TOSHIBA
Carrier

E16-3P1-1

Heat Pump

Model name:

MCY-MAP_7HS-UL

Engineering Data Book



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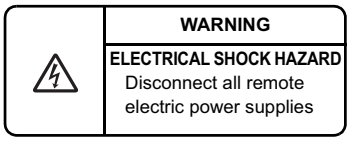
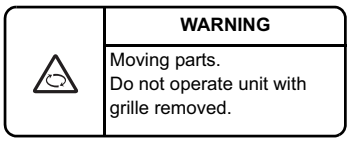
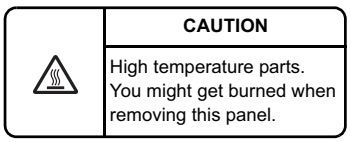
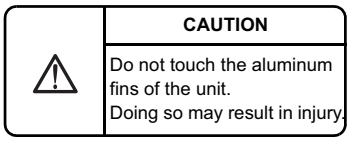
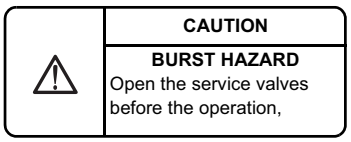
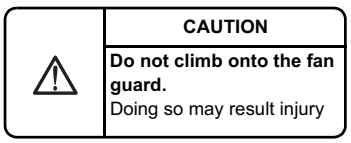
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Safety caution

- **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
	**WARNING** **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.
	**WARNING** Moving parts. Do not operate unit with grille removed. Stop the unit before servicing.
	**CAUTION** High temperature parts. You might get burned when removing this panel.
	**CAUTION** Do not touch the aluminium fins of the unit. Doing so may result in injury.
	**CAUTION** **BURST HAZARD** Open the service valves before the operation, otherwise there might be the burst.
	**CAUTION** **Do not climb onto the fan guard.** Doing so may result in injury.

■ Explanation of indications

⚠ WARNING

Improper handing of equipment could lead to serious injury or death.

⚠ CAUTION

Improper installation of the equipment could lead to minor injury or property damage.

- After installation work is completed, please run the system in test mode for proper operation and explain the maintenance schedules to the customer as outlined in owner's manual. Please ask the customer to retain the installation and owner's manual for future reference.

⚠ WARNING

The system should be installed by trained professional contractor by the factory.

Take precaution so that the refrigerant does not exceed the limit concentration even if it leaks when installing the unit in a small room.

Installation site location should be able to support the weight on the unit.

Ensure the room is properly ventilated in case of refrigerant leak during installation.

Leakage test should be performed to ensure there are no refrigerant leaks after installation.

Empty refrigerant cylinder should be used to recover the refrigerant from the system during repair or re-installation work. Do not store system refrigerant at outdoor unit.

Certified electrician should perform all the electrical work in order to comply with national and local codes and regulations.

Use of proper size and type of wires is recommended for electrical and controls communication.

Ensure proper grounding of wire is carried out as needed through out the system.

⚠ CAUTION

Avoid installation of the unit close to combustible gas or highly corrosion areas.

Be sure to attach an earth leakage breaker; otherwise an electric shock may be caused.

Using a torque wrench, tighten the flare nut in the specified method.
If the flare nut is exceedingly tightened, the flare nut is broken and a refrigerant leakage may be caused after a long time has passed.

WARNINGS ON REFRIGERANT LEAKAGE

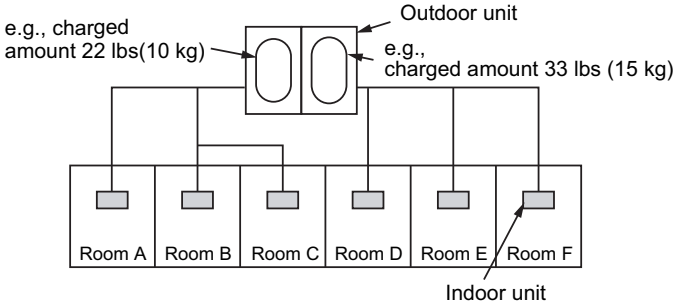
Concentration Limit Check

The room in which the air conditioner is to be installed requires a design that in the event of a refrigerant gas leak, 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.
Use the following calculation to determine the correct amount.

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

Concentration limit
Compliance to the local applicable regulations and standards for the concentration limit is required.

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.

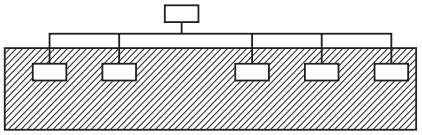


For the amount of charge in this example:
The possible amount of leaked refrigerant gas in rooms A, B and C is 22 lbs (10 kg).
The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15 kg).

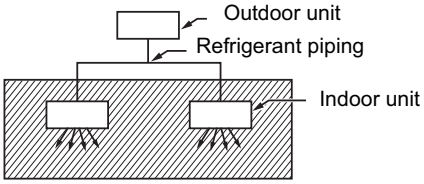
Important

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

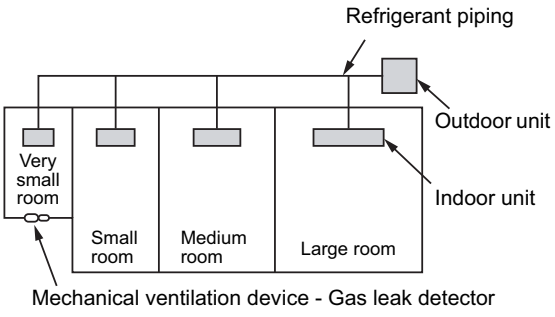
(1) No partition (shaded portion)



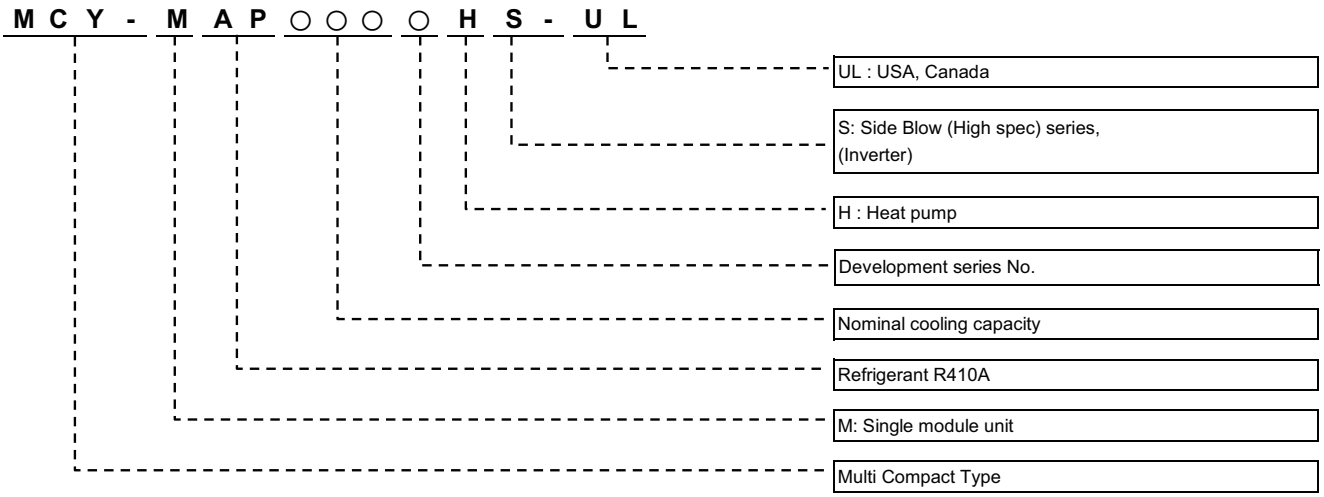
(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15 % or larger than the respective floor spaces at the top or bottom of the door).



(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room becomes the object. However 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.



1-1. Allocation standard of model name

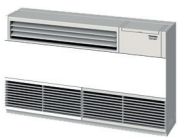


1-2. Summary of system equipments

1-2-1. Outdoor units

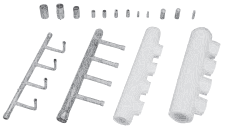
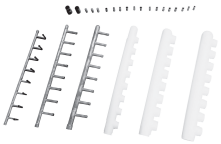
Unit type			Inverter unit			Appearance
Model name	208/230 V, 60 Hz	MCY-	MAP0367HS-UL	MAP0487HS-UL	MAP0607HS-UL	
Capacity type			036 type	048 type	060 type	
Capacity code			36	48	60	

1-2-2. Indoor unit

Type	Appearance	Model name	Capacity type	Capacity code	Cooling capacity (kBtu/h)	Heating capacity (kBtu/h)
4-Way Cassette		MMU-AP0072H2UL	007 type	7.5	7.5	8.5
		MMU-AP0092H2UL	009 type	9.5	9.5	10.5
		MMU-AP0122H2UL	012 type	12	12	13.5
		MMU-AP0152H2UL	015 type	15.4	15.4	17
		MMU-AP0182H2UL	018 type	18	18	20
		MMU-AP0212H2UL	021 type	21	21	24
		MMU-AP0242H2UL	024 type	24	24	27
		MMU-AP0302H2UL	030 type	30	30	34
		MMU-AP0362H2UL	036 type	36	36	40
		MMU-AP0422H2UL	042 type	42	42	47.5
		*MMU-AP0072H2UL-1	007 type	7.5	7.5	8.5
Compact 4-Way Cassette		MMU-AP0071MH2UL	007 type	7.5	7.5	8.5
		MMU-AP0091MH2UL	009 type	9.5	9.5	10.5
		MMU-AP0121MH2UL	012 type	12	12	13.5
		MMU-AP0151MH2UL	015 type	15.4	15.4	17
		MMU-AP0181MH2UL	018 type	18	18	20
Ceiling		MMC-AP0181H2UL	018 type	18	18	20
		MMC-AP0241H2UL	024 type	24	24	27
		MMC-AP0361H2UL	036 type	36	36	40
		MMC-AP0421H2UL	042 type	42	42	47.5
High Wall		MMK-AP0073H2UL	007 type	7.5	7.5	8.5
		MMK-AP0093H2UL	009 type	9.5	9.5	10.5
		MMK-AP0123H2UL	012 type	12	12	13.5
		MMK-AP0153H2UL	015 type	15.4	15.4	17
		MMK-AP0183H2UL	018 type	18	18	20
		MMK-AP0243H2UL	024 type	24	24	27
Slim Ducted		MMD-AP0074SPH2UL	007 type	7.5	7.5	8.5
		MMD-AP0094SPH2UL	009 type	9.5	9.5	10.5
		MMD-AP0124SPH2UL	012 type	12	12	13.5
		MMD-AP0154SPH2UL	015 type	15.4	15.4	17
		MMD-AP0184SPH2UL	018 type	18	18	20
Medium Static Duct		MMD-AP0074BH2UL	007 type	7.5	7.5	8.5
		MMD-AP0094BH2UL	009 type	9.5	9.5	10.5
		MMD-AP0124BH2UL	012 type	12	12	13.5
		MMD-AP0074BH2UL-1	007 type	7.5	7.5	8.5
		MMD-AP0094BH2UL-1	009 type	9.5	9.5	10.5
		MMD-AP0124BH2UL-1	012 type	12	12	13.5
		MMD-AP0154BH2UL-1	015 type	15.4	15.4	17
		MMD-AP0184BH2UL-1	018 type	18	18	20
		MMD-AP0214BH2UL-1	021 type	21	21	24
		MMD-AP0244BH2UL-1	024 type	24	24	27
		MMD-AP0304BH2UL-1	030 type	30	30	34
		MMD-AP0364BH2UL-1	036 type	36	36	40
		MMD-AP0424BH2UL-1	042 type	42	42	47.5
		MMD-AP0484BH2UL-1	048 type	48	48	54
High Static Duct		MMD-AP0304H2UL	030 type	30	30	34
		MMD-AP0364H2UL	036 type	36	36	40
		MMD-AP0484H2UL	048 type	48	48	54
Floor console exposed		MML-AP0074H2UL	007 type	7.5	7.5	8.5
		MML-AP0094H2UL	009 type	9.5	9.5	10.5
		MML-AP0124H2UL	012 type	12	12	13.5
		MML-AP0154H2UL	015 type	15.4	15.4	17
		MML-AP0184H2UL	018 type	18	18	20
		MML-AP0244H2UL	024 type	24	24	27
Floor console recessed		MML-AP0074BH2UL	007 type	7.5	7.5	8.5
		MML-AP0094BH2UL	009 type	9.5	9.5	10.5
		MML-AP0124BH2UL	012 type	12	12	13.5
		MML-AP0154BH2UL	015 type	15.4	15.4	17
		MML-AP0184BH2UL	018 type	18	18	20
		MML-AP0244BH2UL	024 type	24	24	27

* If MMU-AP0072H2UL-1 is included in the system, operation temperature is different.
Cooling operation : 14.0°F to 109.0°F 1Heating operation : 14.0°F to 60.0°F

1-2-3. Branching joints and headers

Name	Model name	Appearance
Y-shape branching joint	RBM-BY55UL	
4-branching header	RBM-HY1043UL	
8-branching header	RBM-HY1083UL	

1-2-4. Remote control

Name	Model name	Remarks
Wired remote control	RBC-AMT32UL	
	RBC-AMS54E-UL	
Simple wired remote control	RBC-AS41UL	
Wireless remote control kit	RBC-AX32U(W)-UL	For 4-Way Cassette type
	RBC-AX33C-UL	For Ceiling type
	TCB-AX32-UL	For Compact 4-Way Cassette type, Medium Static Ducted type, Slim Ducted type, Floor console recessed type
Central remote control	BMS-CM1281TLUL	
Wired remote control with weekly timer	RBC-AMS41UL	

1-2-5. Optional PCB of outdoor unit

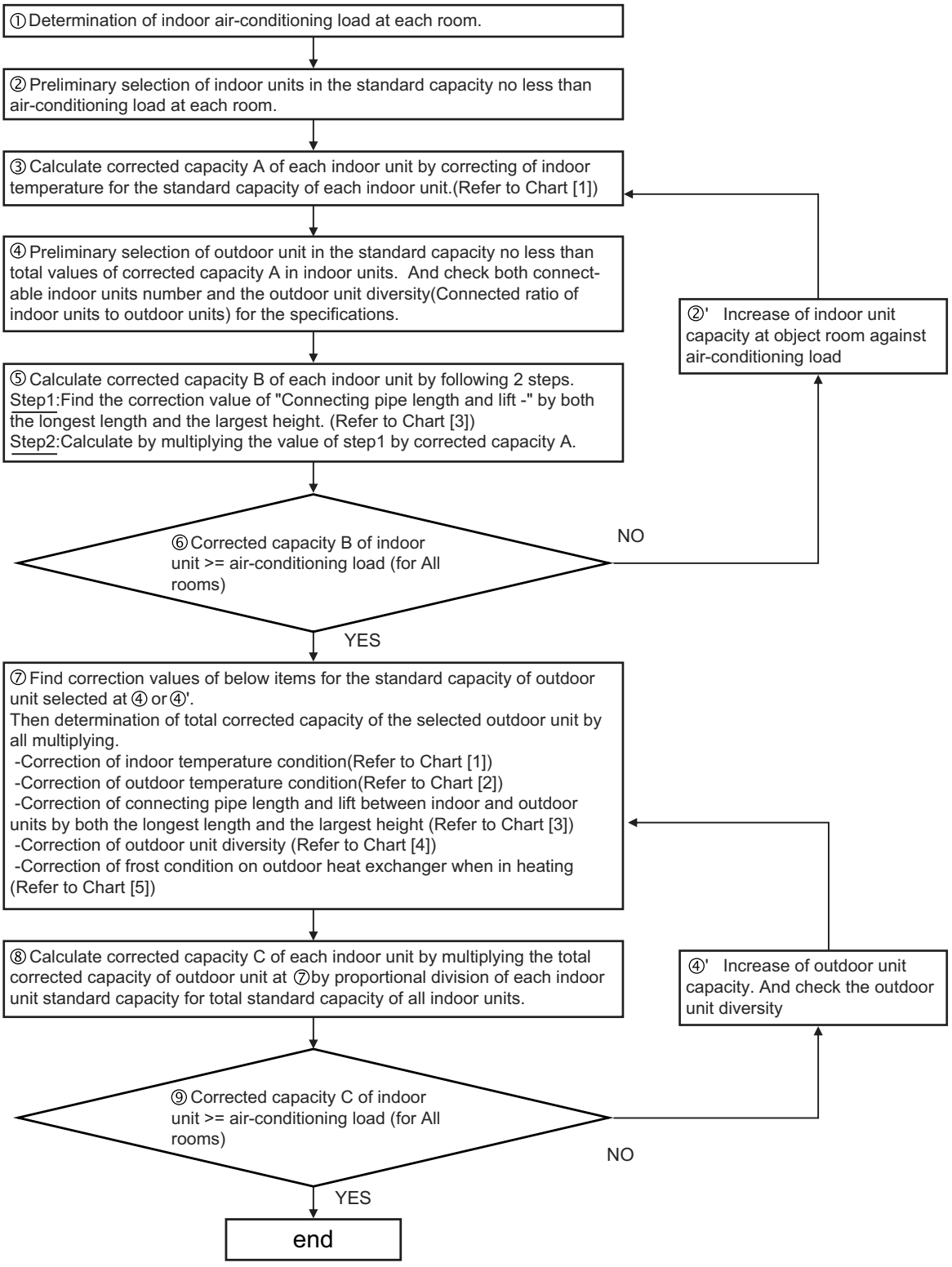
Name	Model name	Remarks
Power peak-cut control board	TCB-PCDM4UL	Power peak-cut control
External master ON/OFF control board	TCB-PCMO4UL	External master ON/OFF control, Night operation control, Operation mode selection control, Snowfall fan control
Output control board	TCB-PCIN4UL	Error / operation output control, Compressor operation output, Operating rate output

1-2-6. Controls

Name	Model name	Remarks
Remote location ON/OFF Control Box	TCB-IFCB-4UL	
“1:1 model" Connection Interface	TCB-PCNT31TLUL	Link adapter for "1:1 model" to enable connection to VRF system network.
LonWorks LN Interface	TCB-IFLN642TLUL	
Smart BMS manager	BMS-SM1280HTLUL	
Energy Monitoring Relay Interface	BMS-IFWH5UL	
Digital I/O Relay Interface	BMS-IFDD03UL	
BACnet Server	BMS-LSV6UL	
	BMS-STBN10UL	
Relay Interface	BMS-IFLSV4UL	
BN Interface	BMS-IFBN640TLUL	
Touch Screen Controller	BMS-CT5120UL	

“1:1 model” : RAV type indoor unit

2-1. Selection flow chart



Note : Please use selection software to layout the system.

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

Indoor unit can connect 50% to 135% of Outdoor unit capacity.
*Permanent operation below 80% is not recommended.

2-2-1. The capacity code of indoor unit is decided for each capacity type.

Indoor unit capacity type	007	009	012	015	018	021	024	027	030	036	042	048
Indoor unit capacity code	7.5	9.5	12	15.4	18	21	24	27	30	36	42	48

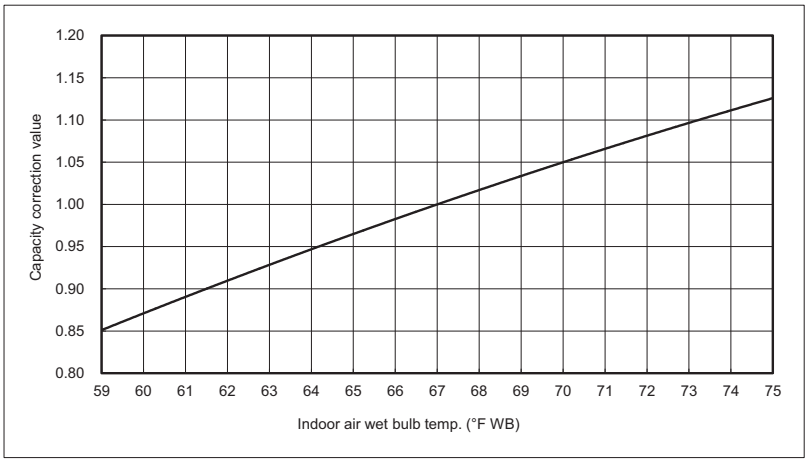
2-2-2. For outdoor unit, maximum No. of connectable indoor units and total capacity code of indoor units are decided.

Outdoor unit	Capacity code of outdoor unit	No. of connectable indoor units	Total capacity code of indoor units
MCY-MAP0367HS-UL	36	2 to 6	18 to 48
MCY-MAP0487HS-UL	48	2 to 8	24 to 64
MCY-MAP0607HS-UL	60	2 to 9	30 to 81

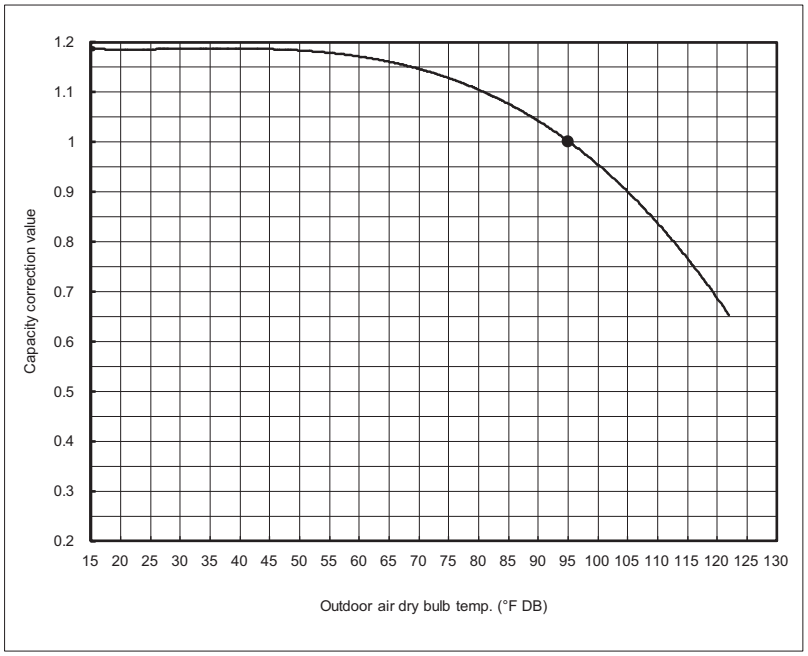
2-3. Cooling/heating capacity characteristics

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

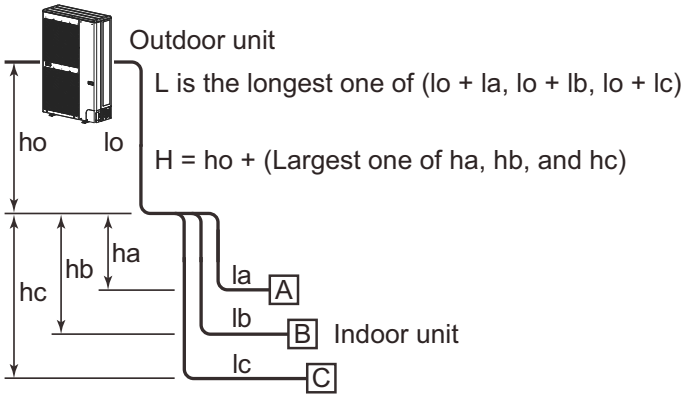
[Chart 1] Indoor air wet bulb temperature vs. capacity correction value

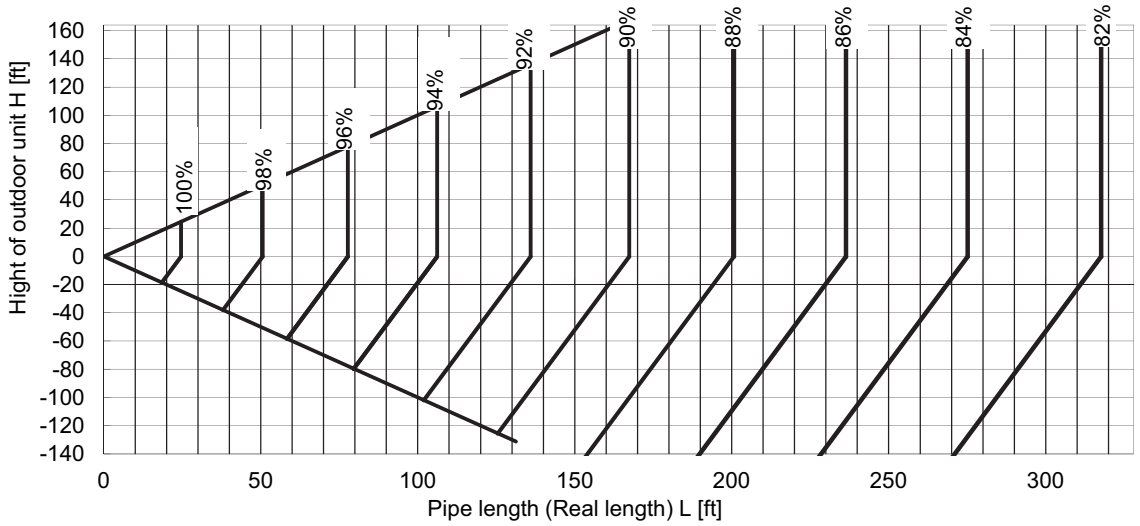


[Chart 2] Outdoor air dry bulb temperature vs. capacity correction value

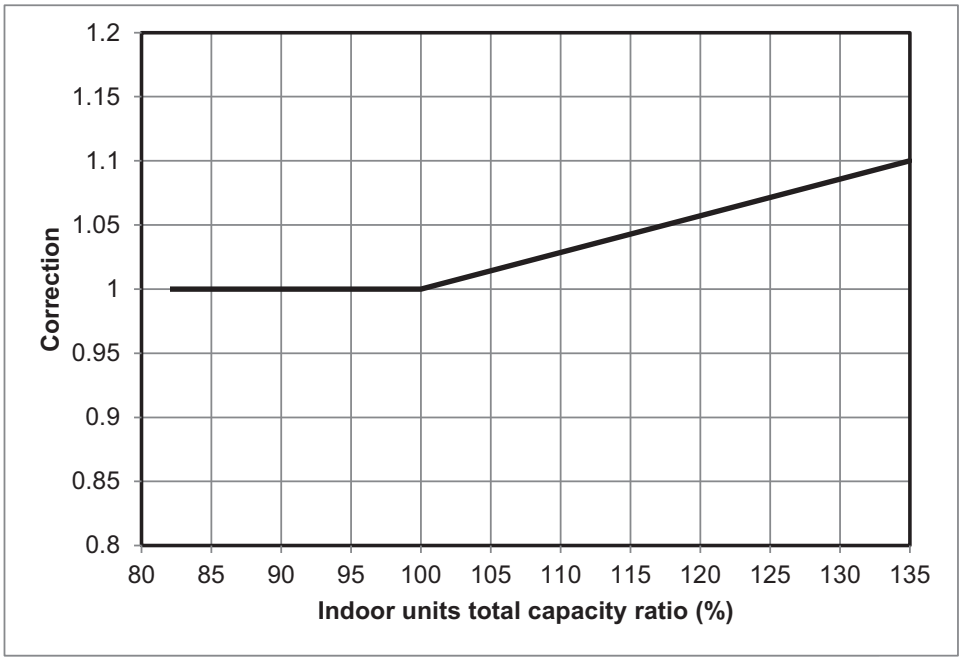


[Chart 3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value





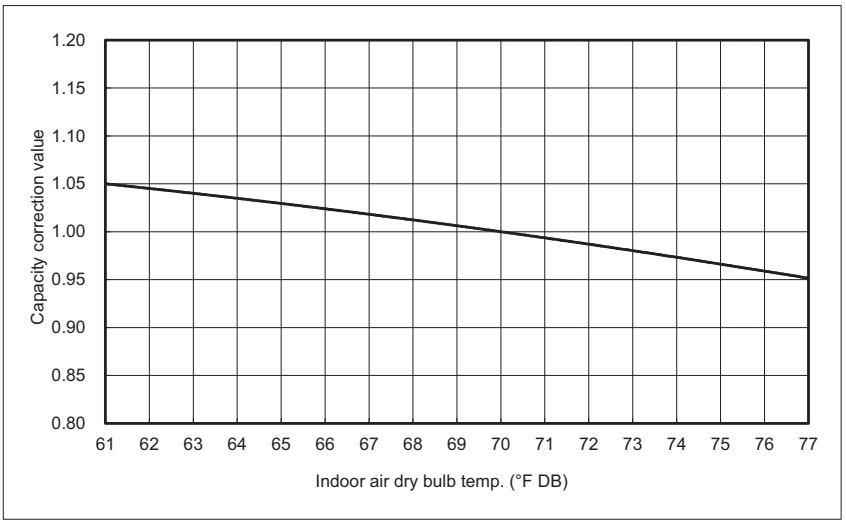
[4]* Correction of outdoor unit diversity



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

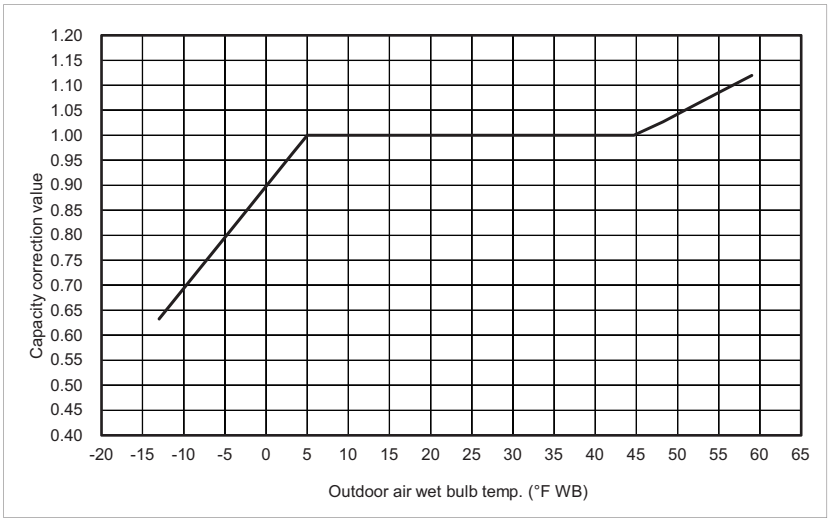
2-3-2. Correction charts for heating capacity calculation

[Chart 1] Indoor air dry bulb temperature vs. capacity correction value

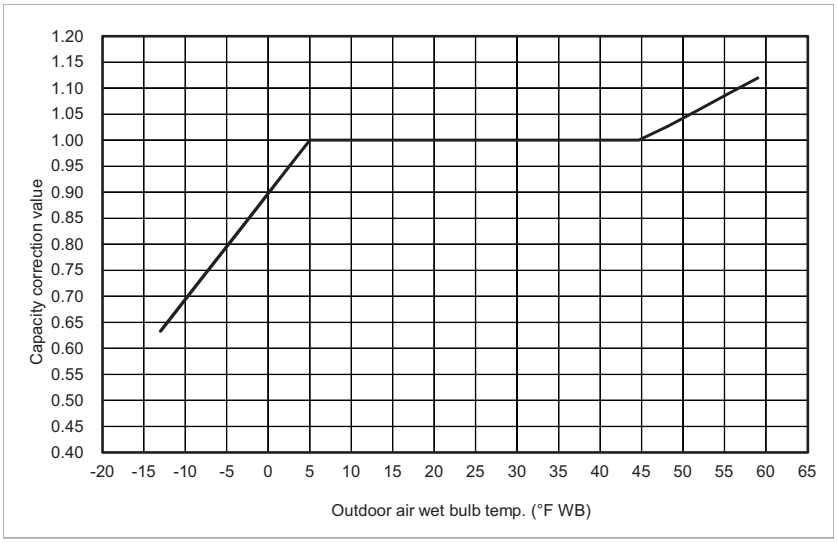


[Chart 2] Outdoor air wet bulb temperature vs. capacity correction value

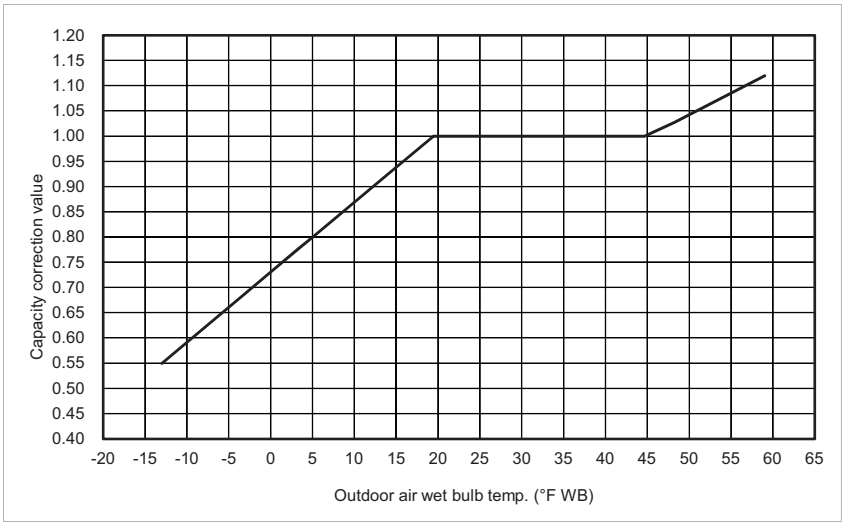
MCY-MAP0367HS-UL



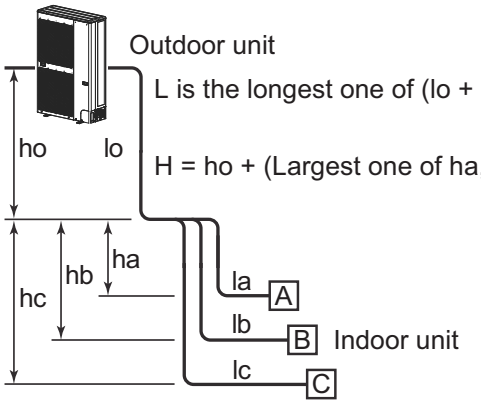
MCY-MAP0487HS-UL

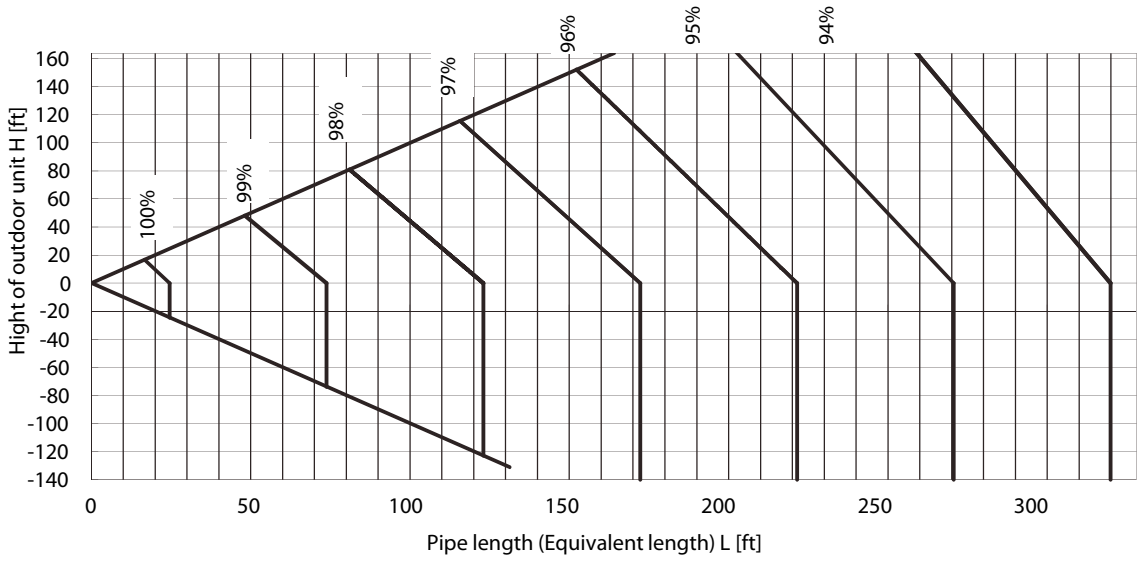


MCY-MAP0607HS-UL

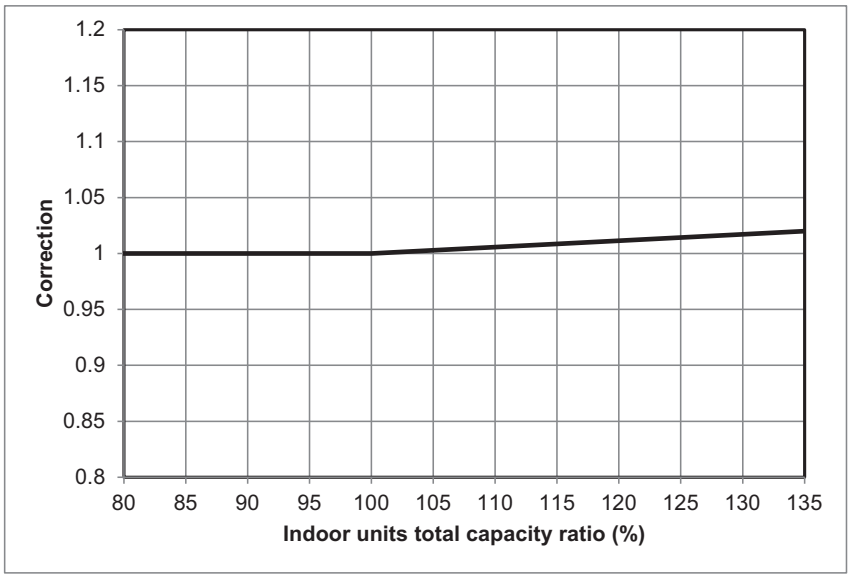


[Chart 3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value





[Chart 4]* Correction of outdoor unit diversity

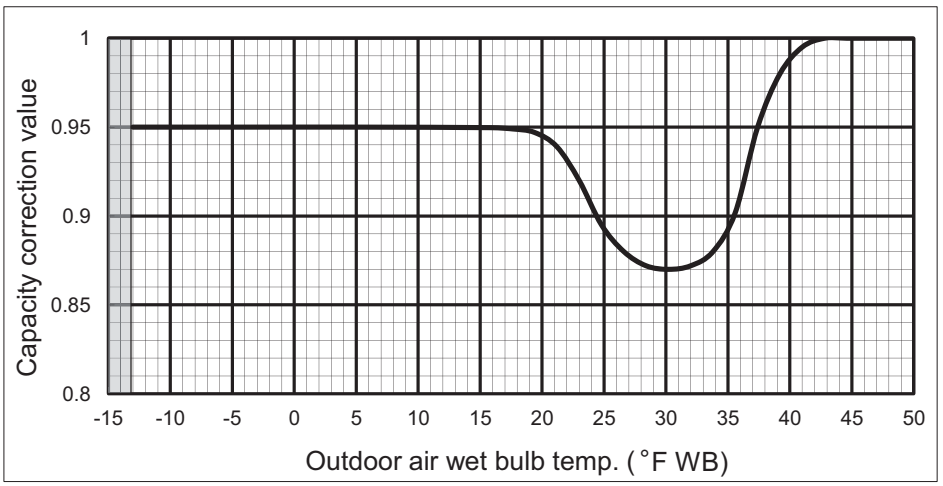


* Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

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

Correct the heating capacity when frost can be 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.)

[Chart 5] Capacity correction in case of frost on the outdoor heat exchanger

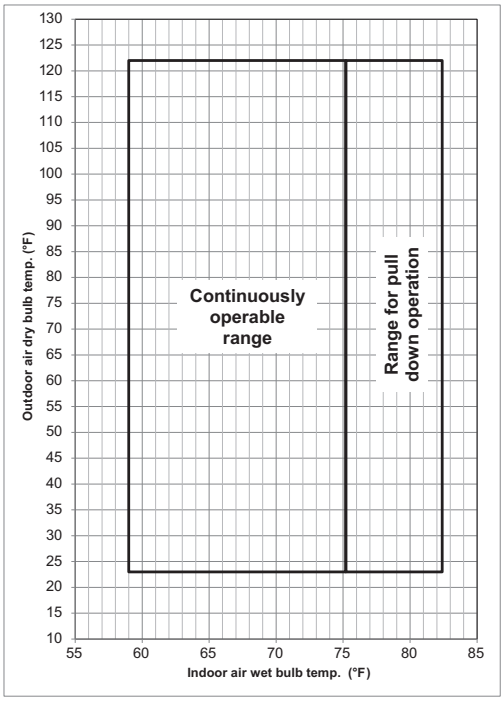


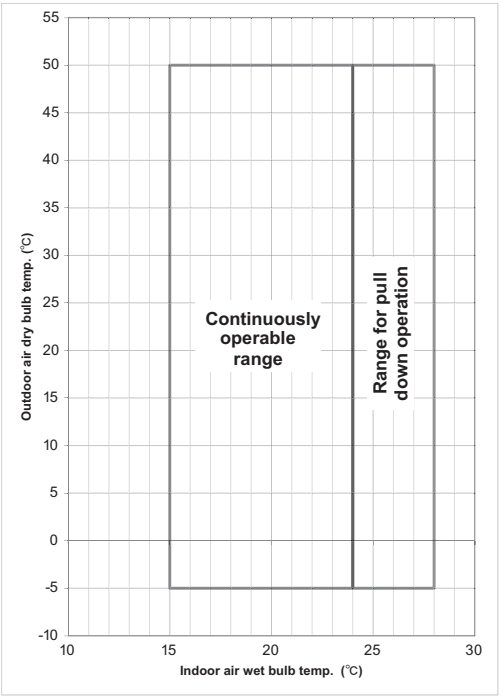
2-3-4. Rated conditions

Cooling: Indoor air temperature 80 °F DryBulb/67 °F WetBulb, Outdoor air temperature 95 °F DryBulb
Heating: Indoor air temperature 70 °F DryBulb, Outdoor air temperature 47 °F DryBulb/43 °F WetBulb

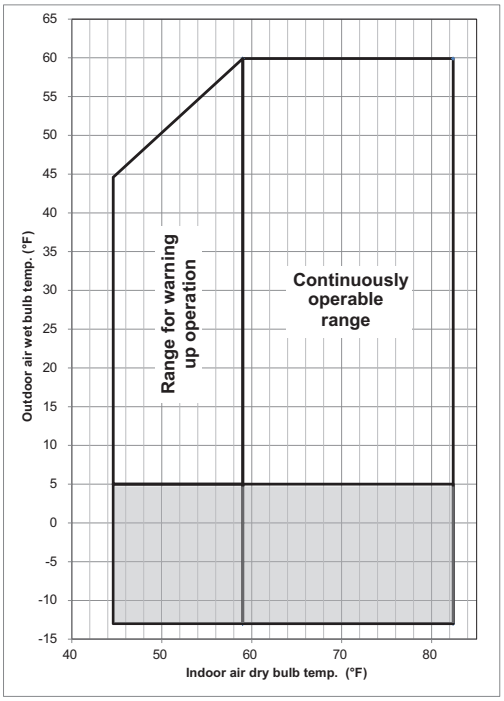
2-4. Operational temperature range

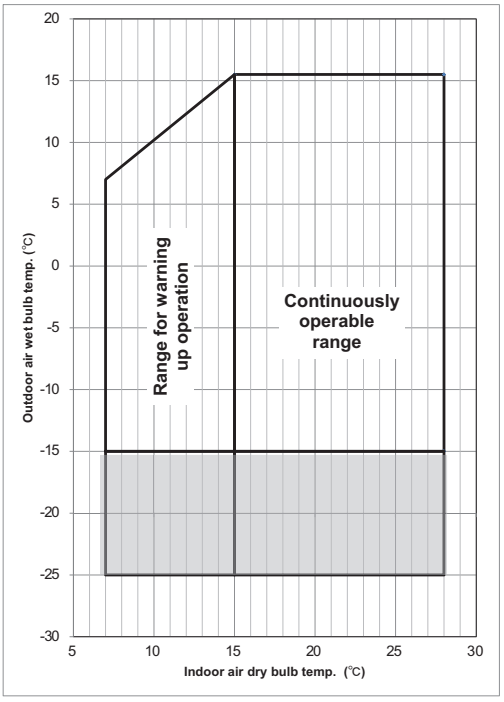
Cooling





Heating

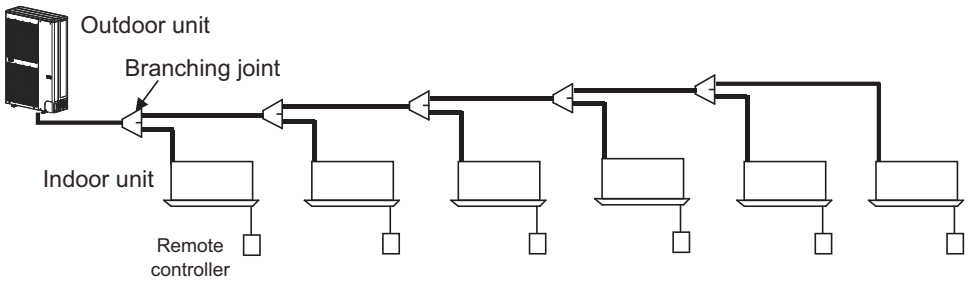
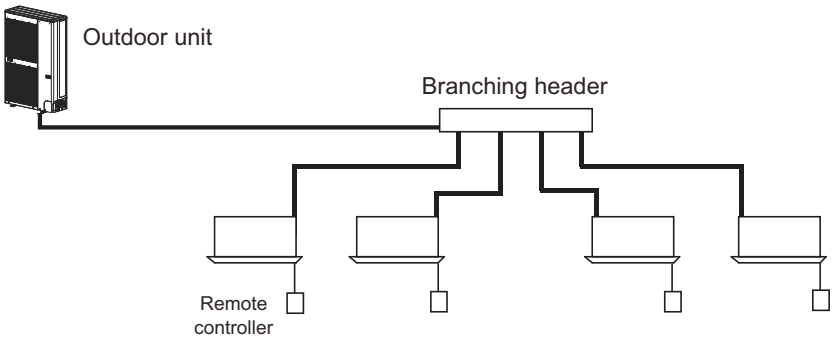
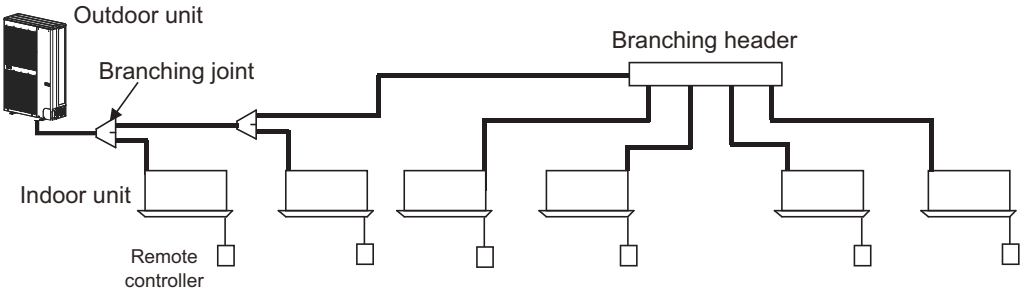
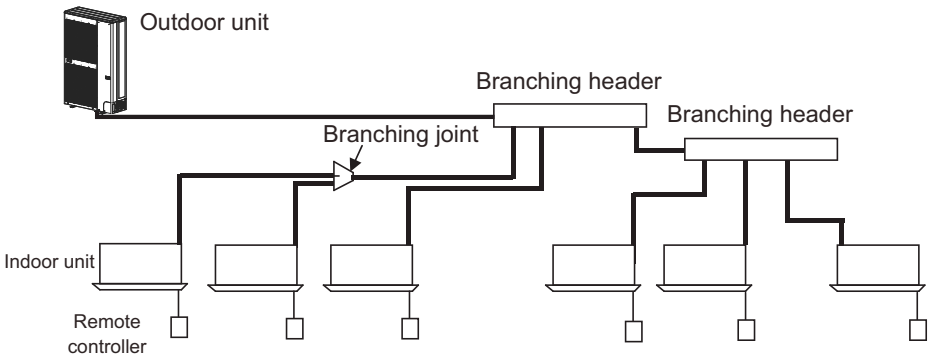




The unit will operate down to an outdoor temperature of -13°F, however considerable performance decrease will be expected below 5°F. Therefore please consider installation location/surroundings and system design when expected to operate between 5 °F and -13°F.

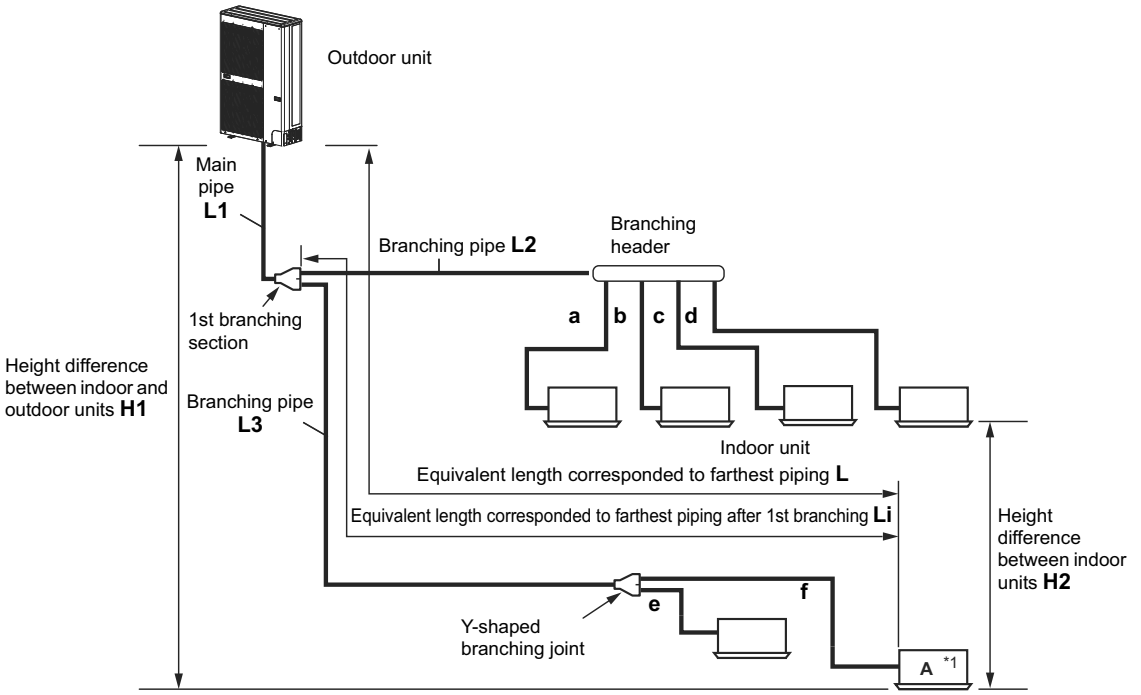
3-1. Free branching system

[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.

Line branching system	
Header branching system	
Header branching system after line branching	
Line branching system after header branching Header branching system after header branching	

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

■Allowable length / height difference of refrigerant piping

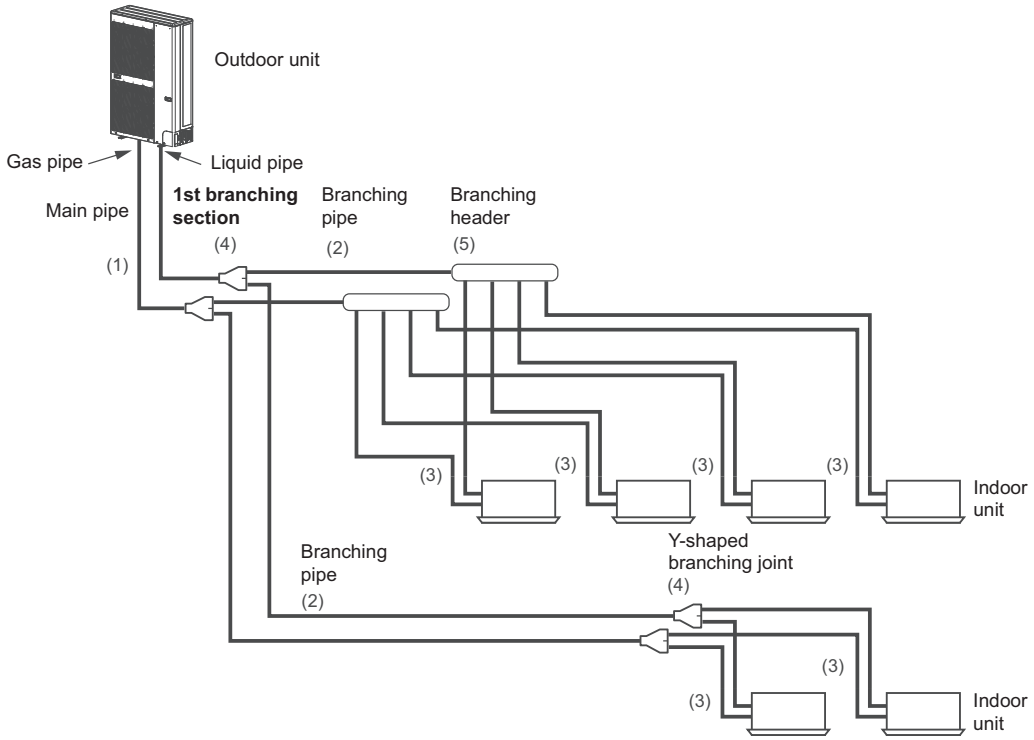


			Allowable value (ft (m))	Pipes
Piping Length	Total extension of pipe (liquid pipe, real length)		591 (180)	L1 + L2 + L3 + a + b + c + d + e + f
	Furthest piping length L (*1)	Real length	328 (100)	L1 + L3 + f
		Equivalent length	410 (125)	
	Max. equivalent length of main pipe		213 (65)	L1
	Max. equivalent length of furthest piping from 1st branching Li (*1)		115 (35)	L3 + f
	Max. real length of indoor unit connecting pipe		49 (15)	a, b, c, d, e, f
Height Difference	Height between indoor and outdoor units H1	Upper outdoor unit	164 (50)	–
		Lower outdoor unit	131 (40)	
	Height between indoor units H2		49 (15)	

*1 Furthest indoor unit from 1st branch to be named “A”.

3-3. Selection of refrigerant piping

■ Selection of refrigerant piping



No.	Piping parts	Name	Selection of pipe size	Remarks
(1)	Outdoor unit ↓ 1st branching section	Main pipe	**Size of main pipe** **Outdoor unit capacity type** / **Gas pipe** / **Liquid pipe** 0367 type / Ø5/8" / Ø3/8" 0487 type / Ø5/8" / Ø3/8" 0607 type / Ø3/4" / Ø3/8"	Same as connecting pipe size of the outdoor unit.
(2)	Branching section ↓ Branching section	Branching pipe	**Pipe size between branching sections** **Total capacity codes of indoor units at down stream side** / **Gas pipe** / **Liquid pipe** **Equivalent to capacity** Below 23 / Ø1/2" / Ø3/8" 23 to below 61 / Ø5/8" / Ø3/8" 61 or more / Ø3/4" / Ø3/8"	Pipe size differs based on the total capacity code value of indoor units at the downstream side. If the total value exceeds the capacity code of the outdoor unit, apply the capacity code of the outdoor unit. (See Table 1 and 2.)

(3)	Branching section ↓ Indoor unit	Indoor unit connecting pipe	**Connecting pipe size of indoor unit** **Capacity rank** / **Gas pipe** / **Liquid pipe** 007 to 012 type / Ø3/8" / Ø1/4" 015 to 018 type / Ø1/2" / Ø1/4" 021 to 048 type / Ø5/8" / Ø3/8"
(4)	Branching section	Y-shaped branching joint	**Selection of branching section (Y-shaped branching joint)** **Model name** Y-shape branch joint / RBM-BY55UL
(5)	Branching section	Branching header	**Selection of branching section (Branching header)** **Model name** Branching header* For 4 branches / RBM-HY1043UL Branching header* For 8 branches / RBM-HY1083UL * A capacity code of up to a maximum of 57 is connectable to one line after branching from the header.

3-4. Charging requirement with additional refrigerant

■ Adding refrigerant

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

Calculation of additional refrigerant charge amount

Default refrigerant amount 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.

Outdoor unit type	MAP0367	MAP0487	MAP0607
Charging amount (lbs (kg))	14.8 (6.7)	14.8 (6.7)	14.8 (6.7)

Additional refrigerant charge amount at local site	=	Real length of liquid pipe	×	Additional refrigerant charge amount per 1 ft liquid pipe (Table 1)	×	1.2	+	Compensation by outdoor HP (Table 2)

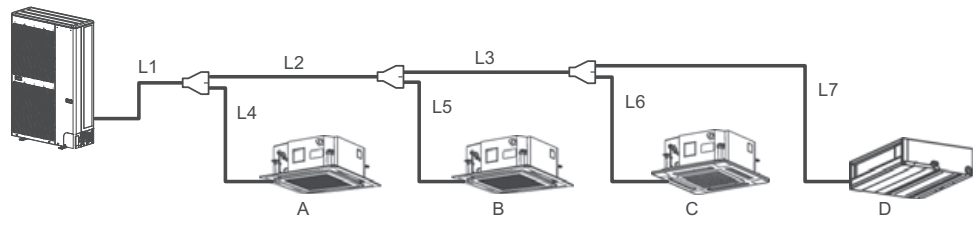
Table 1

Liquid pipe dia. (in)	Ø1/4"	Ø3/8"
Additional refrigerant amount / 1 m liquid pipe (lbs/ft)	0.017	0.038

Table 2

Outdoor unit type	MAP0367	MAP0487	MAP0607
Compensation by outdoor capacity (lbs (kg))	0 (0)	0.88 (0.4)	1.76 (0.8)

Example: (060 type)



L1	Ø3/8": 32.8 ft	L2	Ø3/8": 32.8 ft	L3	Ø3/8": 16.4 ft	L4	Ø3/8": 9.8 ft
L5	Ø1/4": 9.8 ft	L6	Ø1/4": 13.1 ft	L7	Ø1/4": 16.4 ft		

Additional charge amount R (kg)

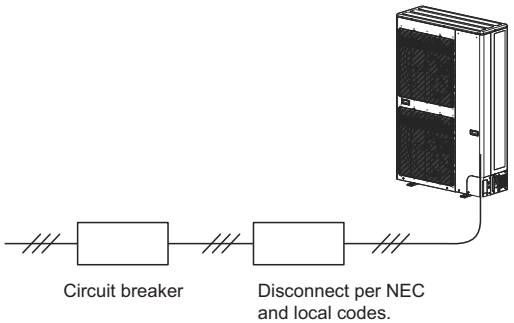
Lx: Real total length of liquid pipe diameter 1/4" (ft)
Ly: Real total length of liquid pipe diameter 3/8" (ft)

= {(Lx × 0.017 lbs/ft) + (Ly × 0.038 lbs/ft)} × 1.2 + (1.76 lbs)
= {(39.3 × 0.017 lbs) + (91.8 × 0.038 lbs)} × 1.2 + (1.76 lbs)
= 6.75 lbs

4-1.General

- All field wiring insulation rating must comply with NEC and local codes.
- Do not connect 208/230 V power to the terminal blocks for control cables (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.
- After connecting wires to the terminal block, take off the traps and fix the wires with cord clamps.
- Do not conduct power to indoor units until vacuuming of the refrigerant pipes 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.
- Prepare an exclusive power supply for the air conditioner.

4-2.Outdoor unit power supply



Outdoor unit data

Model name MCY-	Capacity type	Power supply		Voltage Range		Compressor (kW)	Fan Motor (kW)	MCA (A)	MOCP (A)	Recommended breaker size
		Phase and frequency	Nominal Voltage	Min. (V)	Max. (V)					
MAP0367HS-UL	36	1Ph 60 Hz	208/230 V	187	253	3.75	0.10 x 2	36.3	60	40
MAP0487HS-UL	48	1Ph 60 Hz	208/230 V	187	253	3.75	0.10 x 2	36.3	60	40
MAP0607HS-UL	60	1Ph 60 Hz	208/230 V	187	253	3.75	0.10 x 2	36.3	60	40

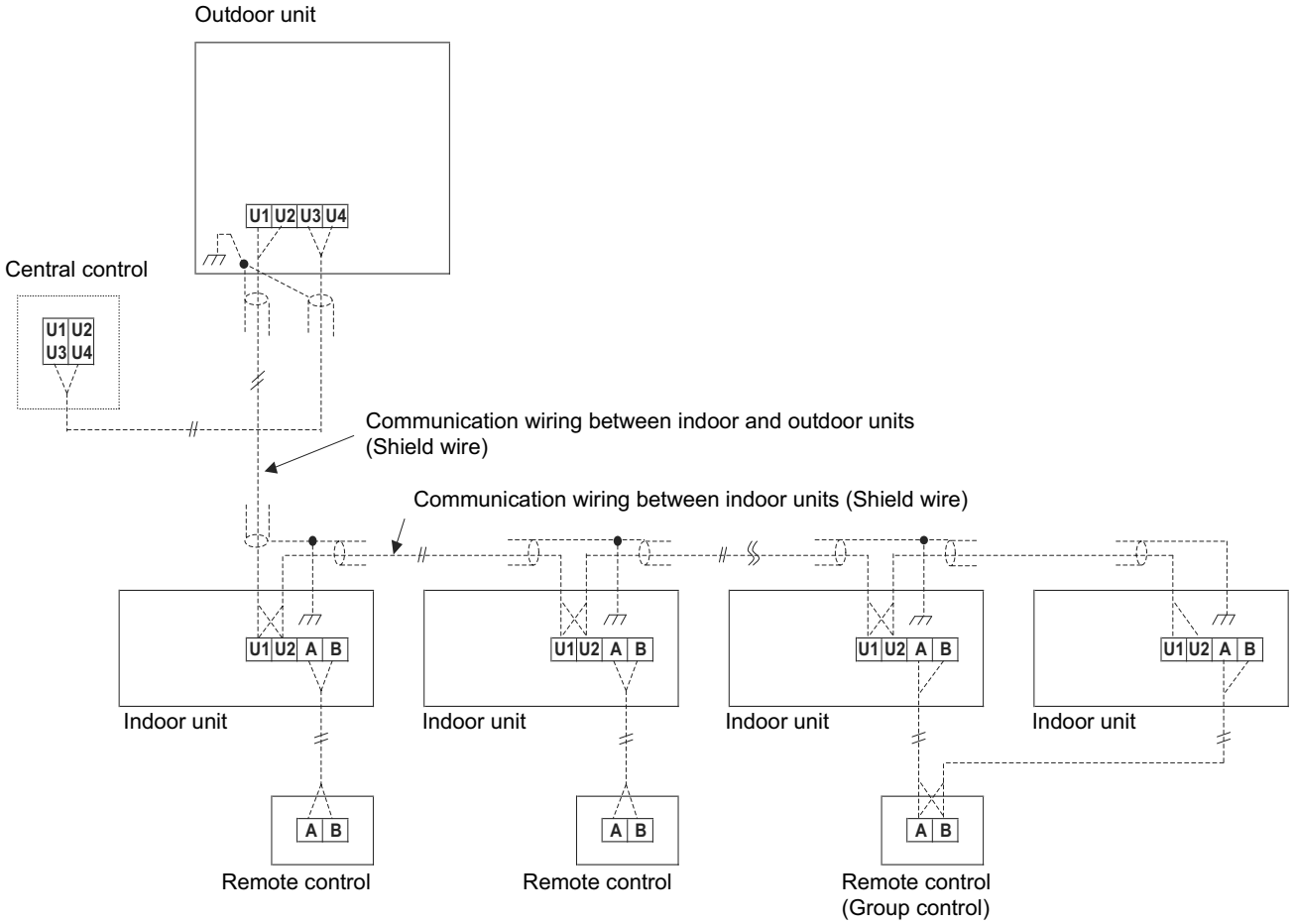
4-3.Indoor unit power supply

Type	Model name	Nominal Voltage (V-Ph-Hz)	Voltage Range (V)		FLA	MCA	MOCP
			Min	Max	A	A	A
4-way Cassette	MMU-AP0072H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0092H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0122H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0152H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0182H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0212H2UL	208/230-1-60	187	253	0.8	1.0	15
	MMU-AP0242H2UL	208/230-1-60	187	253	0.8	1.0	15
	MMU-AP0302H2UL	208/230-1-60	187	253	0.8	1.0	15
	MMU-AP0362H2UL	208/230-1-60	187	253	1.0	1.3	15
	MMU-AP0422H2UL	208/230-1-60	187	253	1.0	1.3	15
	MMU-AP0072H2UL-1	208/230-1-60	187	253	0.6	0.8	15
Compact 4-way Cassette	MMU-AP0071MH2UL	208/230-1-60	187	253	0.4	0.5	15
	MMU-AP0091MH2UL	208/230-1-60	187	253	0.4	0.5	15
	MMU-AP0121MH2UL	208/230-1-60	187	253	0.4	0.5	15
	MMU-AP0151MH2UL	208/230-1-60	187	253	0.5	0.7	15
	MMU-AP0181MH2UL	208/230-1-60	187	253	0.5	0.7	15
Under Ceiling	MMC-AP0181H2UL	208/230-1-60	187	253	0.4	0.5	15
	MMC-AP0241H2UL	208/230-1-60	187	253	0.5	0.7	15
	MMC-AP0361H2UL	208/230-1-60	187	253	0.8	1.0	15
	MMC-AP0421H2UL	208/230-1-60	187	253	0.9	1.2	15
High Wall	MMK-AP0073HP2UL	208/230-1-60	187	253	0.2	0.3	15
	MMK-AP0093HP2UL	208/230-1-60	187	253	0.2	0.3	15
	MMK-AP0123HP2UL	208/230-1-60	187	253	0.2	0.3	15
	MMK-AP0153HP2UL	208/230-1-60	187	253	0.4	0.5	15
	MMK-AP0183HP2UL	208/230-1-60	187	253	0.4	0.5	15
	MMK-AP0243HP2UL	208/230-1-60	187	253	0.4	0.5	15
Slim Duct	MMD-AP0074SPH2UL	208/230-1-60	187	253	0.6	0.7	15
	MMD-AP0094SPH2UL	208/230-1-60	187	253	0.6	0.7	15
	MMD-AP0124SPH2UL	208/230-1-60	187	253	0.6	0.8	15
	MMD-AP0154SPH2UL	208/230-1-60	187	253	0.7	0.9	15
	MMD-AP0184SPH2UL	208/230-1-60	187	253	0.8	1.0	15
Medium Static Duct	MMD-AP0074BH2UL	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0094BH2UL	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0124BH2UL	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0074BH2UL-1	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0094BH2UL-1	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0124BH2UL-1	208/230-1-60	187	253	0.8	1.0	15
	MMD-AP0154BH2UL-1	208/230-1-60	187	253	0.9	1.2	15
	MMD-AP0184BH2UL-1	208/230-1-60	187	253	0.9	1.2	15
	MMD-AP0214BH2UL-1	208/230-1-60	187	253	1.4	1.8	15
	MMD-AP0244BH2UL-1	208/230-1-60	187	253	1.4	1.8	15
	MMD-AP0304BH2UL-1	208/230-1-60	187	253	1.4	1.8	15
	MMD-AP0364BH2UL-1	208/230-1-60	187	253	1.8	2.3	15
	MMD-AP0424BH2UL-1	208/230-1-60	187	253	2.2	2.8	15
	MMD-AP0484BH2UL-1	208/230-1-60	187	253	2.2	2.8	15
High Static Duct	MMD-AP0304H2UL	208/230-1-60	187	253	2.3	2.9	15
	MMD-AP0364H2UL	208/230-1-60	187	253	2.3	2.9	15
	MMD-AP0484H2UL	208/230-1-60	187	253	2.9	3.7	15
Floor console exposed	MML-AP0074H2UL	208/230-1-60	187	253	0.3	0.4	15
	MML-AP0094H2UL	208/230-1-60	187	253	0.3	0.4	15
	MML-AP0124H2UL	208/230-1-60	187	253	0.5	0.6	15
	MML-AP0154H2UL	208/230-1-60	187	253	0.5	0.6	15
	MML-AP0184H2UL	208/230-1-60	187	253	0.6	0.7	15
	MML-AP0244H2UL	208/230-1-60	187	253	0.6	0.7	15
Floor console recessed	MML-AP0074BH2UL	208/230-1-60	187	253	0.3	0.4	15
	MML-AP0094BH2UL	208/230-1-60	187	253	0.3	0.4	15
	MML-AP0124BH2UL	208/230-1-60	187	253	0.3	0.4	15
	MML-AP0154BH2UL	208/230-1-60	187	253	0.6	0.7	15
	MML-AP0184BH2UL	208/230-1-60	187	253	0.6	0.7	15
	MML-AP0244BH2UL	208/230-1-60	187	253	0.6	0.7	15

MCA: Minimum Circuit Amps @208V FLA: Full Load Amps @208V
MOCP: Maximum Overcurrent Protection (Amps)

4-4.Design of control wiring

• Summary of control wiring



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

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

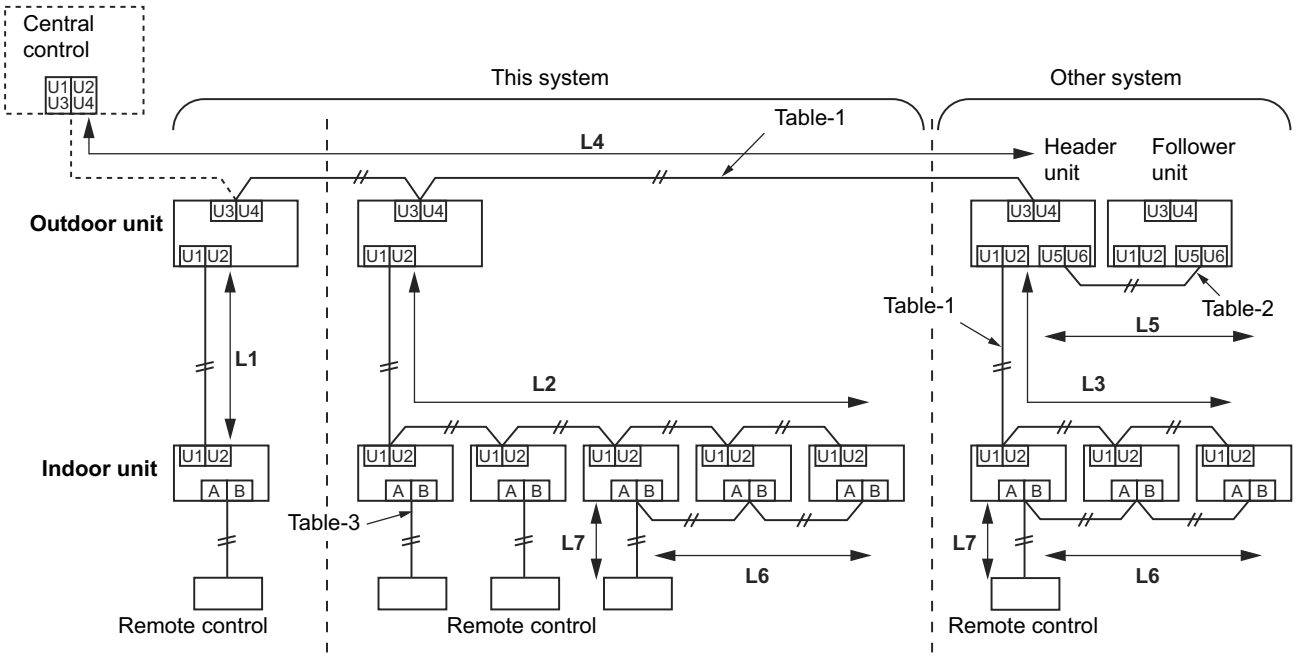


Table-1 Control wiring between indoor and outdoor units (L1, L2, L3), Central control wiring (L4)

Wiring	2-core, non-polarity
Type	Shield wire
Size / Length *1	AWG16: Up to 3280 ft (1000 m) AWG14: Up to 6560 ft (2000 m) (*1)

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

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

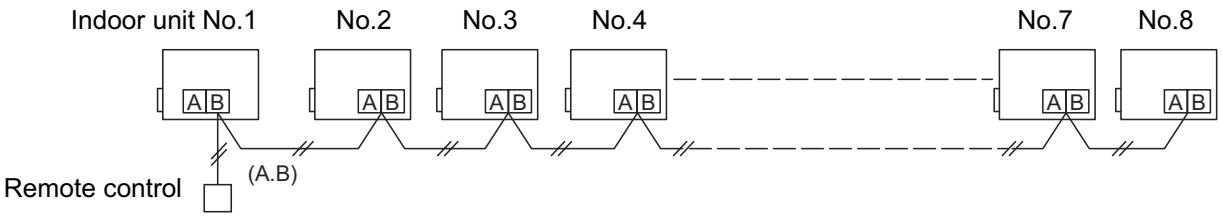
Wiring	2-core, non-polarity
Type	Shield wire
Size / Length	AWG16 to AWG14 / Up to 330 ft (100 m) (L5)

Table-3 Remote control wiring (L6, L7)

Wiring	2-core
Size	AWG20 to AWG14
Length	• Up to 1640 ft (500 m) (L6 + L7) • Up 1310 ft (400 m) in case of wireless remote control in group control. • Up to 660 ft (200 m) total length of control wiring between indoor units (L6)

Group control through a remote control

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



5-1. Specifications

System with Non-ducted indoor units

Outdoor unit model name						MCY-MAP0367HS-UL	MCY-MAP0487HS-UL	MCY-MAP0607HS-UL
Outdoor unit type						Inverter	Inverter	Inverter
Capacity code					ton	3	4	5
Cooling Capacity				(*1)	Btu/h	36,000	48,000	60,000
Heating Capacity				(*1)	Btu/h	40,000	54,000	66,000
Electrical characteristics (Nominal) (*1)		Power supply			(*2)	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V
	Non-ducted	Cooling	Running current		A	11.59	17.52	23.59
			Power consumption		kW	2.29	3.71	5.26
			EER			15.70	12.95	11.40
		Heating	Running current		A	13.79	18.25	23.11
			Power consumption		kW	2.79	3.95	5.16
			COP			4.20	4.01	3.75
		SEER				22.7	21.00	20.5
		HSPF				11.5	11.5	11.5
		Starting Current			A	Soft start	Soft start	Soft start
Dimension		Unit	Height		In	61.0	61.0	61.0
			Width		In	39.8	39.8	39.8
			Depth		In	14.6	14.6	14.6
		Packing	Height		In	66.5	66.5	66.5
			Width		In	43.2	43.2	43.2
			Depth		In	20.3	20.3	20.3
Total Weight		Unit			lbs	311	311	311
		Packed unit			lbs	331	331	331
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			cfm	4520	4690	4850
Heat exchanger						Finned tube	Finned tube	Finned tube
Refrigerant R410A(Charged refrigerant amount(lbs))					(*3)	14.8	14.8	14.8
High-pressure switch					psi	ON:602, OFF:464	ON:602, OFF:464	ON:602, OFF:464
Protective devices						Discharge temp. sensor / Suction temp. sensor / High-pressure sensor	Discharge temp. sensor / Suction temp. sensor / High-pressure sensor	Discharge temp. sensor / Suction temp. sensor / High-pressure sensor
						Low-pressure sensor / Compressor case thermostat / PC board fuse	Low-pressure sensor / Compressor case thermostat / PC board fuse	Low-pressure sensor / Compressor case thermostat / PC board fuse
Electrical specifications		Unit	MCA	(*4)	A	36.3	36.3	36.3
			MOCP	(*5)	A	60	60	60
			Recommended breaker size		A	40	40	40
Refrigerant piping		Connecting port dia	Gas side(main pipe)		In	φ5/8	φ5/8	φ3/4
			Liquid side(main pipe)		In	φ3/8	φ3/8	φ3/8
		Connecting method	Gas side			Flare	Flare	Flare
			Liquid side			Flare	Flare	Flare
Max. No. of connected indoor units						6	8	9
Sound pressure level				Cooling	dB(A)	52	54	55
				Heating	dB(A)	56	57	58
Operation temperature range			Cooling		FDB	23 to 122	23 to 122	23 to 122
			Heating		FWB	-13 to 60	-13 to 60	-13 to 60

(*1) Rated conditions Cooling : Indoor 80 F Dry Bulb /67 F Wet Bulb , Outdoor 95 F Dry Bulb.
Heating : Indoor 70 F Dry Bulb, Outdoor 47 F Dry Bulb / 43 F WetBulb.
The standard pipe means that equivalent piping length of 25ft and standard 0ft piping height difference .

(*2) The source voltage must not fluctuate more than ±10%

(*3) 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

(*4) Select wire size base on the larger value of MCA.

(*5) MOCP:Maximum overcurrent protection (Amps)

Standard model
System with Ducted indoor units

Outdoor unit model name						MCY-MAP0367HS-UL	MCY-MAP0487HS-UL	MCY-MAP0607HS-UL
Outdoor unit type						Inverter	Inverter	Inverter
Capacity code					ton	3	4	5
Cooling Capacity				(*1)	Btu/h	36,000	48,000	60,000
Heating Capacity				(*1)	Btu/h	40,000	54,000	66,000
Electrical characteristics (Nominal) (*1)	Ducted	Power supply			(*2)	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V
		Cooling	Running current		A	13.95	23.03	25.81
			Power consumption		kW	2.76	4.87	5.76
			EER			13.05	9.85	10.42
		Heating	Running current		A	17.03	24.39	23.94
			Power consumption		kW	3.45	5.27	5.34
			COP			3.40	3.00	3.62
		SEER				17.7	16.6	17.6
		HSPF				10.5	9.5	11.0
		Starting Current			A	Soft start	Soft start	Soft start
Dimension		Unit	Height		In	61.0	61.0	61.0
			Width		In	39.8	39.8	39.8
			Depth		In	14.6	14.6	14.6
		Packing	Height		In	66.5	66.5	66.5
			Width		In	43.2	43.2	43.2
			Depth		In	20.3	20.3	20.3
Total Weight		Unit			lbs	311	311	311
		Packed unit			lbs	331	331	331
Appearance(Color)						Silky shade	Silky shade	Silky shade
						(Munsell 1Y8.5/0.5)	(Munsell 1Y8.5/0.5)	(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			cfm	4520	4690	4850
Heat exchanger						Finned tube	Finned tube	Finned tube
Refrigerant R410A(Charged refrigerant amount(lbs))					(*3)	14.8	14.8	14.8
High-pressure switch					psi	ON:602, OFF:464	ON:602, OFF:464	ON:602, OFF:464
Protective devices						Discharge temp. sensor / Suction temp. sensor / High-pressure sensor	Discharge temp. sensor / Suction temp. sensor / High-pressure sensor	Discharge temp. sensor / Suction temp. sensor / High-pressure sensor
						Low-pressure sensor / Compressor case thermostat / PC board fuse	Low-pressure sensor / Compressor case thermostat / PC board fuse	Low-pressure sensor / Compressor case thermostat / PC board fuse
Electrical specifications		Unit	MCA	(*4)	A	36.3	36.3	36.3
			MOCP	(*5)	A	60	60	60
			Recommended breaker size		A	40	40	40
Refrigerant piping		Connecting port dia	Gas side(main pipe)		In	φ5/8	φ5/8	φ3/4
			Liquid side(main pipe)		In	φ3/8	φ3/8	φ3/8
		Connecting method	Gas side			Flare	Flare	Flare
			Liquid side			Flare	Flare	Flare
Max. No. of connected indoor units						6	8	9
Sound pressure level				Cooling	dB(A)	52	54	55
				Heating	dB(A)	56	57	58
Operation temperature range			Cooling		FDB	23 to 122	23 to 122	23 to 122
			Heating		FWB	-13 to 60	-13 to 60	-13 to 60

(*1) Rated conditions Cooling : Indoor 80 F Dry Bulb /67 F Wet Bulb , Outdoor 95 F Dry Bulb.
Heating : Indoor 70 F Dry Bulb, Outdoor 47 F Dry Bulb / 43 F WetBulb.
The standard pipe means that equivalent piping length of 25ft and standard 0ft piping height difference .

(*2) The source voltage must not fluctuate more than ±10%

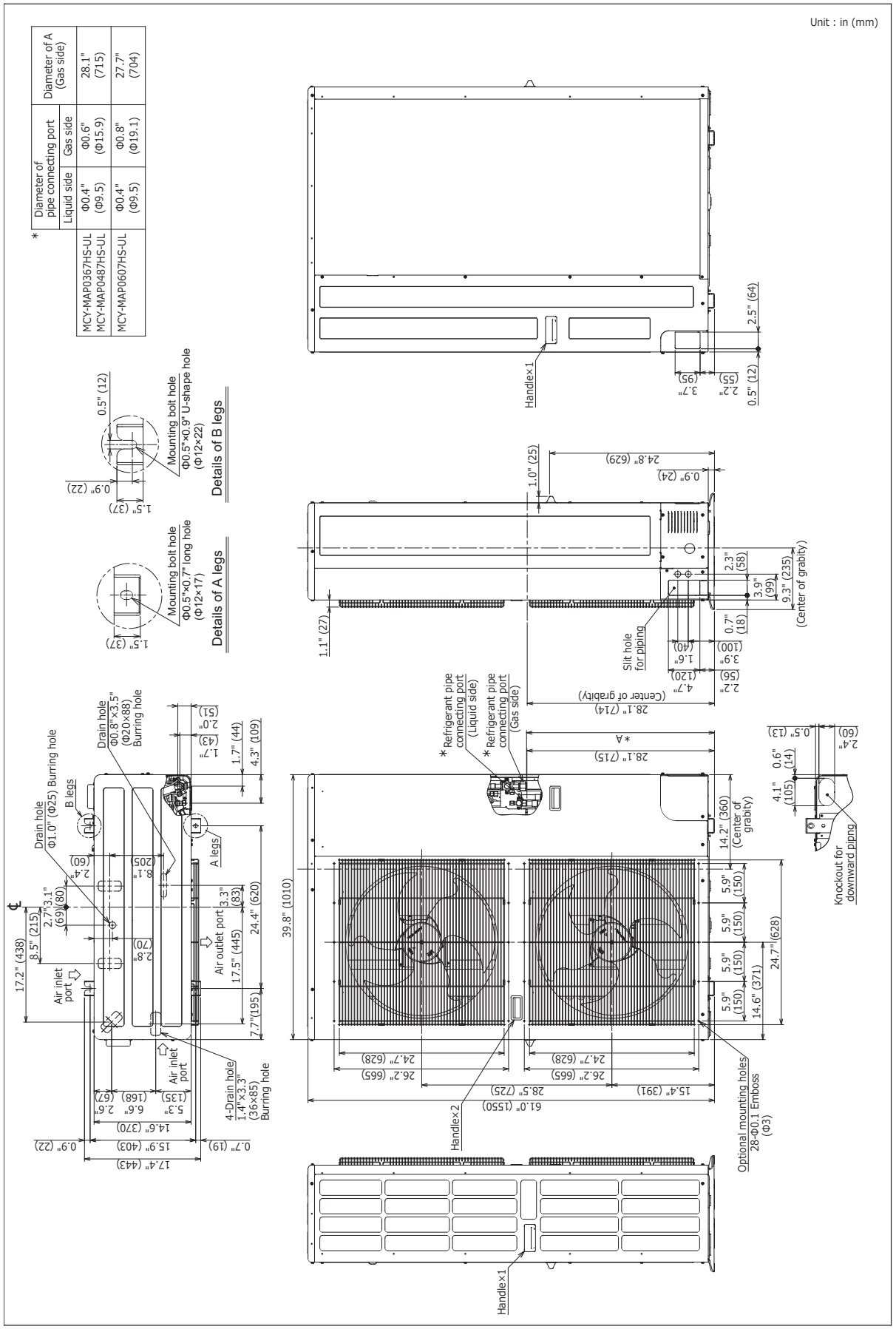
(*3) The amount dose not consider extra piping length and indoor unit type.
Refrigerant must be added on site in accordance with the actual piping length and indoor unit type

(*4) Select wire size base on the larger value of MCA.

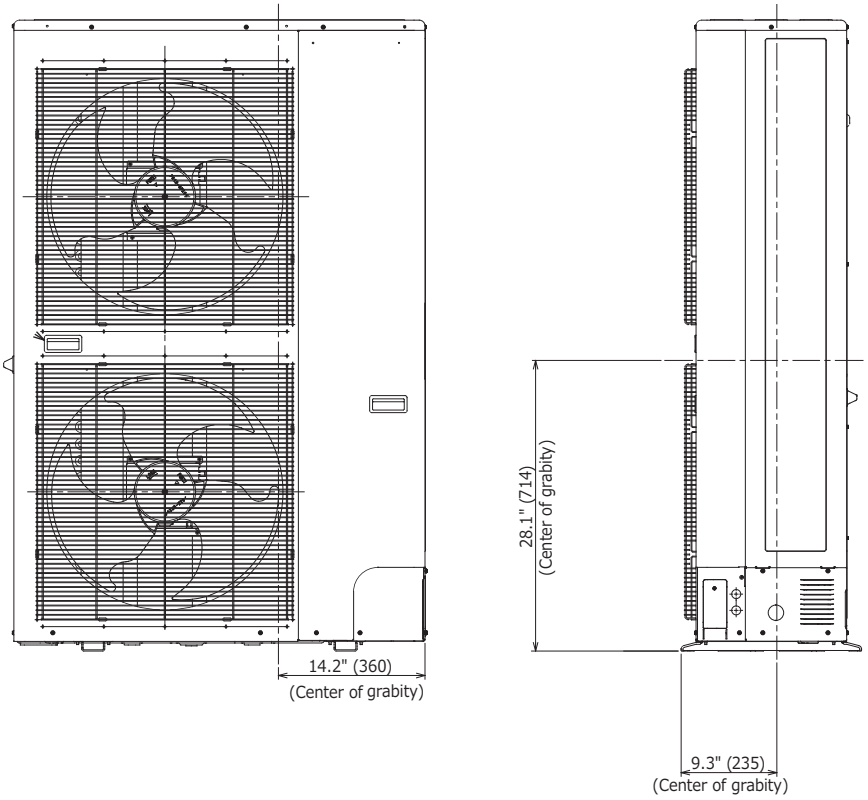
(*5) MOCP:Maximum overcurrent protection (Amps)

5-2. Dimensional drawing

Model : MCY-MAP0367HS-UL, MAP0487HS-UL, MAP0607HS-UL



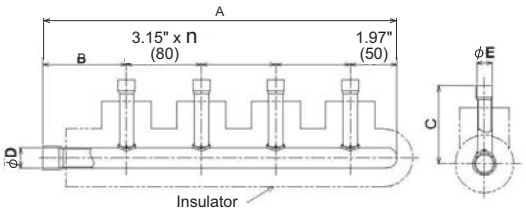
5-3. Center of gravity



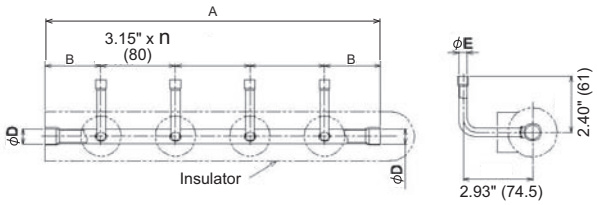
5-4. Branch header / Branch joint

• Branch header (Heat pump)
RBM-HY1043UL, HY1083UL

Gas side



Liquid side

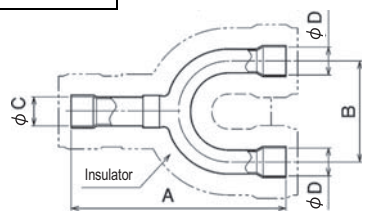


Unit: in (mm)

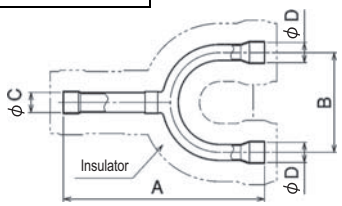
Model		A	B	C	D	E	n	Accessory socket Qty
RBM-HY1043UL	Gas side	15.0" (380)	3.54" (90)	3.29" (83.6)	7/8" (22.2)	5/8" (15.9)	3	⑥ × 4, ⑨ × 4, ⑭ × 1, ⑱ × 1, ⑦⓪ × 1
	Liquid side	13.0" (330)	1.77" (45)	–	5/8" (15.9)	3/8" (9.5)	3	① × 4, ⑥ × 1, ⑨ × 1
RBM-HY1083UL	Gas side	27.6" (700)	3.54" (90)	3.29" (83.6)	7/8" (22.2)	5/8" (15.9)	7	⑥ × 8, ⑨ × 8, ⑭ × 1, ⑱ × 1, ⑦⓪ × 1
	Liquid side	25.6" (650)	1.77" (45)	–	5/8" (15.9)	3/8" (9.5)	7	① × 8, ⑥ × 1, ⑨ × 1

• Y-shape branch joint (Heat pump)
RBM-BY55UL, BY105UL

Gas side



Liquid side

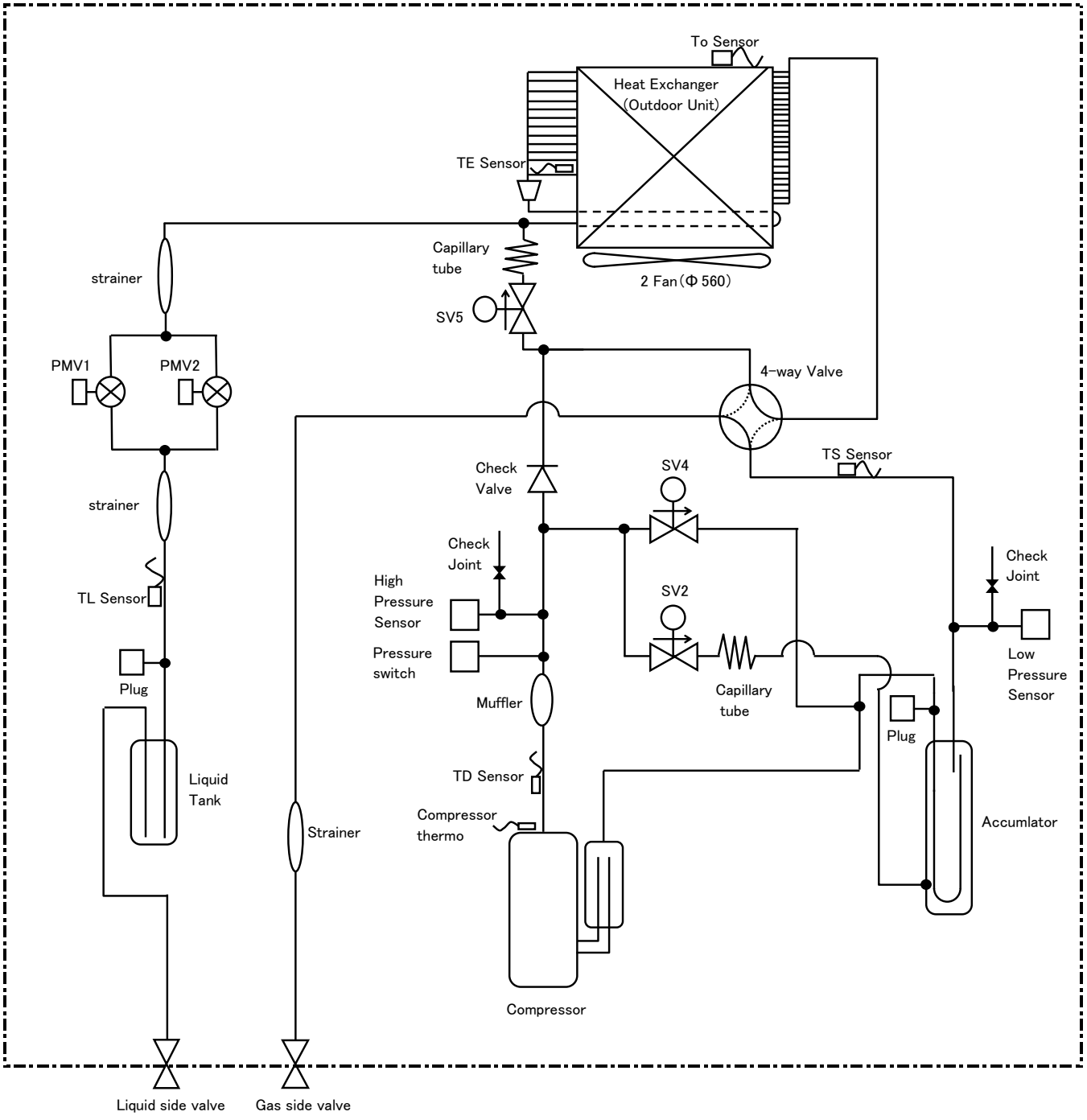


Unit: in (mm)

RBM-		A	B	C	D	Accessory socket Qty
BY55UL	Gas side	6.30" (160)	3.15" (80)	5/8" (15.9)	5/8" (15.9)	⑨ × 1, ⑤① × 2, ⑨① × 1
	Liquid side	5.12" (130)	2.76" (70)	3/8" (9.5)	3/8" (9.5)	① × 2
BY105UL	Gas side	6.69" (170)	3.15" (80)	7/8" (22.2)	7/8" (22.2)	⑭ × 21, ⑦⓪ × 2, ⑨① × 1
	Liquid side	6.30" (160)	3.15" (80)	5/8" (15.9)	5/8" (15.9)	⑨ × 1, ⑨① × 1, ⑨② × 1

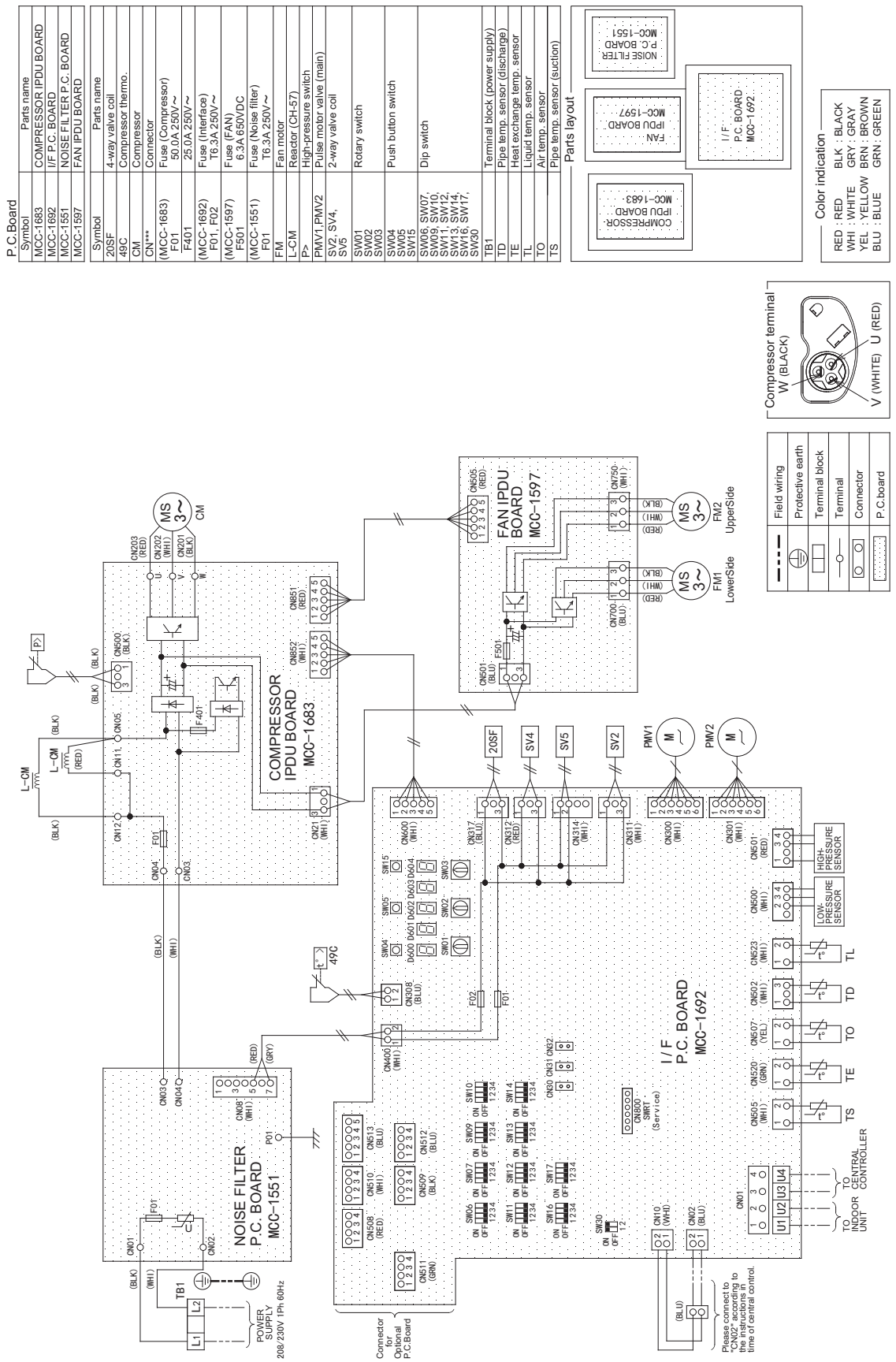
5-5. Refrigerant cycle diagram

Model : MCY-MAP0367HS-UL, MCY-MAP0487HS-UL, MCY-MAP0607HS-UL



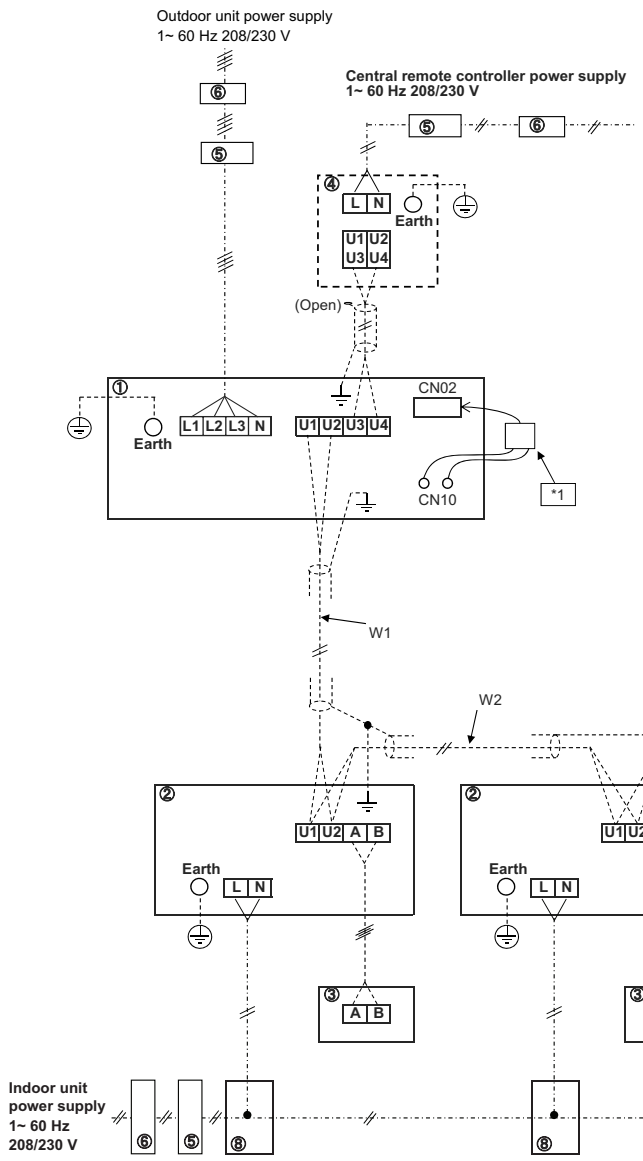
5-6. Wiring diagram

Model : MCY-MAP0367HS-UL, MCY-MAP0487HS-UL, MCY-MAP00607HS-UL



5-7. Connecting diagram

Model: MCY-MAP0367HS-UL, MCY-MAP0487HS-UL, MCY-MAP0607HS-UL



(1)	Outdoor unit
(2)	Indoor unit
(3)	Remote controller
(4)	Central remote controller (option)
(5)	Disconnect switch for NEC
(6)	Circuit breaker

W1	Control wiring between indoor and outdoor units.
W2	Control wiring between indoor units.

(Note)

1. When perform a central control, connect the wire of CN10 in CN02. (Factory default : No connection)
2. Connection of shield wire must be connected. (Connected to all connecting sections in each Indoor unit)
3. Group control
4. Power supply wiring to be per NEC and local codes.
5. For the control wires connecting indoor units, outdoor units, and between indoor and outdoor units, use 2-core and non-polarity shield wires.
6. As for details, see the wiring diagram of indoor/outdoor unit.

5-8. Applied control for Outdoor Unit

The outdoor fan high static pressure support function is made available by setting relevant switches provided on the interface P.C. board of the outdoor unit.

5-8-1. Outdoor Fan High Static Pressure Shift

Purpose/characteristics

This function is used when connecting a duct to the discharge port of an outdoor unit (as part of, for example, unit installation on the floor by floor installation.)

Setup

Turn ON the DIP switch [SW10, Bit 2] provided on the interface P.C. board of the outdoor unit.
This function must be enabled with every discharge duct connected outdoor unit for both of the header and follower units.

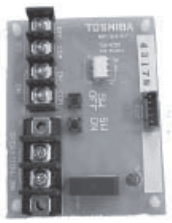
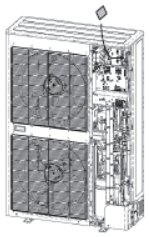
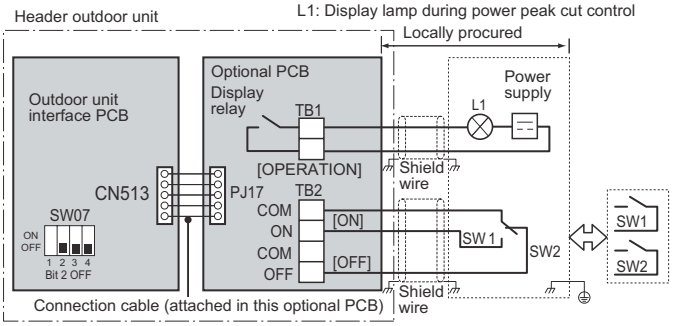
Specification

Increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 0.04inWG (1.0 mmAq) is to be used,enable this function. The maximum external static pressures of outdoor units are shown below (Table 1).

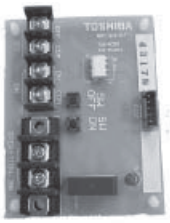
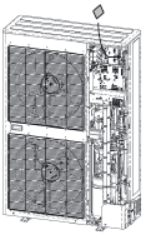
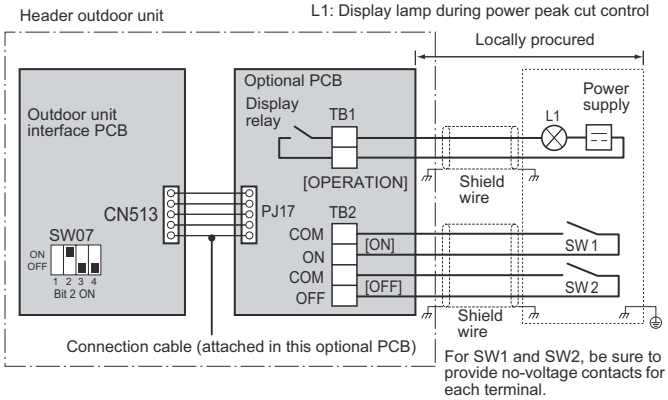
(Table 1.) Maximum external static pressures of outdoor units

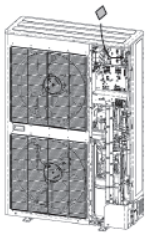
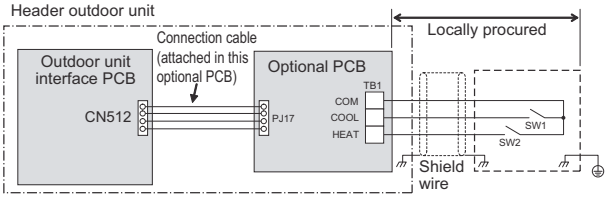
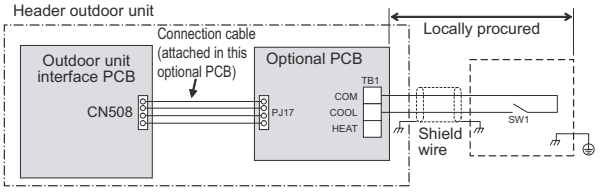
Model name	Maximum external static pressure (inWG)	Outdoor unit air flow (CFM)
MCY-MAP0367HS-UL	0.08	4520
MCY-MAP0487HS-UL	0.08	4690
MCY-MAP0607HS-UL	0.08	4850

5-9. Optional printed circuit board (PCB) of outdoor unit

Model name	Appearance	Function
TCB-PCDM4UL	 Size: 2.80 × 3.35 (in) Application  * Installation the optional PCB in the inveter-box of the outdoor unit.	Power peak-cut Control Standard Specifications (Wiring example)  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. <SW07 (bit 2) OFF [2-stage switching]>

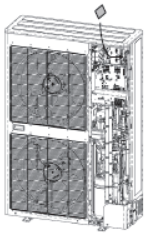
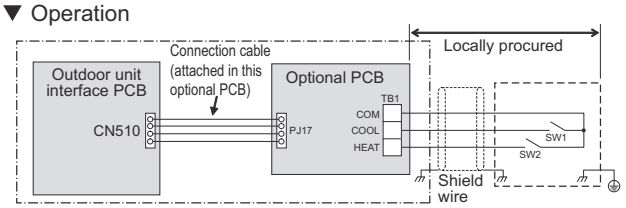
Input		SW07 (bit 1)		Display relay (L1)
SW1	SW2	Bit 1 OFF	Bit 1 ON	
OFF	ON	100% (normal operation)	100% (normal operation)	OFF
ON	OFF	0% (forced stop)	Approx. 60% (upper limit regulated)	ON

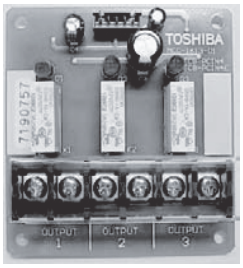
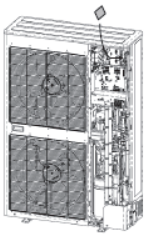
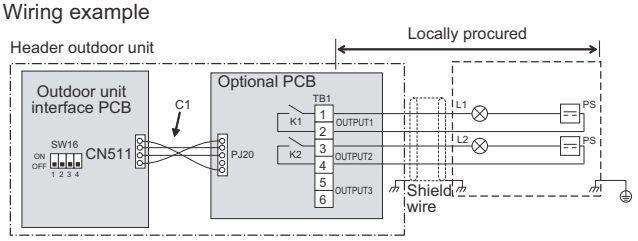
Model name	Appearance	Function
TCB-PCDM4UL	 Size: 2.80 × 3.35 (in) Application  * Install the optional PCB in the inverter assembly of the outdoor header unit.	Enhanced Specifications (Wiring example)  <SW07 (bit 2) ON [4-stage switching]> Input / SW07 (bit 1) / Display relay (L1) SW1 / SW2 / Bit 1 OFF / 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) / ON

Model name	Appearance	Function
TCB-PCMO4UL	 Size: 2.19 × 2.36 (in) Application  * Install the optional PCB in the inverter assembly of the outdoor header unit.	[1] External master ON/OFF control ▼ 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. ▼ Operation  SW1: Operation input switch SW2: Stop input switch Terminal / Input Signal / Operation: COOL (SW1) — ON / OFF — All indoor units operate together HEAT (SW2) — ON / OFF — All indoor units stop together 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 [2] Night time operation (sound reduction) control ▼ 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. ▼ Operation  SW1: Night time signal switch Terminal / Input Signal / Operation: COOL (SW1) — ON / OFF — Night time operation control COOL (SW1) — ON / OFF — Normal operation Each terminal should be connected to dry contact. ▼ Sound reduction and approximation capacity (reference)

Outdoor unit (base unit)	During low-noise mode dB(A)		Capacity		
	Cooling	Heating	Cooling	Heating	
Model 0367*	45	49	approx. 85%	approx. 90%	Relative to maximum capacity
Model 0487*	45	51	approx. 60%	approx. 80%	
Model 0607*	49	52	approx. 70%	approx. 70%	

* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (anechoic sound)

Model name	Appearance	Function
TCB-PCMO4UL	 Size: 2.19 × 2.36 (in) Application  * Install the optional PCB in the inverter assembly of the outdoor header unit.	[3] Operation mode selection control ▼ Function The heating/cooling mode of the system can be selected by connecting to the interface PCB of outdoor units. ▼ Operation  SW1: Cooling mode specified input switch SW2: Heating mode specified input switch Input Signal / Operation: Selected operation mode Cooling (SW1) / Heating (SW2) ON / OFF: Cooling operation only OFF / ON: Heating operation only OFF / OFF: Normal operation Each terminal should be connected to dry contact. **Indoor unit operation intervention function** 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. **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 "operation mode control" (turned on during remote controller operation)

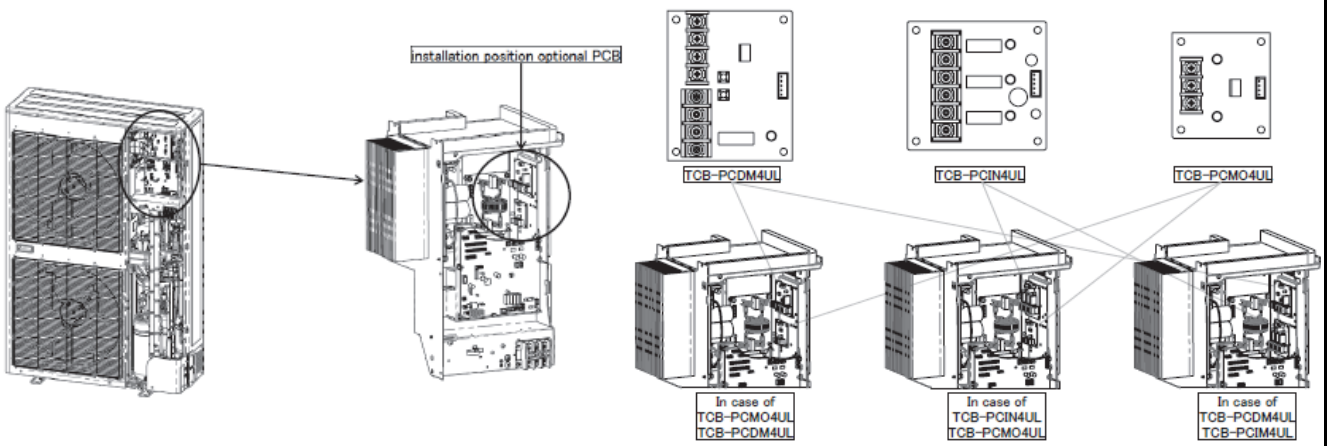
Model name	Appearance	Function
TCB-PCIN4UL	 Size: 2.87 × 3.11 (in) Application  * Install the optional PCB in the inverter assembly of the outdoor header unit.	[1] Error / Operation Output ▼ Function The operation error output PCB can indicate operation and error states by connecting to the interface PCB of outdoor units. ▼ 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. Wiring example 

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

* [OUTPUT3] is displayed when power is turned on.

[PCB Installation Position]

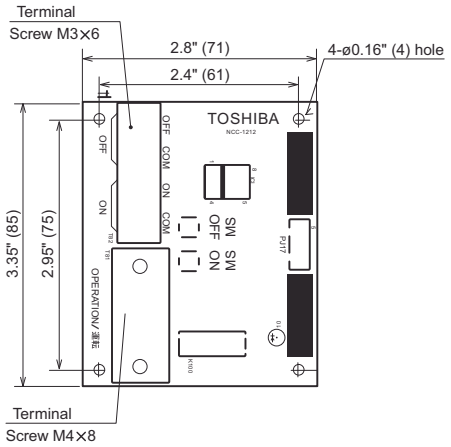
There are holes on the inverter-box.
Three kinds of the optional PCBs are able to install in it.



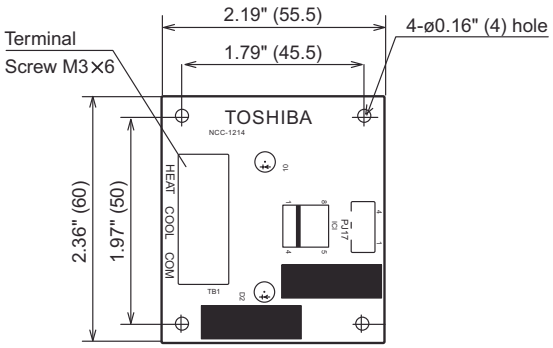
Dimensions of P.C. board

Unit: in (mm)

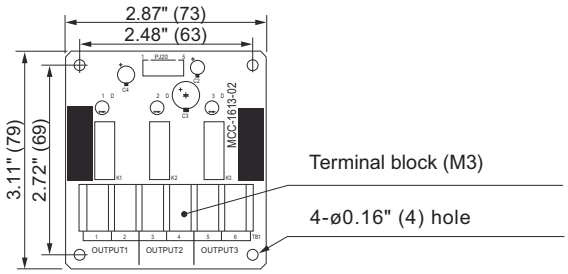
TCB-PCDM4UL



TCB-PCMO4UL

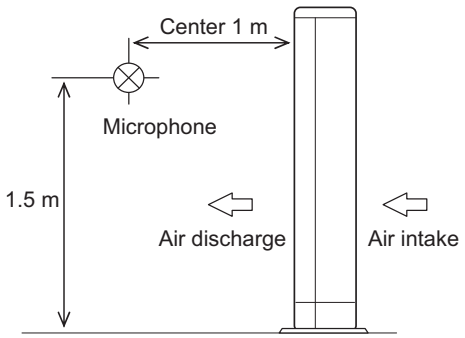


TCB-PCIN4UL



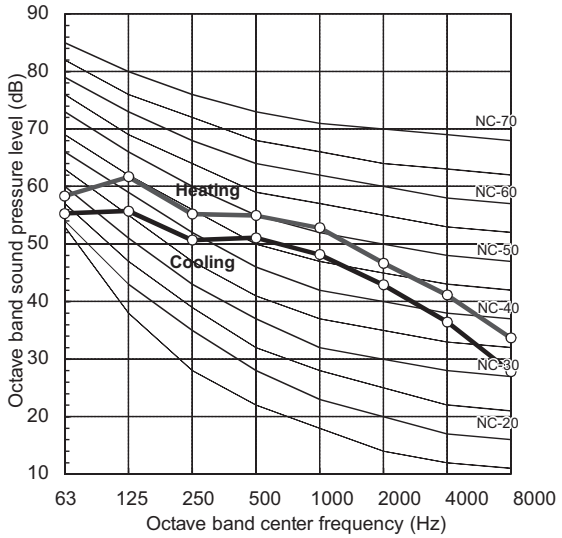
5-10. Sound pressure level data

[Measuring location]



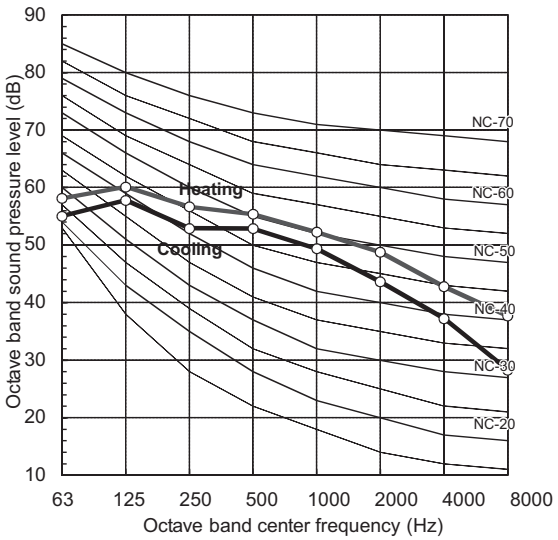
MCY-MAP0367HS-UL

Sound pressure level (dB(A))	Cooling	Heating
	52.0	55.0



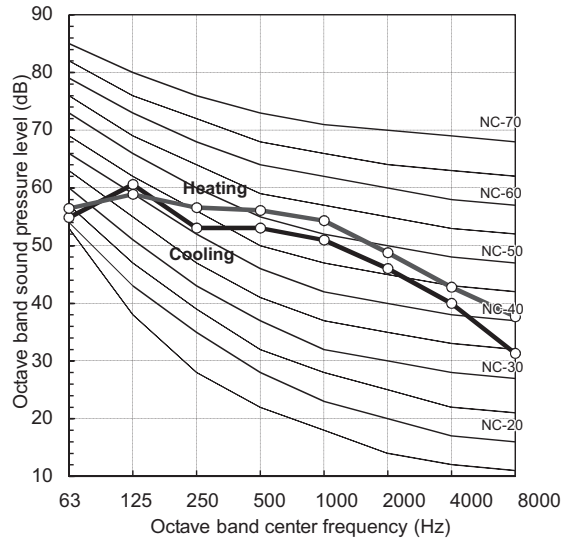
MCY-MAP0487HS-UL

Sound pressure level (dB(A))	Cooling	Heating
	54.0	57.0



MCY-MAP0607HS-UL

Sound pressure level (dB(A))	Cooling	Heating
	55.0	58.0



Engineering Data Book

Model name:

MCY-MAP___7HS-UL

December, 2016 Full version