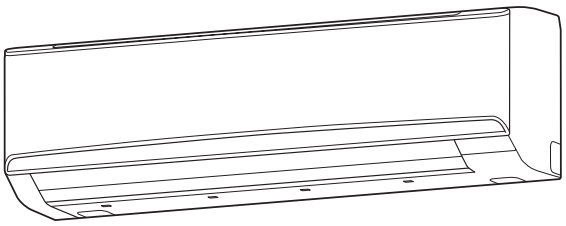
AIR CONDITIONER
Wall-mounted Type

INSTALLATION MANUAL

PART No. 9387082944-01

English Français Español



For authorized service personnel only.

- Branch box which is specified in this manual is the equipment to support the indoor unit of multi-connection type.
- All products are manufactured to metric units and tolerances. United States customary units are provided for reference only. In cases where exact dimensions and tolerances are required, always refer to metric units.

Contents

1. SAFETY PRECAUTIONS

1.1. IMPORTANT! Please read before starting

This air conditioning system meets strict safety and operating standards.
As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

WARNING: This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION: This symbol refers to a hazard or unsafe practice which can result in personal injury and the potential for product or property damage.

- Hazard alerting symbols

Electrical

Safety/alert

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

1.2. Special precautions

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding (earthing) can cause accidental injury or death.
- Ground (earth) the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame.
Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow.

When Connecting Refrigerant Tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before opening the refrigerant valves.

When Servicing

- Turn the power OFF at the main circuit breaker panel before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- After installation, explain correct operation to the customer, using the operation manual.

⚠ WARNING

- Never touch electrical components immediately after the power supply has been turned off. Electric shock may occur. After turning off the power, always wait 10 minutes before touching electrical components.
- Installation of this product must be done by experienced service technicians or professional installers only in accordance with this manual. Installation by non-professional or improper installation of the product might cause serious accidents such as injury, water leakage, electric shock, or fire. If the product is installed in disregard of the instructions in this manual, it will void the manufacturer's warranty.
- Do not turn on the power until all work has been completed. Turning on the power before the work is completed can cause serious accidents such as electric shock or fire.
- If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.
- Installation must be performed in accordance with regulations, codes, or standards for electrical wiring and equipment in each country, region, or the installation place.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- 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.
- To avoid danger of suffocation, keep the plastic bag or thin film used as the packaging material away from young children.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Keep any required ventilation openings clear of obstruction.
- If the power cable or the connection cable is damaged, it must be replaced by the manufacturer, its service agent or similar qualified persons in order to avoid a safety hazard.
- After servicing, check for refrigerant leak before turning on the unit.
- Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

⚠ CAUTION

- Read carefully all safety information written in this manual before you install or use the air conditioner.
- Do not attempt to install the air conditioner or a part of the air conditioner by yourself.
- This product must be installed by qualified personnel with a capacity certificate for handling refrigerant fluids. Refer to regulation and laws in use on installation place.
- Install the product by following local codes and regulations in force at the place of installation, and the instructions provided by the manufacturer.
- This product contains no user-serviceable parts. Always consult experienced service technicians for repairing.
- This product is part of a set constituting an air conditioner. The product must not be installed alone or be installed with a device not authorized by the manufacturer.
- Always use a separate power supply line protected by a circuit breaker operating on all wires with a distance between contact of 1/8 in (3 mm) for this unit.
- To protect the persons, ground (earth) the product correctly, and use the power cable combined with an Earth Leakage Circuit Breaker (ELCB).
- This product is not explosion proof, and therefore should not be installed in an explosive atmosphere.
- When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the product.
- Do not touch the aluminum fins of heat exchanger built-in the indoor or outdoor unit to avoid personal injury when you install or maintain the unit.
- Do not place any other electrical products or household belongings under the product. Condensation dripping from the product might get them wet, and may cause damage or malfunction to the property.

• Be careful not to scratch the air conditioner when handling it.

2. PRODUCT SPECIFICATION

2.1. Precautions for using R32 refrigerant

The basic installation work procedures are the same as conventional refrigerant (R410A, R22) models.
However, pay careful attention to the following points:

- Since the working pressure is 1.6 times higher than that of conventional refrigerant (R22) models, some of the piping and installation and service tools are special. (Refer to the following table.)
  Especially, when replacing a conventional refrigerant R22 model with a new refrigerant R32 model, always replace the conventional piping and flare nuts with the R32 and R410A piping and flare nuts on the outdoor unit side. For R32 and R410A, the same flare nut on the outdoor unit side and pipe can be used.
- Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant R22 and for safety. Therefore, check beforehand. [The charging port thread diameter for R32 and R410A is 1/2-20 UNF.]
- Be more careful than R22 so that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant (R22) models. Also, when storing the piping, securely seal the opening by pinching, taping, etc. (Handling of R32 is similar to R410A.)
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases. And always charge from the liquid phase where refrigerant composition is stable.

This manual includes requirements of clauses according to Table DD.1 (Installation, Maintenance and repair, Decommissioning)

⚠ WARNING

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work.
Examples of such potential ignition sources are hot surfaces with a temperature exceeding 1292°F (700°C) and electric switching devices.

- Minimum room area is corrected by multiplying by an altitude adjustment factor (AF) based on for building site ground level altitude (H_{alt}) in meters.

Altitude Adjustment Factor

H_{alt}	0	200	400	600	800	1000	1200	1400	1600
AF	1.00	1.00	1.00	1.00	1.02	1.05	1.07	1.10	1.12
H_{alt}	1600	1800	2000	2200	2400	2600	2800	3000	3200
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

- The appliance shall not be installed in an unventilated space, if that space is smaller than minimum installation area.
- The installation height is the minimum installation height, which is the lowest installation of ductwork outlets or indoor unit, whichever is the lowest, and the minimum installation areas on the table below were determined based on the lowest installation heights 5.9 ft (1.8 m) and 7.2 ft (2.2 m).
- If the ducted air conditioner is used to condition more than one room, then the minimum installation area on table below shall apply to the smallest room.
- Should the desired minimum installation height be below 5.9 ft (1.8 m), the minimum installation area must be re-calculated accordingly.

(UL60335-2-40)

Amount of refrigerant charge M [lbs (kg)]	Minimum room area [ft² (m²)]	
	Installation height H [ft (m)]	
	5.9 (1.8) ≤ H < 7.2 (2.2)	7.2 (2.2) ≤ H
M ≤ 4.05 (1.836)	—	—
4.05 (1.836) < M ≤ 4.19 (1.90)	74.27 (6.90)	60.82 (5.65)
4.19 (1.90) < M ≤ 4.41 (2.00)	78.25 (7.27)	64.05 (5.95)
4.41 (2.00) < M ≤ 4.63 (2.10)	82.13 (7.63)	67.17 (6.24)
4.63 (2.10) < M ≤ 4.85 (2.20)	86.00 (7.99)	70.40 (6.54)
4.85 (2.20) < M ≤ 5.07 (2.30)	89.99 (8.36)	73.63 (6.84)
5.07 (2.30) < M ≤ 5.29 (2.40)	93.86 (8.72)	76.85 (7.14)
5.29 (2.40) < M ≤ 5.51 (2.50)	97.74 (9.08)	79.98 (7.43)
5.51 (2.50) < M ≤ 5.73 (2.60)	101.72 (9.45)	83.21 (7.73)
5.73 (2.60) < M ≤ 5.95 (2.70)	105.59 (9.81)	86.43 (8.03)
5.95 (2.70) < M ≤ 6.17 (2.80)	109.47 (10.17)	89.56 (8.32)
6.17 (2.80) < M ≤ 6.39 (2.90)	113.45 (10.54)	92.79 (8.62)
6.39 (2.90) < M ≤ 6.61 (3.00)	117.33 (10.90)	96.01 (8.92)
6.61 (3.00) < M ≤ 6.83 (3.10)	121.20 (11.26)	99.14 (9.21)
6.83 (3.10) < M ≤ 7.05 (3.20)	125.08 (11.62)	102.37 (9.51)
7.05 (3.20) < M ≤ 7.28 (3.30)	129.06 (11.99)	105.59 (9.81)
7.28 (3.30) < M ≤ 7.50 (3.40)	132.94 (12.35)	108.82 (10.11)
7.50 (3.40) < M ≤ 7.72 (3.50)	136.81 (12.71)	111.95 (10.40)
7.72 (3.50) < M ≤ 7.94 (3.60)	140.79 (13.08)	115.17 (10.70)
7.94 (3.60) < M ≤ 8.16 (3.70)	144.67 (13.44)	118.40 (11.00)
8.16 (3.70) < M ≤ 8.38 (3.80)	148.54 (13.80)	121.53 (11.29)
8.38 (3.80) < M ≤ 8.60 (3.90)	156.19 (14.51)	124.75 (11.59)
8.60 (3.90) < M ≤ 8.82 (4.00)	164.26 (15.26)	127.98 (11.89)

- Ducts connected to this product shall not contain a potential ignition source such as hot surfaces, flames or current carrying devices that can be the source of arcing or sparking.
- Where the indoor unit is connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings must not be used as a return air duct. And when using auxiliary devices, it shall be installed that is declared suitable with R32 refrigerant in connecting ductwork.

⚠ CAUTION

1 General

1-1 Installation

- That pipe work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.
- That after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:

  The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
- Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0.25 times the maximum allowable pressure. No leak shall be detected;

1-2 Unventilated areas

- When installing this product to an unventilated area, pay attention to prevent fire and explosion caused by the stagnated gas in case of refrigerant leakage. (For products which contain more than 4.05 lbs (1.836 kg) refrigerant.)
- The appliance shall be stored so as to prevent mechanical damage from occurring.

1-3 Qualification of workers

- As this product uses flammable refrigerant, its installation, repair, maintenance, removal, and deposition must be performed by dedicated service personnel who completed trainings and obtained relevant certificates provided by the domestic training facilities or manufactures certified for obtaining relevant national certificate stipulated by the applicable law.

2 Information on servicing
(Checks to the area)

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.
- For repair to the refrigerating system, 2-1 to 2-5 shall be completed prior to conducting work on the system.

2-1 Work procedure

- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

2-2 General work area

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.
- Work in confined spaces shall be avoided.

2-3 Checking for presence of refrigerant

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

2-4 Presence of fire extinguisher

- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.
- Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

2-5 No ignition sources

- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

2-6 Ventilated area

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
- A degree of ventilation shall continue during the period that the work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

2-7 Checks to the refrigerating equipment

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.
- At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants :
  - the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
  - the ventilation machinery and outlets are operating adequately and are not obstructed;
  - if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
  - marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
  - refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

2-8 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
  - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
  - that no live electrical components and wiring are exposed while charging, recovering or purging the system;
  - that there is continuity of earth bonding.

3 Sealed electrical components
Sealed electrical components shall be replaced.

4 Intrinsically safe components
Intrinsically safe components must be replaced.

5 Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

6 Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.

7 Leak detection methods

- The following leak detection methods are deemed acceptable for all refrigerant systems.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need recalibration.
  (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

NOTE:
Examples of leak detection fluids are
- bubble method,
- fluorescent method agents.

- If a leak is suspected, all naked flames shall be removed / extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

8 Removal and evacuation

- When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:
  - safely remove refrigerant following local and national regulations;
  - evacuate;
  - purge the circuit with inert gas (optional for R32);
  - evacuate (optional for R32);
  - continuously flush or purge with inert gas when using flame to open circuit; and
  - open the circuit.
- The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes.
- For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants.
- This process might need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.
- For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for R32).
- This process shall be repeated until no refrigerant is within the system (optional for R32).
- When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- The outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

9 Charging procedures
- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment.
    Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
  - Cylinders shall be kept in an appropriate position according to the instructions.
  - Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
  - Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure tested with the appropriate purging gas.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

10 Decommissioning
- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant.
- It is essential that electrical power is available before the task is commenced.
  a) Become familiar with the equipment and its operation.
  b) Isolate system electrically.
  c) Before attempting the procedure, ensure that:
     - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
     - all personal protective equipment is available and being used correctly;
     - the recovery process is supervised at all times by a competent person;
     - recovery equipment and cylinders conform to the appropriate standards.
  d) Pump down refrigerant system, if possible.
  e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  f) Make sure that cylinder is situated on the scales before recovery takes place.
  g) Start the recovery machine and operate in accordance with instructions.
  h) Do not overfill cylinders (no more than 80 % volume liquid charge).
  i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
  j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

11 Labelling
- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
- The label shall be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

12 Recovery
- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge is available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

Explanation of symbols displayed on the indoor unit or outdoor unit.

	**WARNING**	This symbol shows that this product uses a low burning velocity material. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	This symbol shows that information is available such as the operation manual or installation manual.

2.2. Installation tools

Tool name	Contents of change
Gauge manifold	Pressure is high and cannot be measured with a R22 gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended the gauge with seals -30 inHg to 768 psi (-0.1 to 5.3 MPa) for high pressure. -30 inHg to 551 psi (-0.1 to 3.8 MPa) for low pressure.
Charge hose	To increase pressure resistance, the hose material and base size were changed. (R32/R410A)
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter.
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A or R32.

■ **Copper pipes**

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 0.004 oz/100 ft. (40 mg/10 m). Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion value or capillary tube may become blocked with contaminants.
As an air conditioner using R32 (R410A) incurs pressure higher than when using R22, it is necessary to choose adequate materials.

⚠ WARNING

- Do not use the existing (for R22) piping and flare nuts.
  If the existing materials are used, the pressure inside the refrigerant cycle will rise and cause failure, injury, etc. (Use the special R32/R410A materials.)
- Use (refill or replace with) specified refrigerant R32 only. Use of unspecified refrigerant can cause product malfunction, burst, or injury.
- Do not mix any gas or impurities except specified refrigerant R32. Inflow of air or application of unspecified material makes the internal pressure of the refrigerant cycle too high, and may cause product malfunction, burst of piping, or injury.
- For installation purposes, be sure to use the parts supplied by the manufacturer or other prescribed parts. The use of non-prescribed parts can cause serious accidents such as the unit falling, water leakage, electric shock, or fire.
- Do not turn on the power until all work has been completed.

⚠ CAUTION

This manual describes how to install the indoor unit only. To install the outdoor unit or branch box, (if any), refer to the installation manual included in each product.

2.3. For authorized service personnel only.

⚠ WARNING

- For appropriate working of the air conditioner, install it as outlined in this manual.
- To connect the indoor unit and outdoor unit or branch box, use air conditioner piping and cables available through your local distributor. This manual describes proper connections using such installation set.
- Do not reconnect the power until all work has been completed.

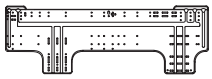
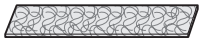
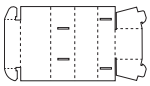
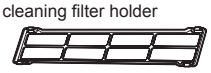
⚠ CAUTION

This installation manual describes how to install the indoor unit only.
To install the outdoor unit or branch box, refer to the installation manual included with the outdoor unit or branch box.

- Be careful not to scratch the air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operation manual.

2.4. Accessories

The following installation accessories are supplied. Use them as required.

Name and Shape	Q'ty	Name and Shape	Q'ty
Operation manual 	1	Self-tapping screw (large) 	8
Installation manual (This manual) 	1	Self-tapping screw (small) 	2
Remote controller 	1	Wall hook bracket 	1
Battery 	2	Air cleaning filter (light blue) 	1
Remote controller holder 	1	Air cleaning filter (white) 	1
Cloth tape 	1	Installation spacer 	1
Air cleaning filter holder 	2	Drain hose insulation 	1

The following items are necessary to install this air conditioner. (The items are not included with the air conditioner and must be purchased separately.)

Additional materials	
Connection pipe assembly	Saddle
Connection cable (4-conductor)	Drain hose
Wall pipe	Self-tapping screw
Decorative tape	Sealant
Vinyl tape	Putty
Wall cap	

2.5. Pipe requirement

⚠ CAUTION

Refer to the installation manual for the outdoor unit for description of allowable pipe length and height difference.

Liquid pipe size <thickness>	Gas pipe size <thickness>
Φ3/8in (Φ9.52mm) <0.031in(0.80mm)>	Φ5/8in (Φ15.88mm) <0.039 in (1.00 mm)>

⚠ CAUTION

Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks.
Use heat insulation with heat resistance above 248 °F (120 °C). Reverse cycle model only.
In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 3/4 in (15 mm) or thicker and if the expected humidity exceeds 80%, use heat insulation that is 13/16 in (20 mm) or thicker.
If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.026 BTU/(ft•hr•°F) [0.045 W/(m•K)] or less (at [68 °F (20 °C)]).

2.6. Electrical requirement

The indoor unit is powered from the outdoor unit or branch box. Do not power indoor unit from separate power source.

⚠ WARNING

- Standard for electrical wiring and equipment differs in each country or region. Before you start electrical working, confirm related regulations, codes, or standards.
- Be sure to install a breaker of the specified capacity (for outdoor unit).

Cable	Cable size	Remarks
Connection cable	14AWG	3 cable+Ground (Earth)

Max. Cable Length: Limit voltage drop to less than 2%. Increase cable gauge if voltage drop is 2% or more.

2.7. Optional parts

Refer to each installation manual for the method of installing optional parts.

Parts name	Model No.	Application
Wired remote controller (*1) (*2)	UTY-RNR*Z*	For air conditioner operation (2-wired type)
	UTY-RVR*	
Simple remote controller (*1)	UTY-RSR*	
	UTY-RHR*	
External input and output PCB (*4)	UTY-XCSXZ2	For control input/output port
External connect kit	UTY-XWZX	
	UTY-XWZXZ5	
Communication kit	UTY-TWRXZ2	For the installation of 2-wired remote controller
WLAN adapter (KP series)	UTY-TFSXH4	For wireless LAN control
Modbus converter	UTY-VMSX	For air conditioner operation
Network converter (*1)	UTY-VTGX	
Thermostat converter (*1) (*3)	UTY-TTRXZ1	
External switch controller (*1)	UTY-TERX	

- Optional parts are subject to change without notice.

*1: Optional Communication kit (UTY-TWRXZ2) is necessary for installation.
*2: The wired remote controller and the wireless remote controller cannot be used simultaneously.
*3: The thermostat converter and the wireless remote controller cannot be used simultaneously.
*4: Optional External connect kit is necessary for installation.

3. INSTALLATION WORK

⚠ WARNING

During transportation or relocation of the indoor unit, pipes shall be covered with the wall hook bracket for protection. Do not move the appliance by holding the indoor unit pipes.
(The stress applied to the pipe joints may cause the flammable gas to leak during operation.)

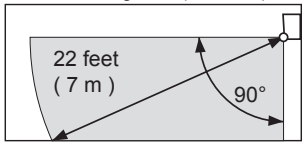
■ **Occupancy sensor (KZ series)**

⚠ CAUTION

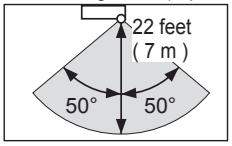
- Do not hit or push the occupancy sensor. This may lead to damage or malfunction.
- Do not touch the occupancy sensor. Any scratches or dirt may lead to incorrect detection.
- Do not place large objects near the occupancy sensor. Also keep heating units outside the sensor's detection area.

Detection range of the occupancy sensor is as follows.

Vertical angle 90° (Side view)



Horizontal angle 100° (Top view)



3.1. Selecting an installation location

Decide the mounting position with the customer as follows:

(1) Install the indoor unit level on a strong wall which is not subject to vibration.
(2) The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
(3) Install the unit a dedicated electrical branch circuit.
(4) Do not install the unit where it will be exposed to direct sunlight.
(5) Install the unit where connection to the outdoor unit or branch box is easy.
(6) Install the unit where the drain pipe can be easily installed.
(7) Take servicing, etc. into consideration and leave the spaces shown in "3.1.1. Installation dimensions". Also install the unit where the filter can be removed.

Correct initial installation location is important because it is difficult to move unit after it is installed.

⚠ WARNING

Install the air conditioner in a location which can withstand a load of at least 3 times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the indoor unit may fall and cause injuries.

Withstandable weight (Unit weight x 3*)
110 lbs (49.5 kg)

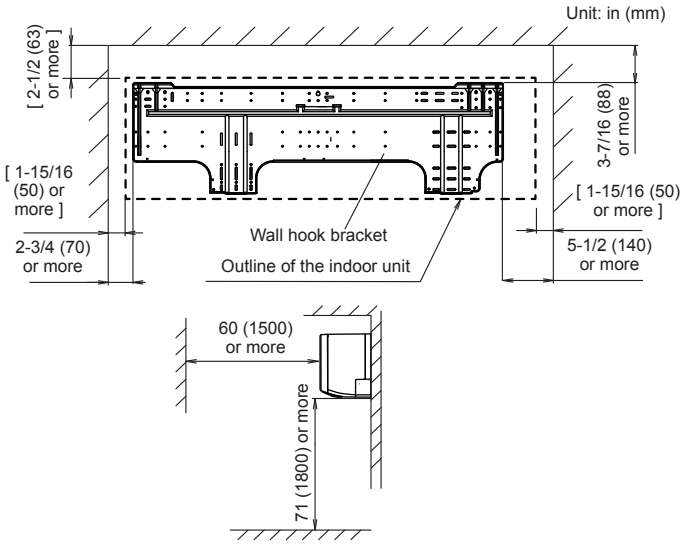
*In accordance with UL standards.

⚠ CAUTION

- Do not install the unit in the following areas:
- Area with high salt content, such as at the seaside. It will deteriorate metal parts, causing the parts to fail or the unit to leak water.
- Area filled with mineral oil or containing a large amount of splashed oil or steam, such as a kitchen.
  It will deteriorate plastic parts, causing the parts to fail or the unit to leak water.
- Area that generates substances that adversely affect the equipment, such as sulfuric gas, chlorine gas, acid, or alkali.
  It will cause the copper pipes and brazed joints to corrode, which can cause refrigerant leakage.
- Area that can cause combustible gas to leak, contains suspended carbon fibers or flammable dust, or volatile inflammables such as paint thinner or gasoline.
  If gas leaks and settles around the unit, it can cause a fire.
- Area where animals may urinate on the unit or ammonia may be generated.
- Do not use the unit for special purposes, such as storing food, raising animals, growing plants, or preserving precision devices or art objects.
  It can degrade the quality of the preserved or stored objects.
- Do not install where there is the warning of combustible gas leakage.
- Do not install the unit near a source of heat, steam, or flammable gas.
- Install the unit where drainage does not cause any trouble.
- Install the indoor unit, outdoor unit, branch box, power supply cable, connection cable, and remote controller cable at least 40 in (1m) away from a television or radio receivers. The purpose of this is to prevent TV reception interference or radio noise. (Even if they are installed more than 40 in (1m) apart, you could still receive noise under some signal conditions.)
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

3.1.1. Installation dimensions

Keep the distance between the wall hook bracket or indoor unit to the surrounding walls as indicated in the following figure.

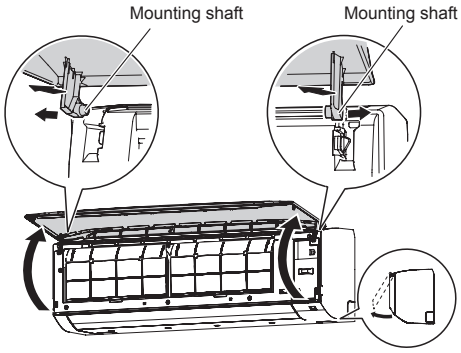


3.2. Removing and replacing parts

3.2.1. Intake grille removal and installation

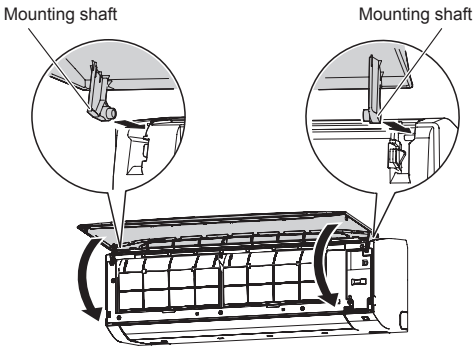
■ Intake grille removal

(1) Open the intake grille.
(2) While pressing the left and right mounting shafts outward gently, pull the intake grille.

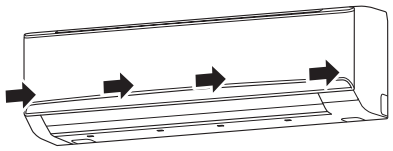


■ Intake grille installation

(1) While holding the intake grille horizontal, set the left and right mounting shafts into the pillow blocks at the top of the front panel.
Insert the shaft until it snaps to latch each shaft properly.



(2) Close the intake grille.
(3) Press 4 places on the intake grille to close it completely.

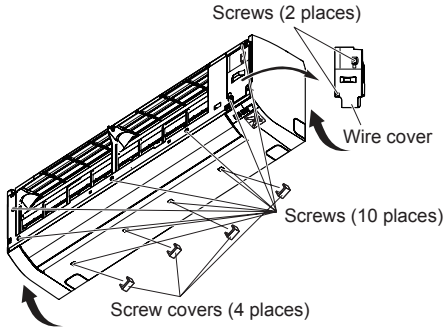


3.2.2. Front panel, control cover removal and installation

* In this description, the intake grille and wire cover already has been removed.

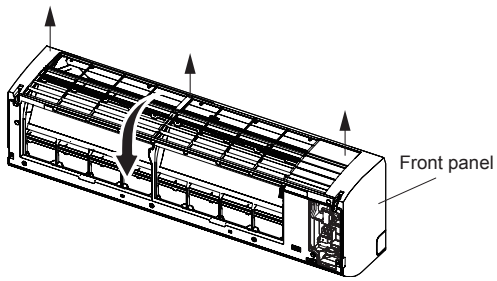
■ Front panel/control cover removal

(1) Remove intake grille. (Refer to “Intake grille removal”.)
NOTE: When removing the screw covers, protect the peripheral parts using soft cloth, etc.to avoid the parts being damaged by the tool.
(2) Remove 4 screw covers.
(3) Remove wire cover. (2-screws)
(4) Remove 10 screws.

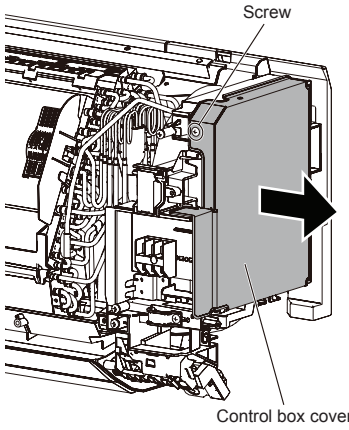


NOTE : When replacing the front panel, do not scratch or damage the louver.

(5) The front panel is pulled to the front, raising the upper surface, then the front panel is removed.

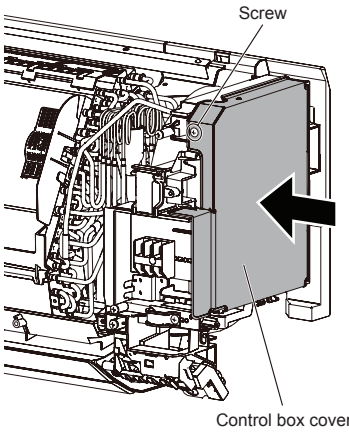


(6) Remove 1 screw, then remove the control box cover.

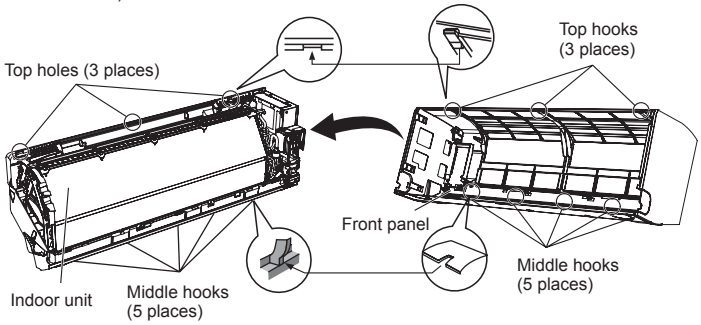


■ **Front panel, control cover installation**

(1) Replace the control box cover and screw.



(2) First, fit the lower part of the front panel, and insert top and middle hooks. (3 top sides, 5 middles)



(3) Attach the 10 screws.
(4) Attach the wire cover. (2-screws)
(5) Attach the 4 caps.
(6) Attach the intake grille.

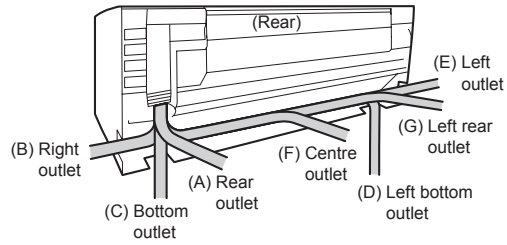
⚠ CAUTION

Please take caution when removing or installing the front panel. If the front panel falls, there is a risk of injury.

3.3. Pipe installation

3.3.1. Indoor unit piping direction

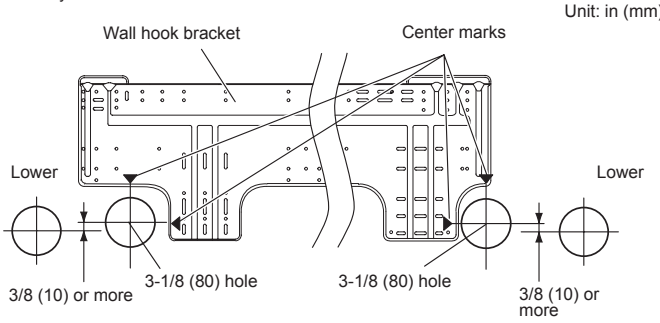
The piping can be connected in the 6 directions indicated in the following.
When the piping is connected to direction (B) , (C) , (D) or (E) , cut along the piping groove on the side of the front cover with a hacksaw.

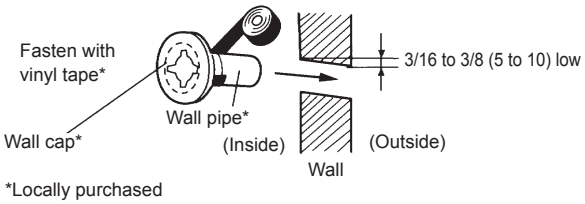


3.3.2. Cutting the hole in the wall for connecting the pipes

(1) Cut a 3-1/8 in (80 mm) diameter hole in the wall at the position shown in the following.
(2) Cut the hole so that the outside end is lower [3/16 to 3/8 in (5 to 10 mm)] than the inside end.
(3) Always align the center of the wall hole. If misaligned, water leakage will occur.
(4) Cut the wall pipe to match the wall thickness, stick it into the wall cap, fasten the cap with vinyl tape, and stick the pipe through the hole.
(5) For left piping and right piping, cut the hole a little lower so that drain water will flow freely.

Unit: in (mm)





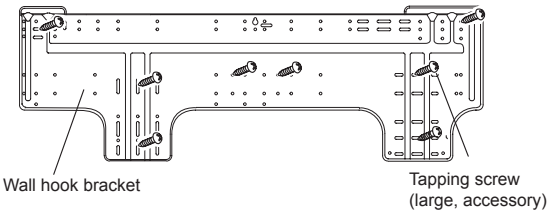
*Locally purchased

⚠ WARNING

Always use the wall pipe. If the wall pipe is not used, the cable that is connected between the indoor unit and the outdoor unit may touch metal, and cause an electric discharge.

3.3.3. Installing the wall hook bracket

(1) Install the wall hook bracket so that it is correctly positioned horizontally and vertically. If the wall hook bracket is titled, water will drip to the floor.
(2) Install the wall hook bracket so that it is strong enough to support the weight of the unit.
- Fasten the wall hook bracket to the wall with 5 or more screws through the holes near the outer edge of the bracket.
- Check that there is no rattle at the wall hook bracket.



⚠ CAUTION

Install the wall hook bracket both horizontally and vertically aligned.
Misaligned installation may cause water leakage.

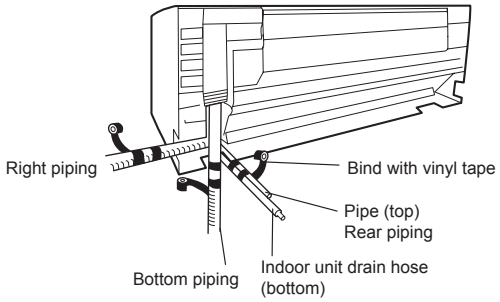
3.3.4. Forming the drain hose and pipe

⚠ CAUTION

- Insert drain hose and drain cap securely. Drain should slope down to avoid water leakage.
- When inserting the drain hose, no other material than water should be applied. Application of other material than water will cause deterioration of the hose, and may cause water leakage.
- After you remove a drain hose, be sure to attach the drain cap.
- For drain hose piping in low temperature environment, you need to apply freeze protection to prevent a frozen drain hose.
  After cooling operation is performed in low temperature environment (when outdoor temperature under 32 °F [0 °C]), water in the drain hose could be frozen. Frozen drain water will block the water flow in the hose, and may cause water leakage at the indoor unit.

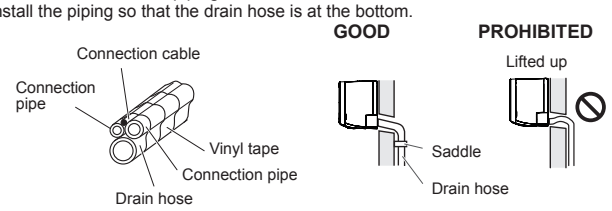
■ **Right rear piping, Right piping, Right bottom piping**

- Install the indoor unit piping in the direction of the wall hole and bind the drain hose and pipe together with vinyl tape.
- Wrap the pipes of the indoor unit that are visible from the outside with decorative tape.



⚠ CAUTION

- When you secure the piping and drain hose with tape, arrange the drain hose so that it is at the bottom of the piping.
- Install the piping so that the drain hose is at the bottom.

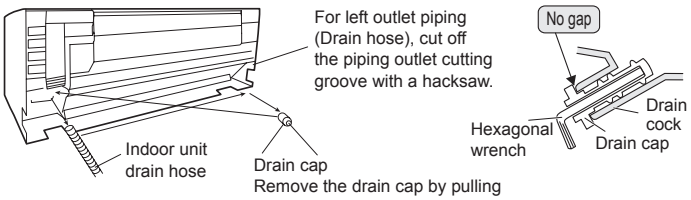


■ **For Left rear piping (Drain hose), Left piping (Drain hose), Left bottom piping (Drain hose)**

Interchange the drain cap and the drain hose.

■ **Installing the drain cap**

Use a hexagonal wrench 4 mm at opposite side to insert the drain cap, till the drain cap contacts the tip of the drain cock.



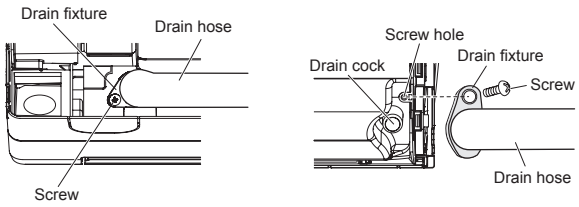
Remove the drain cap by pulling at the projection at the end of the cap with pliers, etc.

Removing the drain hose

Remove the screw at the left of drain hose and pull out drain hose.

Installing the drain hose

Vertically insert the drain hose toward the inside, so that the drain fixture (white) can accurately align with the screw hole around the drain cock.
After inserting and before replacing, reinstall and fix the removed screws.



- Hold around the joint of the drain hose during work.
- As the screw is inside, be sure to use screwdrivers treated with magnet.

- After passing the indoor piping and drain hose through the wall hole, hang the indoor unit on the hooks at the top and bottom of the wall hook bracket.

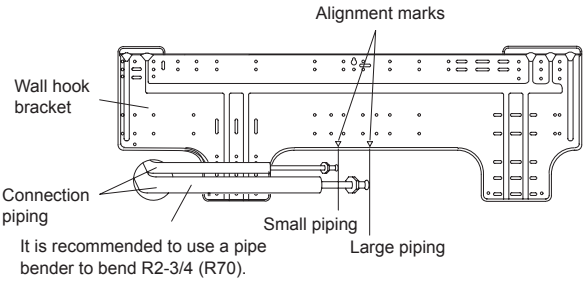
⚠ CAUTION

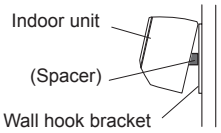
Insert the drain hose and drain cap into the drain port, making sure that it comes in contact with the back of the drain port, and then mount it. If the drain hose is not connected properly, leaking will occur.

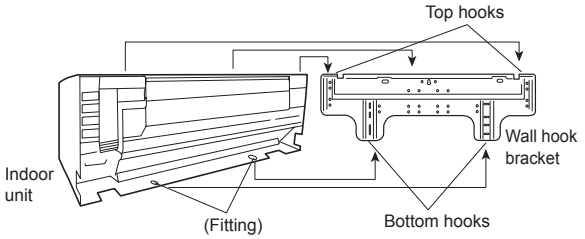
■ **Installing the indoor unit**

- Hang the indoor unit from the hooks at the top of the wall hook bracket.
- Insert the spacer, etc. between the indoor unit and the wall hook bracket and separate the bottom of the indoor unit from the wall.

Unit: in (mm)







- After hooking the indoor unit to the top hook, hook the fittings of the indoor unit to the bottom hooks while lowering the unit and pushing it against the wall.

3.3.5. Pipe connection

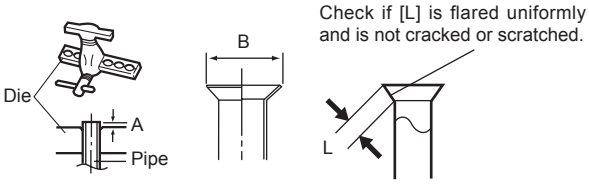
⚠ CAUTION

Tighten the flare nuts with a torque wrench using the specified tightening method. Otherwise, the flare nuts could break after a prolonged period, causing refrigerant to leak and generate hazardous gas if the refrigerant comes into contact with a flame.

■ **Flaring**

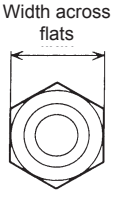
Use special pipe cutter and flare tool exclusive for R410A or R32.

(1) Cut the connection pipe to the necessary length with a pipe cutter.
(2) Hold the pipe downward so that cuttings will not enter the pipe and remove any burrs.
(3) Insert the flare nut (always use the flare nut attached to the indoor unit(s) and outdoor unit respectively) onto the pipe and perform the flare processing with a flare tool. Use the special R32 flare tool, or the conventional flare tool. Leakage of refrigerant may result if other flare nuts are used.
(4) Protect the pipes by pinching them or with tape to prevent dust, dirt, or water from entering the pipes.



Pipe outside diameter [in (mm)]	Dimensions A [in (mm)] Flare tool for R32, clutch type	Dimensions B [in (mm)]
1/4 (6.35)	0 to 0.020 (0 to 0.5)	3/8 (9.1)
3/8 (9.52)		1/2 (13.2)
1/2 (12.70)		5/8 (16.6)
5/8 (15.88)		3/4 (19.7)
3/4 (19.05)		15/16 (24.0)

When using conventional flare tools to flare R32 pipes, the dimensions A should be approximately 0.020 in (0.5 mm) more than indicated in the table (for flaring with R32 flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimensions A.



Pipe outside diameter [in (mm)]	Width across flats of Flare nut [in (mm)]
1/4 (6.35)	11/16 (17)
3/8 (9.52)	7/8 (22)
1/2 (12.70)	1 (26)
5/8 (15.88)	1-1/8 (29)
3/4 (19.05)	1-7/16 (36)

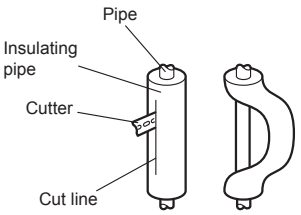
NOTE: The flare nut specification is compliant with ISO14903.

■ **Bending pipes**

⚠ CAUTION

- To prevent breaking of the pipe, avoid sharp bends.
- If the pipe is bent repeatedly at the same place, it will break.

- The pipes are shaped by your hands. Be careful not to collapse them.
- Bend R2-3/4 in (R70 mm) or more with a pipe bender.
- Do not bend the pipes in an angle more than 90°.
- When pipes are repeatedly bend or stretched, the material will harden, making it difficult to bend or stretch them anymore.
- Do not bend or stretch the pipes more than 3 times.
- When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the insulating pipe with a sharp cutter as shown on the right, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.



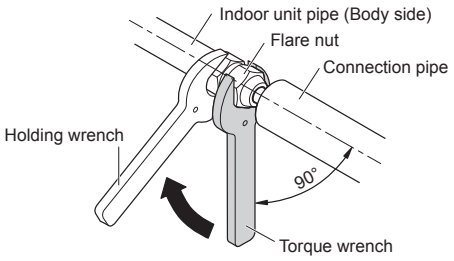
■ **Flare connection**

⚠ CAUTION

- Be sure to install the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
- Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.
- Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.
- Tighten the flare nuts with a torque wrench using the specified tightening method. Otherwise, the flare nuts could break after a prolonged period, causing refrigerant to leak and generate hazardous gas if the refrigerant comes into contact with a flame.
- Connect the piping so that the control box cover can easily be removed for servicing when necessary.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

When the flare nut is tightened properly by your hand, hold the body side coupling with a wrench, then tighten with a torque wrench. (Refer to the following table for the flare nut tightening torques.)

Tighten with 2 wrenches.



Flare nut [in (mm)]	Tightening torque [lb·ft (N·m)]
1/4 (6.35) dia.	11.8 to 13.3 (16 to 18)
3/8 (9.52) dia.	23.6 to 31.0 (32 to 42)
1/2 (12.70) dia.	36.1 to 45.0 (49 to 61)
5/8 (15.88) dia.	46.5 to 55.3 (63 to 75)
3/4 (19.05) dia.	66.4 to 81.1 (90 to 110)

Do not remove the cap from the connection pipe before connecting the pipe.

3.4. Electrical wiring

⚠ WARNING

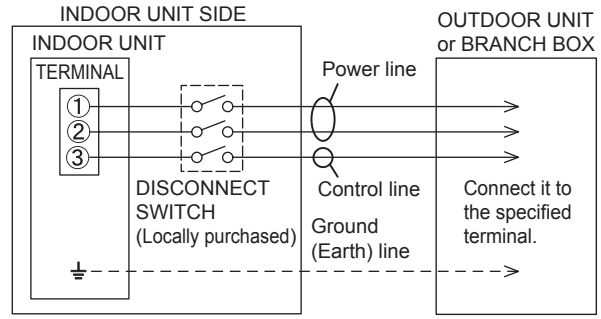
- Before connecting the wires, make sure the power supply is OFF.
- Every wire must be connected firmly.
- No wire should be allowed to touch refrigerant tubing, the compressor or any moving part.
- Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.
- Connect wires to the matching numbers of terminals.

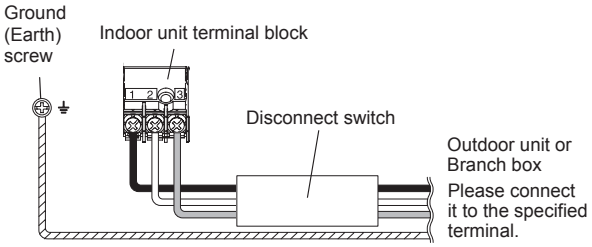
⚠ CAUTION

Be careful not to generate a spark as follows for using a flammable refrigerant.

- Do not remove the fuse while the power is on.
- Do not disconnect the wiring while the power is on.
- It is recommended to position the outlet connection in a high position. Place the cords so that they do not get tangled.

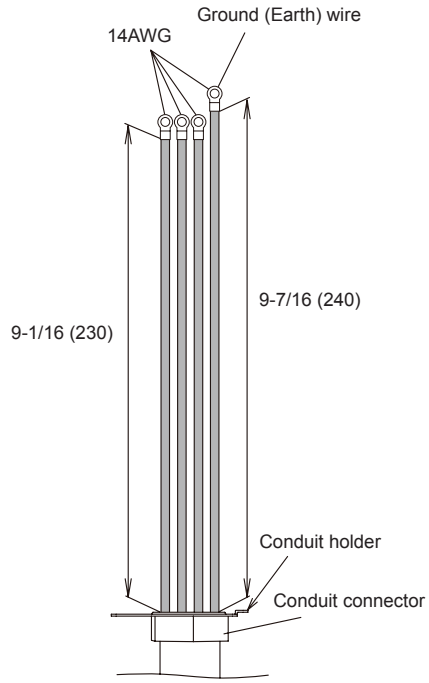
3.4.1. Wiring system diagram





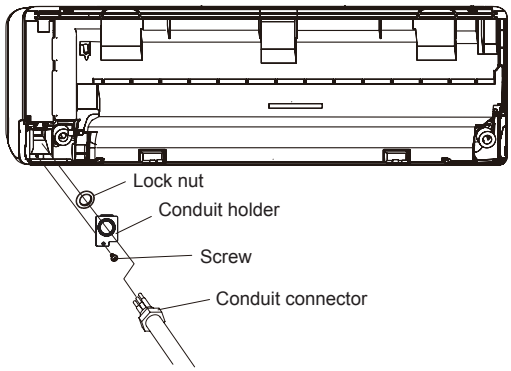
- To connect the indoor unit wires to the terminal correctly, refer to the figure for proper length.

Unit: in (mm)



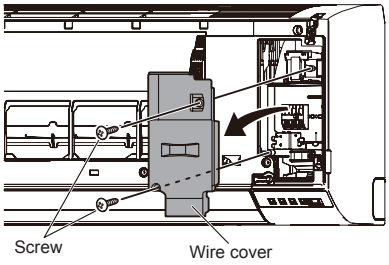
3.4.2. How to the install the connection cable

(1) Remove the screws, then remove the conduit holder.
(2) Fasten the indoor unit wire harness to the conduit holder using the lock nut.
IMPORTANT: Refer to “3.4.1. Wiring system diagram” about the length of indoor unit wire harness.
(3) Use the screws to install the conduit holder provide with the indoor unit.
(4) Remove the screws, then remove the cable clamper.
(5) Connect indoor unit wire harness to the terminal.
Refer to “3.4.1. Wiring system diagram”.
(6) Use the screws to install the cable clamper.

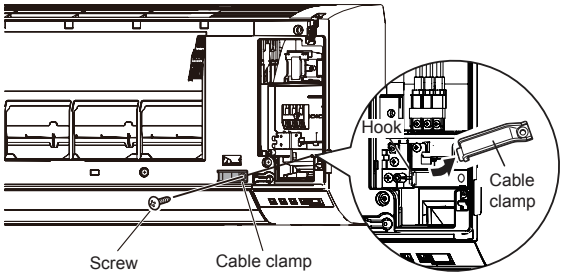


3.4.3. Indoor unit wiring

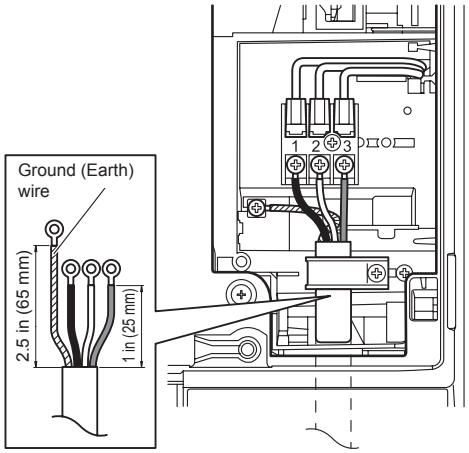
(1) Open the intake grille. Remove the tapping screw for the wire cover and remove the wire cover.



(2) Remove the tapping screw and while minding the cable clamp hook, remove the cable clamp.



(3) Use the wire with ring terminals to connect to the terminal block.



3.4.4. How to connect wiring to the terminals

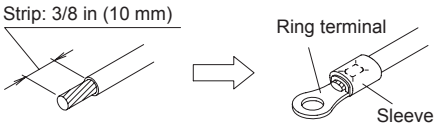
■ **Caution when wiring cable**

Caution when wiring cable

When stripping off the insulation of a lead wire, always use a special tool such as a wire stripper. If there is no special tool available, carefully strip the insulation with a knife etc.

(1) Use ring terminals with insulating sleeves as shown in the following figure to connect to the terminal block.

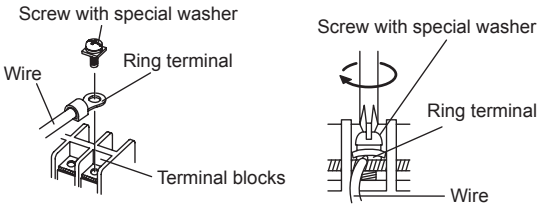
(2) Securely clamp the ring terminals to the wires using an appropriate tool so that the wires do not come loose.



(3) Use the specified wires, connect them securely, and fasten them so that there is no stress placed on the terminals.

(4) Use an appropriate screwdriver to tighten the terminal screws. Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.

(5) Do not tighten the terminal screws too much, otherwise, the screws may break.



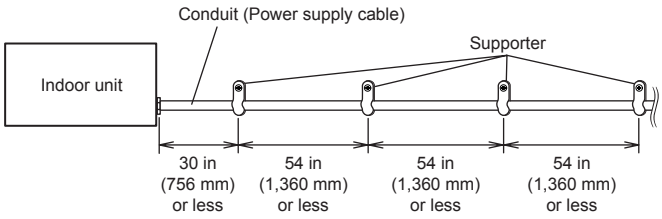
(6) Refer to the following table for the terminal screw tightening torques.

Tightening torque [lbf·in (N·m)]	
M3.5 screw	7.0 to 8.8 (0.8 to 1.0)
M4 screw	10.6 to 15.9 (1.2 to 1.8)
M5 screw	17.7 to 26.5 (2.0 to 3.0)

⚠ CAUTION

- Attach the cable clamp firmly by holding the connection cable, and make sure that the clamp is fixed securely.
  Incomplete attachment of the cable clamp might cause a malfunction of the open panel.
- Match the terminal block numbers and connection cable colors with those of the outdoor unit or branch box.
  Erroneous wiring may cause burning of the electric parts.
- Connect the connection cables firmly to the terminal block. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cable with the cable clamp. (If the insulator is chafed, electric discharge may occur.)
- Always connect the ground (earth) wire.
- Do not use the ground (earth) screw of the indoor unit for the connection other than a specified outdoor unit.

(7) Fix the conduit with the supporters as shown below.



3.5. Remote controller installation

- Check that the indoor unit correctly receives the signal from the remote controller, then install the remote controller holder.
  For battery installation, refer to the operation manual.

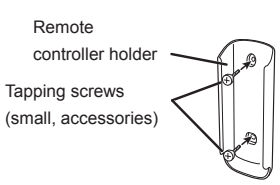
⚠ CAUTION

Do not install the remote controller holder in the following conditions:
- Any places exposed in direct sunlight
- Positions affected by the heat from a stove or heater

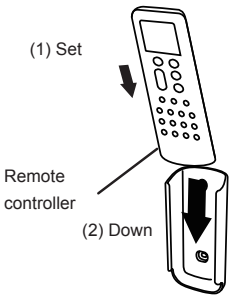
3.5.1. Remote controller holder installation

- Install the remote controller a maximum distance of 22 ft. (7 m) from the remote control signal receiver. After installing the remote controller, check that it operates correctly.
- Install the remote controller holder to a wall, pillar, etc. with the self-tapping screw.

Remote controller holder fixing



Remote controller mounting



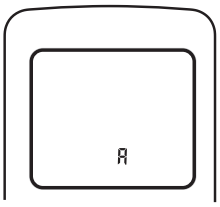
3.5.2. Remote controller custom setting

By setting custom code of indoor unit and remote controller, you can specify the air conditioner which the remote controller controls.
When two or more air conditioners are in the room and you wish to operate them separately, set the custom code (4 selections possible).

NOTE: If custom codes is different between the indoor unit and the remote controller, the indoor unit cannot receive a signal from the remote controller.

How to set the remote controller custom code

(1) Press ⏻/| until the indicators on the remote controller turn off.
(2) Press down [MODE] for more than 5 seconds.
The current custom code will be displayed (initially set to A).
(3) Press [TEMP. (∧∨)] to change the custom code between A (A) ↔ B (b) ↔ C (c/L) ↔ D (d).
* Match the custom code on the display to the air conditioner custom code.
(4) Press [MODE] again.
The custom code will be set.
The display will return to the original display.



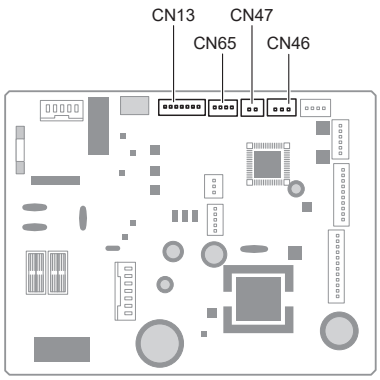
- To change the air conditioner custom code, contact an authorized service personnel (initially set to A).
- If you do not press any buttons for 30 seconds after the custom code is displayed, the display returns to the original display. In this case, repeat the setting from step 2.

4. OPTIONAL INSTALLATION WORK

⚠ CAUTION

- Before installing, be sure to disconnect all power supply.
- Do not touch the heat exchanger.
- When installing or removing parts of the air conditioner, be sure that the wire is not caught by any parts or pulled hard. It may result in damage or malfunction of the air conditioner.

• Connect the cable the circuit board.



This air conditioner can be connected with the following optional type.
For details on how to install optional parts, refer to the installation manual included in each item.

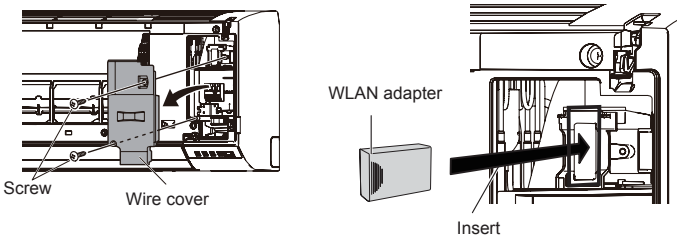
Connector No.	Option type
CN13	Wired remote controller (via the Communication kit)
	Simple remote controller (via the Communication kit)
	Network converter (via the Communication kit)
	Thermostat converter (via the Communication kit)
	External switch controller (via the Communication kit)
CN46	External input
CN47	External output
CN65	Other optional parts (External input and output PCB, Modbus converter, etc.) can be connectable. **NOTE:** Only one type of other optional parts is available.

4.1. Optional kit installation

NOTE: When some wired remote controller is connected, the wireless remote controller cannot be used.

4.1.1. Installing the WLAN adapter (KP series)

• For setting the WLAN adapter, refer to the operation manual.



NOTE: When the WLAN adapter is supplied with an information label, attach the label at a position where it can be seen, or store it.

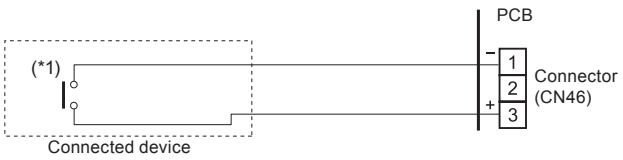
4.1.2. External input and output

■ External input

- Indoor unit functions such as Operation/Stop or Forced stop can be done by using indoor unit terminals.
- "Operation/Stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 492 ft. (150 m).
- Use an external input and output cable with appropriate external dimensions, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

● Dry contact terminal

When a power supply is unnecessary at the input device you want to connect, use the Dry contact terminal.



*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

Operation behavior

● Input signal type

● When function setting is "Operation/Stop" mode 1.

Input signal	Command
OFF → ON	Operation
ON → OFF	Stop

● When function setting is "Forced stop" mode.

Input signal	Command
OFF → ON	Forced stop
ON → OFF	Normal

* When the forced stop is triggered, indoor unit stops and Operation/Stop operation by a remote controller is restricted.

● When function setting is "Operation/Stop" mode 2.

Input signal	Command
OFF → ON	Operation
ON → OFF	Stop (R.C. disabled)

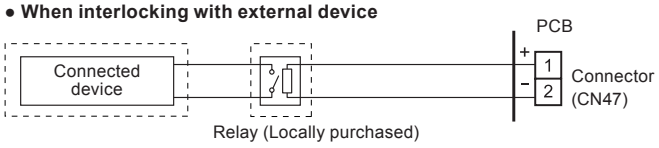
NOTE: For setting "Function number 46", refer to "5.1. Function details ■External input control".

■ External output

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft. (25 m).
- Use an external input and output cable with appropriate external dimensions, depending on the number of cables to be installed.
- Output voltage: Hi DC12V±2V, Lo 0V.
- Permissible current: 50mA

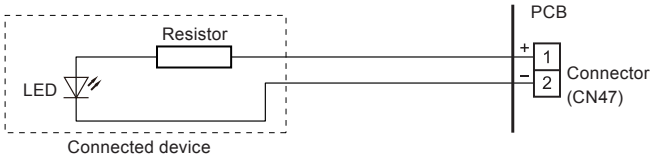
Output select

● When interlocking with external device



or

● When displaying "Operation/Stop"



Operation behavior

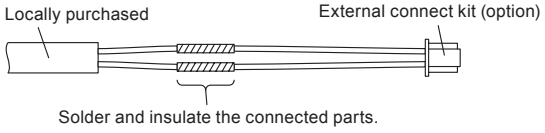
*If function setting "60" is set to "00", refer to "5. FUNCTION SETTING".

■ Connection methods

Wire modification

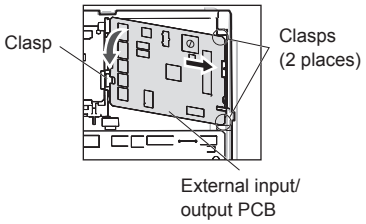
- Remove insulation from wire attached to wire kit connector.
- Remove insulation from locally purchased cable. Use crimp type insulated butt connector to join field cable and wire kit wire.
- Connect the wire with connecting wire with solder.

IMPORTANT: Be sure to insulate the connection between the wires.

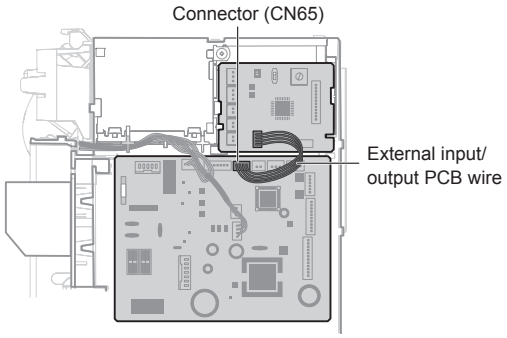


4.1.2. Installing the External input/output PCB

(1) Remove the Intake grille, front panel, and control cover. Refer to "3.2. Removing and replacing parts".
(2) Insert the PCB to the clasps (2 places). Push the PCB down until the clasp on the left is set.



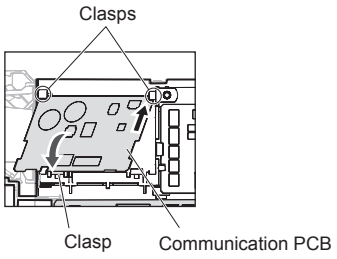
(3) Connect the External input/output PCB wire to the connector (CN65).



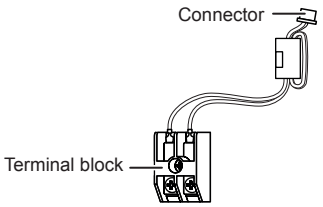
(4) For the setting of rotary switch and DIP switch, refer to the installation manual of optional parts.
NOTE: If the rotary switch on the "External input and output PCB" is set to "1", function number "46" will operate.
(5) Replace the control cover, front panel, and Intake grille.
(6) For setting "Function number 46", refer to "5.1. Function details ■External input control".

4.1.3. Installing the communication kit

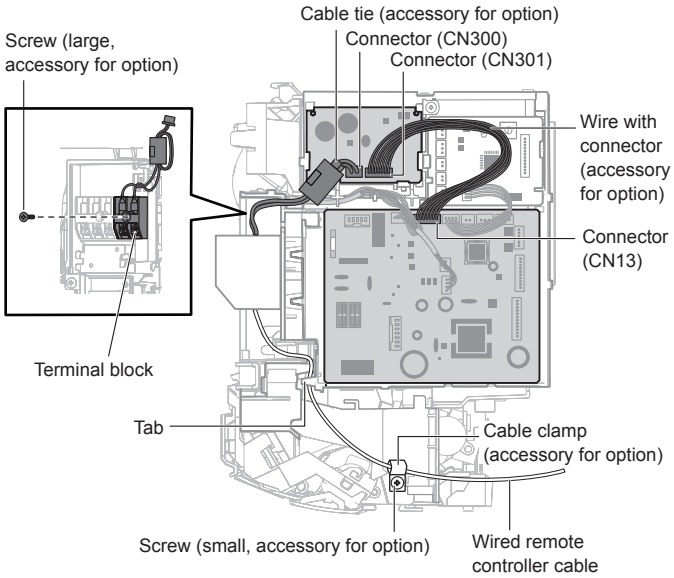
(1) Remove the Intake grille, front panel, and control cover. Refer to "3.2. Removing and replacing parts".
(2) Insert the PCB to the clasps (2 places). Push the PCB down until the clasp on the bottom is set.



(3) Attach the terminal board to the indoor unit with 1 screw (accessory for option).
(4) Connect the connector of wire with EMI core to the communication PCB, then fix it with the cable tie (accessory for option).



(5) Connect the communication kit and main PCB.
(6) Connect the wired remote controller cable to the terminal block as shown in the figure.



(7) Replace the control cover, front panel, and Intake grille.

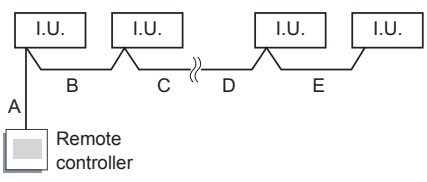
4.2. Group control

NOTE: Group control cannot be used together with WLAN adapter.

4.2.1. Group control system

A number of indoor units can be operated at the same time using a single remote controller.
*When different types of indoor units (such as wall mounted type and cassette type, cassette type and duct type, or other combinations) are connected using group control system, some functions may no longer be available.

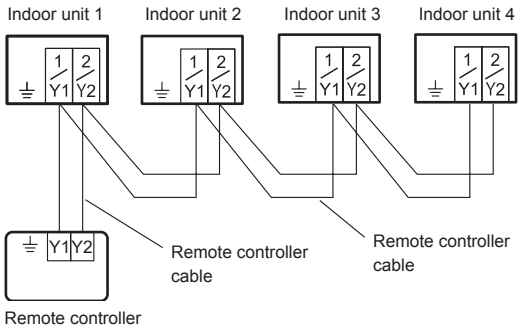
(1) Connect up to 16 indoor units in a system.



I.U.: Indoor unit
A, B, C, D, E : Remote controller cable.
A+B+C+D+E ≤ L

Model	L [yd (m)]
Except UTY-RVR*	546.8 (500)
UTY-RVR*	76.5 (70)

Example of wiring method



NOTE:
"1 / Y1": 1 or Y1, "2 / Y2": 2 or Y2

(2) Automatic address setting

- After the remote controller connection in the system, the automatic address setting runs in the initial starting up. Do not change the remote controller address for the indoor unit.

4.2.2. The Lead Lag function (KP series)

- Lead Lag is a function of the wired remote controller.

Compatible wired remote controller types	UTY-RNR*Z5 or later

- When enabling the Lead lag operation, the indoor units in the RC Group take turns stopping 1 or 2 at a time.

■ **Indoor unit setting**

(1) Connect 2 or more indoor units and the wired remote controller (optional) in group.
(2) Turn on the indoor unit.
(3) Change the function setting according to the table below.
For details, refer to "5. FUNCTION SETTING".

Function number	Setting value
42	01
48	01
96	01

(4) Turn off the indoor unit, and then turn it on again.

■ **Wired remote controller setting**

(1) Select "Enable" on the "Initial Setting > Lead Lag Setting > Enable/Disable" screen.
* For details, refer to the operation manual and installation manual of the wired remote controller.

NOTES:

- When the Lead Lag is set to Enable, operation cannot be performed using the supplied wireless remote controller and the main unit switch.
- In the case of emergency, shut down the circuit breaker of the air conditioner to turn off the air conditioner.

5. FUNCTION SETTING

Perform the Function setting according to the installation conditions using the remote controller.

⚠ CAUTION

- Confirm whether the wiring work for outdoor unit has been finished.
- Confirm that the cover for the electrical enclosure on the outdoor unit is in place.

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit to malfunction.
- After the power is turned on, perform the function setting according to the installation conditions using the remote controller.
- The settings may be selected between the following two: function number and setting value.
- Settings will not be changed if invalid numbers or setting values are selected.
- Refer to the installation manual enclosed with the remote controller when the wired remote controller is used.

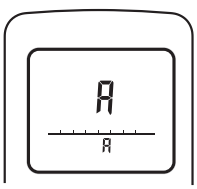
■ **Entering the function setting mode**

While pressing [FAN SPEED] and [TEMP. (∧)] simultaneously, press [RESET] to enter the function setting mode.

STEP 1

Setting the remote controller custom code

Use the following steps to select the custom code of the remote controller. (Note that the air conditioner cannot receive a custom code if the air conditioner has not been set for the custom code.) The custom code that is set through this process are applicable only to the custom in the function setting.



(1) Press [TEMP. (∧∨)] to change the custom code between A (A) ↔ B (b) ↔ C (c/C) ↔ D (d). Match the code on the display to the air conditioner custom code. (initially set to A)
(If the custom code does not need to be selected, press [MODE] and proceed to STEP 2.)
(2) Press [MODE] to accept the custom code, and proceed to STEP 2

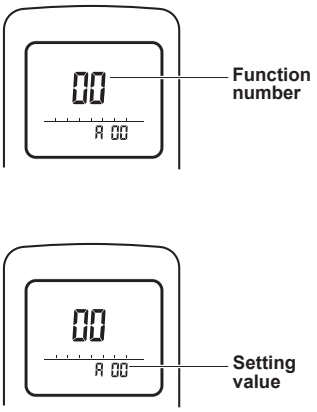
The air conditioner custom code is set to A prior to shipment.
Contact your retailer to change the custom code.

If you do not know the air conditioner custom code setting, try each of the custom codes (A (A) ↔ B (b) ↔ C (c/C) ↔ D (d)) until you find the code which operates the air conditioner.

STEP 2

Setting the function number and setting value

(1) Press [TEMP. (∧∨)] to select the function number.
(Press [MODE] to switch between the left and right digits.)
(2) Press [FAN SPEED] to proceed to setting the value.
(Press [FAN SPEED] again to return to the function number selection.)
(3) Press [TEMP. (∧∨)] to select the setting value.
(Press [MODE] to switch between the left and right digits.)
(4) Press [POWERFUL], then after you hear the beep emitted from the indoor unit, press [⏻/I] to confirm the settings.
(5) Press [RESET] to cancel the function setting mode.
(6) After completing the function setting, be sure to disconnect the power supply and then reconnect it.



⚠ CAUTION

- After disconnecting the power supply, wait 30 seconds or more before reconnecting it.
- The Function Setting will not become active unless the power supply is disconnected and then reconnected.
- When using a custom code other than A, press [RESET] and then press and hold [MODE] again for 5 seconds or more to set the custom code.

5.1. Function details

■ **Filter sign**

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.
If the indication is not required, select "No indication" (03).

(♦... Factory setting)

Function number	Setting value	Setting description	
11	00	Standard (400 hours)	
	01	Long interval (1000 hours)	
	02	Short interval (200 hours)	
	03	No indication	♦

■ **Auto restart**

Enable or disable automatic restart after a power interruption.

(♦... Factory setting)

Function number	Setting value	Setting description	
40	00	Enable	♦
	01	Disable	

* Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

■ **Room temperature sensor switching**

(Only for wired remote controller)
When using the Wired remote controller temperature sensor, change the setting to "Both" (01).

(♦... Factory setting)

Function number	Setting value	Setting description	
42	00	Indoor unit	♦
	01	Both	

00: Sensor on the indoor unit is active.
01: Sensors on both indoor unit and wired remote controller are active.
* Remote controller sensor must be turned on by using the remote controller

■ **Remote controller custom code**

(Only for wireless remote controller)
The indoor unit custom code can be changed. Select the appropriate custom code.

(♦... Factory setting)

Function number	Setting value	Setting description	
44	00	A	♦
	01	B	
	02	C	
	03	D	

■ **External input control**

"Operation/Stop" mode or "Forced stop" mode can be selected.

(♦... Factory setting)

Function number	Setting value	Setting description	
46	00	Operation/Stop mode 1 (R.C. enabled)	♦
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2 (R.C. disabled)	

■ **Room temperature sensor switching (Aux.)**

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01). This function will only work if the function setting 42 is set at "Both" (01)

(♦... Factory setting)

Function number	Setting value	Setting description	
48	00	Both	♦
	01	Wired remote controller	

■ **Indoor unit fan control for energy saving for cooling**

Enables or disables the power-saving function by controlling the indoor unit fan rotation when the outdoor unit is stopped during cooling operation.

(♦... Factory setting)

Function number	Setting value	Setting description	
49	00	Disable	
	01	Enable	
	02	Remote controller	♦

00: When the outdoor unit is stopped, the indoor unit fan operates continuously following the setting on the remote controller.
01: When the outdoor unit is stopped, the indoor unit fan operates intermittently at a very low speed.
02: Enable or disable this function by remote controller setting.

*When using a wired remote controller without Indoor unit fan control for energy saving for cooling function, or when connecting a single split converter, the setting cannot be made by using the remote controller. Set to (00) or (01).
To confirm if the remote controller has this function, refer to the operation manual of each remote controller.

■ **Switching functions for external output terminal**

Functions of the external output terminal can be switched.

(♦... Factory setting)

Function number	Setting value	Setting description	
60	00	Operation status	♦
	01 to 08	Other status (Refer to the Design & technical manual.)	
	09	Error status	
	10	Interlocked with indoor fans	
	11	External heater output	

■ **Control switching of external heaters**

Sets the control method for the external heater being used. For details of the control method, refer to the Design & Technical Manual.

(♦... Factory setting)

Function number	Setting value	Setting description	
61	00	Auxiliary heater control 1	♦
	01	Auxiliary heater control 2	
	02	Heat pump prohibition control	
	03	Heater selection control using outdoor temperature 1	
	04	Heater selection control using outdoor temperature 2	
	05	Auxiliary heater control by outdoor temperature 3	
	06	Auxiliary heat pump control	
	07	Auxiliary heat pump control by outdoor temperature 1	
	08	Auxiliary heat pump control by outdoor temperature 2	
	09	Auxiliary heat pump control by outdoor temperature 3	

■ **Standby time for auxiliary equipment operation**

Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.

(♦... Factory setting)

Function number	Setting value	Setting description	
71	00	Disable	♦
	01	1 minutes	
	02 to 98	2 minutes to 98 minutes	
	99	99 minutes	

■ **Heat pump backup setting**

Enables or disables the heat pump backup instruction from the outdoor unit.
This function will be usable provided that the corresponding outdoor unit is connected.

(♦... Factory setting)

Function number	Setting value	Setting description	
72	00	Disable	♦
	01	Enable	

■ **Emergency heat for external output terminal**

Enables or disables emergency heat input.
To use this function, select "External heater output" after entering "Function Number 60". For more information, please refer to the Design & technical manual.

(♦... Factory setting)

Function number	Setting value	Setting description	
73	00	Disable	♦
	01	Enable	

■ **Special cooling operation (KP series)**

It is used to stabilize cooling when the ambient temperature is low.
Operation mode : Fixed cooling
Airflow : Fixed High
Set temperature : 76°F to 88°F (24°C to 30°C)

(♦... Factory setting)

Function number	Setting value	Setting description	
96	00	Disable	♦
	01	Enable	

NOTES:

- If setting value is set to "Enable"(01), connect the wired remote controller (optional).
- Do not use the wireless remote controller after setting to "Enable"(01).
- Cooling starts automatically after "Enable"(01) is set and the wired remote controller cannot be communicated with.
- If drops of water appear on the surface of the indoor unit after "Enable"(01) is set, set setting value to "Disable"(00).

■ **Setting record**

Record any changes to the settings in the following table.

Function number	Setting description	Setting value
11	Filter sign	
40	Auto restart	
42	Room temperature sensor switching	
44	Remote controller custom code	
46	External input control	
48	Room temperature sensor switching (Aux.)	
49	Indoor unit fan control for energy saving for cooling	
60	Switching functions for external output terminal	
61	Control switching of external heaters	
71	Standby time for auxiliary equipment operation	
72	Heat pump backup setting	
73	Emergency heat for external output terminal	
96	Special cooling operation	

After completing the Function Setting, be sure to disconnect the power supply and then reconnect it.

5.2. Temperature correction

NOTES:

When changing Function 95, perform this setting before other Room temp. control settings (Function 30, 31, 35, 36).
If Function 95 is not set first, Room temperature control settings (Function 30, 31, 35, 36) will be reset and you must re-do them again.

■ **Heat Insulation condition (building insulation)**

Heat insulation conditions differ according to the installed environment.
"Standard insulation" (00) allows system to rapidly respond to the cooling or heating load changes.
"High insulation" (01) is when the heat insulation structure of the building is high and does not require system to rapidly respond to cooling or heating load changes.
When "High insulation" (01) is selected;

- Overheating (overcooling) is prevented at the start-up.
- All room temp. control settings (Function 30, 31, 35, 36) will reset to "No correction" [0.0°F (0.0°C)].

(♦... Factory setting)

Function Number	Setting Value	Setting Description	
95	00	Standard insulation	♦
	01	High insulation	

■ Room temperature control for indoor unit sensor

Depending on the installed environment, correction of the room temperature sensor may be required.
Select the appropriate control setting according to the installed environment.
The temperature of the room temperature sensor is corrected as follows:
Corrected temp. = Temp. of room temp. sensor - correction temp. value
Example of correction :
When the temperature of room temp. sensor is 78 °F and the setting value is "03" (-2 °F), the corrected temp. will be 80 °F (78 °F [-2 °F]).
The temperature correction values show the difference from the "Standard setting" (00) (manufacturer's recommended value).

(♦... Factory setting)

Function number		Setting value	Setting description	
30 (For cooling)	31 (For heating)	00	Standard setting	♦
		01	No correction 0 °F (0.0 °C)	
		02	-1 °F (-0.5 °C)	More Cooling Less Heating
		03	-2 °F (-1.0 °C)	
		04	-3 °F (-1.5 °C)	
		05	-4 °F (-2.0 °C)	
		06	-5 °F (-2.5 °C)	
		07	-6 °F (-3.0 °C)	
		08	-7 °F (-3.5 °C)	
		09	-8 °F (-4.0 °C)	
		10	+1 °F (+0.5 °C)	Less Cooling More Heating
		11	+2 °F (+1.0 °C)	
		12	+3 °F (+1.5 °C)	
		13	+4 °F (+2.0 °C)	
		14	+5 °F (+2.5 °C)	
		15	+6 °F (+3.0 °C)	
		16	+7 °F (+3.5 °C)	
		17	+8 °F (+4.0 °C)	

■ Room temperature control for wired remote controller sensor

Depending on the installed environment, correction of the wire remote temperature sensor may be required.
Select the appropriate control setting according to the installed environment.
To change this setting, set Function 42 to "Both" (01).
Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

(♦... Factory setting)

Function number		Setting value	Setting description	
35 (For cooling)	36 (For heating)	00	No correction	♦
		01	No correction 0 °F (0.0 °C)	
		02	-1 °F (-0.5 °C)	More Cooling Less Heating
		03	-2 °F (-1.0 °C)	
		04	-3 °F (-1.5 °C)	
		05	-4 °F (-2.0 °C)	
		06	-5 °F (-2.5 °C)	
		07	-6 °F (-3.0 °C)	
		08	-7 °F (-3.5 °C)	
		09	-8 °F (-4.0 °C)	
		10	+1 °F (+0.5 °C)	Less Cooling More Heating
		11	+2 °F (+1.0 °C)	
		12	+3 °F (+1.5 °C)	
		13	+4 °F (+2.0 °C)	
		14	+5 °F (+2.5 °C)	
		15	+6 °F (+3.0 °C)	
		16	+7 °F (+3.5 °C)	
		17	+8 °F (+4.0 °C)	

■ Setting record

- Record any changes to the settings in the following table.

Function number	Setting Description		Setting Value
95	Heat Insulation condition (building insulation)		
30	Room temperature control for indoor unit sensor	Cooling	
31		Heating	
35	Room temperature control for wired remote controller sensor	Cooling	
36		Heating	

After completing the Function setting, be sure to disconnect the power and reconnect it again.

6. TEST RUN

■ Check items

- ☐ Is operation of each button on the remote control unit normal?
- ☐ Does each lamp light normally?
- ☐ Do air flow direction louvers operate normally?
- ☐ Is the drain normal?
- ☐ Do not have an abnormal noise and vibration during operation?

Do not operate the air conditioner in test run for a long time.

■ Operation method

Before starting the test run, wait for 1 minute after connecting the power supply.
By the wireless remote controller

- To start the test run, press [(⏻/I)], [TEST RUN] on the remote controller by using the tip of a ballpoint pen or other small object.

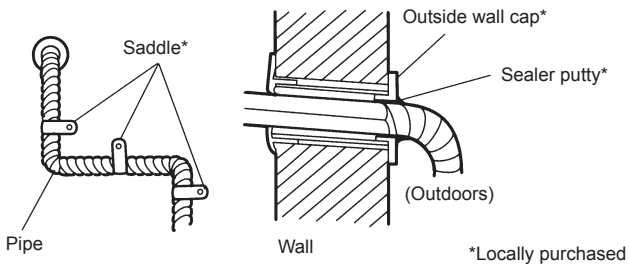
By the indoor unit

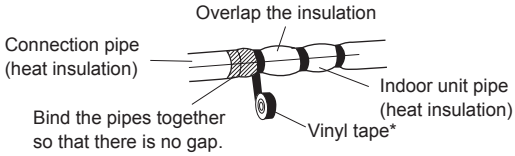
- To start the test run, keep on pressing the indoor unit button for more than 10 seconds.
- To end test operation, press the remote controller [(⏻/I)].
  (When the air conditioner is running by pressing [TEST RUN], the "OPERATION" Lamp and "TIMER" Lamp will simultaneously flash slowly.)

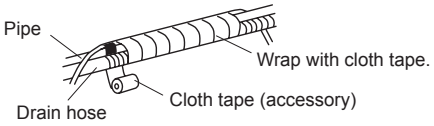
7. FINISHING

(1) Insulate between pipes.
- Insulate suction and discharge pipes separately.
- For rear, right, and bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap.

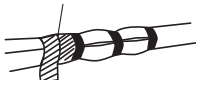
(2) Temporarily fasten the connection cable along the connection pipe with vinyl tape. (Wrap to about 1/3 the width of the tape from the bottom of the pipe so that water does not enter.)
(3) Fasten the connection pipe to the outside wall with a saddle, etc.
(4) Fill the gap between the outside wall pipe hole and the pipe with sealer so that rain water and wind cannot blow in.
(5) Fasten the drain hose to the outside wall, etc.
(6) Check the drainage.



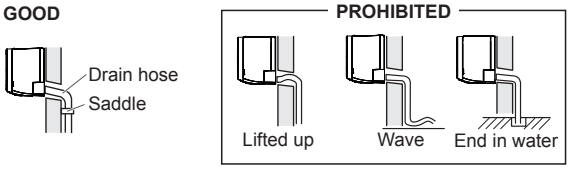




Drain hose insulation is used when the diameter of gas pipe is Ø12.70 or more.



Butt connection pipe (heat insulation) against the indoor unit pipe (heat insulation) and wrap with drain hose insulation so that there is no gap.



(7) Open the intake grille of the indoor unit. Set an air cleaning filter (accessory) to each filter folder (accessory) and attach to the air filter. For details of how to assemble the air filter, please refer to the operation manual.

8. CUSTOMER GUIDANCE

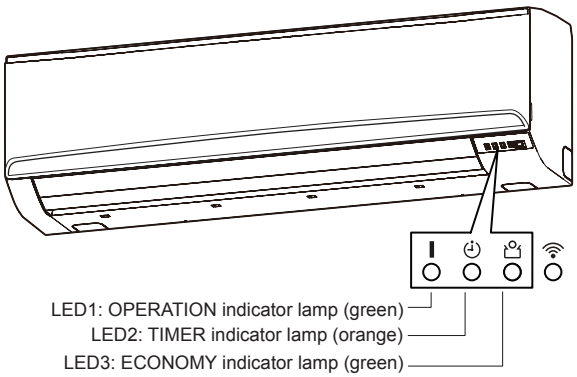
Explain the following to the customer in accordance with the operation manual:
(1) Starting and stopping method, operation switching, temperature adjustment, timer, airflow switching, and other remote control unit operations.
(2) Air filter removal and cleaning, and how to use the air louvers.
(3) Give the operation manual to the customer.

9. ERROR CODES

If you use a wireless remote controller, the lamp on the photo detector unit will output error codes by way of blinking patterns. If you use a wired remote controller, error codes will appear on the remote control display. Refer to the lamp blinking patterns and error codes in the table. An error display is displayed only during operation.

The error code table contains errors irrelevant to this product as well.

■ **Error display on the indoor unit**



If error code 24 is indicated.

The first and second digits of the error code are indicated by the number of times the lamp blinks.

[Blinking interval]
LED1,2 : 0.5s ON / 0.5s OFF
LED3 : 0.1s ON / 0.1s OFF (Always blinking)

*The alphabet is indicated by the following number of times the lamp blinks.
A : 10 times C : 11 times J : 13 times U : 15 times

• Unnecessary error codes for this product may be included in the list.
• If you find any unlisted error codes, please contact to service staff.

Error code	Description
11	Serial communication error
12	Wired remote controller communication error
15	Check run unfinished Automatic airflow adjustment error
16	Peripheral unit transmission PCB connection error
18	External communication error
21	Unit number or Refrigerant circuit address setting error [simultaneous multi-split type]
22	Indoor unit capacity error
23	Combination error
24	• Connection unit number error (indoor secondary unit) [simultaneous multi-split type] • Connection unit number error (indoor unit or branch unit) [flexible multi-split type]
26	Indoor unit address setting error
27	Primary unit, secondary unit setup error [simultaneous multi-split type]
29	Connection unit number error in wired remote controller system
31	Power supply interruption error
32	Indoor unit PCB model information error
33	Indoor unit motor electricity consumption detection error

Error code	Description
35	Manual auto switch error
39	Indoor unit power supply error for fan motor
3A	Indoor unit communication circuit (wired remote controller) error
41	Room temp. sensor error
42	Indoor unit heat ex. middle temp. sensor error
44	Occupancy sensor error
51	Indoor unit fan motor error
53	Drain pump error
54	Electric air cleaner reverse VDD error
55	Filter set error
57	Damper error
58	Intake grille error
59	Indoor unit fan motor 2 error (Left side fan)
5A	Indoor unit fan motor 3 error (Right side fan)
5U	Indoor unit error
61	Outdoor unit reverse/missing phase and wiring error
62	Outdoor unit main PCB model information error or communication error
63	Inverter error
64	Active filter error, PFC circuit error

Error code	Description
65	• Trip terminal L error • IPM temp error
68	Outdoor unit rush current limiting resister temp. rise error
6A	Display PCB microcomputers communication error
71	Discharge temp. sensor error
72	Compressor temp. sensor error
73	Outdoor unit Heat Ex. liquid temp. sensor error
74	Outdoor temp. sensor error
75	Suction Gas temp. sensor error
76	• 2-way valve temp. sensor error • 3-way valve temp. sensor error
77	Heat sink temp. sensor error
82	• Sub-cool Heat Ex. gas inlet temp. sensor error • Sub-cool Heat Ex. gas outlet temp. sensor error
83	Liquid pipe temp. sensor error

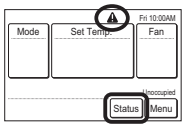
Error code	Description
84	Current sensor error
86	• Discharge pressure sensor error • Suction pressure sensor error • High pressure switch error
94	Trip detection
95	Compressor rotor position detection error (permanent stop)
97	Outdoor unit fan motor 1 error
98	Outdoor unit fan motor 2 error
99	4-way valve error
9A	Coil (expansion valve) error
A1	Discharge temp. error
A3	Compressor temp. error
A4	High pressure error
A5	Low pressure error
AC	Heat sink temp error
J2	Branch boxes error [flexible multi-split type]

■ **Error code on the wired remote controller (option)**

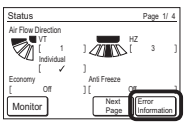
Check the error

1. If an error occurs, an error icon appears on the “Monitor mode screen”. Touch the [Status] on the “Monitor mode screen”. The “Status” screen is displayed.
2. Touch the [Error Information] on the “Status” screen. The “Error Information” screen is displayed. (If there are no errors, the [Error Information] will not be displayed.)
3. 2-digit numbers correspond to the error code in the table. Touch the [Next page] (or [Previous page]) to switch to other connected indoor units.

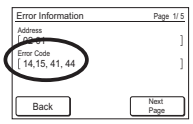
1.



2.



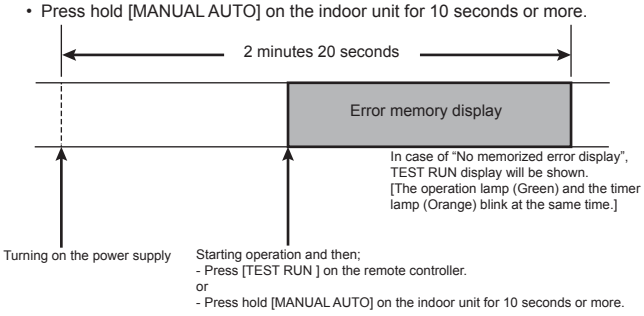
3.



■ **How to check the error memory**

When an error occurs, the operation lamp (Green) and the timer lamp (Orange) indicate the error content by blinking. To check the error memory, follow the procedures below.

1. Stop the operation of the air conditioner, and then disconnect the power supply.
2. Reconnect the power supply.
3. In one of the following two methods, the memorized error is only displayed during the “3 minutes ST”* state period.
   • Start the operation and then press [TEST RUN] on the remote controller.
   or
   • Press hold [MANUAL AUTO] on the indoor unit for 10 seconds or more.



*: The “3 minutes ST” period lasts 2 minutes and 20 seconds after turning on the power supply.

■ **How to erase the error memory**

• Manual erase: Pressing [MANUAL AUTO] on the indoor unit while the “Error memory display” is being shown. (Short beep emits for about 3 seconds.)