

Heat Pump

Model name:

MCY-MAP_7HS-UL

Engineering Data Book



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- 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">WARNING</td> </tr> <tr> <td colspan="2">ELECTRICAL SHOCK HAZARD</td> </tr> <tr> <td colspan="2">Disconnect all remote electric power supplies</td> </tr> </table>	WARNING		ELECTRICAL SHOCK HAZARD		Disconnect all remote electric power supplies		WARNING ELECTRICAL SHOCK HAZARD Disconnect all remote electric power supplies before servicing.
WARNING							
ELECTRICAL SHOCK HAZARD							
Disconnect all remote electric power supplies							
 <table border="1"> <tr> <td colspan="2">WARNING</td> </tr> <tr> <td colspan="2">Moving parts.</td> </tr> <tr> <td colspan="2">Do not operate unit with grille removed.</td> </tr> </table>	WARNING		Moving parts.		Do not operate unit with grille removed.		WARNING Moving parts. Do not operate unit with grille removed. Stop the unit before servicing.
WARNING							
Moving parts.							
Do not operate unit with grille removed.							
 <table border="1"> <tr> <td colspan="2">CAUTION</td> </tr> <tr> <td colspan="2">High temperature parts.</td> </tr> <tr> <td colspan="2">You might get burned when removing this panel.</td> </tr> </table>	CAUTION		High temperature parts.		You might get burned when removing this panel.		CAUTION High temperature parts. You might get burned when removing this panel.
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CAUTION							
BURST HAZARD							
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 <table border="1"> <tr> <td colspan="2">CAUTION</td> </tr> <tr> <td colspan="2">Do not climb onto the fan guard.</td> </tr> <tr> <td colspan="2">Doing so may result injury</td> </tr> </table>	CAUTION		Do not climb onto the fan guard.		Doing so may result injury		CAUTION Do not climb onto the fan guard. Doing so may result in injury.
CAUTION							
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Doing so may result injury							



■ **Explanation of indications**

 **WARNING**

Improper handling 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.

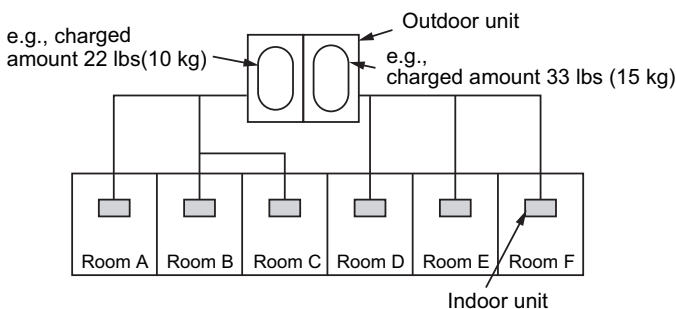
$$\frac{\text{Total amount of refrigerant (lbs (kg))}}{\text{Min. volume of the indoor unit installed room ft}^3 \text{ (m}^3\text{)}} \leq \text{Concentration limit (lbs/ft}^3 \text{ (kg/m}^3\text{))}$$

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).

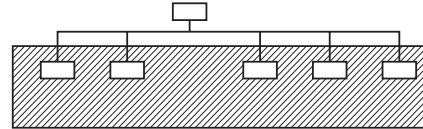
The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15 kg).

Important

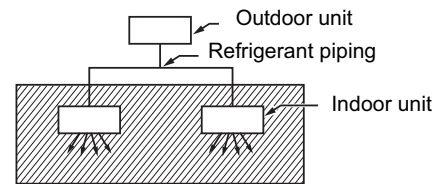
NOTE 2:

The standards for minimum room volume are as follows.

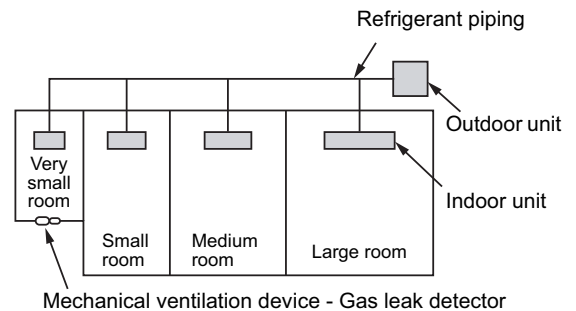
- (1) No partition (shaded portion)



- (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).

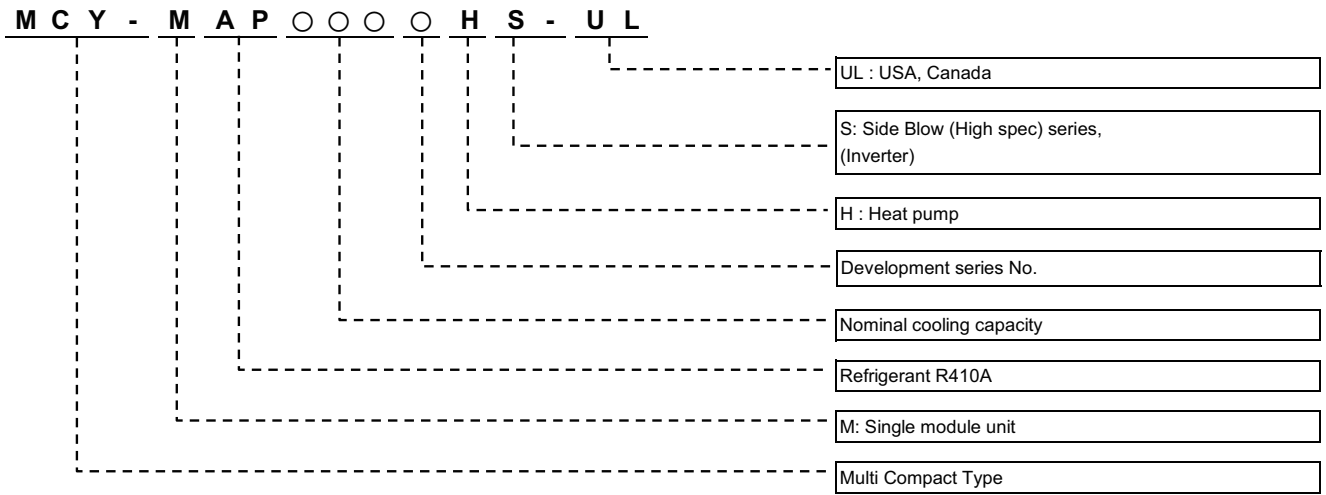


- (3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room becomes the object. However when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume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


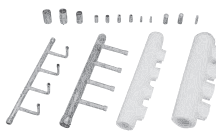
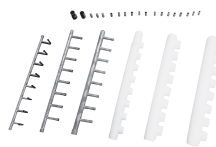


1-2-2. Indoor unit

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
Compact 4-Way Cassette		*MMU-AP0072H2UL-1	007 type	7.5	7.5	8.5
		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
Ceiling		MMU-AP0181MH2UL	018 type	18	18	20
		MMC-AP0181H2UL	018 type	18	18	20
		MMC-AP0241H2UL	024 type	24	24	27
		MMC-AP0361H2UL	036 type	36	36	40
High Wall		MMC-AP0421H2UL	042 type	42	42	47.5
		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
Slim Ducted		MMK-AP0183H2UL	018 type	18	18	20
		MMK-AP0243H2UL	024 type	24	24	27
		MMD-AP0074SPH2UL	007 type	7.5	7.5	8.5
		MMD-AP0094SPH2UL	009 type	9.5	9.5	10.5
Medium Static Duct		MMD-AP0124SPH2UL	012 type	12	12	13.5
		MMD-AP0154SPH2UL	015 type	15.4	15.4	17
		MMD-AP0184SPH2UL	018 type	18	18	20
		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
High Static Duct		MMD-AP0304BH2UL-1	030 type	30	30	34
		MMD-AP0364BH2UL-1	036 type	36	36	40
		MMD-AP0484BH2UL-1	048 type	48	48	54
Floor console exposed		MMD-AP0304H2UL	030 type	30	30	34
		MMD-AP0364H2UL	036 type	36	36	40
		MMD-AP0484H2UL	048 type	48	48	54
		MML-AP0074H2UL	007 type	7.5	7.5	8.5
		MML-AP0094H2UL	009 type	9.5	9.5	10.5
Floor console recessed		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
		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

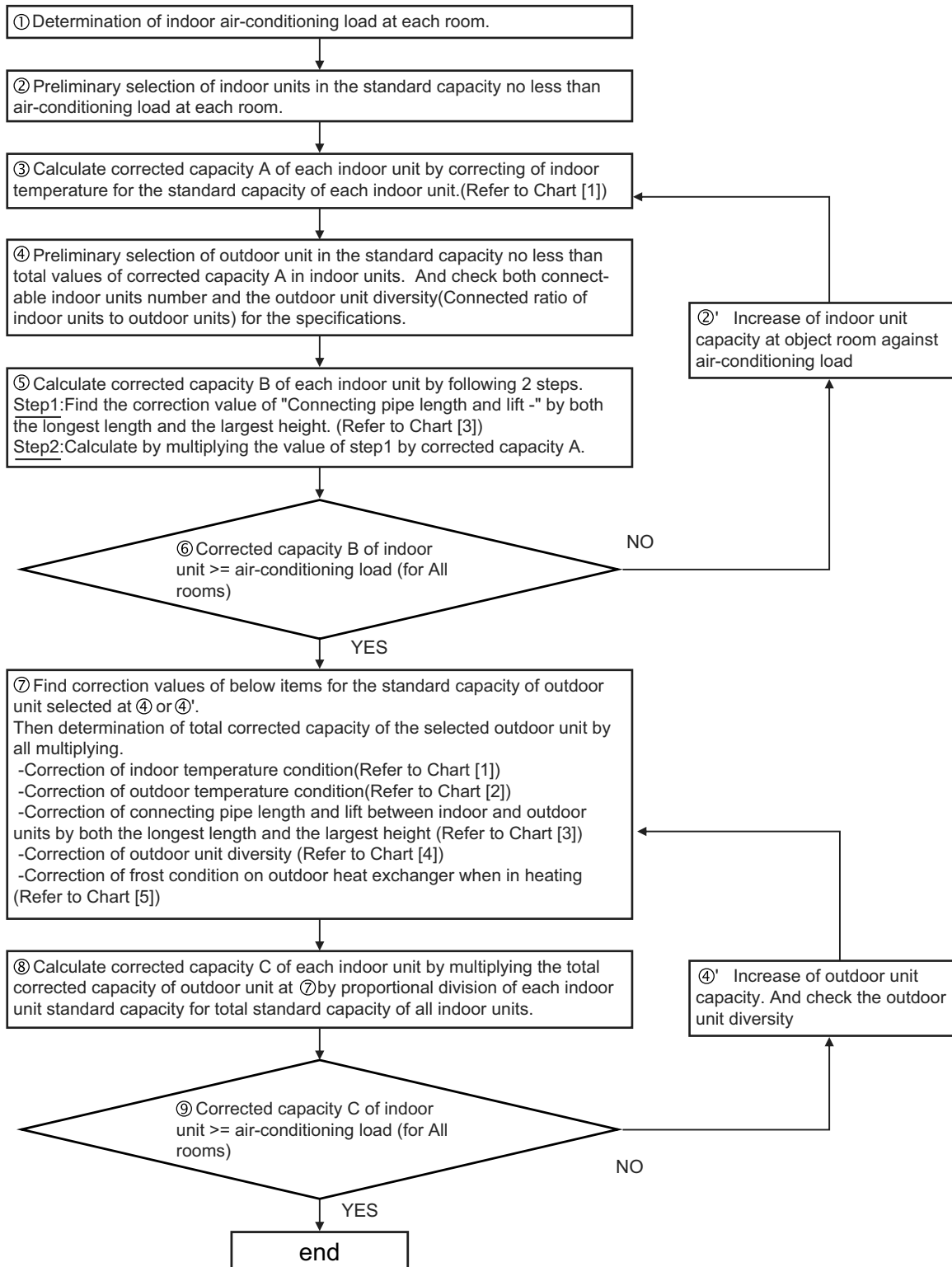
1-2-6. Controls

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.

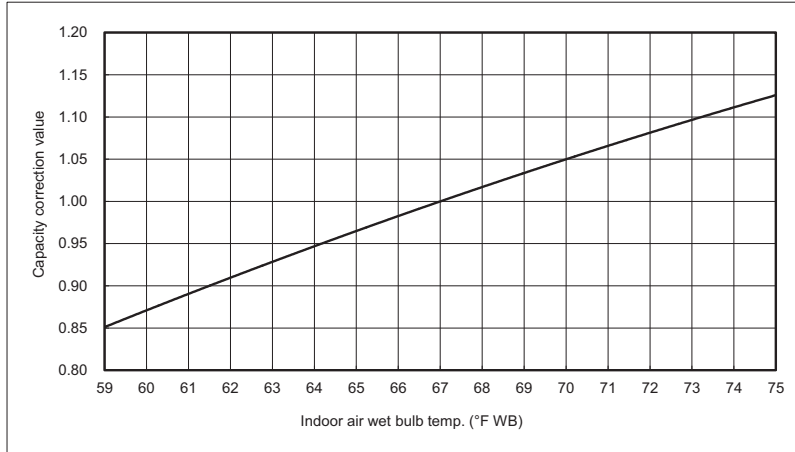
Outdoor unit	Capacity code of outdoor unit	No. of connectable indoor units	Total capacity code of indoor units
MCY-MAP0367HS-UL	36	2 to 6	18 to 48
MCY-MAP0487HS-UL	48	2 to 8	24 to 64
MCY-MAP0607HS-UL	60	2 to 9	30 to 81



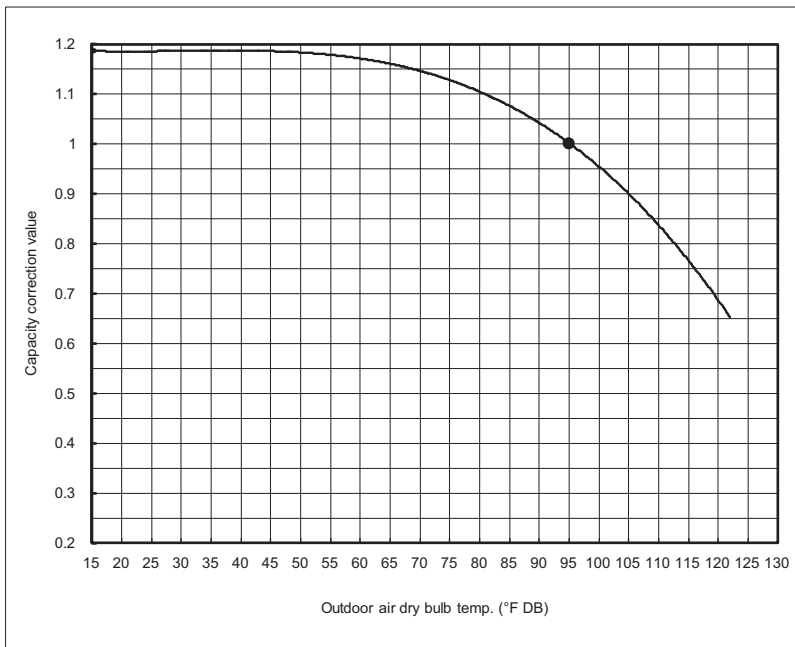
2-3. Cooling/heating capacity characteristics

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

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

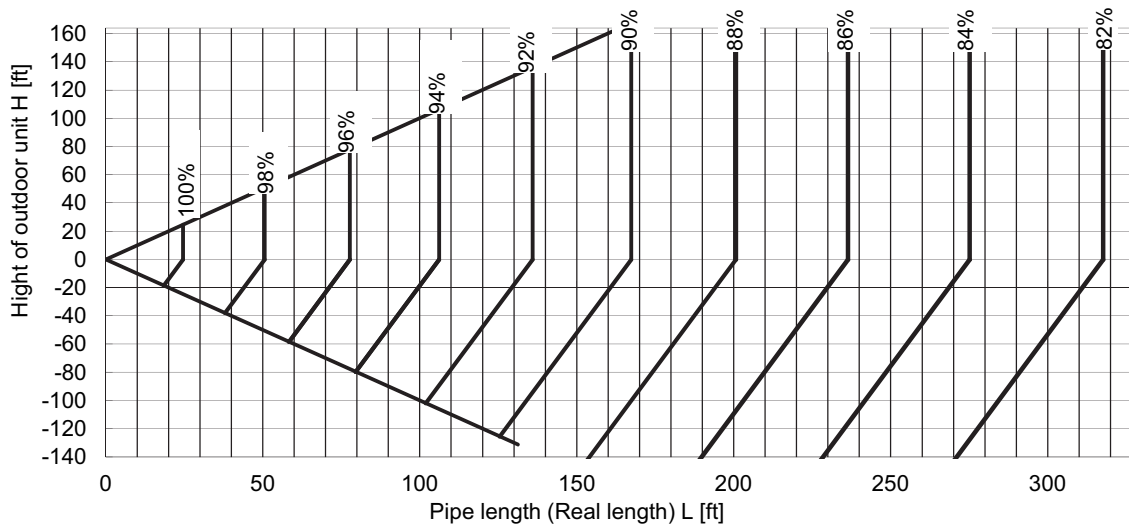
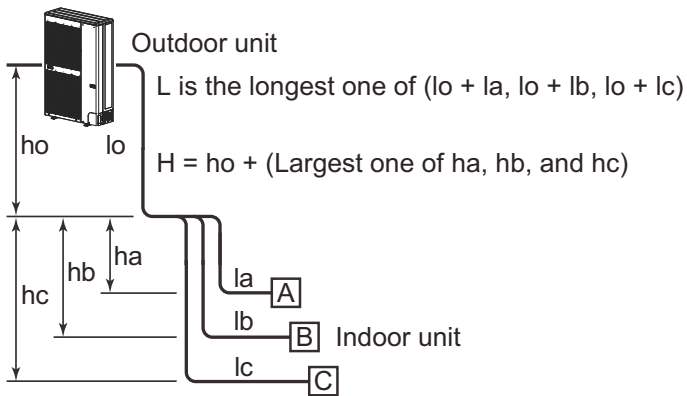


[Chart 2] Outdoor air dry bulb temperature vs. capacity correction value



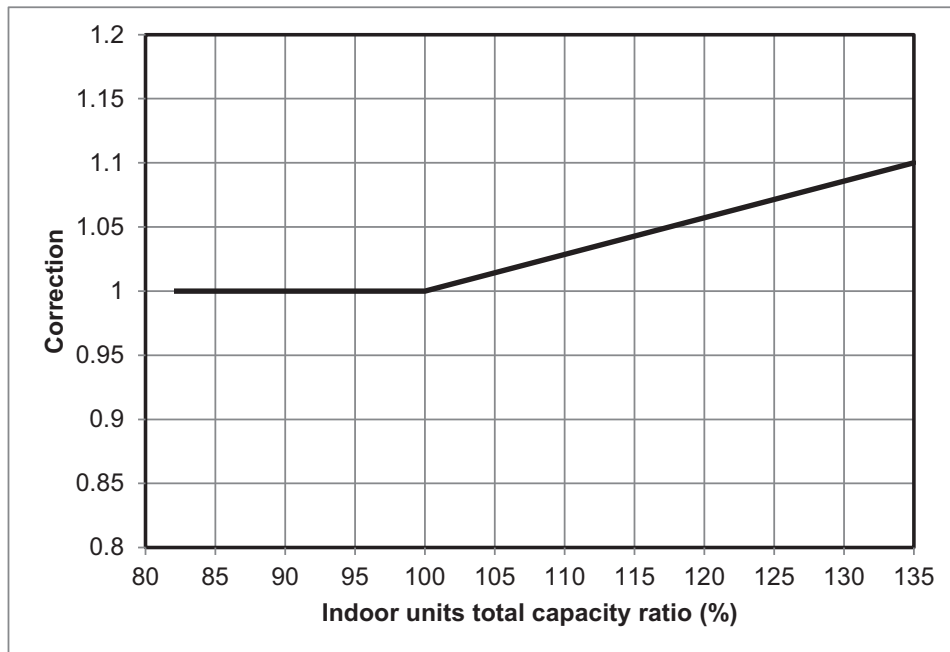


[Chart 3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value





[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.



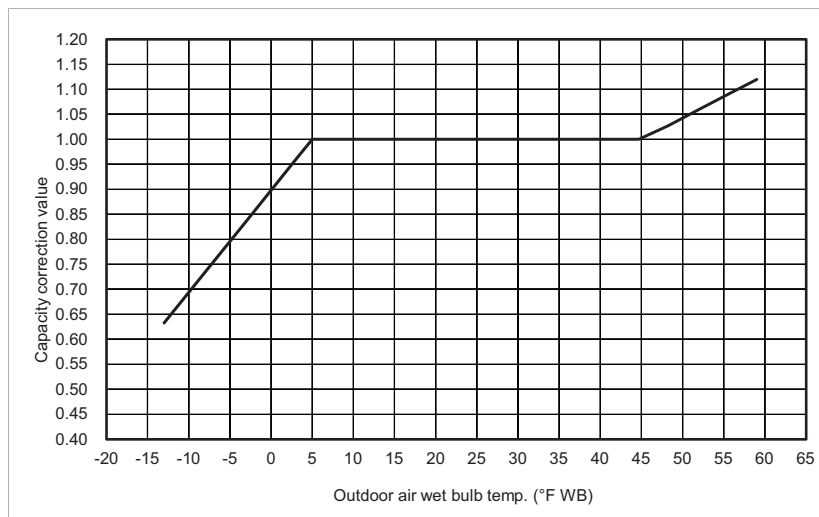
2-3-2. Correction charts for heating capacity calculation

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

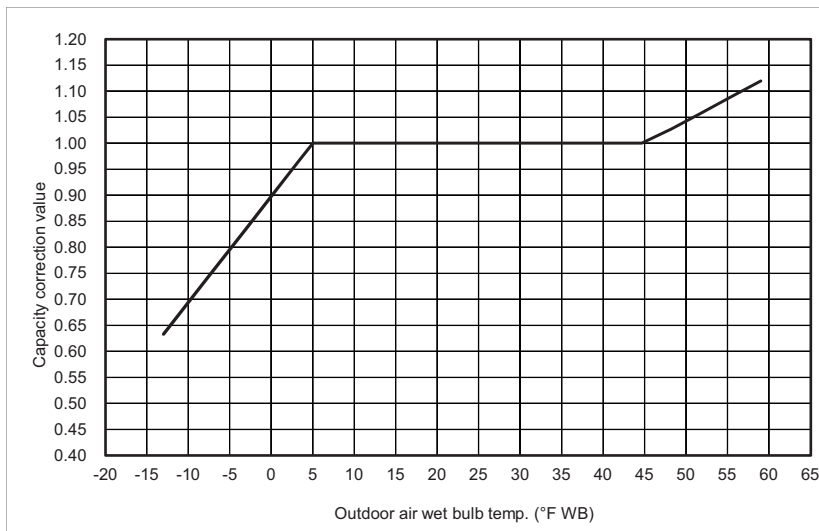


[Chart 2] Outdoor air wet bulb temperature vs. capacity correction value

MCY-MAP0367HS-UL

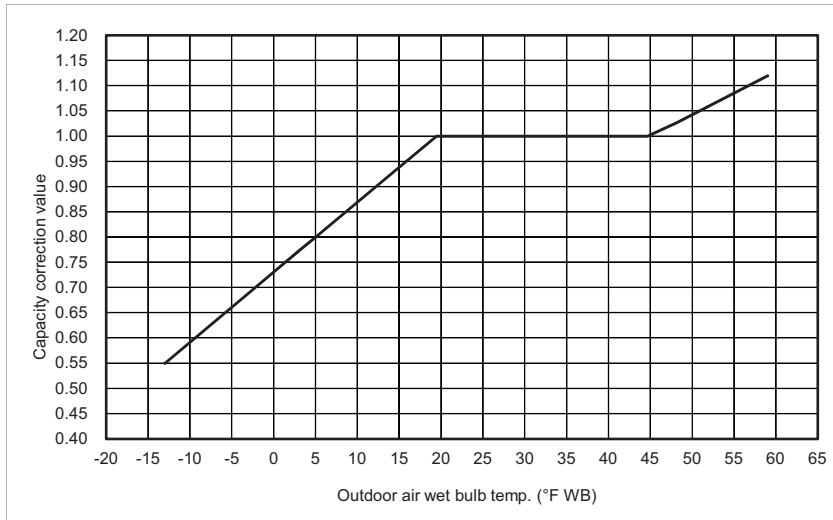


MCY-MAP0487HS-UL

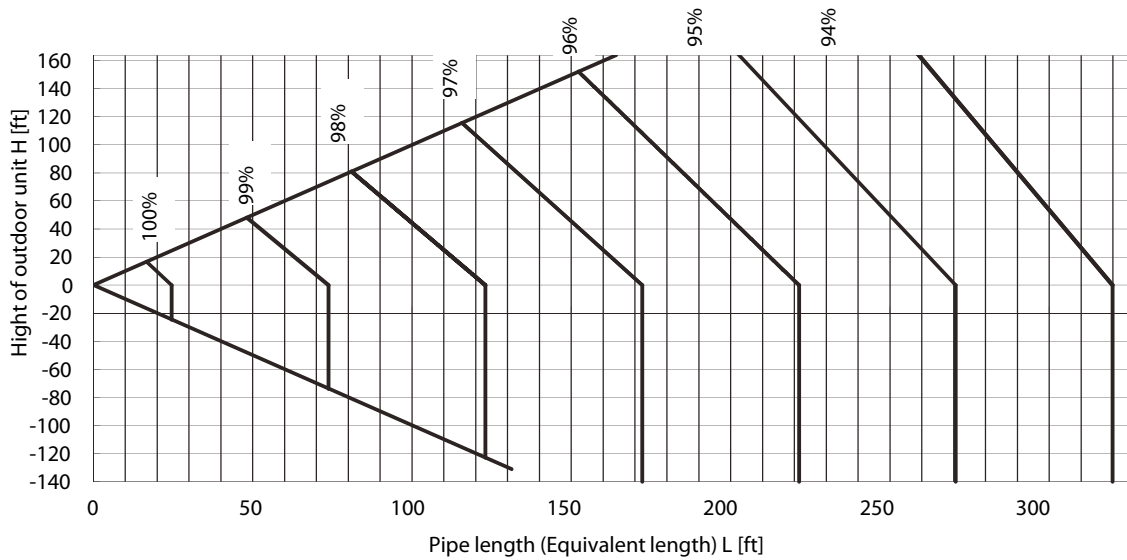
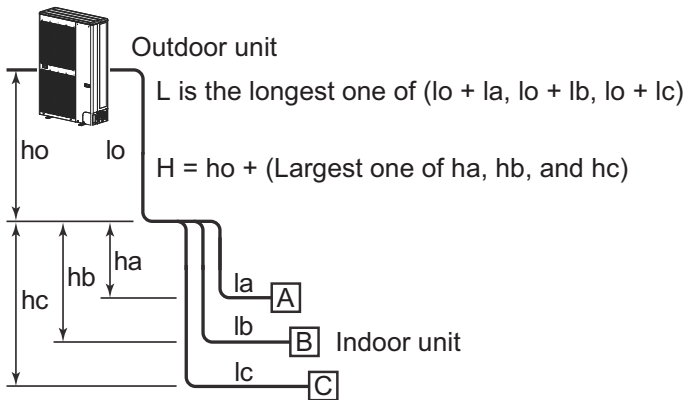




MCY-MAP0607HS-UL

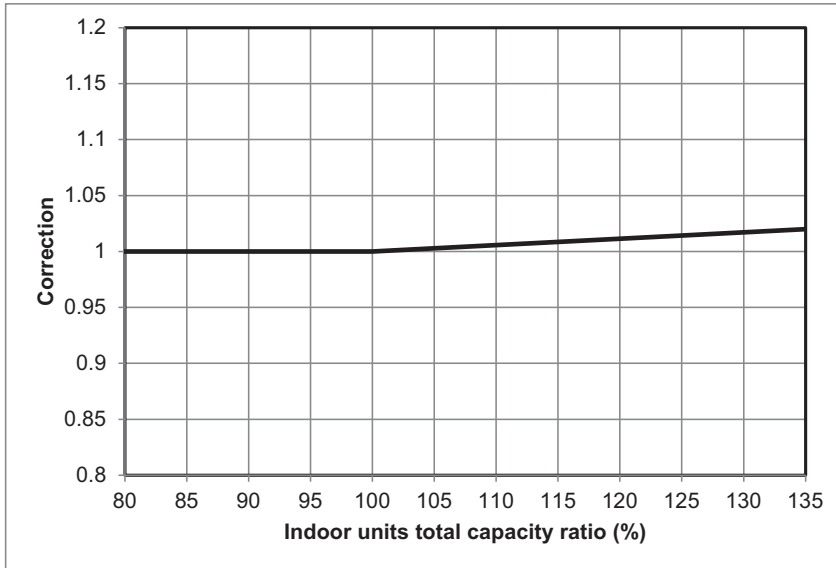


[Chart 3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value





[Chart 4]* Correction of outdoor unit diversity



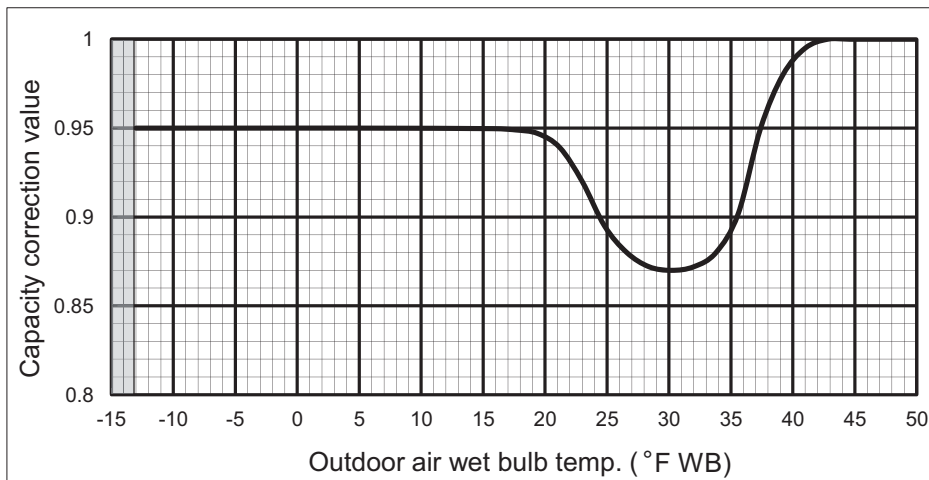
* Coefficient to use for correction of outdoor unit capacity when total capacity of the indoor units are not equal to the outdoor unit capacity.

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

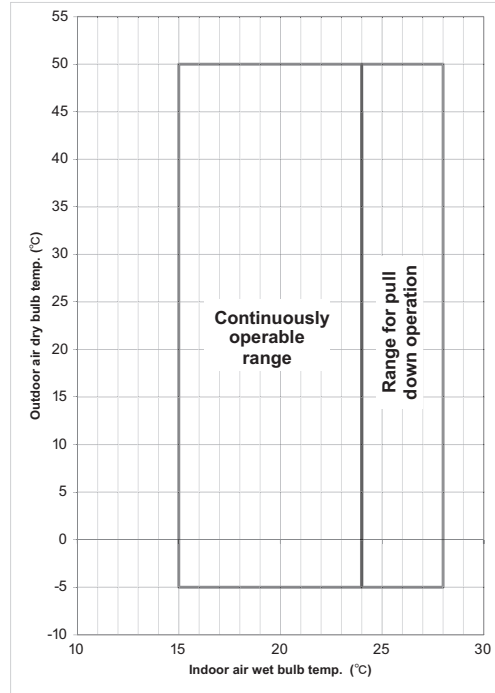
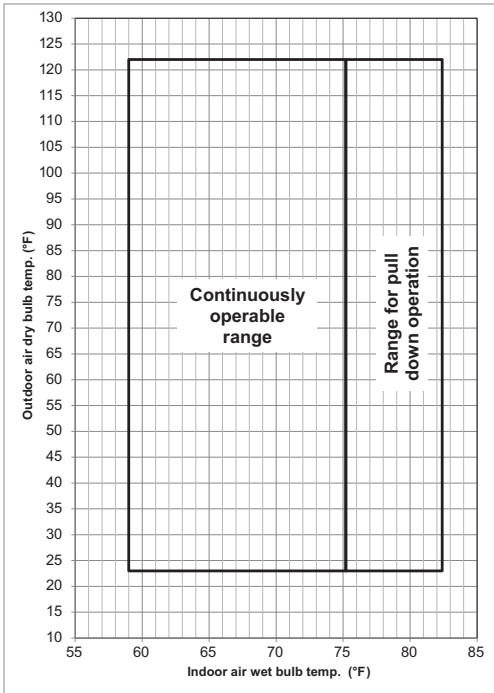
Cooling: Indoor air temperature 80 °F DryBulb/67 °F WetBulb, Outdoor air temperature 95 °F DryBulb

Heating: Indoor air temperature 70 °F DryBulb, Outdoor air temperature 47 °F DryBulb/43 °F WetBulb

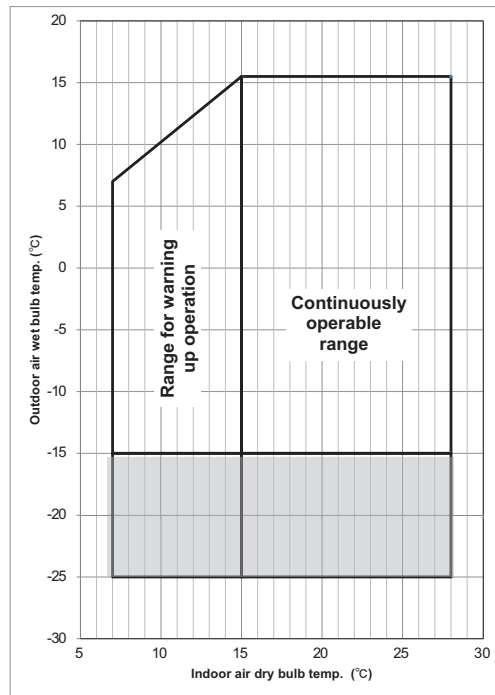
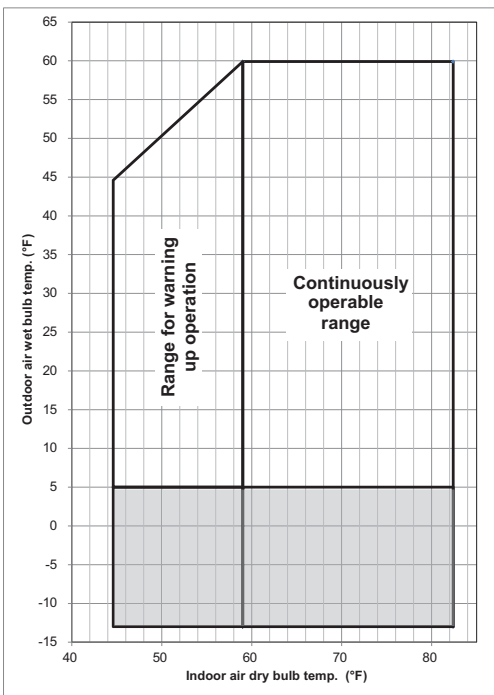


2-4. Operational temperature range

Cooling



Heating



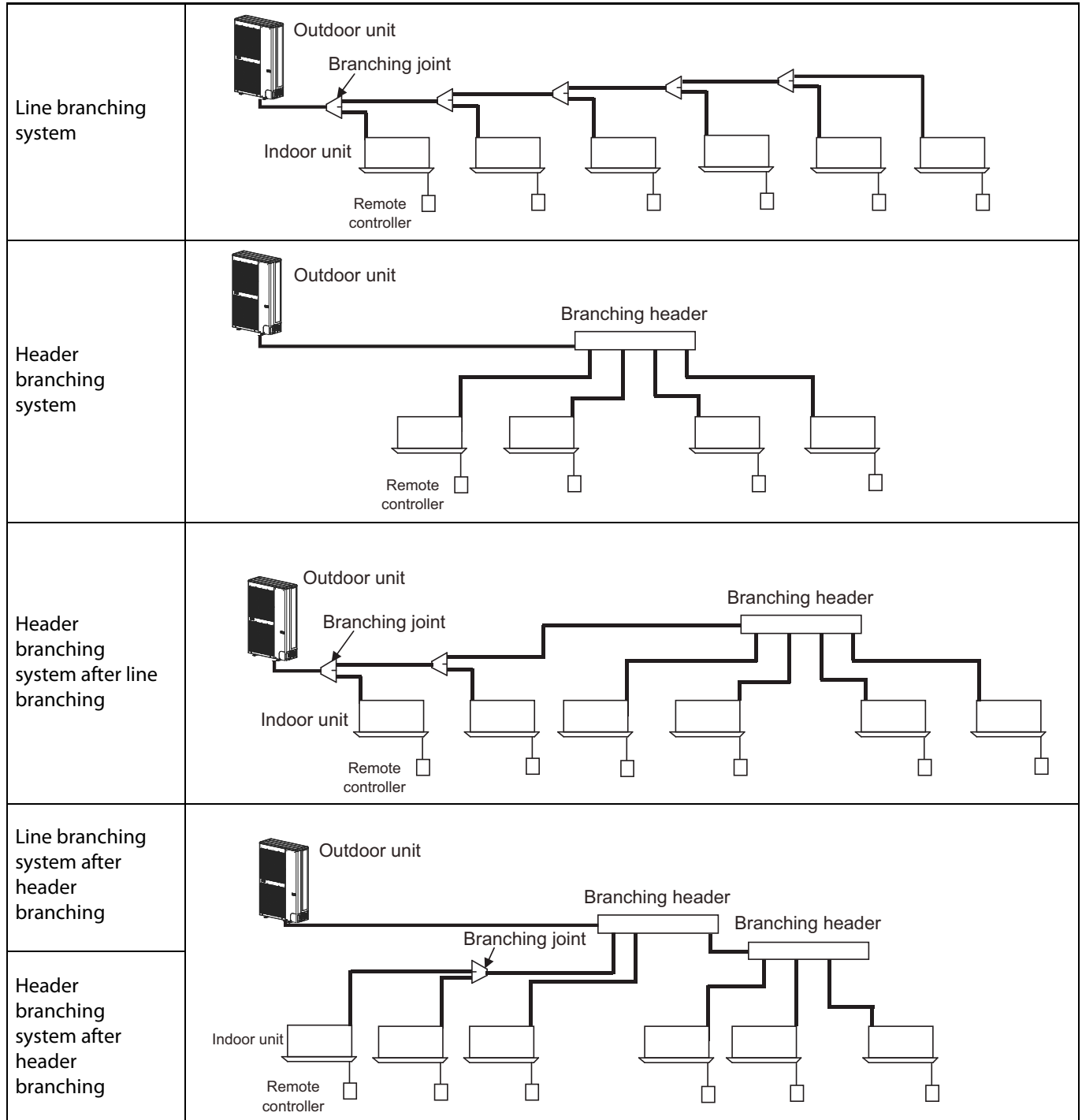
The unit will operate down to an outdoor temperature of -13°F, however considerable performance decrease will be expected below 5°F. Therefore please consider installation location/surroundings and system design when expected to operate between 5 °F and -13°F.



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

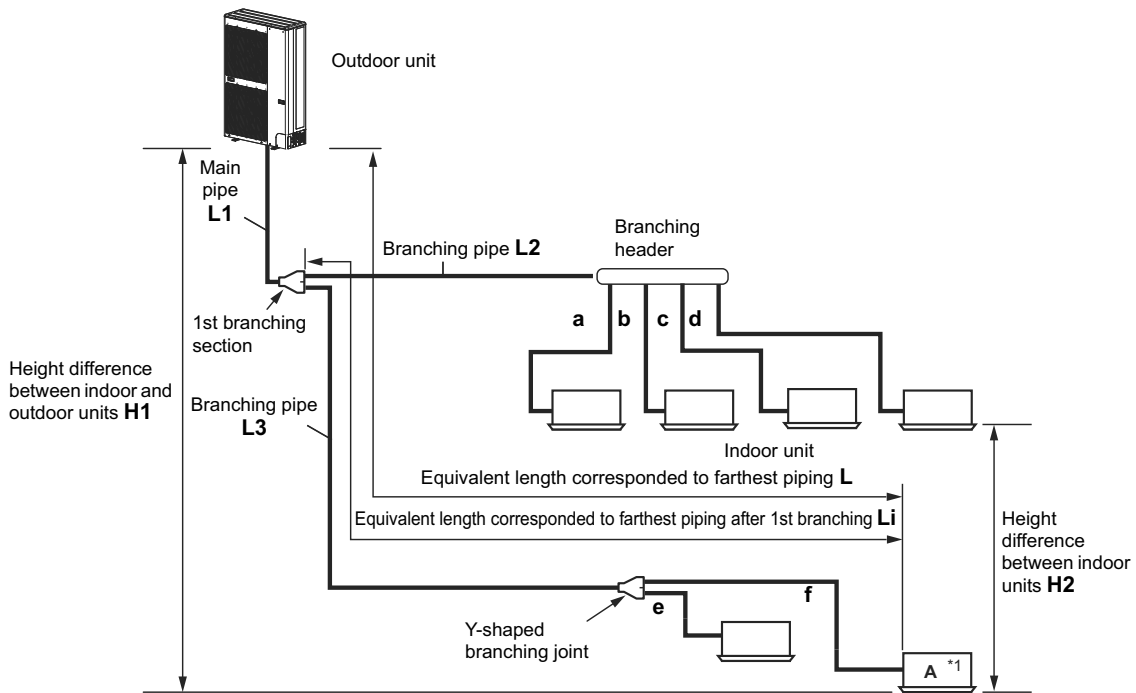
The above five branching systems enable to dramatically increase the flexibility of refrigerant piping design.





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

■ Allowable length / height difference of refrigerant piping



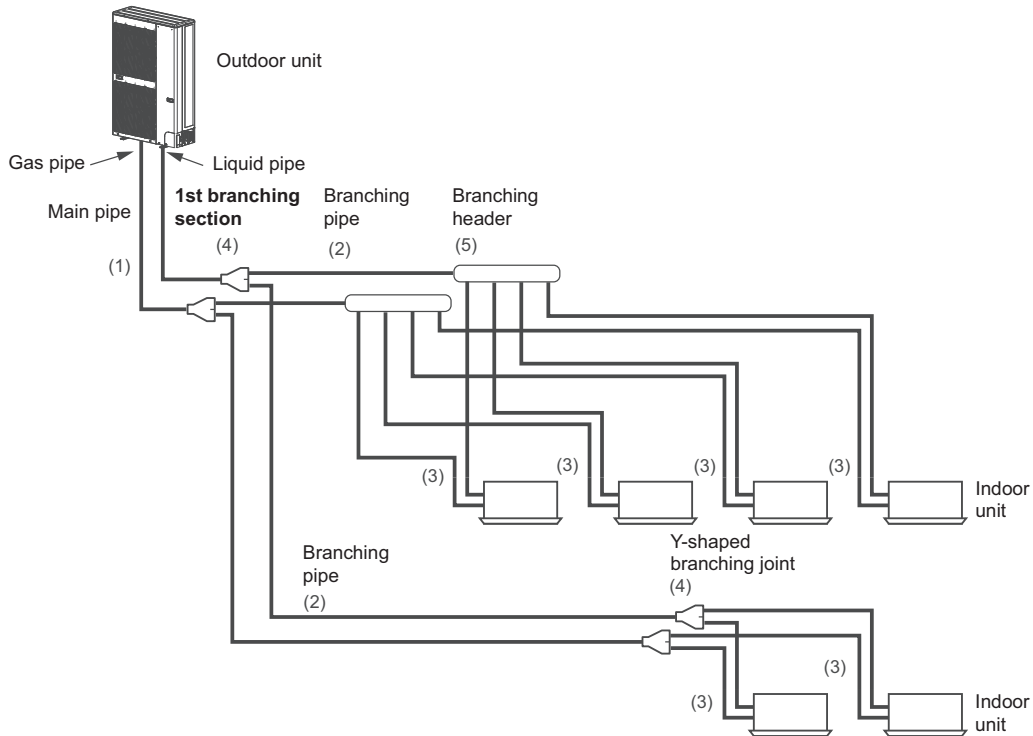
		Allowable value (ft (m))	Pipes
Piping Length	Total extension of pipe (liquid pipe, real length)	591 (180)	$L1 + L2 + L3 + a + b + c + d + e + f$
	Furthest piping length $L (*1)$	Real length	328 (100)
		Equivalent length	410 (125)
	Max. equivalent length of main pipe	213 (65)	$L1$
	Max. equivalent length of furthest piping from 1st branching $L_i (*1)$	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			Same as connecting pipe size of the outdoor unit.
			Outdoor unit capacity type	Gas pipe	Liquid pipe	
			0367 type	Ø5/8"	Ø3/8"	
			0487 type	Ø5/8"	Ø3/8"	
(2)	Branching section ↓ Branching section	Branching pipe	Pipe size between branching sections			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.)
			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"				



(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)		
			Y-shape branch joint		Model name RBM-BY55UL
(5)	Branching section	Branching header	Selection of branching section (Branching header)		
			Branching header*		Model name
			For 4 branches		RBM-HY1043UL
			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)

$$\text{Additional refrigerant charge amount at local site} = \text{Real length of liquid pipe} \times \text{Additional refrigerant charge amount per 1 ft liquid pipe (Table 1)} \times 1.2 + \text{Compensation by outdoor HP (Table 2)}$$

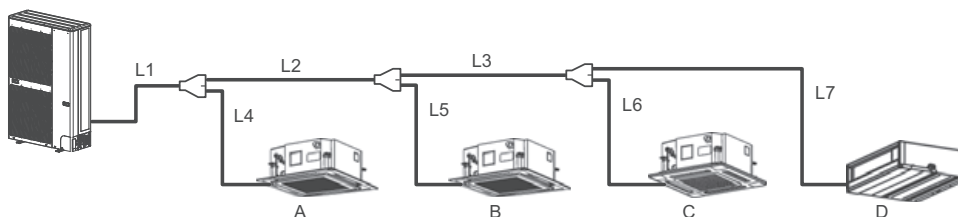
Table 1

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)

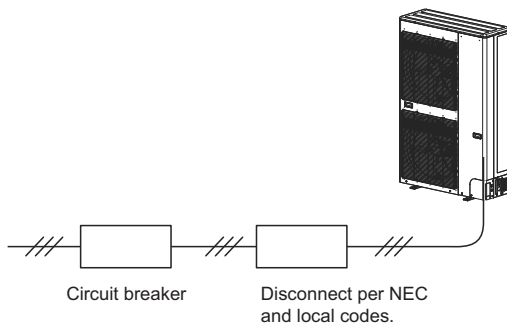
$$\begin{aligned} &= \{ (Lx \times 0.017 \text{ lbs/ft}) + (Ly \times 0.038 \text{ lbs/ft}) \} \times 1.2 + (1.76 \text{ lbs}) \\ &= \{ (39.3 \times 0.017 \text{ lbs}) + (91.8 \times 0.038 \text{ lbs}) \} \times 1.2 + (1.76 \text{ lbs}) \\ &= 6.75 \text{ lbs} \end{aligned}$$



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

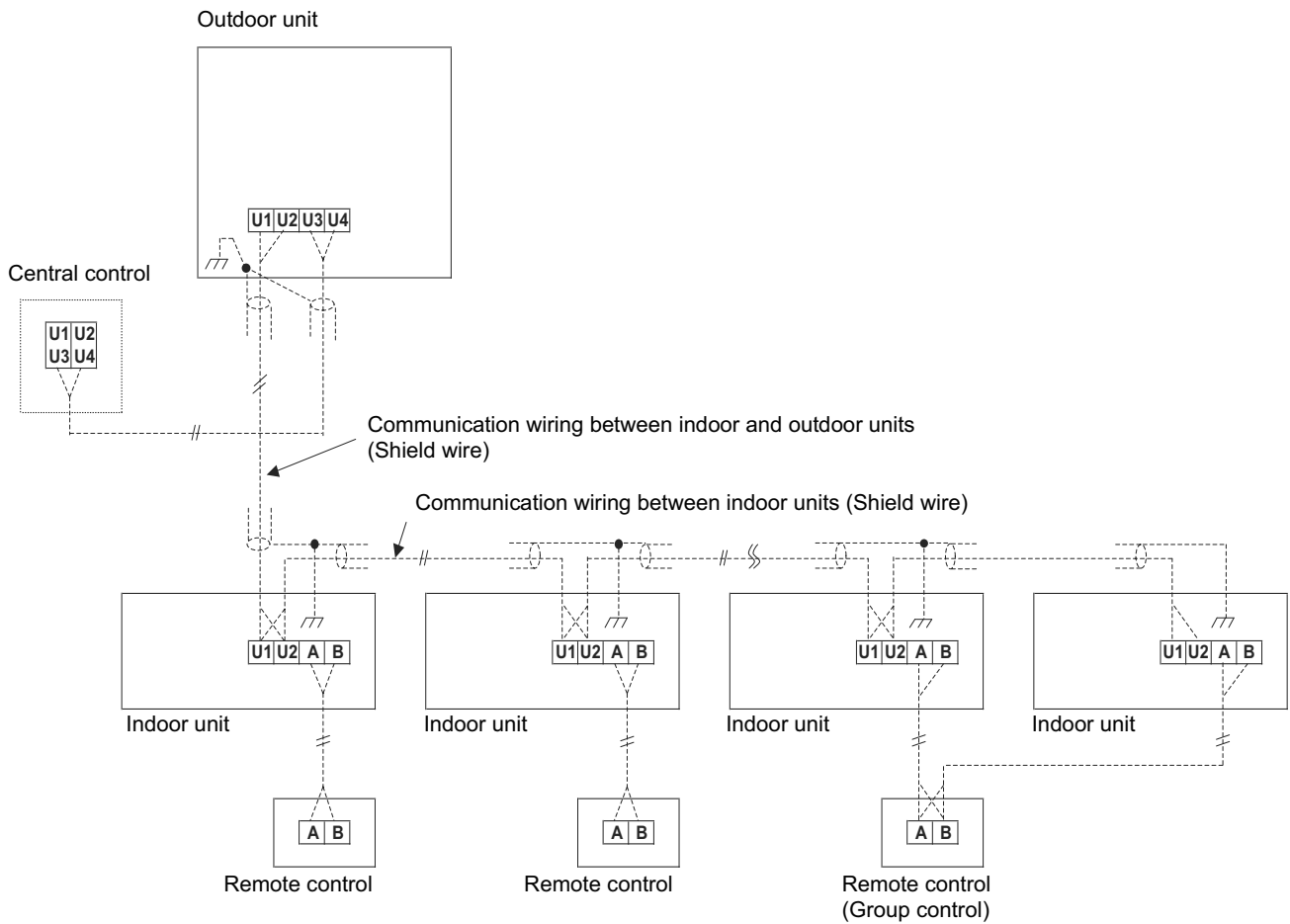
Type	Model name	Nominal Voltage (V-Ph-Hz)	Voltage Range (V)		FLA A	MCA A	MOCP A
			Min	Max			
4-way Cassette	MMU-AP0072H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0092H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0122H2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0152H2UL	208/230-1-60	187	253	0.6	0.8	15
	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
Compact 4-way Cassette	MMU-AP0071MH2UL	208/230-1-60	187	253	0.6	0.8	15
	MMU-AP0071MH2UL-1	208/230-1-60	187	253	0.6	0.8	15
	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
Under Ceiling	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
	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
High Wall	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
	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
Slim Duct	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
	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
Medium Static Duct	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
	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
High Static Duct	MMD-AP0304BH2UL-1	208/230-1-60	187	253	1.4	1.8	15
	MMD-AP0304BH2UL	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
Floor console exposed	MMD-AP0484BH2UL-1	208/230-1-60	187	253	2.2	2.8	15
	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
	MML-AP0074H2UL	208/230-1-60	187	253	0.3	0.4	15
Floor console recessed	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
MOCP: Maximum Overcurrent Protection (Amps)

FLA: Full Load Amps @208V

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.

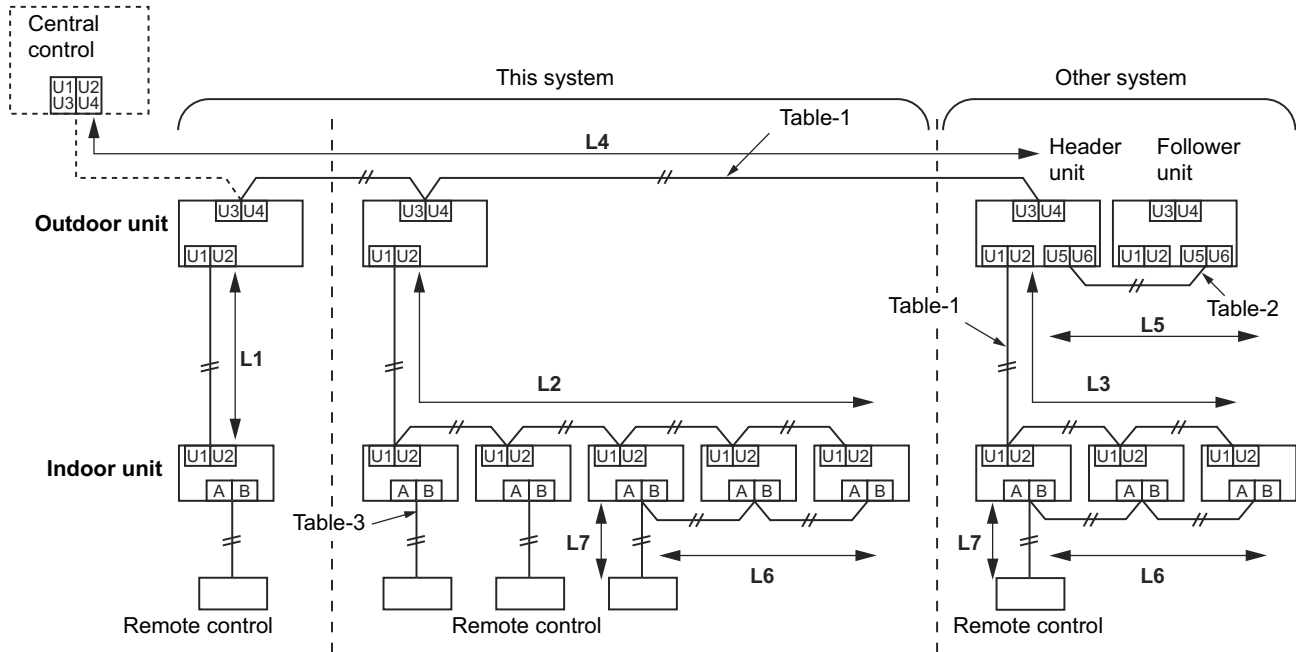


Table-1 Control wiring between indoor and outdoor units (L1, L2, L3), Central control wiring (L4)

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)

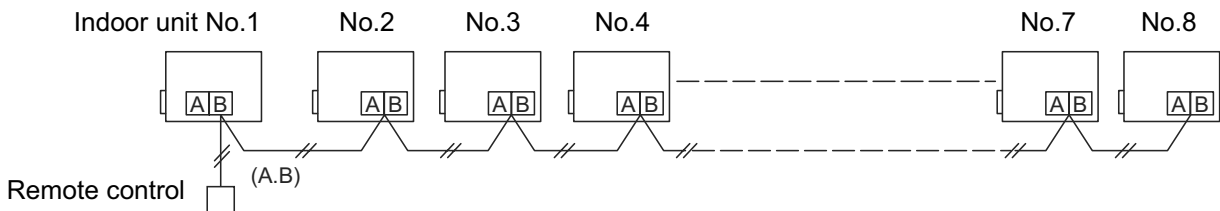
Wiring	2-core, non-polarity
Type	Shield wire
Size / Length	AWG16 to AWG14 / Up to 330 ft (100 m) (L5)

Table-3 Remote control wiring (L6, L7)

Wiring	2-core
Size	AWG20 to AWG14
Length	<ul style="list-style-type: none"> Up to 1640 ft (500 m) (L6 + L7) Up to 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				3	4	5	
Cooling Capacity (*1)				Btu/h	36,000	48,000	
Heating Capacity (*1)				Btu/h	40,000	54,000	
Electrical characteristics (Nominal) (*1)	Non-ducted	Power supply		(*2)	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V	Single phase 60Hz 208/230V
		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	
				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
				Heating	dB(A)	56	57
Operation temperature range				Cooling	FDB	23 to 122	23 to 122
				Heating	FWB	-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**

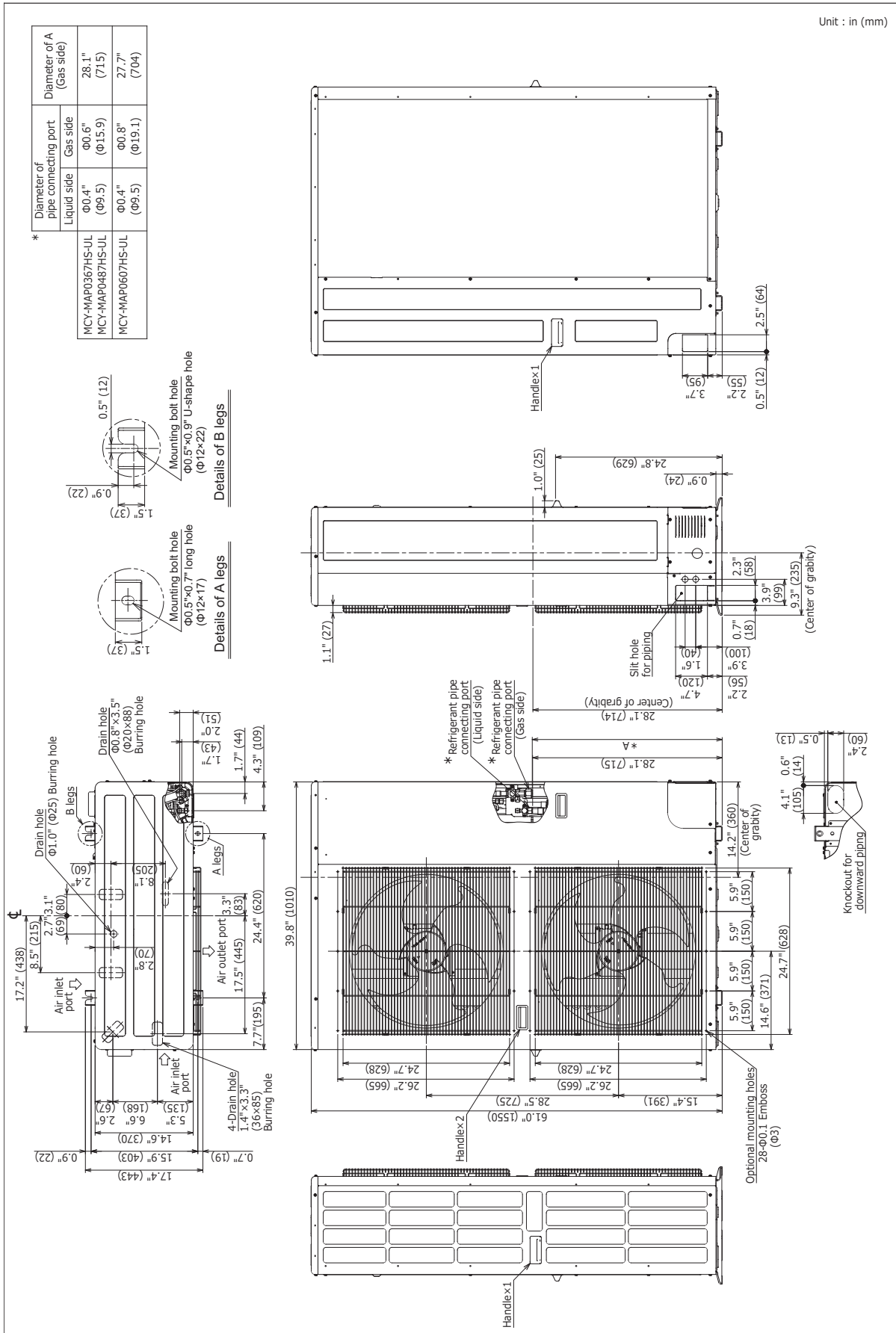
Outdoor unit model name				MCY-MAP0367HS-UL	MCY-MAP0487HS-UL	MCY-MAP0607HS-UL	
Outdoor unit type				Inverter	Inverter	Inverter	
Capacity code			ton	3	4	5	
Cooling Capacity			(*1) Btu/h	36,000	48,000	60,000	
Heating Capacity			(*1) Btu/h	40,000	54,000	66,000	
Electrical characteristics (Nominal) (*1)	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 (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	
			Heating	dB(A)	56	57	
Operation temperature range			Cooling	FDB	23 to 122	23 to 122	
			Heating	FWB	-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.
- (*2) The standard pipe means that equivalent piping length of 25ft and standard 0ft piping height difference .
- (*3) The source voltage must not fluctuate more than ±10%
- (*4) 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
- (*5) Select wire size base on the larger value of MCA.
MOCP:Maximum overcurrent protection (Amps)



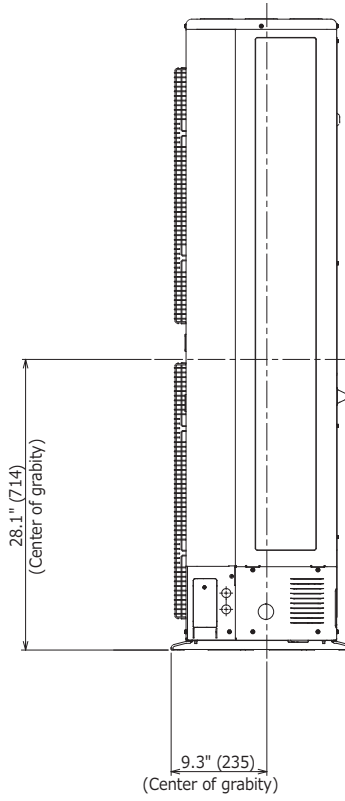
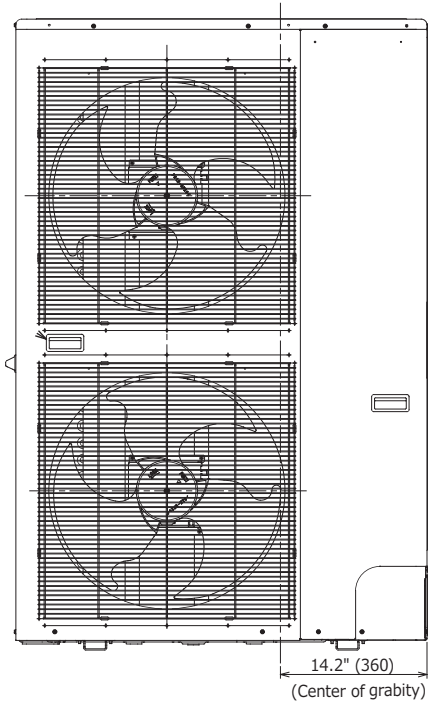
5-2. Dimensional drawing

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





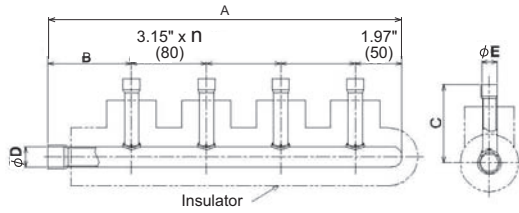
5-3. Center of gravity



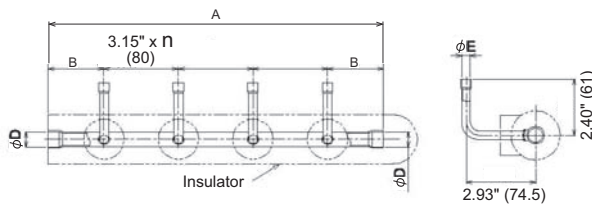
5-4. Branch header / Branch joint

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

Gas side



Liquid side

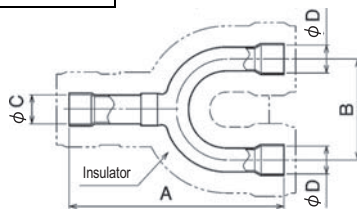


Unit: in (mm)

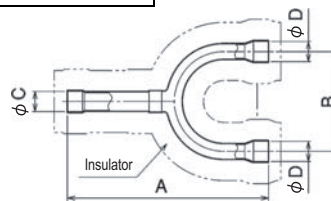
Model		A	B	C	D	E	n	Accessory socket Qty
RBM-HY1043UL	Gas side	15.0" (380)	3.54" (90)	3.29" (83.6)	7/8" (22.2)	5/8" (15.9)	3	⑥ × 4, ⑨ × 4, ⑭ × 1, ⑱ × 1, ⑳ × 1
	Liquid side	13.0" (330)	1.77" (45)	—	5/8" (15.9)	3/8" (9.5)	3	① × 4, ⑥ × 1, ⑨ × 1
RBM-HY1083UL	Gas side	27.6" (700)	3.54" (90)	3.29" (83.6)	7/8" (22.2)	5/8" (15.9)	7	⑥ × 8, ⑨ × 8, ⑭ × 1, ⑱ × 1, ⑳ × 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

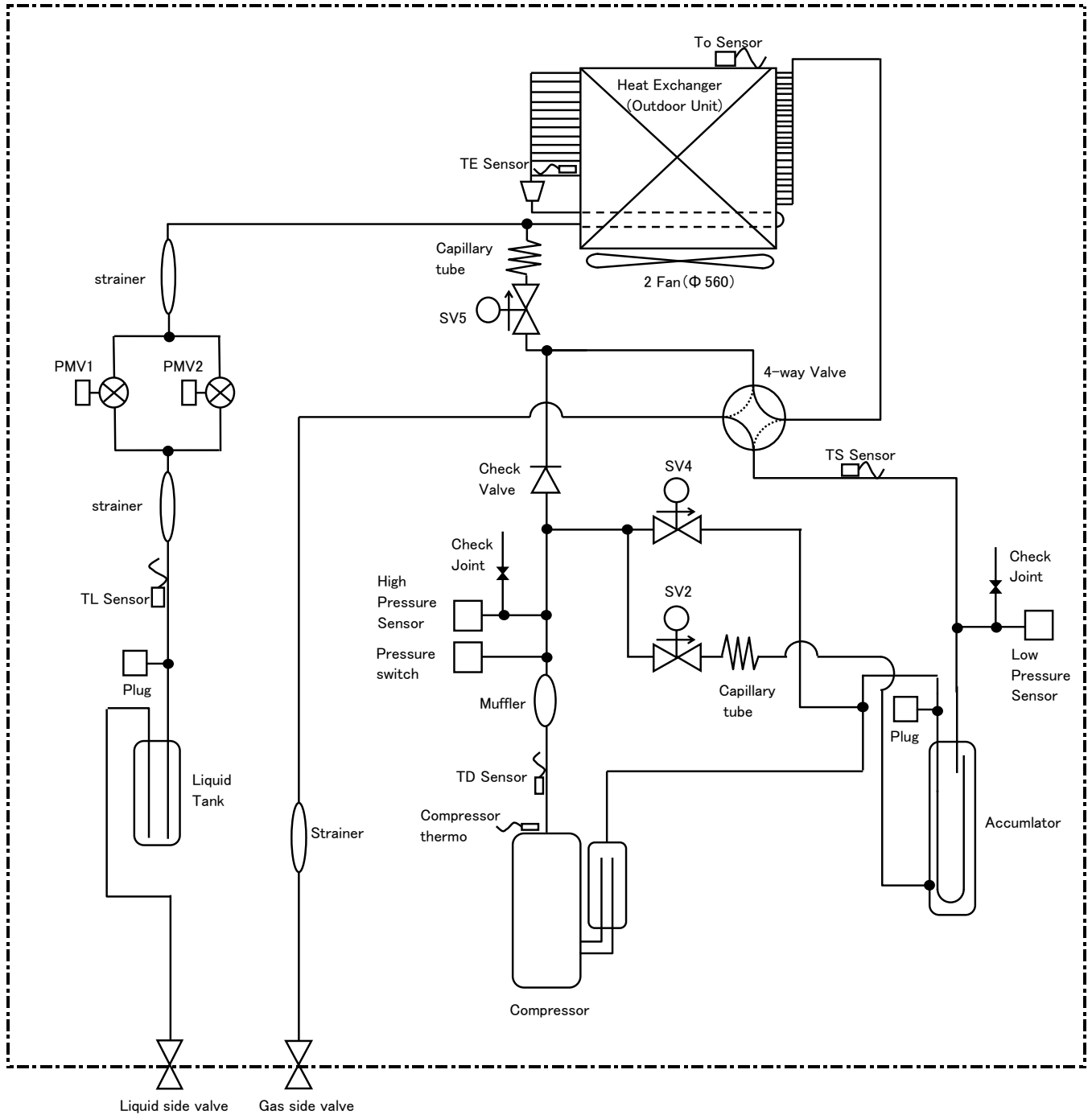


Unit: in (mm)

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, ⑤② × 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)	⑩ × 21, ⑩ × 2, ⑤③ × 1
	Liquid side	6.30" (160)	3.15" (80)	5/8" (15.9)	5/8" (15.9)	⑨ × 1, ⑤① × 1, ⑤④ × 1

5-5. Refrigerant cycle diagram

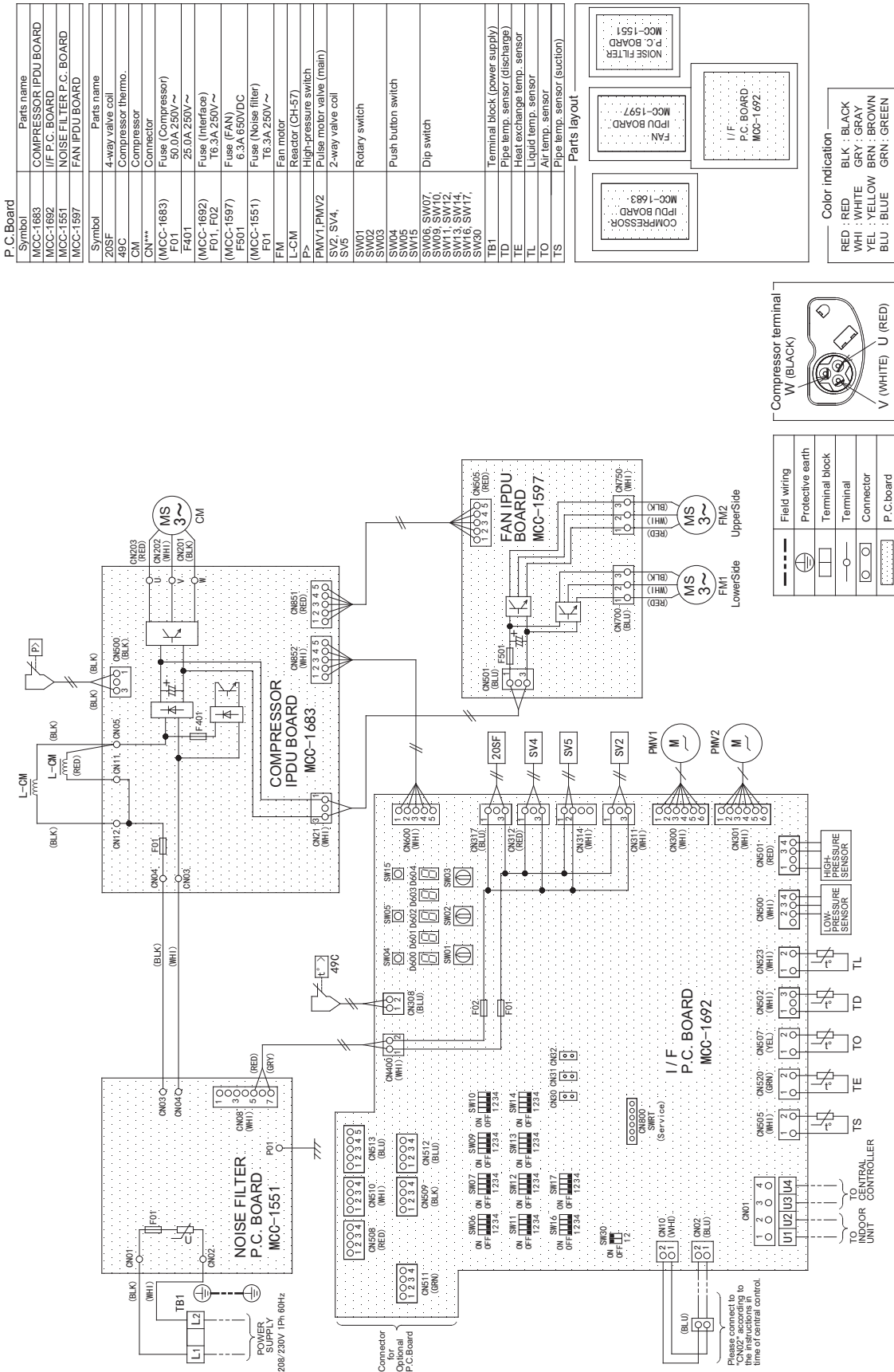
Model : MCY-MAP0367HS-UL, MCY-MAP0487HS-UL, MCY-MAP0607HS-UL



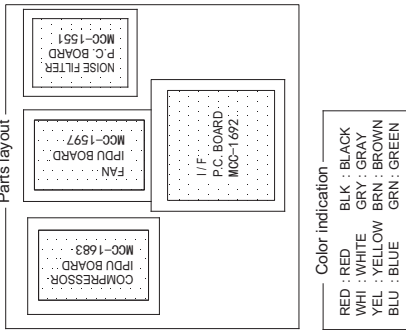


5-6. Wiring diagram

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



Symbol	Parts name
MCC-1683	COMPRESSOR IPDU BOARD
MCC-1692	I/F P.C. BOARD
MCC-1551	NOISE FILTER P.C. BOARD
MCC-1597	FAN IPDU BOARD
Parts name	
20SF	4-way valve coil
49C	Compressor therm.
CM	Compressor
CN**	Connector
(MCC-1683)	Fuse (Compressor)
F01	50.0A 250V~
F02	25.0A 250V~
(MCC-1692)	Fuse (Interface)
F01, F02	T6.3A 250V~
(MCC-1597)	Fuse (FAN)
F501	6.3A 650VDC
(MCC-1551)	Fuse (Noise filter)
F01	T6.3A 250V~
FM	Fan motor
L-CM	Reactor (CH-57)
P>	High-pressure switch
PMV1, PMV2	Pulse motor valve (main)
SV2, SV4, SV5	2-way valve coil
SW01	Rotary switch
SW02	Rotary switch
SW03	Rotary switch
SW04	Push button switch
SW05	Push button switch
SW06	Push button switch
SW07	Dip switch
SW08	Dip switch
SW09	Dip switch
SW10	Dip switch
SW11	Dip switch
SW12	Dip switch
SW13	Dip switch
SW14	Dip switch
SW15	Dip switch
SW16	Dip switch
SW17	Dip switch
SW30	Dip switch
TBT	Terminal block (power supply)
TD	Pipe temp. sensor (discharge)
TE	Heat exchange temp. sensor
TL	Liquid temp. sensor
TO	Air temp. sensor
TS	Pipe temp. sensor (suction)

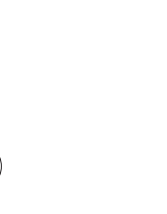


Color indication

RED	: RED
WHI	: WHITE
BLU	: BLUE
GRY	: GRAY
BRN	: BROWN
GRN	: GREEN

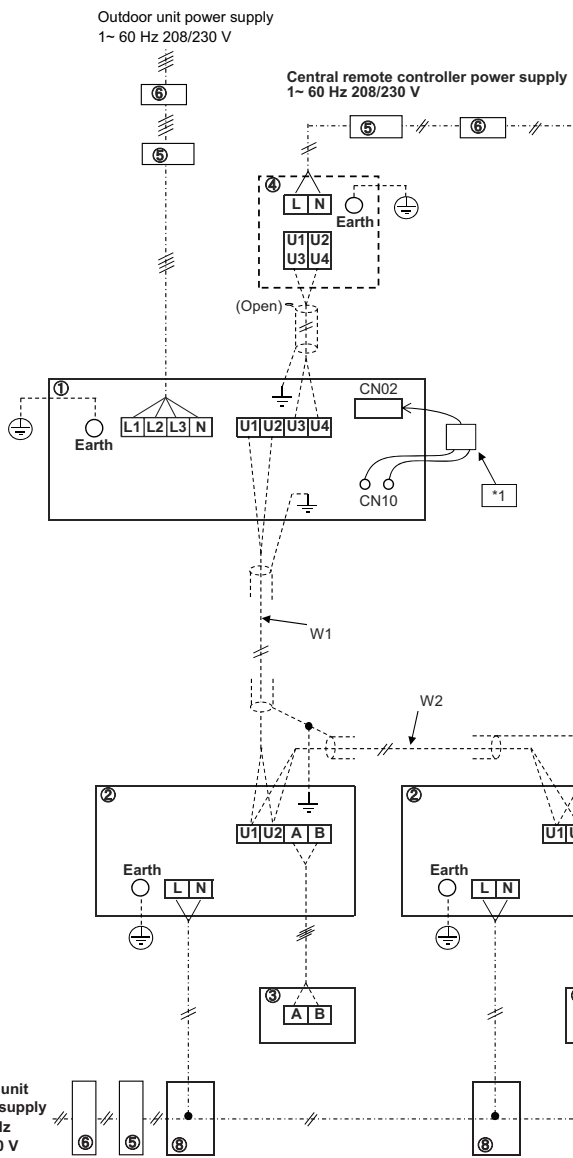


Field wiring	Terminal block	Terminal	Connector	P.C. board
Protective earth	Terminal block	Terminal	Connector	P.C. board



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

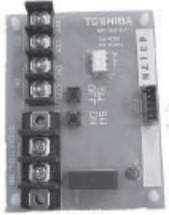
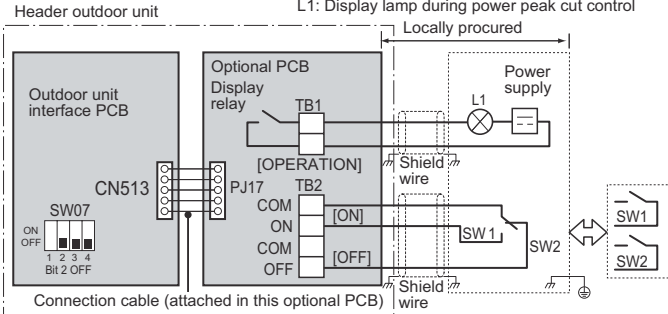
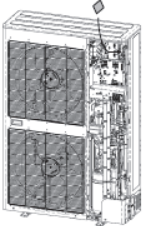
Increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 0.04inWG (1.0 mmAq) is to be used,enable this function. The maximum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


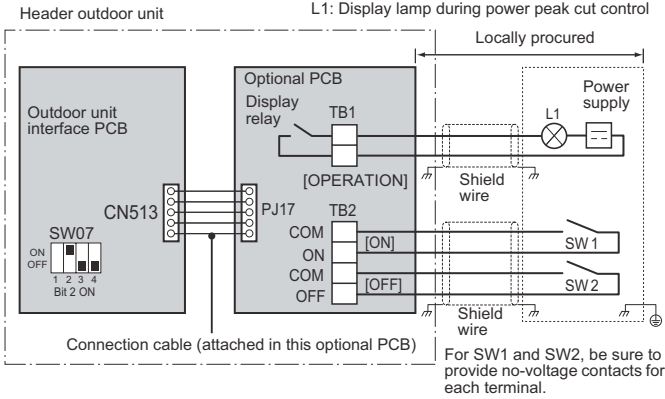
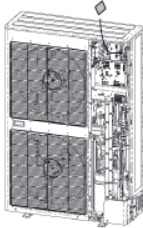
(Table 1.) Maximum external static pressures of outdoor units

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




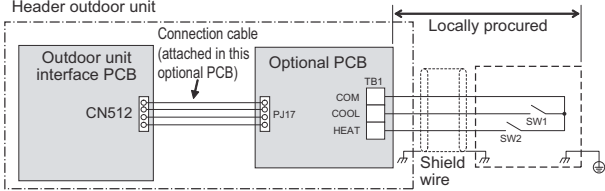
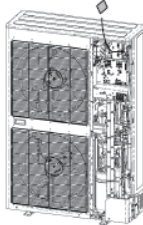
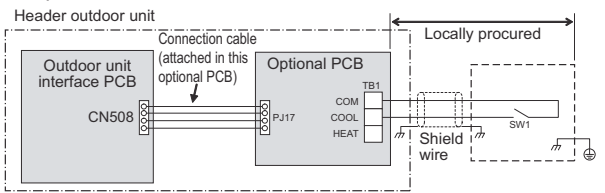
5-9. Optional printed circuit board (PCB) of outdoor unit


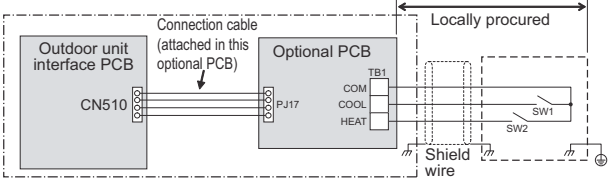
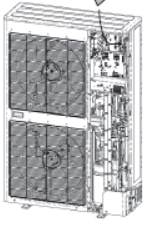
Model name	Appearance	Function																			
TCB-PCDM4UL	 Size: 2.80 × 3.35 (in)	<p>Power peak-cut Control Standard Specifications (Wiring example)</p>  <p>Header outdoor unit</p> <p>L1: Display lamp during power peak cut control</p> <p>Locally procured</p> <p>Power supply</p> <p>Shield wire</p> <p>Shield wire</p> <p>Shield wire</p> <p>SW1</p> <p>SW2</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><SW07 (bit 2) OFF [2-stage switching]></p> <table border="1" data-bbox="671 1010 1353 1167"> <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>	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	ON	100% (normal operation)	100% (normal operation)	OFF																	
ON	OFF	0% (forced stop)	Approx. 60% (upper limit regulated)	ON																	
Application  * Installation the optional PCB in the inverter-box of the outdoor unit.																					

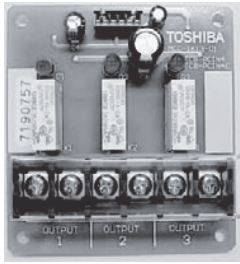
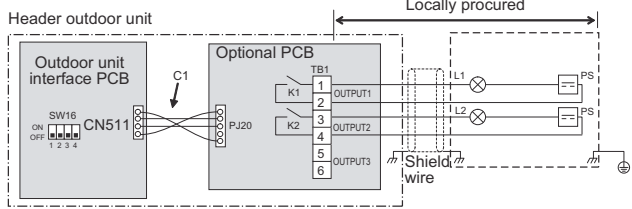
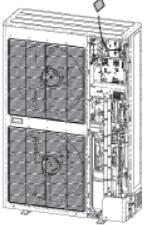
Model name	Appearance	Function
TCB-PCDM4UL	 <p>Size: 2.80 × 3.35 (in)</p>	<p>Enhanced Specifications (Wiring example)</p>  <p>Header outdoor unit</p> <p>L1: Display lamp during power peak cut control</p> <p>Locally procured</p> <p>Outdoor unit interface PCB</p> <p>Optional PCB</p> <p>Display relay</p> <p>TB1</p> <p>[OPERATION]</p> <p>PJ17</p> <p>TB2</p> <p>COM</p> <p>ON</p> <p>[ON]</p> <p>COM</p> <p>[OFF]</p> <p>OFF</p> <p>Shield wire</p> <p>Power supply</p> <p>L1</p> <p>SW1</p> <p>SW2</p> <p>Shield wire</p> <p>Connection cable (attached in this optional PCB)</p> <p>For SW1 and SW2, be sure to provide no-voltage contacts for each terminal.</p>
	Application	
	 <p>* Install the optional PCB in the inverter assembly of the outdoor header unit.</p>	

<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

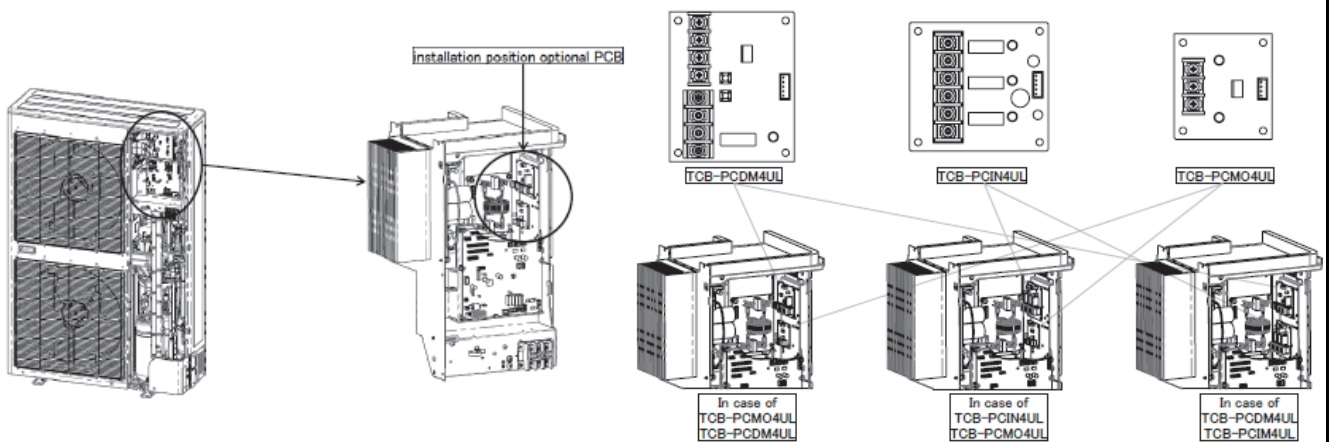
Model name	Appearance	Function																															
TCB-PCMO4UL	 <p style="text-align: center;">Size: 2.19 × 2.36 (in)</p>	<p>[1] External master ON/OFF control</p> <p>▼ Function By connecting the cable (attached in this optional PCB) to the interface PC board on an outdoor unit, all indoor units connected to the outdoor unit enable to operate simultaneously.</p> <p>▼ Operation</p>  <p>SW1: Operation input switch SW2: Stop input switch</p> <table border="1" data-bbox="702 784 1388 918"> <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>	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	All indoor units operate together																															
HEAT (SW2)	ON OFF	All indoor units stop together																															
<p style="text-align: center;">Application</p>  <p>* Install the optional PCB in the inverter assembly of the outdoor header unit.</p>	<p>[2] Night time operation (sound reduction) control</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>▼ Operation</p>  <p>SW1: Night time signal switch</p> <table border="1" data-bbox="702 1489 1372 1624"> <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 operation control</td> </tr> <tr> <td>ON OFF</td> <td>Normal operation</td> </tr> </tbody> </table> <p>Each terminal should be connected to dry contact.</p> <p>▼ Sound reduction and approximation capacity (reference)</p> <table border="1" data-bbox="702 1713 1340 1904"> <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 0367*</td> <td>45</td> <td>49</td> <td>approx. 85%</td> <td>approx. 90%</td> </tr> <tr> <td>Model 0487*</td> <td>45</td> <td>51</td> <td>approx. 60%</td> <td>approx. 80%</td> </tr> <tr> <td>Model 0607*</td> <td>49</td> <td>52</td> <td>approx. 70%</td> <td>approx. 70%</td> </tr> </tbody> </table> <p>* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (anechoic sound)</p>	Terminal	Input Signal	Operation	COOL (SW1)	ON OFF	Night time operation control	ON OFF	Normal operation	Outdoor unit (base unit)	During low-noise mode dB(A)		Capacity		Cooling	Heating	Cooling	Heating	Model 0367*	45	49	approx. 85%	approx. 90%	Model 0487*	45	51	approx. 60%	approx. 80%	Model 0607*	49	52	approx. 70%	approx. 70%
Terminal	Input Signal	Operation																															
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Model 0487*	45	51	approx. 60%	approx. 80%																													
Model 0607*	49	52	approx. 70%	approx. 70%																													

Model name	Appearance	Function																															
TCB-PCMO4UL	 <p>Size: 2.19 × 2.36 (in)</p>	<p>[3] Operation mode selection control</p> <p>▼ Function The heating/cooling mode of the system can be selected by connecting to the interface PCB of outdoor units.</p> <p>▼ Operation</p> 																															
	<p>Application</p>  <p>* Install the optional PCB in the inverter assembly of the outdoor header unit.</p>	<p>SW1: Cooling mode specified input switch SW2: Heating mode specified input switch</p> <table border="1" data-bbox="703 741 1382 887"> <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>Indoor unit operation intervention function</p> <p>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="699 1111 1442 1570"> <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 rowspan="4">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>Mode selected at P.C. board</td> <td>Remote controller operation / display</td> </tr> <tr> <td>Normal</td> <td>All modes (COOL, DRY, HEAT and FAN) available</td> </tr> <tr> <td>COOL</td> <td>Only COOL, DRY and FAN available</td> </tr> <tr> <td>HEAT</td> <td>Only HEAT and FAN available</td> <td>* "operation mode control" (turned on during remote controller operation)</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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	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	 <p>Size: 2.87 × 3.11 (in)</p>	<p>[1] Error / Operation Output</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> <p>Wiring example</p>  <table border="1" data-bbox="719 887 1398 1162"> <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	Terminal block
	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																					
<p>Application</p>  <p>* Install the optional PCB in the inverter assembly of the outdoor header unit.</p>																						

[PCB Installation Position]

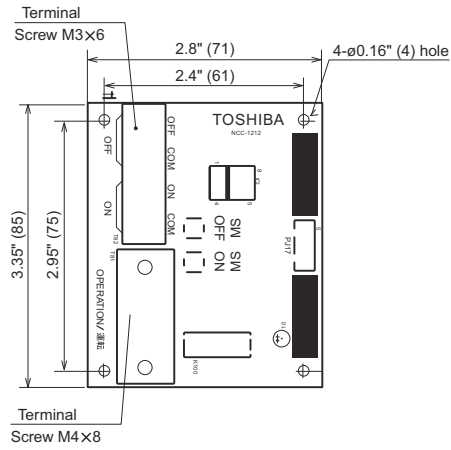
There are holes on the inverter-box.
Three kinds of the optional PCBs are able to install in it.



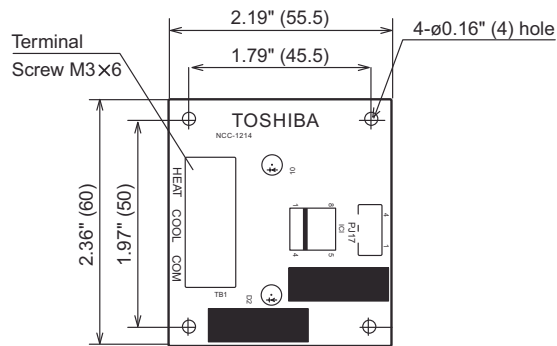
Dimensions of P.C. board

Unit: in (mm)

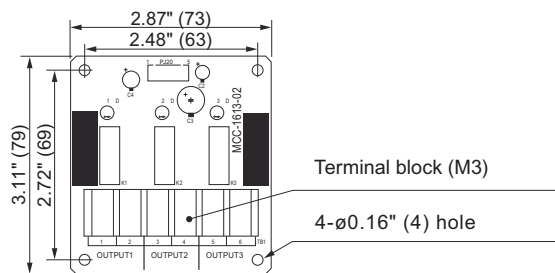
TCB-PCDM4UL



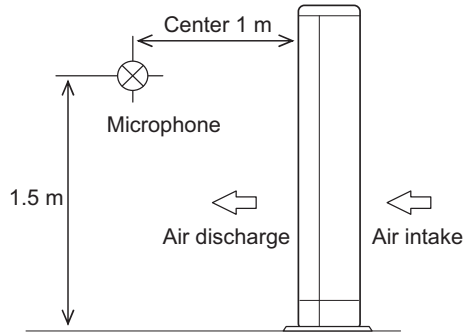
TCB-PCMO4UL



TCB-PCIN4UL

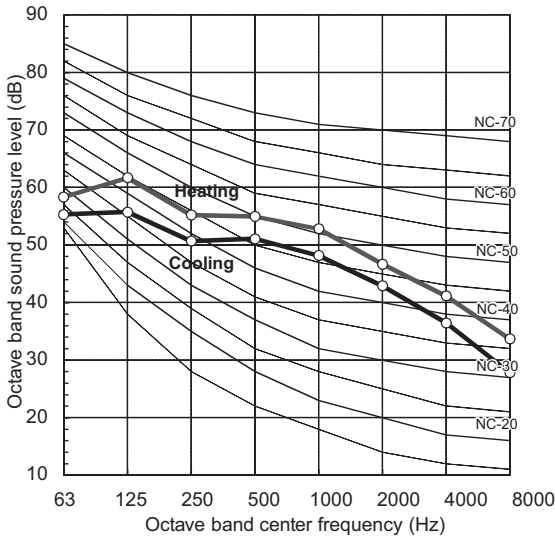


5-10. Sound pressure level data
[Measuring location]



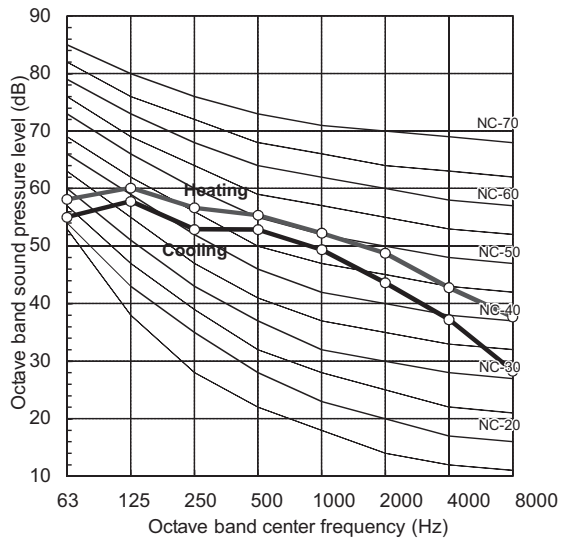
MCY-MAP0367HS-UL

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



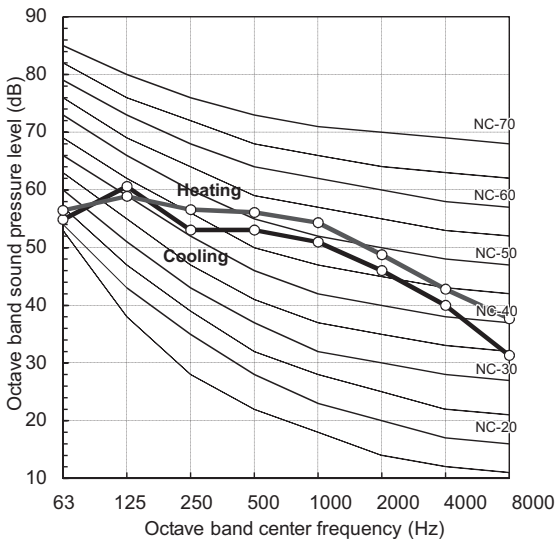
MCY-MAP0487HS-UL

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