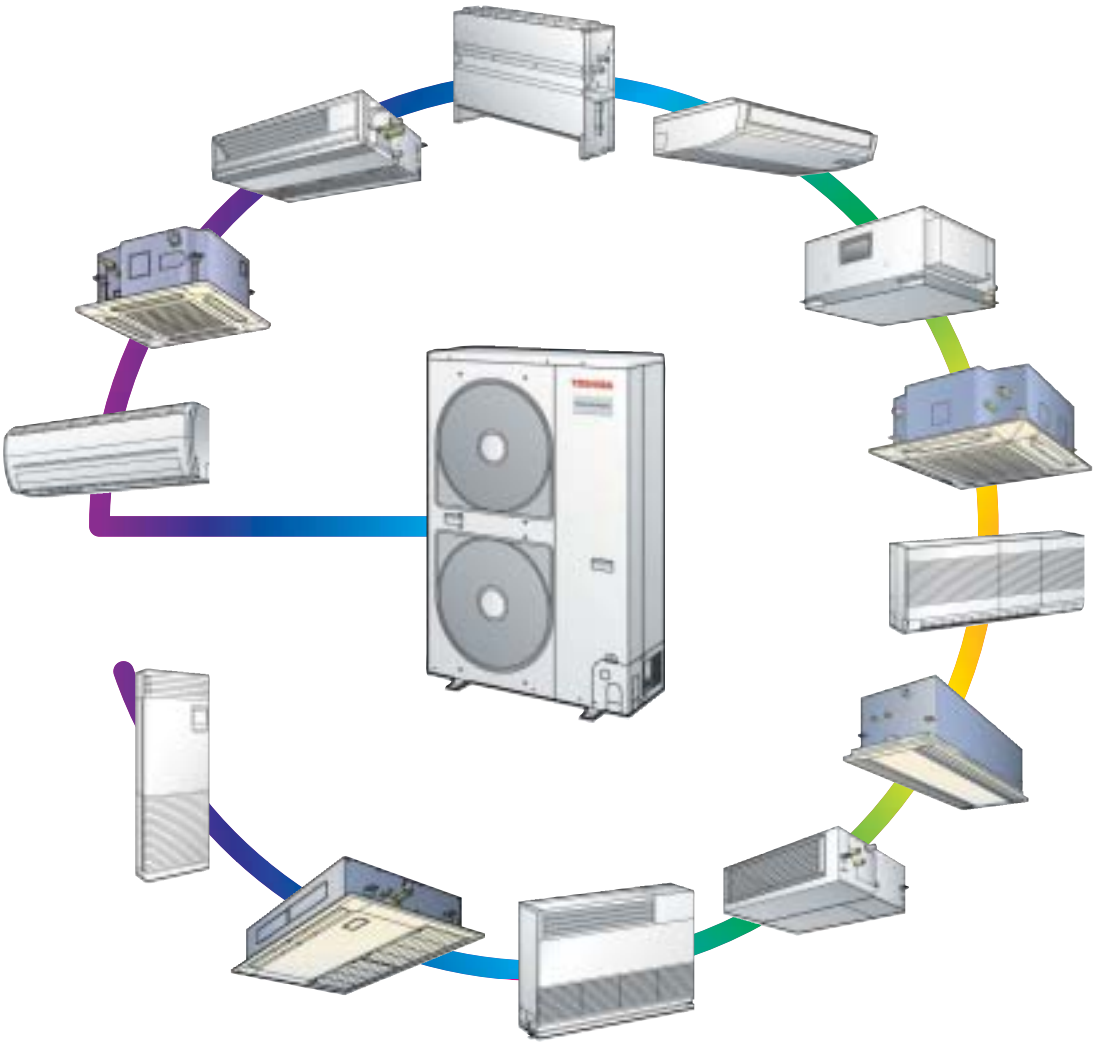
TOSHIBA



MiNi-SMMS

Engineering Data Book

File No. E06-312

1 Foreword

Foreword

The engineering data book details all relevant data, charts and drawings to enable you to get the best performance from the Toshiba Mini-SMMS for various applications.

The information is aimed to assist you by providing greater system details and the wider applications that system covers.

It is recommended that the data book be used in accordance with the following as references.

Design manual: File No.A06-112
Installation manual: File No.A06-212
Service manual: File No.A05-016

(Revised 19 May 2006)

2 Contents

Contents

3 Introduction

Toshiba MiNi-SMMS Air Conditioning
Greater Flexibility for Even More Comfort

- Superior new Toshiba VRF system for small and mid-size buildings
- Toshiba's innovative spirit and VRF concept: Advantages of the reputable SMMS technologies

World's best class energy savings

- COP of 4.61* achieved by Toshiba's unrivalled SMMS technologies and newly developed components

*When heating with 4HP CDU system

Greatest installation flexibility

- 13 types of indoor units for use in up to 9 rooms; max. 6 HP
- Small and light weight outdoor unit
- Total piping length 180 m (farthest 100 m)
- Maximum height variation

(Outdoor unit is up to 30 m higher than indoor unit / outdoor unit is up to 20 m lower than indoor unit)

Surprising quiet operation

- Product with quiet outdoor unit by introduction of bat wing fan
- Quiet operation enables a tranquil interior environment, which can be further enhanced with our optional PMV* kit

*Pulse Motor Valve

(Revised 19 May 2006)

World's best class energy savings

COP of 4.61* achieved by Toshiba's unrivalled SMMS technologies and newly developed components

*When heating with 4HP CDU system

DC fan motor

- Highly efficient DC motor
- 63 W+63 W output
- Sine wave drive

Heat exchanger

High-efficiency R410A heat-transfer tube

Configuration of the finned heat-transfer tube

New

Bat wing fan

New development for high-pressure low-volume fan

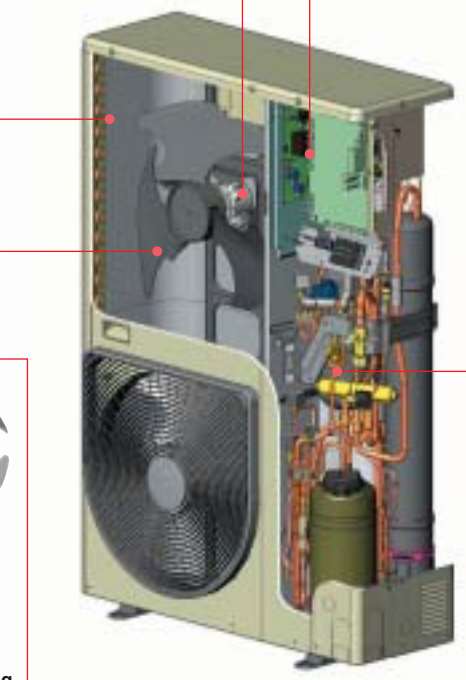
→ The bat wing fan realizes the sound level equivalent to current model.

Anti-eddy projection

Minimizes the generation of large eddies from small eddies.

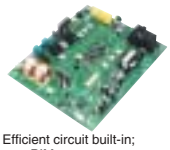
Reverse-arc-shape wing

Reduces air turbulence due to less pressure Loss.



Vector-controlled inverter

Vector IPDU control changes the motor current wave to a smooth sinus pattern so that noise emitted from the drive units is greatly reduced.

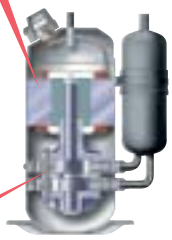


Efficient circuit built-in; new PIM

Smooth sine curve realizes efficiency and less noise.

Twin-rotary DC compressor

DC driven motor with rare earth magnet
· Compact
· Higher efficiency
· Higher power motor torque



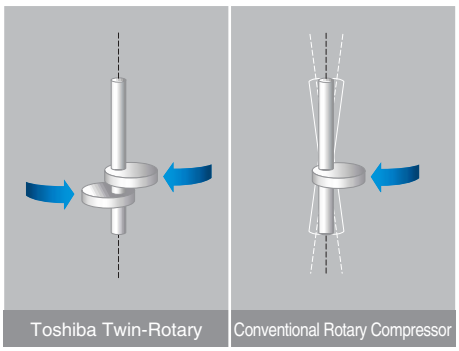
Precise manufacturing technology in the compression parts
· Higher efficiency (in wide range)
· Higher reliability

DC twin-rotary compressor

High reliability

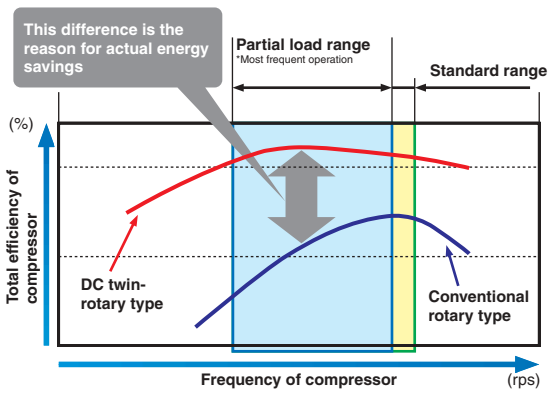
The enhanced DC twin-rotary compressor delivers stable performance with minimum friction. Ideal for noise-sensitive applications. The sound of outdoor unit is almost imperceptible.

TWIN-ROTARY COMPRESSOR



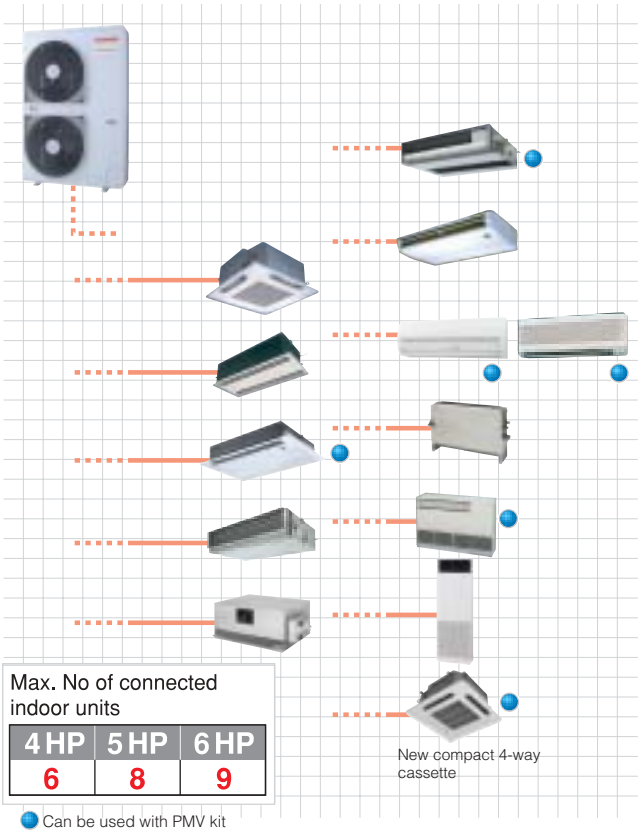
- Low vibration
- Super-quiet operation
- High reliability

Comparison of DC twin-rotary and conventional rotary compressor



(Revised 19 May 2006)

Wide variety in our indoor unit line-up

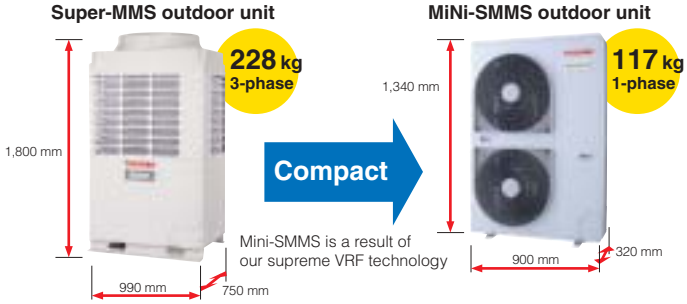


Max. No of connected indoor units

4 HP	5 HP	6 HP
6	8	9

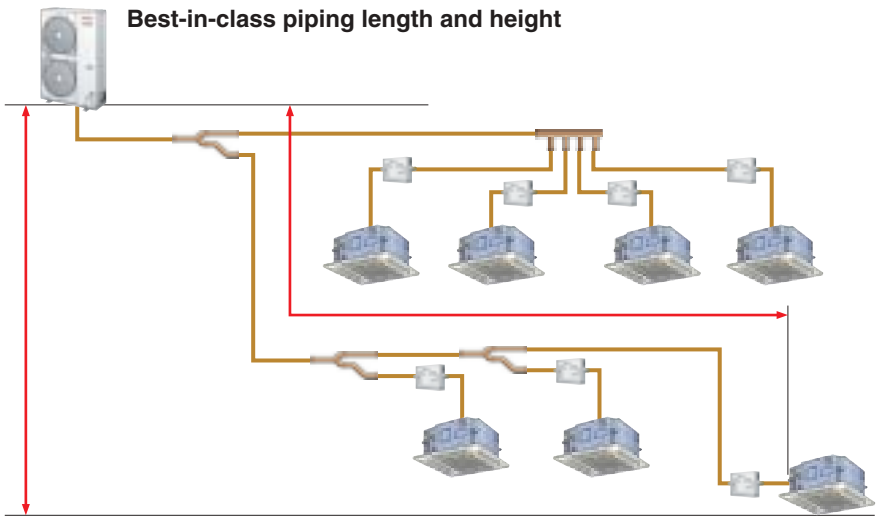
Can be used with PMV kit

Small and lightweight



Piping length

Best-in-class piping length and height

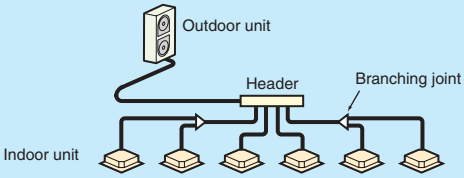


Shortest route design by free branching

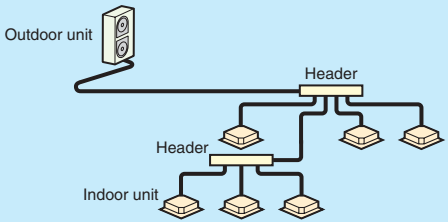
Combination of line and header branching is highly flexible, allowing the shortest route possible thereby saving on installation time and costs.
Line/header branching after header branching is only available with TOSHIBA.

- **Line branching**
- **Header branching**
- **Line + Header branching**

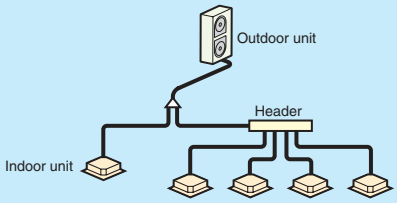
Line branching after header branching



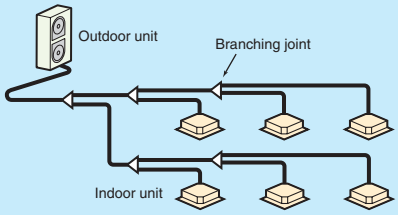
Header branching after header branching



Header branching after line branching



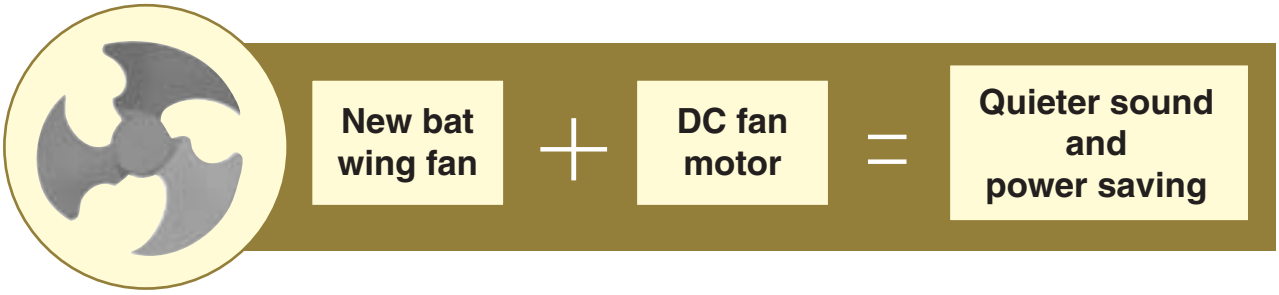
Line branching



(Revised 19 May 2006)

Bat Wing fan

Quieter with smoother wind flow



Night operation (sound reduction) control

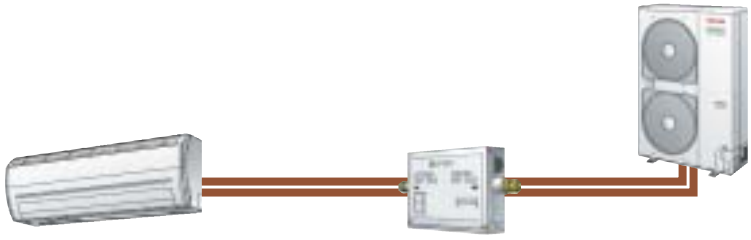
(with optional PC Board (TCB-PCMO2E)) and locally supplied time/rswitch)

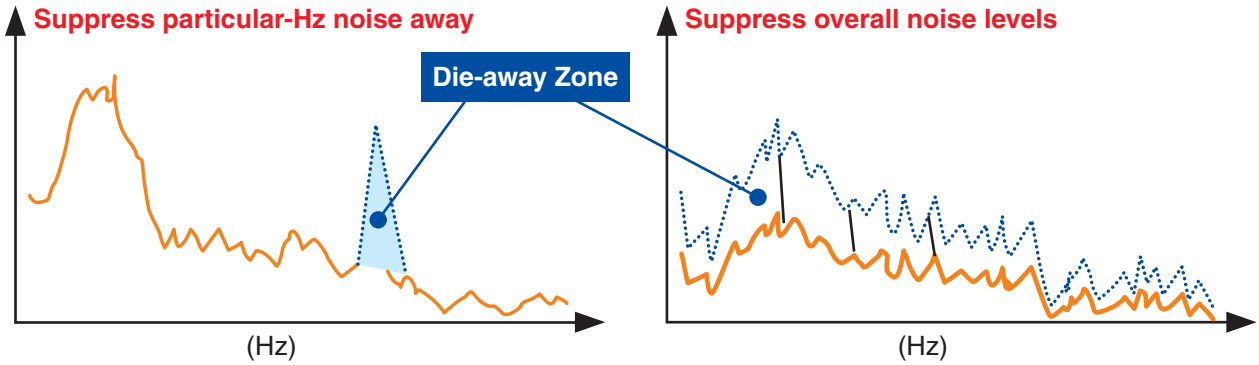
The unit also comes with a night-time low-noise mode, which reduces operating noise at the programmed activation time. (Timer or switch to be locally available.)

Operation control		Normal	Night
4HP	Cooling	49 dB	46 dB
5HP	Heating	50 dB	48 dB
6HP	Cooling	50 dB	47 dB
	Heating	52 dB	49 dB

PMV kit

An optional PMV kit (RBM-PMV0361E/RBM-PMV0901E) allows quiter placement to further reduce refrigerant sound.





(Revised 19 May 2006)

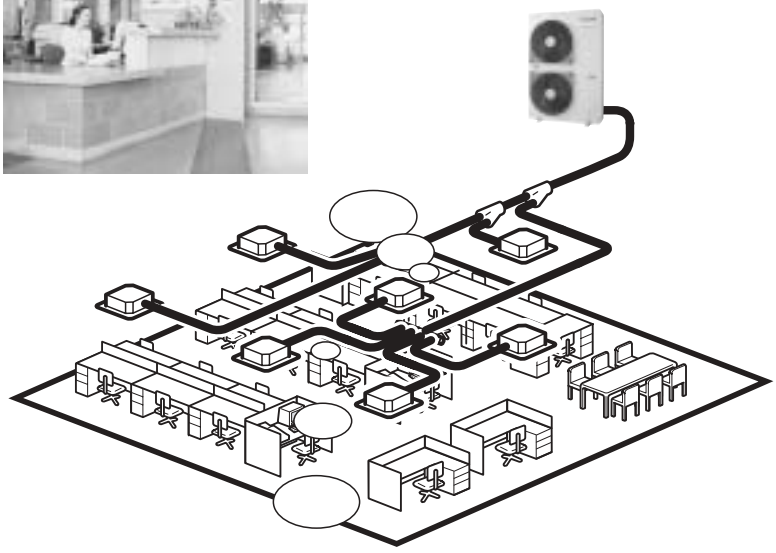
Mini-SMMS Data book

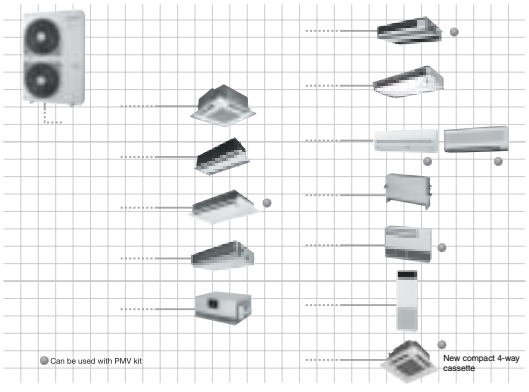
4 System overview

4-1. Summary of system equipments

- *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.





Quieter placement

- An optional PMV kit (RBM-PMV0361E/RBM-PMV0901E) allows quiter placement to further reduce refrigerant sound.

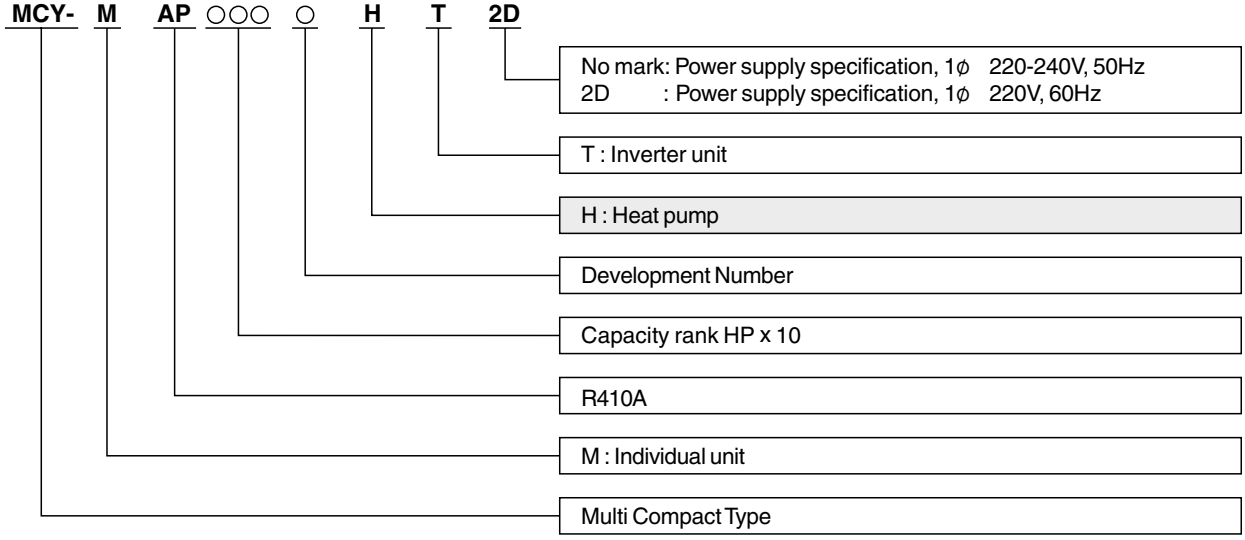
(Revised 19 May 2006)

4-2. Outdoor units

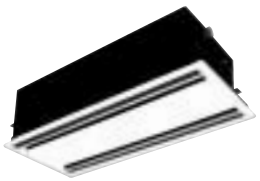
Corresponding HP		Inverter unit		
		4HP	5HP	6HP
Model name	Heat pump(50Hz) MCY-	MAP0401HT	MAP0501HT	MAP0601HT
	Heat pump(60Hz) MCY-	MAP0401HT2D	MAP0501HT2D	MAP0601HT2D
Cooling capacity(kW)*1		12.1	14.0	15.5
Heating capacity(kW)*1		12.5	16.0	18.0
No.of connectable indoor units		6	8	9

*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



4-3. 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	——

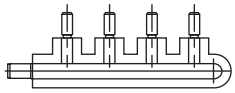
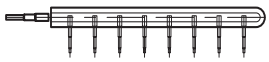
Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
High Wall Type (1 series)		**MMK-AP0071H**	007 type	0.80	2.2	2.5	Available
		MMK-AP0091H	009 type	1.00	2.8	3.2	Available
		MMK-AP0121H	012 type	1.25	3.6	4.0	Available
		MMK-AP0151H	015 type	1.70	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

MM ○- **AP** ○○○ ○ ○**H** -○

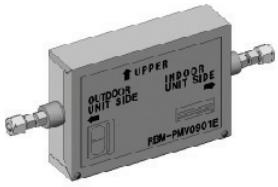
- -○ : C : China model
- ○**H** : M : Compact 4-way Cassete Type
W : 2-way Cassete Type
S : 1-way Cassete Type
Y : Small sized 1-way Cassete Type
B : Built-in Type (Built-in Duct Type) (Floor concealed Type)
SP(S) : Slim Duct Type
- ○ : Development series No.
- ○○○ : Based on the cooling capacity (Btu/h)/1,000
- **AP** : R410A
- ○- : U : Cassette Type
D : Duct Type
C : Under Ceiling Type
K : High Wall Type
L : Floor Type (Cabinet type) (Concealed type)
F : Floor Standing Type
- **MM** : MM : Modular Multi Type

4-4. 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 5-1**. (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.

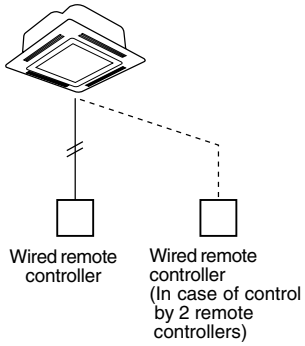
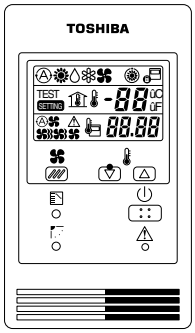
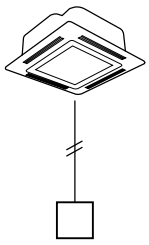
4-5. PMV Kit

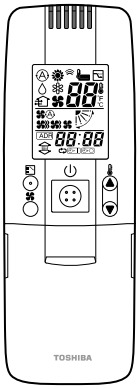
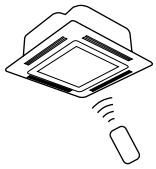
Model name	Indoor unit capacity type	Appearance
RBM-PMV0361E	007, 009, 012 type	
RBM-PMV0901E	015, 018, 024 type	

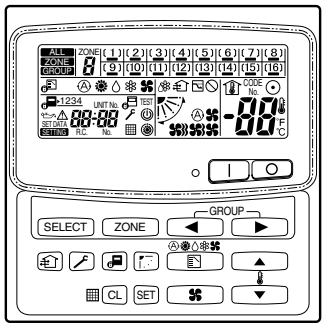
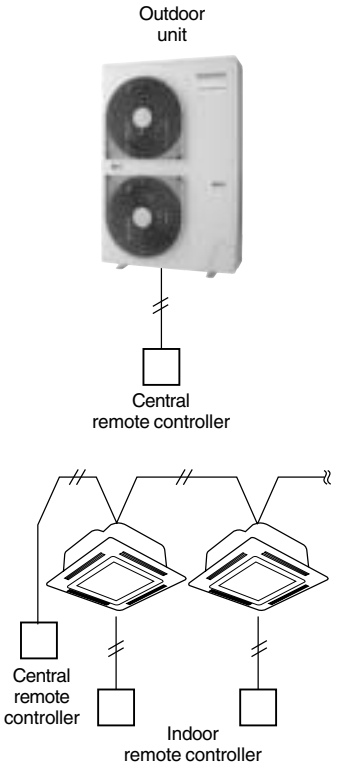
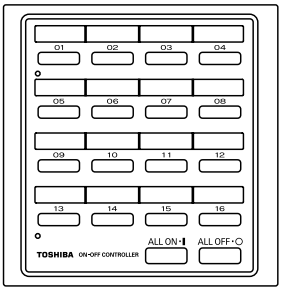
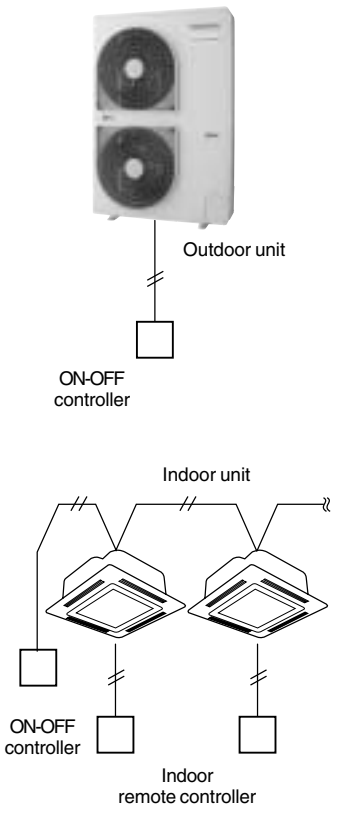
For more information see Chapter 10.

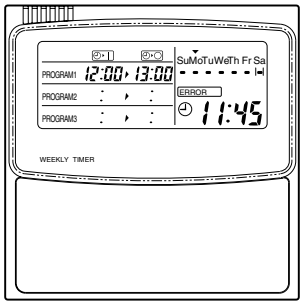
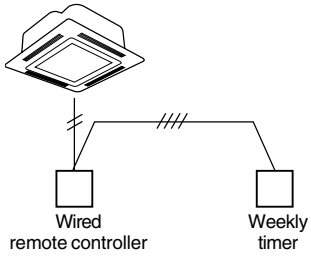
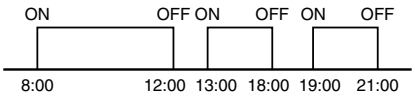
(Revised 12 July 2006)

4-6. 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 minite 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 minute 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.

Mini-SMMS Data book

5 Capacity compensation chart

5 Capacity compensation chart

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.

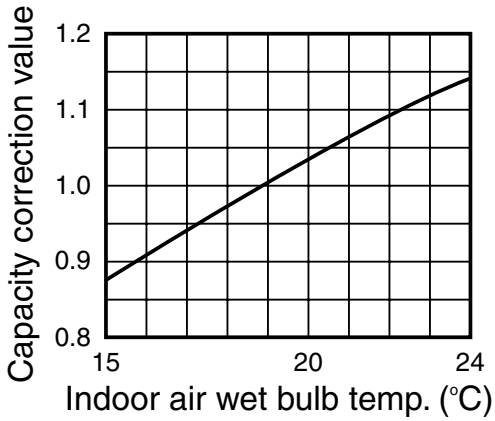
Outdoor unit	Capacity code of outdoor unit	Max. No. of indoor units	Total capacity code of indoor units
MCY-MAP0401HT MCY-MAP0401HT2D	4	6	3.2 to 5.2
MCY-MAP0501HT MCY-MAP0501HT2D	5	8	4.0 to 6.5
MCY-MAP0601HT MCY-MAP0601HT2D	6	9	4.8 to 7.8

5-1. Cooling/heating capacity characteristics

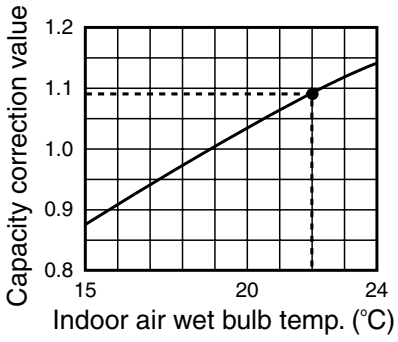
① Cooling capacity calculation method :

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

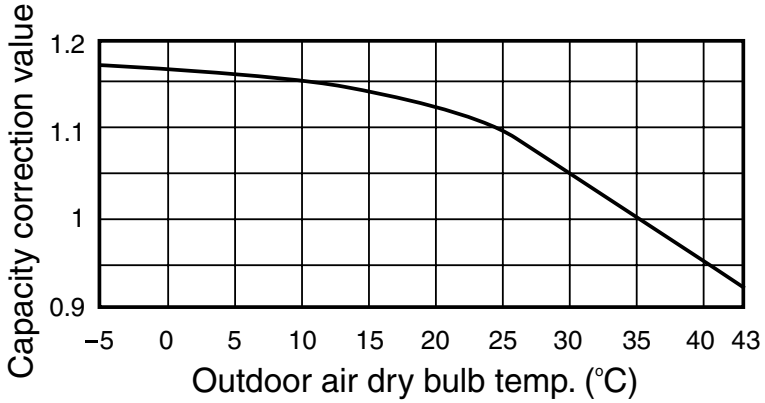
Ⅰ Indoor air wet bulb temperature vs. capacity correction value



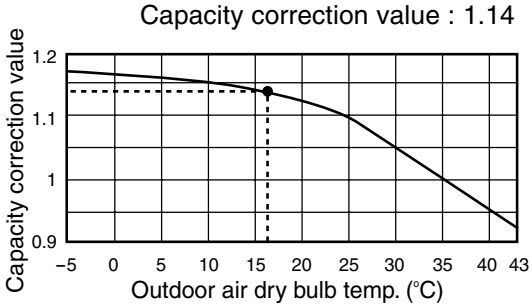
(Example)
Design Indoor conditions : 22°C WB
Capacity correction value : 1.09



Ⅱ Outdoor air dry bulb temperature vs.capacity correction value

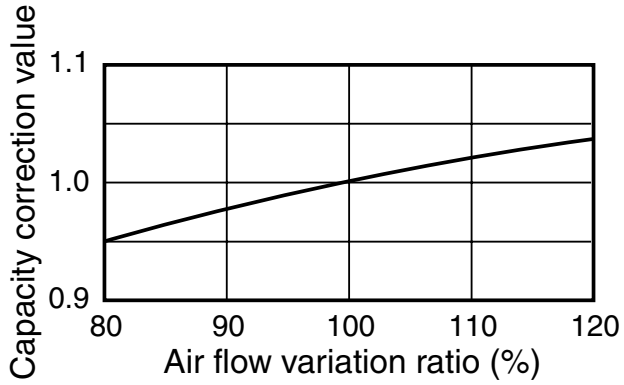


(Example)
Design Outdoor conditions : 17°C DB
Capacity correction value : 1.14

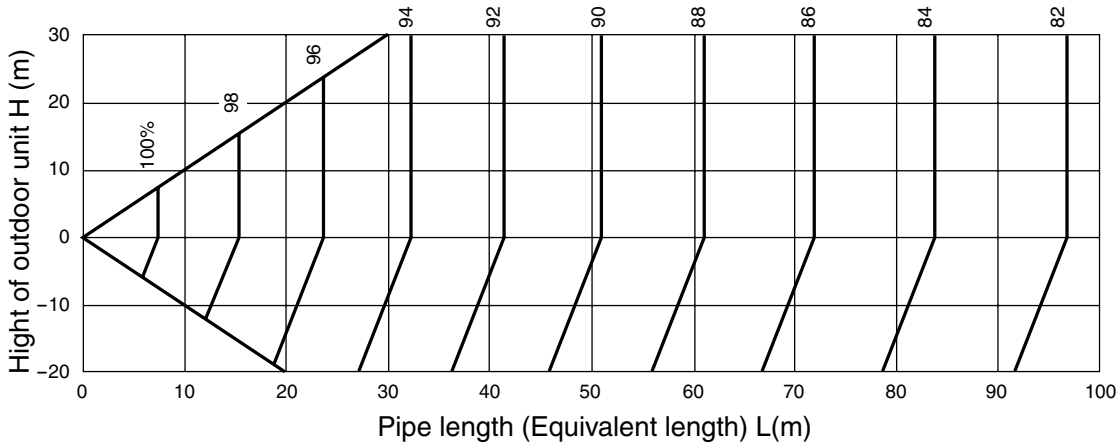


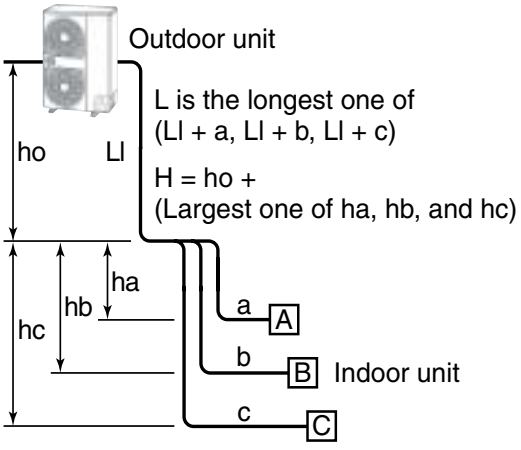
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

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



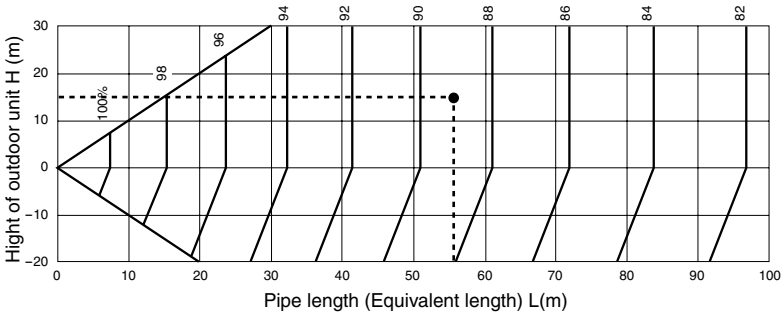


(Example)

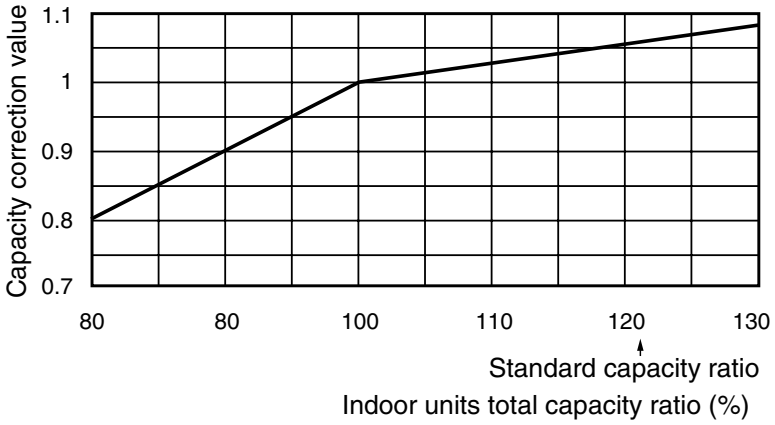
Design Pipelength : 55m

Height of outdoor unit : 15m

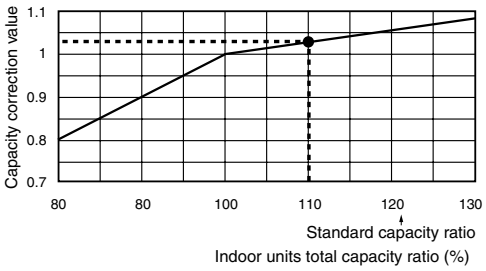
Capacity correction value : 89%



Ⅴ Correction of outdoor unit diversity



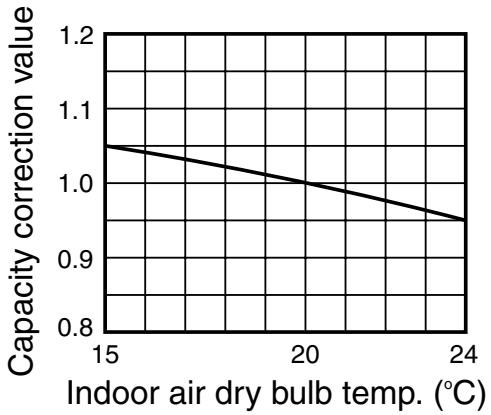
(Example)
Design Outdoor unit : 5.0HP
Indoor units total capacity : 5.5HP
(Capacity ratio : 110%)
Capacity correction value : 1.03%



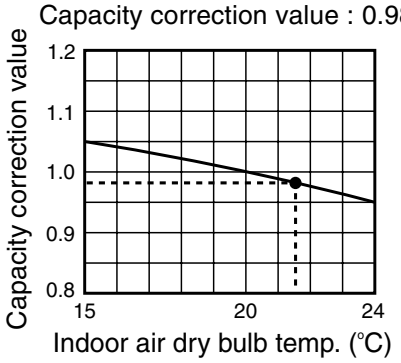
② Heating capacity calculation method :

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

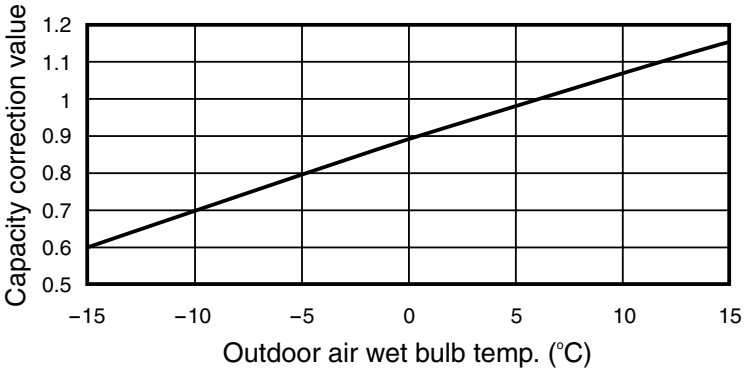
Ⅰ Indoor air dry bulb temperature vs. capacity correction value



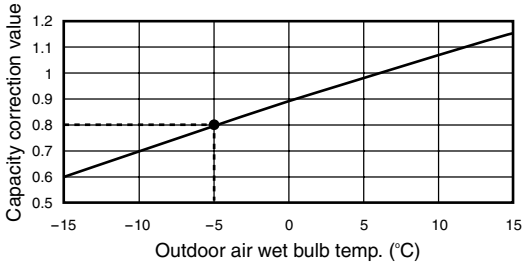
(Example)
Design Indoor conditions : 21.5°C DB
Capacity correction value : 0.98



Ⅱ Outdoor air wet bulb temperature vs. capacity correction value



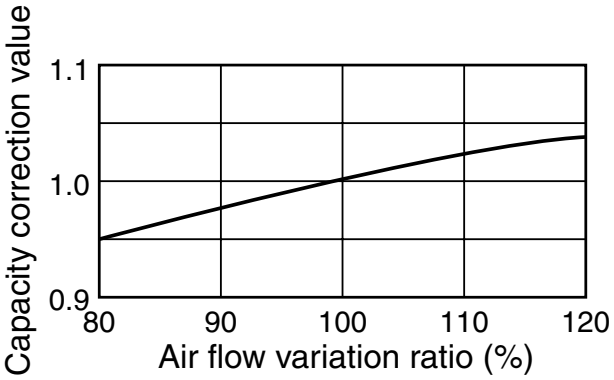
(Example)
Design Outdoor conditions : −5°C WB
Capacity correction value : 0.8



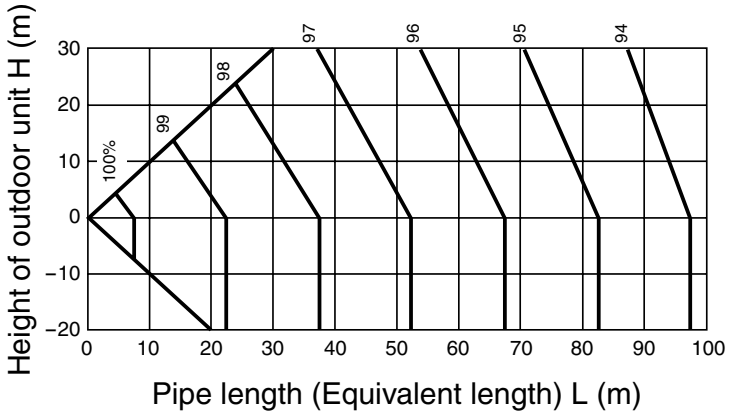
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

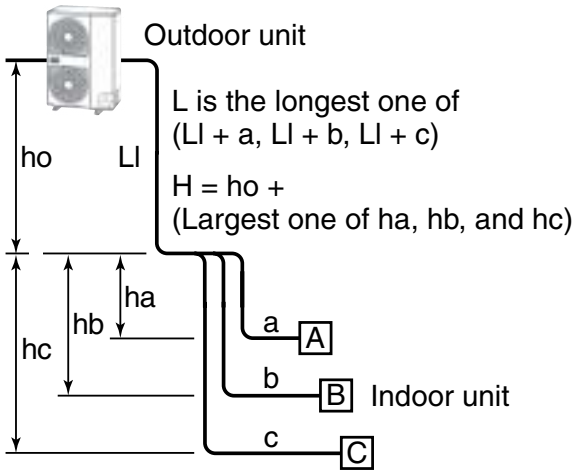
*2 : Refer to item 3.

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



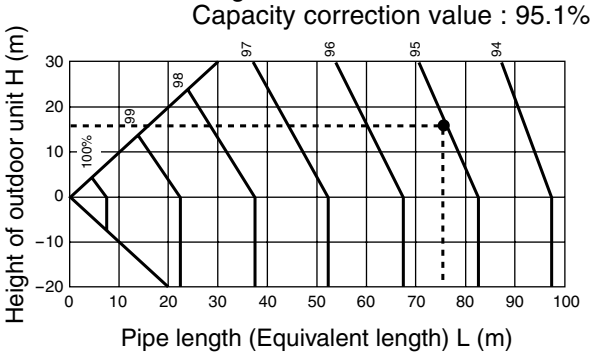


(Example)

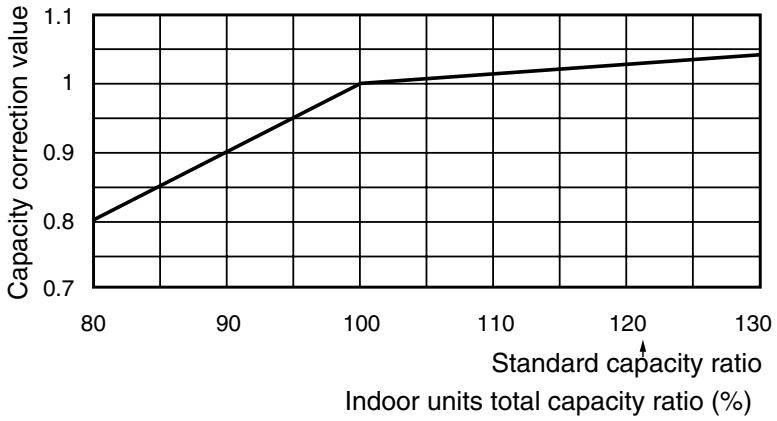
Design Pipe length : 75m

Heigh of outdoor unit : 15m

Capacity correction value : 95.1%

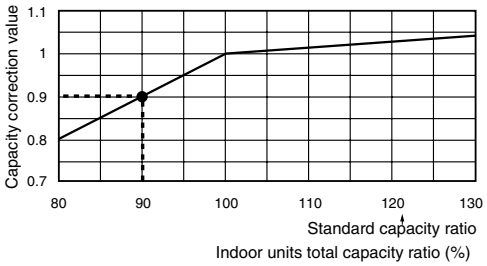


Ⅴ Correction of outdoor unit diversity



(Example)

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



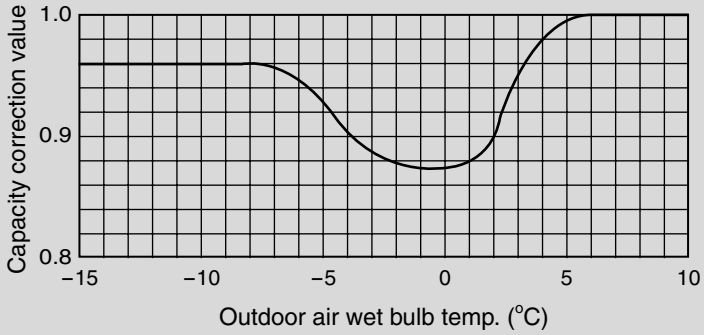
*1 : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

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

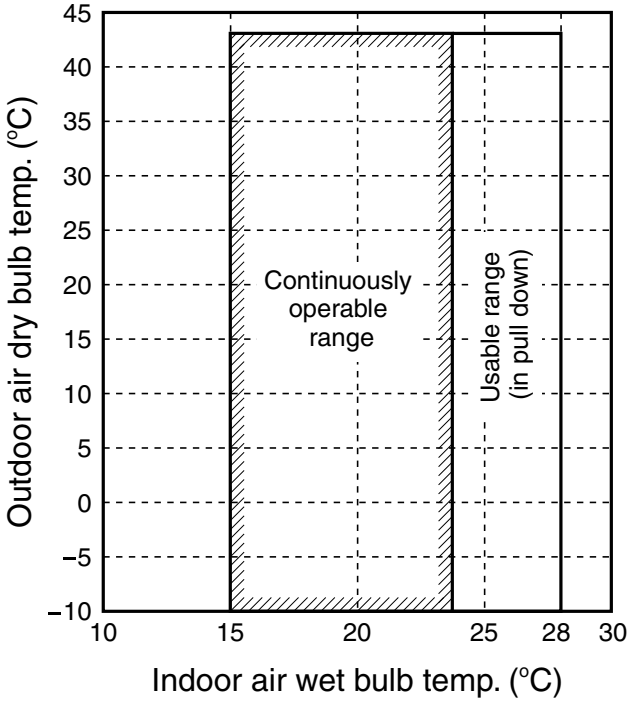


④ Capacity calculation for each indoor unit

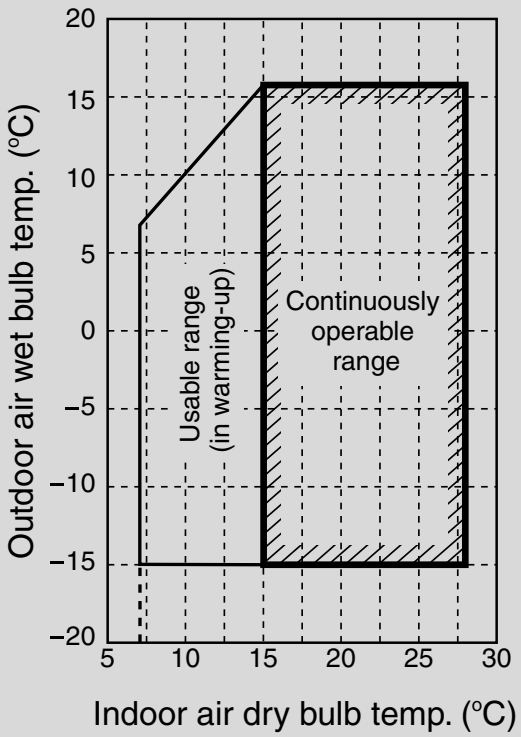
Capacity for each indoor unit
= Capacity after correction of outdoor unit x $\frac{\text{Required standard capacity of indoor unit}}{\text{Total value of standard indoor unit capacity}}$

⑤ Operating temperature range

In cooling time



In heating time



⑥ Rated conditions

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

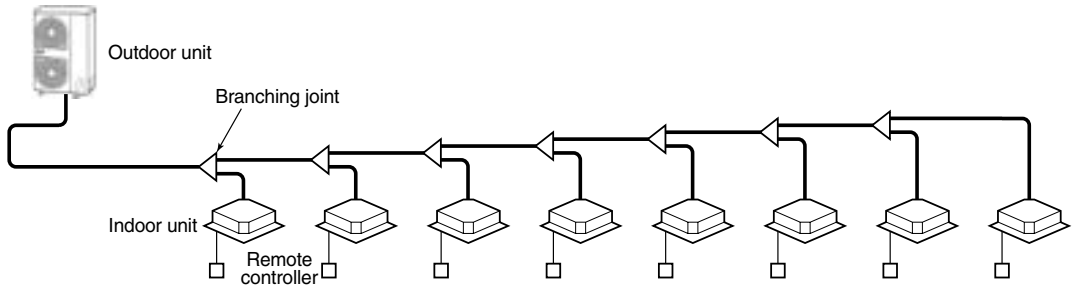
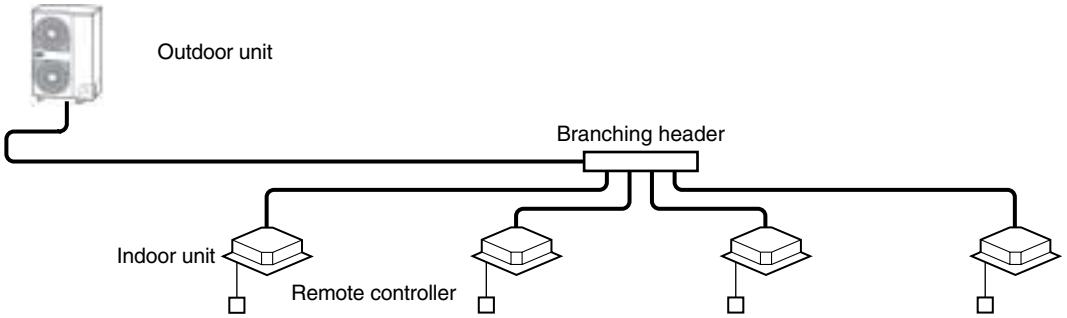
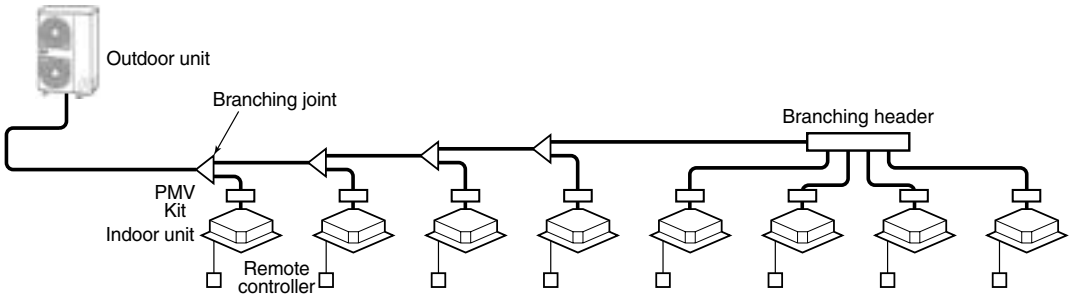
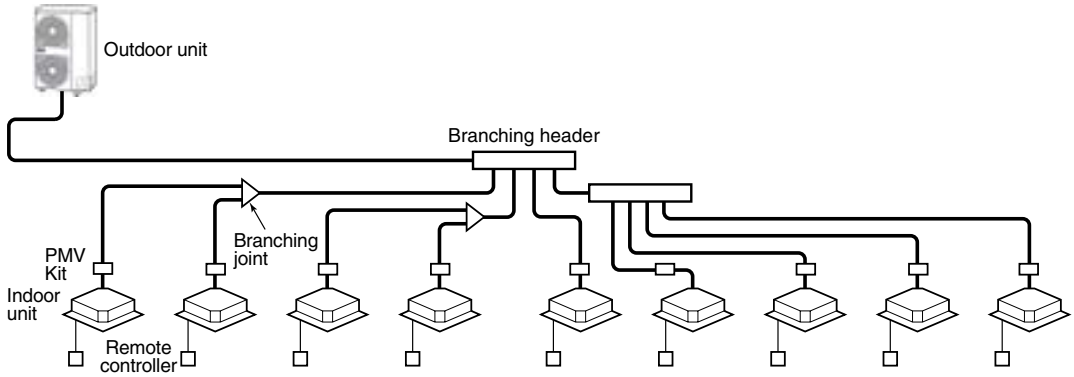
Heating :
Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

6 Piping requirements

6-1. Free branching system

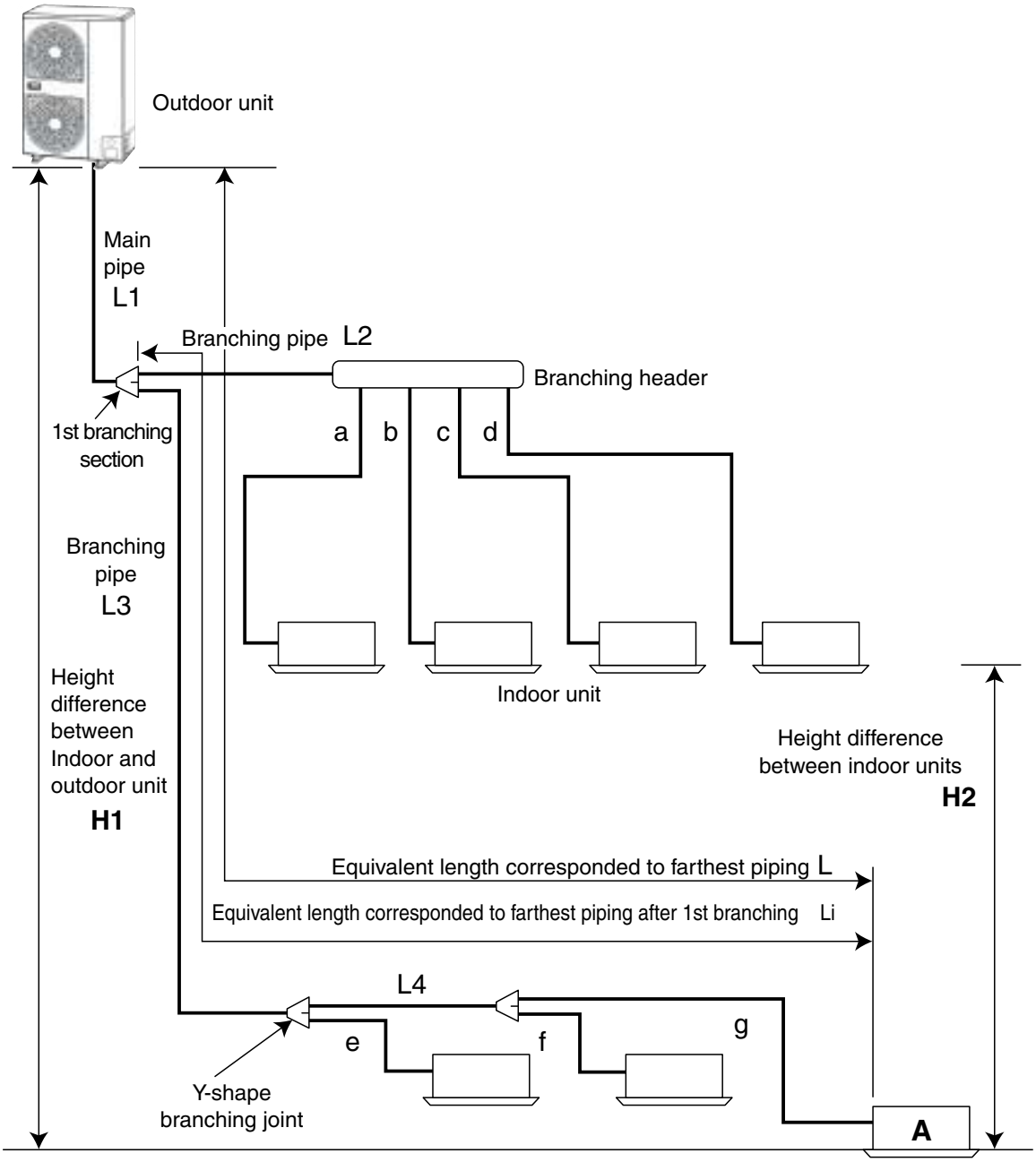
① Line branching system
② Header branching system
③ Header branching system after line branching
④ Line branching system after header branching
⑤ Header branching system after header branching

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" 

6-2. Refrigerant piping length and piping size

① Allowable length and height difference of refrigerant piping

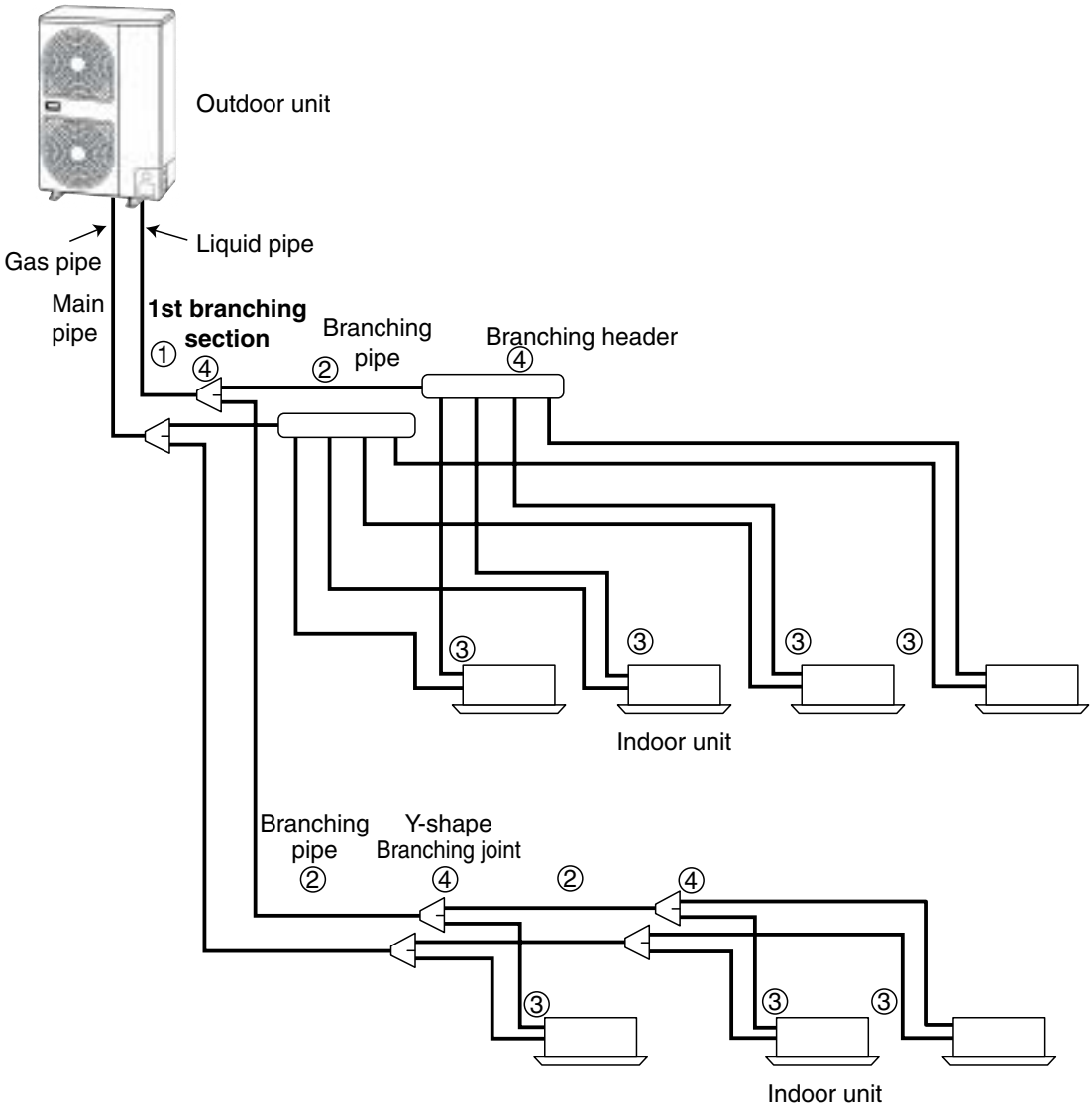


①Allowable length and height difference of refrigerant piping

			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"

② Selection of refrigerant piping



②Selection of refrigerant piping (cont.)

<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

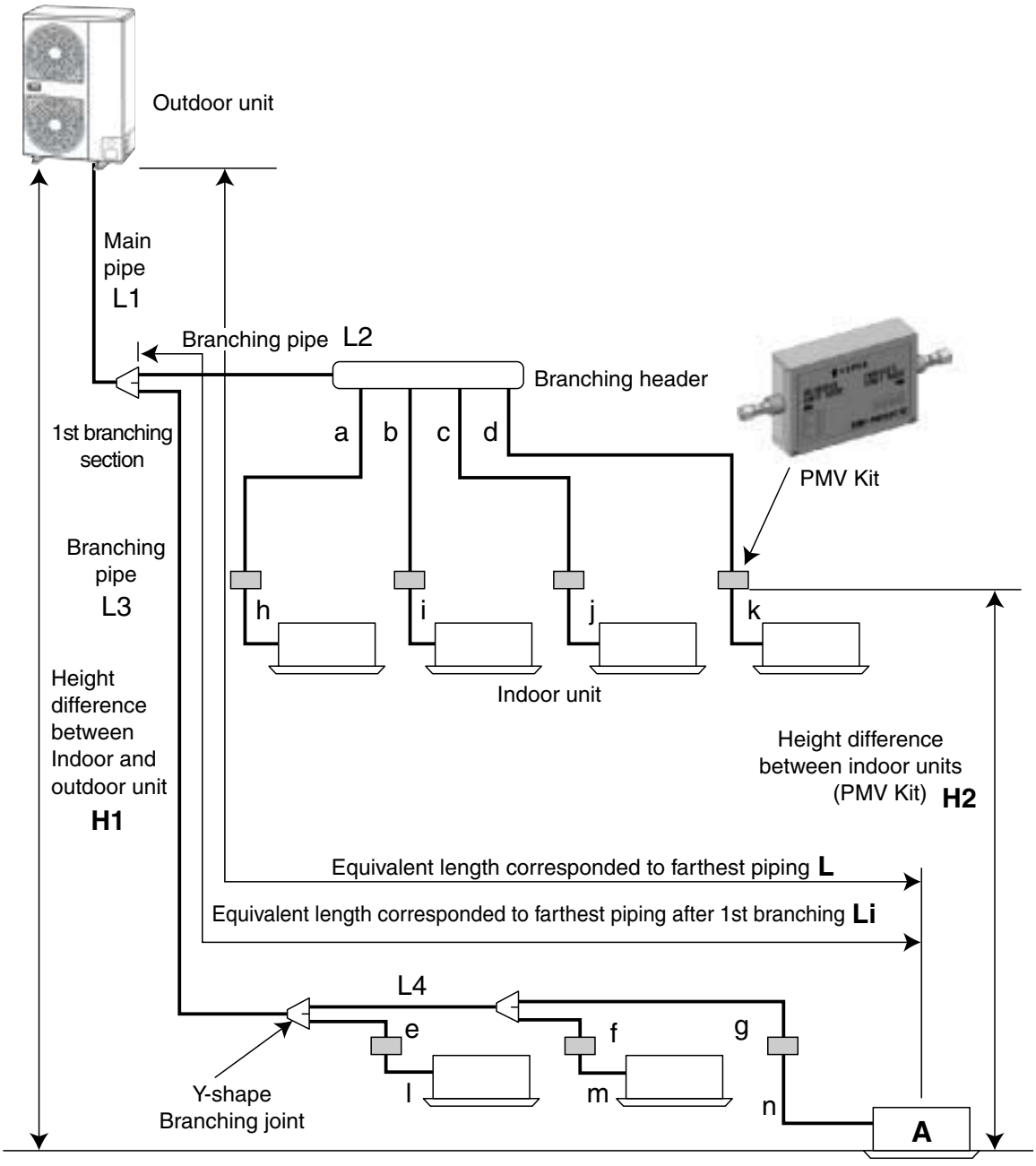
Soft	Harf Hard or Hard	OD (inch)	OD (mm)	Minimum wall thickness (mm)
OK	OK	1/4"	6.35	0.80
OK	OK	3/8"	9.52	0.80
OK	OK	1/2"	12.70	0.80
OK	OK	5/8"	15.88	1.00
NG*	OK	3/4"	19.05	1.00

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

(Revised 12 July 2006)

6-3. Refrigerant piping length and piping size with PMV Kit

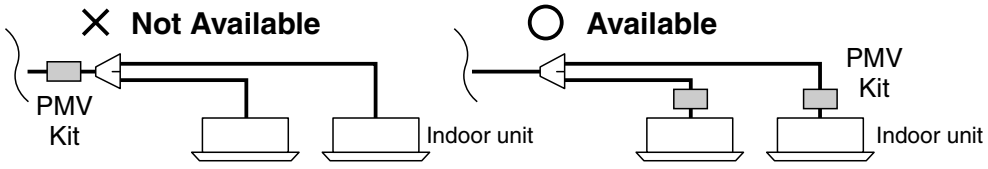
①Allowable length and height difference of refrigerant piping



①Allowable length and height difference of refrigerant piping

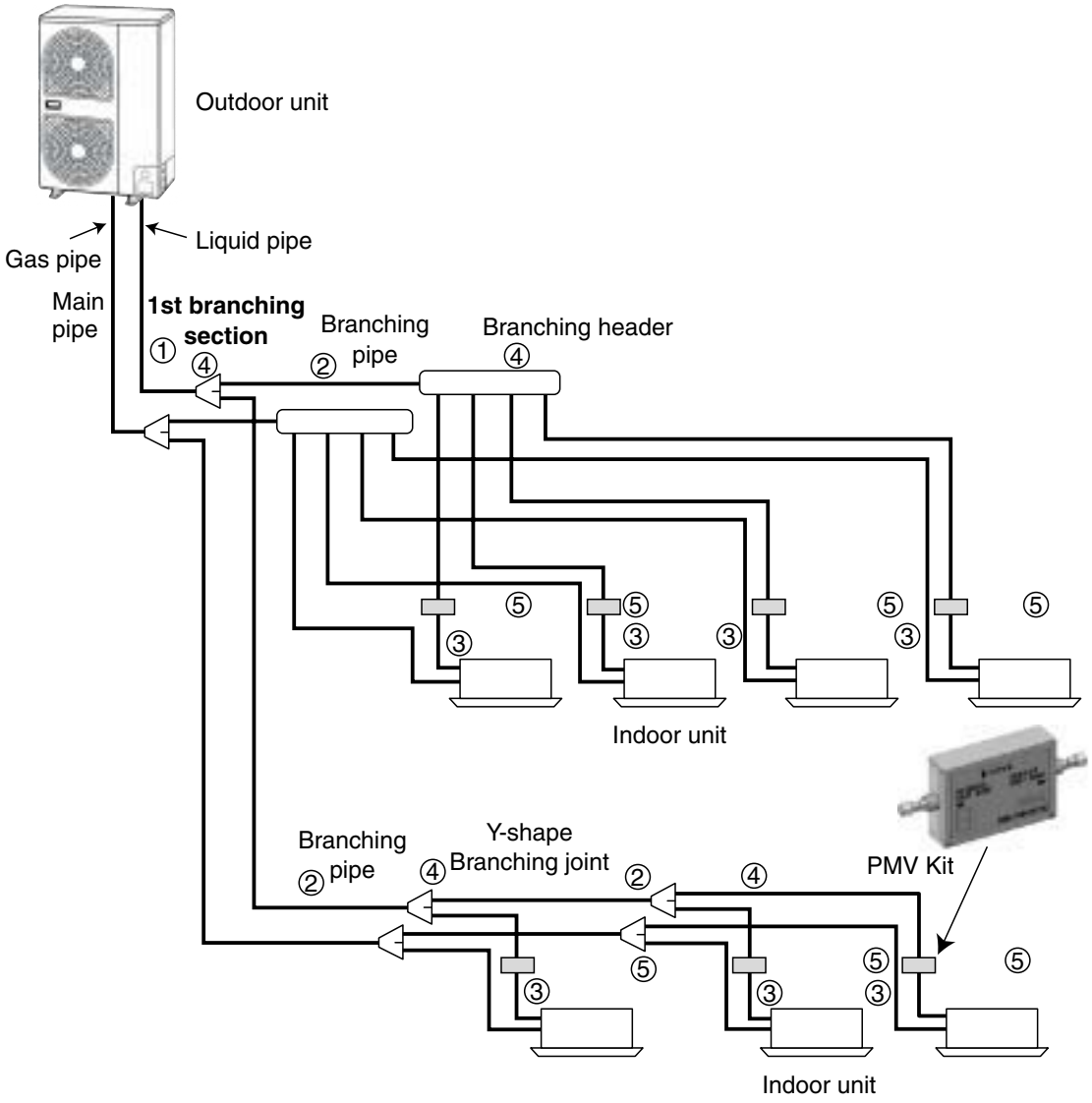
			Allowable value	Piping section
Piping Length	Total extension of pipe (Liquid pipe, real length)		150m	L1+L2+L3+L4+ a+b+c+d+e+f+g+ h+i+j+k+l+m+n
	Furthest piping length **L** (*1)	Real length	65m	L1+L3+L4+g+n
		Equivalent length	80m	
	Max.equivalent length of main pipe		50m	L1
	Equivalent length of furthest 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.

②Selection of refrigerant piping



②Selection of refrigerant piping (cont.)

<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 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>
<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>PBM-PMV0901E</td></tr>
</table></td></tr>
</table>

Minimum wall thickness for R410A application

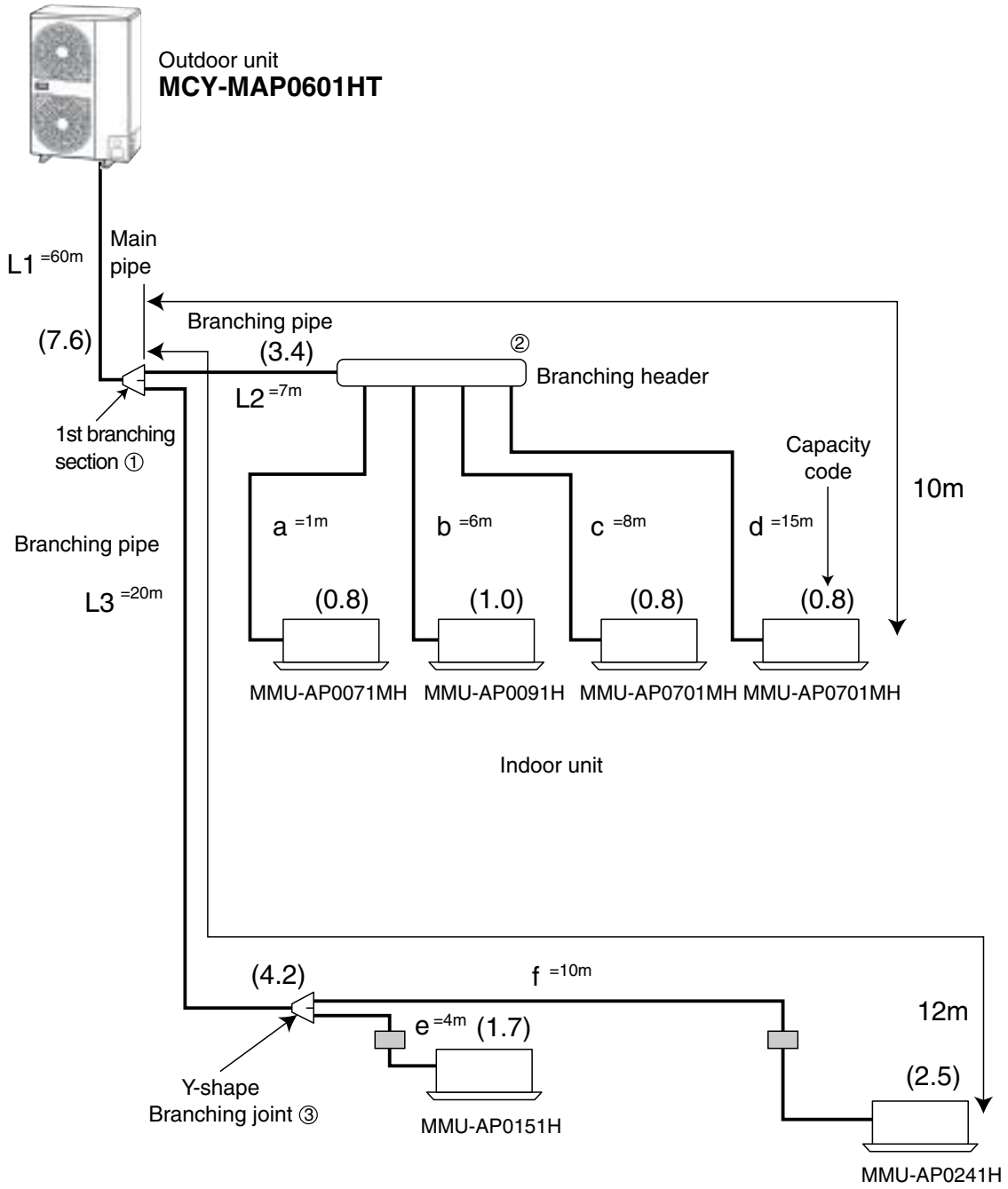
Soft	Harf Hard or Hard	OD (inch)	OD (mm)	Minimum wall thickness (mm)
OK	OK	1/4"	6.35	0.80
OK	OK	3/8"	9.52	0.80
OK	OK	1/2"	12.70	0.80
OK	OK	5/8"	15.88	1.00
NG*	OK	3/4"	19.05	1.00

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

(Revised 12 July 2006)

6-4. Refrigerant piping example

① In case of without "PMV Kit"



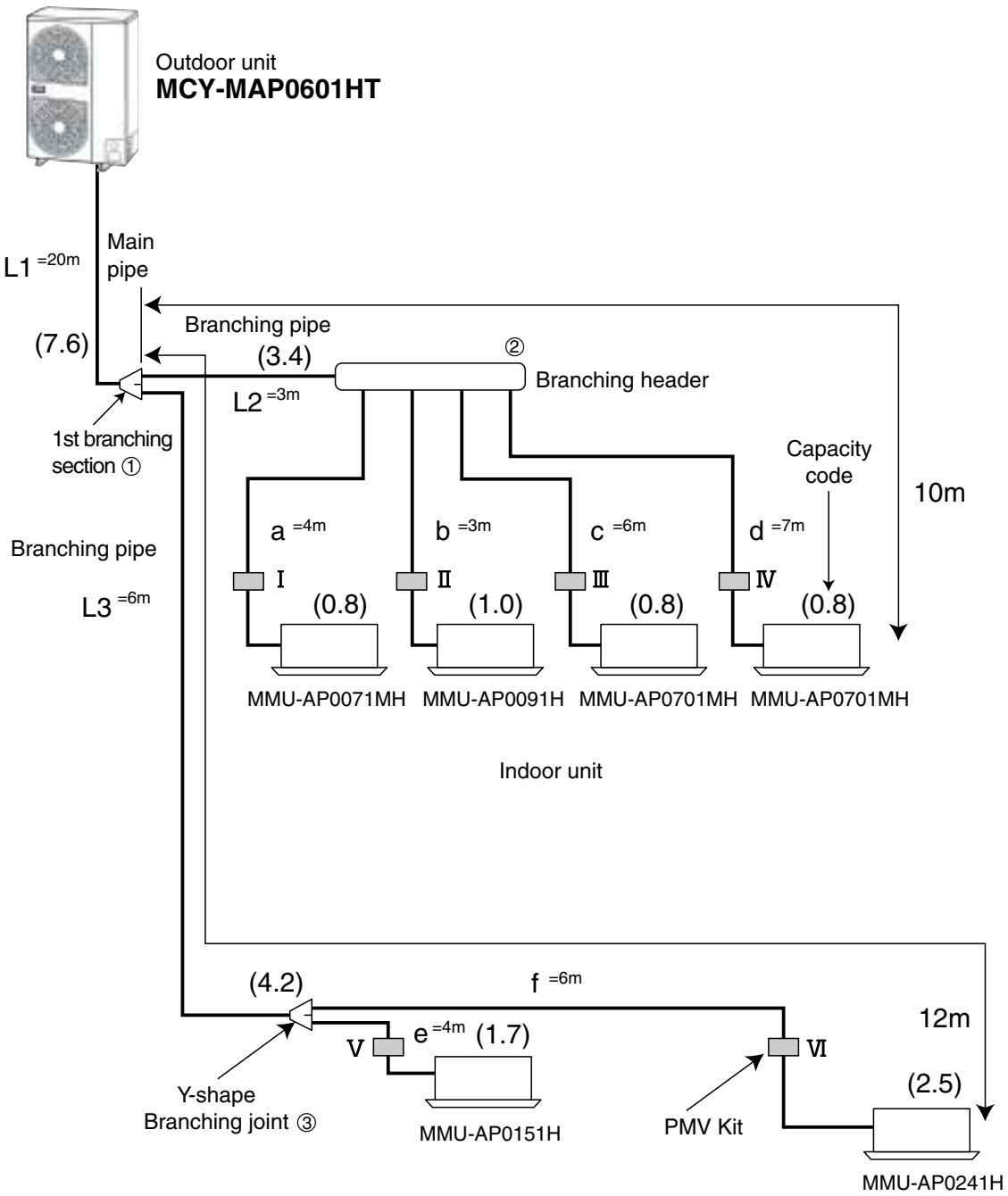
• Piping size

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

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

6-5. 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)**

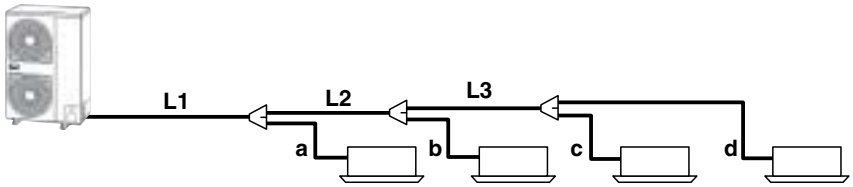
Table 1

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)

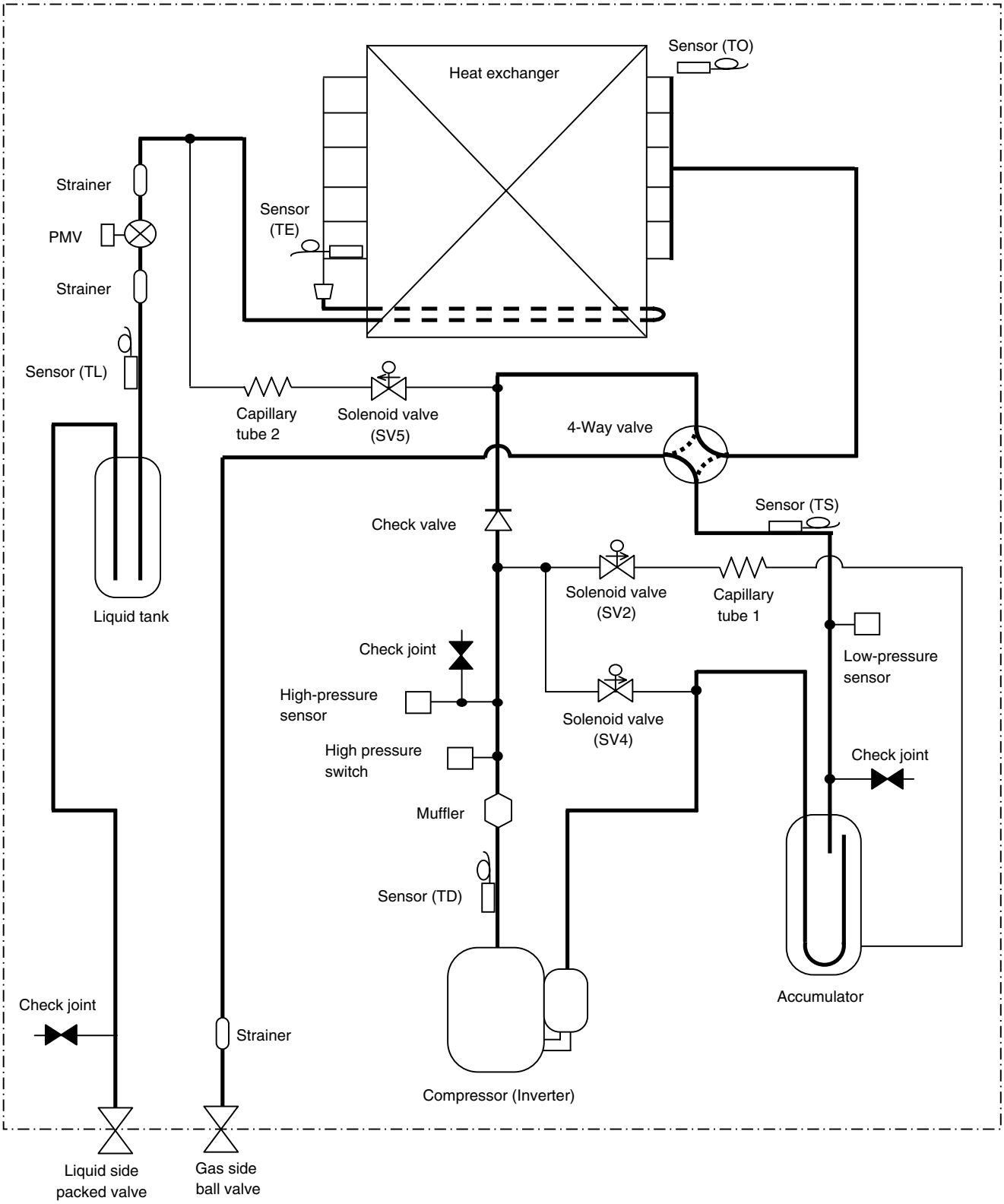
Note)
If the additional refrigerant amount indicates a negative result from the calculation, use air conditioner without the adding of any additional refrigerant.

Mini-SMMS Data book

7 Refrigerant cycle diagram

7 Refrigerant cycle diagram

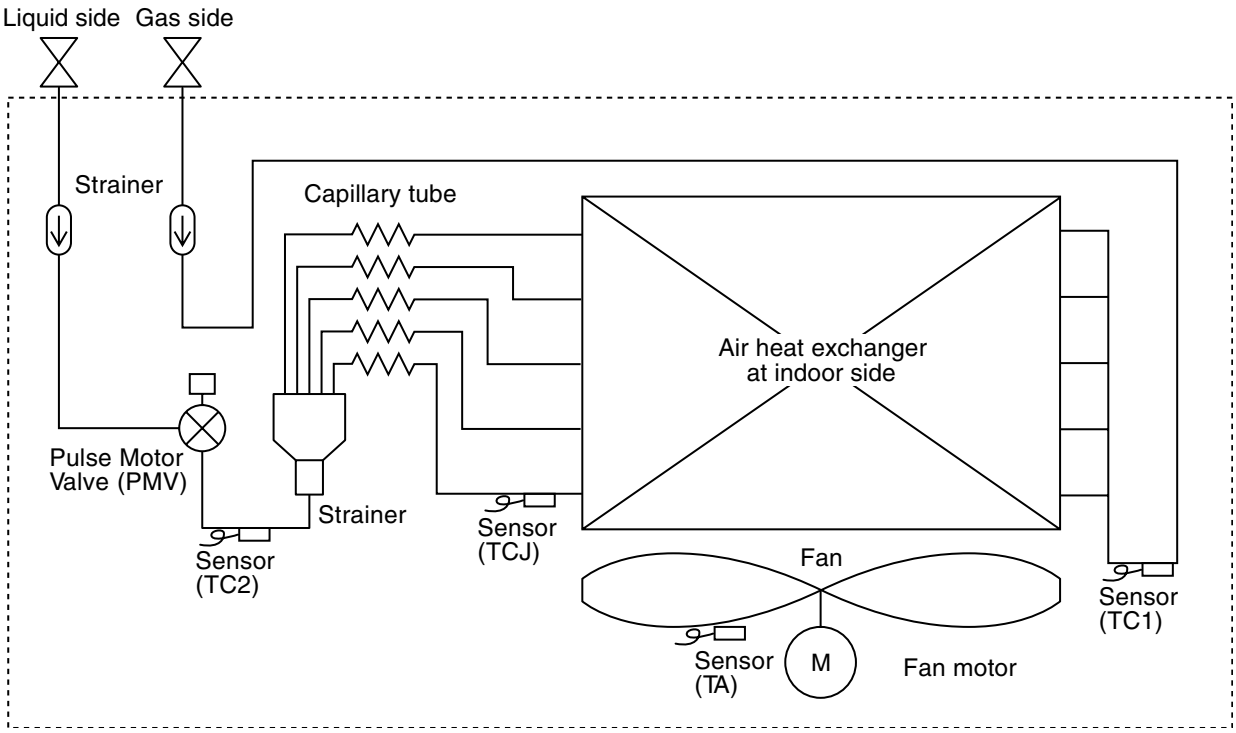
7-1. Outdoor unit



7-2. Explanation of Functional Parts

Functional part name		Functional outline	Connector
Solenoid valve	SV2	1) Low pressure release function 2) High pressure release function 3) Gas balance function during off time 4) Hot gas bypass into accumulator	CN312(Whight)
	SV4	1) High pressure release function 2) Low pressure release function	CN311(Blue)
	SV5	1) Preventive function for high-pressure rising in heating operation	CN310(Whight)
Capillary tube	1	ID:Ø1.5 Length:200mm	
	2	ID:Ø2.2 Length:100mm	
4-Way valve		1) Cooling/heating exchange 2) Reverse defrost	CN317(Blue)
PMV (Pulse motor valve)		1) Super heat control function in all heating and majority heating operation 2) Sub-cool adjustment function in cooling operation	CN300(Whight)
Temp. sensor	TD	1) Protection of compressor discharge temp. Used for release	CN502(Whight)
	TS	1) Controls super heat in heating operation	CN504(Whight)
	TE	1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation	CN505(Green)
	TL	1) Detects under cool in cooling operation	CN521(Whight)
	TO	1) Detects outside temperature	CN507(Yellow)
High-ressure sensor		1) Detects high pressure and controls compressor capacity 2) Detects high pressure in cooling operation, and controls the fan in low ambientcooling operation	CN501(Red)
Low-pressure sensor		1) Detects low pressure in cooling operation and controls compressor capacity 2) Detects low pressure in heating operation, and controls the super heat	CN500(Whight)
Compressor case heater		1) Prevents liquid accumulation to compressor	CN316(Whight)
Accumulator case heater		1) Prevents liquid accumulation to accumulator	CN321(Red)

7-3. Indoor Unit



(NOTE) MMU-AP0071YH to AP0121YH type air conditioners do not have a TC2 sensor .

Functional part name		Functional outline
Pulse Motor Valve	PMV	(Connector CN082 (6P): Blue) 1)Controls super heat in cooling operation 2)Controls under cool in heating operation 3)Recovers refrigerant oil in cooling operation 4)Recovers refrigerant oil in heating operation
Temp. sensor	1. TA	(Connector CN104 (2P): Yellow) 1)Detects indoor suction temperature
	2. TC1	(Connector CN100 (3P): Brown) 1)Controls PMV super heat in cooling operation
	3. TC2	(Connector CN101 (2P): Black) 1)Controls PMV under cool in heating operation
	4. TCJ	(Connector CN102 (2P): Red) 1)Controls PMV super heat in cooling operation 2) [MMU-AP0071 to AP0121YH only] Controls PMV under cool in heating operation

8 Wiring guideline

8 Wiring guideline

⚠ CAUTIONS

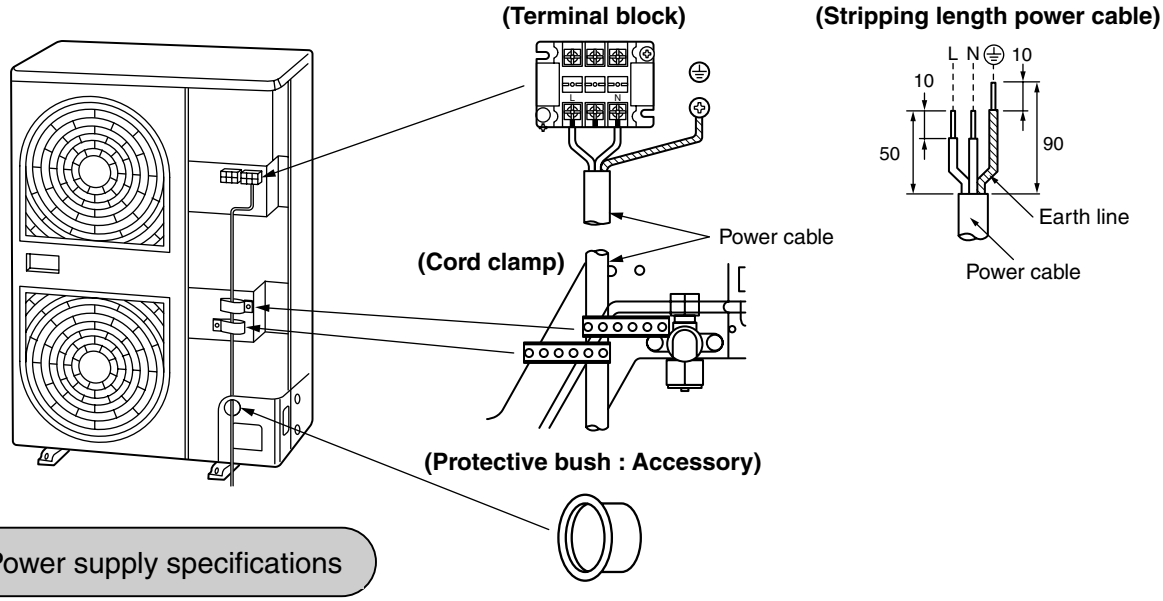
(1) Keep the refrigerant piping system and the indoor-indoor/indoor-outdoor control wiring systems together.
(2) When running power supplies and control wires parallel to each other, run them through separate conduits or maintain a suitable distance between them.
(Current capacity of power supplies: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

8-1. 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.

8-2. Connection of power supply

The details are as follows.

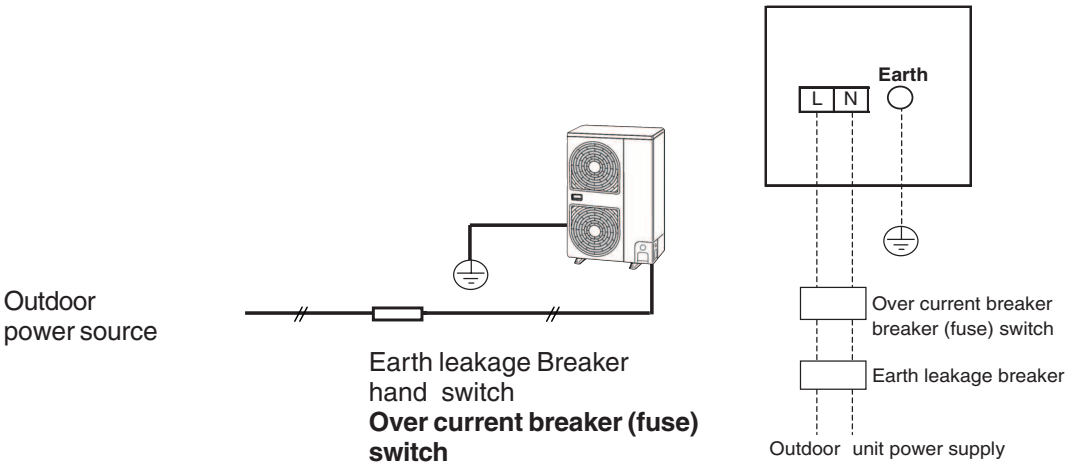


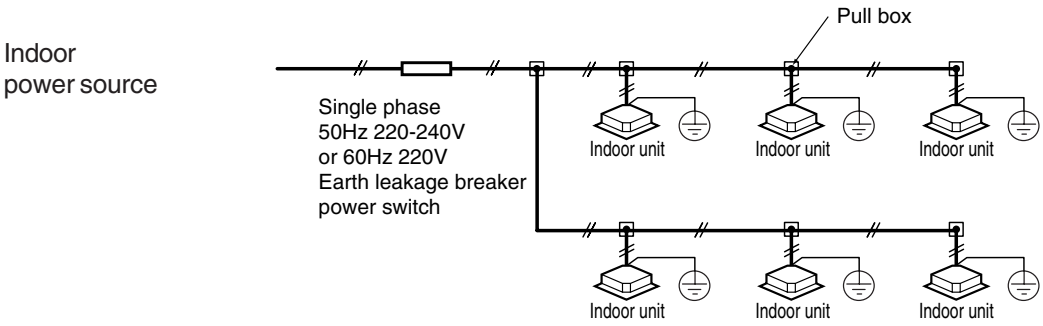
Power supply specifications

- 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)

8-3. 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 *	Maximum 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

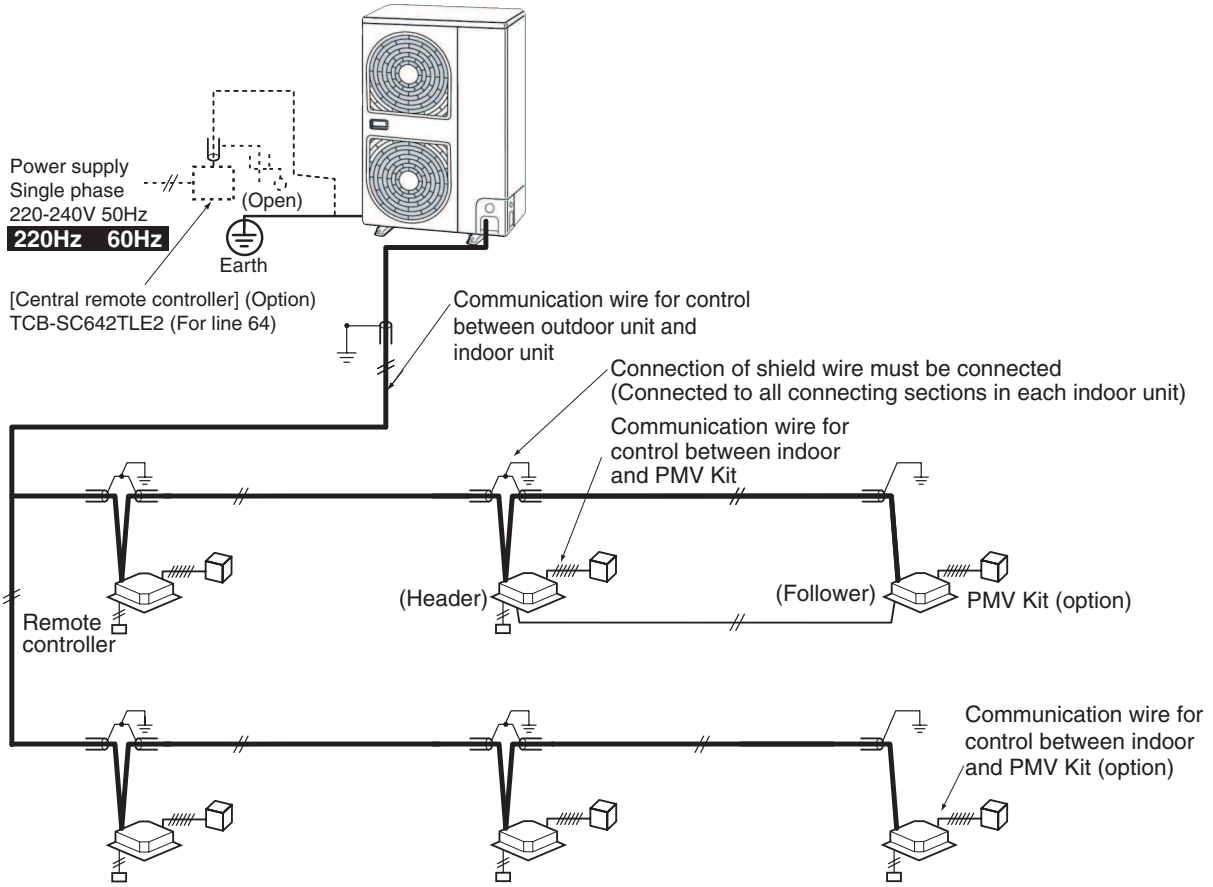
② For Indoor Unit power supply
(Must be independent from the outdoor unit power supply)

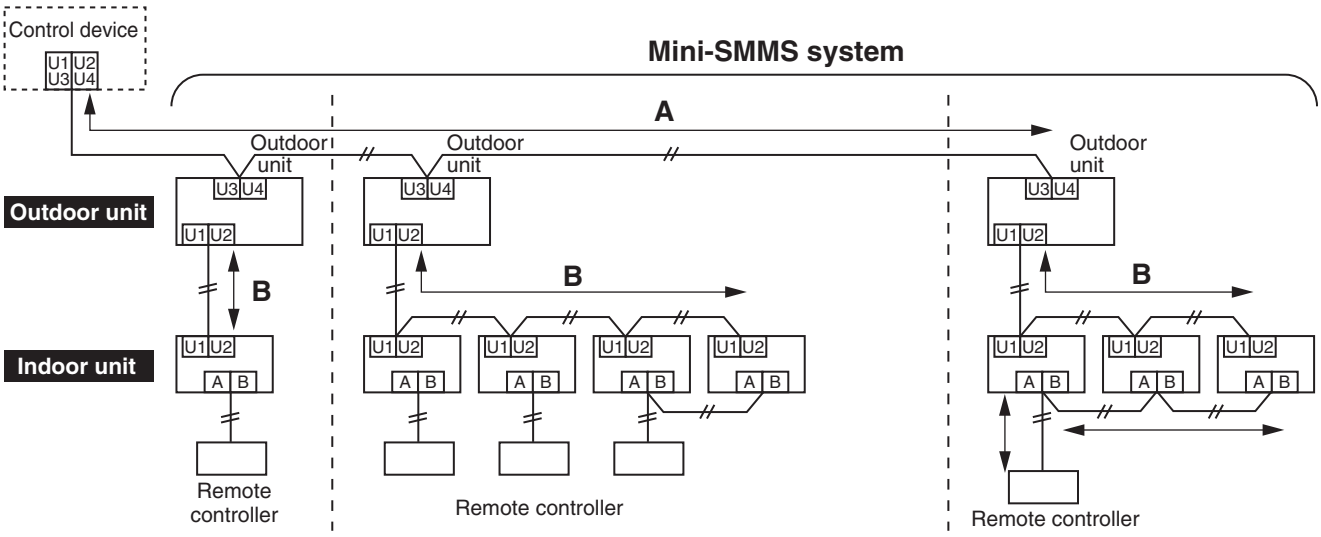
Item / Model	Power supply wiring		
	Wire size		Field fuse
All models of indoor units	2.0mm^2 MAX.20m	3.5mm^2 MAX.50m	15A

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.

(Revised 07 Apr 2006)

8-4. Design of control wiring





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

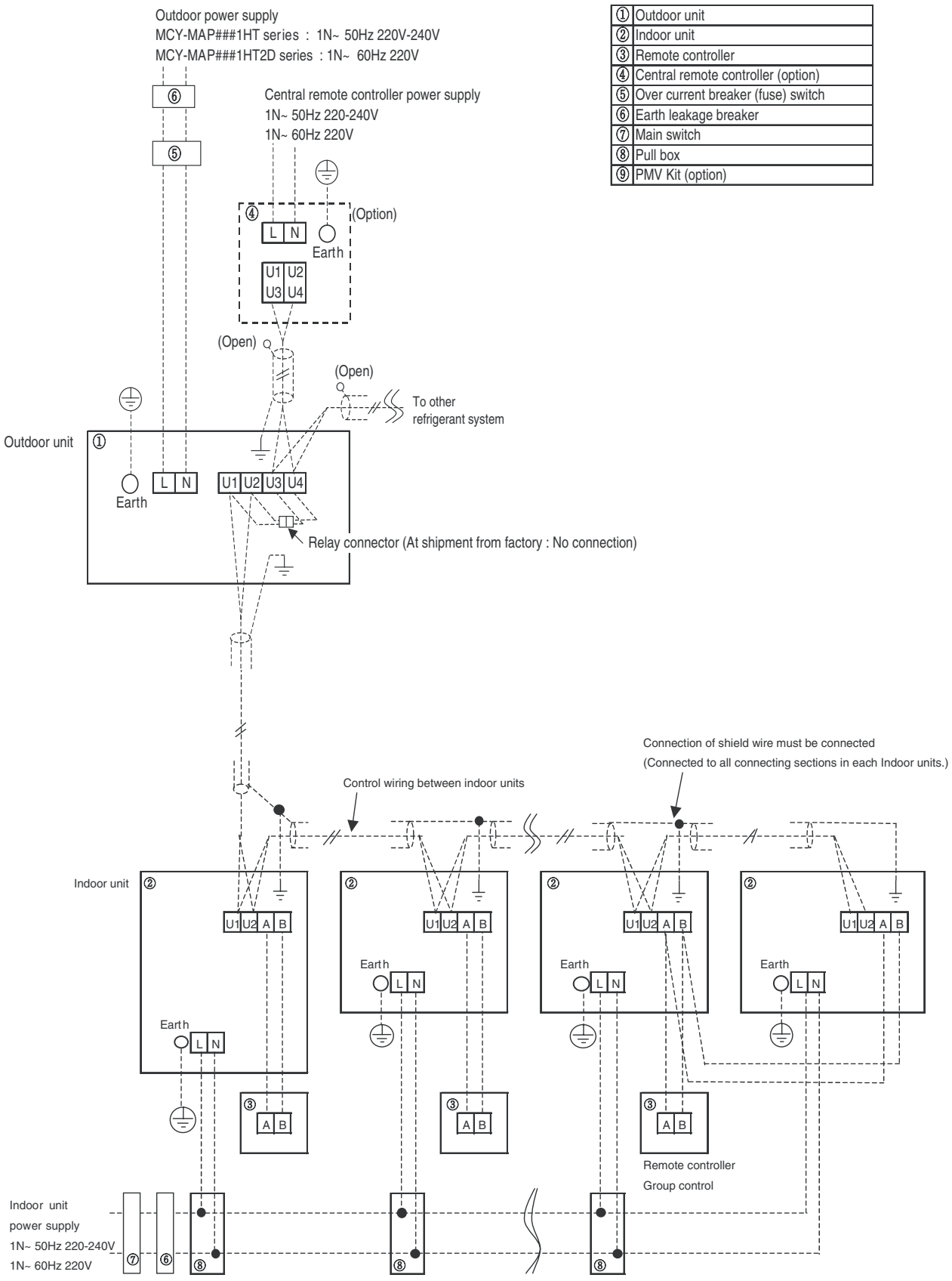
Name	Q'ty	Size			Specification
		Up to 500m	Up to 1000m	1000 to 2000m	
Crossover wiring (A + B) (indoor-indoor / indoor-outdoor / control wiring, central control wiring) *Total Control wiring length	2 cores	1.25mm²		2.0mm²	Shield wire
Remote controller wiring	2 cores	0.5 to 2.0mm²	–	–	–
Control wiring 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.

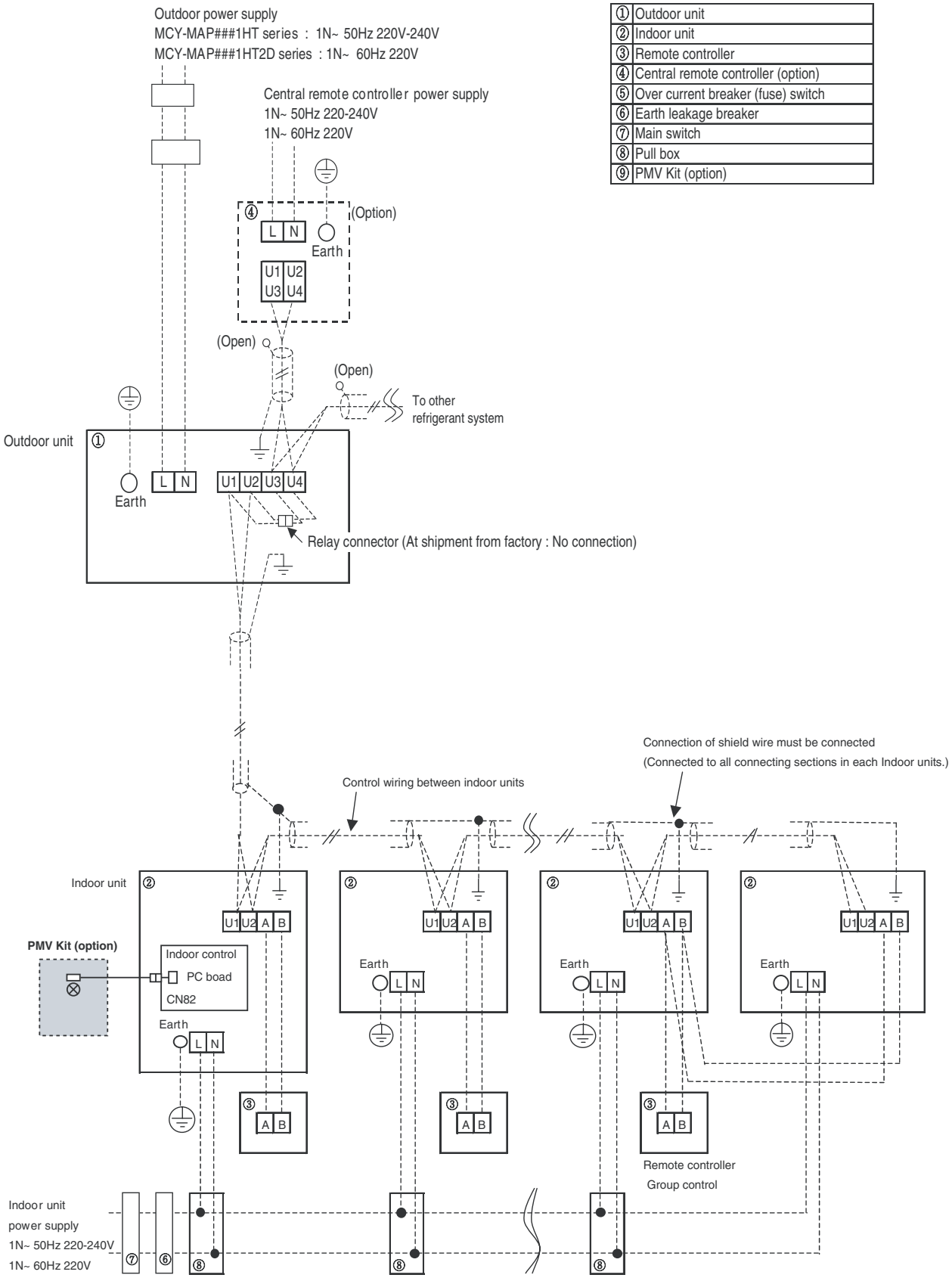
(2) Use 2-core non-polarity wire for remote controller. (A, B terminals)
Use 2-core non-polarity wire for wiring of group control. (A, B terminals)

8-5. Example of system wiring Design

① In cace of without "PMV Kit"



② In cace of "PMV Kit"



8-6. Electrical characteristics

50Hz

■ Outdoor units

Model name	Nominal (V-Ph-Hz)	Voltage Range		Compressor	Fan Motor		Power Supply		
		Min	Max	RLA	kW	FLA	MCA	MOCP	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

50Hz

■ Indoor units

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
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

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

8-6. Electrical characteristics

60Hz

■ Outdoor units

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

60Hz

■ Indoor units

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

9 Indoor unit line up

50Hz

9-1-1. Specifications

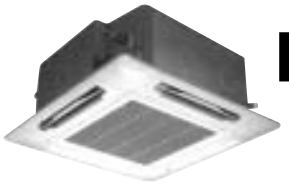
• Specifications (50Hz)

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)-E								
		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 weigh	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 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



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) -E								
		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)	Ø9.5		Ø12.7		Ø15.9				
	Liquid side			(mm)	Ø6.4				Ø9.5				
	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								

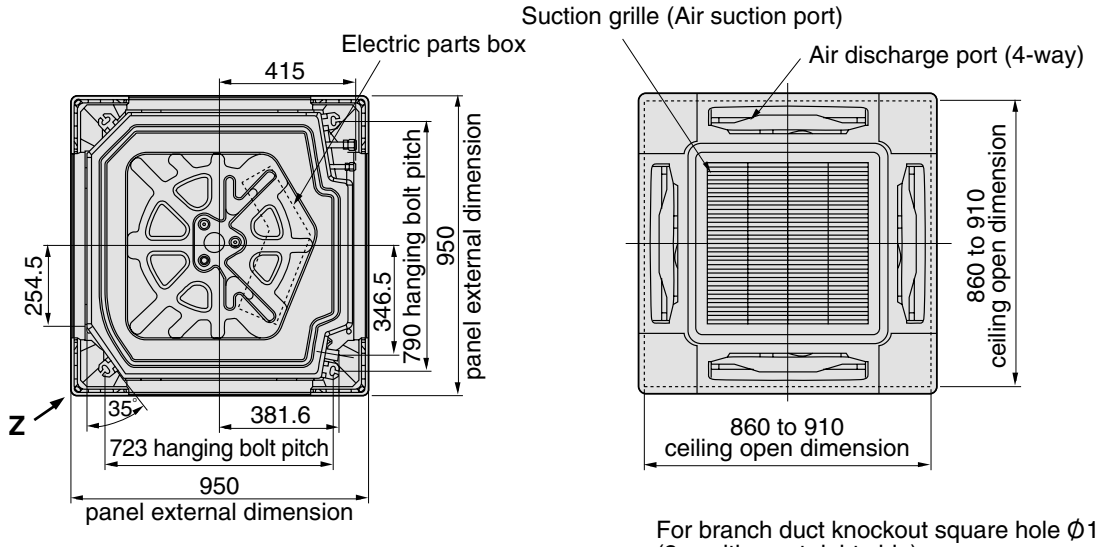
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

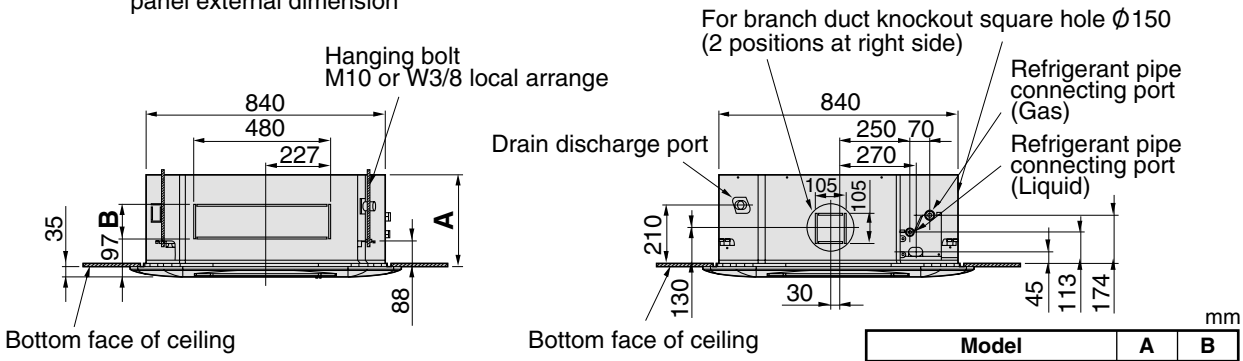
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

9-1-2. Dimension

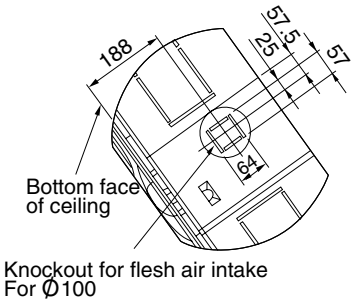
MMU-AP0091H to P0481H



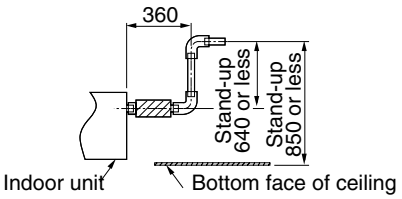


mm

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

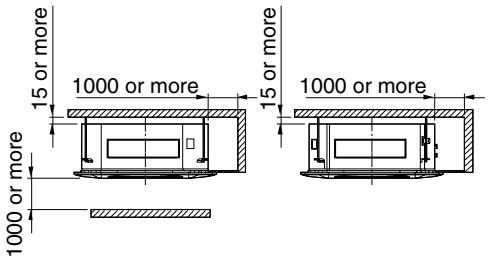


Z view



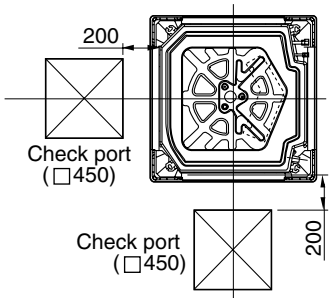
(NOTE)
As ABS is used for the drain discharge port of the main unit, the vinyl chloride paste cannot be used.
Use the flexible hose (Band fix) included in the package.

Drain-up standing-up size



Space required for installation and servicing

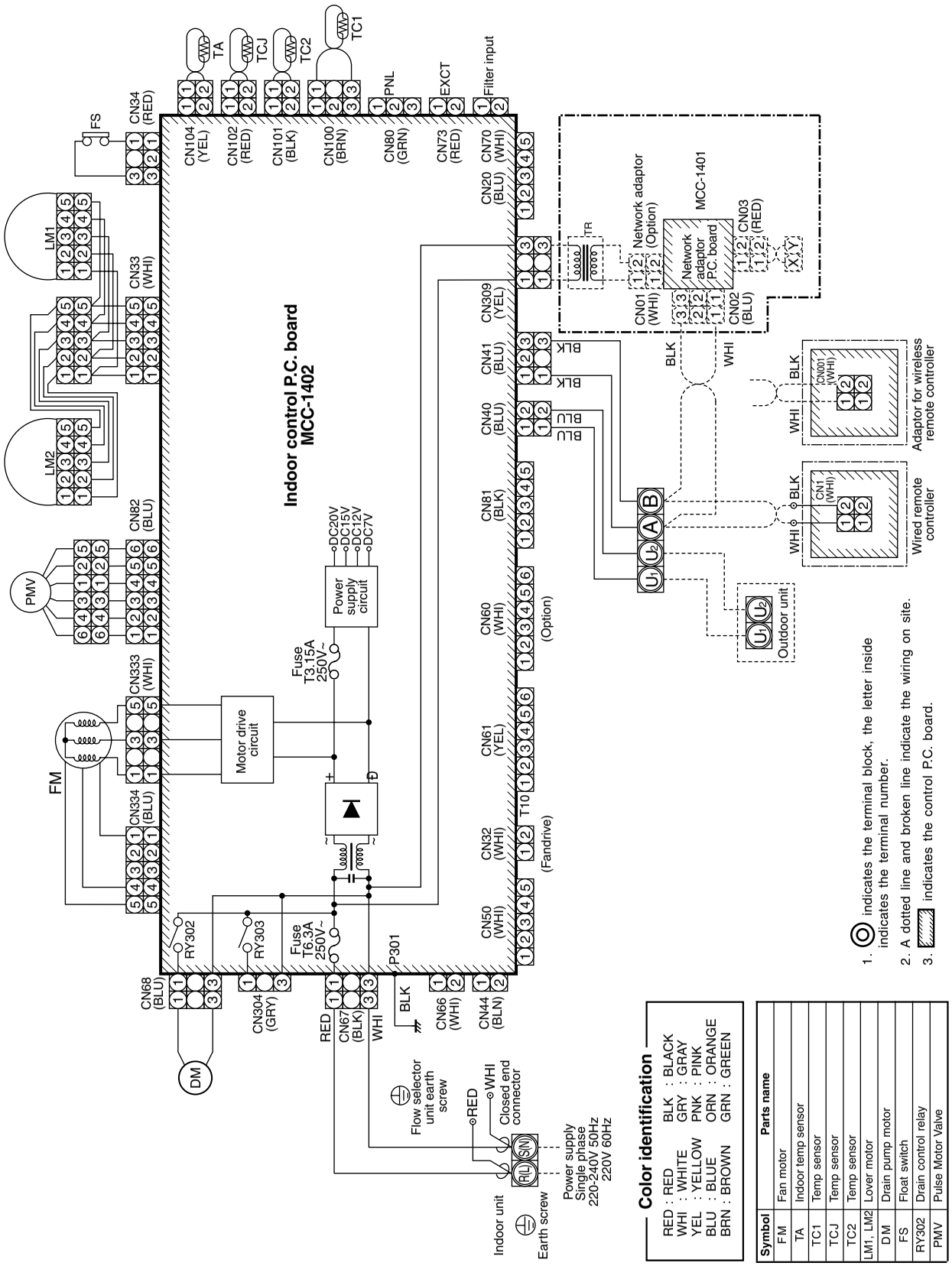
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21U(W)-E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2



Note: All dimensions are in mm.

9-1-3. Wiring diagram

Model: MMU-AP0091H, AP0121H, AP0151H, AP0181H, AP0241H, MMU-AP0271H, AP0301H, AP0361H, AP0481H, AP0561H



Color identification

RED	: RED	BLK	: BLACK
WHI	: WHITE	GRY	: GRAY
YEL	: YELLOW	PNK	: PINK
BLU	: BLUE	ORN	: ORANGE
BRN	: BROWN	GRN	: GREEN

Symbol	Parts name
FM	Fan motor
TA	Indoor temp sensor
TC1	Temp sensor
TCJ	Temp sensor
TC2	Temp sensor
LM1, LM2	Lover motor
DM	Drain pump motor
FS	Float switch
RY302	Drain control relay
PMV	Pulse Motor Valve

9-1-4. Sensible capacity table

(MMU-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp. 16.0˚CWB 23˚CDB TC	SHC	18.0˚CWB 26˚CDB TC	SHC	19.0˚CWB 27˚CDB TC	SHC	20.0˚CWB 28˚CDB TC	SHC	22.0˚CWB 30˚CDB TC	SHC	24.0˚CWB 32˚CDB TC	SHC
009	10.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	12.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	14.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	16.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	18.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	20.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	21.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	23.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	25.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	27.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	29.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	31.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	33.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	35.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	37.0	2.5	1.9	2.7	2.1	2.7	2.1	2.8	2.1	3.0	2.0	3.1	2.0
	39.0	2.4	1.9	2.6	2.0	2.7	2.0	2.8	2.0	2.9	2.0	3.1	1.9
012	10.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	12.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	14.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	16.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	18.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	20.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	21.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	23.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	25.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	27.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	29.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	31.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	33.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	35.0	3.3	2.5	3.5	2.6	3.6	2.6	3.7	2.6	3.9	2.6	4.1	2.5
	37.0	3.2	2.4	3.4	2.6	3.5	2.5	3.6	2.5	3.8	2.5	4.0	2.5
	39.0	3.1	2.3	3.4	2.5	3.5	2.4	3.6	2.4	3.8	2.4	3.9	2.4
015	10.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	12.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	14.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	16.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	18.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	20.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	21.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	23.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	25.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	27.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	29.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	31.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	33.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	35.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	37.0	4.0	3.0	4.3	3.1	4.4	3.1	4.5	3.1	4.8	3.1	5.0	3.0
	39.0	3.9	2.8	4.2	3.0	4.3	3.0	4.4	3.0	4.7	3.0	4.9	2.9

(Revised 12 July 2006)

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
018	10.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	12.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	14.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	16.0	5.1	3.8	5.4	4.0	5.6	3.9	5.8	4.0	6.1	4.0	6.4	3.9
	18.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	20.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	21.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	23.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	25.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	27.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	29.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	31.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	33.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	35.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	37.0	5.0	3.7	5.3	3.9	5.5	3.9	5.7	3.9	6.0	3.9	6.3	3.8
	39.0	4.9	3.6	5.2	3.8	5.4	3.8	5.5	3.8	5.9	3.7	6.1	3.6
024	10.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	12.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	14.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	16.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	18.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	20.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	21.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	23.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	25.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	27.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	29.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	31.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	33.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	35.0	6.4	4.6	6.9	4.9	7.1	4.9	7.3	4.9	7.7	4.9	8.1	4.7
	37.0	6.3	4.5	6.7	4.8	7.0	4.8	7.2	4.8	7.6	4.8	7.9	4.6
	39.0	6.2	4.4	6.6	4.6	6.8	4.6	7.0	4.6	7.4	4.6	7.8	4.5
027	10.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	12.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	14.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	16.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	18.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	20.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	21.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	23.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	25.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	27.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	29.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	31.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	33.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	35.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	37.0	7.1	5.1	7.6	5.4	7.8	5.4	8.1	5.4	8.5	5.3	8.9	5.2
	39.0	7.0	4.9	7.4	5.2	7.7	5.2	7.9	5.2	8.4	5.1	8.8	5.0

(Revised 12 July 2006)

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
030	10.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	12.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	14.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	16.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	18.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	20.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	21.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	23.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	25.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	27.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	29.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	31.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	33.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	35.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	37.0	8.0	5.7	8.6	6.1	8.8	6.1	9.1	6.1	9.6	6.0	10.1	5.9
	39.0	7.8	5.5	8.4	5.9	8.6	5.8	8.9	5.8	9.4	5.8	9.8	5.6
036	10.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	12.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	14.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	16.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	18.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	20.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	21.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	23.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	25.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	27.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	29.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	31.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	33.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	35.0	10.2	7.3	10.9	7.7	11.2	7.7	11.5	7.7	12.2	7.6	12.8	7.5
	37.0	10.0	7.1	10.6	7.6	11.0	7.5	11.3	7.5	12.0	7.5	12.5	7.3
	39.0	9.8	6.8	10.4	7.3	10.8	7.2	11.1	7.2	11.7	7.2	12.3	7.0
048	10.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	12.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	14.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	16.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	18.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	20.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	21.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	23.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	25.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	27.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	29.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	31.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	33.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	35.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	37.0	12.5	9.1	13.3	9.6	13.7	9.6	14.1	9.6	15.0	9.5	15.6	9.3
	39.0	12.2	8.7	13.0	9.2	13.4	9.2	13.8	9.2	14.6	9.1	15.3	8.9

Heating capacity

SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8

Heating capacity (cont.)

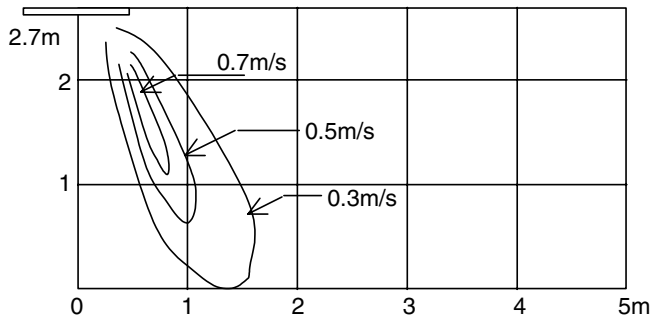
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6

Heating capacity (cont.)

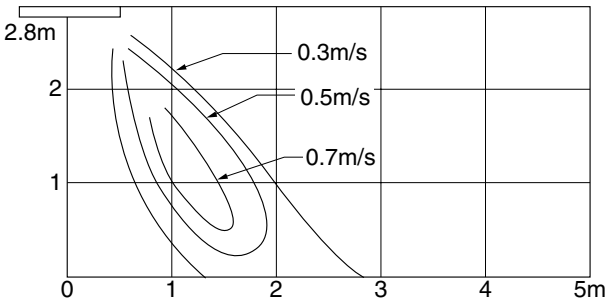
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
030	-15.0	6.3	6.1	6.0	5.9	5.7
	-13.0	6.7	6.6	6.4	6.3	6.1
	-11.0	7.1	7.0	6.8	6.7	6.5
	-10.0	7.3	7.2	7.0	6.9	6.7
	-8.0	7.7	7.6	7.4	7.2	7.0
	-6.0	8.1	8.0	7.8	7.6	7.4
	-4.0	8.5	8.4	8.2	8.0	7.8
	-2.0	8.9	8.8	8.6	8.4	8.1
	0.0	9.3	9.1	8.9	8.7	8.5
	2.0	9.7	9.5	9.3	9.1	8.8
	4.0	10.0	9.9	9.7	9.4	9.2
	6.0	10.4	10.2	10.0	9.8	9.5
	8.0	10.4	10.2	10.0	9.8	9.5
	10.0	10.4	10.2	10.0	9.8	9.5
	12.0	10.4	10.2	10.0	9.8	9.5
	14.0	10.4	10.2	10.0	9.8	9.5
036	-15.0	7.8	7.7	7.5	7.3	7.2
	-13.0	8.3	8.2	8.0	7.8	7.6
	-11.0	8.9	8.7	8.5	8.3	8.1
	-10.0	9.1	9.0	8.8	8.6	8.3
	-8.0	9.7	9.5	9.3	9.1	8.8
	-6.0	10.2	10.0	9.8	9.5	9.3
	-4.0	10.7	10.5	10.2	10.0	9.7
	-2.0	11.1	10.9	10.7	10.5	10.2
	0.0	11.6	11.4	11.2	10.9	10.6
	2.0	12.1	11.9	11.6	11.3	11.0
	4.0	12.6	12.3	12.1	11.8	11.5
	6.0	13.0	12.8	12.5	12.2	11.9
	8.0	13.0	12.8	12.5	12.2	11.9
	10.0	13.0	12.8	12.5	12.2	11.9
	12.0	13.0	12.8	12.5	12.2	11.9
	14.0	13.0	12.8	12.5	12.2	11.9
048	-15.0	10.0	9.8	9.6	9.4	9.1
	-13.0	10.7	10.5	10.3	10.0	9.7
	-11.0	11.4	11.1	10.9	10.7	10.4
	-10.0	11.7	11.5	11.2	11.0	10.7
	-8.0	12.4	12.1	11.9	11.6	11.3
	-6.0	13.0	12.8	12.5	12.2	11.9
	-4.0	13.6	13.4	13.1	12.8	12.4
	-2.0	14.3	14.0	13.7	13.4	13.0
	0.0	14.9	14.6	14.3	14.0	13.6
	2.0	15.5	15.2	14.9	14.5	14.1
	4.0	16.1	15.8	15.4	15.1	14.7
	6.0	16.7	16.3	16.0	15.6	15.2
	8.0	16.7	16.3	16.0	15.6	15.2
	10.0	16.7	16.3	16.0	15.6	15.2
	12.0	16.7	16.3	16.0	15.6	15.2
	14.0	16.7	16.3	16.0	15.6	15.2

9-1-5. Air throw distance chart

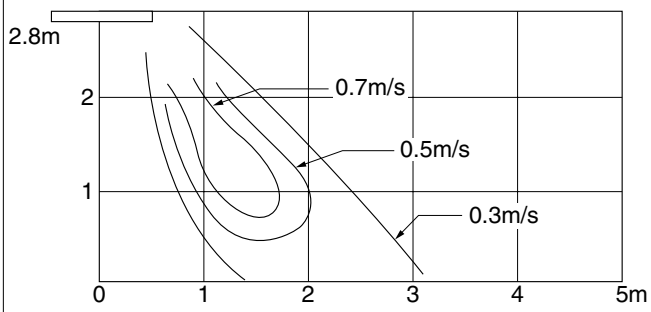
MMU-AP0091H, AP0121H



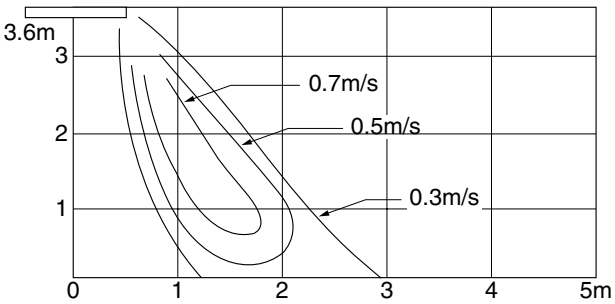
MMU-AP0151H



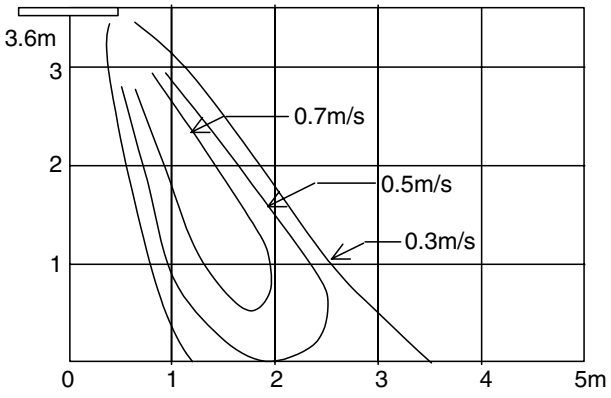
MMU-AP0181H



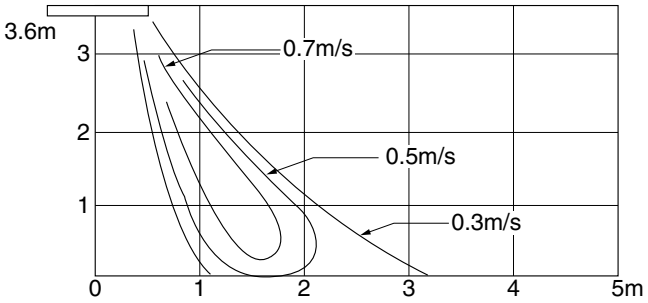
MMU-AP0241H,AP0271H



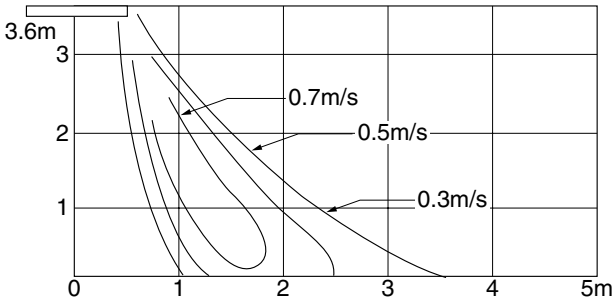
MMU-AP0301H



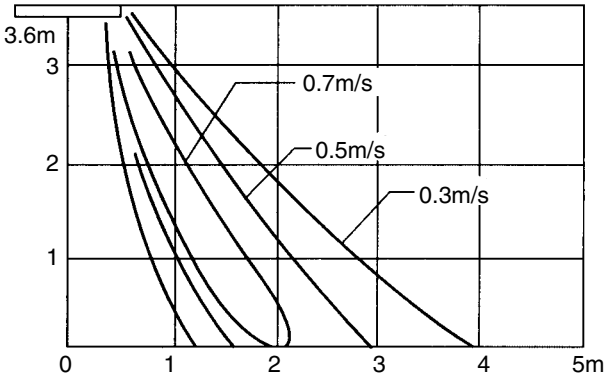
MMU-A0361H



MMU-A0481H

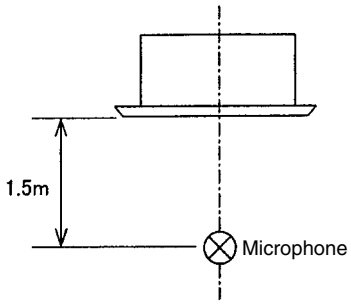


MMU-AP0561H



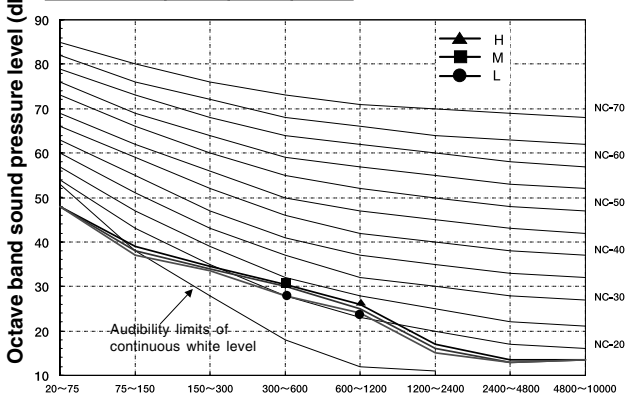
9-1-6. Sound characteristics (NC-Curve)

Sound level values shown are based on a measurement in a non resound room.



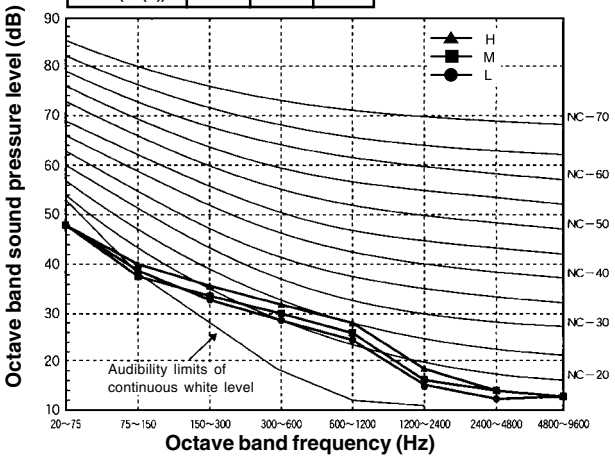
MMU-AP0091H, AP0121H

Fan Tap	H	M	L
Sound pressure level (dB(A))	30	29	27



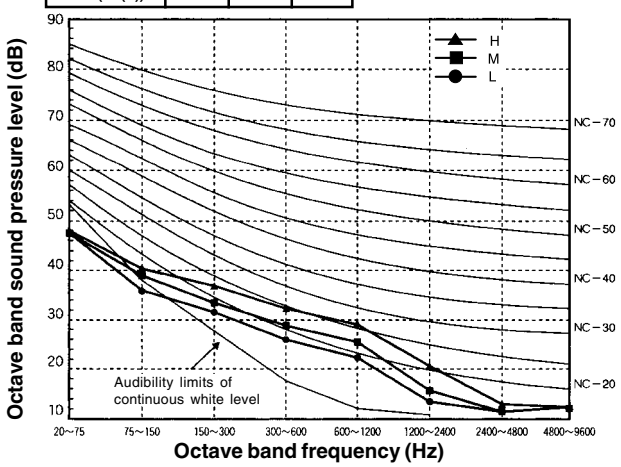
MMU-AP0151H

Fan Tap	H	M	L
Sound pressure level (dB(A))	31	29	27



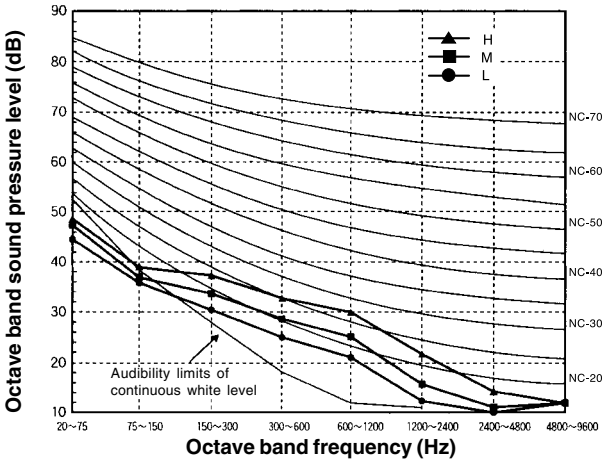
MMU-AP0181H

Fan Tap	H	M	L
Sound pressure level (dB(A))	32	29	28



MMU-AP0241H, AP0271H

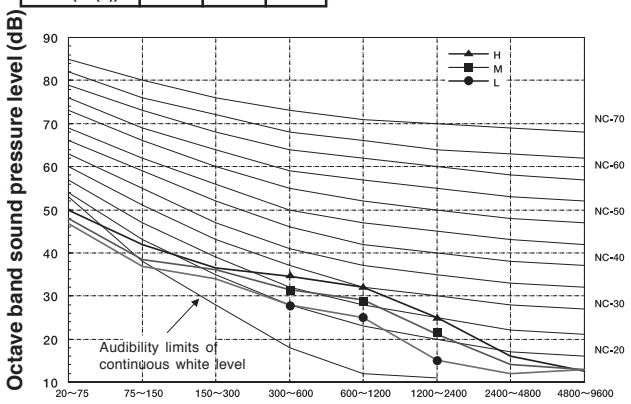
Fan Tap	H	M	L
Sound pressure level (dB(A))	34	31	28



Sound level values shown are based on a measurement in a non resound room.

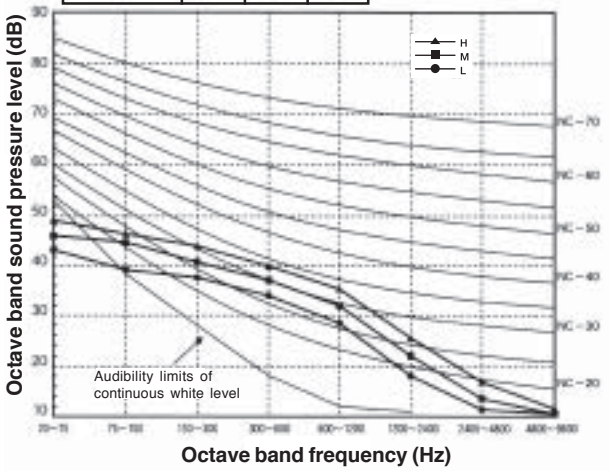
MMU-AP0301H

Fan Tap	H	M	L
Sound pressure level (dB(A))	37	33	30



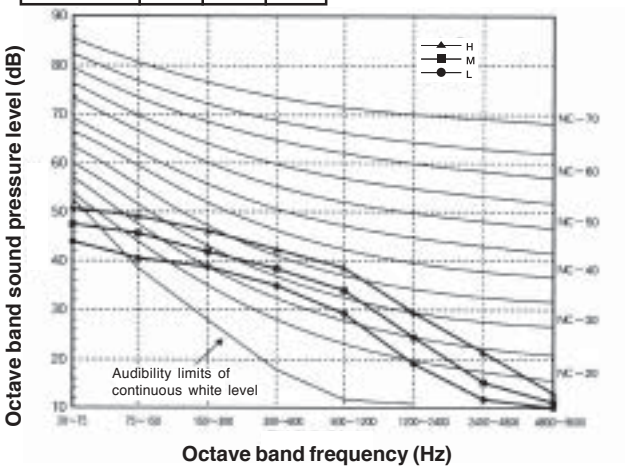
MMU-AP0361H

Fan Tap	H	M	L
Sound pressure level (dB(A))	40	36	33



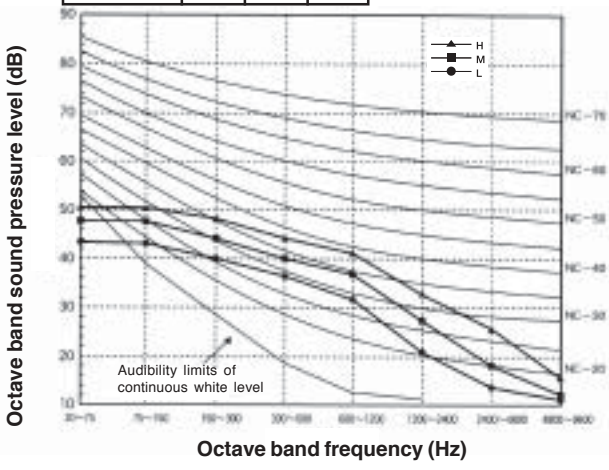
MMU-AP0481H

Fan Tap	H	M	L
Sound pressure level (dB(A))	44	38	34



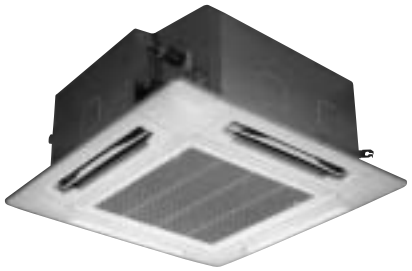
MMU-AP0561H

Fan Tap	H	M	L
Sound pressure level (dB(A))	45	48	34



9-1-7. Accessories

Apperarance



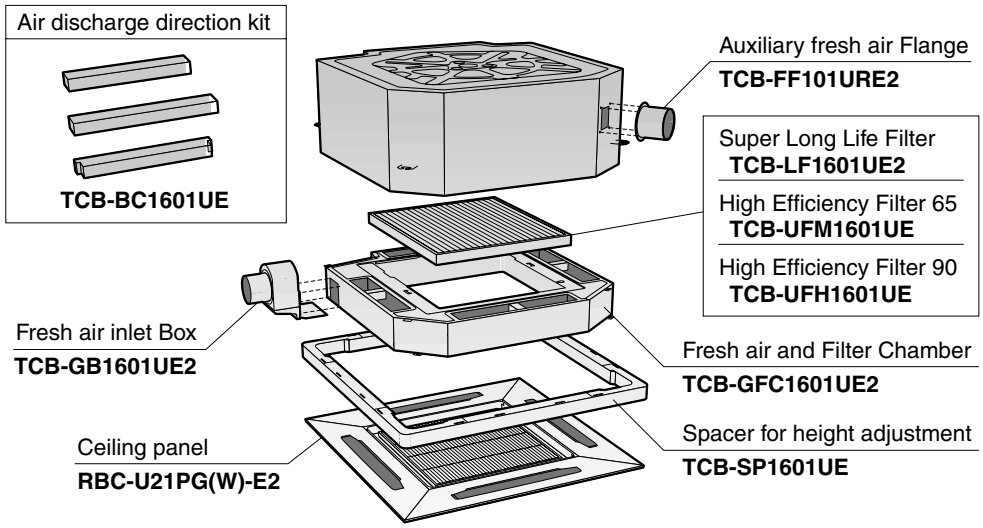
Standard accessories

Part name	Qty	Shape	Use	Part name	Qty	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 16ℓ	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

Optional accessories



Name	Model name	Note
Ceiling panel	RBC-U21PG(W)-E2	Required accessory
Super Long Life Filter	TCB-LF1601UE2	Dust collecting effect :50% (Weight method) Use with TCB-GFC1601UE2
High Efficiency Filter 65	TCB-UFM1601UE	Dust collecting effect :65% (NBS Colorimentric method) Use with TCB-GFC1601UE2
High Efficiency Filter 90	TCB-UFH1601UE	Dust collecting effect :90% (NBS Colorimentric method) 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-FF101URE Use with TCB-GFC1601UE2
Frech Air and Filter Chamber	TCB-GFC1601UE2	For fresh air intake and installing high efficiency filter or super long filter
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
Air Discharge Direction Kit	TCB-BC1601UE	Air direction charge by cutting off air discharge port (3pcs)

9-2-1. Specifications

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 weigh	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				RBC-AMT31E				
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

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 weigh	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				RBC-AMT31E				
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				

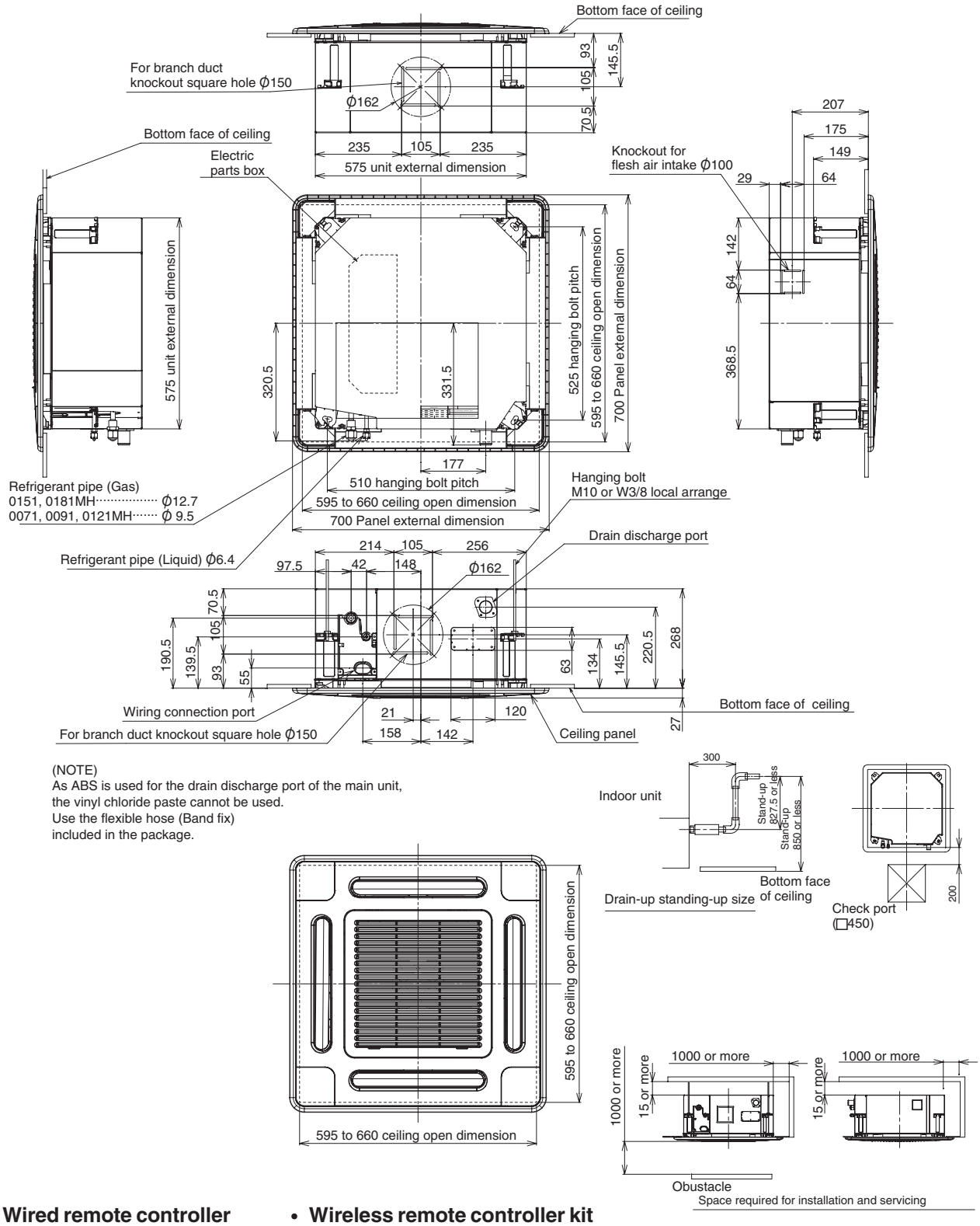
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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

9-2-2. Dimension

MMU-AP0071MH, AP0091MH, AP0121MH, AP0151MH, AP0181MH



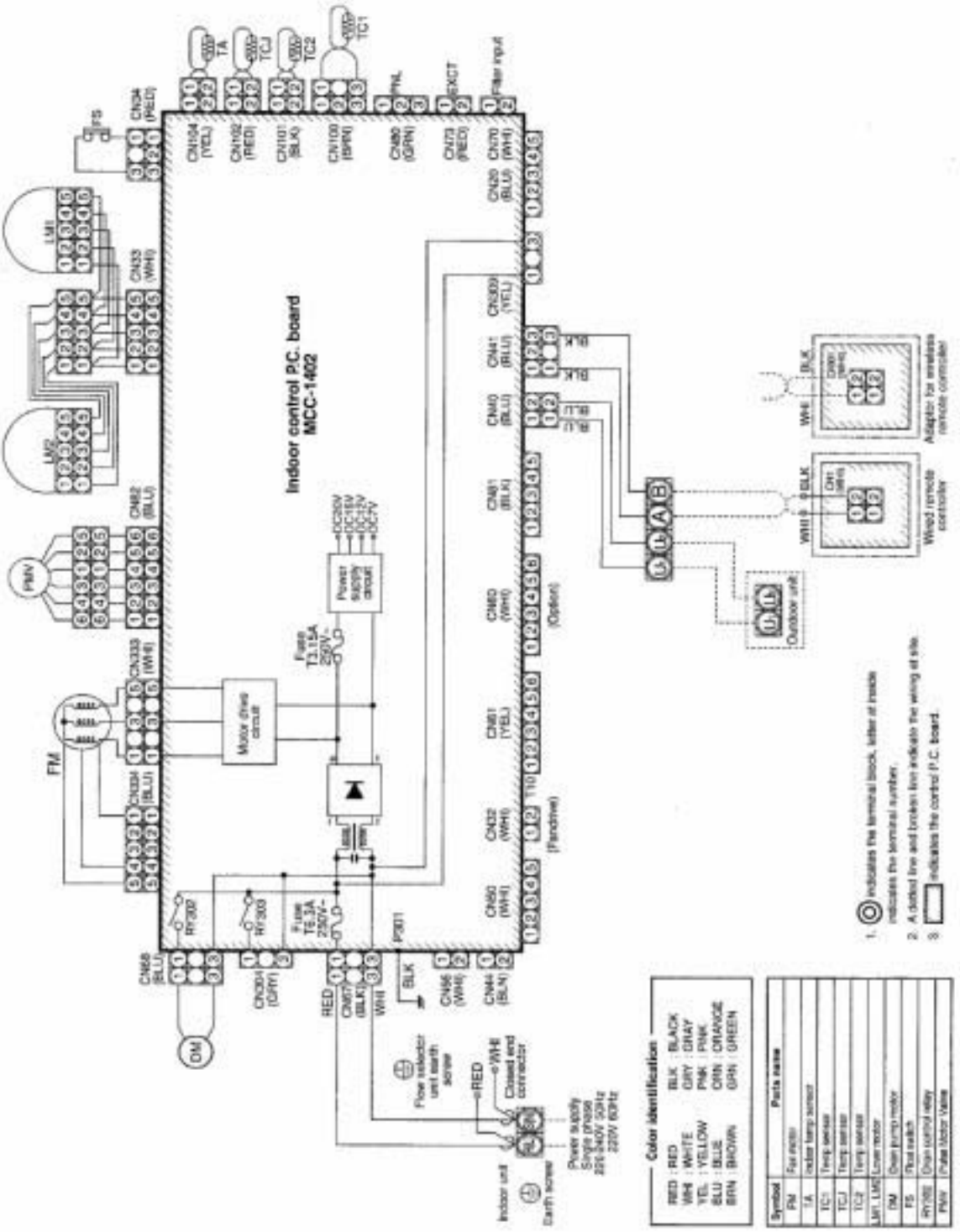
- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Note: All dimensions are in mm.

(Revised 12 July 2006)

9-2-3. Wiring diagram

Model: MMU-AP007MH, AP0091MH, AP0121MH, AP0151MH, AP0181MH



9-2-4. Sensible capacity table

(MMU-AP*MH)**

Cooling capacity

TC:Total capacity[kW] SHC:Sensible capacity[kW]

Unit size	Outdoor air temp. CDB	Indoor air temp.													
		14.0CWB		16.0CWB		18.0CWB		19.0CWB		20.0CWB		22.0CWB		24.0CWB	
		20CDB		23CDB		26CDB		27CDB		28CDB		30CDB		32CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	12.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	14.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	16.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	18.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	20.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	21.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	23.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	25.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	27.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	29.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	31.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	33.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	35.0	1.8	1.5	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	37.0	1.7	1.5	1.9	1.6	2.1	1.7	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.6
	39.0	1.7	1.4	1.9	1.5	2.0	1.6	2.1	1.6	2.1	1.6	2.3	1.6	2.4	1.5
009	10.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	12.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	14.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	16.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	18.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	20.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	21.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	23.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	25.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	27.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	29.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	31.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	33.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	35.0	2.3	1.8	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	37.0	2.2	1.7	2.5	1.8	2.6	1.9	2.7	1.9	2.8	1.9	3.0	1.9	3.1	1.9
	39.0	2.2	1.7	2.4	1.8	2.6	1.9	2.6	1.9	2.7	1.9	2.9	1.9	3.0	1.8
012	10.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	12.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	14.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	16.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	18.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	20.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	21.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	23.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	25.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	27.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	29.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	31.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	33.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	35.0	3.0	2.2	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	37.0	2.9	2.1	3.2	2.3	3.4	2.4	3.5	2.4	3.6	2.4	3.8	2.4	4.0	2.3
	39.0	2.8	2.1	3.1	2.2	3.3	2.4	3.4	2.4	3.5	2.4	3.7	2.3	3.9	2.3

Cooling capacity (cont.)

Unit size	Outdoor air temp. CDB	Indoor air temp.													
		14.0CWB		16.0CWB		18.0CWB		19.0CWB		20.0CWB		22.0CWB		24.0CWB	
		20CDB		23CDB		26CDB		27CDB		28CDB		30CDB		32CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	12.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	14.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	16.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	18.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	20.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	21.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	23.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	25.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	27.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	29.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	31.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	33.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	35.0	3.7	2.7	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	37.0	3.6	2.7	4.0	2.8	4.2	3.0	4.4	3.0	4.5	3.0	4.7	3.0	5.0	2.9
	39.0	3.5	2.6	3.8	2.8	4.1	2.9	4.2	2.9	4.4	2.9	4.6	2.9	4.8	2.8
018	10.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	12.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	14.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	16.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	18.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	20.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	21.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	23.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	25.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	27.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	29.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	31.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	33.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	35.0	4.6	3.2	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	37.0	4.5	3.1	4.9	3.3	5.3	3.5	5.4	3.5	5.6	3.5	5.9	3.5	6.2	3.4
	39.0	4.3	3.0	4.8	3.2	5.1	3.4	5.3	3.4	5.4	3.4	5.7	3.4	6.0	3.3

Heating capacity

SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

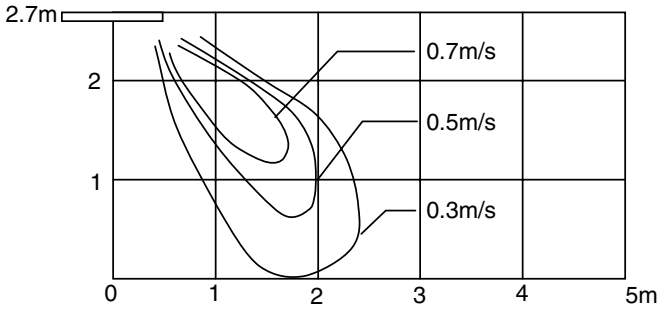
Heating capacity (cont.)

Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0

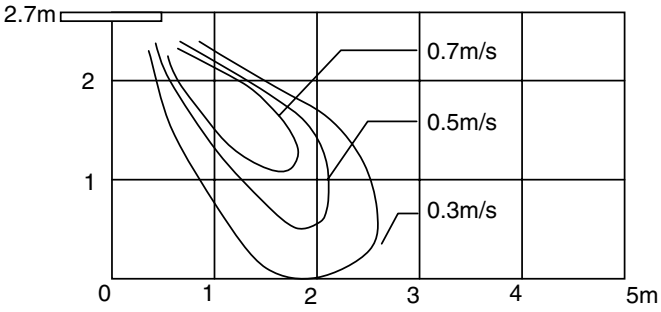
9-2-5. Air throw distance chart

Air Speed Distribution

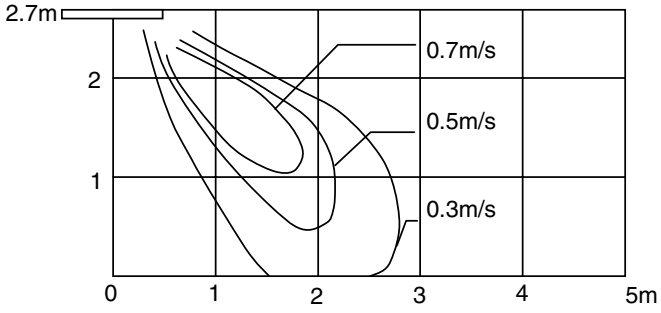
MMU-AP0071MH



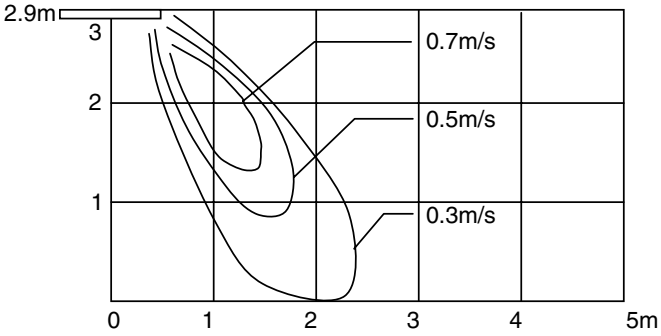
MMU-AP0091MH



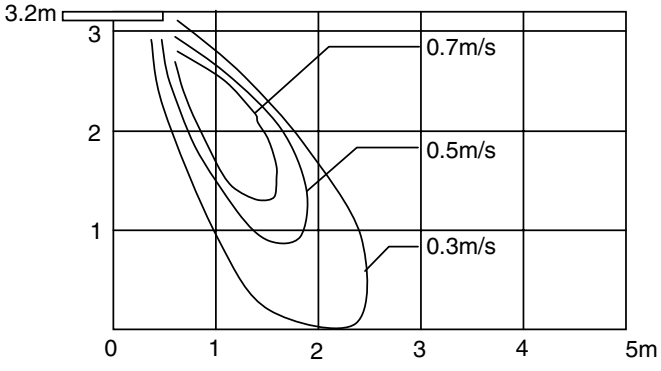
MMU-AP0121MH



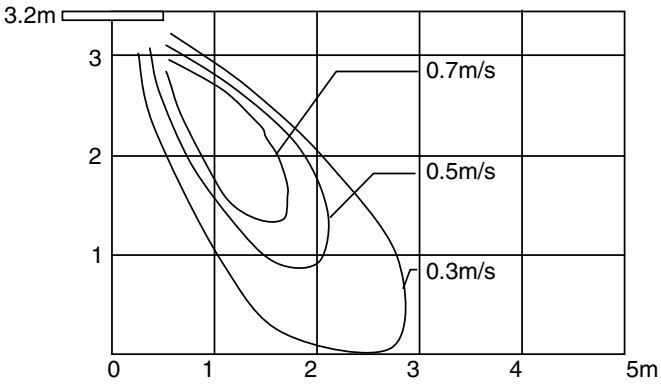
MMU-AP0151MH



MMU-AP0181MH

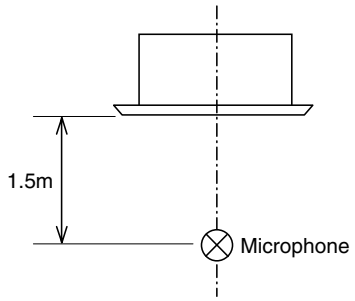


MMU-AP0151MH,MMU-AP0181MH (High ceiling mode)



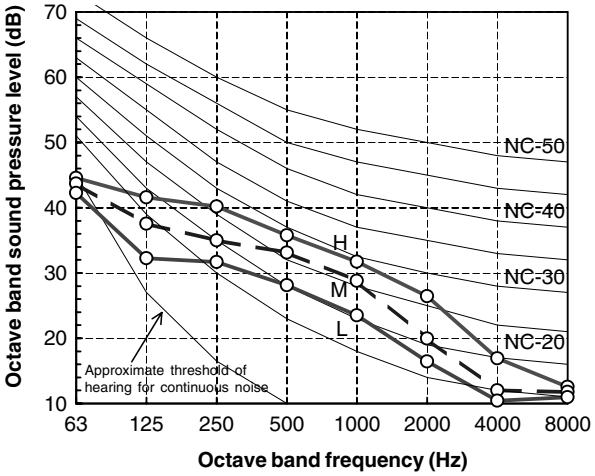
9-2-6. Sound characteristics (NC-Curve)

[Measuring location]



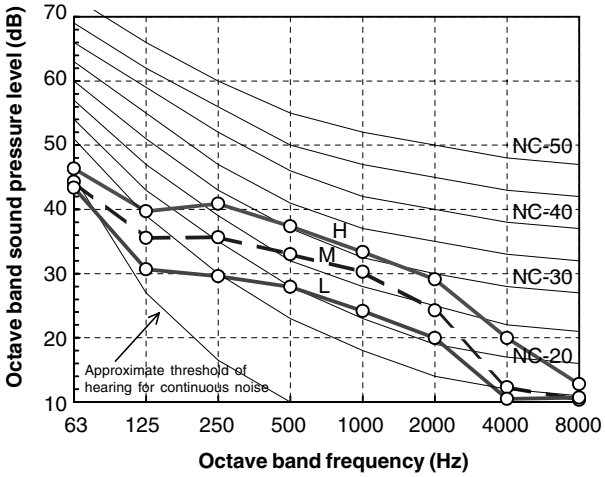
MMU-AP0071MH

Fan Tap	H	M	L
Sound pressure level (dB(A))	36	32	28



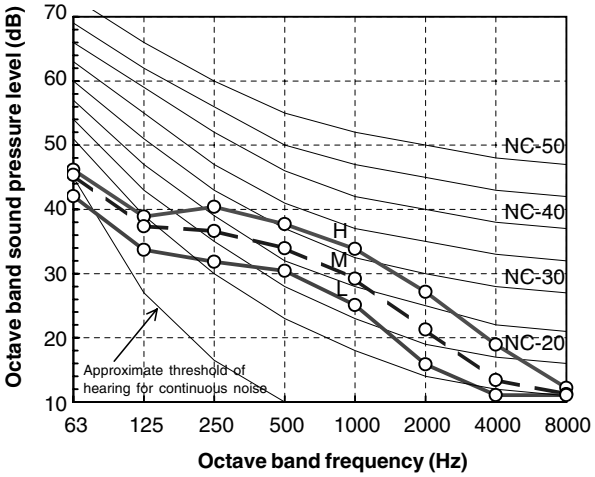
MMU-AP0091MH

Fan Tap	H	M	L
Sound pressure level (dB(A))	37	33	28



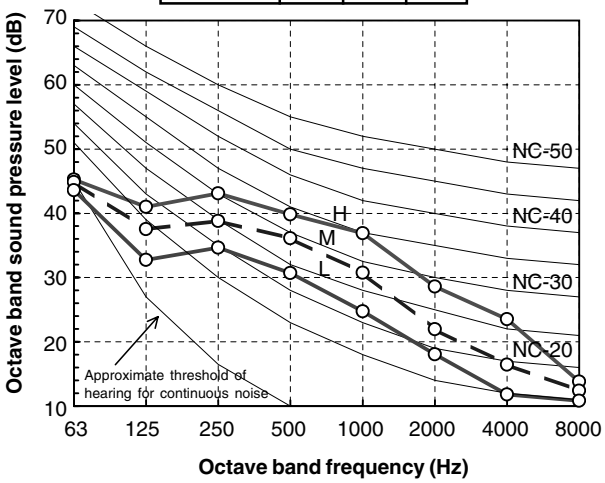
MMU-AP0121MH

Fan Tap	H	M	L
Sound pressure level (dB(A))	37	33	29



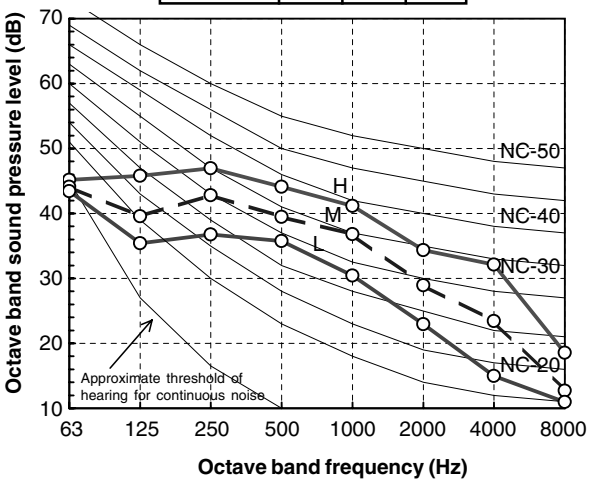
MMU-AP0151MH

Fan Tap	H	M	L
Sound pressure level (dB(A))	40	35	30



MMU-AP0181MH

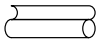
Fan Tap	H	M	L
Sound pressure level (dB(A))	44	39	34



9-2-7. Accessories

Apperarance

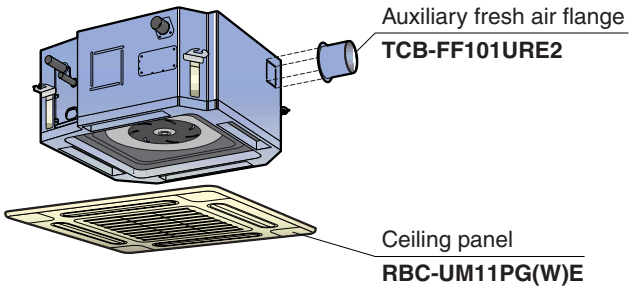
Standard accessories

Part name	Qty	Shape	Use
Installation Manual	1	———	(Be sure to hand over to customer)
Heat insulating pipe	2		For heat insulating of pipe connecting section
Installation pattern	1	———	For confirmation of ceiling opening and main unit position
Installation gauge	2		For positioning of ceiling position (united with installation pattern)
Pattern fixing screw	4	M5 x 16ℓ	For attaching pattern
Heat insulator	1		For heat insulating of drain connecting section
Washer	8		For hanging down unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For centering the drain pipe
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-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

Optional accessories



Name	Model name	Note
Ceiling panel	RBC-UM11PG(W)E	Required accessory
Auxiliary Fresh Air Flange	TCB-FF101URE2	For easy fresh air intake by using the knockout hole of indoor unit.(dia=100mm)

(Revised 19 May 2006)

9-3-1. Specifications

50Hz

• Specifications (50Hz)

Model name			MMU-	AP0071WH	AP0091WH	AP0121WH	AP0151WH	AP0181WH	AP0241WH	AP0271WH	AP0301WH
Cooling/Heating capacity (Note 1)				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		(kW)	1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)							
	Running current		(A)	0.31			0.32		0.46		0.47
	Power consumption		(kW)	0.070			0.072		0.105		0.106
	Power factor		(%)	97					99		98
	Starting current		(A)	0.47			0.60		0.89		0.98
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 weigh	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		1140/960/720		1260/1140/960
	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 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

60Hz

• Specifications (60Hz)

Model name				MMU-	AP0071WH	AP0091WH	AP0121WH	AP0151WH	AP0181WH	AP0241WH	AP0271WH	AP0301WH
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
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							

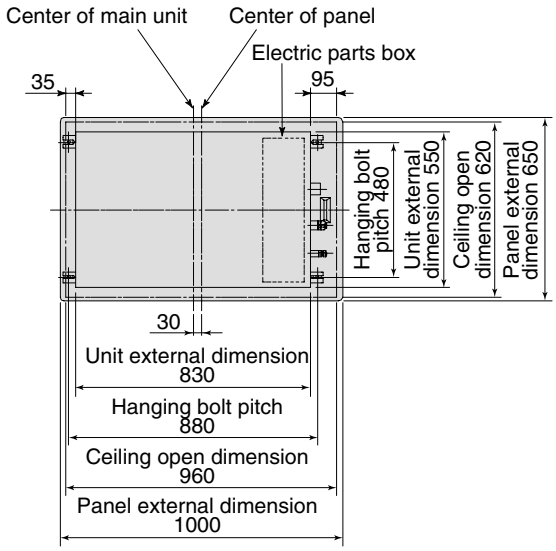
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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.

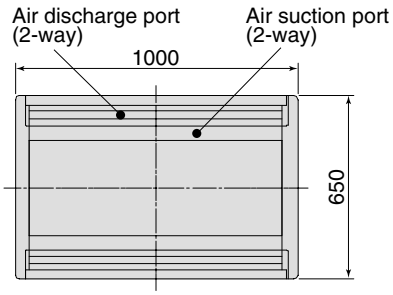
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

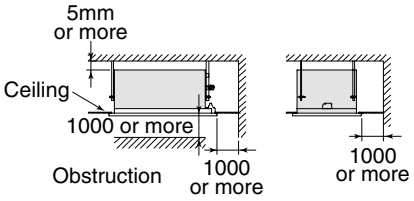
9-3-2. Dimension

MMU-AP0071WH, AP0091WH, AP0121WH

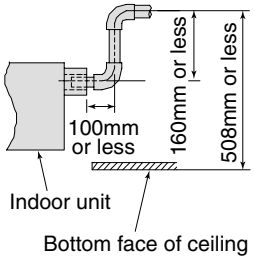


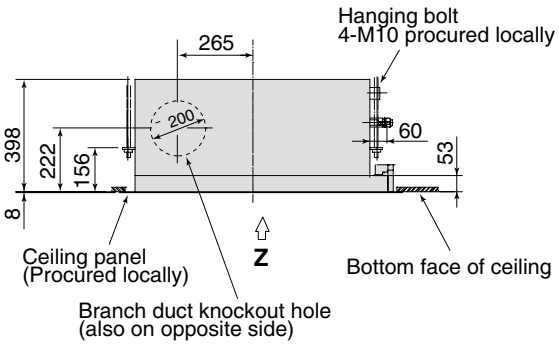
Z view

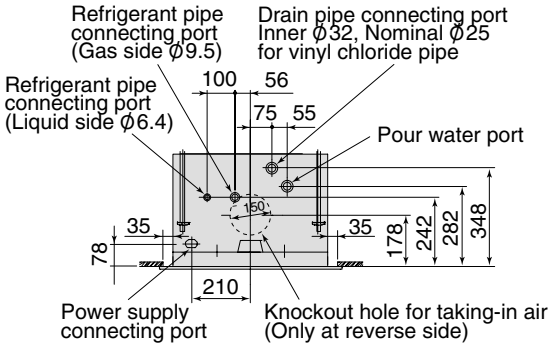




Space required for installation and servicing



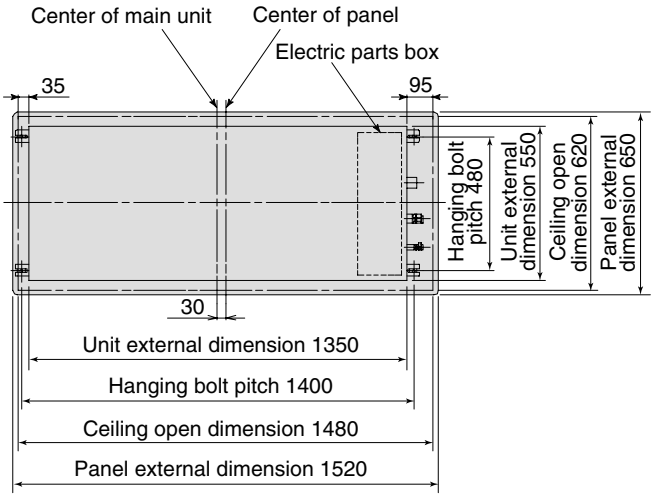




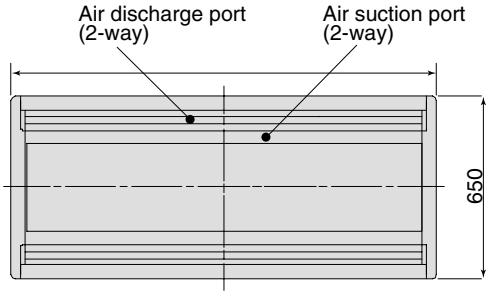
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

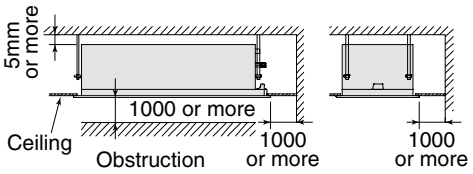
Note: All dimensions are in mm.

MMU-AP0151WH, AP0181WH, AP0241WH, AP0271WH. AP0301WH

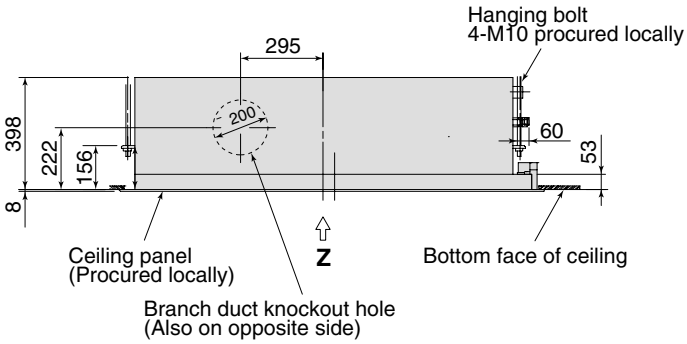


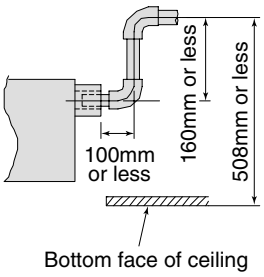
Z view

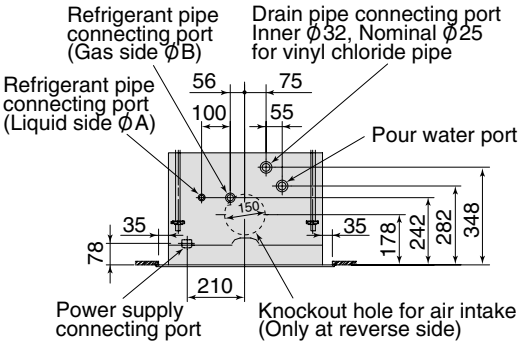




Space required for installation and servicing





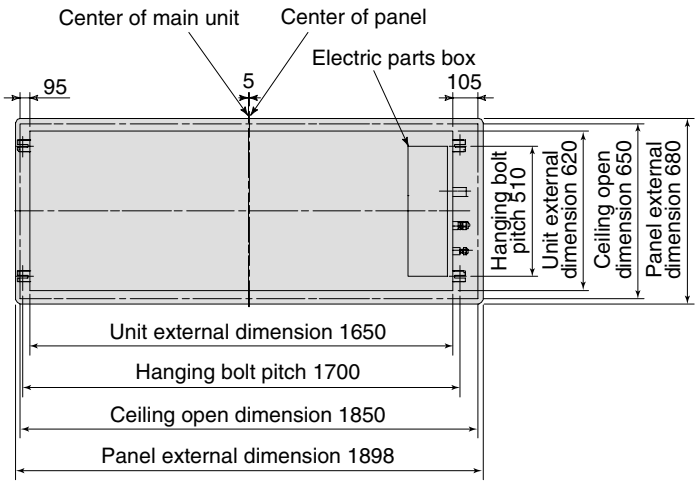


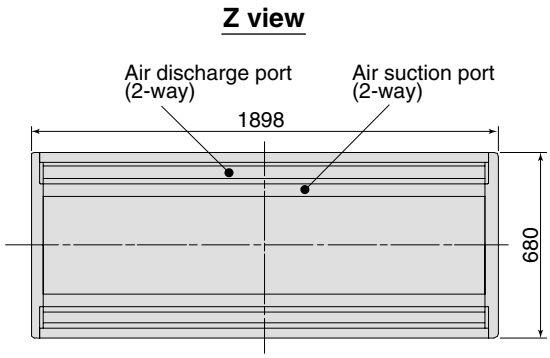
Model	A	B
MMU-AP0151WH to AP0181WH	ϕ6.4	ϕ12.7
MMU-AP0241WH to AP0301WH	ϕ9.5	ϕ15.9

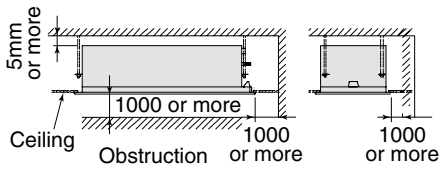
- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Note: All dimensions are in mm.

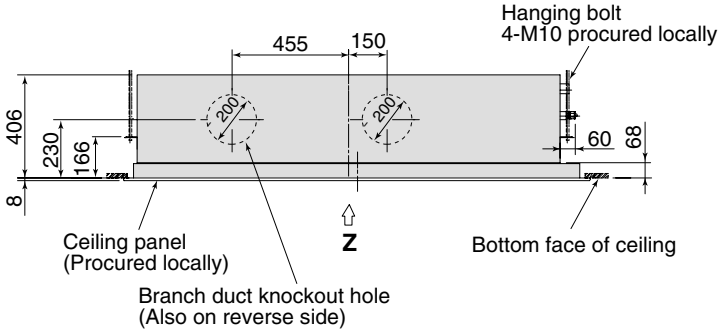
MMU-AP0481WH*CHINA market only

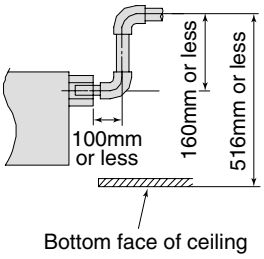


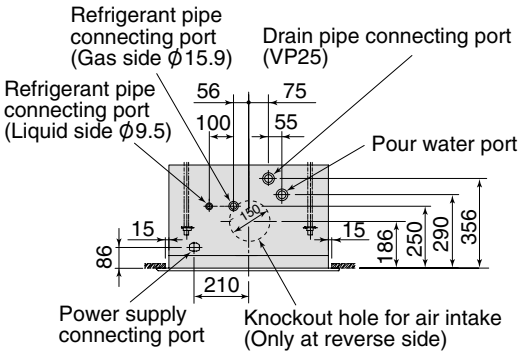




Space required for installation and servicing





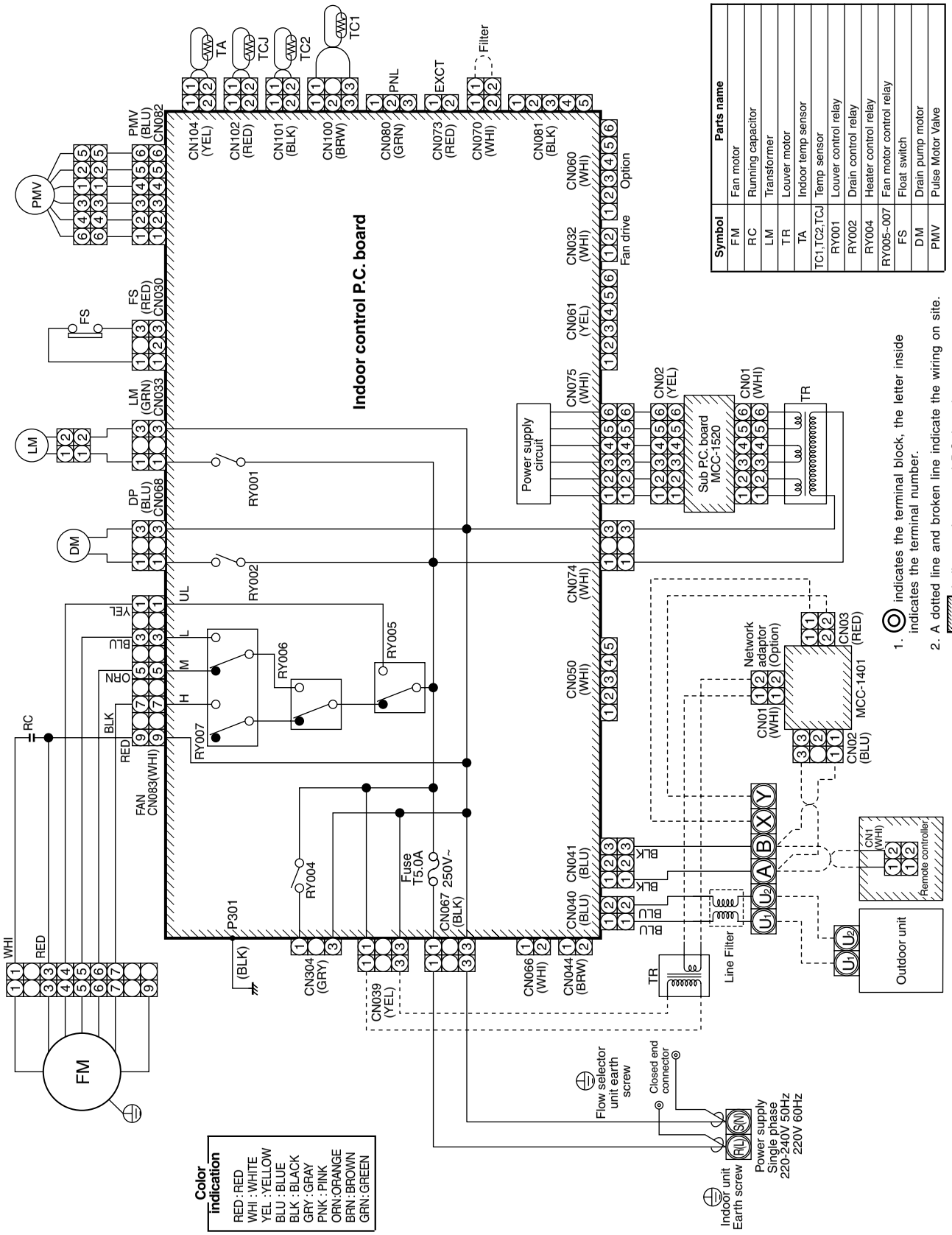


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

9-3-3. Wiring diagram

Model: MMU-AP0071WH, AP0091WH, AP0121WH, AP0151WH, AP0181WH, MMU-AP0241WH, AP0271WH, AP0301WH, AP0481WH



9-3-4. Sensible capacity table

(MMU-AP*WH)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp. 16.0˚CWB 23˚CDB TC	16.0˚CWB 23˚CDB SHC	18.0˚CWB 26˚CDB TC	18.0˚CWB 26˚CDB SHC	19.0˚CWB 27˚CDB TC	19.0˚CWB 27˚CDB SHC	20.0˚CWB 28˚CDB TC	20.0˚CWB 28˚CDB SHC	22.0˚CWB 30˚CDB TC	22.0˚CWB 30˚CDB SHC	24.0˚CWB 32˚CDB TC	24.0˚CWB 32˚CDB SHC
007	10.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	12.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	14.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	16.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	18.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	20.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	21.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	23.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	25.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	27.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	29.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	31.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	33.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	35.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	37.0	2.0	1.6	2.1	1.7	2.2	1.7	2.2	1.7	2.4	1.7	2.5	1.6
	39.0	1.9	1.5	2.0	1.6	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.5
009	10.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	12.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	14.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	16.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	18.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	20.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	21.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	23.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	25.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	27.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	29.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	31.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	33.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	35.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	37.0	2.5	1.9	2.7	2.0	2.7	2.0	2.8	2.0	3.0	1.9	3.1	1.9
	39.0	2.4	1.8	2.6	1.9	2.7	1.9	2.8	1.9	2.9	1.9	3.1	1.8
012	10.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	12.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	14.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	16.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	18.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	20.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	21.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	23.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	25.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	27.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	29.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	31.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	33.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	35.0	3.3	2.2	3.5	2.3	3.6	2.3	3.7	2.3	3.9	2.3	4.1	2.2
	37.0	3.2	2.1	3.4	2.3	3.5	2.3	3.6	2.3	3.8	2.2	4.0	2.2
	39.0	3.1	2.0	3.4	2.2	3.5	2.2	3.6	2.2	3.8	2.1	3.9	2.1
015	10.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	12.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	14.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	16.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	18.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	20.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	21.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	23.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	25.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	27.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	29.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	31.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	33.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	35.0	4.1	2.9	4.4	3.1	4.5	3.1	4.6	3.1	4.9	3.1	5.1	3.0
	37.0	4.0	2.9	4.3	3.0	4.4	3.0	4.5	3.0	4.8	3.0	5.0	2.9
	39.0	3.9	2.8	4.2	2.9	4.3	2.9	4.4	2.9	4.7	2.9	4.9	2.8

(Revised 12 July 2006)

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp. 16.0˚CWB 23˚CDB TC	SHC	18.0˚CWB 26˚CDB TC	SHC	19.0˚CWB 27˚CDB TC	SHC	20.0˚CWB 28˚CDB TC	SHC	22.0˚CWB 30˚CDB TC	SHC	24.0˚CWB 32˚CDB TC	SHC
018	10.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	12.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	14.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	16.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	18.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	20.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	21.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	23.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	25.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	27.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	29.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	31.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	33.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	35.0	5.1	3.6	5.4	3.8	5.6	3.8	5.8	3.8	6.1	3.8	6.4	3.7
	37.0	5.0	3.5	5.3	3.7	5.5	3.7	5.7	3.7	6.0	3.7	6.3	3.6
	39.0	4.9	3.4	5.2	3.6	5.4	3.6	5.5	3.6	5.9	3.5	6.1	3.5
024	10.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	12.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	14.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	16.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	18.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	20.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	21.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	23.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	25.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	27.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	29.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	31.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	33.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	35.0	6.4	4.5	6.9	4.8	7.1	4.8	7.3	4.8	7.7	4.8	8.1	4.6
	37.0	6.3	4.4	6.7	4.7	7.0	4.7	7.2	4.7	7.6	4.7	7.9	4.6
	39.0	6.2	4.3	6.6	4.5	6.8	4.5	7.0	4.5	7.4	4.5	7.8	4.4
027	10.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	12.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	14.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	16.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	18.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	20.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	21.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	23.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	25.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	27.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	29.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	31.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	33.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	35.0	7.3	5.2	7.8	5.5	8.0	5.5	8.2	5.5	8.7	5.4	9.1	5.3
	37.0	7.1	5.1	7.6	5.4	7.8	5.4	8.1	5.4	8.5	5.3	8.9	5.2
	39.0	7.0	4.9	7.4	5.2	7.7	5.2	7.9	5.2	8.4	5.1	8.8	5.0
030	10.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	12.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	14.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	16.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	18.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	20.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	21.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	23.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	25.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	27.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	29.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	31.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	33.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	35.0	8.2	5.7	8.7	6.0	9.0	6.0	9.3	6.0	9.8	5.9	10.3	5.8
	37.0	8.0	5.6	8.6	5.9	8.8	5.9	9.1	5.9	9.6	5.8	10.1	5.7
	39.0	7.8	5.3	8.4	5.7	8.6	5.6	8.9	5.6	9.4	5.6	9.8	5.5

(Revised 12 July 2006)

Heating capacity

SHC : Sensible Heat Capacity (kW)

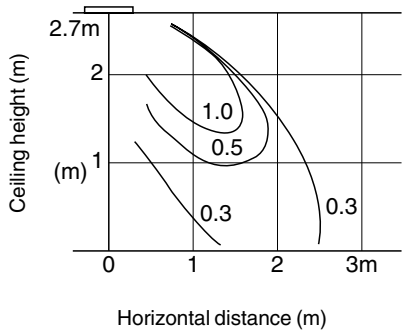
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB 16.0 SHC	18.0 SHC	20.0 SHC	22.0 SHC	24.0 SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8

Heating capacity (cont.)

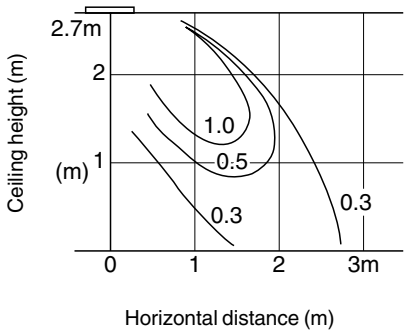
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6

9-3-5. Air throw distance chart

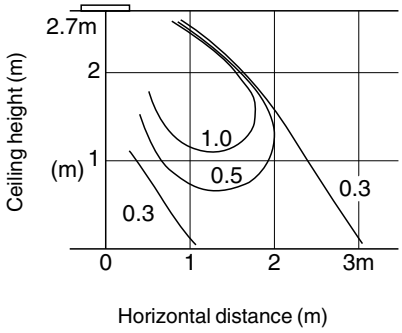
MMU-AP0071WH, AP0091WH, AP0121WH



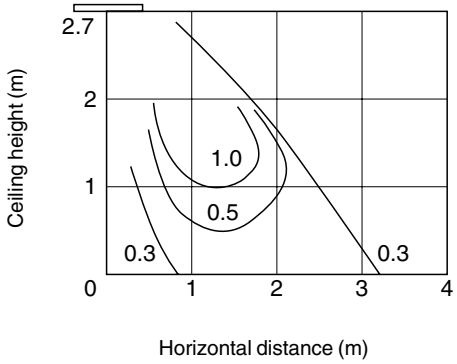
MMU-AP0151WH, AP0181WH



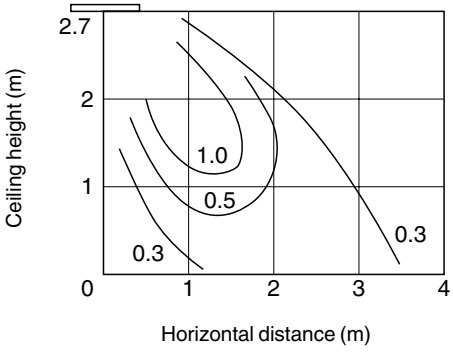
MMU-AP0241WH, AP0271WH



MMU-AP0301WH

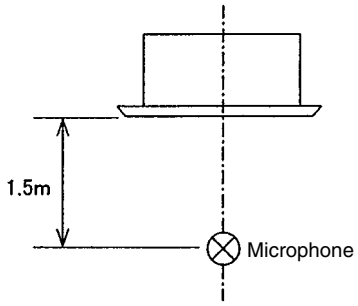


MMU-AP0481WH



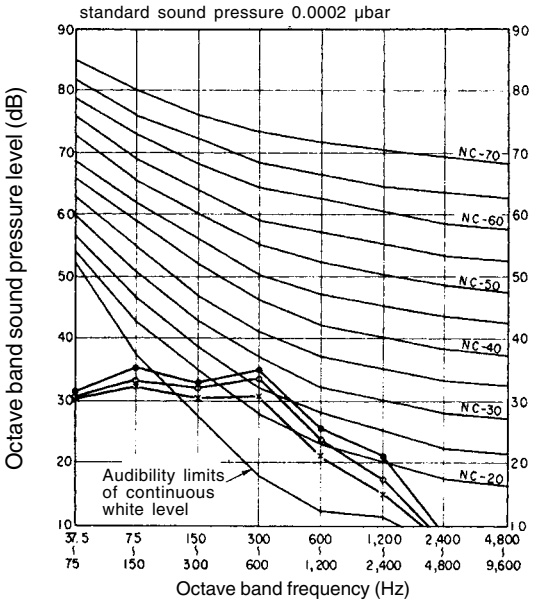
9-3-6. Sound characteristics (NC-Curve)

Sound level values shown are based on a measurement in a non resound room.



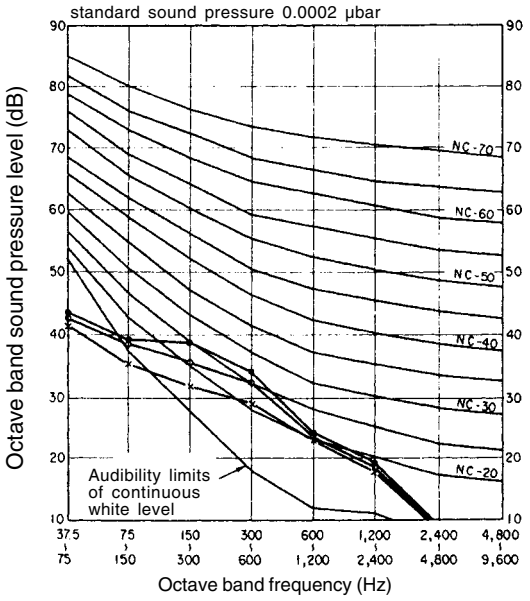
MMU-AP0071WH, AP0091WH, AP0121WH

Fan Tap	H	M	L
Sound pressure level (dB(A))	34	32	30



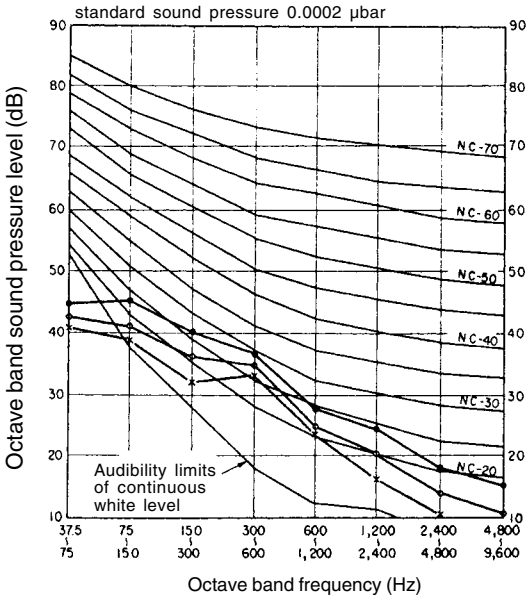
MMU-AP0151WH, AP0181WH

Fan Tap	H	M	L
Sound pressure level (dB(A))	35	33	30



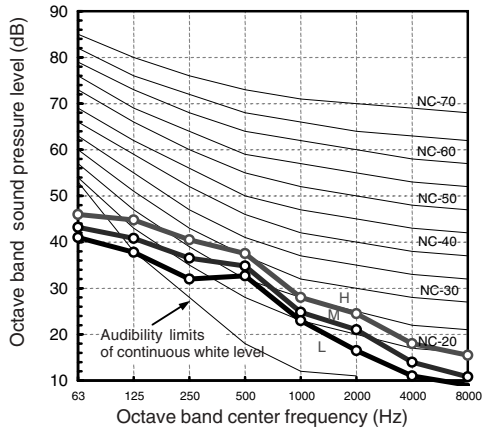
MMU-AP0241WH, AP0271WH

Fan Tap	H	M	L
Sound pressure level (dB(A))	38	35	33



MMU-AP0301WH

Fan Tap	H	M	L
Sound pressure level (dB(A))	40	37	34



(Revised 07 Apr 2006)

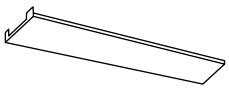
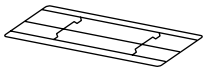
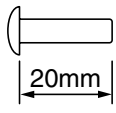
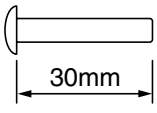
9-3-7. Accessories

Apperarance

Standard accessories

Part name		Qty	Shape	Use	Part name	Qty	Shape	Use
Installation Manual		1	—	(Be sure to hand 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	For attaching the installation pattern
Installation 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

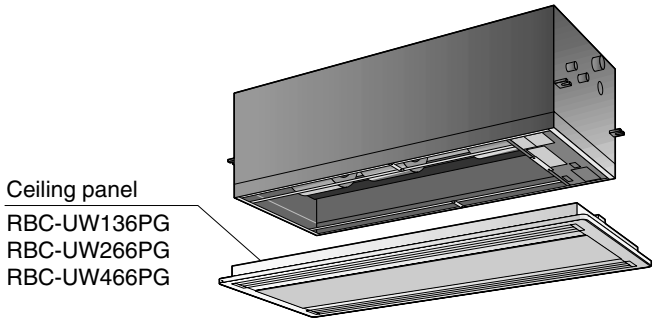
Ceiling panel components

Name	Ceiling panel	Center panel	Air filter	Screw installing panel	Screw installing panel
Shape (Qty)	 (1 set)	 (1 pc)	 • RBC-UW466PG : Attached to indoor unit	 20mm M5×20ℓ (4 pcs)	 30mm M5×30ℓ (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)

Remote controller

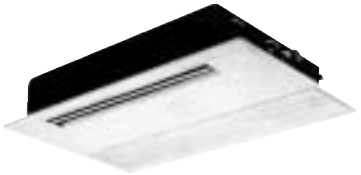
	Model Name
Wired remote controller	RBC-AMT31E
Simple wired remote controller	RBC-AS21E2
Wireless remote controller kit	TCB-AX21E2
Weekly timer application	RBC-AMT31E and RBC-EXW21E2
Central remote controller	TCB-SC642TLE2
ON-OFF controller	TCB-CC163TLE2

Optional accessories



Name	Model name	Note
Ceiling panel	RBC-UW136PG	Required accessory
	RBC-UW266PG	

9-4-1. Specifications



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 weigh	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

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 weigh	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					

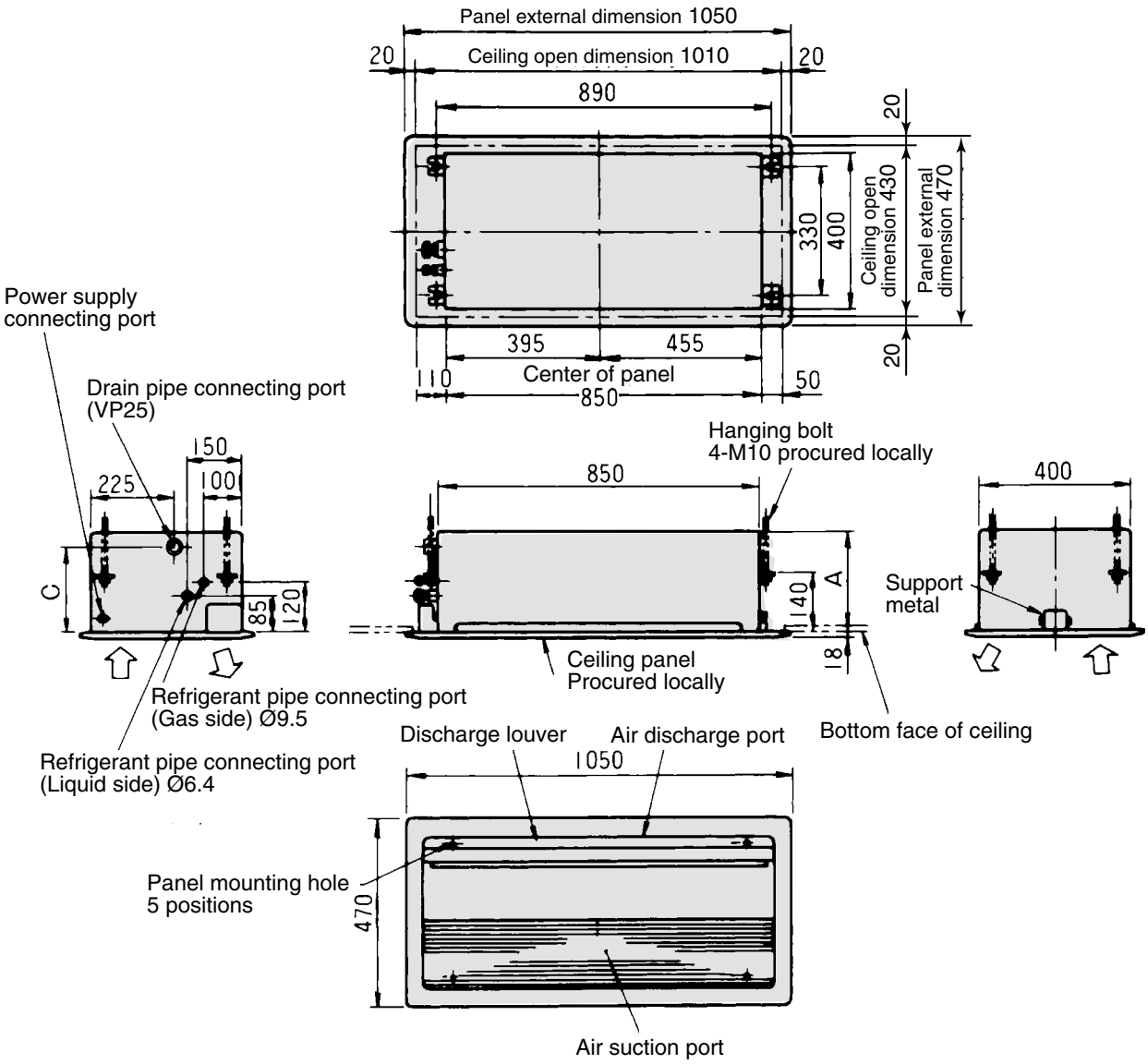
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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

9-4-2. Dimension

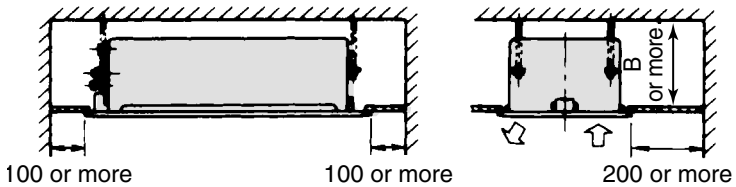
MMU-AP0071YH, AP0091YH, AP0121YH



Dimensions

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

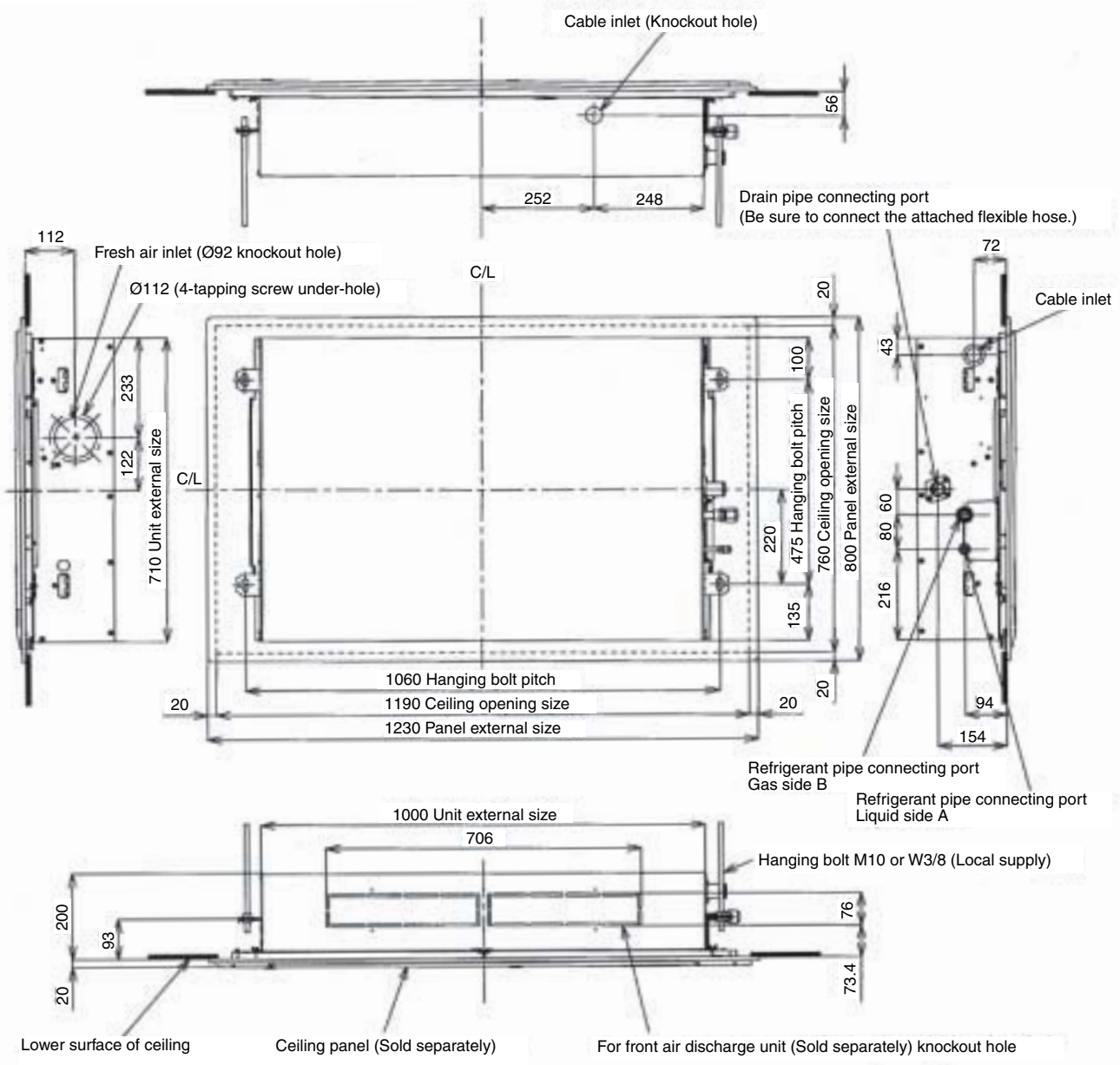
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2



Space required for installation and servicing

Note: All dimensions are in mm.

MMU-AP0152SH, AP0182SH, AP0242SH

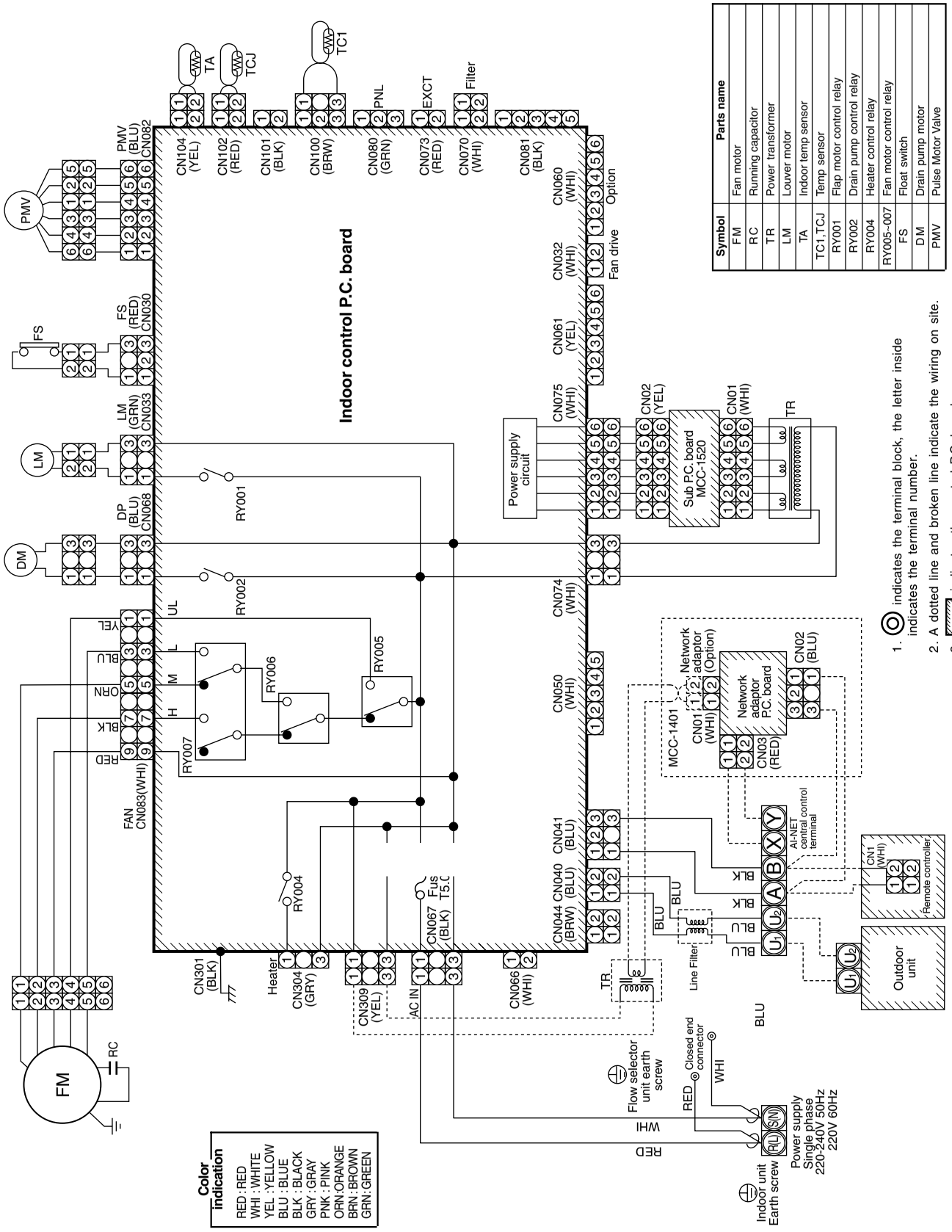


Model name MMU-	A	B
AP015, AP018 type	ϕ6.4	ϕ12.7
AP024 type	ϕ9.5	ϕ15.9

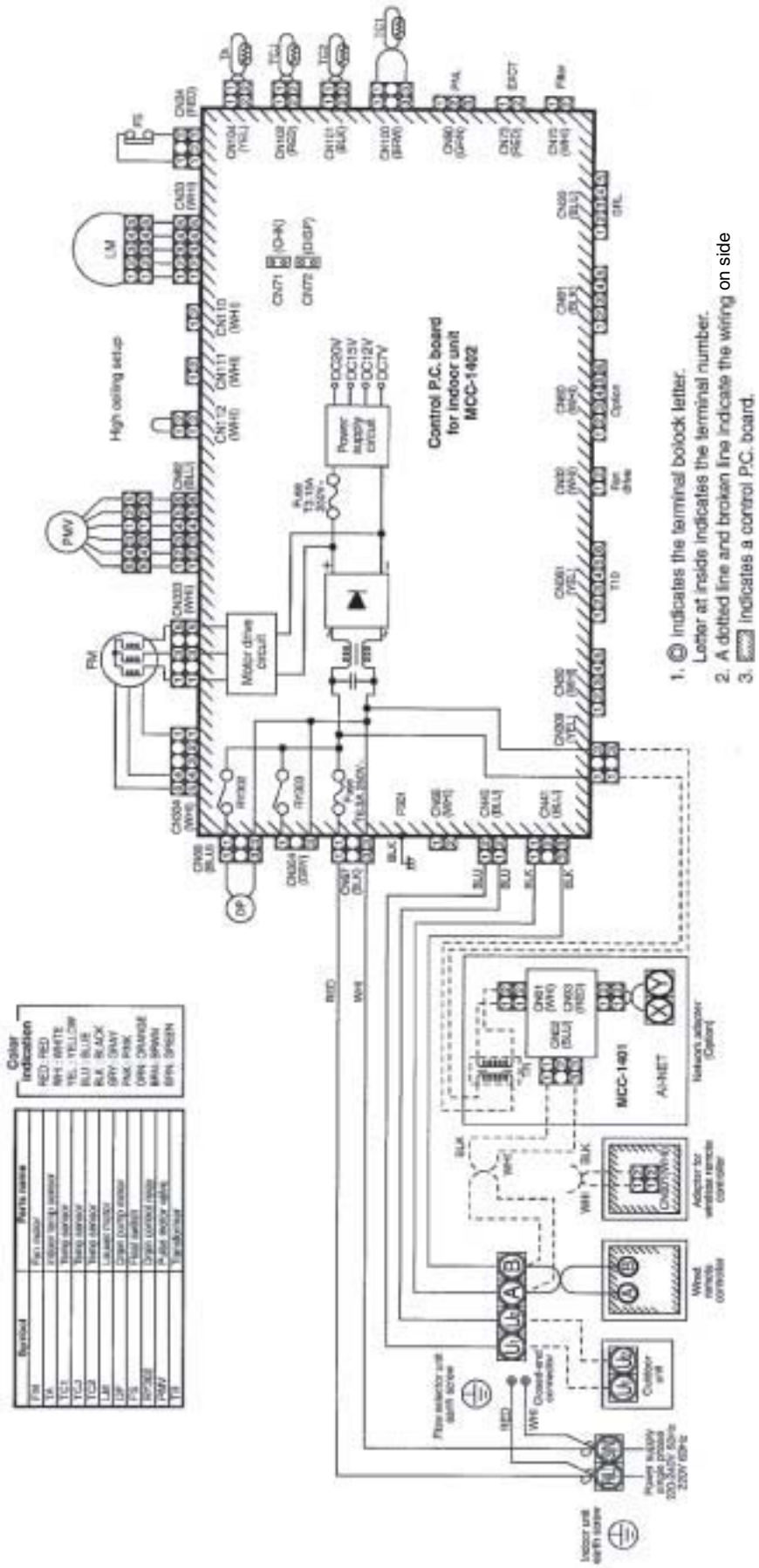
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

9-4-3. Wiring diagram

1-way Air Discharge Cassette Type (Compact type)
Model: MMU-AP0071YH, AP0091YH, AP0121YH



1-way (2 series) Air Discharge Cassette Type (MMU-AP***SH)



9-4-4. Sensible capacity table

(MMU-AP*YH, MMU-AP***SH)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	12.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	14.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	16.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	18.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	20.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	21.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	23.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	25.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	27.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	29.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	31.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	33.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	35.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	37.0	2.0	1.7	2.1	1.8	2.2	1.8	2.2	1.8	2.4	1.7	2.5	1.7
	39.0	1.9	1.6	2.0	1.7	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.6
009	10.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	12.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	14.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	16.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	18.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	20.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	21.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	23.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	25.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	27.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	29.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	31.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	33.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	35.0	2.5	2.1	2.7	2.2	2.8	2.2	2.9	2.2	3.1	2.2	3.2	2.1
	37.0	2.5	2.0	2.7	2.2	2.7	2.2	2.8	2.2	3.0	2.1	3.1	2.1
	39.0	2.4	2.0	2.6	2.1	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.0
012	10.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	12.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	14.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	16.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	18.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	20.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	21.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	23.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	25.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	27.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	29.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	31.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	33.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	35.0	3.3	2.5	3.5	2.7	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	37.0	3.2	2.5	3.4	2.7	3.5	2.6	3.6	2.6	3.8	2.6	4.0	2.6
	39.0	3.1	2.4	3.4	2.5	3.5	2.5	3.6	2.5	3.8	2.5	3.9	2.5

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	12.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	14.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	16.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	18.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	20.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	21.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	23.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	25.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	27.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	29.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	31.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	33.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	35.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	37.0	4.0	3.0	4.3	3.1	4.4	3.1	4.5	3.1	4.8	3.1	5.0	3.0
	39.0	3.9	2.8	4.2	3.0	4.3	3.0	4.4	3.0	4.7	3.0	4.9	2.9
018	10.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	12.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	14.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	16.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	18.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	20.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	21.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	23.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	25.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	27.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	29.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	31.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	33.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	35.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	37.0	5.0	3.6	5.3	3.8	5.5	3.8	5.7	3.8	6.0	3.8	6.3	3.7
	39.0	4.9	3.5	5.2	3.7	5.4	3.7	5.5	3.7	5.9	3.6	6.1	3.6
024	10.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	12.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	14.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	16.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	18.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	20.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	21.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	23.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	25.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	27.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	29.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	31.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	33.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	35.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	37.0	6.3	4.6	6.7	4.9	7.0	4.9	7.2	4.9	7.6	4.9	7.9	4.7
	39.0	6.2	4.4	6.6	4.7	6.8	4.7	7.0	4.7	7.4	4.7	7.8	4.6

Heating capacity

SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

Heating capacity (cont.)

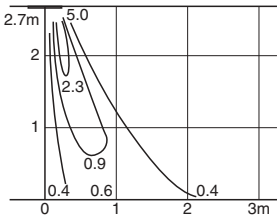
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB 16.0 SHC	18.0 SHC	20.0 SHC	22.0 SHC	24.0 SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

9-4-5. Air throw distance chart

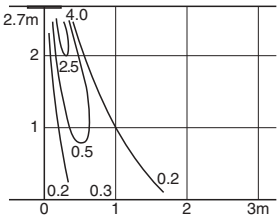
1-way Air Discharge Cassette Type (Compact type)

MMU-AP0071YH, AP0091YH, AP0121YH

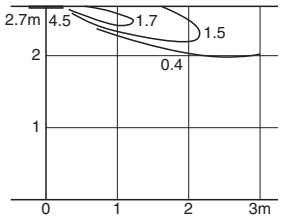
H (High wind, blowing downward)



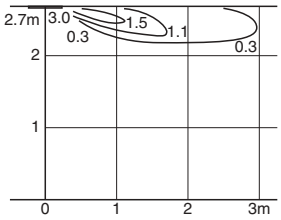
L (Low wind, blowing downward)



H (High wind, blowing horizontally)

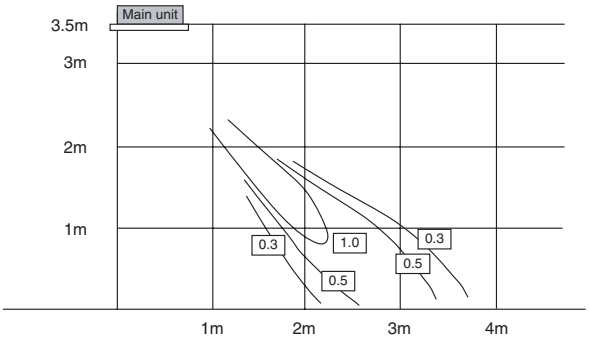


L (Low wind, blowing horizontally)

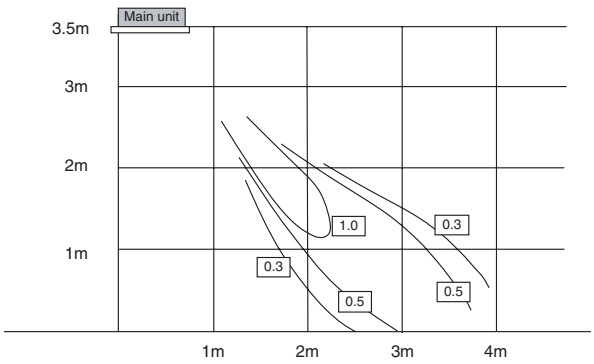


1-way (2 series) Air Discharge Cassette Type Heating mode

MMU-AP0152SH, AP0182SH



MMU-AP0242SH



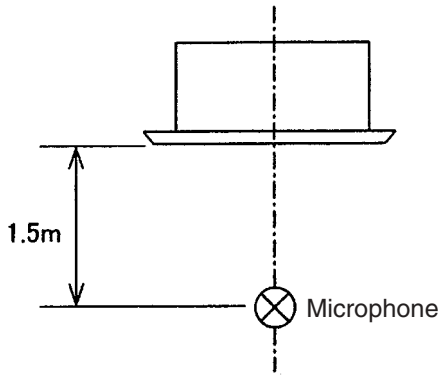
(Revised 07 Apr 2006)

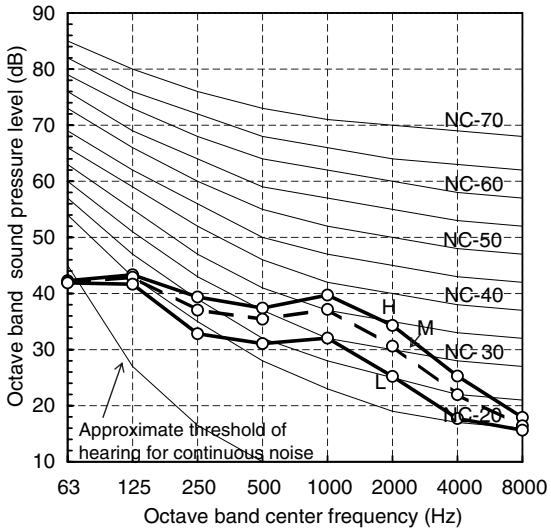
9-4-6. Sound characteristics (NC-Curve)

1-way Air Discharge Cassette Type (Compact type)

MMU-AP0071YH, MMU-AP0091YH, MMU-AP0121YH

Fan tap	H	M	L
Sound pressure level (dB(A))	42	39	34

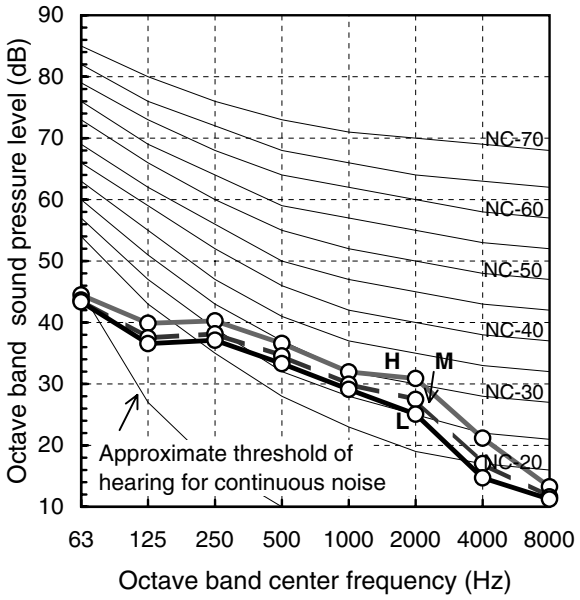




1-way (2 series) Air Discharge Cassette Type

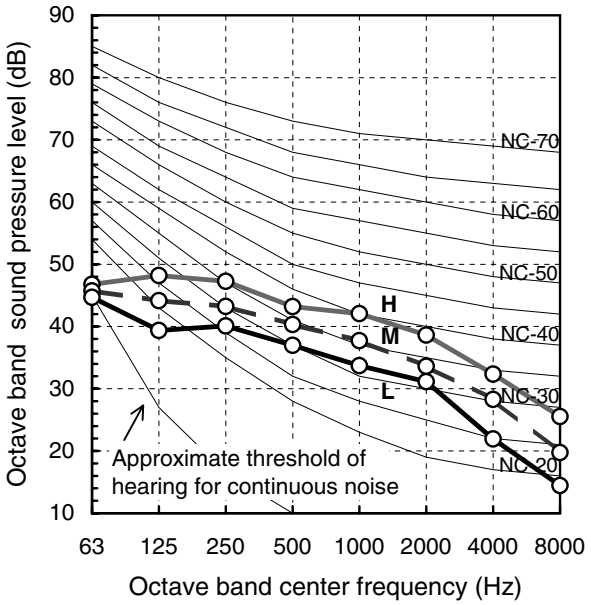
MMU-AP0152SH

Fan tap	H	M	L
Sound pressure level (dB(A))	37	35	32



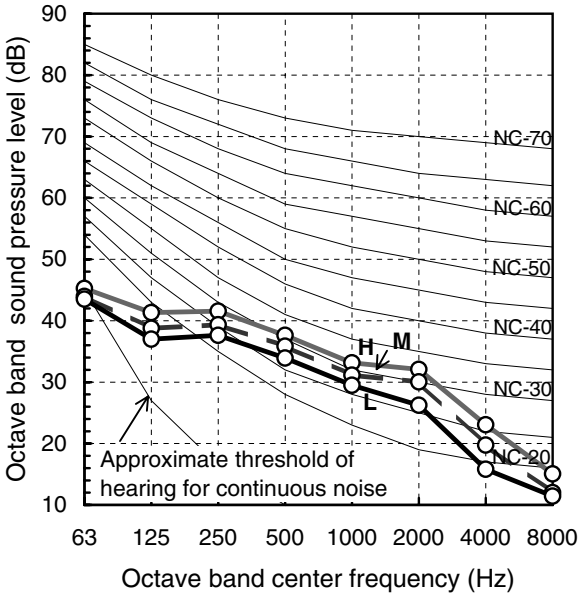
MMU-AP0242SH

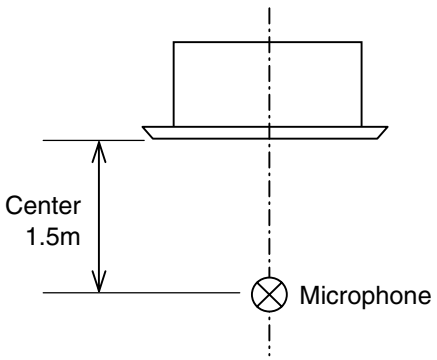
Fan tap	H	M	L
Sound pressure level (dB(A))	45	41	37



MMU-AP0182SH

Fan tap	H	M	L
Sound pressure level (dB(A))	38	36	34





9-4-7. Accessories

1-way (2 series) Air Discharge Cassette Type

Apperarance

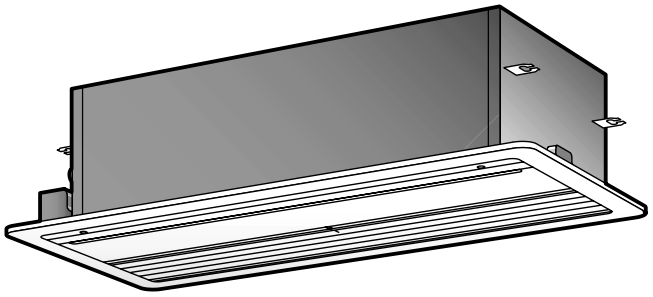
Standard accessories

Part name	Qty	Shape	Use
Installation Manual	1	—	(Be sure to hand over to customer)
Heat insulating pipe	2		For heat insulating of pipe connecting section
Installation gauge	—		For positioning of ceiling position
Installation pattern	1	—	For confirmation of ceiling opening and main unit position

Celling panel components

Part name	Qty	Use
	RBC-US135PG, 165PG, 265PG type	
Ceiling panel	1	—
Intake grille	3	—
Air filter	1	Located in the intake grille and removes dust and dirt from the air.
Panel installation screw (M5 x 20)	7	For securing the ceiling panel
Screw head insulation	1 set	Prevents condensation from forming on screw heads

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

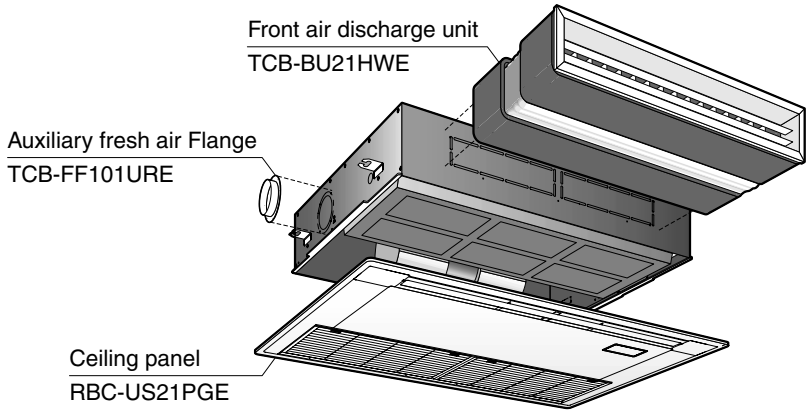
1-way (2 series) Air Discharge Cassette Type

Apperarance

Standard accessories

Part name	Qty	Shape	Use
Installation Manual	1	This manual	(Be sure to hand 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 16ℓ	For mounting of pattern
Heat insulating pipe	2	————	For insulating pipe connecting section
Washer	8	M10 x ∅34	For hanging-down of unit
Hose band	1	————	For connecting drain pipe
Flexible hose	1	————	For adjustment of drain pipe centering
Heat insulator	1	————	For insulating drain connecting section
Heat insulator	1	————	For sealing of pipe connection port (With slit)
Heat insulator	1	————	For sealing of pipe connection port (Without slit)

Optional accessories

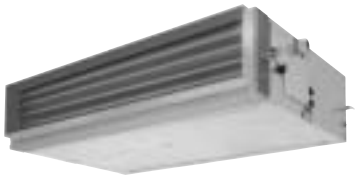


Name	Model name	Note
Ceiling panel	RBC-US21PGE	Required accessory
Front air discharge unit	TCB-BUS21HWE	
Auxiliary fresh air Flange	TCB-FF101URE2	For easy fresh air intake by using the knockout hole of indoor unit. (dia=100mm)

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

9-5-1. Specifications



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 weigh	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		(W)	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

60Hz

• Specifications (60Hz)

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 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)	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)	Ø9.5			Ø12.7		Ø15.9				
	Liquid side			(mm)	Ø6.4					Ø9.5				
	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									

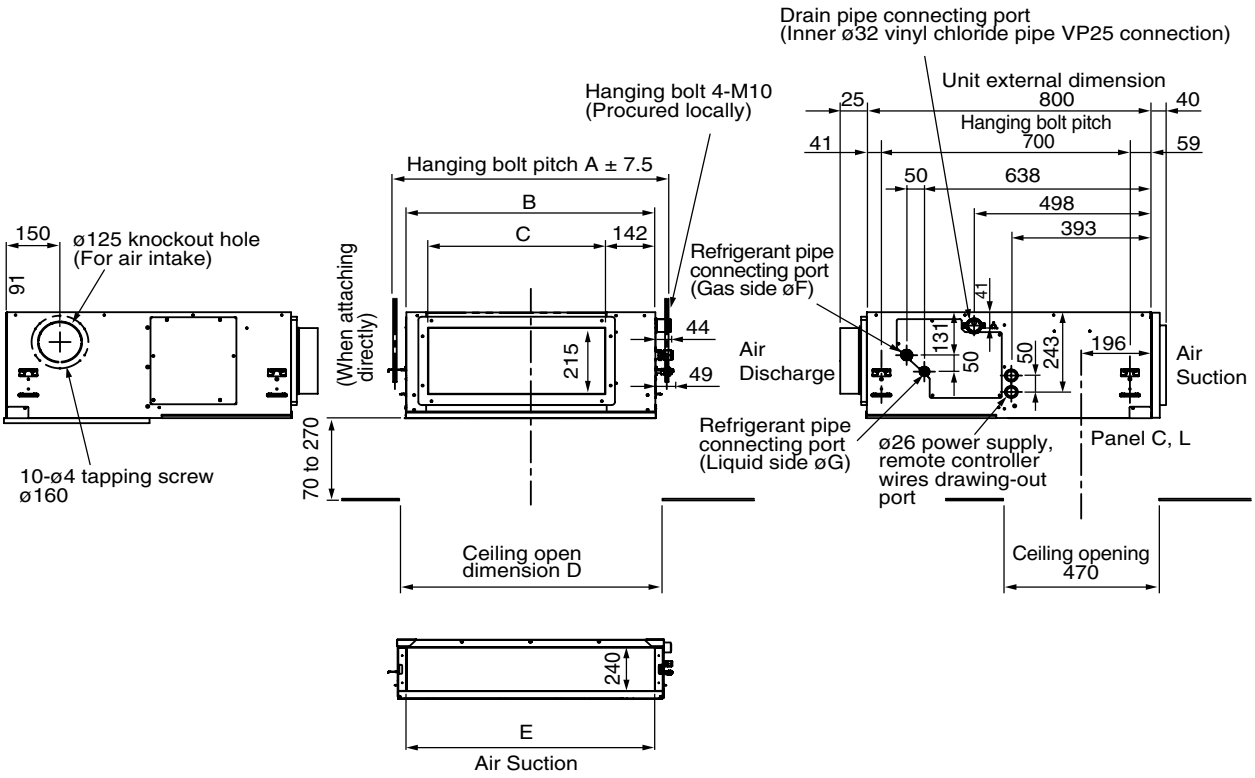
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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

9-5-2. Dimension

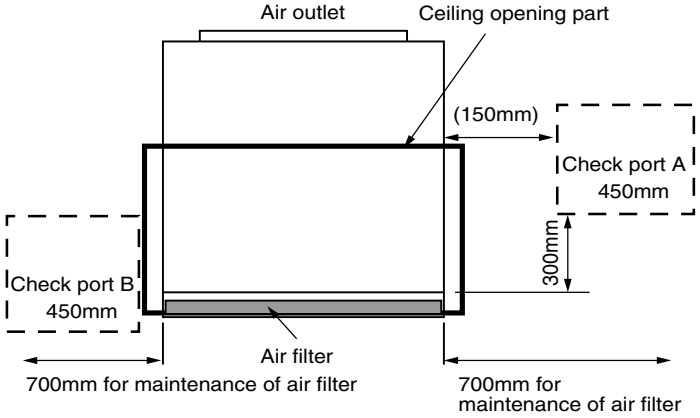
MMD-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH, AP0271BH, AP0301BH, AP0361BH, AP0481BH



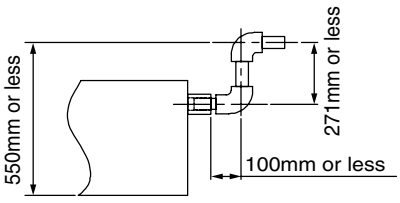
Model MMD-	A	B	C	D	E	F	G
AP0071BH, AP0091BH, AP0121BH	616	550	350	600	470	9.5	6.4
AP0151BH, AP0181BH	766	700	500	750	620	12.7	9.4
AP0241BH, AP0271BH, AP0301BH	1066	1000	800	1050	920	15.9	9.5
AP0361BH, AP0481BH	1416	1350	1150	1400	1270	15.9	9.5

(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

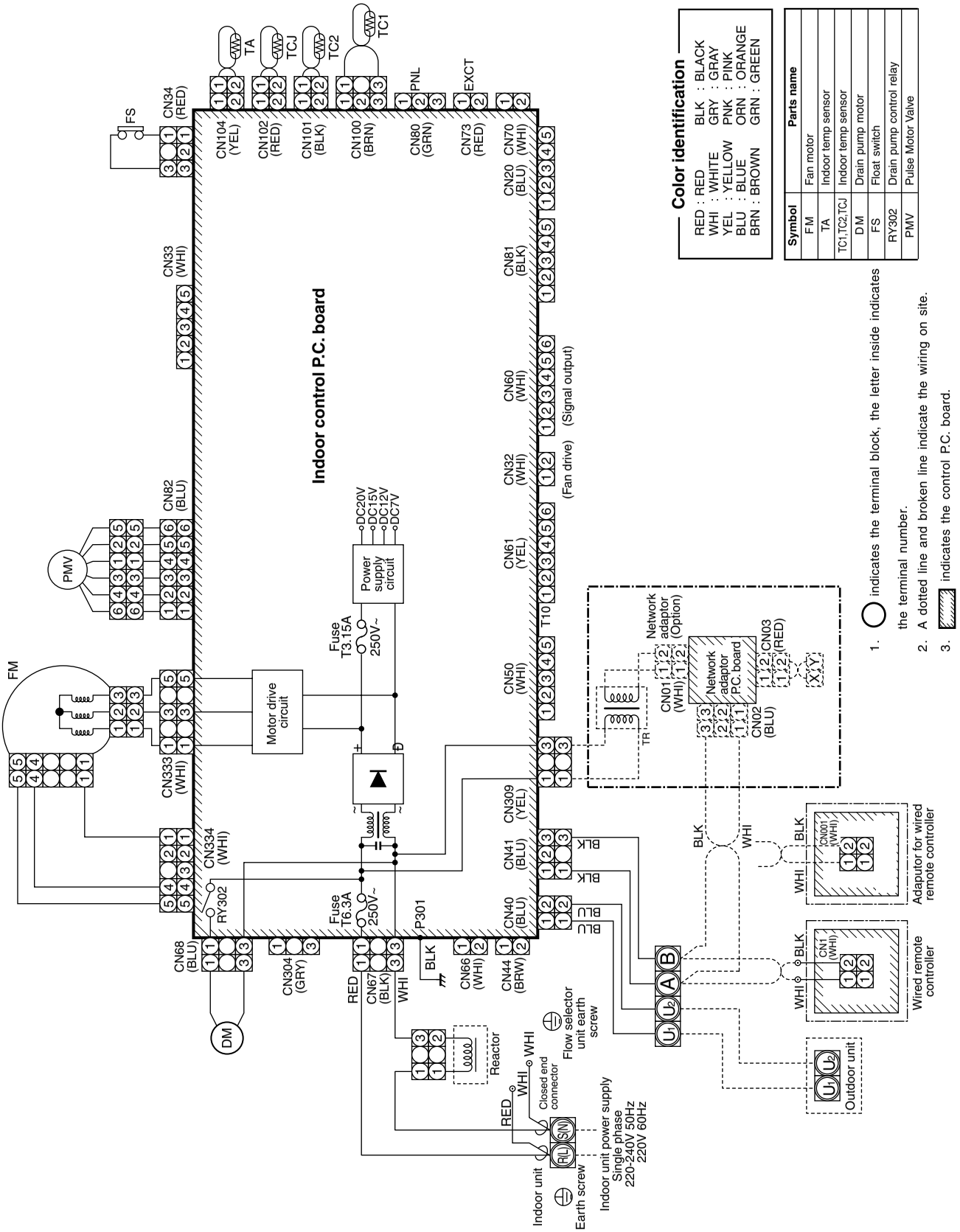


Drain-up piping

Note: All dimensions are in mm.

9-5-3. Wiring diagram

Model: MMD-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH
MMD-AP0271BH, AP0301BH, AP0361BH, AP0481BH, AP0561BH



9-5-4. Sensible capacity table

(MMD-AP*BH)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	12.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	14.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	16.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	18.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	20.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	21.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	23.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	25.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	27.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	29.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	31.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	33.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	35.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	37.0	2.0	1.6	2.1	1.7	2.2	1.7	2.2	1.7	2.4	1.7	2.5	1.6
	39.0	1.9	1.5	2.0	1.6	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.5
009	10.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	12.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	14.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	16.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	18.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	20.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	21.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	23.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	25.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	27.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	29.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	31.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	33.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	35.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	37.0	2.5	1.9	2.7	2.1	2.7	2.1	2.8	2.1	3.0	2.0	3.1	2.0
	39.0	2.4	1.9	2.6	2.0	2.7	2.0	2.8	2.0	2.9	2.0	3.1	1.9
012	10.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	12.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	14.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	16.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	18.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	20.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	21.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	23.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	25.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	27.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	29.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	31.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	33.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	35.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	37.0	3.2	2.3	3.4	2.5	3.5	2.5	3.6	2.4	3.8	2.4	4.0	2.4
	39.0	3.1	2.2	3.4	2.4	3.5	2.4	3.6	2.4	3.8	2.3	3.9	2.3
015	10.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	12.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	14.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	16.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	18.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	20.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	21.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	23.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	25.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	27.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	29.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	31.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	33.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	35.0	4.1	2.8	4.4	3.0	4.5	3.0	4.6	3.0	4.9	3.0	5.1	2.9
	37.0	4.0	2.8	4.3	2.9	4.4	2.9	4.5	2.9	4.8	2.9	5.0	2.8
	39.0	3.9	2.7	4.2	2.8	4.3	2.8	4.4	2.8	4.7	2.8	4.9	2.7

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
018	10.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	12.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	14.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	16.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	18.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	20.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	21.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	23.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	25.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	27.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	29.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	31.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	33.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	35.0	5.1	3.5	5.4	3.7	5.6	3.7	5.8	3.7	6.1	3.7	6.4	3.6
	37.0	5.0	3.4	5.3	3.6	5.5	3.6	5.7	3.6	6.0	3.6	6.3	3.5
	39.0	4.9	3.3	5.2	3.5	5.4	3.5	5.5	3.5	5.9	3.4	6.1	3.4
024	10.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	12.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	14.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	16.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	18.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	20.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	21.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	23.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	25.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	27.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	29.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	31.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	33.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	35.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	37.0	6.3	4.6	6.7	4.9	7.0	4.9	7.2	4.9	7.6	4.9	7.9	4.7
	39.0	6.2	4.4	6.6	4.7	6.8	4.7	7.0	4.7	7.4	4.7	7.8	4.6
027	10.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	12.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	14.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	16.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	18.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	20.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	21.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	23.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	25.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	27.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	29.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	31.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	33.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	35.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	37.0	7.1	5.2	7.6	5.5	7.8	5.5	8.1	5.5	8.5	5.4	8.9	5.3
	39.0	7.0	5.0	7.4	5.3	7.7	5.3	7.9	5.3	8.4	5.2	8.8	5.1
030	10.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	12.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	14.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	16.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	18.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	20.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	21.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	23.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	25.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	27.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	29.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	31.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	33.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	35.0	8.2	5.9	8.7	6.2	9.0	6.2	9.3	6.2	9.8	6.1	10.3	6.0
	37.0	8.0	5.7	8.6	6.1	8.8	6.1	9.1	6.1	9.6	6.0	10.1	5.9
	39.0	7.8	5.5	8.4	5.9	8.6	5.8	8.9	5.8	9.4	5.8	9.8	5.6

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
036	10.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	12.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	14.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	16.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	18.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	20.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	21.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	23.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	25.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	27.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	29.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	31.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	33.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	35.0	10.2	6.9	10.9	7.3	11.2	7.3	11.5	7.3	12.2	7.2	12.8	7.1
	37.0	10.0	6.8	10.6	7.2	11.0	7.2	11.3	7.2	12.0	7.1	12.5	6.9
	39.0	9.8	6.5	10.4	6.9	10.8	6.9	11.1	6.9	11.7	6.8	12.3	6.6
048	10.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	12.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	14.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	16.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	18.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	20.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	21.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	23.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	25.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	27.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	29.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	31.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	33.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	35.0	12.7	8.7	13.6	9.2	14.0	9.2	14.4	9.2	15.3	9.1	16.0	8.9
	37.0	12.5	8.5	13.3	9.0	13.7	9.0	14.1	9.0	15.0	8.9	15.6	8.7
	39.0	12.2	8.2	13.0	8.7	13.4	8.7	13.8	8.7	14.6	8.6	15.3	8.4

Heating capacity

SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB 16.0 SHC	18.0 SHC	20.0 SHC	22.0 SHC	24.0 SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8

Heating capacity (cont.)

Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6
030	-15.0	6.3	6.1	6.0	5.9	5.7
	-13.0	6.7	6.6	6.4	6.3	6.1
	-11.0	7.1	7.0	6.8	6.7	6.5
	-10.0	7.3	7.2	7.0	6.9	6.7
	-8.0	7.7	7.6	7.4	7.2	7.0
	-6.0	8.1	8.0	7.8	7.6	7.4
	-4.0	8.5	8.4	8.2	8.0	7.8
	-2.0	8.9	8.8	8.6	8.4	8.1
	0.0	9.3	9.1	8.9	8.7	8.5
	2.0	9.7	9.5	9.3	9.1	8.8
	4.0	10.0	9.9	9.7	9.4	9.2
	6.0	10.4	10.2	10.0	9.8	9.5
	8.0	10.4	10.2	10.0	9.8	9.5
	10.0	10.4	10.2	10.0	9.8	9.5
	12.0	10.4	10.2	10.0	9.8	9.5
	14.0	10.4	10.2	10.0	9.8	9.5

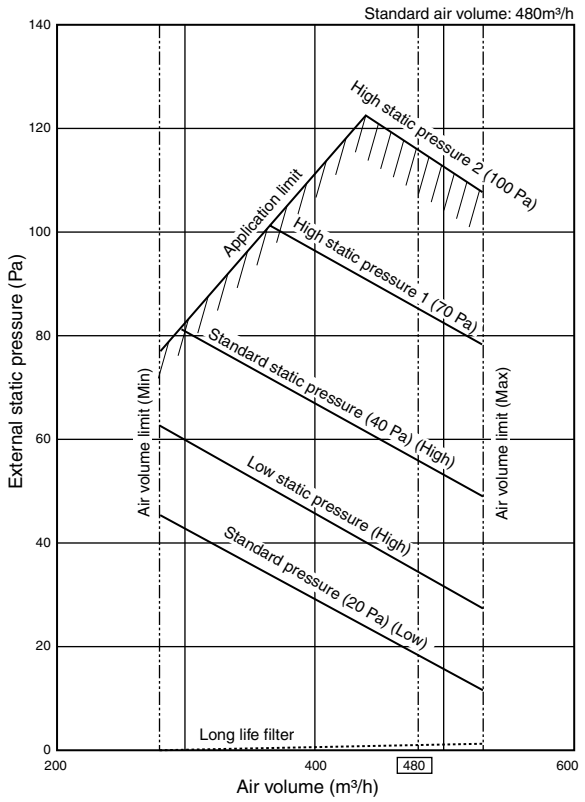
Heating capacity (cont.)

Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
036	-15.0	7.8	7.7	7.5	7.3	7.2
	-13.0	8.3	8.2	8.0	7.8	7.6
	-11.0	8.9	8.7	8.5	8.3	8.1
	-10.0	9.1	9.0	8.8	8.6	8.3
	-8.0	9.7	9.5	9.3	9.1	8.8
	-6.0	10.2	10.0	9.8	9.5	9.3
	-4.0	10.7	10.5	10.2	10.0	9.7
	-2.0	11.1	10.9	10.7	10.5	10.2
	0.0	11.6	11.4	11.2	10.9	10.6
	2.0	12.1	11.9	11.6	11.3	11.0
	4.0	12.6	12.3	12.1	11.8	11.5
	6.0	13.0	12.8	12.5	12.2	11.9
	8.0	13.0	12.8	12.5	12.2	11.9
	10.0	13.0	12.8	12.5	12.2	11.9
	12.0	13.0	12.8	12.5	12.2	11.9
	14.0	13.0	12.8	12.5	12.2	11.9
048	-15.0	10.0	9.8	9.6	9.4	9.1
	-13.0	10.7	10.5	10.3	10.0	9.7
	-11.0	11.4	11.1	10.9	10.7	10.4
	-10.0	11.7	11.5	11.2	11.0	10.7
	-8.0	12.4	12.1	11.9	11.6	11.3
	-6.0	13.0	12.8	12.5	12.2	11.9
	-4.0	13.6	13.4	13.1	12.8	12.4
	-2.0	14.3	14.0	13.7	13.4	13.0
	0.0	14.9	14.6	14.3	14.0	13.6
	2.0	15.5	15.2	14.9	14.5	14.1
	4.0	16.1	15.8	15.4	15.1	14.7
	6.0	16.7	16.3	16.0	15.6	15.2
	8.0	16.7	16.3	16.0	15.6	15.2
	10.0	16.7	16.3	16.0	15.6	15.2
	12.0	16.7	16.3	16.0	15.6	15.2
	14.0	16.7	16.3	16.0	15.6	15.2

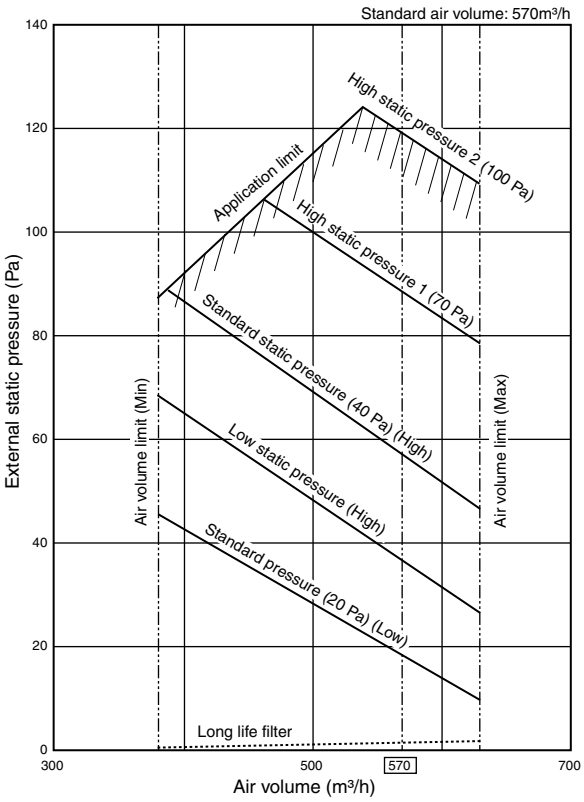
9-5-5. Fan characteristics

• In case of square duct flange of discharge section

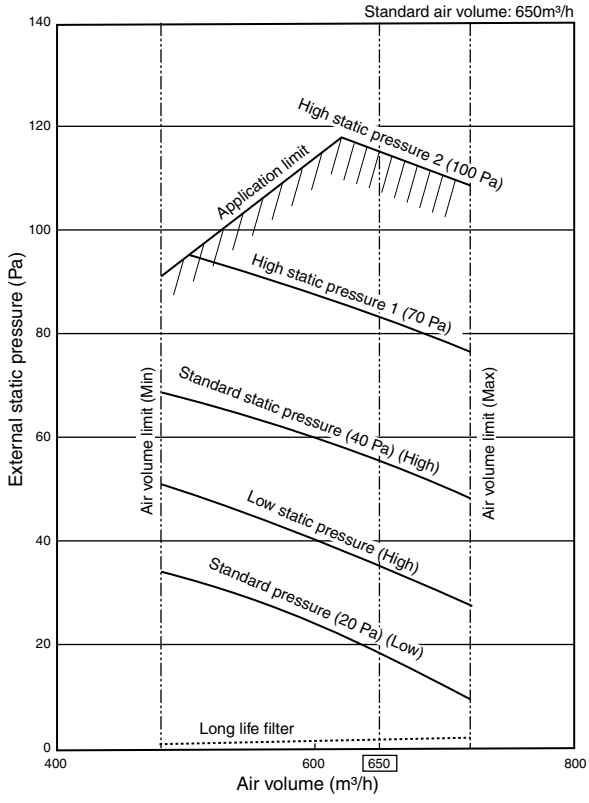
MMD-AP0071BH, AP0091BH



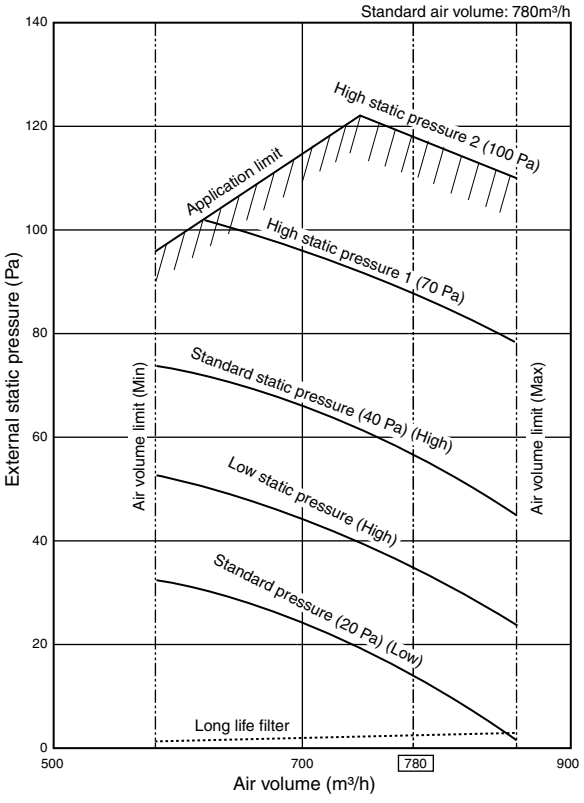
MMD-AP0121BH



MMD-AP0151BH

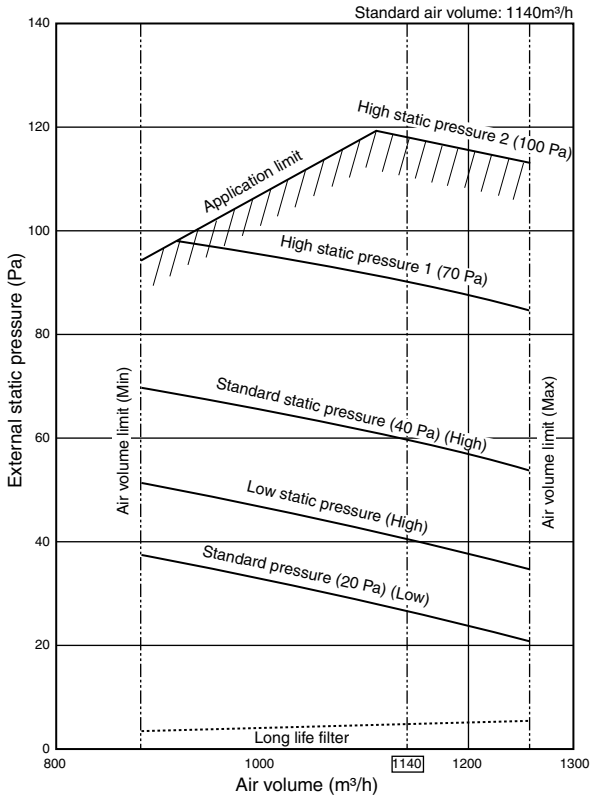


MMD-AP0181BH

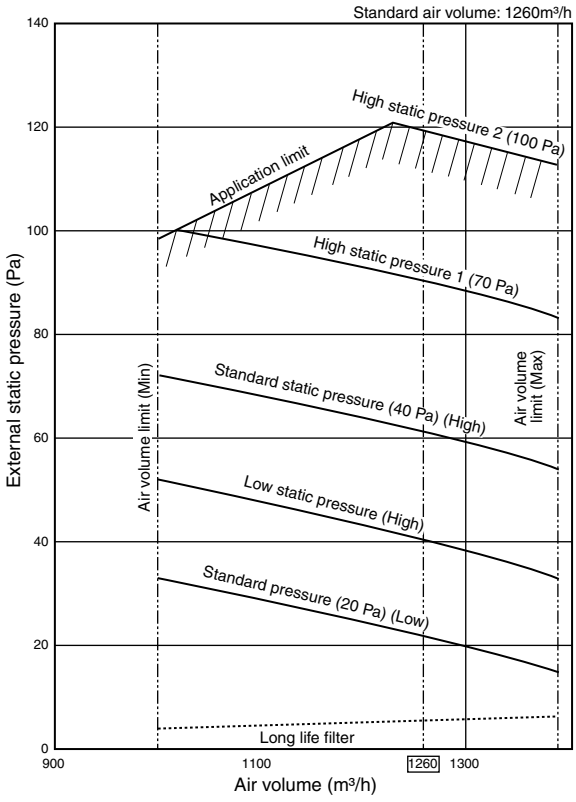


*Note: "High" and "Low" refers to air flow.

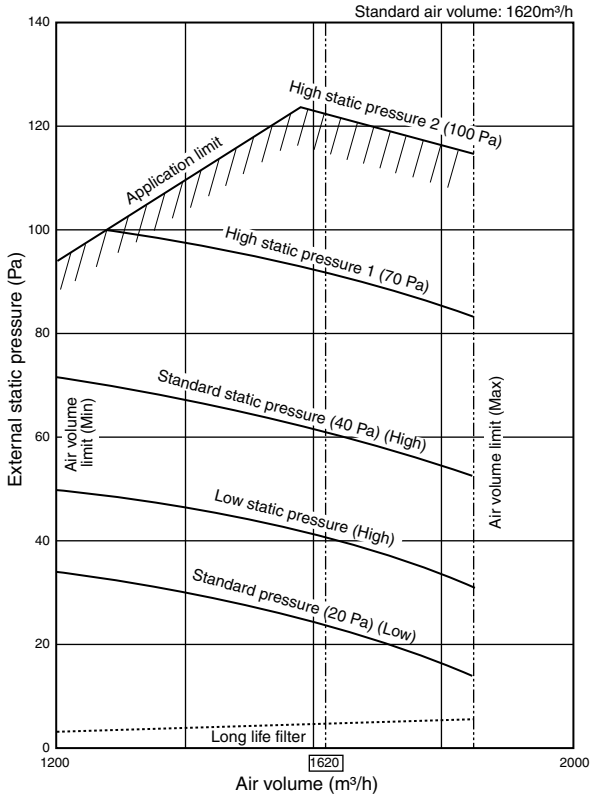
MMD-AP0241BH, AP0271BH



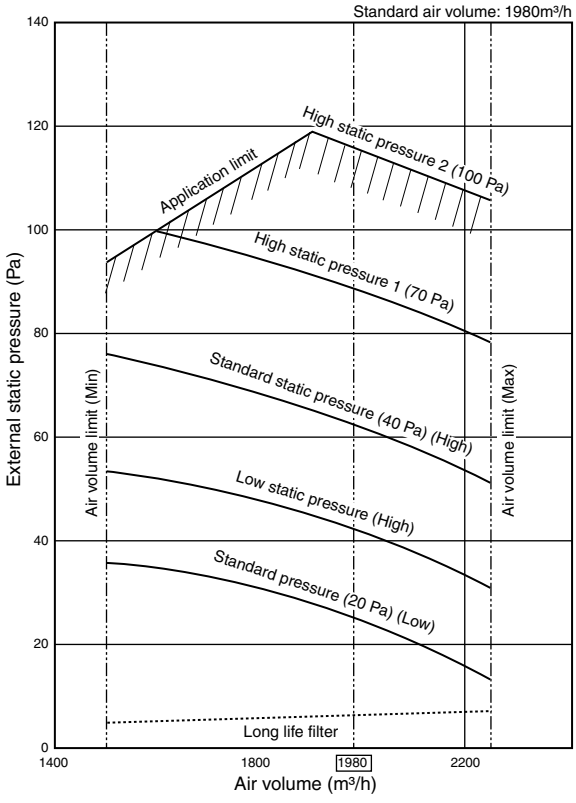
MMD-AP0301BH



MMD-AP0361BH

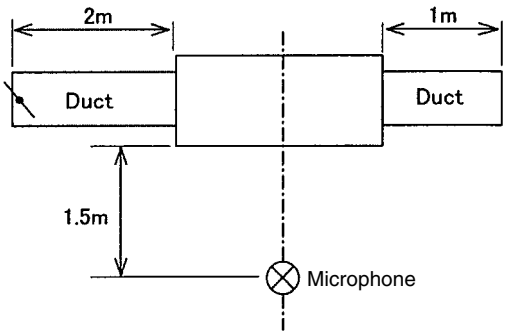


MMD-AP0481BH



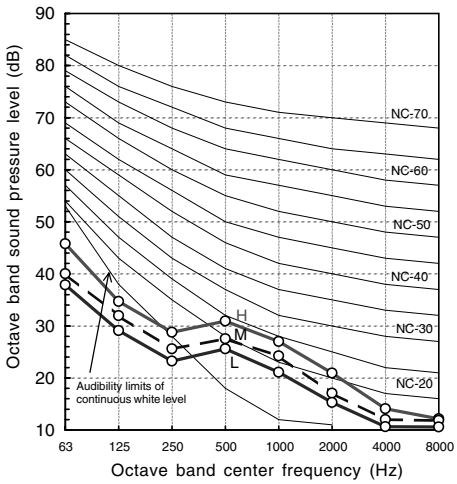
*Note: "High" and "Low" refers to air flow.

9-5-6. Sound characteristics (NC-Curve)



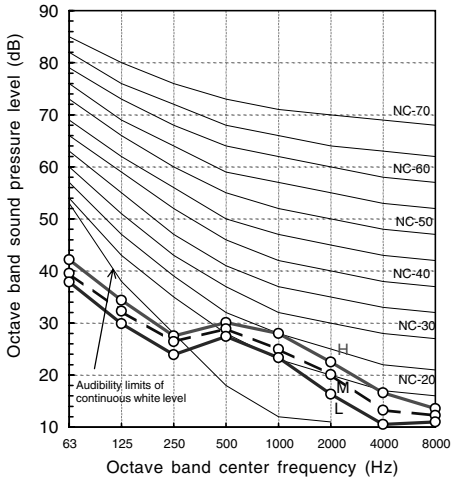
MMD-AP0071BH, AP0091BH

Fan Tap	H	M	L
Sound pressure level (dB (A))	30	28	26



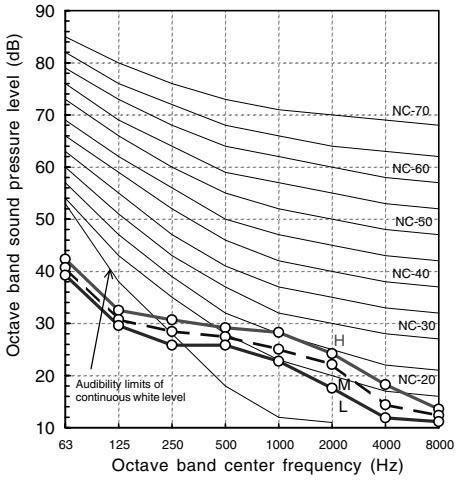
MMD-AP0121BH

Fan Tap	H	M	L
Sound pressure level (dB (A))	31	29	27



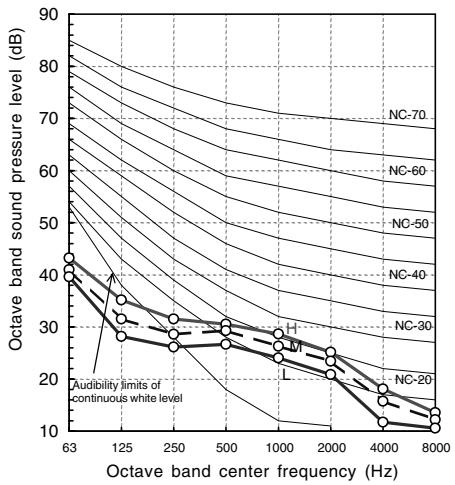
MMD-AP0151BH

Fan Tap	H	M	L
Sound pressure level (dB (A))	31	29	27



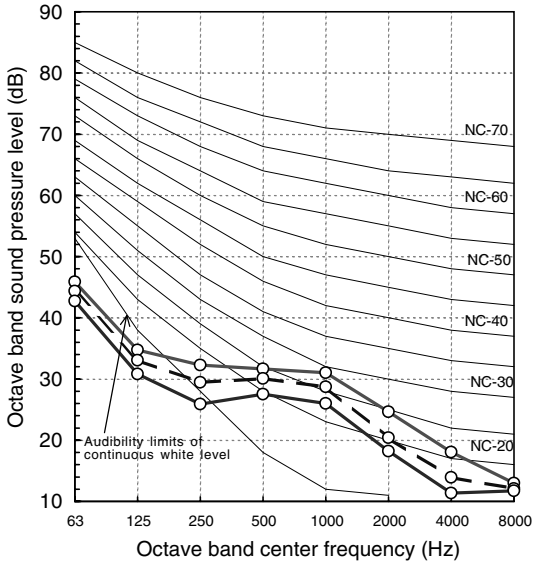
MMD-AP0181BH

Fan Tap	H	M	L
Overall level dB(A)	32	30	28



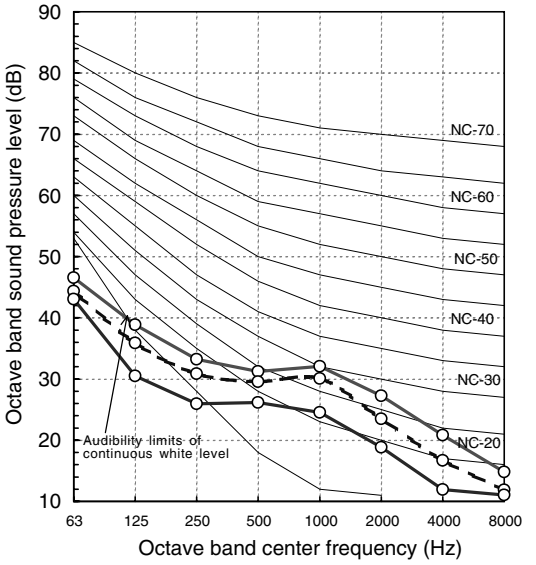
MMD-AP0241BH, AP0271BH

Fan Tap	H	M	L
Sound pressure level (dB(A))	33	31	29



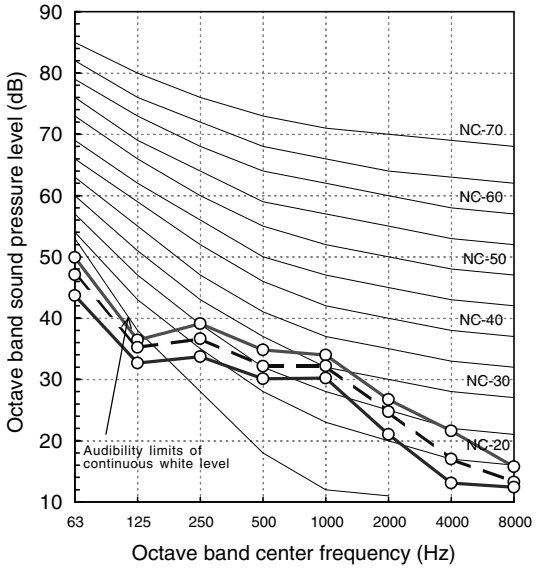
MMD-AP0301BH

Fan Tap	H	M	L
Sound pressure level (dB(A))	34	32	29



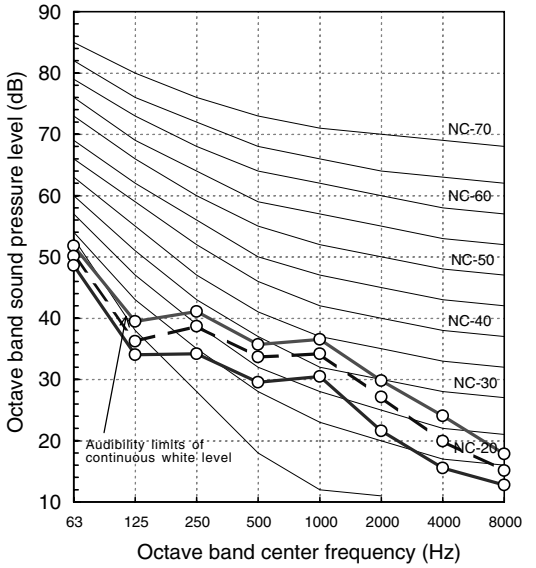
MMD-AP0361BH

Fan Tap	H	M	L
Sound pressure level (dB(A))	36	34	32



MMD-AP0481BH, AP0561BH

Fan Tap	H	M	L
Sound pressure level (dB(A))	38	36	32



9-5-7. Accessories

Apperarance

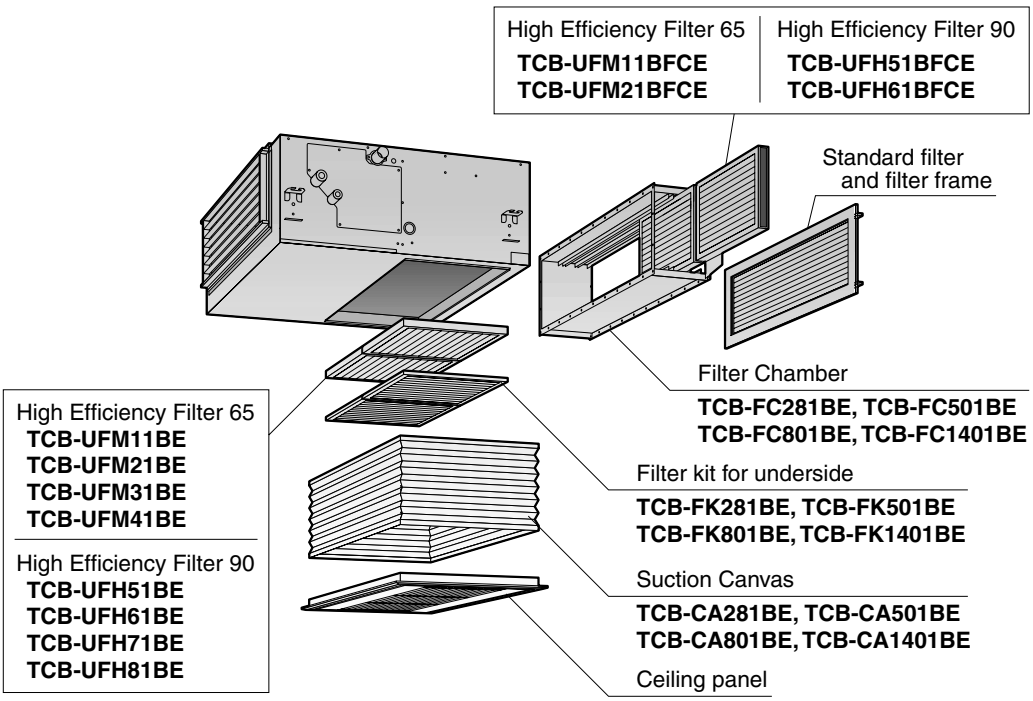
Standard accessories

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

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

Optional accessories



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

9-6-1. Specifications

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)		5-15-30-40 (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)	Ø9.5			Ø12.7	
	Liquid side		(mm)	Ø6.4				
	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

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	0.37
	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)	Ø9.5			Ø12.7	
	Liquid side		(mm)	Ø6.4				
	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.

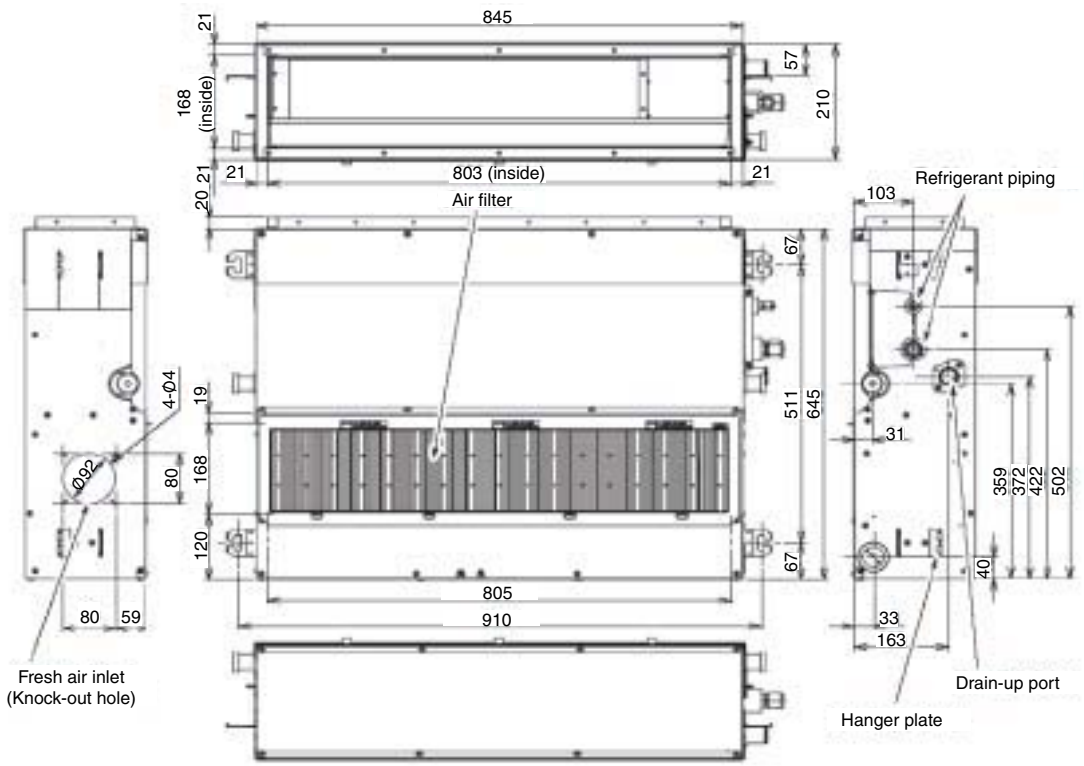
Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

(Revised 07 Apr 2006)

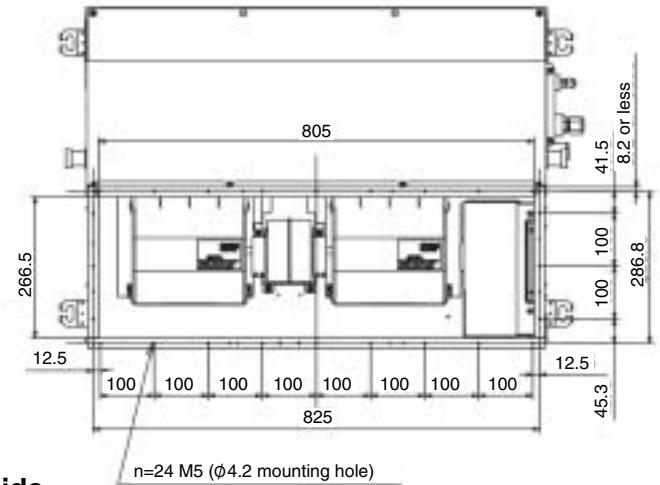
9-6-2. Dimension

MMD-AP0071SPH, AP0091SPH, AP0121SPH, AP0151SPH, AP0181SPH

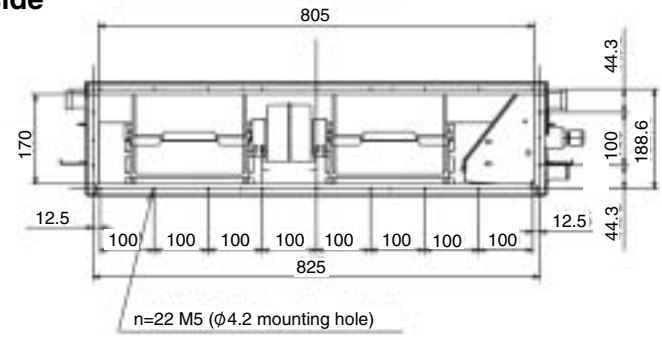


Air inlet connecting flange (Field supply)

Underside



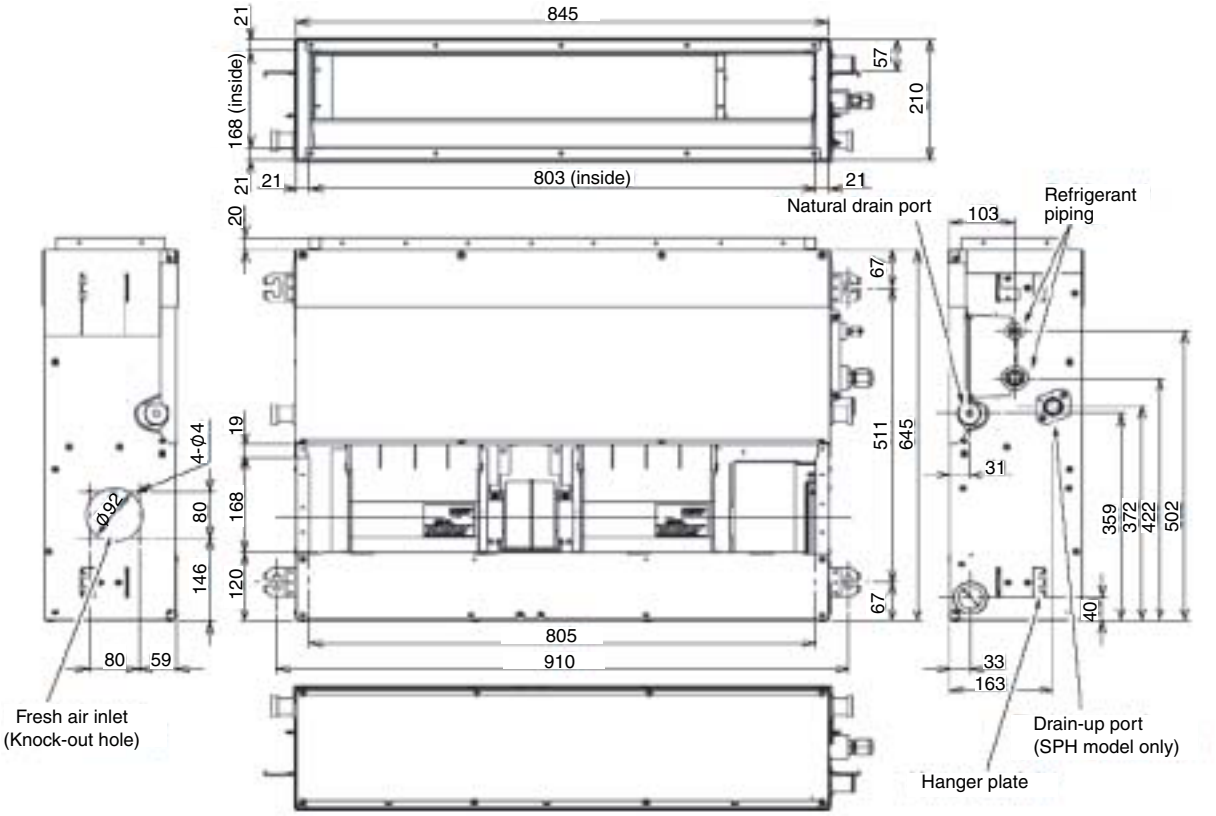
Rearside



- **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**

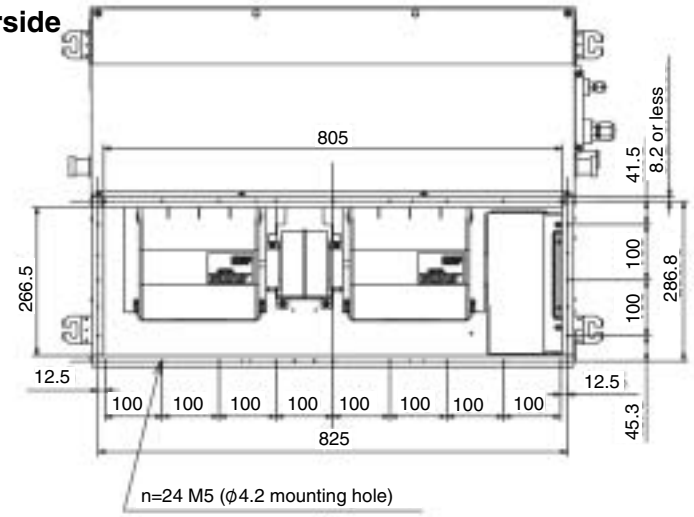
*China only

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

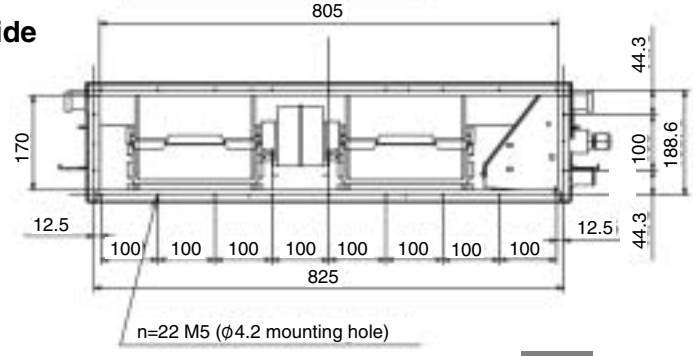


Air inlet connecting flange (Field supply)

Underside



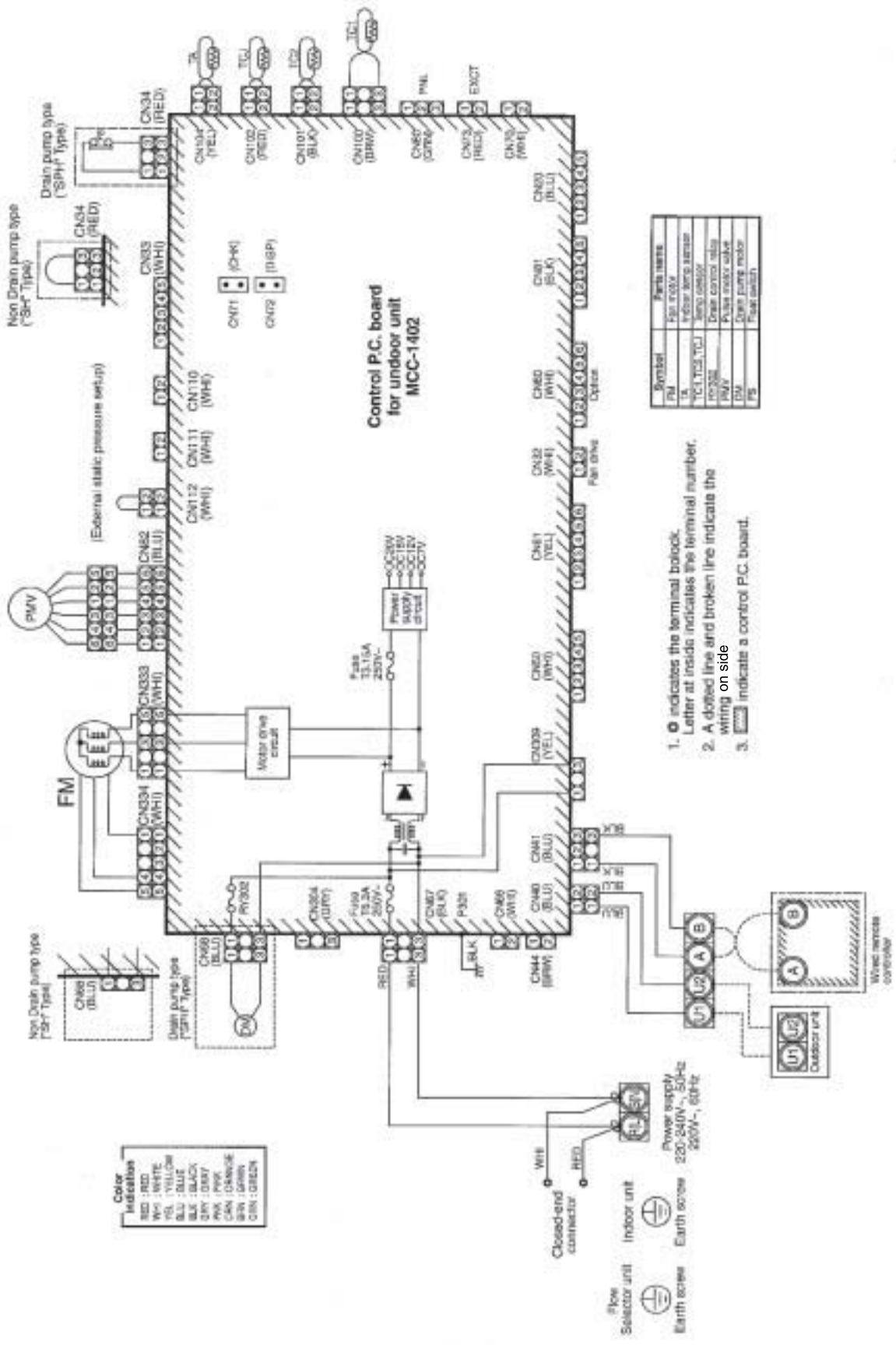
Rearside



- **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**

9-6-3. Wiring diagram

MMD-AP0071SPH(SH), AP0091SPH(SH), AP0121SPH(SH), AP0151SPH(SH), AP0181SPH(SH)



9-6-4. Sensible capacity table

(MMD-AP*SPH)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB 23°CDB		18.0°CWB 26°CDB		19.0°CWB 27°CDB		20.0°CWB 28°CDB		22.0°CWB 30°CDB		24.0°CWB 32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	12.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	14.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	16.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	18.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	20.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	21.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	23.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	25.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	27.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	29.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	31.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	33.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	35.0	2.0	1.7	2.1	1.8	2.2	1.8	2.3	1.8	2.4	1.8	2.5	1.7
	37.0	2.0	1.7	2.1	1.8	2.2	1.8	2.2	1.8	2.4	1.7	2.5	1.7
	39.0	1.9	1.6	2.0	1.7	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.6
009	10.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	12.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	14.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	16.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	18.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	20.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	21.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	23.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	25.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	27.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	29.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	31.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	33.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	35.0	2.5	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1	3.2	2.0
	37.0	2.5	1.9	2.7	2.1	2.7	2.1	2.8	2.1	3.0	2.0	3.1	2.0
	39.0	2.4	1.9	2.6	2.0	2.7	2.0	2.8	2.0	2.9	2.0	3.1	1.9
012	10.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	12.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	14.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	16.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	18.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	20.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	21.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	23.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	25.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	27.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	29.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	31.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	33.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	35.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	37.0	3.2	2.3	3.4	2.5	3.5	2.5	3.6	2.4	3.8	2.4	4.0	2.4
	39.0	3.1	2.2	3.4	2.4	3.5	2.4	3.6	2.4	3.8	2.3	3.9	2.3

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	12.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	14.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	16.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	18.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	20.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	21.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	23.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	25.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	27.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	29.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	31.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	33.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	35.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	37.0	4.0	3.0	4.3	3.1	4.4	3.1	4.5	3.1	4.8	3.1	5.0	3.0
	39.0	3.9	2.8	4.2	3.0	4.3	3.0	4.4	3.0	4.7	3.0	4.9	2.9
018	10.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	12.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	14.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	16.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	18.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	20.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	21.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	23.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	25.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	27.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	29.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	31.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	33.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	35.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	37.0	5.0	3.6	5.3	3.8	5.5	3.8	5.7	3.8	6.0	3.8	6.3	3.7
	39.0	4.9	3.5	5.2	3.7	5.4	3.7	5.5	3.7	5.9	3.6	6.1	3.6

Heating capacity

SHC : Sensible Heat Capacity (kW)

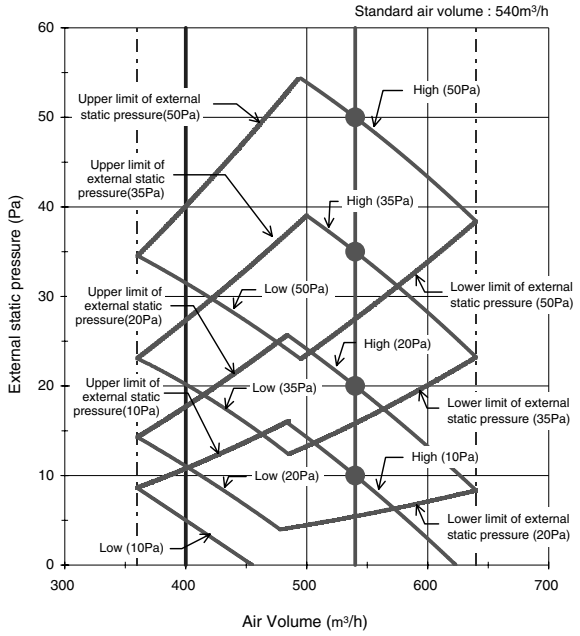
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

Heating capacity (cont.)

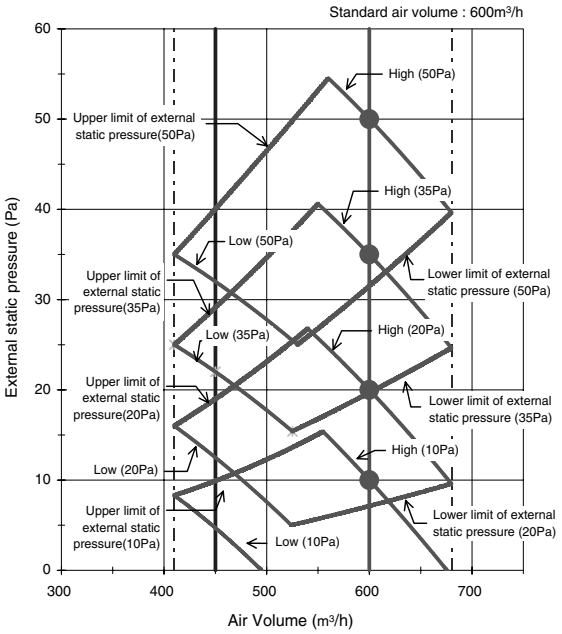
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0

9-6-5. Fan characteristics

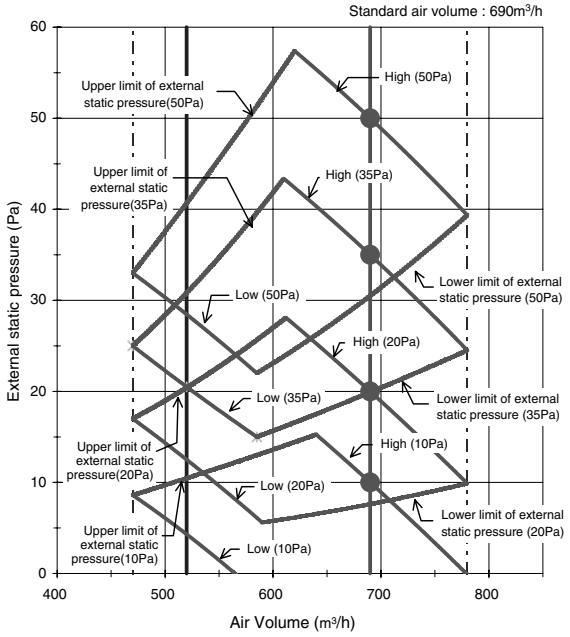
MMD-AP0071SPH
MMD-AP0091SPH



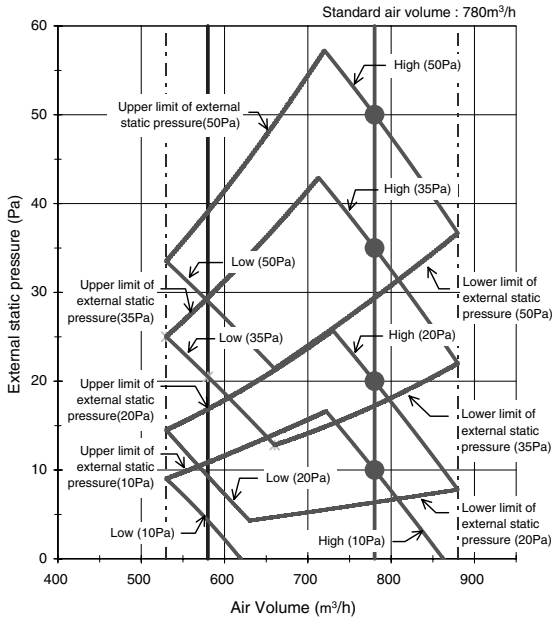
MMD-AP0121SPH



MMD-AP0151SPH

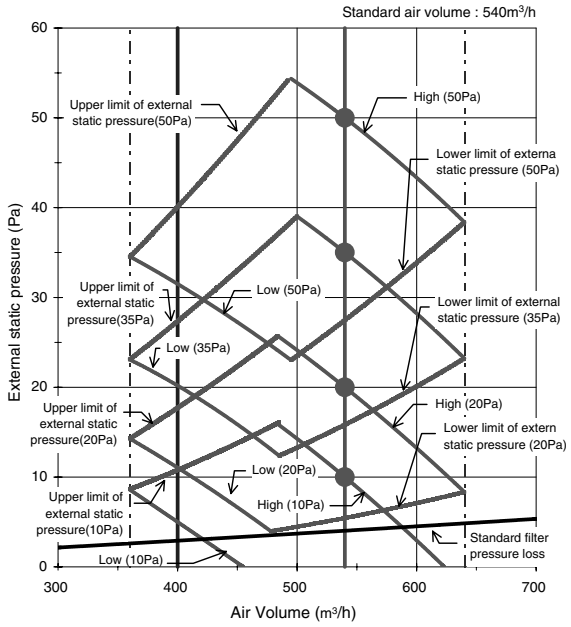


MMD-AP0181SPH

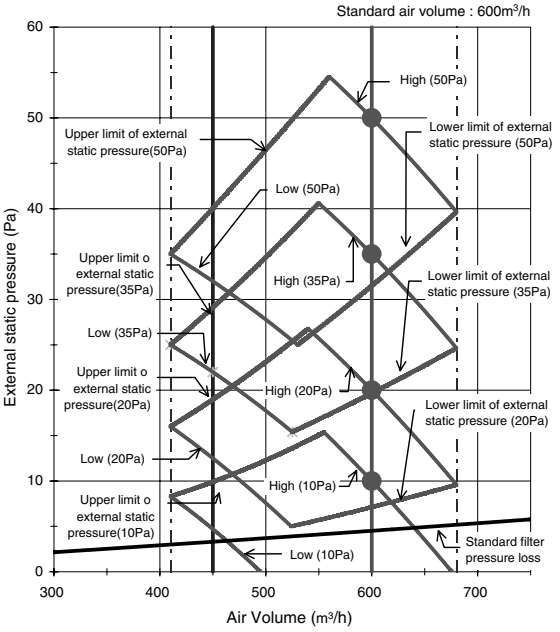


(Filter attached)

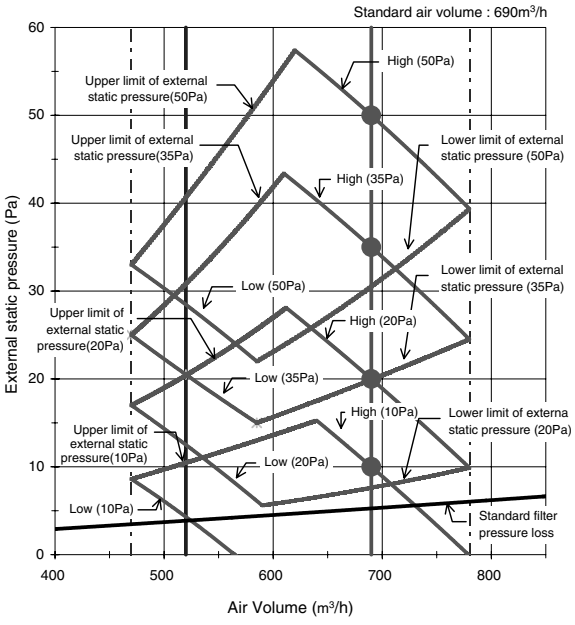
MMD-AP0071SPH
MMD-AP0091SPH



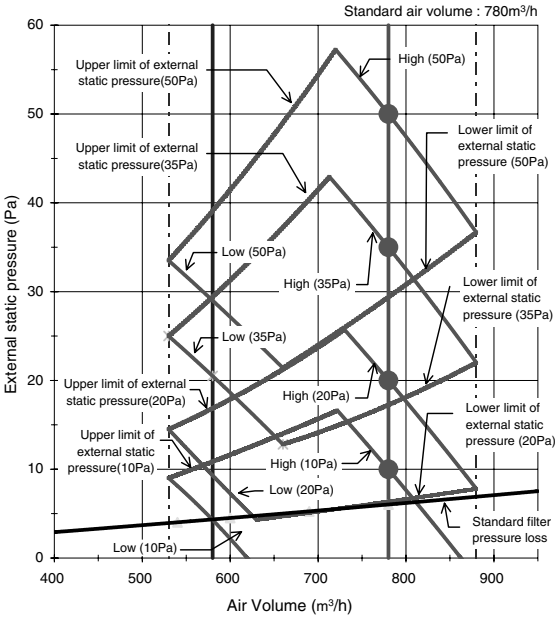
MMD-AP0121SPH



MMD-AP0151SPH

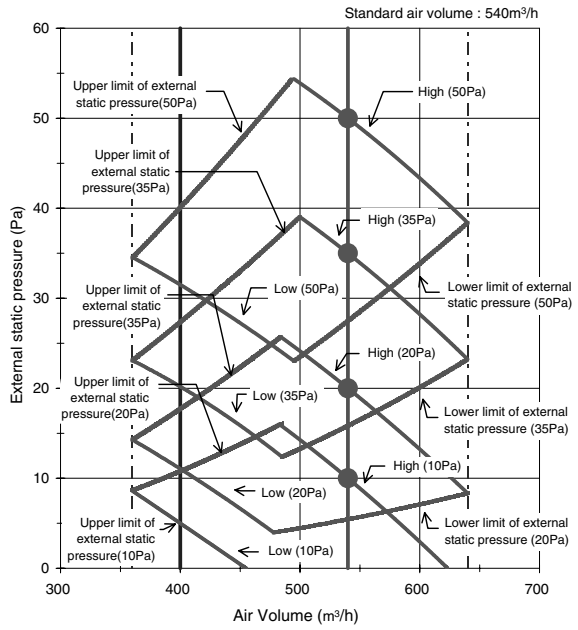


MMD-AP0181SPH

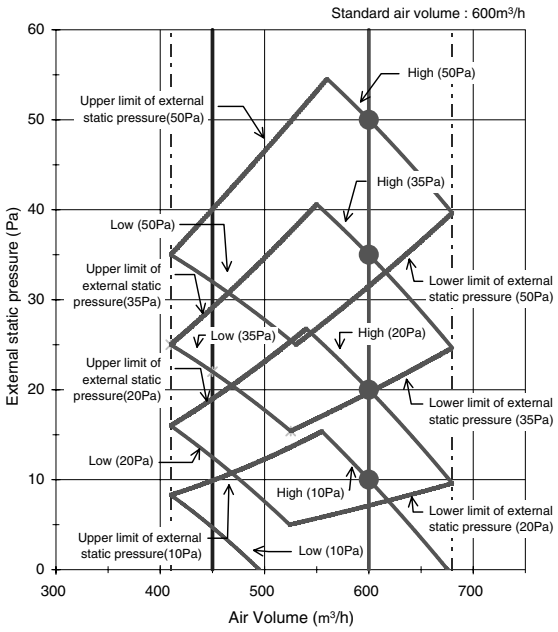


CHINA model

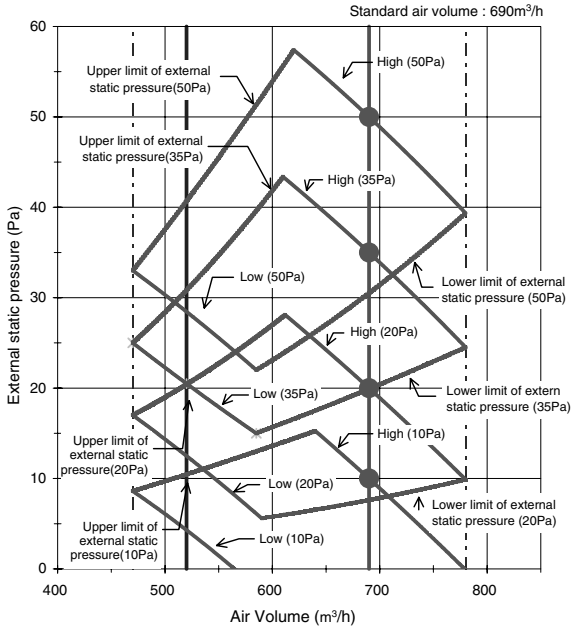
MMD-AP0071SPH-C, SH-C
MMD-AP0091SPH-C, SH-C



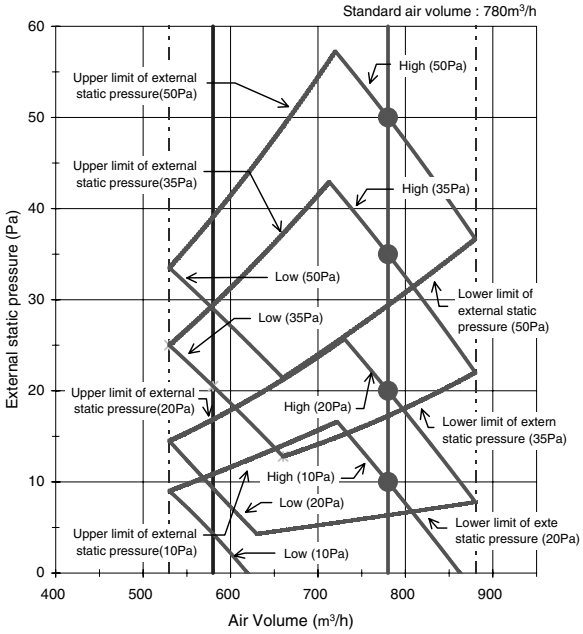
MMD-AP0121SPH-C, SH-C



MMD-AP0151SPH-C, SH-C



MMD-AP0181SPH-C, SH-C



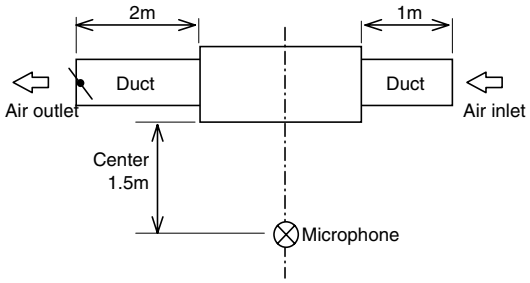
(Revised 07 Apr 2006)

9-6-6. Sound characteristics (NC-Curve)

MMD-AP0071SPH/SH ,
MMD-AP0091SPH/SH

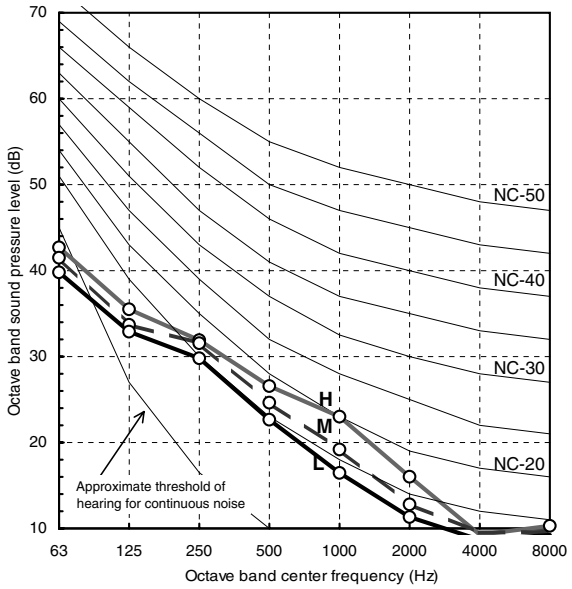
Measuring location

Rear air intake



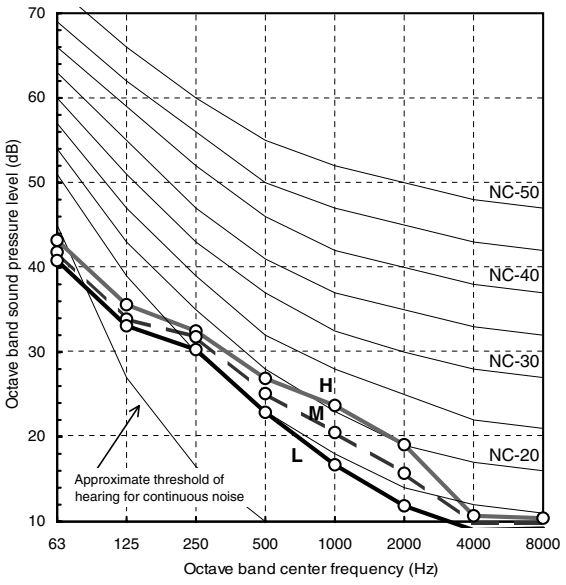
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	28	26	24



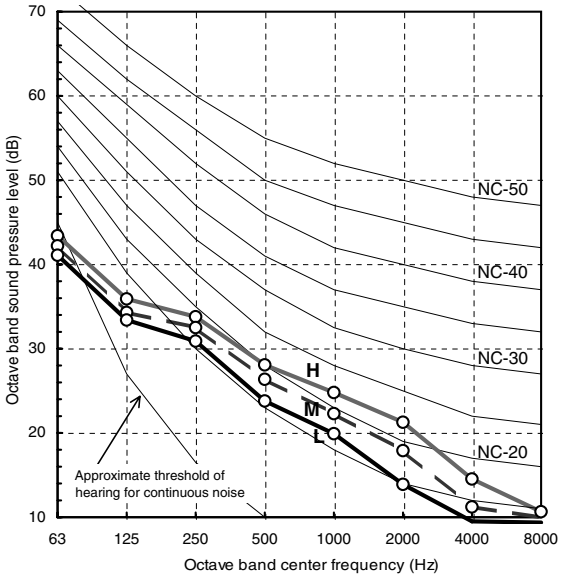
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	29	27	25



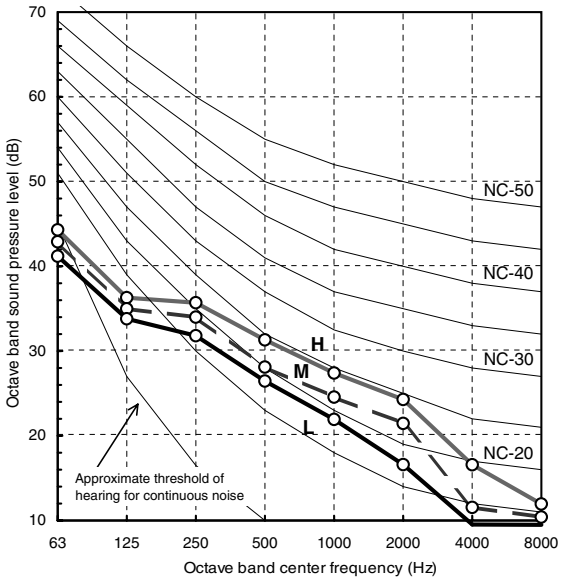
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	30	28	26



External static pressure 50Pa

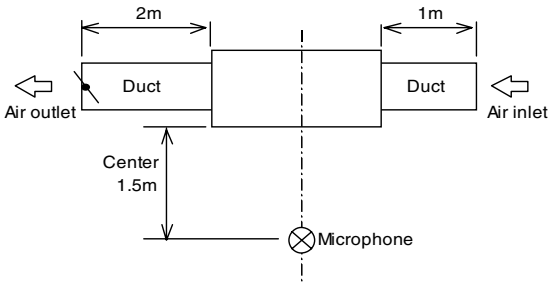
Fan tap	H	M	L
Sound pressure level (dB(A))	32	29	27



MMD-AP0121SPH/SH

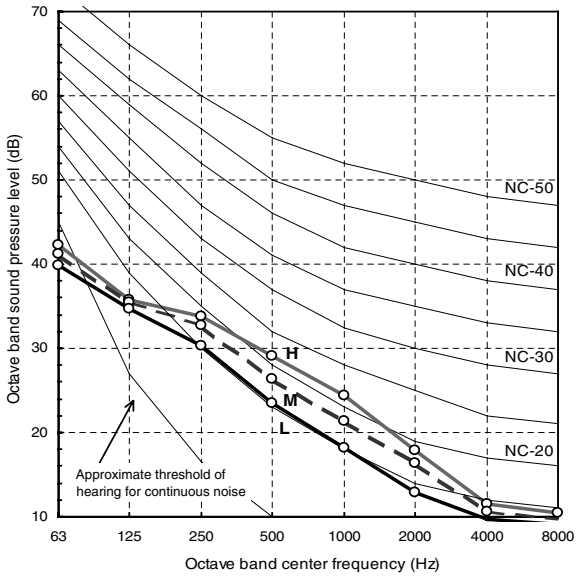
Measuring location

Rear air intake



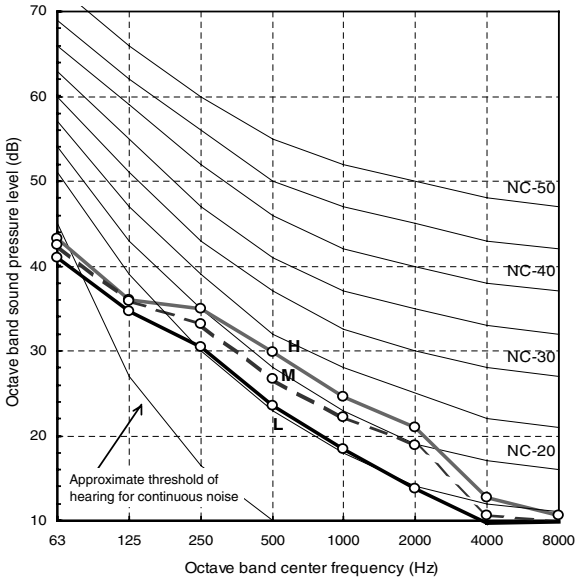
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	29	27	25



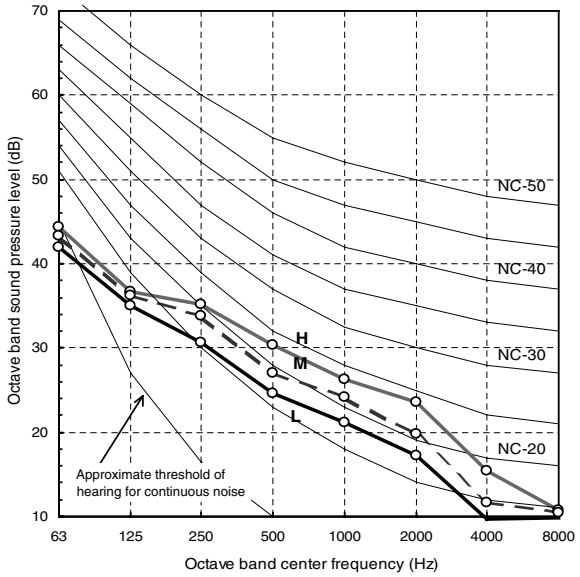
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	30	28	26



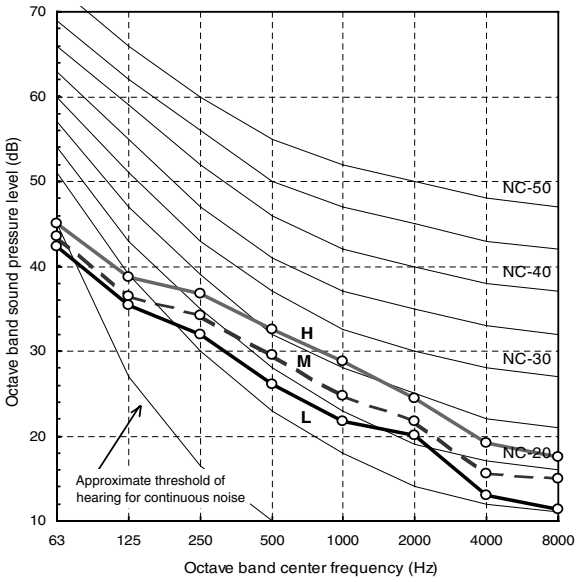
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	31	29	27



External static pressure 50Pa

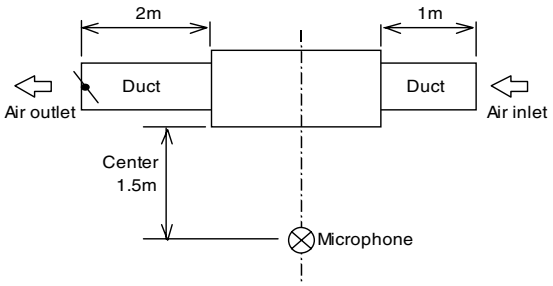
Fan tap	H	M	L
Sound pressure level (dB(A))	32	30	28



MMD-AP0151SPH/SH

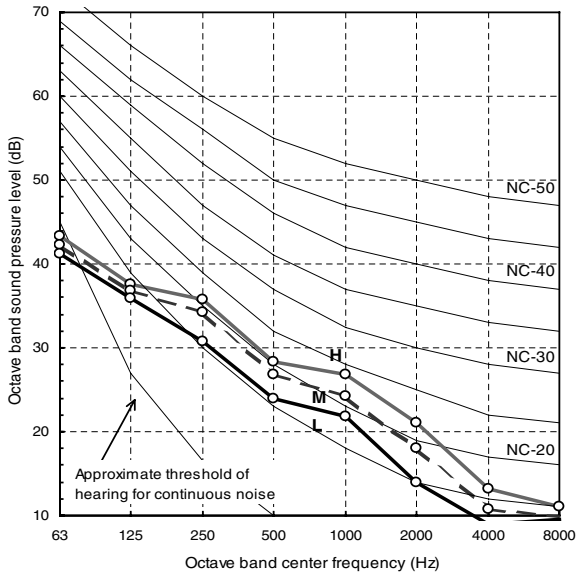
Measuring location

Rear air intake



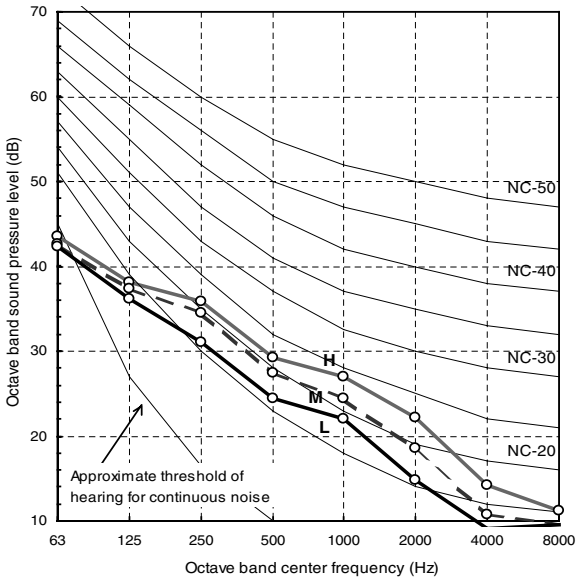
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	32	30	28



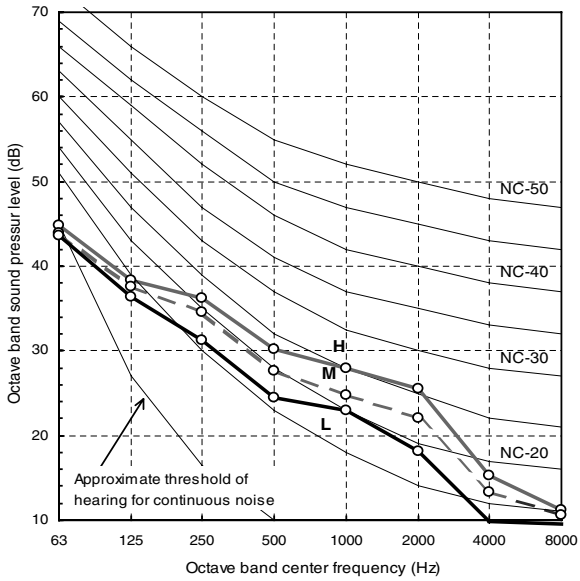
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	33	31	29



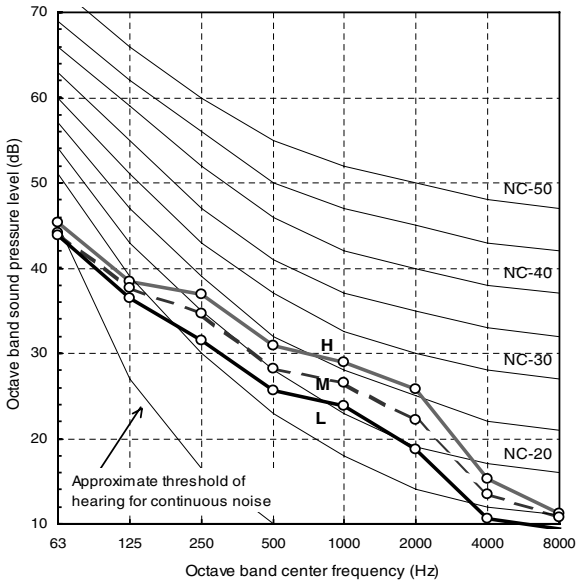
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	34	32	30



External static pressure 50Pa

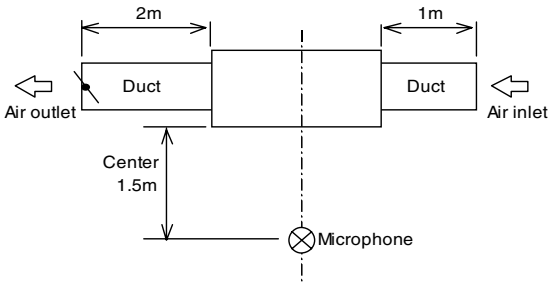
Fan tap	H	M	L
Sound pressure level (dB(A))	35	33	31



MMD-AP0181SPH/SH

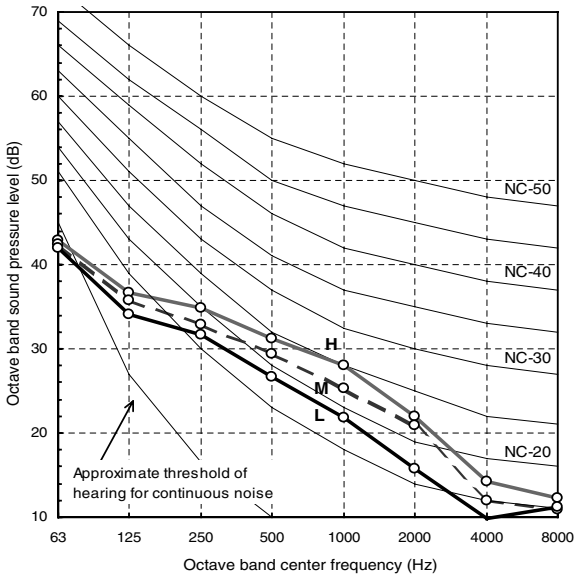
Measuring location

Rear air intake



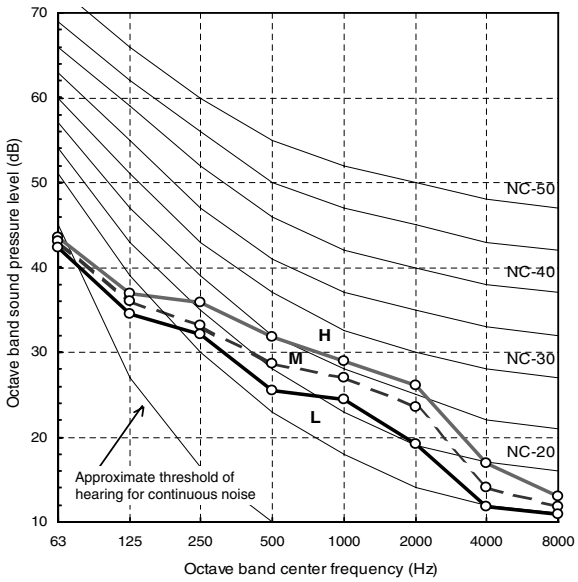
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	33	31	29



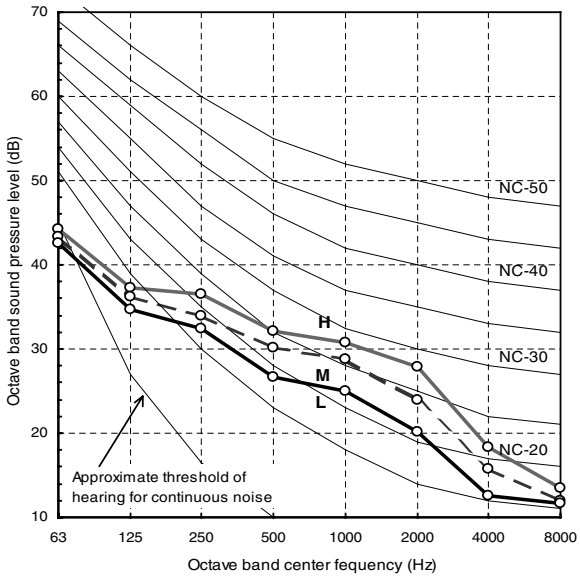
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	34	32	30



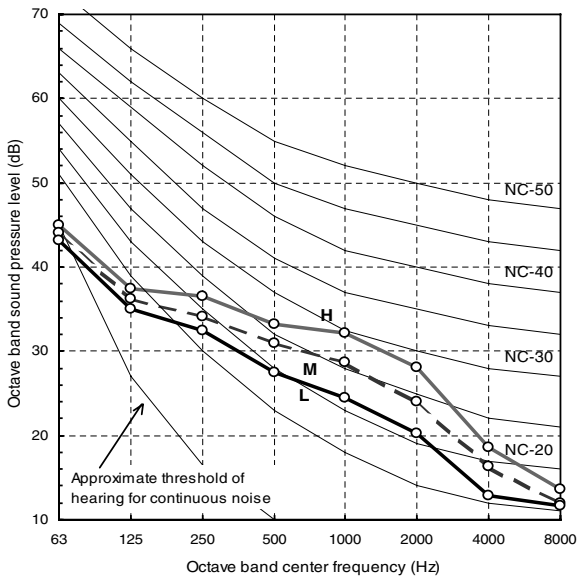
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	35	33	31



External static pressure 50Pa

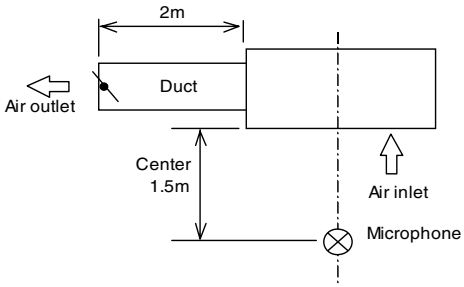
Fan tap	H	M	L
Sound pressure level (dB(A))	36	34	32



MMD-AP0071SPH/SH ,
MMD-AP0091SPH/SH

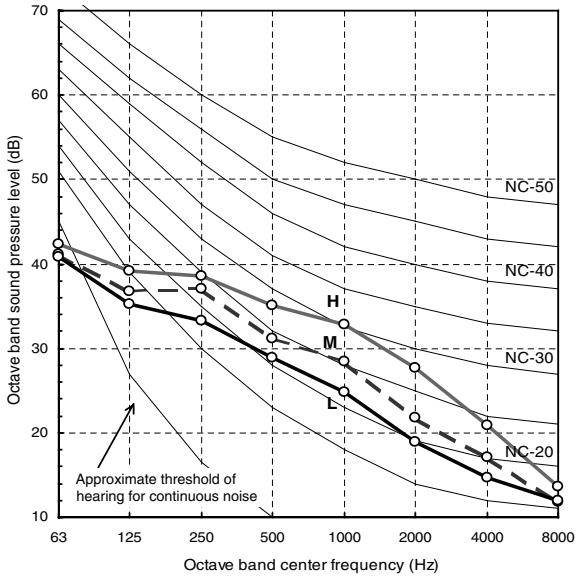
Measuring location

Under air intake



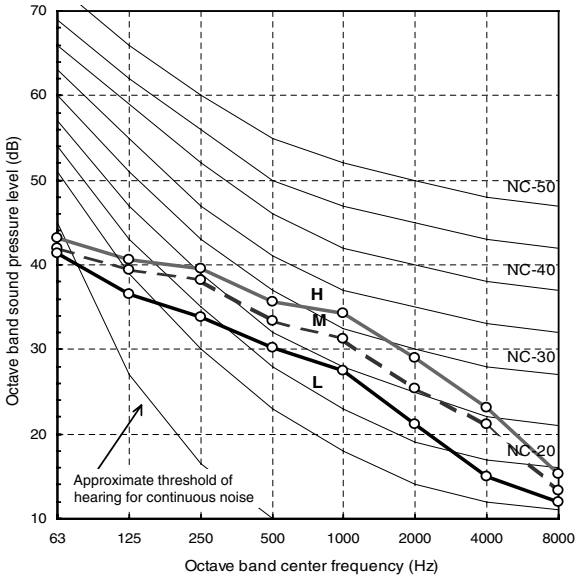
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	36	33	30



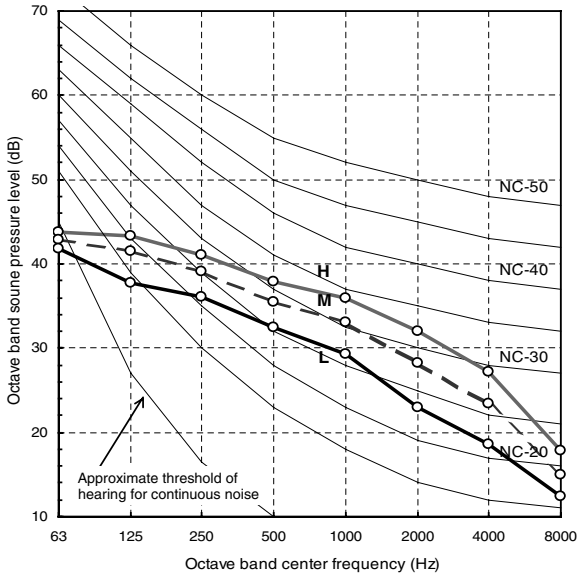
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	37	34	31



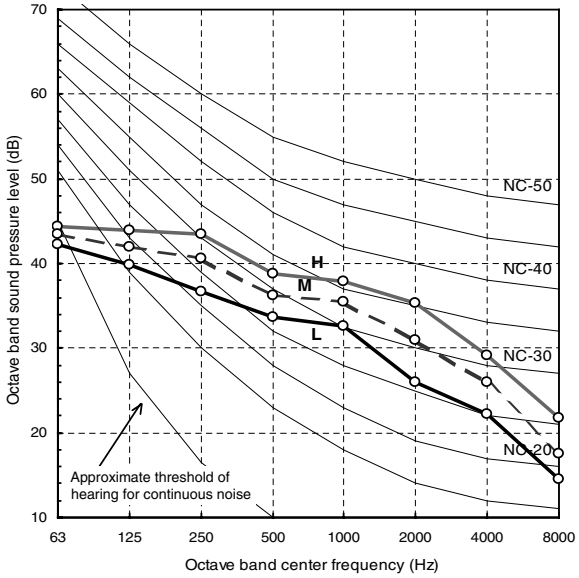
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	39	36	33



External static pressure 50Pa

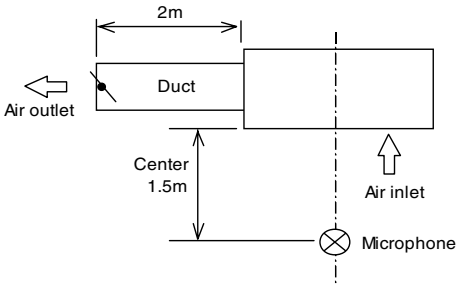
Fan tap	H	M	L
Sound pressure level (dB(A))	41	38	35



MMD-AP0121SPH/SH

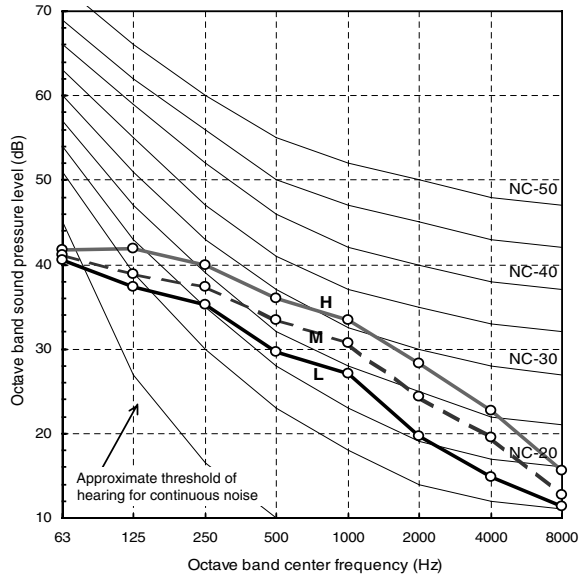
Measuring location

Under air intake



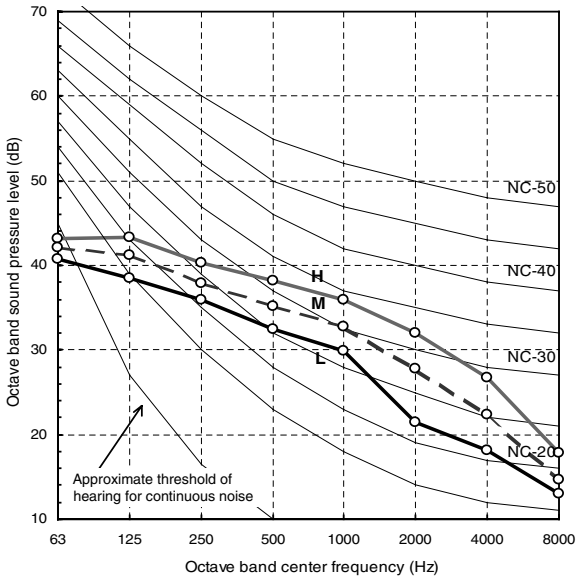
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	38	35	32



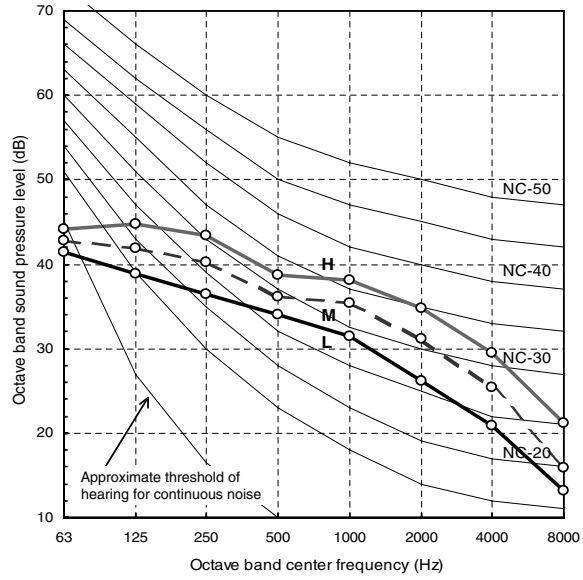
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	39	36	33



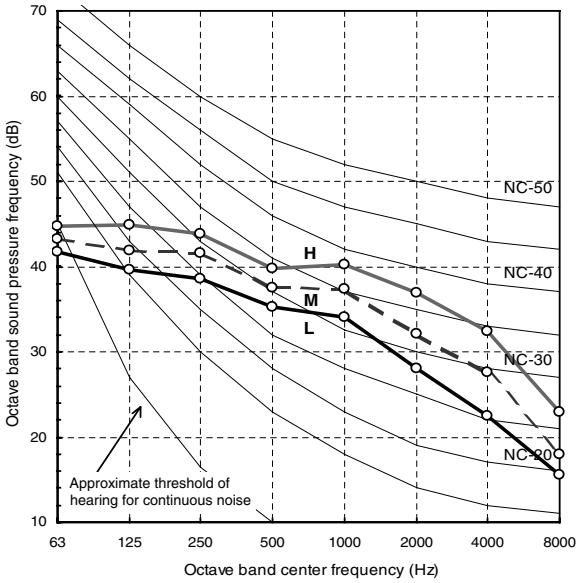
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	41	38	35



External static pressure 50Pa

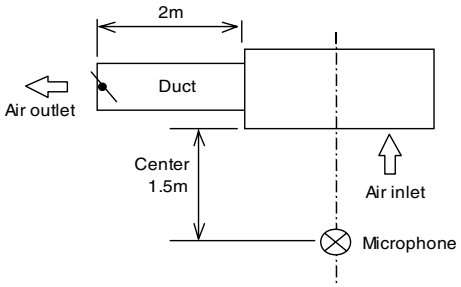
Fan tap	H	M	L
Sound pressure level (dB(A))	43	40	37



MMD-AP0151SPH/SH

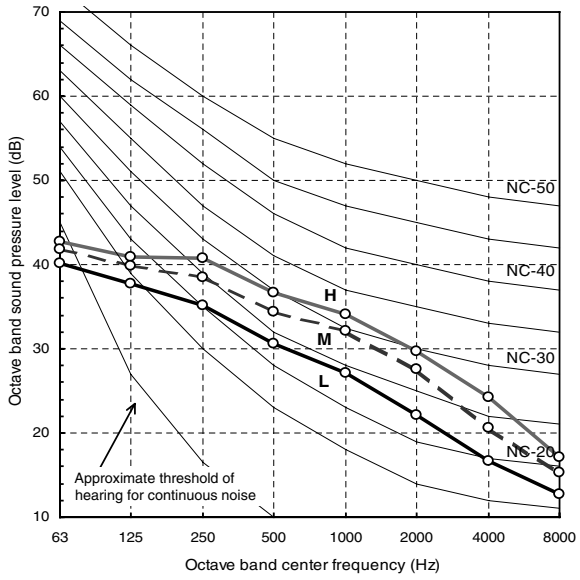
Measuring location

Under air intake



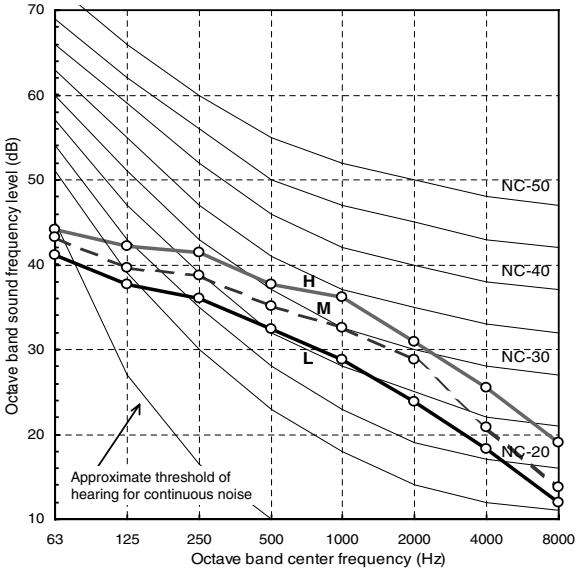
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	39	36	33



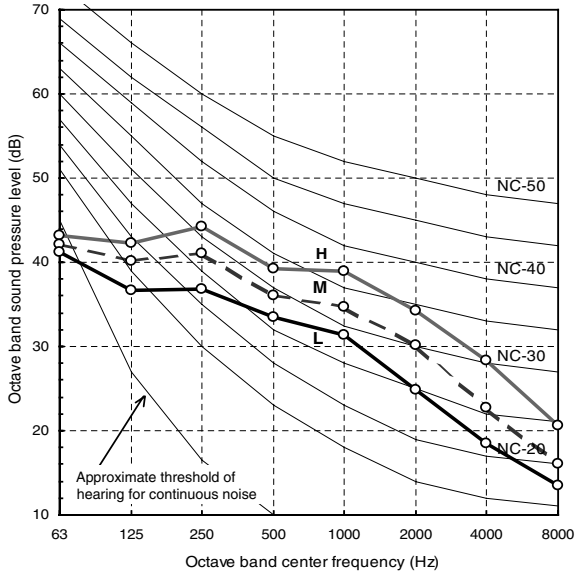
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	40	37	34



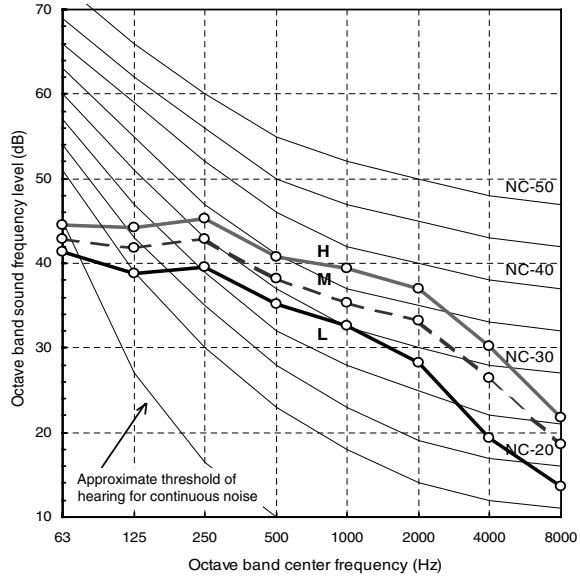
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	41	38	35



External static pressure 50Pa

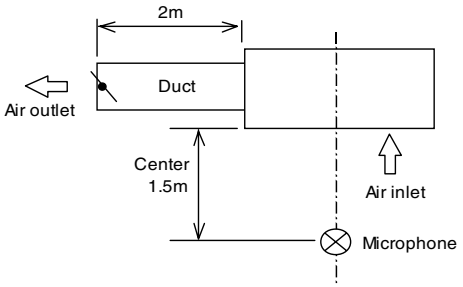
Fan tap	H	M	L
Sound pressure level (dB(A))	43	40	37



MMD-AP0181SPH/SH

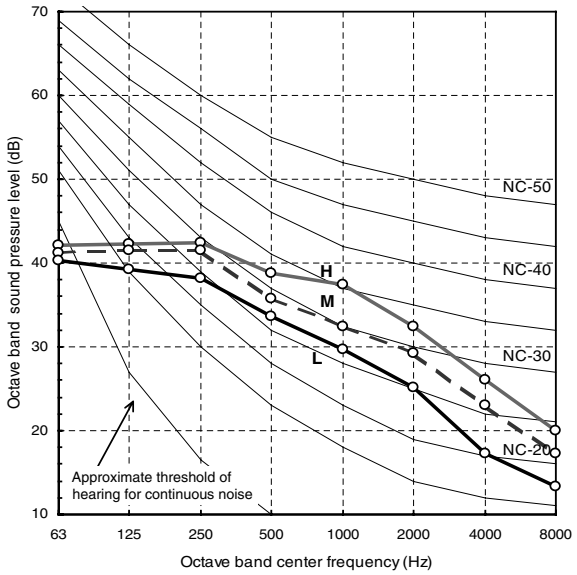
Measuring location

Under air intake



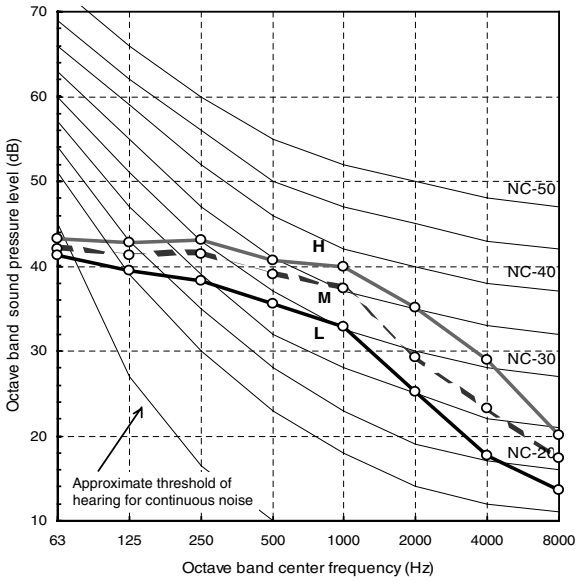
External static pressure 10Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	40	38	36



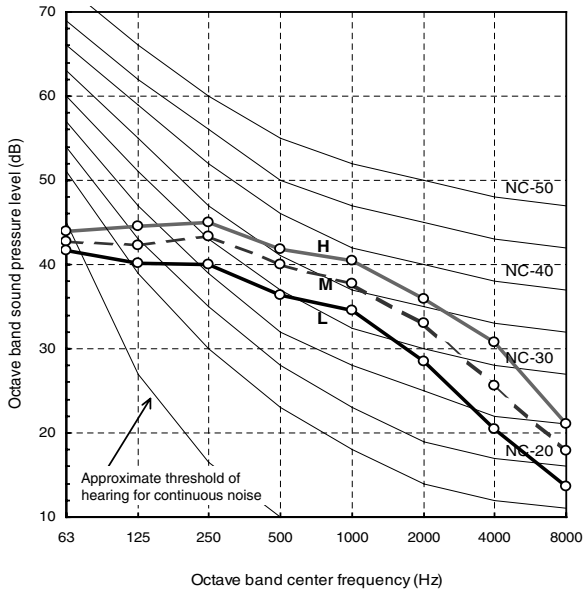
External static pressure 20Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	42	40	37



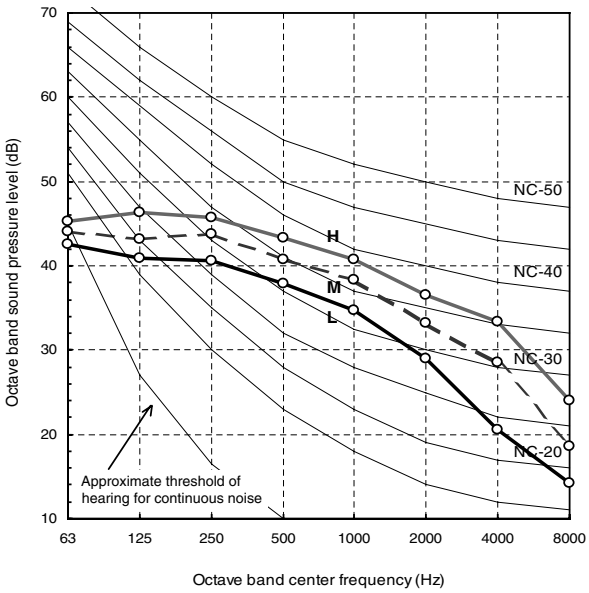
External static pressure 35Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	43	41	38



External static pressure 50Pa

Fan tap	H	M	L
Sound pressure level (dB(A))	44	42	39



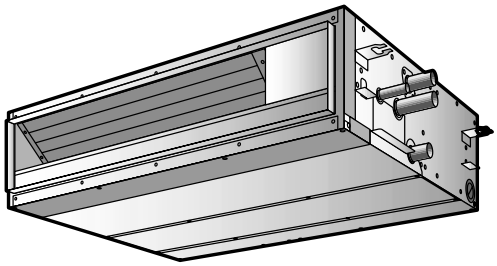
9-6-7. Accessories

Apperarance

Standard accessories

Part name	Qty	Shape	Use
Installation Manual	1	—	(Be sure to hand over to customer)
Insulating pipe	2		For insulating of pipe connecting section
Washer	8	M10 x Ø34	For hanging down unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For centering the drain pipe
Heat insulator	1		For sealing the wire connection opening

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

9-7-1. Specifications

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)	Ø12.7	Ø15.9			
	Liquid side		(mm)	Ø6.4	Ø9.5			
	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

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.

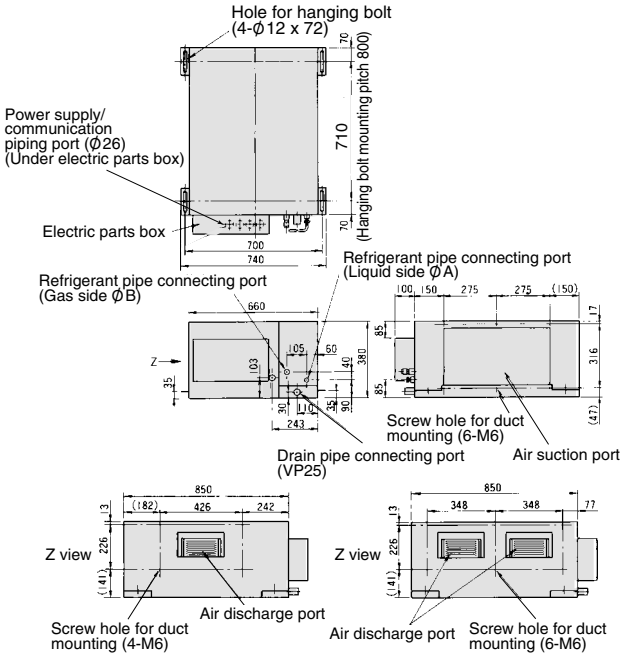
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

9-7-2. Dimension

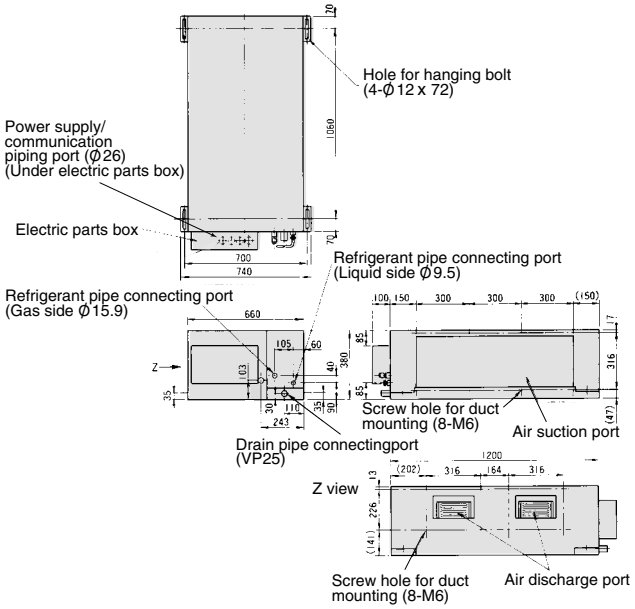
MMD-AP0181H, AP0241H, AP0271H, AP0361H, AP0481H

MMD-AP0181H to AP0361H



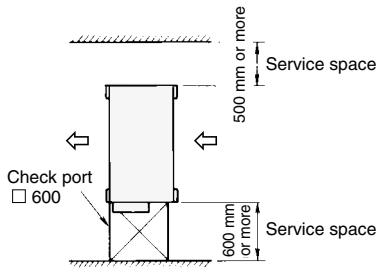
AP0181H to AP0271H type AP0361H type

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

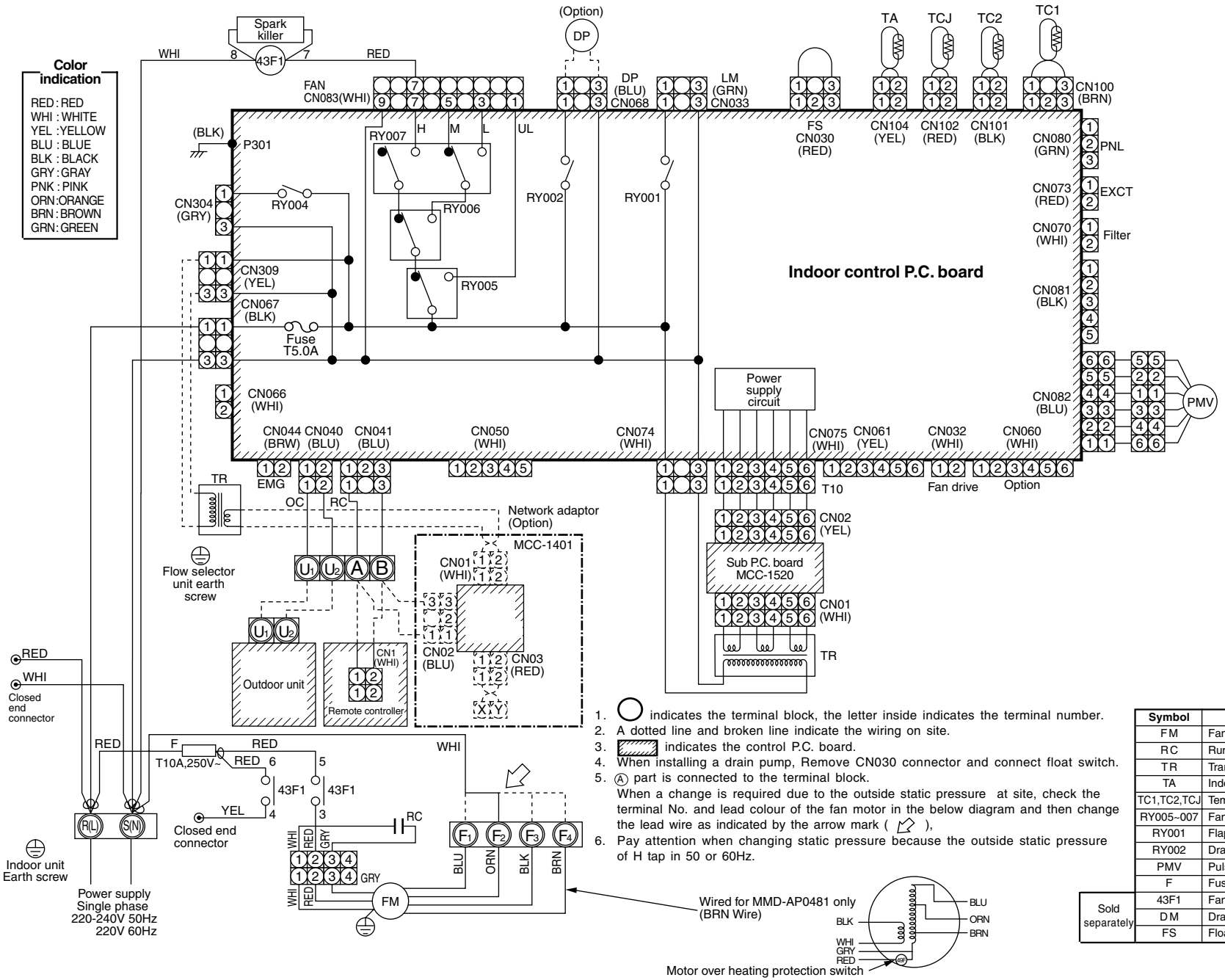


- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Note: All dimensions are in mm.

9-7-3. Wiring diagram

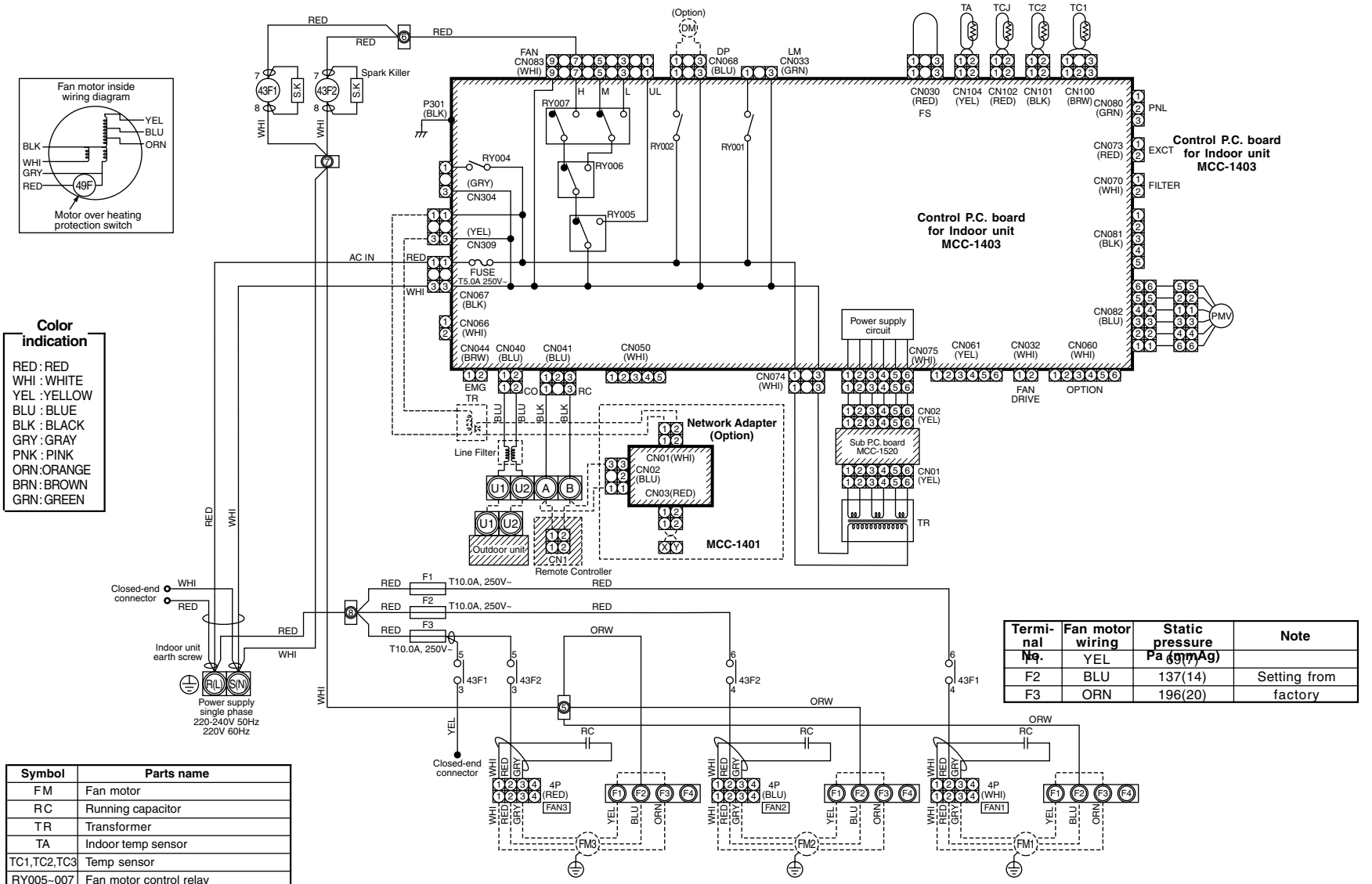
Model: MMD-AP0181H, AP0241H, AP0271H, AP0361H, AP0481H



1. ○ indicates the terminal block, the letter inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ indicates the control P.C. board.
4. When installing a drain pump, Remove CN030 connector and connect float switch.
5. Ⓐ part is connected to the terminal block.
   When a change is required due to the outside static pressure at site, check the terminal No. and lead colour of the fan motor in the below diagram and then change the lead wire as indicated by the arrow mark (⇗),
6. Pay attention when changing static pressure because the outside static pressure of H tap in 50 or 60Hz.

Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY005~007	Fan motor control relay
RY001	Flap motor control relay
RY002	Drain control relay
PMV	Pulse Motor Valve
F	Fuse
43F1	Fan motor control relay
DM	Drain pump motor
FS	Float switch

Sold separately



Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TC3	Temp sensor
RY005~007	Fan motor control relay
RY001	Louver control relay
RY002	Drain control relay
PMV	Pulse motor valve
F1~3	Fuse for fan motor
43F1,43F2	Fan motor control relay
DM	Drain pump motor
FS	Float switch

Sold separately

Termi-nal No.	Fan motor wiring	Static pressure Pa (mmAq)	Note
F1	YEL	69(7)	
F2	BLU	137(14)	Setting from
F3	ORN	196(20)	factory

1. ◎ Indicates the terminal bolock, Letter on the inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ indicate the control p.c. board.
4. When fitting a drain pump remove CN030 connector and connect float switch.
5. Ⓐ Position is connected to the terminal block when there is a change to static pressure. change the lead wire of arrow ⇨ position after checking the terminal number as per figure and the lead wire's checking fan motor.
6. When setting to the high tap, take care as the static pressures are different at50Hz and 60Hz.

9-7-4. Sensible capacity table

(MMD-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
018	10.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	12.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	14.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	16.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	18.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	20.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	21.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	23.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	25.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	27.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	29.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	31.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	33.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	35.0	5.1	3.8	5.4	4.0	5.6	4.0	5.8	4.0	6.1	4.0	6.4	3.9
	37.0	5.0	3.7	5.3	3.9	5.5	3.9	5.7	3.9	6.0	3.9	6.3	3.8
	39.0	4.9	3.6	5.2	3.8	5.4	3.8	5.5	3.8	5.9	3.7	6.1	3.6
024	10.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	12.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	14.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	16.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	18.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	20.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	21.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	23.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	25.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	27.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	29.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	31.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	33.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	35.0	6.4	4.7	6.9	5.0	7.1	5.0	7.3	5.0	7.7	5.0	8.1	4.8
	37.0	6.3	4.6	6.7	4.9	7.0	4.9	7.2	4.9	7.6	4.9	7.9	4.7
	39.0	6.2	4.4	6.6	4.7	6.8	4.7	7.0	4.7	7.4	4.7	7.8	4.6
027	10.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	12.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	14.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	16.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	18.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	20.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	21.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	23.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	25.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	27.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	29.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	31.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	33.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	35.0	7.3	5.1	7.8	5.4	8.0	5.4	8.2	5.4	8.7	5.3	9.1	5.2
	37.0	7.1	5.0	7.6	5.3	7.8	5.3	8.1	5.3	8.5	5.2	8.9	5.1
	39.0	7.0	4.8	7.4	5.1	7.7	5.1	7.9	5.1	8.4	5.0	8.8	4.9

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
036	10.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	12.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	14.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	16.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	18.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	20.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	21.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	23.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	25.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	27.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	29.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	31.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	33.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	35.0	10.2	7.4	10.9	7.8	11.2	7.8	11.5	7.8	12.2	7.7	12.8	7.5
	37.0	10.0	7.2	10.6	7.7	11.0	7.6	11.3	7.6	12.0	7.6	12.5	7.4
	39.0	9.8	6.9	10.4	7.4	10.8	7.3	11.1	7.3	11.7	7.3	12.3	7.1
048	10.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	12.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	14.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	16.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	18.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	20.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	21.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	23.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	25.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	27.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	29.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	31.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	33.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	35.0	12.7	9.0	13.6	9.5	14.0	9.5	14.4	9.5	15.3	9.4	16.0	9.2
	37.0	12.5	8.8	13.3	9.3	13.7	9.3	14.1	9.3	15.0	9.2	15.6	9.0
	39.0	12.2	8.4	13.0	9.0	13.4	8.9	13.8	8.9	14.6	8.9	15.3	8.6

Heating capacity

SHC : Sensible Heat Capacity (kW)

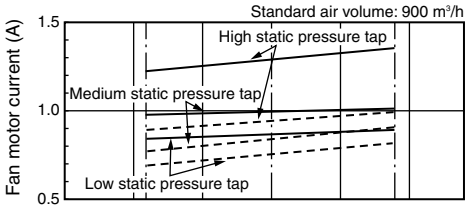
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6

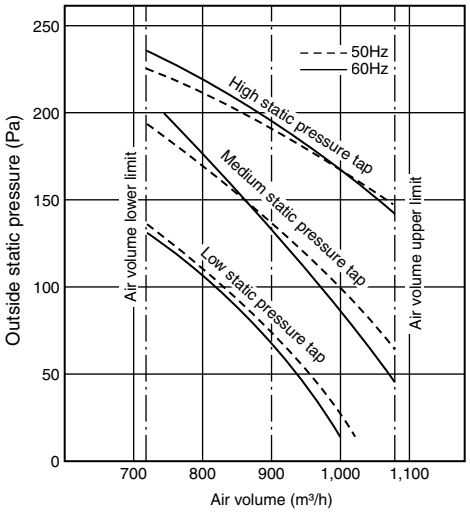
Heating capacity (cont.)

Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
036	-15.0	7.8	7.7	7.5	7.3	7.2
	-13.0	8.3	8.2	8.0	7.8	7.6
	-11.0	8.9	8.7	8.5	8.3	8.1
	-10.0	9.1	9.0	8.8	8.6	8.3
	-8.0	9.7	9.5	9.3	9.1	8.8
	-6.0	10.2	10.0	9.8	9.5	9.3
	-4.0	10.7	10.5	10.2	10.0	9.7
	-2.0	11.1	10.9	10.7	10.5	10.2
	0.0	11.6	11.4	11.2	10.9	10.6
	2.0	12.1	11.9	11.6	11.3	11.0
	4.0	12.6	12.3	12.1	11.8	11.5
	6.0	13.0	12.8	12.5	12.2	11.9
	8.0	13.0	12.8	12.5	12.2	11.9
	10.0	13.0	12.8	12.5	12.2	11.9
	12.0	13.0	12.8	12.5	12.2	11.9
	14.0	13.0	12.8	12.5	12.2	11.9
048	-15.0	10.0	9.8	9.6	9.4	9.1
	-13.0	10.7	10.5	10.3	10.0	9.7
	-11.0	11.4	11.1	10.9	10.7	10.4
	-10.0	11.7	11.5	11.2	11.0	10.7
	-8.0	12.4	12.1	11.9	11.6	11.3
	-6.0	13.0	12.8	12.5	12.2	11.9
	-4.0	13.6	13.4	13.1	12.8	12.4
	-2.0	14.3	14.0	13.7	13.4	13.0
	0.0	14.9	14.6	14.3	14.0	13.6
	2.0	15.5	15.2	14.9	14.5	14.1
	4.0	16.1	15.8	15.4	15.1	14.7
	6.0	16.7	16.3	16.0	15.6	15.2
	8.0	16.7	16.3	16.0	15.6	15.2
	10.0	16.7	16.3	16.0	15.6	15.2
	12.0	16.7	16.3	16.0	15.6	15.2
	14.0	16.7	16.3	16.0	15.6	15.2

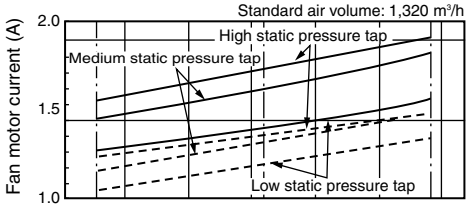
9-7-5. Fan characteristics

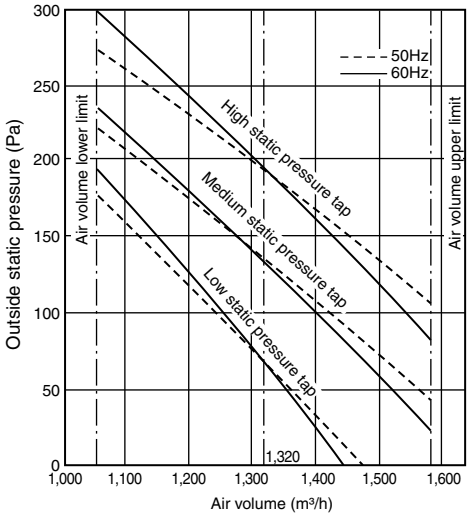
MMD-AP0181H



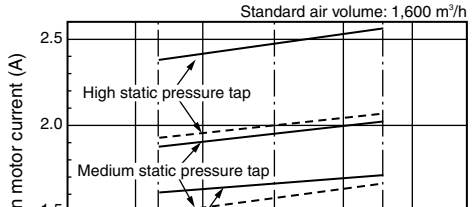


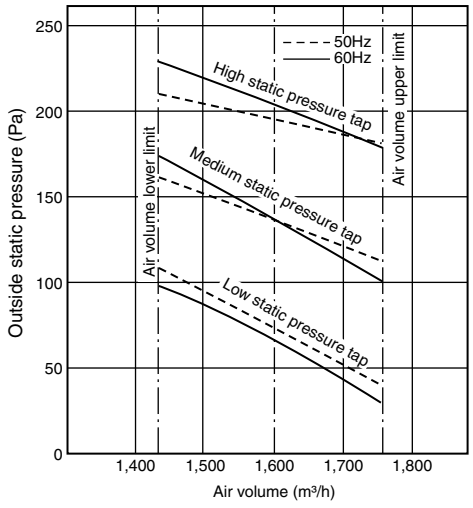
MMD-AP0241H, AP0271H



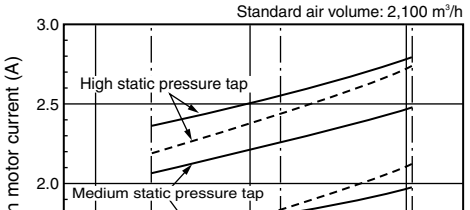


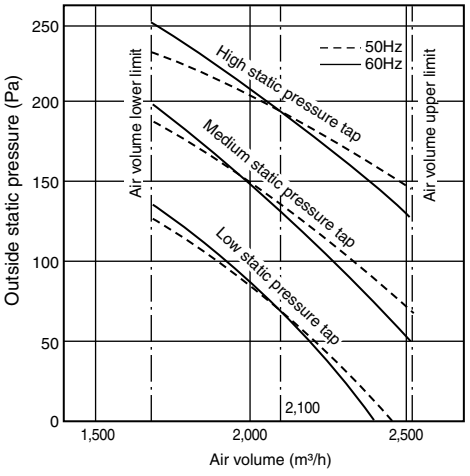
MMD-AP0361H





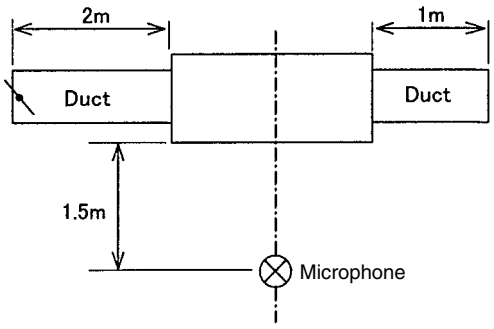
MMD-AP0481H





9-7-6. Sound characteristics (NC-Curve)

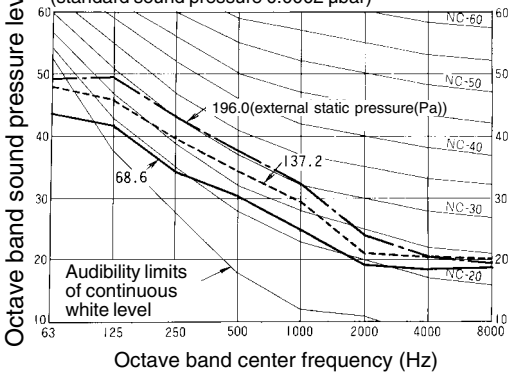
Sound level values shown are based on a measurement in a non resound room.



MMD-AP0181H

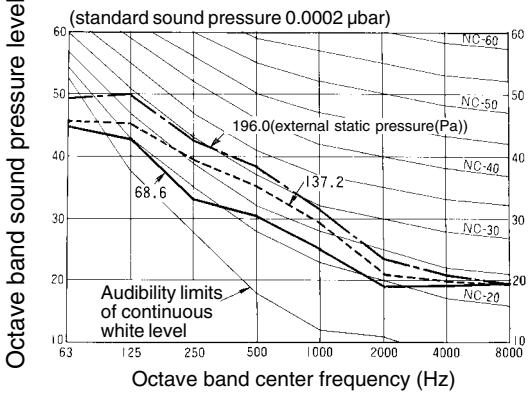
(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	33	37	40
	C	46	51	53



(dB)

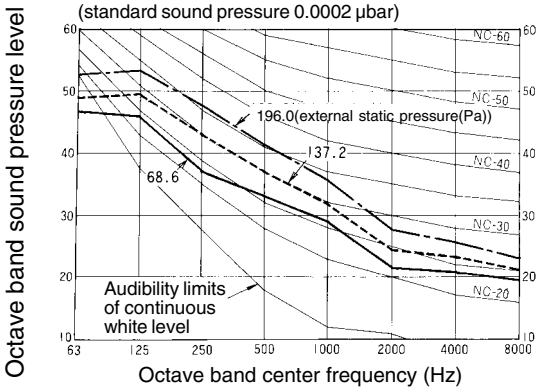
Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	33	37	40
	C	47	49	53



MMD-AP0241H, AP0271H

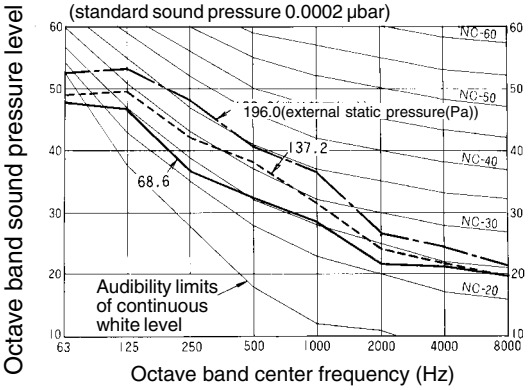
(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	50	53	57



(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	50.5	53	57

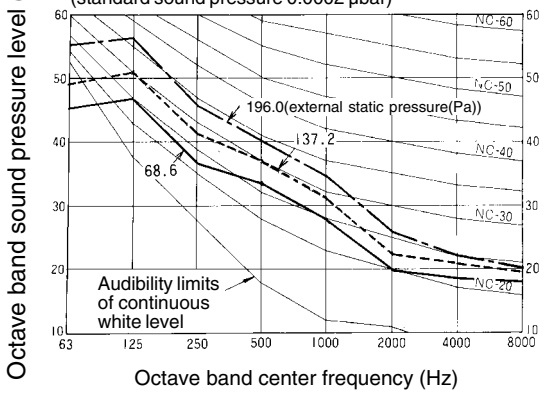


MMD-AP0361H

(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	49.5	54	59

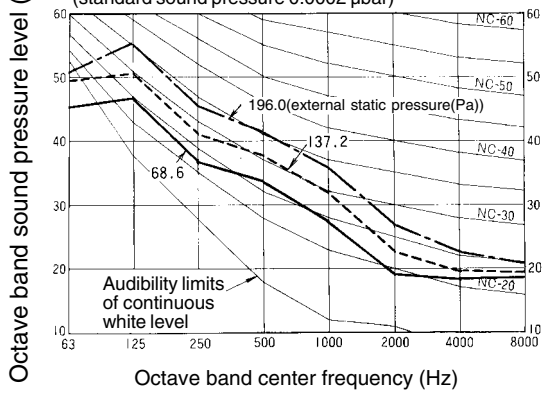
(standard sound pressure 0.0002 μbar)



(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	49	53.5	57

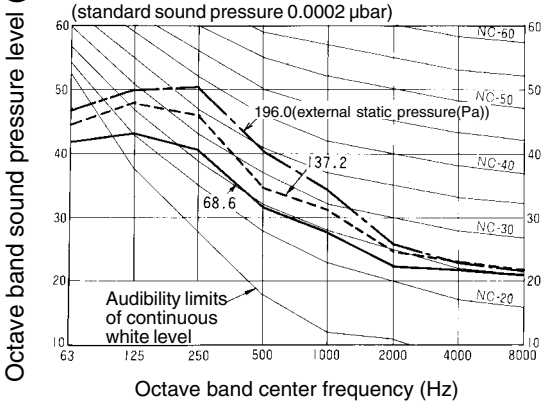
(standard sound pressure 0.0002 μbar)



(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	47	51	54

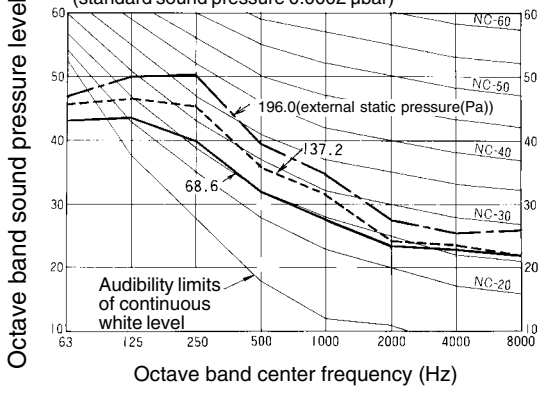
(standard sound pressure 0.0002 μbar)



(dB)

Outside still pressure		68.6 (Pa)	137.2 (Pa)	196.0 (Pa)
Overall level (dB)	A	36	40	44
	C	47	51	54

(standard sound pressure 0.0002 μbar)



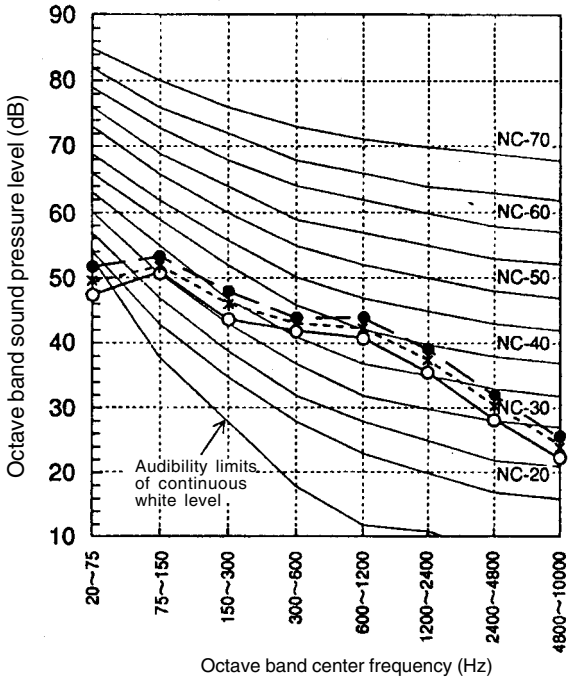
Sound level data (NC CURVE)

Sound level values shown are based on a measurement in a non resound room.

MMD-AP0721H

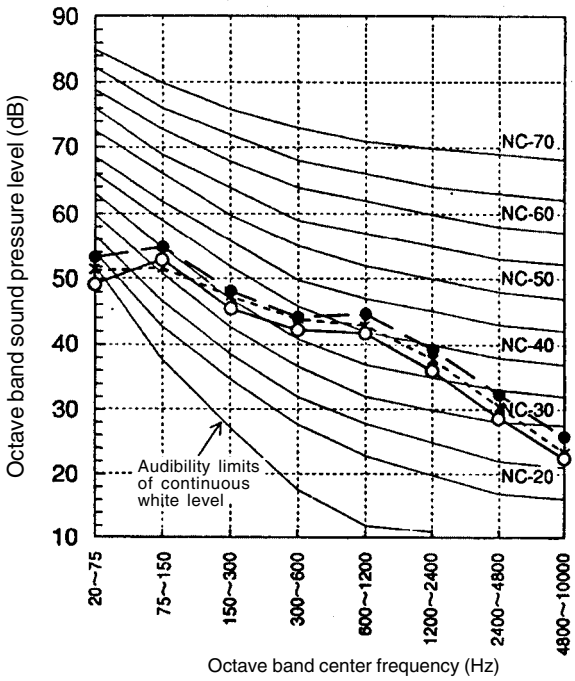
(50Hz)

Outside still pressure		69 (Pa)	137 (Pa)	196 (Pa)
Overall level (dB)	A	48	49	50.5
	C	54	55	57



(60Hz)

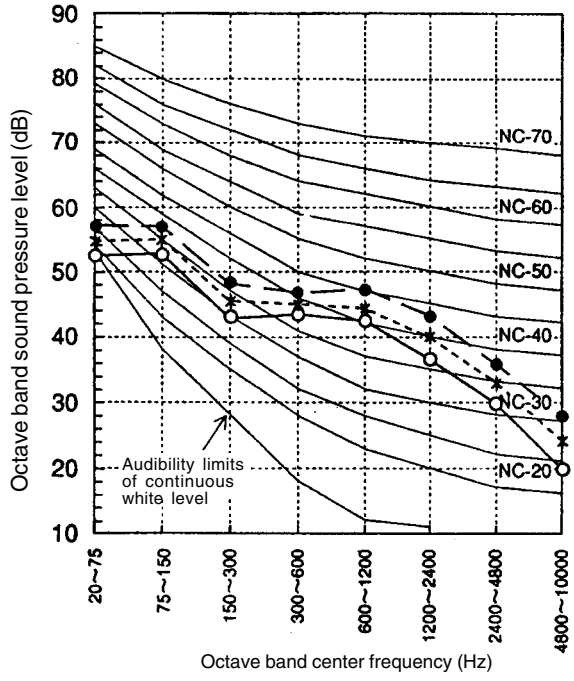
Outside still pressure		69 (Pa)	137 (Pa)	196 (Pa)
Overall level (dB)	A	48	49	50.5
	C	55	50	58



MMD-AP0961H

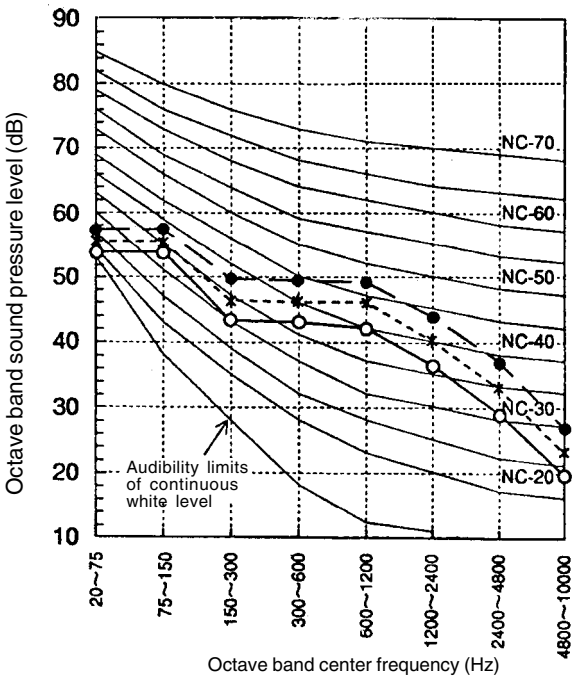
(50Hz)

Outside still pressure		69 (Pa)	137 (Pa)	196 (Pa)
Overall level (dB)	A	49	50	51.5
	C	56	59	61



(60Hz)

Outside still pressure		69 (Pa)	137 (Pa)	196 (Pa)
Overall level (dB)	A	49	50	51.5
	C	57	59	61



9-7-7. Accessories

Apperarance

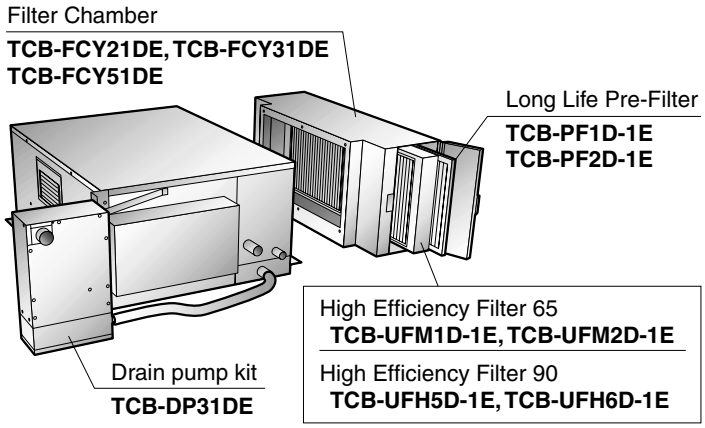
Standard accessories

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

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

Optional accessories



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

9-8-1. Specifications

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		0.033	0.038	0.050		0.091	0.110
		(kW)	0.43	0.48	0.62		1.17	1.25
Appearance	Starting current	(A)	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

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)	Ø12.7		Ø15.9			
	Liquid side		(mm)	Ø6.4		Ø9.5			
	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					

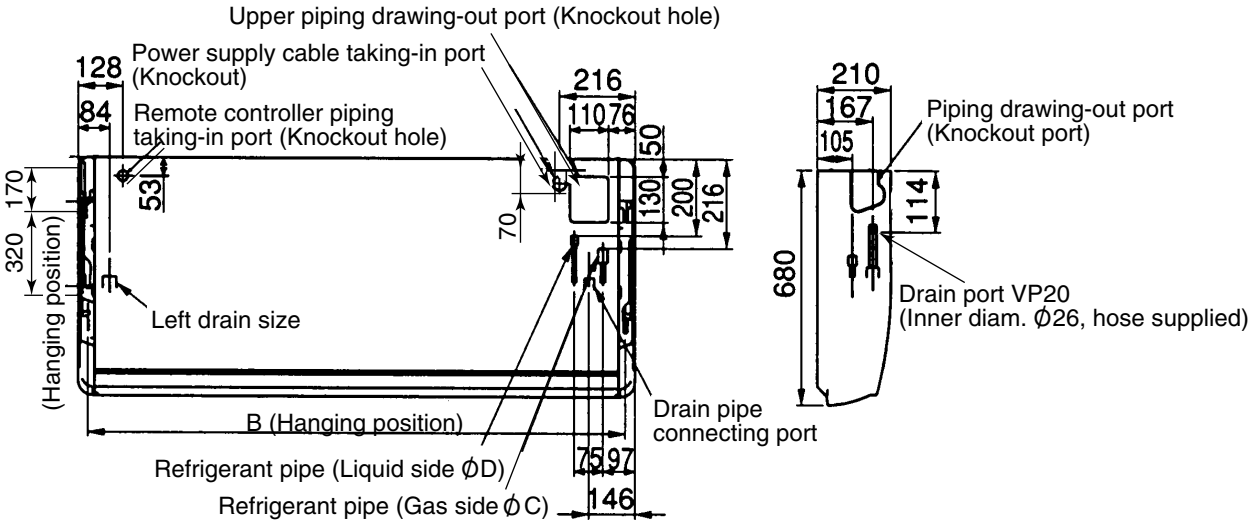
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

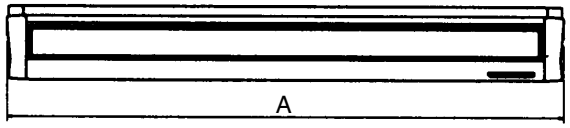
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

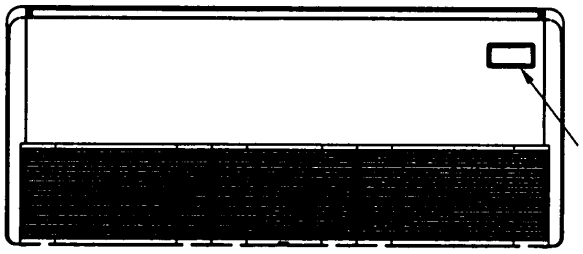
9-8-2. Dimension

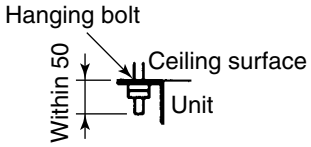
MMC-AP0151H, AP0181H, AP0241H, AP0271H, AP0361H, AP0481H

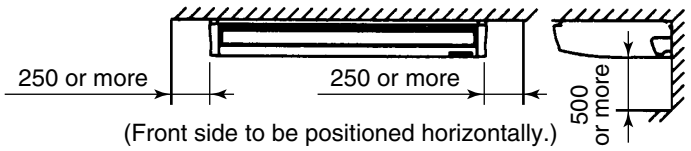




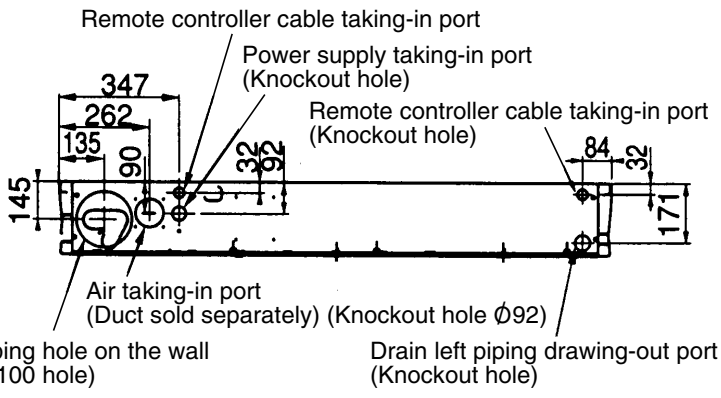
Model MMC-	A	B	C	D
AP0151H, AP0181H	910	855	12.7	6.4
AP0241H, AP0271H	1180	1125	15.9	9.5
AP0361H, AP0481H	1595	1540	15.9	9.5







Space required for installation and servicing

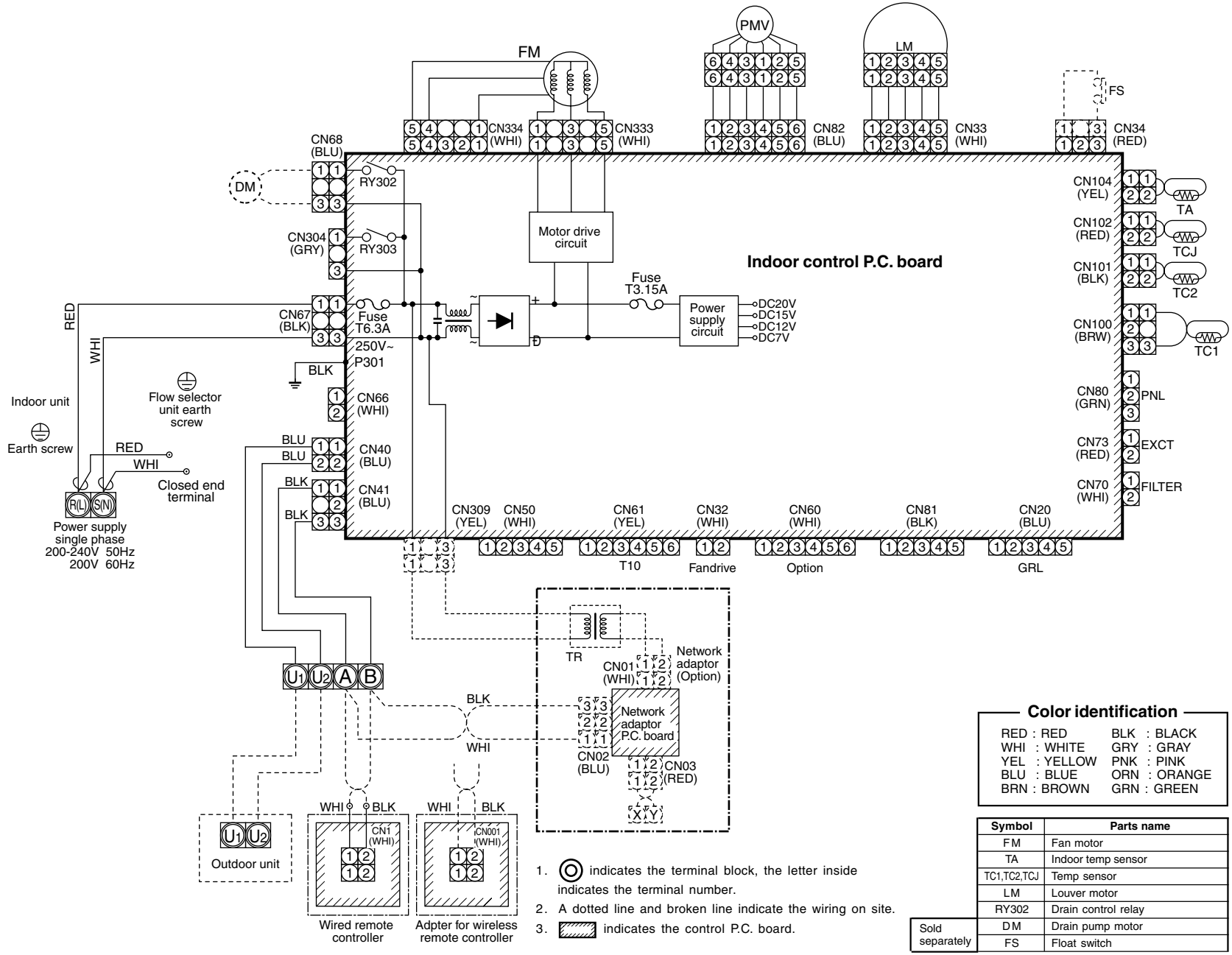


- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX22CE2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Note: All dimensions are in mm.

9-8-3. Wiring diagram

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



1. ◎ indicates the terminal block, the letter inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ indicates the control P.C. board.

Color identification

RED	: RED	BLK	: BLACK
WHI	: WHITE	GRY	: GRAY
YEL	: YELLOW	PNK	: PINK
BLU	: BLUE	ORN	: ORANGE
BRN	: BROWN	GRN	: GREEN

	Symbol	Parts name
	FM	Fan motor
	TA	Indoor temp sensor
	TC1,TC2,TCJ	Temp sensor
	LM	Louver motor
	RY302	Drain control relay
Sold separately	DM	Drain pump motor
	FS	Float switch

9-8-4. Sensible capacity table

(MMD-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	12.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	14.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	16.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	18.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	20.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	21.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	23.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	25.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	27.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	29.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	31.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	33.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	35.0	4.1	3.0	4.4	3.2	4.5	3.2	4.6	3.2	4.9	3.2	5.1	3.1
	37.0	4.0	3.0	4.3	3.1	4.4	3.1	4.5	3.1	4.8	3.1	5.0	3.0
	39.0	3.9	2.8	4.2	3.0	4.3	3.0	4.4	3.0	4.7	3.0	4.9	2.9
018	10.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	12.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	14.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	16.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	18.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	20.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	21.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	23.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	25.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	27.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	29.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	31.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	33.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	35.0	5.1	3.7	5.4	3.9	5.6	3.9	5.8	3.9	6.1	3.9	6.4	3.8
	37.0	5.0	3.6	5.3	3.8	5.5	3.8	5.7	3.8	6.0	3.8	6.3	3.7
	39.0	4.9	3.5	5.2	3.7	5.4	3.7	5.5	3.7	5.9	3.6	6.1	3.6
024	10.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	12.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	14.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	16.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	18.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	20.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	21.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	23.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	25.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	27.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	29.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	31.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	33.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	35.0	6.4	4.8	6.9	5.1	7.1	5.1	7.3	5.1	7.7	5.1	8.1	4.9
	37.0	6.3	4.7	6.7	5.0	7.0	5.0	7.2	5.0	7.6	5.0	7.9	4.8
	39.0	6.2	4.5	6.6	4.8	6.8	4.8	7.0	4.8	7.4	4.8	7.8	4.6

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
027	10.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	12.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	14.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	16.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	18.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	20.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	21.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	23.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	25.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	27.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	29.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	31.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	33.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	35.0	7.3	5.3	7.8	5.6	8.0	5.6	8.2	5.6	8.7	5.5	9.1	5.4
	37.0	7.1	5.2	7.6	5.5	7.8	5.5	8.1	5.5	8.5	5.4	8.9	5.3
	39.0	7.0	5.0	7.4	5.3	7.7	5.3	7.9	5.3	8.4	5.2	8.8	5.1
036	10.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	12.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	14.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	16.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	18.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	20.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	21.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	23.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	25.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	27.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	29.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	31.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	33.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	35.0	10.2	7.2	10.9	7.6	11.2	7.6	11.5	7.6	12.2	7.5	12.8	7.4
	37.0	10.0	7.0	10.6	7.5	11.0	7.4	11.3	7.4	12.0	7.4	12.5	7.2
	39.0	9.8	6.8	10.4	7.2	10.8	7.2	11.1	7.1	11.7	7.1	12.3	6.9
048	10.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	12.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	14.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	16.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	18.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	20.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	21.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	23.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	25.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	27.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	29.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	31.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	33.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	35.0	12.7	9.3	13.6	9.8	14.0	9.8	14.4	9.8	15.3	9.7	16.0	9.5
	37.0	12.5	9.1	13.3	9.6	13.7	9.6	14.1	9.6	15.0	9.5	15.6	9.3
	39.0	12.2	8.7	13.0	9.2	13.4	9.2	13.8	9.2	14.6	9.1	15.3	8.9

Heating capacity

SHC : Sensible Heat Capacity (kW)

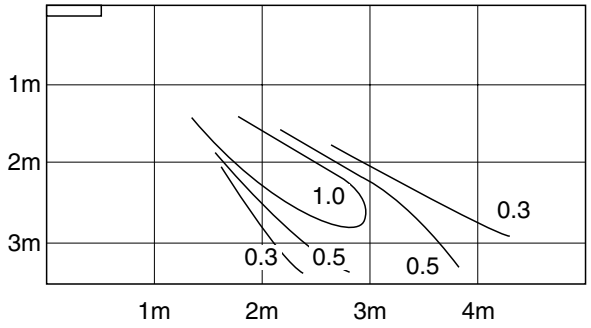
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

Heating capacity (cont.)

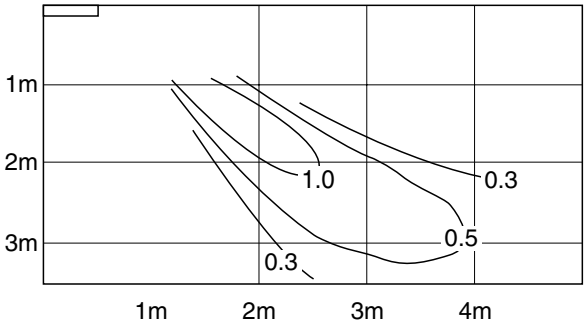
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6
036	-15.0	7.8	7.7	7.5	7.3	7.2
	-13.0	8.3	8.2	8.0	7.8	7.6
	-11.0	8.9	8.7	8.5	8.3	8.1
	-10.0	9.1	9.0	8.8	8.6	8.3
	-8.0	9.7	9.5	9.3	9.1	8.8
	-6.0	10.2	10.0	9.8	9.5	9.3
	-4.0	10.7	10.5	10.2	10.0	9.7
	-2.0	11.1	10.9	10.7	10.5	10.2
	0.0	11.6	11.4	11.2	10.9	10.6
	2.0	12.1	11.9	11.6	11.3	11.0
	4.0	12.6	12.3	12.1	11.8	11.5
	6.0	13.0	12.8	12.5	12.2	11.9
	8.0	13.0	12.8	12.5	12.2	11.9
	10.0	13.0	12.8	12.5	12.2	11.9
	12.0	13.0	12.8	12.5	12.2	11.9
	14.0	13.0	12.8	12.5	12.2	11.9
048	-15.0	10.0	9.8	9.6	9.4	9.1
	-13.0	10.7	10.5	10.3	10.0	9.7
	-11.0	11.4	11.1	10.9	10.7	10.4
	-10.0	11.7	11.5	11.2	11.0	10.7
	-8.0	12.4	12.1	11.9	11.6	11.3
	-6.0	13.0	12.8	12.5	12.2	11.9
	-4.0	13.6	13.4	13.1	12.8	12.4
	-2.0	14.3	14.0	13.7	13.4	13.0
	0.0	14.9	14.6	14.3	14.0	13.6
	2.0	15.5	15.2	14.9	14.5	14.1
	4.0	16.1	15.8	15.4	15.1	14.7
	6.0	16.7	16.3	16.0	15.6	15.2
	8.0	16.7	16.3	16.0	15.6	15.2
	10.0	16.7	16.3	16.0	15.6	15.2
	12.0	16.7	16.3	16.0	15.6	15.2
	14.0	16.7	16.3	16.0	15.6	15.2

9-8-5. Air throw distance chart

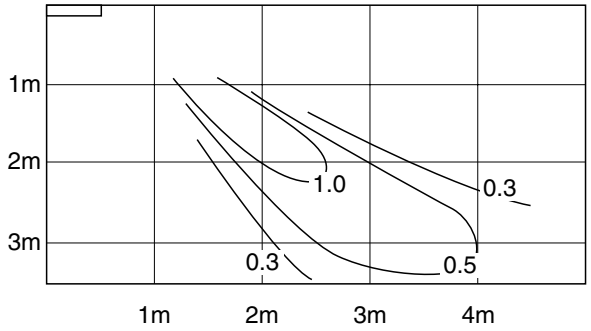
MMC-AP0181H,AP0481H



MMC-AP0361H

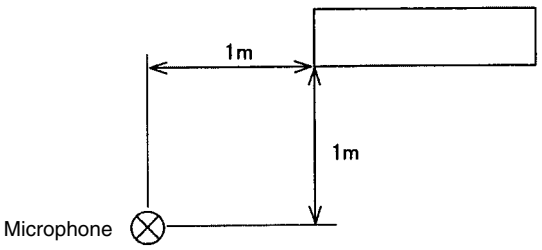


MMC-AP015H,AP0241H,AP0271H



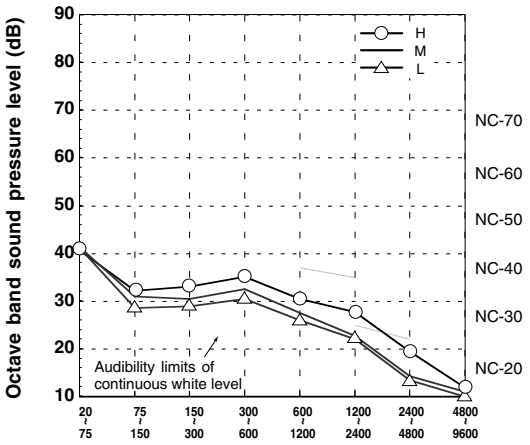
9-8-6. Sound characteristics (NC-Curve)

Sound level values shown are based on a measurement in a non resound room.



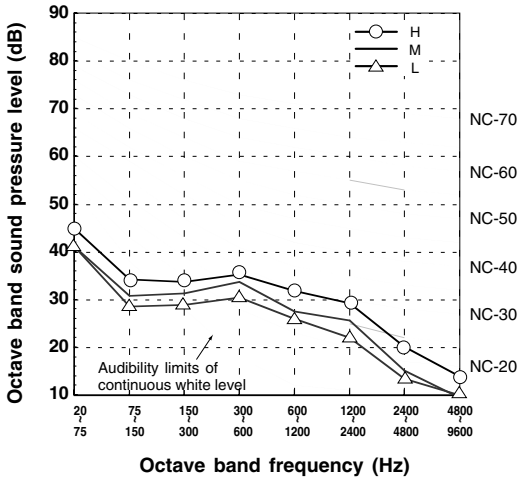
MMC-AP0151H

Fan Tap	H	M	L
Sound pressure level (dB(A))	35	32	30



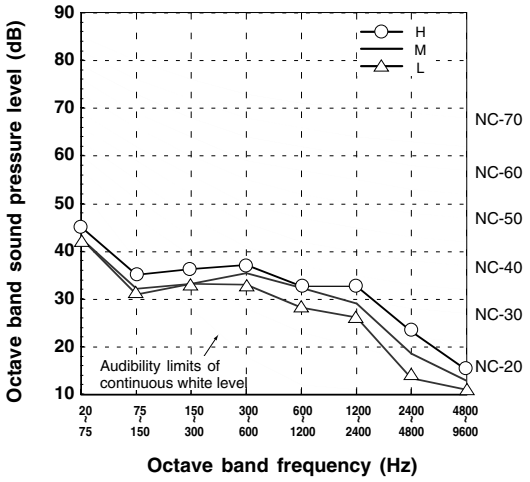
MMC-AP0181H

Fan Tap	H	M	L
Sound pressure level (dB(A))	36	33	30



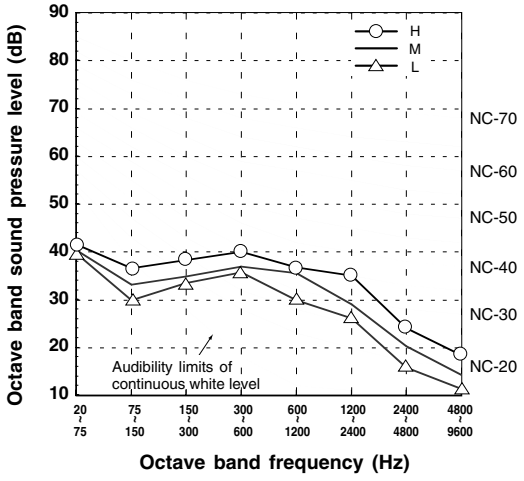
MMC-AP0241H,AP0271H

Fan Tap	H	M	L
Sound pressure level (dB(A))	38	36	33



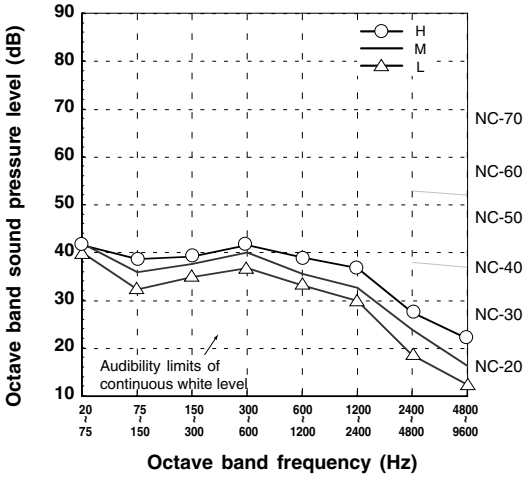
MMC-AP0361H

Fan Tap	H	M	L
Sound pressure level (dB(A))	41	38	35



MMC-AP0481H

Fan Tap	H	M	L
Sound pressure level (dB(A))	43	40	37



9-8-7. Accessories

Apperarance

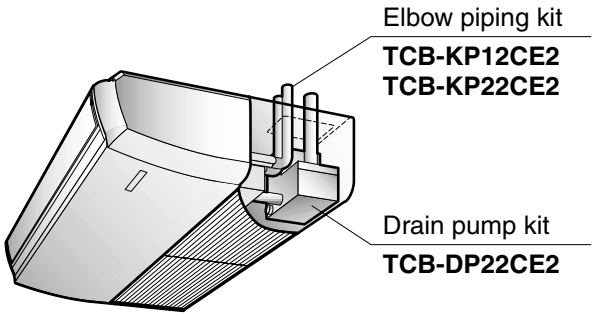
Standard accessories

Part name	Qty	Shape	Use	Part name	Qty	Shape	Use
Installation Manual	1	———	(Be sure to hand over to the customer)	Heat insulator	1		For heat insulation 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

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

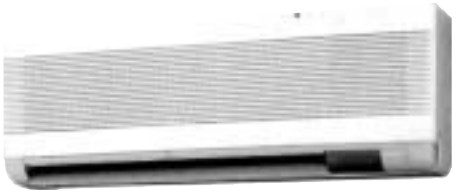
Optional accessories



Name	Model name	Note
Drain Pump Kit	TCB-DP22CE	Stand-up 600 or less (from bottom face of ceiling) MMC-AP0151/0181H Type (Use with TCB-KP12CE) MMC-AP0241H/0271/0361H/0481H (Use with TCB-KP22CE)
Elbow Piping Kit	TCB-KP12CE	Needed when Drain Pump Kid is used
	TCB-KP22CE	

9-9-1. Specifications

50Hz



• Specifications (50Hz)

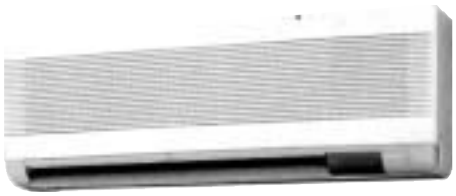
Model name		MMK-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling/Heating capacity (Note 1)		(kW)	2.2/2.5	2.8/3.2	3.6/4.0	4.5/5.0	5.6/6.3	7.1/8.0
Electrical characteristics	Power supply		1 phase 50Hz 230V (220-240V) (Separate power supply for indoor units is required.)					
	Running current	(A)	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

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		368x1,430x210
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)	ø9.5			ø12.7		ø15.9
	Liquid side	(mm)	ø6.4					ø9.5
	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.

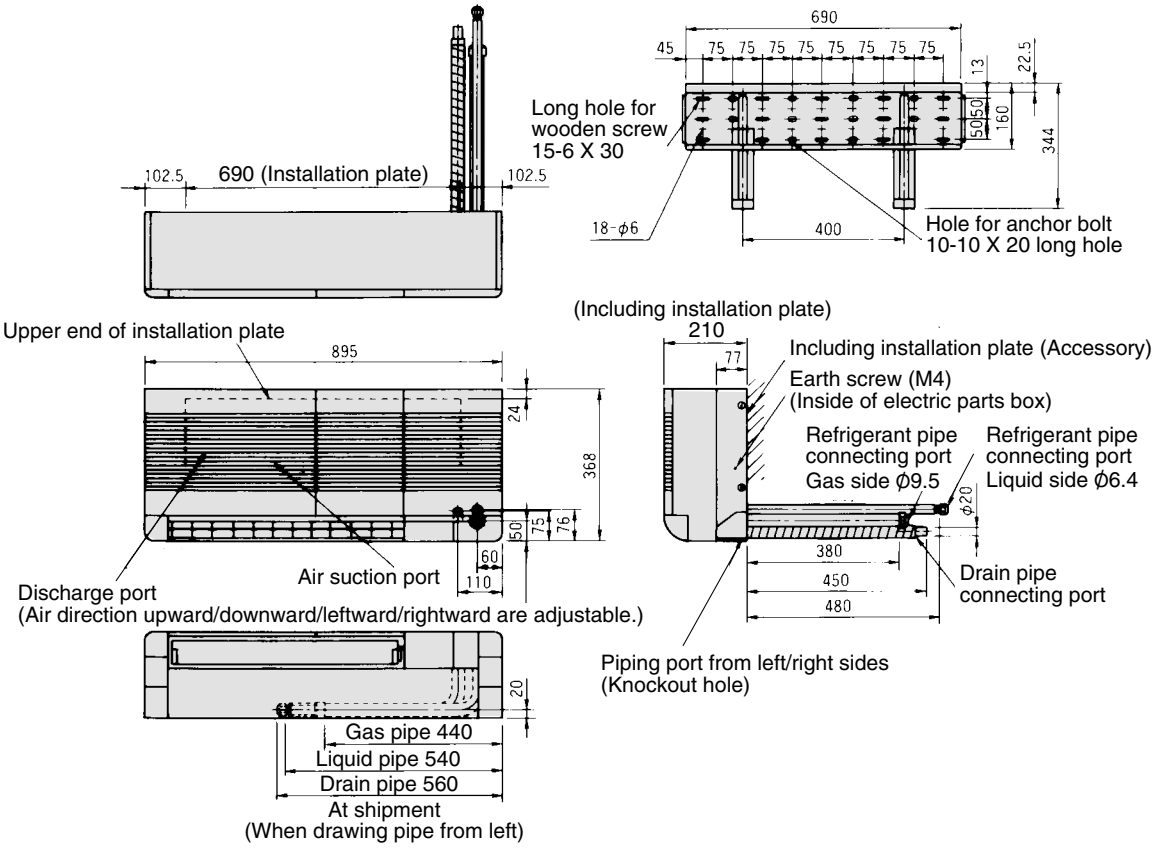
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

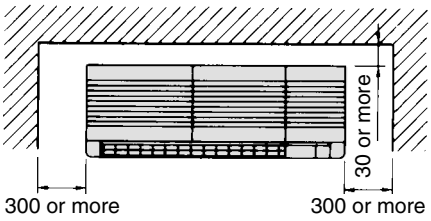
Note : Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

9-9-2. Dimension

MMK-AP0071H, AP0091H, AP0121H

Position of holes on the installation plate.



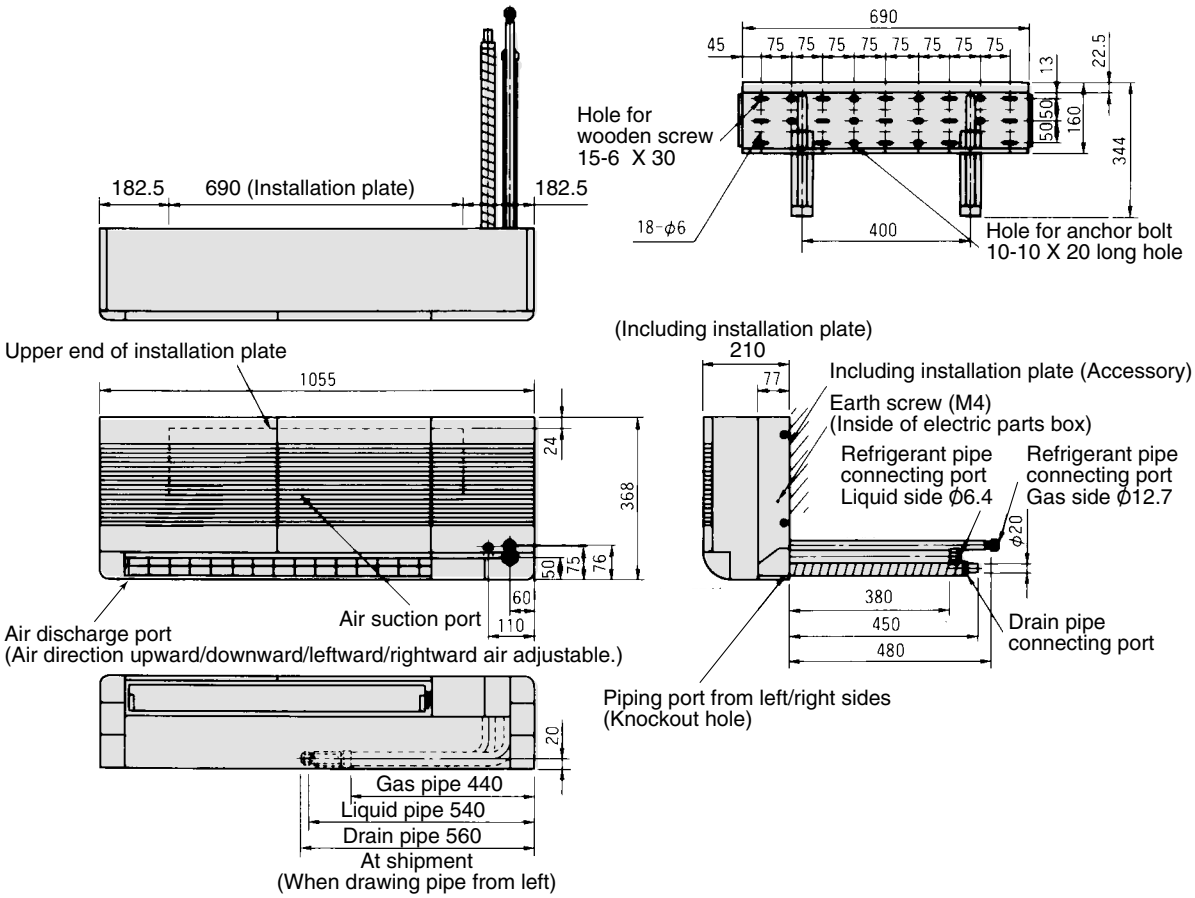


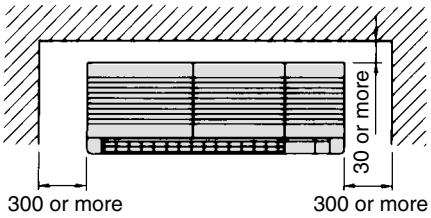
Space required for service

- **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





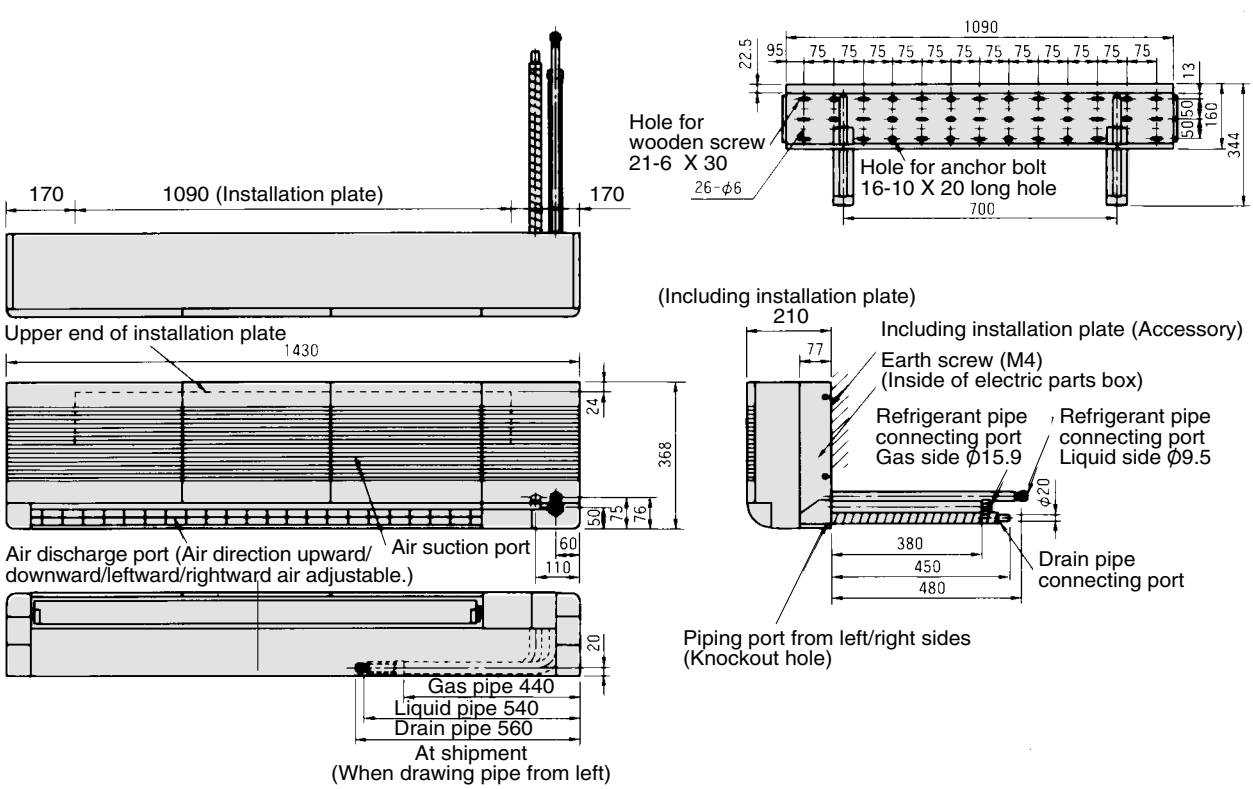
Space required for service

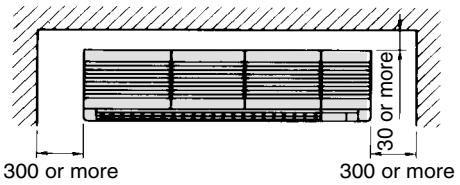
- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

MMK-AP0241H

Position of holes on the installation plate





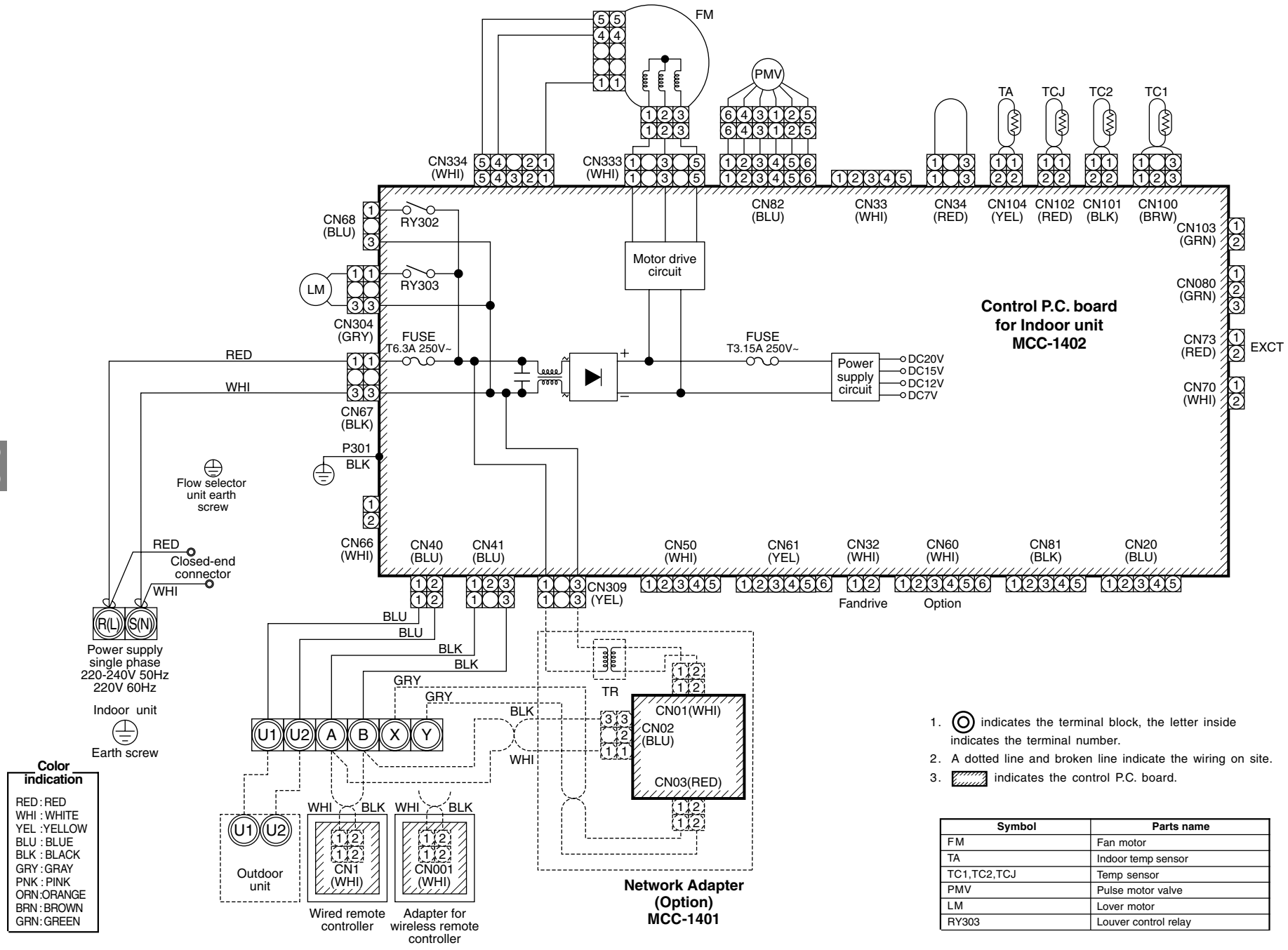
Space required for service

- **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.

9-9-3. Wiring diagram

Model: MMK-AP0071H, AP0091H, AP0121H, AP0151H, AP0181H, AP0241H



Color indication

RED : RED
WHI : WHITE
YEL : YELLOW
BLU : BLUE
BLK : BLACK
GRY : GRAY
PNK : PINK
ORN : ORANGE
BRN : BROWN
GRN : GREEN

1. ⓞ indicates the terminal block, the letter inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ indicates the control P.C. board.

Symbol	Parts name
FM	Fan motor
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
PMV	Pulse motor valve
LM	Lover motor
RY303	Louver control relay

9-9-4. Sensible capacity table

(MMD-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	12.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	14.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	16.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	18.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	20.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	21.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	23.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	25.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	27.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	29.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	31.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	33.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	35.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	37.0	2.0	1.6	2.1	1.7	2.2	1.7	2.2	1.7	2.4	1.7	2.5	1.6
	39.0	1.9	1.5	2.0	1.6	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.5
009	10.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	12.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	14.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	16.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	18.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	20.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	21.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	23.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	25.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	27.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	29.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	31.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	33.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	35.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	37.0	2.5	1.9	2.7	2.0	2.7	2.0	2.8	2.0	3.0	1.9	3.1	1.9
	39.0	2.4	1.8	2.6	1.9	2.7	1.9	2.8	1.9	2.9	1.9	3.1	1.8
012	10.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	12.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	14.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	16.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	18.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	20.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	21.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	23.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	25.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	27.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	29.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	31.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	33.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	35.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	37.0	3.2	2.3	3.4	2.5	3.5	2.5	3.6	2.4	3.8	2.4	4.0	2.4
	39.0	3.1	2.2	3.4	2.4	3.5	2.4	3.6	2.4	3.8	2.3	3.9	2.3

Cooling capacity (cont.)

Unit size	Outdoor air temp. °CDB	Indoor air temp.											
		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		23°CDB		26°CDB		27°CDB		28°CDB		30°CDB		32°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	12.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	14.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	16.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	18.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	20.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	21.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	23.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	25.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	27.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	29.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	31.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	33.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	35.0	4.1	2.7	4.4	2.9	4.5	2.9	4.6	2.9	4.9	2.9	5.1	2.8
	37.0	4.0	2.7	4.3	2.9	4.4	2.8	4.5	2.8	4.8	2.8	5.0	2.8
	39.0	3.9	2.6	4.2	2.7	4.3	2.7	4.4	2.7	4.7	2.7	4.9	2.6
018	10.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	12.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	14.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	16.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	18.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	20.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	21.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	23.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	25.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	27.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	29.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	31.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	33.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	35.0	5.1	3.4	5.4	3.6	5.6	3.6	5.8	3.6	6.1	3.6	6.4	3.5
	37.0	5.0	3.3	5.3	3.5	5.5	3.5	5.7	3.5	6.0	3.5	6.3	3.4
	39.0	4.9	3.2	5.2	3.4	5.4	3.4	5.5	3.4	5.9	3.4	6.1	3.3
024	10.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	12.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	14.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	16.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	18.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	20.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	21.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	23.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	25.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	27.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	29.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	31.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	33.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	35.0	6.4	4.4	6.9	4.7	7.1	4.7	7.3	4.7	7.7	4.7	8.1	4.5
	37.0	6.3	4.3	6.7	4.6	7.0	4.6	7.2	4.6	7.6	4.6	7.9	4.5
	39.0	6.2	4.2	6.6	4.4	6.8	4.4	7.0	4.4	7.4	4.4	7.8	4.3

Heating capacity

SHC : Sensible Heat Capacity (kW)

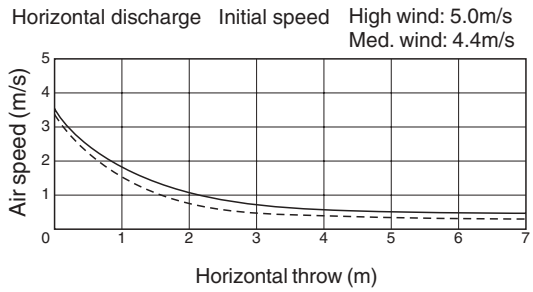
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

Heating capacity (cont.)

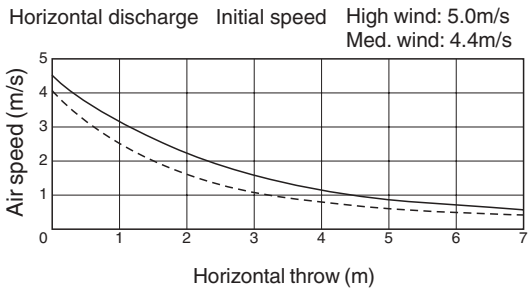
Unit size	Outdoor air temp. °CWB	Indoor air temp. °CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

9-9-5. Air throw distance chart

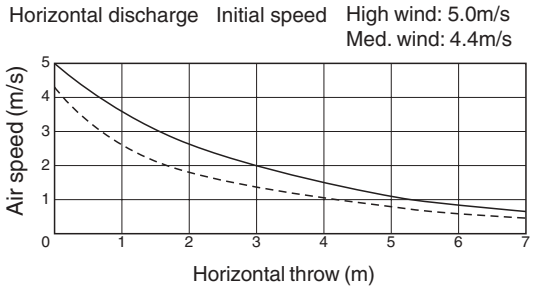
MMK-AP0071H, AP0091H, AP0121H



MMK-AP0151H, AP0181H

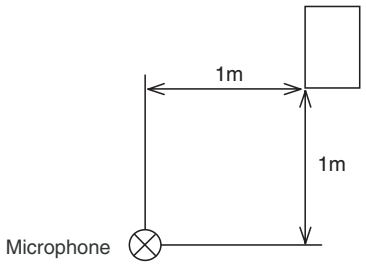


MMK-AP0241H



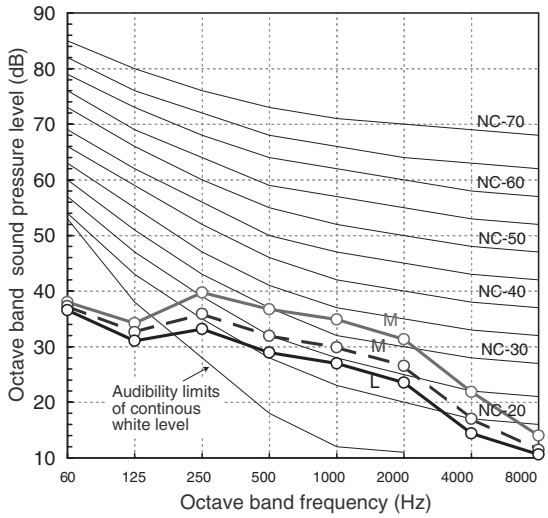
(Revised 07 Apr 2006)

9-9-6. Sound characteristics (NC-Curve)



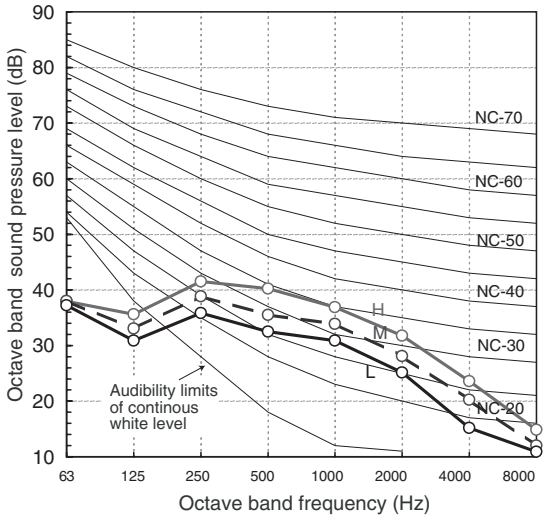
MMK-AP0071H, AP0091H, AP0121H

Fan Tap	H	M	L
Sound pressure level(dB(A))	39	34	31



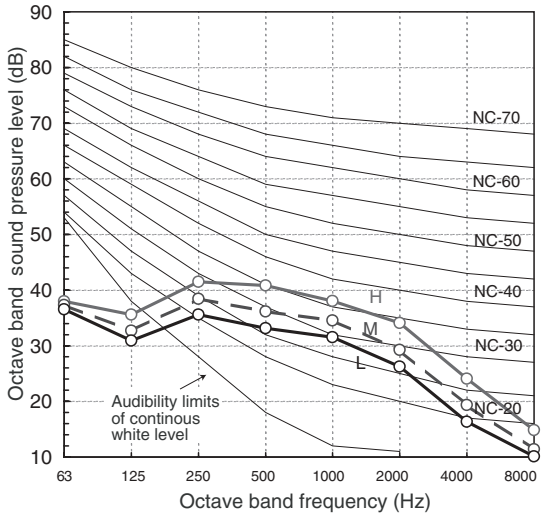
MMK-AP0151H, AP0181H

Fan Tap	H	M	L
Sound pressure level(dB(A))	42	38	35



MMK-AP0241H

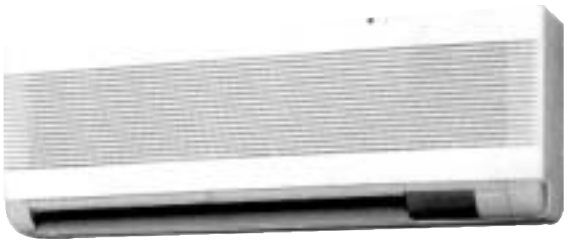
Fan Tap	H	M	L
Sound pressure level(dB(A))	42	38	35



(Revised 07 Apr 2006)

9-9-7. Accessories

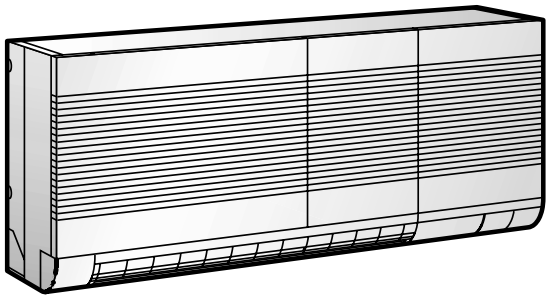
Apperarance



Standard accessories

Part name	Qty	Shape	Use	Part name	Qty	Shape	Use
Installation Manual	1	———	(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 Ø5.1 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

9-10-1. Specifications

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	(Nominal 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

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		
	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 (Nominal 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.

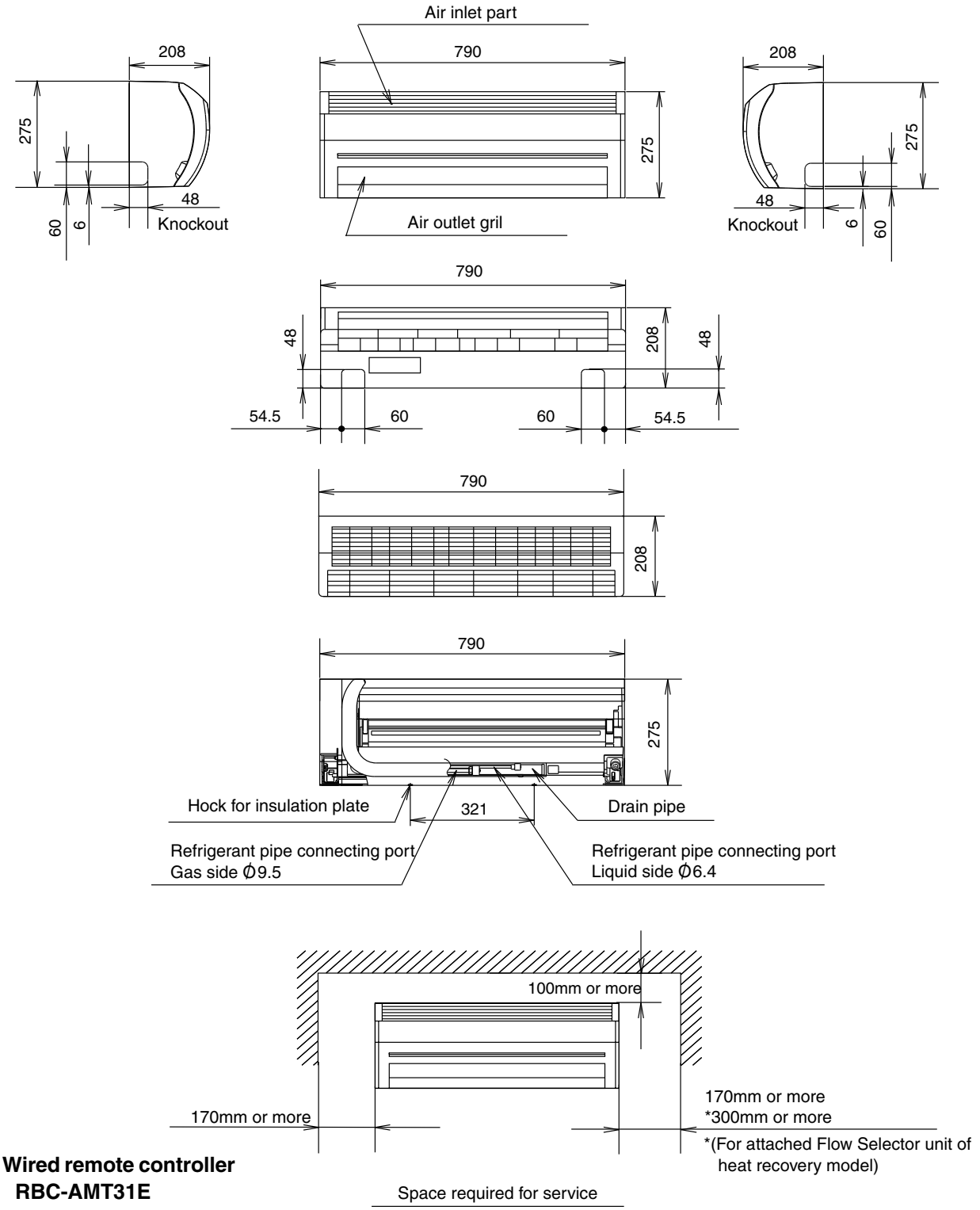
Note 2 : The sound level are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

9-10-2. Dimension

MMK-AP0072H, AP0092H, AP0122H

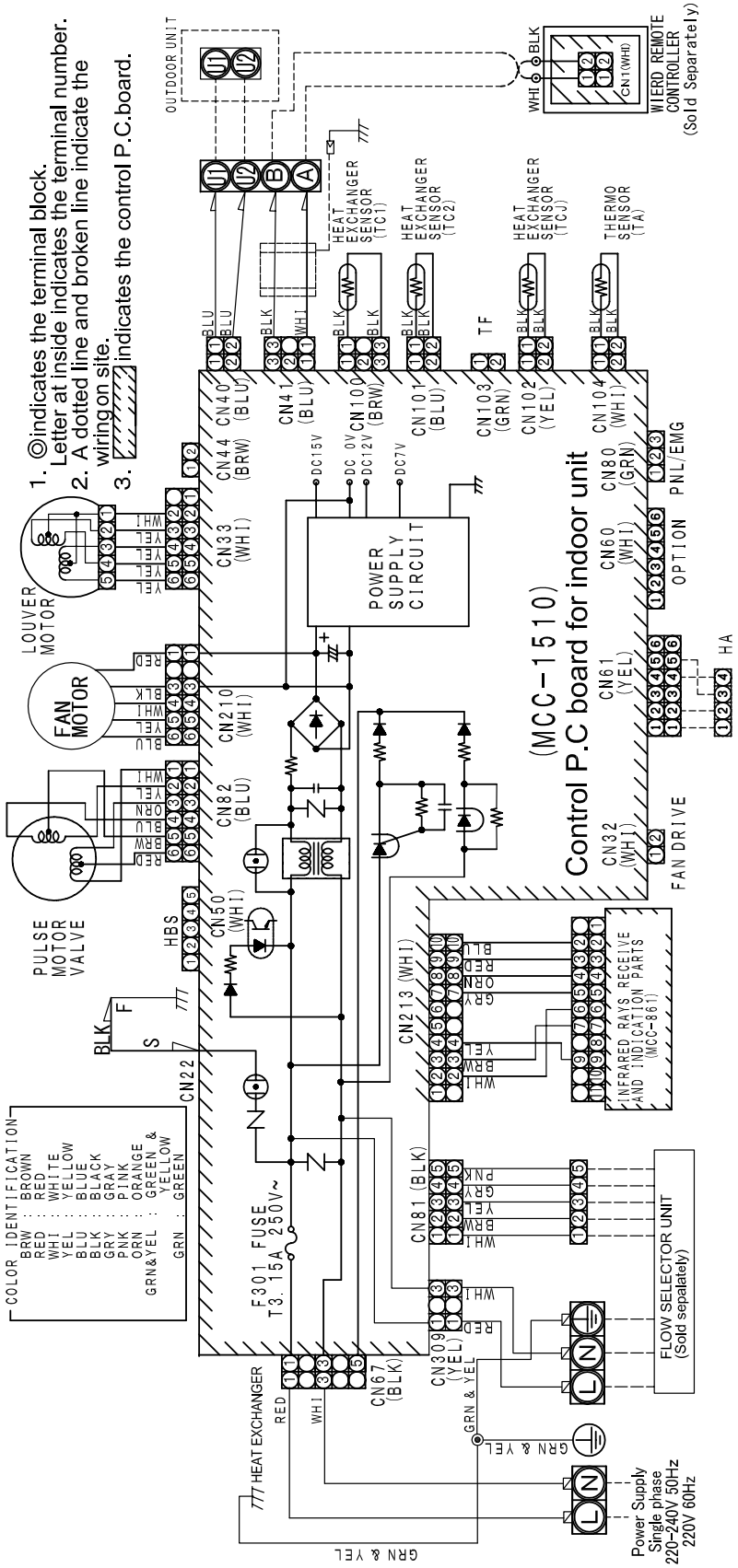


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Note: All dimensions are in mm.

9-10-3. Wiring diagram

Model: MMK-AP0072H, AP0092H, AP0122H



9-10-4. Sensible capacity table

(MMD-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	12.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	14.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	16.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	18.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	20.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	21.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	23.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	25.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	27.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	29.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	31.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	33.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	35.0	2.0	1.6	2.1	1.7	2.2	1.7	2.3	1.7	2.4	1.7	2.5	1.6
	37.0	2.0	1.6	2.1	1.7	2.2	1.7	2.2	1.7	2.4	1.7	2.5	1.6
	39.0	1.9	1.5	2.0	1.6	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.5
009	10.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	12.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	14.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	16.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	18.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	20.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	21.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	23.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	25.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	27.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	29.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	31.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	33.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	35.0	2.5	1.9	2.7	2.0	2.8	2.0	2.9	2.0	3.1	2.0	3.2	1.9
	37.0	2.5	1.9	2.7	2.0	2.7	2.0	2.8	2.0	3.0	1.9	3.1	1.9
	39.0	2.4	1.8	2.6	1.9	2.7	1.9	2.8	1.9	2.9	1.9	3.1	1.8
012	10.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	12.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	14.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	16.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	18.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	20.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	21.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	23.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	25.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	27.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	29.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	31.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	33.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	35.0	3.3	2.4	3.5	2.5	3.6	2.5	3.7	2.5	3.9	2.5	4.1	2.4
	37.0	3.2	2.3	3.4	2.5	3.5	2.5	3.6	2.4	3.8	2.4	4.0	2.4
	39.0	3.1	2.2	3.4	2.4	3.5	2.4	3.6	2.4	3.8	2.3	3.9	2.3

Heating capacity

SHC : Sensible Heat Capacity (kW)

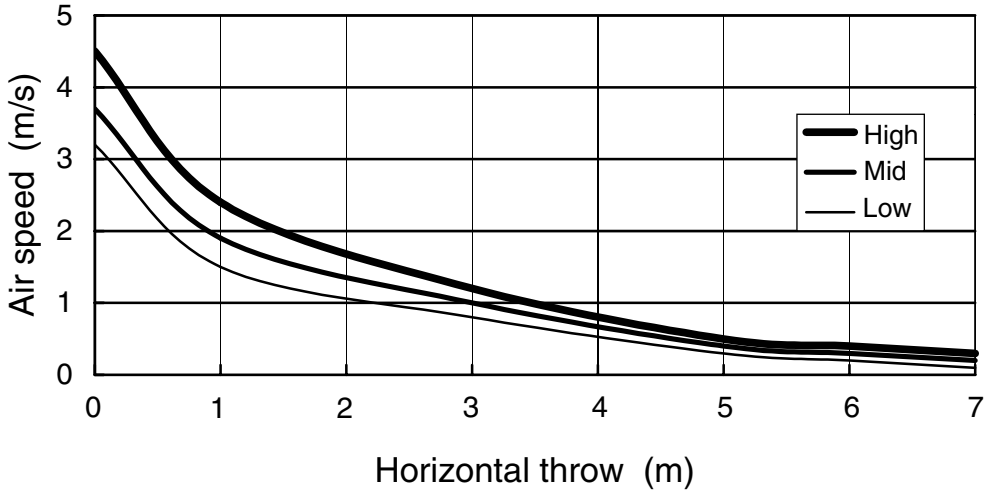
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB 16.0 SHC	18.0 SHC	20.0 SHC	22.0 SHC	24.0 SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

9-10-5. Air throw distance chart

Model : MMK-AP0072H, AP0092H, AP0122H

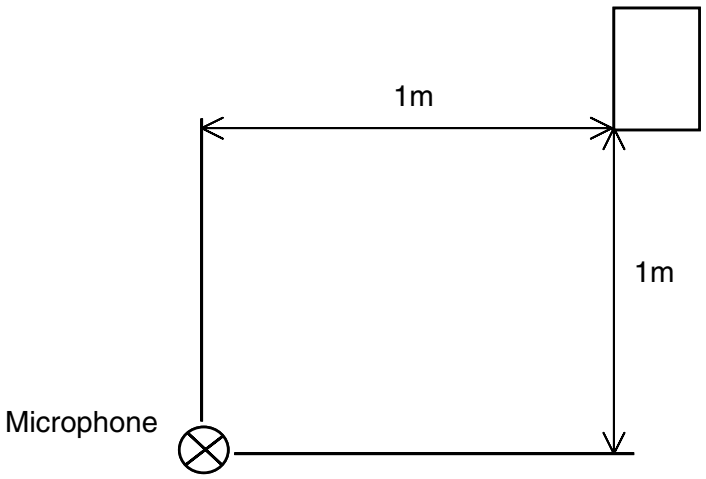
Horizontal discharge Initial speed

High wind : 4.5m/s
Med wind : 3.7m/s
Low wind : 3.2m/s



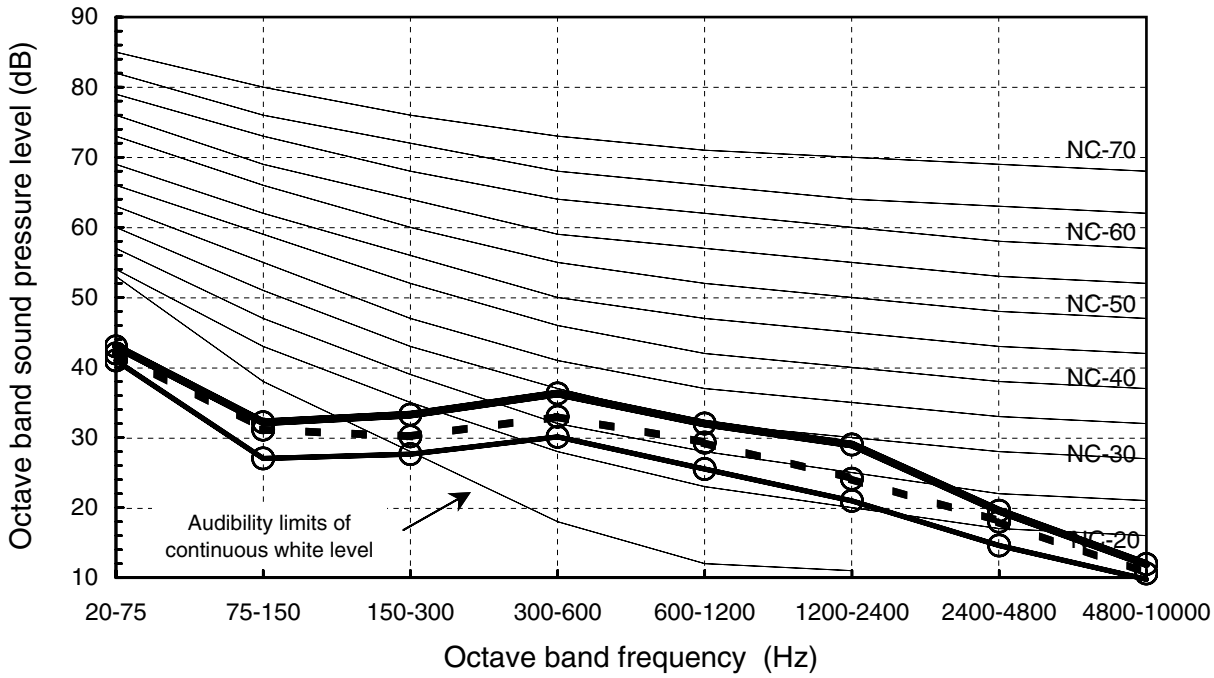
9-10-6. Sound characteristics (NC-Curve)

Model : MMK-AP0072H, AP0092H, AP0122H



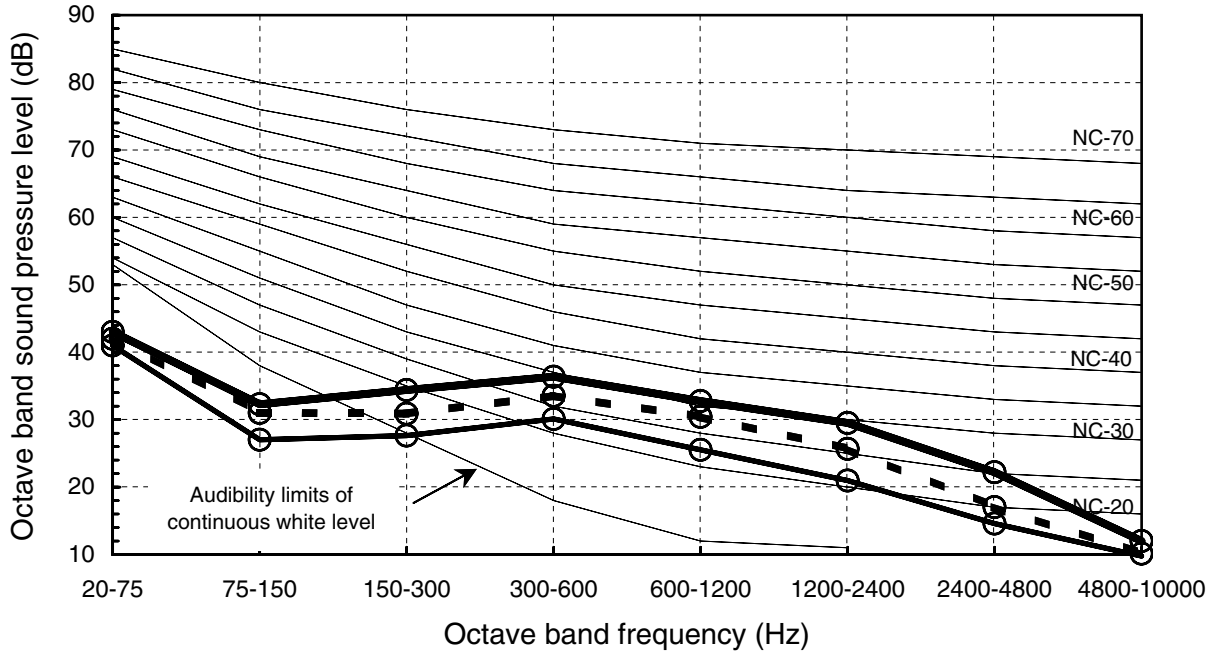
MMK-AP0072H

Fan tap	H	M	L
Sound pressure level (dB(A))	35	32	29



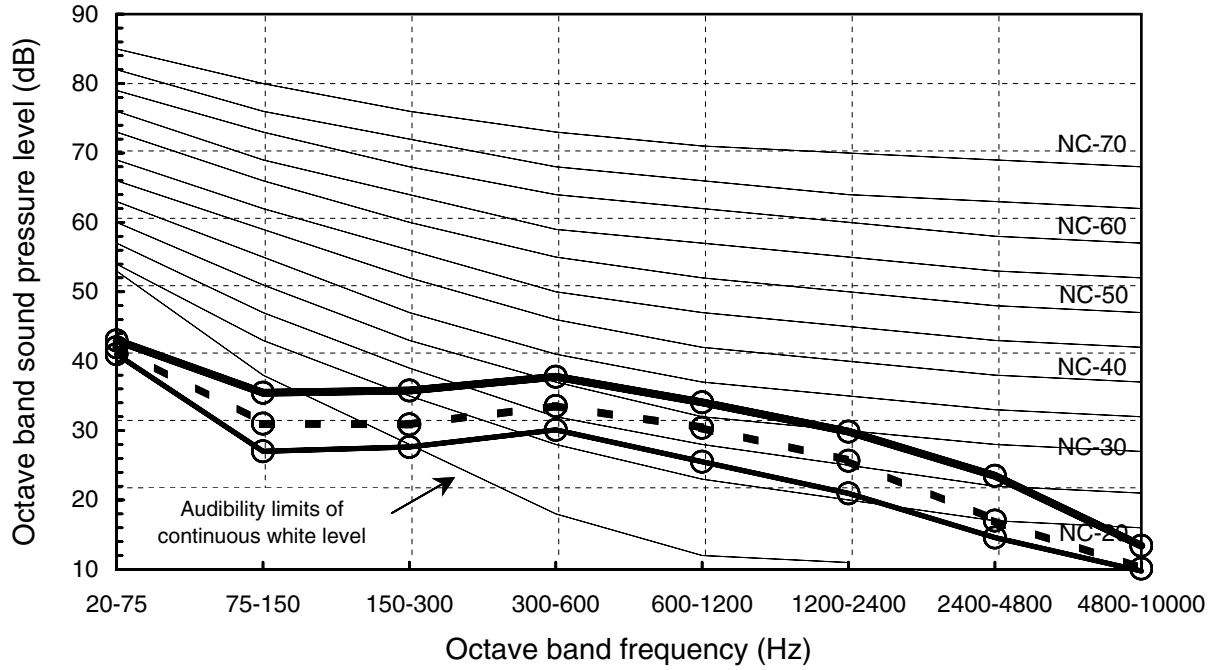
MMK-AP0092H

Fan tap	H	M	L
Sound pressure level (dB(A))	36	33	29



MMK-AP0122H

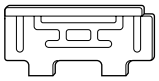
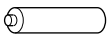
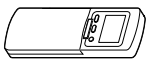
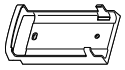
Fan tap	H	M	L
Sound pressure level (dB(A))	35	33	29



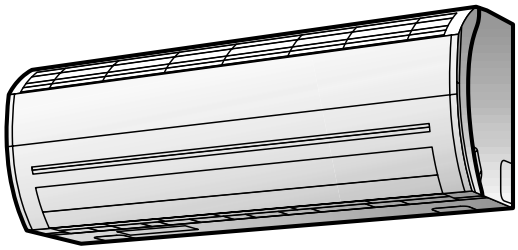
9-10-7. Accessories

Apperarance

Standard accessories

Part No.	Part name (Qty)	Part No.	Part name (Qty)	Part No.	Part name (Qty)
1	 Installation plate × 1	3	 Battery × 2	5	 Mounting screw Ø4 × 25 ℓ x 6
2	 Wireless remote controller × 1	4	 Remote controller holder × 1	6	 Pan head wood screw Ø3.1 × 16 ℓ × 2

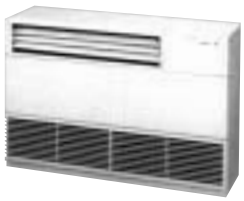
Optional accessories



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

9-11-1. Specifications



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 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

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)	Ø9.5			Ø12.7		Ø15.9
	Liquid side		(mm)	Ø6.4					Ø9.5
	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					

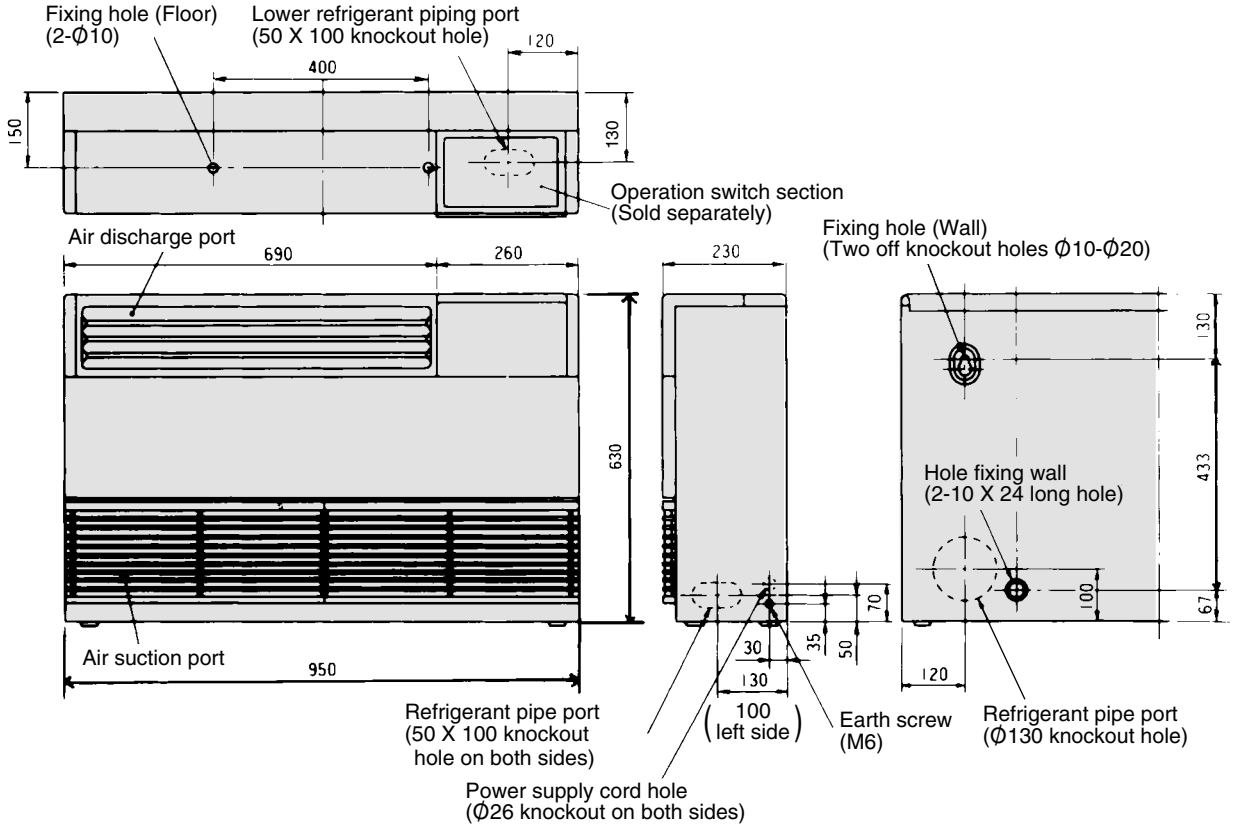
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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

9-11-2. Dimension

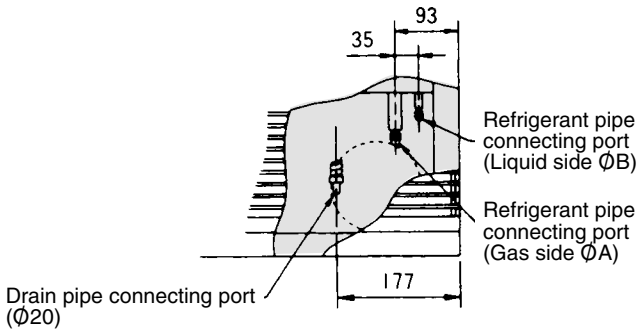
MML-AP0071H, AP0091H, AP0121H, AP0151H, AP0181H, AP0241H

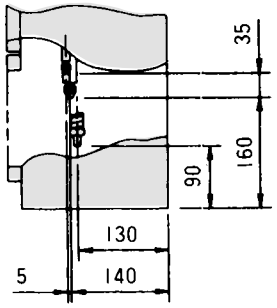


Dimensions

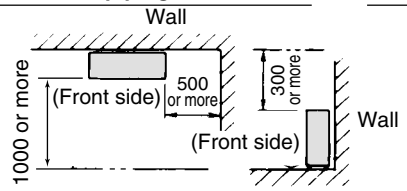
Model MML-	A	B
AP0071H, AP0091H, AP0121H	Φ9.5	Φ6.4
AP0151H, AP0181H	Φ12.7	Φ6.4
AP0241H	Φ15.9	Φ9.5

- **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

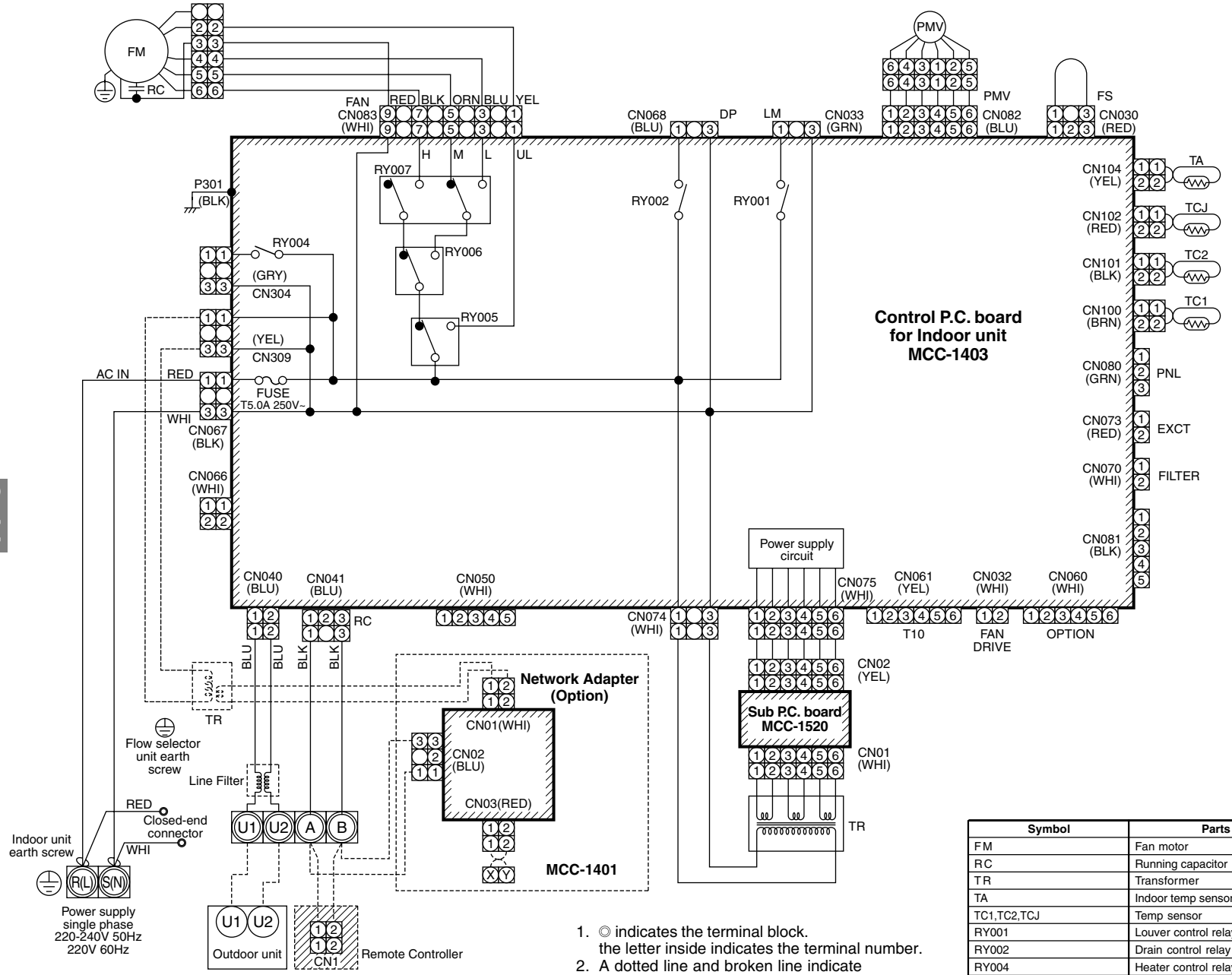


Positional drawing of piping

Note: All dimensions are in mm.

9-11-3. Wiring diagram

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



1. ◎ indicates the terminal block.
   the letter inside indicates the terminal number.
2. A dotted line and broken line indicate
   the wiring on site.
3. ▨ Indicates the control p.c. board.

Color indication

RED	RED
WHI	WHITE
YEL	YELLOW
BLU	BLUE
BLK	BLACK
GRY	GRAY
PNK	PINK
ORN	ORANGE
BRN	BROWN
GRN	GREEN

Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY001	Louver control relay
RY002	Drain control relay
RY004	Heater control relay
RY005~007	Fan motor control relay
PMV	Pulse motor valve

9-11-4. Sensible capacity table

(MML-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	12.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	14.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	16.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	18.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	20.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	21.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	23.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	25.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	27.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	29.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	31.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	33.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	35.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	37.0	2.0	1.3	2.1	1.4	2.2	1.4	2.2	1.4	2.4	1.4	2.5	1.3
	39.0	1.9	1.2	2.0	1.3	2.1	1.3	2.2	1.3	2.3	1.3	2.4	1.3
009	10.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	12.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	14.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	16.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	18.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	20.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	21.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	23.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	25.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	27.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	29.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	31.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	33.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	35.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	37.0	2.5	1.5	2.7	1.6	2.7	1.6	2.8	1.6	3.0	1.6	3.1	1.5
	39.0	2.4	1.4	2.6	1.5	2.7	1.5	2.8	1.5	2.9	1.5	3.1	1.5
012	10.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	12.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	14.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	16.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	18.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	20.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	21.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	23.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	25.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	27.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	29.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	31.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	33.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	35.0	3.2	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	4.0	2.0
	37.0	3.1	1.9	3.3	2.1	3.4	2.1	3.5	2.1	3.7	2.0	3.9	2.0
	39.0	3.1	1.9	3.3	2.0	3.4	2.0	3.5	2.0	3.7	2.0	3.8	1.9

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	12.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	14.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	16.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	18.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	20.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	21.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	23.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	25.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	27.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	29.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	31.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	33.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	35.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	37.0	4.0	2.6	4.3	2.8	4.4	2.7	4.5	2.7	4.8	2.7	5.0	2.7
	39.0	3.9	2.5	4.2	2.6	4.3	2.6	4.4	2.6	4.7	2.6	4.9	2.5
018	10.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	12.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	14.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	16.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	18.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	20.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	21.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	23.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	25.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	27.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	29.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	31.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	33.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	35.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	37.0	5.0	3.2	5.3	3.4	5.5	3.4	5.7	3.4	6.0	3.4	6.3	3.3
	39.0	4.9	3.1	5.2	3.3	5.4	3.3	5.5	3.3	5.9	3.3	6.1	3.2
024	10.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	12.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	14.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	16.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	18.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	20.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	21.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	23.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	25.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	27.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	29.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	31.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	33.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	35.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	37.0	6.3	4.2	6.7	4.4	7.0	4.4	7.2	4.4	7.6	4.4	7.9	4.3
	39.0	6.2	4.0	6.6	4.2	6.8	4.2	7.0	4.2	7.4	4.2	7.8	4.1

Heating capacity

SHC : Sensible Heat Capacity (kW)

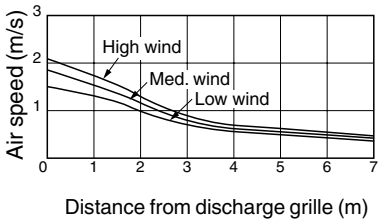
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

Heating capacity (cont.)

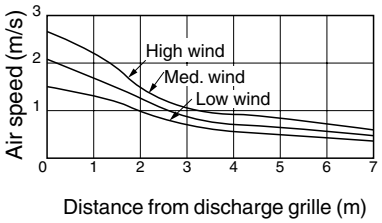
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

9-11-5. Air throw distance chart

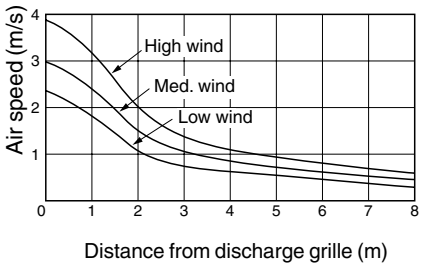
MML-AP0071H, AP0091H



MML-AP0121H, AP0151H

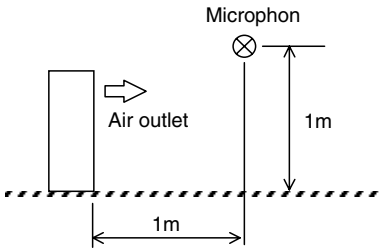


MML-AP0181H, AP0241H



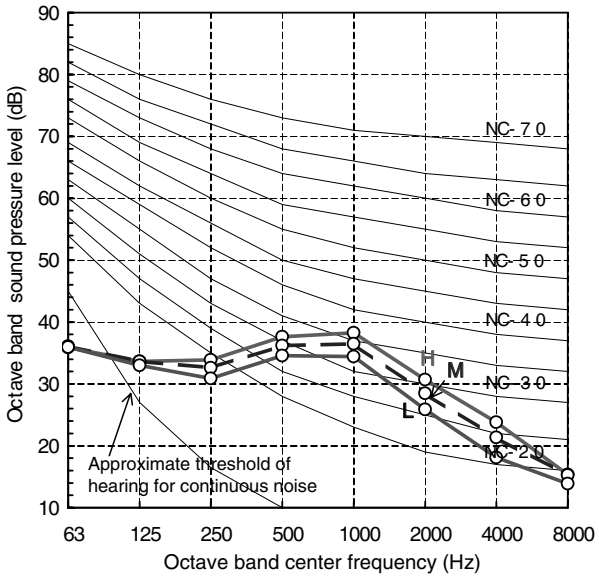
9-11-6. Sound characteristics (NC-Curve)

[Measuring location]



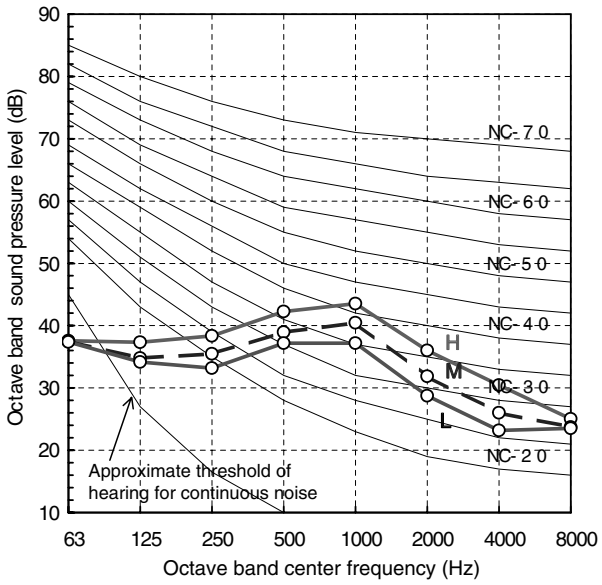
MML-AP0071H,MML-AP0091H

Fan tap	H	M	L
Sound pressure level (dB(A))	39	37	35



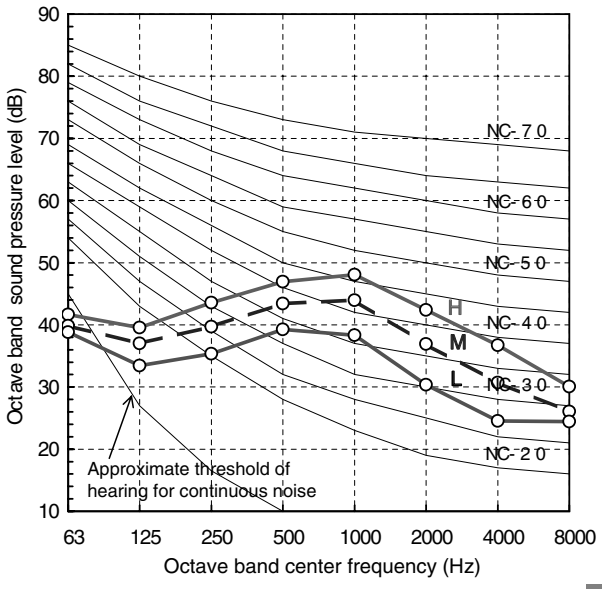
MML-AP0121H,MML-AP0151H

Fan tap	H	M	L
Sound pressure level (dB(A))	45	41	38



MML-AP0181H,MML-AP0241H

Fan tap	H	M	L
Sound pressure level (dB(A))	49	44	39



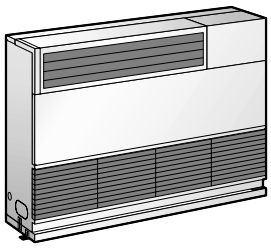
9-11-7. Accessories

Apperarance

Standard accessories

Part name	Qty	Shape	Use	Part name	Qty	Shape	Use
Installation Manual	1	———		Bushing	1		For installation in the wire knockout
Heat insulation	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

9-12-1. Specifications

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 (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

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.

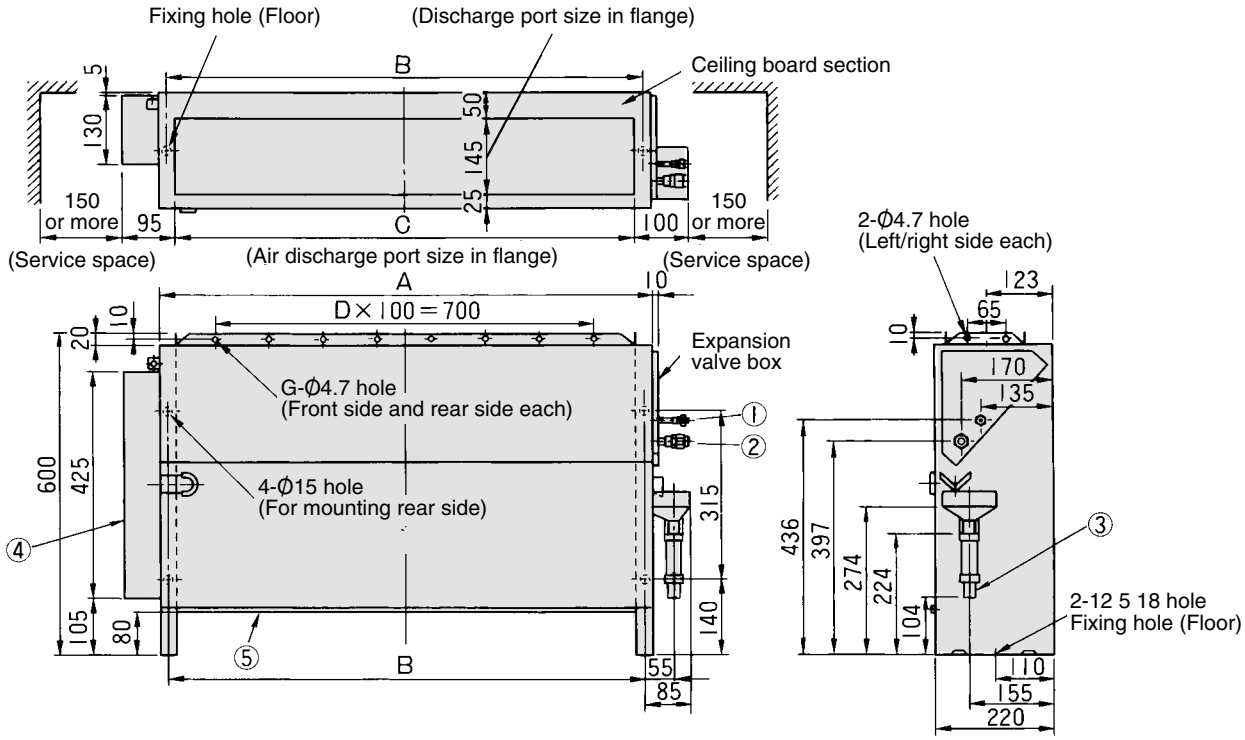
Note 2 : The sound levels are measured in an anechoic chamber in accordance with JIS B8616. Normally, the values measured in the actual operating environment become larger than the indicated values due to the effects of external sound.

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

(Revised 07 Apr 2006)

9-12-2. Dimension

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



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

Dimensions

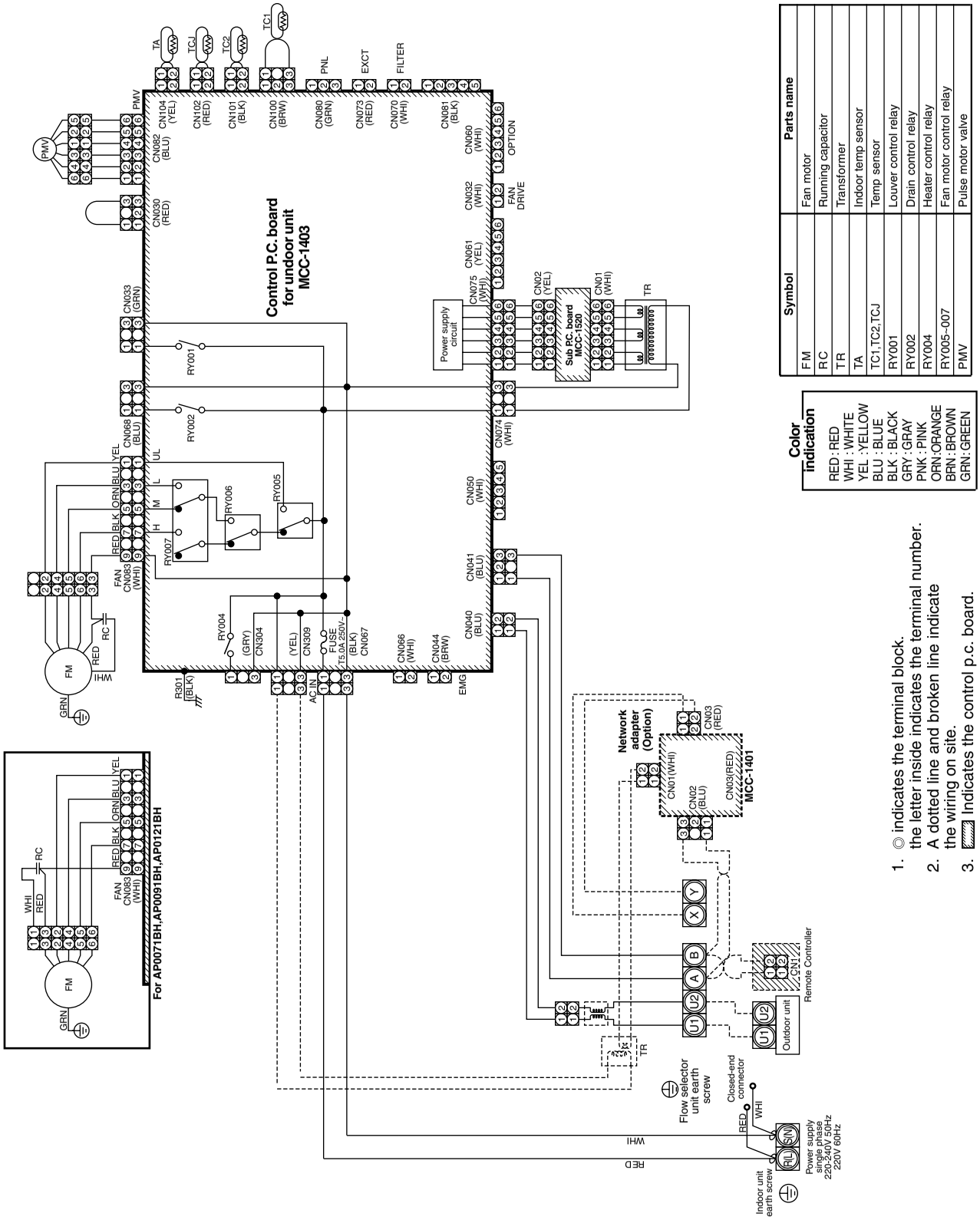
Model MML-	A	B	C	D	E	F	G
AP0071BH, AP0091BH, AP0121BH	610	580	550	4	6.4	9.5	5
AP0151BH, AP0181BH	910	880	850	7	6.4	12.7	8
AP0241BH					9.5	15.9	

- **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.

9-12-3. Wiring diagram

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



Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY001	Louver control relay
RY002	Drain control relay
RY004	Heater control relay
RY005~007	Fan motor control relay
PMV	Pulse motor valve

1. ◎ indicates the terminal block. the letter inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ Indicates the control p.c. board.

9-12-4. Sensible capacity table

(MML-AP*BH)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	10.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	12.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	14.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	16.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	18.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	20.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	21.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	23.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	25.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	27.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	29.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	31.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	33.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	35.0	2.0	1.3	2.1	1.4	2.2	1.4	2.3	1.4	2.4	1.4	2.5	1.4
	37.0	2.0	1.3	2.1	1.4	2.2	1.4	2.2	1.4	2.4	1.4	2.5	1.3
	39.0	1.9	1.2	2.0	1.3	2.1	1.3	2.2	1.3	2.3	1.3	2.4	1.3
009	10.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	12.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	14.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	16.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	18.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	20.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	21.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	23.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	25.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	27.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	29.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	31.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	33.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	35.0	2.5	1.5	2.7	1.6	2.8	1.6	2.9	1.6	3.1	1.6	3.2	1.5
	37.0	2.5	1.5	2.7	1.6	2.7	1.6	2.8	1.6	3.0	1.6	3.1	1.5
	39.0	2.4	1.4	2.6	1.5	2.7	1.5	2.8	1.5	2.9	1.5	3.1	1.5
012	10.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	12.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	14.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	16.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	18.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	20.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	21.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	23.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	25.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	27.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	29.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	31.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	33.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	35.0	3.3	2.1	3.5	2.2	3.6	2.2	3.7	2.2	3.9	2.2	4.1	2.1
	37.0	3.2	2.0	3.4	2.2	3.5	2.2	3.6	2.2	3.8	2.1	4.0	2.1
	39.0	3.1	2.0	3.4	2.1	3.5	2.1	3.6	2.1	3.8	2.1	3.9	2.0

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	12.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	14.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	16.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	18.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	20.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	21.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	23.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	25.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	27.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	29.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	31.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	33.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	35.0	4.1	2.6	4.4	2.8	4.5	2.8	4.6	2.8	4.9	2.8	5.1	2.7
	37.0	4.0	2.6	4.3	2.8	4.4	2.7	4.5	2.7	4.8	2.7	5.0	2.7
	39.0	3.9	2.5	4.2	2.6	4.3	2.6	4.4	2.6	4.7	2.6	4.9	2.5
018	10.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	12.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	14.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	16.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	18.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	20.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	21.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	23.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	25.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	27.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	29.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	31.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	33.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	35.0	5.1	3.3	5.4	3.5	5.6	3.5	5.8	3.5	6.1	3.5	6.4	3.4
	37.0	5.0	3.2	5.3	3.4	5.5	3.4	5.7	3.4	6.0	3.4	6.3	3.3
	39.0	4.9	3.1	5.2	3.3	5.4	3.3	5.5	3.3	5.9	3.3	6.1	3.2
024	10.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	12.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	14.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	16.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	18.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	20.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	21.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	23.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	25.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	27.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	29.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	31.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	33.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	35.0	6.4	4.2	6.9	4.5	7.1	4.5	7.3	4.5	7.7	4.5	8.1	4.4
	37.0	6.3	4.2	6.7	4.4	7.0	4.4	7.2	4.4	7.6	4.4	7.9	4.3
	39.0	6.2	4.0	6.6	4.2	6.8	4.2	7.0	4.2	7.4	4.2	7.8	4.1

Heating capacity

SHC : Sensible Heat Capacity (kW)

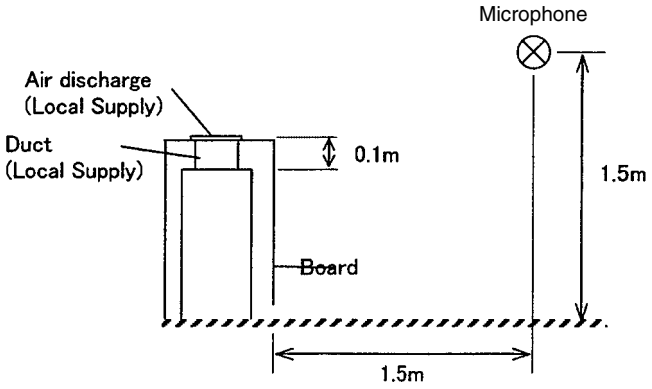
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB 16.0 SHC	18.0 SHC	20.0 SHC	22.0 SHC	24.0 SHC
007	-15.0	1.6	1.5	1.5	1.5	1.4
	-13.0	1.7	1.6	1.6	1.6	1.5
	-11.0	1.8	1.7	1.7	1.7	1.6
	-10.0	1.8	1.8	1.8	1.7	1.7
	-8.0	1.9	1.9	1.9	1.8	1.8
	-6.0	2.0	2.0	2.0	1.9	1.9
	-4.0	2.1	2.1	2.0	2.0	1.9
	-2.0	2.2	2.2	2.1	2.1	2.0
	0.0	2.3	2.3	2.2	2.2	2.1
	2.0	2.4	2.4	2.3	2.3	2.2
	4.0	2.5	2.5	2.4	2.4	2.3
	6.0	2.6	2.6	2.5	2.4	2.4
	8.0	2.6	2.6	2.5	2.4	2.4
	10.0	2.6	2.6	2.5	2.4	2.4
	12.0	2.6	2.6	2.5	2.4	2.4
	14.0	2.6	2.6	2.5	2.4	2.4
009	-15.0	2.0	2.0	1.9	1.9	1.8
	-13.0	2.1	2.1	2.1	2.0	1.9
	-11.0	2.3	2.2	2.2	2.1	2.1
	-10.0	2.3	2.3	2.2	2.2	2.1
	-8.0	2.5	2.4	2.4	2.3	2.3
	-6.0	2.6	2.6	2.5	2.4	2.4
	-4.0	2.7	2.7	2.6	2.6	2.5
	-2.0	2.9	2.8	2.7	2.7	2.6
	0.0	3.0	2.9	2.9	2.8	2.7
	2.0	3.1	3.0	3.0	2.9	2.8
	4.0	3.2	3.2	3.1	3.0	2.9
	6.0	3.3	3.3	3.2	3.1	3.0
	8.0	3.3	3.3	3.2	3.1	3.0
	10.0	3.3	3.3	3.2	3.1	3.0
	12.0	3.3	3.3	3.2	3.1	3.0
	14.0	3.3	3.3	3.2	3.1	3.0
012	-15.0	2.5	2.5	2.4	2.3	2.3
	-13.0	2.7	2.6	2.6	2.5	2.4
	-11.0	2.8	2.8	2.7	2.7	2.6
	-10.0	2.9	2.9	2.8	2.7	2.7
	-8.0	3.1	3.0	3.0	2.9	2.8
	-6.0	3.3	3.2	3.1	3.0	3.0
	-4.0	3.4	3.3	3.3	3.2	3.1
	-2.0	3.6	3.5	3.4	3.3	3.3
	0.0	3.7	3.7	3.6	3.5	3.4
	2.0	3.9	3.8	3.7	3.6	3.5
	4.0	4.0	3.9	3.9	3.8	3.7
	6.0	4.2	4.1	4.0	3.9	3.8
	8.0	4.2	4.1	4.0	3.9	3.8
	10.0	4.2	4.1	4.0	3.9	3.8
	12.0	4.2	4.1	4.0	3.9	3.8
	14.0	4.2	4.1	4.0	3.9	3.8

Heating capacity (cont.)

Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

9-12-5. Sound characteristics (NC-Curve)

Sound level values shown are based on a measurement in a non resound room.

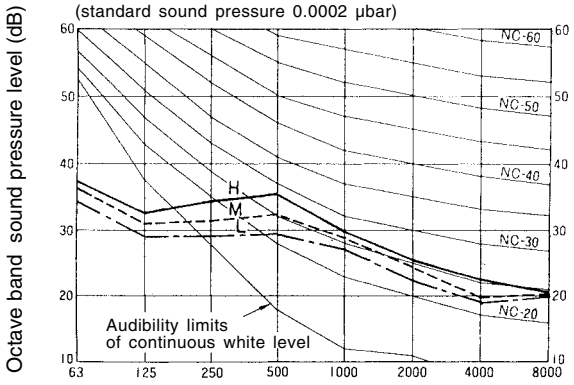


MML-AP0071BH, AP0091BH, AP0121BH

50Hz

Fan Tap		H	M	L
Overall level (dB)	A	36.0	34.0	32.0
	C	41.7	40.2	37.9

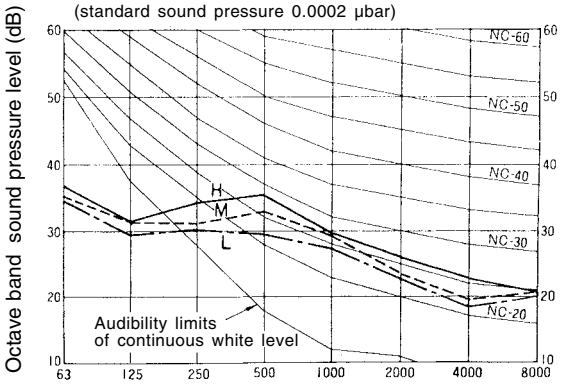
(standard sound pressure 0.0002 μbar)



60Hz

Fan Tap		H	M	L
Overall level (dB)	A	36.0	34.0	32.0
	C	41.6	39.8	38.1

(standard sound pressure 0.0002 μbar)

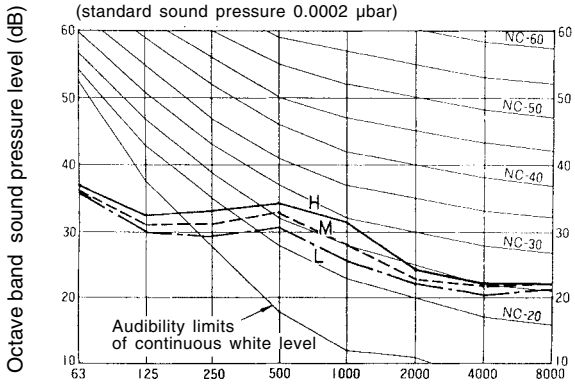


MML-AP0151BH, AP0181BH

50Hz

Fan Tap		H	M	L
Overall level (dB)	A	36.0	34.0	32.0
	C	41.4	40.0	38.8

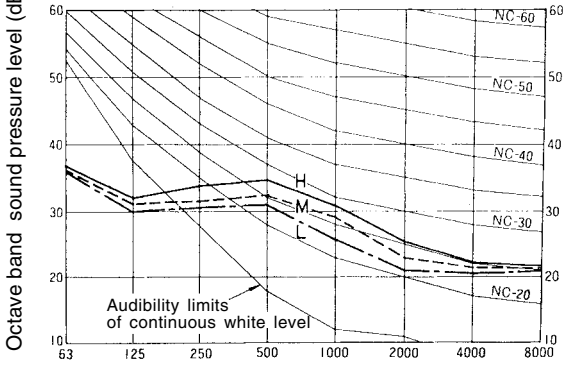
(standard sound pressure 0.0002 μbar)



60Hz

Fan Tap		H	M	L
Overall level (dB)	A	36.0	34.0	32.0
	C	41.4	40.0	39.0

(standard sound pressure 0.0002 μbar)

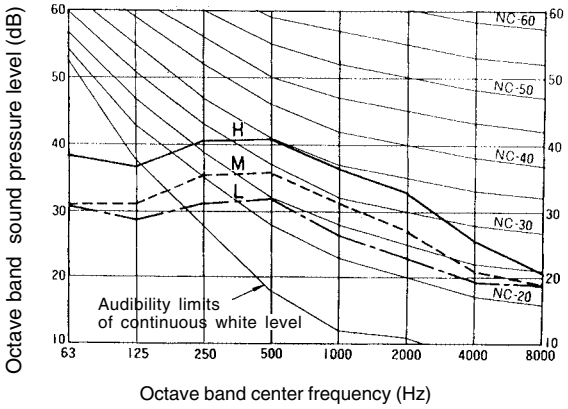


MML-AP0241BH

50Hz

Fan Tap		H	M	L
Overall level (dB)	A	42.0	37.0	33.0
	C	46.4	41.0	37.7

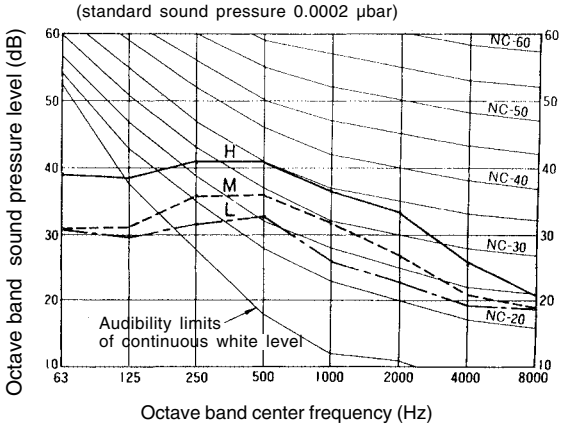
(standard sound pressure 0.0002 μbar)



60Hz

Fan Tap		H	M	L
Overall level (dB)	A	42.0	37.0	33.0
	C	46.6	41.0	38.0

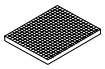
(standard sound pressure 0.0002 μbar)



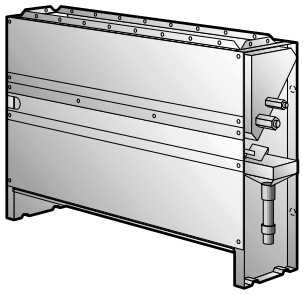
9-12-6. Accessories

Apperarance

Standard accessories

Part name	Qty	Shape	Use	Part name	Qty	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

9-13-1. Specifications

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 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

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)	Ø12.7		Ø15.9			
	Liquid side	(mm)	Ø6.4		Ø9.5			
	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					

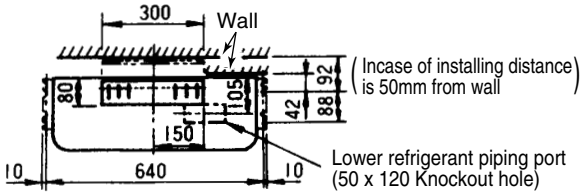
Note 1 : The cooling capacities and electrical characteristics are measured under the conditions specified by JIS B 8615 based on the reference piping. The reference piping consists of 5 m of main piping and 2.5 m of branch piping connected with 0 meter height.

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

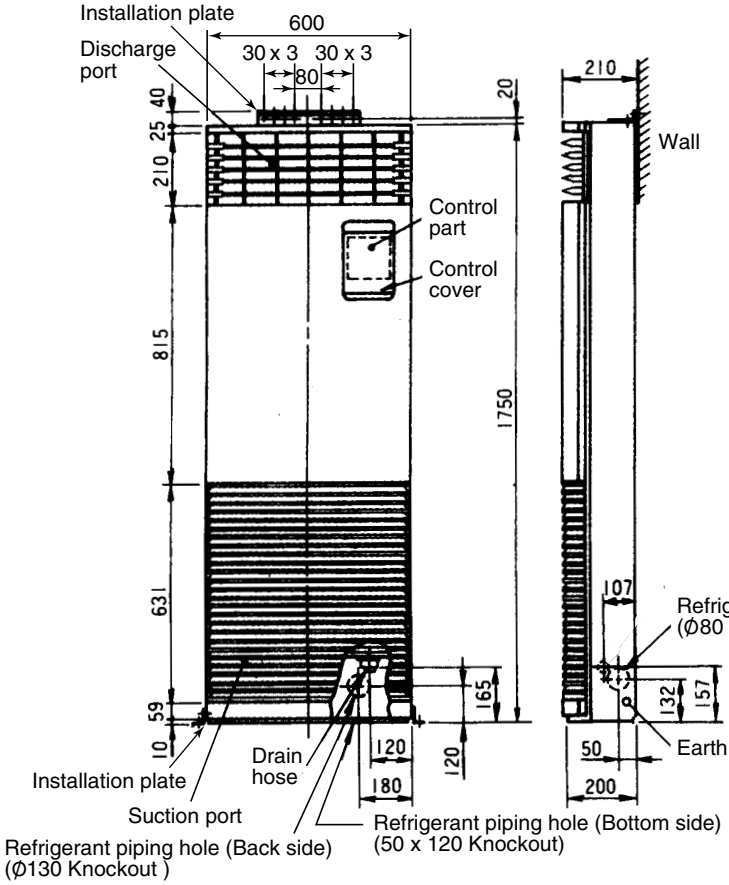
9-13-2. Dimension

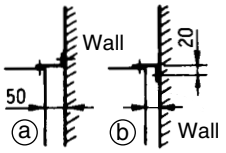
MMF-AP0151H, AP0181H, AP0241H, AP0271H



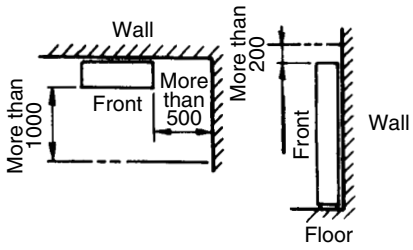
Dimensions

Model	A	B
MMF-AP0151H, AP0181H	Ø12.7	Ø6.4
MMF-AP0241H, AP0271H	Ø15.7	Ø9.5

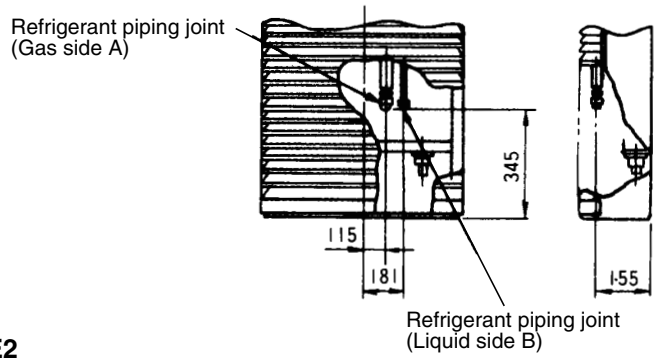




Space required for service (In case of right side piping)

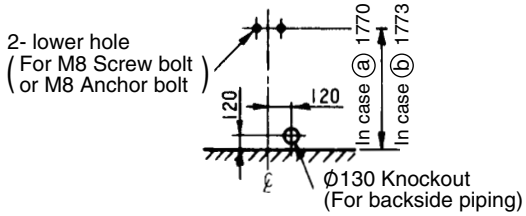


Refrigerant piping position

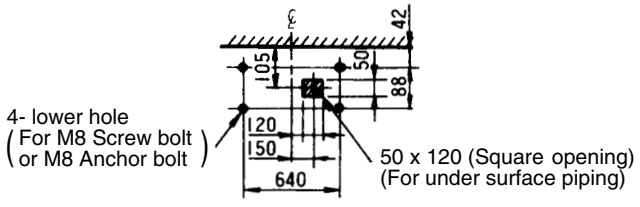


- **Wired remote controller**
  RBC-AMT31E
- **Simple wired remote controller**
  RBC-AS21E2
- **Wireless remote controller kit**
  TCB-AX21E2
- **Weekly timer application**
  RBC-AMT31E and RBC-EXW21E2

Details of hole for back side piping

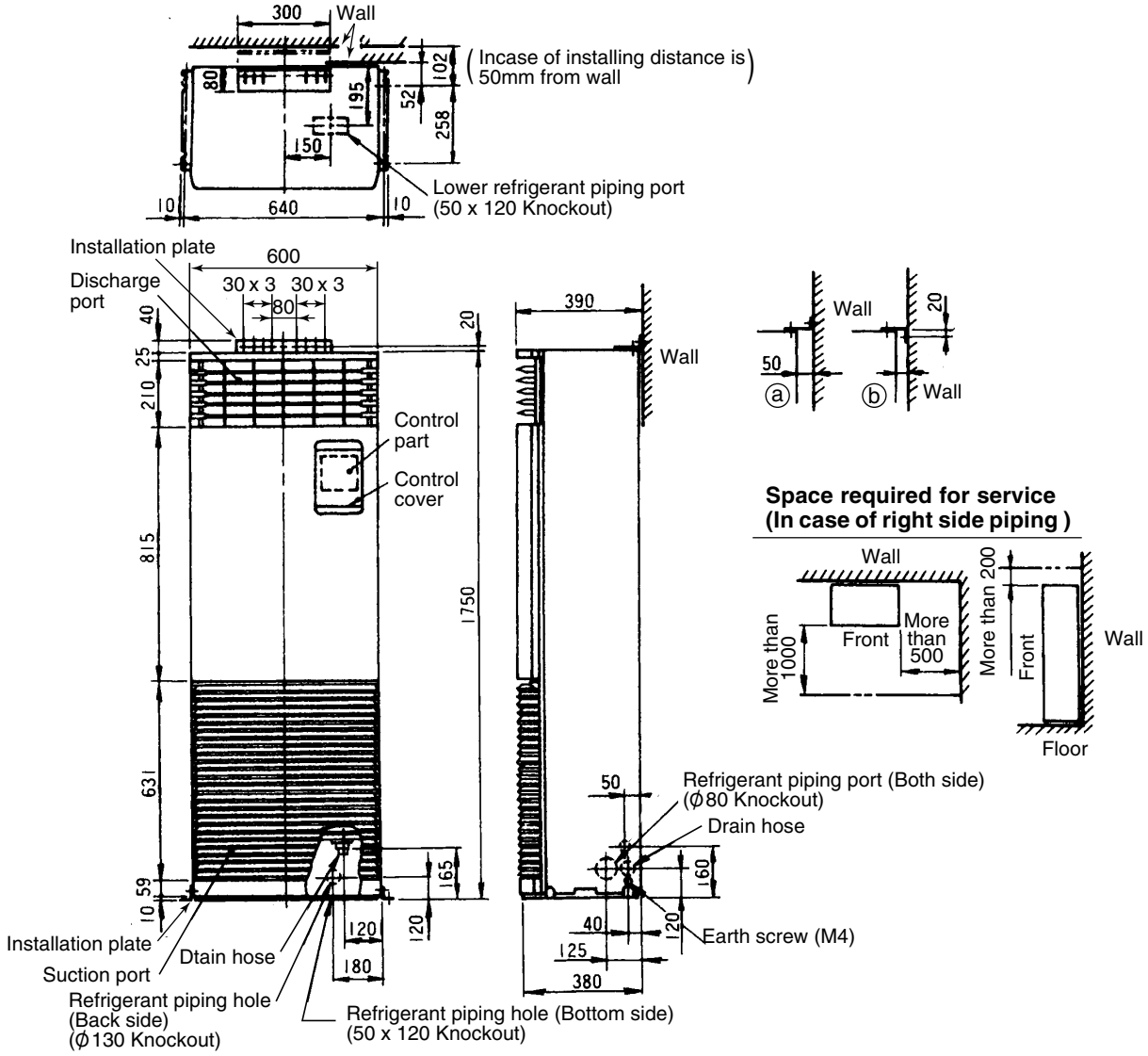


Details of hole for lower side piping

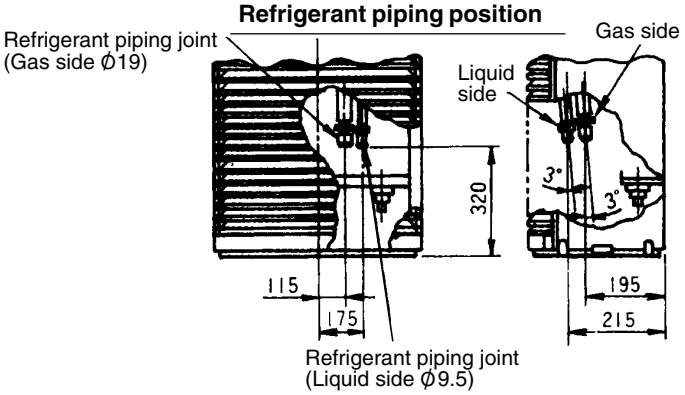


Note: All dimensions are in mm.

MMF-AP0361H, AP0481H

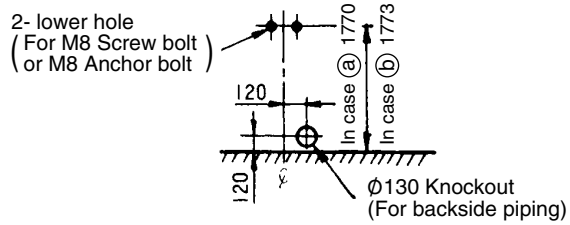


Refrigerant piping position

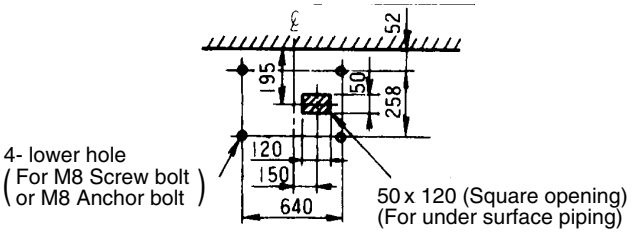


- **Wired remote controller RBC-AMT31E**
- **Simple wired remote controller RBC-AS21E2**
- **Wireless remote controller kit TCB-AX21E2**
- **Weekly timer application RBC-AMT31E and RBC-EXW21E2**

Details of hole for back side piping



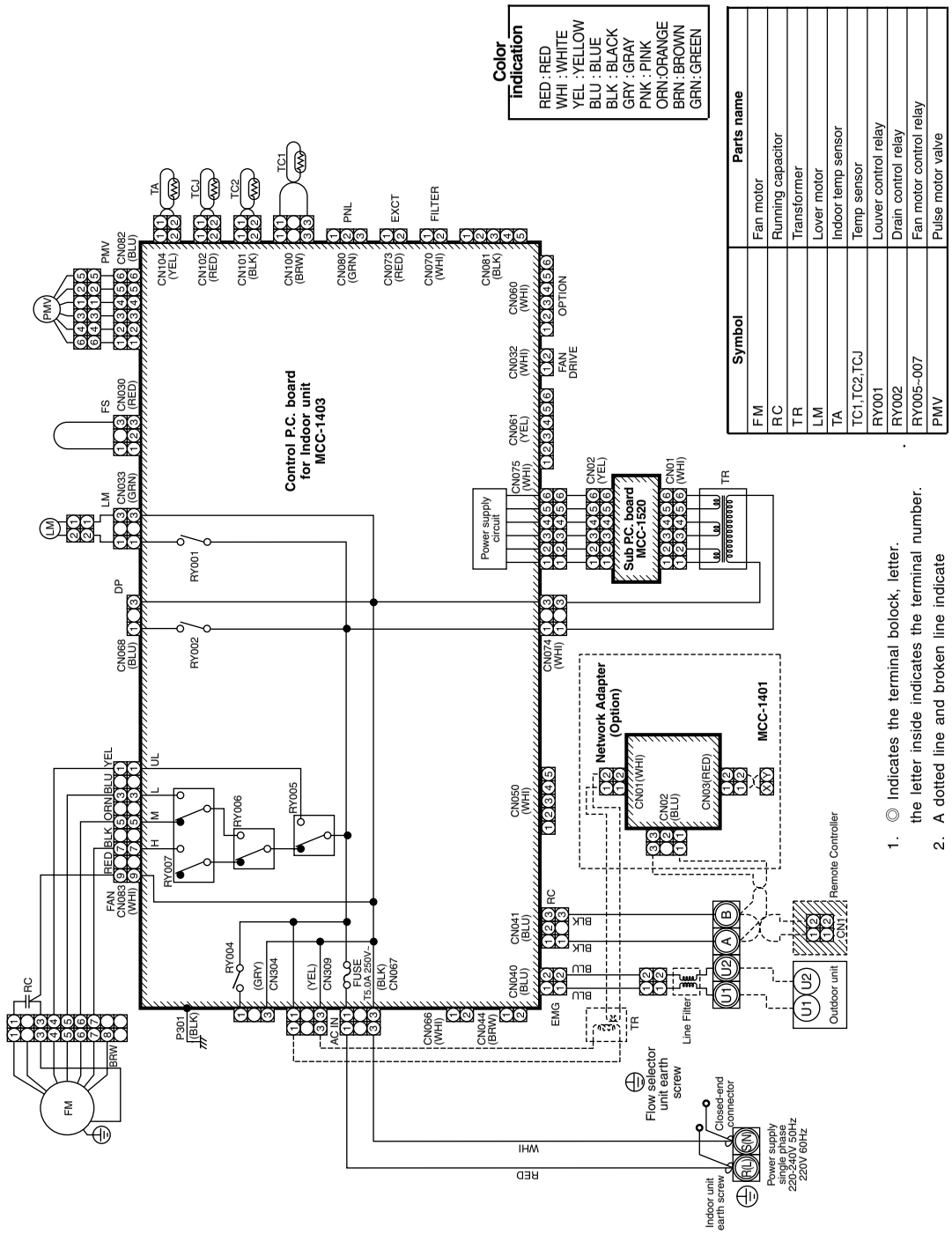
Details of hole for lower side piping



Note: All dimensions are in mm.

9-13-3. Wiring diagram

Model: MMF-AP0151H, AP0181H, AP0241H, AP0271H, AP0361H, AP0481H, AP0561H



Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
LM	Lover motor
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY001	Louver control relay
RY002	Drain control relay
RY005-007	Fan motor control relay
PMV	Pulse motor valve

1. ◎ Indicates the terminal bolock, letter. the letter inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring on site.
3. ▨ Indicates the control p.c. board.

9-13-4. Sensible capacity table

(MMF-AP*H)**

Cooling capacity

TC : Total Capacity (kW) SHC : Sensible Heat Capacity (kW)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
015	10.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	12.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	14.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	16.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	18.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	20.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	21.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	23.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	25.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	27.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	29.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	31.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	33.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	35.0	4.1	3.2	4.4	3.4	4.5	3.4	4.6	3.4	4.9	3.4	5.1	3.3
	37.0	4.0	3.1	4.3	3.3	4.4	3.3	4.5	3.3	4.8	3.3	5.0	3.2
	39.0	3.9	3.0	4.2	3.2	4.3	3.2	4.4	3.2	4.7	3.2	4.9	3.1
018	10.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	12.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	14.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	16.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	18.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	20.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	21.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	23.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	25.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	27.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	29.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	31.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	33.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	35.0	5.1	3.9	5.4	4.1	5.6	4.1	5.8	4.1	6.1	4.1	6.4	4.0
	37.0	5.0	3.8	5.3	4.0	5.5	4.0	5.7	4.0	6.0	4.0	6.3	3.9
	39.0	4.9	3.6	5.2	3.9	5.4	3.9	5.5	3.9	5.9	3.8	6.1	3.7
024	10.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	12.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	14.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	16.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	18.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	20.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	21.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	23.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	25.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	27.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	29.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	31.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	33.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	35.0	6.4	5.0	6.9	5.3	7.1	5.3	7.3	5.3	7.7	5.3	8.1	5.1
	37.0	6.3	4.9	6.7	5.2	7.0	5.2	7.2	5.2	7.6	5.1	7.9	5.0
	39.0	6.2	4.7	6.6	5.0	6.8	5.0	7.0	5.0	7.4	4.9	7.8	4.8

Cooling capacity (cont.)

Unit size	Outdoor air temp. ˚CDB	Indoor air temp.											
		16.0˚CWB		18.0˚CWB		19.0˚CWB		20.0˚CWB		22.0˚CWB		24.0˚CWB	
		23˚CDB		26˚CDB		27˚CDB		28˚CDB		30˚CDB		32˚CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
027	10.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	12.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	14.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	16.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	18.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	20.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	21.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	23.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	25.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	27.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	29.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	31.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	33.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	35.0	7.3	5.6	7.8	5.9	8.0	5.9	8.2	5.9	8.7	5.8	9.1	5.7
	37.0	7.1	5.5	7.6	5.8	7.8	5.8	8.1	5.8	8.5	5.7	8.9	5.6
	39.0	7.0	5.2	7.4	5.6	7.7	5.6	7.9	5.6	8.4	5.5	8.8	5.4
036	10.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	12.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	14.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	16.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	18.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	20.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	21.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	23.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	25.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	27.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	29.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	31.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	33.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	35.0	10.2	7.6	10.9	8.0	11.2	8.0	11.5	8.0	12.2	7.9	12.8	7.7
	37.0	10.0	7.4	10.6	7.9	11.0	7.8	11.3	7.8	12.0	7.8	12.5	7.6
	39.0	9.8	7.1	10.4	7.5	10.8	7.5	11.1	7.5	11.7	7.5	12.3	7.3
048	10.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	12.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	14.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	16.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	18.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	20.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	21.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	23.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	25.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	27.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	29.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	31.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	33.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	35.0	12.7	9.3	13.6	9.9	14.0	9.9	14.4	9.9	15.3	9.8	16.0	9.6
	37.0	12.5	9.2	13.3	9.7	13.7	9.7	14.1	9.7	15.0	9.6	15.6	9.4
	39.0	12.2	8.8	13.0	9.3	13.4	9.3	13.8	9.3	14.6	9.2	15.3	9.0

Heating capacity

SHC : Sensible Heat Capacity (kW)

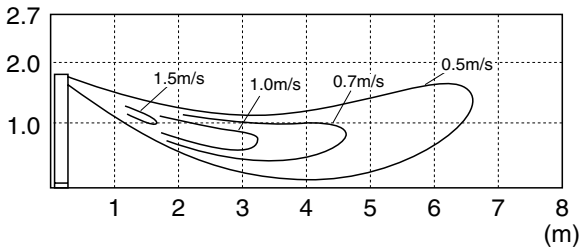
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
015	-15.0	3.1	3.1	3.0	2.9	2.9
	-13.0	3.3	3.3	3.2	3.1	3.0
	-11.0	3.6	3.5	3.4	3.3	3.2
	-10.0	3.7	3.6	3.5	3.4	3.3
	-8.0	3.9	3.8	3.7	3.6	3.5
	-6.0	4.1	4.0	3.9	3.8	3.7
	-4.0	4.3	4.2	4.1	4.0	3.9
	-2.0	4.5	4.4	4.3	4.2	4.1
	0.0	4.7	4.6	4.5	4.4	4.2
	2.0	4.8	4.7	4.6	4.5	4.4
	4.0	5.0	4.9	4.8	4.7	4.6
	6.0	5.2	5.1	5.0	4.9	4.8
	8.0	5.2	5.1	5.0	4.9	4.8
	10.0	5.2	5.1	5.0	4.9	4.8
	12.0	5.2	5.1	5.0	4.9	4.8
	14.0	5.2	5.1	5.0	4.9	4.8
018	-15.0	3.9	3.9	3.8	3.7	3.6
	-13.0	4.2	4.1	4.0	3.9	3.8
	-11.0	4.5	4.4	4.3	4.2	4.1
	-10.0	4.6	4.5	4.4	4.3	4.2
	-8.0	4.9	4.8	4.7	4.6	4.4
	-6.0	5.1	5.0	4.9	4.8	4.7
	-4.0	5.4	5.3	5.2	5.0	4.9
	-2.0	5.6	5.5	5.4	5.3	5.1
	0.0	5.9	5.8	5.6	5.5	5.3
	2.0	6.1	6.0	5.9	5.7	5.6
	4.0	6.3	6.2	6.1	5.9	5.8
	6.0	6.6	6.4	6.3	6.1	6.0
	8.0	6.6	6.4	6.3	6.1	6.0
	10.0	6.6	6.4	6.3	6.1	6.0
	12.0	6.6	6.4	6.3	6.1	6.0
	14.0	6.6	6.4	6.3	6.1	6.0
024	-15.0	5.0	4.9	4.8	4.7	4.6
	-13.0	5.3	5.2	5.1	5.0	4.9
	-11.0	5.7	5.6	5.5	5.3	5.2
	-10.0	5.8	5.7	5.6	5.5	5.3
	-8.0	6.2	6.1	5.9	5.8	5.6
	-6.0	6.5	6.4	6.2	6.1	5.9
	-4.0	6.8	6.7	6.6	6.4	6.2
	-2.0	7.1	7.0	6.9	6.7	6.5
	0.0	7.4	7.3	7.1	7.0	6.8
	2.0	7.7	7.6	7.4	7.3	7.1
	4.0	8.0	7.9	7.7	7.5	7.3
	6.0	8.3	8.2	8.0	7.8	7.6
	8.0	8.3	8.2	8.0	7.8	7.6
	10.0	8.3	8.2	8.0	7.8	7.6
	12.0	8.3	8.2	8.0	7.8	7.6
	14.0	8.3	8.2	8.0	7.8	7.6

Heating capacity (cont.)

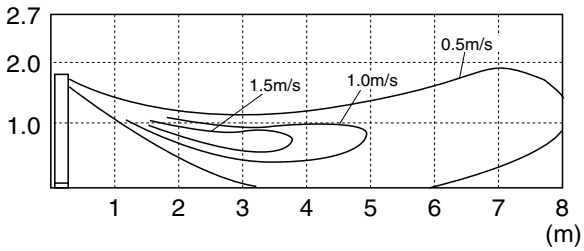
Unit size	Outdoor air temp. ˚CWB	Indoor air temp. ˚CDB				
		16.0	18.0	20.0	22.0	24.0
		SHC	SHC	SHC	SHC	SHC
027	-15.0	5.6	5.5	5.4	5.3	5.1
	-13.0	6.0	5.9	5.8	5.6	5.5
	-11.0	6.4	6.3	6.1	6.0	5.8
	-10.0	6.6	6.5	6.3	6.2	6.0
	-8.0	7.0	6.8	6.7	6.5	6.3
	-6.0	7.3	7.2	7.0	6.9	6.7
	-4.0	7.7	7.5	7.4	7.2	7.0
	-2.0	8.0	7.9	7.7	7.5	7.3
	0.0	8.4	8.2	8.0	7.8	7.6
	2.0	8.7	8.5	8.4	8.2	7.9
	4.0	9.0	8.9	8.7	8.5	8.3
	6.0	9.4	9.2	9.0	8.8	8.6
	8.0	9.4	9.2	9.0	8.8	8.6
	10.0	9.4	9.2	9.0	8.8	8.6
	12.0	9.4	9.2	9.0	8.8	8.6
	14.0	9.4	9.2	9.0	8.8	8.6
036	-15.0	7.8	7.7	7.5	7.3	7.2
	-13.0	8.3	8.2	8.0	7.8	7.6
	-11.0	8.9	8.7	8.5	8.3	8.1
	-10.0	9.1	9.0	8.8	8.6	8.3
	-8.0	9.7	9.5	9.3	9.1	8.8
	-6.0	10.2	10.0	9.8	9.5	9.3
	-4.0	10.7	10.5	10.2	10.0	9.7
	-2.0	11.1	10.9	10.7	10.5	10.2
	0.0	11.6	11.4	11.2	10.9	10.6
	2.0	12.1	11.9	11.6	11.3	11.0
	4.0	12.6	12.3	12.1	11.8	11.5
	6.0	13.0	12.8	12.5	12.2	11.9
	8.0	13.0	12.8	12.5	12.2	11.9
	10.0	13.0	12.8	12.5	12.2	11.9
	12.0	13.0	12.8	12.5	12.2	11.9
	14.0	13.0	12.8	12.5	12.2	11.9
048	-15.0	10.0	9.8	9.6	9.4	9.1
	-13.0	10.7	10.5	10.3	10.0	9.7
	-11.0	11.4	11.1	10.9	10.7	10.4
	-10.0	11.7	11.5	11.2	11.0	10.7
	-8.0	12.4	12.1	11.9	11.6	11.3
	-6.0	13.0	12.8	12.5	12.2	11.9
	-4.0	13.6	13.4	13.1	12.8	12.4
	-2.0	14.3	14.0	13.7	13.4	13.0
	0.0	14.9	14.6	14.3	14.0	13.6
	2.0	15.5	15.2	14.9	14.5	14.1
	4.0	16.1	15.8	15.4	15.1	14.7
	6.0	16.7	16.3	16.0	15.6	15.2
	8.0	16.7	16.3	16.0	15.6	15.2
	10.0	16.7	16.3	16.0	15.6	15.2
	12.0	16.7	16.3	16.0	15.6	15.2
	14.0	16.7	16.3	16.0	15.6	15.2

9-13-5. Air throw distance chart

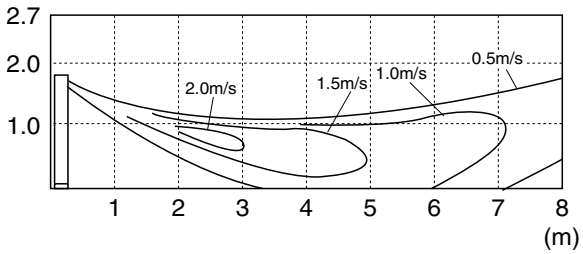
(m) **MMF-AP0151H, AP0181H**



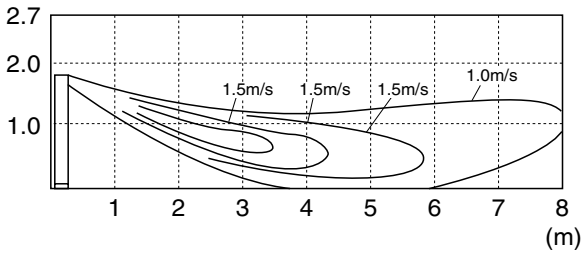
(m) **MMF-AP0241H, AP0271H**



(m) **MMF-AP0361H**

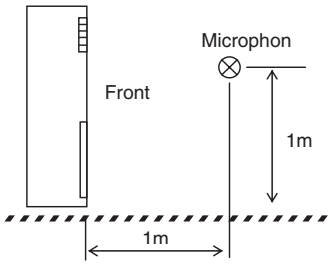


(m) **MMF-AP0481H,AP0561H**



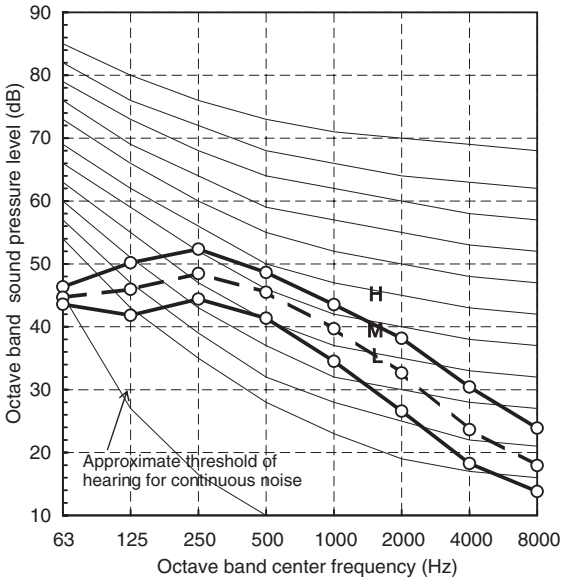
9-13-6. Sound characteristics (NC Curve)

Measuring location



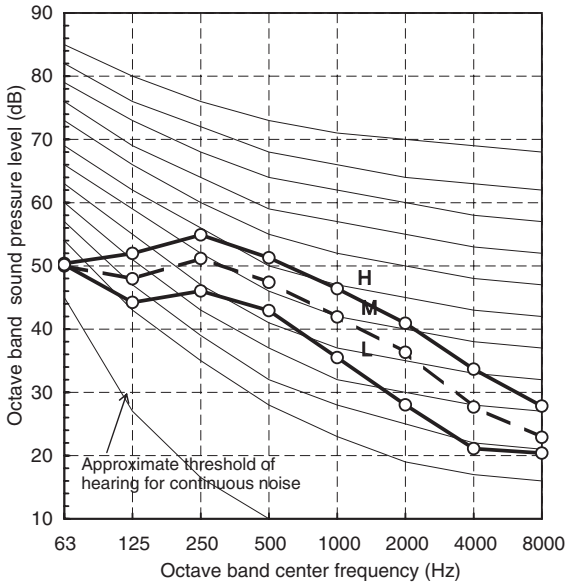
MMF-AP0151H, MMF-AP0181H

Fan tap	H	M	L
Sound pressure level (dB(A))	46	43	38



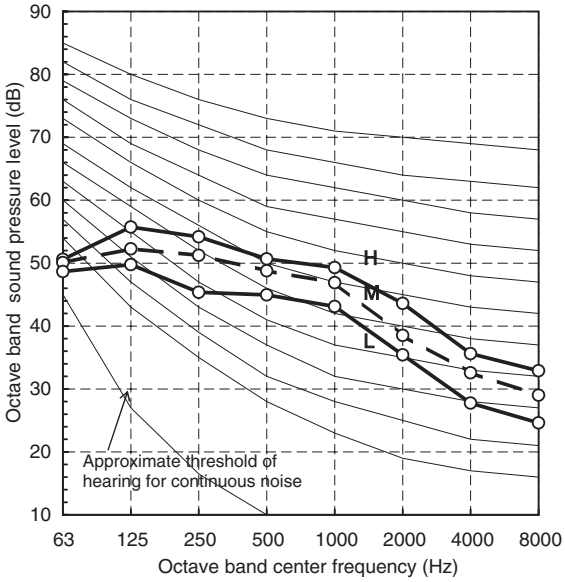
MMF-AP0241H, MMF-AP0271H

Fan tap	H	M	L
Sound pressure level (dB(A))	49	45	40



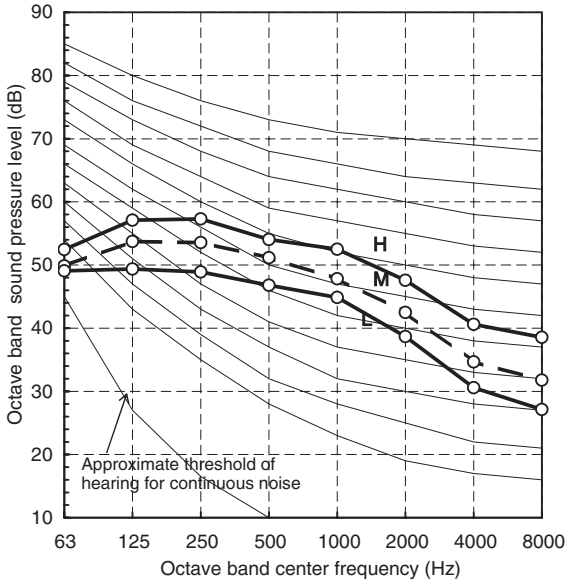
MMF-AP0361H

Fan tap	H	M	L
Sound pressure level (dB(A))	51	48	44



MMF-AP0481H

Fan tap	H	M	L
Sound pressure level (dB(A))	54	50	46

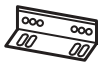
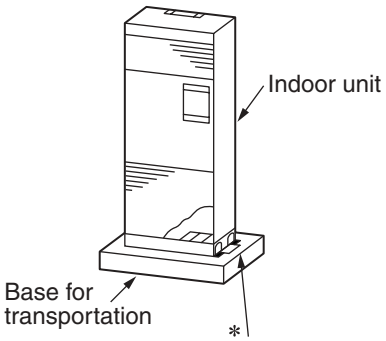
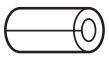


(Revised 12 July 2006)

9-13-7. Accessories

Apperarance

Standard accessories

Attached position	Part name	Qty	Shape	Stored position
Upper part of main unit	Bracket for fixing to wall	1		
Accessory bag	Installation Manual	1	———	
	Thermal insulator	2		
	Screw bolt	* 4 (2)		
	Thermal insulator	2		
Lower part of main unit	Bracket for fixing to floor	2		

* Quantities in the above table are for MMF-AP0361, AP0481 and AP0561 models.
The brackets for fixing to the floor are already mounted on the indoor unit.

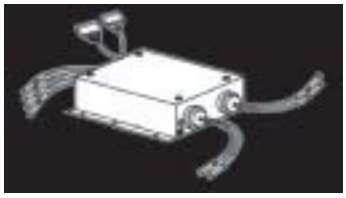
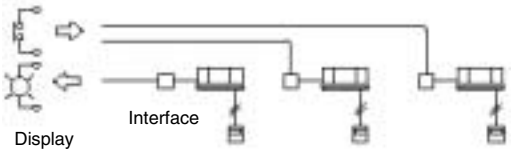
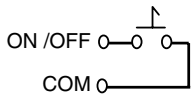
Optional accessories

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

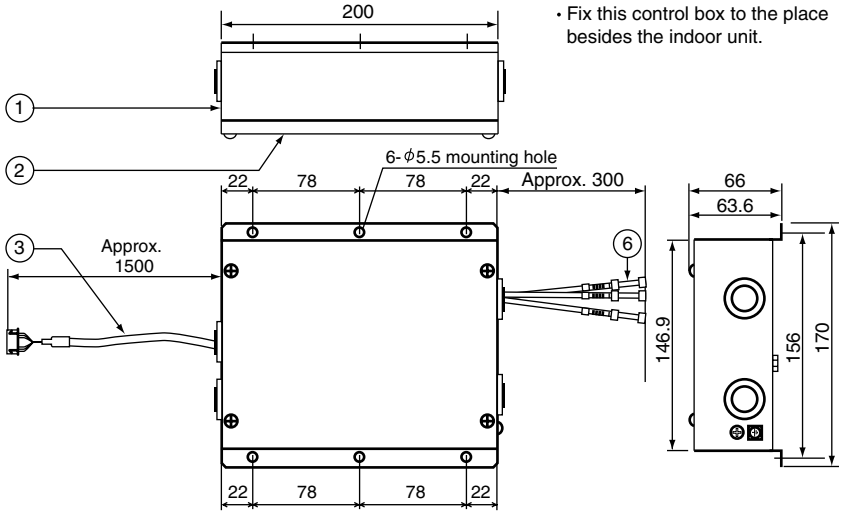
(Revised 19 May 2006)

[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  Display Interface 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

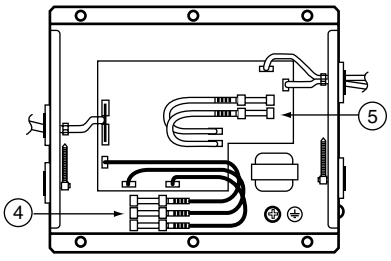
• Dimension

■ Outside view



• Fix this control box to the place besides the indoor unit.

■ 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-FF101URE		
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	

10 PMV Kit

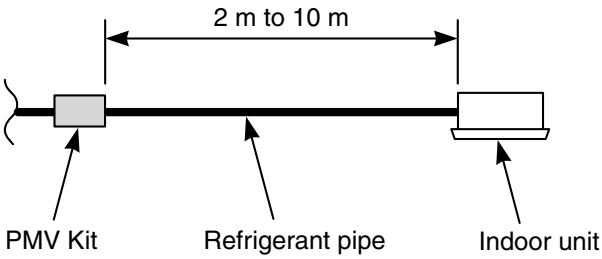
10 PMV Kit

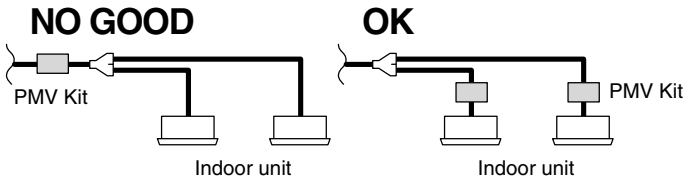
PMV-Kit (RBM-PMV0361E/RBM-PMV0901E) shall be required for quiter place application as an optional to reduce refrigerant sound especially in oil retrieval control or in transient operation as start up.

10-1. Selection

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

Allowable length of refrigerant piping





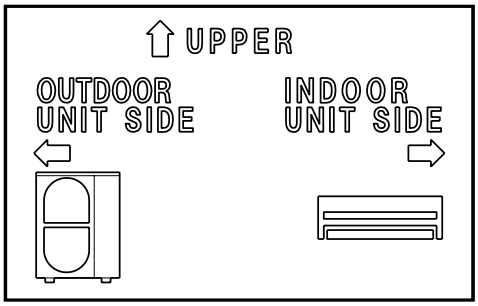
Note)

Do not connect two or more indoor units to one PMV Kit.
Arrange one indoor unit and one PMV Kit set to 1 by 1.

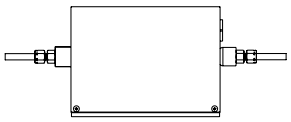
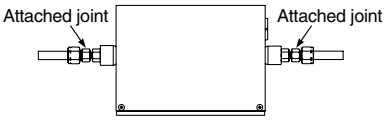
- Connecting direction of refrigerant pipe

  When connecting pipes, be careful of direction of the main unit. Be sure to install the main unit so that [⇧UPPER] mark in the label directs upward.
  For connection of the refrigerant pipes, follow the arrow mark in the label and connect pipes after confirming directions of indoor unit and outdoor unit.

Label

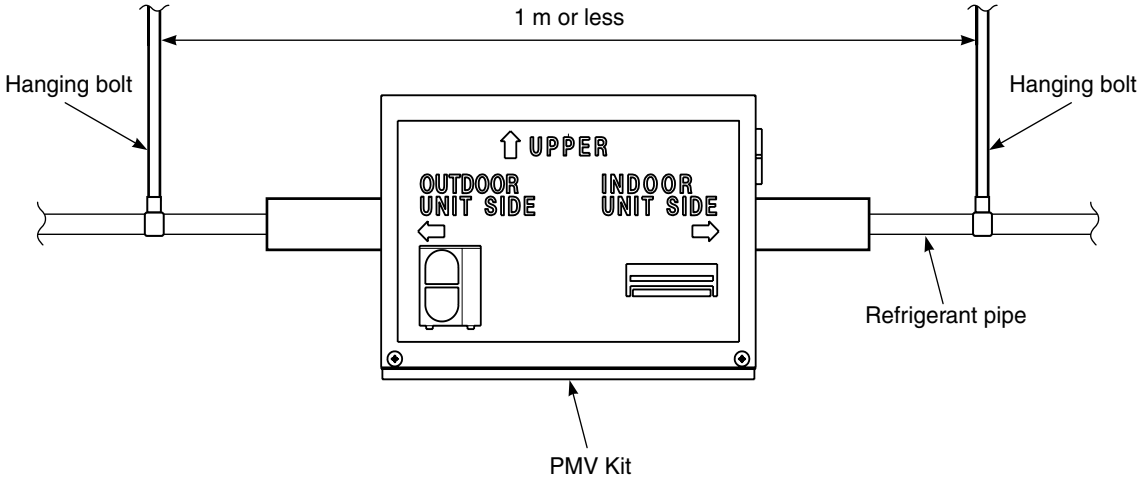


Piping material and dimensions

Model name	Indoor unit capacity type	Diameter of refrigerant pipe	Notes
RBM-PMV0361E	007, 009, 012 type	Ø6.4	
RBM-PMV0901E	015, 018 type	Ø6.4	
	024 type	Ø9.5	

Fixation after connection pipes

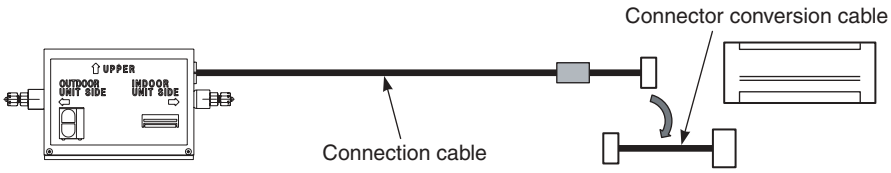
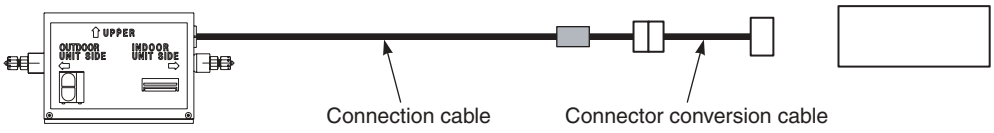
Set the hanging bolts for supporting pipes which are mounted at front and rear sides of PMV Kit at within 1m intervals.



10-2. Wiring connections

For this product, the connector conversion cable (Accessory) is used according to the indoor unit to be connected.

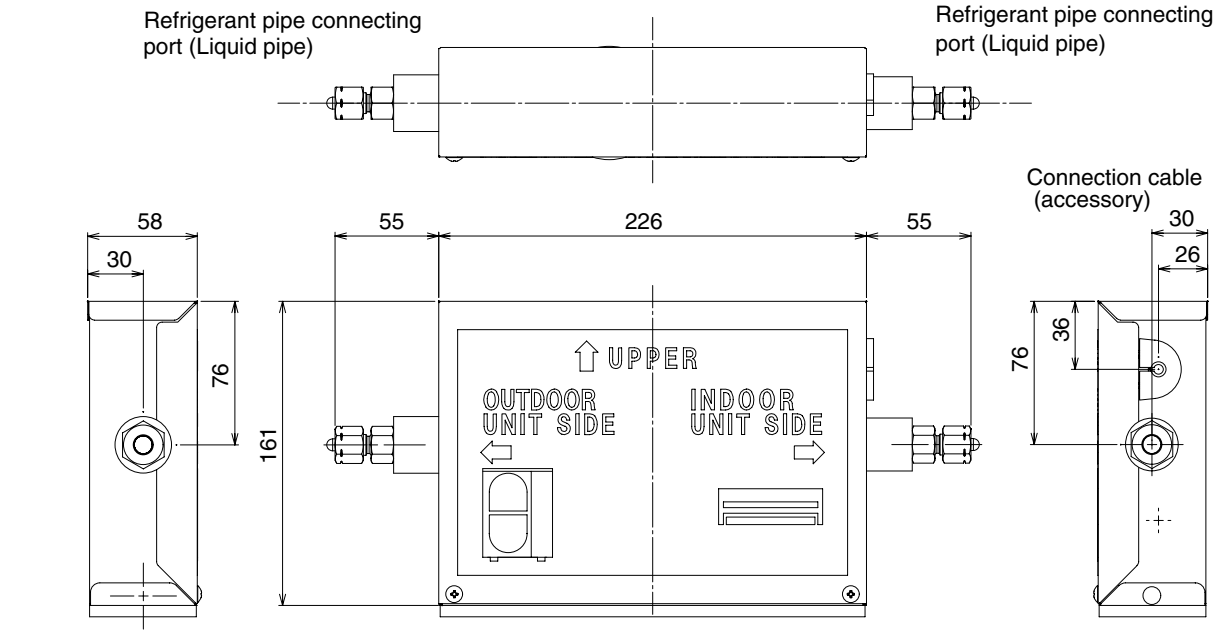
For the corresponding unit and how to use the conversion cable, refer the following description.

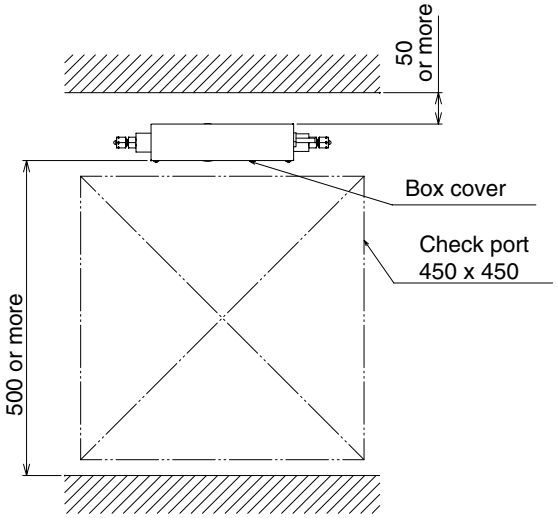
Indoor unit which connector conversion cable is not used
High Wall Type 2 series (MMK-AP0092H, MMK-AP0122H)    Remove the connector conversion cable which is attached to the connection cable (11m) out of the box.
Indoor unit which connector conversion cable is used
Indoor unit except above indoor units 

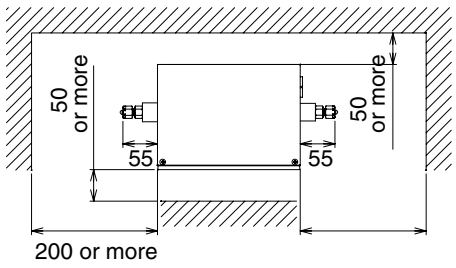
10-3. Dimension

• PMV Kit

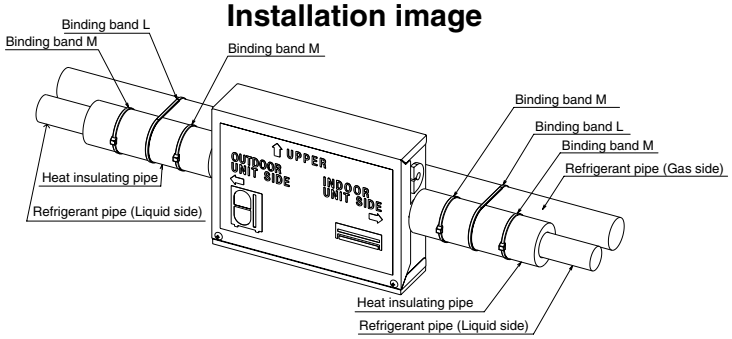
RBM-PMV0361E, RBM-PMV0901E

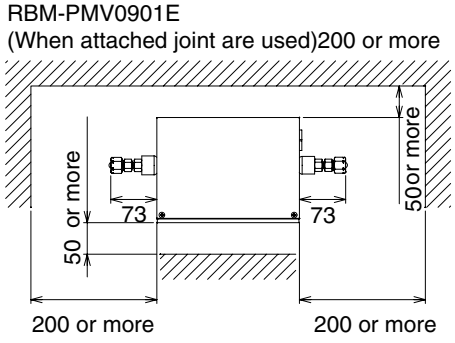






Installation image





Note: All dimensions are in mm.

11 Outdoor unit

11-1. Specifications

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 60Hz 220V		
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		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 1.25mm^2 2cores, up to 1000m Shield wire 2.0mm^2 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.

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

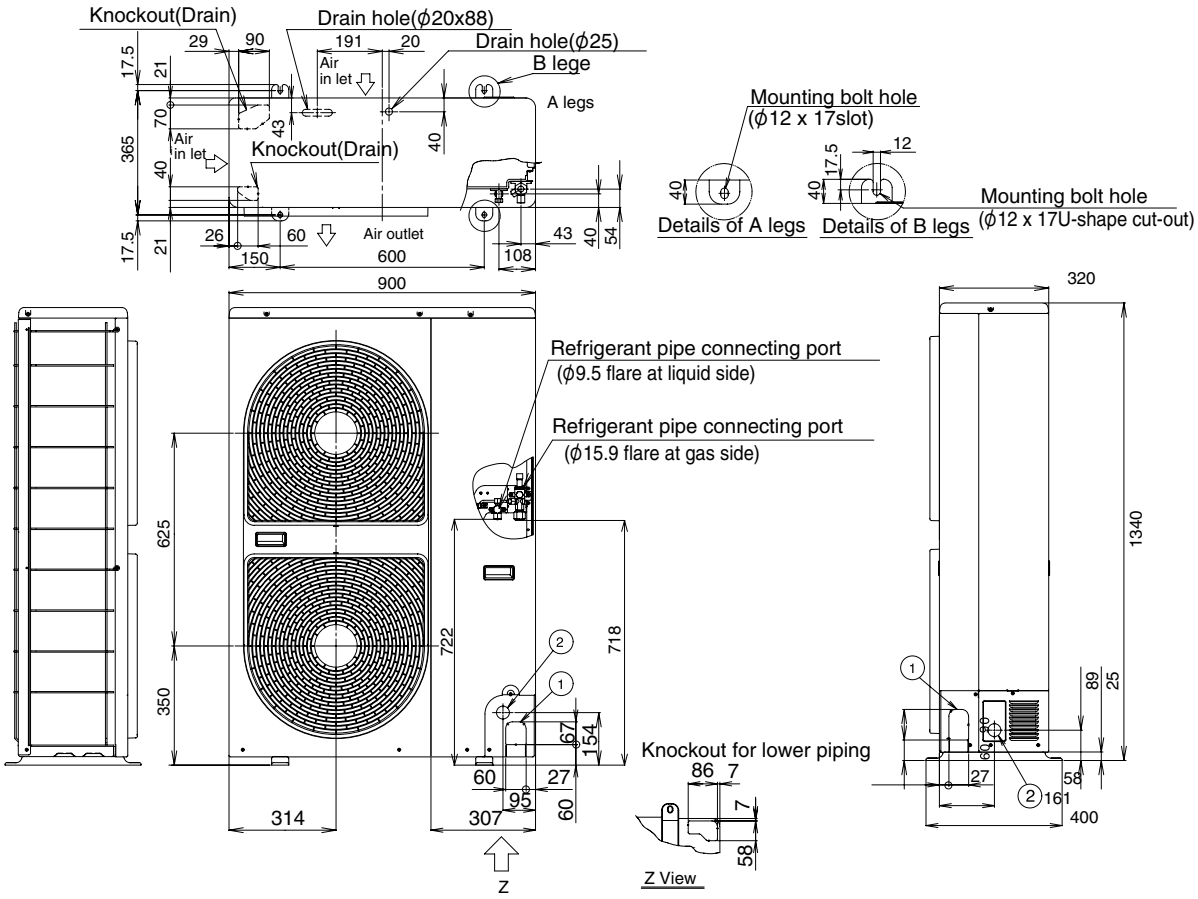
***1 :** Rated conditions Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB
Heating : Indoor air temperature 20°C DB, Outdoor air temperature 7°C DB/6°C WB

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.

11-2. Dimension

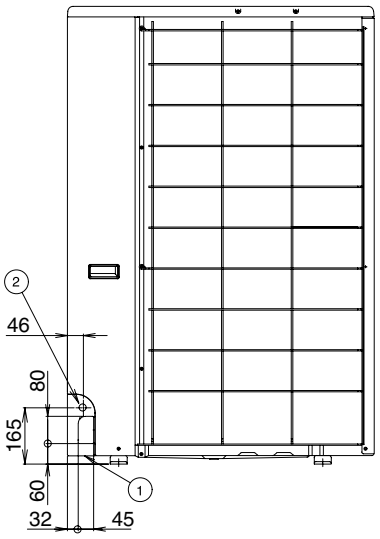
MCY-MAP0401HT, MCY-MAP0501HT, MCY-MAP0601HT,
MCY-MAP0401HT2D, MCY-MAP0501HT2D, MCY-MAP0601HT2D



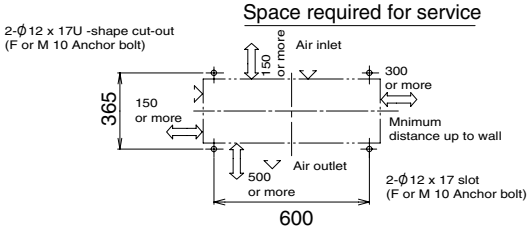
	Name	Notes
①	Control wiring and piping hole	—
②	Power supply wiring hole	Knockout hole ϕ38

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)



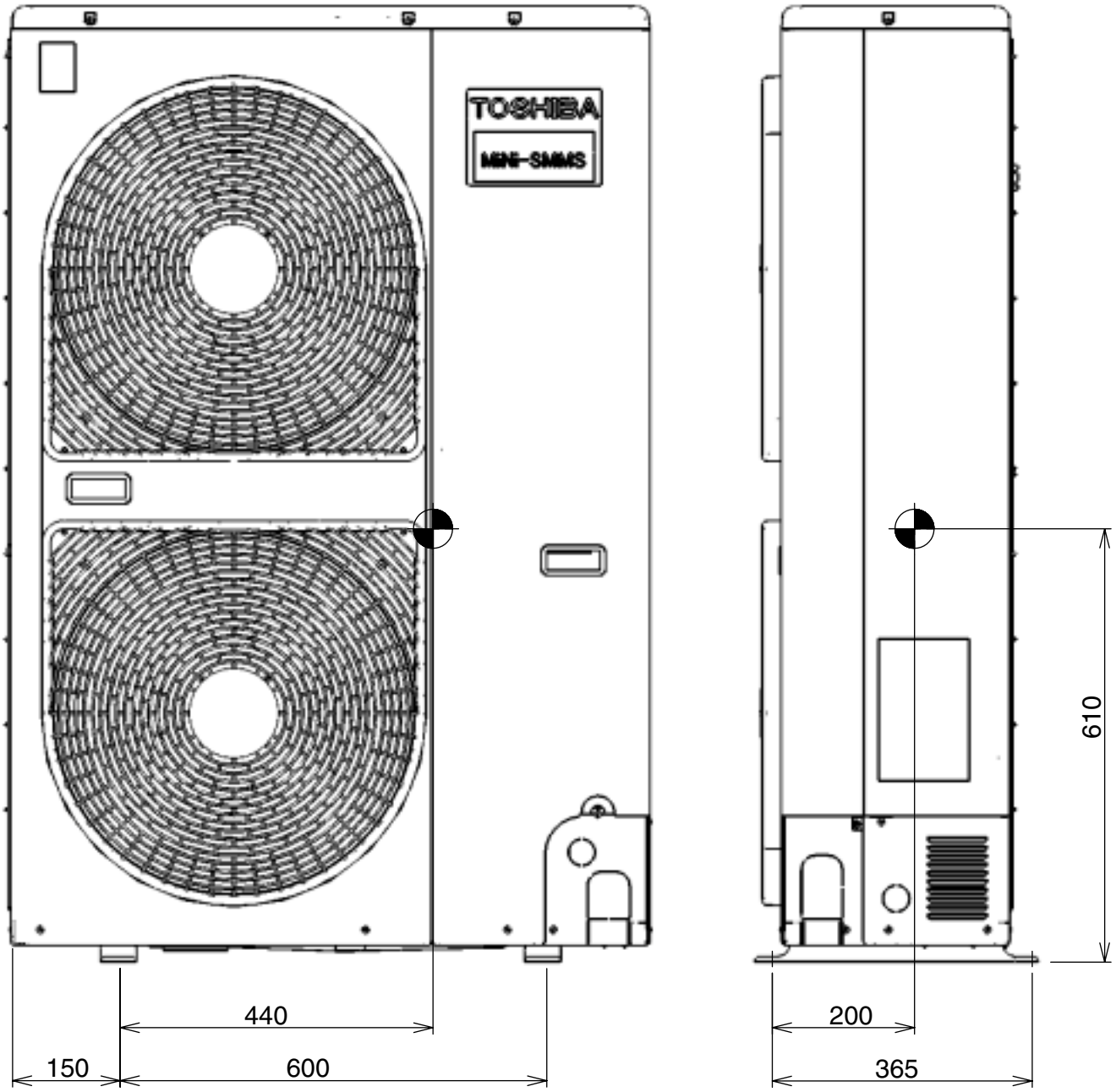
Space required for service



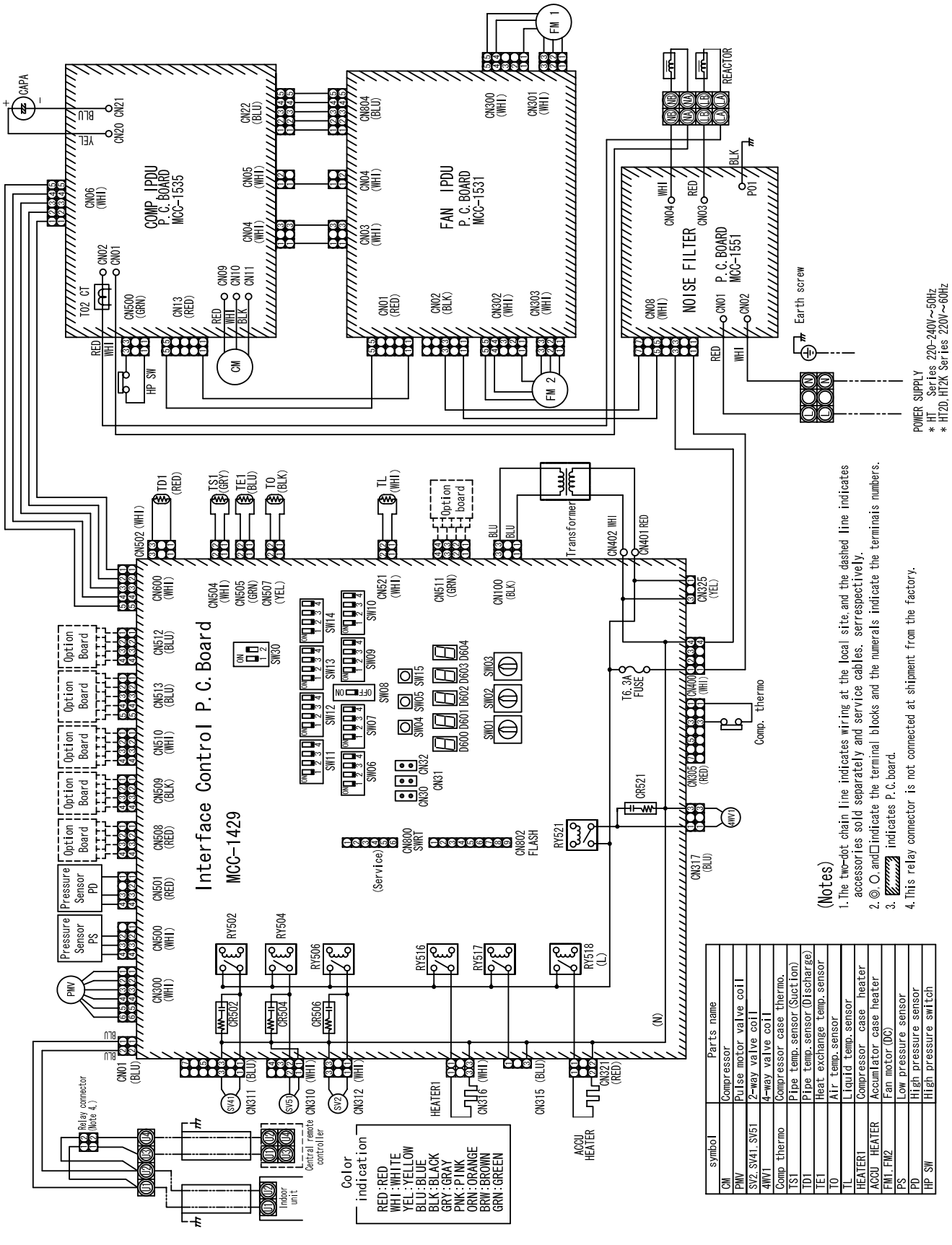
Note: All dimensions are in mm.

11-3. Units center of gravity

Model name	H (mm)	W (mm)	D (mm)	Weight (kg)
				Main unit
MCY-AP0401HT MCY-AP0401HT2D	1340	900	320	117
MCY-AP0501HT MCY-AP0501HT2D				
MCY-AP0601HT MCY-AP0601HT2D				



11-4. Wiring diagram



(Notes)
1. The two-dot chain line indicates wiring at the local site and the dashed line indicates accessories sold separately and service cables. serrespectively.
2. ◎, ○, and □ indicate the terminal blocks and the numerals indicate the terminals numbers.
3. ▨ indicates P.C.board.
4. This relay connector is not connected at shipment from the factory.

symbol	Parts name
CM	Compressor
PMV	Pulse motor valve coil
SV2, SV41, SV51	2-way valve coil
4WV1	4-way valve coil
Comp thermo	Compressor case thermo.
TS1	Pipe temp.sensor (Suction)
TD1	Pipe temp.sensor (Discharge)
TE1	Heat exchange temp.sensor
TO	Air temp.sensor
TL	Liquid temp.sensor
HEATER1	Compressor case heater
ACCU HEATER	Accumulator case heater
FM1, FM2	Fan motor (DC)
PS	Low pressure sensor
PD	High pressure sensor
HP SW	High pressure switch

Contents Code(Outdoor 7-segment display[B])
Displayed when SW01:1,SW02:1,SW03:1

Check code Outdoor 7-segment display / Auxiliary code		Check code name
E06	Number of indoor unit which received normally	Decrease of number of indoor units
E07	–	Indoor/Outdoor communication circuit error
E08	Duplicated indoor addresses	Duplication of indoor addresses
E12	01:Communication between indoor and outdoor 02:Communication between outdoor units	Automatic address start error
E15	–	Indoor is nothing during automatic addressing
E16	00:Capacity over 01~:No.of connected units	Capacity over/Number of connected indoor units
E19	00:Header is nothing 02:Two or more header units	Number of header outdoor units error
E20	01:Other line outdoor connected 02:Other line indoor connected	Other line connected during automatic addressing
E31	IPDU quantity information *1	IPDU communication error
F04	–	TD1 sensor error
F06	–	TE1 sensor error
F07	–	TL sensor error
F08	–	TO sensor error
F12	–	TS1 sensor error
F13	–	TH sensor error
F15	–	Outdoor temp.sensor miswiring(TE,TL)
F16	–	Outdoor pressure sensor miswiring(Pd,Ps)
F23	–	Ps sensor error
F24	–	Pd sensor error
F31	–	Outdoor EEPROM error
H01	–	Compressor breakdown
H02	–	Compressor trouble(Lock) Magnet switch error Overcurrent relay operation
H03	–	Current detective circuit system error
H04	–	Compressor 1 case thermo operation
H06	–	Low-pressure protective operation
L04	–	Outdoor system address duplicated
L06	Number of indoor units with priority	Duplication of indoor units with priority
L08	–	Indoor group/Address unset
L10	–	Outdoor capacity unset
L29	IPDU quantity information *1	IPDU quantity error
L30	Detected indoor address	External interlock of indoor unit
L31	–	Extended I/C error
P03	–	Discharge temp TD1 error
P04	01:Compressor 1	High-pressure SW system operation
P07	01:Compressor 1	Heat sink overtheat error
P10	Detected indoor address	Indoor overflow error
P13	–	Outdoor liquid back detection error
P15	01:TS condition 02:TD condition	Gas leak detection
P19	Detected outdoor unit number(Except cooling only model)	4-way valve inverse error
P20	–	High-pressure protective operation
P22	*A:Fan motor current error *d:Fan motor lock	Outdoor fan IPDU error
P26	–	G-TR short protection error
P29	–	Compressor position detecive circuit system eeror

Explanation of Rotary Switch Function

SW01	SW02	SW03	Displayed contents	LED	D600 D601 (A) D602 D603 D604 (B) Note) : ␣ Blank : *Data display
1	1	1	Outdoor unit check code	A	Outdoor unit No:[U1]to[U4]
				B	Check code (3 digits)
		3	Used retrigerant	A	R410A model:[r4],R407C model:[r4]
				B	R410A model:[10A],R407C model:[07C]
	2		System capacity(HP)	A	4 to 6HP:[␣4]to[␣6]
				B	[␣HP]
	3	1	Operation mode	A	COOL:[␣C],HEAT:[H],DEFROST:[␣J]
				B	No display
	4		Outdoor unit horse power	A	4 to 6HP:[␣4]to[␣6]
				B	[␣HP]
2	5	1	Cooling test operation Push SW04 for 2 sec.or more.	A	[C ␣]
				B	Normal:No display,In cooling test operation[␣-C]
	6		Heating test operation Push SW04 for 2 sec.or more	A	[H ␣]
				B	Normal:No display,In cooling test operation[␣-H]
	7		Collective Start/Stop Start:Push SW04 for 2 sec.or more. Stop:Push SW05 for 2 sec.or more.	A	[CH]
				B	When commanding Start:[␣11]is displayed for 5 sec. When commanding Stop :[␣00]is displayed for 5 sec.
16	16	16	Software version	A	Version (Numerals) is displayed.
				B	

SW01	SW02	SW03	Displayed contents	LED	D600 D601 (A) D602 D603 D604 (B) Note) : ␣ Blank : *Data display
1	1	2	Pd pressure data (Decimal notation)	A	Symbol :[Pd]
				B	Data :[*.**] Unit:(MPaG)
	2		Ps pressure data (Decimal notation)	A	Symbol :[PS]
				B	Data :[*.**] Unit:(MPaG)
	3		PL pressure(Liquid pressure)conversion data (Decimal notation)	A	Symbol :[PL]
				B	Data :[*.**] Unit:(MPaG)
	4		TD1 sensor data (Decimal notation)	A	Symbol :[td] Data:[*]
				B	Symbol :[␣␣] Data:[**.*]
	5		TS sensor data (Decimal notation)	A	Symbol :[tS] Data:[*]
				B	Symbol :[2␣␣] Data:[**.*]
	6		TE sensor data (Decimal notation)	A	Symbol :[tE] Data:[*]
				B	Symbol :No display Data:[**.*]
	7		TL sensor data (Decimal notation)	A	Symbol :[tL] Data:[*]
				B	Symbol :No display Data:[**.*]
	8		TO sensor data (Decimal notation)	A	Symbol :[tO] Data:[*]
				B	Symbol :No display Data:[**.*]

*1 IPDU quantity information

01:COMP IPDU1 error
02:FAN1 IPDU error
03:COMP + FAN1 IPDU error
04:FAN2 IPDU error
05:COMP + FAN2 IPDU error
06:FAN1 + FAN2 IPDU error
07:COMP + FAN1 + FAN2 IPDU error

Additional refrigerant amount at installation time(R410A)	kg
Total refrigerant amount(R410A)	kg
Service shop name which charged refrigerant at installation time	

11-5. Part Load Performance

MCY-MAP0401HT*

Cooling

Outdoor Temperature DB˚C	Outdoor unit 100% Cooling Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
40	11.5	3.07	2.58	2.14	1.76	1.43	1.16
35	12.1	**2.82**	2.37	1.97	1.62	1.31	1.06
30	12.1	2.39	2.01	1.68	1.39	1.14	0.93
25	12.1	2.03	1.72	1.44	1.20	0.99	0.82
20	12.1	1.81	1.53	1.29	1.07	0.89	0.74
15	12.1	1.64	1.39	1.17	0.98	0.81	0.68

Indoor air temperature conditions : 27 ˚CDB, 19˚CWB
Indoor unit fan speed : High

Heating

Outdoor Temparature		Outdoor unit 100% Heating Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
DB˚C	WB˚C		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
15	13.7	12.5	2.38	2.02	1.69	1.38	1.11	0.86
11	9.8	12.5	2.53	2.14	1.79	1.46	1.17	0.90
7	6	12.5	**2.71**	2.29	1.91	1.56	1.24	0.96
1	0.3	11.2	2.59	2.19	1.82	1.49	1.18	0.91
-5	-5.6	9.9	2.46	2.08	1.73	1.41	1.13	0.87
-10	-10.5	8.7	2.35	1.99	1.66	1.35	1.08	0.83

Indoor air temperature conditions : 20 ˚CDB
Indoor unit fan speed : High

MCY-MAP0501HT*

Cooling

Outdoor Temperature DB˚C	Outdoor unit 100% Cooling Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
40	13.3	3.78	3.10	2.52	2.03	1.63	1.34
35	14.0	**3.47**	2.80	2.28	1.85	1.50	1.19
30	14.0	2.90	2.39	1.95	1.59	1.30	1.08
25	14.0	2.45	2.03	1.67	1.37	1.13	0.96
20	14.0	2.17	1.80	1.48	1.22	1.02	0.87
15	14.0	1.96	1.63	1.35	1.12	0.93	0.80

Indoor air temperature conditions : 27 ˚CDB, 19˚CWB
Indoor unit fan speed : High

Heating

Outdoor Temparature		Outdoor unit 100% Heating Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
DB˚C	WB˚C		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
15	13.7	16.0	3.46	2.98	2.49	2.04	1.64	1.27
11	9.8	16.0	3.71	3.16	2.64	2.16	1.72	1.33
7	6	16.0	**4.00**	3.39	2.82	2.30	1.83	1.41
1	0.3	14.4	3.82	3.23	2.69	2.20	1.75	1.35
-5	-5.6	12.6	3.63	3.07	2.56	2.09	1.66	1.28
-10	-10.5	11.1	3.47	2.94	2.45	2.00	1.59	1.23

Indoor air temperature conditions : 20 ˚CDB
Indoor unit fan speed : High

MCY-MAP0601HT*

Cooling

Outdoor Temperature DB˚C	Outdoor unit 100% Cooling Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
40	14.7	5.05	4.14	3.36	2.70	2.18	1.78
35	15.5	**4.63**	3.74	3.04	2.47	2.01	1.59
30	15.5	3.71	3.19	2.61	2.12	1.73	1.44
25	15.5	3.03	2.71	2.22	1.83	1.51	1.27
20	15.5	2.64	2.40	1.98	1.63	1.36	1.16
15	15.5	2.37	2.17	1.80	1.49	1.24	1.06

Indoor air temperature conditions : 27 ˚CDB, 19˚CWB
Indoor unit fan speed : High

Heating

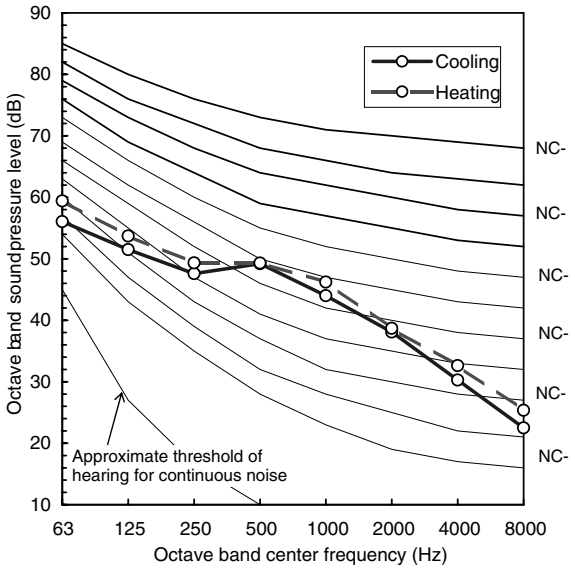
Outdoor Temparature		Outdoor unit 100% Heating Capacity (kW)	Compressor + Outdoor fan motor Power consumption (kW)					
DB˚C	WB˚C		100% Load	90% Load	80% Load	70% Load	60% Load	50% Load
15	13.7	18.0	4.21	3.53	2.90	2.33	1.81	1.35
11	9.8	18.0	4.50	3.77	3.10	2.49	1.93	1.44
7	6	18.0	**4.85**	4.06	3.34	2.67	2.08	1.54
1	0.3	16.2	4.63	3.88	3.18	2.55	1.98	1.47
-5	-5.6	14.2	4.40	3.68	3.03	2.43	1.88	1.40
-10	-10.5	12.5	4.21	3.52	2.89	2.32	1.80	1.34

Indoor air temperature conditions : 20 ˚CDB
Indoor unit fan speed : High

11-6. Sound Characteristics (NC Curve)

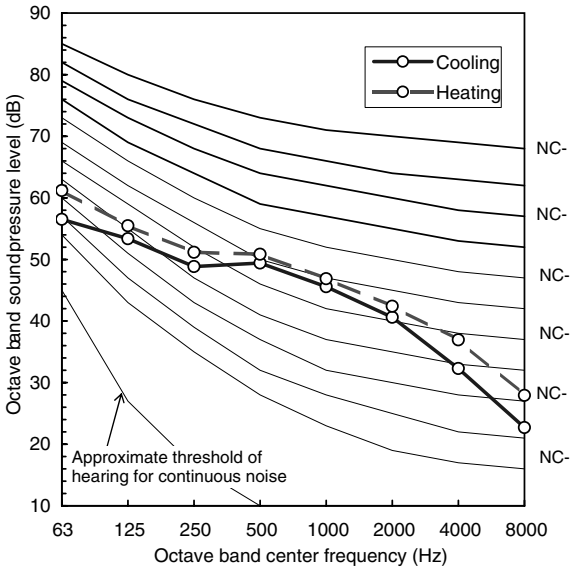
MCY-MAP0401HT

Mode	Cooling	Heating
Sound pressure level (dB(A))	49	50



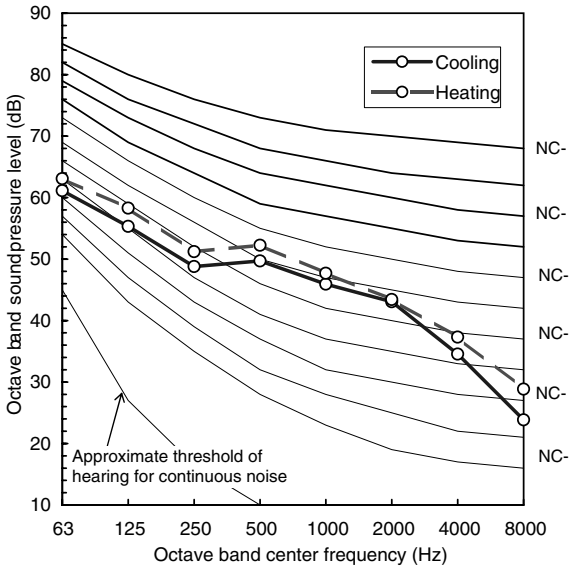
MCY-MAP0501HT

Mode	Cooling	Heating
Sound pressure level (dB(A))	50	52

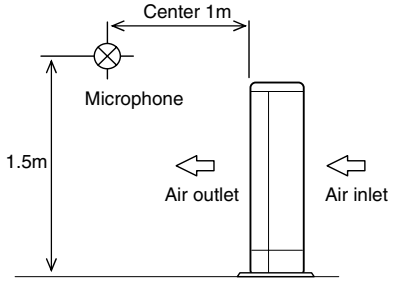


MCY-MAP0601HT

Mode	Cooling	Heating
Sound pressure level (dB(A))	51	53



[Measuring location]



[Conditions]

Cooling
Outdoor temperature: 35˚CDB, 24˚CWB
Indoor air temperature: 27 ˚CDB, 19˚CWB

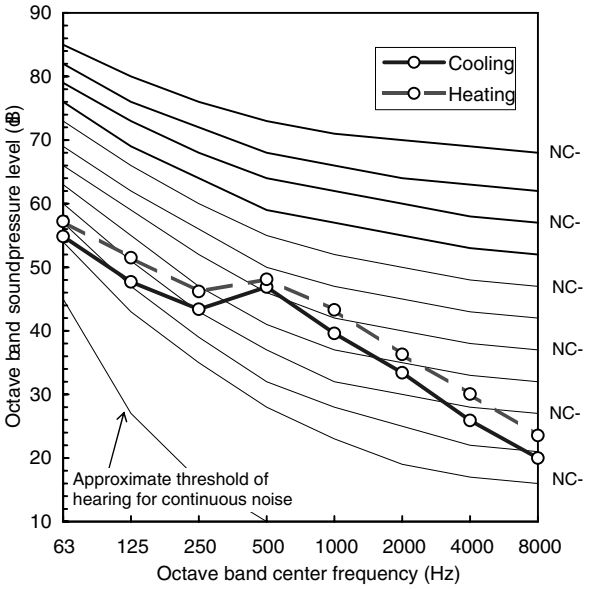
Heating
Outdoor temperature: 7˚CDB, 6˚CWB
Indoor air temperature: 20 ˚CDB

This sound pressure level are measured in an anechoic chamber in accordance.

[Night operation (sound reduction) control]

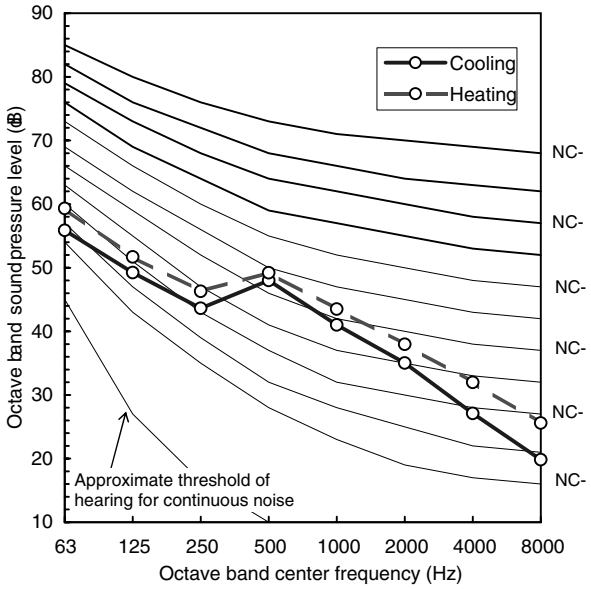
MCY-MAP0401HT,MCY-MAP0501HT

Mode	Cooling	Heating
Sound pressure level (dB(A))	46	48

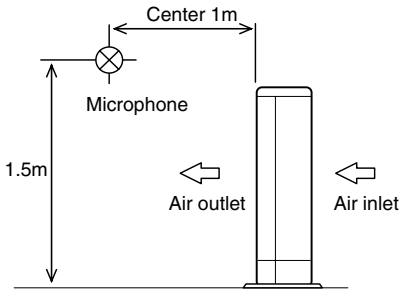


MCY-MAP0601HT

Mode	Cooling	Heating
Sound pressure level (dB(A))	47	49



[Measuring location]



[Conditions]

Cooling
Outdoor temperature: 25˚CDB, 16˚CWB
Indoor air temperature: 27 ˚CDB, 19˚CWB

Heating
Outdoor temperature: 7˚CDB, 6˚CWB
Indoor air temperature: 20 ˚CDB

This sound pressure level are measured in an anechoic chamber in accordance.

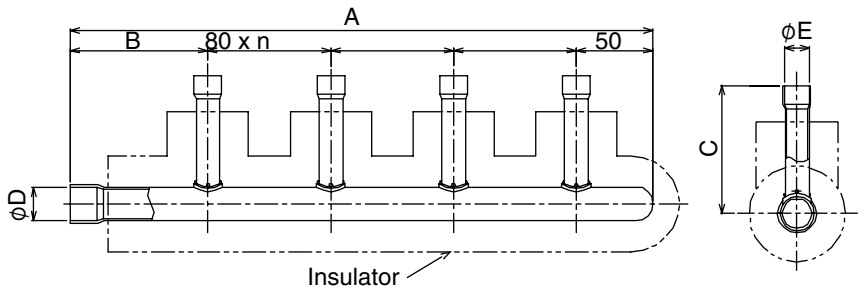
11-7. Accesories

11-7-1. Branching joints and headers

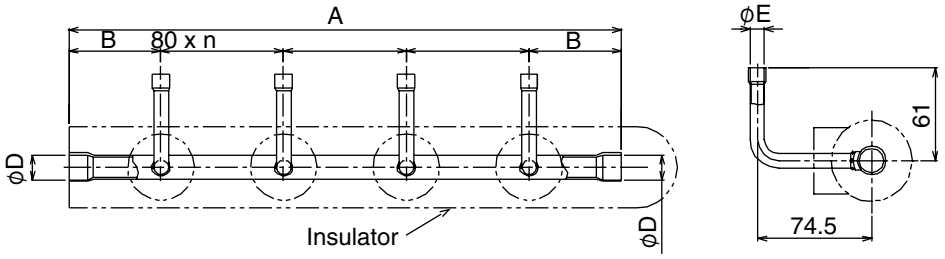
Branch header

RBM-HY1043E, HY1083E

Gas side



Liquid side



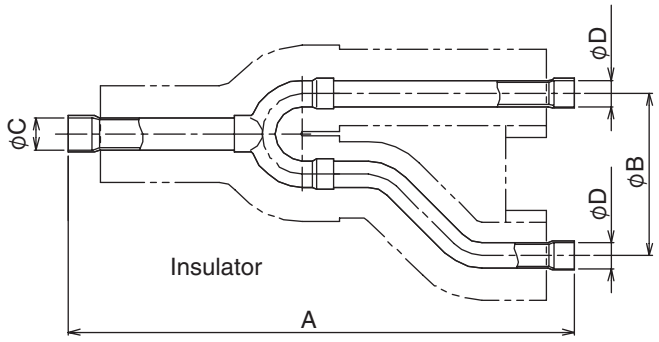
Model		A	B	C	ØD	ØE	n	Accessory socket x Q'ty
RBM-HY1043E	Gas side	380	90	83.6	22.2	15.9	3	⑥ x 4, ⑨ x 4, ⑭ x 1, ⑱ x 1, ⑦⓪ x 1
	Liquid side	360	60	—	15.9	9.5	3	① x 4, ⑥ x 1, ⑨ x 1
RBM-HY1083E	Gas side	700	90	83.6	22.2	15.9	7	⑥ x 8, ⑨x 8, ⑭x 1, ⑱ x 1 ⑦⓪ x 1
	Liquid side	680	60	—	15.9	9.5	7	① x 8, ⑥ x 1,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

Note: All dimensions are in mm.

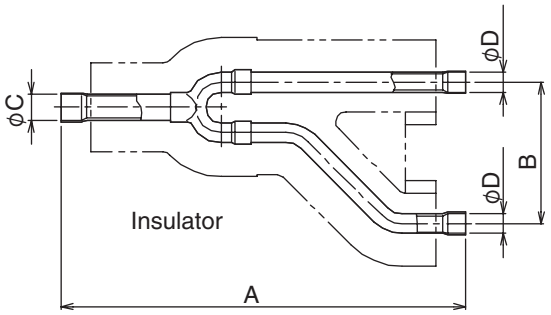
Y-shape branch joint

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.

(Revised 12 July 2006)

11-7-2. 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.

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

● **Normal current**

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

● **Feature**

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

● **Wiring**

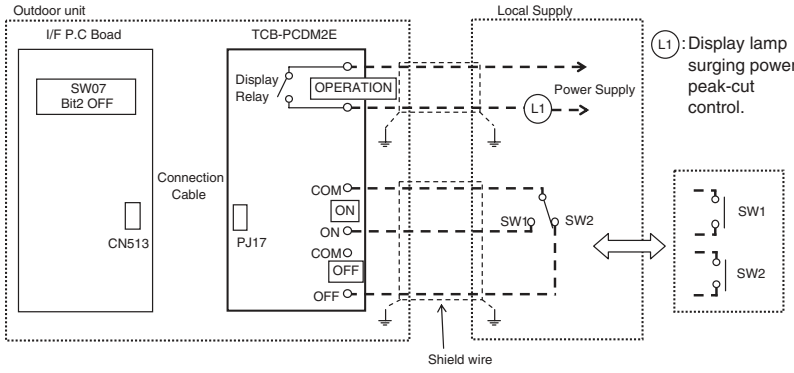
	Len gth	Size	Type
Input wiring	Up to 500m	2-core or 3-core, 0.75mm^2	Shield wire
Output wiring	Up to 200m	2-core, 0.75mm^2 *	Shield wire
	Up to 400m	2-core, 1.5mm^2 *	

* 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]



In case of pulse signal

Be sure to prepare the point of contact for each terminal.
The time of the pulse signal is more than 100msec.
Don't switch on both SW1 and SW2 terminal simultaneously.

SW07-Bit2 OFF

Input		SW07-Bit1 OFF		SW07-Bit1 ON		Display Relay (L1)
SW1	SW2	Capacity	Current	Capacity	Current	
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)

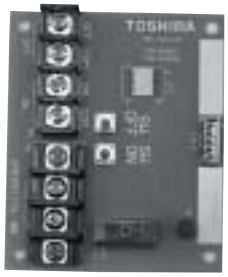
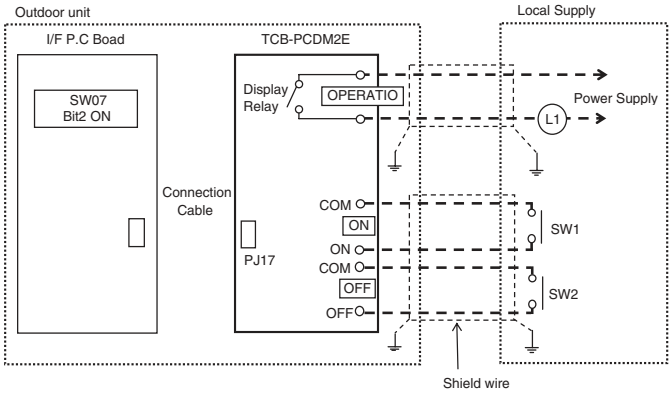
- Be sure to prepare a non-voltege point for each terminal.
- Display Relay capacity of "OPERATION"

  Below AC240V 0.5A (COSφ=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	 Size : 71 x 85	**[Expansion function]**  L1 :Display lamp surging power peak-cut control. **SW07-Bit2 ON** Input / SW07-Bit1 OFF / SW07-Bit1 ON / Display Relay (L1) SW1 | SW2 | Capacity | Current | Capacity | Current OFF | OFF | 100% (Nomal) | 100% (Nomal) | 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 (COSφ=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-PCMO2E	 Size : 55.5 x 60	External master ON/OFF control

Application

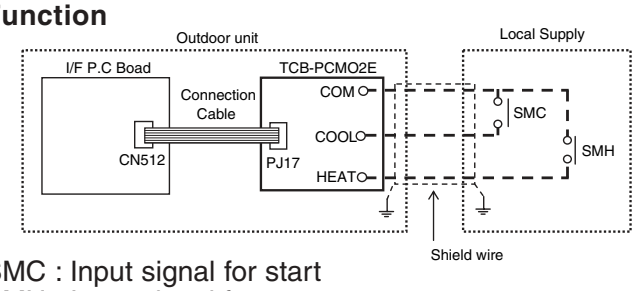
*Install this optional P.C. board in the inverter assembly of the outdoor unit.

External master ON/OFF control

●Feature

The outdoor unit starts or stops the system.

●Function



SMC : Input signal for start
SMH : Input signal for stop

Terminal	Input signal	Operation
SMC	ON / OFF	Starts all indoor units.
SMH	ON / OFF	Stops all indoor units.

• Ensure terminal contacts are securely fixed.

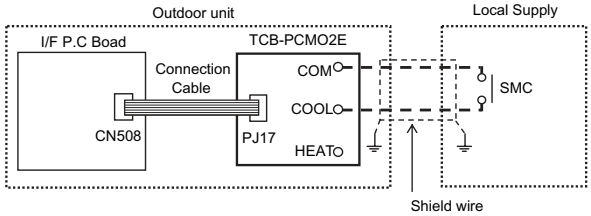
This control is activated when the input signal increases or decreases (The increasing or decreasing signal needs to be held for a minimum of 100m/sec in order to activate the control.)

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
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	

Night operation (Sound reduction) control

[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 mictrophone : 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)

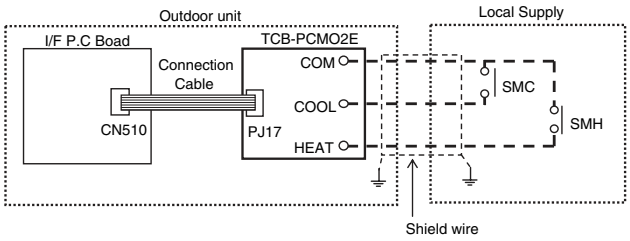
Application

*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.

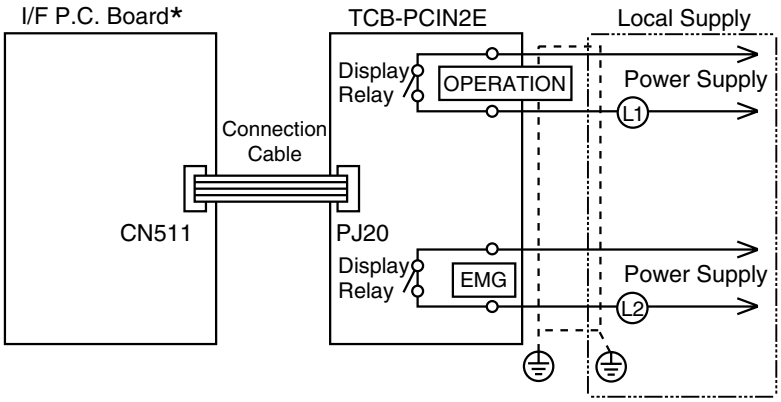
● **Function**



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

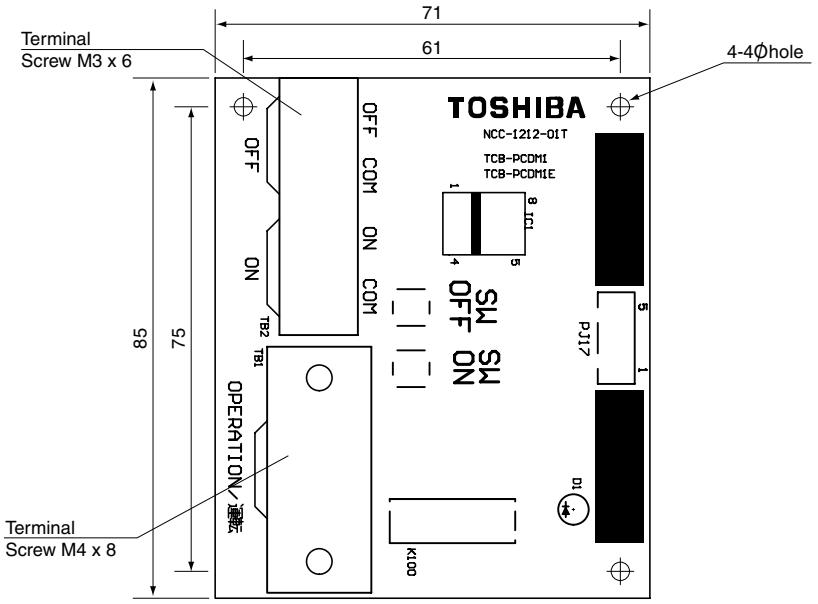
Ensure terminal contacts are securely fixed.

Model Name	Appearance	Function
TCB-PCIN2E	 Size : 73.0 x 79 **Application** *Install this optional P.C. board in to the inverter assembly of the header outdoor unit.	Error / Operation output control  (L1) : Operation monitoring lamp (L2) : Error monitoring lamp • Ensure terminal contacts are securely fixed. • Display Relay capacity of "OPERATION" and "EMG" Below AC240V 0.5A(COSϕ=100%) When connecting a load such as a relay coil to "L1,L2", insert the noise surge absorber. Below DC24V 1A(Non-inductive load) When connecting a load such as a relay coil to "L1,L2", insert the byass circuit.

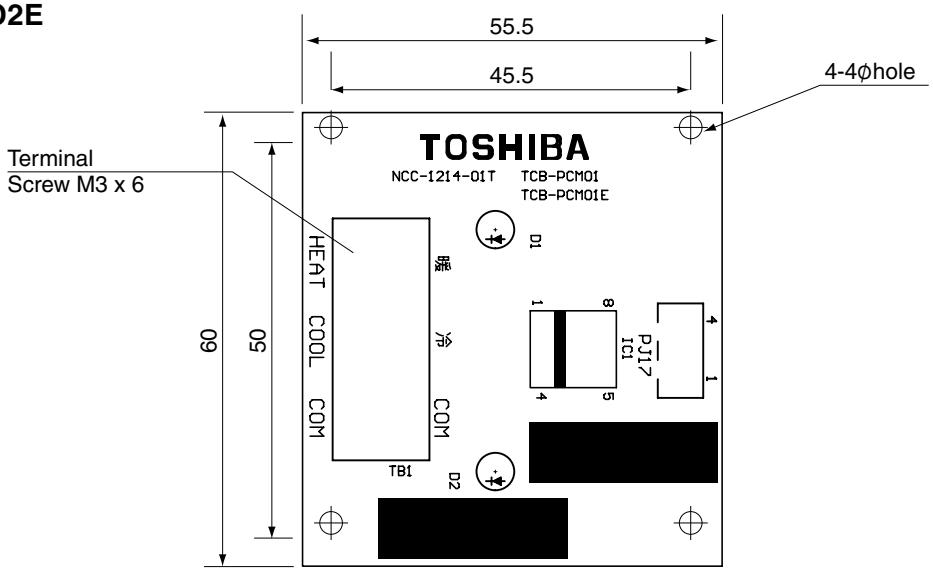
(Revised 19 May 2006)

Dimension

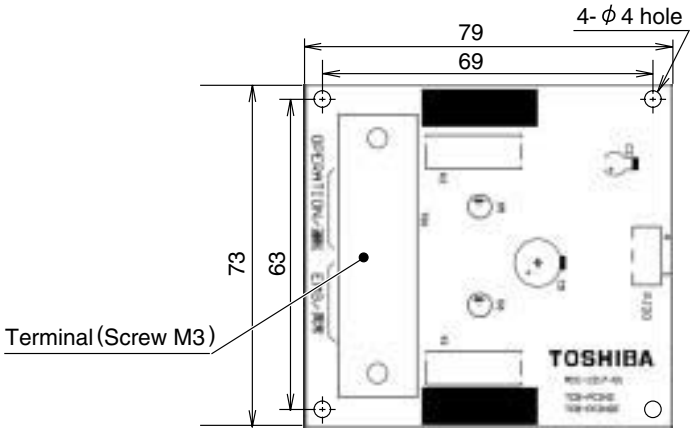
TCB-PCDM2E



TCB-PCMO2E



TCB-PCIN2E



Optional P.C. board of outdoor unit installation

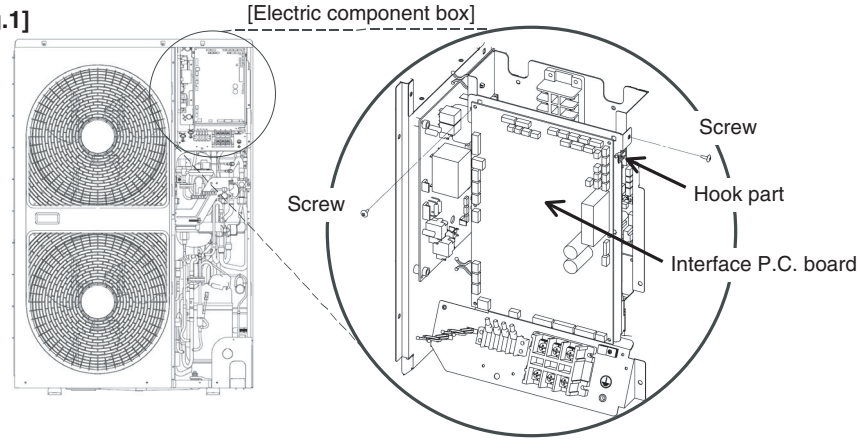
Placing position

Install this optional P.C. board to the back side of the Interface P.C. board on outdoor unit.
Be sure to turn off the power switch before installing.

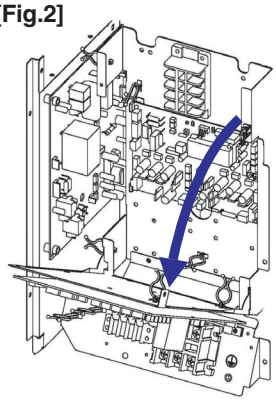
(1) If the screw of the position shown in Fig. 1 is removed and an upper right hook is slipped, an interface board will open.

(2) Place this P.C. board by using the support of the electric component box.
There are four installation holes to place the support of the electric component box.

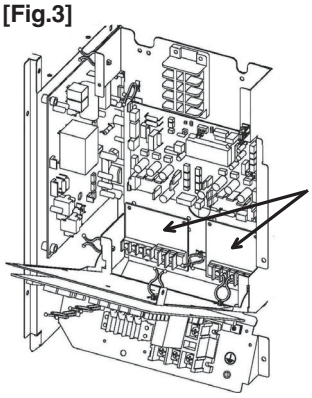
[Fig.1]



[Fig.2]



[Fig.3]



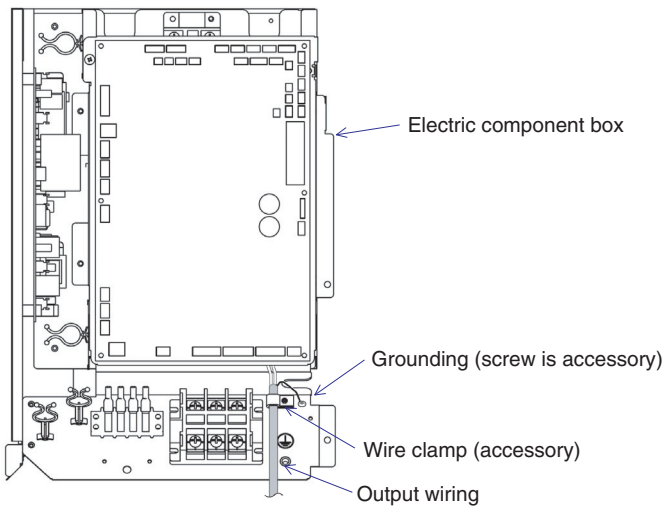
Wiring

(1) Refer to the "Electric wiring diagram" when wiring.

(2) Be sure to use the shield wire to prevent noise trouble, and perform the grounding at both sides of shield wires.

(3) Fix the output wiring with the wire clamp. (Wire clamp is accessory of optional P.C.board.)

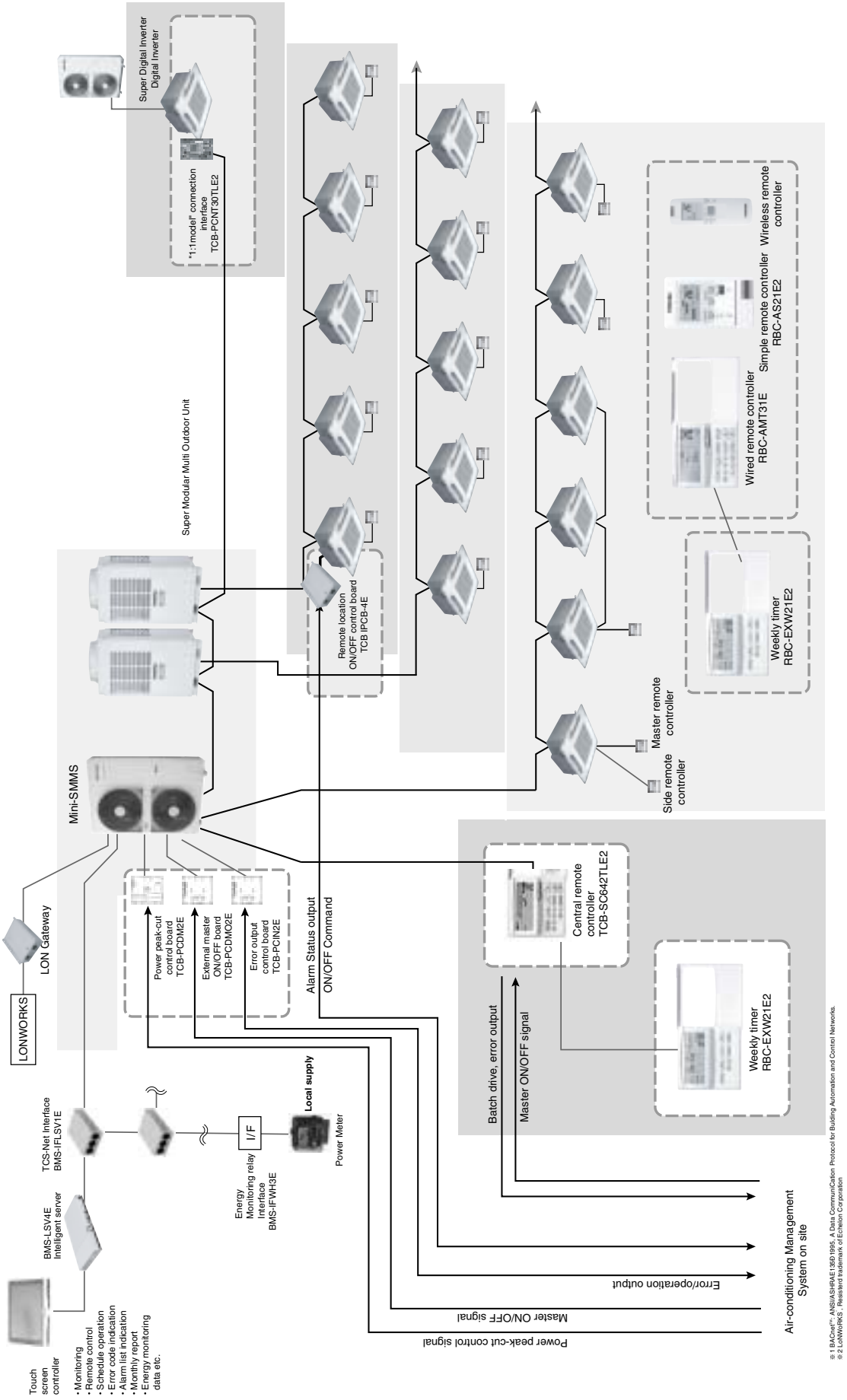
[Fig.4]



(Revised 12 July 2006)

12 Controls

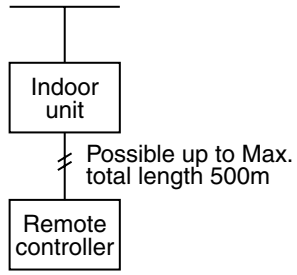
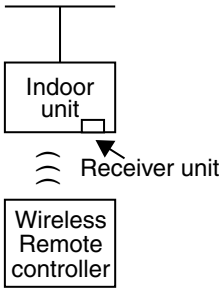
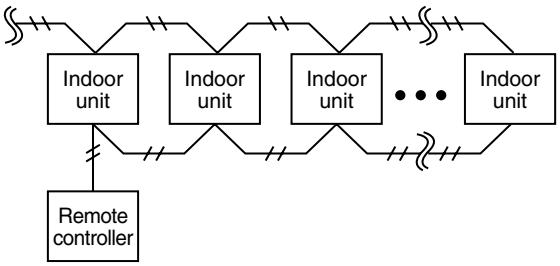
Outline of application Control

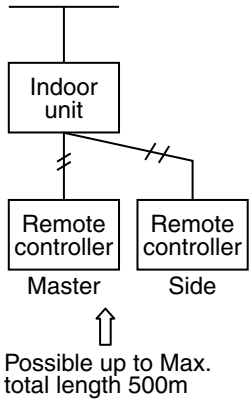
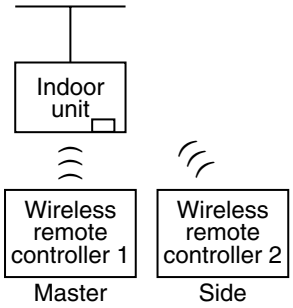
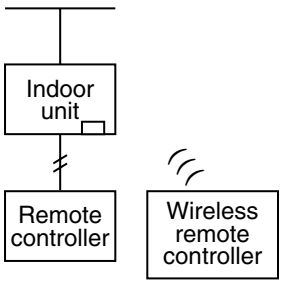
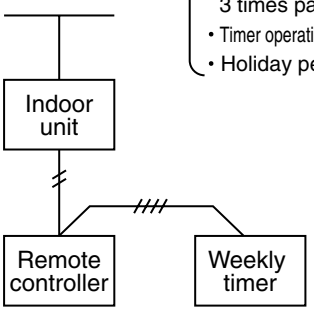


※1 BACnet™: ANSI/ASHRAE135D-1995, A Data Communication Protocol for Building Automation and Control Networks.
※2 LonWorks®, Resistered trademark of Echelon Corporation

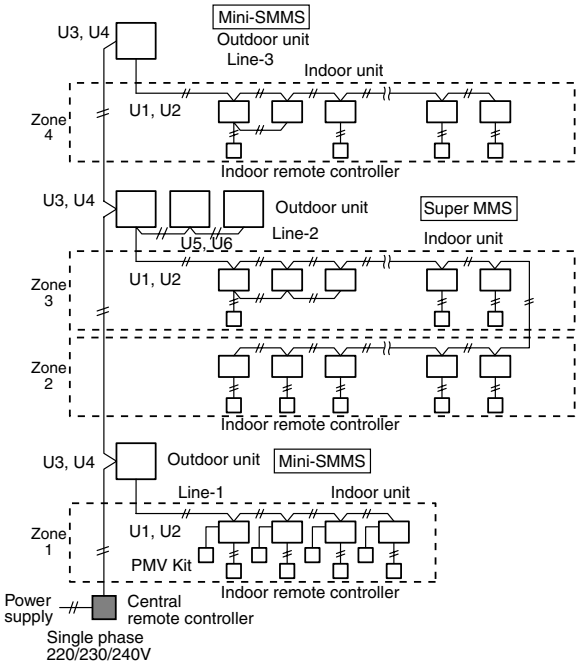
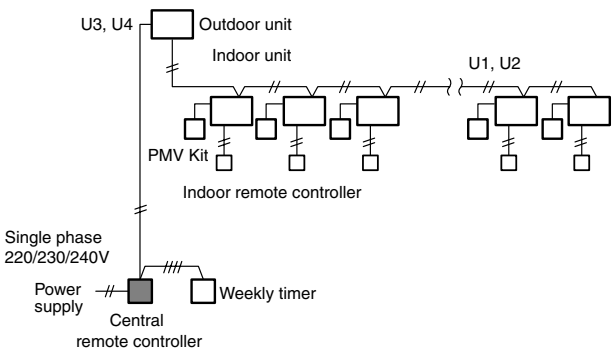
12-1. Applications

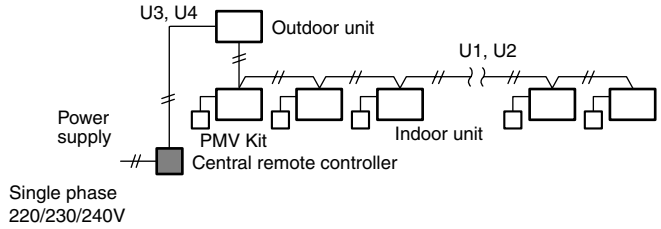
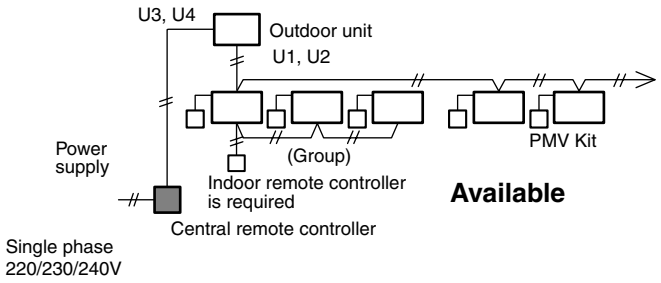
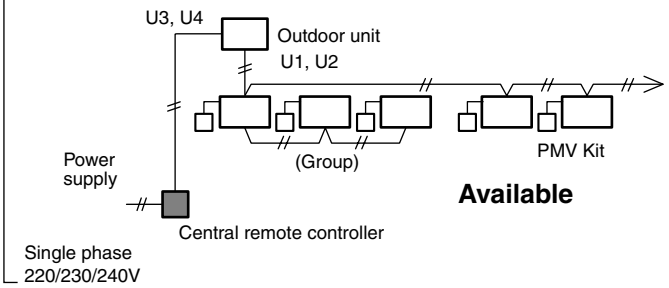
12-1-1. Applications for indoor remote controller

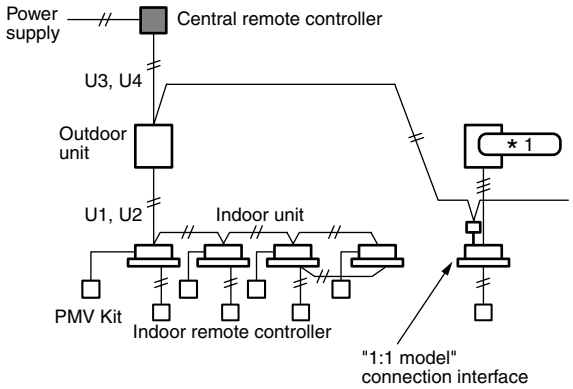
	Basic function	System diagram	Model
1-1	**Individual control** Air conditioner is individually operated at a distance.	Main remote controller  Wireless remote controller  	• Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2** • Wireless remote controller kit **TCB-AX21U(W)-E2** **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  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**

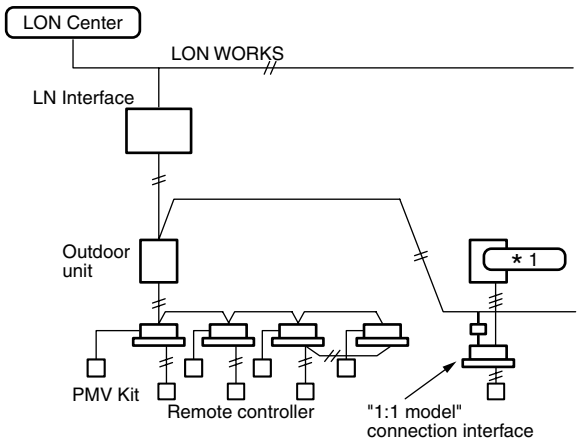
12-1-2. Application controls for central remote controller

	Basic function	System diagram	Model
2-1	Central management controller for 64 units	 **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.	• Central remote controller **TCB-SC642TLE2** **Indoor remote controller** • Wired remote controller **RBC-AMT31E** • Simple remote controller **RBC-AS21E2**
2-2	Central remote controller + Weekly timer [Weekly operation schedule can be set by connecting a weekly timer to the central remote controller]		• Central remote controller **TCB-SC642TLE2** + • Weekly timer **RBC-EXW21E2** **Indoor remote controller** • Wired remote controller **RBC-AMT31E** or • Simple remote controller **RBC-AS21E2**

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

	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**

12-1-3. Application control for network

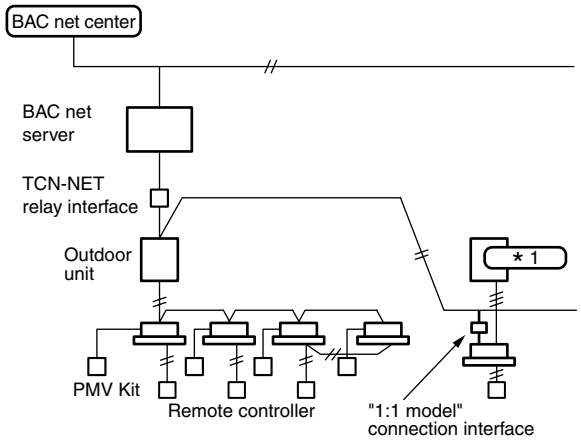
	Basic function	System diagram	Model
3-1	LONWORKS ® (*1)		• LN interface **TCB-IFLN640TLE** • "1 : 1 model" connection interface **TCB-PCNT30TLE2** [RAV-SM560KRT-E, SM800KRT-E are not compatible to connect] **Indoor remote controller** • Wired remote controller **RBC-AMT31E** or • Simple remote controller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

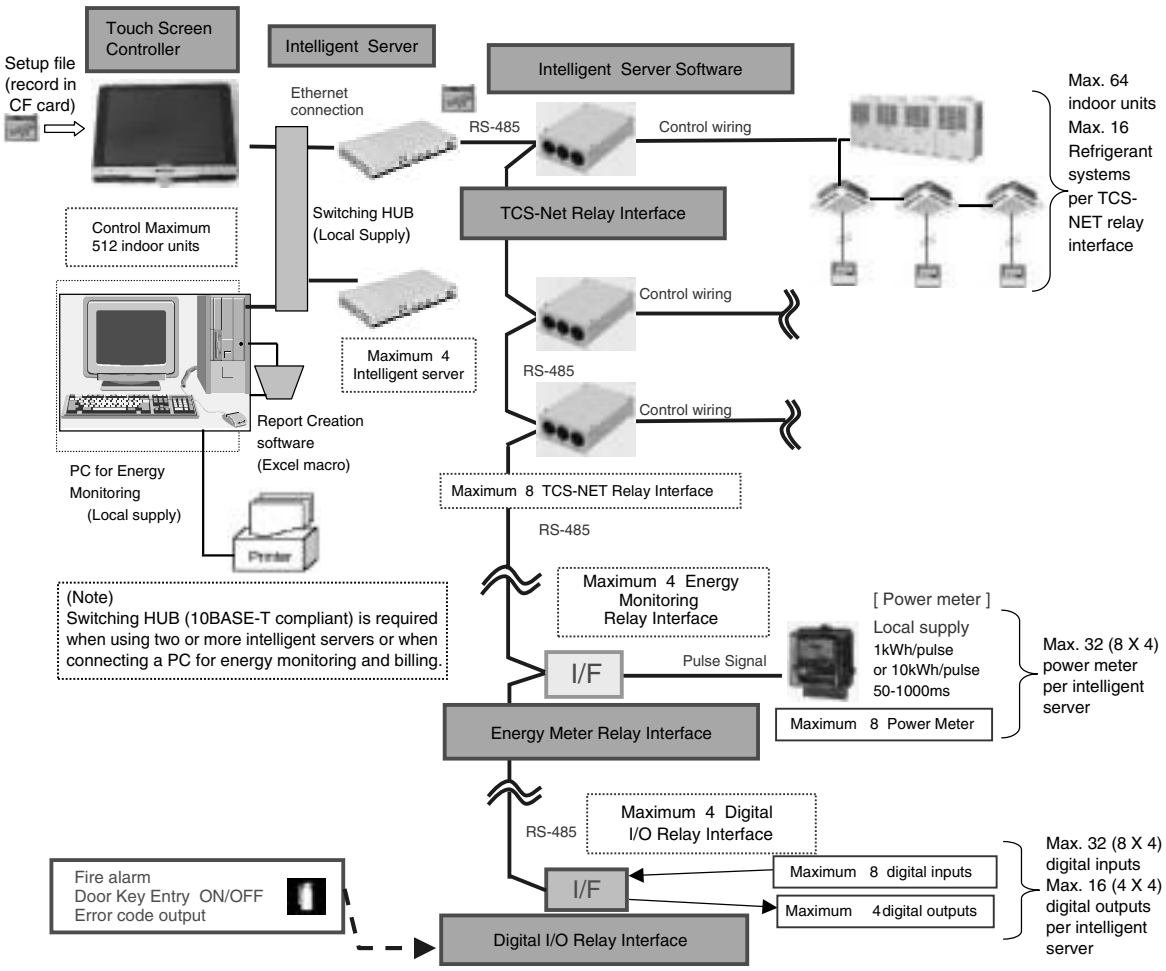
	Basic function	System diagram	Model
3-2	BACnet® (*1)	 TOSHIBA Digital Inverter System and Super Digital Inverter System The local server should be connected to the BACnet network and the Mini-SMMS and Super MMS Super HRM system will be connected through the interface.	• BACnet server **BMS-LSV4E** • 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.

12-1-4. 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-STCC03E	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

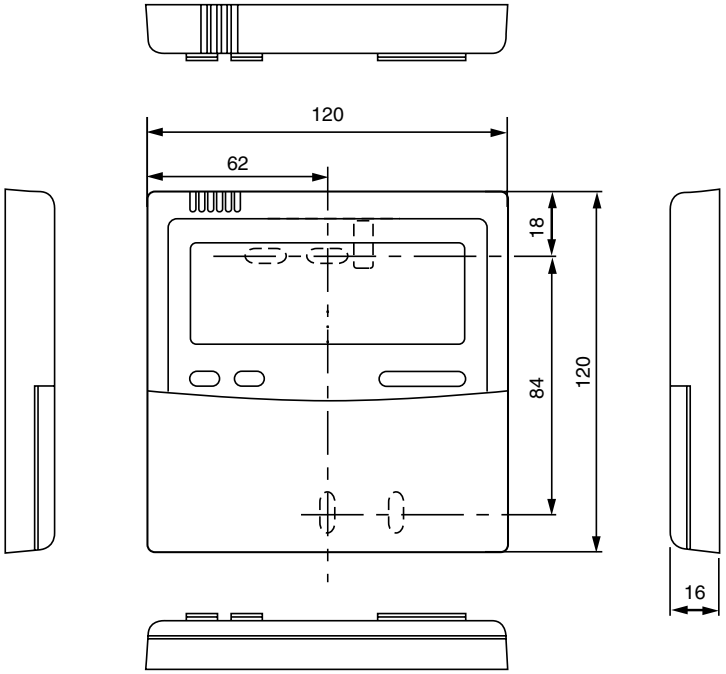
Function	(1) Monitoring air-conditioners	Operation status can be viewed according to a unit. [Unit] All building, All tenants, Each tenant, Each area, Each remote controller group [Monitoring contents] Operation and alarm status, Setting status for each remote controller group
	(2) Operating of air-conditioners	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

(Revised 19 May 2006)

12-2. Controller dimensions

• Wired remote controller

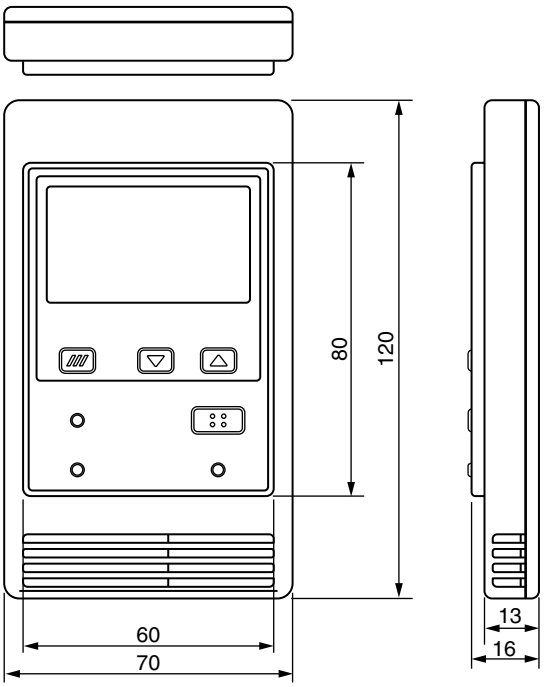
RBC-AMT31E



Note : All dimensions are in mm

• Simple remote controller

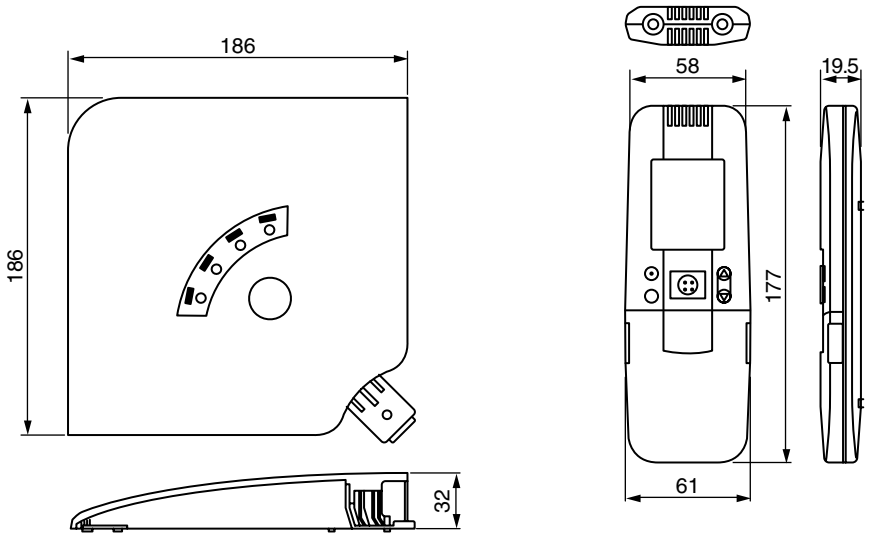
RBC-AS21E2



Note : All dimensions are in mm

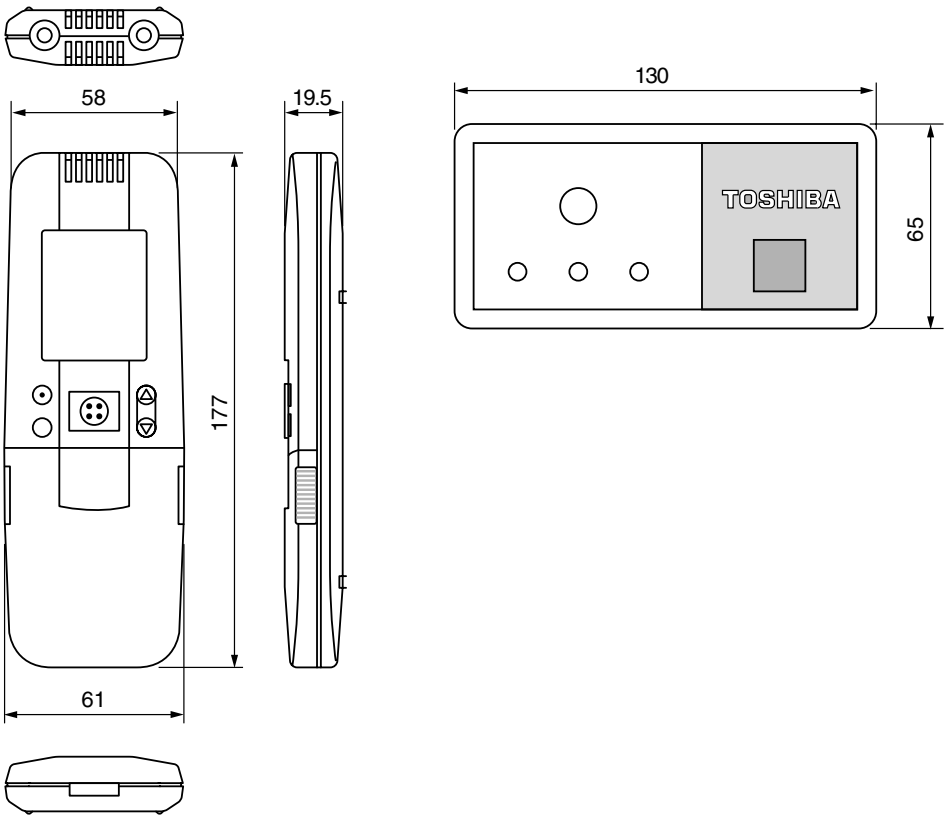
• Wireless remote controller kit

TCB-AX21U (W)-E2



Note : All dimensions are in mm

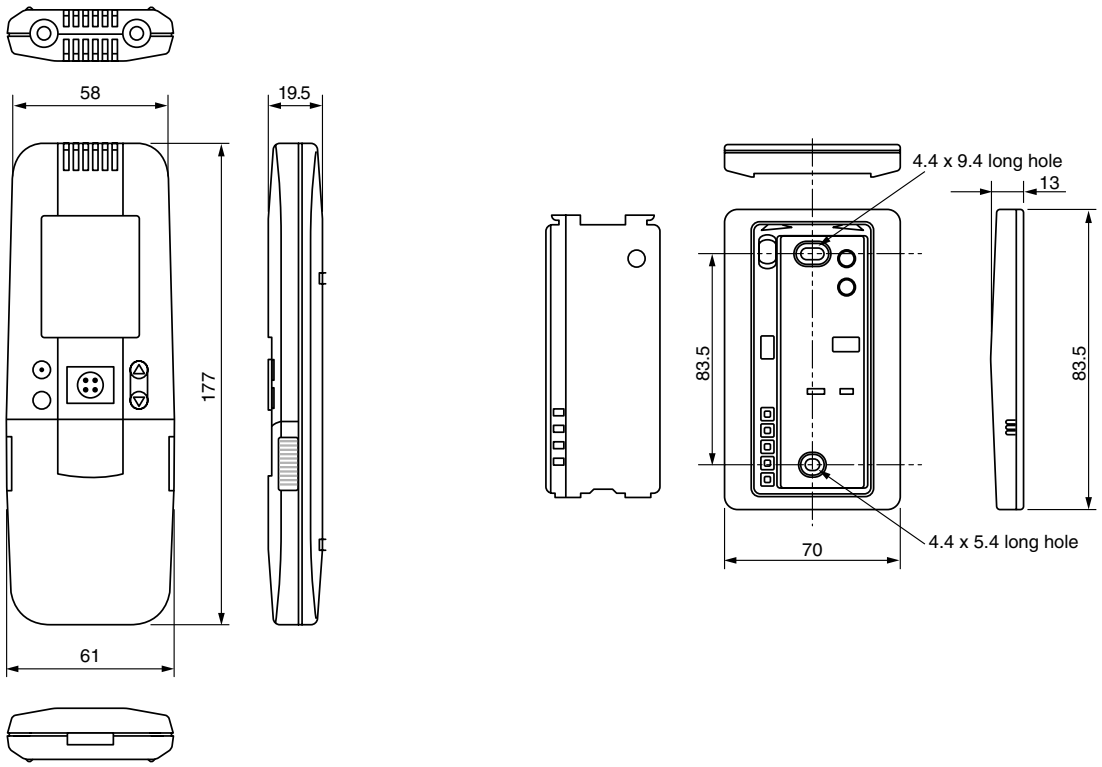
RBC-AX22CE2



Note : All dimensions are in mm

• Wireless remote controller kit

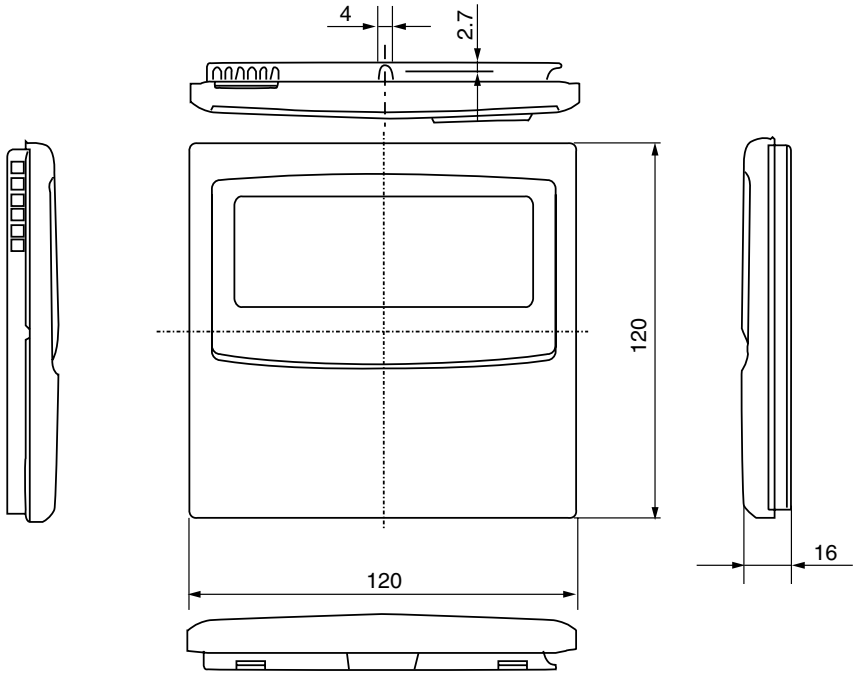
TCB-AX21E2



Note : All dimensions are in mm

• Weekly timer

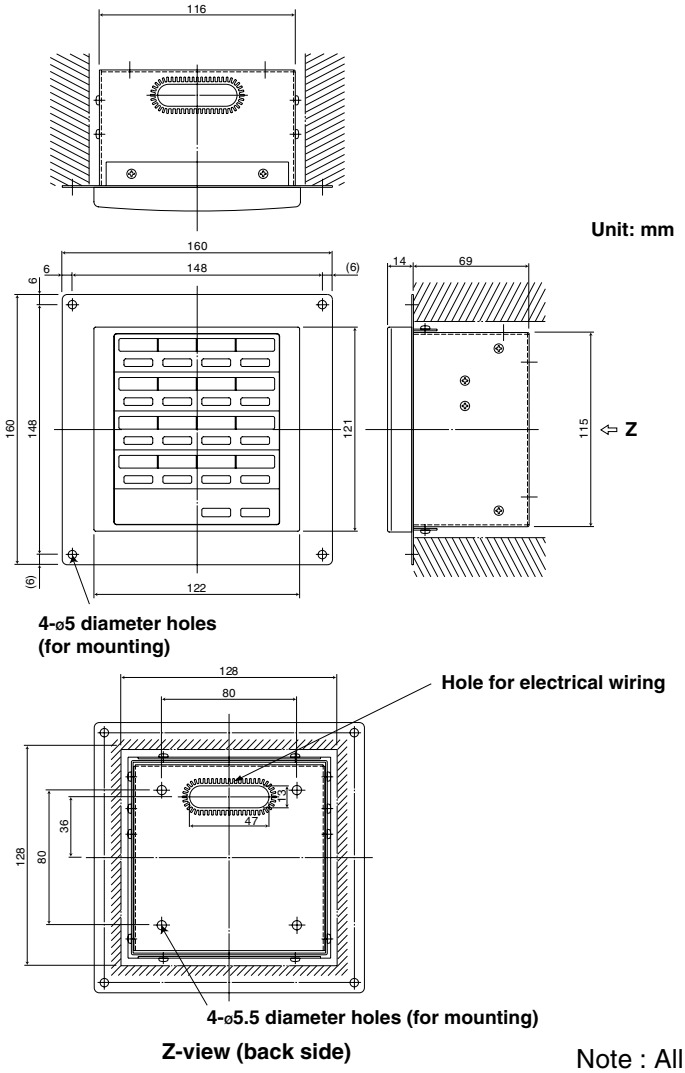
RBC-EXW21E2



Note : All dimensions are in mm

• ON-OFF controller

TCB-CC163TLE2

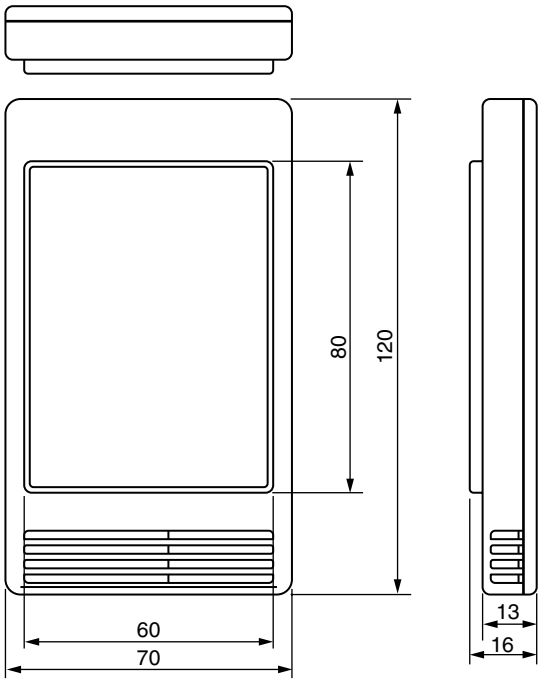


Unit: mm

Note : All dimensions are in mm

• Remote sensor

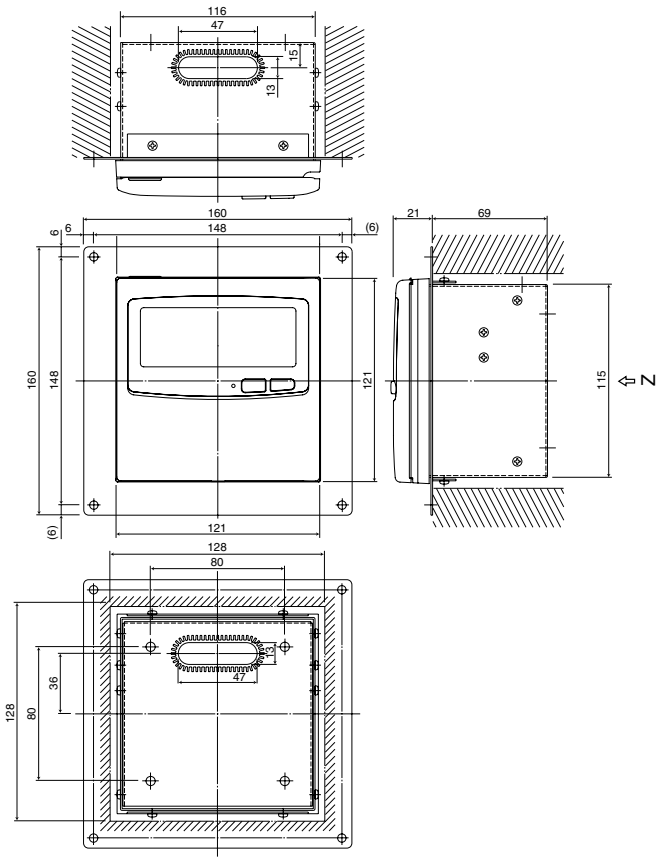
TCB-TC21LE2



Note : All dimensions are in mm

• Central remote controller

TCB-SC642TLE2

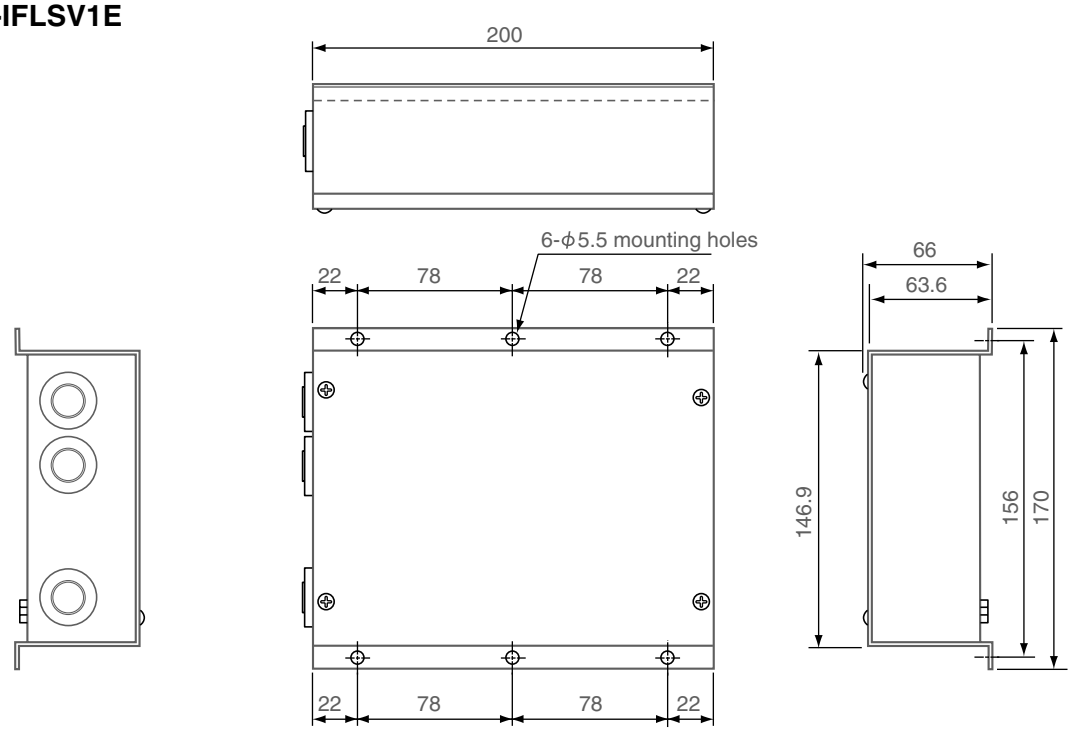


Z view (back side)

Note : All dimensions are in mm

• TCS-Net relay interface

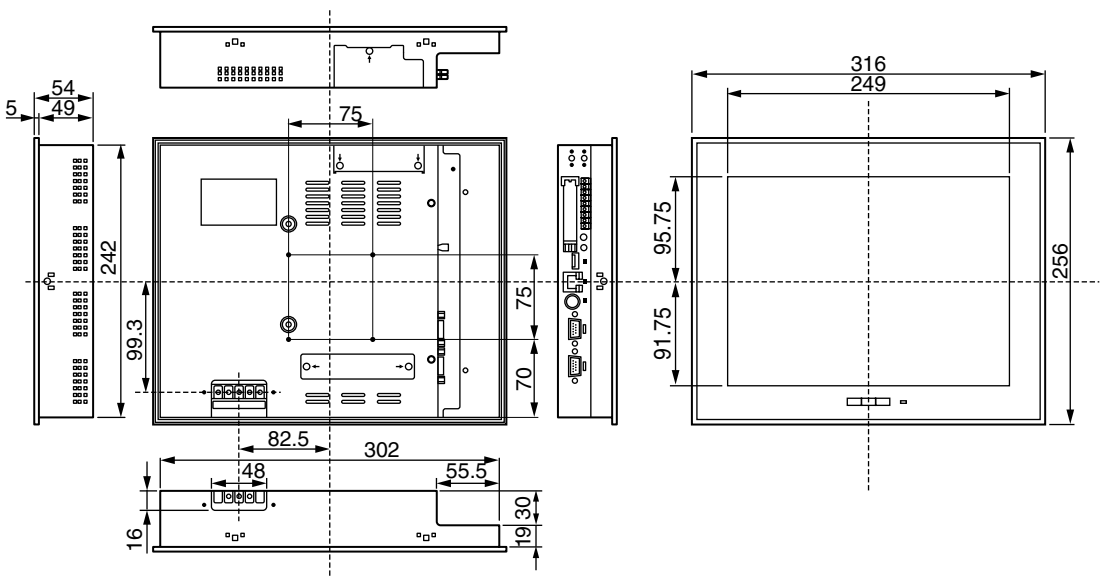
BMS-IFLSV1E



Note : All dimensions are in mm

• Touch screen controller

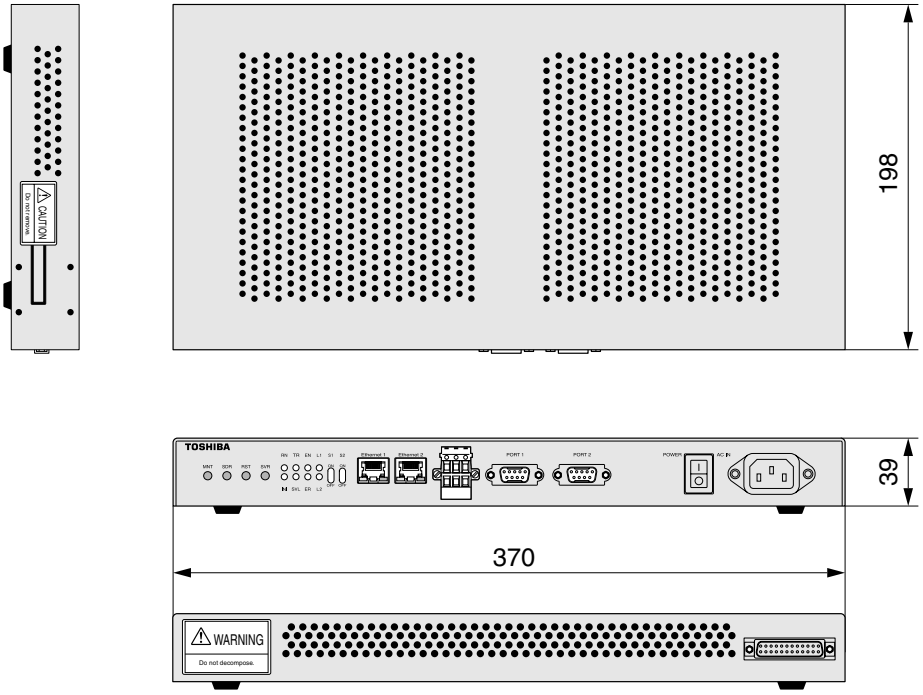
BMS-TP0640ACE
BMS-TP5120ACE
BMS-TP0640PWE
BMS-TP5120PWE



Note : All dimensions are in mm

•Intelligent server

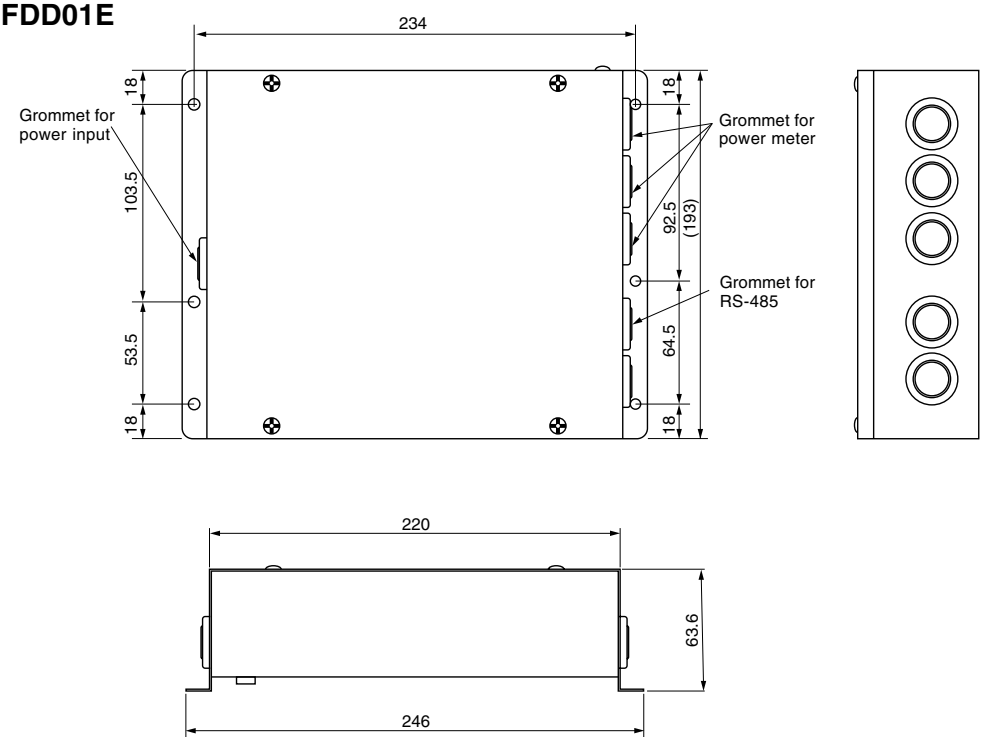
BMS-LSV2E



Note : All dimensions are in mm

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

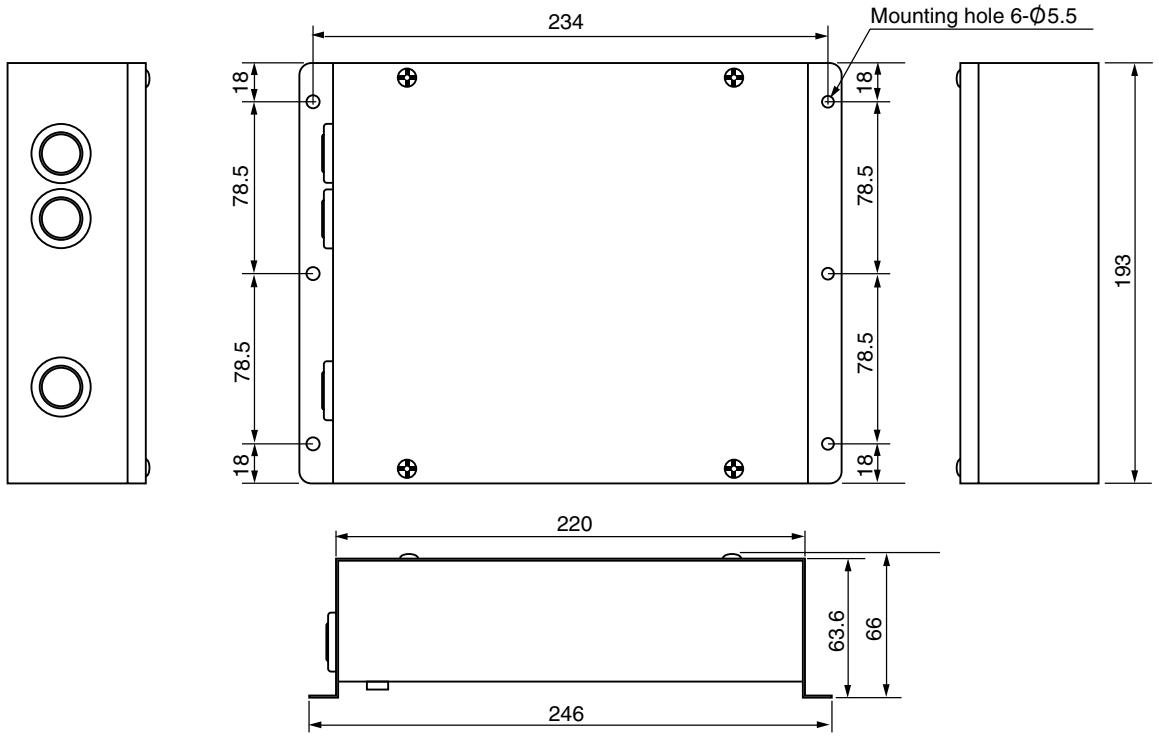
BMS-IFWH3E
BMS-IFDD01E



Note : All dimensions are in mm

• LON GATEWAY

TCB-IFLN640TLE



Note : All dimensions are in mm