

Model name:

***MCY-MHP0404HT-E***

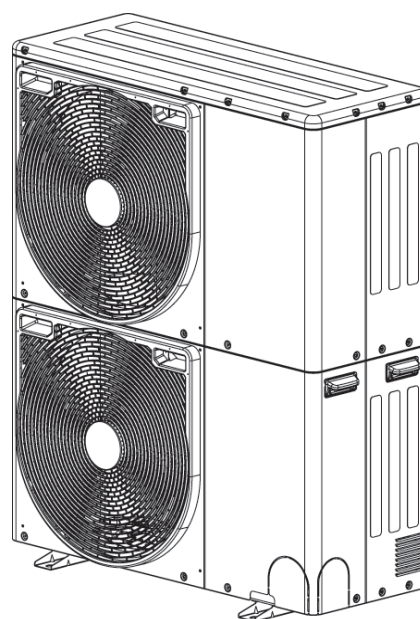
***MCY-MHP0504HT-E***

***MCY-MHP0604HT-E***

## Side blow VRF

## Engineering Data Book

### Outdoor units



Notice: Toshiba is committed to continuously improving its products to ensure the highest quality and reliability standards, and to meet local regulations and market requirements. All features and specifications are subject to change without prior notice.







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# Safety caution

- Before use, read carefully through the “Safety caution” section to ensure correct operation.
- The important contents concerned to the safety are described in the “Safety cautions”. Be sure to keep them. For Indications and their meanings, see the following description.

## Warning Indications on the Air Conditioner Unit

Warning indication		Description					
 <table border="1"> <tr> <td colspan="2"><b>WARNING</b></td> </tr> <tr> <td colspan="2"><b>ELECTRICAL SHOCK HAZARD</b></td> </tr> <tr> <td colspan="2">Disconnect all remote electric power supplies</td> </tr> </table>	<b>WARNING</b>		<b>ELECTRICAL SHOCK HAZARD</b>		Disconnect all remote electric power supplies		<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>
<b>WARNING</b>							
<b>ELECTRICAL SHOCK HAZARD</b>							
Disconnect all remote electric power supplies							
 <table border="1"> <tr> <td colspan="2"><b>WARNING</b></td> </tr> <tr> <td colspan="2">Moving parts. Do not operate unit with grille removed.</td> </tr> </table>	<b>WARNING</b>		Moving parts. Do not operate unit with grille removed.		<p><b>WARNING</b></p> <p>Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.</p>		
<b>WARNING</b>							
Moving parts. Do not operate unit with grille removed.							
 <table border="1"> <tr> <td colspan="2"><b>CAUTION</b></td> </tr> <tr> <td colspan="2">High temperature parts. You might get burned when removing this panel.</td> </tr> </table>	<b>CAUTION</b>		High temperature parts. You might get burned when removing this panel.		<p><b>CAUTION</b></p> <p>High temperature parts. You might get burned when removing this panel.</p>		
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 <table border="1"> <tr> <td colspan="2"><b>CAUTION</b></td> </tr> <tr> <td colspan="2">Do not touch the aluminum fins of the unit. Doing so may result in injury.</td> </tr> </table>	<b>CAUTION</b>		Do not touch the aluminum fins of the unit. Doing so may result in injury.		<p><b>CAUTION</b></p> <p>Do not touch the aluminium fins of the unit. Doing so may result in injury.</p>		
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<b>CAUTION</b>							
<b>BURST HAZARD</b>							
Open the service valves before the operation,							
 <table border="1"> <tr> <td colspan="2"><b>CAUTION</b></td> </tr> <tr> <td colspan="2"><b>Do not climb onto the fan guard.</b></td> </tr> <tr> <td colspan="2">Doing so may result in</td> </tr> </table>	<b>CAUTION</b>		<b>Do not climb onto the fan guard.</b>		Doing so may result in		<p><b>CAUTION</b></p> <p><b>Do not climb onto the fan guard.</b> Doing so may result in injury.</p>
<b>CAUTION</b>							
<b>Do not climb onto the fan guard.</b>							
Doing so may result in							





## WARNINGS ON REFRIGERANT LEAKAGE

### Check of Concentration Limit

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

The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively.

Suffocation from leakage of R410A is almost nonexistent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

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

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

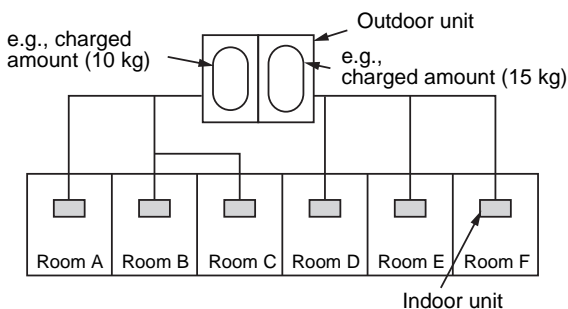
The concentration is as given below.

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

The concentration limit of R410A which is used in multi air conditioners is 0.3 kg/m<sup>3</sup>.

#### NOTE 1:

If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.



For the amount of charge in this example:

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

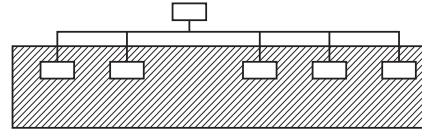
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

### Important

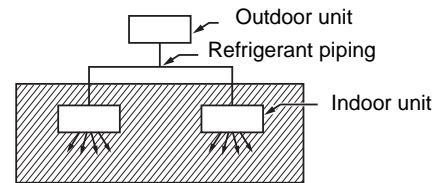
#### NOTE 2:

The standards for minimum room volume are as follows.

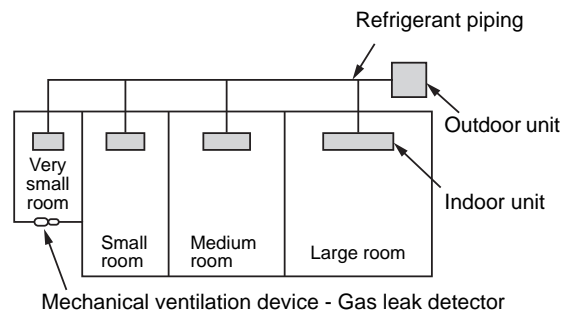
- (1) No partition (shaded portion)



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

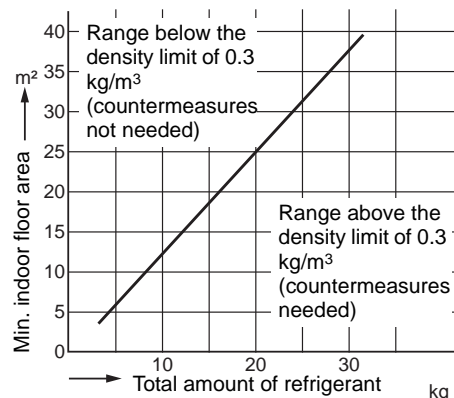


- (3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded,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

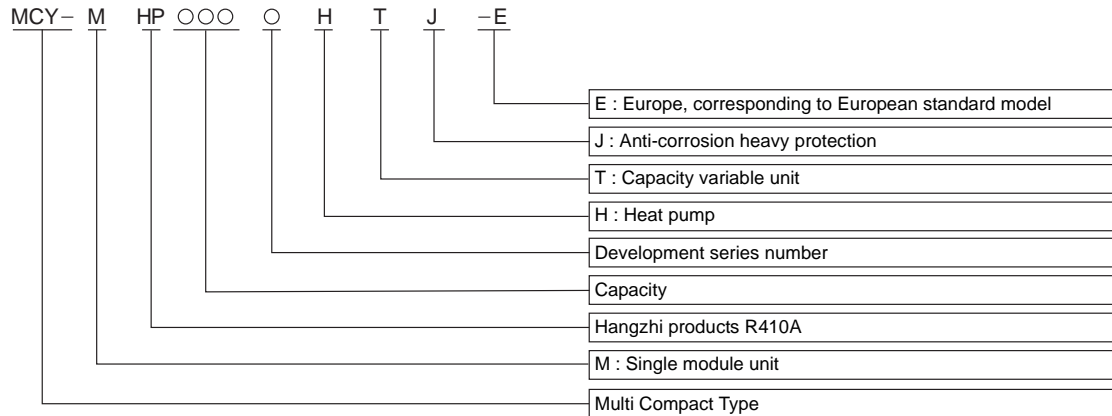


#### NOTE 3:

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



### 1-1. Allocation standard of model name



### 1-2. Summary of system equipments

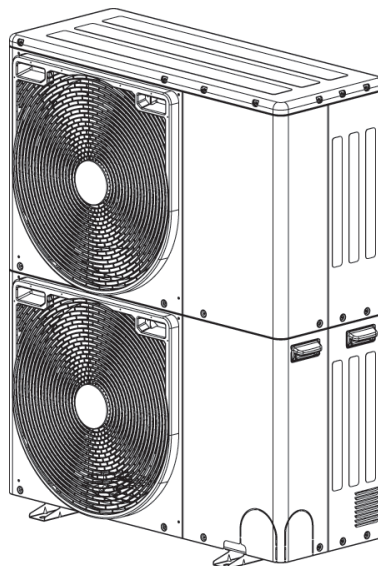
#### 1-2-1. Outdoor units

Corresponding HP	Inverter unit		
	4HP	5HP	6HP
Model name	MCY-MHP0404HT-E	MCY-MHP0504HT-E	MCY-MHP0604HT-E
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	6	6

\*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.



## 1-2-2. Indoor units



Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
4-way Air Discharge Cassette Type		MMU-AP0092H	009 type	1.00	2.8	3.2	-
		MMU-AP0122H	012 type	1.25	3.6	4.0	-
		MMU-AP0152H	015 type	1.70	4.5	5.0	-
		MMU-AP0182H	018 type	2.00	5.6	6.3	-
		MMU-AP0242H	024 type	2.50	7.1	8.0	-
		MMU-AP0272H	027 type	3.00	8.0	9.0	-
		MMU-AP0302H	030 type	3.20	9.0	10.0	-
		MMU-AP0362H	036 type	4.00	11.2	12.5	-
		MMU-AP0482H	048 type	5.00	14.0	16.0	-
		MMU-AP0094HP-E	009 type	1.00	2.8	3.2	-
		MMU-AP0124HP-E	012 type	1.25	3.6	4.0	-
		MMU-AP0154HP-E	015 type	1.70	4.5	5.0	-
		MMU-AP0184HP-E	018 type	2.00	5.6	6.3	-
		MMU-AP0244HP-E	024 type	2.50	7.1	8.0	-
		MMU-AP0274HP-E	027 type	3.00	8.0	9.0	-
		MMU-AP0304HP-E	030 type	3.20	9.0	10.0	-
		MMU-AP0364HP-E	036 type	4.00	11.2	12.5	-
		MMU-AP0484HP-E	048 type	5.00	14.0	16.0	-
Compact 4-way Cassette (600 × 600) Type		MMU-AP0054MH-E	005 type	0.60	1.7	1.9	Available
		MMU-AP0074MH-E	007 type	0.80	2.2	2.5	Available
		MMU-AP0094MH-E	009 type	1.00	2.8	3.2	Available
		MMU-AP0124MH-E	012 type	1.25	3.6	4.0	Available
		MMU-AP0154MH-E	015 type	1.70	4.5	5.0	Available
		MMU-AP0184MH-E	018 type	2.00	5.6	6.3	Available
2-way Air Discharge Cassette Type		MMU-AP0072WH	007 type	0.80	2.2	2.5	-
		MMU-AP0092WH	009 type	1.00	2.8	3.2	-
		MMU-AP0122WH	012 type	1.25	3.6	4.0	-
		MMU-AP0152WH	015 type	1.70	4.5	5.0	-
		MMU-AP0182WH	018 type	2.00	5.6	6.3	-
		MMU-AP0242WH	024 type	2.50	7.1	8.0	-
		MMU-AP0272WH	027 type	3.00	8.0	9.0	-
		MMU-AP0302WH	030 type	3.20	9.0	10.0	-
		MMU-AP0362WH	036 type	4.00	11.2	12.5	-
		MMU-AP0482WH	048 type	5.00	14.0	16.0	-
1-way Air Discharge Cassette Type		MMU-AP0074YH-E	007 type	0.80	2.2	2.5	Available
		MMU-AP0094YH-E	009 type	1.00	2.8	3.2	Available
		MMU-AP0124YH-E	012 type	1.25	3.6	4.0	Available
		MMU-AP0154SH-E	015 type	1.70	4.5	5.0	Available
		MMU-AP0184SH-E	018 type	2.00	5.6	6.3	Available
		MMU-AP0244SH-E	024 type	2.50	7.1	8.0	Available
Concealed Duct Type		MMD-AP0076BHP-E	007 type	0.80	2.2	2.5	Available
		MMD-AP0096BHP-E	009 type	1.00	2.8	3.2	Available
		MMD-AP0126BHP-E	012 type	1.25	3.6	4.0	Available
		MMD-AP0156BHP-E	015 type	1.70	4.5	5.0	Available
		MMD-AP0186BHP-E	018 type	2.00	5.6	6.3	Available
		MMD-AP0246BHP-E	024 type	2.50	7.1	8.0	Available
		MMD-AP0276BHP-E	027 type	3.00	8.0	9.0	Available
		MMD-AP0306BHP-E	030 type	3.20	9.0	10.0	Available
		MMD-AP0366BHP-E	036 type	4.00	11.2	12.5	Available
		MMD-AP0486BHP-E	048 type	5.00	14.0	16.0	Available
Concealed Duct High Static Pressure Type		MMD-AP0184H-E	018 type	2.00	5.6	6.3	-
		MMD-AP0244H-E	024 type	2.50	7.1	8.0	-
		MMD-AP0274H-E	027 type	3.00	8.0	9.0	-
		MMD-AP0364H-E	036 type	4.00	11.2	10.0	-
		MMD-AP0484H-E	048 type	5.00	14.0	16.0	-

# 1 System overview


Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
Slim Duct Type		MMD-AP0054SPH-E	005 type	0.60	1.7	1.9	Available
		MMD-AP0074SPH-E	007 type	0.80	2.2	2.5	Available
		MMD-AP0094SPH-E	009 type	1.00	2.8	3.2	Available
		MMD-AP0124SPH-E	012 type	1.25	3.6	4.0	Available
		MMD-AP0154SPH-E	015 type	1.70	4.5	5.0	Available
		MMD-AP0184SPH-E	018 type	2.00	5.6	6.3	Available
		MMD-AP0244SPH-E	024 type	2.50	7.1	8.0	Available
		MMD-AP0274SPH-E	027 type	3.00	8.0	9.0	Available
Ceiling Type		MMC-AP0154H-E	015 type	1.70	4.5	5.0	-
		MMC-AP0184H-E	018 type	2.00	5.6	6.3	-
		MMC-AP0244H-E	024 type	2.50	7.1	8.0	-
		MMC-AP0274H-E	027 type	3.00	8.0	9.0	-
		MMC-AP0364H-E	036 type	4.00	11.2	12.5	-
		MMC-AP0484H-E	048 type	5.00	14.0	16.0	-
		MMC-AP0157HP-E	015 type	1.70	4.5	5.0	-
		MMC-AP0187HP-E	018 type	2.00	5.6	6.3	-
		MMC-AP0247HP-E	024 type	2.50	7.1	8.0	-
		MMC-AP0277HP-E	027 type	3.00	8.0	9.0	-
		MMC-AP0367HP-E	036 type	4.00	11.2	12.5	-
		MMC-AP0487HP-E	048 type	5.00	14.0	16.0	-
		MMC-AP0567HP-E	056 type	6.00	16.0	18.0	-
High-wall Type 3 series		MMK-AP0073H	007 type	0.80	2.2	2.5	Available
		MMK-AP0093H	009 type	1.00	2.8	3.2	Available
		MMK-AP0123H	012 type	1.25	3.6	4.0	Available
		MMK-AP0153H	015 type	1.70	4.5	5.0	Available
		MMK-AP0183H	018 type	2.00	5.6	6.3	Available
		MMK-AP0243H	024 type	2.50	7.1	8.0	Available
High-wall Type 4 series		MMK-AP0074MH-E	007 type	0.80	2.2	2.5	Available
		MMK-AP0094MH-E	009 type	1.00	2.8	3.2	Available
		MMK-AP0124MH-E	012 type	1.25	3.6	4.0	Available
Floor Standing Concealed Type		MML-AP0074BH-E	007 type	0.80	2.2	2.5	-
		MML-AP0094BH-E	009 type	1.00	2.8	3.2	-
		MML-AP0124BH-E	012 type	1.25	3.6	4.0	-
		MML-AP0154BH-E	015 type	1.70	4.5	5.0	-
		MML-AP0184BH-E	018 type	2.00	5.6	6.3	-
		MML-AP0244BH-E	024 type	2.50	7.1	8.0	-
Floor Standing Cabinet Type		MML-AP0074H-E	007 type	0.80	2.2	2.5	Available
		MML-AP0094H-E	009 type	1.00	2.8	3.2	Available
		MML-AP0124H-E	012 type	1.25	3.6	4.0	Available
		MML-AP0154H-E	015 type	1.70	4.5	5.0	Available
		MML-AP0184H-E	018 type	2.00	5.6	6.3	Available
		MML-AP0244H-E	024 type	2.50	7.1	8.0	Available
Floor Standing Type		MMF-AP0154H-E	015 type	1.70	4.5	5.0	-
		MMF-AP0184H-E	018 type	2.00	5.6	6.3	-
		MMF-AP0244H-E	024 type	2.50	7.1	8.0	-
		MMF-AP0274H-E	027 type	3.00	8.0	9.0	-
		MMF-AP0364H-E	036 type	4.00	11.2	10.0	-
		MMF-AP0484H-E	048 type	5.00	14.0	16.0	-
		MMF-AP0564H-E	056 type	6.00	16.0	18.0	-
Console Type		MML-AP0074NH-E	007 type	0.80	2.2	2.5	Available
		MML-AP0094NH-E	009 type	1.00	2.8	3.2	Available
		MML-AP0124NH-E	012 type	1.25	3.6	4.0	Available
		MML-AP0154NH-E	015 type	1.70	4.5	5.0	Available
		MML-AP0184NH-E	018 type	2.00	5.6	6.3	Available

# 1 System overview

## 1-2-3. Branching joints and headers

Name	Model name	Appearance	Remarks
Y-shape branching joint	RBM-BY55E		
4-branching header	RBM-HY1043E		
8-branching header	RBM-HY1083E		

## 1-2-4. PMV Kits

Name	Model name	Appearance	Remarks
PMV Kits	RBM-PMV0362E		
	RBM-PMV0902E		

## 1-2-5. Remote controllers

Name	Model Name	Remarks
Wired remote controller	RBC-AMT32E	
Simple wired remote controller	RBC-AS41E2	
Wireless remote controller kit	RBC-AX32U(W)-E RBC-AX32U(WS)-E	For 4-way Air Discharge Cassette
	RBC-AX32CE2	For Under Ceiling 4series, 1-way Air Discharge Cassette SH
	TCB-AX33CE	For Under Ceiling 7series, Under Ceiling and 1-way Air Discharge Cassette SH 4series
	TCB-AX32E2	For Compact 4-way Cassette, 1-way Air Discharge Cassette YH, Concealed Duct Standard, Slim Duct, Floor Standing Cabinet, Floor Standing
	RBC-AX23UW(W)-E	For 2-way Air Discharge Cassette
ON-OFF controller	TCB-CC163TLE2	
Central remote controller	TCB-SC642TLE2	
	BMS-CM1280TLE	
Schedule timer	TCB-EXS21TLE	
Remote controller with schedule timer (7-day timer function)	RBC-AMS41E	
Lite-Vision plus Remote Controller	RBC-AMS51E-EN/ES	-EN : English, Italian, Polish, Greece, Russian, Turkish -ES : English, Spanish, Portuguese, French, Dutch, German

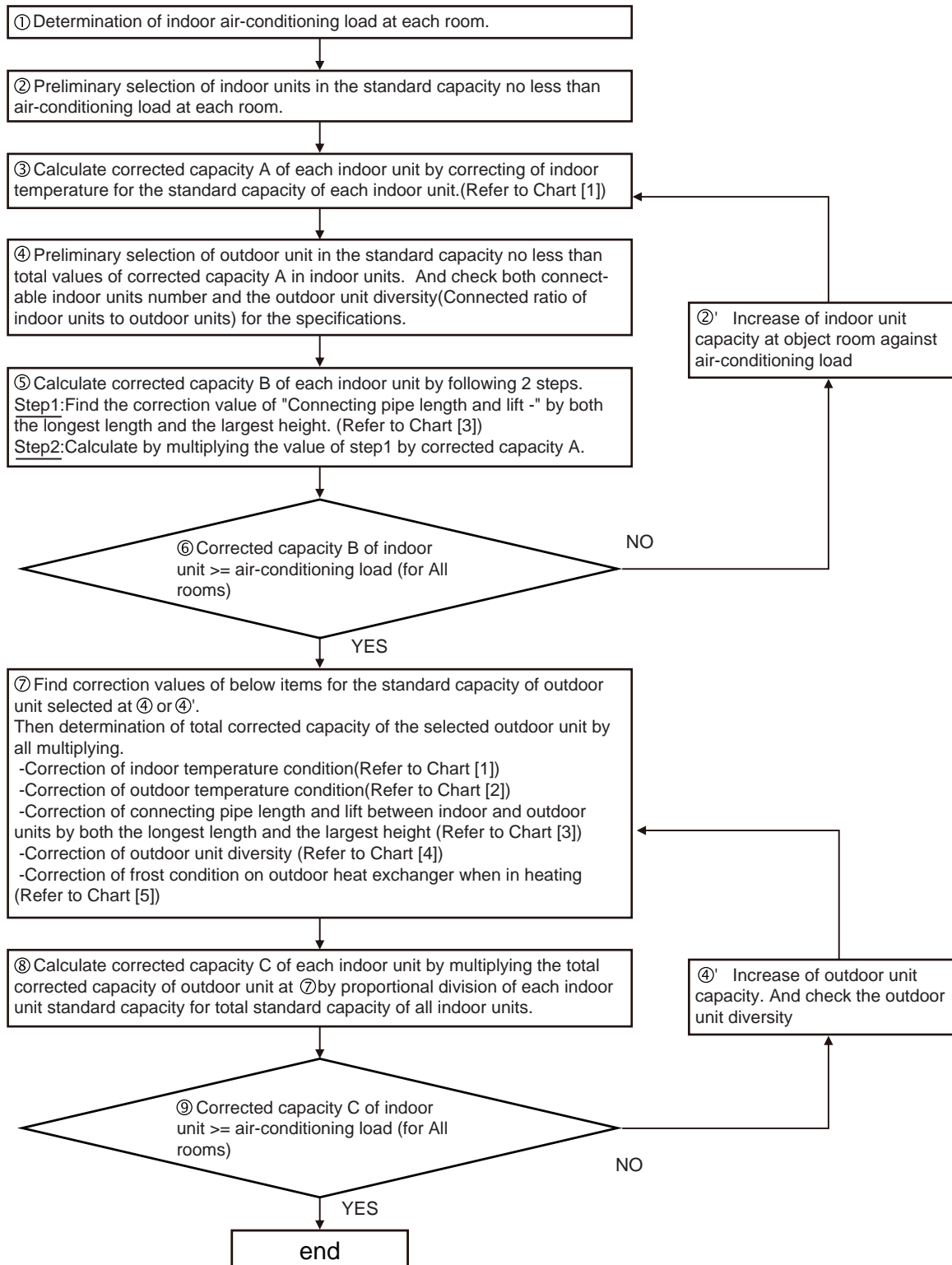
## 1-2-6. Optional PCB of outdoor unit

Name	Model Name	Remarks
Power peak-cut control board	TCB-PCDM4E	
External master ON/OFF control board	TCB-PCMO4E	
Output control board	TCB-PCIN4E	

## 1-2-7. Controls

Name	Model Name	Remarks
Touch Screen Controller	BMS-TP0641ACE	ACE:Without energy monitoring function
	BMS-TP5121ACE	PWE:With energy monitoring function
	BMS-TP0641PWE	0641:Maximum 64 indoor units connectable
	BMS-TP5121PWE	5121:Maximum 512 indoor units connectable
Smart BMS manager	BMS-SM1280HTLE	
Smart BMS manager with data analyzer	BMS-SM1280ETLE	
WEB Based Controller	BMS-WB2561PWE	
	BMS-WB01GTE	
TCS-NET Relay Interface	BMS-IFLSV4E	
Energy Monitoring Relay Interface	BMS-IFWH5E	
Digital I/O Relay Interface	BMS-IFDD03E	
LonWorks LN Interface	TCB-IFLN642TLE	
BACnet Server	BMS-LSV9E	
	BMS-STBN10E	
Modbus Interface	TCB-IFMB641TLE	
Analog Interface	TCB-IFCB640TLE	

## 2-1. Selection flow chart



## **2** *Equipment selection procedure*

### **2-2. Combination conditions for indoor unit and outdoor unit**

Indoor unit can connect 80 % to 130 % of Outdoor unit capacity.

#### **2-2-1. For indoor unit, the capacity code is decided for each capacity rank.**

Capacity rank type		005(*1)	007	008	009	010	012	014	015	017	018	020	024	027	030	036	048	056
Capacity code	Equivalent to HP	0.8	0.8	0.9	1.0	1.1	1.25	1.5	1.7	1.85	2.0	2.25	2.5	3.0	3.2	4.0	5.0	6.0

**NOTE:**

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

\*1 : Capacity code of 005 type is the same as 007 type.

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

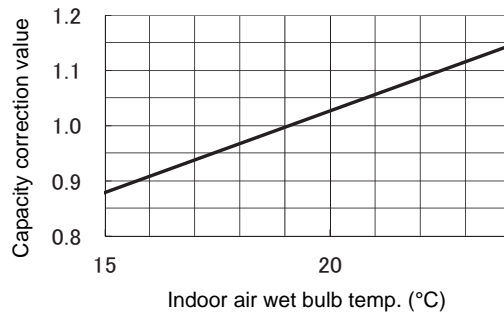
Outdoor unit	Capacity code of outdoor unit	No. of connectable indoor units	Total capacity code of indoor units
MCY-MHP0404HT*	4	2 to 6	3.2 to 5.2
MCY-MHP0504HT*	5	2 to 6	4.0 to 6.5
MCY-MHP0604HT*	6	2 to 6	4.8 to 7.8



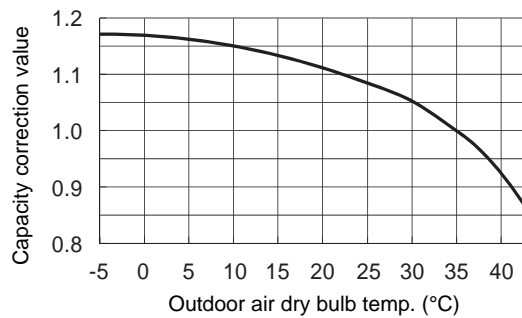
**2-3. Cooling / heating capacity characteristics**

**2-3-1. Correction charts for cooling capacity calculation**

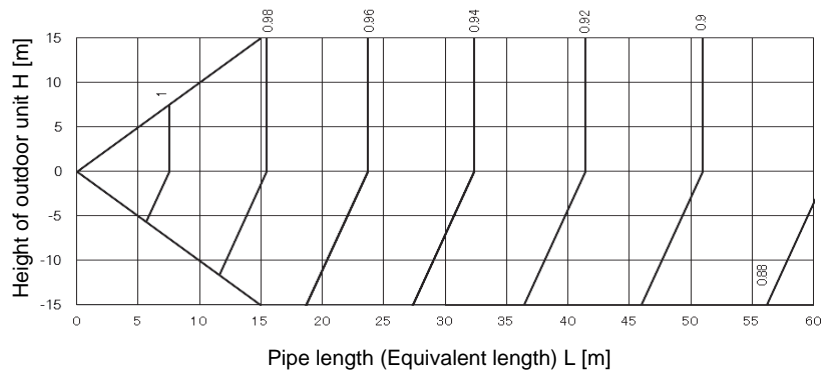
**[1] Capacity correction value vs. indoor air wet bulb temperature**



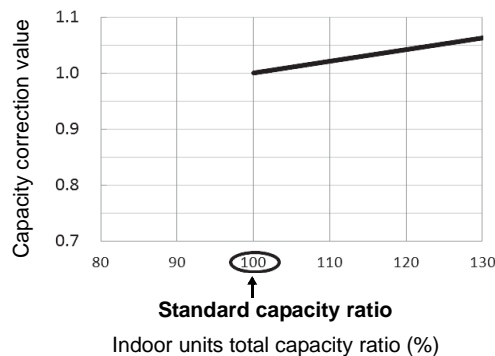
**[2] Capacity correction value vs. outdoor air dry bulb temperature**



**[3] Capacity correction value vs. connecting pipe length and lift difference between indoor and outdoor units**



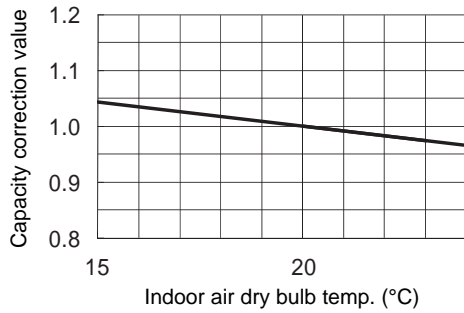
**[4]\* Correction of outdoor unit diversity**



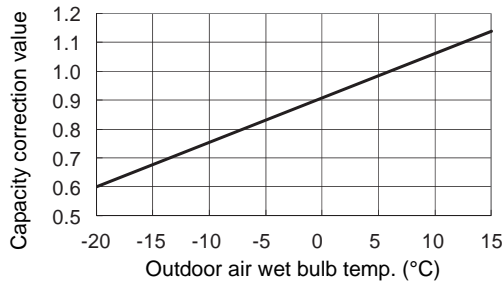
\* : Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

**2-3-2. Correction charts for heating capacity calculation**

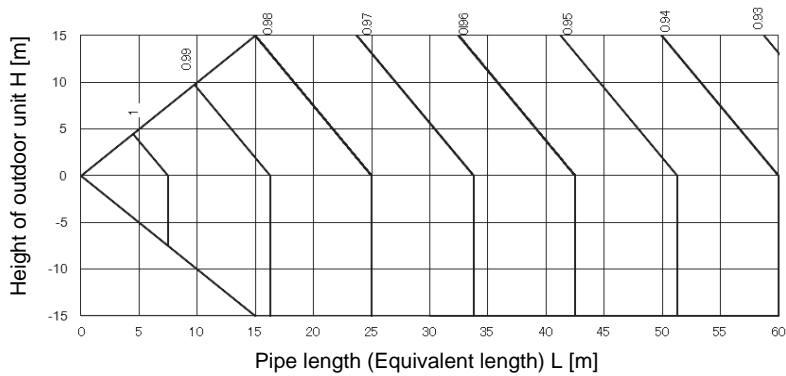
**[1] Capacity correction value vs. indoor air dry bulb temperature**



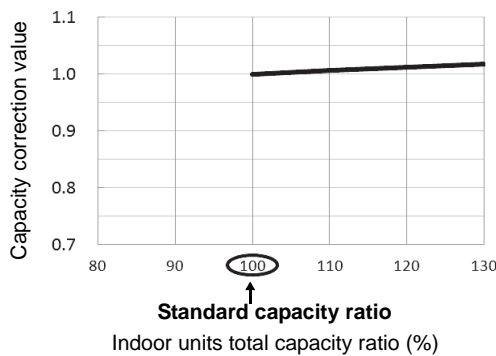
**[2] Capacity correction value vs. outdoor air wet bulb temperature**



**[3] Capacity correction value vs. connecting pipe length and lift difference between indoor and outdoor units**



**[4]\* Correction of outdoor unit diversity**



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

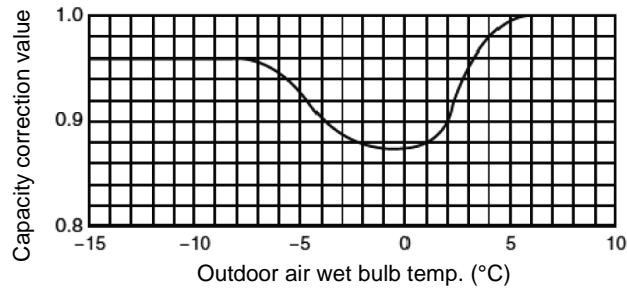
## 2 Equipment selection procedure

### 2-3-3. Capacity correction in case of frost on the outdoor heat exchanger in heating

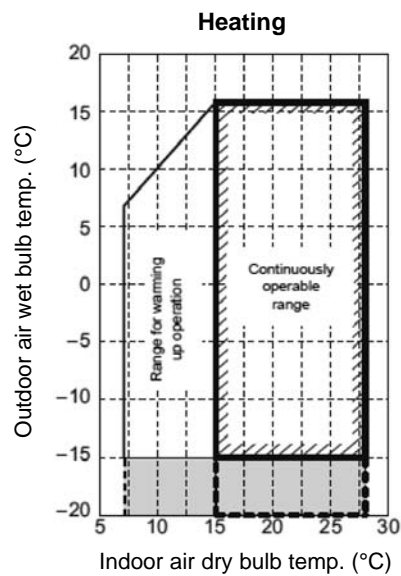
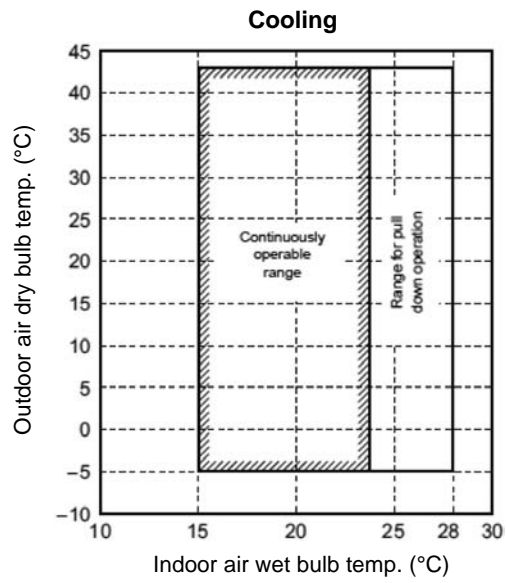
Correct the heating capacity when frost was found on the outdoor heat exchanger.

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

#### [5] capacity correction in case of frost on the outdoor heat exchanger



## 2-4. Operational temperature range



The unit will operate down to an outdoor temperature of -20 °C, however considerable performance decrease will be expected below -15 °C. Therefore please consider installation location/surroundings and system design when expected to operate between -15 °C and -20 °C.

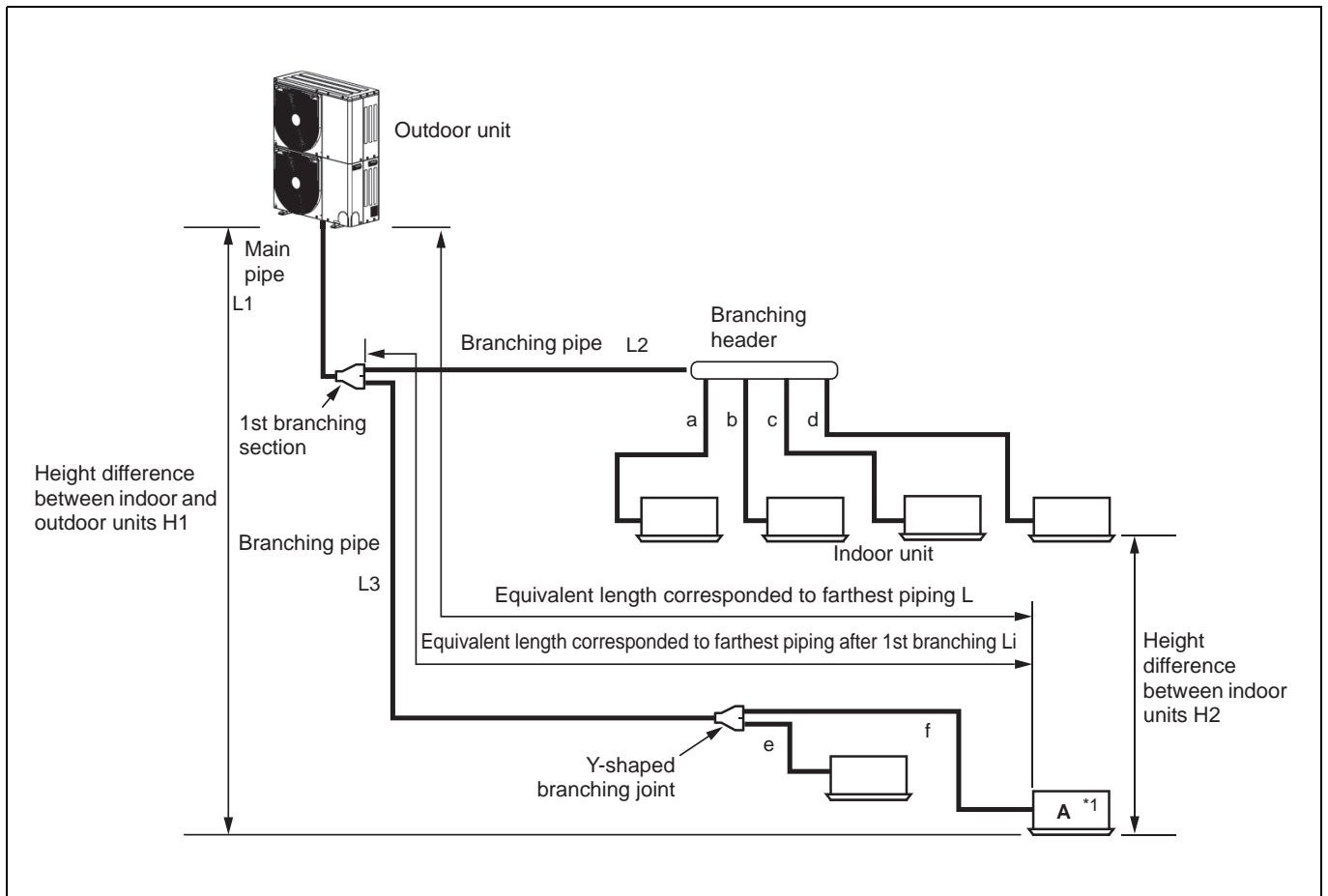
### 3-1. Free branching system

- [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 enable to dramatically increase the flexibility of refrigerant piping design.

<p>Line branching system</p>	
<p>Header branching system</p>	
<p>Header branching system</p>	<p>* In case of "PMV Kit"</p>
<p>Line branching system after header branching</p>	<p>* In case of "PMV Kit"</p>
<p>Header branching system after header branching</p>	

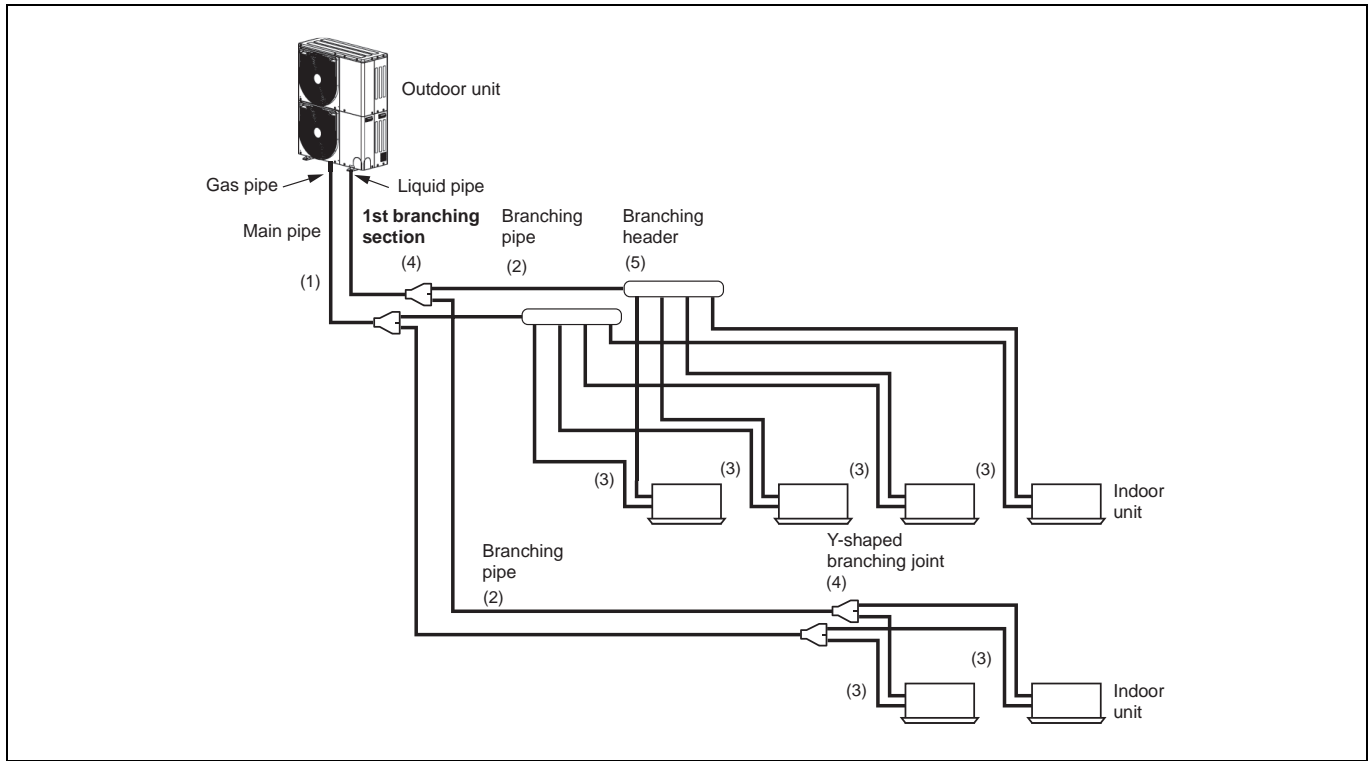
## 3-2. Allowable length / height difference of refrigerant piping



		Allowable value	Piping section	
Pipe Length	Total extension of pipe (Liquid pipe, real length)	90 m	$L1 + L2 + L3 + a + b + c + d + e + f$	
	Furthest piping length L (*1)	Real length	50 m	
		Equivalent length	60 m	$L1 + L3 + f$
	Max. real length of main pipe	30 m	L1	
	Max. real length of furthest piping from 1st branching Li (*1)	20 m	$L3 + f$	
Max. real length of indoor unit connecting pipe	10 m	a, b, c, d, e, f		
Height Difference	Height between indoor and outdoor units H1	Upper outdoor unit	15 m	—
		Lower outdoor unit	15 m	—
	Height between indoor units H2	10 m	—	

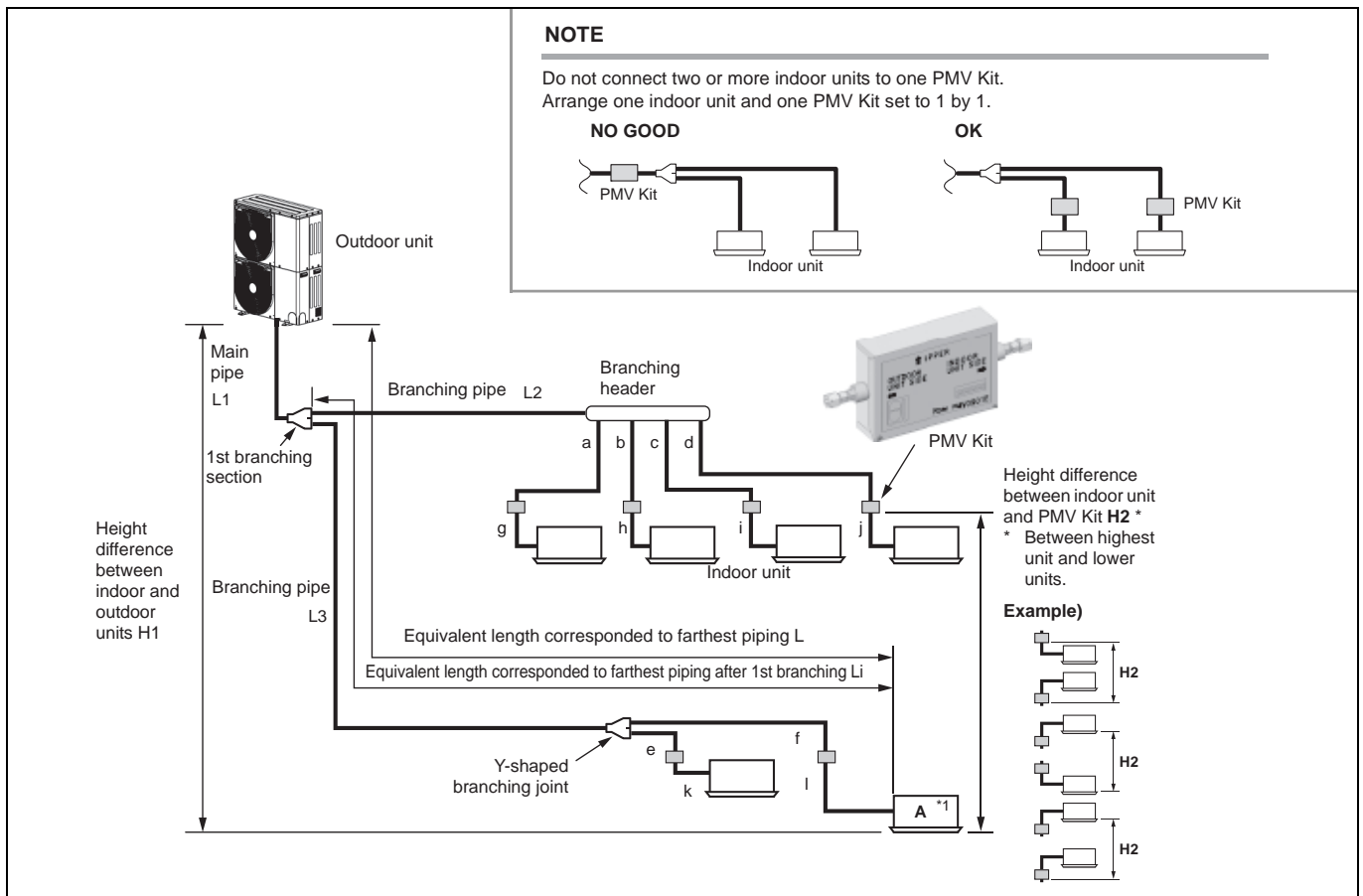
\*1 Furthest indoor unit from 1st branch to be named "A"

## 3-3. Selection of refrigerant piping



No.	Piping parts	Name	Selection of pipe size	Remarks																		
(1)	Outdoor unit ↓ 1st branching section	Main pipe	<b>Size of main pipe</b> <table border="1"> <thead> <tr> <th>Outdoor unit capacity type</th> <th>Gas pipe</th> <th>Liquid pipe</th> </tr> </thead> <tbody> <tr> <td>0404 type</td> <td>15.88</td> <td>9.52</td> </tr> <tr> <td>0504 type</td> <td>15.88</td> <td>9.52</td> </tr> <tr> <td>0604 type</td> <td>19.05</td> <td>9.52</td> </tr> </tbody> </table>	Outdoor unit capacity type	Gas pipe	Liquid pipe	0404 type	15.88	9.52	0504 type	15.88	9.52	0604 type	19.05	9.52	Same as connecting pipe size of the outdoor unit.						
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## 3-4. Allowable length / height difference of refrigerant piping with PMV Kit

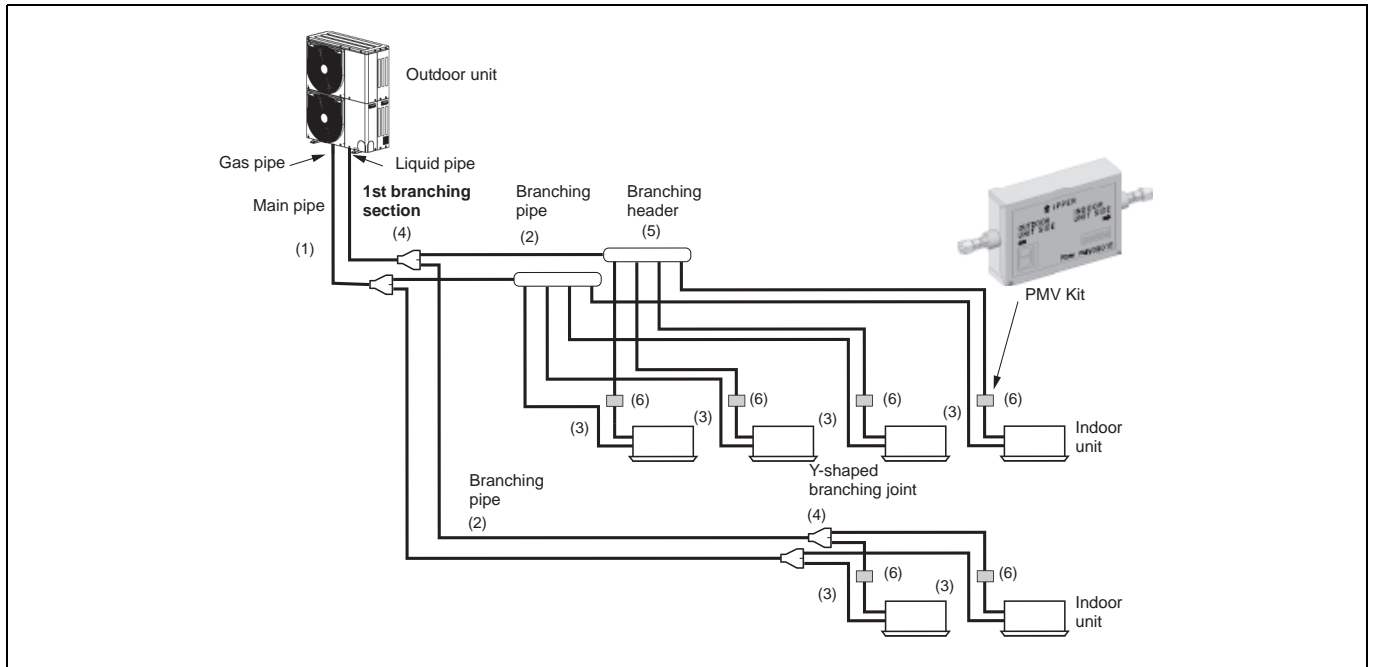


		Allowable value	Piping section	
Pipe Length	Total extension of pipe (Liquid pipe, real length)	75 m	$L1 + L2 + L3 + a + b + c + d + e + f + g + h + i + j + k + l$	
	Furthest piping length <b>L</b> (*1)	Real length	40 m	
		Equivalent length	50 m	$L1 + L3 + f + l$
	Max. real length of main pipe	25 m	L1	
	Max. real length of furthest piping from 1st branching <b>Li</b> (*1)	15 m	$L3 + f + l$	
	Max. real length of indoor unit connecting pipe	10 m	$a + g, b + h, c + i, d + j, e + k, f + l$	
Real length between PMV Kit and indoor unit	2 m or more Below 10 m	$g, h, i, j, k, l$		
Height Difference	Height between indoor and outdoor units <b>H1</b>	Upper outdoor unit	15 m	—
		Lower outdoor unit	15 m	—
	Height between indoor unit and PMV Kit <b>H2</b>	10 m	—	

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



## 3-5. Selection of refrigerant piping with PMV Kit



No.	Piping parts	Name	Selection of pipe size	Remarks																		
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\* PMV kit can be connected less than 027 type FCU.

## 3 Refrigerant piping design

### 3-6. Charging requirement with additional refrigerant

After finishing vacuuming, exchange the vacuum pump with a refrigerant canister and start additional charging of refrigerant.

#### Refrigerant amount charged in factory

Outdoor unit type	MHP0404	MHP0504	MHP0604
Charging amount (kg)	3.9	3.9	3.9

#### Calculation of additional refrigerant charge amount

Refrigerant charge amount factory default does not include the refrigerant for pipes at the local site.

For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

#### NOTE

When the additional refrigerant amount indicates minus as the result of calculation, it is not necessary to subtract any refrigerant.

#### Calculating formula

$$\text{Additional refrigerant charge amount at local site (kg)} = \text{Real length of liquid pipe} \times \text{Additional refrigerant charge amount per 1 m liquid pipe (Table 1)} + \text{Corrective amount of refrigerant depending on the indoor units (Table 2)} + \text{Compensation by outdoor HP (Table 3)}$$

Table 1

Liquid pipe diameter (mm)	6.4	9.5
Additional refrigerant amount /1 m liquid pipe (kg/m)	0.025	0.055

Table2

Capacity rank		005(*1)	007	009	012	015	018	024	027	030	036	048	056	
Capacity code (Equivalent to HP)		0.8	0.8	1.0	1.25	1.7	2.0	2.5	3.0	3.2	4.0	5.0	6.0	
Indoor unit model name	4-way cassette	MMU-AP****H	-	-	0.4	0.4	0.8	0.8	0.8	0.8	1.2	1.2	1.2	
		MMU-AP****MH*	0.4	0.4	0.4	0.4	0.6	0.6	-	-	-	-	-	
	2-way cassette	MMU-AP****WH*	-	0.4	0.4	0.4	0.5	0.7	0.7	0.7	0.7	1.1	1.1	1.1
	1-way cassette	MMU-AP****YH / SH*	-	0.4	0.4	0.4	0.5	0.5	0.6	-	-	-	-	
	Duct	MMD-AP****BH*	-	0.3	0.3	0.3	0.5	0.5	0.8	0.8	0.8	1.1	1.1	1.1
		MMD-AP****S(P)H*	0.3	0.3	0.3	0.3	0.5	0.5	0.8	0.8	-	-	-	-
		MMD-AP****H*	-	-	-	-	-	0.8	1.0	1.0	-	1.0	1.3	-
	Under-ceiling	MMC-AP****HP*	-	-	-	-	0.6	0.6	0.8	0.8	-	1.2	1.2	1.2
		MMC-AP****H*	-	-	-	-	0.5	0.5	0.7	0.7	-	1.1	1.1	-
	High wall	MMK-AP****H*	-	0.5	0.5	0.5	0.7	0.7	0.7	-	-	-	-	-
		MMK-AP****MH*	-	0.3	0.3	0.3	-	-	-	-	-	-	-	-
	Floor standing	MMF-AP****H*	-	-	-	-	0.7	0.7	1.0	1.0	-	1.3	1.3	1.3
		MML-AP****H*	-	0.5	0.5	0.5	0.5	0.8	0.8	-	-	-	-	-
		MML-AP****BH*	-	0.3	0.3	0.3	0.5	0.5	0.7	-	-	-	-	-
		MML-AP****NH*	-	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-	-

\*1: Capacity code of 005 type is the same as 007 type.

(kg)

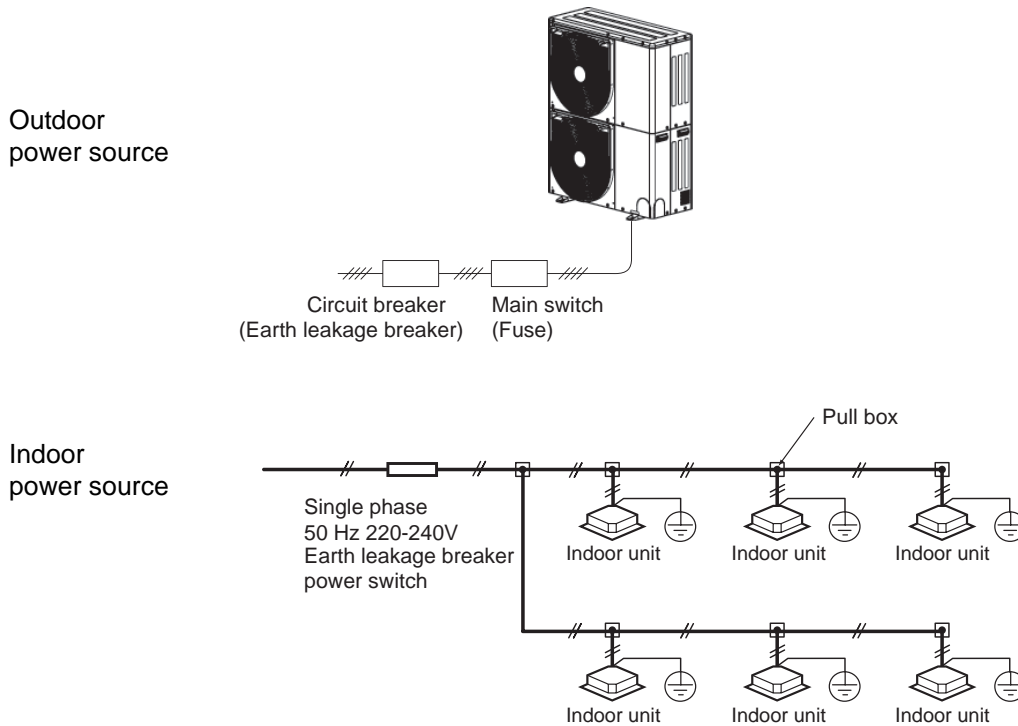
Table 3

Outdoor unit capacity type	MCY-	MHP0404	MHP0504	MHP0604
Compensation by outdoor HP (kg)		-1.6	-1.6	-1.6

### 4-1. General

- **The appliance shall be installed in accordance with national wiring regulations.**  
Capacity shortages of the power circuit or an incomplete installation may cause an electric shock or fire.
- Perform wiring of power supply complying with the rules and regulations of the local electric company.
- Never connect AC voltage power to the control wiring terminal block (U1,U2,U3,U4); otherwise the unit may break down.
- Be sure that electric wiring does not come into contact with high-temperature parts of piping; otherwise the coating of cables may melt and cause an accident.
- Locate wiring system for the control and refrigerant piping system in the same line.
- Do not turn on the power supply of the indoor units until vacuuming of the refrigerant pipe has finished.
- For the wiring of power to indoor units and that between indoor and outdoor units, follow the instructions in the installation manual of each indoor unit.

### 4-2. Electrical wiring design



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

### 4-3. Outdoor unit power supply

#### Electrical characteristics

Model name	Normal Voltage (V-Ph-Hz)	Voltage Range		Compressor kW	Fan Motor kW	Power Supply	
		Min	Max			MCA	MOCP
MCY-MHP0404HT-E	230 - 1 - 50	198	264	3.75	0.100 × 2	23.5	32.0
MCY-MHP0504HT-E	230 - 1 - 50	198	264	3.75	0.100 × 2	26.5	32.0
MCY-MHP0604HT-E	230 - 1 - 50	198	264	3.75	0.100 × 2	28.0	32.0

MCA : Maximum Circuit Amps

MOCP : Maximum Overcurrent Protection (Amps)

## 4-4. Indoor unit power supply

### Electrical characteristics

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-AP0092H	230-1-50	198	264	0.014	0.63	0.79	15
	MMU-AP0122H	230-1-50	198	264	0.014	0.63	0.79	15
	MMU-AP0152H	230-1-50	198	264	0.014	0.80	1.00	15
	MMU-AP0182H	230-1-50	198	264	0.014	0.80	1.00	15
	MMU-AP0242H	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0272H	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0302H	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0362H	230-1-50	198	264	0.068	1.15	1.44	15
	MMU-AP0482H	230-1-50	198	264	0.072	1.15	1.44	15
	MMU-AP0562H	230-1-50	198	264	0.072	1.15	1.44	15
	MMU-AP0094HP-E	230-1-50	198	264	0.014	0.63	0.79	15
	MMU-AP0124HP-E	230-1-50	198	264	0.014	0.63	0.79	15
	MMU-AP0154HP-E	230-1-50	198	264	0.014	0.80	1.00	15
	MMU-AP0184HP-E	230-1-50	198	264	0.014	0.80	1.00	15
	MMU-AP0244HP-E	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0274HP-E	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0304HP-E	230-1-50	198	264	0.020	0.87	1.09	15
	MMU-AP0364HP-E	230-1-50	198	264	0.068	1.15	1.44	15
	MMU-AP0484HP-E	230-1-50	198	264	0.072	1.15	1.44	15
	MMU-AP0564HP-E	230-1-50	198	264	0.072	1.15	1.44	15
Compact 4-way Cassette (600 x 600) Type	MMU-AP0054MH-E	230-1-50	198	264	0.060	0.32	0.40	15
	MMU-AP0074MH-E	230-1-50	198	264	0.060	0.32	0.40	15
	MMU-AP0094MH-E	230-1-50	198	264	0.060	0.35	0.44	15
	MMU-AP0124MH-E	230-1-50	198	264	0.060	0.36	0.45	15
	MMU-AP0154MH-E	230-1-50	198	264	0.060	0.48	0.60	15
MMU-AP0184MH-E	230-1-50	198	264	0.060	0.48	0.60	15	
2-Way Air Discharge Cassette Type	MMU-AP0072WH	230-1-50	198	264	0.020	0.32	0.40	15
	MMU-AP0092WH	230-1-50	198	264	0.020	0.32	0.40	15
	MMU-AP0122WH	230-1-50	198	264	0.020	0.32	0.40	15
	MMU-AP0152WH	230-1-50	198	264	0.020	0.32	0.40	15
	MMU-AP0182WH	230-1-50	198	264	0.030	0.70	0.88	15
	MMU-AP0242WH	230-1-50	198	264	0.040	0.81	1.01	15
	MMU-AP0272WH	230-1-50	198	264	0.040	0.81	1.01	15
	MMU-AP0302WH	230-1-50	198	264	0.050	0.81	1.01	15
	MMU-AP0362WH	230-1-50	198	264	0.070	0.87	1.09	15
	MMU-AP0485WH	230-1-50	198	264	0.070	0.87	1.09	15
MMU-AP0562WH	230-1-50	198	264	0.070	0.87	1.09	15	
1-Way Air Discharge Cassette Type	MMU-AP0074YH-E	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP0094YH-E	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP0124YH-E	230-1-50	198	264	0.022	0.28	0.35	15
	MMU-AP0154SH-E	230-1-50	198	264	0.030	0.40	0.49	15
	MMU-AP0184SH-E	230-1-50	198	264	0.030	0.42	0.53	15
	MMU-AP0244SH-E	230-1-50	198	264	0.030	0.71	0.88	15

## 4 Wiring design

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
Concealed Duct Type	MMD-AP0076BHP-E	230-1-50	198	264	0.150	0.30	0.37	15
	MMD-AP0096BHP-E	230-1-50	198	264	0.150	0.34	0.42	15
	MMD-AP0126BHP-E	230-1-50	198	264	0.150	0.34	0.42	15
	MMD-AP0156BHP-E	230-1-50	198	264	0.150	0.48	0.61	15
	MMD-AP0186BHP-E	230-1-50	198	264	0.150	0.48	0.61	15
	MMD-AP0246BHP-E	230-1-50	198	264	0.150	0.60	0.75	15
	MMD-AP0276BHP-E	230-1-50	198	264	0.150	0.60	0.75	15
	MMD-AP0306BHP-E	230-1-50	198	264	0.150	0.70	0.88	15
	MMD-AP0366BHP-E	230-1-50	198	264	0.250	1.23	1.54	15
	MMD-AP0486BHP-E	230-1-50	198	264	0.250	1.41	1.77	15
MMD-AP0566BHP-E	230-1-50	198	264	0.250	1.41	1.77	15	
Concealed Duct High Static Pressure Type	MMD-AP0184H-E	230-1-50	198	264	0.160	0.93	1.16	15
	MMD-AP0244H-E	230-1-50	198	264	0.160	1.55	1.94	15
	MMD-AP0274H-E	230-1-50	198	264	0.160	1.55	1.94	15
	MMD-AP0364H-E	230-1-50	198	264	0.260	1.87	2.34	15
	MMD-AP0484H-E	230-1-50	198	264	0.260	2.12	2.65	15
Slim Duct Type	MMD-AP0054SPH-E	230-1-50	198	264	0.060	0.35	0.44	15
	MMD-AP0074SPH-E	230-1-50	198	264	0.060	0.35	0.44	15
	MMD-AP0094SPH-E	230-1-50	198	264	0.060	0.35	0.44	15
	MMD-AP0124SPH-E	230-1-50	198	264	0.060	0.37	0.47	15
	MMD-AP0154SPH-E	230-1-50	198	264	0.060	0.38	0.48	15
	MMD-AP0184SPH-E	230-1-50	198	264	0.060	0.47	0.59	15
Ceiling Type	MMC-AP0154H-E	230-1-50	198	264	0.030	0.33	0.41	15
	MMC-AP0184H-E	230-1-50	198	264	0.030	0.37	0.46	15
	MMC-AP0244H-E	230-1-50	198	264	0.040	0.48	0.60	15
	MMC-AP0274H-E	230-1-50	198	264	0.040	0.48	0.60	15
	MMC-AP0364H-E	230-1-50	198	264	0.080	0.90	1.13	15
	MMC-AP0484H-E	230-1-50	198	264	0.080	0.96	1.20	15
	MMC-AP0157HP-E	230-1-50	198	264	0.139	1.14	1.43	15
	MMC-AP0187HP-E	230-1-50	198	264	0.139	0.89	1.11	15
	MMC-AP0247HP-E	230-1-50	198	264	0.139	0.89	1.11	15
	MMC-AP0277HP-E	230-1-50	198	264	0.094	0.75	0.93	15
	MMC-AP0367HP-E	230-1-50	198	264	0.094	0.75	0.93	15
	MMC-AP0487HP-E	230-1-50	198	264	0.094	0.42	0.53	15
MMC-AP0567HP-E	230-1-50	198	264	0.094	0.41	0.52	15	
High-wall Type (3 series)	MMK-AP0073H	230-1-50	198	264	0.030	0.20	0.22	15
	MMK-AP0093H	230-1-50	198	264	0.030	0.22	0.24	15
	MMK-AP0123H	230-1-50	198	264	0.030	0.22	0.24	15
	MMK-AP0153H	230-1-50	198	264	0.030	0.37	0.40	15
	MMK-AP0183H	230-1-50	198	264	0.030	0.37	0.40	15
	MMK-AP0243H	230-1-50	198	264	0.030	0.43	0.47	15
High-wall Type (4 series)	MMK-AP0074MH-E	230-1-50	198	264	0.030	0.20	0.24	15
	MMK-AP0094MH-E	230-1-50	198	264	0.030	0.21	0.26	15
	MMK-AP0124MH-E	230-1-50	198	264	0.030	0.22	0.27	15

## 4 Wiring design

Type	Model	Nominal Voltage (V-Ph-Hz)	Voltage Range		Fan Motor		Power Supply	
			Min	Max	kW	FLA	MCA	MOCP
Floor Standing Cabinet Type	MML-AP0074H-E	230-1-50	198	264	0.045	0.30	0.37	15
	MML-AP0094H-E	230-1-50	198	264	0.045	0.30	0.37	15
	MML-AP0124H-E	230-1-50	198	264	0.045	0.49	0.62	15
	MML-AP0154H-E	230-1-50	198	264	0.045	0.49	0.62	15
	MML-AP0184H-E	230-1-50	198	264	0.070	0.54	0.68	15
	MML-AP0244H-E	230-1-50	198	264	0.070	0.54	0.68	15
Floor Standing Concealed Type	MML-AP0074BH-E	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP0094BH-E	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP0124BH-E	230-1-50	198	264	0.019	0.29	0.36	15
	MML-AP0154BH-E	230-1-50	198	264	0.070	0.52	0.65	15
	MML-AP0184BH-E	230-1-50	198	264	0.070	0.52	0.65	15
	MML-AP0244BH-E	230-1-50	198	264	0.070	0.53	0.66	15
Floor Standing Type	MMF-AP0154H-E	230-1-50	198	264	0.037	0.77	0.96	15
	MMF-AP0184H-E	230-1-50	198	264	0.037	0.77	0.96	15
	MMF-AP0244H-E	230-1-50	198	264	0.063	1.01	1.27	15
	MMF-AP0274H-E	230-1-50	198	264	0.063	1.01	1.27	15
	MMF-AP0364H-E	230-1-50	198	264	0.110	1.48	1.85	15
	MMF-AP0484H-E	230-1-50	198	264	0.160	1.84	2.30	15
	MMF-AP0564H-E	230-1-50	198	264	0.160	1.84	2.30	15
Console Type	MML-AP0074NH-E	230-1-50	198	264	0.041	0.21	0.26	15
	MML-AP0094NH-E	230-1-50	198	264	0.041	0.21	0.26	15
	MML-AP0124NH-E	230-1-50	198	264	0.041	0.25	0.31	15
	MML-AP0154NH-E	230-1-50	198	264	0.041	0.32	0.40	15
	MML-AP0184NH-E	230-1-50	198	264	0.041	0.46	0.58	15

### • Wiring size

**Must be independent from the outdoor unit power supply**

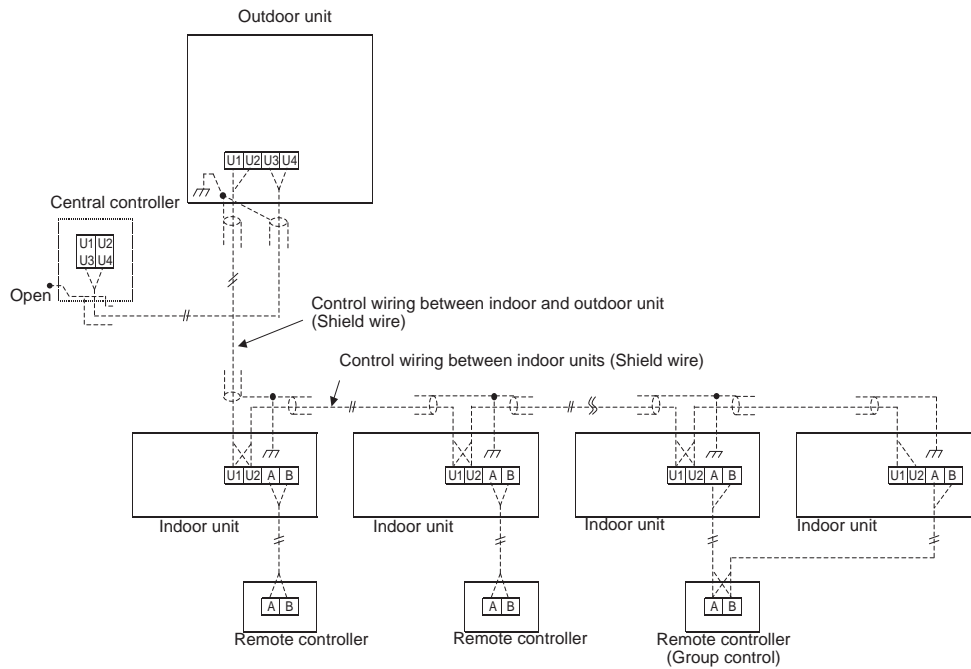
Model	Item	Power supply wiring			
		Wire size			
All models of indoor units		2.0 mm <sup>2</sup> (AWG#14)	Max. 20 m	3.5 mm <sup>2</sup> (AWG#12)	Max. 50 m

### 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.

## 4-5. Design of control wiring

### 4-5-1. Summary of control wiring



Control wiring and central control wiring use 2-core non-polarity wires.

Use 2-core shield wires to prevent noise trouble.

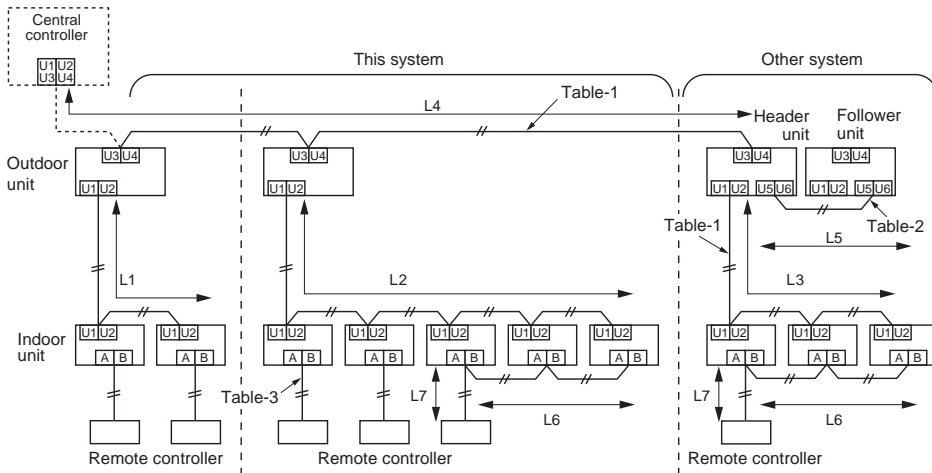
In this case, for the system grounding, close (connect) the end of shield wires, and isolate the end of terminal.

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)

## 4-5-2. Restriction of control wiring

Keep the rule of below tables about size and length of Control wiring.



**Table-1 Control wiring between indoor and outdoor units (L1, L2, L3), Central control wiring (L4)**

Wiring	2-core, non-polarity
Type	Shield wire
Size/Length*1	1.25 mm <sup>2</sup> : Up to 1000 m 2.0 mm <sup>2</sup> : Up to 2000 m

(\*1): Total of control wiring length for all refrigerant circuits (L1 + L2 + L3 + L4)

**Table-2 Control wiring between outdoor units (L5) (Other system)**

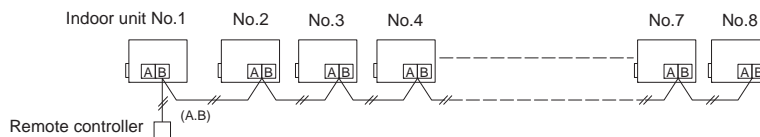
Wiring	2-core, non-polarity
Type	Shield wire
Size/Length	1.25 mm <sup>2</sup> to 2.0 mm <sup>2</sup> Up to 100 m (L5)

**Table-3 Remote controller wiring (L6, L7)**

Wire	2-core
Size	0.5 mm <sup>2</sup> to 2.0 mm <sup>2</sup>
Length	Up to 500 m (L6 + L7) Up to 400 m with of wireless remote controller in group control. Up to 200 m total length of control wiring between indoor units (L6)

## 4-5-3. Group control through a remote controller

Group control of multiple indoor units (8 units) through a single remote controller





## 5-1. Specifications

Outdoor unit model name				MCY-MHP0404HT-E	MCY-MHP0504HT-E	MCY-MHP0604HT-E
Outdoor unit type				Inverter	Inverter	Inverter
Capacity code		HP	4	5	6	
Cooling Capacity		(*) kW	12.1	14.0	15.5	
Heating Capacity		(*) kW	12.5	16.0	18.0	
Electrical characteristics (Nominal) (*)	Power supply		(*) 1phase 50Hz 220 / 230 / 240V	1phase 50Hz 220 / 230 / 240V	1phase 50Hz 220 / 230 / 240V	
	Cooling	Running current	A	13.9 / 13.3 / 12.8	16.7 / 16.0 / 15.4	20.6 / 19.7 / 18.9
		Power consumption	kW	2.88	3.50	4.35
		Power factor	%	94	95	96
		EER		4.20	4.00	3.56
	Heating	Running current	A	13.3 / 12.8 / 12.2	18.0 / 17.3 / 16.5	21.3 / 20.4 / 19.5
		Power consumption	kW	2.73	3.81	4.50
		Power factor	%	93	96	96
		COP		4.58	4.20	4.00
	Starting Current		A	Soft start	Soft start	Soft start
Dimension	Unit	Height	mm	1,235	1,235	1,235
		Width	mm	990	990	990
		Depth	mm	390	390	390
	Packing	Height	mm	1,350	1,350	1,350
		Width	mm	1,102	1,102	1,102
		Depth	mm	552	552	552
Total Weight	Unit	kg	116	116	116	
	Packed unit	kg	124	124	124	
Appearance (Color)				Silky shade (Munsell 1Y8.5/0.5)	Silky shade (Munsell 1Y8.5/0.5)	Silky shade (Munsell 1Y8.5/0.5)
Compressor	Type		Hermetic twin rotary compressor	Hermetic twin rotary compressor	Hermetic twin rotary compressor	
	Motor output		kW	3.75	3.75	3.75
Fan unit	Fan		Propeller fan (Quantity 2)	Propeller fan (Quantity 2)	Propeller fan (Quantity 2)	
	Motor output		W	100 + 100	100 + 100	100 + 100
	Air volume		m <sup>3</sup> /h	6,030	6,210	6,410
Heat exchanger				Finned tube	Finned tube	Finned tube
Refrigerant R410A (Charged refrigerant amount (kg))		(*)	3.9	3.9	3.9	
Protective devices				(*)		
Electrical specifications	Unit	MCA (*)	A	23.5	26.5	28.0
		MOCP (*)	A	32.0	32.0	32.0
Refrigerant piping	Connecting port diameter	Gas side (main pipe)	mm	15.9	15.9	19.1
		Liquid side (main pipe)	mm	9.5	9.5	9.5
	Connecting method	Gas side		Flare	Flare	Flare
		Liquid side		Flare	Flare	Flare
Max. No. of connected indoor units				6	6	6
Sound pressure level	Cooling	dB(A)	50	51	52	
	Heating	dB(A)	52	54	55	
Operation temperature range	Cooling	CDB	-5 to 43	-5 to 43	-5 to 43	
	Heating	CWB	-20 to 15	-20 to 15	-20 to 15	

(\*) Rated conditions Cooling : Indoor 27 degC Dry Bulb / 19 degC Wet Bulb, Outdoor 35 degC Dry Bulb.

Heating : Indoor 20 degC Dry Bulb, Outdoor 7 degC Dry Bulb / 6 degC Wet Bulb.

The standard pipe means that equivalent piping length of 7.5 m and standard 0 m piping height difference.

(\*) The source voltage must not fluctuate more than  $\pm 10\%$ .

(\*) The amount dose not consider extra piping length and indoor unit type.

Refrigerant must be added on site in accordance with the actual piping length and indoor unit type.

(\*) Discharge temp. sensor / Suction temp. sensor / High-pressure sensor / Low-pressure sensor / Compressor case thermostat / PC board fuse

(\*) Select wire size base on the large value of MCA.

MCA : Minimum Circuit Amps

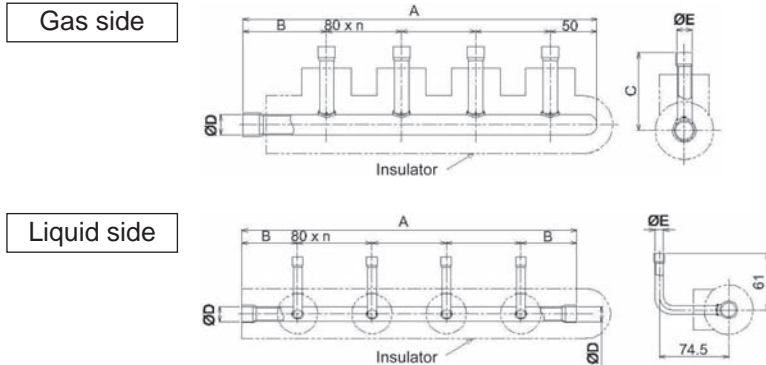
(\*) MOCP Maximum Overcurrent Protection (Amps)



**5-3. Branch header / branch joint**

• **Branch header**

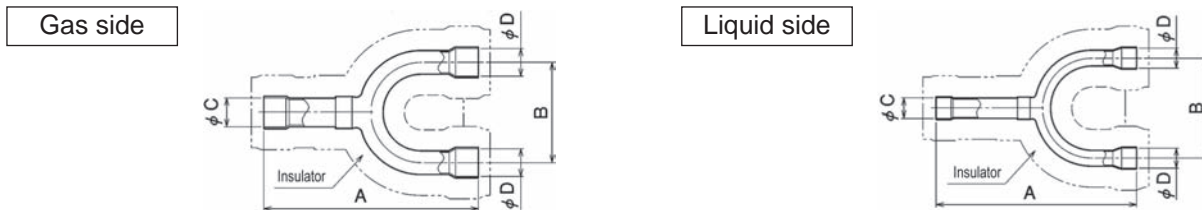
RBM-HY1043E, HY1083E



Model		A	B	C	øD	øE	n	Accessory socket Qty
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, ⑳ 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, ⑨ x 8, ⑭ x 1, ⑱ x 1, ⑳ x 1
	Liquid side	680	60	-	15.9	9.5	7	① x 8, ⑥ x 1, ⑨ x 1

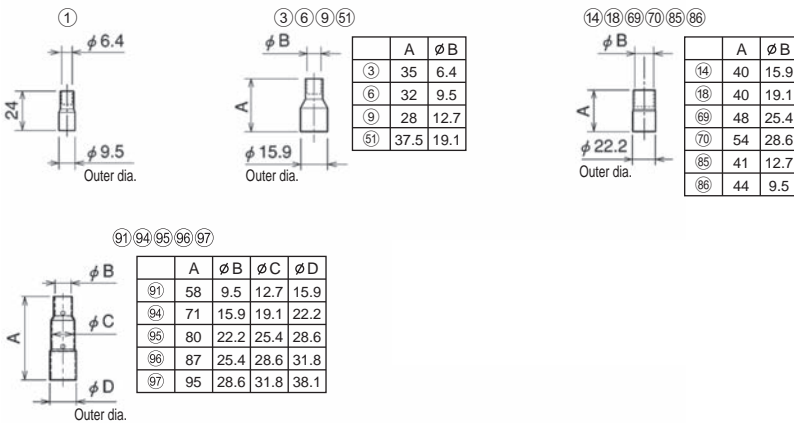
• **Y-shape branch joint**

RBM-BY55E

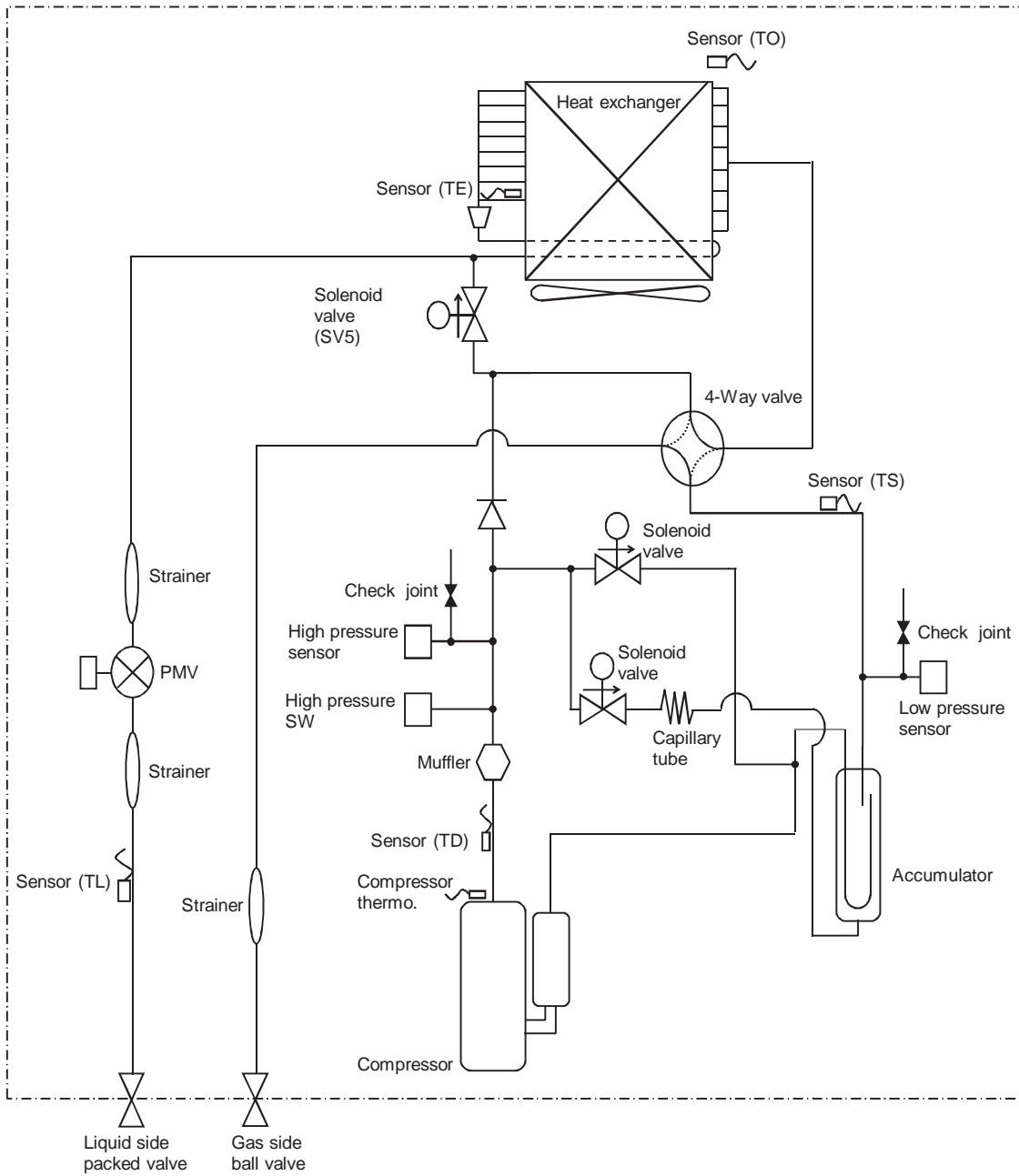


Model		A	B	øC	øD	Accessory socket Qty
RBM-BY55E	Gas side	160	80	15.9	15.9	⑨ x 1, ⑤① x 2, ⑨① x 2
	Liquid side	130	70	9.5	9.5	① x 2

• **Accessory socket**

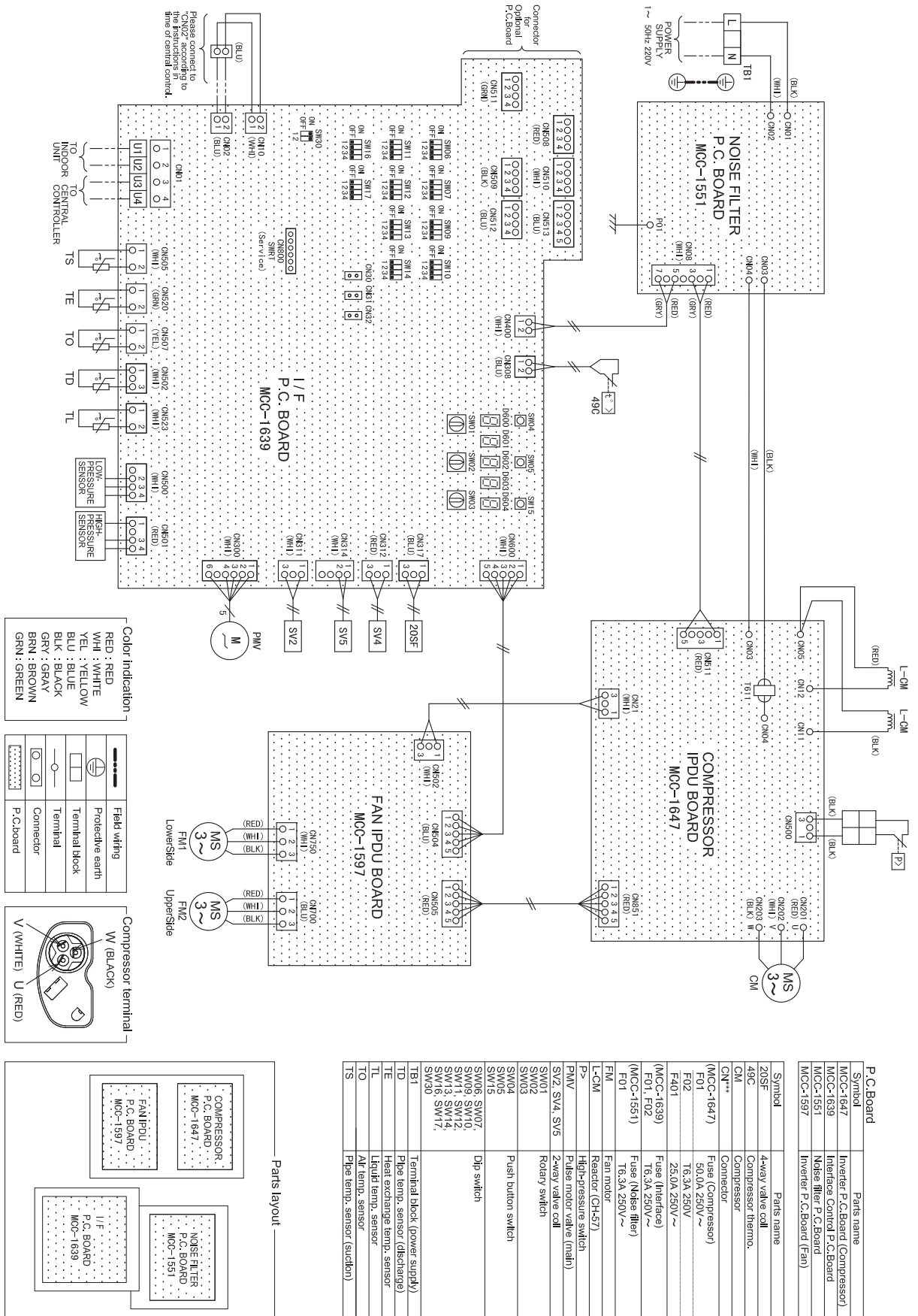


**5-4. Refrigerant cycle diagram**



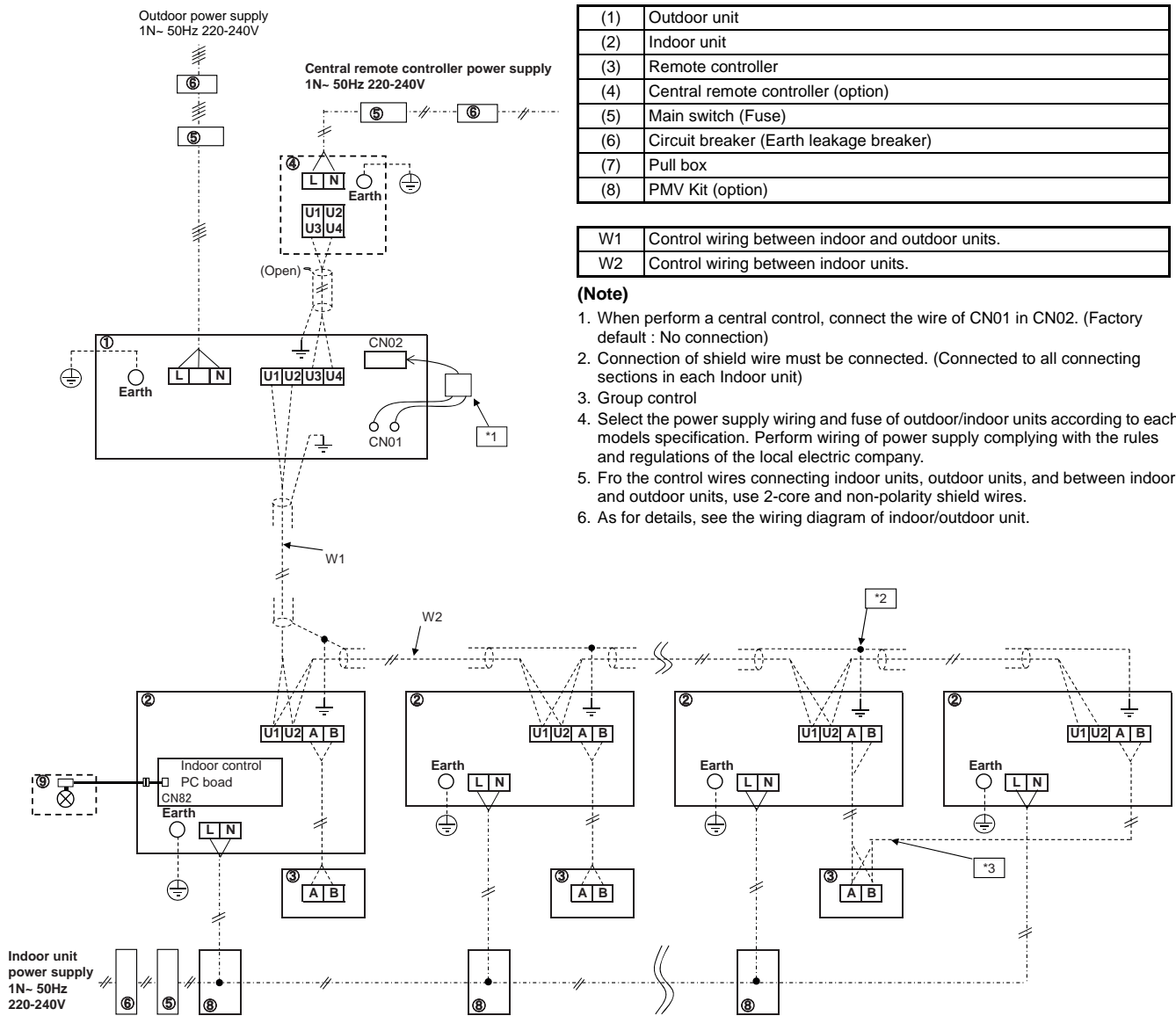
## 5-5. Wiring diagram

### MCY-MHP040HT-E, MCY-MHP0504HT-E, MCY-MHP0604HT-E


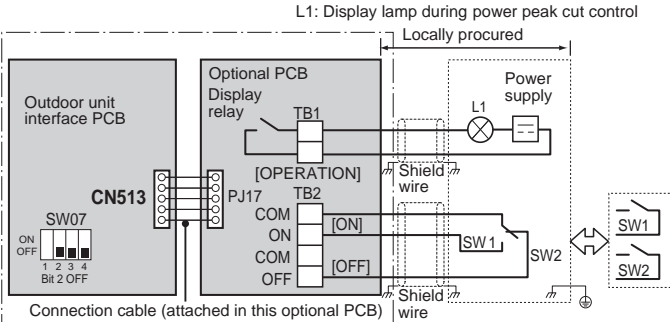
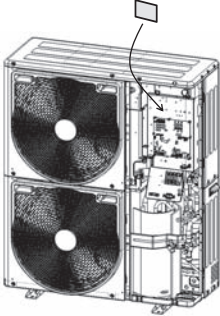
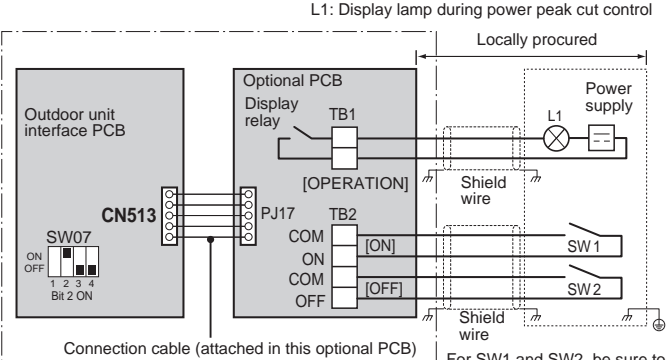


## 5-6. Connecting diagram


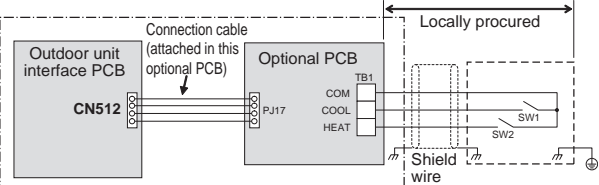
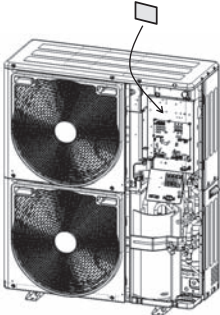


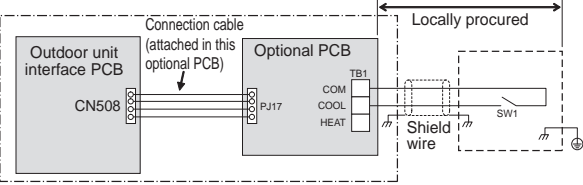










MCY-MHP0404HT-E, MCY-MHP0504HT-E, MCY-MHP0604HT-E




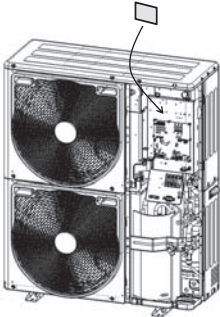
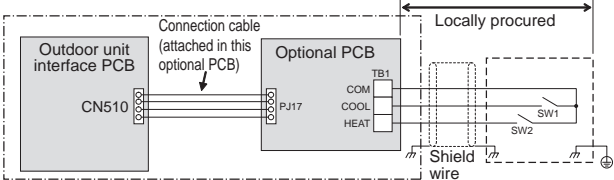
**5-7. Optional printed circuit board (PCB) of outdoor unit**

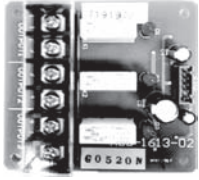
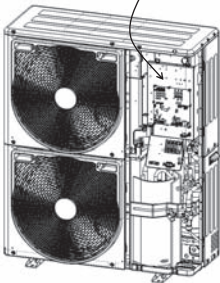
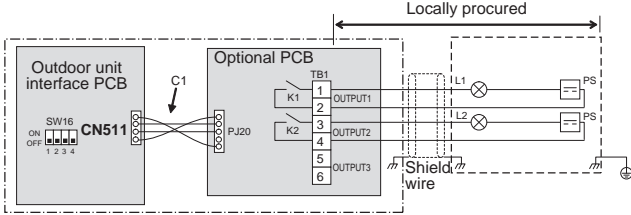
Model name	Appearance	Function																																															
TCB-PCDM4E	 <p>Size : 71 x 85 (mm)</p>	<p><b>Power peak-cut Control</b></p> <p><b>Standard Specifications</b> (Wiring example)</p>  <p>L1: Display lamp during power peak cut control Locally procured</p> <p>For SW1 and SW2, be sure to provide no-voltage contacts for each terminal. The input signals of SW1 and SW2 may be pulse input (100 msec or more) or continuous make. Do not turn on [SW1] and [SW2] simultaneously.</p>																																															
	<p><b>Application</b></p>  <p>* Installation the optional PCB in the interface board of the outdoor unit.</p>	<p><b>&lt;SW07 (bit 2) OFF [2-stage switching]&gt;</b></p> <table border="1" data-bbox="547 969 1474 1176"> <thead> <tr> <th colspan="2">Input</th> <th colspan="2">SW07 (bit 1)</th> <th rowspan="2">Display relay (L1)</th> </tr> <tr> <th>SW1</th> <th>SW2</th> <th>Bit 1 OFF</th> <th>Bit 1 ON</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>ON</td> <td>100 % (normal operation)</td> <td>100 % (normal operation)</td> <td>OFF</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>0 % (forced stop)</td> <td>Approx. 60 % (upper limit regulated)</td> <td>ON</td> </tr> </tbody> </table> <p><b>Enhanced Specifications</b> (Wiring example)</p>  <p>L1: Display lamp during power peak cut control Locally procured</p> <p><b>&lt;SW07 (bit 2) ON [4-stage switching]&gt;</b></p> <table border="1" data-bbox="547 1749 1474 2085"> <thead> <tr> <th colspan="2">Input</th> <th colspan="2">SW07 (bit 1)</th> <th rowspan="2">Display relay (L1)</th> </tr> <tr> <th>SW1</th> <th>SW2</th> <th>Bit 1 OFF</th> <th>Bit 1 ON</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>100 % (normal operation)</td> <td>100 % (normal operation)</td> <td>OFF</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>Approx. 80 % (upper limit regulated)</td> <td>Approx. 85 % (upper limit regulated)</td> <td>ON</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>Approx. 60 % (upper limit regulated)</td> <td>Approx. 75 % (upper limit regulated)</td> <td>ON</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>0 % (forced stop)</td> <td>Approx. 60 % (upper limit regulated)</td> <td>ON</td> </tr> </tbody> </table> <p>For SW1 and SW2, be sure to provide no-voltage contacts for each terminal.</p>	Input		SW07 (bit 1)		Display relay (L1)	SW1	SW2	Bit 1 OFF	Bit 1 ON	OFF	ON	100 % (normal operation)	100 % (normal operation)	OFF	ON	OFF	0 % (forced stop)	Approx. 60 % (upper limit regulated)	ON	Input		SW07 (bit 1)		Display relay (L1)	SW1	SW2	Bit 1 OFF	Bit 1 ON	OFF	OFF	100 % (normal operation)	100 % (normal operation)	OFF	ON	OFF	Approx. 80 % (upper limit regulated)	Approx. 85 % (upper limit regulated)	ON	OFF	ON	Approx. 60 % (upper limit regulated)	Approx. 75 % (upper limit regulated)	ON	ON	ON	0 % (forced stop)	Approx. 60 % (upper limit regulated)
Input		SW07 (bit 1)		Display relay (L1)																																													
SW1	SW2	Bit 1 OFF	Bit 1 ON																																														
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OFF	ON	Approx. 60 % (upper limit regulated)	Approx. 75 % (upper limit regulated)	ON																																													
ON	ON	0 % (forced stop)	Approx. 60 % (upper limit regulated)	ON																																													

## 5 Outdoor unit

Model name	Appearance	Function																
TCB-PCMO4E	 <p>Size : 55.5 x 60 (mm)</p>	<p><b>[1] External master ON/OFF control</b></p> <p>▼ Function By connecting the cable (attached in this optional PCB) to the interface PC board on an outdoor unit, all indoor units connected to the outdoor unit enable to operate simultaneously.</p>  <p>SW1: Operation input switch SW2: Stop input switch</p>																
	<p><b>Application</b></p>  <p>* Installation the optional PCB in the interface board of the outdoor unit.</p>	<table border="1" data-bbox="549 763 1469 931"> <thead> <tr> <th>Terminal</th> <th>Input signal</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>COOL (SW1)</td> <td>ON OFF </td> <td>All indoor units operate together</td> </tr> <tr> <td>HEAT (SW2)</td> <td>ON OFF </td> <td>All indoor units stop together</td> </tr> </tbody> </table> <p>Provide no-voltage pulse contacts for each terminal. Hold the ON state for at least 100 msec. Do not turn SW1 and SW2 ON simultaneously.</p> <p><b>[2] Night time operation (sound reduction) control</b></p> <p>▼ Function As the cable (attached in this optional PCB) is connected to the "Interface PCB" on an outdoor unit, both compressor speed and fan speed are restricted while the signal of the night operation control is input. It makes the noise reduction during the night time operation.</p>  <p>SW1: Night time signal switch</p> <table border="1" data-bbox="549 1491 1469 1659"> <thead> <tr> <th>Terminal</th> <th>Input signal</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td rowspan="2">COOL (SW1)</td> <td>ON OFF </td> <td>Night time control</td> </tr> <tr> <td>ON OFF </td> <td>Normal operation</td> </tr> </tbody> </table> <p>Each terminal should be connected to dry contact. The input signal is recognized during its rising/falling phase. (After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)</p>	Terminal	Input signal	Operation	COOL (SW1)	ON OFF 	All indoor units operate together	HEAT (SW2)	ON OFF 	All indoor units stop together	Terminal	Input signal	Operation	COOL (SW1)	ON OFF 	Night time control	ON OFF 
Terminal	Input signal	Operation																
COOL (SW1)	ON OFF 	All indoor units operate together																
HEAT (SW2)	ON OFF 	All indoor units stop together																
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COOL (SW1)	ON OFF 	Night time control																
	ON OFF 	Normal operation																

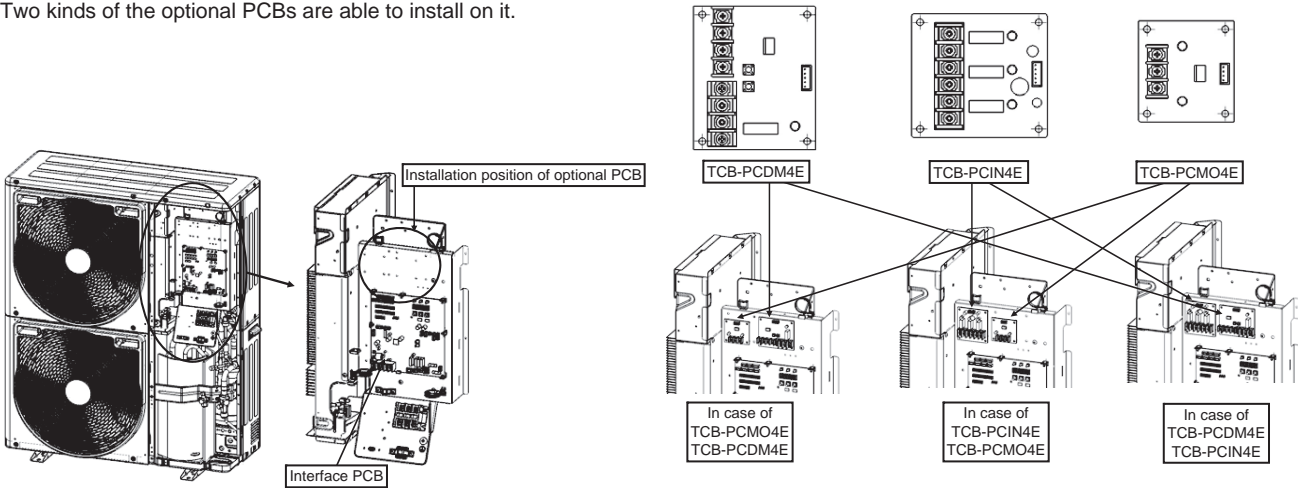


Model name	Appearance	Function																																			
TCB-PCMO4E	 <p>Size : 55.5 x 60 (mm)</p>	<p>▼ Sound reduction and approximation capacity (reference)</p> <table border="1" data-bbox="545 349 1315 566"> <thead> <tr> <th rowspan="2">Outdoor unit (base unit)</th> <th colspan="2">During low-noise mode dB(A)</th> <th colspan="2">Capacity</th> </tr> <tr> <th>Cooling</th> <th>Heating</th> <th>Cooling</th> <th>Heating</th> </tr> </thead> <tbody> <tr> <td>Model 0404*</td> <td>47</td> <td>50</td> <td>approx. 85 %</td> <td>approx. 95 %</td> </tr> <tr> <td>Model 0504*</td> <td>47</td> <td>50</td> <td>approx. 80 %</td> <td>approx. 80 %</td> </tr> <tr> <td>Model 0604*</td> <td>50</td> <td>50</td> <td>approx. 80 %</td> <td>approx. 70 %</td> </tr> </tbody> </table> <p>Relative to maximum capacity</p> <p>* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (anechoic sound)</p>	Outdoor unit (base unit)	During low-noise mode dB(A)		Capacity		Cooling	Heating	Cooling	Heating	Model 0404*	47	50	approx. 85 %	approx. 95 %	Model 0504*	47	50	approx. 80 %	approx. 80 %	Model 0604*	50	50	approx. 80 %	approx. 70 %											
	Outdoor unit (base unit)	During low-noise mode dB(A)		Capacity																																	
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Model 0504*	47	50	approx. 80 %	approx. 80 %																																	
Model 0604*	50	50	approx. 80 %	approx. 70 %																																	
Application	 <p>* Installation the optional PCB in the interface board of the outdoor unit.</p>	<p><b>[3] Operation mode selection control</b></p> <p>▼ Function The heating/cooling mode of the system can be selected by connecting to the interface PCB of outdoor units.</p>  <p>SW1: Cooling mode specified input switch SW2: Heating mode specified input switch</p> <table border="1" data-bbox="545 1093 1465 1279"> <thead> <tr> <th colspan="2">Input Signal</th> <th rowspan="2">Operation: Selected operation mode</th> </tr> <tr> <th>Cooling (SW1)</th> <th>Heating (SW2)</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>OFF</td> <td>Cooling operation only</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>Heating operation only</td> </tr> <tr> <td>OFF</td> <td>OFF</td> <td>Normal operation</td> </tr> </tbody> </table> <p>Each terminal should be connected to dry contact.</p> <p><b>Indoor unit operation intervention function</b> The statuses of indoor units operating in a mode different from the selected operation mode can be changed by changing the status of a jumper wire (J01) provided on the interface P.C. board of outdoor unit.</p> <table border="1" data-bbox="545 1487 1465 2047"> <thead> <tr> <th>Jumper wire</th> <th colspan="2">Description of intervention</th> </tr> </thead> <tbody> <tr> <td>J01 connected (factory default)</td> <td colspan="2">All indoor units operating in a mode different from the selected operation mode (prohibited-mode indoor units) become non-priority units (thermostat OFF). The display "🔌 (operation ready)" appears on the remote controller of prohibited-mode indoor units.</td> </tr> <tr> <td>J01 cut</td> <td colspan="2">The selected operation mode is imposed on all indoor units operating in a different mode.</td> </tr> <tr> <td></td> <td>Mode selected at P.C. board</td> <td>Remote controller operation / display</td> </tr> <tr> <td></td> <td>Normal</td> <td>All modes (COOL, DRY, HEAT and FAN) available</td> </tr> <tr> <td></td> <td>COOL</td> <td>Only COOL, DRY and FAN available</td> </tr> <tr> <td></td> <td>HEAT</td> <td>Only HEAT and FAN available</td> </tr> </tbody> </table>	Input Signal		Operation: Selected operation mode	Cooling (SW1)	Heating (SW2)	ON	OFF	Cooling operation only	OFF	ON	Heating operation only	OFF	OFF	Normal operation	Jumper wire	Description of intervention		J01 connected (factory default)	All indoor units operating in a mode different from the selected operation mode (prohibited-mode indoor units) become non-priority units (thermostat OFF). The display "🔌 (operation ready)" appears on the remote controller of prohibited-mode indoor units.		J01 cut	The selected operation mode is imposed on all indoor units operating in a different mode.			Mode selected at P.C. board	Remote controller operation / display		Normal	All modes (COOL, DRY, HEAT and FAN) available		COOL	Only COOL, DRY and FAN available		HEAT	Only HEAT and FAN available
Input Signal		Operation: Selected operation mode																																			
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	HEAT	Only HEAT and FAN available																																			

Model name	Appearance	Function																			
TCB-PCIN4E	 <p>Size : 73 x 79 (mm)</p>	<p><b>Error / Operation Output</b></p> <p>▼ Function The operation error output PCB can indicate operation and error states by connecting to the interface PCB of outdoor units.</p> <p>▼ Operation Operation output: The operation indicator is on while any indoor unit in the system is operating. Error output: The error indicator is on when an error is occurred on even one of the indoor or outdoor units in the system.</p>																			
	<b>Application</b>	Wiring example																			
	 <p>* Installation the optional PCB in the interface board of the outdoor unit.</p>	 <table border="1" data-bbox="544 880 1465 1252"> <tr> <td>C1</td> <td>Attached connection cable 1 (4wires)</td> </tr> <tr> <td>CN511</td> <td>Connector on interface side (green)</td> </tr> <tr> <td>K1, K2</td> <td>Relays</td> </tr> <tr> <td>L1</td> <td>Error indication Lamp</td> </tr> <tr> <td>L2</td> <td>Operation indication Lamp</td> </tr> <tr> <td>OUTPUT1</td> <td>Error output</td> </tr> <tr> <td>OUTPUT2</td> <td>Operation output</td> </tr> <tr> <td>PJ20</td> <td>Connector on optional PCB side</td> </tr> <tr> <td>PS</td> <td>Power supply unit</td> </tr> <tr> <td>TB1</td> <td>Terminal block</td> </tr> </table> <p>* [OUTPUT3] is displayed when power is turned on.</p>	C1	Attached connection cable 1 (4wires)	CN511	Connector on interface side (green)	K1, K2	Relays	L1	Error indication Lamp	L2	Operation indication Lamp	OUTPUT1	Error output	OUTPUT2	Operation output	PJ20	Connector on optional PCB side	PS	Power supply unit	TB1
C1	Attached connection cable 1 (4wires)																				
CN511	Connector on interface side (green)																				
K1, K2	Relays																				
L1	Error indication Lamp																				
L2	Operation indication Lamp																				
OUTPUT1	Error output																				
OUTPUT2	Operation output																				
PJ20	Connector on optional PCB side																				
PS	Power supply unit																				
TB1	Terminal block																				

## [PCB Installation Position]

There are holes on the metal of interface PCB, and the optional PCBs are installed.  
Two kinds of the optional PCBs are able to install on it.

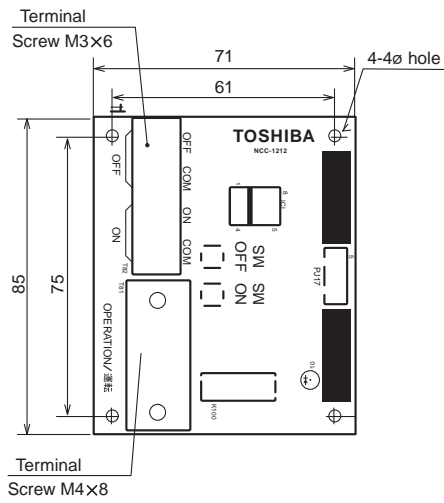


The diagrams illustrate the installation of three types of optional PCBs into the interface PCB of outdoor units. The units shown are TCB-PCMO4E, TCB-PCIN4E, and TCB-PCDM4E. The interface PCB is shown with the optional PCB being inserted into a designated slot. The installation positions are labeled as follows:

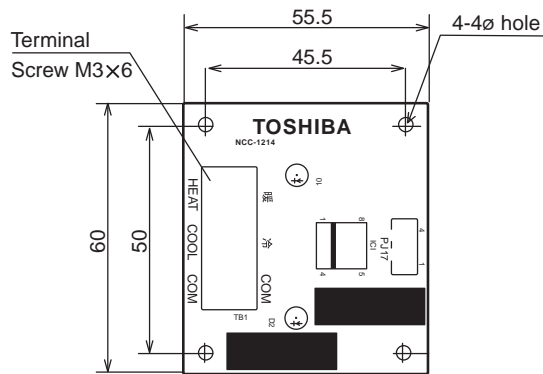
- In case of TCB-PCMO4E / TCB-PCDM4E
- In case of TCB-PCIN4E / TCB-PCMO4E
- In case of TCB-PCDM4E / TCB-PCIN4E

**Dimensions of PCB**

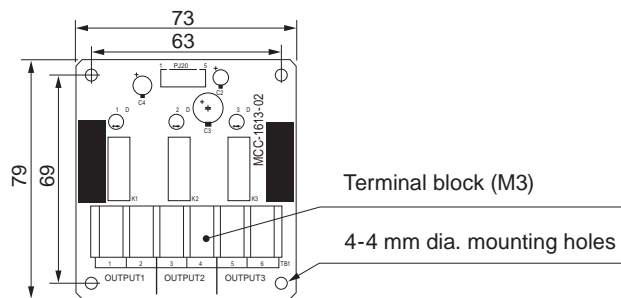
**TCB-PCDM4E**



**TCB-PCMO4E**



**TCB-PCIN4E**





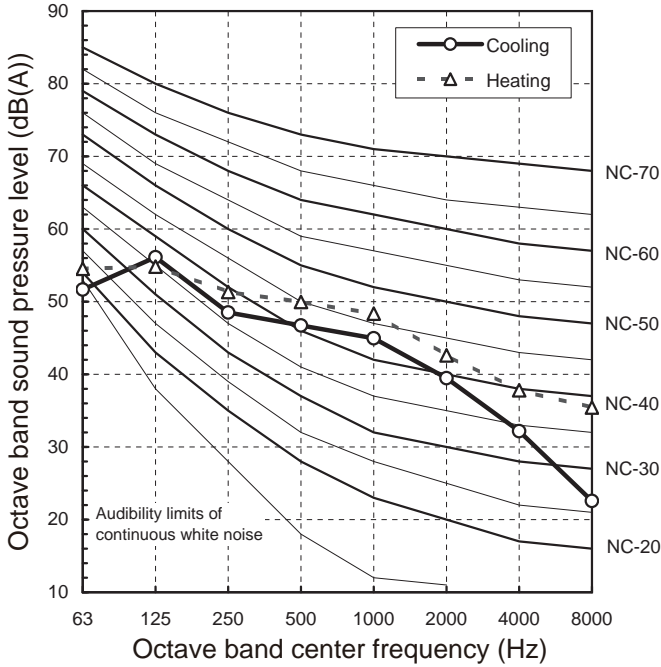




**5-9. Sound pressure level data**

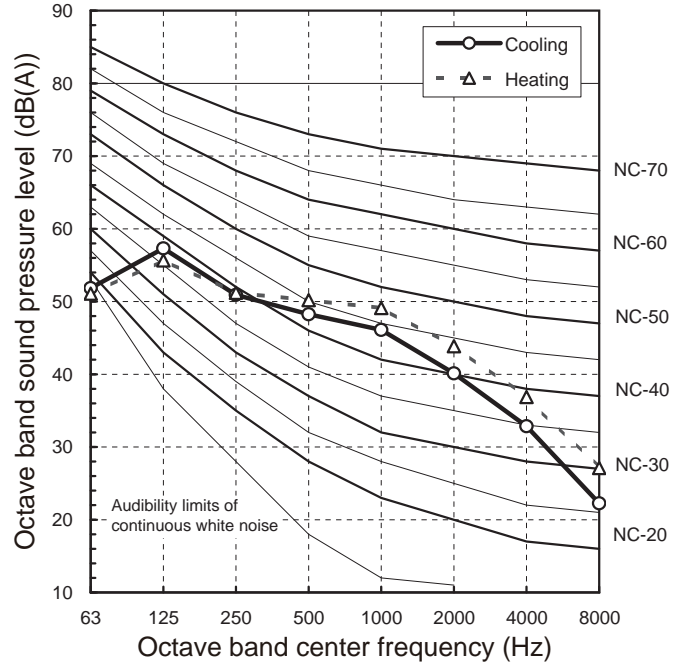
**MCY-MHP0404HT-E**

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



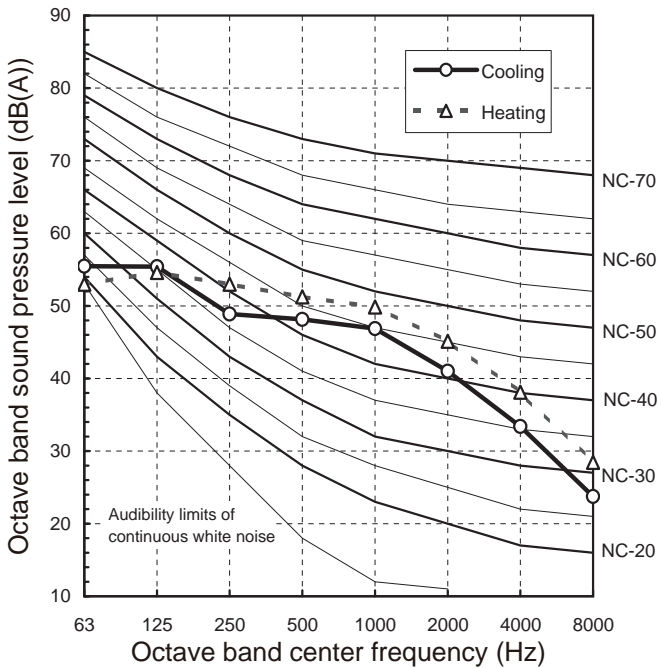
**MCY-MHP0504HT-E**

Sound pressure level (dB(A))	Cooling	Heating
	51	54

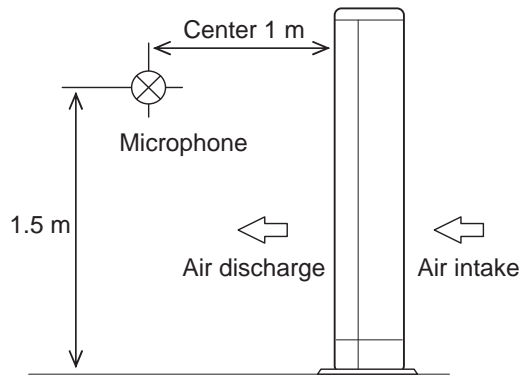


**MCY-MHP0604HT-E**

Sound pressure level (dB(A))	Cooling	Heating
	52	55



**[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.

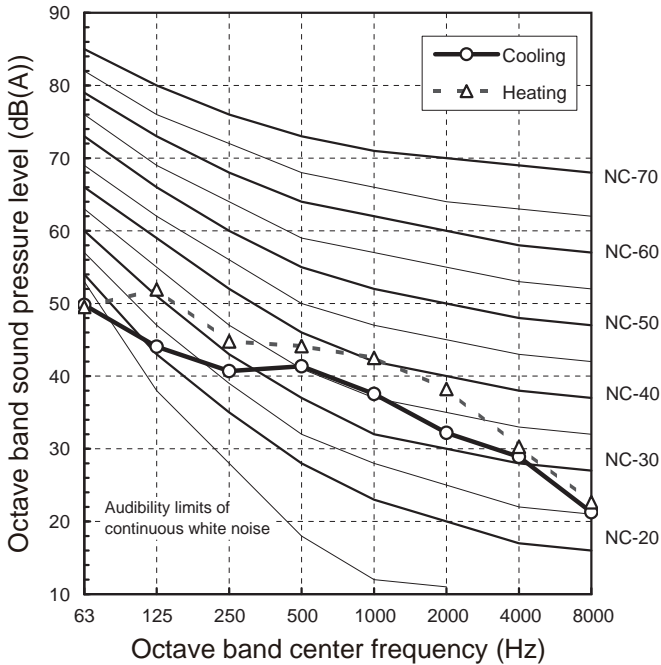


## 5 Outdoor unit

### • Night operation (sound reduction) control

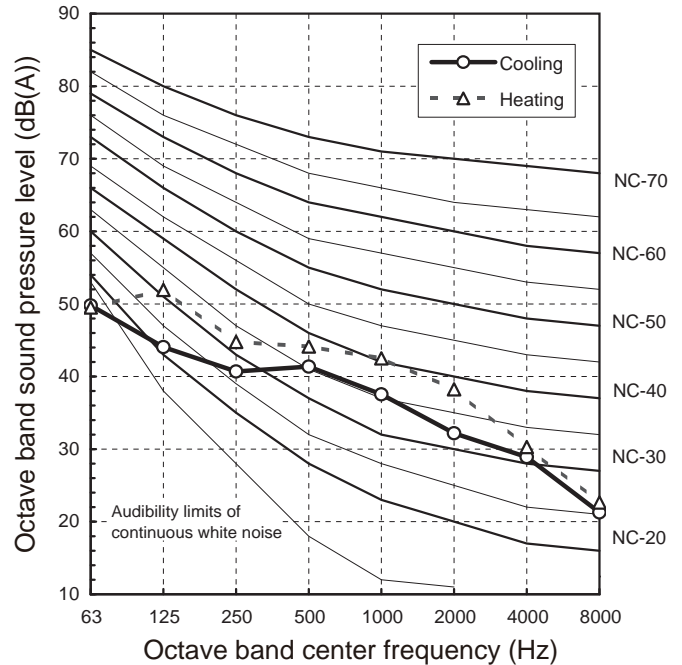
#### MCY-MHP0404HT-E

Sound pressure level (dB(A))	Cooling	Heating
	47	50



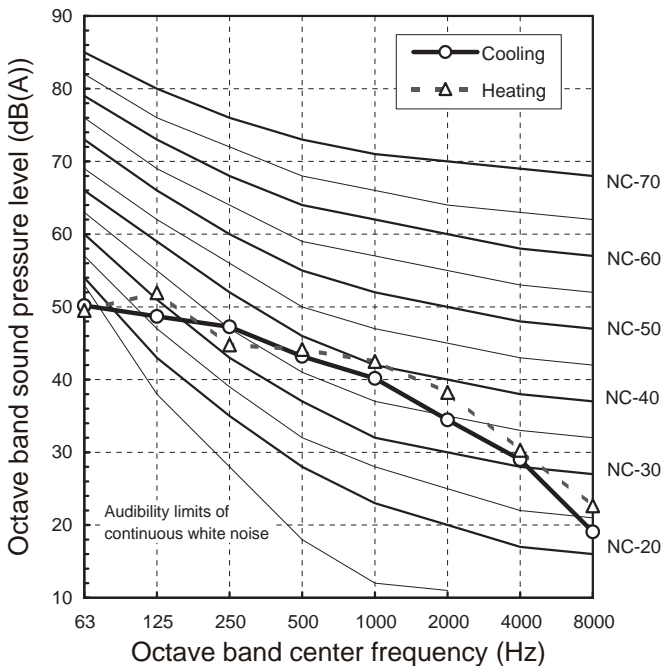
#### MCY-MHP0504HT-E

Sound pressure level (dB(A))	Cooling	Heating
	47	50

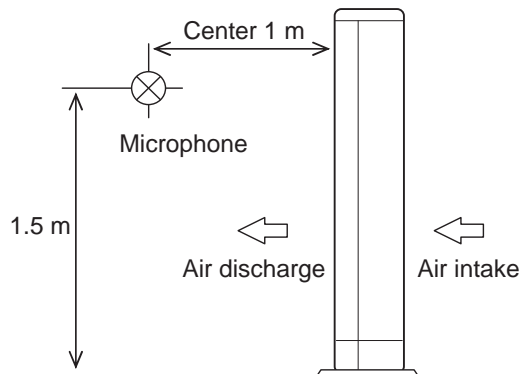


#### MCY-MHP0604HT-E

Sound pressure level (dB(A))	Cooling	Heating
	48	50



#### [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.



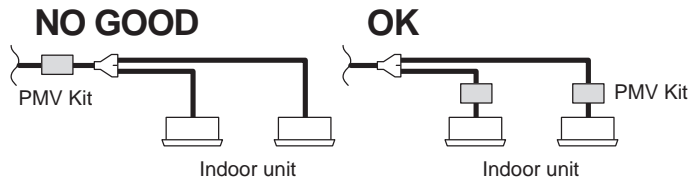
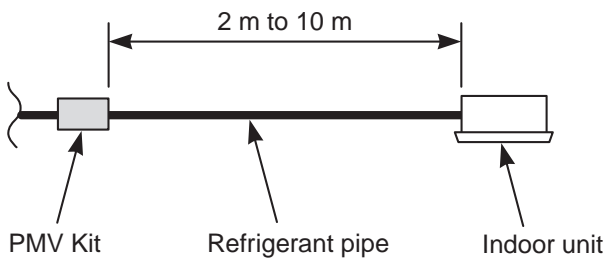
## 5-10. PMV Kit

PMV-Kit (RBM-PMV0362E/RBM-PMV0902E) shall be required for quieter place application as an optional to reduce refrigerant sound especially in oil retrieval control or in transient operation as start up.

### 5-10-1. Selection

Model name	Indoor unit capacity type	Diameter of refrigerant pipe
RBM-PMV0362E	005 to 014 type	ø6.4
RBM-PMV0902E	015 to 018 type	ø6.4
	020 to 027 type	ø9.5

#### Allowable length of refrigerant piping

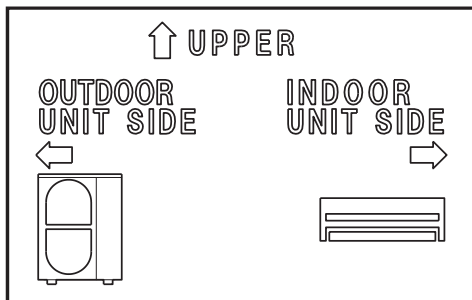


#### Note)

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-PMV0362E	005 to 014 type	ø6.4	
RBM-PMV0902E	015 to 018 type	ø6.4	
	020 to 027 type	ø9.5	

### CAUTION

When connecting ø9.5 refrigerant pipes, be sure to insert a seal pipe between PMV main unit and the joint. If the seal pipe is not inserted, refrigerant leakage is caused.



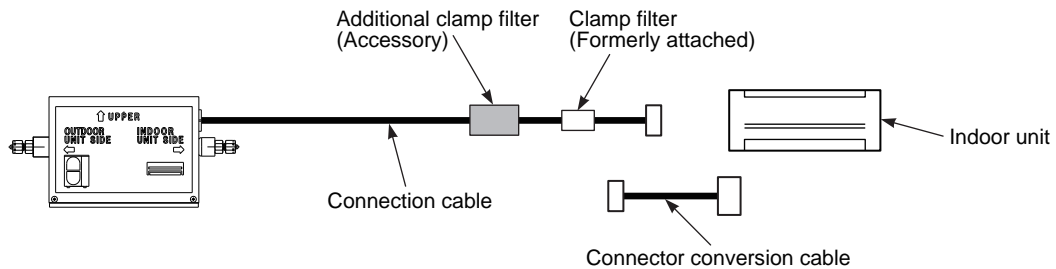
### 5-10-2. Wiring connections

For this product, the connector conversion cable and additional clamp filter (Accessory) are used according to the indoor unit to be connected.

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

**The connector conversion cable is not used for the indoor unit, but the additional clamp filter is used.**

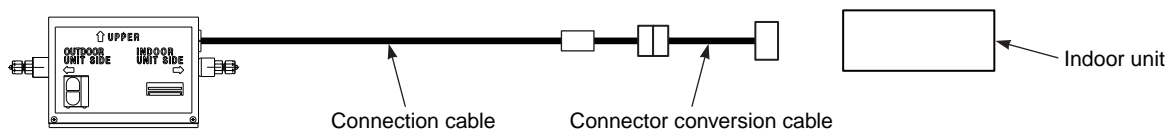
High Wall Type 3 series (MMK-AP\*\*\*3H\*)



- Mount the clamp filter (Accessory) to the connection wire (11 m) out of the PMV kit main body. Refer to the mounting method.
- Remove the connector conversion cable mounted to the connection cable out of the PMV kit main body and then connect it.

**The additional clamp filter is not used for the indoor unit, but the connector conversion cable is used.**

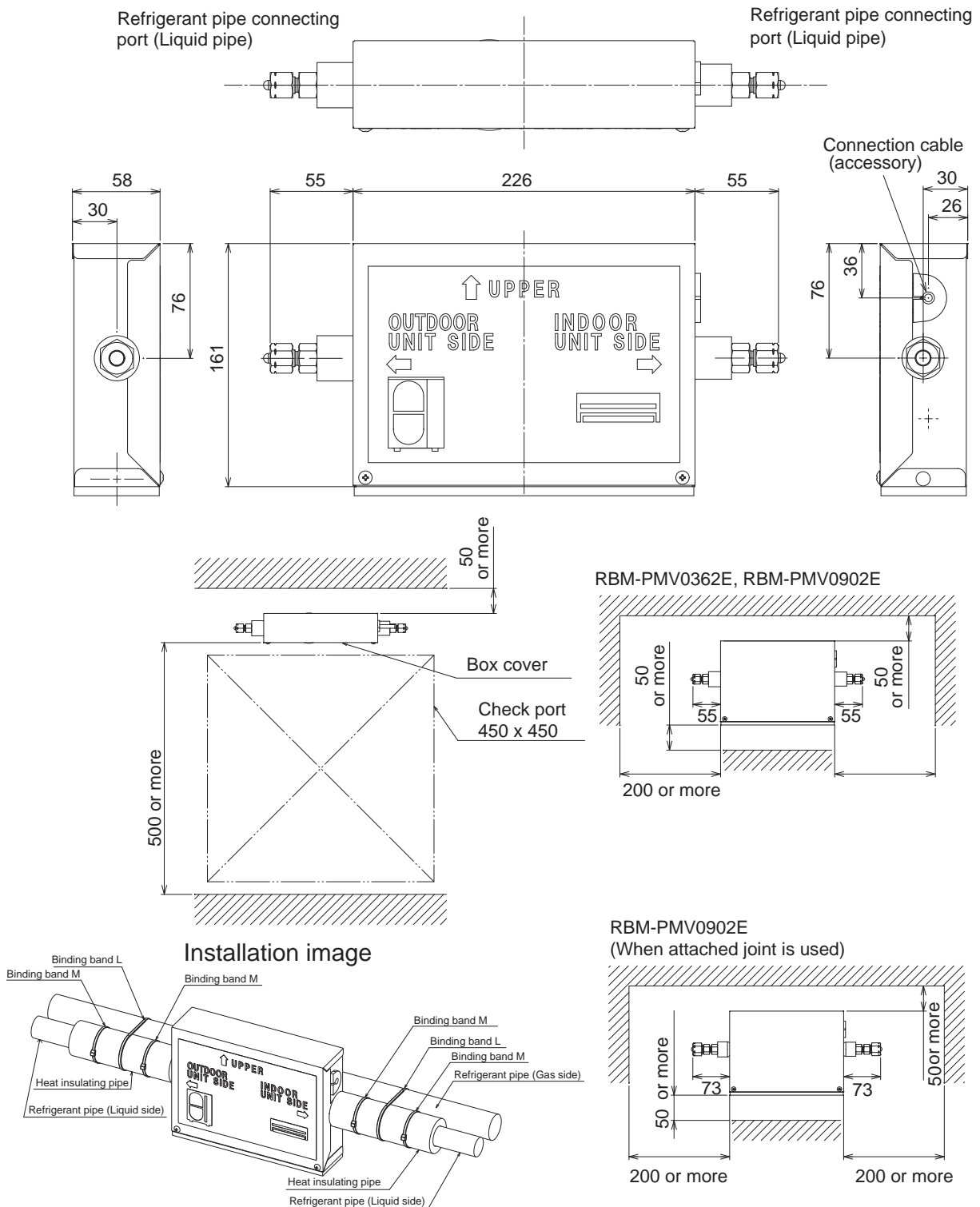
Indoor unit except above indoor units



**5-10-3. Dimensional drawing**

• **PMV Kit**

**RBM-PMV0362E, RBM-PMV0902E**



Note: All dimensions are in mm.

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**Side blow VRF 4-6HP Engineering Data Book**

**May, 2014**

**First Edition**

**TOSHIBA CARRIER CORPORATION**