



# TECHNICAL DATA & SERVICE MANUAL

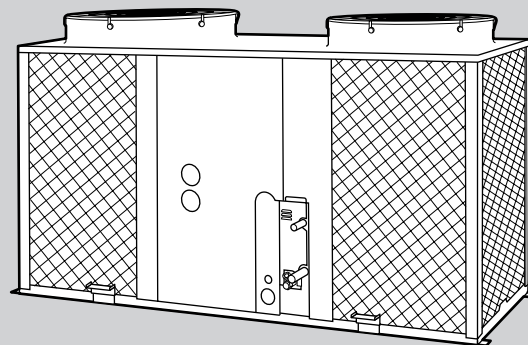
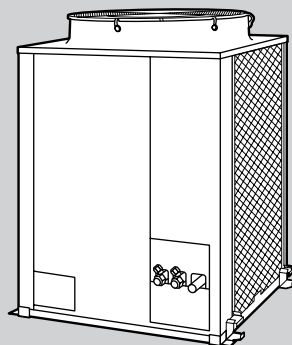
# SANYO

FILE NO.

Revised edition



## R407C & R22



OUTDOOR MODEL No.	PRODUCT CODE No.	APPLICABLE INDOOR MODEL No.	V / $\phi$ / Hz
SPW-CR1503GDYH8	85401575	SPW - K(R) · AS(R) · S(R) · UR · F(R) · FM(R) · SLR	93GH56
SPW-CR1903GDYH8	85401576	SPW - X(R) · K(R) · AS(R) · S(R) · UR · F(R) · FM(R) · SLR	123GH56
SPW-CR703GDCH8	85401579	SPW - X(R) · K(R) · TR · S(R) · UR · F(R) · FM(R) · SLR	183GH56
SPW-CR903GDCH8	85401580	SPW - X(R) · TR · S(R) · UR · D(R) · F(R) · FM(R) · SLR	253GH56
SPW-C1503GDYH8	85401573	SPW - X(R) · TR · UR · D(R)	363GH56
SPW-C1903GDYH8	85401574	SPW - X(R) · TR · UR · D(R)	483GH56
SPW-C703GDCH8	85401577	SPW - DR	763GH56
SPW-C903GDCH8	85401578	SPW - DR	963GH56

## Important

### Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

**For safe installation and trouble-free operation, you must :**

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.



#### WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



#### CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

### If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

### In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

## SPECIAL PRECAUTIONS

### When Wiring



**ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

### When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

### When Installing

#### ...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

#### ...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

#### ...In an area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

#### ...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

### When Connecting Refrigerant Tubing

- Ventilate the room well, in the event that refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

#### NOTE

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "narrow" or "wide" rather than as "liquid" or "gas".

### When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site when installation is finished. Check that no metal scraps or bits of wiring have been left inside the unit.



#### CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Contact of refrigerant gas with fire or heat can produce poisonous gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

## Check of Density Limit



### WARNING

Do not install the indoor unit to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.

The refrigerant (R22/R407C) which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.

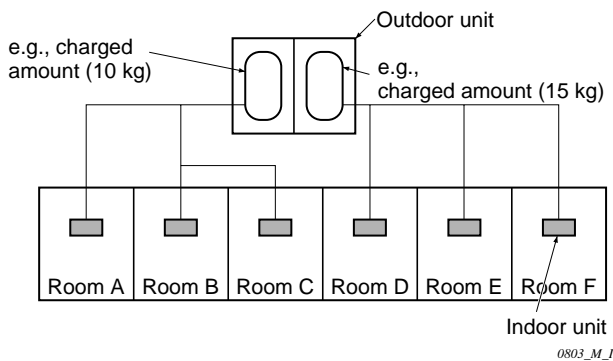
The density is as given below.

Total amount of refrigerant (kg)

Min. volume of the indoor unit installed room (m<sup>3</sup>)  
 $\leq$  Density limit (kg/m<sup>3</sup>)

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m<sup>3</sup> (ISO 5149).

**NOTE 1** : If there are 2 or more refrigerating systems in a single refrigerating device, the amount of refrigerant should be as charged in each independent device.



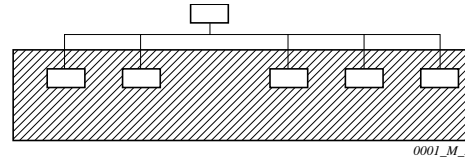
For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.

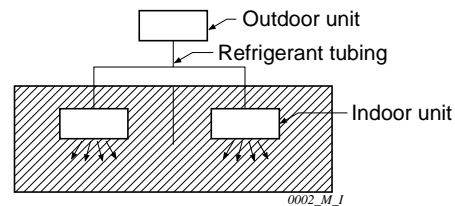
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

**NOTE 2** : The standards for minimum room volume are as follows.

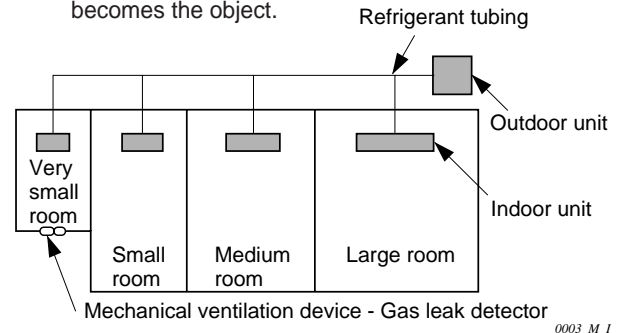
(1) No partition (shaded portion)



(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).

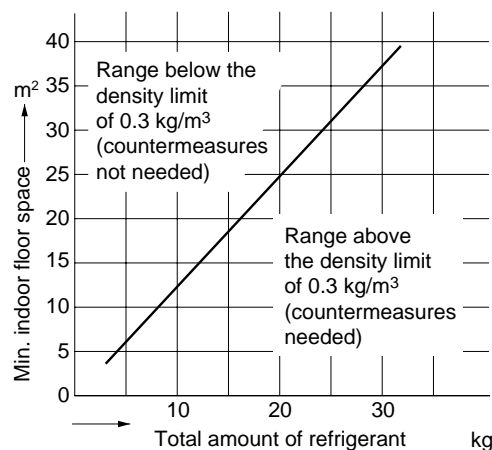


(3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



**NOTE 3** :

The minimum indoor floor space compared with the amount of refrigerant is roughly as follows:  
 (When the ceiling is 2.7 m high)



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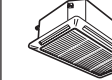

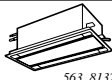
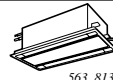
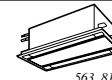
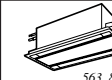
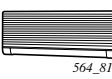
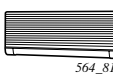
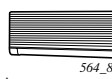
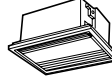
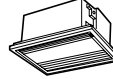
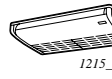
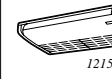

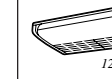
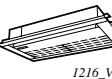
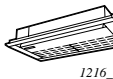
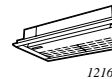

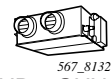
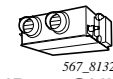
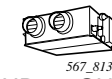
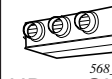
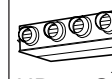
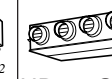
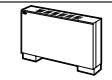
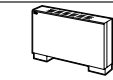
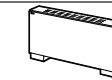
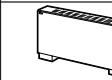


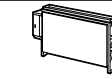
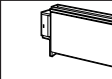
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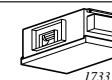
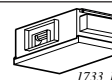
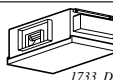
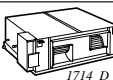
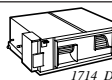
# 1. Line Up (For R407C)

## Indoor units

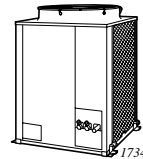
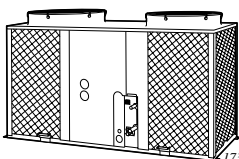
Type	9	12	18	25	36	48
Capacity: kW (BTU/h) Cooling / Heating	2.8 (9,600) / 3.2 (11,000)	3.6 (12,000) / 4.2 (14,000)	5.6 (19,000) / 6.3 (21,000)	7.3 (25,000) / 8.0 (27,000)	10.6 (36,000) / 11.4 (39,000)	14.0 (47,800) / 16.0 (54,600)
4-Way Air Discharge Semi-Concealed Type		 566_8132 XR123GH56	 566_8132 XR183GH56	 566_8132 XR253GH56	 729_8132 XR363GH56	 729_8132 XR483GH56
2-Way Air Discharge Semi-Concealed Type	 563_8132 SR93GH56	 563_8132 SR123GH56	 563_8132 SR183GH56	 563_8132 SR253GH56		
Wall-Mounted Type	 564_8132 KR93GH56	 564_8132 KR123GH56	 564_8132 *KR183GH56			
1-Way Air Discharge Semi-Concealed Type & Ceiling-Mounted Type	 584_8132 ASR93GH56	 584_8132 ASR123GH56	 1215_V_I TR183GH56	 1215_V_I TR253GH56	 1215_V_I TR363GH56	 1215_V_I TR483GH56
1-Way Air Discharge Semi-Concealed- Slim Type (SL type)	 1216_V_I SLR93GH56	 1216_V_I SLR123GH56	 1216_V_I SLR183GH56	 1216_V_I SLR253GH56		
Concealed-Duct Type	 567_8132 UR93GHN56	 567_8132 UR123GHN56	 567_8132 UR183GHN56	 568_8132 UR253GHN56	 569_8132 UR363GHN56	 569_8132 UR483GHN56
Floor Standing Type (F type)	 0855_V_I FR93GH56	 0855_V_I FR123GH56	 0856_V_I FR183GH56	 0856_V_I **FR253GH56		
Concealed Floor Standing Type (FM type)	 0857_V_I FMR93GH56	 0857_V_I FMR123GH56	 0858_V_I FMR183GH56	 0858_V_I **FMR253GH56		

\* KR183GH: Cooling / Heating capacity is 5.0 (17,000) / 6.0 (20,000) : KW (BTU / h)

\*\* FR253GH, FMR253GH: Cooling / Heating capacity is 7.1 (24,000) / 8.0 (27,000) : KW (BTU / h)




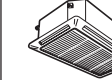

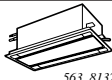
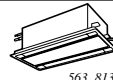
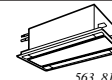
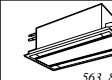
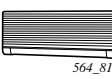
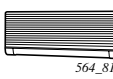
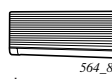
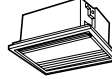
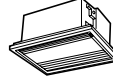
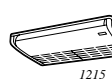


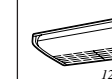
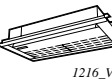
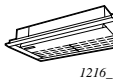
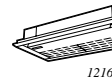

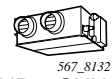
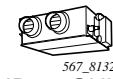
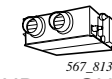
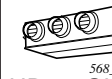
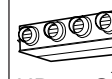
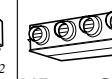
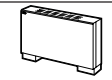
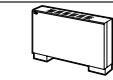
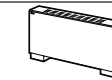
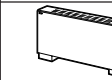


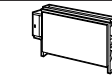
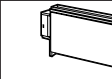
Type	25	36	48	76	96
Concealed-Duct High Static Pressure Type	 1733_D_I DR253GH56	 1733_D_I DR363GH56	 1733_D_I DR483GH56	 1714_D_I DR763GH56	 1714_D_I DR963GH56

## Outdoor units

Type	AD unit		PC unit	
	70	90	150	190
Capacity: kW (BTU/h) Cooling / Heating	22.4 (76,400) / 25.0 (85,300)	28.0 (95,500) / 31.5 (107,500)	45.0 (154,000) / 56.0 (171,000)	50.0 (191,000) / 63.0 (215,000)
Outdoor Unit	 1734_C_I CR703GDCH8		 1735_C_I CR1503GDYH8	
		CR903GDCH8	CR1903GDYH8	

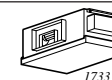
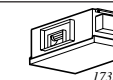
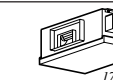
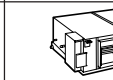
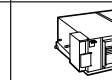
# 1. Line Up (For R22)

## Indoor units

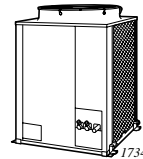
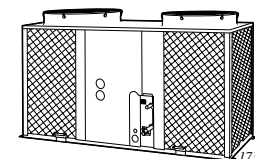
Type	9	12	18	25	36	48
Capacity: kW (BTU/h) Cooling / Heating	2.8 (9,600) / 3.2 (11,000)	3.6 (12,000) / 4.2 (14,000)	5.6 (19,000) / 6.3 (21,000)	7.3 (25,000) / 8.0 (27,000)	10.6 (36,000) / 11.4 (39,000)	14.0 (47,800) / 16.0 (54,600)
4-Way Air Discharge Semi-Concealed Type		 566_8132 X123GH56	 566_8132 X183GH56	 566_8132 X253GH56	 729_8132 X363GH56	 729_8132 X483GH56
2-Way Air Discharge Semi-Concealed Type	 563_8132 S93GH56	 563_8132 S123GH56	 563_8132 S183GH56	 563_8132 S253GH56		
Wall-Mounted Type	 564_8132 K93GH56	 564_8132 K123GH56	 564_8132 *K183GH56			
1-Way Air Discharge Semi-Concealed Type & Ceiling-Mounted Type	 584_8132 AS93GH56	 584_8132 AS123GH56	 1215_V_I TR183GH56	 1215_V_I TR253GH56	 1215_V_I TR363GH56	 1215_V_I TR483GH56
1-Way Air Discharge Semi-Concealed- Slim Type (SL type)	 1216_V_I SLR93GH56	 1216_V_I SLR123GH56	 1216_V_I SLR183GH56	 1216_V_I SLR253GH56		
Concealed-Duct Type	 567_8132 UR93GHN56	 567_8132 UR123GHN56	 567_8132 UR183GHN56	 568_8132 UR253GHN56	 569_8132 UR363GHN56	 569_8132 UR483GHN56
Floor Standing Type (F type)	 0855_V_I F93GH56	 0855_V_I F123GH56	 0856_V_I F183GH56	 0856_V_I **F253GH56		
Concealed Floor Standing Type (FM type)	 0857_V_I FM93GH56	 0857_V_I FM123GH56	 0858_V_I FM183GH56	 0858_V_I **FM253GH56		

\* KR183GH: Cooling / Heating capacity is 5.0 (17,000) / 6.0 (20,000) : KW (BTU / h)

\*\* FR253GH, FMR253GH: Cooling / Heating capacity is 7.1 (24,000) / 8.0 (27,000) : KW (BTU / h)

Type	25	36	48	76	96
Concealed-Duct High Static Pressure Type	 1733_D_I D253GH56	 1733_D_I D363GH56	 1733_D_I D483GH56	 1714_D_I DR763GH56	 1714_D_I DR963GH56

## Outdoor units

Type	AD unit		PC unit	
	70	90	150	190
Capacity: kW (BTU/h) Cooling / Heating	22.4 (76,400) / 25.0 (85,300)	28.0 (95,500) / 31.5 (107,500)	45.0 (154,000) / 56.0 (171,000)	50.0 (191,000) / 63.0 (215,000)
Outdoor Unit	 1734_C_I C703GDCH8 C903GDCH8		 1735_C_I C1503GDYH8 C1903GDYH8	





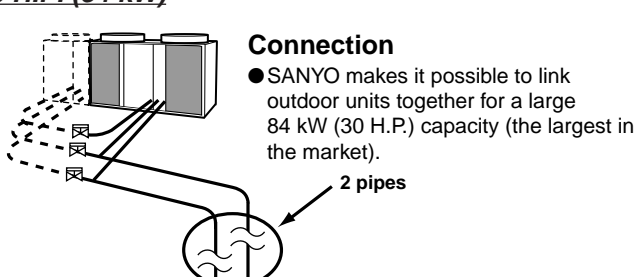
# 2. Features of W-ECO MULTI SYSTEM

## 2-1. Outline of system

W-ECO MULTI is capable of controlling the capacity by 1 H.P. up to 30 H.P. without inverter control.

### ■ W-ECO multi system

**Up to 30 H.P. (84 kW)**



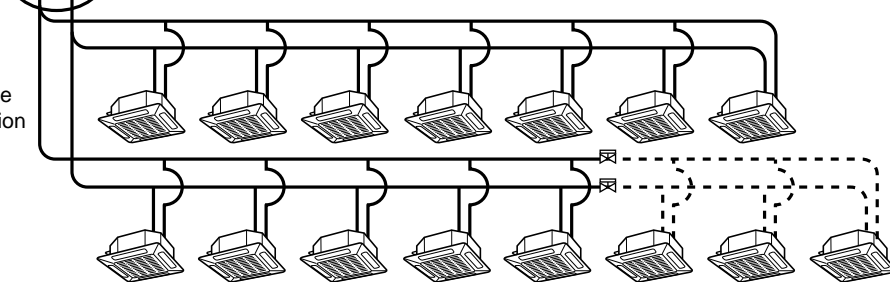
#### Connection

● SANYO makes it possible to link outdoor units together for a large 84 kW (30 H.P.) capacity (the largest in the market).

Limitation of system	
Allowable no. outdoor unit connected	2 units
Allowable max. capacity of outdoor unit	30 H.P. (84 kW)
Allowable No. of indoor unit connected	32 units
Indoor / outdoor unit capacity ratio	~ 130 %

#### Concentration

● Since all tubings are concentrated into one pipe shaft, you can minimize piping space and construction labor.



#### Addition

● If your indoor capacity load changes in the future, it's easy to add on both indoor and outdoor units using the same tubings.

### ■ Combination outdoor units

PC unit can be used independently or in combination with AD unit.

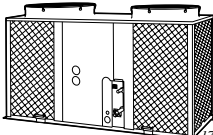
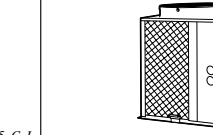
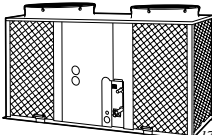
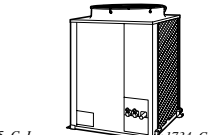
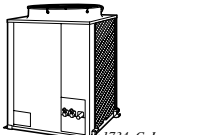



**CAUTION**

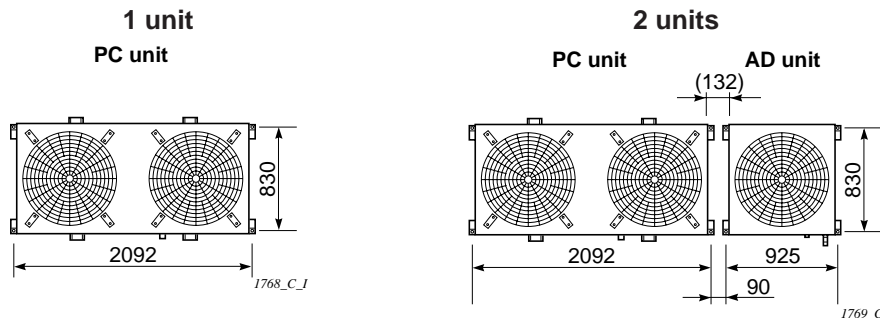
- AD (Additional) unit can not be used independently.
- R407C model and R22 model must not be used as a combination outdoor unit.

1754\_M\_J

#### Combination of outdoor units

No. of units to be combined	1 unit		2 units			
						
Cooling capacity kW (HP)	45 (16)	56 (20)	67.4 (24)	73 (26)	78.4 (28)	84 (30)
Power control outdoor unit (capacity control possible)	150 type	①	①	①		
	190 type		①		①	①
AD outdoor unit (capacity control not possible)	70 type		1		1	
	90 type			1		1

Design your outdoor unit however you want by combining power control units and AD units (up to 2 units) for a horsepower of up to 30 HP. And since you can set the unit capacity to match the indoor load, you can design your air conditioning system much more freely than before, as well as reduce your initial costs by designing the system just the way you want it.



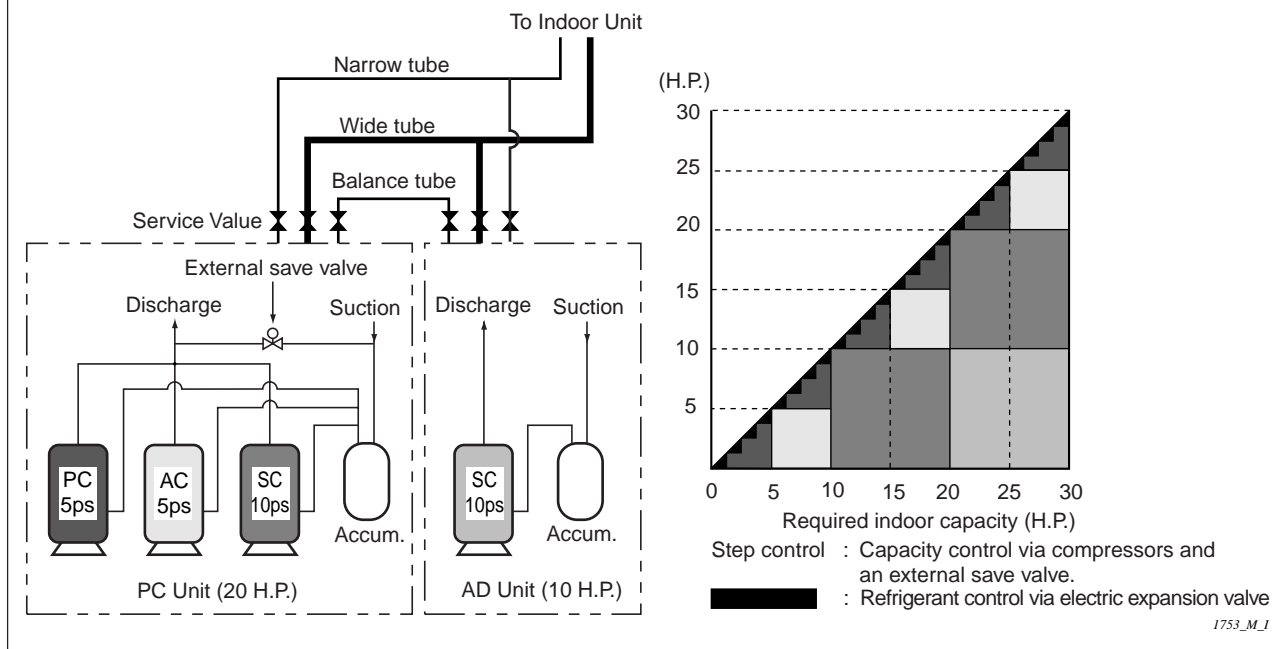
**NOTE**

\* When two outdoor units are used for one refrigerant circuit, be sure to use one PC unit and one AD unit, each.

## 2. Features of W-ECO MULTI SYSTEM

### ■ Capacity control

With a triple compressor organization (consisting of one PC compressor and two AC compressors), capacity control can be implemented by adding an external save valve.



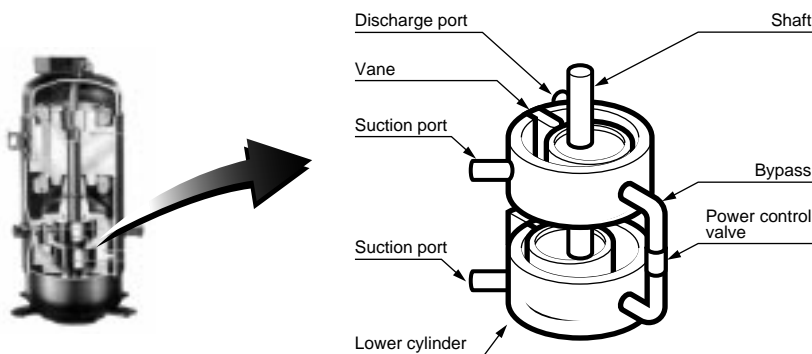
### ● Complying EMC standard

Instead of an inverter, the W-ECO MULTI system uses a power control compressor and an external save valve to control capacity. This results in reduced harmonic wave emissions.

### ● With the new power control compressor, now you can control output in 2.8 kW (1 HP) increments without inverter technology.

- Three-compressor structure features a power control compressor (PC comp.) and two standard constant speed compressors. The combination of these compressors and an external save valve makes it possible to realize compressor capacity control of 16 steps.

In addition, an electronic expansion valve on the indoor unit realizes even more precise control of refrigerant flow volume for better capacity control in accordance with load.



1767\_M\_1



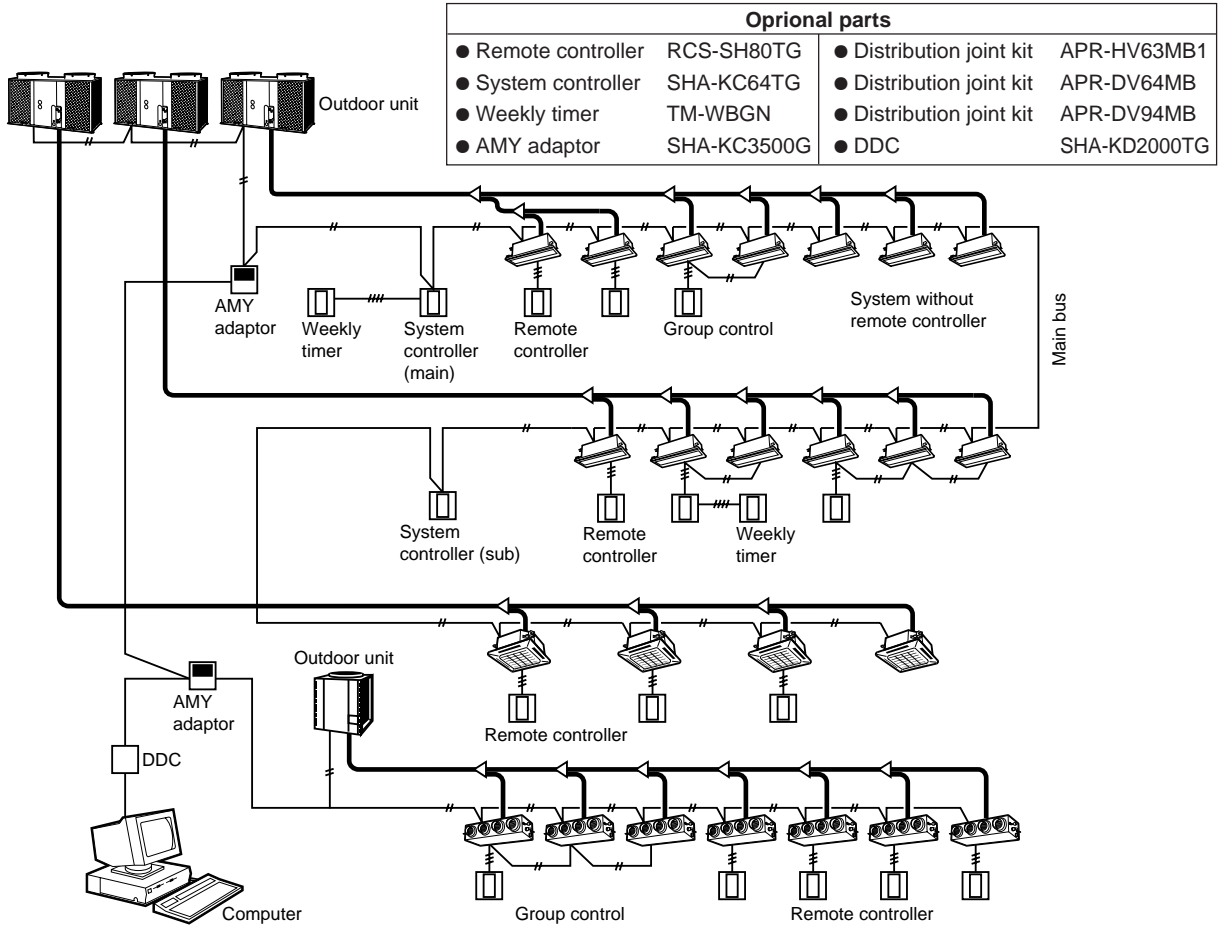
## 2. Features of W-ECO MULTI SYSTEM

### ■ Control system diagram

The indoor and outdoor units each have communications terminals that allow connection of as many as 94 units (Indoor unit : Max. 64+Outdoor unit : Max.30) to a single communications line (non-polar twin-line main bus).

- The main bus is twin-core and non-polar for easier wiring.
- Indoor unit settings are automated for easy installation.

**Note** A "bus" is a pathway for transmitting control signals.



1755\_K\_1

## 2. Features of W-ECO MULTI SYSTEM

### 2-2. Installation

#### ■ Compact size and Light weight outdoor unit

		150 Type	190 Type	70 Type	90 Type
Dimensions: H × W × D mm		1,318 × 2,050 × 883		1,318 × 883 × 883	
Net weight	Heat pump	498 kg	512 kg	246 kg	250 kg

#### ■ No Address switch

ECO series eliminate address switches in the indoor unit. So installers are free from troublesome setting work of address switch.

Manual setting with remote controller is also possible.

#### ■ Simple wiring

ECO series adopt innovative 2-wire signal transmission link system (S-Net).

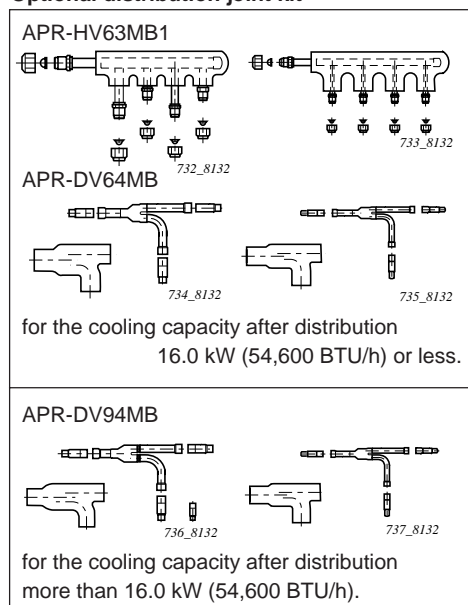
The control lines of inter-units are connected without reference to polarity.

Even more this system employs the Automatic Check Function for connection errors of inter unit wiring and piping.

#### ■ Distribution joint kit (option)

Distribution joint kit (optional) reduces the amount of work involved in installation and increases the reliability of the system.

##### Optional distribution joint kit



### 2-3. Control characteristics

#### ■ New control wiring system (S-net link system)

- It allows connection of as many as total of 94 units ( $64 \geq$  Indoor unit +  $30 \geq$  Outdoor unit) in a network with a single control line (non-polar twin-wire main bus).
- The main bus is twin-wire and non-polar for easier wiring.

##### NOTE

A "bus" is a pathway for transmitting control signals.

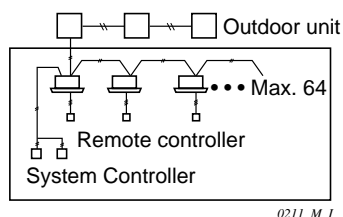
#### ■ Remote controller

- "Remote Controller" (option) with built in easy-to-see & easy-to-use large LCD
- System control functions come as standard
- Maximum up to 8 indoor units can be concurrently controlled with a remote controller. (Group control)
- One more remote controller can be installed at different place. Operation from another desired one becomes possible.

#### ■ System controller

- By using the System Controller (option) together with remote controllers, central control of maximum 64 indoor units becomes possible individually.

##### System Controller & Remote Controllers used concurrently



#### ■ Weekly timer

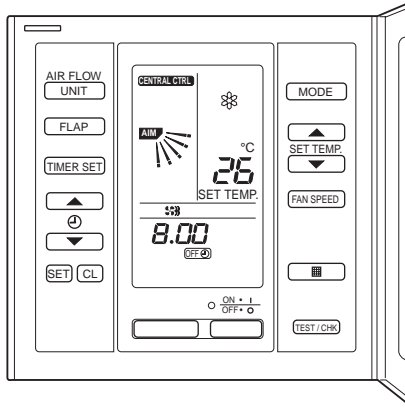
- A program covering 1 week for timer operation 3 times a day can be set, using the Weekly Timer (option). Weekly Timer can be connected with both Remote Controller and System Controller.

## 2. Features of W-ECO MULTI SYSTEM

### 2-4. Delicate control with large crystal display

#### ■ Remote controller (RCS-SH80TG)

: Option



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#### ■ Operating state appears on a large crystal display

#### ■ Automatic fan speed control

The fan speed is automatically switched over (Hi - Me - Lo) according to the difference in the room temperature and set temperature. Similarly while heating, the fan speed is changed (Hi - Me - Lo) so as not to lower the hot blast temperature.

#### ■ ON / OFF Timer

ON / OFF timer can be set to 0.5 hour gradations. (Max. 72 hours)

#### ■ Automatic restart function after power failure

Even when power failure occurs, preset programmed operation can be reactivated once power is resumed.

#### ■ Filter sign

Filter sign informs you the time of maintenance.

2500 hrs: X, T, S, SL type  
150 hrs: AS, K, F, FM type

#### ■ “Personal” comfortable air flow

#### ● Comfortable auto flap control

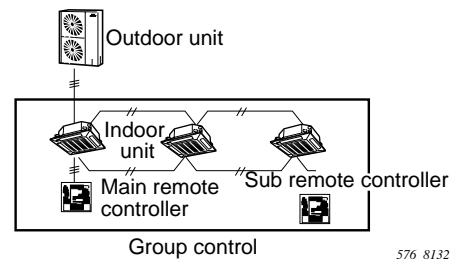
- The flap is automatically positioned moving it upward / downward, at the time of switching over between cooling, and heating.
- The flap can be set at desired position with the fan aim setting button (heating, fan : 5 steps; cooling : 3 steps).
- Flap position is kept memorized (at the time of manual setting).

#### ■ Group control of up to 8 units

#### ● Up to 8 indoor units controlled with a remote controller

The remote controller is suitable for air-conditioning a large room with multiple air-conditioners.

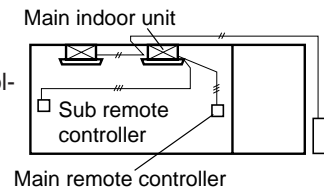
- \* Flap setting is also done concurrently.



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#### ● Control with main / sub remote controllers

Maximum up to 2 remote controllers (1 main remote controller + 1 sub remote controller) can be installed per unit.



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- \* Timer setting cannot be done with sub remote controller.
- \* Connect the remote controllers to the main unit.

#### ■ Service check

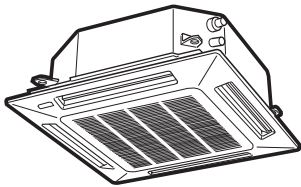
The alarms generated in the past are kept memorized, and can be checked on the LCD. This simplifies diagnosis, and the servicing work is drastically alleviated.

## 3. Outline of Indoor Unit

### 3-1. 4-Way air discharge semi-concealed type

XR123GH, XR183GH, XR253GH,  
XR363GH, XR483GH  
X123GH, X183GH, X253GH,  
X363GH, X483GH

The 4-way air flow makes it comfortable right up to every corner. Excelling in quietness and needing no special installation space, it suits all the requirements of office, stores, etc.



12, 18, 25 Type

578\_8132

#### ■ Drain pump is adapted

Drain-up pump is built in to the unit to raise the drain pipe from the ceiling to 50 cm high.

#### ■ Long-life filter

Long-life maintenance-free filter good for approximately 2,500 hours, is standard equipment.

Even more, filter sign of remote controller indicates the time of maintenance.

Furthermore anti-mold treatment is done for Long-life filter, flap and drain-pan.

#### ■ Light-weight unit and decorative panel

Type	12	18	25	36	48
Weight (kg)	29	29	30	38	38

#### ■ Air-intake chamber (Option)

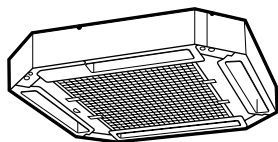
When used to take in fresh air, attach the air-intake chamber to the unit.

Air-intake chamber is optionally provided.

CMB-GSJ80T for 12, 18, 25 type

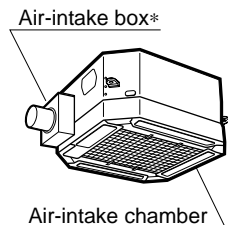
CMB-GSJ140T for 36, 48 type

\* Air-intake box is supplied with air-intake chamber.



1270\_X\_1

Filter chamber incorporating a high-performance filter.



1271\_X\_1

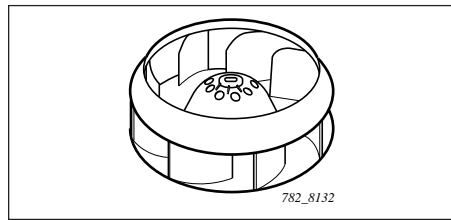
#### ■ Whisper-quiet operation

The noise level of Type 12, 18, 25 has reduced to 37 dB (A) in the "Hi" mode and 31 dB (A) in the "Lo" mode. Thanks to the newly developed turbo fan and decreased air path resistance, one of the trade's lowest levels of noise has been realized.

#### Noise values

Type	12, 18	25	36, 48
Hi / Me / Lo (dB-A)	37 / 35 / 30	37 / 35 / 31	43 / 40 / 36

#### Turbo Fan



782\_8132

#### ■ High performance filter (Option)

High performance filter 65%, 90% is available optionally.

	12, 18, 25 type	36, 48 type
* High performance filter 65%	AFT-MSJ80T	AFT-MSJ140T
* High performance filter 90%	AFT-HSJ80T	AFT-HSJ140T

#### NOTE

\* If installing a high performance filter, a filter chamber (Option) is required.

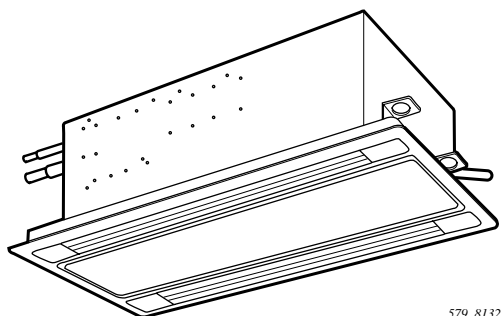
CMB-GSJ80T for 12, 18, 25 type

CMB-GSJ140T for 36, 48 type

### 3. Outline of Indoor Unit

#### 3-2. 2-Way air discharge semi-concealed type

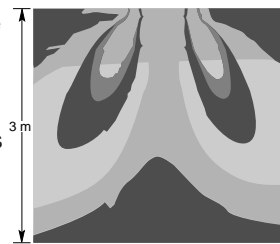
SR93GH, SR123GH, SR183GH, SR253GH  
S93GH, S123GH, S183GH, S253GH



579\_8132

#### ■ Ideal air stream realized for both heating and cooling.

Comes with auto flap feature as standard. When the fan speed becomes Lo at the time of heating, the auto flap adjusts the area of blow port and retains the fan speed at the same level as at the time of Hi, keeping the whole room warm. What's more, it comes with an auto swing feature which further widens the air stream, automatically setting the flap at ideal angle at the time of both heating and cooling.



783\_8132

#### ■ New design creating a high grade sense

The exposed portion of ceiling panel designed to be a slim 5 mm thick.

#### ■ Long life filter comes as standard

Same specification as 4-way air discharge semiconcealed type.

#### ■ Build-in drain pump

#### ■ Whisper-quiet operation

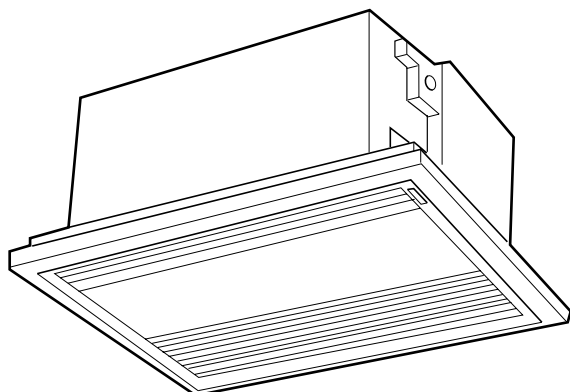
Noise values dB(A)

Type	9	12	18	25
Hi / Me / Lo	32 / 30 / 25	33 / 30 / 26	34 / 31 / 27	37 / 35 / 30

#### ■ Fresh air intake ø125 is provided.

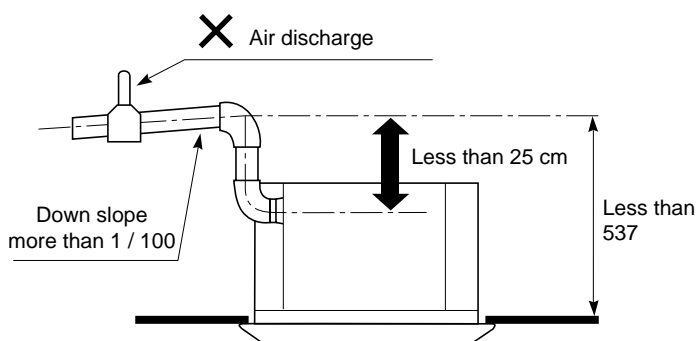
#### 3-3. 1-Way air discharge semi-concealed type

ASR93GH, ASR123GH  
AS93GH, AS123GH



580\_8132

#### ■ Built-in drain pump



581\_8132

#### ■ Fresh air intake ø125 is provided.

#### ■ Quiet design

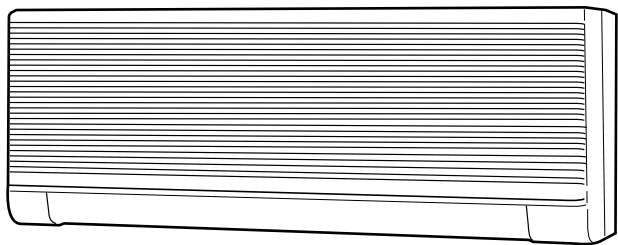
Noise values dB(A)

Type	9	12
Hi / Me / Lo	34 / 32 / 30	38 / 35 / 31

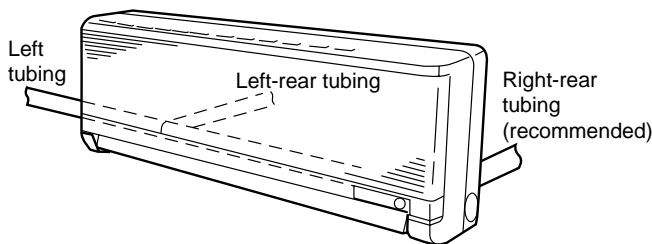
### 3. Outline of Indoor Unit

#### 3-4. Wall-mounted type

KR93GH, KR123GH, KR183GH  
K93GH, K123GH, K183GH



582\_8132

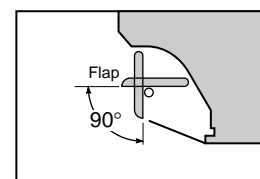


1273\_K\_1

- Sophisticated Color and Round Surface Design
- Simple installation work
- 3-way tubing possible

#### ● Air sweep function

The air sweep function moves the flap up and down in the air outlet, directing air in a "sweeping" motion around the room and providing comfort in every corner.



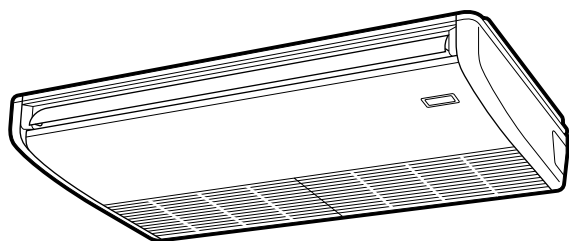
1274\_K\_1

#### IMPORTANT

When indoor units are installed in a calm place where low noise is required such as hotel rooms, bed rooms or VIP rooms and so on, noise from Electronic Expansion Valve controlling refrigerant flow may be offensive to the ear during cooling and heating operation. In order to prevent the noise, please install optional External Electronic Expansion Valve Kit (ATK-SVK80TG/SVK140TG) at narrow tube 5 to 15 m away from indoor unit.

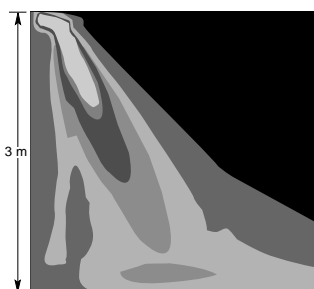
#### 3-5. Ceiling-mounted type

TR183GH, TR253GH, TR363GH, TR483GH



1272\_T\_1

- Ideal air flow realized for both heating and cooling. Auto flap feature comes as standard.



784\_8132

The air flow direction is automatically set for both cooling and heating. While heating with Lo speed, the blowout angle is directed downward so as to warm up the feet. The blowout angle is adjusted in 5 stages from 4 degrees upward to 80 degrees downward. In addition, there is the auto swing feature to further widen the air stream.

- Whisper-quiet operation

#### Noise values

Type	18	25	36	48
Hi / Me / Lo	36 / 33 / 30	39 / 37 / 34	42 / 40 / 35	44 / 41 / 37

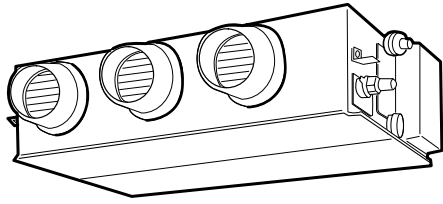




### 3. Outline of Indoor Units

#### 3-6. Concealed-duct type New

UR93GHN, UR123GHN, UR183GHN,  
UR253GHN, UR363GHN, UR483GHN



0179\_U\_1

- Built-in drain pump
- Whisper-quiet operation

Noise values dB(A)

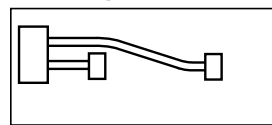
Type	9	12	18	25	36	48
Hi / Me / Lo	29 / 26 / 22	29 / 26 / 22	30 / 28 / 25	34 / 30 / 27	38 / 33 / 31	40 / 37 / 33

- Fresh air intake  $\varnothing 150$  is provided.

#### ● Built-in drain pump

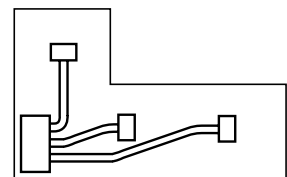
One of the major features of the new concealed-duct type air-conditioner is that air flow outlets can be arranged individually using circular flexible ducts. This more efficient air flow creates a more balanced air conditioning. Moreover, since the indoor unit is installed behind the ceiling, the new concealed-duct model saves space. As you see, it will adapt to any rectangular or L-shaped room, for example, simply by arranging the air outlets. The flexible outlets do not interfere with the room lighting, but square ducts may be substituted for flexible ones, of course. There is also an inlet for bringing in fresh air from outdoors.

#### a) Rectangular Room



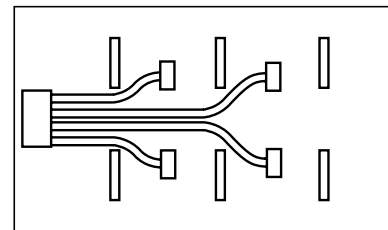
586\_8132

#### b) L-Shape's Room



587\_8132

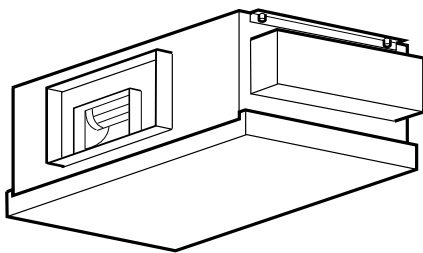
#### c) Large Room



588\_8132

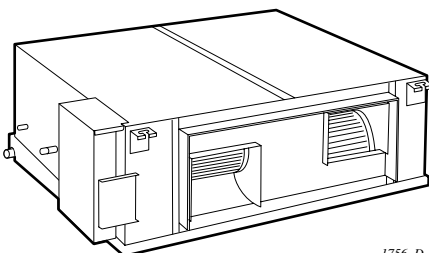
#### 3-7. Concealed-duct high static pressure type

DR253GH, DR363GH, DR483GH  
D253GH, D363GH, D483GH



738\_8132

DR763GH, DR963GH



1756\_D\_1

- High static pressure type suitable to a real duct design

- Realized the high static pressure with the external static pressure of more than 147 Pa (15 mm Aq)

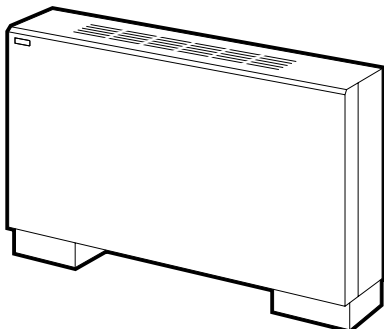
Enables a more highly-advanced design to conform to the interior of the room, because the shape of the air flow outlet such breeze line is freely selected.

- The external static pressure of more than 176 Pa (18 mm Aq) : 76 Type, 216 Pa (22 mm Aq) : 96 Type.

### 3. Outline of Indoor Units

#### 3-8. Floor-standing type (F Type)

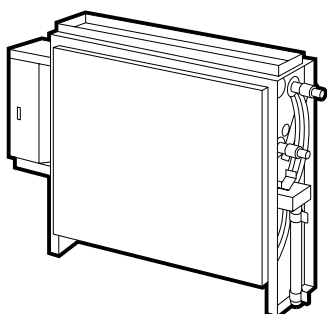
FR93GH, FR123GH  
FR183GH, FR253GH  
F93GH, F123GH  
F183GH, F253GH



0865\_F\_1

#### 3-9. Concealed floor-standing type (FM Type)

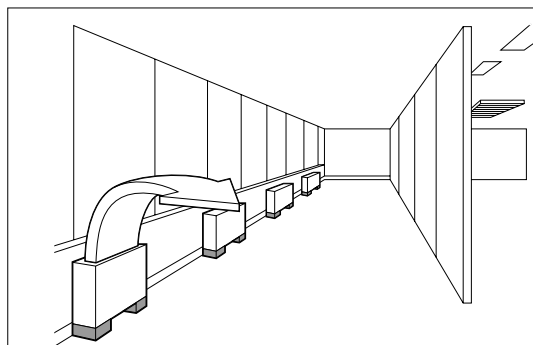
FMR93GH, FMR123GH  
FMR183GH, FMR253GH  
FM93GH, FM123GH  
FM183GH, FM253GH



0866\_FM\_1

#### Flat appearance and easy to maintain.

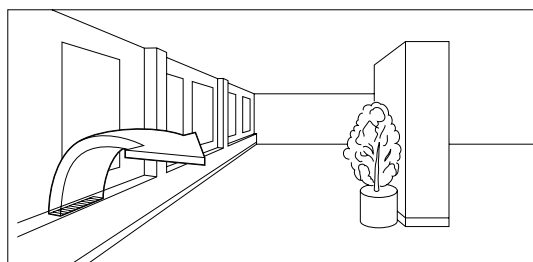
- Front panel opens fully for easier maintainance.
- Removable air discharge grille allows changing air flow direction.
- Pipes installable from either side of the indoor unit (left or right).



1275\_X\_1

#### A slim design with depth just 229 mm allows easy installation in various locations such as perimeter zones.

- Front panel opens for easier maintainance from the front.
- Pipes can be installed from either side of the indoor unit (Left or right).



1276\_X\_1

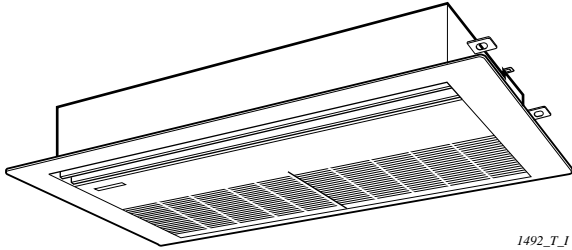
#### IMPORTANT

When indoor units are installed in a calm place where low noise is required such as hotel rooms, bed rooms or VIP rooms and so on, noise from Electronic Expansion Valve controlling refrigerant flow may be offensive to the ear during cooling and heating operation. In order to prevent the noise, please install optional External Electronic Expansion Valve Kit (ATK-SVK80TG/SVK140TG) at narrow tube 5 to 15 m away from indoor unit.

### 3. Outline of Indoor Units

#### 3-10. 1-Way air discharge semi-concealed slim type

SLR93GH, SLR123GH  
SLR183GH, SLR253GH



1492\_T\_1

#### Super-slim 19.8 cm design

- With an embedded area of just 19.8 cm, it is ideal for installation in areas with limited space. Plus, the ceiling panel is just 1.5 cm deep, so it doesn't impose on the interior design of the room.

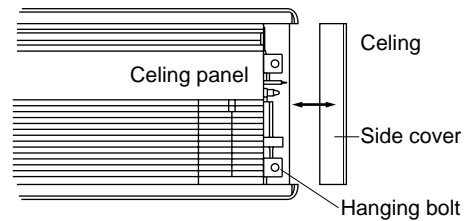
#### Auto-flap system and long-life filter

- The ceiling panel features an auto-flap system that automatically sets the perfect flap angle to match the cooling or heating operation. And with the long-life filter, you don't need to worry about maintenance for the first 2,500 hours.
- Built-in high performance drain pump.

#### Installation

##### ● Easy Installation and Maintenance

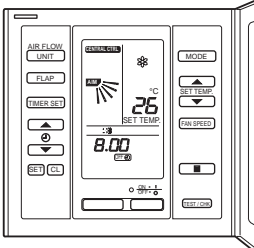
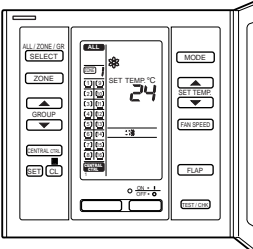
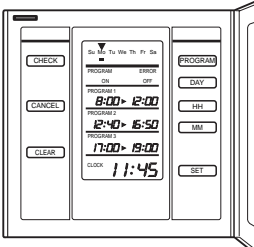
Unit position can be adjusted by simply detaching the side covers of the ceiling panel, so there's no need to dismantle the entire panel.



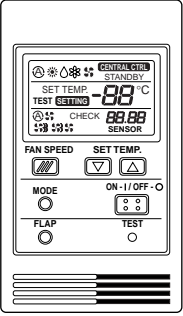
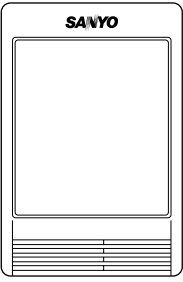

1493\_T\_1

## 4. Example of W-ECO MULTI SYSTEM

### 4-1. List of controllers

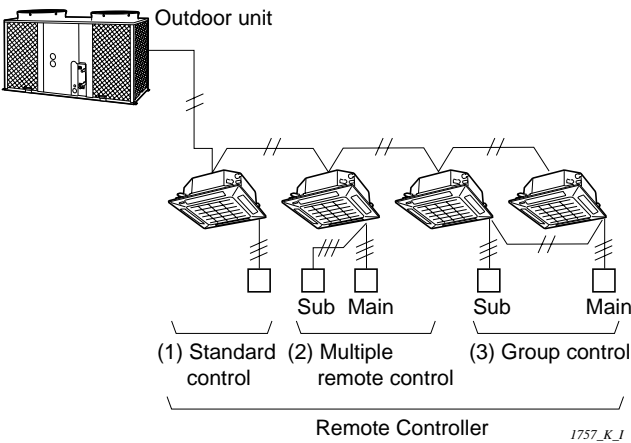
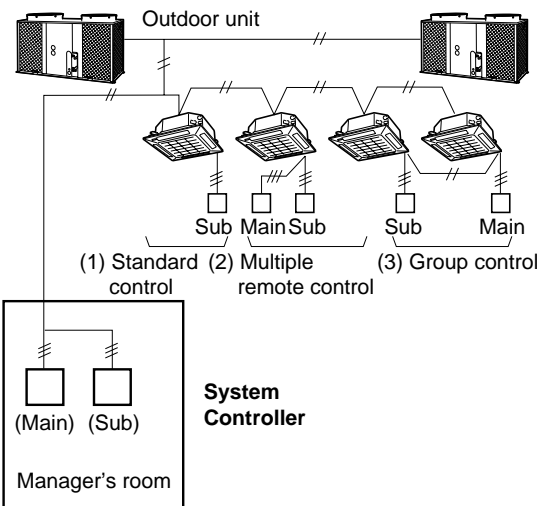
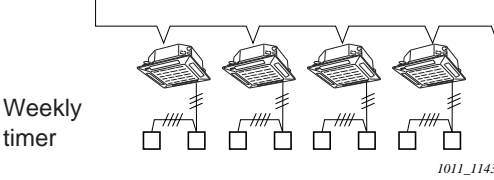
Name	Features	Ref. page
<p>Remote Controller RCS-SH80TG</p>  <p>593_8132</p>	<ul style="list-style-type: none"> <li>① Group (collective) control of maximum up to 8 indoor units with a remote controller is possible.</li> <li>② Control with multiple remote controls (main / sub) is possible. (Max. 2)</li> <li>③ Operating state appears on a large crystal display, and service check functions are also provided.</li> <li>④ Comes with 72-hour ON / OFF timer.</li> </ul>	III-6~
<p>System Controller SHA-KC64TG</p>  <p>739_8132</p>	<ul style="list-style-type: none"> <li>① Used in combination with remote controllers, the system controller can control up to 64 groups of indoor units. (Max. 64 indoor units).</li> <li>② Separating the 64 indoor units into 4 zones, each zone can be controlled individually.</li> <li>③ Maximum up to 16 groups (indoor units) can be registered to each zone.</li> <li>④ Collective control and individual group (unit) control can be performed also.</li> <li>⑤ Remote controllerless system is also possible.</li> <li>⑥ Up to 2 system controllers (1 main , 1 sub) can be installed in a system.</li> <li>⑦ Alarm and operation output for an external collected signal is available (potential free contact).</li> <li>⑧ Power supply: AC 220 - 240 V.</li> </ul>	III-31~
<p>Weekly Timer TM-WBGN</p>  <p>594_8132</p>	<ul style="list-style-type: none"> <li>① Program covering a week, in which the operation can be stopped 3 times per day, can be set. * In case of power failure, the timer stores recorded programs for up to 100 hours.</li> <li>② Temporary cancellation with cancel button is also possible.</li> <li>③ Can be used concurrently with standard remote controller, unit controller, and system controller.</li> </ul>	III-51~

## 4. Example of W-ECO MULTI SYSTEM

Name	Features	Ref. page
<p>Simplified Remote Controller RCS-KR1T</p>  <p>1494_T_I</p>	<ol style="list-style-type: none"> <li>① This easy-to-operate, multifunction remote controller is ideal for use in hotels and large facilities not requiring precise temperature control.</li> <li>② Basic functions include Start/Stop, Mode selection, Temperature and Fan Speed/Airflow settings.</li> <li>③ Automatic Reset function for power failure</li> <li>④ Group control of up to 8 indoor units with a remote controller is possible.</li> <li>⑤ The RCS-KR1T can be mounted on or embedded flush with the wall.</li> <li>⑥ The remote controller may also be installed flush with the surface of a night table. However, in the case the unit's built-in thermostat will not function.</li> <li>⑦ This controller's also features an alarm, self-diagnosing, remote-controlled thermostat (for wall-mounted models), and main/ sub operation.</li> <li>⑧ The RCS-KR1T cannot be connected with a Weekly Timer.</li> </ol>	III-62~
<p>Remote Sensor ART-K41T</p>  <p>1495_T_I</p>	<ol style="list-style-type: none"> <li>① A remote sensor applicable to air-conditioning units.</li> <li>② This sensor can detect room temperatures without the use of a body sensor (Recommended for air-conditioning systems not equipped with remote control).</li> </ol>	III-68~
<p>AMY adaptor SHA-KC3500G D.D.C. SHA-KD2000TG</p>  <p>1783_M_I</p>	<ol style="list-style-type: none"> <li>① Used in combination with 32 × Amy adaptors, Direct Digital Controller can directly connect to BMS for up to Max. 2048 (64 × 32) indoor units and Max. 960 (30 × 32) outdoor units.</li> <li>② The controller makes it possible to use a large-scale intelligent building control system.</li> <li>③ Capable of handling input/output operation data for indoor units' central control, status monitoring, and electricity bill rate for each tenant.</li> <li>④ When connecting with BMS, the user should make sure that computer software is in compliance with the communication protocol specification of DDC.</li> </ol>	III-70~

## 4. Example of W-ECO MULTI SYSTEM

### 4-2. Example of control system

	Control method	Contents of control	Controller
Control with remote controller	(1) Standard control (2) Multiple remote control (3) Group control	(1) Standard control ● The cooling / heating mode of outdoor unit is determined by the first-press priority of remote controller.	Remote controller RCS-SH80TG
	 <p>(1) Standard control (2) Multiple remote control (3) Group control</p> <p>Remote Controller 1757_K_1</p>	(2) Multiple remote control ● Up to 2 remote controller (1 main , 1 sub) can be installed for each unit. ● Control on a last-signal priority basis (Latter-press priority) (Sets the main / sub of remote controllers). ● Timer setting cannot be done with sub remote controller.	Remote controller RCS-SH80TG (Main) × 1 (Sub) × 1
		(3) Group control ● Collective remote control of all air-conditioners ● All indoor units operate in the same mode. ● Up to 8 units can be connected.	Remote controller RCS-SH80TG (Main) × 1 (Sub) × 1
Control with system controller	 <p>(1) Standard control (2) Multiple remote control (3) Group control</p> <p>System Controller (Main) (Sub) Manager's room 1758_K_1</p>	<ul style="list-style-type: none"> <li>● Can be used with remote controller to individually control up to 64 groups.</li> <li>● Operation with at-hand remote controller can be inhibited by making central control from the manager's room.</li> <li>● Up to 2 System Controllers (main 1, sub 1) can be installed.</li> <li>● The system can be constructed without connecting remote controller.</li> <li>● The airflow direction cannot be set with system controller, if a remote controller is connected.</li> </ul>	Remote controller (RCS-SH80TG)  System controller (SHA-KC64TG)
	Control with weekly timer	(3) Schedule control (collective schedule control) Weekly timer  <p>Weekly timer 1011_1143</p>	<ul style="list-style-type: none"> <li>● Connecting a weekly timer to the remote controller, a week's program, turning ON / OFF 3 times a day, can be set up.</li> <li>● Can be used concurrently with system controller also.</li> </ul>



# Contents

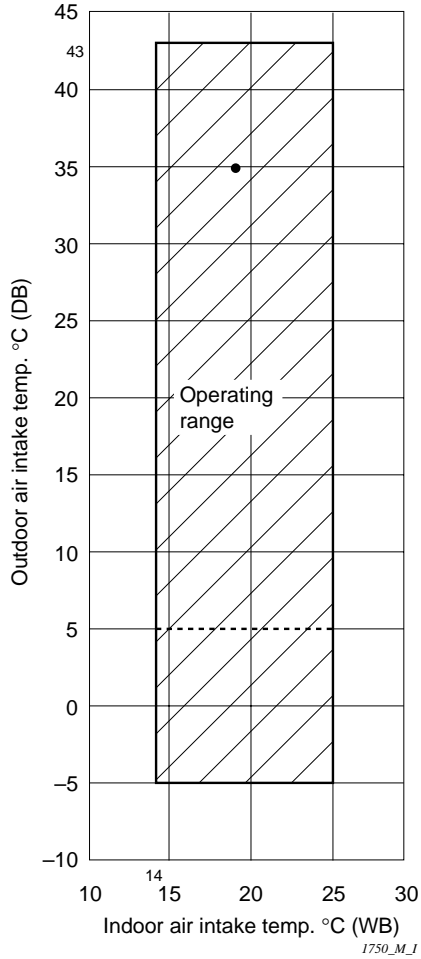
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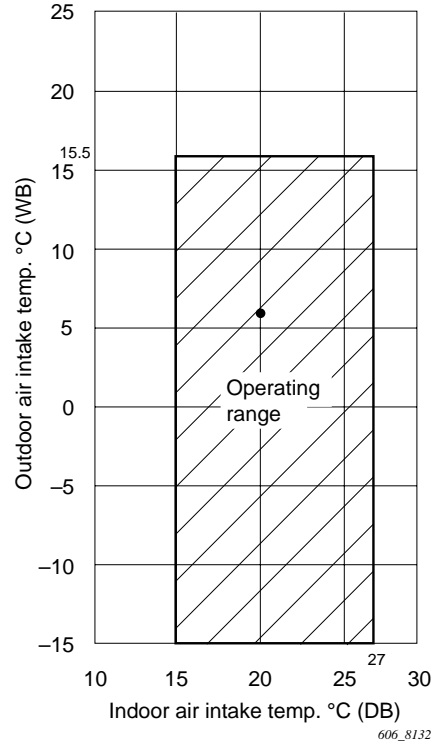
# 1. Model Selecting and Capacity Calculation

## 1-1. Operating range

Cooling



Heating



● : Rated conditions

Cooling operating range

**NOTE**

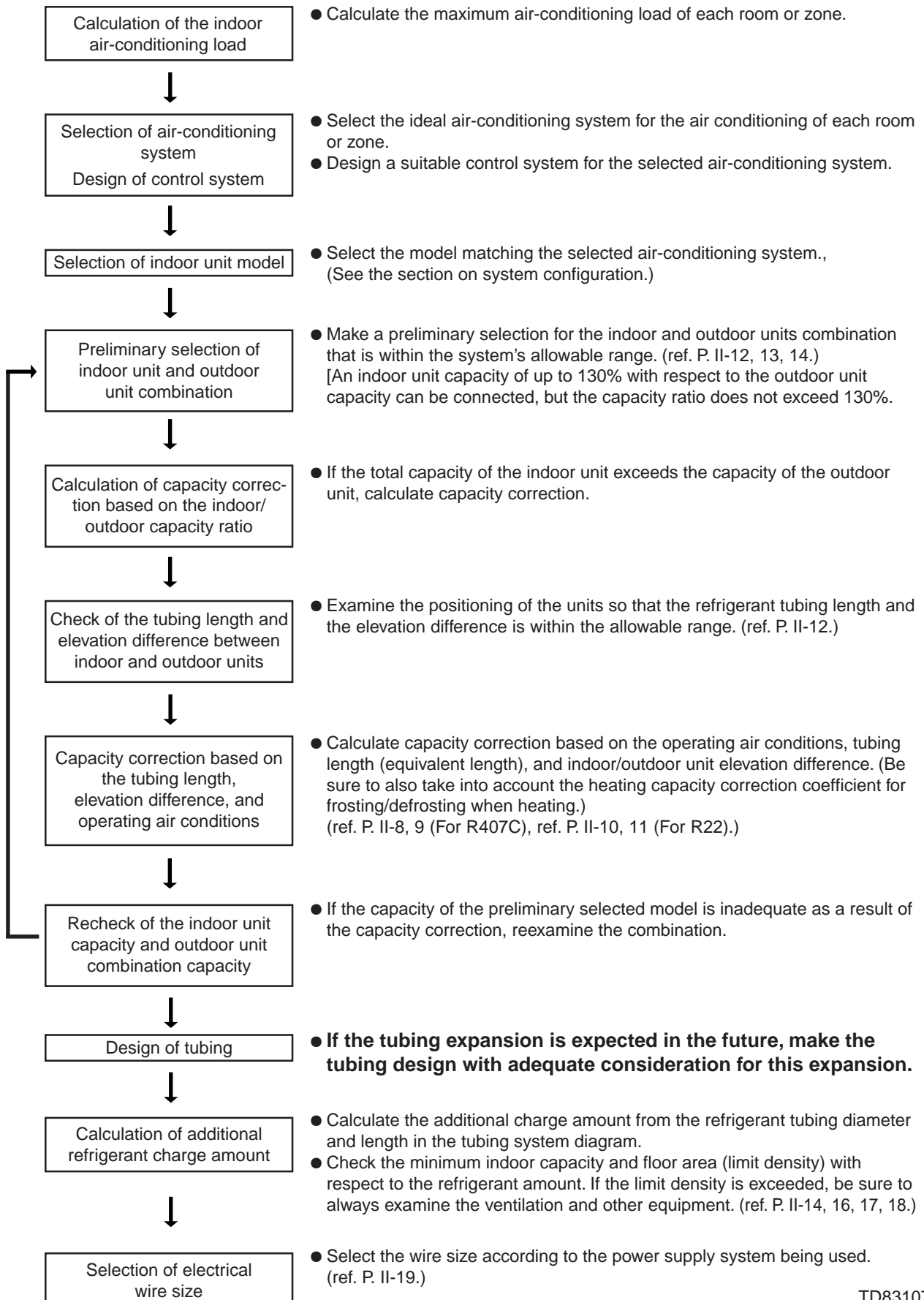
When combined with the AD unit, outdoor air intake temp for operating range is between 5°C and 43°C.



# 1. Model Selecting and Capacity Calculation

## 1-2. Procedure for selecting models and calculating capacity

Select the model and calculate the capacity by using the procedure below.



## 1. Model Selecting and Capacity Calculation

### 1-3. Calculation of actual capacity

Since the capacity of multi air-conditioner changes according to the temperature conditions, tubing length, elevation difference, etc. select the right model taking into account various correction values.

- The actual capacity of multi air-conditioner according to its installation conditions is given by the following expression.

#### <Cooling capacity>

$$\text{Cooling capacity of indoor unit} = \frac{(\text{Indoor unit corrected capacity by indoor / outdoor capacity ratio}) \times \text{① (P. II-6)}}{\text{② (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\frac{(\text{Capacity coefficient by indoor / outdoor temperature conditions}) \times \text{③ (P. II-9 (For R407C), II-11 (For R22))}}{\text{④ (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\frac{(\text{Capacity coefficient by tubing length})}{\text{④ (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\text{③ (P. II-9 (For R407C), II-11 (For R22))}$$

#### <Heating capacity>

$$\text{Heating capacity of indoor unit} = \frac{(\text{Indoor unit corrected capacity by indoor / outdoor capacity ratio}) \times \text{① (P. II-6)}}{\text{② (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\frac{(\text{Capacity coefficient by indoor / outdoor temperature conditions}) \times \text{③ (P. II-9 (For R407C), II-11 (For R22))}}{\text{④ (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\frac{(\text{Capacity coefficient by tubing length}) \times \text{③ (P. II-9 (For R407C), II-11 (For R22))}}{\text{④ (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\text{③ (P. II-9 (For R407C), II-11 (For R22))}$$

$$\frac{(\text{Capacity coefficient by frosting / defrosting})}{\text{④ (P. II-8 (For R407C), II-10 (For R22))}}$$

$$\text{④ (P. II-8 (For R407C), II-10 (For R22))}$$

- \* There is a respective characteristics chart on the page written below each correction item. Find out the respective correction values from various conditions.

- Capacity correction by indoor / outdoor capacity ratio of indoor unit : ①

The total capacity ratio of indoor unit as against the outdoor unit can be connected maximum up to 130 %.

If the usage time period changes, or in case of buildings where the generating time of maximum load changes, the capacity of outdoor unit can be reduced by selecting somewhat larger total capacity of the indoor units than that of the outdoor unit. Here, if the indoor/outdoor capacity ratio exceeds 100 %, the capacity of outdoor unit increases somewhat during concurrent operation, but the capacity of each indoor units decreases below the rated value.

The corrected capacity of indoor unit can be found out from the table of corrected capacities given on P. II-6, after calculating the indoor / outdoor capacity ratio with the following expression, separately for cooling and heating.

- Cooling :

$$\text{* Indoor / Outdoor unit capacity ratio} = \frac{(\text{Total cooling capacity of indoor units})}{(\text{Rated capacity of outdoor unit})} \times 100$$

- Heating :

$$\text{* Indoor / Outdoor unit capacity ratio} = \frac{(\text{Total cooling capacity of indoor units})}{(\text{Rated capacity of outdoor unit})} \times 100$$

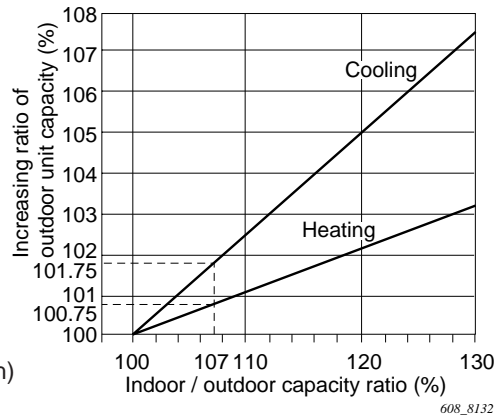
## 1. Model Selecting and Capacity Calculation

### ■ Outdoor unit capacity when the indoor / outdoor capacity ratio is in the range of 100 % to 130 %

The outdoor unit capacity, in case the indoor / outdoor capacity ratio is 100 % - 130 %, can be found out from the table of corrected capacities given the graph shown on the right.

Ex: When both the indoor / outdoor capacity ratios are 107 % as against the cooling capacity of 28.0 kW (95,500 BTU/h) and heating capacity of 31.5 kW (107,500 BTU/h) of the outdoor unit, the outdoor unit capacity is obtained from the graph on the right as follows.

- Corrected Cooling Capacity =  $1.0175 \times 28.0$  (95,500)  
 $\approx 28.49$  kW (97,170 BTU/h)
- Corrected Heating Capacity =  $1.0075 \times 31.5$  (107,500)  
 $\approx 31.74$  kW (108,310 BTU/h)



The corrected capacity of each indoor unit is found out from the ratio of the above given outdoor unit corrected capacity and the total capacity of indoor units.

$$\text{Corrected capacity of each indoor unit} = \text{Rated capacity} \times \frac{(\text{Outdoor unit corrected capacity})}{(\text{Total rated capacity of the indoor units of identical system})}$$

\* The results of above calculation are given on the table on next page (table of corrected capacities). The corrected capacities of indoor and outdoor units can be found out from the calculation of indoor / outdoor capacity ratio only.

### ■ Capacity correction by the temperature conditions of indoor / outdoor unit: ②

The capacity correction value (capacity coefficient ②) according to the temperature conditions of indoor / outdoor unit can be found out from the graph given on P. II-8, II-10.

### ■ Capacity correction by tubing length and elevation difference: ③

The capacity correction value (capacity coefficient ③) according to the tubing length and elevation difference can be found out from the graph given on P. II-9, II-11.

### ■ Heating capacity correction coefficient at the time of frosting / defrosting: ④

The above value (capacity correction coefficient ④) can be found out from the table given on P. II-8, II-10.

## 1. Model Selecting and Capacity Calculation

- Corrected capacity of indoor unit when Indoor / Outdoor unit capacity ratio is in the range of 100 to 130 %

Unit: kW

Unit type	Indoor Unit													
	9 type		12 type		18 (K) type		18 type (except K)		25 type		36 type		48 type	
	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
<b>100 %</b>	<b>2.8</b>	<b>3.2</b>	<b>3.6</b>	<b>4.2</b>	<b>5.0</b>	<b>6.0</b>	<b>5.6</b>	<b>6.3</b>	<b>7.3</b>	<b>8.0</b>	<b>10.6</b>	<b>11.4</b>	<b>14.0</b>	<b>16.0</b>
101	2.78	3.17	3.57	4.16	4.94	5.81	5.56	6.24	7.27	7.84	10.47	11.33	13.89	15.86
102	2.76	3.14	3.55	4.12	4.91	5.76	5.52	6.19	7.22	7.78	10.40	11.23	13.79	15.71
103	2.74	3.12	3.52	4.09	4.87	5.71	5.48	6.14	7.17	7.71	10.32	11.13	13.69	15.58
104	2.72	3.09	3.50	4.06	4.84	5.66	5.44	6.09	7.12	7.64	10.25	11.04	13.60	15.46
<b>105</b>	<b>2.70</b>	<b>3.06</b>	<b>3.47</b>	<b>4.02</b>	<b>4.80</b>	<b>5.61</b>	<b>5.40</b>	<b>6.03</b>	<b>7.08</b>	<b>7.58</b>	<b>10.17</b>	<b>10.94</b>	<b>13.50</b>	<b>15.31</b>
106	2.68	3.04	3.45	3.99	4.77	5.57	5.36	5.98	7.02	7.51	10.10	10.85	13.40	15.18
107	2.66	3.01	3.42	3.96	4.74	5.52	5.33	5.93	6.97	7.45	10.03	10.76	13.31	15.07
108	2.65	2.99	3.40	3.92	4.71	5.47	5.29	5.88	6.92	7.39	9.96	10.67	13.23	14.94
109	2.63	2.96	3.38	3.89	4.67	5.43	5.25	5.83	6.87	7.33	9.90	10.59	13.13	14.82
<b>110</b>	<b>2.61</b>	<b>2.94</b>	<b>3.36</b>	<b>3.86</b>	<b>4.64</b>	<b>5.39</b>	<b>5.22</b>	<b>5.79</b>	<b>6.83</b>	<b>7.27</b>	<b>9.83</b>	<b>10.50</b>	<b>13.05</b>	<b>14.70</b>
111	2.59	2.92	3.33	3.83	4.61	5.34	5.18	5.74	6.78	7.21	9.77	10.42	12.95	14.58
112	2.58	2.89	3.31	3.80	4.58	5.30	5.15	5.70	6.74	7.16	9.70	10.34	12.88	14.46
113	2.56	2.87	3.29	3.77	4.55	5.26	5.12	5.65	6.69	7.10	9.64	10.25	12.80	14.35
114	2.54	2.85	3.27	3.74	4.52	5.22	5.08	5.61	6.65	7.05	9.58	10.18	12.71	14.24
<b>115</b>	<b>2.53</b>	<b>2.83</b>	<b>3.25</b>	<b>3.71</b>	<b>4.50</b>	<b>5.18</b>	<b>5.05</b>	<b>5.57</b>	<b>6.61</b>	<b>6.99</b>	<b>9.52</b>	<b>10.10</b>	<b>12.64</b>	<b>14.14</b>
116	2.51	2.81	3.23	3.68	4.47	5.14	5.02	5.53	6.57	6.94	9.46	10.02	12.54	14.03
117	2.49	2.79	3.21	3.66	4.44	5.10	4.99	5.49	6.53	6.89	9.40	9.95	12.47	13.94
118	2.48	2.76	3.19	3.63	4.41	5.06	4.96	5.44	6.49	6.84	9.34	9.87	12.39	13.81
119	2.46	2.74	3.17	3.60	4.38	5.03	4.93	5.40	6.45	6.78	9.29	9.80	12.32	13.71
<b>120</b>	<b>2.45</b>	<b>2.72</b>	<b>3.15</b>	<b>3.57</b>	<b>4.36</b>	<b>4.99</b>	<b>4.90</b>	<b>5.36</b>	<b>6.41</b>	<b>6.74</b>	<b>9.23</b>	<b>9.73</b>	<b>12.25</b>	<b>13.62</b>
121	2.43	2.70	3.13	3.55	4.33	4.95	4.87	5.32	6.37	6.69	9.18	9.66	12.17	13.52
122	2.42	2.68	3.11	3.52	4.31	4.92	4.84	5.29	6.34	6.64	9.12	9.59	12.11	13.42
123	2.41	2.67	3.09	3.50	4.28	4.88	4.81	5.25	6.30	6.59	9.07	9.52	12.04	13.33
124	2.39	2.65	3.07	3.47	4.26	4.85	4.78	5.21	6.26	6.54	9.02	9.45	11.96	13.23
<b>125</b>	<b>2.38</b>	<b>2.63</b>	<b>3.06</b>	<b>3.45</b>	<b>4.24</b>	<b>4.82</b>	<b>4.76</b>	<b>5.17</b>	<b>6.23</b>	<b>6.50</b>	<b>8.97</b>	<b>9.39</b>	<b>11.90</b>	<b>13.14</b>
126	2.37	2.61	3.04	3.42	4.21	4.78	4.73	5.13	6.19	6.46	8.92	9.32	11.83	13.04
127	2.35	2.59	3.02	3.40	4.19	4.75	4.70	5.10	6.16	6.41	8.87	9.26	11.76	12.96
128	2.34	2.57	3.01	3.38	4.16	4.72	4.68	5.07	6.13	6.37	8.82	9.20	11.70	12.86
129	2.33	2.56	2.99	3.36	4.14	4.69	4.65	5.03	6.09	6.32	8.77	9.14	11.63	12.78
<b>130</b>	<b>2.32</b>	<b>2.54</b>	<b>2.98</b>	<b>3.33</b>	<b>4.12</b>	<b>4.65</b>	<b>4.63</b>	<b>5.00</b>	<b>6.06</b>	<b>6.28</b>	<b>8.73</b>	<b>9.07</b>	<b>11.58</b>	<b>12.70</b>

## 1. Model Selecting and Capacity Calculation

- Corrected capacity of outdoor unit when Indoor / Outdoor unit capacity ratio is in the range of 100 to 130 %

### PC units

Indoor / Outdoor unit capacity ratio	150 type		190 type	
	Capacity kW		Capacity kW	
	Cooling	Heating	Cooling	Heating
100 %	45.0	50.0	56.0	63.0
105 %	45.6	50.3	56.7	63.3
110 %	46.1	50.6	57.4	63.7
115 %	46.7	50.8	58.1	64.0
120 %	47.3	51.1	58.8	64.4
125 %	47.8	51.4	59.5	64.7
130 %	48.4	51.7	60.2	65.1

### AD units

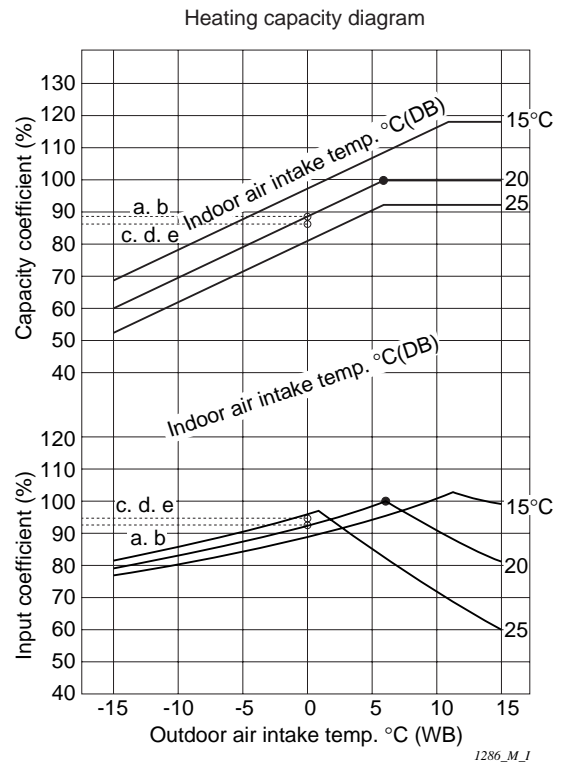
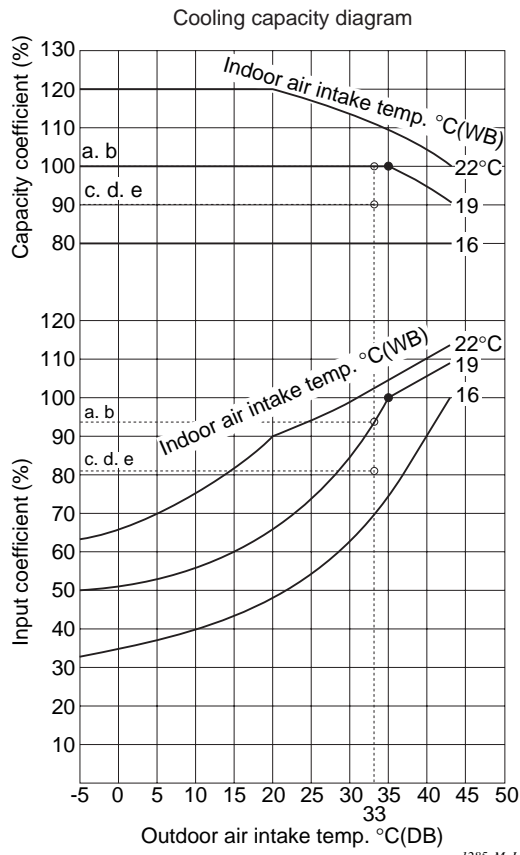
Indoor / Outdoor unit capacity ratio	70 type		90 type	
	Capacity kW		Capacity kW	
	Cooling	Heating	Cooling	Heating
100 %	22.4	25.0	28.0	31.5
105 %	22.7	25.1	28.4	31.7
110 %	23.0	25.3	28.7	31.8
115 %	23.2	25.4	29.1	32.0
120 %	23.5	25.6	29.4	32.2
125 %	23.8	25.7	29.8	32.4
130 %	24.1	25.8	30.1	32.5

### Combinations of outdoor units

Total cooling capacity kW (HP)		67.4 (24)		73 (26)		78.4 (28)		84 (30)	
Unit		150 type	70 type	150 type	90 type	190 type	70 type	190 type	90 type
100 %	Cooling	67.4		73.0		78.4		84.0	
	Heating	75.0		81.5		88.0		94.5	
105 %	Cooling	68.2		73.9		79.4		85.1	
	Heating	75.4		81.9		88.5		95.0	
110 %	Cooling	69.1		74.8		80.4		86.1	
	Heating	75.8		82.4		89.0		95.5	
115 %	Cooling	69.9		75.7		81.3		87.2	
	Heating	76.2		82.8		89.5		96.1	
120%	Cooling	70.8		76.7		82.3		88.2	
	Heating	76.7		83.3		89.9		96.6	
125 %	Cooling	71.6		77.6		83.3		89.3	
	Heating	77.1		83.7		90.4		97.1	
130 %	Cooling	72.5		78.5		84.3		90.3	
	Heating	77.5		84.2		90.9		97.6	

# 1. Model Selecting and Capacity Calculation

## 1-4. Capacity correction graph according to temperature condition (For R407C)



Rating value: Cooling

Model	Cooling capacity :kW (Btu/h)	Input: kW 380 - 400 - 415 V
70 type	22.4 ( 76,400)	9.46 - 9.52 - 9.58
90 type	28.0 ( 95,500)	11.3 - 11.4 - 11.5
150 type	45.0 (154,000)	17.6 - 17.7 - 17.8
190 type	56.0 (191,000)	21.9 - 22.1 - 22.3

Rating value: Heating

Model	Heating capacity :kW (Btu/h)	Input: kW 380 - 400 - 415 V
70 type	25.0 ( 85,300)	9.08 - 9.12 - 9.17
90 type	31.5 (107,500)	10.6 - 10.8 - 11.0
150 type	50.0 (171,000)	16.9 - 17.0 - 17.2
190 type	63.0 (215,000)	20.6 - 21.0 - 21.4

### ● Heating capacity correction coefficient at the time of frosting / defrosting (For R407C)

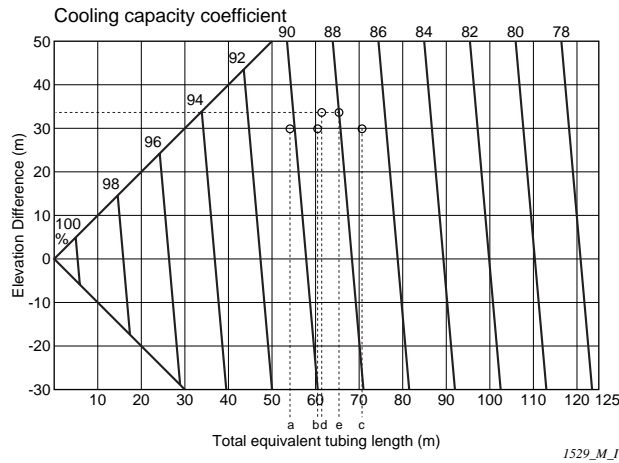
Outdoor suction air temp (CWB, RH85 %)	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.97	0.97	0.97	0.96	0.95	0.94	0.91	0.89	0.88	0.87	0.87	0.87	0.88	0.89	0.91	0.92	0.95	1.0

- To find out the heating capacity taking into account the frosting / defrosting operation, multiply the capacity given in the capacity chart with the value in the above table.
- The correction coefficients are for outdoor capacity ratio 100 % heating operation.

System example	Cooling				Heating			
	Outdoor temp. (DB)	Indoor temp. (WB)	Capacity coefficient	Input coefficient	Outdoor temp. (WB)	Indoor temp. (DB)	Capacity coefficient	Input coefficient
Indoor unit 25: a	33 °C	19 °C	100 %	95 %	0 °C	20 °C	89 %	92 %
Indoor unit 12: b	33 °C	19 °C	100 %	95 %	0 °C	20 °C	89 %	92 %
Indoor unit 9: c	33 °C	17.5 °C	90 %	81 %	0 °C	22 °C	86 %	94 %
Indoor unit 18: d	33 °C	17.5 °C	90 %	81 %	0 °C	22 °C	86 %	94 %
Indoor unit 36: e	33 °C	17.5 °C	90 %	81 %	0 °C	22 °C	86 %	94 %

# 1. Model Selecting and Capacity Calculation

## 1-5. Capacity correction graph according to refrigerant tubing length and elevation difference (For R407C)



To minimize the reduction in cooling capacity to be caused when an excessively long tubing is used, we recommended increasing the diameter of the wide tubing as indicated in Table 1. Do not exceed the recommended total tubing length.

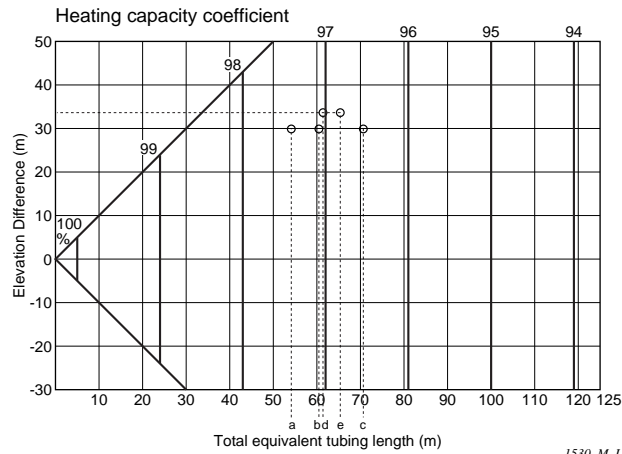
\* Increase diameter of the gas tubing side only, as specified in Table 1. Calculate the refrigerant additional charging volume appropriate for the narrow tubing diameter and length.

Table 1: Equivalent coefficient of correction of tubing length to be applied when increasing the diameter of the gas tubing.

Reference tubing diameter (wide tubing) mm	ø12.7	ø15.88	ø19.05	ø22.22	ø25.4	ø28.58	ø31.75	ø38.1	ø41.28	ø44.45
Modified tubing diameter (wide tubing) mm	ø15.88	ø19.05	ø22.22	ø25.4	ø28.58	ø31.75	ø38.1	ø41.28	ø44.45	ø50.8
Equivalent coefficient of correction of tubing length	0.4		0.5			0.6		0.7		

When increasing the tubing diameter on the gas side, calculate the equivalent length by the coefficient of correction as specified in Table 1.

$$\text{Equivalent tubing length after increasing the diameter} = \text{Reference tubing length} \times \text{equivalent coefficient of correction of tubing length}$$



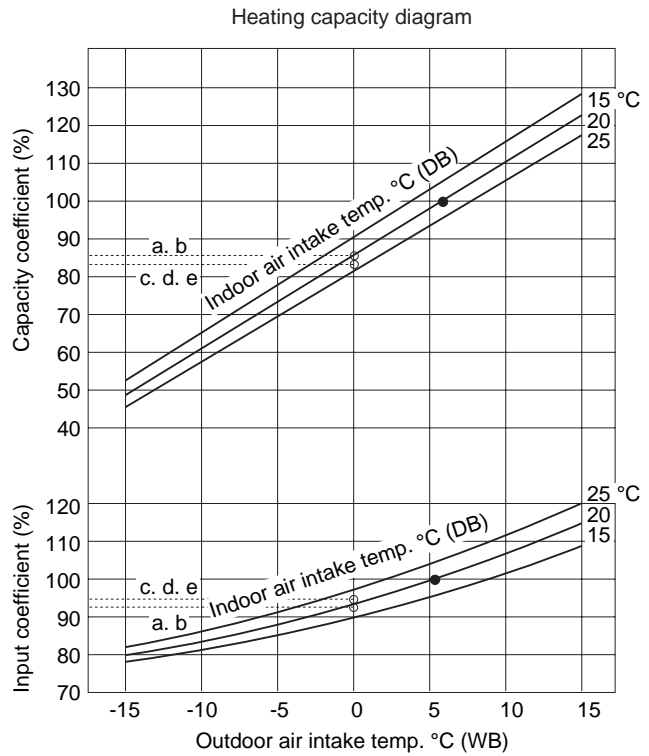
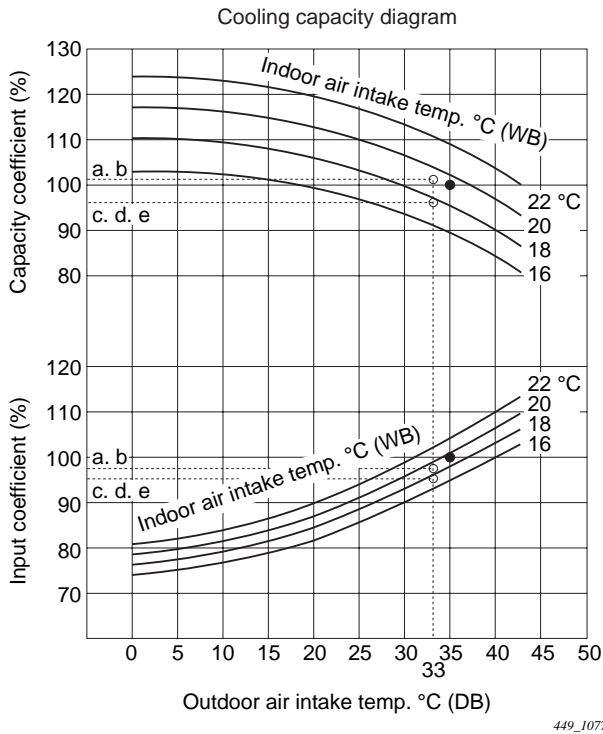
**NOTE**

- 1) Plus side of the elevation difference is when the outdoor unit is higher than the indoor unit.
- 2) Minus side of the elevation difference is when the outdoor unit is lower than the indoor unit.
- 3) The value of gas tube is used as equivalent length.
- 4) The capacity of each indoor unit is calculated by multiplying it with the capacity coefficient, as obtained from the total equivalent lengths of main tubes and distribution branches which are directly connected to the indoor units.
- 5) Equivalent length conversion is not necessary for the optional distribution joint.
- 6) Total equivalent length is calculated by adding the straight equivalent length of joints to the actual length.
- 7) Model selection is done from the value calculated for total cooling and total heating.

System example	Elevation difference	Total equivalent tubing length	Cooling capacity coefficient	Heating capacity coefficient
Indoor unit 25: a	30 m	54.2 m	90.0 %	97.4 %
Indoor unit 12: b	30 m	60.8 m	89.0 %	97.1 %
Indoor unit 9: c	30 m	70.9 m	87.0 %	96.5 %
Indoor unit 18: d	34 m	61.8 m	88.0 %	97.0 %
Indoor unit 36: e	34 m	65.8 m	88.0 %	96.8 %

# 1. Model Selecting and Capacity Calculation

## 1-6. Capacity correction graph according to temperature condition (For R22)



Rating value: Cooling

Model	Cooling capacity :kW (Btu/h)	Input: kW 380 - 400 - 415 V
70 type	22.4 ( 76,400)	9.46 - 9.52 - 9.58
90 type	28.0 ( 95,500)	11.3 - 11.4 - 11.5
150 type	45.0 ( 154,000)	17.6 - 17.7 - 17.8
190 type	56.0 ( 191,000)	21.9 - 22.1 - 22.3

Rating value: Heating

Model	Heating capacity :kW (Btu/h)	Input: kW 380 - 400 - 415 V
70 type	25.0 ( 85,300)	9.08 - 9.12 - 9.17
90 type	31.5 ( 107,500)	10.6 - 10.8 - 11.0
150 type	50.0 ( 171,000)	16.9 - 17.0 - 17.2
190 type	63.0 ( 215,000)	20.6 - 21.0 - 21.4

### ● Heating capacity correction coefficient at the time of frosting / defrosting (For R22)

Outdoor suction air temp (CWB, RH85 %)	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.97	0.97	0.97	0.96	0.95	0.94	0.91	0.89	0.88	0.87	0.87	0.87	0.88	0.89	0.91	0.92	0.95	1.0

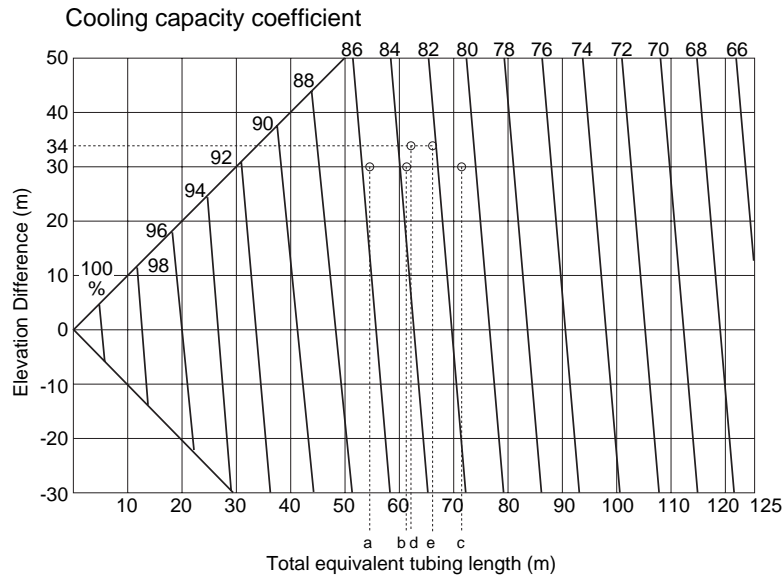
- To find out the heating capacity taking into account the frosting / defrosting operation, multiply the capacity given in the capacity chart with the value in the above table.
- The correction coefficients are for outdoor capacity ratio 100 % heating operation.

System example	Cooling				Heating			
	Outdoor temp. (DB)	Indoor temp. (WB)	Capacity coefficient	Input coefficient	Outdoor temp. (WB)	Indoor temp. (DB)	Capacity coefficient	Input coefficient
Indoor unit 25: a	33 °C	19 °C	102 %	98 %	0 °C	20 °C	86 %	94 %
Indoor unit 12: b	33 °C	19 °C	102 %	98 %	0 °C	20 °C	86 %	94 %
Indoor unit 9: c	33 °C	17.5 °C	97 %	96 %	0 °C	22 °C	83 %	92 %
Indoor unit 18: d	33 °C	17.5 °C	97 %	96 %	0 °C	22 °C	83 %	92 %
Indoor unit 36: e	33 °C	17.5 °C	97 %	96 %	0 °C	22 °C	83 %	92 %

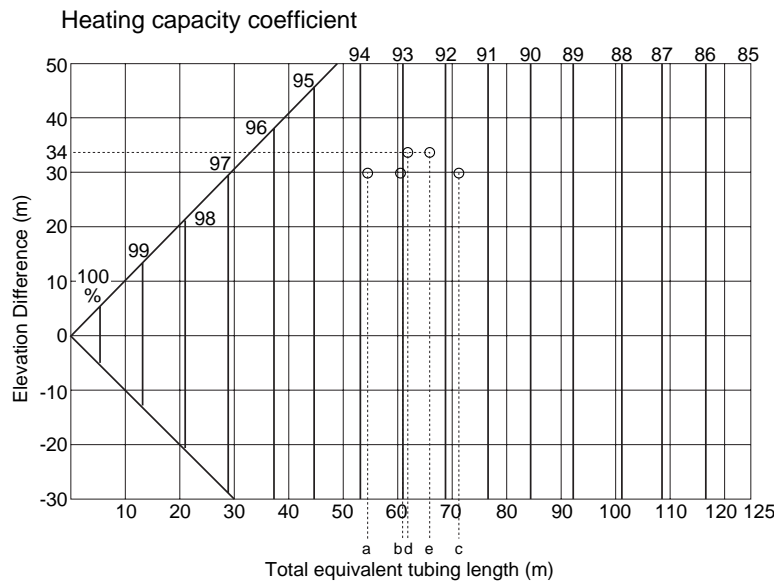


# 1. Model Selecting and Capacity Calculation

## 1-7. Capacity correction graph according to refrigerant tubing length and elevation difference (For R22)



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607\_8132

**NOTE**

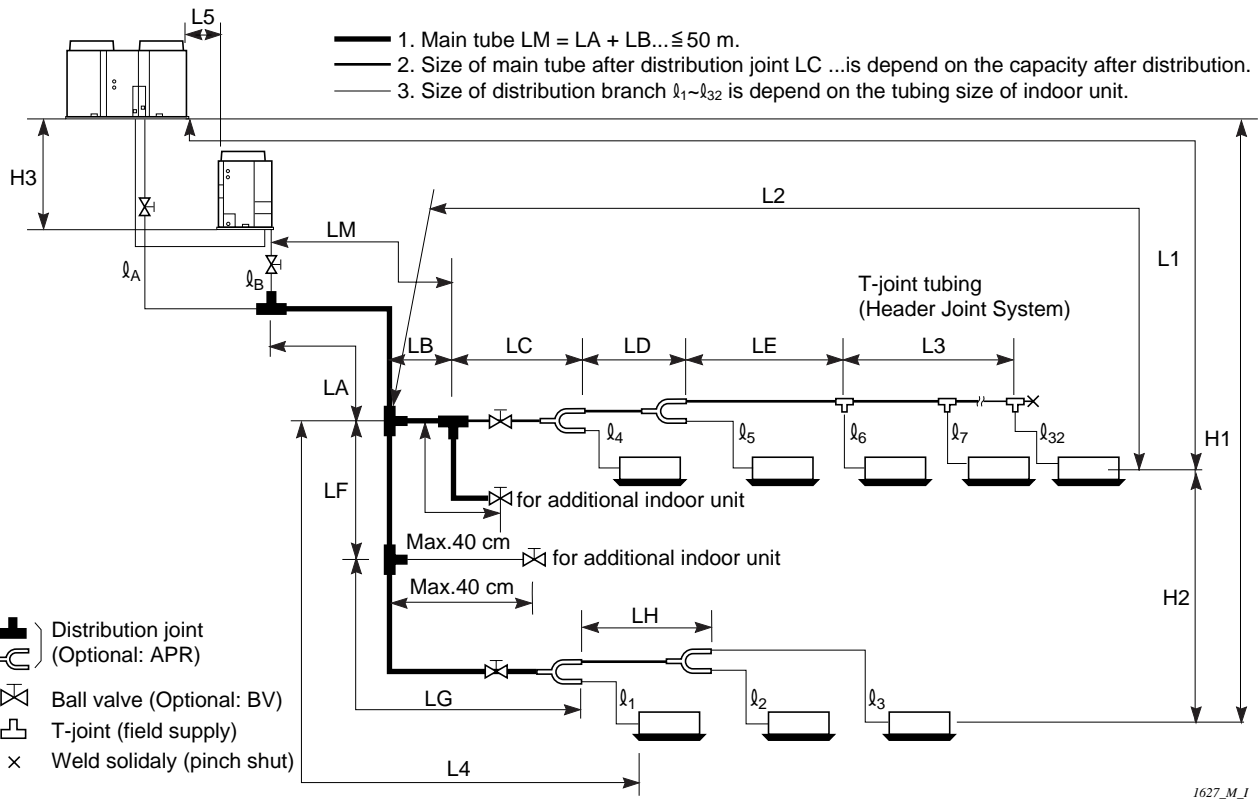
- 1) Plus side of the elevation difference is when the outdoor unit is higher than the indoor unit.
- 2) Minus side of the elevation difference is when the outdoor unit is lower than the indoor unit.
- 3) The value of gas tube is used as equivalent length.
- 4) The capacity of each indoor unit is calculated by multiplying it with the capacity coefficient, as obtained from the total equivalent lengths of main tubes and distribution branches which are directly connected to the indoor units.
- 5) Equivalent length conversion is not necessary for the optional distribution joint.
- 6) Total equivalent length is calculated by adding the straight equivalent length of joints to the actual length.
- 7) Model selection is done from the value calculated for total cooling and total heating.

System example	Elevation difference	Total equivalent tubing length	Cooling capacity coefficient	Heating capacity coefficient
Indoor unit 25: a	30 m	54.2 m	85.7 %	93.9 %
Indoor unit 12: b	30 m	60.8 m	83.8 %	93.0 %
Indoor unit 9: c	30 m	70.9 m	80.9 %	91.8 %
Indoor unit 18: d	34 m	61.8 m	83.2 %	92.9 %
Indoor unit 36: e	34 m	65.8 m	82.1 %	92.4 %



# 1. Model Selecting and Capacity Calculation

## 1-8. Design of tubing length



1627\_M\_1

**NOTE**

, : Optional distribution joint must be used.  
 Do not use field supply T-joint, otherwise refrigerant flow distribution between units is not performed uniformly.

Items	Marks	Contents	Length (m)	
Allowable tubing length	L1	Max. tubing length	Actual length	$\leq 100$
			Equivalent length	$\leq 125$
	$\Delta L = (L2 - L4)$	Difference between max. length and min. length from the No.1 distribution joint	$\leq 40$	
	LM	Max. length of main tubing (which has max. diameter)	$\leq 50$	
	$l_1, l_2 \sim l_{32}$	Max. length of each distribution tube	$\leq 30$	
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit	$\leq 50$	
		When outdoor unit is installed lower than indoor unit	$\leq 40$	
Allowable length of header tube	L3	Max. tubing length between the first T-joint and terminated (weld shut) end point	$\leq 15$	
			$\leq 4$	
Allowable length of header tube	L3	Max. tubing length between the first T-joint and terminated (weld shut) end point	$\leq 2$	
			$\leq 2$	

L = Length, H = Height

## 1. Model Selecting and Capacity Calculation

### Tubing size

#### Main tubing size (LA, LB, LC...)

Unit: mm (in.)

Combination Capacity of Outdoor Unit		40.0 kW or more less than 52.4 kW	52.4 kW or more less than 70.0 kW	70.0 kW or more less than 106.0 kW
Main tube size LA	Gas tube	ø38.10 (1 1/2)	ø41.28 (1 5/8)	ø44.45 (1 3/4)
	Liquid tube	ø15.88 (5/8)	ø19.05 (3/4)	ø22.22 (7/8)
Main tube size after distribution (LC...)	70 kW or more, less than 106.0 kW	Gas tube	–	ø44.45 (1 3/4)
		Liquid tube	–	ø22.22 (7/8)
	52.4 kW or more, less than 70.0 kW	Gas tube	ø41.28 (1 5/8)	
		Liquid tube	ø19.05 (3/4)	
	42.0 kW or more, less than 52.4 kW	Gas tube	ø38.10 (1 1/2)	
		Liquid tube	ø15.88 (5/8)	
	30.0 kW or more, less than 42.0 kW	Gas tube	ø31.80 (1 1/4)	
		Liquid tube	ø15.88 (5/8)	
	16.0 kW or more, less than 30.0 kW	Gas tube	ø28.58 (1 1/8)	
		Liquid tube	ø12.70 (1/4)	
	9.0 kW or more, less than 16.0 kW	Gas tube	ø19.05 (3/4)	
		Liquid tube	ø9.52 (3/8)	
	Below 9.0 kW	Gas tube	ø15.88 (5/8)	
		Liquid tube	ø9.52 (3/8)	

#### NOTE

- \* In case that the total capacity of connected indoor unit exceeds the total capacity of outdoor unit, select the main tubing size for the total capacity of outdoor unit.
- \* If the tubing expansion is expected in the future, make the tubing design with adequate consideration for this expansion.

#### Outdoor unit tubing size ( $l_A, l_B$ )

Unit: mm (in.)

	Power Control (PC) unit		Additional (AD) unit	
	150 type	190 type	70 type	90 type
Wide tube	38.1 (1 1/2)	41.28 (1 5/8)	25.4 (1)	28.58 (1 1/8)
	Brazing connection			
Narrow tube	15.88 (5/8)	19.05 (3/4)	12.7 (1/2)	
	Brazing connection		Flare connection	
Balance tube	9.52 (3/8)			
	Flare connection			

#### Distribution branch size ( $l_1, l_2 \dots l_{32}$ )

Unit: mm (in.)

Indoor unit type	9 type	12 type	18 type	25 type	36 type	48 type
Wide tube	12.7 (1/2)		15.88 (5/8)		19.05 (3/4)	
Narrow tube	9.52 (3/8)*					

#### NOTE

- \* For the 25 type, use the "Tube connector" (supplied with the unit) for sizing up a narrow tube from 6.35 to 9.52.


## 1. Model Selecting and Capacity Calculation

### ■ Straight equivalent length of joints

Design the tubing system by referring to the following table for the straight equivalent length of joints.

#### Straight Equivalent Length of Joints

Unit: m

Wide tube size (mm)	12.7	15.88	19.05	22.22	25.4	28.58	31.8	38.1	41.28	44.45
90° Elbow 	0.30	0.35	0.42	0.48	0.52	0.57	0.70	0.79	0.85	0.92
45° Elbow 	0.23	0.26	0.32	0.36	0.39	0.43	0.53	0.59	0.64	0.69
U-shape tube bent (R60~100 mm) 	0.90	1.05	1.26	1.44	1.56	1.71	2.10	2.37	2.55	2.76
Trap bent 	2.30	2.80	3.20	3.80	4.30	4.70	5.00	5.80	6.80	7.40
Y-branch distribution joint 	Equivalent length conversion not needed									
Ball valve for service	Equivalent length conversion not needed									

#### Required copper tube dimensions

Unit: mm

Type		0					
Copper tube	Outer diameter	6.35	9.52	12.7	15.88	19.05	22.2
	Wall thickness	0.8	0.8	0.8	1.0	1.0	1.2

Type		1/2 H, H						
Copper tube	Outer diameter	25.4	28.58	31.8	38.1	41.3	44.45	50.8
	Wall thickness	1.0	1.0	1.2	1.3	1.3	1.4	1.5

#### NOTE

\* Refrigerant pipes of the same wall thickness as R22 can be used for R407C.

\* C1220 type with JIS H 3300 designation (Copper Pipe and Copper Alloy Seamless Pipe)

### ■ Additional refrigerant charge amount

Additional refrigerant charge amount is calculated from the narrow tube total length as follows.

#### Amount of refrigerant additional charge per meter, according to narrow tube size

Narrow tube size	Amount of refrigerant additional charge/m (g/m)
9.52	75
12.7	125
15.88	195
19.05	280
22.22	400
25.4	500

Required amount of additional charge  
 = (Amount of additional refrigerant charge per meter of each size of narrow tube × its tube length)  
 + (...) + (...)

\* Always recharge accurately using a scale for weighing.

#### Refrigerant charge amount at shipment.

##### R407C models

R407C (kg)	PC unit		AD unit	
	SPW-CR1503GDYH8	SPW-CR1903GDYH8	SPW-CR703GDCH8	SPW-CR903GDCH8
	16.5	20	8	9.5

##### R22C models

R22 (kg)	PC unit		AD unit	
	SPW-C1503GDYH8	SPW-C1903GDYH8	SPW-C703GDCH8	SPW-C903GDCH8
	16.5	20	8	9.5

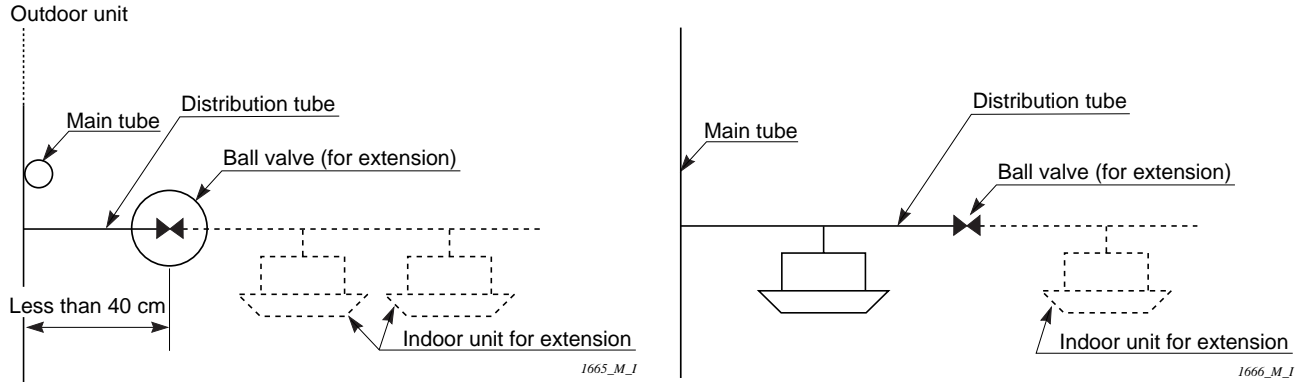
## 1. Model Selecting and Capacity Calculation

### ■ Recommended location of ball valves

- Recommend that install a ball valve kit at each outdoor unit
- Select the position to perform the service easily each unit or each refrigerant system

#### (1) In case of adding the indoor unit

① LOCATION: Install the ball valve at distribution tube (not main tube).

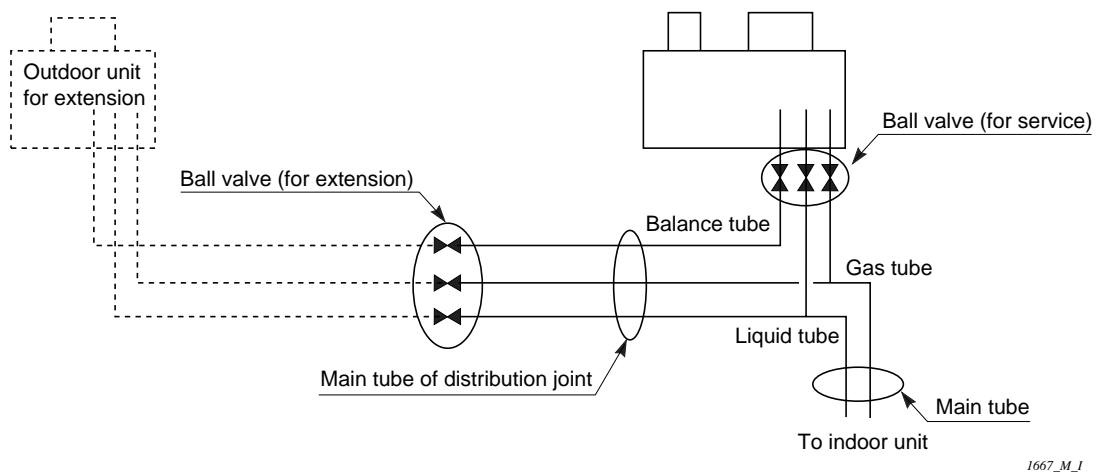


② Installation standard:

- Make sure to install the ball valve up grade to avoid the flow of oil.
- Install the ball valve at the shortest distance (within 40 cm) from the main tube.  
In the event that the diameter of the ball valve is smaller than the one of the main tube, reduce the size of the area where it is installed by Reducer etc.
- Select the place where is easy to operate and consider that the establishment place is to be confirmed later.

#### (2) In case of adding the outdoor unit

① LOCATION: Install the ball valve at main tube of distribution joint.



② Installation standard:

- Make sure to install the ball valve up grade to avoid the flow of oil.
- Install the ball valve at the shortest distance (within 40 cm) from the main tube.  
In the event that the diameter of the ball valve is smaller than the one of the main tube, use a Reducer etc., to reduce the size of the area where it is connected.

#### NOTE

\* In the event that the ball valve is installed to the outdoor unit (including extension for outdoor unit), face the service port of the valve to the outdoor unit side (above illustration; dotted line) and have a distance over 50 cm from the outdoor unit. In case that the ball valve is installed between indoor unit (Including extension for indoor unit) and the main tube, face it to the indoor unit side (above illustration; dotted line).

# 1. Model Selecting and Capacity Calculation



**WARNING**

Always check the gas density for the room in which the unit is installed.

## ■ Check of limit density

When installing an air-conditioner in a room, it is necessary to ensure that even if the refrigerant gas accidentally leaks outside, its density does not exceed the limit level. If the density might exceed the limit level, it is necessary to set up an opening between it and the adjacent room, or to install a mechanical ventilation which is interlocked with the leak detector.

$$\frac{\text{(Total refrigerant charged amount : kg)}}{\left( \begin{array}{l} \text{Min indoor volume where the} \\ \text{indoor unit is installed : m}^3 \end{array} \right)} \leq \text{Limit density 0.3 (kg/m}^3\text{)}$$

The limit density of refrigerant which is used in this unit is 0.3 kg/m<sup>3</sup> (ISO 5149).

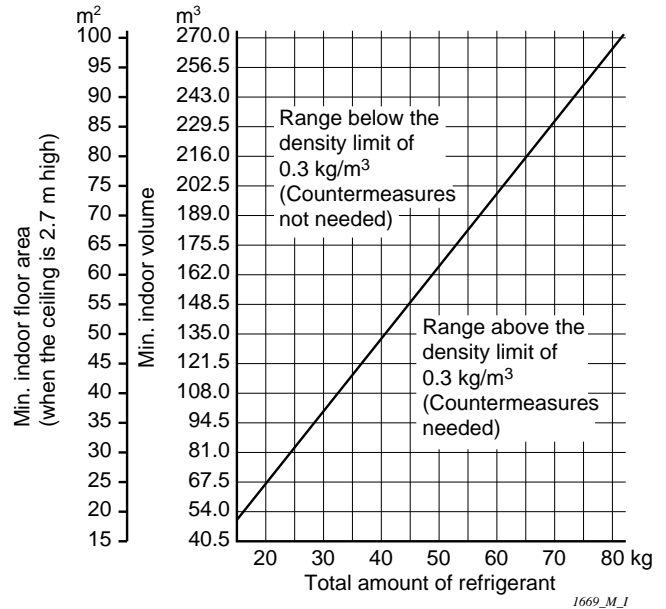
The shipped outdoor unit comes charged with the amount of refrigerant fixed for each type; so add it to the amount that is charged at the field.

(For the refrigerant charge amount at shipment, please refer to the unit's nameplate.)

## ■ Installing distribution joint

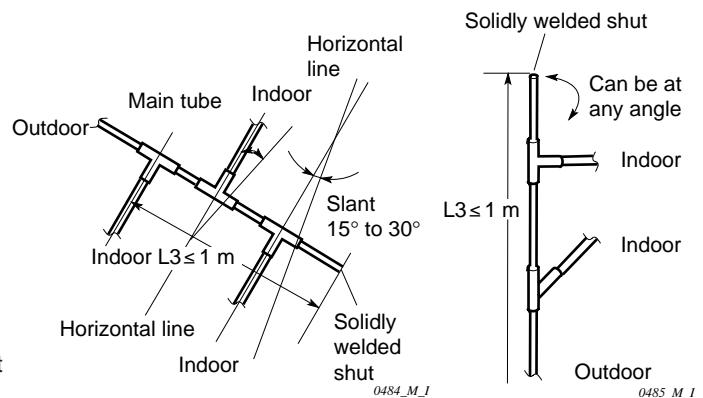
- (1) Refer to "HOW TO ATTACH DISTRIBUTION JOINT" enclosed with the optional distribution joint kit (APR-DV64MB, APR-HV63MB1 etc.).
- (2) ● The T-joint (not provided) installation direction should be either horizontal or vertical. The direction of the connection port to each indoor must be slanted slightly upward (15° to 30°) when the main tube is horizontal and can be any direction but the branch tube must be slightly upward when the tube is vertical (L3 shows tubing connected by a T-joint (1 meter or less)).
  - Make sure that the end point is solidly welded shut. Also pay attention to the insertion distance of each connection tube so refrigerant flow inside the T-joint is not blocked.
  - Never diverge a branch tube again after the T-joint (that is, there can only be 1 branch in a line).
- (3) The branch tube must have a trap when the branch tube after distribution is connected to only 1 indoor unit. If not, in case the indoor unit is defective, do not operate the system until the defective unit is repaired. Otherwise the compressor may develop problems because the refrigerant oil accumulates in the branch tube.

Minimum indoor volume & floor area as against the amount of refrigerant is roughly as given in the following table.



**WARNING**

Don't install the indoor unit to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

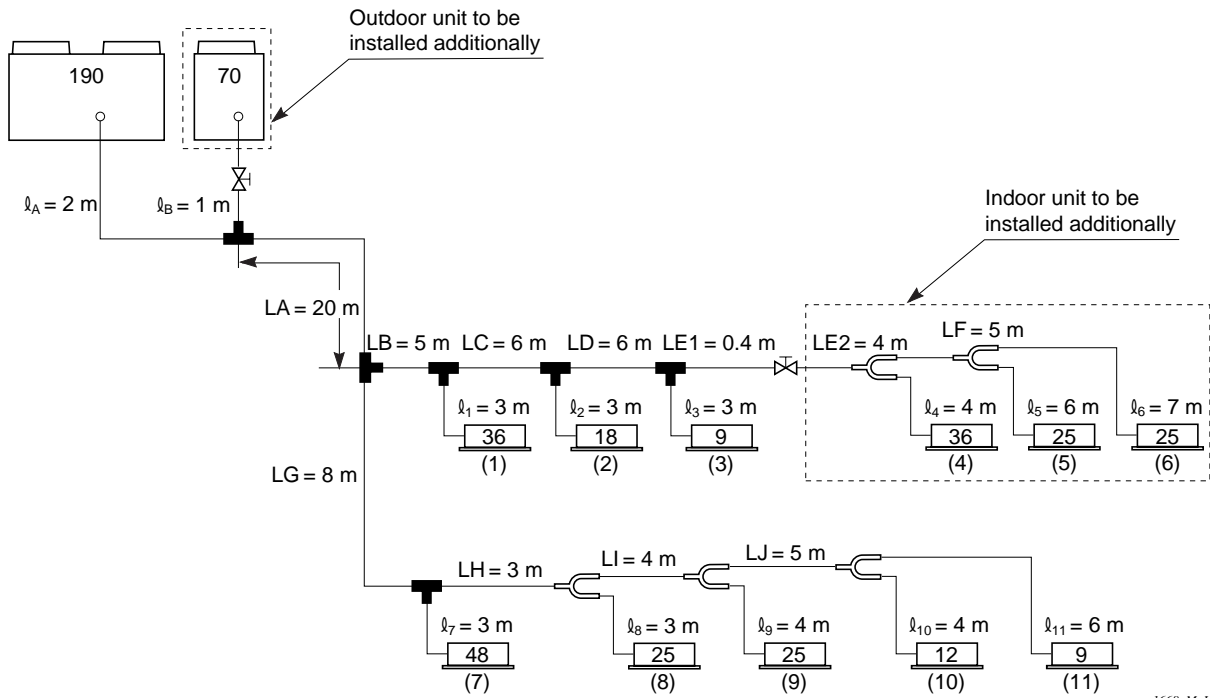


When in horizontal use

When in vertical use

## 2. Example of System Design

### 2-1. Example of tubing size selection and additional charge amount



1668\_M\_1

		Rating Capacity	
		Cooling	Heating
Indoor unit	9 type: (3), (11)	2.8	3.2
	12 type: (10)	3.6	4.2
	18 type: (2)	5.6	6.3
	25 type: (5), (6), (8), (9)	7.3	8.0
	36 type: (1), (4)	10.6	11.4
	48 type: (7)	14.0	16.0
Outdoor unit	190 type	56.0	63.0
	70 type	22.4	25.0

#### Before extension

		Total cooling capacity after distribution joint / Outdoor unit type / Indoor unit type	Wide tube	Narrow tube	① Tubing length (m)	② Additional refrigerant (g/m)	①×②
							(g)
Main tube	LA	$56 + 22.4 = 78.4 \text{ kW}^*$	44.45 (1 3/4)	22.22 (7/8)	20	400 (m)	8000
	LB	$10.6 + 5.6 + 2.8 + 10.6 + 7.3 + 7.3 = 44.2 \text{ kW}$	38.10 (1 1/2)	15.88 (5/8)	5	195	975
	LC	$5.6 + 2.8 + 10.6 + 7.3 + 7.3 = 33.6 \text{ kW}$	31.80 (1 1/4)	15.88 (5/8)	6	195	1170
	LD	$2.8 + 10.6 + 7.3 + 7.3 = 28.0 \text{ kW}$	28.58 (1 1/8)	12.70 (1/2)	6	125	750
	LE1	$10.6 + 7.3 + 7.3 = 25.2 \text{ kW}$	28.58 (1 1/8)	12.70 (1/2)	0.4	125	50
	LG	$14.0 + 7.3 + 7.3 + 3.6 + 2.8 = 35.0 \text{ kW}$	31.80 (1 1/4)	15.88 (5/8)	8	195	1560
	LH	$7.3 + 7.3 + 3.6 + 2.8 = 21.0 \text{ kW}$	28.58 (1 1/8)	12.70 (1/2)	3	125	375
	LI	$7.3 + 3.6 + 2.8 = 13.7 \text{ kW}$	19.05 (3/4)	9.52 (3/8)	4	75	300
	LJ	$3.6 + 2.8 = 6.4 \text{ kW}$	15.88 (5/8)	9.52 (3/8)	5	75	375
Outdoor unit tube	IA 190 type		41.28 (1 5/8)	19.05 (3/4)	2	280	560
	IB 70 type		25.40 (1)	12.70 (1/2)	1	125	125
Distribution branch	I1 36 type		19.05 (3/4)	9.52 (3/8)	3	75	225
	I2 18 type		15.88 (5/8)	9.52 (3/8)	3	75	225
	I3 9 type		12.70 (1/2)	9.52 (3/8)	3	75	225
	I4 36 type		19.05 (3/4)	9.52 (3/8)	4	75	300
	I5 25 type		15.88 (5/8)	9.52 (3/8)	6	75	450
	I6 25 type		15.88 (5/8)	9.52 (3/8)	7	75	525
	I7 48 type		19.05 (3/4)	9.52 (3/8)	3	75	225
	I8 25 type		15.88 (5/8)	9.52 (3/8)	3	75	225
	I9 25 type		15.88 (5/8)	9.52 (3/8)	4	75	300
	I10 12 type		12.70 (1/2)	9.52 (3/8)	4	75	300
	I11 9 type		12.70 (1/2)	9.52 (3/8)	6	75	450

Total additional refrigerant charge amount before extension = 17,690 g



## 2. Example of System Design

### After extending indoor and outdoor unit

		Total cooling capacity after distribution joint / Outdoor unit type / Indoor unit type	Wide tube	Narrow tube	① Tubing length (m)	② Additional refrigerant (g/m)	①×② (g)
Main tube	LE2	10.6 + 7.3 + 7.3 = 25.2 kW	28.58 (1 1/8)	12.70 (1/2)	4	125	500
	LF	7.3 + 7.3 = 14.6 kW	19.05 (3/4)	9.52 (3/8)	5	75	375
Distribtuon branch	I4	36 type	19.05 (3/4)	9.52 (3/8)	4	75	300
	I5	25 type	15.88 (5/8)	9.52 (3/8)	6	75	450
	I6	25 type	15.88 (5/8)	9.52 (3/8)	7	75	525

Additional refrigerant charge amount for extension = 2,150 g

Total refrigerant charge amount including initial charge amount  
 = 20,000 g (190 type) + 8,000 g (70 type) + 17,690g + 2,150 g = 47,640 g

### ■ Checking of limit density

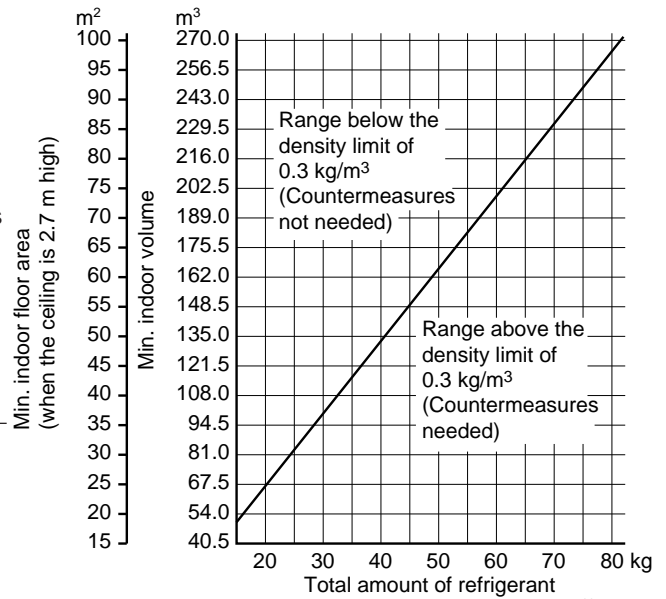
Density limit is determined on the basis of the size of a room using an indoor unit of minimum capacity.

For, instance, when an indoor unit (3) is used in a room (Floor area 15 m<sup>2</sup> × Ceiling height 2.7 m = Room volume 40.5 m<sup>3</sup>), the graph on the right shows that the minimum room volume should be 159 m<sup>3</sup> (Floor area 59 m<sup>2</sup>) for refrigerant of 47.64 kg, and accordingly openings like louvers are required for the room.

<Determination by calculation>

$$\frac{\left( \begin{array}{c} \text{Overall refrigerant charge amount for} \\ \text{the air-conditioner : kg} \end{array} \right)}{\text{(Minimum room volume for an indoor unit : m}^3\text{)}} \\
 = \frac{47.64 \text{ (kg)}}{40.5 \text{ (m}^3\text{)}} = 1.18 \text{ (kg/m}^3\text{)} \leq 0.3 \text{ (kg/m}^3\text{)}$$

Therefore, openings like louvers are required for the room.



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## 3. Electrical Wiring

### 3-1. General precautions on wiring

- (1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
- (2) Provide a power outlet to be used exclusively for each unit, and a power supply disconnect and circuit breaker for overcurrent protection should be provided in the exclusive line.
- (3) To prevent possible hazards from insulation failure, the unit must be grounded.
- (4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
- (5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- (6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.
- (7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning.  
You must ensure that installation complies with all relevant rules and regulations.
- (8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:
  - The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
  - Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.
- (9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop appointed by the manufacture, because special purpose tools are required.

2

### 3-2. Recommended wire length and wire diameter for power supply system

#### Outdoor unit

\* AWG = American Wire Gauge

		(A) Power supply		Time delay fuse or circuit capacity	Power supply terminal base**		
		Wire size	Max. length		Capacity	Max. wire size	
R22	SPW-C1503GDYH8	10 mm <sup>2</sup>	41 m	60 A	80 A	22 mm <sup>2</sup>	(AWG #4)*
	SPW-C1903GDYH8	10 mm <sup>2</sup>	33 m	80 A	80 A	22 mm <sup>2</sup>	(AWG #4)*
	SPW-C703GDCH8	6 mm <sup>2</sup>	45 m	45 A	50 A	14 mm <sup>2</sup>	(AWG #6)*
	SPW-C903GDCH8	6 mm <sup>2</sup>	39 m	50 A	50 A	14 mm <sup>2</sup>	(AWG #6)*
R407C	SPW-CR1503GDYH8	10 mm <sup>2</sup>	36 m	60 A	80 A	22 mm <sup>2</sup>	(AWG #4)*
	SPW-CR1903GDYH8	10 mm <sup>2</sup>	35 m	80 A	80 A	22 mm <sup>2</sup>	(AWG #4)*
	SPW-CR703GDCH8	6 mm <sup>2</sup>	43 m	50 A	50 A	14 mm <sup>2</sup>	(AWG #6)*
	SPW-CR903GDCH8	6 mm <sup>2</sup>	37 m	50 A	50 A	14 mm <sup>2</sup>	(AWG #6)*

#### NOTE

\*\* With ring type wire terminal.

#### Indoor unit

Type	(B) Power supply	Time delay fuse or circuit capacity	Power supply terminal base	
	2.5 mm <sup>2</sup>		Capacity	Max. wire diameter
AS, SL, S, X, K, T, U, F, FM	Max. 100 m	10 A	25 A	5.5 mm <sup>2</sup> (AWG #10)*
D	Max. 60 m	10 A	50 A	14 mm <sup>2</sup> (AWG #6)*
DR763 / 963	Max. 50 / 30 m	10 A	50 A	14 mm <sup>2</sup> (AWG #6)*

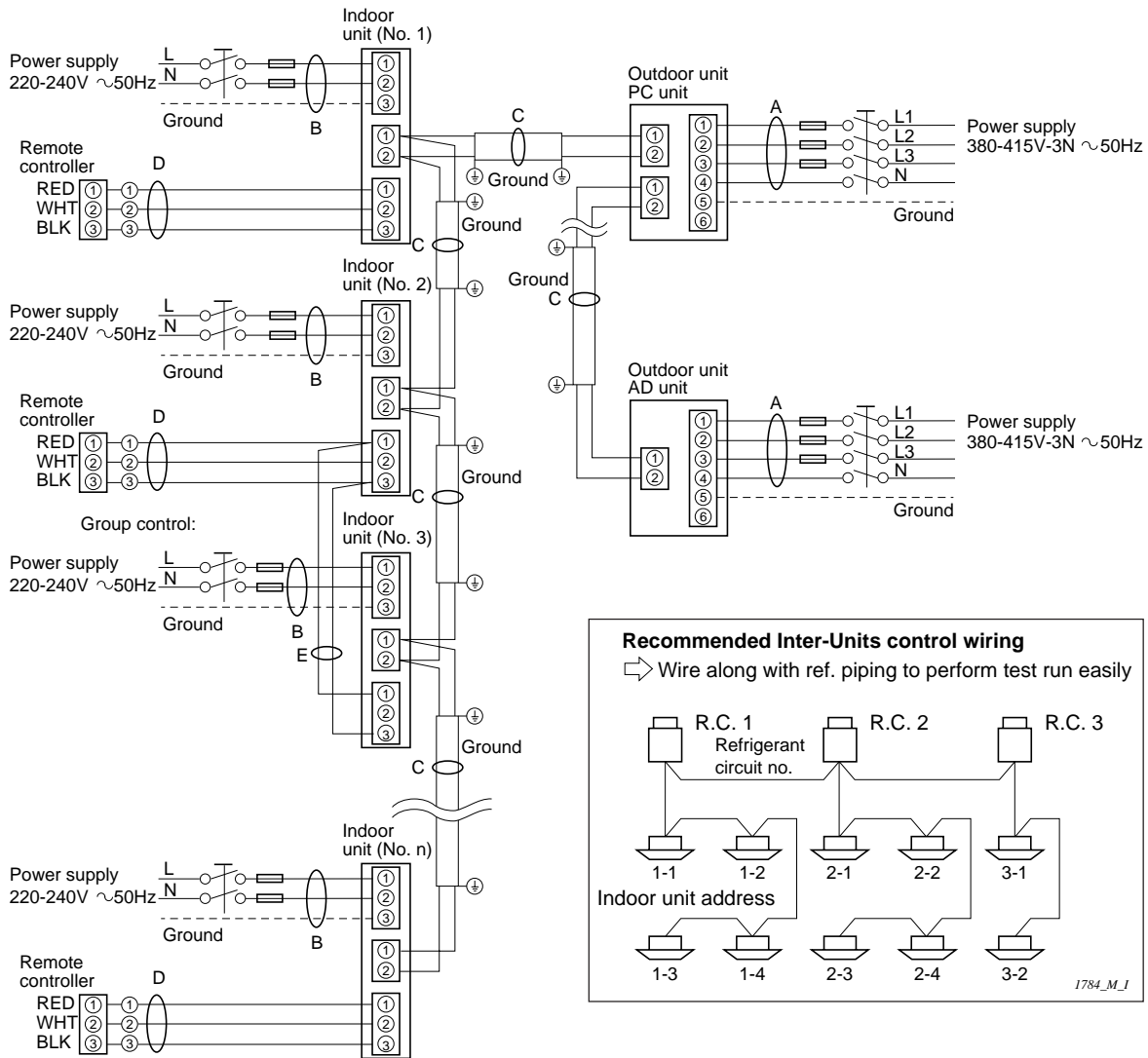
#### Control wiring

(C) Inter-unit control wiring	(D) Remote control wiring	(E) Control wiring for group control
0.75 mm <sup>2</sup> (AWG #18) Use shielded wiring	0.75 mm <sup>2</sup> (AWG #18)	0.75 mm <sup>2</sup> (AWG #18)
Max. 1,000 m	Max. 500 m (Total)	Max. 500 m (Total)

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### 3. Electrical Wiring

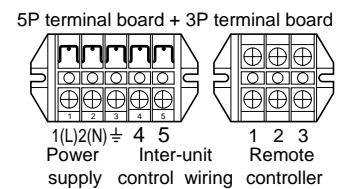
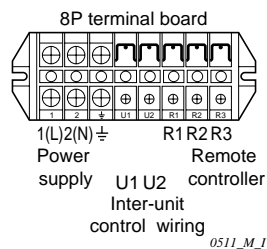
#### 3-3. Wiring system diagrams



1701\_M\_I

**NOTE**

- (1) Refer to Section 5-2. "Recommended Wire Length and Wide Diameter for Power Supply System" for the explanation of "A", "B", "C", "D", and "E", in the above diagrams.
- (2) The basic connection diagram of the indoor unit shows the 8P terminal board, so the terminal boards in your equipment may differ from the diagram.
- (3) R.C. Address should be set before turning the power on.
- (4) Regarding the R.C. Address setting, refer to page 86. Auto. address setting can be executed by a remote controller automatically. Please refer to the ENGINEERING MANUAL & TECHNICAL DATA of the ECO MULTI SYSTEM.



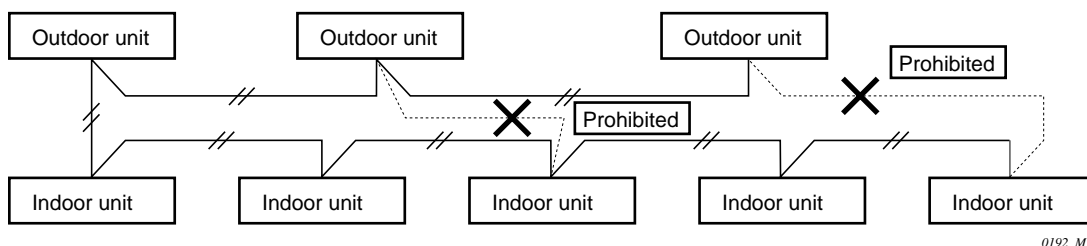
AS, SL, S, X, T, U,  
 D, F, FM Type

K Type

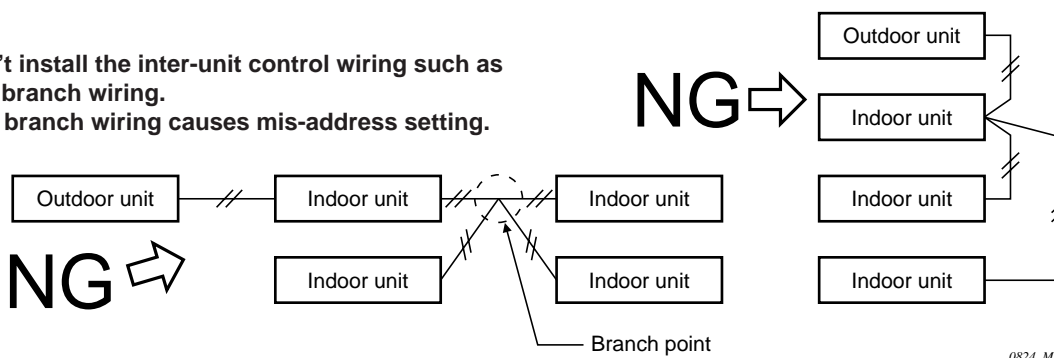
### 3. Electrical Wiring



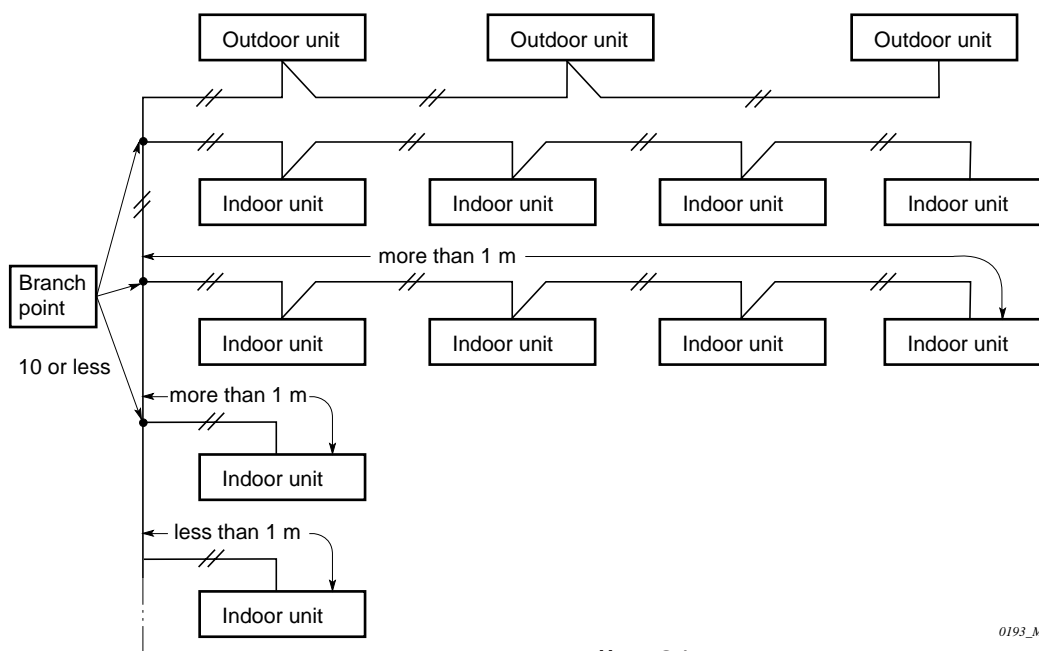
- (1) When linking outdoor units in a network (S-net link system), remove the short plug (CN031, 2P Black, location: right bottom on the outdoor control PCB) from all outdoor units except any one of the outdoor units. Otherwise the communication of S-net link system does not perform.  
For a system without link (no connection wiring between outdoor units), do not remove the short plug.
- (2) Do not install the inter-unit control wiring in a loop.



- (3) Don't install the inter-unit control wiring such as star branch wiring. Star branch wiring causes mis-address setting.

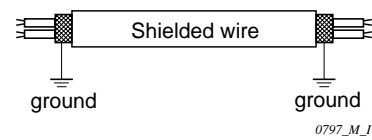


- (4) If branching the inter-unit control wiring, the number of branch points should be 10 or less. (Branches less than 1 m are not included in the total branch number.)



### 3. Electrical Wiring

- (5) Use shielded wires for inter-unit control wiring (c) and ground the shield on both sides, otherwise misoperation from noise may occur. All wiring except inter-unit control wiring (c) has polarity. Connect wiring as shown in Section 5-3 “Wiring System Diagrams”.



**WARNING**

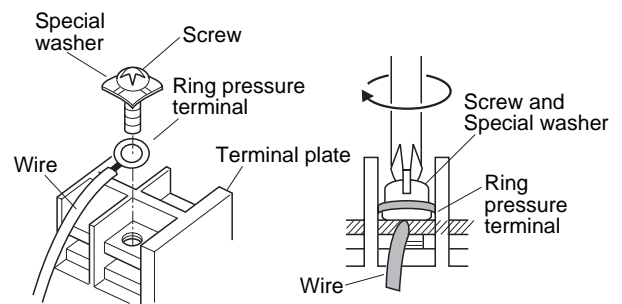
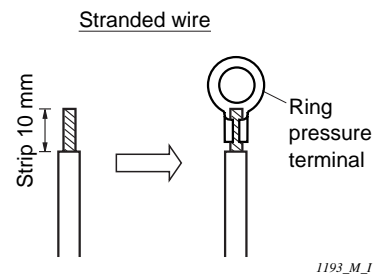
Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, ensure that all wiring is tightly connected.

When connecting each power wire to the corresponding terminal, follow the instructions on “How to connect wiring to the terminal” and fasten the wire securely with the fixing screw of the terminal plate.

#### How to connect wiring to the terminal

##### ■ For stranded wiring

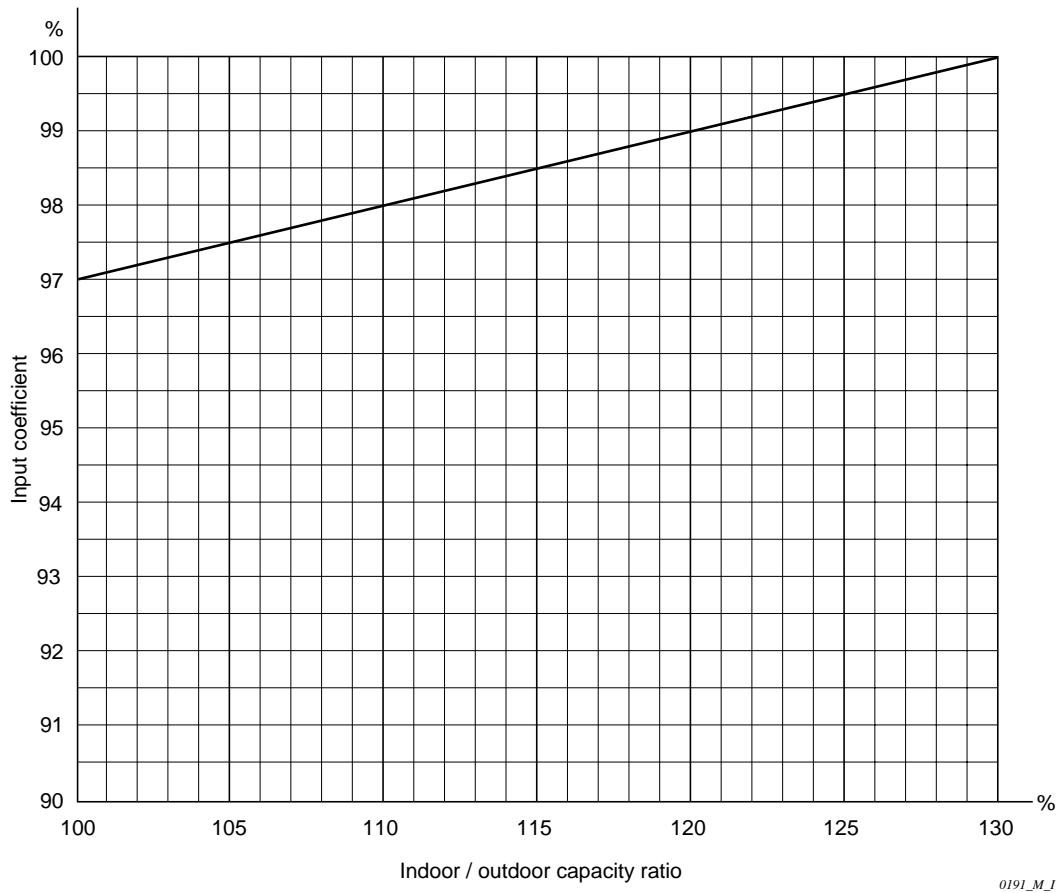
- (1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wiring about 10 mm and tightly twist the wire ends.
- (2) Using a Phillips head screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring pressure terminal.
- (4) Place the ring pressure terminal, and replace and tighten the removed terminal screw using a screwdriver.



### 3. Electrical Wiring

#### 3-4. Maximum power input

- The maximum power input of the outdoor unit is a electric power input consumed when the outdoor unit is operated under the condition of the JIS cooling overload at the indoor / outdoor unit capacity ratio of 130 %.
- The maximum power input at the indoor / outdoor unit capacity ratio of less than 130 % can be calculated by multiplying the input coefficient calculated using the diagram below by the maximum power input.



- **How to calculate**

Find out the input coefficient from the intersecting point of the above indoor / outdoor capacity ratio graph.

You can calculate by multiplying the input coefficient by the maximum power input.

# 4. Installation Instructions

## 4-1. Selecting the installation site

### Indoor Unit

#### AVOID:

- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist.
- direct sunlight.
- locations near heat sources which may affect the performance of the unit.
- locations where external air may enter the room directly. This may cause "sweating" on the air discharge ports, causing them to spray or drip.
- locations where the remote controller will be splashed with water or affected by dampness or humidity.
- installing the remote controller behind curtains or furniture.

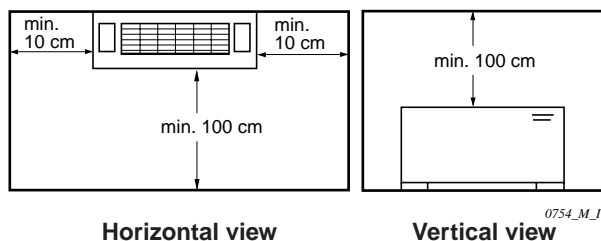
#### DO:

- select an appropriate position from which every corner of the room can be uniformly cooled.
- select a location where the ceiling is strong enough to support the weight of the unit.
- select a location where tubing and drain pipe have the shortest run to the outdoor unit.
- allow room for operation and maintenance as well as unrestricted air flow around the unit.
- install the unit within the maximum elevation difference above or below the outdoor unit and within a total tubing length from the outdoor unit as detailed in Table 1-20.
- allow room for mounting the remote controller about 1m off the floor, in an area that is not in direct sunlight nor in the flow of cool air from the indoor unit.

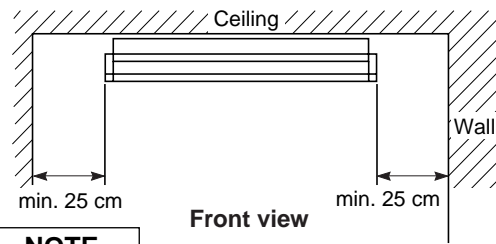
### NOTE

Air delivery will be degraded if the distance from the floor to the ceiling is greater than 3 m. (for SL type, greater than 3.5 m)

### Floor-Standing, Concealed Floor-Standing Type

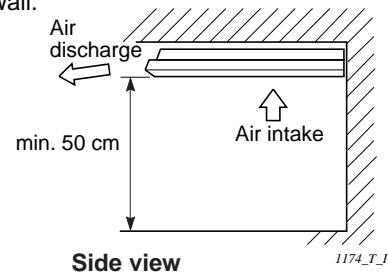


### Ceiling-Mounted Type

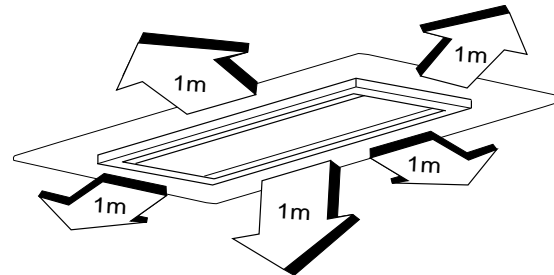


### NOTE

The rear of the indoor unit can be installed flush against the wall.

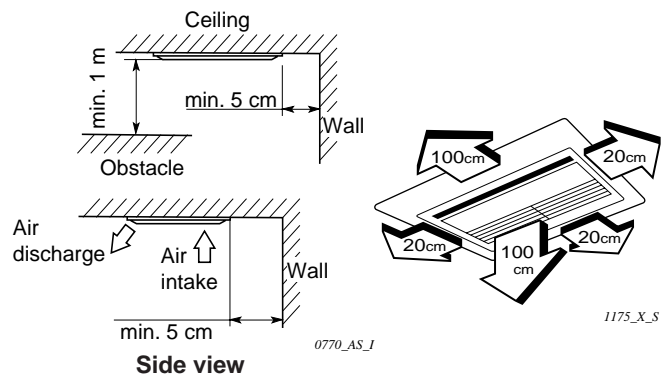


### Concealed-Duct Type 2-Way, 4-Way Semi-Concealed Type

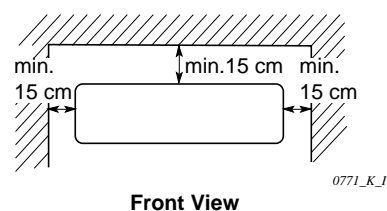


### 1-Way Semi-Concealed & Slim Type

#### Semi-Concealed Type      Semi-Concealed Slim Type



### Wall-Mounted Type



## 4. Installation Instructions

### 4-2. Transporting

When transporting the unit, have it delivered as close to the installation site as possible without unpacking.

Use hook for suspending a unit type 190 and 150.



**CAUTION**

**Rope or strap must be settled properly down at the bottom of the hook, not at the edge of the hook.**

Remove one of the two bolts (M8) fixing the suspension plate, and screw the Eye-Bolt (field supply) at the position indicated. In the same way, attach the Eye-Bolts in the 4 positions.

Put the rope or strap through the hook of the Eye-Bolt.

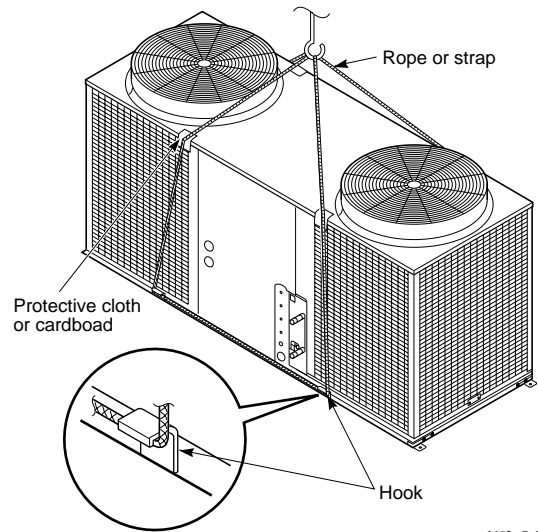
When suspending a packaged unit, be sure to pass rope through the suspension plate at the bottom.

Lift the unit with its weight balanced and evenly supported.

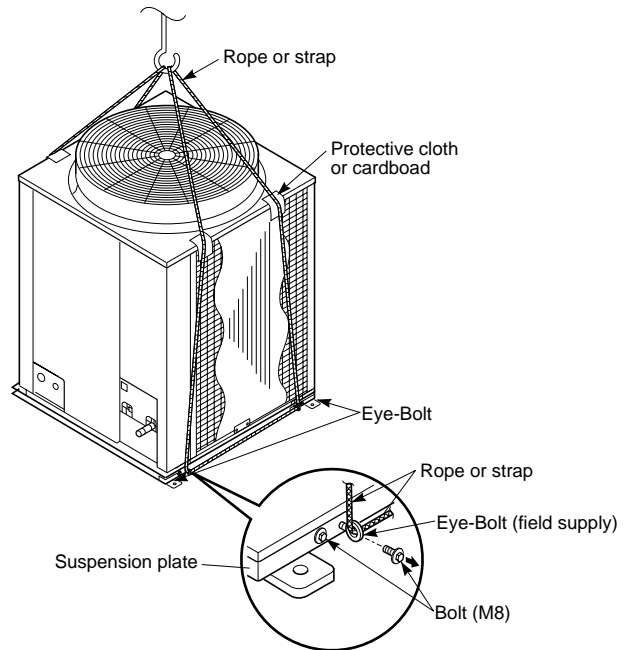
To prevent damage, use protective material (such as cloth or cardboard) at all points where the lifting rope or strap touches the unit.

### 4-3. Installing the outdoor unit

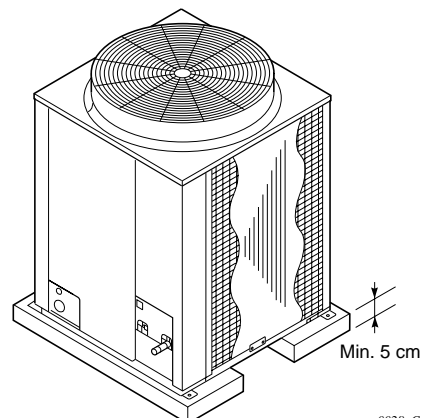
- (1) Install a block or a solid platform under the outdoor unit which provides a minimum height of 5 cm from ground level.



1682\_C\_1



1691\_C\_1



0028\_C\_1

## 4. Installation Instructions

- (2) The types 70 and 90 must be bolted down through vibration insulators tightly to the blocks or platform with 4 anchor bolts.



**CAUTION**

The unit must sit on the vibration insulator and platform at least 10 mm wide at both ends.

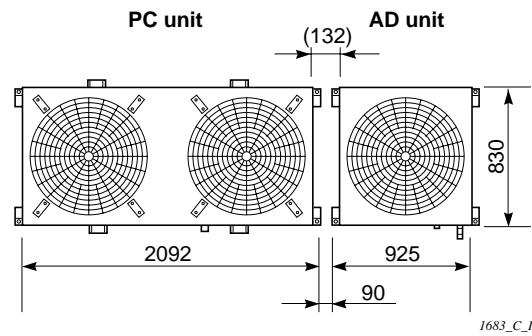
- (3) The types 190 and 150 must be bolted down through vibration insulators tightly to the blocks or platform at 6 places including the center of the unit (Section A).

The center portion secure the vibration insulator with tapping screws by the aid of L-type fittings (local supply).

The vibration insulator should be secured to the outdoor unit through two holes equally spaced from the center of the unit bottom plate. Pitch : 100 mm. Same dimension for both back and front.

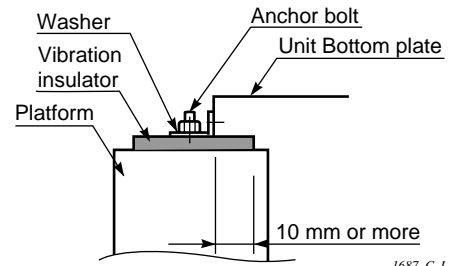
The unit must sit on the vibration insulator and platform at least 10 mm wide at both ends.

To be level with four anchor bolt securing positions.



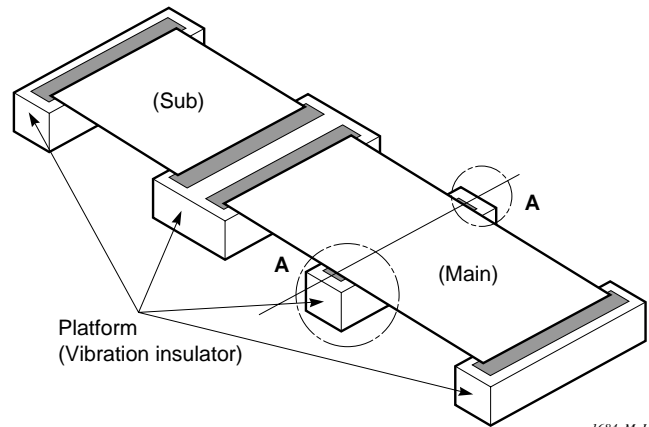
1683\_C\_1

### Details of anchor bolt installation



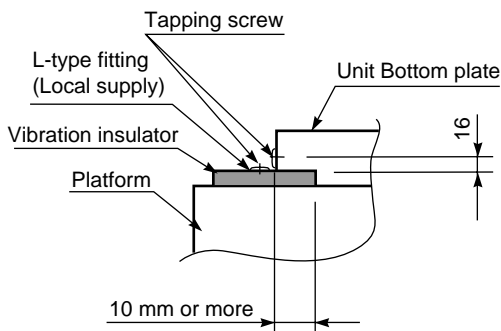
1687\_C\_1

### In case of widthwise platform



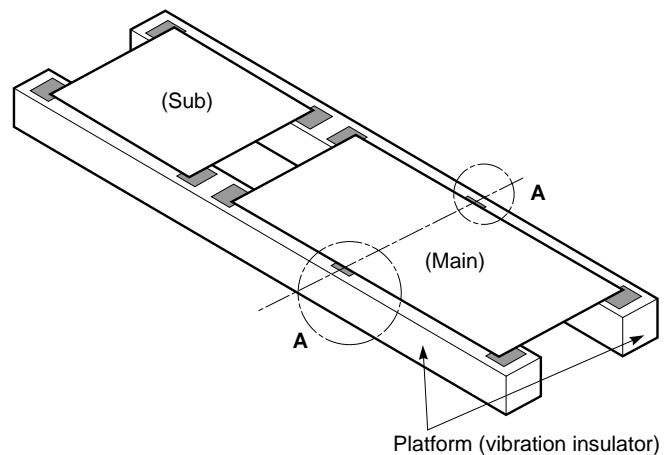
1684\_M\_1

### Details of Section A



1686\_C\_1

### In case of lengthwise platform



1684\_M\_1



## 4. Installation Instructions

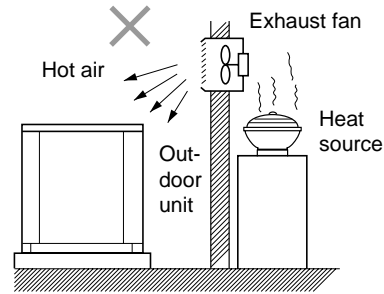
### 4-4. Outdoor Unit

#### AVOID:

- heat sources, exhaust fans, etc.
- damp, humid or uneven locations.
- Indoor (no ventilation place)

#### DO:

- choose a place as cool as possible.
- choose a place that is well ventilated.
- allow enough room around the unit for air intake/ exhaust and possible maintenance.

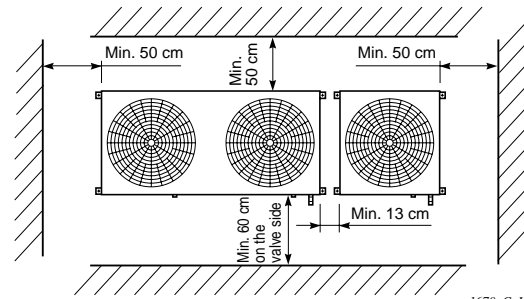


0024\_C\_I

#### Installation space

Install the outdoor unit where there is enough space for ventilation. Otherwise the unit may not operate properly. Fig. 2-10 shows the minimum space requirement around the outdoor units when three sides are open and only one side is shuttered, with areas over the unit open. The mounting base should be concrete or a similar material that allows for adequate drainage. Make provisions for anchor bolts, platform height, and other site-specific installation requirements.

#### PC and AD unit placed adjacently



1670\_C\_I



**CAUTION**

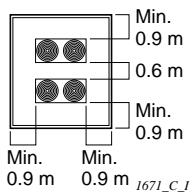
- **Not more than 2 units should be installed adjacently.**
- **Leave space open above the unit.**
- **Construct louvers or other openings in the wall, if necessary, to ensure adequate ventilation.**

#### NOTE

\* Do not do any wiring or tubing within 60 cm of the front panel, because it is needed as a servicing space for the compressor.

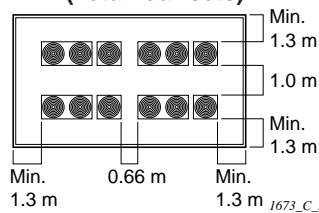
#### Multiple installation

##### One units in two row



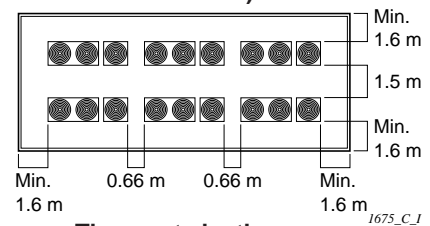
1671\_C\_I

##### Two sets by two rows (Total four sets)



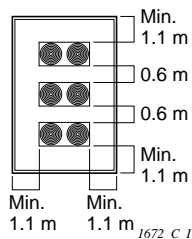
1673\_C\_I

##### Three sets by two rows (Total six sets)



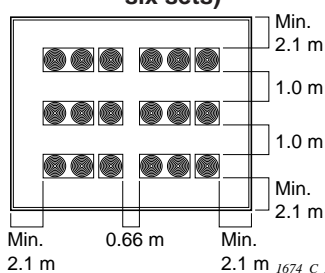
1675\_C\_I

##### One units in three row



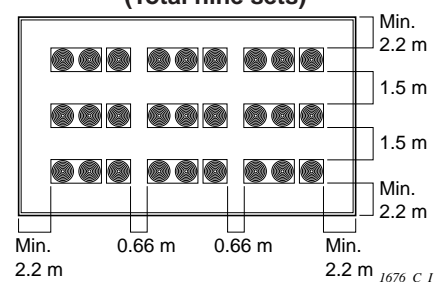
1672\_C\_I

##### Two sets by three rows (Total six sets)



1674\_C\_I

##### Three sets by three rows (Total nine sets)



1676\_C\_I

Conditions for installation: Fence height 1.8m, Effective opening ratio 50%, No raising for installation. The distances between the units will vary with changes in installation conditions.

## 4. Installation Instructions

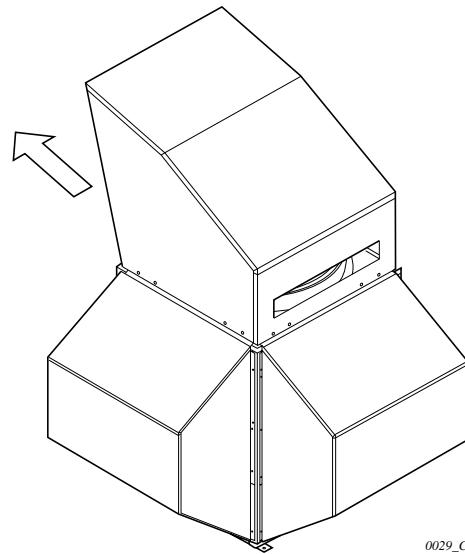
### 4-5. Shield for horizontal exhaust discharge

It is necessary for you to install an air-discharge chamber (field supply) to direct exhaust from the fan horizontally if it is difficult to provide a minimum space of 2 m between the air-discharge outlet and a nearby obstacle.



**CAUTION**

In regions with heavy snowfall, the outdoor unit should be provided with a solid, raised platform and snow-proof vents.



0029\_C\_1

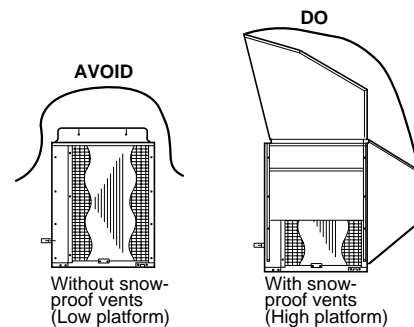
### 4-6. Installing the outdoor unit in heavy snow areas

In locations where wind-blown snow can be a problem, snow-proof vents should be fitted to the unit and direct exposure to the wind should be avoided as much as possible. The following problems may occur if proper countermeasures are not taken:

- The fan in the outdoor unit may stop running, causing the unit to be damaged.
- There may be no air flow.
- The tubing may freeze and burst.
- The condenser pressure may drop because of strong wind, and the indoor unit may freeze.

### 4-7. Precautions when installing in heavy snow areas

- a) The platform should be higher than the maximum snow depth.
- b) The 2 anchoring feet of the outdoor unit should be used for the platform, and the platform should be installed beneath the air-intake side of the outdoor unit.
- c) The platform foundation must be solid and the unit must be secured with anchor bolts.
- d) When installing on a roof subject to strong wind, countermeasures must be taken to prevent the unit from being overturned.



Without snow-proof vents (Low platform)

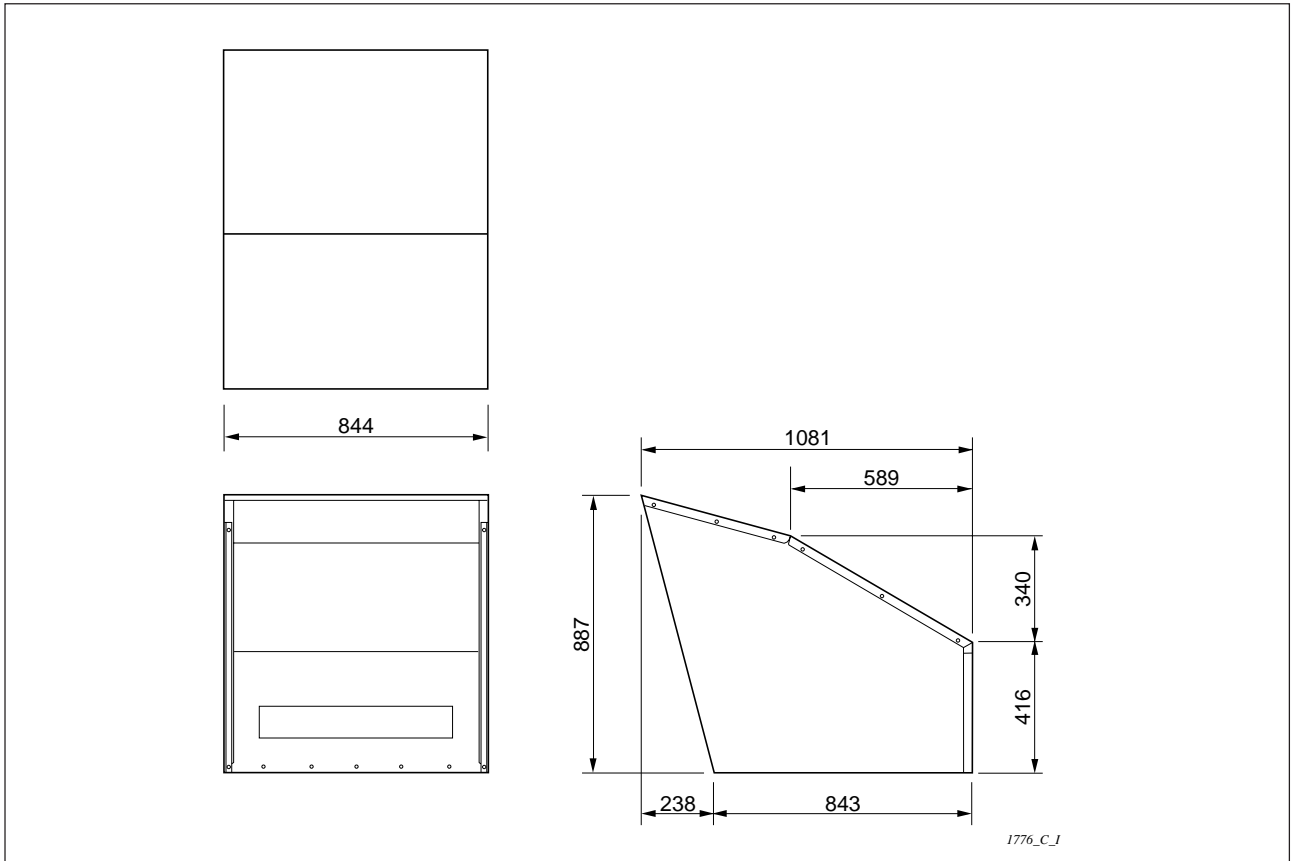
With snow-proof vents (High platform)

1677\_C\_1

## 4. Installation Instructions

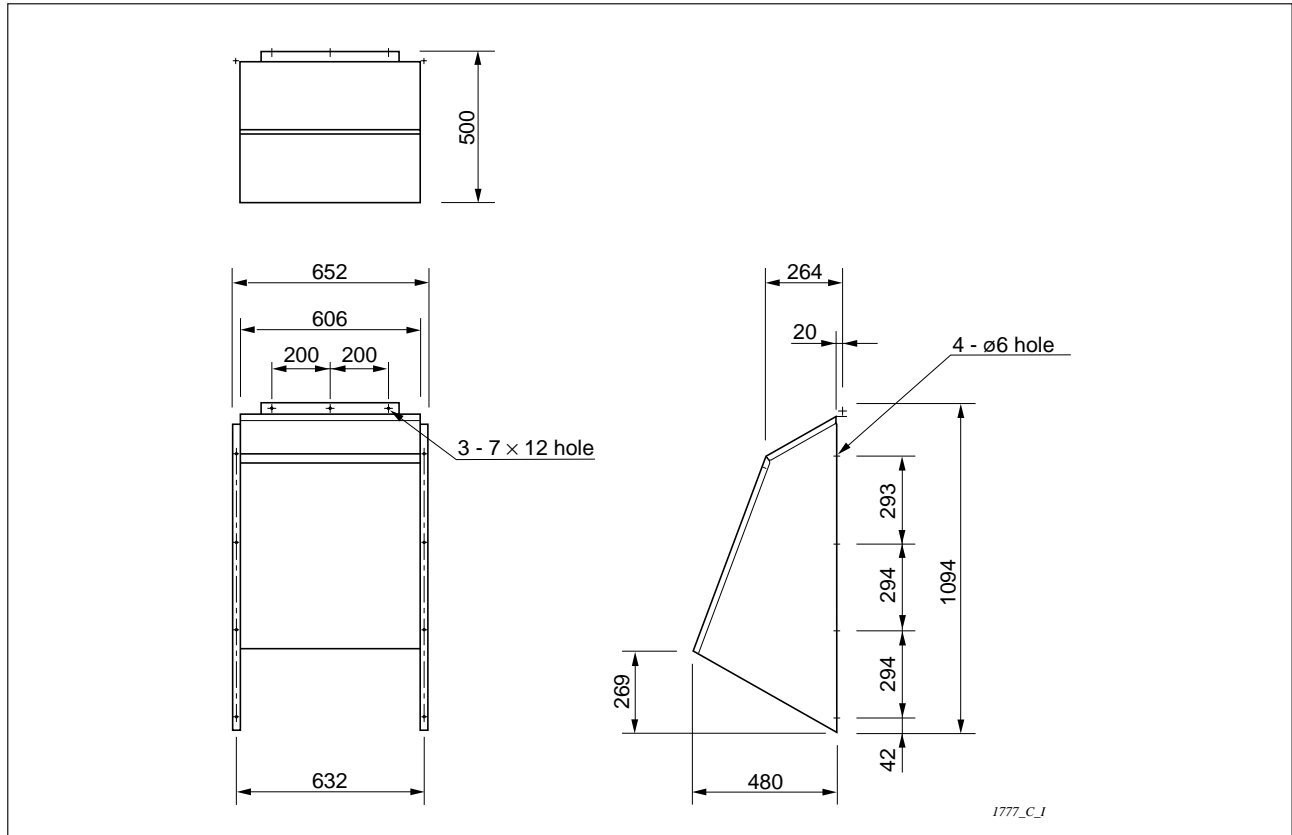
### 4-8. Dimensions of snow / wind ducting

- Reference diagram for air-discharge chamber (field supply)

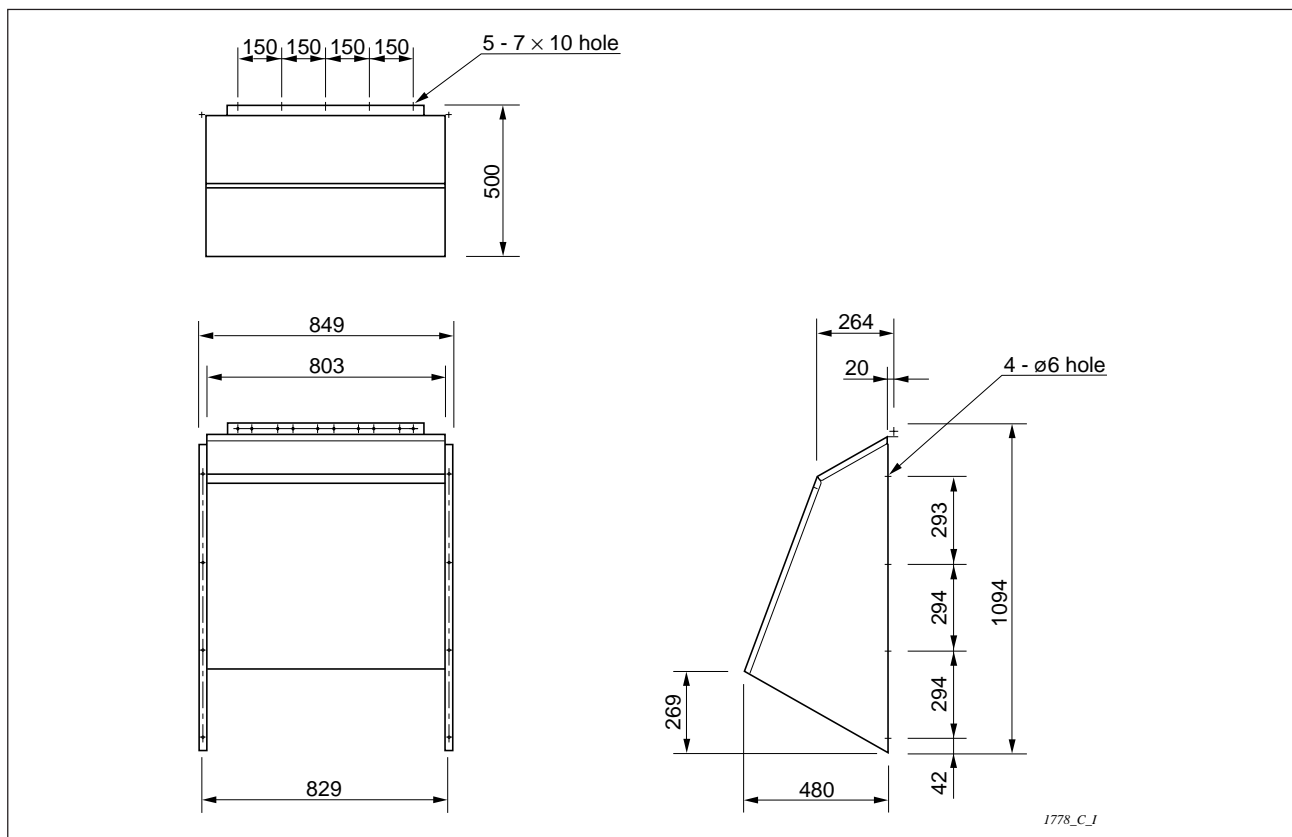


## 4. Installation Instructions

● Reference diagram for snow-proof vents (field supply) (For 150, 190 type)



● Reference diagram for snow-proof vents (field supply) (For 150, 190, 70, 90 type)

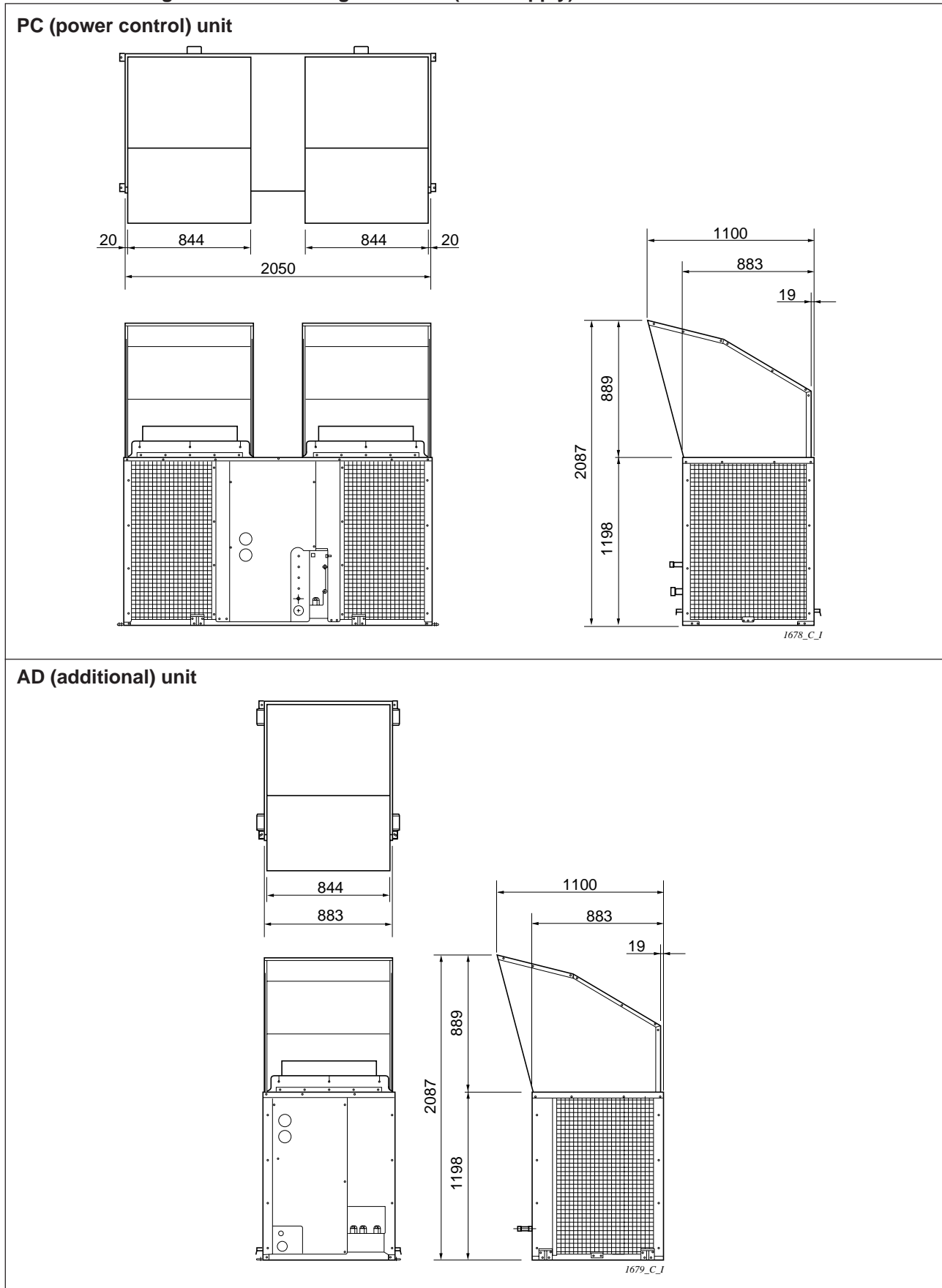


2

## 4. Installation Instructions

### 4-9. Dimensions of wind ducting

- Reference diagram of air-discharge chamber (field supply)

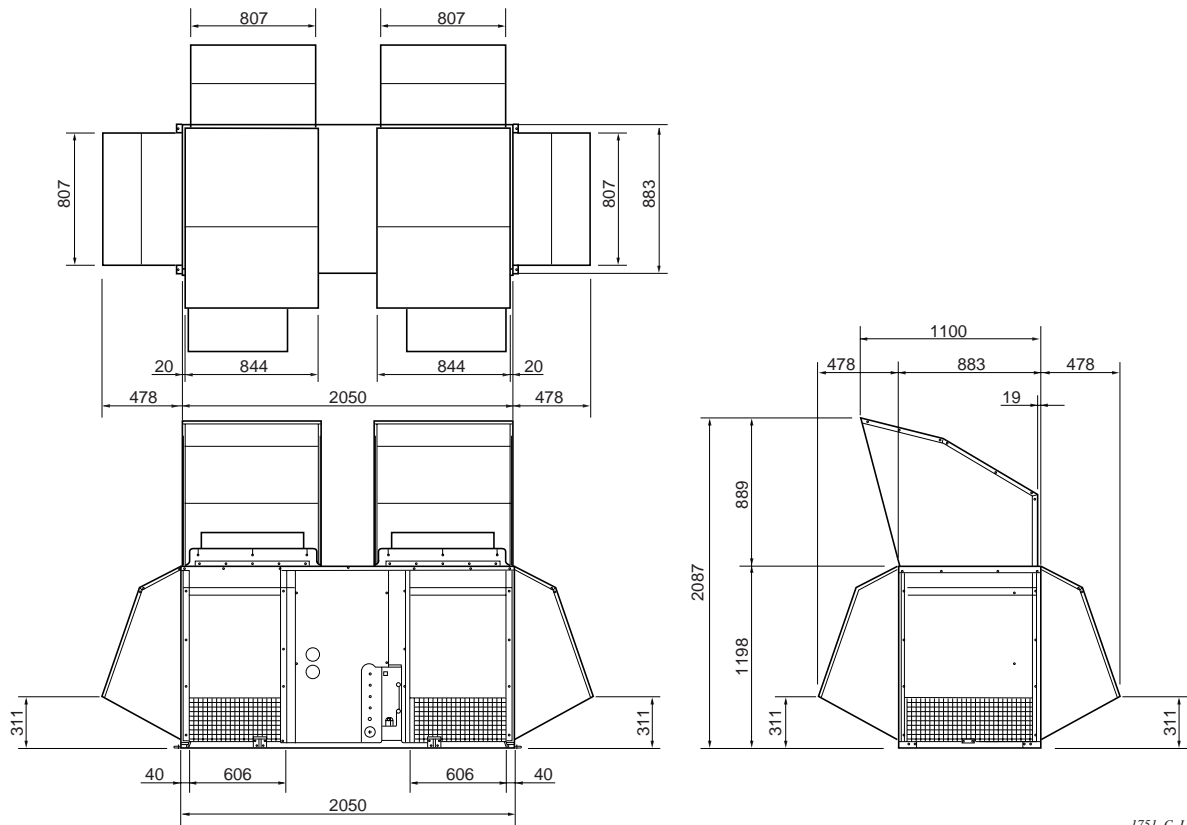


## 4. Installation Instructions

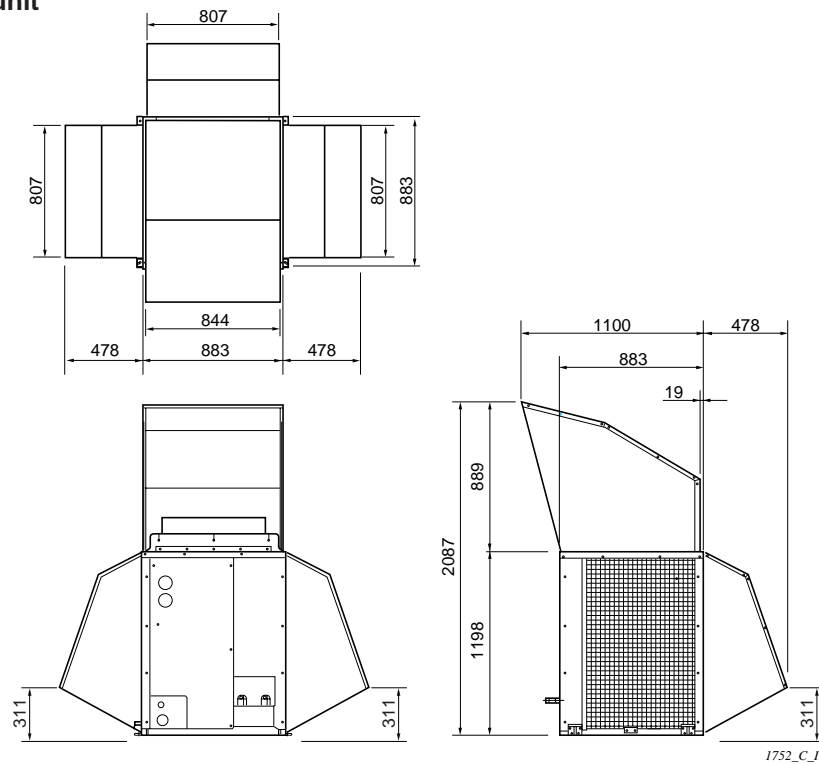
### 4-10. Dimensions of snow ducting

- Reference diagram for snow-proof vents (field supply)

#### PC (power control) unit



#### AD (additional) unit



2

## 4. Installation Instructions

### 4-11. Optional distribution joint kits

See the installation instructions packaged with the distribution joint kit for the procedure for installation.

Model Name	Cooling capacity after distribution
1. APR-HV63MB1	16.0 kW (54.6 Mbtu/h) or less
2. APR-DV64MB	
3. APR-DV94MB	More than 16.0 kW (54.6 Mbtu/h)
4. APR-HV84MB	28.0 kW (95.5 Mbtu/h) or less
5. APR-HV106MB	More than 30.0 kW (102.4 Mbtu/h) 52.4 kW (178.8 Mbtu/h) or less
6. APR-DV138MB	More than 16.0 kW (54.6 Mbtu/h) 56.0 kW (191.1 Mbtu/h) or less
7. APR-DV148MB	More than 28.0 kW (95.5 Mbtu/h) 101.0 kW (344.7 Mbtu/h) or less
8. APR-DV168MB	More than 28.0 kW (95.5 Mbtu/h) 112.0 kW (382.2 Mbtu/h) or less

2

#### 1. APR-HV63MB1

Wide tube

Narrow tube

#### 2. APR-DV64MB

Max. diameter 19.05 mm  
Min. diameter 12.7 mm

Wide tube

Narrow tube

Unit: mm

Position	A	B	C	D	E	F	G
Size	28.58	25.4	19.05	15.88	12.7	9.52	6.35

#### 3. APR-DV94MB

Max. diameter 28.58 mm  
Min. diameter 19.05 mm  
(ø 12.7-1)

Wide tube

Narrow tube

Unit: mm

Position	A	B	C	D	E	F	G
Size	28.58	25.4	19.05	15.88	12.7	9.52	6.35

### 4. Installation Instructions

#### 4. APR-HV84MB

Part name	Distribution joints		Insulations	Joint
Figure				
Q'ty	1	1	1	1

Size of connection point on each part (Part A-G show inside diameters of tubing and Part Z shows outside one.)

Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part Z
mm	28.58	25.4	19.05	15.88	12.7	9.52	6.35	25.4
inch	1-1/8	1	3/4	5/8	1/2	3/8	1/4	1

#### 5. APR-HV106MB

Part name	Distribution joints		Insulations	Joint
Figure				
Q'ty	1	1	1	1

Size of connection point on each part (Part A-G show inside diameters of tubing and Part Y-Z show outside ones.)

Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part Y	Part Z
mm	38.1	31.75	19.05	15.88	12.7	9.52	6.35	31.75	19.05
inch	1-1/2	1-1/4	3/4	5/8	1/2	3/8	1/4	1-1/4	3/4

#### 6. APR-DV138MB

Part name	Distribution joints	Insulations	Reducing joints			
Figure						
Q'ty	1	1	2	2	4	3

Size of connection point on each part (Part A-I show inside diameters of tubing and Part W-Z show outside ones.)

Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part H	Part I	Part W	Part X	Part Y	Part Z
mm	41.28	38.1	31.75	28.58	25.4	19.05	15.88	12.7	9.52	31.75	28.58	19.05	12.7
inch	1-5/8	1-1/2	1-1/4	1-1/8	1	3/4	5/8	1/2	3/8	1-1/4	1-1/8	3/4	1/2

2



4. Installation Instructions



7. APR-DV148MB

Part name	Distribution joints	Insulations	Reducing joints		
Figure					
Q'ty	1	1	2	2	2
Figure					
Q'ty	1	1	2	1	

Size of connection point on each part (Part A-L show inside diameters of tubing and Part X-Z show outside ones.)

Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part H	Part I	Part J	Part K	Part L
mm	44.45	41.28	38.1	31.75	28.58	25.4	22.22	19.05	16.16	15.88	12.7	9.52
inch	1-3/4	1-5/8	1-1/2	1-1/4	1-1/8	1	7/8	3/4	-	5/8	1/2	3/8

Size	Part X	Part Y	Part Z
mm	41.28	19.05	15.88
inch	1-5/8	3/4	5/8

8. APR-DV168MB

Part name	Distribution joints	Insulations	Reducing joints			
Figure						
Q'ty	1	1	2	2	2	2
Figure						
Q'ty	1	1	2	2	1	

Size of connection point on each part (Part A-M show inside diameters of tubing and Part V-Z show outside ones.)

Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part H	Part I	Part J	Part K	Part L	Part M
mm	50.8	44.45	41.28	38.1	31.75	28.58	25.4	22.22	19.05	16.16	15.88	12.7	9.52
inch	2	1-3/4	1-5/8	1-1/2	1-1/4	1-1/8	1	7/8	3/4	-	5/8	1/2	3/8

Size	Part V	Part W	Part X	Part Y	Part Z
mm	44.45	41.28	22.22	19.05	15.88
inch	1-3/4	1-5/8	7/8	3/4	5/8

## 4. Installation Instructions

### 4-12. Optional ball valve kits

See the installation instructions packaged with the ball valve kit for the procedure for installation.

Model name		Contents	Applicable outdoor unit	Indoor unit cooling capacity after the ball valve
for R407C	for R22			
BV-XR125B	BV-X125B	* 38.1 (1- 1/2)	190, 150 type	40 ~ 70 kW
		15.88 (5/8)		
BV-XR94B	BV-X94B	* 28.58 (1- 1/8)	90 type	~ 28 kW
		12.7 (1/2)		
BV-XR84B	BV-X84B	* 25.4 (1)	70 type	~ 22.4 kW
		12.7 (1/2)		
BV-XR63B	BV-X63B	19.05 (3/4)	(36, 48 type)	~ 16 kW
		9.52 (3/8)		
BV-XR53B	BV-X53B	15.88 (5/8)	-	~ 9 kW
		9.52 (3/8)		
BV-XR43B	BV-X43B	12.7 (1/2)	-	~ 3.6 kW
		9.52 (3/8)		
BV-R3B	BV-3B	9.52 (3/8)	for Balance tube	-

\* Marked ball valves are brazing type and the others are flare connecting type.



**CAUTION**

Referring to the above chart, make sure that your ball valve is suitable for your refrigerant. The ball valve used for R22 refrigerant is different from one used for R407C (No-interchangeability).

Figure	Ball valve size mm (in.)	Dimension (mm)																			
		A	B	C	D	E															
<b>Flare type</b> 	9.52 (3/8")	76	42	54	16	44															
	12.7 (1/2")	89	42	56	20	51															
	15.88 (5/8")	92	42	56	20	51															
	19.05 (3/4")	108	51	68	22	56															
<b>Welding type</b> 	25.4 (1")	250	55	69	35	83															
	28.58 (1-1/8")	250	55	69	41	92															
<b>Welding type</b> 	38.1 (1-1/2")	270	28	67	40	104															
	<table border="1"> <thead> <tr> <th colspan="2">Attachment</th> <th>Q'ty</th> </tr> </thead> <tbody> <tr> <td>Joint</td> <td>Inside diameter 41.28  Inside diameter 38.1</td> <td>1</td> </tr> <tr> <td>Joint</td> <td>Inside diameter 41.28  Outside diameter 38.1</td> <td>1</td> </tr> <tr> <td>Joint</td> <td>Inside diameter 38.1  Inside diameter 31.8</td> <td>1</td> </tr> <tr> <td>Joint</td> <td>Inside diameter 19.05  15.88, Flared</td> <td>2</td> </tr> </tbody> </table>						Attachment		Q'ty	Joint	Inside diameter 41.28  Inside diameter 38.1	1	Joint	Inside diameter 41.28  Outside diameter 38.1	1	Joint	Inside diameter 38.1  Inside diameter 31.8	1	Joint	Inside diameter 19.05  15.88, Flared	2
	Attachment		Q'ty																		
	Joint	Inside diameter 41.28  Inside diameter 38.1	1																		
	Joint	Inside diameter 41.28  Outside diameter 38.1	1																		
Joint	Inside diameter 38.1  Inside diameter 31.8	1																			
Joint	Inside diameter 19.05  15.88, Flared	2																			

**NOTE**

Install the service port facing toward the port for additional unit.

TD831077

# Contents

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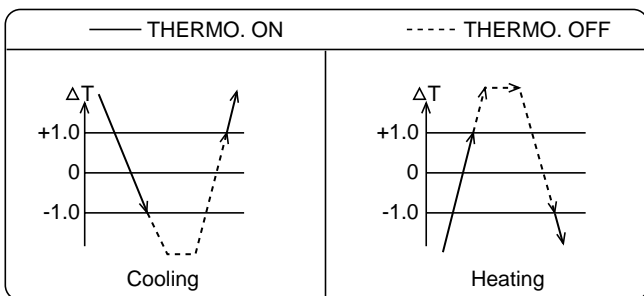
# 1. Main Operating Functions

## 1-1. Room temperature control

The thermostat turns ON / OFF with the following  $\Delta T$ .

$\Delta T = \text{Room temp} - \text{Set temp}$	
With body thermostat	Room temp = (Body sensor) - (Shift temp*)

- \* Shift temp (valid while heating, only) is set when shipped from factory as follows:
- +4 deg: all type except wall mounted and floor standing type
  - +2 deg: wall mounted type
  - 0 deg: floor standing type
- Shift temp can be set with Remote controller from +1 to +10 deg.



634\_8132

Supplement:

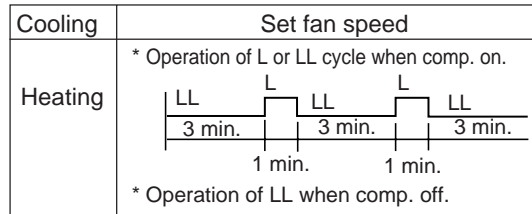
- (1) After thermo.-on, it will not thermo.-off for 3 minutes due to  $\Delta T$ . However, for heating, if the indoor coil E2 temperature  $\geq 64^\circ\text{C}$ , it will thermo.-off within 5 minutes (over load protection).
- (2) After thermo.-off, it will not thermo.-on for 1 ~ 3 minute. For cooling or dehumidifying, it will not thermo.-on if the indoor coil E1 or E2 temperature  $< 2^\circ\text{C}$ .
- (3) When the system is set for test operation, it will not thermo.-off for 60 minutes (forced thermo.-on).

## 1-2. Fan speed control

(1) Control in special conditions

Reverse cycle start control	•Cooling, dry operation : Set fan speed
Oil recovery control	•Heating : OFF
Reverse cycle defrost control	•OFF or LL
Switch over control	•When switching over from cooling,dry, or fan to heating : OFF •When switching over from heating to cooling, dry, or fan: Set fan speed

- (2) Fan operation : Set fan speed
- (3) Dry operation : L
- (4) When thermo. OFF

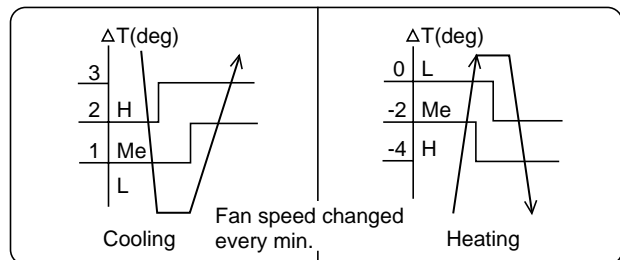


\* For all units except wall mounted type.  
In case of wall mounted type, only LL airflow blows when thermo. OFF.

(5) When thermo. ON

Cooling operation	<ul style="list-style-type: none"> <li>• Auto setting : Conforms to the procedure of "Fan speed auto control"</li> <li>• Regular fan speed setting : Conforms to the set fan speed</li> </ul>
Heating operation	<ul style="list-style-type: none"> <li>• At start of operation : Conforms to the procedure of "Cold draft prevention"</li> <li>• Later                             <ul style="list-style-type: none"> <li>- Fan speed auto setting : Conforms to the procedure of "Fan speed auto control"</li> <li>- Regular fan speed setting : Conforms to the set fan speed</li> </ul> </li> </ul>

● Fan speed auto control : Controlled by  $\Delta T$  (Room temp - Set temp)



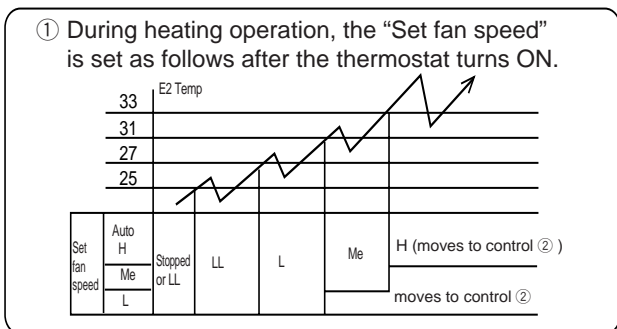
1278\_X\_1

Supplement

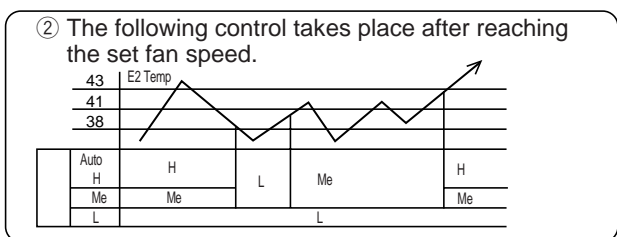
The following heating controls receive priority, while heating.

# 1. Main Operating Functions

## ● Heating operation control



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**NOTE**  
E2: Indoor coil temp.

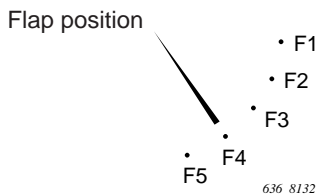
## 1-3. Auto flap control

[Applicable indoor units]  
4-Way, 2-Way, & ceiling mounted

- The airflow direction can be set at 5 stages with **FLAP setting button**.

Flap position according to the operating state

		4-Way 2-Way	Ceiling mounted
Fan	Initial setting	F2	F1
	Manual setting	F1 ~ F5	
Cooling, dry	Initial setting	F2	F1
	Manual setting	F1 ~ F3	
Heating (H / Me)	Initial setting	F4	
	Manual setting	F1 ~ F5	
Heating (L)	Initial setting	F4	
	Manual setting	F1 ~ F4	
Sweep		F1 ~ F5	
Heating stand by		F2	
When stopped		F5	



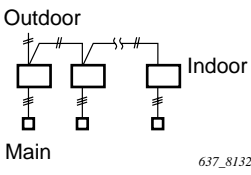
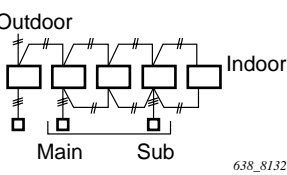
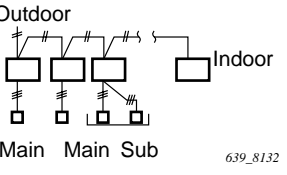
636\_8132

\* Movement of flap  
When changing from F4 to F3  
moves once through F5 & F1,  
and then set at F3.  
(F4 → F5 → F1 → F2 → F3)

## 1. Main Operating Functions

### 1-4. Functions for group control & multiple remote control

Group control and multiple remote control become possible by using remote controllers; however part of the functions of the main and sub remote controller cannot be controlled. So, confirm them referring to the following table.

	Individual remote control (standard)	Group control		Multiple remote control	
Diagram of system outline	 <p>637_8132</p>	 <p>638_8132</p>	 <p>639_8132</p>		
Remote control functions	Each remote controller	Main remote controller	Sub remote controller	Main remote controller	Sub remote controller
ON / OFF	○	○ (Collective, later pressed priority)	○	○ (Later pressed priority)	○
Operation Mode switch	○	○ (Collective, first pressed priority *1)	○	○ (First pressed priority *1)	○
Temp setting	○	○ (Collective, later pressed priority)	○	○ (Later pressed priority)	○
Fan speed setting (H / Me / L / auto)	○	○ (Collective, later pressed priority)	○	○ (Later pressed priority)	○
timer 72 hr ON / OFF	○	○ (Timer setting with sub impossible)	×	○ (Timer setting with sub impossible)	×
Auto flap	Arbitrary airflow direction setting	○ (Individual, later pressed priority)	○	○ (Later pressed priority)	○
	Sweep	○ (Individual, later pressed priority)	○	○ (Later pressed priority)	○
Sensor temp. display	○	○	○	○	○
Service check	○	○	○	○	○

#### NOTE

To use as a sub unit (sub remote controller), the remote control address switch of its remote control PCB must be set ON.

\*1 In ECO & W-ECO multi system, first pressed cooling (dry) or heating mode has priority, different mode can not be selected later except fan mode.

If you select a different mode later, the indication "MODE FIXED" will be displayed on remote controller.

## 2. Optional Controller

### ■ List of optional controller functions

#### ● Remote controller functions

In multi system, the following optional remote controllers can be selected, but there are some functions which cannot be controlled. So, confirm the usable functions from the following table at the time of selecting them.

○: Controllable X: Uncontrollable

Function			Remote Controller	System Controller	Simplified Remote Controller	
			RCS-SH80TG	SHA-KC64TG	RCS-KR1TG	
			ON / OFF	○ (Collective/Individual)	○ (Collective/Individual)	
Operation mode switch	Heating		○	○ (Individual)	○ (Individual)	
	Dry		○	○ (Individual)	○ (Individual)	
	Cooling		○	○ (Individual)	○ (Individual)	
	Fan		○	○ (Individual)	○ (Individual)	
	Temp setting			○	○ (Individual)	○ (Individual)
	Fan speed setting (H / Me / L / auto)			○	○ (Individual)	○
	Auto flap	Auto airflow direction setting		○	○	X
		Arbitrary airflow direction setting		○	*2 ○	X
	Sweep (Flap swing)			○	*2 ○	○
	72 hr ON / OFF timer			○	X	X
	Sensor temp display			○	X	X
	Self-diagnostic function (as sub controller) * 3			○	○	X
	Cummulative operation time * 3			X	X	X
	System	Central control (at hand inhibited)			X	○
Group control			○ (Up to 8 units)	○ (Up to 16 groups)	○	
Multiple units set in parallel (as sub controller) *1			○	○	○	
Multiple units set in parallel (as main controller)			○	○	○	
Concurrent use as weekly timer			○	○	X	
Setting range	Cooling, dry	( °C)	18 ~ 30		18 ~ 30	
	Heating	( °C)	16 ~ 26		16 ~ 26	

#### NOTE

- \* 1 To use as a sub controller, the address switch of its remote control PCB must be set (from OFF to ON.).
- \* 2 This function is not useable for indoor unit which is connected remote controller.
- \* 3 This function is to estimate the simple electrical charge.

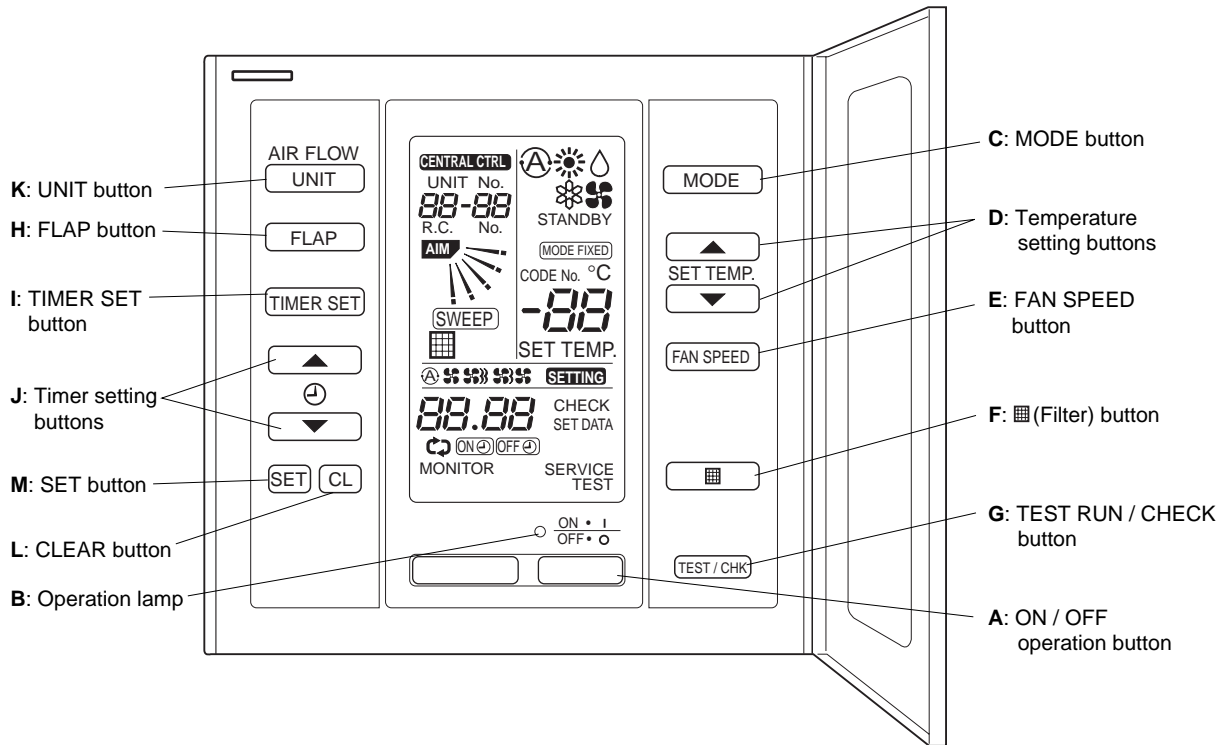
#### NOTE

If you use both remote controller and system controller concurrently, both controller can be used on a last-signal priority basis.

## 2. Optional Controller (remote controller)

### 2-1. Remote controller / RCS-SH80TG

#### ■ How to use the remote controller














642\_8132

<b>A:</b>	<b>ON/OFF operation button</b>	This button is for turning the air conditioner on and off.
<b>B:</b>	<b>Operation lamp</b>	This lamp lights when the air conditioner is turned on.
<b>C:</b>	<b>MODE button</b>	Use this button to select one of the following five operations: ☀️ <b>(HEAT)</b> Used for normal heating operation. (temperature range: 16 - 26 °C) 💧 <b>(DRY)</b> Used for dehumidifying without changing the room temperature. (temperature range: 18 - 30 °C) ❄️ <b>(COOL)</b> Used for normal cooling operation. (temperature range: 18 - 30 °C) 🌀 <b>(FAN)</b> Used to run the fan only, without the heating or cooling operation.  <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>NOTE</b></div> <b>When the (MODE FIXED) indication is displayed, change the setting with the MODE button, or turn off all units once then select the mode again.</b>
<b>D:</b>	<b>Temperature setting buttons</b>	▲ : Press this button to increase the set temperature. ▼ : Press this button to decrease the set temperature.



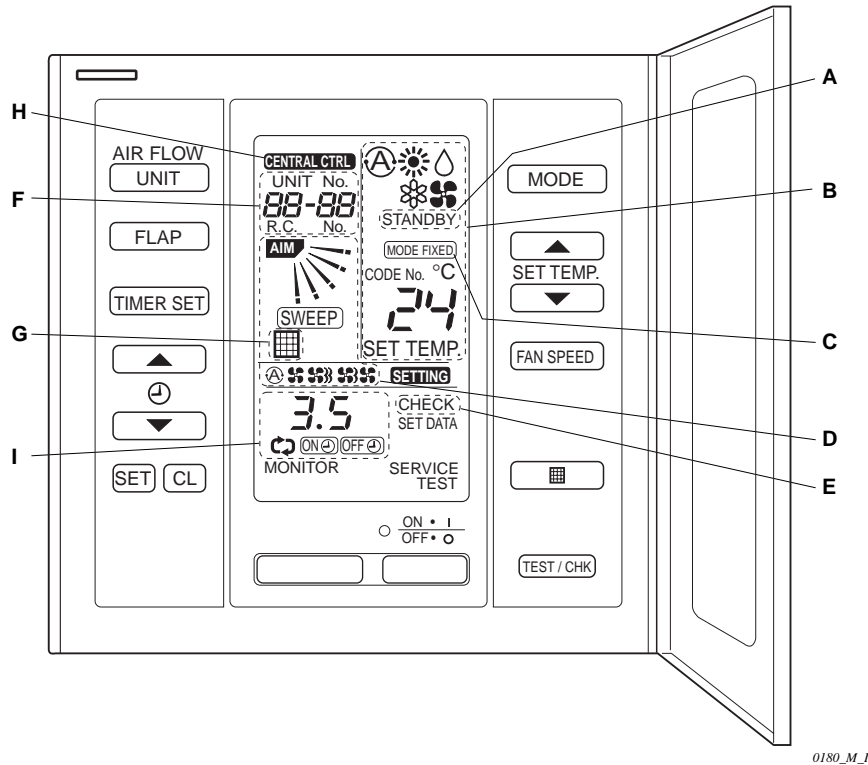
## 2. Optional Controller (remote controller)

<b>E:</b> <b>FAN SPEED button</b>	 <p>The air conditioner automatically decides the fan speed.</p> <p>High fan speed</p> <p>Medium fan speed</p> <p>Low fan speed</p>						
<b>F:</b>  <b>button (Filter)</b>	<p>Use this button to reset the filter sign  (timer). The air conditioner has the timer for filter and informs you the time of cleaning the filter.</p>						
<b>G:</b> <b>TEST RUN / CHECK</b>  <b>CAUTION</b>	<p>This button is used only when servicing the air conditioner.</p> <p><b>Do not use the TEST / CHK button for normal operation.</b></p>						
<b>H:</b> <b>FLAP button</b>  <b>CAUTION</b>	<p>Use this button to set the airflow direction at a specific angle or to make the airflow direction sweep to up and down automatically (SWEEP). Airflow direction or <b>SWEEP</b> indication is displayed on the remote controller.</p> <table border="1"> <thead> <tr> <th>Operation mode</th> <th>Number of airflow direction settings</th> </tr> </thead> <tbody> <tr> <td>COOL or DRY</td> <td>3</td> </tr> <tr> <td>HEAT or FAN</td> <td>5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>● In the cool mode and dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent.</li> <li>● Do not move the flap with your hands.</li> </ul>	Operation mode	Number of airflow direction settings	COOL or DRY	3	HEAT or FAN	5
Operation mode	Number of airflow direction settings						
COOL or DRY	3						
HEAT or FAN	5						
<b>I:</b> <b>TIMER SET button</b>	<p>Use this button to set the timer at which you wish the air conditioner to go on or off.</p> <p> : The air conditioner stops after the length of time set.</p> <p>  : The air conditioner stops after the same set time every time.</p> <p> : The air conditioner starts after the length of time set.</p>						
<b>J:</b> <b>Timer setting buttons</b>  Press this button to increase the time.  Press this button to decrease the time. <b>NOTE</b>	<ul style="list-style-type: none"> <li>● When more than one remote controller is being used with the twin-type, triple-type, etc, <b>a sub remote controller can not be used for timer operations.</b></li> <li>● If a power failure occurs, the time counted up to that point will be memorized. After the power is restored, the timer again starts counting up to the set time.</li> </ul>						
<b>K:</b> <b>Unit button</b>	<p>Use this button to select the indoor unit in case of group control. Cannot be used in other case.</p>						
<b>L:</b> <b>CLEAR button</b>	<p>Use this button to clear the timer setting.</p>						
<b>M:</b> <b>SET button</b>	<p>Use this button to set the timer setting.</p>						

- NOTE**
- 1) When multiple remote controllers are used, the most recent button that is pressed on any remote controller is effective, except for timer operations and mode setting.
  - 2) When "CENTRAL CONTROL" is displayed on the LCD, any operation (setting) is made by system controller. When "CENTRAL CONTROL" is flashing on the LCD, ON/OFF operation is not accepted by system controller (remote control inhibited).

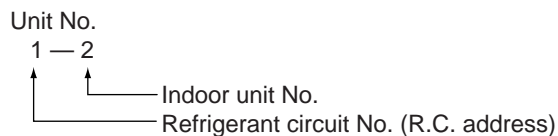
## 2. Optional Controller (remote controller)

### Display (Remote controller)



#### Description

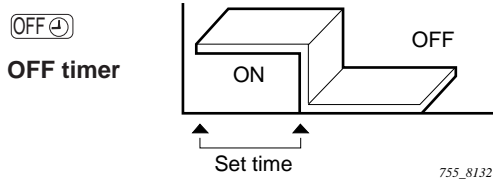
- A:** When the unit is in the heating standby mode, the STANDBY indicator appears.
- B:** The currently selected operation mode is displayed.
- C:** This is displayed in case a different operation mode was selected already.
- D:** The currently selected FAN SPEED, FAN AIM and SWEEP status are displayed.
- E:** This is displayed only if an abnormality occurs within a unit.
- F:** This indicates the indoor unit address in case of group control.



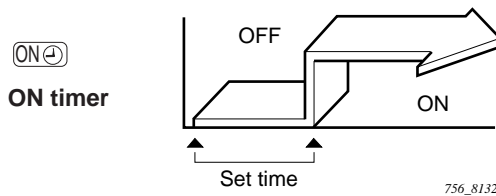
- G:** This is displayed if it is time to clean the filter.
- H:** This is displayed during central control.
- I:** When setting the timer, the selected timer mode is displayed.

## 2. Optional Controller (remote controller)

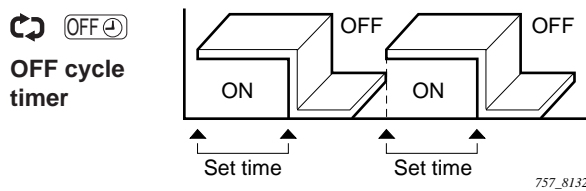
### ■ Setting the Timer



Use this mode to turn off the appliance automatically after the length of time set.



Use this mode to start the appliance automatically after the length of time set.



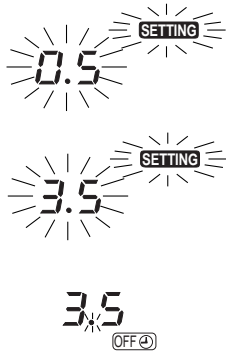
Use this mode to turn the appliance off automatically after the same set time every time.

- NOTE**
- When more than one remote controller is being used a sub-remote controller can not be used for timer operations.

## 2. Optional Controller (remote controller)

### How to set the OFF timer ( )

(Example) To stop the air conditioner after 3:30.



#### Operation

1. Press the **ON / OFF** button to start the air conditioner.
2. Press the **TIMER SET** button to select  mode.
3.
  - Press the **▲** button until 3.5 is displayed.
  - Press the **▼** button if the set time is overexceed.
4. Press the **SET** button to set the OFF timer.

#### Indication





→ The **SETTING** and time indications flash.

### How to set the OFF cycle timer ( )

(Example) To stop the air conditioner after 3:30 everytime



#### Operation

1. Press the **ON / OFF** button to start the air conditioner.
2. Press the **TIMER SET** button to set  .
3. Set the time using **▲ ▼** button.
4. Press the **SET** button to set the OFF cycle timer (   ).

#### NOTE


When the OFF cycle timer is set, the unit will stop after 3:30 every operation.

### How to set the ON timer ( )

(Example) To start the air conditioner after 10:30.



#### Operation

1. Press the **ON / OFF** button to start the air conditioner.
2. Press the **TIMER SET** button to select  mode.
3.
  - Press the **▲** button until 10.5 is displayed.
  - Press the **▼** button if the set time is overexceed.
4. Press the **SET** button to set the ON timer.

#### Indication

→ The **SETTING** and time indications flash.

#### NOTE

When the ON timer is set, the unit enters the paused state.

## 2. Optional Controller (remote controller)

### ■ How to install the remote controller

Remote controller wiring can be extended to a maximum of 1,000 m.



**CAUTION**

- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the remote controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

The mounting position for the remote controller should be located in an accessible place for control. Never cover over the remote controller or recess it into the wall.

- (1) When you open the decorative cover, you will see two gaps under the remote controller. Insert a coin into these gaps and pry off the back case.

### ■ When using a wall box for flush mounting

- If local codes allow, this remote controller can be mounted using a conventional wall box for flush mounting.
- (2) Attach the back case with the 2 small screws provided. Using a screwdriver, push open the cut-outs on the back case. These holes are for screws. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
  - (3) Connect the remote controller wiring (3 wires) correctly to the corresponding terminals in the electrical component of the indoor unit.



**CAUTION**

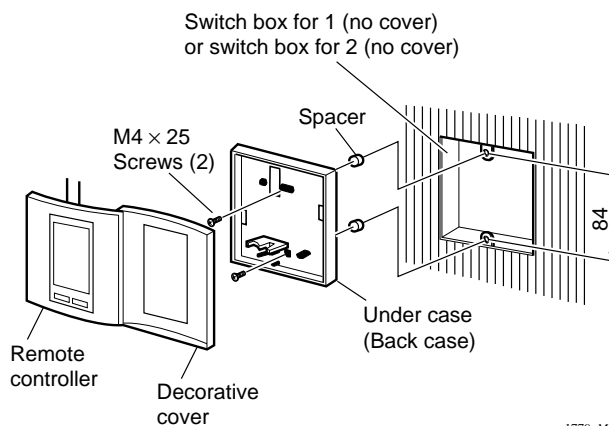
**When wiring, do not connect the remote controller wires to the adjacent terminal block for the power wiring. Otherwise, the unit will break down.**

- (4) To finish, fit the back tabs of the case into the remote controller and mount it.

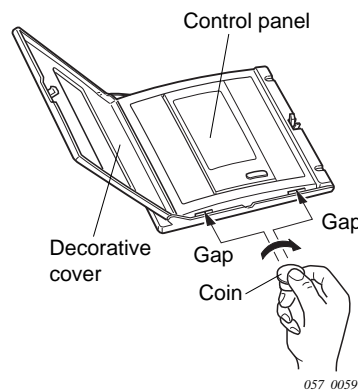


**CAUTION**





**Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.**

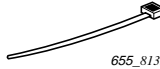



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057\_0059

No.	Accompanying parts	Qty
①	Remote controller (comes with 20 cm wire)  651_8132	1
②	Machine screws M4 x 25  652_8132	2
③	Wood screws  653_8132	2
④	Spacers  654_8132	2

No.	Accompanying parts	Qty
⑤	Clamper  655_8132	2
⑥	Wire joints  656_8132	3

## 2. Optional Controller (remote controller)

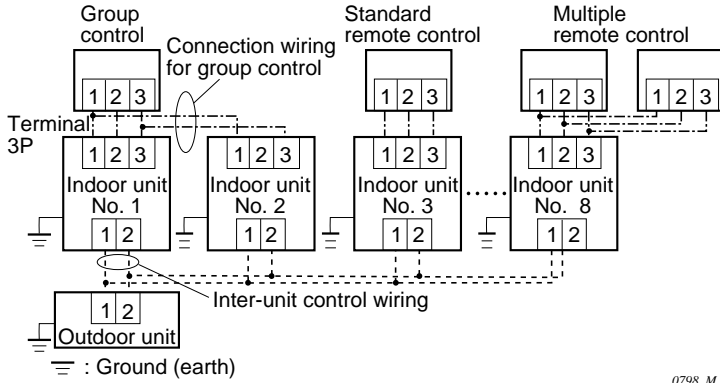
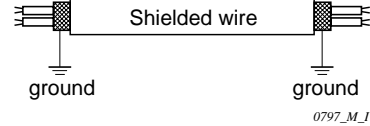
### Basic wiring diagram



**CAUTION**

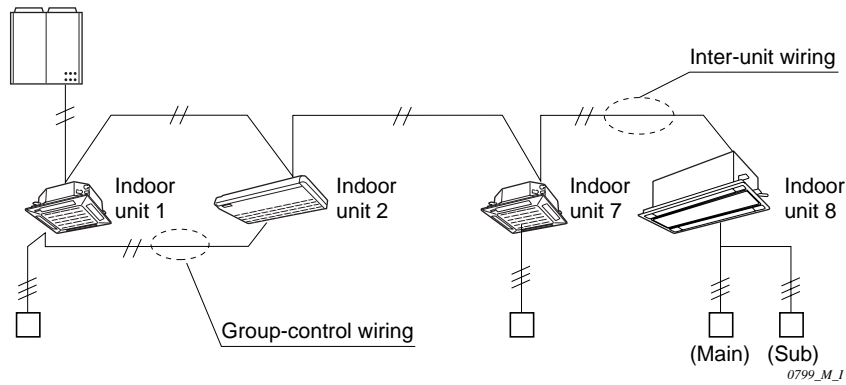
Install wiring correctly (incorrect wiring will damage the equipment).

- Use shielded wires for inter-unit control wiring and ground the shield on both sides. Otherwise misoperation because of noise may occur.



### Recommended wire diameter and wire length

Inter-unit control wiring	Remote control wiring Control wiring for group control
0.75 mm <sup>2</sup> (AWG #18) <b>Use shielded wiring*</b>	0.75 mm <sup>2</sup> (AWG #18)
Max. 1,000 m (Total)	Max. 500 m (Total)

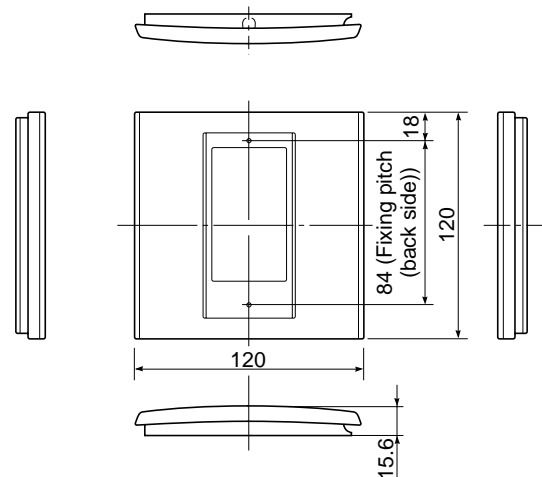


### Wiring procedure

Install the wiring according to the above wiring diagram.

- The address setting is automatically executed after turning on the system.  
An indoor unit address is assigned to each indoor unit.
- Operation takes place successively at intervals of 1 second, by using combinations of the address setting of each unit.

### Diagram of outer dimensions



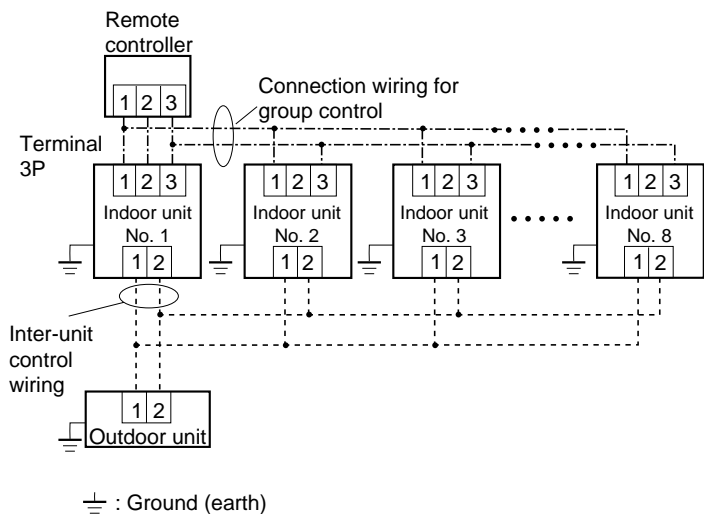
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## 2. Optional Controller (remote controller)

### ■ Wiring system diagram for group control

This diagram shows when several units (maximum of 8) are controlled by a remote controller (master unit). In this case, a remote controller can be connected at any indoor unit.



0800\_M\_I

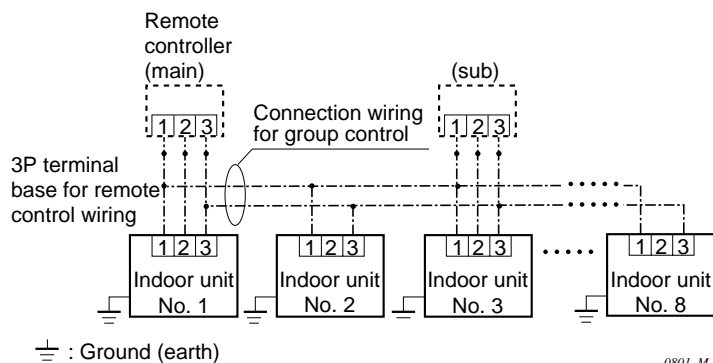
### Wiring procedure

Wire according to the left diagram:

- Address setting is executed automatically when the outdoor unit is turned on.
- Each successive unit will respond at one-second intervals following the order of the group address when the remote controller is operated.

### ● Group control using 2 remote controllers.

It does not matter which of the 2 remote controllers you set as the main controller.

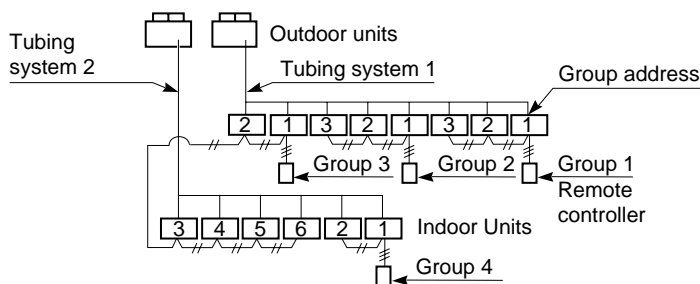


0801\_M\_I

### NOTE Cautions on group control

- Group control within the same refrigerant tubing system is recommended.

[Tubing system which is not recommended]



0195\_M\_I

When using multiple remote controllers (up to 2 of them can be used), one is the main remote controller and the other is the sub-remote controller.

- To set up a sub-remote controller, turn its remote control address switch (RCU. ADR) located on its PCB from OFF to ON (OFF: when shipped from factory).

Example.1 In the ECO multi system, group control extending over tubing systems becomes impossible to set, giving rise to indoor units which cannot operate.

While group 4 is in heating operation, if later group 3 begins cooling operation, indoor units 1, 2 of group 3 can be operated, but the indoor units 3-6 of group 4 cannot operate.



## 2. Optional Controller (remote controller)

### ■ Wiring system diagram for multiple remote control

#### ● When Installing Multiple Remote Controllers

This multiple remote controller system is used for operating the unit(s) at different positions. (A maximum of 2 remote controllers can be installed.)

#### ● Setting method

To execute this control, make the setting according to the following procedure.

- ① Of the two installed remote controllers, make one the main remote controller (factory-shipped state).
- ② On the other remote controller, turn the address switch on the PCB from OFF to ON. In this state, it functions as a sub-remote controller.

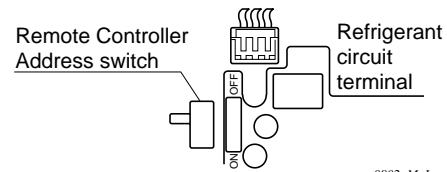
#### ● Basic wiring diagram



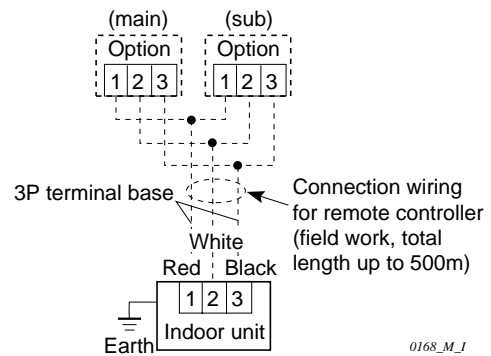
**CAUTION**

Install wiring correctly (incorrect wiring will damage the equipment).

- To operate 1 indoor unit with 2 remote controllers set at different places.



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0168\_M\_I



## 2. Optional Controller (remote controller)

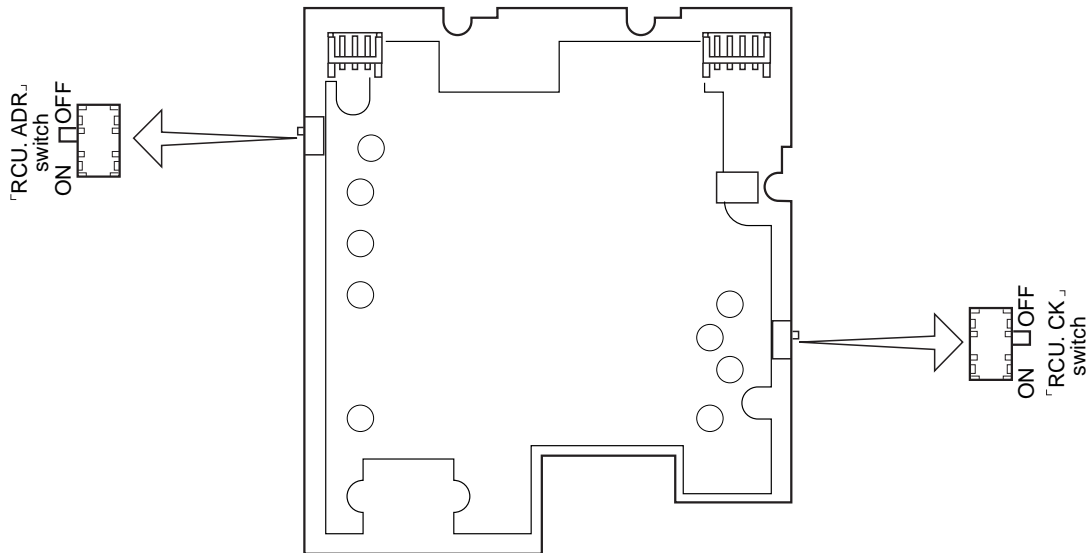
### ■ Service functions of remote controller

From the remote controller you can control both the operation and settings of the unit as well as perform several useful service checks. This section explains how to use the remote controller to:

- (A) Set service check switches.
- (B) Use the test run procedure.
- (C) Check the sensor temperature readings.
- (D) Find out about past service problems.
- (E) Check the remote controller itself for correct operation.
- (F) Execute the auto. address operation.
- (G) Confirm and change the indoor unit address.
- (H) Change the shift temperature in heating mode
- (I) Set the indoor unit address.
- (J) Change the period of the filter timer

#### (A) Set service check switches

The service check switches are located on the back of the remote controller's P.C.B. Ass'y as follows :



The following are the correct switch settings for normal use of the unit. Only change the settings temporarily for making service checks. When you have changed the settings, **be sure to return them to the standard settings** shown here.

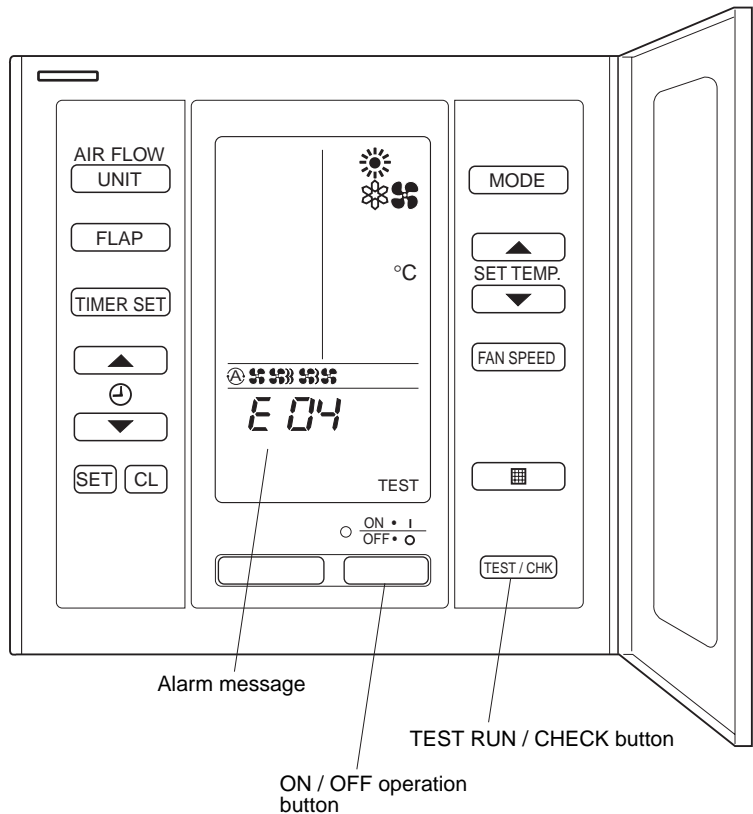
- RCU.CK** switch - Refer to section (E) "Checking the remote controller for correct operation"
- RCU.ADR** switch - Keep the switch **OFF** all the time except in case of sub remote controller

## 2. Optional Controller (remote controller)

### (B) Use the test run procedure

- ❑ The purpose of the test run function is to let you control the operation of the unit directly without the thermostat turning the unit on or off. As indicated in the following procedure, be sure to switch out of TEST RUN when you are finished, or the air conditioner can be damaged because it won't cycle on and off normally.
- ❑ To protect the air conditioner from overloading, the outdoor unit will not start running for 3 minutes after power is applied or the unit is turned OFF.

- a Press the **TEST / CHK** button at the bottom right on the remote controller.
- b Press the **ON / OFF** operation button to start the test run.
- c Press the **MODE** button to select either COOL or HEAT mode.
- d When the test run has started, "TEST" shows on the remote controller's display.
- e During the test run, the air conditioner runs continuously and the thermostat does not control the system.
- f After the test run, be sure to press the **TEST / CHK** button once again to cancel this mode and be sure "TEST" is not shown on the display.



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**The TEST RUN button is used only for servicing the air conditioner. Do not press this button for normal operation, or the system may be damaged.**

## 2. Optional Controller (remote controller)

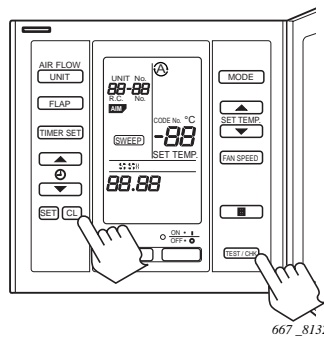
### (C) Check the sensor temperature readings

The air conditioner has temperature sensors placed in areas where temperature levels control the heating or cooling process.

- Each sensor has an address which is made up of the indoor unit address, and the sensor address. The indoor unit address is used only when several units are hooked up to one remote controller (group control). If there is only one unit, made up of one indoor and one outdoor component, then only the sensor address must be put in, as shown in the procedure below.

Follow this procedure to display the temperature of each sensor:

- On the remote controller, press both **TEST / CHK** and **CL** buttons at the same time for more than 4 seconds.

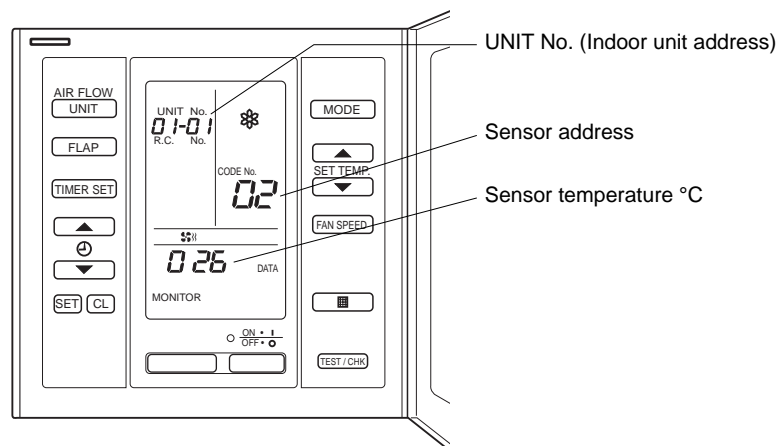


- Once in this mode, the UNIT No., the address and temperature of the sensors instead of its usual information will flash on the display.

#### NOTE

Do not press **TIMER SET** button during checking.

- For this example the UNIT No. (Indoor unit address) is fixed at **01-01**.
- In case of group control, select the UNIT NO. (Indoor unit address) which you want to call with **UNIT** button.
- Each time you press the **▲**, **▼** (SET TEMP.) button you select a different sensor, and the display shows the sensor address and temperature as shown below.



## 2. Optional Controller (remote controller)

Refer to the table below for the relationship between the sensor address and the location of the sensor.

Relationship between the sensor address and the location of sensor

Sensor Address (CODE No.)		Location of Sensor (Themistor)			
Indoor Unit	01			—	
	02	TH1	Indoor air suction Temp.		
	03	TH2	Indoor coil Temp. (E1)		
	04	TH3	Indoor coil Temp. (E2)		
	05	TH4	Indoor coil Temp. (E3)		
	06	TH5	Indoor Discharge air Temp.		
	07		—		
	08		Indoor Electronic Control Valve Open		
	09		—		
Outdoor Unit		PC unit		AD unit	
	0A	TH1	Discharge gas Temp. (PC Compressor)	—	
	0B	TH2	Discharge gas Temp. (AC Compressor)	—	
	0C	TH6	Outdoor coil Temp. (Right coil)	1C	TH3 Outdoor coil Temp.
	0D	TH7	Outdoor coil 1 gas Temp. (Right coil)	1D	TH4 Outdoor coil gas Temp.
	0E	TH4	Outdoor coil 1 liquid Temp. (Right coil)	1E	TH2 Outdoor coil liquid Temp.
	0F	TH8	Outdoor coil 2 gas Temp. (Left coil)	—	
	10	TH5	Outdoor coil 2 liquid Temp. (Left coil)	—	
	11	TH9	Outdoor air suction Temp.	21	TH5 Outdoor air suction Temp.
	12		—	—	
	13		PC Compressor Current	—	
	14		AC Compressor Current	—	
	15		—	—	
	16		—	—	
	17	TH3	Discharge gas Temp. (SC Compressor)	27	TH1 Discharge gas Temp. (SC Compressor)
	18		SC Compressor Current	28	SC Compressor Current

- ( PC or PC Comp. or Compressor : Power Control Compressor  
 AC Comp. or AC Compressor : Standard Compressor  
 SC Comp. or SC Compressor : Scroll Compressor

### NOTE

In case there are no sensor equipped with the unit, - - - is shown on the display.

© Resetting the remote controller display back to normal.

- To reset the display when you are finished, press **TEST / CHK** button, then the remote controller will return to previous mode.

### (D) Find out about past service problems

The remote controller can store the **max. 4 most recent alarm codes**, so you can see what kind of problems the unit has had, if any. Knowing what has already happened and been fixed helps you know what to check at present.

- This function is usable even if the unit is not working.  
 To display the past error codes, follow the procedure below.

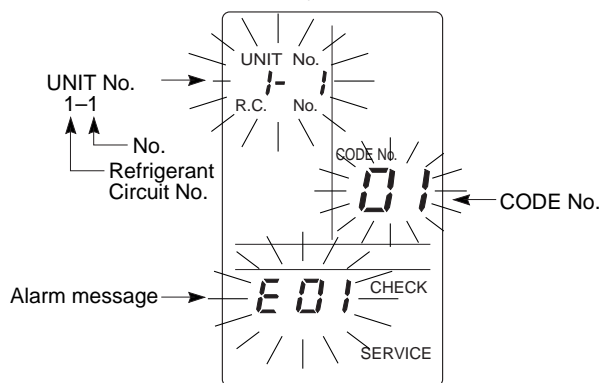
Procedure:

- ① On the remote controller, press both **TEST / CHK** and **SET** buttons at the same time for more than 4 seconds.  
 ② Once in this mode, a change from the normal display to service check display takes place, as shown in the table below:

NORMAL DISPLAY	Display Change (→)	SERVICE CHECK DISPLAY
Set temp.	→	Code No.
UNIT No.	→	UNIT No. (Indoor unit address)
Hours, Minutes	→	Alarm Message

## 2. Optional Controller (remote controller)

The panel now shows this display as shown below.



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- ©. A maximum of 4 alarm messages can be accessed by pressing either **SET TEMP** button ▲ or ▼ as follows.

MODE



Past  
↓  
Present

SET TEMP.



Present  
↓  
Past

FAN SPEED

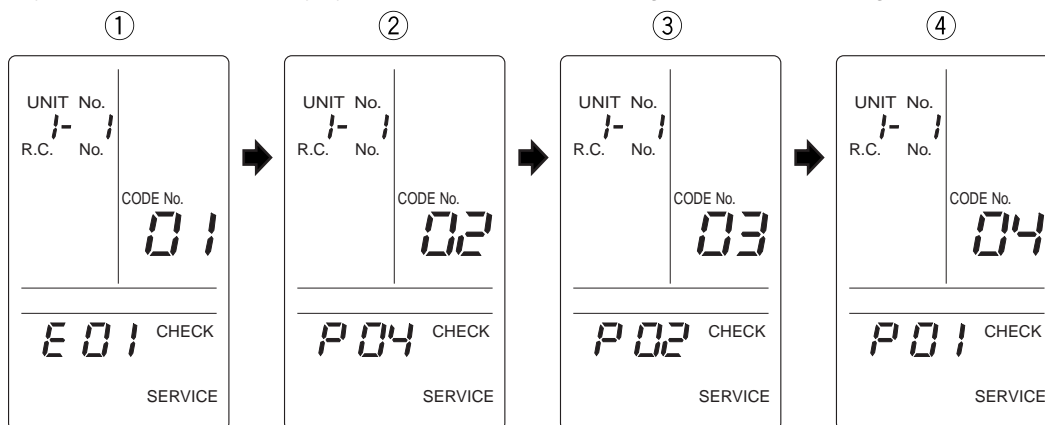
**NOTE** Pressing **CL** (Clear) button will clear all the service history.

▲ ... accessed in order of "Past → Present".

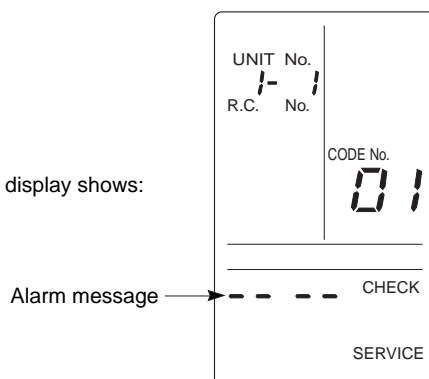
▼ ... accessed in order of "Present → Past".

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For example, if the last four alarm messages were, in order of occurrence from oldest to most recent, **P01**, **P02**, **P04**, and most recently **E01**, then the display would look as shown below as you pressed ▼ four times. The 5th time you pressed ▼ you would start the display cycle over, and the first message would be shown again.



If there are no alarm messages, the display shows:



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## 2. Optional Controller (remote controller)

### Important

Never press **CL** button unless you want to erase the accessed data in memory. Follow the procedure below only when erasing is necessary.

- To erase accessed data, press the **CL** button.
- When erasing is finished, ---- shows on the controller's display.



After checking the alarm messages be sure to press the **TEST / CHK** button.

### (E) Check the remote controller itself for correct operation

The remote controller has a **self-diagnostic** function to check if it works properly. Use this procedure to find out if the remote controller itself is defective:

- a) Turn ON the **RCU.CK** switch on the back of the **P.C.B.** Ass'y in the remote controller. See section **(A)** for exact location.
- b) The appearance of the display will tell you whether or not the remote controller is working correctly or not.
  - Normal condition** – All displays appear for 10 seconds, then disappear.
  - Adnormal condition** – All displays flash ON and OFF for 10 seconds, then disappear.



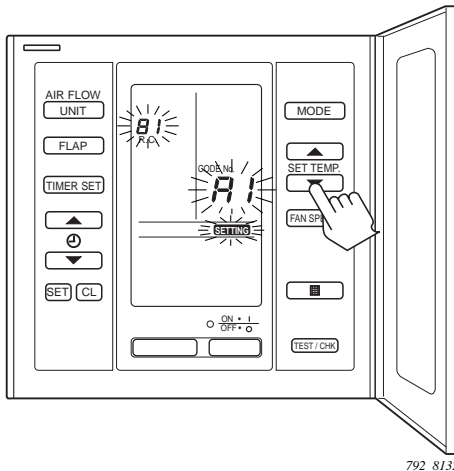
After checking the panel, be sure to set the **RCU.CK** switch to this original **OFF** position.

## 2. Optional Controller (remote controller)

### (F) Execute the auto. address operation

- Auto. address operation is executed by pressing the A. ADD button of outdoor unit's PCB usually (See "Test Run" V-2 ~).  
For your convenient it can be executed by remote controller also.

- a) Press the **TEST / CHK** and ▲ ( ⌚ ) buttons at the same time for more than 4 seconds.
- b) Set CODE No. A1 with ▲ , ▼ (**SET TEMP**) button.



In this mode, the auto. address operation is executed at each R.C. line one by one.

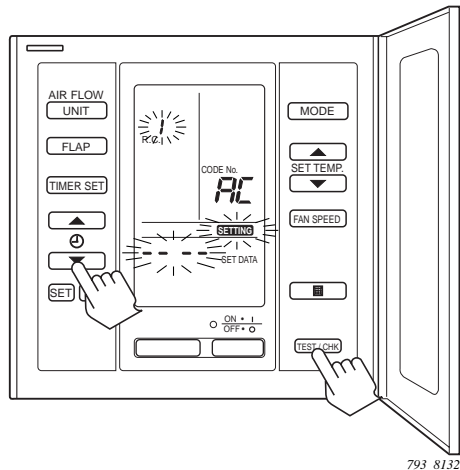
- c) Select R.C. No. which you want to execute the auto. address operation with **UNIT** button.
- d) Press the **SET** button. The auto. address operation will start. CODE No. changes from flashing to ON state.
- e) If the error is happened during the operation, the alarm message will display. Check and remove the cause. If you want to interrupt the operation, press the **CL** button then the unit stands in waiting mode (Press the **SET** button).
- f) If the auto. address operation finishes, the display will disappear.
- g) Execute the operation of the other R.C. line in the same way by following the above steps c) to d) .
- h) Complete the auto. address operation by pressing the **TEST / CHK** button.

## 2. Optional Controller (remote controller)

### (G) Confirm and change the indoor unit address

- The purpose of the above function is to let you confirming the indoor unit address after the auto. address operation, and changing the indoor unit address if it is needed.

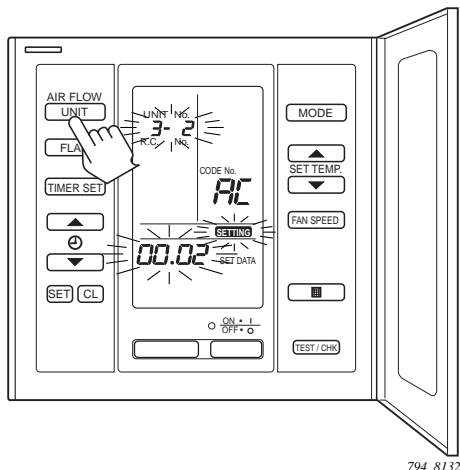
- a) Press the **TEST / CHK** and **▼ (⊖)** buttons at the same time for more than 4 seconds.



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- b) Select the R.C. No. which you want to change with the **UNIT** (up) or **FLAP** (down) buttons.

- c) Press the **SET** button (to confirm the R.C. No.).  
The smallest registered indoor No. and the selected R.C. No. will display.



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Ex:

R.C. No. 3 is selected.

Indoor No. 2 is smallest indoor No. of the R.C. No. 3.

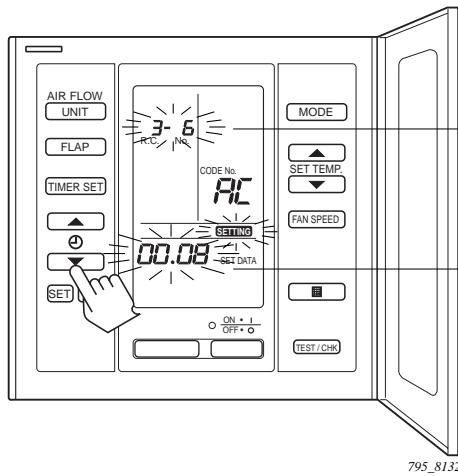
- d) Select the indoor No. which you want to change with **UNIT** button. Once in this mode, **the fan motor of selected indoor unit will turn on and let you confirming the indoor unit address.**

: Confirming the indoor unit address



## 2. Optional Controller (remote controller)

- Ⓔ Set the required new indoor No. by pressing the ▲ , ▼ ( ⌚ ) button.



Ex: UNIT No. 3-6: current registered the indoor unit address

Required new indoor No.8: SET DATA

\* In this case, UNIT No. 3 - 6 (current)

↓  
3 - 8 (NEW : after pressing the  
**TEST / CHK** button)

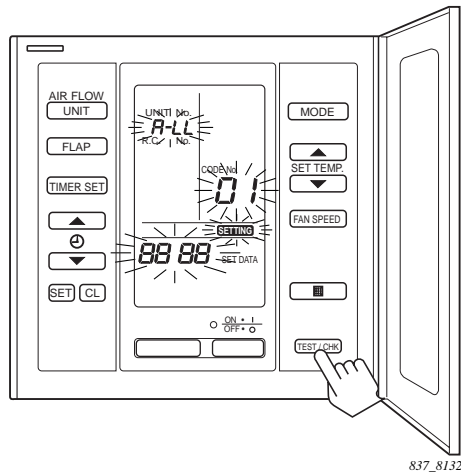
- Ⓕ Press the SET button.  
UNIT No, SET DATA (0008) and **SETTING** changes from flashing to ON state.
- Ⓖ If you make mistake press the **CL** button.
- Ⓗ Finally, press the **TEST / CHK** button.
- Ⓙ If you want to change the indoor unit address of the other R.C. No., follow the step Ⓔ to Ⓗ in the same way.

## 2. Optional Controller (remote controller)

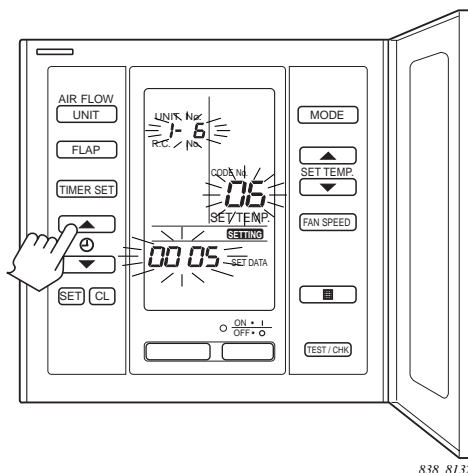
### (H) Change the shift temperature in heating mode

- ❑ If the indoor unit is installed at high location (ex. ceiling level), the thermostat tends to turn off early in heating mode because of the hot air temperature of ceiling level. In order to resolve the problem, the shift temp. (valid while heating only) is set when shipped from factory (refer to room temp. control P. III-2).
- ❑ If the shift temp. is not enough (ex. the indoor unit is installed at position higher than 3 m), the shift temp. can be set with remote controller from +1 to +10 deg manually as follows:

- a) Press the **TEST / CHK** button for more than 4 seconds.



- b) In case of group control, if you want to change all units in group control collectively, proceed next step remaining ALL displayed.  
If you want to change a unit individually, select the indoor unit address (UNIT No.) with **UNIT** button.
- c) Select the CODE No. 06 with ▲, ▼ (**SET TEMP**) button.
- d) Choose the shift temp with ▲, ▼ (⌚) button.



EX:  
UNIT No. 1-6  
CODE No. 06  
Shift temp. +5 deg

- e) Press the **SET** button.  
CODE No. 06, SET DATA and **SETTING** change from flashing to ON state.
- f) If you make mistake, press the **CL** button.
- g) Finally, press the **TEST / CHK** button.

## 2. Optional Controller (remote controller)

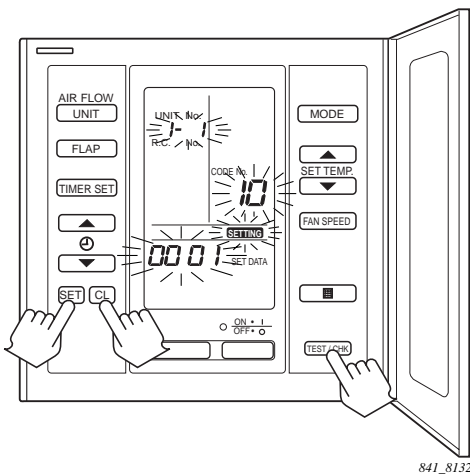
### (I) Set the indoor unit address

- This function is usable if the auto. address operation is not possible.  
Indoor unit address can be set one by one by remote controller in such case.

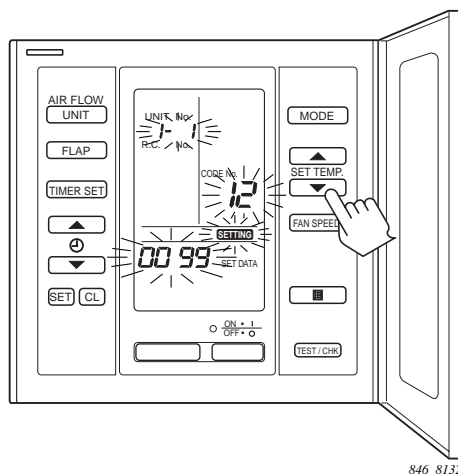
#### NOTE

- 1) In case of group control, branch wiring for group control should be removed temporarily.
- 2) In case of remote controller – less system, remote controller should be connected with the indoor unit temporarily.

- a) Short the two terminals of DISP PIN on indoor unit PCB.  
(DISP PIN : Refer to P. VI-2)
- b) Press the **TEST / CHK**, **SET** and **CL** buttons at the same time for more than 4 seconds.

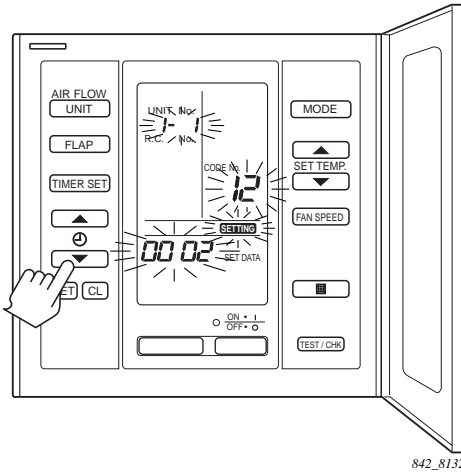


- c) Set the CODE No. 12 to set the No. of R. C. with the ▲, ▼ (**SET TEMP**) button.



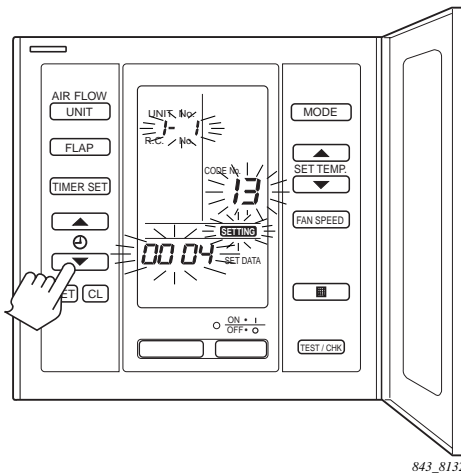
## 2. Optional Controller (remote controller)

- d Set the No. of R. C. which you want to set with ▲ , ▼ ( ⊕ ) button.



Ex. No. of R. C. will be set 2.

- e Press the **SET** button.  
UNIT No., CODE No. 12, **SETTING** and SET DATA (0002) change from flashing to ON state.
- f Select the CODE No. 13 to set the indoor unit No. with the ▲ , ▼ (**SET TEMP**) button.
- g Set the indoor unit No. which you want to set with the ▲ , ▼ ( ⊕ ) button.

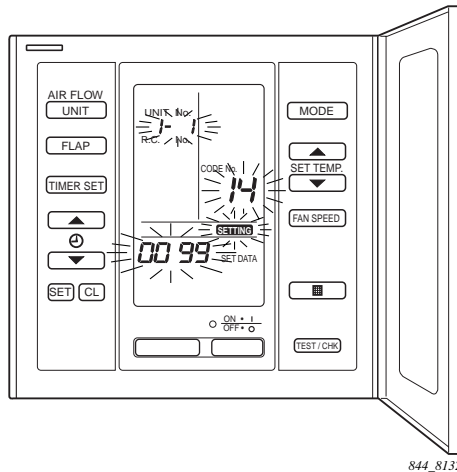


Ex. Indoor unit No. will be set 4.  
In this example, indoor unit address (UNIT No.) will be set 2-4.

- h Press the **SET** button.  
UNIT No., CODE No. 13, **SETTING** and SET DATA (0004) change from flashing to ON state.

## 2. Optional Controller (remote controller)

- ① Select the code No. 14 to set group setting with the ▲ , ▼ (SET TEMP) button.
- ② Set the No. of group setting as shown below with the ▲ , ▼ (⊖) button.



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- 0 : Standard system (except group control)
- 1 : Main indoor unit in case of group control
- 2 : Sub indoor unit in case of group control
- 99 : No setting (at factory shipment)

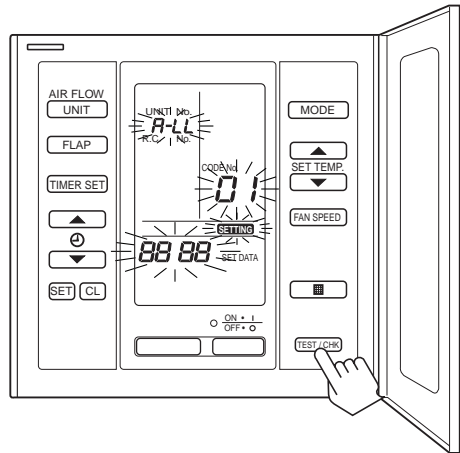
- Ⓚ Press the **SET** button.  
UNIT No., CODE No. 14, **SETTING** and SET DATA change from flashing to ON state.
- ① If you make mistake, press the **CL** button so that setting changes the initial state.
- Ⓜ Press the **TEST / CHK** button to finish this mode.  
The display is disappeared.
- Ⓝ Confirm the indoor unit address (UNIT No.) with the **UNIT** button after pressing the **ON / OFF** button.
- Ⓞ Finally, remove the short circuit of DISP PIN.  
And in case of group control, be sure to restore the branch wiring to its original wiring. In case of remote controller-less system, remove the remote controller.

## 2. Optional Controller (remote controller)

### (J) Change the period of the filter timer

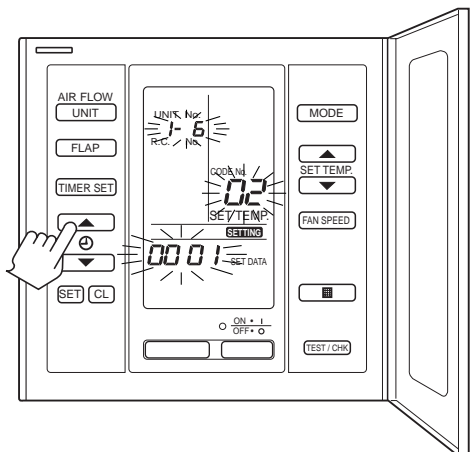
- If the period of filter timer is not suitable (for example in case of dirty environment), the period can be half done as follows:

- a) Press the **TEST / CHK** button for more than 4 seconds.



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- b) In case of group control, if you want to change all units in group control collectively, proceed next step remaining ALL displayed.  
If you want to change a unit individually, select the indoor unit address (UNIT No.) with **UNIT** button.
- c) Select the CODE No. 02 with ▲ , ▼ (**SET TEMP**) button.
- d) Change the No. from 0 to 1 with ▲ , ▼ (⊕) button.



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EX:

UNIT No. 1-6  
 CODE No. 02  
 { X, S, T, SL type 2,500 hr → 1,250 hr  
 { AS, K, F, FM type 150 hr → 75 hr

- e) Press the **SET** button.  
CODE No. 06, SET DATA and **SETTING** change from flashing to ON state.
- f) If you make mistake, press the **CL** button.
- g) Finally, press the **TEST / CHK** button.

## 2. Optional Controller (remote controller)

### ■ Explanation of alarm messages

Possible cause of malfunction		Alarm message		
Serial communication errors Mis-setting	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) R.C. address on CCU (CR-DYPTG), indoor unit address, indoor unit setting is not set. (Auto address is not completed.)	<E1>	
		Error in transmitting serial communication signal.	<E2>	
	Indoor unit is detecting error signal from remote controller (and system controller).		<<E3>>	
	Indoor unit is detecting error signal from CCU (CR-DYPTG).	Error in receiving serial communication signal. When turning on the power supply, the number of connected indoor units does not correspond to number set. (Except R.C. address is "0")	E4	
		Error in transmitting serial communication signal.	E5	
	CCU (CR-DYPTG) is detecting error signal from indoor unit.	Error in receiving serial communication signal. While turning on power supply, CCU (CR-DYPTG) does not receive serial communication signal from some indoor units.	E6	
		Error in transmitting serial communication signal.	E7	
	Improper setting of indoor unit or remote controller.	Indoor unit address setting is duplicated.	E8	
		Remote controller address (RCU. ADR) switch setting is duplicated. (Duplication of main remote controller)	<<E9>>	
	During auto. address setting, number of connected units does not correspond to number set.  When turning on the power supply, number of connected units does not correspond to number set. (Except R.C. address is "0")	Starting auto. address setting is prohibited. Auto address button S001 (A. ADR) is pressed while other R.C. line is executing auto address operation.	E12	
		Error in auto. address setting. (Number of connected indoor units is less than the number set)	E15	
		Error in auto. address setting. (Number of connected indoor units is more than the number set)	E16	
		Error of CCU (CR-DYPTG) in transmitting serial communication signal to outdoor P.C.B..	E23	
		Error of CCU (CR-DYPTG) in receiving serial communication signal from outdoor P.C.B..	E24	
		Duplication of outdoor unit address.	E25	
The number of connected outdoor unit does not correspond to the number set.		E26		
Mis-wiring of outdoor unit control wiring		E27		
Error of outdoor P.C.B. in receiving serial communication signal.		E29		
Indoor unit communication error of group control wiring. Improper setting.		Error of main indoor unit in receiving serial communication signal from sub indoor units.	E18	
	Duplication of main indoor unit address setting in group control.		<L3>	
		Duplication of outdoor R.C. address setting.	L4	
	There are 2 or more remote controllers which has operation mode priority in 1 refrigerant circuit.	Priority setting remote controller	L5	
		Non-priority setting remote controller	L6	
	Group control wiring is connected to individual control indoor unit.	L7		
	Indoor unit address is not set.	L8		
	Capacity code of indoor unit is not set.	<<L9>>		
	Activation of protective device	Protective device in indoor unit is activated.	Thermal protector in indoor unit fan motor is activated.	P1
			Improper wiring connections of ceiling panel.	P9
Float switch is activated.			P10	
Protective device in outdoor unit is activated.		Thermal protector in outdoor unit fan motor is activated. Compressor thermal protector is activated. Defective phase. Power supply voltage is unusual. (The voltage is more than 260 V or less than 160 V between L and N phase.)	P2	
		Abnormal discharge temperature. (PC comp.)	P3	
		High pressure switch is activated.	P4	
		Incorrect power supply voltage. Negative phase.	P5	
		Abnormal discharge temperature. (AC comp.)	P17	
		Abnormal discharge temperature. (SC comp.)	P18	
		Improper setting	Mis-matching setting of refrigerant kinds between CCU and outdoor P.C.B..	L17

#### NOTE

- Alarm messages in << >> do not affect other indoor unit operations.
- Alarm messages in < > sometimes affect other indoor unit operations depending on the fault.

- CCU : Command control unit (incorporated in outdoor unit)
- PC unit : Power control unit
- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor

## 2. Optional Controller (remote controller)

Possible cause of malfunction			Alarm message
Thermistor fault	Indoor thermistor is either open or damaged.	Indoor coil temp. sensor (Sensor no. 03, TH2)	<<F1>>
		Indoor coil temp. sensor (Sensor no. 04, TH3)	<<F2>>
		Indoor coil temp. sensor (Sensor no. 05, TH4)	<<F3>>
		Indoor suction air (room) temp. sensor (Sensor no. 02, TH1)	<<F10>>
		Indoor discharge air temp. sensor (Sensor no. 06, TH5)	<<F11>>
	Outdoor thermistor is either open or damaged.	PC. comp. discharge gas temp. sensor (Sensor no. 0A, TH1)	F4
		AC. comp. discharge gas temp. sensor (Sensor no. 0b, TH2)	F5
		Outdoor no. 1 coil gas temp. sensor (Sensor no. 0D, TH7: PC unit/1D, TH4: AD unit)	F6
		Outdoor no. 1 coil liquid temp. sensor (Sensor no. 0E, TH4: PC unit/1E, TH2: AD unit)	F7
		Outdoor air temp. sensor (Sensor no. 11, TH9: PC unit/21, TH5: AD unit)	F8
		SC comp. discharge gas temp. sensor (Sensor no. 17, TH3: PC unit/27, TH1: AD unit)	F22
		Outdoor no. 2 coil gas temp. sensor (Sensor no. 0F, TH8)	F23
		Outdoor no. 2 coil liquid temp. sensor (Sensor no. 10, TH5)	F24
		Outdoor coil temp. sensor (Sensor no. 0C, TH6: PC unit/1C, TH3: AD unit)	F25
	Comp. CT detection current fault	Current is detected when compressor is OFF (SC comp.) (Sensor no. 18: PC unit/28: AD unit)	F21
Current is detected when compressor is OFF (PC comp.) (Sensor no. 13)		F27	
Current is detected when compressor is OFF (AC comp.) (Sensor no. 14)		F28	
EEP ROM on indoor P.C.B. failure			F29
Protective device for comp. is activated	Protective device for PC comp. is activated.	Overload current is detected.	H01
		Lock current is detected.	H02
		Current is not detected when comp. is ON.	H03
		Magnetic contactor (MgSW) is chattering.	H09
	Protective device for AC comp. is activated.	Overload current is detected.	H11
		Lock current is detected.	H12
		Current is not detected when comp. is ON.	H13
		Magnetic contactor (MgSW) is chattering.	H19
	Protective device for SC comp. is activated.	Low pressure switch is activated.	H06
		Overload current is detected.	H21
		Lock current is detected.	H22
		Current is not detected when comp. is ON.	H23
		Improper installation of discharge temp. sensor.	H25
		Magnetic contactor (MgSW) is chattering.	H29
	Low oil level.		H07
	Oli sensor fault.	PC comp. oil sensor	H08
		SC comp. oil sensor	H28

Alarm messages displayed on system controller			
Serial communication errors Mis-setting	Error in transmitting serial communication signal.	Indoor or outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, outdoor unit and system controller.	C05
	Error in receiving serial communication signal.	Indoor or outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, outdoor unit and system controller. CN1 is not connected properly.	C06
Activation of protective device	Protective device of sub indoor unit in group control is activated.	*When using wireless remote controller or system controller, in order to check the alarm message in detail, connect wired remote controller to indoor unit temporarily.	P30

**NOTE**

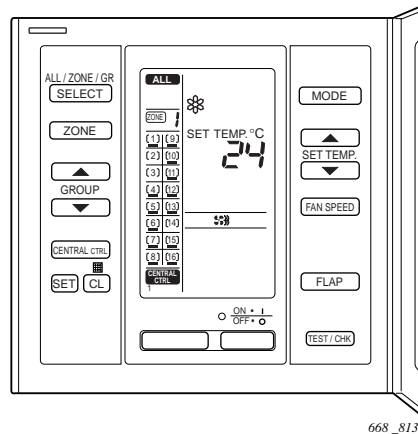
- Alarm messages in << >> do not affect other indoor unit operations.
- Alarm messages in < > sometimes affect other indoor unit operations depending on the fault.

- CCU : Command control unit (incorporated in outdoor unit)
- PC unit : Power control unit
- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor



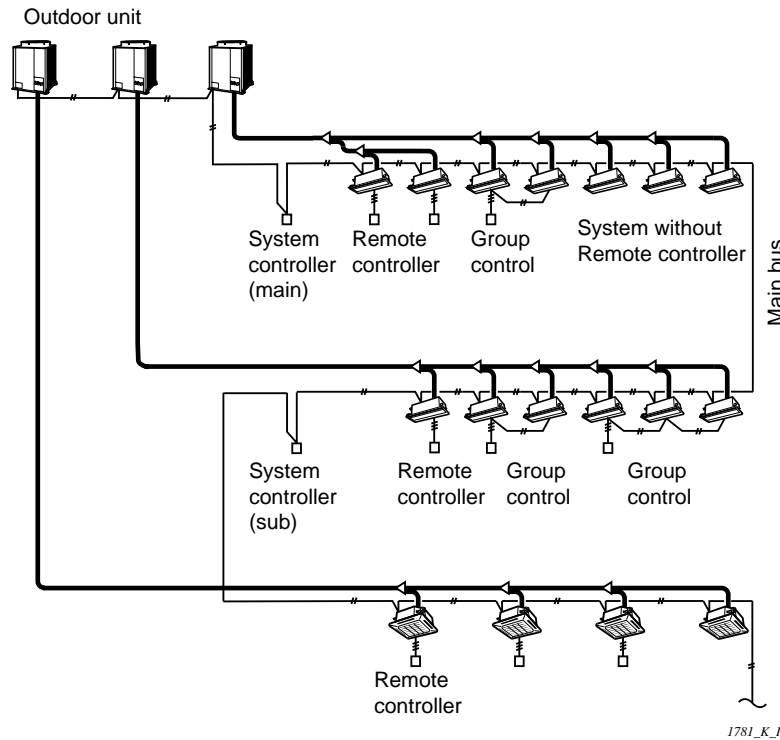
## 2. Optional Controller (system controller)

### 2-2. System controller / SHA-KC64TG



- Example of central control with system controller (individually controlled)

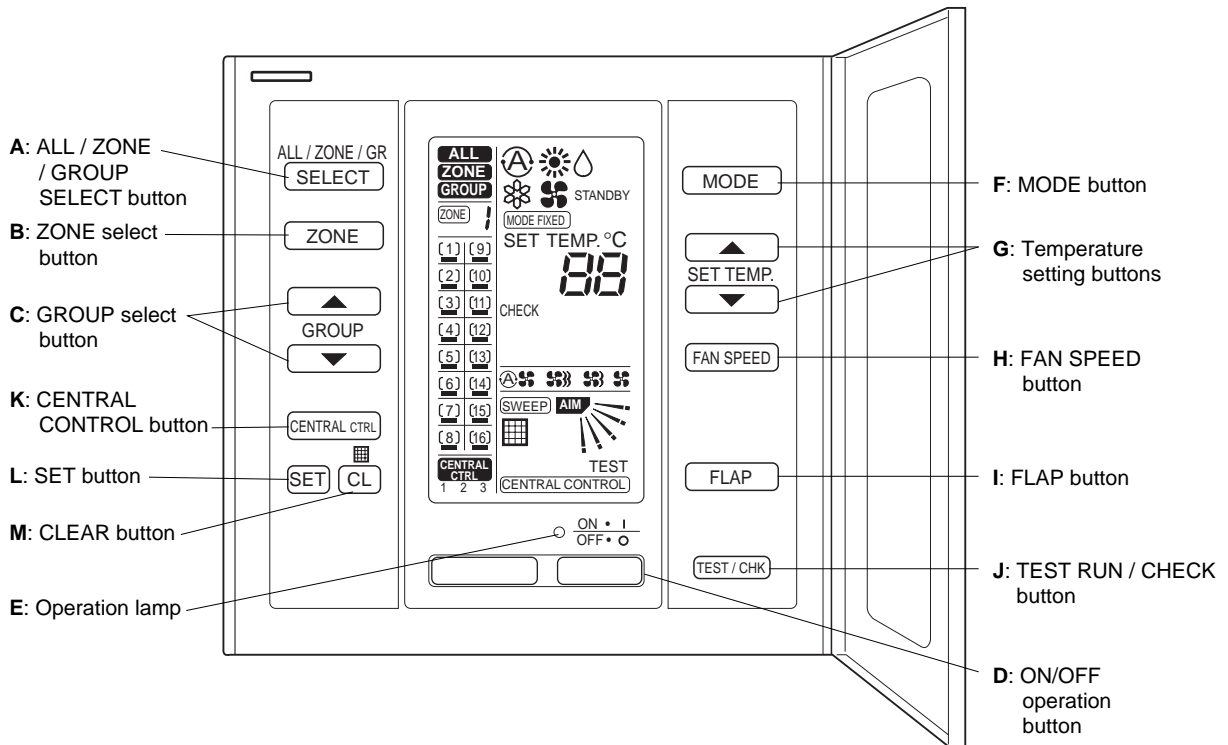
#### Control wiring system



- Control wiring system allows connection of as many as total of 94 units ( $64 \geq$  Indoor unit +  $30 \geq$  Outdoor unit) to a single control line (non-polar twin-line main bus).
- The main bus is twin-core and non-polar for easier wiring.
- Using concurrently as remote controller, system controller can control maximum up to 64 indoor units (or groups) individually.
- The system without remote controller can be formed.
- Maximum up to 2 system controllers (1 main, 1 sub) can be installed.
- It can separate the 64 indoor units into 4 zones and control each zone individually.
- Maximum up to 16 groups can be registered to each zone.
- Collective control and individual group (unit) control can be performed also.
- Alarm and operation output for an external collected signal is available (potential free contact) DC24V Max. 1A.
- Input terminal for collective operation on / off is available.
- Power supply : AC 220 - 240 V

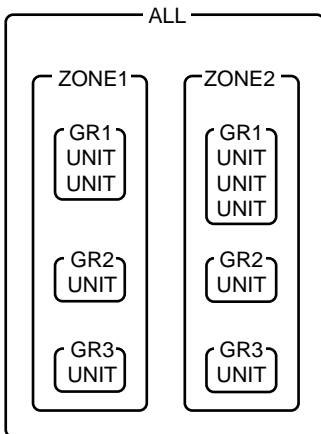
## 2. Optional Controller (system controller)

### ■ How to use the system controller



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#### A: ALL / ZONE / GROUP SELECT button



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Use this button to select one of the followings:

- ALL:** Used for turning the all air conditioners on and off.
- ZONE:** Used for turning the all air conditioners of each zone on and off individually.
- GROUP:** Used for turning the (all) air conditioner(s) of each group on and off individually.

**NOTE** Max. 4 zones and max. 16 groups (units) in a zone can be set.

#### B: ZONE select button

Use this button to select zone (1 to 4) to operate individually.





















#### C: GROUP select button





Use this button to select the group (1 to 16) to operate individually.

## 2. Optional Controller (system controller)

### ■ Function of buttons (Continued)

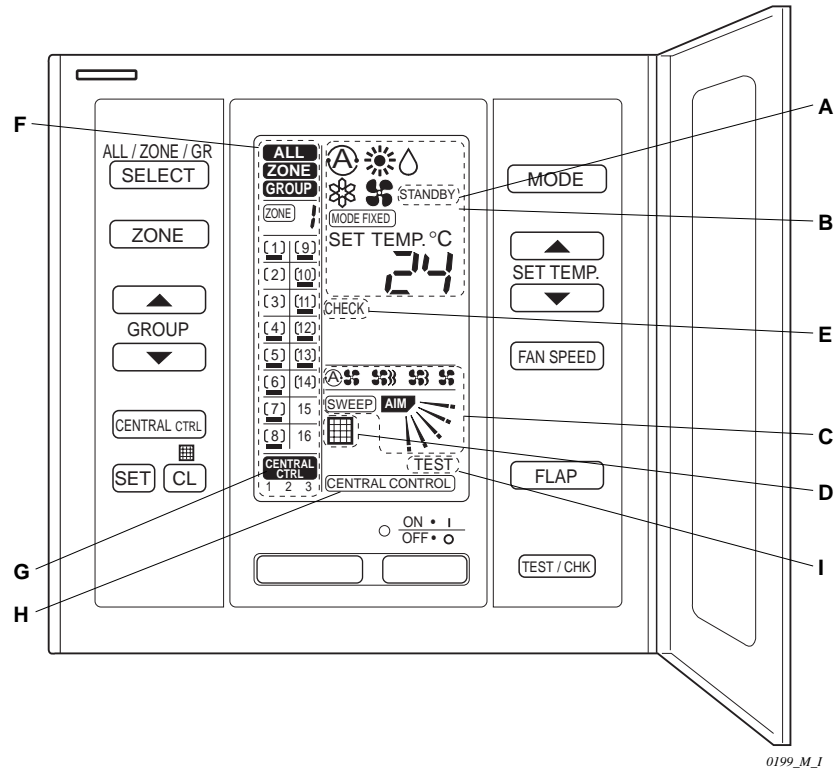
<b>D: ON/OFF operation button</b>	This button is for turning the selected air conditioner(s) on and off.						
<b>E: Operation lamp</b>	This lamp lights when the appliance is turned on.						
<b>F: MODE button</b>  (AUTO)  (HEAT)  (DRY)  (COOL)  (FAN)	Use this button to select one of the following four operations:  : Used to automatically set cooling or heating operation. <div style="border: 1px solid black; padding: 2px; display: inline-block;">Only for single heat pump type</div> (temperature range: 17 - 27 °C)  : Used for normal heating operation. (temperature range: 16 - 26 °C)  : Used for dehumidifying without changing the room temperature. (temperature range: 18 - 30 °C)  : Used for normal cooling operation. (temperature range: 18 - 30 °C)  : Used to run the fan only, without the heating or cooling operation.  <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>NOTE</b></div> <b>When the <span style="border: 1px solid black; padding: 1px;">MODE FIXED</span> indication is displayed, you can not change the mode,  and  or , to  or  and .</b> You should turn off all units once then select the mode again.						
<b>G: Temperature setting buttons</b>	 : Press this button to increase the set temperature.  : Press this button to decrease the set temperature.						
<b>H: FAN SPEED button</b>  (AUTO) (HI.) (MED.) (LO.)	  The air conditioner automatically decides the fan speed.  High fan speed  Medium fan speed  Low fan speed						
<b>I: FLAP button</b>           <span style="border: 1px solid black; padding: 2px;">CAUTION</span>	Use this button to set the airflow direction at a specific angle or to make the airflow direction sweep to up and down automatically (SWEEP). Airflow direction or <span style="border: 1px solid black; padding: 1px;">SWEEP</span> indication is displayed on the remote controller.  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Operation mode</th> <th style="text-align: left; border-bottom: 1px solid black;">Number of airflow direction settings</th> </tr> </thead> <tbody> <tr> <td>COOL or DRY</td> <td>3</td> </tr> <tr> <td>HEAT or FAN</td> <td>5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>● In the cool mode and dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent.</li> <li>● Do not move the flap with your hands.</li> </ul> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>NOTE</b></div> <b>FLAP setting can be performed only for the unit which has no remote controller.</b>	Operation mode	Number of airflow direction settings	COOL or DRY	3	HEAT or FAN	5
Operation mode	Number of airflow direction settings						
COOL or DRY	3						
HEAT or FAN	5						
<b>J: TEST RUN / CHECK</b>   <span style="border: 1px solid black; padding: 2px;">CAUTION</span>	This button is used only when servicing the air conditioner.  <b>Do not use the TEST / CHK button for normal operation.</b>						

## 2. Optional Controller (system controller)

<p><b>K: CENTRAL CONTROL button</b></p>	<p>Use this button to inhibit individual operation by remote controller for central control as follows:</p> <p><b>CENTRAL CTRL</b></p> <ul style="list-style-type: none"> <li>1 : Inhibiting individual ON / OFF operation</li> <li>2 : Inhibiting individual ON / OFF, MODE and SET TEMP operation.</li> <li>3 : Inhibiting individual MODE and SET TEMP operation.</li> </ul> <p>No indication : Central control is cleared. (Individual operation)</p>
<p><b>L: SET button</b></p> <p style="text-align: right;"><b>NOTE</b></p>	<p>This button is used only when installing the air conditioner.</p> <p><b>Do not use the SET button for normal operation.</b></p>
<p><b>M:  CLEAR button</b></p>	<p>Use this button to reset the filter sign  (timer). The air conditioner has the timer for filter and informs you the time of cleaning the filter.</p>

## 2. Optional Controller (system controller)

### Display

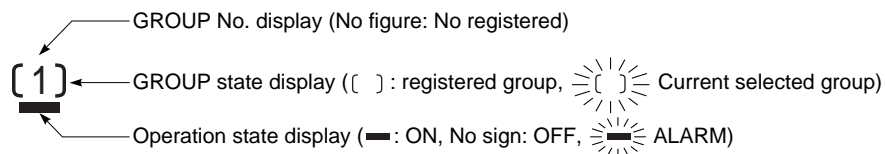


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### Description

- A : When the unit is in the heating standby mode, the STANDBY indicator appears.
- B : The currently selected operation mode is displayed.
- C : The currently selected FAN SPEED, fan AIM and SWEEP are displayed.
- D : This is displayed if the period of cleaning for filter has come.
- E : This is displayed only if an abnormality occurs within a unit.
- F : The currently selected mode (ALL, ZONE or GROUP), ZONE No. and Group No. are displayed.



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- G : The currently selected central control mode (1, 2 or 3) is displayed.
- H : When **CENTRAL CONTROL** is displayed on the LCD, any operation (setting) is made by higher rank controller. When **CENTRAL CONTROL** is flashing on the LCD, ON / OFF operation is not accepted by the higher rank controller (system controller inhibited).
- I : When TEST / CHK button is pressed, the TEST indicator appears.

## 2. Optional Controller (system controller)

### How to start individual operation

Press the SELECT button and select GROUP.	<b>1</b>		<p>To start individual operation</p> <p><b>Power</b> Keep the power supply switch turned on more than 5 hours before starting operation.</p> <p><b>5</b> Set heating, dry, or cooling by pressing the MODE button.</p> <p><b>6</b> Set the desired temperature by pressing one of the temperature setting buttons ▲▼.</p> <p><b>7</b> Set the desired fan speed by pressing the FAN SPEED button.</p> <p><b>8</b> Set the airflow direction at a specific angle or sweep mode</p>
Select the ZONE No. including the group to be operated by pressing ZONE button.	<b>2</b>		
Select the GROUP No. to be operated by pressing GROUP select button ▲▼.	<b>3</b>		
Select the control mode.	<b>9</b>		
Press the ON / OFF button.	<b>4</b>		
Confirming the GROUP No. to be selected, once again press the ON/OFF button.	Stop		

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**NOTE** FLAP setting can be performed only for the unit which has no remote controller.

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### How to start collective operation

Press the SELECT button and select ALL or ZONE.	<b>1</b>		<p>To start collective operation (ALL or ZONE)</p> <p><b>Power</b> Keep the power supply switch turned on more than 5 hours before starting operation.</p> <p><b>4</b> Set heating, dry, or cooling by pressing the MODE button.</p> <p><b>5</b> Set the desired temperature by pressing one of the temperature setting buttons ▲▼.</p> <p><b>6</b> Set the desired fan speed by pressing the FAN SPEED button.</p>
In case of ZONE collective operation.	<b>2</b>		
Select the ZONE No. to be operated by pressing ZONE button.			
Select the control mode.	<b>7</b>		
Press the ON / OFF button.	<b>3</b>		
Confirming the ZONE No. to be selected or ALL indication, once again press the ON/OFF button.	Stop		

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**NOTE** In the ALL or ZONE mode, FLAP setting can not be performed. If necessary you should select GR mode and use FLAP button.

## 2. Optional Controller (system controller)

### ■ How to install the system controller

#### Installation site selection

- Install the system controller at a height of between 1 and 1.5 meters above the floor.
- Do not install the system controller in a place where it will be exposed to direct sunlight or near a window or other place where it will be exposed to the outside air.
- Be sure to install the system controller vertically, such as on a wall.



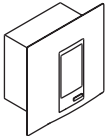



**WARNING**

Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.



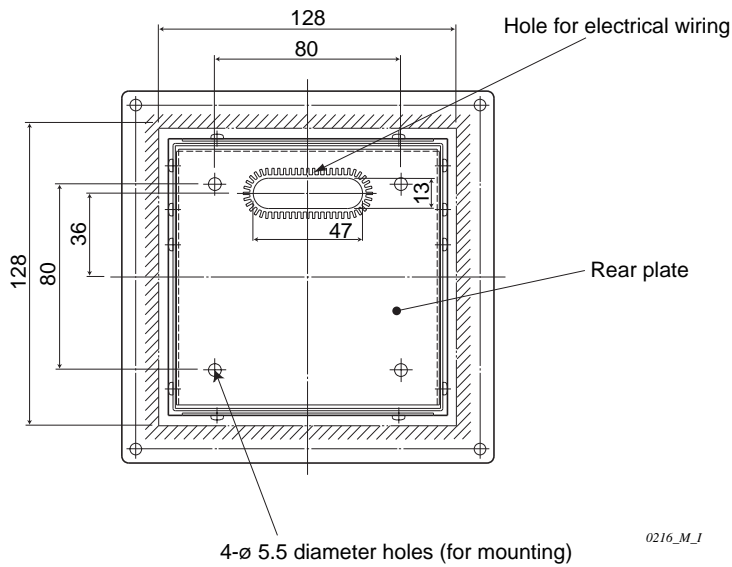
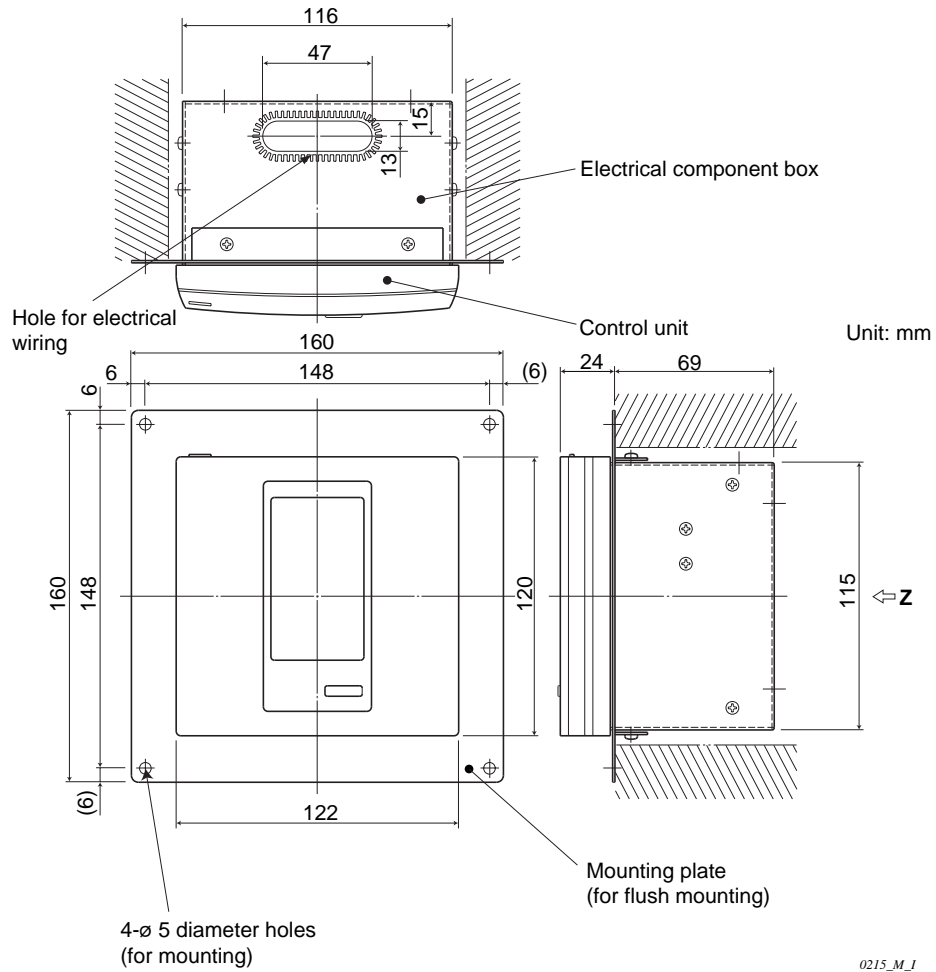
**CAUTION**

- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the system controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

Part Name	Figure	Q'ty	Remarks
System controller		1	
Tapping screw	Truss-head Phillips 4 × 16 mm 	4	For securing the system controller
Rawl plug		4	For securing the system controller
Manual		1	For installation
		1	For operation

## 2. Optional Controller (system controller)

● Diagram of outer dimensions



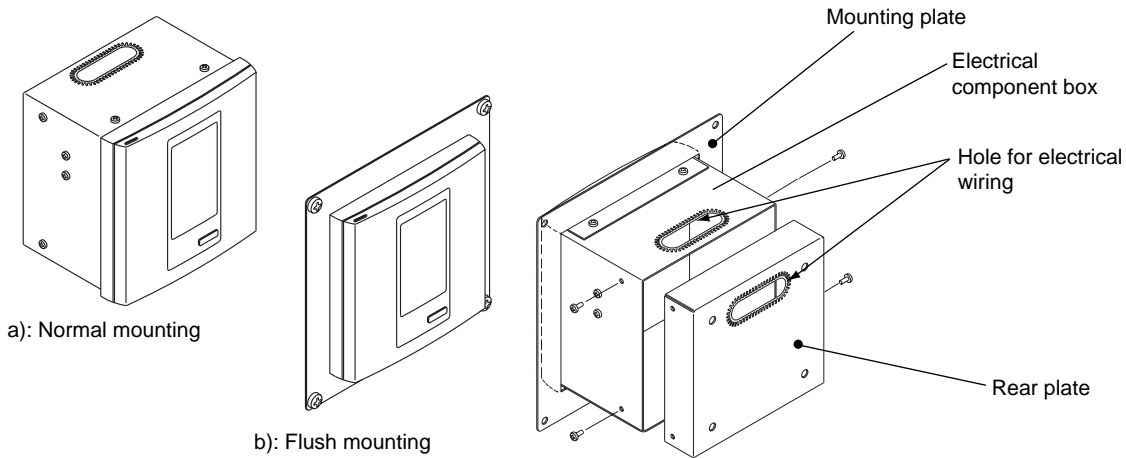
**Z-view (black side)**

\* In order to mount the system controller flush with the wall, an opening measuring 128 mm × 128 mm is necessary.



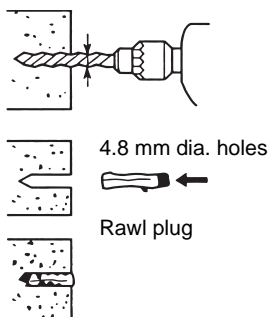
## 2. Optional Controller (system controller)

### ● Installation procedure



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1. Decide how the system controller will be mounted: in the normal manner or flush with the wall.
  - a) To mount the system controller in the normal manner, remove the mounting plate. Then reattach the four screws to the electrical component box.
  - b) To mount the system controller flush with the wall, make an opening in the wall measuring 128 mm × 128 mm. The opening must be at least 85 mm deep as measured from the outside surface of the wall.
2. Remove the rear plate and connect the electrical wiring.
  - 1) Remove the four screws located on both sides of the rear plate.
  - 2) Either the hole in the top of the electrical component box or the hole in the rear plate may be used to feed the electrical wiring.
  - 3) If the hole on top is used, the rear plate should be turned upside down.
3. Secure the system controller in place.
  - a) If the system controller is being mounted in the normal manner, first attach the rear plate to the wall using the screws and Rawl plugs provided. Next, place the body of the system controller over the rear plate and secure it in place using four screws.
  - b) If the system controller is being mounted flush with the wall, fit it through the mounting plate on the wall and secure it in place using the screws and Rawl plugs provided.



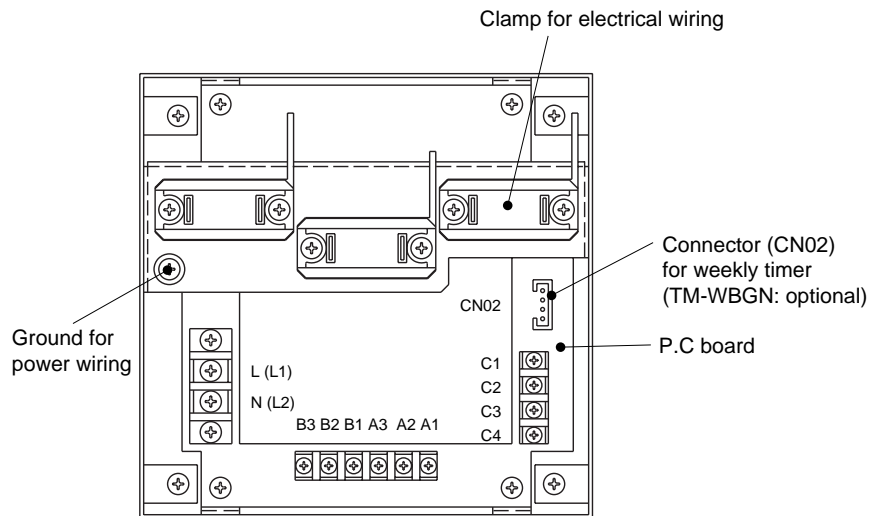
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#### NOTE

To mount the system controller on a wall made of cinder block, brick, concrete, or a similar material, drill 4.8 mm diameter holes in the wall and insert Rawl plugs to anchor the mounting screws.

## 2. Optional Controller (system controller)

### ■ Layout of electrical terminals



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### How to connect electrical wiring

#### 1) Basic wiring

L (L1): } Power supply (  $\sim$  50 Hz / 60 Hz, 220 - 240 V )  
 N (L2): }

C1: } Inter-unit control wiring. (Low voltage)  
 C2: }

C3: Auxiliary

C4: Ground for inter-unit control wiring

#### 2) Terminals for remote monitoring

A1: Input for turning on air conditioners concurrently. (\*1)  
 A2: Input for turning off air conditioners concurrently.  
 A3: Common input for turning air conditioners on or off. } DC24V

B1: On operation state indicator output. (\*2)  
 B2: Alarm indicator output. (\*3)  
 B3: Common indicator output. } potential free contact  
 DC24V, Max 1A

#### NOTE

1) \*1: All air conditioners turn on at same mode and operation conditions of when it stops as before.

2) \*2: The output signal will appear when any one of indoor units turns on.

3) \*3: The alarm signal will appear when any one of indoor units has a trouble.

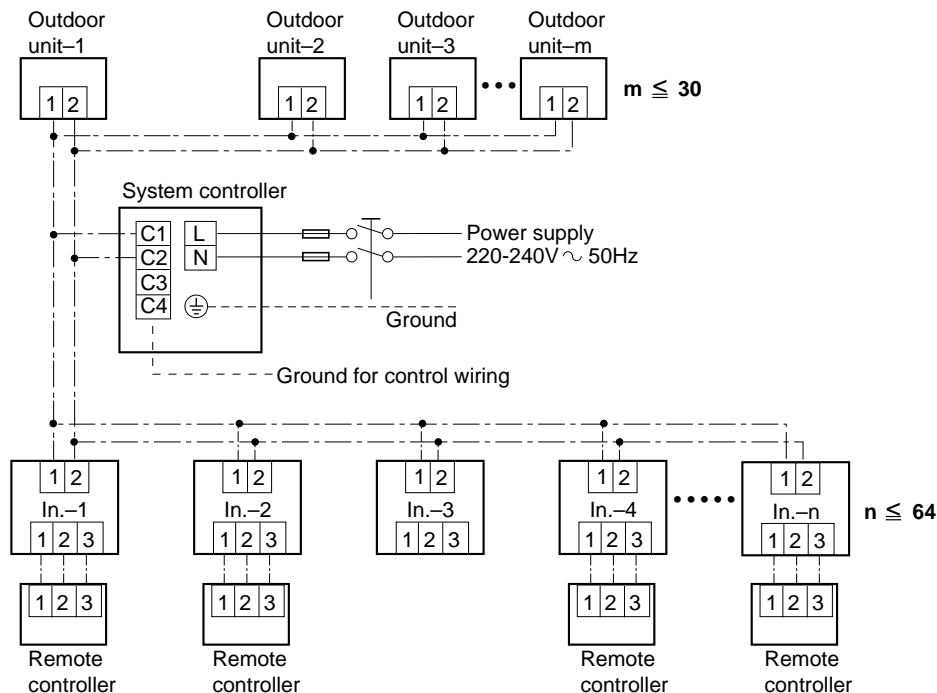
## 2. Optional Controller (system controller)

### Basic wiring diagram



**CAUTION**

Make correct wiring without any mistakes (incorrect wiring will damage the equipment).



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**NOTE**

- 1) The chain lines ( — — — ) indicate control line in the system.
- 2) In. means indoor unit.
- 3) Up to two system controllers are connectable in one control line system.
- 4) Recommended wire diameter and wire length

Type	Power supply	Time delay fuse or circuit capacity	Power supply terminal base	
	2.5 mm <sup>2</sup>		Capacity	Max. wire diameter
System controller	Max. 100 m	10 A	25 A	5.5 mm <sup>2</sup> (AWG #10)*

\* With ring type wire terminal.

**Control wiring (Use shield wiring)**

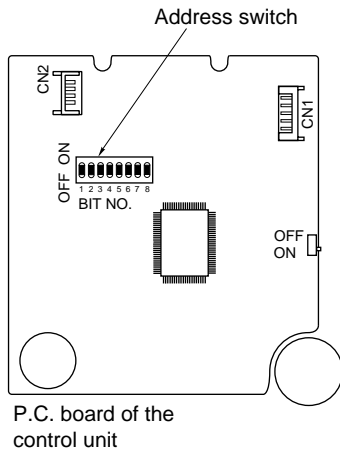
Inter-unit control wiring	Remote control wiring
0.75 mm <sup>2</sup> (AWG #18)	0.75 mm <sup>2</sup> (AWG #18)
<b>Use shielded wiring*</b>	
Max. 1,000 m (Total)	Max. 500 m (Total)



## 2. Optional Controller (system controller)

### ■ Control with multi (main / sub) system controllers

This control is used for operating the unit(s) with multiple system controllers (up to two).



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Bit No.	ON	OFF
1	System controller operates as sub-controller	System controller operates as main controller
2	—	Must be set to OFF position
3	—	Must be set to OFF position
4	—	Must be set to OFF position
5	—	Must be set to OFF position
6	—	Must be set to OFF position
7	No tone when operations are selected	Beep tone when operations are selected
8	—	Must be set to OFF position

#### NOTE

1. It is not normally necessary to change the settings.
2. All bits are set to OFF when the unit is shipped from the factory.

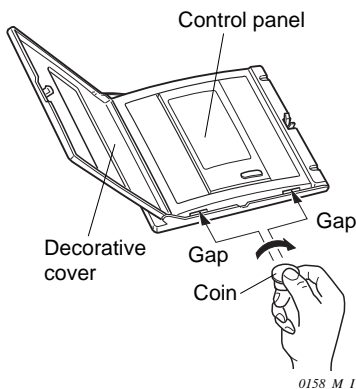
#### Setting method

To execute this control, make the setting according to the following procedure.

1. Out of the multiple installed system controllers, make one the main system controller (factory shipped state).
2. For the other system controller, turn the Bit number 1 of address switch on the PC board from OFF to ON.  
In this state, the unit functions as the sub system controller.

#### How to reach P.C. board

Remove the flap-top screw on the bottom of the back case. When you open up the decorative cover, you will see two notches under the control unit. Insert a coin or other flat object into these notches and pry off the back case. The P.C. board on the back of the control unit is now visible.



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## 2. Optional Controller (system controller)

### ■ How to set zone registration

To operate system controller properly, zone registration is required after finishing test run (after setting all indoor unit addresses) as following methods.

- (1) Zone registration by remote controller (RCS-SH80TG)
- (2) Zone registration by system controller (SHA-KC64TG)
- (3) Auto. zone registration by system controller (SHA-KC64TG)

In case of method (1) and (2), you should make the zone registration table manually in advance the above registration as shown by next page.

In case of method (3), zone registration is executed automatically assigning from small indoor unit address and small central address to large No. in numerical order. For example,

Central address	1	2	3	4	5	6	
(ZONE-GROUP)	1-1	1-2	1-3	1-4	1-5	1-6	
Indoor unit address	1-1	1-2	2-1	2-2	2-3	3-1	

#### NOTE

1. Indoor unit address is assigned to each indoor unit after auto. address operation. Indoor unit address is combined R.C. address and indoor unit No. as follows:

1-1 : Indoor unit address (UNIT No.)  
 ↑ Indoor unit No.  
 — Refrigerant circuit No. (R.C. address)

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This address is displayed on remote controller for UNIT No. when pressing UNIT button.

2. Central address represents each zone and group No. in numerical order.

## 2. Optional Controller (system controller)

ZONE registration table

ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location	ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location
1	1	1			3	1	33		
	2	2				2	34		
	3	3				3	35		
	4	4				4	36		
	5	5				5	37		
	6	6				6	38		
	7	7				7	39		
	8	8				8	40		
	9	9				9	41		
	10	10				10	42		
	11	11				11	43		
	12	12				12	44		
	13	13				13	45		
	14	14				14	46		
	15	15				15	47		
	16	16				16	48		
2	1	17			4	1	49		
	2	18				2	50		
	3	19				3	51		
	4	20				4	52		
	5	21				5	53		
	6	22				6	54		
	7	23				7	55		
	8	24				8	56		
	9	25				9	57		
	10	26				10	58		
	11	27				11	59		
	12	28				12	60		
	13	29				13	61		
	14	30				14	62		
	15	31				15	63		
	16	32				16	64		

**NOTE**

1. You should assign each indoor unit address to the desired position (Central address) manually.
2. In case of group control, only main indoor unit should be assigned. Sub indoor unit can not be assigned.

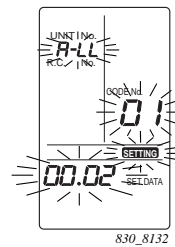
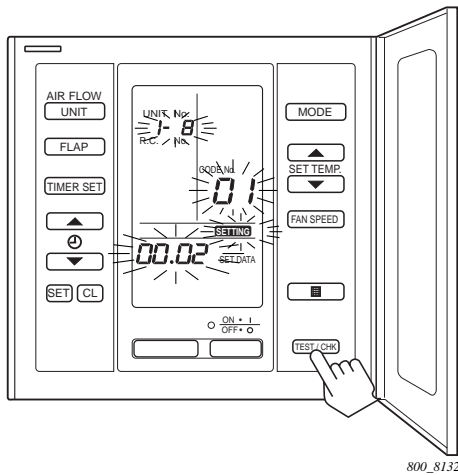
## 2. Optional Controller (system controller)

### (1) Zone registration by remote controller (RCS-SH80TG)

- ❑ In this case confirming the indoor unit connected with the remote controller, you set the central address one by one.
- ❑ In case of remote controller-less system, connect remote controller to the system temporarily then follow this procedure.

**NOTE** Indoor unit address must have been already set before performing the zone registration.  
If necessary you can refer to the installation manual attached in the outdoor unit.

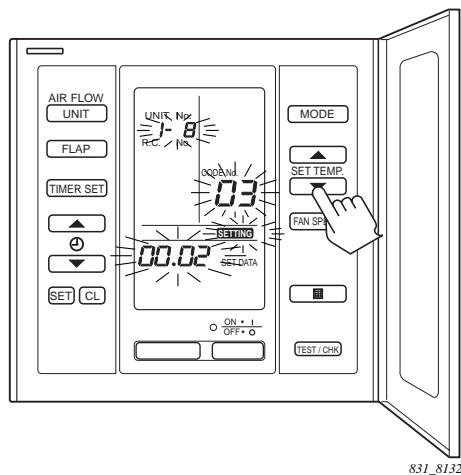
- a) Press the **TEST / CHK** button at the bottom right on the remote controller for more than 4 seconds.
- b) Once in this mode, the UNIT No., CODE No., SET DATA and **SETTING** will flash on the display as shown below.



**NOTE** In case of group control, "ALL" instead of UNIT No. will flash on the display. Select the main indoor unit address by pressing the **UNIT** button once.

# 3

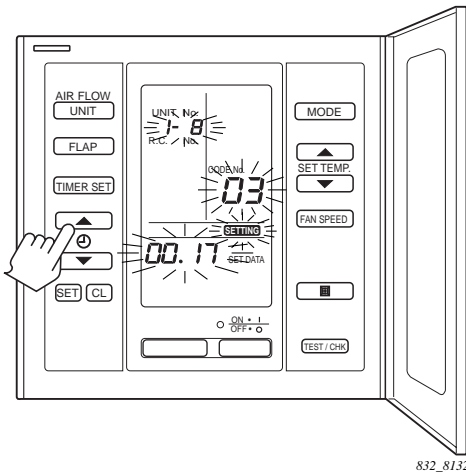
- c) Set the CODE No. 03 with ▲, ▼ (**SET TEMP**) button.



**NOTE** The CODE No.03 must be selected to perform the zone registration by the remote controller.

## 2. Optional Controller (system controller)

- ④ Set the central address which you want to set to this indoor unit address with ▲, ▼ (⊖) button according to the zone registration table



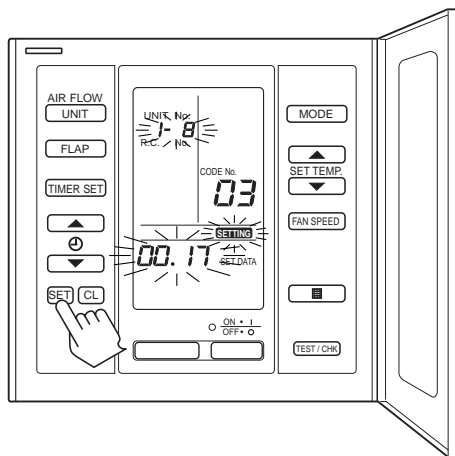
832\_8132

For example, in case of left

Indoor unit address : 1-8

Central address : 17 (ZONE 2, GROUP 1)

- ⑤ Press the **SET** button. The CODE No. and Central address changes from flashing to ON state. If you make mistake, then press the **CL** button and re-set the central address.



833\_8132

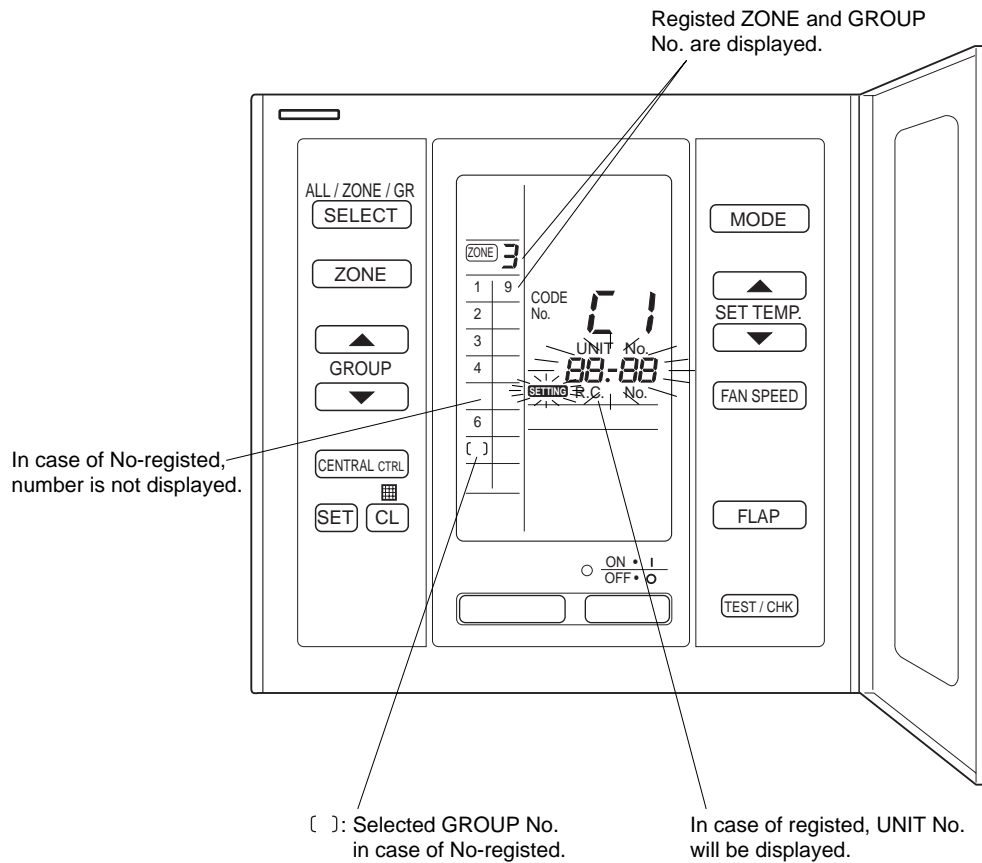
- ⑥ Press the **TEST / CHK** button to finish zone registration.



## 2. Optional Controller (system controller)

### (2) Zone registration by system controller

- In this case you set all central addresses by system controller at once manually.
- ① Press the **TEST / CHK** and **ZONE** buttons at the same time for more than 4 seconds.  
**SETTING** and CODE No. C1 will flush.
- ② After confirming code No. C1, press the SET button.  
Once in this mode, a change takes place as shown below.



0203\_M\_1

## 2. Optional Controller (system controller)

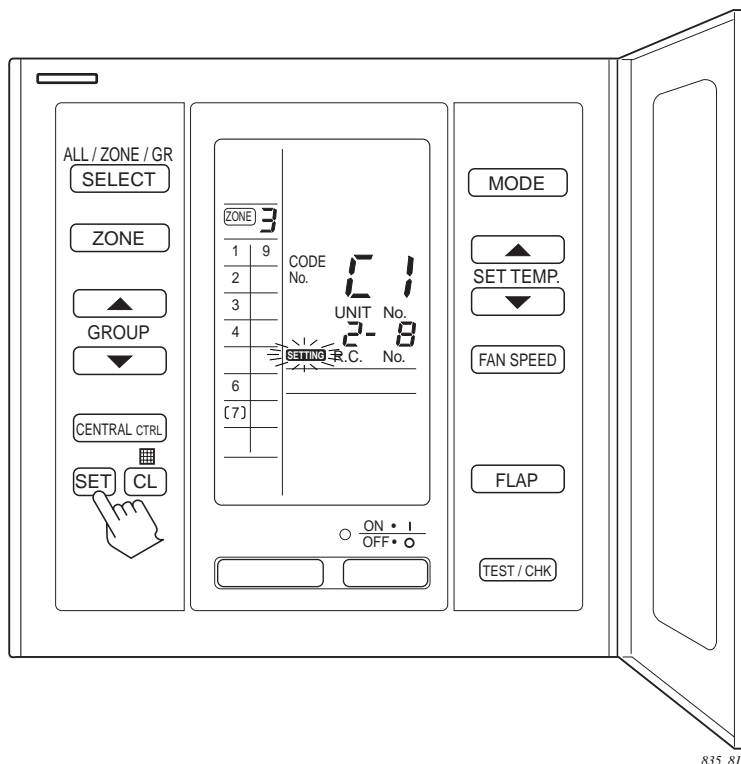
- ③ Select the zone and group No. which you want to set with **ZONE** and ▲ , ▼ (**GROUP**) buttons.
- ④ Set the UNIT No. (Indoor unit address) with **FAN SPEED** and **FLAP** buttons according to the zone registration table.

R.C. No. ———— **FAN SPEED** button

Indoor unit No. — **FLAP** button

- ⑤ Press the **SET** button.  
GROUP No. turns ON and UNIT No. (Indoor unit address) changes from flashing to ON state.  
UNIT No. is registered to selected ZONE No. and GROUP No..

If you make mistake, then press the **CL** button and re-select the ZONE, GROUP and UNIT No.



For example, in case of left

Zone 3, GROUP No. 7

UNIT No. (Indoor unit address) 2-8

: UNIT No. 2-8 is registered to  
Zone 3-GROUP 7.

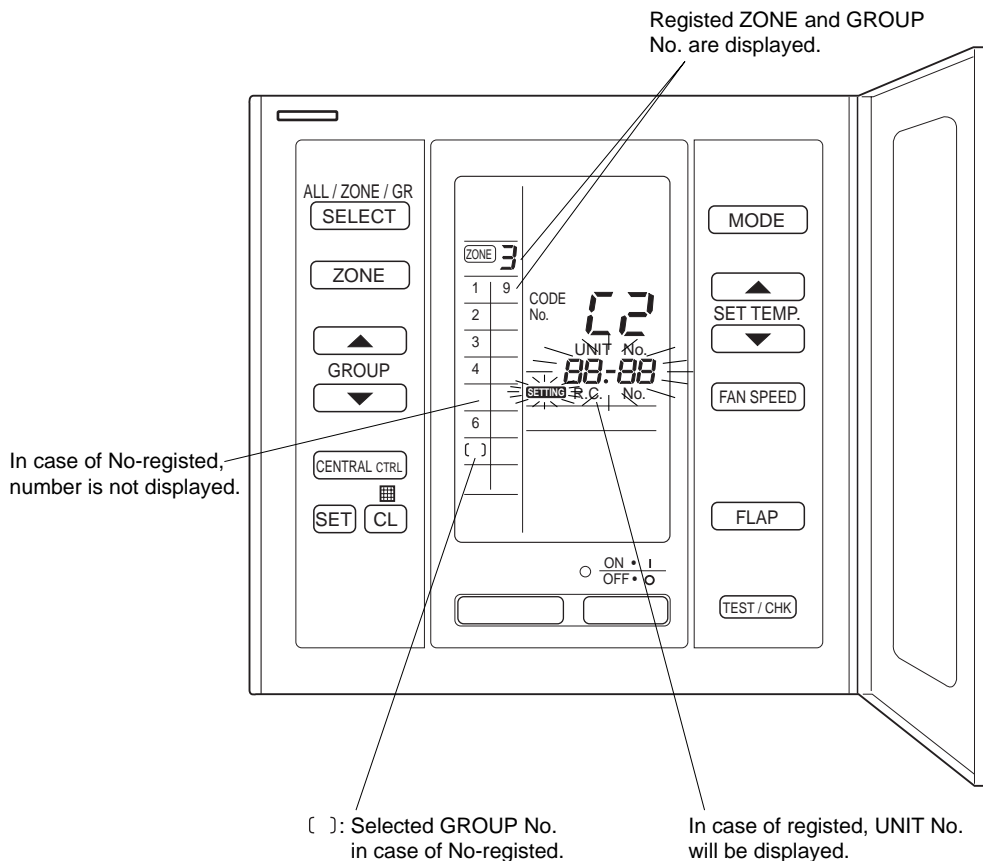
- ⑥ Register the other UNIT No. in the same way by following the above steps ③ to ⑤.
- ⑦ Finally, complete the registration by pressing the **TEST / CHK** button. **SETTING** changes from flashing to OFF state.

3

## 2. Optional Controller (system controller)

### (3) Auto. zone registration by system controller

- a) Press the **TEST / CHK** and **ZONE** buttons at the same time for more than 4 seconds.  
**SETTING** and CODE No. C1 will flash.
- b) Select CODE No. C2 by pressing ▲ , ▼ (**SET TEMP**) button and press the **SET** button.  
C2 changes from flashing to ON state and auto. zone registration will start.
- c) Registered GROUP No. will be disappeared all.
- d) Central address will be assigned from small indoor unit address to large one in numerical order automatically.  
Finishing auto. zone registration, **SETTING** changes from flashing to OFF.
- e) If the error is happened, the "CHECK" starts flashing and zone registration finishes at this time. Press the **CL** button.
- f) Finally, complete the auto. zone registration mode by pressing the **TEST / CHK** button.



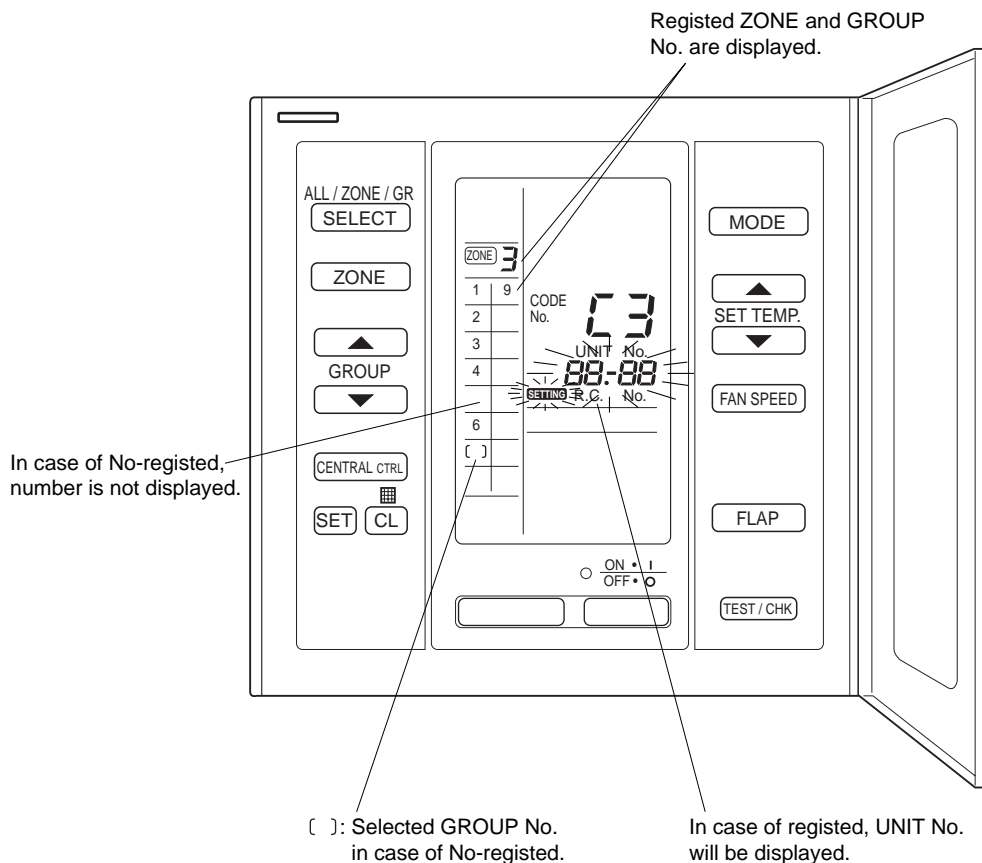
0204\_M\_I

3

## 2. Optional Controller (system controller)

### ■ How to check overlapping of central address No.

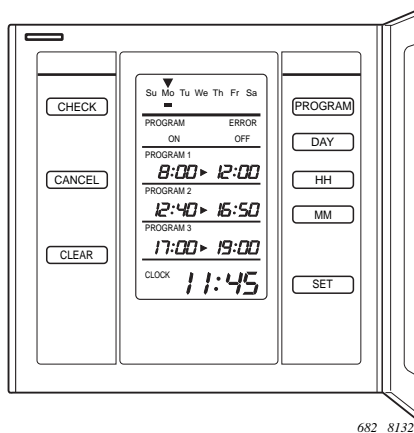
- a) Press the **TEST / CHK** and **ZONE** buttons at the same time for more than 4 seconds.  
**SETTING** and CODE No. C1 will flash.
- b) Select CODE No. C3 by pressing **▲** , **▼** (**SET TEMP**) button and press the **SET** button.  
C3 changes from flashing to ON state and **SETTING** will flash. Then auto. overlap checking will start.
- c) If C3 changes from ON to flashing and **SETTING** changes from flashing to ON, there is no overlapping. Then finally, complete the auto. overlap checking mode by pressing the **TEST / CHK** button.
- d) If some of GROUP No., ZONE No. and UNIT No. flash, you should try again the zone registration.
  - ① Select CODE No. C1 by pressing **▲** , **▼** (**SET TEMP**) button and press the **SET** button.
  - ② Select the flashing GROUP No. with **ZONE** and **GROUP** button.  
Then press the **CL** button and re-select the **ZONE**, **GROUP** and **UNIT** No.
  - ③ Then finally, complete the auto. overlap checking mode by pressing the **TEST / CHK** button.



0205\_M\_I

## 2. Optional Controller (weekly timer)

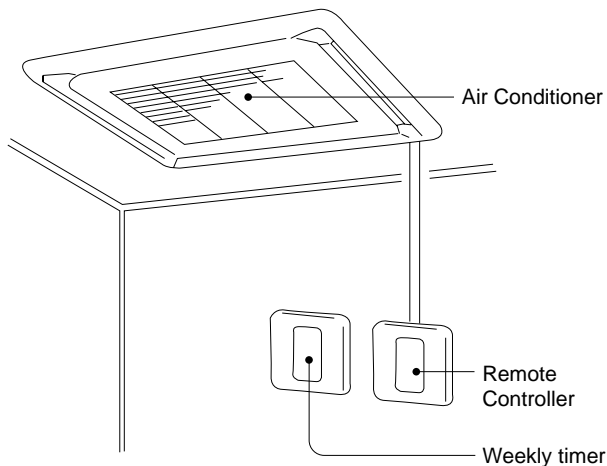
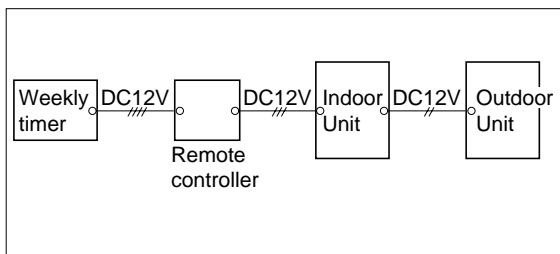
### 2-3. Weekly timer / TM-WBGN



682\_8132

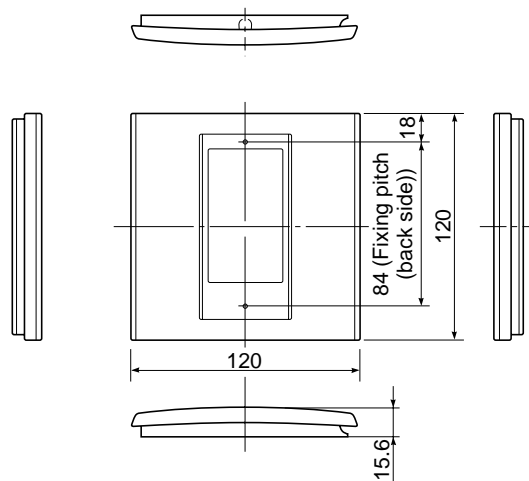
- The weekly timer is used, connected to remote controller (RCS-SH80TG), and system controller (SHA-KC64TG).
- ON / OFF can be easily set 3 times a day, in units of 1 minutes, in conversation mode. Program reservation of 1 week can be also easily set.
- Operation reservation can be temporarily cancelled using “cancel button” without changing the program.
- The 24-hour display shows the current time, day, and the details of operation during program execution.
- The output can be forcibly turned ON, without changing the program.
- A built-in back up function memorizes the program reservation, providing back up against power failure.

#### ● System diagram



683\_8132

#### ● Diagram of outer dimensions

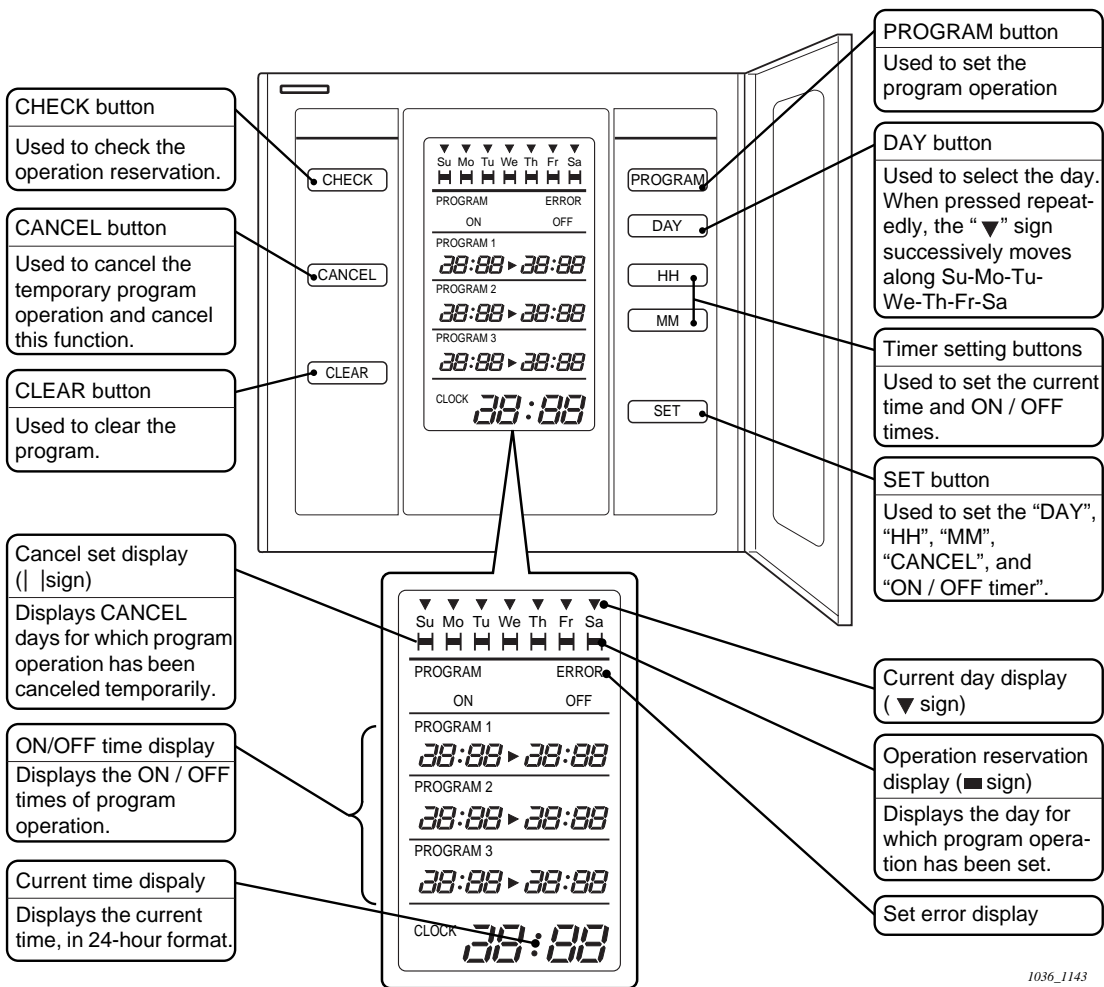


1780\_M\_1



## 2. Optional Controller (weekly timer)

### ■ How to use the weekly timer

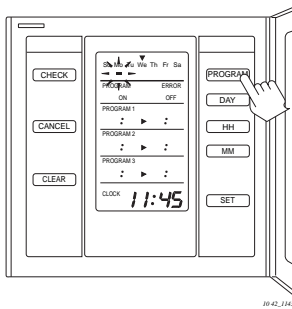


1036\_1143



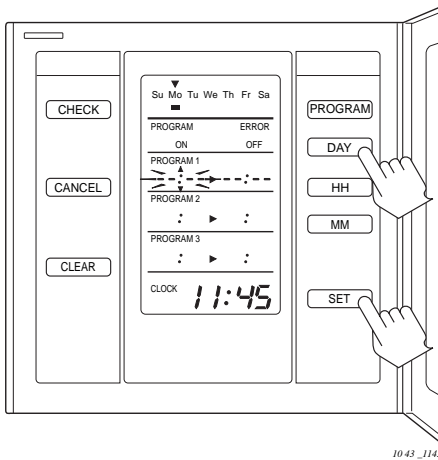
## 2. Optional Controller (weekly timer)

① At first, press the program button.



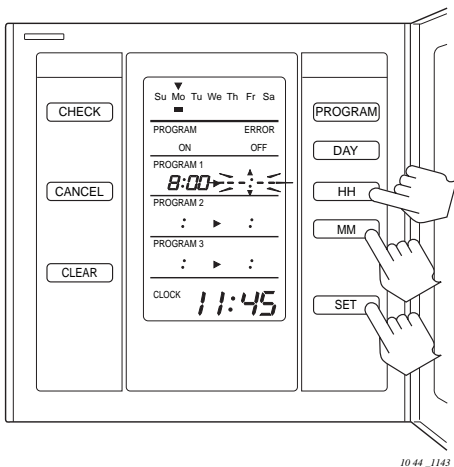
● The operation reservation display “■” starts flashing as soon as the program button is pressed.

② Select the day of program operation by pressing the DAY button, and press the SET button.



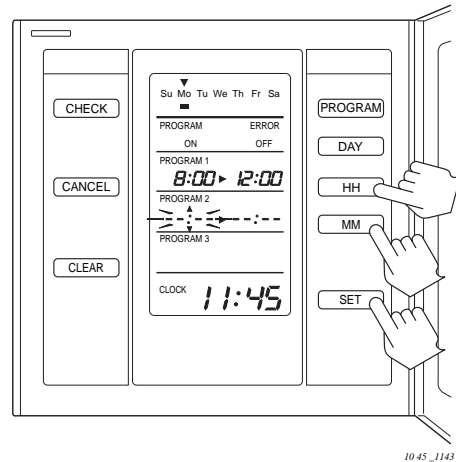
The reservation operation display “■” changes from flashing to ON state as soon as the SET button is pressed, and the ON time of program 1 starts flashing at the same time.

③ Set the ON time by pressing the HH. and MM. buttons, and press SET button.



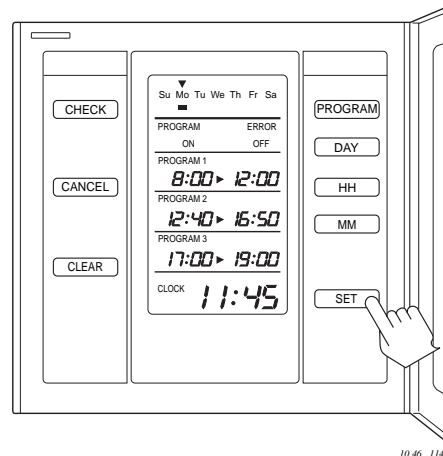
As soon as the SET button is pressed, the ON time (8:00 in the example) changes from flashing to ON state, and at the same time the OFF time of program 1 starts flashing.

④ Set the OFF time by pressing the HH. and MM. buttons, and press SET button.



As soon as the SET button is pressed, the OFF time (12:00 in the example) changes from flashing to ON state, and at the same time the ON time of program 2 starts flashing.

⑤ Next, set the operating times of programs 2 and 3.



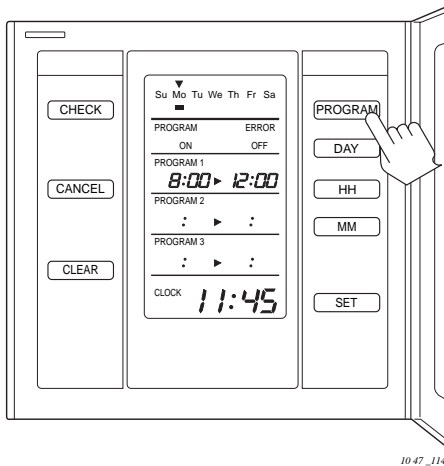
As soon as the SET button is pressed after setting the OFF time of program 3, the OFF time (19:00 in the example) changes from flashing to ON state, and at the same time the ON time of program 1 starts flashing.

3



## 2. Optional Controller (weekly timer)

- ⑥ Finally, press the PROGRAM button.  
After setting, press the PROGRAM button within the next 30 seconds.



1047\_1143

This completes the setting of program operation on 1 day (Monday, in the example). The ON / OFF display appears, if the current time is within the set times. (In this state, the ON / OFF times of program 1 are displayed, because the current time is within the set times.

- ⑦ Set the program operation of other day in the same way by following the above steps ① to ⑥. At this time, if the day's operating time is the same as that of already set another day, refer to the item "Copying the Program Operating Time".

### NOTE

- Setting of program time  
0:00 is treated as 24:00.  
Ex : Following program time can be set.

ON	OFF
0:00 ▶	2:00
22:00 ▶	0:00

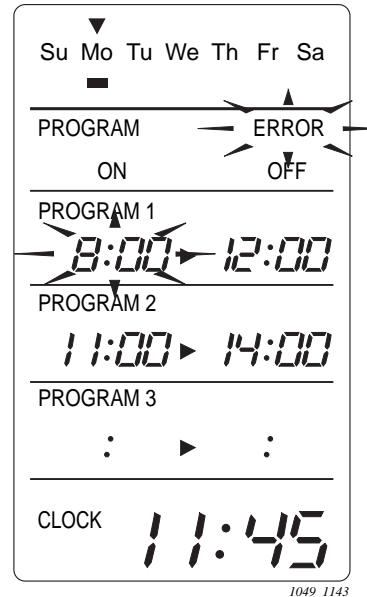
1048\_1143

- If the DAY, HH., or MM. button is not pressed while it is flashing, the original display (regular display) is automatically restored after lapse of 30 seconds. Repeat the operation from the beginning.

### (D) Set error

If the "ERROR" starts flashing at the time of setting program operation, correct the time in the following way.

- ① When the "ERROR" starts flashing, the ON time of error generated program also starts flashing.



1049\_1143

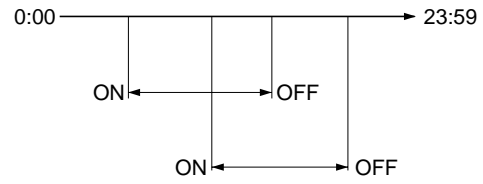
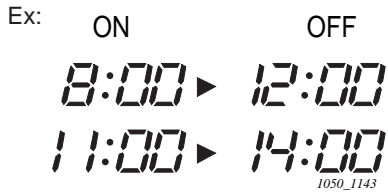
- ② Press the SET button, and make the time to be corrected flashing.  
③ Revise the ON / OFF time using the HH. and MM. buttons.  
④ Press the SET button.  
If the time is correctly set, the error display disappears.  
⑤ Complete the revision by pressing the PROGRAM button.

## 2. Optional Controller (weekly timer)

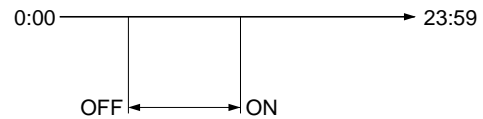
**NOTE**

- "ERROR" is displayed, if the ON / OFF times are set as follows.

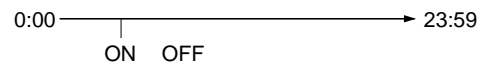
(1) If the operating times overlap



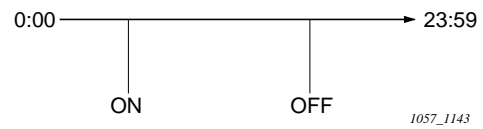
(2) If the OFF time is earlier than the ON time



(3) If the ON and OFF times are the same

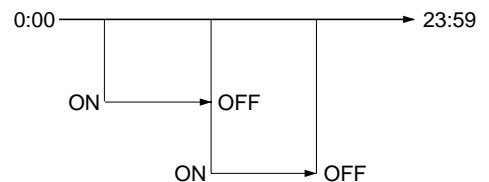


(4) If only the ON or OFF time is set



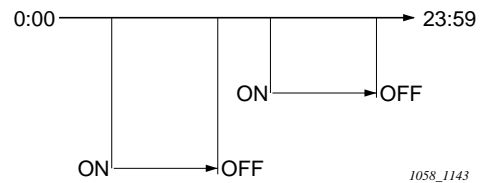
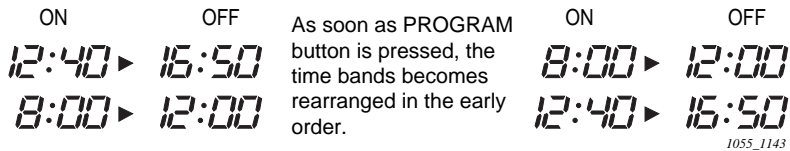
- Set error is not generated in the following cases

(1) If the OFF time of previous cycle and the ON time of next cycle are the same



(2) If the time band of next cycle is earlier than that of the previous cycle

Ex:



(3) If both the ON and OFF times are 0:00

Ex:



3

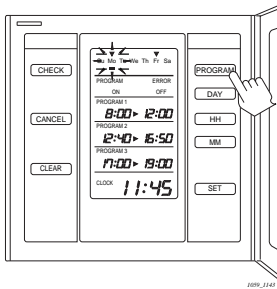
## 2. Optional Controller (weekly timer)

### (E) Copying the program operating time

At the time of setting program operation, if the operating time to be set is the same as that an already set another day, it can be copied here.

Ex: To copy the operation of Monday at the operation of Tuesday

- ① Press CHECK button while in the state of regular display.
- ② Press DAY button, and bring the operation reservation indicator "■" at the day (Mon. in the example) whose program operation has been already set.
- ③ Press the PROGRAM button.

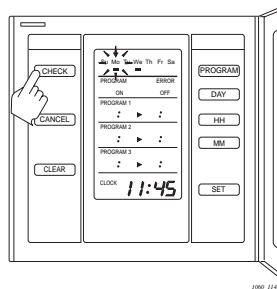


Current day indicator "∞" and operation reservation indicator "■" start flashing.

- ④ Press DAY button, and bring the operation reservation indicator "∞" at the day (Tue. in the example) whose program operation is to be set. (To copy continuously, press the SET button, then press the DAY button, and repeat the process).
- ⑤ Press the PROGRAM button. The operation reservation indicator "■" turns ON below the copied day.

### (F) Checking the program operating time

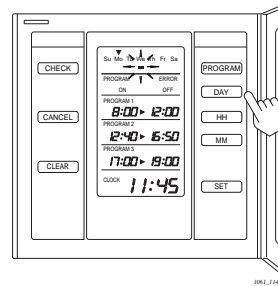
- ① Press CHECK button.



Ex: To check the program operating times of Wednesday, on Monday

- The operation reservation indicator "■" starts flashing, beginning from the state of regular display.

- ② Press DAY button, and bring the operation reservation indicator "■" at the day to be checked.



- Every time the DAY button is pressed, the operation reservation indicator "■" starts flashing, and the operation times of the day where the operation reservation indicator "■" is located are displayed.

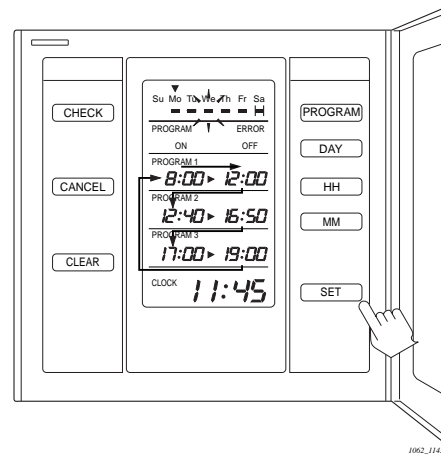
- ③ Press CHECK button. Regular display is restored.

#### NOTE

1. If a button other than the DAY, CHECK, and PROGRAM is pressed while checking, the display does not change.
2. While checking, if 30 seconds elapse without pressing of the DAY, CHECK, or PROGRAM button, regular display is automatically restored.

### (G) Changing the program operating time

- ① Beginning from regular display, press the PROGRAM button.
- ② Press DAY button, and bring the operation reservation indicator "■" at the day to be revised.
- ③ Press SET button.
- ④ Pressing SET repeatedly moves the flashing position in the following order. Adjust it at the time to be changed.

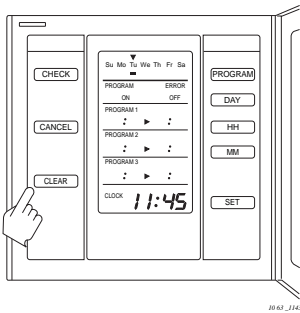


- ⑤ Change the time with the HH. and MM. buttons.
- ⑥ Press SET button.
- ⑦ Finally, complete the revision by pressing the PROGRAM button.

## 2. Optional Controller (weekly timer)

### (H) Clearing a program operation

- Clearing the program of the day



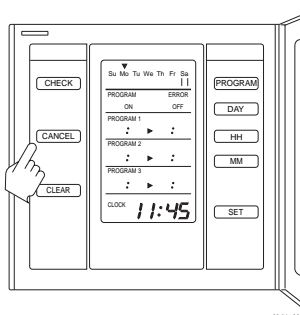
- ① Press PROGRAM button.
- ② Press DAY button and bring the operation reservation indicator "■" at the day to be cleared.
- ③ Press CLEAR button. The program times disappear.
- ④ Press PROGRAM button. The operation reservation indicator "■" disappears.

- Clearing a part of the program

- ① Press PROGRAM button.
- ② Press DAY button and bring the operation reservation indicator "■" at the day whose part of the program is to be cleared.
- ③ Press SET button.
- ④ Press SET button once again, and make the ON or OFF time of the program to be cleared flash.
- ⑤ Press CLEAR button. Part of the program disappears, and at the same time the remaining programs automatically get rear-ranged.
- ⑥ Press PROGRAM button.

### (I) Cancelling the temporary program operation

- Operation reservation in unit of days can be temporarily cancelled, using CANCEL button.



- ① Press the CANCEL button. The cancel set indicator "I" starts flashing.
- ② Press the DAY button, and bring the cancel set indicator "I" at the day which is to be set as a cancel day.
- ③ Press SET button. The cancel set indicator "I" changes from flashing to ON state (■).

- Cancelling a set cancel day

- ① Press the CANCEL button.
- ② Press the DAY button, and bring the cancel set indicator "I" at the day which is to be cancelled as a cancel day.
- ③ Press SET button. The cancel set indicator "I" disappears, and the display changes over to operation reservation display (■).

- Description of operation

The operation is temporarily cancelled on the day which is set as a cancel day, but on the following day the cancel set indicator "I" disappears automatically and operation reservation indicator "■" is restored.

#### NOTE

- The day for which no program has been set cannot be set as a cancel day.

## 2. Optional Controller (weekly timer)

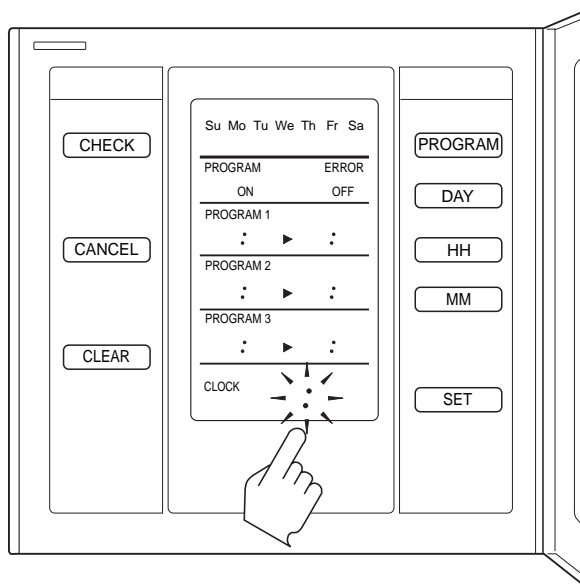
### (J) Others

#### Some information on this weekly timer

##### 1. Power Failure

If a power failure occurs during operation, and the power supply is later recovered, the display appears as shown on the right.

(The colon “ : ” of current time flash).



1065\_1143

- Restarting operation

- ① Start the air conditioner with remote controller.
- ② Press the PROGRAM button of weekly timer.

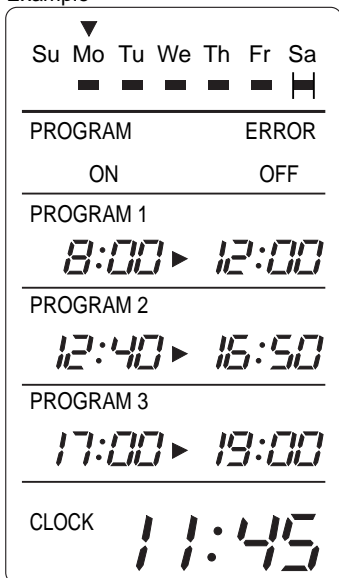
The colon of current time changes from flashing to ON state, and regular status is restored.

In this case the set program operation is kept memorized by the back up function, so it need not be set again.

##### 2. Operations of the weekly timer and air conditioner

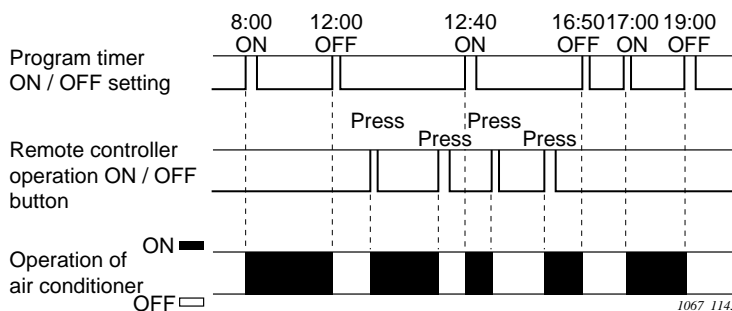
The air conditioner fitted with a weekly timer is operated with either a remote controller or with a weekly timer.

#### Example

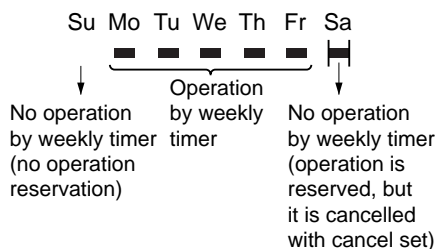


1066\_1143

#### ① Operation pattern of 1 day (static signal)



1067\_1143



1068\_1143



## 2. Optional Controller (weekly timer)









### ■ How to install the weekly timer



#### WARNING

Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.

#### ■ Accessories

No.	Accompanying parts	Qty	No.	Accompanying parts	Qty
①	Weekly timer  651_8132	1	⑤	Spacer  654_8132	2
②	Connecting wiring length 1.2 m  728_8132	2	⑥	Clampers  676_8132	2
③	Screws M4 x 25  652_8132	2	⑦	Operation manual  657_8132	1
④	Wooden screws  653_8132	2	⑧	Installation manual  657_8132	1



#### CAUTION

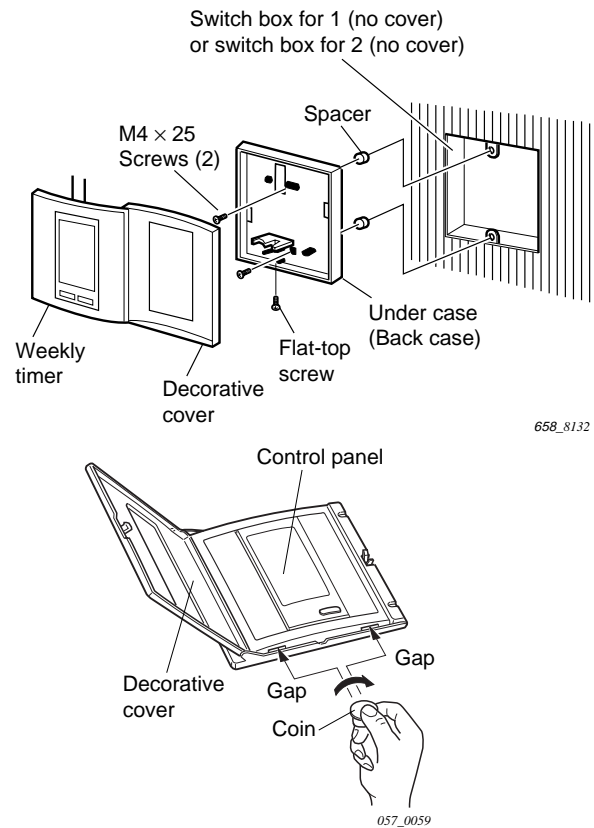
- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the weekly timer away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

The mounting position for the weekly timer should be located in an accessible place for control. Never cover over the weekly timer or recess it into the wall.

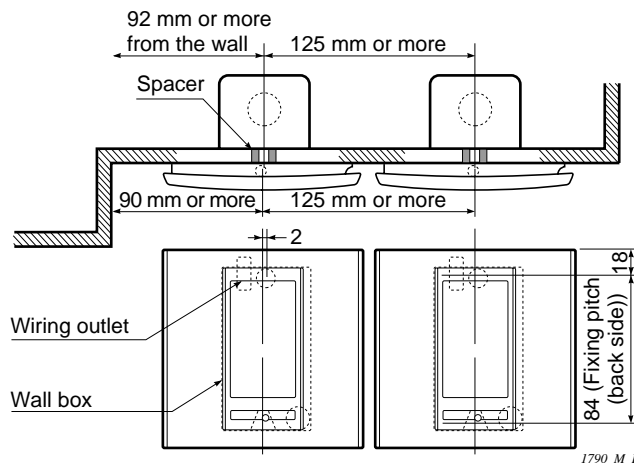
- (1) Remove the flat-top screw on the bottom of the back case. When you open up the decorative cover, you will see two gaps under the weekly timer. Insert a coin into these gaps and remove the back case.

#### When using a wall box for flush mounting

- If local codes allow, this weekly timer can be mounted using a conventional wall box for flush mounting.
- (2) Attach the back case with the 2 small screws provided. Using a screwdriver, push open the cut-outs on the back case. These holes are for screws. Use the spacers and take care not to tighten the screws excessively. If the back case does not sit well, cut the spacers to a suitable thickness.
  - (3) Connect the 4 wires to the weekly timer 4P terminal base. (see next page)
  - (4) To finish, fit the back tabs of the back case into the weekly timer and mount it using the flat-top screw.



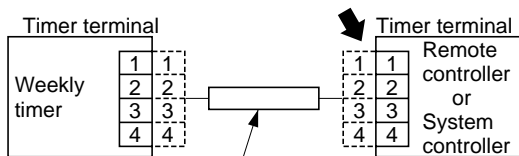
#### Mounting dimensions for continuous installation



- For vertical continuous installation, the space between the weekly timer and the remote controller must be 25 mm or more.

## 2. Optional Controller (weekly timer)

### ■ Wiring diagram (for wiring, always use the supplied wires)



Connection wiring (supplied)

0806\_M\_1

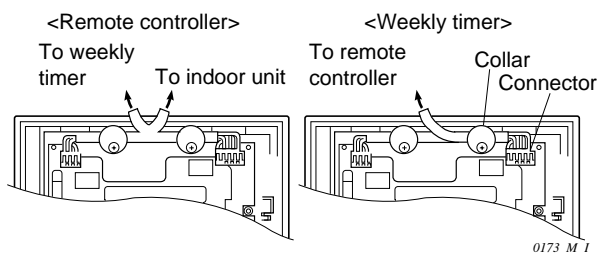
### ● Layout

The weekly timer and remote controller may be located, either one on the left or right sides.

### ● Wiring procedure

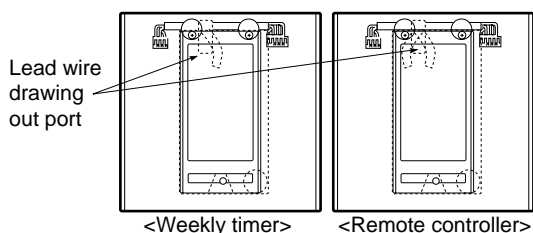
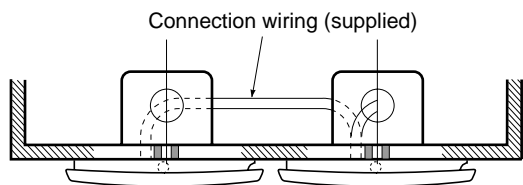
Do the wiring according to the following procedure.

- Loosen the retaining screw of the lead wire of the weekly timer, remove the collar, and connect the to the timer terminal (4P connector) of weekly timer. Place the supplied connection wiring into the groove neatly, and then refasten the collar.



0173\_M\_1

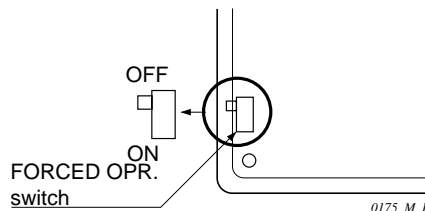
- Pass the supplied connection wiring through the lead-wire drawing-out port on the bottom case of weekly timer, then run it behind the wall, and connect it to the timer terminal (4P terminal) of the remote controller. (Use the supplied collar for fastening the wiring of remote controller).



0804\_M\_1

### ■ Test run setting

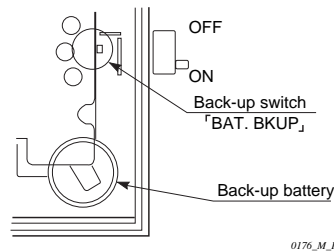
- After installation, check the output state of the weekly timer with the "FORCED OPR." switch (OFF to ON) located on the rear side of its PCB. After confirming normal operation, turn the "FORCED OPR." switch back to OFF without fail.



0175\_M\_1

### ■ Memory back up function for power failure compensation

- This weekly timer keeps the settings of operating buttons memorized; so that after a power failure the operation can be restarted in the same set state by pressing the PROGRAM button.
- Using the "Back Up" After installation, confirm that the BAT.BKUP switch on the rear side of the weekly timer's PCB is ON.

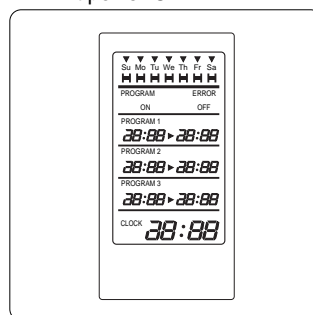


0176\_M\_1

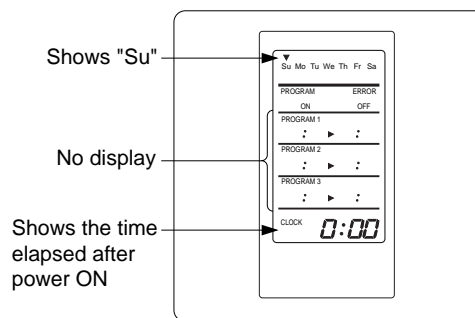
### ■ Display at power ON

- When the power is turned ON, the weekly timer displays the following.

At power ON



After 5 sec.



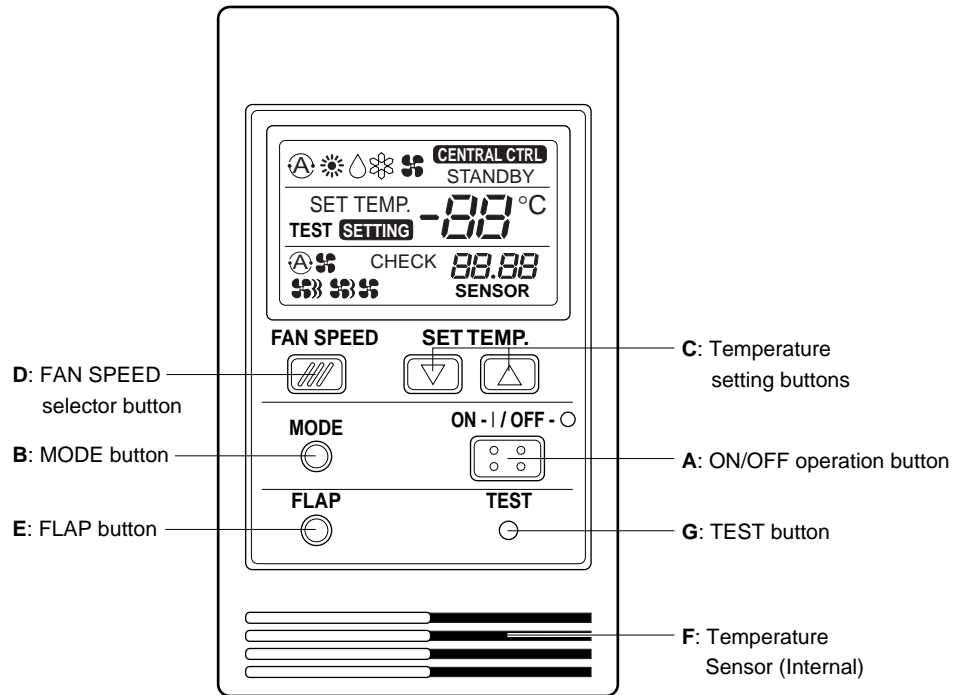
0805\_M\_1

3

## 2. Optional Controller (simplified remote controller)

### 2-4. Simplified remote controller / RCS-KR1TG

#### ■ How to use the simplified remote controller








1504\_T\_I

<b>A:</b>	<b>ON/OFF operation button</b>	This button is for turning the air conditioner on and off.
<b>B:</b>	<b>MODE button</b>	Use this button to select one of the following five operating modes.
	<b>(AUTO)</b>	: Used to automatically set cooling or heating operation. Only for single heat pump type (temperature range: 17 - 27 °C)
	<b>(HEAT)</b>	: Used for normal heating operation. Only for heat pump type (temperature range: 16 - 26 °C)
	<b>(DRY)</b>	: Used for dehumidifying without changing the room temperature. (temperature range: 18 - 30 °C)
	<b>(COOL)</b>	: Used for normal cooling operation. (temperature range: 18 - 30 °C)
	<b>(FAN)</b>	: Used to run the fan only, without the heating or cooling operation.
<b>C:</b>	<b>Temperature setting buttons</b>	: Press this button to increase the temperature setting. : Press this button to decrease the temperature setting.



## 2. Optional Controller (simplified remote controller)

<p>D: <b>FAN SPEED selector button</b></p> <p>(AUTO) (HI.) (MED.) (LO.)</p>	<p> : The air conditioner automatically decides the fan speed.   : High fan speed   : Medium fan speed   : Low fan speed</p>
<p>E: <b>FLAP button</b></p> <p><b>NOTE</b></p>	<p>1. Use this button to set the airflow direction to a specific angle.</p> <ul style="list-style-type: none"> <li>● In the cool mode and dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent.</li> <li>● Do not move the flap with your hands.</li> </ul> <p>This function is available only for models X, S, SL, T and K.</p>
<p>F: <b>* Temperature sensor (Internal)</b></p>	<p>Although the temperature sensor in the indoor unit normally detects the temperature, this internal sensor can detect the temperature around the remote control unit. For more information, contact the dealer where you made the purchase. (Do not make any settings if group control is being used.)</p>
<p>G: <b>Test button</b></p> <p> <b>CAUTION</b></p>	<p>This button is used only when servicing the air conditioner. Do not use the TEST button for normal operation.</p>

**NOTE** When two remote control units are being used in one group control\* system, the most recent button that is pressed on any remote control unit is effective.

\* Group control means that maximum up to 8 indoor units can be concurrently controlled with a remote controller.

\* **Switching the room temperature sensor**

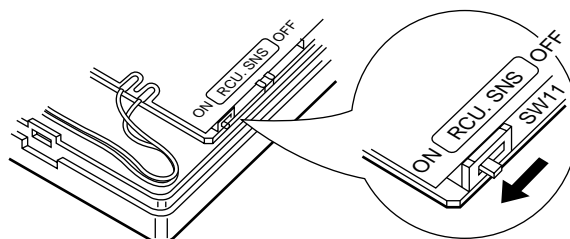
The room temperature sensor is placed both in the indoor unit and the simplified remote controller respectively. Either sensor can be used to sense the room temperature.

The indoor unit sensor is usually used.

If you use the simplified remote controller to sense the room temperature, switch the remote controller sensor switch (RCU. SNS) on the P.C. board of the simplified remote controller from OFF to ON. See the diagram below.

< **NOTE 1** > Although switching the simplified sub-remote controller's switch from OFF to ON, the sub-remote controller cannot detect the room temperature.

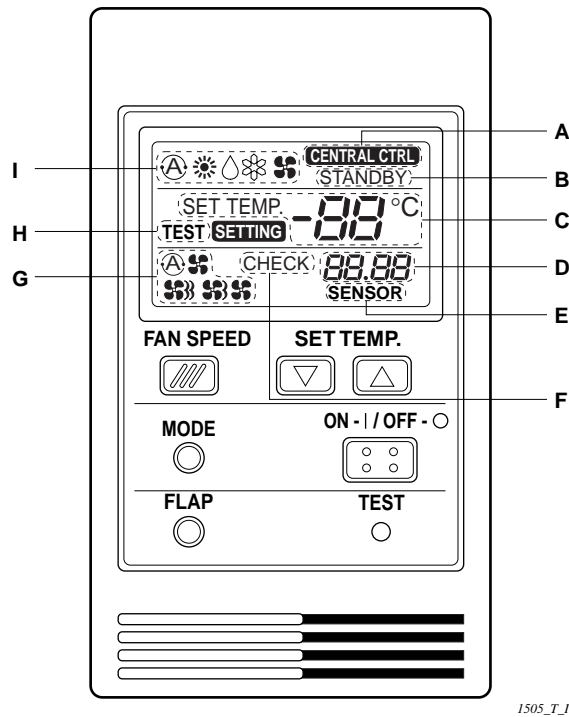
< **NOTE 2** > The standard remote controller cannot detect the room temperature.



1791\_M\_I

## 2. Optional Controller (simplified remote controller)

### Display (Remote controller)



1505\_T\_1

#### Description

- A** : This is displayed to indicate that the system controller is being used for control.  
When **CENTRAL CTRL** is flashing on the display, the operation is not accepted by the system controller.
- B** : When the unit is in the heating standby mode, the STANDBY indicator appears.
- C** : This displays the temperature setting.
- D** : This displays alarm messages when an error occurs.
- E** : This is displayed when using the temperature sensor in the remote control unit.
- F** : This is displayed only if an abnormality occurs within a unit.
- G** : The currently selected FAN SPEED is displayed.
- H** : When the TEST button is pressed, the TEST indicator appears.
- I** : The currently selected operation mode is displayed.

## 2. Optional Controller (simplified remote controller)

### ■ How to install the simplified remote controller



#### WARNING

Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.

### ■ Accessories

No.	Accompanying parts	Qty	No.	Accompanying parts	Qty
①	Simplified remote controller (comes with 200 mm wire)	1	④	Spacers	2
②	Machine screws M4 × 25	2	⑤	Wire joints	3
③	Wood screws	2	⑥	Installation manual	1



#### CAUTION

- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the simplified remote controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

The mounting position for the simplified remote controller should be located in an accessible place for control. Never cover over the simplified remote controller or recess it into the wall.

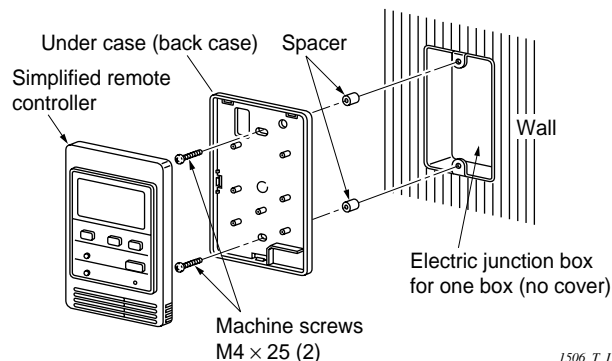
- (1) Insert a screwdriver or the like in the groove on the lower side of the simplified remote controller body to pry off the back case.

### When using a wall box for flush mounting

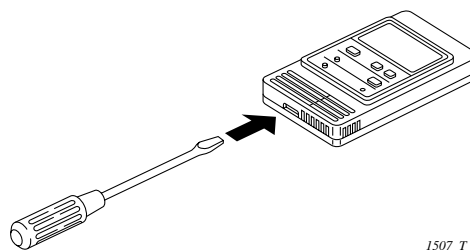
- If local codes allow, this weekly timer can be mounted using a conventional wall box for flush mounting.
- (2) Use the two supplied M4 machine screws to secure the simplified remote controller back case. Prior to mounting, clear the cutouts in the back case corresponding to the holes in the wall box using a screwdriver or the like. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
  - (3) Connect locally supplied three core lead wires to the lead wires from the simplified remote controller. (See "How to wire the simplified remote controller.")

When connecting the locally supplied three core lead wires to the terminal block, check the terminal numbers in the indoor unit to make sure that the wires are correctly connected. (The simplified remote controller is damaged if 220 / 240 V AC is applied.)

- (4) Fit the simplified remote controller to the tabs of the back case and mount it screw.

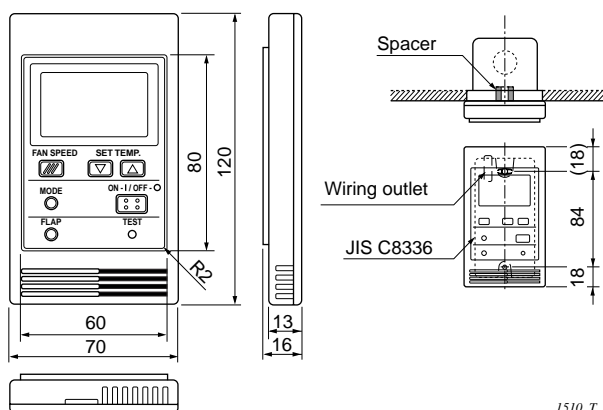


1506\_T\_I



1507\_T\_I

### Mounting dimensions for continuous installation



1510\_T\_I

### Place of installation

- Mount the simplified remote controller at a height of 1 to 1.5 meters above the floor where it can sense the average temperature of the room.
- Do not mount the simplified remote controller in a place exposed to direct sunlight or a place exposed to outside air such as near a window.
- Do not mount the simplified remote controller behind an object so that it is separated from the air circulation of the room.
- Mount the simplified remote controller in a room air conditioned.
- The simplified remote controller must be mounted on the wall or other surface vertically.

## 2. Optional Controller (simplified remote controller)

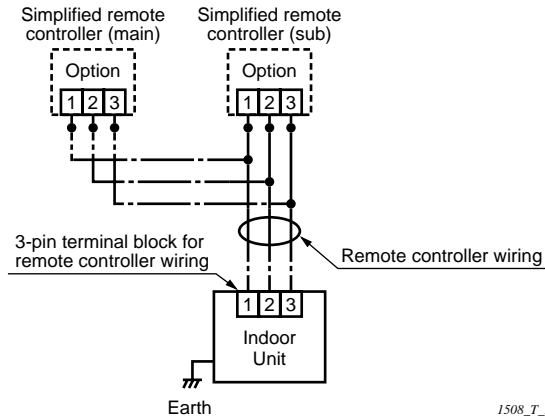
### ■ Basic wiring diagram



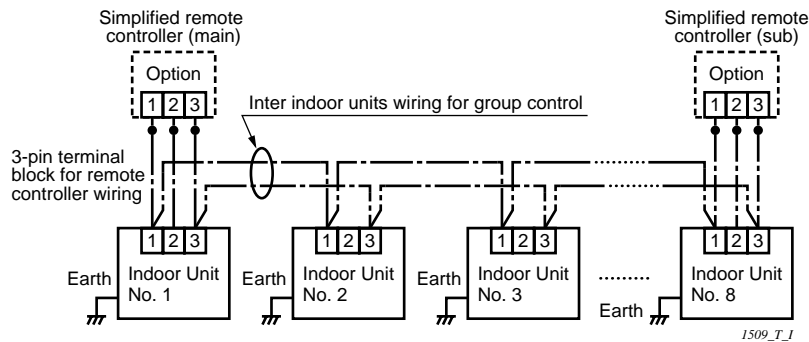
**CAUTION**

Make correct wiring without any mistakes (incorrect wiring will damage the equipment).

- Following is a wiring diagram for controlling one indoor unit by two simplified remote controllers.



- Performing the group control of the multiple indoor units with two simplified remote controllers.
- \* The main and the sub simplified remote controllers can be installed at any indoor unit for operations.



**NOTE**

- 1) The chain lines ( — - — ) indicate control line in the system.
- 2) Up to two system controllers are connectable in one control line system.
- 3) Recommended wire diameter and wire length

Remote control wiring	Control wiring for group control
0.75 mm <sup>2</sup> (AWG #18)	0.75 mm <sup>2</sup> (AWG #18)
Max. 500 m (Total)	Max. 500 m (Total)

## 2. Optional

### 2-5. Indoor-use Relay Board / ACC-DC24SB

Used for centralized control over various air conditioner operations from a remote location.

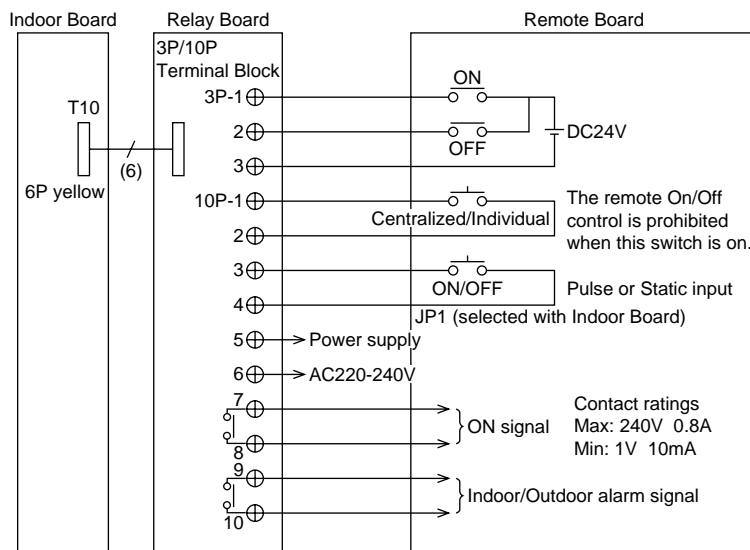
Can be connected to all ECO indoor units.

#### Input

- Three-way On/Off selection
  - Individual On/Off pulse signals (DC24V pulse signal)
  - On/Off pulse signal (potential free pulse signal)
  - Continuous signal (potential free pulse signal)
- Remote control-side On/Off prohibition (potential free static signal)

#### Output

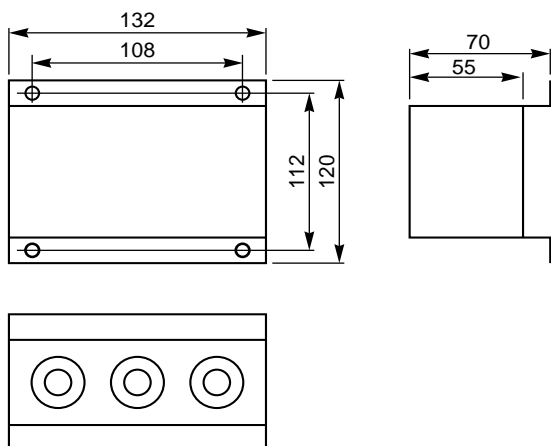
- On signal (potential free normal contact)
- Indoor/Outdoor alarm signal (potential free normal contact)



\* The power supply is not necessary if 10P-1 to 10P-4 of the terminal block is not used.

1772\_M\_1

#### Dimension



1773\_M\_1



## 2. Optional Controller (remote sensor)

### ■ How to install the remote sensor



#### WARNING

Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.

### ■ Accessories

No.	Accompanying parts	Qty	No.	Accompanying parts	Qty
①	Remote sensor (comes with 200 mm wire)	1	④	Spacers	2
②	Machine screws M4 × 25	2	⑤	Wire joints	3
③	Wood screws	2	⑥	Installation manual	1



#### CAUTION

- Do not twist the remote sensor wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the remote sensor away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

The mounting position for the remote sensor should be located in an accessible place for control. Never cover over the simplified remote controller or recess it into the wall.

- (1) Insert a screwdriver or the like in the groove on the lower side of the remote sensor body to pry off the back case.

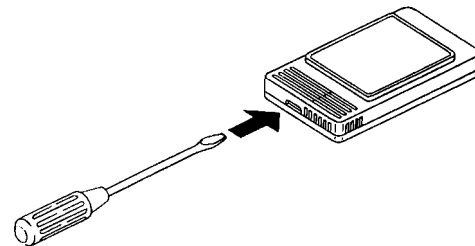
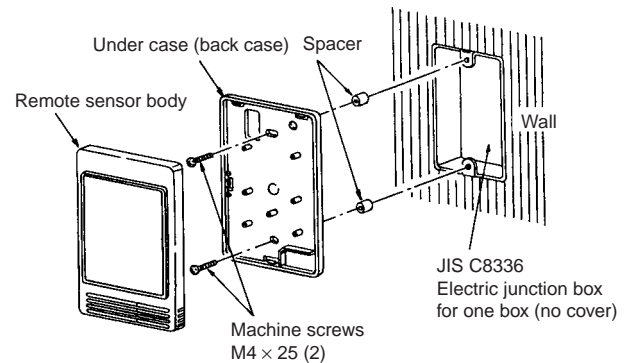
### When using a wall box for flush mounting

- If local codes allow, this remote sensor can be mounted using a conventional wall box for flush mounting.
- (2) Use the two supplied M4 machine screws to secure the remote sensor back case. Prior to mounting, push open the cutouts in the back case corresponding to the holes in the wall box using a screwdriver or the like. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
  - (3) Connect the remote controller wires (3 wires) to the electric cable from the remote sensor body. (See "How to wire the remote sensor")

When connecting the remote sensor wires, check the terminal numbers in the indoor unit to make sure that the wires are correctly connected.

(The remote sensor is damaged if 220 / 240 V AC is applied.)

- (4) Fit the remote sensor body to the tabs of the back case into the outdoor unit and mount it.



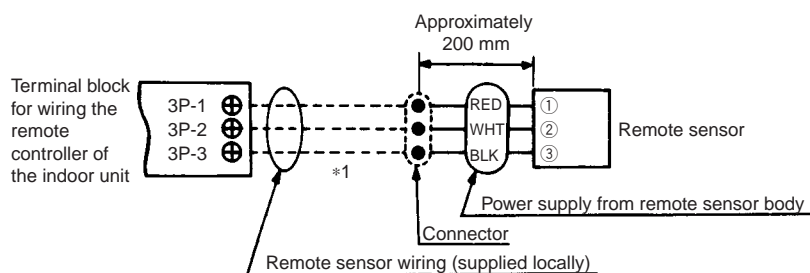
Place of installation

- Mount the remote sensor at a height of 1 to 1.5 meters above the floor where it can sense the average temperature of the room.
- Do not mount the remote sensor in a place exposed to direct sunlight or a place exposed to outside air such as near a window.
- Do not mount the remote sensor behind an object so that it is separated from the air circulation of the room.
- Mount the remote sensor in a room air conditioned.
- The remote sensor must be installed perpendicular to the wall or other surface it is mounted on.

## 2. Optional Controller (remote sensor)

### ■ How to wire the remote sensor

#### ● Connection diagram



\*1: 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup> of the wires are used for lead wires.

#### ● How to connect lead wires

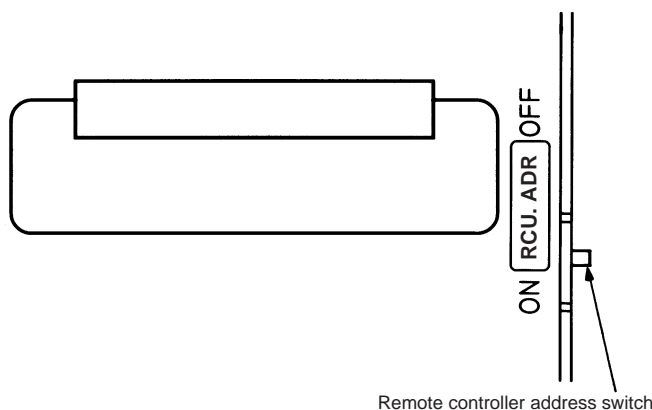
<p>3 supplied white wire joints</p>	<p>Lead wire from indoor unit</p> <p>Lead wire from remote sensor body</p> <p>Wire joint</p>	<ol style="list-style-type: none"> <li>1. Peel off 14 mm of the cable sheathing.</li> <li>2. Twist the two wires together and crimp them together with the wire joint.</li> <li>3. When a crimping tool is not used, solder the wires together and cover the joint with insulating tape.</li> </ol>
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### ■ Guidelines for using a remote controller and a remote sensor

#### ● Set-up procedure

Use the following procedure for setting up.

- ① Use the remote controller as a sub-remote controller. Set the remote controller address switch on the remote controller PCB from OFF to ON. The remote controller can now be used as a sub-remote controller.



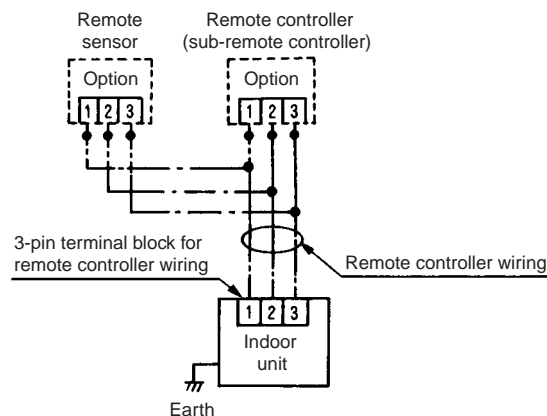
#### ● Basic wiring diagram



**CAUTION**

Make sure to connect the wires correctly or the unit may be damaged.

- Following is a wiring diagram for controlling one indoor unit by a remote sensor and a remote controller.

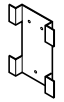




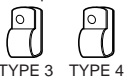
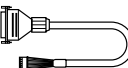
3

## 2. Optional Controller (S-DDC)

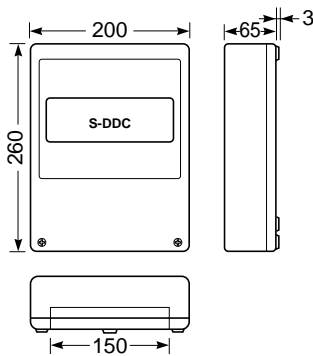
### ■ How to install the S-DDC (SHA-KD2000TG)

#### ■ Accessories

No.	Accompanying parts	Qty
①	Fixture 	1
②	Screws (4 x L12) For fixture 	4
③	Screws for Nylon clammer (3 x L8) 	2

No.	Accompanying parts	Qty
④	Nylon clammer TYPE 3 TYPE 4 	1 each
⑤	RS-232C cable 	1

#### ● Dimension



1835\_M\_I

#### ● Electrical specs.

Rated voltage  
: 220/230/ 240 V

Frequency  
: 50 Hz

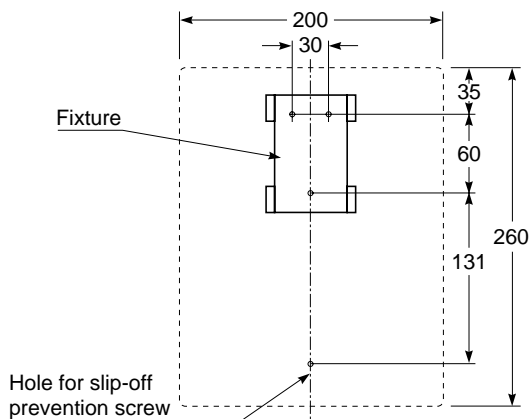
Input  
: 8 W

Net weight  
: 1.5 kg



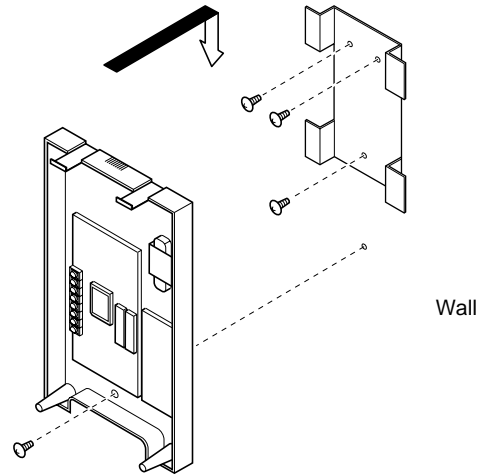
**CAUTION**

- Do not strand or twist AMY control wire and input-output wire with power cord, or thread them through a metallic pipe because it may causes faulty operation.
- Install S-DDC apart from electrical noise source.
- Do not install AMY adapter where water splashes or humid place.
- Avoid excessive vibration and shock.



1836\_M\_I

Hook the AMY adapter to the fixture



Screw for slip-off prevention

1837\_M\_I

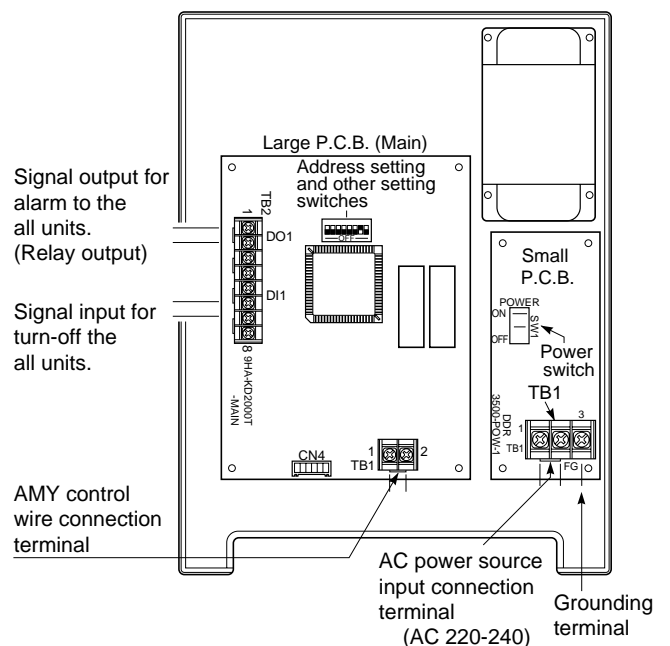
- (1) Secure the fixture according to the <Measurement for installation>.
- (2) Hook the adapter to the fixture.
- (3) When the fixture is loose and the S-DDC seems to be slipped off, secure the S-DDC with a screw removing the upper lid of the S-DDC.

#### ■ Layout electrical terminals

When connecting or disconnecting S-DDC, turn off the power source. Remove two screws fixing upper lid, then remove the lid.

- (1) Connecting the power source.

Apply AC 220 V to 240 V of the power source to S-DDC. Connect the power cord <TB1-1> and <TB1-2> on the small size printed circuit board in S-DDC.



1838\_M\_I



## 2. Optional Controller (S-DDC)

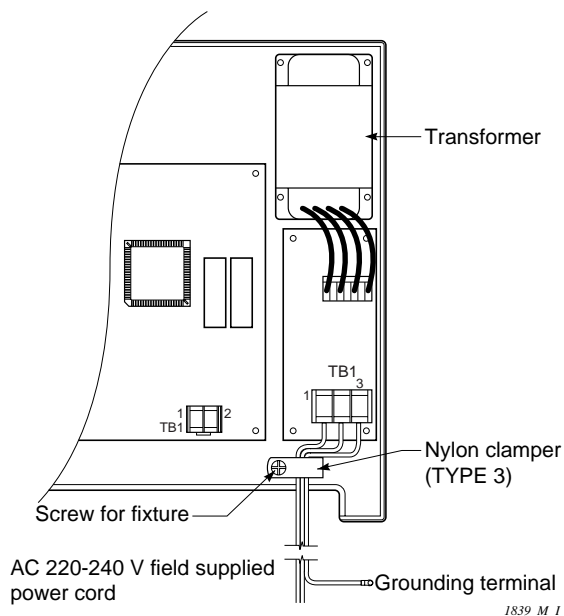
### (2) Connecting control wires.

Use two-core, 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup> lead wire for AMY control wire. The limited length of control wire is 1,000 m in total. The control wire has no polarity.

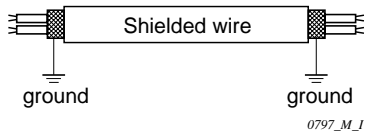


#### CAUTION

- Do not thread the AMY control wire through a metallic pipe with power cord.
- Do not wire the power cord and the control wires together in a same cable or do not wire the power cord near the control wires. For AMY control wire, use signal wire which is different from power code.



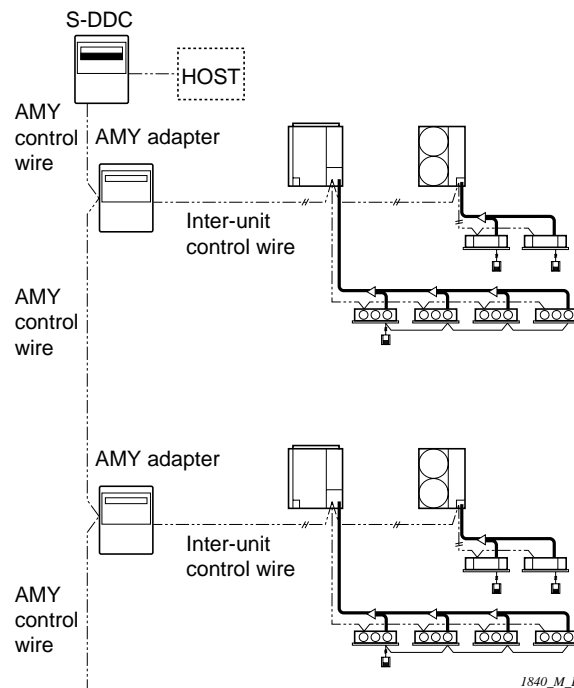
- MVVS or CPEVS: Shielding wire from 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup>.
- Use shielding wire for AMY and inter-unit control wiring and ground the shielding on both sides (See below), otherwise misoperation from noise may occur.



### ■ Wiring diagram

AMY and inter-unit control wiring for AMY adapter should be wired as shown below.

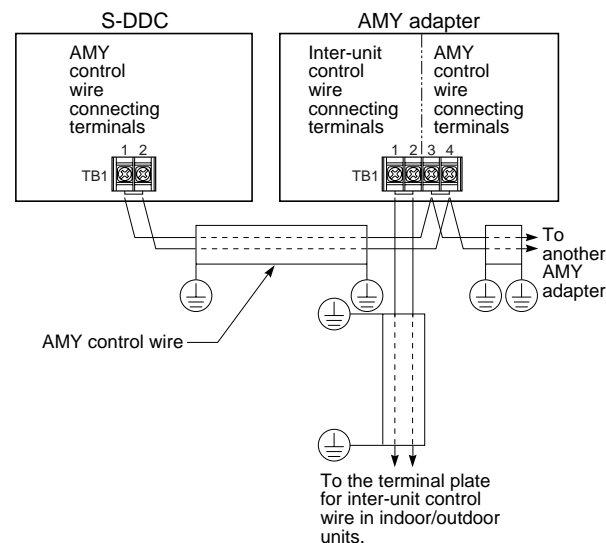
- When using S-DDC:  
UP to 32 AMY adapters can be connected.



3

### ■ Wiring procedure

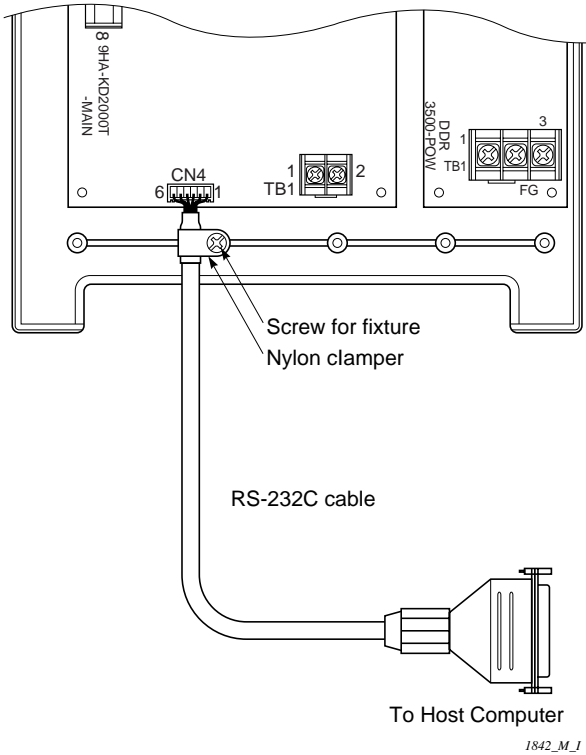
- AMY control wire is used to connect between S-DDC and AMY adapter. Connect AMY control wire between the terminals ① and ② on the terminal plate TB1 of large P.C.B. in S-DDC and the terminals ③ and ④ on the terminal plate TB1 of large P.C.B. in AMY adapter.



## 2. Optional Controller (S-DDC)

### ● RS-232C cable

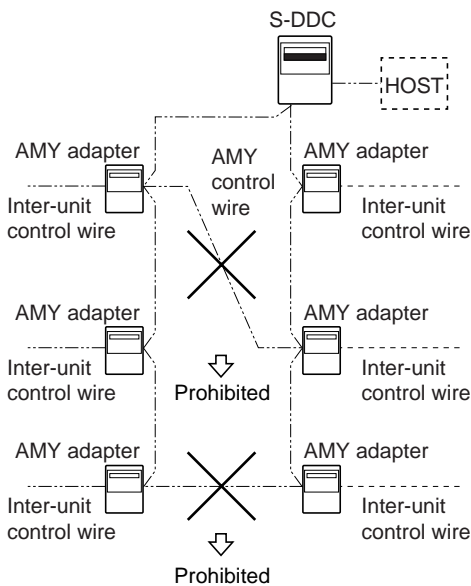
RS-232C cable is used to connect between the terminals CN4 of the large P.C.B. in S-DDC and Host Computer. The cable should be fixed to S-DDC with nylon clasper as shown below.



1842\_M\_1

### ■ Precautions when wiring AMY control wire

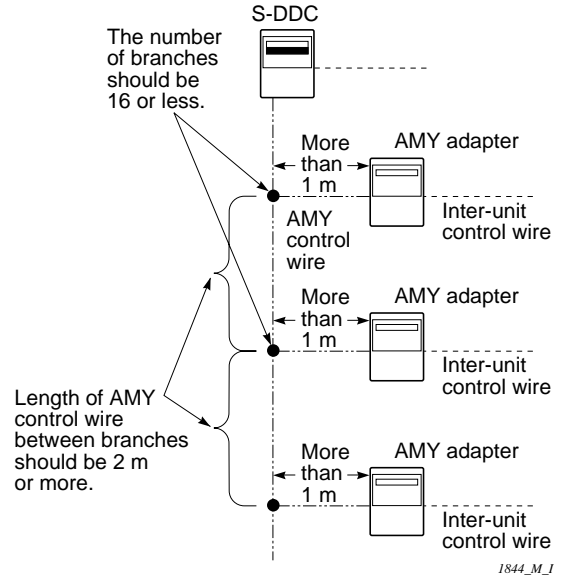
- (1) Do not wire the inter-adapter control wiring such as loop wiring as shown below.



1843\_M\_1

- (2) Branch wiring

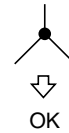
If branching the inter-adapter control wiring, the number of branches should be 16 or less. (Branch length less than 1 m is not included in the total branch number.)



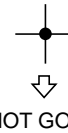
1844\_M\_1

#### NOTE

1. Up to 3 wires can be branched off from the terminal. (Please refer to the following example of branch wiring.)



OK



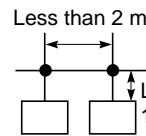
NOT GOOD

4 wires or more can not be branched from the terminal.

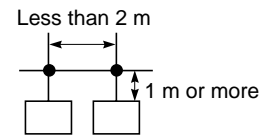
1845\_M\_1

2. Branch length less than 1 m is not included in the total branch number.

3. AMY control wire length between branches should be 2 meter or more as shown below.



NOT GOOD



NOT GOOD

1846\_M\_1



#### CAUTION

- Do not connect the power supply cord to the AMY control wire terminal. Otherwise the P.C.B. in the AMY adapter will be damaged.

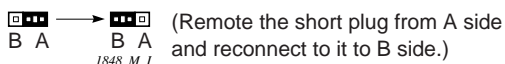
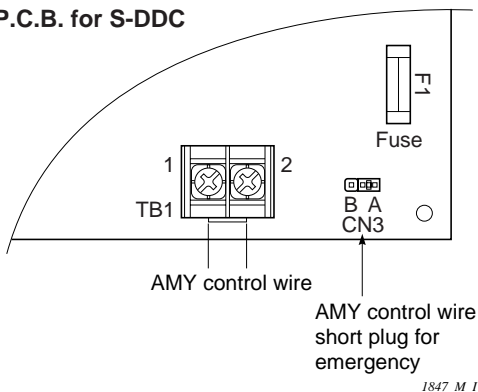
#### NOTE

In case of emergency, the P.C.B. can be used by reconnecting CN3 short plug from A side to B side after correcting wiring.

<Turn off the power supply switch before reconnecting the short plug>

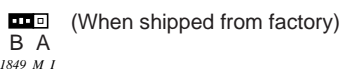
## 2. Optional Controller (S-DDC)

### Main P.C.B. for S-DDC

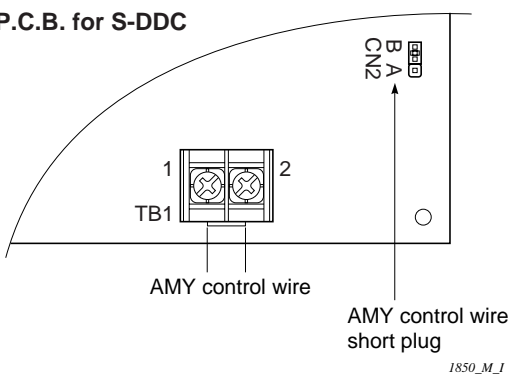


(When shipped from factory) (Emergency)

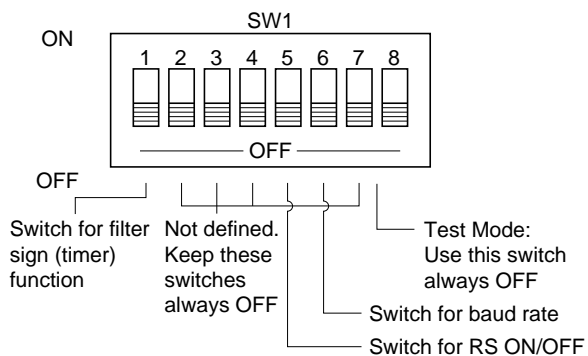
- Check if the short plug for AMY control wiring is connected to B side.



### Main P.C.B. for S-DDC



### Switch setting



- SW1-1: Filter sign (timer) function  
 OFF : With air filter sign (timer) function (When shipped from factory)  
 ON : Without air filter sign (timer) function
- SW1-5: RS ON/OFF  
 OFF : RS switch is always OFF (When shipped from factory)  
 ON : \*RS switch is always ON
- SW1-6: Changing baud rate  
 OFF : 4800 bps (When shipped from factory)  
 ON : 9600 bps
- SW1-8: Test mode  
 Use this switch is always OFF

**NOTE** \* In case of Host Computer (Program) has CD (Carrier Detect) function, RS switch is always ON

### Connection to the outside equipments

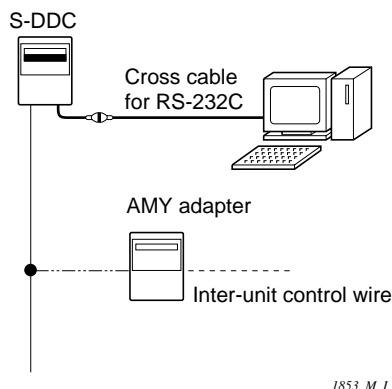
- (1) Signal input for turn-off the all units. (Potential free normal open contact) <Inputting photo coupler>



- (2) Signal output for alarm to the all units. (Potential free normal open contact) <It will be shortened, when detecting alarm signal>

- Control wires used for inputting signals are field supply. Maximum wiring length is 100 m. Use 2-core shielding wires 0.5 mm<sup>2</sup> or more for the places where misoperation may occur from the noise.

- (3) Input & output for RS-232C



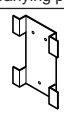



- Cross cable for RS-232C is field supply. Maximum length is less than 15 m.



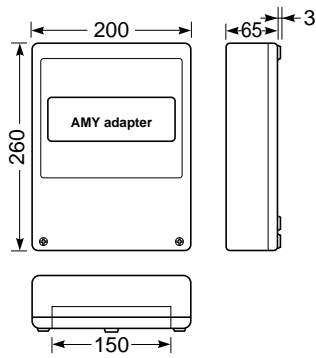
## 2. Optional Controller (AMY adapter)

### ■ How to install the AMY adapter (SHA-KC3500G)

#### ■ Accessories

No.	Accompanying parts	Qty	No.	Accompanying parts	Qty
①	Fixture 	1	③	Screws for Nylon clamper (3 × L8) 	1
②	Screws (4 × L12) For fixture 	4	④	Nylon clamper 	1

#### ● Dimension



1835\_M\_I

#### ● Electrical specs.

Rated voltage  
: 220/230/ 240 V

Frequency  
: 50 Hz

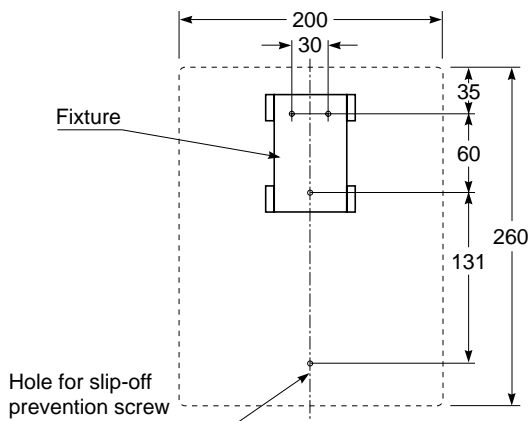
Input  
: 5 W

Net weight  
: 1.5 kg



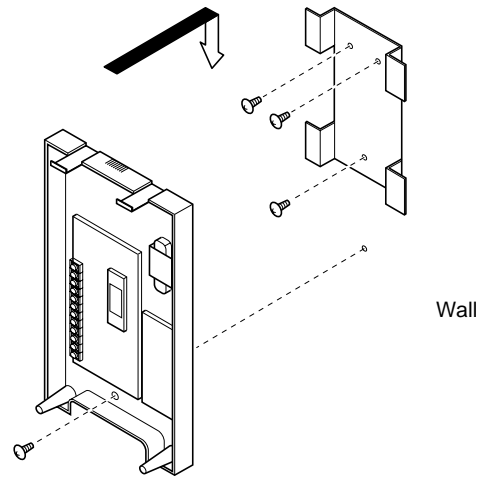
**CAUTION**

- Do not strand or twist inter-unit control wire. AMY control wire and input-output wire with power cord, or thread them through a metallic pipe because it may causes faulty operation.
- Install AMY adapter apart from electrical noise source.
- Do not install AMY adapter where water splashes or humid place.
- Avoid excessive vibration and shock.



1836\_M\_I

Hook the AMY adapter to the fixture



Screw for slip-off prevention

1854\_M\_I

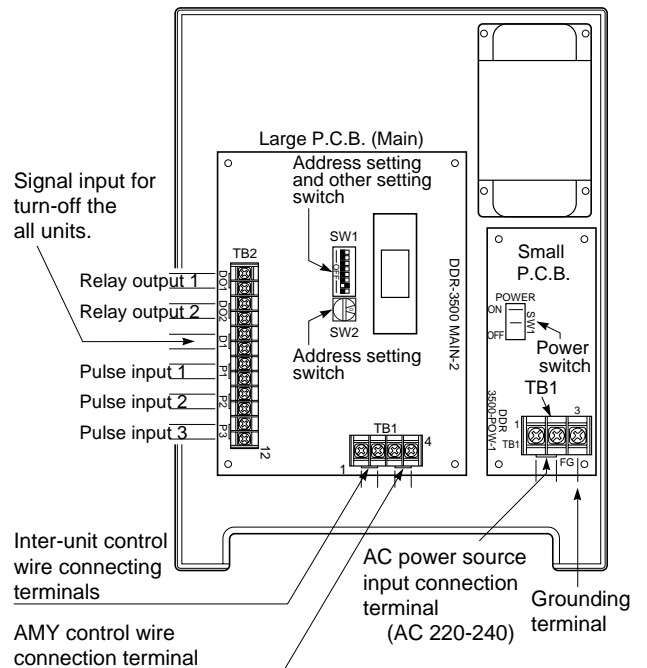
- (1) Secure the fixture according to the <Measurement for installation>.
- (2) Hook the adapter to the fixture.
- (3) When the fixture is loose and the AMY adapter seems to be slipped off, secure the AMY adapter with a screw removing the upper lid of the AMY adapter.

#### ■ Layout electrical terminals

When connecting or disconnecting AMY adapter, turn off the power source. Remove two screws fixing upper lid, then remove the lid.

- (1) Connecting the power source.

Apply AC 220 V to 240 V of the power source to AMY adapter. Connect the power cord <TB1-1> and <TB1-2> on the small size printed circuit board in AMY adapter.



1855\_M\_I

## 2. Optional Controller (AMY adapter)

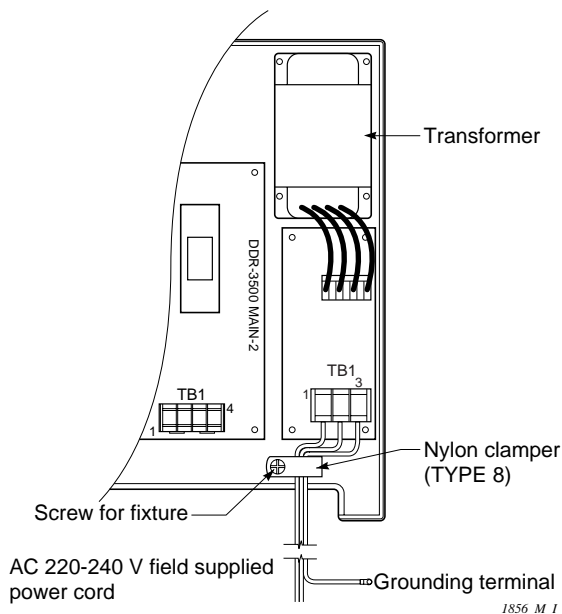
(2) Connecting control wires.

Use two-core, 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup> lead wires for both AMY control and inter-unit control wires. The limited length of control wire is 1,000 m in total. The control wire has no polarity.

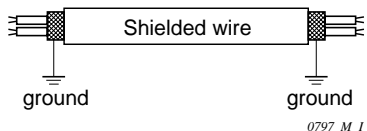


**CAUTION**

- Do not thread the AMY control and inter-unit control wires through a metallic pipe with power cord.
- Do not wire the power cord and the control wires together in a same cable or do not wire the power cord near the control wires. Both AMY control and inter-unit control wires should be different from power code.



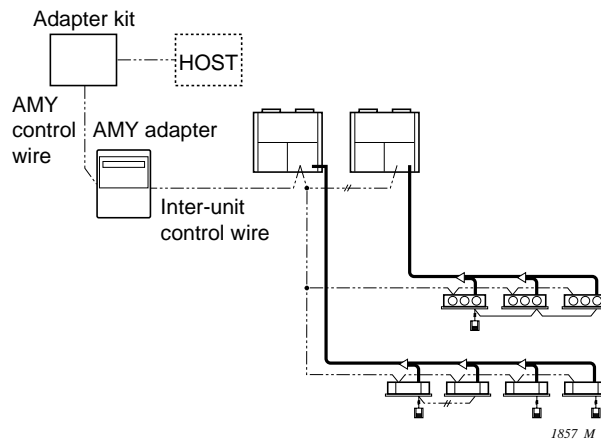
- MVVS or CPEVS: Shield wire from 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup>
- Use shielded wires for inter-unit control wiring and ground the shielded on both side (See below), otherwise misoperation from noise may occur.



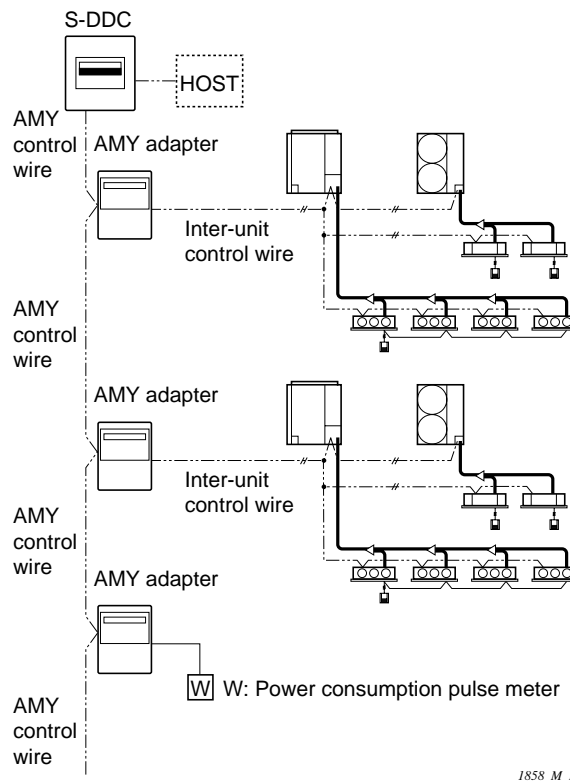
### ■ Wiring diagram

AMY and inter-unit control wiring for AMY adapter should be wired as shown below.

- When using adapter kit:  
Only one AMY adapter can be connected.



- When using S-DDC:  
Up to 32 AMY adapters can be connected.



## 2. Optional Controller (AMY adapter)

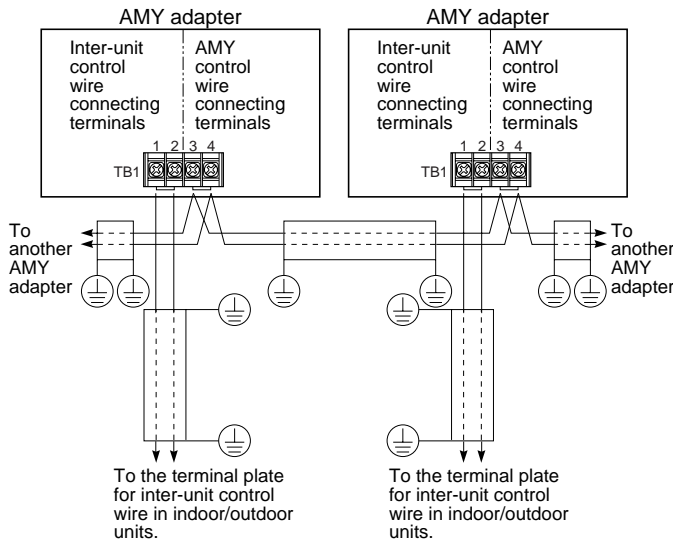
### ■ Wiring procedure

#### ● Inter-unit control wire

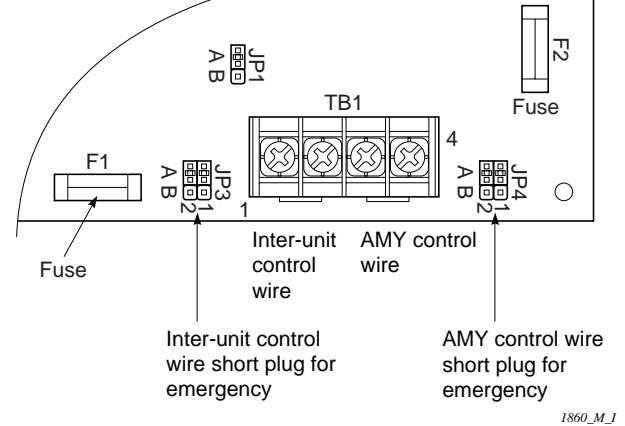
Inter-unit control wire is used to connect between the AMY adapter and the indoor or the outdoor unit. Connect the inter-unit control wire to the terminals ① and ② on the terminal plate TB1 of large P.C.B..

#### ● AMY control wire

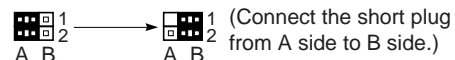
AMY control wire is used to connect between the AMY adapters. Connect the AMY control wire between the terminals ③ and ④ on the terminal plate TB1 of large P.C.B. and the terminals ③ and ④ in another AMY adapter.



### Main P.C.B. for AMY adapter



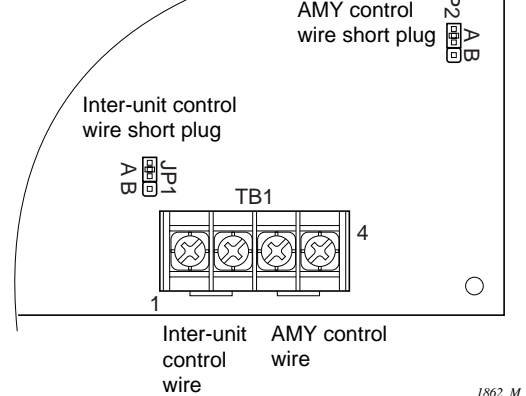
1860\_M\_I



(When shipped from factory) (Emergency)

- Connecting short plug to inter-unit control wiring  
Check if the short plug (CN31: 2P. black terminating resistor) of the whole outdoor units except one outdoor unit are removed from outdoor units P.C.B.. JP1 on large P.C.B. (Main) in the AMY adapter is the short plug (the terminating resistor) is connected. When shipped from factory, short plug is plugged at B side.

### Main P.C.B. for AMY adapter



1862\_M\_I

- Connecting short plug to AMY control wiring

### ■ Precautions when wiring AMY control



**CAUTION**

- Do not connect the power supply cord to the AMY control wire terminal and inter-unit control terminal.
- Otherwise the P.C.B. in the AMY adapter will be damaged.

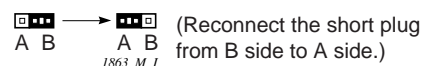
### NOTE

In case of emergency, the P.C.B. can be used by reconnecting JP3 or JP4 short plug from A side to B side after correcting wiring.

<Turn off the power supply switch before reconnecting the short plug>

### Important

When connecting the short plug to the adapter kit, keep the short plug (JP2) at B side. When connecting the short plug to S-DDC, reconnect the short plug (JP2) from B side to A side of the whole connected AMY adapters.

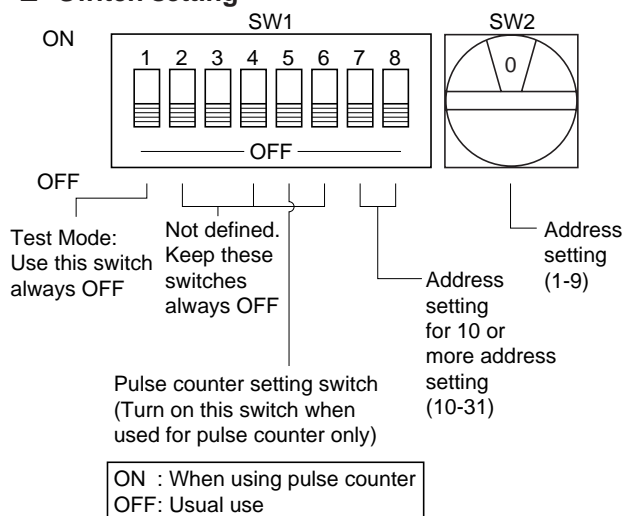


(When shipped from factory)

1863\_M\_I

## 2. Optional Controller (AMY adapter)

### Switch setting



### How to set the address switch

When connecting to the adapter kit, no need to set the address switch. (When shipped from factory, setting is 0.)  
 When connecting to S-DDC, set address switches of whole connected AMY adapters, as follows.

(When shipped from factory, setting is 0.)

Add. No.	Switch setting	Add. No.	Switch setting
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	
		31	

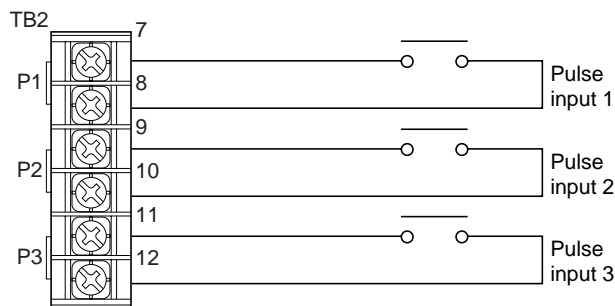
### Connection to the outside equipments

- Signal input for turn-off the all units.  
 (Potential free normal open contact)  
 <Inputting photo coupler>



- Do not apply voltage to D1 input terminal. Take care not to share one of the input terminals with other input. Since the D1 input terminal is used for potential free contact.

- Inputting by pulse counter  
 (Potential free normal open contact)  
 <Inputting photo coupler>



- AMY adapter counts the number of pulses which the outer contact turns on through the input terminal P1, P2 and P3. Since the contact is potential free, do not apply voltage. AMY adapter will be damaged. Please take care that input terminal can not be connected with other input.

- Control wires used for inputting signals are field supply. Maximum wiring length is 100 m. Use 2-core shielded wires 0.5 mm<sup>2</sup> or more for the places where misoperation may occur from the noise.



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# 1. Outdoor Unit (For R407C)

## 1-1. Specifications

### Unit specifications (A)

MODEL No.		Outdoor Unit		SPW-CR1503GDYH8				
<b>POWER SOURCE</b>				380 - 400 - 415 V / 3 N / 50Hz				
<b>PERFORMANCE</b>				Cooling			Heating	
Capacity		kW	45.0			50.0		
		BTU / h	154,000			171,000		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)		310 (10,950)				
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	29.5	28.3	27.8	28.2	27.4	27.0
Running amperes**		A	41.2	39.2	38.4	-	-	-
Power input*		kW	17.6	17.7	17.8	16.9	17.0	17.2
Power input**		kW	24.2	24.4	24.8	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.56	2.54	2.53	2.96	2.94	2.90
Max. starting amperes		A	101	105	108	101	105	108
<b>FEATURES</b>								
Controls		Microprocessor						
Defrost control		Hot gas, microprocessor control						
Service function		Sensor temp. recall function Past service warnings recall function						
Refrigerant control		Electronic expansion valve						
Compressor		Power control twin rotary, twin rotary, scroll						
Operation sound		dB-A	61.5					
External finish		Galvanized steel plate with powder paint						
Color (Approximate value)		Munsell 5Y8.4 / 0.5, RAL 9002-GL						
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	15.88 ( 5 / 8 ) : Brazing connection					
	Wide tube	mm (in)	38.1 ( 1 - 1 / 2 ) : Brazing connection					
	Balance tube	mm (in)	9.52 ( 3 / 8 ) : Flare connection					
Distribution joint kit / ball valve kit		Optional						
Refrigerant amount at shipment		kg	R407C - 16.5					
<b>DIMENSIONS &amp; WEIGHT</b>				Unit dimensions		Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)		1,451 (57 - 4 / 32)			
	Width	mm(in)	2,050 (80 - 23 / 32)		2,164 (85 - 6 / 32)			
	Depth	mm(in)	883 (34 - 24 / 32)		1,035 (40 - 24 / 32)			
Net weight		kg(lb)	498 ( 1098 )					
Shipping weight		kg(lb)	521 ( 1149 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	3.25 ( 114.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

Rating conditions(★) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(★★) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

Heating:

Rating conditions(★) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

1. Outdoor Unit (For R407C)

Unit specifications (B)

MODEL No.		Outdoor Unit		SPW-CR1903GDYH8				
<b>POWER SOURCE</b>				380 - 400 - 415 V / 3 N / 50Hz				
<b>PERFORMANCE</b>				Cooling			Heating	
Capacity	kW		56.0			63.0		
	BTU / h		191,000			215,000		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)		310 (10,950)				
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	36.5	35.6	34.8	34.5	33.8	33.5
Running amperes**		A	48.4	47.2	46.2	-	-	-
Power input*		kW	21.9	22.1	22.3	20.6	21.0	21.4
Power input**		kW	29.0	29.8	30.2	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.56	2.53	2.51	3.06	3.00	2.94
Max. starting amperes		A	120	123	126	120	123	126
<b>FEATURES</b>								
Controls		Microprocessor						
Defrost control		Hot gas, microprocessor control						
Service function		Sensor temp. recall function Past service warnings recall function						
Refrigerant control		Electronic expansion valve						
Compressor		Power control twin rotary, twin rotary, scroll						
Operation sound		dB-A	62.5					
External finish		Galvanized steel plate with powder paint						
Color (Approximate value)		Munsell 5Y8.4 / 0.5, RAL 9002-GL						
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	19.05 ( 3 / 4 ) : Brazing connection					
	Wide tube	mm (in)	41.28 ( 1 - 5 / 8 ) : Brazing connection					
	Balance tube	mm (in)	9.52 ( 3 / 8 ) : Flare connection					
Distribution joint kit / ball valve kit		Optional						
Refrigerant amount at shipment		kg	R407C - 20.0					
<b>DIMENSIONS &amp; WEIGHT</b>				Unit dimensions		Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)		1,451 (57 - 4 / 32)			
	Width	mm(in)	2,050 (80 - 23 / 32)		2,164 (85 - 6 / 32)			
	Depth	mm(in)	883 (34 - 24 / 32)		1,035 (40 - 24 / 32)			
Net weight		kg(lb)	512 ( 1129 )					
Shipping weight		kg(lb)	535 ( 1179 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	3.25 ( 114.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

Rating conditions(\*) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(\*\*) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

Heating:

Rating conditions(\*) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

TD831077

# 1. Outdoor Unit (For R407C)

## Unit specifications (C)

MODEL No.	Outdoor Unit		SPW-CR703GDCH8					
<b>POWER SOURCE</b>			380 - 400 - 415 V / 3 N / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		22.4			25.0		
	BTU / h		76,400			85,300		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)	155 (5,470)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	15.8	15.2	15.0	15.2	14.7	14.3
Running amperes**		A	20.6	19.6	19.2	-	-	-
Power input*		kW	9.46	9.52	9.58	9.08	9.12	9.17
Power input**		kW	12.1	12.2	12.4	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.37	2.35	2.34	2.75	2.74	2.73
Max. starting amperes		A	82	86	89	82	86	89
<b>FEATURES</b>								
Controls			Microprocessor					
Defrost control			Hot gas, microprocessor control					
Service function			Sensor temp. recall function Past service warnings recall function					
Refrigerant control			Electronic expansion valve					
Compressor			Scroll compressor					
Operation sound		dB-A	58					
External finish			Galvanized steel plate with powder paint					
Color (Approximate value)			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube mm (in)		12.7 ( 1 / 2 )					
	Wide tube mm (in)		25.4 ( 1 )					
	Balance tube mm (in)		9.52 ( 3 / 8 )					
Distribution joint kit / ball valve kit			Optional					
Refrigerant amount at shipment		kg	R407C - 8.0					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)			1,451 (57 - 4 / 32)		
	Width	mm(in)	883 (34 - 24 / 32)			1,047 (41 - 7 / 32)		
	Depth	mm(in)	883 (34 - 24 / 32)			1,005 (39 - 18 / 32)		
Net weight		kg(lb)	246 ( 542 )					
Shipping weight		kg(lb)	258 ( 569 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	1.527 ( 53.9 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

**Cooling:**

Rating conditions(★) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(★★) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

**Heating:**

Rating conditions(★) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB



## 1. Outdoor Unit (For R407C)

## Unit specifications (D)

MODEL No.	Outdoor Unit		SPW-CR903GDCH8					
<b>POWER SOURCE</b>			380 - 400 - 415 V / 3 N / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		28.0			31.5		
	BTU / h		95,500			107,500		
Air circulation (Hi)	m <sup>3</sup> /min(cu. ft3/min)		155 (5,470)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		380	400	415	380	400	415
Available voltage range	VAC		342 - 456					
Running amperes*	A		18.8	18.3	18.0	17.7	17.3	17.1
Running amperes**	A		24.2	23.6	23.1	-	-	-
Power input*	kW		11.3	11.4	11.5	10.6	10.8	11.0
Power input**	kW		14.5	14.9	15.1	-	-	-
Power factor	%		91	90	89	91	90	90
C.O.P	W/W		2.48	2.46	2.43	2.97	2.92	2.86
Max. starting amperes	A		98	101	104	98	101	104
<b>FEATURES</b>								
Controls			Microprocessor					
Defrost control			Hot gas, microprocessor control					
Service function			Sensor temp. recall function Past service warnings recall function					
Refrigerant control			Electronic expansion valve					
Compressor			Scroll compressor					
Operation sound	dB-A		58					
External finish			Galvanized steel plate with powder paint					
Color (Approximate value)			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
<b>REFRIGERANT TUBING</b>								
Limit of tubing length	m(ft.)		100 (328)					
Limit of elevation difference between the two units	m(ft.)		Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	12.7 ( 1 / 2 )					
	Wide tube	mm (in)	28.58 (1 - 1 / 8)					
Distribution joint kit / ball valve kit			Optional					
Refrigerant amount at shipment	kg		R407C - 9.5					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)			1,451 (57 - 4 / 32)		
	Width	mm(in)	883 (34 - 24 / 32)			1,047 (41 - 7 / 32)		
	Depth	mm(in)	883 (34 - 24 / 32)			1,005 (39 - 18 / 32)		
Net weight	kg(lb)		250 ( 551 )					
Shipping weight	kg(lb)		262 ( 578 )					
Shipping volume	m <sup>3</sup> (Cu. ft.)		1.527 ( 53.9 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Cooling:

Rating conditions(\*) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(\*\*) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

## Heating:

Rating conditions(\*) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

## 1. Outdoor Unit (For R22)

## Unit specifications (E)

MODEL No.	Outdoor Unit		SPW-C1503GDYH8					
<b>POWER SOURCE</b>			380 - 400 - 415 V / 3 N / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		45.0			50.0		
	BTU / h		154,000			171,000		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)	310 (10,950)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	27.9	27.0	26.4	27.0	26.1	25.7
Running amperes**		A	36.4	34.6	34.0	-	-	-
Power input*		kW	16.7	16.8	16.9	16.2	16.2	16.4
Power input**		kW	22.4	21.8	21.7	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.69	2.68	2.66	3.09	3.09	3.05
Max. starting amperes		A	100	104	107	100	104	107
<b>FEATURES</b>								
Controls			Microprocessor					
Defrost control			Hot gas, microprocessor control					
Service function			Sensor temp. recall function Past service warnings recall function					
Refrigerant control			Electronic expansion valve					
Compressor			Power control twin rotary, twin rotary, scroll					
Operation sound		dB-A	61.5					
External finish			Galvanized steel plate with powder paint					
Color (Approximate value)			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	15.88 ( 5 / 8 ) : Brazing connection					
	Wide tube	mm (in)	38.1 ( 1 - 1 / 2 ) : Brazing connection					
	Balance tube	mm (in)	9.52 ( 3 / 8 ) : Flare connection					
Distribution joint kit / ball valve kit			Optional					
Refrigerant amount at shipment		kg	R22 - 16.5					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)			1,451 (57 - 4 / 32)		
	Width	mm(in)	2,050 (80 - 23 / 32)			2,164 (85 - 6 / 32)		
	Depth	mm(in)	883 (34 - 24 / 32)			1,035 (40 - 24 / 32)		
Net weight		kg(lb)	498 ( 1098 )					
Shipping weight		kg(lb)	521 ( 1149 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	3.25 ( 114.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Cooling:

Rating conditions(\*) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(\*\*) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

## Heating:

Rating conditions(\*) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

## 1. Outdoor Unit (For R22)

## Unit specifications (F)

MODEL No.	Outdoor Unit		SPW-C1903GDYH8					
<b>POWER SOURCE</b>			380 - 400 - 415 V / 3 N / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		56.0			63.0		
	BTU / h		191,000			215,000		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)	310 (10,950)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	34.7	33.7	33.1	32.7	32.0	31.8
Running amperes**		A	44.6	43.4	42.4	-	-	-
Power input*		kW	20.8	21.0	21.2	19.6	20.0	20.4
Power input**		kW	26.7	27.1	27.1	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.69	2.67	2.64	3.21	3.15	3.09
Max. starting amperes		A	119	122	125	119	122	125
<b>FEATURES</b>								
Controls			Microprocessor					
Defrost control			Hot gas, microprocessor control					
Service function			Sensor temp. recall function Past service warnings recall function					
Refrigerant control			Electronic expansion valve					
Compressor			Power control twin rotary, twin rotary, scroll					
Operation sound		dB-A	62.5					
External finish			Galvanized steel plate with powder paint					
Color (Approximate value)			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	19.05 ( 3 / 4 ) : Brazing connection					
	Wide tube	mm (in)	41.28 ( 1 - 5 / 8 ) : Brazing connection					
	Balance tube	mm (in)	9.52 ( 3 / 8 ) : Flare connection					
Distribution joint kit / ball valve kit			Optional					
Refrigerant amount at shipment		kg	R22 - 20.0					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)			1,451 (57 - 4 / 32)		
	Width	mm(in)	2,050 (80 - 23 / 32)			2,164 (85 - 6 / 32)		
	Depth	mm(in)	883 (34 - 24 / 32)			1,035 (40 - 24 / 32)		
Net weight		kg(lb)	512 ( 1129 )					
Shipping weight		kg(lb)	535 ( 1179 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	3.25 ( 114.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

Rating conditions(\*) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(\*\*) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

Heating:

Rating conditions(\*) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

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# 1. Outdoor Unit (For R22)

## Unit specifications (G)

MODEL No.		Outdoor Unit		SPW-C703GDCH8				
<b>POWER SOURCE</b>				380 - 400 - 415 V / 3 N / 50Hz				
<b>PERFORMANCE</b>				Cooling			Heating	
Capacity	kW		22.4			25.0		
	BTU / h		76,400			85,300		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)		155 (5,470)				
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	14.5	14.1	13.8	13.1	12.7	12.4
Running amperes**		A	19.6	18.7	18.3	-	-	-
Power input*		kW	8.69	8.74	8.78	7.83	7.88	7.93
Power input**		kW	11.5	11.6	11.8	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.58	2.56	2.55	3.19	3.17	3.15
Max. starting amperes		A	82	86	89	82	86	89
<b>FEATURES</b>								
Controls		Microprocessor						
Defrost control		Hot gas, microprocessor control						
Service function		Sensor temp. recall function Past service warnings recall function						
Refrigerant control		Electronic expansion valve						
Compressor		Scroll compressor						
Operation sound		dB-A	58					
External finish		Galvanized steel plate with powder paint						
Color (Approximate value)		Munsell 5Y8.4 / 0.5, RAL 9002-GL						
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube mm (in)		12.7 ( 1 / 2 )					
	Wide tube mm (in)		25.4 ( 1 )					
	Balance tube mm (in)		9.52 ( 3 / 8 )					
Distribution joint kit / ball valve kit		Optional						
Refrigerant amount at shipment		kg	R22 - 8.0					
<b>DIMENSIONS &amp; WEIGHT</b>				Unit dimensions			Package dimensions	
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)			1,451 (57 - 4 / 32)		
	Width	mm(in)	883 (34 - 24 / 32)			1,047 (41 - 7 / 32)		
	Depth	mm(in)	883 (34 - 24 / 32)			1,005 (39 - 18 / 32)		
Net weight		kg(lb)	246 ( 542 )					
Shipping weight		kg(lb)	258 ( 569 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	1.527 ( 53.9 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

Rating conditions(★) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(★★) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

Heating:

Rating conditions(★) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB





1. Outdoor Unit (For R22)

Unit specifications (H)

MODEL No.		Outdoor Unit		SPW-C903GDCH8				
<b>POWER SOURCE</b>				380 - 400 - 415 V / 3 N / 50Hz				
<b>PERFORMANCE</b>				Cooling			Heating	
Capacity	kW		28.0			31.5		
	BTU / h		95,500			107,500		
Air circulation (Hi)		m <sup>3</sup> /min(cu. ft3/min)		155 (5,470)				
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	380	400	415	380	400	415
Available voltage range		VAC	342 - 456					
Running amperes*		A	17.2	16.8	16.5	16.0	15.6	15.5
Running amperes**		A	23.0	22.5	22.0	-	-	-
Power input*		kW	10.3	10.5	10.6	9.60	9.75	9.92
Power input**		kW	13.8	14.2	14.4	-	-	-
Power factor		%	91	90	89	91	90	89
C.O.P		W/W	2.72	2.67	2.64	3.28	3.23	3.18
Max. starting amperes		A	98	101	104	98	101	104
<b>FEATURES</b>								
Controls		Microprocessor						
Defrost control		Hot gas, microprocessor control						
Service function		Sensor temp. recall function Past service warnings recall function						
Refrigerant control		Electronic expansion valve						
Compressor		Scroll compressor						
Operation sound		dB-A	58					
External finish		Galvanized steel plate with powder paint						
Color (Approximate value)		Munsell 5Y8.4 / 0.5, RAL 9002-GL						
<b>REFRIGERANT TUBING</b>								
Limit of tubing length		m(ft.)	100 (328)					
Limit of elevation difference between the two units		m(ft.)	Outdoor unit is higher than indoor unit : 50 (165) Outdoor unit is lower than indoor unit : 40 (132)					
Refrigerant tube outer diameter	Narrow tube	mm (in)	12.7 ( 1 / 2 ) : Brazing connection					
	Wide tube	mm (in)	28.58 ( 1 - 1 / 8 ) : Brazing connection					
	Balance tube	mm (in)	9.52 ( 3 / 8 ) : Flare connection					
Distribution joint kit / ball valve kit		Optional						
Refrigerant amount at shipment		kg	R22 - 9.5					
<b>DIMENSIONS &amp; WEIGHT</b>				Unit dimensions		Package dimensions		
Dimensions	Height	mm(in)	1,318 (51 - 28 / 32)		1,451 (57 - 4 / 32)			
	Width	mm(in)	883 (34 - 24 / 32)		1,047 (41 - 7 / 32)			
	Depth	mm(in)	883 (34 - 24 / 32)		1,005 (39 - 18 / 32)			
Net weight		kg(lb)	250 ( 551 )					
Shipping weight		kg(lb)	262 ( 578 )					
Shipping volume		m <sup>3</sup> (Cu. ft.)	1.527 ( 53.9 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

Rating conditions(★) : Indoor air temperature 27 °C DB / 19.0 °C WB , Outdoor air temperature 35 °C DB

Full load conditions(★★) : Indoor air temperature 32 °C DB / 22.5 °C WB , Outdoor air temperature 43 °C DB

Heating:

Rating conditions(★) : Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C DB

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## 1. Outdoor Unit (For R407C)

## 1-2. Major component specifications

## Outdoor Unit (A)

<b>MODEL No.</b>	SPW-CR1503GDYH8		
<b>Source</b>	380 - 440 - 415 V / 3 N / 50Hz		
<b>Controller P.C.B. Ass'y</b>	CR - CR1503GDYH8, CR - DYPTG		
Control circuit fuse	250 VAC , 15 A		
<b>Compressor</b>			
	PC (Power Control)	AC (Standard)	SC (Scroll)
Model ... Code No.	C-5RN373H8S ... 80838688	C-5RN373H8C ... 80838588	C-SCN603H8B ... 80966188
Nominal output kW	3.75	3.75	6.0
Compressor oil (ETHER FV68S) cc	2,100	2,100	2,700
Coil resistance $\Omega$ (Ambient temperature 25°C)	V - U: 2.78 U - W: 2.83 W - V: 2.65	V - U: 2.78 U - W: 2.83 W - V: 2.65	V - U: 1.655 U - W: 1.742 W - V: 1.713
Safety devices			
Thermal protector ON / OFF °C	120 $\pm$ 5 / 98 $\pm$ 11		
Microprocessor safety devices	Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit		
Crank case heater VAC, W	240, 32	240, 32	240, 44 $\times$ 2
<b>Fusible plug (Operating temp) °C</b>	73 $\pm$ 2		
<b>High pressure switch</b>	ACB - 1TB14W (TÜV Approved)		
Set pressure ON / OFF kg/cm <sup>2</sup>	24 $\pm$ 2.0 / 33		
<b>Fan (Number ... diameter(mm))</b>	Propeller (1 ... $\varnothing$ 750)		
<b>Fan motor</b>			
Model ... Nominal output W	KFJ8T - 301B3P... 200W		
No. of pole ... r.p.m. (230 V, High)	8 ... 567 r.p.m.		
Coil resistance $\Omega$ (Ambient temperature 20 °C)	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65		
Safety device			
Thermal protector ON / OFF °C	(115 $\pm$ 5) / 130 $\pm$ 5		
Run capacitor VAC , $\mu$ F	400 VAC , 15 $\mu$ F		
<b>Heat exchanger</b>			
Coil	Aluminum plate fin / Copper tube		
Rows ... fin pitch mm	2 ... 2.0		
Face area m <sup>2</sup>	4.94		

## 1. Outdoor Unit (For R407C)

## Outdoor Unit (B)

<b>MODEL No.</b>		SPW-CR1903GDYH8		
<b>Source</b>		380 - 440 - 415 V / 3 N / 50Hz		
<b>Controller P.C.B. Ass'y</b>		CR - CR1503GDYH8, CR - DYPTG		
Control circuit fuse		250 VAC , 15 A		
<b>Compressor</b>				
		PC (Power Control)	AC (Standard)	SC (Scroll)
Model ... Code No.		C-5RN433H8S ... 80844688	C-5RN433H8C ... 80844588	C-SCN753H8C ... 80976288
Nominal output kW		4.3	4.3	7.5
Compressor oil (ETHER FV68S) cc		2,100	2,100	2,700
Coil resistance $\Omega$ (Ambient temperature 25°C)		V - U: 2.71 U - W: 2.76 W - V: 2.59	V - U: 2.71 U - W: 2.76 W - V: 2.59	V - U: 1.308 U - W: 1.373 W - V: 1.351
Safety devices				
Thermal protector ON / OFF °C		120 $\pm$ 5 / 98 $\pm$ 11		
Microprocessor safety devices		Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit		
Crank case heater VAC, W		240, 32	240, 32	240, 44 $\times$ 2
<b>Fusible plug (Operating temp) °C</b>		73 $\pm$ 2		
<b>High pressure switch</b>				
Set pressure ON / OFF kg/cm <sup>2</sup>		24 $\pm$ 2.0 / 33		
<b>Fan (Number ... diameter(mm))</b>				
Propeller (1 ... $\varnothing$ 750)				
<b>Fan motor</b>				
Model ... Nominal output W		KFJ8T - 301B3P... 200W		
No. of pole ... r.p.m. (230 V, High)		8 ... 567 r.p.m.		
Coil resistance $\Omega$ (Ambient temperature 20 °C)		BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65		
Safety device				
Thermal protector ON / OFF °C		(115 $\pm$ 5) / 130 $\pm$ 5		
Run capacitor VAC , $\mu$ F		400 VAC , 17.5 $\mu$ F		
<b>Heat exchanger</b>				
Coil		Aluminum plate fin / Copper tube		
Rows ... fin pitch mm		2 ... 1.8		
Face area m <sup>2</sup>		4.94		

## 1. Outdoor Unit (For R407C)

## Outdoor Unit (C)

<b>MODEL No.</b>	SPW-CR703GDCH8	
<b>Source</b>	380 - 440 - 415 V / 3 N / 50Hz	
<b>Controller P.C.B. Ass'y</b>	CR - CR703GDH8	
Control circuit fuse	250 VAC , 15 A	
<b>Compressor</b>		
	SC (Scroll)	
Model ... Code No.	C-SCN753H8B ... 80976188	
Nominal output	kW	7.5
Compressor oil (ETHER FV68S)	cc	2,700
Coil resistance (Ambient temperature 25°C)	Ω	V - U: 1.308 U - W: 1.373 W - V: 1.308
Safety devices		
Thermal protector ON / OFF	°C	120 ± 5 / 98 ± 11
Microprocessor safety devices	Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit	
Crank case heater	VAC, W	240, 32
<b>Fusible plug (Operating temp)</b>	°C	73 ± 2
<b>High pressure switch</b>		
ACB - 1TB14W (TÜV Approved)		
Set pressure	ON / OFF kg/cm <sup>2</sup>	24 ± 2.0 / 33
<b>Fan (Number ... diameter(mm))</b>		
Propeller (1 ... ø 750)		
<b>Fan motor</b>		
Model ... Nominal output	W	KFJ8T - 301B3P... 200W
No. of pole ... r.p.m. (230 V, High)	8 ... 567 r.p.m.	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65
Safety device		
Thermal protector ON / OFF	°C	(115 ± 5) / 130 ± 5
Run capacitor	VAC , μF	400 VAC , 15 μF
<b>Heat exchanger</b>		
Aluminum plate fin / Copper tube		
Rows ... fin pitch	mm	2 ... 2.0
Face area	m <sup>2</sup>	2.53

## 1. Outdoor Unit (For R407C)

## Outdoor Unit (D)

<b>MODEL No.</b>		SPW-CR903GDCH8
<b>Source</b>		380 - 440 - 415 V / 3 N / 50Hz
<b>Controller P.C.B. Ass'y</b>		CR - CR703GDH8
Control circuit fuse		250 VAC , 15 A
<b>Compressor</b>		
		SC (Scroll)
Model ... Code No.		C-SCN753H8C ... 80976288
Nominal output	kW	7.5
Compressor oil (ETHER FV68S)	cc	2,100
Coil resistance	$\Omega$	V - U: 1.308 U - W: 1.373 W - V: 1.351
(Ambient temperature 25°C)		
Safety devices		
Thermal protector ON / OFF	$^{\circ}\text{C}$	120 $\pm$ 5 / 98 $\pm$ 11
Microprocessor safety devices		Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit
Crank case heater	VAC, W	240, 44
<b>Fusible plug (Operating temp)</b>		$^{\circ}\text{C}$ 73 $\pm$ 2
<b>High pressure switch</b>		
Set pressure ON / OFF		ACB - 1TB14W (TÜV Approved)
	kg/cm <sup>2</sup>	24 $\pm$ 2.0 / 33
<b>Fan (Number ... diameter(mm))</b>		
		Propeller (1 ... $\varnothing$ 750)
<b>Fan motor</b>		
Model ... Nominal output	W	KFJ8T - 301B3P... 200W
No. of pole ... r.p.m. (230 V, High)		8 ... 567 r.p.m.
Coil resistance	$\Omega$	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65
(Ambient temperature 20 °C)		
Safety device		
Thermal protector ON / OFF	$^{\circ}\text{C}$	(115 $\pm$ 5) / 130 $\pm$ 5
Run capacitor	VAC , $\mu\text{F}$	400 VAC , 17.5 $\mu\text{F}$
<b>Heat exchanger</b>		
Coil		Aluminum plate fin / Copper tube
Rows ... fin pitch	mm	2 ... 1.8
Face area	m <sup>2</sup>	2.53

## 1. Outdoor Unit (For R22)

## Outdoor Unit (E)

<b>MODEL No.</b>	SPW-C1503GDYH8		
<b>Source</b>	380 - 440 - 415 V / 3 N / 50Hz		
<b>Controller P.C.B. Ass'y</b>	CR - CR1503GDYH8, CR - DYPTG		
Control circuit fuse	250 VAC , 15 A		
<b>Compressor</b>			
	PC (Power Control)	AC (Standard)	SC (Scroll)
Model ... Code No.	C-5R373H8U ... 80837688	C-5R373H8C ... 80837588	C-SC603H8B ... 80960188
Nominal output kW	3.75	3.75	6.0
Compressor oil (ETHER FV68S) cc	2,100	2,100	2,700
Coil resistance $\Omega$ (Ambient temperature 25°C)	V - U: 2.78 U - W: 2.83 W - V: 2.65	V - U: 2.78 U - W: 2.83 W - V: 2.65	V - U: 1.655 U - W: 1.742 W - V: 1.713
Safety devices			
Thermal protector ON / OFF °C	120 $\pm$ 5 / 98 $\pm$ 11		
Microprocessor safety devices	Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit		
Crank case heater VAC, W	240, 32	240, 32	240, 44 $\times$ 2
<b>Fusible plug (Operating temp) °C</b>	73 $\pm$ 2		
<b>High pressure switch</b>	ACB - 1TB04W (TÜV Approved)		
Set pressure ON / OFF kg/cm <sup>2</sup>	24 $\pm$ 2.0 / 33		
<b>Fan (Number ... diameter(mm))</b>	Propeller (1 ... $\varnothing$ 750)		
<b>Fan motor</b>			
Model ... Nominal output W	KFJ8T - 301B3P... 200W		
No. of pole ... r.p.m. (230 V, High)	8 ... 567 r.p.m.		
Coil resistance $\Omega$ (Ambient temperature 20 °C)	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65		
Safety device			
Thermal protector ON / OFF °C	(115 $\pm$ 5) / 130 $\pm$ 5		
Run capacitor VAC , $\mu$ F	400 VAC , 15 $\mu$ F		
<b>Heat exchanger</b>			
Coil	Aluminum plate fin / Copper tube		
Rows ... fin pitch mm	2 ... 2.0		
Face area m <sup>2</sup>	4.94		

## 1. Outdoor Unit (For R22)

## Outdoor Unit (F)

<b>MODEL No.</b>	SPW-C1903GDYH8		
<b>Source</b>	380 - 440 - 415 V / 3 N / 50Hz		
<b>Controller P.C.B. Ass'y</b>	CR - CR1503GDYH8, CR - DYPTG		
Control circuit fuse	250 VAC , 15 A		
<b>Compressor</b>			
	PC (Power Control)	AC (Standard)	SC (Scroll)
Model ... Code No.	C-5R433H8U ... 80843688	C-5R433H8A ... 80843588	C-SC753H8C ... 80975288
Nominal output kW	4.3	4.3	7.5
Compressor oil (ETHER FV68S) cc	2,100	2,100	2,700
Coil resistance $\Omega$ (Ambient temperature 25°C)	V - U: 2.71 U - W: 2.76 W - V: 2.59	V - U: 2.71 U - W: 2.76 W - V: 2.59	V - U: 1.308 U - W: 1.373 W - V: 1.351
Safety devices			
Thermal protector ON / OFF °C	120 $\pm$ 5 / 98 $\pm$ 11		
Microprocessor safety devices	Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit		
Crank case heater VAC, W	240, 32	240, 32	240, 44 $\times$ 2
<b>Fusible plug (Operating temp) °C</b>	73 $\pm$ 2		
<b>High pressure switch</b>	ACB - 1TB04W (TÜV Approved)		
Set pressure ON / OFF kg/cm <sup>2</sup>	24 $\pm$ 2.0 / 33		
<b>Fan (Number ... diameter(mm))</b>	Propeller (1 ... $\varnothing$ 750)		
<b>Fan motor</b>			
Model ... Nominal output W	KFJ8T - 301B3P... 200W		
No. of pole ... r.p.m. (230 V, High)	8 ... 567 r.p.m.		
Coil resistance $\Omega$ (Ambient temperature 20 °C)	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65		
Safety device			
Thermal protector ON / OFF °C	(115 $\pm$ 5) / 130 $\pm$ 5		
Run capacitor VAC , $\mu$ F	400 VAC , 17.5 $\mu$ F		
<b>Heat exchanger</b>			
Coil	Aluminum plate fin / Copper tube		
Rows ... fin pitch mm	2 ... 1.8		
Face area m <sup>2</sup>	4.94		

## 1. Outdoor Unit (For R22)

## Outdoor Unit (G)

<b>MODEL No.</b>	SPW-C703GDCH8	
<b>Source</b>	380 - 440 - 415 V / 3 N / 50Hz	
<b>Controller P.C.B. Ass'y</b>	CR - CR703GDH8	
Control circuit fuse	250 VAC , 15 A	
<b>Compressor</b>		
	SC (Scroll)	
Model ... Code No.	C-SC753H8B ... 80975188	
Nominal output	kW	7.5
Compressor oil (ETHER FV68S)	cc	2,700
Coil resistance (Ambient temperature 25°C)	Ω	V - U: 1.308 U - W: 1.351 W - V: 1.308
Safety devices		
Thermal protector ON / OFF	°C	120 ± 5 / 98 ± 11
Microprocessor safety devices	Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit	
Crank case heater	VAC, W	240, 32
<b>Fusible plug (Operating temp)</b>	°C	73 ± 2
<b>High pressure switch</b>		
ACB - 1TB04W (TÜV Approved)		
Set pressure	ON / OFF kg/cm <sup>2</sup>	24 ± 2.0 / 33
<b>Fan (Number ... diameter(mm))</b>		
Propeller (1 ... ø 750)		
<b>Fan motor</b>		
Model ... Nominal output	W	KFJ8T - 301B3P... 200W
No. of pole ... r.p.m. (230 V, High)	8 ... 567 r.p.m.	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65
Safety device		
Thermal protector ON / OFF	°C	(115 ± 5) / 130 ± 5
Run capacitor	VAC , μF	400 VAC , 15 μF
<b>Heat exchanger</b>		
Aluminum plate fin / Copper tube		
Rows ... fin pitch	mm	2 ... 2.0
Face area	m <sup>2</sup>	2.53



## 1. Outdoor Unit (For R22)

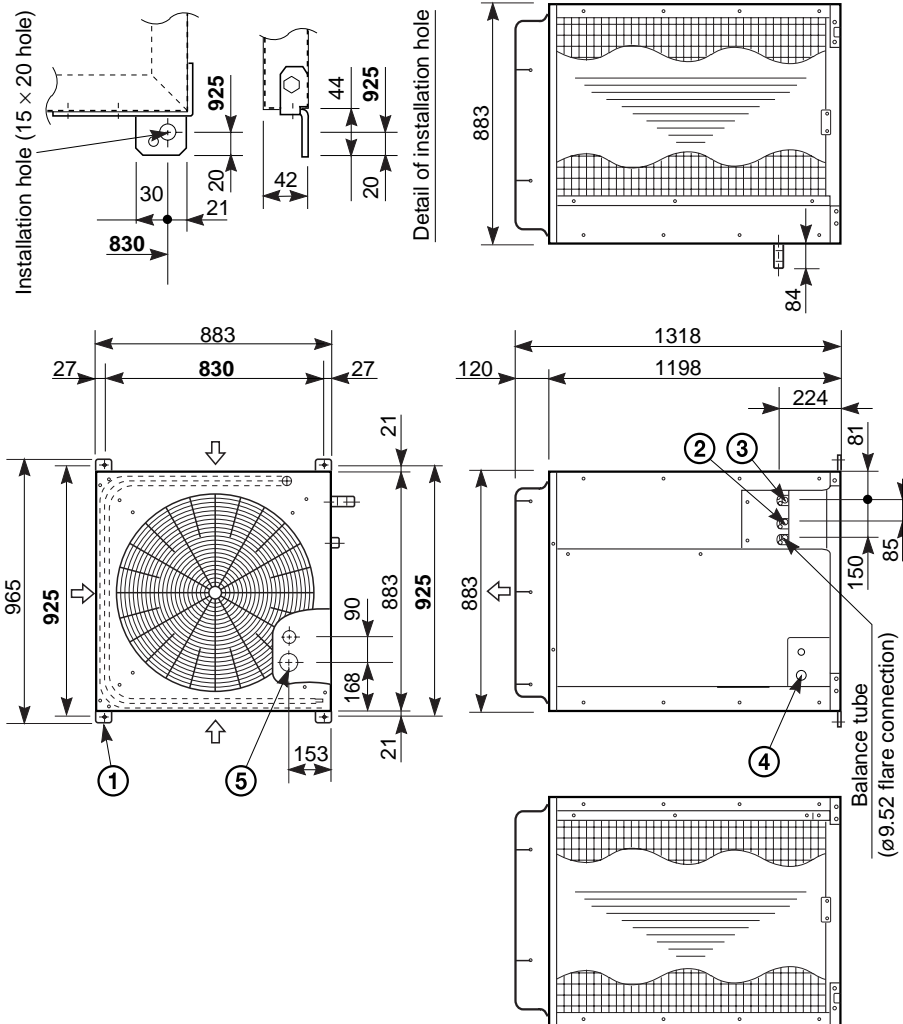
## Outdoor Unit (H)

<b>MODEL No.</b>		SPW-C903GDCH8
<b>Source</b>		380 - 440 - 415 V / 3 N / 50Hz
<b>Controller P.C.B. Ass'y</b>		CR - CR703GDH8
Control circuit fuse		250 VAC , 15 A
<b>Compressor</b>		
		SC (Scroll)
Model ... Code No.		C-SC753H8C ... 80975288
Nominal output	kW	7.5
Compressor oil (ETHER FV68S)	cc	2,700
Coil resistance (Ambient temperature 25°C)	Ω	V - U: 1.308 U - W: 1.373 W - V: 1.351
Safety devices		
Thermal protector ON / OFF	°C	120 ± 5 / 98 ± 11
Microprocessor safety devices		Compressor current detection circuit Compressor discharge gas temperature control Defective drop detection circuit Voltage drop detection circuit
Crank case heater	VAC, W	240, 44
<b>Fusible plug (Operating temp)</b>		°C 73 ± 2
<b>High pressure switch</b>		
Set pressure ON / OFF		kg/cm <sup>2</sup> 24 ± 2.0 / 33
<b>Fan (Number ... diameter(mm))</b>		
Propeller (1 ... ø 750)		
<b>Fan motor</b>		
Model ... Nominal output	W	KFJ8T - 301B3P... 200W
No. of pole ... r.p.m. (230 V, High)		8 ... 567 r.p.m.
Coil resistance (Ambient temperature 20 °C)	Ω	BRN - WHT : 12.01 WHT - VLT : 4.218 VLT - YEL : 9.886 WHT - PNK : 12.65
Safety device		
Thermal protector ON / OFF	°C	(115 ± 5) / 130 ± 5
Run capacitor	VAC , μF	400 VAC , 17.5 μF
<b>Heat exchanger</b>		
Coil		Aluminum plate fin / Copper tube
Rows ... fin pitch	mm	2 ... 1.8
Face area	m <sup>2</sup>	2.53

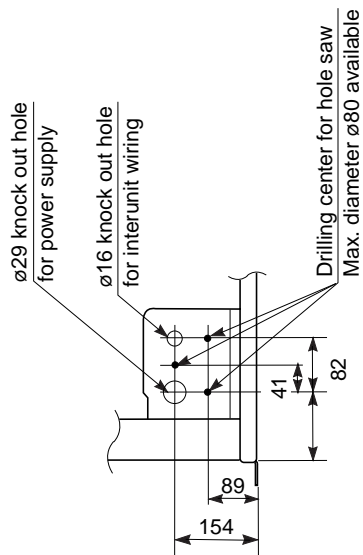
1. Outdoor Unit

1-3. Dimensional data

SPW-CR703GDCH8 / C703GDCH8  
 SPW-CR903GDCH8 / C903GDCH8

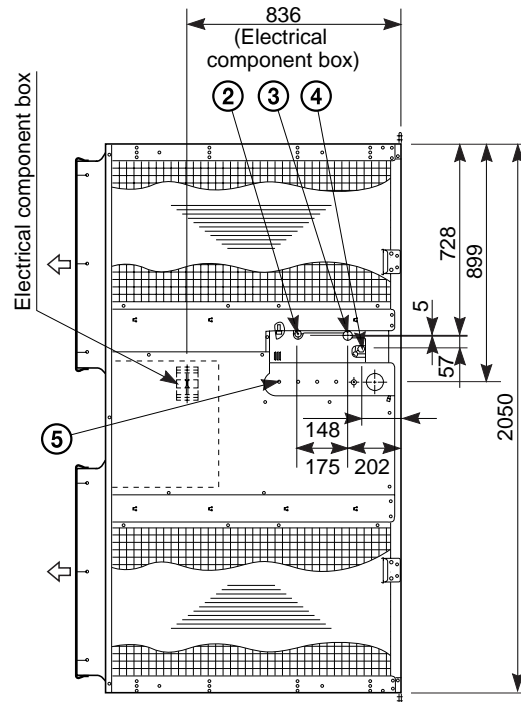
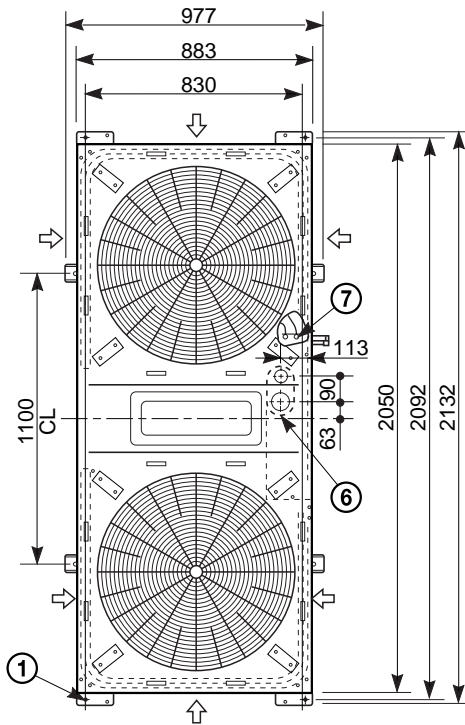
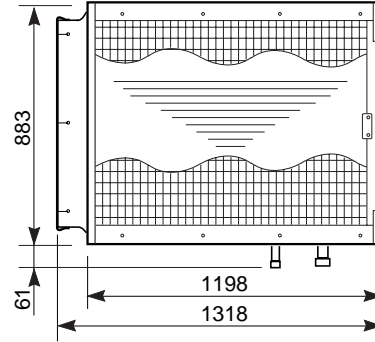
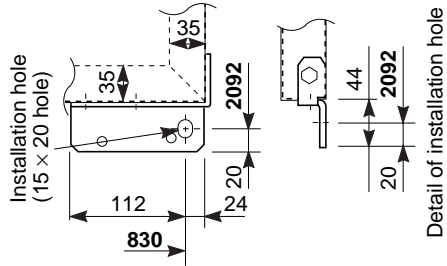


①	Installation hole (4 - 15 × 20 hole)
②	Refrigerant liquid line $\varnothing 12.7$ (narrow tube) flare connection
③	Refrigerant gas line (wide tube) 90 type: $\varnothing 28.58$ 70 type: $\varnothing 25.4$ Brazing connection
④	Knock out hole for power supply, inter-unit wiring (Front side)
⑤	Power supply, inter-unit wiring openings (Bottom side) $\varnothing 60, \varnothing 38$ conduit connection

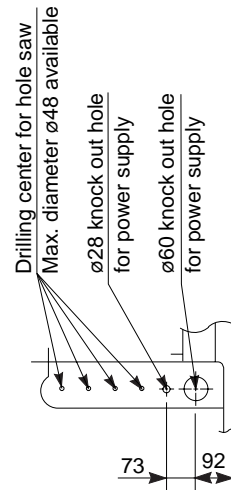


1. Outdoor Unit

SPW-CR1503GDYH8 / C1503GDYH8  
 SPW-CR1903GDYH8 / C1903GDYH8



①	Installation hole (4 - 15 × 20) Refrigerant liquid line (narrow tube)
②	150 type: $\varnothing 15.88$ 190 type: $\varnothing 19.05$ Brazing connection
③	Refrigerant gas line (wide tube) 150 type: $\varnothing 38.1$ 190 type: $\varnothing 41.28$ Brazing connection
④	Refrigerant line $\varnothing 9.52$ (balance tube) flare connection
⑤	Knock out hole for power supply, inter-unit wiring (Front side)
⑥	Power supply, inter-unit wiring opening (Bottom side) $\varnothing 60, \varnothing 38$ conduit connection

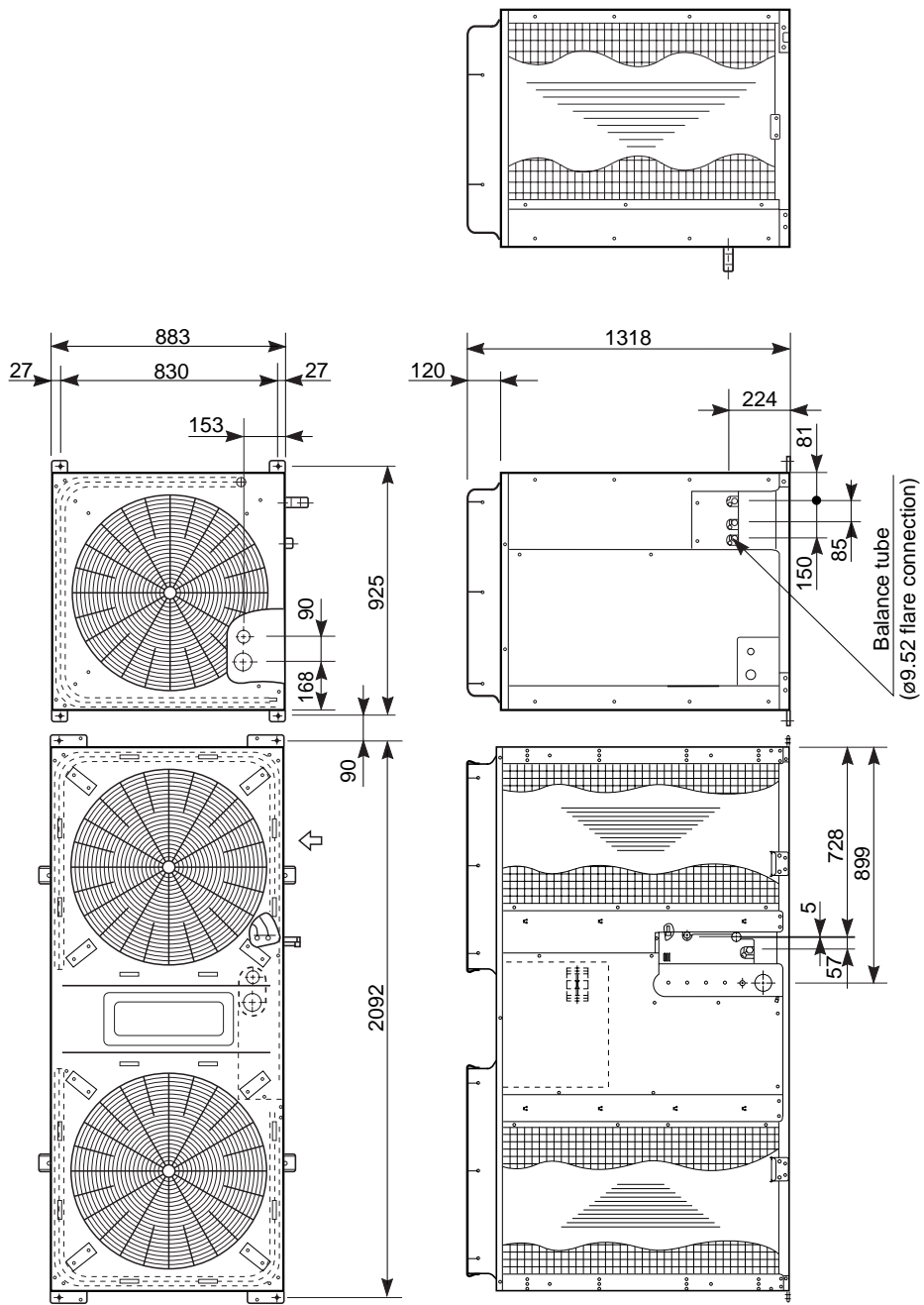


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4

1. Outdoor Unit

Combinational dimension

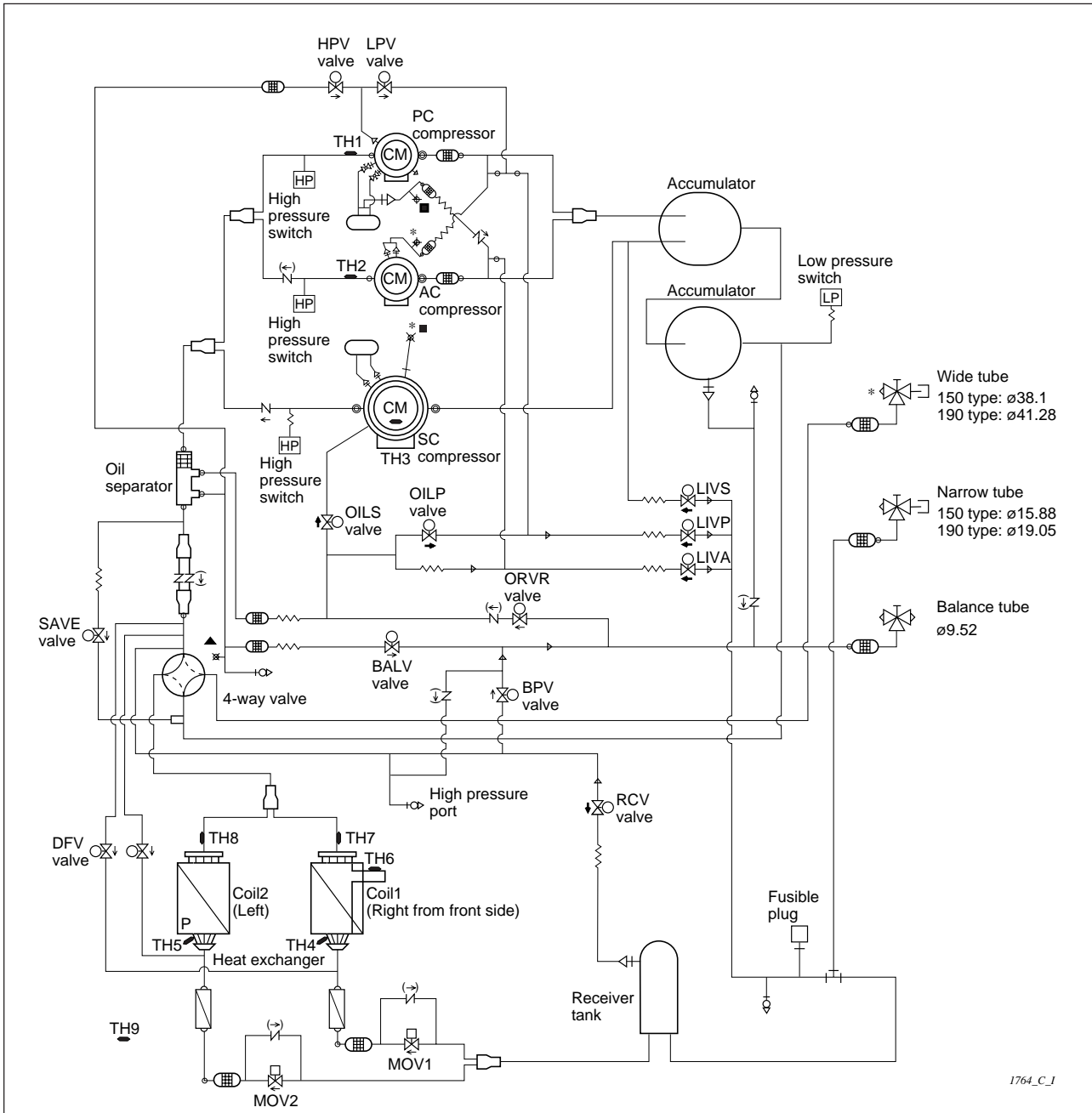


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1. Outdoor Unit

1-4. Refrigerant flow diagram

SPW-CR1503GDYH8, SPW-CR1903GDYH8, SPW-C1503GDYH8, SPW-C1903GDYH8

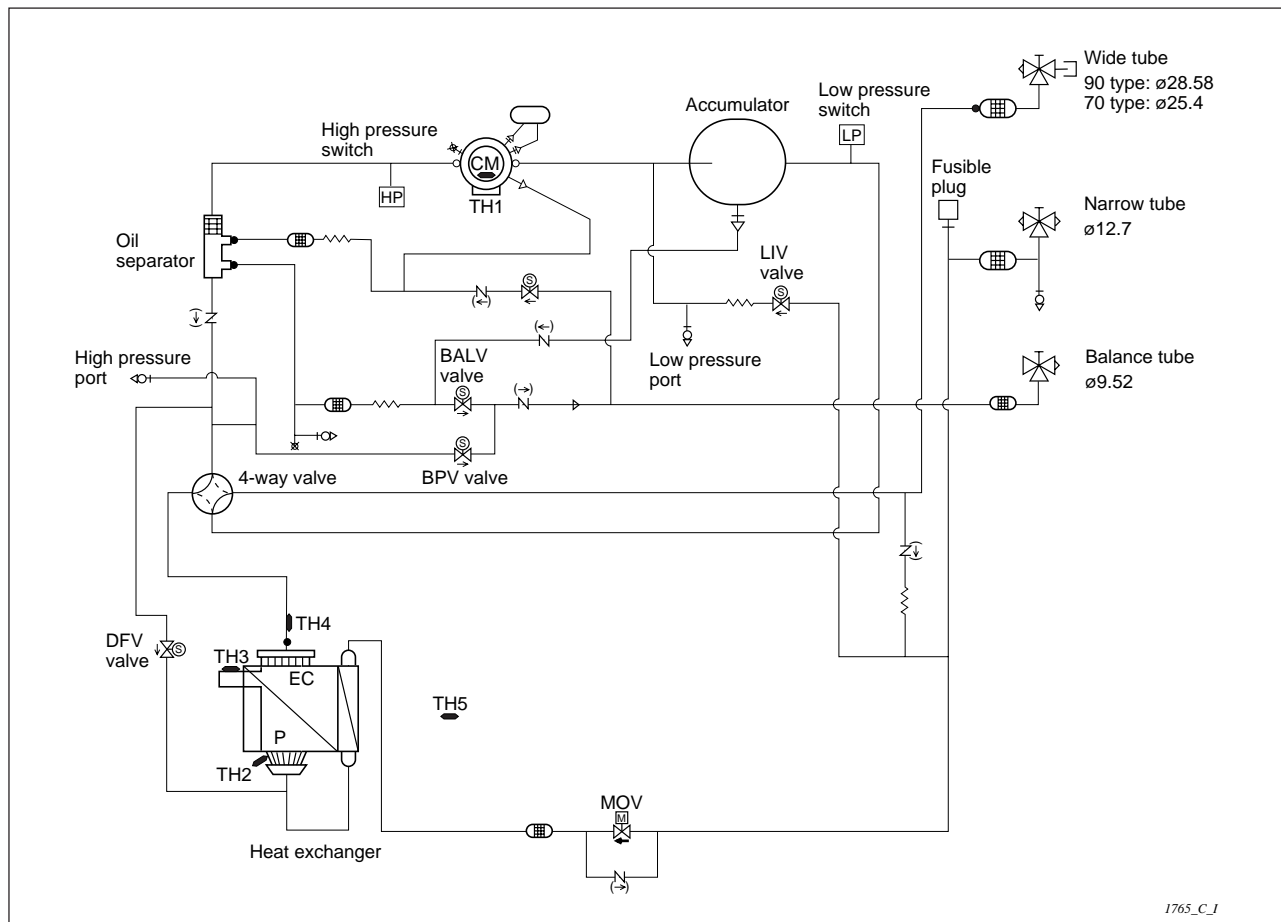


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4

1. Outdoor Unit

SPW-CR703GDCH8, SPW-CR903GDCH8, SPW-C703GDCH8, SPW-C903GDCH8

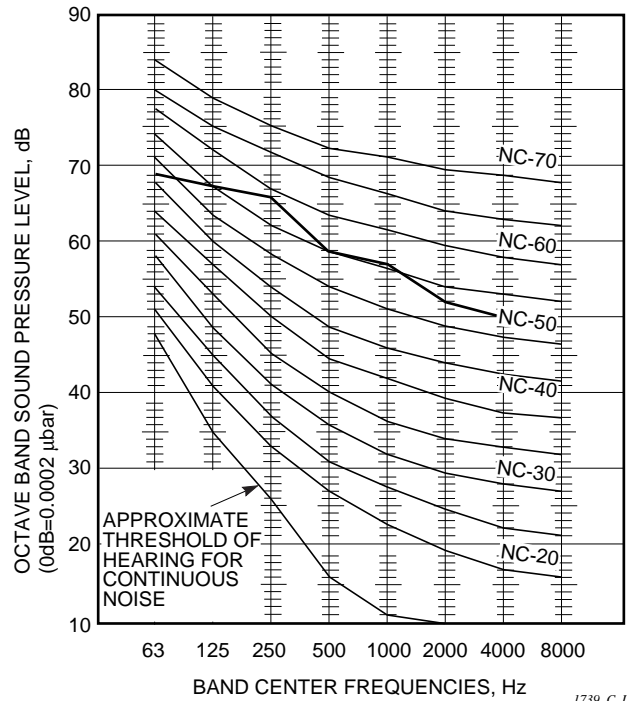
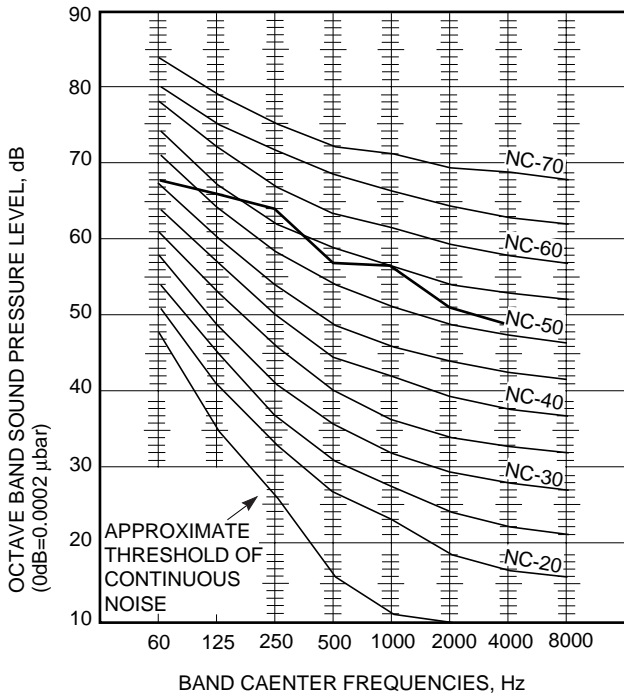


# 1. Outdoor Unit

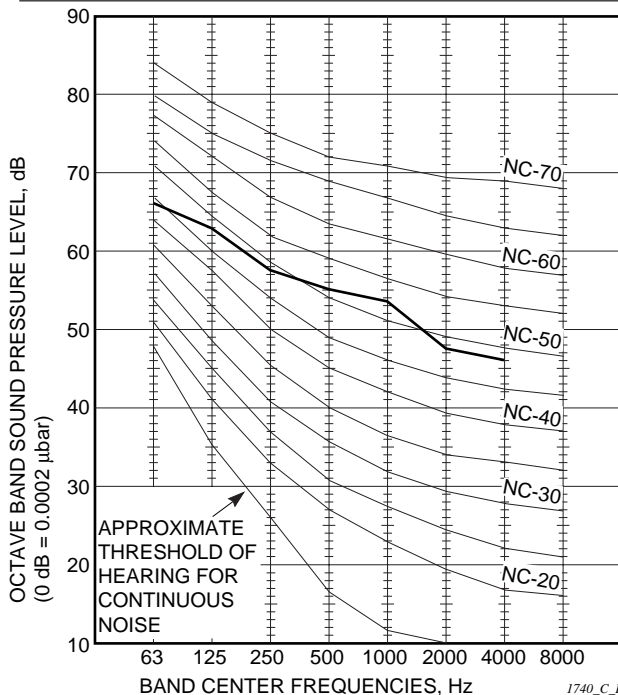
## 1-5. Noise criterion curves

MODEL : SPW-CR1503GDYH8 , C1503GDYH8  
 SOUND LEVEL : 61.5 dB(A), NC 57  
 CONDITION : Distance 1 m, Hight 1 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz  
 380 - 400 - 415 V, 3 Phase, 50 Hz

MODEL : SPW-CR1903GDYH8 , C1903GDYH8  
 SOUND LEVEL : 62.5 dB(A), NC 59  
 CONDITION : Distance 1 m, Hight 1 m  
 SOURCE : 380 - 400 - 415 V, 3 Phase, 50 Hz



MODEL : SPW-CR703GDCH8 , C703GDCH8  
 SPW-CR903GDCH8 , C903GDCH8  
 SOUND LEVEL : HIGH 58.5 dB(A), NC 52  
 CONDITION : Height 1 m, distance 1 m  
 SOURCE : 380 / 400 / 415 V, 3 Phase, 50 Hz



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## 2. 4-Way Air Discharge Semi-concealed Type

### 2-1. Specifications

#### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-XR123GH56 / SPW-X123GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase – 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		3.6	4.2
	BTU / h		12,000	14,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	900 / 780 / 660	
Moisture removal (High)		Liters/h	0.9	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes		A	0.60 - 0.62 - 0.63	0.37 - 0.40 - 0.42
Power input		W	130 - 140 - 150	80 - 90 - 100
Power factor		%	98 - 98 - 99	98 - 98 - 99
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	37 / 35 / 30	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)	
	Wide tube mm (in.)		12.7 (1 / 2)	
Drain connection			25 A, OD32 mm	
Drain pump			Max. head 25 cm above drain connection	
Panel			Optional (PNR-X253GHA)	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (include panel)	Package Body      Panel
Dimensions	Height	mm (in.)	328 (12 - 29 / 32)	284 (11 - 6 / 32)      104 ( 4 - 3 / 32)
	Width	mm (in.)	860 (33 - 27 / 32)	824 (32 - 14 / 32)      967 (38 - 2 / 32)
	Depth	mm (in.)	860 (33 - 27 / 32)	833 (32 - 25 / 32)      999 (39 - 11 / 32)
Net weight		kg (lb.)	29 ( 64 )	—      —
Shipping weight		kg (lb.)	—	26 ( 57 )      8 ( 18 )
Shipping volume		m <sup>3</sup> (cu. ft)	—	0.195 ( 6.9 )      0.1 ( 3.5 )

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

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## 2. 4-Way Air Discharge Semi-concealed Type

### Unit specifications (B)

MODEL No.	Indoor Unit		SPW-XR183GH56 / SPW-X183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.6	6.3
	BTU / h		19,000	21,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	900 / 780 / 660	
Moisture removal (High)		Liters/h	2.6	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.60 - 0.62 - 0.63	0.37 - 0.40 - 0.42
Power input		W	130 - 140 - 150	80 - 90 - 100
Power factor		%	98 - 98 - 99	98 - 98 - 99
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	37 / 35 / 30	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)	
	Wide tube mm (in.)		15.88 (5 / 8)	
Drain connection			25 A, OD32 mm	
Drain pump			Max. head 25 cm above drain connection	
Panel			Optional (PNR-X253GHA)	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (include panel)	Package Body      Panel
Dimensions	Height	mm (in.)	328 (12 - 29 / 32)	284 (11 - 6 / 32)      104 ( 4 - 3 / 32)
	Width	mm (in.)	860 (33 - 27 / 32)	824 (32 - 14 / 32)      967 (38 - 2 / 32)
	Depth	mm (in.)	860 (33 - 27 / 32)	833 (32 - 25 / 32)      999 (39 - 11 / 32)
Net weight		kg (lb.)	29 ( 64 )	—      —
Shipping weight		kg (lb.)	—	26 ( 57 )      8 ( 18 )
Shipping volume		m <sup>3</sup> (cu. ft)	—	0.195 ( 6.9 )      0.1 ( 3.5 )

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

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## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (C)

MODEL No.		Indoor Unit		SPW-XR253GH56 / SPW-X253GH56				
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz				
<b>PERFORMANCE</b>				Cooling		Heating		
Capacity		kW BTU / h		7.3 25,000		8.0 27,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h		1,140 / 1,020 / 840				
Moisture removal (High)		Liters/h		3.6		—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC		220 - 230 - 240				
Available voltage range		VAC		198 - 264				
Running amperes		A		0.60 - 0.62 - 0.63		0.37 - 0.40 - 0.42		
Power input		W		130 - 140 - 150		80 - 90 - 100		
Power factor		%		98 - 98 - 99		98 - 98 - 99		
Fan motor locked rotor amperes		A		1 - 1 - 1				
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		37 / 35 / 31				
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter		Narrow tube mm (in.)		9.52 (3 / 8)*				
		Wide tube mm (in.)		15.88 (5 / 8)				
Drain connection		25 A, OD32 mm						
Drain pump		Max. head 25 cm above drain connection						
Panel		Optional (PNR-X253GHA)						
Remote Controller		Optional (RCS-SH80TG)						
Refrigerant tubing kit / Accessories		Optional / —						
Color (Approximate value)		Munsell 10Y9.3 / 0.4, RAL 9010-GL						
<b>DIMENSIONS &amp; WEIGHT</b>				Indoor unit (include panel)		Package		
						Body		Panel
Dimensions		Height mm (in.)		328 (12 - 29 / 32)		284 (11 - 6 / 32)		104 ( 4 - 3 / 32)
		Width mm (in.)		860 (33 - 27 / 32)		824 (32 - 14 / 32)		967 (38 - 2 / 32)
		Depth mm (in.)		860 (33 - 27 / 32)		833 (32 - 25 / 32)		999 (39 - 11 / 32)
Net weight		kg (lb.)		30 ( 66 )		—		—
Shipping weight		kg (lb.)		—		27 ( 60 )		8 ( 18 )
Shipping volume		m <sup>3</sup> (cu. ft)		—		0.195 ( 6.9 )		0.1 ( 3.5 )

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

\* Use the "Tube connector" (accessory part with unit).

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## 2. 4-Way Air Discharge Semi-concealed Type

### Unit specifications (D)

MODEL No.	Indoor Unit		SPW-XR363GH56 / SPW-X363GH56		
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz		
<b>PERFORMANCE</b>			Cooling		Heating
Capacity	kW		10.6		11.4
	BTU / h		36,000		39,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1,920 / 1,680 / 1,320		
Moisture removal (High)		Liters/h	4.6	—	
<b>ELECTRICAL RATINGS</b>					
Voltage rating		VAC	220 - 230 - 240		
Available voltage range		VAC	198 - 264		
Running amperes		A	0.92 - 0.92 - 0.93	0.65 - 0.67 - 0.68	
Power input		W	200 - 210 - 220	140 - 150 - 160	
Power factor		%	99 - 99 - 99	98 - 97 - 98	
Fan motor locked rotor amperes		A	2 - 2 - 2		
<b>FEATURES</b>					
Controls			Microprocessor		
Timer			ON / OFF Timer (Max. 72 hr)		
Fan speeds			3 and Automatic control		
Air filter			Washable, easy access, long life (2,500 hr)		
Refrigerant control			Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	43 / 40 / 36		
Refrigerant tubing connections			Flare type		
Refrigerant tube diameter		Narrow tube mm (in.)	9.52 (3 / 8)		
		Wide tube mm (in.)	19.05 (3 / 4)		
Drain connection			25 A, OD32 mm		
Drain pump			Max. head 25 cm above drain connection		
Panel			Optional (PNR-X483GHA)		
Remote Controller			Optional (RCS-SH80TG)		
Refrigerant tubing kit / Accessories			Optional / —		
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL		
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (include panel)	Package	
				Body	Panel
Dimensions	Height	mm (in.)	358 (14 - 3 / 32)	316 (12 - 14 / 32)	104 ( 4 - 3 / 32)
	Width	mm (in.)	1150 (45 - 9 / 32)	1114 (43 - 27 / 32)	1257 (49 - 16 / 32)
	Depth	mm (in.)	860 (33 - 27 / 32)	833 (32 - 25 / 32)	999 (39 - 11 / 32)
Net weight		kg (lb.)	38 ( 84 )	—	—
Shipping weight		kg (lb.)	—	32 ( 71 )	10 ( 22 )
Shipping volume		m <sup>3</sup> (cu. ft)	—	0.293 ( 10.3 )	0.131 ( 4.6 )

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

TD831077

## 2. 4-Way Air Discharge Semi-concealed Type

### Unit specifications (E)

MODEL No.		Indoor Unit		SPW-XR483GH56 / SPW-X483GH56		
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz		
<b>PERFORMANCE</b>				Cooling		Heating
Capacity		kW	14.0	16.0		
		BTU / h	47,800	54,600		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1,920 / 1,680 / 1,320			
Moisture removal (High)		Liters/h	7.4	—		
<b>ELECTRICAL RATINGS</b>						
Voltage rating		VAC	220 - 230 - 240			
Available voltage range		VAC	198 - 264			
Running amperes		A	0.92 - 0.92 - 0.93	0.65 - 0.67 - 0.68		
Power input		W	200 - 210 - 220	140 - 150 - 160		
Power factor		%	99 - 99 - 99	98 - 97 - 98		
Fan motor locked rotor amperes		A	2 - 2 - 2			
<b>FEATURES</b>						
Controls		Microprocessor				
Timer		ON / OFF Timer (Max. 72 hr)				
Fan speeds		3 and Automatic control				
Air filter		Washable, easy access, long life (2,500 hr)				
Refrigerant control		Electronic expansion valve				
Operation sound (Hi / Me / Lo)		dB-A	43 / 40 / 36			
Refrigerant tubing connections		Flare type				
Refrigerant tube diameter		Narrow tube mm (in.)	9.52 (3 / 8)			
		Wide tube mm (in.)	19.05 (3 / 4)			
Drain connection		25 A, OD32 mm				
Drain pump		Max. head 25 cm above drain connection				
Panel		Optional (PNR-X483GHA)				
Remote Controller		Optional (RCS-SH80TG)				
Refrigerant tubing kit / Accessories		Optional / —				
Color (Approximate value)		Munsell 10Y9.3 / 0.4, RAL 9010-GL				
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (include panel)	Package		
				Body	Panel	
Dimensions	Height	mm (in.)	358 (14 - 3 / 32)	316 (12 - 14 / 32)	104 ( 4 - 3 / 32)	
	Width	mm (in.)	1150 (45 - 9 / 32)	1114 (43 - 27 / 32)	1257 (49 - 16 / 32)	
	Depth	mm (in.)	860 (33 - 27 / 32)	833 (32 - 25 / 32)	999 (39 - 11 / 32)	
Net weight		kg (lb.)	38 ( 84 )	—	—	
Shipping weight		kg (lb.)	—	32 ( 71 )	10 ( 22 )	
Shipping volume		m <sup>3</sup> (cu. ft)	—	0.293 ( 10.3 )	0.131 ( 4.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

TD831077

## 2. 4-Way Air Discharge Semi-concealed Type

## 2-2. Major component specifications

## Indoor unit (A)

MODEL No.		SPW-XR123GH56	SPW-X123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 490)	
Fan motor			
Model...Nominal output	W	SFG6X-41A5P ... 40 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 442	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 114.0 WHT – VLT : 23.9 VLT – ORG : 12.4	ORG – YEL : 66.4 WHT – PNK : 77.4 YEL – BLK : 82.1
Safety device			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 3.5 μF	
Electronic expansion valve			
Coil		DKV-MOZS582E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46 ,	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.295	
Panel			
Model No.		PNR-X253GHA	
Dew proof heater		240 V, 26 W	
Auto louver motor		M2LB24ZA12	
Auto louver motor...Rated	VAC, W, rpm.	240 VAC, 3W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	15,620 Ω ± 15 %	
Drain Pump		WP20SL - 21	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (B)

<b>MODEL No.</b>		SPW-XR183GH56	SPW-X183GH56
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Turbo (1 ... ø 490)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG6X-41A5P ... 40 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 442	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 114.0 WHT – VLT : 23.9 VLT – ORG : 12.4	ORG – YEL : 66.4 WHT – PNK : 77.4 YEL – BLK : 82.1
Safety device			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 3.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS582E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46 ,	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.295	
<b>Panel</b>			
Model No.		PNR-X253GHA	
Dew proof heater		240 V, 26 W	
Auto louver motor		M2LB24ZA12	
Auto louver motor...Rated	VAC, W, rpm.	240 VAC, 3W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	15,620 Ω ± 15 %	
<b>Drain Pump</b>		WP20SL - 21	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (C)

MODEL No.		SPW-XR253GH56	SPW-X253GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 490)	
Fan motor			
Model...Nominal output	W	SFG6X-41A5P ... 40 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 470	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 114.0 WHT – VLT : 23.9 VLT – ORG : 12.4	ORG – YEL : 66.4 WHT – PNK : 77.4 YEL – BLK : 82.1
Safety device			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 4 μF	
Electronic expansion valve			
Coil		DKV-MOZS582E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46, RED – GRY : 46,	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.295	
Panel			
Model No.		PNR-X253GHA	
Dew proof heater		240 V, 26 W	
Auto louver motor		M2LB24ZA12	
Auto louver motor...Rated	VAC, W, rpm.	240 VAC, 3W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	15,620 Ω ± 15 %	
Drain Pump		WP20SL - 21	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (D)

MODEL No.		SPW-XR363GH56	SPW-X363GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 490)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG6X-61A3P...60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 530	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 71.1 WHT – VLT : 8.7 VLT – ORG : 13.3	ORG – YEL : 22.7 VLT – PNK : 43.2 YEL – BLK : 126.7
Safety device			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 6 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS584E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46 ,	YEL – GRY : 46 BLK – GRY : 46
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.479	
<b>Panel</b>			
Model No.		PNR-X483GHA	
Dew proof heater		240 V, 31 W	
Auto louver motor		M2LB24ZA12	
Auto louver motor...Rated	VAC, W, rpm.	240 VAC, 3W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	15,620 Ω ± 15 %	
<b>Drain Pump</b>		WP20SL - 21	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	



## 2. 4-Way Air Discharge Semi-concealed Type

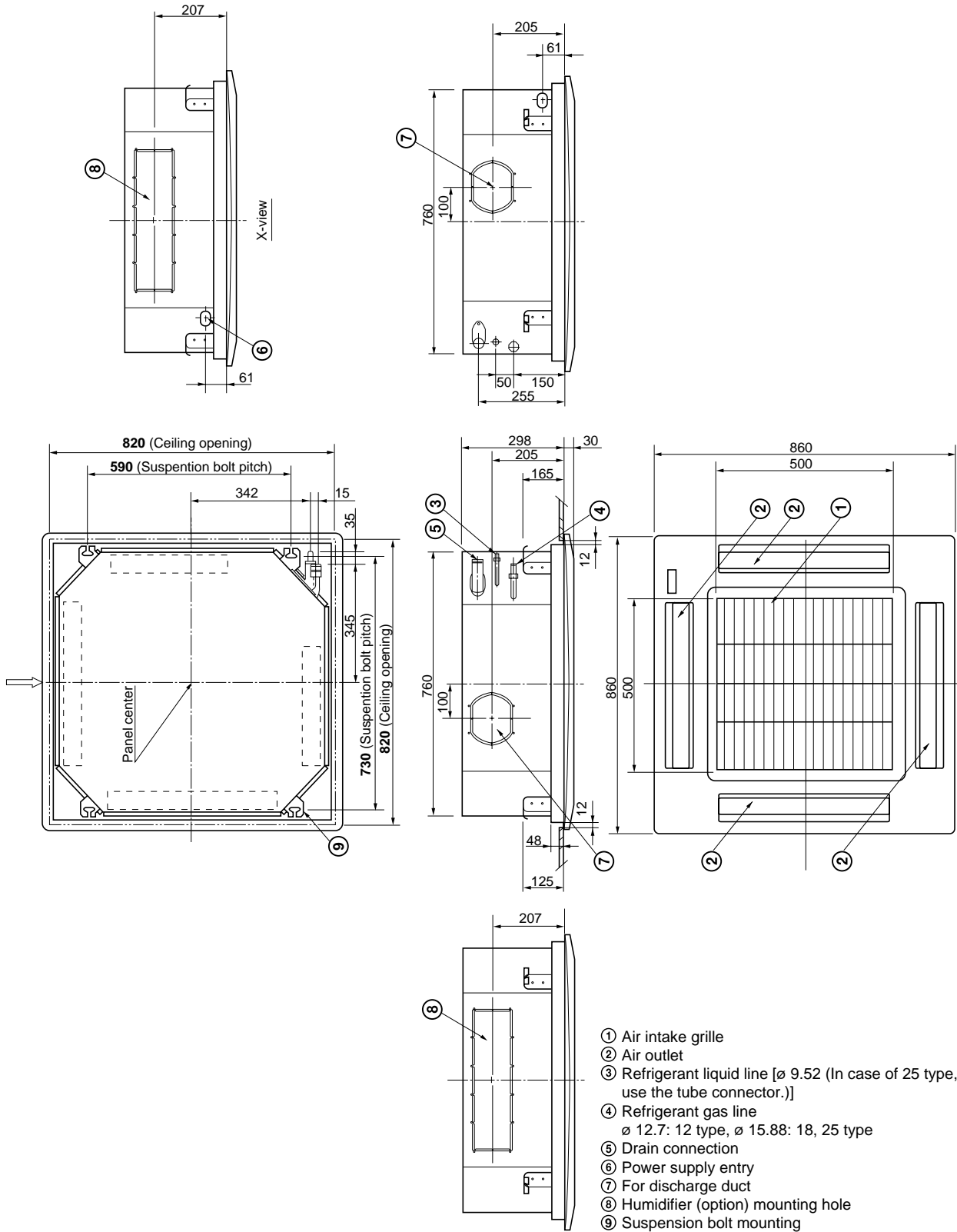
## Indoor unit (E)

MODEL No.		SPW-XR483GH56	SPW-X483GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 490)	
Fan motor			
Model...Nominal output	W	SFG6X-61A3P...60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 530	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 71.1 WHT – VLT : 8.7 VLT – ORG : 13.3	ORG – YEL : 22.7 VLT – PNK : 43.2 YEL – BLK : 126.7
Safety device			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 6 μF	
Electronic expansion valve			
Coil		EKV-MOZS584E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46 ,	YEL – GRY : 46 BLK – GRY : 46
Valve body		HKV-30D16	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.479	
Panel			
Model No.		PNR-X483GHA	
Dew proof heater		240 V, 31 W	
Auto louver motor		M2LB24ZA12	
Auto louver motor...Rated	VAC, W, rpm.	240 VAC, 3W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	15,620 Ω ± 15 %	
Drain Pump		WP20SL - 21	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

## 2. 4-Way Air Discharge Semi-concealed Type

### 2-3. Dimensional data

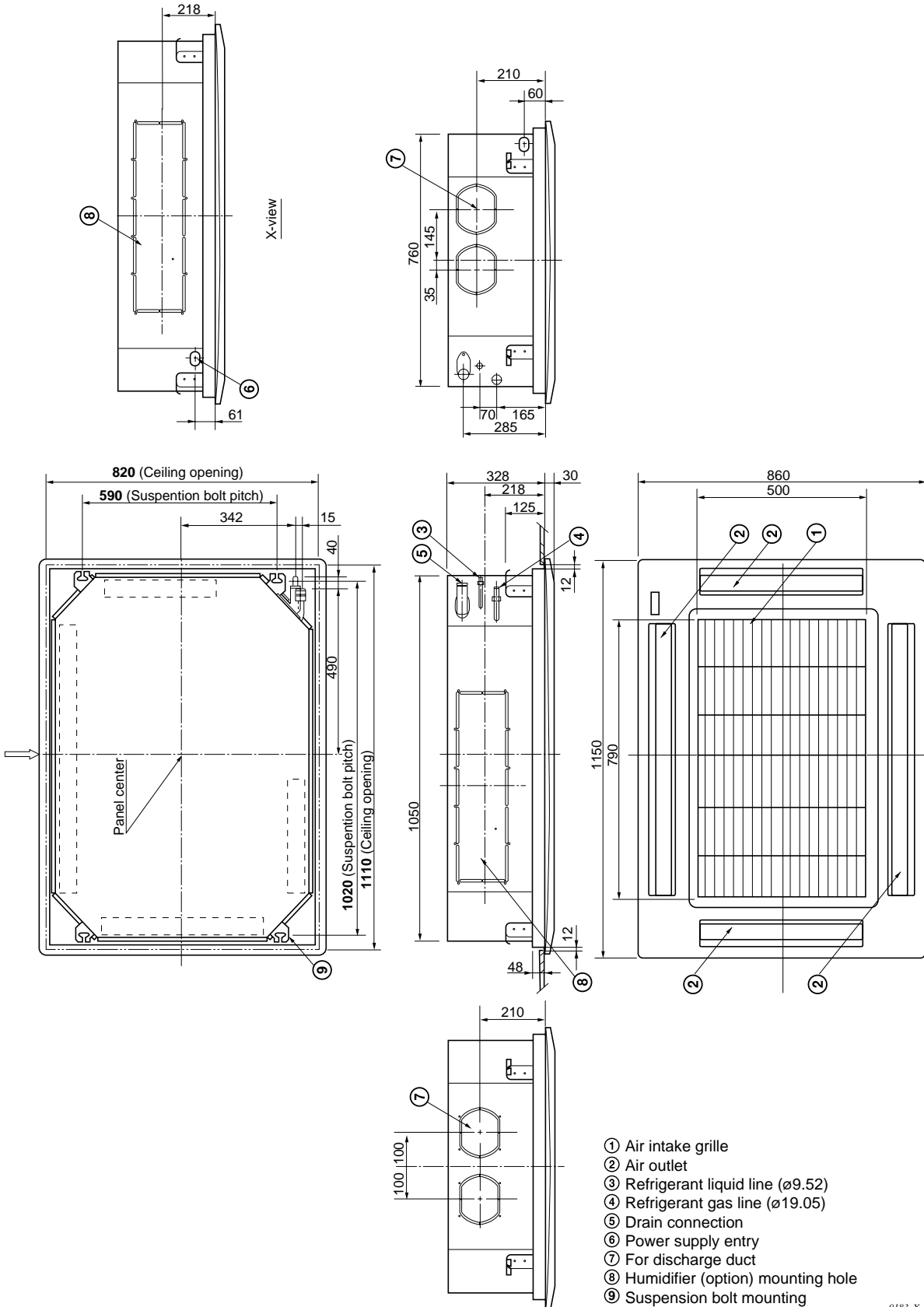
Indoor unit : 12, 18, 25 Type



1488\_X\_1

## 2. 4-Way Air Discharge Semi-concealed Type

Indoor unit : 36, 48 Type

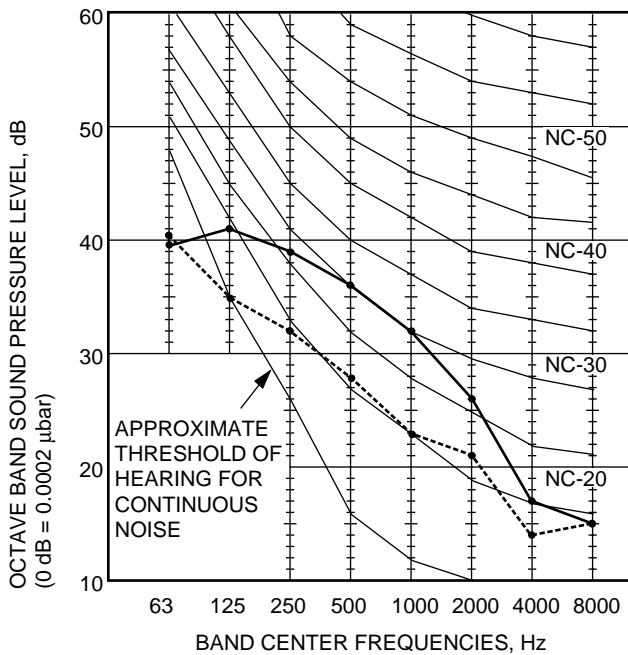


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## 2. 4-Way Air Discharge Semi-concealed Type

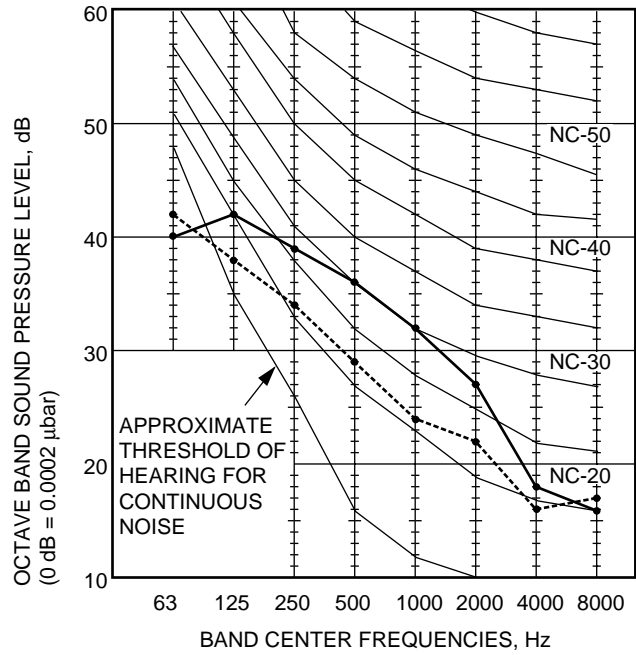
### 2-4. Noise criterion curves

MODEL	: SPW-XR123GH56 , XR183GH56 SPW-X123GH56 , X183GH56
SOUND LEVEL	: HIGH 37 dB(A), NC 30 LOW 30 dB(A), NC 22
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



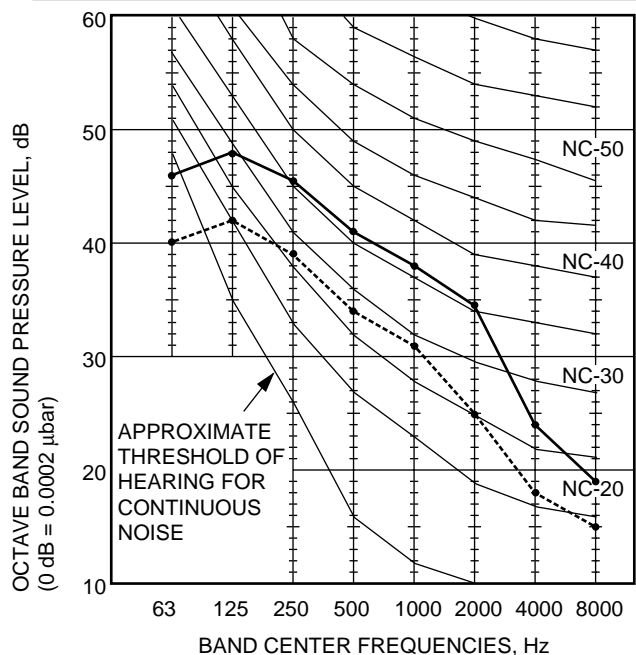
0273\_X\_1

MODEL	: SPW-XR253GH56 SPW-X253GH56
SOUND LEVEL	: HIGH 37 dB(A), NC 30 LOW 31 dB(A), NC 22
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0274\_X\_1

MODEL	: SPW-XR363GH56 , XR483GH56 SPW-X363GH56 , X483GH56
SOUND LEVEL	: HIGH 43 dB(A), NC 36 LOW 36 dB(A), NC 24
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0275\_X\_1

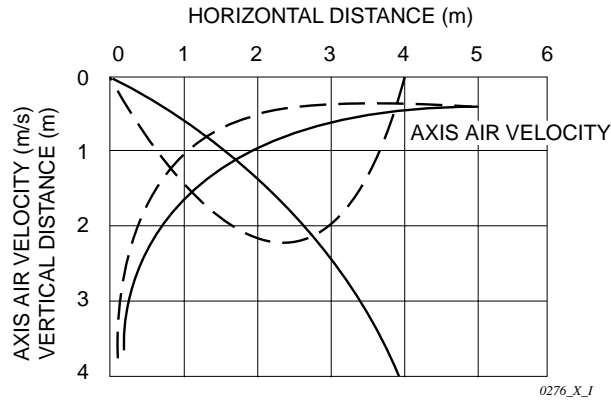
- REMARKS:**
- Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  - The test results were obtained from an anechoic room.

**NOTE** To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

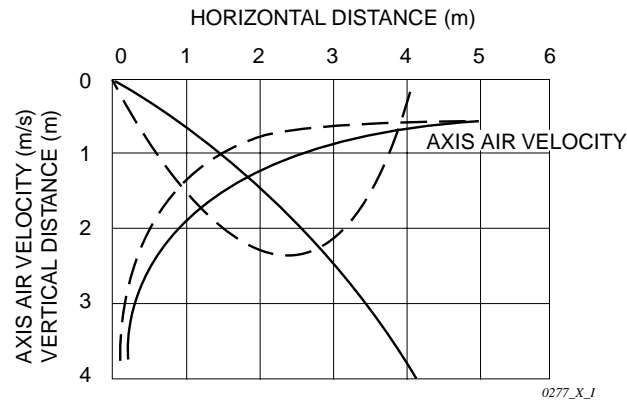
## 2. 4-Way Air Discharge Semi-concealed Type

### 2-5. Air throw distance chart

Model: 12, 18, 25 Type



Model: 36, 48 Type



———— : LOUVER ANGLE 20° in Cooling mode  
 - - - - - : LOUVER ANGLE 60° in Heating mode

Condition Fan Speed : Hi

Room air temp. : 27 °C DB in cooling mode

20 °C DB in heating mode

### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-1. Specifications

##### Unit specifications (A)

MODEL No.		Indoor Unit		SPW-SR93GH56 / SPW-S93GH56	
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>				Cooling	Heating
Capacity		kW BTU / h	2.8 9,600	3.2 11,000	
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	540 / 485 / 410		
Moisture removal (High)		Liters/h	1.0	—	
<b>ELECTRICAL RATINGS</b>					
Voltage rating		VAC	220 - 230 - 240		
Available voltage range		VAC	198 - 264		
Running amperes		A	0.33 - 0.34 - 0.35	0.24 - 0.25 - 0.26	
Power input		W	70 - 75 - 80	50 - 55 - 60	
Power factor		%	96 - 96 - 95	95 - 96 - 96	
Fan motor locked rotor amperes		A	1 - 1 - 1		
<b>FEATURES</b>					
Controls		Microprocessor			
Timer		ON / OFF Timer (Max. 72 hr)			
Fan speeds		3 and Automatic control			
Air filter		Washable, easy access, long life (2,500 hr)			
Refrigerant control		Electronic expansion valve			
Operation sound (Hi / Me / Lo)		dB-A	32 / 30 / 25		
Refrigerant tubing connections		Flare type			
Refrigerant tube diameter	Narrow tube mm (in.)	9.52 (3 / 8)			
	Wide tube mm (in.)	12.7 (1 / 2)			
Drain connection		25 A, OD32 mm			
Drain pump		Max. head 25 cm above drain connection			
Remote Controller		Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories		Optional / —			
Color (Approximate value)		Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT (include ceiling panel)</b>					
Dimensions	Height	mm (in.)	398 (15 - 5 / 8)		519 (20 - 3 / 8)
	Width	mm (in.)	1,110 (43 - 3 / 4)		1,218 (48 )
	Depth	mm (in.)	680 (26 - 3 / 4)		788 (31 )
Net weight		kg (lbs.)	40 ( 88 )		
Shipping weight		kg (lbs.)	61 ( 135 )		
Shipping volume		m <sup>3</sup> (cu. ft)	0.498 ( 17.6 )		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB



### 3. 2-Way Air Discharge Semi-concealed Type

#### Unit specifications (B)

MODEL No.	Indoor Unit		SPW-SR123GH56 / SPW-S123GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		3.6	4.2
	BTU / h		12,000	14,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	570 / 510 / 430	
Moisture removal (High)		Liters/h	1.6	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.36 - 0.37 - 0.38	0.27 - 0.28 - 0.29
Power input		W	75 - 80 - 85	55 - 60 - 65
Power factor		%	95 - 94 - 93	93 - 93 - 93
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	33 / 30 / 26	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)	
	Wide tube mm (in.)		12.7 (1 / 2)	
Drain connection			25 A, OD32 mm	
Drain pump			Max. head 25 cm above drain connection	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT (include ceiling panel)</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in.)	398 (15 - 5 / 8)	519 (20 - 3 / 8)
	Width	mm (in.)	1,110 (43 - 3 / 4)	1,218 (48 )
	Depth	mm (in.)	680 (26 - 3 / 4)	788 (31 )
Net weight		kg (lbs.)	40 ( 88 )	
Shipping weight		kg (lbs.)	61 ( 135 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.498 ( 17.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

4

## 3. 2-Way Air Discharge Semi-concealed Type

## Unit specifications (C)

MODEL No.	Indoor Unit		SPW-SR183GH56 / SPW-S183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.6	6.3
	BTU / h		19,000	21,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		960 / 860 / 720	
Moisture removal (High)	Liters/h		2.4	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 / 230 / 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		0.60 - 0.61 - 0.62	0.50 - 0.51 - 0.53
Power input	W		129 - 137 - 146	105 - 113 - 122
Power factor	%		98 - 98 - 98	95 - 96 - 96
Fan motor locked rotor amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max. 72 hr)			
Fan speeds	3 and Automatic control			
Air filter	Washable, easy access, long life (2,500 hr)			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		34 / 31 / 27	
Refrigerant tubing connections	Flare type			
Refrigerant tube diameter	Narrow tube mm (in.)	9.52 (3 / 8)		
	Wide tube mm (in.)	15.88 (5 / 8)		
Drain connection	25 A, OD32 mm			
Drain pump	Max. head 25 cm above drain connection			
Remote Controller	Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories	Optional / —			
Color (Approximate value)	Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT (include ceiling panel)</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in.)	398 (15 - 5 / 8)	519 (20 - 3 / 8)
	Width	mm (in.)	1,390 (54 - 3 / 4)	1,498 (59 )
	Depth	mm (in.)	680 (26 - 3 / 4)	788 (31 )
Net weight	kg (lbs.)		50 ( 110 )	
Shipping weight	kg (lbs.)		76 ( 168 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.613 ( 21.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB



### 3. 2-Way Air Discharge Semi-concealed Type

#### Unit specifications (D)

MODEL No.	Indoor Unit		SPW-SR253GH56 / SPW-S253GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		7.3	8.0
	BTU / h		25,000	27,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1,140 / 1,030 / 860	
Moisture removal (High)		Liters/h	3.5	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.65 - 0.66 - 0.67	0.55 - 0.56 - 0.57
Power input		W	141 - 150 - 158	117 - 126 - 134
Power factor		%	99 - 99 - 98	97 - 98 - 98
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	37 / 35 / 30	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)*	
	Wide tube mm (in.)		15.88 (5 / 8)	
Drain connection			25 A, OD32 mm	
Drain pump			Max. head 25 cm above drain connection	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / Mounting plates	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT (include ceiling panel)</b>				
Dimensions	Height	mm (in.)	398 (15 - 5 / 8)	519 (20 - 3 / 8)
	Width	mm (in.)	1,390 (54 - 3 / 4)	1,498 (59 )
	Depth	mm (in.)	680 (26 - 3 / 4)	788 (31 )
Net weight		kg (lbs.)	50 ( 110 )	
Shipping weight		kg (lbs.)	76 ( 168 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.613 ( 21.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

\* Use the "Tube connector" (accessory part with unit).

4

### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-2. Major component specifications

##### Indoor unit (A)

MODEL No.		SPW-SR93GH56	SPW-S93GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31B3P ... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4P ... 540	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 139.3 WHT – VLT : 19.77 VLT – ORG : 38.20	ORG – YEL : 25.59 YEL – BLK : 43.02 BLK – PNK : 84.32
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 , RED – GRY : 46,	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.265	
<b>Panel</b>			
Model No.		PNR-S123GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>		WP20SL-18	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

### 3. 2-Way Air Discharge Semi-concealed Type

#### Indoor unit (B)

MODEL No.		SPW-SR123GH56	SPW-S123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1...ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31B3P ... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4P ... 690	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 139.3 WHT – VLT : 19.77 VLT – ORG : 38.20	ORG – YEL : 25.59 YEL – BLK : 43.02 BLK – PNK : 84.32
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.2 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 , RED – GRY : 46	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.265	
<b>Panel</b>			
Model No.		PNR-S123GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		WP20SL-18	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

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## 3. 2-Way Air Discharge Semi-concealed Type

## Indoor unit (C)

MODEL No.		SPW-SR183GH56	SPW-S183GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51E3P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4P ... 568	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 68.62 WHT – VLT : 12.46 VLT – ORG : 16.31	ORG – YEL : 10.37 YEL – BLK : 24.04 BLK – PNK : 16.26
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 , RED – GRY : 46 ,	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	2...1.7
Face area	m <sup>2</sup>	0.382	
<b>Panel</b>			
Model No.		PNR-S253GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		WP20SL-18	
Total head & capacity		AC230 V, 50 Hz, 14.7 W 400 mm, 600 cc/min	

### 3. 2-Way Air Discharge Semi-concealed Type

#### Indoor unit (D)

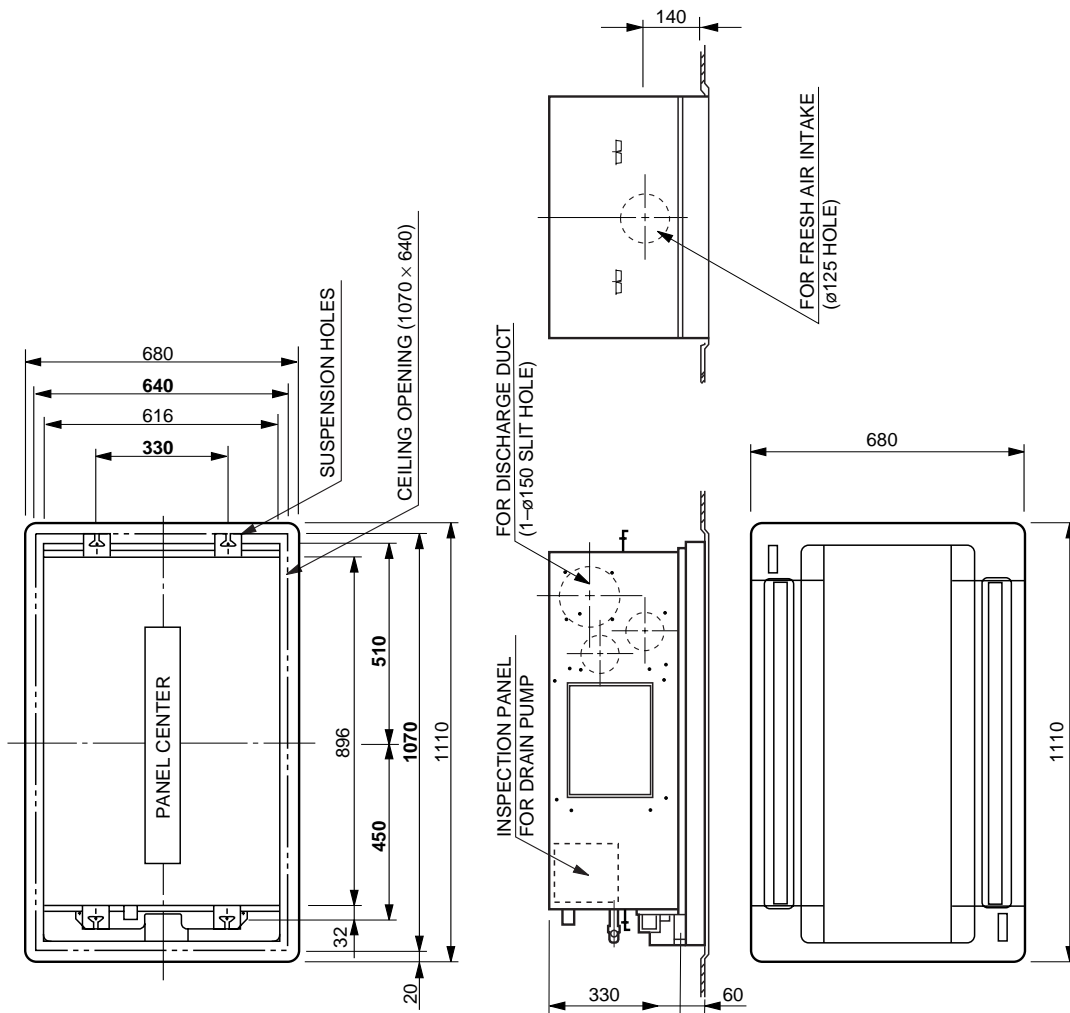
MODEL No.		SPW-SR253GH56	SPW-S253GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51E3P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4P ... 827	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 68.62 WHT – VLT : 12.46 VLT – ORG : 16.31	ORG – YEL : 10.37 YEL – BLK : 24.04 BLK – PNK : 16.26
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.382	
<b>Panel</b>			
Model No.		PNR-S253GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		WP20SL-18	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

4

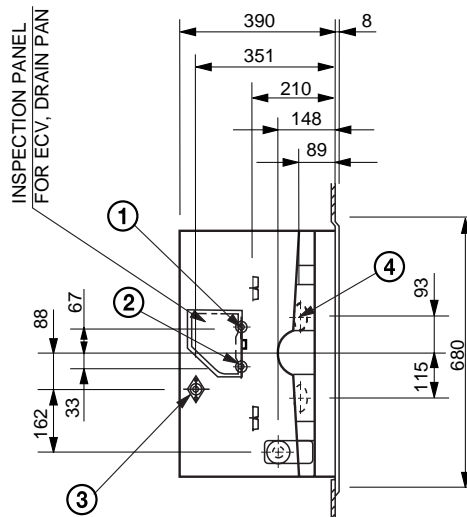
### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-3. Dimensional data

Indoor unit : 9, 12 Type

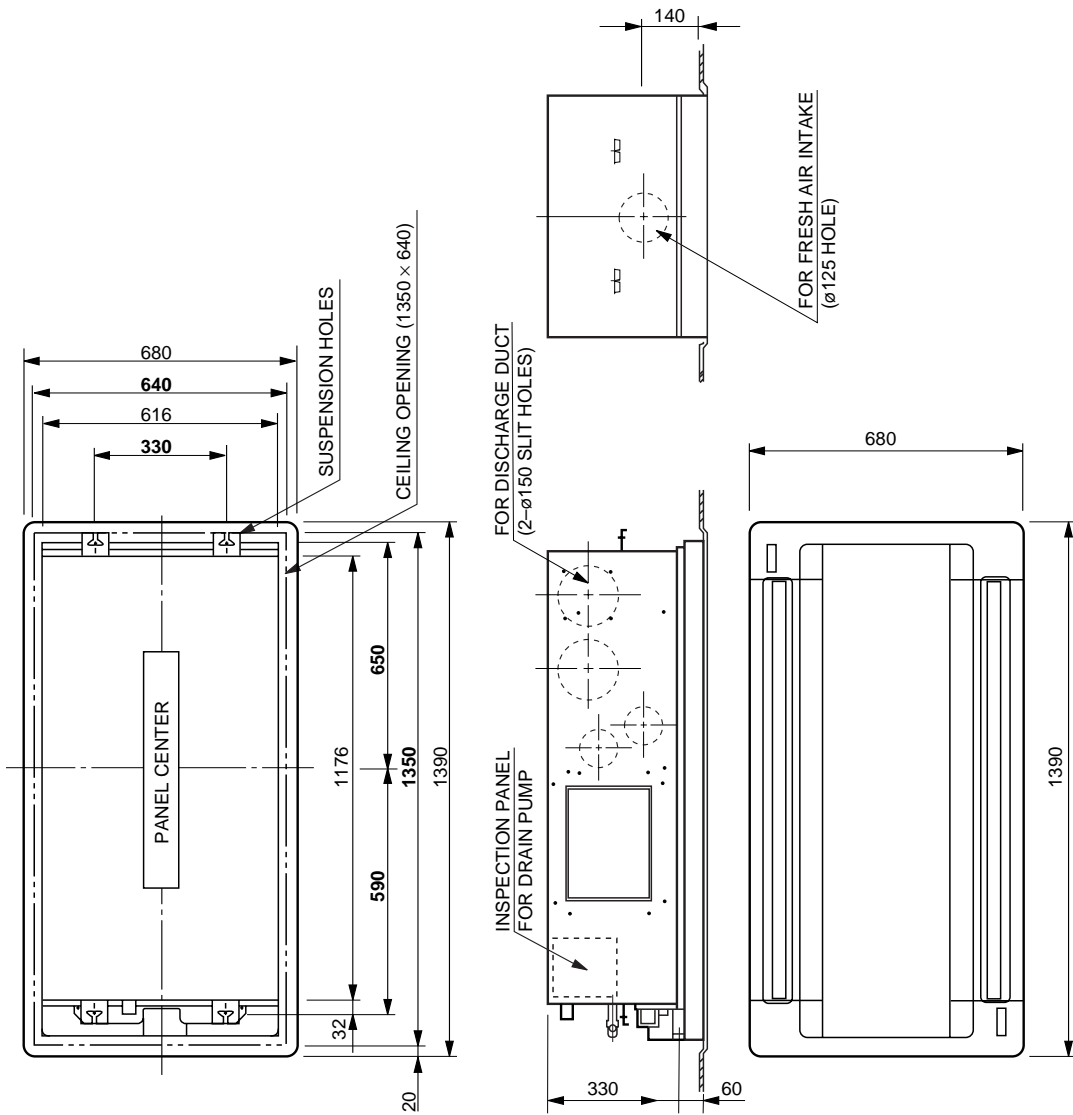


- ① Refrigerant liquid line (ø 9.52)
- ② Refrigerant gas line (ø 12.7)
- ③ Drain connection (25 A. O.D.32 mm)
- ④ Power supply entry

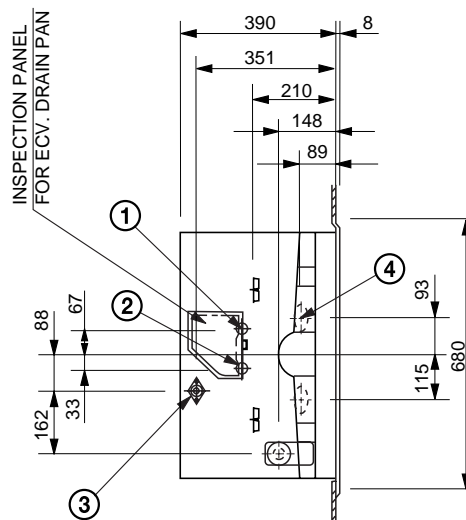


### 3. 2-Way Air Discharge Semi-concealed Type

Indoor unit : 18, 25 Type



- ① Refrigerant liquid line (φ 9.52)  
(In case of 25 type, use the tube connector.)
- ② Refrigerant gas line (φ 15.88)
- ③ Drain connection (25 A. O.D.32 mm)
- ④ Power supply entry



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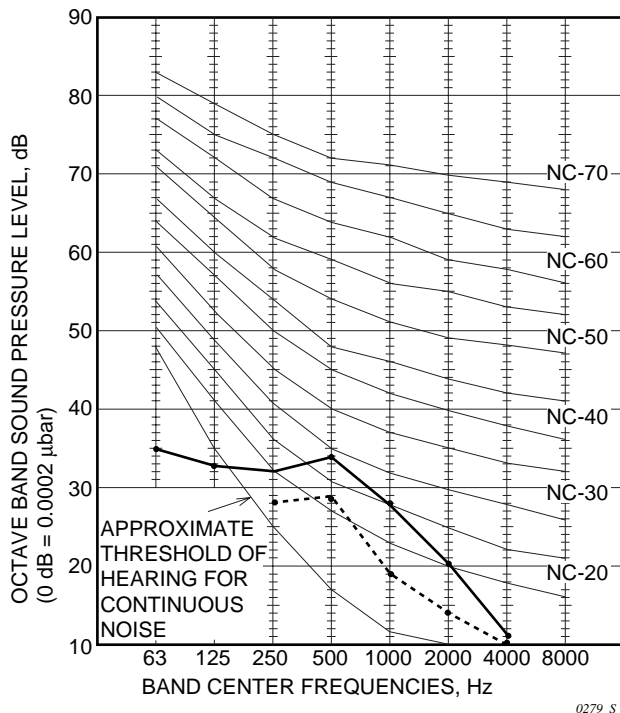
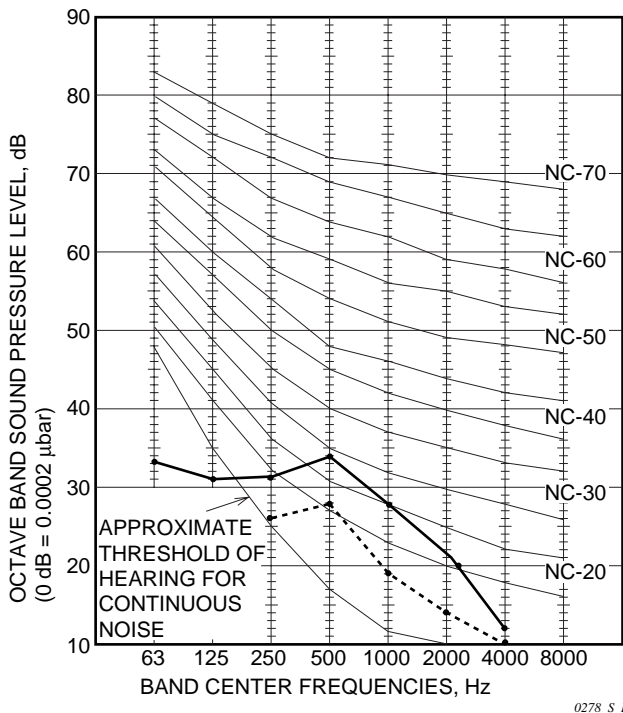
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### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-4. Noise criterion curves

MODEL	: SPW-SR93GH56
	SPW-S93GH56
SOUND LEVEL	: HIGH 32 dB(A), NC 29
	LOW 25 dB(A), NC 21
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL	: SPW-SR123GH56
	SPW-S123GH56
SOUND LEVEL	: HIGH 33 dB(A), NC 29
	LOW 26 dB(A), NC 22
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



- REMARKS :**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

**NOTE** To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

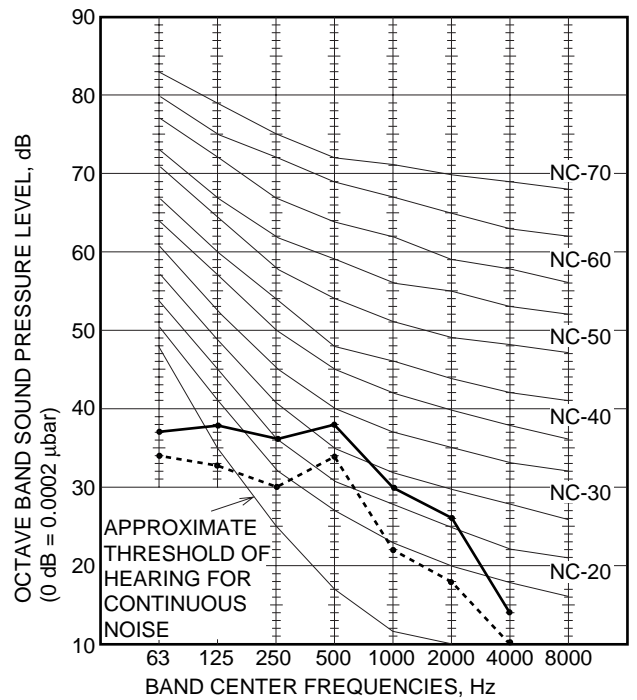
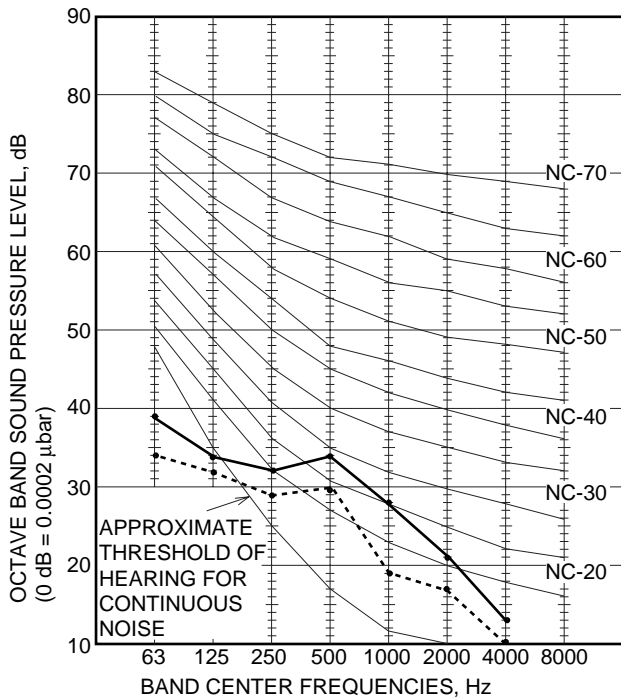




### 3. 2-Way Air Discharge Semi-concealed Type

MODEL	: SPW-SR183GH56
	SPW-S183GH56
SOUND LEVEL	: HIGH 34 dB(A), NC 29
	LOW 27 dB(A), NC 24
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL	: SPW-SR253GH56
	SPW-S253GH56
SOUND LEVEL	: HIGH 37 dB(A), NC 33
	LOW 30 dB(A), NC 29
CONDITION	: Distance 1 m, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



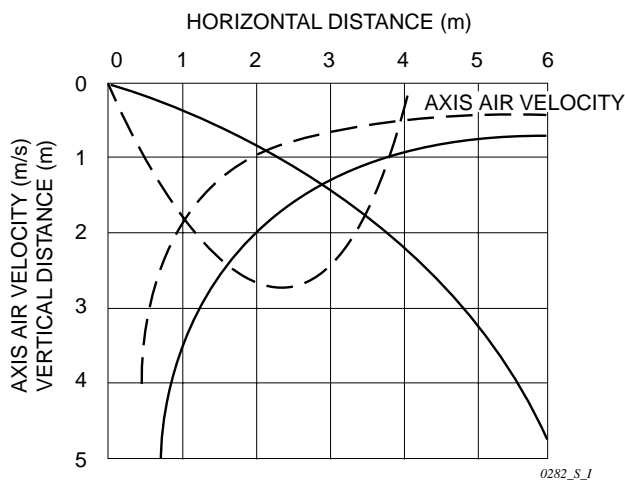
- REMARKS :**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

**NOTE** To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

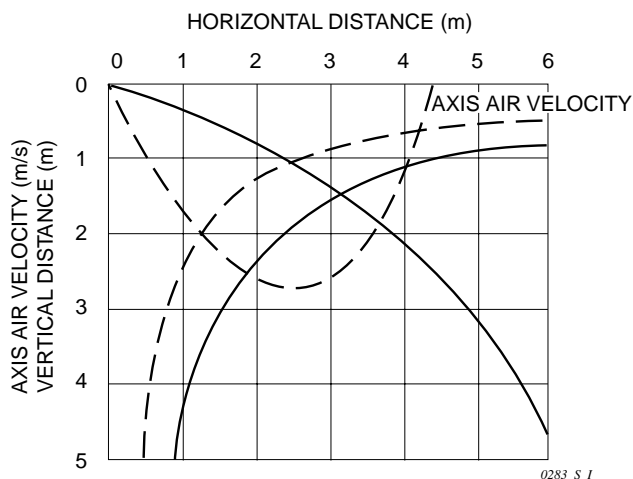
### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-5. Air throw distance chart

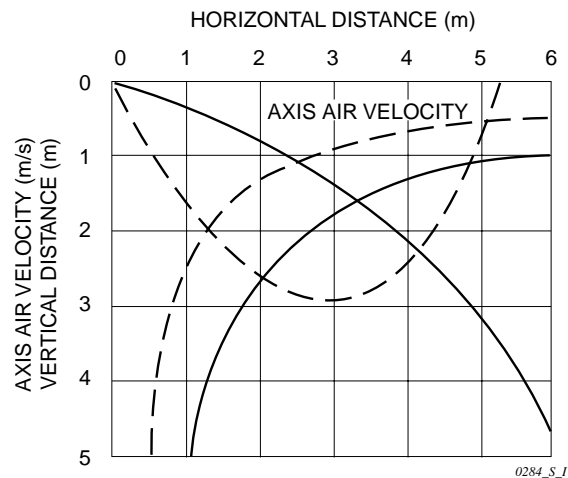
**Model: 9, 12 Type**



**Model: 18 Type**



**Model: 25 Type**



————— : LOUVER ANGLE 20° in Cooling mode  
 - - - - - : LOUVER ANGLE 60° in Heating mode  
 Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in cooling mode  
 20 °C DB in heating mode

# 4. 1-Way Air Discharge Semi-concealed Type

## 4-1. Specifications

### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-ASR93GH56 / SPW-AS93GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		2.8	3.2
	BTU / h		9,600	11,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	480 / 420 / 360	
Moisture removal (High)		Liters / h	1.1	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.36 - 0.37 - 0.38	0.28 - 0.29 - 0.30
Power input		W	65 - 70 - 75	50 - 55 - 60
Power factor		%	82 - 82 - 82	81 - 82 - 83
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	34 / 32 / 30	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter		Narrow tube mm (in.)	9.52 (3 / 8)	
		Wide tube mm (in.)	12.7 (1 / 2)	
Drain connection			25 A, OD32 mm	
Drain pump			Max. head 25 cm above drain connection	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b> (include ceiling panel)			Unit dimensions	Package dimensions
Dimensions		Height mm (in.)	370 (14 - 5 / 8)	485 (19 - 1 / 8)
		Width mm (in.)	810 (31 - 7 / 8)	918 (38 - 1 / 8)
		Depth mm (in.)	620 (24 - 3 / 8)	728 (28 - 5 / 8)
Net weight		kg (lbs.)	28 ( 62 )	
Shipping weight		kg (lbs.)	40 ( 88 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.324 ( 11.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

4

### 4. 1-Way Air Discharge Semi-concealed Type

#### Unit specifications (B)

MODEL No.	Indoor Unit		SPW-ASR123GH56 / SPW-AS123GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW BTU / h		3.6 12,000	4.2 14,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		580 / 520 / 450	
Moisture removal (High)	Liters / h		1.7	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		0.34 - 0.35 - 0.36	0.27 - 0.28 - 0.29
Power input	W		70 - 75 - 80	55 - 60 - 65
Power factor	%		93 - 93 - 93	93 - 93 - 93
Fan motor locked rotor amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max. 72 hr)			
Fan speeds (Indoor unit)	3 and Automatic control			
Air filter	Washable, easy access			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		38 / 35 / 31	
Refrigerant tubing connections	Flare type			
Refrigerant tube diameter	Narrow tube mm (in.)	9.52 (3 / 8)		
	Wide tube mm (in.)	12.7 (1 / 2)		
Drain connection	25 A, OD32 mm			
Drain pump	Max. head 25 cm above drain connection			
Remote Controller	Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories	Optional / —			
Color (Approximate value)	Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT (include ceiling panel)</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in.)	370 (14 - 5 / 8)	485 (19 - 1 / 8)
	Width	mm (in.)	810 (31 - 7 / 8)	918 (38 - 1 / 8)
	Depth	mm (in.)	620 (24 - 3 / 8)	728 (28 - 5 / 8)
Net weight	kg (lb.)		30 ( 66 )	
Shipping weight	kg (lb.)		42 ( 93 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.324 ( 11.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB



## 4. 1-Way Air Discharge Semi-concealed Type

### 4-2. Major component specifications

#### Indoor unit (A)

MODEL No.		SPW-ASR93GH56	SPW-AS93GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
Fan motor			
Model...Nominal output	W	UE6Q-21B3P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6P ... 696	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 290.0 WHT – VLT : 117.4 VLT – ORG : 39.32	ORG – YEL : 241.2 WHT – PNK : 45.74
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 0.6 μF	
Electronic expansion valve			
Coil		LAM-MDI2ST-1	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 48 , RED – GRY : 48 ,	YEL – GRY : 48 BLK – GRY : 48
Valve body		LAM-B30YPST-1	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 2.0	
Face area	m <sup>2</sup>	0.144	
Panel			
Model No.		PNR-AS123GH	
Drain Pump		WP20SL-14	
Rated	V, W	AC 230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

### 4. 1-Way Air Discharge Semi-concealed Type

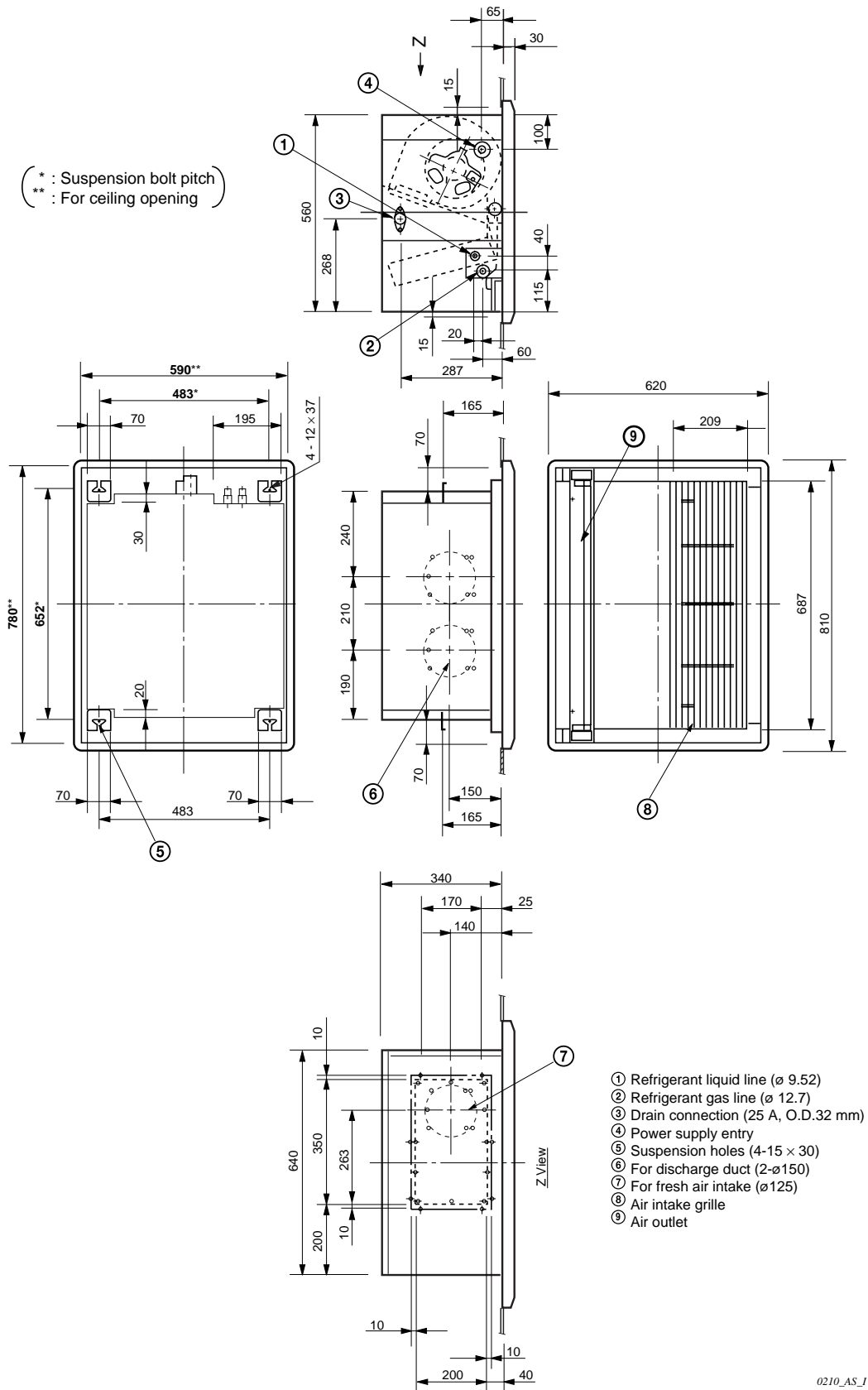
#### Indoor unit (B)

MODEL No.		SPW-ASR123GH56	SPW-AS123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
Fan motor			
Model...Nominal output	W	UE6Q-21B3P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6P ... 771	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 290.0 WHT – VLT : 117.4 VLT – ORG : 39.32	ORG – YEL : 241.2 WHT – PNK : 45.74
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
Electronic expansion valve			
Coil		LAM-MDI2ST-1	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 48 , RED – GRY : 48	YEL – GRY : 48 BLK – GRY : 48
Valve body		LAM-B30YPST-1	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.144	
Panel			
Model No.		PNR-AS123GH	
Drain Pump		WP20SL-14	
Rated	V, W	AC 230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

## 4. 1-Way Air Discharge Semi-concealed Type

### 4-3. Dimensional data

Indoor unit : 9, 12 Type



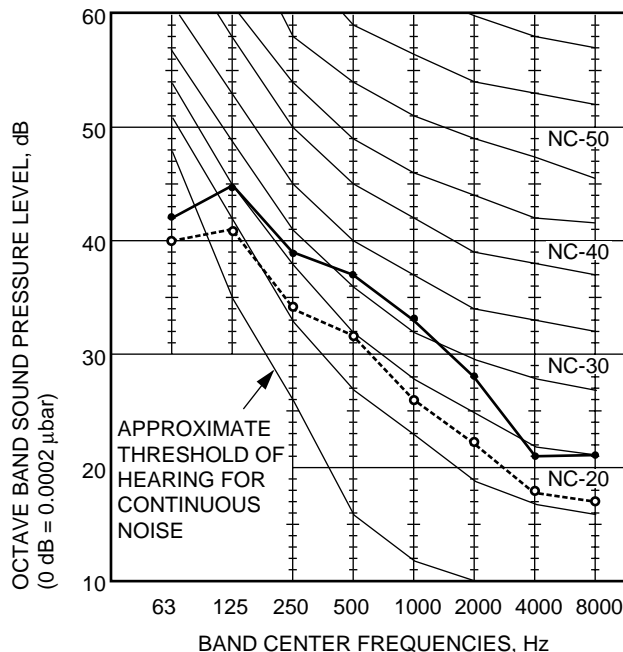
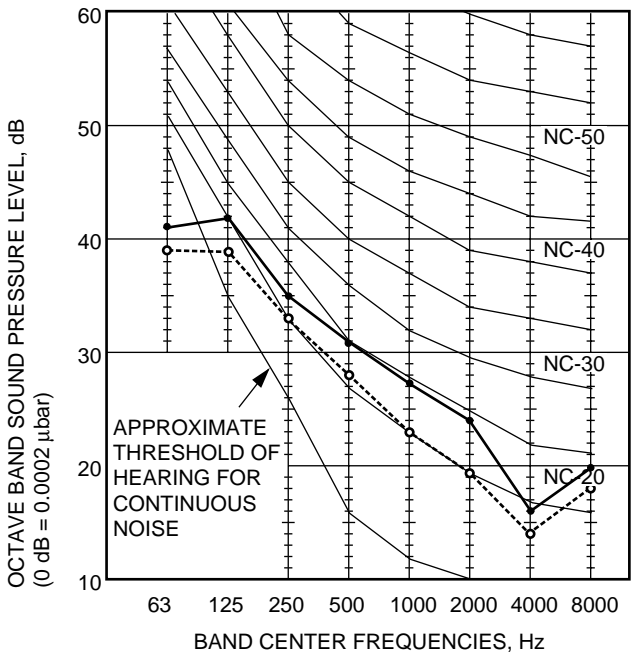
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## 4. 1-Way Air Discharge Semi-concealed Type

### 4-4. Noise criterion curves

MODEL	: SPW-ASR93GH56
	SPW-AS93GH56
SOUND LEVEL	: HIGH 34 dB(A), NC 25
	LOW 30 dB(A), NC 22
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL	: SPW-ASR123GH56
	SPW-AS123GH56
SOUND LEVEL	: HIGH 38 dB(A), NC 32
	LOW 31 dB(A), NC 25
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



- REMARKS :**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

**NOTE** To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

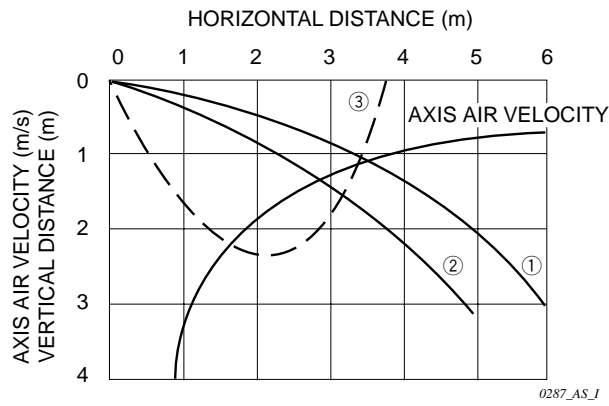




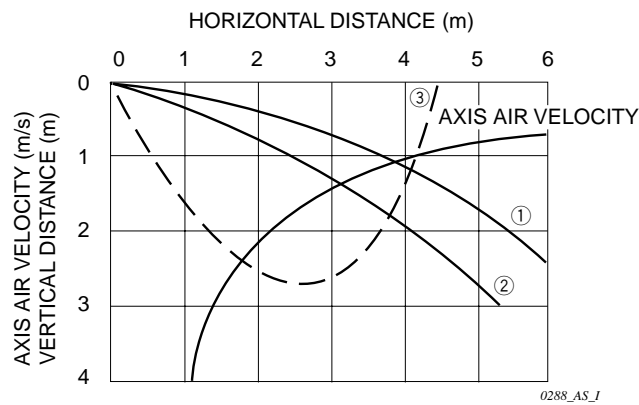
## 4. 1-Way Air Discharge Semi-concealed Type

### 4-5. Air throw distance chart

Model: 9 Type



Model: 12 Type



- ①: LOUVER ANGLE 10° in cooling mode
- ②: LOUVER ANGLE 20° in cooling mode
- ③: LOUVER ANGLE 60° in heating mode

Condition Fan Speed : Hi

Room air temp. : 27 °C DB in cooling mode  
20 °C DB in heating mode

## 5. Wall Mounted Type

### 5-1. Specifications

#### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-KR93GH56 / SPW-K93GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		2.8	3.2
	BTU / h		9,600	11,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		450 / 390 / 340	
Moisture removal (High)	Liters / h		1.3	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		0.22 - 0.22 - 0.23	0.22 - 0.22 - 0.23
Power input	W		47 - 50 - 54	47 - 50 - 54
Power factor	%		97 - 98 - 98	97 - 98 - 98
Fan motor locked rotor amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max. 72 hr)			
Fan speeds (Indoor unit)	3 and Automatic control			
Air filter	Washable, easy access			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		38 / 33 / 30	
Refrigerant tubing connections	Flare type			
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection	20 A, OD26 mm			
Remote Controller	Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories	Optional / Hanging wall bracket			
Color (Approximate value)	Munsell 3.0Y8.6 / 0.8, RAL 1013-GL			
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in)	360 (14 - 1 / 8)	282 (11 - 1 / 8)
	Width	mm (in)	1,000 (39 - 3 / 8)	1,080 (42 - 1 / 2)
	Depth	mm (in)	205 (8 - 1 / 16)	443 (17 - 1 / 2)
Net weight	kg (lb)		15 ( 33 )	
Shipping weight	kg (lb)		19 ( 42 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.135 ( 4.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 5. Wall Mounted Type

### Unit specifications (B)

MODEL No.	Indoor Unit		SPW-KR123GH56 / SPW-K123GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		3.6	4.2
	BTU / h		12,000	14,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	630 / 490 / 430	
Moisture removal (High)		Liters / h	1.6	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.24 - 0.24 - 0.25	0.24 - 0.24 - 0.25
Power input		W	51 - 54 - 59	51 - 54 - 59
Power factor		%	97 - 98 - 98	97 - 98 - 98
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	40 / 37 / 34	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection			20 A, OD26 mm	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket	
Color (Approximate value)			Munsell 3.0Y8.6 / 0.8, RAL 1013-GL	
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	360 (14 - 1 / 8)	282 (11 - 1 / 8)
	Width	mm (in)	1,000 (39 - 3 / 8)	1,080 (42 - 1 / 2)
	Depth	mm (in)	205 (8 - 1 / 16)	443 (17 - 1 / 2)
Net weight		kg (lb)	15 ( 33 )	
Shipping weight		kg (lb)	19 ( 42 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.135 ( 4.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 5. Wall Mounted Type

## Unit specifications (C)

MODEL No.	Indoor Unit		SPW-KR183GH56 / SPW-K183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.0	6.0
	BTU / h		17,000	20,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		800 / 660 / 520	
Moisture removal (High)	Liters / h		2.5	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		0.35 - 0.35 - 0.36	0.35 - 0.35 - 0.36
Power input	W		75 - 80 - 85	75 - 80 - 85
Power factor	%		97 - 97 - 98	97 - 97 - 98
Fan motor locked rotor amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)	dB-A		46 / 42 / 37	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection			20 A, OD26 mm	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket	
Color (Approximate value)			Munsell 3.0Y8.6 / 0.8, RAL 1013-GL	
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	360 (14 - 1 / 8)	282 (11 - 1 / 8)
	Width	mm (in)	1,000 (39 - 3 / 8)	1,080 (42 - 1 / 2)
	Depth	mm (in)	205 (8 - 1 / 16)	443 (17 - 1 / 2)
Net weight	kg (lb)		15 ( 33 )	
Shipping weight	kg (lb)		19 ( 42 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.135 ( 4.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 5. Wall Mounted Type

### 5-2. Major component specifications

#### Indoor unit (A)

MODEL No.		SPW-KR93GH56	SPW-K93GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 81 / L 610)	
Fan motor			
Model...Nominal output	W	UF2Q-21C5P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	2 ... 1,160	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 208.5 WHT – VLT : 84.20 VLT – ORG : 17.59	ORG – YEL : 72.32 YEL – PNK : 44.89
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 0.8 μF	
Electronic expansion valve			
Coil		LAM-MD12ST-1	
Coil resistance (at 20 °C)	Ω	ORG – RED : 48 , RED – WHT : 48 ,	YEL – BRN : 48 BRN – BLU : 48
Valve body		LAM-B30YPST-1	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.172	
Auto louver motor		M2LJ24ZE31	
Rated		AC 230 V-50 Hz	
No. of pole...r.p.m.	rpm.	8P – 2.5	
Nominal output		3	
Coil resistance (at 25 °C)	Ω	16,450 Ω ± 15 %	

## 5. Wall Mounted Type

## Indoor unit (B)

MODEL No.		SPW- KR123GH56	SPW- K123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 81 / L 610)	
<b>Fan motor</b>			
Model...Nominal output	W	UF2Q – 21C5P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	2 ... 1,280	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 208.5 WHT – VLT : 84.20 VLT – ORG : 17.59	ORG – YEL : 72.32 YEL – PNK : 44.89
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		LAM-MD12ST-1	
Coil resistance (at 20 °C)	Ω	ORG – RED : 48 , YEL – BRN : 48 RED – WHT : 48 , BRN – BLU : 48	
Valve body		LAM-B30YPST-1	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.172	
<b>Auto louver motor</b>			
Rated		AC 230 V – 50 Hz	
No. of pole...r.p.m.	rpm.	8P – 2.5	
Nominal output	W	3	
Coil resistance (at 25 °C)	Ω	16,450 Ω ± 15 %	

## 5. Wall Mounted Type

### Indoor unit (C)

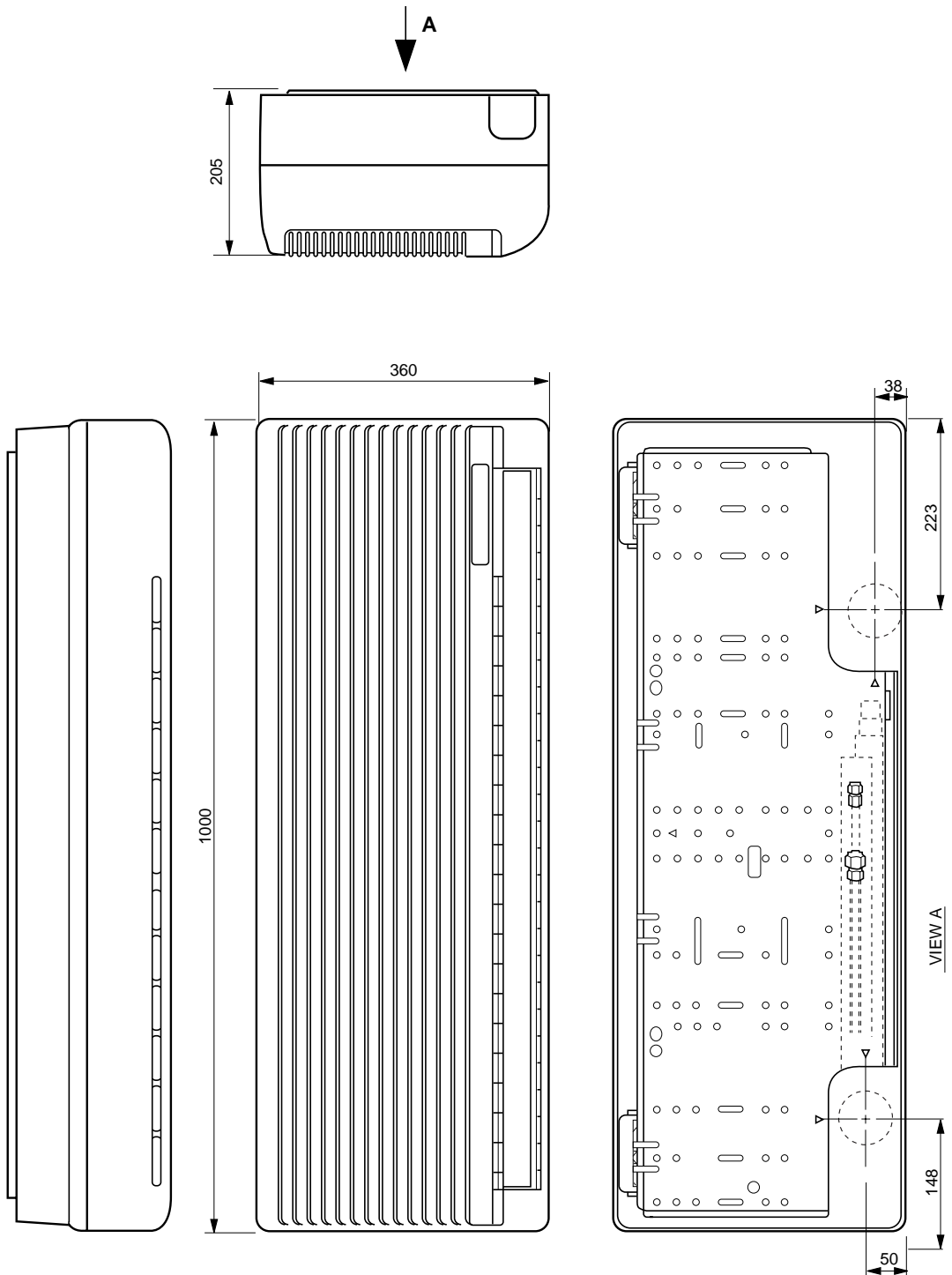
MODEL No.		SPW-KR183GH56	SPW-K183GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 81/L610)	
Fan motor			
Model...Nominal output	W	UF2Q-21B3P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	2 ... 1,810 rpm (at 220 V, 1,750 rpm)	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 137.4 WHT – VLT : 39.27 VLT – ORG : 12.81	ORG – YEL : 47.60 YEL – PNK : 17.81
Safety device			
Operating temperature	Open °C	148 ± 5	
	Close °C	—	
Run capacitor	VAC, μF	440 VAC, 2.5 μF	
Electronic expansion valve			
Coil		LAM-MD12ST-1	
Coil resistance (at 20 °C)	Ω	ORG – RED : 48 , RED – WHT : 48 ,	YEL – BRN : 48 BRN – BLU : 48
Valve body		LAM-B30YPST-1	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	2 ... 1.7
Face area	m <sup>2</sup>	0.172	
Auto louver motor		M2LJ24ZE31	
Rated		AC 230 V – 50 Hz	
No. of pole...r.p.m.	rpm.	8P – 2.5	
Nominal output		3	
Coil resistance (at 25 °C)	Ω	16,450 Ω ± 15%	

4

5. Wall Mounted Type

5-3. Dimensional data

Indoor unit : 9, 12, 18 Type



0289\_K\_1

TYPE OF COPPER TUBE

TUBE	OUTER DIAMETER	NOTES
NARROW	9.52 mm (3 / 8 inch)	9, 12, 18 type
WIDE	12.7 mm (1 / 2 inch)	9, 12 type
	15.88 mm (5 / 8 inch)	18 type

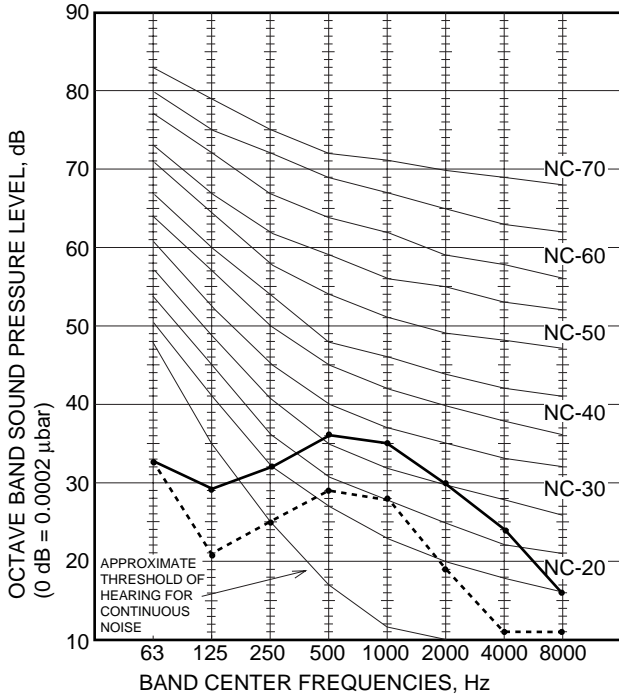




## 5. Wall Mounted Type

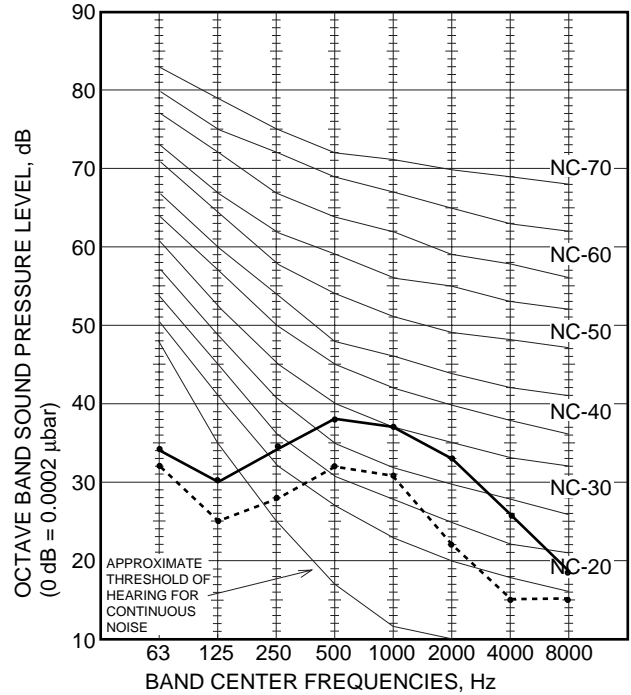
### 5-4. Noise criterion curves

MODEL	: SPW-KR93GH56 SPW-K93GH56
SOUND LEVEL	: HIGH 38 dB(A), NC 33 LOW 30 dB(A), NC 25
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



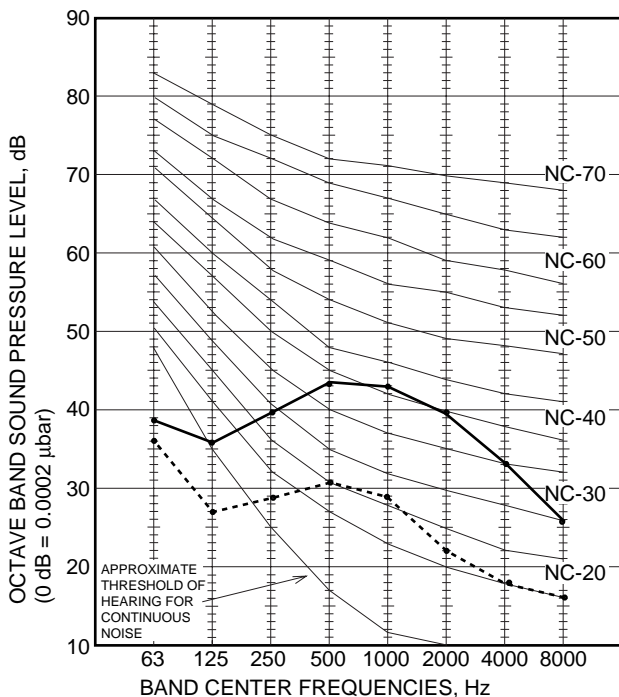
0290\_K\_1

MODEL	: SPW-KR123GH56 SPW-K123GH56
SOUND LEVEL	: HIGH 40 dB(A), NC 35 LOW 34 dB(A), NC 29
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0291\_K\_1

MODEL	: SPW-KR183GH56 SPW-K183GH56
SOUND LEVEL	: HIGH 46 dB(A), NC 41 LOW 37 dB(A), NC 32
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0292\_K\_1

- REMARKS:**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

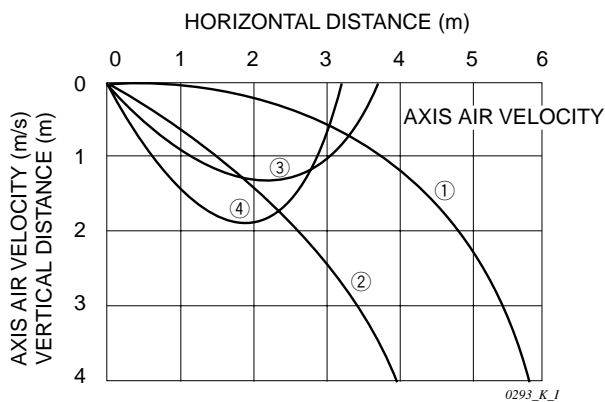
**NOTE** To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

4

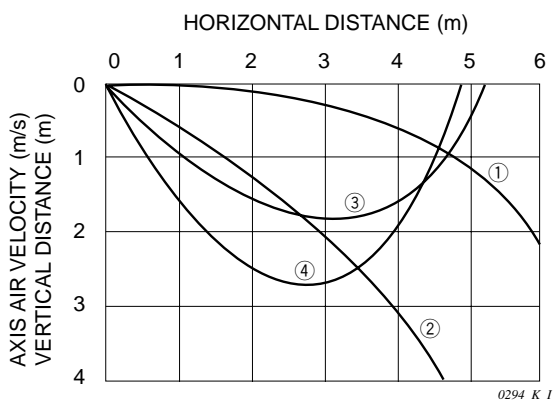
## 5. Wall Mounted Type

### 5-5. Air throw distance chart

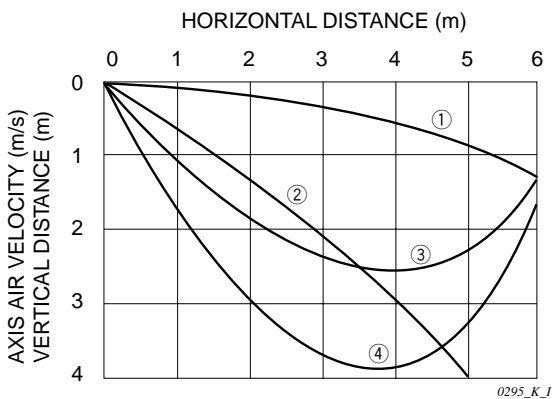
Model: 9 Type



Model: 12 Type



Model: 18 Type



Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in cooling mode  
 20 °C DB in heating mode

①: LOUVER ANGLE 0° in cooling mode  
 ②: LOUVER ANGLE 30° in cooling mode  
 ③: LOUVER ANGLE 45° in heating mode  
 ④: LOUVER ANGLE 60° in heating mode

4

## 6. Ceiling Mounted Type

### 6-1. Specifications

#### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-TR183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.6	6.3
	BTU / h		19,000	21,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		780 / 660 / 540	
Moisture removal (High)	Liters / h		2.8	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		0.40 - 0.40 - 0.40	0.30 - 0.30 - 0.31
Power input	W		84 - 88 - 93	64 - 68 - 73
Power factor	%		95 - 96 - 97	97 - 99 - 98
Fan motor locked rotor amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max. 72 hr)			
Fan speeds (Indoor unit)	3 and Automatic control			
Air filter	Washable, easy access, long life (2,500 hr)			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		36 / 33 / 30	
Refrigerant tubing connections	Flare type			
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection	20 A, OD26 mm			
Remote Controller	Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories	Optional / —			
Color (Approximate value)	Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in)	190 ( 7 - 15 / 32)	266 ( 10 - 15 / 32)
	Width	mm (in)	1,080 ( 42 - 17 / 32)	1,183 ( 46 - 9 / 16)
	Depth	mm (in)	670 ( 26 - 3 / 8)	789 ( 31 - 1 / 16)
Net weight	kg (lb)		23 ( 51 )	
Shipping weight	kg (lb)		28 ( 62 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.248 ( 8.76 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 6. Ceiling Mounted Type

## Unit specifications (B)

MODEL No.	Indoor Unit		SPW-TR253GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		7.3	8.0
	BTU / h		25,000	27,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,080 / 960 / 840	
Moisture removal (High)		Liters / h	3.5	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.43 - 0.43 - 0.43	0.33 - 0.34 - 0.34
Power input		W	90 - 95 - 100	70 - 75 - 80
Power factor		%	95 - 96 - 97	96 - 96 - 98
Fan motor locked rotor amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	39 / 37 / 34	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)*	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection			20 A, OD26 mm	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	190 ( 7 - 15 / 32)	266 (10 - 15 / 32)
	Width	mm (in)	1,300 (51 - 3 / 16)	1,403 (55 - 1 / 4)
	Depth	mm (in)	670 (26 - 3 / 8)	789 (31 - 1 / 16)
Net weight		kg (lb)	26 ( 57 )	
Shipping weight		kg (lb)	32 ( 71 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.294 ( 10.4 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

\* Use the "Tube connector" (accessory part with unit).

## 6. Ceiling Mounted Type

### Unit specifications (C)

MODEL No.	Indoor Unit		SPW-TR363GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		10.6	11.4
	BTU / h		36,000	39,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,680 / 1,410 / 1,200	
Moisture removal (High)		Liters / h	4.7	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes		A	0.95 - 0.96 - 0.98	0.86 - 0.88 - 0.90
Power input		W	200 - 210 - 220	180 - 190 - 200
Power factor		%	96 - 95 - 94	95 - 94 - 93
Fan motor locked rotor amperes		A	2 - 2 - 2	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	42 / 40 / 35	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter		Narrow tube mm (in)	9.52 (3 / 8)	
		Wide tube mm (in)	19.05 (3 / 4)	
Drain connection			20 A, OD26 mm	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in)	240 ( 9 - 7 / 16)	317 ( 12 - 15 / 32)
	Width	mm (in)	1,575 ( 62 )	1,678 ( 66 - 1 / 16)
	Depth	mm (in)	670 ( 26 - 3 / 8)	789 ( 31 - 1 / 16)
Net weight		kg (lb)	38 ( 84 )	
Shipping weight		kg (lb)	44 ( 97 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.42 ( 14.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 6. Ceiling Mounted Type

## Unit specifications (D)

MODEL No.	Indoor Unit		SPW-TR483GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		14.0	16.0
	BTU / h		47,800	54,600
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,920 / 1,680 / 1,320	
Moisture removal (High)		Liters / h	7.0	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes		A	0.95 - 0.96 - 0.98	0.86 - 0.88 - 0.90
Power input		W	200 - 210 - 220	180 - 190 - 200
Power factor		%	96 - 95 - 94	95 - 94 - 93
Fan motor locked rotor amperes		A	2 - 2 - 2	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max. 72 hr)	
Fan speeds (Indoor unit)			3 and Automatic control	
Air filter			Washable, easy access, long life (2,500 hr)	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	44 / 41 / 37	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter		Narrow tube mm (in)	9.52 (3 / 8)	
		Wide tube mm (in)	19.05 (3 / 4)	
Drain connection			20 A, OD26 mm	
Remote Controller			Optional (RCS-SH80TG)	
Refrigerant tubing kit / Accessories			Optional / —	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in)	240 ( 9 - 7 / 16)	317 ( 12 - 15 / 32)
	Width	mm (in)	1,575 ( 62 )	1,678 ( 66 - 1 / 16)
	Depth	mm (in)	670 ( 26 - 3 / 8)	789 ( 31 - 1 / 16)
Net weight		kg (lb)	38 ( 84 )	
Shipping weight		kg (lb)	44 ( 97 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.42 ( 14.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 6. Ceiling Mounted Type

### 6-2. Major component specifications

#### Indoor unit (A)

<b>MODEL No.</b>		SPW-TR183GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50 Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3 ... ø 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X-31A3P ... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,077	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 191.0      ORG – YEL : 40.0 WHT – VLT : 47.1      YEL – BLK : 96.5 VLT – ORG : 40.0      BLK – PNK : 44.7	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV - MOZS582E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.5	
Face area	m <sup>2</sup>	0.138	
<b>Auto louver motor</b>			
Auto louver motor...Rated	VAC, Hz, W, rpm.	220 – 240 VAC, 50 Hz, 3 W, 3.3 rpm.	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	

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## 6. Ceiling Mounted Type

## Indoor unit (B)

<b>MODEL No.</b>		SPW-TR253GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50 Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4 ... ø 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X-51A6P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,172	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 111.0      ORG – YEL : 16.7 WHT – VLT : 35.4      YEL – BLK : 136.6 VLT – ORG : 13.4      BLK – PNK : 23.9	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV - MOZS582E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.5	
Face area	m <sup>2</sup>	0.168	
<b>Auto louver motor</b>			
Auto louver motor...Rated	VAC, Hz, W, rpm.	220 – 240 VAC, 50 Hz, 3 W, 3.3 rpm.	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	



## 6. Ceiling Mounted Type

### Indoor unit (C)

<b>MODEL No.</b>		SPW-TR363GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50 Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4 ... ø 150)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-101C6P...100 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4...1,015	
Coil resistance (Ambient temperature 20 °C)	Ω	BRN – WHT : 61.05      ORG – YEL : 13.23 WHT – VLT : 9.955      YEL – BLK : 19.25 VLT – ORG : 9.576      BLK – PNK : 10.81	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 4.0 μF	
<b>Electronic expansion valve</b>			
Coil		EKV - MOZS584E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		HKV - 30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.5	
Face area	m <sup>2</sup>	0.326	
<b>Auto louver motor</b>			
Auto louver motor...Rated	VAC, Hz, W, rpm.	220 – 240 VAC, 50 Hz, 3 W, 3.3 rpm.	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	

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## 6. Ceiling Mounted Type

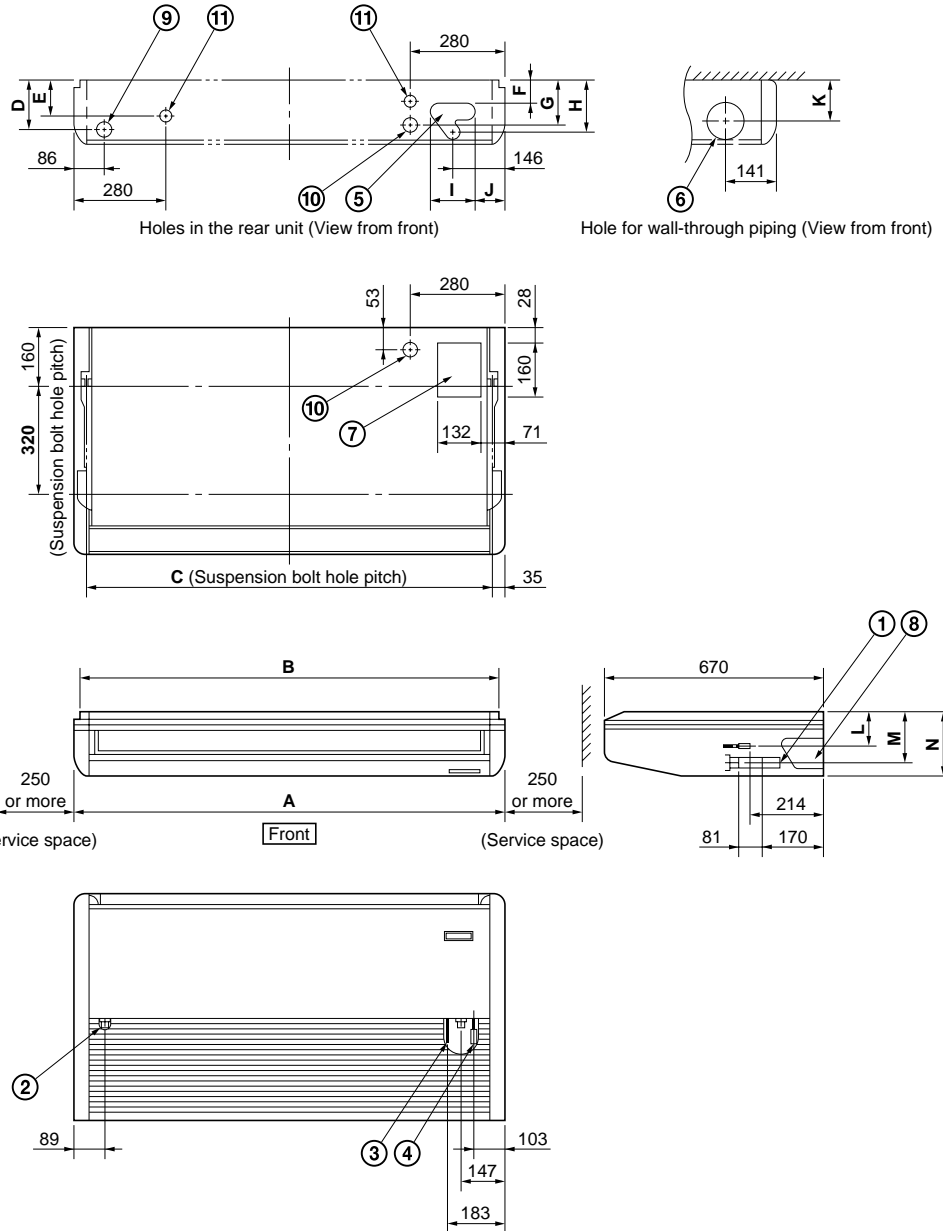
## Indoor unit (D)

<b>MODEL No.</b>		SPW-TR483GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4...ø150)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-101C6P...100 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4...1,070	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 61.05      ORG – YEL : 13.23 WHT – VLT : 9.955      YEL – BLK : 19.25 VLT – ORG : 9.576      BLK – PNK : 10.81	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	( 79 ± 15 )	
Run capacitor	VAC, μF	440 VAC, 5.0 μF	
<b>Electronic expansion valve</b>			
Coil		EKV - MOZS584E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		HKV - 30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.326	
<b>Auto louver motor</b>			
Auto louver motor...Rated	VAC, Hz, W, rpm.	220 – 240 VAC, 50Hz, 3 W, 3.3 rpm.	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8 %	

## 6. Ceiling Mounted Type

### 6-3. Dimensional data

Indoor unit : 18, 25, 36, 48 Type



Dimension : mm

- ① Drain connection
- ② Drain connection for left side
- ③ Refrigerant liquid line (ø9.52)
- ④ Refrigerant gas line (18, 25 type: ø15.88 / 36, 48 type: ø19.05)
- ⑤ Hole for rear side refrigerant tubing
- ⑥ Hole for through-the-wall refrigerant tubing (ø100 hole)
- ⑦ Hole for upper side refrigerant tubing (Knockout hole)
- ⑧ Hole for right side refrigerant tubing (Knockout hole)
- ⑨ Hole for left side drain connection (Knockout hole)
- ⑩ Hole for power supply cord (Knockout hole ø40)
- ⑪ Hole for remote controller wiring

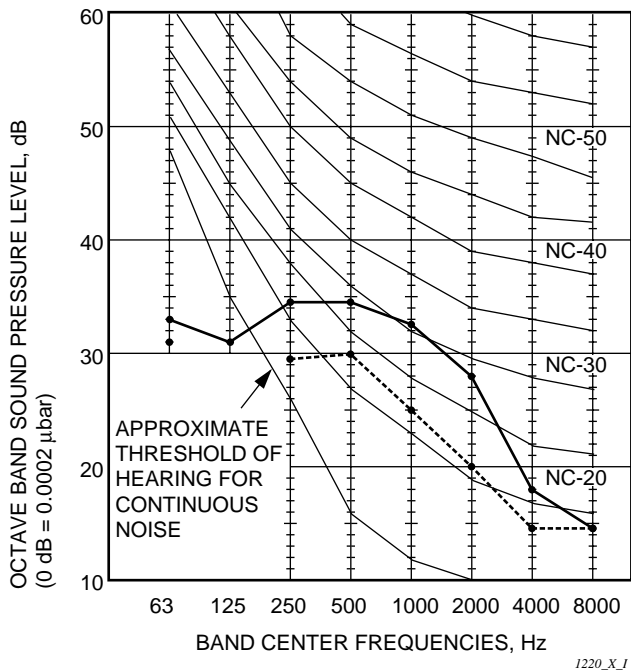
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
18 type	1,080	1,060	1,010	147	101	64	134	147	116	83	120	95	147	190
25 type	1,300	1,280	1,230											
36, 48 type	1,575	1,555	1,505											

1394\_X\_S

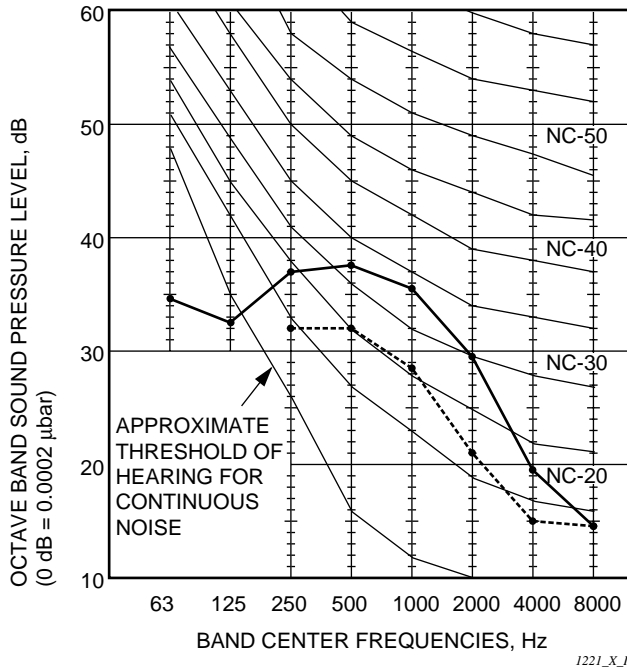
## 6. Ceiling Mounted Type

### 6-4. Noise criterion curves

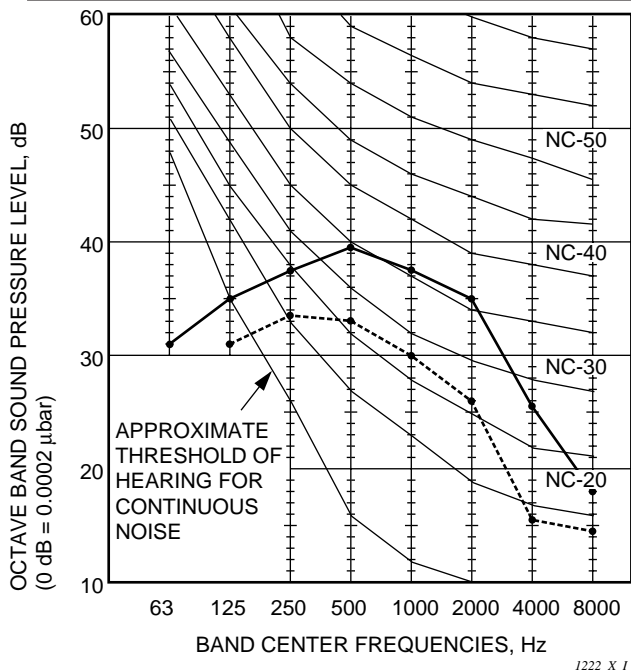
MODEL	: SPW-TR183GH56
SOUND LEVEL	: HIGH 36 dB(A), NC 31 LOW 30 dB(A), NC 23
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



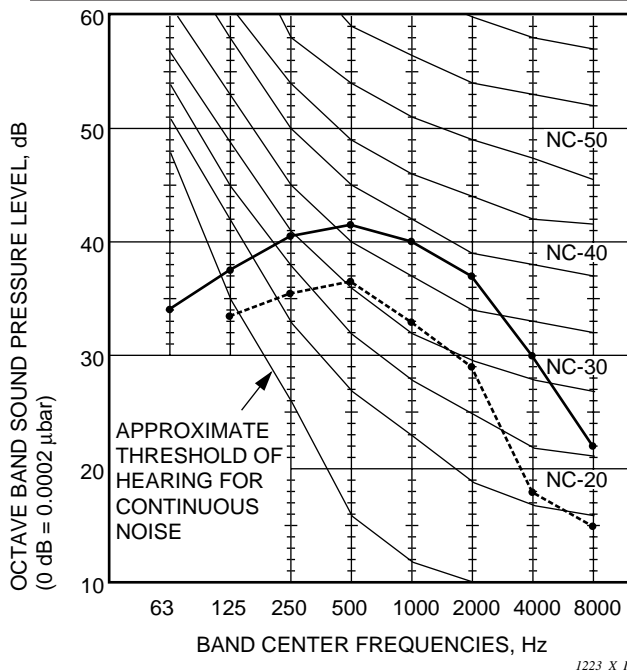
MODEL	: SPW-TR253GH56
SOUND LEVEL	: HIGH 39 dB(A), NC 34 LOW 34 dB(A), NC 26
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: SPW-TR363GH56
SOUND LEVEL	: HIGH 42 dB(A), NC 36 LOW 35 dB(A), NC 28
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



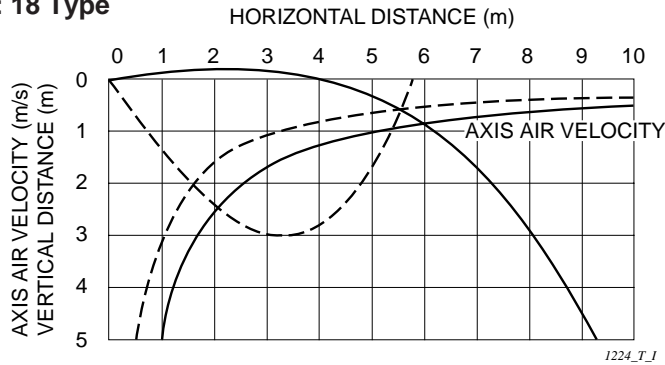
MODEL	: SPW-TR483GH56
SOUND LEVEL	: HIGH 44 dB(A), NC 38 LOW 37 dB(A), NC 31
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



## 6. Ceiling Mounted Type

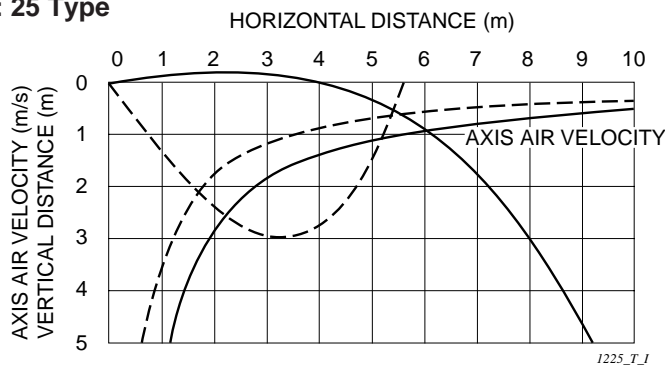
### 6-5. Air throw distance chart

Model: 18 Type



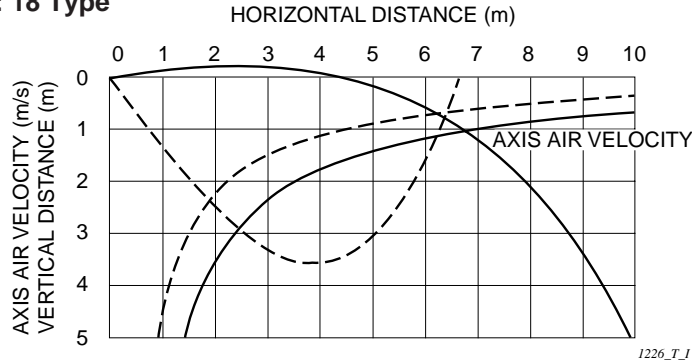
1224\_T\_I

Model: 25 Type



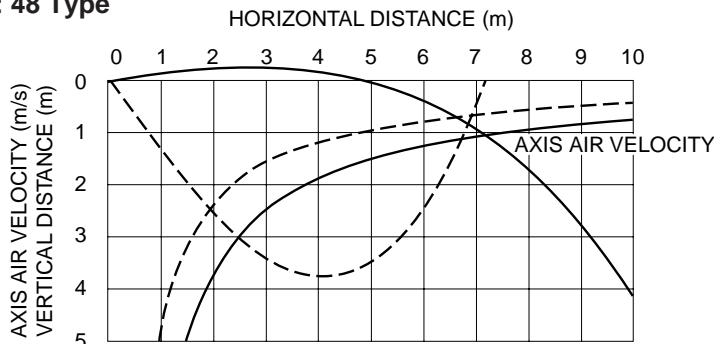
1225\_T\_I

Model: 18 Type



1226\_T\_I

Model: 48 Type



	COOLING	HEATING
FAN SPEED	HIGH	HIGH
ROOM AIR TEMP.	27°	20°
LOUVER ANGLE	-7°	54°

————— : COOLING

- - - - - : HEATING

1227\_T\_I

## 7. Concealed Duct Type

### 7-1. Specifications

#### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-UR93GHN56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity for Multi system (R22 and R407C)	kW		2.8			3.2		
	BTU / h		9,600			11,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	600 / 510 / 420					
Moisture removal (High)		Liters / h	1.1			—		
External static pressure (High)		Pa (mmAq)	49 (5): at shipment, 69 (7): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	220	230	240	220	230	240
Available voltage range		VAC	198 - 264					
Running amperes*		A	0.45	0.46	0.47	0.4	0.41	0.42
Power input		W	94	100	106	82	88	94
Power factor		%	94.9	94.5	94	93.2	93.3	93.3
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72 hr					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	29 / 26 / 22					
using the booster cable (Hi / Me / Lo)			32 / 29 / 26					
Refrigerant tubing connections			Flare type					
Refrigerant tube outer diameter		Narrow tube mm (in)	9.52 (3 / 8)					
		Wide tube mm (in)	12.7 (1 / 2)					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)					
Remote controller (Option)			Optional (RCS-SH80TG)					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions		Height mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
		Width mm (in)	700 (27 - 18 / 32)			891 (35 - 3 / 32)		
		Depth mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight		kg (lb)	24 ( 53 )					
Shipping weight		kg (lb)	28 ( 62 )					
Shipping volume		m <sup>3</sup> (cu. ft)	0.25 ( 8.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 7. Concealed Duct Type

## Unit specifications (B)

MODEL No.	Indoor Unit		SPW-UR123GHN56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity for Multi system (R22 and R407C)	kW		3.6			4.2		
	BTU / h		12,000			14,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	600 / 510 / 420					
Moisture removal (High)		Liters / h	1.8			—		
External static pressure (High)		Pa (mmAq)	49 (5): at shipment, 69 (7): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	220	230	240	220	230	240
Available voltage range		VAC	198 - 264					
Running amperes*		A	0.45	0.46	0.47	0.4	0.41	0.42
Power input		W	94	100	106	82	88	94
Power factor		%	94.9	94.5	94	93.2	93.3	93.3
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72 hr					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	29 / 26 / 22					
using the booster cable (Hi / Me / Lo)			32 / 29 / 26					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter		Narrow tube mm (in)	9.52 (3 / 8)					
		Wide tube mm (in)	12.7 (1 / 2)					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)					
Remote controller (Option)			Optional (RCS-SH80TG)					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions		Height mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
		Width mm (in)	700 (27 - 18 / 32)			891 (35 - 3 / 32)		
		Depth mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight		kg (lb)	24 ( 53 )					
Shipping weight		kg (lb)	28 ( 62 )					
Shipping volume		m <sup>3</sup> (cu. ft)	0.25 ( 8.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 7. Concealed Duct Type

## Unit specifications (C)

MODEL No.	Indoor Unit		SPW-UR183GHN56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity for Multi system (R22 and R407C)	kW		5.6			6.3		
	BTU / h		19,000			21,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	720 / 630 / 540					
Moisture removal (High)		Liters / h	3.0			—		
External static pressure (High)		Pa (mmAq)	40 (4.1): at shipment, 62 (6.3): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		220	230	240	220	230	240
Available voltage range	VAC		198 - 264					
Running amperes*	A		0.44	0.45	0.46	0.39	0.4	0.41
Power input	W		96	102	109	84	90	97
Power factor	%		99.2	98.6	98.7	97.9	97.8	98.6
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72 hr					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	30 / 28 / 25					
using the booster cable (Hi / Me / Lo)		dB-A	33 / 30 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)					
	Wide tube	mm (in)	15.88 (5 / 8)					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)					
Remote controller (Option)			Optional (RCS-SH80TG)					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
	Width	mm (in)	700 (27 - 18 / 32)			891 (35 - 3 / 32)		
	Depth	mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight	kg (lb)		25 ( 55 )					
Shipping weight	kg (lb)		29 ( 64 )					
Shipping volume	m <sup>3</sup> (cu. ft)		0.25 ( 8.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (\*) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (\*) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB



## 7. Concealed Duct Type

## Unit specifications (D)

MODEL No.	Indoor Unit		SPW-UR253GHN56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity for Multi system (R22 and R407C)	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,080 / 900 / 780					
Moisture removal (High)		Liters / h	3.5			—		
External static pressure (High)		Pa (mmAq)	50 (5.1): at shipment, 92 (9.4): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		220	230	240	220	230	240
Available voltage range	VAC		198 - 264					
Running amperes*	A		0.83	0.86	0.89	0.78	0.81	0.84
Power input	W		180	195	210	168	183	198
Power factor	%		98.6	98.6	98.3	97.9	98.2	98.2
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72 hr					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	34 / 30 / 27					
using the booster cable (Hi / Me / Lo)		dB-A	38 / 34 / 30					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)					
	Wide tube	mm (in)	15.88 (5 / 8)					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)					
Remote controller (Option)			Optional (RCS-SH80TG)					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
	Width	mm (in)	1,000 (39 - 12 / 32)			1,191 (46 - 28 / 32)		
	Depth	mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight	kg (lb)		32 ( 71 )					
Shipping weight	kg (lb)		37 ( 82 )					
Shipping volume	m <sup>3</sup> (cu. ft)		0.334 ( 11.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 7. Concealed Duct Type

## Unit specifications (E)

MODEL No.	Indoor Unit		SPW-UR363GHN56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity for Multi system (R22 and R407C)	kW		10.6			11.4		
	BTU / h		36,000			39,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,800 / 1,560 / 1,260					
Moisture removal (High)		Liters / h	4.2			—		
External static pressure (High)		Pa (mmAq)	79 (8.1): at shipment, 122 (12.4): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		220	230	240	220	230	240
Available voltage range	VAC		198 - 264					
Running amperes*	A		1.44	1.45	1.46	1.39	1.4	1.41
Power input	W		312	327	342	300	315	330
Power factor	%		98.5	98.1	97.6	98.1	97.8	97.5
Max. starting amperes	A		2	2	2	2	2	2
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72 hr					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	38 / 33 / 31					
using the booster cable (Hi / Me / Lo)		dB-A	42 / 38 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)					
	Wide tube	mm (in)	19.05 (3 / 4)					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)					
Remote controller (Option)			Optional (RCS-SH80TG)					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Dimensions	Height	mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
	Width	mm (in)	1,480 (58 - 9 / 32)			1,671 (65 - 25 / 32)		
	Depth	mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight	kg (lb)		47 ( 104 )					
Shipping weight	kg (lb)		52 ( 115 )					
Shipping volume	m <sup>3</sup> (cu. ft)		0.468 ( 16.5 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 7. Concealed Duct Type

## Unit specifications (F)

MODEL No.	Indoor Unit		SPW-UR483GHN56						
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz						
<b>PERFORMANCE</b>			Cooling			Heating			
Capacity for Multi system (R22 and R407C)	kW		14.0			16.0			
	BTU / h		47,800			54,600			
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,980 / 1,800 / 1,500						
Moisture removal (High)		Liters / h	6.6			—			
External static pressure (High)		Pa (mmAq)	78 (8.0): at shipment, 113 (11.5): using the booster cable						
<b>ELECTRICAL RATINGS</b>									
Voltage rating		VAC	220	230	240	220	230	240	
Available voltage range		VAC	198 - 264						
Running amperes*		A	1.42	1.43	1.44	1.36	1.37	1.38	
Power input		W	308	325	341	296	313	329	
Power factor		%	98.6	98.8	98.7	98.9	99.3	99.3	
Max. starting amperes		A	2	2	2	2	2	2	
<b>FEATURES</b>									
Controls / Thermostat control			Microprocessor / I.C. thermostat						
Timer			ON / OFF Timer 72 hr						
Fan speeds			3 and Automatic control						
Air filter			Field supply						
Refrigerant control			Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A	40 / 37 / 33						
using the booster cable (Hi / Me / Lo)		dB-A	44 / 40 / 37						
Refrigerant tubing connections			Flare type						
Refrigerant tube diameter		Narrow tube mm (in)	9.52 (3 / 8)						
		Wide tube mm (in)	19.05 (3 / 4)						
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32mm)						
Remote controller (Option)			Optional (RCS-SH80TG)						
Color (Approximate value)			—						
<b>DIMENSIONS &amp; WEIGHT</b>									
Dimensions		Height	mm (in)	310 (12 - 7 / 32)			358 (14 - 3 / 32)		
		Width	mm (in)	1,480 (58 - 9 / 32)			1,671 (65 - 25 / 32)		
		Depth	mm (in)	630 (24 - 26 / 32)			783 (30 - 26 / 32)		
Net weight		kg (lb)		47 ( 104 )					
Shipping weight		kg (lb)		52 ( 115 )					
Shipping volume		m <sup>3</sup> (cu. ft)		0.468 ( 16.5 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 7. Concealed Duct Type

## 7-2. Major component specifications

## Indoor unit (A)

<b>MODEL No.</b>		SPW-UR93GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 76.88      ORG – YEL : 14.42 WHT – VLT : 12.66      YEL – BLK : 26.76 VLT – ORG : 21.01      BLK – PNK : 25.17	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS697E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.7	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>		PJV-1,422	
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	

## 7. Concealed Duct Type

## Indoor unit (B)

<b>MODEL No.</b>		SPW-UR123GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,009	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 76.88      ORG – YEL : 14.42 WHT – VLT : 12.88      YEL – BLK : 26.76 VLT – ORG : 21.01      BLK – PNK : 25.17	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS697E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.7	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>		PJV-1,422	
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	

## 7. Concealed Duct Type

## Indoor unit (C)

<b>MODEL No.</b>		SPW-UR183GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,191	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 76.88      ORG – YEL : 14.42 WHT – VLT : 12.66      YEL – BLK : 26.76 VLT – ORG : 21.01      BLK – PNK : 25.17	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS697E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.7	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>			
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	

## 7. Concealed Duct Type

## Indoor unit (D)

<b>MODEL No.</b>		SPW-UR253GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (2 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-71B5P ... 70 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,063	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 74.72      ORG – YEL : 9.588 WHT – VLT : 19.14      YEL – BLK : 10.52 VLT – ORG : 10.52      BLK – PNK : 21.72	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS697E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.7	
Face area	m <sup>2</sup>	0.189	
<b>Drain pump</b>			
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	

## 7. Concealed Duct Type

## Indoor unit (E)

<b>MODEL No.</b>		SPW-UR363GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-141A5P...160 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,207	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 25.79 WHT – VLT : 5.086 VLT – ORG : 8.626 ORG – YEL : 5.792 YEL – BLK : 6.746 PNK – VLT : 6.361	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 8 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS698E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.308	
<b>Drain pump</b>			
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	



## 7. Concealed Duct Type

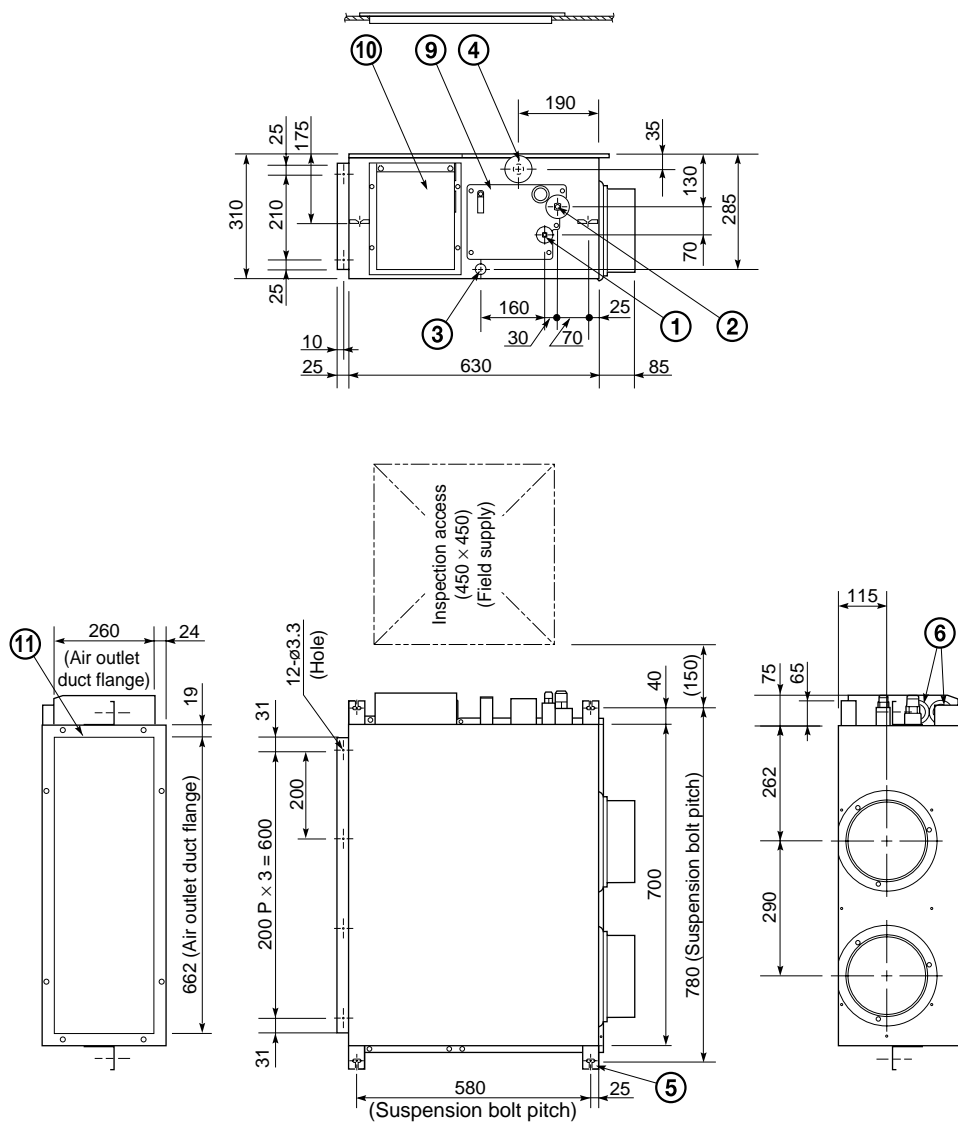
## Indoor unit (F)

<b>MODEL No.</b>		SPW-UR483GHN56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-141A5P...160 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,207	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 25.79 WHT – VLT : 5.086 VLT – ORG : 8.626 ORG – YEL : 5.792 YEL – BLK : 6.746 ORG – VLT : 6.361	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 8 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS698E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.308	
<b>Drain pump</b>			
Rated	V, W	AC 230 V, 50 Hz, 12 W	
Total head (from drain outlet) & capacity		500 mm, 400 cc/min	

## 7. Concealed Duct Type

### 7-3. Dimensional data

Indoor unit : 9, 12, 18 Type



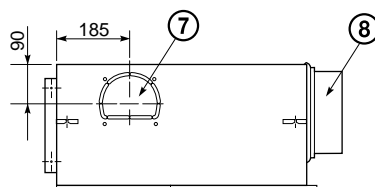
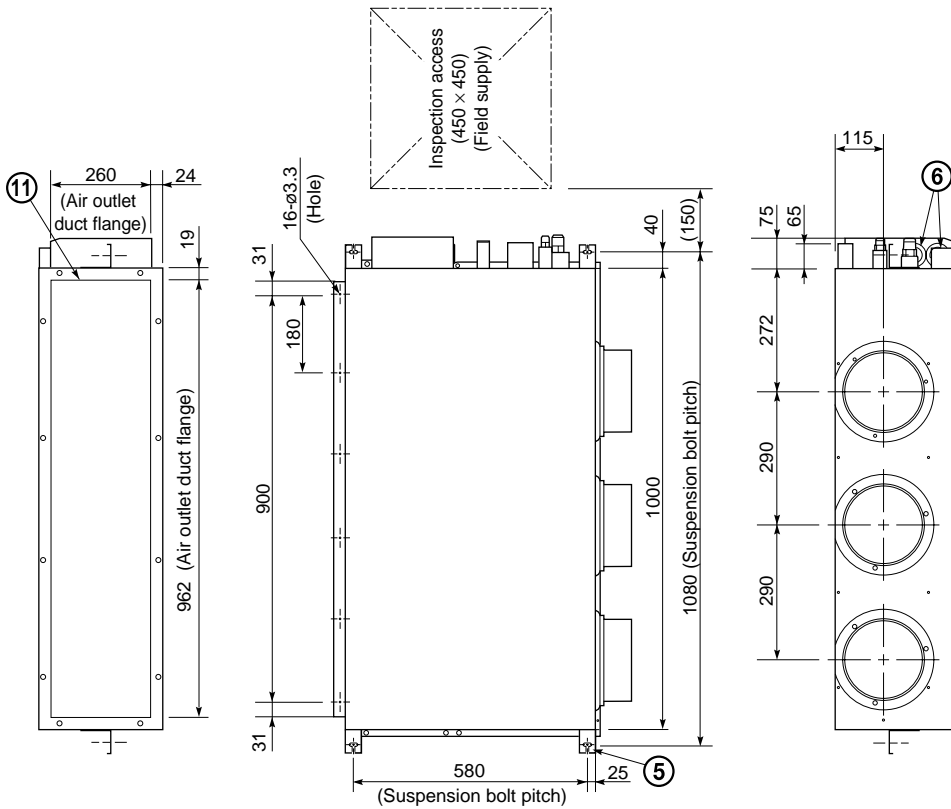
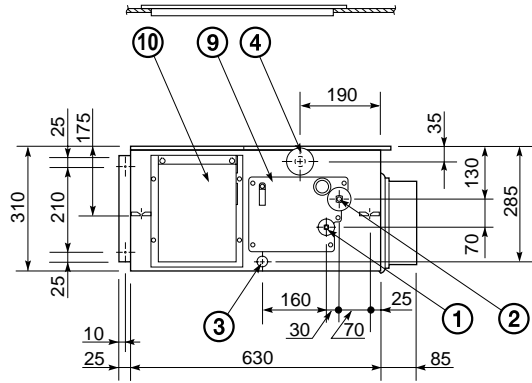
- ① Refrigerant liquid line  $\phi 9.52$  (narrow tube)
- ② Refrigerant gas line 9.12:  $\phi 12.7$ , 18:  $\phi 15.88$  (wide tube)
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2- $\phi 30$ )
- ⑦ Fresh air intake port ( $\phi 150$ )
- ⑧ Flange for the flexible air outlet duct ( $\phi 200$ )
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct (Option or field supply)

1730\_U\_1



### 7. Concealed Duct Type

#### Indoor unit: 25 Type

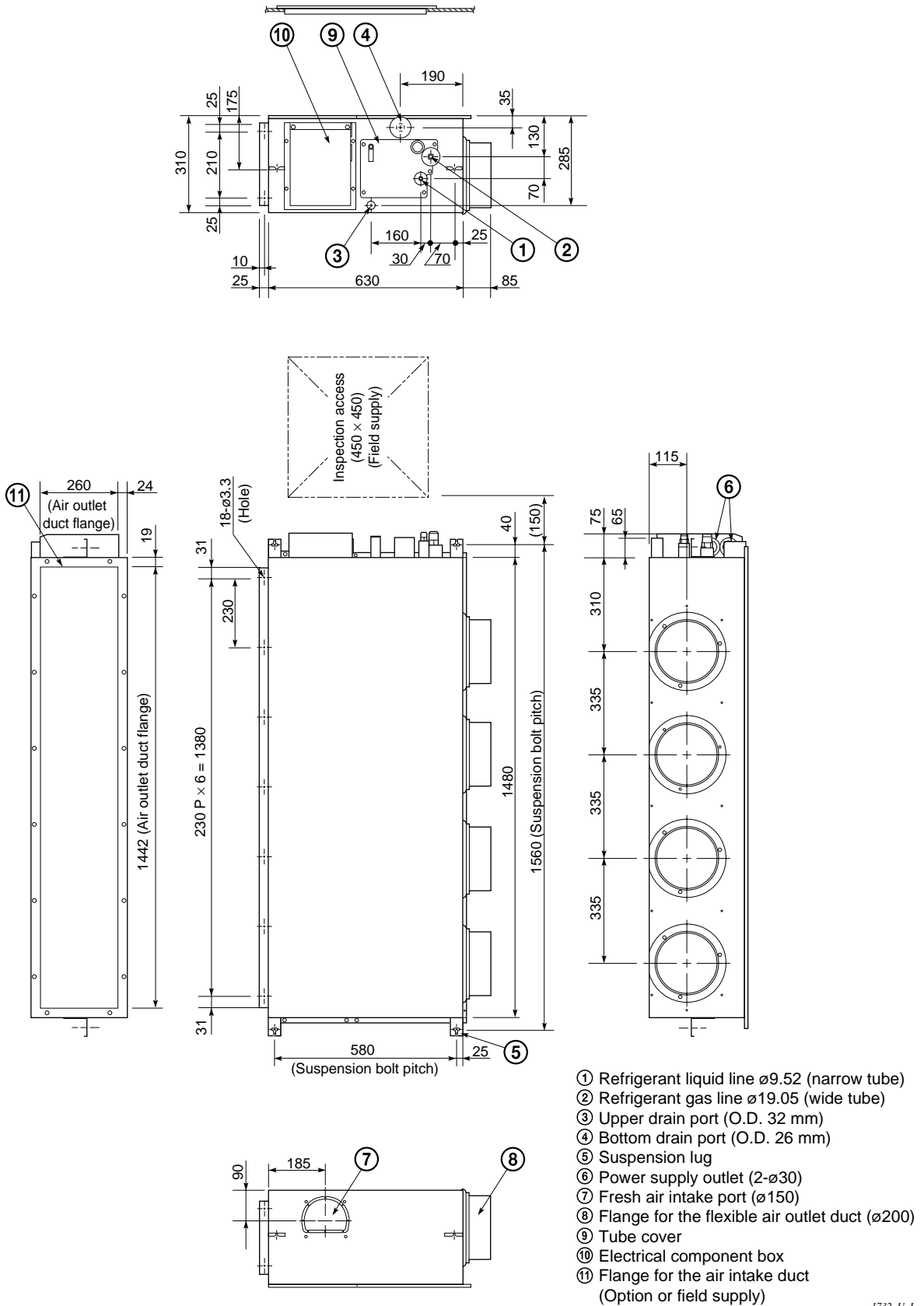


- ① Refrigerant liquid line  $\varnothing 9.52$  (narrow tube)  
(Use the tube connector)
- ② Refrigerant gas line  $\varnothing 15.88$  (wide tube)
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2- $\varnothing 30$ )
- ⑦ Fresh air intake port ( $\varnothing 150$ )
- ⑧ Flange for the flexible air outlet duct ( $\varnothing 200$ )
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct  
(Option or field supply)

1731\_U\_1

7. Concealed Duct Type

Indoor unit: 36, 48 Type

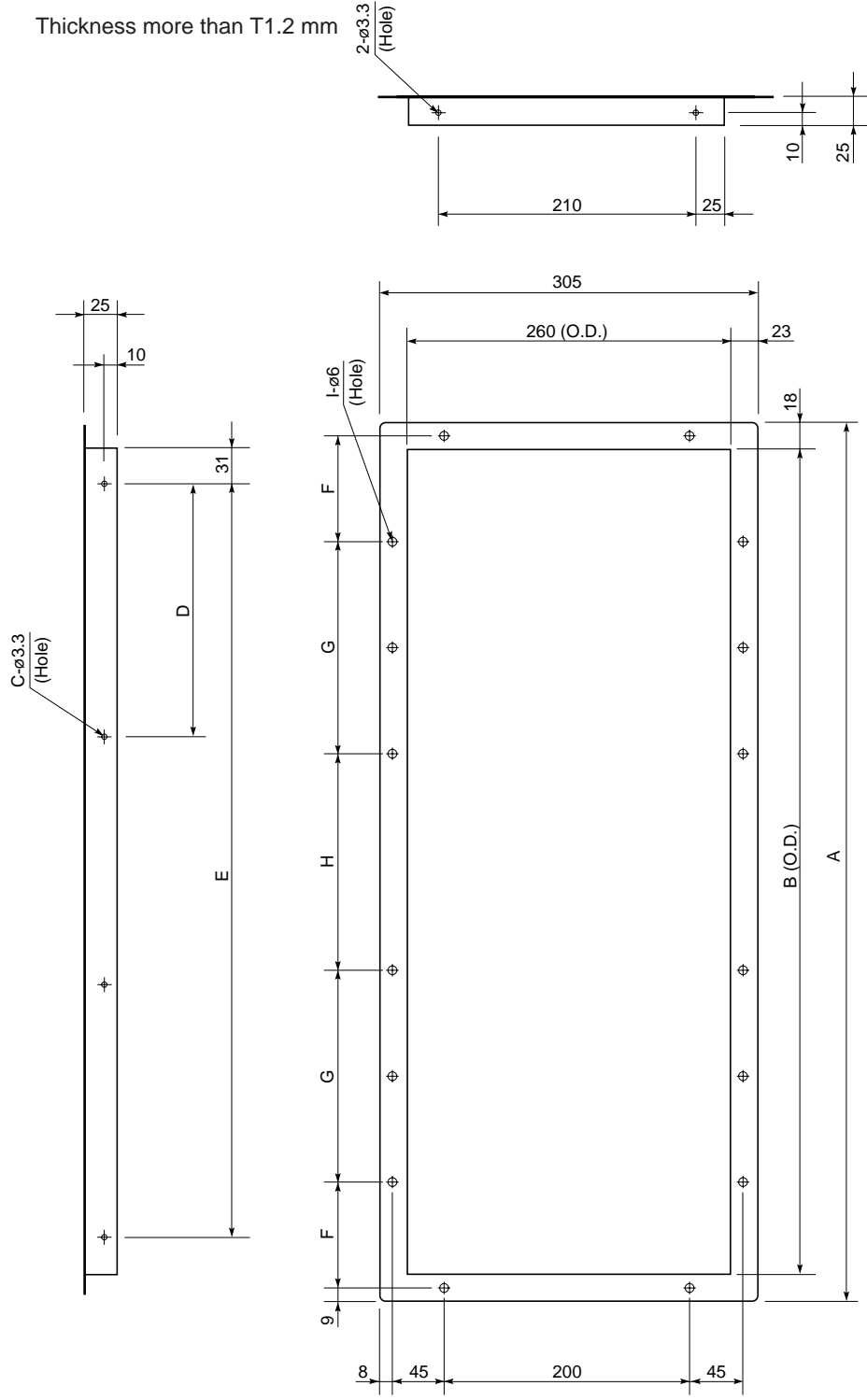


4

- ① Refrigerant liquid line  $\varnothing 9.52$  (narrow tube)
- ② Refrigerant gas line  $\varnothing 19.05$  (wide tube)
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2- $\varnothing 30$ )
- ⑦ Fresh air intake port ( $\varnothing 150$ )
- ⑧ Flange for the flexible air outlet duct ( $\varnothing 200$ )
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct (Option or field supply)

## 7. Concealed Duct Type

- Flange for the air intake duct (Field supply)  
: For Concealed Duct Type



1766\_U\_1

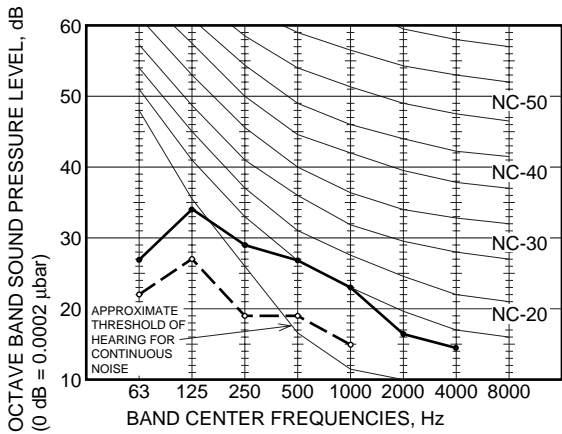
(mm)

	A	B	C	D	E	F	G	H	I
9, 12, 18 type	698	662	4	200	3 × 200P = 600	170	-	340	12
25 type	998	962	6	180	5 × 180P = 900	120	245 (245 × 1)	250	16
36, 48 type	1,478	1,442	7	230	6 × 230P = 1,380	120	490 (245 × 2)	240	20

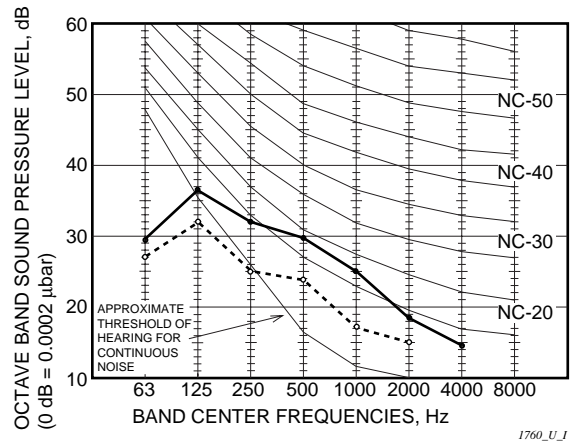
## 7. Concealed Duct Type

### 7-4. Noise criterion curves

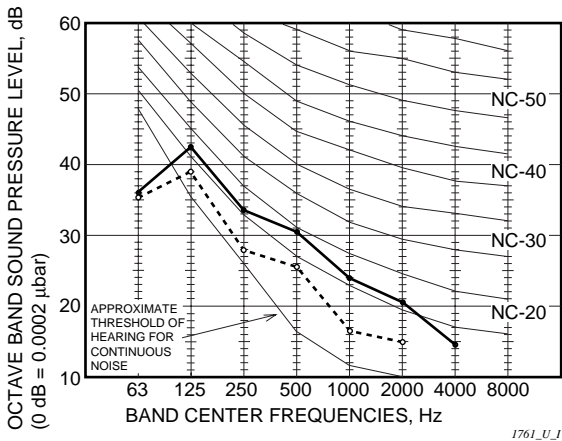
MODEL : SPW-UR93GHN56, UR123GHN56  
 SOUND LEVEL : HIGH 29 dB(A), NC 20 / LOW 22 dB(A), NC 13  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL : SPW-UR183GHN56  
 SOUND LEVEL : HIGH 30 dB(A), NC 23 / LOW 25 dB(A), NC 17  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



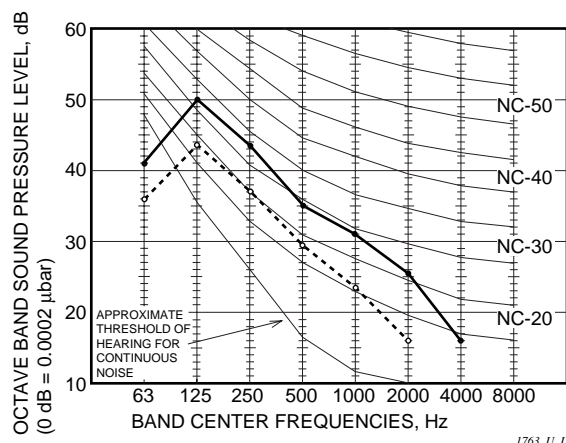
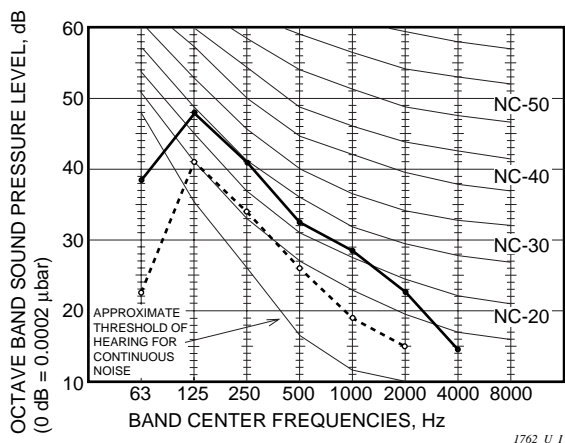
MODEL : SPW-UR253GHN56  
 SOUND LEVEL : HIGH 34 dB(A), NC 22 / LOW 27 dB(A), NC 18  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



## 7. Concealed Duct Type

MODEL : SPW-UR363GHN56  
 SOUND LEVEL : HIGH 38 dB(A), NC 30 / LOW 31 dB(A), NC 21  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL : SPW-UR483GHN56  
 SOUND LEVEL : HIGH 40 dB(A), NC 33 / LOW 33 dB(A), NC 25  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



- REMARKS:**
- Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  - The test results were obtained from an anechoic room.

**NOTE**

To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

## 7. Concealed Duct Type

### 7-5. Increasing the fan speed

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

- (1) Remove 2 screws on the electrical component box and remove the cover plate.
- (2) Disconnect the fan motor sockets in the box.
- (3) Take out the booster cable (sockets at both ends) clamped in the box.
- (4) Securely connect the booster cable sockets between the disconnected fan motor sockets in step 2 as shown in the Fig. 7-1.
- (5) Place the cable neatly in the box and reinstall the cover plate.

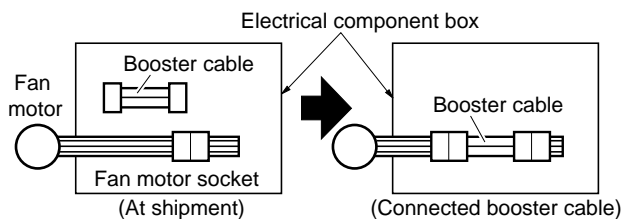
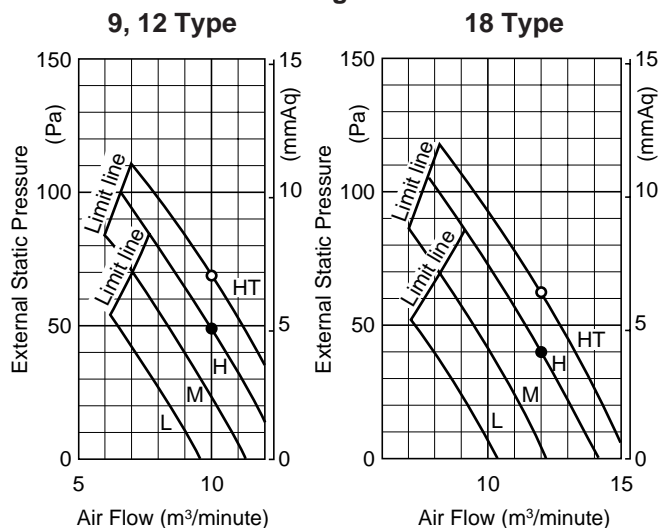


Fig. 7-1

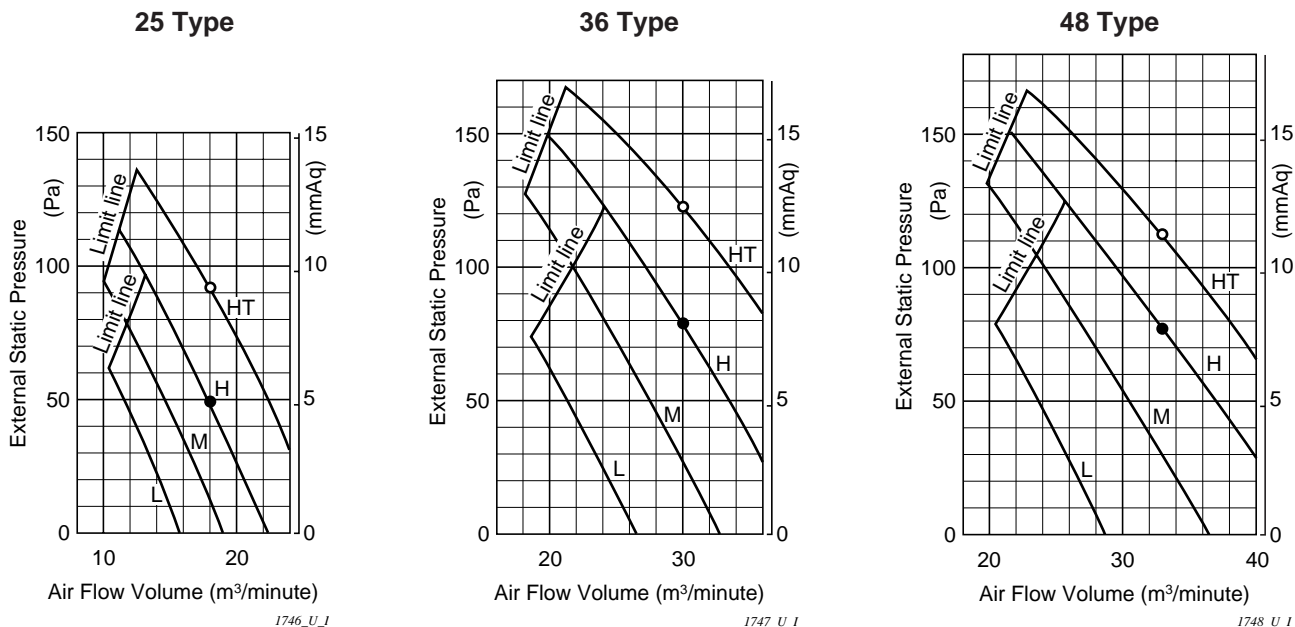
1743\_M\_I



1610\_U\_I

1611\_U\_I

### Indoor Fan Performance



1746\_U\_I

1747\_U\_I

1748\_U\_I

**NOTE** HT : Using the booster cable  
 H : At shipment



Fig. 7-2

#### How to read the diagram

The vertical axis is the external static pressure (Pa) while the horizontal axis represents the AIR FLOW (m³/minute). The characteristic curves for "HT", "H", "M" and "L" fan speed control are shown.

The nameplate values are shown based on the "H" air flow. For the 25 type, the air flow is 18 m³/minute, while the external static pressure is 49 Pa at "H" position. If external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet.

This problem may be solved by increasing the fan speed as explained above.





## 8. Concealed Duct High Static Pressure Type

### 8-1. Specifications

#### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-DR253GH56 / SPW-D253GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW BTU / h		7.3 25,000	8.0 27,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		1,380 / 1,320 / 1,260	
External static pressure (High)	mmAq (Pa)		19 (186)	
Moisture removal (High)	Liters / h		3.1	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes	A		2.29 - 2.30 - 2.31	2.29 - 2.30 - 2.31
Power input	W		480 - 505 - 530	480 - 505 - 530
Power factor	%		95 - 95 - 96	95 - 95 - 96
Fan motor locked rotor amperes	A		3 - 3 - 3	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max. 72 hr)			
Fan speeds	3 and Automatic control			
Air filter	Field supply			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		44 / 43 / 42	
Refrigerant tubing connections	Flare type			
Refrigerant tube diameter	Narrow tube	mm (in)	9.52 (3 / 8)*	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection	20 A, OD26 mm			
Remote Controller	Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories	Optional / —			
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions	Package dimensions
Dimensions	Height	mm (in)	420 (16 - 1 / 2)	513 (20 - 1 / 4)
	Width	mm (in)	1,065 (41 - 7 / 8)	1,148 (45 - 1 / 4)
	Depth	mm (in)	620 (24 - 3 / 8)	713 (28 - 1 / 8)
Net weight	kg (lb)		47 ( 104 )	
Shipping weight	kg (lb)		61 ( 134 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.42 ( 14.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

\* Use the "Tube connector" (accessory part with unit).

### 8. Concealed Duct High Static Pressure Type

#### Unit specifications (B)

MODEL No.		Indoor Unit		SPW-DR363GH56 / SPW-D363GH56	
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>				Cooling	Heating
Capacity	kW		10.6	11.4	
	BTU / h		36,000	39,000	
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h		1,800 / 1,680 / 1,500	
External static pressure (High)		mmAq (Pa)		18 (176)	
Moisture removal (High)		Liters / h		4.4	—
<b>ELECTRICAL RATINGS</b>					
Voltage rating		VAC		220 - 230 - 240	
Available voltage range		VAC		198 – 264	
Running amperes		A		2.46 - 2.46 - 2.47	2.46 - 2.46 - 2.47
Power input		W		520 - 545 - 570	520 - 545 - 570
Power factor		%		96 - 96 - 96	96 - 96 - 96
Fan motor locked rotor amperes		A		4 - 4 - 4	
<b>FEATURES</b>					
Controls		Microprocessor			
Timer		ON / OFF Timer (Max. 72 hr)			
Fan speeds		3 and Automatic control			
Air filter		Field supply			
Refrigerant control		Electronic expansion valve			
Operation sound (Hi / Me / Lo)		dB-A		45 / 44 / 42	
Refrigerant tubing connections		Flare type			
Refrigerant tube diameter	Narrow tube mm (in)		9.52 (3 / 8)		
	Wide tube mm (in)		19.05 (3 / 4)		
Drain connection		20 A, OD26 mm			
Remote Controller		Optional (RCS-SH80TG)			
Refrigerant tubing kit / Accessories		Optional / —			
<b>DIMENSIONS &amp; WEIGHT</b>					
Dimensions	Height mm (in)		420 (16 - 1 / 2)		513 (20 - 1 / 4)
	Width mm (in)		1,065 (41 - 7 / 8)		1,148 (45 - 1 / 4)
	Depth mm (in)		620 (24 - 3 / 8)		713 (28 - 1 / 8)
Net weight		kg (lb)		50 ( 110 )	
Shipping weight		kg (lb)		64 ( 141 )	
Shipping volume		m <sup>3</sup> (cu. ft)		0.42 ( 14.8 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB



8. Concealed Duct High Static Pressure Type

Unit specifications (C)

MODEL No.	Indoor Unit		SPW-DR483GH56 / SPW-D483GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW BTU / h		14.0 47,800	16.0 54,600
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	2,160 / 2,100 / 1,980	
External static pressure (High)		mmAq (Pa)	17 (167)	
Moisture removal (High)		Liters / h	6.6	—
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes		A	2.80 - 2.90 - 3.00	2.80 - 2.90 - 3.00
Power input		W	600 - 660 - 710	600 - 660 - 710
Power factor		%	99 - 99 - 99	99 - 99 - 99
Fan motor locked rotor amperes		A	4 - 4 - 4	
<b>FEATURES</b>				
Controls		Microprocessor		
Timer		ON / OFF Timer (Max. 72 hr)		
Fan speeds		3 and Automatic control		
Air filter		Field supply		
Refrigerant control		Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	47 / 46 / 44	
Refrigerant tubing connections		Flare type		
Refrigerant tube diameter		Narrow tube mm (in)	9.52 (3 / 8)	
		Wide tube mm (in)	19.05 (3 / 4)	
Drain connection		20 A, OD26 mm		
Remote Controller		Optional (RCS-SH80TG)		
Refrigerant tubing kit / Accessories		Optional / —		
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions		Height	mm (in)	450 (17 - 3 / 4)
		Width	mm (in)	1,065 (41 - 7 / 8)
		Depth	mm (in)	620 (24 - 3 / 8)
Net weight		kg (lb)		54 ( 119 )
Shipping weight		kg (lb)		69 ( 152 )
Shipping volume		m <sup>3</sup> (cu. ft)		0.42 ( 14.8 )

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

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### 8. Concealed Duct High Static Pressure Type

#### Unit specifications (D)

MODEL No.		Indoor Unit		SPW-DR763GH5			
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz			
<b>PERFORMANCE</b>				Cooling		Heating	
Capacity	kW		22.4		25.0		
	BTU / h		76,400		85,300		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h		3,360 / 3,190 / 2,980			
Moisture removal (High)		Liters / h		11.1		—	
External static pressure (High)		Pa (mmAq)		176 (18.0)			
<b>ELECTRICAL RATINGS</b>							
Voltage rating		VAC		220	230	240	220 230 240
Available voltage range		VAC		198 - 264			
Running amperes*		A		4.05	4.06	4.07	4.05 4.06 4.07
Power input		W		870	900	930	870 900 930
Power factor		%		97.6	96.4	95.2	97.6 96.4 95.2
Max. starting amperes		A		7	7	7	7 7 7
<b>FEATURES</b>							
Controls / Thermostat control		Microprocessor / I.C. thermostat					
Timer		ON / OFF Timer (Max. 72 hr)					
Fan speeds		3 and Automatic control					
Air filter		Field supply					
Refrigerant control		Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A		48 / 47 / 46			
using the booster cable (Hi / Me / Lo)		dB-A		-			
Refrigerant tubing connections		1 / 2' : Flare type, 1' : Brazing connection					
Refrigerant tube diameter		Narrow tube mm (in)		12.7 (1 / 2)			
		Wide tube mm (in)		25.4 (1)			
Drain connection		25 A, OD32 mm					
Drain pump		-					
Remote controller		Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories		Optional / -					
Color (Approximate value)		-					
<b>DIMENSIONS &amp; WEIGHT</b>				Unit dimensions		Package dimensions	
Dimensions		Height mm (in)		467 (18 - 12 / 32)		615 (24 - 7 / 32)	
		Width mm (in)		1,428 (56 - 7 / 32)		1,536 (60 - 15 / 32)	
		Depth mm (in)		1,230 (48 - 14 / 32)		1,342 (52 - 27 / 32)	
Net weight		kg (lb)		110 ( 243 )			
Shipping weight		kg (lb)		134 ( 295 )			
Shipping volume		m <sup>3</sup> (cu. ft)		1.268 ( 44.8 )			

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

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### 8. Concealed Duct High Static Pressure Type

#### Unit specifications (E)

MODEL No.	Indoor Unit		SPW-DR963GH5					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		28.0			31.5		
	BTU / h		95,500			107,500		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	4,320 / 4,200 / 3,960					
Moisture removal (High)		Liters / h	13.9			—		
External static pressure (High)		Pa (mmAq)	216 (22): at shipment, 235 (24): using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	220	230	240	220	230	240
Available voltage range		VAC	198 - 264					
Running amperes*		A	6.04	6.06	6.07	6.04	6.06	6.07
Power input		W	1,270	1,330	1,390	1,270	1,330	1,390
Power factor		%	95.6	95.4	95.4	95.6	95.4	95.4
Max. starting amperes		A	7	7	7	7	7	7
<b>FEATURES</b>								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	51 / 50 / 49					
using the booster cable (Hi / Me / Lo)		dB-A	52 / 51 / 50					
Refrigerant tubing connections			1 / 2' : Flare type, 1 - 1 / 8' : Brazing connection					
Refrigerant tube diameter	Narrow tube mm (in)		12.7 ( 1 / 2 )					
	Wide tube mm (in)		28.58 ( 1 - 1 / 8 )					
Drain connection			25 A, OD32 mm					
Drain pump			—					
Remote controller			Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			—					
<b>DIMENSIONS &amp; WEIGHT</b>								
Dimensions	Height	mm (in)	467 ( 18 - 12 / 32 )			615 ( 24 - 7 / 32 )		
	Width	mm (in)	1,428 ( 56 - 7 / 32 )			1,536 ( 60 - 15 / 32 )		
	Depth	mm (in)	1,230 ( 48 - 14 / 32 )			1,342 ( 52 - 27 / 32 )		
Net weight		kg (lb)	120 ( 265 )					
Shipping weight		kg (lb)	144 ( 317 )					
Shipping volume		m <sup>3</sup> (cu. ft)	1.268 ( 44.8 )					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions (★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions (★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

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## 8. Concealed Duct High Static Pressure Type

## 8-2. Major component specifications

## Indoor unit (A)

<b>MODEL No.</b>		SPW-DR253GH56 / SPW-D253GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 220)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-201B5P ... 200 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,004	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 13.75      ORG – YEL : 2.21 WHT – VLT : 4.47      YEL – BLK : 10.33 VLT – ORG : 1.20      BLK – PNK : 12.90	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 5.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.233	

## 8. Concealed Duct High Static Pressure Type

## Indoor unit (B)

<b>MODEL No.</b>		SPW-DR363GH56 / SPW-D363GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 220)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-201B5P ... 200 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,134	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 13.75      ORG – YEL : 2.21 WHT – VLT : 4.47      YEL – BLK : 10.33 VLT – ORG : 1.20      BLK – PNK : 12.90	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 7.0 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS559E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4 ... 2.0	
Face area	m <sup>2</sup>	0.273	

## 8. Concealed Duct High Static Pressure Type

## Indoor unit (C)

<b>MODEL No.</b>		SPW-DR483GH56 / SPW-D483GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 250)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4Q-401A5P ... 400 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,077	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 11.05      ORG – YEL : 4.57 WHT – VLT : 1.80      YEL – PNK : 7.70 VLT – ORG : 1.00	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 7 μF x 2	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS559E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4 ... 2.0	
Face area	m <sup>2</sup>	0.273	



## 8. Concealed Duct High Static Pressure Type

## Indoor unit (D)

<b>MODEL No.</b>		SPW-DR763GH5	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 220)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-201B5P ... 180 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,012	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 13.75      ORG – YEL : 2.21 WHT – VLT : 4.47      YEL – BLK : 10.33 VLT – ORG : 1.20      BLK – PNK : 12.90	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 7 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS660E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4 ... 2.0	
Face area	m <sup>2</sup>	0.54	

## 8. Concealed Duct High Static Pressure Type

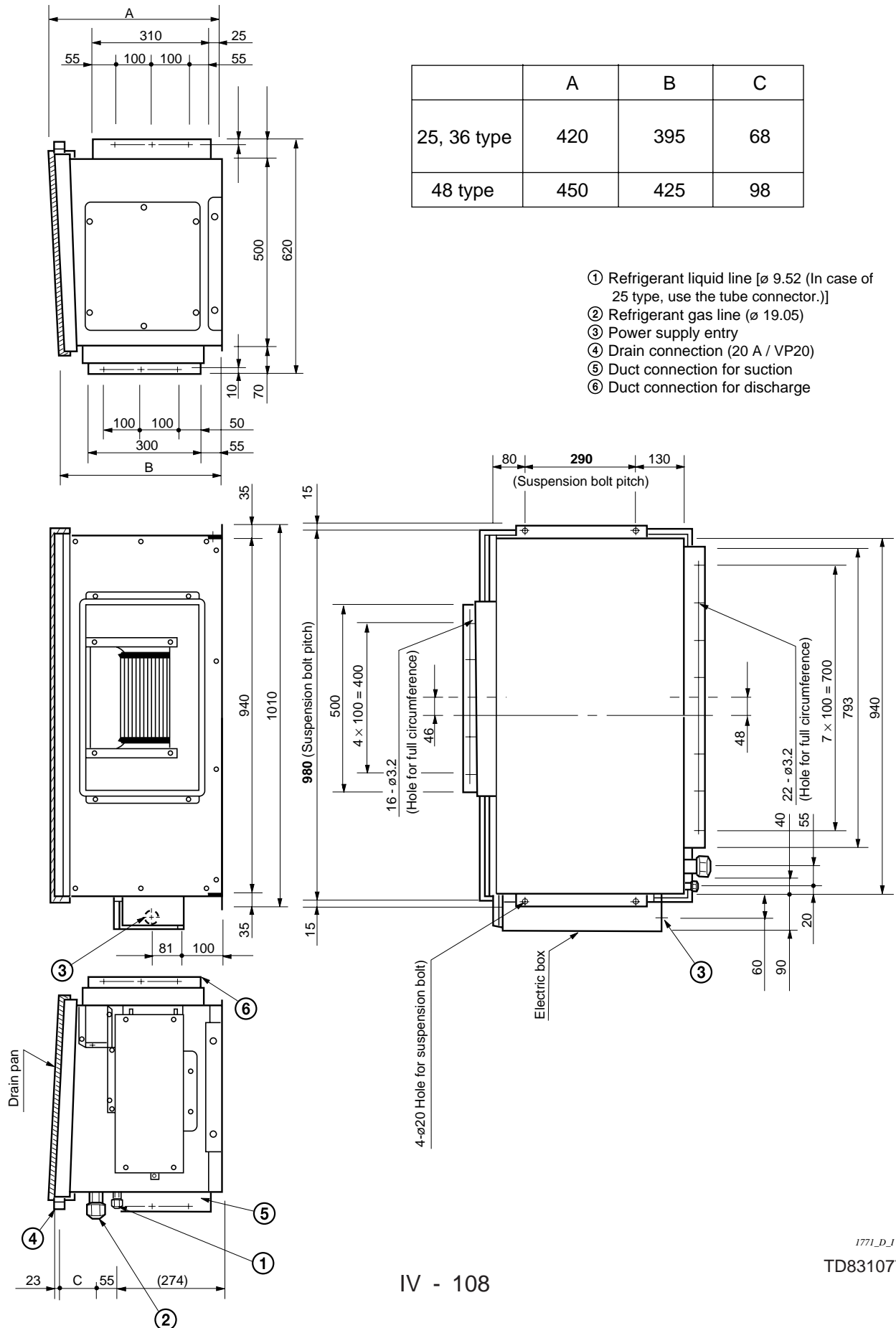
## Indoor unit (E)

<b>MODEL No.</b>		SPW-DR963GH5	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (1 ... ø 250)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-401B3P ... 400 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,211	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 6.159      ORG – YEL : 0.87 WHT – VLT : 1.08      YEL – BLK : 2.87 VLT – ORG : 0.77      BLK – PNK : 5.98	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 5.0 μF	
<b>Electronic expansion valve</b>			
Coil		EKV-MOZS660E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		HKV-30D16	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4 ... 2.0	
Face area	m <sup>2</sup>	0.66	

## 8. Concealed Duct High Static Pressure Type

### 8-3. Dimensional data

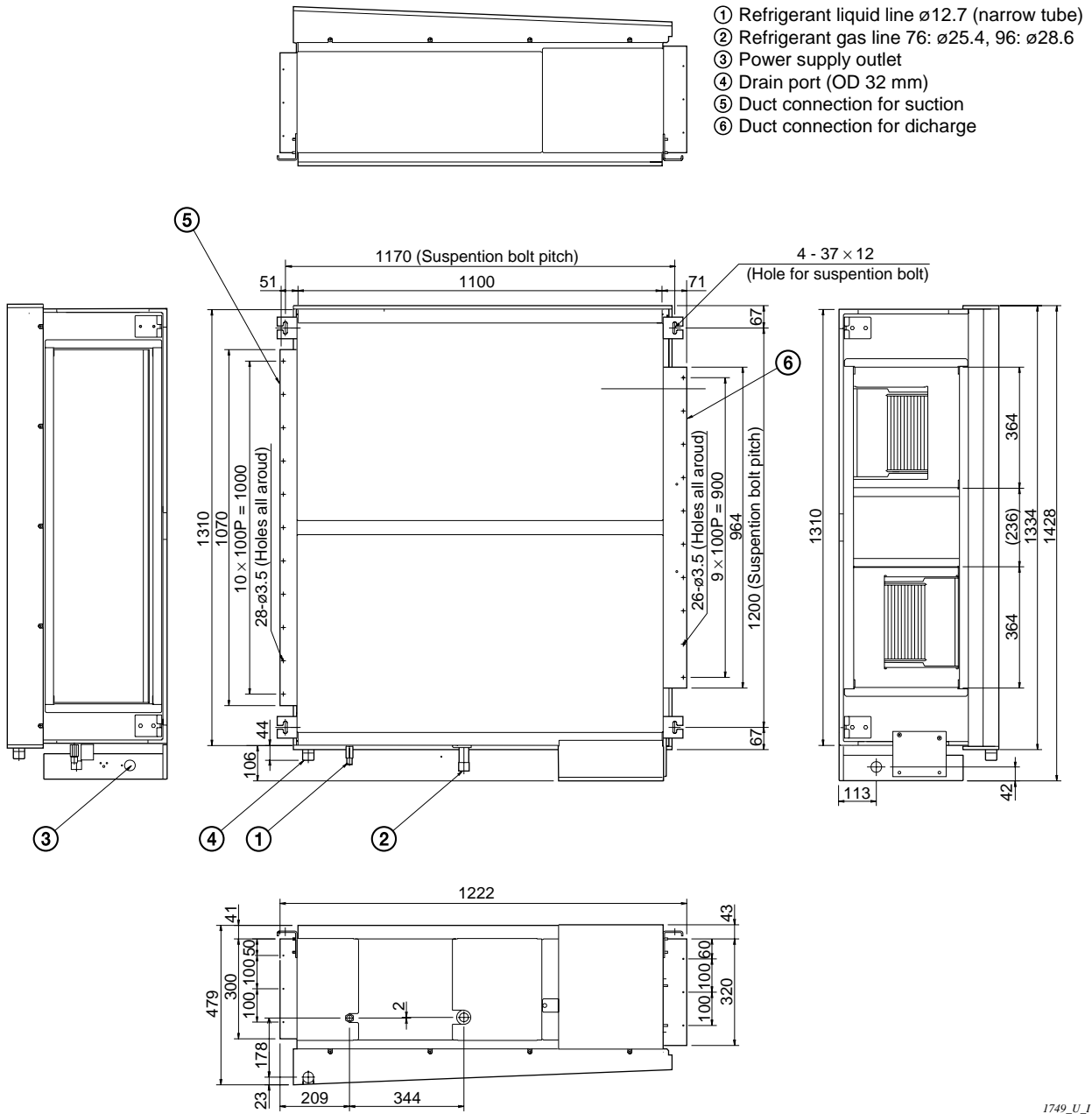
Indoor unit : 25, 36, 48 Type



4

## 8. Concealed Duct High Static Pressure Type

Indoor unit : 76, 96 Type



4

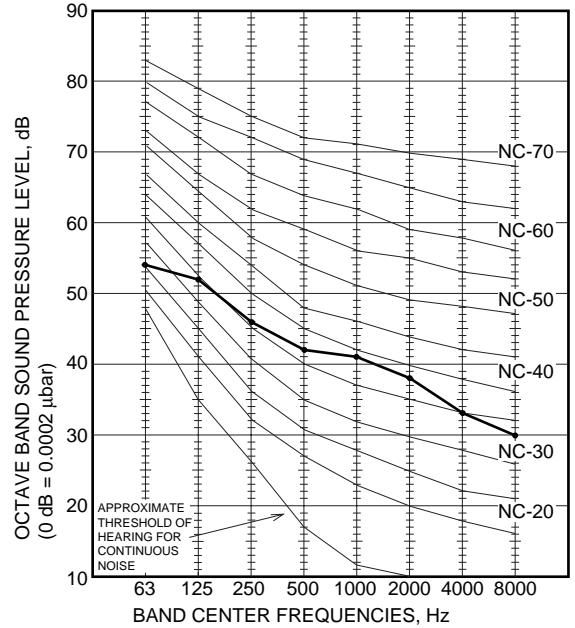
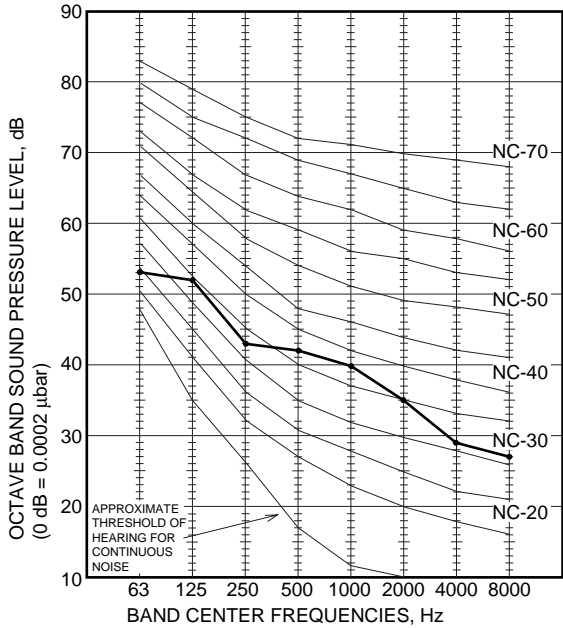
1749\_U\_I

## 8. Concealed Duct High Static Pressure Type

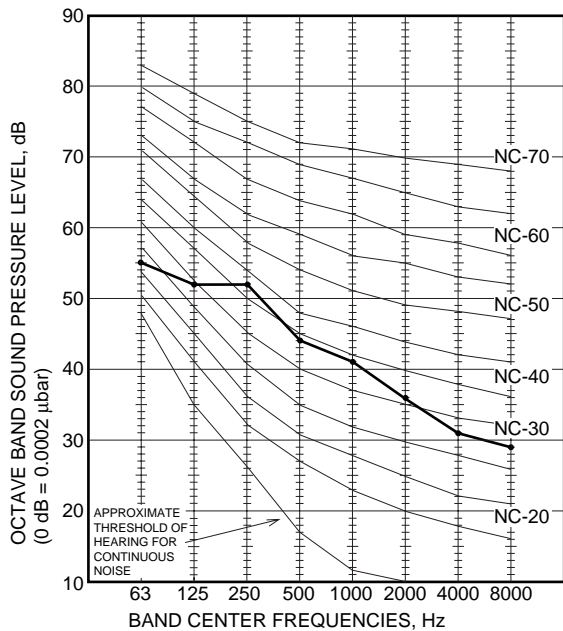
### 8-4. Noise criterion curves

MODEL	: SPW-DR253GH56 SPW-D253GH56
SOUND LEVEL	: HIGH 44 dB(A), NC 38
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL	: SPW-DR363GH56 SPW-D363GH56
SOUND LEVEL	: HIGH 45 dB(A), NC 39
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: SPW-DR483GH56 SPW-D483GH56
SOUND LEVEL	: HIGH 47 dB(A), NC 42
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



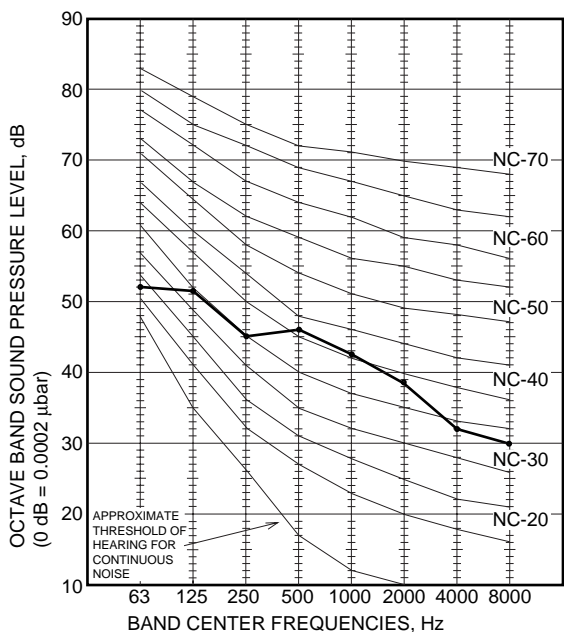
- REMARKS:**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

**NOTE**

To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

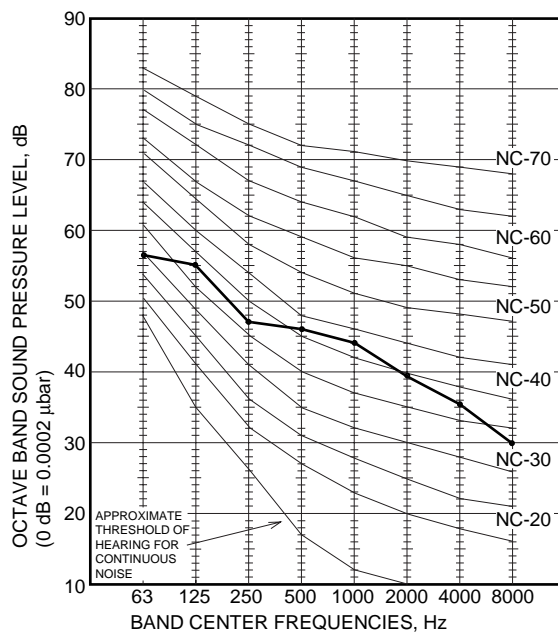
### 8. Concealed Duct High Static Pressure Type

MODEL	: SPW-DR763GH56
SOUND LEVEL	: HIGH 48 dB(A), NC 42
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



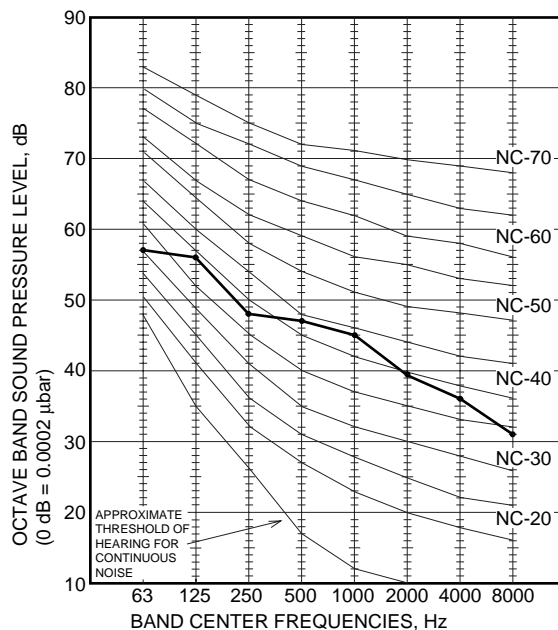
1786\_D\_1

MODEL	: SPW-DR963GH56
SOUND LEVEL	: HIGH 51 dB(A), NC 43
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



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MODEL	: SPW-DR963GH56 (When Booster cable connected)
SOUND LEVEL	: HIGH 52 dB(A), NC 44
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



1788\_D\_1

- REMARKS:**
1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  2. The test results were obtained from an anechoic room.

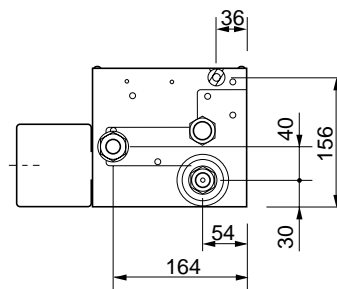
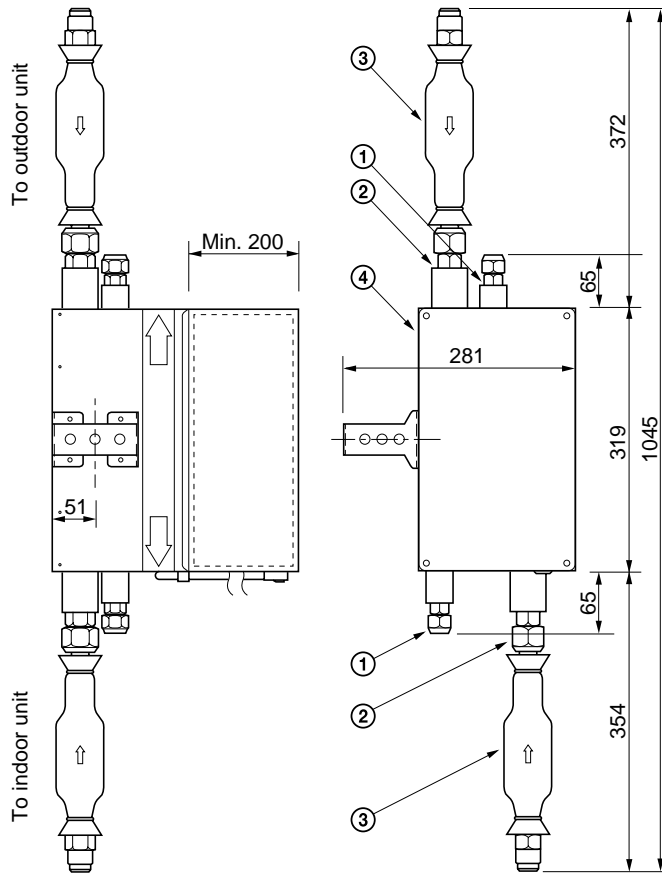
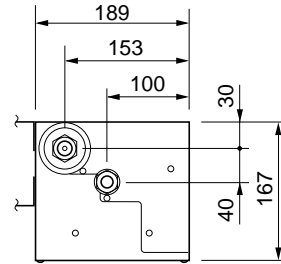
**NOTE**  
To evaluate "Noise level" the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.



## 8. Concealed Duct High Static Pressure Type

### 8-5. R.A.P. valve kit

- Connect two units in parallel for each indoor unit.
- Attach the R.A.P. valve kit within 30 meters from the indoor unit.
- Secure the R.A.P. valve kit using hanging bolts, etc.
- Be absolutely sure to install the R.A.P. valve kit top side up.
- Do not place the R.A.P. valve kit directly on the ceiling.
- The R.A.P. valve kit is required when a multiple number of type 76 or 96 units are to be connected to the same system.
- The R.A.P. valve kit is required when a type 76 or 96 indoor unit is to be connected among other indoor units.



- ① Refrigerant liquid line (ø9.52)
- ② Refrigerant gas line (ø19.05)
- ③ Strainer for refrigerant gas line
- ④ Service-cover

1782\_M\_1

## 8. Concealed Duct High Static Pressure Type

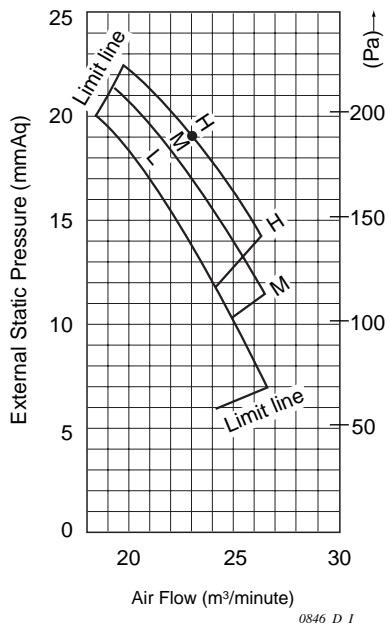
### 8-6. Indoor fan performance

#### How to Read the Diagram

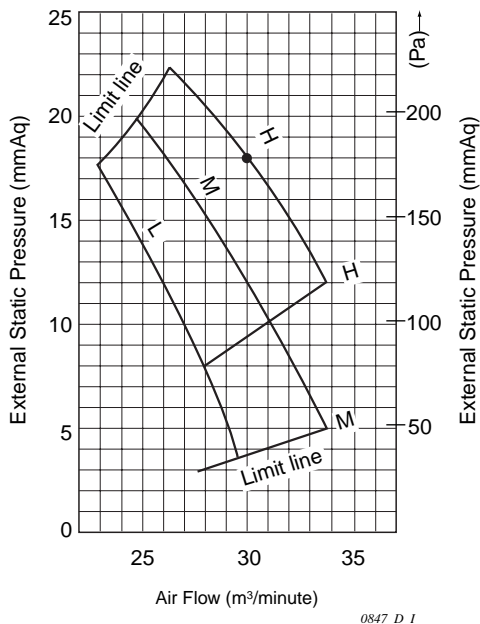
The vertical axis is the EXTERNAL STATIC PRESSURE (mmAq) while the horizontal axis represents the AIR FLOW (m<sup>3</sup>/minute). The characteristic curve for the "H", "Med", and "Lo" fan speed control.

The name plate values are shown based on the "H" air flow. Therefore in the case of the 25 type the flow is 23 m<sup>3</sup>/minute, while the EXTERNAL STATIC PRESSURE is 19 mmAq at "H" position. If the external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet.

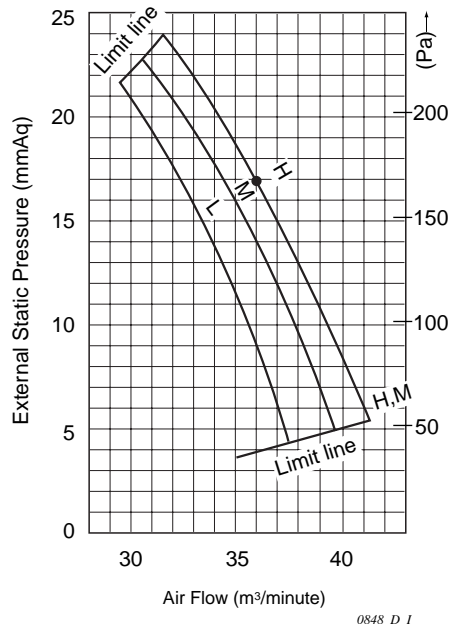
25, 27 Type



36 Type



48 Type





## 8. Concealed Duct High Static Pressure Type

### Increasing the Fan Speed (96 type only)

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

- (1) Remove 4 screws on the electrical component box and remove the cover plate.
- (2) Disconnect the fan motor sockets in the box.
- (3) Take out 2 booster cables from option curton box (sockets at both ends).
- (4) Securely connect 2 booster cable's sockets between the disconnected fan motor sockets in step 2 as shown in the Fig. 8-1.
- (5) Place the cable neatly in the box and reinstall the cover plate.

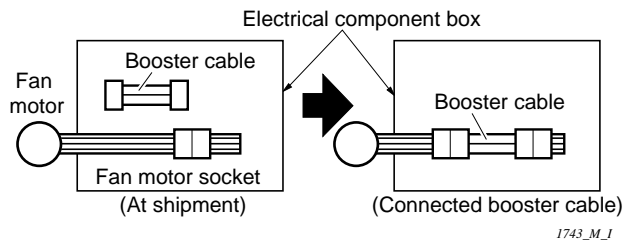
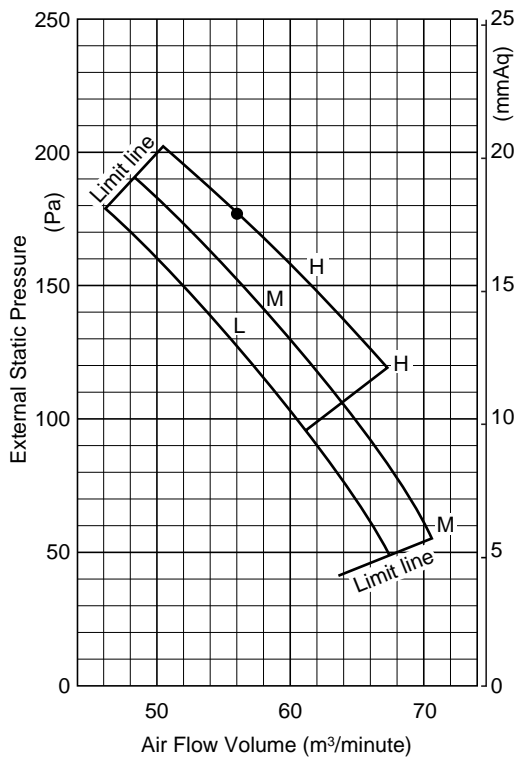


Fig. 8-1

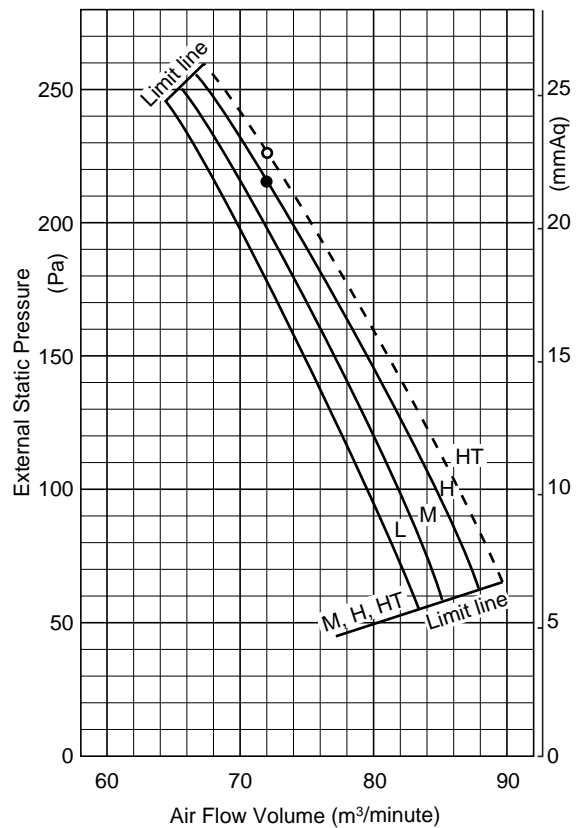
### Indoor Fan Performance

76 Type



1744\_D\_1

96 Type



1745\_D\_1

**NOTE** HT : Using the booster cable (96 type only)

H : At shipment



Fig. 8-2  
IV - 114

# 9. Floor-Standing Type (F Type)

## 9-1. Specifications

### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-FR93GH56 / SPW-F93GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		2.8	3.2
	BTU / h		9,600	11,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	420 / 360 / 300	
Moisture removal (High)		Liters / h	1.3	-
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes*		A	0.24 - 0.25 - 0.26	0.17 - 0.18 - 0.19
Power input		W	51 - 56 - 61	36 - 40 - 45
Power factor		%	96.6 - 97.4 - 97.8	96.3 - 96.6 - 98.7
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls		Microprocessor		
Timer		ON / OFF Timer (Max.72 hr)		
Fan speeds		3 and Automatic control		
Air filter		Washable, easy access		
Refrigerant control		Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	33 / 30 / 28	
Refrigerant tubing connections		Flare type		
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection		20A, OD26mm		
Drain pump		-		
Drain pump (drain connection)		Optional (RCS-SH80TG)		
Remote controller (option)		Optional / drain hose		
Color (Approximate value)		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	615 (24 - 7 / 32)	694 (27 - 10 / 32)
	Width	mm (in)	1065 (41 - 30 / 32)	1157 (45 - 18 / 32)
	Depth	mm (in)	230 ( 9 - 2 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	29 ( 64 )	
Shipping weight		kg (lb)	64 ( 68 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.251 ( 8.9 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB



9. Floor-Standing Type (F Type)

Unit specifications (B)

<b>MODEL No.</b>	Indoor Unit		SPW-FR123GH56 / SPW-F123GH56	
<b>POWER SOURCE</b>	220 - 230 - 240 V / 1 phase / 50Hz			
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		3.6	4.2
	BTU / h		12,000	14,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		540 / 420 / 360	
Moisture removal (High)	Liters / h		1.7	-
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes*	A		0.37 - 0.38 - 0.39	0.3 - 0.31 - 0.32
Power input	W		79 - 85 - 91	64 - 70 - 76
Power factor	%		97.1 - 97.3 - 97.2	97 - 98.2 - 99
Max. starting amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max.72 hr)			
Fan speeds	3 and Automatic control			
Air filter	Washable, easy access			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		39 / 35 / 29	
Refrigerant tubing connections	Flare type			
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection	20A, OD26mm			
Drain pump	-			
Drain pump (drain connection)	Optional (RCS-SH80TG)			
Remote controller (option)	Optional / drain hose			
Color (Approximate value)	Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	615 (24 - 7 / 32)	694 (27 - 10 / 32)
	Width	mm (in)	1065 (41 - 30 / 32)	1157 (45 - 18 / 32)
	Depth	mm (in)	230 ( 9 - 2 / 32)	312 (12 - 9 / 32)
Net weight	kg (lb)		29 ( 64 )	
Shipping weight	kg (lb)		31 ( 68 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.251 ( 8.9 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

4

## 9. Floor-Standing Type (F Type)

## Unit specifications (C)

MODEL No.	Indoor Unit		SPW-FR183GH56 / SPW-F183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.6	6.3
	BTU / h		19,000	21,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	900 / 780 / 660	
Moisture removal (High)		Liters / h	2.5	–
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes*		A	0.54 - 0.56 - 0.58	0.37 - 0.41 - 0.43
Power input		W	116 - 126 - 136	79 - 91 - 101
Power factor		%	97.6 - 97.8 - 97.7	97.1 - 96.5 - 97.9
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max.72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	39 / 36 / 31	
Refrigerant tubing connections			Flare type	
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection			20A, OD26mm	
Drain pump			–	
Drain pump (drain connection)			Optional (RCS-SH80TG)	
Remote controller (option)			Optional / drain hose	
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL	
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	615 (24 - 7 / 32)	694 (27 - 10 / 32)
	Width	mm (in)	1380 (54 - 11 / 32)	1472 (57 - 30 / 32)
	Depth	mm (in)	230 ( 9 - 2 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	39 ( 86 )	
Shipping weight		kg (lb)	41 ( 90 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.319 ( 11.3 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

9. Floor-Standing Type (F Type)

Unit specifications (D)

<b>MODEL No.</b>	Indoor Unit		SPW-FR253GH56 / SPW-F253GH56	
<b>POWER SOURCE</b>	220 - 230 - 240 V / 1 phase / 50Hz			
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		7.1	8
	BTU / h		24,000	27,000
Air circulation (Hi / Me / Lo)	m <sup>3</sup> / h		1,020 / 840 / 720	
Moisture removal (High)	Liters / h		3.5	-
<b>ELECTRICAL RATINGS</b>				
Voltage rating	VAC		220 - 230 - 240	
Available voltage range	VAC		198 - 264	
Running amperes*	A		0.7 - 0.72 - 0.73	0.52 - 0.54 - 0.56
Power input	W		150 - 160 - 170	110 - 120 - 130
Power factor	%		97.4 - 96.6 - 97	96.2 - 96.6 - 96.7
Max. starting amperes	A		1 - 1 - 1	
<b>FEATURES</b>				
Controls	Microprocessor			
Timer	ON / OFF Timer (Max.72 hr)			
Fan speeds	3 and Automatic control			
Air filter	Washable, easy access			
Refrigerant control	Electronic expansion valve			
Operation sound (Hi / Me / Lo)	dB-A		41 / 38 / 35	
Refrigerant tubing connections	Flare type			
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection	20A, OD26mm			
Drain pump	-			
Drain pump (drain connection)	Optional (RCS-SH80TG)			
Remote controller (option)	Optional / drain hose			
Color (Approximate value)	Munsell 10Y9.3 / 0.4, RAL 9010-GL			
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	615 (24 - 7 / 32)	694 (27 - 10 / 32)
	Width	mm (in)	1380 (54 - 11 / 32)	1472 (57 - 30 / 32)
	Depth	mm (in)	230 ( 9 - 2 / 32)	312 (12 - 9 / 32)
Net weight	kg (lb)		39 ( 86 )	
Shipping weight	kg (lb)		41 ( 90 )	
Shipping volume	m <sup>3</sup> (cu. ft)		0.319 ( 11.3 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 9. Floor-Standing Type (F Type)

## 9-2. Major component specifications

## Indoor unit (A)

MODEL No.		SPW-FR93GH56	SPW-F93GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFT6Q-11A3P ... 15 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 831	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 370.2 WHT – VLT : 105.4 VLT – ORG : 67.05	ORG – YEL : 168.0 YEL – PNK : 92.16
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.102	

## 9. Floor-Standing Type (F Type)

## Indoor unit (B)

MODEL No.		SPW-FR123GH56	SPW-F123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT4Q-21B3P ... 20 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,102	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 217.7      ORG – YEL : 37.88 WHT – VLT : 37.33      YEL – PNK : 21.82 VLT – ORG : 22.48	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
Electronic expansion valve			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.102	

## 9. Floor-Standing Type (F Type)

## Indoor unit (C)

MODEL No.		SPW-FR183GH56	SPW-F183GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,066	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 67.62      ORG – YEL : 17.36 WHT – VLT : 18.47      YEL – PNK : 5.18 VLT – ORG : 10.10	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.165	



## 9. Floor-Standing Type (F Type)

## Indoor unit (D)

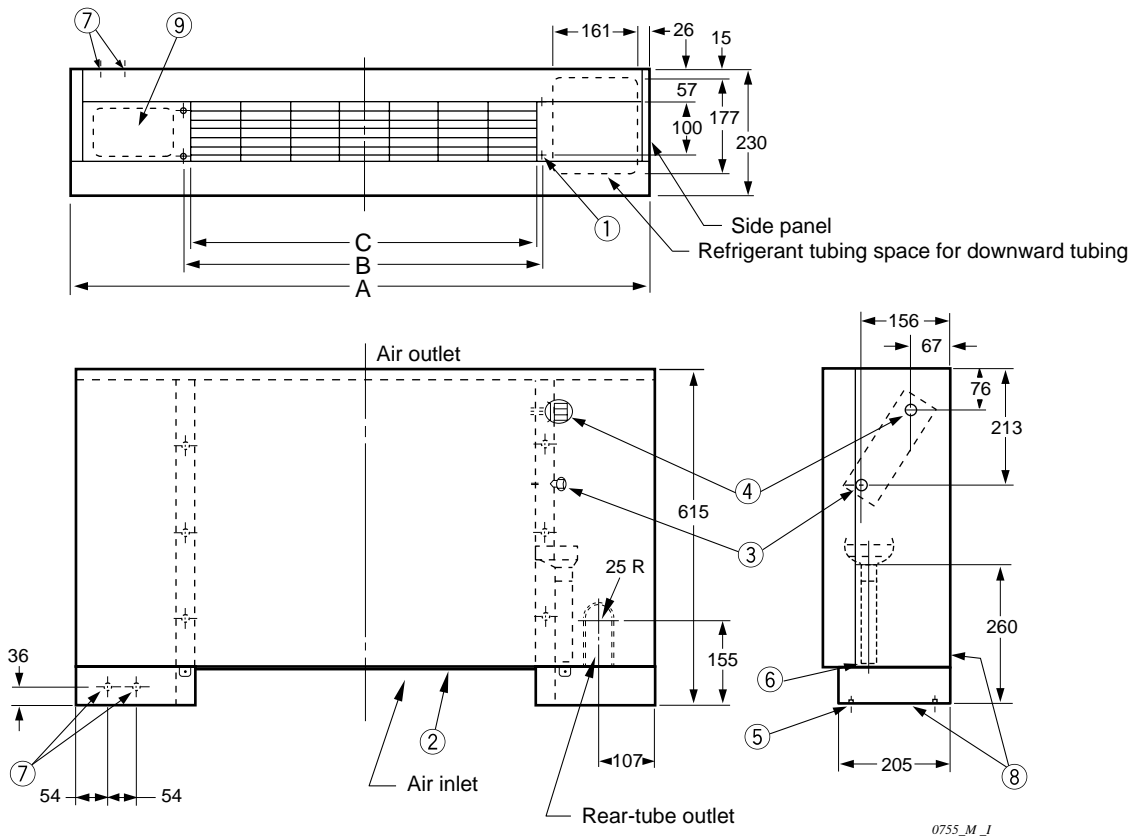
MODEL No.		SPW-FR253GH56	SPW-F253GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,066	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 67.62      ORG – YEL : 17.36 WHT – VLT : 18.47      YEL – PNK : 5.18 VLT – ORG : 10.10	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 3.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.165	

## 9. Floor-Standing Type (F Type)

### 9-3. Dimensional data

Indoor unit : 9, 12, 18, 25 Type

Type \ Size	A	B	C	Narrow tube	Wide tube
9, 12	1065	665	632	9.52	12.7
18,25	1380	980	947	9.52	15.88

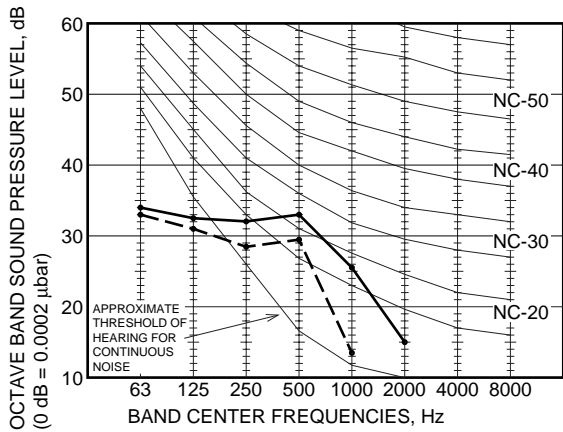


- ① 4- $\phi$ 12 hole (For fastening the indoor unit to the floor by screws.)
- ② Air filter
- ③ Refrigerant connection outlet (narrow tube)
- ④ Refrigerant connection outlet (wide tube)
- ⑤ Level adjusting bolt
- ⑥ Drain outlet (20 A)
- ⑦ Power cord outlet (downward, rear)
- ⑧ Refrigerant tubing outlet (downward, rear)
- ⑨ Location for mounting the remote controller (remote controller is attachable in the room)

## 9. Floor-Standing Type (F Type)

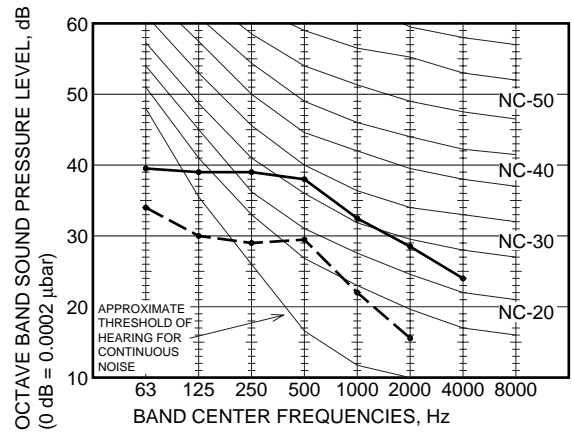
### 9-4. Noise criterion curves

MODEL	: SPW-FR93GH56
	SPW-F93GH56
SOUND LEVEL	: HIGH 33 dB(A), NC 27
	LOW 28 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



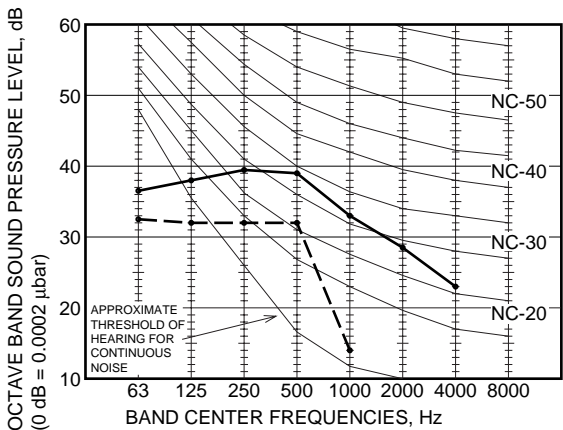
0834\_V\_I

MODEL	: SPW-FR123GH56
	SPW-F123GH56
SOUND LEVEL	: HIGH 39 dB(A), NC 33
	LOW 29 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



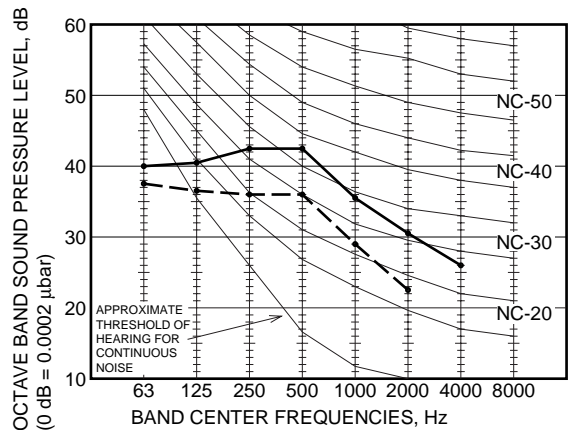
0835\_V\_I

MODEL	: SPW-FR183GH56
	SPW-F183GH56
SOUND LEVEL	: HIGH 39 dB(A), NC 34
	LOW 31 dB(A), NC 26
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0836\_V\_I

MODEL	: SPW-FR253GH56
	SPW-F253GH56
SOUND LEVEL	: HIGH 41 dB(A), NC 37
	LOW 35 dB(A), NC 30
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



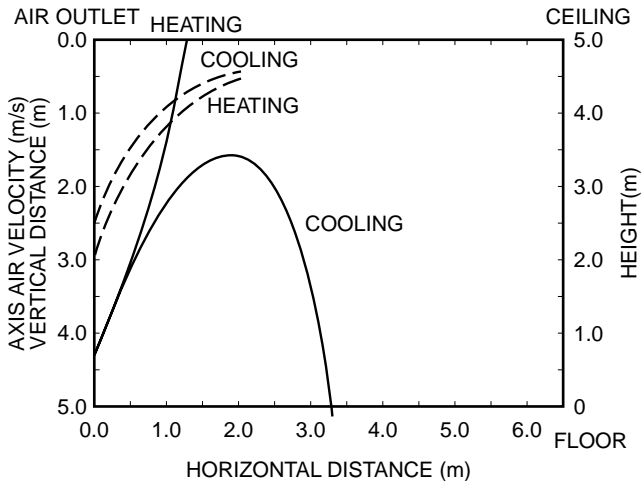
0837\_V\_I

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9. Floor-Standing Type (F Type)

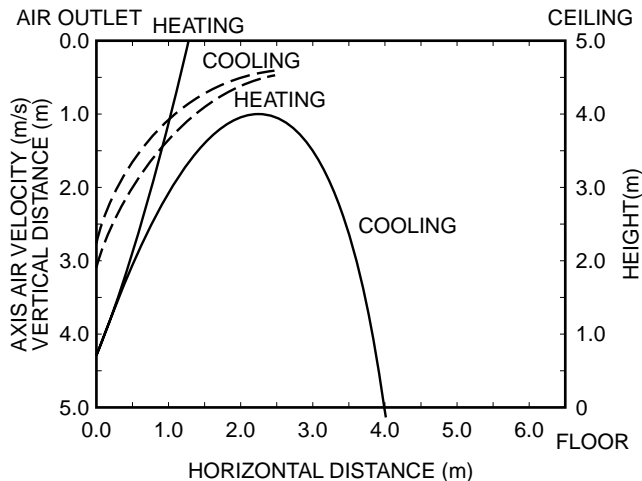
9-5. Air throw distance chart

Model: 9 Type



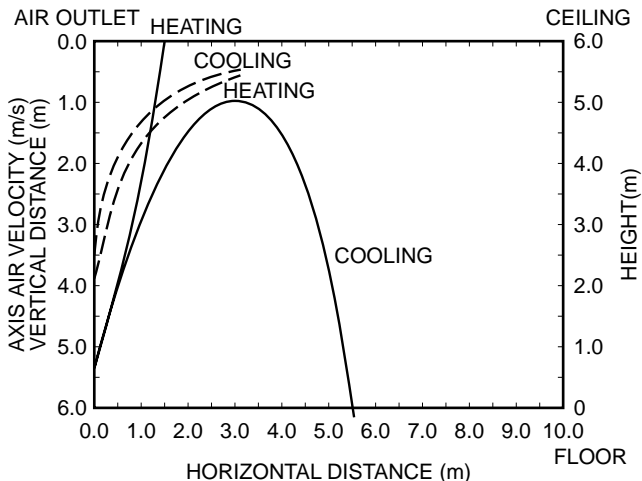
0838\_V\_J

Model: 12 Type



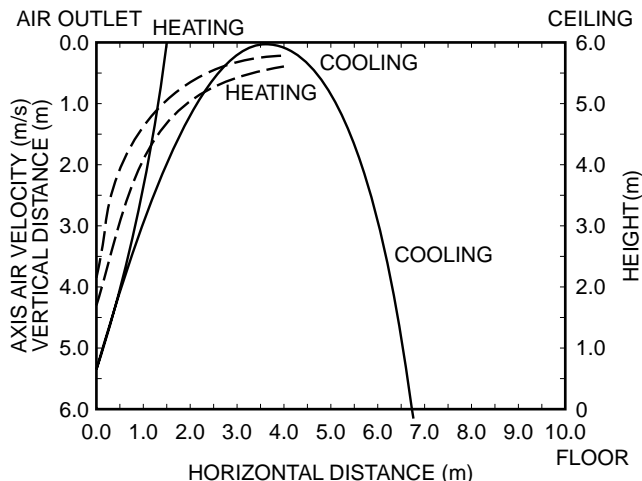
0839\_V\_J

Model: 18 Type



0840\_V\_J

Model: 25 Type



0841\_V\_J

Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in cooling mode  
 20 °C DB in heating mode



# 10. Concealed Floor-Standing Type (FM Type)

## 10-1. Specifications

### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-FMR93GH56 / SPW-FM93GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		2.8	3.2
	BTU / h		9,600	11,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	420 / 360 / 300	
Moisture removal (High)		Liters / h	1.3	–
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes*		A	0.24 - 0.25 - 0.26	0.17 - 0.18 - 0.19
Power input		W	51 - 56 - 61	36 - 40 - 45
Power factor		%	96.6 - 97.4 - 97.8	96.3 - 96.6 - 98.7
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls		Microprocessor		
Timer		ON / OFF Timer (Max.72 hr)		
Fan speeds		3 and Automatic control		
Air filter		Washable, easy access		
Refrigerant control		Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	33 / 30 / 28	
Refrigerant tubing connections		Flare type		
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection		20A, OD26mm		
Drain pump		–		
Drain pump (drain connection)		Optional (RCS-SH80TG)		
Remote controller (option)		Optional / drain hose		
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	616 (24 - 8 / 32)	679 (26 - 23 / 32)
	Width	mm (in)	904 (35 - 19 / 32)	976 (38 - 14 / 32)
	Depth	mm (in)	229 (9 - 1 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	21 ( 46 )	
Shipping weight		kg (lb)	23 ( 51 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.207 ( 7.3 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 10. Concealed Floor-Standing Type (FM Type)

## Unit specifications (B)

MODEL No.	Indoor Unit		SPW-FMR123GH56 / SPW-FM123GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		3.6	4.2
	BTU / h		12,000	14,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	540 / 420 / 360	
Moisture removal (High)		Liters / h	1.7	–
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes*		A	0.37 - 0.38 - 0.39	0.3 - 0.31 - 0.32
Power input		W	79 - 85 - 91	64 - 70 - 76
Power factor		%	97.1 - 97.3 - 97.2	97 - 98.2 - 99
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls		Microprocessor		
Timer		ON / OFF Timer (Max.72 hr)		
Fan speeds		3 and Automatic control		
Air filter		Washable, easy access		
Refrigerant control		Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	39 / 35 / 29	
Refrigerant tubing connections		Flare type		
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	12.7 (1 / 2)	
Drain connection		20A, OD26mm		
Drain pump		–		
Drain pump (drain connection)		Optional (RCS-SH80TG)		
Remote controller (option)		Optional / drain hose		
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	616 (24 - 8 / 32)	679 (26 - 23 / 32)
	Width	mm (in)	904 (35 - 19 / 32)	976 (38 - 14 / 32)
	Depth	mm (in)	229 ( 9 - 1 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	21 ( 64 )	
Shipping weight		kg (lb)	23 ( 51 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.207 ( 7.3 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

## 10. Concealed Floor-Standing Type (FM Type)

## Unit specifications (C)

MODEL No.	Indoor Unit		SPW-FMR183GH56 / SPW-FM183GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		5.6	6.3
	BTU / h		19,000	21,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	900 / 780 / 660	
Moisture removal (High)		Liters / h	2.5	–
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 – 264	
Running amperes*		A	0.54 - 0.56 - 0.58	0.37 - 0.41 - 0.43
Power input		W	116 - 126 - 136	79 - 91 - 101
Power factor		%	97.6 - 97.8 - 97.7	97.1 - 96.5 - 97.9
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls			Microprocessor	
Timer			ON / OFF Timer (Max.72 hr)	
Fan speeds			3 and Automatic control	
Air filter			Washable, easy access	
Refrigerant control			Electronic expansion valve	
Operation sound (Hi / Me / Lo)		dB-A	39 / 36 / 31	
Refrigerant tubing connections			Flare type	
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection			20A, OD26mm	
Drain pump			–	
Drain pump (drain connection)			Optional (RCS-SH80TG)	
Remote controller (option)			Optional / drain hose	
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	616 (24 - 8 / 32)	679 (26 - 23 / 32)
	Width	mm (in)	1219 (47 - 32 / 32)	1291 (50 - 26 / 32)
	Depth	mm (in)	229 ( 9 - 1 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	28 ( 62 )	
Shipping weight		kg (lb)	31 ( 68 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.273 ( 9.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB

10. Concealed Floor-Standing Type (FM Type)

Unit specifications (D)

MODEL No.	Indoor Unit		SPW-FMR253GH56 / SPW-FM253GH56	
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz	
<b>PERFORMANCE</b>			Cooling	Heating
Capacity	kW		7.1	8
	BTU / h		24,000	27,000
Air circulation (Hi / Me / Lo)		m <sup>3</sup> / h	1,020 / 840 / 720	
Moisture removal (High)		Liters / h	3.5	-
<b>ELECTRICAL RATINGS</b>				
Voltage rating		VAC	220 - 230 - 240	
Available voltage range		VAC	198 - 264	
Running amperes*		A	0.7 - 0.72 - 0.73	0.52 - 0.54 - 0.56
Power input		W	150 - 160 - 170	110 - 120 - 130
Power factor		%	97.4 - 96.6 - 97	96.2 - 96.6 - 96.7
Max. starting amperes		A	1 - 1 - 1	
<b>FEATURES</b>				
Controls		Microprocessor		
Timer		ON / OFF Timer (Max.72 hr)		
Fan speeds		3 and Automatic control		
Air filter		Washable, easy access		
Refrigerant control		Electronic expansion valve		
Operation sound (Hi / Me / Lo)		dB-A	41 / 38 / 35	
Refrigerant tubing connections		Flare type		
Refrigerant tube outer diameter	Narrow tube	mm (in)	9.52 (3 / 8)	
	Wide tube	mm (in)	15.88 (5 / 8)	
Drain connection		20A, OD26mm		
Drain pump		-		
Drain pump (drain connection)		Optional (RCS-SH80TG)		
Remote controller (option)		Optional / drain hose		
<b>DIMENSIONS &amp; WEIGHT</b>				
Dimensions	Height	mm (in)	616 (24 - 8 / 32)	679 (26 - 23 / 32)
	Width	mm (in)	1219 (47 - 32 / 32)	1291 (50 - 26 / 32)
	Depth	mm (in)	229 ( 9 - 1 / 32)	312 (12 - 9 / 32)
Net weight		kg (lb)	28 ( 62 )	
Shipping weight		kg (lb)	31 ( 68 )	
Shipping volume		m <sup>3</sup> (cu. ft)	0.273 ( 9.6 )	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling :

Rating conditions(★) : Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating :

Rating conditions(★) : Indoor air temperature 20 °C DB, Outdoor air temperature 7°C DB / 6°C DB





## 10. Concealed Floor-Standing Type (FM Type)

## 10-2. Major component specifications

## Indoor unit (A)

MODEL No.		SPW-FMR93GH56	SPW-FM93GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT6Q-11A3P ... 15 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	6 ... 831	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 370.2 WHT – VLT : 105.4 VLT – ORG : 67.05	ORG – YEL : 168.0 YEL – PNK : 92.16
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
Electronic expansion valve			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 , RED – GRY : 46	YEL – GRY : 46 BLK – GRY : 46
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.102	

## 10. Concealed Floor-Standing Type (FM Type)

## Indoor unit (B)

MODEL No.		SPW-FMR123GH56	SPW-FM123GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT4Q-21B3P ... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,102	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 217.7      ORG – YEL : 37.88 WHT – VLT : 37.33      YEL – PNK : 21.82 VLT – ORG : 22.48	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
Electronic expansion valve			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.102	

## 10. Concealed Floor-Standing Type (FM Type)

## Indoor unit (C)

MODEL No.		SPW-FMR183GH56	SPW-FM183GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,066	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 67.62      ORG – YEL : 17.36 WHT – VLT : 18.47      YEL – PNK : 5.18 VLT – ORG : 10.10	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
Electronic expansion valve			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Valve body		IKV-24D12	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.165	

## 10. Concealed Floor-Standing Type (FM Type)

## Indoor unit (D)

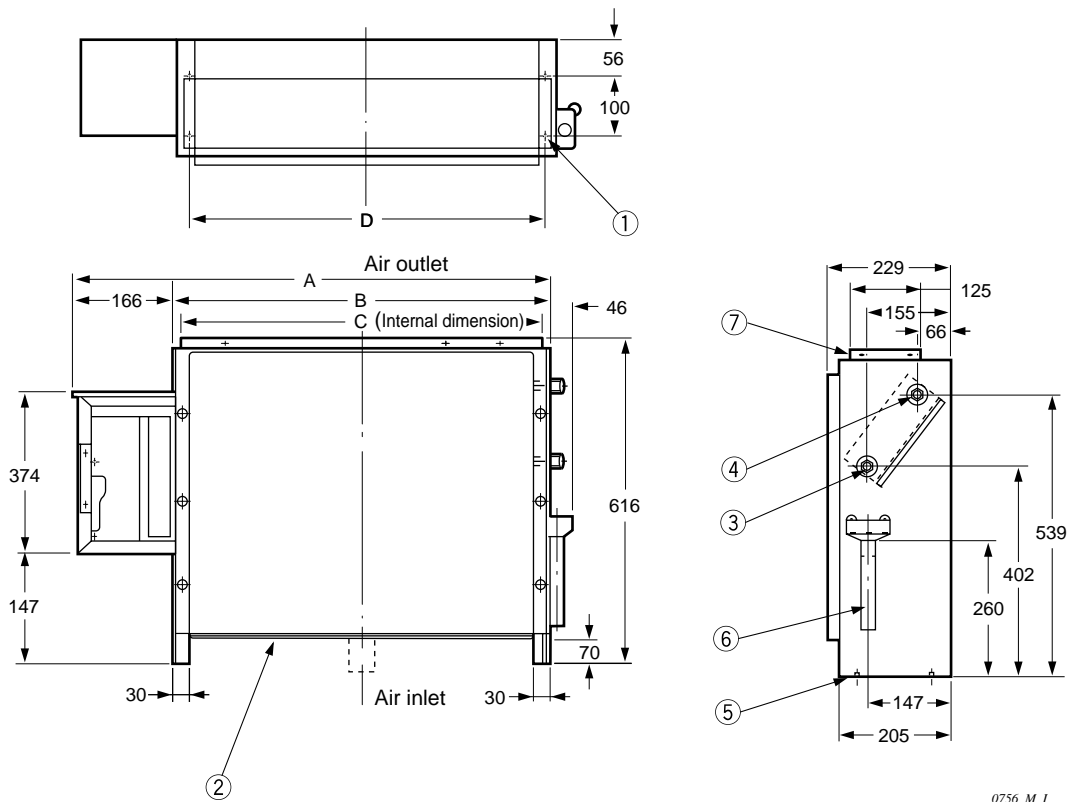
MODEL No.		SPW-FMR253GH56	SPW-FM253GH56
Source		220 - 230 - 240 V / 1 phase / 50Hz	
Controller P.C.B. Ass'y		CR-X253GH (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4 ... 1,066	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 67.62      ORG – YEL : 17.36 WHT – VLT : 18.47      YEL – PNK : 5.18 VLT – ORG : 10.10	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 3.5 μF	
<b>Electronic expansion valve</b>			
Coil		DKV-MOZS550E0	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46 ,      YEL – GRY : 46 RED – GRY : 46 ,      BLK – GRY : 46	
Valve body		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 2.0	
Face area	m <sup>2</sup>	0.165	

## 10. Concealed Floor-Standing Type (FM Type)

### 10-3. Dimensional data

Indoor unit : 9, 12, 18, 25 Type

Type \ Size	A	B	C	D	Narrow tube	Wide tube
9, 12	858	692	672	665	9.52	12.7
18, 25	1173	1007	1002	980	9.52	15.88



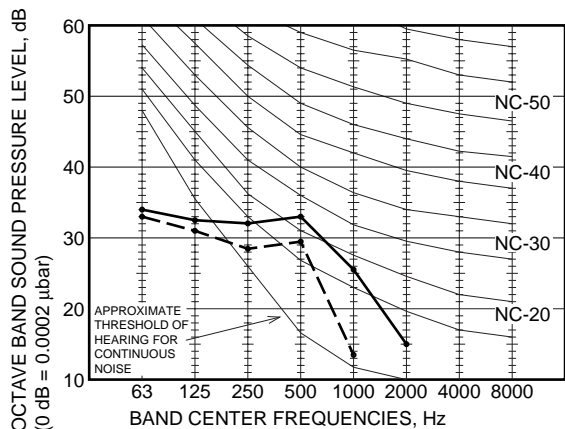
0756\_M\_1

- ① 4- $\phi$ 12 hole (For fastening the indoor unit to the floor by screws.)
- ② Air filter
- ③ Refrigerant connection outlet (narrow tube)
- ④ Refrigerant connection outlet (wide tube)
- ⑤ Level adjusting bolt
- ⑥ Drain outlet (20 A)
- ⑦ Flange for the air-outlet duct

## 10. Concealed Floor-Standing Type (FM Type)

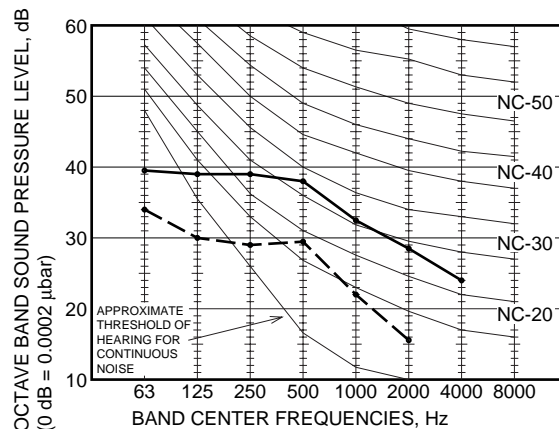
### 10-4. Noise criterion curves

MODEL	: SPW-FMR93GH56
	SPW-FM93GH56
SOUND LEVEL	: HIGH 33 dB(A), NC 27
	LOW 28 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



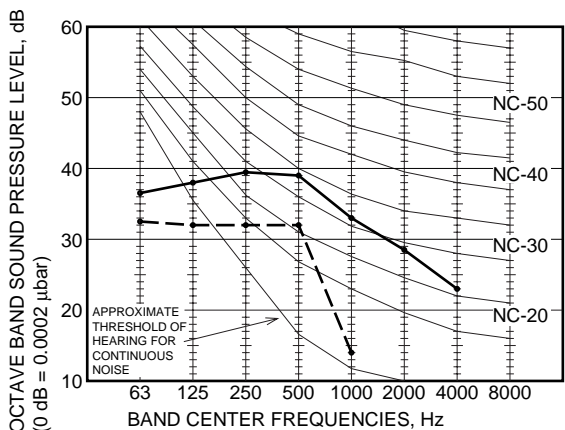
0834\_V\_I

MODEL	: SPW-FMR123GH56
	SPW-FM123GH56
SOUND LEVEL	: HIGH 39 dB(A), NC 33
	LOW 29 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



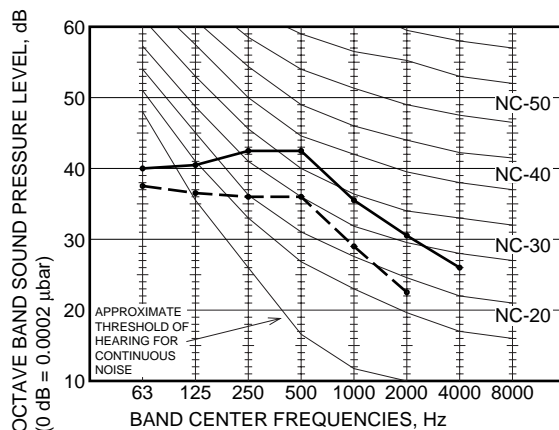
0835\_V\_I

MODEL	: SPW-FMR183GH56
	SPW-FM183GH56
SOUND LEVEL	: HIGH 39 dB(A), NC 34
	LOW 31 dB(A), NC 26
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



0836\_V\_I

MODEL	: SPW-FMR253GH56
	SPW-FM253GH56
SOUND LEVEL	: HIGH 41 dB(A), NC 37
	LOW 35 dB(A), NC 30
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz

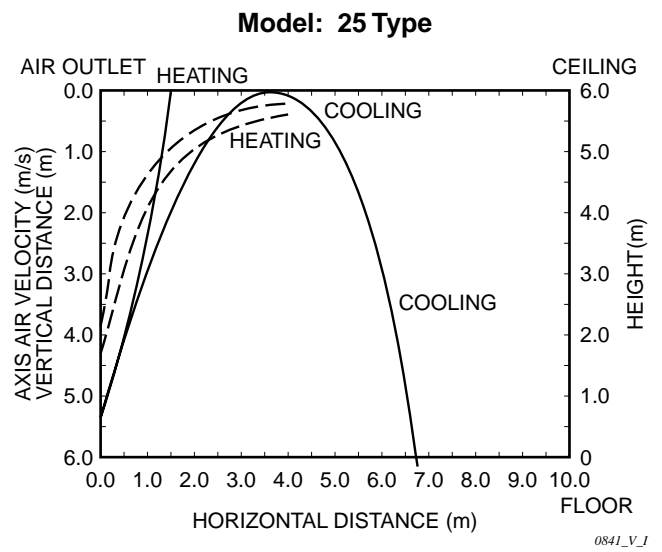
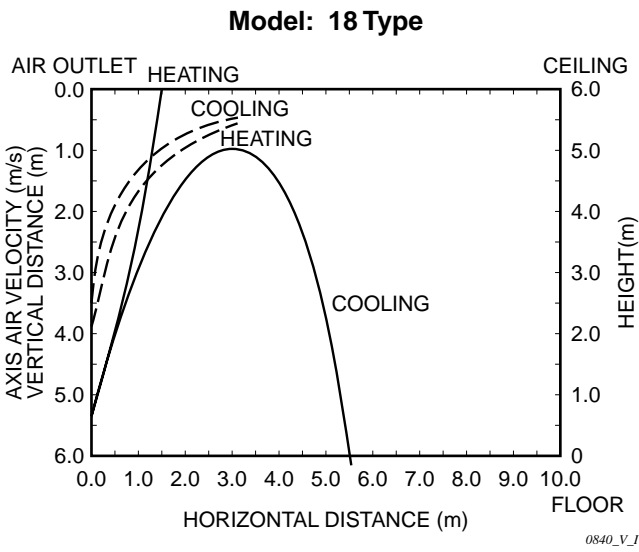
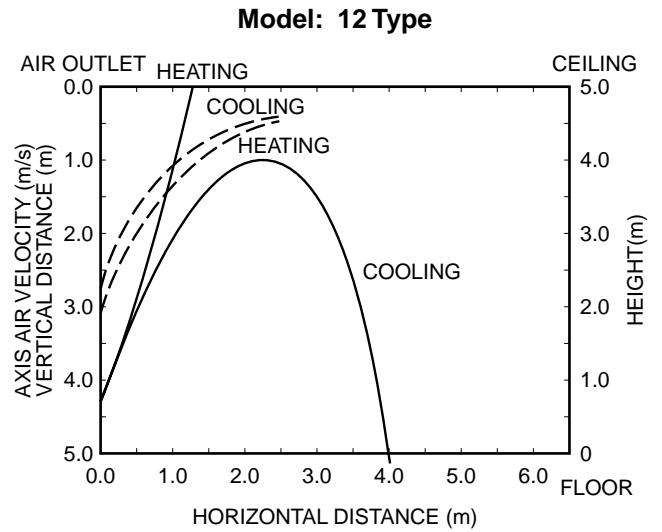
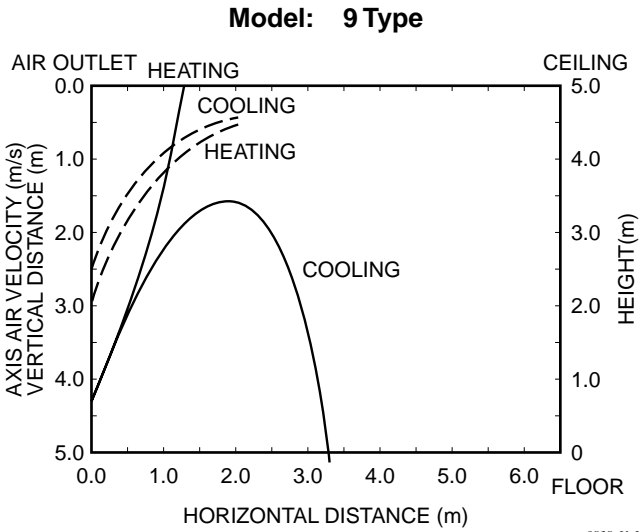


0837\_V\_I



## 10. Concealed Floor-Standing Type (FM Type)

### 10-5. Air throw distance chart



Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in cooling mode  
 20 °C DB in heating mode

4

## 10. Concealed Floor-Standing Type (FM Type)

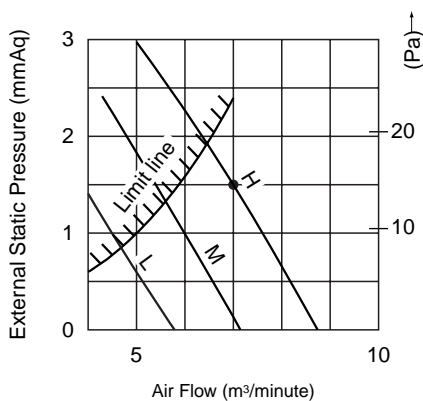
### 10-6. Indoor fan performance

#### How to Read the Diagram

The vertical axis is the EXTERNAL STATIC PRESSURE (mmAq) while the horizontal axis represents the AIR FLOW (m<sup>3</sup>/minute). The characteristic curve for the "H", "Med", and "Lo" fan speed control.

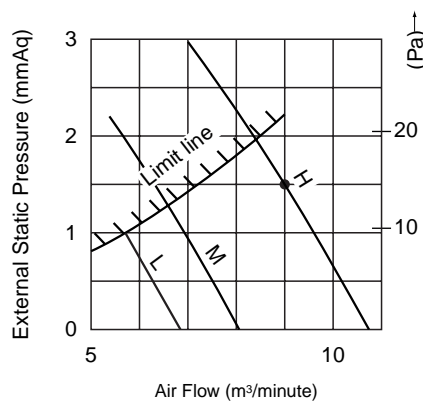
The name plate values are shown based on the "H" air flow. Therefore in the case of the 25 type the flow is 17 m<sup>3</sup>/minute, while the EXTERNAL STATIC PRESSURE is 1.5 mmAq at "H" position. If the external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet.

**9 Type**



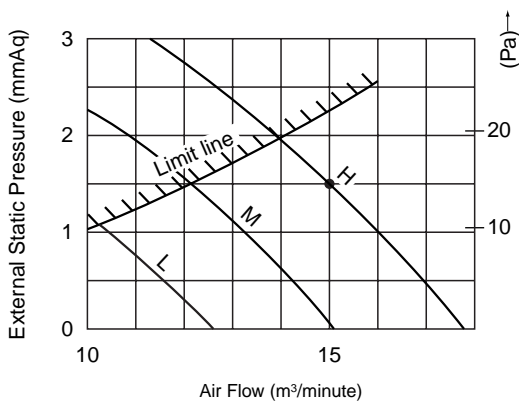
0842\_V\_1

**12 Type**



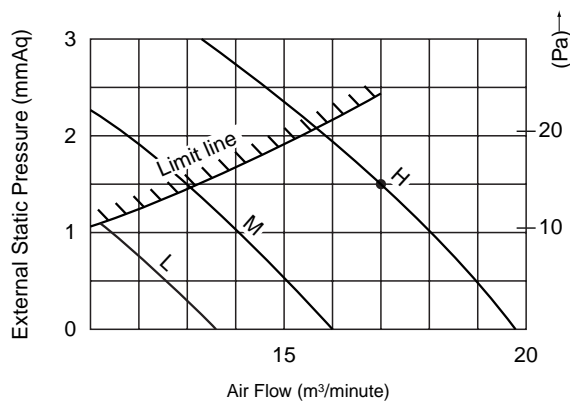
0843\_V\_1

**18 Type**



0844\_V\_1

**25 Type**



0845\_V\_1





# 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

## 11-1. Specifications

### Unit specifications (A)

MODEL No.	Indoor Unit		SPW-SLR93GH56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity		kW BTU / h	2.8 9,600			3.2 11,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	840 (750)* / 630 / 540					
Moisture removal (High)		Liters/h	0.6			—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		220	230	240	220	230	240
Available voltage range	VAC		198 – 264					
Running amperes	A		0.50	0.50	0.51	0.36	0.37	0.38
Power input	W		105	110	115	75	80	85
Power factor	%		95	96	94	95	94	93
Fan motor locked rotor amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	43 (41)* / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)					
	Wide tube mm (in.)		12.7 (1 / 2)					
Drain connection			25 A, OD32 mm					
Drain pump			Max. head 25 cm above drain connection					
Remote Controller			Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories			Optional / —					
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor Unit (include panel)		Package			
Dimensions	Height	mm (in.)	213 ( 8-12/32)		365 (14-12/32)		164 ( 6-15/32)	
	Width	mm (in.)	1,233 (48-17/32)		1,268 (49-29/32)		1,393 (54-27/32)	
	Depth	mm (in.)	730 (28-24/32)		714 (28- 4/32)		860 (33-27/32)	
Net weight		kg (lbs.)	34 (75)		—		—	
Shipping weight		kg (lbs.)	—		32 (71)		13 (29)	
Shipping volume		m <sup>3</sup> (cu. ft)	—		0.33 (11.7)		0.196 (6.9)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\*: When using accessory cable

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

### 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

#### Unit specifications (B)

MODEL No.		Indoor Unit		SPW-SLR123GH56				
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz				
<b>PERFORMANCE</b>				Cooling			Heating	
Capacity		kW BTU / h	3.6 12,000			4.2 14,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	870 (780)* / 660 / 570					
Moisture removal (High)		Liters/h	1.3			—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	220	230	240	220	230	240
Available voltage range		VAC	198 – 264					
Running amperes		A	0.50	0.50	0.51	0.36	0.37	0.38
Power input		W	105	110	115	75	80	85
Power factor		%	95	96	94	95	94	93
Fan motor locked rotor amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	43 (41)* / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)					
	Wide tube mm (in.)		12.7 (1 / 2)					
Drain connection			25 A, OD32 mm					
Drain pump			Max. head 25 cm above drain connection					
Remote Controller			Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories			Optional / —					
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>				Indoor Unit (include panel)		Package		
Dimensions	Height	mm (in.)	213 ( 8-12/32)		365 (14-12/32)		164 ( 6-15/32)	
	Width	mm (in.)	1,233 (48-17/32)		1,268 (49-29/32)		1,393 (54-27/32)	
	Depth	mm (in.)	730 (28-24/32)		714 (28- 4/32)		860 (33-27/32)	
Net weight		kg (lbs.)	34 (75)		—		—	
Shipping weight		kg (lbs.)	—		32 (71)		13 (29)	
Shipping volume		m <sup>3</sup> (cu. ft)	—		0.33 (11.7)		0.196 (6.9)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\*: When using accessory cable

Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

### Unit specifications (C)

MODEL No.	Indoor Unit		SPW-SLR183GH56					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		5.6 19,000			6.3 21,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	900 (810)* / 690 / 600					
Moisture removal (High)		Liters/h	2.5			—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	VAC		220	230	240	220	230	240
Available voltage range		VAC	198 – 264					
Running amperes		A	0.53	0.53	0.54	0.38	0.39	0.40
Power input		W	110	115	120	80	85	90
Power factor		%	94	94	93	96	95	94
Fan motor locked rotor amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	44 (42)* / 38 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3 / 8)					
	Wide tube mm (in.)		15.88 (1 / 2)					
Drain connection			25 A, OD32 mm					
Drain pump			Max. head 25 cm above drain connection					
Remote Controller			Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories			Optional / —					
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor Unit (include panel)		Package			
Dimensions	Height	mm (in.)	213 ( 8-12/32)		365 (14-12/32)		164 ( 6-15/32)	
	Width	mm (in.)	1,233 (48-17/32)		1,268 (49-29/32)		1,393 (54-27/32)	
	Depth	mm (in.)	730 (28-24/32)		714 (28- 4/32)		860 (33-27/32)	
Net weight		kg (lbs.)	35 (77)		—		—	
Shipping weight		kg (lbs.)	—		33 (73)		13 (29)	
Shipping volume		m <sup>3</sup> (cu. ft)	—		0.33 (11.7)		0.196 (6.9)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\*: When using accessory cable

#### Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB , Outdoor air temperature 7 °C DB / 6 °C WB

## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

## Unit specifications (D)

MODEL No.		Indoor Unit		SPW-SLR253GH56				
<b>POWER SOURCE</b>				220 - 230 - 240 V / 1 phase / 50Hz				
<b>PERFORMANCE</b>				Cooling		Heating		
Capacity		kW BTU / h	7.3 25,000		8.0 27,000			
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1200 (1110)* / 990 / 780					
Moisture removal (High)		Liters/h	3.3		—			
<b>ELECTRICAL RATINGS</b>								
Voltage rating		VAC	220	230	240	220	230	240
Available voltage range		VAC	198 – 264					
Running amperes		A	0.55	0.55	0.56	0.40	0.41	0.42
Power input		W	115	120	125	85	90	95
Power factor		%	95	95	93	97	95	94
Fan motor locked rotor amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	48 (46)* / 44 / 37					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	9.52 (3 / 8)*					
	Wide tube	mm (in.)	15.88 (1 / 2)					
Drain connection			25 A, OD32 mm					
Drain pump			Max. head 25 cm above drain connection					
Remote Controller			Optional (RCS-SH80TG)					
Refrigerant tubing kit / Accessories			Optional / —					
Color (Approximate value)			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>				Indoor Unit (include panel)		Package		
Dimensions	Height	mm (in.)	213 ( 8-12/32)	365 (14-12/32)	164 ( 6-15/32)			
	Width	mm (in.)	1,430 (56-10/32)	1,465 (57-22/32)	1,590 (62-19/32)			
	Depth	mm (in.)	730 (28-24/32)	714 (28- 4/32)	860 (33-27/32)			
Net weight		kg (lbs.)	39 (86)	—	—			
Shipping weight		kg (lbs.)	—	35 (77)	15 (33)			
Shipping volume		m <sup>3</sup> (cu. ft)	—	0.382 (13.5)	0.224 (7.9)			

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\*: When using accessory cable

## Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

\* Use the "Tube connector" (accessory part with unit).

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## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

### 11-2. Major component specifications

#### Indoor unit (A)

<b>MODEL No.</b>		SPW-SLR93GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X - 31A3P... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4... 1.010	
Coil resistance (Ambient temperature 20 °C)	Ω	WHT - BRN : 191.0	ORG - YEL : 40.0
		WHT - VLT : 47.1	YEL - BLK : 96.5
		VLT - ORG : 40.0	BLK - PNK : 44.7
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Solenoid control model		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG - GRY : 46 ,	YEL - GRY : 46
		RED - GRY : 46,	BLK - GRY : 46
Solenoid control valve model		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		PNR-SL183GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	220 - 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		V, W	
Total head & capacity		400 mm, 600 cc/min	

## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

## Indoor unit (B)

<b>MODEL No.</b>		SPW-SLR123GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X - 31A3P... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4... 1.080	
Coil resistance (Ambient temperature 20 °C)	Ω	WHT - BRN : 191.0	ORG - YEL : 40.0
		WHT - VLT : 47.1	YEL - BLK : 96.5
		VLT - ORG : 40.0	BLK - PNK : 44.7
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Solenoid control model		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Solenoid control valve model		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2 ... 1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		PNR-SL183GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	220 - 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		WP20SL-19	
	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	

11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

Indoor unit (C)

<b>MODEL No.</b>		SPW-SLR183GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (3)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X - 31A3P... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4... 1,080	
Coil resistance (Ambient temperature 20 °C)	Ω	WHT - BRN : 191.0      ORG - YEL : 40.0 WHT - VLT : 47.1      YEL - BLK : 96.5 VLT - ORG : 40.0      BLK - PNK : 44.7	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Solenoid control model		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG – GRY : 46 ,    YEL – GRY : 46 RED – GRY : 46 ,    BLK – GRY : 46	
Solenoid control valve model		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		PNR-SL183GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	220 - 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		V, W	AC230 V, 50 Hz, 14.7 W
Total head & capacity		400 mm, 600 cc/min	

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## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

## Indoor unit (D)

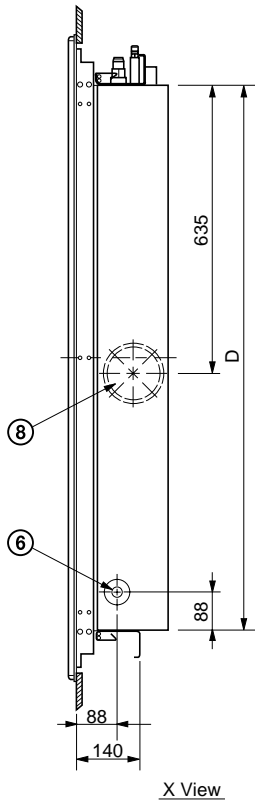
<b>MODEL No.</b>		SPW-SLR253GH56	
<b>Source</b>		220 - 230 - 240 V / 1 phase / 50Hz	
<b>Controller P.C.B. Ass'y</b>		CR-X253GH (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X - 51B5P... 30 W	
Source		220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm.	4... 1,210	
Coil resistance (Ambient temperature 20 °C)	Ω	WHT - BRN : 149.8 WHT - VLT : 29.44 VLT - ORG : 23.39	ORG - YEL : 35.66 YEL - BLK : 40.72 BLK - PNK : 3.780
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
<b>Electronic expansion valve</b>			
Solenoid control model		DKV-MOZS550E0	
Coil resistance (at 20 °C)	Ω	ORG - GRY : 46 , YEL - GRY : 46 RED - GRY : 46 , BLK - GRY : 46	
Solenoid control valve model		IKV-24D12	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3 ... 1.5	
Face area	m <sup>2</sup>	0.170	
<b>Panel</b>			
Model No.		PNR-SL253GHA	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm.	220 - 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25 °C)	Ω	16,430 Ω ± 8 %	
<b>Drain Pump</b>			
Rated		WP20SL-19	
Rated	V, W	AC230 V, 50 Hz, 14.7 W	
Total head & capacity		400 mm, 600 cc/min	



# 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

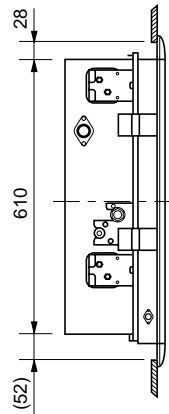
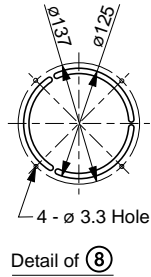
## 11-3. Dimensional data

Indoor unit : 9, 12, 18, 25 Type

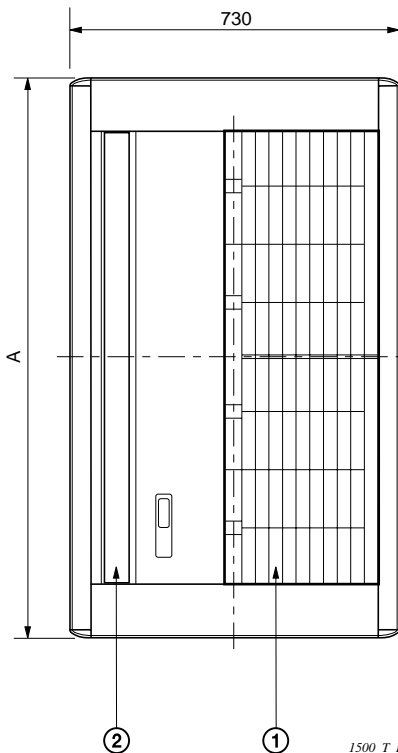
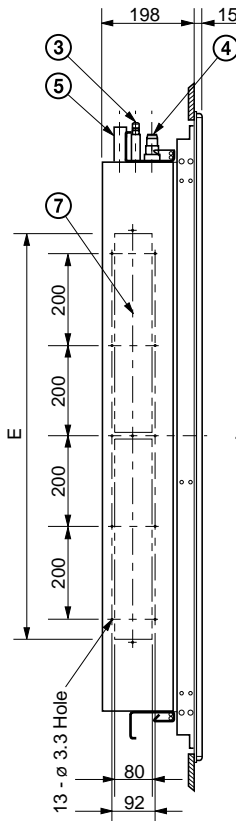
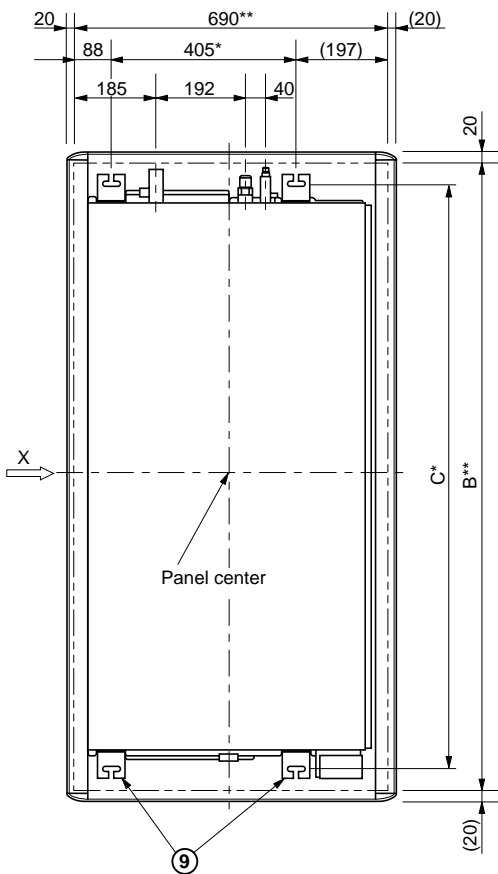


	A	B	C	D	E
9, 12, 18 Type	1233	1193	1089	1003	660
25 Type	1430	1390	1286	1200	900

(\*: Suspension bolt pitch)  
(\*\*: For ceiling opening)



- ① Air intake grille
- ② Air outlet
- ③ Refrigerant liquid line (ø 9.52)
- ④ Refrigerant gas line (ø 12.7: 9, 12 type, ø 15.88: 18, 25 type)
- ⑤ Drain connection
- ⑥ Power supply entry
- ⑦ For discharge duct
- ⑧ For fresh air intake
- ⑨ Suspension mounting

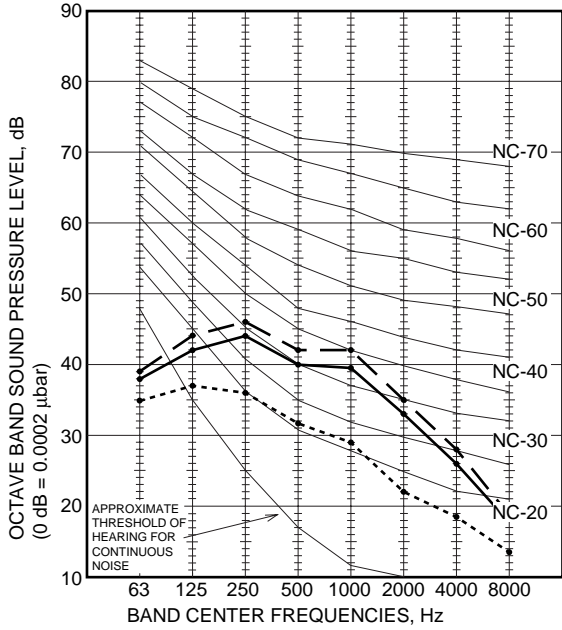


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## 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

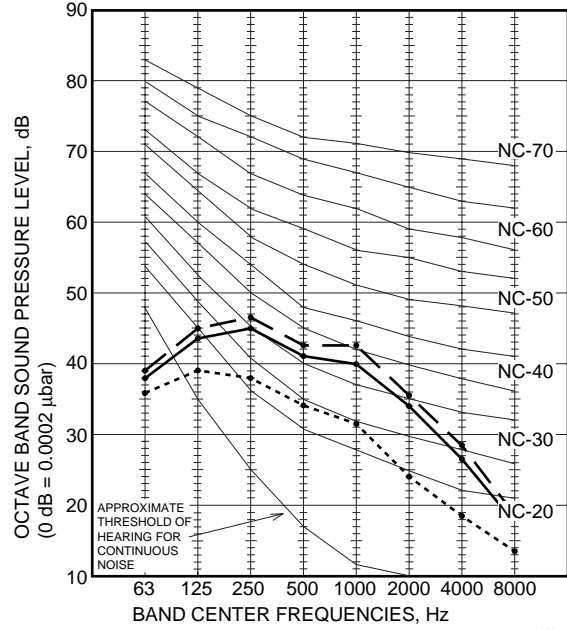
### 11-4. Noise criterion curves

MODEL : SPW-SLR93GH56, SLR123GH56  
 SOUND LEVEL : HIGH 43 dB(A), NC 41 / LOW 33 dB(A), NC 27  
 (HIGH 41 dB(A), NC 37 / LOW 33 dB(A), NC 27)  
 ( ) : when Booster cable connected  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



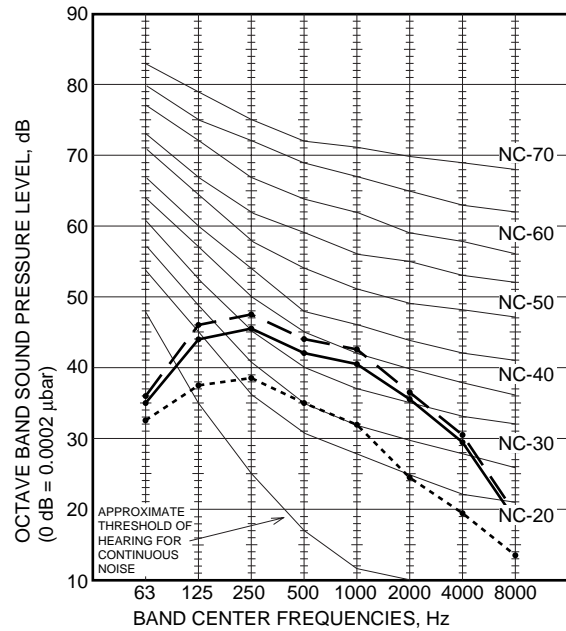
1501\_U\_I

MODEL : SPW-SLR183GH56  
 SOUND LEVEL : HIGH 44 dB(A), NC 41 / LOW 35 dB(A), NC 29  
 (HIGH 42 dB(A), NC 38 / LOW 35 dB(A), NC 29)  
 ( ) : when Booster cable connected  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



1502\_U\_I

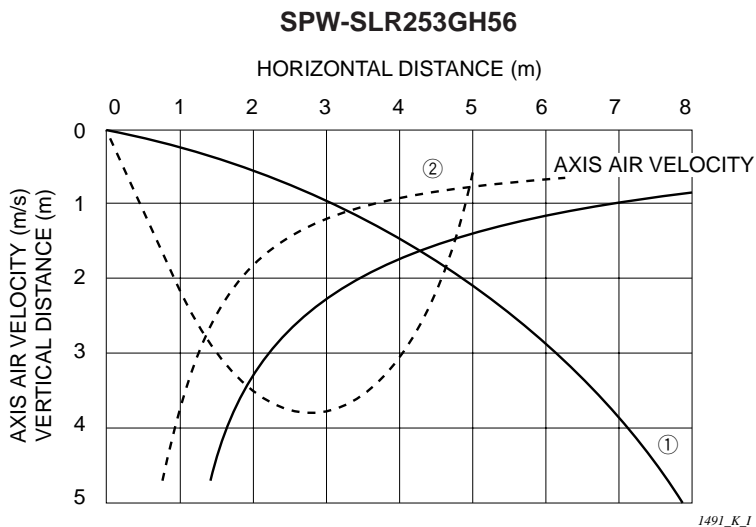
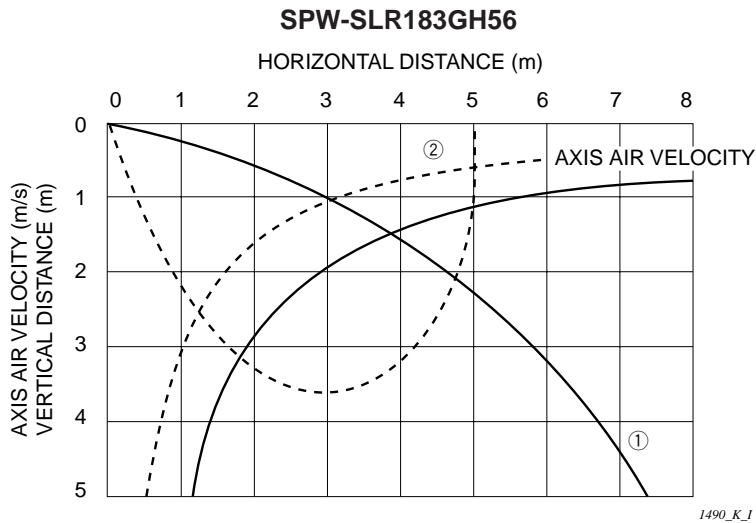
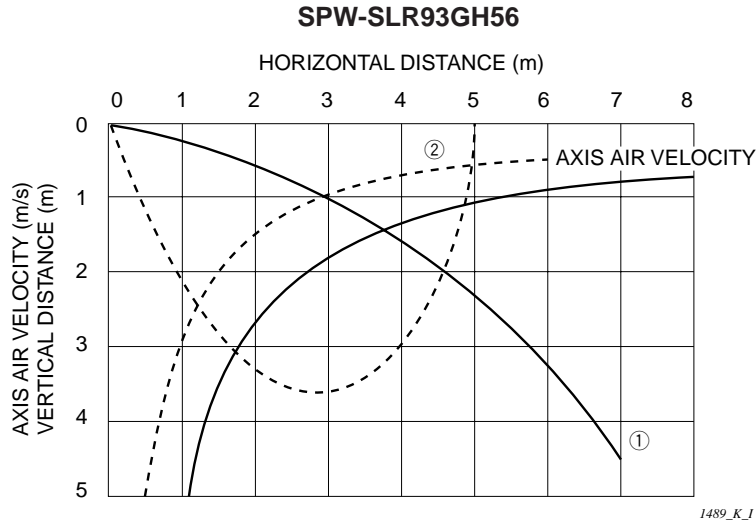
MODEL : SPW-SLR25GH56  
 SOUND LEVEL : HIGH 48 dB(A), NC 41 / LOW 37 dB(A), NC 30  
 (HIGH 46 dB(A), NC 38 / LOW 37 dB(A), NC 30)  
 ( ) : when Booster cable connected  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



1503\_U\_I

### 11. 1-Way Air Discharge Semi-concealed-Slim Type (SL Type)

#### 11-5. Air throw distance chart



Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in cooling mode  
 20 °C DB in heating mode

①: LOUVER ANGLE 15° in cooling mode  
 ②: LOUVER ANGLE 65° in cooling mode

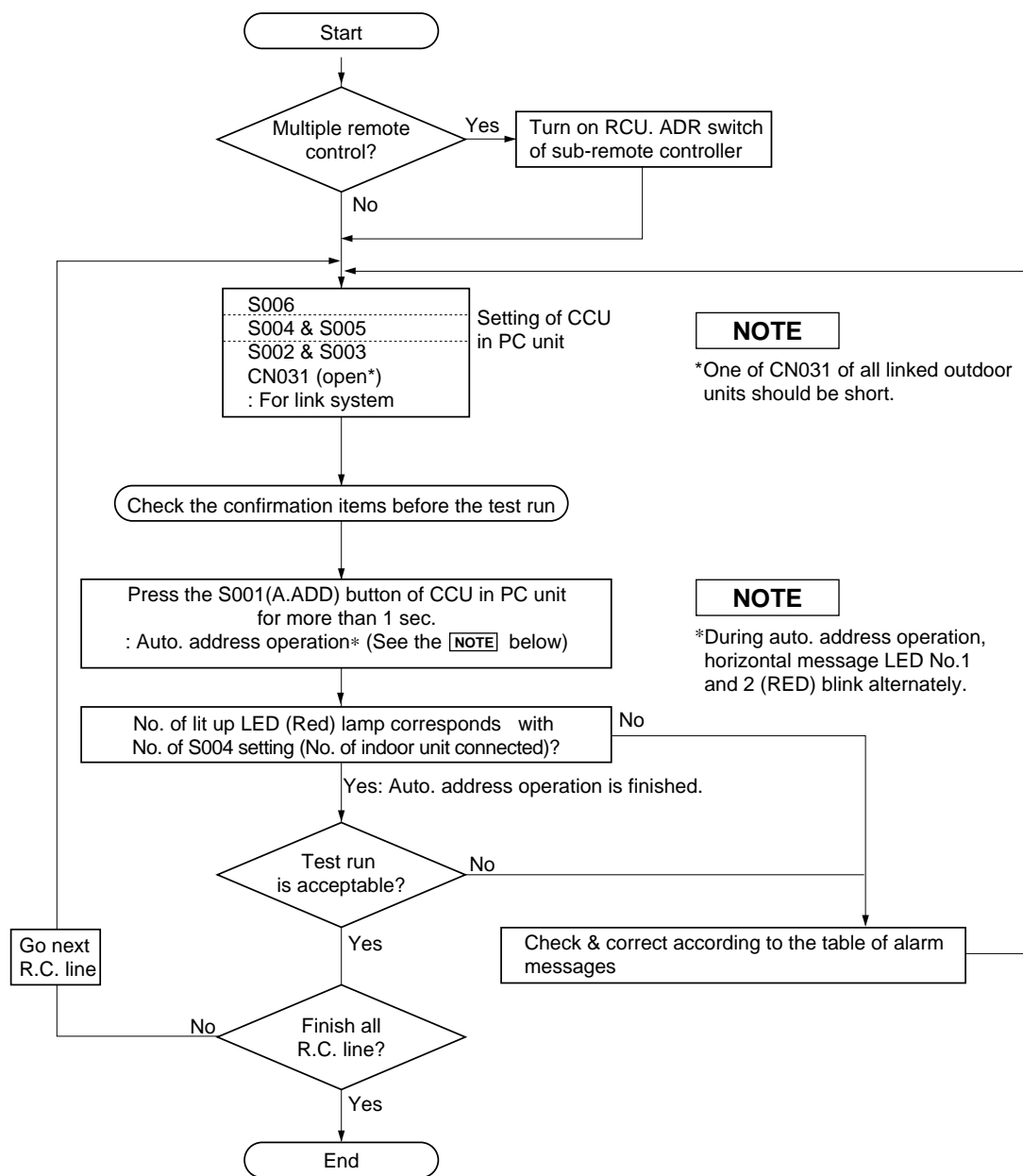
# Contents

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  - 1-2. Monitor and self-diagnostic function ..... V - 4
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- 2. Electrical Work ..... V - 10**
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# 1. Test Run

## 1-1. Test run procedure



**NOTE**  
\*One of CN031 of all linked outdoor units should be short.

**NOTE**  
\*During auto. address operation, horizontal message LED No.1 and 2 (RED) blink alternately.

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**NOTE**

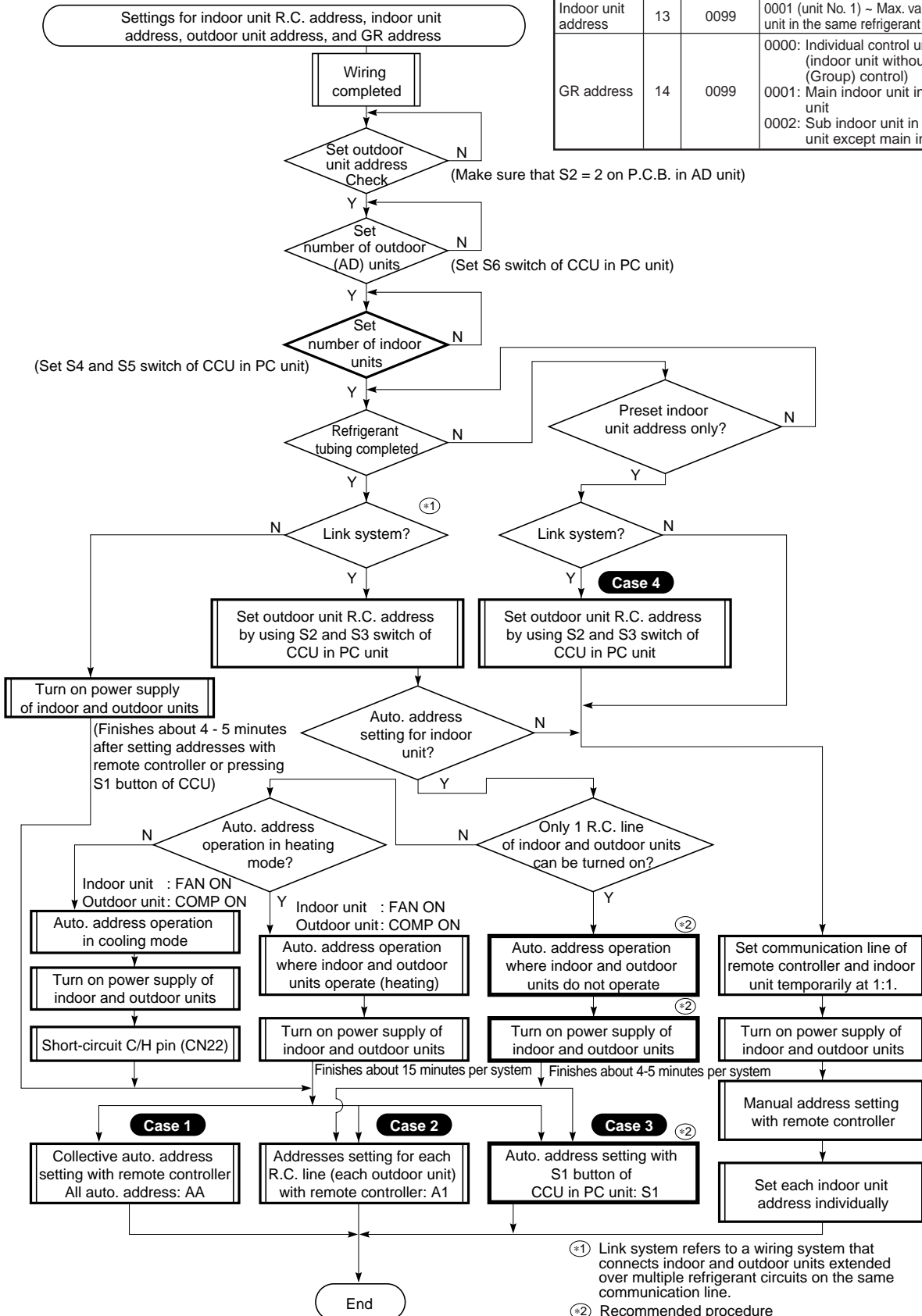
- 1) Auto. address operation decides each indoor unit address to the indoor unit connected to the refrigerant circuit individually.  
The required time of operation depends on the temperature.  
It takes a maximum of 20 minutes for a link system.  
It takes a maximum of about 3 minutes without turning on the compressor, for a system without link.
- 2) When linking outdoor units in a network (link system), Auto. address operation should be performed by each refrigerant circuit (outdoor unit) individually. If you start Auto. address operation of another refrigerant circuit during Auto. address operation, the alarm message (E12) will be displayed.
- 3) Indoor unit address can be changed manually with the remote controller when required.
- 4) The selected indoor unit address is memorized in EEPROM even after power failure.
- 5) When using a system controller, zone registration is required after finishing the test run.

# 1. Test Run

● Test run procedure in detail

● The following addresses will be set in EEPROM (IC8) on indoor P.C.B. after test run. (Data is not set when shipped from factory).

	Item code	Factory setting data	Setting data
R.C. address	12	0099	0001 (unit No. 1) ~ 0030 (unit No. 30)
Indoor unit address	13	0099	0001 (unit No. 1) ~ Max. value of indoor unit in the same refrigerant circuit
GR address	14	0099	0000: Individual control unit (indoor unit without GR (Group) control) 0001: Main indoor unit in GR control unit 0002: Sub indoor unit in GR control unit except main indoor unit



\*1 Link system refers to a wiring system that connects indoor and outdoor circuits extended over multiple refrigerant circuits on the same communication line.  
\*2 Recommended procedure



# 1. Test Run

## 1-2. Monitor and self-diagnostic function

### ■ Monitor function for CCU (CR-DYPTG) in PC unit

By selecting the Item SW (S7) and Select SW (S8), the LED will display all the necessary information to be monitored. The monitored information stored in memory can be deleted by turning off the power supply.

#### ● Location and name of LED on CCU in PC unit.

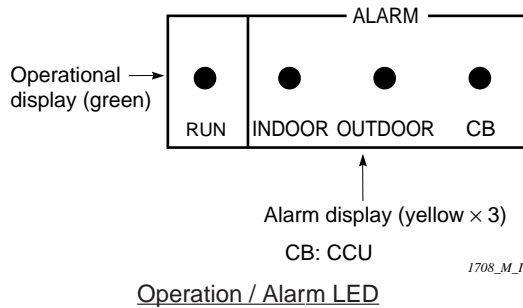
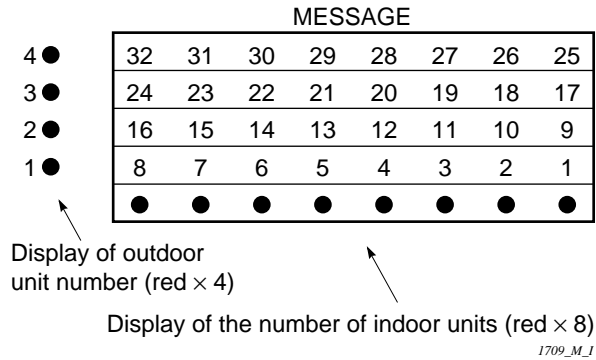


Fig. 1-7



LED indicating the number of indoor units

Fig. 1-8

#### ● Display messages when using the item and select switches

☼ : light ON / blink ● : light OFF

ITEM SW (S7) 0~F	SELECT SW (S8) 1~4	Item	Message displayed	
			RUN / ALARM LED	MESSAGE LED
0 (Initial setting)	-	Display of the number of connected indoor units	☼ ● ● ● (● ● ● ●) RUN INDOOR OUTDOOR CB	Display of the number of indoor units
		Display of alarm messages for indoor unit *Displayed at the time of operation	☼ ☼ ● ● RUN INDOOR OUTDOOR CB	Display of the number of indoor units
		Display of alarm messages for outdoor unit	☼ ● ☼ ● (● ● ☼ ●) RUN INDOOR OUTDOOR CB	Vertical LED : Lights up unit where alarm is being issued [unit No. 1 (PC unit), unit No. 2 and No. 3 (AD units)] Horizontal LED : Displays alarm messages
		Display of alarm messages for CCU	☼ ● ● ☼ (● ● ● ☼) RUN INDOOR OUTDOOR CB	Vertical LED : Displays progress of auto. address operation Horizontal LED : Displays alarm messages
		Display during auto. address operation	☼ ● ● ● (● ● ● ●) RUN INDOOR OUTDOOR CB	Vertical LED : All off Horizontal LED : 1 and 2 blink alternately Note) CB: CCU
		* If either outdoor or CB alarm message is displayed during auto. address operation, the alarm can be conformed by selecting "4" on the Item switch.		

# 1. Test Run

ITEM SW (S7) 0~F	SELECT SW (S8) 1~4	Item	Message displayed	
			RUN / ALARM LED	MESSAGE LED
1	1~4	Display of connected indoor unit	RUN / ALARM LED display does not affect monitored information.	Vertical LED : Lights up starting from 1 in sequence by pressing the Select switch each time Horizontal LED : Lights up in accordance with connected unit on the vertical LED (blinks if the indoor unit has an alarm)
2	1~4	Display of connected indoor unit in operation		Vertical LED : Lights up starting from 1 in sequence by pressing the Select switch each time Horizontal LED : Lights up in accordance with connected operating unit on the vertical LED (blinks if the indoor unit has an alarm)
3	–	Display of the number of connected outdoor units		Vertical LED : OFF Horizontal LED : Lights up the number of connected outdoor units
4	–	Display of alarm history		Vertical LED : If alarm occurs on outdoor unit, the unit lights up. OFF when alarm occurs on CCU Horizontal LED : Displays latest alarm message for all outdoor units and CCU
5	1~4	Display of oil level monitor		Vertical LED : Lights up in accordance with outdoor units selected with the Select SW (S8) Horizontal LED : Displays oil level of outdoor unit compressor indicated on the vertical LED (same as outdoor PCB display for parts inspection method on page).
6	1~4	Display of alarm history for outdoor unit		Vertical LED : Lights up in accordance with outdoor units selected with the Select SW (S8) Horizontal LED : Displays latest alarm message for outdoor unit indicated on the vertical LED * Latest alarm message can be monitored for individual outdoor unit including the information that can be monitored by using the Item "4".

■ Explanation for MESSAGE LED (Horizontal LED red, 8 lamps / vertical LED red, 4 lamps)

- It normally indicates the number of connected indoor units (up to 32 units). Refer to Fig. 1-9 for example of display.
- In case of outdoor unit and CCU alarm, both outdoor alarm LED (yellow) and CB alarm LED (yellow) light up and alarm messages are displayed on LED as shown in Fig. 1-10.
- Outdoor unit alarm display includes alarm messages on 8 horizontal LED lamps and outdoor unit number causing the alarm on 4 vertical LED lamps.  
(vertical LED 1 lights up: outdoor PC unit alarm / vertical LED 2 and 3 light up: outdoor AD unit, alarm for unit No. 2 and No. 3)
- In case of CCU alarm, all vertical LED lamps are off and only 8 horizontal LED lamps display alarm messages.
- If outdoor alarm LED (yellow) is OFF, any of vertical LED 1 - 3 lights up, and 8 horizontal LED lamps blink, it is not displayed on the remote controller due to temporary protective operations generated by outdoor unit. After releasing the protective operations, the number of connected indoor units is displayed.

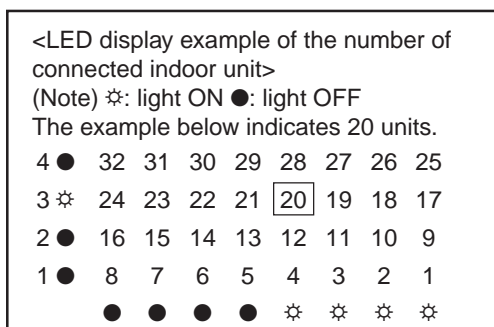


Fig. 1-9

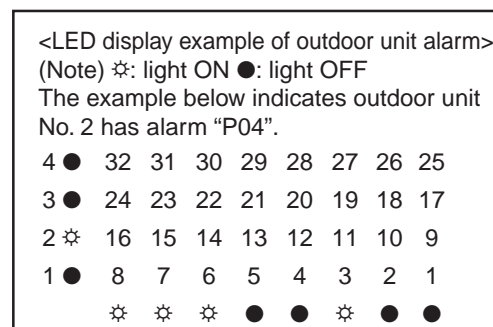


Fig. 1-10



# 1. Test Run

## 1-3. Alarm messages on CCU (CR-DYPTG)

- \* During normal operation, either "OUTDOOR" or "CB" alarm lamp on CCU lights up with alarm display of LED1-8 (red).
- \* In case either "OUTDOOR" or "CB" alarm lamp lights up during automatic address operation, turn the "ITEM" switch to "4" to display alarm messages on LED 1-8 (red).
- \* In case of "INDOOR" alarm, only alarm LED lights up, and alarm messages are not displayed on LED 1-8 (red).

☆: light ON / blinking ●: light OFF

Remote controller display	LED (red)								Alarm message		
	8	7	6	5	4	3	2	1			
E06	●	☆	●	●	●	☆	☆	●	CCU receives error signal from indoor unit.		
E07	●	☆	●	●	●	☆	☆	☆	CCU transmits error signal to indoor unit.		
-	●	☆	●	●	☆	☆	●	●	Starting auto. address setting is prohibited.		
E15	●	☆	●	●	☆	☆	☆	☆	The number of connected indoor units is less than the number set in CCU.	Message displayed by turning the "ITEM" switch to "4" when alarm LED lights up during automatic address operation.	
E16	●	☆	●	☆	●	●	●	●			The number of connected indoor units is more than the number set in CCU.
E23	●	☆	●	☆	●	☆	☆	☆	CCU transmits error signal to outdoor P.C.B..		
E24	●	☆	●	☆	☆	●	●	●	CCU receives error signal from outdoor P.C.B..		
E25	●	☆	●	☆	☆	●	●	☆	Duplication of outdoor unit address.		
E26	●	☆	●	☆	☆	●	☆	●	The number of outdoor units does not correspond to number set in CCU.		
E27	●	☆	●	☆	☆	●	☆	☆	Mis-wiring of outdoor unit control wiring.		
E29	●	☆	●	☆	☆	☆	●	☆	Outdoor unit receives error signal.		
L04	☆	☆	●	●	●	☆	●	●	Duplication of outdoor R.C. address setting.		
L05	☆	☆	●	●	●	☆	●	☆	Operation mode priority remote controllers are set with 2 units or more.	From priority mis-setting remote controller	
L06	☆	☆	●	●	●	☆	☆	●		From non-priority setting remote controller	
F04	●	☆	☆	●	●	☆	●	●	Outdoor thermistor is either open or damaged	Discharge gas temp. (PC comp.): TH1	
F05	●	☆	☆	●	●	☆	●	☆		Discharge gas temp. (AC comp.): TH2	
F06	●	☆	☆	●	●	☆	☆	●		Outdoor no. 1 coil gas temp.: TH7/TH4	
F07	●	☆	☆	●	●	☆	☆	☆		Outdoor no. 1 coil liquid temp.: TH4/TH2	
F08	●	☆	☆	●	☆	●	●	●		Outside air temp.: TH9/TH5	
F22	●	☆	☆	☆	●	☆	☆	●		Discharge gas temp. (SC comp.): TH3/TH1	
H25	☆	●	●	☆	☆	●	●	☆		Note: PC unit / AD unit	Improper installation of discharge gas temp. sensor (SC comp.): TH3/TH1
F23	●	☆	☆	☆	●	☆	☆	☆		Outdoor no. 2 coil gas temp.: TH8	
F24	●	☆	☆	☆	☆	●	●	●		Outdoor no. 2 coil liquid temp.: TH5	
F25	●	☆	☆	☆	☆	●	●	☆		Outdoor coil temperature: TH6/TH3	
* P02	☆	☆	☆	●	●	●	☆	●	Protective device activated	Thermal protector in FM or comp. Defective phase.	
										Power supply voltage is unusual. (The voltage is more than 260V or less than 160V between L and N phase.)	
* P04	☆	☆	☆	●	●	☆	●	●	High-pressure switch	PC, AC, SC comp.	
* H06	☆	●	●	●	●	☆	☆	●	Low-pressure switch	SC comp.	
* P05	☆	☆	☆	●	●	☆	●	☆	Negative phase protector		
* P03	☆	☆	☆	●	●	●	☆	☆		PC comp.	
* P17	☆	☆	☆	☆	●	●	●	☆	Abnormal discharge temperature	AC comp.	
* P18	☆	☆	☆	☆	●	●	☆	●		SC comp.	

### NOTE

\*: Alarm display LED lamps may all be lit up or all blink at once.  
(Without\*: light up all at once only)

- CCU : Command control unit (incorporated in outdoor unit)
- PC unit : Power control unit
- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor

# 1. Test Run

Remote controller display	LED (red)								Alarm message	
	8	7	6	5	4	3	2	1		
* H01		●	●	●	●	●	●	☆	PC comp. CT detection current	Overload current
* H02		●	●	●	●	●	☆	●		Lock current
* H03	☆	●	●	●	●	●	☆	☆		Current is not detected when compressor is ON
F27	●	☆	☆	☆	☆	●	☆	☆		Current is detected when compressor is OFF
* H09	☆	●	●	●	☆	●	●	☆		MG SW is chattering
* H11	☆	●	●	●	☆	●	☆	☆		AC comp. CT detection current
* H12	☆	●	●	●	☆	☆	●	●	Lock current	
* H13	☆	●	●	●	☆	☆	●	☆	Current is not detected when compressor is ON	
F28	●	☆	☆	☆	☆	☆	●	●	Current is detected when compressor is OFF	
* H19	☆	●	●	☆	●	●	☆	☆	MG SW is chattering	
* H21	☆	●	●	☆	●	☆	●	☆	SC comp. CT detection current	
* H22	☆	●	●	☆	●	☆	☆	●		Lock current
* H23	☆	●	●	☆	●	☆	☆	☆		Current is not detected when compressor is ON
F21	●	☆	☆	☆	●	☆	●	☆		Current is detected when compressor is OFF
* H29	☆	●	●	☆	☆	☆	●	☆		MG SW is chattering
H08	☆	●	●	●	☆	●	●	●		Oil sensor fault
H28	☆	●	●	☆	☆	☆	●	●	SC comp.	
H07	☆	●	●	●	●	☆	☆	☆	Low oil level	
L17	☆	☆	●	☆	●	●	●	☆	Improper setting	Mis-matching setting of refrigerant kinds between CCU and outdoor P.C.B.

**NOTE**

\*: Alarm display LED lamps may all be lit up or all blink at once.  
(Without\*: light up all at once only)

- CCU : Command control unit (incorporated in outdoor unit)
- PC unit : Power control unit
- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor

# 1. Test Run

## Alarm messages on the outdoor P.C.B.

When the outdoor alarm LED (yellow) is OFF and the alarm display LED (red) lamps blink → Operation thermostat OFF, with no alarm display on the remote controller.  
 When the outdoor alarm LED (yellow) is ON and the alarm display LED (red) lamps light up → An alarm message is also displayed on the remote controller.

☆: light ON / blinking ●: light OFF

Remote controller display	LED (red)								Alarm message	Outdoor unit	
	8	7	6	5	4	3	2	1		PC unit	AD unit
E25	●	☆	●	☆	☆	●	●	☆	Duplication of outdoor unit address	Duplication of outdoor unit address	Duplication of outdoor unit address
E29	●	☆	●	☆	☆	☆	●	☆	Receiving error signal	Outdoor P.C.B. receives error signal from CCU	Outdoor P.C.B. receives error signal from CCU
E30	●	☆	●	☆	☆	☆	☆	●	Transmitting error signal	Outdoor P.C.B. transmits error signal to CCU	Outdoor P.C.B. transmits error signal to CCU
F04	●	☆	☆	●	●	☆	●	●	Sensor fault	Discharge temp. (PC comp.): TH1	-----
F05	●	☆	☆	●	●	☆	●	☆		Discharge temp. (AC comp.): TH2	-----
F06	●	☆	☆	●	●	☆	☆	●		No. 1 coil gas temp.: TH7	Coil gas temp.: TH4
F07	●	☆	☆	●	●	☆	☆	☆		No. 1 coil liquid temp.: TH4	Coil liquid temp.: TH2
F08	●	☆	☆	●	☆	●	●	●		Outside air temp.: TH9	Outside air temp.: TH5
F22	●	☆	☆	☆	●	☆	☆	●		Discharge temp. (SC comp.): TH3	Discharge temp.: TH1
H25	☆	●	●	☆	☆	●	●	☆		Improper installation of discharge temp. sensor (SC comp.): TH3	Improper installation of discharge temp. sensor: TH1
F23	●	☆	☆	☆	●	☆	☆	☆		No. 2 coil gas temp.: TH8	-----
F24	●	☆	☆	☆	☆	●	●	●		No. 2 coil liquid temp.: TH5	-----
F25	●	☆	☆	☆	☆	●	●	☆		Coil temperature: TH6	Coil temperature: TH3
* P02	☆	☆	☆	●	●	●	☆	●	Protective device activated	Fan motor protection thermostat PC, AC, SC comp. protection thermostat Defective phase Power supply voltage is unusual	Fan motor protection thermostat Compressor protection thermostat Defective phase Power supply voltage is unusual
* P04	☆	☆	☆	●	●	☆	●	●	High-pressure switch	PC, AC, SC comp.	Compressor
* H06	☆	●	●	●	●	☆	☆	●	Low-pressure switch	SC comp.	Compressor
* P05	☆	☆	☆	●	●	☆	●	☆	Negative phase	Negative phase	Negative phase
* P03	☆	☆	☆	●	●	●	☆	☆	Incorrect discharge temperature	PC comp.	-----
* P17	☆	☆	☆	☆	●	●	●	☆		AC comp.	-----
* P18	☆	☆	☆	☆	●	●	☆	●		SC comp.	Compressor
* H01	☆	●	●	●	●	●	●	☆	PC comp. CT detection current	Overload current	-----
* H02	☆	●	●	●	●	●	☆	●		Lock current	-----
* H03	☆	●	●	●	●	●	☆	☆		Current is not detected when compressor is ON	-----
F27	●	☆	☆	☆	☆	●	☆	☆		Current is detected when compressor is OFF	-----
* H09	☆	●	●	●	☆	●	●	☆		MG SW is chattering	-----
* H11	☆	●	●	●	☆	●	☆	☆		AC comp. CT detection current	Overload current
* H12	☆	●	●	●	☆	☆	●	●	Lock current		-----
* H13	☆	●	●	●	☆	☆	●	☆	Current is not detected when compressor is ON		-----
F28	●	☆	☆	☆	☆	☆	●	●	Current is detected when compressor is OFF		-----
* H19	☆	●	●	☆	●	●	☆	☆	MG SW is chattering		-----

### NOTE

\*: Alarm display LED lamps may all be lit up or all blink at once.  
 (Without\*: light up all at once only)

- CCU : Command control unit (incorporated in outdoor unit)
- PC unit : Power control unit
- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor

# 1. Test Run

Remote controller display	LED (red)								Alarm message	Outdoor unit	
	8	7	6	5	4	3	2	1		PC unit	AD unit
* H21	☼	●	●	☼	●	☼	●	☼	SC comp. CT detection current	Overload current	Overload current
* H22	☼	●	●	☼	●	☼	☼	●		Lock current	Lock current
* H23	☼	●	●	☼	●	☼	☼	☼		Current is not detected when compressor is ON	Current is not detected when compressor is ON
F21	●	☼	☼	☼	●	☼	●	☼		Current is detected when compressor is OFF	Current is detected when compressor is OFF
* H29	☼	●	●	☼	☼	☼	●	☼		MG SW is chattering	MG SW is chattering
H08	☼	●	●	●	☼	●	●	●	Oil sensor fault	PC comp. oil sensor	-----
H28	☼	●	●	☼	☼	☼	●	●		SC comp. oil sensor	Comp. oil sensor

**NOTE**

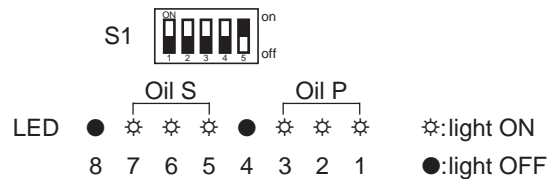
\*: Alarm display LED lamps may all be lit up or all blink at once.  
(Without\*: light up all at once only)

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- AD unit : Additional unit
- PC comp. : Power control compressor
- AC comp. : Constant speed compressor
- SC comp. : Scroll compressor

● **Monitor function of oil level**

Oil level of compressor can be monitored by setting of DIP switch on each outdoor unit P.C.B..

- ① PC unit  
Set DIP switch S1-5 to ON on the main P.C.B.. (Fig. 1-11)  
\* Main P.C.B. is the larger P.C.B. in PC unit.

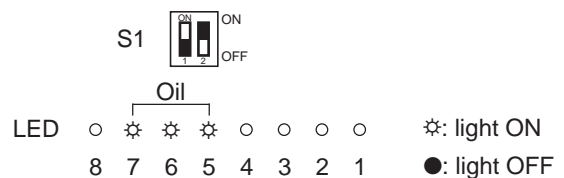


Oil P	3	2	1	Oil level
Oil S	7	6	5	
LED display	☼	☼	☼	Sufficient
	●	☼	☼	Insufficient
	●	●	☼	None

Oil S: Oil level of scroll compressor  
Oil P: Oil level of power control compressor

Fig. 1-11

- ② AD unit  
Set DIP switch S1-2 to ON on the P.C.B.. (Fig. 1-12)



Oil	7	6	5	Oil level
LED display	○	○	○	Sufficient
	●	○	○	Insufficient
	●	●	○	None

Fig. 1-12



## 2. Electrical Work

### 2-1. Electrical wiring

- Do not mistake the polarities of the wiring for group control and central control.
- Take the power supply for indoor units separately in units of each outdoor unit.

#### ■ Cautions on electrical work

- Regulations on wire diameters differ from locality to locality.  
For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning.  
You must insure that installation complies with all relevant rules and regulations.
- Invariably draw the power from a dedicated branch circuit.
- Fasten the power wiring and inter-unit operating wiring with the “code fixtures accompanying the units, and make sure that they do not contact the refrigerant tubing, valves, etc.
- Do the electrical wiring to the outdoor unit by drilling a hole onto the “power connection panel” matching to the thickness of conduit, using a hole saw. It can be done from both the left / right sides. (eyelet rubber)
- After wiring the indoor unit, seal the power intake clearance with the accompanying putty.
- Invariably match the wiring of indoor / outdoor units (incorrect wiring will result in damage).
- Do not carry the remote controller wiring, inter-unit operating wires, or central control wiring in the same conduit as the power wiring, or wire them with the same cables, or wire them close to each other.
- Use shield wires for remote controller wiring and inter-unit operating wires. And, invariably earth only one side of the shield wires.
- Keep the power cord of air conditioner and inter-unit cables 3m or more way from the main units, antenna, signal lines, power cord etc. of any TV, radio, stereo, interphone, personal computer, work processor, telephone, etc. Otherwise, noise may affect them.

## 2. Electrical Work

### 2-2. Noise countermeasures of control wiring

#### ■ Signal line wiring between micro computer mounted devices

Countermeasures: Signal connecting wiring, remote controller wiring, and group control wiring between the indoor / outdoor units

Along with the introduction of micro computer in air conditioners, misoperation due to noise or inter-device interference is at times generated. To prevent this, always use a shielded wire for making serial communication.

#### ● Types of shielded wires

- \*1. Use a shield wire having a shield of braided type and twist pitch of about 2-inch or lesser.
- \*2. Use a core wire of 0.75 mm<sup>2</sup> or more thickness
- \*3. Use a wire of designated core count.  
Core count designation:  
Inter-indoor / outdoor unit connecting wires ... 2-core shielded wire

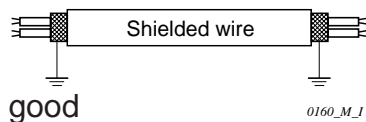


Fig. 2-1

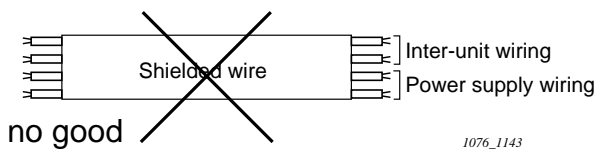


Fig. 2-2

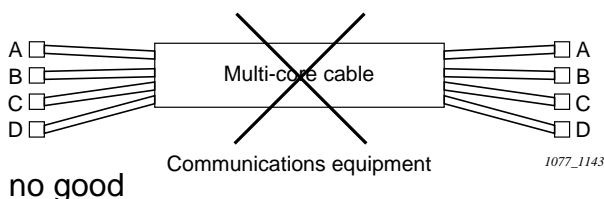


Fig. 2-3

#### ● Engineering method

1. Ground the shield on both sides (Fig. 2-1)
2. Install the unit 3 m away from any nearby high frequency equipment.  
\* House the remote controller into an iron box, and its wiring into a wiring pipe or iron conduit.
3. Do not bundle the signal lines together with the power line or wire them with the same cable. (Fig. 2-2)  
\* If wired together, keep the distance between them more than 30 cm.

Current (A)	Distance between signal lines & power line
10 A or less	30 cm or more
50 A or less	50 cm or more
100 A or less	100 cm or more

4. Do not wire the signal lines of different equipment with multi-core cables. (Fig. 2-3)
5. When using a noise filter or noise cut transformer, firmly connect the earth wire of filter, etc. with the main unit of air conditioner. Of course, install an earth for the air conditioner. (Fig. 2-4)
6. Wire the primary and secondary side lead wires of noise filter and noise guard transformer away from each other. (Fig. 2-5)
7. Scrape off the paint from the joint of earth terminal in order to ensure that its connection resistance does not become large.

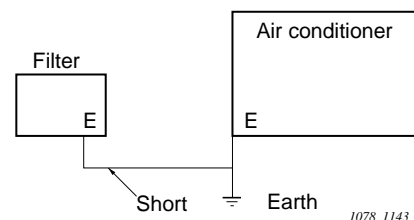


Fig. 2-4

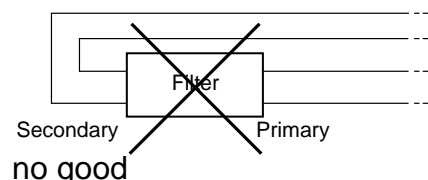
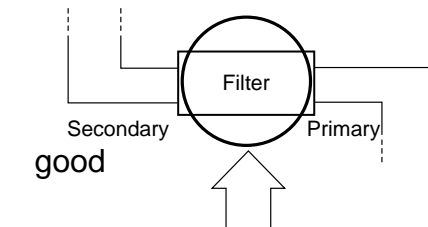


Fig. 2-5



### 3. Installation Standards

#### 3-2. Check of density limit



**WARNING**

Do not install the indoor unit to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.

The refrigerant (R22/R407C) which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device. The density is as given below.

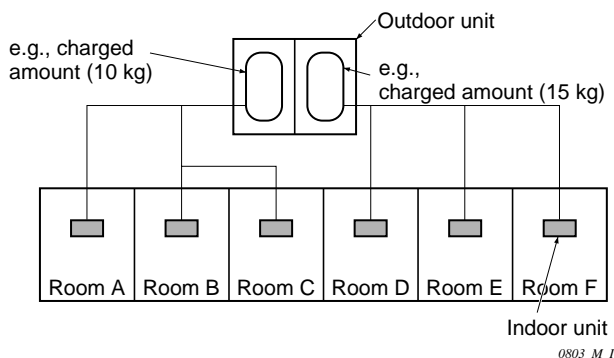
Total amount of refrigerant (kg)

Min. volume of the indoor unit installed room (m<sup>3</sup>)

$$\leq \text{Density limit (kg/m}^3\text{)}$$

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m<sup>3</sup> (ISO 5149).

**NOTE 1** : If there are 2 or more refrigerating systems in a single refrigerating device, the amount of refrigerant should be as charged in each independent device.



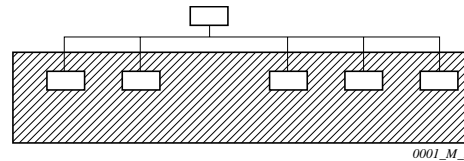
For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.

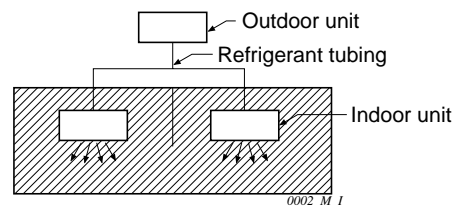
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

**NOTE 2** : The standards for minimum room volume are as follows.

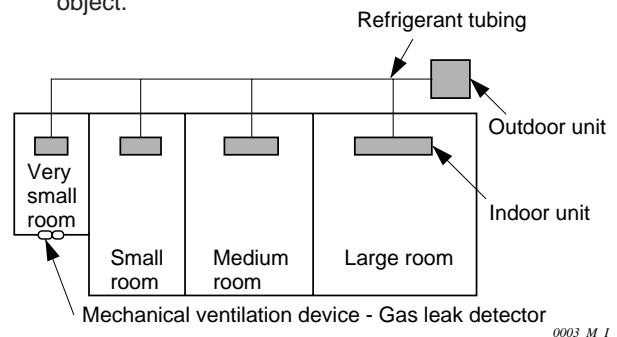
- (1) No partition (shaded portion)



- (2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).

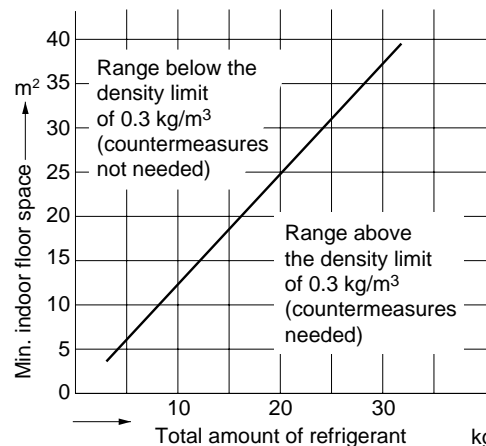


- (3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



**NOTE 3** :

The minimum indoor floor space compared with the amount of refrigerant is roughly as follows: (When the ceiling is 2.7 m high)





### 3. Installation Standards

#### 3-3. Precautions for new refrigerant installation

##### 1. Care regarding piping

1-1. There is no need to change piping and tube wall thickness. Use refrigerant pipes of the same wall thickness as R22.

Unit: mm

Type		0					
Copper tube	Outer diameter	6.35	9.52	12.7	15.88	19.05	22.2
	Wall thickness	0.8	0.8	0.8	1.0	1.0	1.2

Type		1/2 H, H						
Copper tube	Outer diameter	25.4	28.58	31.8	38.1	41.3	44.45	50.8
	Wall thickness	1.0	1.0	1.2	1.3	1.3	1.4	1.5

\* C1220 type with JIS H 3300 designation (Copper Pipe and Copper Alloy Seamless Pipe)

1-2. Prevent impurities including water, dust and oxide from coming into the pipe. Impurities can cause R407C refrigerant deterioration and compressor defects. Due to the different features of the refrigerant and refrigerating machine oil, the prevention of water and other impurities becomes more important than ever.

##### 2. Make sure to refill the refrigerant in liquid form.

2-1. Since R407C is a non-azeotrope, refilling the refrigerant in gas form can lower performance and cause defects of the unit.

2-2. Since refrigerant composition changes and performance decreases when gas leaks, collect the remaining refrigerant and refill the required total amount of new refrigerant after fixing the leak.

##### 3. Different tools

3-1. Tools specs have been changed due to the features of R407C.

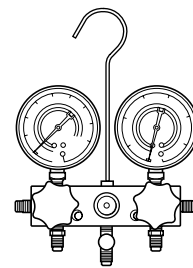
Some of the R22 tools cannot be used.

Product name	New tools	R22 tools compatible with R407C	Remarks
Gauge manifold	Yes	No	Types of refrigerant and refrigerating machine oil, and pressure gauge are different.
Charge hose	Yes	No	To resist pressure and oil, material has been changed.
Vacuum pump	Yes	Yes	Use a conventional vacuum pump if it is equipped with a check valve. If it has no check valve, purchase and attach a vacuum pump adaptor.
Leak detector	Yes	No	Leak detectors for CFC and HCFC which react to chlorine do not function because R407C contains no chlorine. Leak detector for R407C can be used for HFC134a.
Flaring oil	Yes	No	Mineral oil (for example, suniso oil) can be used as R22 oil. Use synthetic fluid (for example, ether oil) as R407C oil.

\* Using both R22 tools and new tools together can cause defects.

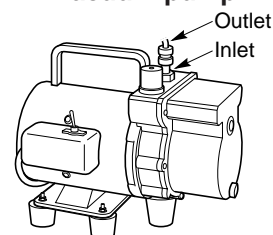
3-2. Use a R407C exclusive cylinder only.

Gauge manifold

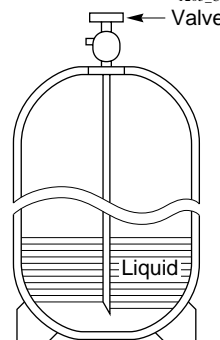


1202\_C\_1

Vacuum pump



1203\_C\_1



1171\_M\_1

TD831077

##### Single-outlet valve

(with siphon tube)

Liquid refrigerant can be refilled standing it up straight.

### 3. Installation Standards

#### 3-4. New refrigerant R407C cannot be used for existing models

**1. Compressor specs are different.**

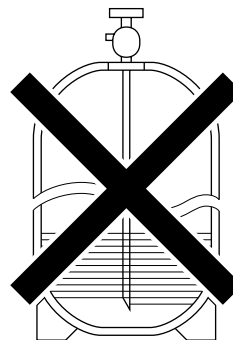
When refilling the R22 compressor with R407C, durability will significantly decrease since some of the materials used for compressor parts are different.

**2. Existing piping cannot be used.**

Completely cleaning out residual refrigerating machine oil is impossible, even by flushing.

**3. Refrigerating machine oil differs.**

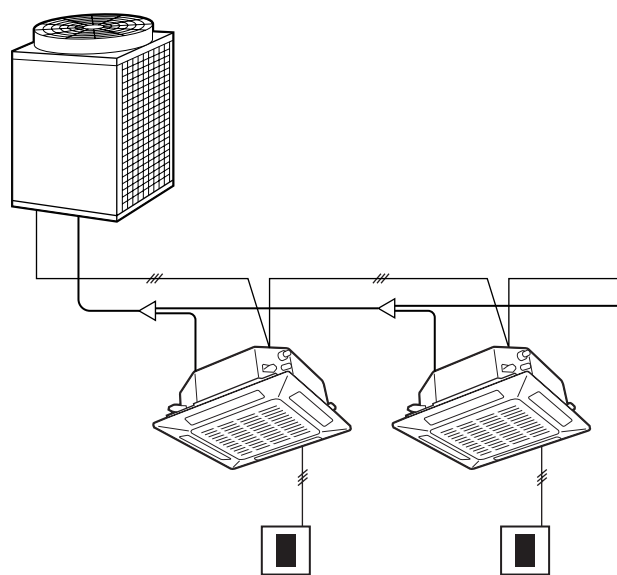
Since R22 refrigerating machine oil is mineral oil, it does not dissolve in R407C. Therefore, refrigerating machine oil discharged from the compressor can cause compressor damage.



1172\_M\_1

**R407C**

R22 refrigerating machine oil	Mineral oil (suniso oil)
R407C refrigerating machine oil	Synthetic fluid (ether oil)



1173\_X\_S

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# 1. Compressor Control

## 1-1. Compressor capacity control

### (1) Outdoor unit operation control

- The compressor capacity is calculated by the C.C.U. based on the operation capacities of the indoor units and the difference between the temperature setting and room temperature. This is designated as the C.C.U. target capacity, and this is assigned to each outdoor unit as the outdoor unit target capacity.
- Priority is given to the PC unit for operation.
- To allow operation of the maximum number of outdoor units, the outdoor units may be re-selected in cases where the required operation capacity is 80% or more of the PC unit maximum operation capacity.
- In order to compensate for the capacity, compressors may operate at more than the indoor unit operation capacity in some cases.

### (2) Relationship between current operation capacity and output

(Current operation capacity: Indicated as percentage with the maximum capacity being 100%)

#### ① 150 type

**Table 1**

Output		Current operation capacity (%)								
		0	7	14	21	28	36	42	49	56
PC compressor	Magnet switch	OFF	ON	ON	ON	ON	ON	ON	ON	ON
	Low-pressure valve	ON	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	High-pressure valve	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	ON
AC compressor	Magnet switch	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON
External save valve		ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF

The scroll (SC) compressor magnet switch is turned on at 52% or more.

#### ② 190 type

**Table 2**

Output		Current operation capacity (%)							
		0	60	68	74	82	88	96	100
PC compressor	Magnet switch	OFF	ON	ON	ON	ON	ON	ON	ON
	Low-pressure valve	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	High-pressure valve	OFF	OFF	ON	ON	OFF	OFF	ON	ON
AC compressor	Magnet switch	OFF	OFF	OFF	OFF	ON	ON	ON	ON
External save valve		ON	OFF	ON	OFF	ON	OFF	ON	OFF

The compressor magnet switch is turned on at 11.5 H.P. or more.

### (3) Startup delay for outdoor unit

When an operation start signal is received, the operation of each outdoor unit compressor is delayed by "outdoor address".

### (4) Startup delay for AC and SC compressors in PC unit

If the outdoor unit target capacity is determined in the full stop state indicates that more than one compressor will be started at the same time, the SC compressor starts 15 seconds delayed from the AC compressor, and the AC compressor starts 15 seconds delayed from the PC compressor. However, the delay time is five seconds when using 4-way valve adjustment control, inter-system oil recovery control, and hot gas defrosting control.

### (5) All outdoor unit compressors that have been stopped do not operate for three minutes.

\* When the capacity is decreased from maximum capacity operation, the AC compressor is stopped, and then the SC compressor is stopped and the AC compressor is turned on again, operation is performed by the PC compressor only for the three minutes that the AC compressor is off.

### (6) In the PC unit, if a compressor is started when another compressor is already operating, the high-pressure valve (HPV): OFF, low-pressure valve (LPV): ON, and save valve (SAVE): ON status is held for 15 seconds before starting the compressor.

### (7) Increasing and reducing the operation capacity

When the outdoor target capacity is decreased, this immediately becomes the target capacity.

If the outdoor target capacity is increased, the target capacity either increases immediately to this capacity or it increases in 30-second steps depending on the increase amount.

## 2. Protection Controls

- If the C.C.U. target capacity decreases, the C.C.U. target capacity does not increase for one minute.
- If the outdoor unit capacity decreases, the capacity does not increase for one minute. However, the case in (6) under "1-1. Compressor capacity control" is an exception.

### (1) Discharge temperature control

Discharge temperature control is determined based on the type of installed compressors regardless of the outdoor model.

#### ① High discharge temperature

**Table 3**

PC unit (PC compressor, AC compressor)		PC unit (SC compressor), AD unit	
106 °C	Compressor OFF	135 °C	Compressor OFF
	Compressor ON		Compressor ON

The outdoor unit is stopped when the protection mechanism of the PC compressor is activated.

The outdoor unit is stopped when the protection mechanism of the AD unit compressor is activated.

\* After compressor operation, a warning is issued if operation is stopped four consecutive times after less than five minutes (less than two minutes for the scroll compressor) by the above control.

#### ② Startup protection temperature

The compressors do not operate if the discharge temperature of the stopped compressors are higher than the temperatures in the table 4.

**Table 4**

PC unit (PC compressor, AC compressor)	PC unit (SC compressor), AD unit
90 °C	90 °C

#### ③ Discharge temperature sensor error

A warning is issued if the discharge temperature is higher than the temperatures in the table 5 even when the compressor is stopped for 15 minutes.

**Table 5**

PC unit (PC compressor, AC compressor)	PC unit (SC compressor), AD unit
90 °C	90 °C

### (2) Current control

Current control is determined based on the installed compressors regardless of the outdoor model.

#### ① Lock current

A warning is issued if the current value of the compressors that are operating exceeds Ar.

#### ② Overload current

A warning is issued if the current value of the compressors that are operating exceeds Ao for 30 seconds.

**Table 6**

Compressor capacity		Lock current	Overload current
		Ar	Ao
Rotary compressor	4 H.P.	33	27
	5 H.P.	36	30
Scroll compressor	8 H.P.	56	46
	10 H.P.	72	60

## 2. Protection Controls

### (3) Coil temperature control

#### ① Evaporation temperature control

The lowest of the E1, E2, and E3 temperatures of all indoor units whose cooling thermostat is on is designated as the minimum evaporation temperature ( $T_e$ ), and control is performed as shown in the table 7. This control is performed every 30 seconds.

**Table 7**

$T_e$ °C	
6	↑
5	↑
2	↑
1.5	↑
6	Increase in capacity is allowed
5	Increase in capacity prohibited
2	
1.5	Decrease in capacity

- If the evaporation temperature is less than 2°C and the thermostat is off, control of the operation capacity at the next startup may begin from the smallest capacity.
- If "test run" is selected for even one indoor unit when the indoor units are running under cooling operation, the unit is constantly set to "increase in capacity is allowed".
- Three minutes after the compressor is started, "decrease in capacity" is regarded as "increase in capacity prohibited".
- When "decrease in capacity" control is activated for the minimum capacity due to the evaporation temperature, this is handled as "increase in capacity prohibited" for six minutes, and the thermostat is not turned off.

#### ② Condensation temperature control

The highest of the E1 and E2 temperatures of all indoor units whose heating thermostat is on is designated as the maximum condensation temperature ( $T_c$ ), and control is performed as shown in the table 8. This control is performed every 30 seconds.

**Table 8**

$T_c$ °C	
X	↑
55	↑
54	↑
50	↑
49	↑
X	Thermostat off
55	Decrease in capacity
54	Increase in capacity prohibited
50	
49	Increase in capacity is allowed

**NOTE**

The thermostat off temperature X varies from 60°C to 64°C depending on whether operation was stopped by the protection control or other control mechanisms.

- If the condensation temperature becomes more than X°C and the thermostat is off, control of the operation capacity at the next startup may begin from the smallest capacity.
- When "decrease in capacity" control is activated for the minimum capacity due to the evaporation temperature, this is handled as "increase in capacity prohibited" for six minutes, and the thermostat is not turned off.
- If the condensation temperature X°C is reached, the thermostat remains off for at least three minutes.

### (4) Demand control

**Table 9**

Demand input		Control description
Contact 1	Contact 2	
X	X	No limits (100%)
○	X	70% of the outdoor unit maximum capacity total
X	○	50% of the outdoor unit maximum capacity total
○	○	Number of outdoor units allowed to operate: 0; The command "3 minute OFF" = ON is sent to the indoor and outdoor units.

○: Input    X: No input

### 3. Fan Control

#### (1) Outdoor fan mode

**Table 10**

[PC unit]

Mode	Fan No. 1	Fan No. 2
8	High	High
7	High	Medium
6	Medium	Medium
5	Medium	Low
4	Low	Low
3	High	Stop
2	Medium	Stop
1	Low	Stop
0	Stop	Stop

**Table 11**

[AD unit]

Mode	Fan
5	–
4	–
3	High
2	Medium
1	Low
0	Stop

\* When fan No. 1 is set to Low, fan No. 2 cannot be set to High.

#### (2) Initial control

Control is performed during the initial 30-second operation starting period based on the external temperature as shown in the table below.

**Table 12**

During cooling operation		During heating operation	
External temperature °C		External temperature °C	
21	Fan mode: 8 (3)	21	Fan mode: 1~6 (2)
16	Fan mode: 4~8 (3)	16	Fan mode: 4~8 (3)
11	Fan mode: 2~6 (3)	11	Fan mode: 6~8 (3)
1	Fan mode: 1~4 (2)	10	Fan mode: 8 (3)
0	Fan mode: 1~3 (2)		

**NOTE**

The initial fan speed of PC unit may change based on the operation capacity of the outdoor unit.

The initial fan speed for the AD unit is shown in parentheses.

- (3) The fan mode can be moved up or down based on the operating status. However, fan mode No. 0 is not available during heating operation.
- (4) When the fans are started up, they run at High for 12 seconds.

### 4. Outdoor Electronic Expansion Valve

#### (1) When the outdoor unit is stopped: 0 pulses (initialized by stopping operation)

However, control is performed at 55 pulses in systems with only the AD unit if all of the units are stopped during cooling mode.

#### (2) During cooling operation : 480 pulses

#### (3) During heating operation : $\Delta T$ control at each heat exchanger

- $\Delta T$ =Gas temperature - liquid temperature
- The target  $\Delta T$  is 3°C to 8°C (adjustable using the operation capacity)  
The control range is 30 to 480 pulses.

## 5. Solenoid Valve Control

- In solenoid valve control, in addition to the conditions shown below, multiple valves may be controlled at the same time. This is performed according to the respective control items.

### (1) Liquid valve control (LIVP, LIVA, LIVS)

To properly control the discharge temperature, control is performed on a small amount of liquid refrigerant bypassing to the suction pipe.

#### ① High discharge temperature

**Table 13**

PC unit (PC compressor, AC compressor)	PC unit (SC compressor), AD unit
Rotary compressor	Scroll compressor
<p>Discharge temperature °C</p> <p style="text-align: right;"><small>1815_M_I</small></p>	<p>Discharge temperature °C</p> <p style="text-align: right;"><small>1816_M_I</small></p>

\* The discharge temperature of the scroll compressor changes the line diagram for after five minutes and less than five minutes after compressor startup.

### (2) Save valve control (PC unit only) (SAVE)

- ① Save valve control is turned on according to the compressor control items.
- ② Save valve control is turned on for five minutes after stopping the outdoor unit.
- ③ Save valve control may be turned on due to other control mechanisms (4-way valve adjustment control, hot gas defrosting control).

### (3) Hot gas valve (DEF)

- ① Hot gas valve control is on during hot gas defrosting control. Also, hot gas valve control remains on for 10 seconds after hot gas defrosting control is finished.
- ② Hot gas valve control remains off in situations besides (1) above.

#### **NOTE**

Hot gas defrosting is performed simultaneously with hot gas valve control, but they end separately.

### (4) Refrigerant adjustment valve control (REV)

- ① Valve control is off when operation is stopped.
- ② Valve control is turned on or off according to whether a shortage of refrigerant or overcharge is detected.

### (5) Oil recovery valve control (ORVR)

- ① See the oil recovery control and refrigerant movement control items.
- ② Valve control of PC unit may be turned on when the compressor is operating during heating. This helps to even out any low pressure in the operating units by passing through the balance pipes. (The balance pipes are low pressure.) Priority is given to oil control.

### (6) Bypass valve control (BPV)

- ① See the oil recovery control and refrigerant movement control items.
- ② The AD unit may be turned on when the compressor is operating during cooling. Some of the refrigerant passes through the balance pipe and bypasses to the PC unit. (The balance pipe is high pressure.) Priority is given to oil control.

### (7) Balance valve control (BRV)

- ① See the oil recovery control and refrigerant movement control items.



## 5. Solenoid Valve Control

### (8) PC oil valve control (OILP), SC oil valve control (OILS)

There is no oil sensor in the AC compressor due to cross oil control. As a result, no oil valve is attached.

Oil is constantly returning to the AC compressor by passing through a capillary tube.

- ① When self-separator oil recovery is performed
  - The oil valve of the operating compressor not having enough oil is turned on.
- ② When involved in inter-unit oil recovery control
  - When supplying oil to other units: Both the PC oil valve and SC oil valve are turned off.
  - When oil is received from other units: The oil valve of the compressor not having enough oil is turned on.
- ③ Other items
  - The oil valve for compressors that are stopped are turned off. However, both valves are turned on for five minutes after the outdoor unit is stopped in order to obtain balanced pressure.
  - The oil valve of the compressor not having enough oil is turned on, and the oil valve of the compressor having enough oil is turned off.
  - When the AC compressor is operating, the oil valve is turned off if there is enough oil in the corresponding compressor.
  - When the AC compressor is stopped, the oil valve of the compressor that is operating is turned on.

### (9) 4-way valve control (20S)

- ① During normal operation, 4-way valve control is turned off during cooling operation and turned on during heating operation. (The output status for all outdoor units is the same.)
- ② When an outdoor unit is stopped, the mode just before stopping is maintained.

## 6. Hot Gas Defrosting Control

- Hot gas defrosting using a normal cycle is performed.
- Defrosting is performing by using some discharge gas to bypass to the distributor of the outdoor heat exchanger.

### 6-1. Frost detection

- (1) Frost detection is not performed for five minutes from the start of operation.
- (2) Frost detection conditions = Condition 1 or Condition 2  
 Condition 1 = L2 line or below for four continuous minutes is detected twice  
 Condition 2 = L1 line or below detected for a total of 60 minutes

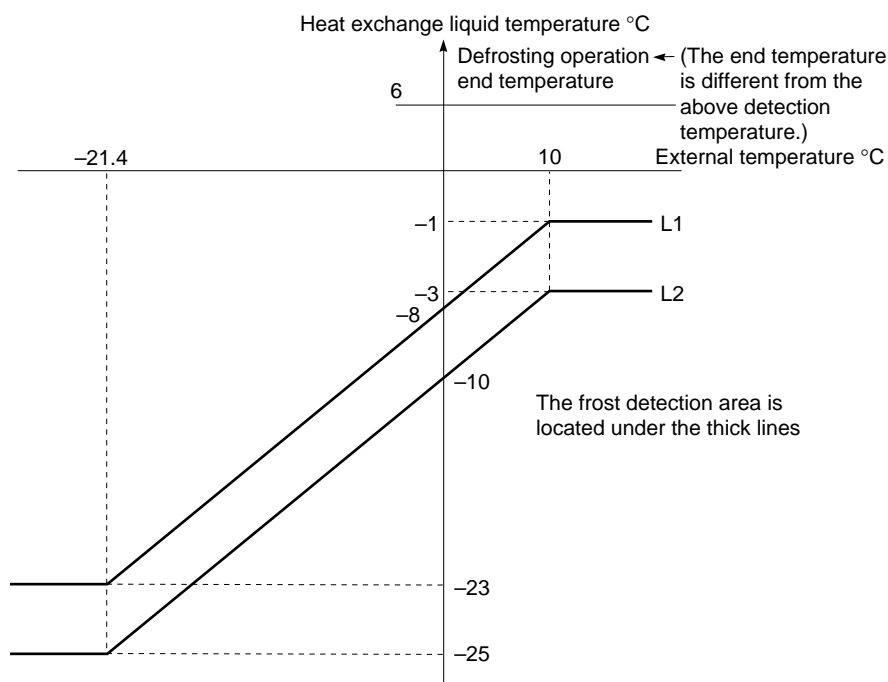


Fig. 1  
VI - 7

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TD831077

## 6. Hot Gas Defrosting Control

### 6-2. Defrosting operation conditions

- (1) Defrosting operation is performed after at least 35 minutes of total operation during heating operation.
  - \* Even in outdoor units where a total operation time of 35 minutes has not elapsed, defrosting operation will be performed if other outdoor units satisfying the conditions above start defrosting operation.
- (2) Once defrosting operation is finished, defrosting operation does not start again for 10 minutes (even when operation is stopped while defrosting is in progress).
- (3) If the CHECK. PIN (CP) on the outdoor unit control P.C.B is short-circuited during operation, the defrosting operation conditions are met, and defrosting operation is forced to start. However, defrosting operation is not performed for the 10 minutes described in (2) above. Also, be sure to remove the CHECK. PIN (CP) if this operation has been performed.

### 6-3. Defrosting end conditions

- (1) Minimum temperature of the sensor mounted to the outdoor unit heat exchanger must be  $\geq 6^{\circ}\text{C}$
- (2) Maximum of 12 minutes

### 6-4. Defrosting control description

**Table 14**

Control units	Control unit operation during defrosting operation	
	During hot gas defrosting operation (maximum of 12 minutes)	After defrosting operation
Hot gas valve	ON	OFF
Constant-speed compressor	Maximum capacity (protection control priority)	
LPV		
HPV		
Save valve	ON	Normal control
4-way valve	ON	ON
Outdoor fan	Stop	Normal control
Refrigerant adjustment valve	ON	Normal control
Outdoor electronic expansion valve	Control at 80 to 250 pulses	Normal control

**NOTE**

The target maximum capacity of all operating outdoor units is transmitted during defrosting control.

## 7. Self-Separator Oil Recovery Control

- Control is performed for oil recovery from the oil separator of the unit itself. The recovery valve and balance valve are turned on at the same time.

## 8. Inter-Outdoor Unit Oil Recovery Control

- Control is performed on oil exchanges (supplying and receiving) with other outdoor units by passing through the balance pipes. However, this control is only performed when multiple outdoor units are operating. This control is performed when the oil of compressor does not return to the original level after self-separator oil recovery is performed.
- Oil-supplying unit : The balance valve and bypass valve turn on and off alternately.
- Oil-receiving unit : The recovery valve is turned on.
  - \* The balance valve is set to high and low pressure by the turning on and off of the balance valve and bypass valve.

## 9. Inter-Refrigerant System Oil Recovery Control

- Control is performed for recovering the oil accumulated in the indoor unit, refrigerant pipes, or other locations in the system. (maximum of two minutes)
- **Control description**
- If the oil does not return to the original level even after the oil level reaches 0 and operation is performed for a set time, the thermostat for the outdoor unit is turned off. Operation is then restarted, and this control is started if the oil level does not rise above 1 when this operation is performed and stopped three times.
  - \* During operation, the self-separator oil recovery control and inter-outdoor unit oil recovery control are performed simultaneously.
- If the PC compressor oil level is 1 or less when the AC compressor is turned on, and the PC compressor oil level does not reach 2 by performing self-separator oil recovery control and inter-outdoor unit oil recovery control, the AC compressor is stopped, and the PC compressor operates at the maximum capacity. When this state continues for 30 minutes or more, inter-refrigerant system oil recovery control is started.
- When all connected outdoor units are operating at the maximum capacity, the indoor unit electronic expansion valve runs at the initial pulse for the cooling cycle and 480 pulses (fully open) for the heating cycle.
- During inter-refrigerant system oil recovery control, self-separator oil recovery control and inter-outdoor unit oil recovery control is performed simultaneously based on the conditions. However, the count is not cleared unless the oil level reaches 2.
- After inter-refrigerant system oil recovery control, normal control is performed. However, if the oil level becomes 0 without reaching 2, operation is stopped after a set time, and a warning is issued.

## 10. 4-way Valve Adjustment Valve

- When the power is turned on, a warning is issued, or at least one hour has passed in a fully stopped state, control is performed for unifying the 4-way valve modes of all the outdoor units and for recovering refrigerant accumulated in the pipes.
  - \* **Cooling operation** :
    - All of the outdoor units operate at the maximum capacity for one minute.
    - The opening and closing of the indoor unit electronic expansion valve is the initial pulse regardless of the unit operation/stopping.
  - \* **Heating operation** :
    - All of the outdoor units operate at the maximum capacity for 1 to 10 minutes. When this control is started, only the outdoor unit that must operate runs at the maximum capacity in response to the indoor unit capacity request. However, this operation is not performed when the power is turned on and after a warning is issued.
    - This control is performed for a minimum of one minute, and it ends when the maximum condensation temperature is 35°C or above.

## 11. Refrigerant Movement Control

- Refrigerant passes through the balance pipes and is recovered from the stopped unit when shortage of refrigerant is occurred during operation. However, priority is given to the various types of oil control.
  - \* **During cooling operation** :
    - Operation unit : The recovery valve is turned on.
    - Stop unit : The bypass valve and balance valve are turned on.
  - \* **During heating operation** :
    - Operation unit : The recovery valve is turned on.
    - Stop unit : The balance valve is turned on, and the outdoor fan operates at the maximum speed.

## 12. Backup Operation

### ● Types of backup operation

#### (1) Electrically disconnecting a unit

- ① Disconnect the inter-control unit wire from the faulty outdoor unit, and set the number of C.C.U. AD units to the number of outdoor units that are connected electrically minus one.
- ② Close the service valve of the faulty unit.
- ③ In this state, perform operation to check the operating status.
  - This completes the procedure.
  - If the PC unit is faulty, leave the power on for the C.C.U. If the PC unit is electrically disconnected, operation is not performed unless a request with a capacity of one or more AD units is received from the indoor unit.
- ④ Settings for allowing backup operation
  - Change the settings of the C.C.U. DIP switch S6.

Example : When three outdoor units are installed

Example 1 : When there is one PC unit and one AD unit (one AD unit is faulty)



← Set to the number of outdoor units that are connected minus one. In this example  $2-1=1$ .

Example 2 : When there are two AD units (PC unit is faulty)



← Set to the number of outdoor units that are connected minus one. In this example  $2-1=1$ .

#### (2) Backup operation when a compressor in the PC unit is faulty

- Backup operation using only the PC unit is still possible when one of the PC unit compressors is faulty.
- ① Setting the backup switch and CT switch combinations on the outdoor unit control P.C.B. allows operation while ignoring the protection control mechanisms of the faulty compressor.
 

**NOTE**

    - 1) Backup operation is an emergency measure in the event of a fault.
    - 2) The settings on the C.C.U. do not need to be changed.
  - ② Settings for allowing backup operation
 

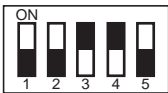
Change the settings of the PC unit outdoor unit control P.C.B. DIP switch S1.

Example 1 : When the AC compressor is faulty



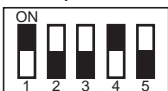
→ Set 2: CTA and 4:BUSW to ON.

Example 2 : When the SC compressor is faulty



→ Set 3: CTS and 4:BUSW to ON.

Example 3 : Backup operation is possible when the PC compressor is faulty.



→ Set 1: CTP and 4:BUSW to ON.

\* Since the discharge pipe of the PC compressor does not have a check valve, check that the discharge refrigerant for other compressor is not bypassed to the low-pressure side. If refrigerant has bypassed to the low-pressure side, remove the PC compressor, close the discharge and suction pipes with pinches, and perform emergency operation.

# 13. Room Temperature Control

The thermostat is switched on/off by  $\Delta T$  as follows.

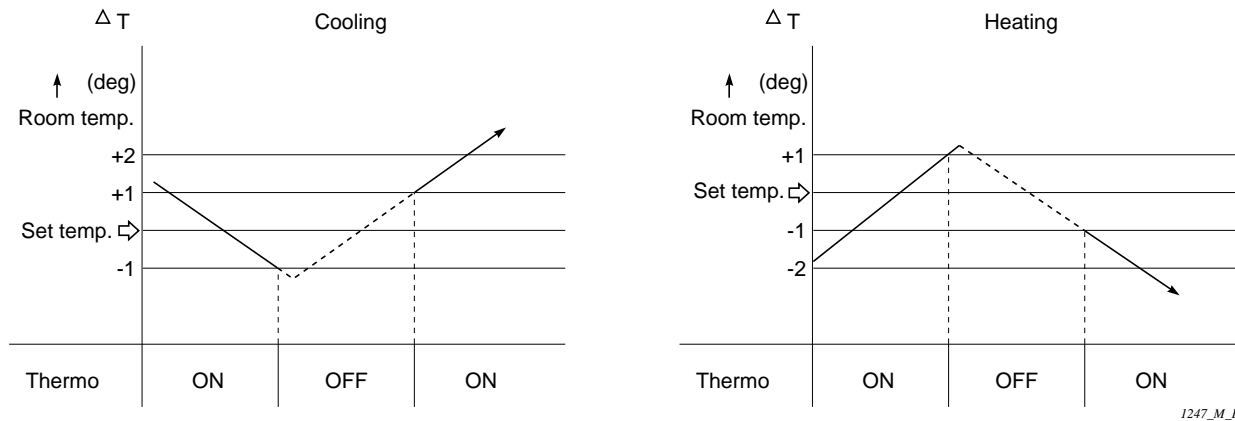
$\Delta T = (\text{Room temperature}) - (\text{Set temperature})$	
Remote control sensor	Room temperature = remote control sensor detection temperature
Body sensor	Room temperature = (Body sensor detection temperature) - (Air-intake shift temperature*)

\* Shift temperature (valid only for heating)

In heating mode, a temperature difference occurs between the upper part and lower part of a room. The value is set in consideration of the difference between the temperature detected by the body sensor located in the upper part of the room and the temperature detected in the lower part of the room.

0 °C ~ 10 °C can be selected with the remote controller simple setting mode.

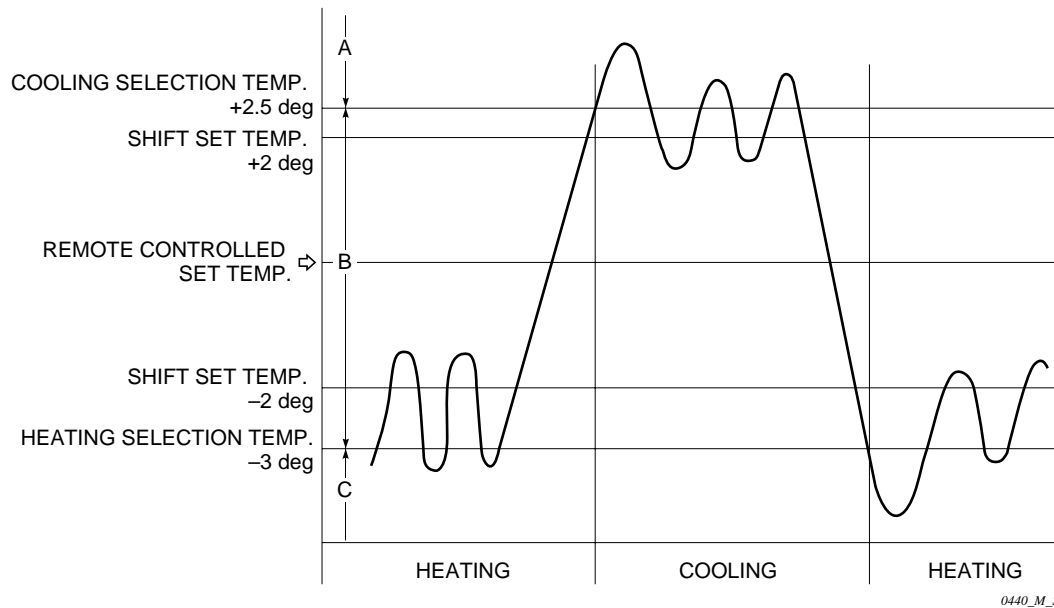
(Factory settings: floor standing type ----- 0 deg; wall-mounted type ----- 2 deg; other types ----- 4 deg)



Supplement:

- (1) After thermo-on, it will not thermo-off for 3 minutes due to  $\Delta T$ .  
However, for heating, if the indoor coil E2 temperature  $\geq 64$  °C, it will thermo-off within 3 minutes (over load protection).
- (2) After thermo-off, it will not thermo-on for 1~3 minute.  
For cooling or dehumidifying, it will not thermo-on if the indoor coil E1 or E2 temperature  $< 6$  °C even after the above-mentioned period of time has passed.
- (3) When the system is set for test operation, it will not thermo-off for 60 minutes (forced thermo-on).

# 14. Auto. Mode for Automatic Heating/Cooling Switching



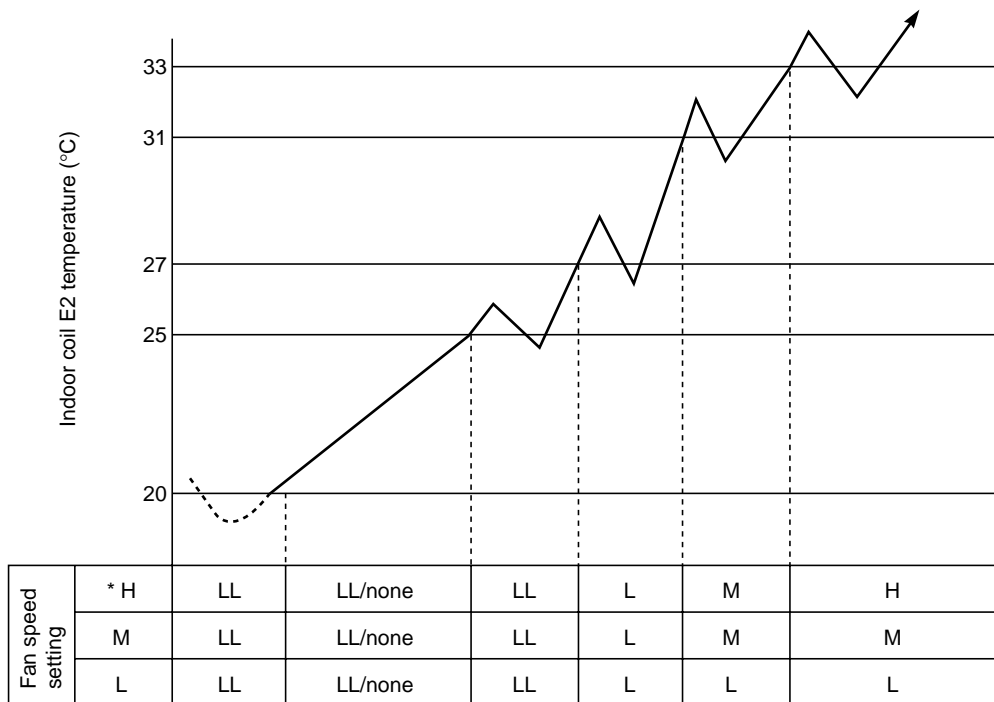
## Chart summary and Explanations

- This control is effective only for one indoor unit or group control.
- (1) This chart shows how the Operation Mode (**COOLING** or **HEATING**) is determined by the microprocessor taking the room temperature into consideration. It also shows the temperature points at which the cooling or heating mode is switched, when the AUTO mode is selected.
  - (2) After operation starts, the set temperature shifts automatically by +2 deg. at cooling and by - 2 deg. at heating. For example, if cooling is selected, the set temperature changes from 20° C to 22° C.  
(The display of the remote controller remains 20° C.)
  - (3) The change of the operation mode (heating to cooling, cooling to heating) by the change of the room temperature during the operation is as follows.  
Heating to Cooling; Room temp.  $\geq$  Shifted temp + 0.5 deg.  
Cooling to Heating; Room temp.  $\leq$  Shifted temp -1.0deg.  
For example, if the room temperature rises above 22.5 °C (=22+0.5) during the cooling operation at the room temperature 20° C set by the remote controller, the operation changes to cooling. When the room temperature lowers below 17° C (=18-1.0) thereafter, the operation changes to heating again.
  - (4) In heating operation, using the body sensor, room temperature control is designed so that room air temp. is sensed as 4 deg. lower than suctioned air at indoor unit taking into account of the temperature gap between upper part and lower part of the room.  
Accordingly, in this example, when the body sensor detection temperature reaches more than 26.5 °C, the operation is changed from heating to cooling.
  - (5) Within 10 minutes after the compressor turns OFF, the operation does not change to cooling (heating), even when the room temperature changes from C to A (A to C).
  - (6) When switching from cooling (heating) to heating (cooling), the actuation of the 4 way valve will delay about 30-50 seconds after the compressor turns ON.

# 15. Heating Preparations

(1) After thermo.-on, until the set fan speed is reached, cool air is output (emanates) from this beginning heating operation and the indoor fan speed is controlled as shown below to prevent cold draft.

- When the fan speed is LL or off, "STAND BY" is displayed at the remote controller.
  - Room temperature thermostat off
  - Condensation elimination operation
  - After heating operation start, until the indoor coil E2 temperature is 27 °C or higher (6 minutes max.)
- After heating operation start, the fan speed approaches the set fan speed as the indoor coil E2 temperature rises.



H: High    L : Low  
M: Middle   LL: Very low

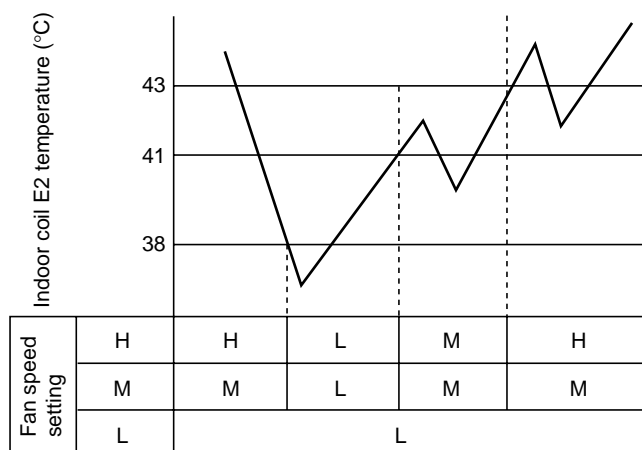
\* Same for automatic fan speed setting

- The dotted lines are fan off. (When the indoor coil E2 temperature is 20°C or lower, the fan does not operate.)

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(2) Fan speed control after set fan speed is reached

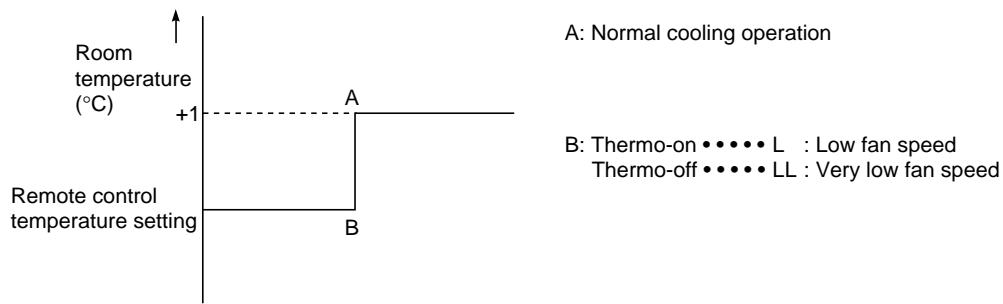
- Indoor coil E2 temperature  $\geq 43$  °C, the control below is performed.
- Indoor coil E2 temperature  $\leq 38$  °C, until indoor coil E2 temperature  $\geq 43$  °C, the fan speed accelerates in a rising slope.
- When the fan speed changes, it does not change again for 1 minute.



H: High    L : Low  
M: Middle   LL: Very low

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## 16. Dehumidifying Control

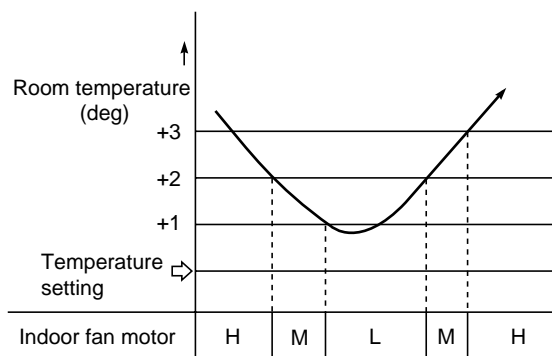


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## 17. Automatic Fan Speed Control

- (1) When automatic fan speed is selected with the remote controller, the indoor fan motor is controlled as shown below.
- (2) The fan speed does not change in 3 minutes of cooling operation and in one minute of heating operation after operation starts.

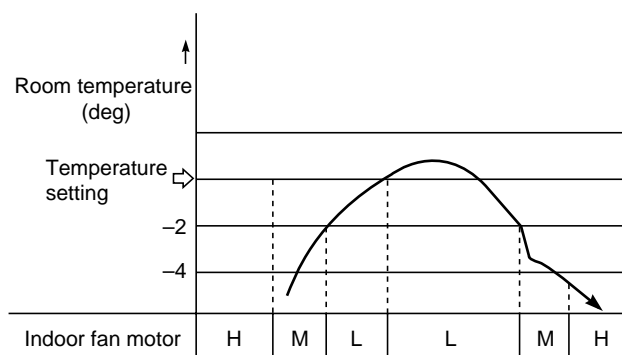
### 17-1. Cooling



H : High L : Low  
 M : Middle LL : Very low

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### 17-2. Heating



H : High L : Low  
 M : Middle LL : Very low

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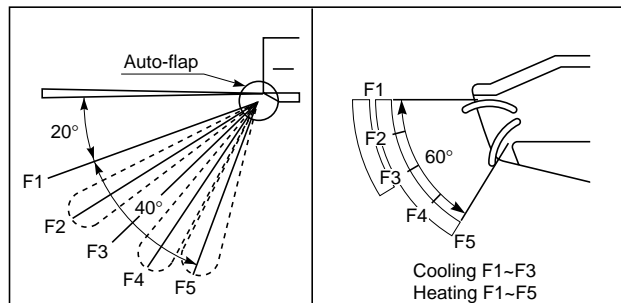
## 18. Auto-flap Control

### 18-1. X, S, T Type

The auto-flap controls the air flow to one of the five vertical levels.

X type (4-way), S type (2-way)

T type



1267\_M.1

Operation mode	Flap position	
	Automatic setting	Manual setting
Cooling / drying	F2	F1 · F2 · F3 · swing
Fan	F2	F1 · F2 · F3 · F4 · F5 · swing
Heating	F4	F1 · F2 · F3 · F4 · F5 · swing
Heating preparation	F2 (Original position after release)	

- (1) When the unit is stopped, the auto-flap returns to the F5 position.
- (2) When the airflow direction is set manually (optional setting), the auto and swing settings will be released. To return to automatic airflow direction, change the operation mode.
- (3) Once auto-flap is set, it is input into the microcomputer memory.
- (4) When the operation mode is changed, the unit begins a sensing operation. (If a search for sensing points does not succeed in one minute, only the flap moves.)

Remote controller configuration	Wired remote controller (RCS-SH80TG)		Wireless remote controller (RCS-SH80TGWL)		System controller (SHA-KC64TG)
	Single	Group control	Single	Group control	
Auto-flap					
Swing	○	○	○	○	△ (*1)
Air direction setting	○	○	○	○	△ (*1)

\*1: Only possible when remote control unit is not used.  
For group control, the settings are for the complete group.

### 18-2. K Type

When the "SWEEP" button is pressed, swing starts and when it is pressed again, the flap stops in place.

## 19. Drain Pump Control (Does not include K, T, D, F, FM Type)

- (1) Drain pump control turns ON when the compressor is activated in cooling operation.
- (2) When the compressor turns OFF due to freeze prevention control, drain pump turns ON for 20 minutes.
- (3) Drain pump control turns ON when the floating switch is activated. If the operation is performed for 5 minutes and the floating switch does not return to the original position, an alarm message P10 is displayed. (Operation continues.)

If the floating switch returns to the original position, control turns OFF 5 minutes after the return of the floating switch.

## 20. Indoor Electronic Expansion Valve

- However, when the compressor is stopped, there still occur 20 pulses. When the power is first switched on until the ON / OFF operation button is pressed, the valve is open at 480 pulses.
- From then on, control is accomplished as shown below.

### 20-1. Cooling and dehumidifying operation

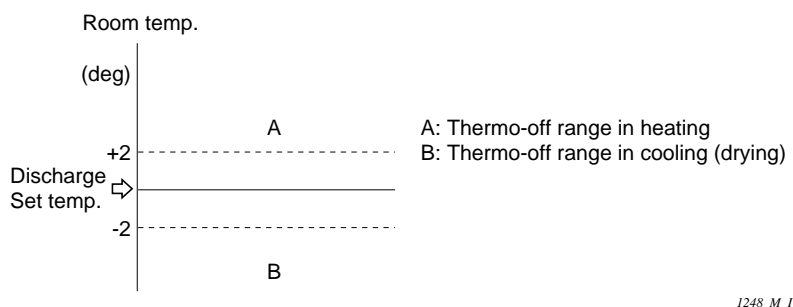
- (1) When operation is stopped and thermo-off, operation is still at 20 pulses. However, the electronic expansion valve may be opened for about 3 minutes to recover oil in the pipes.
- (2) When the thermostat is active, the valve is controlled in the range of 70 to 480 pulses.
- (3) When the compressor maximum discharge temperature  $\geq 98$  °C, the degree of electronic expansion valve opening increases.
- (4) When the super-heat of indoor unit (E3 temperature – E1 temperature) is low, the degree of electronic expansion valve opening is reduced. However, (3) has priority.
- (5) When the super-heat at the indoor unit outlet is high, the degree of the electronic expansion valve opening increases.

### 20-2. Heating operation

- (1) When operation is stopped and the thermostat is inactive, the electronic expansion valve opens and closes so that the refrigerant does not accumulate excessively in the indoor unit.
- (2) When thermo-on, the valve is controlled within the range of 70 to 480 pulses.
- (3) When the compressor maximum discharge temperature  $\geq 98$  °C, the degree of electronic expansion valve opening.
- (4) When the degree of heat at the outdoor heat exchanger (coil temperature – liquid temperature) is high, the degree of electronic expansion valve opening increases.
- (5) When the sub-cool of indoor unit (E2 temperature – E1 temperature) is low, the degree of electronic expansion valve opening reduces. However, (4) above takes precedence.
- (6) When the degree of overcooling at the indoor unit outlet (E2 temperature – E1 temperature) is high, the degree of electronic expansion valve opening is increased.
- (7) When the indoor heat exchanger temperature  $\leq 30$  °C, the electronic expansion valve returns to its initial pulse control.

## 21. Discharge Temperature Control (Only for U, D Type)

- If the range shown below is continuously detected for 6 minutes, the unit will thermo-off operation is initiated.



- \*1. The discharge temperature was factory set as follows: 15 °C for cooling; 40 °C for heating  
This can be changed using the simple setting mode on the remote controller.
2. For U and D type, thermo-off operation is initiated if one of the thermo-off conditions for normal room temperature control and the discharge temperature control is met.

## 22. Automatic Restart Function after Power Failure

Even when power failure occurs, preset programmed operation can be reactivated once power is resumes within 100 hrs.

## 23. Filter Sign

Filter sign informs you when maintenance is necessary.

- 2,500 hrs : X, S, T, SL, type
- 150 hrs : AS, K, F, FM type

**7. Replacement of Main Units**

**1. Compressors ..... VII - 2**

- 1-1. Judging whether a compressor needs to be replaced..... VII - 2
- 1-2. Procedure for Replacing one faulty Compressor ..... VII - 3
- 1-3. PC unit..... VII - 5
- 1-4. AD unit..... VII - 9
- 1-5. Replacing the Compressors (Three) of the PC Unit ..... VII - 12
- 1-6. Procedure for Replacing All Compressors in the Same System ..... VII - 15

**2. Indoor Units ..... VII - 17**

- 2-1. Refrigerant recovery when a fault occurs in the indoor unit ..... VII - 17
- 2-2. Refrigerant Recovery Operation ..... VII - 18



# 1. Compressors

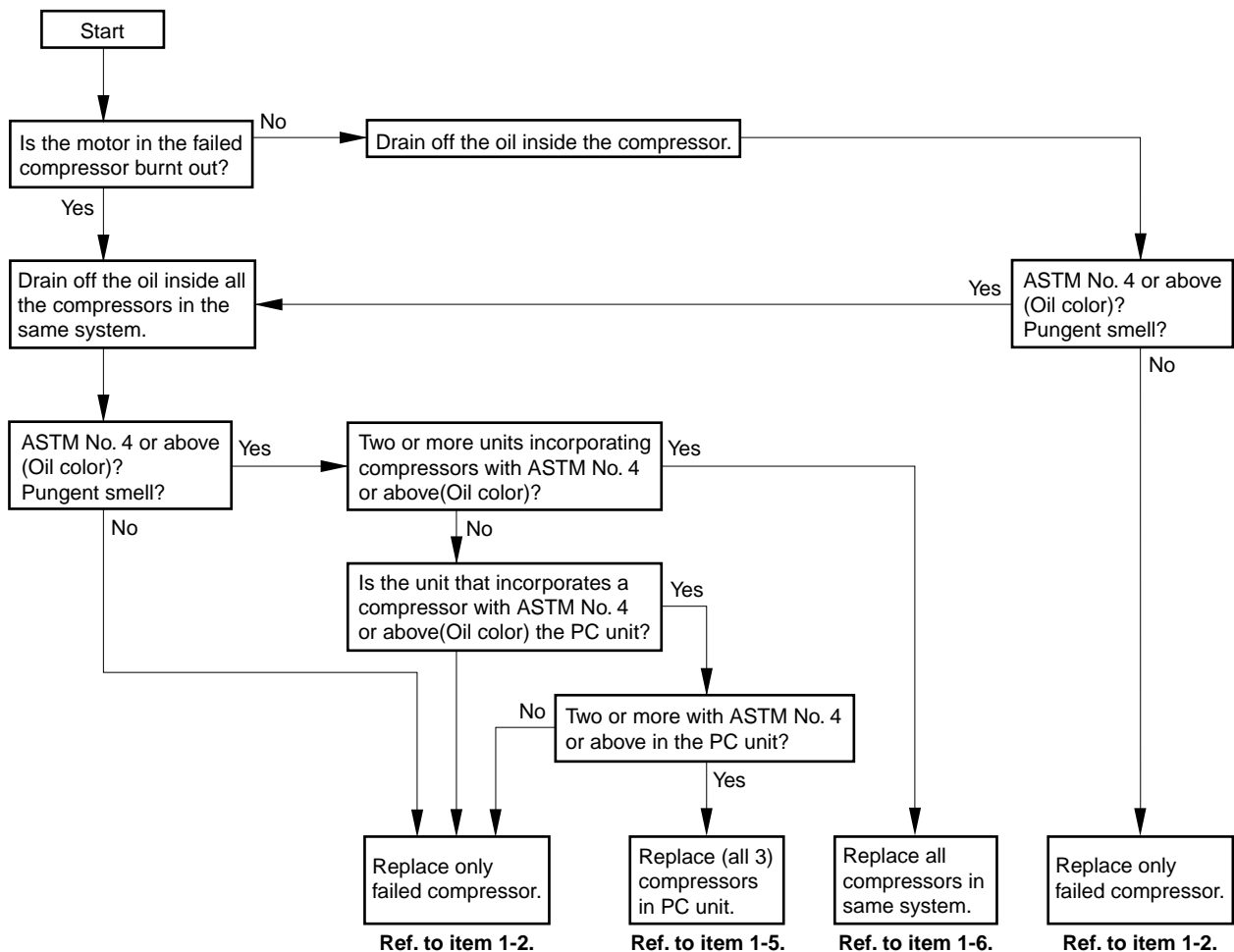
Compressor trouble can generally be grouped under the following categories:

- ① Mechanical trouble → (A) Compressor lock-up  
(B) Trouble in boosting pressure  
(C) Abnormal noises
- ② Electrical trouble → (A) Winding burn-out  
(B) Broken or disconnected wires  
(C) Defective insulation  
(D) Ground faults

Troubleshooting consists in pinpointing the trouble from the winding resistance (which differs depending on the compressor concerned), insulation resistance, current, leakage circuit breaker tripping, extent to which the oil and refrigerant have become contaminated, abnormal smells, pressure, noise and other factors on the basis of the H01 and H02 (PC comp), H11 and H12 (AC comp), H21 and H22 (SC comp) remote control displays.

**Remarks:** Insulation resistance (measure the insulation resistance of the live parts and non-live parts using a DC 500V megger)  
 (a) Fan motor → 300 Ω or more  
 (b) compressor → 100 Ω or more (item supplied for servicing)  
 (c) unit → 10 Ω or more (this is measured because the unit contains refrigerant which reduces the insulation resistance)

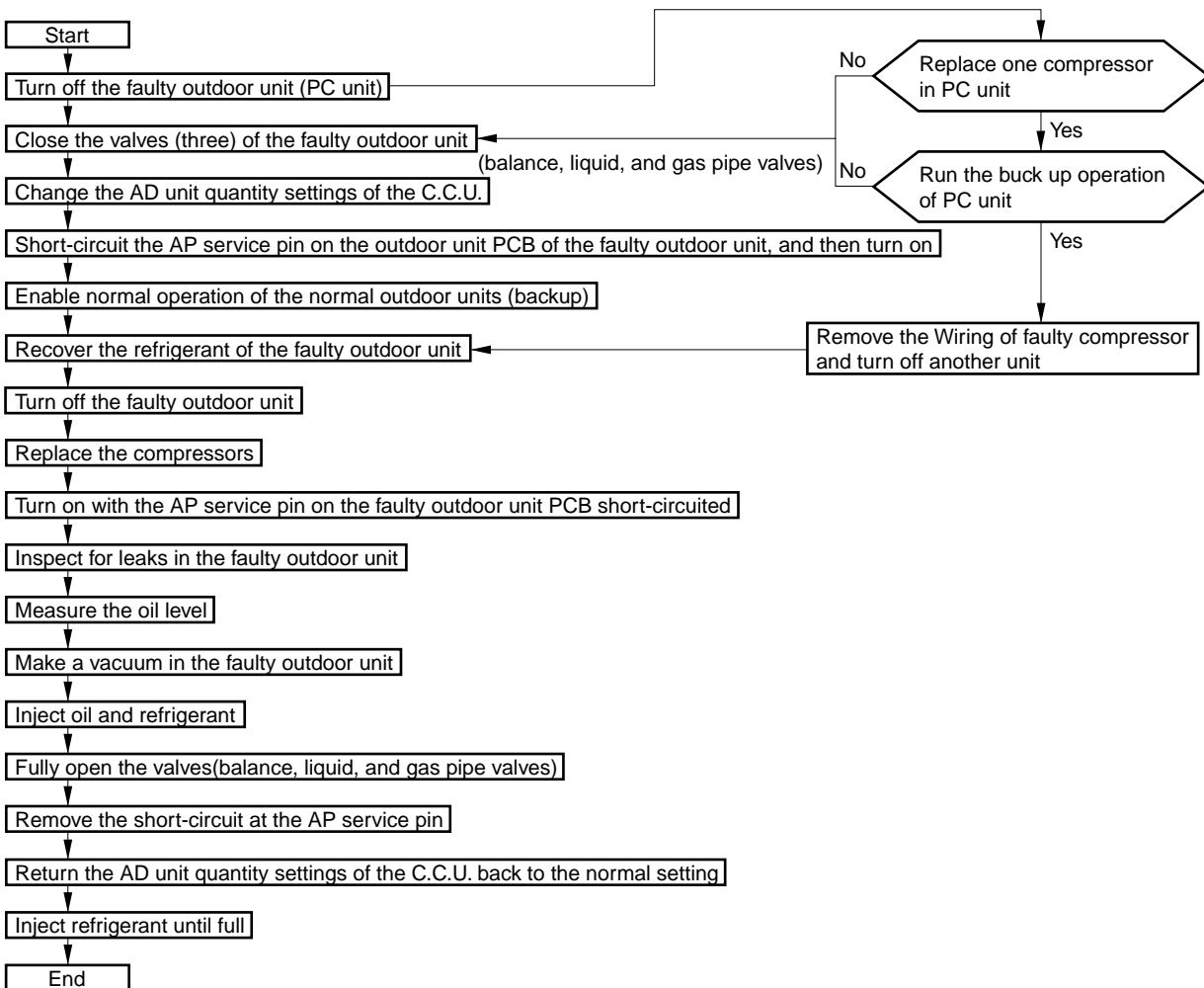
## 1-1. Judging whether a compressor needs to be replaced



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# 1. Compressors

## 1-2. Procedure for Replacing one faulty Compressor



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### NOTE

1. Ref. P VI-10, Backup Operation, under Control Functions.
2. When the AP service pin is short-circuited, the compressors and fans of the faulty unit (PC unit) are stopped, the solenoid valves and electronic expansion valves are fully opened, and all transmission is stopped.
3. Be sure to first check the injection amount of the refrigerant and oil, and then check the recovery amount.
4. If the short-circuit of the AP service pin is removed when the power is left on, transmission with the C.C.U. is restarted.
5. Even if an alarm (E26) has occurred, operation is restarted when the unit quantity setting is returned to normal. The power does not need to be turned on and off again.
6. Perform immediately once the oil and refrigerant are injected.
7. Perform this operation if you were unable to inject the specified amount using the normal injection procedure.

## 1. Compressors

### **(1) Refrigerant Recovery and Oil Recovery of the Faulty Unit (Always use the refrigerant recovery device)**

Dirty oil and refrigerant from the faulty unit must not be recovered in another unit. Use the following procedure to correctly perform refrigerant and oil recovery. Also, be sure to connect the dry core (D-253U) in accordance with Fig. A (P19).

- 1. Perform an air purge for each service pipe. (Do not release the refrigerant into the open air.)**  
Install a manual valve (packless valve) near the connected piping discharge outlet, and then perform an air purge for the piping up to the valve. Use a vacuum pump to air purge with a vacuum pump up to 133.3 Pa (1 mmHg) in the connected main piping. Also, air purge with a vacuum pump inside the oil separator.
- 2. Set the valves.**  
Open valves V1 and V5, and close the other valves V2, V3, V4, V6, V7, V8, and V9. (The supplied valves of the oil tank and oil separator are all closed.)
- 3. Operate the refrigerant recovery device, and recover the dirty refrigerant.**  
\* For information about refrigerant recovery device operation, refer to the operation manual of the respective device. Prepare a cylinder with a capacity of at least 15 kg.
- 4. Look at the site glass, and perform the valve operations below to recover the oil if the liquid refrigerant becomes low.**
  - a) Close the valves of the balance pipes (① valve).
  - b) Set the balance pipe valve ② of the faulty outdoor unit from closed to the half-way open (turn about two times).
  - c) Perform operations on the valves installed at the site. Open the V2 and V4 oil separator valves, and set the V1 valve from open to closed. (Oil recovery is started.)
  - d) When approximately 10 minutes elapses, turn valve V1 from closed to open, and then operate until the low-pressure switch of the refrigerant recovery device is activated.  
(Perform refrigerant and oil recovery until the internal pressure of the faulty unit is 0.098 MPa (1 kg/cm<sup>2</sup>) or lower. If the dry core is clogged with dirt or other debris, replace it with a new one.)
- 5. Stop operation of the refrigerant recovery device.**
- 6. Close the V5 valve, and then open the V9 valve to release the small amount of residual gas refrigerant into a safe location. Check that the vacuum low-pressure gauge becomes 0 MPa (0 kg/cm<sup>2</sup>).**
- 7. When these operations are finished, remove the circuits for the oil separator, dry core, and V4 valve.**
- 8. Measure the amount of recovered refrigerant and oil. (This amount of refrigerant and oil will be added later.)**
- 9. Never attempt to reuse recovered refrigerant or oil. Dispose of the recovered refrigerant and oil at a recycling plant.**

# 1. Compressors

## 1-3. PC unit

### (1) Replacing the power control (PC) compressor (Ref. Fig. 1)

#### [Removal]

1. Remove the front panel at the front.
2. Remove the sound-proofing material which is wrapped around the compressor.
3. Remove the cap over the compressor terminal section, and disconnect the power and internal terminals. (Do this in two places at the left and right.)
4. Remove the crankcase heater.
5. Disconnect the oil sensor leads from the PCB.
6. Remove the three bolts.
7. Prepare to remove the welded areas. (Protect the sensor unit and the plate, rubber, leads and clampers around it.)
8. Remove the three welded areas and disconnect the connecting parts. If area (A) proves hard to remove, cut the pipe shown in the figure, and then remove.
9. Draw the compressor out toward you.

#### [Installation]

1. Prepare to install the compressor.
  - Remove the oil sensor and PC pipe from the failed compressor.  
To return the oil inside the oil sensor to the compressor, tilt the compressor toward the opposite side to that of the oil sensor, and then close the ball valve.  
Remove the upper and lower flare nuts.
  - Remove the stoppers over the outlet and intake ports of the new compressor.
  - Mount the oil sensor and PC pipe on the new compressor. After installing the oil sensor, be absolutely sure to open the ball valve.
  - Mount the flare nuts and other parts which were removed from the new compressor onto the failed compressor.
2. Install the compressor in the outdoor unit.  
(Be absolutely sure to check the compressor's model number. The PC compressor is on the left. Its model number has the suffix "S or U".)
3. Install the pipes.
4. Replace the air inside the pipes with nitrogen.  
(If the pipes have not been inserted, discharge a small amount of the nitrogen while using a burner to apply heat to them, and insert. Use wet cloths or other suitable materials to cool off the surrounding pipes.)
5. Braze with copper.

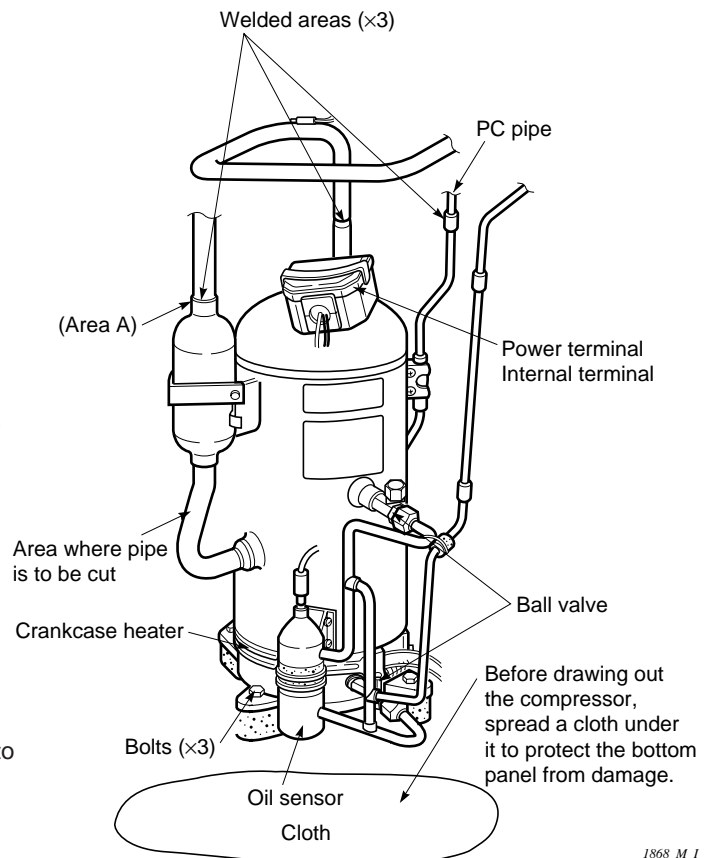


Fig. 1

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## 1. Compressors

- Close valve V9 and open valve V6 and inspect for leaks. (Keep the pressure within the 1.27 to 1.47 MPa (13-15 kg/cm<sup>2</sup>) range in order to protect the low-pressure switch.) (Ref. Fig. A)  
Under no circumstances, do not exceed pressure 1.47 MPa (15 kg/cm<sup>2</sup>). Otherwise the low-pressure switch becomes damage.

### NOTE

**When the refrigerant has been recovered in the PC unit, inspect for leaks using a refrigerant gas pressure of 0.98 MPa (10 kg/cm<sup>2</sup>).**

- If no leaks are found, close valve V6 and open valve V9, and prepare for establishing a vacuum. Mount the parts which were removed at the previous stage. (Ref. Fig. A)

### (2) Replacing the constant-speed AC compressor (Ref. Fig. 2)

- \* If the power cable interferes and makes it impossible to replace the AC compressor, refer to "(1) Replacing the PC compressor" on the previous page.

#### [Removal]

- Remove the front panel at the front.
- Remove the sound-proofing material which is wrapped around the compressor.
- Remove the cap over the compressor terminal section, and disconnect the power and internal terminals. (Do this in two places at the left and right.)
- Remove the crankcase heater.
- Remove the three bolts.
- Prepare to remove the welded areas.
  - Protect the sensor unit and the plate, rubber, leads and claspers around it.
- Remove the three welded areas.
- Lift and draw the compressor out toward you.

#### [Installation]

- Prepare to install the compressor.
  - Remove the cross oil pipe from the failed compressor. Before removing the pipe, tilt the compressor toward the opposite side to that of the cross oil pipe to return the oil inside the cross oil pipe to the compressor.
  - Remove the stoppers over the outlet and intake ports of the new compressor. Mount the crankcase heater.
  - Place the compressor on its side, and attach the cross oil pipe. Remove the upper flare nut. Loosen the lower flare nut, hold the cross oil pipe and connect it as quickly as possible. (Have a pan ready.)
  - Mount the flare nuts and other parts which were removed from the new compressor onto the failed compressor.
- Install the compressor in the outdoor unit. (Be absolutely sure to check the compressor's model number. The AC compressor's model number has the suffix "B" or "C".)
- Install the pipes.
- Replace the air inside the pipes with nitrogen. (If the pipes have not been inserted, discharge a small amount of the nitrogen while using a burner to apply heat to them, and insert. Use wet cloths or other suitable materials to cool off the surrounding pipes.)

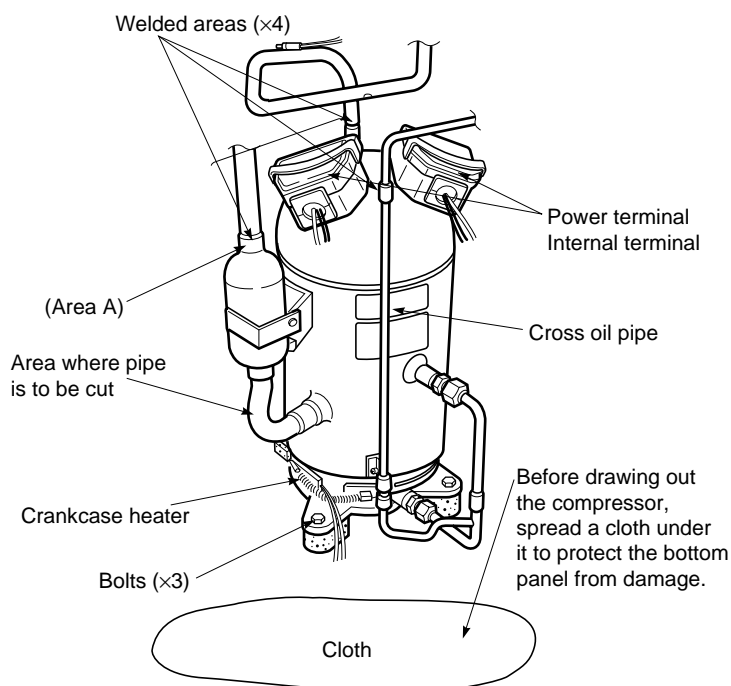


Fig. 2

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## 1. Compressors

5. Braze with copper.
6. Close valve V9 and open valve V6 and inspect for leaks. (Keep the pressure within the 1.27 to 1.47 MPa (13-15 kg/cm<sup>2</sup>) range in order to protect the low-pressure switch.) (Ref. Fig. A)

Under no circumstances do not exceed pressure 1.47 MPa (15 kg/cm<sup>2</sup>).

### NOTE

**When the refrigerant has been recovered in the PC unit, inspect for leaks using a refrigerant gas pressure of 0.98 MPa (10 kg/cm<sup>2</sup>).**

7. If no leaks are found, close valve V6 and open valve V9, and prepare for establishing a vacuum. Mount the parts which were removed at the previous stage. (Ref. Fig. A)

### NOTE

**If the power cable was disconnected, perform the work in such a way that the power supply area screws will not become loose.**

### (3) Replacing the scroll (SC) compressor (PC unit) (Ref. Fig. 3, 4)

#### [Removal]

\* Refer to "(1) Replacing the PC compressor" on page 5 to remove this compressor before following the steps in the procedure below.

1. Remove the front left side fan guard.
2. Remove the fan.
3. Remove the outer rear panel.
4. Remove the part of the compressor cover.
  - Left rear side panel, low-pressure switch.
  - \* Remove the rear service panel of the compressor cover.
  - \* Proceed with the work inside the fan nozzle area.
5. Remove the sound-proofing material which is wrapped around the compressor.
6. Remove the cap over the compressor terminal section, and disconnect the power and internal terminals.
7. Remove the crankcase heater.
8. Disconnect the oil sensor lead wires from the PCB.
9. Draw out the discharge sensor at the top of the compressor.
 

(Draw out the resin stopper.)
10. Remove the bolts and nut with washer.

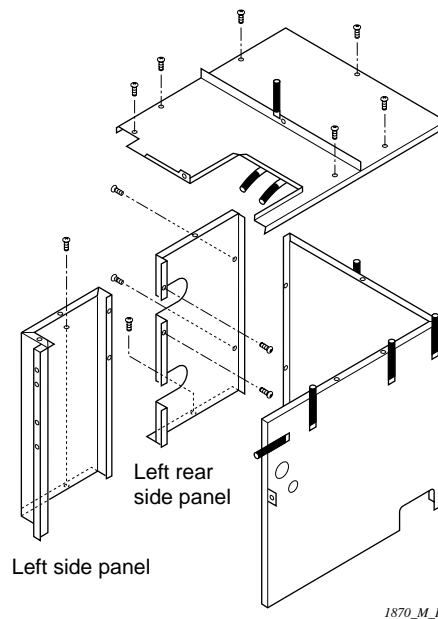


Fig. 3

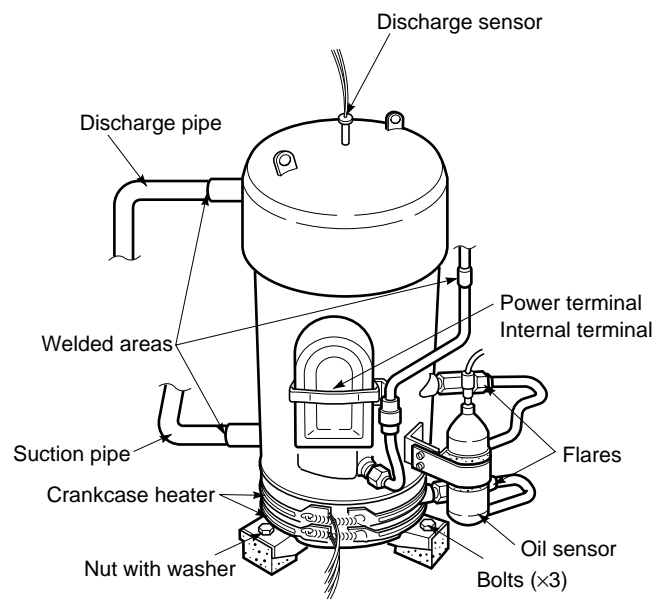


Fig. 4

## 1. Compressors

11. Proceed as instructed below to check whether any oil has accumulated in the suction pipe.
  - Loosen the lower flare part of the oil sensor, and drain off the oil until no more comes out. (Be absolutely sure to provide a pan large enough to collect about a liter of oil.)
  - Remove the oil sensor.
  - Place the cap over the installation hole of the oil sensor.

12. Prepare to remove the welded areas.
  - Protect the plate, rubber, leads and clampers around these areas.

13. Remove the three welded areas.

**NOTE**

**Do not perform the work inside the unit when the discharge and suction pipes are to be disconnected.**

14. Lift and draw the compressor out toward you.

**[Installation]**

1. Prepare to install the compressor. (Ref. Fig. 4)
  - Remove the stoppers over the outlet and intake ports of the new compressor.
  - Mount the oil sensor onto the compressor.
  - Connect the oil return pipe to the compressor.
  - Mount the flare nuts and other parts which were removed from the new compressor onto the failed compressor.
2. Install the compressor in the outdoor unit. (Be absolutely sure to check the compressor's model number.)
3. Shape the pipes and insert them into the welded areas.
4. Replace the air inside the pipes with nitrogen. (If the pipes have not been inserted, discharge a small amount of the nitrogen while using a burner to apply heat to them, and insert. Use wet cloths or other suitable materials to cool off the surrounding pipes.)
5. Braze with silver (in two places: discharge pipe and suction pipe). Braze with copper (in one place). Remove the paint, oil and other foreign matter from the silver brazing areas. Failure to do this may cause leaks.
6. Close valve V9 and open valve V6 and inspect for leaks. (Keep the pressure within the 1.27 to 1.47 MPa (13-15 kg/cm<sup>2</sup>) range in order to protect the low-pressure switch.) (Ref. Fig. A)
 

Under no circumstances do not exceed pressure 1.47 MPa (15 kg/cm<sup>2</sup>).
7. Close valve V6 and open valve V9, and prepare for establishing a vacuum.
8. In the silver brazing areas, remove the flux, and touch up the paint-work. (Ref. Fig. A)

**NOTE**

**Be absolutely sure to attach the discharge sensor.**

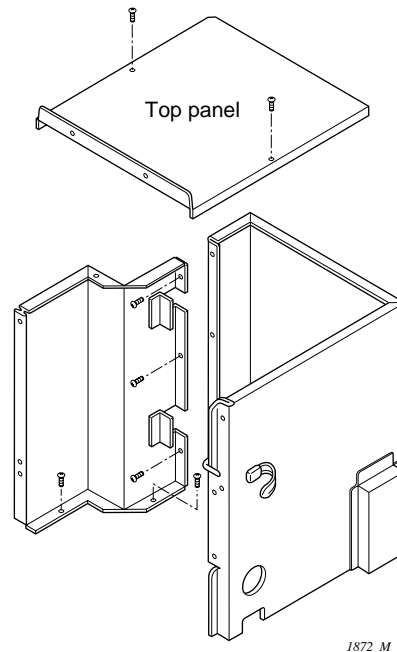
# 1. Compressors

## 1-4. AD unit

### (1) Replacing the compressor (Ref. Fig. 5, 6)

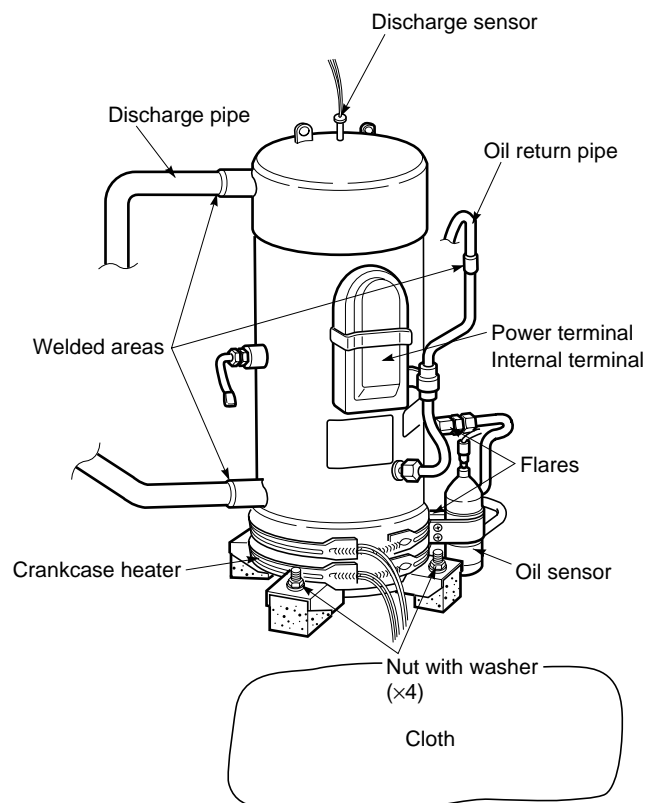
**[Removal]**

1. Remove the front panel.
2. Remove the electrical parts box.
3. Remove the part of the compressor cover.
  - Disconnect the wires bundled together by the clumper.
4. Remove the sound-proofing material which is wrapped around the compressor.
5. Remove the cap over the compressor terminal section, and disconnect the power and internal terminals.
6. Remove the crankcase heater.
7. Disconnect the oil sensor lead wires from the PCB.
8. Draw out the discharge sensor at the top of the compressor.  
(Draw out the resin stopper.)
9. Remove the nuts with washers.
10. Proceed as instructed below to remove the oil from the suction pipe.
  - Remove the upper pipe flare of the oil sensor. If oil oozes out, drain it off until no more comes out. (Provide a pan to collect the oil.)
  - After checking the above work, tilt the compressor, remove the lower pipe flare of the oil sensor, and then remove the oil sensor itself. (The oil which was in the oil sensor will ooze out at this point.)
  - Adjust the angle of tilt, and drain off the liter or so of oil inside the compressor. (It is OK if no oil comes out.)
  - Place the cap over the installation hole of the oil sensor.
11. Prepare to remove the welded areas.
  - Protect the plate, rubber, leads and clumpers around these areas.
12. Remove the three welded areas.
13. Lift and draw the compressor out toward you.



**Fig. 5**

1872\_M\_I



**Fig. 6**

1873\_M\_I



## 1. Compressors

### [Installation]

1. Prepare to install the compressor.
  - Remove the crankcase heater.
  - Remove the compressor. Nuts with washers
  - Install the new compressor. Install it in the same status that the old compressor was originally in.
  - Remove the stoppers over the outlet and intake ports of the new compressor.
  - Install the crankcase heater.
  - Mount the oil sensor onto the new compressor.
  - Mount the flare nuts and other parts which were removed from the new compressor onto the failed compressor.
2. Install the compressor in the outdoor unit. (Be absolutely sure to check the compressor's model number.)
3. Shape the pipes and insert them into the welded areas.
4. Replace the air inside the pipes with nitrogen. (If the pipes have not been inserted, discharge a small amount of the nitrogen while using a burner to apply heat to them, and insert. Use wet cloths or other suitable materials to cool off the surrounding pipes.)
5. Braze with silver (in two places: discharge pipe and suction pipe). Braze with copper (in one place). Remove the paint, oil and other foreign matter from the silver brazing areas. Failure to do this may cause leaks.
6. Close valve V9 and open valve V6, and inspect for leaks. (Keep the pressure within the 1.27 to 1.47 MPa (13-15 kg/cm<sup>2</sup>) range in order to protect the low-pressure switch.) (Ref. Fig. A)  
Under no circumstances must the pressure exceed 1.47 MPa (15 kg/cm<sup>2</sup>).
7. Close valve V6 and open valve V9, and prepare for establishing a vacuum. (Ref. Fig. A)
8. In the silver brazing areas, remove the flux, and touch up the paint-work.

**NOTE**

**Be absolutely sure to attach the discharge sensor.**

## 1. Compressors

### (2) Air Purging with a Vacuum Pump, refilling the oil/refrigerant

#### [Measuring the amount of oil]

Measure the amount of oil in the compressor which has been removed and determine whether more oil needs to be added.

(a) When the oil inside the oil separator is not recovered	Total amount of oil recovered (liters)	-	1.8 l (AD COMP) 2.4 l (SC COMP)	=	Amount of oil to be added (liters) (minus sign denotes no oil to be added)
(b) When the oil inside the oil separator is recovered	Total amount of oil recovered (liters) (oil in compressor, oil separator, etc.)	-	8.2 l (PC unit) 4.6 l (AD unit)	=	Amount of oil to be added (liters) (minus sign denotes no oil to be added)

#### [Air Purging with a Vacuum Pump] (Ref. Fig. A)

1. When the need to perform an operation involving oil refilling arises, connect an oil tank to the end of valve V3 as shown in the Fig. (A) on page 19.
2. Close valve V9 and open valves V3 and V7, and run the vacuum pump. (The valves provided on both sides of the oil tank are set to the closed position.)
3. Continue with Air Purging with a Vacuum Pump until the vacuum low-pressure gauge reads 133.3 Pa (1 mmHg).
4. Upon completion of Air Purging with a Vacuum Pump, close valve V7 and stop the vacuum pump.

#### [Refilling the oil] (Ref. Fig. A)

Set the outdoor unit side of the valve provided on the oil tank connected to V3 to the closed position, and refill the amount of oil to be added inside the unit. If the oil fails to be refilled, apply refrigerant pressure from the reverse side.

Close valves V1 and V2, and open valve V8 and the valves provided on the oil tank. Upon completion, close all of these valves.

(Use a weighing scale. The specific gravity is 0.85 or so.)

#### [Refilling the refrigerant] (Ref. Fig. A)

If refrigerant needs to be refilled, open valves V1, V2 and V8, and close the valves provided on the oil tank and valve 3.

If the refrigerant fails to be refilled, run another outdoor unit, open valve V5 and close valves V1 and V2.

In this case, refill the refrigerant in the form of a gas. (Use a weighing scale. This job arises mainly when the ASTM No. of the oil is 4 or above.)

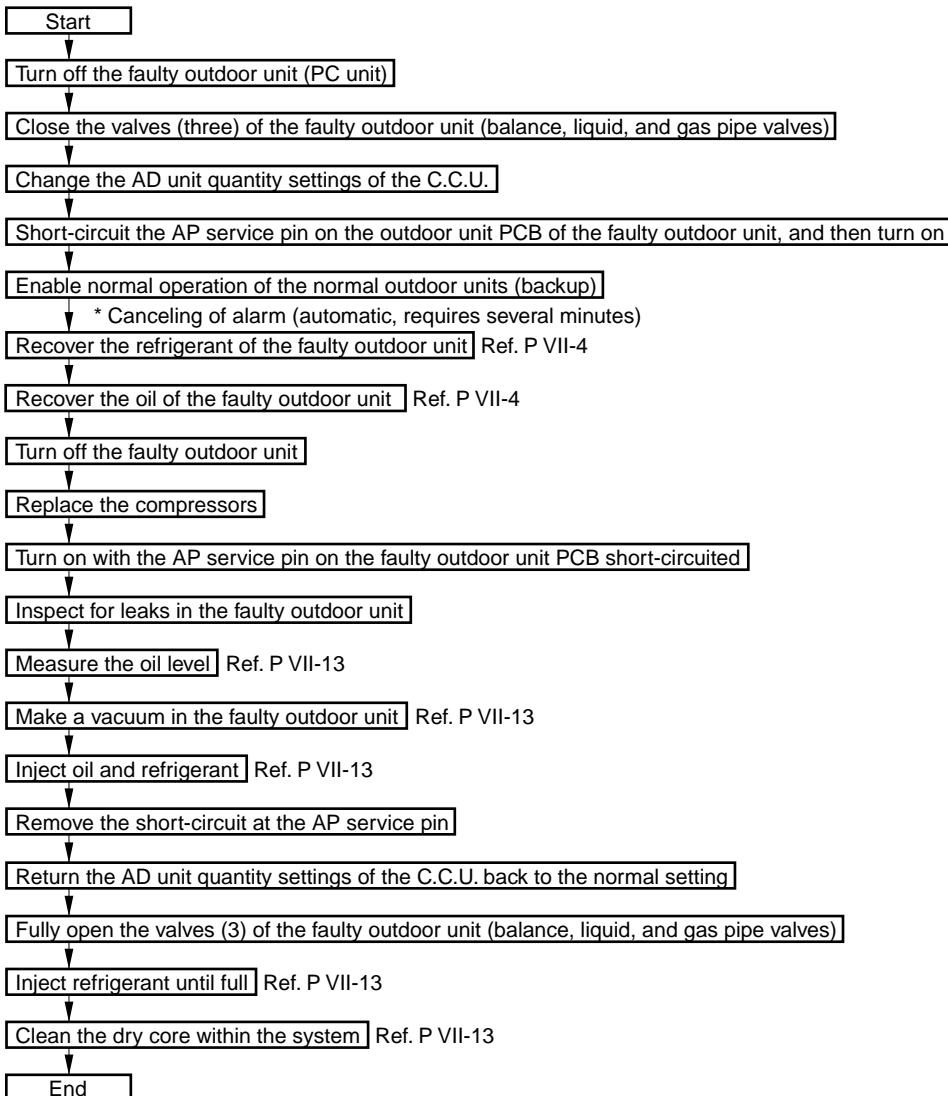
If the refrigerant cannot be refilled by taking the steps above, set all the outdoor units to the operation enable mode, then run all the units and follow the same steps as for refilling the gas.



## 1. Compressors

### 1-5. Replacing the Compressors (Three) of the PC Unit

\* Never attempt to recover the refrigerant or oil of the faulty unit (PC unit) in another unit (AD unit). See the flowchart in “1-1. Judging whether a compressor needs to be replaced” and Fig. A (P19).



1874\_M\_1

#### NOTE

1. Ref. P VI-10, Backup Operation, under Control Functions.
2. When the AP service pin is short-circuited, the compressors and fans of the faulty unit (PC unit) are stopped, the solenoid valves and electronic expansion valves are fully opened, and all transmission is stopped.
3. Be sure to first check the injection amount of the refrigerant and oil, and then check the recovery amount.
4. If the short-circuit of the AP service pin is removed when the power is left on, transmission with the C.C.U. is restarted.
5. Even if an alarm (E26) has occurred, operation is restarted when the unit quantity setting is returned to normal.  
The power does not need to be turned on and off again.
6. Perform immediately once the oil and refrigerant are injected.
7. Perform this operation if you were unable to inject the specified amount using the normal injection procedure.

## 1. Compressors

### (1) Vacuum and Oil and Refrigerant Injection

#### [Measurement of oil amount]

Measure the oil amount in the faulty compressor and the oil amount recovered in the oil separator to determine the amount of new oil to be added.

Total amount of recovered oil (ℓ) (two compressors and oil separator)	–	8.2 ℓ (PC unit)	=	Amount of oil to be added (ℓ) (If the result is negative, no oil needs to be added.)
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#### [Vacuum]

1. Close the V9 valve, open the V3 and V7 valves, and start vacuum pump operation. (Both oil tank valves are closed.) (The V1 and V2 valves are open, the V5, V6, and V8 valves are closed, the balance pipe valves ① are closed, and ② is half-way open.)
2. Make a vacuum so that the vacuum low-pressure gauge reaches 133.3 Pa (1 mmHg).
3. Once this is reached, close the V7 valve, and then stop the vacuum pump.

#### [Oil injection]

Refer to “(2) Air Purging with a Vacuum Pump, refilling the oil/refrigerant” (P VII-11).

#### [Refrigerant injection]

Inject an amount equal to the amount recovered by the refrigerant recovery device plus 0.5 kg.

1. Open the V1, V2, and V8 valves, and close the oil tank valves and V3 valve. If all of the oil cannot be injected, operate another outdoor unit, and inject from the low-pressure discharge outlet of the operation unit in gaseous form. (Use the weighing scale.) If you cannot finish injection using this method, enable operation in all of the outdoor units, and then operate all of the outdoor units, and perform injection using this gas injection method.

### (2) Cleaning of the Dry Cores in the System

One cause of repeated burning and other faults in compressors in the same piping system is acid, sludge, carbon, or other substances remaining in the refrigeration cycle. This is often due to inadequate cleaning. Perform cleaning properly by following the procedure below.

#### ● When a ball valve is installed at the outdoor unit side

Install the service pipes as shown in Fig. B (P20).

1. Operate all of the outdoor units (either cooling or heating operation is OK).
2. Close the liquid pipe valve and ball valve of the outdoor unit where the dry core is to be mounted.
3. Immediately close the V1 valve, and then once operation is performed for 10 seconds, stop the outdoor unit. (The pipe contents are pumped down inside the piping.)
4. When the outdoor unit stops, close the V1 valve.
5. Remove the pipe between the liquid pipe valve and ball valve, and then mount the designated dry core. (This varies according to the specific model. This uses the flare connection method.)
6. Inspect for leaks in the pipe where the dry core is mounted (nitrogen pressure: approx. 1.96 MPa (20 kg/cm<sup>2</sup>)).
7. Make a vacuum in the pipe where the dry core is mounted (133.3 Pa (1 mmHg)).
8. Open the liquid pipe valve and ball valve.
9. Turn on the outdoor units.
10. Perform the above procedure for each outdoor unit.
11. Run each outdoor unit in this state for about three hours.
12. Follow the procedure above, and replace each dry core with a new one.
13. For the second time in this state, operate each outdoor unit for about 20 minutes.
14. Extract a small amount of oil, and check its smell, color, and overall appearance. If it meets the designated criteria, remove each dry core to complete the procedure. If the oil does not meet the designated criteria, replace each dry core with new ones again. Repeat this procedure until the oil meets the designated criteria.



## 1. Compressors

### ● When a ball valve is not installed at the outdoor unit side

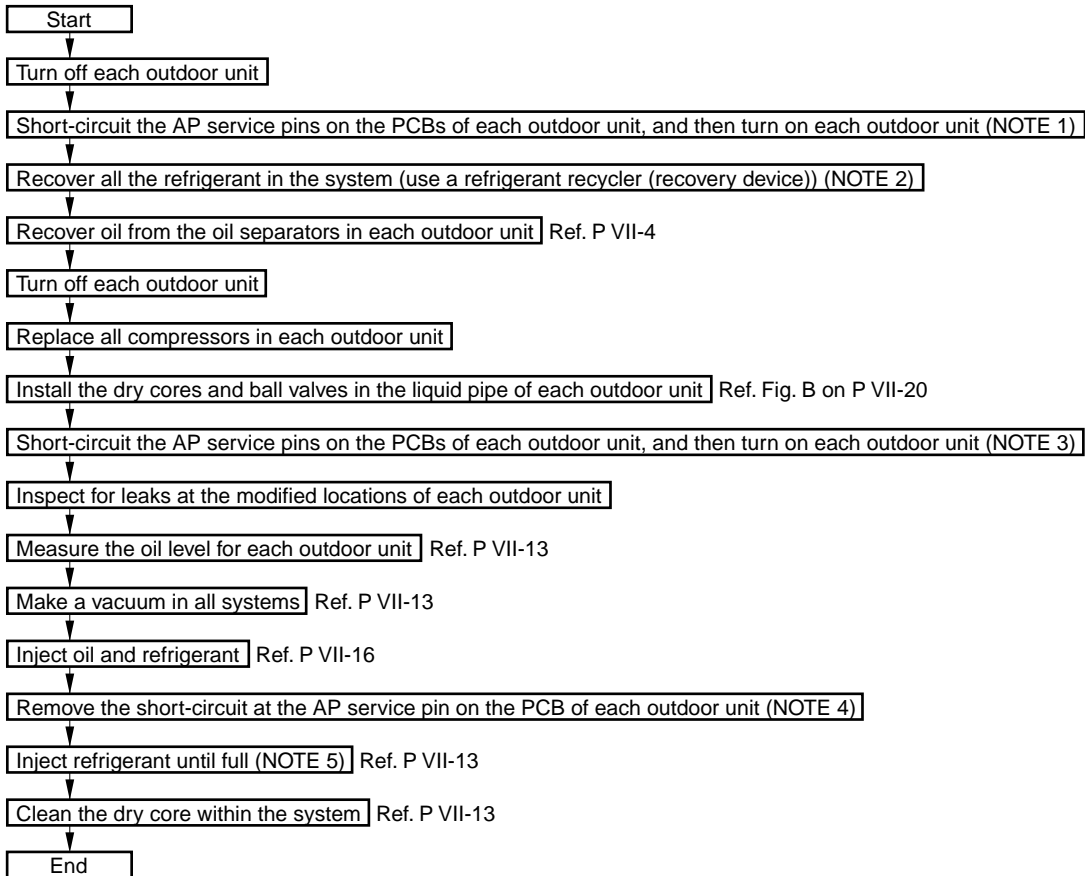
The refrigerant inside all indoor units and the pipes between all units must be pumped down to the outdoor unit side. The pumping down capacity of this outdoor unit is approximately 10 kg in this system. As a result, another refrigerant recovery device is always necessary. Perform cleaning properly by following the procedure below. Fig. C (P21). The outdoor units are pumped down in the order of (1) AD unit and then (2) PC unit.

1. As shown in the figure, install a pressure gauge (high-pressure, low-pressure) at the outdoor units where the refrigerant will be pumped down.
2. Fully close the liquid pipe valves of the outdoor units where the refrigerant will be pumped down.
3. Stop the unit when the high-pressure gauge of the unit where the refrigerant is being recovered reaches 2.45 MPa (25 kg/cm<sup>2</sup>). (All Stop)
  - \* Stopping procedures (two examples)
    - a) Make an instantaneous short-circuit at the operation stop pin (CN024-2P) on the C.C.U.
    - b) Pull the temperature thermistor connector unit on the outdoor unit control PCB from the PCB. (Any PCB can be used as long as it is not a discharge temperature PCB. Never pull by grasping the lead wires.)
4. Immediately fully close the gas pipe valves of the outdoor units where the refrigerant were pumped down.
5. Remove the inter unit wiring between the units of the outdoor PC and AD units where the refrigerant has been pumped down.
6. Set the AD unit quantity setting DIP switch (S006) on the C.C.U. to the number of outdoor units where the pumping down of the refrigerant has not been completed.
7. Operate the remaining outdoor units in cooling mode. (Cooling operation is performed also when the lower 2P pin of the cooling/heating selector pin (CN022-3P) on the C.C.U. is instantaneously short-circuited.)
8. In the next steps, repeat pumping down for each outdoor unit using the procedure described above. When pumping down for all the outdoor units is completed, prepare the refrigerant recovery device. (Although this varies depending on the pipe length at the site, approximately 10 to 40 kg of refrigerant is recovered.)
9. Simultaneously recover the refrigerant in the indoor units and in the pipes between units from all of the outdoor unit liquid pipe and gas pipe valve service ports. Fully close the valves of the outdoor unit, and leave the indoor and outdoor units in their stopped status. Since the recovered refrigerant will later be used for charging, do not mix it with other recovered refrigerant.
10. Perform refrigerant recovery operation until the refrigerant recovery device low-pressure switch is activated. (For information about refrigerant recovery device operation, refer to the operation manual of the respective device.)
11. Release the small amount of residual gas refrigerant into a safe location.
12. As shown in Fig. C (P21), install the liquid pipe ball valve and dry core of the outdoor units. (The size varies according to the specific model. This uses the flare connection method.) Open the ball valve. Remove the dry core mounted to the service pipe.
13. Inspect for leaks in the pipe where the ball valve and dry core are mounted (nitrogen pressure: approx. 1.96 MPa (20 kg/cm<sup>2</sup>))
14. Make a vacuum inside the indoor unit and unit pipes.
15. Inject the recovered refrigerant into the liquid pipe side. If all of the refrigerant cannot be injected, inject the refrigerant into the low-pressure side in gaseous state after operation is started later. Be sure to always inject only the amount of recovered refrigerant. Also, inject new refrigerant if the refrigerant has a pungent, burning smell.
16. Fully open the liquid pipe valves of all outdoor units. Operate all units.
17. Refer to "(1) When a ball valve is installed at the outdoor unit side" above for the subsequent procedure.

# 1. Compressors

## 1-6. Procedure for Replacing All Compressors in the Same System

Always recover all the refrigerant and oil in the same system without releasing them into the open air. Perform operations according to the flowchart below. Never reuse the recovered refrigerant and oil.



1875\_M\_1

### NOTE

1. When the AP service pin is short-circuited, the compressors and fans are stopped, the solenoid valves and electronic expansion valves are fully opened, and all transmission is stopped.
2. **Be sure to first check the injection amount, and then check the recovery amount.**
3. **Always make the short-circuit before turning on the power.**
4. If the short-circuit of the AP service pin is removed when the power is left on, transmission with the C.C.U. is restarted.
5. Perform this operation if you were unable to inject the specified amount using the normal injection procedure.

## 1. Compressors

### (1) Injection of Oil and Refrigerant

#### [Oil injection]

Inject the oil amount below into each model from the oil removal service port of each model.

2.4 l

#### [Refrigerant injection]

1. Find the refrigerant injection amount using the formula below.

$$\begin{array}{|l|} \hline \text{Refrigerant} \\ \text{injection amount} \\ \text{(kg) (entire system)} \\ \hline \end{array} = \begin{array}{|l|} \hline \text{Total default refrigerant} \\ \text{injection amount for all} \\ \text{outdoor unit models} \\ \hline \end{array} + \begin{array}{|l|} \hline \text{Additional refrigerant} \\ \text{charge amount in the} \\ \text{on-site pipes} \\ \hline \end{array}$$

\* The default refrigerant injection amount for each model is written on the name plate affixed to each unit.

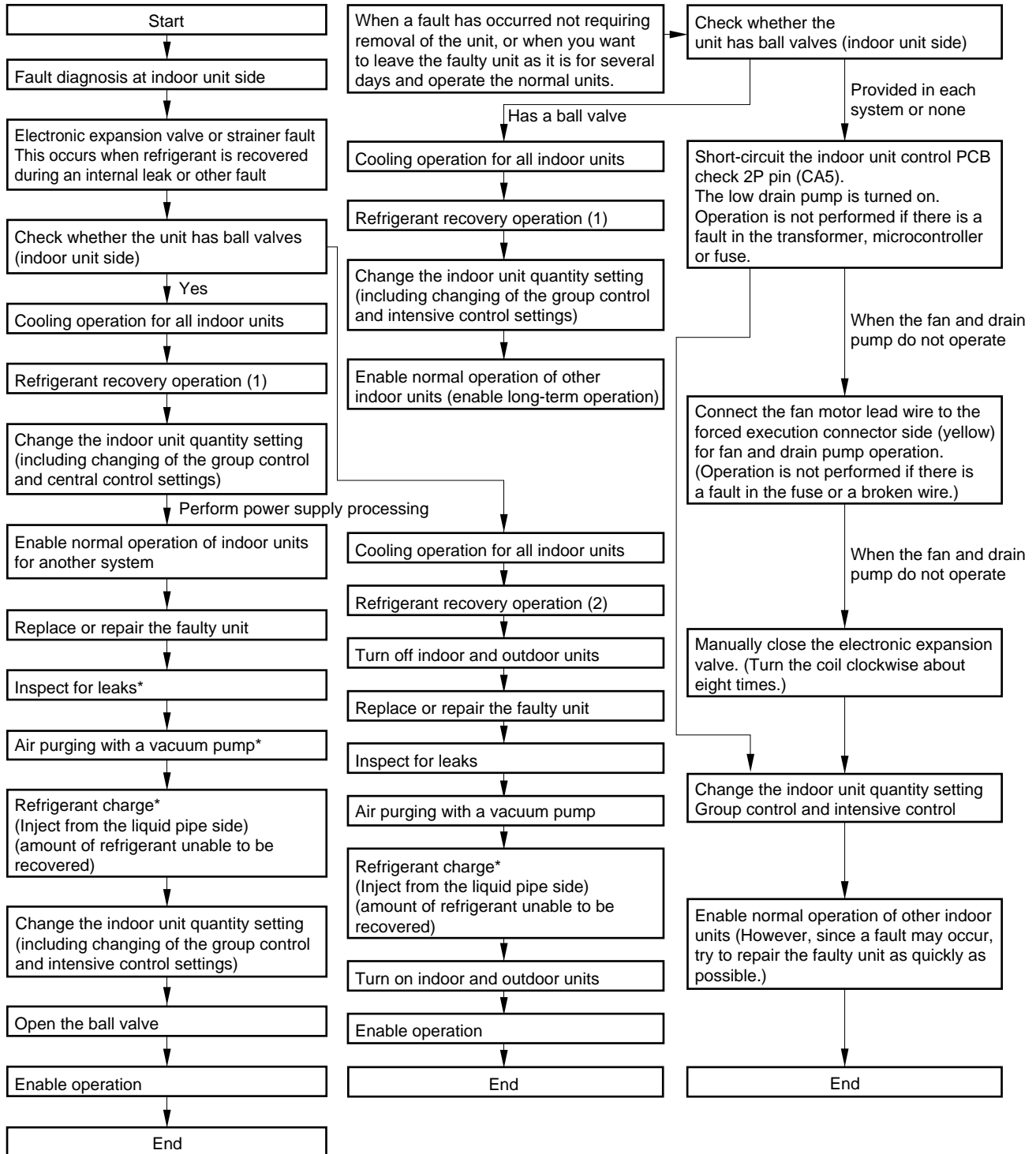
2. Inject refrigerant from the liquid pipe valve of each model.

7

## 2. Indoor Units

### 2-1. Refrigerant recovery when a fault occurs in the indoor unit

The procedure for refrigerant recovery when replacing or repairing an indoor unit due to a faulty refrigerant recovery circuit or other cause is shown below. Be sure to perform this procedure correctly.



\* Performed from the service port of the indoor unit-side ball valve

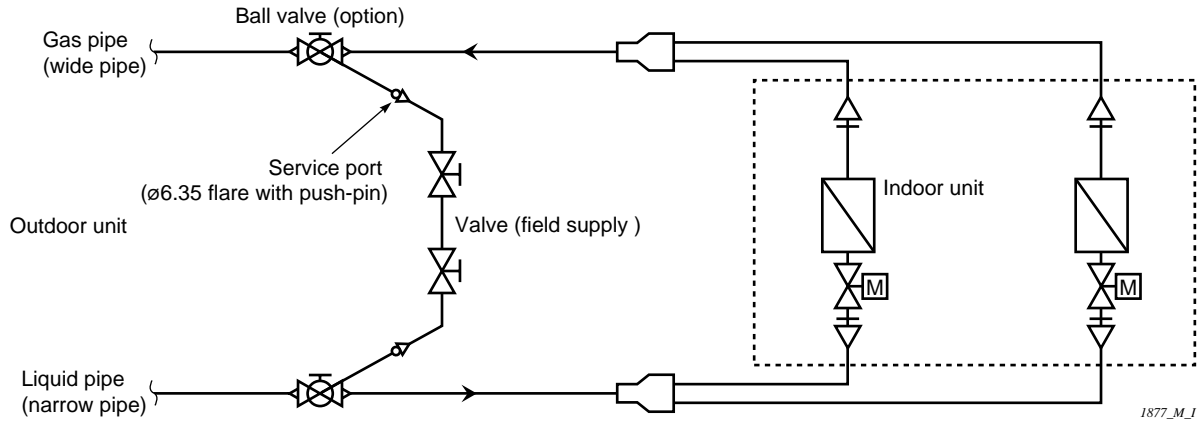


## 2. Indoor Units

### 2-2. Refrigerant Recovery Operation

(When a ball valve is installed)

#### Cooling operation



- ① Fully close the ball valve at the liquid pipe side.
- ② As shown in the figure, pass the ball valves on the liquid pipe and gas pipe sides through the respective service port (ø 6.35 flare with push-pin) so that the passages are joined. (Perform an air purge using a charge hose or other equipment.)
- ③ Operate for 10 to 20 minutes in this state.
- ④ Fully close the ball valve on the gas pipe side.
- ⑤ Release the small amount of residual refrigerant in the indoor unit to a safe location.

#### Refrigerant Recovery Operation

(When a ball valve is not installed)

\* Refer to P VII-13, Cleaning of Dry Cores in the System, when replacing the compressors.

2. Indoor Units

■ Refrigerant recovery and oil recovery

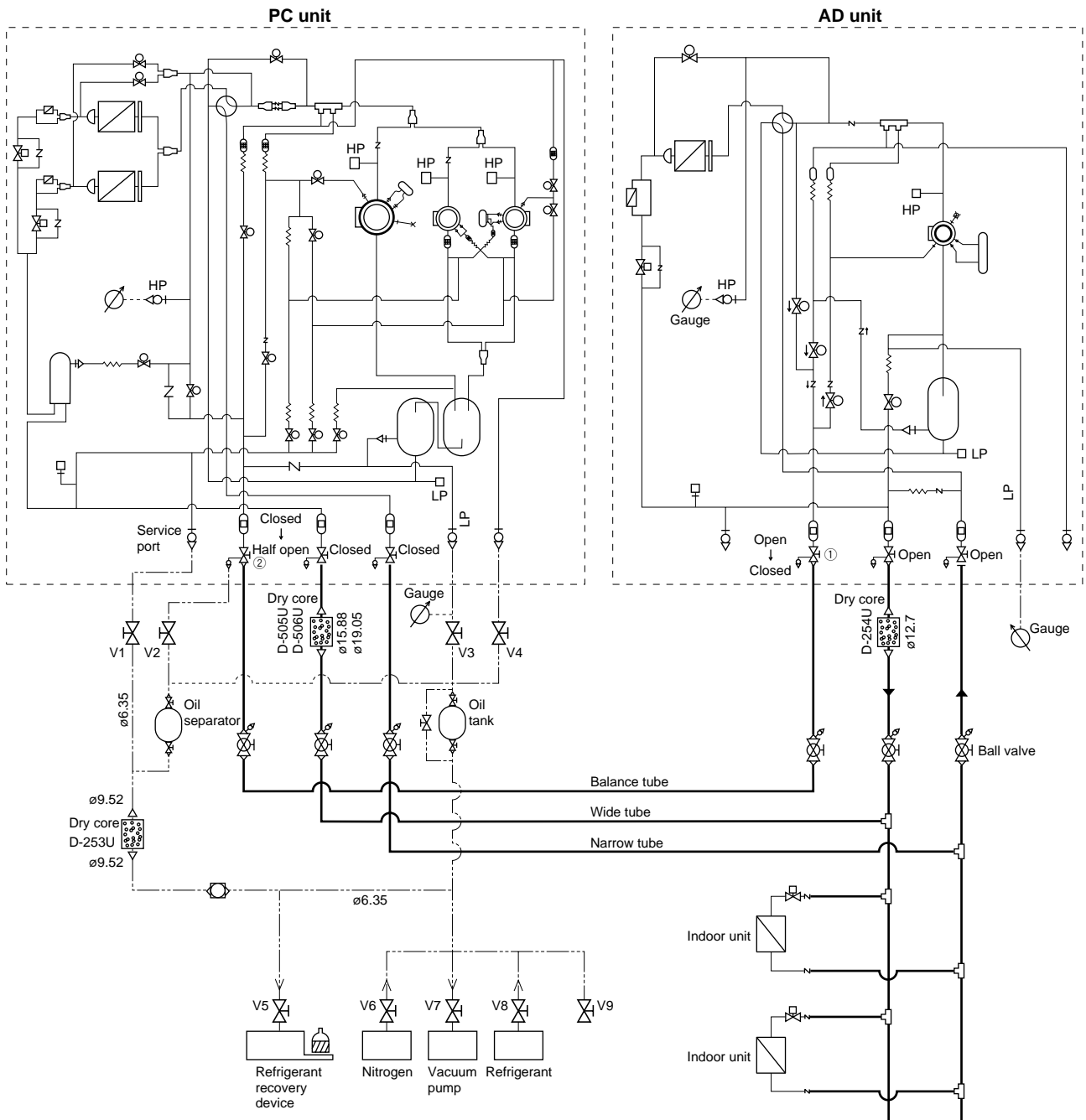


Fig. A

1878\_M\_1

2. Indoor Units

■ When a ball valve is installed

7

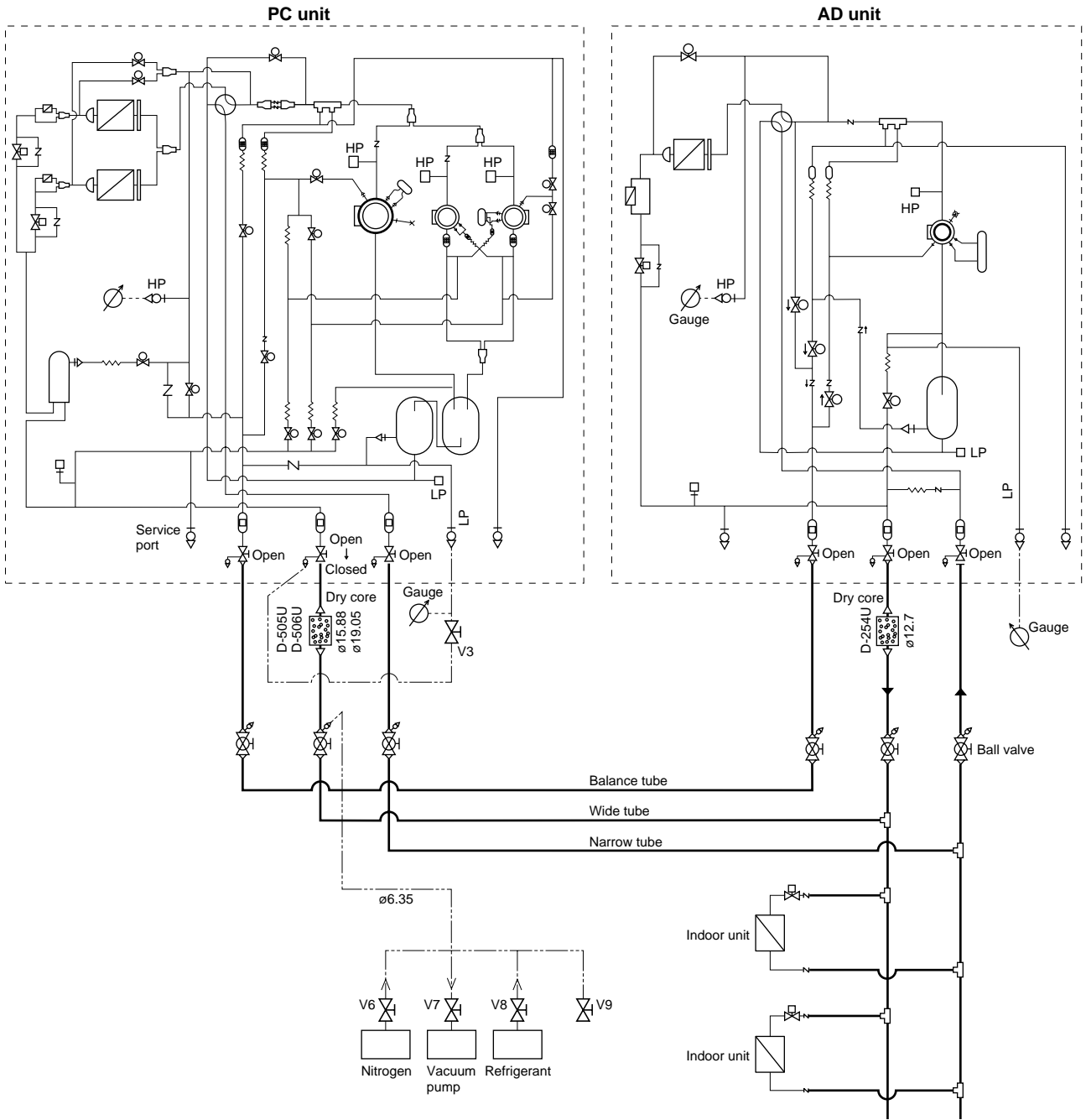


Fig. B

1884\_M\_1

## 2. Indoor Units

■ When a ball valve is not installed

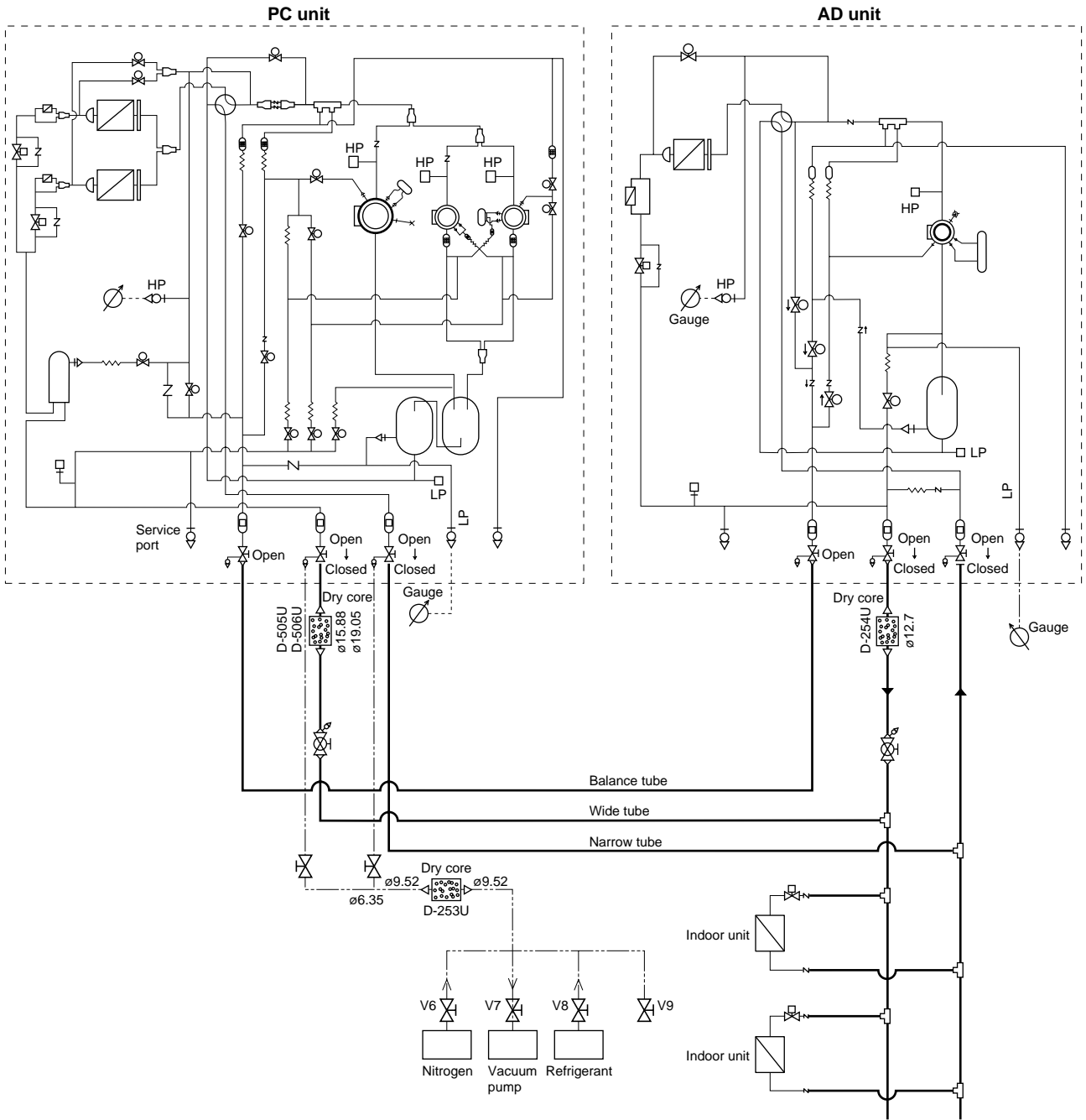


Fig. C

1885\_M\_1





# Contents

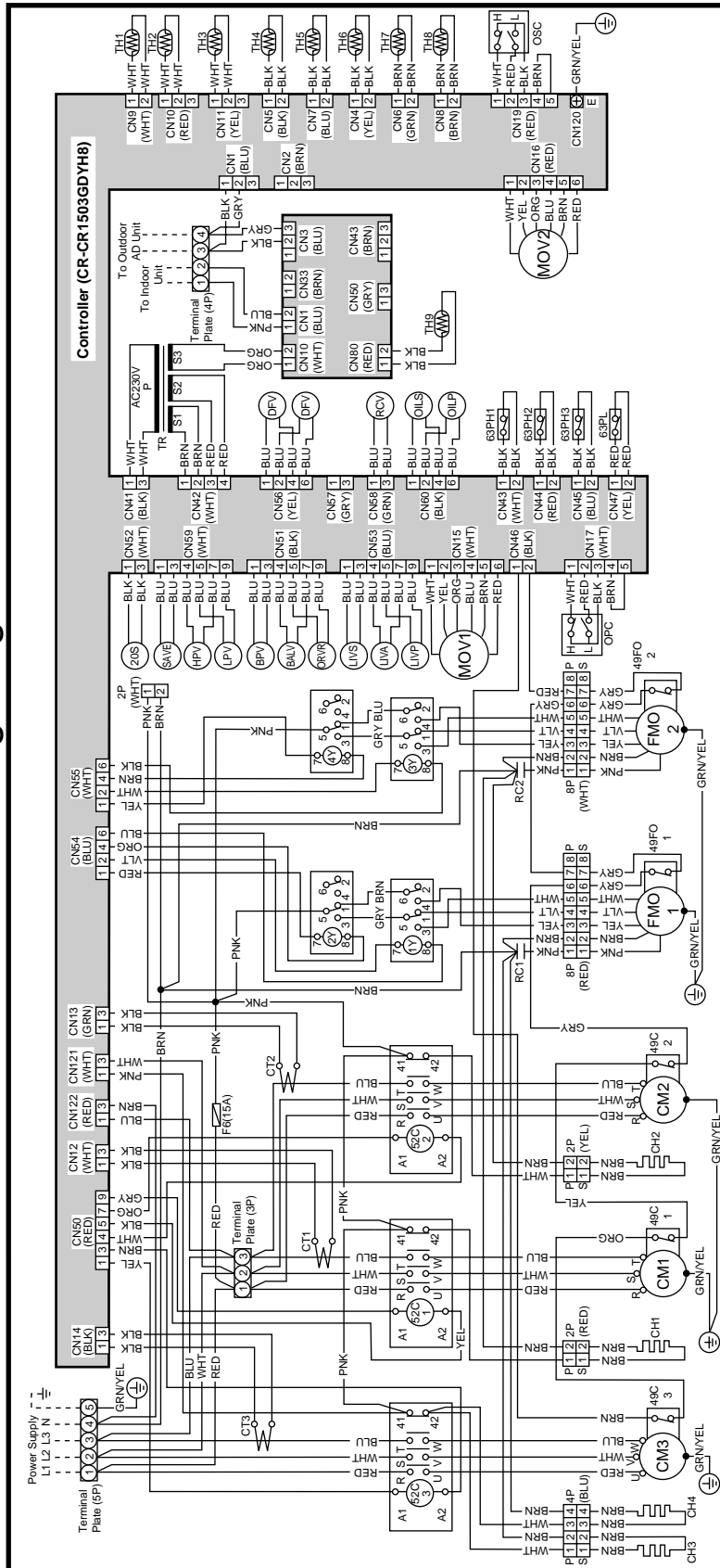
## 8. Electrical Data

<b>1. Outdoor Unit .....</b>	<b>VIII - 2</b>
(1) SPW-CR1503GDYH8, SPW-CR1903GDYH8 .....	VIII - 2
(2) SPW-CR703GDCH8, SPW-CR903GDCH8 .....	VIII - 4
(3) SPW-C1503GDYH8, SPW-C1903GDYH8 .....	VIII - 6
(4) SPW-C703GDCH8, SPW-C903GDCH8 .....	VIII - 8
<b>2. Indoor Unit .....</b>	<b>VIII - 10</b>
(1) SPW-X(R)123GH56, SPW-X(R)183GH56, SPW-X(R)253GH56, SPW-X(R)363GH56, SPW-X(R)483GH56 ...	VIII - 10
(2) SPW-S(R)93GH56, SPW-S(R)123GH56, SPW-S(R)183GH56, SPW-S(R)253GH56 .....	VIII - 12
(3) SPW-AS(R)93GH56, SPW-AS(R)123GH56 .....	VIII - 14
(4) SPW-K(R)93GH56, SPW-K(R)123GH56, SPW-K(R)183GH56 .....	VIII - 16
(5) SPW-TR183GH56, SPW-TR253GH56, SPW-TR363GH56, SPW-TR483GH56 .....	VIII - 18
(6) SPW-UR93GHN56, SPW-UR123GHN56, SPW-UR183GHN56, SPW-UR253GHN56, SPW-UR363GHN56, SPW-UR483GHN56 .....	VIII - 20
(7)-1 SPW-D(R)253GH56 .....	VIII - 22
(7)-2 SPW-D(R)363GH56 .....	VIII - 24
(7)-3 SPW-D(R)483GH56 .....	VIII - 26
(7)-4 SPW-DR763GH56, SPW-DR963GH56 .....	VIII - 28
(8) SPW-F(R)93GH56, SPW-F(R)123GH56, SPW-F(R)183GH56, SPW-F(R)253GH56 .....	VIII - 30
(9) SPW-FM(R)93GH56, SPW-FM(R)123GH56, SPW-FM(R)183GH56, SPW-FM(R)253GH56 .....	VIII - 32
(10) SPW-SLR93GH56, SPW-SLR123GH56, SPW-SLR183GH56, SPW-SLR253GH56 .....	VIII - 34

# 1. Outdoor Unit (For R407C)

(1) SPW-CR1503GDYH8, SPW-CR1903GDYH8

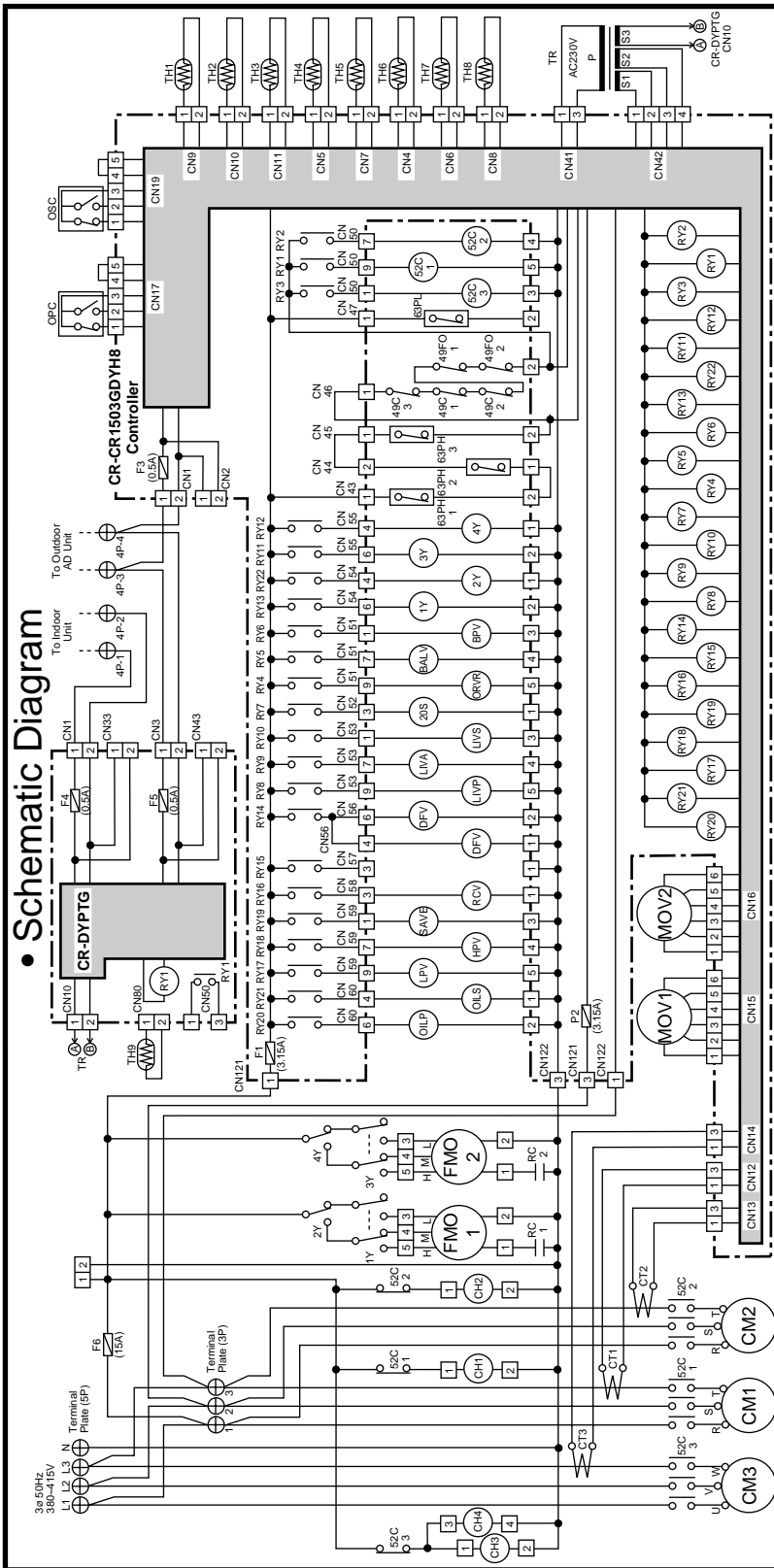
## • Electric Wiring Diagram



⑈ 854-2-5268-818-00-1 (CR1503GDYH8)

# 1. Outdoor Unit (For R407C)

## (1) SPW-CR1503GDYH8, SPW-CR1903GDYH8



• Schematic Diagram

Symbols	Description	Symbols	Description
CM1-3	Compressor Motor	OILP	Oil Valve (PC)
FMO 1,2	Outdoor Fan Motor	OILS	Oil Valve (SC)
CH1-4	Crank Case Heater	MOV 1,2	Motor Operated Valve
52C1-3	Compressor Motor Magnetic Contactor	TH1	Thermistor (Discharge Temp PC)
RC1,2	Running Capacitor	TH2	Thermistor (Discharge Temp AC)
49C1-3	Compressor Motor Thermal Protector	TH3	Thermistor (Discharge Temp SC)
49FO1,2	Outdoor Fan Motor Thermal Protector	TH4	Thermistor (Coil Liquid 1 Temp)
CT1-3	Current Transmitter	TH5	Thermistor (Coil Liquid 2 Temp)
63PH1-3	High Pressure Switch	TH6	Thermistor (Air Suction Temp)
63PL	Low Pressure Switch	TH7	Thermistor (Coil Gas 1 Temp)
20S	Four Way Valve	TH8	Thermistor (Coil Gas 2 Temp)
SAVE	Save Valve	TH9	Thermistor (Outdoor Air Temp)
HPV	High Pressure Valve	OPC	Oil Sensor (PC)
LPV	Low Pressure Valve	OSC	Oil Sensor (SC)
BPV	Bypass Valve	TR	Power Transformer
BALV	Balance Valve	FL-6	Fuse
ORVR	Oil Recovery Valve	T-4Y,R,Y1-22	Auxiliary Relay
LIVP	Liquid Valve (PC)	CR-CR1503GDYH8	Controller
LIVA	Liquid Valve (AC)	CR-DYPTG	Relay Board
LIVS	Liquid Valve (SC)	□	Connector
DFV	Defrost Valve	⊕	Terminal
RCV	Refrigerant Control Valve		

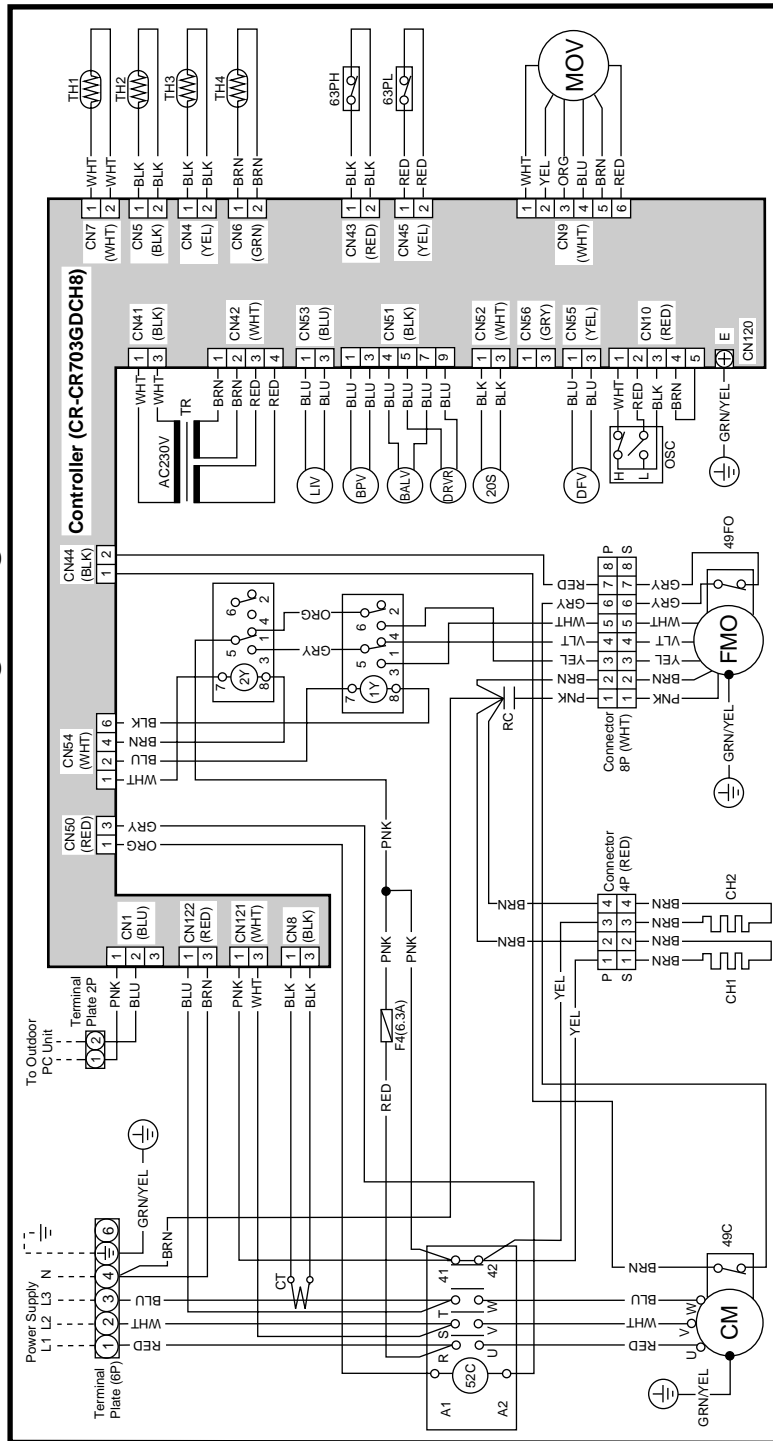
⑧ 854-2-5268-818-00-1 (CR1503GDYH8)



1. Outdoor Unit (For R407C)

(2) SPW-CR703GDCH8, SPW-CR903GDCH8

• Electric Wiring Diagram

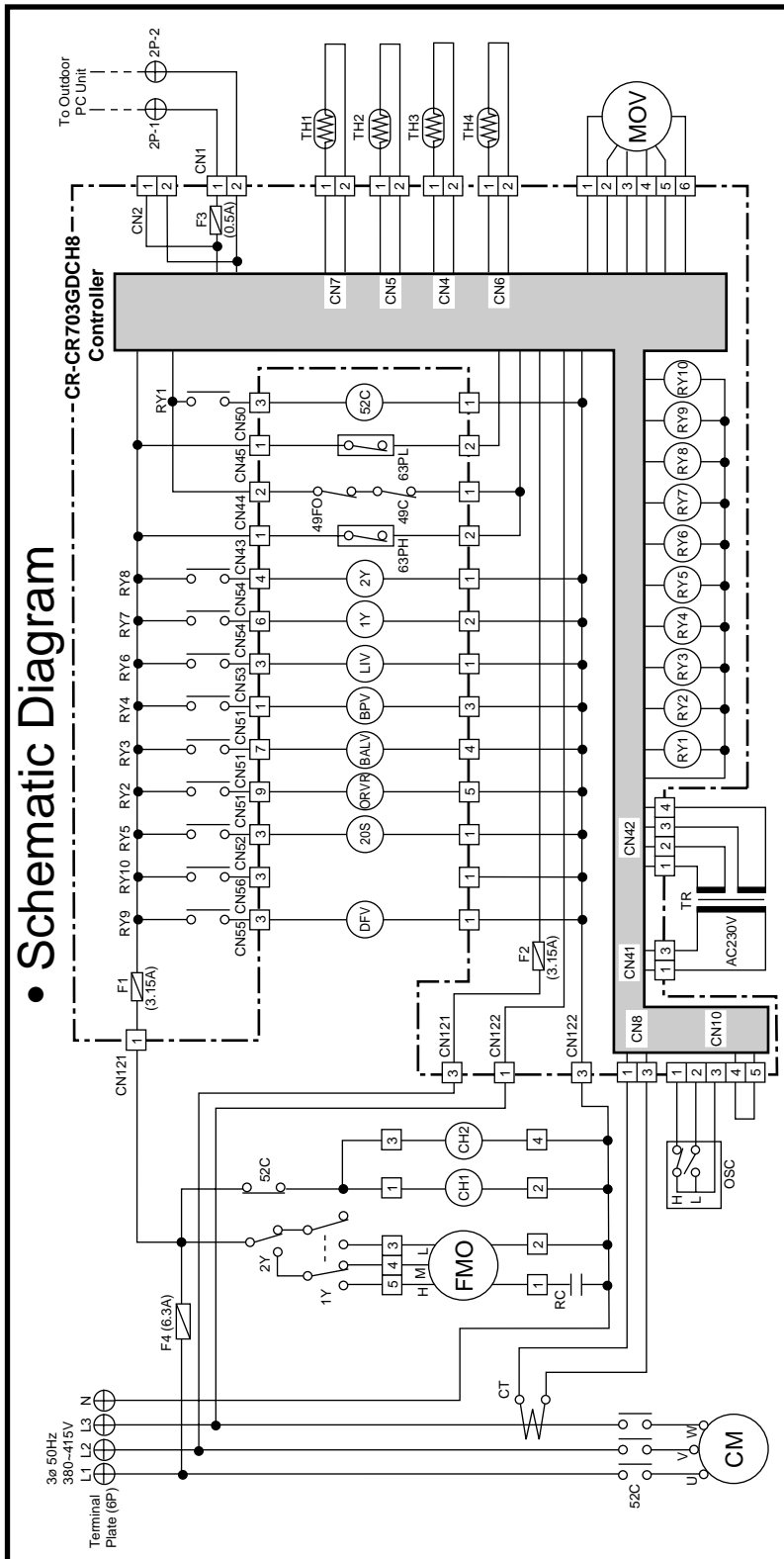


① 854-2-5268-819-00-1 (CR703GDCH8)



1. Outdoor Unit (For R407C)

(2) SPW-CR703GDCH8, SPW-CR903GDCH8



Symbols	Description	Symbols	Description
CM	Compressor Motor	LIV	Liquid Valve
FMO	Outdoor Fan Motor	DFV	Defrost Valve
CH1,2	Crank Case Heater	MOV	Motor Operated Valve
52C	Compressor Motor Magnetic Contactor	OSC	Oil Sensor SC
RC	Running Capacitor	TH1	Thermistor (Discharge Temp)
49C	Compressor Motor Thermal Protector	TH2	Thermistor (Coil Liquid Temp)
49FO	Fan Motor Thermal Protector	TH3	Thermistor (Air Suction Temp)
CT	Current Transmitter	TH4	Thermistor (Coil Gas Temp)
63PH	High Pressure Switch	TR	Power Transformer
63PL	Low Pressure Switch	F1-4	Fuse
20S	Four Way Valve	1Y,2Y,RY1-10	Auxiliary Relay
BPV	Bypass Valve	CR-CR703GDCH8	Controller
BALV	Balance Valve		Connector
ORVR	Oil Recovery Valve		Terminal

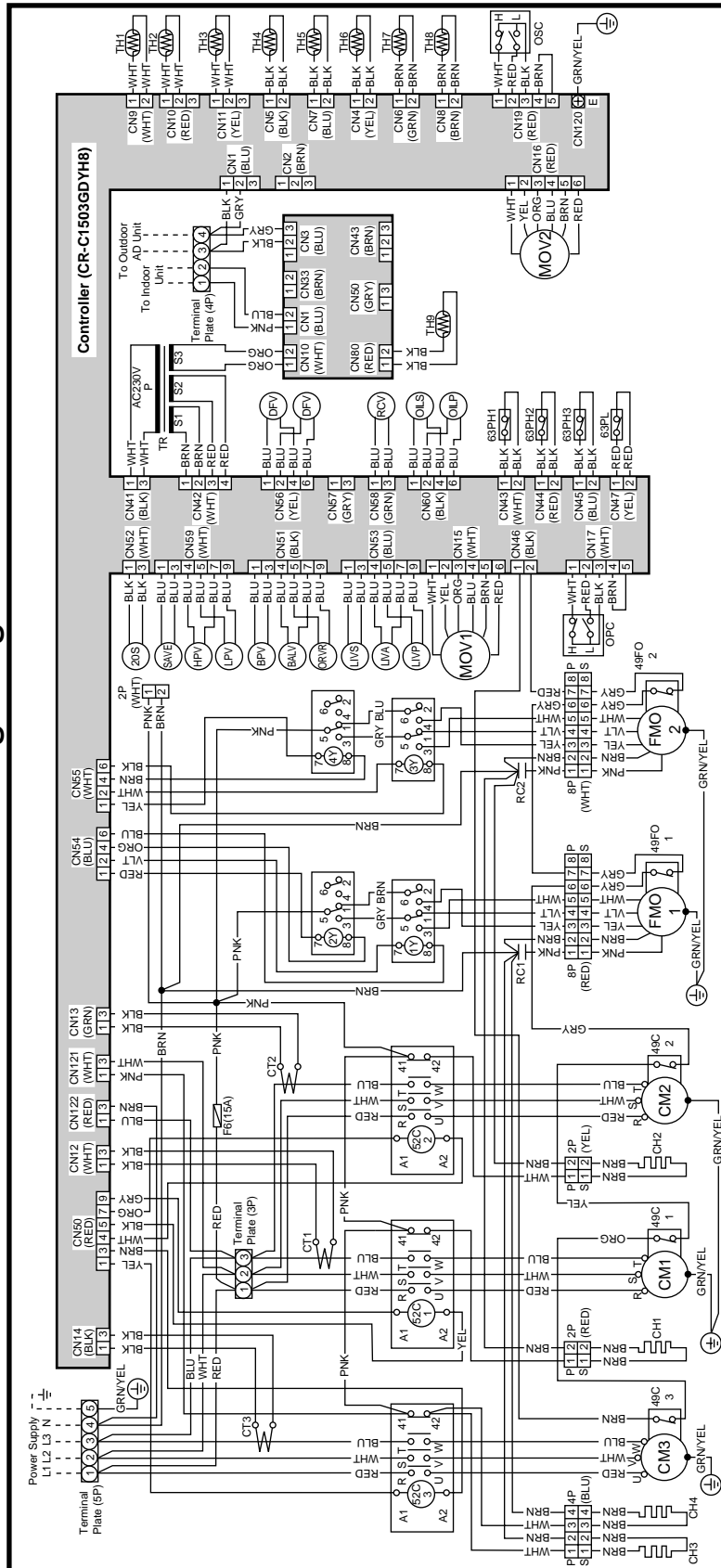
© 854-2-5268-819-00-1 (CR703GDCH8)



1. Outdoor Unit (For R22)

(3) SPW-C1503GDYH8, SPW-C1903GDYH8

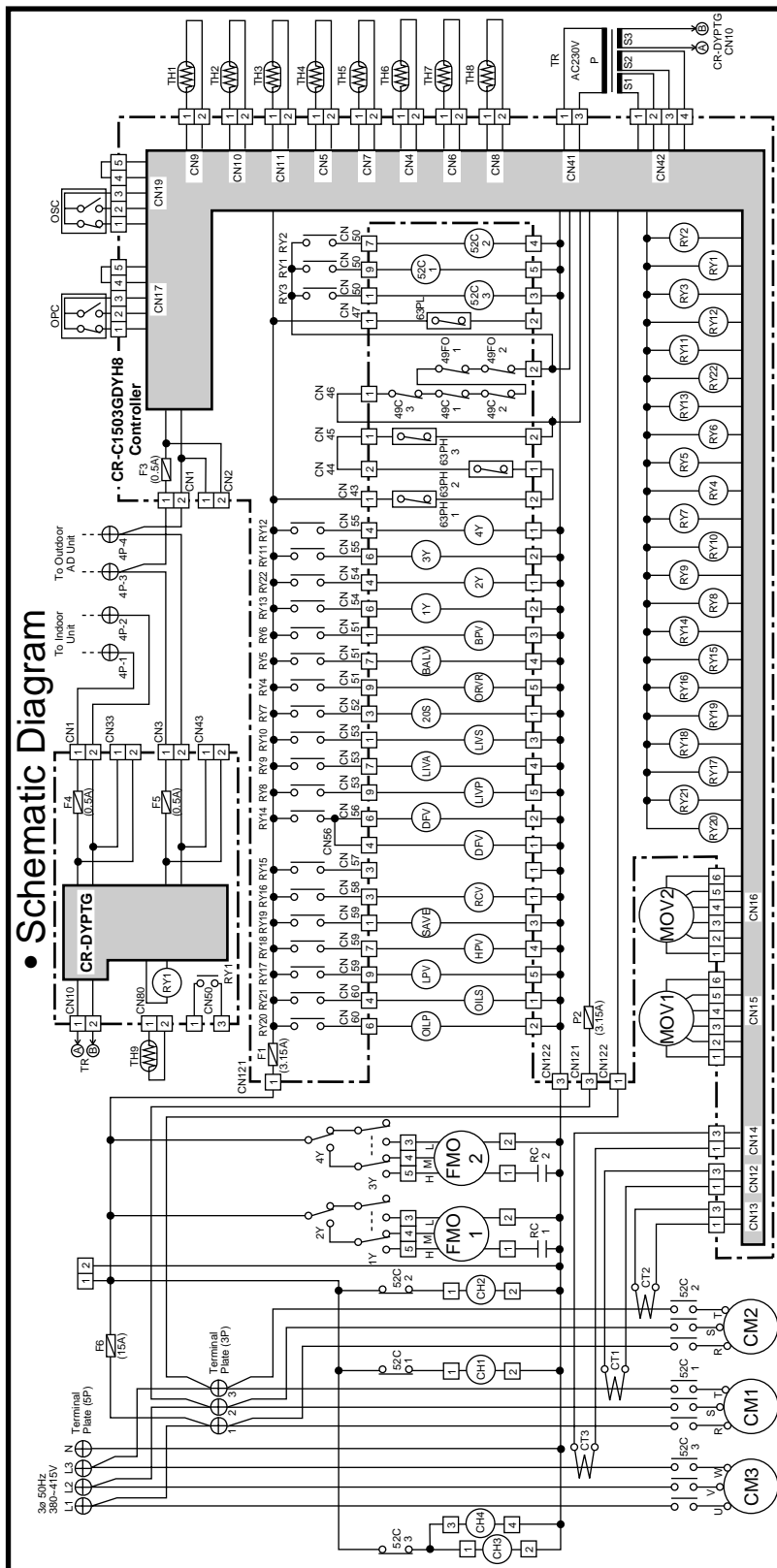
• Electric Wiring Diagram



④ 854-2-5268-816-00-1 (C1503GDYH8)

1. Outdoor Unit (For R22)

(3) SPW-C1503GDYH8, SPW-C1903GDYH8



Symbols	Description	Symbols	Description
CM1-3	Compressor Motor	OILP	Oil Valve (PC)
FMO 1,2	Outdoor Fan Motor	OILS	Oil Valve (SC)
CH1-4	Crank Case Heater	MOV 1,2	Motor Operated Valve
52C1-3	Compressor Motor Magnetic Contactor	TH1	Thermistor (Discharge Temp PC)
RC 1,2	Running Capacitor	TH2	Thermistor (Discharge Temp AC)
49C1-3	Compressor Motor Thermal Protector	TH3	Thermistor (Discharge Temp SC)
49FO1,2	Outdoor Fan Motor Thermal Protector	TH4	Thermistor (Coil Liquid 1 Temp)
CT1-3	Current Transmitter	TH5	Thermistor (Coil Liquid 2 Temp)
63PH1-3	High Pressure Switch	TH6	Thermistor (Air Suction Temp)
63PL	Low Pressure Switch	TH7	Thermistor (Coil Gas 1 Temp)
SAVE	Save Valve	TH8	Thermistor (Coil Gas 2 Temp)
HPV	High Pressure Valve	TH9	Thermistor (Outdoor Air Temp)
LIPV	Low Pressure Valve	OPC	Oil Sensor (PC)
BPV	Bypass Valve	OSC	Oil Sensor (SC)
BALV	Balance Valve	TR	Power Transformer
ORVR	Oil Recovery Valve	F1-6	Fuse
LIVA	Liquid Valve (PC)	1-4Y,RY1-22	Auxiliary Relay
LIVS	Liquid Valve (AC)	CR-C1503GDYH8	Controller
DFV	Defrost Valve	CR-DYPTG	Relay Board
RCV	Refrigerant Control Valve	⊕	Connector
		⊕	Terminal

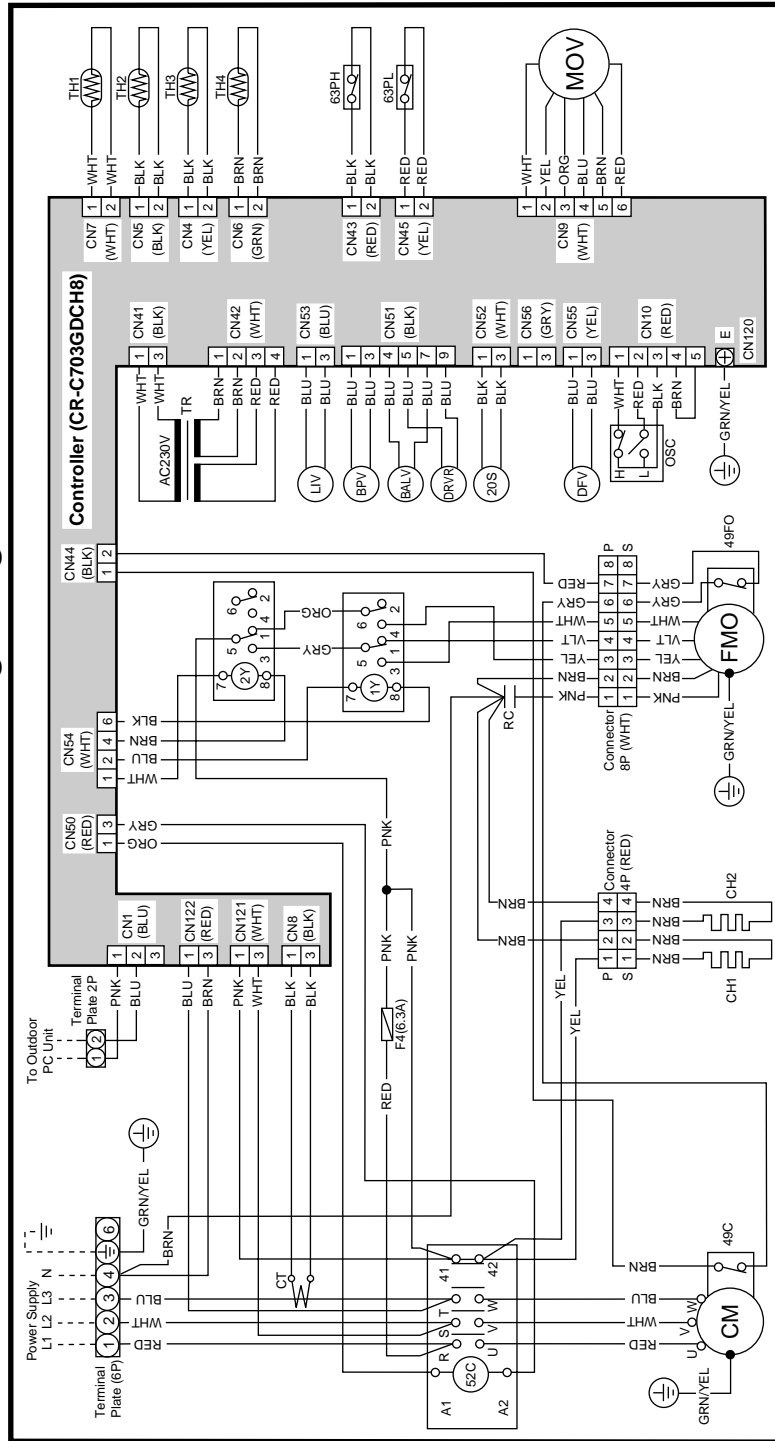
© 854-2-5268-816-00-1 (C1503GDYH8)



1. Outdoor Unit (For R22)

(4) SPW-C703GDCH8, SPW-C903GDCH8

• Electric Wiring Diagram



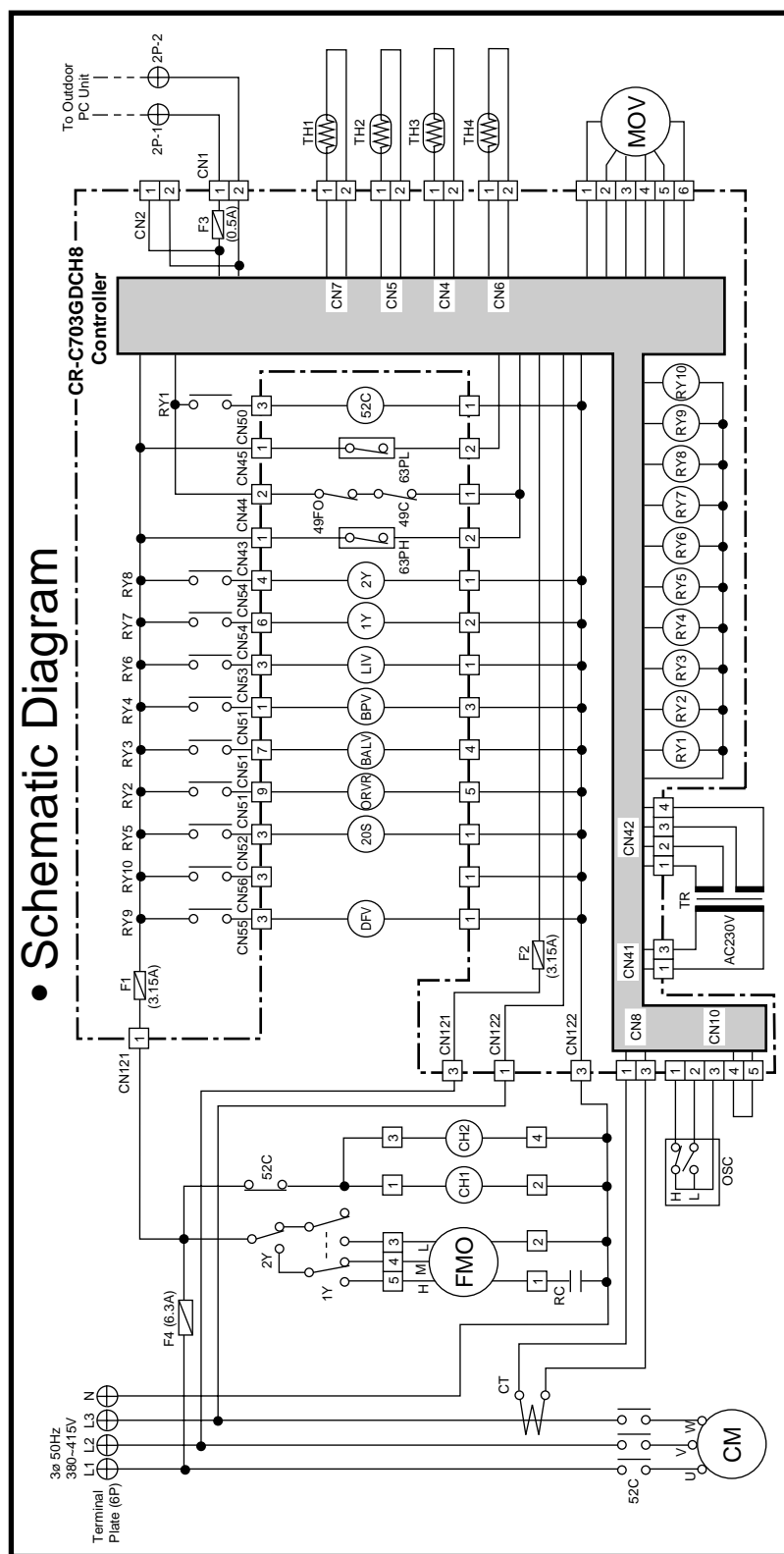
Ⓒ 854-2-5268-817-00-1 (C703GDCH8)





# 1. Outdoor Unit (For R22)

## (4) SPW-C703GDCH8, SPW-C903GDCH8



Symbols	Description	Symbols	Description
CM	Compressor Motor	LIV	Liquid Valve
FMO	Outdoor Fan Motor	DFV	Defrost Valve
CH1,2	Crank Case Heater	MOV	Motor Operated Valve
52C	Compressor Motor Magnetic Contactor	OSC	Oil Sensor SC
RC	Running Capacitor	TH1	Thermistor (Discharge Temp)
49C	Compressor Motor Thermal Protector	TH2	Thermistor (Coil Liquid Temp)
49FO	Fan Motor Thermal Protector	TH3	Thermistor (Air Suction Temp)
CT	Current Transmitter	TH4	Thermistor (Coil Gas Temp)
63PH	High Pressure Switch	TR	Power Transformer
63PL	Low Pressure Switch	F1-4	Fuse
20S	Four Way Valve	1Y,2Y,RY1-10	Auxiliary Relay
BPV	Bypass Valve	CR-C703GDCH8	Controller
BALV	Balance Valve	□	Connector
ORVR	Oil Recovery Valve	⊕	Terminal

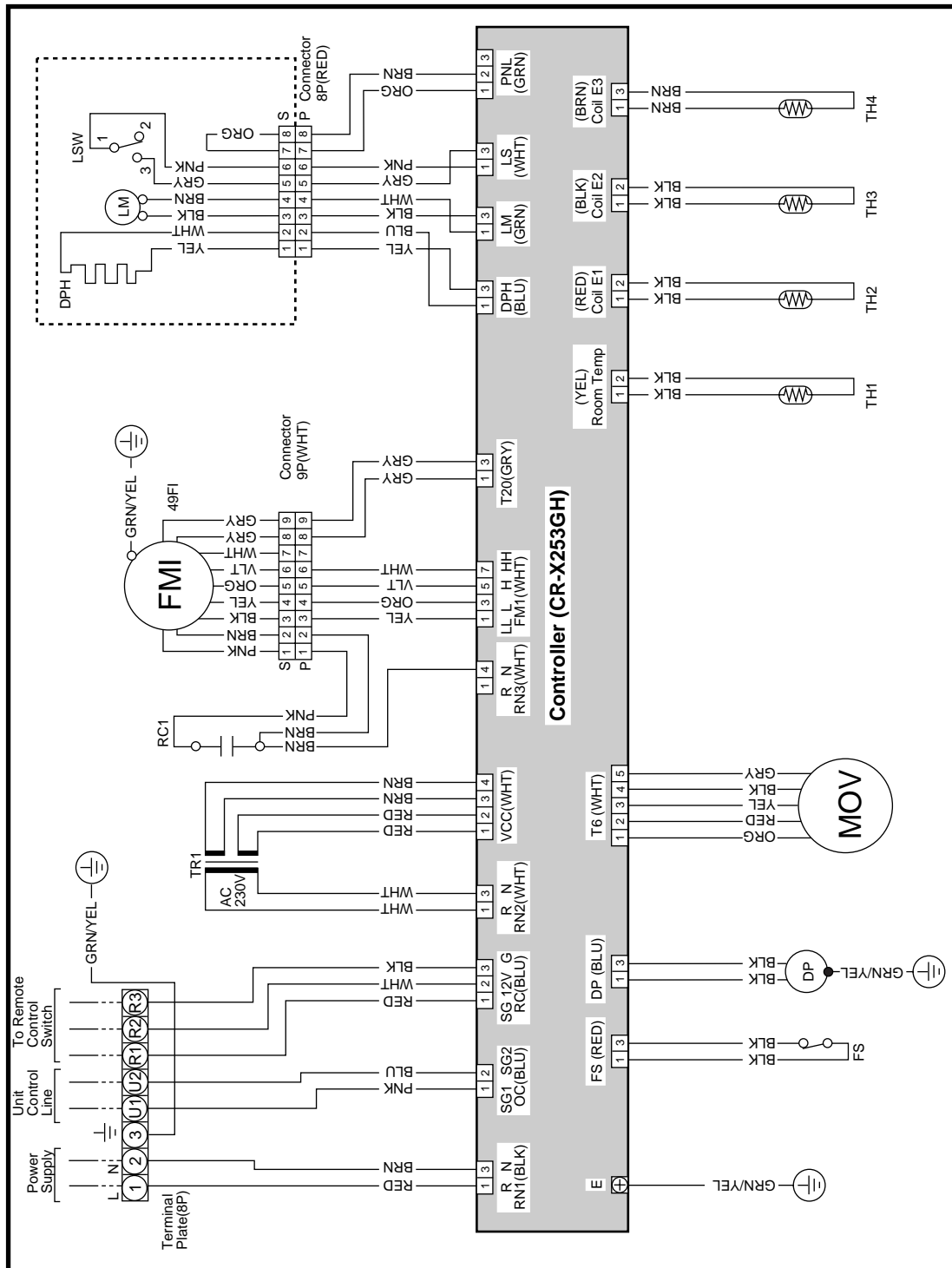
© 854-2-5268-817-00-1 (C703GDCH8)



## 2. Indoor Unit

- (1) SPW-X(R)123GH56, SPW-X(R)183GH56, SPW-X(R)253GH56, SPW-X(R)363GH56, SPW-X(R)483GH56

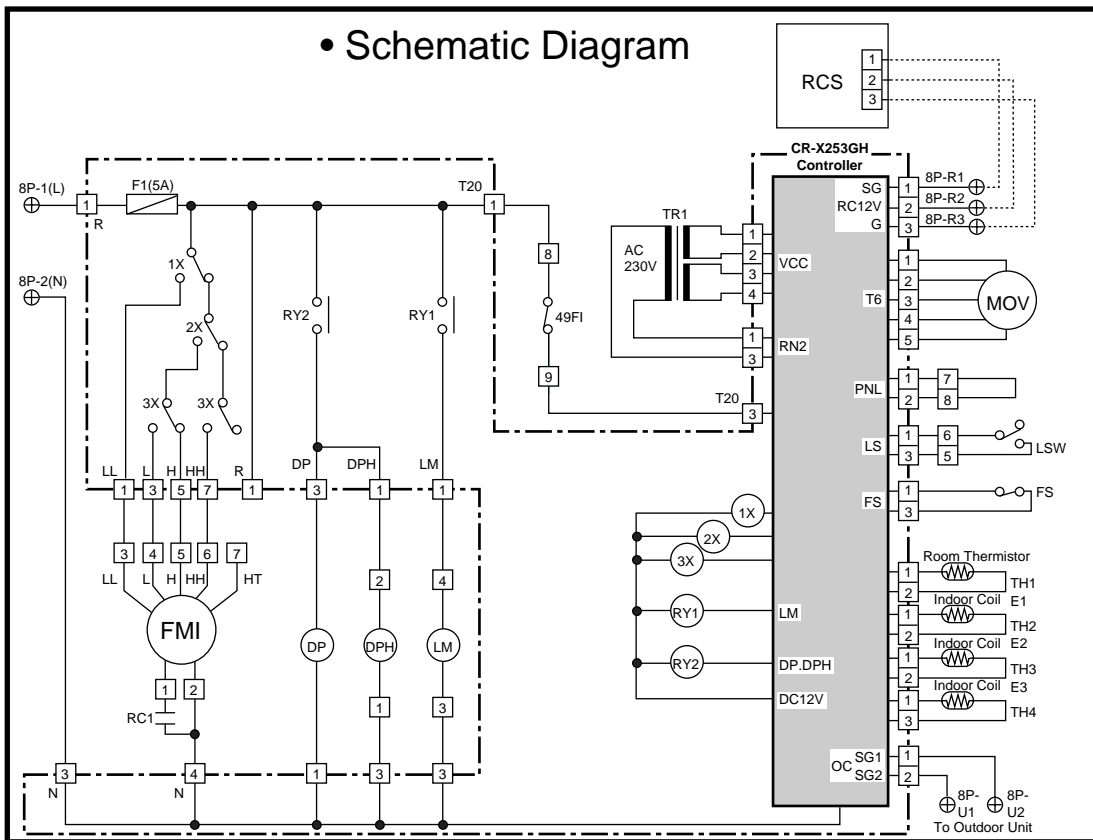
### • Electric Wiring Diagram



Ⓜ 854-2-5268-470-00-3 (X)

2. Indoor Unit

- (1) SPW-X(R)123GH56, SPW-X(R)183GH56, SPW-X(R)253GH56, SPW-X(R)363GH56, SPW-X(R)483GH56



Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
LM	Auto Louver Motor	□	Connector
TR1	Power Transformer	⊕	Terminal
1X-3X	Auxiliary Relay	DP	Drain Pump
RY1-RY2	Auxiliary Relay	DPH	Dew Proof Heater
MOV	Motor Operated Valve	LSW	Limit Switch
RCS	Remote Control Switch	FS	Float Switch
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

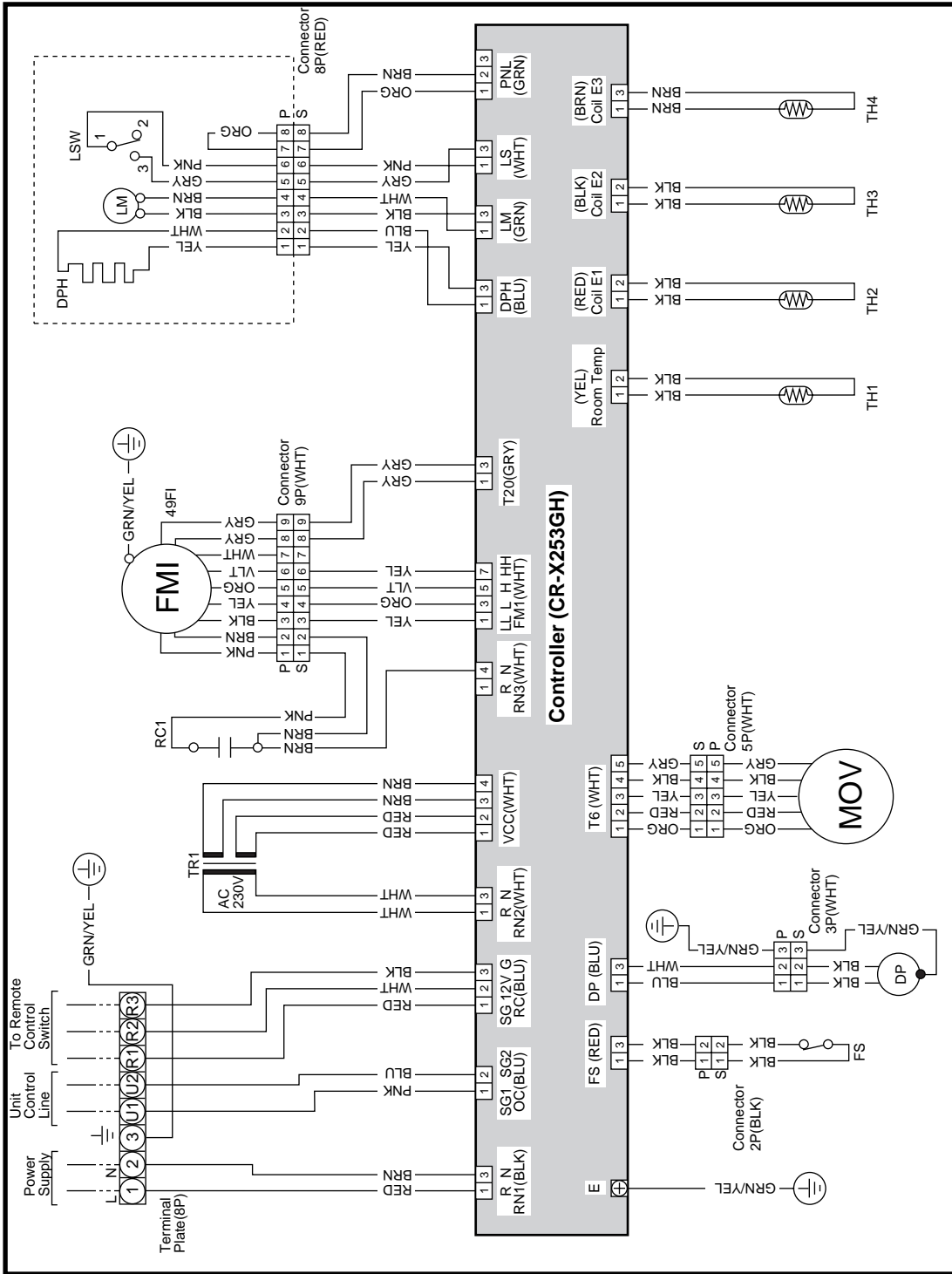
© 854-2-5268-470-00-3 (X)



2. Indoor Unit

(2) SPW-S(R)93GH56, SPW-S(R)123GH56, SPW-S(R)183GH56, SPW-S(R)253GH56

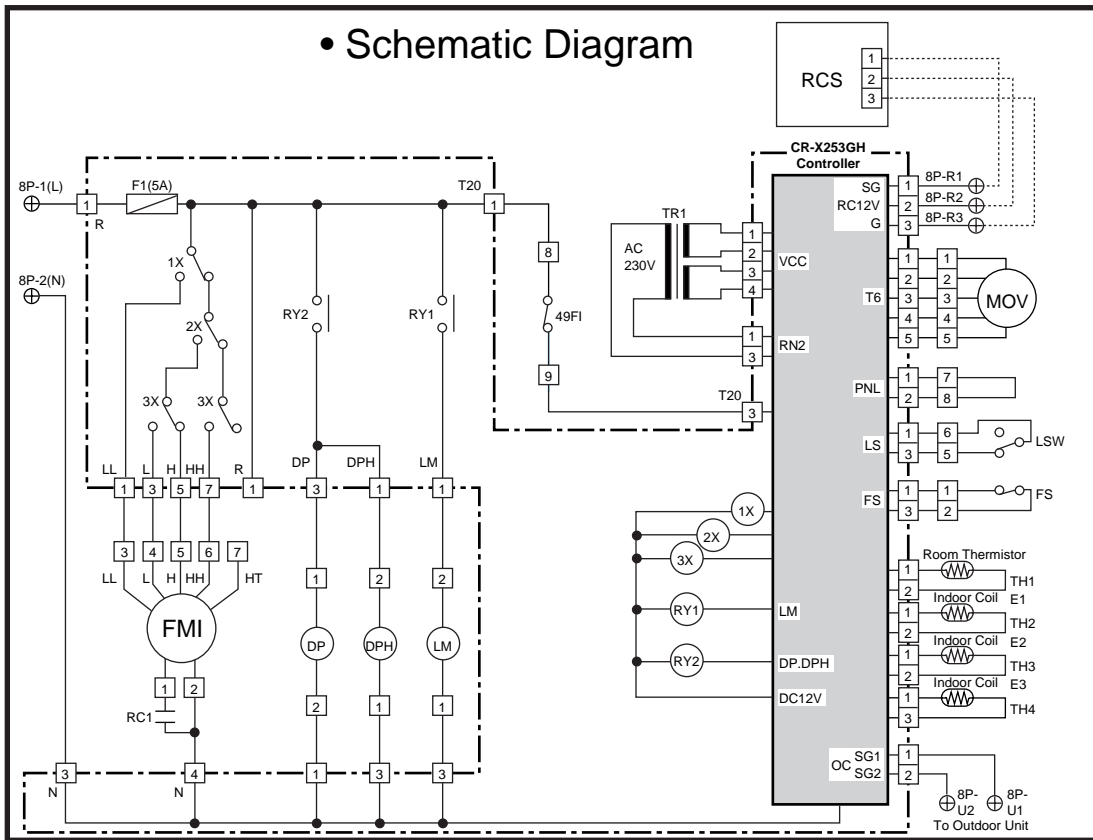
• Electric Wiring Diagram



⑧ 854-2-5268-413-00-2 (S)

2. Indoor Unit

(2) SPW-S(R)93GH56, SPW-S(R)123GH56, SPW-S(R)183GH56, SPW-S(R)253GH56



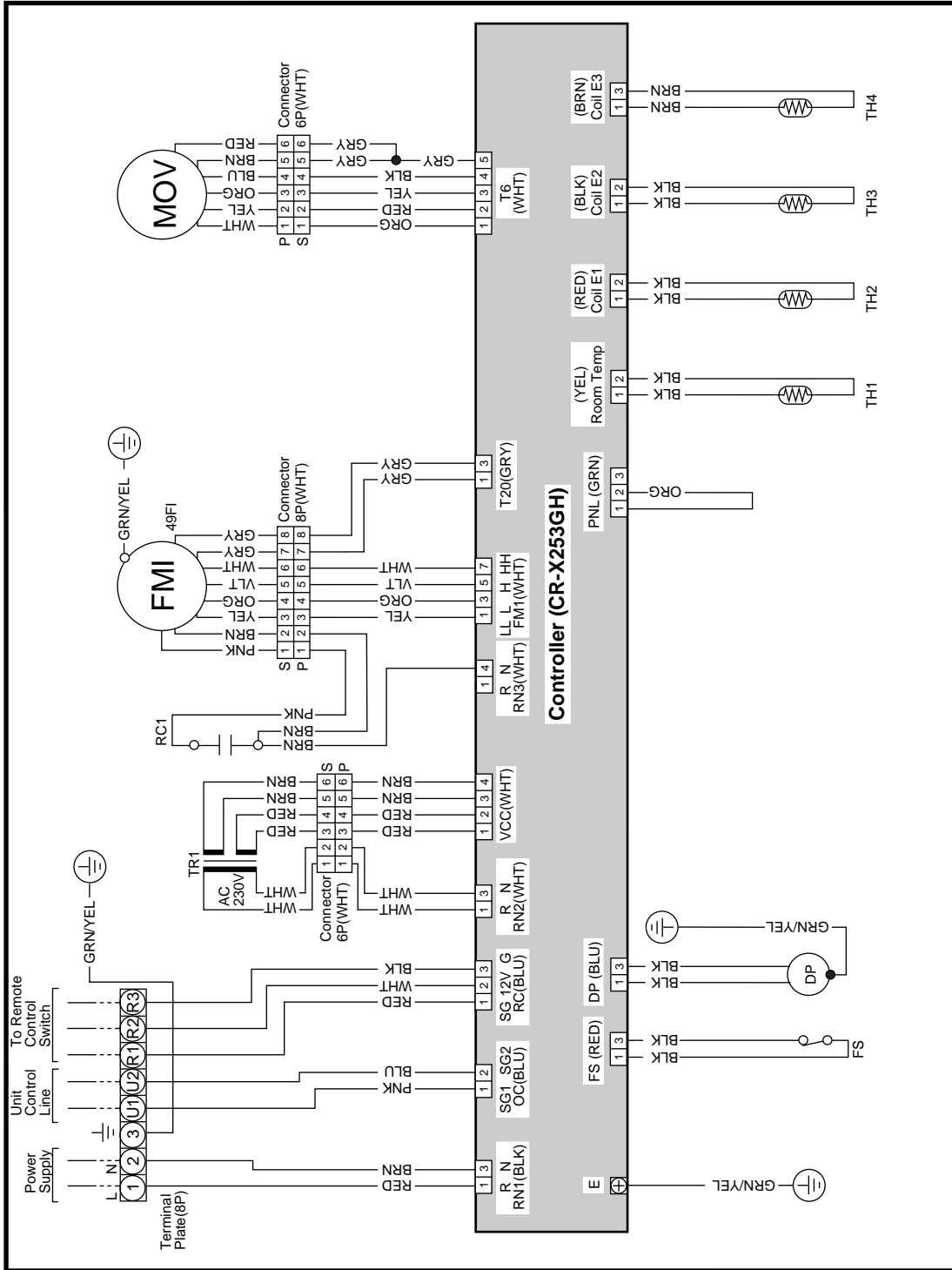
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
LM	Auto Louver Motor	□	Connector
TR1	Power Transformer	⊕	Terminal
1X-3X	Auxiliary Relay	DP	Drain Pump
RY1-RY2	Auxiliary Relay	DPH	Dew Proof Heater
MOV	Motor Operated Valve	LSW	Limit Switch
RCS	Remote Control Switch	FS	Float Switch
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

© 854-2-5268-413-00-2 (S)

2. Indoor Unit

(3) SPW-AS(R)93GH56, SPW-AS(R)123GH56

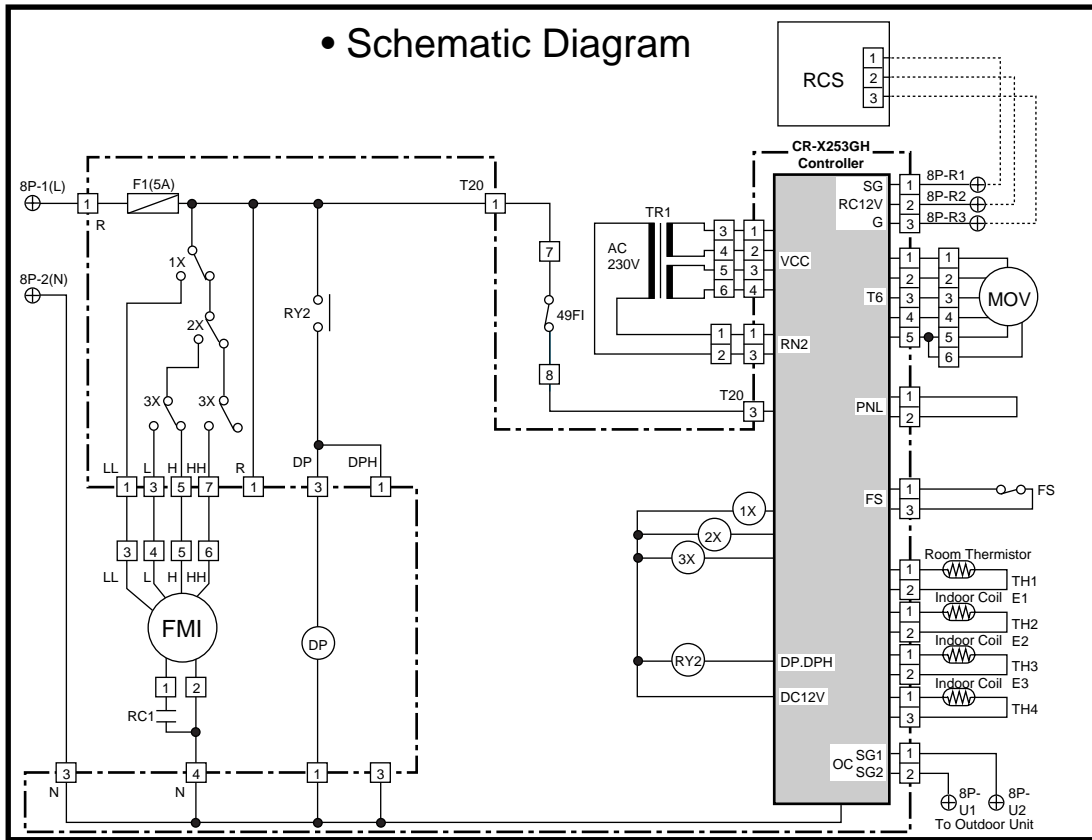
• Electric Wiring Diagram



⑧ 854-2-5268-411-00-2 (AS)

2. Indoor Unit

(3) SPW-AS(R)93GH56, SPW-AS(R)123GH56



Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
DP	Drain Pump	□	Connector
TR1	Power Transformer	⊕	Terminal
1X-3X	Auxiliary Relay	FS	Float Switch
RY2	Auxiliary Relay		
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

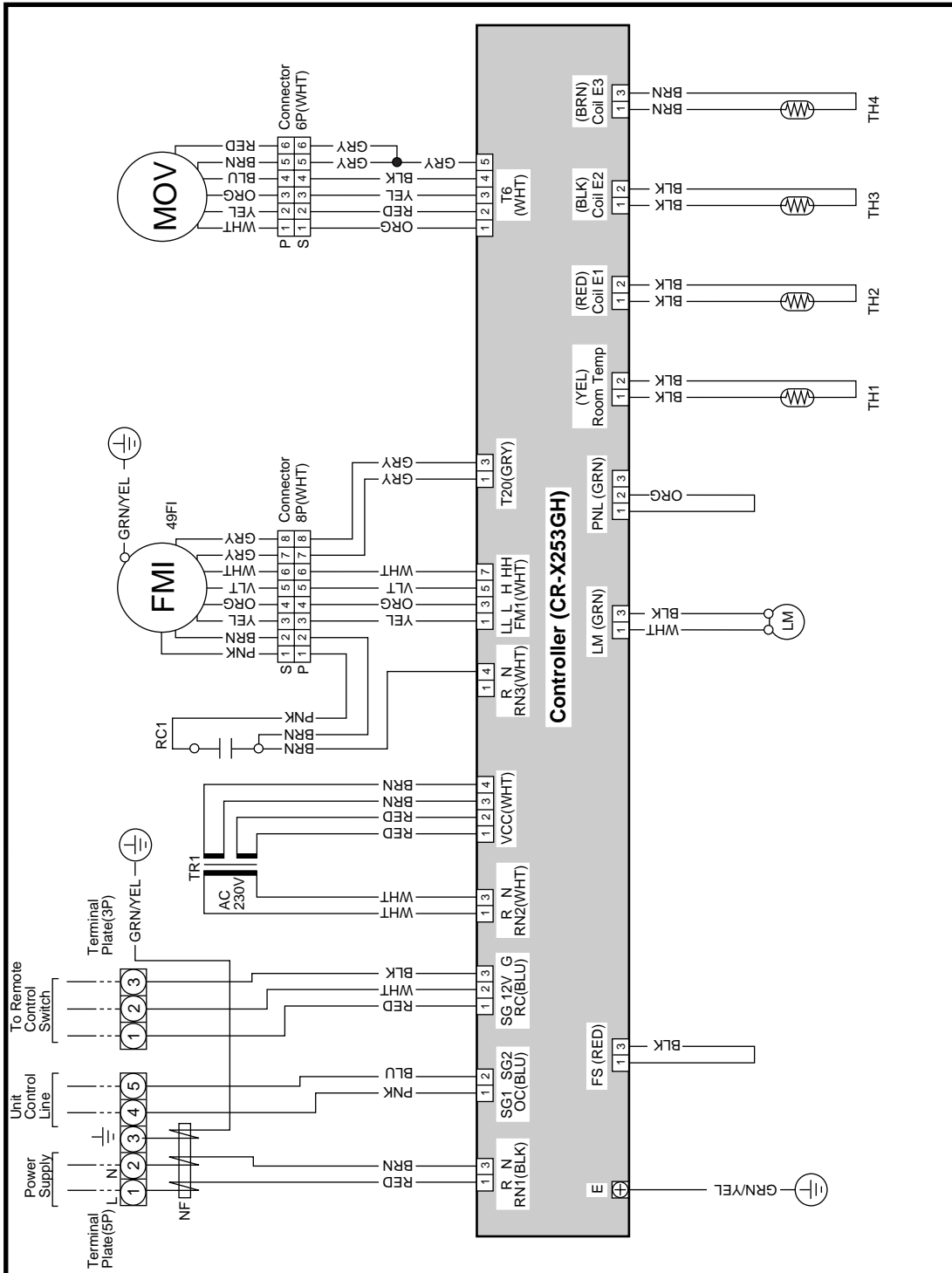
© 854-2-5268-411-00-2 (AS)



2. Indoor Unit

(4) SPW-K(R)93GH56, SPW-K(R)123GH56, SPW-K(R)183GH56

• Electric Wiring Diagram

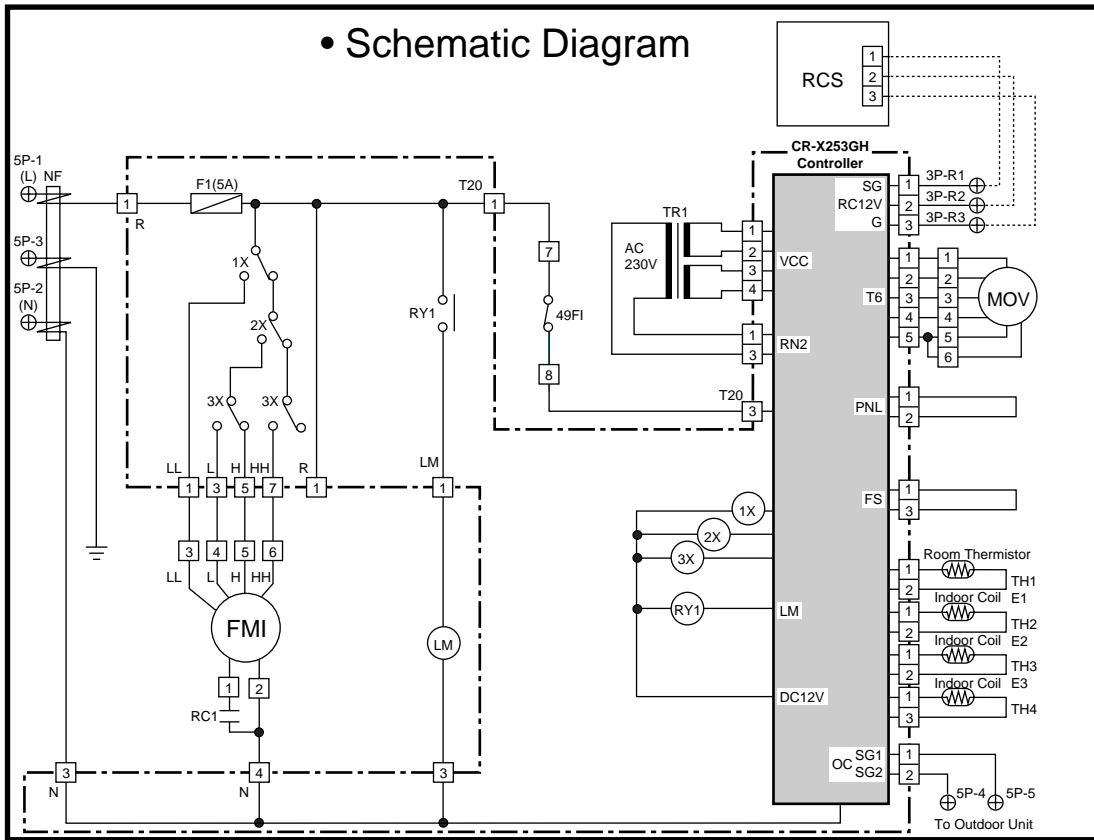


© 854-2-5268-410-00-3 (K)



2. Indoor Unit

(4) SPW-K(R)93GH56, SPW-K(R)123GH56, SPW-K(R)183GH56



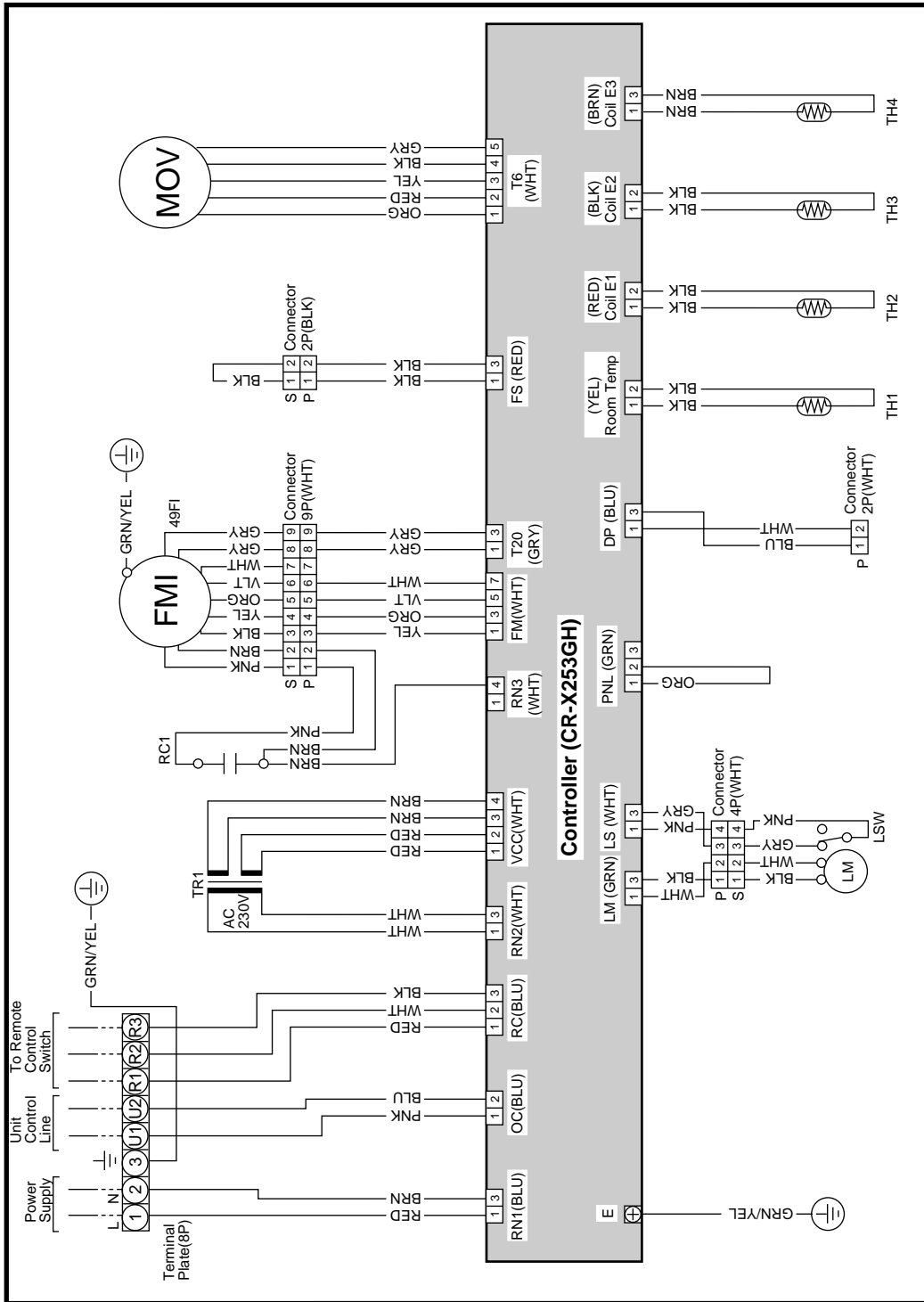
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
LM	Auto Louver Motor	□	Connector
TR1	Power Transformer	⊕	Terminal
1X-3X	Auxiliary Relay	NF	Noise Filter
RY1	Auxiliary Relay		
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

© 854-2-5268-410-00-3 (K)

2. Indoor Unit

(5) SPW-TR183GH56, SPW-TR253GH56, SPW-TR363GH56, SPW-TR483GH56

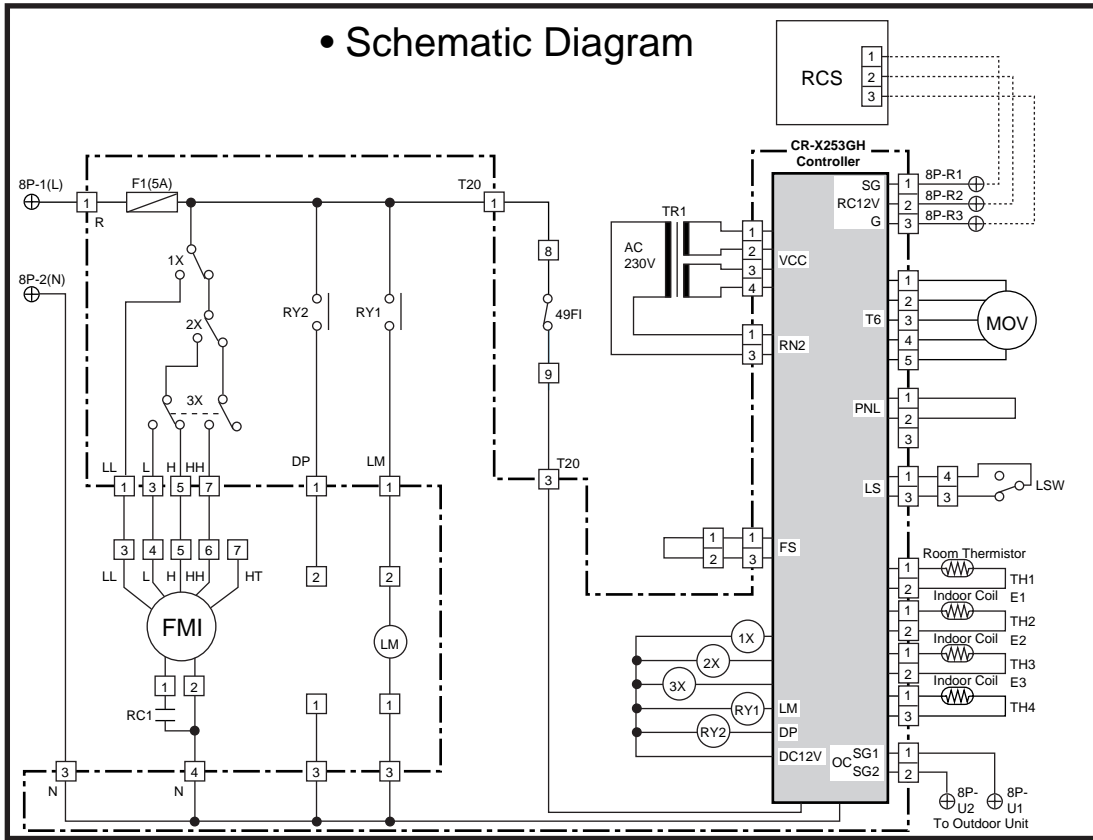
• Electric Wiring Diagram



W 854-2-5268-665-00-0 (TR)

2. Indoor Unit

(5) SPW-TR183GH56, SPW-TR253GH56, SPW-TR363GH56, SPW-TR483GH56



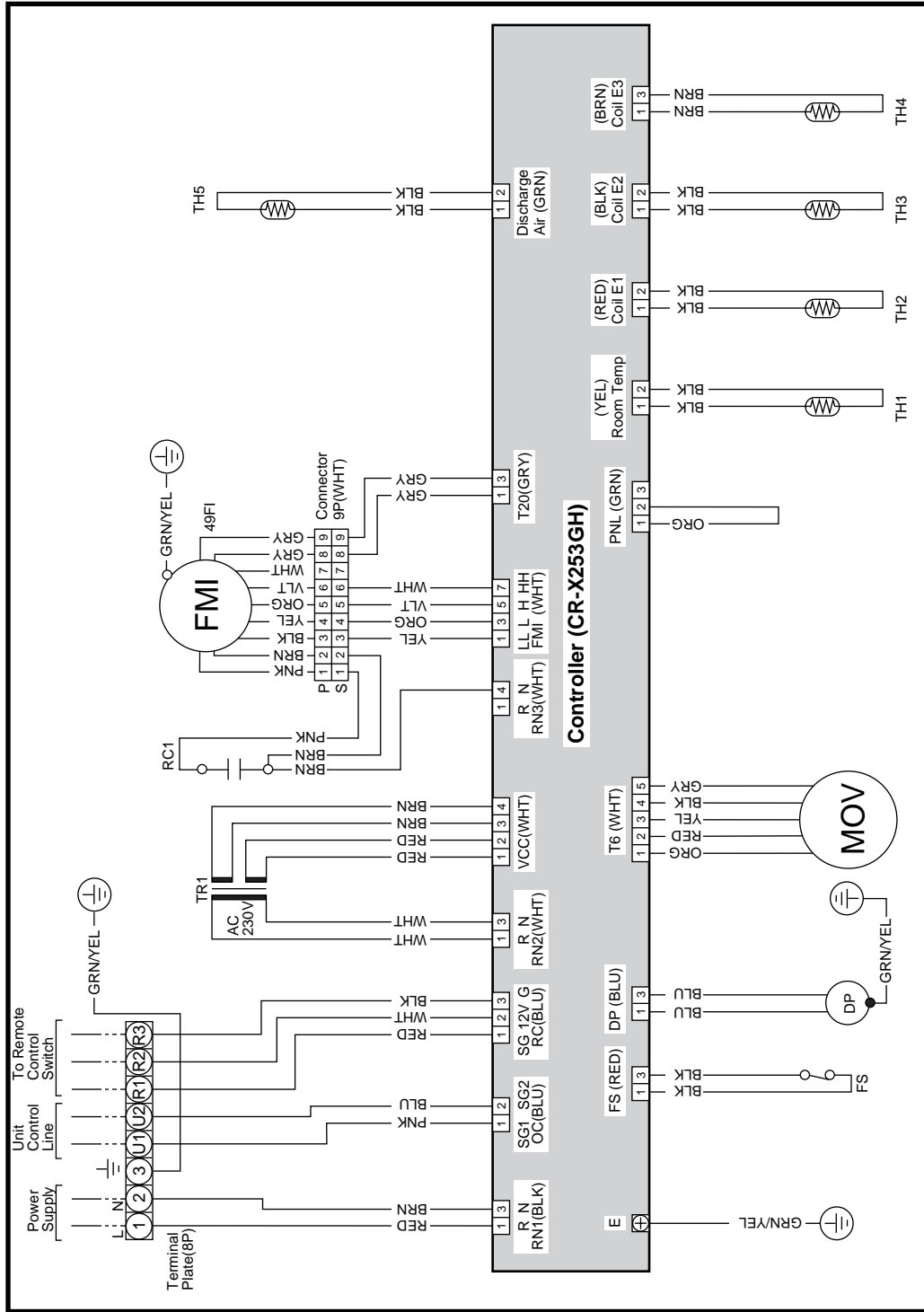
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
MOV	Motor Operated Valve	F1	Fuse
49FI	Indoor Motor Thermal Protector	1X-3X	Auxiliary Relay
RC1	Running Capacitor	RY1-RY2	Auxiliary Relay
TR1	Power Transformer	CR	Indoor Controller
LM	Auto Louver Motor	RCS	Remote Control Switch
LSW	Limit Switch	⊕	Terminal Plate
TH1	Room Thermistor	□	Connector
TH2	Thermistor (Indoor Coil E1)	⊕	Terminal
TH3	Thermistor (Indoor Coil E2)		

© 854-2-5268-665-00-0 (TR)

2. Indoor Unit

- (6) SPW-UR93GHN56, SPW-UR123GHN56, SPW-UR183GHN56, SPW-UR253GHN56  
 SPW-UR363GHN56, SPW-UR483GHN56

• Electric Wiring Diagram

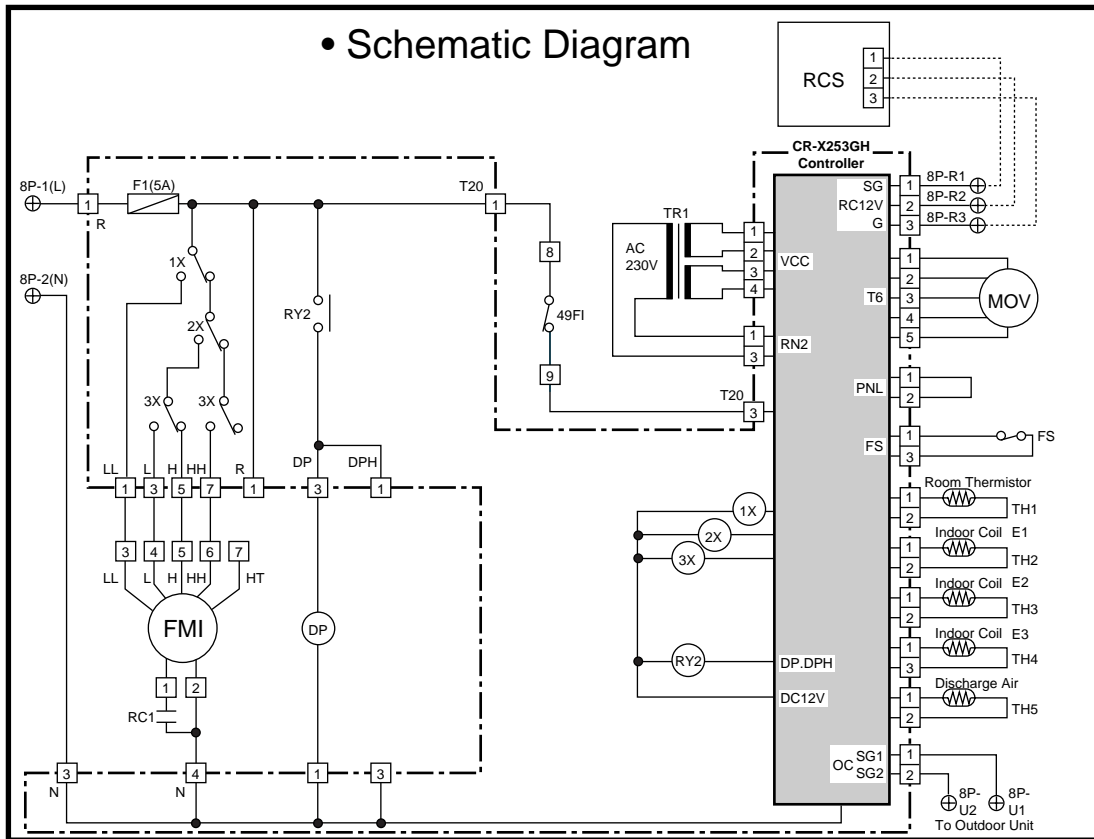


Ⓜ 854-2-5268-843-00-0 (UR93GHN56)



2. Indoor Unit

- (6) SPW-UR93GHN56, SPW-UR123GHN56, SPW-UR183GHN56, SPW-UR253GHN56  
 SPW-UR363GHN56, SPW-UR483GHN56



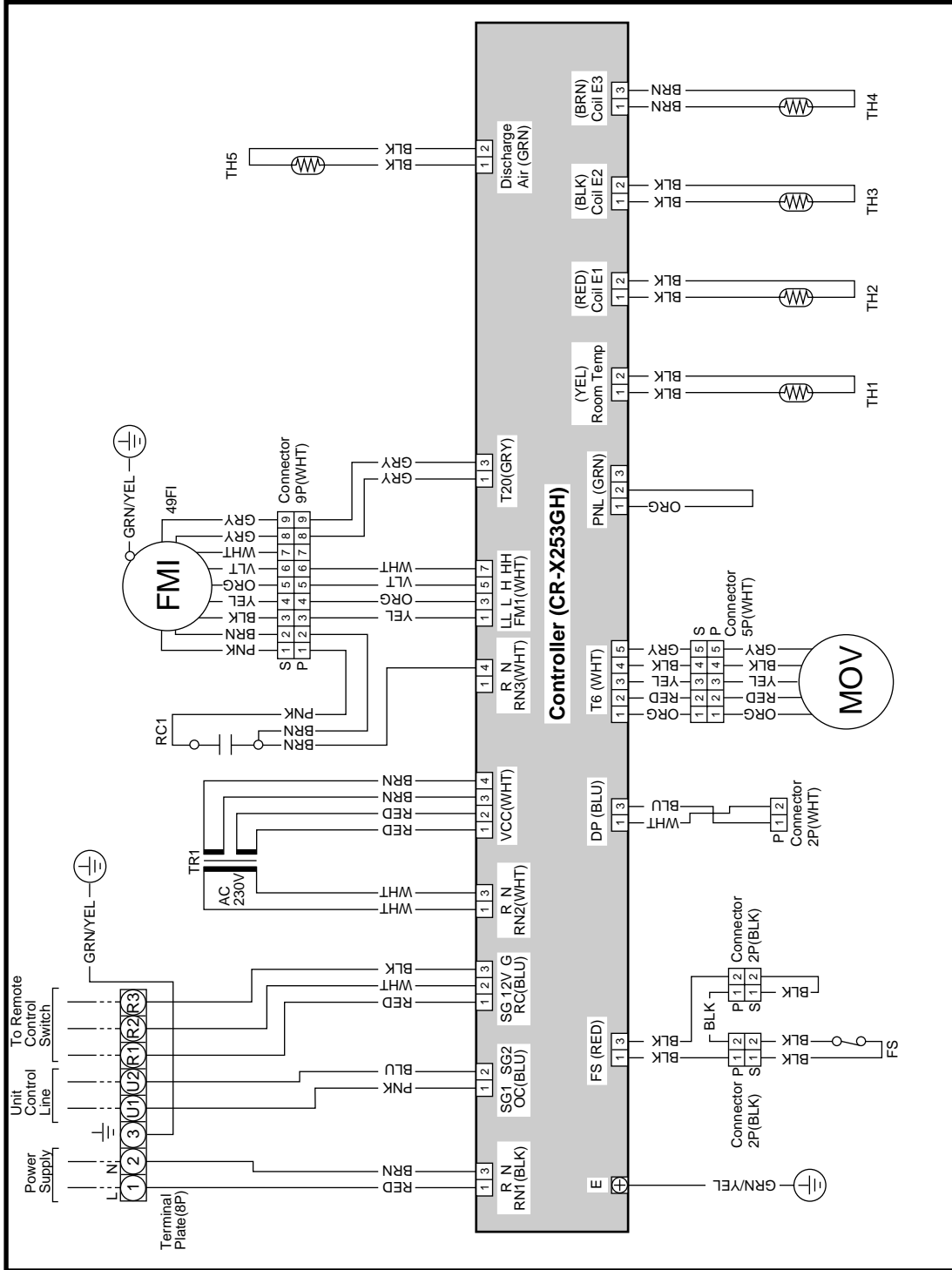
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	TH5	Thermistor (Discharge Air)
F1	Fuse	CR-X253GH	Indoor Controller
FS	Float Switch	⊕	Terminal Plate
TR1	Power Transformer	□	Connector
1X-3X	Auxiliary Relay	⊕	Terminal
RY2	Auxiliary Relay	DP	Drain Pump
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

© 854-2-5268-843-00-0 (UR93GHN56)

## 2. Indoor Unit

### (7)-1 SPW-D(R)253GH56

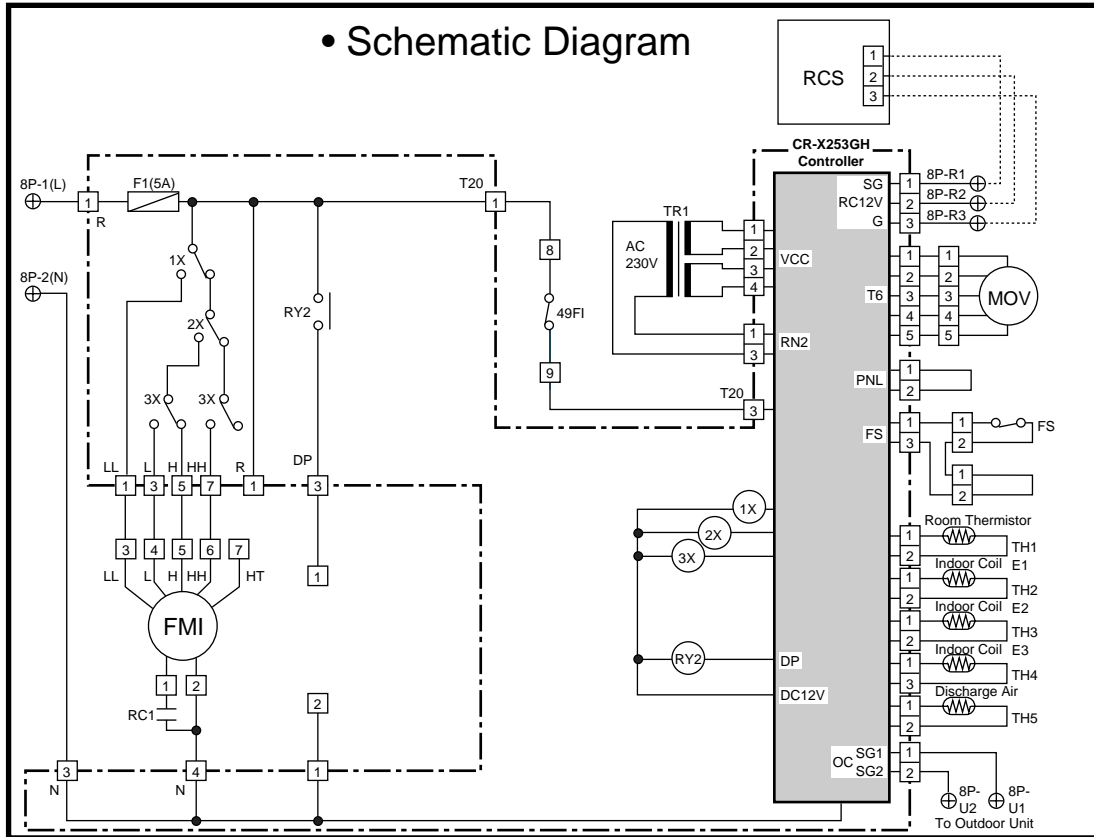
#### • Electric Wiring Diagram



© 854-2-5268-693-00-0 (DR)

2. Indoor Unit

(7)-1 SPW-D(R)253GH56



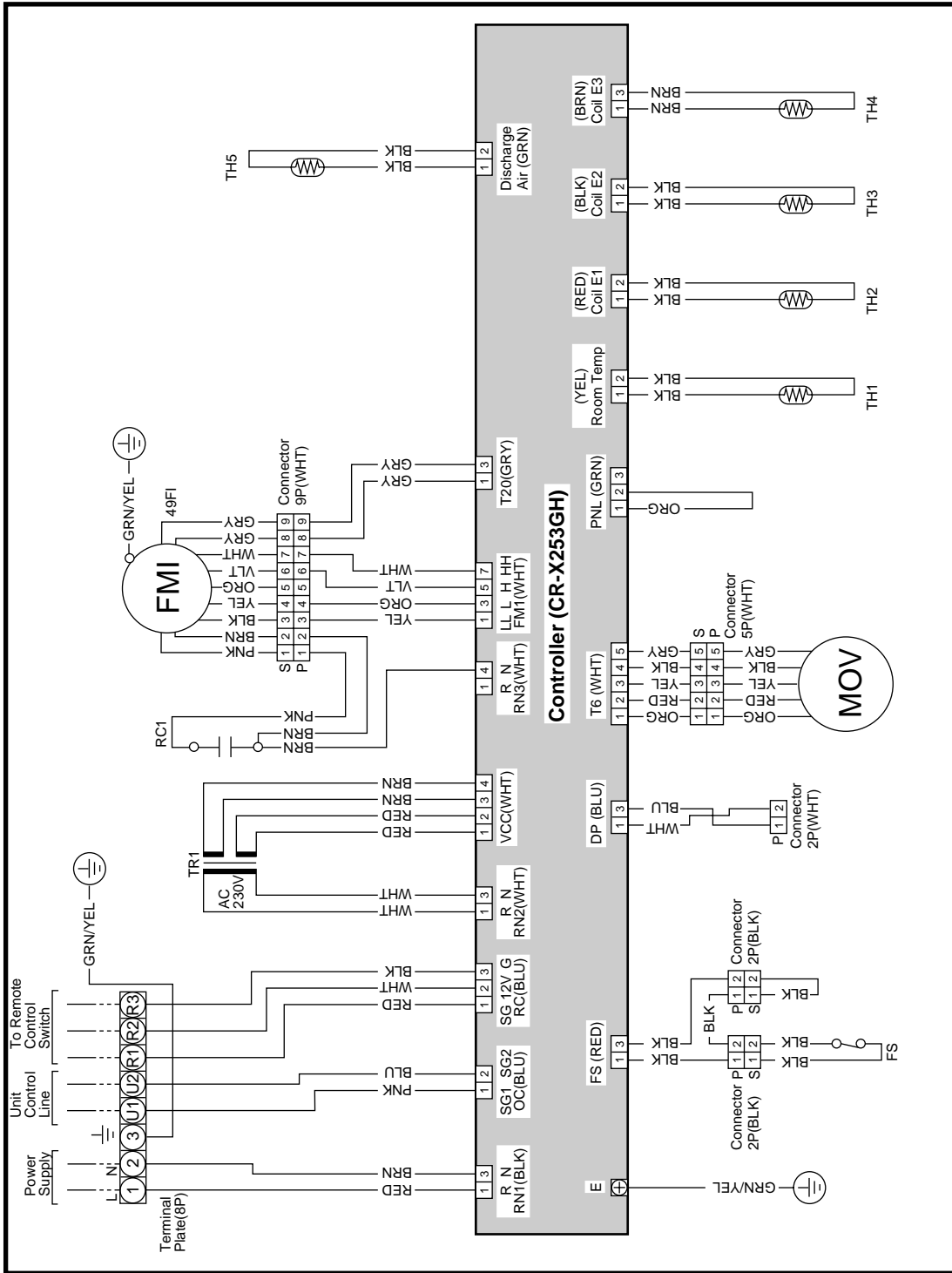
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
49FI	Indoor Motor Thermal Protector	TH5	Thermistor (Discharge Air)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
TR1	Power Transformer	□	Connector
1X-3X	Auxiliary Relay	⊕	Terminal
RY2	Auxiliary Relay	FS	Float Switch
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		
TH3	Thermistor (Indoor Coil E2)		

© 854-2-5268-693-00-0 (DR)

2. Indoor Unit

(7)-2 SPW-D(R)363GH56

• Electric Wiring Diagram

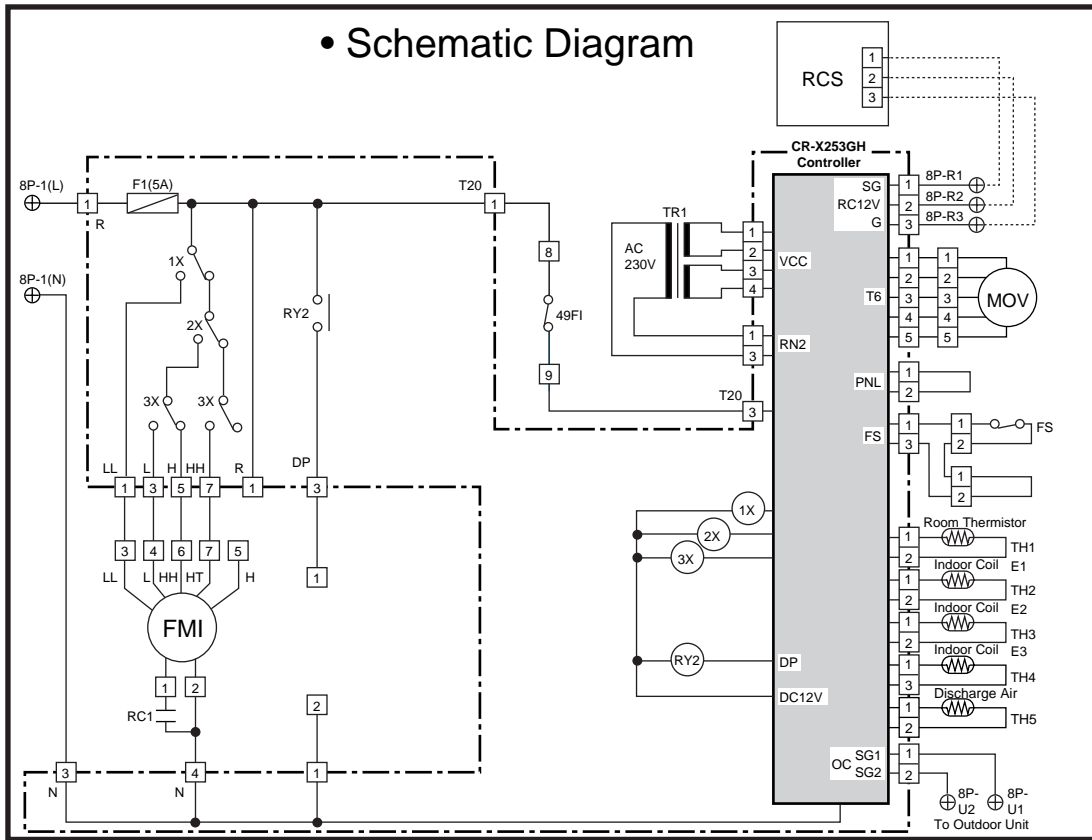


© 854-2-5268-694-00-0 (DR)



2. Indoor Unit

(7)-2 SPW-D(R)363GH56



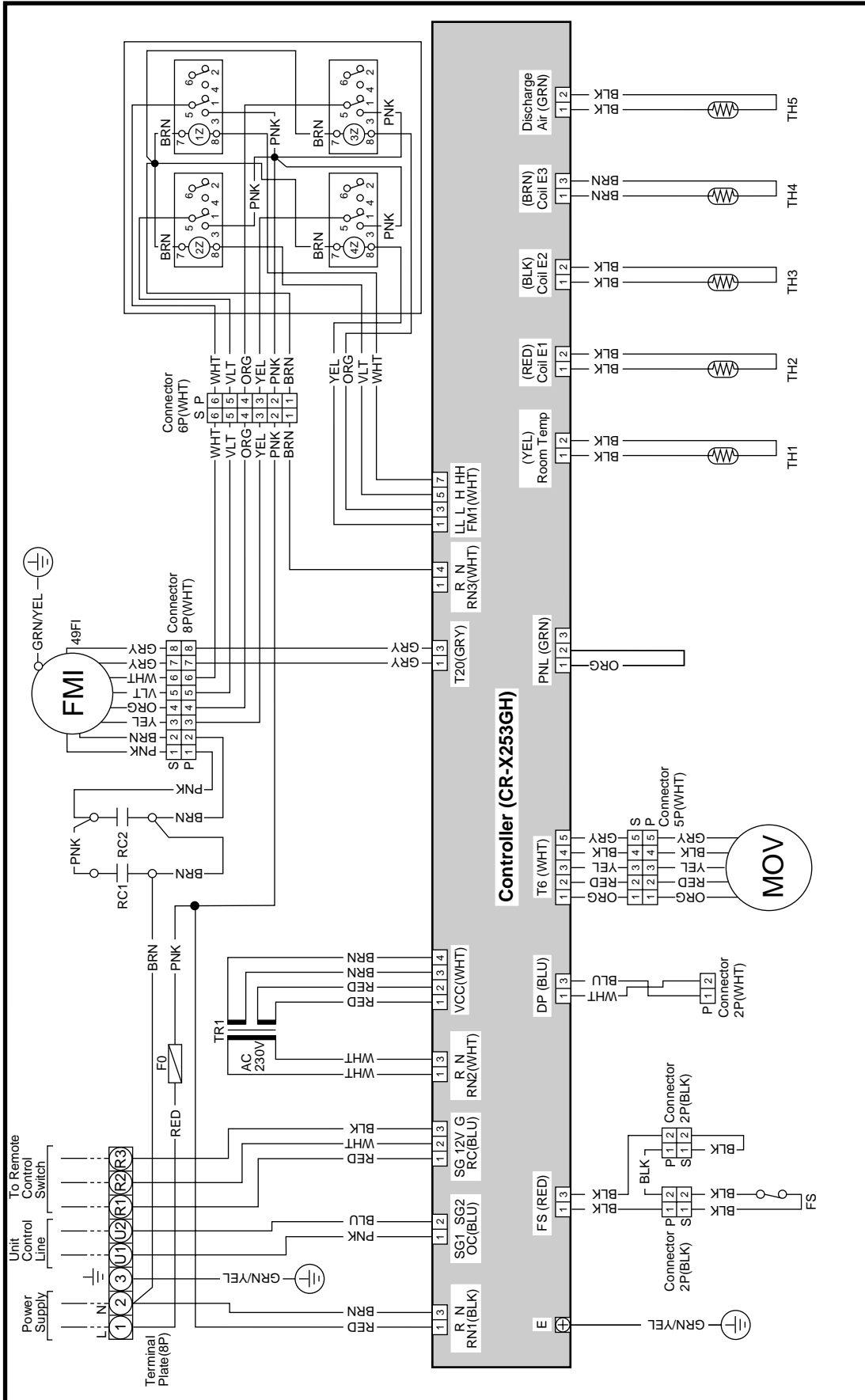
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
49FI	Indoor Motor Thermal Protector	TH5	Thermistor (Discharge Air)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
TR1	Power Transformer	□	Connector
1X-3X	Auxiliary Relay	⊕	Terminal
RY2	Auxiliary Relay	FS	Float Switch
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		
TH3	Thermistor (Indoor Coil E2)		

© 854-2-5268-694-00-0 (DR)

2. Indoor Unit

(7)-3 SPW-D(R)483GH56

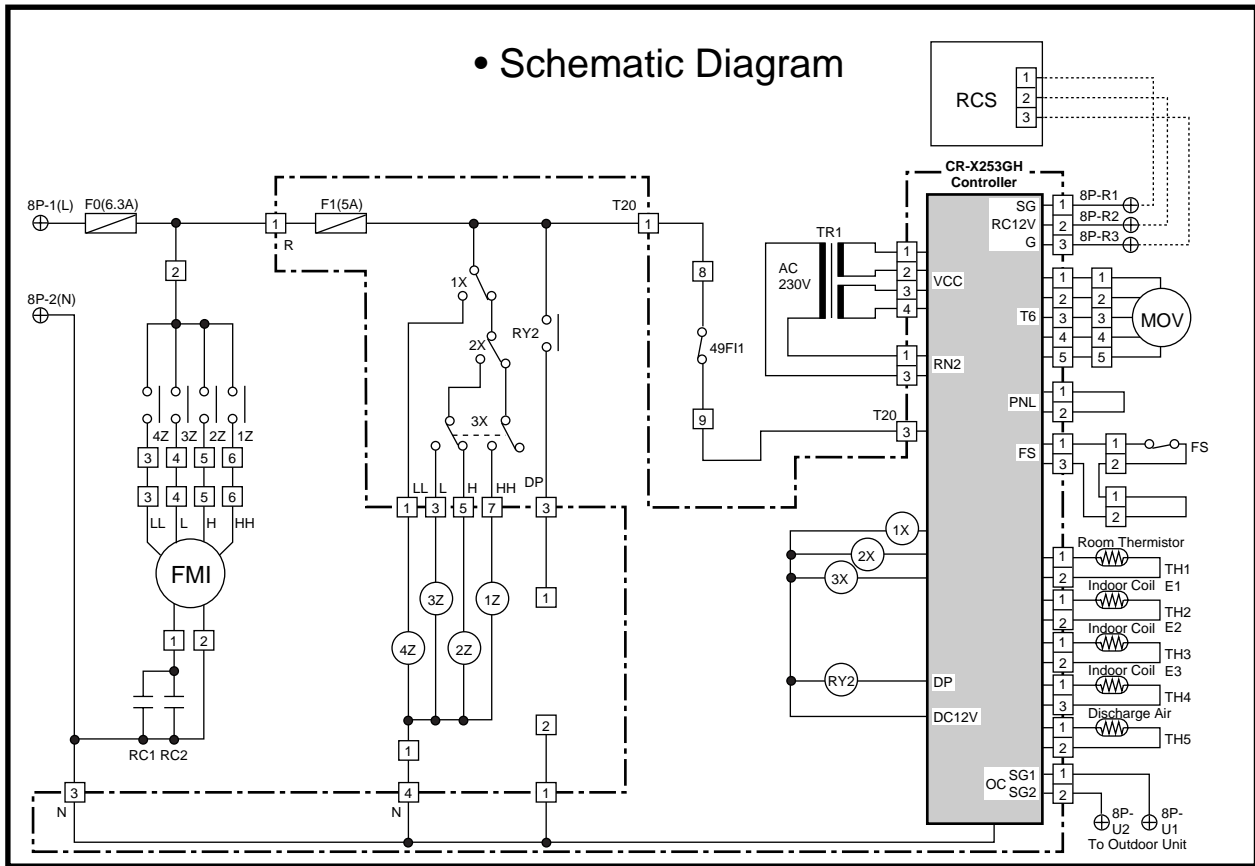
• Electric Wiring Diagram



Ⓜ 854-2-5268-695-00-0 (DR)

2. Indoor Unit

(7)-3 SPW-D(R)483GH56



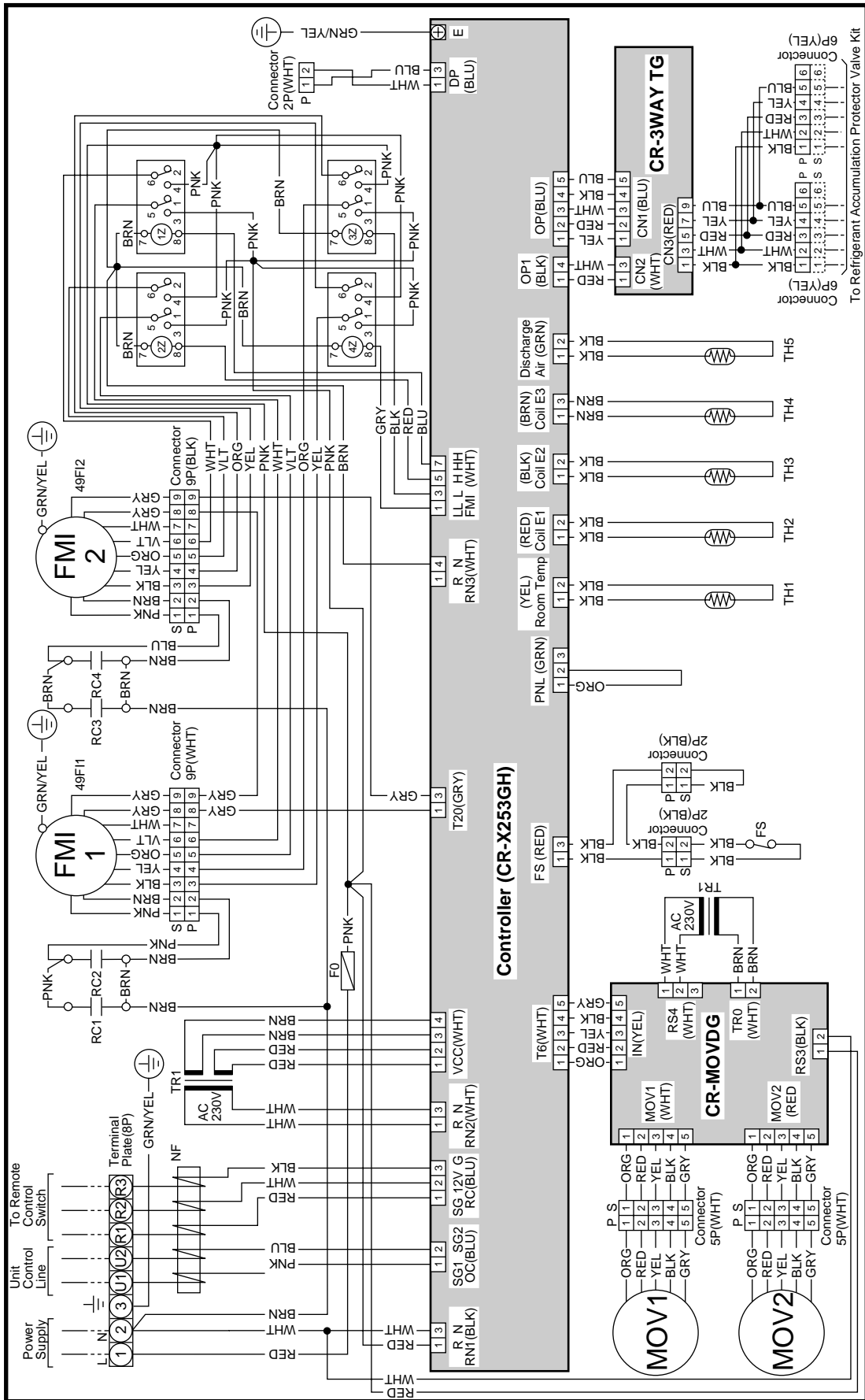
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
49FI	Indoor Motor Thermal Protector	TH5	Thermistor (Discharge Air)
RC1, 2	Running Capacitor	CR-X253GH	Indoor Controller
F0, 1	Fuse	⊕	Terminal Plate
TR1	Power Transformer	□	Connector
1X-3X	Auxiliary Relay	⊕	Terminal
RY2	Auxiliary Relay	FS	Float Switch
MOV	Motor Operated Valve	1Z-4Z	Auxiliary Relay
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		
TH3	Thermistor (Indoor Coil E2)		

© 854-2-5268-695-00-0 (DR)

2. Indoor Unit

(7)-4 SPW-DR763GH56, SPW-DR963GH56

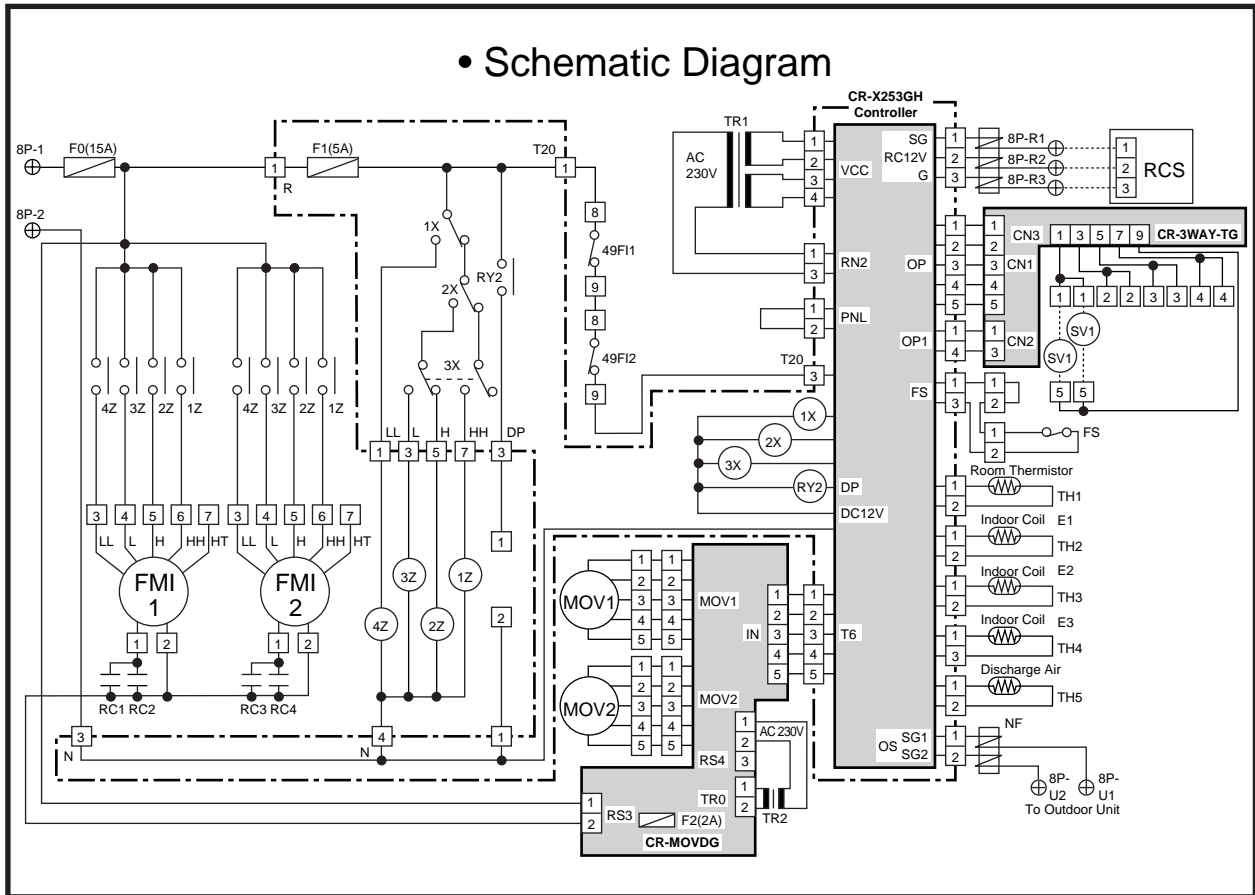
• Electric Wiring Diagram



⑧ 854-2-5268-789-00-0 (DR963GH56)

2. Indoor Unit

(7)-4 SPW-DR763GH56, SPW-DR963GH56



Symbols	Description	Symbols	Description
FMI1, 2	Indoor Fan Motor	TH2	Thermistor (Indoor Coil E1)
49FI1, 2	Indoor Motor Thermal Protector	TH3	Thermistor (Indoor Coil E2)
RC1-RC4	Running Capacitor	TH4	Thermistor (Indoor Coil E3)
F0-F2	Fuse	TH5	Thermistor (Discharge Air)
FS	Float Switch	NF	Noise Filter
TR1, 2	Power Transformer	CR-X253GH	Indoor Controller
1X-3X	Auxiliary Relay	CR-MOVDG	Sub Controller
1Z-4Z	Auxiliary Relay	CR-3WAY-TG	Sub Controller
RY2	Auxiliary Relay	⊕	Terminal Plate
MOV1, 2	Motor Operated Valve	□	Connector
RCS	Remote Control Switch	⊕	Terminal
TH1	Room Thermistor	(SV1)	Rap Valve Kit (Option Parts)

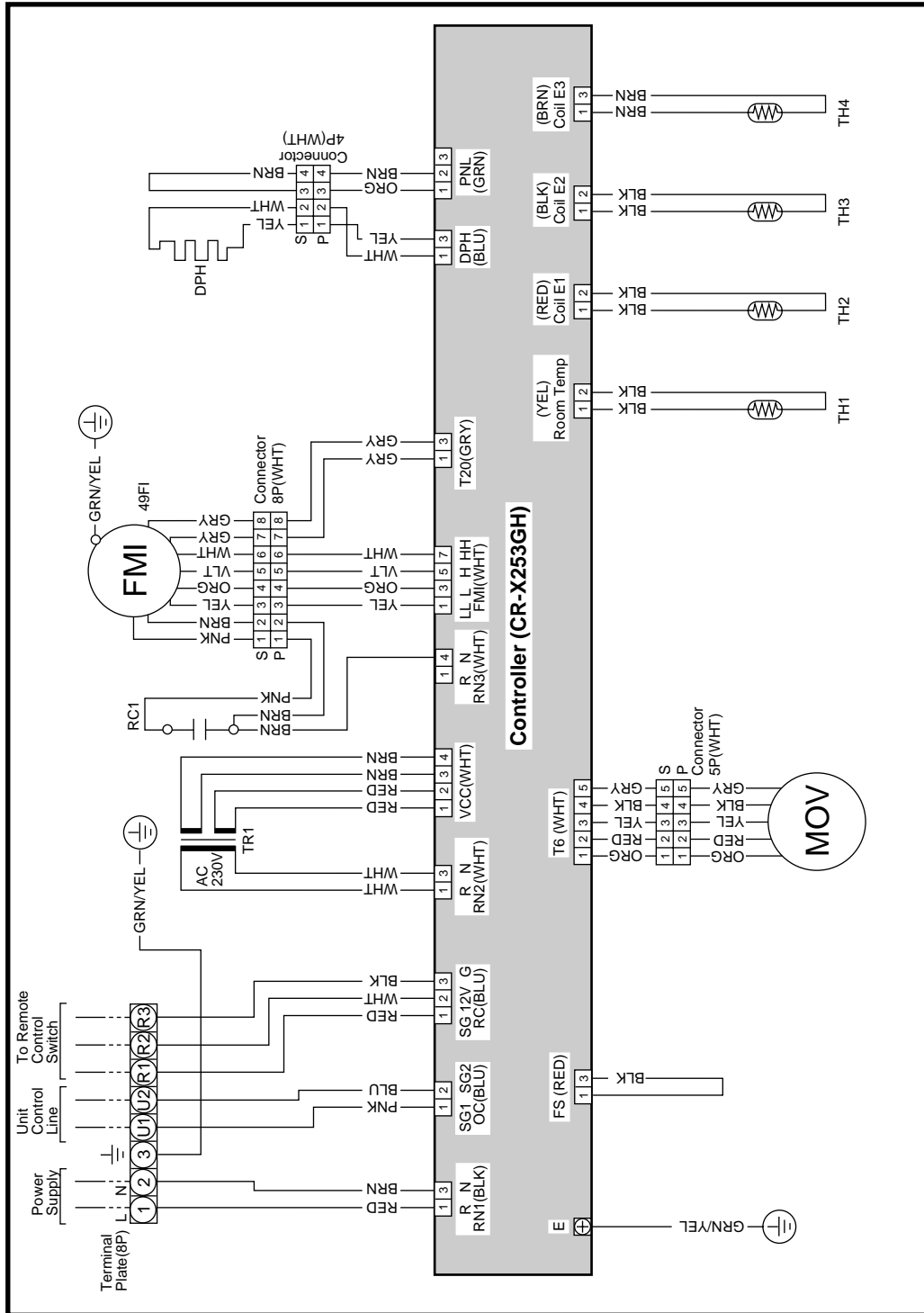
© 854-2-5268-789-00-0 (DR963GH56)



2. Indoor Unit

(8) SPW-F(R)93GH56, SPW-F(R)123GH56, SPW-F(R)183GH56, SPW-F(R)253GH56

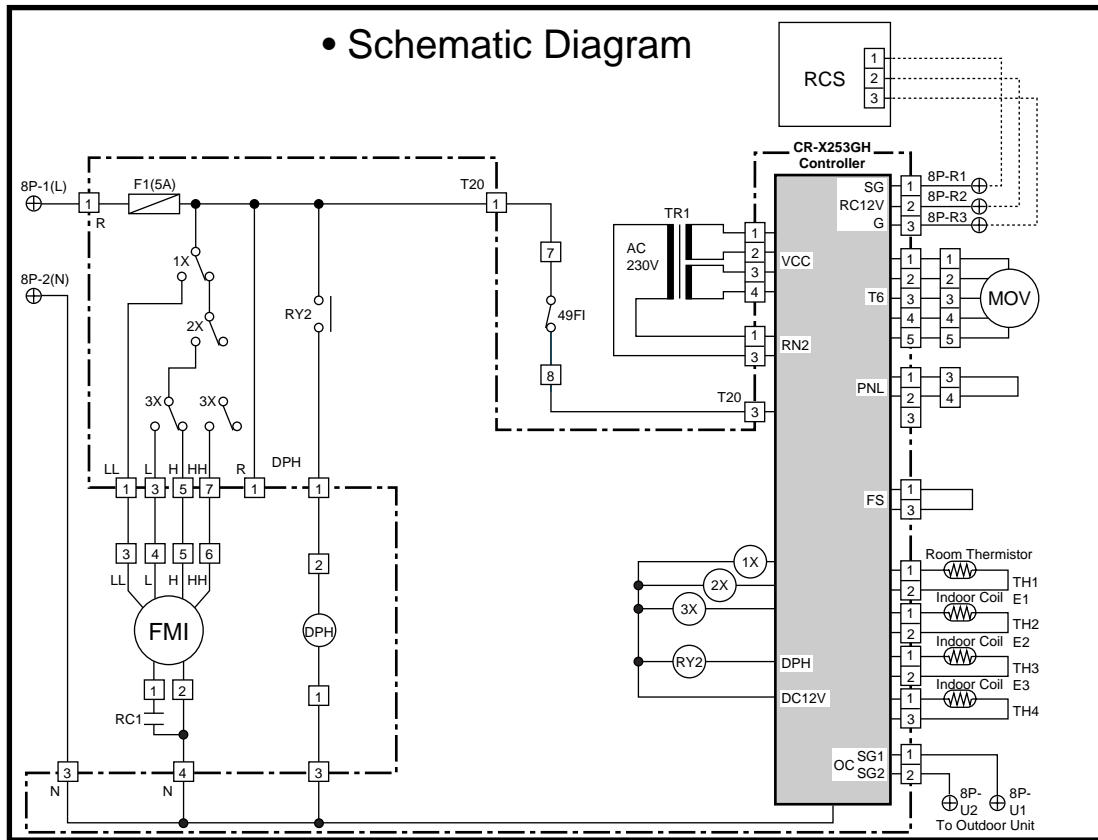
• Electric Wiring Diagram



© 854-2-5268-558-00-0 (FR93GH56, FR123GH56, FR183GH56, FR253GH56)

2. Indoor Unit

(8) SPW-F(R)93GH56, SPW-F(R)123GH56, SPW-F(R)183GH56, SPW-F(R)253GH56



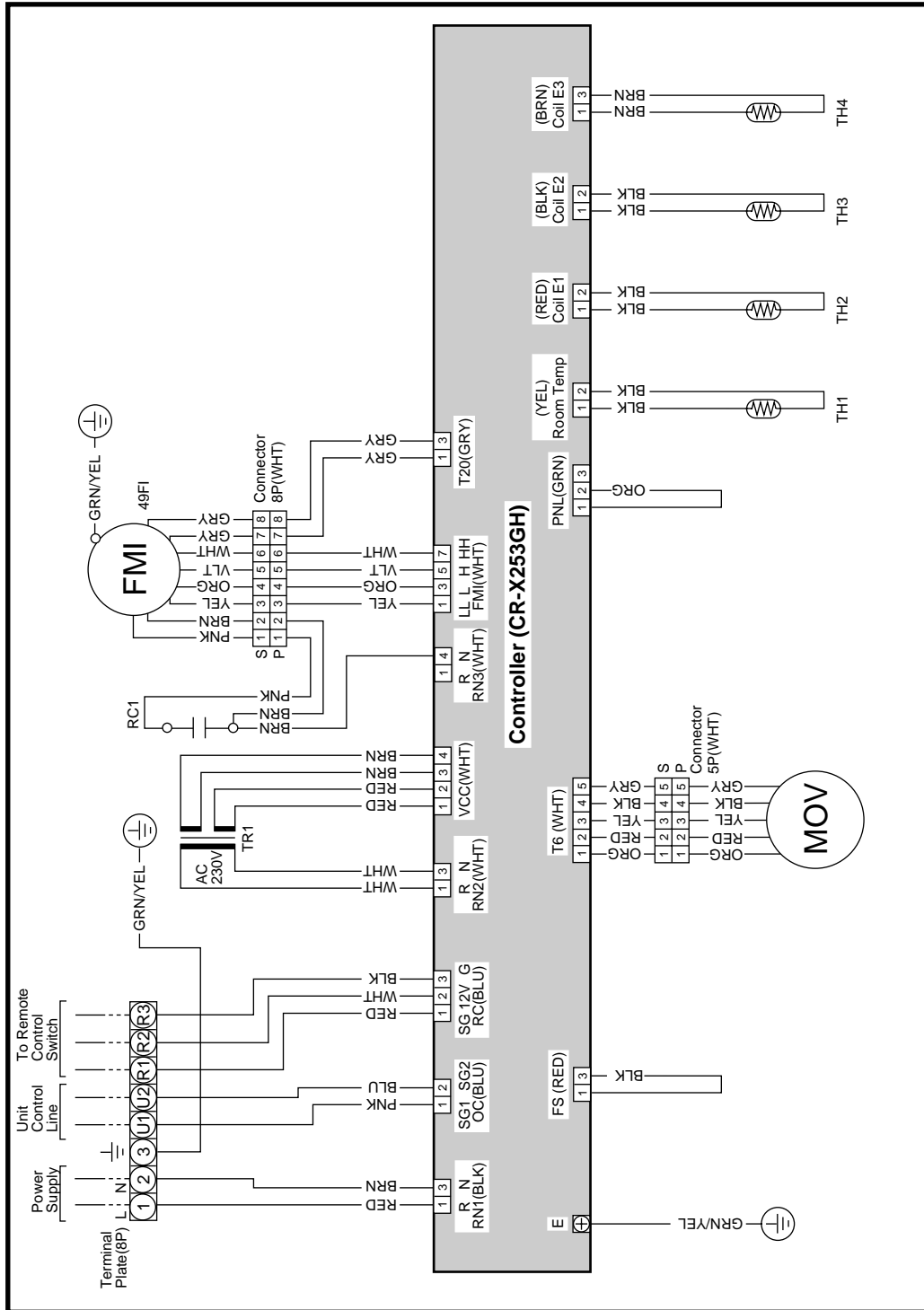
Symbols	Description
FMI	Indoor Fan Motor
49FI	Indoor Motor Thermal Protector
RC1	Running Capacitor
F1	Fuse
TR1	Power Transformer
1X-3X	Auxiliary Relay
RY2	Auxiliary Relay
MOV	Motor Operated Valve
RCS	Remote Control Switch
TH1	Room Thermistor
TH2	Thermistor (Indoor Coil E1)
TH3	Thermistor (Indoor Coil E2)
TH4	Thermistor (Indoor Coil E3)
CR-X253GH	Indoor Controller
⊕	Terminal Plate
□	Connector
⊕	Terminal
DPH	Dew Proof Heater

© 854-2-5268-558-00-0 (FR93GH56, FR123GH56, FR183GH56, FR253GH56)

2. Indoor Unit

(9) SPW-FM(R)93GH56, SPW-FM(R)123GH56, SPW-FM(R)183GH56, SPW-FM(R)253GH56

• Electric Wiring Diagram

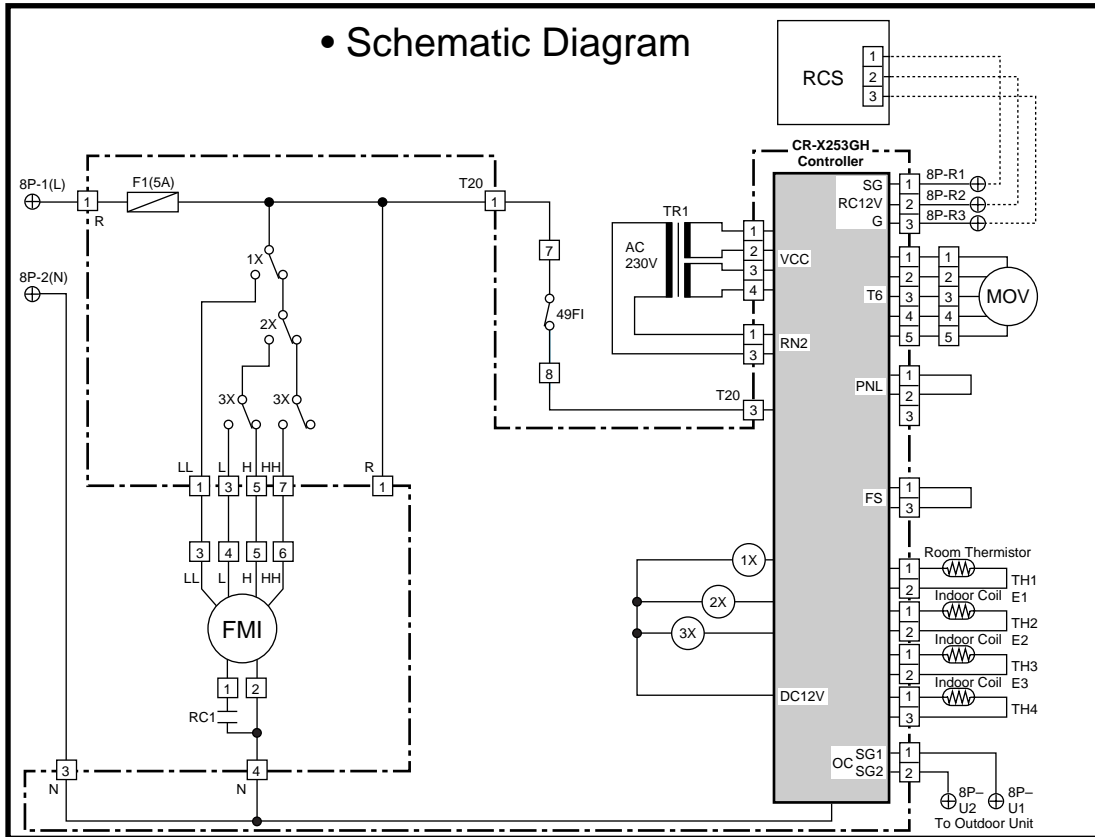


© 854-2-5268-559-00-0 (FMR93GH56, FMR123GH56, FMR183GH56, FMR253GH56)



2. Indoor Unit

(9) SPW-FM(R)93GH56, SPW-FM(R)123GH56, SPW-FM(R)183GH56, SPW-FM(R)253GH56



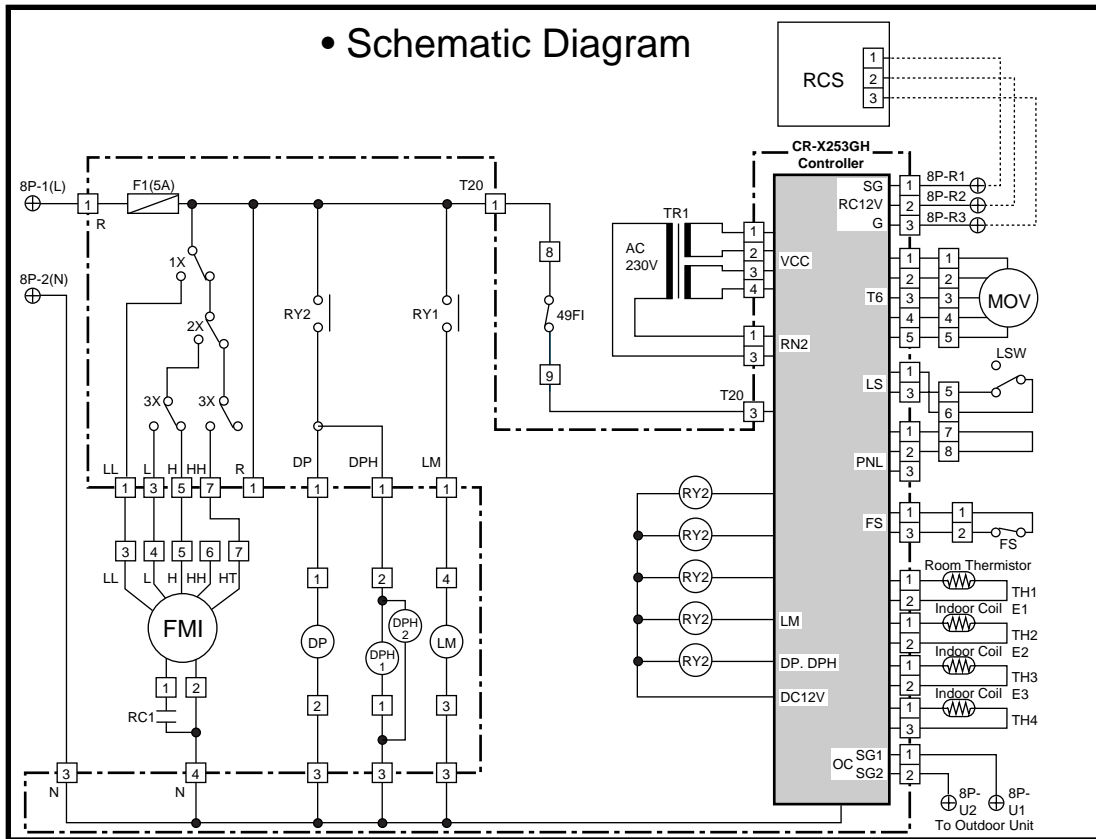
Symbols	Description
FMI	Indoor Fan Motor
49FI	Indoor Motor Thermal Protector
RC1	Running Capacitor
F1	Fuse
TR1	Power Transformer
1X-3X	Auxiliary Relay
MOV	Motor Operated Valve
RCS	Remote Control Switch
TH1	Room Thermistor
TH2	Thermistor (Indoor Coil E1)
TH3	Thermistor (Indoor Coil E2)
TH4	Thermistor (Indoor Coil E3)
CR-X253GH	Indoor Controller
⊕	Terminal Plate
□	Connector
⊕	Terminal

© 854-2-5268-559-00-0 (FMR93GH56, FMR123GH56, FMR183GH56, FMR253GH56)



2. Indoor Unit

(10) SPW-SLR93GH56, SPW-SLR123GH56, SPW-SLR183GH56, SPW-SLR253GH56



Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
49FI	Indoor Motor Thermal Protector	CR-X253GH	Indoor Controller
RC1	Running Capacitor	⊕	Terminal Plate
F1	Fuse	□	Connector
TR1	Power Transformer	⊕	Terminal
1X-3X	Auxiliary Relay	DPH1,2	Dew Proof Heater
RY1-RY2	Auxiliary Relay	LSW	Limit Switch
MOV	Motor Operated Valve	FS	Float Switch
RCS	Remote Control Switch	DP	Drain Pump
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		
TH3	Thermistor (Indoor Coil E2)		

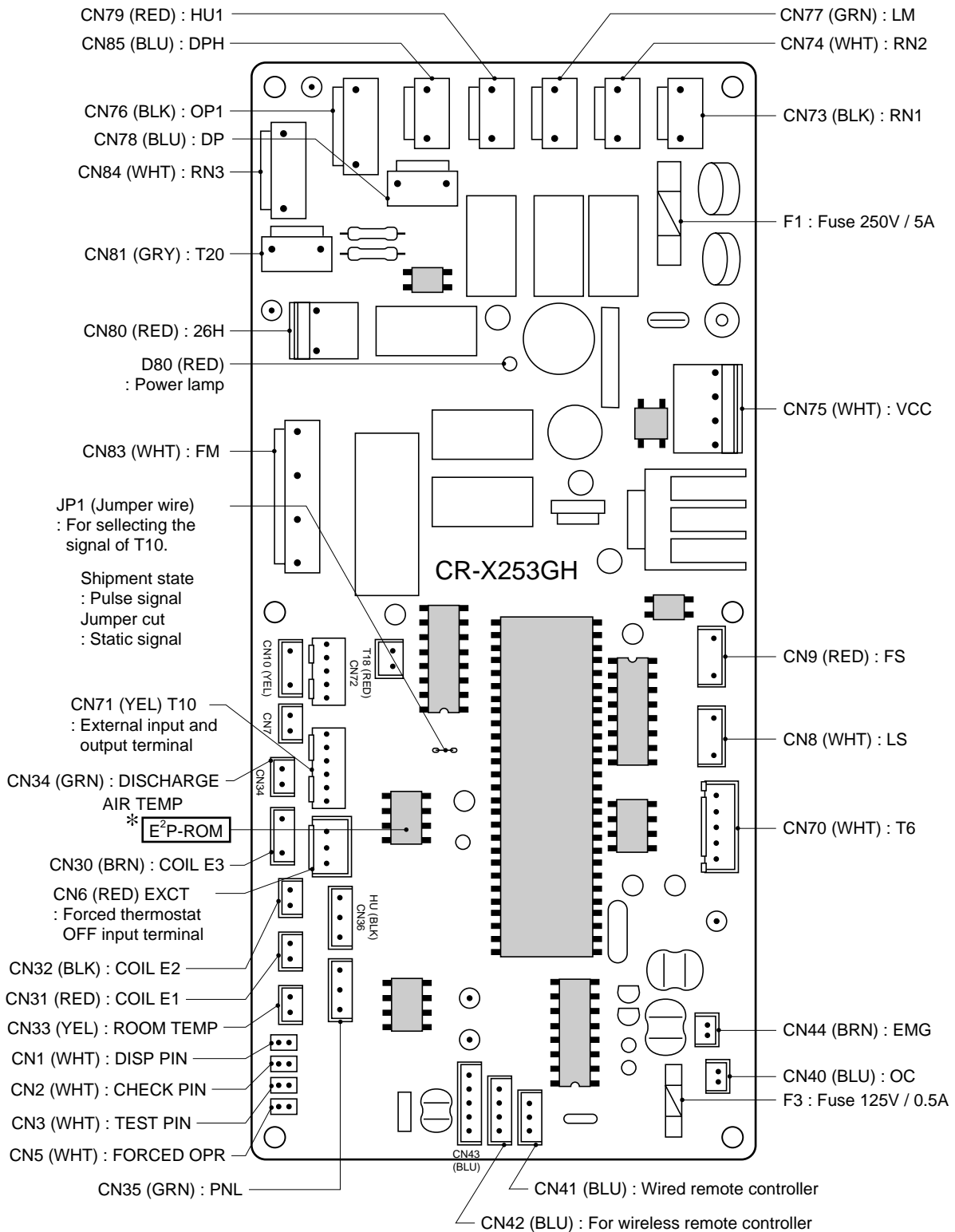
© 854-2-5268-710-00-1

9. Appendix

1. P.C.B. illustrations ..... IX - 2

# 1. P.C.B. illustrations

## ■ P.C.B. (CR-X253GH) for indoor units



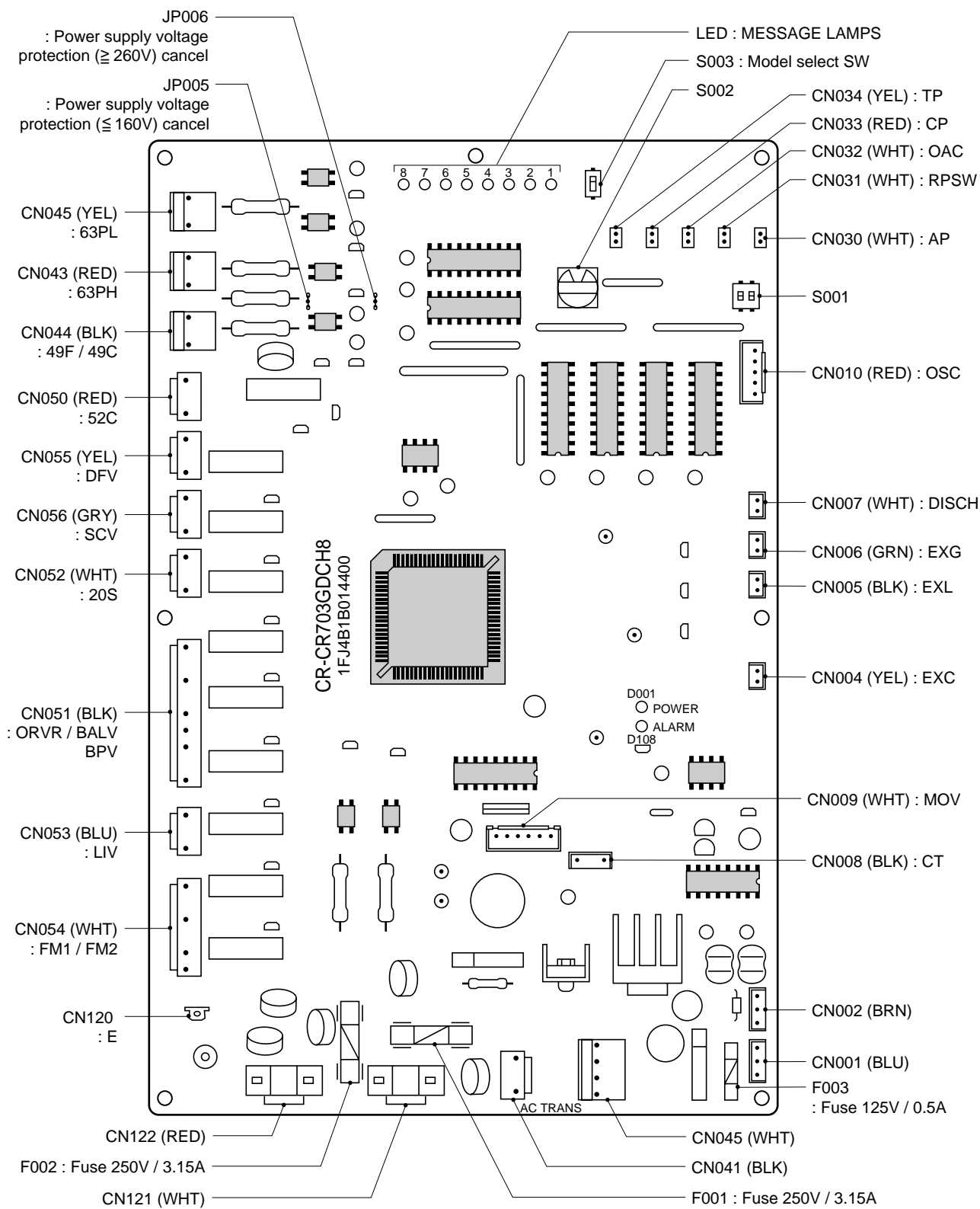
1208\_THS\_J

### Note when replacing the indoor unit PCB

When replacing the indoor unit PCB for service, remove the \*E<sup>2</sup>P-ROM of the original PCB then attach it to the new PCB since the original E<sup>2</sup>P-ROM has its own data (ex. indoor unit address) to identify the unit.

# 1. P.C.B. illustrations

## Outdoor unit control P.C.B. (CR-CR703GDCH8)

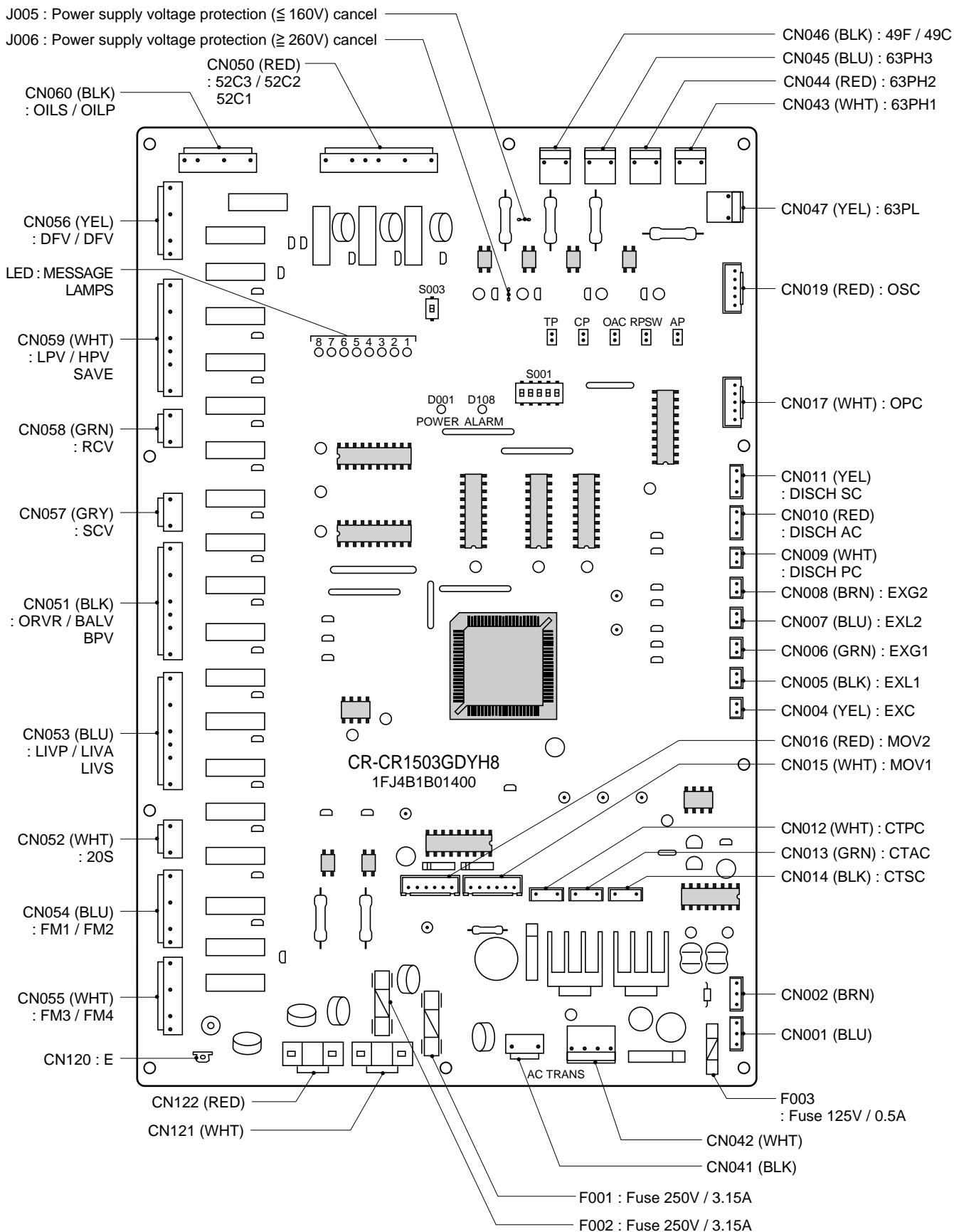


1615\_M\_1



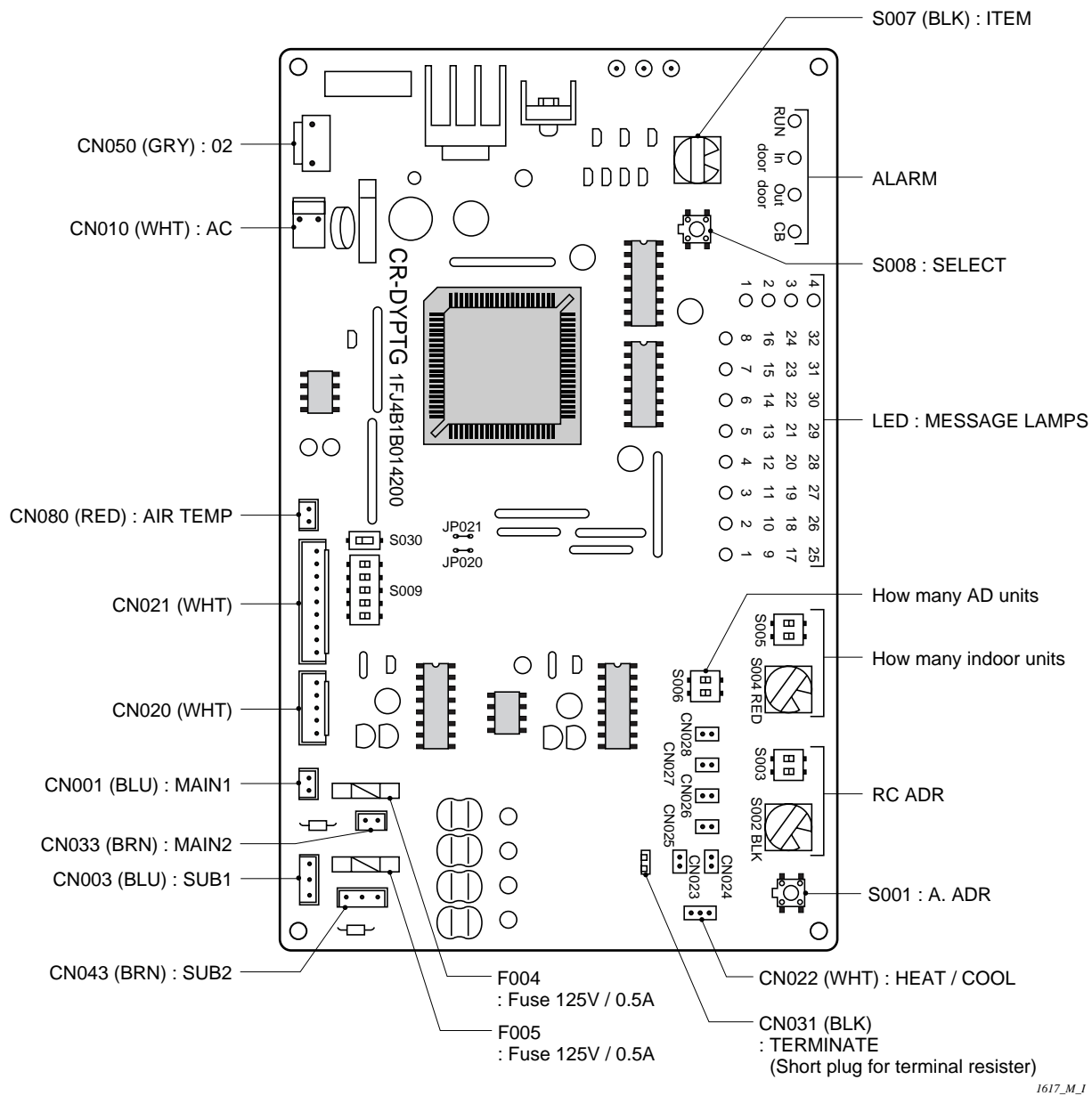
# 1. P.C.B. illustrations

## Outdoor unit control P.C.B. (CR-CR1503GDYH8)



# 1. P.C.B. illustrations

## Outdoor unit control CCU (Command control unit: CR-DYPTG)



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- The specifications, designs, and information in this brochure are subject to change without notice.



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