

TECHNICAL DATA

3WAY VRF SYSTEM



Model No.
Outdoor Unit

	Class	8HP	10HP	12HP	14HP	16HP
MF2	Model Name	U-8MF2E8	U-10MF2E8	U-12MF2E8	U-14MF2E8	U-16MF2E8

Check of Density Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density 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 imposed to protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density 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 to conventional individual air conditioners. If a single unit of the multi air 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 density 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 density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device. The density is as given below.

Total amount of refrigerant (kg)

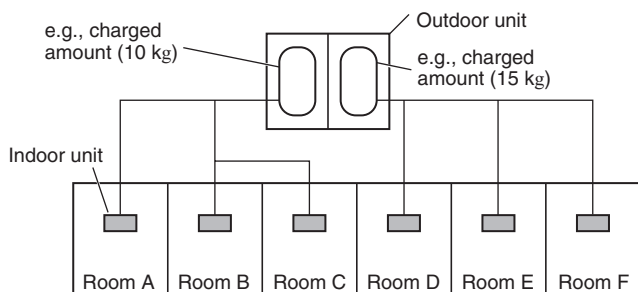
$$\text{Min. volume of the indoor unit installed room (m}^3\text{)} \leq \text{Density limit (kg/m}^3\text{)}$$

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m³ (ISO 5149).

NOTE

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

For the amount of charge in this example:

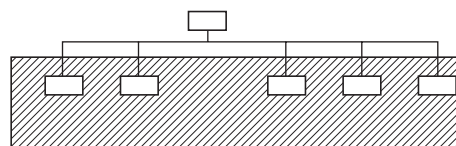


The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.

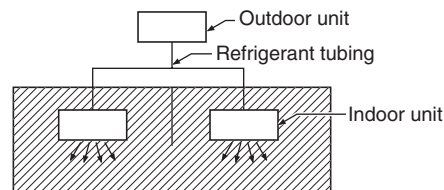
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

- The standards for minimum room volume are as follows.

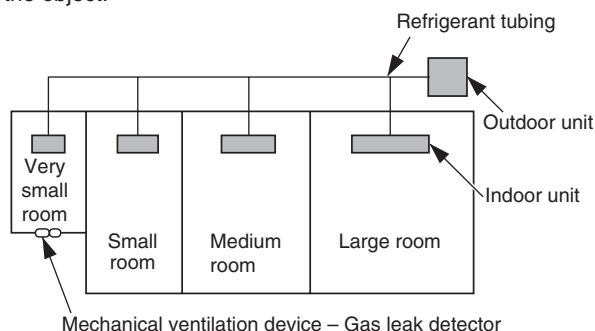
- (1) No partition (shaded portion)



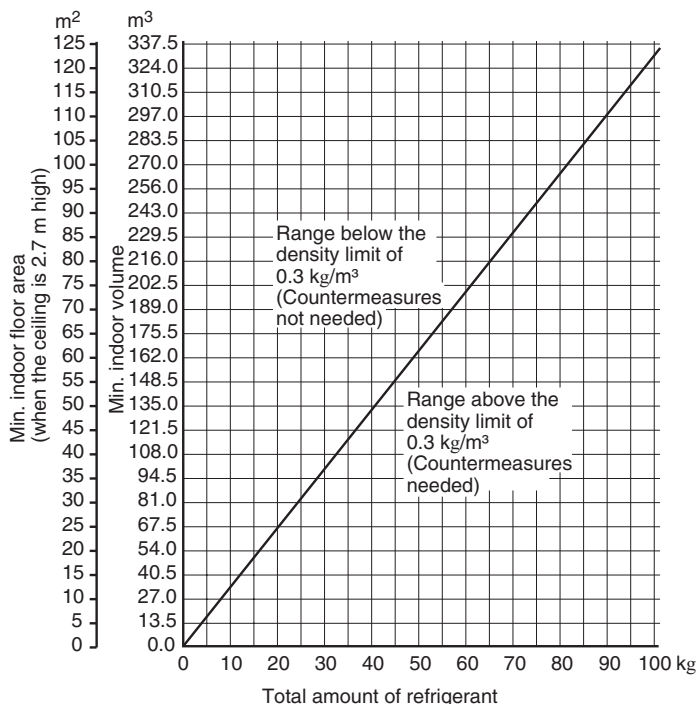
- (2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



- (3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when 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.



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



Precautions for Installation Using New Refrigerant

1. Care regarding tubing

1-1. Process tubing

- Material: Use C1220 phosphorous deoxidized copper specified in JIS H3300 "Copper and Copper Alloy Seamless Pipes and Tubes." For tubes of $\phi 22.22$ or larger, use C1220 T-1/2H material or H material, and do not bend the tubes.
- **Tubing size: Be sure to use the sizes indicated in the table below.**
- Use a tube cutter when cutting the tubing, and be sure to remove any flash. This also applies to distribution joints (optional).
- When bending tubing, use a bending radius that is 4 times the outer diameter of the tubing or larger.



CAUTION

Use sufficient care in handling the tubing. Seal the tubing ends with caps or tape to prevent dirt, moisture, or other foreign substances from entering. These substances can result in system malfunction.

Unit: mm

Material		O					
Copper tube	Outer diameter	6.35	9.52	12.7	15.88	19.05	22.22
	Wall thickness	0.8	0.8	0.8	1.0	1.0	1.15

Unit: mm

Material		1/2 H, H				
Copper tube	Outer diameter	25.4	28.58	31.75	38.1	41.28
	Wall thickness	1.0	1.0	1.1	over 1.35	over 1.45

- 1-2. Prevent impurities including water, dust and oxide from entering the tubing. Impurities can cause R410A refrigerant deterioration and compressor defects. Due to the features of the refrigerant and refrigerating machine oil, the prevention of water and other impurities becomes more important than ever.

2. Be sure to recharge the refrigerant only in liquid form.

- 2-1. Since R410A is a non-azeotrope, recharging the refrigerant in gas form can lower performance and cause defects in the unit.
- 2-2. Since refrigerant composition changes and performance decreases when gas leaks, collect the remaining refrigerant and recharge the required total amount of new refrigerant after fixing the leak.

3. Different tools required

- 3-1. Tool specifications have been changed due to the characteristics of R410A.

Some tools for R22- and R407C-type refrigerant systems cannot be used.

Item	New tool?	R407C tools compatible with R410A?	Remarks
Manifold gauge	Yes	No	Types of refrigerant, refrigerating machine oil, and pressure gauge are different.
Charge hose	Yes	No	To resist higher pressure, material must be changed.
Vacuum pump	Yes	Yes	Use a conventional vacuum pump if it is equipped with a check valve. If it has no check valve, purchase and attach a vacuum pump adapter.
Leak detector	Yes	No	Leak detectors for CFC and HCFC that react to chlorine do not function because R410A contains no chlorine. Leak detectors for HFC134a can be used for R410A.
Flaring oil	Yes	No	For systems that use R22, apply mineral oil (Suniso oil) to the flare nuts on the tubing to prevent refrigerant leakage. For machines that use R407C or R410A, apply synthetic oil (ether oil) to the flare nuts.

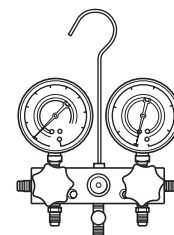
* Using tools for R22 and R407C and new tools for R410A together can cause defects.

- 3-2. Use R410A exclusive cylinder only.

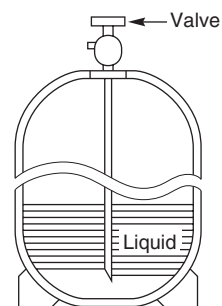
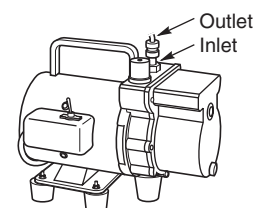
Single-outlet valve (with siphon tube)

Liquid refrigerant should be recharged with the cylinder standing on end as shown.

Manifold gauge



Vacuum pump



IMPORTANT INFORMATION REGARDING THE REFRIGERANT USED

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type: R410A

GWP⁽¹⁾ value: 1975

⁽¹⁾GWP = global warming potential

Periodical inspections for refrigerant leaks may be required depending on European or local legislation.
Please contact your local dealer for more information.

Please fill in with indelible ink,

- ① the factory refrigerant charge of the product
 - ② the additional refrigerant amount charged in the field and
 - ① + ② the total refrigerant charge
- on the refrigerant charge label supplied with the product.

The filled out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the service cover).

The image shows a rectangular label with a black border. At the top left is a small icon of a document. To its right is the text: "This product contains fluorinated greenhouse gases covered by the Kyoto Protocol." Below this is a large black box with "R410A" in white. To the right of "R410A" are three rows of input fields, each followed by "kg". The first row is "① = [] kg", the second is "② = [] kg", and the third is "① + ② = [] kg". To the left of these fields is a diagram of a refrigerant charging port with a cylinder and manifold. The diagram has two numbered circles: "①" pointing to the cylinder and "②" pointing to the manifold. Below the diagram are two numbered circles: "5" pointing to the cylinder and "6" pointing to the manifold. To the right of the label, there are four numbered lines: "4" pointing to the top text, "1" pointing to the first input field, "2" pointing to the second input field, and "3" pointing to the third input field.

* English text printed on this label is original. Each language label will be sealed on this original text.

1. Factory refrigerant charge of the product: see unit name plate
2. Additional refrigerant amount charged in the field
3. Total refrigerant charge
4. Contains fluorinated greenhouse gases covered by the Kyoto Protocol
5. Outdoor unit
6. Refrigerant cylinder and manifold for charging

Contents

1. OUTLINE OF 3WAY SYSTEM

1. Line-up.....1-2

2. Features of 3WAY SYSTEM.....1-4

 2-1. Outline of 3WAY SYSTEM.....1-4

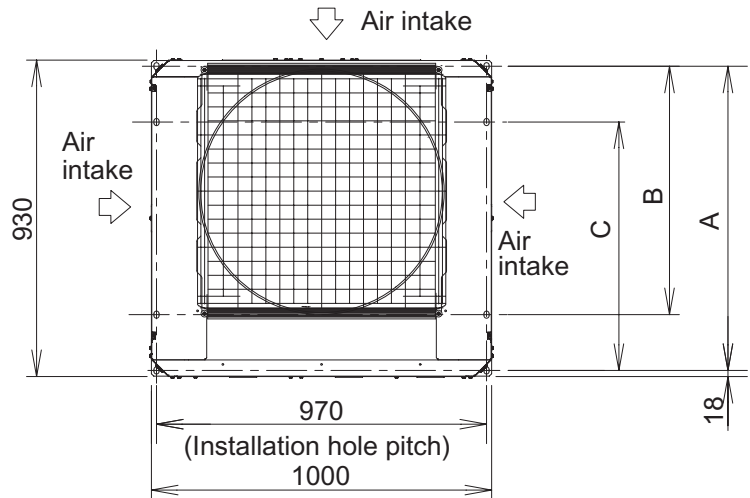
3. MARKINGS FOR DIRECTIVE 97/23/EC (PED).....1-7

1. Line-up

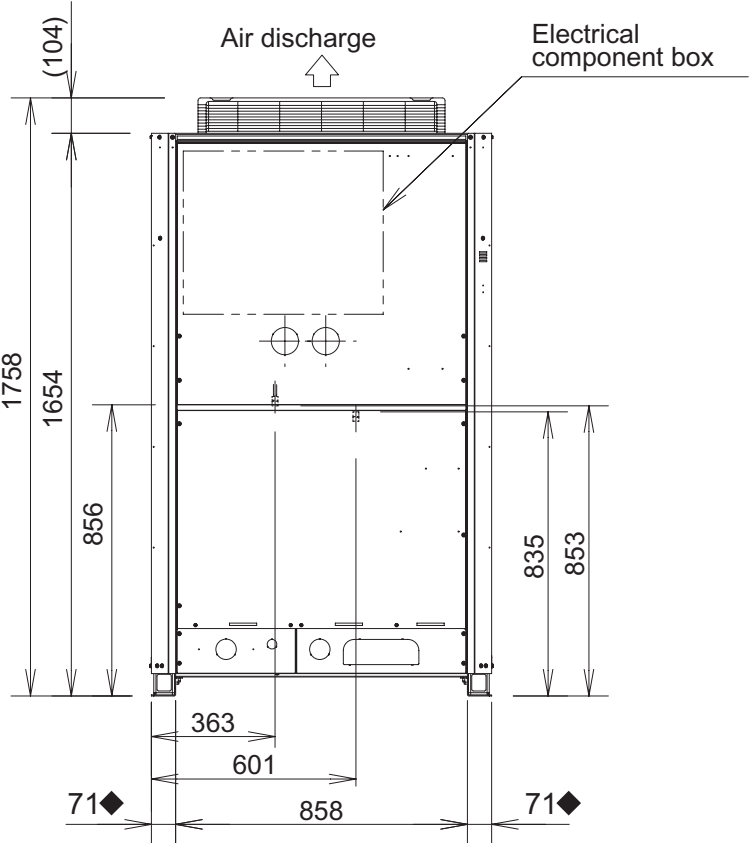
Outdoor units

Model		U-8MF2E8	U-10MF2E8	U-12MF2E8	U-14MF2E8	U-16MF2E8
Capacity: kW (BTU/h)	Cooling	22.4 (76,500)	28.0 (95,600)	33.5 (114,300)	40.0 (136,500)	45.0 (153,600)
	Heating	25.0 (85,300)	31.5 (107,500)	37.5 (128,000)	45.0 (153,600)	50.0 (170,600)

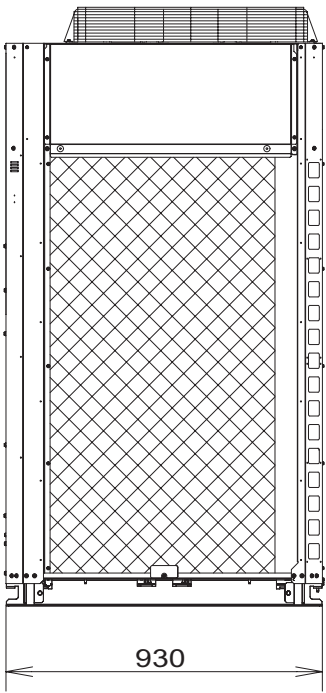
unit: mm



Top view



Front view



Side view

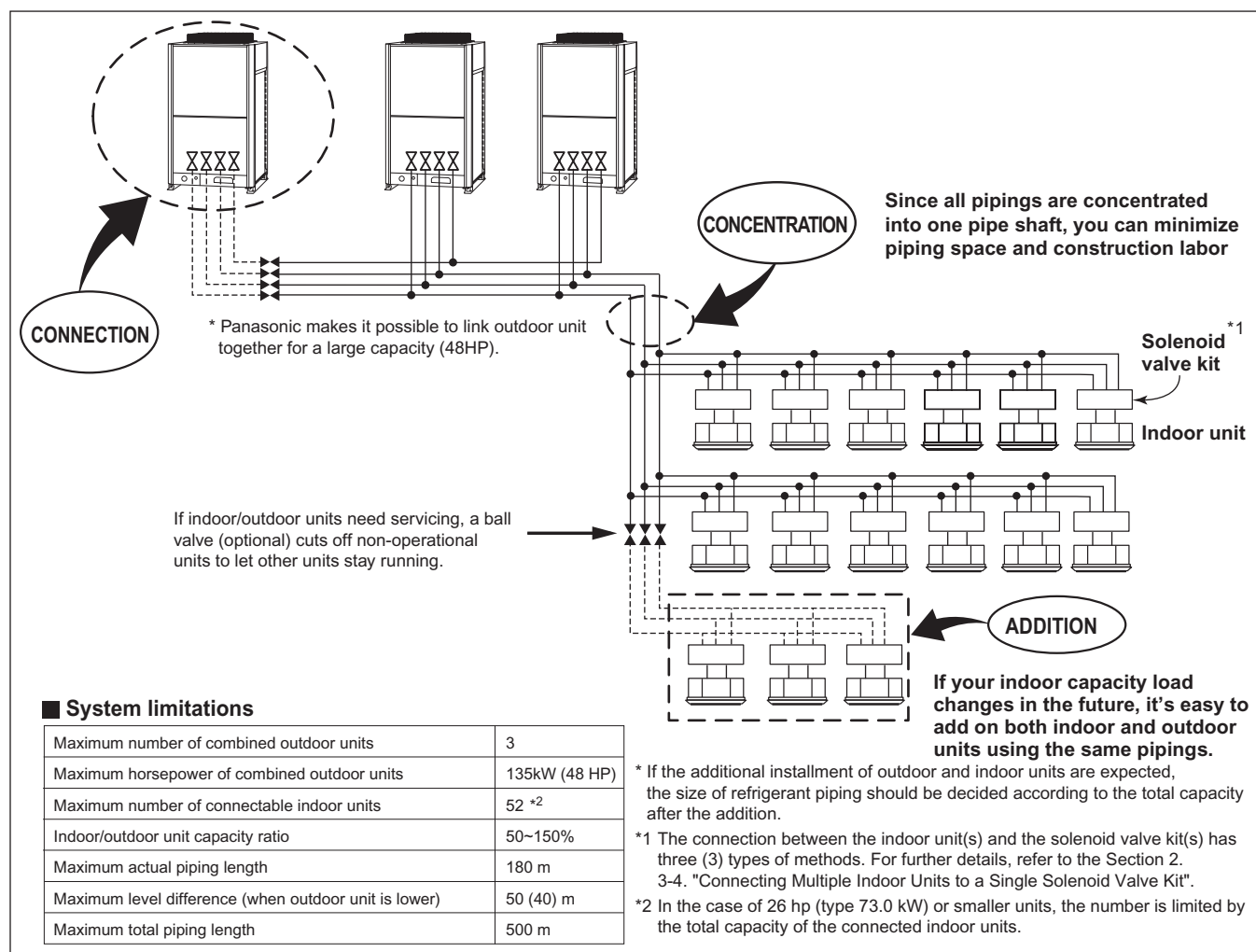
◆ Installation fixing bracket
Installation side

- According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from "A", "B" or "C".
A : 894 (Installation hole pitch) * The tubing is routed out from the front.
B : 730 (Installation hole pitch) * The tubing is routed out from the bottom.
C : 730 (Installation hole pitch)

2. Features of 3WAY SYSTEM

2-1. Outline of 3WAY SYSTEM

■ System example



■ Combination of outdoor units

Total horse power Inverter unit	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
8	1					1	1	1	1					1	1	1	1				
10		1				1															
12			1				1			1				1							
14				1				1		1	2	1		1	2	1		3	2	1	
16					1				1			1	2			1	2		1	2	3

■ Combination of outdoor units (High efficiency combination)

Total horse power Inverter unit	16	24	26	28	30	32
8	2	3	2	2	2	1
10			1			
12				1		2
14					1	
16						

■ Maximum number of connectable indoor units when connected with minimum capacity

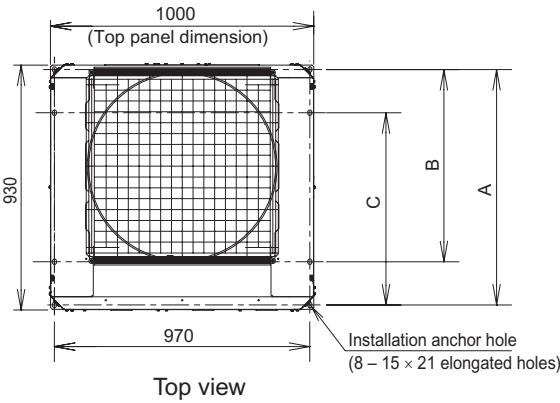
Total horse power	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Number of indoor units	15	19	22	27	30	34	38	41	46	49	52	52	52	52	52	52	52	52	52	52	52

2. Features of 3WAY SYSTEM

■ Dimensions

8, 10, 12, 14, 16 HP

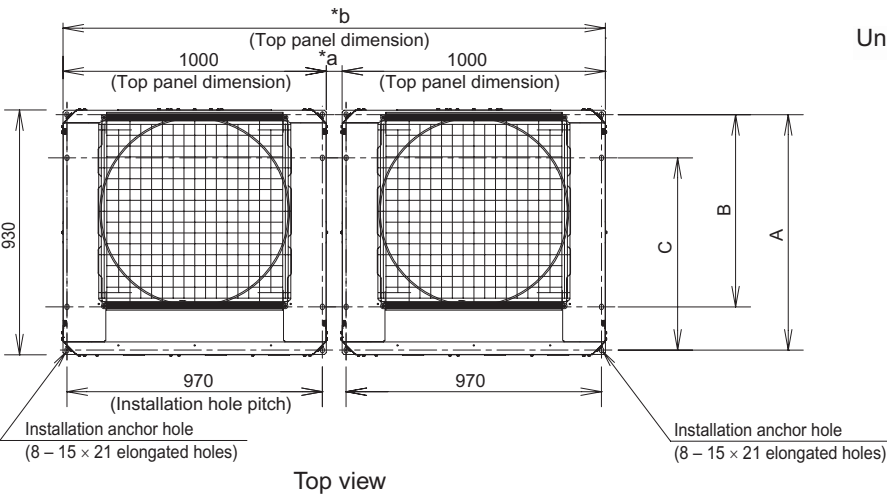
8HP U-8MF2E8
10HP U-10MF2E8
12HP U-12MF2E8
14HP U-14MF2E8
16HP U-16MF2E8



Unit: mm

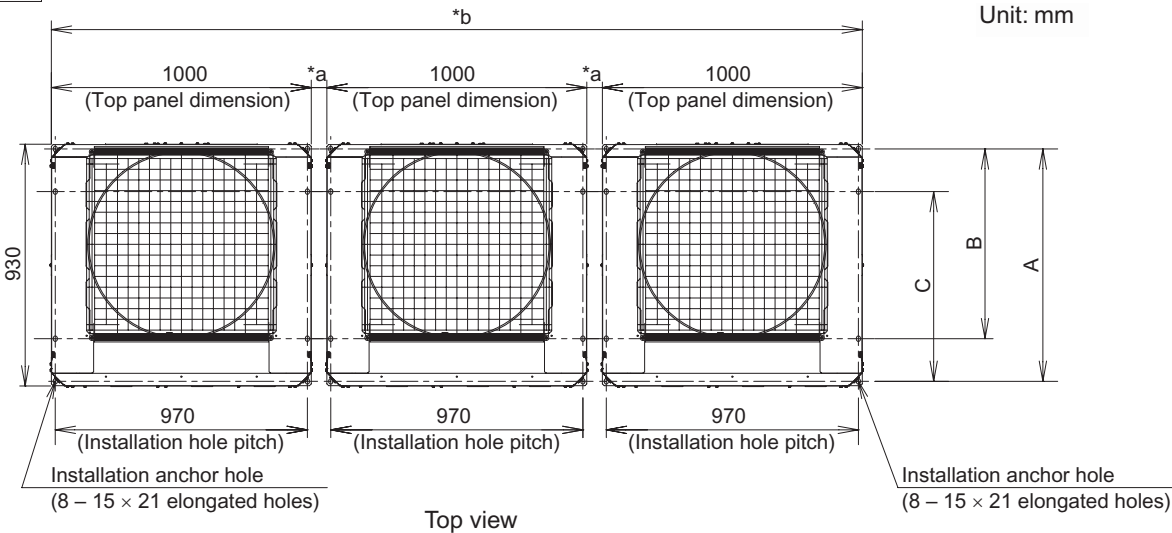
■ Dimensions of unit combination

2-unit setting



Unit: mm

3-unit setting



Unit: mm

• According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from “A”, “B” or “C”.

	For 2-unit setting		For 3-unit setting	
	*a	*b	*a	*b
A :894 (Installation hole pitch) * The tubing is routed out from the front.	60	2060	60	3120
B :730 (Installation hole pitch) * The tubing is routed out from the bottom.	180	2180	180	3360
C :730 (Installation hole pitch)	180	2180	180	3360

2. Features of 3WAY SYSTEM

Capacity control

The compressor combination (DC inverter compressor + constant-speed compressor) allows smooth capacity control from 0.8 HP to 48 HP (horsepower).

Realization of smooth capacity control from 0.8HP to 48HP

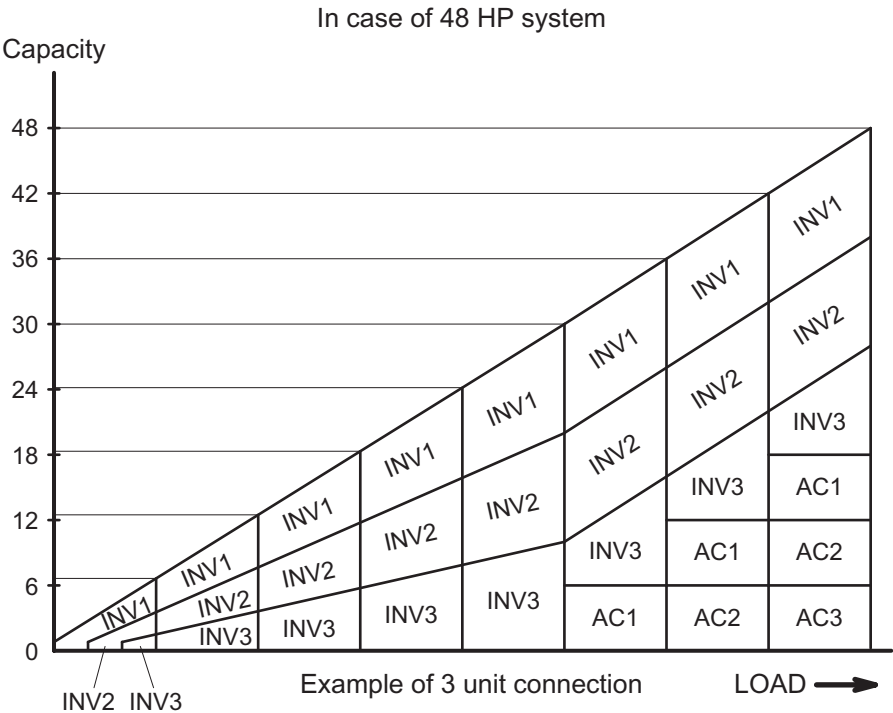
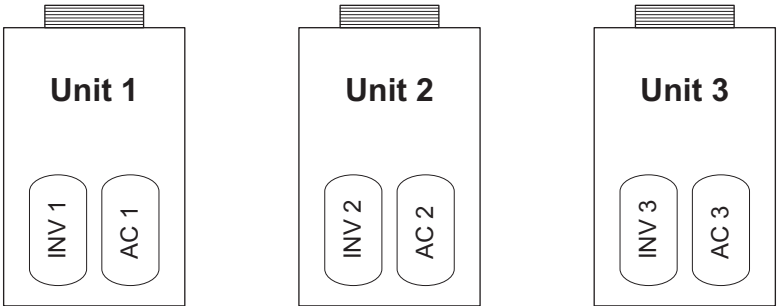
Capacity control is possible smoothly with a DC inverter compressor.

The graph shown in the below is the image of the operating combination of compressors in case of 48HP system.

In actual operation, the combination will be changed by operating condition, operating time amount, priority of compressor and so on.

Comp. HP	Unit 1 (main)	Unit 2 (sub 1)	Unit 3 (sub 2)
INV comp.	10	10	10
AC1 comp.	6	6	6

* 48HP = U-16MF2E8 x 3



3. MARKINGS FOR DIRECTIVE 97/23/EC (PED)

Rating nameplate figure

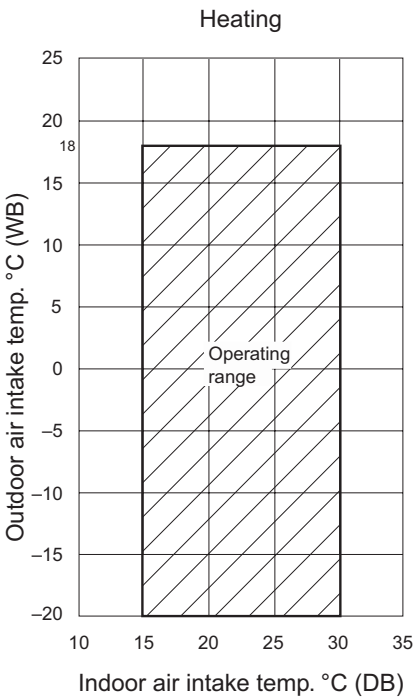
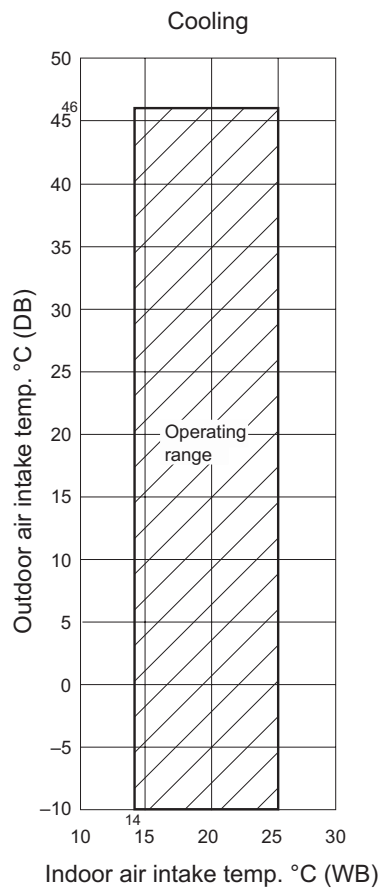
 	
Multi Type Air Conditioner Кондиционер Мульти-Сплит Система Кондиціонер Мульти-спліт система	
Model No.	A: Model Name Various Класс защиты I
POWER SOURCE : B: Various	
MAX ELECTRIC INPUT : C: kW A	
TIME DELAY FUSE MAX SIZE : D: A 	
UNIT PROTECTION : IPX4	
Operating Spec. Area Various (Not for the PED)	
MAX.WORKING PRESSURE : HIGH SIDE E: bar (MPa) Various LOW SIDE F: bar (MPa) Various	
REFRIGERANT: R410A G: kg. Various	
NET WEIGHT : Various (Not for the PED)	
SERIAL NO. : Серийный номер. : Various Серійний номер. :	PROD. DATE : Дата производства : YYYY.MM Дата виготовлення :
THE CAPACITY, CURRENT AND POWER INPUT ARE FOR THIS UNIT CONNECTED TO THE FOLLOWING INDOOR UNITS. ПРОИЗВОДИТЕЛЬНОСТЬ, ТОК И ПОТРЕБЛЯЕМАЯ МОЩНОСТЬ ДАННОГО БЛОКА ПРИ ЕГО ПОДКЛЮЧЕНИИ К СЛЕДУЮЩИМ ВНУТРЕННИМ БЛОКАМ. ПРОДУКТИВНІСТЬ, СТРУМ ТА СПОЖИВАНА ПОТУЖНІСТЬ ДАНОГО БЛОКУ ПРИ ЙОГО ПІДКЛЮЧЕННІ ДО НАСТУПНИХ ВНУТРІШНІХ БЛОКІВ. Various (Not for the PED) FOR OTHER COMBINATIONS, REFER TO MANUAL. ИНФОРМАЦИЮ ПО ДРУГИМ КОМБИНАЦИЯМ СМОТРИТЕ В ИНСТРУКЦИИ. ЗА ІНФОРМАЦІЮ СТОСОВНО ІНШИХ КОМБІНАЦІЙ ЗВЕРТАЙТЕСЯ ДО ІНСТРУКЦІЇ. Authorized representative in EU Panasonic Testing Centre	
Panasonic Marketing Europe GmbH Winsbergring 15, 22525 Hamburg, Germany	
Panasonic Corporation 1006 Kadoma, Kadoma City, Osaka, Japan	
Made in Malaysia Сделано в Малайзии Вироблено в Малайзії Fabricado en Malasia	

Tabulation of Various data

A	U-8MF2E8	U-10MF2E8	U-12MF2E8	U-14MF2E8	U-16MF2E8
B	380 – 415 V, 3 N~, 50 Hz				
C	7.96 kW, 12.6 A	10.6 kW, 16.3 A	13.7 kW, 21.2 A	16.7 kW, 25.7 A	19.0 kW, 29.3 A
D	25 A	25 A	35 A	40 A	50 A
E	38.0 bar (3.80 MPa)				
F	27.0 bar (2.70 MPa)				
G	8.3 kg	8.5 kg	8.8 kg	9.3 kg	9.3 kg

1. Model Selecting and Capacity Calculator

1-1. Operating Range



3. Electrical Wiring

3-1. General Precautions on Wiring

- (1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
- (2) Provide a power outlet to be used exclusively for each unit, and a power supply disconnect, circuit breaker and earth leakage breaker for overcurrent protection should be provided in the exclusive line.
- (3) To prevent possible hazards from insulation failure, the unit must be grounded.
- (4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
- (5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- (6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.
- (7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with all relevant rules and regulations.
- (8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:
 - The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
 - Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.
- (9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop appointed by the manufacturer, because special purpose tools are required.
- (10) Use a waterproof conduit for outdoor unit wiring to avoid damaging the wire and to prevent accumulation of liquid inside the unit.

3-2. Recommended Wire Length and Wire Diameter for Power Supply System

Outdoor unit

	(A) Power supply		Time delay fuse or circuit capacity
	Wire size	Max. length	
U-8MF2E8	4 mm ²	65 m	25 A
U-10MF2E8	4 mm ²	47 m	25 A
U-12MF2E8	6 mm ²	70 m	35 A
U-14MF2E8	10 mm ²	96 m	40 A
U-16MF2E8	10 mm ²	84 m	50 A

or

(A) Power supply		Time delay fuse or circuit capacity
Wire size	Max. length	
6 mm ²	98 m	35 A
6 mm ²	70 m	35 A
6 mm ²	70 m	35 A
10 mm ²	96 m	50 A
10 mm ²	84 m	50 A

Indoor unit

Type	(B) Power supply		Time delay fuse or circuit capacity
	Minimum 2 mm ²	2.5 mm ²	
K2	Max. 150 m	—	15 A
Y2	Max. 130 m	—	15 A
K1	—	Max. 150 m	10 – 16 A
D1, L1, U1, Y1, T1, F1, M1, P1, R1	—	Max. 130 m	10 – 16 A
E1 (73, 106, 140)	—	Max. 60 m	10 – 16 A
E1 (224)	—	Max. 50 m	10 – 16 A
E1 (280)	—	Max. 30 m	10 – 16 A

Control wiring

(C) Inter-unit (between outdoor and indoor units) control wiring		
0.75 mm ² (AWG #18) Use shielded wiring*	or	2.0 mm ² (AWG #14) Use shielded wiring*
Max. 1,000 m		Max. 2,000 m

(D) Remote control wiring
0.75 mm ² (AWG #18)
Max. 500 m

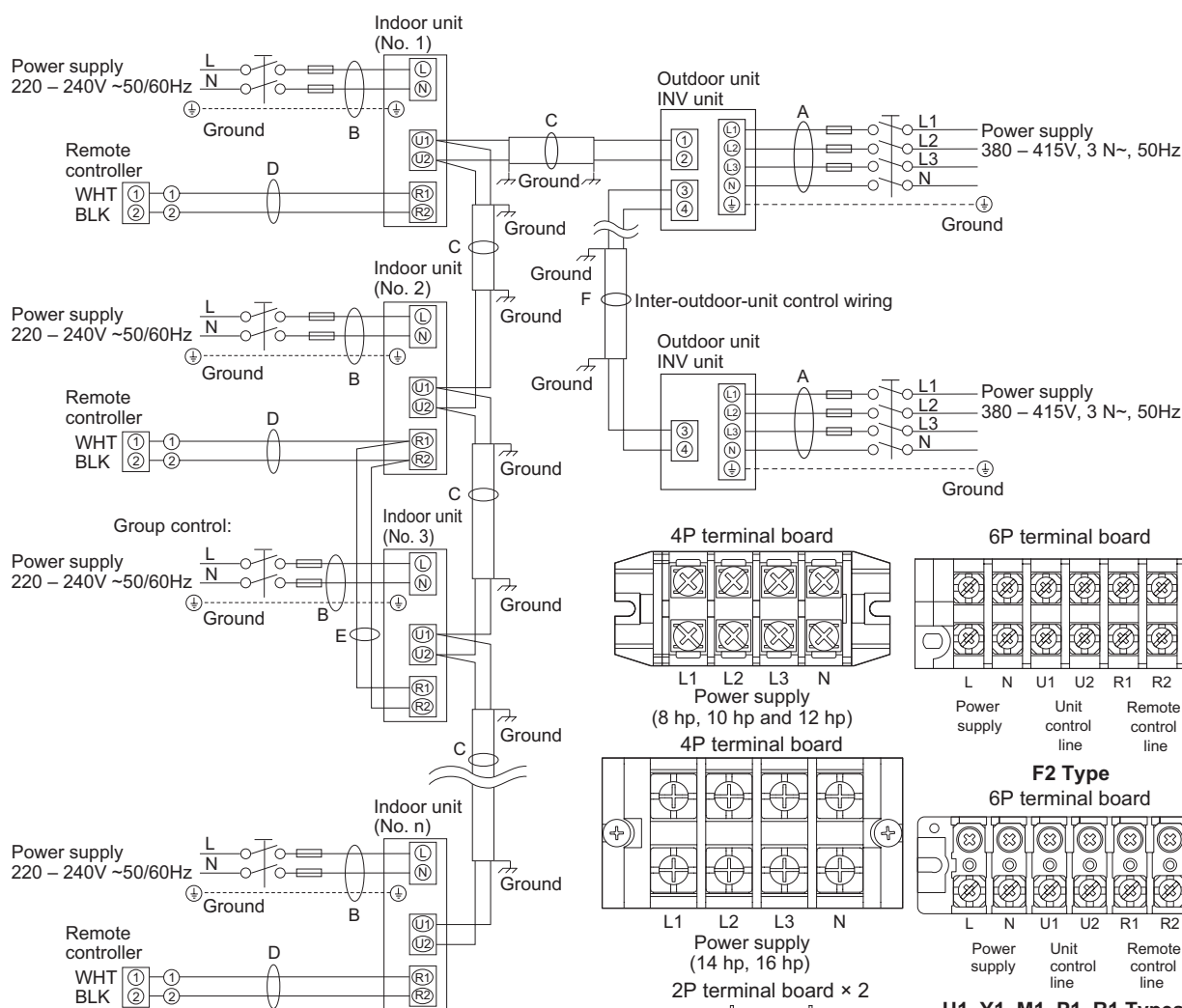
NOTE * With ring-type wire terminal.

(E) Control wiring for group control
0.75 mm ² (AWG #18)
Max. 200 m (Total)

(F) Inter-outdoor unit control wiring
0.75 mm ² (AWG #18) Use shielded wiring
Max. 300 m

3. Electrical Wiring

3-3. Wiring System Diagrams



NOTE

- (1) Refer to Section 3-2. "Recommended Wire Length and Wire Diameter for Power Supply System" for the explanation of "A", "B", "C", "D", "E" and "F" in the above diagram.
- (2) The basic connection diagram of the indoor unit shows the 7P terminal board, so the terminal boards in your equipment may differ from the diagram.
- (3) Refrigerant Circuit (R.C.) address should be set before turning the power on.
- (4) Address setting can be executed by remote controller automatically. Refer to section "4. Auto Address Setting under 5. TEST RUN".
- (5) Regarding S-280ME1E5, the power supply is 220 – 240 V, 50 Hz.

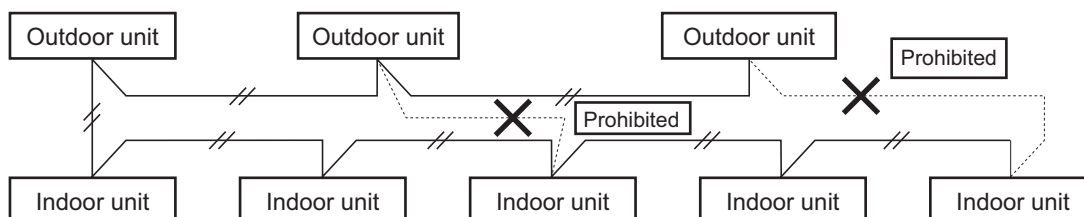
3. Electrical Wiring



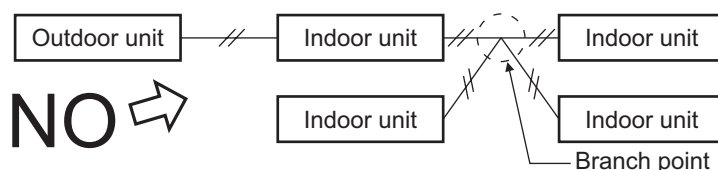
CAUTION

(1) When linking outdoor units in a network, see the section “Adjustment of Termination Resistor (Plug)” under 5. TEST RUN.

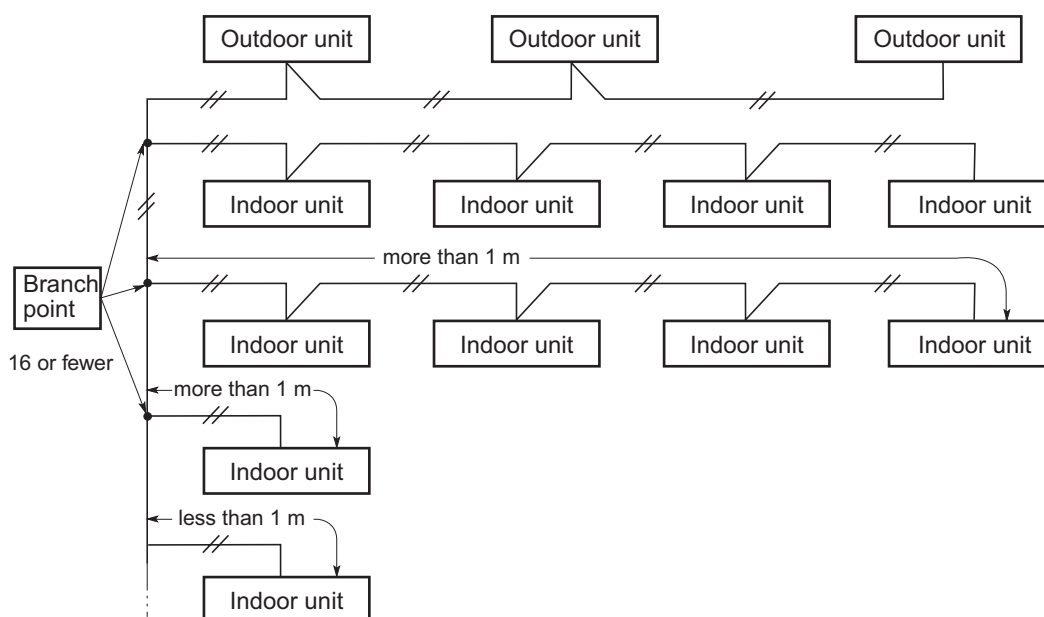
(2) Do not install the inter-unit control wiring in a way that forms a loop.



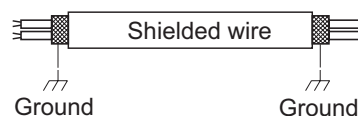
(3) Do not install inter-unit control wiring such as star branch wiring. Star branch wiring causes mis-address setting.



(4) If branching the inter-unit control wiring, the number of branch points should be 16 or fewer. (Branches less than 1 m are not included in the total branch number.)



(5) Use shielded wires for inter-unit control wiring (c) and ground the shield on both sides, otherwise misoperation from noise may occur. Connect wiring as shown in Section 3-3. “Wiring System Diagrams.”



3. Electrical Wiring

- (6) • Use the standard power supply cables for Europe (such as H05RN-F or H07RN-F which conform to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (60245 IEC57, 60245 IEC66)
- Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 or 3 *1.5 mm² flexible cord. Type designation 60245 IEC 57 (H05RN-F, GP85PCP etc.) or heavier cord.



WARNING

Loose wiring may cause the terminal to overheat or result in unit malfunction.

A fire hazard may also occur.

Therefore, ensure that all wiring is tightly connected.

When connecting each power wire to the terminal, follow the instructions on “How to connect wiring to the terminal” and fasten the wire securely with the fixing screw of the terminal plate.

3-4. Connecting Multiple Indoor Units to a Single Solenoid Valve Kit

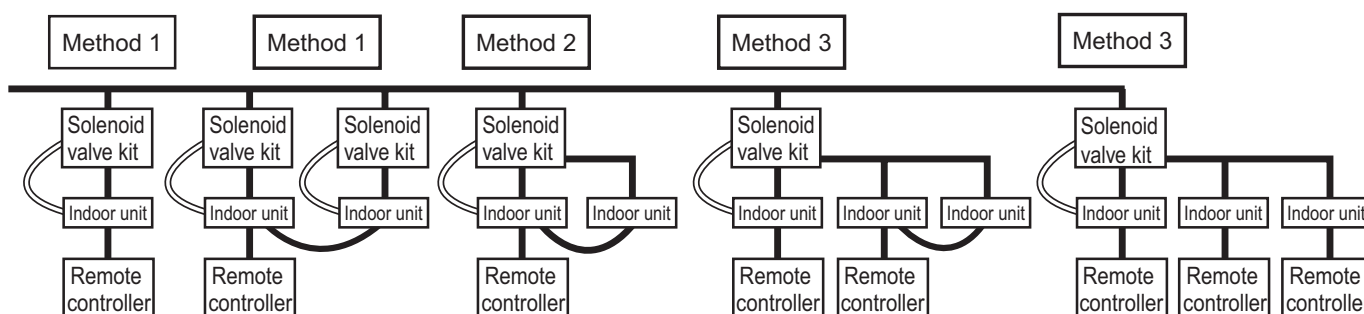
- It is possible to connect multiple indoor units to one solenoid valve kit.
The indoor units can be controlled individually or be operated as a group.
- It is possible to adopt multiple units with a common use of the solenoid valve kit per piece of refrigerant.
- Categories of connected indoor unit capacities are determined by the solenoid valve kit.

Type of solenoid valve kit	Total capacity of indoor units (kW)
CZ-P160HR3	5.6 < Total capacity ≤ 16.0
CZ-P56HR3	2.2 ≤ Total capacity ≤ 5.6

* If the capacity range is exceeded, use two solenoid valves connected in parallel.

Each Method (General) and Conditions

	Method 1	Method 2	Method 3
Method	Connecting one indoor unit with one solenoid valve kit	Group control is possible by connecting multiple indoor units to one solenoid valve kit.	Indoor units can operate individually by connecting multiple indoor units to one solenoid valve kit.
Connectable number of remote controls	1 piece	1 piece	Over 2 pieces
Possible operating functions	Individual control	Group control * Thermostat On/Off function is only individual control (when selecting the body thermostat).	Individual control available * Mixed group control available
Possible operating modes	Cool, Dry, Heating, Auto, Fan	Cool, Dry, Heating, Auto, Fan	Cooling, Dry, Heating, Fan * Auto selection is impossible.
Condition	–	Mixed cooling and heating is impossible.	Mixed cooling and heating is impossible. Auto selection is impossible.



3. Electrical Wiring

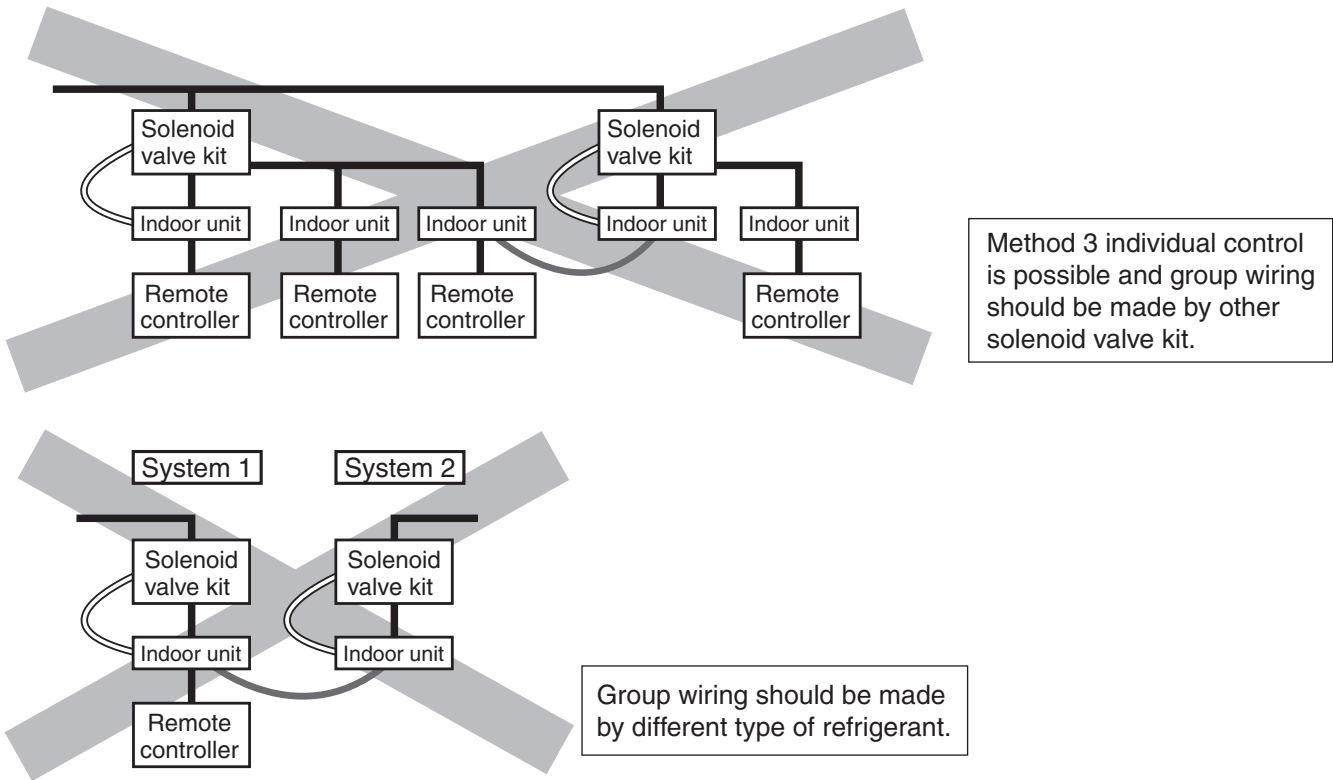
Necessity of setting changes by combination of each method

Type of combination: Necessity of setting
Method 1 only: Setting is unnecessary.
Method 2 included: Setting up in common use of a solenoid valve kit from “Remote Control” is necessary. * ¹ * Method 2 only is set. * Method 3 excluded
Method 3 included: Setting up in common use of a solenoid valve kit from a specific program settings software is necessary. * ¹ * Setting all connected indoor units

*1: Refer to “Test Run” for setting instructions.

Please note the following system example is prohibited and avoid the following connection.

2

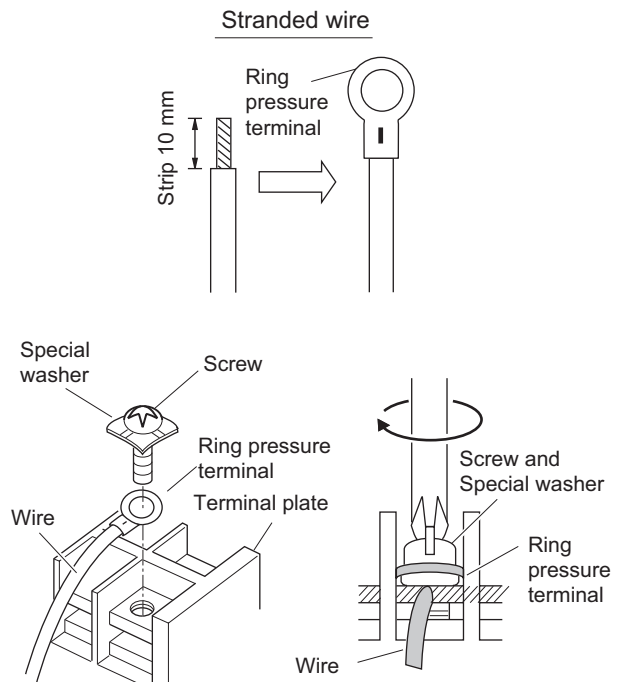


3. Electrical Wiring

How to connect wiring to the terminal

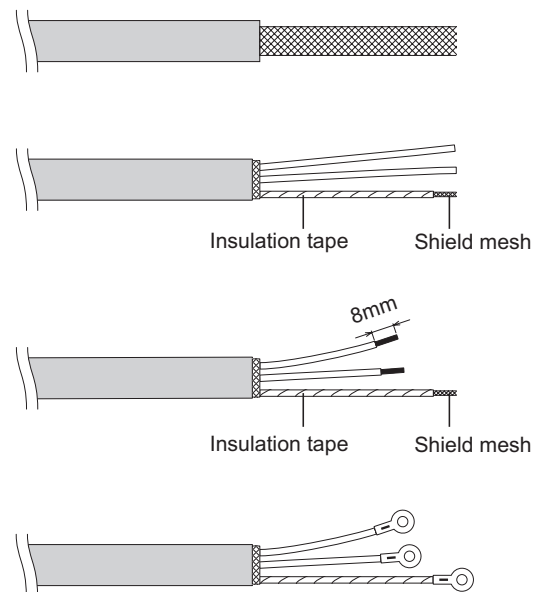
■ For stranded wiring

- (1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wiring about 10 mm and tightly twist the wire ends.
- (2) Using a Phillips head screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring pressure terminal.
- (4) Place the ring pressure terminal, and replace and tighten the removed terminal screw using a screwdriver.



■ Examples of shield wires

- (1) Remove cable coat not to scratch braided shield.
- (2) Ravel braided shield carefully and put tightly braided shield together.
Coat with insulation tube or wrap insulation tape after putting tightly.
- (3) Remove coat of signal wire.
- (4) Connect signal wire removed coat and shield wire with pressure terminal.



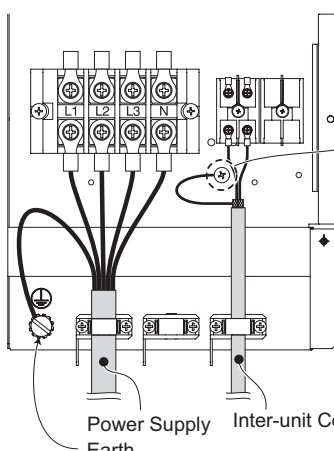
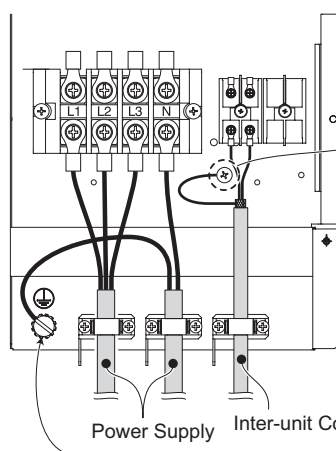
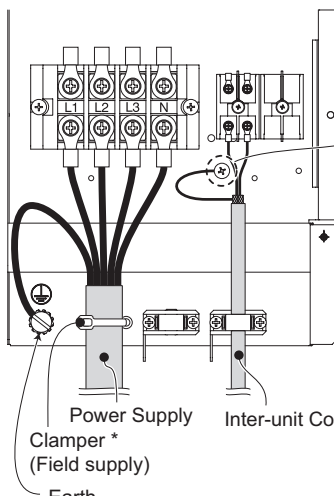
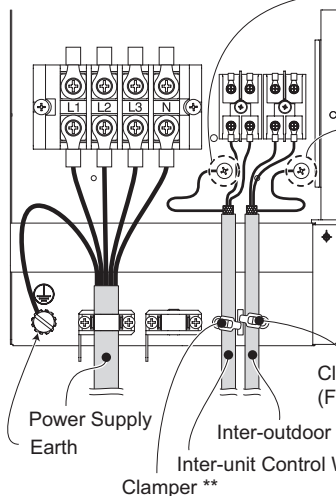
■ Earth wire for power supply

The earth wire should be longer than the other lead wires for electrical safety.

3. Electrical Wiring

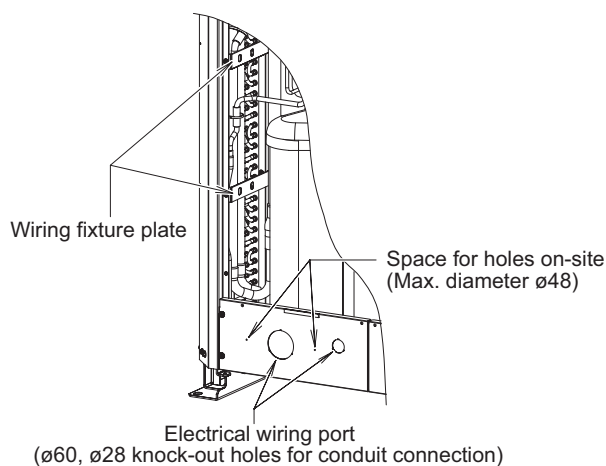
■ Wiring sample

Outdoor Unit : MF2 Type

1.  Use this screw when connecting to ground for the inter-unit control wiring.
 2.  Use this screw when connecting to ground for the inter-unit control wiring.
 3.  Use this screw when connecting to ground for the inter-unit control wiring.
 4.  Use this screw when connecting to ground for the inter-unit control wiring.
Use this screw when connecting to ground for the inter-outdoor unit control wiring.
- * First remove the attached resin fixture. Then lead the clamper (field supply) through the screw hole and fix the power supply wire.
- ** First remove the attached resin fixture. Then lead the clamper (field supply) through the screw hole and square hole from top to bottom or vice versa. Finally fix each inter-outdoor unit control wire and the inter-unit control wire separately with the clamper (field supply).

NOTE

- Fix the wires with the clamper (field supply) to the wiring fixture plates (2 locations) and do not allow them to touch the refrigerant tubing and compressor.
- Use a waterproof conduit for outdoor unit wiring to avoid damaging the wire and to prevent accumulation of liquid inside the unit.



Contents

4. 3WAY SYSTEM UNIT SPECIFICATIONS

1. Outdoor Unit	4-2
1-1. Specifications	4-2
• Standard Combination.....	4-2
• High Efficiency Combination	4-9
1-2. Dimensional Data	4-11
1-3. Multiple Unit Installation Example	4-13
1-4. Refrigerant Flow Diagram.....	4-14
1-5. Noise Criterion Curves	4-17
2. Indoor Unit	
* Refer to the 2WAY SYSTEM TECHNICAL DATA (TD831159)	

1. Outdoor Unit

1-1. Specifications

Standard Combination

Unit Specifications (1)

Model Name				3WAY System Outdoor Unit								
Horsepower				8			10			12		
Model No.				U-8MF2E8			U-10MF2E8			U-12MF2E8		
Power Supply			ø Hz	3ø 50Hz			3ø 50Hz			3ø 50Hz		
			V	380	400	415	380	400	415	380	400	415
Cooling	Capacity		kW	22.4	22.4	22.4	28.0	28.0	28.0	33.5	33.5	33.5
			BTU/h	76500	76500	76500	95600	95600	95600	114300	114300	114300
	Current		A	8.60	8.17	7.96	11.3	10.8	10.6	15.1	14.5	14.1
	Power Input		kW	4.98	4.98	4.98	6.83	6.83	6.83	9.05	9.05	9.05
	EER		—	4.50	4.50	4.50	4.10	4.10	4.10	3.70	3.70	3.70
	Power Factor		%	88	88	87	92	91	90	91	90	89
	Operation Sound	Pressure Level	dB-A	57.0 (Quiet mode: 54.0)			59.0 (Quiet mode: 56.0)			61.0 (Quiet mode: 58.0)		
		Power Level	dB-A	71.5 (Quiet mode: 68.5)			73.5 (Quiet mode: 70.5)			75.5 (Quiet mode: 72.5)		
Heating	Capacity		kW	25.0	25.0	25.0	31.5	31.5	31.5	37.5	37.5	37.5
			BTU/h	85300	85300	85300	107500	107500	107500	128000	128000	128000
	Current		A	8.95	8.50	8.28	11.6	11.0	10.7	14.7	14.1	13.8
	Power Input		kW	5.24	5.24	5.24	6.92	6.92	6.92	8.72	8.72	8.72
	COP		—	4.77	4.77	4.77	4.55	4.55	4.55	4.30	4.30	4.30
	Power Factor		%	89	89	88	91	91	90	90	89	88
MAX Current			A	12.6	12.6	12.6	16.3	16.3	16.3	21.2	21.2	21.2
MAX Power Input			kW	7.40	7.80	8.00	9.80	10.3	10.6	12.8	13.3	13.7
Starting Current			A	1	1	1	1	1	1	74	77	80
Comp Motor output			kW	4.2			6.0			3.0+4.5		
Fan Motor output (No. of poles)			kW	0.75 (8P)			0.75 (8P)			0.75 (8P)		
External static pressure			Pa	80			80			80		
Air flow			m³/min	158			178			212		
Refrigerant amount at shipment			kg	R410A 8.3			R410A 8.5			R410A 8.8		
Unit Dimensions		Height	mm (inch)	1758 (69-7/32)			1758 (69-7/32)			1758 (69-7/32)		
		Width	mm (inch)	1000 (39-3/8)			1000 (39-3/8)			1000 (39-3/8)		
		Depth	mm (inch)	930 (36-39/64)			930 (36-39/64)			930 (36-39/64)		
Net weight			kg (lbs.)	269 (593)			269 (593)			314 (692)		
Color (Approximate value)		Color (Munsell code)		Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)		
		RAL code		7044			7044			7044		
Operation Condition		Cooling	DBT	-10°C ~ 46°C			-10°C ~ 46°C			-10°C ~ 46°C		
		Heating	WBT	-20°C ~ 18°C			-20°C ~ 18°C			-20°C ~ 18°C		
		Cooling & Heating	DBT	-10°C ~ 24°C			-10°C ~ 24°C			-10°C ~ 24°C		
Piping *1		Liquid	mm (inch)	9.52 (3/8)			9.52 (3/8)			12.7 (1/2)		
		Discharge	mm (inch)	15.88 (5/8)			19.05 (3/4)			19.05 (3/4)		
		Suction	mm (inch)	19.05 (3/4)			22.22 (7/8)			25.4 (1)		
		Balance	mm (inch)	6.35 (1/4)			6.35 (1/4)			6.35 (1/4)		
Compressor	Refrigeration oil	Type		FV68S (Ether oil)			FV68S (Ether oil)			FV68S (Ether oil)		
		Charge amount		L		1.6+3		1.6+3		1.6+1.7+3		
	Crankcase heater		W		28		28		28+31			
Primary Accessories				None			Connection Piping (ø19.05, ø15.88)			Connection Piping (ø19.05, ø15.88) (ø12.7, ø9.52)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

*1 Main Pipe Diameter size-up apply to O.D. to first branch pipe

* Performance and electrical characteristics values are based on JIS B8616(EN14511 is only applicable to temperature conditions.) package A/C.

(Cooling : Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)

(Heating : Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)

1. Outdoor Unit

1-1. Specifications

Standard Combination

Unit Specifications (3)

Model Name				3WAY System Outdoor Unit								
Horsepower				20			22			24		
Model No.				U-12MF2E8 U-8MF2E8			U-14MF2E8 U-8MF2E8			U-16MF2E8 U-8MF2E8		
Power Supply			ø Hz	3ø 50Hz			3ø 50Hz			3ø 50Hz		
			V	380	400	415	380	400	415	380	400	415
Cooling	Capacity		kW	56.0	56.0	56.0	61.5	61.5	61.5	68.0	68.0	68.0
			BTU/h	191100	191100	191100	209900	209900	209900	232100	232100	232100
	Current		A	23.8	22.9	22.3	27.0	26.0	25.3	30.9	29.7	28.9
	Power Input		kW	14.1	14.1	14.1	16.2	16.2	16.2	18.5	18.5	18.5
	EER		—	3.97	3.97	3.97	3.80	3.80	3.80	3.68	3.68	3.68
	Power Factor		%	90	89	88	91	90	89	91	90	89
	Operation Sound		Pressure Level	dB-A	62.5 (Quiet mode: 59.5)			63.0 (Quiet mode: 60.0)			63.0 (Quiet mode: 60.0)	
Power Level			dB-A	77.0 (Quiet mode: 74.0)			77.5 (Quiet mode: 74.5)			77.5 (Quiet mode: 74.5)		
Heating	Capacity		kW	63.0	63.0	63.0	69.0	69.0	69.0	76.5	76.5	76.5
			BTU/h	215000	215000	215000	235500	235500	235500	261100	261100	261100
	Current		A	23.8	22.9	22.3	25.2	24.2	23.6	30.4	29.2	28.5
	Power Input		kW	14.1	14.1	14.1	15.1	15.1	15.1	18.2	18.2	18.2
	COP		—	4.47	4.47	4.47	4.57	4.57	4.57	4.20	4.20	4.20
	Power Factor		%	90	89	88	91	90	89	91	90	89
MAX Current			A	33.8	33.8	33.8	38.3	38.3	38.3	41.9	41.9	41.9
MAX Power Input			kW	20.2	21.1	21.7	23.0	24.0	24.7	25.2	26.3	27.0
Starting Current			A	87	90	93	87	90	93	91	94	98
Comp Motor output			kW	(3.1+4.5) +4.2			(4.8+4.5) +4.2			(5.7+5.2) +4.2		
Fan Motor output (No. of poles)			kW	0.75 (8P) × 2			0.75 (8P) × 2			0.75 (8P) × 2		
External static pressure			Pa	80			80			80		
Air flow			m³/min	370			370			370		
Refrigerant amount at shipment			kg	R410A 17			R410A 18			R410A 18		
Unit Dimensions		Height	mm (inch)	1758 (69-7/32)			1758 (69-7/32)			1758 (69-7/32)		
		Width	mm (inch)	2060 (81-7/64)			2060 (81-7/64)			2060 (81-7/64)		
		Depth	mm (inch)	930 (36-39/64)			930 (36-39/64)			930 (36-39/64)		
Net weight			kg (lbs.)	583 (1285)			591 (1303)			591 (1303)		
Color (Approximate value)		Color (Munsell code)		Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)		
		RAL code		7044			7044			7044		
Operation Condition		Cooling	DBT	-10°C ~ 46°C			-10°C ~ 46°C			-10°C ~ 46°C		
		Heating	WBT	-20°C ~ 18°C			-20°C ~ 18°C			-20°C ~ 18°C		
		Cooling & Heating	DBT	-10°C ~ 24°C			-10°C ~ 24°C			-10°C ~ 24°C		
Piping *1		Liquid	mm (inch)	15.88 (5/8)			15.88 (5/8)			15.88 (5/8)		
		Discharge	mm (inch)	22.22 (7/8)			25.4 (1)			25.4 (1)		
		Suction	mm (inch)	28.58 (1-1/8)			28.58 (1-1/8)			28.58 (1-1/8)		
		Balance	mm (inch)	6.35 (1/4)			6.35 (1/4)			6.35 (1/4)		
Compressor	Refrigeration oil	Type		FV68S (Ether oil)			FV68S (Ether oil)			FV68S (Ether oil)		
		Charge amount		L	(1.6+1.7+3) + (1.6+3)			(1.6+1.7+3) + (1.6+3)			(1.6+1.7+3) + (1.6+3)	
	Crankcase heater		W	(28+31) +28			(28+31) +28			(28+31) +28		
Primary Accessories				Connection Piping (ø19.05, ø15.88) (ø12.7, ø9.52)			Connection Piping (ø22.22, ø19.05)			Connection Piping (ø28.58, ø25.4) (ø22.22, ø19.05)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

*1 Main Pipe Diameter size-up apply to O.D. to first branch pipe

* Performance and electrical characteristics values are based on JIS B8616(EN14511 is only applicable to temperature conditions.) package A/C.

(Cooling : Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)

(Heating : Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)

1. Outdoor Unit

1-1. Specifications

Standard Combination

Unit Specifications (4)

Model Name				3WAY System Outdoor Unit								
Horsepower				26			28			30		
Model No.				U-14MF2E8 U-12MF2E8			U-14MF2E8 U-14MF2E8			U-16MF2E8 U-14MF2E8		
Power Supply			ø Hz	3ø 50Hz			3ø 50Hz			3ø 50Hz		
			V	380	400	415	380	400	415	380	400	415
Cooling	Capacity		kW	73.0	73.0	73.0	78.5	78.5	78.5	85.0	85.0	85.0
			BTU/h	249100	249100	249100	267900	267900	267900	290100	290100	290100
	Current		A	33.7	32.4	31.5	37.2	35.7	34.8	41.1	39.5	38.5
	Power Input		kW	20.4	20.4	20.4	22.5	22.5	22.5	24.9	24.9	24.9
	EER		—	3.58	3.58	3.58	3.49	3.49	3.49	3.41	3.41	3.41
	Power Factor		%	92	91	90	92	91	90	92	91	90
	Operation Sound		Pressure Level	dB-A	64.5 (Quiet mode: 61.5)			65.0 (Quiet mode: 62.0)			65.0 (Quiet mode: 62.0)	
Power Level			dB-A	79.0 (Quiet mode: 76.0)			79.5 (Quiet mode: 76.5)			79.5 (Quiet mode: 76.5)		
Heating	Capacity		kW	81.5	81.5	81.5	87.5	87.5	87.5	95.0	95.0	95.0
			BTU/h	278200	278200	278200	298600	298600	298600	324200	324200	324200
	Current		A	31.1	29.8	29.1	32.6	31.3	30.5	37.7	36.2	35.3
	Power Input		kW	18.6	18.6	18.6	19.5	19.5	19.5	22.6	22.6	22.6
	COP		—	4.38	4.38	4.38	4.49	4.49	4.49	4.20	4.20	4.20
	Power Factor		%	91	90	89	91	90	89	91	90	89
	MAX Current		A	46.9	46.9	46.9	51.4	51.4	51.4	55.0	55.0	55.0
	MAX Power Input		kW	28.4	29.5	30.4	31.2	32.4	33.4	33.4	34.7	35.7
	Starting Current		A	100	103	106	100	103	106	104	107	111
	Comp Motor output		kW	(4.8+4.5) + (3.1+4.5)			(4.8+4.5) + (4.8+4.5)			(5.7+5.2) + (4.8+4.5)		
Fan Motor output (No. of poles)		kW	0.75 (8P) × 2			0.75 (8P) × 2			0.75 (8P) × 2			
External static pressure		Pa	80			80			80			
Air flow		m³/min	424			424			424			
Refrigerant amount at shipment		kg	R410A 18			R410A 19			R410A 19			
Unit Dimensions		Height	mm (inch)	1758 (69-7/32)			1758 (69-7/32)			1758 (69-7/32)		
		Width	mm (inch)	2060 (81-7/64)			2060 (81-7/64)			2060 (81-7/64)		
		Depth	mm (inch)	930 (36-39/64)			930 (36-39/64)			930 (36-39/64)		
Net weight		kg (lbs.)	636 (1402)			644 (1420)			644 (1420)			
Color (Approximate value)		Color (Munsell code)		Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)		
		RAL code		7044			7044			7044		
Operation Condition		Cooling	DBT	-10°C ~ 46°C			-10°C ~ 46°C			-10°C ~ 46°C		
		Heating	WBT	-20°C ~ 18°C			-20°C ~ 18°C			-20°C ~ 18°C		
		Cooling & Heating	DBT	-10°C ~ 24°C			-10°C ~ 24°C			-10°C ~ 24°C		
Piping *1		Liquid	mm (inch)	19.05 (3/4)			19.05 (3/4)			19.05 (3/4)		
		Discharge	mm (inch)	25.4 (1)			28.58 (1-1/8)			28.58 (1-1/8)		
		Suction	mm (inch)	31.75 (1-1/4)			31.75 (1-1/4)			31.75 (1-1/4)		
		Balance	mm (inch)	6.35 (1/4)			6.35 (1/4)			6.35 (1/4)		
Compressor	Refrigeration oil	Type		FV68S (Ether oil)			FV68S (Ether oil)			FV68S (Ether oil)		
		Charge amount		L	(1.6+1.7+3) × 2			(1.6+1.7+3) × 2			(1.6+1.7+3) × 2	
	Crankcase heater		W	(28+31) × 2			(28+31) × 2			(28+31) × 2		
Primary Accessories				Connection Piping (ø22.22, ø19.05) (ø19.05, ø15.88) (ø12.7, ø9.52)			Connection Piping (ø22.22, ø19.05) × 2			Connection Piping (ø28.58, ø25.4) (ø22.22, ø19.05) × 2		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

^{*1} Main Pipe Diameter size-up apply to O.D. to first branch pipe

* Performance and electrical characteristics values are based on JIS B8616(EN14511 is only applicable to temperature conditions.) package A/C.

(Cooling : Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)

(Heating : Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)

1. Outdoor Unit

1-1. Specifications

Standard Combination

Unit Specifications (5)

Model Name				3WAY System Outdoor Unit								
Horsepower				32			34			36		
Model No.				U-16MF2E8 U-16MF2E8			U-14MF2E8 U-12MF2E8 U-8MF2E8			U-14MF2E8 U-14MF2E8 U-8MF2E8		
Power Supply			ø Hz	3ø 50Hz			3ø 50Hz			3ø 50Hz		
			V	380	400	415	380	400	415	380	400	415
Cooling	Capacity		kW	90.0	90.0	90.0	96.0	96.0	96.0	101.0	101.0	101.0
			BTU/h	307200	307200	307200	327600	327600	327600	344700	344700	344700
	Current		A	43.9	42.2	41.1	42.9	41.2	39.7	46.1	44.3	43.1
	Power Input		kW	26.6	26.6	26.6	25.7	25.7	25.7	27.6	27.6	27.6
	EER		—	3.38	3.38	3.38	3.74	3.74	3.74	3.66	3.66	3.66
	Power Factor		%	92	91	90	91	90	90	91	90	89
	Operation Sound		Pressure Level	dB-A	65.0 (Quiet mode: 62.0)			65.0 (Quiet mode: 62.0)			65.5 (Quiet mode: 62.5)	
Power Level			dB-A	79.5 (Quiet mode: 76.5)			79.5 (Quiet mode: 76.5)			80.0 (Quiet mode: 77.0)		
Heating	Capacity		kW	100.0	100.0	100.0	108.0	108.0	108.0	113.0	113.0	113.0
			BTU/h	341300	341300	341300	368600	368600	368600	385700	385700	385700
	Current		A	41.7	40.1	39.1	41.0	39.4	38.4	41.6	39.9	38.9
	Power Input		kW	24.8	24.8	24.8	24.3	24.3	24.3	25.0	25.0	25.0
	COP		—	4.03	4.03	4.03	4.44	4.44	4.44	4.52	4.52	4.52
	Power Factor		%	90	89	88	90	89	88	91	90	89
MAX Current			A	58.6	58.6	58.6	59.5	59.5	59.5	64.0	64.0	64.0
MAX Power Input			kW	35.6	37.0	38.0	35.8	37.3	38.4	38.6	40.2	41.4
Starting Current			A	108	111	115	113	116	119	113	116	119
Comp Motor output			kW	(5.7+5.2) + (5.7+5.2)			(4.8+4.5) + (3.1+4.5) +4.2			(4.8+4.5) + (4.8+4.5) +4.2		
Fan Motor output (No. of poles)			kW	0.75 (8P) × 2			0.75 (8P) × 3			0.75 (8P) × 3		
External static pressure			Pa	80			80			80		
Air flow			m³/min	424			582			582		
Refrigerant amount at shipment			kg	R410A 19			R410A 26			R410A 27		
Unit Dimensions		Height	mm (inch)	1758 (69-7/32)			1758 (69-7/32)			1758 (69-7/32)		
		Width	mm (inch)	2060 (81-7/64)			3120 (122-53/64)			3120 (122-53/64)		
		Depth	mm (inch)	930 (36-39/64)			930 (36-39/64)			930 (36-39/64)		
Net weight			kg (lbs.)	644 (1420)			905 (1995)			913 (2013)		
Color (Approximate value)		Color (Munsell code)		Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)		
		RAL code		7044			7044			7044		
Operation Condition		Cooling	DBT	-10°C ~ 46°C			-10°C ~ 46°C			-10°C ~ 46°C		
		Heating	WBT	-20°C ~ 18°C			-20°C ~ 18°C			-20°C ~ 18°C		
		Cooling & Heating	DBT	-10°C ~ 24°C			-10°C ~ 24°C			-10°C ~ 24°C		
Piping*1		Liquid	mm (inch)	19.05 (3/4)			19.05 (3/4)			19.05 (3/4)		
		Discharge	mm (inch)	28.58 (1-1/8)			28.58 (1-1/8)			28.58 (1-1/8)		
		Suction	mm (inch)	31.75 (1-1/4)			31.75 (1-1/4)			38.1 (1-1/2)		
		Balance	mm (inch)	6.35 (1/4)			6.35 (1/4)			6.35 (1/4)		
Compressor	Refrigeration oil	Type		FV68S (Ether oil)			FV68S (Ether oil)			FV68S (Ether oil)		
		Charge amount		L	(1.6+1.7+3) × 2			(1.6+1.7+3) × 2+ (1.6+3)			(1.6+1.7+3) × 2+ (1.6+3)	
	Crankcase heater		W	(28+31) × 2			(28+31) × 2+28			(28+31) × 2+28		
Primary Accessories				Connection Piping (ø28.58, ø25.4) × 2 (ø22.22, ø19.05) × 2			Connection Piping (ø22.22, ø19.05) (ø19.05, ø15.88) (ø12.7, ø9.52)			Connection Piping (ø22.22, ø19.05) × 2		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

*1 Main Pipe Diameter size-up apply to O.D. to first branch pipe

* Performance and electrical characteristics values are based on JIS B8616(EN14511 is only applicable to temperature conditions.) package A/C.

(Cooling : Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)

(Heating : Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)

1. Outdoor Unit

1-1. Specifications

High Efficiency Combination

Unit Specifications (9)

Model Name				3WAY System Outdoor Unit								
Horsepower				28			30			32		
Model No.				U-12MF2E8 U-8MF2E8 U-8MF2E8			U-14MF2E8 U-8MF2E8 U-8MF2E8			U-12MF2E8 U-12MF2E8 U-8MF2E8		
Power Supply			ø Hz	3ø 50Hz			3ø 50Hz			3ø 50Hz		
			V	380	400	415	380	400	415	380	400	415
Cooling	Capacity		kW	78.5	78.5	78.5	85.0	85.0	85.0	90.0	90.0	90.0
			BTU/h	267900	267900	267900	290100	290100	290100	307200	307200	307200
	Current		A	32.2	31.0	30.2	36.5	35.0	34.1	38.9	37.4	36.4
	Power Input		kW	19.1	19.1	19.1	21.6	21.6	21.6	23.3	23.3	23.3
	EER		—	4.11	4.11	4.11	3.94	3.94	3.94	3.86	3.86	3.86
	Power Factor		%	90	89	88	90	89	88	91	90	89
	Operation Sound	Pressure Level	dB-A	63.5 (Quiet mode: 60.5)			64.0 (Quiet mode: 61.0)			65.0 (Quiet mode: 62.0)		
		Power Level	dB-A	78.0 (Quiet mode: 75.0)			78.5 (Quiet mode: 75.5)			79.5 (Quiet mode: 76.5)		
Heating	Capacity		kW	87.5	87.5	87.5	95.0	95.0	95.0	100.0	100.0	100.0
			BTU/h	298600	298600	298600	324200	324200	324200	341300	341300	341300
	Current		A	32.4	31.1	30.4	35.0	33.6	32.7	38.3	36.8	35.9
	Power Input		kW	19.2	19.2	19.2	20.7	20.7	20.7	22.7	22.7	22.7
	COP		—	4.56	4.56	4.56	4.59	4.59	4.59	4.41	4.41	4.41
	Power Factor		%	90	89	88	90	89	88	90	89	88
MAX Current			A	46.4	46.4	46.4	50.9	50.9	50.9	55.0	55.0	55.0
MAX Power Input			kW	27.6	28.9	29.7	30.4	31.8	32.7	33.0	34.4	35.4
Starting Current			A	100	103	106	100	103	106	108	111	114
Comp Motor output			kW	(3.1+4.5) +4.2+4.2			(4.8+4.5) +4.2+4.2			(3.1+4.5) + (3.1+4.5) +4.2		
Fan Motor output (No. of poles)			kW	0.75 (8P) × 3			0.75 (8P) × 3			0.75 (8P) × 3		
External static pressure			Pa	80			80			80		
Air flow			m³/min	528			528			582		
Refrigerant amount at shipment			kg	R410A 25			R410A 26			R410A 26		
Unit Dimensions		Height	mm (inch)	1758 (69-7/32)			1758 (69-7/32)			1758 (69-7/32)		
		Width	mm (inch)	3120 (122-53/64)			3120 (122-53/64)			3120 (122-53/64)		
		Depth	mm (inch)	930 (36-39/64)			930 (36-39/64)			930 (36-39/64)		
Net weight			kg (lbs.)	852 (1878)			860 (1896)			897 (1978)		
Color (Approximate value)		Color (Munsell code)		Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)			Ivory (2.6Y7.6/1.1)		
		RAL code		7044			7044			7044		
Operation Condition		Cooling	DBT	-10°C ~ 46°C			-10°C ~ 46°C			-10°C ~ 46°C		
		Heating	WBT	-20°C ~ 18°C			-20°C ~ 18°C			-20°C ~ 18°C		
		Cooling & Heating	DBT	-10°C ~ 24°C			-10°C ~ 24°C			-10°C ~ 24°C		
Piping *1		Liquid	mm (inch)	19.05 (3/4)			19.05 (3/4)			19.05 (3/4)		
		Discharge	mm (inch)	28.58 (1-1/8)			28.58 (1-1/8)			28.58 (1-1/8)		
		Suction	mm (inch)	31.75 (1-1/4)			31.75 (1-1/4)			31.75 (1-1/4)		
		Balance	mm (inch)	6.35 (1/4)			6.35 (1/4)			6.35 (1/4)		
Compressor	Refrigeration oil	Type		FV68S (Ether oil)			FV68S (Ether oil)			FV68S (Ether oil)		
		Charge amount		L	(1.6+1.7+3) + (1.6+3) × 2			(1.6+1.7+3) +(1.6+3) × 2			(1.6+1.7+3) × 2+ (1.6+3)	
	Crankcase heater		W	(28+31) +28 × 2			(28+31) +28 × 2			(28+31) × 2+28		
Primary Accessories				Connection Piping (ø19.05, ø15.88) (ø12.7, ø9.52)			Connection Piping (ø22.22, ø19.05)			Connection Piping (ø19.05, ø15.88) × 2 (ø12.7, ø9.52) × 2		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

*1 Main Pipe Diameter size-up apply to O.D. to first branch pipe

* Performance and electrical characteristics values are based on JIS B8616(EN14511 is only applicable to temperature conditions.) package A/C.

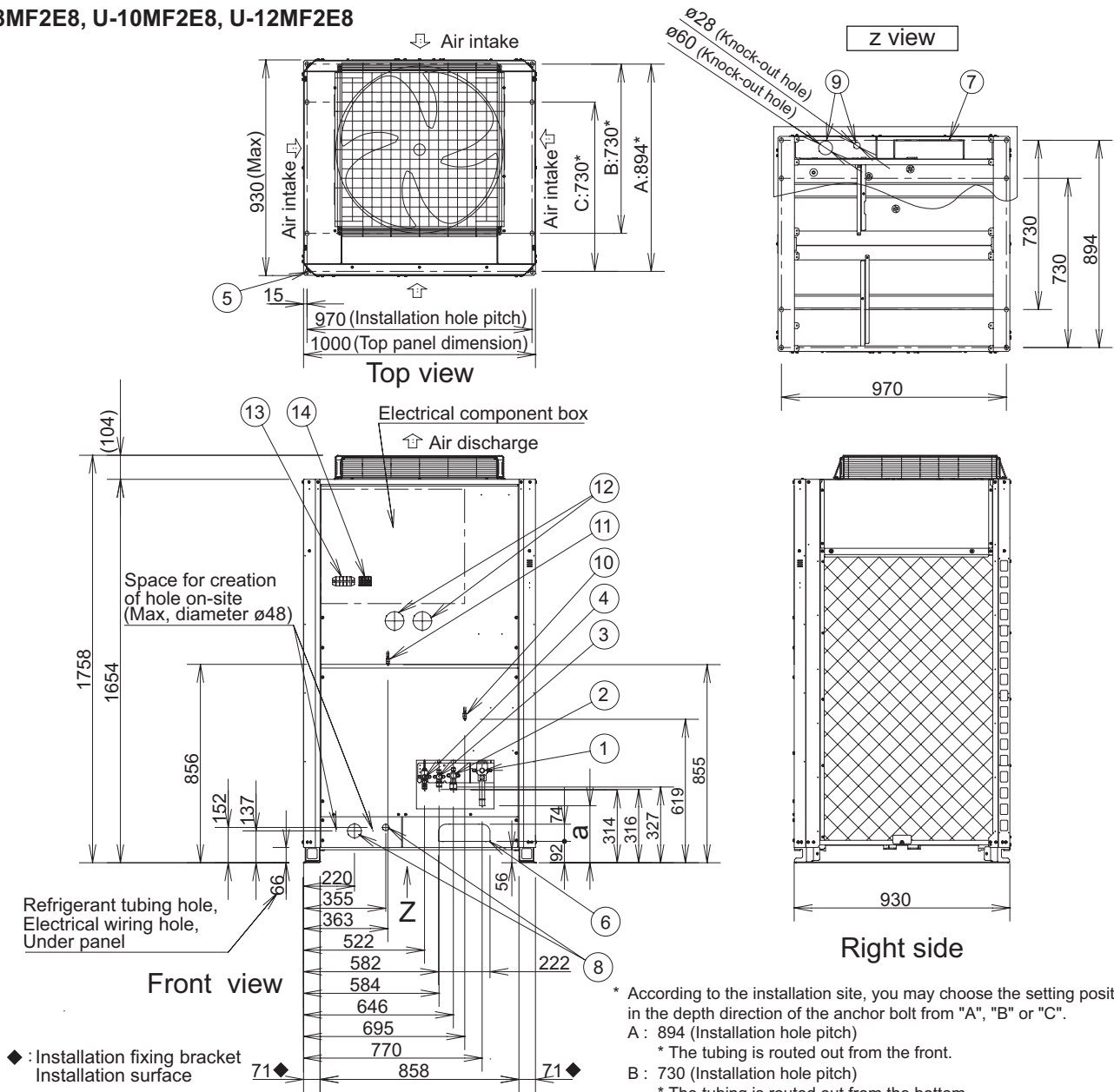
(Cooling : Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)

(Heating : Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)

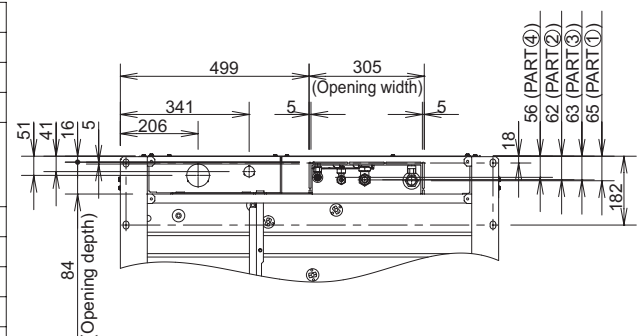
1. Outdoor Unit

1-2. Dimensional Data

U-8MF2E8, U-10MF2E8, U-12MF2E8



①	Refrigerant tubing (suction tube)	See table at right.
②	Refrigerant tubing (discharge tube)	flared connection $\phi 15.88$
③	Refrigerant tubing (liquid tube)	flared connection $\phi 9.52$
④	Refrigerant tubing (balance tube)	flared connection $\phi 6.35$
⑤	Installation holes (4-15×21 elongated holes), anchor bolts M12 or larger: use 4 pieces and select an anchor bolt position in the direction of depth among A, B, C according to the installation location.	
⑥	Refrigerant tubing port (front: knock-out hole)	
⑦	Refrigerant tubing port (bottom: slit hole)	
⑧	Electrical wiring port (front: $\phi 60$, $\phi 28$ knock-out holes for conduit connection)	
⑨	Electrical wiring port (bottom: $\phi 60$, $\phi 28$ knock-out holes for conduit connection)	
⑩	Pressure outlet port (for high pressure: $\phi 7.94$ Schrader-type connection)	
⑪	Pressure outlet port (for low pressure: $\phi 7.94$ Schrader-type connection)	
⑫	Knock-out hole for connecting pressure gauge (optional)	
⑬	Terminal board	
⑭	Inter-unit control wiring, Inter-outdoor unit control wiring Terminal board	



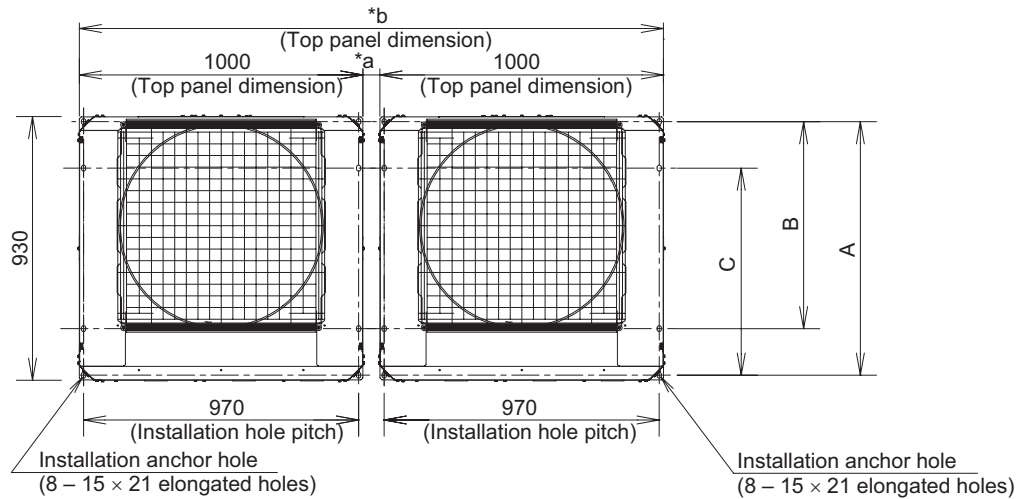
	a	connection
U-8MF2E8	258	Brazed connection $\phi 19.05$
U-10MF2E8	246	Brazed connection $\phi 22.22$
U-12MF2E8		

1. Outdoor Unit

1-3. Multiple Unit Installation Example

• Diagrams for 2-unit setting (Top view)

Unit: mm

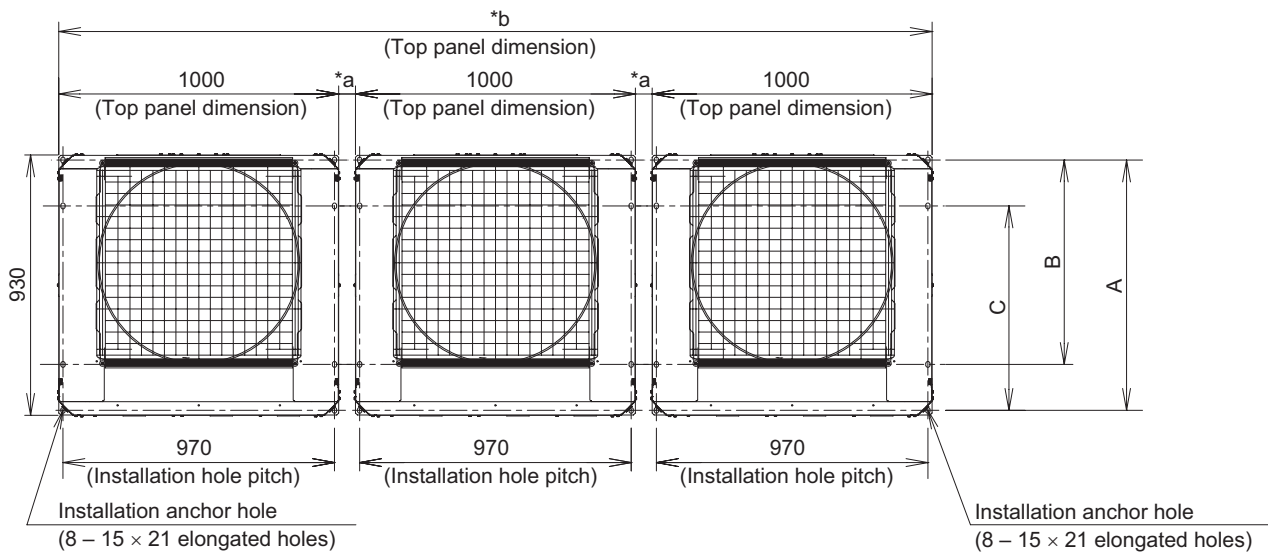


- According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from "A", "B" or "C".

For 2-unit setting		
	*a	*b
A : 894 (Installation hole pitch) * The tubing is routed out from the front.	60	2060
B : 730 (Installation hole pitch) * The tubing is routed out from the bottom.	180	2180
C : 730 (Installation hole pitch)	180	2180

• Diagrams for 3-unit setting (Top view)

Unit: mm



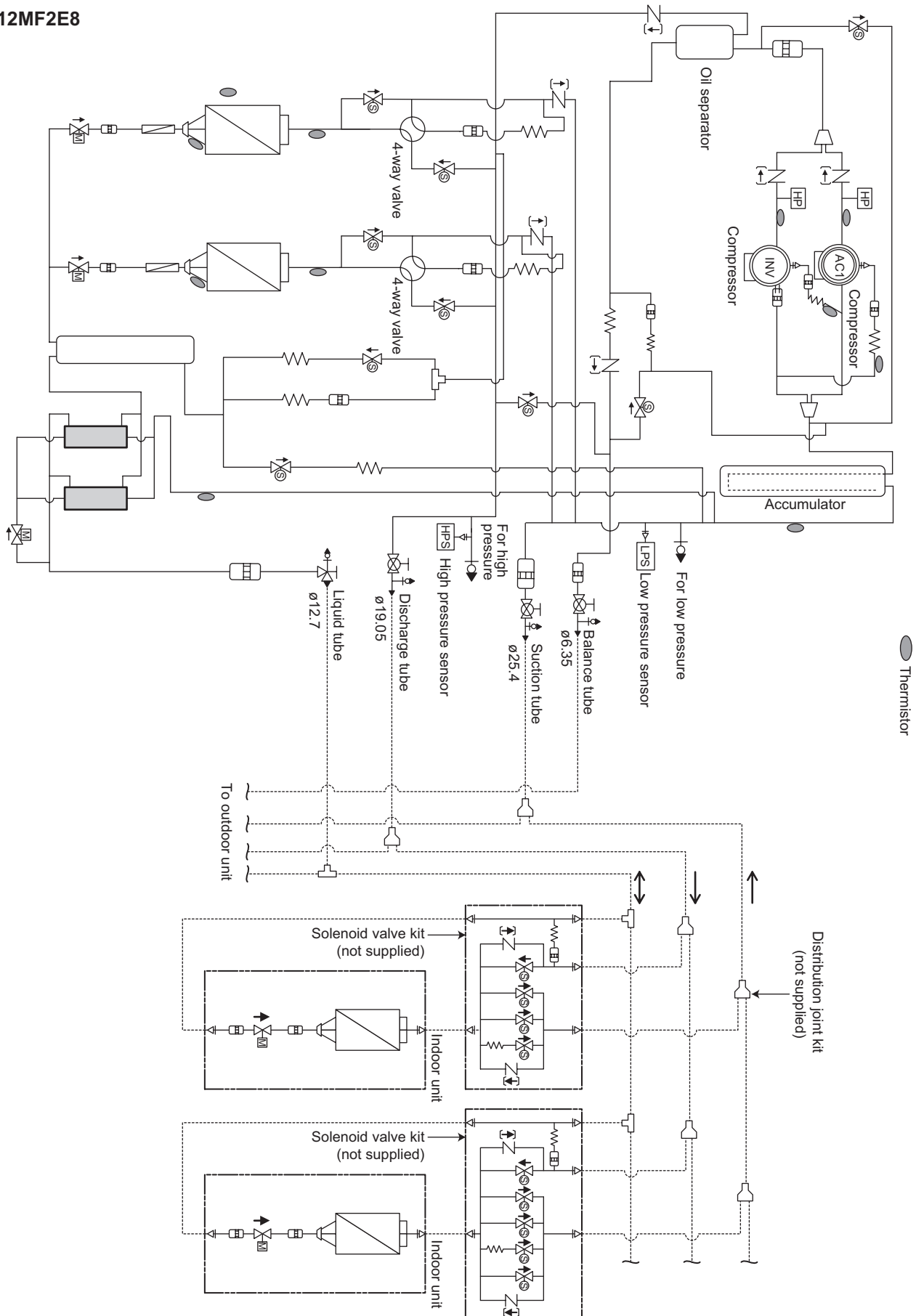
- According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from "A", "B" or "C".

For 3-unit setting		
	*a	*b
A : 894 (Installation hole pitch) * The tubing is routed out from the front.	60	3120
B : 730 (Installation hole pitch) * The tubing is routed out from the bottom.	180	3360
C : 730 (Installation hole pitch)	180	3360

1. Outdoor Unit

1-4. Refrigerant Flow Diagram

U-12MF2E8



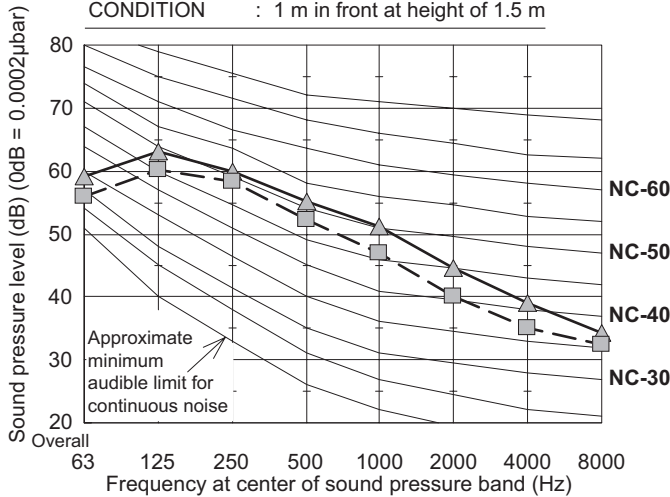
1. Outdoor Unit

1-5. Noise Criterion Curves

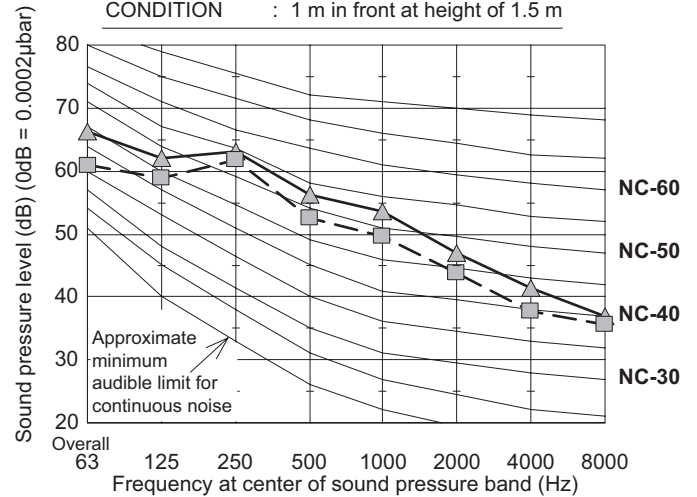
U-8MF2E8, U-10MF2E8, U-12MF2E8, U-14MF2E8, U-16MF2E8

Standard mode 
Quiet mode 

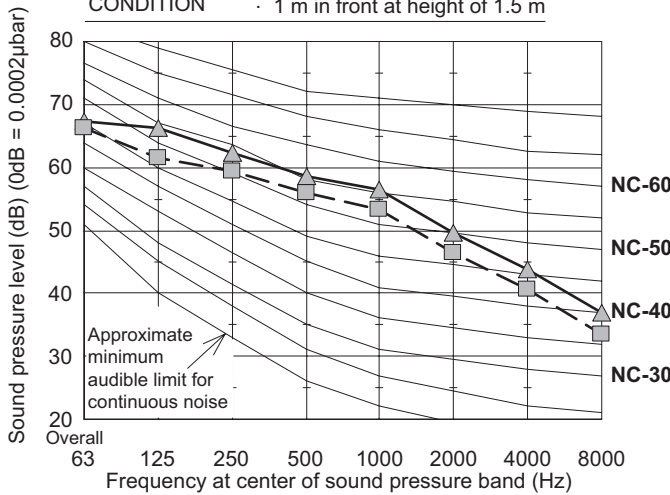
MODEL : U-8MF2E8
SOUND LEVEL : 57.0
db (A) (Quiet mode 54.0)
CONDITION : 1 m in front at height of 1.5 m



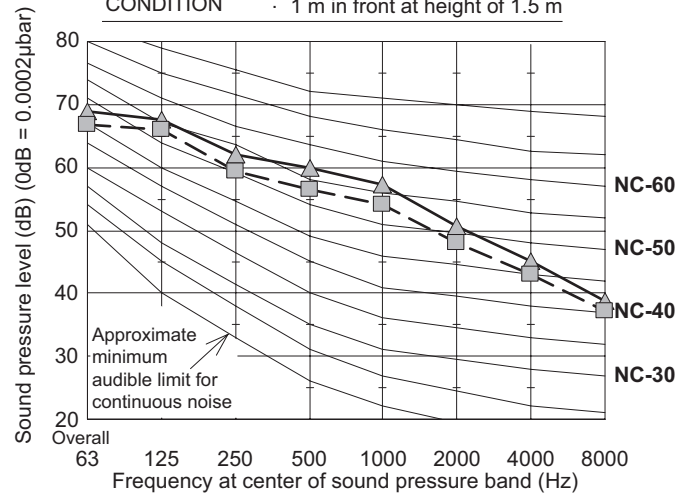
MODEL : U-10MF2E8
SOUND LEVEL : 59.0
db (A) (Quiet mode 56.0)
CONDITION : 1 m in front at height of 1.5 m



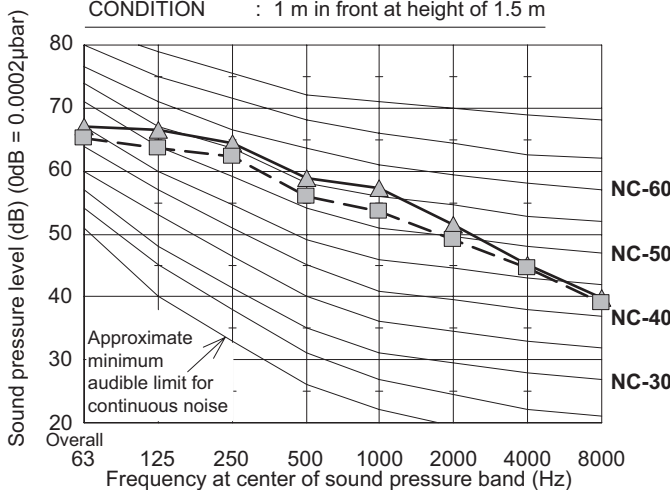
MODEL : U-12MF2E8
SOUND LEVEL : 61.0
db (A) (Quiet mode 58.0)
CONDITION : 1 m in front at height of 1.5 m



MODEL : U-14MF2E8
SOUND LEVEL : 62.0
db (A) (Quiet mode 59.0)
CONDITION : 1 m in front at height of 1.5 m



MODEL : U-16MF2E8
SOUND LEVEL : 62.0
db (A) (Quiet mode 59.0)
CONDITION : 1 m in front at height of 1.5 m



Contents

6. ELECTRICAL DATA

1. Outdoor Unit 6-2

 (1) U-8MF2E8/10MF2E8 6-2

 (2) U-12MF2E8 6-4

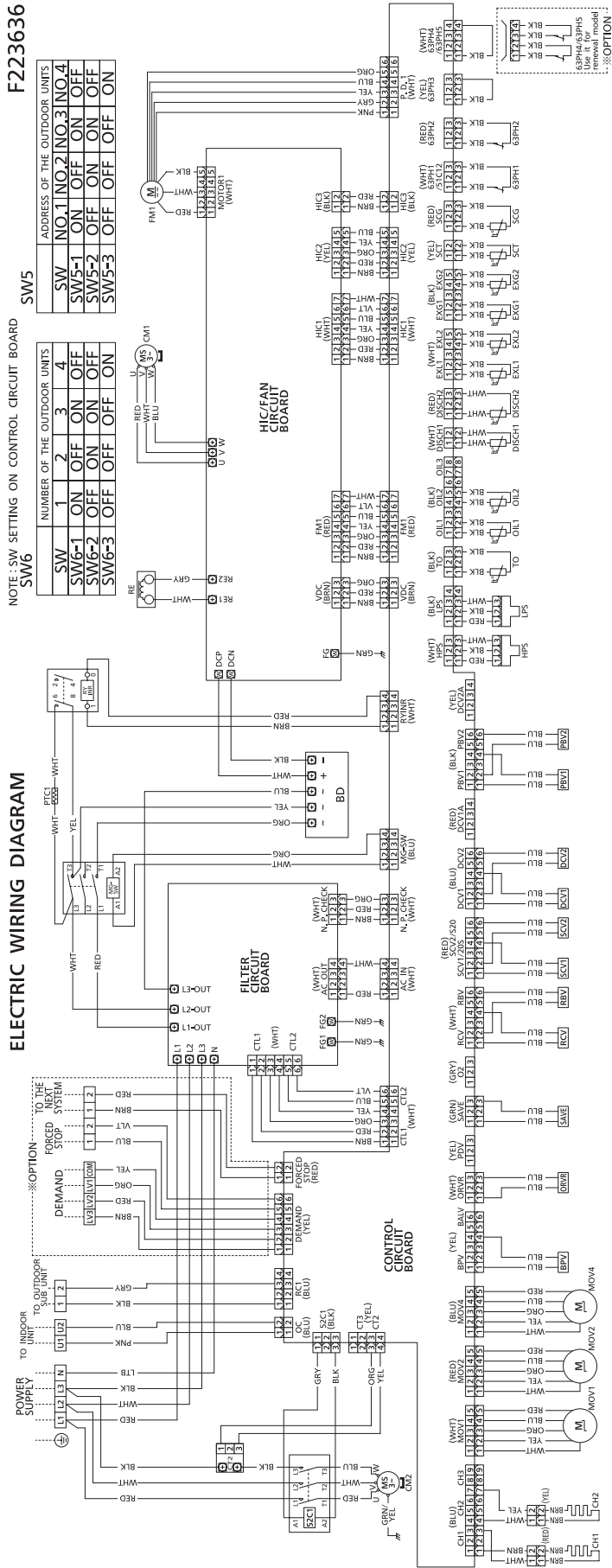
 (3) U-14MF2E8/16MF2E8 6-6

2. Indoor Unit

* Refer to the 2WAY SYSTEM TECHNICAL DATA (TD831159)

1. Outdoor Unit

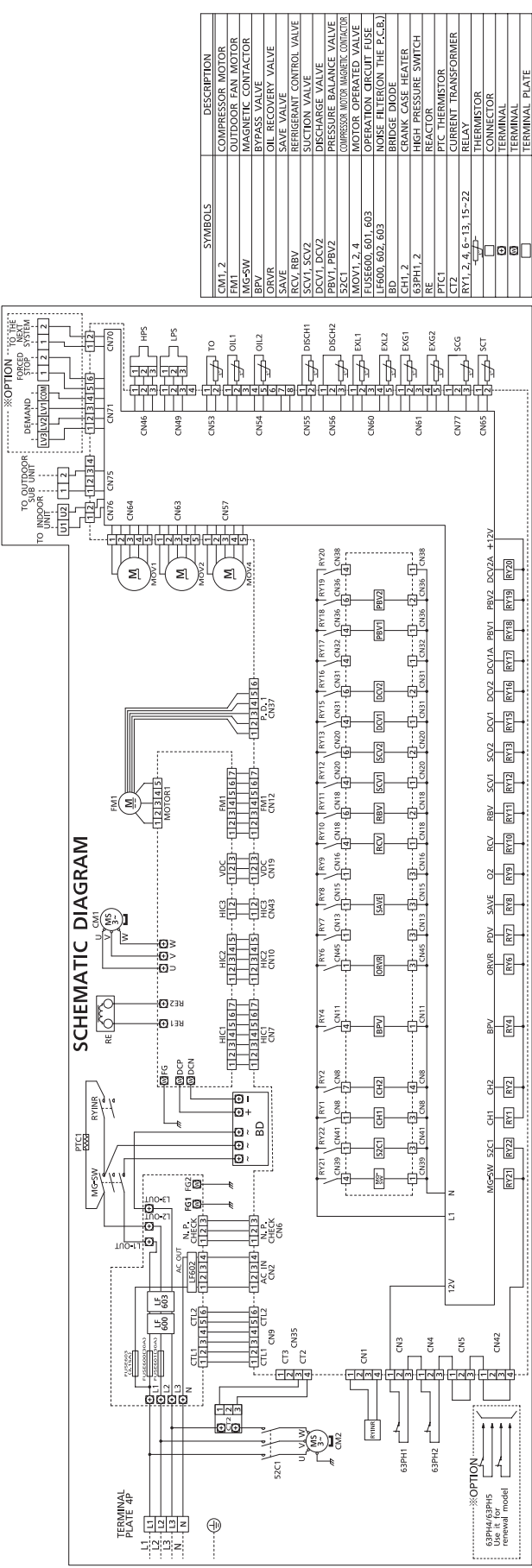
(2) Electric Wiring Diagram U-12MF2E8



1. Outdoor Unit

Schematic Diagram U-12MF2E8

F223636



Contents

9. CAPACITY TABLE

1. Capacity Ratio of Outdoor Unit	9-2
1-1. U-8MF2E8 (Cooling)	9-2
1-2. U-8MF2E8 (Heating)	9-5
1-3. U-10MF2E8 (Cooling)	9-8
1-4. U-10MF2E8 (Heating)	9-11
1-5. U-12MF2E8 (Cooling)	9-14
1-6. U-12MF2E8 (Heating)	9-17
1-7. U-14MF2E8 (Cooling)	9-20
1-8. U-14MF2E8 (Heating)	9-23
1-9. U-16MF2E8 (Cooling)	9-26
1-10. U-16MF2E8 (Heating)	9-29

1. Capacity Ratio of Outdoor Unit

1-5. U-12MF2E8 (Cooling)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	-10.0	31.2	4.19	36.0	4.84	36.0	4.84	36.0	4.84	40.8	5.49	45.6	6.14	50.4	6.80
	-5.0	31.2	4.19	36.0	4.85	36.0	4.85	36.0	4.85	40.8	5.50	45.6	6.16	50.4	6.81
	0.0	31.2	4.20	36.0	4.87	36.0	4.87	36.0	4.87	40.8	5.52	45.6	6.18	50.4	6.83
	5.0	31.2	4.21	36.0	4.89	36.0	4.89	36.0	4.89	40.8	5.56	45.6	6.22	50.4	6.87
	10.0	31.2	4.23	36.0	4.94	36.0	4.94	36.0	4.94	40.8	5.62	45.6	6.30	50.4	6.96
	15.0	31.2	4.27	36.0	5.06	36.0	5.06	36.0	5.06	40.8	5.78	45.6	6.48	50.4	7.14
	20.0	31.2	4.42	36.0	5.41	36.0	5.41	36.0	5.41	40.8	6.37	45.6	7.49	50.4	8.72
	25.0	31.2	5.16	36.0	6.79	36.0	6.79	36.0	6.79	40.8	8.04	45.6	9.38	50.4	10.84
	30.0	31.2	6.43	36.0	8.34	36.0	8.34	36.0	8.34	40.8	9.82	45.6	11.42	49.6	12.67
	35.0	31.2	7.80	36.0	9.99	36.0	9.99	36.0	9.99	40.8	11.75	44.1	12.67	45.9	12.67
	40.0	31.2	9.27	36.0	11.80	36.0	11.80	36.0	11.80	39.0	12.67	40.7	12.67	42.4	12.67
	43.0	31.2	10.21	35.5	12.67	35.5	12.67	35.5	12.67	36.6	12.33	36.6	11.33	36.6	10.41
	46.0	28.9	9.64	28.9	9.64	28.9	9.64	28.9	9.64	28.9	8.87	28.9	8.15	28.9	7.49

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
120%	-10.0	28.1	3.77	33.8	4.53	35.2	4.73	35.2	4.73	39.9	5.37	44.6	6.00	49.2	6.63
	-5.0	28.1	3.78	33.8	4.54	35.2	4.74	35.2	4.74	39.9	5.38	44.6	6.02	49.2	6.65
	0.0	28.1	3.78	33.8	4.54	35.2	4.75	35.2	4.75	39.9	5.39	44.6	6.04	49.2	6.67
	5.0	28.1	3.79	33.8	4.56	35.2	4.78	35.2	4.78	39.9	5.42	44.6	6.07	49.2	6.72
	10.0	28.1	3.81	33.8	4.59	35.2	4.82	35.2	4.82	39.9	5.48	44.6	6.15	49.2	6.80
	15.0	28.1	3.86	33.8	4.65	35.2	4.93	35.2	4.93	39.9	5.63	44.6	6.33	49.2	6.98
	20.0	28.1	3.99	33.8	4.86	35.2	5.27	35.2	5.27	39.9	6.14	44.6	7.20	49.2	8.36
	25.0	28.1	4.67	33.8	5.81	35.2	6.56	35.2	6.56	39.9	7.76	44.6	9.04	49.2	10.43
	30.0	28.1	5.82	33.8	7.21	35.2	8.05	35.2	8.05	39.9	9.48	44.6	11.01	49.2	12.65
	35.0	28.1	7.04	33.8	8.72	35.2	9.67	35.2	9.67	39.9	11.35	43.8	12.67	45.5	12.67
	40.0	28.1	8.36	33.8	10.34	35.2	11.43	35.2	11.43	38.7	12.67	40.4	12.67	42.1	12.67
	43.0	28.1	9.21	33.8	11.38	35.2	12.57	35.2	12.57	36.6	12.47	36.6	11.48	36.6	10.54
	46.0	28.1	10.10	28.9	9.73	28.9	9.73	28.9	9.73	28.9	8.96	28.9	8.24	28.9	7.57

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
110%	-10.0	25.2	3.38	30.2	4.05	34.3	4.62	34.3	4.62	38.9	5.24	43.5	5.86	48.1	6.48
	-5.0	25.2	3.38	30.2	4.06	34.3	4.62	34.3	4.62	38.9	5.25	43.5	5.87	48.1	6.49
	0.0	25.2	3.38	30.2	4.07	34.3	4.63	34.3	4.63	38.9	5.27	43.5	5.89	48.1	6.52
	5.0	25.2	3.39	30.2	4.08	34.3	4.66	34.3	4.66	38.9	5.29	43.5	5.93	48.1	6.55
	10.0	25.2	3.41	30.2	4.11	34.3	4.71	34.3	4.71	38.9	5.35	43.5	6.01	48.1	6.63
	15.0	25.2	3.45	30.2	4.17	34.3	4.81	34.3	4.81	38.9	5.48	43.5	6.18	48.1	6.81
	20.0	25.2	3.58	30.2	4.36	34.3	5.11	34.3	5.11	38.9	5.91	43.5	6.91	48.1	8.02
	25.0	25.2	4.21	30.2	5.21	34.3	6.34	34.3	6.34	38.9	7.48	43.5	8.71	48.1	10.03
	30.0	25.2	5.23	30.2	6.46	34.3	7.79	34.3	7.79	38.9	9.15	43.5	10.62	48.1	12.18
	35.0	25.2	6.33	30.2	7.79	34.3	9.36	34.3	9.36	38.9	10.96	43.3	12.59	45.2	12.67
	40.0	25.2	7.50	30.2	9.24	34.3	11.06	34.3	11.06	38.5	12.67	40.1	12.67	41.8	12.67
	43.0	25.2	8.25	30.2	10.16	34.3	12.16	34.3	12.16	36.6	12.63	36.6	11.62	36.6	10.68
	46.0	25.2	9.05	28.9	9.83	28.9	9.83	28.9	9.83	28.9	9.05	28.9	8.33	28.9	7.65

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
100%	-10.0	22.3	3.00	26.8	3.60	31.3	4.20	33.5	4.51	38.0	5.11	42.4	5.72	46.9	6.32
	-5.0	22.3	3.00	26.8	3.60	31.3	4.21	33.5	4.52	38.0	5.12	42.4	5.73	46.9	6.34
	0.0	22.3	3.00	26.8	3.61	31.3	4.22	33.5	4.53	38.0	5.13	42.4	5.75	46.9	6.35
	5.0	22.3	3.01	26.8	3.62	31.3	4.24	33.5	4.54	38.0	5.16	42.4	5.78	46.9	6.40
	10.0	22.3	3.03	26.8	3.65	31.3	4.27	33.5	4.58	38.0	5.21	42.4	5.86	46.9	6.47
	15.0	22.3	3.07	26.8	3.70	31.3	4.35	33.5	4.68	38.0	5.34	42.4	6.01	46.9	6.65
	20.0	22.3	3.19	26.8	3.89	31.3	4.61	33.5	4.97	38.0	5.71	42.4	6.64	46.9	7.68
	25.0	22.3	3.77	26.8	4.64	31.3	5.60	33.5	6.11	38.0	7.19	42.4	8.37	46.9	9.63
	30.0	22.3	4.68	26.8	5.75	31.3	6.91	33.5	7.53	38.0	8.82	42.4	10.22	46.9	11.71
	35.0	22.3	5.63	26.8	6.92	31.3	8.31	33.5	9.05	37.8	10.53	42.4	12.14	44.9	12.67
	40.0	22.3	6.69	26.8	8.20	31.3	9.84	33.5	10.69	38.0	12.50	39.8	12.67	41.5	12.67
	43.0	22.3	7.35	26.8	9.02	31.3	10.81	33.5	11.77	36.4	12.67	36.6	11.78	36.6	10.82
	46.0	22.3	8.05	26.8	9.89	28.9	10.34	28.9	9.93	28.9	9.14	28.9	8.41	28.9	7.73

1. Capacity Ratio of Outdoor Unit

U-12MF2E8 (Cooling)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
90%	-10.0	20.1	2.70	24.1	3.24	28.1	3.78	30.2	4.05	34.2	4.60	38.2	5.14	42.2	5.68
	-5.0	20.1	2.70	24.1	3.24	28.1	3.78	30.2	4.05	34.2	4.61	38.2	5.15	42.2	5.70
	0.0	20.1	2.71	24.1	3.25	28.1	3.79	30.2	4.06	34.2	4.62	38.2	5.17	42.2	5.72
	5.0	20.1	2.71	24.1	3.26	28.1	3.81	30.2	4.08	34.2	4.63	38.2	5.19	42.2	5.75
	10.0	20.1	2.72	24.1	3.28	28.1	3.83	30.2	4.11	34.2	4.68	38.2	5.24	42.2	5.81
	15.0	20.1	2.75	24.1	3.32	28.1	3.89	30.2	4.18	34.2	4.77	38.2	5.36	42.2	5.95
	20.0	20.1	2.84	24.1	3.45	28.1	4.08	30.2	4.40	34.2	5.04	38.2	5.69	42.2	6.44
	25.0	20.1	3.32	24.1	4.06	28.1	4.85	30.2	5.28	34.2	6.16	38.2	7.11	42.2	8.14
	30.0	20.1	4.14	24.1	5.04	28.1	6.01	30.2	6.52	34.2	7.59	38.2	8.73	42.2	9.96
	35.0	20.1	5.00	24.1	6.08	28.1	7.24	30.2	7.86	34.2	9.13	38.2	10.49	42.2	11.92
	40.0	20.1	5.92	24.1	7.20	28.1	8.58	30.2	9.29	34.2	10.80	38.2	12.40	40.2	12.67
	43.0	20.1	6.51	24.1	7.93	28.1	9.44	30.2	10.23	34.2	11.88	36.6	12.52	36.6	11.52
	46.0	20.1	7.12	24.1	8.69	28.1	10.35	28.9	10.41	28.9	9.59	28.9	8.82	28.9	8.12

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
80%	-10.0	17.9	2.40	21.4	2.88	25.0	3.36	26.8	3.60	30.4	4.08	33.9	4.57	37.5	5.05
	-5.0	17.9	2.40	21.4	2.88	25.0	3.37	26.8	3.60	30.4	4.09	33.9	4.57	37.5	5.06
	0.0	17.9	2.40	21.4	2.89	25.0	3.37	26.8	3.61	30.4	4.10	33.9	4.59	37.5	5.08
	5.0	17.9	2.41	21.4	2.89	25.0	3.38	26.8	3.62	30.4	4.11	33.9	4.61	37.5	5.10
	10.0	17.9	2.42	21.4	2.91	25.0	3.39	26.8	3.65	30.4	4.14	33.9	4.64	37.5	5.14
	15.0	17.9	2.43	21.4	2.93	25.0	3.44	26.8	3.69	30.4	4.21	33.9	4.72	37.5	5.25
	20.0	17.9	2.50	21.4	3.03	25.0	3.57	26.8	3.85	30.4	4.41	33.9	4.97	37.5	5.53
	25.0	17.9	2.84	21.4	3.51	25.0	4.16	26.8	4.51	30.4	5.21	33.9	5.98	37.5	6.79
	30.0	17.9	3.63	21.4	4.37	25.0	5.17	26.8	5.58	30.4	6.46	33.9	7.38	37.5	8.35
	35.0	17.9	4.38	21.4	5.29	25.0	6.24	26.8	6.74	30.4	7.79	33.9	8.89	37.5	10.05
	40.0	17.9	5.19	21.4	6.26	25.0	7.40	26.8	8.00	30.4	9.23	33.9	10.53	37.5	11.89
	43.0	17.9	5.70	21.4	6.89	25.0	8.15	26.8	8.80	30.4	10.16	33.9	11.59	36.6	12.43
	46.0	17.9	6.24	21.4	7.55	25.0	8.93	26.8	9.66	28.9	10.17	28.9	9.38	28.9	8.62

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
70%	-10.0	15.6	2.10	18.8	2.52	21.9	2.94	23.5	3.15	26.6	3.57	29.7	3.99	32.8	4.42
	-5.0	15.6	2.10	18.8	2.52	21.9	2.94	23.5	3.15	26.6	3.57	29.7	4.00	32.8	4.43
	0.0	15.6	2.10	18.8	2.52	21.9	2.95	23.5	3.16	26.6	3.58	29.7	4.01	32.8	4.43
	5.0	15.6	2.11	18.8	2.52	21.9	2.95	23.5	3.17	26.6	3.59	29.7	4.02	32.8	4.45
	10.0	15.6	2.11	18.8	2.53	21.9	2.97	23.5	3.18	26.6	3.61	29.7	4.05	32.8	4.48
	15.0	15.6	2.13	18.8	2.56	21.9	3.00	23.5	3.21	26.6	3.66	29.7	4.10	32.8	4.55
	20.0	15.6	2.17	18.8	2.62	21.9	3.09	23.5	3.32	26.6	3.79	29.7	4.27	32.8	4.75
	25.0	15.6	2.40	18.8	2.95	21.9	3.51	23.5	3.79	26.6	4.36	29.7	4.95	32.8	5.58
	30.0	15.6	3.15	18.8	3.76	21.9	4.40	23.5	4.73	26.6	5.42	29.7	6.15	32.8	6.91
	35.0	15.6	3.80	18.8	4.54	21.9	5.32	23.5	5.72	26.6	6.56	29.7	7.43	32.8	8.34
	40.0	15.6	4.50	18.8	5.38	21.9	6.31	23.5	6.79	26.6	7.78	29.7	8.81	32.8	9.89
	43.0	15.6	4.93	18.8	5.92	21.9	6.94	23.5	7.48	26.6	8.57	29.7	9.71	32.8	10.90
	46.0	15.6	5.40	18.8	6.48	21.9	7.61	23.5	8.20	26.6	9.40	28.9	10.12	28.9	9.31

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
60%	-10.0	13.4	1.80	16.1	2.16	18.8	2.52	20.1	2.70	22.8	3.06	25.5	3.42	28.1	3.78
	-5.0	13.4	1.80	16.1	2.16	18.8	2.52	20.1	2.71	22.8	3.07	25.5	3.43	28.1	3.79
	0.0	13.4	1.80	16.1	2.16	18.8	2.52	20.1	2.71	22.8	3.07	25.5	3.43	28.1	3.79
	5.0	13.4	1.80	16.1	2.16	18.8	2.52	20.1	2.71	22.8	3.08	25.5	3.44	28.1	3.80
	10.0	13.4	1.81	16.1	2.17	18.8	2.53	20.1	2.72	22.8	3.09	25.5	3.46	28.1	3.83
	15.0	13.4	1.82	16.1	2.18	18.8	2.55	20.1	2.74	22.8	3.11	25.5	3.49	28.1	3.87
	20.0	13.4	1.85	16.1	2.23	18.8	2.62	20.1	2.81	22.8	3.20	25.5	3.60	28.1	4.00
	25.0	13.4	1.99	16.1	2.43	18.8	2.89	20.1	3.11	22.8	3.57	25.5	4.03	28.1	4.51
	30.0	13.4	2.71	16.1	3.19	18.8	3.68	20.1	3.95	22.8	4.48	25.5	5.04	28.1	5.62
	35.0	13.4	3.26	16.1	3.85	18.8	4.46	20.1	4.78	22.8	5.43	25.5	6.11	28.1	6.81
	40.0	13.4	3.84	16.1	4.55	18.8	5.29	20.1	5.67	22.8	6.45	25.5	7.25	28.1	8.08
	43.0	13.4	4.22	16.1	5.00	18.8	5.82	20.1	6.24	22.8	7.10	25.5	7.99	28.1	8.91
	46.0	13.4	4.61	16.1	5.48	18.8	6.38	20.1	6.84	22.8	7.79	25.5	8.78	28.1	9.79

1. Capacity Ratio of Outdoor Unit

U-12MF2E8 (Cooling)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
50%	-10.0	11.2	1.50	13.4	1.80	15.6	2.10	16.8	2.25	19.0	2.55	21.2	2.85	23.5	3.15
	-5.0	11.2	1.50	13.4	1.80	15.6	2.10	16.8	2.25	19.0	2.55	21.2	2.85	23.5	3.16
	0.0	11.2	1.50	13.4	1.80	15.6	2.10	16.8	2.25	19.0	2.55	21.2	2.86	23.5	3.16
	5.0	11.2	1.50	13.4	1.80	15.6	2.11	16.8	2.25	19.0	2.56	21.2	2.86	23.5	3.17
	10.0	11.2	1.50	13.4	1.81	15.6	2.11	16.8	2.26	19.0	2.57	21.2	2.87	23.5	3.18
	15.0	11.2	1.51	13.4	1.82	15.6	2.12	16.8	2.27	19.0	2.59	21.2	2.90	23.5	3.20
	20.0	11.2	1.53	13.4	1.84	15.6	2.15	16.8	2.32	19.0	2.63	21.2	2.96	23.5	3.28
	25.0	11.2	1.62	13.4	1.96	15.6	2.32	16.8	2.50	19.0	2.85	21.2	3.21	23.5	3.57
	30.0	11.2	2.30	13.4	2.66	15.6	3.04	16.8	3.23	19.0	3.63	21.2	4.05	23.5	4.46
	35.0	11.2	2.74	13.4	3.20	15.6	3.67	16.8	3.91	19.0	4.40	21.2	4.91	23.5	5.42
	40.0	11.2	3.22	13.4	3.78	15.6	4.34	16.8	4.64	19.0	5.23	21.2	5.84	23.5	6.45
	43.0	11.2	3.53	13.4	4.14	15.6	4.78	16.8	5.10	19.0	5.76	21.2	6.43	23.5	7.11
	46.0	11.2	3.85	13.4	4.53	15.6	5.23	16.8	5.59	19.0	6.32	21.2	7.05	23.5	7.81

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
40%	-10.0	8.9	1.19	10.7	1.44	12.5	1.68	13.4	1.80	15.2	2.04	17.0	2.28	18.8	2.52
	-5.0	8.9	1.19	10.7	1.44	12.5	1.68	13.4	1.80	15.2	2.05	17.0	2.28	18.8	2.52
	0.0	8.9	1.20	10.7	1.44	12.5	1.68	13.4	1.80	15.2	2.05	17.0	2.28	18.8	2.52
	5.0	8.9	1.20	10.7	1.44	12.5	1.68	13.4	1.80	15.2	2.05	17.0	2.29	18.8	2.52
	10.0	8.9	1.20	10.7	1.45	12.5	1.68	13.4	1.81	15.2	2.05	17.0	2.29	18.8	2.53
	15.0	8.9	1.20	10.7	1.45	12.5	1.69	13.4	1.82	15.2	2.06	17.0	2.31	18.8	2.55
	20.0	8.9	1.21	10.7	1.47	12.5	1.71	13.4	1.84	15.2	2.08	17.0	2.33	18.8	2.59
	25.0	8.9	1.27	10.7	1.53	12.5	1.79	13.4	1.93	15.2	2.20	17.0	2.47	18.8	2.74
	30.0	8.9	1.91	10.7	2.18	12.5	2.45	13.4	2.59	15.2	2.87	17.0	3.16	18.8	3.45
	35.0	8.9	2.26	10.7	2.61	12.5	2.95	13.4	3.12	15.2	3.48	17.0	3.83	18.8	4.19
	40.0	8.9	2.64	10.7	3.06	12.5	3.48	13.4	3.69	15.2	4.12	17.0	4.55	18.8	4.99
	43.0	8.9	2.89	10.7	3.35	12.5	3.81	13.4	4.05	15.2	4.53	17.0	5.00	18.8	5.49
	46.0	8.9	3.14	10.7	3.65	12.5	4.17	13.4	4.43	15.2	4.96	17.0	5.49	18.8	6.04

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
30%	-10.0	6.7	0.90	8.0	1.08	9.4	1.26	10.1	1.35	11.4	1.53	12.7	1.71	14.1	1.89
	-5.0	6.7	0.90	8.0	1.08	9.4	1.26	10.1	1.35	11.4	1.53	12.7	1.71	14.1	1.89
	0.0	6.7	0.90	8.0	1.08	9.4	1.26	10.1	1.35	11.4	1.53	12.7	1.71	14.1	1.89
	5.0	6.7	0.90	8.0	1.08	9.4	1.26	10.1	1.35	11.4	1.53	12.7	1.71	14.1	1.89
	10.0	6.7	0.91	8.0	1.09	9.4	1.27	10.1	1.36	11.4	1.54	12.7	1.72	14.1	1.90
	15.0	6.7	0.91	8.0	1.09	9.4	1.27	10.1	1.36	11.4	1.54	12.7	1.72	14.1	1.91
	20.0	6.7	0.91	8.0	1.10	9.4	1.28	10.1	1.37	11.4	1.56	12.7	1.74	14.1	1.92
	25.0	6.7	0.93	8.0	1.12	9.4	1.31	10.1	1.41	11.4	1.60	12.7	1.79	14.1	1.99
	30.0	6.7	1.44	8.0	1.66	9.4	1.86	10.1	1.96	11.4	2.17	12.7	2.38	14.1	2.57
	35.0	6.7	1.82	8.0	2.05	9.4	2.29	10.1	2.41	11.4	2.63	12.7	2.87	14.1	3.10
	40.0	6.7	2.10	8.0	2.39	9.4	2.68	10.1	2.82	11.4	3.10	12.7	3.39	14.1	3.68
	43.0	6.7	2.28	8.0	2.60	9.4	2.92	10.1	3.09	11.4	3.40	12.7	3.73	14.1	4.05
	46.0	6.7	2.46	8.0	2.82	9.4	3.19	10.1	3.36	11.4	3.72	12.7	4.08	14.1	4.44

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp. °CDB	Indoor air temp. : °CWB													
		14.0		16.0		18.0		19.0		21.0		23.0		25.0	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20%	-10.0	4.5	0.60	5.4	0.71	6.3	0.84	6.7	0.90	7.6	1.02	8.5	1.14	9.4	1.26
	-5.0	4.5	0.60	5.4	0.72	6.3	0.84	6.7	0.90	7.6	1.02	8.5	1.14	9.4	1.26
	0.0	4.5	0.60	5.4	0.72	6.3	0.84	6.7	0.90	7.6	1.02	8.5	1.14	9.4	1.26
	5.0	4.5	0.60	5.4	0.72	6.3	0.84	6.7	0.91	7.6	1.02	8.5	1.14	9.4	1.27
	10.0	4.5	0.60	5.4	0.72	6.3	0.84	6.7	0.91	7.6	1.02	8.5	1.14	9.4	1.27
	15.0	4.5	0.61	5.4	0.72	6.3	0.84	6.7	0.91	7.6	1.02	8.5	1.15	9.4	1.27
	20.0	4.5	0.61	5.4	0.72	6.3	0.85	6.7	0.91	7.6	1.03	8.5	1.15	9.4	1.28
	25.0	4.5	0.62	5.4	0.73	6.3	0.86	6.7	0.92	7.6	1.05	8.5	1.17	9.4	1.29
	30.0	4.5	0.77	5.4	0.91	6.3	1.03	6.7	1.10	7.6	1.22	8.5	1.35	9.4	1.48
	35.0	4.5	1.40	5.4	1.55	6.3	1.69	6.7	1.76	7.6	1.89	8.5	2.03	9.4	2.16
	40.0	4.5	1.59	5.4	1.76	6.3	1.95	6.7	2.03	7.6	2.20	8.5	2.37	9.4	2.53
	43.0	4.5	1.71	5.4	1.91	6.3	2.10	6.7	2.20	7.6	2.40	8.5	2.59	9.4	2.77
	46.0	4.5	1.83	5.4	2.05	6.3	2.27	6.7	2.38	7.6	2.60	8.5	2.81	9.4	3.02

1. Capacity Ratio of Outdoor Unit

1-6. U-12MF2E8 (Heating)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	°CDB	°CWB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	-19.8	-20.0	30.4	10.83	28.1	9.91	26.5	9.30	26.5	9.30	26.5	9.30	26.5	9.30	23.1	7.94
	-14.7	-15.0	32.3	11.00	29.9	10.09	28.2	9.48	28.2	9.48	28.2	9.48	28.2	9.48	24.8	8.13
	-9.6	-10.0	34.6	11.27	32.1	10.36	30.3	9.75	30.3	9.75	30.3	9.75	30.3	9.75	27.0	8.40
	-4.4	-5.0	37.8	11.68	35.1	10.77	33.3	10.15	33.3	10.15	33.3	10.15	33.3	10.15	29.9	8.78
	-1.8	-2.5	39.8	11.95	37.1	11.04	35.2	10.41	35.2	10.41	35.2	10.41	35.2	10.41	31.8	9.03
	0.8	0.0	42.1	12.21	39.4	11.35	37.4	10.72	37.4	10.72	37.4	10.72	37.4	10.72	33.0	9.02
	2.8	2.0	43.7	12.21	41.6	11.66	39.6	11.01	39.6	11.01	39.6	11.01	38.8	10.27	33.0	8.60
	6.0	5.0	46.6	12.21	43.3	11.31	40.3	10.36	40.3	10.36	40.3	10.36	38.8	9.34	33.0	7.82
	7.0	6.0	47.6	12.21	43.3	10.87	40.3	9.96	40.3	9.96	40.3	9.96	38.8	8.99	33.0	7.53
	8.6	7.5	47.8	11.53	43.3	10.19	40.3	9.35	40.3	9.35	40.3	9.35	38.8	8.46	33.0	7.09
	11.2	10.0	47.8	10.30	43.3	9.12	40.3	8.38	40.3	8.38	40.3	8.38	38.8	7.60	33.0	6.39
	16.4	15.0	47.8	8.05	43.3	7.17	40.3	6.61	40.3	6.61	40.3	6.61	38.8	6.08	33.0	5.15
	24.0	18.0	47.8	6.88	43.3	6.17	40.3	5.70	40.3	5.70	40.3	5.70	38.8	5.29	33.0	4.53

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
120%	°CDB	°CWB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	-19.8	-20.0	30.5	10.70	28.1	9.81	26.5	9.21	26.5	9.21	26.5	9.21	24.6	8.39	21.3	7.34
	-14.7	-15.0	32.3	10.88	29.9	9.99	28.2	9.39	28.2	9.39	28.2	9.39	26.4	8.58	22.9	7.51
	-9.6	-10.0	34.7	11.16	32.1	10.27	30.4	9.66	30.4	9.66	30.4	9.66	28.6	8.87	24.9	7.75
	-4.4	-5.0	37.8	11.57	35.2	10.68	33.3	10.06	33.3	10.06	33.3	10.06	31.5	9.27	27.6	8.10
	-1.8	-2.5	39.9	11.85	37.1	10.94	35.2	10.32	35.2	10.32	35.2	10.32	33.4	9.52	29.3	8.33
	0.8	0.0	42.3	12.17	39.5	11.27	37.4	10.63	37.4	10.63	37.4	10.63	35.0	9.62	29.7	8.12
	2.8	2.0	44.0	12.21	41.6	11.55	39.4	10.87	39.4	10.87	39.4	10.87	35.0	9.19	29.7	7.72
	6.0	5.0	46.6	12.21	42.3	10.82	39.4	9.92	39.4	9.92	39.4	9.92	35.0	8.35	29.7	7.02
	7.0	6.0	46.7	11.75	42.3	10.39	39.4	9.54	39.4	9.54	39.4	9.54	35.0	8.04	29.7	6.76
	8.6	7.5	46.7	11.00	42.3	9.75	39.4	8.96	39.4	8.96	39.4	8.96	35.0	7.57	29.7	6.37
	11.2	10.0	46.7	9.80	42.3	8.71	39.4	8.01	39.4	8.01	39.4	8.01	35.0	6.80	29.7	5.75
	16.4	15.0	46.7	7.65	42.3	6.84	39.4	6.31	39.4	6.31	39.4	6.31	35.0	5.44	29.7	4.64
	24.0	18.0	46.7	6.52	42.3	5.87	39.4	5.44	39.4	5.44	39.4	5.44	35.0	4.74	29.7	4.07

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
110%	°CDB	°CWB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	-19.8	-20.0	30.6	10.59	28.2	9.71	26.6	9.12	26.6	9.12	25.5	8.66	22.6	7.69	19.6	6.75
	-14.7	-15.0	32.4	10.77	29.9	9.91	28.2	9.31	28.2	9.31	27.2	8.86	24.2	7.87	21.0	6.90
	-9.6	-10.0	34.8	11.06	32.2	10.18	30.4	9.58	30.4	9.58	29.4	9.14	26.2	8.13	22.8	7.12
	-4.4	-5.0	38.0	11.48	35.2	10.59	33.3	9.98	33.3	9.98	32.3	9.54	28.9	8.48	25.2	7.43
	-1.8	-2.5	39.9	11.75	37.2	10.86	35.2	10.24	35.2	10.24	34.2	9.79	30.6	8.71	26.6	7.60
	0.8	0.0	42.3	12.07	39.5	11.16	37.4	10.54	37.4	10.54	36.0	9.97	31.3	8.57	26.6	7.26
	2.8	2.0	44.2	12.21	41.3	11.34	38.4	10.45	38.4	10.45	36.0	9.53	31.3	8.17	26.6	6.90
	6.0	5.0	45.6	11.66	41.3	10.34	38.4	9.50	38.4	9.50	36.0	8.65	31.3	7.43	26.6	6.27
	7.0	6.0	45.6	11.19	41.3	9.93	38.4	9.13	38.4	9.13	36.0	8.32	31.3	7.15	26.6	6.03
	8.6	7.5	45.6	10.47	41.3	9.30	38.4	8.56	38.4	8.56	36.0	7.81	31.3	6.72	26.6	5.69
	11.2	10.0	45.6	9.32	41.3	8.31	38.4	7.66	38.4	7.66	36.0	7.01	31.3	6.05	26.6	5.14
	16.4	15.0	45.6	7.26	41.3	6.51	38.4	6.03	38.4	6.03	36.0	5.56	31.3	4.85	26.6	4.15
	24.0	18.0	45.6	6.18	41.3	5.57	38.4	5.19	38.4	5.19	36.0	4.82	31.3	4.23	26.6	3.65

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
100%	°CDB	°CWB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	-19.8	-20.0	30.6	10.47	28.2	9.61	26.6	9.03	24.9	8.45	23.2	7.87	20.5	7.00	17.8	6.17
	-14.7	-15.0	32.5	10.66	30.0	9.81	28.3	9.23	26.5	8.64	24.7	8.05	21.9	7.17	19.1	6.30
	-9.6	-10.0	34.8	10.95	32.3	10.09	30.5	9.50	28.6	8.91	26.7	8.31	23.8	7.39	20.7	6.50
	-4.4	-5.0	38.0	11.38	35.3	10.51	33.4	9.90	31.4	9.29	29.4	8.66	26.2	7.72	22.8	6.77
	-1.8	-2.5	40.0	11.65	37.2	10.77	35.2	10.15	33.2	9.53	31.1	8.89	27.8	7.93	23.6	6.74
	0.8	0.0	42.4	11.97	39.5	11.07	37.4	10.45	34.7	9.63	32.0	8.79	27.8	7.59	23.6	6.44
	2.8	2.0	44.4	12.20	40.3	10.88	37.5	10.04	34.7	9.19	32.0	8.38	27.8	7.21	23.6	6.11
	6.0	5.0	44.4	11.11	40.3	9.87	37.5	9.09	34.7	8.34	32.0	7.60	27.8	6.56	23.6	5.56
	7.0	6.0	44.4	10.66	40.3	9.48	37.5	8.72	34.7	8.01	32.0	7.32	27.8	6.31	23.6	5.35
	8.6	7.5	44.4	9.97	40.3	8.89	37.5	8.19	34.7	7.53	32.0	6.87	27.8	5.94	23.6	5.05
	11.2	10.0	44.4	8.86	40.3	7.92	37.5	7.32	34.7	6.73	32.0	6.17	27.8	5.35	23.6	4.56
	16.4	15.0	44.4	6.88	40.3	6.19	37.5	5.75	34.7	5.32	32.0	4.90	27.8	4.29	23.6	3.70
	24.0	18.0	44.4	5.85	40.3	5.29	37.5	4.94	34.7	4.59	32.0	4.25	27.8	3.75	23.6	3.26

1. Capacity Ratio of Outdoor Unit

U-12MF2E8 (Heating)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°CDB	°CWB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
90%	-19.8	-20.0	30.9	10.05	28.4	9.26	26.7	8.73	25.0	8.19	23.3	7.66	20.6	6.86	17.7	6.10
	-14.7	-15.0	32.7	10.27	30.2	9.48	28.4	8.93	26.6	8.39	24.8	7.84	21.9	7.02	19.0	6.22
	-9.6	-10.0	35.1	10.59	32.4	9.77	30.6	9.22	28.7	8.65	26.7	8.08	23.7	7.23	20.6	6.38
	-4.4	-5.0	38.3	11.01	35.4	10.18	33.4	9.59	31.2	8.96	28.8	8.22	25.0	7.17	21.3	6.17
	-1.8	-2.5	40.0	11.20	36.3	10.05	33.8	9.31	31.2	8.60	28.8	7.90	25.0	6.89	21.3	5.93
	0.8	0.0	40.0	10.66	36.3	9.56	33.8	8.84	31.2	8.15	28.8	7.48	25.0	6.51	21.3	5.61
	2.8	2.0	40.0	10.06	36.3	9.03	33.8	8.36	31.2	7.72	28.8	7.09	25.0	6.18	21.3	5.32
	6.0	5.0	40.0	9.05	36.3	8.14	33.8	7.56	31.2	6.98	28.8	6.43	25.0	5.61	21.3	4.81
	7.0	6.0	40.0	8.67	36.3	7.81	33.8	7.26	31.2	6.71	28.8	6.17	25.0	5.39	21.3	4.63
	8.6	7.5	40.0	8.08	36.3	7.29	33.8	6.78	31.2	6.28	28.8	5.79	25.0	5.07	21.3	4.36
	11.2	10.0	40.0	7.15	36.3	6.48	33.8	6.03	31.2	5.61	28.8	5.18	25.0	4.55	21.3	3.94
	16.4	15.0	40.0	5.48	36.3	5.01	33.8	4.71	31.2	4.40	28.8	4.10	25.0	3.64	21.3	3.19
24.0	18.0	40.0	4.93	36.3	4.52	33.8	4.25	31.2	3.99	28.8	3.71	25.0	3.31	21.3	2.90	

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
80%	-19.8	-20.0	31.2	9.71	28.7	8.98	26.9	8.49	25.2	8.00	23.4	7.51	20.6	6.78	17.8	6.08
	-14.7	-15.0	33.1	9.97	30.5	9.22	28.6	8.71	26.8	8.20	24.9	7.69	22.0	6.93	18.9	6.15
	-9.6	-10.0	35.5	10.29	32.2	9.34	30.0	8.71	27.8	8.09	25.5	7.48	22.2	6.61	18.9	5.78
	-4.4	-5.0	35.6	9.62	32.2	8.72	30.0	8.13	27.8	7.55	25.5	6.99	22.2	6.18	18.9	5.40
	-1.8	-2.5	35.6	9.15	32.2	8.28	30.0	7.73	27.8	7.19	25.5	6.65	22.2	5.88	18.9	5.14
	0.8	0.0	35.6	8.59	32.2	7.80	30.0	7.27	27.8	6.77	25.5	6.27	22.2	5.55	18.9	4.85
	2.8	2.0	35.6	8.09	32.2	7.36	30.0	6.88	27.8	6.40	25.5	5.94	22.2	5.26	18.9	4.59
	6.0	5.0	35.6	7.25	32.2	6.61	30.0	6.19	27.8	5.77	25.5	5.35	22.2	4.74	18.9	4.12
	7.0	6.0	35.6	6.92	32.2	6.32	30.0	5.93	27.8	5.53	25.5	5.14	22.2	4.55	18.9	3.97
	8.6	7.5	35.6	6.44	32.2	5.89	30.0	5.54	27.8	5.17	25.5	4.81	22.2	4.27	18.9	3.74
	11.2	10.0	35.6	5.67	32.2	5.21	30.0	4.91	27.8	4.60	25.5	4.30	22.2	3.84	18.9	3.37
	16.4	15.0	35.6	4.45	32.2	4.09	30.0	3.85	27.8	3.61	25.5	3.38	22.2	3.07	18.9	2.74
24.0	18.0	35.6	4.45	32.2	4.09	30.0	3.85	27.8	3.61	25.5	3.37	22.2	3.01	18.9	2.65	

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
70%	-19.8	-20.0	31.1	9.27	28.2	8.49	26.3	7.99	24.3	7.49	22.4	7.01	19.5	6.31	16.5	5.64
	-14.7	-15.0	31.1	8.83	28.2	8.09	26.3	7.61	24.3	7.13	22.4	6.67	19.5	5.99	16.5	5.34
	-9.6	-10.0	31.1	8.35	28.2	7.66	26.3	7.21	24.3	6.77	22.4	6.31	19.5	5.66	16.5	5.01
	-4.4	-5.0	31.1	7.66	28.2	7.04	26.3	6.63	24.3	6.23	22.4	5.82	19.5	5.24	16.5	4.67
	-1.8	-2.5	31.1	7.26	28.2	6.67	26.3	6.29	24.3	5.90	22.4	5.53	19.5	4.97	16.5	4.42
	0.8	0.0	31.1	6.79	28.2	6.26	26.3	5.90	24.3	5.55	22.4	5.21	19.5	4.68	16.5	4.16
	2.8	2.0	31.1	6.38	28.2	5.89	26.3	5.56	24.3	5.24	22.4	4.91	19.5	4.42	16.5	3.91
	6.0	5.0	31.1	5.69	28.2	5.27	26.3	4.99	24.3	4.70	22.4	4.40	19.5	3.95	16.5	3.49
	7.0	6.0	31.1	5.42	28.2	5.03	26.3	4.77	24.3	4.50	22.4	4.22	19.5	3.79	16.5	3.36
	8.6	7.5	31.1	5.03	28.2	4.68	26.3	4.44	24.3	4.20	22.4	3.95	19.5	3.57	16.5	3.17
	11.2	10.0	31.1	4.39	28.2	4.12	26.3	3.92	24.3	3.73	22.4	3.52	19.5	3.20	16.5	2.86
	16.4	15.0	31.1	3.97	28.2	3.65	26.3	3.44	24.3	3.24	22.4	3.03	19.5	2.71	16.5	2.40
24.0	18.0	31.1	3.97	28.2	3.65	26.3	3.44	24.3	3.24	22.4	3.03	19.5	2.71	16.5	2.40	

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60%	-19.8	-20.0	26.7	7.41	24.2	6.88	22.5	6.53	20.9	6.18	19.2	5.85	16.7	5.35	14.2	4.86
	-14.7	-15.0	26.7	7.03	24.2	6.56	22.5	6.24	20.9	5.91	19.2	5.58	16.7	5.08	14.2	4.60
	-9.6	-10.0	26.7	6.55	24.2	6.12	22.5	5.83	20.9	5.55	19.2	5.25	16.7	4.80	14.2	4.33
	-4.4	-5.0	26.7	5.97	24.2	5.59	22.5	5.33	20.9	5.08	19.2	4.80	16.7	4.40	14.2	3.99
	-1.8	-2.5	26.7	5.63	24.2	5.28	22.5	5.04	20.9	4.80	19.2	4.55	16.7	4.17	14.2	3.78
	0.8	0.0	26.7	5.26	24.2	4.94	22.5	4.72	20.9	4.49	19.2	4.26	16.7	3.91	14.2	3.50
	2.8	2.0	26.7	4.93	24.2	4.64	22.5	4.44	20.9	4.23	19.2	4.01	16.7	3.65	14.2	3.26
	6.0	5.0	26.7	4.36	24.2	4.12	22.5	3.94	20.9	3.76	19.2	3.56	16.7	3.25	14.2	2.92
	7.0	6.0	26.7	4.15	24.2	3.92	22.5	3.77	20.9	3.59	19.2	3.41	16.7	3.12	14.2	2.81
	8.6	7.5	26.7	3.84	24.2	3.64	22.5	3.50	20.9	3.35	19.2	3.19	16.7	2.93	14.2	2.65
	11.2	10.0	26.7	3.49	24.2	3.22	22.5	3.09	20.9	2.96	19.2	2.84	16.7	2.63	14.2	2.40
	16.4	15.0	26.7	3.49	24.2	3.22	22.5	3.04	20.9	2.86	19.2	2.69	16.7	2.42	14.2	2.15
	24.0	18.0	26.7	3.49	24.2	3.22	22.5	3.04	20.9	2.86	19.2	2.69	16.7	2.42	14.2	2.15

1. Capacity Ratio of Outdoor Unit

U-12MF2E8 (Heating)

Capacity Ratio 20-130%

TC: Total capacity (kW), PI: Power input (kW)

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
50%	-19.8	-20.0	22.2	5.78	20.1	5.50	18.8	5.31	17.4	5.08	16.0	4.85	13.9	4.50	11.8	4.14
	-14.7	-15.0	22.2	5.45	20.1	5.19	18.8	5.01	17.4	4.82	16.0	4.63	13.9	4.27	11.8	3.91
	-9.6	-10.0	22.2	5.06	20.1	4.82	18.8	4.67	17.4	4.49	16.0	4.31	13.9	4.02	11.8	3.68
	-4.4	-5.0	22.2	4.58	20.1	4.38	18.8	4.24	17.4	4.09	16.0	3.92	13.9	3.66	11.8	3.37
	-1.8	-2.5	22.2	4.30	20.1	4.12	18.8	3.99	17.4	3.85	16.0	3.71	13.9	3.45	11.8	3.12
	0.8	0.0	22.2	3.99	20.1	3.84	18.8	3.71	17.4	3.59	16.0	3.45	13.9	3.18	11.8	2.87
	2.8	2.0	22.2	3.73	20.1	3.58	18.8	3.48	17.4	3.35	16.0	3.20	13.9	2.95	11.8	2.68
	6.0	5.0	22.2	3.26	20.1	3.14	18.8	3.05	17.4	2.94	16.0	2.83	13.9	2.62	11.8	2.40
	7.0	6.0	22.2	3.10	20.1	2.99	18.8	2.90	17.4	2.82	16.0	2.70	13.9	2.52	11.8	2.31
	8.6	7.5	22.2	3.01	20.1	2.79	18.8	2.70	17.4	2.62	16.0	2.53	13.9	2.37	11.8	2.19
	11.2	10.0	22.2	3.01	20.1	2.79	18.8	2.63	17.4	2.49	16.0	2.34	13.9	2.14	11.8	1.99
	16.4	15.0	22.2	3.01	20.1	2.79	18.8	2.63	17.4	2.49	16.0	2.34	13.9	2.12	11.8	1.89
	24.0	18.0	22.2	3.01	20.1	2.79	18.8	2.63	17.4	2.49	16.0	2.34	13.9	2.12	11.8	1.89

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
40%	-19.8	-20.0	17.8	4.45	16.1	4.33	15.0	4.23	13.9	4.12	12.8	3.96	11.1	3.71	9.5	3.46
	-14.7	-15.0	17.8	4.18	16.1	4.07	15.0	3.98	13.9	3.88	12.8	3.77	11.1	3.53	9.5	3.27
	-9.6	-10.0	17.8	3.85	16.1	3.76	15.0	3.69	13.9	3.60	12.8	3.50	11.1	3.31	9.5	3.07
	-4.4	-5.0	17.8	3.46	16.1	3.38	15.0	3.32	13.9	3.25	12.8	3.17	11.1	2.96	9.5	2.69
	-1.8	-2.5	17.8	3.24	16.1	3.17	15.0	3.11	13.9	3.05	12.8	2.94	11.1	2.73	9.5	2.49
	0.8	0.0	17.8	2.98	16.1	2.93	15.0	2.87	13.9	2.78	12.8	2.68	11.1	2.50	9.5	2.30
	2.8	2.0	17.8	2.76	16.1	2.69	15.0	2.63	13.9	2.56	12.8	2.48	11.1	2.33	9.5	2.15
	6.0	5.0	17.8	2.53	16.1	2.35	15.0	2.30	13.9	2.25	12.8	2.19	11.1	2.08	9.5	1.94
	7.0	6.0	17.8	2.53	16.1	2.35	15.0	2.23	13.9	2.15	12.8	2.10	11.1	2.01	9.5	1.87
	8.6	7.5	17.8	2.53	16.1	2.35	15.0	2.23	13.9	2.12	12.8	2.00	11.1	1.88	9.5	1.78
	11.2	10.0	17.8	2.53	16.1	2.35	15.0	2.23	13.9	2.12	12.8	2.00	11.1	1.81	9.5	1.64
	16.4	15.0	17.8	2.53	16.1	2.35	15.0	2.23	13.9	2.12	12.8	2.00	11.1	1.81	9.5	1.64
	24.0	18.0	17.8	2.53	16.1	2.35	15.0	2.23	13.9	2.12	12.8	2.00	11.1	1.81	9.5	1.64

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
30%	-19.8	-20.0	13.4	3.39	12.1	3.35	11.3	3.30	10.4	3.24	9.6	3.15	8.3	2.98	7.1	2.81
	-14.7	-15.0	13.4	3.17	12.1	3.14	11.3	3.10	10.4	3.05	9.6	2.99	8.3	2.83	7.1	2.64
	-9.6	-10.0	13.4	2.90	12.1	2.90	11.3	2.87	10.4	2.83	9.6	2.76	8.3	2.60	7.1	2.38
	-4.4	-5.0	13.4	2.58	12.1	2.58	11.3	2.53	10.4	2.47	9.6	2.39	8.3	2.25	7.1	2.08
	-1.8	-2.5	13.4	2.38	12.1	2.35	11.3	2.30	10.4	2.26	9.6	2.19	8.3	2.08	7.1	1.94
	0.8	0.0	13.4	2.14	12.1	2.12	11.3	2.09	10.4	2.06	9.6	2.01	8.3	1.92	7.1	1.80
	2.8	2.0	13.4	2.06	12.1	1.94	11.3	1.93	10.4	1.90	9.6	1.87	8.3	1.79	7.1	1.69
	6.0	5.0	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.66	8.3	1.61	7.1	1.53
	7.0	6.0	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.65	8.3	1.55	7.1	1.48
	8.6	7.5	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.65	8.3	1.52	7.1	1.41
	11.2	10.0	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.65	8.3	1.52	7.1	1.39
	16.4	15.0	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.65	8.3	1.52	7.1	1.39
	24.0	18.0	13.4	2.06	12.1	1.92	11.3	1.83	10.4	1.74	9.6	1.65	8.3	1.52	7.1	1.39

Combination(%) :Indoor/outdoor capacity ratio	Outdoor air temp.		Indoor air temp. : °CDB													
			15.0		18.0		20.0		22.0		24.0		27.0		30.0	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20%	-19.8	-20.0	8.9	2.49	8.1	2.49	7.5	2.46	6.9	2.42	6.4	2.35	5.6	2.25	4.7	2.14
	-14.7	-15.0	8.9	2.33	8.1	2.33	7.5	2.31	6.9	2.28	6.4	2.21	5.6	2.08	4.7	1.91
	-9.6	-10.0	8.9	2.10	8.1	2.07	7.5	2.04	6.9	2.00	6.4	1.94	5.6	1.85	4.7	1.73
	-4.4	-5.0	8.9	1.76	8.1	1.75	7.5	1.74	6.9	1.72	6.4	1.68	5.6	1.62	4.7	1.53
	-1.8	-2.5	8.9	1.60	8.1	1.60	7.5	1.60	6.9	1.59	6.4	1.56	5.6	1.51	4.7	1.44
	0.8	0.0	8.9	1.58	8.1	1.49	7.5	1.46	6.9	1.46	6.4	1.45	5.6	1.40	4.7	1.35
	2.8	2.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.35	5.6	1.33	4.7	1.28
	6.0	5.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.18
	7.0	6.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.15
	8.6	7.5	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.12
	11.2	10.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.12
	16.4	15.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.12
	24.0	18.0	8.9	1.58	8.1	1.49	7.5	1.43	6.9	1.37	6.4	1.31	5.6	1.22	4.7	1.12