



MCU-S6NEE1N
MCU-S4NEE1N
MCU-S4NEE2N
MCU-S2NEK1N

MCU installation manual



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EN ZH DB68-03490A-06

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Safety precautions

The safety information and precautions below must be kept for the safety of users and installers.

Before installing an air conditioner, please read this manual thoroughly to ensure that you know how to safely and efficiently install a new appliance.

※ DVM S air conditioner uses R-410A refrigerant.

- When using R-410A, moisture or foreign substances may affect the capacity and reliability of the product. Safety precautions must be taken when installing the refrigerant pipe.
- The designing pressure of the system is 4.1MPa. Select appropriate material and thickness according to the regulations.
- R-410A is a quasi-azeotrope of two refrigerants.
Make sure to charge with liquid phase when filling refrigerant.
If you charge gaseous refrigerant, it may affect the capacity and reliability of the product as a result of change formation of the refrigerant.

※ Connect the indoor units for R-410A refrigerant. Check whether the indoor units can be connected with the product's catalogue. (When incorrect indoor units are connected, they cannot operate normally.)

※ After installation and trial operation, explain to the customer how to use the air conditioner and give the installation manual to the user.

※ The manufacturer is not responsible for accidents due to incorrect installation. Any claims caused by failing to keep the safety precautions are installer's responsibility. (The installer is responsible for the service cost.)



WARNING

In case of not following the safety precautions, the service agent or the user may get the risk of serious wound or death.



CAUTION

In case of not following the safety precautions, the service agent or the user may get the risk of injury or loss of property.

FOR INSTALLATION



WARNING

Installation must be done by the installer or its service agent.

- ▶ Installation by an unqualified person may cause a water leakage, electric shock or fire and so on.

Install the unit correctly according to the installation manual.

- ▶ An incorrect installation may cause a water leakage, electric shock or fire.

When installing the unit in a small place, take measures in order to keep the refrigerant concentration from exceeding allowable safety limits in the event of a refrigerant leak.

- ▶ Excessive refrigerant concentration can lead to suffocation.

If any gas or impurities except R-410A refrigerant get into the refrigerant pipe, serious problems may occur and this may cause injury.

When installing the unit, only use the components and tools which are specified for the installation.

- ▶ Using the uncertified components and tools may cause a unit fall, water leakage, electric shock, and a fire.
(Never use the components and pipe for R-22 refrigerant)

Install the unit safely on a place that can support its weight.

- ▶ If the place cannot support its weight, the unit may fall down and cause injury.

Check out the safety precautions below before installing or fixing the unit.

- ▶ Before welding the unit, you must remove all the hazardous materials around the unit that may cause an explosion and a fire.
- ▶ When refrigerant is in the product or the pipe before welding the unit, you must remove the refrigerant.
- If you weld the unit when there is refrigerant inside, the increased pressure of refrigerant may explode or break the leaking spot so that causes serious injuries.
- ▶ When welding the unit, please use nitrogen gas to prevent oxide from generating in the pipe

Make sure to cut off all the power supply before installing, fixing, and cleaning the unit.

When the electric wire is damaged, you must exchange it by the manufacturer or its service agent, or a person who has the equivalent qualification.

When turning on the power, make sure to connect the power supply to the circuit breaker designated for indoor units. (ELCB, ELB, MCCB)

- ▶ If you do not install the circuit breaker for MCU(ELCB, ELB, MCCB), excessive current or failure to blocking the power supply may cause electric shock, a fire.

Safety precautions

FOR INSTALLATION



WARNING

Make sure to connect wires thoroughly and fix them firmly so that no outer pressure of the wires would put on the terminal block.

- ▶ If the terminal is loose, it may generate heat and cause a fire.

Supplied power should be more or less than 2% of the rated power.

- ▶ If the power is supplied unevenly, a life span of the storage battery shortens. If the supplied power is more than 4 % of the rated power, the unit terminates and indicates errors to protect it.

Make sure the interior power supply shouldn't be over the maximum voltage or under the minimum voltage.

- ▶ Otherwise, it could result in malfunction of the unit due to damaged electrical components or decreased function of components.

Only use copper wire as the power cable and all wiring, components and materials should comply with the applicable local and national codes.

Make sure that all wiring is properly installed.

- ▶ Otherwise, the unit can be heated and cause a fire.

Never use the pipe and flare parts for R-22 refrigerant.

In case of a refrigerant gas leakage during installation, please ventilate the area.

- ▶ If refrigerant gas combines with inflammable materials, toxic gases can be generated.

The electric work must be done by service agent or qualified persons according to national wiring regulations and use only rated cable.

- ▶ Voltage drop, shortage of power supply, improper electric work and using unapproved wires can cause an electric shock or a fire.

FOR INSTALLATION



CAUTION

Make sure to earth.

- ▶ Do not connect the earth wire to the gas pipe, lighting rod or telephone wire.
- ▶ If earthing is incomplete, electric shock or fire may occur.

Make sure that the condensed water from the drain hose runs out properly based on this installation manual and insulate the drain pipe so that frost does not generate.

- ▶ If the draining work is done incompletely, property damage may occur due to a leakage.

Install the power cable and communication cable of MCU at least 1m away from the electric appliances and at least 2m away from the lightning rod.

- ▶ However, you may hear a noise 1 meter away from the unit depending on the condition of the electric wave.

Install MCU away from lighting apparatus using the ballast.

- ▶ If you use the wireless remote control, it may not operate normally.

Do not install the unit in following places.

- ▶ The place packed with mineral oil and the place where there are lots of moisture, or arsenic acid:
The resin parts may burn and cause the fall of the components or a refrigerant leakage.
- ▶ The place where corrosive gas such as sulfurous acid gas generates from the vent pipe or air outlet:
The copper pipe or connection pipe may corrode and refrigerant may leak.
- ▶ The place where there is a machine that generates electromagnetic waves:
The unit may not operate normally due to malfunction in the control system.
- ▶ The place where there is a possibility of combustible gas leakage, and where inflammable materials like thinner or gasoline is handled. The place where a carbon fiber or inflammable dust is floating in the air:
If the gas leaks and stays around the main valve, it may result in a fire.
- ▶ The places where have a possibility of the MCU corrosion like a spa and a shore.

When there is a possibility that the place in which MCU is installed could be the shelter of small animals, take proper measures to prevent this situation in advance.

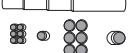
- ▶ If small animals contact the unit, this may result in malfunction of the unit or cause a fire and smoke. Please remind users of cleaning the place around MCU.

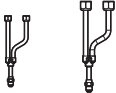
※ Any claims caused by failing to keep the safety precautions are installer's responsibility.
(The installer is responsible for the service cost.)

Preparing the installation

Accessories

Please check if items below are included in installation accessories.

Name	Insulation (for pipe)	Insulation (for base)	Installation manual	Pattern sheet	Cable tie	Pipe socket	Drain socket
Shape							

Name	Y-connector [Ø9.52mm(3/8"), Ø15.88mm(5/8") (Except MCU-S2NEK1N)]
Shape	

Selecting the refrigerant pipe for installation

The design pressure of MCU for R-410A is about 4.1 MPa. For safe use of the product, please refer to the table below in selecting the installation pipe.

Outer diameter		Minimum thickness		Temper grade
mm	inch	mm	inch	
6.35	1/4	0.70	0.028	Annealed
9.52	3/8	0.70	0.028	
12.70	1/2	0.80	0.031	
15.88	5/8	1.00	0.039	
19.05	3/4	0.90	0.035	Drawn
22.22	7/8	0.90	0.035	
25.40	1	1.00	0.039	
28.58	1 1/8	1.10	0.043	
31.75	1 1/4	1.10	0.043	
34.92	1 3/8	1.21	0.048	
38.10	1 1/2	1.35	0.053	
41.28	1 5/8	1.43	0.056	
44.45	1 3/4	1.60	0.063	
50.80	2	2.00	0.079	
53.98	2 1/8	2.10	0.083	



- For pipes larger than Ø 19.05mm(3/4"), drawn type (C1220T-1/2H or C1220T-H) type copper pipe must be used. If an annealed type (C1220T-O) copper pipe is used, pipe may break due to its low pressure resistance and cause personal injury.

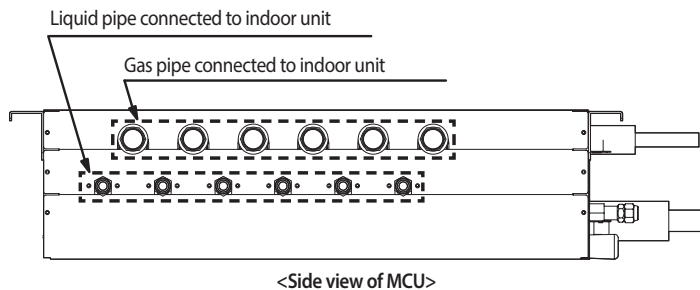
Preparing the installation

MCU indoor/outdoor unit compatible table

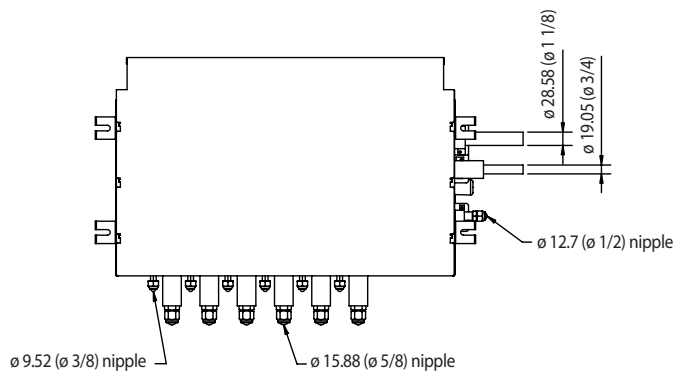
Before installing MCU, refer to the compatible table below and find the model before installation.

Outdoor Unit		MCU		Indoor Unit
AM****X****	↔	MCU-S6NEE1N MCU-S4NEE1N MCU-S4NEE2N MCU-S2NEK1N	↔	AM*****N****

MCU Kit	Model	Description
	MCU-S6NEE1N	Below 6 indoor units, below 56 kW (192MBH)
	MCU-S4NEE1N	Below 4 indoor units, below 56 kW (192MBH)
	MCU-S4NEE2N	Below 2 large capacity indoor unit, below 56 kW (192MBH)
	MCU-S2NEK1N	Below 2 indoor units, below 28 kW (96MBH)

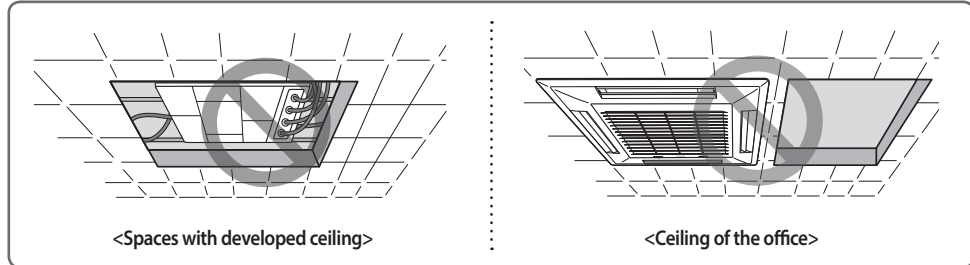


[Unit : mm(inch)]

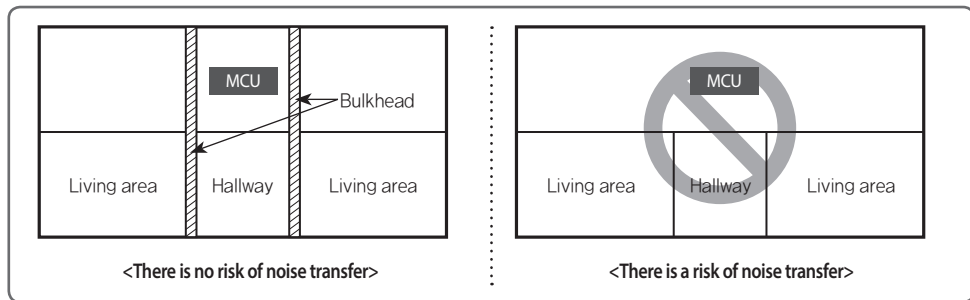


Space requirements

1. Since refrigerant noise can be generated during the MCU operation, do not install the unit on the ceiling of the places that requires silence such as bedrooms, libraries, hospitals and offices etc.
2. Do not install the MCU in the ceiling of the living area. Otherwise, noise generated from the MCU may disturb people in that area and cause inconvenience.



3. It is normally recommended to install MCU in a hallway but a bulkhead should be installed to minimize the noise from being transferred to living area. (Refer to the below figure)

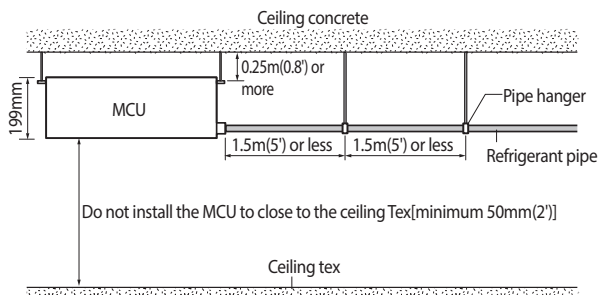


※ Soundproof and soundproofing materials

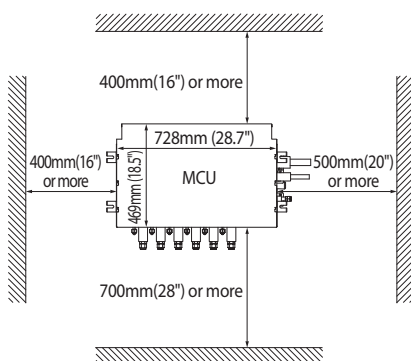
- ▶ The place where MCU is installed and the interior walls should have a high soundproof ability. (Bricks, Concretes, Cement)
 - ▶ The ceiling where MCU is installed should be coated with quality Tex that has a good soundproof function.
 - ▶ Minimize the size of the hole between the walls and the pipe connection. After the installation, block the gap to prevent noise from leaking.
4. Secure over 0.25m(0.82') of space when MCU is being fixed to the concrete of the ceiling.
 5. MCU may generate noise so don't install it too close to the ceiling Tex.
 6. Each pipe hanger should be placed at 1.5m(4.92') interval to support its weight firmly. If the pipe or the hanger isn't fixed firmly, the unit may fall and cause a property damage or loss of life.
 7. When 'Low temperature cooling range expansion' option is set for constant cooling operation throughout the year, noise of the MCU may get louder during winter time. Therefore, above installation conditions must be complied.

Space requirements

7. Select the place where MCU supporting structure can support the weight of the indoor unit and have strong vibration resistance without any slope.
(If the structure is not strong enough, MCU may fall down and break, which can cause injury to your body.)

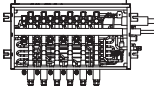
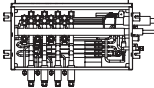
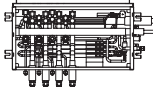
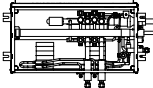


8. Select a place with enough space for repairing and services.
(Leave enough space between sidewalls in installation.-refer to the picture below)

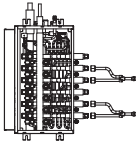
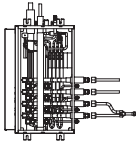
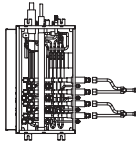
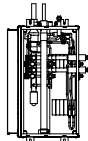


Installing the unit

1. MCU specification

Model	MCU-S6NEE1N	MCU-S4NEE1N	MCU-S4NEE2N	MCU-S2NEK1N
Exterior of MCU				
Number of connectable indoor units	Up to 6 units	Up to 4 units	Up to 2 units * Refer to the detail information of installation	Up to 2 units
Maximum capacity of connectable indoor units	56 kW (192MBH)	56 kW (192MBH)	56 kW (192MBH)	28 kW (96MBH)
Internal EEV	Not included Cannot connect indoor unit without internal EEV			

2. Installing the indoor unit

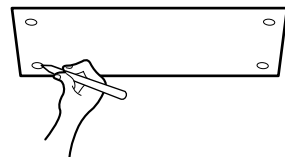
Model	MCU-S6NEE1N	MCU-S4NEE1N	MCU-S4NEE2N	MCU-S2NEK1N
Example installing				
Installation Condition	Single capacity range 10 kW(30 MBH) or under: Connect the liquid, gas pipe of indoor unit to a single port in MCU 11.2~14 kW(36~48 MBH): Use Y-Joint		The indoor unit's capacity of 20 kW(60 MBH) or over, must use the appropriate MCU Apply when connecting the indoor unit's capacity of over 11.2 kW (36 MBH): Use Y-Joint	14 kW(48 MBH) or under: Connect the liquid, gas pipe of indoor unit to a single port in MCU 14~28 kW(48~96 MBH): Use Y-Joint(DB97-19694A)
Maximum IDU Capacity	14 kW(48 MBH)		28 kW(96 MBH)	28 kW(96 MBH)
Minimum IDU Capacity	-		11.2 kW(36 MBH)	-
Maximum Single Port Capacity	10 kW(30 MBH)		-	14 kW(48 MBH)
Installation condition in case of continuous cooling	5~14 kW(18~48 MBH): Use Y-joint Under 5 kW(18 MBH): Connect the liquid, gas pipe of indoor unit to a single port in MCU		Use Y-Joint	5 kW(18 MBH) or over: Use Y-Joint(DB97-19693A) Under 5 kW(18 MBH): Connect the liquid, gas pipe of indoor unit to a single port in MCU
	Option switch and key function needs to set. For detail information, refer to the outdoor unit's manual			
Remarks	Y-Joint consists of accessories			Y-Joint is supplied with service materials (DB97-19693A, DB97-19694A)

3. Preparation before installation.

- 1) Place the pattern sheet on the ceiling at the spot where you want to install the indoor unit.



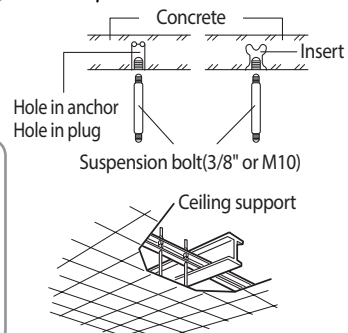
- Since the diagram is made of paper, it may shrink or stretch slightly due to temperature or humidity. For this reason, before drilling the holes maintain the correct dimensions between the markings.



- 2) Insert bolt anchors, use existing ceiling supports or construct a suitable support as shown in figure.
- 3) Install the suspension bolts depending on the ceiling type.



- Ensure that the ceiling is strong enough to support the weight of the indoor unit. Before hanging the unit, test the strength of each attached suspension bolt.
- If the length of suspension bolt is more than 1.5m(4.92'), it is required to prevent vibration.
- If this is not possible, create an opening on the false ceiling in order to be able to use it to perform the required operations on the indoor unit.

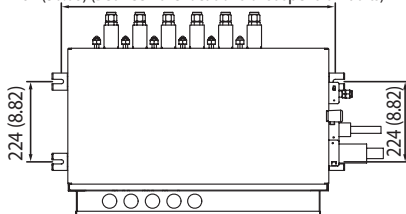


Installing the unit

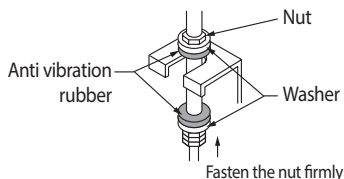
4. Cautions about MCU installation.

- ▶ When fixing the unit at the upper place using suspension bolts, use a nut and washer to vertically fasten the unit.
- ▶ There are four spots to fix the suspension bolts. Make sure every spot is fixed.
- ▶ The upper and the lower side of MCU is distinguished, so be careful not to turn the unit upside down when installing the unit. Otherwise, noise may be generated or the product may be damaged.

764 (30.08) (Between the locations of suspension bolts) Unit : mm (inch)

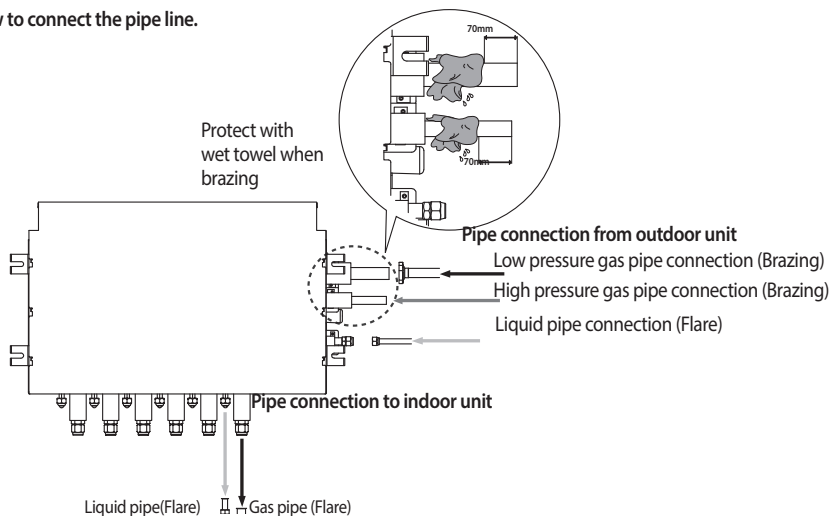


<Location and intervals of fixed suspension bolts>



<Fixing the bolt>

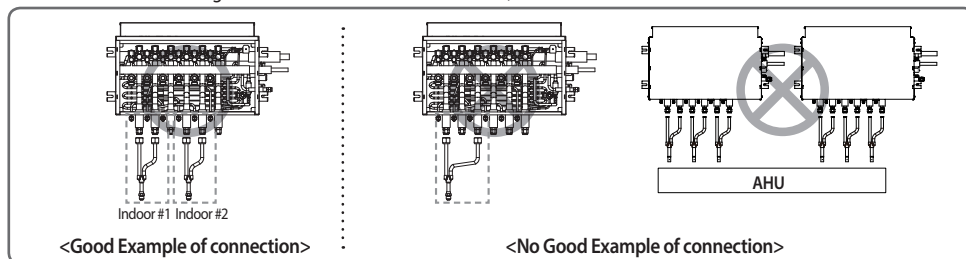
5. How to connect the pipe line.



- ※ When installing MCU, use the pattern sheet for installation that is provided with the product.
- ※ When brazing the high / low pressure gas pipe, protect the product with the flame-proof sheet.

6. How to connect Y-connector

- ▶ In case of connecting one indoor with Y-Connector to MCU, Y-Connector must be connected in series.



Refrigerant piping works

Method and cautions on brazing the pipe

Keeping refrigerant pipe clean and dry

- ▶ To prevent foreign materials or water from entering the pipe, it is important to keep the refrigerant pipe clean, dry and sealed during installation.

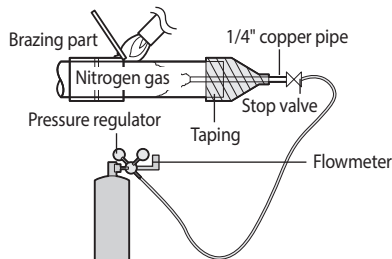
Exposure place	Exposure time	Sealing type
Outside exposure	Longer than one month	Pipe pinch
	Shorter than one month	Taping
Inside exposure	-	Taping

Brazing the pipe

- ▶ Make sure that there is no moisture inside the pipe.
- ▶ Make sure that there are no foreign materials and impurities in the pipe.
- ▶ Make sure that there is no leak.
- ▶ Make sure to follow the instruction when brazing the pipe.

The use of Nitrogen gas

1. Use Nitrogen gas when brazing the pipes as shown in the picture.
2. If you don't use Nitrogen gas when brazing the pipes, oxide may form inside the pipe. It can cause the damage of the compressor and valves.
3. Adjust the flow rate of the nitrogen gas with a pressure regulator to maintain 0.05m³/h(1.77 ft³/h) or less.



Direction of the pipe when brazing

- Performing the brazing of the pipe should be headed downwards or horizontally.

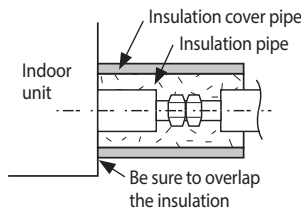
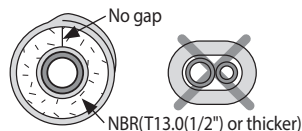
Method and cautions on refrigerant pipe insulation

Make sure to check for gas leakage before completing the installation (hose and pipe insulation) and insulate hoses and pipes when there is no sign of leakage.

1. To avoid condensation problems, place T13.0(1/2") or thicker Acrylonitrile Butadiene Rubber separately around each refrigerant pipe.
2. Wind insulating tape around the pipes and drain hose avoiding to compress the insulation too much.
3. Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.
4. The pipes and electrical cables connecting the indoor unit with the outdoor unit must be fixed to the wall with suitable ducts.



- Always make the seam of pipes face upwards.



- All refrigerant connection must be accessible, in order to permit either unit maintenance or removing it completely.



- Must fit tightly against body without any gap.

Refrigerant piping works

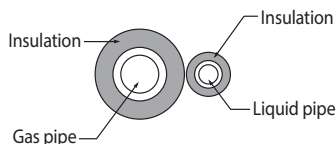
5. Select the insulation of the refrigerant pipe.

- ▶ Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
- ▶ Indoor temperature of 30°C(86°F) and humidity of 85% is the standard condition. If install in a high humidity condition, use one grade thicker insulator by referring to the table below. If installing in an unfavorable conditions, use thicker one.
- ▶ Insulator's heat-resistance temperature should be more than 120°C(248°F).

Pipe	Outer diameter		Insulator (Cooling, Heating)				Remarks
			General [30°C (86°F), 85%]		High humidity [30°C (86°F), over 85%]		
			EPDM, NBR				
	mm	inch	mm	inch	mm	inch	
Liquid pipe	6.35~9.52	1/4~3/8	9	3/8	9	3/8	Heating resisting temperature over 120°C (248°F)
	12.70~50.80	1/2~2	13	1/2	13	1/2	
Gas Pipe	6.35	1/4	13	1/2	19	3/4	
	9.52~25.4	3/8~1	19	3/4	25	1	
	28.58~44.45	1 1/8~1 3/4	19	3/4	32	1 1/4	
	50.80	2	25	1	38	1 1/2	

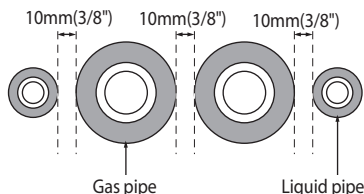
Refrigerant pipe before EEV kit and MCU or without EEV kit and MCU

- ▶ You can contact the gas side and liquid side pipes but the pipes should not be pressed.
- ▶ When contacting the gas side and gas side pipe, use 1 grade thicker insulator.

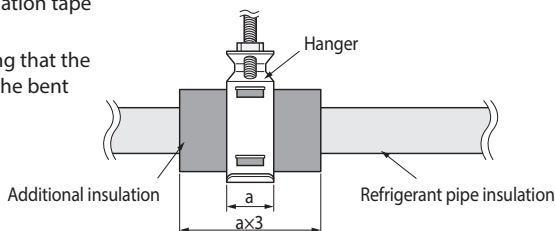


Refrigerant pipe after EEV kit and MCU

- ▶ Install the gas side and liquid side pipes, leave 10mm(3/8") of space.
- ▶ When contacting the gas side and liquid side pipe, use 1 grade thicker insulation.



- Install the insulation not to get wider and use the adhesives on the connection part of it to prevent moisture from entering.
- Wind the refrigerant pipe with insulation tape if it is exposed to outside sunlight.
- Install the refrigerant pipe respecting that the insulation does not get thinner on the bent part or hanger of pipe.
- Add the additional insulation if the insulation plate gets thinner.



Refrigerant piping works

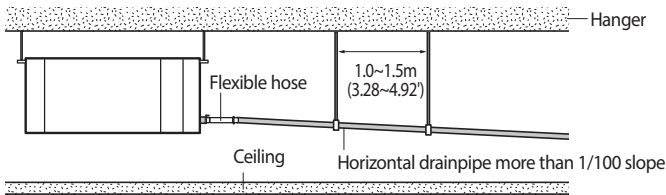
Draining form

- ▶ In a standard condition, drain installation is not required
- ▶ In a high humidity condition, drain installation is required

High humidity condition: Indoor temperature of 30°C, relative humidity of 85% within MCU installation space

Without the drain pump

1. Install horizontal drain pipe with a slope of 1/100 or more and fix it by hanger space of 1.0~1.5m (3.28~4.92')
2. Install U-trap at the end of the drain pipe to prevent a nasty smell to reach the indoor unit.
3. Install U-trap at the end of the drain pipe to prevent a nasty smell to reach the indoor unit.



Wiring works

Installing the circuit breaker and wires

Power supply	MCCB	ELB	Power cable	Earth cable	Communication cable
Max : 242V Min : 198V	X A	X A, 30mA 0.1 sec	0.0039inch ² (2.5mm ²)	0.0039inch ² (2.5mm ²)	0.0012~0.0023inch ² (0.75~1.5mm ²)

- ▶ Decide the capacity of ELB and MCCB by below formula.

The capacity of ELB, MCCB $X[A] = 1.25 \times 1.1 \times \sum A_i$

- * X : The capacity of ELB, MCCB
- * $\sum A_i$: Sum of Rating currents of each indoor unit.
- * Refer to each installation manual about the rating current of indoor unit.
- ▶ Decide the power cable specification and maximum length within 10% power drop among indoor units.

$$\sum_{k=1}^n \left(\frac{\text{Coef} \times 35.6 \times L_k \times i_k}{1000 \times A_k} \right) < 10\% \text{ of input voltage [V]}$$

* Coef: 1.55

* L_k : Distance among each indoor unit[m], A_k : Power cable specification[mm²]

i_k : Running current of each unit[A]

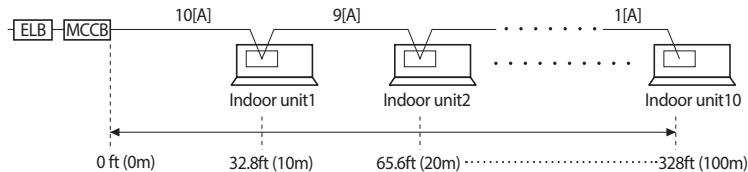
- ▶ DVM Hydro unit HT should use a separated power cable . Do not divide power cable from MCU to Hydro unit HT, MCU may be damaged.

Wiring works

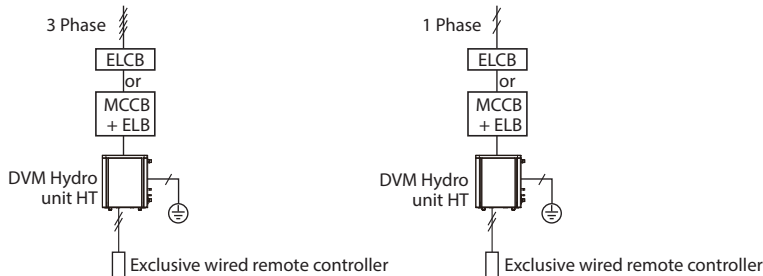
Indoor unit	Power supply	MCCB [A]	ELB [A]	Power cable (mm ²)	Earth cable (mm ²)	Communication cable (mm ²)
DVM Hydro unit	1Ø, 220~240 V/50 Hz Max : 264 V Min : 198 V	X [A]	X [A], 30 mA, 0.1 sec ↓	0.0039 inch ² ↑ (2.5 mm ²) (Single Installation)	0.0039 inch ² (2.5 mm ²)	0.0012~0.0023 inch ² (0.75~1.5 mm ²)
DVM Hydro unit HT	1Ø, 220~240 V/50 Hz Max : 264 V Min : 198V	X [A]	X [A], 30 mA, 0.1 sec ↓	0.0062 inch ² ↑ (4.0 mm ²) (Single Installation)		
	3Ø, 380~415 V/50 Hz Max : 456.5 V Min : 342 V	X [A]	X [A], 30 mA, 0.1 sec ↓	0.0039 inch ² ↑ (2.5 mm ²) (Single Installation)		

Example of Installation

- ▶ Total power cable length L = 328ft (100m), Running current of each units 1[A]
- ▶ Total 10 indoor units were installed



※ Installing a separated power supply for DVM HYDRO UNIT HT.

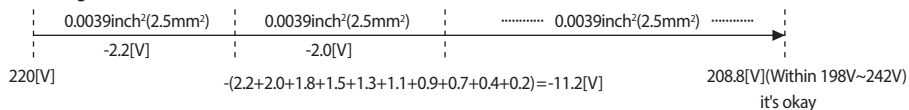


- ▶ Apply following equation.

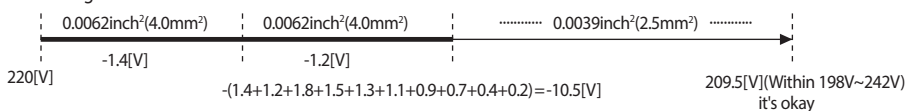
$$\sum_{k=1}^n \left(\frac{\text{Coef} \times 35.6 \times L_k \times i_k}{1000 \times A_k} \right) < 10\% \text{ of input voltage [V]}$$

※ Calculation

- Installing with 1 sort wire



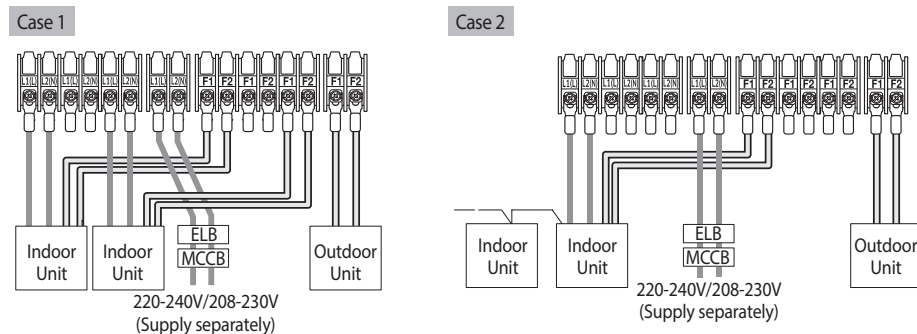
- Installing with 2 different sort wire



※ If the terminal input pressure of the indoor unit goes down by more than 10%, install the thicker wire.

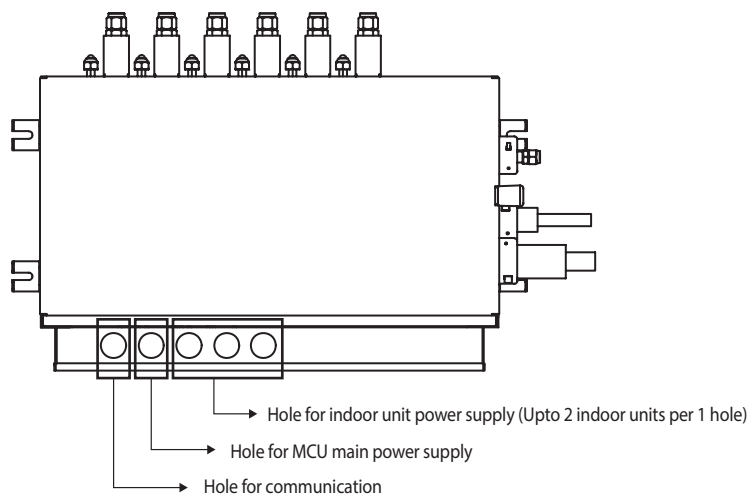
Installing the wire

- ▶ Supply the 220-240V/208-230V power to L1, L2 of MCU separately with outdoor unit.
- ▶ Connect the communication cable from the outdoor unit to F1, F2 of MCU.
- ▶ Power Line and communication line must be connected as shown in drawing.



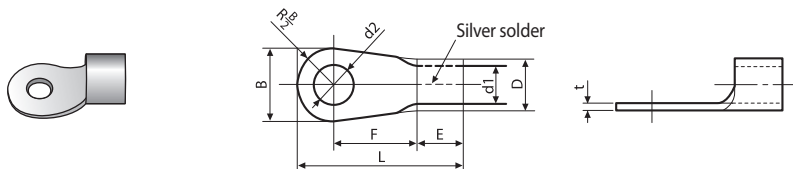
Input socket

- ▶ Power Line and communication line must be installed as shown in drawing



Wiring works

- Choose the compressed socket based on the cross-section of the connecting wire.

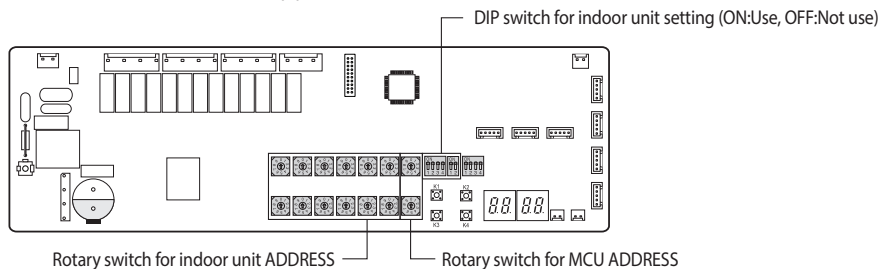


Nominal dimensions for cable [mm ² (inch ²)]		1.5 (0.002)		2.5 (0.003)		4 (0.006)
Nominal dimensions for screw [mm (inch)]		4 (0.157)	4 (0.157)	4 (0.157)	4 (0.157)	4 (0.157)
B	Standard dimension [mm (inch)]	6.6 (0.259)	8 (0.314)	6.6 (0.259)	8.5 (0.334)	9.5 (0.374)
	Allowance [mm (inch)]	±0.2 (0.007)		±0.2 (0.007)		±0.2 (0.007)
D	Standard dimension [mm (inch)]	3.4 (0.134)		4.2 (0.165)		5.6 (0.220)
	Allowance [mm (inch)]	+0.3 (0.011) -0.2 (-0.007)		+0.3 (0.011) -0.2 (-0.007)		+0.3 (0.011) -0.2 (-0.007)
d1	Standard dimension [mm (inch)]	1.7 (0.066)		2.3 (0.090)		3.4 (0.133)
	Allowance [mm (inch)]	+0.2 (±0.007) 0		+0.2 (±0.007) 0		+0.2 (±0.007) 0
E	Min. [mm (inch)]	4.1 (0.161)		6 (0.236)		6 (0.236)
F	Min. [mm (inch)]	6 (0.236)		6 (0.236)		5 (0.196)
L	Max. [mm (inch)]	16 (0.629)		17.5 (0.688)		20 (0.787)
d2	Standard dimension [mm (inch)]	4.3 (0.169)		4.3 (0.169)		4.3 (0.169)
	Allowance [mm (inch)]	+0.2 (±0.007) 0		+0.2 (±0.007) 0		+0.2 (±0.007) 0
t	Min. [mm (inch)]	0.7 (0.027)		0.8 (0.031)		0.9 (0.035)

Setting address and option

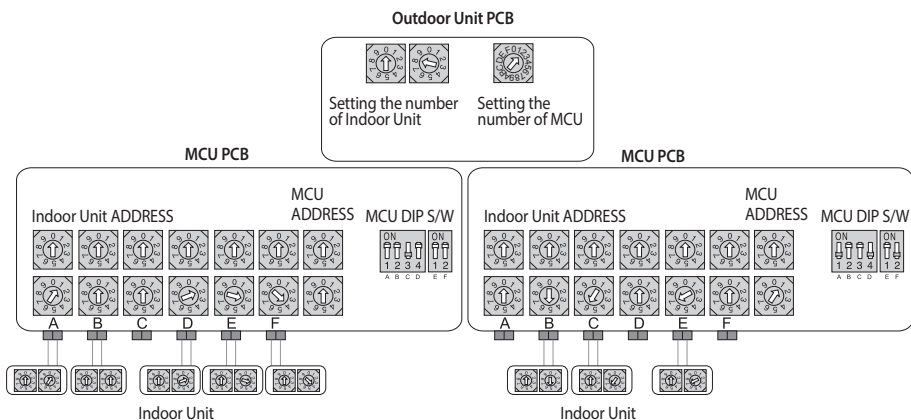
PCB Layout

- Turn off the DIP switch on the MCU PCB when pipe is not connected.



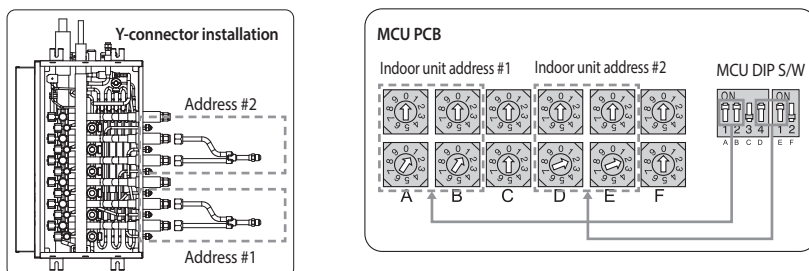
Setting MCU address

- ▶ Set the rotary switch of the indoor unit ADDRESS on the MCU PCB same as the ADDRESS of connected indoor unit.
- ▶ When installing more than 2 MCU, set each rotary switch for MCU ADDRESS properly.



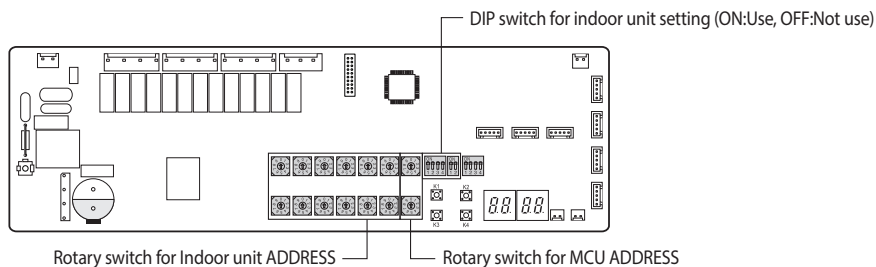
Connecting indoor with Y-Connector to MCU

- ▶ In case of connecting one indoor unit to the MCU by using Y-branch joint, you must set both switches that correspond to the MCU port with the same indoor unit address.
- ▶ You must also set the DIP switch of the MCU in a same way.

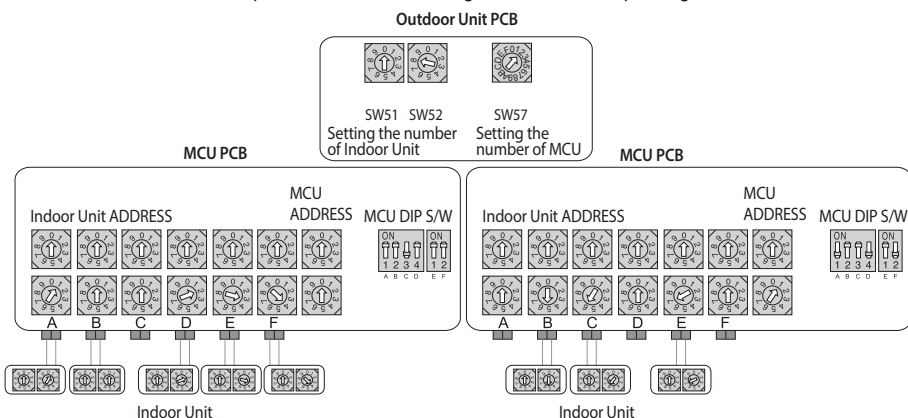


Wiring works

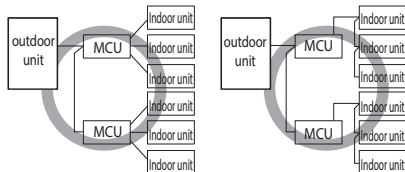
Setting MCU option



- ▶ Address on the rotary switch at the MCU PCB and the rotary switch on the indoor unit must be same.
- ▶ When installing more than 2 MCU's set each rotary switch of MCU differently.
- ▶ When the indoor unit connection port on the MCU is not being used, set the corresponding MCU DIP switch to 'OFF'

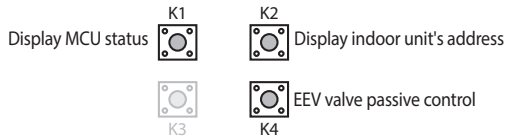


- Connect the power cable using the compressed ring terminal.



- Communication cables are connected as shown above when installing MCU.
- When installing electricity and wires of MCU, please proceed the work referring to the installation manual of the HR outdoor unit.

Key operation



K1 (Pushed time)	Display Contents	Display segment				Remarks
		1	2	3	4	
1	MCU address	0	Blank	0	0	MCU address 0
			Blank	0	1	MCU address 1
			Blank	0	2	MCU address 2
			Blank	1	1	MCU address 11
			Blank	1	5	MCU address 15
2	Mode switching EEV1 step	1	4	8	0	Ex) 480 steps
3	Mode switching EEV2 step	2	4	8	0	Ex) 480 steps
4	Mode switching EEV3 step	3	4	8	0	Ex) 480 steps
5	Mode switching EEV4 step	4	4	8	0	Ex) 480 steps
6	Mode switching EEV5 step	5	4	8	0	Ex) 480 steps
7	Mode switching EEV6 step	6	4	8	0	Ex) 480 steps
8	Subcooler EEV step	7	4	8	0	Ex) 480 steps
9	Subcooler-in sensor temperature	8	-	0	1	Ex) -1°C
			Blank	1	0	Ex) 10°C
10	Subcooler-out sensor temperature	9	-	0	1	Ex) -1°C
			Blank	1	0	Ex) 10°C
11	On/Off for solenoid valve A_C, A_H	A	-	* _C : Cooling solenid valve of port * * _H : Heating solenid valve of port * • 3rd segment : Cooling solenid valve On : 1 / Off : 0 • 4th segment : Heating solenid valve On : 1 / Off : 0		
12	On/Off for solenoid valve B_C, B_H	B				
13	On/Off for solenoid valve C_C, C_H	C				
14	On/Off for solenoid valve D_C, D_H	D				
15	On/Off for solenoid valve E_C, E_H	E				
16	On/Off for solenoid valve F_C, F_H	F				
17	On/Off for liquid by pass solenoid valve	G	Blank	0	N	Ex) On
			0	F	F	Ex) Off
18	Version	8	A	2	0	Ex) October 20, 2008 → 8A 20
19	End of K1 display					

K2 (Pushed time)	Display Contents	Display segment				Remarks
		1	2	3	4	
1	Indoor unit main address for matching with port A	A	-	0	0	Indoor unit main address of port A : 0
2	Indoor unit main address for matching with port B	B	-	0	3	Indoor unit main address of port B : 3
3	Indoor unit main address for matching with port C	C	-	0	6	Indoor unit main address of port C : 6
4	Indoor unit main address for matching with port D	D	-	0	9	Indoor unit main address of port D : 9
5	Indoor unit main address for matching with port E	E	-	1	1	Indoor unit main address of port E : 11
6	Indoor unit main address for matching with port F	F	-	1	5	Indoor unit main address of port F : 15
7	End of K2 display					

Wiring works

K4 Switch (Electronic Valve Manual Control)

- ▶ According to the push time of K4 Switch, A_C, A_H, ..., F_C, F_H, Liquid bypass solenoid valve opens in order.
- ▶ In Electronic Valve Manual Control mode, valve operates by K4 Push time irrespective of indoor operation mode.
- ▶ In Electronic Valve Manual Control mode, push K1 Switch makes DATA DISPLAY MODE to start and valves will operate following indoor operation mode.

K4 (Push time)	Display Contents	Display segment			
		1	2	3	4
1	A_C sol valve ON, other sol valve Off	P	A	1	0
2	A_H sol valve ON, other sol valve Off	P	A	0	1
3	B_C sol valve ON, other sol valve Off	P	B	1	0
4	B_H sol valve ON, other sol valve Off	P	B	0	1
5	C_C sol valve ON, other sol valve Off	P	C	1	0
6	C_H sol valve ON, other sol valve Off	P	C	0	1
7	D_C sol valve ON, other sol valve Off	P	D	1	0
8	D_H sol valve ON, other sol valve Off	P	D	0	1
9	E_C sol valve ON, other sol valve Off	P	E	1	0
10	E_H sol valve ON, other sol valve Off	P	E	0	1
11	F_C sol valve ON, other sol valve Off	P	F	1	0
12	F_H sol valve ON, other sol valve Off	P	F	0	1
13	Liquid b/p sol valve ON, other sol valve Off	P	S	1	0
14	sol valve Manual Control MODE end	P	Communication DATA Display		

Commisioning

※ After installing MCU, check those items below. If you find something unfulfilled, refer to the manual to complete it.

Item	Check
1. If the gas leaking test has been completed or not.	
2. If MCU has been fixed securely enough to avoid the danger of vibration and falling or not.	
3. The Insulation condition of the pipe. (Refrigerant pipe, Pipe connection.)	
4. If the R-410A refrigerant has been charged or not. If the subsidiary unit for R-410A has been used or not.	
5. Checking malfunction of the wire and the communication line.	
6. If the MCU frame has been installed upside-down or not.	
7. If the wire earthing work has been done or not.	
8. If the space between sidewalls, ceiling concrete, and the ceiling Tex has been secured enough or not to install the MCU frame.	
9. If the supporting tool of the MCU pipe has been safely placed in 1.5m intervals or not.	
10. If the prescribed wire has been used or not.	
11. If the supplied power is proper or not.	
12. If the additional refrigerant is proper or not. (Refer to the installation manual of the HR outdoor unit.)	

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2 MERKEZ ADRESİ	FLAT OFİS İSTANBUL İŞ MERKEZİ OTAKÇILAR CAD.NO:78K.3 NO:B3 EYUP
3 TELEFON	0212 4670600
4 FAKS	0212 4378528
6 TİCARET SİCİL NO	629388
8 VERGİ NO	7420397337
1 Servis Adı	AHMET DOĞRUDAĞ-DOĞUŞ ELEKTRONİK
Yetkili Ad Soyad	
Vergi Dairesi	TOPÇU MEYDANI
Vergi No	66274209310
Telefon No	904142153076
HYB No	63-HYB-14
Adres	HAMİDİYE MAH.263.SOK.RÜMEYSA APT ALTI NO:27/A
Şehir	ŞANLIURFA
2 Servis Adı	AK GÜVEN SOĞUTMA-ALİ YILDIZ
Yetkili Ad Soyad	
Vergi Dairesi	İSTİKLAL VERGİ DAİRESİ
Vergi No	9600318189
Telefon No	03243286260
HYB No	33-HYB-400
Adres	BAHÇELİEVLER MH. HÜSEYİN OKAN MERZECİ BLV. NO:476/A
Şehir	MERSİN
3 Servis Adı	ATEŞ ELEKTRONİK - ÖZCAN ATEŞ
Yetkili Ad Soyad	
Vergi Dairesi	ARDA
Vergi No	34609345408
Telefon No	02842352837
HYB No	59-HYB-770
Adres	FATİH MAH. İBRAHİM AY CAD. PEMBE KOŞK APT. NO:1 / EDİRNE
Şehir	EDİRNE
4 Servis Adı	AYTEK ÇINAR-ŞAFAK KOÇ-ÜMİT TELLAL ORTAKLIĞI/BİRLİK TEKNİK ORTALIĞI
Yetkili Ad Soyad	
Vergi Dairesi	GÖNEN
Vergi No	2510299103
Telefon No	02667627811
HYB No	10-HYB-867
Adres	MALKOÇ MAHALLESİ MÜFTİ ŞEVKET CADDESİ NO:60/D / GÖNEN
Şehir	BALIKESİR
5 Servis Adı	BAŞARAN TEKNİK SERVİS-MEHMET BAŞARAN
Yetkili Ad Soyad	
Vergi Dairesi	SERİK
Vergi No	14257579684
Telefon No	0242.7220548
HYB No	07-HYB-531
Adres	KÖKEZ MAHALLESİ BURMAHANCI CADDESİ No:104/C
Şehir	ANTALYA

6 Servis Adı	BAYRAK ELEKTRONİK TAMİR BAKIM HİZMETLERİ SAN.TİC.LTD.ŞTİ.
Yetkili Ad Soyad	
Vergi Dairesi	GAZİLER
Vergi No	1550544868
Telefon No	903624316480
HYB No	55-HYB-292
Adres	19 MAYIS MAH.AĞABALI CAD. NO:38 İLKADIM/ SAMSUN
Şehir	SAMSUN
7 Servis Adı	BERK SERVİS HASAN BAYRAKTAR
Yetkili Ad Soyad	
Vergi Dairesi	İLYASBEY
Vergi No	10743028780
Telefon No	902626414565
HYB No	34-HYB-2952
Adres	- KIZILAY CD.1201/2 SK. - NO:1/C
Şehir	KOCAELİ
8 Servis Adı	EKREM MANDAL-GÜVEN TEKNİK
Yetkili Ad Soyad	
Vergi Dairesi	BEYDAĞI V.D.
Vergi No	6120003243
Telefon No	904223242145
HYB No	44-HYB-45
Adres	UÇBAĞLAR MAH.YUNUS EMRE CAD.NO:25
Şehir	MALATYA
9 Servis Adı	EMİR ELEKTRONİK-SECATTİN AYLANÇ
Yetkili Ad Soyad	
Vergi Dairesi	ERZURUM
Vergi No	12596155408
Telefon No	0442 237 37 01
HYB No	25-HYB-223
Adres	GEZ MAH. ÇAYKARA CAD. NO:44/14
Şehir	ERZURUM
10 Servis Adı	EM-TA TEKNİK-EMRAH KORUYUCU
Yetkili Ad Soyad	
Vergi Dairesi	OSMANİYE
Vergi No	5800184379
Telefon No	903288125766
HYB No	01-HYB-3166
Adres	7 OCAK MAH. D. AHMET ALKAN CAD. NO:132/C / MERKEZ
Şehir	OSMANİYE
11 Servis Adı	ENVER TURKUT - TURKUT TEKNİK
Yetkili Ad Soyad	
Vergi Dairesi	DÜDEN
Vergi No	20410577534
Telefon No	0242.3442333
HYB No	07-HYB-253
Adres	GÜVENLİK MAHALLESİ 267. SOKAK No:16 A/A MURATPAŞA / ANTALYA
Şehir	ANTALYA

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	Vergi No	39784205288
	Telefon No	904242186621
	HYB No	23-HYB-226
	Adres	RÜSTEM PAŞA MH. HACI HAYRİ CD. NO:100/E
	Şehir	ELAZIĞ
13	Servis Adı	GARANTİ SERVİS DAYANIKLI TÜKETİM MALLARI PAZARLAMA SERVİS HİZMETLERİ SANAYİ VE TİCARET LTD. ŞTİ.
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	Vergi Dairesi	GAZİOSMANPAŞA
	Vergi No	3890693692
	Telefon No	0212 6250625
	HYB No	34-HYB-4664
	Adres	ALİBEYKÖY GÜZELTEPE MAHALLESİ AVCI SOKAK NO.8/B EYÜP
	Şehir	İSTANBUL
14	Servis Adı	GENERAL SOĞUTMA-HALİL ABBASOĞLU
	Yetkili Ad Soyad	
	Vergi Dairesi	KİLİS
	Vergi No	0010358834
	Telefon No	905442754211
	HYB No	27-HYB-4201
	Adres	ALTINUZUM MAHALLESİ NEMİKA CADDESİ No:73 A/ Z1 / KİLİS MERKEZ
	Şehir	KİLİS
15	Servis Adı	GÖKSEL SARFAKLAR
	Yetkili Ad Soyad	
	Vergi Dairesi	KARESİ
	Vergi No	34540021010
	Telefon No	02662447072
	HYB No	10-HYB-528
	Adres	HACI İLBAY MAH. ANAFARTALAR CAD. NO:80/A POSTAKODU:10100 ALTIEYLÜL/BALIKESİR
	Şehir	BALIKESİR
16	Servis Adı	Hakan GÜZEL - ÖZKA ELEKTRONİK
	Yetkili Ad Soyad	
	Vergi Dairesi	BİSMİL
	Vergi No	4530610193
	Telefon No	04124152111
	HYB No	21-HYB-3322
	Adres	ALTIOK MAHALLESİ, İSMAİL BEŞİKÇİ CADDESİ, JİYAN 3 APARTMANI ALTI 87/B / BİSMİL
	Şehir	DIYARBAKIR
17	Servis Adı	İKLİM SOĞUTMA-NİLÜFER ALIÇ
	Yetkili Ad Soyad	
	Vergi Dairesi	MUT
	Vergi No	52639093434
	Telefon No	03247745503
	HYB No	33-HYB-923
	Adres	PINARBAŞI MAHALLESİ ATATÜRK BULVARI No:61/C / MUT
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18	Servis Adı	MAVIAY MÜHENDİSLİK MAKİNE İNŞAAT ELEKTRONİK SANAYİ VE TİCARET LIMITED ŞİRKETİ
	Yetkili Ad Soyad	
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	Vergi No	6130692275
	Telefon No	02582620009
	HYB No	20-HYB-1221
	Adres	Merkezefendi Mahallesi 29 Ekim Bulvarı No:37/A Maviay İş Merkezi Merkezefendi/Denizli /
	Şehir	DENİZLİ
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	Yetkili Ad Soyad	
	Vergi Dairesi	GÖKALP
	Vergi No	0540127457
	Telefon No	04122575172
	HYB No	21-HYB-3383
	Adres	MEDYA MAHALLESİ 153.SOKAK SEÇKİN SİTESİ ALTI 5/A /41 / KAYAPINAR
	Şehir	DIYARBAKIR
20	Servis Adı	NAİLE KABASAKAL
	Yetkili Ad Soyad	
	Vergi Dairesi	nazilli
	Vergi No	22279368582
	Telefon No	02563136266
	HYB No	09-HYB-588
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	Şehir	AYDIN
21	Servis Adı	NECMİ GÜRALP ÖZCAN GÜRALP MÜHENDİSLİK
	Yetkili Ad Soyad	
	Vergi Dairesi	ZİYAPASA
	Vergi No	6710098948
	Telefon No	903224540680
	HYB No	01-HYB-2994
	Adres	GAZİPAŞA MH. BORSA CAD. BORSA APT.NO:32/F
	Şehir	ADANA
22	Servis Adı	PINAR ELEKTRONİK
	Yetkili Ad Soyad	
	Vergi Dairesi	İSTİKLAL
	Vergi No	8210021023
	Telefon No	0 324 336 8298
	HYB No	33-HYB-21
	Adres	MAHMUDIYE MAH.108 SOK.NO:32/B
	Şehir	MERSİN
23	Servis Adı	SALİHLİ TEKNİK-TİMUR ACAR Esnaf
	Yetkili Ad Soyad	
	Vergi Dairesi	ADIL ORAL
	Vergi No	25850289290
	Telefon No	05542154699
	HYB No	45-HYB-725
	Adres	CUMHURİYET MH. ESKİ MANİSA YOLU NO: 87
	Şehir	TURGUTLU/ MANİSA

SERVİS İSTASYONLARI GÖSTERİR LİSTE

24	Servis Adı	SAMTİT ELEKTRİK ELEKTRONİK BİLİŞİM DAYANIKLI TÜKETİM MALLARI SANAYİ VE TİCARET LTD. ŞTİ.
	Yetkili Ad Soyad	
	Vergi Dairesi	SELÇUK
	Vergi No	7420421584
	Telefon No	03322388484
	HYB No	42-HYB-1352
	Adres	MUSALLA BAĞLARI MAH. TELGRAFCI HAMDİBEY CAD. NO:10 / SELÇUKLU
	Şehir	KONYA
25	Servis Adı	SİMGE ELEKTRONİK-YAŞAR ALAR
	Yetkili Ad Soyad	
	Vergi Dairesi	YILDIRIM BEYAZIT
	Vergi No	55804106610
	Telefon No	0312 3251876
	HYB No	06-HYB-84
	Adres	ETLİK MAH. YENİ ETLİK CAD. NO:205/ A
	Şehir	ANKARA
26	Servis Adı	SİSTEM GURUP ELEKTRONİK TİCARET VE TAAHHÜT LTD. ŞTİ.
	Yetkili Ad Soyad	
	Vergi Dairesi	MALTEPE
	Vergi No	7710312272
	Telefon No	903122120143
	HYB No	06-HYB-2185
	Adres	ETİ MAH.GAZİ MUSTAFA KEMAL BULVARI NO:104/A ÇANKAYAANKARA
	Şehir	ANKARA
27	Servis Adı	STAR ELEKTRONİK SERVİS HİZMETLERİ-MEHMET YILMAZ
	Yetkili Ad Soyad	
	Vergi Dairesi	KARADENİZ
	Vergi No	13664938404
	Telefon No	904623216224
	HYB No	61-HYB-1084
	Adres	İNÖNÜ MAH. YAVUZ SELİM BULVARI YAVUZ SELİM APARTMANI NO:164/A / ORTAHİSAR
	Şehir	TRABZON
28	Servis Adı	UFUK NEBİ TEMEL
	Yetkili Ad Soyad	
	Vergi Dairesi	ERGANI
	Vergi No	17482883854
	Telefon No	04126112043
	HYB No	21-HYB-3333
	Adres	ADNAN MENDERES MAHALLESİ YENİ HAL CADDESİ, SOKAK 1/1 / ERGANİ
	Şehir	DIYARBAKIR

29	Servis Adı	ÜN SOĞUTMA-AKİF ÜN
	Yetkili Ad Soyad	
	Vergi Dairesi	DÖRTYOL
	Vergi No	31831635246
	Telefon No	0326 712 38 09
	HYB No	31-HYB-28
	Adres	YEŞİL MAH. ATATÜRK CD.KERVAN SOK.NO:4
	Şehir	HATAY
30	Servis Adı	WEGA ELEKTRONİK SACIT SEN
	Yetkili Ad Soyad	
	Vergi Dairesi	ÇORLU
	Vergi No	62722092022
	Telefon No	282-653 82 81
	HYB No	59-HYB-362
	Adres	CAMİATIK MAH. ÇALISKAN SOKAK NO. 8/A
	Şehir	ÇORLU
31	Servis Adı	YUSUF KEMİK - MEGA TEKNİK SERVİS
	Yetkili Ad Soyad	
	Vergi Dairesi	GAZİKENT
	Vergi No	5440343766
	Telefon No	03423381070
	HYB No	27-HYB-1012
	Adres	İNCİLİPINAR MAH. MUAMMER AKSOY BLV. KEPKEP PLAZA İŞ MRK. ALTI NO: 8 ŞEHİTKAMİL /
	Şehir	GAZİANTEP

Belirtilen Servis Merkezleri iletişim bilgileri 02.06.2017 tarihinde güncellenmiştir ve bu tarihten sonra değişiklik gösterebilir. Bilgilere istinaden, bölgenizdeki servis merkezlerimize ulaşamadığınız durumlarda 444 77 11 numaralı Çağrı Merkezimizden size en yakın Servis Merkezimizi öğrenebilirsiniz.



