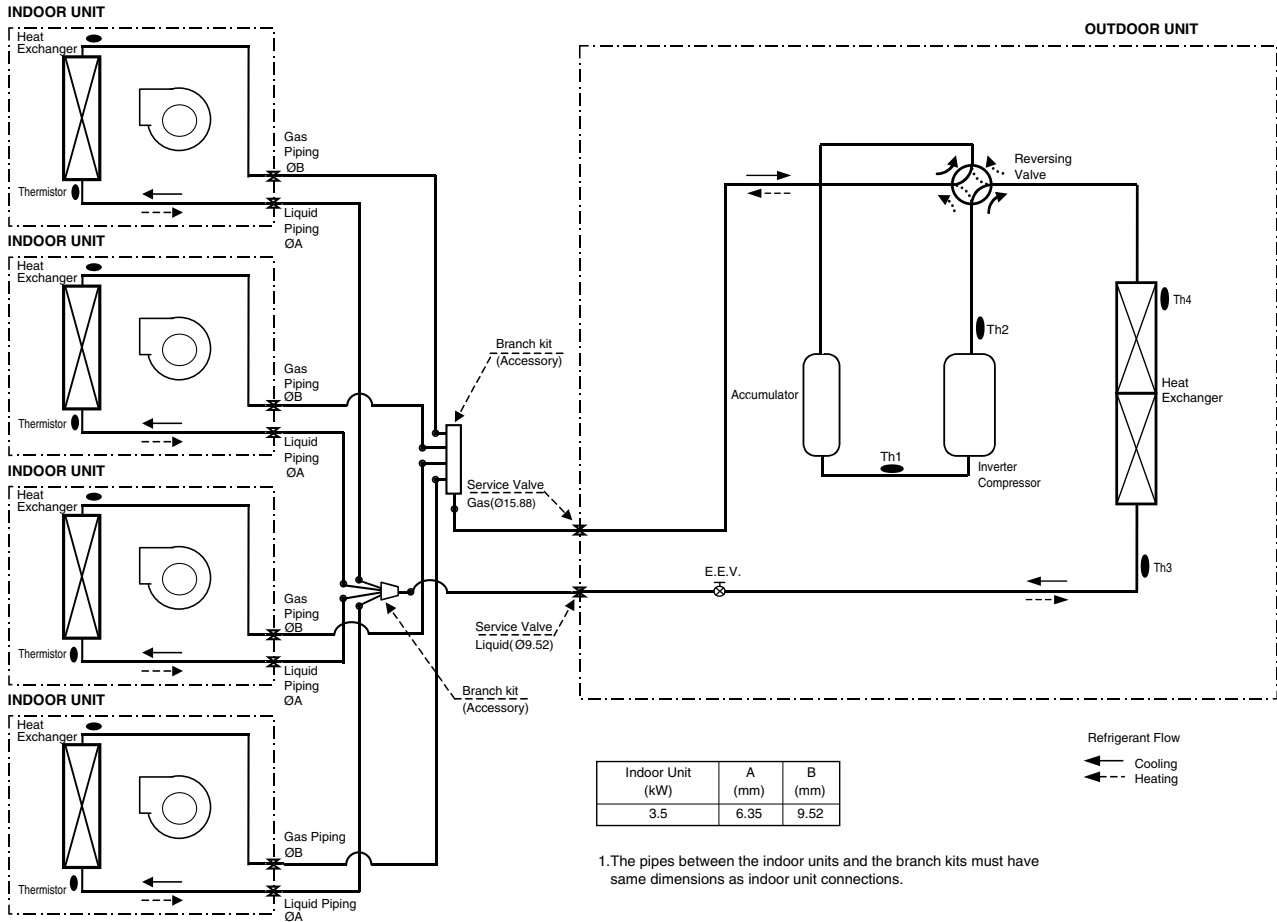
Models : "Synchro" Trio - AUUW366DH1[UU36WH U31], AUUW426DH1[UU42WH U31], AUUW486DH1[UU48WH U31]
 AUUW368DH1[UU37WH U31], AUUW428DH1[UU43WH U31], AUUW488DH1[UU49WH U31]



Note :
 1. The pipes between the indoor units and the branch kits must have same dimensions as indoor unit connections.

2. DC Inverter High-Synchro

Models : "Synchro" Quartet - AUUW426DH1[UU42WH U31], AUUW486DH1[UU48WH U31]
 AUUW428DH1[UU43WH U31], AUUW488DH1[UU49WH U31]



Part 2 Product data_ Outdoor unit

2. DC Inverter High-Synchro

2.5 Accessories

Optional accessories

Name	Model No.	Indoor classification	Capacity Ratio(%)
Branch Kit	PMUB11A	"Synchro" Duo	50:50(1:1)
	PMUB111A	"Synchro" Trio	33:33:33(1:1:1)
	PMUB1111A	"Synchro" Quartet	25:25:25:25(1:1:1:1)

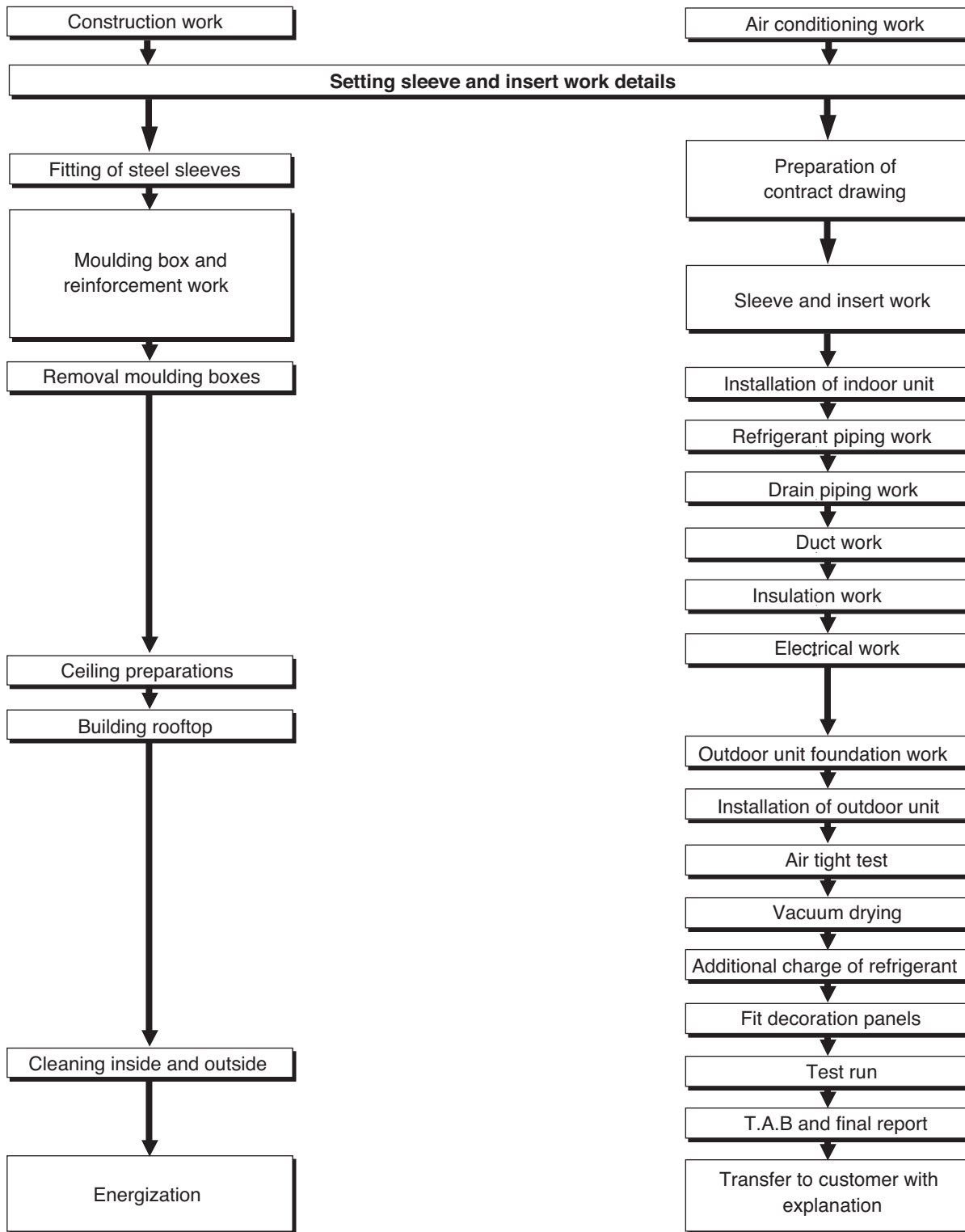
Part 3 Design and installation

- 1. General installation guideline**
- 2. Guideline for each installation process**
- 3. Installation of indoor unit**
- 4. Installation of outdoor Unit**

1. General installation guideline

1.1 Installation process & Guideline

Striking a balance between system installation & general construction work.



1. The division of the work should be thoroughly clarified.
2. keep a constant check on the progress of the construction work to avoid deviations from the air conditioning work schedule.

1. General installation guideline

1.2 Checking the drawing

Installation procedure

Remarks

Determination of work scope	..... Check and confirm required loads calculation, model selection, drawings etc.
Preparation of contract drawings	..... Make a relationship between outdoor ,indoor controller and option connection clear. (prepare control circuit diagram)
Sleeve and insert works	..... Determine sleeve position, size and counts as required
Installation of indoor units	..... Check model name to make sure the fitting is made correctly
Refrigerant piping works	..... Special attention to dryness , cleanness and tightness
Drain pipe works	..... Make sure that the drain pipe diameter is big enough and adjust it to downward gradient
Duct works	..... Make sure airflow is sufficient
Insulation works	..... Make sure no gap is left where the insulating materials are joined
Electrical work	..... Multiple core cable must not be used (suitable cable should be selected)
Outdoor unit foundation works	..... The foundation must be vibration proof and in level
Installation of outdoor units	..... Avoid airflow short circuit and ensure sufficient space is allowed for servicing
Air tight test	..... For 24 hours at 3.8MPa(R410a) or 2.8MPa(R22) there must be no drop in pressure
Vacuum drying	..... Less than 5 Torr (At least more than 1hr)
Additional charge of refrigerant	..... Charge the refrigerant accurately by using a charging cylinder
Fit decoration panels	..... Make sure there are no gaps left between facing materials used on the ceiling
Test run	..... Follow the testing operation check sheet
Transfer to customer with explanation	..... Explain to customer or operator the manual etc

2. Guideline for each installation process

2.1 Sleeve and insert work

2.1.1 Positioning of the pipe holes

1. The through holes for the drain piping should be positioned such that pipes have a downward gradient (the gradient must be at least 1/100. The thickness of the insulating materials must also be taken into consideration.)
2. The diameter of the through holes for the refrigerant piping should include an allowance for the thickness of the heat insulation materials.
3. Attention should be paid to the construction of the beam themselves since there are sometimes parts of the beam which cannot be used to accommodate through holes.

2.1.2 Selection of sleeve

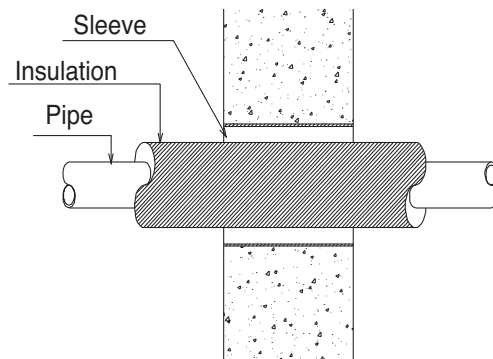
1. Sleeve work should be performed to make a space for passing pipe and wire through the wall or ground under construction.

For example if gas pipe and liquid pipe is 12.7mm , 6.35mm the sleeve diameter is minimum 79.05mm .

Gas pipe diameter	12.7mm
Liquid pipe diameter	6.35mm
Insulation thickness(gas pipe)	10mm x 2
Insulation thickness(liquid pipe)	10mm x 2
20mm surplus	20mm
Total sleeve diameter	79.05mm

* Assumption : Gas pipe insulation thickness and liquid pipe insulation thickness is 10mm and 10mm respectively

2.1.3 Sleeve type



NOTE

Sleeve type should be considered as per local regulation & laws.

CAUTION

1. In high voltage generation places, water-proof flexible conduit should be used. (in substation room, in elevator room)
2. Conduit should be chosen in accordance with electrical installation regulation.

NOTE

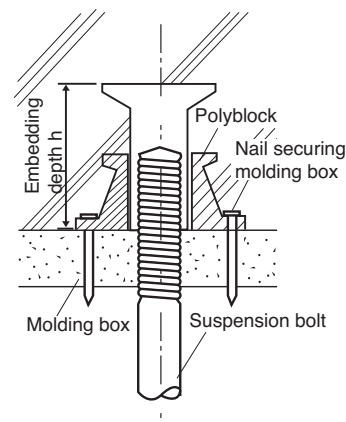
Cable conduit should be considered under the local regulation & laws.

2.1.4 Insert work and support work

An insert is a metal tool which is inserted into a floor or beam before the concrete is set such that fittings such as duct , pipes or suspension bolts for hanging units can be fitted into the place later. The positioning of the inserts must be decided early.

1. Insert work

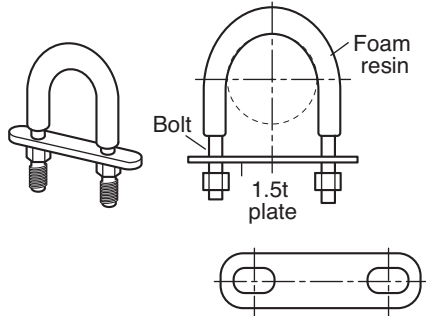
Example : Through holes in a reinforced concrete beam



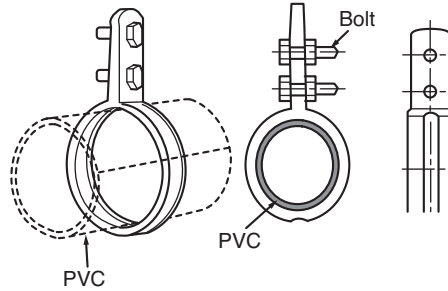
2. Guideline for each installation process

2. Support work.

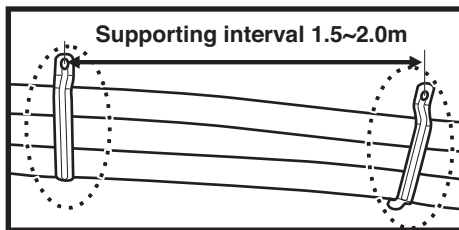
■ Insulated U-bolt type supporting



■ Insulated O-ring band type supporting



■ Saddle supporting

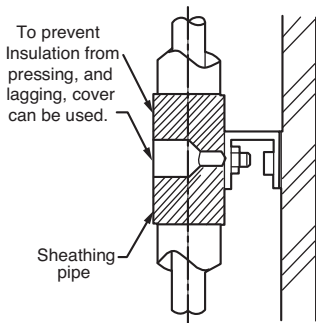


⚠ CAUTION

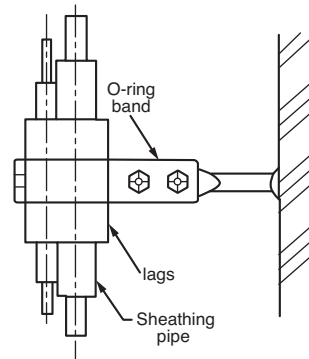
During saddle supporting work, insulation should not be pressed by saddle as this can lead to tearing of insulation and thus falling of condensed water during product operation.

a) Supporting with insulated pipe

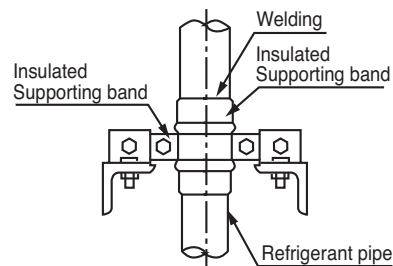
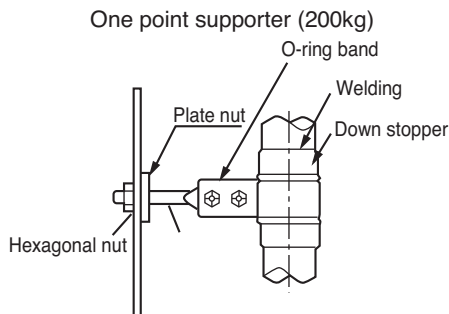
① U-bolt supporting



② O-ring band supporting



B) Down stopper supporting



2. Guideline for each installation process

2.2 Refrigerant piping work

2.2.1 Flaring work

NOTE Choice of material for refrigerant piping
Copper pipe selection

- The wall thickness of the refrigerant piping should comply with relevant local and national regulation for R410A the design pressure is 3.8MPa.(38.7kgf/cm²)
- If not, we recommend to use with phosphorus deoxidized copper type
- Generally used copper pipe specifications as follows;

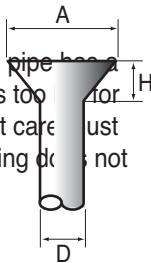
Size(ø)mm	Torque kg·f.m	Thickness	
		R22	R410A
6.35	1.80~2.50	0.7	0.8
9.52	3.40~4.20	0.8	0.8
12.70	5.50~6.60	0.8	0.8
15.88	6.30~8.20	1.0	1.0
19.05	9.90~12.1	1.0	1.0

* Never use the pipe which is mixed scrap or a pipe used somewhere else
The method how to distinguish the pipe mixed scarp : check the oxidization evidence after leaving the pipe for 24hour.

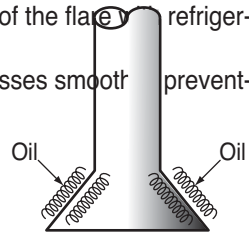
CAUTION

Flare connection and procedure

- Stiffened pipe must always be annealed at least once prior to the flaring work.
- A pipe cutter must be used to cut the pipe.
(A large pipe cutter must be used where the pipe has a large diameter. When cutting a pipe which is too large for the pipe cutter a metal saw may be used but care must be taken to ensure that the debris from sawing does not get into the pipe.)



- Set the flaring tool to make sure the flare size remains within the prescribed limits.
- Coat the inner and outer surface of the flare with refrigerant oil (Ester or ether oil).
(this ensures that the flare nut passes smoothly preventing the pipe from twisting.)
Do not use SUNISO-4GS oil.



External diameter of pipe D		Pipe widening dimension A (mm)	Required flare height H (mm)
(in)	(mm)		
1/4	6.35	8.6~9.0	1.1~1.3
3/8	9.52	12.6~13.0	1.5~1.7
1/2	12.7	15.8~16.2	1.6~1.8
5/8	15.88	19.0~19.4	1.6~1.8
3/4	19.05	22.9~23.3	1.9~2.1

CAUTION

- Burrs should be carefully removed.
- 2 spanners should be used to grip the pipe.
- The flare nut must be inserted before starting the flaring operation.
- The appropriate amount of torque should be used to tighten the flare nut.
- Check that there is no superficial damage to the surface of the flare.

2. Guideline for each installation process

2.2.2 Pipe connection and flaring works

NOTE

1. After installation completion make sure to open the valve. operating the unit with the valve shut off will destroy the compressor (Refer to the Additional refrigerant charge detail information)
2. Use R410A to add refrigerant. All field piping must be installed by a licensed refrigeration technician
3. Must comply with local and national standard regulations.

1) Connecting the piping to the indoor unit and drain hose to drain pipe

- ① Align the center of the piping and sufficiently tighten the flare nut by hand.
- ② Tighten the flare nut with a wrench. Wrap the insulation material around the connecting portion.

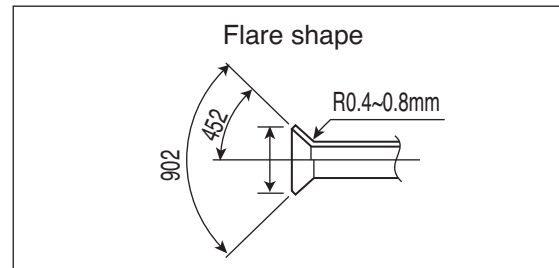
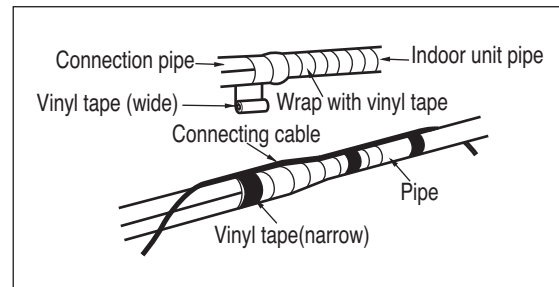
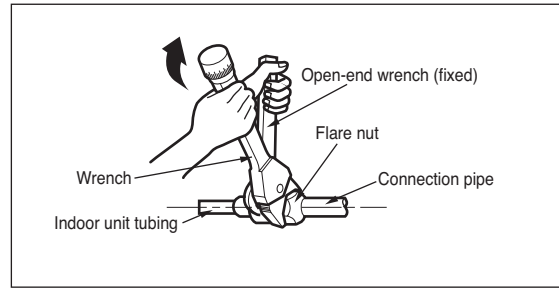
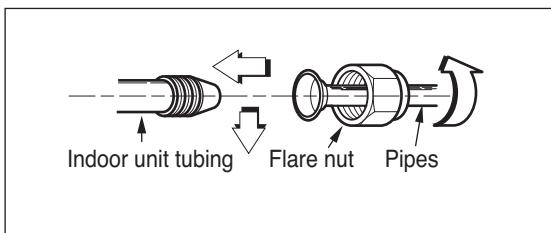
Outside diameter(Ø)		Torque kg·f.m
mm	inch	
6.35	1/4	1.80~2.50
9.52	3/8	3.40~4.20
12.7	1/2	5.50~6.60
15.88	5/8	6.30~8.20
19.05	3/4	9.90~12.1

2) Wrap the insulation material around the connecting portion.

- ① Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there is no gap.
- ② Wrap the area which accommodates the rear piping housing section with vinyl tape.
- ③ When the piping is passed through a tray, duct work or a sleeve the insulation wrapping on the pipe is not required.

3) Close up a socket out of use with a brass cap.

- ① Align the center of the piping and sufficiently tighten the brass cap by hand.
- ② Tighten the brass cap with a wrench.
- ③ Wrap the area contacted with insulation.



2.2.3. SVC valve fitting

Cautions on handling SVC valve

- The figure below shows the name of each part required in handling SVC valve. At the time of shipment, SVC valve is closed.
- If only a torque wrench is used to loosen or tighten the flare nut, the side plate may be distorted. Make sure to fix SVC valve with a spanner, then loosen or tighten the flare nut with a torque wrench.
- When it is expected that the operating pressure will be low (for example, when cooling will be performed while the outside air temperature is low), seal sufficiently the flare nut in SVC valve on the gas line with silicon sealant to prevent freezing.

[Valve operation method]

Prepare hexagon wrenches (whose size is 4 mm).

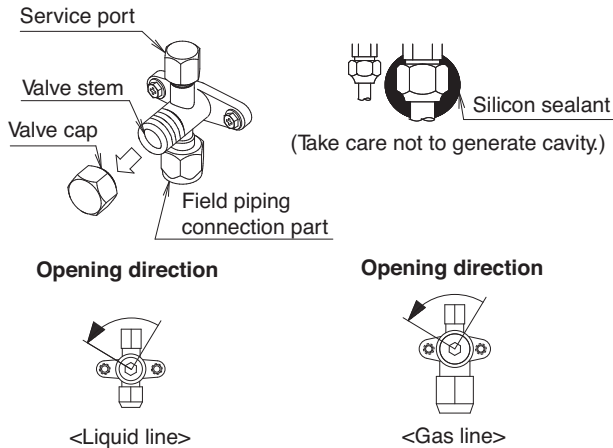
How to open the stop valve

1. Insert a hexagon wrench into the valve stem, and turn the valve stem counterclockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is open.

2. Guideline for each installation process

How to close the stop valve

1. Insert a hexagon wrench into the valve stem, and turn the valve stem clockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is closed.

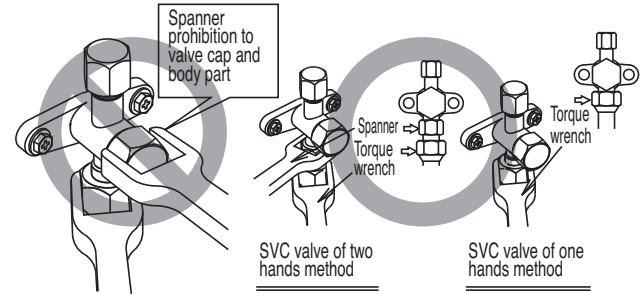


Cautions on handling the service port

- Use charge hose equipped with push in the work.
- After the work, make sure to tighten the valve cap securely. Tightening torque.....8.5~10.3 ft·lbf

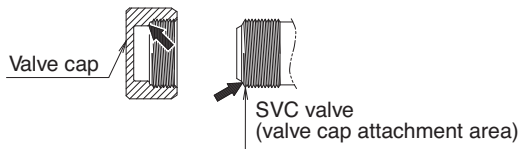
Do not apply any force to the valve cap

Using a spanner on the valve cap and the valve body could cause a refrigerant leak.



Cautions on handling the valve cap

- The valve is sealed in the arrow area. Take care not to damage the arrow area.



- After handling the valve, make sure to tighten the valve cap securely.

Liquid line	Gas line
3.4~4.2 m·kgf	6.3~8.2 m·kgf

2. Guideline for each installation process

2.2.4 Brazing work

CAUTION

Brazing of refrigerant piping :

The following precaution should be taken.

1. Do not use flux when brazing copper to copper refrigerant piping.

(Particularly for the HFC refrigerant piping)

Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.

(Flux has extremely harmful influence on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

If brazing work is carried out without passing nitrogen gas through the pipes then it allows the formation of oxidation bubbles on the inside surface of the pipes.

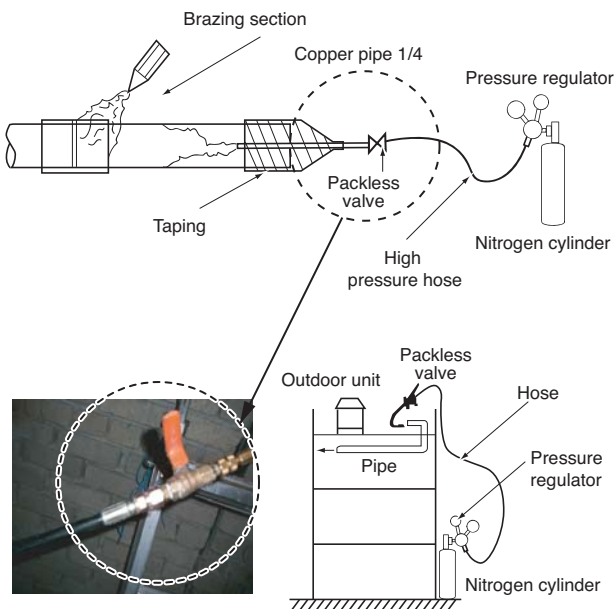
These oxidation bubbles are then carried along inside the pipes to cause damage to various members of the system such as valve or compressors and the system ceases to function properly.

In order to avoid this problem nitrogen is passed through the pipe while the soldering work is being carried out.

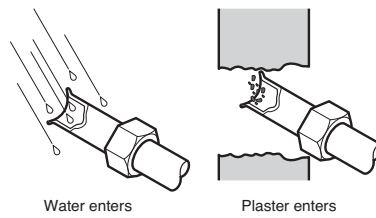
This operation work is known as nitrogen replacement.(Air is replaced by nitrogen)

This is standard work during all brazing works.

1. Nitrogen flushing method (During brazing)



CAUTION



Make sure to keep the connecting piping dry (away from water) , clean (away from dust) , and air tight (avoid refrigerant leakage)

CAUTION

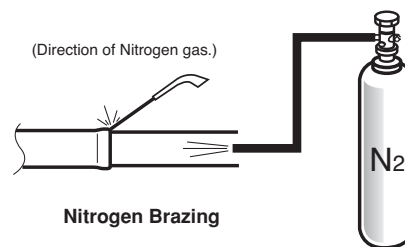
Pipe bending

Annealed copper pipe with small diameter (Ø6.35 or Ø9.52) can be easily bent manually. In this case, secure large R (radius) for the bend section and gradually bend pipe. If annealed copper pipe is large in diameter (Ø15.88 or over), bend pipe with bender. Use bender appropriate for the pipe diameter.

CAUTION

Nitrogen Brazing

- a. This procedure is designed to prevent formation of oxidation film by filling piping with inert gas. Note that excessive gas pressure will generate pinholes at brazed points. (Nitrogen gas: Supply pressure 0.05~0.1kg/cm²G)
- b. When supplying inert gas, be sure to open one end of piping.



2. Guideline for each installation process

Brazing work should be carried out either downwards or sideways.
An upward direction should be avoided wherever possible(to prevent leakage).

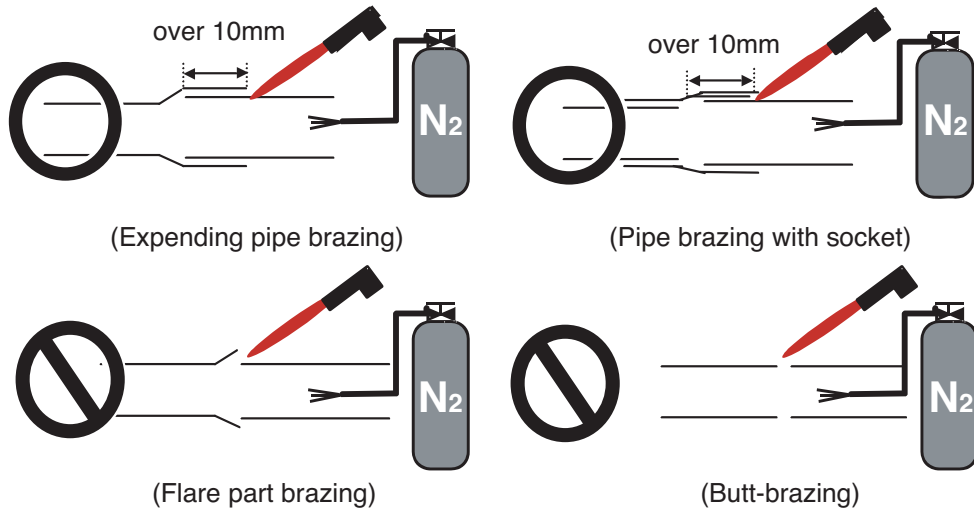


Table 1: Correlation of nozzle tip and size of refrigeration piping

(Unit : mm)

	Nozzle tip No.							Brazing filler diameter Ø		
	# 200	# 225	# 250	# 315	# 400	# 450	# 500	1.6	2.4	3.2
Piping size	Ø6.35									
	Ø9.52									
	Ø12.7									
	Ø15.9									
	Ø19.1									
	Ø22.2									
	Ø25.4									
	Ø31.8									
	Ø38.1									
Ø44.5										

CAUTION

1. Generally expending pipe brazing is performed with pan-coil type copper pipe, and socket blazing is performed with straight copper pipe.
2. Do not perform flare part brazing or butt-brazing.
3. Brazing should be performed on welding table.
4. Any dust should enter in the pipe while brazing.
5. Distance of copper pipe support spacing is within 1~2m
6. The copper pipe should not be secured directly by metal brackets.

2. Guideline for each installation process

2.2.5 Refrigerant pipe flushing

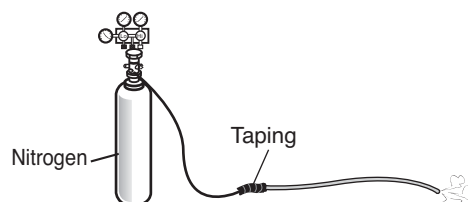
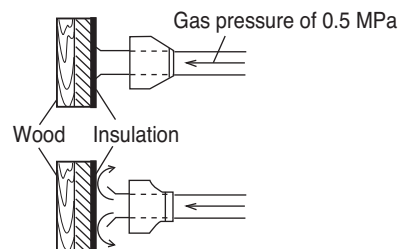
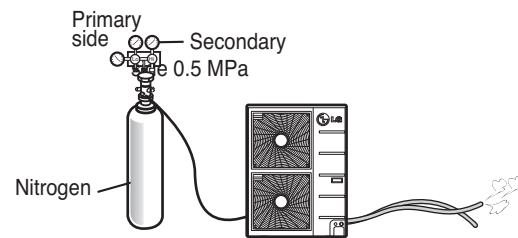
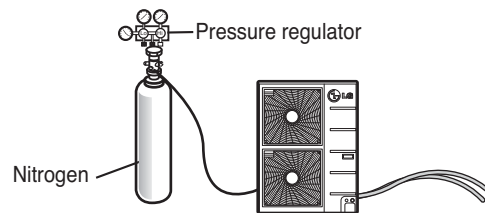
Flushing is a method of cleaning extraneous matter out of pipes using pressurized gas.

NOTE

Refrigerant pipe flushing of 3 major effects

1. Removal of oxidation bubbles formed inside copper pipes when “nitrogen replacement is insufficient” during soldering work
2. Removal of extraneous material and moisture from pipes when covering has been insufficient
3. Checks connections in pipes linking outdoor and indoor units (Both liquid and gas pipes)

- ① Set pressure regulator on nitrogen cylinder.
- ② Connect the charge hose from pressure regulator to service port on the liquid pipe side of the outdoor unit before its connection to BD unit or indoor unit.
- ③ Open the main valve on the nitrogen cylinder and set the pressure regulator to 0.5MPa.
- ④ Ensure that nitrogen is flowing through the pipe properly.
- ⑤ For flushing block the end of the pipe with wood insulation block.
- ⑥ When the pressure becomes great remove the block quickly.
- ⑦ Do step 6 & 7 repeatedly till cleanness is ensured.
- ⑧ Connect the charge hose from pressure regulator to service port on the gas pipe side of outdoor unit before its connection to BD unit or indoor unit.
- ⑨ Flow the steps 3, 4, 5, 6, 7.
- ⑩ In case of BD unit system, before connecting to indoor units, each pipe should be flushed individually.
- ⑪ Flow the steps 3, 4, 5, 6, 7.



CAUTION

After welding the pipe, nitrogen flushing is strongly recommended.

2. Guideline for each installation process

2.3 Drain piping work

The purpose of drain piping is to prevent damage of products and ceiling materials by proper draining of dew condensation which is generated from the evaporator of indoor unit when the hot vapors come in contact with the evaporator.

1. Application

Pipes for draining water generated from indoor unit on cooling operation

Specification for drain piping

Type		Drain pipe diameter (External/ Internal)	Drain pump	Drain pump discharge head (mm)	Drain amount (at 10mm height)
					cm ³ /min (lpm)
Single A	Cassette 4 way	Ø32/25mm	Standard	700	400 (0.4)
	Duct	Ø32/26mm	Standard	700	400 (0.4)
	Suspended	Ø20/17mm	-	-	-

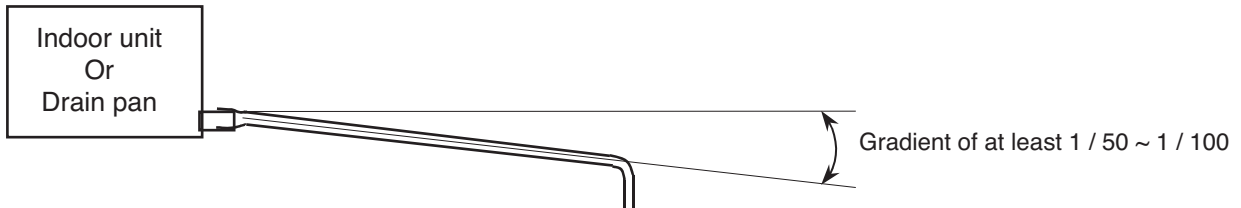
[Reference Table] Drain amount per capacity

kW	Air flow rate (CMH)	Drain amount (lpm)	Remark
2.04	8	0.128	Indoor temp. : 26C DB Indoor humidity RH : 85% Outlet temp. :14C DB Outlet temp. RH: 50%
2.33	8.5	0.137	
2.91	10.5	0.169	
4.36	11.5	0.185	
5.82	17	0.273	
7.28	19	0.305	
8.73	21	0.337	
10.2	23	0.369	
11.6	25	0.402	
14.6	34	0.546	

2. Guideline for each installation process

2.3.1 Drain pipe slope and support

- Slope gradient for drain should be (1/50~1/100mm) and PVC pipes should be used.
- Support hanger should be at 1~1.5m interval to prevent from loosing and dropping.
- Drain pipe insulation
: The inside temperature of drain pipe is about 10°C. When high temperature and humidity air touches the surface of pipe, dew condensation occurs. To prevent that, drain pipe keeps warm using insulation with polyethylene 10mm thickness.



1. Application

Refrigerant pipe length contracts and expands on heating and cooling repeatedly. So supporting work is needed not to hinder each copper pipe connection part.

2. Supporting distance for common drain pipe

[Table]The interval of the supporting hanger for drainage pipe

Pipe diameter (mm)	Ø20~40	Ø40~50	Ø65~125
Max. interval(m)	Below 1.0	Below 1.2	Below 1.5

3. Anchor bolt supporting work

Anchor bolt supporting work should be used for supporting a heavy indoor unit to ceiling.

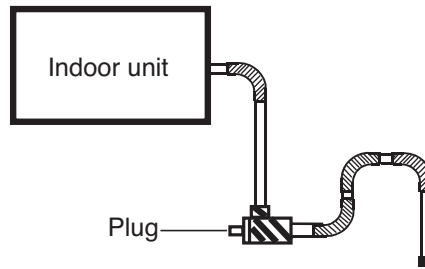
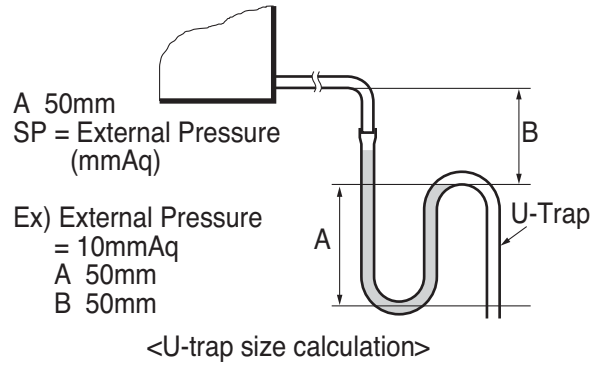
Clamp hanger supporting work is for hanging refrigerant pipe, drain pipe and cables.

It can prevent vibrating noise from passing through pipe.

We recommend set anchor bolt for supporting indoor unit and strong anchor bolt for supporting pipes and cables

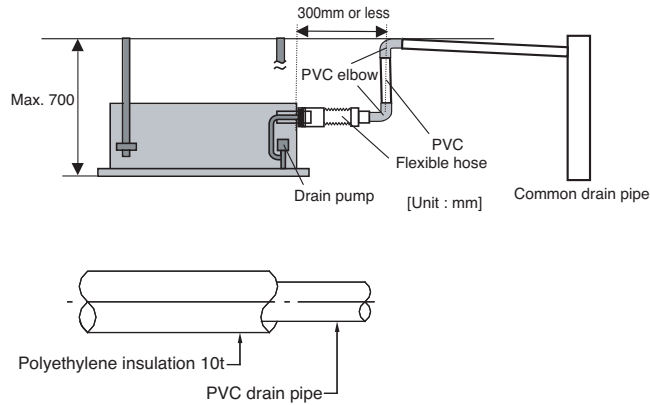
2. Guideline for each installation process

2.3.2 Drain pipe trap (only for duct)

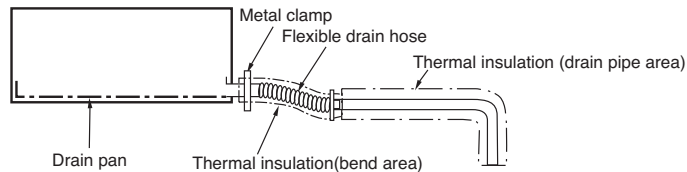


- In case of duct, the U trap maintains a positive pressure on the indoor side of the unit.

Models with drain pump:



Models without drain pump



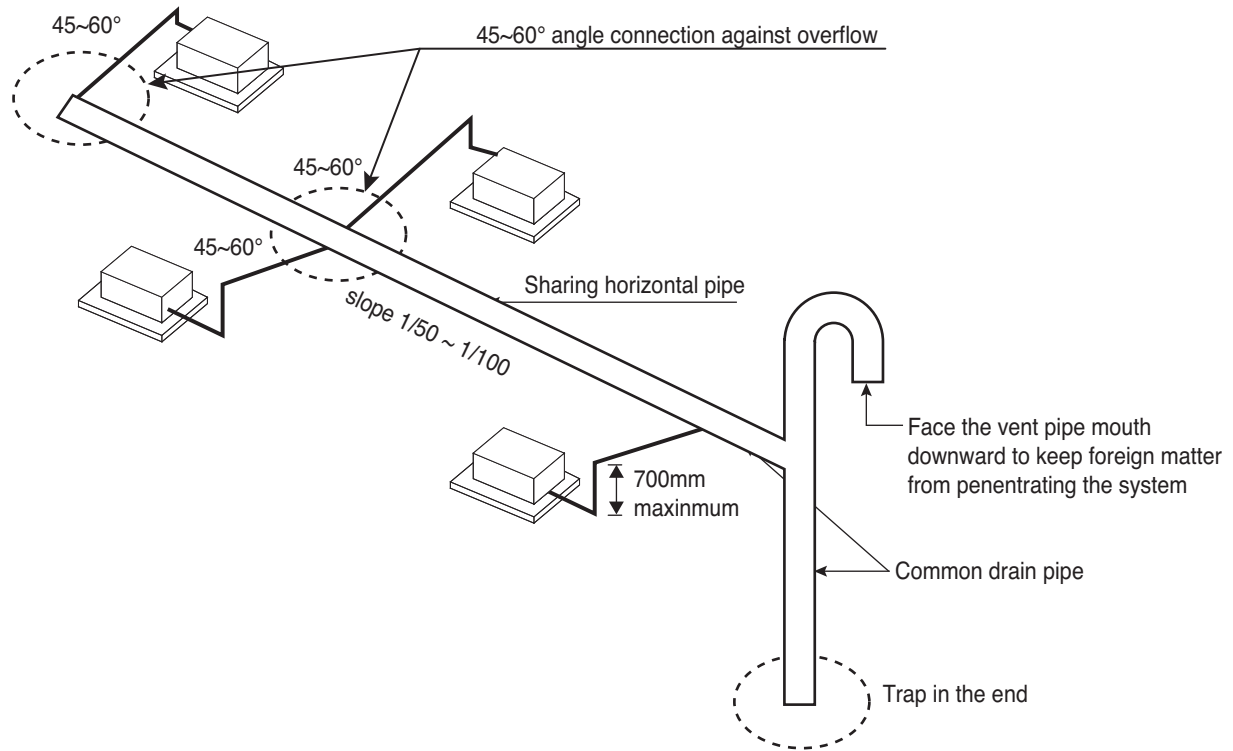
2. Guideline for each installation process

2.3.3 Grouped drain pipes

It is standard work practice to make connections to the main pipe from above.

The pipe down from the combination should be as large as possible.

The diameter of ventilation pipe should be same or larger than drain pipe diameter.



NOTE

1. Trap is required if the pipe is open towards sewage to prevent bad smell from coming to indoor.
2. Do not connect drain pipe with building common drain pipe in heavy snow area. It might block the pipe with ice and remaining collected water can get back to indoor unit.
Provide separate air conditioner drain pipe.

Grouped drain piping standard

- For drain pipe diameter selection, refer to the following table.
- The drainpipe should be used for only air conditioners. If you share it for rainwater drain, you should be careful of a back flow, leakage, bad odor and so on.
- Use separate drain pipe for polluted water or wasted water

[Table] Drain pipe diameter selection standard

Sum of the capacity of indoor units (Btu/h)	~80,000	~200,000	~400,000	~600,000	~1000,000
Internal diameter (External)	25(32)	32(40)	40(50)	50(60)	65(75)

NOTE

Select the diameter of the horizontal pipe bigger than vertical.

2. Guideline for each installation process

2.3.4 Caution for drain piping work

Notice on drain working

1. Drain pipe should be insulated all connected joints and ends.



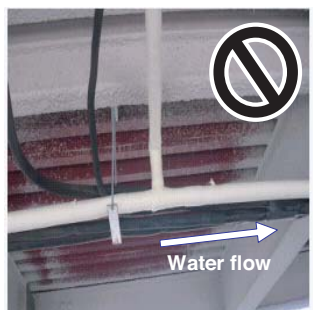
CAUTION

Flexible tube should be connected with clamp concentrically.
If not, water will leak from the connection.



<clamp connection>

2. No reverse slope for drain connection

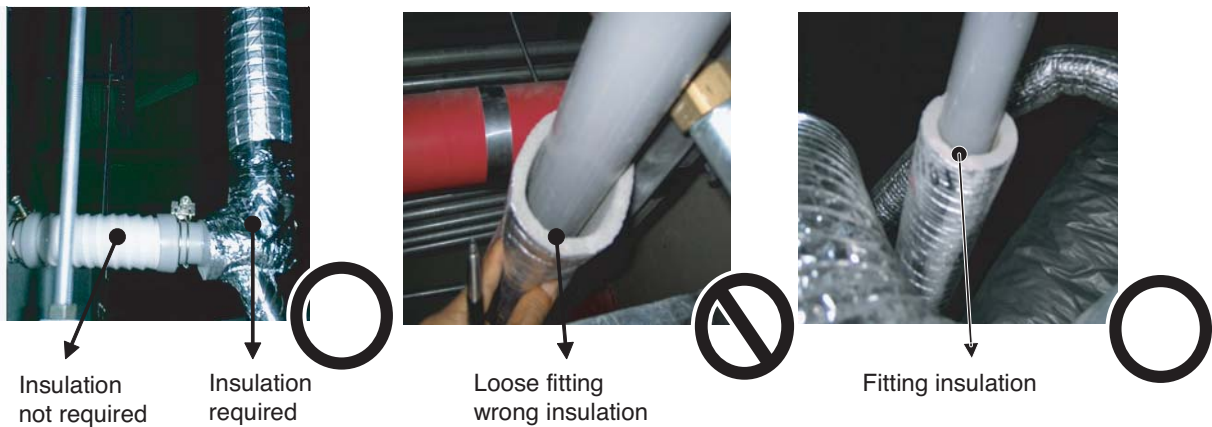


<Reverse slope>

2. Guideline for each installation process

Drain pipe insulation

- Drain pipe should be insulated all connected joints and ends.



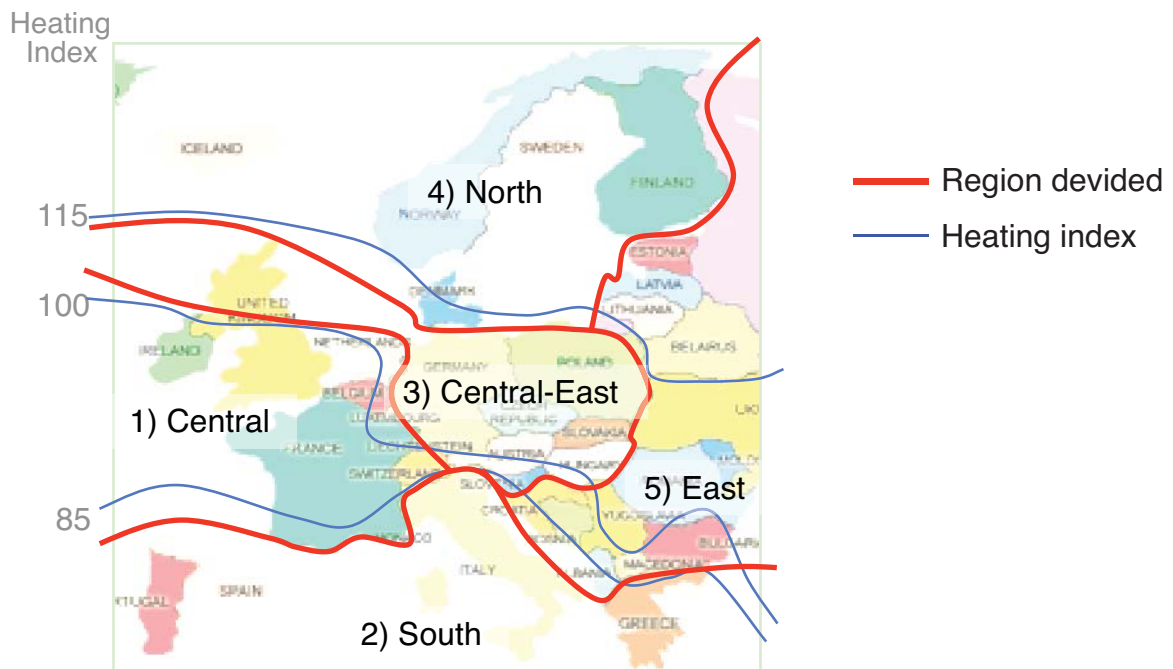
- Do not use the loose fitting insulation.

Drain water leakage test

- Water leakage test should be performed 24 hours later after drain work finishing.
- In the test, only water should be used. Other liquids are unacceptable.

2.3.5. Outdoor unit drain (recommendation)

- Mild heating region : 2) South EU use drain hose recommended (drain hole diameter 20mm)
- Intermediate heating : 1) central,3) central-east,5) east EU outdoor unit Drain pan(local) recommended.
- Hard heating region : 4) North EU super extreme heat pump model



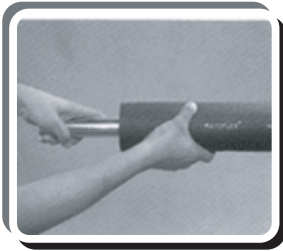
2. Guideline for each installation process

2.4 Insulation work

2.4.1 Insulation



1) Operational steps



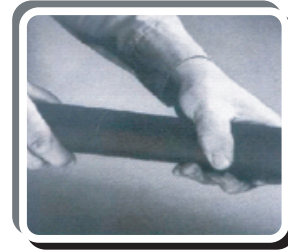
① EPDM length should be more longer than pipe length. Do not extend EPDM by force.



② Put the pipe in EPDM insulation carefully so that the pipe will not get damaged with EPDM.



③ Bond on both side of cut surfaces of move sure to use the correct type of bond for EPDM cut surface attaching.

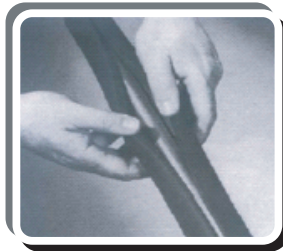


④ Dry it until it becomes thick, sticky and does not get detached.

2) Bending vertical side of insulation



① Use the original uncut insulation material.



② Only in specialcase is the vertical cutting of the insulation allowed.



③ Bond both sides of the surface of EPDM and press them together for long lasting bonding.

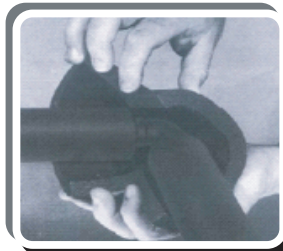


④ Dry it until it becomes thick and sticky.

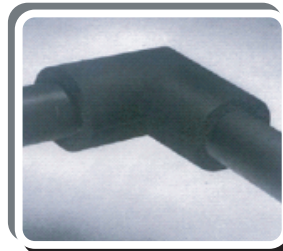
3) ' L ' Fitting connection part insulation



① All of the fitting connecting parts should be insulated. Bring face to face the each end of EPDM on fitting connection part.



② Make fitting cover to fit the EPDM insulation fitting cover should be overlapped with insulation min 1 inch (2.5cm).



③ Bond the both cutting sides of fitting cover.

2. Guideline for each installation process

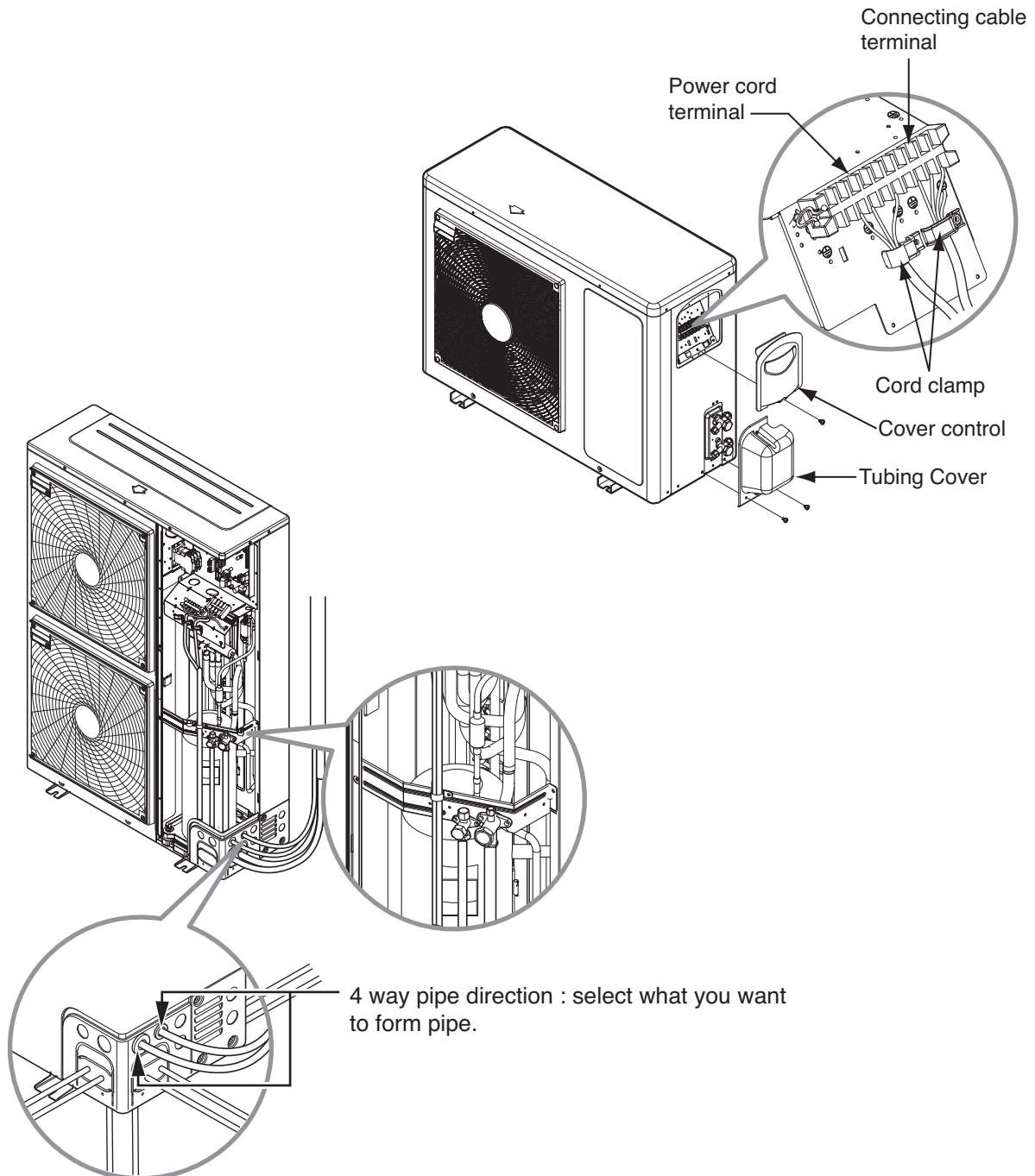
2.4.2 Forming the piping

1) Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tape.

• If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

2) In cases where the outdoor unit is installed below the indoor unit perform the following.

- ① Tape the piping, drain hose and transmission cable from down to up.
- ② Secure the tapped piping along the exterior wall using saddle or equivalent.

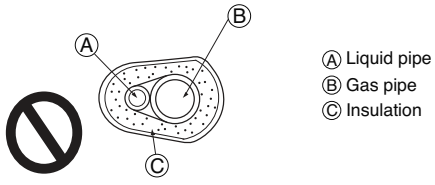
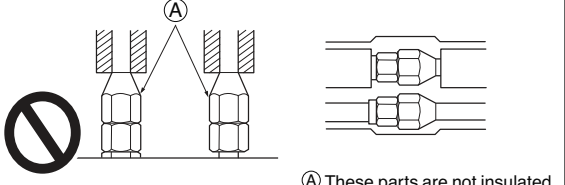
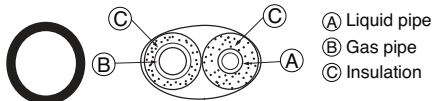
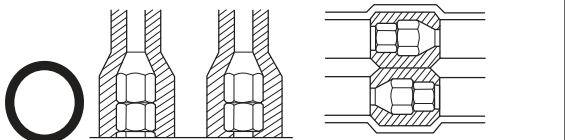


2. Guideline for each installation process

2.4.3 Essential points of thermal insulation

1) Thermal insulation of refrigerant piping

Be sure to give insulation work to refrigerant piping by covering liquid pipe and gas pipe separately with enough thickness heat-resistant insulation materials, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation drip, etc. pay special attention to insulation work to ceiling plenum.

<p>Wrong method</p>	<ul style="list-style-type: none"> Do not insulate gas or low pressure pipe and liquid or high pressure pipe together. 	<ul style="list-style-type: none"> Be sure to fully insulate connecting portion. 
<p>Correct method</p>		

2) Caution during insulation work

- In case the cables are installed in the conduit, a finishing tape is not required.
- Defect and insufficient insulation can cause condensation drops.
- Binding the insulation too tight may result in dew drops.
- Be sure not to tie rap the insulation but put special taping or the clamp at the connecting portion.
- The insulation overlapping part at the piping connection must be a distance from the flaring part at the pipe connection.

3) Insulation tube thickness

- Thickness decision of insulation tube
 - Insulation material: EPDM or polyethylene foam
 - Thermal conductivity 0.035 kcal~0.040kcal/mh°C
 - Heat resistance=85°C(Cooling only) or more
100°C(Heat pump) or over
- The thickness of the thermal insulation material must be determined in the light of the pipe sizes.

Pipe size	Thickness of insulation material
6.35 ~ 25.4 mm	10mm or more
25.4 ~	15mm

- It will be necessary to increase the thickness of insulation in the above table when conditions are hot and humid.
- Where a customer supplies his own specifications then these must be adhered to.

CAUTION

Outdoor temperature and humidity around the cooling piping might exceed 30°C and RH80%, reinforce the insulation on the cooling piping (at least 20mm thick)

2. Guideline for each installation process

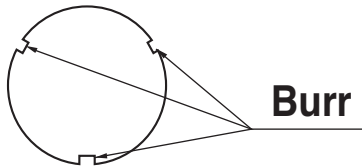
2.5 Electrical work

2.5.1 Precautions

CAUTION

When knocking out knock holes

- To punch a knock hole, hit on it with a hammer.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using paint to prevent rusting.
- When passing electrical wiring through the knock holes, remove any burrs from the knock holes and wrap the wiring with protective tape to prevent damage.



If there are any possibilities that small animals or insects enter the system through the knock holes, plug the holes with packing materials (to be prepared onsite).

Use a conduit for the cable

- Outside the unit, make sure the thin signal cable (i.e. for the remote control, between units, etc.) and the thick electric wiring do not pass near each other and use of the shield signal cable is recommended. Otherwise, the outdoor unit may be affected by electrical noise (external noise), and malfunction or fail.
- Secure the wiring with the accessory clamps so that it does not touch the piping.
- Make sure the wiring and the electric parts box cover do not stick up above the structure, and close the cover firmly.

CAUTION

Do not operate the air conditioner until the refrigerant piping work is completed.

(Operating the air conditioner before the refrigerant piping work is completed may damage the compressor.)

- Install an earth leakage circuit breaker. Since this is an inverter air conditioner. In order to prevent malfunction of the earth leakage breaker itself, use a breaker resistant to higher harmonics.
- After finishing the electric work, confirm that each electric part and terminal inside the electric parts box is connected securely.

NOTE

- Only professional electricians having sufficient knowledge should perform the electrical wiring work. Perform the electrical wiring work in accordance with the electrical wiring diagram. Make sure to set OFF the branch switch and over current breaker before starting the work.
- Install an earth leakage breaker.
- Perform grounding to the indoor units and outdoor units.
 - Do not connect the ground wire to gas pipes, sewage pipes, lightning rods telephone ground wires.
 - Gas pipes ... Can explode or catch fire if gas leaks.
 - Sewage pipes... Provides no grounding effect if hard plastic pipes are used.
 - Telephone ground wires and lightning rods ... dangerous when struck by lightning due to abnormal rise in the electrical potential in the ground.
- Use only copper wires.
- Make sure to shut down the power before starting the electric wiring work. Do not set ON any switch until the work is completed.
- The outdoor unit has an inverter compressor which generates noise and charges the outer casing with the leakage current. The outdoor unit should be grounded so that the effect of the generated noise on other equipment can be reduced, and that the outer casing can be discharged.
- Never install a phase advancing capacitor for power factor improvement. (Even if it is installed, the power factor is not improved. And if it is installed, the outdoor unit is abnormally overheated.)
- Use specified electric wires in the wiring, and connect them securely. Fix them in such a way that external force is not applied at the terminals (transmission wiring in the local field and ground terminal).
- Never push excessive electric wires into the units.
- Protect electric wires with conduit tubes or other proper tubes so that they will not be damaged by edges of knock holes.
- Do not use multi conductor cable which have more than 5 wires in one core.

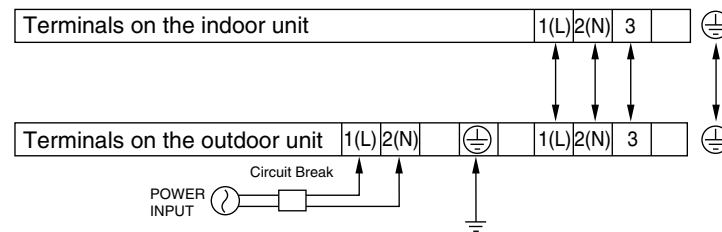
2. Guideline for each installation process

2.5.2 Control wiring / power supply

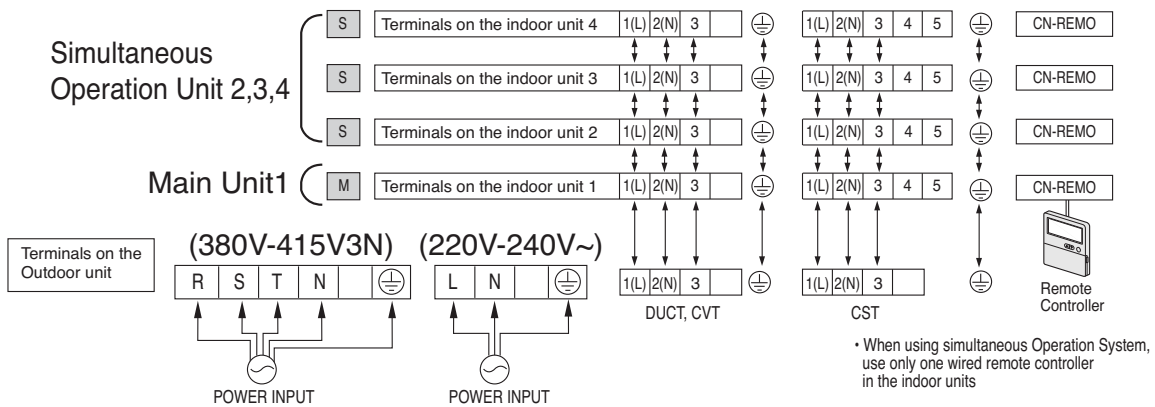
- 1) All wiring must comply with LOCAL REGULATIONS.
- 2) Select a power source that is capable of supplying the current as required by the air conditioner.
- 3) Feed the power source to the unit via a distribution switch board designed for this purpose.
- 4) The terminal screws inside the control box may be loose due to vibration during transport.
Check the screws for loose connection.
(Running the air conditioner with loose connection can overload and damage electrical components.)
- 5) Always ground the air conditioner with a grounding wire and connector to meet the LOCAL REGULATION.

DC Inverter High Efficiency models (1Ø)

1Phase model



DC Inverter High Efficiency models synchro

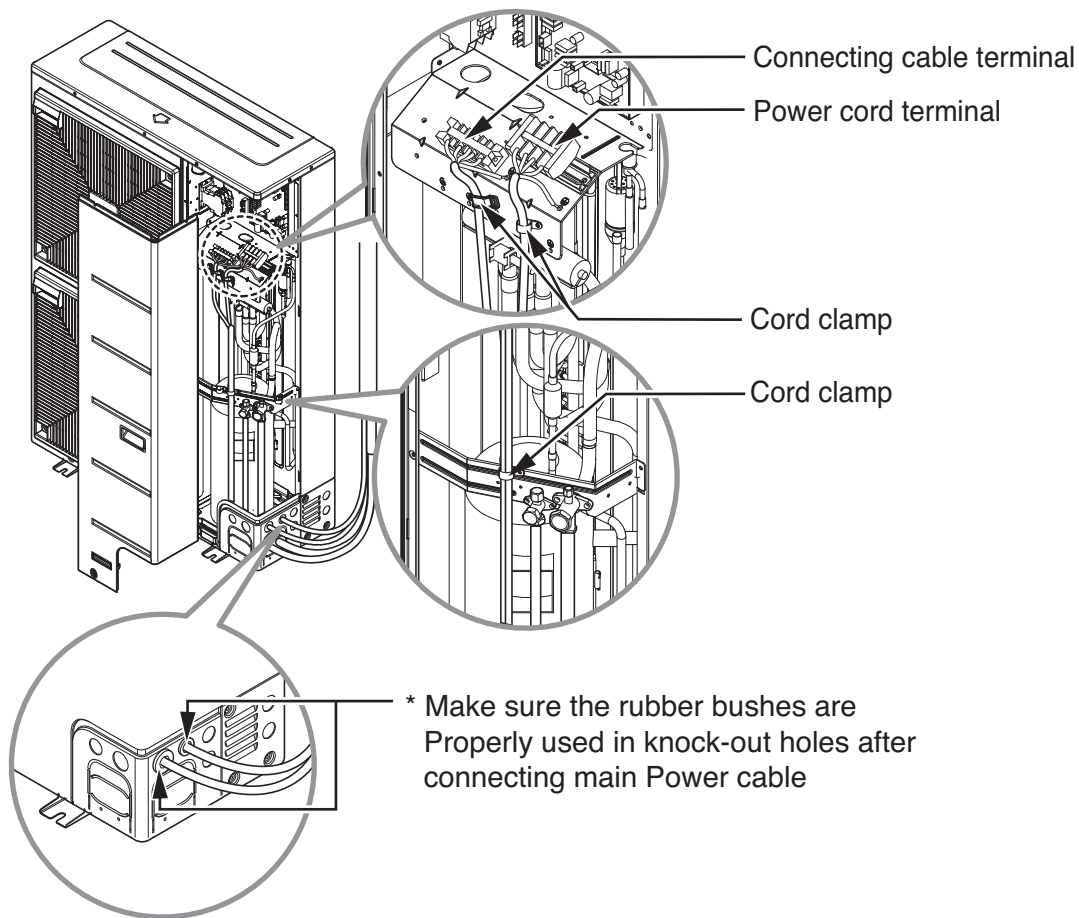


2. Guideline for each installation process

Connecting the cable to Outdoor Unit

- Remove the side panel for wiring connection.
- Use the cord clamp to fix the cord.
- Earthing work
 - Case 1 :Terminal block of Outdoor Unit have ⊕ mark.
- Connect the cable of diameter 1.6mm² or more to the earthing terminal provided in the control box and do earthing.
 - Case 2 :Terminal block of Outdoor Unit don't have ⊕ mark.
- Connect the cable of diameter 1.6mm² or more, to the panel of control box, marked as ⊕ and fasten with earth screw.

※ Please check !!



⚠ CAUTION

- The circuit diagram is not subject to change without notice.
- Be sure to connect wires according to the wiring diagram.
- Connect the wires firmly, so that not to be pulled out easily.
- Connect the wires according to color codes by referring the wiring diagram.

2. Guideline for each installation process

2.6 Air tight test

2.6.1 Air purging

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.

- ① Pressure in the system rises.
- ② Operating current rises.
- ③ Cooling (or heating) efficiency drops.
- ④ Moisture in the refrigerant circuit may freeze and block capillary tubing.
- ⑤ Water may lead to corrosion of parts in the refrigeration system. Therefore, the indoor/outdoor unit and connecting tube must be checked for leak tight, and vacuumed to remove incondensable gas and moisture in the system.

Checking method

1) Preparation

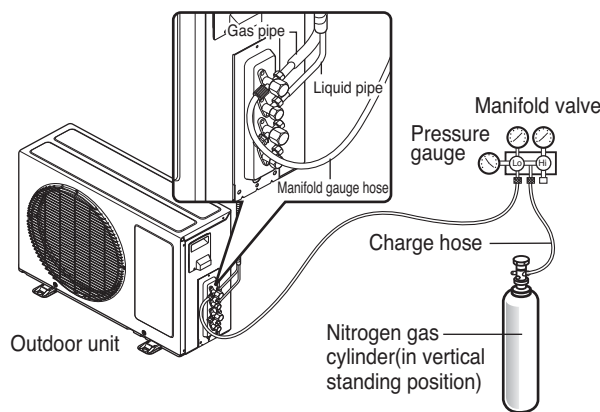
- Check that each pipe (both liquid and gas side pipes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Check that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

2) Leakage test

- Connect the manifold valve (with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

CAUTION

Be sure to use a manifold valve for leakage test. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.



CAUTION

To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

1. Do a leakage test of all joints of the Tubing (both indoor and outdoor) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
2. After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.

2.6.2 Essential points of testing

The key to successful testing is strict adherence to the following procedure:

- a) The liquid and gas piping in each refrigerant system should be pressurized in turn in accordance with the following steps. (Nitrogen gas must be used.)

Step 1: increase pressure to 0.3MPa
for 3 minutes or more

Step 1: increase pressure to 1.5MPa
for 3 minutes or more

Step 3: increase pressure to 3.8MPa
for approximate 24 hours

Indicates existence of major leaks

Indicates existence of major leaks

Increasing the system pressure to 3.8MPa does not guarantee the identification of minor leaks if pressure is maintained for only a short time. It is therefore recommended that the system remain pressurized in accordance with Step 3 above for at least 24 hours.

NOTE

Piping should not be pressured more than 3.8MPa.

- b) Check for pressure drop

If there is no drop in pressure then the test is deemed a success. If the pressure drops then the leak must be located. See following page.

However, if there is a change in the ambient temperature between the pressurizing stage and the time when you check for a drop in pressure then you will have to adjust your calculations accordingly since a change of 1°C can account for a pressure change of approximately 0.01MPa.

Compensating adjustment value:

(temperature at time of pressurizing – temperature at time of checking) x 0.01

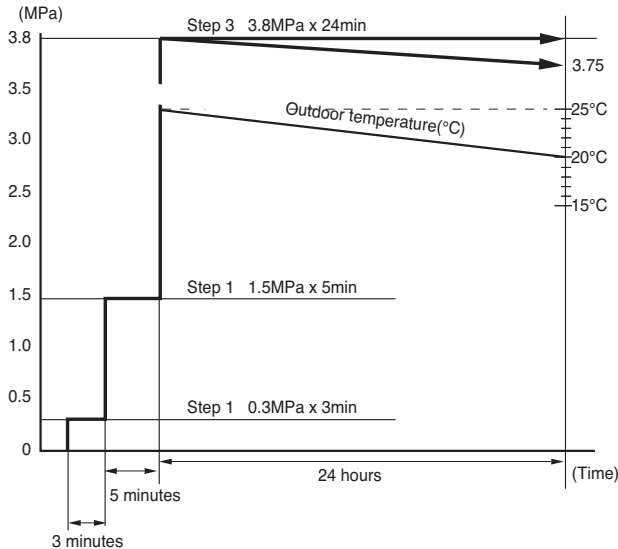
2. Guideline for each installation process

Example:

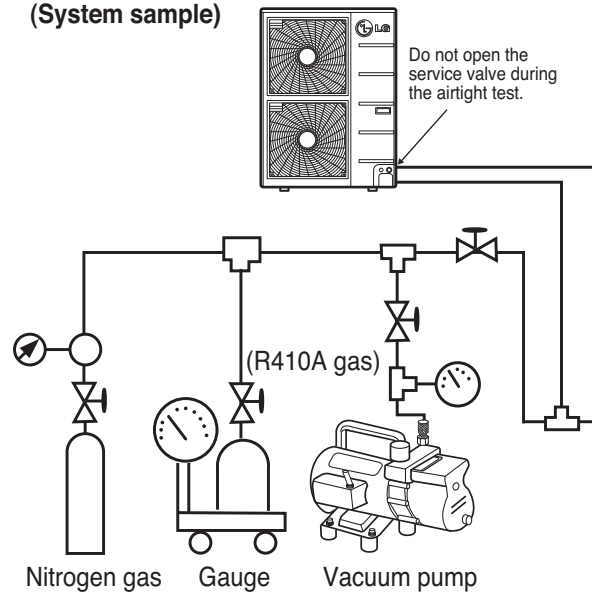
During of pressurizing: 3.8MPa 25°C

24 hours later: 3.75MPa 20°C

Although the gauge pressure is dropped from 3.8MPa to 3.75MPa, it can be safely assumed that there is no leakage because the gauge pressure can also drop due to the change in outdoor temperature.



(System sample)



Important points

1. Where the lengths of piping involved are particularly long then the air tight test should be carried out block by block.
 - 1) Indoor side
 - 2) Indoor side + vertical pipes
 - 3) Indoor side + vertical pipes + outdoor side

2.6.3 Checking for leakage

[Check 1] (Where pressure falls while carrying out Steps 1 to 3 described on previous page)

- ▶ Check by measure gage.....gas detector.
- ▶ Check by ear.....Listen for the sound of a major leakage.
- ▶ Check by hand.....Check for leak by feeling around jointed sections with hand.
- ▶ Bubble checkBubbles will reveal the presence of a leakage.

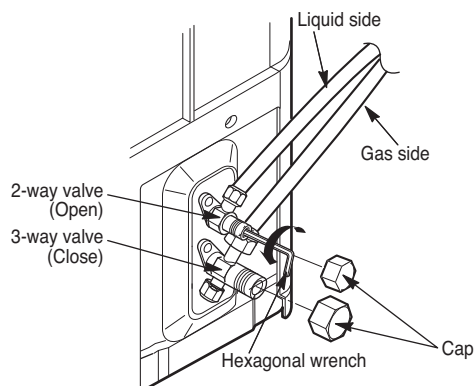
[Check 2] (When searching for a minor leak or when there has been a fall in pressure while the system has been fully pressurized but the source of the leak cannot be traced.)

1. Release the nitrogen until the pressure reaches 0.3MPa.
2. Increase pressure to 1.5MPa using gaseous refrigerant(R410A).
3. Search for the source of the leakage using a leakage detector such as a halide torch or a propane or electronic detector.
4. If the source of the leakage still cannot be traced then repressurize with nitrogen up to 3.8MPa and check again. (The pressure must not be increased to more than 3.8MPa.)

CAUTION

Soap water method

1. Remove the caps from the 2-way and 3-way valves.
2. Remove the service-port cap from the 3-way valve.
3. To open the 2-way valve turn the valve stem counter-clockwise approximately 90°, wait for about 2~3 sec, and close it.
4. Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping.
5. If bubbles appear then those points have leakage.



2. Guideline for each installation process

2.7 Vacuum drying works

2.7.1 What is Vacuum drying?

Vacuum drying is : The use of a vacuum pump to vaporize(gasify) the moisture (liquid) inside the pipe and expel it leaving the pipes completely dry inside.
 At 1 atm(760mmHg) the boiling point (evaporating temperature) of water is 100°C but if a vacuum is created inside the pipes using a vacuum pump then the boiling point is rapidly reduced as the degree of the vacuum is increased.
 If the boiling point is reduced to a level below that of the ambient temperature then the moisture in the pipes will evaporate.

Example

When outside temperature is 11.7°C as shown in the table on the right , the degree of vacuum must be lowered below -750mmHg

Boiling point of water(°C)	The degree of a vacuum		
	mmHg	Pa	Torr
40	-705	7333	55
30	-724	4800	36
26.7	-735	3333	25
24.4	-738	3066	22
22.2	-740	2666	20
20.6	-742	2400	18
17.8	-745	2000	15
15.0	-747	1733	13
11.7	-750	1333	10
7.2	-752	1066	8
0	-755	667	5

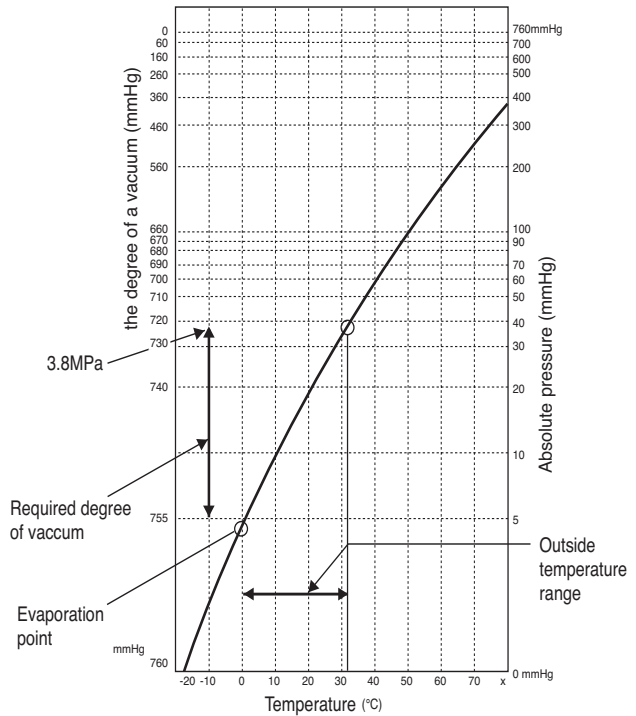
The evacuation of air conditioner piping provides the following effects.

1. Vacuum drying
2. Removes air and nitrogen(used in air-tightness test) from the inside of pipes.

Therefore , it is necessary to ensure that both purposes have been achieved in the vacuum drying operation.

NOTE

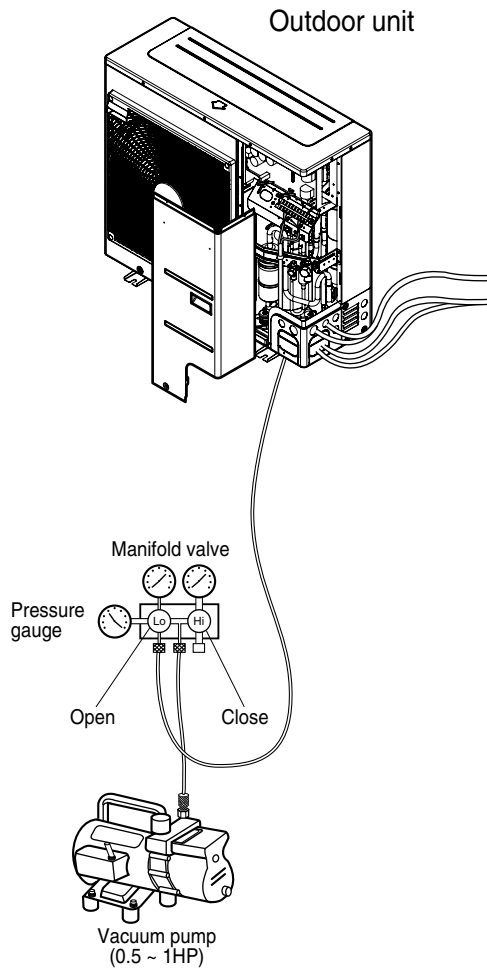
Key point: Maintain a vacuum level of -755mmHg



2.7.2 Evacuation

1. Connect the manifold hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump. The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.
2. When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.

2. Guideline for each installation process



CAUTION

Finishing the job

1. With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
2. Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
4. Replace the flare nut and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
5. Replace the valve caps at both gas and liquid side service valves and fasten them tight. This completes air purging with a vacuum pump. The air conditioner is now ready for test run.

2.7.3 Choosing a vacuum pump

The necessity for counter flow prevention

After the vacuum process of the refrigerant cycle, the inside of the hose will be vacuumed after stopping the vacuum pump, the oil of vacuum pump may flow back. Moreover, if the vacuum pump stops during the operation for some reason.

Therefore, in order to prevent the counter flow from the vacuum pump, a check valve is required.

1) Vacuum pump performance

The 2 most important things for determining vacuum pump performance are as follows:

- (1) Exhaust velocity
- (2) Degree of vacuum

(1) Exhaust velocity

Exhaust volume is usually expressed as l/min or m³/hr. The larger the number, the faster the vacuum is achieved. Generally speaking, the faster the exhaust velocity, the larger and heavier the vacuum pump itself is.

Commercially available vacuum pumps (exhaust velocity of 20 - 30 l/min) usually take an extremely long time to achieve vacuum. (We recommend a vacuum pump of approx. 60 - 100 l/min.)

(2) Degree of vacuum

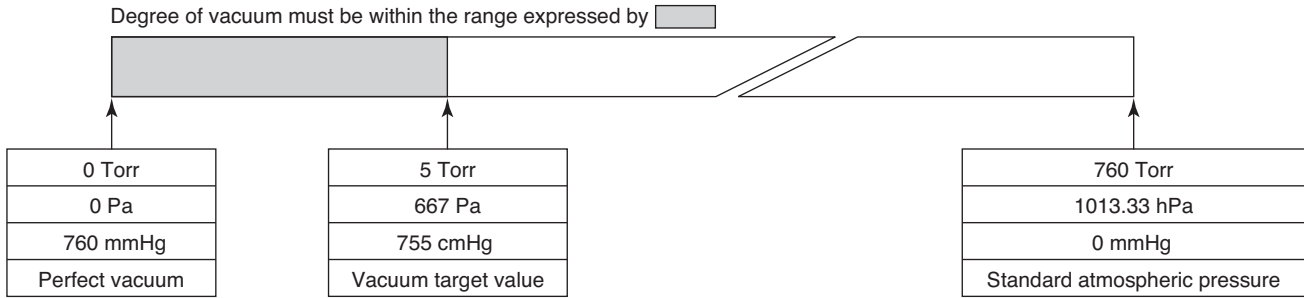
Ultimate vacuum varies largely according to use of the vacuum pump. Vacuum pumps used for vacuum forming cannot be used for vacuum drying. (A vacuum pump with a high degree of vacuum is required.)

When selecting a vacuum, you should select one which is capable of achieving 0.2 Torr of ultimate vacuum.

Degree of vacuum is expressed in Torr, micron, mmHg, and Pascal (Pa). The units correlate as follows:

	Unit	Standard atmospheric pressure	Perfect vacuum
Gauge Pressure	kg/cm ²	0	-1.033
Absolute Pressure	kg/cm ² abs	1.033	0
Torr	Torr	760	0
Micron	Micron	760000	0
mmHg	mmHg	0	760
Pa	Pa	1013.33	0

2. Guideline for each installation process

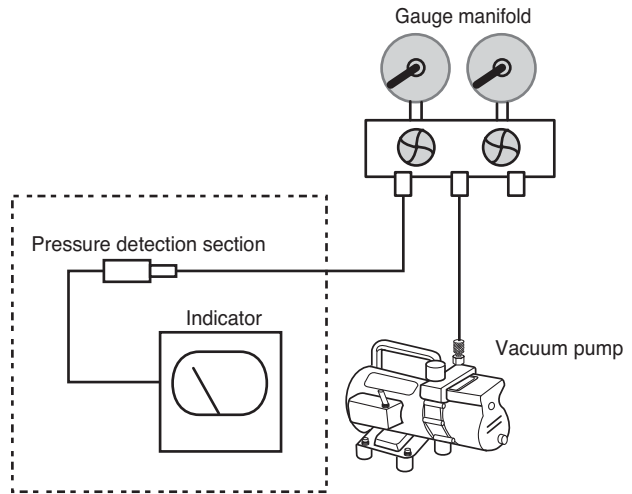


2) Vacuum pump maintenance

Because of their nature, most vacuum pumps contain large amounts of oil which lubricates bearings, etc., and functions to enhance airtightness of pistons. When using a vacuum pump to discharge air from refrigerant piping, moisture in the air tends to get mixed in with the oil. You must therefore change oil periodically and make sure the proper oil level is maintained. (Perform periodic inspections in accordance with the operating instructions.)

3) Degree of vacuum measurement

An extremely accurate vacuum gauge is required to test degree of vacuum. You cannot accurately measure degree of vacuum with the compound gauge on the gauge manifold. A Pirani vacuum gauge is required to measure degree of vacuum accurately. Because Pirani gauges are very sensitive and require extreme care when using, they are not very suitable for use in the field. You should therefore use the Pirani gauge to calibrate the attached vacuum gauge on the gauge manifold and the degree of vacuum of the vacuum pump.



(Reference) Types of vacuum pump with respect to maximum degree of vacuum

Type	Maximum degree of vacuum		Use	
	Expulsion capacity		Vacuum drying	Air expulsion
Oil rotary (Oil using)	0.02 mmHg	100 l/min	Suitable	Suitable
	10 mmHg			
Oilless rotary (No need of oil)	50 l/min	40 l/min	Unsuitable	Suitable
	0.02 mmHg		Suitable	Suitable

↑
Many handy pumps fall into this category

4) Calibration method

1. Connect a Pirani vacuum gauge and the gauge manifold vacuum gauge (760 mmHg) to the vacuum pump at the same time, and run the pump for about 3 minutes.
2. Make sure the reading of the Pirani vacuum gauge is 5 Torr (667 Pa) or less. The reading of conventional vacuum pumps lowers to about 0.2 Torr. If the reading is not 5 Torr or less, check the vacuum pump oil. (Oil is low in many cases.)
3. Check the attached gauge on the gauge manifold. Adjust the gauge if the reading is not exactly correct.
4. Adjust the gauge manifold valve so that the Pirani vacuum gauge reads 5 Torr.
5. Mark the position indicated by the gauge manifold gauge with an oil based ink pen.
6. Use the mark of the gauge manifold as a target when vacuuming in the field.

2. Guideline for each installation process

2.7.4 Vacuum drying procedure

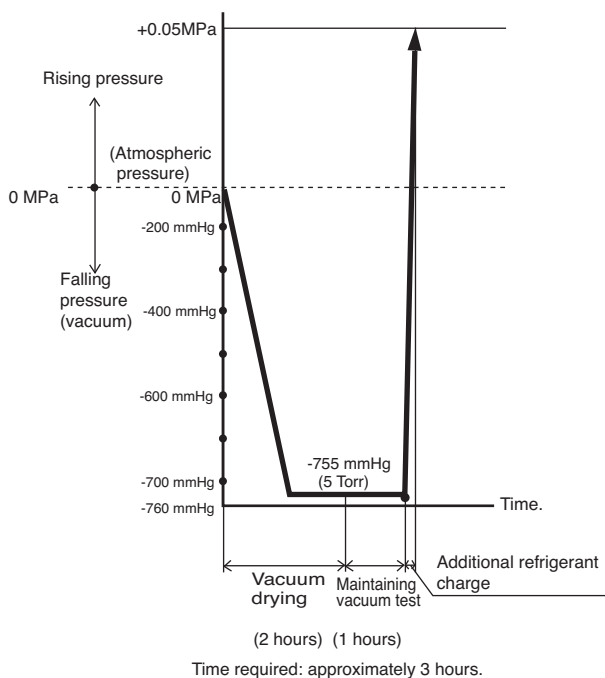
There are two vacuum drying methods and the appropriate one should always be chosen to confirm with individual local conditions. [Normal vacuum drying].....The standard method

[Operational steps]

1. Vacuum drying (1st time): Connect a manifold gauge to the service port of the liquid or gas pipe and operate the vacuum pump for at least 2 hours.
 (The degree of vacuum produced should be in excess of 5 Torr)
 If after 2 hours the vacuum produced has not exceeded 5 Torr then either there is moisture in the pipe or there is a leak.
 Operate the vacuum pump for further one more hour.
 If, even after 3 hours, the vacuum has not reached 5 Torr then check the system for a leak.
2. Carry out vacuum test.
 Produce a vacuum in excess of 5 Torr and do not release it for an hour or more. Check the vacuum gauge to make sure that it has not risen. (If the gauge rise then there is still moisture in the pipe or there is a leak somewhere.)
3. Additional charge of refrigerant.
 Connect the charging cylinder to the liquid pipe service port and charge with the required amount of refrigerant.
4. Open stop valve to the full.
 Open the stop valve on the liquid and the gas pipes to the full.

NOTE

Vacuums should be produced in both the liquid and the gas pipes. (Because there are a large number of functional components in the indoor unit which cut off the vacuum mid-way through)



2. Guideline for each installation process

2.8 Additional charge of refrigerant

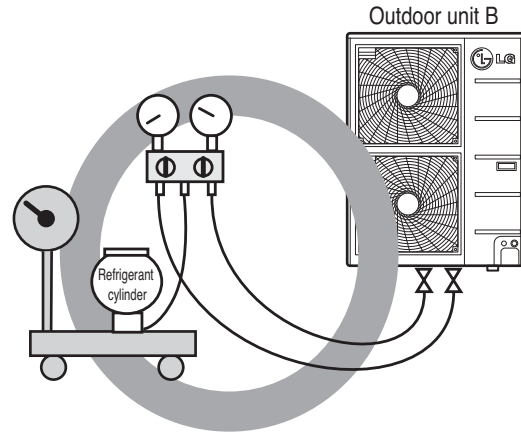
2.8.1 Refrigerant charging instructions

Refrigerant charging

1. The results of all calculations must be recorded. (make a list)
2. The refrigerant will need to be additionally charged when the distance between the outdoor Unit and the most distant indoor unit is more than length (refer to section 8 outdoor unit installation condition)
3. The additional charging operation should be carried out by input of liquid into the liquid pipes from a charging cylinder following completion of the Vacuum drying operation.
4. When the additional charging operation cannot be satisfactorily completed, use the action of the compressor to complete the additional charging during the test run.

R-410A is a non-azeotrope refrigerants. Therefore, these refrigerants must be charged in the Liquid state.

When charging the refrigerant into equipment from the cylinder, turn the refrigerant cylinder upside down.



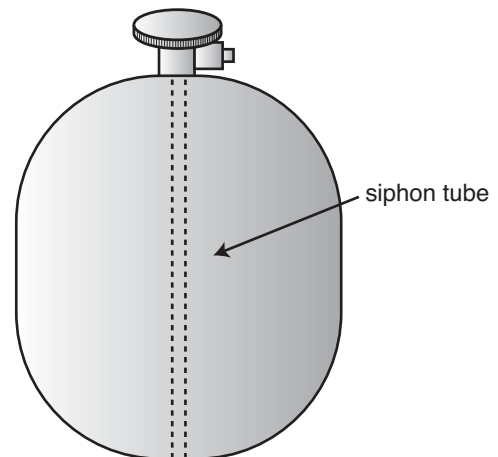
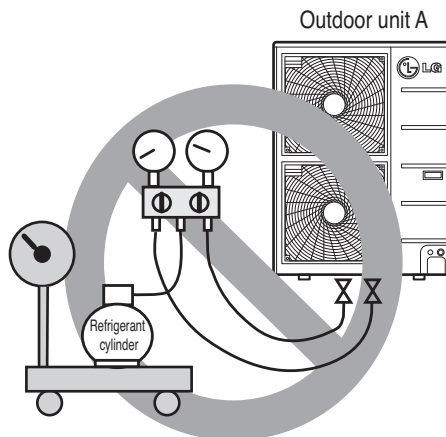
CAUTION

- Since some refrigerant cylinders differ in the internal mechanism, it is necessary to examine the cylinder carefully. (Some cylinders have a siphon tube to eliminate the need for turning it upside down)

NOTE

Make sure that the refrigerant (liquid) is taken out from the bottom part of the refrigerant cylinder.

Do not take out the refrigerant (gas) at the upper of the refrigerant cylinder for charging.

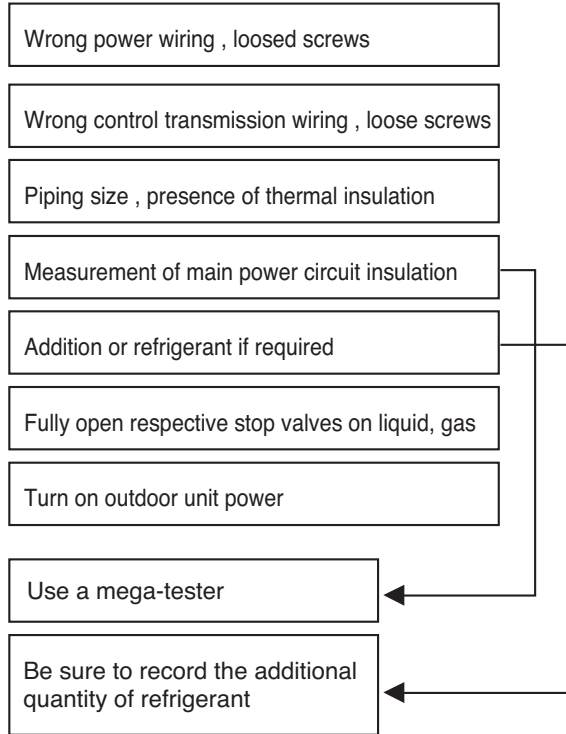


2. Guideline for each installation process

2.9 Trial test run operation

2.9.1 Test run procedure

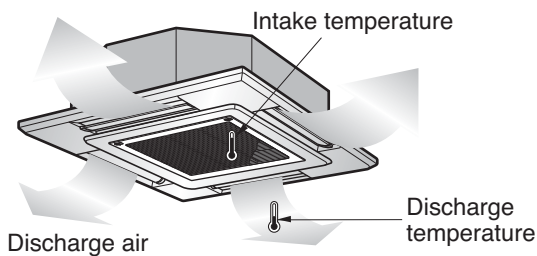
Check the following before turning power on



2.9.2 Evaluation performance

Evaluation of the performance
Operate unit for 15~20 minutes, then check the system refrigerant charge:

1. Measure the pressure of the gas side service valve.
2. Measure the temperature of the intake and discharge of air.
3. Ensure the difference between the intake temperature and the discharge is more than 8°C



4. For reference, the gas side pressure of optimum condition is as below. (Cooling)

Refrigerant	Outside ambient Temp.	The pressure of the gas side service valve.
R410A	35°C (95°F)	8.0~10.0kg/cm ² G

NOTE

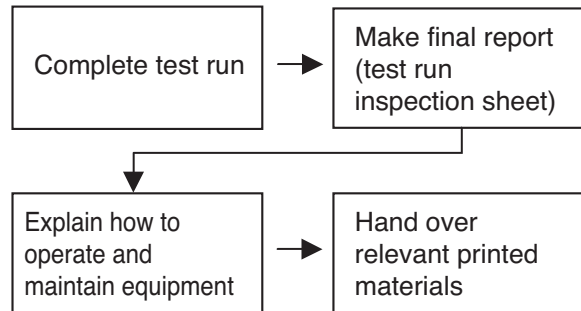
: If the actual pressure is higher than shown, the system is most likely overcharged so extra refrigerant should be removed.

If the actual pressure is lower than shown, the system is most likely undercharged so extra refrigerant should be added.

The air conditioner is now ready for use.

2.9.3 Transfer to customer with explanation

1. Operational step



- a) The measurements taken during the test run should be recorded and kept on a test run inspection sheet.
- b) Do not forget to record the length of the refrigerant piping and the refrigerant additional charging volume on the plate on the back of the outdoor unit external notice board, as this information will be required for servicing the system.
- c) Explain to the customer how to operate and maintain the equipment and let him try it.
- d) Assemble all the relevant diagrams and other printed matter which is required to operate the system and hand over to the customer (on the spot) and request him to keep it handy.
- e) Service contact address.

List of equipment which has been delivered

Installation drawing

It is essential to prepare a control wiring diagram which clarifies the refrigerant system and the control system.

1 set of operation manuals

Names of those responsible for the work (emergency contact address)

Equipment guarantees.

3. Installation of indoor unit

3.1 Safety precautions

Please strictly follow the instructions given in the Installation manual. Improper installation by ignoring the instructions can lead to damage to life and property. Make sure to read the following safety instructions very carefully and thoroughly.

⚠ WARNING : This symbol indicates the possibility of death or serious injury.

⚠ CAUTION : This symbol indicates the possibility of injury or damage to properties.

■ The meanings of the symbols used in this manual are as shown below.

⊘ : **Be sure not to do.**

! : **Be sure to follow the instruction.**

⚠ WARNING

Do not use a defective or underrated circuit breaker.

- There is risk of fire or electric shock.

Always use this appliance on a dedicated circuit breaker.

- Otherwise it can cause electric shock or fire.

For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center. Do not disassemble or repair the product by yourself.

- There is risk of fire or electric shock.

Always ground the product as per the field wiring diagram. Do not connect the ground wire to gas or water pipes lighting rod or telephone ground wire.

- There is risk of fire or electric shock.

Install the panel and the cover of control box securely.

- There is risk of fire or electric shock due to dust, water etc.

Use the correctly rated breaker or fuse.

- There is risk of fire or electric shock.

Do not modify or extend the power cable. If the power cable or cord has scratches or skin peeled off or deteriorated then immediately replace it.

- There is risk of fire or electric shock.

For installation, removal or reinstall, always contact the dealer or an Authorized Service Center.

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

Do not install the product on a defective installation foundation. Be sure that the installation area does not deteriorate with age.

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

When the product is soaked (flooded or submerged) in water, contact an Authorized Service Center for repair before using it again.

- There is risk of fire or electric shock.

In outdoor unit the step-up capacitor supplies high voltage electricity to the electrical components.

Be sure to discharge the capacitor completely before conducting the repair work.

- An charged capacitor can cause electrical shock.

Be sure to use only those parts which are listed in the service parts list. Never attempt to modify the equipment.

- The use of inappropriate parts can cause an electrical shock, excessive heat generation or fire.

Indoor/outdoor wiring connections must be secured tightly and the cable should be routed properly so that there is no force pulling the cable at the connection terminals.

- Improper or loose connections can cause excessive heat generation or fire.

Safely dispose off the packing materials.

- Things like screws, nails, batteries, broken things etc. after installation or svc can cause injury to small kids. Tear away and throw away the plastic packaging bags so that children will not play with them.

During svc be sure to check the refrigerant to be used.

- Incorrect refrigerant used can prevent the normal operation of the unit.

When installing the unit, use the installation kit provided with the product.

- Otherwise the unit may fall and cause severe injury.

Do not touch, operate, or repair the product with wet hands.

- There is risk of electric shock or fire.

Do not place a heater or other appliances near the power cable.

- There is risk of fire and electric shock.

Do not allow water to run into electric parts. Install the unit away from water sources

- There is risk of fire, failure of the product, or electric shock.

Do not store or use or even allow flammable gas or combustibles near the product.

- There is risk of fire or failure of product.

Do not use the product in a tightly closed space for a long time. Perform ventilation regularly.

- Oxygen deficiency could occur and hence harm your health.

If strange sounds, smell or smoke comes from product, immediately turn the breaker off or disconnect the power supply cable.

- There is risk of electric shock or fire.

When installing the unit, use the installation kit provided with the product.

- Otherwise the unit may fall and cause severe injury.

Do not open the front grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

- There is risk of physical injury, electric shock or product failure.

3. Installation of indoor unit

Ventilate the product room from time to time when operating it together with a stove, or heating element etc.

- Oxygen deficiency can occur and hence harm your health.

Turn the main power when cleaning or repairing the product.

- There is risk of electric shock.

When the product is not to be used for a long time, shut off the circuit breaker.

- There is risk of product damage or failure or unintended operation.

CAUTION

Use two or more people to lift and transport the product.

- Avoid personal injury.

Do not install the product where it will be exposed to sea wind (salt spray) directly.

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

Install the drain hose to ensure that water is drained away properly.

- A bad connection may cause water leakage.

Keep level even when installing the product.

- To avoid vibration or noise.

Always check for gas (refrigerant) leakage after installation or repair of product.

- Low pressure levels may cause failure of product.

Do not block the inlet or outlet of air flow.

- It may cause product failure.

Use a soft cloth to clean. Do not use harsh detergents, solvents or splashing water etc .

- There is risk of fire, electric shock, or damage to the plastic parts of the product.

Do not step on or put anything on the product. (outdoor units)

- There is risk of personal injury and failure of product.

Do not insert hands or other objects through the air inlet or outlet while the product is operating.

- There are sharp and moving parts that could cause personal injury.

Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.

If the refrigerant gas leaks during the repair, do not touch the leaking refrigerant gas.

- The refrigerant gas can cause frostbite (cold burn).

Do not tilt the unit when removing or uninstalling it.

- The condensed water inside can cause spill and wet the furniture and the floor.

Do not mix air or gas other than the specified refrigerant used in the system.

- If air enters the refrigerant system, an excessively high pressure results, causing equipment damage or injury.

Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.

- There is risk of fire or explosion.

If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.

- The chemicals in batteries could cause burns or other health hazards.

Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.

- There is risk of damage or loss of property.

Do not touch the metal parts of the product when removing the air filter.

- There is risk of personal injury.

If the refrigerant gas leaks during the installation or operation ventilate the area immediately.

- Otherwise it can be harmful for your health.

Do not turn off the power immediately after stopping the operation.

- Always wait for 5 minutes before turning off the power otherwise water leakage and troubles can occur.

Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Moisture may condense and wet or damage furniture.

Do not expose your skin or kids or plants to the cool or hot air draft.

- This could harm to your health.

Do not drink the water drained from the product.

- It is not sanitary and could cause serious health issues.

Use a firm stool or ladder when cleaning, maintaining or repairing the product at an height.

- Be careful and avoid personal injury.

Dismantling of the unit , treatment of the refrigerant oil and eventual parts should be done in accordance with local and national standards.

Do not recharge or disassemble the batteries. Do not dispose off batteries in fire.

- They may burn or explode.

3. Installation of indoor unit

3.1.1 Points for explanation about operations

The items with WARNING and CAUTION marks in the operation manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the owner's manual.

1. Note to the installer

Be sure to instruct customers how to properly operate the unit (especially cleaning filters, operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the manual.

3.1.2 Selecting installation site for indoor units

1. Select an installation site where the following conditions are fulfilled and that meets with your customer's approval.

- 1) Location strong enough to bear the weight of the unit.
- 2) Location accessible and having enough clearance for inspection and service in the future.
- 3) Location allowing easy condensate drainage and suitable gradient of the unit and the drain pipe.
- 4) Piping between the indoor and outdoor unit is possible within the allowable limits.
- 5) Location free from electrical noise.
- 6) Location allowing optimum air distribution without any blocking to air flow.
- 7) Location having no risk of flammable gas leakage.
- 8) Location free from mineral oil mist or an oil spray or vapor example in kitchen .It could result in leakage .
- 9) Location free from corrosive gases such as sulphurous acid gas because it corrodes the copper pipes or soldered parts resulting in leakage .
- 10) Location free from any machinery emitting electromagnetic waves which may disturb the control system thus causing malfunction of the unit .
- 11) Location free from flammable gases , carbon fibre , or ignitable dust suspensions in the air or where volatile flames are handled like gasoline or thinner. Operating in such conditions may result in fire .
- 12) Install the indoor and outdoor units, power supply wiring and connecting wires at least 1m away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1m. may not be sufficient enough to eliminate the noise.)

- 13) Consider whether the place where the unit will be installed can support the full weight of the unit, and reinforce it with boards and beams, etc. If needed before proceeding with the installation. Also, reinforce the place to prevent vibration and noise before installing.
- 14) The indoor artcool, artcool mirror, wallmount unit may not be directly installed on the wall. Use the attached installation plate before installing the unit.
- 15) Obey the local and national regulations and limits regarding airconditioner installation.

3. Installation of indoor unit

2. For the following items, take special care during construction and check after installation is finished

1. Items to be checked after completion of installation work

Items to be checked	If not properly done, what is likely to occur	Check
Are the indoor and outdoor unit fixed firmly?	The units may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling or heating.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the unit safely grounded?	It may be dangerous during electric leakage.	
Is wiring size correct according to specifications?	The unit may malfunction or the components burn out.	
Is there something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling or heating.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

3.1.3 Before installation

1. During product unpacking and removing it from the packing case, be sure to lift it without exerting any pressure on other parts, especially, horizontal flaps, the refrigerant piping, drain piping, and other resin parts.

- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- When using the wireless remote controller, refer to the installation manual attached to the wireless remote controller.

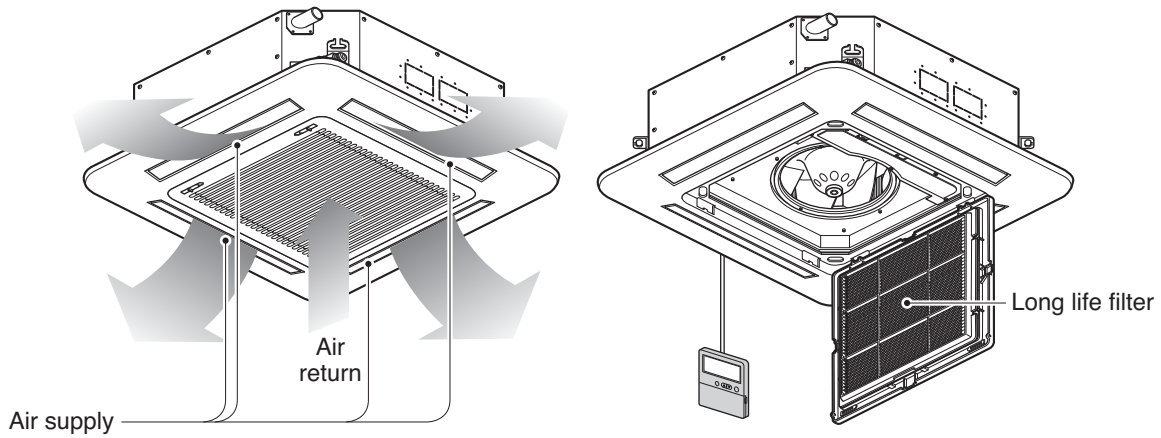
NOTE

- **Be sure to read this manual before installing the indoor unit.**
- Entrust installation to the place of purchase or an authorized serviceman. Improper installation could lead to leaks and in worst cases, electric shock or fire.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and in the worst cases, electric shock or fire.

3. Installation of indoor unit(Ceiling cassette 4-way)

3.2 Ceiling cassette 4-way

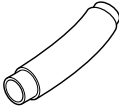


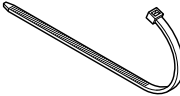
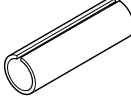

- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



3.2.1 Accessories

Check whether the following accessories are included with your unit.

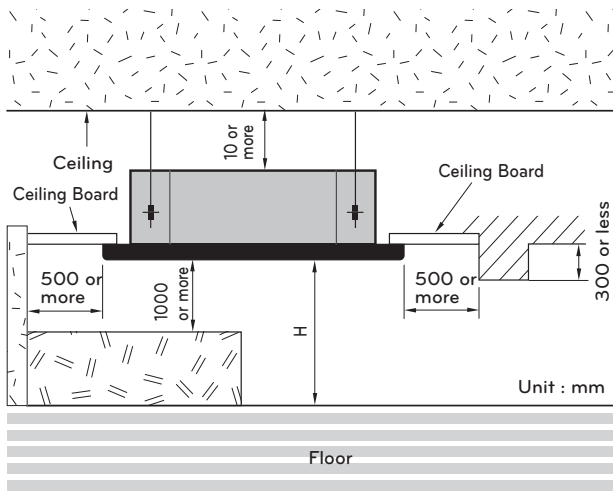
1) Standard accessories

Name	Drain hose	Clamp metal	Washer for hanging basket	Clamp	Insulation for fitting	(Other)
Quantity	1 EA	1 EA	8 EA	8 EA	1 SET	
Shape					 for gas pipe  for liquid pipe	<ul style="list-style-type: none"> • Paper pattern for installation • Owner's manual • Installation manual

3. Installation of indoor unit(Ceiling cassette 4-way)

3.2.2 Selection of the best location

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to the air circulation.
- There should be provision of easy condensate drain.
- Taking into accounting the noise prevention criteria, spot the installation location.
- Do not install the unit near the door way.
- Keep proper distances, of the unit, from ceiling, fence, floor, walls and other obstacles as shown in figure.
- The indoor unit must have the maintenance space.



NOTE

Above figure means minimum value. Please keep these value at least.

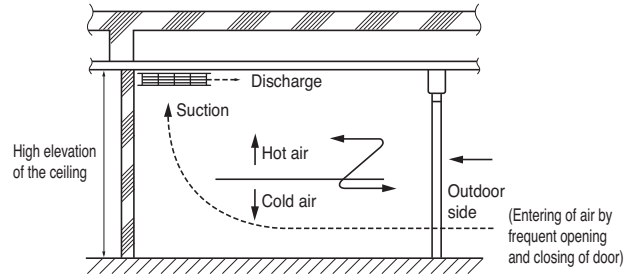
- below 30kbtu/h (TR/Q/P Chassis) model H
= At least 1800(70-7/8) , 3600(141-23/32) or less
- over 30kbtu/h (TN/M Chassis) model H
= At least 1800(70-7/8) , 4200(165-11/32) or less

3.2.3 Precautions regarding cassette indoor unit installation

1) Main points about the indoor installation

• In case of high height ceiling

In general commercial places and offices though the height of the ceiling is 2.7 m, the ceiling height can be 3 m. In such cases because of the temperature difference with the floor the heating effect can fall down.

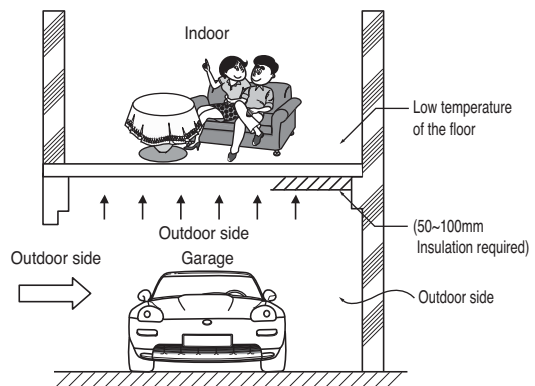


• Countermeasure method

- ① Air conditioner must be able to operate in high ceiling conditioner.
- ② Plan to install the circulator.
- ③ The air discharge port is made to give more airflow to the down wood directions.
- ④ The gate or exit of the building is protected by dual door system.

2) In case the floor or surfaces of the place to be air conditioned is in direct contact with the outdoor air

- The floor of the heating room indirect contact with the storeroom, garage or the outside air receives the cold air at the floor and the floor temperature decrease will feel cold at the feet.



In such places where the feet comes in direct contact with floors will give a cold feeling to the floor.

3. Installation of indoor unit(Ceiling cassette 4-way)

• Countermeasure:

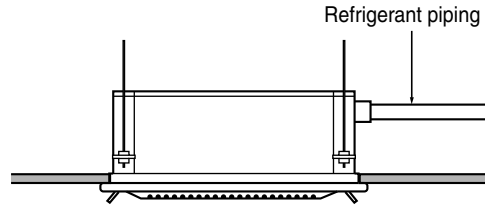
- Use the carpet on the floor (compared to the tiles the carpet over it will have a 3 degree rise in temperature)
- Insulating the floor.
- Floor heating

- In case of the multi flow type, use the high humidity kit. Otherwise the dew drops can be seen in the unit body.
- Refrigerant piping: Increase the piping insulation thickness with thickness above 20 mm.

CAUTION

• Case of cold air intake:

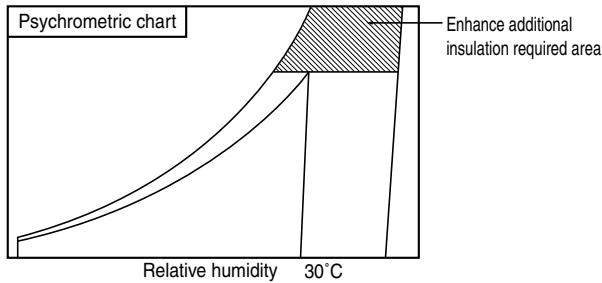
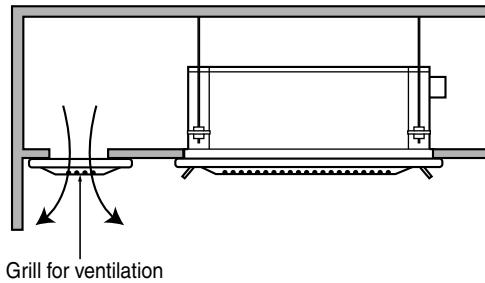
The duct surface will have the dew drops so a insulation on the duct is a must.(Insulation material: a glass wool of thickness 25 mm will be appropriate.)



- Others: Inside the ceiling near th air tight seal places (no escape of the humidity)

3) In case of high temperature or high humidity between the false ceiling and ceiling slab(near by the sea, river, lake, spa)

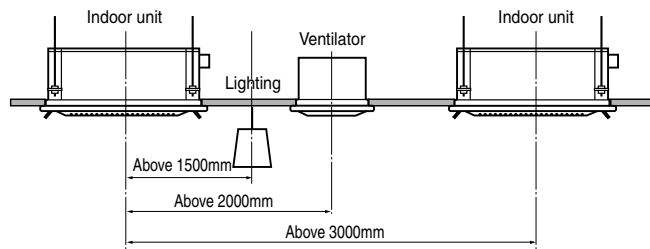
- In case of temperature of 30 degree and humidity above 80%, the units body as well as the piping insulation should be strengthened. Refer to the picture given below.



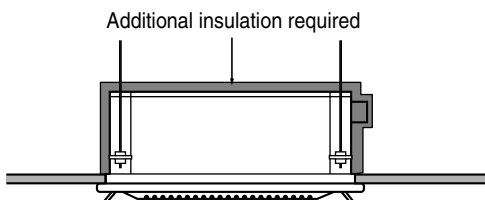
• In case of multiple indoor cassette units (recommended)

• Places having the temperature and humidity of the surrounding and the

The surrounding water sources(sea, river etc.)
 In case the steam is generated between the false ceiling and the ceiling slab



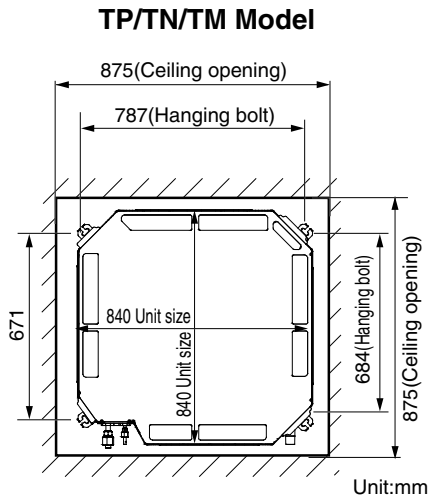
- Due to some nearby by steam source.
- Indoor unit: Insulate the unit body with some insulation like glass wool atleast 10 mm in thickness.



3. Installation of indoor unit(Ceiling cassette 4-way)

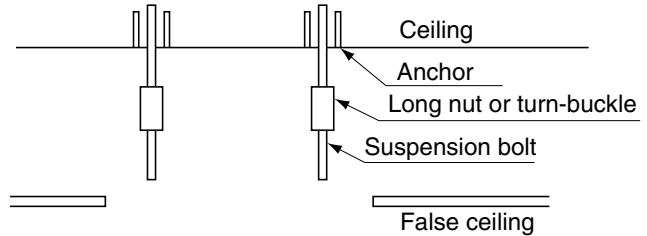
3.2.4 Ceiling opening dimensions and hanging bolt location

- ① The dimensions of the paper pattern for installation are the same as those of the ceiling opening dimensions.
- ② Select and mark the position for fixing bolts and piping hole.
- ③ Decide the position for fixing bolts slightly tilted to the drain direction after considering the direction of drain hose.
- ④ Drill the hole for anchor bolt on the wall.



1) Install the suspension bolts.

(Use either a W3/8" or M10 size bolt) Use a hole-in anchor for existing ceilings, and a sunken insert, sunken anchor or other field supplied parts for new ceilings to reinforce the ceiling to bear the weight of the unit. Adjust clearance from the ceiling before proceeding further.



NOTE

All the above parts are field supplied.

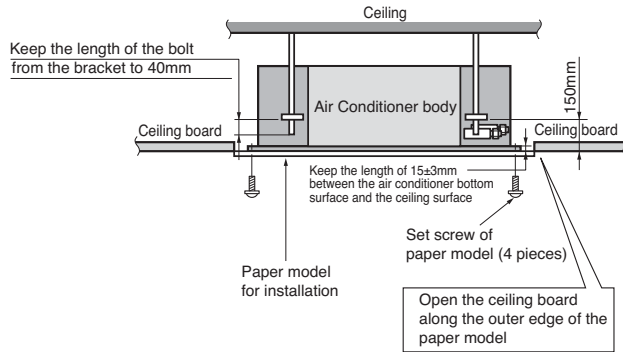
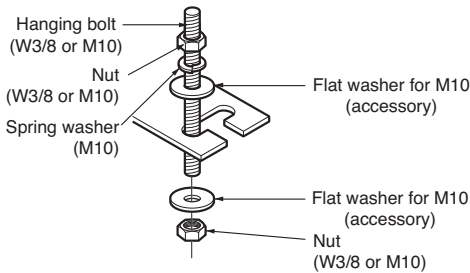
3. Installation of indoor unit(Ceiling cassette 4-way)

3.2.5 Indoor unit installation

- Installing of the accessories (except for the decoration panel) before installing the indoor unit is easier.

1) Install the indoor unit temporarily.

- Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.



- The following parts are local purchasing.
- Hanging Bolt - W 3/8 or M10
- Nut - W 3/8 or M10
- Spring Washer - M10
- Plate Washer - M10

2) For new ceilings

(1) Refer to the paper pattern for ceiling opening dimension.

- The center of the ceiling opening is indicated on the paper pattern for installation. The center of the unit is indicated on the label attached to the unit and on the paper pattern for installation.
- First remove paper packaging material from the 4 corners of the paper pattern for installation, fix the paper pattern to the unit with screws.
- Ceiling height is shown on the side of the paper pattern for installation. Adjust the height of the unit according to this indication.

<Ceiling work>

(2) Adjust the unit to the right position for installation.

(3) Assure that the unit is horizontal.

- The indoor unit is equipped with a built-in drain pump and float switch. At each of the unit's 3 corners, verify that it is level by using a water-level or a water-filled vinyl tube. (Otherwise it will result in the malfunctioning of unit and cause water to drip.)

(4) Remove the washer fixing plate used for preventing the washer from falling and tighten the upper nut.

(5) Remove the paper pattern for installation

3) For existing ceilings

(1) Adjust the height and position of the unit.

(2) Perform steps 3 and 4 in "5.1 For new ceilings".

3.2.6 Connecting pipes to the indoor unit

1) Refrigerant piping work

please refer "REFRIGERANT PIPING WORK".

2) Piping insulation

- ① Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result condensate formation over pipe.
- ② Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 120°C).
- ③ Precautions in high humidity circumstance:
- ④ Refer to insulation work

CAUTION

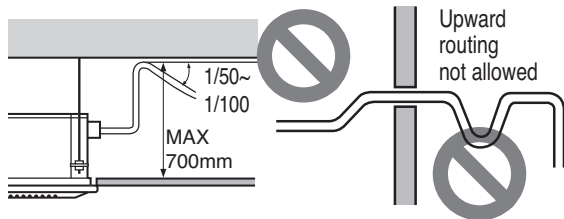
- Make sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

3. Installation of indoor unit(Ceiling cassette 4-way)

3) Indoor unit drain piping

- Drain piping must have downward (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reverse flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- The outside diameter of the drain connection on the indoor unit is 32mm.

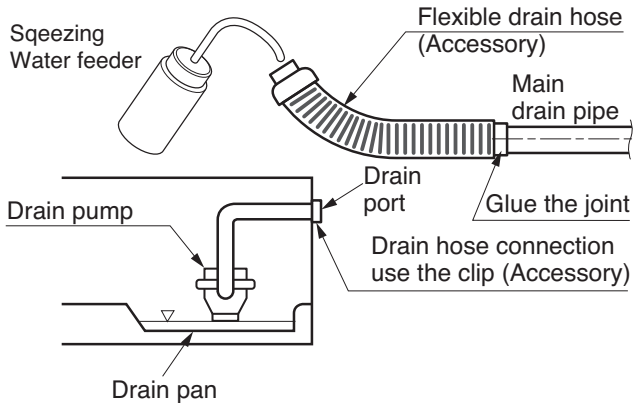
Piping material: Polyvinyl chloride pipe 25mm and pipe fittings



- Be sure to install heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 10 mm.

4) Drain test

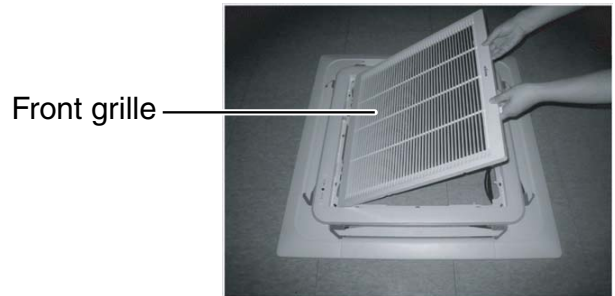


3.2.7 Decoration panel

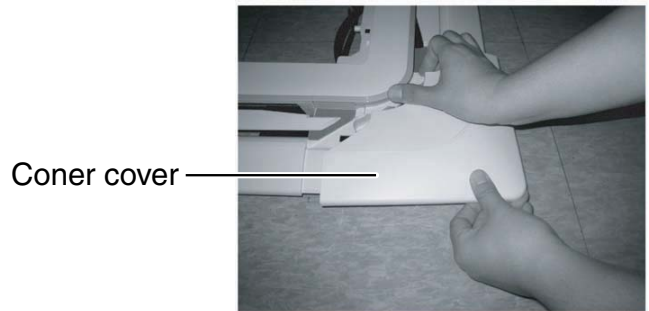
The decoration panel has its installation direction.

Before installing the decoration panel, always remove the paper template.

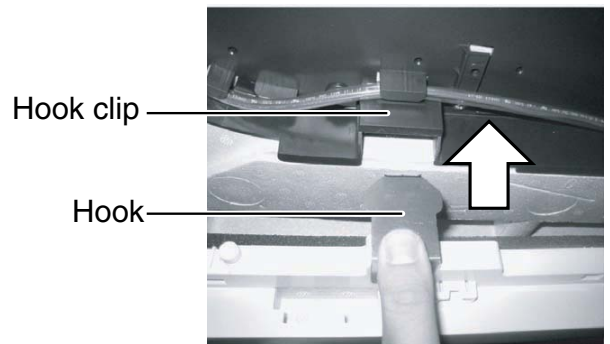
1. Remove the packing and take out air inlet grille from front panel.



2. Remove the Corner covers of the panel.



3. Fit the panel on the unit by inserting hooks as shown in picture.

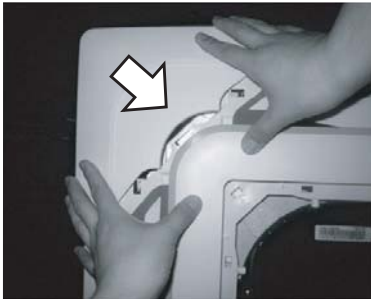


3. Installation of indoor unit(Ceiling cassette 4-way)

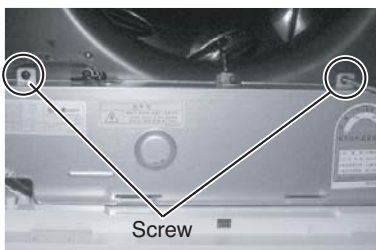
4. Insert two screws on diagonal corners of panel. Do not tighten the bolts completely. (The fixing screws are included in the indoor unit box.) Check the alignment of panel with the ceiling. Height can be adjusted using hanging bolts as shown in picture. Insert the other two screws and tighten all screws completely.



5. Fit the corner covers.



6. Open two screws of control panel cover.

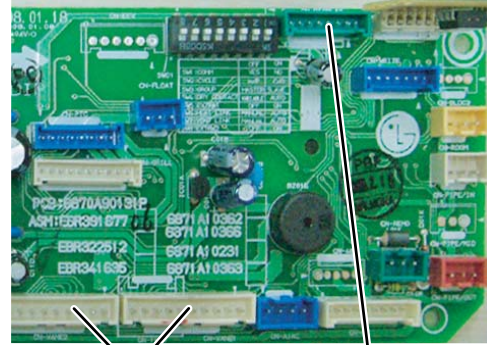


7. Connect one display connector and two vane control connectors of front panel to indoor unit PCB.

The position marking on PCB is as:

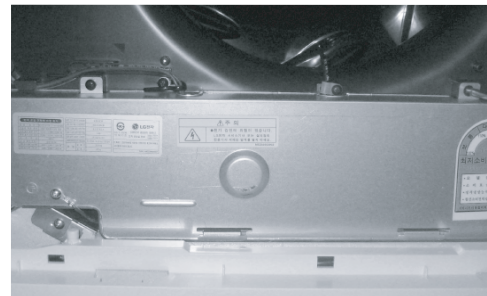
Display connector : CN-DISPLAY

Vane control connector: CN-VANE 1,2

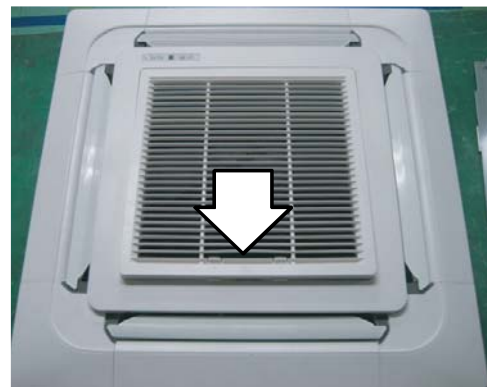


CN-VANE 1,2 CN-DISPLAY

8. Close the cover for control box.



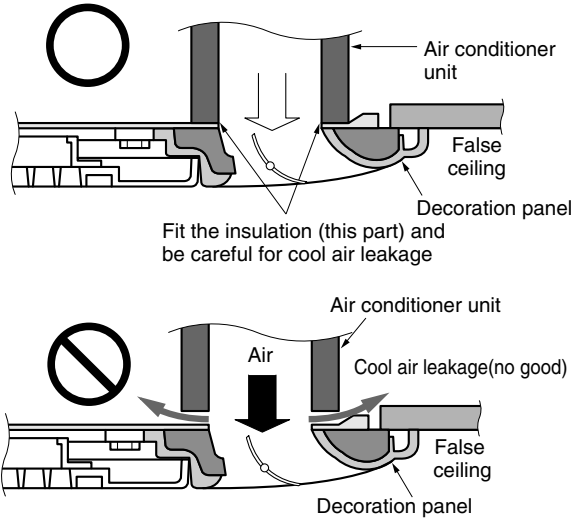
9. Install the air inlet grille and Filter on the panel.



3. Installation of indoor unit(Ceiling cassette 4-way)

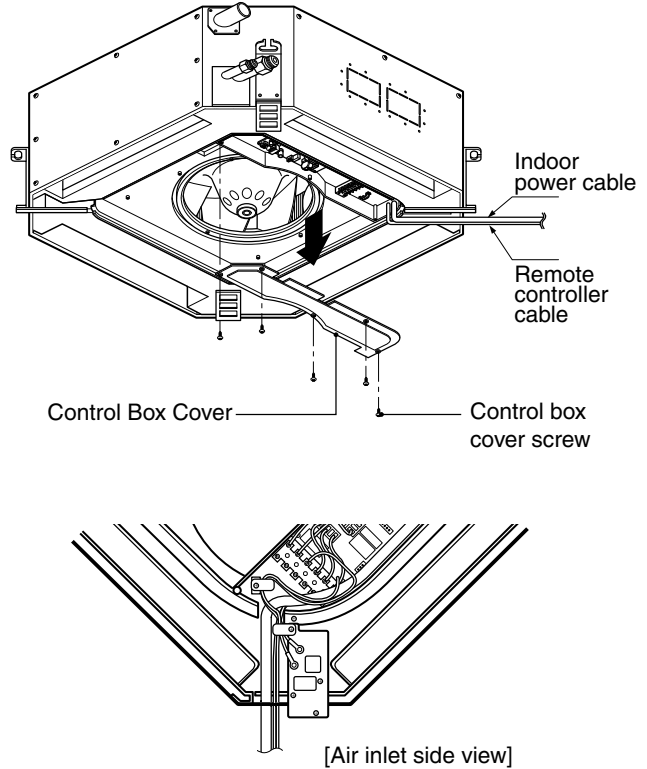
CAUTION

Install certainly the decoration panel.
Cool air leakage causes sweating.
→ Water drops fall.



2) Wiring Connection

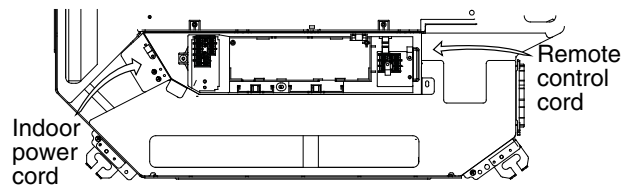
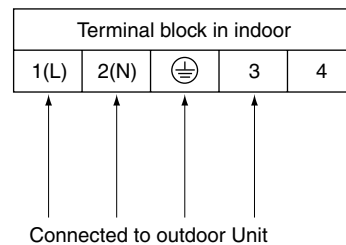
- ① Open the control box cover and connect the Remote controller cord and Indoor power wires.



3.2.8 Electric wiring work

1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes.
Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor units are properly matched. If wiring and piping between the outdoor unit and an indoor units are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.



- ② Make sure to attach the sealing material (field supplied) to hole of wiring to prevent the infiltration of foreign particle from outside. Otherwise a short-circuit may occur inside the electric parts box

3. Installation of indoor unit(Ceiling cassette 4-way)

- ③ When clamping the wires, be sure no pressure is applied to the wire connections by using the included clamping material to make appropriate clamps. Also, when wiring, make sure the cover on the electric parts box fits snugly by arranging the wires neatly and attaching the electric parts box cover firmly. When attaching the electric parts box cover, make sure no wires get caught in the edges. Pass wiring through the holes to prevent damage to them.
- ④ Make sure the remote controller wiring, the wiring between the units, and other electrical wiring do not pass through the same locations outside of the unit, separating them properly, otherwise electrical noise (external static) could cause product malfunction.

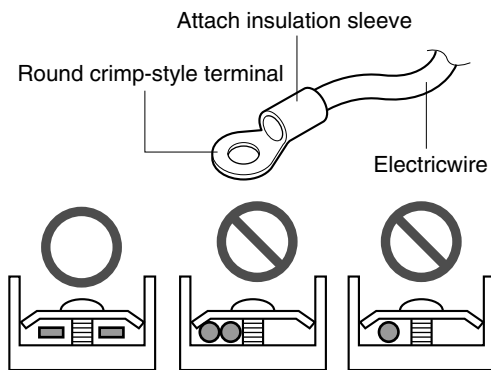
⚠ WARNING

- Make sure that the screws of the terminal are not loose.

NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.

- Do not connect wires of different gauge to the same power supply terminal. (Looseness connection may cause overheating.)
- Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



Connect wires of the same gauge to both sides

2. Tightening torque for the terminal screws.

- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.

- 3. **Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.**
- 4. **At the unit, keep proper separation between transmissio and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.**
- 5. **Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.**
- 6. **Use only specified wire and tightly connect wires to terminals. Be careful that wires should not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worst case, electric shock or fire.**

⚠ CAUTION

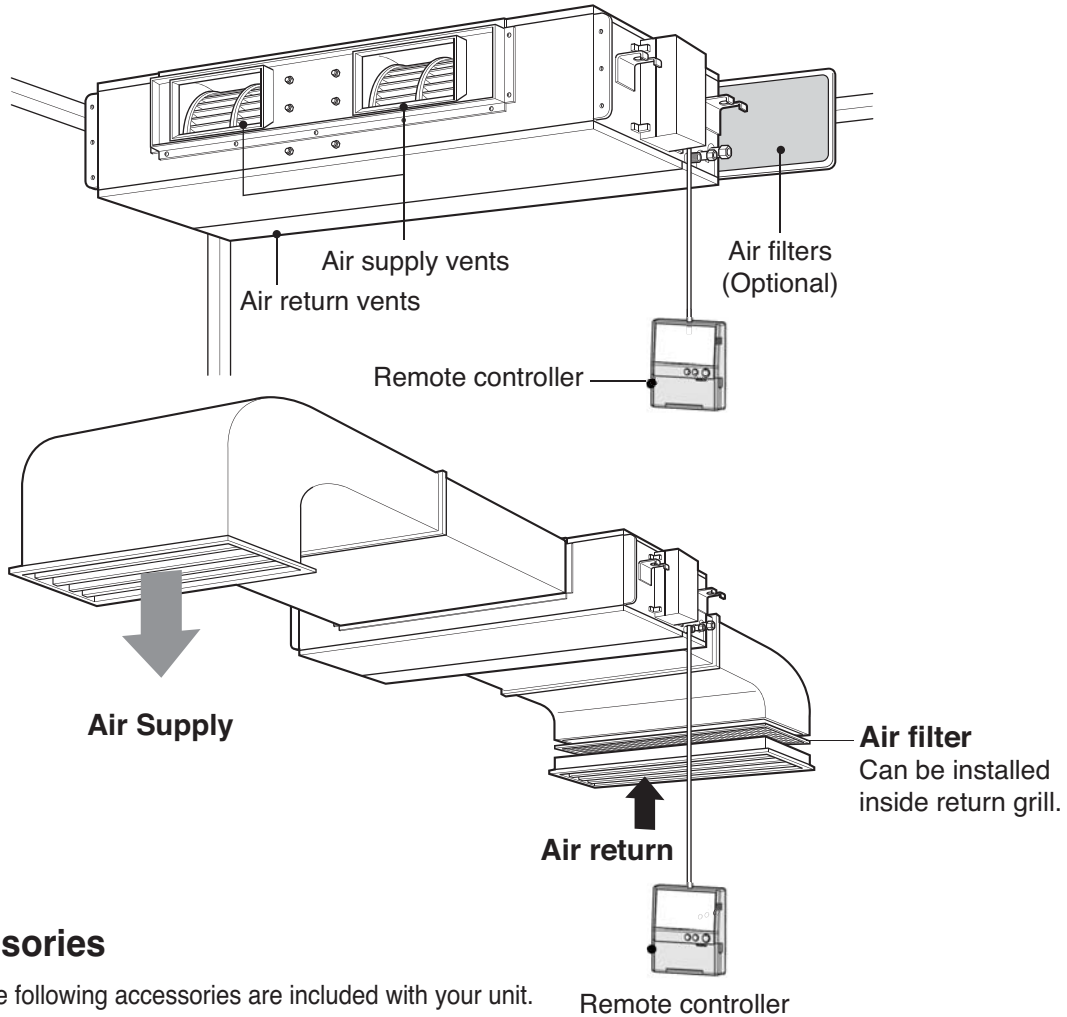
After the confirmation of the above conditions, prepare the wiring as follows:

- 1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.
- 2) The screw which fasten the wiring in the casing of electrical fittings are liable to become loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.)
- 3) Confirm the specification of power source.
- 4) Confirm that electrical capacity is sufficient.
- 5) See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 6) Confirm that the cable thickness is as specified in the power source specification. (Particularly note the relation between cable length and thickness.)
- 7) Always install an earth leakage circuit breaker in a wet or moist area.
- 8) The following would be caused by voltage drop.
 - Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.
- 9) The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

3. Installation of indoor unit(Ceiling concealed duct)

3.3 Ceiling concealed duct


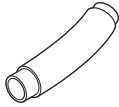
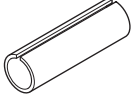
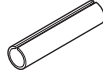
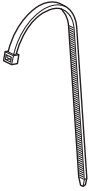
- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



3.3.1 Accessories

Check whether the following accessories are included with your unit.

1) Standard accessories

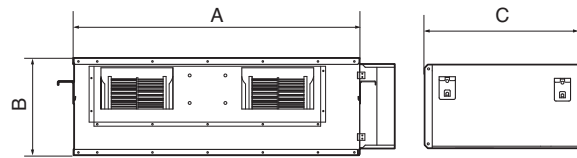
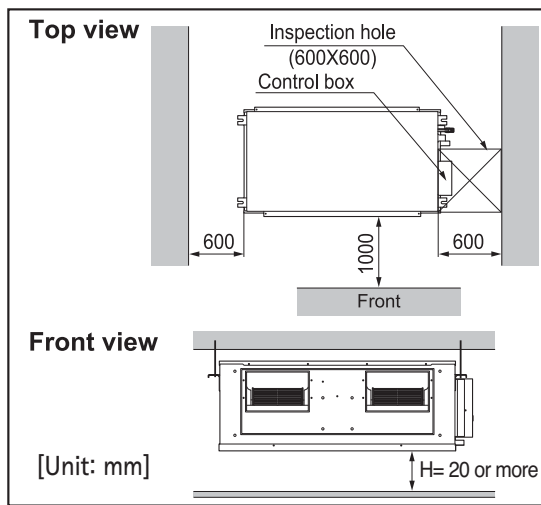
Name	Clamp metal	Drain hose	Insulation for fitting	Clamp	(Other)
Quantity	1 EA	1 EA	1 set	4 EA	
Shape			 for gas pipe  for liquid pipe		<ul style="list-style-type: none"> • Owner's manual • Installation manual • Washers(8 pcs.)

3. Installation of indoor unit(Ceiling concealed duct)

3.3.2 Selection of the best location

Install the air conditioner in the location that satisfies the following conditions.

1. The place shall easily bear a load of the indoor unit.
2. The place should have enough area for inspection as shown in figure.
3. The place where the unit shall be leveled.
4. The place shall allow easy water drainage.
5. The place shall easily connect with the outdoor unit.
6. The place where the unit is not affected by an electrical noise.
7. The place where air circulation in the room will be good .
8. There should not be any heat source or steam near the unit.



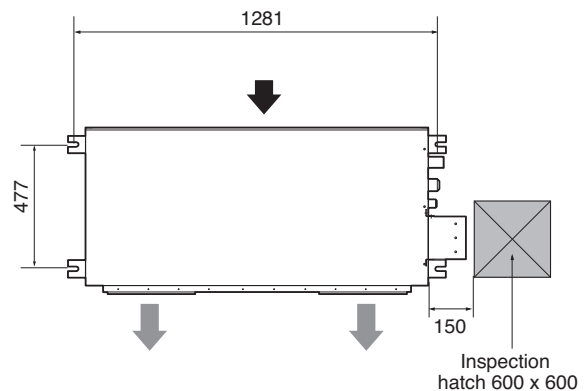
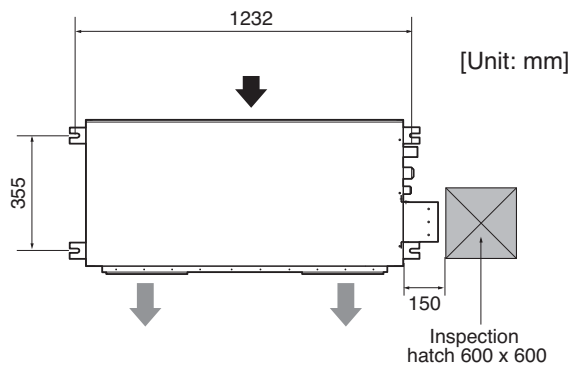
[Unit: mm]

Model	A	B	C
ABNH18GGLA1[UB18H NG1]	1182	298	450
ABNH21GGLA1[UB21H NG1]			
ABNH24GGLA1[UB24H NG1]			
ABNH36GRLA1[UB36H NR1]	1230	380	590
ABNH42GRLA1[UB42H NR1]			
ABNH48GRLA1[UB48H NR1]			

NOTE

If the service panel is at the top of the unit, then provide sufficient service clearance as per convenience.

2) Relative positions of indoor unit, suspension bolt and inspection hatch size



3.3.3 Ceiling dimension, also hanging bolt location and service space

1) Select an installation site where the following conditions are fulfilled and also that meets with your customer's approval.

- If supporting structural members are not strong enough to take the units weight, the unit could fall out of place and cause serious injury.
- Where sufficient clearance of maintenance and service can be ensured.
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where piping between indoor and outdoor units is possible within the allowable limit (Refer to the installation manual of the outdoor unit.)
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1 m from TVs and radios, to prevent distorted pictures and static.(Depending on the type and source of the electrical waves, static may be heard even when more than 1 m away.)

3) Install a canvass duct to the air discharge outlet and air inlet so that vibration from the machine body is not transmitted to the duct or ceiling. You should also apply acoustic (insulation material) to the inside of the duct, and vibration insulation rubber to the suspension bolts.

4) Install suspension bolts. (Use bolts of 10 mm diameter.)

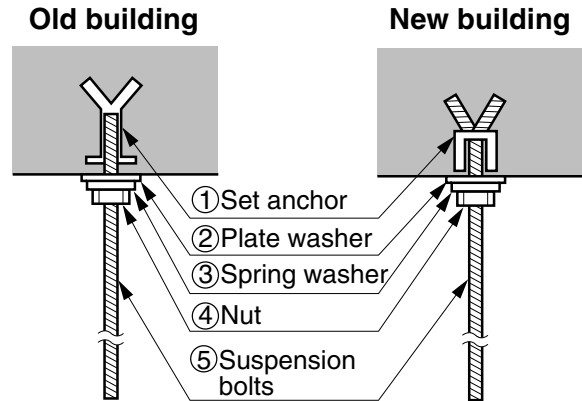
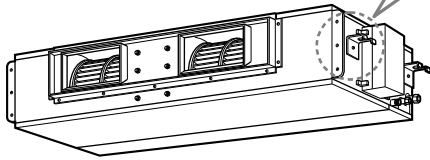
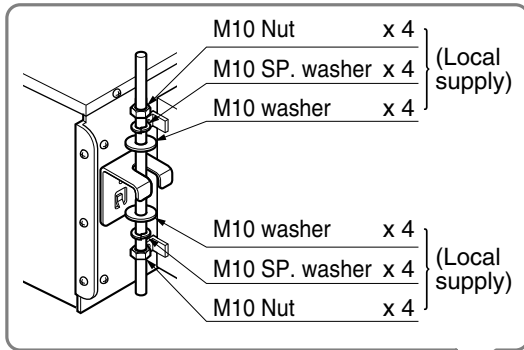
- Install the equipment where supporting structures are strong enough to bear the equipment's weight. Use embedded inserts or anchor bolts with new buildings and hole-in-anchors with old buildings.

3. Installation of indoor unit(Ceiling concealed duct)

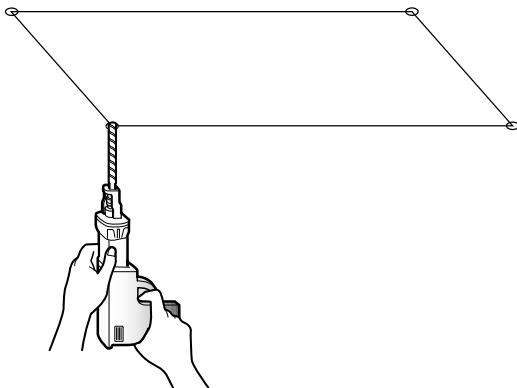
3.3.4 Position of suspension bolt

- ① Install the unit leaning to a drainage hole side as given in the figure above for easy water drainage.
- ② A place where the unit will be leveled and that can support the weight of the unit.
- ③ A place where the unit can withstand its vibration.
- ④ A place where service can be easily performed.

- ⑦ Insert the set anchor and washer on the suspension bolts for locking the suspension bolts on the ceiling.
- ⑧ Mount the suspension bolts to the set anchor firmly.
- ⑨ Secure the installation plates on the suspension bolts (adjust level roughly) using nuts, washers and spring washers.



- ⑤ Select and mark the position for fixing bolts.
- ⑥ Drill the hole for set anchor on the face of ceiling.



CAUTION

- Tighten the nut and bolt to prevent unit from falling.

3. Installation of indoor unit(Ceiling concealed duct)

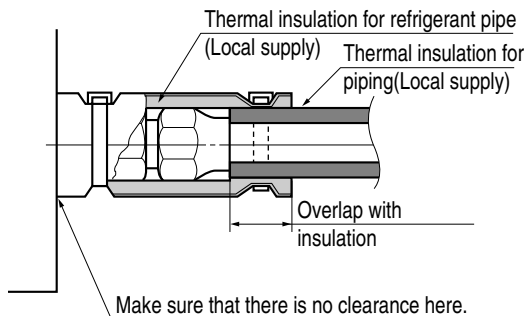
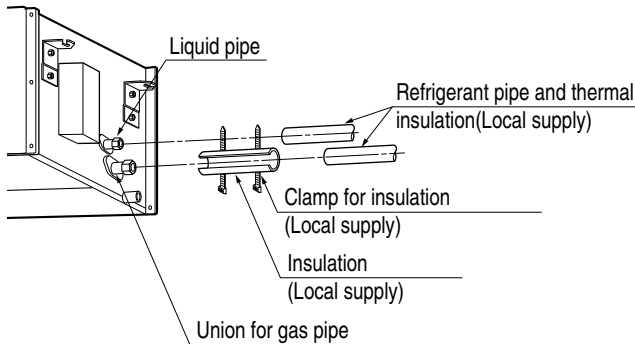
3.3.5 Connection pipes to the indoor unit

1) Refrigerant piping work

please refer “REFRIGERANT PIPING WORK”.

2) Piping insulation

- ① Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result due condensate formation over pipe.
- ② Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 120°C).
- ③ Precautions in high humidity circumstance.
- ④ Refer to the insulation works.



CAUTION

- Make sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

3) Indoor unit drain piping

- ① During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- ② The outside diameter of the drain connection on the indoor unit is 32mm.

Piping material: Polyvinyl chloride pipe inner diameter Ø 25mm and pipe fitting

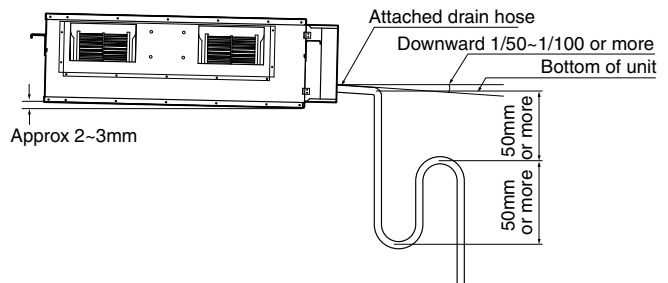
CAUTION

1. Decline Installation of indoor unit is very important for the drain of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe should be 5mm.

4) Caution for gradient of unit and drain piping

- Without drain pump

- ① Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- ② 10mm or thicker formed thermal insulation shall always be provided for the drain pipe.

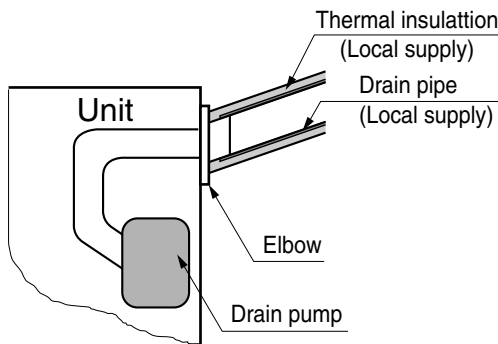
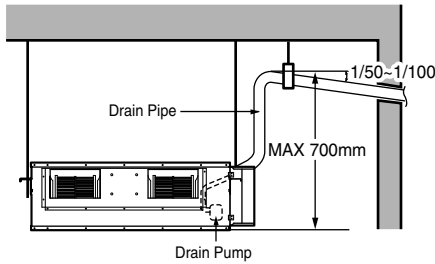


※ U-trap is not required for low static model in which the external static pressure is below 50 pa(5mm Aq)

3. Installation of indoor unit(Ceiling concealed duct)

- With drain pump

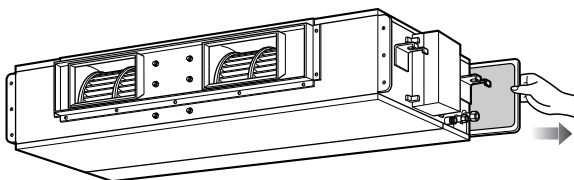
- ① Possible drain head is upto 700mm.
- ② Keep the drain pipe downward stope upto 1/50~1/100. Prevent any upward flow or reverse flow in any part.
- ③ 10mm or thicker insulation should be provided for the drain pipe.



3) Checking the drain

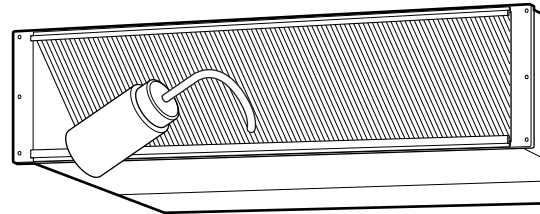
1) Checking the drain

- ① Remove the air filter.



2. Check the drain.

- ① Pour enough water on the drain pan.
- ② Ensure that water flows through the drain pipe from indoor unit without any leakage.



3.3.6 Electric wiring work

1) General instructions

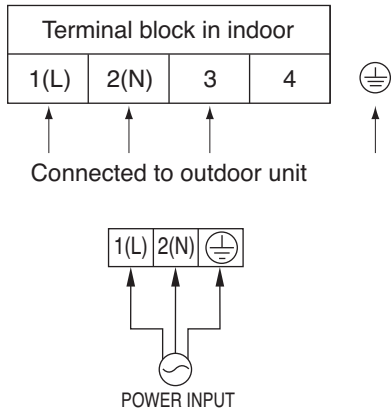
- ① All field supplied parts and materials, electric works must conform to local codes. Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

3. Installation of indoor unit(Ceiling concealed duct)

2) Wiring connection

Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

- ① Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively 30k/36k/42k/48k/60k Btu/h.



- ② If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

⚠ WARNING

- Make sure that the screws of the terminal are fixed tightly.

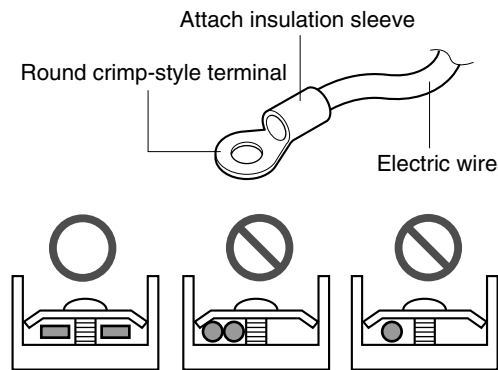
⚠ CAUTION

- Make sure to attach the sealing material or (field supplied) to hole of wiring to prevent the infiltration of foreign particle from outside. Otherwise a short-circuit may occur inside the electric parts box
- When clamping the wires, be sure no pressure is applied to the wire connections by using the included clamping material to make appropriate clamps. Also, when wiring, make sure the cover on the electric parts box fits snugly by arranging the wires neatly and attaching the electric parts box cover firmly. When attaching the electric parts box cover, make sure no wires get caught in the edges. Pass wiring through the holes to prevent damage to them.
- Make sure the remote controller wiring, the wiring between the units, and other electrical wiring do not pass through the same locations outside of the unit, separating them properly, otherwise electrical noise (external static) could cause product malfunction.

NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.

- ① Do not connect wires of different gauge to the same power supply terminal.
- ② Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



Connect wires of the same gauge to both sides

2 Tightening torque for the terminal screws.

- ① Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- ② If the terminal screws are tightened too hard, screws might be damaged.

3. Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.

4. Outside of the unit, keep proper separation between transmission and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.

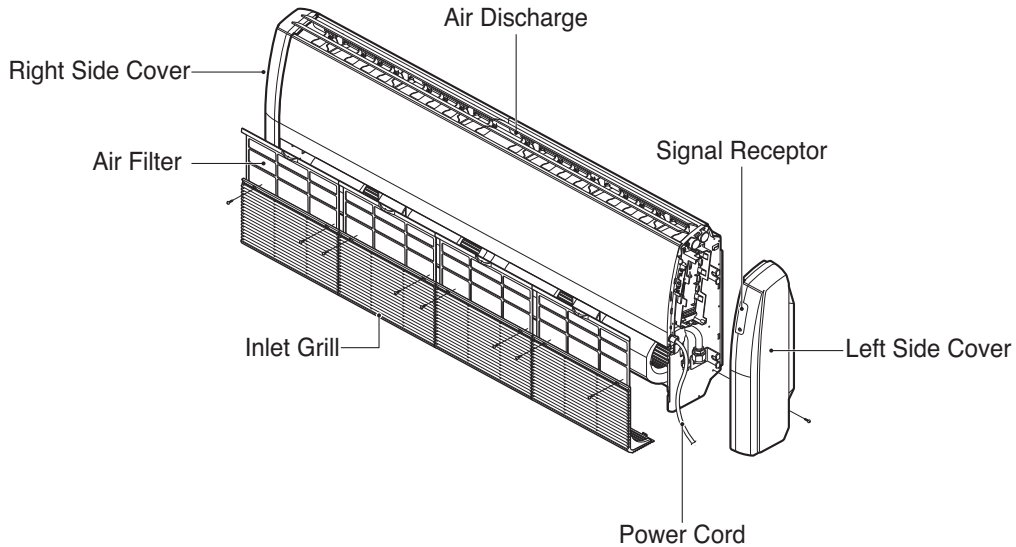
5. Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.

6. Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.

3. Installation of indoor unit(Ceiling suspended)

3.4 Ceiling suspended

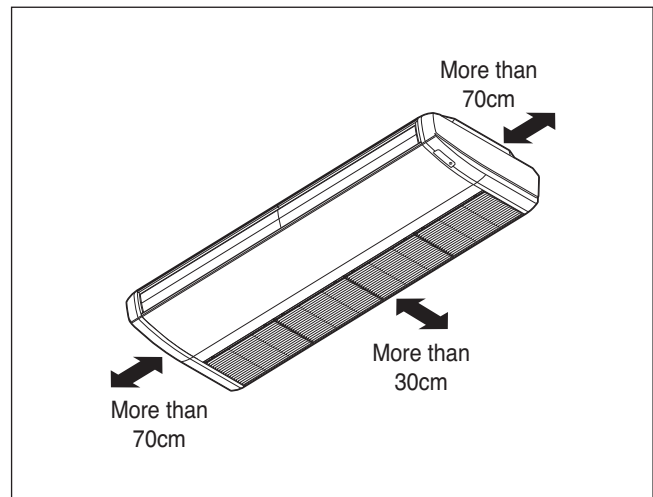
- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



3.4.1 Selection of the best location

Indoor unit

- ① Do not have any heat or steam near the unit.
- ② Select a place where there are no obstacles in front of the unit.
- ③ Make sure that condensation drainage can be conveniently routed away.
- ④ Do not install near a doorway.
- ⑤ Ensure that the interval between a wall and the left (or right) of the unit is more than 70cm.
- ⑥ Use a stud finder to locate studs to prevent unnecessary damage to the wall.



3. Installation of indoor unit(Ceiling suspended)

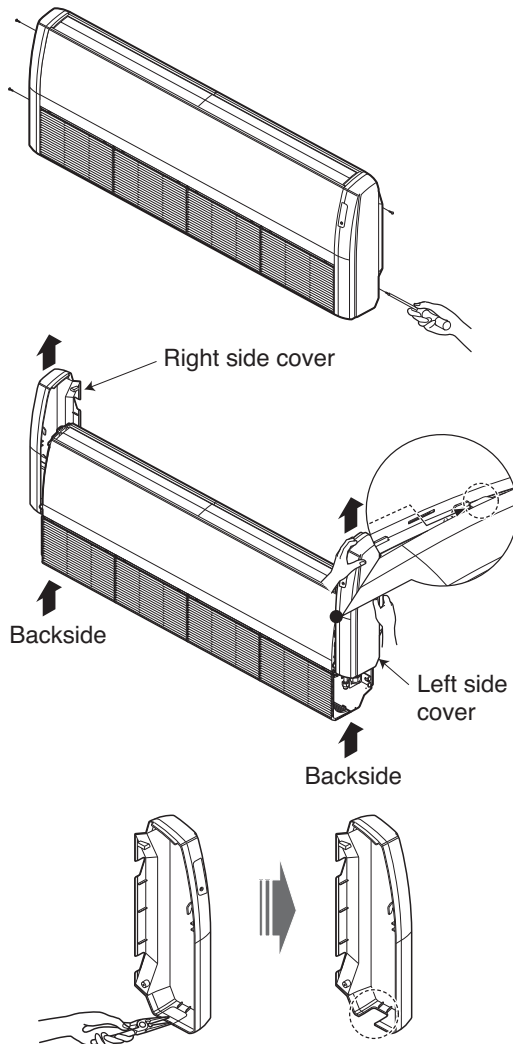
3.4.2 Preparing Work for Installation

1) Open side cover

- ① Remove two screws from side-cover as shown in fig.
- ② Unlock side-cover from side panel by slightly pulling the edge of side cover.
- ③ Tap the side-cover with your palm on the backside. (Inlet grill side.)
- ④ Hold the side-cover with other hand while tapping to prevent it to fall down.

Recommendation: it is recommended to select the left side for drain to have common hole in the side-cover along with pipe and wiring.

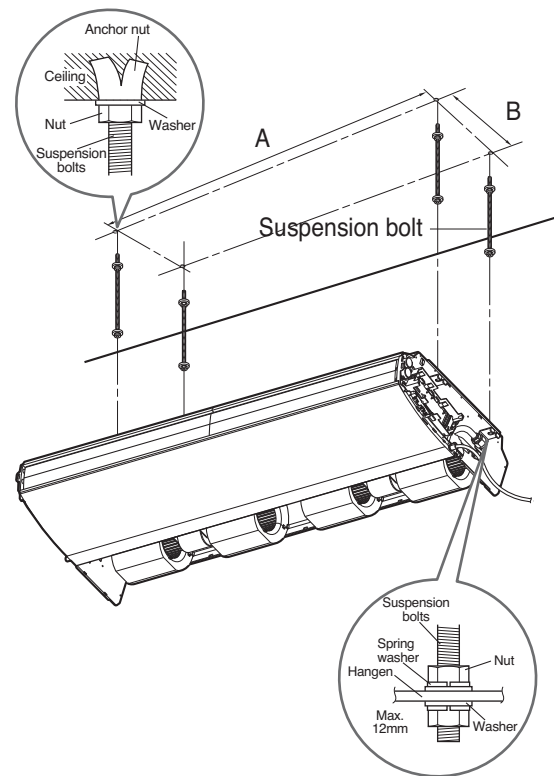
- ⑤ Remove the rubber stopple in the desired drain direction.
- ⑥ Knock out the pipe hole from the left side-cover with the help or nipper/plier.
- ⑦ Knock hole on right side-cover only if right side is selected for water drain.



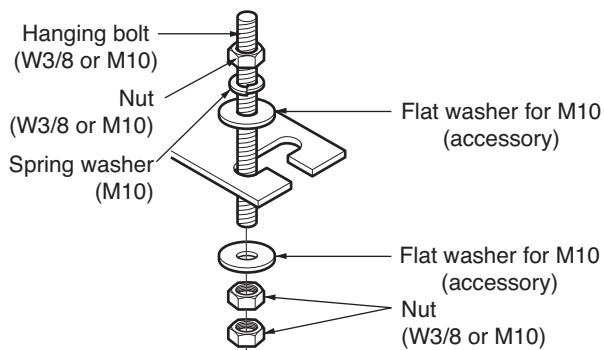
2) Mounting the anchor nut and bolt

- Prepare 4 suspension bolts. (Each bolts length should be same.)
- Measure and mark the position for the Suspension bolts and the piping hole.
- Drill the hole for anchor nut on the ceiling.
- Insert the nuts and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- Mount the suspension bolts to the anchor-nuts firmly.
- Secure the hangers onto the Suspension bolts (adjust level roughly.) using nuts, washers and spring washers.
- Adjust a level with a level gauge on the direction of left-right, back-forth by adjusting suspension bolts.
- Adjust a level on the direction of top-bottom by adjusting suspension bolts. Then the unit will be declined to the bottomside so as to drain well.

MODEL	DIM	
	A	B
VL	1655	320
VK	1255	320
VJ	855	320



3. Installation of indoor unit(Ceiling suspended)



- The following parts is option.

Hanging Bolt - W 3/8 or M10

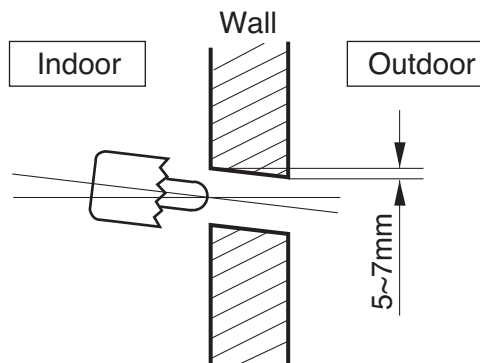
Nut - W 3/8 or M10

Spring Washer - M10

Plate Washer - M10

3) Drill a hole in the wall

- Drill the piping hole with a $\varnothing 70\text{mm}$ hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.



CAUTION

Tighten the nut and bolt to prevent unit falling.

- Drill the piping hole on the wall slightly tilted to the outdoor side using a $\varnothing 70$ hole-core drill.

3. Installation of indoor unit(Ceiling suspended)

3.4.3 Indoor unit installation

Hang the Indoor unit on suspension bolt as per following guidelines:

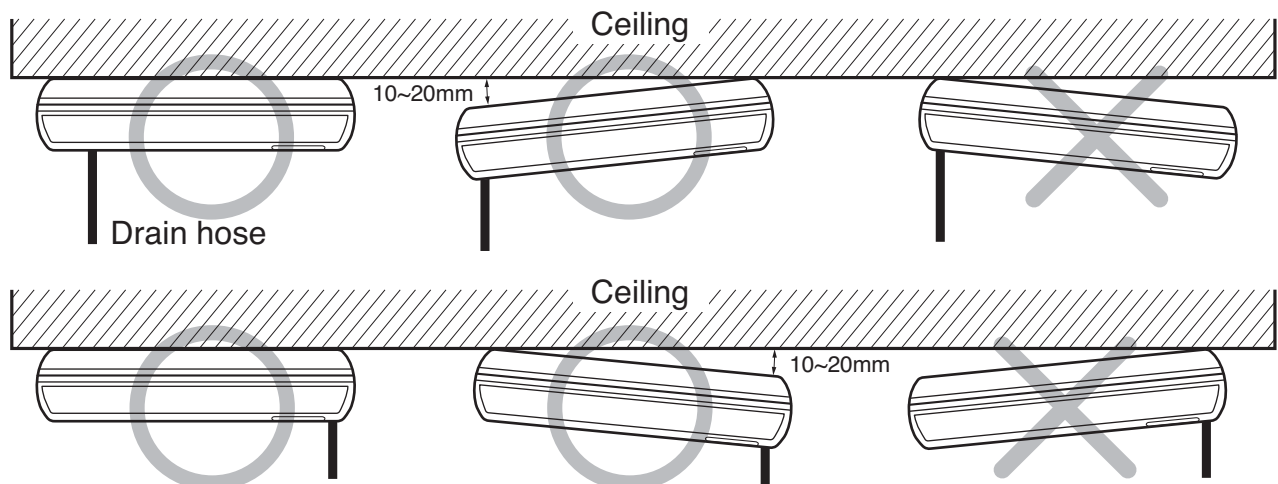
- ① Lift the indoor unit to sufficient height.
- ② Insert the suspended part of four suspension bolt in the four hangers provided on the side of main body one by one.
- ③ Lower the indoor unit till the hangers rest on their respective flat washer.
- ④ Adjust the level in the top down direction by adjusting the suspension bolts.
Inclined the indoor unit as per direction provided in the fig

⚠ CAUTION : Installation Information For Declination

1. **Install declination** of the indoor unit is very **important for the drain** of the convertible type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe shall be 10mm.
3. If the Installation Plates are fixed to horizontal line, the indoor unit after installing will be declined to the bottomside.

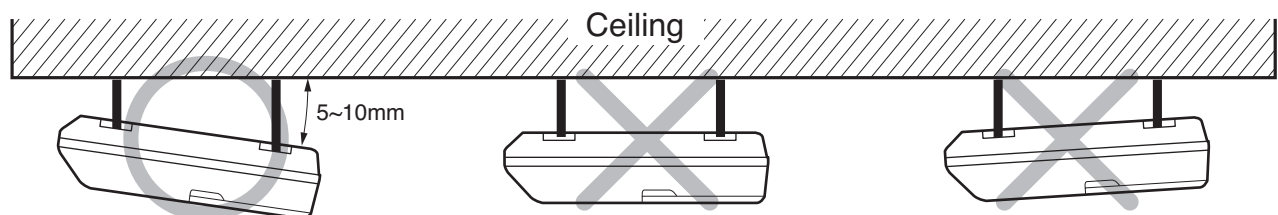
Front of view

- The unit must be horizontal or inclined at angle.
- The inclination should be less than or equal to 1° or in between 10 to 20mm inclined in drain direction as shown in fig.



Side of view

- The unit must be declined to the bottomside of the unit when finished installation.



3. Installation of indoor unit(Ceiling suspended)

3.4.4 Connection pipes to the indoor unit

1) Refrigerant piping work

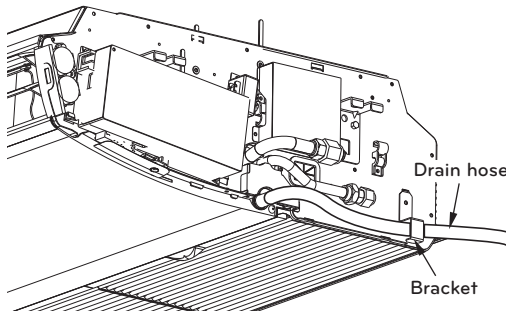
Please refer “REFRIGERANT PIPING WORK”.

2) Piping insulation

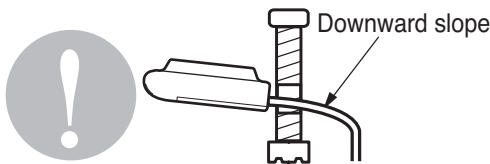
- ① Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result due condensate formation over pipe.
- ② Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 120°C).
- ③ Precautions in high humidity circumstance.
- ④ Refer to the insulation works.

3) Indoor Unit Drain Piping

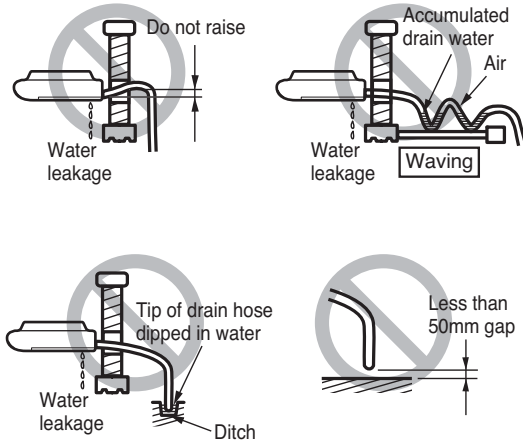
- Drain piping must have down-slope (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- Remove the rubber stopple before connecting drain hose.
- Hook on the bracket after connecting the drain hose as below.



- The drain hose should point downward for easy drain flow.



- Do not make drain piping like the following.

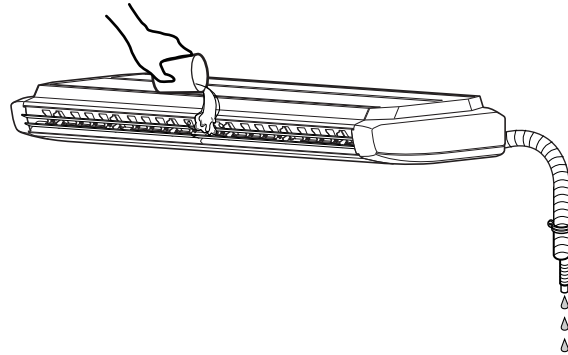


- Be sure to execute heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm.

4) Drain test

Use the following procedure to test the drain pump operation:



- Set the air direction louvers up-and-down to the position(horizontally) by hand.
- Pour a glass of water on the evaporator using a kettle.
- Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.

3. Installation of indoor unit(Ceiling suspended)

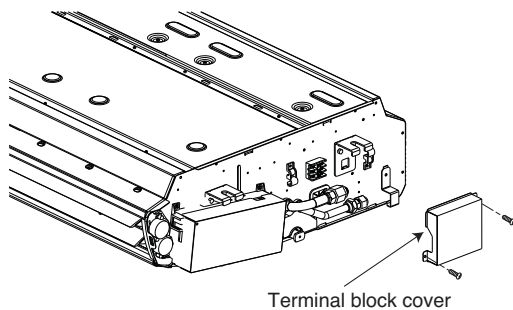
3.4.5 Electric wiring work

1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes.
Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor units are properly matched. If wiring and piping between the outdoor unit and an indoor units are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

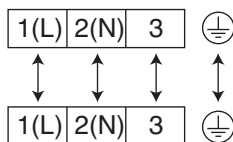
2) Wiring Connection

- Remove the terminal block cover for electrical connection between the indoor and outdoor unit.
- Use the cord clamper to fix the cord.

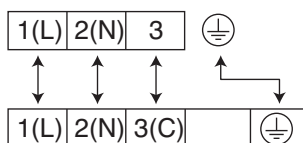


Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

* 12k, 18k, 36k, 42k, 48k



* 21k, 24k



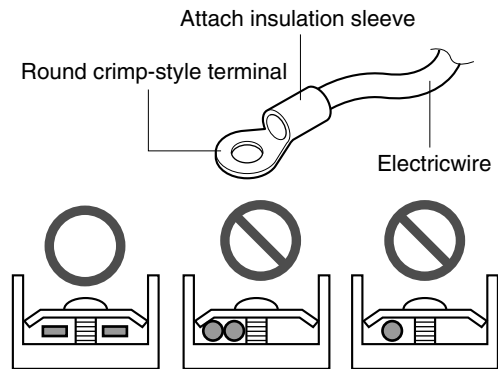
⚠ WARNING

- Make sure that the screws of the terminal are not loose.

NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.

- Do not connect wires of different gauge to the same power supply terminal. (Looseness connection may cause overheating.)
- Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



Connect wires of the same gauge to both sides

2. Tightening torque for the terminal screws.

- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.

3. Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.

4. At the unit, keep proper separation between transmission and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.

5. Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.

6. Use only specified wire and tightly connect wires to terminals. Be careful that wires should not place external stress on terminals. Keep wiring in

3. Installation of indoor unit(Ceiling suspended)

neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worst case, electric shock or fire.

⚠ CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

- 1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.
- 2) The screw which fasten the wiring in the casing of electrical fittings are liable to become loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.)
- 3) Confirm the specification of power source.
- 4) Confirm that electrical capacity is sufficient.
- 5) See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 6) Confirm that the cable thickness is as specified in the power source specification.
(Particularly note the relation between cable length and thickness.)
- 7) Always install an earth leakage circuit breaker in a wet or moist area.
- 8) The following would be caused by voltage drop.
 - Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.
- 9) The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

4. Installation of outdoor Unit

4.1 Safety Precautions

Please strictly follow the instructions given in the Installation manual. Improper installation by ignoring the instructions can lead to damage to life and property. Make sure to read the following safety instructions very carefully and thoroughly.

⚠ WARNING: This symbol indicates the possibility of death or serious injury.

⚠ CAUTION: This symbol indicates the possibility of injury or damage to properties.

■ The meanings of the symbols used in this manual are as shown below.

⊘: Be sure not to do.

!: Be sure to follow the instruction.

⚠ WARNING

Do not use a defective or underrated circuit breaker.

- There is risk of fire or electric shock.

Do not use a multi consent. Always use this appliance on a dedicated circuit and breaker.

- Otherwise it can cause electric shock or fire.

For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center. Do not disassemble or repair the product by yourself.

- There is risk of fire or electric shock.

Always ground the product as per the wiring diagram.

Do not connect the ground wire to gas or water pipes lightning rod or telephone ground wire.

- There is risk of fire or electric shock.

Install the panel and the cover of control box securely.

- There is risk of fire or electric shock due to dust, water etc.

Use the correctly rated breaker or fuse.

- There is risk of fire or electric shock.

If the power cable or cord has scratches or skin peeled off or deteriorated then immediately replace it.

- There is risk of fire or electric shock.

For installation, removal or reinstall, always contact the dealer or an authorized service center.

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

Do not install the product on a defective foundation. Be sure that the installation area does not deteriorate with age.

- If the foundation collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

Never install the outdoor unit at a place from where it can fall down.

- The falling outdoor unit can cause damage or injury or even death of a person and also damage or malfunctioning of the product itself.

When the product is soaked (flooded or submerged) in water, contact an authorized service center for repair before using it again.

- There is risk of fire or electric shock.

In outdoor units the the step up capacitor supplies high voltage electricity to the electrical components. Be sure to discharge the capacitor completely before conducting the repair work.

- An charged capacitor can cause electrical shock.

Be sure to use only those parts which are listed in the svc parts list. Never attempt to modify the equipment.

- The use of inappropriate parts can cause an electrical shock, excessive heat generation or fire.

Indoor/outdoor wiring connections must be secured tightly and the cable should be routed properly so that there is no force pulling the cable at the connection terminals.

- Improper or loose connections can cause excessive heat heat generation or fire.

Safely dispose off the packing materials.

- Things like screws, nails, batteries, broken things etc after installation or svc can cause injury to small kids. Tear away and throw away the plastic packaging bags so that children will not play with them.

Make sure to check that the power cable plug is not dirty, loose or broken, then only insert the plug completely.

- Dirty, loose or broken power plug can cause electric shock or fire.

During svc be sure to check the refrigerant to be used.

- Incorrect refrigerant used can prevent the normal operation of the unit.

When installing the unit, use the installation kit provided with the product.

- Otherwise the unit may fall and cause severe injury.

Do not touch, operate, or repair the product with wet hands.

- There is risk of electric shock or fire.

Do not place a heater or other appliances near the power cable.

- There is risk of fire and electric shock.

Do not allow water to run into electric parts. Install the unit away from water sources

- There is risk of fire, failure of the product, or electric shock.

Do not store or use or even allow flammable gas or combustibles near the product.

- There is risk of fire or failure of product.

4. Installation of outdoor Unit

If strange sounds, smell or smoke comes from the product, immediately turn the breaker off or disconnect the power supply cable.

- There is risk of electric shock or fire.

Do not open the front grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

- There is risk of physical injury, electric shock, or product failure.

Turn the main power off when cleaning or repairing the product.

- There is risk of electric shock.

When the product is not to be used for a long time, turn off the circuit breaker.

- There is risk of product damage or failure, or unintended operation.

Take care to ensure that nobody especially kids could step on or fall onto the outdoor unit.

- This could result in personal injury and product damage.



Use two or more people to lift and transport the product.

- Avoid personal injury.

Do not install the product where it will be exposed to sea wind (salt spray) directly.

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

Keep level even when installing the product.

- To avoid vibration or noise.

Do not install the product where the noise or hot air from the outdoor unit could damage or disturb the neighborhoods.

- It may cause a problem for your neighbors and hence dispute.

Always check for gas (refrigerant) leakage after installation or repair of product.

- Low refrigerant levels may cause failure of product.

Do not block the inlet or outlet of air flow.

- It may cause product failure.

Do not step on or put anything on the product.

- There is risk of personal injury and failure of product.

Do not insert hands or other objects through the air inlet or outlet while the product is operating.

- There are sharp and moving parts that could cause personal injury.

Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.

If the refrigerant gas leaks during the repair, do not touch the leaking refrigerant gas.

- The refrigerant gas can cause frostbite (cold burn).

Do not tilt the unit when removing or uninstalling it.

- The condensed water inside can cause spill and wet the furniture and the floor.

Do not mix air or gas other than the specified refrigerant used in the system.

- If air enters the refrigerant system, an excessively high pressure results, causing equipment damage or injury.

If the refrigerant gas leaks during the installation or operation ventilate the area immediately.

- Otherwise it can be harmful for your health.

Do not expose your skin or kids or plants to the cool or hot air draft.

- This could harm to your health.

Use a firm stool or ladder when cleaning, maintaining or repairing the product at an height.

- Be careful and avoid personal injury.

Dismantling the unit, treatment of the refrigerant oil, oil and eventual parts should be done in accordance with local and national standards.

4.1.1 Points for explanation about operations

The items with WARNING and CAUTION marks in the operation manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the operation manual.

4.1.2 Note to the installer

Be sure to instruct customers how to properly operate the unit (especially cleaning filters, operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the manual.

4.1.3 Selecting installation site for outdoor units

Select an installation site where the following conditions are fulfilled and that meets with your customer's approval.

1. Location strong enough to bear the weight of the unit.
2. Location accessible and having enough clearance for inspection and service in the future.
3. Location allowing easy condensate drainage suitable gradient of the unit and the drain pipe.
4. Piping between the indoor and outdoor unit is possible within the allowable limits.

4. Installation of outdoor Unit

5. Location free from electrical noise.
6. Location allowing optimum air distribution without any blocking to air flow.
7. Location having no risk of flammable gas leakage.
8. Location free from mineral oil mist or an oil spray or vapor eg in kitchen .It could result in leakage .
9. Location free from corrosive gases such as sulphurous acid gas because it corrodes the copper pipes or soldered parts resulting in leakage .
10. Location free from any machinery emitting electromagnetic waves which may disturb the control system thus causing malfunction of the unit .
11. Location free from flammable gases , carbon fibre , or ignitable dust suspensions in the air or where volatile flames are handled like gasoline or thinner. Operating in such conditions may result in fire.
12. Install the indoor and outdoor units, power supply wiring and connecting wires at least 1m. away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1m. may not be sufficient enough to eliminate the noise.)
13. Consider whether the place where the unit will be installed can support the full weight of the unit, and reinforce it with boards and beams, etc. if needed before proceeding with the installation. Also, reinforce the place to prevent vibration and noise before installing. (The installation pitch can be found on the paper pattern for installation (3), so refer to it when considering the necessity for reinforcing the location.)
14. Obey the local and national regulations and limits regarding airconditioner installation.
15. Location free from lavatory (NH3.etc.). NH3 gas will cause corrosion of outdoor unit metallic parts.

4.1.4 For the following items, take special care during construction and check after installation is finished

1. Items to be checked after completion of work

Items to be checked	If not properly done, what is likely to occur	Check
Are the indoor and outdoor unit fixed firmly?	The units may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the unit safely grounded?	It may be dangerous at electric leakage.	
Is wiring size according to specifications?	The unit may malfunction or the components burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

CAUTION

- **Be very careful about product transportation.**
Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
- **Safely dispose of the packing materials.**
Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

NOTE

- **Install the indoor and outdoor units, power supply wiring and connecting wires at least 1m. away from televisions or radios in order to prevent image interference or noise.**
(Depending on the radio waves, a distance of 1m. may not be sufficient enough to eliminate the noise.)

4. Installation of outdoor Unit

4.1.5 Before installation

- **During product unpacking and removing it from the packing case, be sure to lift it without exerting any pressure on other parts, especially, horizontal flaps, the refrigerant piping, drain piping, and other resin parts.**
- Be sure to remove a cushion (corrugated paper) located between the heat exchanger and the right air filter.
- Be sure to check the type of R410A refrigerant to be used before installing the unit. (Using an incorrect refrigerant will prevent normal operation of the unit.)
- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- For the installation of an outdoor unit, refer to the installation manual attached to the outdoor unit.
- When using the wireless remote controller, refer to the installation manual attached to the wireless remote controller.
- Entrust installation to the place of purchase or an authorized serviceman. Improper installation could lead to leaks and in worst cases, electric shock or fire.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and, in the worst cases, electric shock or fire.

4. Installation of outdoor Unit

4.2 Introduction

This installation guidance describes the procedures for outdoor unit installation, piping, wiring, and control between outdoor units, indoor units and controller.

Installation of the indoor units is not described in this part. Please refer to the installation guidance manual which supplied with indoor units for their respective installation.

4.2.1 Lifting method

1. When carrying the unit suspended, pass the ropes under the unit and use the two fork lift slots each at the front and rear.
2. Always lift the unit with ropes attached at four points so that impact is not applied to the unit.
3. Attach the ropes to the unit at an angle of 40° or less.
4. Use two ropes at least 7 m long.

CAUTION

Be very careful when carrying the product.

- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in outdoor unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make outdoor unit unstable, resulting in a fall of it.

4.2.2 Inspecting and handling the unit

At the time of delivery, the package should be checked for any damage from out side and inside, If damaged then it should be reported to the carrier claims agent immediately . When handling the unit refer to following cautions:

1. Handle the unit with care. Keep the unit upright in order to avoid inside components damage.
2. If a forklift is to be used it should pass the forklift arms through the openings at the bottom of the unit.
3. If a crane is used, lift the unit preferably with 2 ropes of at least 7m length.
4. When lifting the unit with a crane, always use protectors to prevent belt damage and pay attention to the position of the unit's center of gravity.
5. Bring the unit in original package to prevent damage during local transport.

4. Installation of outdoor Unit

4.3. Foundation

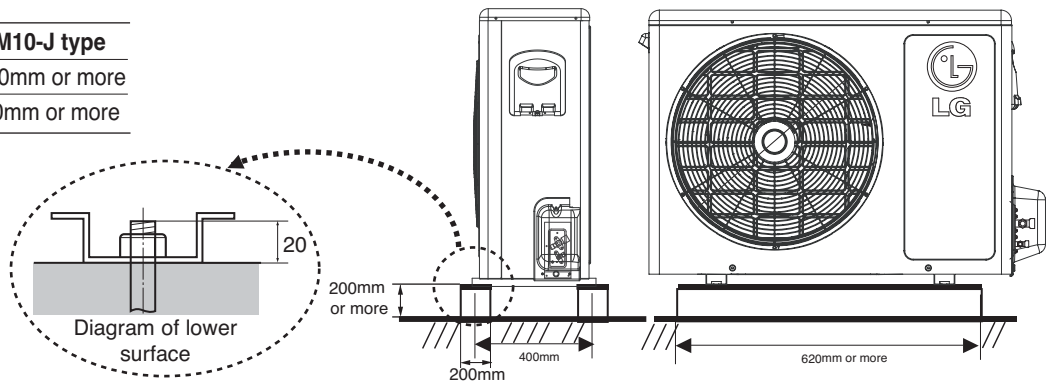
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For good drain of outdoor unit, keep the bottom height from icing upward.

AUW126DH1[UU12WH UE1]

<Basic intensity>

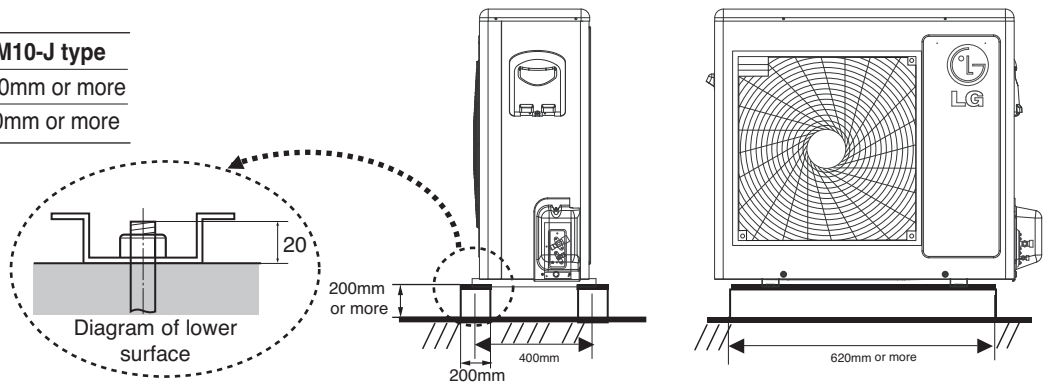
Bolt Factor	M10-J type
Concrete height	200mm or more
Bolt inserted depth	70mm or more



AUW186DH1[UU18WH UE1] AUW216DH1[UU21WH U41] AUW246DH1[UU24WH U41]

<Basic intensity>

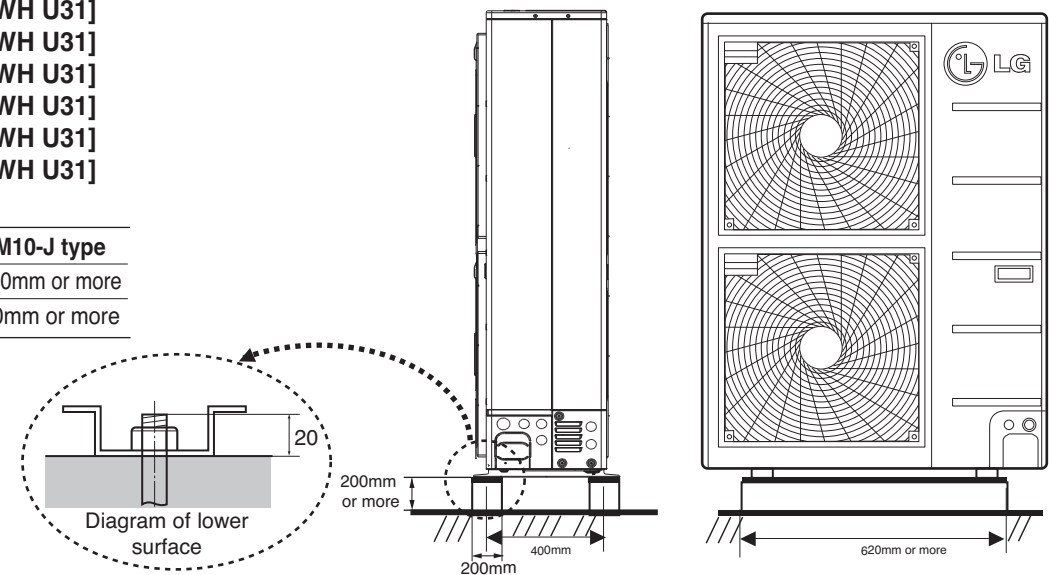
Bolt Factor	M10-J type
Concrete height	200mm or more
Bolt inserted depth	70mm or more



AUW366DH1[UU36WH U31] AUW426DH1[UU42WH U31] AUW486DH1[UU48WH U31] AUW368DH1[UU37WH U31] AUW428DH1[UU43WH U31] AUW488DH1[UU49WH U31]

<Basic intensity>

Bolt Factor	M10-J type
Concrete height	200mm or more
Bolt inserted depth	70mm or more

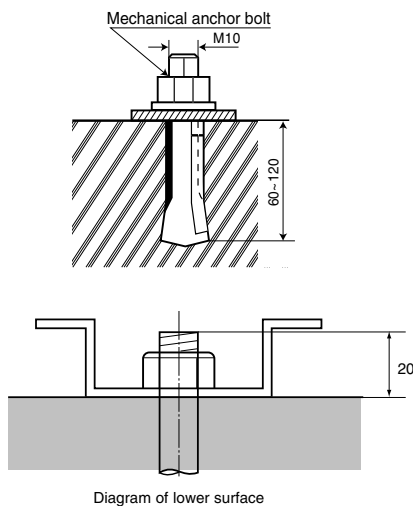


4. Installation of outdoor Unit

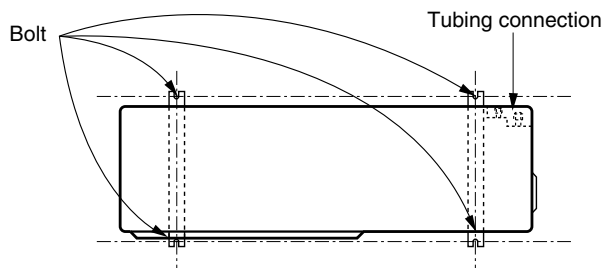
4.4 Settlement of the outdoor unit

- Anchor the outdoor unit with a bolt and nut tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the house, secure the unit with an anti-vibration rubber.

Bolt construction work



Settlement draw of outdoor units



CAUTION

- The ingredients of foundation : Cement : Sand : Gravel for the concrete should 1 : 2 : 4 ratio
- The foundation surface should be finished with mortar.
- The edges of foundation should be rounded.
- A drain passage should be made around the foundation to thoroughly drain water away from the equipment installation area.
- If installing the outdoor units on the roof, the roof's strength have to be checked.
- Care should be taken for weather - proofing
- Blocking all gaps of outdoor unit, for passing piping and wiring, using sealing material (Field supply) (Animals and bugs might enter in the machine.)

4.5 Selection of the best location

This Single A unit is suitable for installation in a residential and commercial environmental situation.

If installed near a household appliance it can cause electro-magnetic interference.

The units should be installed in a location that meets the following requirements:

1. A robust and strong base which can support the weight of the unit and will not degrade easily
2. If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that the discharge air of the condenser is not restricted.
3. It is recommended that the outdoor unit should be fenced to avoid animals or plants being exposed in the direct path of the discharged air .
4. Ensure proper spaces between the unit and its surrounding as given in the figure.
5. Ensure that the water shall not cause any damage by overflowing in case of water condensation
6. The noise, vibration and hot discharged air of the outdoor unit should not annoy the surrounding environment.
7. Ensure that there is no damage to the pipes in long run as it may cause the refrigerant leakage.
8. In case the outdoor may have heavy snow :
 - a. Make foundation at a suitable height not for ice to grow upward.
 - b. Fit a suitable hood or a awning over the unit not to attach outdoor unit heat exchanger directly.
 - c. In very cold snowing area, please consult with your consultant.
9. Rooftop Installations : If the outdoor unit is installed on a roof structure, be sure to level the unit. Ensure the roof structure and anchoring method are adequate for the unit location. Consult local codes regarding rooftop mounting.

CAUTION

An inverter air conditioner can cause electronic noise generated from broadcasting frequency. Make sure to maintain proper distances between the products and electric wires keeping away from stereo, TV set or other appliances

1. Branch switch, over current breaker
2. Remote controller
3. Cool/heat selector
4. Radio or TV set
5. Wireless microphone

If frequency signal of AM broadcasting or TV Set is non stable, keep distances of 3m or more from product and use electric wire along with conduit tubes for power and transmission cable.

4. Installation of outdoor Unit

⚠ CAUTION

1. Actually the R410A refrigerant is not toxic, nonflammable and odor free. Any how if the refrigerant is leaked then its concentration may exceed the allowable limit depending on the related space volume.
Due to this, it is necessary to take measures for the volume size against leakage.
2. Do not install unit in following locations.
 - Locations where sulfurous acids or this kind of other corrosive gases might be help to corrode of copper piping and soldered joints, and can cause refrigerant leakage.
 - Locations such as kitchens or cuisine which contain a lot of hot oil or steam or where oil may splatter to the product. Can cause the unit to make leak or other serious problem.
 - Locations where electromagnetic waves is prevalent. The electromagnetic waves may cause the control system to malfunction or causing an abnormal operation.
 - Locations where inflammable gas might leak, where combined gasoline, methane or other volatile substances, carbon dust and other incendiary substances are found in the atmosphere. Leaked gas may accumulate around the unit, can cause an serious explosion.

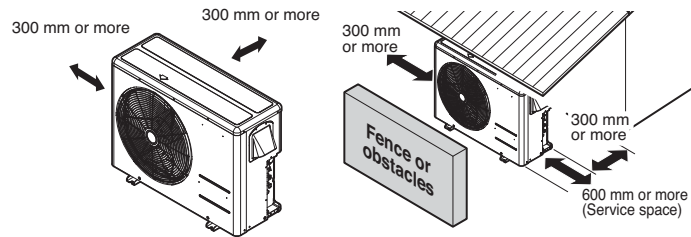
4. Installation of outdoor Unit

4.6 Clearance space

4.6.1 Clearance around outdoor unit

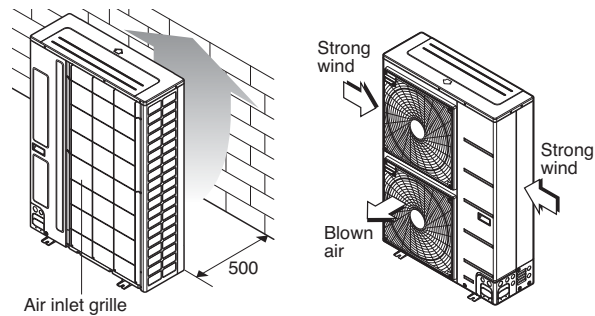
SINGLE A™

- Ensure that the space around the back is more than 300 mm on the opposite to the PCB side and secure 600 mm space near the compressor and PCB side of the air conditioner for service.



* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

- Install the unit so that its discharge port faces to the wall of the building. Keep a distance 500mm or more between the unit and the wall surface.
- Supposing the wind direction during the operation season of the air conditioner, install the unit so that the discharge port is set at right angle to the wind direction.



Turn the air outlet side toward the building's wall, fence or windbreak screen.

Set the outlet side at a right angle to the direction of the wind.

* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

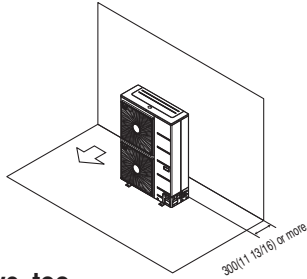
4. Installation of outdoor Unit

Clearance of side discharge unit [Unit:mm(inch)]

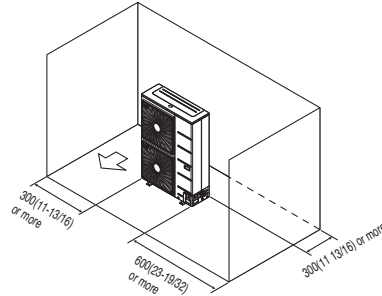
1) Where there is an obstacle on the air intake side:

■ No obstacle above

- Obstacle on the suction side only

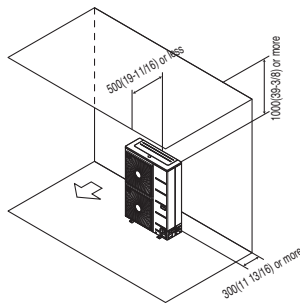


- Obstacle on the both sides

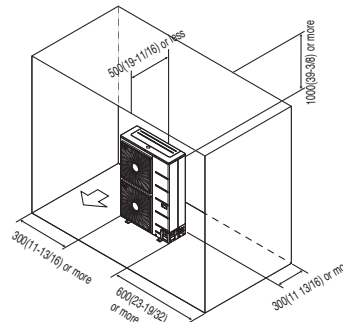


■ Obstacle above, too

- Obstacle on the air intake side, too

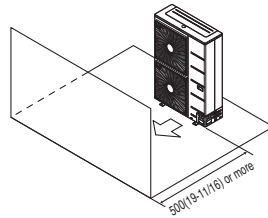


- Obstacle on the air intake side, and both sides

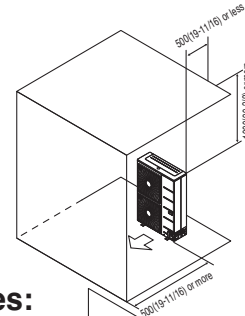


2) Where there is an obstacle on the discharge side:

■ No obstacle above



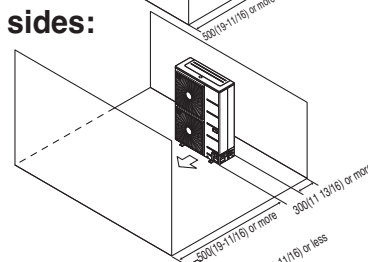
■ Obstacle above, too



3) Where there are obstacles on both suction and discharge sides:

■ Where the obstacles on the discharge side is higher than the unit:

- No obstacle above

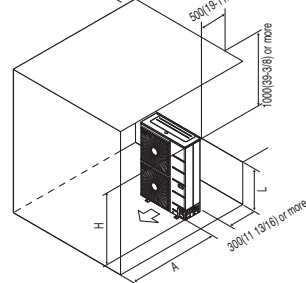


- Obstacle above, too

The relations between H, A and L are as follows:

	L	A[mm(inch)]
L ≤ H	0 < L ≤ 1/2H	750(29 1/32)
	1/2H < L	1 000(39 3/8)
H < L	Set the stand as: L ≤ H	

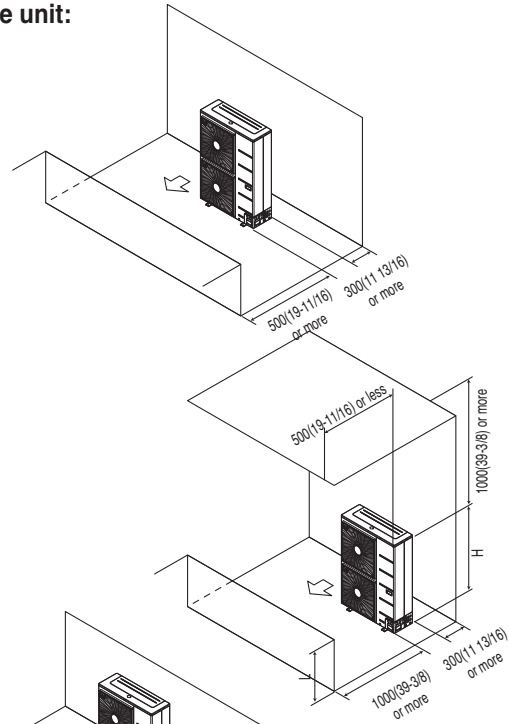
Close the bottom of the installation frame to prevent the discharged air from being bypassed.



4. Installation of outdoor Unit

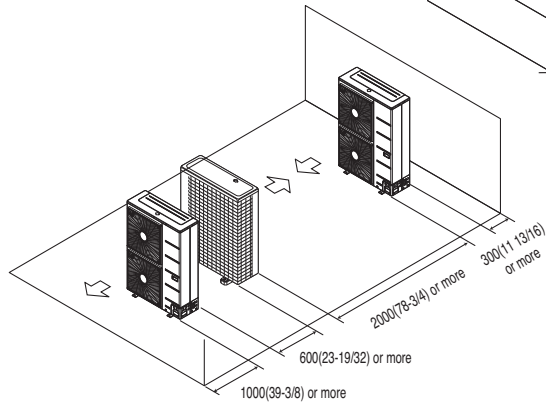
■ Where the obstacles on the discharge side is lower than the unit:

- No obstacle above



- Obstacle above, too
'L' should be lower than 'H'.
Close the bottom of the installation frame to prevent the discharged air from being bypassed.

4) Series installation



[Example]



<Without air guide>
Safety dorice activation



<With air guide>
Normal operation

4.6.2 Air guide work

In case of out door unit is located outdoor cabin of apartment or flats, then the efficiency can drop and system pressure increases thus finally damaging the compressor or other components in the system by heat short circuit.

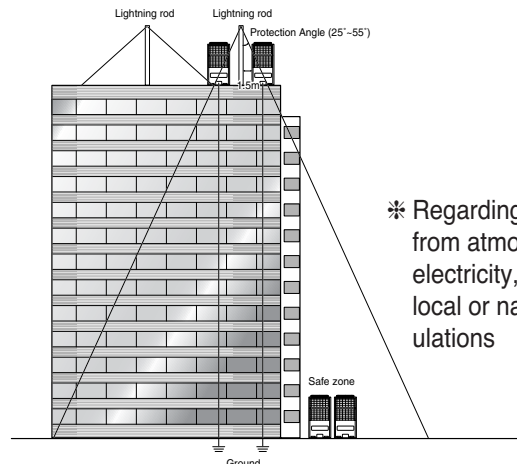
4.6.3 Lightning safety zone

- 1) To protect outdoor unit from lightning, it should be placed within lightning safety zone.

Safety zone

Building Height [m]	20	30	45	60
Protection Angle [°]	55	45	35	25

- 2) Power cable and communication cable should be 1.5m away from lightning rod.
- 3) High resistance grounded system should be performed against induced lightning or indirect stroke.
- 4) If the building has no lightning protection, outdoor may be damage from lightning. This should be informed to customer or building owner in advance.



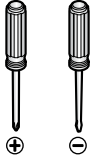
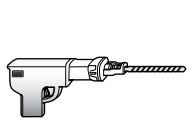
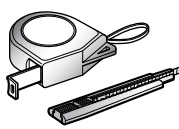
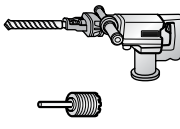
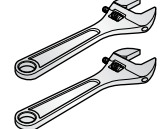
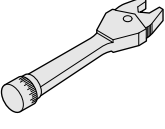
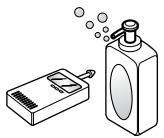
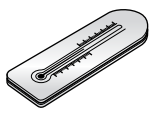

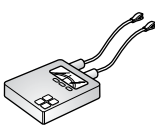
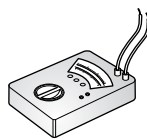
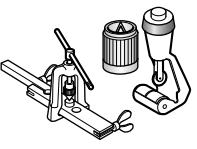
✱ Regarding the safety from atmosphere electricity, follow the local or national regulations

4. Installation of outdoor Unit

4.7 Outdoor unit piping

4.7.1 Outdoor unit piping

Required tools

					
Screw Driver	Drill M/C f 3.5/F14.5	Measuring Tape, Blade	Core drill	Spanner	Torque Wrench
					
Soap Foam	Thermometer	Hexagonal wrench(4mm, 5mm)	Hook Meter	Multi Tester	Flare Set

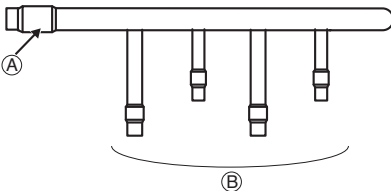
4.7.2 Connecting piping

1) Connecting socket must be used when connecting the piping to the indoor and outdoor units

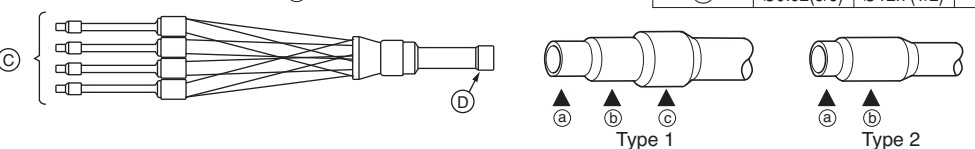
■ Branching kit

Indoor Classification	Model Name	Capacity Ratio(%)
2 Units	PMUB11A	50:50 (1:1)
3 Units	PMUB111A	33:33:33 (1:1:1)
4 Units	PMUB1111A	25:25:25:25(1:1:1:1)

Unit : mm(inch)

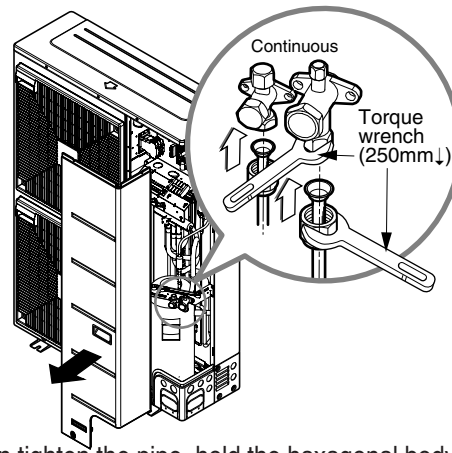
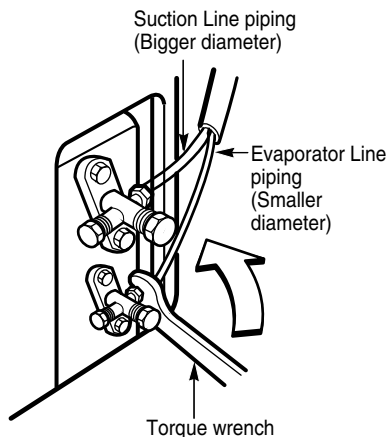


(I.D)	a	b	c	Type
(A)	Ø15.88(5/8)	Ø19.05(3/4)	Ø25.4(1)	1
(B)	Ø9.52(3/8)	Ø12.7(1/2)	-	2
(C)	Ø6.35(1/4)	Ø9.52(3/8)	-	2
(D)	Ø9.52(3/8)	Ø12.7(1/2)	-	2



2) Finally, tighten the flare nut with torque wrench until the wrench clicks.

- When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.



* When tighten the pipe, hold the hexagonal body.

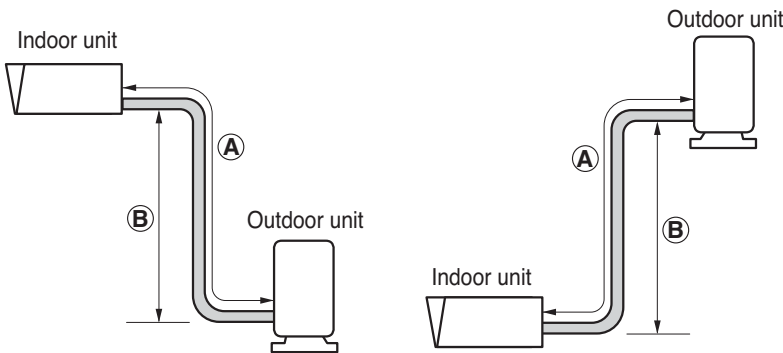
4. Installation of outdoor Unit

4.8 Outdoor unit installation requirements

4.8.1 Piping elevation and length

• For 1 Phase Inverter Model

Model	Pipe Size (Diameter:Ø)		Length(A, m)		Elevation(B, m)	*Additional refrigerant(g/m)
	Gas	Liquid	Standard	Max.	Max.	
UU12WH	9.52(3/8)	6.35(1/4)	5	30	20	20
UU18WH	12.7(1/2)	6.35(1/4)	5	50	30	20
UU21WH	15.88(5/8)	9.52(3/8)	5	50	30	40
UU24WH	15.88(5/8)	9.52(3/8)	5	50	30	40
UU36WH/UU37WH	15.88(5/8)	9.52(3/8)	5	75	30	40
UU42WH/UU43WH	15.88(5/8)	9.52(3/8)	5	75	30	40
UU48WH/UU49WH	15.88(5/8)	9.52(3/8)	5	75	30	40



* If installed tube is shorter than C m, additional charging is not necessary. Additional Refrigerant = (A - C) x Additional refrigerant (g).

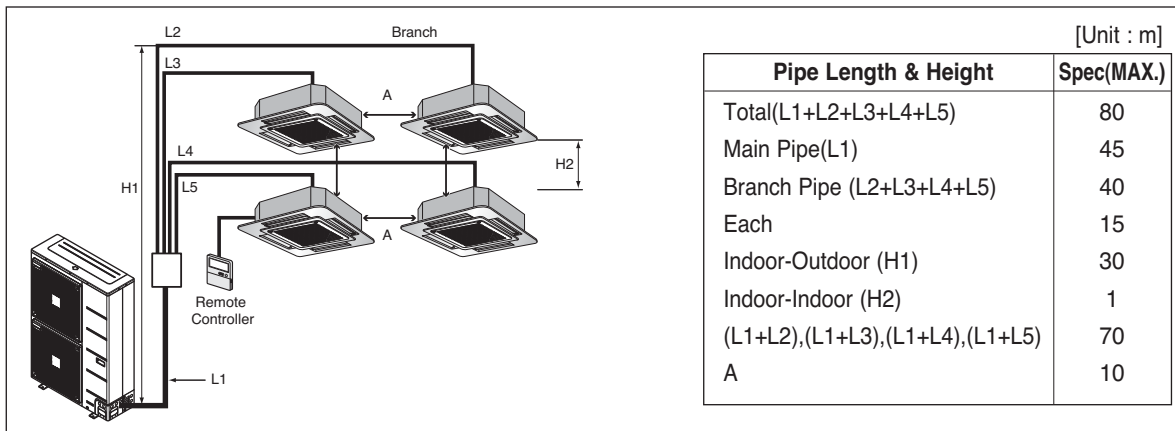
Model	C (m)
UU12WH	10
UU18WH	10
UU21WH	10
UU24WH	10
UU36WH/UU37WH	7.5
UU42WH/UU43WH	7.5
UU48WH/UU49WH	7.5

CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.

2) Synchro Operation

Install the branch pipe so that pipe length and difference between high and low will not exceed below Spec.



- When installing the branch pipe, direction and angle of installation is not limited.
- Take care so that burrs and foreign material may not enter into the cutting surface when connecting.
- Connect remaining those by cutting or direct insertion to the diameter of pipe.

4. Installation of outdoor Unit

Refrigerant Additional Charging Method

For additional charging method, see below table.

Indoor Unit	Refrigerant Additional charging (g)	Pipe Diameter. (mm)	C (g/m)
Duo	Refrigerant = (L1-b) x B + (L2 + L3) x C	Ø 6.35	35
Trio	Refrigerant = (L1-b) x B + (L2 + L3 + L4) x C	Ø 9.52	40
Quartet	Refrigerant = (L1-b) x B + (L2 + L3 + L4 + L5) x C		

Model	b (m)	B (g/m)
UU36WH/UU37WH UU42WH/UU43WH UU48WH/UU49WH	7.5	40

NOTE

- a : Reted performance for refrigerant line length.
- A : Additional charging Refrigerant of Branch Liquid Pipe.
- B : Additional charging Refrigerant of Main Liquid Pipe.

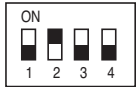
CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.

Night Silent Operation setting

1. Open the side panel of outdoor unit.
2. Set the DIP switch.

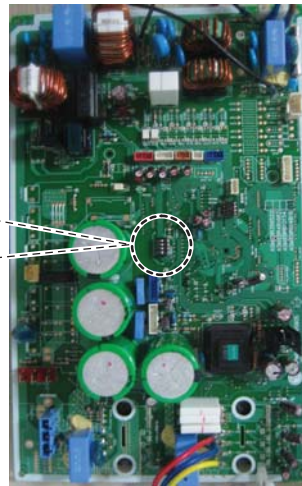
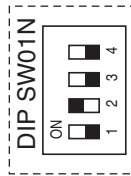
DIP SW01N



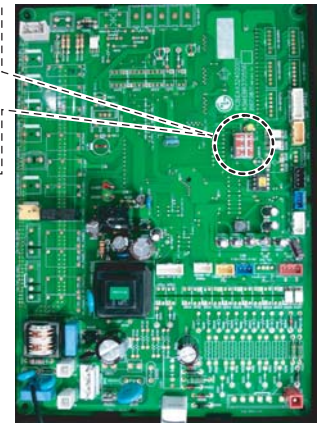
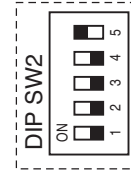
DIP SW2



* 1 means S/W on.
0 means S/W off.



Capacity: 3.5 / 5 / 6 / 7kW



Capacity: 10 / 12.5 / 13.4kW

3. Close the side panel.

4. Installation of outdoor Unit

Outdoor Unit PCB Setting Procedure For Simultaneous Operation System

1. DIP SW2 Setting

Set the DIP SW2 as below Table (A)

2. Auto Addressing Method

Addressing work assigns address to each indoor unit. When firstly installing product or replacing the indoor unit PCB. Auto Addressing work should be done for simultaneous operation.

* Work procedure

- 1) Set DIP SW2 correctly.
- 2) Turn on main power.
- 3) Press the SW01B for about 3 seconds within 3 minutes After main power on.(B)
- 4) After step 3), the LED01G(red LED) and LED02G(green LED) rapidly flickers. When Addressing work is done, green LED is off, else LED (LED01G) stops flickering and lights continuously. Address of indoor unit is indicated on the wired remote control display window. (CH01, CH02, CH03, CH04)
- 5) Press (i) button to turn on the indoor.
- 6) If you fail to perform the Addressing work, repeat step 2)~5).

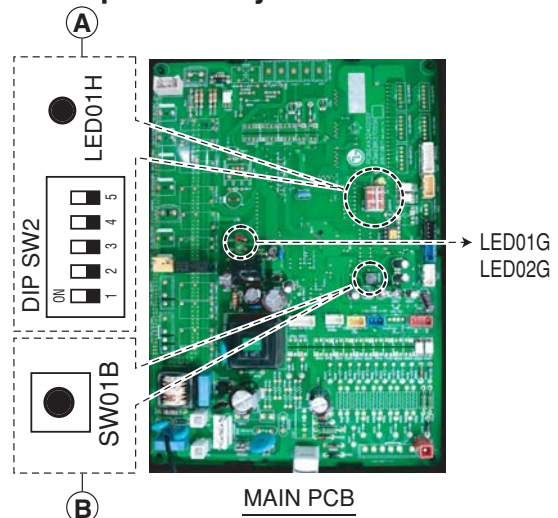


Table DIP SW2 Setting

DIP SW2	Indoor Unit No.
 1 2 3 4 5 0 0 0 0 0	1(Single) : Default
 1 2 3 4 5 1 0 0 0 0	2(Duo)
 1 2 3 4 5 1 1 0 0 0	3(Trio)
 1 2 3 4 5 1 1 1 0 0	4(Quartet)

* 1 means S/W on.
0 means S/W off.

CAUTION

1. Regulation for refrigerant leakage
: the amount of refrigerant leakage should satisfy the following equation for human safety.

$$\frac{\text{Total amount of refrigerant in the system}}{\text{Volume of the room at which indoor unit of the least capacity is installed}} \leq 0.44 \text{ (kg / m}^3 \text{)}$$

2. If the above equation can not be satisfied, then follow the following steps.

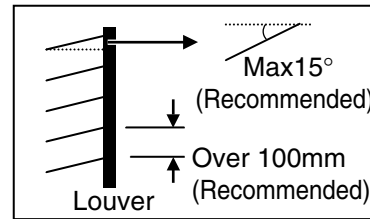
- ① Selection of air conditioning system: select one of the followings.
 - Effective opening part Installation
 - Reconfirmation of outdoor unit capacity and piping length
 - Reduction of the amount or refrigerant
 - 2 or more security device installation of alarm for gas leakage
- ② Change indoor unit type
: installation position should be over 2m from the floor (Wall mounted type Cassette type)
- ③ Adoption of ventilation system
: choose ordinary ventilation system or building ventilation system
- ④ Limitation in piping work
: design for earthquake-proof and prevention against thermal stress

4. Installation of outdoor Unit

4.9 Outdoor unit cabin

4.9.1 Outdoor Cabin louver requirement

1. Outdoor cabin type : Manual door open type
2. Louver angle : less than 15° on the horizontal base
3. Louver interval: over 100mm (recommend)
4. Louver shape : wing type or plane type

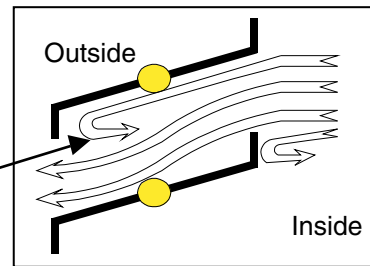


Section

CAUTION

- Opening rate and suction should be considered for louvered outdoor room.
- Do not use 'S' type louver.

Noise can occur due to the backward flow of the air passing through the louver blade

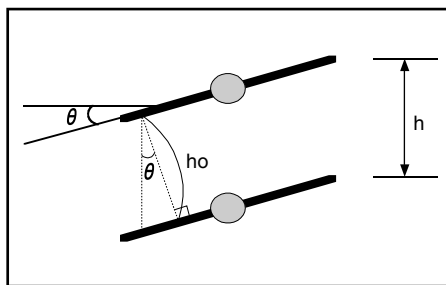


NOTE

The problem in case the louver opening rate is small.

1. Noise can occur due to the increased velocity of the air passing through louver blade.
2. Noise can occur due to the louver blade vibrations.
3. Drop in outdoor fan performance (Excess static pressure damage can cause drop in the performance as well as outdoor heat exchange efficiency).
4. In case the louver opening rate is small or there is insufficient air flow exchange, it might stop the air conditioner.

Opening rate by louver radian



$$\theta \leq 15^\circ$$

$$h_o = h \cdot \cos \theta$$

$$\text{Total face area}(A) = H \cdot W$$

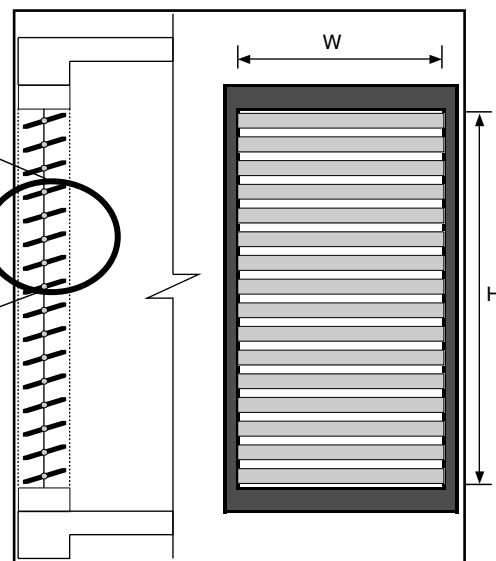
$$\text{Number of open space}(N) = (\text{number of louver} - 1)$$

$$\text{Effective face area}(A_f) = h_o \cdot W \cdot N$$

$$\text{Louver opening rate}(n) = A_f / A$$

$$\therefore A_f = A \cdot n$$

Effective face area of cross section



[Side view]

[Front view]

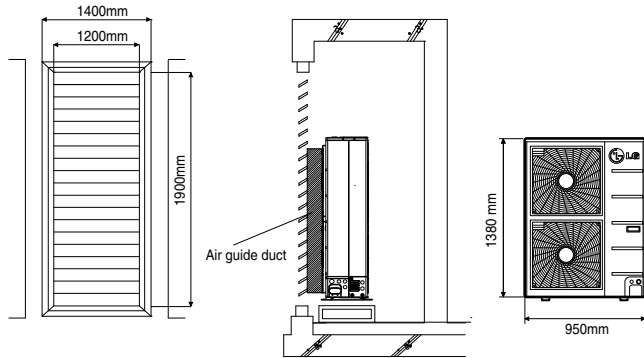
4. Installation of outdoor Unit

4.9.2 Air flow rate confirmation

Example. 1

■ Application Model : AUUW366DH1[UU36WH U31] Airflow rate 106CMM

[Total opening rate]



- Case : velocity of discharging air: 5m/s,
velocity of suction air: 2.5m/s
- Openness rate = 80% or more
- * Openness rate = $\frac{\text{Effective face area}(A_f)}{\text{Total face area}(A)}$
- Air guide of discharging air part should be equipped.

- Louver total dimension (excluding frame)
- Louver shielding dimension by product
- Suction able louver dimension
- Equivalent suction dimension (Opening rate 80%)
- Equivalent suction air volume
- Required air volume / equivalent volume

$$\begin{aligned}
 (A) &= 1.2 \text{ m} \times 1.9 \text{ m} = 2.28 \text{ m}^2 \\
 (B) &= 0.9 \text{ m} \times 1.13 \text{ m} = 1.02 \text{ m}^2 \\
 (A-B) &= 1.26 \text{ m}^2 \\
 &= 1.26 \text{ m}^2 \times 0.8 = 1.01 \text{ m}^2 \\
 &= 1.2816 \text{ m}^2 \times 2.5 \text{ m/s} \times 60\text{s/m} = 152 \text{ CMM} \\
 &= 152 \text{ CMM} / 106 \text{ CMM}(\text{product airflow rate}) = 142 \% \\
 &\rightarrow \text{OK}
 \end{aligned}$$



Part 4 Accessories

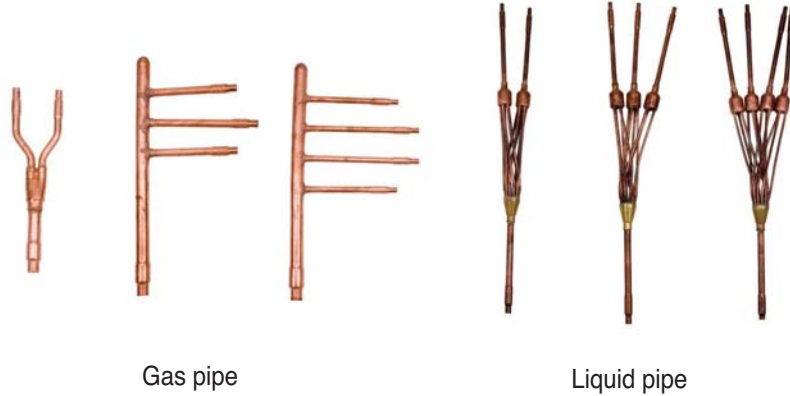
1. Mechanical accessories

1. Mechanical accessories

1.1 Branch kit

Models : PMUB11A, PMUB111A, PMUB1111A

Picture



Gas pipe

Liquid pipe

Features

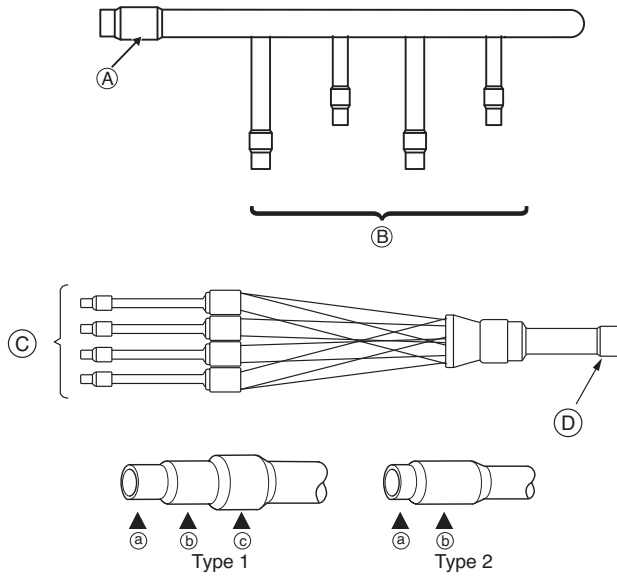
Connectable of indoor units	Models	Gas pipe	Liquid pipe
2 Units	PMUB 11A	 (1:1)	 (1:1)
3 Units	PMUB 111A	 (1:1:1)	 (1:1:1)
4 Units	PMUB 1111A	 (1:1:1:1)	 (1:1:1:1)

1. Mechanical accessories

Branch kit

Between units are the required Branch kits mentioned, that are necessary to install the combination.

Indoor Classification	Model Name	Capacity Ratio(%)
2 Units	PMUB11A	50:50 (1:1)
3 Units	PMUB111A	33:33:33 (1:1:1)
4 Units	PMUB1111A	25:25:25:25(1:1:1:1)



Unit : mm(inch)

(I.D)	a	b	c	Type
(A)	Ø15.88(5/8)	Ø19.05(3/4)	Ø25.4(1)	1
(B)	Ø9.52(3/8) Ø12.7(1/2)	Ø12.7(1/2) Ø15.88(5/8)	-	2
(C)	Ø6.35(1/4)	Ø9.52(3/8)	-	2
(D)	Ø9.52(3/8)	Ø12.7(1/2)	-	2

1. Mechanical accessories

1.2 Cassette cover

Models : PTDCM

Picture:



Functional Description:

Maintains the ceiling elegance.

- Covers the side area of cassette.
- Gives elegant looks.
- Light weight..
- Suitable when false ceiling is unavailable.



Applicable Models:

PTDCM : UT12H ~ UT48H TP/TN/TM CHASSIS



P/No.: MFL62069304



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