



Installation, Operation, and Maintenance

GMV DC Air Handler

Model Number:

TRN-IM09A1
TRN-IM12A1
TRN-IM18A1
TRN-IM24A1
TRN-IM30A1
TRN-IM36A1
TRN-IM42A1
TRN-IM48A1
TRN-IM54A1
TRN-IM60A1

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

⚠ AVERTISSEMENT DE SÉCURITÉ

Seul le personnel qualifié doit installer et procéder à l'entretien des équipements. L'installation, le démarrage et la réparation des équipements de chauffage, de ventilation et de climatisation peuvent être dangereux et nécessitent une formation et des connaissances spécifiques. Un équipement mal installé, réglé ou modifié par un individu non qualifié peut entraîner des blessures graves, voire mortelles. Lors de toute intervention sur l'équipement, respectez toutes les précautions figurant dans la documentation et sur les étiquettes et autocollants fixés à l'équipement.

Preface

For correct installation and operation, please read all instructions carefully. Before reading the instructions, please be aware of the following items:

⚠ DANGER	If not abide them strictly, it may cause severe damage to the unit or the people.
⚠ WARNING	If not abide them strictly, it may cause slight or medium damage to the unit or the people.
⚠ CAUTION	This sign indicates that the items must be prohibited. Improper operation may cause severe damage or death to people.
NOTICE	This sign indicates that the items must be observed. Improper operation may cause damage to people or property.

⚠ WARNING	
(1)	The design standard of multi VRF system conforms to related standard of sales countries.
(2)	To ensure safety when operating this system, please strictly follow the instructions in this manual.
(3)	The total capacity of running indoor units must not exceed that of the outdoor units. Otherwise, the cooling (heating) effect of each IDU would be poor.
(4)	Make sure that this manual is kept by direct operators and maintainers.
(5)	If the product needs to be installed, moved or maintained, please contact our designated dealer or local service center for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.
(6)	All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. If there is adjustment in the product, please subject to actual product.
(7)	Under the standby status, the unit will consume a little power for ensuring reliability of the complete unit, maintaining normal communication and preheating refrigerant. When the unit won't be used for a long time, please cut off the power of the complete unit. However, please preheat it when operating the unit next time.

User Notice

- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.



Exception Clauses	
Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons:	
(1)	Damage the product due to improper use or misuse of the product;
(2)	Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer;
(3)	After verification, the defect of product is directly caused by corrosive gas;
(4)	After verification, defects are due to improper operation during transportation of product;
(5)	Operate, repair, maintain the unit without abiding by instruction manual or related regulations;
(6)	After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers;
(7)	The damage is caused by natural calamities, bad using environment or force majeure.

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1 Safety Precautions

WARNING

- (1) This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for the above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.
- (2) Follow this manual to complete the installation work. Please read this manual carefully before turning on or repairing the unit.
- (3) Installation should be conducted by the dealer or qualified personnel. Please do not attempt to install the air conditioner by yourself. Improper installation may lead to water leakage, electric shock or fire hazard, etc.
- (4) Before installation, please check whether the power supply is complied with that specified on the nameplate and check the safety of the power supply.
- (5) The air conditioner must be grounded reliably for avoiding electric shock. Please do not connect the earthing wire to gas pipe, water pipe, lightning rod or telephone line.
- (6) Be sure to use special accessories and parts for installation to prevent water leakage, electric shock and fire hazard, etc.
- (7) If refrigerant leakage happens, please ventilate the room immediately.
- (8) Diameter of power cord should be large enough. The damaged power cord and connection wire must be replaced with special cables.
- (9) When the power cord is connected, please fix the electric box cover properly to avoid safety accidents.
- (10) Never fail to comply with the nitrogen-charging welding process. Do charge nitrogen when welding the pipes.
- (11) Never short circuit or cancel the pressure switch to prevent unit damage.
- (12) As for the unit controlled by the wired controller, connect the wired controller well firstly and then energize the unit; otherwise, the unit can't operate normally.
- (13) When installation is finished, please check whether the drainage pipes, pipelines and electric wires are connected correctly to avoid water leakage, refrigerant leakage, electric shock or fire, etc.
- (14) Do not insert fingers or objects into air outlet or air return grille.
- (15) Open the door and window frequently to keep good ventilation for avoiding oxygen deficit when gas heater or oil heater is used in the room.
- (16) Never plug in or unplug the power plug directly to turn on or turn off the air conditioner.
- (17) Once the air conditioner is turned on, it can be turned off only after it has operated for 5min at least; otherwise, it will affect the oil return of compressor.
- (18) Do not allow children to operate this air conditioner.
- (19) Do not operate this air conditioner with wet hands.
- (20) The air conditioner can be cleaned only when it has been turned off and the power has been cut off; otherwise, it may cause electric shock or injury.
- (21) Never spray or flush water towards the air conditioner; otherwise, malfunction or electric shock may happen.
- (22) Do not expose the air conditioner to the moist or corrosive environment.
- (23) Put through the power 8 hours in advance before operation. Do not cut off the power when the air conditioner stops operation for only about one night (protect the compressor).
- (24) Volatile liquid, such as diluent or gasoline, will damage the appearance of air conditioner. Only soft dry cloth and wet cloth dipped with neutral detergent can be used to clean the outer case of air conditioner.
- (25) Under cooling mode, please don't set the room temperature too low.
- (26) If there are any abnormal circumstances (such as burning smell, etc.), please turn off the unit and cut off the main power supply immediately, and then contact our designated dealer or local service center. If those abnormal circumstances still exit, the unit may be damaged and it may lead to electric shock or fire hazard.
- (27) Do not repair the unit by yourself. Wrong maintenance may cause electric shock or fire hazard. Please contact our designated dealer or local service center for help.
- (28) HVAC systems may experience operational disruptions due to electromagnetic interference (EMI), potentially affecting medical devices and broadcast signal transmissions. Conversely, variable-frequency drives (VFDs), dedicated generators, high-frequency medical devices, and radio communication equipment may also interfere with HVAC system operation.
- (29) The mounting bracket shall remain structurally sound throughout its service life. Any degradation must be repaired immediately; failure to do so may cause equipment detachment, resulting in personal injury or property damage.

⚠ WARNING	
(30)	Handle equipment with care during transportation. Team handling is required; use appropriate handling equipment. Never grasp the packaging straps; wear safety gloves during unpacking and handling to prevent injury.
(31)	Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, it may cause water leakage or equipment damage.
(32)	Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1.

If the product needs to be installed, moved or maintained, please contact our designated dealer or local service center for professional support, otherwise our company would bear no legal reliability for the related damages arising therefrom.

2 Product Introduction

2.1 Names of Key Components

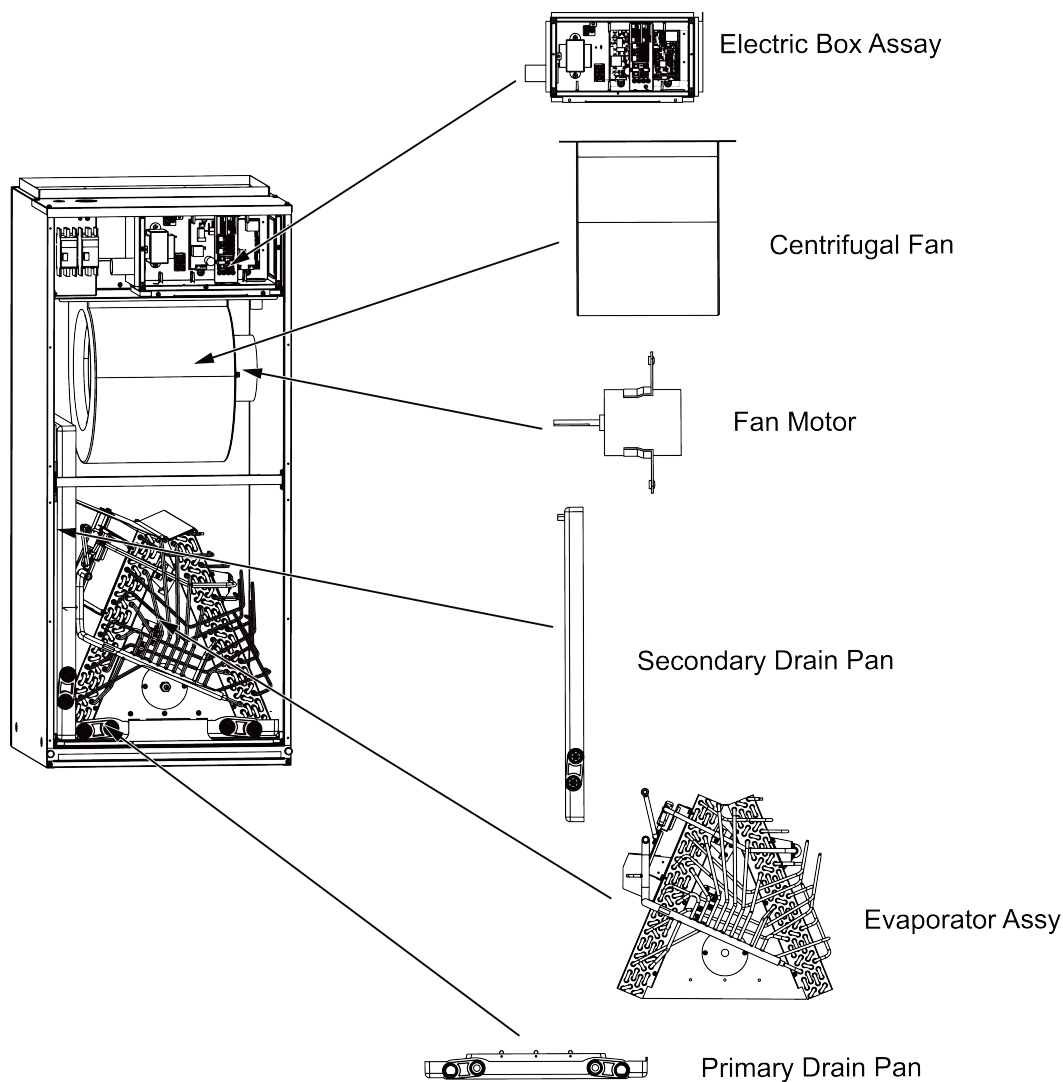


Fig.2.1.1

2.2 Rated Working Condition

—	Indoor Side Condition		Outdoor Side Condition	
	Dry Bulb Temp ℃(°F)	Wet Bulb Temp ℃(°F)	Dry Bulb Temp ℃(°F)	Wet Bulb Temp ℃(°F)
Rated Cooling	26.7(80.0)	19.4(67.0)	35(95.0)	23.9(75.0)
Rated Heating	21.1(70.0)	15.6(60.0)	8.3(47.0)	6.1(43.0)

3 Preparations for Installation

NOTICE

Product graphics are only for reference. Please refer to actual products. Unspecified measure unit is mm(inch).

3.1 Pre-Installation Instruction

3.1.1 Checking Product Received

After receiving the product, please check if there is any damage caused by transportation. Shipping damage is the responsibility of the carrier. Verify the model No., specifications and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

3.1.2 Before Installation

Carefully read all instructions for the installation prior to installing product. Make sure each step or procedure is understood and any special considerations are taken into account before starting installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally. Make sure everything needed to install the product is on hand before starting.

3.1.3 Codes & Regulations

This product is designed and manufactured to comply with national codes. It is installer's responsibilities to install the product in accordance with such codes and/or any prevailing local codes/regulations. The manufacturer assumes no responsibilities for equipment installed in violation of any codes or regulations.

3.1.4 Replacement Parts

When reporting shortages or damages, or ordering repair parts, give the complete product No. and serial numbers as stamped on the product. Replacement parts for this product are available through your contractor or local distributor.

When removing the air filter, wear appropriate eye protection. Include gas handling procedures to prevent exposure to toxic and hazardous gases.

3.2 Important Safety Instructions

Recognize Safety Symbols, Words, and Labels

The following symbols and labels are used throughout this manual to indicate immediate or potential hazards. It is the owner's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of serious personal injury or death, property damage and/or product damage.

⚠ DANGER Immediate hazards which will result in property damage, product damage, severe personal injury or death.

⚠ WARNING Hazards or unsafe practice could result in property damage, product damage, severe personal injury or death.

⚠ CAUTION Hazards or unsafe practices which may result in property damage, product damage, severe personal injury or death.

⚠ WARNING Before serving or installing this equipment. The electrical power to this unit must be in the “off” position. Caution, more than one disconnect may exist. Failure to observe this warning may result in an electrical shock that can cause personal injury or death.

⚠ WARNING The United States environmental protection agency (“EPA”) has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary due to the passage of laws. A certified technician must perform the installation and service of this product. Should questions arise, contact your local EPA office.

⚠ WARNING Due to high system pressure and electrical shock in potential, installation and service work can be dangerous. Only trained and qualified personnel are permitted to install or service this equipment. Observe all warnings contained in this manual and labels/tags attached to the equipment.

⚠ WARNING This product is factory shipped for use with a 208-230/1/60 electrical power supply. This air handler must not be reconfigured to operate with any other power supply.

⚠ WARNING The unit must have an uninterrupted, unbroken electric grounding to minimize the possibility of personal injury if an electric fault occurs. The electric grounding circuit may consist of an appropriate sized power cord which connected with the grounding piece located in the unit control box and also connecting to the building electric service panel. Other methods of grounding are permitted if performed in accordance with the “national electric code” (NEC) / “American national standards institute” (ANSI) / “national fire protection association” (NFPA) 70 and local/state codes. In Canada, electric grounding conforms to the Canadian electric code CSA c22.1. Failed to observe this warning can result in electrical shock that can cause personal injury.

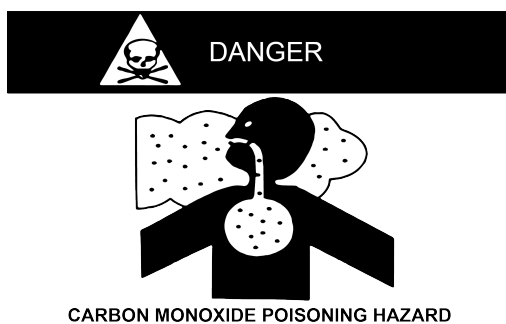


Fig.3.2.1

Special warning for installation of furnaces or air handling units in enclosed areas, such as garages, utility rooms or parking areas.

Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate

ventilation directly to outside.

This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emission can be (re)circulated throughout the building if the furnace or air handler is operating in any mode.

CO can cause serious illness including permanent brain damage or death.

3.3 Requirements for Communication Line

NOTICE If the unit is installed in the place with strong electromagnetic interference, shielded wire must be applied on the communication wire between indoor unit and wired controller. Twisted pair line with shielding function must be applied on the communication wire between indoor unit and indoor unit (outdoor unit).

3.3.1 Select communication line for indoor unit and wired controller

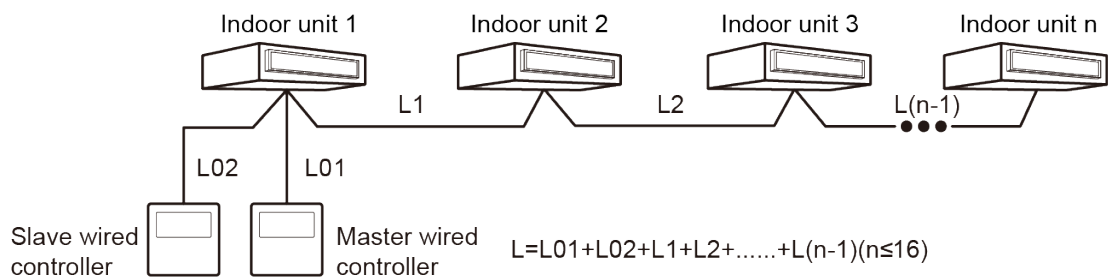


Fig.3.3.1

Material type	Total length of communication line between indoor unit and wired controller L	Numbers × size	Remarks
Light/Ordinary polyvinyl chloride sheathed cord.	$L \leq 250\text{m}$ ($L \leq 820\text{-}1/4\text{ft.}$)	2×AWG18~2×AWG16	1. Total length of communication line can't exceed 250m (820-1/4ft.).The average length of the communication line between indoor unit and wired controller is 15m(49-1/4ft.). 2. The cord shall be Circular cord (the cores shall be twisted together). 3. If unit is installed in places with intense magnetic field or strong interference, it is necessary to use shielded wire.

3.3.2 Select communication line for indoor unit and outdoor unit

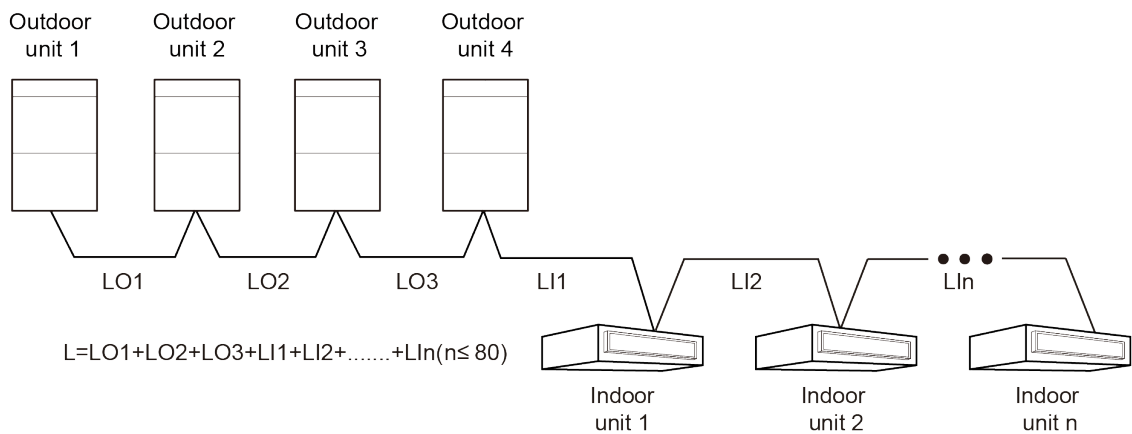


Fig.3.3.2

Material Type	Total Length L of Communication Cable between Indoor Unit and Indoor (Outdoor) Unit	Numbers × size	Remarks
Light/Ordinary polyvinyl chloride sheathed cord.	$L \leq 1000\text{m}$ ($L \leq 3280\text{-}7/8\text{ft.}$)	$\geq 2 \times \text{AWG}18$	1. If the wire diameter is enlarged to $2 \times \text{AWG}16$, the total communication line length can reach 1500 m (4921-1/4ft.). The average length of communication line between units is 12.5 m (410-1/8ft.). 2. The cord shall be Circular cord (the cores shall be twisted together). 3. If unit is installed in places with intense magnetic field or strong interference, it is necessary to use shielded wire.

3.4 Wiring Requirements

Power Cord Size and Air Switch Capacity

Model	Power Cord Size	Minimum Circuit Ampacity (A)	Maximum Overcurrent Protection (A)
GMV-ND09A/B-T(U)	208/230V-1Ph-60Hz	3.0	15
GMV-ND12A/B-T(U)		3.0	15
GMV-ND18A/B-T(U)		3.0	15
GMV-ND24A/B-T(U)		4.0	15
GMV-ND30A/B-T(U)		4.0	15
GMV-ND36A/B-T(U)		5.0	15
GMV-ND42A/B-T(U)		5.0	15
GMV-ND48A/B-T(U)		8.7	15
GMV-ND54A/B-T(U)		8.7	15
GMV-ND60A/B-T(U)		8.7	15

NOTICE

- Use copper wire only as unit's power cord. Operating temperature should be within its rated value.
- If the power cord is more than 15 m (49-1/4 ft.) long, please increase properly the sectional area of power cord to avoid overload, which may cause accident.
- Above selection requirements: Power cord size is based on BV single-core wire (2~4pc) at 40° (104°F) ambient temperature when laying across plastic pipe. Air switch is D type and used at 40°C (104°F). If actual installation condition varies, please lower the capacity appropriately according to the specifications of power cord and air switch provided by manufacturer.
- Install cut-off device near the unit. The minimum distance between each stage of cut-off device should be 3 mm (1/8 inch) (The same for both indoor unit and outdoor unit).

4 Installation Instructions

4.1 Dimension Data

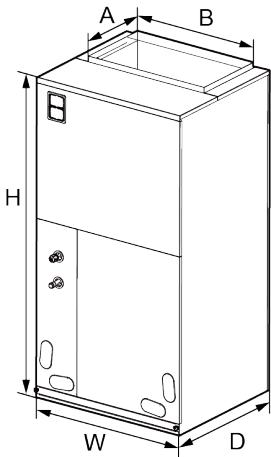


Fig.4.1.1

Model	Dimension				
	W	D	H	A	B
GMV-ND09A/B-T(U)	460(18-1/8)	540(21-1/4)	1105(43-1/2)	295(11-5/8)	426(16-3/4)
GMV-ND12A/B-T(U)	460(18-1/8)	540(21-1/4)	1105(43-1/2)	295(11-5/8)	426(16-3/4)
GMV-ND18A/B-T(U)	460(18-1/8)	540(21-1/4)	1105(43-1/2)	295(11-5/8)	426(16-3/4)
GMV-ND24A/B-T(U)	460(18-1/8)	540(21-1/4)	1105(43-1/2)	295(11-5/8)	426(16-3/4)
GMV-ND30A/B-T(U)	460(18-1/8)	540(21-1/4)	1105(43-1/2)	295(11-5/8)	426(16-3/4)
GMV-ND36A/B-T(U)	540(21-1/4)	540(21-1/4)	1224(48-1/4)	295(11-5/8)	508(20)
GMV-ND42A/B-T(U)	540(21-1/4)	540(21-1/4)	1224(48-1/4)	295(11-5/8)	508(20)
GMV-ND48A/B-T(U)	630(24-3/4)	540(21-1/4)	1448 (57)	295(11-5/8)	508(20)
GMV-ND54A/B-T(U)	630(24-3/4)	540(21-1/4)	1448 (57)	295(11-5/8)	508(20)
GMV-ND60A/B-T(U)	630(24-3/4)	540(21-1/4)	1448 (57)	295(11-5/8)	508(20)

4.2 Location

4.2.1 Unit Inspection

Upon delivery, inspect the unit for damage. Any damage must be reported immediately to the carrier. Do not install such an equipment damaged by freight which determines the integrity and safety of the unit.

Please check the equipment model number to ensure the unit is appropriately sized for the condensing unit.

If an incorrect unit is supplied, it must not be installed and it is to be returned to the supplier. The manufacturer assumes no responsibility for the installation of incorrectly delivered units. The evaporator coil contains high-pressure inert gas for holding charge.

4.2.2 Installation Site

- ◆ A place where cool air can be distributed throughout the room.
- ◆ A place where condensation water is easily drained out.
- ◆ A place that can bear the weight of indoor unit.
- ◆ A place which is easy for maintenance.
- ◆ A place where easy connection with the outdoor unit is available.
- ◆ A place where is 1m or more away from other electric appliances such as television, audio device, etc.
- ◆ Avoid a location where there is heat source, high humidity or inflammable gas.
- ◆ Do not place the unit near a laundry, a bath, a shower or a swimming pool.
- ◆ Be sure that the installation conforms to the installation dimension diagram.
- ◆ The space around the unit is adequate for ventilation.
- ◆ Vibration isolation, acoustic insulation, and noise control measures must be implemented during installation.

4.2.3 Location

⚠ WARNING	
(1)	The unit must be installed where strong enough to withstand the weight of the unit and fixed securely, otherwise the unit would topple or fall off.
(2)	The mounting bracket shall remain structurally sound throughout its service life. Any degradation must be repaired immediately; failure to do so may cause equipment detachment, resulting in personal injury or property damage.
(3)	Do not install where there is the danger of combustible gas leakage.
(4)	Do not install the unit at a place with leakage of inflammable gas.
(5)	Sealant must be applied at all penetration points where wiring, refrigerant lines, and condensate drain lines enter the cabinet.

⚠ WARNING This air handler is designed for indoor installation only. Do not install it outdoors.

When installing the air handler, take consideration to minimize the length of refrigerant tubing as much as possible. Do not install the air handler in a location either above or below the condenser that violates the instructions provided with the condenser. Service clearance is to take precedence. Allow a minimum of 24" in front of the unit for service clearance. When installing in an area directly over a finished ceiling (such as an attic), an emergency drain pan is required directly under the unit. See local and state codes for requirements. When installing this unit in an area that may become wet, elevate the unit with a sturdy, non-porous material. In installations that may lead to physical damage (i.e. a garage) it is advised to install a protective barrier to prevent such damage.

This air handler is designed for a complete supply and return ductwork system. These duct type indoor units are used to supply conditioned air to one room. Do not operate this product without all ductwork attached.

Based upon the actual conditions, if air handler is installed as Fig.4.2.1(A), the air handler should be concealed in a specific room or space and make sure the air handler is not accessible to the general public.

Based upon the actual conditions, if air handler is installed as Fig.4.2.1(B), make sure that there is enough space for care and maintenance and the height between the air handler and ground is above 2500mm. And the air handler is not accessible to the general public.

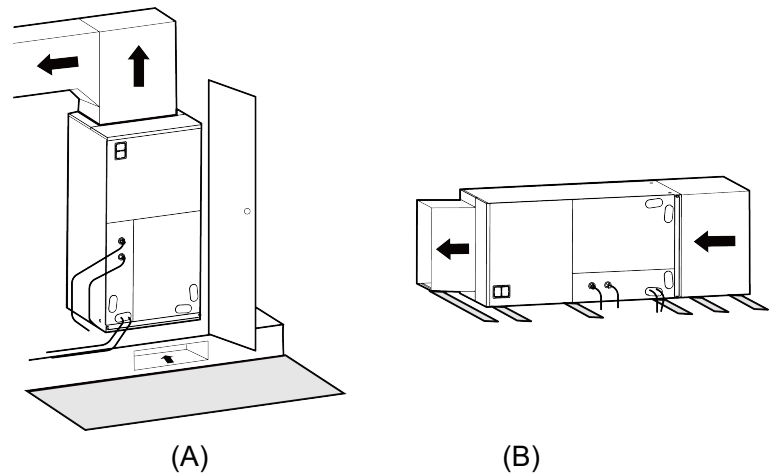


Fig.4.2.1

4.3 Piping Work

4.3.1 Specification of Connection Pipe

Model	External Diameter (inch)	
	Gas Pipe	Liquid Pipe
GMV-ND09A/B-T(U)	3/8	1/4
GMV-ND12A/B-T(U)	1/2	1/4
GMV-ND18A/B-T(U)	5/8	3/8
GMV-ND24A/B-T(U)	5/8	3/8
GMV-ND30A/B-T(U)	5/8	3/8
GMV-ND36A/B-T(U)	5/8	3/8
GMV-ND42A/B-T(U)	5/8	3/8
GMV-ND48A/B-T(U)	5/8	3/8
GMV-ND54A/B-T(U)	3/4	3/8
GMV-ND60A/B-T(U)	3/4	3/8

4.3.2 Piping Preparation

4.3.2.1 Solder Connection

All cut ends are to be round, burr free, and cleaned. Failure to follow this practice increases the chances for refrigerant leakage.

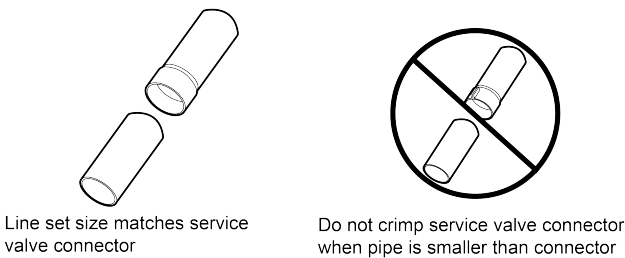


Fig.4.3.1

4.3.2.2 Screw Connection

- (1) Aim the flaring port of copper pipe at the center of screwed joint and then tighten the flaring nut with hand as shown in Fig.4.3.2
- (2) Tighten the flaring nut with torque wrench.

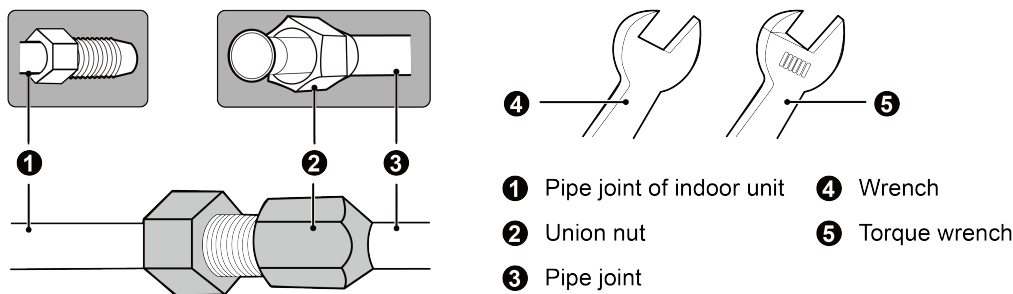


Fig.4.3.2

Pipe diameter mm(inch)	Torque(N•m)
Φ6.35(1/4)	15~30
Φ9.52(3/8)	35~40
Φ12.7(1/2)	45~50
Φ15.9(5/8)	60~65
Φ19.05(3/4)	70~75

- (3) Use pipe bend when bending the pipe and the bending angle should not be too small.
- (4) Wrap the connection pipe and joint with sponge and then tie them firmly with tape.
- (5) Prior to installation, the internal piping must be free of contaminants and protected against dust ingress. Any contamination may compromise the unit's operational integrity.
- (6) When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes. If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.
- (7) Tighten all flare nuts to specification using a torque wrench. If tightened too much, the flare nut can break after an extended period and refrigerant can leak out.

4.4 Condensate Removal

- (1) It is not allowed to connect the condensate drain pipe into waste pipe or other pipelines which are likely to produce corrosive or peculiar smell to prevent the smell from entering indoors or corrupt the unit.
- (2) It is not allowed to connect the condensate drain pipe into rain pipe to prevent rain water from pouring in and cause property loss or personal injury.
- (3) Setting the unit at an angle opposite to the drain piping might cause leaks.
- (4) Condensate drain pipe should be connected into special drain system for air conditioner.
- (5) Improper drainage may damage the house and property.
- (6) The drain pan has primary and secondary drain connection. Condensate removal is performed by attaching a 3/4" PVC pipe to the evaporator coil pan and terminated in accordance with local or state Plumbing/HVAC codes. The installation must include a "P" style trap that is located closely to the evaporator coil. Do not over-tighten the drain connection in order to prevent possible damage to the evaporator drain pan. See the following figure for details of a typical condensate line "P" trap.

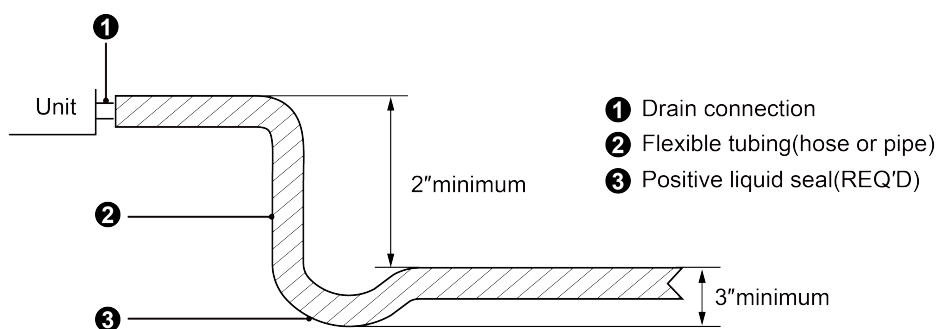


Fig.4.4.1

4.5 Installation of Wired Controller

Please refer to User Manual of Wired Controller for the installation details.

NOTICE

When installation is finished, the unit must be tested and debugged before operation. Please refer to Instruction Manual of ODU for auto addressing and debugging details.

4.6 Ductwork

This air handler is designed for a complete supply and return ductwork system.

⚠ WARNING

Do not operate the unit without all ductwork completed.

Do not operate this product without all ductwork attached.

Inadequate ductwork that restricts airflow can result in improper performance and compressor or heater failure. Ductwork is to be constructed in a manner that limits restrictions and maintains suitable air velocity. Ductwork is to be sealed to the unit in a manner that will prevent leakage.

Return ductwork: Do not terminate the return ductwork in an area that can introduce toxic, or objectionable fumes/odors into the ductwork. The return ductwork is to be introduced into the air handler bottom (up flow configuration).

Return Air Filters: Each installation must include a return air filter. This filtering may be performed at the air handler or externally such as a return air filter grille.

4.7 Electric Heater

The air handlers listed in this manual do not have factory installed electric heater. Electric heater is available as an accessory. Please refer to installation instructions provided with heater kit for the correct installation procedure.

⚠ WARNING

Refer to the "installing electric heater" section of this manual and the instructions provided with the heater kit for the correct installation procedure.

⚠ WARNING

The electrical characteristics of the air handler, the electric heater kit, and the supply power should be identical. This air handler does not have factory installed electric heater. Electric heater is available as an accessory. If installing this option, the only heater kits that can be used are the series as indicated below. It is forbidden to use the electric heater other than those recommended.

⚠ WARNING

E-HEAT mode setting method: under off status, press ON/OFF and Menu button for 5s to turn on or turn off E-heat mode. After that, the wired remote control pop-up box shows "Setting is done" for 1s, and indoor unit can set "Electric heating mode". When E-HEAT mode has been set and indoor unit operates under heating mode, if outdoor unit stops operation because of error, indoor unit will switch to operate under electric heating mode.

⚠ WARNING

After the electric heater is shutdown, the fan of indoor unit will delay for a few minutes and then shut down so that the indoor unit can blow the waste heat and relieve the heat accumulation in the air duct.

⚠ WARNING

During installation and debugging, pay attention to verify the switch sequence of electric heater and fan, ensure the fan must be turned on when electric heater operation and ensure the electric heater is turned off before the fan to avoid unsafe.

⚠ WARNING

Installation of the electric heater must strictly adhere to the manufacturer's instructions. Unauthorized modification of the electric heating circuit is strictly prohibited, as it may cause fire hazards.

4.7.1 Electric Heater Kits Available

Model	Electric heater	Description	Manufacturer of electric heater
GMV-ND09A/B-T(U) GMV-ND12A/B-T(U) GMV-ND18A/B-T(U)	21-4227-00	Circuit breaker, 5 kW electric heater	TUTCO
GMV-ND24A/B-T(U) GMV-ND30A/B-T(U) GMV-ND36A/B-T(U)	21-4227-00 21-4216-00 21-4216-01	Circuit breaker, 5 kW、8 kW、10 kW electric heater	
GMV-ND42A/B-T(U) GMV-ND48A/B-T(U) GMV-ND54A/B-T(U) GMV-ND60A/B-T(U)	21-4227-00 21-4216-00 21-4216-01 21-4217-00	Circuit breaker, 5 kW、8 kW、10 kW、15 kW electric heater	

4.7.2 Electric Heater Kits Installation

⚠ CAUTION

- (1) Ensure that all power supply is disconnected prior to installing the heater kit.
 - (2) A means of strain relief and conductor protection must be provided at the supply wire entrance into cabinet.
 - (3) Use copper conductors only.
 - (4) Installation must follow national electric code and other applicable codes.
 - (5) If this appliance is installed in an enclosed area such as a garage or utility room with any carbon monoxide producing appliance, ensure the area is properly ventilated.
- 1) Refer to the Table for appropriate heater kit.
 - 2) Check any physical damage, do not install damaged heater kit.
 - 3) Remove the upper access panel from air handler.
 - 4) Remove cover plate from air handler.
 - 5) Slide the heater kit in to the slot and secure element plate with previously removed screws.
 - 6) Insert power leads into the circuit breaker lugs or stripped red and black wires (for heater kit without circuit breaker) and tighten.
 - 7) Connect ground wire to ground lug.
 - 8) Knock off appropriate area of the plastic circuit breaker cover on the access panel of the air handler. Knock off the holes according to the actual installation number and positions of circuit breakers. If circuit breaker is not installed, do not knock off the holes; otherwise, electric shock may occur.
 - 9) Replace access panel and check operation.

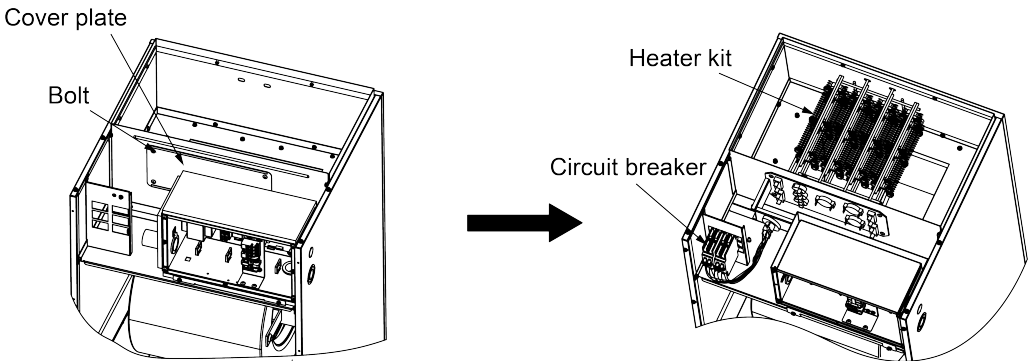


Fig.4.7.1

10) Connection of power cords and wired controller.

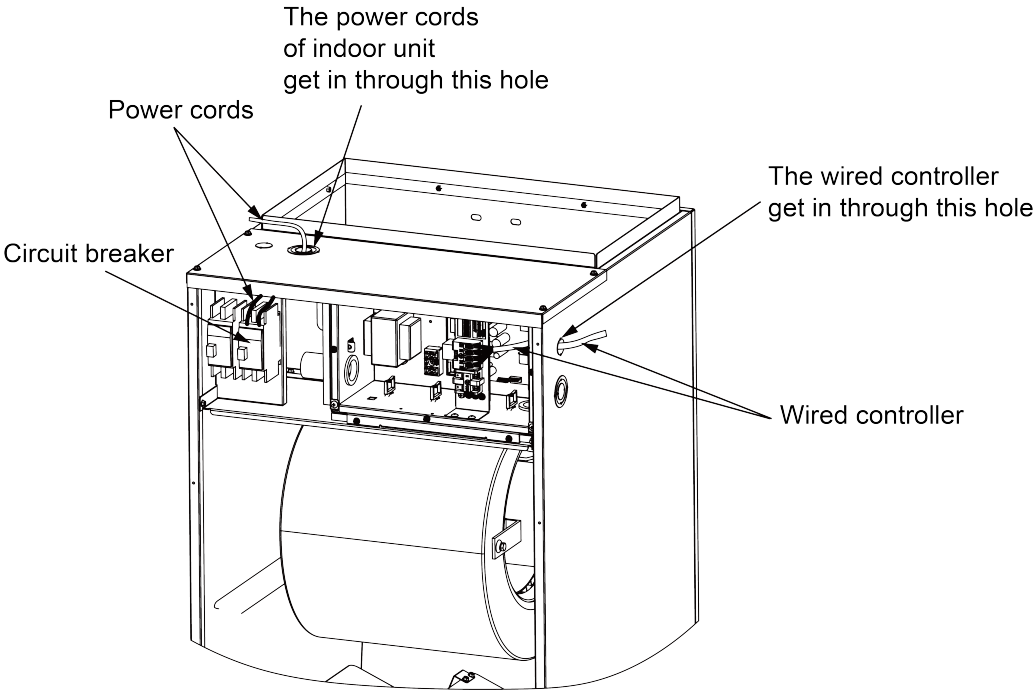


Fig.4.7.2

5 Wiring Work

⚠ WARNING Before obtaining access to terminals, all supply circuits must be disconnected.

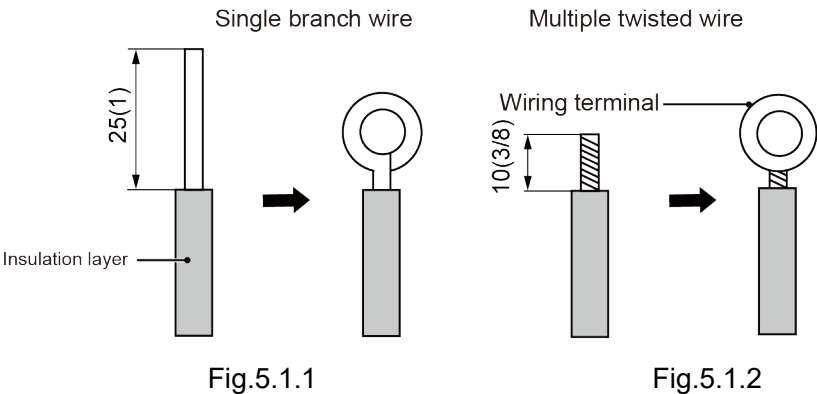
NOTICE	
(1)	Units must be earthed securely, or it may cause electric shock.
(2)	Please carefully read the wiring diagram before carry out the wiring work, incorrect wiring could cause malfunction or even damage the unit.
(3)	The capacity of power supply must be sufficient and the sectional area of wires in the room should be above 2.5mm ² .
(4)	The wiring should be in accordance with related regulations in order to ensure the units reliable running.
(5)	Install circuit breaker for branch circuit according to related regulations and electrical standards.
(6)	All wiring must use pressure terminal or single wire. Multi-twisted wire that connects directly to the wiring board may cause fire hazard.
(7)	Keep cable away from refrigerant pipings, compressor and fan motor.
(8)	Do not change the internal wiring of the air conditioner; otherwise, our company will not bear relevant legal responsibilities for the related damages.
(9)	If the unit is installed in places with strong electromagnetic interference, it's recommended to use twin-twisted shield wire. During wire connection, please pay attention that the metal shield layer of the twin-twisted wire must be grounded (outer case) in order to prevent the unit from electromagnetic interference.
(10)	The communication wires should be separated from power cord and connection wire between indoor unit and outdoor unit.
(11)	The electric wire can't be expanded by connecting another electric wire. When the length of the electric wire is not enough, please contact our designated dealer or local service center for a special electric wire.
(12)	Adjust the static pressure via wired controller according to site circumstance.
(13)	When wiring, position the wires so that the electrical components box lid can be securely fastened.
(14)	Be sure to attach the sealing material or putty (field supplied) to hole of wiring to prevent the infiltration of water as well as any insects and other small creatures from outside. Otherwise a short-circuit may occur inside the electrical components box.
(15)	Use round crimp-style terminals for connecting wires to the power supply terminal block.

NOTICE	
(16)	Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.
(17)	A single switch can be used to supply power to units on the same system. However, branch switches and branch ground fault circuit interrupters must be selected carefully.
(18)	If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.

5.1 Connection of Wire and Patch Board Terminal

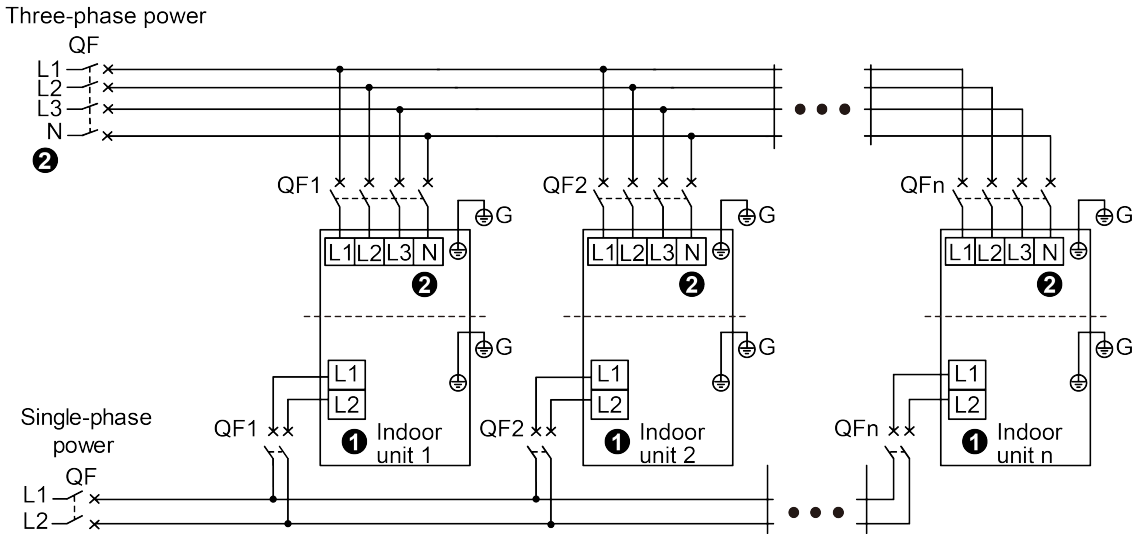
- (1) The connection of wire (as shown in Fig.5.1.1)
 - 1) Strip about 25mm (1 inch) insulation of the wire end by stripping and cutting tool.
 - 2) Remove the wiring screws on the terminal board.
 - 3) Shape the tail of wire into ring by needle nose plier, and keep the gauge of ring in accordance with screw.
 - 4) Use the screwdriver for tightening the terminal.
- (2) The connection of stranded wire (as shown in Fig.5.1.2)
 - 1) Strip about 10mm (3/8 inch) insulation of the end of stranded wire by stripping and cutting tool.
 - 2) Loosen the wiring screws on terminal board.
 - 3) Insert the wire into the ring tongue terminal and tighten by crimping tool.
 - 4) Use the screwdriver for tightening the terminal.

Unit: mm(inch)



5.2 Power Cord Connection

NOTICE All indoor units must be unified of power supply so that they can be powered ON/OFF at the same time.



- 1 NOTICE** (1) Connect wires for single-phase unit according to figure 1 and connect wires for three-phase unit according to figure 2. As for some areas where there's no neutral wire, please refer to the wiring diagram of unit for details.
- (2) The maximum connection quantity "n" for indoor unit is decided by the capacity of outdoor unit. Please refer to the unit capacity of unit for details.

Fig.5.2

- (1) Detach the electric box lid.
- (2) Let the power cord pass through the wiring through-holes.
- (3) Connect wires according to Fig. 5.2.
- (4) Fix the power cord with wiring clamp.

5.3 Connection of Communication Wire between Indoor Unit and Outdoor Unit (or indoor unit)

- (1) Detach the electric box lid.
- (2) Let the Communication cable pass through the wiring through-holes.
- (3) Connect the communication wire to terminal D1 and D2 of indoor 4-bit wiring board, as shown in Fig.5.3.1.

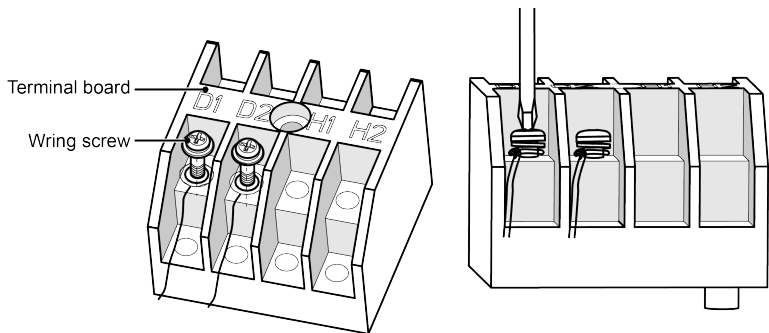
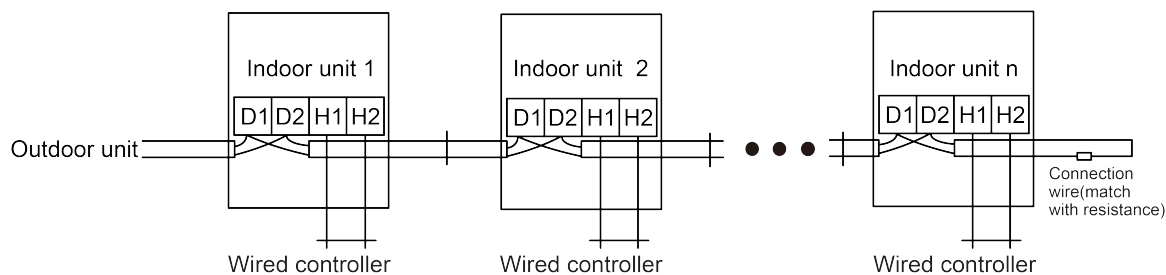


Fig.5.3.1



NOTICE Indoor unit quantity n is according to the outdoor unit capacity.

Fig.5.3.2

- (4) Fix the communication cable with clamp of electric box.
- (5) For more reliable communication, make sure connect the terminal resistor to the most downstream IDU of the communication bus (terminal D1 and D2), as shown in Fig.5.3.2, terminal resistor is provided with each ODU.

5.4 Connect Communication Wire of Wired Controller

- (1) Open electric box cover of indoor unit.
- (2) Let the communication wire go through the rubber ring.
- (3) Connect the communication wire to terminal H1 and H2 of indoor 4-bit wiring board.
- (4) Fix the communication wire with wire clip on the electric box.
- (5) Wiring instructions of remote receiving light board and wired controller:
 - 1) Fig 5.4.1 shows the installation of wired controller.

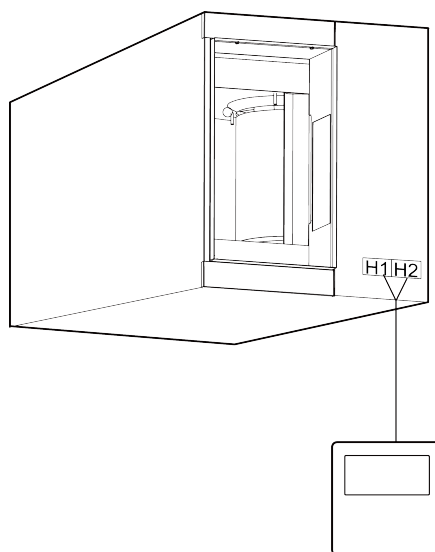


Fig.5.4.1

- 2) Wired controller and receiving light board can be installed at the same time. When operating through a remote controller, both wired controller and the receiving light board can receive the signals.

5.5 Illuminate for Connection of Wired Controller and Indoor Units Network

- (1) Communication wire of indoor unit and outdoor unit (or indoor unit) is connected to D1, D2.
- (2) Wired controller is connected to H1, H2.
- (3) One indoor unit can connect two wired controllers that must be set as master one and slave

one.

- (4) One wired controller can control 16 indoor units in maximum at the same time (As shown in Fig.5.5).

NOTICE	
(1)	The type of indoor units must be the same if they are controlled by the same wired controller.
(2)	When the indoor unit is controlled by two wired controllers, the addresses of the two wired controllers should be different through address setting. Address 1 is for main controller; Address 2 is for slave controller. Detailed setting please refer to the instruction manual of wired controller.

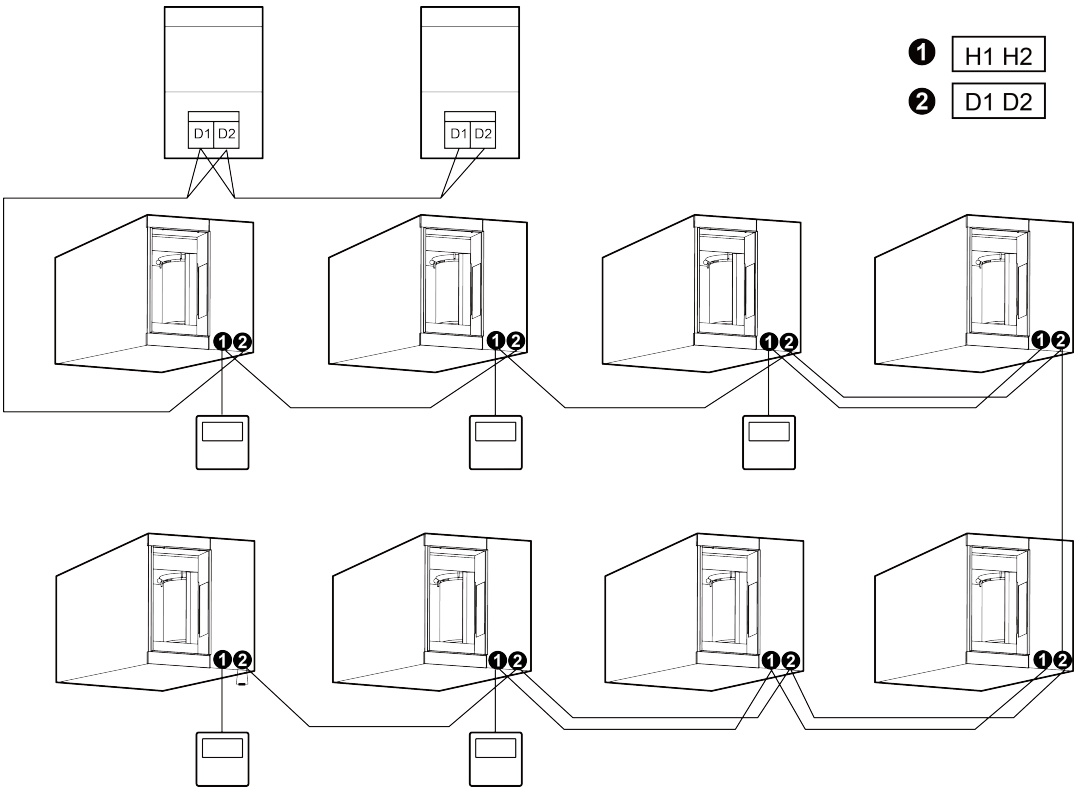


Fig.5.5

6 Setting of External Static Pressure

Working range for external static pressure of this series of duct type unit is 0 inwg~1.00 inwg. For corresponding external static pressure to the respective static pressure notch please see as below. The setting of static pressure for indoor fan can be done via wired controller. For specific setting method please see the Wired Controller Instruction Manual.

Applicable to: GMV-ND09~60A/B-T(U)							
Static pressure notch for indoor fan	1~3	4	5	6	7	8	9
External static pressure (inwg)	0	0.08	0.20	0.40	0.60	0.80	1.00

Note: The defaulted static pressure notch for all models at ex-factory is 5.

7 Routine Maintenance

NOTICE	
(1)	Do turn off the unit and cut off the main power supply when cleaning the air conditioner to avoid electric shock or injury.
(2)	Stand at solid table when cleaning the unit.

NOTICE

- | |
|--|
| (3) Do not clean the unit with hot water whose temperature is higher than 45°C (113°F) to prevent fade or deformation. |
| (4) Do not dry the filters by fire, or it may catch fire or become deformed. |
| (5) Clean the filter with a wet cloth dipped in neutral detergent. |
| (6) Please contact after-sales service staff if there is abnormal situation. |

7.1 Cleaning of Filter

- (1) Remove the filters from inlet of IDU. Use a vacuum cleaner to remove dust. If the filters are dirty, wash them with warm water and mild detergent, and dry the filters in the shade.
- (2) If the unit used in the environment with much dust, please clean it regularly (Usually once every two weeks).

7.2 Maintenance before the Seasonal Use

- (1) Check if the air inlet and air outlet of indoor and outdoor unit are blocked.
- (2) Check if securely grounded.
- (3) Check if all the power cord and communication cable are securely connected.
- (4) Check if any error code displayed after energized.

7.3 Maintenance after the Seasonal Use

- (1) Set the unit in fan mode for half a day in a sunny day to dry the inner part of unit;
- (2) When the unit won't be used for a long time, please cut off power supply for energy saving; the characters on the wired controller screen will disappear after cutting off the power supply.

8 The Table of Error Codes for Indoor Unit

Error Code	Content	Error Code	Content	Error Code	Content
L0	Indoor Unit Error	LA	Indoor Units Incompatibility Error	d9	Jumper Cap Error
L1	Indoor Fan Protection	LH	Low Air Quality Warning	dA	Indoor Unit Network Address Error
L2	E-heater Protection	LC	ODU-IDU Incompatibility Error	dH	Wired Controller PCB Error
L3	Water Full Protection	d1	Indoor Unit PCB Error	dC	Capacity DIP Switch Setting Error.
L4	Wired Controller Power Supply Error	d3	Ambient Temperature Sensor Error	dL	Outlet Air Temperature Sensor Error
L5	Freeze protection	d4	Inlet Pipe Temperature Sensor Error	dE	Indoor Unit CO ₂ Sensor Error
L7	No Master Indoor Unit Error	d6	Outlet Pipe Temperature Sensor Error	C0	Communication Error
L8	Power Insufficiency Protection	d7	Humidity Sensor Error	AJ	Filter Cleaning Reminder
L9	Quantity Of Group Control Indoor Units Setting Error	d8	Water Temperature Error	o1	Low bus bar voltage of indoor unit
o2	High bus bar voltage of indoor unit	o3	IPM Module Protection of Indoor Unit	o4	Failure Startup of Indoor Unit

Error Code	Content	Error Code	Content	Error Code	Content
o5	Overcurrent Protection of Indoor Unit	o6	Current Detection Circuit Malfunction of Indoor Unit	o7	Desynchronizing Protection of Indoor Unit
o8	Communication Malfunction of Indoor Unit's Drive	o9	Communication Malfunction of Main Mater of Indoor Unit	oA	High temperature of Indoor Unit's Module
ob	Malfunction of Temperature Sensor of Indoor Unit's Module	oC	Charging Circuit Malfunction of Indoor Unit	o0	Other Drive Malfunction
db	Special Code: Field Debugging Code				

9 Troubleshooting

The air conditioner is not expected to be serviced by users. Incorrect repair may cause electric shock or fire, so please contact an authorized service center for professional service. The following checks prior to contact may save your time and money.

Phenomenon	Troubleshooting
The unit can't start.	① Power supply is not connected. ② Circuit breaker tripping caused by leakage of electricity. ③ Input voltage is too low. ④ Defect of main PC-board.
The unit stops after running for a while.	① The inlet or outlet of ODU or IDU are blocked by obstacle.
Poor cooling effect.	① The filter is dirty. ② Too heavy heat load of room (e.g. too many people). ③ Door or windows is open. ④ Inlet and outlet of IDU are blocked. ⑤ Setting temperature is too high. ⑥ Refrigerant is insufficient (e.g. refrigerant leakage).
Poor heating effect.	① The filter is dirty. ② Door or window is open. ③ Setting temperature is too low. ④ Refrigerant is insufficient (e.g. refrigerant leakage).
Indoor fan doesn't start up during heating.	① At starting, the IDU fan could not operate till the heat exchange become hot, for preventing delivering the cool air. ② At defrosting, the IDU fan stopped due to system switch to cooling mode. For preventing delivering the cool air, and resume operating after defrosting.

NOTICE

If air conditioner still fails to work normally after checking and handling as described above, please stop using it immediately and contact local service center for assistance.

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