TOSHIBA

FILE NO.E06-112

HFC
R410A

DESIGN MANUAL

MiNi-SMMS

(Revised Edition in 19.May.2006)

WARNINGS ON REFRIGERANT LEAKAGE

Refrigerant density limit

Important

The room in which the air conditioner is to be installed should be designed or chosen such that in the event of a refrigerant gas leak the density of gas should not exceed a set limit.

The refrigerant R-410A, which is used in the air conditioner product, is intrinsically safe without the toxicity or combustibility of ammonia. R-410A is environmentally friendly and is not restricted by current or pending laws intended to protect the ozone layer.

Risk of suffocation through leakage of R-410A is minimal. However, with the recent increase in the number of high density buildings and use of multi air conditioner systems to ensure effective use of floor space, energy conservation and individual control, installers should ensure it is not possible to exceed density limits in the event of a refrigerant leak. In particular, where a single unit of the multi conditioner system is to be installed into a small room, select a suitable model and installation procedure so that if refrigerant leaks out, density limits are not exceeded. In a room where there is a risk of the density limit being exceeded, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.

The density can be calculated as shown below;

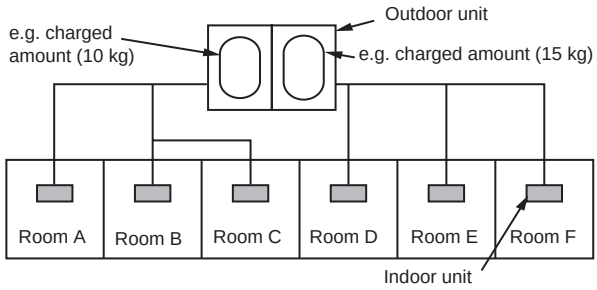
$$\frac{\text{Total amount of refrigerant (kg)}}{\text{Min. volume of the indoor unit installed room } (m^3)} \leq \text{density limit } (kg/m^3)$$

The density calculation must be carried out in accordance with local regulation or guideline like BS EN 378

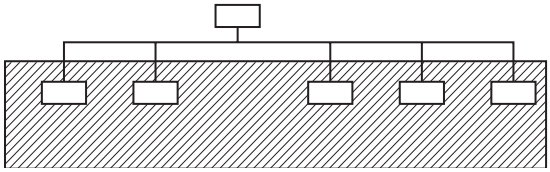
The above procedure must be completed in accordance with local, national and international standards, code of practice and statutory requirements.

Note 1: If there are 2 or more refrigerating systems in a single area, the amount of refrigerant should be charged as required for each individual unit.

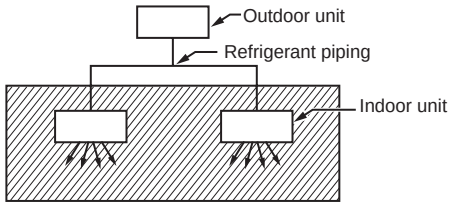
For the amount of charge in this example:
- The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.
- The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.



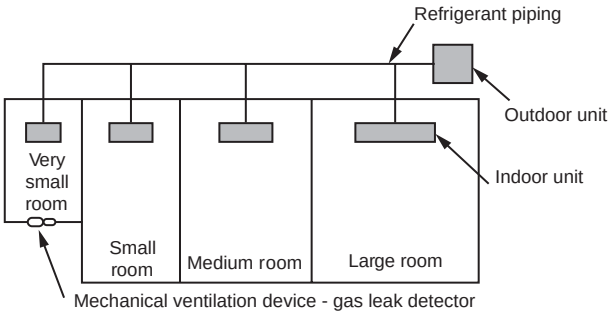
Note 2: The standards for minimum room volume are as follows:
(1) No partition (shaded portion)



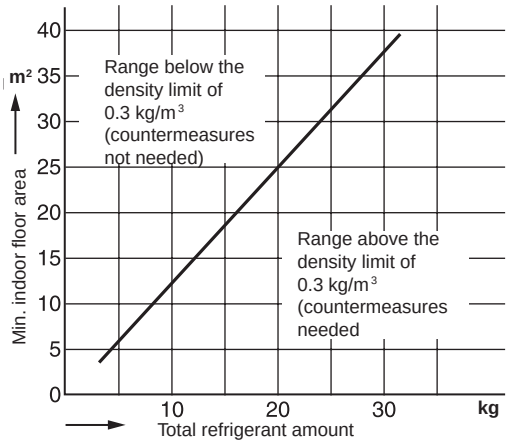
(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



(3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, attention must be paid to ensure safeguards are in place to avoid density limits being exceeded in each partitioned area. When leak detection is interlocked with mechanical ventilation equipment is installed in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



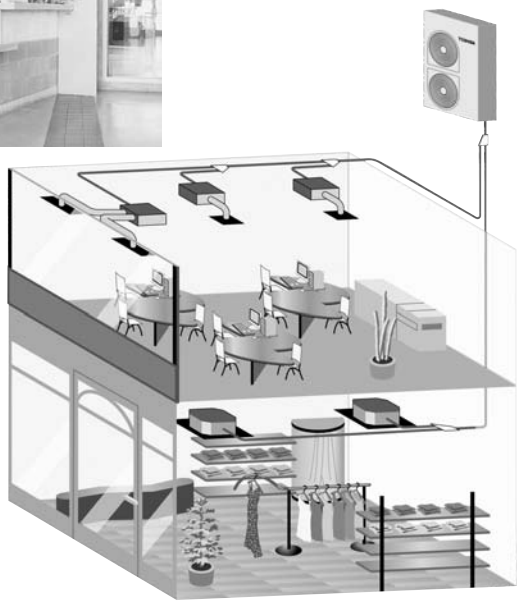
Note 3: The minimum indoor floor area compared with the amount of refrigerant is roughly as follows (when the ceiling is 2.7 m high):

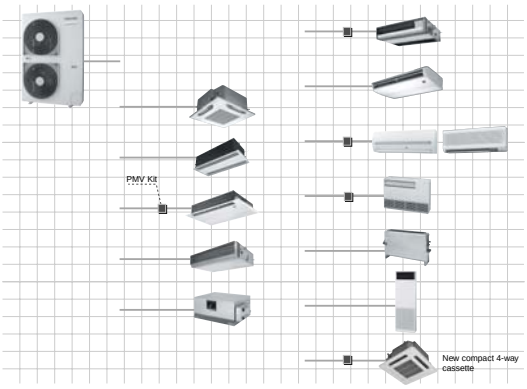


Outline

- *World-class energy savings–COP of 4.61* achieved by Toshiba's unrivalled S-MMS technologies and newly developed components*
  *4HP CDU system
- *Quiet operation can be further enhanced with an optional PMV (flow regulating valve) Kit.*
  *Pulse Motor Valve
- *Versatile application–13 types of indoor units for use in up to 9 rooms (6 HP)*

Sales launch scheduled for early 2006. Specifications differ by region.
For questions regarding availability, please contact your local distributor.





Use of quieter place

- Necessity of PMV Kit (RBM-PMV0361E / RBM-PMV0901E) for quieter place application as an optional.

(Revised Edition in 19.May.2006)

Outdoor unit line-up

Appearance	Model name 50Hz	Model name 60Hz
	MCY-MAP0401HT	MCY-MAP0401HT2D
	MCY-MAP0501HT	MCY-MAP0501HT2D
	MCY-MAP0601HT	MCY-MAP0601HT2D

Indoor unit line-up

Capacity rank		007	009	012	015	018	024	027	030	036	048
Cooling capacity (kW)		2.2	2.8	3.6	4.5	5.6	7.1	8.0	9.0	11.2	14.0
(HP equivalent)		0.8	1.0	1.25	1.7	2.0	2.5	3.0	3.2	4.0	5.0
4-way Air Discharge Cassette			MMU-AP***1H								
Compact 4-way Cassette (600 x 600)			MMU-AP***1MH								
2-way Air Discharge Cassette			MMU-AP***1WH								
1-way Air Discharge Cassette			MMU-AP***1YH / -AP***2SH								
Concealed Duct Standard			MMD-AP***1BH								
Slim Duct			MMD-AP***1SPH								
Concealed Duct High Static Pressure			MMD-AP***1H								
Under Ceiling			MMC-AP***1H								
High Wall 1series			MMK-AP***1H								
High Wall 2series			MMK-AP***2H								
Floor Standing Cabinet			MML-AP***1H								
Floor Standing Concealed			MML-AP***1BH								
Floor Standing			MMF-AP***1H								

Mini-SMMS Design Manual

Contents

M E M O

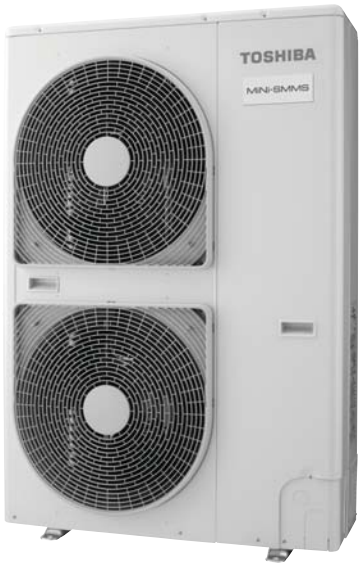
1. Design methods

1-1. System Overview

1-1-1. Outdoor units

Corresponding HP		Inverter unit		
		4HP	5HP	6HP
Model name	Heat pump(50Hz) MCY-	MAP0401HT	MAP0501HT	MAP0601HT
	Heat pump(60Hz) MCY-	MAP0401HT2D	MAP0501HT2D	MAP0601HT2D
Cooling capacity(kW)*1		12.1	14.0	15.5
Heating capacity(kW)*1		12.5	16.0	18.0
No.of connectable indoor units		6	8	9

*1 Rated conditions
Cooling:Indoor air temperature 27°C DB/19°CWB,Outdoor air temperature 35°CDB
Heating:Indoor air temperature 20°C DB,Outdoor air temperature 7°CDB/6°CWB

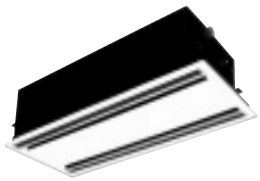
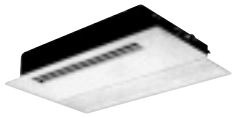


Allocation standard of model name

MCY- M AP ○○○ ○ H T 2D

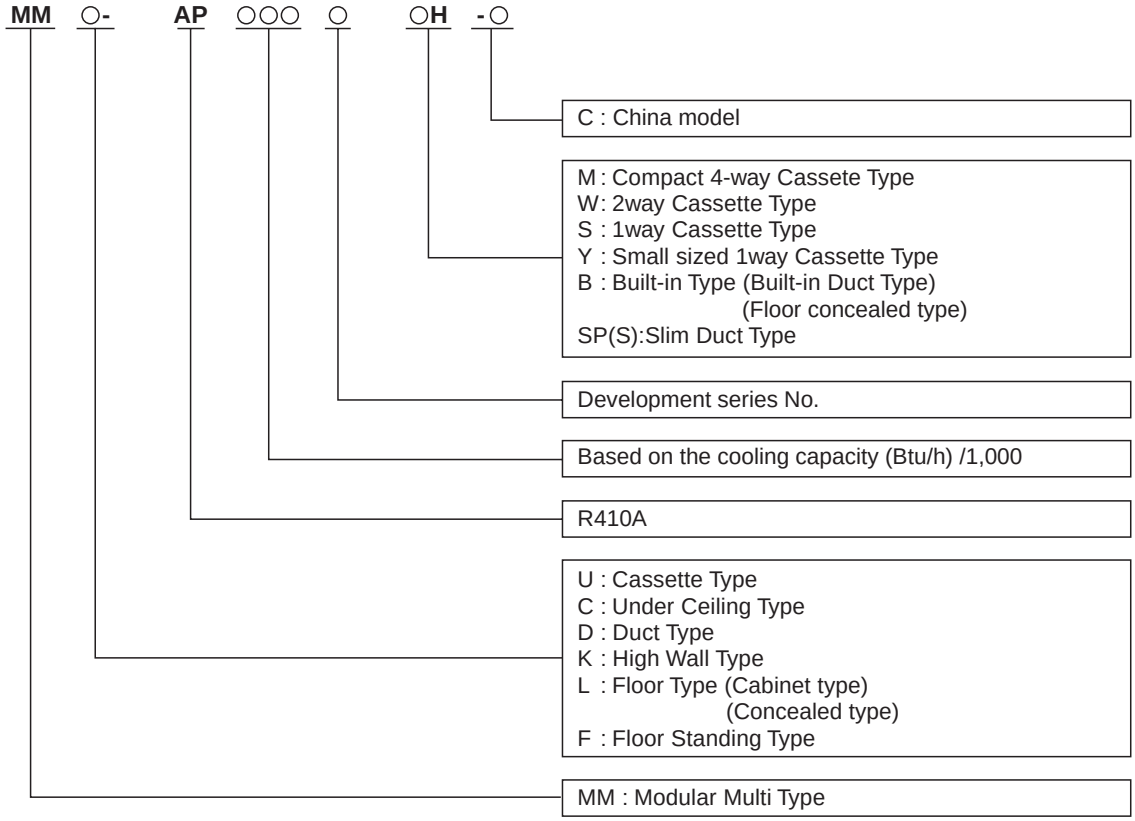
- 2D: No mark:Power supply specification, 1φ 220/230/240V, (50Hz) / 2D :Power supply specification, 1φ 220V, 60Hz
- T : Inverter Unit
- H : Heat pump
- Development Number
- Capacity rank HP x 10
- R410A
- M : Individual Unit
- MCY-: Multi Compact Type

1-1-2. Indoor units

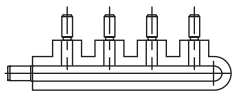
Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
4-way Air Discharge Cassette Type		**MMU-AP0091H**	009 type	1.00	2.8	3.2	——
		MMU-AP0121H	012 type	1.25	3.6	4.0	——
		MMU-AP0151H	015 type	1.70	4.5	5.0	——
		MMU-AP0181H	018 type	2.00	5.6	6.3	——
		MMU-AP0241H	024 type	2.50	7.1	8.0	——
		MMU-AP0271H	027 type	3.00	8.0	9.0	——
		MMU-AP0301H	030 type	3.20	9.0	10.0	——
		MMU-AP0361H	036 type	4.00	11.2	12.5	——
		MMU-AP0481H	048 type	5.00	14.0	16.0	——
Compact 4-way Air Discharge (600x600) Type		**MMU-AP0071MH**	007 type	0.80	2.2	2.5	Available
		MMU-AP0091MH	009 type	1.00	2.8	3.2	Available
		MMU-AP0121MH	012 type	1.25	3.6	4.0	Available
		MMU-AP0151MH	015 type	1.70	4.5	5.0	Available
		MMU-AP0181MH	018 type	2.00	5.6	6.3	Available
2-way Air Discharge Cassette Type		**MMU-AP0071WH**	007 type	0.80	2.2	2.5	——
		MMU-AP0091WH	009 type	1.00	2.8	3.2	——
		MMU-AP0121WH	012 type	1.25	3.6	4.0	——
		MMU-AP0151WH	015 type	1.70	4.5	5.0	——
		MMU-AP0181WH	018 type	2.00	5.6	6.3	——
		MMU-AP0241WH	024 type	2.50	7.1	8.0	——
		MMU-AP0271WH	027 type	3.00	8.0	9.0	——
		MMU-AP0301WH	030 type	3.20	9.0	10.0	——
1-way Air Discharge Cassette Type		**MMU-AP0071YH**	007 type	0.80	2.2	2.5	Available
		MMU-AP0091YH	009 type	1.00	2.8	3.2	Available
		MMU-AP0121YH	012 type	1.25	3.6	4.0	Available
		MMU-AP0152SH	015 type	1.70	4.5	5.0	Available
		MMU-AP0182SH	018 type	2.00	5.6	6.3	Available
		MMU-AP0242SH	024 type	2.50	7.1	8.0	Available
Concealed Duct Standard Type		**MMD-AP0071BH**	007 type	0.80	2.2	2.5	——
		MMD-AP0091BH	009 type	1.00	2.8	3.2	——
		MMD-AP0121BH	012 type	1.25	3.6	4.0	——
		MMD-AP0151BH	015 type	1.70	4.5	5.0	——
		MMD-AP0181BH	018 type	2.00	5.6	6.3	——
		MMD-AP0241BH	024 type	2.50	7.1	8.0	——
		MMD-AP0271BH	027 type	3.00	8.0	9.0	——
		MMD-AP0301BH	030 type	3.20	9.0	10.0	——
		MMD-AP0361BH	036 type	4.00	11.2	12.5	——
		MMD-AP0481BH	048 type	5.00	14.0	16.0	——
Slim Duct Type		**MMD-AP0071SPH**	007 type	0.80	2.2	2.5	Available
		MMD-AP0091SPH	009 type	1.00	2.8	3.2	Available
		MMD-AP0121SPH	012 type	1.25	3.6	4.0	Available
		MMD-AP0151SPH	015 type	1.70	4.5	5.0	Available
		MMD-AP0181SPH	018 type	2.00	5.6	6.3	Available
Concealed Duct High Static Pressure Type		**MMD-AP0181H**	018 type	2.00	5.6	6.3	——
		MMD-AP0241H	024 type	2.50	7.1	8.0	——
		MMD-AP0271H	027 type	3.00	8.0	9.0	——
		MMD-AP0361H	036 type	4.00	11.2	10.0	——
		MMD-AP0481H	048 type	5.00	14.0	16.0	——
Under Ceilling Type		**MMC-AP0151H**	015 type	1.70	4.5	5.0	——
		MMC-AP0181H	018 type	2.00	5.6	6.3	——
		MMC-AP0241H	024 type	2.50	7.1	8.0	——
		MMC-AP0271H	027 type	3.00	8.0	9.0	——
		MMC-AP0361H	036 type	4.00	11.2	12.5	——
		MMC-AP0481H	048 type	5.00	14.0	16.0	——

Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
High Wall Type (1 series)		**MMK-AP0071H**	007 type	0.80	2.2	2.5	Available
		MMK-AP0091H	009 type	1.00	2.8	3.2	Available
		MMK-AP0121H	012 type	1.25	3.6	4.0	Available
		MMK-AP0151H	015 type	1.70	4.5	5.0	Available
		MMK-AP0181H	018 type	2.00	5.6	6.3	Available
		MMK-AP0241H	024 type	2.50	7.1	8.0	Available
High Wall Type (2 series)		**MMK-AP0072H**	007 type	0.80	2.2	2.5	Available
		MMK-AP0092H	009 type	1.00	2.8	3.2	Available
		MMK-AP0122H	012 type	1.25	3.6	4.0	Available
Floor Standing Cabinet Type		**MML-AP0071H**	007 type	0.80	2.2	2.5	Available
		MML-AP0091H	009 type	1.00	2.8	3.2	Available
		MML-AP0121H	012 type	1.25	3.6	4.0	Available
		MML-AP0151H	015 type	1.70	4.5	5.0	Available
		MML-AP0181H	018 type	2.00	5.6	6.3	Available
		MML-AP0241H	024 type	2.50	7.1	8.0	Available
Floor Standing Concealed Type		**MML-AP0071BH**	007 type	0.80	2.2	2.5	——
		MML-AP0091BH	009 type	1.00	2.8	3.2	——
		MML-AP0121BH	012 type	1.25	3.6	4.0	——
		MML-AP0151BH	015 type	1.70	4.5	5.0	——
		MML-AP0181BH	018 type	2.00	5.6	6.3	——
		MML-AP0241BH	024 type	2.50	7.1	8.0	——
Floor Standing Type		**MMF-AP0151H**	015 type	1.70	4.5	5.0	——
		MMF-AP0181H	018 type	2.00	5.6	6.3	——
		MMF-AP0241H	024 type	2.50	7.1	8.0	——
		MMF-AP0271H	027 type	3.00	8.0	9.0	——
		MMF-AP0361H	036 type	4.00	11.2	10.0	——
		MMF-AP0481H	048 type	5.00	14.0	16.0	——

Allocation standard of model name



1-1-3. Branching joints and headers *1

	Model name	Usage	Appearance
Y-shape branching joint	**RBM-BY53E**	Indoor unit capacity code (*2) :Total below 7.8	
4-branching header	**RBM-HY1043E**	Indoor unit capacity code (*2) :Total below 7.8	
8-branching header	**RBM-HY1083E**	Indoor unit capacity code (*2) :Total below 7.8	

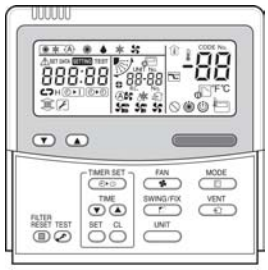
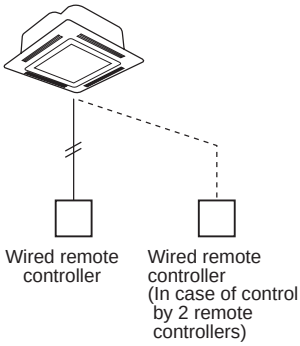
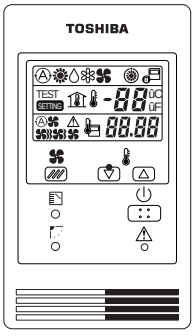
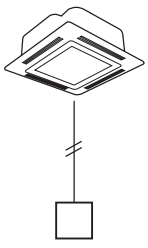
*1 If total capacity code value of indoor unit exceeds that of outdoor unit, apply code of outdoor unit.
*2 "capacity code" can be obtained from page 1-17. (capacity code is not actual capacity)
*3 When using Y-shape branching joint for 1st branching, select according to the capacity code of outdoor unit.

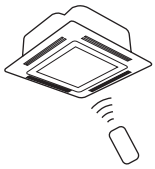
1-1-4. PMV Kit

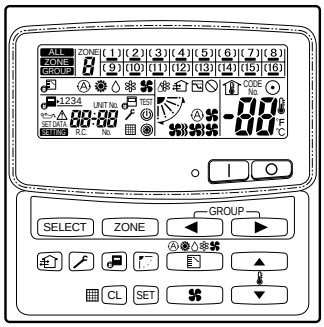
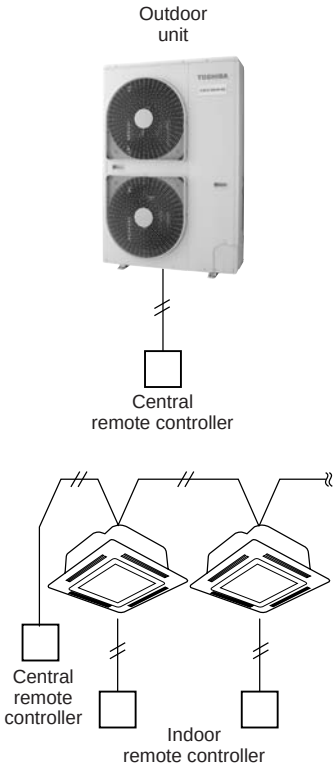
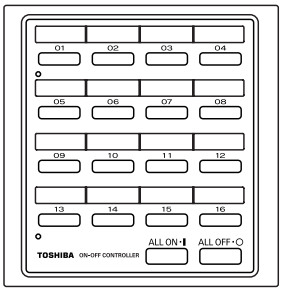
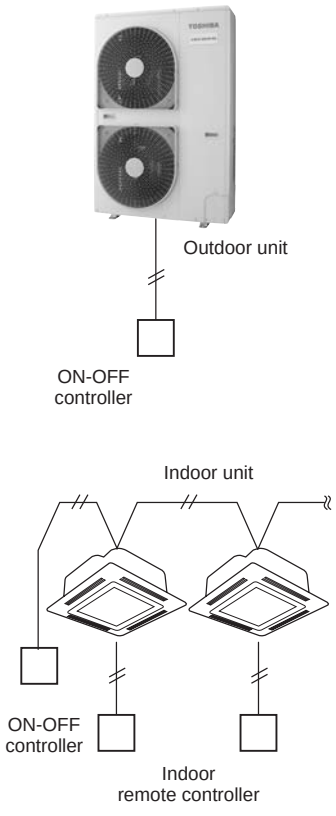
Model name	Indoor unit capacity type	Appearance
RBM-PMV0361E	007, 009, 012 type	
RBM-PMV0901E	015, 018, 024 type	

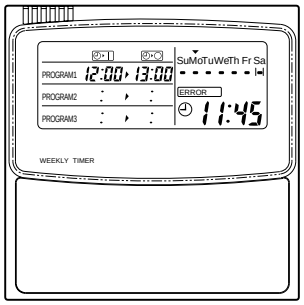
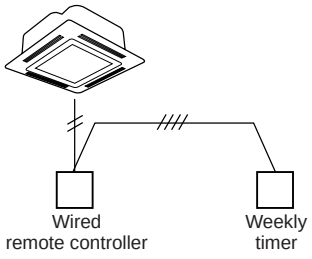
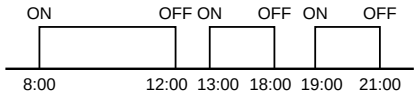
For more information see section 3.

1-1-5. Remote controller

Name	Model name	Appearance	Application	Function
Wired remote controller	RBC-AMT31E		**Connected to indoor unit**  	• Start / Stop • Mode Change • Temperature setting • Fan speed • Timer function ① On or off elapsed timer with 30 minutes increments. Automatic off function. ② Weekly when combined with RBC-EXW21E2 weekly schedule operation can be operated. • Filter dirty indicator Displays automatically maintenance time of indoor filter by flashes. • Self-diagnosis function Pressing "CHECK" button displays status code. • Control by 2 remote controllers is available. Two remote controllers can be connected to one indoor unit. The indoor unit can be separately operated from a different location.
Simple wired remote controller	RBC-AS21E2	 	**Connected to indoor unit**  Simple remote controller	• Start / Stop • Temperature setting • Change of air flow • Check code display

Name	Model name	Appearance		Function
Wireless remote controller kit	TCB-AX21U(W)-E2			• Start / Stop • Mode change • Temperature setting • Change of air flow • Timer function On or off timer operation, setting in 30 minutes increments. Automatic Off function. • Control by 2 remote controllers is available. Two wireless remote controllers can operate one indoor unit. The indoor unit can be separately operated from a different location. • Check code display TCB-AX21U(W)-E2 (for 4-way airdischarge cassette) RBC-AX22CE2 (for under ceiling) TCB-AX21-E2 (for other units except for the concealed duct high static pressure) 
	RBC-AX22CE2			
	TCB-AX21E2			

Name	Model name	Appearance	Application	Performance
Central remote controller	TCB-SC642TLE2		**Connected to outdoor unit, or indoor unit** 	Individual control up to 64 indoor units. Individual control for max. 64 indoor units divided into 4 zones. (Up to 16 indoor units for each zone) Up to 16 outdoor units are connectable. Four selectable central control settings to restrict individual remote controller operations. Setting for one of 1 to 4 zones is available. Can be used with other central control devices (Up to 10 central control devices with in one control circuit) Two selectable control modes (Central controller mode Remote controller mode) Setting of simultaneous ON/OFF 3 times for each day of the week combined with a weekly timer.
ON-OFF controller	TCB-CC163TLE2		**Connected to outdoor unit, or indoor unit** 	• Individual control up to 16 indoor units. • Setting of simultaneous ON-OFF 3 times for each day of the week when combined with a weekly timer. • Connected to 2 remote controllers is possible.

Name	Model name	Appearance	Application	Performance
Weekly timer	RBC-EXW21E2		**Connected to central remote controller or wired remote controller**  Wired remote controller Weekly timer  Outdoor unit Central remote controller Weekly timer	Weekly schedule operation ① Setting different start / stop time for each day of the week ② ON / OFF can be set 3 times a day.  ③ "CHECK" "PROGRAM" "DAY" button copying of settings easy. ④ Two different schedules for a week can be specified. (Summer schedule and winter schedule, etc.) ⑤ "CANCEL" "DAY" button enables holiday setting. ⑥ If power supply fails, the setting contents are stored in the memory for 100 hours.

1-2. Basic system configuration

The following shows an example of Basic system configuration

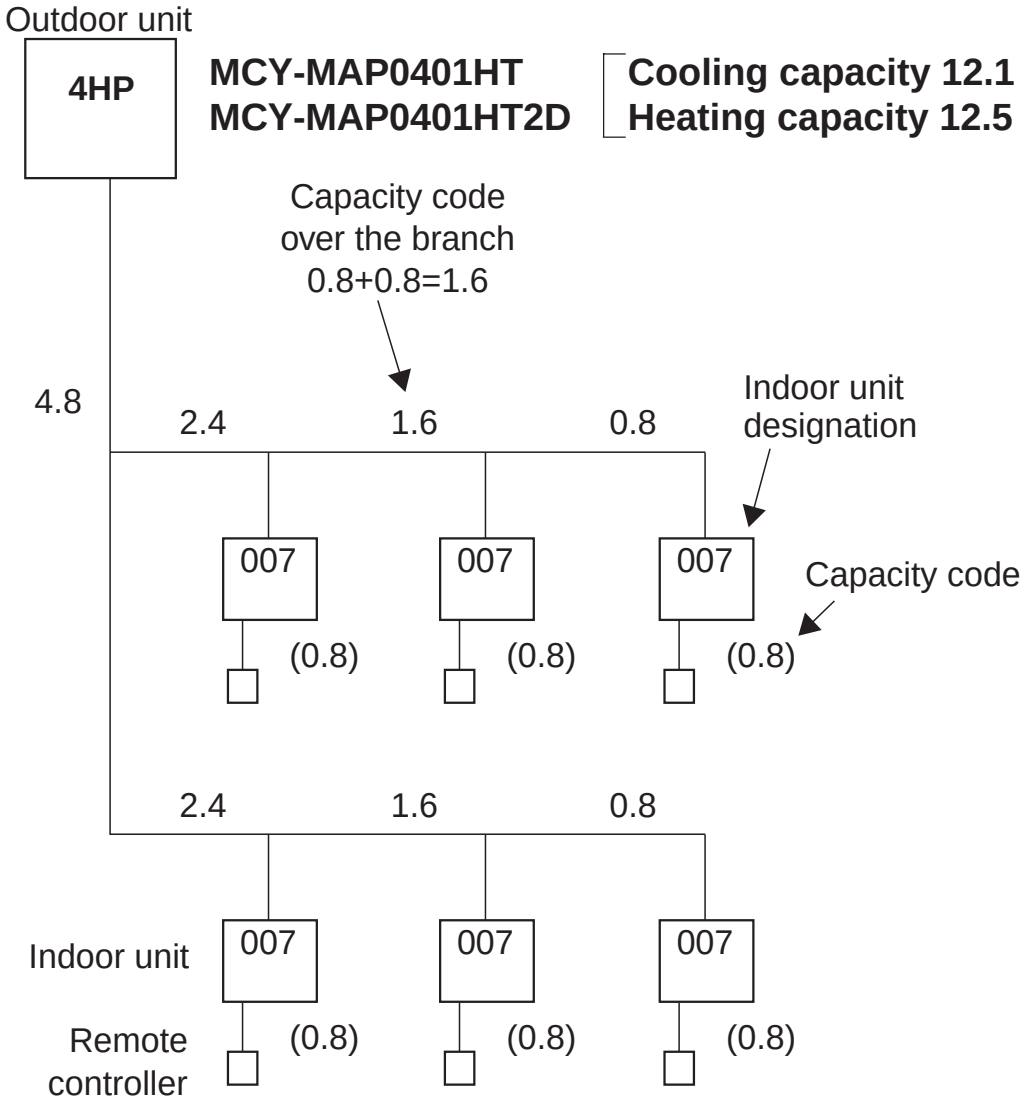
① In case of without "PMV Kit"

Reference example 1

4HP system

- **MAX.indoor unit : 6 units**
- **Capacity code of indoor unit** — **Min. : 3.2**, **Max.: 5.2**

Capacity code
Total : 4.8
No.of total units
6



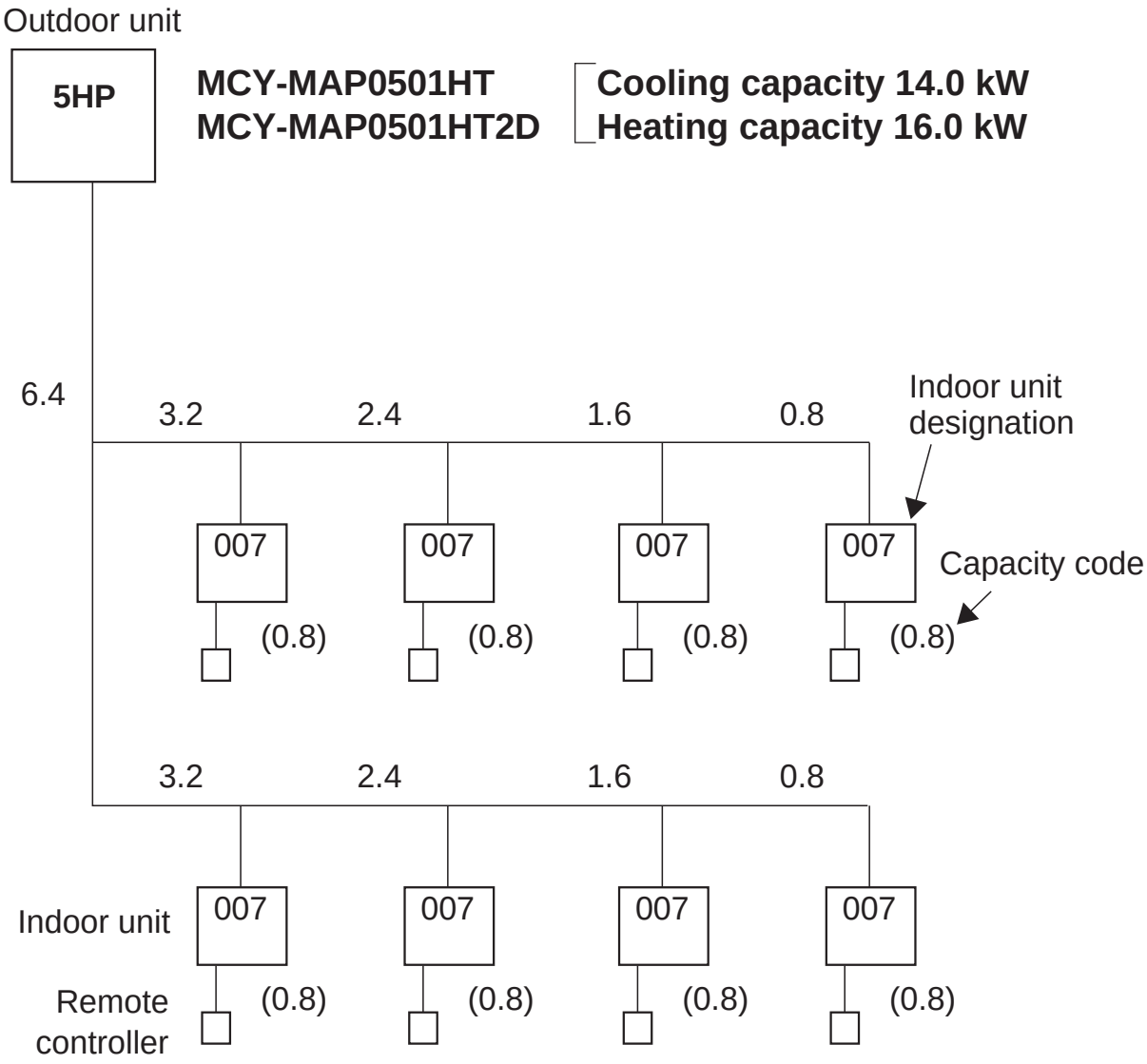
① In case of without "PMV Kit"

Reference example 2

5HP system

- **MAX.indoor unit : 8 units**
- **Capacity code of indoor unit** — **Min. : 4.0**, **Max.: 6.5**

Capacity code
Total : 6.4
No.of total units
8



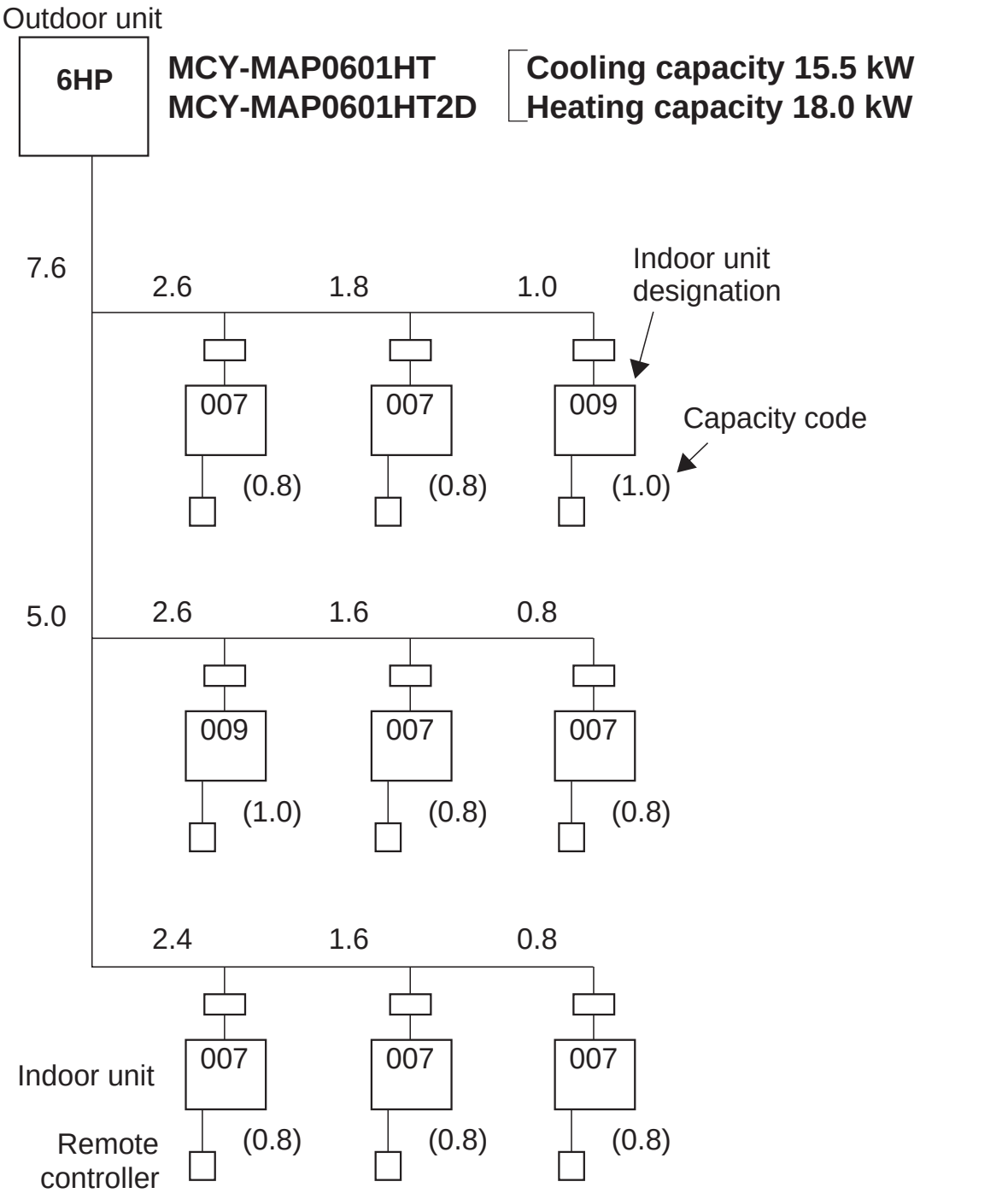
① In case of without "PMV Kit"

Reference example 3

6HP system

- **MAX.indoor unit : 9 units**
- **Capacity code of indoor unit** **Min. : 4.8** **Max.: 7.8**

Capacity code
Total : 7.6
No.of total units
9



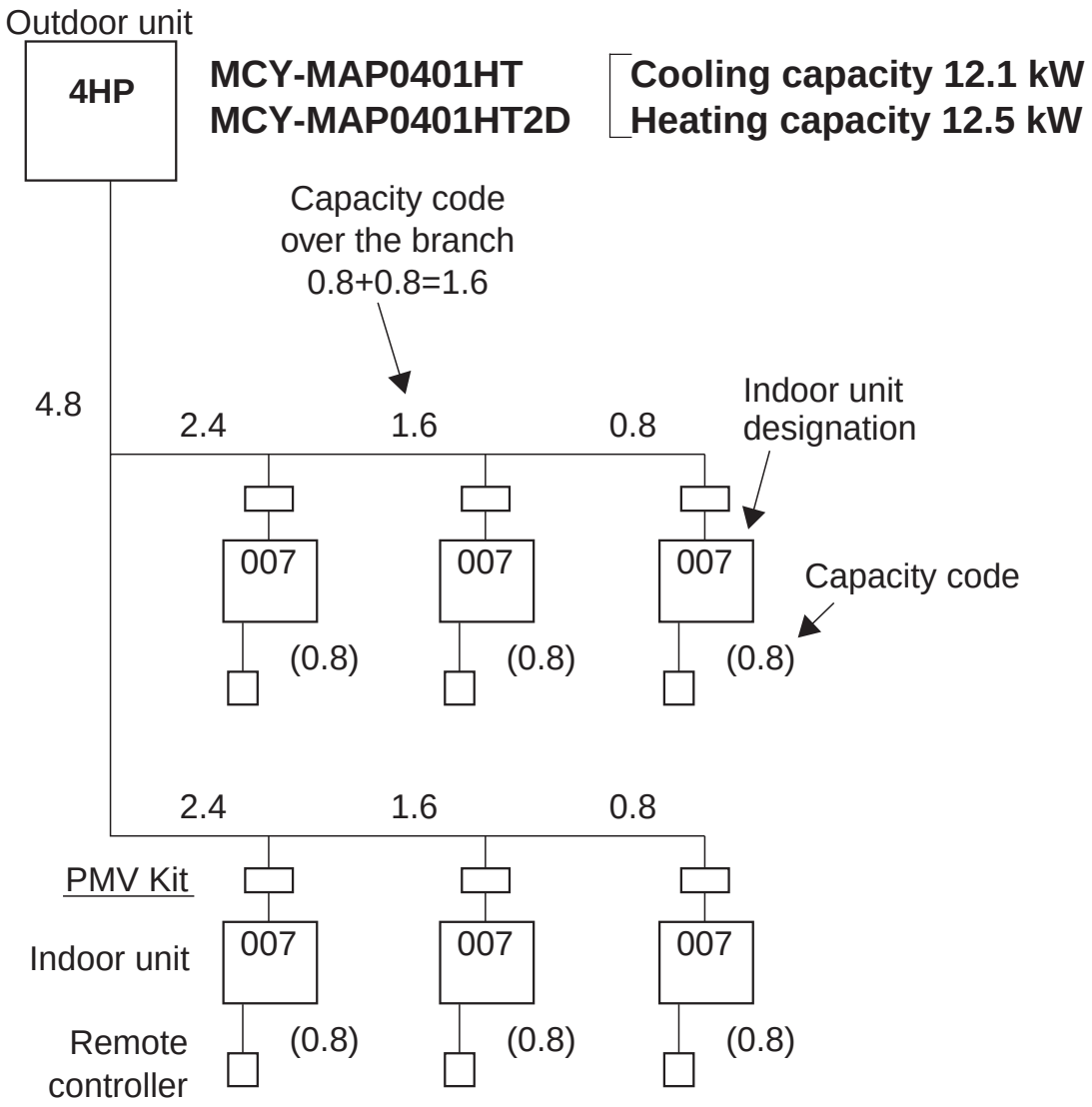
② In case of "PMV Kit"

Reference example 4

4HP system

- **MAX.indoor unit : 6 units**
- **Capacity code of indoor unit** — **Min. : 3.2**, **Max.: 5.2**

Capacity code
Total : 4.8
No.of total units
6



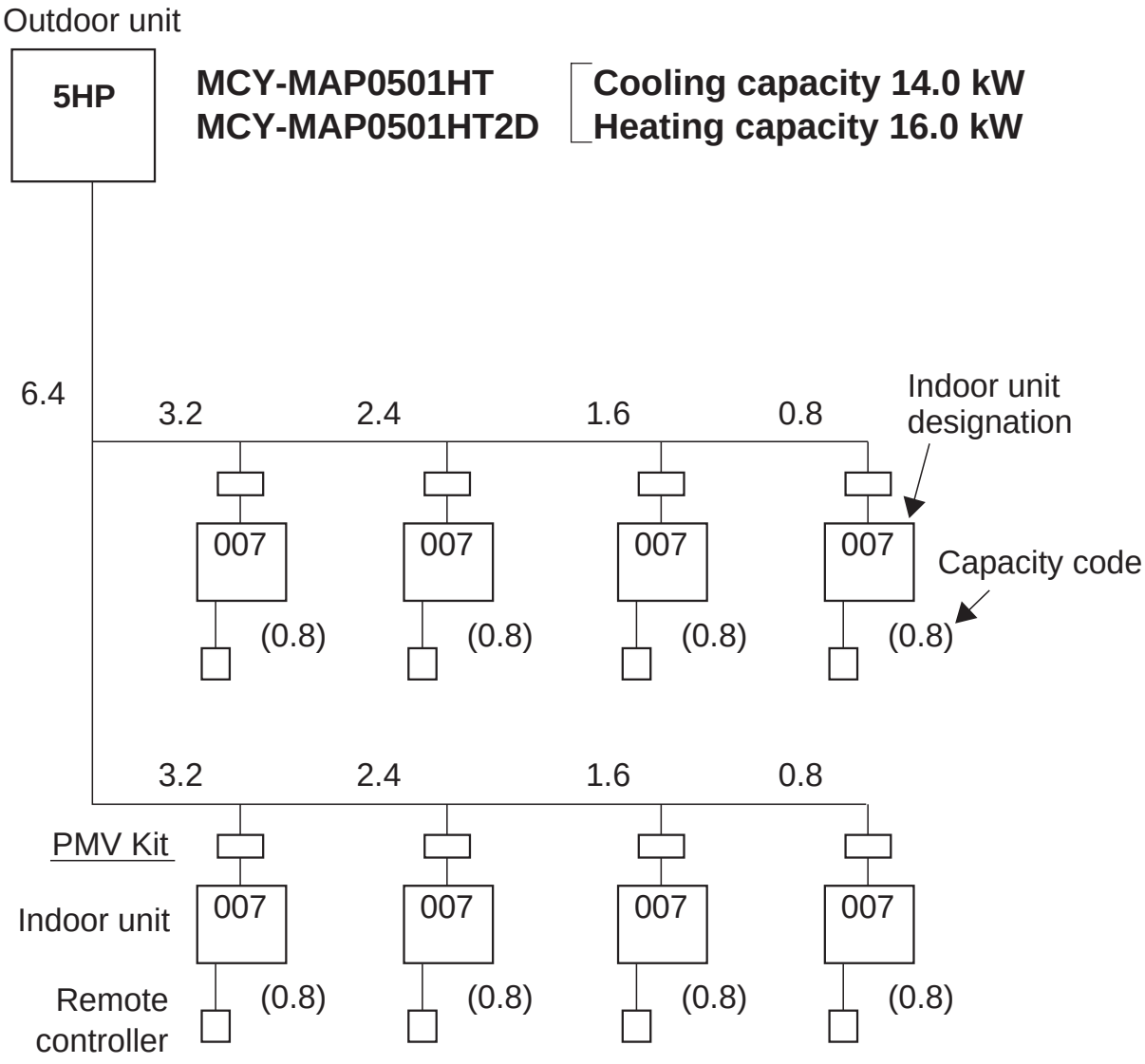
② In case of "PMV Kit"

Reference example 5

5HP system

- **MAX.indoor unit : 8 units**
- **Capacity code of indoor unit** — **Min. : 4.0**, **Max.: 6.5**

Capacity code
Total : 6.4
No.of total units
8



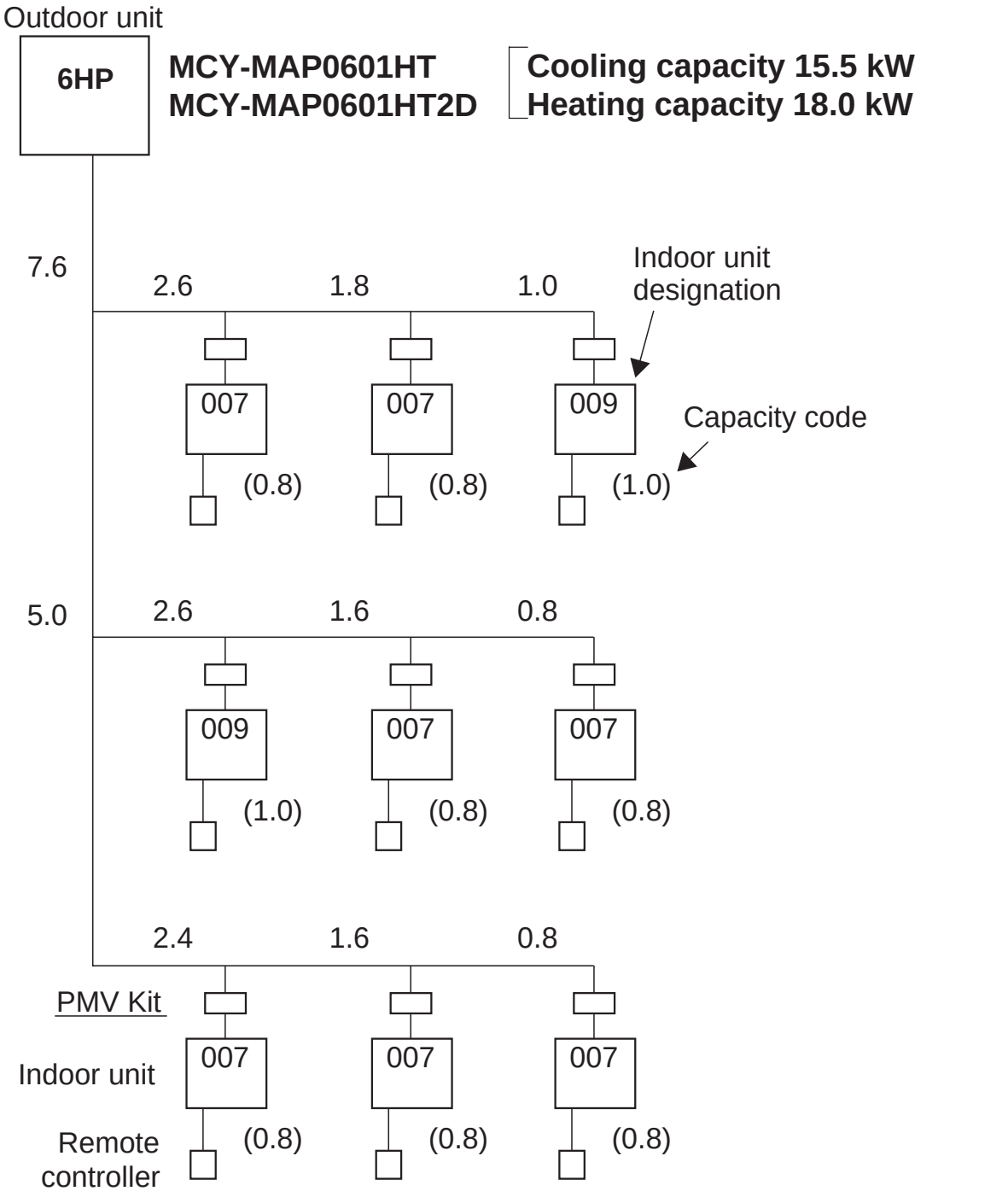
② In case of "PMV Kit"

Reference example 6

6HP system

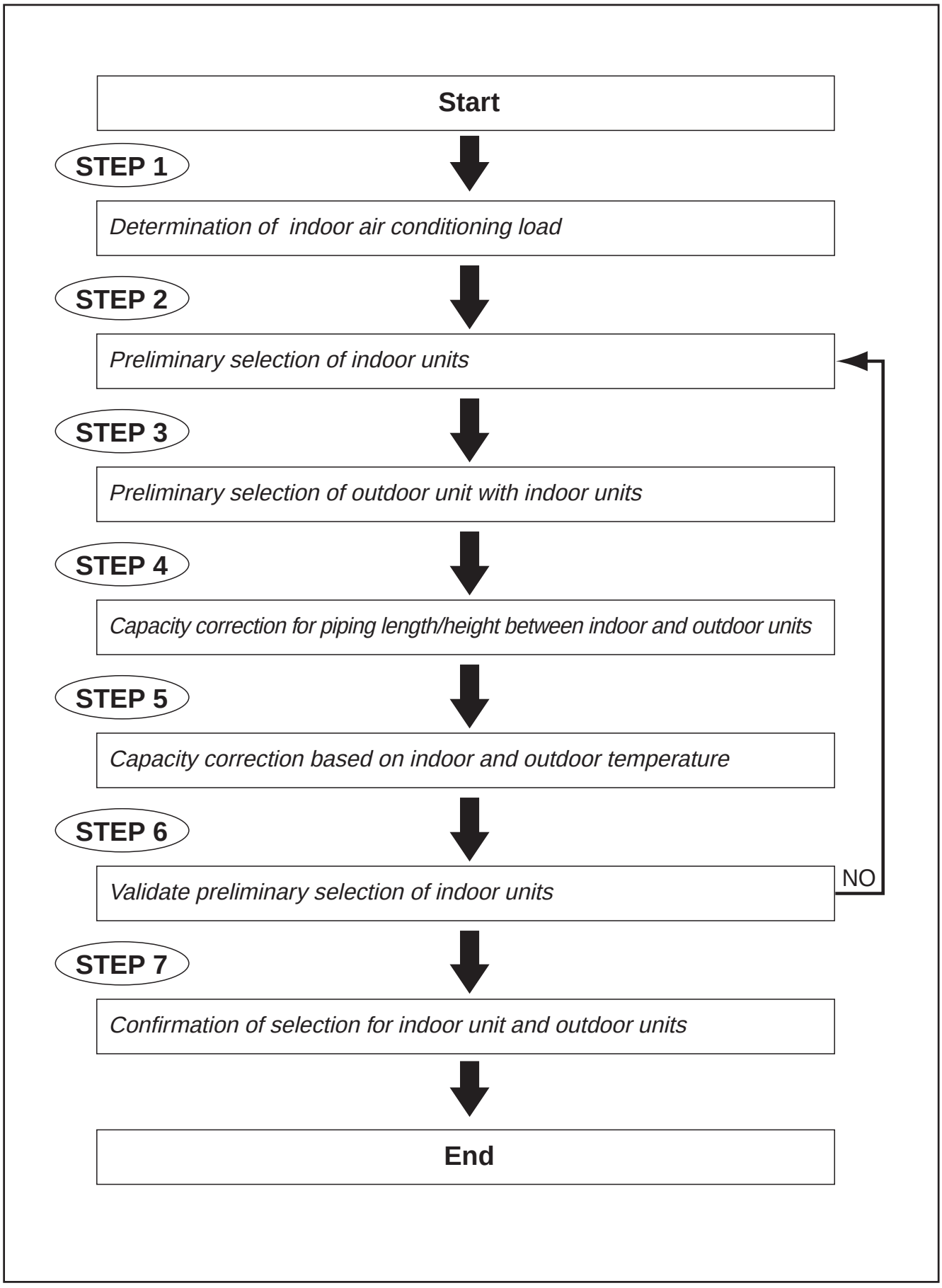
- **MAX.indoor unit : 9 units**
- **Capacity code of indoor unit** **Min. : 4.8** **Max.: 7.8**

Capacity code
Total : 7.6
No.of total units
9



1-3. Equipment selection procedure

1-3-1. Selection flow chart



1-3-2. Combination conditions for indoor unit and outdoor unit

① For indoor unit, the capacity code is decided for each capacity rank.

Capacity rank type	007	009	012	015	018	024	027	030	036	048
Capacity code	0.8	1	1.25	1.7	2	2.5	3	3.2	4	5

NOTE :

Capacity rank : Correspondence to Btu/h. Capacity code : Correspondence to Horsepower.

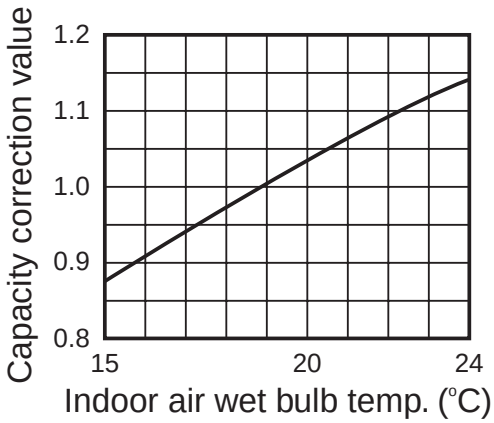
② For outdoor unit, maximum No. of connectable indoor units and total capacity code of indoor units are decided.

Outdoor unit	Capacity code of outdoor unit	Max. No. of indoor units	Total capacity code of indoor units
MCY-MAP0401HT MCY-MAP0401HT2D	4	6	3.2 to 5.2
MCY-MAP0501HT MCY-MAP0501HT2D	5	8	4.0 to 6.5
MCY-MAP0601HT MCY-MAP0601HT2D	6	9	4.8 to 7.8

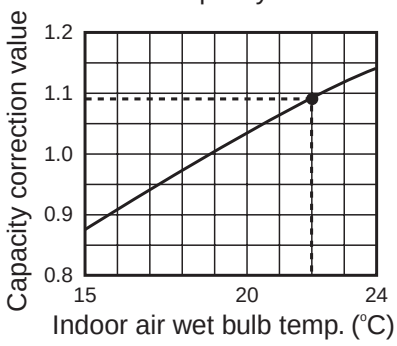
1-3-3. Cooling/heating capacity characteristics

① Cooling capacity calculation method :
Required cooling capacity = Cooling capacity x Factor (Ⅰ , Ⅱ , Ⅲ , Ⅳ , Ⅴ *1) kW

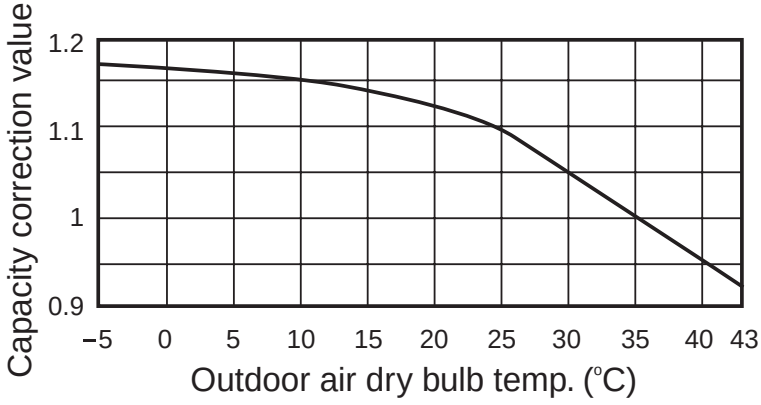
Ⅰ Indoor air wet bulb temperature vs. capacity correction value



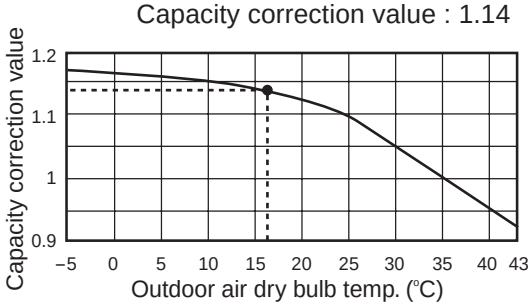
(Example)
Design Indoor conditions : 22°C WB
Capacity correction value : 1.09



Ⅱ Outdoor air dry bulb temperature vs.capacity correction value

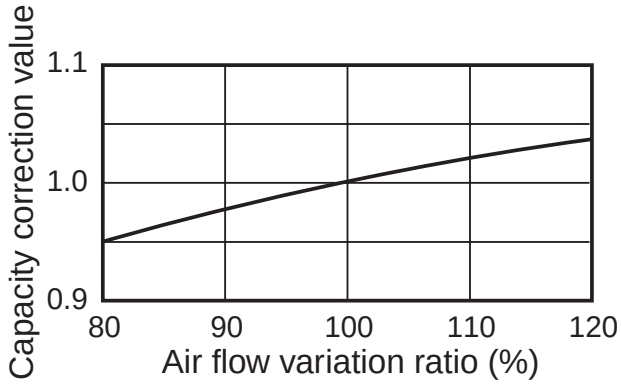


(Example)
Design Outdoor conditions : 17°C DB
Capacity correction value : 1.14

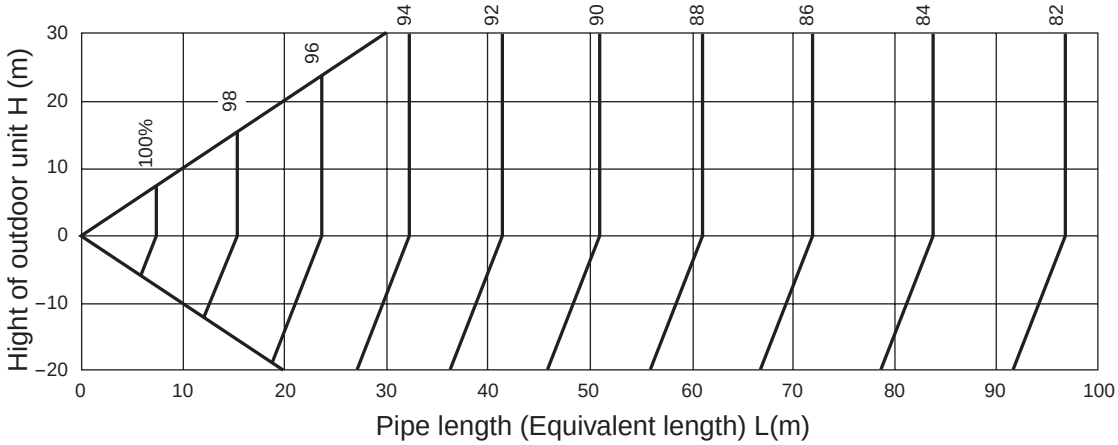


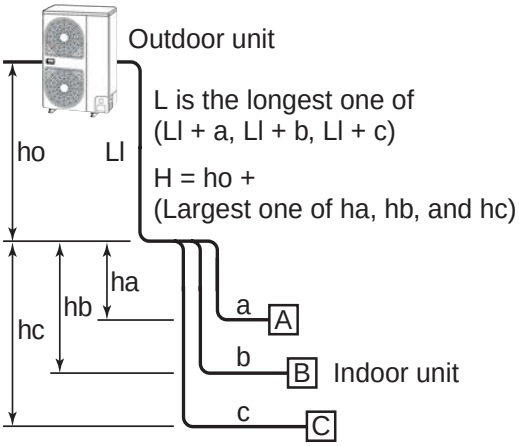
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

Ⅲ Air flow variation ratio of indoor unit vs. capacity correction (For concealed duct type only)



Ⅳ Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value



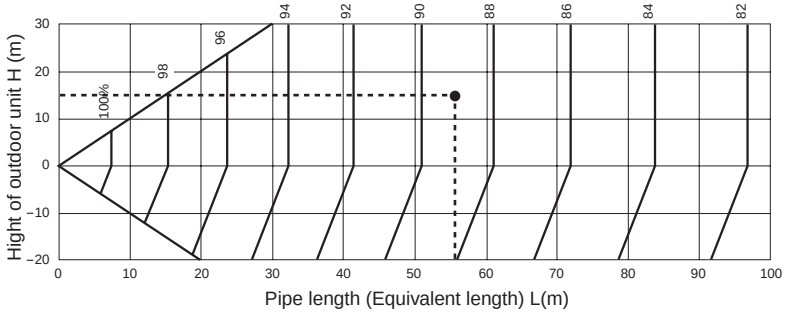


(Example)

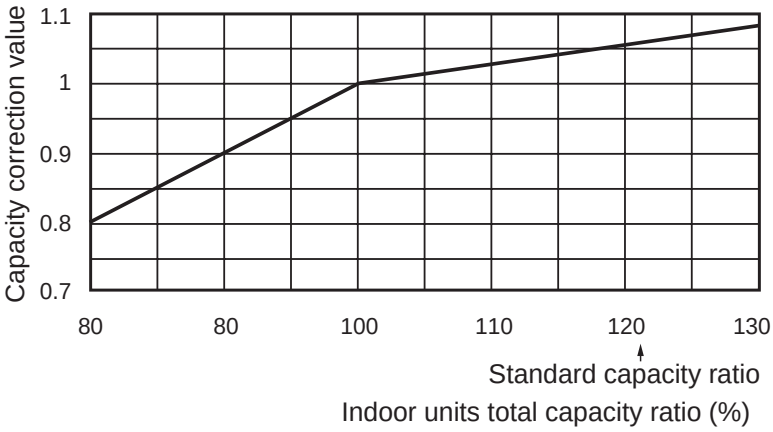
Design Pipelength : 55m

Height of outdoor unit : 15m

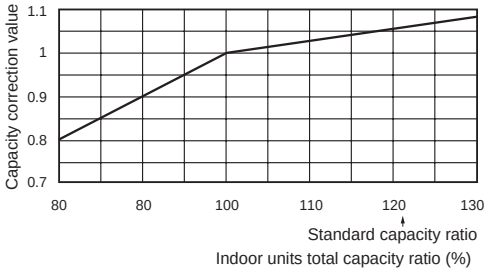
Capacity correction value : 89%



Ⅴ Correction of outdoor unit diversity

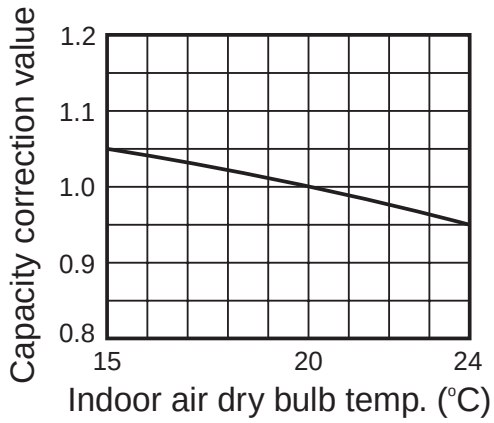


(Example)
Design Outdoor unit : 5.0HP
Indoor units total capacity : 5.5HP
(Capacity ratio : 110%)
Capacity correction value : 1.03%

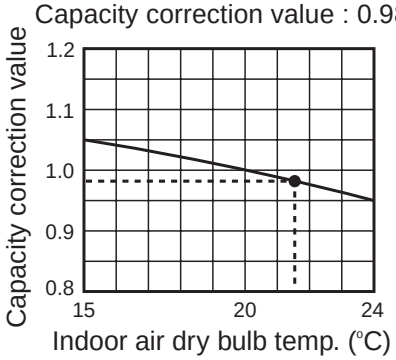


② Heating capacity calculation method :
Required heating capacity = Heating capacity x Factor (Ⅰ , Ⅱ , Ⅲ , Ⅳ , Ⅴ*1, Ⅵ*2) kW

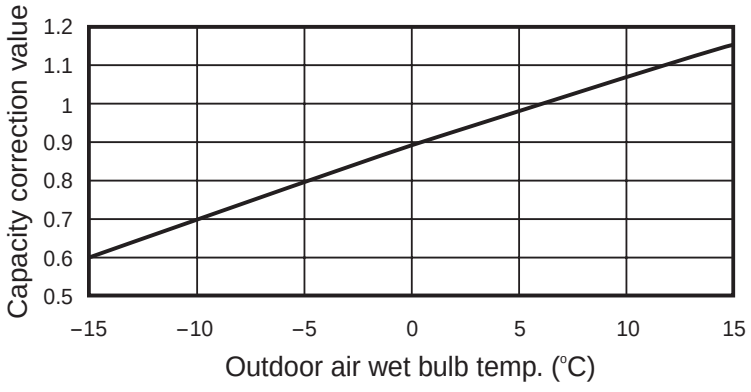
Ⅰ Indoor air dry bulb temperature vs. capacity correction value



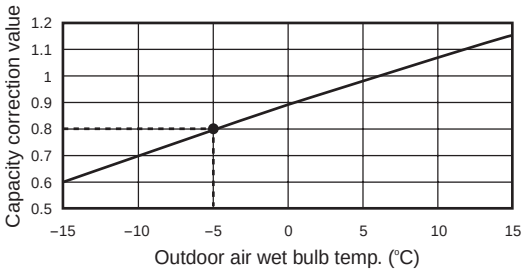
(Example)
Design Indoor conditions : 21.5°C DB
Capacity correction value : 0.98



Ⅱ Outdoor air wet bulb temperature vs. capacity correction value



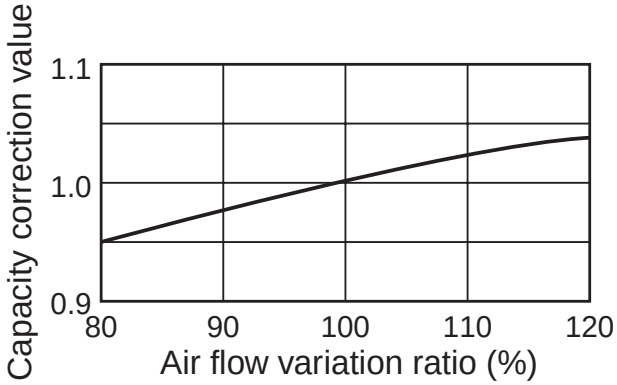
(Example)
Design Outdoor conditions : −5°C WB
Capacity correction value : 0.8



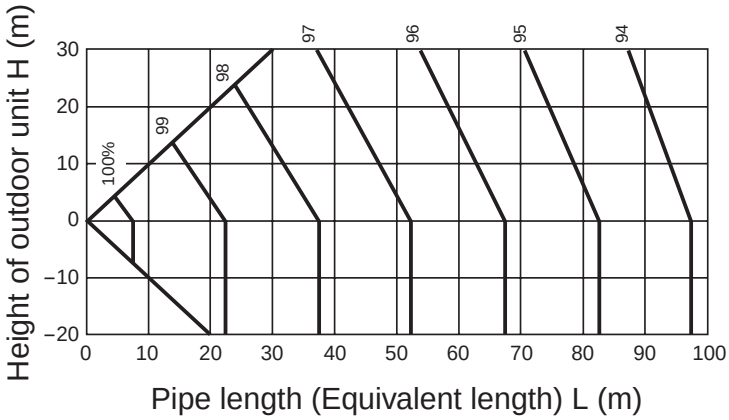
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

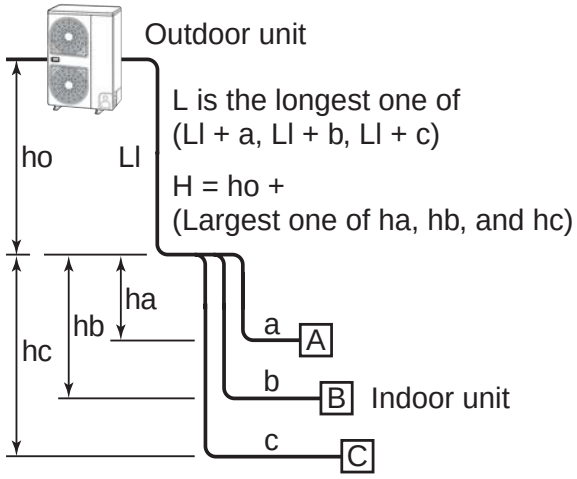
*2 : Refer to item 3.

Ⅲ Air flow variation ratio of indoor unit vs. capacity correction (For concealed duct type only)



Ⅳ Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value



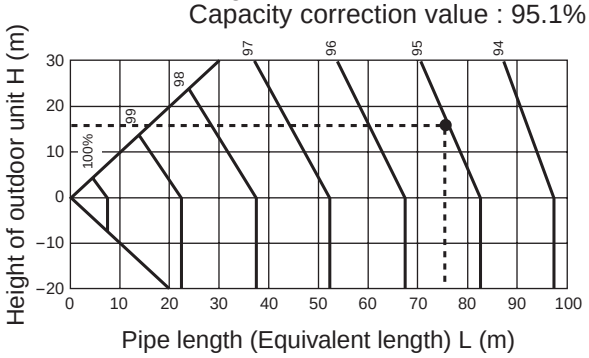


(Example)

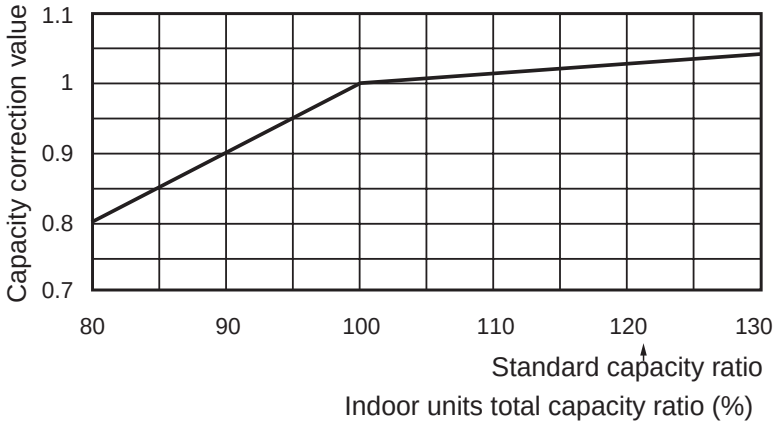
Design Pipe length : 75m

Heigh of outdoor unit : 15m

Capacity correction value : 95.1%

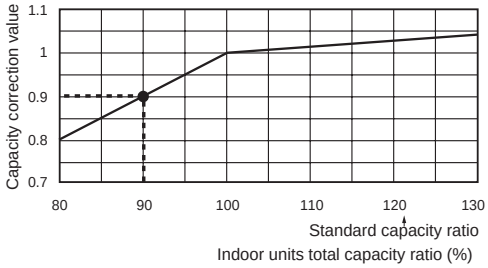


Ⅴ Correction of outdoor unit diversity



(Example)

Design Outdoor unit : 5HP
Indoor units total capacity : 4.5HP
(Capacity ratio : 90%)
Capacity correction value : 0.9%



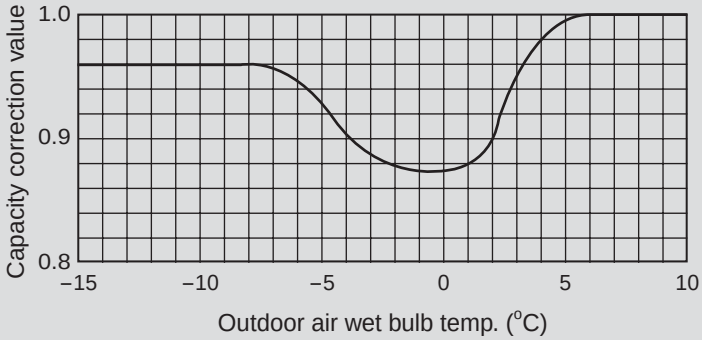
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

③ Capacity correction in case of frost on the outdoor heat exchanger in heating

Correct the heating capacity when frost was found on the outdoor heat exchanger.

Heating capacity = Capacity after correction of outdoor unit × Correction value of capacity resulted from frost
(Capacity after correction of outdoor unit : Heating capacity calculated in the above item 2.)

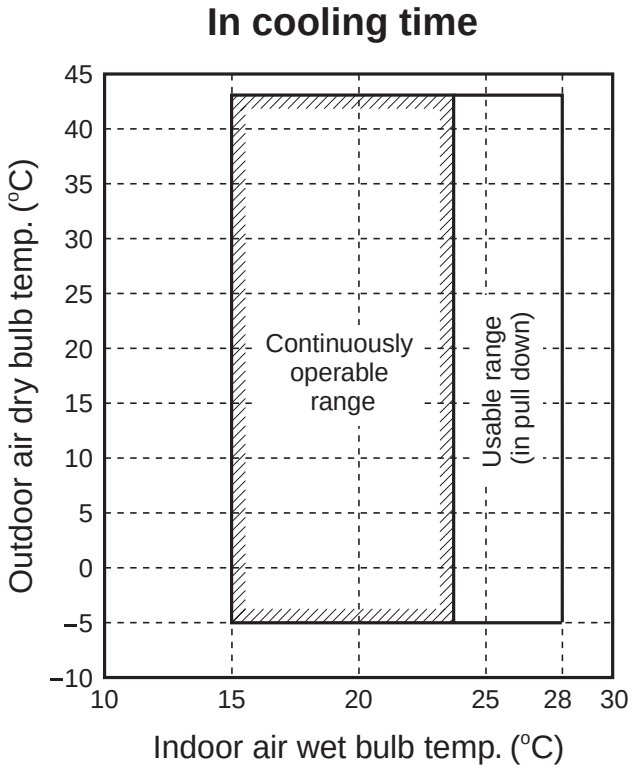
Ⅵ Capacity correction in case of frost on the outdoor heat exchanger

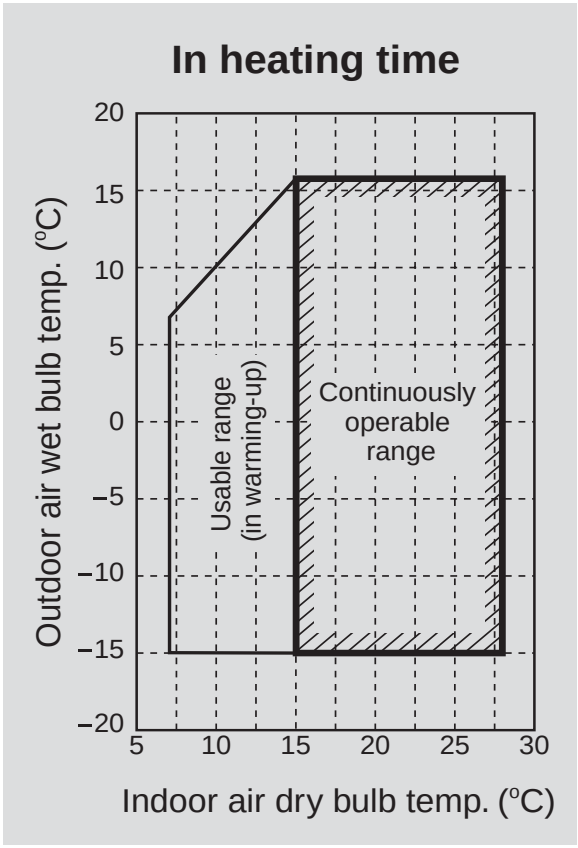


④ Capacity calculation for each indoor unit

Capacity for each indoor unit
= Capacity after correction of outdoor unit x $\frac{\text{Required standard capacity of indoor unit}}{\text{Total value of standard indoor unit capacity}}$

⑤ Operating temperature range





⑥ Rated conditions

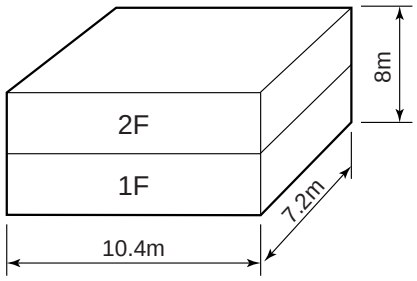
Cooling :
Indoor air temperature 27°C DB/19.0°C WB, Outdoor air temperature 35°C DB

Heating :
Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

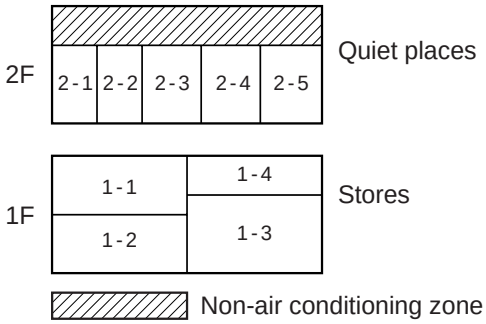
1-3-4. Example of equipment Selection

The following shows an example of equipment selection based upon a building model
Fig. 1 Overview of building model

<Outside view>



<Floor plan>



- Steel frame, reinforced concrete building, two stories above ground. Total floor area : 150m^2
  Outdoor unit is installed on the roof.
- Design indoor conditions
  Cooling : 27.0/19.0°C DB/WB, Heating : 20°C DB
- Design outdoor conditions
  Cooling : 35°C DB (Standard condition), Heating : 3°C WB (Standard condition : 6°C WB)

Selection Criteria for Each Floor

2F : Outdoor capacity exactly matches the total indoor capacity.

- Total indoor HP = Outdoor unit HP Indoor **:** 1.5 HP x 2 units + 1.25 HP + 1.0 HP+ 0.8HP = 6.05 HP
  Outdoor**:** 6 HP Same capacity

1F : Consider the increasing heat load in the specific room.

Total indoor units HP > Outdoor unit HP

- Select each indoor unit based on individual peak room load.
  Indoor : 1.0HP + 1.5HP + 2.0HP + 2.0HP =
  6.5HP ⟷ Outdoor : 6HP
- The outdoor unit should have sufficient capacity to cover the peak demand of the indoor unit

Procedure and result of equipment selection

① Procedure of equipment selection

a. Calculate cooling for every rooms.

b. Select an indoor unit to match the cooling load for every room from the table in pages.

c. Choose a tentative outdoor unit that will match with the indoor units. Perform capacity correction based on the pipe length, system lift, indoor set temperature, outdoor temperature.

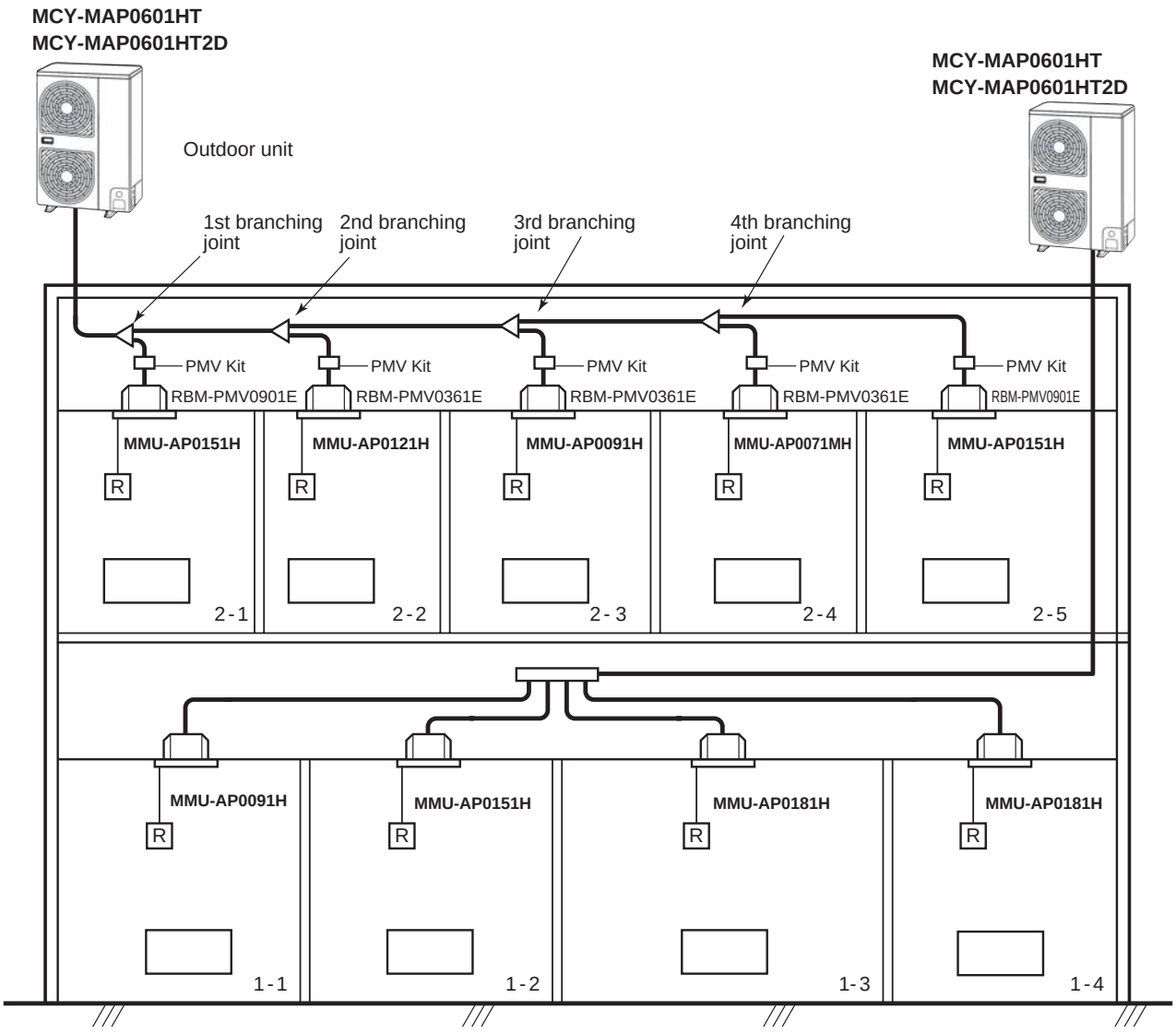
Then, make sure the corrected system cooling capacity satisfies the cooling load.

② Equipment selection and capacity check

Air conditioning load				Equipment selection						
Floor	Room No.	Indoor air conditioning load (kW)		Indoor unit			Outdoor unit			
				Model	Capacity (kW)		Model MCY-	Capacity (kW)		
		Cooling	Heating		Cooling	Heating		Cooling	Heating	
2F	2-1	**4.2**	3.4	MMU-AP0151H	**4.5**	**5.0**	MAP0601H MAP0601H2D	**15.5**	**18.0**	
	2-2	**3.3**	2.2	MMU-AP0121H	**3.6**	**4.0**				
	2-3	**2.6**	**2.5**	MMU-AP0091H	**2.8**	**3.2**				
	2-4	**2.3**	**2.3**	MMU-AP0071MH	**2.2**	**2.5**				
	2-5	**4.1**	**4.0**	MMU-AP0151H	**4.5**	**5.0**				
1F	1-1	**2.6**	**2.3**	MMU-AP0091H	**2.8**	**3.2**	MAP0601H MAP0601H2D	**15.5**	**18.0**	
	1-2	**4.1**	**3.8**	MMU-AP0151H	**4.5**	**5.0**				
	1-3	**5.1**	**4.9**	MMU-AP0181H	**5.6**	**6.3**				
	1-4	**5.1**	**3.7**	MMU-AP0181H	**5.6**	**6.3**				

Piping distance				Capacity correction		Capacity check after correction		
Floor	Room No.	Equivalent length (m)	Height difference (m)	Pipe correction x temp. correction		Capacity		Judgment
						Capacity (kW)		
				Cooling	Heating	Cooling	Heating	
2F	2-1	**23**	5	1.0 x 1.0 x 0.96 =0.96	1.0 x 0.95 x 0.99 x 0.95 =0.89	**4.3**	**4.4**	good
	2-2					**3.4**	**3.5**	
	2-3					**2.6**	**2.8**	
	2-4					**2.4**	**2.4**	
	2-5					**4.3**	**4.4**	
1F	1-1	**42**		1.0 x 1.0 x 1.03 x 0.92 =0.94	1.0 x 0.95 x 0.975 x 1.03 x 0.95 =0.90	**2.6**	**2.9**	
	1-2					**4.2**	**4.5**	
	1-3					**5.2**	**5.6**	
	1-4					**5.2**	**5.6**	

③ Schematic diagram

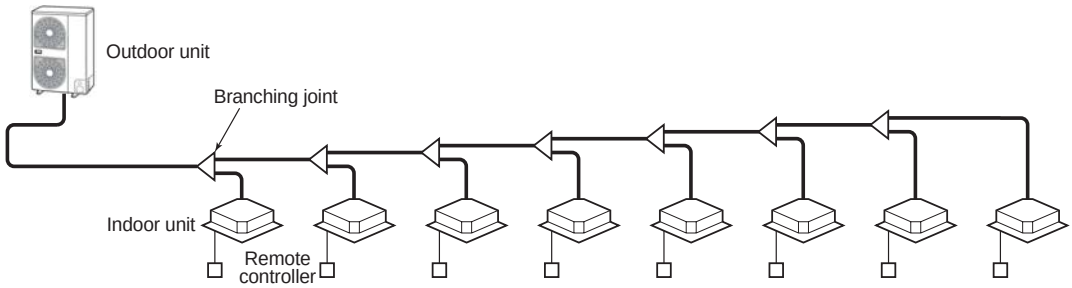
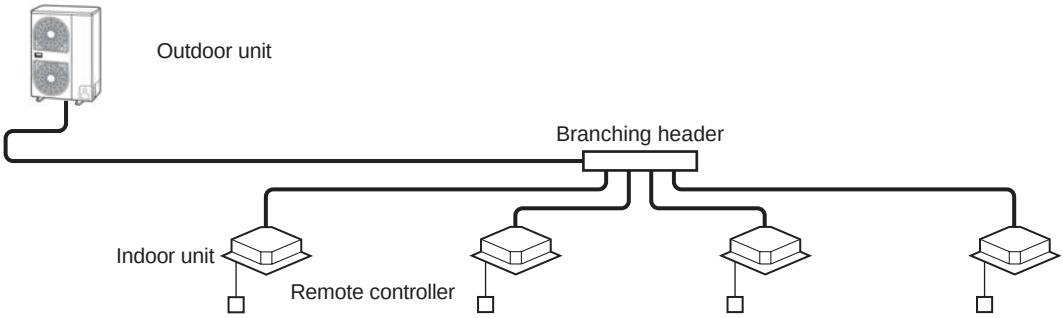
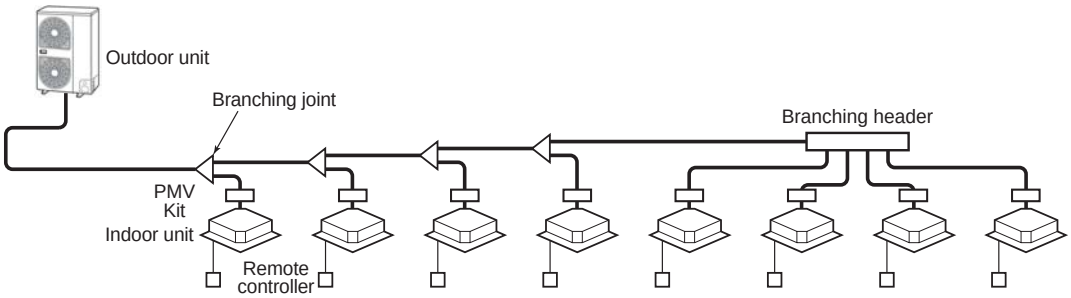
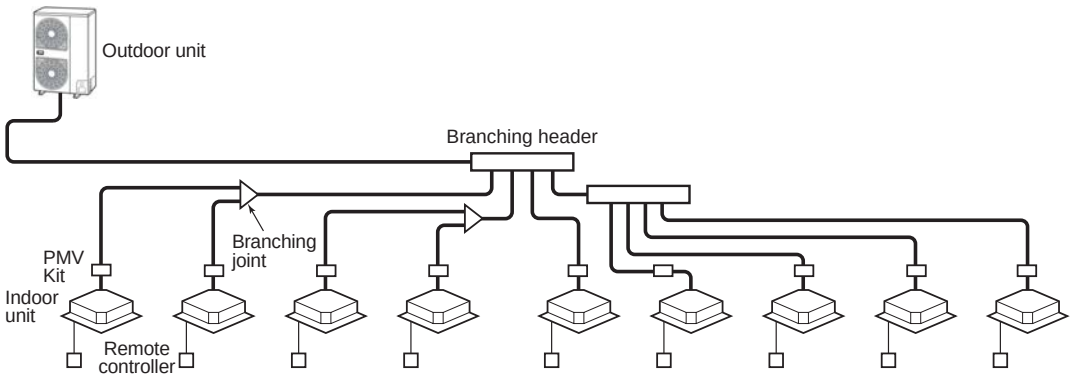


1-4. Piping requirement

1-4-1. Free branching system

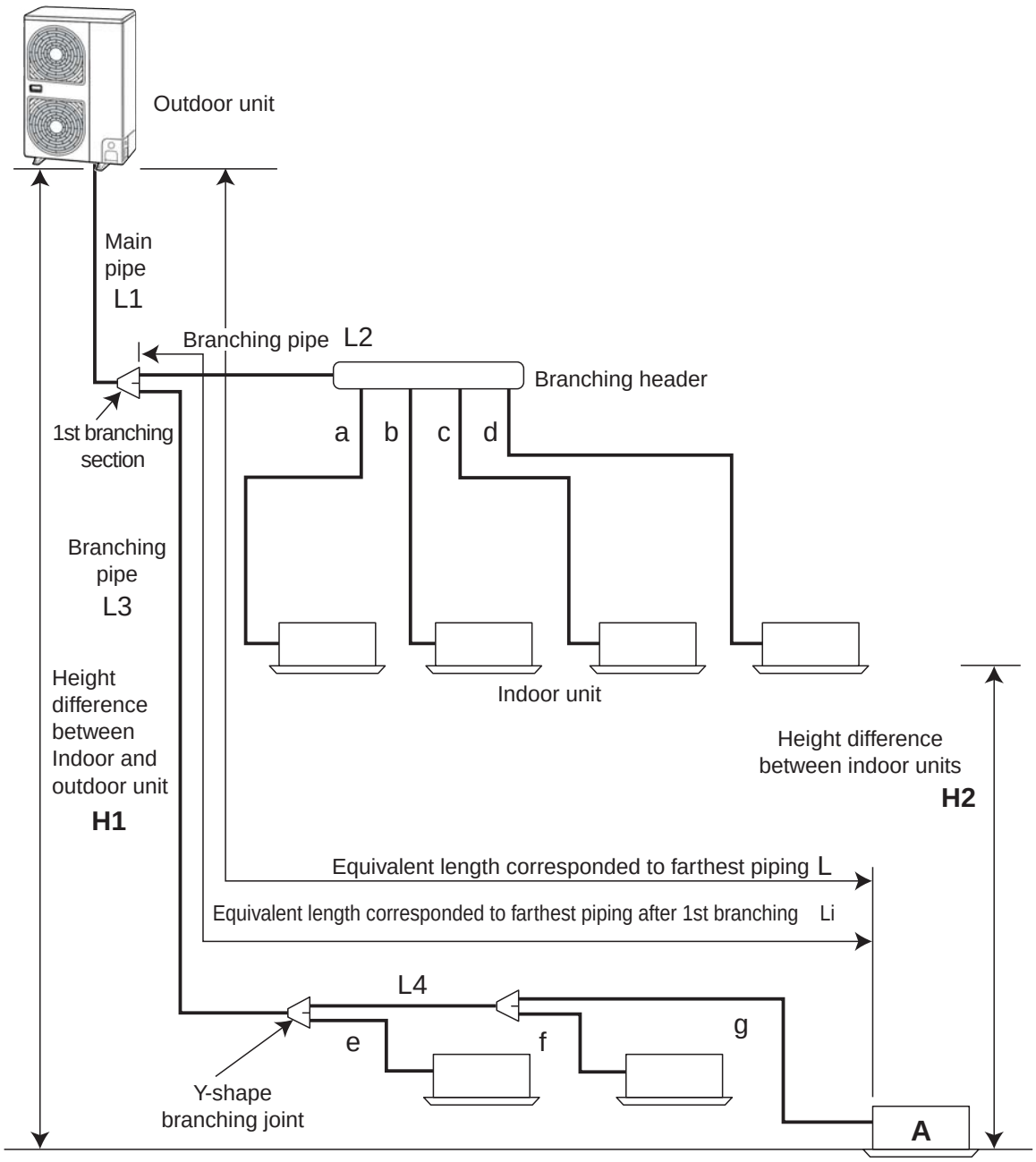
① Line branching system
② Header branching system
③ Header branching system after line branching
④ Line branching system after header branching
⑤ Header branching system after header branching

The above five branching systems are available to dramatically increase the flexibility of refrigerant piping design.

Line branching system	
Header branching system	
Header branching system after line branching	* In case of "PMV Kit" 
Line branching system after header branching Header branching system after header branching	* In case of "PMV Kit" 

1-4-2. Refrigerant piping length and piping size

① Allowable length and height difference of refrigerant piping



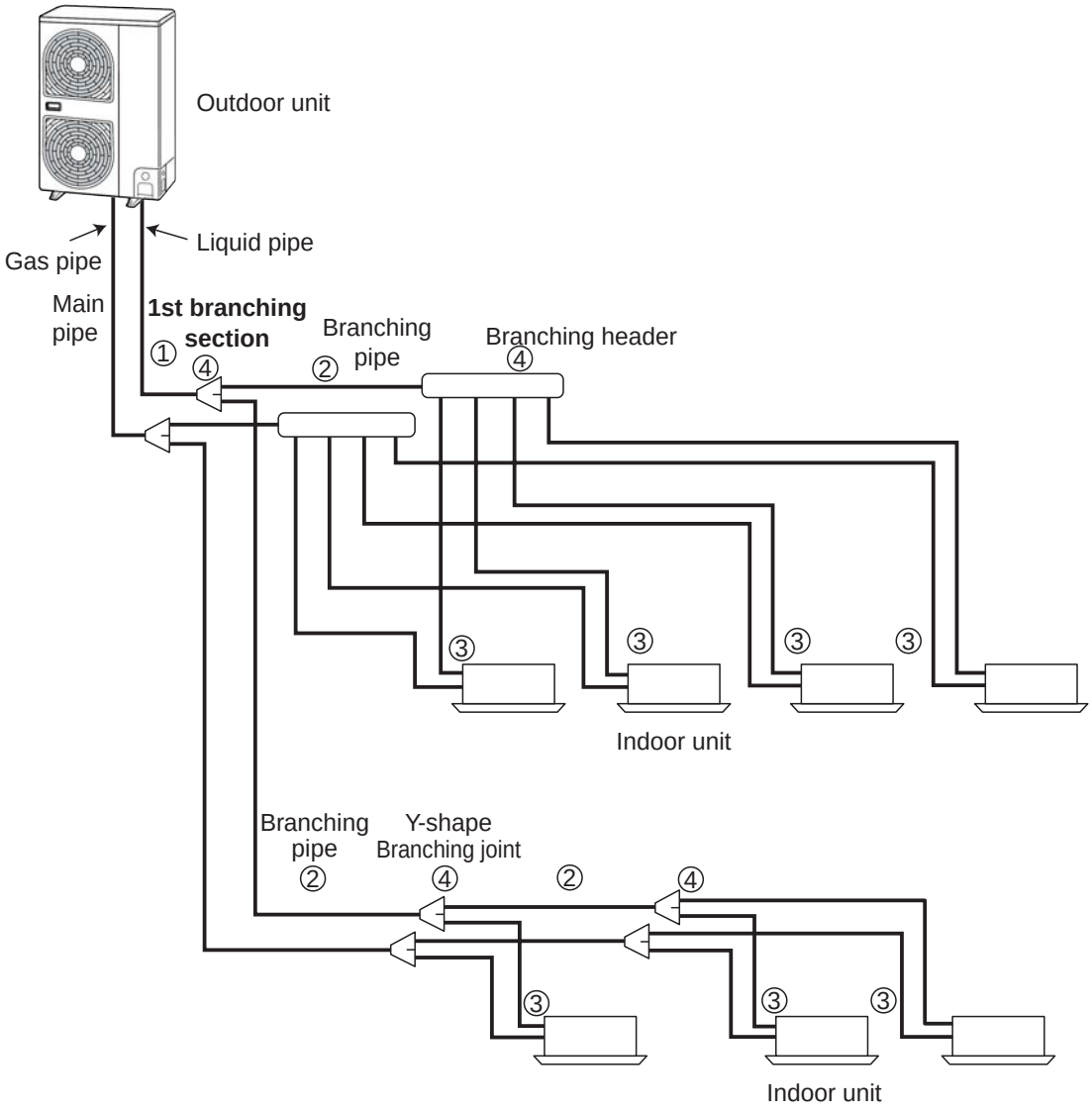
① Allowable length and height difference of refrigerant piping

			Allowable value	Piping section
Piping Length	Total extension of pipe (Liquid pipe, real length)		180m	L1+L2+L3+L4+ a+b+c+d+e+f+g
	Furthest piping length **L** (*1)	Real length	100m	L1+L3+L4+g
		Equivalent length	125m	
	Max.equivalent length of main pipe		65m	L1
	Equivalent length of furthest piping from 1st branching **Li** (*1)		35m	L3+L4+g
	Max.real length of indoor unit connecting pipe		15m	a, b, c, d, e, f, g
Height Difference	Height between indoor and outdoor units **H1**	Upper outdoor unit	30m	—
		Lower outdoor unit	20m	—
	Height between indoor units **H2**		15m	—

*1 Furthest indoor unit from 1st branch to be named "A"

1-4-2. Refrigerant piping length and piping size

② Selection of refrigerant piping



② Selection of refrigerant piping

<table>
<tr><th>No.</th><th>Piping parts</th><th>Name</th><th>Selection of pipe size</th></tr>
<tr><td>①</td><td>Outdoor unit
↓
1st branching section</td><td>Main pipe</td><td>Size of main pipe
<table>
<tr><th>Outdoor unit capacity type</th><th>Gas pipe (mm)</th><th>Liquid pipe (mm)</th></tr>
<tr><td>0401 type</td><td>15.9</td><td>9.5</td></tr>
<tr><td>0501 type</td><td>15.9</td><td>9.5</td></tr>
<tr><td>0601 type</td><td>19.1</td><td>9.5</td></tr>
</table></td></tr>
<tr><td>②</td><td>Branching section
↓
Branching section</td><td>Branching pipe</td><td>Pipe size between branching sections
<table>
<tr><th>Total capacity codes of indoor units at down stream side
Equivalent to HP</th><th>Gas pipe (mm)</th><th>Liquid pipe (mm)</th></tr>
<tr><td>Below 2.8</td><td>12.7</td><td>9.5</td></tr>
<tr><td>2.8 to below 6.4</td><td>15.9</td><td>9.5</td></tr>
<tr><td>6.4 to below 7.2</td><td>19.1</td><td>9.5</td></tr>
</table>
Note) If the total capacity code value of indoor units exceeds that of the outdoor units, apply the capacity code of outdoor units.</td></tr>
<tr><td>③</td><td>Branching section
↓
Indoor unit</td><td>Indoor unit
connecting pipe</td><td>Connecting pipe size of indoor unit
<table>
<tr><th>Indoor unit capacity type</th><th>Gas pipe (mm)</th><th>Liquid pipe (mm)</th></tr>
<tr><td>007, 009, 012 type</td><td>9.5</td><td>6.4</td></tr>
<tr><td>015, 018 type</td><td>12.7</td><td>6.4</td></tr>
<tr><td>024, 030, 036, 048 type</td><td>15.9</td><td>9.5</td></tr>
</table></td></tr>
<tr><td>④</td><td>Branching section</td><td>Y-shape branching joint
Branching header</td><td>Selection of branching section
<table>
<tr><th colspan="2" rowspan="2"></th><th>Total capacity codes of indoor units at down stream side
Equivalent to HP</th><th>Model name</th></tr>
<tr><td colspan="2">Y-shape branching joint</td><td>Below 7.8</td><td>RBM-BY53E</td></tr>
<tr><td rowspan="2">Branching header *1</td><td>For 4 branches</td><td>Below 7.8</td><td>RBM-HY1043E</td></tr>
<tr><td>For 8 branches</td><td>Below 7.8</td><td>RBM-HY1083E</td></tr>
</table>
Note) *1 : For 1 line after branching header indoor units with a maximum capacity code of 6.0 in total can be connected.</td></tr>
</table>

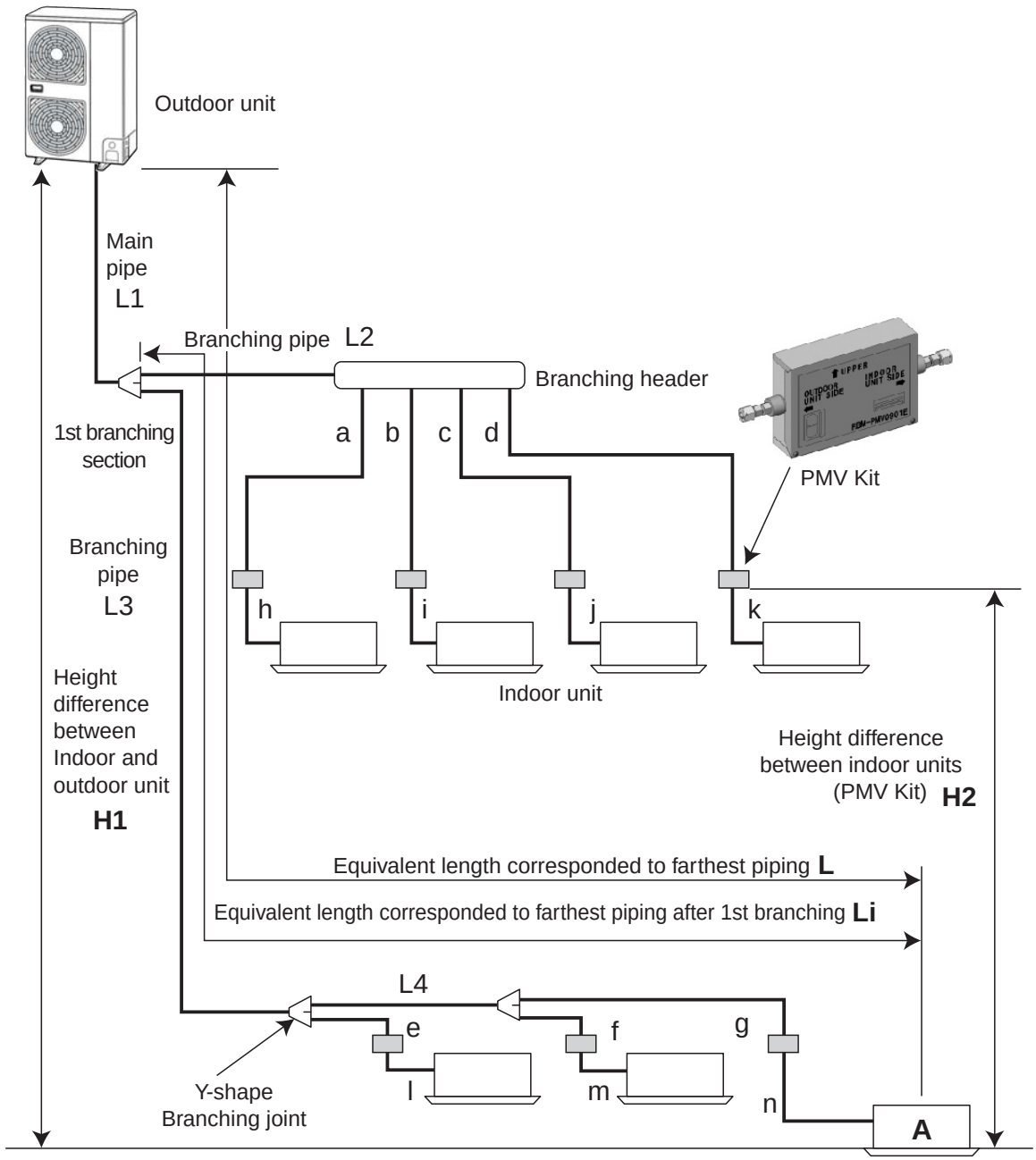
Minimum wall thickness for R410A application

Soft	Harf Hard or Hard	OD (inch)	OD (mm)	Minimum wall thickness (mm)
OK	OK	1/4"	6.35	0.80
OK	OK	3/8"	9.52	0.80
OK	OK	1/2"	12.70	0.80
OK	OK	5/8"	15.88	1.00
NG*	OK	3/4"	19.05	1.00

*If the pipe size is ϕ19.0 or more, use a suitable material.

1-4-3. Refrigerant piping length and piping size with PMV Kit

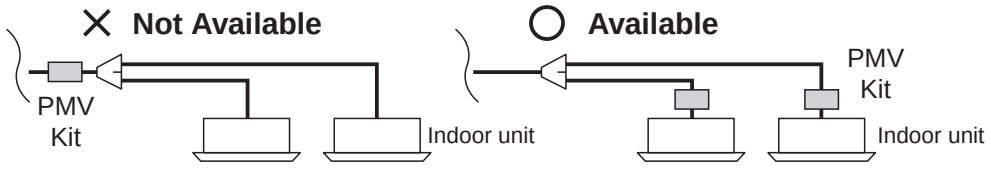
① Allowable length and height difference of refrigerant piping



① Allowable length and height difference of refrigerant piping

			Allowable value	Piping section
Piping Length	Total extension of pipe (Liquid pipe, real length)		150m	L1+L2+L3+L4+ a+b+c+d+e+f+g+ h+i+j+k+l+m+n
	Furthest piping length **L** (*1)	Real length	65m	L1+L3+L4+g+n
		Equivalent length	80m	
	Max.equivalent length of main pipe		50m	L1
	Equivalent length of furthest piping from 1st branching **Li** (*1)		15m	L3+L4+g+n
	Max.real length of indoor unit connecting pipe		15m	a+h, b+i, c+j, d+k, e+l, f+m, g+n
	Real length between PMV Kit and indoor unit		2m or more and up to 10m	h, i, j, k, l, m, n
Height Difference	Height between indoor and outdoor unit **H1**	Upper outdoor unit	30m	—
		Lower outdoor unit	20m	—
	Height between indoor units (PMV Kit) **H2** Height difference between highest indoor unit or PMV Kit and lowest indoor unit or PMV Kit shall be 15m or less		15m	—

*1 Furthest indoor unit from 1st branch to be named "A"

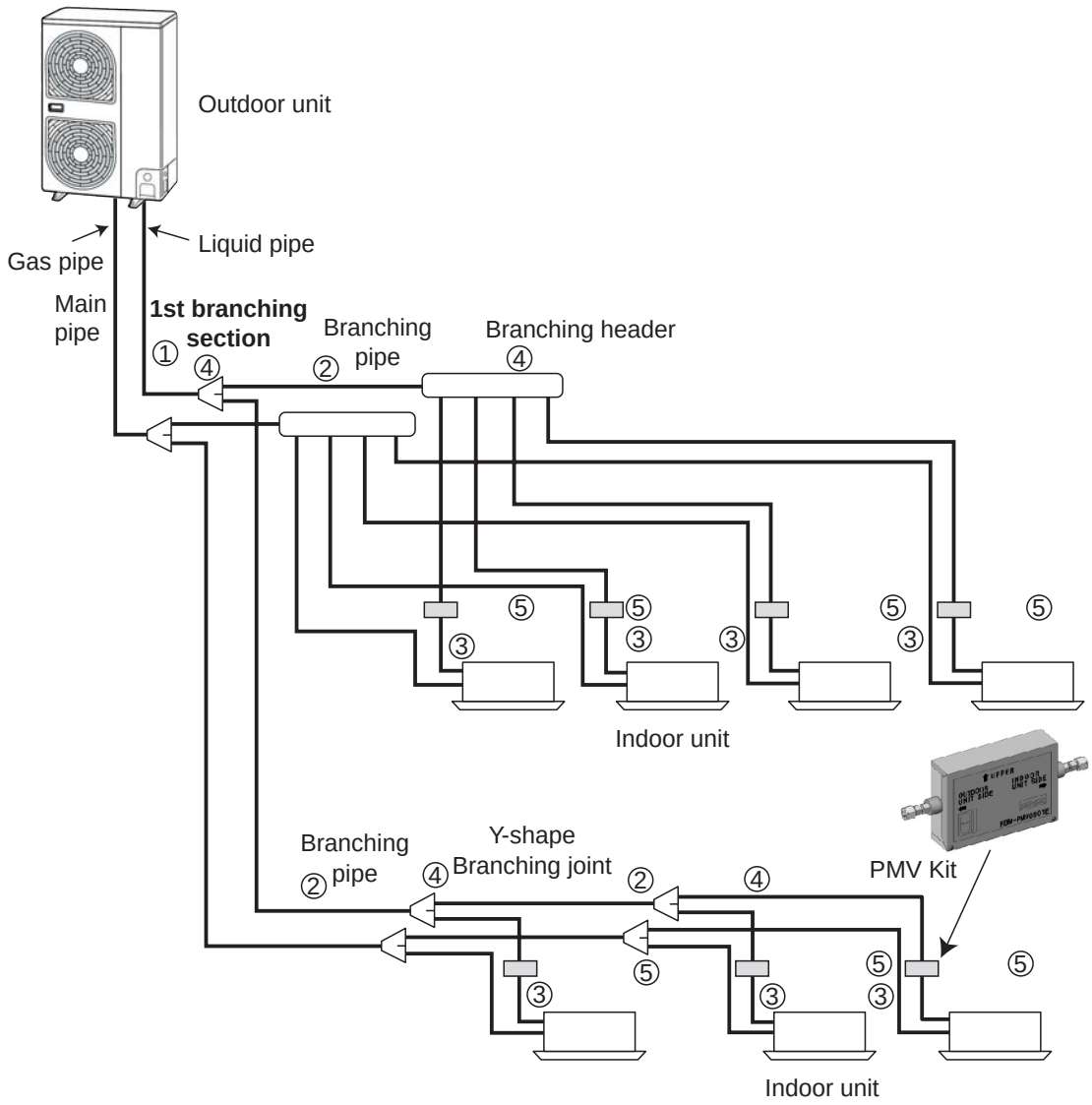


NOTE

Don't connect two or more indoor units to one PMV Kit. Arrange one indoor unit and one PMV Kit set to 1 by 1.

1-4-3. Refrigeran piping length and piping size with PMV Kit

② Selection of refrigerant piping



② Selection of refrigerant piping

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<tr><th>No.</th><th>Piping parts</th><th>Name</th><th>Selection of pipe size</th></tr>
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Note) If the total capacity code value of indoor units exceeds that of the outdoor units, apply the capacity code of outdoor units.</td></tr>
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<tr><td>④</td><td>Branching section</td><td>Y-shape branching joint
Branching header</td><td>Selection of branching section
<table>
<tr><th colspan="2" rowspan="2"></th><th>Total capacity codes of indoor units at down stream side
Equivalent to HP</th><th>Model name</th></tr>
<tr><td colspan="2">Y-shape branching joint</td><td>Below 7.8</td><td>RBM-BY53E</td></tr>
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<tr><td>For 8 branches</td><td>Below 7.8</td><td>RBM-HY1083E</td></tr>
</table>
Note) *1 : For 1 line after branching header indoor units with a maximum capacity code of 6.0 in total can be connected.</td></tr>
<tr><td>⑤</td><td>PMV Kit</td><td>PMV Kit</td><td>Selection of PMV Kit
<table>
<tr><th>Indoor unit capacity type</th><th>Model name</th></tr>
<tr><td>007, 009, 012 type</td><td>RBM-PMV0361E</td></tr>
<tr><td>015, 018, 024 type</td><td>RBM-PMV0901E</td></tr>
</table></td></tr>
</table>

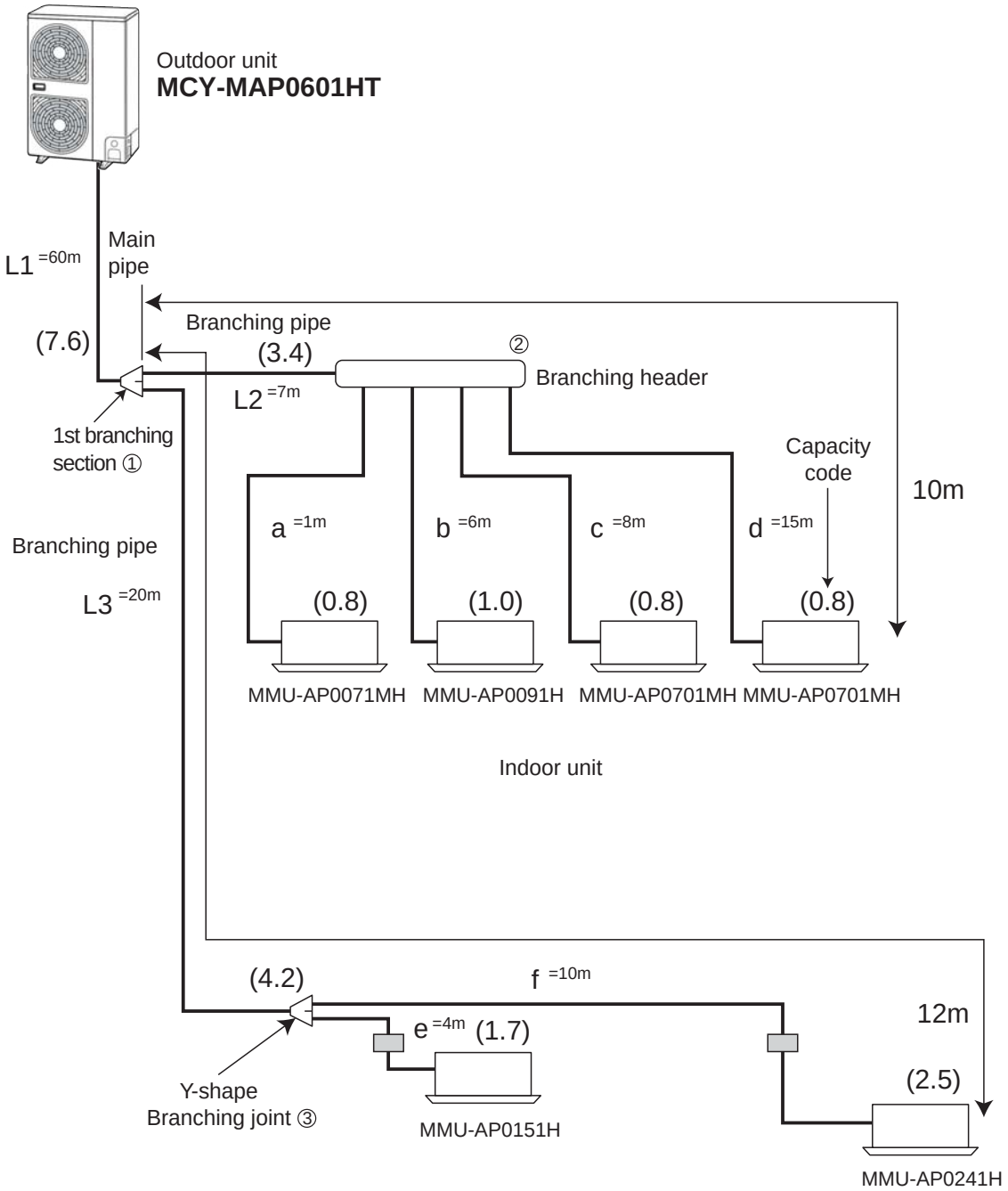
Minimum wall thickness for R410A application

Soft	Harf Hard or Hard	OD (inch)	OD (mm)	Minimum wall thickness (mm)
OK	OK	1/4"	6.35	0.80
OK	OK	3/8"	9.52	0.80
OK	OK	1/2"	12.70	0.80
OK	OK	5/8"	15.88	1.00
NG*	OK	3/4"	19.05	1.00

*If the pipe size is φ19.0 or more, use a suitable material as detailed in the installation manual.

1-4-4. Refrigerant piping example

① In case of without "PMV Kit"



• Piping size

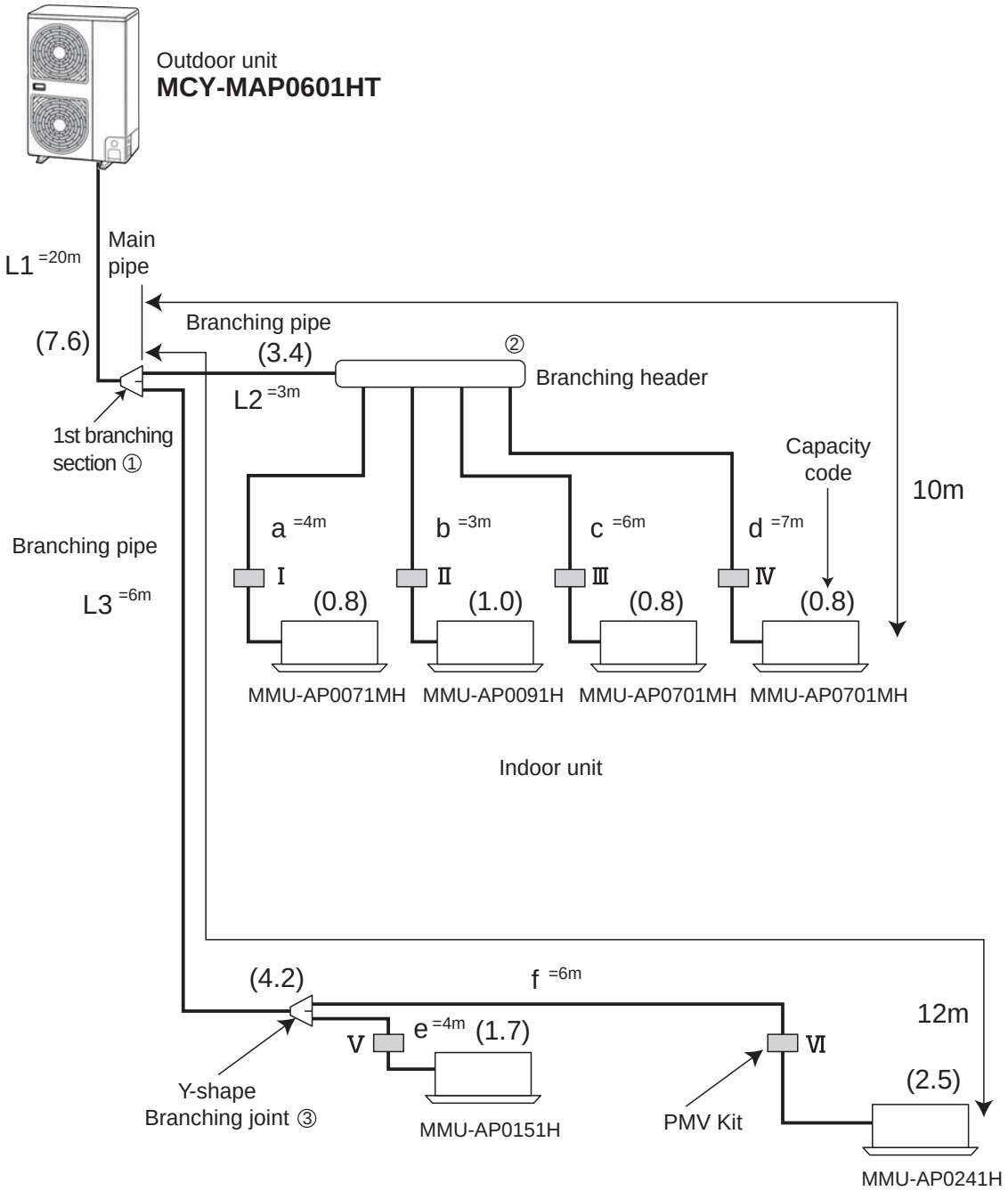
Mark	Equivalent length (m)	Seclection method (capacity code)	Gas pipe (mm)	Liquid pipe (mm)
L1	60	————	ϕ19.1	ϕ9.5
L2	7	0.8 + 1.0 + 0.8 + 0.8 = 3.4	ϕ15.9	ϕ9.5
L3	20	1.7 + 2.5 = 4.2	ϕ15.9	ϕ9.5
a	1	0.8	ϕ9.5	ϕ6.4
b	6	1.0	ϕ9.5	ϕ6.4
c	8	0.8	ϕ9.5	ϕ6.4
d	15	0.8	ϕ9.5	ϕ6.4
e	4	1.7	ϕ12.7	ϕ6.4
f	10	2.5	ϕ15.9	ϕ9.5

• Y-shape branching joint and Header

Mark		Y-joint or Header select (capacity code)	Model name
①	1st branching	6 (capacity code of outdoor unit)	RBM-BY53E
②	Branch header	0.8 +1.0 +0.8 +0.8 = 3.4 (a+b+c+d=L2)	RBM-HY1043E
③	Y-shape branch joint	1.7 + 2.5 = 4.2 (e+f=L3)	RBM-BY53E

1-4-4. Refrigerant piping example

② In cace of PMV Kit



• Piping size

Mark	Equivalent length (m)	Seclection method (capacity code)	Gas pipe (mm)	Liquid pipe (mm)
L1	20	————————	ϕ19.1	ϕ9.5
L2	3	0.8 + 1.0 + 0.8 + 0.8 = 3.4	ϕ15.9	ϕ9.5
L3	6	1.7 + 2.5 = 4.2	ϕ15.9	ϕ9.5
a	4	0.8	ϕ9.5	ϕ6.4
b	3	1.0	ϕ9.5	ϕ6.4
c	6	0.8	ϕ9.5	ϕ6.4
d	7	0.8	ϕ9.5	ϕ6.4
e	4	1.7	ϕ12.7	ϕ6.4
f	6	2.5	ϕ15.9	ϕ9.5

• Y-shape branching joint and Header

Mark		Y-joint or Header select (capacity code)	Model name
①	1st branching	6 (capacity code of outdoor unit)	RBM-BY53E
②	Branch header	0.8 +1.0 +0.8 +0.8 = 3.4 (a+b+c+d=L2)	RBM-HY1043E
③	Y-shape branch joint	1.7 + 2.5 = 4.2 (e+f=L3)	RBM-BY53E

• PMV Kit

Mark	PMV Kit select (capacity code)	Model name
Ⅰ	0.8	RBM-PMV0361E
Ⅱ	1.0	RBM-PMV0361E
Ⅲ	0.8	RBM-PMV0361E
Ⅳ	0.8	RBM-PMV0361E
Ⅴ	1.7	RBM-PMV0901E
Ⅵ	2.5	RBM-PMV0901E

1-4-5. Charging requirement with additional refrigerant

After the system has been vacuumed,replace the vacuum pump with a refrigerant cylinder and charge the system with additional refrigerant.

HFC
R410A

Calculating the amount of additional refrigerant required

(Calculation)
Additional refrigerant charge amount is calculated from size of liquid pipe at site and its real length.

Additional refrigerant charge amount at site R (kg) = **Real length of liquid pipe** X **Additional refrigerant charge amount per liquid pipe 1m (Table 1)** + **Compensation by outdoor HP (Table 2)**

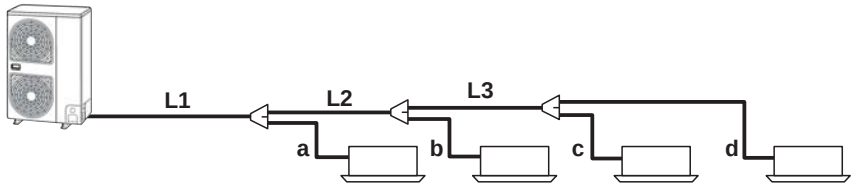
Table 1

Pipe dia. at liquid side	ϕ6.4	ϕ9.5
Additional refrigerant amount/1m (kg)	0.025	0.055

Table 2

Outdoor unit capacity type	0401 type	0501 type	0601 type
Compensation by outdoor HP (kg)	−0.8	−0.4	0

Example :
(0501 type)



L1	ϕ9.5 : 10m	L2	ϕ9.5 : 10m	L3	ϕ9.5 : 5m	a	ϕ9.5 : 3m
b	ϕ6.4 : 3m	c	ϕ6.4 : 4m	d	ϕ6.4 : 5m		

Additional charge amount R (kg) = (Lx X 0.025kg/m) + (Ly X 0.055kg/m) + (−0.4kg)
= (12 X 0.025kg) + (28 X 0.055kg) + (−0.4kg)
=1.44kg

Lx : Real total length of liquid pipe ϕ6.4 (m)
Ly : Real total length of liquid pipe ϕ9.5 (m)

Note)
If the additional refrigerant amount indicates a negative result from the calculation, use air conditioner without the adding of any additional refrigerant.

1-5. Wiring guideline

⚠ CAUTIONS

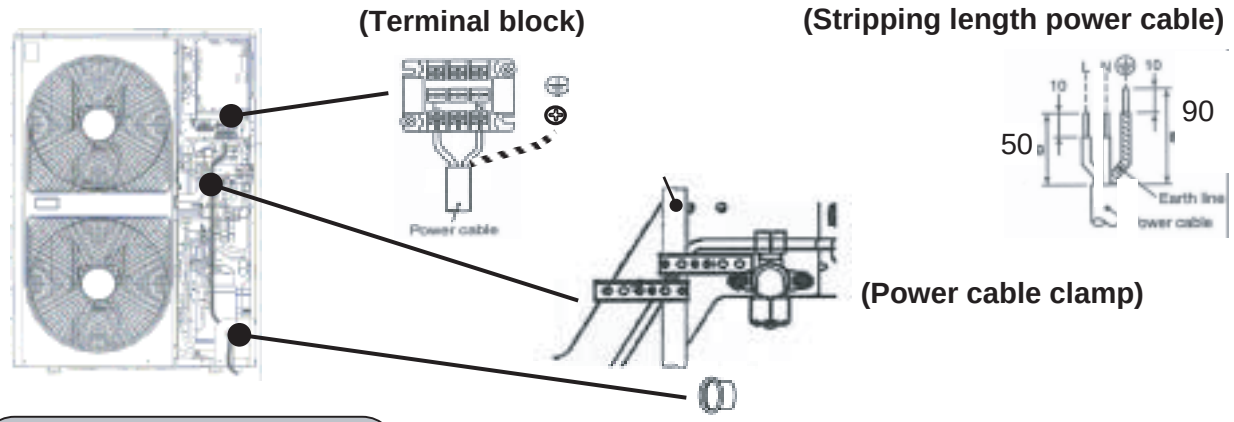
(1) Keep the refrigerant piping system and the indoor-indoor/indoor-outdoor control wiring systems together.
(2) When running power supplies and control wires parallel to each other, run them through separate conduits or maintain a suitable distance between them.
(Current capacity of power supplies: 10A or less for 300m, 50A or less for 500m)

1-5-1. General

①	Perform wiring of the power supplies in conformance with the regulation of the local electrical company.
②	Use a 2 core shield wire for control wiring on connecting indoor units, and connecting of indoor units to outdoor units. This is recommended to prevent possible noise issues.
③	Be sure to connect an earth leakage breaker to the power supply of the indoor units.
④	Never connect 220-240V power to the control wiring terminal block (U1,U2,U3,U4). Fault will be caused.
⑤	Locate wiring system for the control and refrigerant piping system in the same line.
⑥	Arrange the cables so that the electrical wires do not come in to contact with high-temperature parts of the pipework ; otherwise insulation will melt and an accident may be caused.
⑦	Do not turn on the power supply of the indoor units until vacuuming of the refrigerant pipe has finished.

1-5-2. Connection of power supply

The details are as follows.

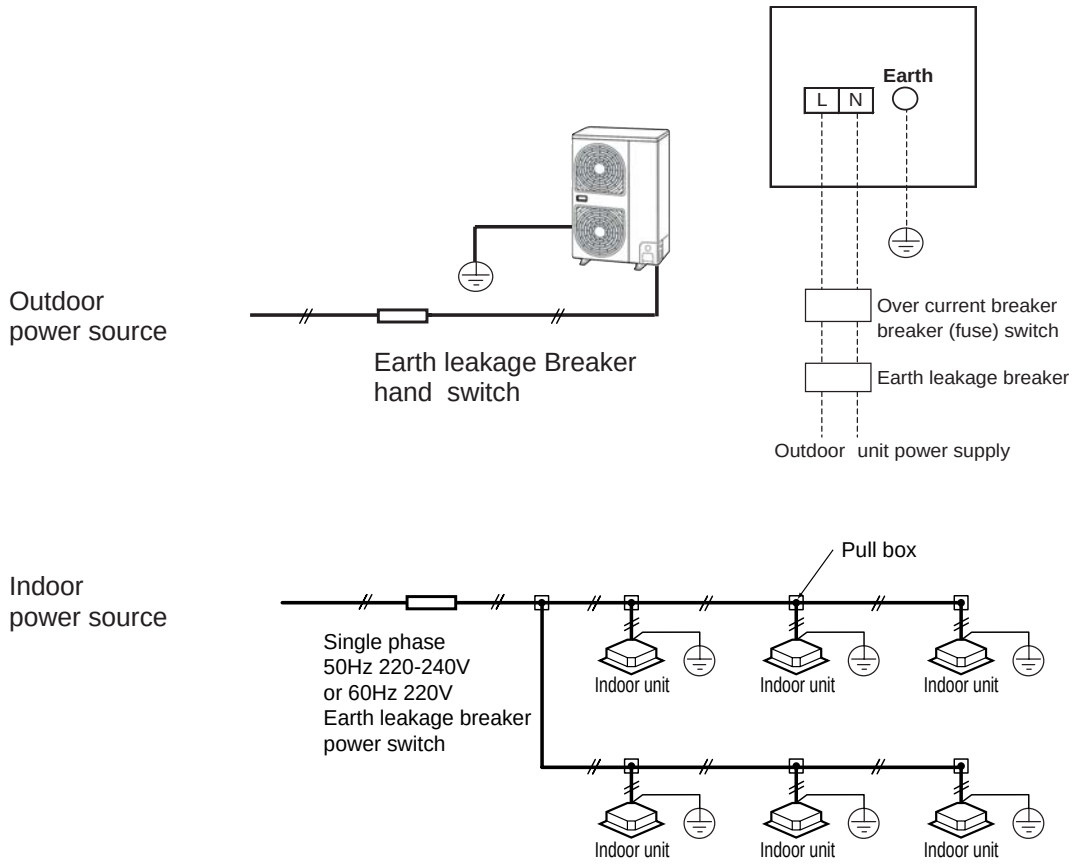


Power supply specifications

- Select the power supply cabling and fuse of each outdoor unit from the following specifications:
- 3 core cable in conformance with Design 60245 IEC 66
- Do not connect the units looping via the terminal blocks (L,N)

1-5-3. Electrical wiring desin

Power supply	MCY-MAP###1HT series	1N~ 50Hz 220V-240V
	MCY-MAP###1HT2D series	1N~ 60Hz 220V



- Determine the wire size for the indoor unit according to the number of conncted indoor units downstream.

① Outdoor Unit capacities and power supply wire sizes (Reference)

- **Observe local regulations in reference to the wire size selection and installtion.**

Outdoor unit capacity type	Wire size *	Maxim running current	Installation fuse
0401 type	6 mm^2 Max. 28 m	25A	32A
0501 type	6 mm^2 Max. 25 m	28A	32A
0601 type	6 mm^2 Max. 22 m	31A	40A

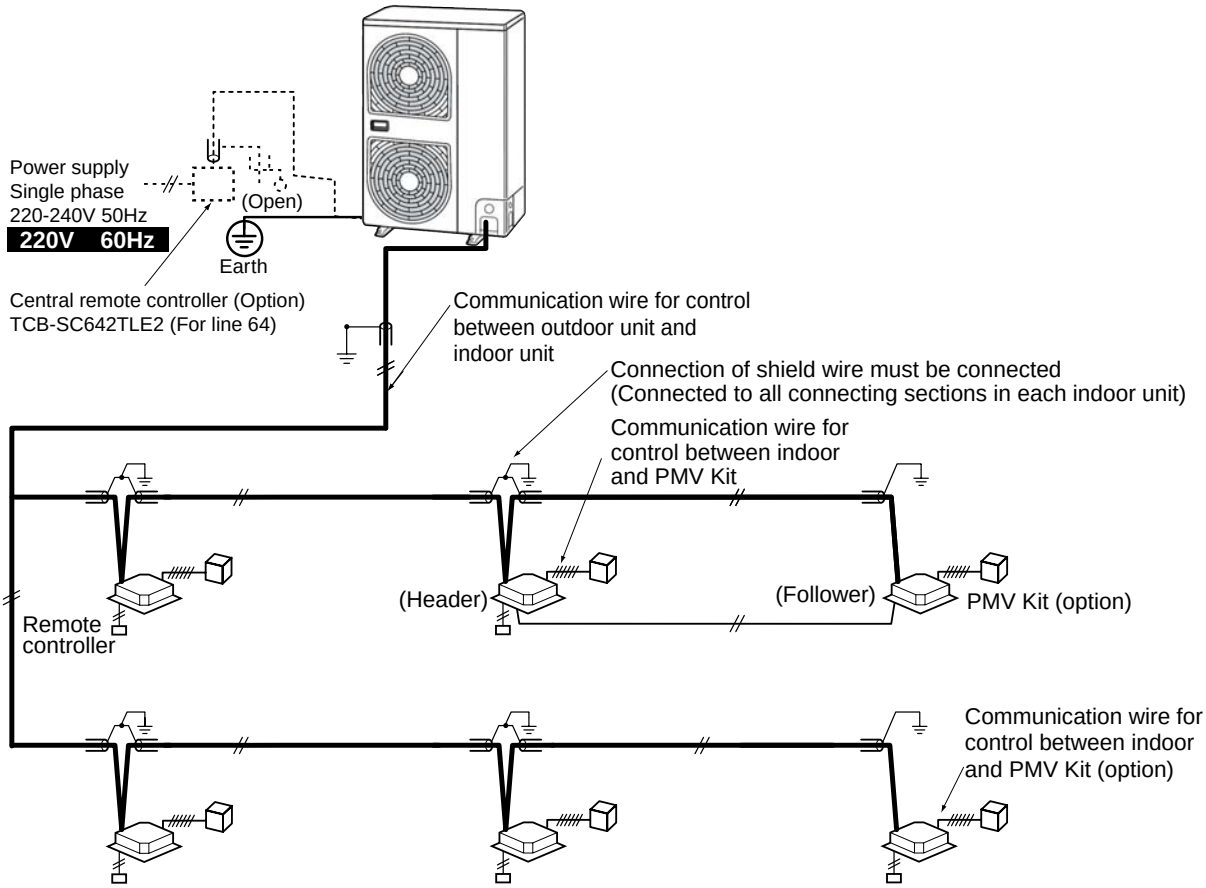
* Design 60245 IEC66

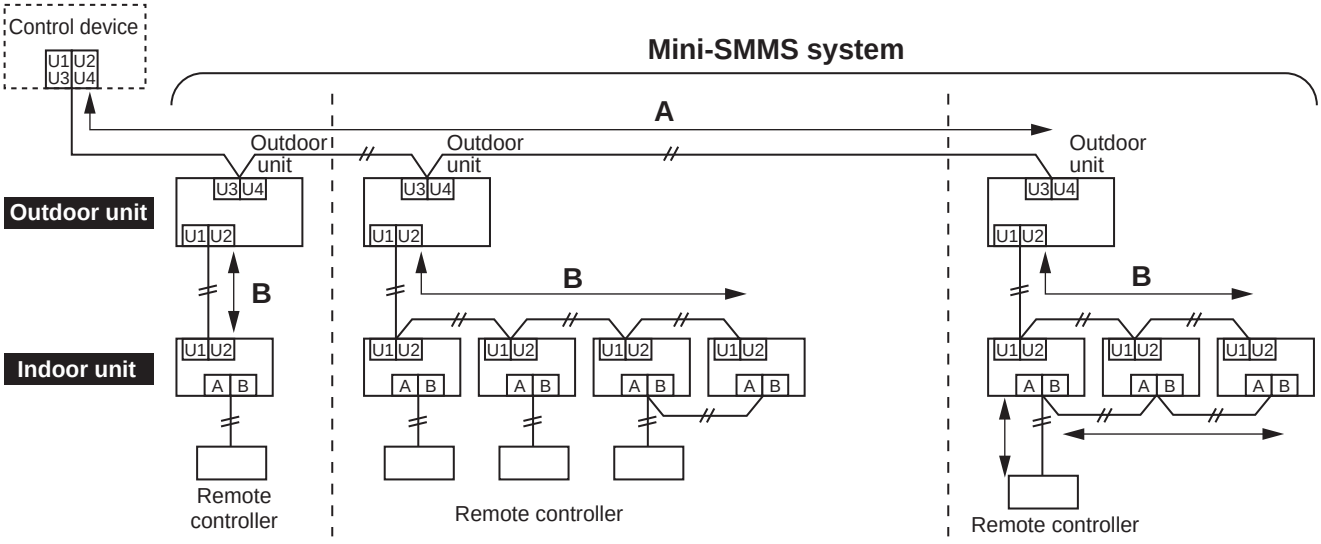
② For Indoor Unit power supply
(Must be independent from the outdoor unit power supply)

Item / Model	Power supply wiring		
	Wire size		Field fuse
All models of indoor units	2.0mm^2 MAX.20m	3.5mm^2 MAX.50m	15A

NOTE:
The above connecting lengths stated in the table indicate the length from the isolator to the outdoor unit. When the power supply of the indoor units are connected in parallel, it is assumed that no more than a 2% voltage drop will occur. If the connecting length is to exceed the stated lengths, select a suitable wire in accordance with the local wiring standards.

1-5-4. Design of control wiring





• Wire specification, quantity, size of crossover wiring and remote controller wiring

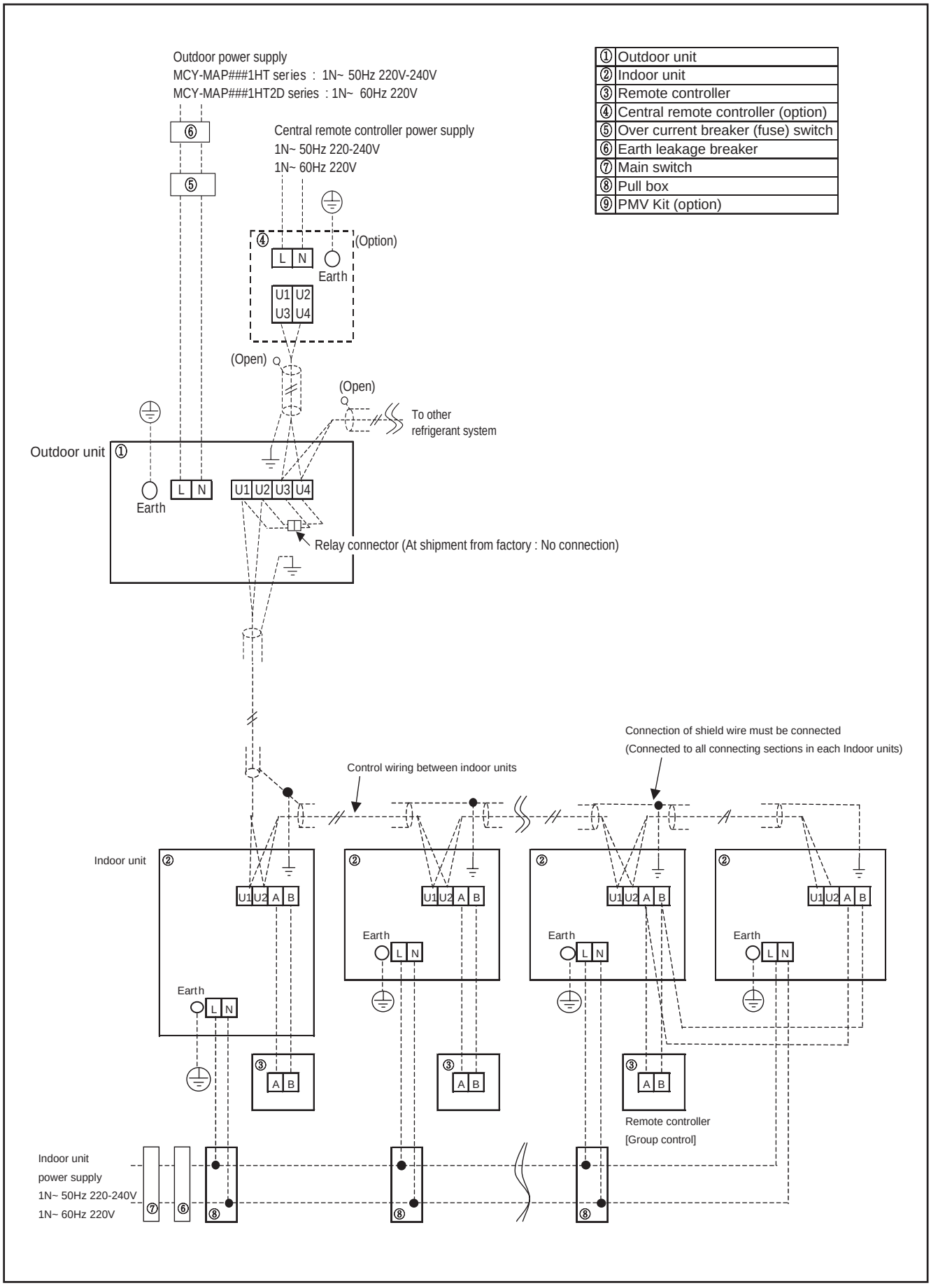
Name	Q'ty	Size			Specification
		Up to 500m	Up to 1000m	1000 to 2000m	
Crossover wiring (A + B) (indoor-indoor / indoor-outdoor / control wiring, central control wiring) *Total Control wiring length	2 cores	1.25mm²		2.0mm²	Shield wire
Remote controller wiring	2 cores	0.5 to 2.0mm²	–	–	–
Control wiring between indoor and PMV Kit	Be sure to use the attached cable. MIN 2m - MAX 10m				

(1) The crossover wiring and central control wiring uses a 2-core non-polarity communication wire. Use 2-core shielded wire to prevent possible noise issues. Connect the end of the shielded wires and earth(ground) at both the outdoor and indoor unit.
Where the shielded wire is connected between a central controller and a outdoor unit, only earth(ground) at one end of the central control line.

(2) Use 2-core non-polarity wire for remote controller. (A, B terminals)
Use 2-core non-polarity wire for wiring of group control. (A, B terminals)

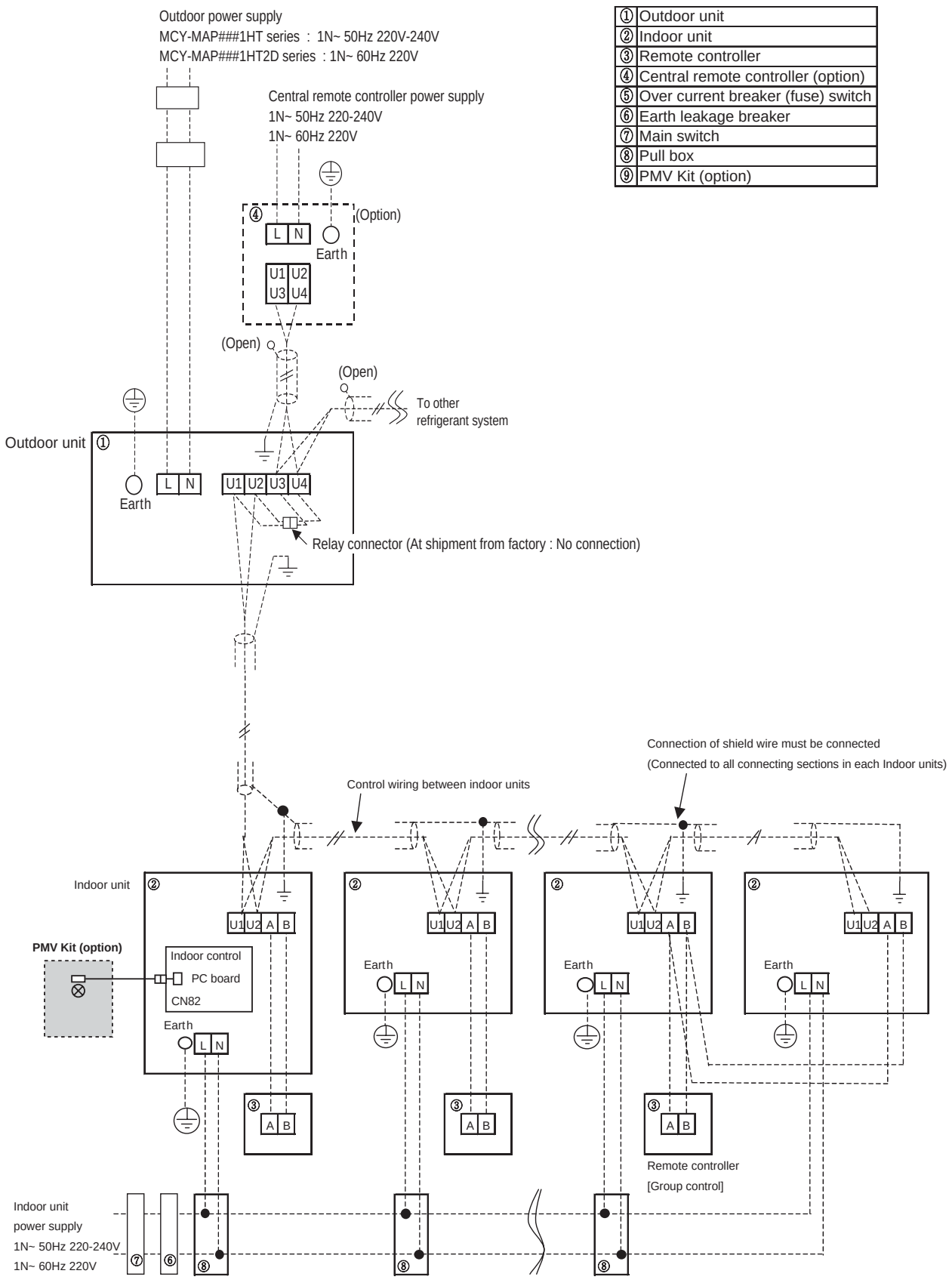
1-5-5. Example of system wiring Design

① In cace of without "PMV Kit"



1-5-5. Example of system wiring Design

② In cace of "PMV Kit"



1-5-6. Electrical characteristics

■ Outdoor units

50Hz

Model name	Nominal (V-Ph-Hz)	Voltage Range		Compressor	Fan Motor		Power Supply		
		Min	Max	RLA	kW	FLA	MCA		ICF
MCY-MAP0401HT	230-1-50	198	264	22.4	0.063 x 2	1.2	25	32	–
MCY-MAP0501HT	230-1-50	198	264	25.3	0.063 x 2	1.3	28	32	–
MCY-MAP0601HT	230-1-50	198	264	27.8	0.063 x 2	1.3	31	40	–

Legend

RLA : Rated Load Amps
FLA : Full Load Amps
kW : Fan Motor Rated Output (kW)
MCA : Minimum Circuit Amps
MOCP : Maximum Overcurrent Protection (Amps)
ICF : Maximum Instantaneous Current Flow Start

NOTE : RLA is based on the following conditions.
Indoor temperature : 27°CDB / 19°CWB
Outdoor temperature : 35°CDB

■ Indoor units

50Hz

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
4-Way Air Discharge Cassette Type	MMU-AP 0091 H	230-1-50	198	264	0.060	0.20	0.25	15
	MMU-AP 0121 H	230-1-50	198	264	0.060	0.20	0.25	15
	MMU-AP 0151 H	230-1-50	198	264	0.060	0.22	0.28	15
	MMU-AP 0181 H	230-1-50	198	264	0.060	0.24	0.30	15
	MMU-AP 0241 H	230-1-50	198	264	0.060	0.28	0.35	15
	MMU-AP 0271 H	230-1-50	198	264	0.060	0.28	0.35	15
	MMU-AP 0301 H	230-1-50	198	264	0.060	0.40	0.50	15
	MMU-AP 0361 H	230-1-50	198	264	0.090	0.68	0.85	15
	MMU-AP 0481 H	230-1-50	198	264	0.090	0.93	1.16	15
Compact 4-Way Cassette (600 x 600) Type	MMU-AP 0071 MH	230-1-50	198	264	0.060	0.32	0.40	15
	MMU-AP 0091 MH	230-1-50	198	264	0.060	0.35	0.44	15
	MMU-AP 0121 MH	230-1-50	198	264	0.060	0.36	0.45	15
	MMU-AP 0151 MH	230-1-50	198	264	0.060	0.48	0.60	15
	MMU-AP 0181 MH	230-1-50	198	264	0.060	0.48	0.60	15
2-Way Air Discharge Cassette Type	MMU-AP 0071 WH	230-1-50	198	264	0.053	0.36	0.45	15
	MMU-AP 0091 WH	230-1-50	198	264	0.053	0.36	0.45	15
	MMU-AP 0121 WH	230-1-50	198	264	0.053	0.36	0.45	15
	MMU-AP 0151 WH	230-1-50	198	264	0.039	0.37	0.46	15
	MMU-AP 0181 WH	220-1-50	198	264	0.039	0.37	0.46	15
	MMU-AP 0241 WH	230-1-50	198	264	0.053	0.53	0.66	15
	MMU-AP 0271 WH	230-1-50	198	264	0.053	0.53	0.66	15
	MMU-AP 0301 WH	230-1-50	198	264	0.053	0.54	0.68	15
	MMU-AP 0481 WH*1	230-1-50	198	264	0.092	1.33	1.67	15
1-Way Air Discharge Cassette Type	MMU-AP 0071 YH	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP 0091 YH	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP 0121 YH	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP 0152 SH	230-1-50	198	264	0.030	0.40	0.49	15
	MMU-AP 0182 SH	230-1-50	198	264	0.030	0.42	0.53	15
	MMU-AP 0242 SH	230-1-50	198	264	0.030	0.71	0.88	15

*1 China market only

50Hz

■ Indoor units

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
Concealed Duct Type	MMD-AP 0071 BH	230-1-50	198	264	0.120	0.33	0.41	15
	MMD-AP 0091 BH	230-1-50	198	264	0.120	0.33	0.41	15
	MMD-AP 0121 BH	230-1-50	198	264	0.120	0.39	0.49	15
	MMD-AP 0151 BH	230-1-50	198	264	0.120	0.39	0.49	15
	MMD-AP 0181 BH	230-1-50	198	264	0.120	0.50	0.62	15
	MMD-AP 0241 BH	230-1-50	198	264	0.120	0.60	0.75	15
	MMD-AP 0271 BH	230-1-50	198	264	0.120	0.60	0.75	15
	MMD-AP 0301 BH	230-1-50	198	264	0.120	0.70	0.88	15
	MMD-AP 0361 BH	230-1-50	198	264	0.120	0.96	1.20	15
	MMD-AP 0481 BH	230-1-50	198	264	0.120	1.13	1.41	15
Slim Duct Type	MMD-AP 0071 SPH	230-1-50	198	264	0.060	0.35	0.44	15
	MMD-AP 0091 SPH	230-1-50	198	264	0.060	0.35	0.44	15
	MMD-AP 0121 SPH	230-1-50	198	264	0.060	0.37	0.47	15
	MMD-AP 0151 SPH	230-1-50	198	264	0.060	0.38	0.48	15
	MMD-AP 0181 SPH	230-1-50	198	264	0.060	0.47	0.59	15
Concealed Duct High Static Pressure Type	MMD-AP 0181 H	230-1-50	198	264	0.160	0.93	1.16	15
	MMD-AP 0241 H	230-1-50	198	264	0.160	1.55	1.94	15
	MMD-AP 0271 H	230-1-50	198	264	0.160	1.55	1.94	15
	MMD-AP 0361 H	230-1-50	198	264	0.260	1.87	2.34	15
	MMD-AP 0481 H	230-1-50	198	264	0.260	2.12	2.65	15
Under Ceiling Type	MMC-AP 0151 H	230-1-50	198	264	0.030	0.33	0.41	15
	MMC-AP 0181 H	220-1-50	198	264	0.030	0.37	0.46	15
	MMC-AP 0241 H	230-1-50	198	264	0.040	0.48	0.60	15
	MMC-AP 0271 H	230-1-50	198	264	0.040	0.48	0.60	15
	MMC-AP 0361 H	230-1-50	198	264	0.080	0.90	1.13	15
	MMC-AP 0481 H	230-1-50	198	264	0.080	0.96	1.20	15
High Wall 1series Type	MMK-AP 0071 H	230-1-50	198	264	0.030	0.35	0.44	15
	MMK-AP 0091 H	230-1-50	198	264	0.030	0.35	0.44	15
	MMK-AP 0121 H	230-1-50	198	264	0.030	0.35	0.44	15
	MMK-AP 0151 H	230-1-50	198	264	0.030	0.37	0.46	15
	MMK-AP 0181 H	230-1-50	198	264	0.030	0.37	0.46	15
	MMK-AP 0241 H	230-1-50	198	264	0.030	0.40	0.50	15
High Wall 2series Type	MMK-AP 0072 H	230-1-50	198	264	0.030	0.20	0.24	15
	MMK-AP 0092 H	230-1-50	198	264	0.030	0.21	0.26	15
	MMK-AP 0122 H	230-1-50	198	264	0.030	0.22	0.27	15
Floor Standing Cabinet Type	MML-AP 0071 H	230-1-50	198	264	0.045	0.30	0.37	15
	MML-AP 0091 H	230-1-50	198	264	0.045	0.30	0.37	15
	MML-AP 0121 H	230-1-50	198	264	0.045	0.49	0.62	15
	MML-AP 0151 H	230-1-50	198	264	0.045	0.49	0.62	15
	MML-AP 0181 H	230-1-50	198	264	0.070	0.54	0.68	15
	MML-AP 0241 H	230-1-50	198	264	0.070	0.54	0.68	15
Floor Standing Concealed Type	MML-AP 0071 BH	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP 0091 BH	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP 0121 BH	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP 0151 BH	230-1-50	198	264	0.070	0.52	0.65	15
	MML-AP 0181 BH	230-1-50	198	264	0.070	0.52	0.65	15
	MML-AP 0241 BH	230-1-50	198	264	0.070	0.53	0.66	15
Floor Standing Type	MMF-AP 0151 H	230-1-50	198	264	0.037	0.77	0.96	15
	MMF-AP 0181 H	230-1-50	198	264	0.037	0.77	0.96	15
	MMF-AP 0241 H	230-1-50	198	264	0.063	1.01	1.27	15
	MMF-AP 0271 H	230-1-50	198	264	0.063	1.01	1.27	15
	MMF-AP 0361 H	230-1-50	198	264	0.110	1.48	1.85	15
	MMF-AP 0481 H	230-1-50	198	264	0.160	1.84	2.30	15

1-5-6. Electrical characteristics

■ Outdoor units

60Hz

Model name	Nominal (V-Ph-Hz)	Voltage Range		Compressor	Fan Motor		Power Supply		
		Min	Max	RLA	kW	FLA	MCA	MOCP	ICF
MCY-MAP0401HT2D	220-1-60	198	242	22.4	0.063 x 2	1.2	25	32	–
MCY-MAP0501HT2D	220-1-60	198	242	25.3	0.063 x 2	1.3	28	32	–
MCY-MAP0601HT2D	220-1-60	198	242	27.8	0.063 x 2	1.3	31	40	–

Legend

RLA : Rated Load Amps
FLA : Full Load Amps
kW : Fan Motor Rated Output (kW)
MCA : Minimum Circuit Amps
MOCP : Maximum Overcurrent Protection (Amps)
ICF : Maximum Instantaneous Current Flow Start

NOTE : RLA is based on the following conditions.
Indoor temperature : 27°CDB / 19°CWB
Outdoor temperature : 35°CDB

■ Indoor units

60Hz

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
4-Way Air Discharge Cassette Type	MMU-AP 0091 H	220-1-60	198	242	0.060	0.21	0.26	15
	MMU-AP 0121 H	220-1-60	198	242	0.060	0.21	0.26	15
	MMU-AP 0151 H	220-1-60	198	242	0.060	0.23	0.29	15
	MMU-AP 0181 H	220-1-60	198	242	0.060	0.25	0.31	15
	MMU-AP 0241 H	220-1-60	198	242	0.060	0.29	0.37	15
	MMU-AP 0271 H	220-1-60	198	242	0.060	0.29	0.37	15
	MMU-AP 0301 H	220-1-60	198	242	0.060	0.42	0.52	15
	MMU-AP 0361 H	220-1-60	198	242	0.090	0.70	0.88	15
	MMU-AP 0481 H	220-1-60	198	242	0.090	0.98	1.22	15
Compact 4-Way Cassette (600 x 600) Type	MMU-AP 0071 MH	220-1-60	198	242	0.060	0.31	0.39	15
	MMU-AP 0091 MH	220-1-60	198	242	0.060	0.33	0.41	15
	MMU-AP 0121 MH	220-1-60	198	242	0.060	0.35	0.44	15
	MMU-AP 0151 MH	220-1-60	198	242	0.060	0.47	0.59	15
	MMU-AP 0181 MH	220-1-60	198	242	0.060	0.47	0.59	15
2-Way Air Discharge Cassette Type	MMU-AP 0071 WH	220-1-60	198	242	0.053	0.38	0.47	15
	MMU-AP 0091 WH	220-1-60	198	242	0.053	0.38	0.47	15
	MMU-AP 0121 WH	220-1-60	198	242	0.053	0.38	0.47	15
	MMU-AP 0151 WH	220-1-60	198	242	0.039	0.44	0.55	15
	MMU-AP 0181 WH	220-1-60	198	242	0.039	0.44	0.55	15
	MMU-AP 0241 WH	220-1-60	198	242	0.053	0.61	0.76	15
	MMU-AP 0271 WH	220-1-60	198	242	0.053	0.61	0.76	15
	MMU-AP 0301 WH	220-1-60	198	242	0.053	0.67	0.84	15
1-Way Air Discharge Cassette Type	MMU-AP 0071 YH	220-1-60	198	242	0.022	0.30	0.37	15
	MMU-AP 0091 YH	220-1-60	198	242	0.022	0.30	0.37	15
	MMU-AP 0121 YH	220-1-60	198	242	0.022	0.30	0.37	15
	MMU-AP 0152 SH	220-1-60	198	242	0.030	0.40	0.50	15
	MMU-AP 0182 SH	220-1-60	198	242	0.030	0.45	0.57	15
	MMU-AP 0242 SH	220-1-60	198	242	0.030	0.75	0.94	15

60Hz

■ Indoor units

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
Concealed Duct Type	MMD-AP 0071 BH	220-1-60	198	242	0.120	0.35	0.43	15
	MMD-AP 0091 BH	220-1-60	198	242	0.120	0.35	0.43	15
	MMD-AP 0121 BH	220-1-60	198	242	0.120	0.41	0.51	15
	MMD-AP 0151 BH	220-1-60	198	242	0.120	0.41	0.51	15
	MMD-AP 0181 BH	220-1-60	198	242	0.120	0.52	0.65	15
	MMD-AP 0241 BH	220-1-60	198	242	0.120	0.63	0.78	15
	MMD-AP 0271 BH	220-1-60	198	242	0.120	0.63	0.78	15
	MMD-AP 0301 BH	220-1-60	198	242	0.120	0.73	0.91	15
	MMD-AP 0361 BH	220-1-60	198	242	0.120	1.00	1.25	15
	MMD-AP 0481 BH	220-1-60	198	242	0.120	1.18	1.48	15
Slim Duct Type	MMD-AP 0071 SPH	220-1-60	198	242	0.060	0.32	0.41	15
	MMD-AP 0091 SPH	220-1-60	198	242	0.060	0.32	0.41	15
	MMD-AP 0121 SPH	220-1-60	198	242	0.060	0.36	0.45	15
	MMD-AP 0151 SPH	220-1-60	198	242	0.060	0.37	0.47	15
	MMD-AP 0181 SPH	220-1-60	198	242	0.060	0.44	0.56	15
Concealed Duct High Static Pressure Type	MMD-AP 0181 H	220-1-60	198	242	0.160	1.06	1.32	15
	MMD-AP 0241 H	220-1-60	198	242	0.160	2.07	2.59	15
	MMD-AP 0271 H	220-1-60	198	242	0.160	2.07	2.59	15
	MMD-AP 0361 H	220-1-60	198	242	0.260	2.38	2.98	15
	MMD-AP 0481 H	220-1-60	198	242	0.260	2.60	3.25	15
Under Ceiling Type	MMC-AP 0151 H	220-1-60	198	242	0.030	0.35	0.43	15
	MMC-AP 0181 H	220-1-60	198	242	0.030	0.39	0.48	15
	MMC-AP 0241 H	220-1-60	198	242	0.040	0.50	0.63	15
	MMC-AP 0271 H	220-1-60	198	242	0.040	0.50	0.63	15
	MMC-AP 0361 H	220-1-60	198	242	0.080	0.94	1.18	15
	MMC-AP 0481 H	220-1-60	198	242	0.080	1.00	1.25	15
High Wall 1series Type	MMK-AP 0071 H	220-1-60	198	242	0.030	0.37	0.46	15
	MMK-AP 0091 H	220-1-60	198	242	0.030	0.37	0.46	15
	MMK-AP 0121 H	220-1-60	198	242	0.030	0.37	0.46	15
	MMK-AP 0151 H	220-1-60	198	242	0.030	0.39	0.48	15
	MMK-AP 0181 H	220-1-60	198	242	0.030	0.39	0.48	15
	MMK-AP 0241 H	220-1-60	198	242	0.030	0.40	0.50	15
High Wall 2series Type	MMK-AP 0072 H	220-1-60	198	242	0.030	0.21	0.26	15
	MMK-AP 0092 H	220-1-60	198	242	0.030	0.22	0.27	15
	MMK-AP 0122 H	220-1-60	198	242	0.030	0.23	0.29	15
Floor Standing Cabinet Type	MML-AP 0071 H	220-1-60	198	242	0.045	0.29	0.36	15
	MML-AP 0091 H	220-1-60	198	242	0.045	0.29	0.36	15
	MML-AP 0121 H	220-1-60	198	242	0.045	0.51	0.63	15
	MML-AP 0151 H	220-1-60	198	242	0.045	0.51	0.63	15
	MML-AP 0181 H	220-1-60	198	242	0.070	0.61	0.76	15
	MML-AP 0241 H	220-1-60	198	242	0.070	0.61	0.76	15
Floor Standing Concealed Type	MML-AP 0071 BH	220-1-60	198	242	0.019	0.31	0.39	15
	MML-AP 0091 BH	220-1-60	198	242	0.019	0.31	0.39	15
	MML-AP 0121 BH	220-1-60	198	242	0.019	0.31	0.39	15
	MML-AP 0151 BH	220-1-60	198	242	0.070	0.53	0.66	15
	MML-AP 0181 BH	220-1-60	198	242	0.070	0.53	0.66	15
	MML-AP 0241 BH	220-1-60	198	242	0.070	0.59	0.73	15
Floor Standing Type	MMF-AP 0151 H	220-1-60	198	242	0.037	0.77	0.96	15
	MMF-AP 0181 H	220-1-60	198	242	0.037	0.77	0.96	15
	MMF-AP 0241 H	220-1-60	198	242	0.063	1.04	1.29	15
	MMF-AP 0271 H	220-1-60	198	242	0.063	1.04	1.29	15
	MMF-AP 0361 H	220-1-60	198	242	0.110	1.58	1.97	15
	MMF-AP 0481 H	220-1-60	198	242	0.160	2.01	2.52	15

2. Indoor Units

2-1. 4-way Air Discharge Cassette Type

Apperarance

Standard accessories

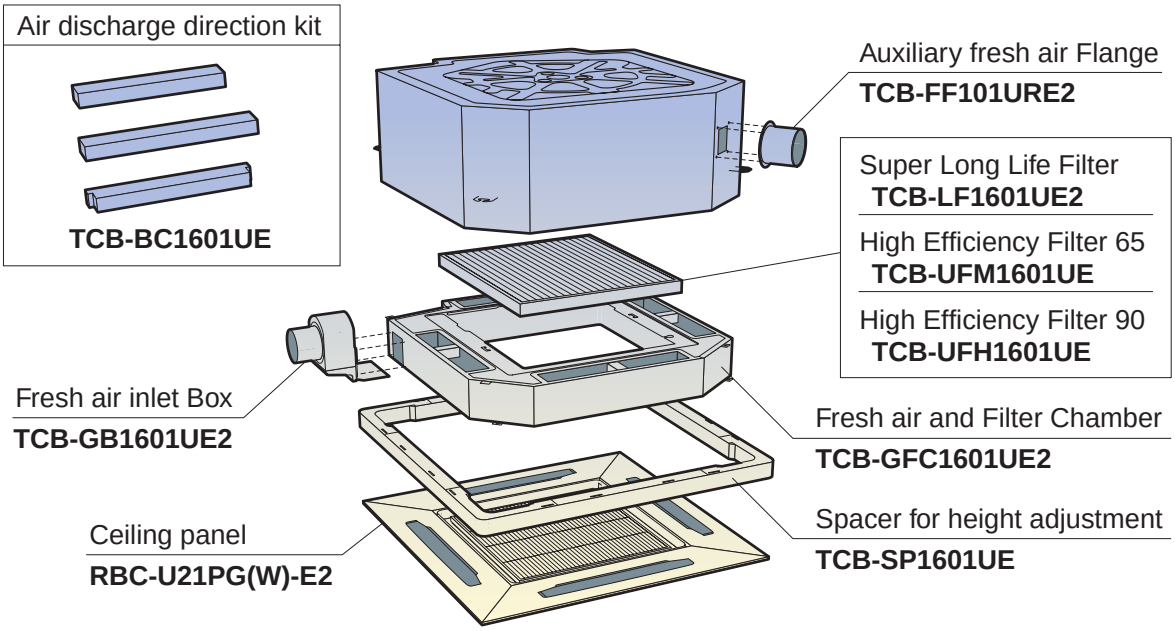
Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	2	—	(Be sure to hand over to customer)	Heat insulator	1		For heat insulating of drain connecting section
Heat insulating pipe	2		For heat insulating of pipe connecting section	Washer	8		For hanging down unit
Installation pattern	1	—	For confirmation of ceiling opening and main unit position	Hose band	1		For connecting drain pipe
Installation gauge	2		For positioning of ceiling position (united with installation pattern)	Flexible hose	1		For centering the drain pipe
Pattern fixing screw	4	M5 x 16 ℓ	For attaching pattern	Heat insulator	1		For sealing the wire connection opening

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21U(W)-E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

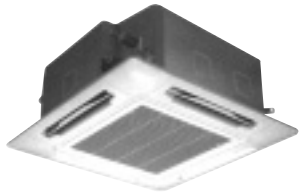
2-1. 4-way Air Discharge Cassette Type

Optional accessories



Parts Name	Model name	Applied Model	Notes	Remarks
Ceiling panel	RBC-U21PG(W)-E2	MMU-AP***1H	Required accessory	
Super Long Life Filter	TCB-LF1601UE2		Dust collecting effect : 50% (Weight method) *Not valid in combination with TCB-FM1601UE, TCB-UFH1601UE and TCB-BC1601UE	Use with TCB-GFC1601UE2
High Efficiency Filter 65	TCB-UFM1601UE		Dust collecting effect : 65% (NBS Colorimentric method) *Not valid in combination with TCB-LF1601UE2, TCB-UFH1601UE, TCB-FF101URE2 and TCB-BC1601UE	Use with TCB-GFC1601UE2
High Efficiency Filter 90	TCB-UFH1601UE		Dust collecting effect : 90% (NBS Colorimentric method) *Not valid in combination with TCB-LF1601UE2, TCB-UFM1601UE, TCB-FF101URE2 and TCB-BC1601UE	Use with TCB-GFC1601UE2
Fresh air inlet Box	TCB-GB1601UE2		For fresh air intake by using the knockout hole of Fresh air and filter chamber. (dia=100mm) *Not valid in combination with TCB-FF101URE2 and TCB-SP1601UE	Use with TCB-GFC1601UE2
Frech air and Filter Chamber	TCB-GFC1601UE2		For fresh air intake and installing high efficiency filter or super long filter *Not valid in combination with TCB-SP1601UE	
Auxiliary fresh air Flange	TCB-FF101URE2		For easy fresh air intake by using the knockout hole of indoor unit.(dia=100mm) *Not valid in combination with TCB-GB1601UE2	
Spacer for height adjustment	TCB-SP1601UE		Height = 500mm *Not valid in combination with TCB-GB1601UE2 and TCB-GFC1601UE2	
Air discharge direction kit	TCB-BC1601UE		Air direction charge by cutting off air discharge port (3pcs) *Not valid in combination with TCB-LF1601UE2, TCB-UFM1601UE, TCB-UFH1601UE	

2-1. 4-way Air Discharge Cassete Type



50Hz

• Specifications (50Hz)

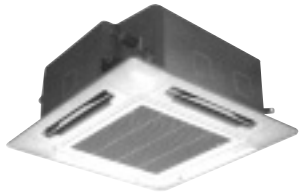
Model name			MMU-	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H	AP0271H	AP0301H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)			(kW)	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply			1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)								
	Running current		(A)	0.17		0.19	0.21	0.24		0.35	0.59	0.81
	Power consumption		(kW)	0.020		0.022	0.026	0.032		0.048	0.070	0.110
	Starting current		(A)	0.30		0.33	0.36	0.42		0.59	0.87	1.23
Appearance	Main unit			Heat-insulating material attached Zinc hot dipping steel plate								
	Ceiling Panel	Model		RBC-U21PG (W)-E2								
		Panel color		Moon white (Munsell/2.5GY 9.0/0.5)								
Outer dimension	Main unit	Height	(mm)	256							319	
		Width	(mm)	840								
		Depth	(mm)	840								
	Ceiling panel	Height	(mm)	35								
		Width	(mm)	950								
		Depth	(mm)	950								
Total weight	Main unit		(kg)	20		22		23			28	
	Ceiling panel		(kg)	4.5								
Heat exchanger				Finned tube								
Soundproof/Heat-insulating material				Non-flammable insulation								
Fan unit	Fan			Turbo fan								
	Standard air flow (High/Mid/Low)		(m^3/h)	800 (730/680)		930 (830/790)	1,050 (920/800)	1,200 (920/820)		1,320 (1,110/850)	1,680 (1,300/1,070)	2,040 (1,430/1,130)
	Motor		(W)	60							90	
Air filter				Standard filter attached (Long life filter)								
Controller				Remote controller								
Connecting pipe	Gas side		(mm)	ϕ9.5		ϕ12.7		ϕ15.9				
	Liquid side		(mm)	ϕ6.4				ϕ9.5				
	Drain port (Nominal dia. mm)			25 (Polyvinyl chloride tube)								
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	30/29/27		31/29/27	32/29/28	34/31/28		37/33/30	40/36/33	44/38/34
PMV Kit				Not available								

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : Rated conditions Cooling : Indoor air temperature 27ºC DB/19ºC WB, Outdoor air temperature 35ºC DB
Heating : Indoor air temperature 20ºC DB, Outdoor air temperature 7ºC DB/6ºC WB

2-1. 4-way Air Discharge Cassete Type



60Hz

• Specifications (60Hz)

Model name				MMU-	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H	AP0271H	AP0301H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)				(kW)	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply				1 phase 60Hz 220V (Separate power supply for indoor units is required.)								
	Running current			(A)	0.18		0.20	0.22	0.26		0.37	0.61	0.85
	Power consumption			(kW)	0.020		0.022	0.026	0.032		0.048	0.070	0.110
	Starting current			(A)	0.30		0.33	0.36	0.42		0.59	0.87	1.23
Appearance	Main unit				Heat-insulating material attached Zinc hot dipping steel plate								
	Ceiling Panel	Model			RBC-U21PG (W) -E2								
		Panel color			Moon white (Munsell/2.5GY 9.0/0.5)								
Outer dimension	Main unit	Height		(mm)	256							319	
		Width		(mm)	840								
		Depth		(mm)	840								
	Ceiling panel	Height		(mm)	35								
		Width		(mm)	950								
		Depth		(mm)	950								
Total weight	Main unit			(kg)	20		22		23			28	
	Ceiling panel			(kg)	4.5								
Heat exchanger					Finned tube								
Soundproof/Heat-insulating material					Non-flammable insulation								
Fan unit	Fan				Turbo fan								
	Standard air flow (High/Mid./Low)			(m^3/h)	800 (730/680)		930 (830/790)	1,050 (920/800)	1,200 (920/820)		1,320 (1,110/850)	1,680 (1,300/1,070)	2,040 (1,430/1,130)
	Motor			(W)	60							90	
Air filter					Standard filter (Long life filter)								
Controller					Remote controller								
Connecting pipe	Gas side			(mm)	ϕ9.5		ϕ12.7		ϕ15.9				
	Liquid side			(mm)	ϕ6.4				ϕ9.5				
	Drain port (Nominal dia. mm)				25 (Polyvinyl chloride tube)								
Sound pressure level(Note 2) (High/Mid./Low)				(dB(A))	30/29/27		31/29/27	32/29/28	34/31/28		37/33/30	40/36/33	44/38/34
PMV Kit					Not available								

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

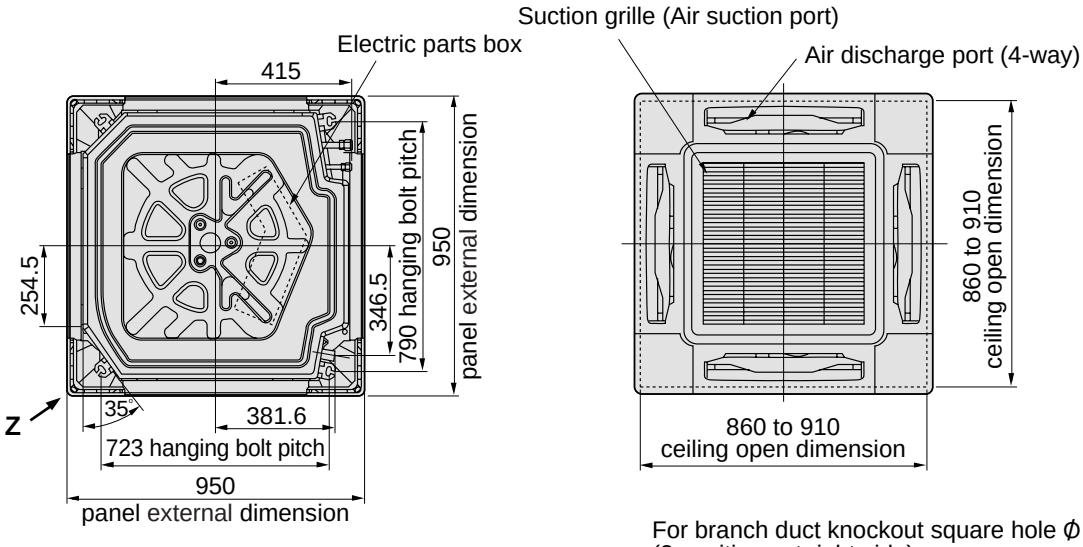
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

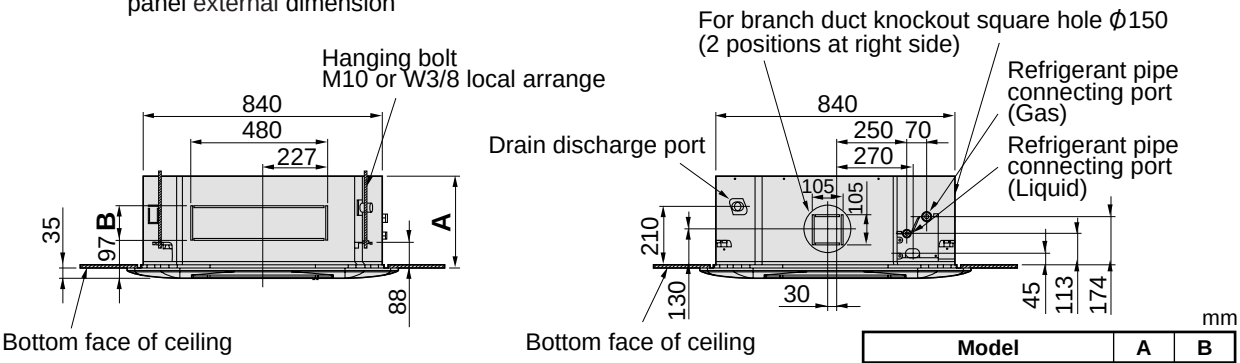
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

2-1. 4-Way Air Discharge Cassete Type

• Dimension

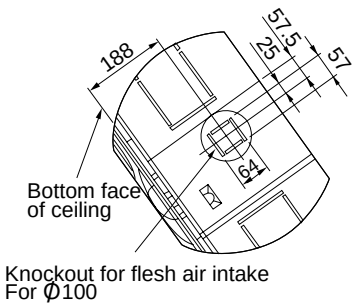
MMU-AP0091H to P0481H



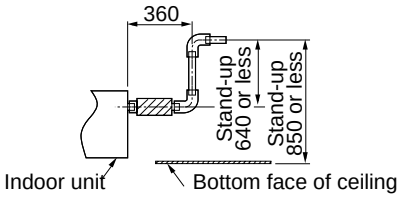


mm

Model	A	B
AP0091H to AP0301H	256	120
AP0361H to AP0481H	319	183

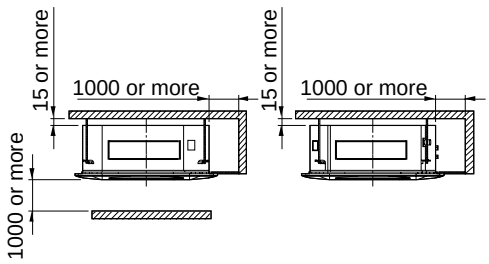


Z view



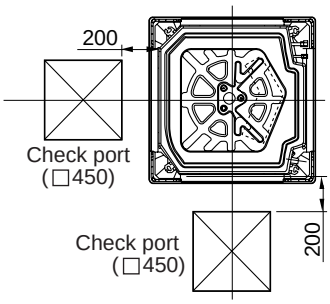
(NOTE)
As ABS is used for the drain discharge port of the main unit, the vinyl chloride paste cannot be used.
Use the flexible hose (Band fix) included in the package.

Drain-up standing-up size



Space required for installation and servicing

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21U(W)-E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

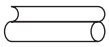


Note: All dimensions are in mm.

2-2. Compact 4-way cassette (600 x 600) type

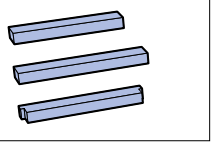
Appearance

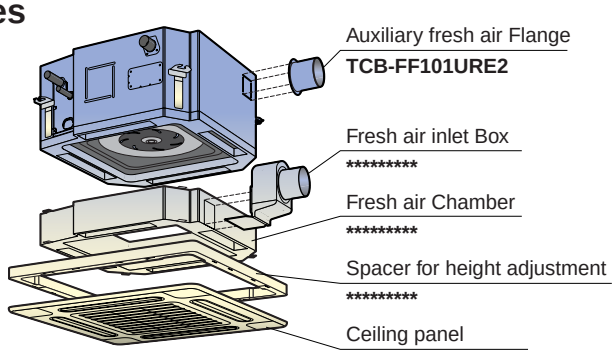
Standard accessories

Part name	Q'ty	Shape	Usage
Installation Manual	1	This manual	(Ensure handover to customer)
Heat insulating pipe	2		For heat insulation of the pipe connecting section
Installation pattern	1	—	For checking of ceiling opening and the main unit position
Installation gauge	2		For positioning of the ceiling position (To be used with the installation pattern)
Pattern fixing screw	4	M5 x 16 ℓ	For attach the installation pattern
Heat insulator	1		For heat insulation of drain connecting section
Washer	8		For hanging unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For adjusting core-out of drain pipe
Heat insulator	1		For sealing of wire connecting port

Optional accessories

Air discharge direction kit





Parts Name	Model name	Applied Model	Notes	Remarks
Ceiling panel	RBC-UM11PG(W)E	MMU-AP***1MH	Required accessory	
Auxiliary fresh air Flange	TCB-FF101URE2		For easy fresh air intake by using the knockout hole of indoor unit.(dia=100mm)	
Frech air and Filter Chamber	TBD			This product is scheduled to go on sale
Fresh air inlet Box	TBD			
Spacer for height adjustment	TBD			
Air discharge direction kit	TBD			

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-2. Compact 4-way Cassette (600x 600) Type

50Hz

• Specifications (50Hz)

Model name			MMU-	AP0071MH	AP0091MH	AP0121MH	AP0151MH	AP0181MH
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3
Electrical characteristics	Power supply			1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)				
	Running current		(A)	0.28	0.30	0.31	0.34	0.42
	Power consumption		(kW)	0.034	0.036	0.038	0.041	0.052
	Starting current		(A)	0.49	0.52	0.54	0.59	0.73
Appearance	Main unit			Zinc hot dipping steel plate *Heat-insulating material attached to only upper plate				
	Ceiling Panel	Model		RBC-UM11PG(W)E				
		Panel color		Moon white (Munsell/2.5GY 9.0/0.5)				
Outer dimension	Main unit	Height	(mm)	268				
		Width	(mm)	575				
		Depth	(mm)	575				
	Ceiling panel	Height	(mm)	27				
		Width	(mm)	700				
		Depth	(mm)	700				
Total weight	Main unit		(kg)	17				
	Ceiling panel		(kg)	3				
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Non-flammble insulation				
Fan unit	Fan			Turbo fan				
	Standard air flow (High/Mid/Low)		(m^3/h)	552/462/378	570/468/378	594/504/402	660/552/468	762/642/522
	Motor		(W)	60				
Air filter				Long life filter				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	ϕ9.5			ϕ12.7	
	Liquid side		(mm)	ϕ6.4				
	Drain port (Nominal dia. mm)			25 (Polyvinyl choride tube)				
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	36/32/28	37/33/28	37/33/29	40/35/30	44/39/34
PMV Kit				Available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-2. Compact 4-way Cassette (600x 600) Type

60Hz

• Specifications (60Hz)

Model name			MMU-	AP0071MH	AP0091MH	AP0121MH	AP0151MH	AP0181MH
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)				
	Running current		(A)	0.27	0.29	0.30	0.33	0.41
	Power consumption		(kW)	0.034	0.036	0.038	0.041	0.052
	Starting current		(A)	0.49	0.52	0.54	0.59	0.73
Appearance	Main unit			Zinc hot dipping steel plate *Heat-insulating material attached to only upper plate				
	Ceiling Panel	Model		RBC-UM11PG(W)E				
		Panel color		Moon white (Munsell/2.5GY 9.0/0.5)				
Outer dimension	Main unit	Height	(mm)	268				
		Width	(mm)	575				
		Depth	(mm)	575				
	Ceiling panel	Height	(mm)	27				
		Width	(mm)	700				
		Depth	(mm)	700				
Total weight	Main unit		(kg)	17				
	Ceiling panel		(kg)	3				
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Non-flammble insulation				
Fan unit	Fan			Turbo fan				
	Standard air flow (High/Mid/Low)		(m^3/h)	552/462/378	570/468/378	594/504/402	660/552/468	762/642/522
	Motor		(W)	60				
Air filter				Long life filter				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	ϕ9.5			ϕ12.7	
	Liquid side		(mm)	ϕ6.4				
	Drain port (Nominal dia. mm)			23 (Polyvinyl choride tube)				
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	36/32/28	37/33/28	37/33/29	40/35/30	44/39/34
PMV Kit				Available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

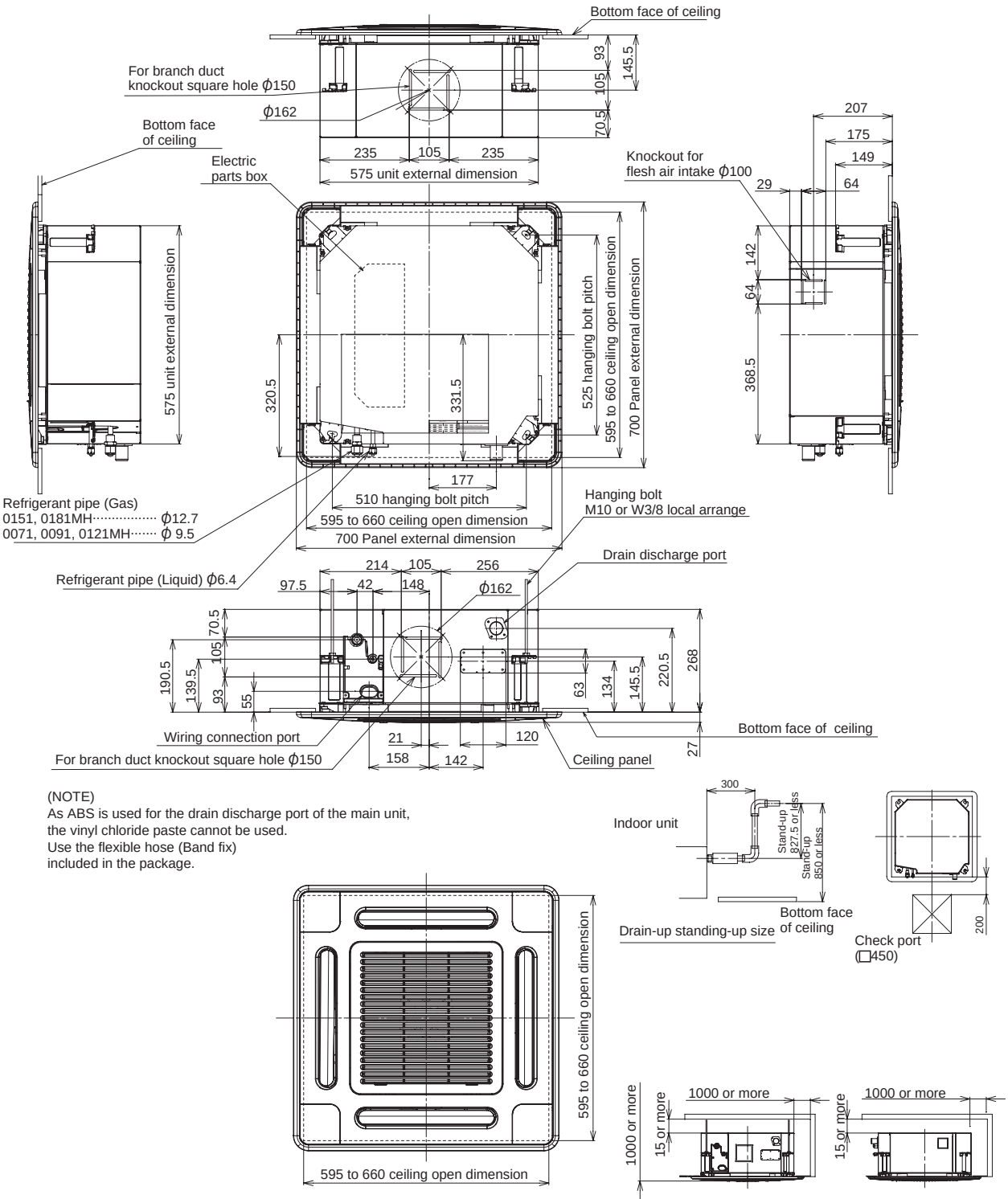
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-2. Compact 4-way Cassette (600 x 600) Type

• Dimension

MMU-AP0071MH, AP0091MH, AP0121MH, AP0151MH, AP0181MH



- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Note: All dimensions are in mm.

2-3. 2-way Air Discharge Cassette Type

Apperarance

Standard accessories

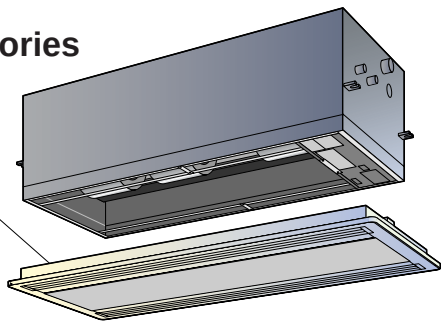
Part name		Q'ty	Shape	Use		Q'ty	Shape	Use
Installation Manual		1	This manual	(Be sure to hand this over to customer)	Installation gauge	1		For positioning of ceiling position (United with installation pattern)
Heat insulating pipe		2		For heat insulating pipe connecting section	Pattern fixing screw	6	M5 x 16 ℓ	For attaching the installation pattern
Installa-tion pattern	MMU-AP0301WH type or lower	1	—	For checking the position of the ceiling openings and the unit	Fan motor connector	1		For changing fan motor r.p.m. to apply higher ceiling
	MMU-AP0481WH type	2			Heat insulator	1		For seal for wire connecting port

Ceiling panel components

Name		Center panel	Air filter	Screw installing panel	Screw installing panel
Shape (Q'ty)	(1 set)	(1 pc)	• RBC-UW466PG : Attached to indoor unit	20mm M5 x 20 ℓ (4 pcs)	30mm M5 x 30 ℓ (2 pcs)
Usage	—	—	Attached to ceiling panel, and removes dust.	For fixing ceiling panel (4 corners)	For tentative hanging and fixing ceiling panel (Center part)

Optional accessories

Ceiling panel
RBC-UW136PG
RBC-UW266PG



Parts Name	Model name	Applied Model	Notes	Remarks
Ceiling panel	RBC-UW136PG	MMU-AP0071WH/0091/0121WH	Required accessory	
	RBC-UW266PG	MMU-AP0151/0181/0241/0301WH		

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-3. 2-way Air Discharge Cassette Type

50Hz

• Specifications (50Hz)

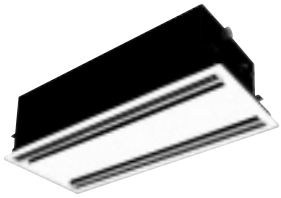
Model name			MMU-	AP0071WH	AP0091WH	AP0121WH	AP0151WH	AP0181WH	AP0241WH	AP0271WH	AP0301WH	AP0481WH China only
Cooling/Heating capacity			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0	14.0/16.0
Electrical characteristics	Power supply			1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)								1 Phase 50Hz 220V
	Running current		(A)	0.31			0.32		0.46		0.47	1.16
	Power consumption		(kW)	0.070			0.072		0.105		0.106	0.250
	Power factor		(%)	97					99		98	
	Starting current		(A)	0.47			0.60		0.89		0.98	1.33
Appearance	Main unit			Heat-insulating material attached Zinc hot dipping steel plate								
	Ceiling Panel	Model		RBC-UW136PG			RBC-UW266PG					RBC-UW466PG
		Panel color		Light ivory (Munsell 10Y 9/0.5)								
Outer dimension	Main unit	Height	(mm)	398								406
		Width	(mm)	830			1,350					1,650
		Depth	(mm)	550								620
	Ceiling panel	Height	(mm)	8								
		Width	(mm)	1,000			1,520					1,898
		Depth	(mm)	650								680
Total weight	Main unit		(kg)	33			44		48			52
	Ceiling panel		(kg)	8			11					18
Heat exchanger				Finned tube								
Soundproof/Heat-insulating material				Non-flammable insulation								
Fan unit	Fan			Centrifugal fan								
	Standard air flow (High/Mid/Low)		(m^3/h)	570/510/450			780/700/600		1140/960/720		1260/1140/960	1920/1500/1050
	Motor		(W)	53			39		53			92
Air filter				Standard filter attached (Long life filter)								
Controller				Remote controller								
Connecting pipe	Gas side		(mm)	φ9.5			φ12.7		φ15.9			
	Liquid side		(mm)	φ6.4					φ9.5			
	Drain port (Nominal dia. mm)			25 (Polyvinyl chloride tube)								
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	34/32/30			35/33/30		38/35/33		40/37/34	45/42/39
PMV Kit				Not available								

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-3. 2-way Air Discharge Cassette Type



60Hz

• Specifications (60Hz)

Model name				MMU-	AP0071WH	AP0091WH	AP0121WH	AP0151WH	AP0181WH	AP0241WH	AP0271WH	AP0301WH
Cooling/Heating capacity				(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0
Electrical characteristics	Power supply				1 phase 60Hz 220V (Separate power supply for indoor units is required.)							
	Running current			(A)	0.33			0.38		0.53		0.58
	Power consumption			(kW)	0.070			0.076		0.115		0.123
	Power factor			(%)	97			90		99		96
	Starting current			(A)	0.46			0.59		0.87		0.96
Appearance	Main unit				Heat-insulating material attached Zinc hot dipping steel plate							
	Ceiling panel	Model			RBC-UW136PG			RBC-UW266PG				
		Panel color			Light ivory (Munsell 10Y 9/0.5)							
Outer dimension	Main unit	Height		(mm)	398							
		Width		(mm)	830			1.350				
		Depth		(mm)	550							
	Ceiling panel	Height		(mm)	8							
		Width		(mm)	1,000			1,520				
		Depth		(mm)	650							
Total weight	Main unit			(kg)	33			44		48		
	Ceiling panel			(kg)	8			11				
Heat exchanger					Finned tube							
Soundproof/Heat-insulating material					Non-flammable insulation							
Fan unit	Fan				Centrifugal fan							
	Standard air flow (High/Mid./Low)			(m^3/h)	570/510/450			780/700/600		1,140/960/720		1,260/1,140/960
	Motor			(W)	53			39		53		
Air filter					Standard filter (Long life filter)							
Controller					Remote controller							
Connecting pipe	Gas side			(mm)	φ9.5			φ12.7		φ15.9		
	Liquid side			(mm)	φ6.4					φ9.5		
	Drain port			(Nominal dia.mm)	25 (Polyvinyl chloride tube)							
Sound pressure level(Note 2) (High/Mid./Low)				(dB(A))	34/32/30			35/33/30		38/35/33		40/37/34
PMV Kit					Not available							

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

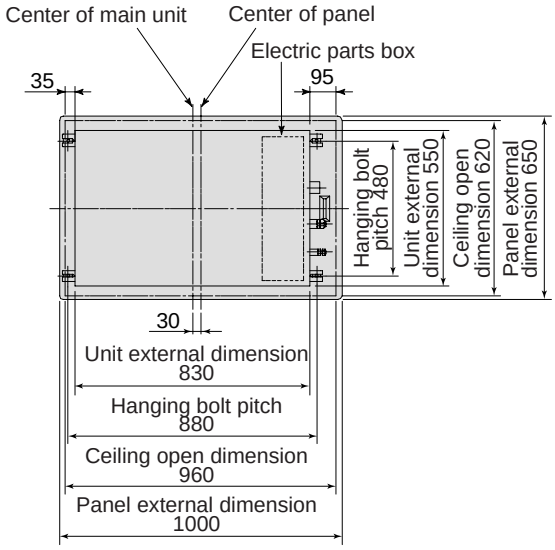
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

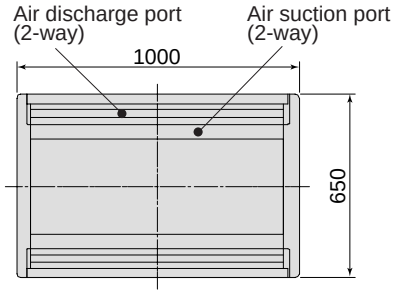
2-3. 2-way Air Discharge Cassette Type

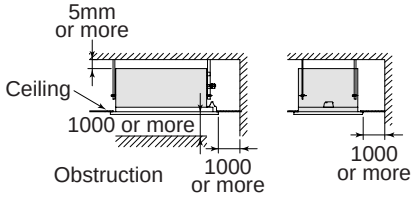
• Dimension

MMU-AP0071WH, AP0091WH, AP0121WH

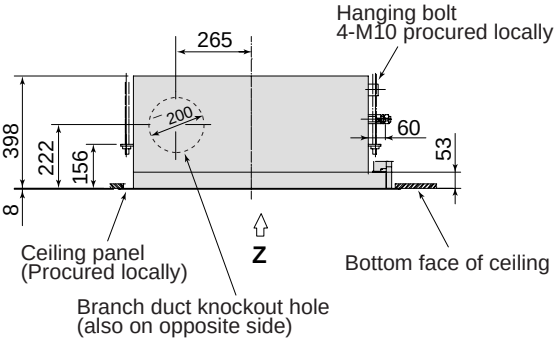


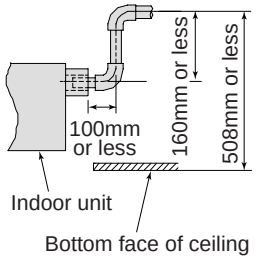
Z view

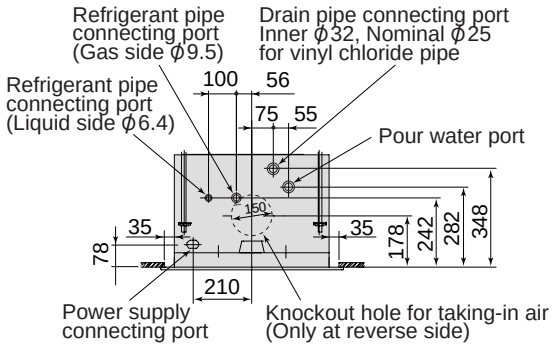




Space required for installation and servicing



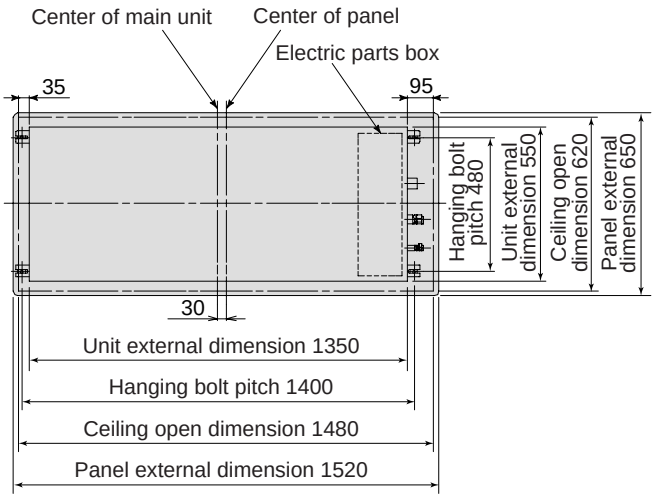




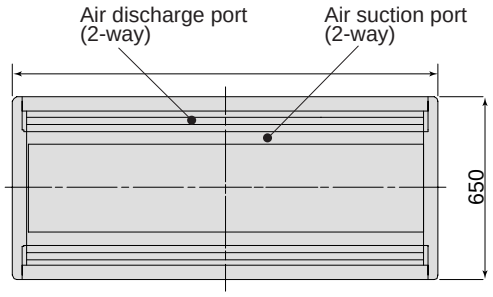
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

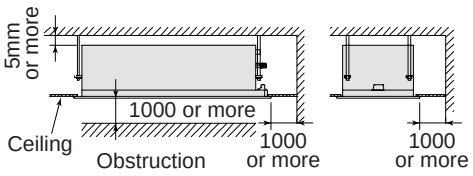
Note: All dimensions are in mm.

MMU-AP0151WH, AP0181WH, AP0241WH, AP0271WH. AP0301WH

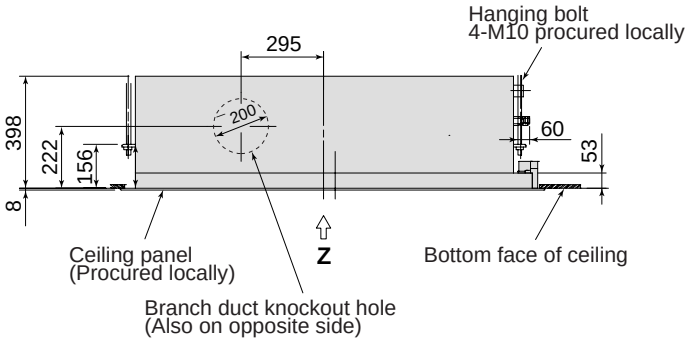


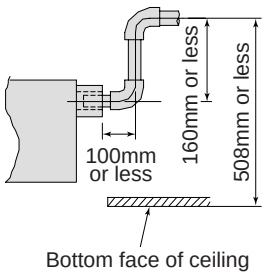
Z view

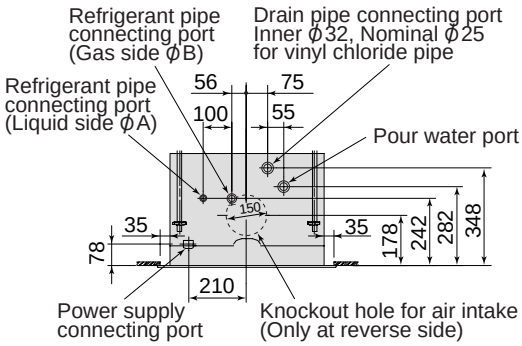




Space required for installation and servicing





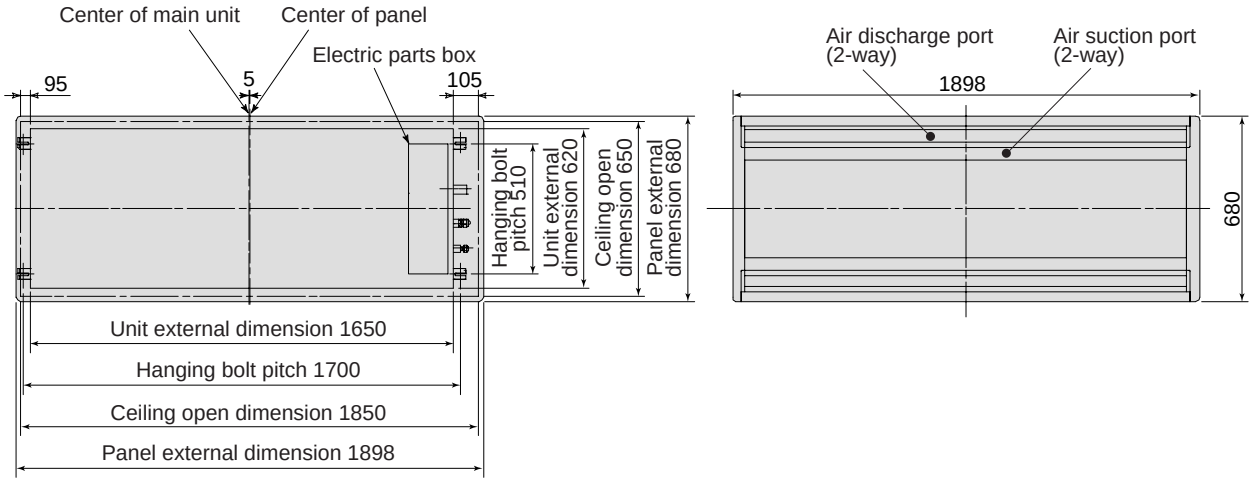


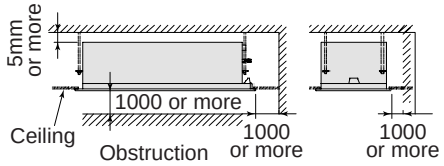
Model	A	B
MMU-AP0151WH to AP0181WH	ϕ6.4	ϕ12.7
MMU-AP0241WH to AP0301WH	ϕ9.5	ϕ15.9

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

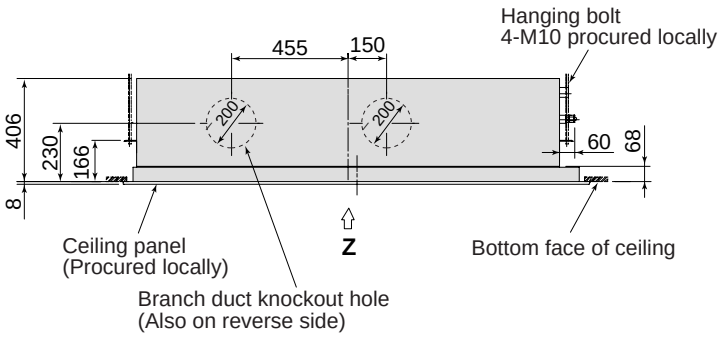
Note: All dimensions are in mm.

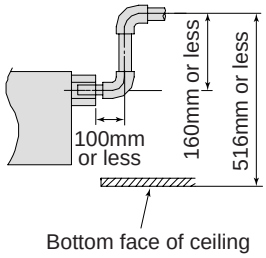
MMU-AP0481WH*CHINA market only

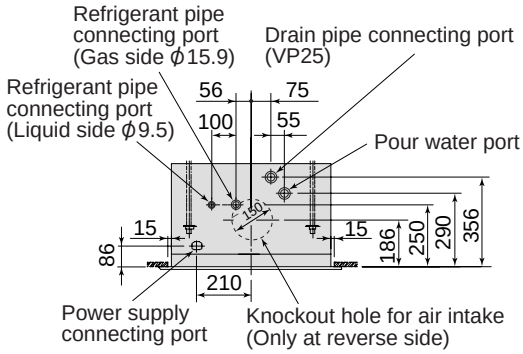




Space required for installation and servicing







- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

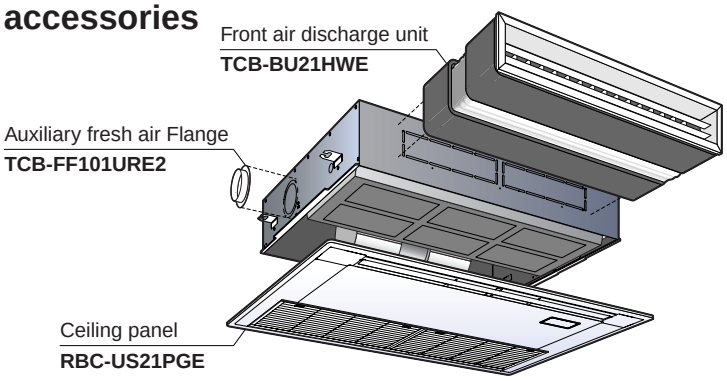
2-4. 1-way Air Discharge Cassette Type

Appera

Standard accessories

Part name	Q'ty	Shape	Usage
Installation Manual	1	This manual	(Be sure to hand this over to customer)
Installation pattern	1	—	For check of ceiling opening and unit position
Installation gauge	1		For check of ceiling opening and unit position (Unit with installation pattern)
Pattern fixing screw	4	M5 x 16 ℓ	For mounting of pattern
Heat insulating pipe	2		For insulating pipe connecting section
Washer	8	M10 x ϕ34	For hanging-down of unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For
Heat insulator	1		For insulating drain connecting section
Heat insulator	1		For sealing of pipe connecting port (With slit)
Heat insulator	1		For sealing of pipe connecting port (Without slit)

Optional accessories



Parts Name	Model name	Applied Model	Notes	Remarks
Ceiling panel	RBC-US21PGE	MMC-AP0152SH/0182SH/0242SH	Required accessory	
Front air discharge unit	TCB-BUS21HWE			
Auxiliary fresh air Flange	TCB-FF101URE2		For easy fresh air intake by using the knockout hole of indoor unit.(dia=100mm)	

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

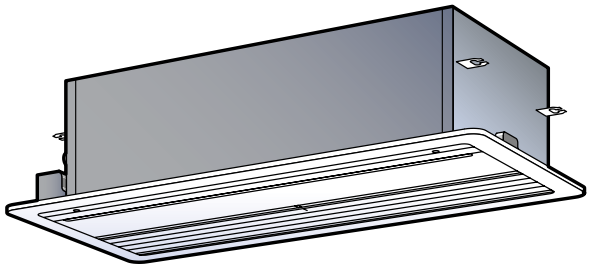
2-4. Compact 1-way Air Discharge Cassette Type

Apperarance

Standard accessories

Part name		Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual		1	This manual	(Be sure to hand this over to customer)	Installation gauge	1		For positioning of ceiling position (United with installation pattern)
Heat insulating pipe		2		For heat insulating pipe connecting section	Pattern fixing screw	6	M5 x 16L ℓ	For attaching the installation pattern
Installa-tion pattern	MMU-AP0301WH type or lower	1	—	For checking the position of the ceiling openings and the unit	Fan motor connector	1		For changing fan motor r.p.m. to apply higher ceiling
	MMU-AP0481WH type	2			insulator	1		For seal for wire connecting port

Optional accessories



Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-4. 1-way Air Discharge Cassette Type

50Hz

• Specifications (50Hz)

Model name				MMU-	AP0071YH	AP0091YH	AP0121YH	AP0152SH	AP0182SH	AP0242SH
Cooling/Heating capacity(Note 1)				(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics (Note 2)	Power supply				1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current			(A)	0.24			0.34	0.37	0.62
	Power consumption			(kW)	0.053			0.042	0.046	0.075
	Power factor			(%)	95			—	—	—
	Starting current			(A)	0.6			0.53	0.54	0.80
Appearance	Main unit				Heat-insulating material attached Zinc hot dipping steel plate					
	Ceiling Panel	Model			RBC-UY135PG			RBC-US21PGE		
		Panel color			W : Silky shade (1Y8.5/0.5)			Moon white (Munsel 2.5GY9.0/0.5)		
Outer dimension	Main unit	Height		(mm)	235			200		
		Width		(mm)	850			1,000		
		Depth		(mm)	400			710		
	Ceiling panel	Height		(mm)	18			20		
		Width		(mm)	1,050			1,230		
		Depth		(mm)	470			800		
Total weight	Main unit			(kg)	22			21		22
	Ceiling panel			(kg)	3.5			5.5		
Heat exchanger					Finned tube					
Soundproof/Heat-insulating material					Non-flammable insulation			Polyethylene foam + Expanded polystyrene		
Fan unit	Fan				Centrifugal fan					
	Standard air flow (High/Mid/Low)			(m^3/h)	540/480/420			750/690/630	780/720/660	1,140/960/810
	Motor			(W)	22			30		
Controller					Remote controller					
Air filter					Standard filter (Long life filter)					
Connecting pipe	Gas side			(mm)	φ9.5			φ12.7		φ15.9
	Liquid side			(mm)	φ6.4					φ9.5
	Drain port			(Nominal dia. mm)	25 (Polyvinyl chloride tube:External dia.32 Internal dia.25)					
Sound pressure level(Note 2) (High/Mid/Low)				(dB(A))	42/39/34			37/35/32	38/36/34	45/41/37
PMV Kit					Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-4. 1-way Air Discharge Cassette Type

60Hz

• Specifications (60Hz)

Model name				MMU-	AP0071YH	AP0091YH	AP0121YH	AP0152SH	AP0182SH	AP0242SH
Cooling/Heating capacity(Note 1)				(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics (Note 2)	Power supply				1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current			(A)	0.26			0.35	0.39	0.62
	Power consumption			(kW)	0.056			0.041	0.045	0.073
	Power factor			(%)	98			—	—	—
	Starting current			(A)	0.60			0.53	0.54	0.80
Appearance	Main unit				Heat-insulating material attached Zinc hot dipping steel plate					
	Ceiling Panel	Model			RBC-UY135PG			RBC-US21PGE		
		Panel color			W : Silky shade (1Y8.5/0.5)			Moon white (Munsel 2.5GY9.0/0.5)		
Outer dimension	Main unit	Height		(mm)	235			200		
		Width		(mm)	850			1,000		
		Depth		(mm)	400			710		
	Ceiling panel	Height		(mm)	18			20		
		Width		(mm)	1,050			1,230		
		Depth		(mm)	470			800		
Total weight	Main unit			(kg)	22			21		22
	Ceiling panel			(kg)	3.5			5.5		
Heat exchanger					Finned tube					
Soundproof/Heat-insulating material					Non-flammable insulation			Polyethylene foam + Expanded polystyrene		
Fan unit	Fan				Centrifugal fan					
	Standard air flow (High/Mid/Low)			(m^3/h)	540/480/420			750/690/630	780/720/660	1,140/960/810
	Motor			(W)	22			30		
Controller					Remote controller					
Air filter					Standard filter (Long life filter)					
Connecting pipe	Gas side			(mm)	φ9.5			φ12.7		φ15.9
	Liquid side			(mm)	φ6.4					φ9.5
	Drain port			(Nominal dia. mm)	25 (Polyvinyl chloride tube:External dia.32 Internal dia.25)					
Sound pressure level(Note 2) (High/Mid/Low)				(dB(A))	42/39/34			37/35/32	38/36/34	45/41/37
PMV Kit					Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

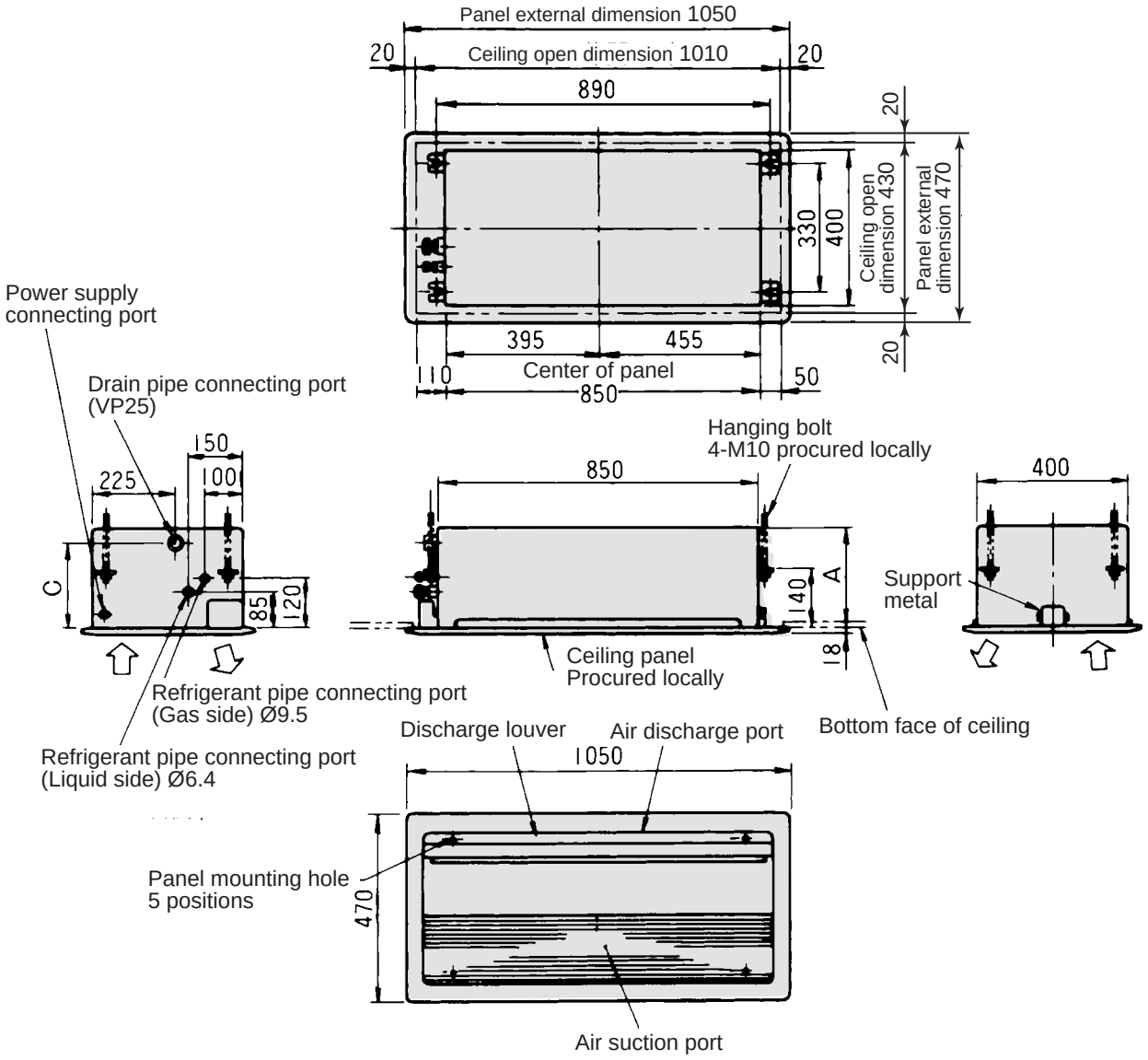
Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-4. 1-way Air Discharge Cassette Type

• Dimension

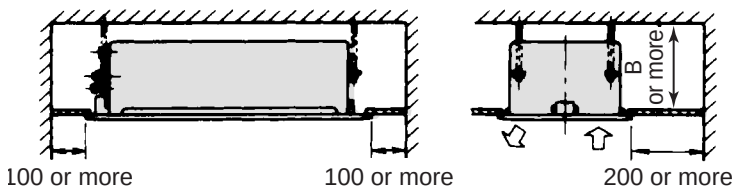
MMU-AP0071YH, AP0091YH, AP0121YH



Dimensions

Model MMU-	A	B	C
AP0071YH,AP0091YH, AP0121YH	235	245	200

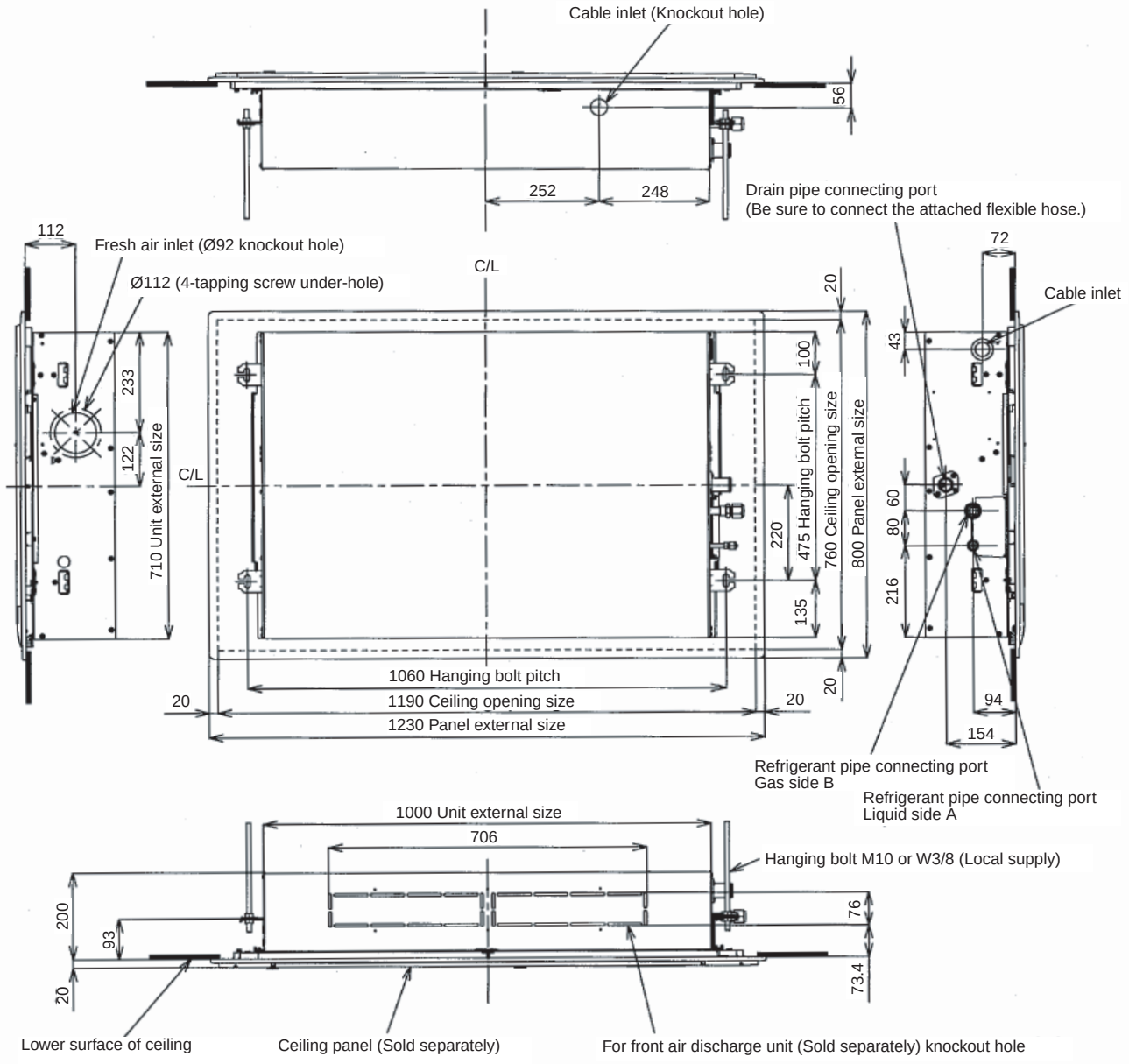
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2



Space required for installation and servicing

Note: All dimensions are in mm.

MMU-AP0152SH, AP0182SH, AP0242SH



Model name MMU-	A	B
AP015, AP018 type	ϕ6.4	ϕ12.7
AP024 type	ϕ9.5	ϕ15.9

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

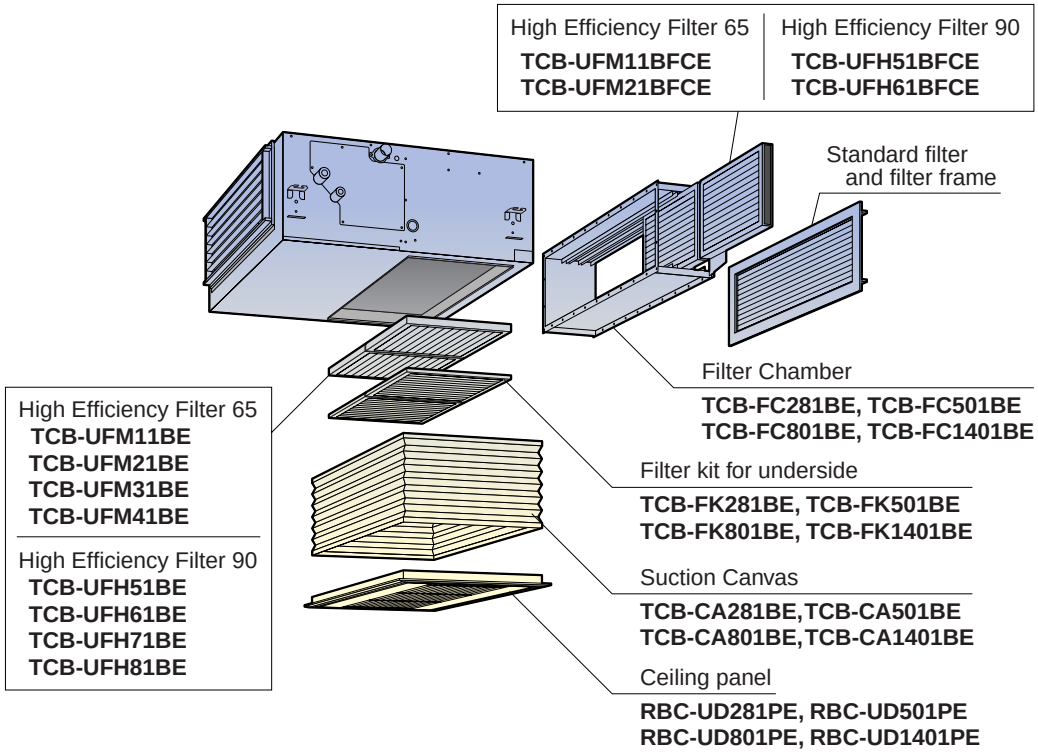
2-5. Concealed Duct Standard Type

Appearance

Standard accessories

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	—	—	Washer	8		For hanging down the unit
Insulated pipe	2		For heat insulating of pipe connecting section				

Optional accessories



Parts Name	Model name	Applied Model	Notes	Remarks
High Efficiency Filter 65 (For rear suction)	TCB-UFM11BFCE	MMD-AP0071/0091/0121BH	Dust collecting effect : 65% (NBS Colorimentric method)	Use with TCB-FC281BE
	TCB-UFM11BFCE(2 pcs.)	MMD-AP0151/0181BH		Use with TCB-FC501BE
	TCB-UFM21BFCE	MMD-AP0241/0271/0301BH		Use with TCB-FC801BE
	TCB-UFM21BFCE(2 pcs.)	MMD-AP0361/0481BH		Use with TCB-FC1401BE
High Efficiency Filter 90 (For rear suction)	TCB-UFH51BFCE	MMD-AP0071/0091/0121BH	Dust collecting effect : 90% (NBS Colorimentric method)	Use with TCB-FC281BE
	TCB-UFH51BFCE(2 pcs.)	MMD-AP0151/0181BH		Use with TCB-FC501BE
	TCB-UFH61BFCE	MMD-AP0241/0271/0301BH		Use with TCB-FC801BE
	TCB-UFH61BFCE(2 pcs.)	MMD-AP0361/0481BH		Use with TCB-FC1401BE
Filter Chamber (For rear suction)	TCB-FC281BE	MMD-AP0071/0091/0121BH	For high efficiency filter	
	TCB-FC501BE	MMD-AP0151/0181BH		
	TCB-FC801BE	MMD-AP0241/0271/0301BH		
	TCB-FC1401BE	MMD-AP0361/0481BH		
High Efficiency Filter 65 (For underside suction)	TCB-UFM11BE	MMD-AP0071/0091/0121BH	Dust collecting effect : 65% (NBS Colorimentric method)	
	TCB-UFM21BE	MMD-AP0151/0181BH		
	TCB-UFM31BE	MMD-AP0241/0271/0301BH		
	TCB-UFM41BE	MMD-AP0361/0481BH		
High Efficiency Filter 90 (For underside suction)	TCB-UFH51BE	MMD-AP0071/0091/0121BH	Dust collecting effect : 90% (NBS Colorimentric method)	
	TCB-UFH61BE	MMD-AP0151/0181BH		
	TCB-UFH71BE	MMD-AP0241/0271/0301BH		
	TCB-UFH81BE	MMD-AP0361/0481BH		
Ceiling panel (Half panel for underside suction)	RBC-UD281PE(W)	MMD-AP0071/0091/0121BH		
	RBC-UD501PE(W)	MMD-AP0151/0181BH		
	RBC-UD801PE(W)	MMD-AP0241/0271/0301BH		
	RBC-UD1401PE(W)	MMD-AP0361/0481BH		
Suction Canvas (For underside suction)	TCB-CA281BE	MMD-AP0071/0091/0121BH	Adjustment height of the suction canvas is more 40mm and 100mm	
	TCB-CA501BE	MMD-AP0151/0181BH		
	TCB-CA801BE	MMD-AP0241/0271/0301BH		
	TCB-CA1401BE	MMD-AP0361/0481BH		
Filter kit for underside	TCB-FK281BE	MMD-AP0071/0091/0121BH	Kit of underside prefilter & shielding plate of rear suction	
	TCB-FK501BE	MMD-AP0151/0181BH		
	TCB-FK801BE	MMD-AP0241/0271/0301BH		
	TCB-FK1401BE	MMD-AP0361/0481BH		

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-5. Concealed Duct Standard Type

50Hz

• Specifications (50Hz)

Model name				MMD-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH	AP0271BH	AP0301BH	AP0361BH	AP0481BH
Cooling/Heating capacity (Note 1)				(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply				1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)									
	Running current			(A)	0.29		0.34		0.43	0.52		0.61	0.83	0.98
	Power consumption			(kW)	0.033		0.039		0.050	0.060		0.071	0.107	0.128
	Starting current			(A)	0.5		0.59		0.75	0.90		1.05	1.44	1.70
Appearance	Main unit				Zinc hot dipping steel plate									
Outer dimension	Main unit	Height		(mm)	320									
		Width		(mm)	550			700		1,000			1,350	
		Depth		(mm)	800									
	Suction ceiling panel	Height		(mm)	9									
		Width		(mm)	630			780		1,080			1,430	
		Depth		(mm)	500									
Total weight	Main unit			(kg)	28			32		43			55	
	Ceiling panel			(kg)	3.5			4		6			7	
Heat exchanger					Finned tube									
Soundproof/Heat-insulating material					Non-flammable insulation									
Fan unit	Fan				Centrifugal fan									
	Standard air flow (High/Mid/Low)			(m^3/h)	480 (420/340)		570 (490/400)	650 (540/480)	780 (660/540)	1,140 (990/870)		1,260 (1,080/870)	1,620 (1,410/1,200)	1,980 (1,710/1,490)
	Motor			(W)	120									
	External static pressure (factory setting)			(Pa)	40									
	External static pressure			(Pa)	100									
Air filter					Standard filter (Long life filter)									
Controller					Remote controller									
Connecting pipe	Gas side			(mm)	ϕ9.5			ϕ12.7		ϕ15.9				
	Liquid side			(mm)	ϕ6.4					ϕ9.5				
	Drain port (Nominal dia. mm)				25 (Polyvinyl chloride tube)									
Sound pressure level(Note 2) (High/Mid/Low)				(dB(A))	30/28/26		31/29/27		32/30/28	33/31/29		34/32/29	36/34/32	38/36/32
PMV Kit					Not available									

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-5. Concealed Duct Standard Type

60Hz

• Specifications (60Hz)

Model name				MMD-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH	AP0271BH	AP0301BH	AP0361BH	
Cooling/Heating capacity (Note 1)				(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	9.0/10.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply				1 phase 60Hz 220V (Separate power supply for indoor units is required.)									
	Running current			(A)	0.30		0.35		0.45	0.55		0.64	0.87	1.03
	Power consumption			(kW)	0.033		0.039		0.050	0.060		0.071	0.107	0.128
	Starting current			(A)	0.5		0.59		0.75	0.90		1.05	1.44	1.70
Appearance	Main unit				Zinc hot dipping steel plate									
Outer dimension	Main unit		Height	(mm)	320									
			Width	(mm)				700		1,000			1,350	
			Depth	(mm)	800									
	Suction ceiling panel		Height	(mm)	9									
			Width	(mm)	630			780		1,080			1,430	
			Depth	(mm)	500									
Total weight	Main unit			(kg)	28			32		43			55	
	Ceiling panel			(kg)	3.5			4		6			7	
Heat exchanger					Finned tube									
Soundproof/Heat-insulating material					Non-flammable insulation									
Fan unit	Fan				Centrifugal fan									
	Standard air flow (High/Mid/Low)			(m^3/h)	480 (420/340)		570 (490/400)	650 (540/480)	780 (660/540)	1,140 (990/870)		1,260 (1,080/870)	1,620 (1,410/1,200)	1,980 (1,710/1,490)
	Motor			(W)	120									
	External static pressure (factory setting)			(Pa)	40									
				(pa)	100									
Air filter					Standard filter (Long life filter)									
Controller					Remote controller									
Connecting pipe	Gas side			(mm)	ϕ9.5			ϕ12.7		ϕ15.9				
	Liquid side			(mm)	ϕ6.4					ϕ9.5				
	Drain port (Nominal dia. mm)				25 (Polyvinyl chloride tube)									
Sound pressure level(Note 2) (High/Mid/Low)				(dB(A))	30/28/26		31/29/27		32/30/28	33/31/29		34/32/29	36/34/32	38/36/32
PMV Kit					Not available									

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

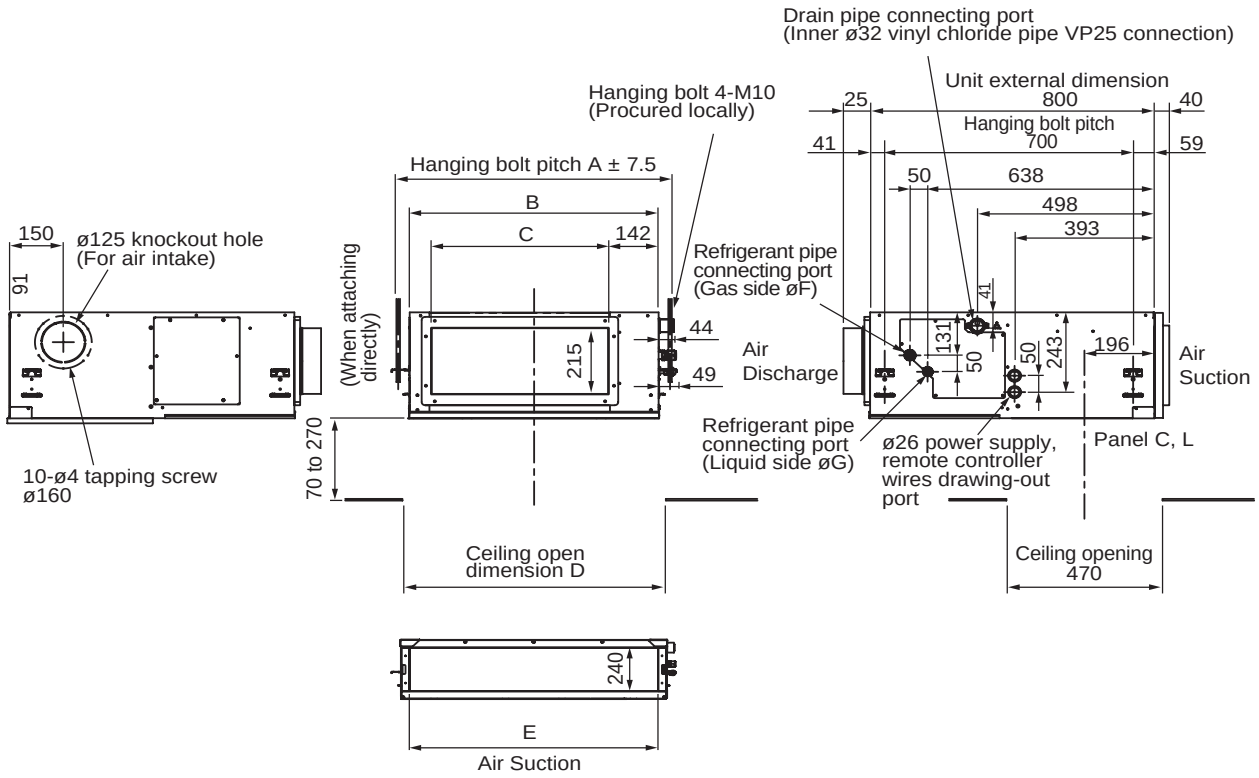
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-5. Concealed Duct Standard Type

• Dimension

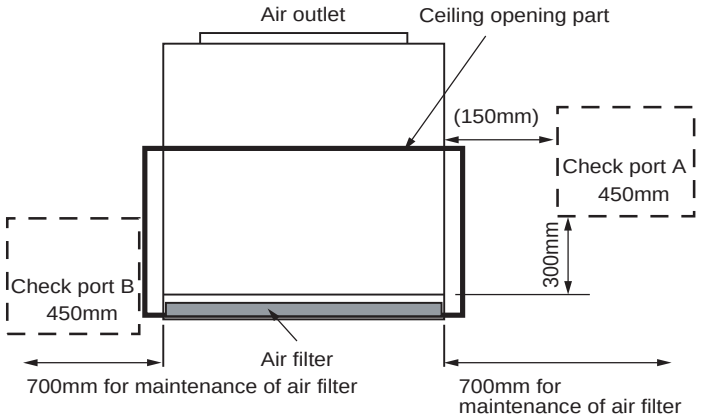
MMD-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH, AP0271BH, AP0301BH, AP0361BH, AP0481BH



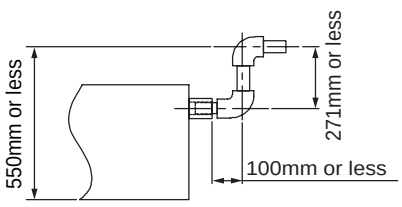
Model MMD-	A	B	C	D	E	F	G
AP0071BH, AP0091BH, AP0121BH	616	550	350	600	470	9.5	6.4
AP0151BH, AP0181BH	766	700	500	750	620	12.7	9.4
AP0241BH, AP0271BH, AP0301BH	1066	1000	800	1050	920	15.9	9.5
AP0361BH, AP0481BH	1416	1350	1150	1400	1270	15.9	9.5

(Note)
Two of high efficiency filters available
Deodorant filter not available

(Note)
Be sure to create a check port at position A as indicated in the following figure. This is for maintenance of the equipment.



- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2



Drain-up piping

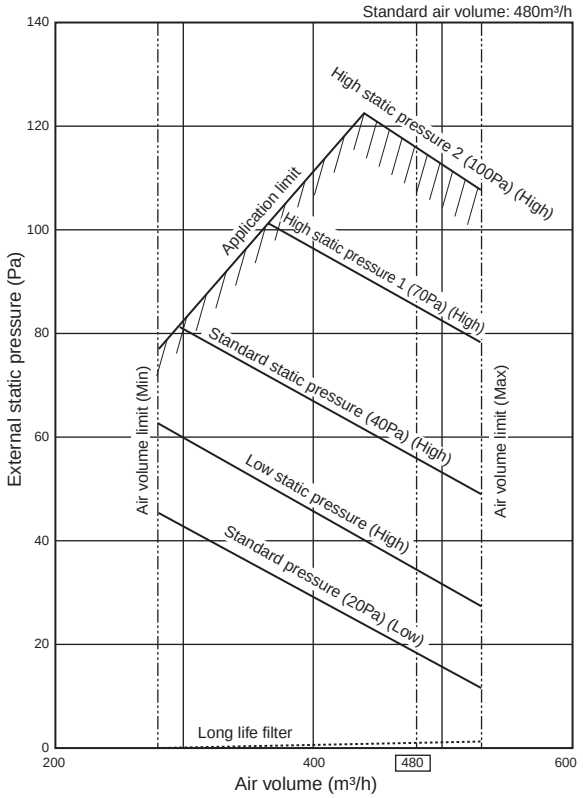
Note: All dimensions are in mm.

2-5. Concealed Duct Standard Type

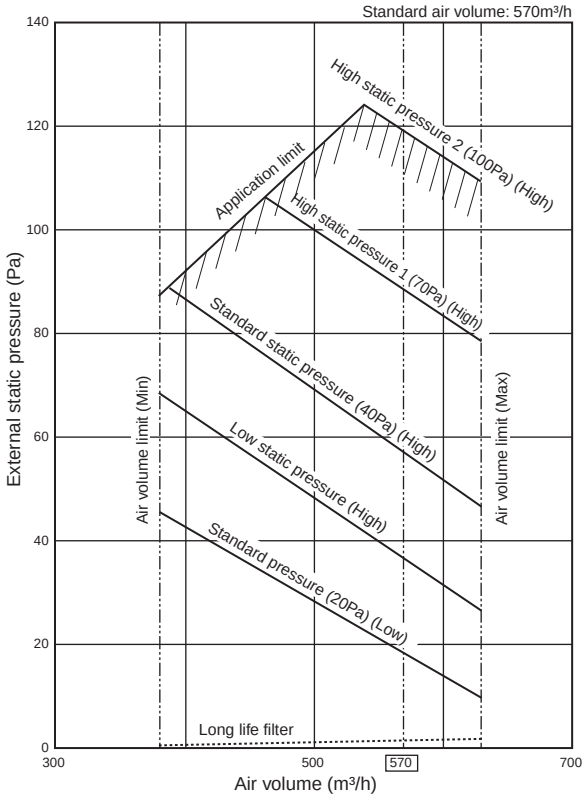
Fan characteristics

- **In case of square duct flange of discharge section**

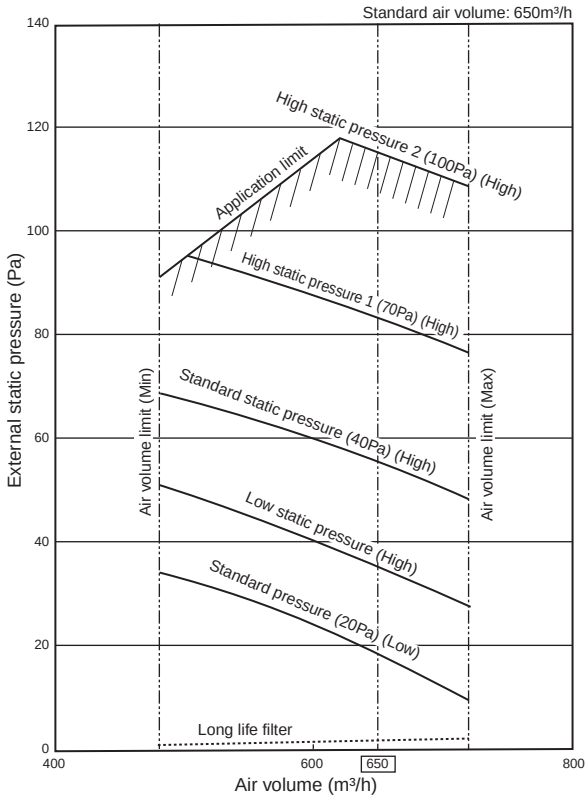
MMD-AP0071BH, AP0091BH



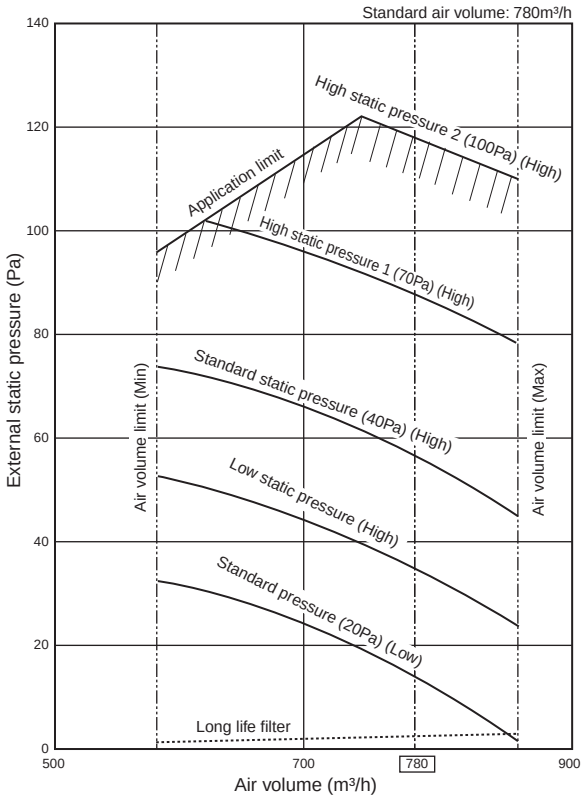
MMD-AP0121BH



MMD-AP0151BH

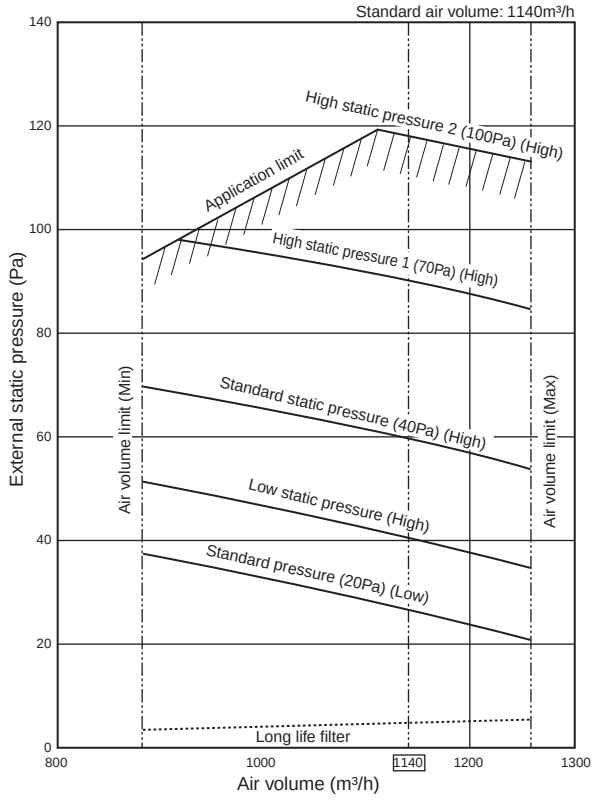


MMD-AP0181BH

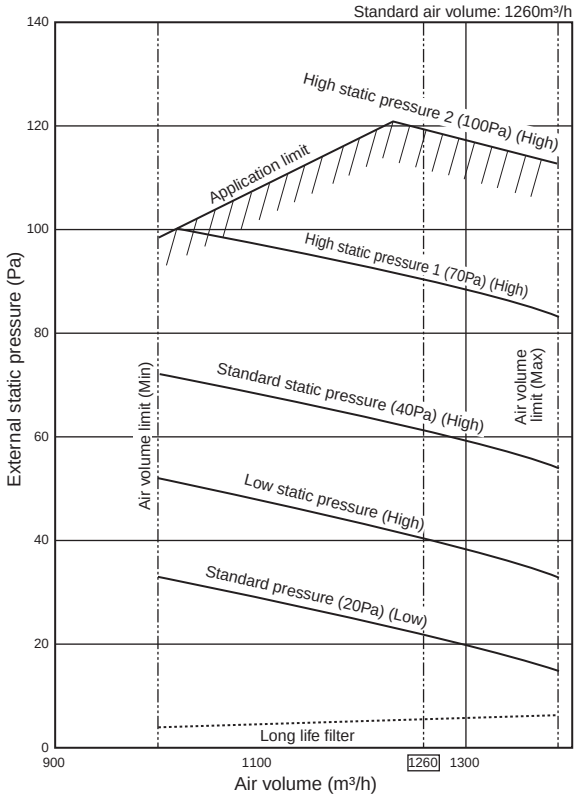


Note: "High" and "Low" is Air flow.

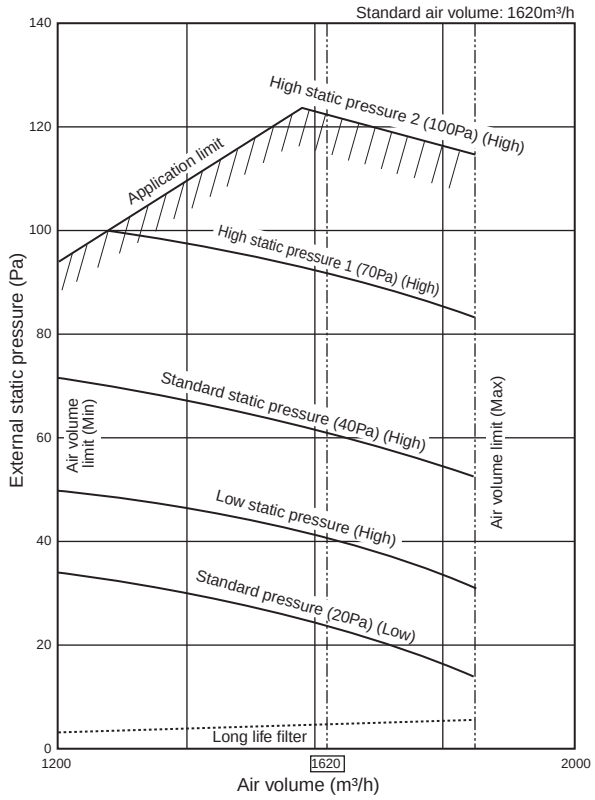
MMD-AP0241BH, AP0271BH



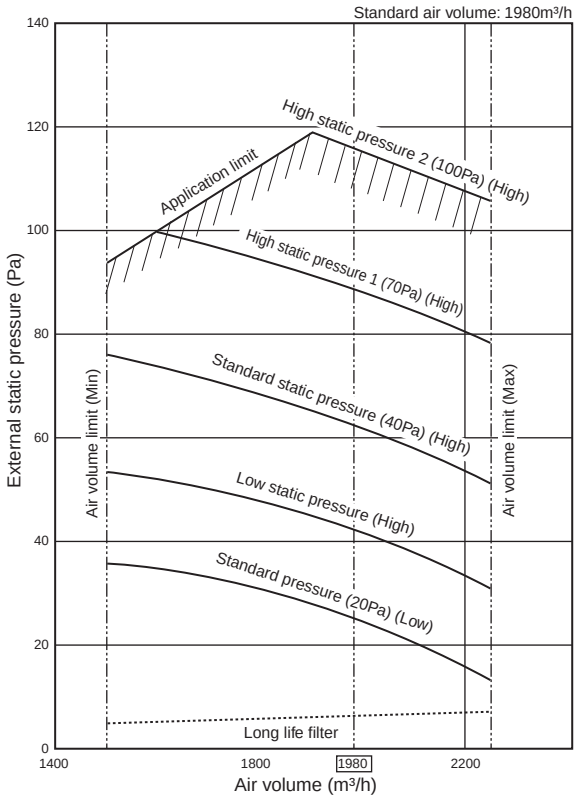
MMD-AP0301BH



MMD-AP0361BH



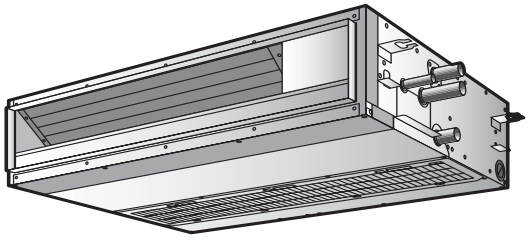
MMD-AP0481BH



Note: "High" and "Low" is Air flow.

2-6. Slim Duct Type

Appearance



Standard accessories

Part name	Q'ty	Shape	Usage
Installation Manual	1	This manual	(Be sure to hand over to customer)
insulating pipe	2		For insulating pipe connecting section
Washer	8	M10 x ϕ34	For hanging-down the unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For adjusting of drain pipe connecting
Heat insulator	1		For insulating drain connecting section

Optional accessories

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-6. Slim Duct Type

50Hz

• Specifications (50Hz)

Model name			MMD-	AP0071SPH	AP0091SPH	AP0121SPH	AP0151SPH	AP0181SPH
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3
Electrical characteristics	Power supply			1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)				
	Running current		(A)	0.29	0.29	0.31	0.32	0.39
	Power consumption		(kW)	0.039	0.039	0.043	0.045	0.054
	Starting current		(A)	0.51	0.51	0.54	0.56	0.68
Appearance				Zinc hot dipping steel plate				
Outer dimension	Height x Width x Depth		(mm)	210/845/645				
Total weight			(kg)	22	22	22	23	23
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Polyethylene foam + Polyurethane foam				
Fan unit	Fan			Centrifugal fan				
	Standard air flow (High/Mid./Low)		(m^3/h)	540/470/400		600/520/450	690/600/520	780/680/580
	Motor		(W)	60				
	External static pressure (Factory setting)		(Pa)	6		5		4
	External static pressure		(Pa)	6-16-31-46 (4steps)		5-15-30-45 (4steps)		4-14-29-44 (4steps)
	Air filter pressure loss		(Pa)	4		5		6
Air filter				Standard filter supplied (Long life filter)				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	φ9.5			φ12.7	
	Liquid side		(mm)	φ6.4				
	Drain port (Nominal dia. mm)			25 (Polyvinyl chloride tube : External dia.32 Internal dia.25)				
Sound pressure level(Note 2) (High/Mid/Low)	Under air inlet		(dB(A))	36/33/30		38/35/32	39/36/33	40/38/36
	Back air inlet		(dB(A))	28/26/24		29/27/25	32/30/28	33/31/29
PMV Kit				Available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-6. Slim Duct Type

60Hz

• Specifications (60Hz)

Model name			MMD-	AP0071SPH	AP0091SPH	AP0121SPH	AP0151SPH	AP0181SPH
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)				
	Running current		(A)	0.27	0.27	0.30	0.31	
	Power consumption		(kW)	0.037	0.037	0.041	0.043	0.052
	Starting current		(A)	0.47	0.47	0.53	0.54	0.65
Appearance				Zinc hot dipping steel plate				
Outer dimension	Height x Width x Depth		(mm)	210/845/645				
Total weight			(kg)	22	22	22	23	23
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Polyethylene foam + Polyurethane foam				
Fan unit	Fan			Centrifugal fan				
	Standard air flow (High/Mid./Low)		(m^3/h)	540/470/400		600/520/450	690/600/520	780/680/580
	Motor		(W)	60				
	External static pressure (Factory setting)		(Pa)	6		5		4
	External static pressure		(Pa)	6-16-31-46 (4steps)		5-15-30-45 (4steps)		4-14-29-44 (4steps)
	Air filter pressure loss		(Pa)	4		5		6
Air filter				Standard filter (Long life filter)				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	ϕ9.5			ϕ12.7	
	Liquid side		(mm)	ϕ6.4				
	Drain port (Nominal dia. mm)			25 (Polyvinyl chloride tube : External dia.32 Internal dia.25)				
Sound pressure level(Note 2) (High/Mid/Low)	Under air inlet		(dB(A))	36/33/30		38/35/32	39/36/33	40/38/36
	Back air inlet		(dB(A))	28/26/24		29/27/25	32/30/28	33/31/29
PMV Kit				Available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

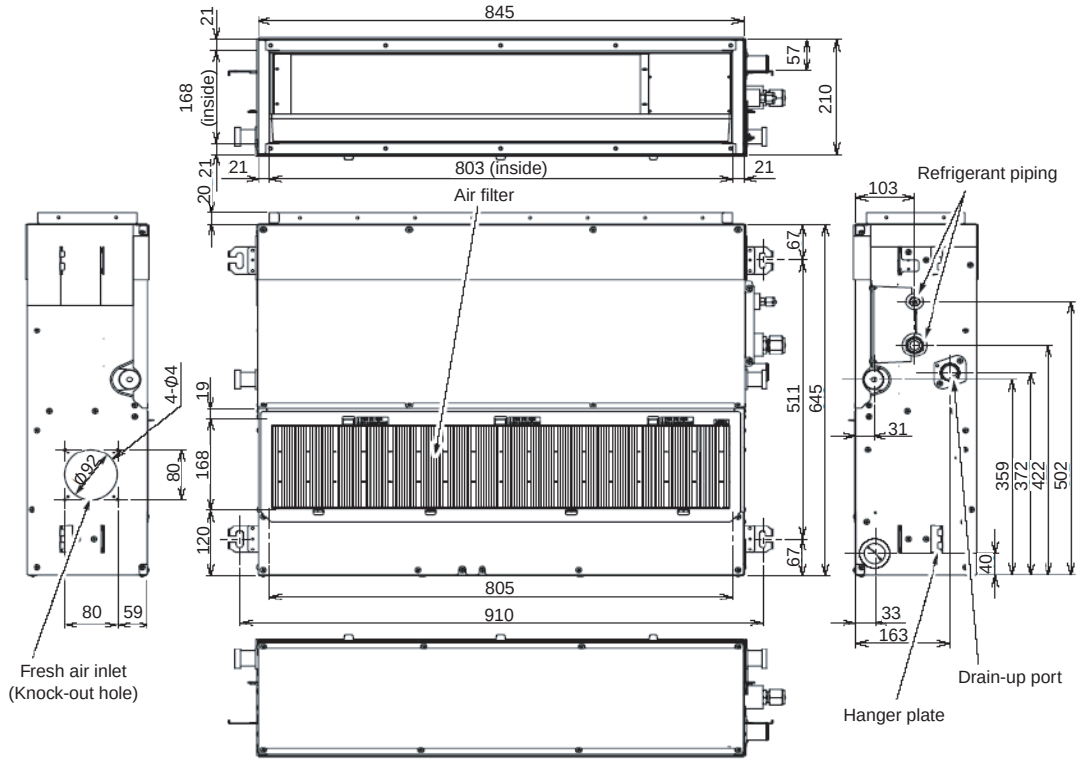
Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-6. Slim Duct Type

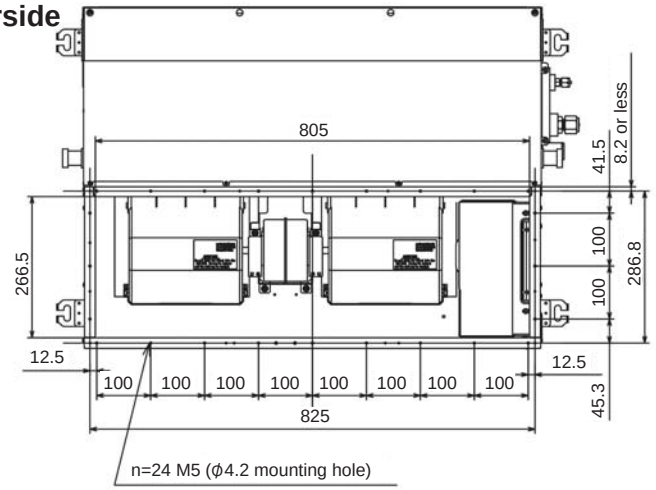
• Dimension

MMD-AP0071SPH, AP0091SPH, AP0121SPH, AP0151SPH, AP0181SPH

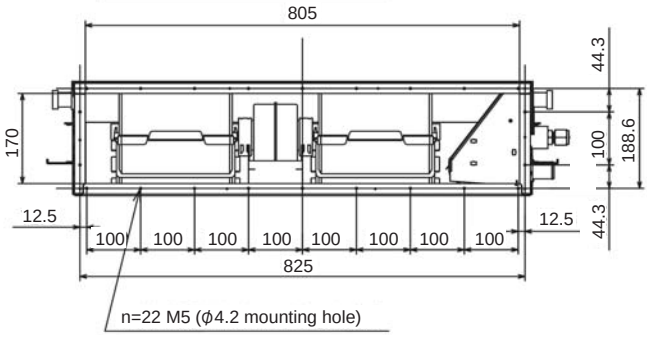


Air inlet connecting flange (Field supply)

Underside

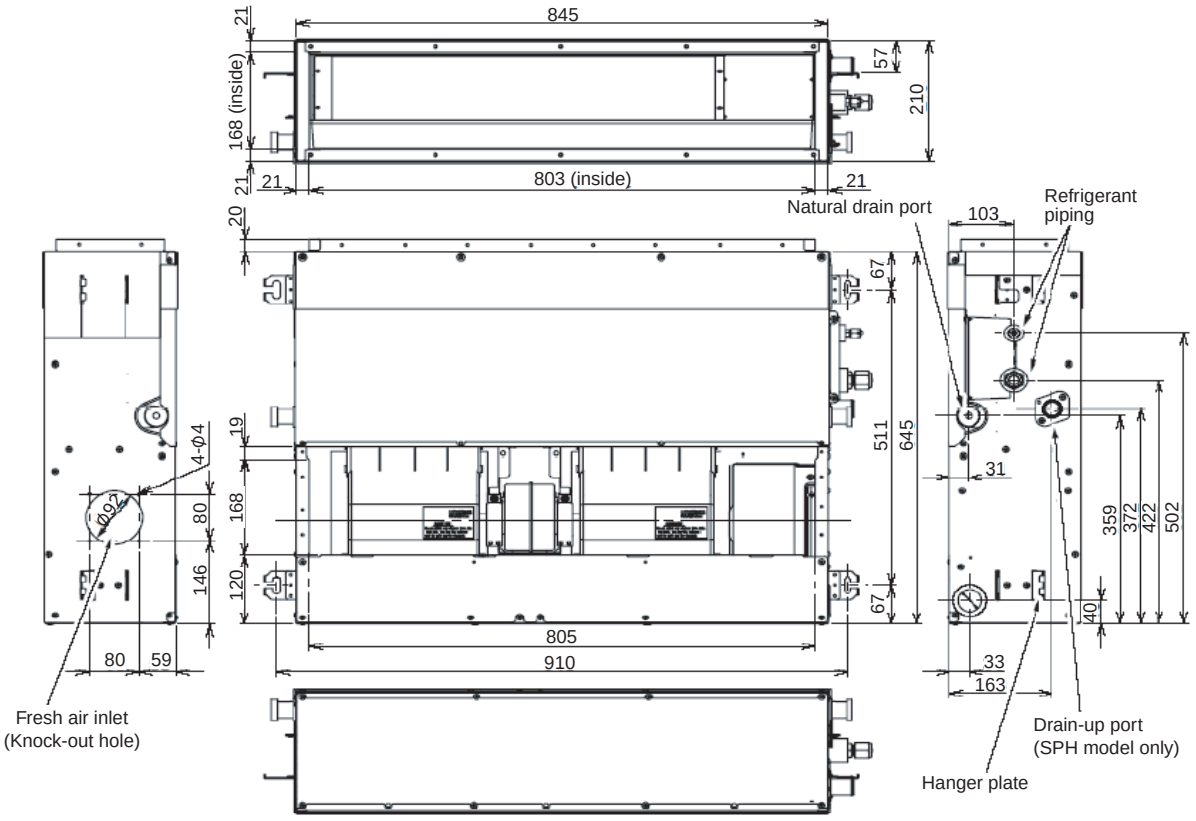


Rears



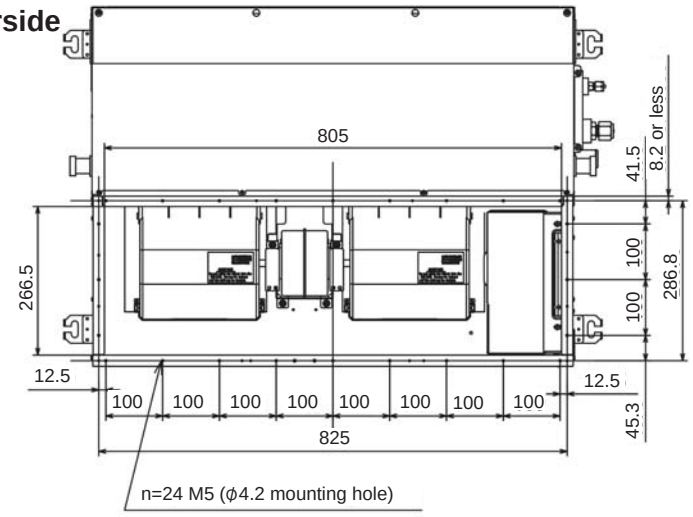
- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

MMD-AP007SPH-C, AP0091SPH-C, AP0121SPH-C, AP0151SPH-C, AP0181SPH-C,
MMD-AP0071SH-C, AP0091SH-C, AP0121SH-C, AP0151SH-C, AP0181SH-C

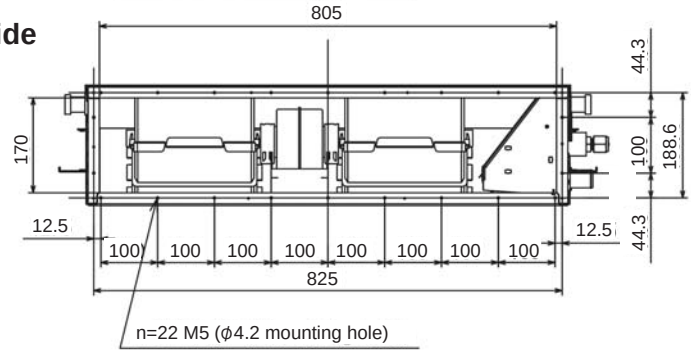


Air inlet connecting flange (Field supply)

Underside



Rearside

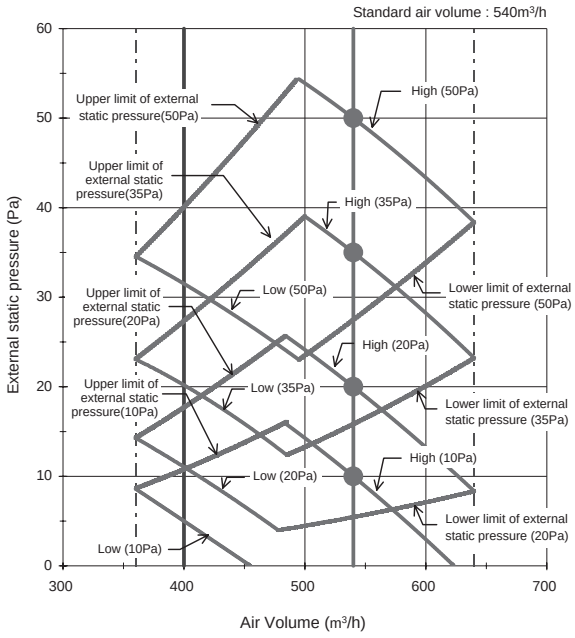


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

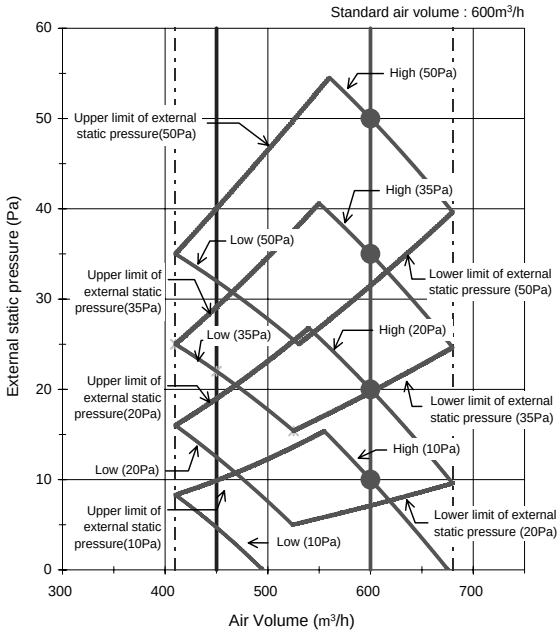
2-6. Slim Duct Type

Fan characteristice

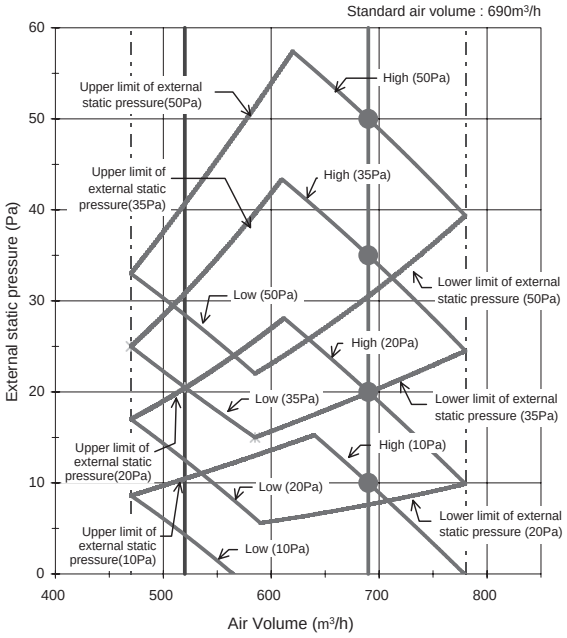
MMD-AP0071SPH
MMD-AP0091SPH



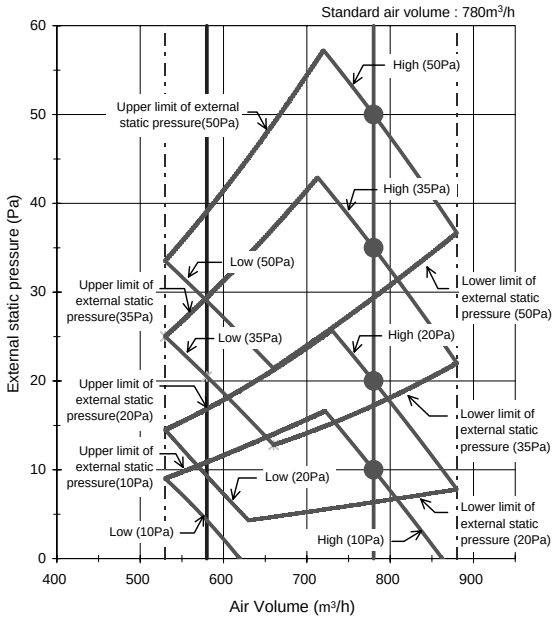
MMD-AP0121SPH



MMD-AP0151SPH

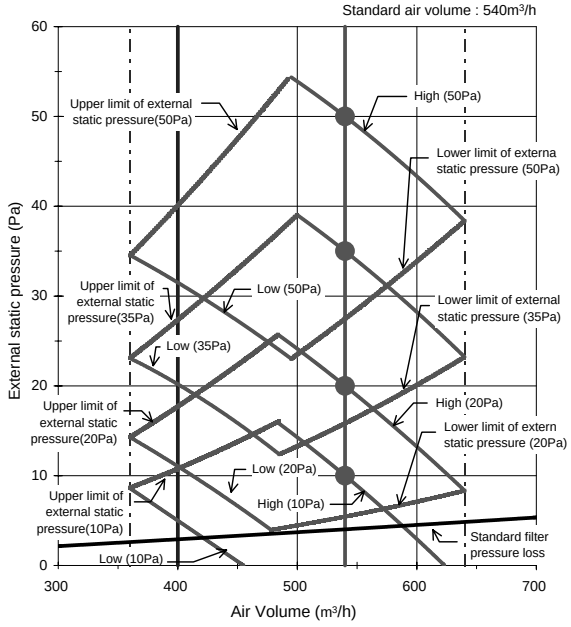


MMD-AP0181SPH

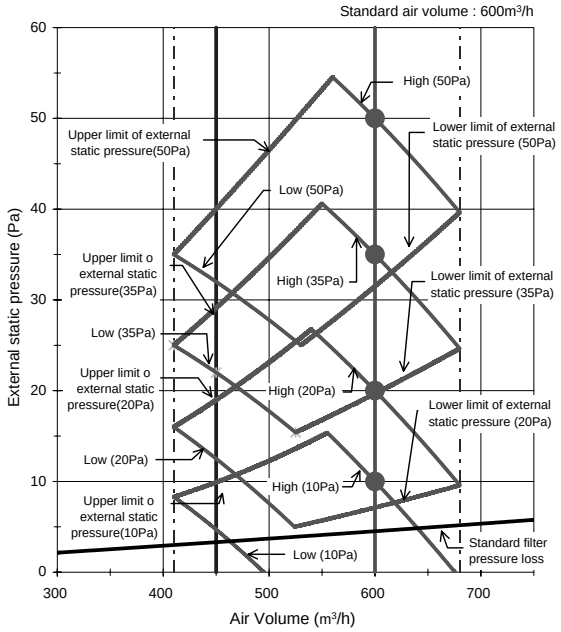


2-6. Slim Duct Type
(Filter attached)

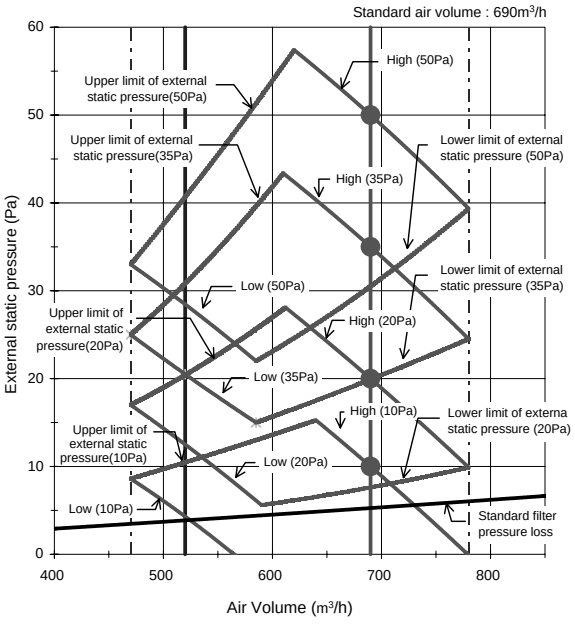
MMD-AP0071SPH
MMD-AP0091SPH



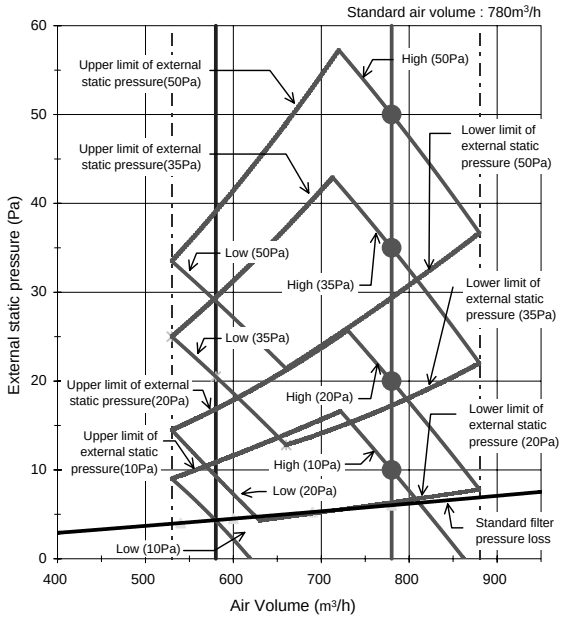
MMD-AP0121SPH



MMD-AP0151SPH



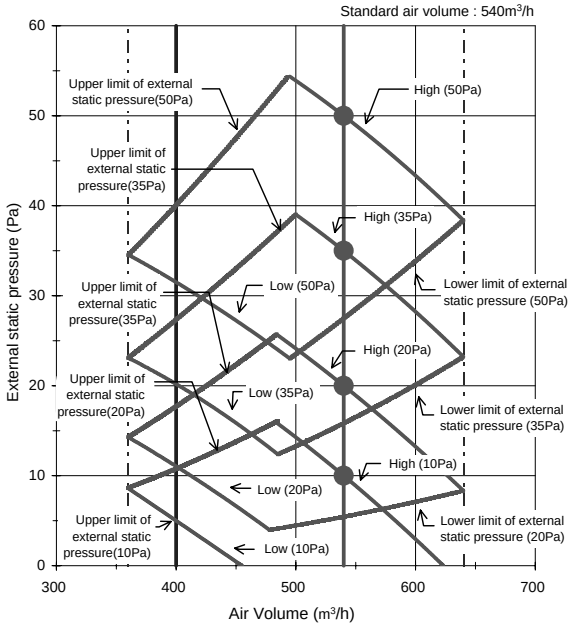
MMD-AP0181SPH



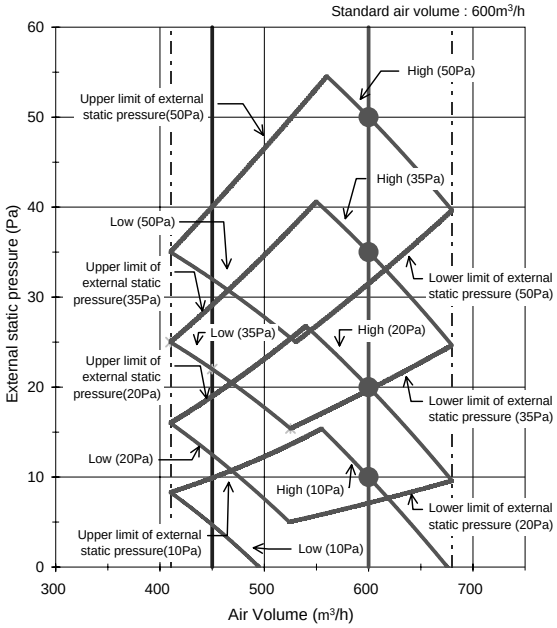
2-6. Slim Duct Type

CHINA model (Filter attached)

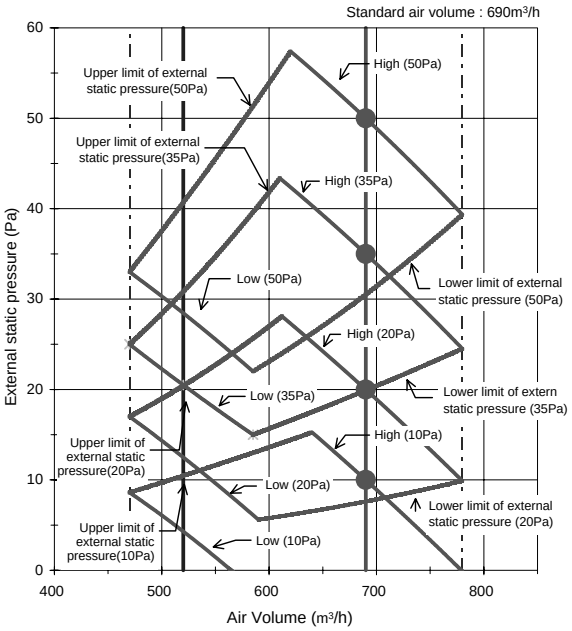
MMD-AP0071SPH-C, SH-C
MMD-AP0091SPH-C, SH-C



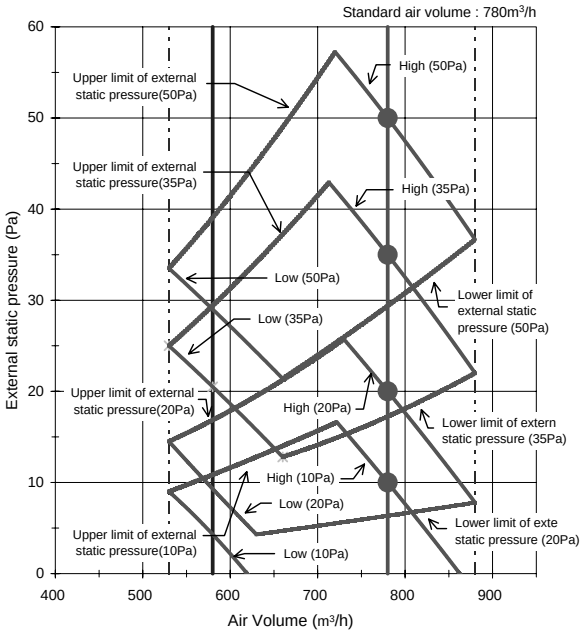
MMD-AP0121SPH-C, SH-C



MMD-AP0151SPH-C, SH-C



MMD-AP0181SPH-C, SH-C



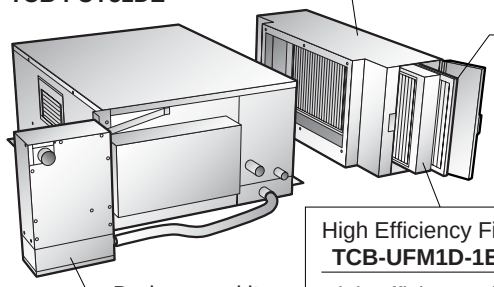
2-7. Concealed Duct High Static Pressure Type

Appearance

Standard accessories

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	—	—	Insulation	1		For insulating the liquid pipe connection
Insulation	1		For insulating the gas pipe connection				

Optional accessories



Parts Name	Model name	Applied Model	Notes	Remarks
High Efficiency Filter 65	TCB-UFM1D-1E	MMD-AP0181H	Dust collecting effect : 65% (NBS Colorimentric method)	Use with TCB-FCY21D
	TCB-UFM2D-1E(2 pcs.)	MMD-AP0241/0271/0361H		Use with TCB-FCY31D
	TCB-UFM1D-1E(2 pcs.)	MMD-AP0481H		Use with TCB-FCY41D
High Efficiency Filter 90	TCB-UFH5D-1E	MMD-AP0181H	Dust collecting effect : 90% (NBS Colorimentric method)	Use with TCB-FCY21D
	TCB-UFH6D-1E (2 pcs.)	MMD-AP0241/0271/0361H		Use with TCB-FCY31D
	TCB-UFH5D-1E (2 pcs.)	MMD-AP0481H		Use with TCB-FCY41D
Long life Pre-filter	TCB-PF1D-1E	MMD-AP0181H	Dust collecting effect : 50% (Weight method)	Use with TCB-FCY21D
	TCB-PF2D-1E (2 pcs.)	MMD-AP0241/0271/0361H		Use with TCB-FCY31D
	TCB-PF1D-1E (2 pcs.)	MMD-AP0481H		Use with TCB-FCY41D
Filter Chamber	TCB-FCY21DE	MMD-AP0181H	For high efficiency filter or long life pre-filter	
	TCB-FCY31DE	MMD-AP0241/0271/0361H		
	TCB-FCY51DE	MMD-AP0481H		
Drain Pump Kit	TCB-DP31DE	MMD-AP0181H to AP0481H	Stand-up 330 or less (from bottom face of ceiling)	

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-7. Concealed Duct High Static Pressure Type

50Hz

• Specifications (50Hz)

Model name			MMD-	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)			(kW)	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply			1 phase 50Hz 220V (220-240V) (Separate power supply for indoor units is required.)				
	Running current		(A)	0.81	1.35		1.63	1.84
	Power consumption		(kW)	0.184	0.299		0.368	0.414
	Power factor		(%)	99	96		98	
	Starting current		(A)	1.3	3.5		4.1	4.8
Appearance				Zinc hot dipping steel plate				
Outer dimension	Height x Width x Depth		(mm)	380 x 850 x 660				380 x 1,200 x 660
Total weight			(kg)	50	52		56	67
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Non-flammable insulation				
Fan unit	Fan			Centrifugal fan				
	Standard air flow		(m^3/h)	900	1,320		1,600	2,100
	Motor		(W)	160			260	
	External static pressure (Factory setting)		(Pa)	137				
	External static pressure		(Pa)	68.6-137-196				
	Air flow limit Lower limit/Upper limit		(m^3/h)	720/1,080	1,060/1,580		1,280/1,920	1,680/2,520
Air filter				Option or field supply				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	ϕ12.7	ϕ15.9			
	Liquid side		(mm)	ϕ6.4	ϕ9.5			
	Drain port	(Nominal dia. mm)		25 (One side of male screw)				
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	37	40			
PMV Kit				Not available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-7. Concealed Duct High Static Pressure Type

60Hz

• Specifications (60Hz)

Model name			MMD-	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)			(kW)	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)				
	Running current		(A)	0.92	1.80		2.07	2.26
	Power consumption		(kW)	0.198	0.385		0.450	0.490
	Power factor		(%)	98	97		99	
	Starting current		(A)	1.30	3.40		3.90	4.35
Appearance				Zinc hot dipping steel plate				
Outer dimension	Height x Width x Depth		(mm)	380 x 850 x 660				380 x 1,200 x 660
Total weight			(kg)	50	52		56	67
Heat exchanger				Finned tube				
Soundproof/Heat-insulating material				Non-flammable insulation				
Fan unit	Fan			Centrifugal fan				
	Standard air flow		(m^3/h)	900	1,320		1,600	2,100
	Motor		(W)	160			260	
	External static pressure (Factory setting)		(Pa)	137				
	External static pressure		(Pa)	68.6-137-196				
	Air flow limit Lower limit/Upper limit		(m^3/h)	720/1,080	1,060/1,580		1,280/1,920	1,680/2,520
Air filter				Option or field supply				
Controller				Remote controller				
Connecting pipe	Gas side		(mm)	ϕ12.7	ϕ15.9			
	Liquid side		(mm)	ϕ6.4	ϕ9.5			
	Drain port	(Nominal dia. mm)		25 (One side of male screw)				
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	37	40			
PMV Kit				Not available				

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

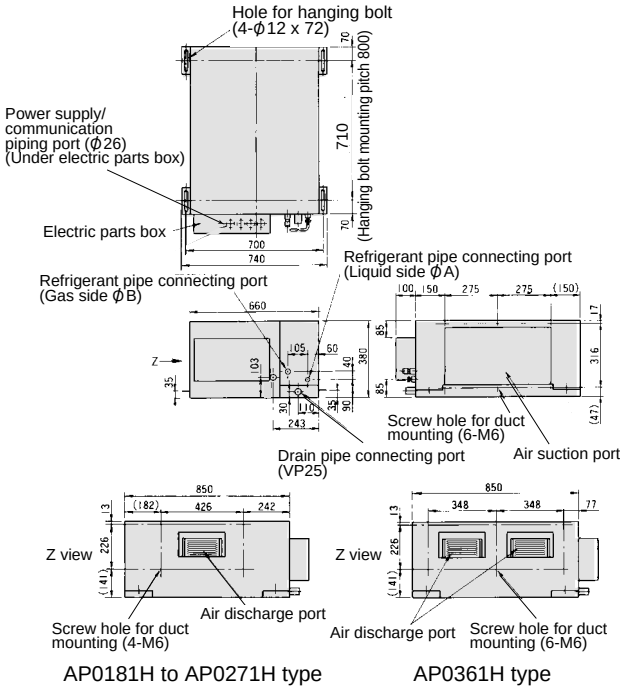
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

2-7. Concealed Duct High Static Pressure Type

• Dimension

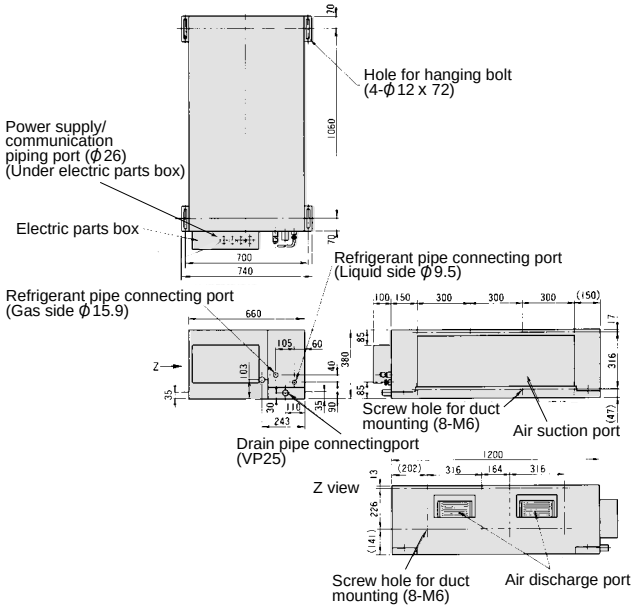
MMD-AP0181H, AP0241H, AP0271H, AP0361H, AP0481H

MMD-AP0181H to AP0361H



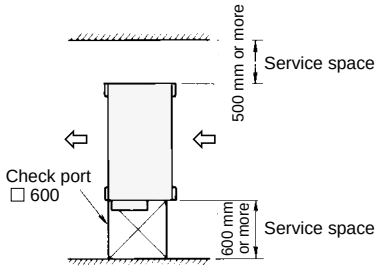
AP0181H to AP0271H type AP0361H type

MMD-AP0481H



Model MMD-	A	B
AP0181H	6.4	12.7
AP0241H, AP0271H, AP0361H, AP0481H	9.5	15.9

Space required for installation and servicing ⋆1



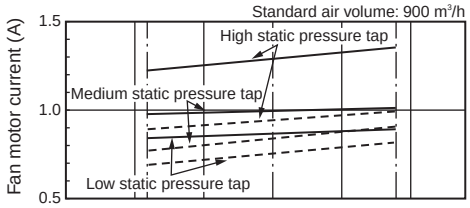
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

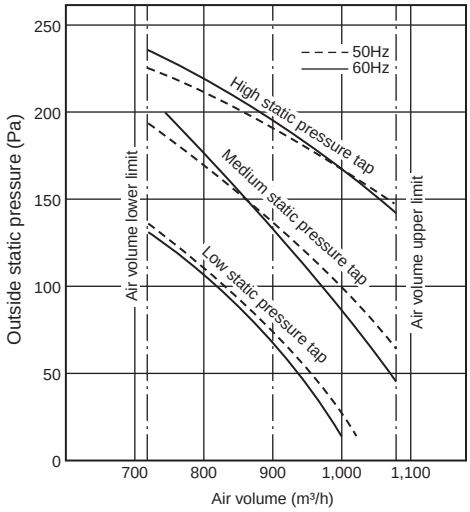
Note: All dimensions are in mm.

2-7. Concealed Duct High Static Pressure Type

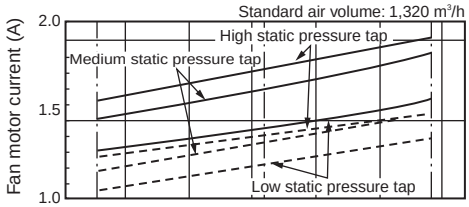
Fan Characteristics

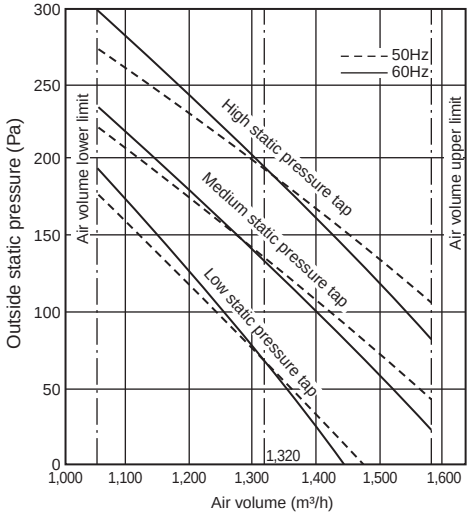
MMD-AP0181H



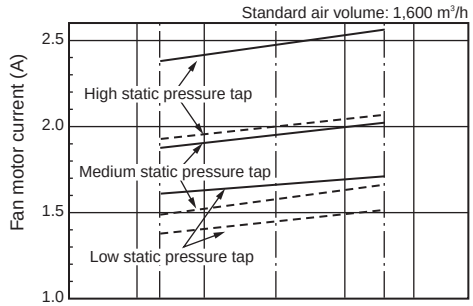


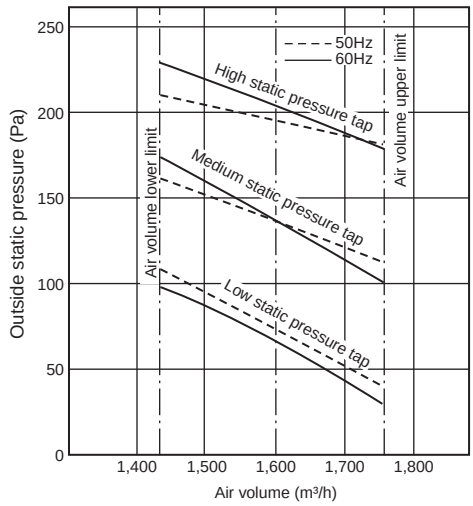
MMD-AP0241H, AP0271H



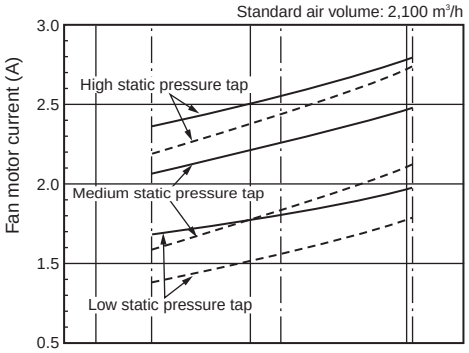


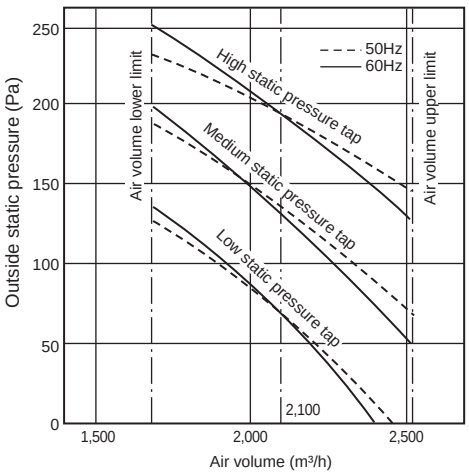
MMD-AP0361H





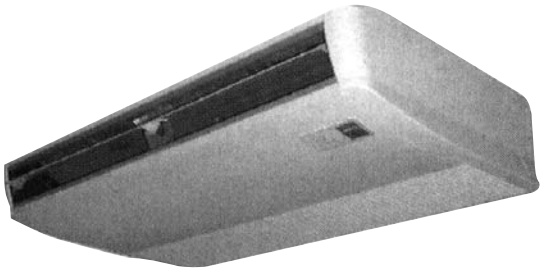
MMD-AP0481H





2-8. Under ceiling Type

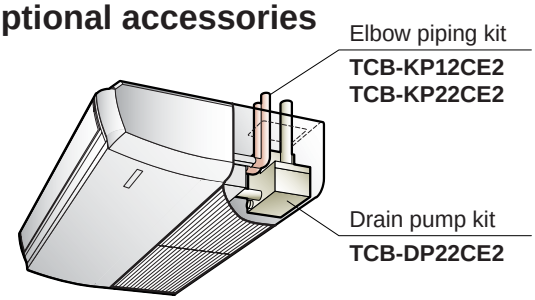
Appearance



Standard accessories

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	This manual	(Be sure to hand over to the customer)	Heat insulator	1		For heat insulating of drain connecting section
Heat insulating pipe	2		For heat insulation of pipe connecting section	Washer	4		For hanging-down unit
Installation pattern	1	—	For confirmation of ceiling opening and main unit position	Hose band	2		For connecting drain pipe
Banding band	2		For drain hose forming	Drain hose	1		For drain piping
Bushing	1		For power supply cord protection	Heat insulator	1		For sealing of piping hole

Optional accessories

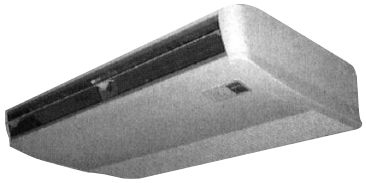


Parts Name	Model name	Applied Model	Notes	Remarks
Drain Pump Kit	TCB-DP22CE2	MMC-AP0151/0181H	Stand-up 600 or less (from bottom face of ceiling)	Use with TCB-KP12CE
		MMC-AP0241H/0271/0361H/0481H		Use with TCB-KP22CE
Elbow Piping Kit	TCB-KP12CE2	MMC-AP0151/0181H	Needed when Drain Pump Kid is used	
	TCB-KP22CE2	MMC-AP0241H/0271/0361H/0481H		

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-8. Under Ceiling Type



50Hz

• Specifications (50Hz)

Model name		MMC-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)		(kW)	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	0.29	0.32	0.42		0.78	0.84
	Power consumption	(kW)	0.033	0.038	0.050		0.091	0.110
	Starting current	(A)	0.43	0.48	0.62		1.17	1.25
Appearance			White (Munsell 10Y 9.3/0.4)					
Outer dimension	Height x Width x Depth	(mm)	210 x 910 x 680		210 x 1,180 x 680		210 x 1,595 x 680	
Total weight		(kg)	22		26		34	
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Centrifugal fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	720/600/540	780/660/540	1,110/900/840		1,650/1,380/1,200	1,800/1,560/1,320
	Motor	(W)	30		40		80	
Controller			Remote controller					
Air filter			Standard filter (Long life filter)					
Connecting pipe	Gas side	(mm)	ϕ12.7		ϕ15.9			
	Liquid side	(mm)	ϕ6.4		ϕ9.5			
	Drain port	(Nominal dia. mm)	20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	35/32/30	36/33/30	38/36/33		41/38/35	43/40/37
PMV Kit			Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-8. Under Ceiling Type

60Hz

• Specifications (60Hz)

Model name			MMC-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)			(kW)	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current		(A)	0.30	0.34	0.44		0.82	0.87
	Power consumption		(kW)	0.033	0.038	0.050		0.091	0.110
	Starting current		(A)	0.43	0.48	0.62		1.17	1.25
Appearance				White (Munsell 10Y 9.3/0.4)					
Outer dimension	Height x Width x Depth		(mm)	210 x 910 x 680		210 x 1,180 x 680		210 x 1,595 x 680	
Total weight			(kg)	22		26		34	
Heat exchanger				Finned tube					
Soundproof/Heat-insulating material				Non-flammable insulation					
Fan unit	Fan			Centrifugal fan					
	Standard air flow (High/Mid/Low)		(m^3/h)	720/600/540	780/660/540	1,110/900/840		1,650/1,380/1,200	1,800/1,560/1,320
	Motor		(W)	30		40		80	
Controller				Remote controller					
Air filter				Standard filter (Long life filter)					
Connecting pipe	Gas side		(mm)	Φ12.7		Φ15.9			
	Liquid side		(mm)	Φ6.4		Φ9.5			
	Drain port	(Nominal dia. mm)		20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)			(db(A))	35/32/30	36/33/30	38/36/33		41/38/35	43/40/37
PMV Kit				Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

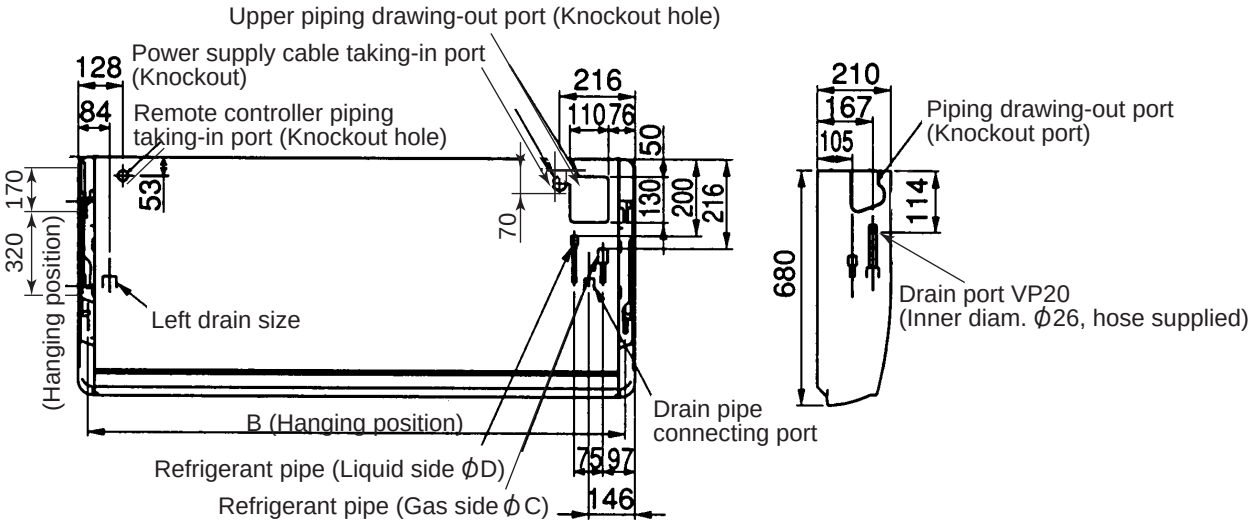
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

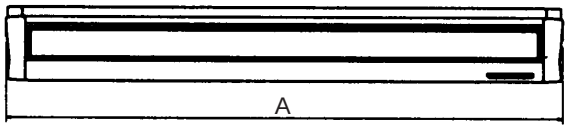
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

2-8. Under Ceiling Type

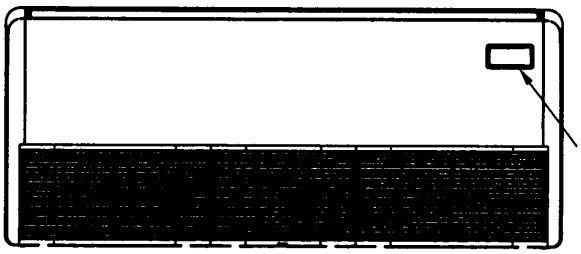
• Dimension

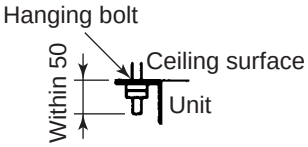
MMC-AP0151H, AP0181H, AP0241H, AP0271H, AP0361H, AP0481H

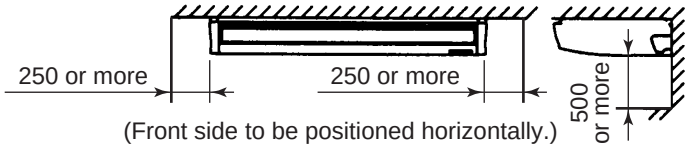




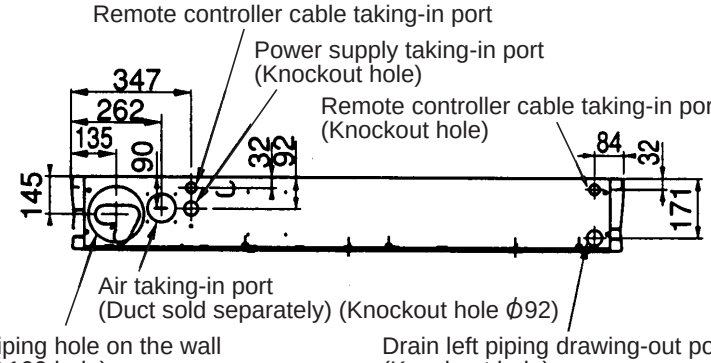
Model MMC-	A	B	C	D
AP0151H, AP0181H	910	855	12.7	6.4
AP0241H, AP0271H	1180	1125	15.9	9.5
AP0361H, AP0481H	1595	1540	15.9	9.5







Space required for installation and servicing

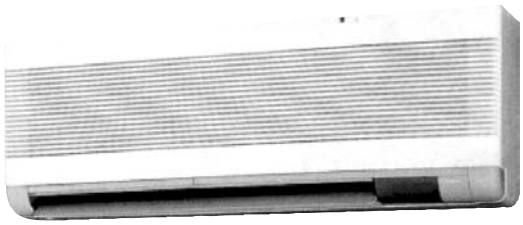


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX22CE2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

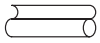
2-9. High Wall (1series) Type

Appearance

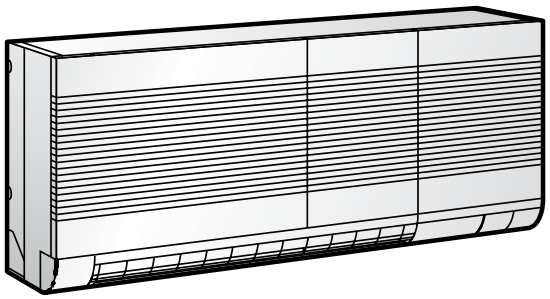


Standard accessories

High Wall type (1 series)

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	This manual	(Be sure to hand over to customer)	Installation pattern	1	—	Used for drilling holes and positioning installation plate
Heat Insulating pipe	2		For heat insulating of pipe connecting section	Screw cap	4		Cover on fixing screw at side plate
Wood screw ϕ5.1 x 45ℓ	12		Used to fix installation plate	Bundling band	4		Used to fix attached pipe heat insulating material
Installation plate	1		Used to install indoor unit wall unit				

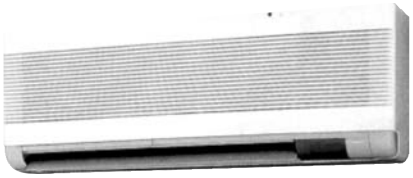
Optional accessories



Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-9. High Wall 1series Type



50Hz

• Specifications (50Hz)

Model name		MMK-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	0.30			0.32		0.35
	Power consumption	(kW)	0.035			0.037		0.040
	Starting current	(A)	0.36			0.42		0.47
Appearance	Suction grille and side panel		Silky mist (Munsell 1Y 8.9/0.5)					
	Discharge grille		City gray (Munsell N6.5)					
	Bottom surface		Silky mist (Munsell 1Y 8.9/0.5)					
Outer dimension	Height x Width x Depth	(mm)	368 x 895 x 210			368 x 1,055 x 210		368 x 1,430 x 210
Total weight		(kg)	18			19		25
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Cross-flow fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	600/540/480			780/660/600		1,200/1,020/900
	Motor outlet	(W)	30					
Air filter			Standard filter (Simple filter)					
Controller			Remote controller					
Connecting pipe	Gas side	(mm)	ϕ9.5			ϕ12.7		ϕ15.9
	Liquid side	(mm)	ϕ6.4					ϕ9.5
	Drain port	(Nominal dia. mm)	20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	39/34/31			42/38/35		42/38/35
PMV Kit			Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-9. High Wall 1series Type

60Hz

• Specifications (60Hz)

Model name			MMK-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current		(A)	0.32			0.34		0.35
	Power consumption		(kW)	0.035			0.037		0.040
	Starting current		(A)	0.46			0.48		0.60
Appearance	Suction grille and side panel			Silky mist (Munsell 1Y 8.9/0.5)					
	Discharge grille			City gray (Munsell N6.5)					
	Bottom surface			Silky mist (Munsell 1Y 8.9/0.5)					
Outer dimension	Height x Width x Depth		(mm)	368 x 895 x 210			368 x 1,055 x 210		368 x 1,430 x 210
Total weight			(kg)	18			19		25
Heat exchanger				Finned tube					
Soundproof/Heat-insulating material				Non-flammable insulation					
Fan unit	Fan			Cross-flow fan					
	Standard air flow (High/Mid/Low)		(m^3/h)	600/540/480			780/660/600		1,200/1,020/900
	Motor outlet		(W)	30					
Air filter				Standard filter (Simple filter)					
Controller				Remote controller					
Connecting pipe	Gas side		(mm)	ϕ9.5			ϕ12.7		ϕ15.9
	Liquid side		(mm)	ϕ6.4					ϕ9.5
	Drain port (Nominal dia. mm)			20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	39/34/31			42/38/35		42/38/35
PMV Kit				Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

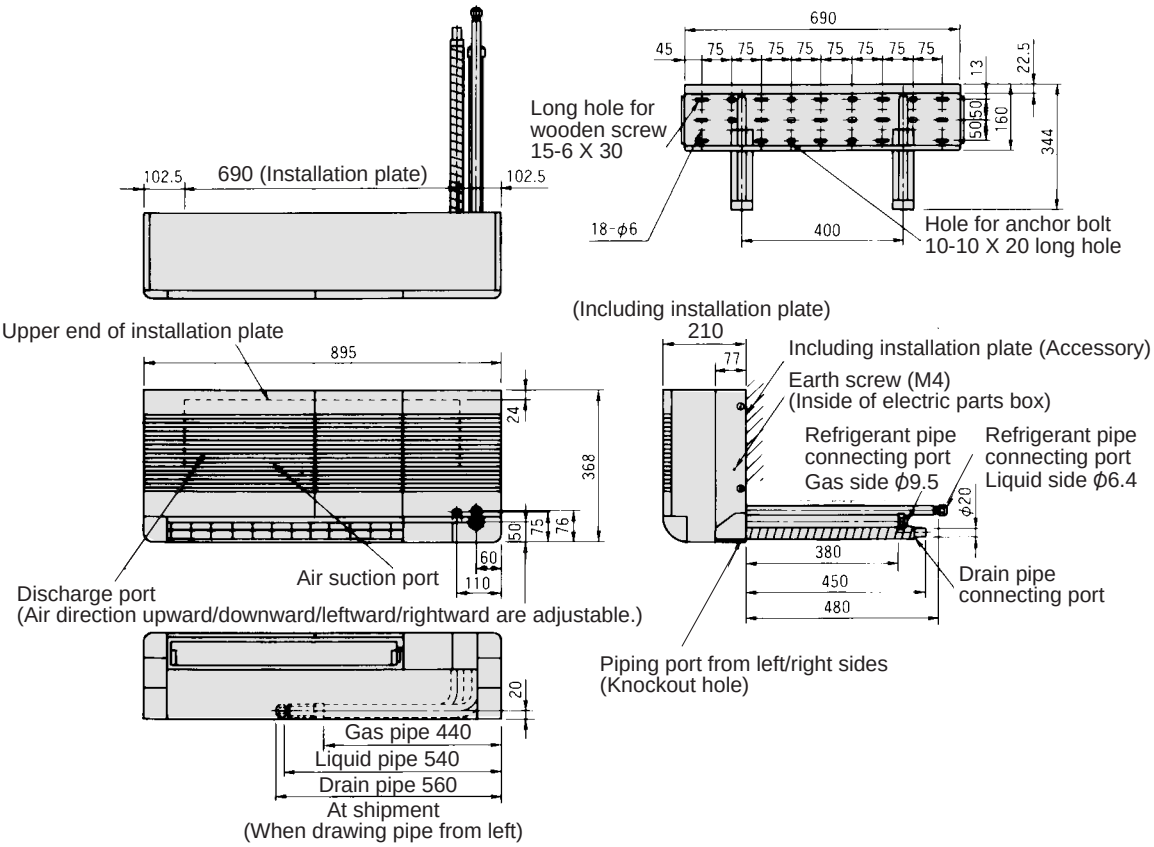
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

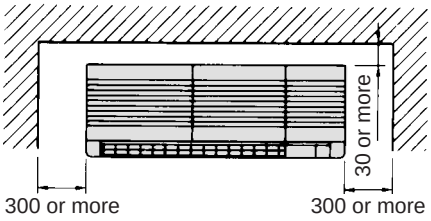
2-9. High Wall 1series Type

• Dimension

MMK-AP0071H, AP0091H, AP0121H

Position of holes on the installation plate.



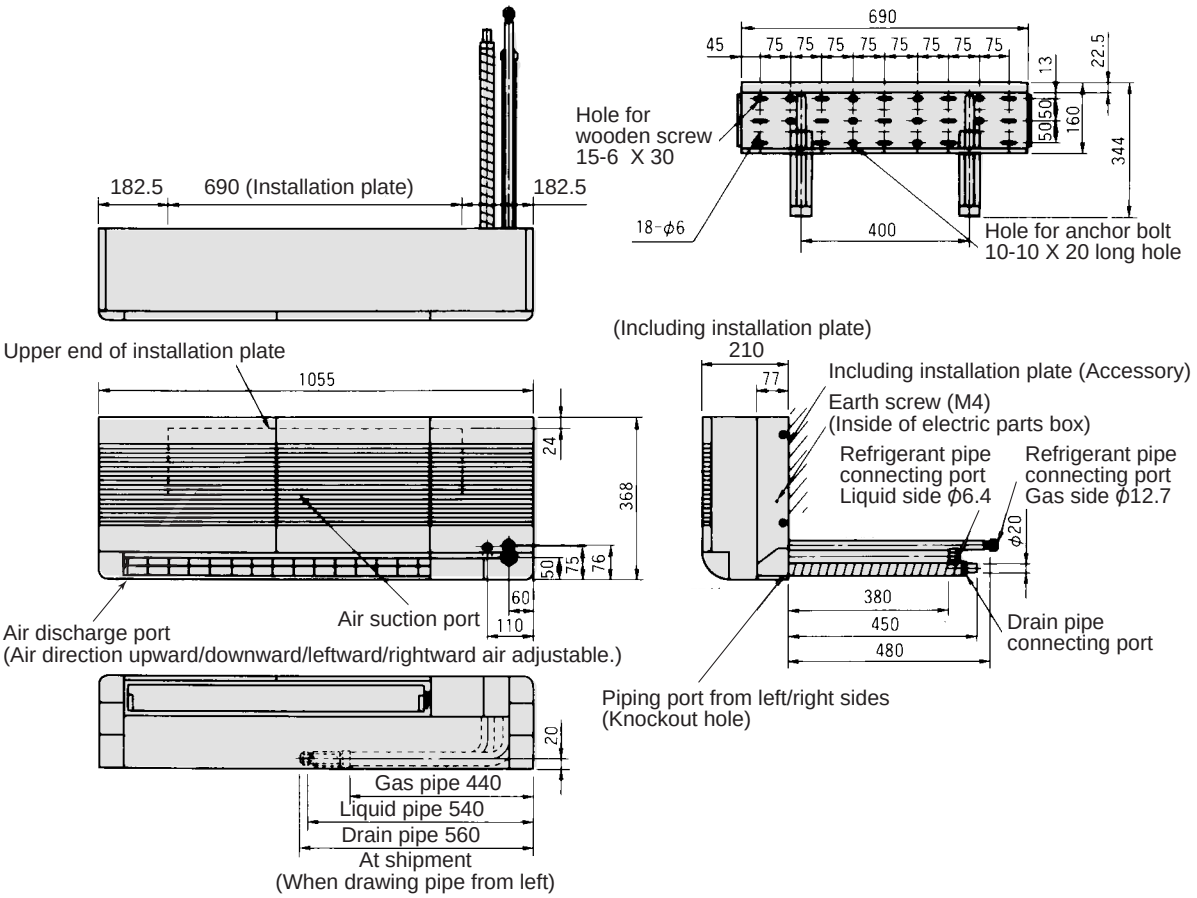


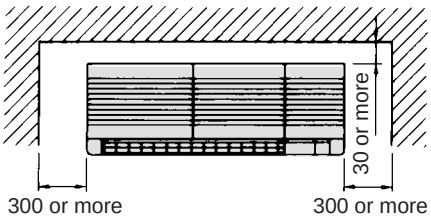
Space required for service

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

MMK-AP0151H, AP0181H





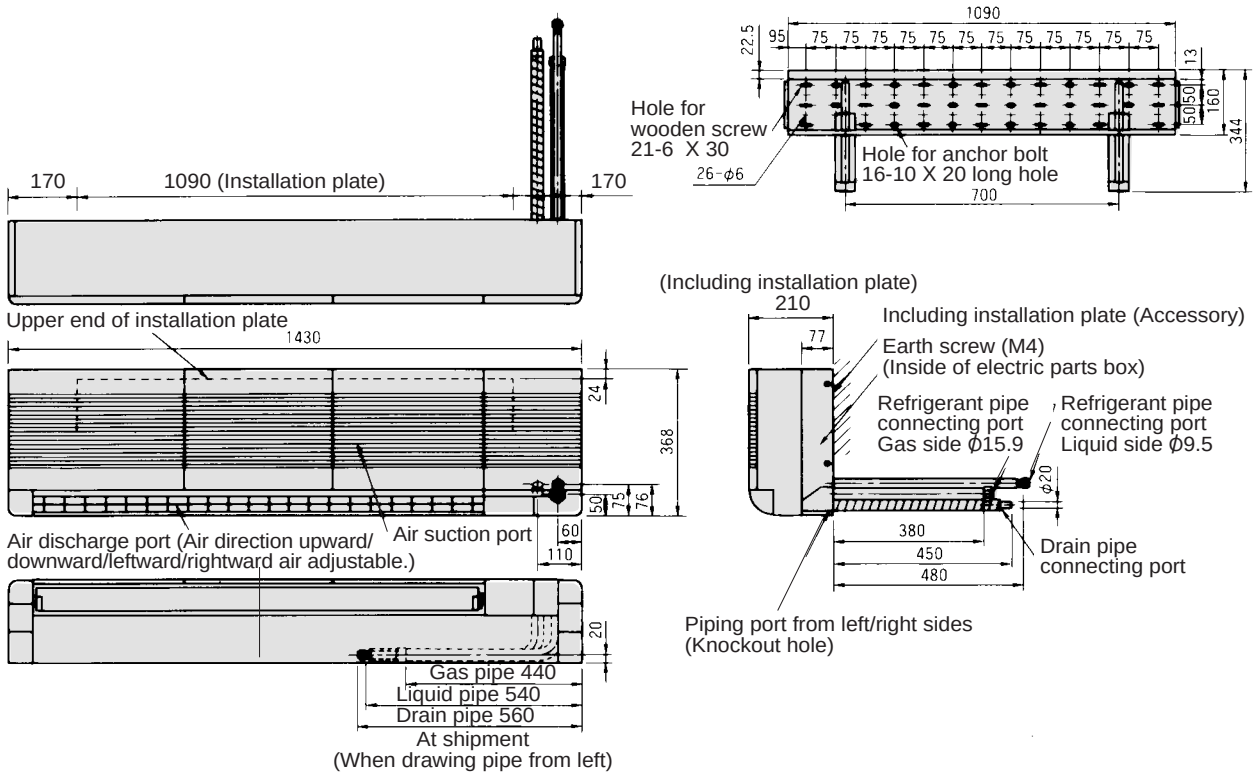
Space required for service

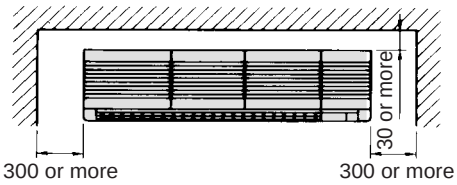
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

MMK-AP0241H

Position of holes on the installation plate





Space required for service

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

2-10. High Wall (2series) Type

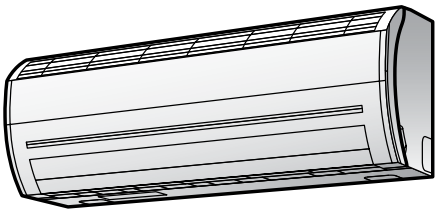
Appearance

Standard accessories

High Wall type (2 series)

Part No.	Part name (Q'ty)	Part No.	Part name (Q'ty)	Part No.	Part name (Q'ty)
1	Installation plate x 1	3	Battery x 2	5	Mounting screw ϕ4 x 25 ℓ x 6
2	Wireless remote controller x 1	4	Remote controller holder x 1	6	Pan head wood screw ϕ3.1 x 16 ℓ x 2

Optional accessories



Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-10. High Wall 2 series Type

50Hz

• Specifications (50Hz)

Model name		MMK-	AP0072H	AP0092H	AP0122H
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)		
	Running current	(A)	0.17	0.18	0.19
	Power consumption	(kW)	0.017	0.018	0.019
	Starting current	(A)	0.22	0.23	0.24
Appearance	Suction grille and side panel		Moon white		
	Discharge grille		Moon white		
	Bottom surface		Moon white		
Outer dimension	Height x Width x Depth	(mm)	275 x 790 x 208		
Total weight		(kg)	11		
Heat exchanger			Finned tube		
Soundproof/Heat-insulating material			Non-flammable insulation		
Fan unit	Fan		Cross-flow fan		
	Standard air flow (High/Mid/Low)	(m^3/h)	480/420/360	510/450/360	540/450/360
	Motor outlet	(W)	30		
Air filter			Standard filter (Simple filter)		
Controller			Wireless remote controller (WH-H2UE, Packed with indoor unit)		
Connecting pipe	Gas side	(mm)	φ9.5		
	Liquid side	(mm)	φ6.4		
	Drain port	(Outer dia. mm)	16 (Polyvinyl chloride tube)		
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	35/32/29	36/33/29	37/33/29
PMV Kit			Available		

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note 3 : Wireless remote controller is packed with indoor unit.
Wired remote controller (RBC-AMT31E, RBC-AS21E2) can be also connected.

Note : Rated conditions Cooling : Indoor air temperature 27ºC DB/19ºC WB, Outdoor air temperature 35ºC DB
Heating : 20ºC DB, Outdoor air temperature 7ºC DB/6ºC WB

2-10. High Wall 2 series Type

60Hz

• Specifications (60Hz)

Model name		MMK-	AP0072H	AP0092H	AP0122H
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0
Electrical characteristics	Power supply		1 phase 60Hz 220V (Separate power supply for indoor units is required.)		
	Running current	(A)	0.18	0.19	0.20
	Power consumption	(kW)	0.017	0.018	0.019
	Starting current	(A)	0.22	0.23	0.24
Appearance	Suction grille and side panel		Moon white		
	Discharge grille		Moon white		
	Bottom surface		Moon white		
Outer dimension	Height x Width x Depth	(mm)	275 x 790 x 208		
Total weight		(kg)	11		
Heat exchanger			Finned tube		
Soundproof/Heat-insulating material			Non-flammable insulation		
Fan unit	Fan		Cross-flow fan		
			480/420/360	510/450/360	540/450/360
	Motor outlet	(W)	30		
Air filter			Standard filter (Simple filter)		
Controller			Wireless remote controller (WH-H2UE, Packed with indoor unit)		
Connecting pipe	Gas side	(mm)	φ9.5		
	Liquid side	(mm)	φ6.4		
	Drain port	(Outer dia. mm)	16 (Polyvinyl chloride tube)		
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	35/32/29	36/33/29	37/33/29
PMV Kit			Available		

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

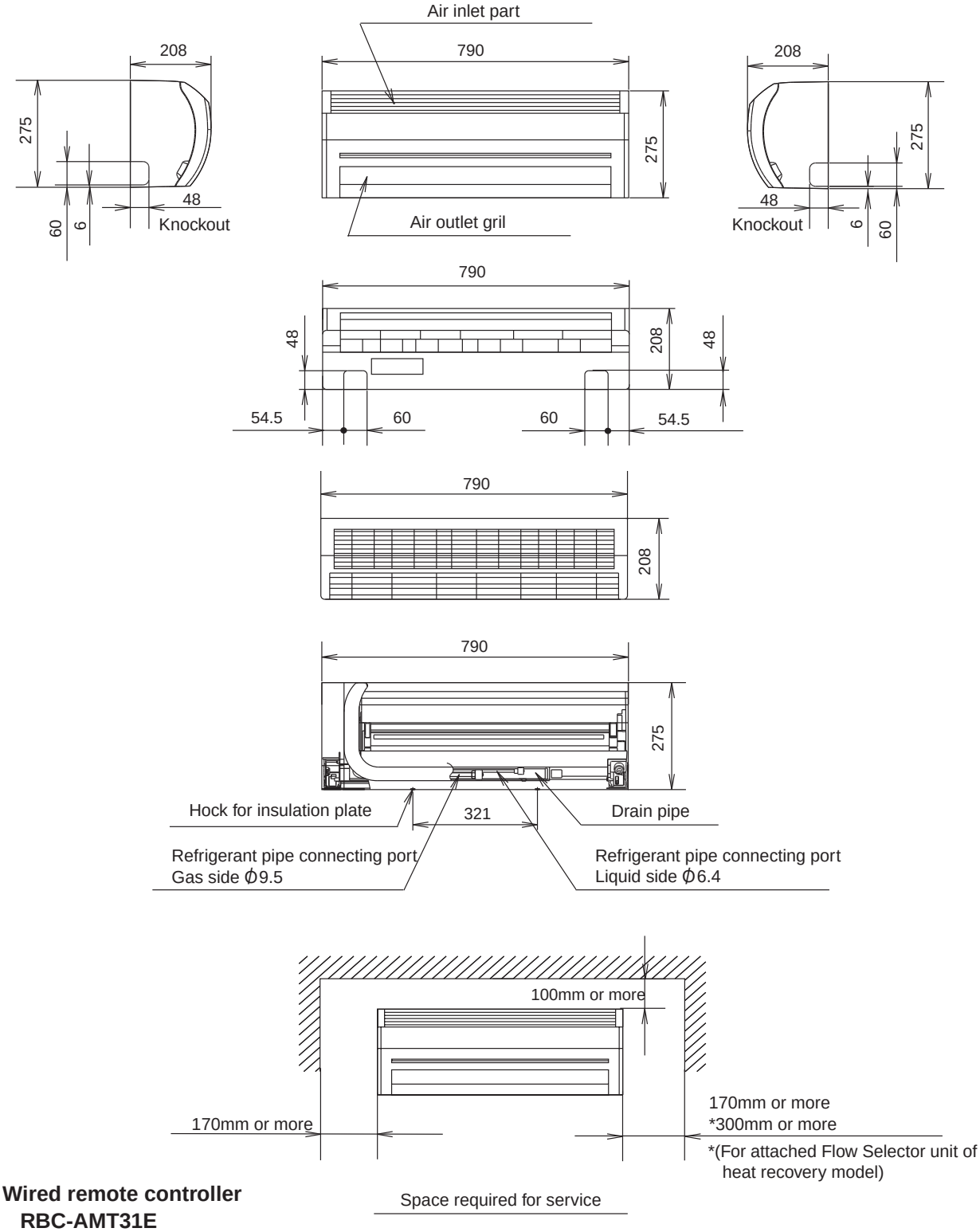
Note 3 : Wireless remote controller is packed with indoor unit.
Wired remote controller (RBC-AMT31E, RBC-AS21E2) can be also connected.

Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : 20°C DB, Outdoor air temperature 7°C DB/6°C WB

2-10. High Wall 2 series Type

• Dimension

MMK-AP0072H, AP0092H, AP0122H

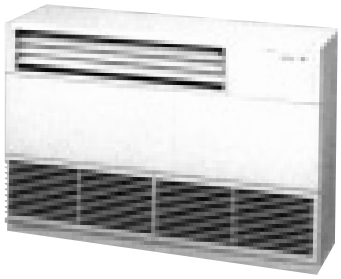


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

2-11. Floor Standing Cabinet Type

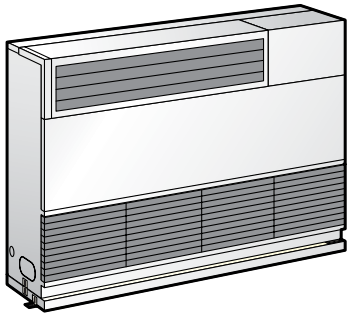
Appearance



Standard accessories

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	—		Bushing	1		For installation in the wire knockout
Heat Insulating	2		For insulating the indoor unit pipe connections				

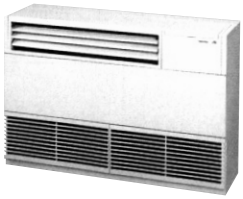
Optional accessories



Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-11. Floor Standing Cabinet Type



50Hz

• Specifications (50Hz)

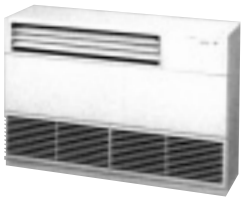
Model name		MML-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	0.26		0.43		0.47	
	Power consumption	(kW)	0.056		0.092		0.102	
	Power factor	(%)	94		93		94	
	Starting current	(A)	0.60		0.80		1.10	
Appearance			Silky shade (1Y8.5/0.5)					
Outer dimension	Height x Width x Depth	(mm)	630 x 950 x 230					
Total weight		(kg)	37				40	40
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Centrifugal fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	480/420/360		900/780/650		1,080/930/780	
	Motor outlet	(W)	45				70	
Air filter			Standard filter (Simple filter)					
Controller			Remote controller					
Connecting pipe	Gas side	(mm)	ϕ9.5			ϕ12.7		ϕ15.9
	Liquid side	(mm)	ϕ6.4					ϕ9.5
	Drain port	(Nominal dia. mm)	20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	39/37/35		45/41/38		49/44/39	
PMV Kit			Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : Rated conditions Cooling : Indoor air temperature 27ºC DB/19ºC WB, Outdoor air temperature 35ºC DB
Heating : Indoor air temperature 20ºC DB, Outdoor air temperature 7ºC DB/6ºC WB

2-11. Floor Standing Cabinet Type



60Hz

• Specifications (60Hz)

Model name			MML-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current		(A)	0.25		0.44		0.53	
	Power consumption		(kW)	0.053		0.092		0.113	
	Power factor		(%)	96		95		97	
	Starting current		(A)	0.60		0.80		1.10	
Appearance				Silky shade (1Y8.5/0.5)					
Outer dimension	Height x Width x Depth		(mm)	630 x 950 x 230					
Total weight			(kg)	37				40	
Heat exchanger				Finned tube					
Soundproof/Heat-insulating material				Non-flammable insulation					
Fan unit	Fan			Centrifugal fan					
	Standard air flow (High/Mid/Low)		(m^3/h)	480/420/360		900/780/650		1,080/930/780	
	Motor outlet		(W)	45				70	
Air filter				Standard filter (Simple filter)					
Controller				Remote controller					
Connecting pipe	Gas side		(mm)	φ9.5			φ12.7		φ15.9
	Liquid side		(mm)	φ6.4					φ9.5
	Drain port (Nominal dia. mm)			20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)			(dB(A))	39/37/35		45/41/38		49/44/39	
PMV Kit				Available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

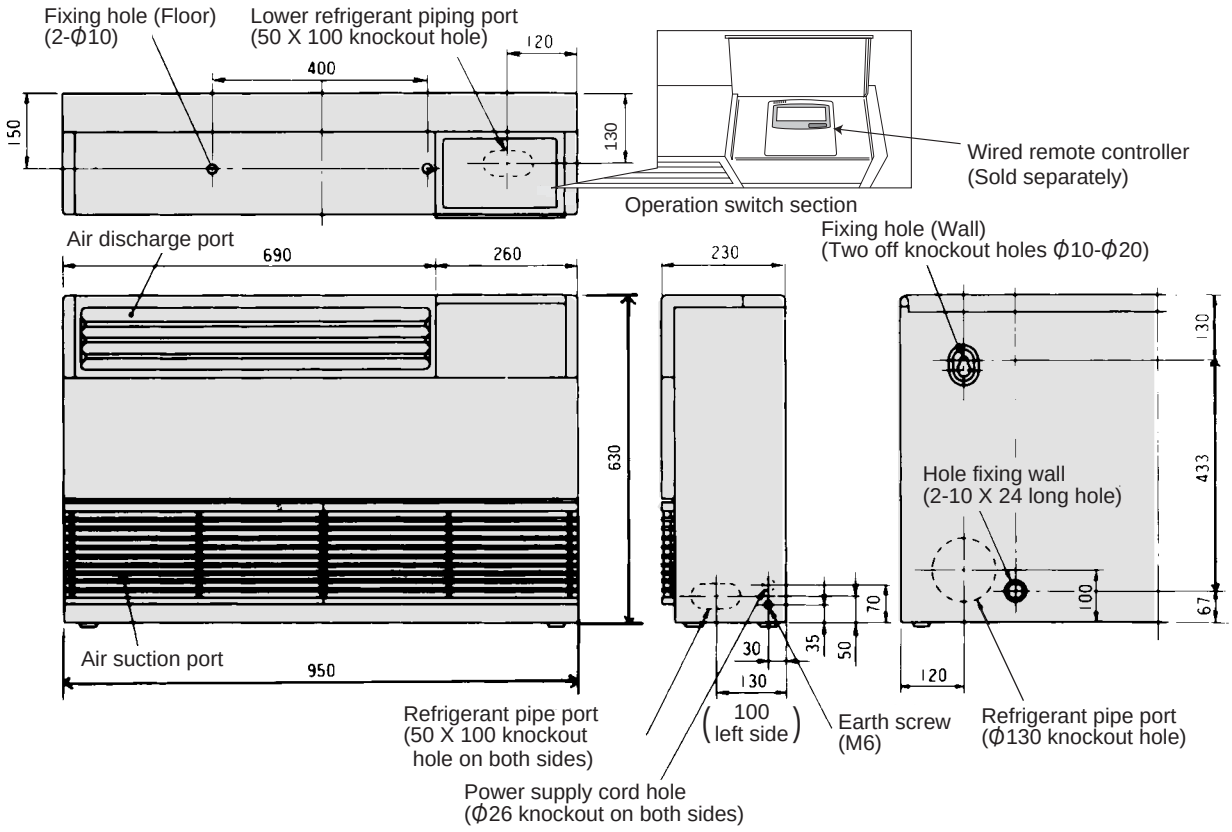
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-11. Floor Standing Cabinet Type

• Dimension

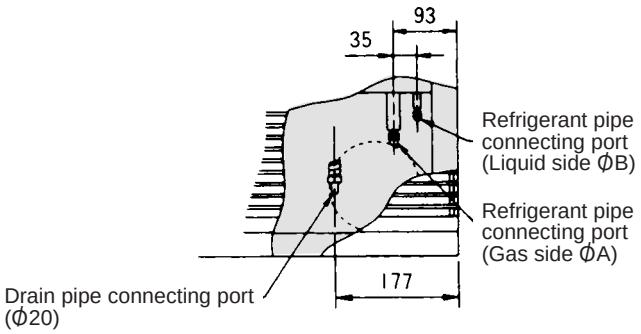
MML-AP0071H, AP0091H, AP0121H, AP0151H, AP0181H, AP0241H

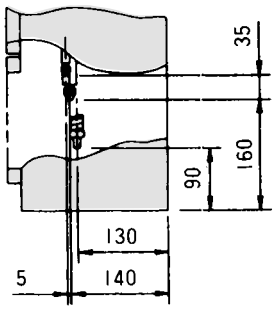


Dimensions

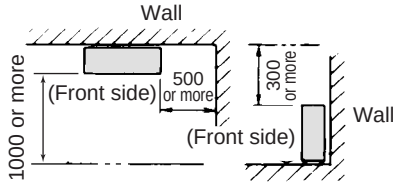
Model MML-	A	B
AP0071H, AP0091H, AP0121H	ϕ9.5	ϕ6.4
AP0151H, AP0181H	ϕ12.7	ϕ6.4
AP0241H	ϕ15.9	ϕ9.5

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2





Space required for service
Figure shows piping at the left side

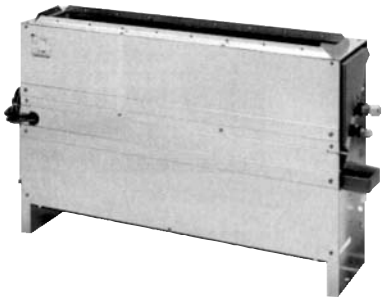


Positional drawing of piping

Note: All dimensions are in mm.

2-12. Floor Standing Concealed Type

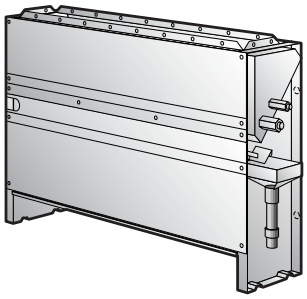
Appearance



Standard accessories

Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	—	—	Drain receiver fixing screw	1		For fix the drain receiver
Heat insulation	2		For heat insulating the indoor unit pipe connections	Drain hose	1		For water draining (Attaches to the drain receiver.)
Drain pan	1		For water draining	Heat insulated pipe	1		For insulating the drain receiver (Attaches to the drain receiver.)
Drain filter	1		Drain filter (inside the drain receiver)				

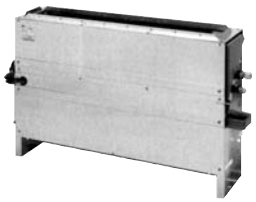
Optional accessories



Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-12. Floor Standing Concealed Type



50Hz

• Specifications (50Hz)

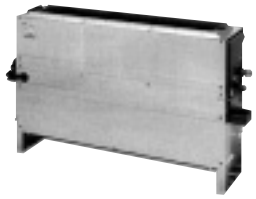
Model name		MML-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	0.25			0.45		0.46
	Power consumption	(kW)	0.056			0.090		0.095
	Power factor	(%)	97			87		90
	Starting current	(A)	0.60			0.80		1.00
Appearance			Zinc hot dipping steel plate					
Outer dimension	Height x Width x Depth	(mm)	600 x 745 x 220			600 x 1,045 x 220		
Total weight		(kg)	21			29		
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Centrifugal fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	460/400/300			740/600/490		950/790/640
	Motor	(W)	19			70		
	Static pressure range	(kPa)	0					
Air filter			Standard filter attached (Simple filter)					
Controller			Remote controller					
Connecting pipe	Gas side	(mm)	φ9.5			φ12.7		φ15.9
	Liquid side	(mm)	φ6.4					φ9.5
	Drain port	(Nominal dia. mm)	20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	36/34/32					42/37/33
PMV Kit			Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-12. Floor Standing Concealed Type



60Hz

• Specifications (60Hz)

Model name			MML-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH
Cooling/Heating capacity (Note 1)			(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply			1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current		(A)	0.27			0.46		0.51
	Power consumption		(kW)	0.058			0.096		0.110
	Power factor		(%)	98			95		98
	Starting current		(A)	0.60			0.80		1.00
Appearance				Zinc hot dipping steel plate					
Outer dimension	Height x Width x Depth		(mm)	600 x 745 x 220			600 x 1,045 x 220		
Total weight			(kg)	21			29		
Heat exchanger				Finned tube					
Soundproof/Heat-insulating material				Non-flammable insulation					
Fan unit	Fan			Centrifugal fan					
	Standard air flow (High/Mid/Low)		(m^3/h)	460/400/300			740/600/490		950/790/640
	Motor		(W)	19			70		
	Static pressure range		(kPa)	0					
Air filter				Standard filter (Simple filter)					
Controller				Remote controller					
Connecting pipe	Gas side		(mm)	ϕ9.5			ϕ12.7		ϕ15.9
	Liquid side		(mm)	ϕ6.4					ϕ9.5
	Drain port	(Nominal dia. mm)		20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2)(High/Mid/Low)			(dB(A))	36/34/32					42/37/33
PMV Kit				Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

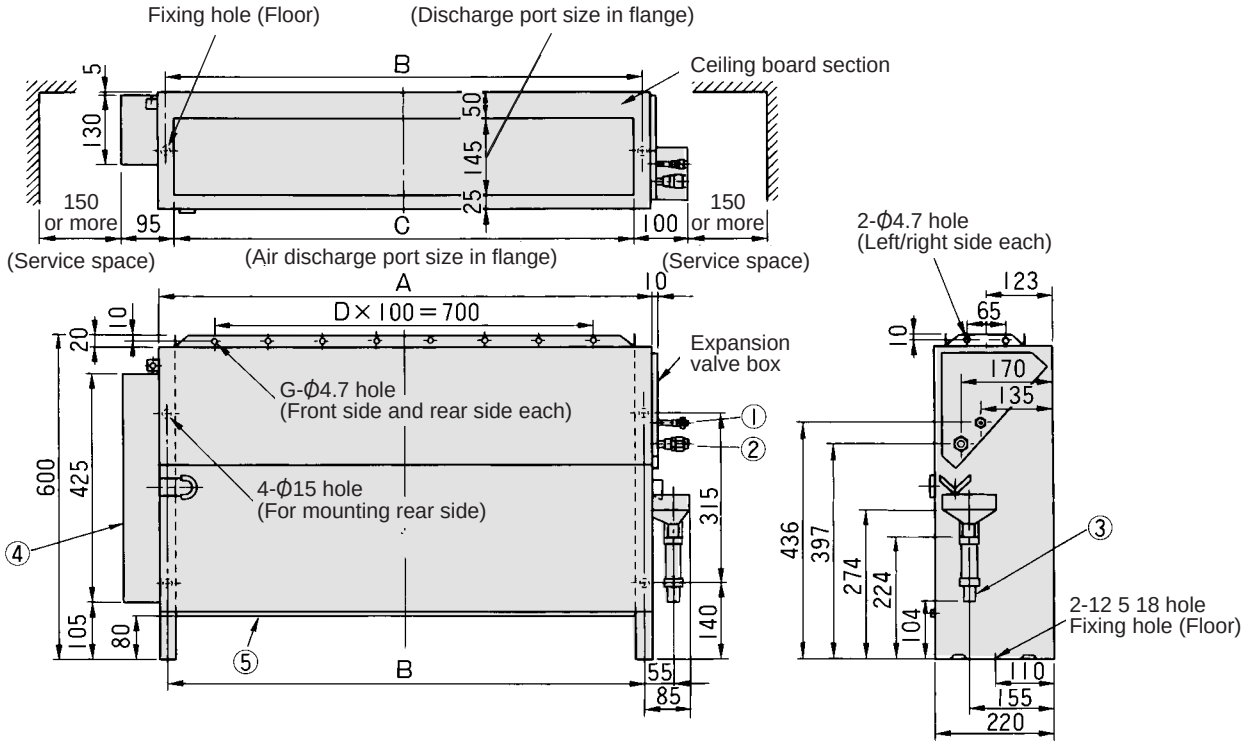
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-12. Floor Standing Concealed Type

• Dimension

MML-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH



No.	Name
①	Pipe connecting port at liquid side (ΦE)
②	Pipe connecting port at gas side (ΦF)
③	Drain pipe connecting port (20A)
④	Electric parts box (Earth terminal on the inside)
⑤	Air filter

Dimensions

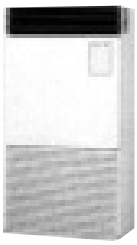
Model MML-	A	B	C	D	E	F	G
AP0071BH, AP0091BH, AP0121BH	610	580	550	4	6.4	9.5	5
AP0151BH, AP0181BH	910	880	850	7		12.7	8
AP0241BH					9.5	15.9	

- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

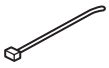
Note: All dimensions are in mm.

2-13. Floor Standing Type

Appearance



Standard accessories

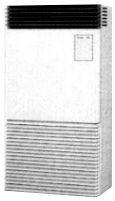
Part name	Q'ty	Shape	Use	Part name	Q'ty	Shape	Use
Installation Manual	1	This manual	(Be sure to hand over to the customer)	Heat insulator	1		For heat insulating of drain connecting section
Heat insulating pipe	2		For heat insulation of pipe connecting section	Washer	4		For hanging-down unit
Installation pattern	1	—	For confirmation of ceiling opening and main unit position	Hose band	2		For connecting drain pipe
Banding band	2		For drain hose forming	Drain hose	1		For drain piping
Bushing	1		For power supply cord protection	Heat insulator	1		For sealing of piping hole

Optional accessories

Remote controller

	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

2-13. Floor Standing Type



50Hz

• Specifications (50Hz)

Model name		MMF-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)		(kW)	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	0.67		0.88		1.29	1.60
	Power consumption	(kW)	0.150		0.190		0.280	0.350
	Power factor	(%)	97		94			95
	Starting current	(A)	0.90		1.10		1.70	2.10
Appearance			W : Silky shade (1Y 8.5/0.5)					
Outer dimension	Height x Width x Depth	(mm)	1,750 x 600 x 210				1,750 x 600 x 390	
Total weight		(kg)	48		49		65	
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Centrifugal fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	900/780/660		1,200/1,020/840		1,920/1,680/1,380	2,160/1,860/1,560
	Motor	(W)	37		63		110	160
Air filter			Standard filter (Simple filter)					
Controller			Remote controller					
Connecting pipe	Gas side	(mm)	ϕ12.7		ϕ15.9			
	Liquid side	(mm)	ϕ6.4		ϕ9.5			
	Drain port	(Nominal dia. mm)	20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	46/43/38		49/45/40		51/48/44	54/50/46
PMV Kit			Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : Rated conditions Cooling : Indoor air temperature 27ºC DB/19ºC WB, Outdoor air temperature 35ºC DB
Heating : Indoor air temperature 20ºC DB, Outdoor air temperature 7ºC DB/6ºC WB

2-13. Floor Standing Type

60Hz

• Specifications (60Hz)

Model name		MMF-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling/Heating capacity (Note 1)		(kW)	4.5/5.0	5.6/6.3	7.1/8.0	8.0/9.0	11.2/12.5	14.0/16.0
Electrical characteristics	Power supply		1 phase 60Hz 220V (Separate power supply for indoor units is required.)					
	Running current	(A)	0.67		0.90		1.37	1.75
	Power consumption	(kW)	0.146		0.195		0.295	0.380
	Power factor	(%)	99		98			99
	Starting current	(A)	0.90		1.10		1.80	2.30
Appearance			W : Silky Shade (1Y 8.5/0.5)					
Outer dimension	Height x Width x Depth	(mm)	1,750 x 600 x 210				1,750 x 600 x 390	
Total weight		(kg)	48		49		65	
Heat exchanger			Finned tube					
Soundproof/Heat-insulating material			Non-flammable insulation					
Fan unit	Fan		Centrifugal fan					
	Standard air flow (High/Mid/Low)	(m^3/h)	900/780/660		1,200/1,020/840		1,920/1,680/1,380	2,160/1,860/1,560
	Motor	(W)	37		63		110	160
Air filter			Standard filter (Simple filter)					
Controller			Remote controller					
Connecting pipe	Gas side	(mm)	φ12.7		φ15.9			
	Liquid side	(mm)	φ6.4		φ9.5			
	Drain port (Nominal dia. mm)		20 (Polyvinyl chloride tube)					
Sound pressure level(Note 2) (High/Mid/Low)		(dB(A))	46/43/38		49/45/40		51/48/44	54/50/46
PMV Kit			Not available					

Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

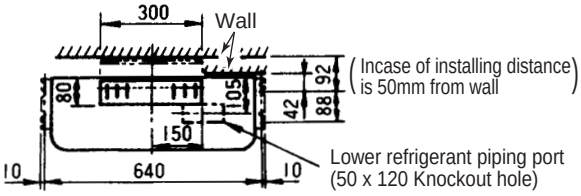
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

Note : 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

2-13. Floor Standing Typs

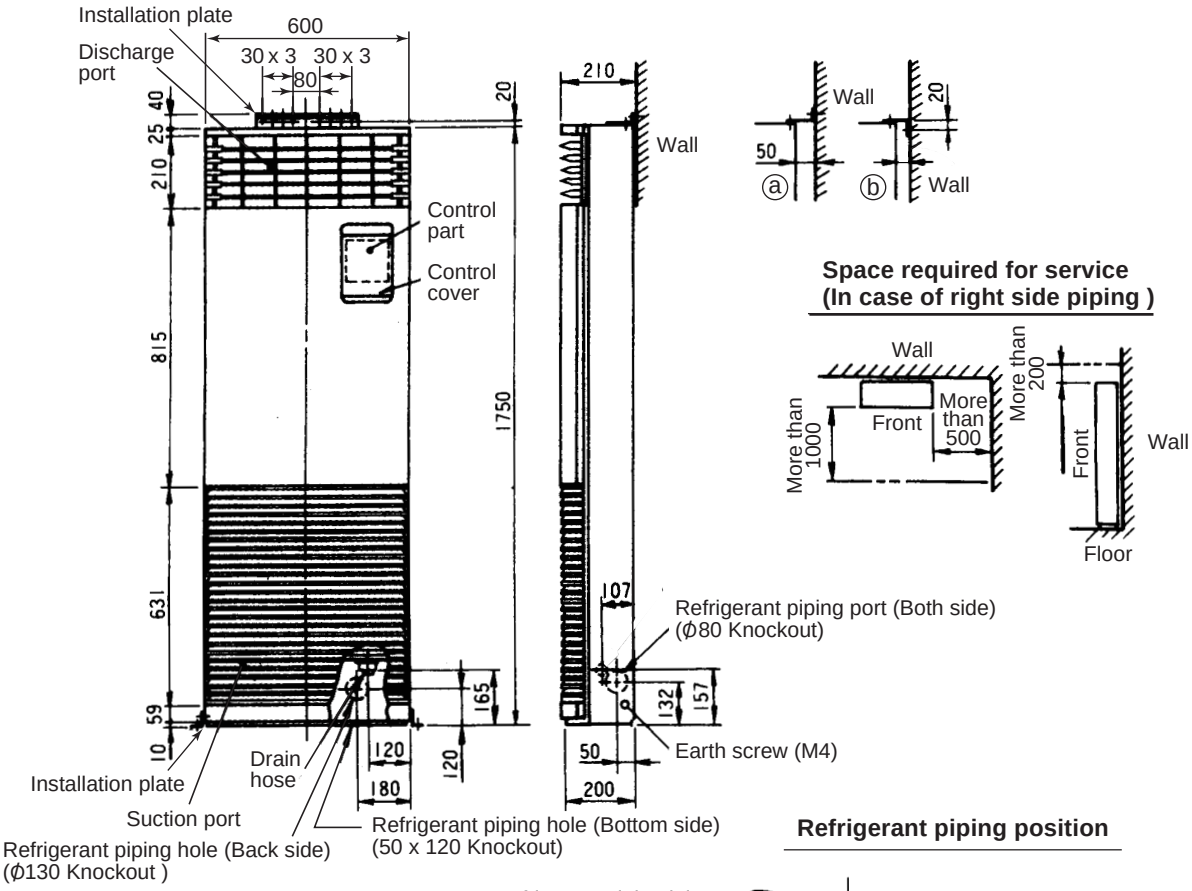
• Dimension

MMF-AP0151H, AP0181H, AP0241H, AP0271H



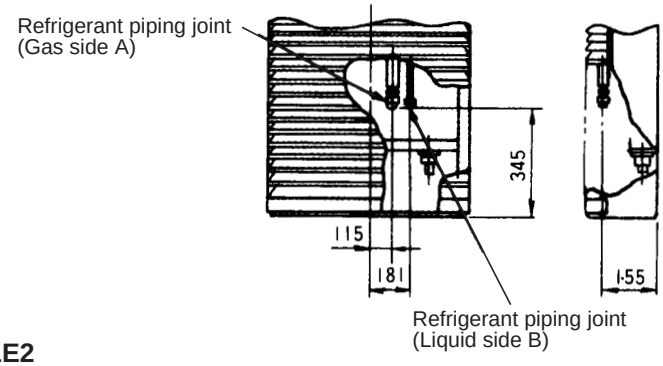
Dimensions

Model	A	B
MMF-AP0151H, AP0181H	ϕ12.7	ϕ6.4
MMF-AP0241H, AP0271H	ϕ15.7	ϕ9.5



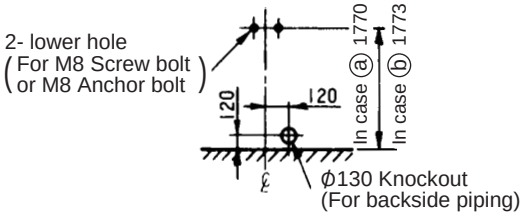
Space required for service (In case of right side piping)

Refrigerant piping position

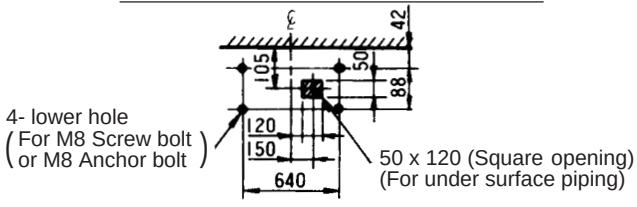


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Details of hole for back side piping

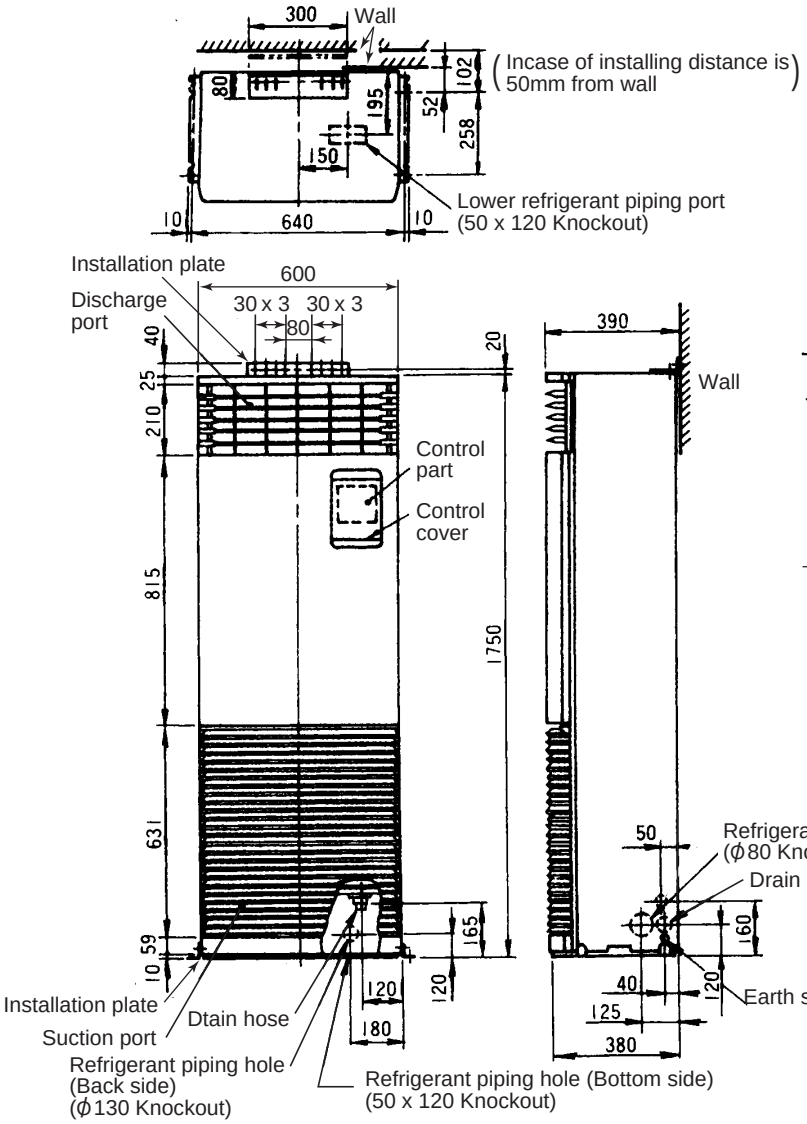


Details of hole for lower side piping

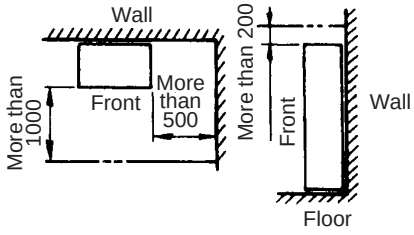


Note: All dimensions are in mm.

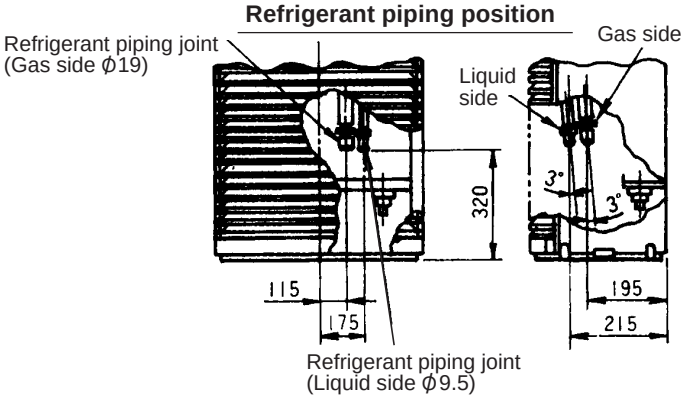
MMF-AP0361H, AP0481H



Space required for service (In case of right side piping)

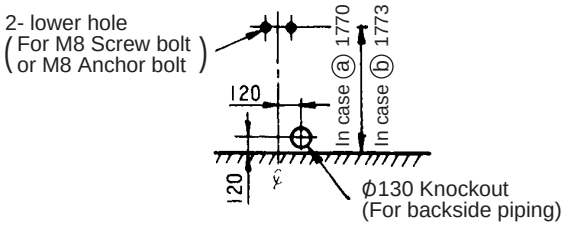


Refrigerant piping position

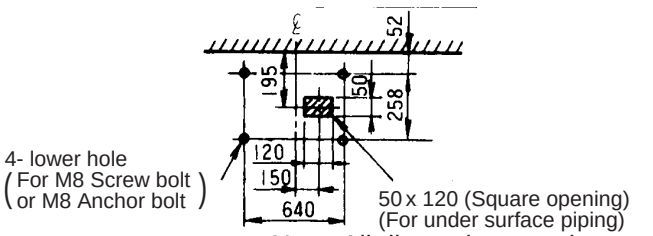


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Details of hole for back side piping



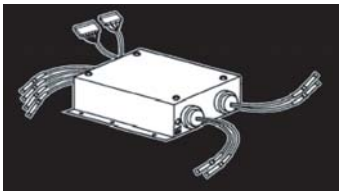
Details of hole for lower side piping



Note: All dimensions are in mm.

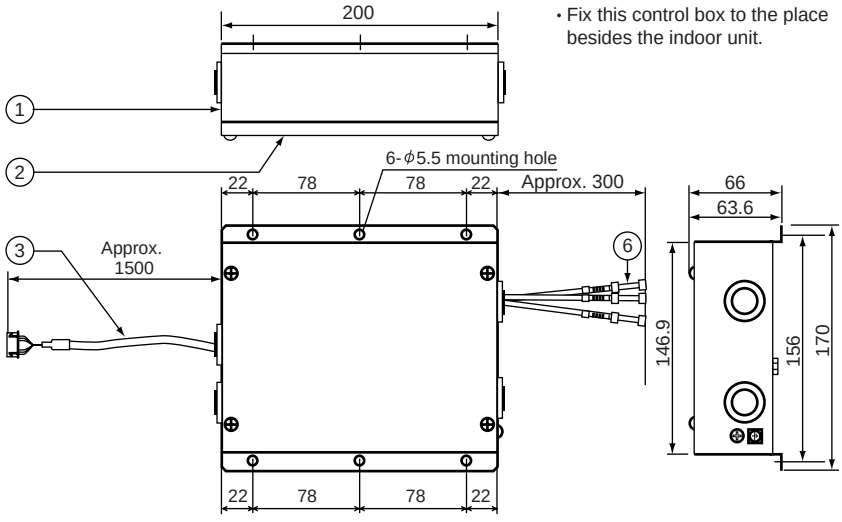
2-14. Application controls of indoor units

[1] Remote location ON/OFF control box

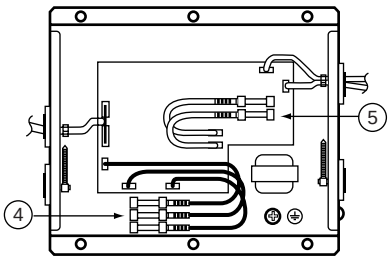
Model Name	Appearance	Features
TCB-IFCB-4E2		● Start and stop of the air conditioner is possible by a external signal and indication of operation/alarm externally.
	Application	**Function**
	Operation Interface Display Remote Controller	• Monitoring ON/OFF status (for indoor unit) Alarm status (system & indoor unit stop) • ON/OFF command Air conditioner can be turned ON/OFF by external signals. The external ON/OFF signals will initiate the signals shown below. ON /OFF COM Non-voltage ON /OFF continious signal

• Dimension

■ **Outside view**



■ **Inside view**



Note : All dimensions are in mm

(NOTE) Do not install the accessory parts at the following locations.

1. Location where combustible gas may leak
2. Location where direct sunlight shines
3. Location with high humidity such as bathroom, kitchen, etc.
4. Location with high levels of dust
5. Location where rain or dew drops such as outdoors
6. Location in 1m-range of a TV or radio

No.	Name	Specification
1	Case unit	Galvanized steel 0.8t
2	Case cover	Galvanized steel 0.8t
3	Harness to connect indoor unit P.C. board	CN61 connector
4	Harness for indication cable	UL1015 AWG18 tip-insulation type butt connector
5	Harness for power supply	3-core, 0.75mm^2
6	Harness for ON/OFF command	UL1015 AWG18 tip-insulation type butt connector

• Panels and accessories

Indoor unit type		Accessory parts name	Model	Application model	Remarks
4-way Air Discharge Cassette Type	Required accessory	Ceiling panel	RBC-U21PG(W)-E2		
	Optional	Super Long Life Filter	TCB-LF1601UE2		Be used with TCB-GFC1601UE2
		High Efficiency Filter 65	TCB-UFM1601UE		
		High Efficiency Filter 90	TCB-UFH1601UE		
		Fresh air and Filter Chamber	TCB-GFC1601UE2		
		Fresh air inlet Box	TCB-GB1601UE2		Be used with TCB-GFC1601UE2
		Auxiliary fresh air Flange	TCB-FF101URE2		
		Spacer for height adjustment	TCB-SP1601UE		
		Air discharge direction kit	TCB-BC1601UE		Three-piece set
Compact 4-way Air Discharge Cassette (600 x 600) Type	Required accessory	Ceiling panel	RBC-UM11PG(W)E		
	Optional	Spacer for height adjustment	***		
		Fresh Air Chamber	***		
		Fresh Air Intel Box	***		
		Air Discharge Direction Kit	***		
2-way Air Discharge Cassette Type	Required accessory	Ceiling panel	RBC-UW136PG	AP0071-0121	
			RBC-UW266PG	AP0151-0301	
			RBC-UW466PG	AP0481	China market only
1-way Air Discharge Cassette Type	Required accessory	Ceiling panel	RBC-US21PGE		
	Optional	Front air discharge unit	TCB-BU21HWE		
		Auxiliary fresh air flange	TCB-FF101URE2		
Concealed Duct Type	Optional	High Efficiency Filter 65	TCB-UFM11BFCE	AP0071-0121/AP0241-0301	AP0241-AP0301 use two pcs.
			TCB-UFM21BFCE	AP0151-0181/AP0361-0481	AP0361-AP0481 use two pcs.
			TCB-UFM11BE	AP0071-0121	For underside suction
			TCB-UFM21BE	AP0151-0181	
			TCB-UFM31BE	AP0241-0301	
			TCB-UFM41BE	AP0361-0481	
		High Efficiency Filter 90	TCB-UFH51BFCE	AP0071-0121/AP0241-0301	AP0241-AP0301 use two pcs.
			TCB-UFH61BFCE	AP0151-0181/AP0361-0481	AP0361-AP0481 use two pcs.
			TCB-UFH51BE	AP0071-0121	For underside suction
			TCB-UFH61BE	AP0151-0181	
			TCB-UFH71BE	AP0241-0301	
			TCB-UFH81BE	AP0361-0481	
		Ceiling panel	RBC-UD281PE(W)	AP0071-0121	(Half panel for underside suction)
			RBC-UD501PE(W)	AP0151-0181	
			RBC-UD801PE(W)	AP0241-0301	
			RBC-UD1401PE(W)	AP0361-0481	
		Suction Canvas	TCB-CA281BE	AP0071-0121	For underside suction
			TCB-CA501BE	AP0151-0181	
			TCB-CA801BE	AP0241-0301	
			TCB-CA1401BE	AP0361-0481	
		Filter Chamber	TCB-FC281BE	AP0071-0121	For rear suction
			TCB-FC501BE	AP0151-0181	
			TCB-FC801BE	AP0241-0301	
			TCB-FC1401BE	AP0361-0481	
		Filter kit for underside	TCB-FK281BE	AP0071-0121	
			TCB-FK501BE	AP0151-0181	
			TCB-FK801BE	AP0241-0301	
			TCB-FK1401BE	AP0361-0481	
Concealed Duct High Static Pressure Type	Optional	High Efficiency Filter 65	TCB-UFM1D-1E	AP0181/0481	AP0481 use two pcs.
			TCB-UFM2D-1E	AP0241-0361	Use two pcs.
		High Efficiency Filter 90	TCB-UFH5D-1E	AP0181/0481	AP0481 use two pcs.
			TCB-UFH6D-1E	AP0241-0361	Use two pcs.
		Long Life Pre-Filter	TCB-PF1D-1E	AP0181/0481	AP0481 use two pcs.
			TCB-PF2D-1E	AP0241-0361	Use two pcs.
		Filter Chamber	TCB-FCY21DE	AP0181	
			TCB-FCY31DE	AP0241-0361	
			TCB-FCY51DE	AP0481	
		Drain pump kit	TCB-DP31DE	AP0181-0481	
Under Ceiling Type	Optional	Drain pump kit	TCB-DP22CE2	AP0151-0481	*Required accessories when using Drain Pump Kit
		Elbow piping kit	TCB-KP12CE2	AP0151-0181	
			TCB-KP22CE2	AP0241-0481	

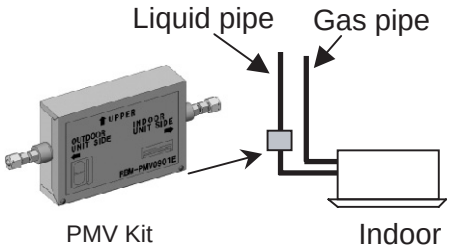
3. PMV Kit

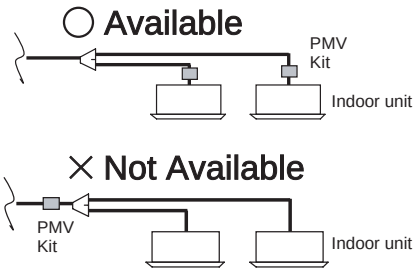
3. PMV Kit

PMV-Kit (RBM-PMV0361E/RBM-PMV0901E) shall be required for quiter place application as an optional to reduce refrigerant sound especially in oil retrieval control or in transient operation as start up.

3-1. Selection of PMV Kit

Model name	Indoor unit capacity type	Diameter of refrigerant pipe
RBM-PMV0361E	007,009,012 type	ϕ 6.4
RBM-PMV0901E	015,018 type	ϕ 6.4
	024 type	ϕ 9.5



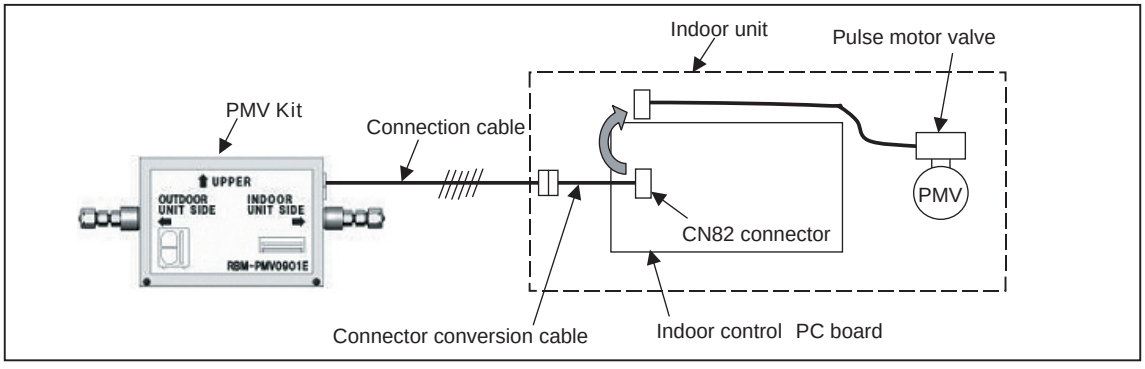


NOTE
Don't connect two or more indoor units to one PMV kit. Arrange one indoor unit and one PMV kit set to 1 by 1.

Refrigerant pipe
Real length between PMV Kit and indoor unit: 2m or more and up to 10m

3-2. Wiring connections

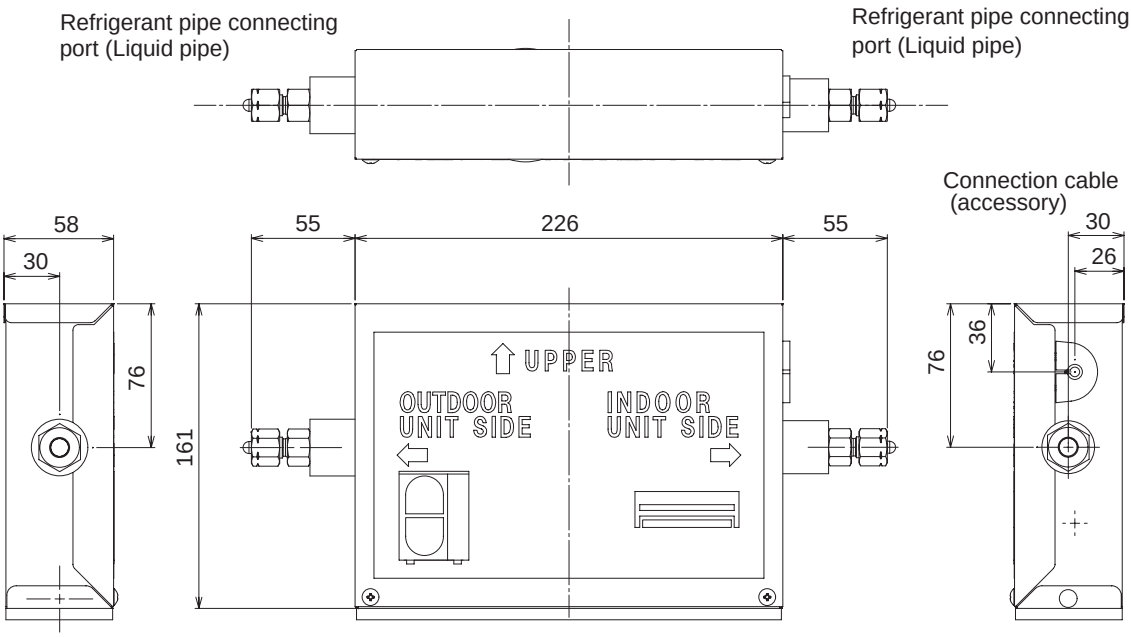
Be sure to use the attached connection cable (10m).

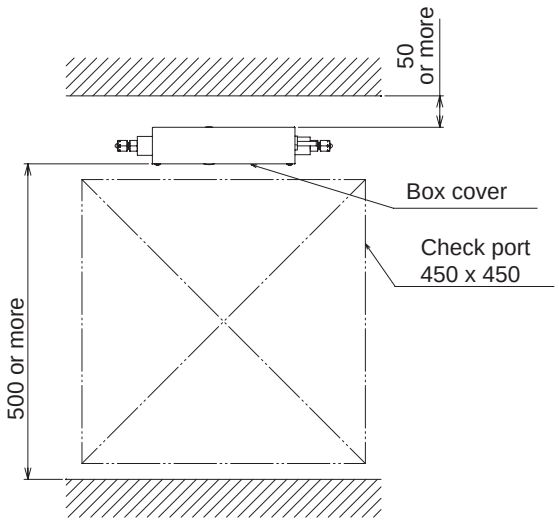


3-3. Dimension

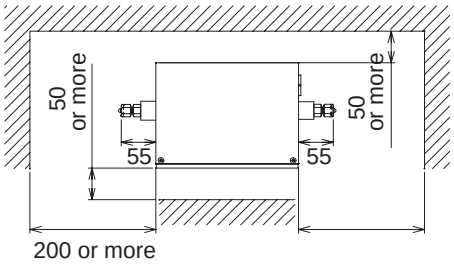
• PMV Kit

RBM-PMV0361E, RBM-PMV0901E

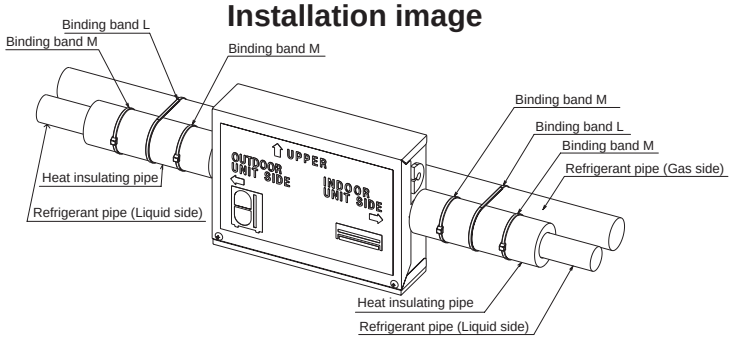




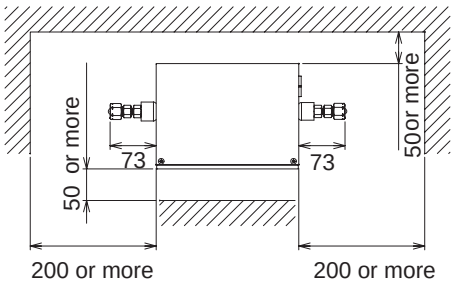
RBM-PMV0361E,PMV0901E



Installation image



RBM-PMV0901E
(When attached joint are used)200 or more



Note: All dimensions are in mm.

4. Outdoor Units

4-1. Outdoor units

50Hz

• Specifications (50Hz)

Equivalent HP				Equivalent to 4HP	Equivalent to 5HP	Equivalent to 6HP
Model name			MMY-	MCY-MAP0401HT	MCY-MAP0501HT	MCY-MAP0601HT
Outdoor unit type				Inverter unit		
Cooling capacity (*1)			(kW)	12.1	14.0	15.5
Standard heating capacity (*1)			(kW)	12.5	16.0	18.0
Power supply (*2)				1 phase 50Hz 230V (220-240V)		
Electrical characteristics (*1)	Cooling	Running current	(A)	13.2	16.1	21.4
		Power consumption	(kW)	2.82	3.47	4.63
		Power factor	(%)	93	94	94
		EER (Energy Efficiency Ratio)	(kW/kW)	4.29	4.03	3.35
		Starting current	(A)	Soft start		
	Heating	Running current	(A)	12.5	18.3	22.2
		Power consumption	(kW)	2.71	4.00	4.85
		Power factor	(%)	94	95	95
		EER (Energy Efficiency Ratio)	(kW/kW)	4.61	4.00	3.71
		Starting current	(A)	Soft start		
External dimension			(mm)	Height 1,340/Width 900/Depth 320		
Total weight			(kg)	117		
Color				Shilky shade (Munsell 1Y8.5/0.5)		
Compressor	Type			Hermetic Type		
	Motor output		(kW)	2.3	3.1	4.2
Fan unit	Fan			Propeller fan (Quantity 2)		
	Motor output		(kW)	0.063 + 0.063		
	Air volume		(m^3/h)	5,820	6,120	6,420
Heat exchanger				Finned tube		
Refrigerant R410A (Charged refrigerant amount) (*3)			(kg)	7.2		
High-pressure switch			(MPa)	Open : 3.73 Close : 2.9		
Protective devices				*5		
Refrigerant piping specifications (*4)	Connecting port dia	gas side	(mm)	15.9		19.1
		Liquid side	(mm)	9.5		
	Connecting method	Discharge gas side	(mm)	Flare		Brazing
		Liquid side		Flare		
	Max. equivalent length		(m)	15		
	Max. real length		(m)	125 (If the total bend length exceeds 125m, use the max equivalent length as the standard.)		
	Max. total pipe length (Real length)		(m)			
	Max. Height between indoor units		(m)	Outdoor unit is higher than indoor unit : 30		
				Outdoor unit is lower than indoor unit : 20		
	Real length between PMV Kit and indoor unit		(m)	2-10		
Control wiring Total wire length(indoor unit- indoor unit/ indoor unit-outdoor unit control wiring, central control wiring)				Shield wire 1.25mm² 2cores, up to 1000m Shield wire 2.0mm² 2cores, up to 2000m		
Max. No. of connected indoor units				6	8	9
Sound pressure level (Cooling/Heating) *3			(dB(A))	49/50	50/52	51/53
		Night operation (Sound reduction)control*4	(dB(A))	46/48	46/48	47/49

*1 : 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

The standard piping means that main pipe length is 5 m, branching pipe length 2.5 m of branch piping connected with a 0 meter height.

*2 : The source voltage must not fluctuate more than ±10%.

*3 : The amount does not consider extra piping lengths. Refrigerant must be added on site in accordance with the actual piping length.

*4 : The maximum total piping length indicates the sum of one-way piping lengths on the liquid side or gas side.

*5 : Discharge temp. sensor, Suction temp. sensor, Compressor case thermostat, High-pressure switch, Over-current sensor, High-pressure sensor, Low pressure sensor, Over-current relay.

4-1. Outdoor units

60Hz

• Specifications (60Hz)

Equivalent HP				Equivalent to 4HP	Equivalent to 5HP	Equivalent to 6HP
Model name			MMY-	MCY-MAP0401HT2D	MCY-MAP0501HT2D	MCY-MAP0601HT2D
Outdoor unit type				Inverter unit		
Cooling capacity (*1)			(kW)	12.1	14.0	15.5
Standard heating capacity (*1)			(kW)	12.5	16.0	18.0
Power supply (*2)				1 phase 60Hz 220V		
Electrical characteristics (*1)	Cooling	Running current	(A)	13.8	16.8	22.4
		Power consumption	(kW)	2.82	3.47	4.63
		Power factor	(%)	93	94	94
		EER (Energy Efficiency Ratio)	(kW/kW)	4.29	4.03	3.35
		Starting current	(A)	Soft start		
	Heating	Running current	(A)	13.1	19.1	23.2
		Power consumption	(kW)	2.71	4.00	4.85
		Power factor	(%)	94	95	95
		EER (Energy Efficiency Ratio)	(kW/kW)	4.61	4.00	3.71
		Starting current	(A)	Soft start		
External dimension			(mm)	Height 1,340/Width 900/Depth 320		
Total weight			(kg)	117		
Color				Shilky shade (Munsell 1Y8.5/0.5)		
Compressor	Type			Hermetic Type		
	Motor output		(kW)	2.3	3.1	4.2
Fan unit	Fan			Propeller fan (Quantity 2)		
	Motor output		(kW)	0.063 + 0.063		
	Air volume		(m^3/h)	5,820	6,120	6,420
Heat exchanger				Finned tube		
Refrigerant R410A (Charged refrigerant amount) (*3)			(kg)	7.2		
High-pressure switch			(MPa)	Open : 3.73 Close : 2.9		
Protective devices				*5		
Refrigerant piping specifications (*4)	Connecting port dia	gas side	(mm)	15.9		19.1
		Liquid side	(mm)	9.5		
	Connecting method	Discharge gas side		Flare		Brazing
		Liquid side		Flare		
	Max. equivalent length		(m)	15		
	Max. real length		(m)	125 (If the total bend length exceeds 125m, use the max equivalent length as the standard.)		
	Max. total pipe length (Real length)		(m)			
	Max. Height between indoor units		(m)	Outdoor unit is higher than indoor unit : 30		
				Outdoor unit is lower than indoor unit : 20		
	Real length between PMV Kit and indoor unit		(m)	2-10		
Control wiring Total wire length(indoor unit- indoor unit/ indoor unit-outdoor unit control wiring, central control wiring)				Shield wire 1.25mm² 2cores, up to 1000m Shield wire 2.0mm² 2cores, up to 2000m		
Max. No. of connected indoor units				6	8	9
Sound pressure level (Cooling/Heating) *3			(dB(A))	49/50	50/52	51/53
		Night operation (Sound reduction)control*4	(dB(A))	46/48	46/48	47/49

*1 : 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

The standard piping means that main pipe length is 5 m, branching pipe length 2.5 m of branch piping connected with a 0 meter height.

*2 : The source voltage must not fluctuate more than ±10%.

*3 : The amount does not consider extra piping lengths. Refrigerant must be added on site in accordance with the actual piping length.

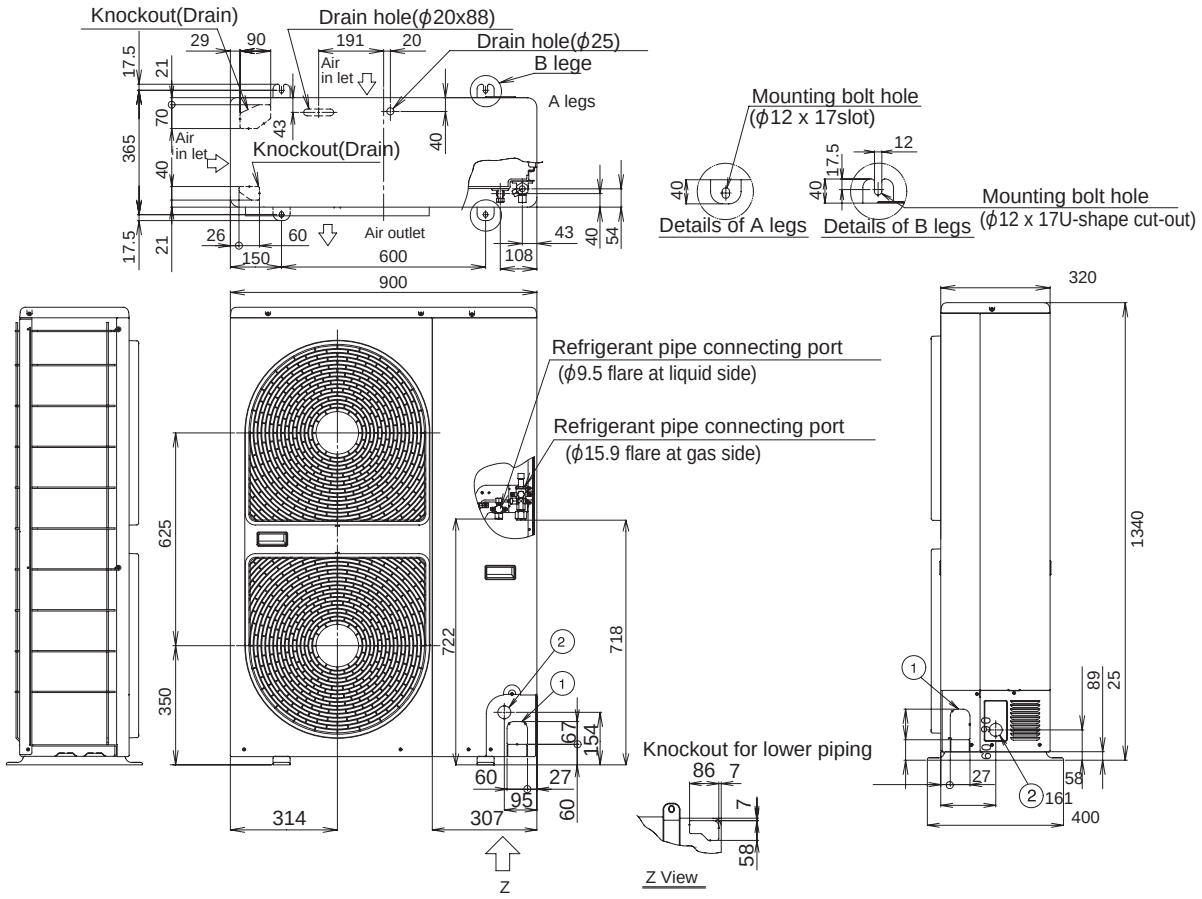
*4 : The maximum total piping length indicates the sum of one-way piping lengths on the liquid side or gas side.

*5 : Discharge temp. sensor, Suction temp. sensor, Compressor case thermostat, High-pressure switch, Over-current sensor, High-pressure sensor, Low pressure sensor, Over-current relay.

4-1. Outdoor unit

• Dimension

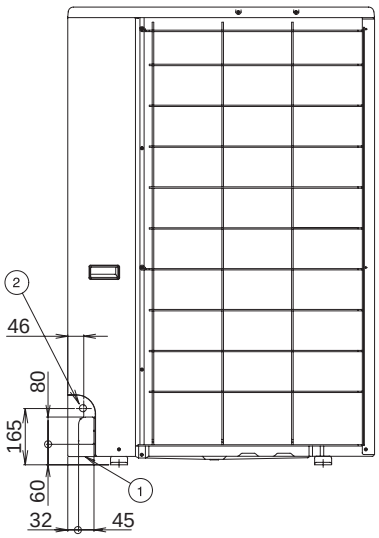
MCY-MAP0401HT, MCY-MAP0501HT, MCY-MAP0601HT,
MCY-MAP0401HT2D, MCY-MAP0501HT2D, MCY-MAP0601HT2D

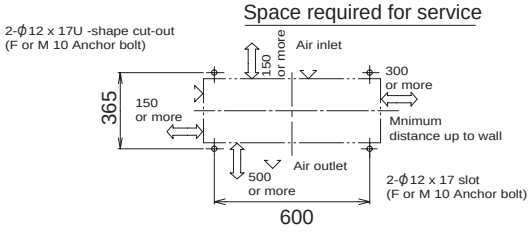


	Name	Notes
①	Control wiring and piping hole	—
②	Power supply wiring hole	Knockout hole ϕ38

Diameter of refrigerant pipe

Model name	Gas side	Liquid side
MCY-MAP0401HT*	ϕ15.9 (Flare)	ϕ9.5 (Flare)
MCY-MAP0501HT*	ϕ15.9 (Flare)	ϕ9.5 (Flare)
MCY-MAP0601HT*	ϕ19.1 (Blazing connection with attached joint socket.)	ϕ9.5 (Flare)





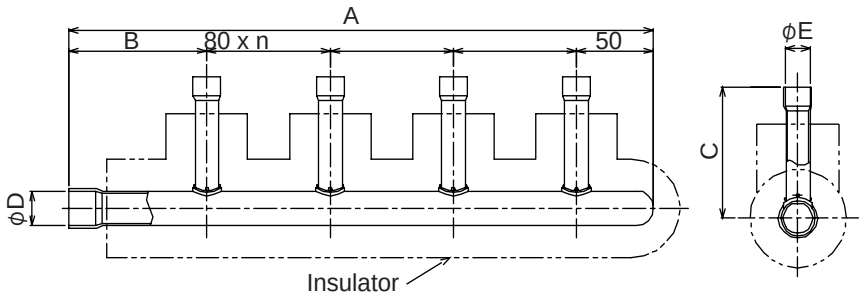
Note: All dimensions are in mm.

4-2. Branching joints and headers

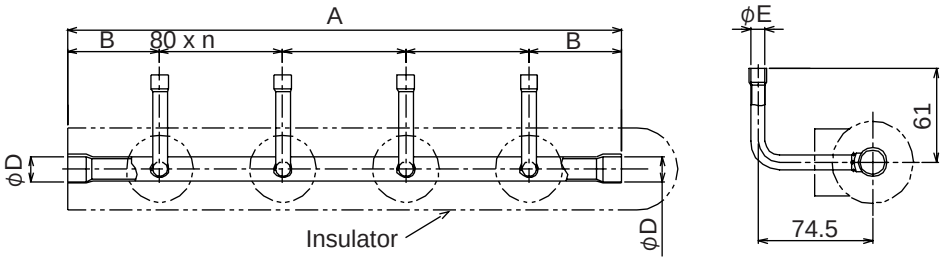
Branch header

RBM-HY1043E, HY1083E

Gas side



Liquid side



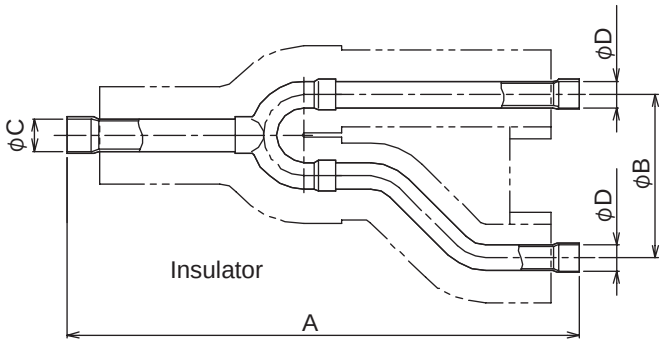
Model		A	B	C	ØD	ØE	n	Accessory socket x Q'ty
RBM-HY1043E	Gas side	380	90	83.6	22.2	15.9	3	⑥ x 4, ⑨ x 4, ⑭ x 1, ⑱ x 1, ⑦⓪ x 1
	Liquid side	360	60	—	15.9	9.5	3	① x 4, ⑥ x 1, ⑨ x 1
RBM-HY1083E	Gas side	700	90	83.6	22.2	15.9	7	⑥ x 8, ⑨x 8, ⑭x 1, ⑱ x 1 ⑦⓪ x 1
	Liquid side	680	60	—	15.9	9.5	7	① x 8, ⑥ x 1, ⑨ x 1

Note: All dimensions are in mm.

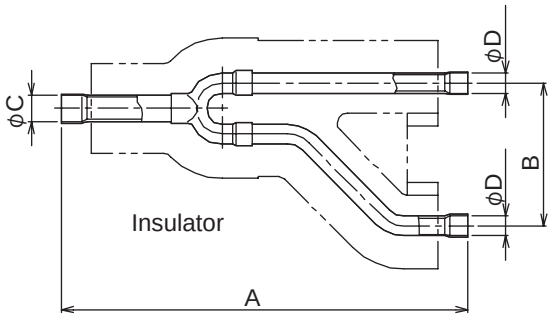
Y-shape branch joint

RBM-BY53E, BY103E

Gas side



Liquid side

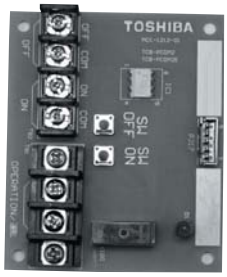


Model		A	B	ØC	ØD	Accessory socket x Q'ty
RBM-BY53E	Gas side	250	80	15.9	12.7	⑤ x 2, ⑭ x 2, ⑨ x 1, ⑪ x 1
	Liquid side	200	70	12.7	9.5	① x 2, ⑤ x 1

Note: All dimensions are in mm.

4-3. Application controls of outdoor unit

Note : The P.C. boards of outdoor unit (TCB-PCDM2E, TCB-PCMO2E, TCB-PCIN2E) can be installed up to two boards in outdoor unit.

Model Name	Appearance	Function
TCB-PCDM2E	 Size : 71 x 85	**Power peak-cut control**

■ **Feature**

The upper limit capacity and current of the outdoor unit is restricted based on the demand request signal from outside.

■ **Normal current**

Outdoor unit capacity type MCY-	0401 type	0501 type	0601 type
Normal current (Maxim running current)	**25A**	**28A**	**31A**

■ **Wiring**

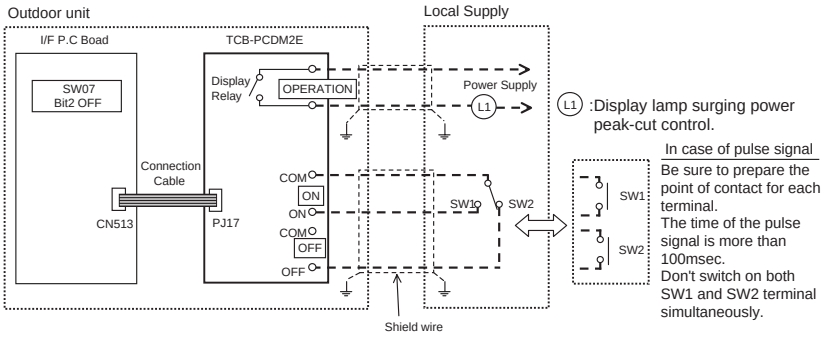
	Length	Size	Type
Input wiring	Up to 500m	2-core or 3-core, 0.75mm^2	Shield wire
Output wiring	Up to 200m	2-core, 0.75mm^2 *	Shield wire
	Up to 400m	2-core, 1.5mm^2 *	

* In conformity with design 60245 IEC 57

■ **Function / Electric wiring diagram**

Two type control can be selected by setting SW07 on the interface P.C. board of the outdoor unit.

[Standard funciton]



SW07-Bit2 OFF

Input		SW07-Bit1 OFF		SW07-Bit1 ON		Display Relay
SW1	SW2	Capacity	Current	Capacity	Current	(L1)
OFF	ON	100% (Nomal)	100% (Nomal)	100% (Normal)	100% (Normal)	OFF
ON	OFF	0% (stop)	0% (stop)	Up to 60%	Up to 80%	ON

⚠ CAUTION)

・Be sure to prepare a non-voltege point for each terminal.

・Display Relay capacity of "OPERATION"

Below AC240V 0.5A (COSl=100%)

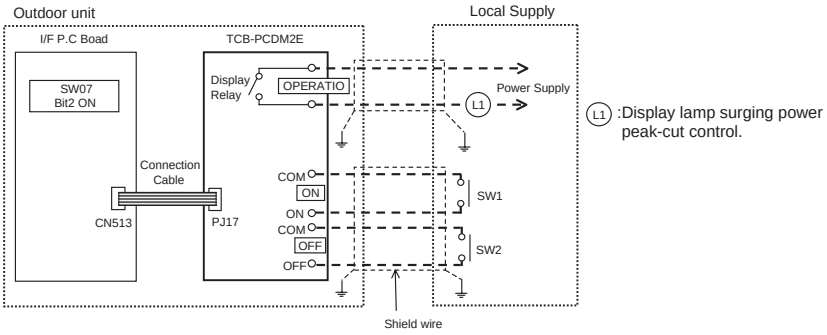
When connecting load such as relay coil to "L1" load, insert the noise surge absorber.

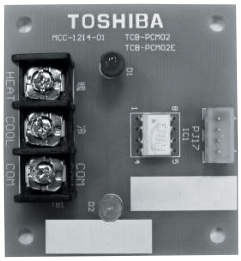
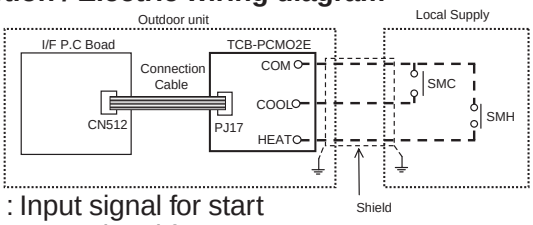
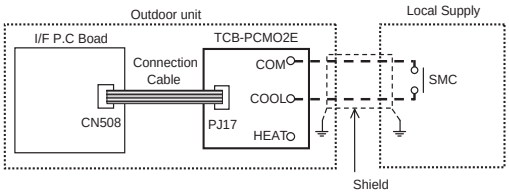
Below DC24V 1A (Non-indutive load)

When connecting load such as relay coil to "L1" load, insert the bypass circuit.

Application

*Install this optional P.C. board in the inverter assembly of the outdoor unit.

Model Name	Appearance	Function
TCB-PCDM2E		**[Expansion function]**  **SW07-Bit2 ON** **Input** / **SW07-Bit1 OFF** / **SW07-Bit1 ON** / Display Relay SW1 / SW2 / Capacity / Current / Capacity / Current / (L1) OFF / OFF / 100% (Normal) / 100% (Normal) / 100% (Normal) / 100% (Normal) / OFF ON / OFF / Up to 80% / Up to 80% / Up to 85% / Up to 90% / ON OFF / ON / Up to 60% / Up to 70% / Up to 75% / Up to 80% / ON ON / ON / 0% (stop) / 0% (stop) / Up to 60% / Up to 70% / ON ⚠ CAUTION) ・Be sure to prepare non voltage continuous point of contact for each terminal. ・Display Relay capacity of "OPERATION" Below AC240V 0.5A (COSl=100%) When connecting load such as relay coil to "L1" load, insert the noise surge absorber. Below DC24V 1A (Non-indutive load) When connecting load such as relay coil to "L1" load, insert the bypass circuit.

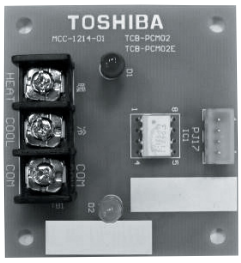
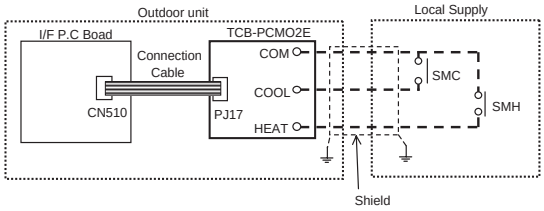
Model Name	Appearance	Function
TCB-PCMO2E	 Size : 55.5 x 60	External master ON/OFF control ● **Feature** The outdoor unit starts or stops the system. ● **Wiring** Input wiring: Size: 3-core, 0.75mm²; Length: Up to 500m; Type: Shield wire ● **Function / Electric wiring diagram**  SMC : Input signal for start SMH : Input signal for stop
	Application	
	*Install this optional P.C. board in the inverter assembly of the outdoor unit.	Night operation (Sound reduction) control ● **Feature** Sound level can be reduced by restricting the compressor and fan speeds. ● **Function**  SMC : Cooling mode designated input switch

Terminal	Input signal	Operation
COOL (SMC)	ON / OFF	Starts all indoor units.
HEAT (SMH)	ON / OFF	Stops all indoor units.

⚠CAUTION
- Be sure to prepare a non voltege pulse point of contact for each terminal.
- This control is conducted when input signal stand up or fall down. (Standing and falling status should be held for 100 msec. or more.)

Terminal	Input signal	Operation
SMC	ON / OFF	Night operation control
	ON / OFF	Usual Operation

This control is activated when the input signal increases or decreases. (The increasing or decreasing signal needs to be held for a minimum of 100m/sec in order to activate the control).

Model Name	Appearance	Function
TCB-PCMO2E	 Size : 55.5 x 60	**[Reference]** **Mini-SMMS series (MCY-MAP####HT)** Outdoor unit capacity type / 0401 type / 0501 type / 0601 type Sound reduction (dB(A)) (Cooling / Heating) *1 / 46 / 48 / 46 / 48 / 47 / 49 Approximation capacity (Cooling / Heating) *2 / 90% / 95% / 85% / 75% / 85% / 70% *1: This sound pressure level are measured in an anechoic chamber in accordance. Location of microphone : The front of 1m, a height of 1.5m Cooling:(Indoor 27°CDB,19°CDB) (Outdoor temperature 25°CDB) Heating:(Indoor 20°CDB) (Outdoor temperature 7°CDB,6°CWB) *2: Against Max. capacity. Cooling:(Indoor 27°CDB,19°CDB) (Outdoor temperature 25°CDB) Heating:(Indoor 20°CDB) (Outdoor temperature 7°CDB,6°CWB)
	Application *Install this optional P.C. board in the inverter assembly of the outdoor unit.	Operation mode selection control ●**Feature** This control can restrict the selectable operation mode. ●**Function**  SMC : Cooling mode designated input switch SMH : Heating mode designated input switch SMC / SMH / Selected operation mode ON / OFF / Only cooling mode permitted OFF / ON / Only heating mode permitted Ensure terminal contacts are securely fixed.

Model Name	Appearance	Function
TCB-PCIN2E	 Size : 73.0 x 79	Error / Operation output control

● **Feature**

Operation and Error monitoring is possible by using Error output control board "TCB-PCIN2E".

● **Wiring**

	Length	Size	Type
Output wiring	Up to 200m	4-core, 0.75mm^2 *	Shield wire
	Up to 400m	4-core, 1.5mm^2 *	

* In conformity with design 60245 IEC 57

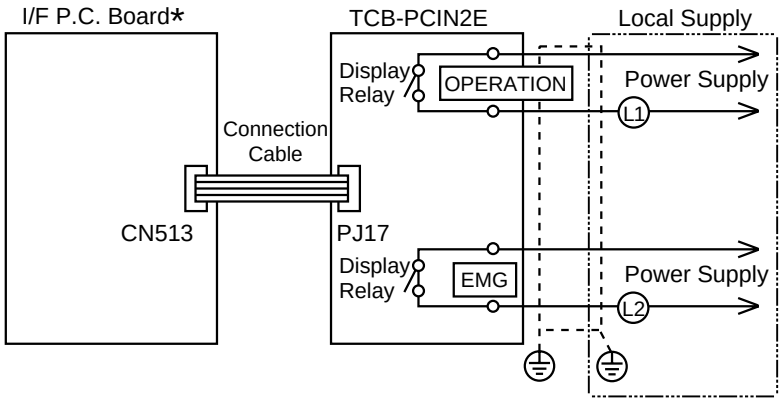
Application

*Install this optional P.C. board in to the inverter assembly of outdoor unit.

● **Function / Electric wiring diagram**

Operation monitoring: Display relay is ON with more than one indoor unit operation.

EMG monitoring : Display relay is ON when the sistem in Error status.



(L1) : Operation monitoring lamp

(L2) : Error monitoring lamp

⚠CAUTION

- Be sure to prepare a non-voltege point for each terminal.
- Display Relay capacity of "OPERATION"and"EMG"

  Below AC240V 0.5A (COS ϕ=100%)

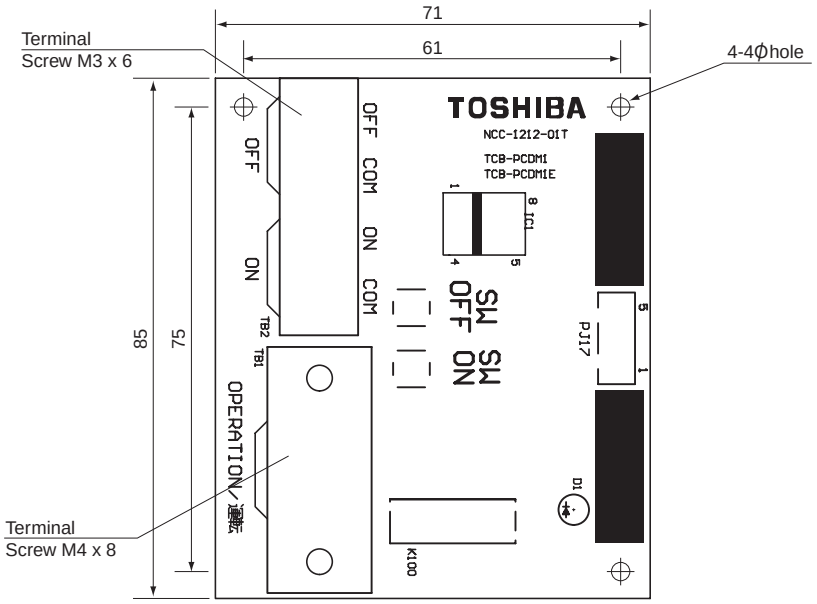
  When connecting load such as relay coil to "L1,L2" load, insert the noise surge absorber.

  Below DC24V 1A (Non-indutive load)

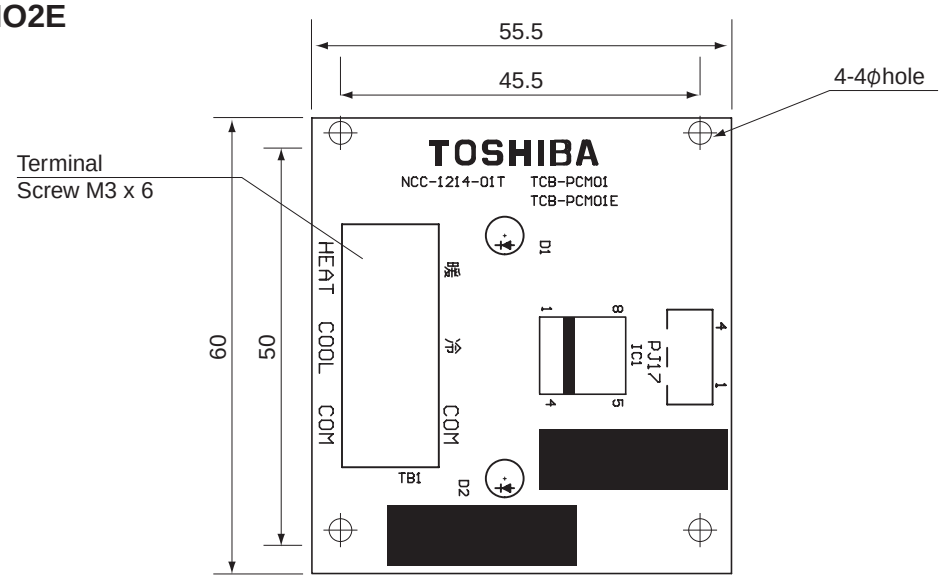
  When connecting load such as relay coil to "L1,L2" load, insert the bypass circuit.

Dimension

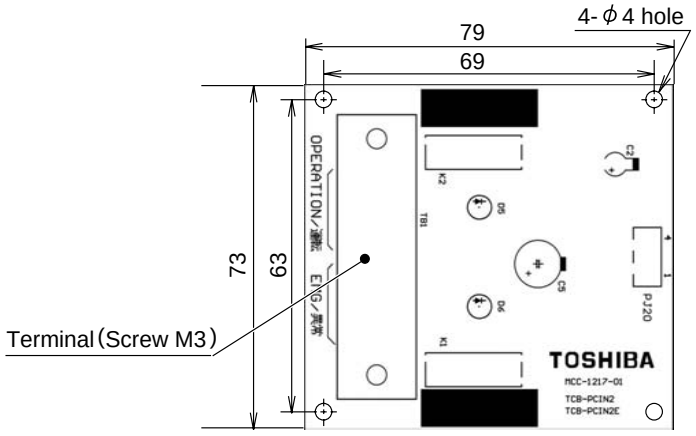
TCB-PCDM2E



TCB-PCMO2E



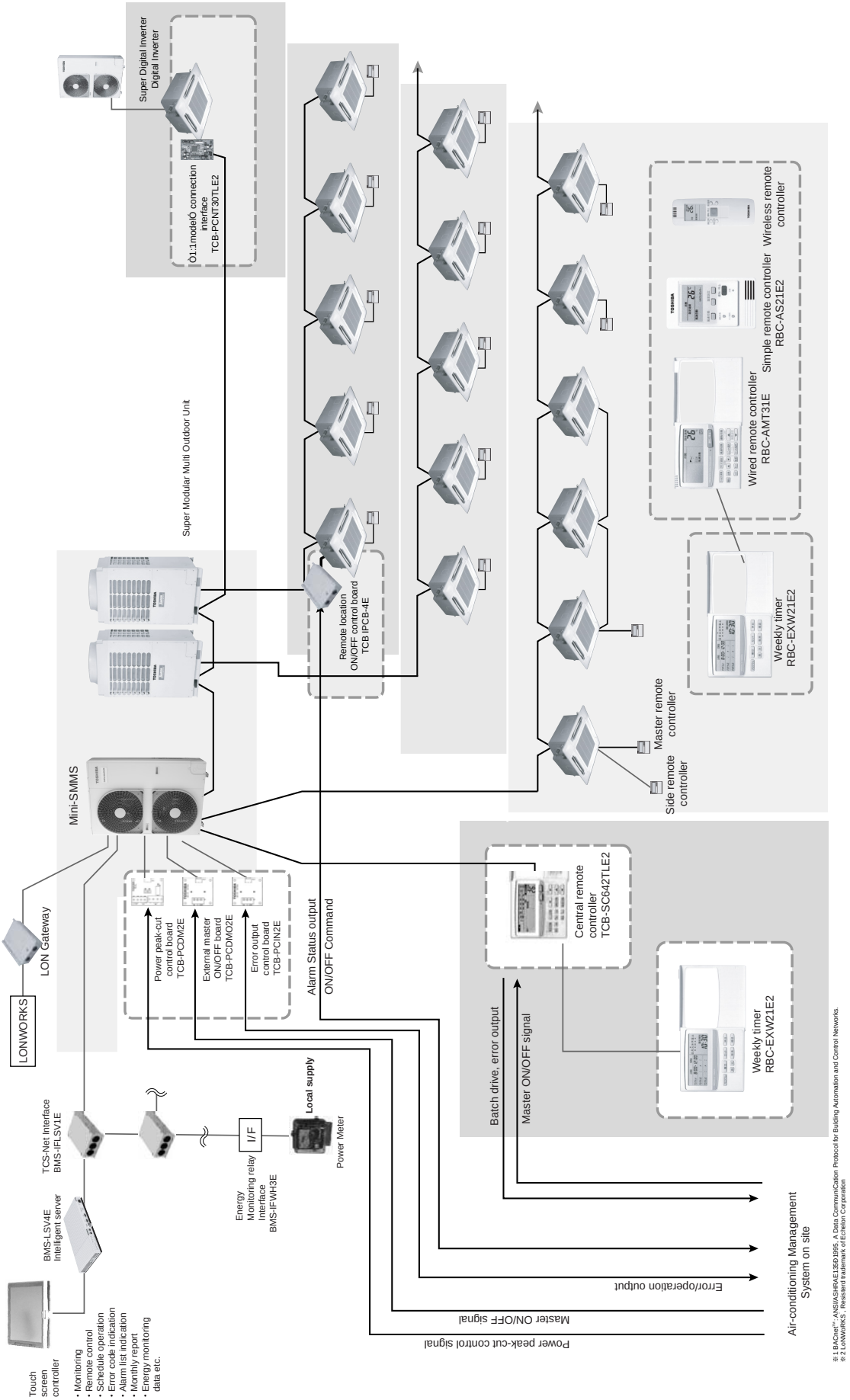
TCB-PCIN2E



5. Controls

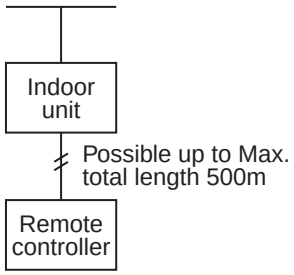
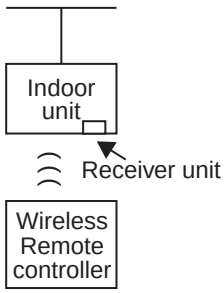
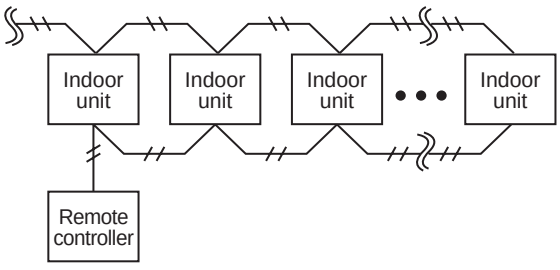
5. Controls

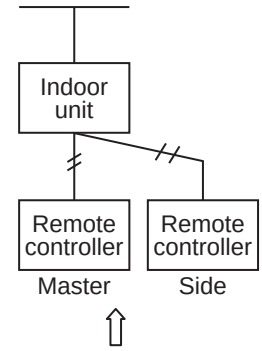
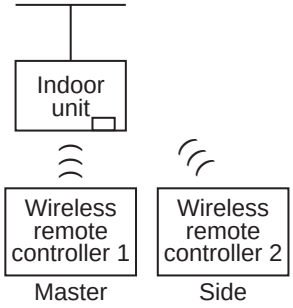
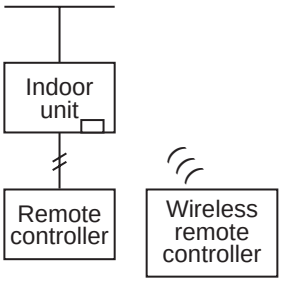
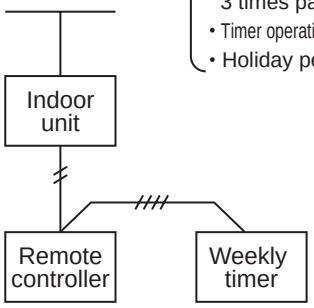
Outline of application Control



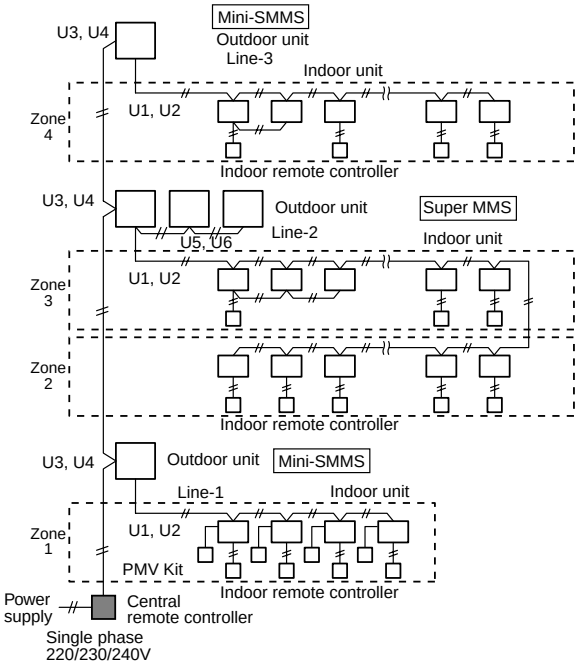
5-1. Control devices

5-1-1. Applications for indoor remote controller

	Basic function	System diagram	Model
1-1	**Individual control** Air conditioner is individually operated at a distance.	Main remote controller  Wireless remote controller  	• Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2** • Wireless remote controller kit **TCB-AX21U(W)-E2** **RBC-AX22CE2** **TCB-AX21E2**
1-2	**GROUP control** One remote controller can control a group of up to a maximum. 8 indoor units.Operating on the same setting	Max.8 indoor units  Possible up to Max.total length 500m	• Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2**

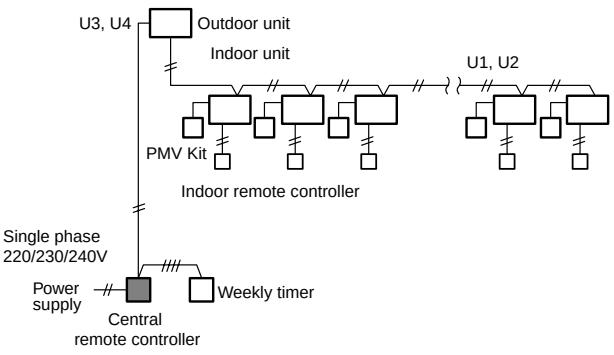
	Basic function	System diagram	Model
1-3	**Two remote control** Air conditioner is controlled by two remote controllers in two locations.	Wired system  Possible up to Max. total length 500m Wireless system  Wired & Wireless combination control (Either one of the two controllers can be set as side control).  	• Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2** • Wireless remote controller kit **TCB-AX21U(W)-E2** **RBC-AX22CE2** **TCB-AX21E2**
1-4	**Control by weekly timer** Weekly schedule operation	Weekly timer function • Setting of ON-OFF 3 times par day • Timer operation time is displayed. • Holiday period  	• Wired remote controller **RBC-AMT31E** + • Weekly timer **RBC-EXW21E2**

5-1-2. Application controls for central remote controller

<table>
<tr><th></th><th>Basic function</th><th>System diagram</th><th>Model</th></tr>
<tr><td>2-1</td><td>Central management controller for 64 units</td><td>


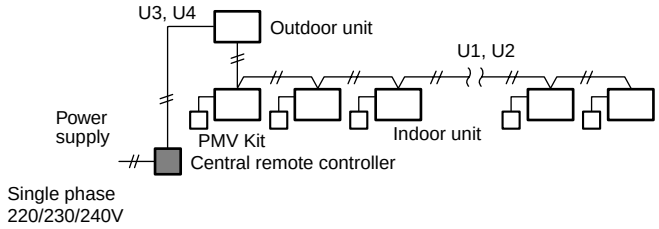
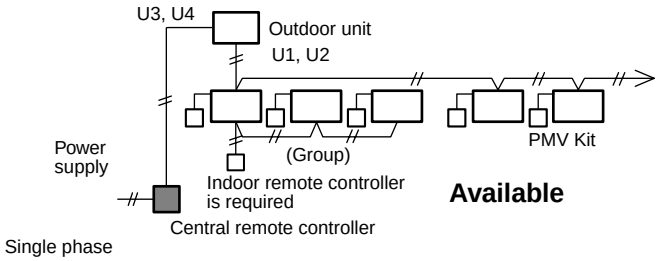
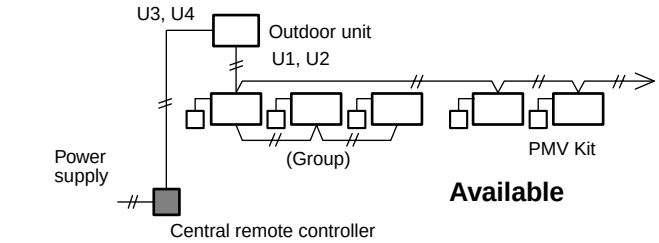
Function of central remote controller
• Individual control for up to 64 indoor units.
• Individual control for max. 64 indoor units divided in to 4 zones. (Up to 16 indoor units for each zone.)
• Up to 16 outdoor header units are connectable.
• 4 specific central control settings to restrict individual operation by remote controller are selectable.
• Different settings for one of 1 to 4 zones.
• Usable with other central control devices (Up to 10 central control devices in one control circuit)
• Two selectable control modes Central controller mode/Remote controller mode
• Setting of simultaneous ON/OFF 3 times per day when a controller is combined with using a weekly timer.
</td><td>
• Central remote controller
TCB-SC642TLE2

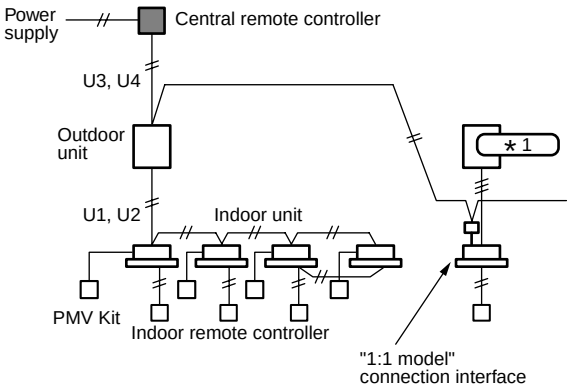
Indoor remote controller
• Wired remote controller
RBC-AMT31E

• Simple remote controller
RBC-AS21E2
</td></tr>
<tr><td>2-2</td><td>Central remote controller
+
Weekly timer
[Weekly operation schedule can be set by connecting a weekly timer to the central remote controller]</td><td>


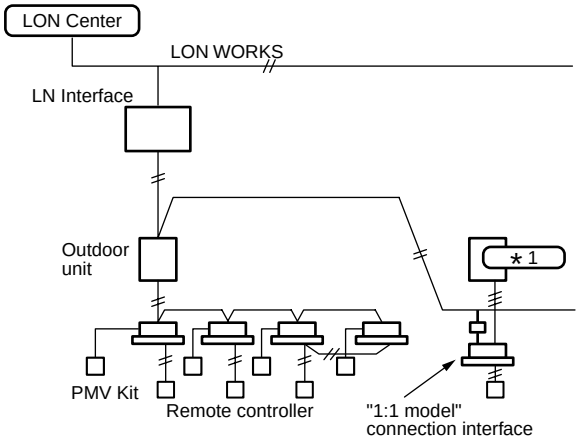
</td><td>
• Central remote controller
TCB-SC642TLE2
+
• Weekly timer
RBC-EXW21E2

Indoor remote controller
• Wired remote controller
RBC-AMT31E
or
• Simple remote controller
RBC-AS21E2
</td></tr>
</table>

	Basic function	System diagram	Model
2-3	Central remote controller without indoor remote controller	 (Even when grouping operation is performed by connecting multiple indoor units to 1 line, the indoor remote controller is required.) Example of grouping operation  	• Central remote controller **TCB-SC642TLE2** **Indoor remote controller** • Wired remote controller **RBC-AMT31E**

	Basic function	System diagram	Model
2-4	Central management control with "1 : 1 model"	 * TOSHIBA Digital Inverter System and Super Digital Inverter System	• Central remote controller **TCB-SC642TLE2** **TCB-SC163TLE2** • "1 : 1 model" connection interface **TCB-PCNT30TLE2** [RAV-SM560KRT-E, SM800KRT-E are not compatible to connect] **Indoor remote controller** • Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2**

5-1-3. Application control for network

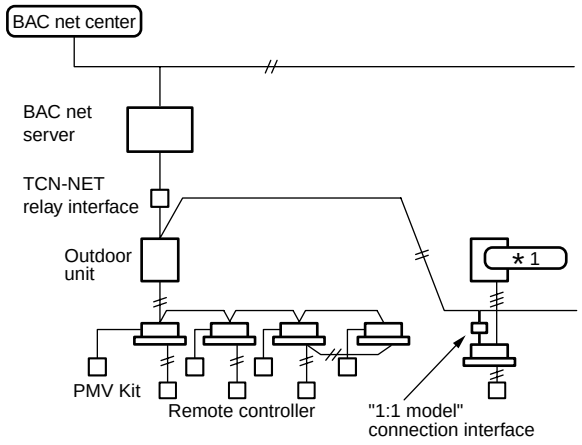
	Basic function	System diagram	Model
3-1	LONWORKS® (*1)		• LN interface **TCB-IFLN640TLE** • "1 : 1 model" connection interface **TCB-PCNT30TLE2** [RAV-SM560KRT-E, SM800KRT-E are not compatible to connect] **Indoor remote controller** • Wired remote controller **RBC-AMT31E** or • Simple remote controller **RBC-AS21E2**

*1 TOSHIBA Digital Inverter System and Super Digital Inverter System

The LONWORKS interface should be connected between a building management computer and a Mini-SMMS / Super HRM / Super MMS system.

Max. 64 indoor units are connectable per interface.

*1) LONWORKS : Registerd trademark Echelon corporation.

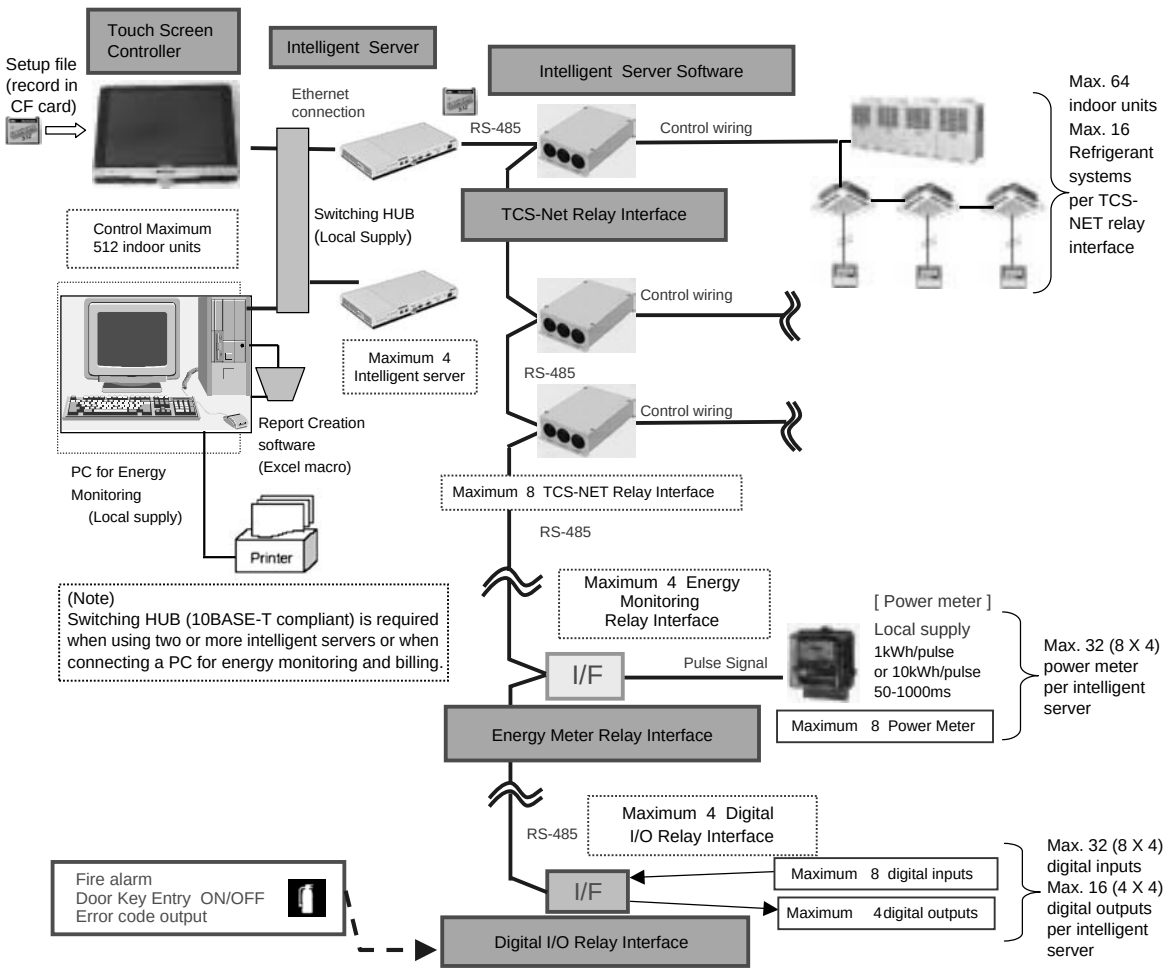
	Basic function	System diagram	Model
3-2	BACnet® (*1)	 TOSHIBA Digital Inverter System and Super Digital Inverter System The local server should be connected to the BACnet network and the Mini-SMMS and Super MMS Super HRM system will be connected through the interface.	• BACnet server **BMS-LSV4E** • BACnet server software **XXX-XXXXXX** • TCS-Net Relay Interface **BMS-IFLSV1E** • "1 model" connection interface **TCB-PCNT30TLE2** [RAV-SM560KRT-E, SM800KRT-E are not compatible to connect.] **Indoor remote controller** • Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2**

*1) BACnet™: ANSI/ASHRAE 135-1995, A Data Communication Protocol for Building Automation and Control Networks.

Touch screen controller system

3-3

System diagram



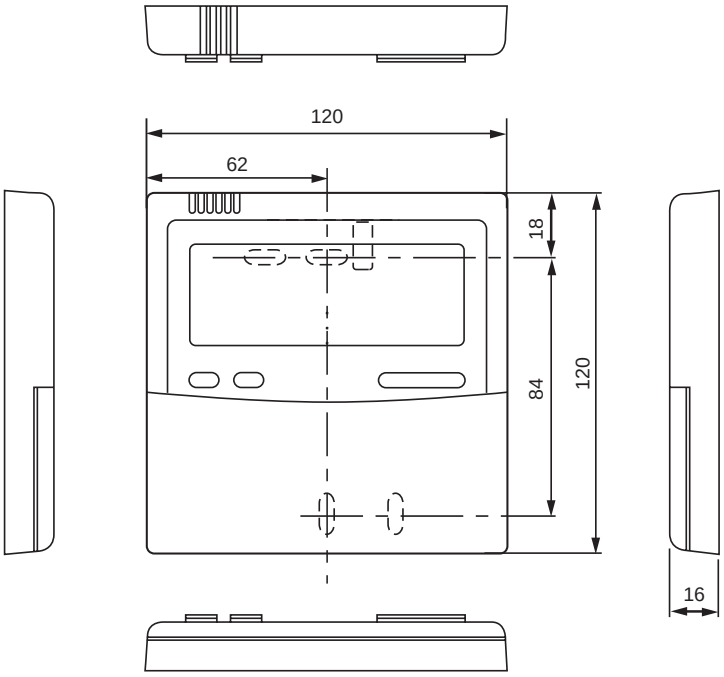
	Model Name	Model Name	Specification
Devices	Touch Screen controller (English version)	BMS-TP0640ACE	Max 64 indoor units , without energy monitoring and billing
		BMS-TP5120ACE	Max 512 indoor units , without energy monitoring and billing
		BMS-TP0640PWE	Max 64 indoor units , with energy monitoring and billing
		BMS-TP5120PWE	Max 512 indoor units , with energy monitoring and billing
	Intelligent Server	BMS-LSV4E	Server in between Touch Screen controller and RS-485
	Intelligent Server Software	BMS-SRCC03E	Installed on Intelligent Server
	TCS-Net Relay Interface	BMS-IFLSV1E	Interface between intelligent Server Control wiring(TCC-LINK)
	Energy Monitoring Relay Interface	BMS-IFWH3E	Interface for power meter
	Digital I/O Relay Interface	BMS-IFDD01E	Interface for input / output signal

Function	(1) Monitoring air-conditioners	Operation status can be viewed according to a unit. [Unit] All building, All tenants, Each tenant, Each area, Each remote controller group [Monitoring contents] Operation and alarm status, Setting status for each remote controller group
	(2) Operating of air-conditioners	Header / individual control can be performed according to a unit. [Operating contents] ON/OFF, Operation setting (operation mode, air volume, louver position, setting temp., restricted setting from remote location)
	(3) Schedule operation	Air-conditioners are operated according to the set-up schedule / operation pattern. Schedule opretaion can be performed according to a unit. [Operation pattern]Weekly pattern, special day pattern (4 pattern), Non-operation days pattern
	(4) Alarm list display	The present alarm contents are displayed. [Display contents] Alarm contents, Unit number, Generated time
	(5) Alarm record display	The alarm history records are displayed. [Display contents] Alarm contents, Unit number, Generated time
	(6) Monthly report data extraction	Monthly report data is written to "Compact Flash". Monthly reports can be created according to a unit using the monthly report software. [Monthly report contents] The number of ON/OFF, Operating time, Results of energy monitoring
	(7) Energy monitoring data extraction	Power consumption data is written to "Compact Flash". Energy monitoring can be performed according to a unit using the energy monitoring software. [Energy monitoring data] Power consumption according to the power meter

5-2. Controller dimensions

• Wired remote controller

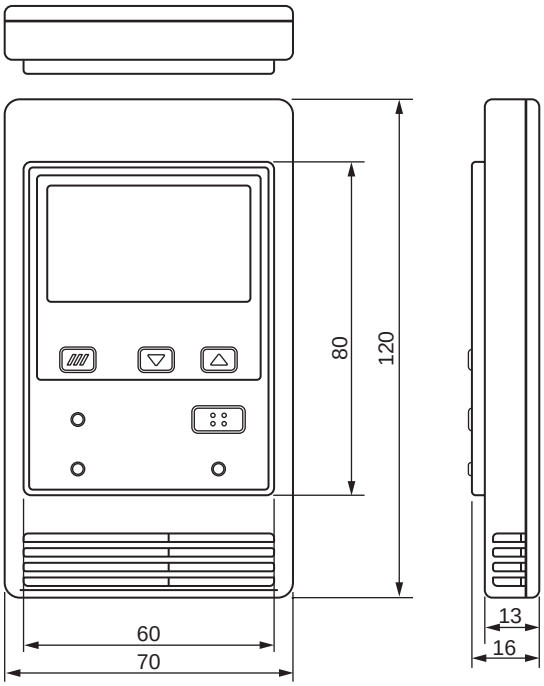
RBC-AMT31E



Note : All dimensions are in mm

• Simple remote controller

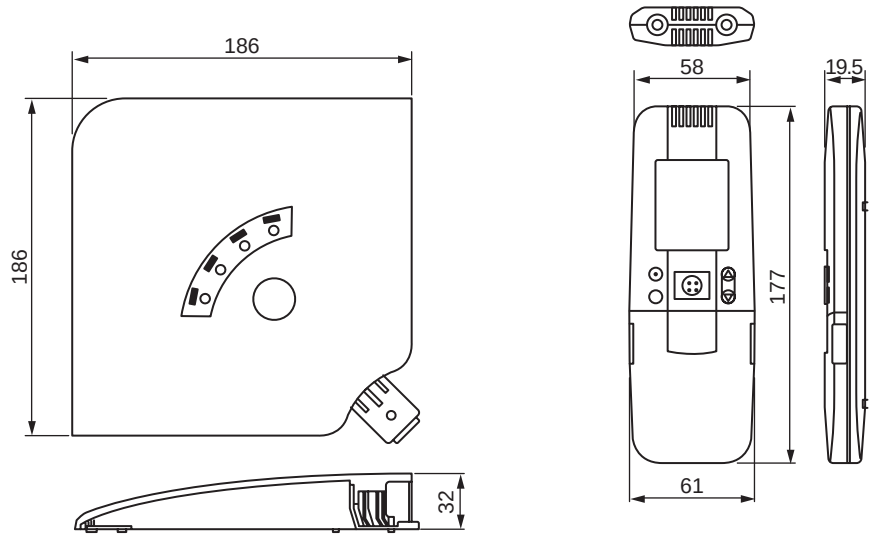
RBC-AS21E2



Note : All dimensions are in mm

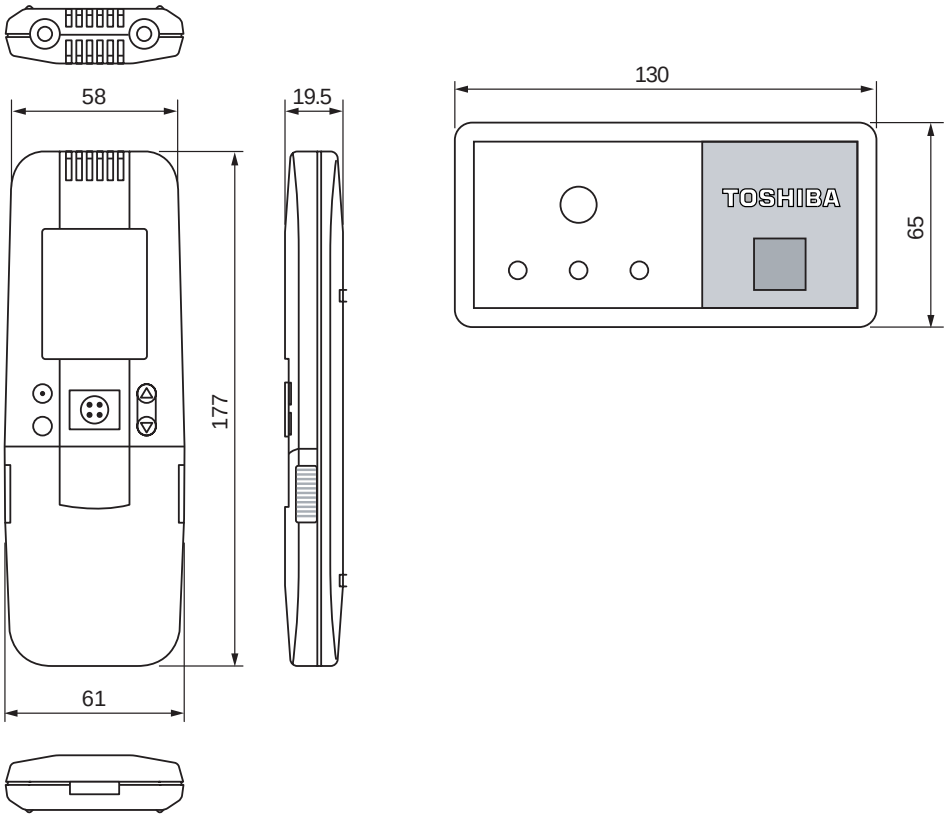
• Wireless remote controller kit

TCB-AX21U (W)-E2



Note : All dimensions are in mm

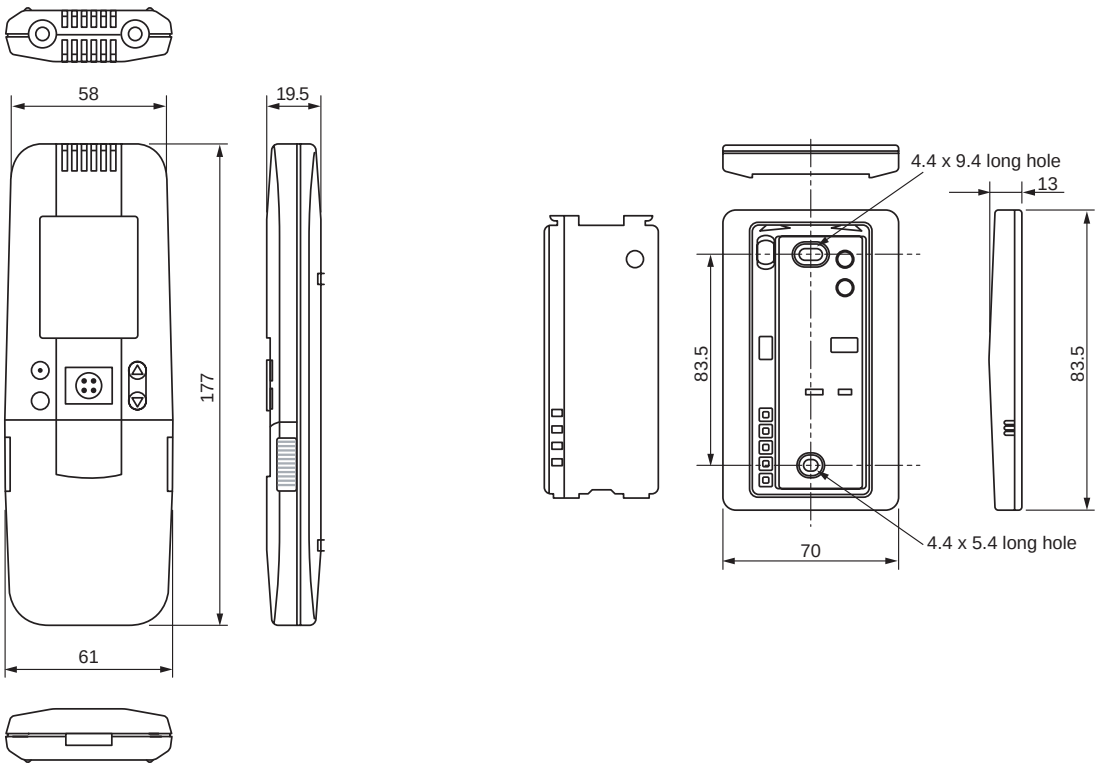
RBC-AX22CE2



Note : All dimensions are in mm

• Wireless remote controller kit

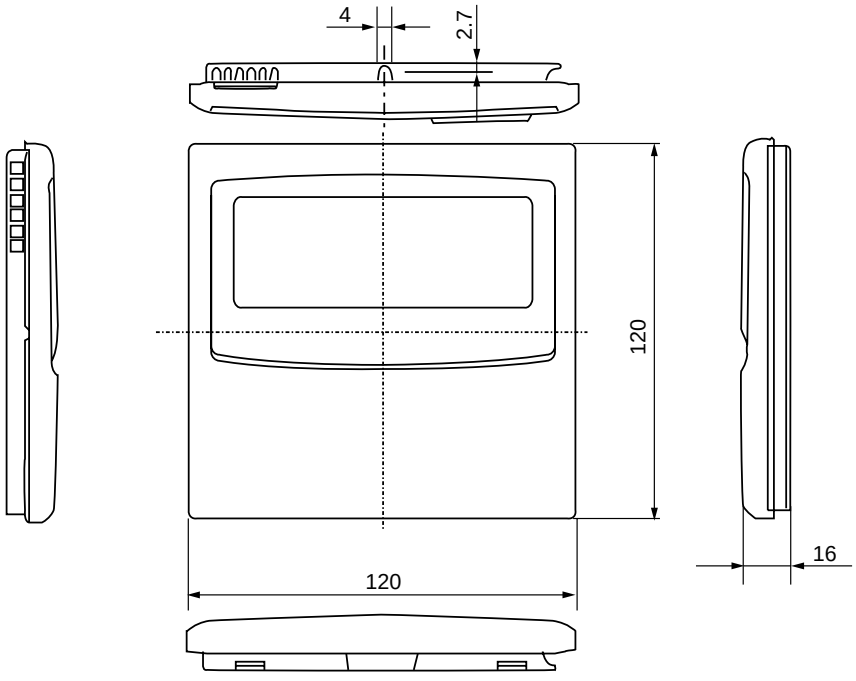
TCB-AX21E2



Note : All dimensions are in mm

• Weekly timer

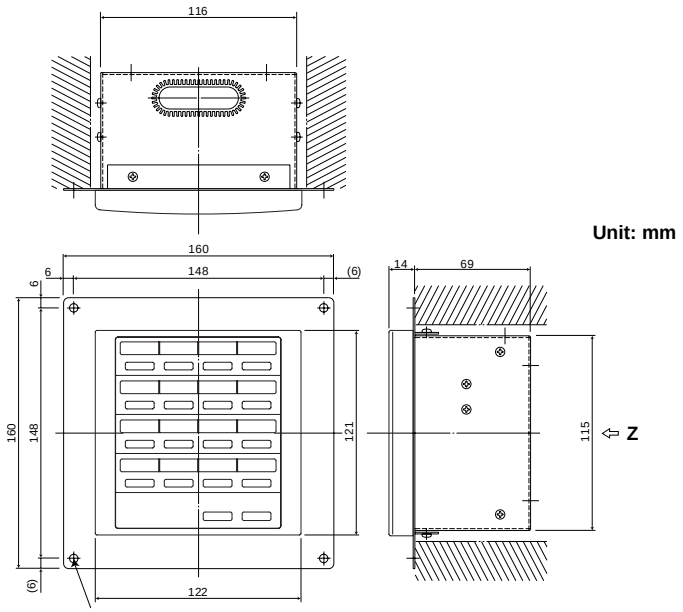
RBC-EXW21E2



Note : All dimensions are in mm

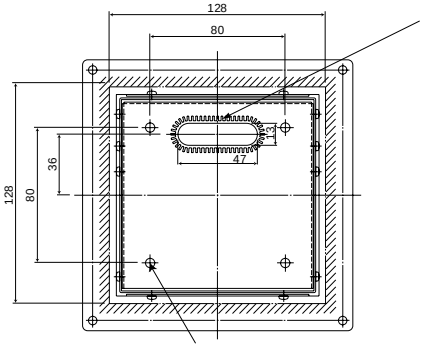
• ON-OFF controller

TCB-CC163TLE2



Unit: mm

4-ø5 diameter holes (for mounting)

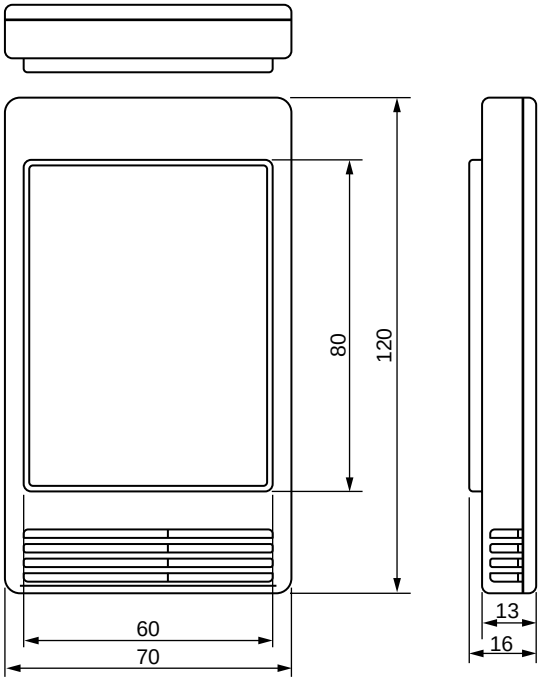


Z-view (back side)

Note : All dimensions are in mm

• Remote sensor

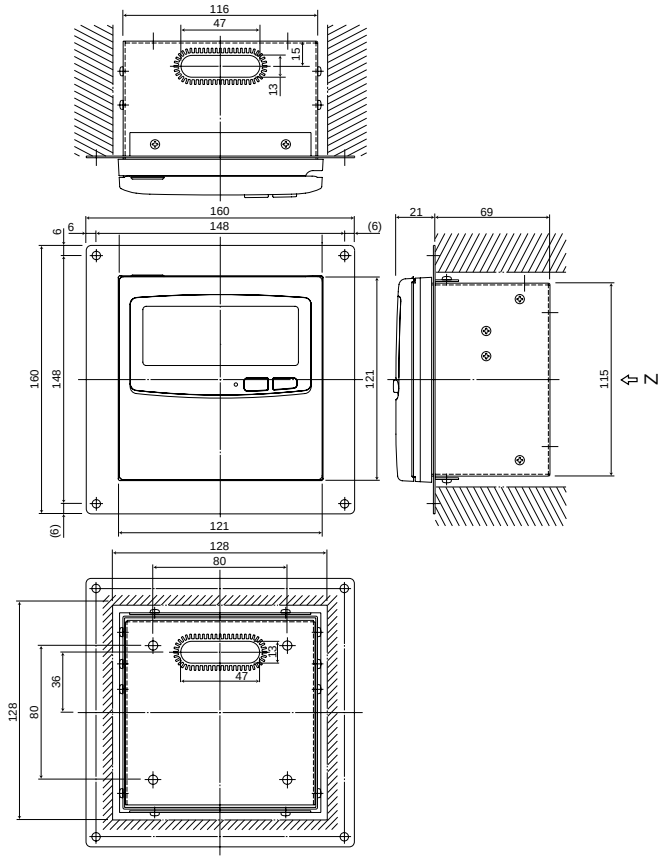
TCB-TC21LE2



Note : All dimensions are in mm

• Central remote controller

TCB-SC642TLE2

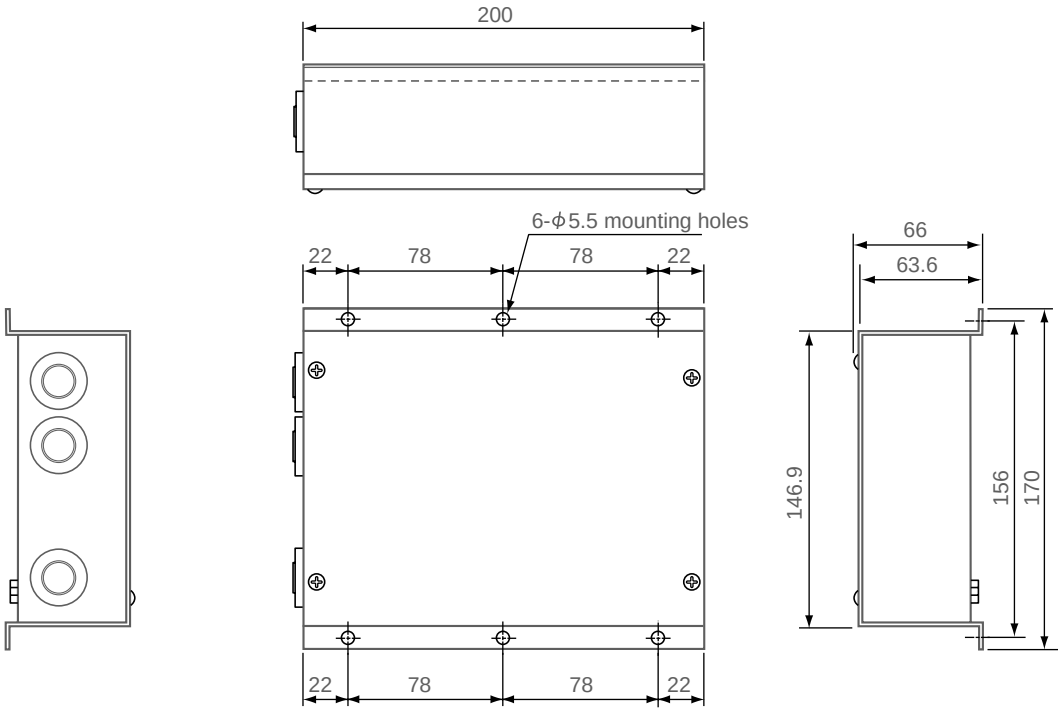


Z view (back side)

Note : All dimensions are in mm

• TCS-Net relay interface

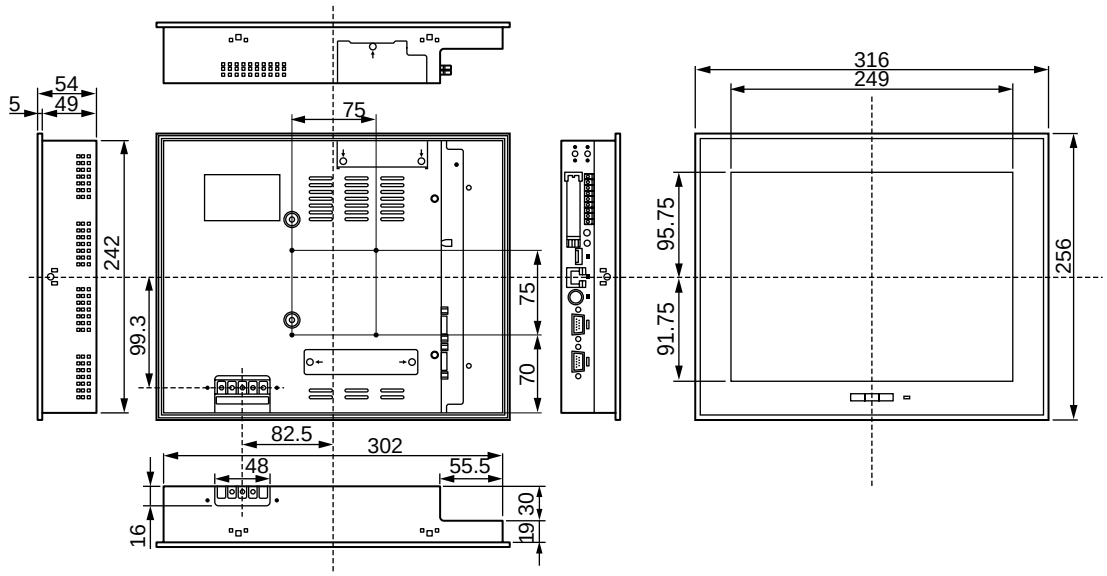
BMS-IFLSV1E



Note : All dimensions are in mm

• Touch screen controller

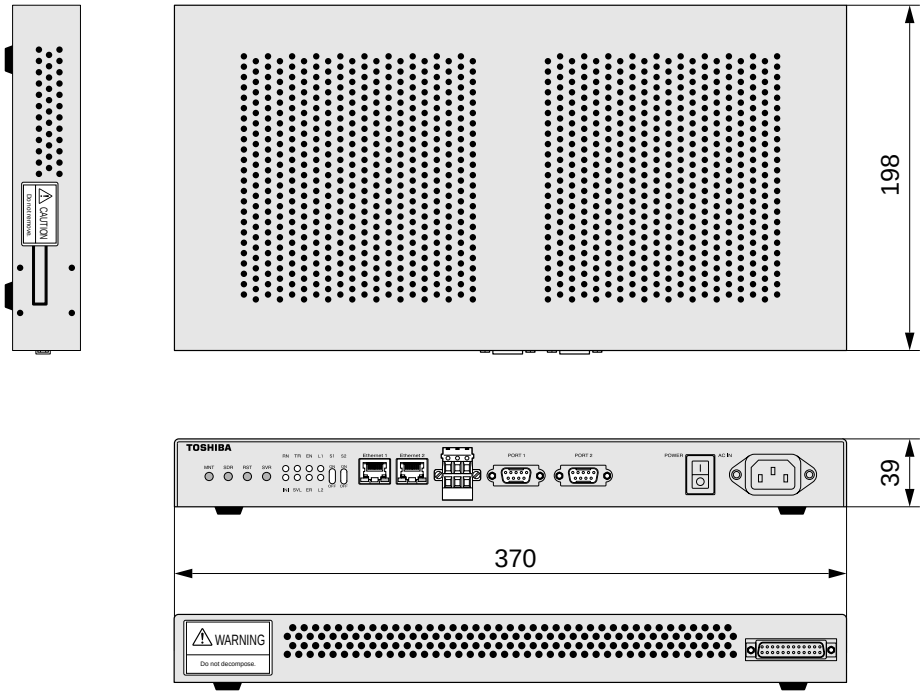
BMS-TP0640ACE
BMS-TP5120ACE
BMS-TP0640PWE
BMS-TP5120PWE



Note : All dimensions are in mm

• Intelligent server

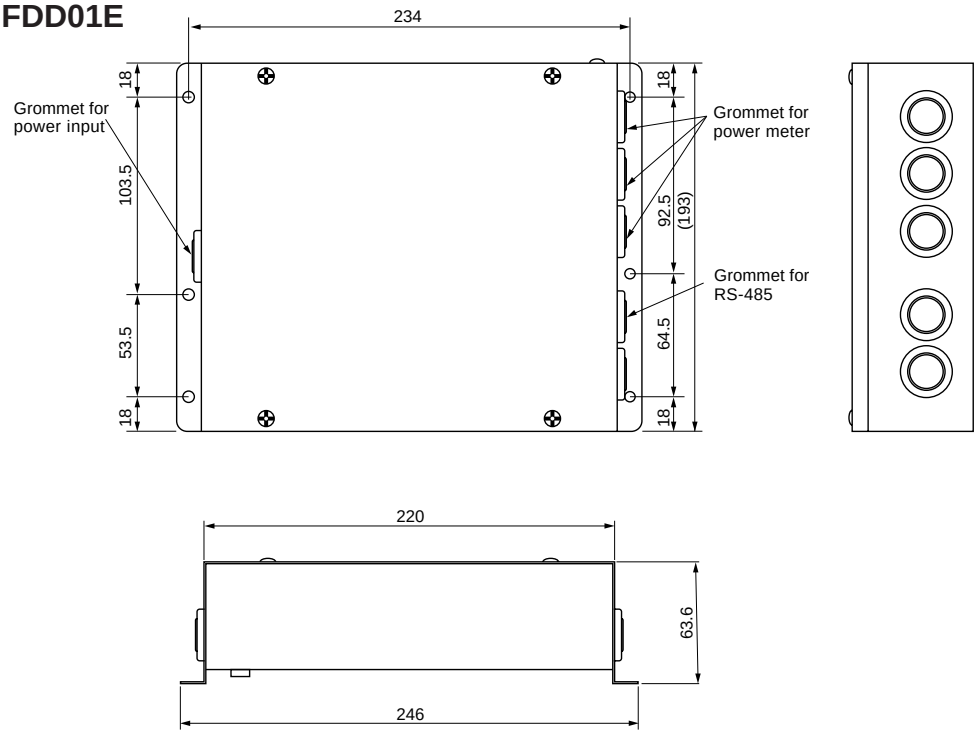
BMS-LSV2E



Note : All dimensions are in mm

• Energy monitoring relay interface/Digital I/O relay interface

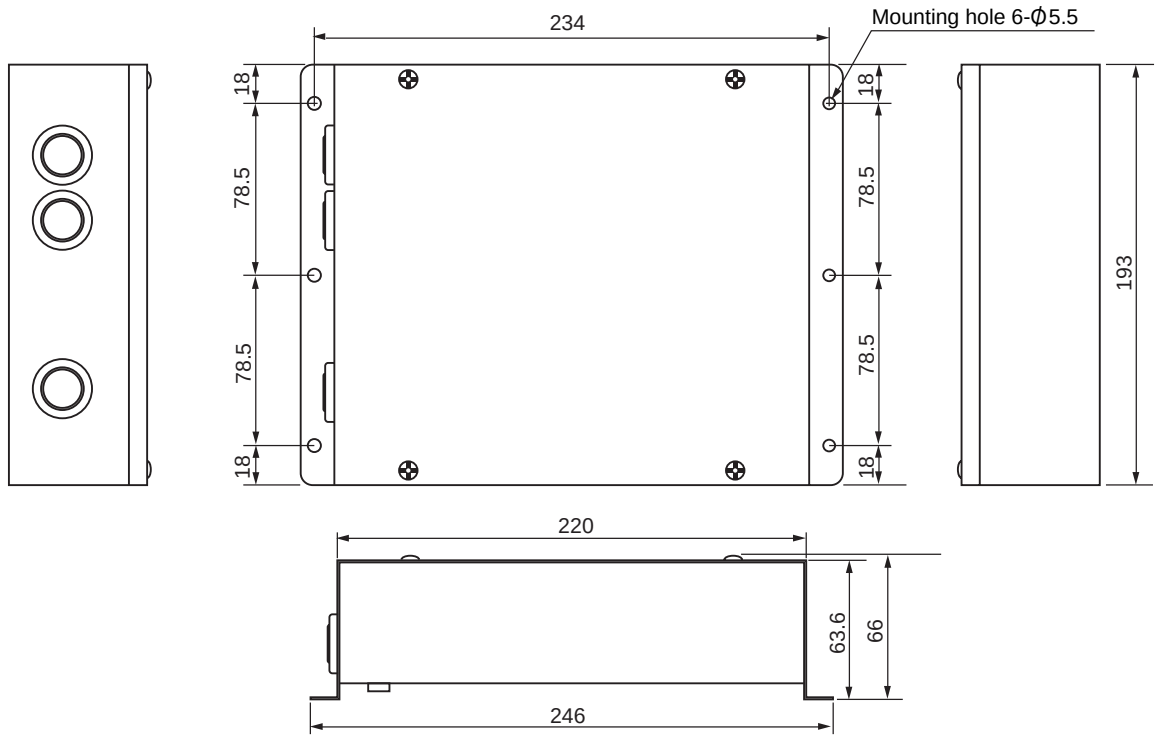
BMS-IFWH3E
BMS-IFDD01E



Note : All dimensions are in mm

• LON GATEWAY

TCB-IFLN640TLE



Note : All dimensions are in mm

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2 CHOME 12-32, KONAN, MINATOKU, TOKYO, 108-0075, JAPAN