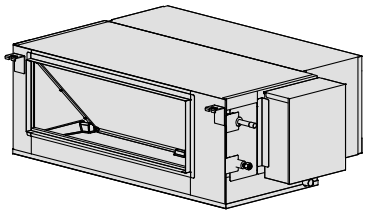
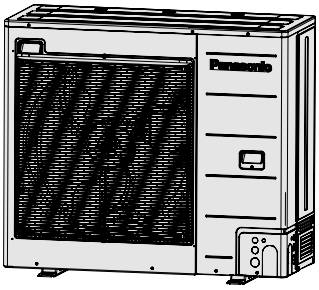
Order No: PAPAMY2404031CE

Service Manual

Air Conditioner





Indoor Unit **Outdoor Unit**
S-200PE4E **U-200PZH4E8**
S-250PE4E **U-250PZH4E8**

Destination
Europe
Turkey
CIS

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

⚠ CAUTION

R32 REFRIGERANT – This Air Conditioner contains and operates with refrigerant R32.
THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.
Refer to National, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

Panasonic®

Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury.
⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with white background denotes item that is PROHIBITED.
❗ ⏚	Symbol with dark background denotes item that must be carried out.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

	⚠ **WARNING**
⃠	Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.
⃠	Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.
⃠	Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
⃠	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
⃠	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
⃠	Do not sit or step on the unit, you may fall down accidentally.
⃠	Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
⃠	When installing or relocating air conditioner, do not let any substance other than the specifi ed refrigerant, eg. air etc mix into refrigeration cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
⃠	Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.
⃠	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
❗	• For R32 model, use new piping, flare nut and tools which is specified for R32 refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigerant cycle (piping), and possibly result in explosion and injury. For R32 and R410A, the same flare nut on the outdoor unit side and pipe can be use. • Since the working pressure for R32/R410A is higher than that of refrigerant R22 models, replacing conventional piping and flare nuts on the outdoor unit side are recommended. • If reuse piping is unavoidable, refer to instruction **REFRIGERANT INSTALLATION (IN CASE OF REUSING EXISTING REFRIGERANT PIPING)** in outdoor unit installation manual. • Thickness for copper pipes used with R32 must be more than 0.6 mm. Never use copper pipes thinner than 0.6 mm. For copper pipe ø15.88 or more use copper pipe thickness 0.8 mm and above. Refer to **REFRIGERANT INSTALLATION** piping thickness table. • It is desirable that the amount of residual oil less than 40 mg/10 m.
❗	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
❗	For refrigeration system work, install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
❗	Use the attached accessories parts and specifi ed parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
❗	Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
❗	For electrical work, follow the national regulation, legislation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
❗	Do not use joint cable for indoor / outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction **ELECTRICAL WIRING** and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.
❗	Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.

⚠ WARNING	
❗	This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD), with sensitivity of 30mA at 0.1 sec or less. Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown.
❗	During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened position will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
❗	During pump down operation, stop the compressor before removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
❗	Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
❗	After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
❗	Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.
❗	Be aware that refrigerants may not contain an odour.
⏚	This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.

⚠ CAUTION	
⊘	Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
⊘	Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.
⊘	Do not overcharge the unit, refer to gas charge specification in Outdoor Installation manual. Overcharge will cause over current and damage to compressor.
⊘	Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
⊘	Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
⊘	Do not touch the sharp aluminium fin, sharp parts may cause injury.
❗	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
❗	Select an installation location which is easy for maintenance. Incorrect installation, service or repair of this air conditioner may increase the risk of rupture and this may result in loss damage or injury and/or property.
❗	Power supply connection to the room air conditioner. Use power supply cord type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to a circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0mm contact gap. Power supply point should be in easily accessible place for power disconnection in case of emergency.
❗	Installation work. It may need two people to carry out the installation work.
❗	Keep any required ventilation openings clear of obstruction.

Precaution 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:

⚠ WARNING	
❗	The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than A_{min} (m^2) [refer to Check of Density Limit] and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.
❗	The mixing of different refrigerants within a system is prohibited. Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety. Therefore, check beforehand. [The charging port thread diameter for R32 and R410A is 12.7 mm (1/2 inch - 20 UNF)].
❗	Ensure that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc. (Handling of R32 is similar to R410A.)
❗	Operation, maintenance, repairing and refrigerant recovery should be carried out by trained and certified personnel in the use of flammable refrigerants and as recommended by the manufacturer. Any personnel conducting an operation, servicing or maintenance on a system or associated parts of the equipment should be trained and certified.
❗	Any part of refrigerating circuit (evaporators, air coolers, AHU, condensers or liquid receivers) or piping should not be located in the proximity of heat sources, open flames, operating gas appliance or an operating electric heater.
❗	The user/owner or their authorized representative shall regularly check the alarms, mechanical ventilation and detectors, at least once a year, where as required by national regulations, to ensure their correct functioning.
❗	A logbook shall be maintained. The results of these checks shall be recorded in the logbook.
❗	In case of ventilations in occupied spaces shall be checked to confirm no obstruction.
❗	Before a new refrigerating system is put into service, the person responsible for placing the system in operation should ensure that trained and certified operating personnel are instructed on the basis of the instruction manual about the construction, supervision, operation and maintenance of the refrigerating system, as well as the safety measures to be observed, and the properties and handling of the refrigerant used.
❗	The general requirement of trained and certifi ed personnel are indicated as below: a) Knowledge of legislation, regulations and standards relating to flammable refrigerants; and, b) Detailed knowledge of and skills in handling flammable refrigerants, personal protective equipment, refrigerant leakage prevention, handling of cylinders, charging, leak detection, recovery and disposal; and, c) Able to understand and to apply in practice the requirements in the national legislation, regulations and standards; and, d) Continuously undergo regular and further training to maintain this expertise.
❗	Air-conditioner piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
❗	Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
❗	Ensure protection devices, refrigerating piping and fittings are well protected against adverse environmental effects (such as the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris).
❗	Expansion and contraction of long runs piping in refrigerating systems shall be designed and installed securely (mounted and guarded) to minimize the likelihood hydraulic shock damaging the system.
❗	Protect the refrigerating system from accidental rupture due to moving furniture or reconstruction activities.
❗	To ensure no leaking, 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 (>1.04 MPa, max 4.15 MPa). No leak shall be detected.

⚠ CAUTION	
❗	1. General • Must ensure the installation of pipe-work shall be kept to a minimum. Avoid use dented pipe and do not allow acute bending. • Must ensure that pipe-work shall be securely mounted and guarded from physical damage. • Must comply with national gas regulations, state municipal rules and legislation. Notify relevant authorities in accordance with all applicable regulations. • Must ensure mechanical connections be accessible for maintenance purposes. • In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction. • When disposal of the product, do follow to the precautions in #10 and comply with national regulations. • In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified, measured and labelled. Always contact to local municipal offices for proper handling. • Ensure the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed. • Ensure refrigerant charge not to leak. • Wear appropriate protective equipment, including respiratory protection, as conditions warrant. • Keep all sources of ignition and hot metal surfaces away. • Explosion-proof electronic components shall only be replaced with parts specified by the appliance manufacturer. Replacement with other parts may result in the ignition of refrigerant in the event of a leak.
❗	2. Servicing 2-1. Qualification of workers • Any qualified person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification. • Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants. • Servicing shall be performed only as recommended by the manufacturer. • The system is inspected, regularly supervised and maintained by a trained and certified service personnel who is employed by the person user or party responsible.
❗	2-2. 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 minimised. For repair to the refrigerating system, the precautions in #2-3 to #2-7 must be followed before conducting work on the system.
❗	2-3. Work procedure • Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.
❗	2-4. General work area • All maintenance staff and others working in the local area shall be instructed and supervised on the nature of work being carried out. • Avoid working in confined spaces. Always ensure away from source, at least 2 meter of safety distance, or zoning of free space area of at least 2 meter in radius.
❗	2-5. 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 flammable atmospheres. • Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe. • In case of leakage/spillage happened, immediately ventilate area and stay upwind and away from spill/release. • In case of leakage/spillage happened, do notify persons down wind of the leaking/spill, isolate immediate hazard area and keep unauthorized personnel out.
❗	2-6. Presence of fire extinguisher • If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fi re extinguishing equipment shall be available at hand. • Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.
❗	2-7. No ignition sources • No person carrying out work in relation to a refrigerating system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it can lead to the risk of fire or explosion. They must not be smoking when carrying out such work. • 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.
❗	2-8. 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.
❗	2-9. 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 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 can corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are properly protected against being so corroded.

⚠ CAUTION

2-10. Checks to electrical devices
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- Initial safety checks shall include but not limit to:-
  - That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
  - That there is no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.
- At all times the manufacturer's maintenance and service guidelines shall be followed.
- If in doubt consult the manufacturer's technical department for assistance.
- 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.
- The owner of the equipment must be informed or reported so all parties are advised thereinafter.

3. Sealed electrical components
- Sealed electrical components shall not be repaired.

4. 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.

5. Detection of flammable refrigerants
- Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- The following leak detection methods are deemed acceptable for all refrigerant systems.
  - No leaks shall be detected when using detection equipment with a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>1.04 MPa, max 4.15 MPa) for example, a universal sniffer.
  - Electronic leak detectors may be used to detect flammable refrigerants, but the sensitivity can be inadequate, or can need re-calibration.
    (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, for example, bubble method and fluorescent agent method. The use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
  - 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. The precautions in #6 must be followed to remove the refrigerant.

6. Refrigerant removal and circuit evacuation
- When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

  1. Safely remove refrigerant following local and national regulations
  2. Evacuate
  3. Purge the circuit with inert gas
  4. Evacuate
  5. Continuously flush with inert gas when using flame to open circuit
  6. Open the circuit

- The refrigerant charge shall be recovered into the correct recovery cylinders.
- Compressed air or oxygen shall not be used for purging refrigerant systems, only use OFN (oxygen free nitrogen) for this task.
- Purging of the refrigerant circuit shall be achieved by breaking the vacuum in the system with inert gas and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to vacuum.
- This process shall be repeated until no refrigerant is within the system.
- The system shall be vented down to atmospheric pressure to enable work to take place.
- Ensure that the outlet of the vacuum pump is not close to any potential ignition sources and there is ventilation available.

7. 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.
  - Label the system when charging is complete (if not already labelled).
  - Extreme care shall be taken not to over fill the refrigerating system.
- Prior to recharging the system it shall be pressure tested with OFN (refer to #6).
- 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.
- Electrostatic charge may accumulate and create a hazardous condition when charging and discharging the refrigerant. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

⚠ CAUTION	
	8. Decommissioning • Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. • 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 over fill 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. • Electrostatic charge may accumulate and create a hazardous condition when charging or discharging the refrigerant. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.
	9. Labelling • Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. • The label shall be dated and signed. • Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
	10. Recovery • When removing refrigerant from a system, either for servicing or decommissioning, it is required to follow 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 are 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. • 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 concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. Consult manufacturer if in doubt. • 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 processed according to the local legislation 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. Draining of oil from a system shall be carried out safely.

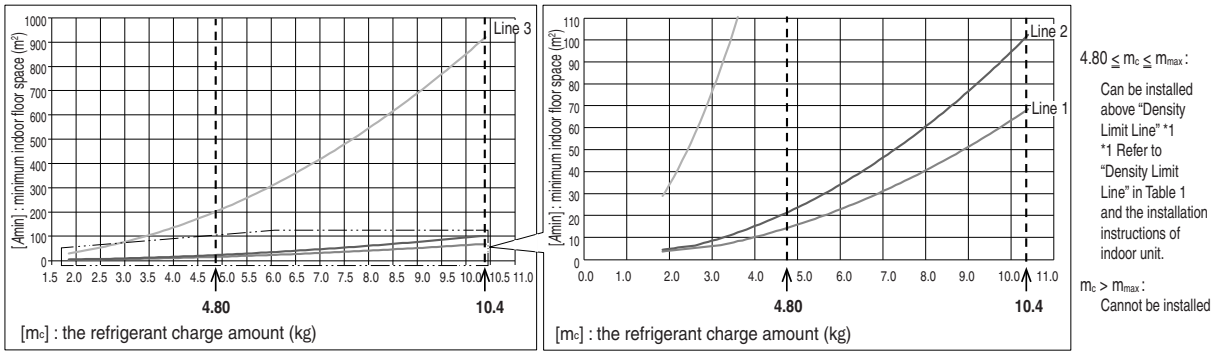
Check of Density Limit

1. Outdoor

U-200PZH4E8, U-250PZH4E8

The refrigerant (R32), which is used in the air conditioner, is a flammable refrigerant.
So the requirements for installation space of appliance are determined according to the refrigerant charge amount (m_c) used in the appliance.

The minimum indoor floor space compared with the amount of refrigerant is roughly as follows:



	U-200PZH4E8 U-250PZH4E8
m_{max}	10.40 kg

m_c : The refrigerant charge amount (Total of refrigerant at shipment and refrigerant charge amount in the field).

- Please calculate m_c according to tubing length in the field as shown in the calculation example below.

< Calculating example > • Refer to table "Specification for tube connecting indoor unit to outdoor unit".

U-200PZH4E8 (Single)
(conditions : Total tube length = 40 m)

m_c = ① + ② = ① + (③ x (④ – ⑤)) = 4.8 kg + (0.08 kg x (40 m – 30 m) = 5.60 kg

< Calculating example > **• Please refer to "8. TWIN, TRIPLE AND DOUBLE TWIN TYPE CONNECTIONS-Refrigerant charging"**
(conditions : U-200PZH4E8 (TRIPLE) Total pipe length = 65 m)

m_c = ① + ② = ① + (③ ∗ (④ – ⑤ – ⑦ – ⑧ – ⑨)) + (⑥ ∗ (⑦ + ⑧ + ⑨)) = 4.80 kg + 0.08 kg ∗ (65 m - 30 m - 3 m - 4 m - 5 m) + 0.040 kg ∗ (3 m + 4 m + 5 m) = 7.12 kg

①: Refrigerant charged at shipment ②: Refrigerant charge amount in the field ③: Additional charge per 1 m (Main tube)
④: Total pipe length ⑤: Charge-less pipe length (30 m) ⑥: Additional charge per 1 m (Branch pipe)
⑦: 1st Branch pipe length (3 m) ⑧: 2nd Branch pipe length (4 m) ⑨: 3rd Branch pipe length (5 m)

- If the total tubing length is within the maximum value of the charge-less tubing length, refrigerant charge in the field is unnecessary.

m_{max} : The maximum refrigerant charge amount

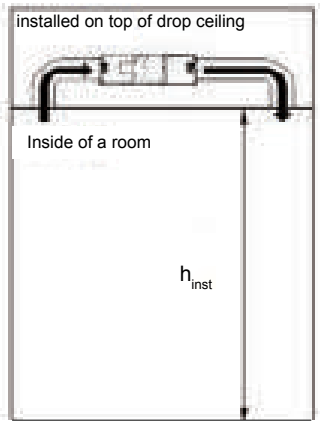
2. Indoor

The refrigerant (R32), which is used in the air conditioner, is a flammable refrigerant. So the requirements for installation space of appliance are determined according to the refrigerant charge amount [m_c] used in the appliance. Regarding the refrigerant charge amount [m_c] used in the appliance, see “5. REFRIGERANT INSTALLATION” on page 1-11-2-1-14 to 1-11-2-1-17.
The minimum indoor floor space compared with the amount of refrigerant is roughly as follows:

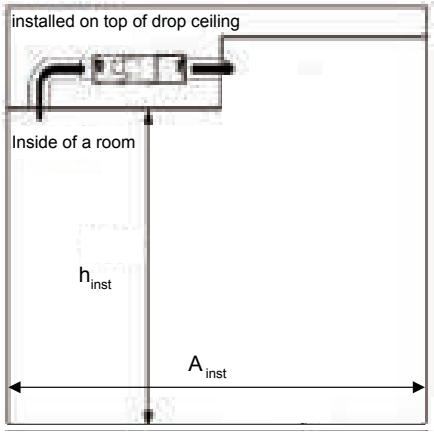
Table 2-1

Installation height of Indoor Unit: h_{inst}	Indoor Unit Type	Density Limit Line
h_{inst} > 2.5 m	Splittable duct (S-200PE4E, S-250PE4E)	Line 1

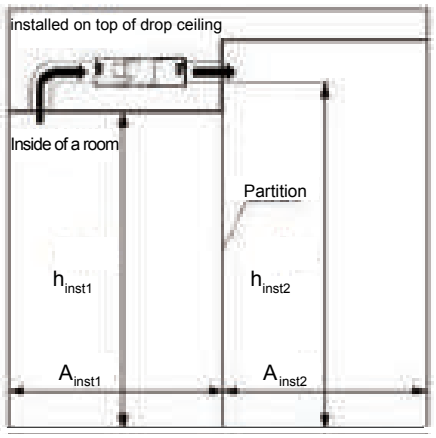
When connecting the duct to either inlet side or outlet side



A_{inst} :Floor area of the room (m^2)
Satisfy the diagram for A_{inst}

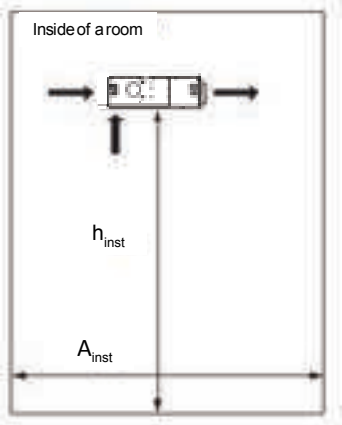


When not partitioning:
Satisfy the diagram for A_{inst}

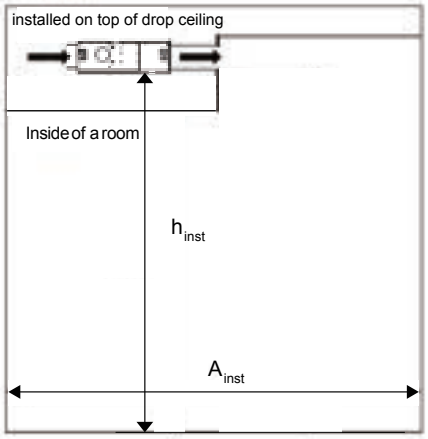


When there is a partition：
Satisfy the diagram for A_{inst1} and h_{inst1}
and satisfy the diagram for A_{inst2} and h_{inst2}

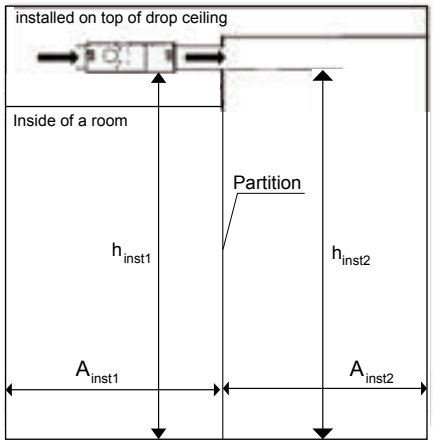
When not connecting the duct to even in both cases of inlet side/outlet side



A_{inst} : Floor area of the room (m^2)
Satisfy the diagram for A_{inst}

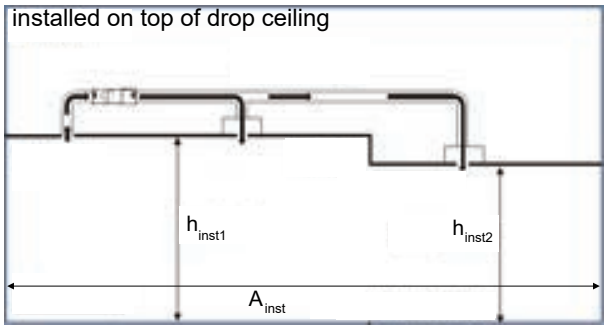


When not partitioning:
Satisfy the diagram for A_{inst}

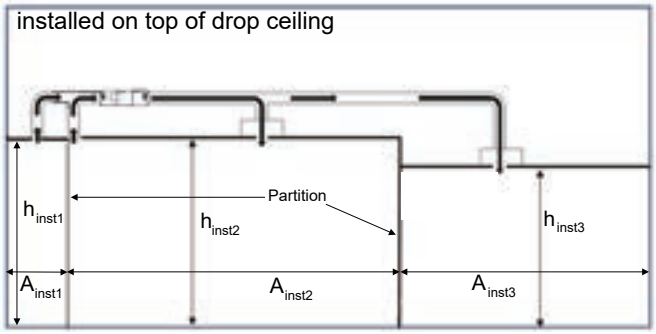


When partitioning:
Satisfy the diagram for A_{inst1} and h_{inst1}
and satisfy the diagram for A_{inst2} and h_{inst2}

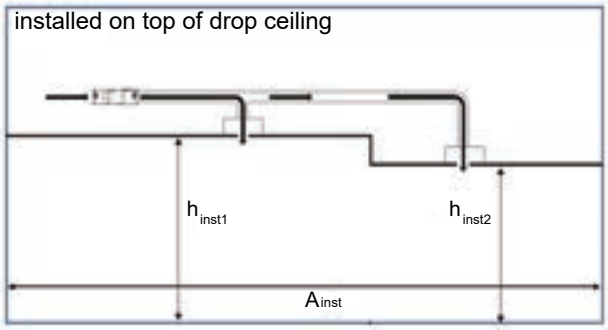
When providing outlets in multiple living rooms with outlet duct



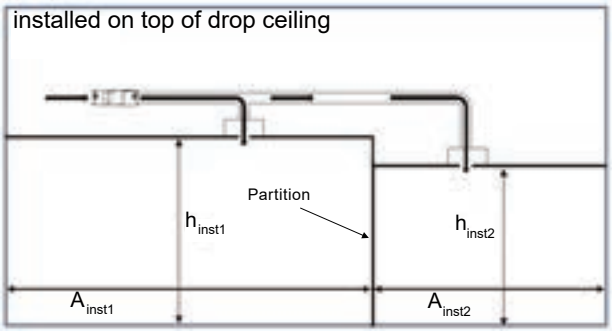
When not partitioning:
Satisfy the diagram for A_{inst}
$h_{inst} = Min(h_{inst1}, h_{inst2})$



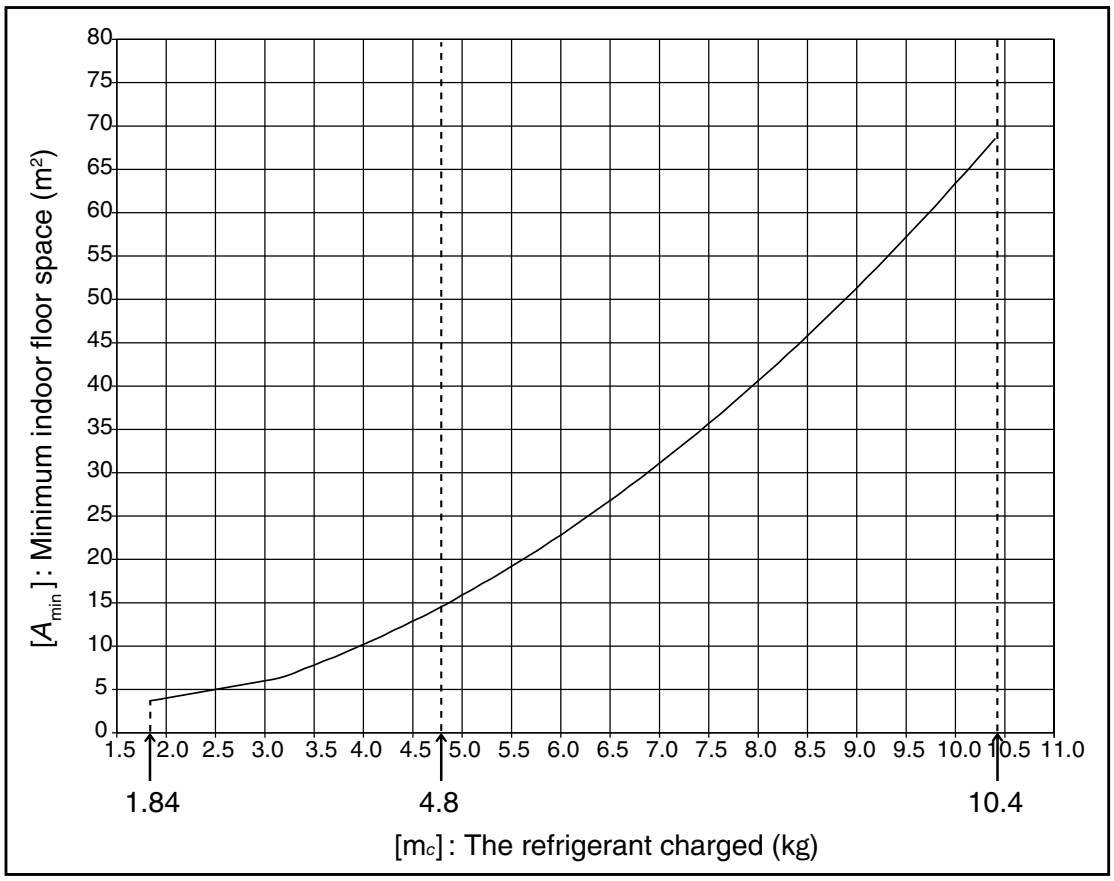
When partitioning:
Satisfy the diagram for A_{inst1} and h_{inst1}
and satisfy the diagram for A_{inst2} and h_{inst2}
and satisfy the diagram for A_{inst3} and h_{inst3}



When not partitioning:
Satisfy the diagram for A_{inst}
$h_{inst} = Min(h_{inst1}, h_{inst2})$



When partitioning:
Satisfy the diagram for A_{inst1} and h_{inst1}
and satisfy the diagram for A_{inst2} and h_{inst2}



$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$ ** not less than safety factor margin

A_{min} = Required minimum room area, in m^2
m_c = Refrigerant charge in appliance, in kg
LFL = Lower flammability limit (0.307 kg/m^3)
h_0 = Release height is 2.2m.
CF = Concentration factor with a value of 0.75
** The required minimum room area, A_{min}, shall also be governed by the safety factor margin formula below :

$A_{min} = m_c / (CF \times LFL \times h_0)$

The higher value shall be taken when determining the room area.
$m_c \leq 1.84$: Can be installed
$1.84 < m_c \leq m_{max}$: Can be installed above “Density Limit Line” *1
*1 Refer to table and the installation instructions of indoor unit when deciding “Density Limit Line”.

[m_c] kg	[A_{min}] (m^2)
4.8	14.6
4.9	15.2
5.0	15.9
5.1	16.5
5.2	17.2
5.3	17.8
5.4	18.5
5.5	19.2
5.6	19.9
5.7	20.6
5.8	21.3
5.9	22.1

[m_c] kg	[A_{min}] (m^2)
6.0	22.8
6.1	23.6
6.2	24.4
6.3	25.2
6.4	26.0
6.5	26.8
6.6	27.6
6.7	28.5
6.8	29.3
6.9	30.2
7.0	31.1
7.1	32.0

[m_c] kg	[A_{min}] (m^2)
7.2	32.9
7.3	33.8
7.4	34.7
7.5	35.7
7.6	36.6
7.7	37.6
7.8	38.6
7.9	39.6
8.0	40.6
8.1	41.6
8.2	42.6

[m_c] kg	[A_{min}] (m^2)
8.3	43.7
8.4	44.7
8.5	45.8
8.6	46.9
8.7	48.0
8.8	49.1
8.9	50.2
9.0	51.3
9.1	52.5
9.2	53.6
9.3	54.8

[m_c] kg	[A_{min}] (m^2)
9.4	56.0
9.5	57.2
9.6	58.4
9.7	59.6
9.8	60.8
9.9	62.1
10.0	63.4
10.1	64.6
10.2	65.9
10.3	67.2
10.4	68.5

Precautions for Installation Using New Refrigerant

1. Care regarding tubing

(1) Process tubing

- Material: Use seamless phosphorous deoxidized copper tube for refrigeration. Wall thickness shall comply with the applicable legislation. For tubes of ø22.22 or larger, use the material of temper 1/2H or H (Hard copper tube). Do not bend the hard copper tube.
- For the renewal tubing size, refer to the Technical Data.
- Use a tube cutter when cutting the tubing, and be sure to remove any flash. This also applies to distribution joints (optional).
- When bending tubing, use a bending radius that is 4 times the outer diameter of the tubing or larger.

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

(2) Prevent impurities including water, dust and oxide from entering the tubing. Impurities can cause R32 refrigerant deterioration and compressor defects. Due to the features of the refrigerant and refrigerating machine oil, the prevention of water and other impurities becomes more important than ever.

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

(1) Since refrigerant composition changes and performance decreases when gas leaks, collect the remaining refrigerant and recharge the required total amount of new refrigerant after fixing the leak.

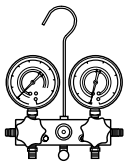
3. Different tools required

(1) Tool specifications have been changed due to the characteristics of R32.
Some tools for R22- and R407C-type refrigerant systems cannot be used.

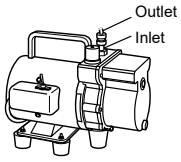
Item	Different tools? (From R22 and R407C)	R410A tools compatible with R32?	Remarks
Manifold gauge	Yes	Yes	Types of refrigerant, refrigerating machine oil, and pressure gauge are different.
Charge hose	Yes	Yes	To resist higher pressure, material must be changed.
Vacuum pump	Yes	Yes	Use a conventional vacuum pump if it is equipped with a check valve. If it has no check valve, purchase and attach a vacuum pump adapter.
Leak detector	Yes	Yes	Leak detectors for CFC and HCFC that react to chlorine do not function because R32 and R410A contains no chlorine. Leak detectors for HFC can be used for R32 and R410A.
Flaring oil	Yes	Yes	For systems that use R22, apply mineral oil (Suniso oil) to the flare nuts on the tubing to prevent refrigerant leakage. For machines that use R32 or R410A, apply synthetic oil (ether oil) to the flare nuts.

* Using tools for R22 and R407C can cause defects.

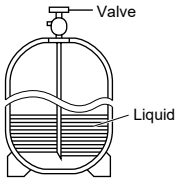
Manifold gauge



Vacuum pump



Single-outlet valve
(with siphon tube)
Liquid refrigerant should be recharged with the cylinder standing on end as shown.



Important Information Regarding The Refrigerant Used

This product contains fluorinated greenhouse gases. Do not vent gases into the atmosphere.

Refrigerant type: R32

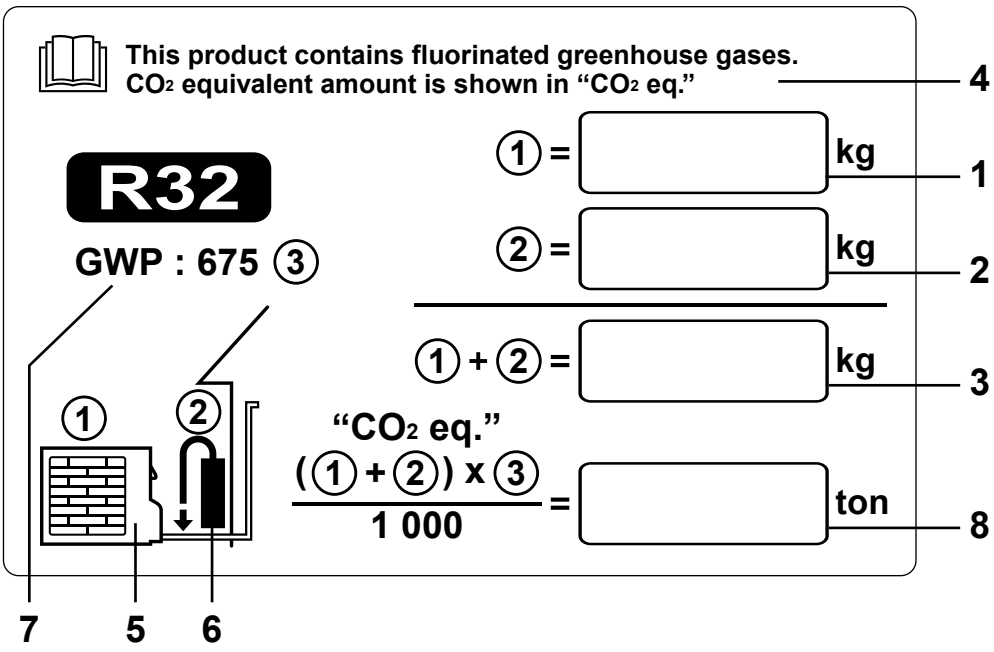
GWP(1) value: 675

(1)GWP = global warming potential

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

Fill in the blanks below with the indelible ink pens.

- ①: the factory refrigerant charge of the product
- ②: the additional refrigerant amount charged in the field
- ① + ② : the total refrigerant charge
- (① + ②) x ③/1000: CO_2 equivalent in tons; multiply the total refrigerant charge by GWP value, then divided by 1000.



1. Factory refrigerant charge of the product: see unit name plate
2. Additional refrigerant amount charged in the field*
3. Total refrigerant charge
4. Contains fluorinated greenhouse gases
5. Outdoor unit
6. Refrigerant cylinder and manifold for charging
7. GWP(global warming potential) of the refrigerant used in this product
8. CO_2 equivalent of fluorinated greenhouse gases contained in this product

* See "5. REFRIGERANT INSTALLATION" on page 1-11-2-1-14 to 1-11-2-1-17.

Combination of Indoor and Outdoor Units

PZH4

	200	250
E3	S-200PE4E U-200PZH4E8	S-250PE4E U-250PZH4E8

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1-1. Unit Specifications

PZH4

High Static Pressure Ducted Type S-200PE4E / U-200PZH4E8

INDOOR			MODEL		S-200PE4E			-			-
PANEL			MODEL		-			-			-
OUTDOOR			MODEL		-			U-200PZH4E8			-
Branch pipe			MODEL		-						
Performance test condition					ISO5151 / EN14511 / EN12102 / EN14825						
Power supply			ø, Hz		1ø 50Hz			3Ø 50Hz			-
			V		220V	230V	240V	380V	400V	415V	Min	Max
COOLING	Capacity		kW		19.0	19.0	19.0	-	-	-	5.7	20.0
			BTU/h		64800	64800	64800	-	-	-	19400	68200
			Sensible	kW	16.7	16.7	16.7	-	-	-	-	-
			Latent	kW	2.3	2.3	2.3	-	-	-	-	-
	Current		A		3.50	3.40	3.30	9.80	9.30	8.95	-	-
	Input power		W		620	620	620	-	-	-	-	-
			TOTAL W			-		5.930k	5.930k	5.930k	1.240k	7.200k
	Annual consumption		TOTAL kWh		-	-	-	-	2965	-	-	-
	EER/EER CLASS		TOTAL (W/W) *5/ ("A"~"G")		-	-	-	3.20	3.20 / B	3.20	4.60	2.78
	Erp *6	Pdesign	kW		-	-	-	-	19.0	-	-	-
		ηsc	%		-	-	-	-	237.8	-	-	-
		Annual Consumption	kWh		-	-	-	-	-	-	-	-
		Class			-	-	-	-	-	-	-	-
	Power factor		%		-	-	-	92	92	92	-	-
	Noise indoor		dB-A (H/M/L)			46/44/41			-		-	-
			Power Level dB			78/76/73			-		-	-
	Noise outdoor		dB-A (H/L)			-			57/-		-	-
			Power Level dB			-			76/-		-	-
HEATING	Capacity		kW		22.4	22.4	22.4	-	-	-	5.0	24.5
			BTU/h		76400	76400	76400	-	-	-	17100	83600
	Current		A		3.50	3.40	3.30	10.4	9.90	9.55	-	-
	Input power		W		620	620	620	-	-	-	-	-
			TOTAL W			-		6.310k	6.310k	6.310k	1.050k	7.500k
	COP/COP CLASS		TOTAL (W/W) *5/ ("A"~"G")		-	-	-	3.55	3.55 / B	3.55	4.76	3.27
	Erp *6	Pdesign at -10°C	kW		-	-	-	-	16.0	-	-	-
		Tbivalent	°C		-	-	-	-	-10	-	-	-
		ηsh	%		-	-	-	-	146.0	-	-	-
		Annual consumption	kWh		-	-	-	-	-	-	-	-
		elbu(-10°C)	kW		-	-	-	-	0.00	-	-	-
		Class			-	-	-	-	-	-	-	-
	Power factor		%		-	-	-	92	92	92	-	-
	Noise indoor		dB-A (H/M/L)			46/44/41			-		-	-
			Power Level dB			78/76/73			-		-	-
	Noise outdoor		dB-A (H/L)			-			61/-		-	-
			Power Level dB			-			80/-		-	-
LOW TEMP			Total capacity(kW)			-			-			-
EXTRA LOW TEMP			Total capacity(kW) *2			-			17.8			-
Max Current(A) / Max Input power(W)					5.90/1090	5.80/1090	5.70/1090	15.0/9.08k	15.0/9.56k	15.0/9.92k		-
Starting current(A) (Cooling/Heating)					-	-	-	9.80/10.4	9.30/9.90	8.95/9.55		-
Comp output(W)						-		4.20k	4.20k	4.20k		-
Time Delay fuse max size(A)						-			30			-
Network Impedance (Ω MAX.)						-			-			-
Fan motor output (Indoor/Outdoor) W						750			600			-
Moisture removal volume				L/h(Pt/h)		4.3 (4.3×1)			-			-
External static pressure				Pa		75 / (120/180)			-			-
Indoor Air flow	Cooling		(H/M/L) m³/min (m³/h)			72.0/63.0/53.0 (4320)/(3780)/(3180)			-		-	-
	Heating		(H/M/L) m³/min (m³/h)			72.0/63.0/53.0 (4320)/(3780)/(3180)			-		-	-
Outdoor Air flow	Cooling		m³/min (m³/h)			-			116 (6960)		-	-
	Heating		m³/min (m³/h)			-			136 (8160)		-	-
Refrigerant type / amount g(oz) / amount max kg						-			R32 / 4.80k / 10.4		-	-
F-GAS	GWP / CO_2eq (ton) (PRECHARGE AMOUNT) / CO_2eq (ton) (MAXIMUM CHARGE AMOUNT)					-			675 / 3.24 / 7.02			-
Product dimension			Height	mm (inch)		486 (19-1/8)			996 (39-7/32)			-
			Width	mm (inch)		1456 (57-5/16)			1140 (44-7/8)			-
			Depth	mm (inch)		916 (36-1/16)			460 (18-7/64)			-
Product dimension (Panel)			H×W×D mm, inch			-			-			-
Packing dimension			Height	mm (inch)		610 (24-1/32)			1135 (44-11/16)			-
			Width	mm (inch)		1646 (60-13/16)			1252 (49-19/64)			-
			Depth	mm (inch)		1132 (44-9/16)			616 (24-1/4)			-
Weight			(NET)	kg (lb)		83 (183)			109 (240)			-
			(GROSS)	kg (lb)		97 (214)			117 (258)			-
			Panel	kg (lb)		-			-			-
Layers limit (actually)						4 (5)			1 (2)			-
Operation condition			Cool (DBT)			18°C ~ 32°C			-15°C ~ 52°C			-
			Heat (DBT)			16°C ~ 30°C			-20°C ~ 35°C			-
Max Working Pressure HP/LP Mpa (bar)						4.15/2.55 (41.5/25.5)						-
PIPING	Pipe port diameter mm (inch)				(Liquid)Ø12.7(1/2) (Gas)Ø22.22(7/8)			(Liquid)Ø12.7(1/2) (Gas)Ø22.22(7/8)				-
	Pipe diameter mm (inch)				(Liquid)Ø12.7(1/2) (Gas)Ø22.2(7/8)							-
	Standard length m(ft)				7.5 (24.6)							-
	Connecting method				(Liquid)flared type (Gas)brazing connection			(Liquid)flared type (Gas)brazing connection				-
	Pipe length range m (ft)				5 ~ 100m (16.4 ~ 328)							-
	Indoor unit & Outdoor unit height difference m (ft)				30 (OD located lower) / 30 (OD located higher) (98.4/98.4)							-
	Add gas amount g/m (oz/ft)				80g/m (0.860)							-
	Pipe length for additional gas m (ft)				30m (98.4)							-

* In the case of nanoe X OFF
*1 In case it is necessary to indicate the air flow volume in (l/s), the value in (m³/min.) shall be multiplied by 16.7 and rounded down the decimal point.
*2 If the EUROVENT Certified models can be operated under the "extra-low" temperature condition, -7°C dry bulb and -8°C wet bulb temperatures with rated voltage 230V (400V) shall be used.
*3 Network Impedance shall be applicable for EUROPE and CHINA models.
*4 The annual comsumption is calculated by multiplying the input power at 230V(400V) by an average of 500 hours per year in cooling mode.
*5 EER and COP classification is at 230V(400V) only in accordance with EU directive 2002/31/EC.
*6 ηsc and ηsh classification is at 230V(400V) only in accordance with EN-14825. For heating, ηsh indicates the value of only Average heating season.
* Max Current(A)/ Max Input Power(W) value in the outdoor side is applicable for outdoor unit only.

1-1. Unit Specifications

PZH4

High Static Pressure Ducted Type S-250PE4E/ U-250PZH4E8

INDOOR			MODEL		S-250PE4E			-			-
PANEL			MODEL		-			-			-
OUTDOOR			MODEL		-			U-250PZH4E8			-
Branch pipe			MODEL		-						
Performance test condition					ISO5151 / EN14511 / EN12102 / EN14825						
Power supply			ø, Hz		1ø 50Hz			3Ø 50Hz			-
			V		220V	230V	240V	380V	400V	415V	Min	Max
COOLING	Capacity		kW		22.0	22.0	22.0	-	-	-	6.1	25.6
			BTU/h		75100	75100	75100	-	-	-	20800	87300
			Sensible	kW	18.2	18.2	18.2	-	-	-	-	-
			Latent	kW	3.8	3.8	3.8	-	-	-	-	-
	Current		A		4.30	4.20	4.10	13.10	12.50	8.95	-	-
	Input power		W		830	830	830	-	-	-	-	-
			TOTAL W		-			8.040k	8.040k	8.040k	1.250k	10.30k
	Annual consumption		TOTAL kWh		-	-	-	-	4020	-	-	-
	EER/EER CLASS		TOTAL (W/W) *5/ ("A"~"G")		-	-	-	2.74	2.74 / D	2.74	4.88	2.49
	Erp *6	Pdesign	kW		-	-	-	-	22.0	-	-	-
		ηsc	%		-	-	-	-	213.0	-	-	-
		Annual Consumption	kWh		-	-	-	-	-	-	-	-
		Class			-	-	-	-	-	-	-	-
	Power factor		%		-	-	-	93	93	93	-	-
	Noise indoor		dB-A (H/M/L)		47/45/42			-			-	-
			Power Level dB		79/77/74			-			-	-
	Noise outdoor		dB-A (H/L)		-			57/-			-	-
			Power Level dB		-			76/-			-	-
HEATING	Capacity		kW		24.0	24.0	24.0	-	-	-	5.5	27.6
			BTU/h		81900	81900	81900	-	-	-	18800	94200
	Current		A		4.30	4.20	4.10	11.00	10.50	10.10	-	-
	Input power		W		830	830	830	-	-	-	-	-
			TOTAL W		-			6.760k	6.760k	6.760k	1.050k	9.000k
	COP/COP CLASS		TOTAL (W/W) *5/ ("A"~"G")		-	-	-	3.55	3.55 / B	3.55	4.78	3.07
	Erp *6	Pdesign at -10°C	kW		-	-	-	-	17.2	-	-	-
		Tbivalent	°C		-	-	-	-	-10	-	-	-
		ηsh	%		-	-	-	-	145.0	-	-	-
		Annual consumption	kWh		-	-	-	-	-	-	-	-
		elbu(-10°C)	kW		-	-	-	-	0.00	-	-	-
		Class			-	-	-	-	-	-	-	-
	Power factor		%		-	-	-	93	93	93	-	-
	Noise indoor		dB-A (H/M/L)		47/45/42			-			-	-
			Power Level dB		79/77/74			-			-	-
	Noise outdoor		dB-A (H/L)		-			63/-			-	-
			Power Level dB		-			82/-			-	-
LOW TEMP			Total capacity(kW)		-			-			-	
EXTRA LOW TEMP			Total capacity(kW) *2		-			20.1			-	
Max Current(A) / Max Input power(W)					6.60/1440	6.60/1440	6.30/1440	18.5/11.3k	18.5/11.9k	18.5/12.4k	-	
Starting current(A) (Cooling/Heating)					-	-	-	13.10/11.0	12.50/10.5	12.00/10.1	-	
Comp output(W)					-			5.50k	5.50k	5.50k	-	
Time Delay fuse max size(A)					-			30			-	
Network Impedance (Ω MAX.)					-			-			-	
Fan motor output (Indoor/Outdoor) W					750 x 2			600			-	
Moisture removal volume				L/h(Pt/h)	5.5 (5.5×1)			-			-	
External static pressure				Pa	75 / (130/200)			-			-	
Indoor Air flow	Cooling		(H/M/L) m³/min (m³/h)		84.0/72.0/59.0 (5040)/(4320)/(3540)			-			-	-
	Heating		(H/M/L) m³/min (m³/h)		84.0/72.0/59.0 (5040)/(4320)/(3540)			-			-	-
Outdoor Air flow	Cooling		m³/min (m³/h)		-			116 (6960)			-	-
	Heating		m³/min (m³/h)		-			148 (8880)			-	-
Refrigerant type / amount g(oz) / amount max kg					-			R32 / 4.80k / 10.40			-	-
F-GAS	GWP / CO_2eq (ton) (PRECHARGE AMOUNT) / CO_2eq (ton) (MAXIMUM CHARGE AMOUNT)				-			675 / 3.24 / 7.02			-	
Product dimension			Height	mm (inch)	486 (19-1/8)			996 (39-7/32)			-	
			Width	mm (inch)	1456 (57-5/16)			1140 (44-7/8)			-	
			Depth	mm (inch)	916 (36-1/16)			460 (18-7/64)			-	
Product dimension (Panel)			H×W×D mm, inch		-			-			-	
Packing dimension			Height	mm (inch)	610 (24-1/32)			1135 (44-11/16)			-	
			Width	mm (inch)	1646 (60-13/16)			1252 (49-19/64)			-	
			Depth	mm (inch)	1132 (44-9/16)			616 (24-1/4)			-	
Weight			(NET)	kg (lb)	87 (192)			109 (240)			-	
			(GROSS)	kg (lb)	101 (223)			117 (258)			-	
			Panel	kg (lb)	-			-			-	
Layers limit (actually)					4 (5)			1 (2)			-	
Operation condition			Cool (DBT)		18°C ~ 32°C			-15°C ~ 52°C			-	
			Heat (DBT)		16°C ~ 30°C			-20°C ~ 35°C			-	
Max Working Pressure HP/LP Mpa (bar)					4.15/2.55 (41.5/25.5)						-	
PIPING	Pipe port diameter mm (inch)				(Liquid)Ø12.7(1/2) (Gas)Ø22.22(7/8)			(Liquid)Ø12.7(1/2) (Gas)Ø22.22(7/8)			-	
	Pipe diameter mm (inch)				(Liquid)Ø12.7(1/2) (Gas)Ø22.2(7/8)						-	
	Standard length m(ft)				7.5 (24.6)						-	
	Connecting method				(Liquid)flared type (Gas)brazing connection			(Liquid)flared type (Gas)brazing connection			-	
	Pipe length range m (ft)				5 ~ 100m (16.4 ~ 328)						-	
	Indoor unit & Outdoor unit height difference m (ft)				30 (OD located lower) / 30 (OD located higher) (98.4/98.4)						-	
	Add gas amount g/m (oz/ft)				80g/m (0.860)						-	
	Pipe length for additional gas m (ft)				30m (98.4)						-	

* In the case of nanoe X OFF

*1 In case it is necessary to indicate the air flow volume in (l/s), the value in (m³/min.) shall be multiplied by 16.7 and rounded down the decimal point.

*2 If the EUROVENT Certified models can be operated under the "extra-low" temperature condition, -7°C dry bulb and -8°C wet bulb temperatures with rated voltage 230V (400V) shall be used.

*3 Network Impedance shall be applicable for EUROPE and CHINA models.

*4 The annual comsumption is calculated by multiplying the input power at 230V(400V) by an average of 500 hours per year in cooling mode.

*5 EER and COP classification is at 230V(400V) only in accordance with EU directive 2002/31/EC.

*6 ηsc and ηsh classification is at 230V(400V) only in accordance with EN-14825. For heating, ηsh indicates the value of only Average heating season.

* Max Current(A)/ Max Input Power(W) value in the outdoor side is applicable for outdoor unit only.

1-2. Major Component Specifications

(A) Indoor Units

High Static Pressure Ducted Type
S-200PE4E

MODEL No.		S-200PE4E
Source		220 - 230 - 240V, single-phase, 50Hz
Controller P.C.B. Ass'y		ACXA73C51510
Fan (Number...diameter)	mm	SIROCCO (2...ø255)
Fan motor		
Model...Nominal output	W	L6CBYYYL0463...750W
Power source		100 - 390 VDC
No. of pole...r.p.m. (230V, High)	rpm	8P...1080
Coil resistance (Ambient temperature 20°C)	Ω	–
Run capacitor	VAC, μF	–
Electronic expansion valve		
Coil		–
Coil resistance (at 20°C)	Ω	–
Valve body		–
Heat exchanger		
Coil		Aluminium plate fin / Copper tube
Row x Stage x FPI		3 x 28 x 18
W x H x L	mm	38.1 x 588 x 1092

(A) Indoor Units

High Static Pressure Ducted Type

S-250PE4E

MODEL No.		**S-250PE4E**
Source		220 - 230 - 240V, single-phase, 50Hz
Controller P.C.B. Ass'y		ACXA73C51510
Fan (Number...diameter)	mm	SIROCCO (2...ø255)
Fan motor		
Model...Nominal output	W	L6CBYYYL0238...750W L6CBYYYL0237...750W
Power source		100 - 391 VDC
No. of pole...r.p.m. (230V, High)	rpm	8P...1180
Coil resistance (Ambient temperature 20°C)	Ω	–
Run capacitor	VAC, μF	–
Electronic expansion valve		
Coil		–
Coil resistance (at 20°C)	Ω	–
Valve body		–
Heat exchanger		
Coil		Aluminium plate fin / Copper tube
Row x Stage x FPI		3 x 28 x 18
W x H x L	mm	38.1 x 588 x 1092

(B) Outdoor Units

U-200PZH4E8

MODEL No.				U-200PZH4E8
Source				380 - 400 - 415V 3-Phase 50Hz
	Control circuit fuse			30A
Compressor				
	Model....number			9VD550XAA21
	Source			520V DC MOTOR
	Nominal output		W	4,800
	Compressor oil		cc	1,900
	Coil resistance (Ambient temperature 25°C)		Ω	U-V 0.735 U-W 0.715 V-W 0.715
	Safety control			Discharge temperature control
		Overload relay models		–
		Operation temperature	Open °C	–
			Close °C	–
	Crank case heater		W	230V-32W+/-10%
Refrigerant amount at shipment			kg	R32-5.2
High pressure switch				
	Set pressure		OFF MPa	4.15±0.2
			ON MPa	3.05±0.2
Fan				
	Number...diameter		mm	2...ø540
	Air circulation		m^3/h	160
Fan speeds (Max.)				
Fan motor				
	Model No.			L6CBYYYL0486
	Source			DC310V
	No. of pole			10
	Nominal output		W	600 x 2
	Safety device			–
		Overheat protection temperature	Open °C	90 - 100
			Close °C	75 - 85
	Run capacitor		VAC, μF	–
Heat exchanger				
	Coil			Aluminium plate fin / Copper tube
	Row x Stage x FPI			3 x (22+24) x 18
	W x H x L		mm	54.6 x 966(462+504) x 1100

(B) Outdoor Units

U-250PZH4E8

MODEL No.				U-250PZH4E8
Source				400 - 415V 3-Phase 50Hz
	Control circuit fuse			30A
Compressor				
	Model....number			9VD550XAA21
	Source			520V DC MOTOR
	Nominal output		W	5,500
	Compressor oil		cc	1,900
	Coil resistance (Ambient temperature 25°C)		Ω	U-V 0.735 U-W 0.715 V-W 0.715
	Safety control			Discharge temperature control
	Overload relay models			–
	Operation temperature	Open °C		–
		Close °C		–
	Crank case heater		W	230V-32W+/-10%
Refrigerant amount at shipment			kg	R32-5.2
High pressure switch				
	Set pressure	OFF MPa		4.15±0.2
		ON MPa		3.05±0.2
Fan				
	Number...diameter		mm	2...ø540
	Air circulation		m^3/h	160
Fan speeds (Max.)				
Fan motor				
	Model No.			L6CBYYYL0486
	Source			DC310V
	No. of pole			10
	Nominal output		W	600 x 2
	Safety device			–
	Overheat protection temperature	Open °C		90 - 100
		Close °C		75 - 85
	Run capacitor	VAC, µF		–
Heat exchanger				
	Coil			Aluminium plate fin / Copper tube
	Row x Stage x FPI			3 x (22+24) x 18
	W x H x L		mm	54.6 x 966(462+504) x 1100

1-3. Other Component Specifications

Outdoor Units
U-200PZH4E8

MODEL No.	Outdoor Unit	U-200PZH4E8			
Power Transformer					
Rated		–			
Source	VAC, Hz	–			
Secondary		–			
		–			
Coil resistance	Ω	–			
Thermal cut off temperature		–			
Thermistor (Coil / Air sensor): TH1, TH2, TH3, TH4					
Resistance	kΩ	-20°C：	38.48±2%	20°C：	6.517±2%
		-10°C：	23.67±2%	30°C：	4.448±2%
		0°C：	15.00±2%	40°C：	3.100±2%
		5°C：	12.06±2%	45°C：	2.607±2%
		10°C：	9.765±2%	50°C：	2.203±2%
Thermistor (Discharge gas sensor): TH5					
Resistance	kΩ	60°C：	13.85±2%	85°C：	5.946±2%
		65°C：	11.59±2%	90°C：	5.086±2%
		70°C：	9.743±2%	95°C：	4.367±2%
		75°C：	8.228±2%	100°C：	3.764±2%
		80°C：	6.981±2%	105°C：	3.256±2%

Outdoor Units
U-250PZH4E8

MODEL No.	Outdoor Unit	U-250PZH4E8	
Power Transformer			
Rated		–	
Source	VAC, Hz	–	
Secondary		–	
		–	
Coil resistance	Ω	–	
Thermal cut off temperature		–	
Thermistor (Coil / Air sensor): TH1, TH2, TH3, TH4			
Resistance	kΩ	-20°C： 38.48±2%	20°C： 6.517±2%
		-10°C： 23.67±2%	30°C： 4.448±2%
		0°C： 15.00±2%	40°C： 3.100±2%
		5°C： 12.06±2%	45°C： 2.607±2%
		10°C： 9.765±2%	50°C： 2.203±2%
Thermistor (Discharge gas sensor): TH5			
Resistance	kΩ	60°C： 13.85±2%	85°C： 5.946±2%
		65°C： 11.59±2%	90°C： 5.086±2%
		70°C： 9.743±2%	95°C： 4.367±2%
		75°C： 8.228±2%	100°C： 3.764±2%
		80°C： 6.981±2%	105°C： 3.256±2%

1-4. Dimensional Data

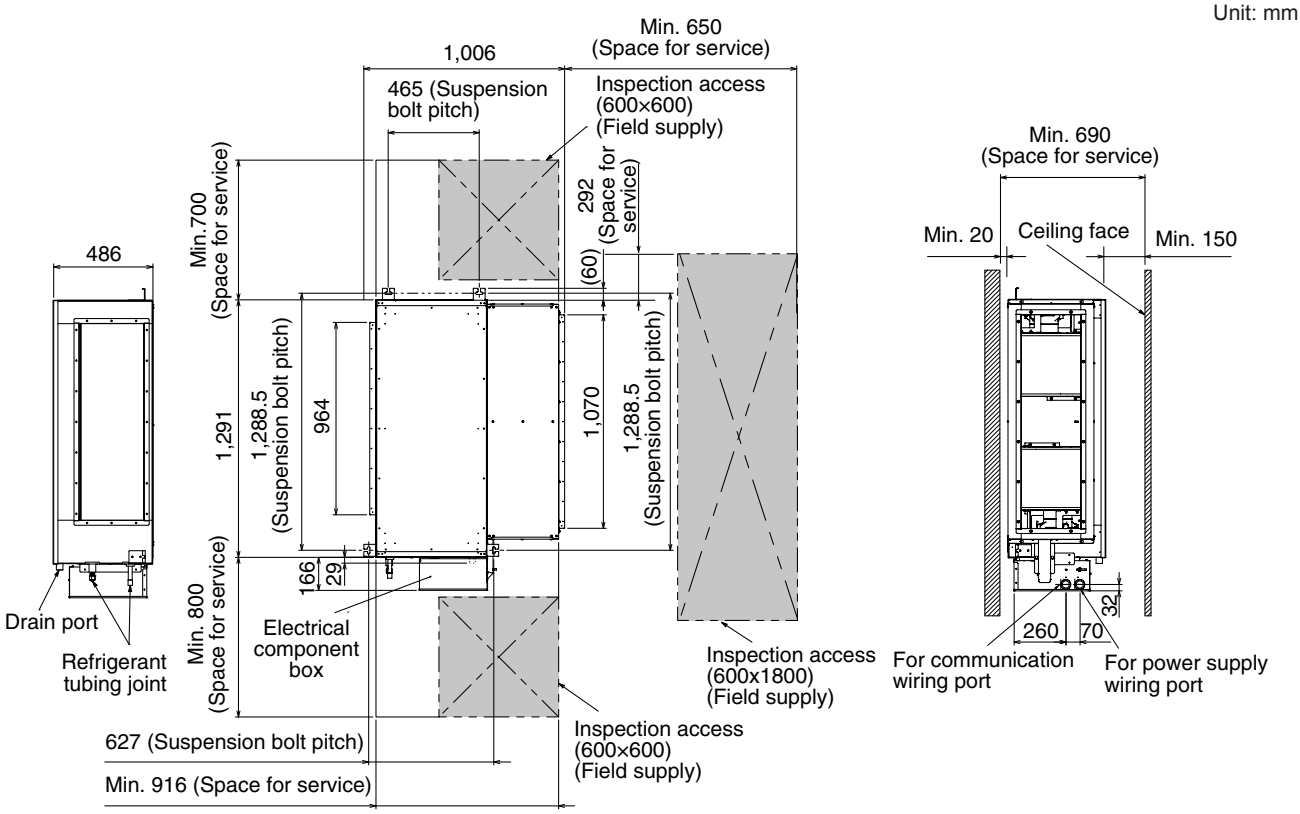
(A) Indoor Units

High Static Pressure Ducted Type
S-200PE4E, S-250PE4E

Required Minimum Space for Installation and Service

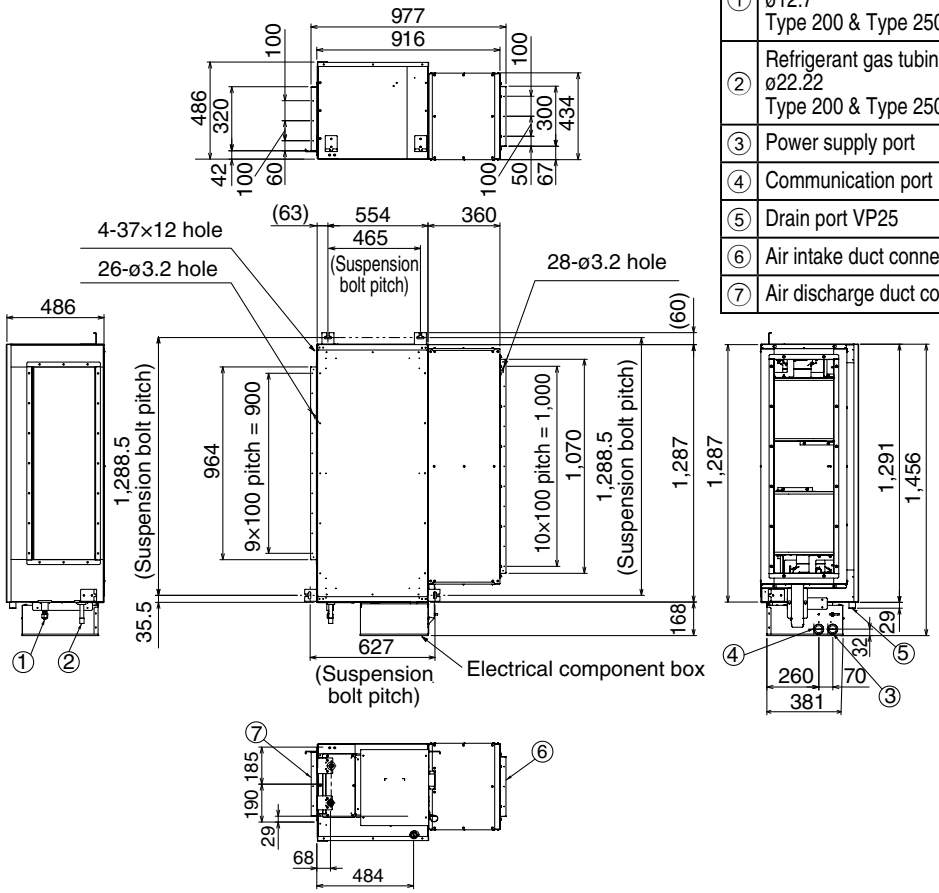
(1) Dimensions of suspension bolt pitch and unit

Unit: mm



(2) Dimensions of indoor unit

Unit: mm

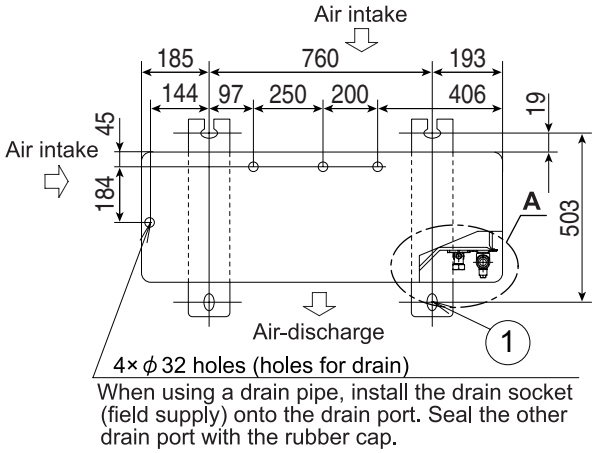


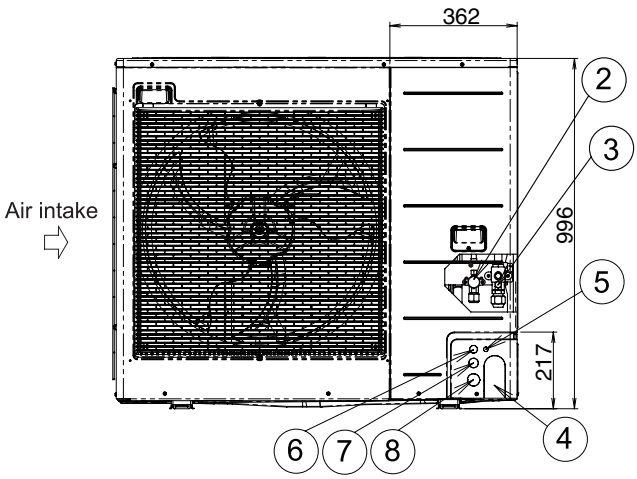
①	Refrigerant liquid tubing (Flare) ø12.7 Type 200 & Type 250
②	Refrigerant gas tubing (Brazing) ø22.22 Type 200 & Type 250
③	Power supply port
④	Communication port
⑤	Drain port VP25
⑥	Air intake duct connecting side flange
⑦	Air discharge duct connecting side flange

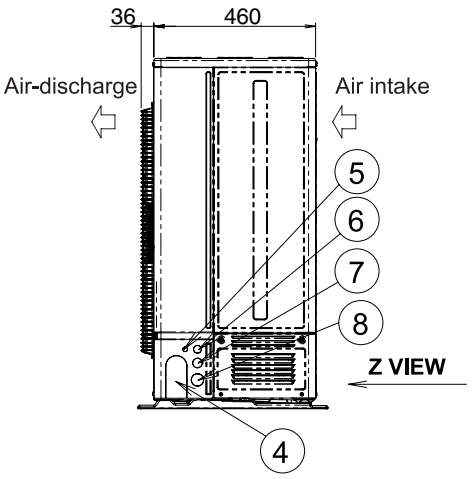
(B) Outdoor Units
U-200PZH4E8, U-250PZH4E8

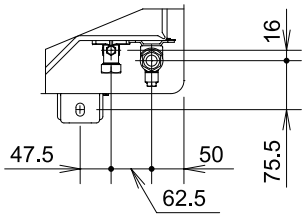
Unit: mm

①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (ø12.7)
③	Refrigerant tubing (gas tube), flared connection (ø22.22)
④	Refrigerant tubing port
⑤	Electrical wiring port (ø13)
⑥	Electrical wiring port (ø22)
⑦	Electrical wiring port (ø27)
⑧	Electrical wiring port (ø35)

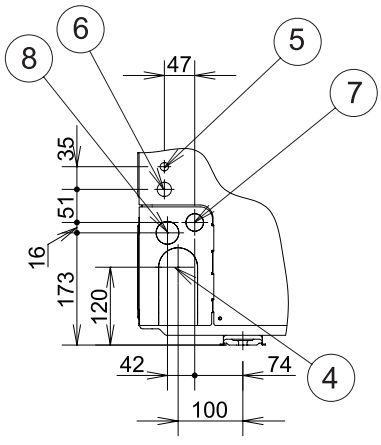






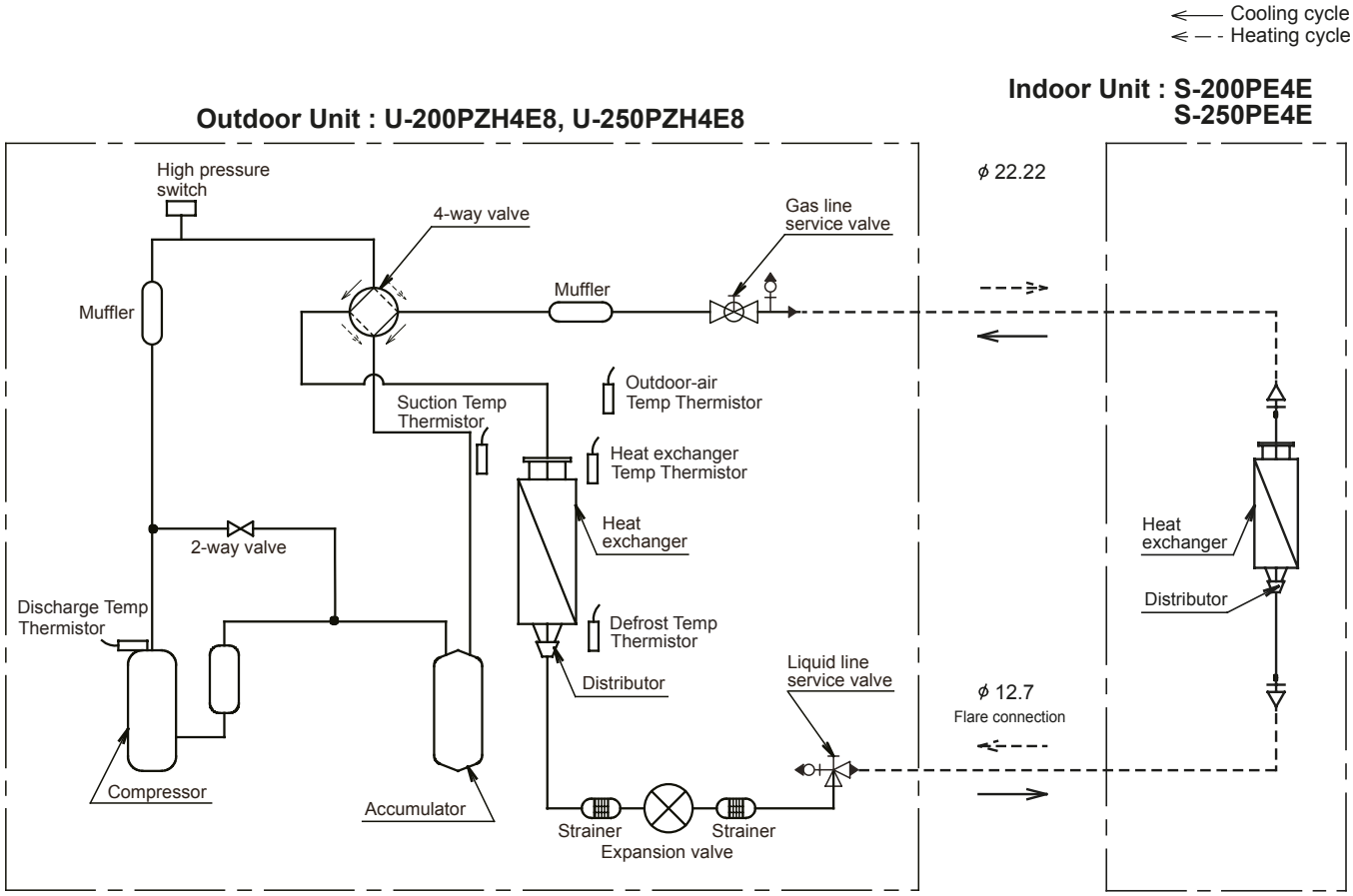


A VIEW



Z VIEW

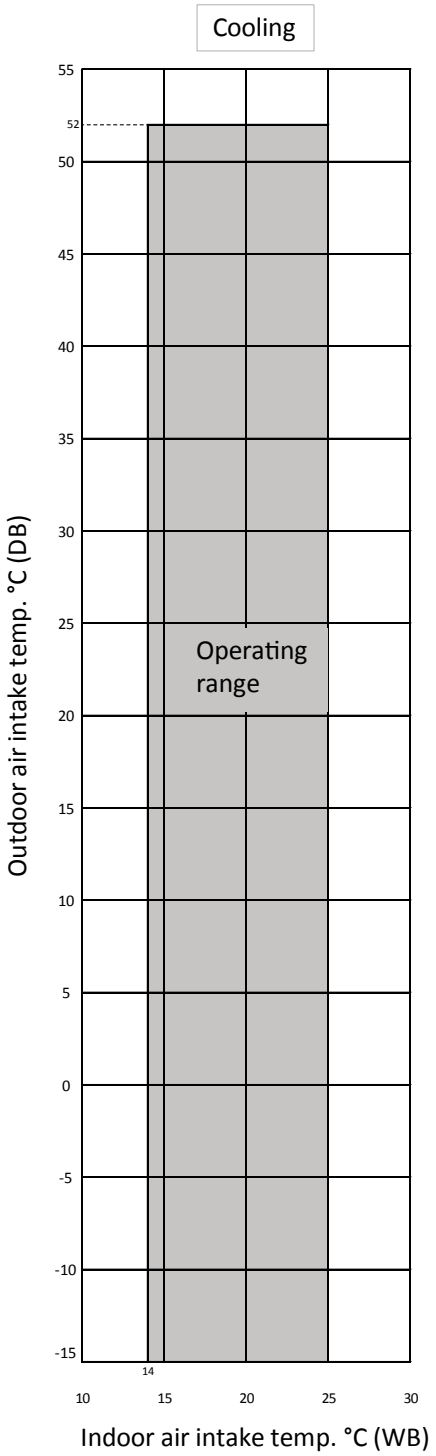
1-5. Refrigerant Flow Diagram

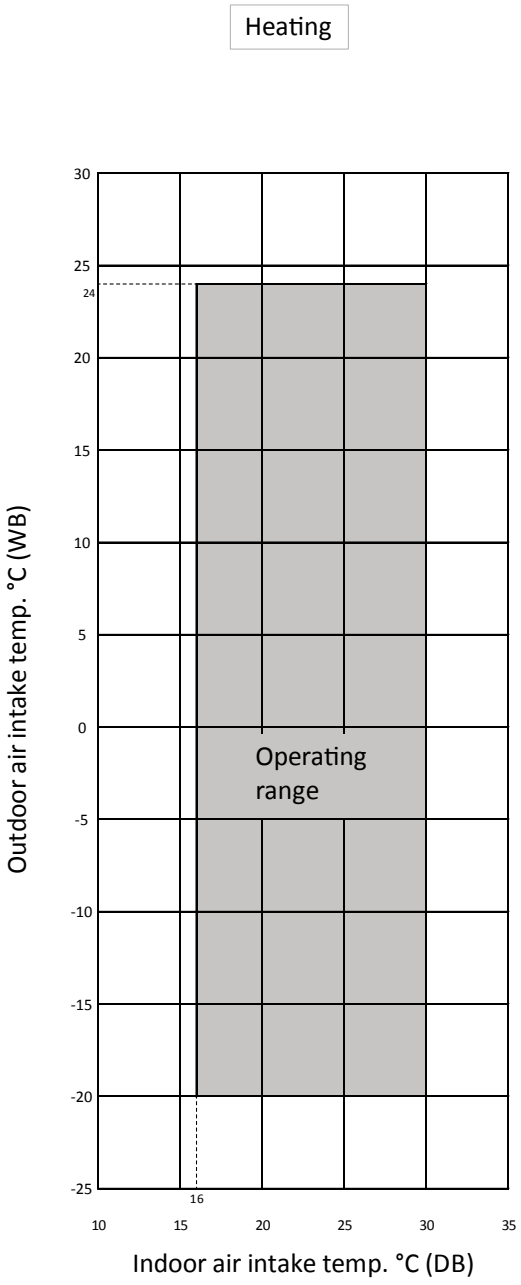


1-6. Operating Range

S-200PE4E - U-200PZH4E8
S-250PE4E - U-250PZH4E8

Temperature		Indoor air intake temperature	Outdoor air intake temperature
COOLING	Max.	32°C DB / 25°C WB	52°C DB
	Min.	18°C DB / 14°C WB	-15°C DB
HEATING	Max.	30°C DB / - WB	35°C DB / 24°C WB
	Min.	16°C DB / - WB	-20°C DB / -20°C WB

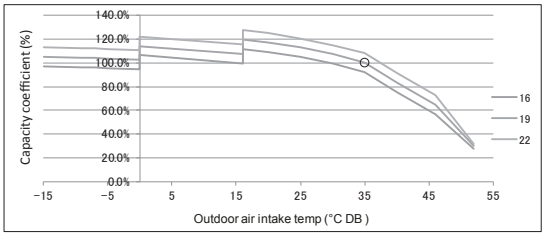


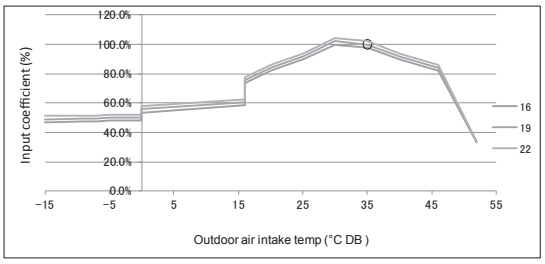


1-7. Capacity Correction Graph According to Temperature Condition

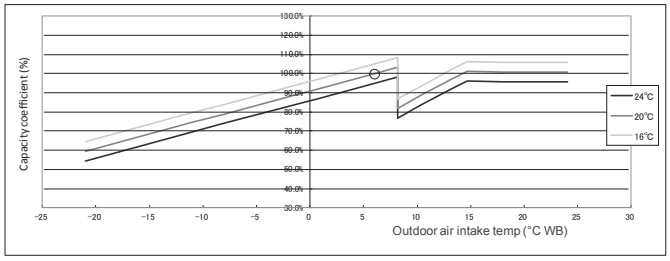
U-200PZH4E8, U-250PZH4E8

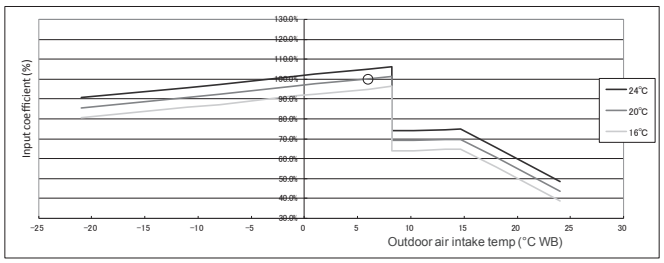
Cooling capacity ratio (maximum capacity)





Heating capacity ratio (maximum capacity)





NOTE 1

1. The graphs " ① " of the characteristics show the value under the following conditions.
   Equivalent tubing length : 7.5m
   Difference of elevation : 0m
   Wind speed : High
2. " ◯ " marking indicates the maximum capacity / maximum power consumption.
   Maximum capacity indicates the maximum value in the parentheses of the specifications (cooling and heating capacity).
3. The characteristic of heating capacity excludes the decline of capacity when frosting (including defrost drive).

Outdoor unit heating capacity correction coefficient during of frosting/defrosting

Outdoor intake air temperature °C WB	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3
Correction coefficient	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.860	0.830	0.830

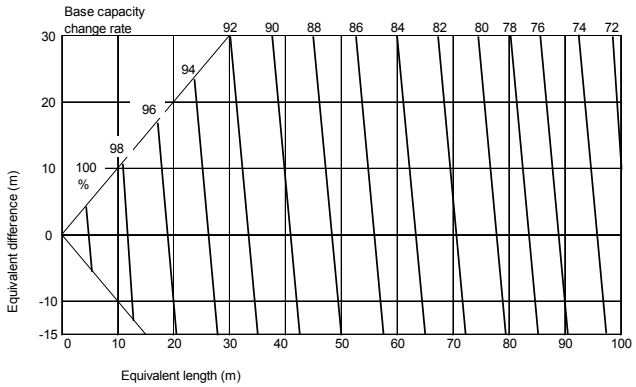
Outdoor intake air temperature °C WB	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.820	0.820	0.830	0.830	0.850	0.890	0.910	0.950	1.000

To calculate the heating capacity with consideration for frosting/defrosting operation, multiply the heating capacity found from the capacity graph by the correction coefficient from the table above.

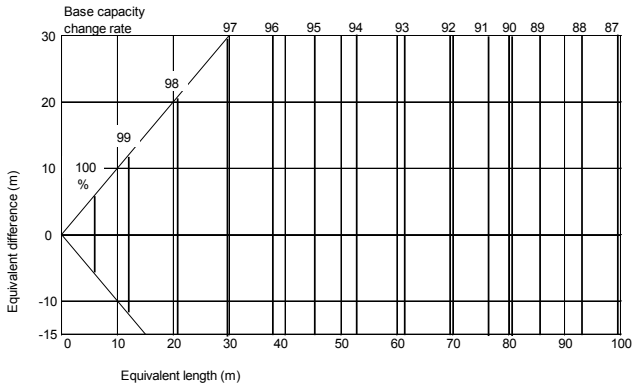
② Graph of capacity change characteristics resulting from tubing length and elevation difference
(Performance correction coefficients by elevation difference of refrigerant tube length [performance change rate ÷ 100] is calculated by the following line map.)

U-200PZH4E8
U-250PZH4E8

<Cooling>

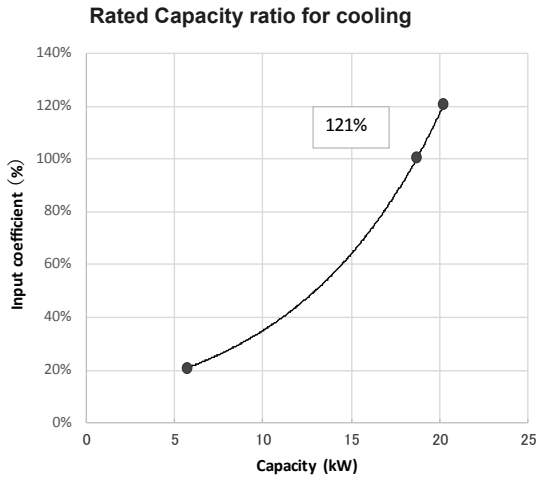


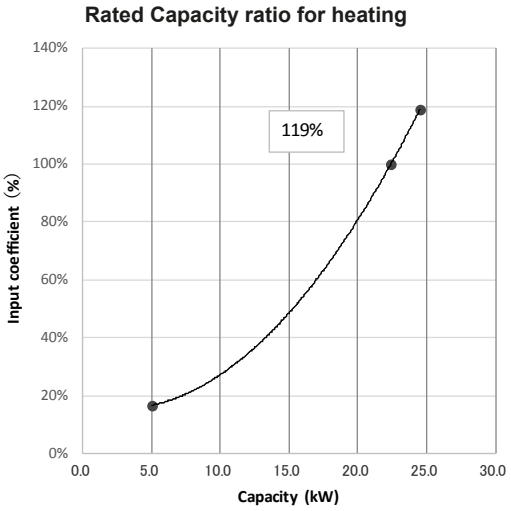
<Heating>



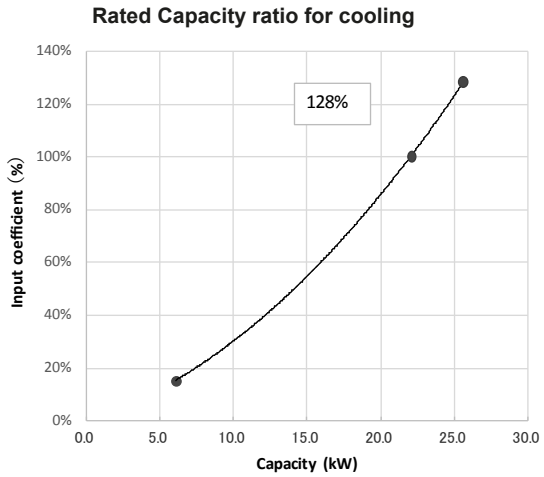
*The positive side for the elevation difference indicates that the outdoor unit is installed at a higher position than the indoor units. The negative side indicates the opposite.

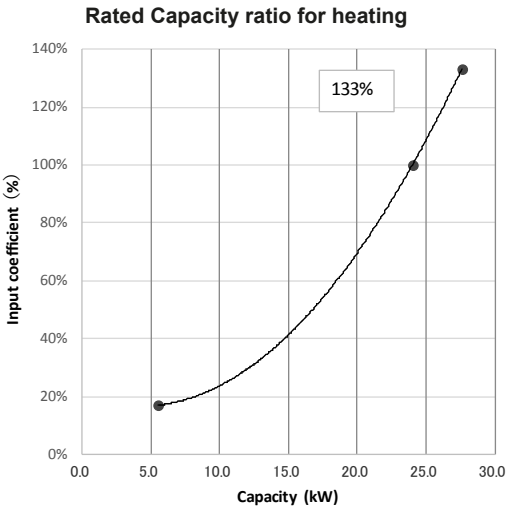
③ U-200PZH4E8





③ U-250PZH4E8





NOTE 2

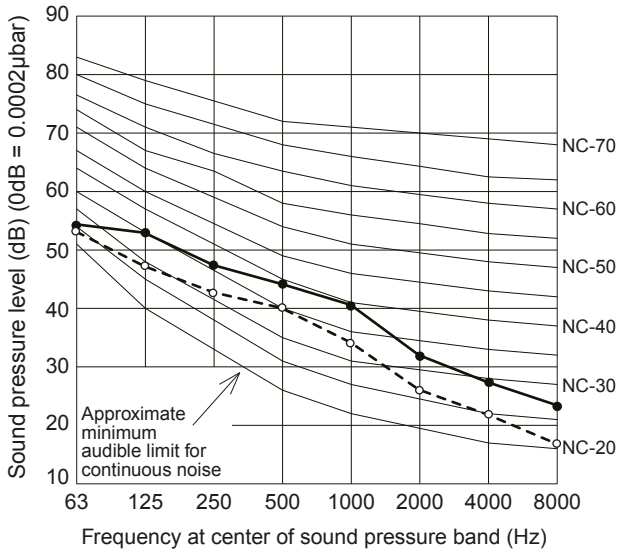
1. The graphs " ③ " of the characteristics show the value under the following conditions.
   Equivalent tubing length : 7.5m
   Difference of elevation : 0m
   Wind speed : High
2. " □ " marking indicates the rated capacity / rated power consumption under the JIS condition.
   " ◯ " marking indicates the maximum capacity / maximum power consumption under the JIS condition.
3. The characteristic of heating capacity excludes the decline of capacity when frosting (including defrost drive).

1-8. Noise Criterion Curves

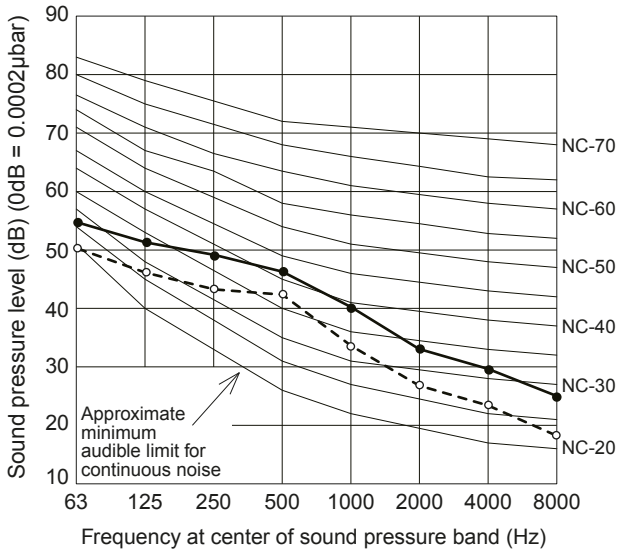
High Static Pressure Ducted Type S-200PE4E, S250PE4E

HIGH
LOW

MODEL	: S-200PE4E	
SOUND LEVEL	: HIGH	46 dB(A)
	LOW	41 dB(A)
CONDITION	: Under the unit 1.5 m	



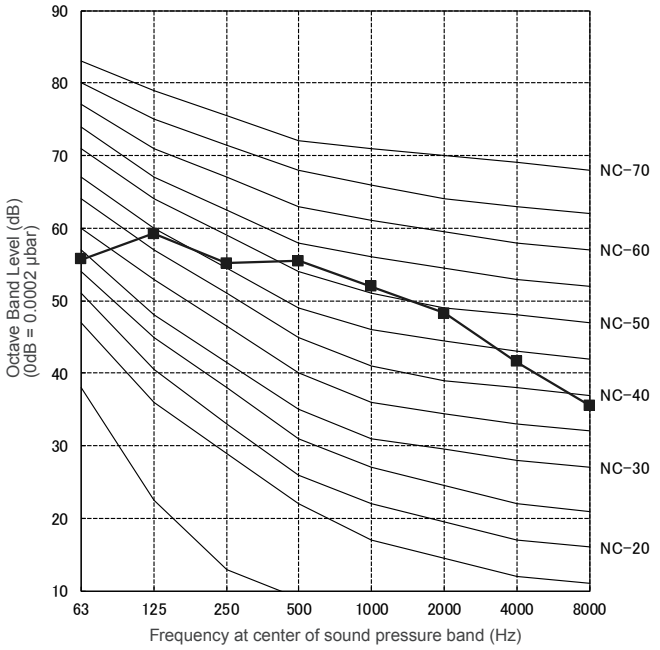
MODEL	: S-250PE4E	
SOUND LEVEL	: HIGH	47 dB(A)
	LOW	42 dB(A)
CONDITION	: Under the unit 1.5 m	



U-200PZH4E8, U-250PZH4E8

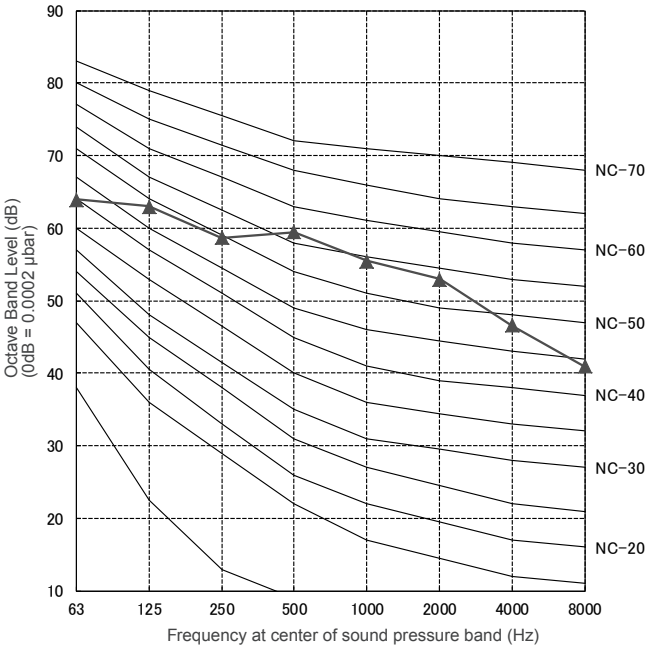
COOLING

MODEL	: U-200PZH4E8
SOUND LEVEL	: 57 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



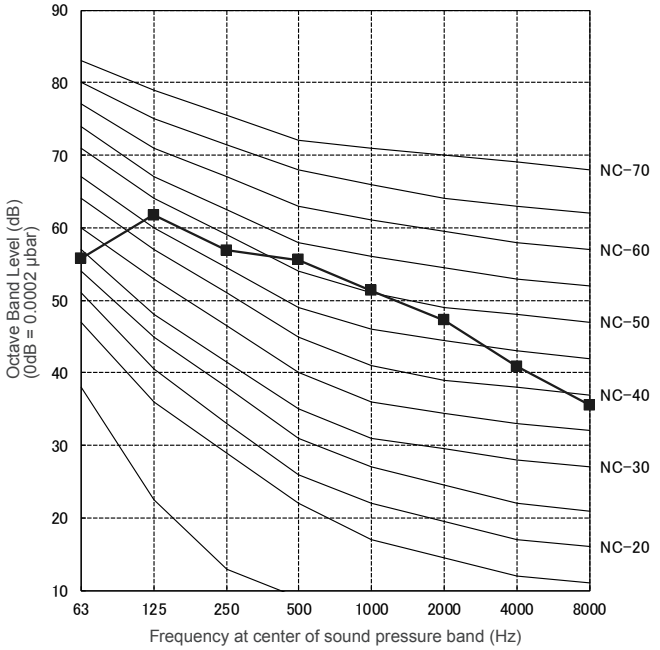
HEATING

MODEL	: U-200PZH4E8
SOUND LEVEL	: 61dB(A)
CONDITION	: 1 m in front at height of 1.5 m



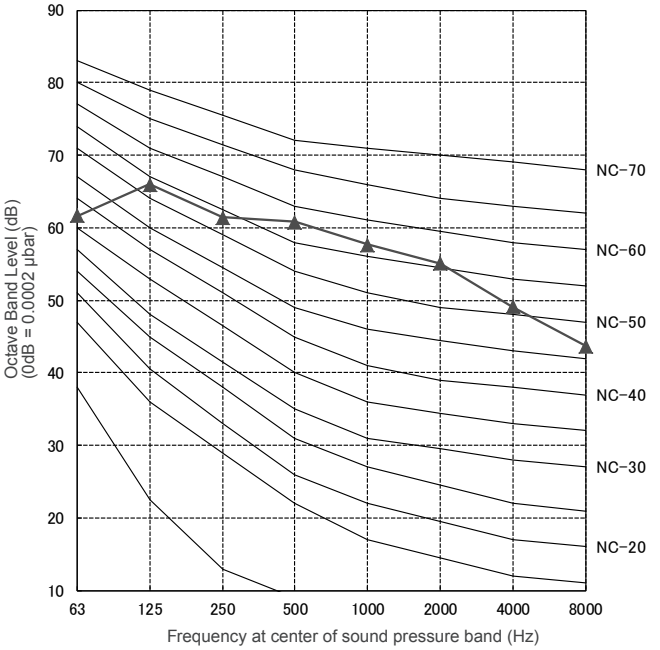
COOLING

MODEL	: U-250PZH4E8
SOUND LEVEL	: 57 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



HEATING

MODEL	: U-250PZH4E8
SOUND LEVEL	: 63 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



REMARKS:

1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
2. The test results were obtained from an nechoic room.

NOTE

To evaluate “Noise level” the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used.
Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

1-9. Installation Instructions
High Static Pressure Ducted Type
S-200PE** S-250PE**
■ SELECT THE INDOOR UNIT INSTALLATION LOCATION

1-1. Indoor Unit

Provide a check port on the piping side ceiling for repair and maintenance.

● Install the indoor unit once the following conditions are satisfied and after receiving the customer approval.
1. The indoor unit must be within a maintenance space.
2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spread of air throughout the room.

● If the height from the floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

⚠ WARNING

3. The installation position must be able to support a load four times the indoor unit weight.
4. The indoor unit must be away from heat and sources of steam, but avoiding installation near an entrance.
5. The indoor unit must allow easy draining.
6. The indoor unit must allow easy connection to the outdoor unit.
7. The indoor unit must be at least 3 m away from any noise-generating equipment. The electrical wiring must be shielded with a steel conduit.
8. If the power supply is subject to noise generation, add a suppressor.
9. Do not install the indoor unit in a laundry. Electric shocks may result.
10. Installation height is more than 2.5m.

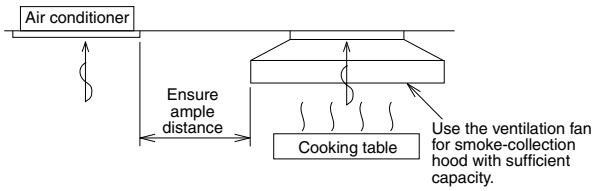
NOTE ● Thoroughly study the following installation locations

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the fan, the fin of the heat exchanger, resulting in heat exchange reduction, spraying, dispersing of water drops, etc.
   In these cases, take the following actions:

● Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.

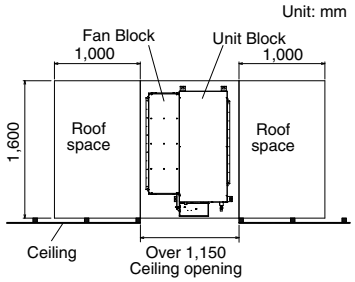
● Make sure there is enough distance from the cooking room to install the air conditioner in such place where it may not suck in oily steam.

2. Avoid installing the air conditioner in such circumstances where cutting oil mist or iron powder exist, especially in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulphurous acid gas or corrosive gas can be generated.
5. Avoid places near high frequency generators.



1-2. When transporting the indoor unit to the roof space through the ceiling opening

Transport is possible without separation with a ceiling opening dimension of over 500 × 1,150 mm and a roof space dimension as shown below. After transporting the unit, see section “2. HOW TO INSTALL THE INDOOR UNIT”



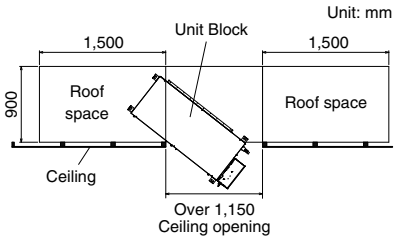
Criteria for ceiling opening dimension and height of roof space

Width of ceiling opening	Height of roof space	Necessity of separating indoor unit
1,150	1,600	Unnecessary
1,150	900	Necessary
700	1,600	Necessary

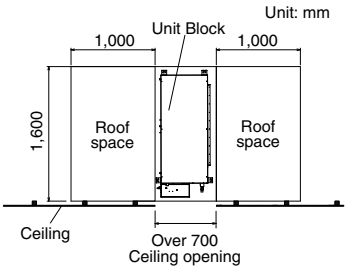
Unit: mm

It is possible to separate the indoor unit into Fan Block and Unit Block.
Separated transport if necessary

<Case 1>
If a ceiling opening dimension is over 500 × 1,150 mm and a roof space dimension is shown below, the indoor unit can be separated to fit through the space. For separating procedure, see section “1-3. How to separate the indoor unit”.



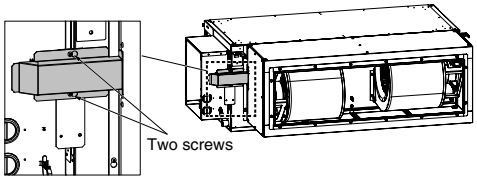
<Case 2>
If a ceiling opening dimension is over 500 × 700 mm and a roof space dimension is shown below, the indoor unit can be separated to fit through the space. For separating procedure, see section “1-3. How to separate the indoor unit”.



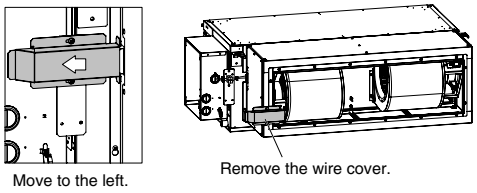
1-3. How to separate the indoor unit

(1) Remove the wire cover.

1. Loosen two screws.

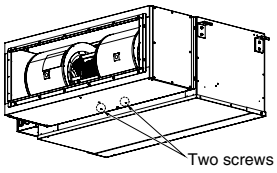


2. Move to the left and remove the wire cover through the round hole.

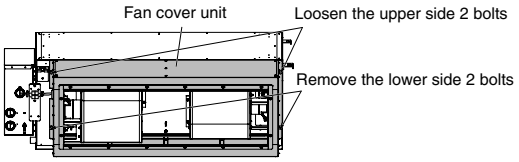


(2) Remove the fan cover unit.

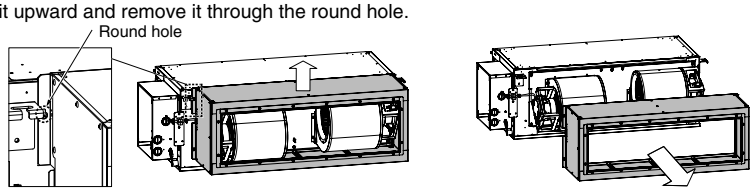
1. Remove two screws (Type 200 only)



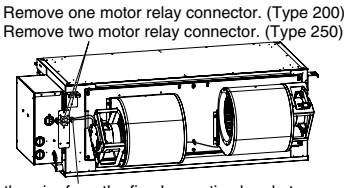
2. Move the fan cover unit upward and remove it through the round hole.



3. Move the fan cover unit upward and remove it through the round hole.



(3) Remove the motor relay connector.

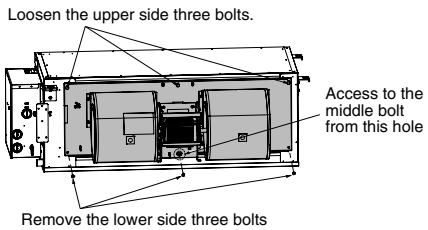


(4) Separate the fan motor unit and heat exchanger unit.

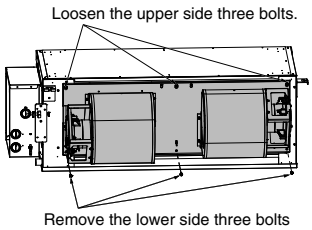
1. Loose the upper side three bolts and remove the lower side three bolts.

⚠ WARNING **Do not remove the upper side three bolts.**
The motor unit may drop during work of unit separation and can lead to personal injury or death.

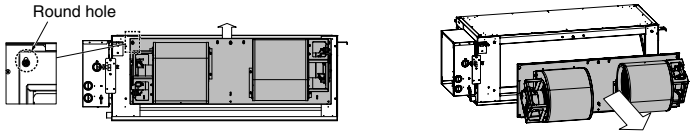
Type 200



Type 250

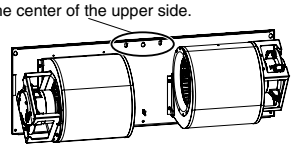
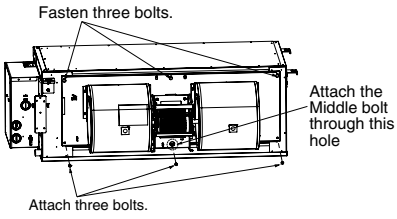
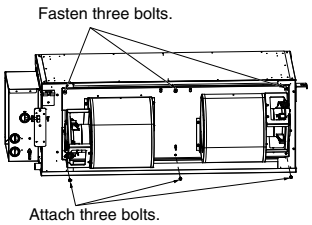
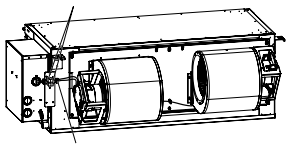


2. Move upward and remove the fan motor unit through the round hole.



1-4. How to assemble the indoor unit

(1) Attach the fan motor unit.

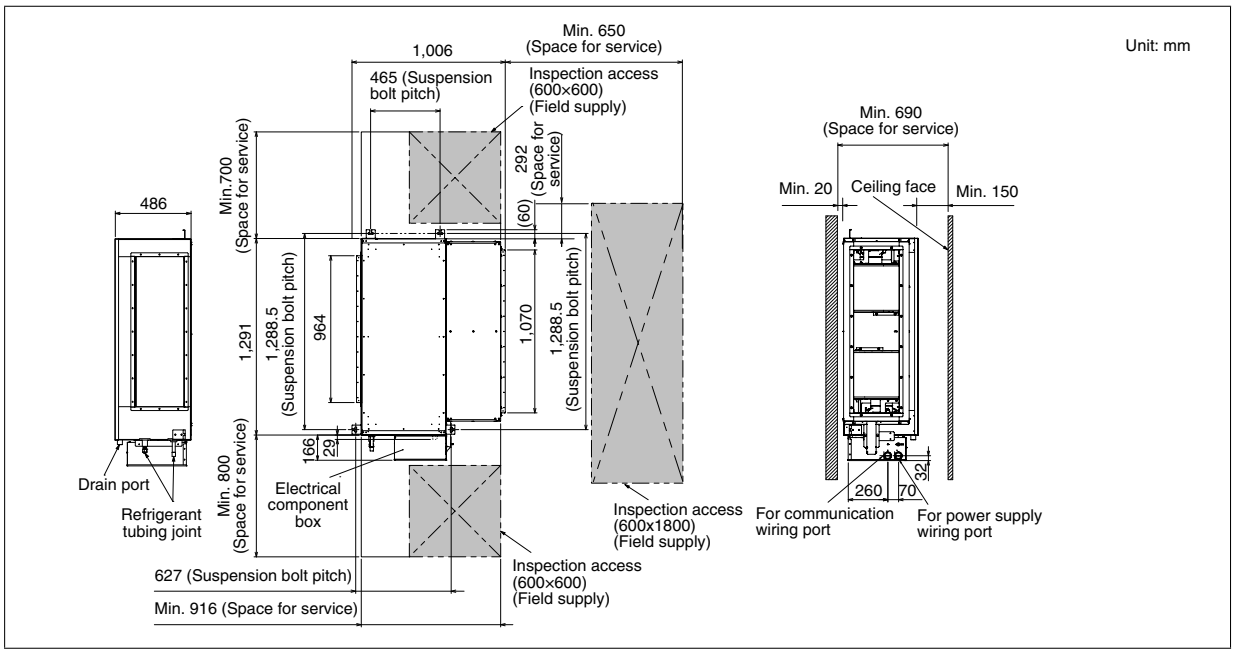
1. Pass the bolts for the heat exchanger unit through the round holes.	2. Attach three bolts in the lower side and then fasten three bolts in the upper side. (Tightening torque : 2.45 ~ 3.4 N · m)	3. Attach the motor wire.
Mount the unit with three holes located in the center of the upper side. 	Type 200  Type 250 	Attach one motor connector. (Type 200) Attach two motor connectors. (Type 250) (Connectors at each end should be matched with the same color.) 

(2) Attach the fan cover unit and wire cover.
Attach the fan cover unit and wire cover in reverse order of separating unit.

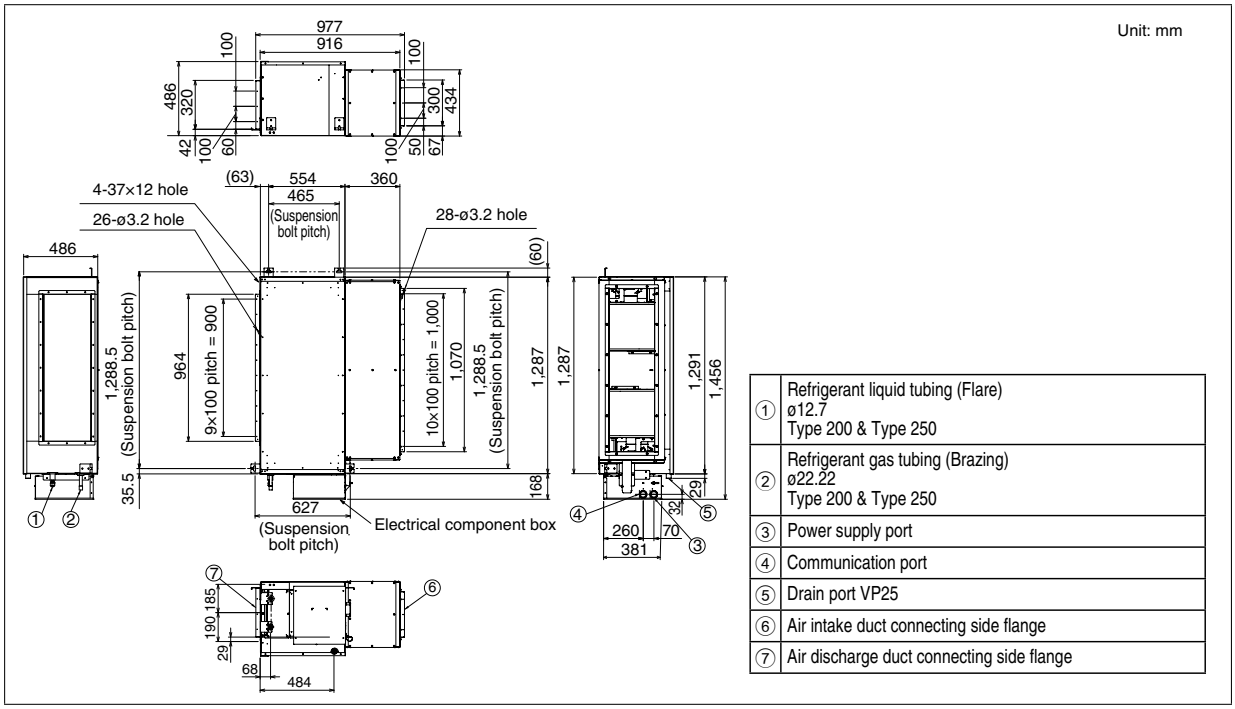
■ HOW TO INSTALL THE INDOOR UNIT

2-1. Required Minimum Space for Installation and Service

(1) Dimensions of suspension bolt pitch and unit



(2) Dimensions of indoor unit



①	Refrigerant liquid tubing (Flare) ø12.7 Type 200 & Type 250
②	Refrigerant gas tubing (Brazing) ø22.22 Type 200 & Type 250
③	Power supply port
④	Communication port
⑤	Drain port VP25
⑥	Air intake duct connecting side flange
⑦	Air discharge duct connecting side flange

2-2. Suspending the Indoor Unit

Depending on the ceiling type:
(1) Check the suspension bolt pitch.
(2) Ensure that the ceiling is strong enough to support the weight of the unit.
(3) To prevent the unit from dropping, firmly fasten the suspension bolts as shown in the figure below.

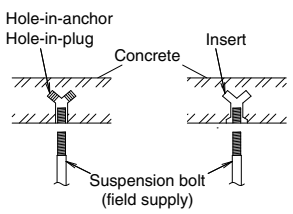
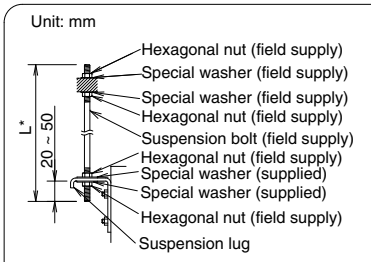


Fig. 3-1



* Choose "L" dimension according to the status of the ceiling.

Fig. 3-2

NOTE

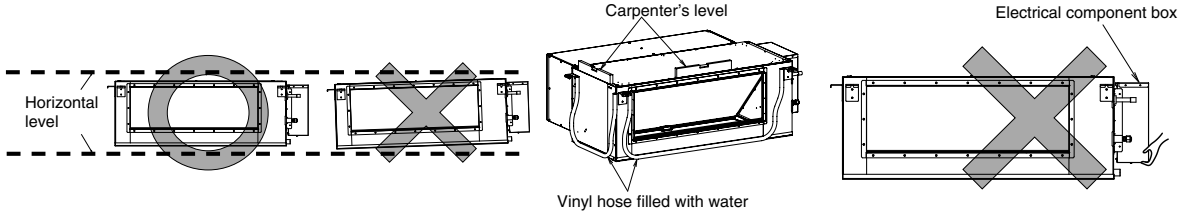
Suspension bolt (field supply)	M10 or 3/8"

⚠ WARNING

It is important that you use extreme care in supporting the indoor unit inside the ceiling.
Ensure that the ceiling is strong enough to support the weight of the unit.
Before suspending the unit, test the strength of each attached suspension bolt.

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data given previously.
Tubing must be laid and connected inside the ceiling when suspending the unit.
If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.
(2) Screw in the suspension bolts allowing them to protrude from the ceiling as shown in Fig. 3-1.
(Cut the ceiling material, if necessary.)
(3) Suspend and fix the indoor unit using the 2 hexagonal nuts (field supply) and special washers (supplied with the unit) as shown in Fig. 3-2.

⚠ CAUTION	**The top of the unit must be installed horizontally.**



- **Check the unit is placed horizontally.**
  Make sure the unit is installed level using a level or a vinyl hose filled with water.
  In using a vinyl hose instead of a level, adjust the top surface of the unit to the surface of the water at both ends of the vinyl hose and make horizontal adjustment on all 4 corners of the unit.
  If the air discharge side of the unit is installed downward, splashing water or water leak may occur.
  Also, the dust may accumulate inside the drain pan caused by draining residual water.
- **When lifting the unit, do not attempt to hold the electrical component box in hand.**

2-3. Installing the Refrigerant Tubing

The size of the refrigerant tubing is as shown in the table below.

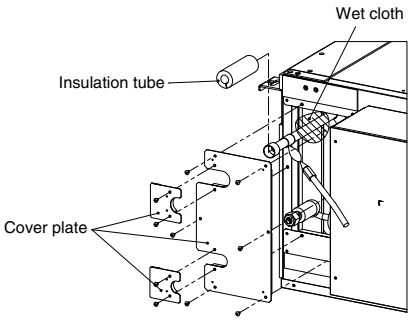
Table 2-1

Type	200 / 250
Gas tube	ø22.2 (100 m) (Brazing connection)
Liquid tube	ø12.7 (Flare connection) Tightening torque (approximate) : 49 ~ 55 N • m Thickness of connecting tube : 0.8 mm

NOTE

To fasten the flare nuts, apply specified torque.

- When brazing, must be cool the pipe by wet cloths after removing the insulation tube and the cover plate.
- When brazing the gas tubing, cool the tubing with dampened shopcloths as you work, as shown in the figure below, to protect the unit's thermistor from the heat generated by brazing.
- When brazing, be careful not to heat the electrical component box. Doing so may cause the unit to be damaged.
- Pipe insulation must be made after leak detection for tubing connection area was performed.
- Be sure to insulate both the gas tubing and liquid tubing.
- In addition, wrap the insulation material (field supply) around the tubing joints, and fasten in place with vinyl tape or other means.
  Failure to insulate the tubing may result in water leakage from condensation.
- Plug all gaps at tube through-holes in the unit with insulation or a similar substance to prevent air leakage.



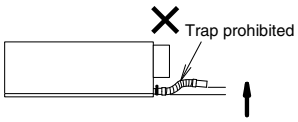
2-4. Installing the Drain Piping

2-4-1. Before Performing the Installation Drain Piping

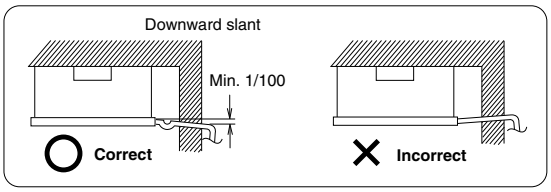
(1) (Prepare standard hard PVC pipe (O.D. 32 mm) for the drain and use the supplied drain socket to prevent water leaks.
The PVC pipe must be purchased separately.
When doing this, apply adhesive for the PVC pipe at the connection point.
See section "2-4-2. Installing the Drain Pipe".

(2) Limitations of Drain Hose Connection

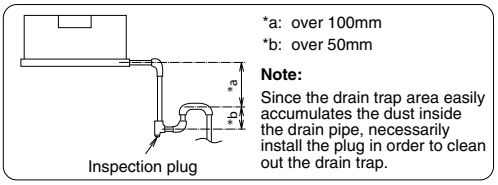
⚠ CAUTION	Do not make a trap in the middle of the supplied drain pipe. Doing so will cause abnormal sound.



(3) Ensure the drain pipe has a downward slant (1/100 or more).



(4) The drain pipe with a trap should be installed away from the indoor unit.
(5) Do not attach any air purge equipment.
If attached, drain water may result in splashing out of the drain pipe.
(6) When the drain piping is completed, perform the water leak test and check for a water leak.
If detected, it may result in water leakage or condensation.
(7) When the drain piping is completed, perform the drainage test if the water drains smoothly.
If not draining smoothly, it may result in water leakage or condensation.
(8) When the drain piping work is finished securely, wrap the insulation material around the indoor side drain pipe.
At this time, do not wrap together with the refrigerant tubing.
If wraped together, the drain pipe is lifted and water drainage will not be operated.
Consequently, the water comes out of the drain pan and it can lead to water leakage.



2-4-2. Installing the Drain Pipe

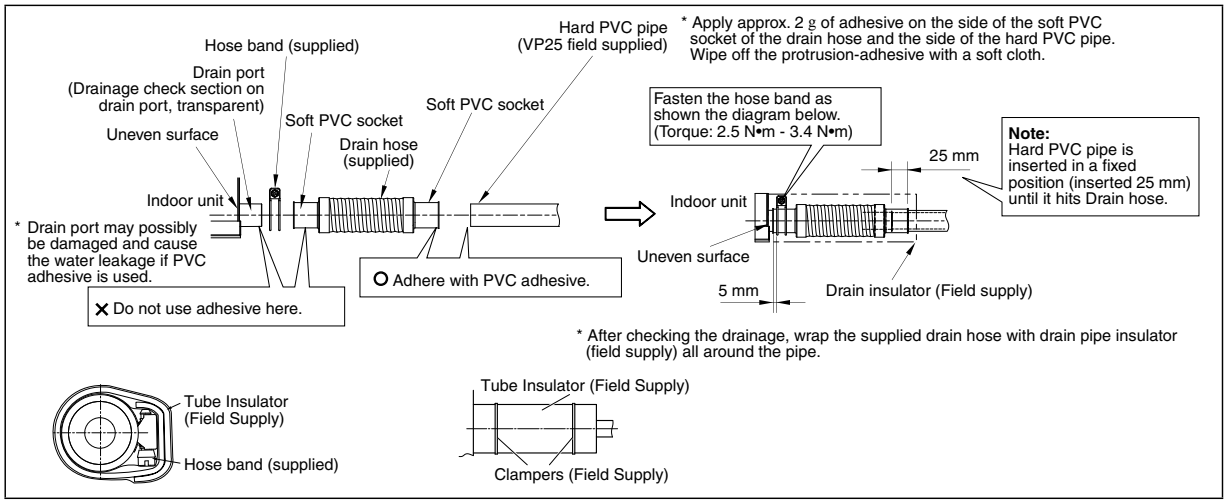
⚠ CAUTION

(1) How to Connect Drain Port and Drain Hose

- First insert the supplied hose band into the drain port pipe. Then make sure the head of the screw is facing toward a technical engineer when placing the screw of the hose band at an upward angle.
- Insert the soft PVC socket of the supplied drain hose to the drain port pipe.
  Never apply the adhesive to the both ends of the soft PVC socket and the drain port pipe.
- Insert the drain hose to the point where there is a difference in level as shown in the figure below and fasten it with the hose band 5 mm away from that position.
- Tightening torque must be 2.5 ~ 3.4 N•m.
- Tightening position of the hose band must be upward.

(2) How to Install the Drain Pipe

- Connect the hard PVC pipe (O.D. 32 mm) to the side of the soft PVC socket of the drain hose.
- Apply approx. 2 g of adhesive on the side of the soft PVC socket of the drain hose and the side of the hard PVC pipe.
- Do not apply force to the drain port when connecting the drain pipe. Install and fix it near the indoor unit as close as possible.



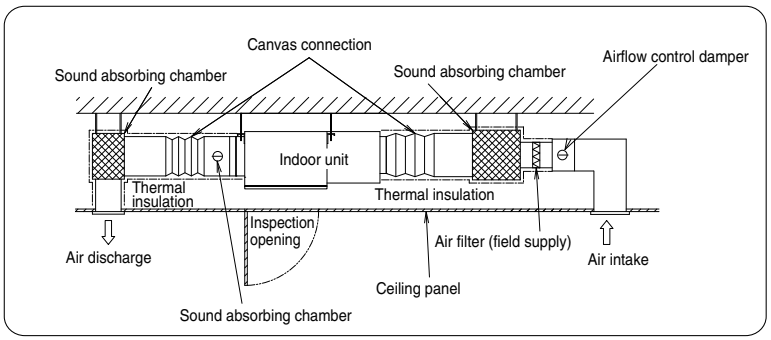
(3) Insulating the Drain Hose

- Selection of heat insulation materials for drain hose (Drain insulator). When using the heat insulation materials (field supply), kindly use the same size and performance as refrigerant tubes. Check for its size as below table.

Insulation Material	Thermal insulation thickness
Polyethylene foam (same as heat insulators for refrigerant tubes)	Insulation thickness must 10mm or greater

2-5. Caution for Ducting Work

- This unit has high static pressure.
  In case of small pressure resistance (for instance, a short duct), install an airflow control damper (field supply) for adjusting airflow volume as airflow volume / airflow noise increases.
- If the air conditioner is to be installed in a room such as an office or meeting room which needs a low sound level, provide a supply and return sound absorption chamber with an acoustic liner.
- Use a flexible canvas connection or vibration isolation hanger (field supply) to break transmission of mechanical vibration of the unit.



⚠ CAUTION

- Use incombustible duct materials.
- Use thermal insulation to prevent duct condensation.
- An air filter (field supply) must be installed at the air intake side.
  If not installed, the heat exchanger will get dirty and the unit will reduce the quality.
- Obtain and install an air filter (field supply) which can easily wash away the dust by lukewarm, soapy water or suck up with a vacuum cleaner.
- Clean the air filter periodically to collect dust and other particles from the air.
- Use duct static pressure within a range of specification value.

■ ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

3-1. General Precautions on Wiring

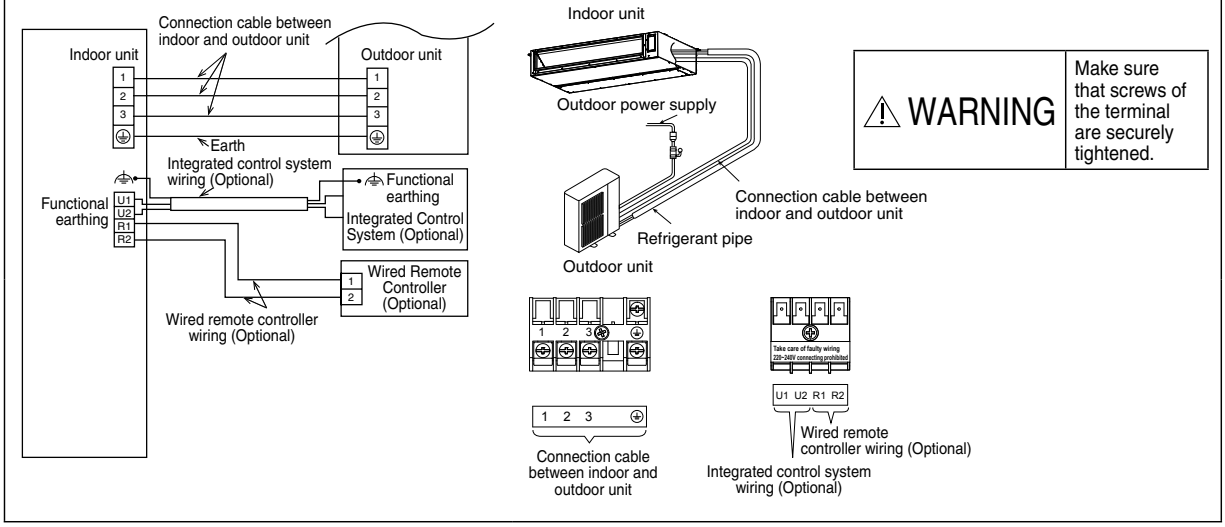
⚠ WARNING	● This air conditioner must be installed in accordance with national wiring regulations.
	● Cables connected to indoor unit must be approved polychloroprene sheathed type 60245 IEC 57 or heavier.
	● The units must be connected to the supply cables for fixed wiring by qualified technician. Circuit breaker must be incorporated in the fixed wiring in accordance with the national wiring regulations. The circuit breaker must be approved, suitable for the voltage and current ratings of equipment and have a contact separation by 3mm in all poles. When the supply cable is damaged, it must be replaced by qualified technician.
	● Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
	● Be sure to connect the unit to secure earth connection. ⏚ If the earthing work is not carried out properly, electric shocks may result.
	● Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

(1) Select a power source that is capable of supplying the current required by the air conditioner.
(2) Feed the power source to the unit via a distribution switch board designed for this purpose, the switch should disconnect all poles with a contact separation of at least 3 mm.
(3) Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
(4) Be sure to connect the indoor/outdoor unit connection wires correctly to terminal board.
(5) Be sure to turn off the main power before installing and connecting the remote controller.
(6) Each wiring connection must be done in accordance with the wiring system diagram.
Wrong wiring may cause the wires overloaded and overheated.

NOTE

If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off after at least 1 minute has passed. (For the system's automatic setting.) Turning off the power supply on the way may cause an abnormal operation.

3-2. Wiring System Diagrams



⚠ WARNING

Make sure that screws of the terminal are securely tightened.

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

Indoor unit

Model	Power Supply Cable										Time Delay Fuse or Circuit Capacity (A)
	Power Supply	Min. Wire Size (mm^2)	Recommended Wire Length and Wire Diameter for Power Supply Cable								
			Wire Size (mm^2)	Max. Length (m)	Wire Size (mm^2)	Max. Length (m)	Wire Size (mm^2)	Max. Length (m)	Wire Size (mm^2)	Max. Length (m)	
S-180PE4R	230-240V~	1.5	1.5	27	2.5	45	4.0	72	6.0	108	10
S-200PE4R	230-240V~	1.5	1.5	26	2.5	44	4.0	71	6.0	106	10
S-224PE4R	230-240V~	1.5	1.5	24	2.5	40	4.0	64	6.0	96	10

Connection cable between Indoor and Outdoor Unit

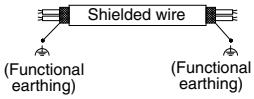
Wire Size	Length
2.5mm^2	Max.100m

Wired Remote Controller

Wire Size	Length
0.75mm^2 (AWG#18)	Max. 500m

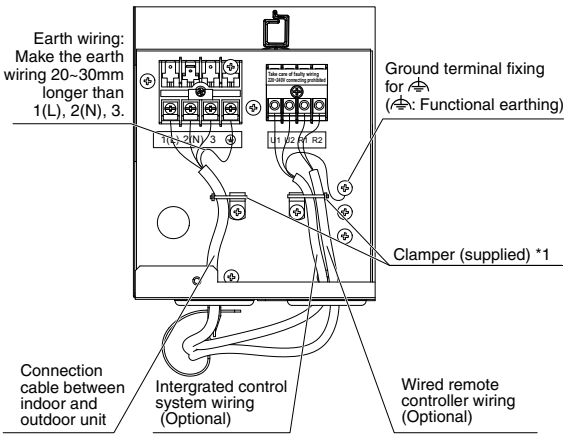
Wired Remote Controller (Optional)

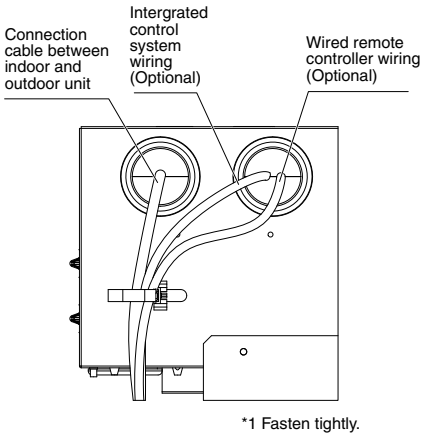
Use shielded wires for integrated control system wiring and ground the shield on both sides, otherwise misoperation from noise may occur. Connect wiring as shown in Section 3-2 Wiring System Diagrams.



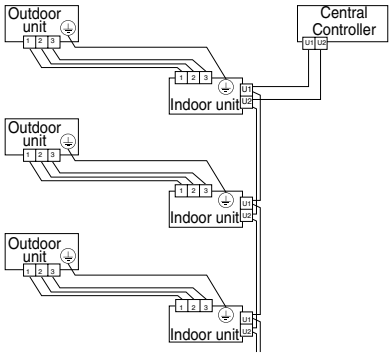
NOTE

For Optional Parts connecting wiring size, refer to Installation Manual of the Optional Parts

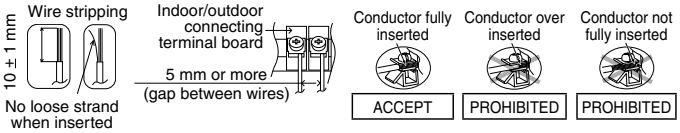




If branching in the inter-unit control wiring, the number of branch points should be 16 or fewer



WIRE STRIPPING AND CONNECTING REQUIREMENT



This equipment must be properly earthed. ⏚

Note:

Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.

Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reasons.

- Earth lead wire shall be longer than other lead wires as shown in the figure for the electrical safety in case of the cord slipping out of anchorage.

■ REFRIGERANT PIPING

Must ensure mechanical connections be accessible for maintenance purposes. The liquid tubing side is connected by a flare nut, and the gas tubing side is connected by brazing.

4-1. Connecting the Refrigerant Tubing

Cautions During Brazing

- **Replace air inside the tube with nitrogen gas to prevent copper oxide film from forming during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)**
- **Do not allow the tubing to get too hot during brazing. The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore allow the tubing to cool when brazing.**
- **Use a reducing valve for the nitrogen cylinder.**
- **Do not use agents intended to prevent the formation of oxide film. These agents adversely affect the refrigerant and refrigerant oil, and may cause damage or malfunctions.**

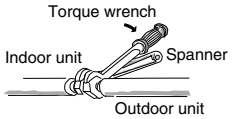
4-2. Connecting Tubing Between Indoor and Outdoor Units

(1) Tightly connect the indoor-side refrigerant tubing extended from the wall with the outdoor-side tubing.

Indoor Unit Tubing Connection

Indoor unit type	200 / 250
Gas tubing (mm)	ø22.2 (100 m)
Liquid tubing (mm)	ø12.7

(2) To fasten the flare nuts, apply specified torque.



- When removing the flare nuts from the tubing connections, or when tightening them after connecting the tubing, be sure to use a torque wrench and a spanner. If the flare nuts are over-tightened, the flare may be damaged, which could result in refrigerant leakage and cause injury or asphyxiation to room occupants.
- For the flare nuts at tubing connections, be sure to use the flare nuts that were supplied with the unit, or else flare nuts for R410A, R32 (type 2). The refrigerant tubing that is used must be of the correct wall thickness as shown in the table below.

Tube diameter	Flare nut tightening torque (approximate)	Min. tube thickness
ø12.7 (1/2")	52± 3 N•m {520 ±30 kgf•cm}	0.8 mm
ø22.2 (7/8")	–	1.0 mm

- Because the pressure is approximately 1.6 times higher than conventional refrigerant R22 pressure, the use of ordinary flare nuts (type 1) or thin-walled tubes may result in tube rupture, injury, or asphyxiation caused by refrigerant leakage.
- In order to prevent damage to the flare caused by over-tightening of the flare nuts, use the table above as a guide when tightening.
- When tightening the flare nut on the liquid tube, use an adjustable wrench with a nominal handle length of 200 mm.

4-3. Insulating the Refrigerant

⚠ CAUTION	Be sure to perform heat insulation on the drain, liquid and gas piping. Imperfection in heat insulation work leads to water leakage.

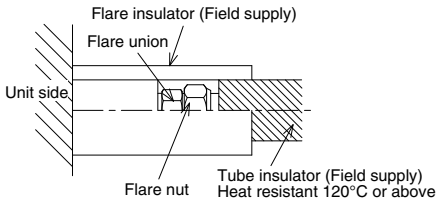
(1) Selection of heat insulation materials for refrigerant tube. When using heat insulation materials (field supply), kindly check for its sizes and performance.

- Material for insulation material: Polyethylene foam.
- Heat transfer rate: less than 0.051W/m·K.
- Material withstand temperature: 120°C or above (gas tubing).
  For other tubing 80°C or above
- Must be easy to use, age resistance and not easily absorb moisture.
- Be sure to match the below insulation material size with tube sizes.

Piping size, mm (In)	Thermal insulation size (I.D.)	Thermal insulation Thickness
ø12.7 (1/2")	14 ~ 16 mm	Insulation thickness must be 10mm or greater
ø22.2 (7/8")	25 ~ 28 mm	

(2) Taping the flare nuts

- Wind the white insulating tape around the flare nuts at the gas tube connection.
- Then cover up the tubing connection with tube insulator (field supply) and fill in the gap with black insulation tape.
- Finally fasten with clampers (field supply)



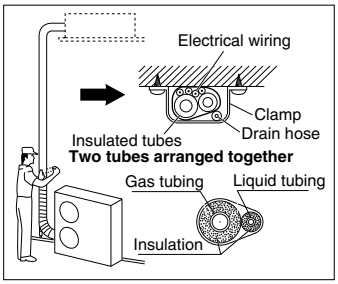
NOTE

If noise bothers you from the area between indoor and outdoor units' connection pipes, it is effective to wind the soundproofing materials (field supply) to reduce noise.

⚠ CAUTION	After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack. Never grasp the drain or refrigerant connecting outlets when moving the unit.

(3) Taping the tubes

- Refrigerant tubes (and electrical wiring if local permit) should be taped together with armouring tape in 1 bundle. Keep the drain hose separate from refrigerant tube to prevent condensation.
- Wrap the armouring tape from bottom of the outdoor unit to the tubing here it enters the wall. Overlap half of each previous turn.
- Clamp the tubing to the wall, using 1 clamp approx. per each meter apart.



NOTE

Do not wind the armouring tape too tightly since this will decrease the heat insulation effect. Also ensure that the condensation drain hose splits away from the bundle and drips clear of the unit and the tubing.

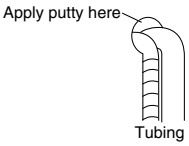
⚠ CAUTION	If the exterior of the outdoor unit valves has been finished with a square Duct covering, make sure you allow sufficient space to access the valves and to allow the panels to be attached and removed.

(4) Finishing the Installation

- After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering.

(5) Precautions in high humidity circumstances

- This air-conditioner has been tested according to the "JIS Standard Conditions with Mist" and have been confirmed that there are no faults. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23 °C), water drops are liable to fall. In this case, add heat insulation material according to the following procedures:
  1. Heat insulation material to be prepared. Adiabatic glass wool with thickness 10~20mm
  2. Stick the wool on all air-conditioners that are located in the ceiling atmosphere
  3. In addition to the normal heat insulation (thickness: more than 10mm) refrigerant piping, add a further of 10~30 mm thickness material.



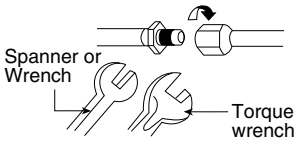
4-4. Additional Precautions for R32 models

For connection joint of all models

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

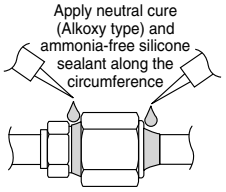


Additional Precautions For R32 Models when connecting by flaring at indoor side

❗ Ensure to do re-flaring of pipes before connecting to units to avoid leaking

Seal sufficiently the flare nut (both gas and liquid sides) with neutral cure (Alkoxy type) & ammonia-free silicone sealant and insulation material to avoid the gas leak caused by freezing.

※ Use of silicon containing ammonia can lead to stress corrosion on the joint & can cause leakage.



Neutral cure (Alkoxy type) & ammonia-free silicone sealant is only to be applied after pressure testing and cleaning up by following instructions of sealant, only to the outside of the connection. The aim is to prevent moisture from entering the connection joint and possible occurrence of freezing. Curing sealant will take some time. Make sure sealant will not peel off when wrapping the insulation.

(1) Vacuum Drying

- After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The vacuum drying must be carried out by using the service ports of both the liquid and gas side valves.

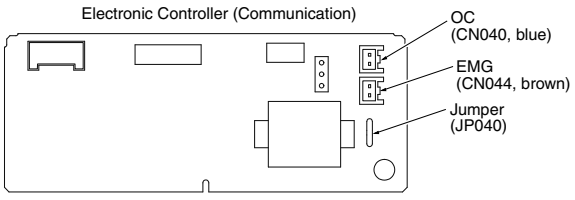
■ HOW TO INSTALL THE TIMER REMOTE CONTROLLER OR HIGH-SPEC WIRED REMOTE CONTROLLER (OPTIONAL PART)

NOTE

Refer to the Installation Instructions attached to the optional Timer Remote Controller or optional High-spec Wired Remote Controller.

■ PRECAUTIONS ON TEST RUN

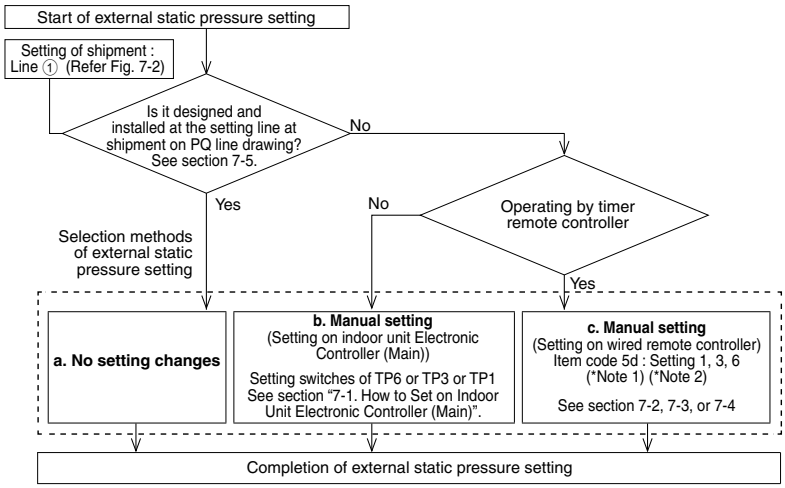
- Request that the customer be present when the test run is performed. At this time, explain the operation manual and have the customer perform the actual steps.
- Check that the 230 –240 VAC power is not connected to the U1 & U2 terminal board terminal.
  * If 230 –240 VAC is accidentally applied, the Fuse on indoor unit Electronic Controller (Communication) will blow in order to protect the PCB.
  In this case, recover the connection by disconnect 2P connector wires that originally connected to the indoor unit Electronic Controller (Communication) OC connector and shift the connector wires to EMG connector on same indoor unit Electronic Controller (Communication). If operation is still not possible after shift to EMG connector, cut the jumper JP040 on the same indoor unit Electronic Controller (Communication).



■ EXTERNAL STATIC PRESSURE SETTING

Choose one of the methods (selection of "a", "b", "c" within the range of dotted line as shown in the flowchart below) and make settings.
a. No setting changes: When using as it is factory preset at shipment.
(If resetting after external static pressure setting once, it might be different from factory preset.)
b. Manual setting (on indoor unit Electronic Controller (Main)): This is static pressure setting excepting factory preset at shipment. Dip switch select method.
c. Manual setting (by wired remote controller): Static pressure setting excepting factory preset at shipment.

Flow of External Static Pressure



NOTE

(1) Refer to Tables 7-2, 7-3, 7-4 and Fig. 7-2 for details on the relationship between the value of item code "5d" and the external static pressure.
(2) (When set in group control (connecting multiple indoor units with one timer remote controller), set each indoor unit to item code "5d".
When amending the setting after selecting [b. Manual setting] (due to airflow path changes, etc.), it is necessary to cancel [b. Manual setting] (switching OFF positions).
When [b. Manual setting] has not been cancelled, [c. Manual setting] will be activated if selected, but [b. Manual setting] takes precedence when the power is switched back on after power outages, etc.

⚠ CAUTION

- **Make sure the external static pressure is in a range of specifications.**
  Then proceed the external static pressure setting.
  Improper settings can cause noise, a shortage of airflow volume and water leakage.
  Refer to Fig. 7-2 for the external static pressure setting range.
- **Be sure to set the [External Static Pressure Setting] once again after amending the airflow path for the duct or air outlet after setting the external static pressure.**

7-1. How to Set on Indoor Unit Electronic Controller (Main)

(1) Turn off the power breaker to halt the supply of electricity to the indoor unit Electronic Controller (Main).
(2) Open the lid of the electrical component box and confirm the location where the Select switch on the indoor unit Electronic Controller (Main) is placed. (Fig. 7-1)
(3) Set the On/Off switches in the Off position which are now set in the On position.
Select the positions of the Select SW001 switches respectively to make the desired external static pressure settings referring to the Table 7-1.

Table 7-1 External static pressure SW setting

External static pressure at the time of rated airflow volume		SW001		
200	250	TP6	TP3	TP1
180Pa	200Pa	ON 1	2	3
120Pa	130Pa	1	ON 2	3
75Pa	75Pa	1	2	ON 3

Indoor Unit Electronic Controller (Main)

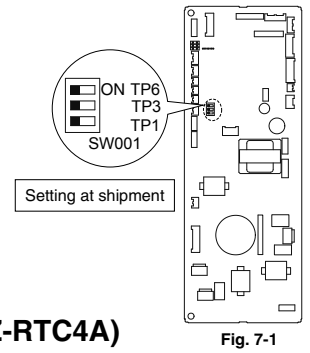


Fig. 7-1

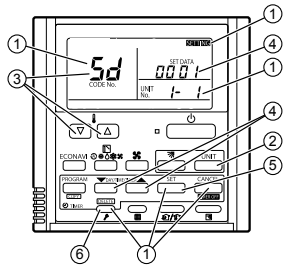
7-2. Operating the Timer Remote Controller (CZ-RTC4 / CZ-RTC4A)

How to set the external static pressure

(1) Press and hold down the ⏻, CANCEL and SET buttons simultaneously for 4 or more seconds. (SETTING, the Unit No., Item Code and Detailed Data will blink on the LCD display.)
(2) The indoor unit numbers in the group control will be sequentially displayed whenever the Unit Select button is pressed UNIT.
Only the fan motor for the selected indoor unit will operate during this time.
(3) Specify the "5d" item code by pressing the ▽ / △ buttons for the temperature setting buttons and confirm the values. ("0001" set at shipment)
(4) Press the TIMER SET / TIMER ▲ buttons for the time to amend the values for the set data.
Refer to Table 7-2 and Fig. 7-2 and select a value "0006", "0003" or "0001".
(5) Press the SET button.
The display will stop blinking and remain illuminated.
(6) Press the ⏻ button. The fan motor will stop operating and the LCD display will return to the normal stop mode.

Table 7-2 Setting the external static pressure

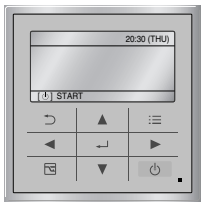
Indoor unit		Item code
200	250	5d
External static pressure of the rated air flow volume		
180 Pa	200 Pa	0006
120 Pa	130 Pa	0003
75 Pa	75 Pa	0001



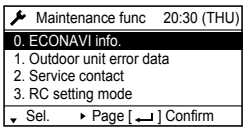
NOTE:
Failure to set this parameter may result in decreased airflow and condensation.

7-3. Operating the High-spec Wired Remote Controller (CZ-RTC5B)

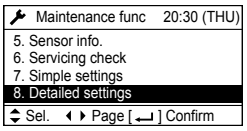
How to set the external static pressure

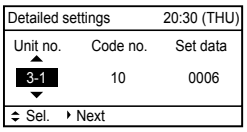


(1) Keep pressing the [↩], [↵] and [►] buttons simultaneously for 4 or more seconds.
The "Maintenance func" screen appears on the LCD display.

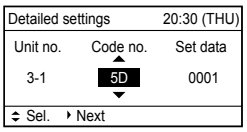


(2) Press the [▼] or [▲] button to see each menu. If you wish to see the next screen instantly, press the [◄] or [►] button.
Select "8. Detailed settings" on the LCD display and press the [↵] button.
The "Detailed settings" screen appears on the LCD display.
Select the "Unit no." by pressing the [▼] or [▲] button for changes.





(3) Select the "Code no." by pressing the [◄] or [►] button.
Change the "Code no." to "5D" by pressing the [▼] or [▲] button (or keeping it pressed).

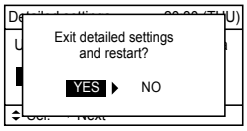


(4) Select the "Set data" by pressing the [◄] or [►] button.
Select one of the "Set data" among "0006", "0003" or "0001" according to the desired external static pressure setting by pressing the [▼] or [▲] button.
(See Table 7-3 and Fig. 7-2.)
Then press the [↵] button.

Table 7-3 Setting the external static pressure

Indoor unit		Item code
200	250	5d
External static pressure of the rated air flow volume		
180 Pa	200 Pa	0006
120 Pa	130 Pa	0003
75 Pa	75 Pa	0001

(5) Select the "Unit no." by pressing the [◄] or [►] button and press the [↩] button.
The "Exit detailed settings and restart?" (Detailed setting-end) screen appears on the LCD display.
Select "YES" and press the [↵] button.

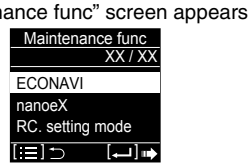


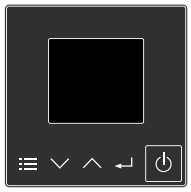
7-4. Operating the Wired Remote Controller (CZ-RTC6 series)

Stop the system before performing these steps.

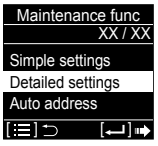
How to set the external static pressure

(1) Keep pressing the [☰], [∨], [∧] and [↵] buttons simultaneously for 4 or more seconds.
The "Maintenance func" screen appears on the LCD display.





(2) Press the [∨] or [∧] button to see each menu.
Select "Detailed settings" on the LCD display and press the [↵] button.



The "Detailed settings" screen appears on the LCD display.

(3) Select the "Unit no." by pressing the [∨] or [∧] button.
After selecting "Unit no.", press the [↵] button and proceed to Step 4.
If the [☰] button is pressed, proceed to Step 6.

(4) Keep pressing the [↵] button for 2 seconds or more during selecting "Code no.".

Change the "Code no." one digit at a time so that it becomes [00005D] along with the following procedures.

Change the value by pressing the [∨] or [∧] button.
After changing the value, press the [↵] button and set the next digit.

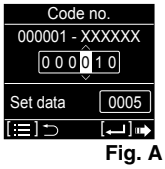


Fig. A

Change the value by pressing the [∨] or [∧] button.
After changing the value, press the [↵] button and set the next digit.

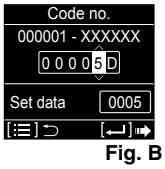


Fig. B

Change the value by pressing the [∨] or [∧] button.
After changing all digits, press the [↵] button and proceed to Step 5.

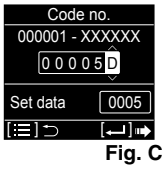


Fig. C

(5) Select one of the "Set data" among "0006", "0003" or "0001" according to the desired external static pressure setting by pressing the [∨] or [∧] button. (See Table 7-4.)
After selecting "Set data", press the [↵] button.
(If setting continuously, follow the procedures from **Fig. A**.)
If you wish to change the selected indoor unit or finish setting, press the [☰] button twice (the display returns to Step 3).

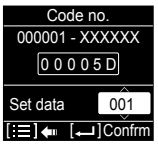


Fig. D

Table 7-4 Setting the external static pressure

Indoor unit		Item code
200	250	5d
External static pressure of the rated air flow volume		
180 Pa	200 Pa	0006
120 Pa	130 Pa	0003
75 Pa	75 Pa	0001

NOTE

Failure to set this parameter may result in decreased airflow and condensation.

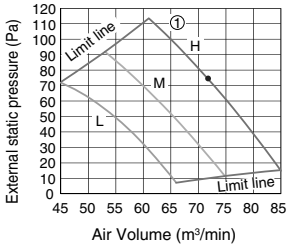
(6) If the [☰] button is pressed under the display Step 3, the following display (Detailed setting-end screen) appears.Then select "YES" by pressing the [∨] or [∧] button and press the [↵] button.

7-5. Indoor Fan Performance

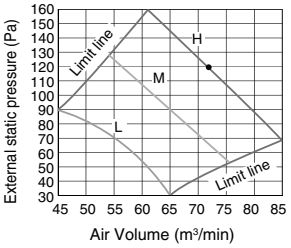
Type 200

(External static pressure 75 Pa)
Item code 5d = 0001

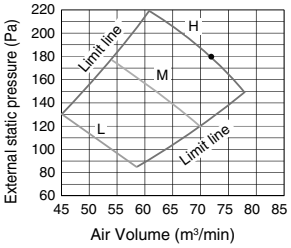
Setting at shipment



(External static pressure 120 Pa)
Item code 5d = 0003



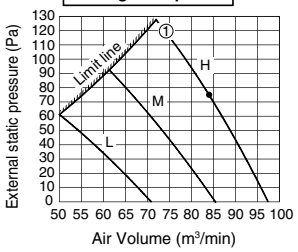
(External static pressure 180 Pa)
Item code 5d = 0006



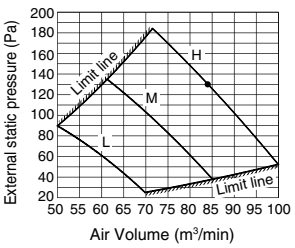
Type 250

(External static pressure 75 Pa)
Item code 5d = 0001

Setting at shipment



(External static pressure 130 Pa)
Item code 5d = 0003



(External static pressure 200 Pa)
Item code 5d = 0006

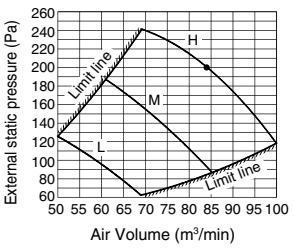
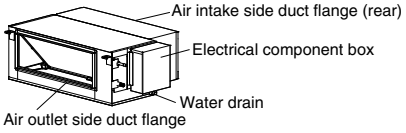


Fig. 7-2

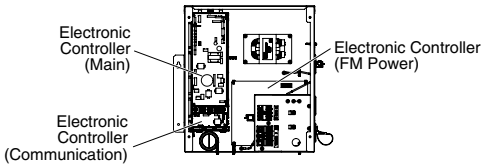
■ APPENDIX

■ **Name of Parts**

High Static Pressure Ducted



Electrical Component Box



■ **Care and Cleaning**

⚠ WARNING

- **Engage authorized dealer or specialist for cleaning.**
- **For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.**
- **Do not pour water on the indoor unit to clean it. This will damage the internal components and cause an electric shock hazard.**

Air intake and outlet side (Indoor unit)

Clean the air intake and outlet side of the indoor unit with a vacuum cleaner brush, or wipe them with a clean, soft cloth.

If these parts are stained, use a clean cloth moistened with water. When cleaning the air outlet side, be careful not to force the vanes out of place.

⚠ CAUTION

- **Never use solvents or harsh chemicals when cleaning the indoor unit. Do not wipe plastic parts using very hot water.**
- **Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.**
- **The internal coil and other components of outdoor unit must be cleaned regularly. Consult your dealer or service center.**

Air filter

- **In case of Installing the Duct (field supply)**

Period	(Depends on filter's specifications)	When cleaning the air filter, consult your dealer or service center.

⚠ CAUTION	• **Certain metal edges and the condenser fins are sharp and may cause injury if handled improperly; special care should be taken when you clean these parts.** • **The internal coil and other components must also be cleaned periodically. Consult your dealer or service center.**

Care: After a prolonged idle period

Check the indoor and outdoor unit air intakes and outlets for blockage; if there is a blockage, remove it.

Care: Before a prolonged idle period

- Operate the fan for half a day to dry out the inside.
- Disconnect the power supply and also turn off the circuit breaker.
- Clean the air filter and replace it in its original position.

NOTE

Should the power fail while the unit is running

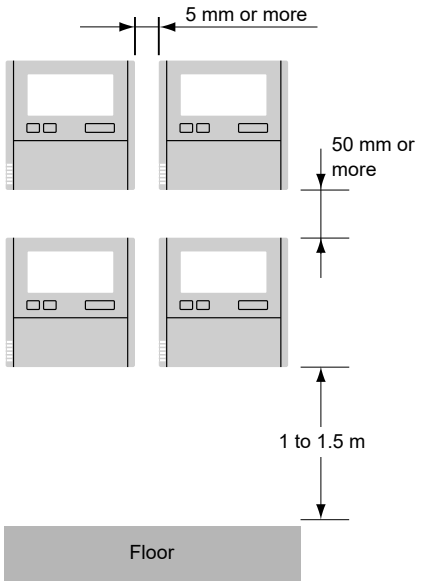
If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was interrupted.

Important Information Regarding The Refrigerant Used

NOTE

Refer to the Installation Instructions attached to the outdoor unit.

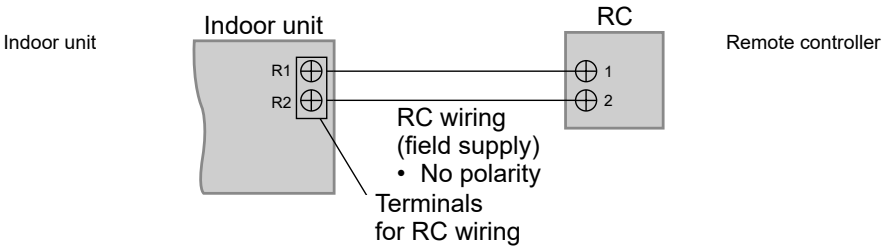
■ REMOTE CONTROLLER INSTALLATION INSTRUCTION
CZ-RTC4 / CZ-RTC4A
Installation Precautions
Installation Location



- Install at the height of 1 to 1.5 m from the floor (Location where average room temperature can be detected).
- Install vertically against the floor.
- When installing more than 1 remote controller next to each other, keep distance of 5 mm on the right and left and 50 mm on top and bottom.
- Avoid the following locations for installation.
  - By the window, etc. exposed to direct sunlight or direct air
  - In the shadow or backside of objects deviated from the room airflow.
  - Location where condensation occurs (The remote controller is not moisture proof or drip proof.)
  - Location near heat source
  - Uneven surface
- Keep distance of 1 m or more from the TV, radio and PC. (Cause of fuzzy images or noise)

Remote control wiring

■ **Wiring diagram**



■ **Type of wiring**
Use cables of 0.5 to 1.25 mm^2.

■ **Total wire length:** 500 m or less
(The wire length between indoor units should be 200 m or less.)

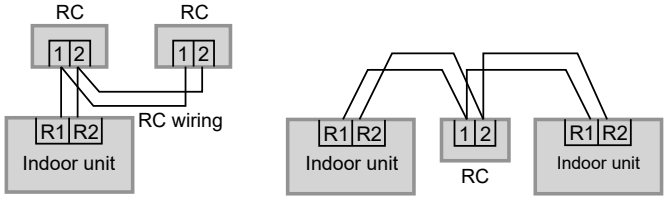
■ **Number of connectable units**
Remote controller: Max. 2 Indoor unit: Max. 8

Attention

- Use the field supplied RC wiring with at least 1 mm in thickness of insulation part including the sheath.
  Regulations on wire diameters differ from locally to locally. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with relevant rules and regulations.
- Be careful not to connect cables to other terminals of indoor units (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.
- If noise is induced to the unit power supply, attach a noise filter.

***Wiring as shown below is prohibited.**

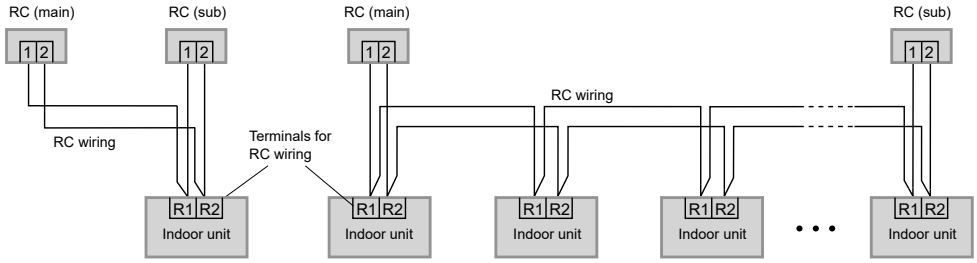
Installation example



When setting both the main and sub remote controllers
After installation, set one remote controller to [Main] and the other to [Sub] for [Main/sub] for “Setting” (P.1-11-1-2-18).

Installation example

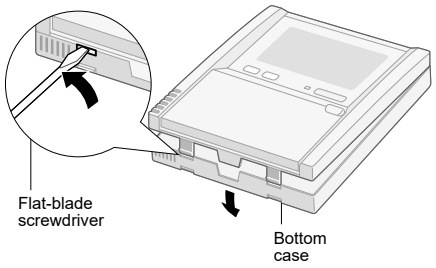
Using 1 indoor unit **Using more than 1 indoor unit**



*Remote controllers can be connected to any indoor unit for operation.

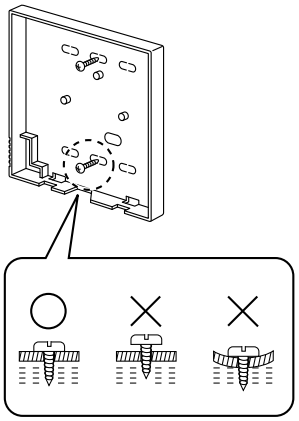
Mounting

1 **Remove the bottom case.**
Insert the driver and slightly turn.
*Do not insert the screw driver too deep. Doing so may cause the claw to be broken.



Attention

Mounting the bottom case
- Tighten the screws securely until the screw heads touch the bottom case.
  (Otherwise, loose screw heads may hit the PCB and cause malfunction when mounting the top case.)
- Do not over-tighten the screws.
  (The bottom case may be deformed, resulting in fall of the unit.)



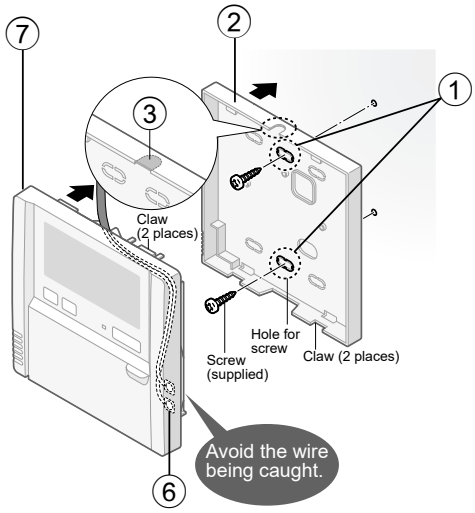
Connecting the remote control wiring
- Arrange the wires as shown in the illustration for ⑥ in step 2 (P.1-11-1-2-17) and ⑤ (P.1-11-1-2-17), avoiding unnecessary wires being stored in the case.
- Avoid the wires touching parts on the PCB.
- Avoid the wires coming in contact with the metallic object protruded from the PCB.

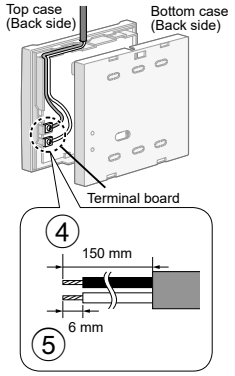
(Caught wires may destroy the PCB.)

Mounting the top case
- Do not push the top case with excessive force.
  (Doing so may cause the protrusions of the bottom case to hit and destroy the PCB.)

2 Mount to the wall.

Exposed type

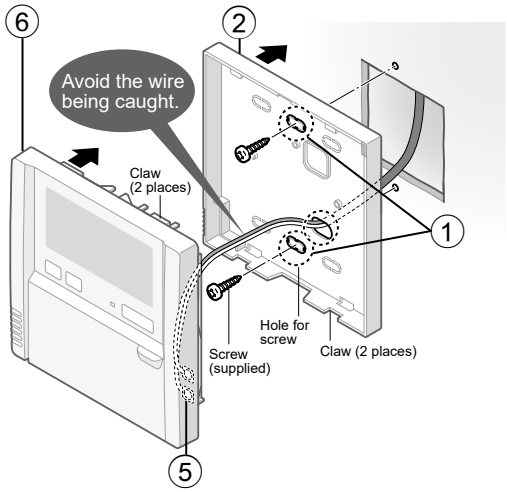


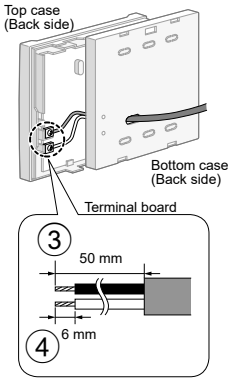


① Make 2 holes for screws using a driver.
② Mount the bottom case to the wall.
③ Cut here with a nipper and remove the burr with a file.
④ Remove the sheath. Approx. 150 mm
⑤ Remove the coating. Approx. 6 mm
⑥ Connect the remote control wiring.
- Make sure the wiring connection is in the correct direction.
- Arrange the wires along the groove of the case.
- Avoid the wire being caught.

⑦ Mount the top case.
- Align the claws of the top case and then align the claws of the bottom case.

Embedded type





① Make 2 holes for screws using a driver.
② Mount the bottom case to the wall.
- Pass the wire through the hole in the centre of the bottom case.

③ Remove the sheath. Approx. 50 mm
④ Remove the coating. Approx. 6 mm
⑤ Connect the remote control wiring.
- Make sure the wiring connection is in the correct direction.
- Avoid the wire being caught.

⑥ Mount the top case.
- Align the claws of the top case and then align the claws of the bottom case.

Setting / Test operation / Specifications

Setting

- Clock
- RC. setting mode (Main/sub, Clock type)
- Detailed setting mode (Ventilation fan output setting, Room temperature sensor, Temperature display setting)

Clock

1 **Press and hold SET for several seconds.**

2 **Set day of the week, hour and minute.**
DAY/TIME/TIMER ◀▶ → SET
(Repeat)
"▼": Su ↔ Mo ↔ … ↔ Sa

RC. setting mode

1 **Press and hold the 2 buttons for several seconds simultaneously.**
, SET

2 **Select the Code no.**
▽ △

3 **Select the Set data.**
DAY/TIME/TIMER ◀▶ → SET
The indicator illuminates after blinking.
Press .

Code no.	Item	Set data	
		0000	0001
01	Main/sub	Sub	Main
02	Clock type	24 hours	12 hours (AM/PM)

Detailed setting mode

1 **Press and hold the 3 buttons for several seconds simultaneously.**
, SET, CANCEL

2 **Select the Code no.**
▽ △

3 **Select the Unit no.**
UNIT

4 **Select the Set data.**
DAY/TIME/TIMER ◀▶ → SET
The indicator illuminates after blinking.
Press .

Code no.	Item	Set data	
		0000	0001
31	Ventilation fan output setting	Not connected	Connected
32	Room temperature sensor	Main unit	RC
33	Temperature display setting	°C	°F

Test operation

Turn on the circuit breaker beforehand, referring to the operating instructions for the unit. The remote controller starts.

1 **Press and hold for several seconds.**
[TEST] display appears. (The unit enters the test operation mode.)

2 **Press . Perform the test operation.**
[TEST] is displayed during the test operation.

3 **Press . Finish the test operation**
[TEST] display disappears.

4 **Delete the error history.**
Press and hold the 2 buttons for several seconds simultaneously.
, SET
Information of errors is displayed.
To delete the error history, press CANCEL.
Press to finish service mode.

Attention

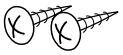
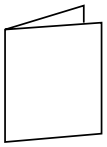
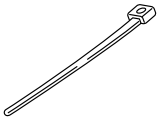
- Do not use this mode for purposes other than the test operation.
  (To prevent overload of the units)
- Read the installation instructions supplied with the units.
- Any of the Heat, Cool and Fan operations can only be performed.
- Temperature cannot be changed.
- The test operation mode is automatically turned o□ in 60 minutes. (To prevent continuous test operation)
- Outdoor units do not operate for approx. 3 minutes after the power is turned on or operation is stopped.

Specifications

Model No.		CZ-RTC4 / CZ-RTC4A
Dimensions		(H) 120 mm × (W) 120 mm × (D) 20 + 4.75 mm
Weight		160 g
Temperature/ Humidity range		0 °C to 40 °C / 20 % to 80 % (no condensation) *Indoor use only.
Power Source		DC16 V (supplied with indoor unit)
Clock	**Precision**	± 30 seconds/month (at normal temperature 25 °C) *Adjust periodically.
	Holding time	24 hours (when fully charged) *Approx. 8 hours are required for full charge.
Number of connected indoor units		Up to 8 units

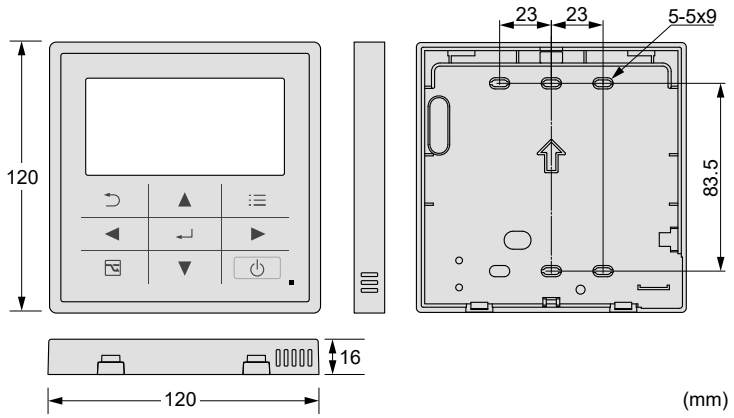
CZ-RTC5B
Specifications

Model No.	CZ-RTC5B
Dimensions	(H) 120 mm x (W) 120 mm x (D) 16 mm
Weight	180 g
Temperature/ Humidity range	0 ˚C to 40 ˚C / 20 % to 80 % (no condensation) *Indoor use only.
Power Source	DC16 V (supplied with indoor unit)
Clock precision	± 30 seconds/month (at normal temperature 25 ˚C) *Adjust periodically.
Number of connectable indoor units	Up to 8 units

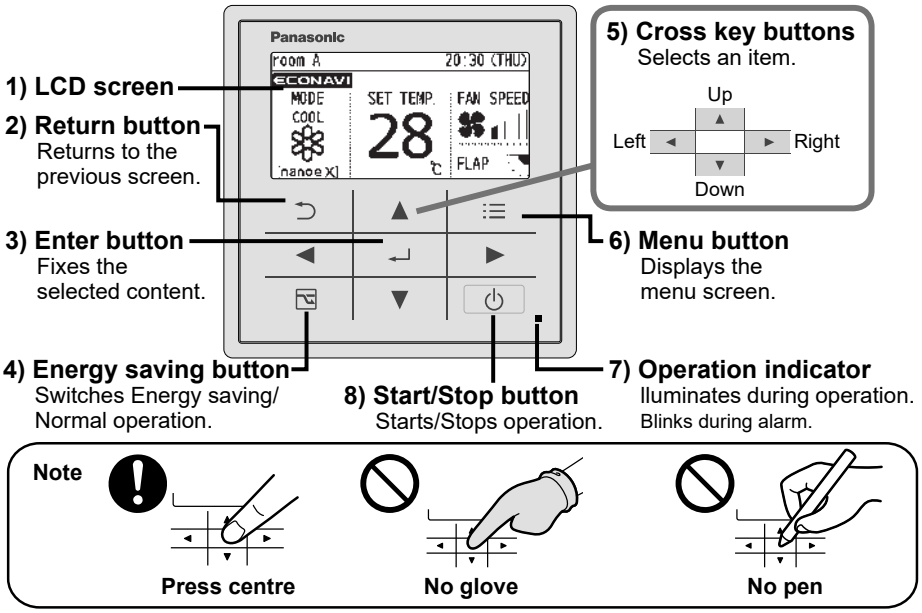
Supplied accessories		
Screw M3.8 x 16 (2)	**Quick Reference** (1)	**Clamper** (1)
		

*Remote control wiring is not supplied. (field supplied item)

Dimensions

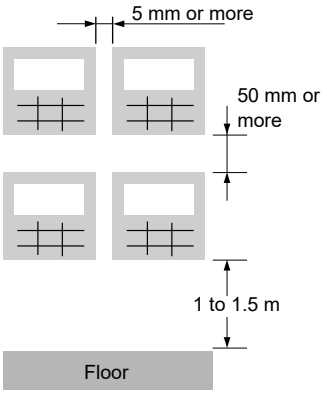


Part Names (Control panel)



Installation Precautions

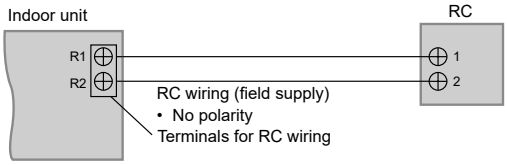
Installation location



- Install at the height of 1 to 1.5 m from the floor (Location where average room temperature can be detected).
- Install vertically against the floor.
- When installing more than 1 remote controller next to each other, keep distance of 5 mm on the right and left and 50 mm on top and bottom.
- Avoid the following locations for installation.
  - By the window, etc. exposed to direct sunlight or direct air
  - In the shadow or backside of objects deviated from the room airflow.
  - Location where condensation occurs (The remote controller is not moisture proof or drip proof.)
  - Location near heat source
  - Uneven surface
- Keep distance of 1 m or more from the TV, radio and PC. (Cause of fuzzy images or noise)

Remote control wiring

■ Wiring diagram



■ Type of wiring
- Use cables of 0.5 to 1.25 mm^2.

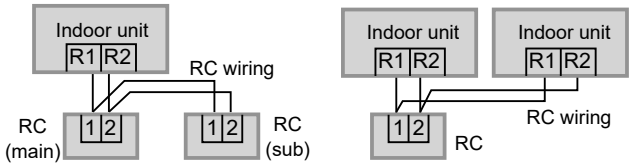
■ Total wire length: 500 m or less
(The wire length between indoor units should be 200 m or less.)

■ Number of connectable units
Remote controller: Max. 2
Indoor unit: Max. 8

Attention

- Use the field supplied RC wiring with at least 1 mm in thickness of insulation part including the sheath. Regulations on wire diameters differ from locally to locally. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with relevant rules and regulations.
- Be careful not to connect cables to other terminals of indoor units (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.
- If noise is induced to the unit power supply, attach a noise filter.

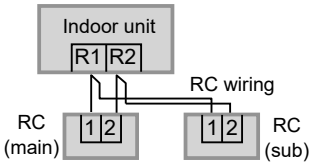
Wiring as shown below is prohibited.



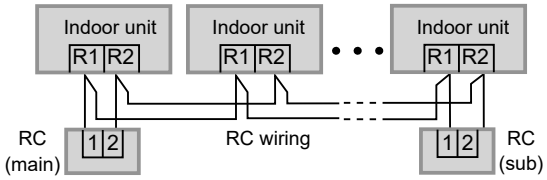
When setting both the main and sub remote controllers

After installation, set one remote controller to [Main] and the other to [Sub] for [Main/sub] for “Setting”. (See the other side)
When using the remote controllers* in combination, set this unit to [Main].
*CZ-RTC2, CZ-RTC4, CZ-RE2C2, CZ-RELC2

■ **Using 1 indoor unit**



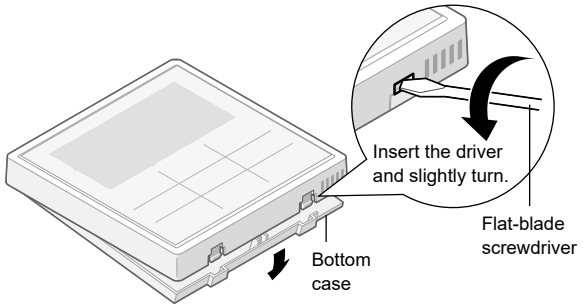
■ **Using more than 1 indoor unit**



Note Remote controllers can be connected to any indoor unit for operation.

Mounting

1 Remove the bottom case.



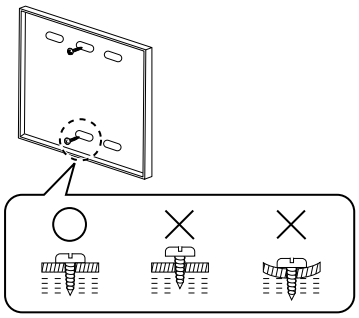
Attention

Mounting the bottom case

- Tighten the screws securely until the screw heads touch the bottom case. (Otherwise, loose screw heads may hit the PCB and cause malfunction when mounting the top case.)
- Do not over-tighten the screws. (The bottom case may be deformed, resulting in fall of the unit.)

Connecting the remote control wiring

- Arrange the wires as shown in the illustration for ❷ in step 2, avoiding unnecessary wires being stored in the remote controller case. (Caught wires may destroy the PCB.)
- Avoid wires touching parts on the PCB. (Caught wires may destroy the PCB.)



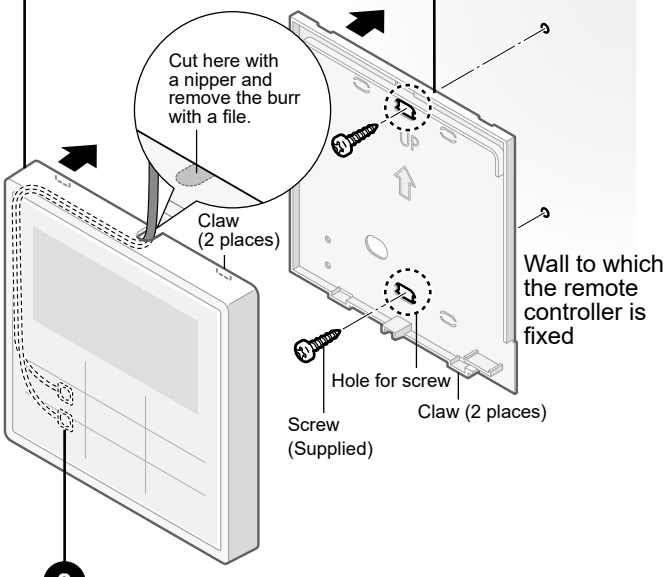
2 Mount to the wall.

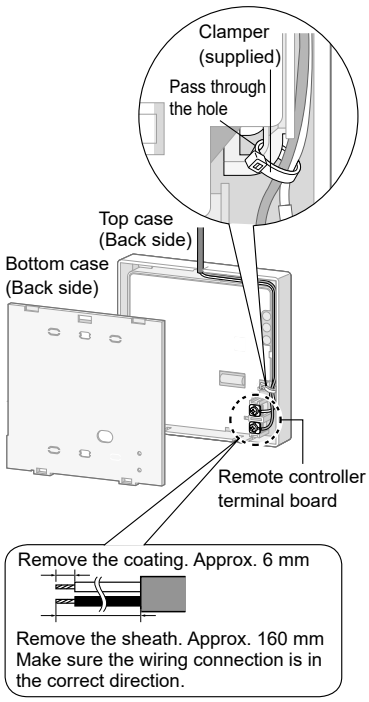
Exposed type

Preparation: Make 2 holes for screws using a driver.

3 Mount the top case.
- Align the claws of the top case and then align the claws of the bottom case.

1 Mount the bottom case to the wall.





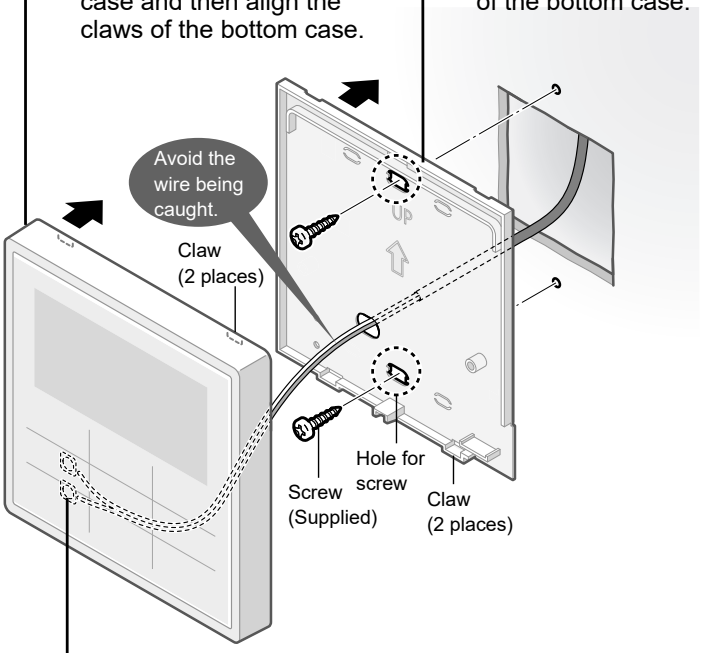
2 Connect the remote control wiring.
- Arrange the wires along the groove of the case.

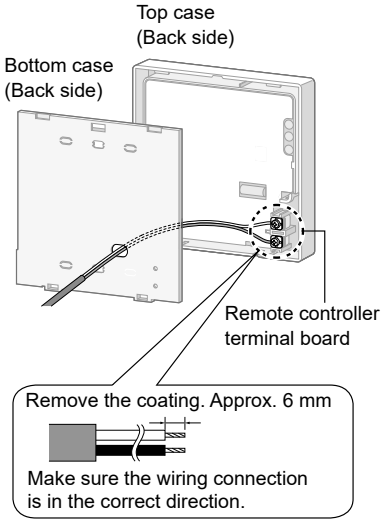
Embedded type

Preparation: Make 2 holes for screws using a driver.

3 Mount the top case.
- Align the claws of the top case and then align the claws of the bottom case.

1 Mount the bottom case to the wall.
- Pass the wire through the hole in the centre of the bottom case.





2 Connect the remote control wiring.

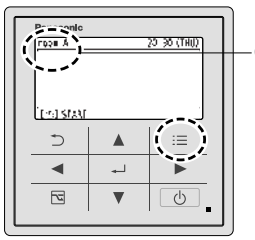
Setting

Preparation: Turn on the circuit breaker of units and then turn the power on. The remote controller starts, and wait until the [Assigning] display disappears.
(If [Assigning] continues to blink for 10 minutes or more, check the address setting of indoor units.)

Note **To return to the previous screen**
Press ⮌.

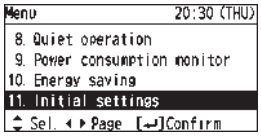
■ **Language** ■ **Clock** ■ **Controller name**

1 **Press ☰.**



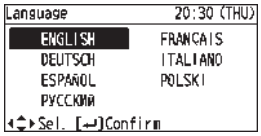
2 **Select [Initial settings].**
▲ ▼ → ↵

3 **Select the item to set.**
▲ ▼ → ↵



Language

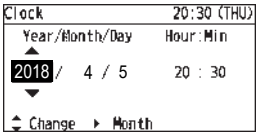
4 **Set.**
▲ ▼ ◄ ► → ↵



Default setting : English

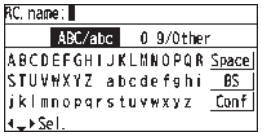
Clock

4 **Set.**
▲ ▼ → ► → ↵
(Repeat)



Controller name

4 **Set.**
▲ ▼ ◄ ► → ↵
(Repeat the same procedure for all characters.)



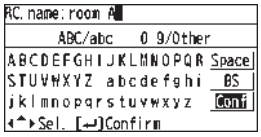
- Up to 16 characters
(Space is included in the number of characters.)

■ **To change the character type**
Select the character type with ▲ ▼ ◄ ► and press ↵.

■ **To delete 1 character**
Select [BS] with ▲ ▼ ◄ ► and press ↵.

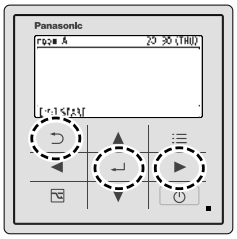
■ **To enter space**
Select [Space] with ▲ ▼ ◄ ► and press ↵.

5 **Select [Conf].**
▲ ▼ ◄ ► → ↵

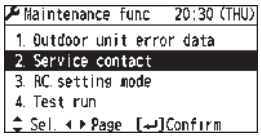


■ **Service contact**

1 **Press and hold the 3 buttons for 4 seconds or more simultaneously.**
↩, ↵, ►

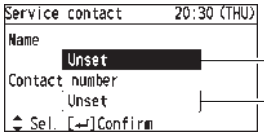


2 **Select the item to set.**
▲ ▼ → ↵

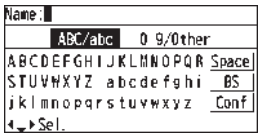


Service contact

3 **Select.** (**Name**)
▲ ▼ → ↵



4 ▲ ▼ ◄ ► → ↵
(Repeat the same procedure for all characters.)



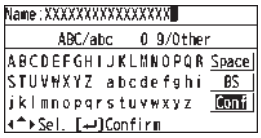
- Up to 16 characters
(Space is included in the number of characters.)

■ **To change the character type**
Select the character type with ▲ ▼ ◄ ► and press ↵.

■ **To delete 1 character**
Select [BS] with ▲ ▼ ◄ ► and press ↵.

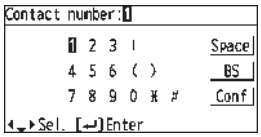
■ **To enter space**
Select [Space] with ▲ ▼ ◄ ► and press ↵.

5 **Select [Conf].**
▲ ▼ ◄ ► → ↵



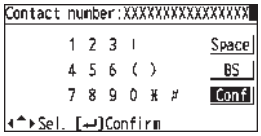
6 **Select on the screen for step 3.**
(Contact number)
▲ ▼ → ↵

7 ▲ ▼ ◄ ► → ↵
(Repeat the same procedure for all characters.)



- Up to 16 characters
(Space is included in the number of characters.)

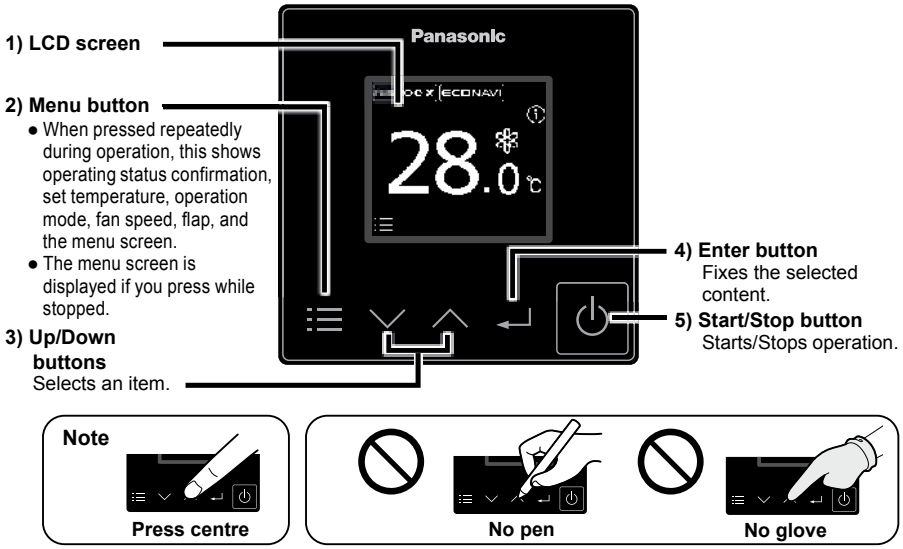
8 **Select [Conf].**
▲ ▼ ◄ ► → ↵



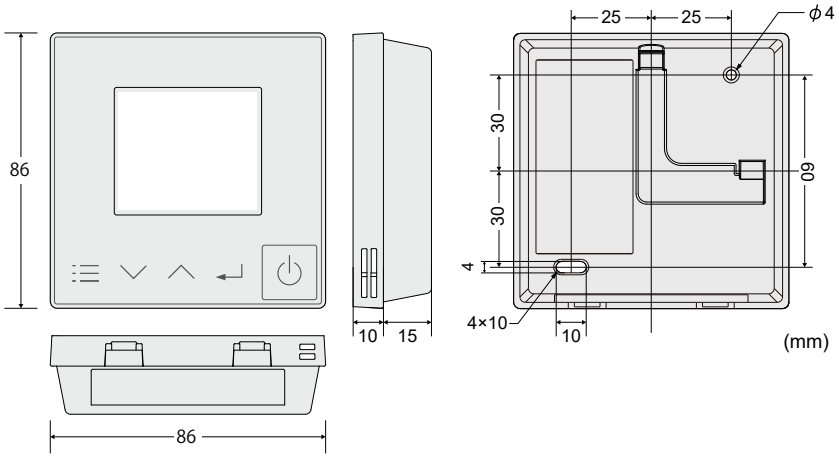
CZ-RTC6/CZ-RTC6BL/CZ-RTC6BLW

Part Names (Control panel)

The control panel colour of CZ-RTC6 series is white.



Dimensions

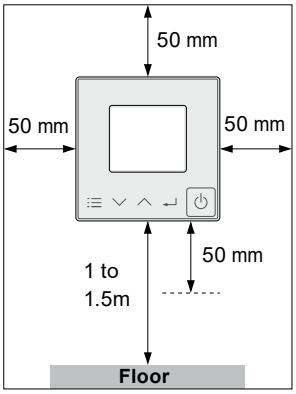


Supplied accessories			
Screw M3.8 x 16 (2)	**Operating Instructions** (1)	**Installation Instructions** (1)	**Clamper** (1)

*Remote control wiring is not supplied. (field supplied item)

Installation Precautions

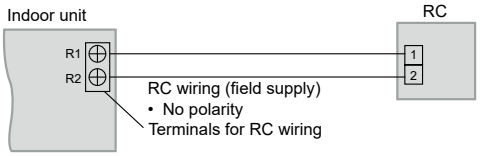
Installation location



- Install at the height of 1 to 1.5 m from the floor (Location where average room temperature can be detected).
- Install vertically against a wall or suitable supporting structure.
- Keep a space around the remote controller as detailed on the figure shown left.
- Avoid the following locations for installation.
  - By a window, etc. exposed to direct sunlight or external airflow
  - In the shadow or backside of objects deviated from the room airflow
  - Location where condensation occurs (The remote controller is not moisture proof or drip proof)
  - Location near heat source
  - Uneven surface
- Keep distance of 1 m or more from the TV, radio and PC. (Image blur or related noise may occur)

Remote control wiring

Wiring diagram



■ Type of wiring
- Use cables of 0.75 to 1.25 mm^2.

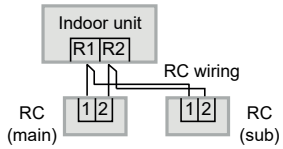
■ Total wire length: 500 m or less (The wire length between indoor units should be 200 m or less.)

■ Number of connectable units
- Remote controller: Max. 2
- Indoor unit:Max. 8

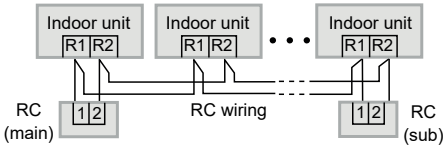
Attention

- Use the field supplied RC wiring with at least 1 mm in thickness of insulation part including the sheath. Wiring Regulations may differ depending on location. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES.
  You must ensure that installation complies with relevant rules and regulations.
- Be careful not to connect cables to other terminals of indoor units (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.
- If noise is induced to the unit power supply, attach a noise filter.

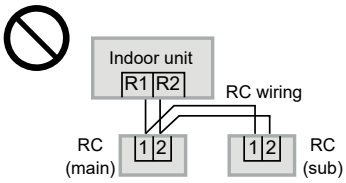
■ Using 1 indoor unit

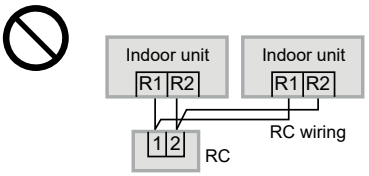


■ Using more than 1 indoor unit



Wiring as shown below is prohibited.





When setting both the main and sub remote controllers

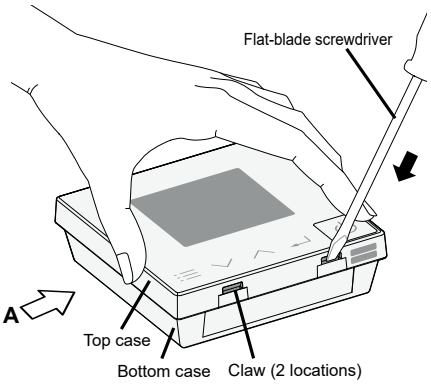
After installation, set one remote controller to [Main] and the other to [Sub] for [Main/sub] for “Setting”.
(See “Setting” section - “RC. setting mode”)
When using the remote controllers* in combination, set the CZ-RTC6(CZ-RTC6W) unit to [Sub].

*CZ-RTC5B, CZ-RTC6BL(CZ-RTC6WBL)

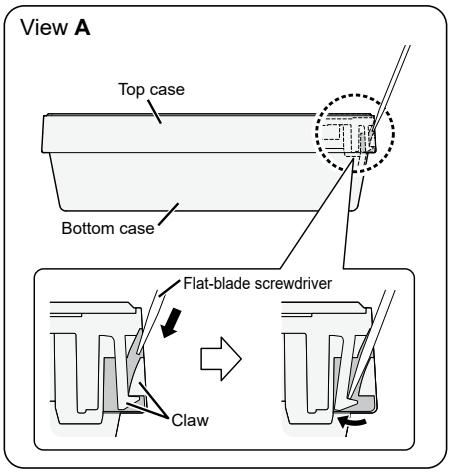
Note Remote controllers can be connected to any indoor unit for operation.

1 Remove the top case.

❶ Insert the screwdriver to the bottom case.
Insert the flat-blade screwdriver to the claws as show in the figure.



❷ Push the flat-blade screwdriver in.
Push down the flat-blade screwdriver along with the slope of the claws until the top case comes off.



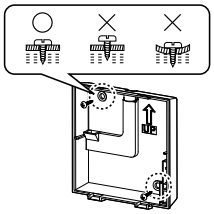
2 Mount to the wall.

There are 2 types of wall-mounting methods: Exposed type and Embedded type.

Attention

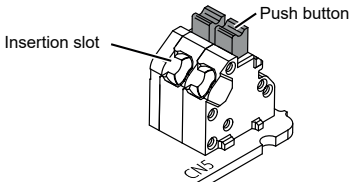
Mounting the bottom case

- Tighten the screws securely until the screw heads touch the bottom case.
  (Otherwise, loose screw heads may hit the PCB and cause malfunction when mounting the top case.)
- Do not over-tighten the screws.
  (The bottom case may be deformed, resulting in the unit becoming detached from the surface it is fixed to.)



Connection to the remote controller terminal board

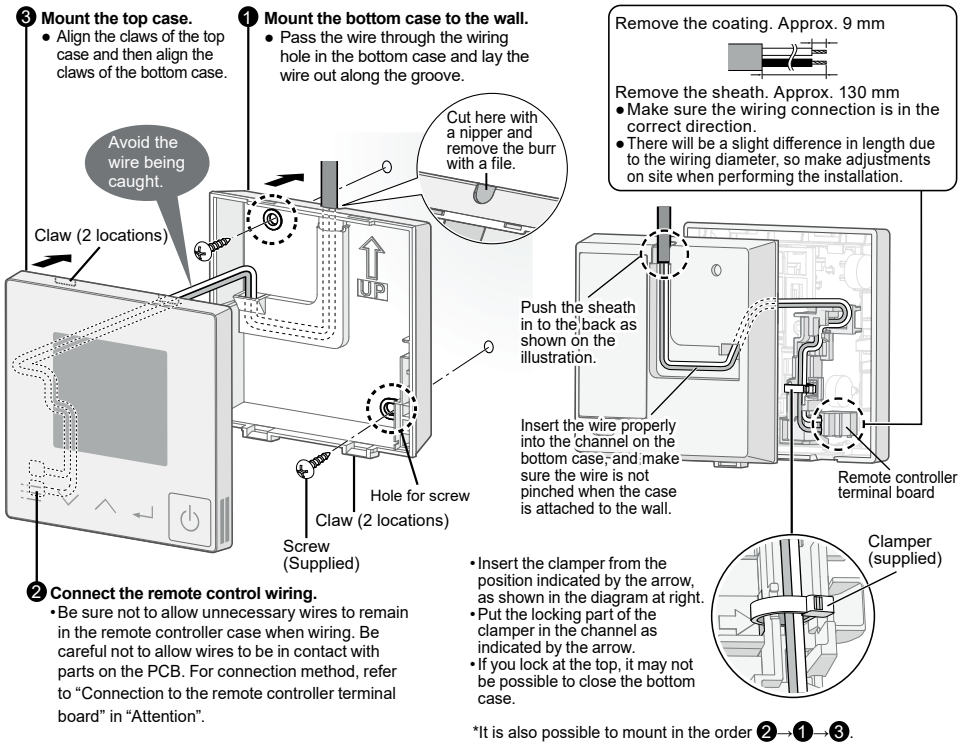
- Depress the push button using a round bar or finger, insert the remote control wiring securely from the wiring insertion slot and release the push button.
- Pull the remote control wiring lightly, and confirm it is secured.
- There is the danger of shorting if copper wire is exposed. Make sure the wire is properly inserted.



Remote controller terminal board

Exposed type

A protective film is attached on the Control panel.



❷ **Connect the remote control wiring.**

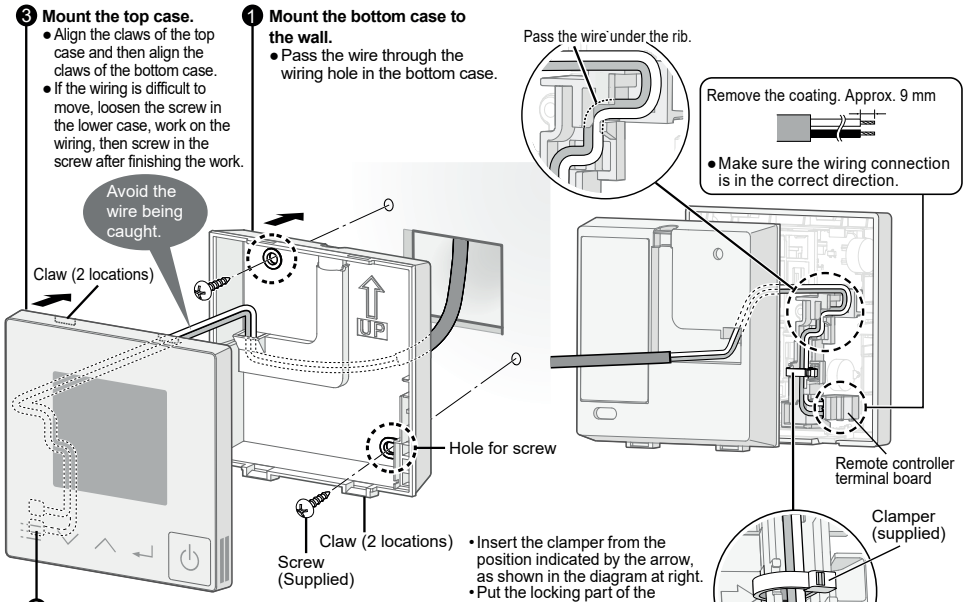
- Be sure not to allow unnecessary wires to remain in the remote controller case when wiring. Be careful not to allow wires to be in contact with parts on the PCB. For connection method, refer to “Connection to the remote controller terminal board” in “Attention”.

- Insert the clamper from the position indicated by the arrow, as shown in the diagram at right.
- Put the locking part of the clamper in the channel as indicated by the arrow.
- If you lock at the top, it may not be possible to close the bottom case.

*It is also possible to mount in the order ❷→❶→❸.

Embedded type

A protective film is attached on the Control panel.



❷ **Connect the remote control wiring.**

- Be sure not to allow unnecessary wires to remain in the remote controller case when wiring. Be careful not to allow wires to be in contact with parts on the PCB. For connection method, refer to “Connection to the remote controller terminal board” in “Attention”.

- Insert the clamper from the position indicated by the arrow, as shown in the diagram at right.
- Put the locking part of the clamper in the channel as indicated by the arrow.
- If you lock at the top, it may not be possible to close the bottom case.

*It is also possible to mount in the order ❷→❶→❸.

(B) Outdoor Unit
U-200PZH4E8, U-250PZH4E8

PRECAUTION 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:

⚠ WARNING	
❗	The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than A_{min} (m^2) [refer to Check of Density Limit] and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.
❗	The mixing of different refrigerants within a system is prohibited. Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety. Therefore, check beforehand. [The charging port thread diameter for R32 and R410A is 12.7 mm (1/2 inch - 20 UNF)].
❗	Ensure that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc. (Handling of R32 is similar to R410A.)
❗	Operation, maintenance, repairing and refrigerant recovery should be carried out by trained and certified personnel in the use of flammable refrigerants and as recommended by the manufacturer. Any personnel conducting an operation, servicing or maintenance on a system or associated parts of the equipment should be trained and certified.
❗	Any part of refrigerating circuit (evaporators, air coolers, AHU, condensers or liquid receivers) or piping should not be located in the proximity of heat sources, open flames, operating gas appliance or an operating electric heater.
❗	The user/owner or their authorized representative shall regularly check the alarms, mechanical ventilation and detectors, at least once a year, where as required by national regulations, to ensure their correct functioning.
❗	A logbook shall be maintained. The results of these checks shall be recorded in the logbook.
❗	In case of ventilations in occupied spaces shall be checked to confirm no obstruction.
❗	Before a new refrigerating system is put into service, the person responsible for placing the system in operation should ensure that trained and certified operating personnel are instructed on the basis of the instruction manual about the construction, supervision, operation and maintenance of the refrigerating system, as well as the safety measures to be observed, and the properties and handling of the refrigerant used.
❗	The general requirement of trained and certified personnel are indicated as below: a) Knowledge of legislation, regulations and standards relating to flammable refrigerants; and, b) Detailed knowledge of and skills in handling flammable refrigerants, personal protective equipment, refrigerant leakage prevention, handling of cylinders, charging, leak detection, recovery and disposal; and, c) Able to understand and to apply in practice the requirements in the national legislation, regulations and standards; and, d) Continuously undergo regular and further training to maintain this expertise.
❗	Air-conditioner piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
❗	Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
❗	Ensure protection devices, refrigerating piping and fittings are well protected against adverse environmental effects (such as the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris).
❗	Expansion and contraction of long runs piping in refrigerating systems shall be designed and installed securely (mounted and guarded) to minimize the likelihood hydraulic shock damaging the system.
❗	Protect the refrigerating system from accidental rupture due to moving furniture or reconstruction activities.
❗	To ensure no leaking, 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 (>1.04 MPa, max 4.15 MPa). No leak shall be detected.

⚠ CAUTION

1. General

- Must ensure the installation of pipe-work shall be kept to a minimum. Avoid use dented pipe and do not allow acute bending.
- Must ensure that pipe-work shall be securely mounted and guarded from physical damage.
- Must comply with national gas regulations, state municipal rules and legislation. Notify relevant authorities in accordance with all applicable regulations.
- Must ensure mechanical connections be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposal of the product, do follow to the precautions in #10 and comply with national regulations.
- In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified, measured and labelled.
  Always contact to local municipal offices for proper handling.
- Ensure the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
- Ensure refrigerant charge not to leak.
- Wear appropriate protective equipment, including respiratory protection, as conditions warrant.
- Keep all sources of ignition and hot metal surfaces away.
- Explosion-proof electronic components shall only be replaced with parts specified by the appliance manufacturer. Replacement with other parts may result in the ignition of refrigerant in the event of a leak.

2. Servicing

2-1. Qualification of workers

- Any qualified person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- Servicing shall be performed only as recommended by the manufacturer.
- The system is inspected, regularly supervised and maintained by a trained and certified service personnel who is employed by the person user or party responsible.

2-2. 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 minimised.
  For repair to the refrigerating system, the precautions in #2-3 to #2-7 must be followed before conducting work on the system.

2-3. Work procedure

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

2-4. General work area

- All maintenance staff and others working in the local area shall be instructed and supervised on the nature of work being carried out.
- Avoid working in confined spaces. Always ensure away from source, at least 2 meter of safety distance, or zoning of free space area of at least 2 meter in radius.

2-5. 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 flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe.
- In case of leakage/spillage happened, immediately ventilate area and stay upwind and away from spill/release.
- In case of leakage/spillage happened, do notify persons down wind of the leaking/spill, isolate immediate hazard area and keep unauthorized personnel out.

2-6. 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 at hand.
- Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

2-7. No ignition sources

- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it can lead to the risk of fire or explosion. They must not be smoking when carrying out such work.
- 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.

2-8. 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.

2-9. 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 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 can corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are properly protected against being so corroded.

2-10. Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- Initial safety checks shall include but not limit to:-
  - That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
  - That there is no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.
- At all times the manufacturer's maintenance and service guidelines shall be followed.
- If in doubt consult the manufacturer's technical department for assistance.
- 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.
- The owner of the equipment must be informed or reported so all parties are advised thereinafter.

3. Sealed electrical components
   - Sealed electrical components shall not be repaired.

4. 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.

5. Detection of flammable refrigerants
   - Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
   - A halide torch (or any other detector using a naked flame) shall not be used.
   - The following leak detection methods are deemed acceptable for all refrigerant systems.
     - No leaks shall be detected when using detection equipment with a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>1.04 MPa, max 4.15 MPa) for example, a universal sniffer.
     - Electronic leak detectors may be used to detect flammable refrigerants, but the sensitivity can be inadequate, or can need re-calibration.
       (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, for example, bubble method and fluorescent agent method. The use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
     - 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. The precautions in #6 must be followed to remove the refrigerant.

6. Refrigerant removal and circuit evacuation
   - When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.
     However, it is important that best practice is followed since flammability is a consideration.
     The following procedure shall be adhered to:

     1. Safely remove refrigerant following local and national regulations
     2. Evacuate
     3. Purge the circuit with inert gas
     4. Evacuate
     5. Continuously flush with inert gas when using flame to open circuit
     6. Open the circuit

   - The refrigerant charge shall be recovered into the correct recovery cylinders.
   - Compressed air or oxygen shall not be used for purging refrigerant systems, only use OFN (oxygen free nitrogen) for this task.
   - Purging of the refrigerant circuit shall be achieved by breaking the vacuum in the system with inert gas and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to vacuum.
   - This process shall be repeated until no refrigerant is within the system.
   - The system shall be vented down to atmospheric pressure to enable work to take place.
   - Ensure that the outlet of the vacuum pump is not close to any potential ignition sources and there is ventilation available.

7. 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.
     - Label the system when charging is complete (if not already labelled).
     - Extreme care shall be taken not to over fill the refrigerating system.
   - Prior to recharging the system it shall be pressure tested with OFN (refer to #6).
   - 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.
   - Electrostatic charge may accumulate and create a hazardous condition when charging and discharging the refrigerant.
     To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

8. Decommissioning
   - Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
   - 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 over fill 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.
   - Electrostatic charge may accumulate and create a hazardous condition when charging or discharging the refrigerant.
     To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

9. Labelling
   - Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
   - The label shall be dated and signed.
   - Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

10. Recovery
   - When removing refrigerant from a system, either for servicing or decommissioning, it is required to follow 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 are 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.
   - 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 concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. Consult manufacturer if in doubt.
   - 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 processed according to the local legislation 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. Draining of oil from a system shall be carried out safely.

Check of Density Limit

The refrigerant (R32), which is used in the air conditioner, is a flammable refrigerant.
So the requirements for installation space of appliance are determined according to the refrigerant charge amount (m_c) used in the appliance.

The minimum indoor floor space compared with the amount of refrigerant is roughly as follows:

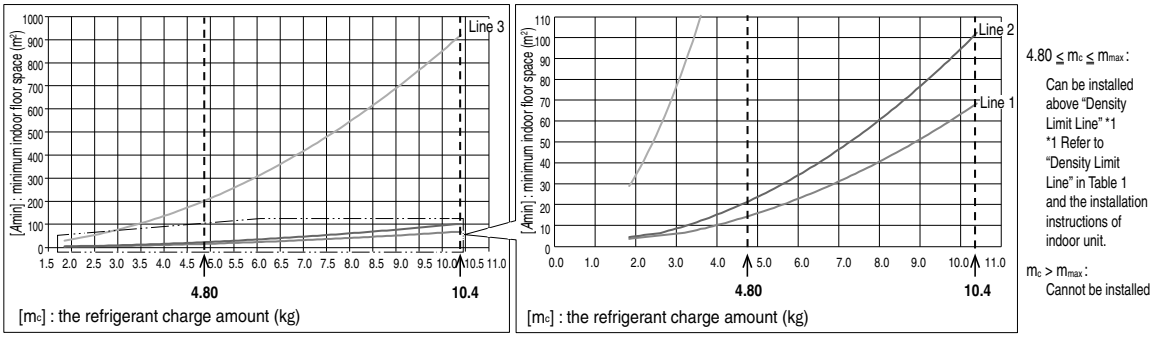


Table 1		
Installation height of Indoor Unit: h_{inst}	Indoor Unit Type	Density Limit Line
h_{inst} > 2.5 m	High Static Pressure Duct (S-200PE4E, S-250PE4E)	Line 1
h_{inst} ≥ 2.2 m	4-Way Cassette Duct Units (Horizontal Installation)	Line 1
1.8 m ≤ h_{inst} < 2.2 m	Duct Units (Horizontal Installation)	Line 2
h_{inst} < 1.8 m	Duct Units (Vertical Installation)	Line 3

	U-200PZH4E8	U-250PZH4E8
m_{max}	10.40 kg	10.40 kg

m_c : The refrigerant charge amount (Total of refrigerant at shipment and refrigerant charge amount in the field).

- Please calculate m_c according to piping length in the field as shown in the calculation example below.

< Calculating example > **• Refer to table "Specification for pipe connecting indoor unit to outdoor unit.".**
(conditions : U-200PZH4E8 (Single) Total pipe length = 40 m)

m_c = ① + ② = ① + (③ ∗ (④ – ⑤)) = 4.80 kg + (0.08 kg ∗ (40 m – 30 m) = 5.60 kg

< Calculating example > **• Please refer to "8. TWIN, TRIPLE AND DOUBLE TWIN TYPE CONNECTIONS-Refrigerant charging"**
(conditions : U-200PZH4E8 (TRIPLE) Total pipe length = 65 m)

m_c = ① + ② = ① + (③ ∗ (④ – ⑤ – ⑦ – ⑧ – ⑨)) + (⑥ ∗ (⑦ + ⑧ + ⑨)) = 4.80 kg + 0.08 kg ∗ (65 m - 30 m - 3 m - 4 m - 5 m) + 0.040 kg ∗ (3 m + 4 m + 5 m) = 7.12 kg

①: Refrigerant charged at shipment ②: Refrigerant charge amount in the field ③: Additional charge per 1 m (Main tube)
④: Total pipe length ⑤: Charge-less pipe length (30 m) ⑥: Additional charge per 1 m (Branch pipe)
⑦: 1st Branch pipe length (3 m) ⑧: 2nd Branch pipe length (4 m) ⑨: 3rd Branch pipe length (5 m)

- If the total piping length is within the maximum value of the charge-less piping length, refrigerant charge in the field is unnecessary.

m_{max} : The maximum refrigerant charge amount

■ ACCESSORIES SUPPLIED WITH OUTDOOR UNIT

The following parts are supplied as accessories with each outdoor unit. Check that all accessory parts are present before installing the outdoor unit.

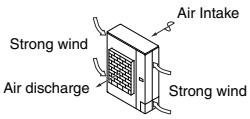
Part name	Diagram	Quantity
Protective bushing (For protecting electrical wires)		2

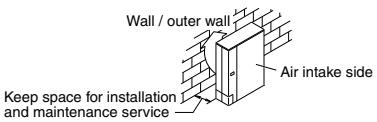
Part name	Diagram	Quantity
Banding strap (For tying electrical wires together)		4

■ SELECT THE OUTDOOR UNIT INSTALLATION LOCATION

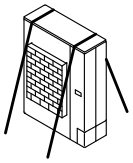
⚠ WARNING	Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

1. Install the unit once you have checked that the installation location matches the following conditions.
   - A location with sufficient ventilation.
   - Possibly a location that is sheltered from rain or direct sunlight and is well-ventilated so that hot and cool air does not build up.
   - A location where the area around the discharge is not exposed to animals or plants which could adversely affect the release of hot or cool air from the unit.
   - A location where the discharge and operation noise will not be a nuisance to the neighbours.
   - A location that can support the product's weight or vibrations and secured for horizontal installation wherever possible.
   - A location that does not obstruct the air discharge or intake.
   - A location where there is no danger of flammable or corrosive gas leaks.
   - A location that provides space for installation and service.
   - A location that allows the pipe and cable length fixture for internal and external connections.
   - It may need two or more people to carry out the installation work.
2. Refer to the diagram below for the installation location which is exposed to strong wind.
   - If a strong wind of more than 5 m/sec blows to the area directly in front of the discharge, the outdoor unit's air flow is reduced and the outflow may re-enter (short circuit) causing the following outcome:
     "Reduced capacity", "Increased frost formation during heating" or "Operation stopped due to increased pressure".
     Should an exceptionally strong wind blow to the area directly in front of the discharge of the outdoor unit; there is the risk of damage due to the fan's high-speed reverse rotation.
   - If the direction of the prevailing wind is known when operating the unit, place the unit at an appropriate angle to the wind's direction so that the discharge faces towards a building or a wall.





3. If installing at locations prone to snowfall, install the unit as high as possible with suitable roofing which shelters the unit from snow.
4. Avoid installing the unit in locations where there are petroleum products (such as machine oil), saline content (such as coastal areas), sulphurous gas and where high frequency noise is generated.
5. Place the indoor and outdoor unit, power cords and indoor/outdoor unit connection cables at a minimum distance of 1 meter or more away from televisions and radios. This is to avoid interference to picture and/or sound.
   (However, depending on the electromagnetic waves, noise interference may still occur even with the 1 meter separation.)
6. For restaurants and kitchens, avoid installing at locations which draws oil and steam.
   Plastic parts can deteriorate from droplets of oil and steam or it can cause falling parts or water leakage.
7. Avoid installing at the location where cutting oil mist or iron powder is present.
8. If there is an immense voltage fluctuation due to the location's problem, ensure to split the power supply.
9. When installing the product in a place where it will be affected by typhoon or strong wind such as wind blowing between buildings, including the rooftop of a building and a place where there is no building in surroundings, fix the product with an overturn prevention wire, etc.
10. Ensure to assign several people or use a mechanical lift, etc. to transport the unit.

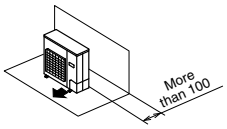


■ SELECTING THE LOCATION FOR INSTALLATION SERVICE

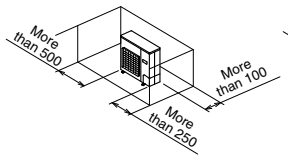
Please secure necessary space to guarantee performance and service & maintenance.
For multiple installations, please secure enough space to enable removal of side face screws between units. (unit:mm)

(A) If there are obstacles at the intake

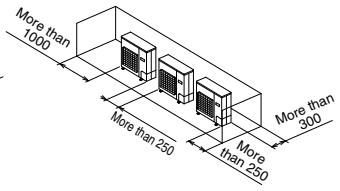
- If the upper part is open
  - ① For separate installation location
    - Only if there are obstacles at the intake



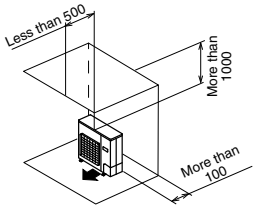
  - If there are obstacles on both sides



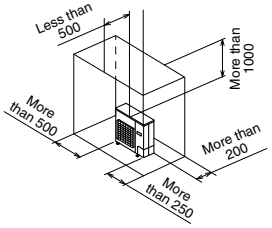
  - ② For multiple units (more than 2 units)
    - If there are obstacles on both sides



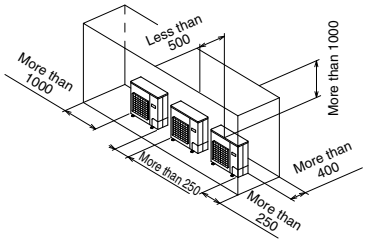
- If there are obstacles above the unit
  - ① For separate installation location
    - Only if there are obstacles at the intake



  - If there are obstacles on the intake and the other side



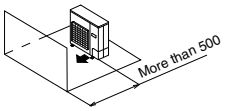
  - ② For multiple units (more than 2 units)
    - If there are obstacles on both sides



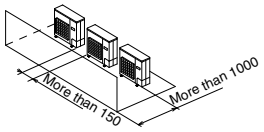
(B) If there are obstacles at the discharge

● If the upper part is open

① For separate installation location

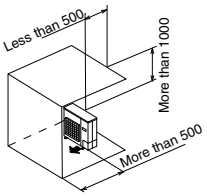


② For multiple units (more than 2 units)

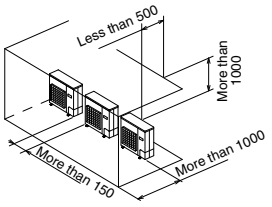


● If there are obstacles above the unit

① For separate installation location



② For multiple units (more than 2 units)

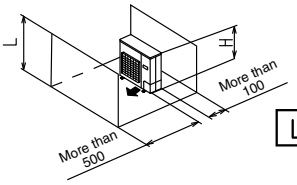


(C) If there are obstacles on both the intake and discharge

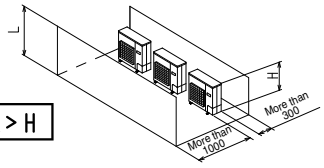
Pattern 1 If there is an obstacle that is higher than the unit on the intake side. (There is no limit to the height of the obstacle above the discharge.)

● If the upper part is open

① For separate installation location



② For multiple units (more than 2 units)



L > H

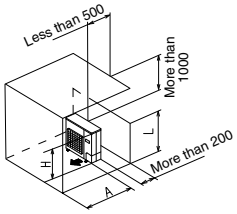
● If there are obstacles above the unit

① For separate installation location

• The dimensions for H, A and L are shown in the following table.

	L	A
L ≤ H	0 < L ≤ 1/2 H	500
	1/2H < L ≤ H	750
H < L	Install a pedestal or mount so that L ≤ H	

• Cover the bottom part of the pedestal or mount so that air does not go through it.

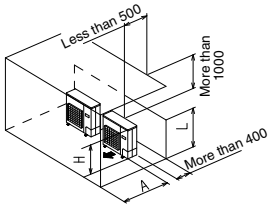


② For multiple units (up to 2 units)

• The dimensions for H, A and L are shown in the following table.

	L	A
L ≤ H	0 < L ≤ 1/2 H	1000
	1/2H < L ≤ H	1250
H < L	Install a pedestal or mount so that L ≤ H	

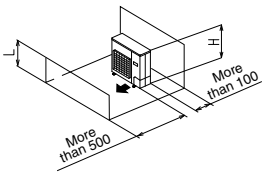
• Cover the bottom part of the pedestal or mount so that air does not bypass it.
• A limit of only 2 units can be installed.



Pattern 2 If there is an obstacle that is higher than the unit on the discharge side. (There is no limit to the height of the obstacle above the discharge.)

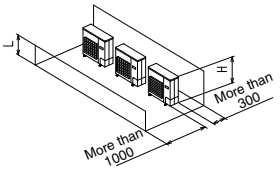
● If the upper part is open

① For separate installation location



L ≤ H

② For multiple units (more than 2 units)



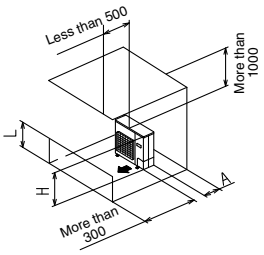
● If there are obstacles above the unit

For separate installation location

• The dimensions for H, A and L are shown in the following table.

	A
L ≤ H	100
H < L	Install a pedestal or mount so that L ≤ H

• Cover the bottom part of the pedestal or mount so that air does not go through it.



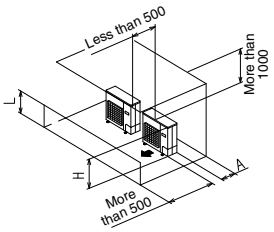
② For multiple units (up to 2 units)

• The dimensions for H, A and L are shown in the following table.

	A
L ≤ H	400
H < L	Install a pedestal or mount so that L ≤ H

• Cover the bottom part of the pedestal or mount so that air does not bypass it.

• A limit of only 2 units can be installed.



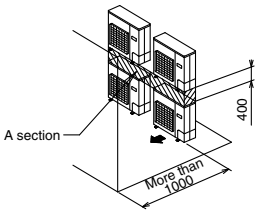
(D) Stacking installation setup

• Stack up to 2 tiers.

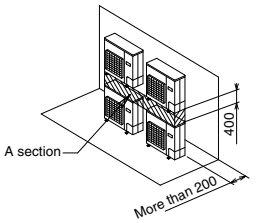
• A dimension of approximately 400 mm is required for the second tier outdoor unit's drain pipe and space for maintenance of the first tier outdoor unit.

• Close A section (the space between the upper and lower level outdoor units) so the outtake air does not bypass it.

① If there are obstacles at the discharge

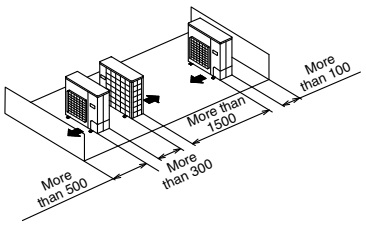


② If there are obstacles at the intake

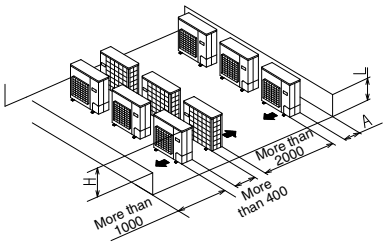


(E) For multiple row installation (on the roof, etc.)

① For one row installation setup



② For multiple units (more than 2 units)



• The dimensions for H, A and L are shown in the following table.

	A
L ≤ H	300
H < L	Installation not possible

• The above mentioned distance is required for optimal unit performance. Allow as much space as possible in order to obtain the best performance from the units.

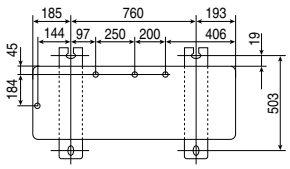
■ TRANSPORT AND INSTALL THE OUTDOOR UNIT

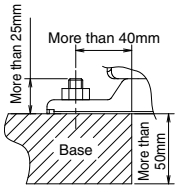
- Transporting
  1. Transport the outdoor unit in its original packaging as close as possible to the installation location.
  2. In the event that the unit needs to be lifted or suspended, use a rope or belt and use cloth or wood as padding to avoid damaging the unit.
  3. Use the side handles to carry the unit and be careful not to touch the fin with your hand or any objects.
- Installation

⚠ CAUTION	
	Route the tubing so that it does not contact the compressor, panel or other parts inside the unit. Increased noise will result if the tubing contacts these parts.
	When routing the tubing, use a tube bender to bend the tubes.
	In cold-weather regions, in order to prevent draingage water from freezing, do not install the drain socket cap. Also take steps to prevent water from accumulating around the unit.

1. Read the "Select the outdoor unit installation location" thoroughly before installing the outdoor unit.
2. When installing to a concrete or solid surface, use M10 or a W 3/8 bolts and nuts to secure the unit. Ensure that it installed upright on a horizontal plane. (Use an anchor bolt for the installation as shown in the diagram below.)
3. Avoid installing on a slanted roof.
4. In the event where the roof is at risk of receiving oscillations or vibrations, secure the unit with a seismic isolating mount or vibration absorbing rubber.
5. The drain water will be discharged from the unit during heating or defrosting operation mode.
   Select an appropriate location with good drainage system.
   (In winter, there is a risk of slipping caused by freezing depending on the installation location.)
   * Ensure a height of 15 cm or more at the feet on both sides of the unit.
   * Precautions for Installation in Heavy Snow Areas.
     The platform should be higher than the maximum snow depth + 50 cm.
     (In this case, leave clearance below the unit for the drain tube, and to prevent freezing of drainage water in cold-weather regions.)
   * Please consult us if installing the drain socket (Field supply).
   * When using a drain tube, install the drain socket (Field supply) onto the drain hole.
     Seal the other drain hole with the rubber cap (Field supply). For details, refer to the instruction manual of the drain socket (Field supply).
     After completing the installation work of the drain socket, make sure that the water does not leak from any part of connection.
   * In cold regions (where the outdoor temperature can drop to below 0° for 2 to 3 consecutive days), the drain water may freeze and may prevent the fan from operating. For this case, do not use the drain socket (Field supply).

(Unit: mm)



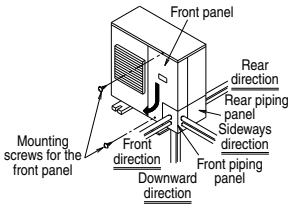


Anchor bolt length

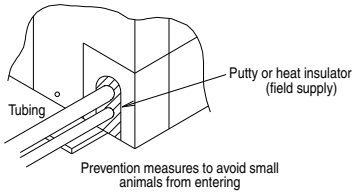
■ REFRIGERANT INSTALLATION

For indoor unit refrigerant tubing installation, refer to the installation instruction manual that comes with that indoor unit.

1. Precautions during refrigerant installation.
   - Use clean tubes with no dust inside.
     The tube may corrode with the presence of fluorine dust which will adversely affect the refrigerant tubing system due to deterioration of the refrigerant oil, etc.
   - This unit is specifically for R32. Ensure to adhere to the following items and install accordingly:
     - Use tube cutters and flaring tools which are specially designed for use with R32.
     - When connecting with flaring tools, coat the flare section with ether-based oil.
     - Ensure to use flare nuts supplied with the unit when connecting this unit.
     - Only for storing or for open tubes.
     - Set the lower limit of the allowable tube length to 5 m.
       If the tube is shorter than 5 m, the refrigerant may become overfilled and a problem such as abnormal high pressure could occur.
     - Carefully handle the liquid refrigerant, as it may cause a frostbite.
     - Do not release refrigerants during the tubing works for installing, re-installing and repairing refrigeration parts.



2. The local tubes can protrude from any four directions.
   - Make holes in the tube panel for the tubes to penetrate it and lay the tubes accordingly.
     - It is recommended to apply additional substance to the cut area for anti-rust protection.
   - Ensure to install tube panels to prevent rain water from getting into the unit.
   - Close the gap at the tube connected area with putty or heat insulator (field supply).
     - If an insect or small animal enters the outdoor unit, there is the risk of shorting in the product electronic casing.
       [Remove the front panel]
       (1) Remove the 2 mounting screws.
       (2) Slide the front panel using your hands downwards to release the pawls.
       Then remove by pulling the panel towards you.



Specification for tube connecting indoor unit to outdoor unit.

			U-200PZH4E8	U-250PZH4E8	U-200PZH4E8 U-250PZH4E8 (TWIN)	U-200PZH4E8 U-250PZH4E8 (TRIPLE, DOUBLE TWIN)
Pipe outer diameter	Liquid	mm (in.)	12.7 (1/2)			
			Flare Connection			
	Gas	mm (in.)	22.22 (7/8)			
			Brazing			
Maximum pipe length		(m)	100			
Maximum elevation	Outdoor unit is placed higher	(m)	30			
	Outdoor unit is placed lower	(m)	30			
Charge-less pipe length		(m)	5 ~ 30			
Additional charge per 1 m (Main tube)		(g)	80			
Refrigerant charged at shipment		(kg)	4.8			
Total refrigerant amount (Max. pipe length)		(kg)	10.4			

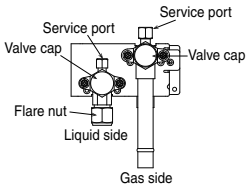
Remark: Do not overcharge.

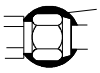
Tubing Thickness:

Size mm (in.)	ø6.35 (1/4)	ø9.52 (3/8)	ø12.7 (1/2)	ø15.88 (5/8)	ø19.05 (3/4)	ø22.22 (7/8)	ø25.4 (1)
Thickness. mm	≥ 0.8	≥ 0.8	≥ 0.8	≥ 1.0	≥ 1.0	≥ 1.0	≥ 1.0
Material	Temper-O (Soft copper tube)					Temper-1/2H, H (Hard copper tube)	

Precautions when operating the 3-way valve for tubing installation

- Do not open the 3-way valve until the piping installation is completed.
  - It is closed during shipment.
  - During installation the side panel may warp if only the flare nut is loosened and tightened with a torque wrench. As a result, always be sure to secure to the hexagonal part of the 3-way valve with a spanner, or other tool.
- Refer to the following table for the tightening torque of the 3-way valve flare nuts.
  - If the nuts are over tightened, they may cause the flares to break or leak.
- Do not add additional force to the valve's cover.
  - Using spanners on the cover or valve itself (other than the hexagonal parts) may cause gas leakage. Avoid using spanners on the cover or parts other than the hexagonal part of the valve.
- When cooling in the low outdoor air, the low-pressure side pressure may decrease. Seal sufficiently the flare nut in the service valve (both gas and liquid tubes) with silicone sealant to avoid the gas leak caused by freezing.





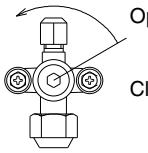
Silicone Sealant must be neutral cure and ammonia free. Use of silicon containing ammonia can lead to stress corrosion on the joint and cause leakage.

Ensure to do the re-flaring of pipes before connecting to units to avoid leaking.

To prevent the ingress of moisture into the joint which could have the potential to freeze and then cause leakage, the joint must be sealed with suitable silicone and insulation material. The joint should be sealed on both liquid and gas side.

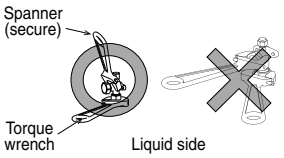
[3-way valve operation method]

- Use an Allen wrench. Direction to open



Opening : Open the cover and turn the Allen wrench counter-clockwise until it stops.

Closing : Open the cover and turn the Allen wrench clockwise until it stops.

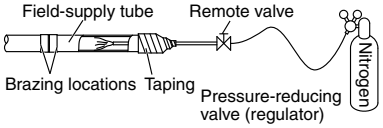


(Please use a single, open-end spanner to loosen and tighten the liquid side 3-way valve flare nut.)

Precautions for brazing

- Be sure to replace the air inside the tube with nitrogen to prevent oxide fi lm from forming during the brazing process. Be sure to use a damp cloth or other means to cool the valve unit during brazing.

Work method



⚠ CAUTION

1. Be sure to use nitrogen. Oxygen, CO_2, and CFC must not be used.
2. Use a pressure-reducing valve on the nitrogen tank.
3. Do not use agents intended to prevent the formation of oxide film. They will adversely affect the refrigeration oil, and may cause equipment failure.

⚠ CAUTION

If the exterior of the outdoor unit valves has been finished with a square duct covering, make sure you allow sufficient space to access the valves and to allow the panels to be attached and removed.

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack. Never grasp the drain or refrigerant connecting outlets when moving the unit.

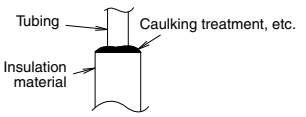
		Tightening torque (approx.)
Valve cap (Valve size)	ø12.70 (Liquid tube)	49 N•m ~ 55 N•m {490 kgf•cm ~ 550 kgf•cm}
Service port		10.7 N•m ~ 14.7 N•m {107 kgf•cm ~ 147 kgf•cm}

Precautions for handling the valve cap

- Ensure not to scratch the inner surface of the valve or the end of the valve shaft.
  - Once adjustments to the valve are completed, ensure to tighten the valve cap according to the prescribed torque.

Precautions for handling the service ports

- Use a push-rod with a charge hose.
  - Once adjustments to the valve are completed, ensure to tighten the valve cap according to the prescribed torque.



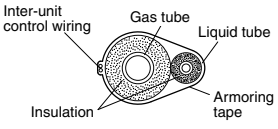
Precautions for connecting the tubes

- For proper connection, align the union and flare straight with each other.
- Ensure that the tubes do not come into contact with the compressor's bolts or exterior panel.
- There is a risk of condensation from the 3-way valve coming out between the insulation material and the indoor unit's tubing when you install the outdoor unit above then the indoor unit. Ensure to caulk the connection parts.

Precautions for insulation installation | **Maximum temperature limit of gas or liquid tubing exceeds 120 °C**

- In high humidity environment, reinforce the insulation material for the refrigerant tubing. Failure to do so may result in condensation on the surface of the insulation material.
- Use materials with good heat-resistant properties as the heat insulator for the tubes. Ensure to insulate both the gas and liquid tubes. If the tubes are not adequately insulated, condensation and water leakages may occur.
- Ensure that the current insulation covers the tubes up to the unit's connecting part. If the tubing is exposed, it may cause condensation or burn (when touch the tube).

Two tubes arranged together



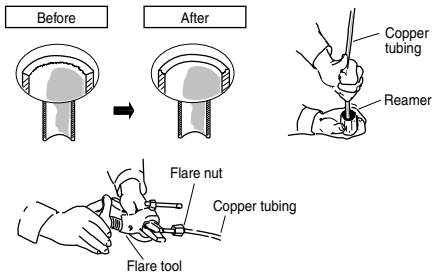
Precautions for flare nut installation

Use of the Flaring Method
Many of conventional split system air conditioners employ the flaring method to connect refrigerant tubes that run between indoor and outdoor units. In this method, the copper tubes are flared at each end and connected with flare nuts.

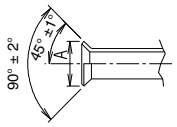
Flaring Procedure with a Flare Tool
(1) Cut the copper tube to the required length with a tube cutter. It is recommended to cut approx. 30 – 50 cm longer than the tubing length you estimate.
(2) Remove burrs at each end of the copper tubing with a tube reamer or a similar tool. This process is important and should be done carefully to make a good flare. Be sure to keep any contaminants (moisture, dirt, metal filings, etc.) from entering the tubing.

NOTE
When reaming, hold the tube end downward and be sure that no copper scraps fall into the tube.
(3) Remove the flare nut from the unit and be sure to mount it on the copper tube.
(4) Make a flare at the end of the copper tube with a flare tool.

Deburring



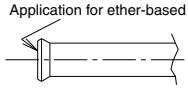
- Dimensions when adding flare nuts and the tightening torque
- For the flare nuts at tubing connections, be sure to use the flare nuts that were supplied with the unit. The refrigerant tubing that is used must be of the correct wall thickness as shown in the table below.

Tubing size	Tightening torque (approx.)	Flare section dimensions A	Tube thickness	Flare configuration
ø 6.35	14.0 N•m ~ 18.0 N•m {140 kgf•cm ~ 180 kgf•cm)	8.7 ~ 9.1 mm	0.8 mm	
ø 9.52	34.0 N•m ~ 42.0 N•m {340 kgf•cm ~ 420 kgf•cm)	12.8 ~ 13.2 mm	0.8 mm	
ø 12.7	49.0 N•m ~ 55.0 N•m {490 kgf•cm ~ 550 kgf•cm)	16.2 ~ 16.6 mm	0.8 mm	
ø 15.88	68.0 N•m ~ 82.0 N•m {680 kgf•cm ~ 820 kgf•cm)	19.3 ~ 19.7 mm	1.0 mm	
ø 19.05	100.0 N•m ~ 120 N•m {1020 kgf•cm ~ 1220 kgf•cm)	20.6 ~ 24.0 mm	1.0 mm	

After tubing connection has completed, ensure there is no gas leakage.

- Because the pressure is approximately 1.6 times higher than refrigerant R22 pressure, the use of flare nuts (type 1) or thin-walled tubes may result in tube rupture, injury, or asphyxiation caused by refrigerant leakage.
- When tightening the flare nut, coat the flares (inner surface only) with refrigerant oil on the flares. Firstly, screw in 3-4 turns by hand.
  * Ensure not to get oil on the screw part.
    Refrigerant oil used is ether-based.
- Once the tubing connections are completed, perform leakage inspection using nitrogen gas.
- When flared joints are reused, the flare part shall be re-fabricated.
- Selecting the location for installation service.

Application for ether-based oil



Incase of reusing existing refrigerant tubing

Observe the followings to decide reusing the existing refrigerant tubing.
Poor refrigerant tubing could result in product failure.

- In the circumstances listed below, do not reuse any refrigerant tubing. Instead, make sure to install a new tubing.
  - Heat insulation is not provided for either liquid or gas tube or both.
  - The existing refrigerant tube has been left in an open condition.
  - The diameter and thickness of the existing refrigerant tubing does not meet the requirement. (Refer to above tables)
  - The tubing length and elevation does not meet the requirement. (Refer to above tables)
  - Use only R32 or R410A genuine branch tube.
- Perform proper pump down for operated product before reuse tubing.
- In the circumstances listed below, clean it throughly before reuse.
  - Pump down operation cannot be performed for the existing air conditioner.
  - The compressor has a failure history.
  - Oil colour is darken. (ASTM 4.0 and above)
  - The existing air conditioner is gas/oil heat pump type.
- Do not reuse the flare to prevent gas leak. Make sure to install a new flare.
- If there is a welded part on the existing refrigerant tubing, conduct a gas leak check on the welded part.
- Replace deteriorated heat insulating material with a new one. Heat insulating material is required for both liquid and gas tubes.

Reusing existing tubing

		U-200PZH4E8 / U-250PZH4E8								
Liquid tube		ø9.52			ø12.7			ø15.88		
Gas tube		ø19.05	ø22.22	ø25.4	ø19.05	ø22.22	ø25.4	ø19.05	ø22.22	ø25.4
Maximum tube length	(m)	×	×	×	100	100	100	65	65	65
Charge-less tube length	(m)	×	×	×	30	30	30	20	20	20
Additional charge per 1m	(g/m)	×	×	×	80	80	80	120	120	120

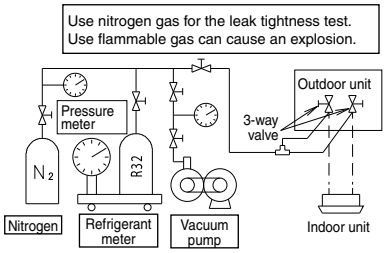
× Unallowable

NOTE
Interconnecting refrigerant pipework, i.e. pipework external to the unitary components, should be marked with a Class label (see right figure) every two metres where the pipework is visible. Label size is 50 mm x 50 mm. This includes pipework located in a ceiling space or any void which a person may access for maintenance or repair work within that space.

■ LEAK TEST AND EVACUATION

Leak Tightness Test Method

- Keep 3-way valve fully closed and pressurize through 3-way valve service port.
- Do not pressurize to the default value at once.Pressurize gradually.
  (1) Pressurize to 0.5MPa {5 kgf/cm^{2}G} and then leave it for 5 minutes to ensure that the pressure does not drop.
  (2) Pressurize to 1.5MPa {15 kgf/cm^{2}G} and leave it for 5 minutes to ensure that the pressure does not drop.
  (3) For the test, pressurize to 4.15MPa and leave it for about 1 day to ensure that the pressure does not drop.



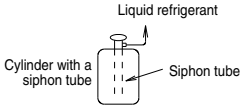
EVACUATION

- Use a vacuum pump (with back-flow prevention device) to vacuum through the 3-way valve service port to achieve below -101kPa {–755 mmHg, 5 Torr}.
- Air and moisture remaining in the refrigerant system due to poor vacuum drying can cause performance decrement and malfunction of the compressor.

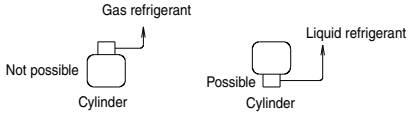
7. REGARDING REFRIGERANT FILLING

Precautions during refrigerant filling

- Ensure to fill only with liquid refrigerant when refilling.
  If gas refrigerant is filled, the refrigerant composition will not be balanced and will cause abnormal operation.



- If using cylinders as shown in the bottom left diagram; without a siphon tube inside, turn it upside down and use it.
  (It is recommended to use the manifold with the side glass.)



- Use tools that are designed specifically for R32, for pressure resistance and to prevent mixing impurities.
- Fill the refrigerant from the 3-way valve's service port on the liquid tube.

For filling and replacing all refrigerant (For refilling due to a leak)

- For refilling refrigerant, first collect all residual refrigerant and after vacuum dehydration using the vacuum pump. Refill the refrigerant according to the prescribed amount stated on the placard affixed to this unit.

Precautions after the tubes' connection have completed

- Ensure to open the 3-way valve after completing the tubing installation, leak test and vacuuming. If it is closed during operation, it can lead to compressor failure.

Charging with refrigerant * For single combination

- At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent tube length of 30m. If the equivalent tube length used will be 30m or less, no additional charging will be necessary.
- If the equivalent tube length will be between 30 and 100m, charge with additional refrigerant according to the equivalent length given in the table below.

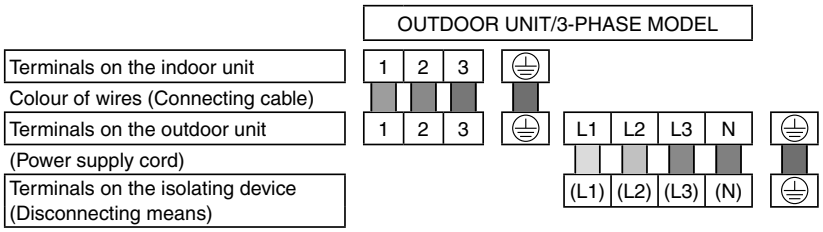
	Additional charging amount	Equivalent length	Minimum length
U-200PZH4E8 / U-250PZH4E8	80 g/m	100 m	5 m

- Pump down operation
  Please refer to "9. PRECAUTIONS REGARDING TEST RUN (Caution for Pump Down)" of this Installation instruction manual. It is also indicated on the label affixed to the outdoor unit.

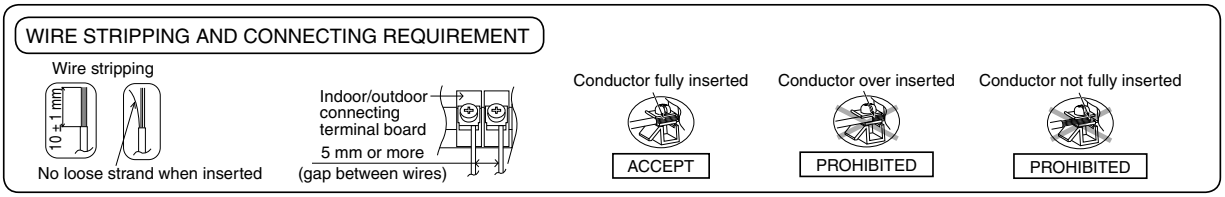
■ ELECTRICAL WIRING

⚠ WARNING	This air conditioner must be installed in accordance with national wiring regulations.
	Cables connected to outdoor unit must be approved polychloroprene sheathed type 60245 IEC 57 or H05RN-F/H07RN-F or heavier.
	The units must be connected to the supply cables for fixed wiring by qualified technician. Circuit breaker must be incorporated in the fixed wiring in accordance with the national wiring regulations. The circuit breaker must be approved, suitable for the voltage and current ratings of equipment and have a contact separation by 3 mm in all poles. When the supply cable is damaged, it must be replaced by qualified technician.
	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
	Be sure to connect the unit to secure earth connection. Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason. If the earthing work is not carried out properly, electric shocks may result.
	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Remove the service panel from the unit by loosening the screw.
2. Ensure to connect the electrical cable connections and clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires (power source cable, connection cable between indoor and outdoor unit, earth lead wire).
3. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram below.

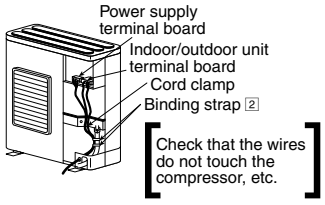


4. For wire stripping and connection requirement, refer diagram below.



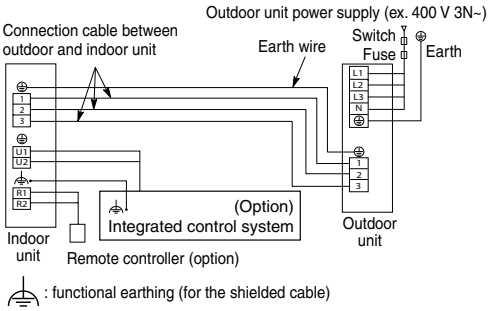
5. Do not install a phase advance capacitor for power factor improvement. (It does not improve the power factor and will cause abnormal overheating.)
6. Do not bind the excess cables together and place them inside this unit.
7. Once all wiring work has been completed, tie the cables with the provided binding strap so that they do not touch the compressor and the pipes.
8. Attach the service panel back to the original position with screw.
   - Protect the electrical cable with the protective bushing provided so that the cables do not get damaged on the knock hole or etched portions. If there is space between the electrical cables and the protective bushing occurs, seal it accordingly.
   - The equipment shall be connected to a suitable mains network with a main impedance less than the valve indicated in the table of power supply specifications.
   - Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
   - When setting up the cables, inside of unit must be installed properly so that the front panel will not lift up. Make sure that front panel mount correctly.
9. The binding screws inside the power supply box may become loosened due to vibration during transportation, so check that they are tightened securely.

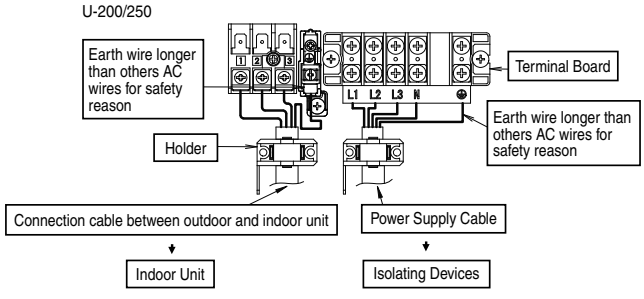
Screw diameter name	Tightening torque N•m (kgf•cm)
M4	1.57 ~ 1.96 (16 ~ 20)
M5	1.96 ~ 2.45 (20 ~ 25)



10. Tighten the binding screws to the specified torque while referring to the table above.
11. Use the appropriate screwdriver for tightening the terminal screws. Small sized screwdriver damages the head of the screw and cannot tighten it properly.
12. There is risk of damaging the screw if the terminal screw is over tightened.

OUTDOOR UNIT/3-PHASE MODEL





This equipment complies with EN/IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equals to ※1 kVA at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure; by consultation with the distribution network operator if necessary that the equipment is connected only to supply with a short-circuit power Ssc greater than or equals to ※1 kVA.

Ssc : Short circuit power

Outdoor unit

Model	Power supply cable								Time delay fuse or circuit capacity (A)	※1 Ssc
	Power supply	Min. wire size (mm^2)	Recommended Wire Length and Wire Diameter for Power Supply Cable							
			Wire size (mm^2)	Max. length (m)	Wire size (mm^2)	Max. length (m)	Wire size (mm^2)	Max. length (m)		
U-200PZH4E8	380-400-415V 3N~	2.5	2.5	32	4.0	52	6.0	78	20	※2
U-250PZH4E8	380-400-415V 3N~	2.5	2.5	26	4.0	42	6.0	64	25	※2

※2 Intended for professional use. Permission from the power supplier is required when installing the U-200PZH4E8, U-250PZH4E8 outdoor units that are connected to a 16 A distribution network.

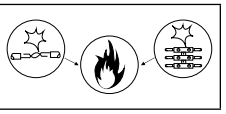
Control wiring

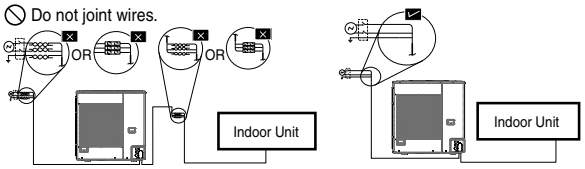
Type	Connection cable between outdoor and indoor unit	
	Outdoor unit	Max. length
min. 2.5 mm^2	U-200PZH4E8	100 m
	U-250PZH4E8	100 m

- Refer to the installation instruction manual provided with the indoor unit.
- Decide the length and size of the power supply cable based on the maximum ampere tabulated above in accordance with the national wiring regulations.
- Recommended maximum length indicates the value calculated with 2% voltage drop of the cable.
- Select the fuse(s) and/or circuit breaker(s) from the types and ratings suitable for the maximum ampere tabulated above in accordance with the national wiring regulations.
- An RCD suitable for use with inverters, resistant to high frequency noise, is most suitable. RCD's intended for protection to include high frequency currents are unnecessary and should be avoided, as potentially causing nuisance tripping, in this application.
- If capacity of power supply circuit and enforcement are not enough, it can causes the electric shock and a fire.

WARNING

RISK OF FIRE
JOINING OF WIRES MAY CAUSE OVERHEATING AND FIRE.





Use complete wire without joining.
Wire connection in this area must follow to national wiring rules.

Refer to the installation instruction manual provided with the indoor unit for the specifications on the indoor unit installation.

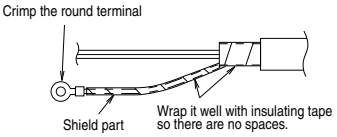
⚠ WARNING

Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also occur. Therefore, ensure that all wiring is tightly connected.
When connecting each power wire to the terminal, follow the instructions on "How to connect wiring to the terminal" and fasten the wire securely with the terminal screw.

For the shield part of the shielded cable, twist the end out, crimp it with a round terminal, and connect it to the functional earthing screw.
After crimping it with a round terminal, wrap it with insulating tape so there are no spaces and adjust it so the shield part does not touch any live parts.

⚠ CAUTION

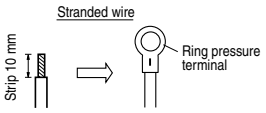
Be sure that the shield part of the shielded cable does not touch the terminal block or any live parts.
Failure to do so may lead to electric shock or fire.



How to connect wiring to the terminal

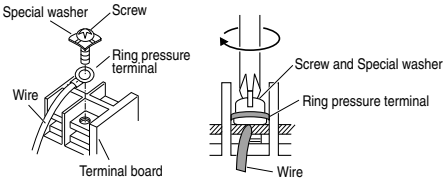
■ **For stranded wires**

(1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wire about 10 mm and tightly twist the wire ends.



(2) Using a Phillips head screwdriver, remove the terminal screw(s) on the terminal board.
(3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring pressure terminal.

(4) Put the removed terminal screw through the ring pressure terminal and then replace and tighten the terminal screw using a screwdriver.



■ TWIN, TRIPLE AND DOUBLE TWIN TYPE CONNECTIONS

- Two, three or four indoor units can be operated simultaneously with a single remote control unit. Note that individual operation is not possible.
- Master unit and slave unit can be set automatically in twin and triple system. No address setting is necessary.
- Applicable "TWIN" and "TRIPLE" combination table.

	Outdoor unit	200 Type	250 Type
SINGLE	combination	U-200 / S-200	U-250 / S-250
TWIN	combination	U-200 / S-1014 S-1014	U-250 / S-1014 S-1014
TRIPLE	combination	U-200 / S-6071 S-6071 S-6071	———
DOUBLE TWIN	combination	U-200 / S-3650 S-3650 S-3650 S-3650	U-250 / S-6071 S-6071 S-6071 S-6071

- Type E4 (High Static Pressure Duct)
- Type U3 (4-way cassette 90x90)
- Type F3 (Middle Static Pressure Duct)

The number after "S" may differ from the above. Please check the catalogue, etc. for available models.

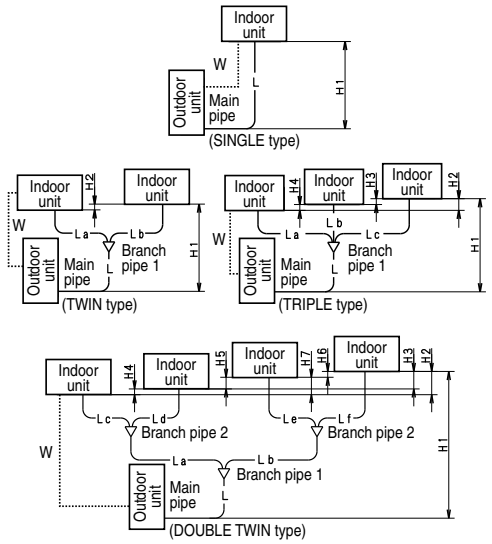
Piping Connections

- The following table shows the pipe diameter. (Branch pipe kit should be used)

Outdoor unit main pipe diameter (mm)	Branch pipe diameter	Indoor unit combination				
		S-3650	S-6071	S-1014	S-200	S-250
Liquid side : ø12.7	Liquid side	ø6.35	ø9.52	ø9.52	ø12.7	ø12.7
Gas side : ø22.22	Gas side	ø12.7	ø15.88	ø15.88	ø22.22	ø22.22
Branch pipe kit (option)	TWIN	CZ-P680BK2BM				
	TRIPLE	CZ-P3HPC2BM				
	DOUBLE TWIN	Branch pipe 1: CZ-P680BK2BM + Branch pipe 2: CZ-P224BK2BM				

- The following table shows the equivalent pipe lengths and height differences.

		SYMBOLS				SPEC
		SINGLE	TWIN	TRIPLE	DOUBLE TWIN	
Total pipe length		L	L+La+Lb	L+La+Lb+Lc	L+La+Lb+Lc+Ld+Le+Lf	100m
Maximum branch pipe length	Length after branch pipe 1	———	La or Lb	La or Lb or Lc	La+Lc or La+Ld or Lb+Le or Lb+Lf	15m
	Length after branch pipe 2	———	———	———	Lc, Ld, Le, Lf	Less than 5m
Maximum branch pipe length difference		———	La > Lb La - Lb	La > Lb > Lc La - Lb Lb - Lc La - Lc	Lb+Lf →MAX La+Lc →MIN (Lb + Lf) - (La + Lc)	Less than 10m
Maximum pipe length difference of branch pipe 1 (DOUBLE TWIN)		———	———	———	Lb > La Lb - La	Less than 10m
Maximum pipe length difference of branch pipe 2 (DOUBLE TWIN)		———	———	———	Ld > Lc Lf > Le Ld - Lc Lf - Le	Less than 10m
Height difference	Outdoor located higher installation	H1				Less than 30m
	Outdoor located lower installation	H1				Less than 30m
Height difference between indoor units		———	H2	H2 or H3 or H4	H2 or H3 or H4 or H5 or H6 or H7	Less than 0.5m
Maximun connection cable between indoor and outdoor unit		W				Less than 100m



- Piping length may be limited depending on the wiring length. If the maximum wiring length is exceeded, normal communication may not be possible.

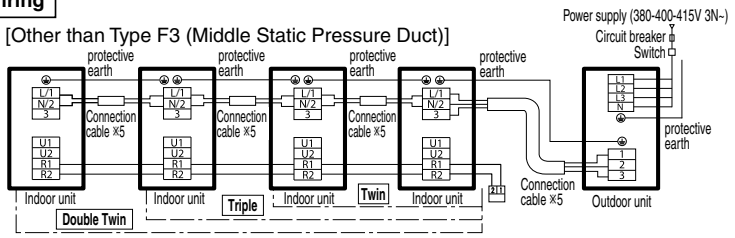
Refrigerant charging

- For the twin connection, the amount of refrigerant required for pipe length 30m has been included in this unit at the factory while that required for pipe length 20m has been included for the triple/double-twin connections.
  No additional charge is required for the first 30m pipe length in the case of the twin connection and for the first 20m in the case of the triple/double-twin connections. The amount of included refrigerant for each model is listed on NAME PLATE. Make additional charges by adding up pipe length in an order of main pipe (L) → branch pipe (La → Lb→ Lc wide diameter) and then selecting the amount of refrigerant corresponding to the remaining (after 30m for the twin connection and after 20m for the triple/double-twin connections) liquid side pipe diameter and pipe length from the right table.

Liquid pipe diameter	Addition amount of refrigerant [g/m] (Branch pipe)
ø6.35	20
ø9.52	40
ø12.7	80

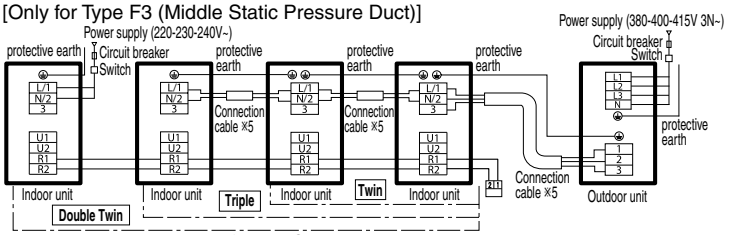
Wiring

[Other than Type F3 (Middle Static Pressure Duct)]



×5 Connection cable:
Connection cable between outdoor and indoor unit

[Only for Type F3 (Middle Static Pressure Duct)]



* For double twin connections of Middle Static Pressure Duct, additional power supply is required at indoor side.

■ PRECAUTIONS REGARDING TEST RUN

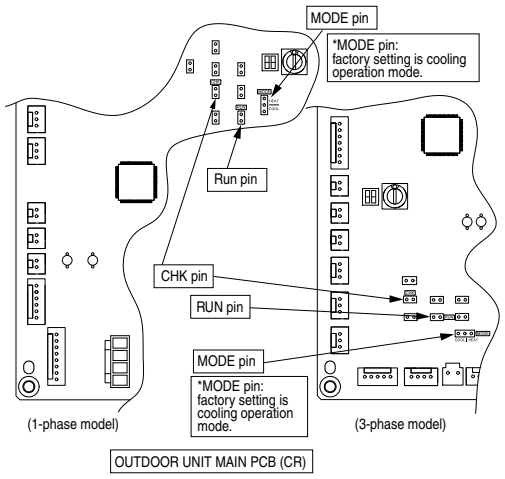
Check Before Test Run

	Content check
Outdoor unit	● Check that the insulation resistant value is more than 1MΩ. Use the 500 V mega-testers to measure the insulation. Check point : between power supply terminal block (L1, L2, L3, N or L, N) to earth. Do not use the mega-tester for any other circuit except for voltage of 230-240V~ or 400-415V 3N~.
Power supply cable Indoor/outdoor connection wire Earth wire	● Is the wire set up and connected as described in the instructions? Check for any phase sequence. ● Are the wire connection's screws loose? ● Is the open and close device / leakage breaker installed? ● Is the power supply cable's thickness and length appropriately measured as described in the instructions? ● Is it earthed (grounded)? ● Are the wire connections for the indoor/outdoor units connected as described in the instructions? Are there any looped wires? ● Was the "N-phase" surely connected when connecting the power supply wire on the three-phase model? If N-phase is not connected, only the fan may repeat turning ON/OFF without the compressor operating. In that case, check if there is any problem with N-phase connection.
Refrigerant tube	● Is the tubing installed as described in the instructions? ● Are the tubes sizes appropriate? ● Does the tube's length adhere to the specifications? ● Is the branch tube slant being appropriately done as described in the instructions? ● Was vacuum removal sufficiently carried out? ● Was the leak tightness test carried out with nitrogen gas? Use the testing pressure of 4.15 MPa. ● Is the tubing insulation material appropriately installed? (Insulation material is necessary for both gas and liquid tubing.) ● Is the 3-way valve for the liquid tube and gas tube open?

- Always be sure to use a properly insulated tool to operate the short-circuit pin on the circuit board. (Do not use your finger.)
- Never switch the power supply ON until the installation has completed.
- Supply electrical current through all indoor units and check the voltage.
- Supply electrical current through all the outdoor units and check each inter-phase voltage.
- Before the test run, ensure to check that the 3-way valve is open. Operating while the valve is closed causes the compressor to fail.

Test Run Procedure

- If there are duplicated system addresses, or if the settings for the Nos. of the indoor units are not consistent, an alarm will occur and the system will not start.
- Switch the power supply ON both indoor and outdoor unit.
- Short-circuit CHK pin on the outdoor main PCB.
  Do not remove CHK pin until test run is completed.
  Removing CHK pin stops test run.
- Short-circuit RUN pin on the outdoor main PCB for one second or longer.
  Factory setting is cooling operation mode and cooling operation test run starts.
  If heating operation starts, short-circuit both right side and centre of the MODE pin (centre and COOL) continuously.
- Ensure to conduct a test run. In addition, be sure to run the cooling operation test run for at least 20 minutes before starting the heating operation test run.
- To conduct heating operation test run, short-circuit left side and centre of the MODE pin (centre and HEAT) continuously.
- Removing CHK pin's and MODE pin's short-circuit stops test run.
- For the test run using remote controller, please see installation instructions included with the remote controller.



Caution for Pump Down

Pump down means refrigerant gas in the system is returned to the outdoor unit.
Pump down is used when the unit is to be moved, or before servicing the refrigerant circuit.

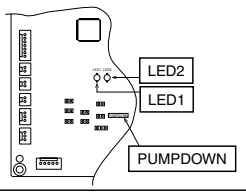
How to perform Pump-Down (Refrigerant recovery) properly
(1) Stop operation of the unit (cooling, heating etc.).
(2) Connect the pressure gauge to the service port of the gas tubing valve.
(3) Short-circuit the "PUMPDOWN" pin on an outdoor unit control PCB (CR) for more than 1 second to release.
- Pump-Down begins and the unit starts operating.
- During Pump-Down, LED1 blinks and LED2 is lit on an outdoor unit control PCB (CR).
- "CHK" blinks on the remote controller.

(4) Fully close the liquid tubing valve 2-3 minutes later. The Pump-Down will begin.
(5) When the pressure gauge drops to 0.1-0.2MPa, close the gas tubing valve tightly and short-circuit the "PUMPDOWN" pin for more than 1 second to release. That is the end of Pump-Down.
- When running for more than 10 minutes, it stops even if the Pump-Down is not completed. Check the blocked state of the liquid tubing valve.
- It also stops when the "PUMPDOWN" pin is short-circuited during the operation.

* For compressor protection, do not operate to the point where the unit wiring side reaches negative pressure.

Note : In the case that copper pipe length or longer, you cannot pump-down. (It may trigger the operation of the overload protection device.) In this case, perform pump-down with pump-down device.

OUTDOOR UNIT CONTROL PCB (CR)
3-PHASE MODEL



Note : In the case that copper pipe length is 30m or longer, you cannot pump-down. (It may trigger the operation of the overload protection device.) In this case, perform pump-down with pump-down device.

10. CHECKS AFTER INSTALLATION HAVE COMPLETED

- Check the following items after completing installation.
  - ☐ Is there a short circuit with the intake air flow?
  - ☐ Is the insulation secure? (Refrigerant tubing)
  - ☐ Are there any errors with the wiring?
  - ☐ Are the terminal screws loose? Tightening torque (Unit: N•m {kgf•cm})
    M4...1.57~1.96{16~20}, M5...1.96~2.45{20~25}
  - ☐ Is the drain water flowing smoothly?
  - ☐ Is the insulation material properly installed?
  - ☐ Is the earth wire securely connected?
  - ☐ Is the front panel and the indoor unit air conditioner firmly fixed and was the installation completed without any leakage from the refrigerant?
  - ☐ Are the indoor and outdoor units secured firmly installed with bolts at secured locations?

■ REGARDING DELIVERY TO THE CUSTOMER

- Request the customer to review the operating instructions and explain the operating method for the product.
- In addition, it is also recommended that regular inspection checks are agreed upon for maintenance.

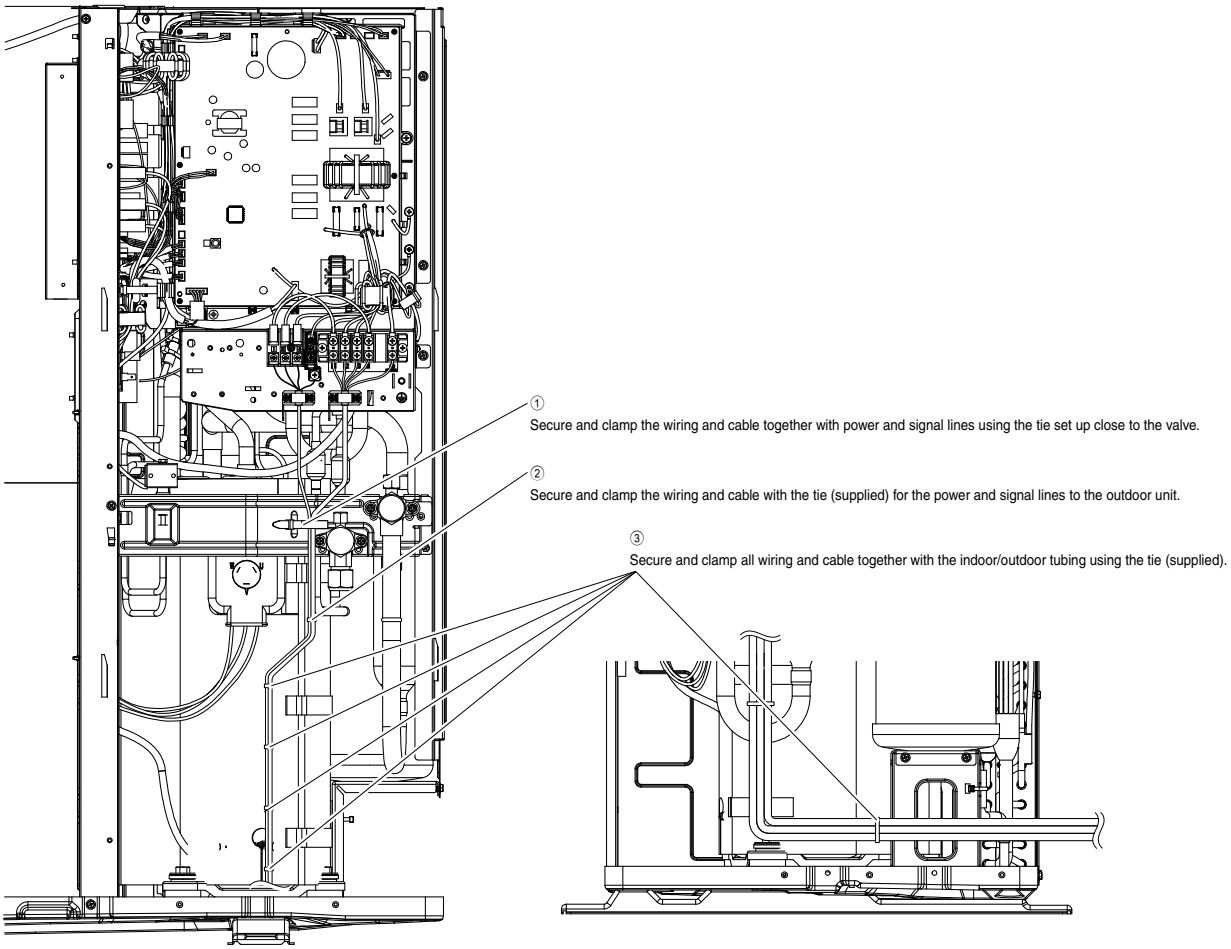
User inspection places
- • Grill cleaning
- • Exterior cleaning

Serviceman inspection places
- • Check the operating status
- • Clean the drain pan or things related to the water discharge
- • Heat exchanger cleaning

■ WIRING PROCEDURE

Follow the wiring procedure below for terminal connection.
(1) Secure and clamp the power and signal lines with the tie, set up close to the valve.
(2) Set the wiring and cables for the power and signal lines to the outdoor unit together, and secure each wire and cable with the tie.
(3) Set up the wiring and cable for the outdoor unit tubing and secure with a tie.

- Outdoor unit / 3-phase model



1-10. Capacity Table
High Static Pressure Ducted Type S-200PE4E, S-250PE4E
1. Cooling capacity performance data

TC :Cooling Capacity
SHC :Sensible Heat Capacity
IPT :Cooling Power Consumption
unit : kW

S-200PE4E
U-200PZH4E8

		Outdoor air intake temp (°C D.B.)																	
Ambient		25	25	25	30	30	30	35	35	35	40	40	40	46	46	46	52	52	52
DB	WB	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
23	16	20.1	15.0	6.5	19.8	12.6	7.2	18.4	12.1	7.1	15.1	9.0	6.5	11.3	7.8	5.9	5.6	2.5	2.4
	19	21.7	11.1	6.6	21.4	8.6	7.3	20.0	8.1	7.2	16.7	5.9	6.6	12.9	5.2	6.0	6.0	1.7	2.4
	22	23.3	7.0	6.8	23.0	4.5	7.5	21.6	4.1	7.3	18.3	2.8	6.8	14.5	2.4	6.2	6.4	0.9	2.4
25	16	20.1	17.7	6.5	19.8	17.6	7.2	18.4	16.9	7.1	15.1	12.5	6.5	11.3	10.6	5.9	5.6	3.4	2.4
	19	21.7	13.5	6.6	21.4	13.4	7.3	20.0	12.9	7.2	16.7	9.7	6.6	12.9	8.9	6.0	6.0	2.6	2.4
	22	23.3	9.4	6.8	23.0	9.3	7.5	21.6	8.9	7.3	18.3	6.7	6.8	14.5	6.1	6.2	6.4	1.8	2.4
27	16	20.9	19.1	6.5	19.8	18.8	7.2	18.4	17.5	7.1	15.1	12.5	6.5	11.3	10.6	5.9	5.6	3.6	2.4
	19	22.5	16.0	6.6	21.4	15.9	7.3	20.0	15.3	7.2	16.7	11.4	6.6	12.9	10.7	6.0	6.0	3.1	2.4
	22	24.1	11.8	6.8	23.0	11.7	7.5	21.6	11.2	7.3	18.3	8.4	6.8	14.5	7.9	6.2	6.4	2.3	2.4
29	16	20.1	19.1	6.5	19.8	18.8	7.2	18.4	17.5	7.1	15.1	12.5	6.5	11.3	10.6	5.9	5.6	3.6	2.4
	19	21.7	18.4	6.6	21.4	18.3	7.3	20.0	17.8	7.2	16.7	13.5	6.6	12.9	12.2	6.0	6.0	3.6	2.4
	22	23.3	14.2	6.8	23.0	14.1	7.5	21.6	13.7	7.3	18.3	10.5	6.8	14.5	9.8	6.2	6.4	2.8	2.4
32	16	20.1	19.1	6.5	19.8	18.8	7.2	18.4	17.5	7.1	15.1	12.5	6.5	11.3	10.6	5.9	5.6	3.6	2.4
	19	21.7	20.6	6.6	21.4	20.3	7.3	20.0	19.0	7.2	16.7	13.7	6.6	12.9	12.2	6.0	6.0	3.9	2.4
	22	23.3	17.8	6.8	23.0	17.7	7.5	21.6	17.0	7.3	18.3	13.5	6.8	14.5	12.6	6.2	6.4	3.4	2.4

S-250PE4E
U-250PZH4E8

		Outdoor air intake temp(°C D.B.)																	
Ambient		25	25	25	30	30	30	35	35	35	40	40	40	46	46	46	52	52	52
DB	WB	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
23	16	25.8	20.2	9.3	25.3	17.0	10.3	23.6	16.3	10.1	19.3	12.1	9.3	14.5	10.6	8.4	7.2	3.3	3.4
	19	27.8	15.0	9.5	27.4	11.5	10.5	25.6	10.9	10.3	21.3	7.9	9.5	16.5	7.0	8.7	7.7	2.3	3.5
	22	29.8	9.5	9.7	29.4	6.1	10.7	27.6	5.5	10.5	23.4	3.8	9.7	18.6	3.3	8.9	8.2	1.2	3.5
25	16	25.8	23.8	9.3	25.3	23.6	10.3	23.6	22.8	10.1	19.3	16.9	9.3	14.5	14.3	8.4	7.2	4.6	3.4
	19	27.8	18.2	9.5	27.4	18.1	10.5	25.6	17.4	10.3	21.3	13.0	9.5	16.5	12.0	8.7	7.7	3.5	3.5
	22	29.8	12.7	9.7	29.4	12.5	10.7	27.6	11.9	10.5	23.4	9.0	9.7	18.6	8.2	8.9	8.2	2.4	3.5
27	16	26.8	25.8	9.3	25.3	25.3	10.3	23.6	23.6	10.1	19.3	16.9	9.3	14.5	14.3	8.4	7.2	4.9	3.4
	19	28.8	21.5	9.5	27.4	21.4	10.5	25.6	20.6	10.3	21.3	15.4	9.5	16.5	14.4	8.7	7.7	4.1	3.5
	22	30.9	15.9	9.7	29.4	15.8	10.7	27.6	15.1	10.5	23.4	11.4	9.7	18.6	10.7	8.9	8.2	3.1	3.5
29	16	25.8	25.8	9.3	25.3	25.3	10.3	23.6	23.6	10.1	19.3	16.9	9.3	14.5	14.3	8.4	7.2	4.9	3.4
	19	27.8	24.8	9.5	27.4	24.6	10.5	25.6	23.9	10.3	21.3	18.2	9.5	16.5	16.4	8.7	7.7	4.8	3.5
	22	29.8	19.1	9.7	29.4	19.0	10.7	27.6	18.4	10.5	23.4	14.2	9.7	18.6	13.2	8.9	8.2	3.7	3.5
32	16	25.8	25.8	9.3	25.3	25.3	10.3	23.6	23.6	10.1	19.3	16.9	9.3	14.5	14.3	8.4	7.2	4.9	3.4
	19	27.8	27.8	9.5	27.4	27.4	10.5	25.6	25.6	10.3	21.3	18.4	9.5	16.5	16.4	8.7	7.7	5.3	3.5
	22	29.8	24.0	9.7	29.4	23.8	10.7	27.6	22.9	10.5	23.4	18.1	9.7	18.6	16.9	8.9	8.2	4.6	3.5

2. Heating capacity performance data

TC :Heating Capacity
IPT :Heating Power Consumption
unit : kW

			Outdoor air intake temp(°C W.B.)											
Model	Power Source	Ambient Return Air	-21°C		-8°C		6°C		8°C		15°C		24°C	
		DB	TC	IPT	TC	IPT	TC	IPT	TC	IPT	TC	IPT	TC	IPT
S-200PE4E (U-200PZH4E8)	230V-240V 50Hz 1phase (400V-415V 50Hz 3phase)	16	15.7	6.05	20.7	6.54	25.7	7.13	21.3	4.80	26.0	4.86	25.9	2.90
		20	14.5	6.42	19.5	6.92	24.5	7.50	20.1	5.18	24.8	5.24	24.7	3.27
		24	13.3	6.80	18.2	7.29	23.3	7.88	18.8	5.55	23.6	5.61	23.4	3.65
S-250PE4E (U-250PZH4E8)	230V-240V 50Hz 1phase (400V-415V 50Hz 3phase)	16	17.7	7.25	23.3	7.85	29.0	8.55	24.0	5.76	29.3	5.84	29.2	3.47
		20	16.3	7.70	21.9	8.30	27.6	9.00	22.6	6.21	27.9	6.29	27.8	3.92
		24	14.9	8.15	20.5	8.75	26.2	9.45	21.2	6.66	26.5	6.74	26.4	4.38

2. TEST RUN

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■ Indoor Units

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■ Outdoor Units

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2-1. Preparing for Test Run

• Before attempting to start the air conditioner, check the following:

(1) All loose matter is removed from the cabinet especially steel filings, bits of wire, and clips.
(2) The control wiring is correctly connected and all electrical connections are tight.
(3) The protective spacers for the compressor used for transportation have been removed.
If not, remove them now.
(4) The transportation pads for the indoor fan have been removed. If not, remove them now.
(5) The power has been supplied to the unit for at least 12 hours before starting the compressor. The bottom of the compressor should be warm to the touch and the crankcase heater around the feet of the compressor should be hot to the touch. (Fig. 2-1)
(6) Both the gas and liquid tube service valves are open. If not, open them now. (Fig. 2-2)

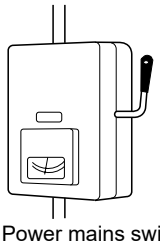


Fig. 2-1

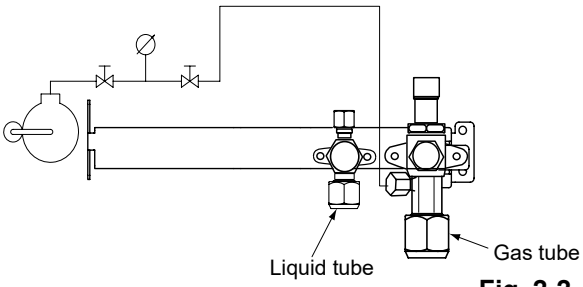


Fig. 2-2

(7) Request that the customer be present for the test run. Explain the contents of the instruction manual, and then have the customer actually operate the system.
(8) Be sure to give the instruction manual and warranty certificate to the customer.
(9) When replacing the control PCB, be sure to make all the same settings on the new PCB as were in use before replacement. The existing EEPROM is not changed, and is connected to the new control PCB.

Check Before Test Run

	Content check
Outdoor unit	• Check that the insulation resistant value is more than 1MΩ. Use the 500 V mega-testers to measure the insulation. Check point : between power supply terminal block (L1, L2, L3, or L, N) to earth. Do not use the mega-tester for any other circuit except for voltage of 230-240V~ or 400-415V 3N~.
Power supply cable Indoor / outdoor connection wire Earth wire	• Is the wire set up and connected as described in the instructions? Check for any phase sequence. • Are the wire connection's screws loose? • Is the open and close device / leakage breaker installed? • Is the power supply cable's thickness and length appropriately measured as described in the instructions? • Is it earthed (grounded)? • Are the wire connections for the indoor / outdoor units connected as described in the instructions? Are there any looped wires? • Was the "N-phase" surely connected when connecting the power supply wire on the three-phase model? If N-phase is not connected, only the fan may repeat turning ON/OFF without the compressor operating. In that case, check if there is any problem with N-phase connection.
Refrigerant tube	• Is the tubing installed as described in the instructions? • Are the tubes sizes appropriate? • Does the tube's length adhere to the specifications? • Is the branch tube slant being appropriately done as described in the instructions? • Was vacuum removal sufficiently carried out? • Was the leak tightness test carried out with nitrogen gas? Use the testing pressure of 4.15 MPa. • Is the tubing insulation material appropriately installed? (Insulation material is necessary for both gas and liquid tubing.) • Is the 3-way valve for the liquid tube and gas tube open?

- Always be sure to use a properly insulated tool to operate the short-circuit pin on the circuit board. (Do not use your finger.)
- Never switch the power supply ON until the installation has completed.
- Supply electrical current through all indoor units and check the voltage.
- Supply electrical current through all the outdoor units and check each inter-phase voltage.
- Before the test run, ensure to check that the 3-way valve is open. Operating while the valve is closed causes the compressor to fail.

2-2. Precautions

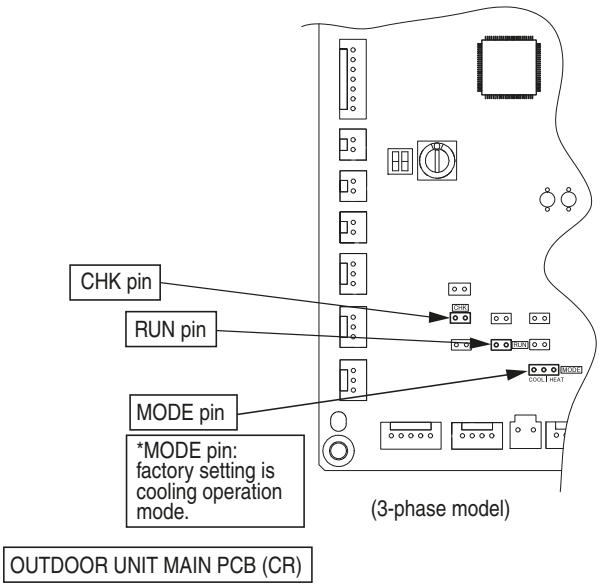
- Request that the customer be present when the test run is performed.
  At this time, explain the operation manual and have the customer perform the actual steps.

OUTDOOR UNIT MAIN PCB (CR)

- Be sure to pass the manuals and warranty certificate to the customer.
- Check that the 230 – 240 VAC power is not connected to the inter-unit control wiring connector terminal.

* If 230 – 240 VAC is accidentally applied, the indoor or outdoor unit control PCB fuse will blow in order to protect the PCB.
Correct the wiring connections, then disconnect the 2P connectors that are connected to the PCB, and replace them with 2P connectors.
If operation is still not possible after changing the brown connectors, try cutting the varistor.
(Be sure to turn the power OFF before performing this work.)

U-200PZH4E8, U-250PZH4E8



OUTDOOR UNIT MAIN PCB (CR)

Fig. 2-3

INDOOR UNIT MAIN PCB (CR)

- Request that the customer be present when the test run is performed. At this time, explain the operation manual and have the customer perform the actual steps.
- Check that the 230 –240 VAC power is not connected to the U1 & U2 terminal board terminal.

* If 230 –240 VAC is accidentally applied, the Fuse on indoor unit Electronic Controller (Communication) will blow in order to protect the PCB.
In this case, recover the connection by disconnect 2P connector wires that originally connected to the indoor unit Electronic Controller (Communication) OC connector and shift the connector wires to EMG connector on same indoor unit Electronic Controller (Communication). If operation is still not possible after shift to EMG connector, cut the jumper JP040 on the same indoor unit Electronic Controller (Communication).

High Static Pressure Ducted Type
S-200PE4E, S-250PE4E

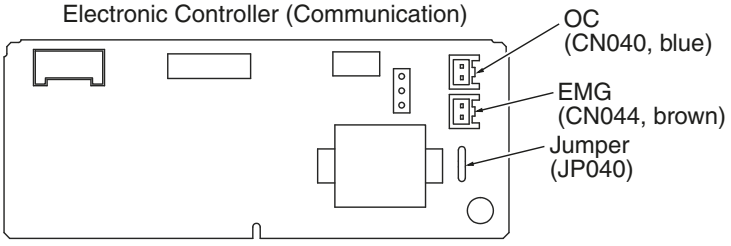


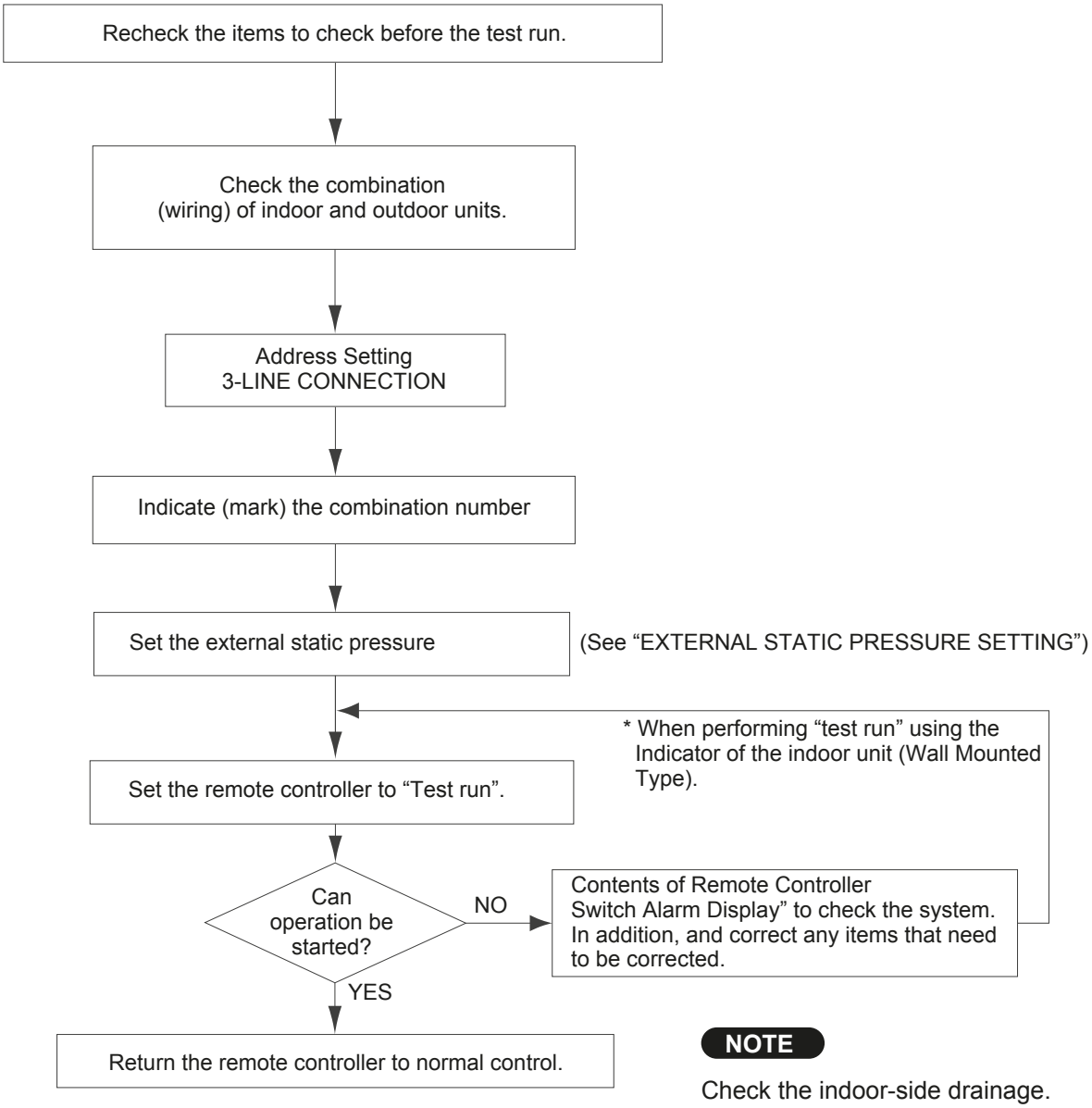
Fig. 2-4

■ **Indoor Units**

2-3. Caution

- **This unit may be used in a single-type refrigerant system where 1 outdoor unit is connected to 1 indoor unit.**
- **The indoor and outdoor unit control PCB utilizes a semiconductor memory element (EEPROM). The settings required for operation were made at the time of shipment. Only the correct combinations of indoor and outdoor units can be used.**
- **This test run section describes primarily the procedure when using the wired remote controller.**

2-4. Test Run Procedure



NOTE

Check the indoor-side drainage.

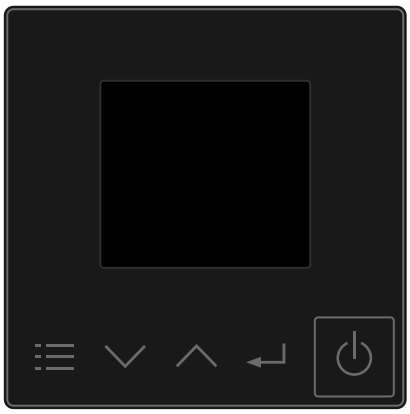
Fig. 2-5

2-5. Items to Check Before the Test Run

(1) Turn the remote power switch ON at least 12 hours in advance in order to energize the crankcase heater.
(2) Fully open the closed valves on the liquid-tube and gas-tube sides.

2-6. Test Run Using the Remote Controller

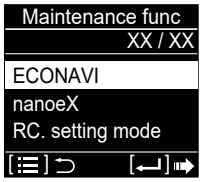
<Procedure of CZ-RTC6 series>



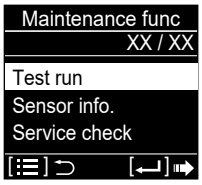
CZ-RTC6 series

This mode places a heavy load on the machines. Therefore use it only when performing the test run.

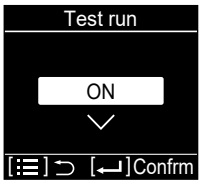
(1) Keep pressing the ☰, ∧ and ↵ buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.



(2) Press the ∨ or ∧ button to see each menu.
Select “Test run” on the LCD display and press the ↵ button.

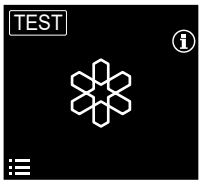


Change the display from “OFF” to “ON” by pressing the ∨ or ∧ button.
Then press the ↵ button.



(3) Press the ☰ button.
“TEST” will be displayed on the LCD display.

(4) Press the ⏻ button. Test run will be started.
Test run setting mode screen appears on the LCD display.



- The test run can be performed using the HEAT, COOL, or FAN operation mode.
- The temperature cannot be adjusted when in test run mode.
- If correct operation is not possible, a code is displayed on the remote controller LCD display. (Regarding the alarm contents, see “2-3-1-5. Contents of Remote Controller Switch Alarm Display”.)

(5) After the test run is completed, proceed from Step (1) and change to “OFF” at Step (2).

- To prevent continuous test run, this remote controller includes a timer function that cancels the test run after 60 minutes.

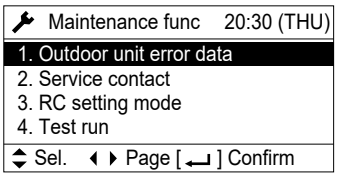
NOTE

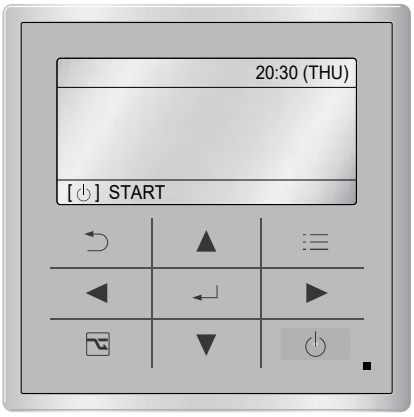
- The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.
- If the test run is performed using the wired remote controller, operation is possible even if the cassette-type ceiling panel has not been installed. (“P09” display does not occur.)

<Procedure of CZ-RTC5B>

This mode places a heavy load on the machines. Therefore use it only when performing the test run.

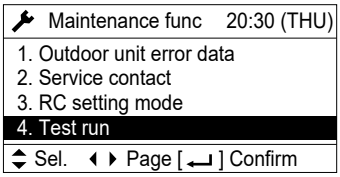
(1) Keep pressing the [↩], [↵] and [▶] buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.



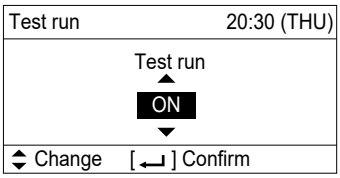


CZ-RTC5B

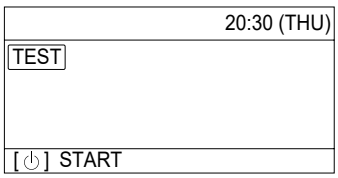
(2) Press the [▼] or [▲] button to see each menu.
If you wish to see the next screen instantly, press the [◀] or [▶] button.
Select “4. Test run” on the LCD display and press the [↵] button.



Change the display from “OFF” to “ON” by pressing the [▼] or [▲] button. Then press the [↵] button.

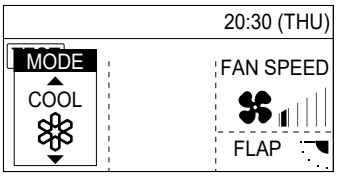


(3) Press the [↩] button. “TEST” will be displayed on the LCD display.

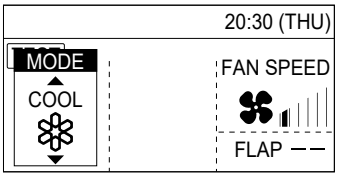


(4) Press the [⏻] button. Test run will be started.
Test run setting mode screen appears on the LCD display.
- The test run can be performed using the HEAT, COOL, or FAN operation mode.
- The temperature cannot be adjusted when in test run mode.
- If correct operation is not possible, a code is displayed on the remote controller LCD display. (Regarding the alarm contents, see “2-3-1-5. Contents of Remote Controller Switch Alarm Display”.)

- **4-Way Cassette Type**
- **Wall Mounted Type**
- **Ceiling Type**
- **4-Way Cassette 60 × 60 Type**



- **Middle Static Pressure Duct Type**



(5) After the test run is completed, proceed from Step (1) and change to “OFF” at Step (2).
- To prevent continuous test run, this remote controller includes a timer function that cancels the test run after 60 minutes.

NOTE

- The outdoor units will not operate for approximately 3 minutes after the power is turned ONand after operation is stopped.
- If the test run is performed using the wired remote controller, operation is possible even if the cassette-type ceiling panel has not been installed. (“P09” display does not occur.)

<Procedure of CZ-RTC4 / CZ-RTC4A>

This mode places a heavy load on the machines. Therefore use it only when performing the test run.

(1) Press the remote controller button for 4 seconds or longer.

Then press the button.

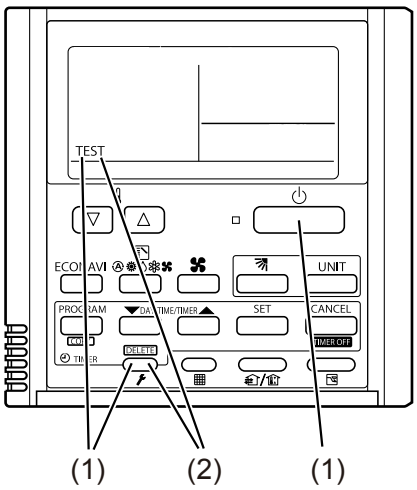
"TEST" appears on the LCD display while the test run is in progress.

- The test run can be performed using the HEAT, COOL, or FAN operation mode.
- The temperature cannot be adjusted when in test run mode.
- If correct operation is not possible, a code is displayed on the remote controller LCD display. (Regarding the alarm contents, see "2-3-1-5. Contents of Remote Controller Switch Alarm Display")

(2) After the test run is completed, press the button again.

Check that "TEST" disappears from the LCD display.

- To prevent continuous test run, this remote controller includes a timer function that cancels the test run after 60 minutes.



CZ-RTC4

NOTE

- The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.
- If the test run is performed using the wired remote controller, operation is possible even if the cassette-type ceiling panel has not been installed. ("P09" display does not occur.)

2.7. Contents of Remote Controller Switch Alarm Display

ON: ○ Blinking: ☼ OFF: ●

Abnormal display		Wireless remote controller receiver display: Operation	Timer	Standby	Alarm contents		Error location
Remote controller • Indoor Unit	E01	Operating lamp blinking	●	●	Faulty remote controller		• Replace the remote controller
					Disconnection / Contact failure of remote controller wiring		• Correct the remote controller wiring
					CHK (check) pins on the indoor unit control PCB are short circuited		• Remove the short
					In the case of non-group control: • Power supply OFF of outdoor unit • Disconnection / Contact failure of indoor / outdoor control line* In the case of group control: Auto address operation was not carried out		• Execute auto address setting
					Faulty setting of EEPROM (IC010) on indoor unit		• Replace the indoor unit EEPROM
	E02				Faulty remote controller		• Replace the remote controller
					Wrong wiring of remote controller		• Correct the remote controller wiring
	E03				Error in indoor unit receiving signal from remote controller (central)		• Check the indoor unit control PCB • Check the remote controller wiring • Check the indoor / outdoor control line*
	E04	Standby lamp blinking	●	☼	Disconnection / Contact failure of indoor / outdoor control line*		• Check the electrical connection of indoor / outdoor control line* • Replace the indoor unit control PCB • Replace the outdoor unit control PCB • Check the electrical connection of fuse (F302) on indoor unit control PCB In the case of the fuse opened on an indoor unit control PCB, after correcting wiring connection, it substitutes an EMG plug for OC plug
					• Faulty indoor unit control PCB • Faulty outdoor unit control PCB • Communication circuit fuse (F302) on indoor unit control PCB opened		
					• Fuse on outdoor unit control PCB opened Since failure of an outdoor fan motor is considered as a cause, both outdoor unit control PCB(CR/HIC) and outdoor unit fan motor are exchanged simultaneously		In the case of the fuse opened on an outdoor unit control PCB, replace both outdoor unit control PCB (CR / HIC) and outdoor unit fan motor simultaneously
					・Setting error of indoor unit address ・Capacity of indoor / outdoor units is mismatched.		• Capacity and address re-setting after correcting the combination of units
	E08	Operating lamp blinking	☼	●	Duplication of indoor unit address setting		• Indoor unit address re-setting
	E09				Error because of more than one remote controller setting to main		• Correct the setting
	E10				Communication error between fan motor & main PCB for indoor unit		• CN-AC connector disconnected/unplug • Indoor unit fan motor PCB fuse open • Indoor unit fan motor PCB malfunction • CN-LM connector disconnected/unplug
	E14				Duplication of main unit in group control		• Check the indoor / outdoor control line* • Check the indoor unit combination
	E18				• Disconnection of wiring between main unit and additional units • Contact failure of wiring • Faulty indoor unit control PCB (Main or Addition)		• Correct the wiring connection • Replace the wiring • Replace the indoor unit control PCB
	E15	Standby lamp blinking	●	☼	Auto address alarm	The total capacity of indoor units is too low.	• Check the indoor / outdoor control line* • Check the indoor and outdoor unit control PCB • Check the power supply • Capacity and address re-setting after correcting the combination of units
	E16					• The total capacity of indoor units is too high • The numbers of indoor units is too many	
	F01	Operating and timer lamp blinking alternately	☼	●	Indoor heat exchanger temperature sensor (E1) trouble		• Check the indoor unit heat exchanger temperature sensor (E1) • Check the indoor unit control PCB
	F02				Indoor heat exchanger temperature sensor (E2) trouble		• Check the indoor unit heat exchanger temperature sensor (E2) • Check the indoor unit control PCB
	F10				Indoor air temperature sensor (TA) trouble		• Check the indoor unit air temperature sensor (TA) • Check the indoor unit control PCB
	F29	Operating and timer lamp blinking simultaneously	☼	●	Indoor unit EEPROM trouble		• Check the indoor unit EEPROM • Check the indoor unit control PCB
	L02	Operating and standby lamps blinking simultaneously	●	☼	Setting error, indoor / outdoor unit type / model mismatched		• Address re-setting after correcting the combination of units
	L03				Duplication of main indoor unit address in group control		• Correct the group (main and addition)
	L07				Group control wiring is connected to individual control indoor unit		• Correct the indoor unit address
	L08				Indoor unit address is not set		• Correct the indoor unit address
	L09				Indoor unit capacity is not set		• Correct the capacity setting of indoor units

* indoor / outdoor control line* : Connection cable between outdoor and indoor unit

ON: ○ Blinking: ☼ OFF: ●

Abnormal display		Wireless remote controller receiver display			Alarm contents	Error location
		☼⏻ Operation	◴ Timer	✺ Standby		
Remote controller • Indoor Unit	P01	Timer and standby lamp blinking alternately			Indoor unit fan motor locked	• Remove the cause
					Indoor unit fan motor layer short	• Replace the fan motor
					Contact failure in thermostat protector circuit	• Correct the wiring
	P09				Faulty wiring connections of (ceiling) indoor unit panel	• Correct the wiring connection • Correct insertion direction of connector. (Hook is outside)
	P10				Faulty drain pump	• Repair / Replace
					Drainage failure	• Correct
					Contact failure of float switch wiring	• Correct the wiring
		●	☼	☼	High water alarm for the case of Middle static pressure duct (PF) model installed vertically	• Change the setting
	P11				Faulty drain pump	• Repair / Replace
					Drain pump locked	• Remove the cause
	P12				Indoor unit fan motor locked Faulty wiring connections of indoor unit fan motor	• Remove the cause • Correct the wiring
	P31	Operating and standby lamp blinking alternately			Indoor unit in group control trouble	• Repair indoor unit which blinking alarm
		☼	●	☼		

ON: ○ Blinking: ☼ OFF: ●

Abnormal display		Wireless remote controller receiver display: Operation	Timer	Standby	Alarm contents		Error location
Outdoor Unit	E06	Standby lamp blinking	●	●	☼	• Disconnection / Contact failure of indoor / outdoor control line*	Correct the indoor / outdoor control line* • Check the electrical connection of fuse(F302) on indoor unit control PCB In the case of the fuse opened on an indoor unit control PCB, After correcting wiring connection, it substitutes an EMG plug for OC plug.
						• Disconnection of indoor / outdoor control line* • Communication circuit fuse (F302) on indoor unit control PCB opened	
						Indoor unit control PCB address setting error	• Indoor unit address re-setting
	E15	Standby lamp blinking	●	●	☼	Auto address alarm: The total capacity of indoor units is too low.	• Check the power supply • Check the indoor and outdoor unit control PCB • Check the power supply • Capacity and address re-setting after correcting the combination of units
	E16					• The total capacity of indoor units is too high • The numbers of indoor units is too many	
	E20					No indoor unit connected	
	F04	Operating and timer lamp blinking alternately	☼	☼	○	Compressor discharge temperature sensor (TD) trouble	• Check the Compressor discharge temperature sensor (TD) • Check the outdoor unit control PCB
	F06					Outdoor heat exchanger temperature sensor (C1) trouble	• Check the outdoor unit heat exchanger temperature sensor (C1) • Check the outdoor unit control PCB
	F07					Outdoor heat exchanger temperature sensor (C2) trouble	• Check the outdoor unit heat exchanger temperature sensor (C2) • Check the outdoor unit control PCB
	F08					Outdoor air temperature sensor (TO) trouble	• Check the outdoor air temperature sensor (TO) • Check the outdoor unit control PCB
	F12					Compressor suction temperature sensor (TS) trouble	• Check the Compressor suction temperature sensor (TS) • Check the outdoor unit control PCB
	F31	Operating and timer lamp blinking alternately	☼	☼	○	Outdoor unit EEPROM trouble	• Check the outdoor unit EEPROM • Check the outdoor unit control PCB
	H01	Timer lamp blinking	●	☼	●	Primary (input) overcurrent detected	• Check the Refrigerant cycle (abnormal overload operation) • Check the outdoor unit control PCB • Check the power supply
	H02					PAM trouble	• Check the outdoor unit control PCB • Compressor locked • Check the power supply
	H03					Primary current CT sensor failure	• Check the outdoor unit control PCB • Check the power supply
	H31					HIC trouble DC voltage not detected	• Check the outdoor unit control PCB • Check the HIC • Compressor locked • Valve blockage
	L10	Operating and standby lamps blinking simultaneously	☼	○	☼	Outdoor unit capacity is not set or setting error	• Replace the outdoor unit EEPROM
	L13					Indoor unit type setting error Type of indoor / outdoor units is different	• Replace the indoor unit EEPROM • Check the outdoor unit control PCB • Check the type of IU and OU, and re-set address
	L18					4-way valve locked trouble / operation failure	• Check the 4-way valve • Check the 4-way valve wiring • Check the outdoor unit control PCB
	P03	Operating and standby lamp blinking alternately	☼	●	☼	Compressor discharge temperature trouble	• Check the refrigerant cycle (gas leak) • Trouble with the electronic expansion valve • Check the discharge temperature sensor (TD)
	P04					Compressor discharge pressure trouble	• Check the refrigerant cycle • Valve blockage • Heat exchanger obstruction
	P05					Open phase detected AC power supply trouble	• Check the power supply • Check the outdoor unit control PCB • Check the compressor wiring ,and reactor wiring

* indoor / outdoor control line* : Connection cable between outdoor and indoor unit

ON: ○ Blinking: ☼ OFF: ●

Abnormal display		Wireless remote controller receiver display			Alarm contents	Error location
		Operation	Timer	Standby		
Outdoor Unit	P13	Timerand standby lamp blinking alternately			Valve error Refrigerant circuit error. Wrong installation for refrigerant piping and wiring	• Valve blockage • Check the refrigerant circuit • Check the refrigerant piping and wiring installation
	P15	Operating and standby lamp blinking alternately			Insufficient gas level detected	• Check the refrigerant cycle (gas leak) • Trouble with the electronic expansion valve • Valve (or refrigerant circuit) blockage
	P16				Compressor overcurrent trouble	• Layer short on the compressor • Check the outdoor unit control PCB • Compressor locked
	P22				Outdoor unit fan motor trouble Outdoor unit fan trouble	• Check the outdoor unit fan motor, connector • Check the outdoor unit control PCB
	P29				Inverter compressor trouble	• Layer short on the compressor • Check the outdoor unit control PCB • Check the inverter compressor wiring (Open phase / Reverse phase) • Compressor actuation failure (include lock) • Valve (or refrigerant circuit) blockage
	P31				Indoor unit in group control trouble	• Repair indoor unit which blinking alarm

2.8. System Control

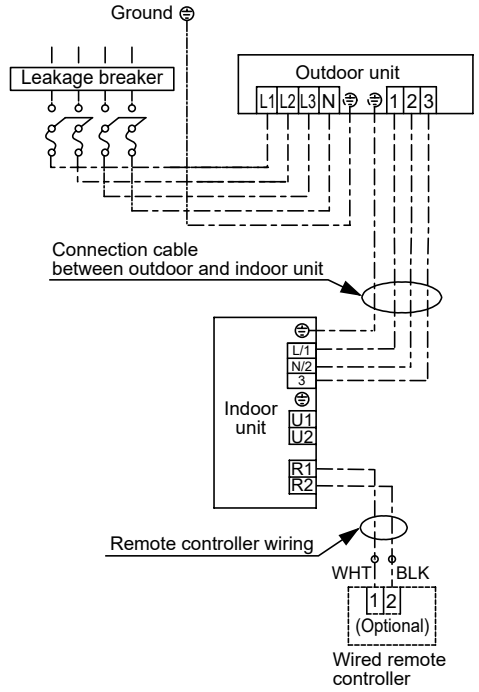
System control refers to the link wiring connection for control of simultaneous-operation multi systems, group control, and main-sub remote controller control.

2-3-1-6-1. Basic wiring diagram : 3-LINE CONNECTION

- Be careful to avoid miswiring when connecting the wires. (Miswiring will damage the units.)

(for 3-phase Outdoor unit)

(Example of SINGLE type)



(Wiring procedure)

(1) Connect the remote controller to the indoor unit remote controller wiring terminal plate (R1, R2).
(Remote controller wiring)

(2) Connect the indoor units (L / 1, N / 2, 3) and the outdoor units (1, 2, 3).
Connect the remote controller communication wiring to the indoor units (R1, R2) for each refrigerant system.
(Remote controller wiring)

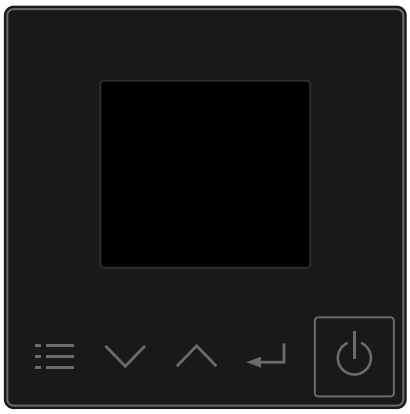
(3) Connect the remote controller communication wiring (2 wires) from the remote controller wiring terminal plate (R1, R2) on the indoor unit (unit where the remote controller is connected) to the remote controller terminal plates (R1, R2) on the other indoor units. (Remote controller communication wiring)

(4) Turn ON both the indoor and outdoor unit power and perform auto address setting from the remote controller.
(For the auto address setting procedure, see 2-3-1-6-3.)

NOTE

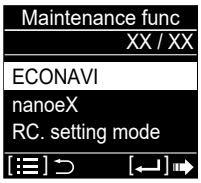
* Be sure to use the indoor unit temperature sensor (body sensor) when using this control. (Status at shipment.)

2-3-1-6-3. Auto Address Setting Using the Remote Controller
<Procedure of CZ-RTC6 series>

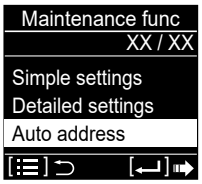


CZ-RTC6 series

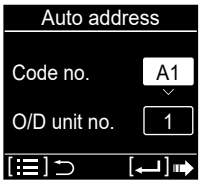
(1) Keep pressing the ☰, ∧ and ↵ buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.



(2) Press the ∨ or ∧ button to see each menu.
Select “Auto address” on the LCD display and press the ↵ button.

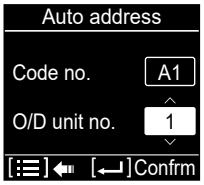


(3) The “Auto address” screen appears on the LCD display.
Select the “Code no.” to “A1” by pressing the ∨ or ∧ button.

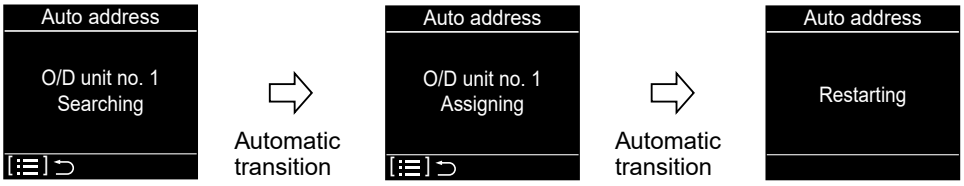


After selecting “Code no.”, press the ↵ button and proceed to Step (4).
If the ☰ button is pressed, proceed to Step (5).

(4) Select one of the “O/D unit no.” for auto address by pressing the ∨ or ∧ button.

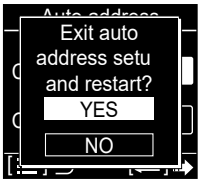


After selecting “O/D unit no.”, press the ↵ button.



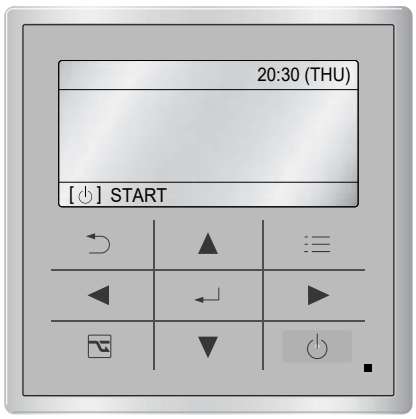
Approximately 10 minutes are required.
When auto address setting is completed, the units return to normal stopped status.

(5) If the ☰ button is pressed under the display Step (3), the following display (Auto address-end screen) appears.
Then select “YES” by pressing the ∨ or ∧ button and press the ↵ button.



<Procedure of CZ-RTC5B>

(1) Keep pressing the [↩], [↵] and [▶] buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.



CZ-RTC5B

Maintenance func 20:30 (THU)
1. Outdoor unit error data
2. Service contact
3. RC setting mode
4. Test run
↕ Sel. ◀ ▶ Page [↵] Confirm

(2) Press the [▼] or [▲] button to see each menu.
If you wish to see the next screen instantly, press the [◀] or [▶] button.
Select “9. Auto address” on the LCD display and press the [↵] button.

Maintenance func 20:30 (THU)
9. Auto address
10. Set elec. consumption
11. Set touch key
12. Check touch key
↕ Sel. ◀ ▶ Page [↵] Confirm

(3) The “Auto address” screen appears on the LCD display.
Change the “Code no.” to “A1” by pressing the [▼] or [▲] button.

Auto address	20:30 (THU)
Code no.	O/D unit no.
▲ A1 ▼	1
↕ Sel. ▶ Next	

(4) Select the “O/D unit no.” by pressing the [◀] or [▶] button.
Select one of the “O/D unit no.” by pressing the [▼] or [▲] button and press the [↵] button for auto address setting.
Approximately 10 minutes are required.
When auto address setting is completed, the units return to normal stopped status.

<Procedure of CZ-RTC4 / CZ-RTC4A>

NOTE

- Selecting each refrigerant system individually for auto address setting
- Auto address setting for each system : Item code “A1”

(1) Press the remote controller timer time /TIMER button and button at the same time.
(Press and hold for 4 seconds or longer.)

(2) Next, press either the temperature setting ▽ / △ button.
(Check that the item code is “A1”.)

(3) Use either the UNIT button to set the system No. to perform auto address setting.

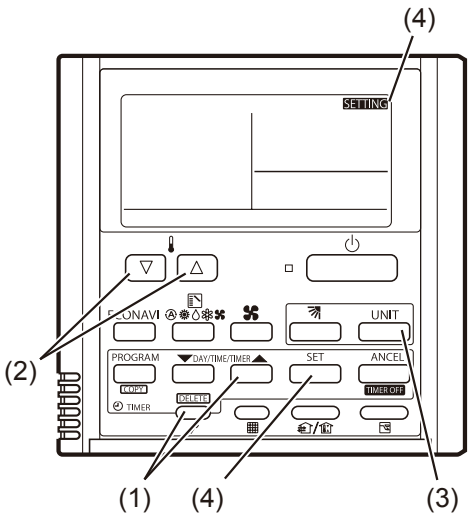
(4) Then press the SET button.

(Auto address setting for one refrigerant system begins.)
(When auto address setting for one system is completed, the system returns to normal stopped status.)

<Approximately 10 minutes are required.>

(During auto address setting, “SETTING” is displayed on the remote controller.

This message disappears when auto address setting is completed.)



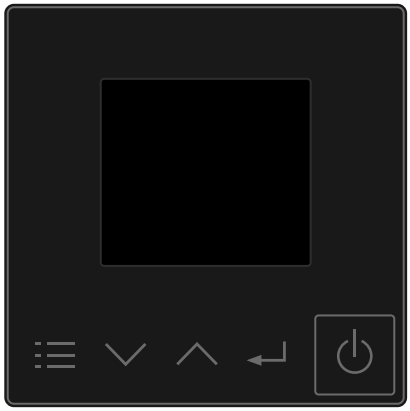
CZ-RTC4 / CZ-RTC4A

(5) Repeat the same steps to perform auto address setting for each successive system.

2-3-1-6-4. Checking the Indoor Unit Addresses

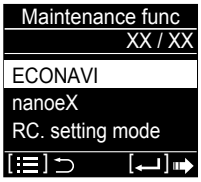
Use the remote controller to check the indoor unit address.

<Procedure of CZ-RTC6 series>

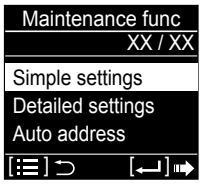


CZ-RTC6 series

(1) Keep pressing the ☰, ∧ and ↵ buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.



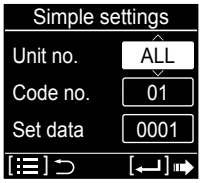
(2) Press the ∨ or ∧ button to see each menu.
Select “Simple settings” on the LCD display and press the ↵ button.



(3) The “Simple settings” screen appears on the LCD display.
Select the “Unit no.” by pressing the ∨ or ∧ button for changes.

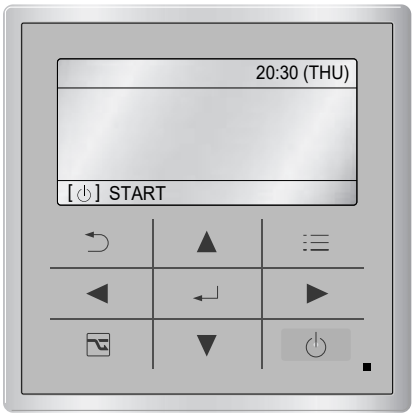
* The initial display is “ALL”.

The indoor unit fan operates only at the selected indoor unit.



(4) Press the ☰ button and select “YES” to restart.

<Procedure of CZ-RTC5B>



CZ-RTC5B

(1) Keep pressing the ⮌ , ↵ and ▶ buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.

Maintenance func 20:30 (THU)
1. Outdoor unit error data
2. Service contact
3. RC setting mode
4. Test run
▲▼ Sel. ◀ ▶ Page [↵] Confirm

(2) Press the ▼ or ▲ button to see each menu.
If you wish to see the next screen instantly, press the ◀ or ▶ button.
Select “7. Simple settings” on the LCD display and press the ↵ button.

Maintenance func 20:30 (THU)
5. Sensor info.
6. Servicing check
7. Simple settings
8. Detailed settings
▲▼ Sel. ◀ ▶ Page [↵] Confirm

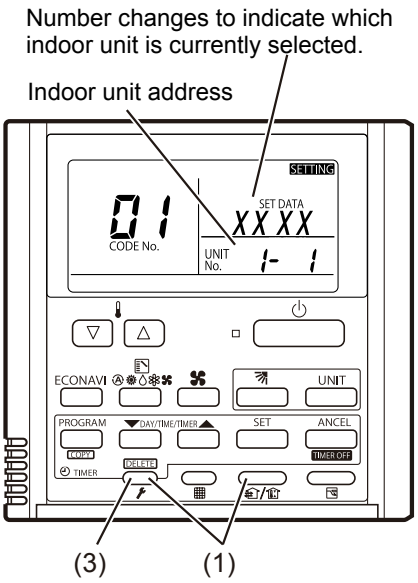
(3) The “Simple settings” screen appears on the LCD display.
Select the “Unit no.” by pressing the ▼ or ▲ button for changes.
* The initial display is “ALL”.
The indoor unit fan operates only at the selected indoor unit.

Simple settings		20:30 (THU)
Unit no.	Code no.	Set data
ALL	01	0001
▲▼ Sel. ▶ Next		

(4) Press the ⮌ button and select “YES” to restart.

<Procedure of CZ-RTC4 / CZ-RTC4A>
<If 1 indoor unit is connected to 1 remote controller>

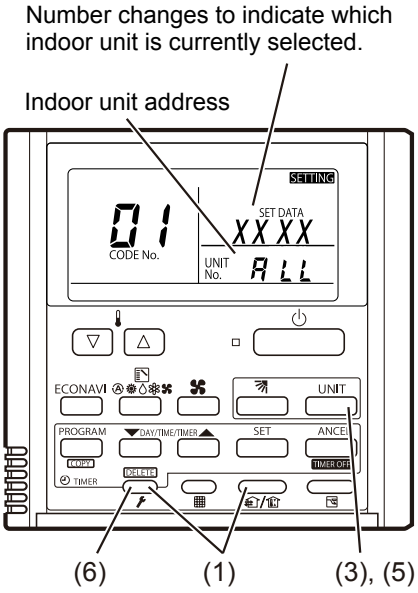
(1) Press and hold the button and button for 4 seconds or longer (simple settings mode).
(2) The address is displayed for the indoor unit that is connected to the remote controller.
(Only the address of the indoor unit that is connected to the remote controller can be checked.)
(3) Press the button again to return to normal remote controller mode.



CZ-RTC4

<If multiple indoor units are connected to 1 remote controller (group control)>

(1) Press and hold the button and button for 4 seconds or longer (simple settings mode).
(2) "ALL" is displayed on the remote controller.
(3) Next, press the UNIT button.
(4) The address is displayed for 1 of the indoor units which is connected to the remote controller. Check that the fan of that indoor unit starts and that air is discharged.
(5) Press the UNIT button again and check the address of each indoor unit in sequence.
(6) Press the button again to return to normal remote controller mode.

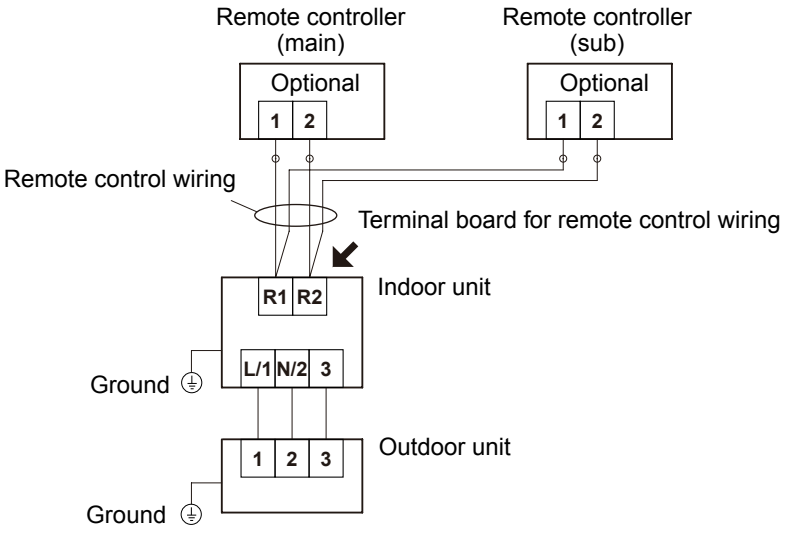


CZ-RTC4

2-3-1-6-5. Main-Sub Remote Controller Control

One (1) indoor unit can be controlled by two (2) wired remote controllers. In the case of using 2 remote controllers, one of them needs to be designated as the sub remote controller.

Connecting 2 remote controllers to control 1 Indoor unit



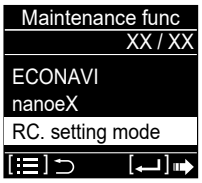
3-LINE CONNECTION

<Procedure of CZ-RTC6 series>

(1) Press and hold the ☰, ∧ and ↵ for 4 seconds or more simultaneously.

(2) Select “RC. setting mode”.

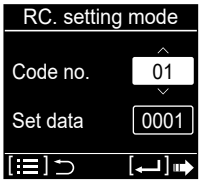
∨ ∧ → ↵

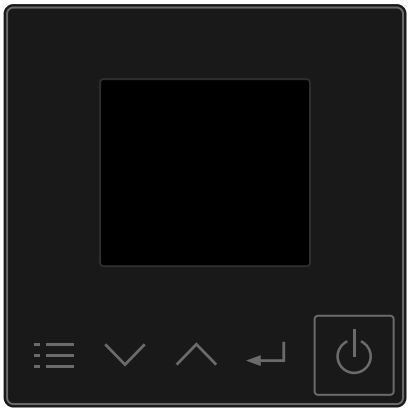


(3) Select the “Code no.” and “ Set data”.

∨ ∧ → ↵

(Repeat)





CZ-RTC6 series

Code no.	Item	Set data	
		0000	0001
01	Main/Sub	Sub	Main

(4) Press ☰

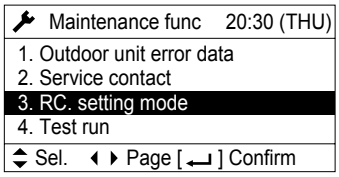
- After selecting “YES”, the unit restarts.

<Procedure of CZ-RTC5B>

(1) Press and hold the [↩], [↵] and [▶] for 4 seconds or more simultaneously.

(2) Select “3. RC. setting mode”.

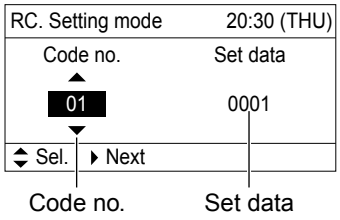
[▲] [▼] → [↵]

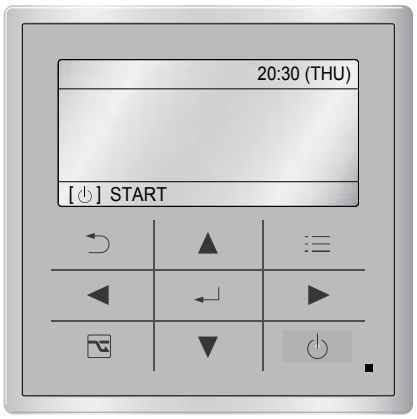


(3) Select the “Code no.” and “Set data”.

[▲] [▼] → [▶] → [↵]

(Repeat)





CZ-RTC5B

Code no.	Item	Set data	
		0000	0001
01	Main / Sub	Sub	Main

(4) Press [↩].

• After selecting “YES”, the unit restarts.

<Procedure of CZ-RTC4 / CZ-RTC4A>

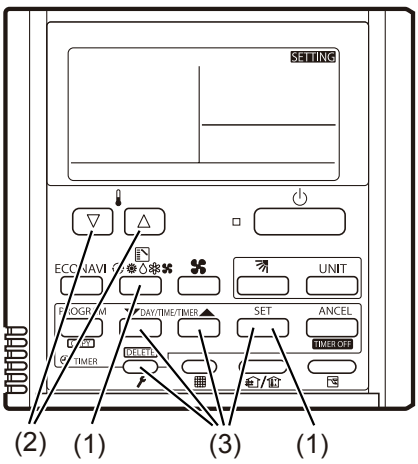
(1) Press and hold the [☼❄♨✻] and [SET] buttons for several seconds simultaneously.

(2) Select the Code no. [▽] / [△]

(3) Select the Set data. [DAY/TIME/TIMER▲] → [SET]

The indicator illuminates after blinking. Press [🔧].

Code no.	Item	Set data	
		0000	0001
01	Main / Sub	Sub	Main

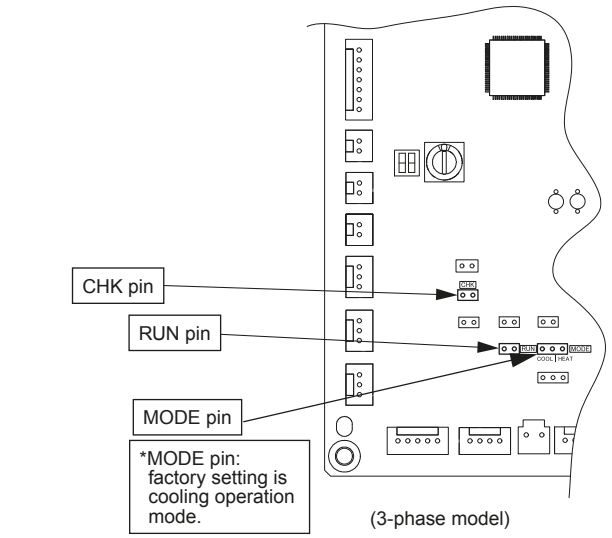


CZ-RTC4 / CZ-RTC4A

■ **Outdoor Units**

2-9. Test Run Procedure

- If there are duplicated system addresses, or if the settings for the Nos. of the indoor units are not consistent, an alarm will occur and the system will not start.
- Switch the power supply ON both indoor and outdoor unit.
- Short-circuit CHK pin on the outdoor main PCB. Do not remove CHK pin until test run is completed. Removing CHK pin stops test run.
- Short-circuit RUN pin on the outdoor main PCB for one second or longer.
  Factory setting is cooling operation mode and cooling operation test run starts.
  If heating operation starts, short-circuit both right side and centre of the MODE pin (centre and COOL) continuously.
- Ensure to conduct a test run. In addition, be sure to run the cooling operation test run for at least 20 minutes before starting the heating operation test run.
- To conduct heating operation test run, short-circuit left side and centre of the MODE pin (centre and HEAT) continuously.
- Removing CHK pin's and MODE pin's short-circuit stops test run.
- For the test run using remote controller, please see installation instructions included with the remote controller.



2-10. CHECKS AFTER INSTALLATION HAVE COMPLETED

- Check the following items after completing installation.
  - ☐ Is there a short circuit with the intake air flow?
  - ☐ Is the insulation secure? (Refrigerant tubing)
  - ☐ Are there any errors with the wiring?
  - ☐ Are the terminal screws loose? Tightening torque (Unit: N•m {kgf•cm})
    M4...1.57~1.96{16~20}, M5...1.96~2.45{20~25}
  - ☐ Is the drain water flowing smoothly?
  - ☐ Is the insulation material properly installed?
  - ☐ Is the earth wire securely connected?
  - ☐ Is the front panel and the indoor unit air conditioner firmly fixed and was the installation completed without any leakage from the refrigerant?
  - ☐ Are the indoor and outdoor units secured firmly installed with bolts at secured locations?

2-11. REGARDING DELIVERY TO THE CUSTOMER

- Request the customer to review the operating instructions and explain the operating method for the product.
- In addition, it is also recommended that regular inspection checks are agreed upon for maintenance.

User inspection places	• Grill cleaning
	• Exterior cleaning
Serviceman inspection places	• Check the operating status
	• Clean the drain pan or things related to the water discharge
	• Heat exchanger cleaning

2-12. Caution for Pump Down

Pump down means refrigerant gas in the system is returned to the outdoor unit. Pump down is used when the unit is to be moved, or before servicing the refrigerant circuit.

How to perform Pump-Down (Refrigerant recovery) properly

(1) Stop operation of the unit (cooling, heating etc.).

(2) Connect the pressure gauge to the service port of the gas tubing valve.

(3) Short-circuit the “PUMPDOWN” pin on an outdoor unit control PCB (CR) for more than 1 second to release.

- Pump-Down begins and the unit starts operating.
- During Pump-Down, LED1 blinks and LED2 is lit on an outdoor unit control PCB (CR).
- “CHK” blinks on the remote controller.

(4) Fully close the liquid tubing valve 2-3 minutes later.
The Pump-Down will begin.

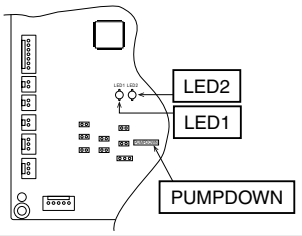
(5) When the pressure gauge drops to 0.1-0.2MPa, close the gas tubing valve tightly and short-circuit the “PUMPDOWN” pin for more than 1 second to release. That is the end of Pump-Down.

- When running for more than 10 minutes, it stops even if the Pump-Down is not completed. Check the blocked state of the liquid tubing valve.
- It also stops when the “PUMPDOWN” pin is short-circuited during the operation.

* For compressor protection, do not operate to the point where the unit wiring side reaches negative pressure.

Note : If maximum charge-less pipe length is exceeded, do not pump-down with running compressor only.
(It may trigger the overload protection control).
In this case, use pump-down device.

OUTDOOR UNIT CONTROL PCB (CR)
3-PHASE MODEL



3. ELECTRICAL DATA

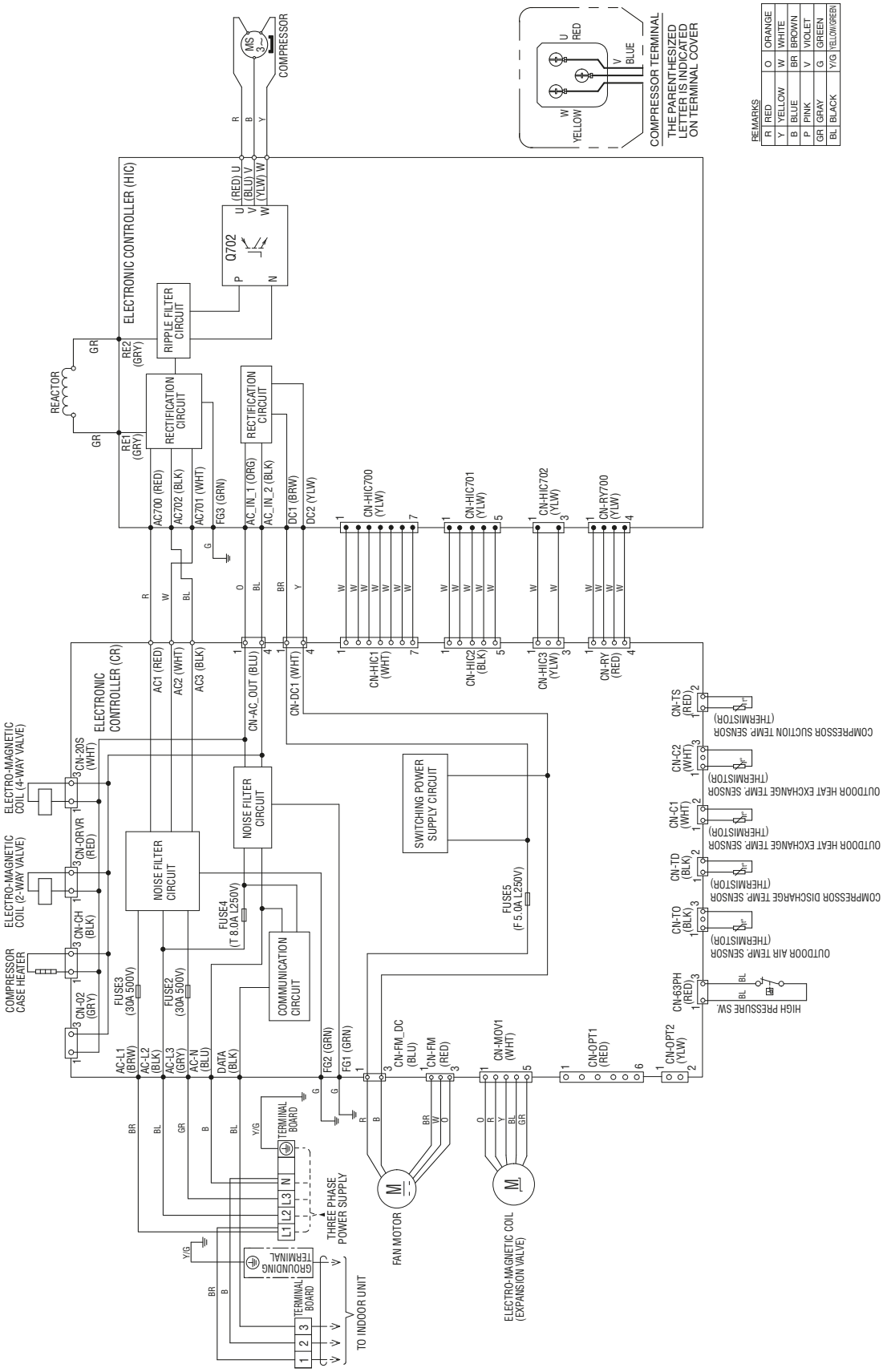
3-1. Outdoor Units (Electric Wiring Diagram) 3-2

3-2. Indoor Units (Electric Wiring Diagram) 3-3

High Static Pressure Ducted Type S-200PE4E, S-250PE4E

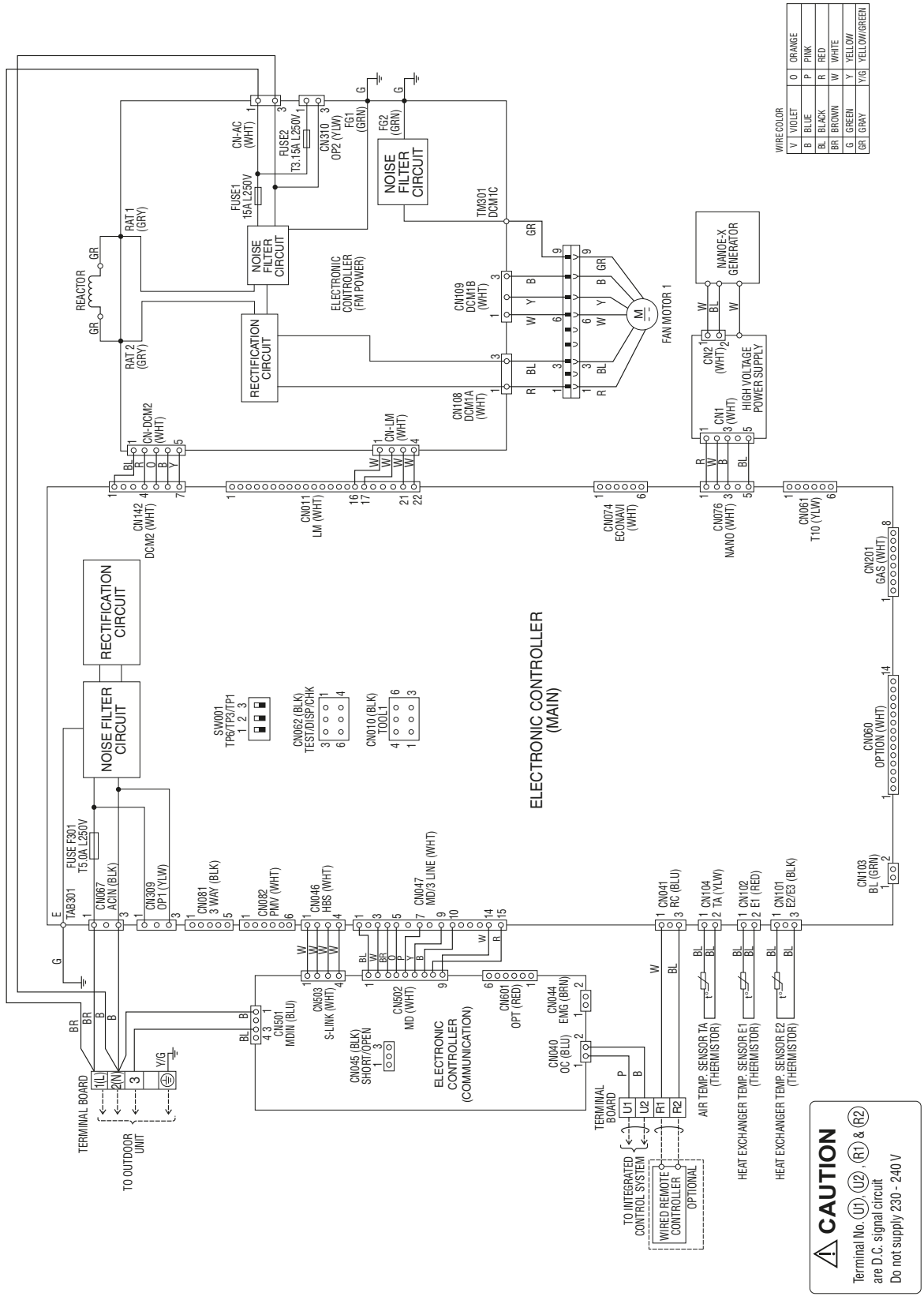
3-1. Outdoor Units (Electric Wiring Diagram)

U-200PZH4E8, U-250PZH4E8

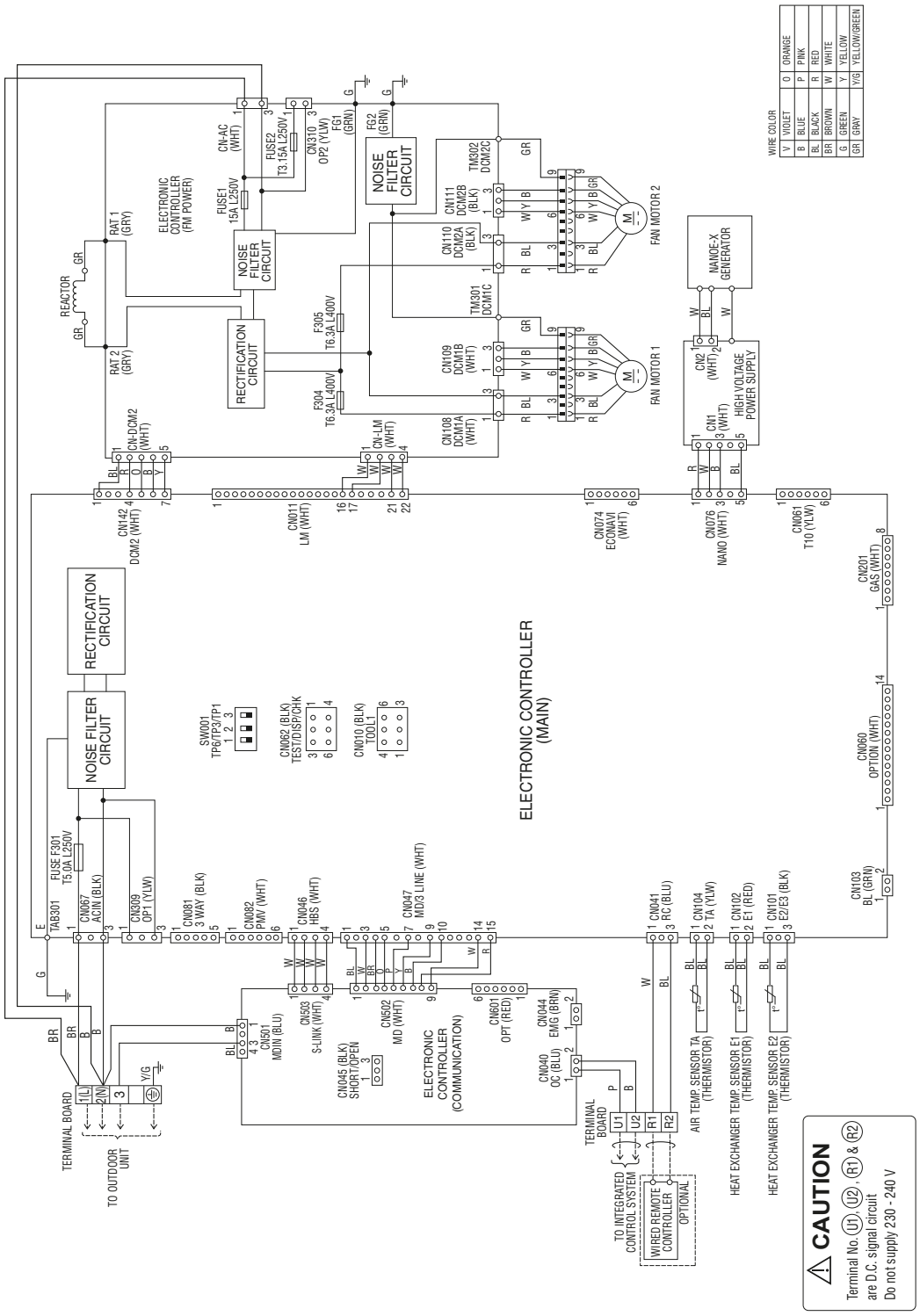


3-2. Indoor Units (Electric Wiring Diagram)

High Static Pressure Ducted Type S-200PE4E



3


ELECTRONIC CONTROLLER (MAIN)
NOISE FILTER CIRCUIT
RECTIFICATION CIRCUIT
ELECTRONIC CONTROLLER (FM POWER)
ELECTRONIC CONTROLLER (COMMUNICATION)
HIGH VOLTAGE POWER SUPPLY
NANOE-X GENERATOR
FAN MOTOR 1
FAN MOTOR 2
TERMINAL BOARD
TO OUTDOOR UNIT
TO INTEGRATED CONTROL SYSTEM
(WIRED REMOTE CONTROLLER) OPTIONAL
AIR TEMP. SENSOR TA (THERMISTOR)
HEAT EXCHANGER TEMP. SENSOR E1 (THERMISTOR)
HEAT EXCHANGER TEMP. SENSOR E2 (THERMISTOR)
WIRE COLOR
V VIOLET
B BLUE
BL BLACK
BR BROWN
G GREEN
GR GRAY
O ORANGE
P PINK
R RED
W WHITE
Y YELLOW
Y/G YELLOW/GREEN
CAUTION
Terminal No. (U1), (U2), (R1) & (R2) are D.C. signal circuit
Do not supply 230 - 240 V

4. PROCESS AND FUNCTIONS

4-1. Control Functions..... 4 - 2
4-2. Outdoor Unit Control PCB..... 4 - 9
4-3. Outdoor Unit HIC Board..... 4-12
4-4. Indoor Unit Control PCB Switches and Functions..... 4-13

4-1. Control Functions

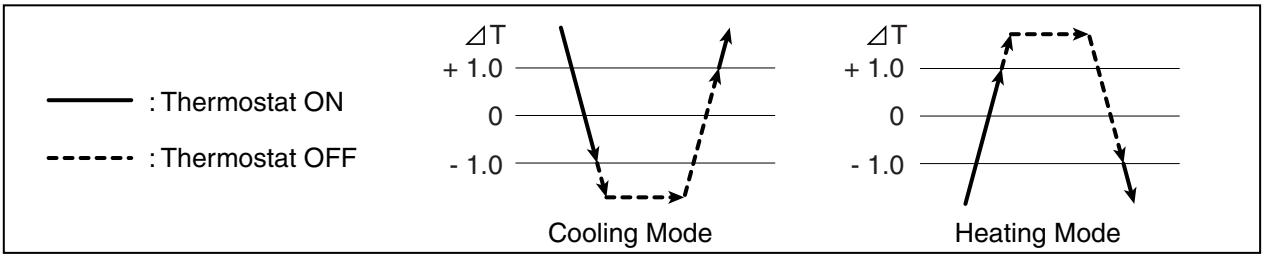
1. Indoor Air Temperature Control

The thermostat is switched on and off in accordance with ⊿ T shown below.

⊿ T= (Indoor air temperature) - (Temperature set with the remote controller)	
In the body thermostat mode (setting at factory shipment)	Indoor air temperature = (Body sensor) - (Shift temperature *)
In the remote controller thermostat mode	Indoor air temperature = (Remote controller sensor)

* Shift Temperature
Only valid during heating operation. Set at 0 °C during cooling operation.
The settings at factory shipment during heating operation are as follows:
Wall-Mounted type : 2°C
Floor Standing type : 0°C
All other types (4-Way types, Concealed types, etc.) : 4°C

This function acts as the coefficient for adjusting differences in temperature caused by the height of the living space from the floor to the ceiling (the temperature at ceiling height is higher) during heating operation.
The setting can be modified between 0°C and 6°C with mode [06] (Simple Settings Function) on the remote controller.



(1) Once the thermostat has been switched on, it cannot be switched off again by indoor air temperature control for a period of 10 minutes.
(2) Once the thermostat has been switched off, it cannot be switched on again for a period of 3 minutes.
(3) When in the test run operation mode, the thermostat will not be switched off by indoor air temperature control and the operation will continue.

2. Compressor Frequency Control

The frequency of the compressor's inverter is limited by either of the following controls depending on whether the cooling or heating mode is in operation.

Cooling Mode :

· Indoor air temperature control
· Maximum and minimum frequency control
· Current control
· Cooling high-load prevention control
· Cooling freeze prevention control
· Discharge temperature control

Heating Mode :

· Indoor air temperature control
· Maximum and minimum frequency control
· Current control
· Heating high-load prevention control
· Discharge temperature control

1) Indoor Air Temperature Control

By the control method, not only the thermostat is switched on and off, as explained section “1. Indoor Air Temperature Control”, but also the frequency of the compressor’s inverter is controlled in accordance with ⊿ T and fluctuations in indoor air temperature. Inverter frequency is controlled as follows:

When ⊿T is high (not yet reached the temperature set with the remote controller).	Controlled so that the inverter frequency is increased.
When ⊿T is low (approximately +1.0 or less in the cooling mode or approximately -1.0 or more in the heating mode).	Controlled so that the inverter frequency is decreased or kept.

2) Maximum and Minimum Frequency Control

The compressor's inverter frequency is controlled in accordance with the model and operation mode.
The maximum and minimum frequencies for each model are shown in the table below.

* There are cases in which frequency is limited with other control functions depending on operational conditions, so operations are not always carried out in accordance with the maximum frequencies listed below.

· Maximum and Minimum Frequency

		U-200PZH4E8	U-250PZH4E8
Maximum Frequency (Hz)	Cooling	70	80
	Heating	95	100
Minimum Frequency (Hz)	Cooling	13	13
	Heating	15	15

* There is a case in which the frequency set at maximum and minimum may sometimes decrease in accordance with ambient temperature and indoor loads.

3) Current Control

The inverter frequency is controlled so that the current value for the inverter compressor is less than the figure listed in the table below in order to prevent abnormal increases in the inverter circuit located within the outdoor unit's electrical box.

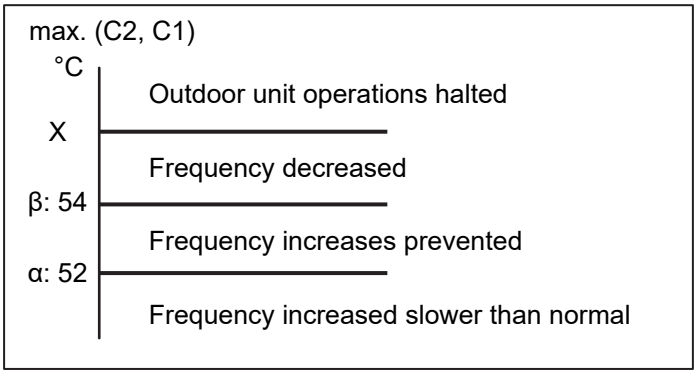
Current control with primary current : The limited values are modified in accordance with ambient temperature.

		U-200PZH4E8	U-250PZH4E8
Is (A)	Cooling	12.5	14.0
	Heating	15.0	16.5

4) Condensation Temperature Control (cooling)

This system control is performed to limit the inverter frequency in order to restrict high pressure's abnormal increase and high-load operating prevention in the cooling mode.
In accordance with the temperature of the outdoor heat exchanger temperature sensors (C1, C2), such controls are performed as to halting the operations of the indoor unit, decreasing the inverter frequency and restricting its increase, etc.

(a) The threshold value is decreased in accordance with the compressor frequency or indoor load (differences of temperature).
(b) When "X" values are lowered, the results basically become β=X-2, α=X-3.



Outdoor EEPROM : Amendment of X values can be made due to 4B.

EEPROM setting in outdoor unit
CODE: 4B

Setting No.	1	2	3	4 *
X (°C)	52	56.5	58.5	60

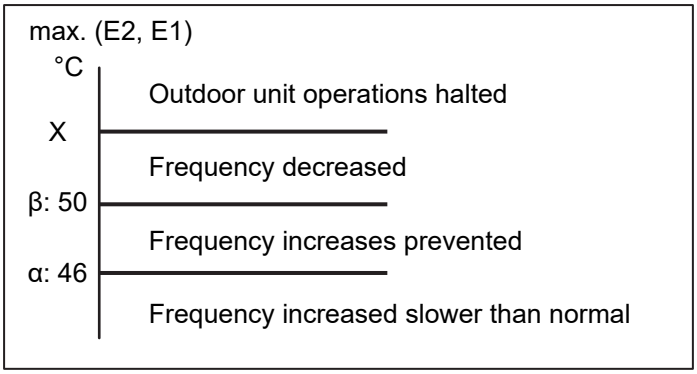
* Setting at factory shipment

4

5) Condensation Temperature Control (heating)

This system control is performed to limit the inverter frequency in order to restrict high pressure's abnormal increase and high-load operating prevention in the heating mode.
In accordance with the temperature of the indoor heat exchanger temperatures sensor (E1, E2), such controls are performed as to halting the operations of the indoor unit, decreasing the inverter frequency and restricting its increase, etc.

(a) The threshold value is decreased in accordance with the compressor frequency or indoor load (differences of temperature).
(b) When "X" values are lowered, the results basically become β=X-2, α=X-3.



Outdoor EEPROM : Amendment of X values can be made due to 4B.

EEPROM setting in outdoor unit
CODE: 4B

Setting No.	1	2	3	4 *
X (°C)	52	56.5	58.5	60

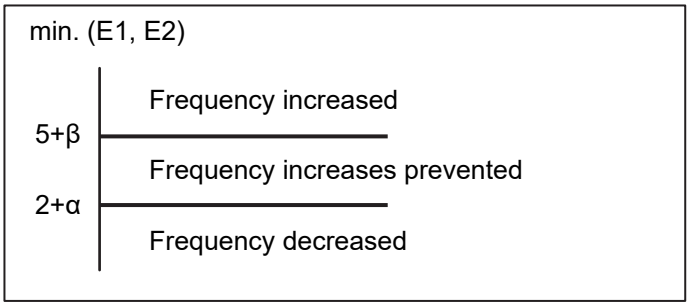
* Setting at factory shipment

6) Cooling Freeze Prevention Control

The following control is performed during cooling operations (including dry mode operation), in accordance with whichever of the indoor heat exchanger temperatures (E1 or E2) is lower. (See the chart below.)

(a) Frequency will not be decreased less than 6 minutes after thermostat ON.

(b) The threshold value is increased in accordance with the indoor load (differences of temperature).



Outdoor EEPROM : Amendment of α and β values can be made due to 30A or 30B.

EEPROM setting in outdoor unit

CODE: 30A (for α setting)

Setting No.	-15	.....	0 *	.....	9
α	-15		0		9

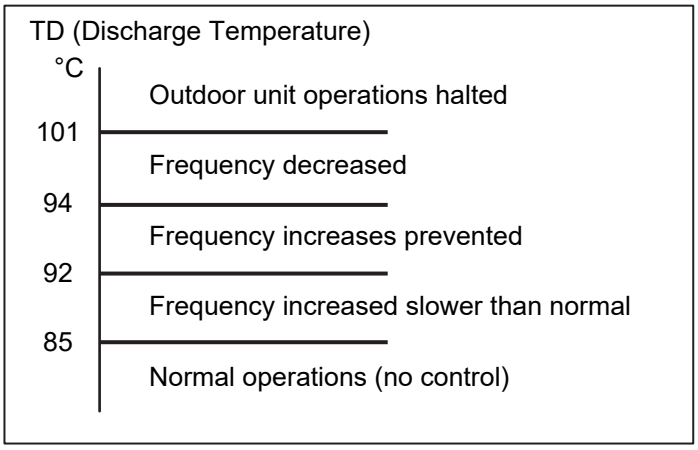
CODE: 30B (for β setting)

Setting No.	-15	.....	0 *	.....	9
β	-15		0		9

* Setting at factory shipment

7) Discharge Temperature Control

The following control is performed to prevent the discharge temperature from rising abnormally in order to protect the inverter compressor.
In accordance with the temperature of the discharge sensor TD, such controls are performed as to limiting the increase of inverter frequency, decreasing it or halting operation of the compressor.

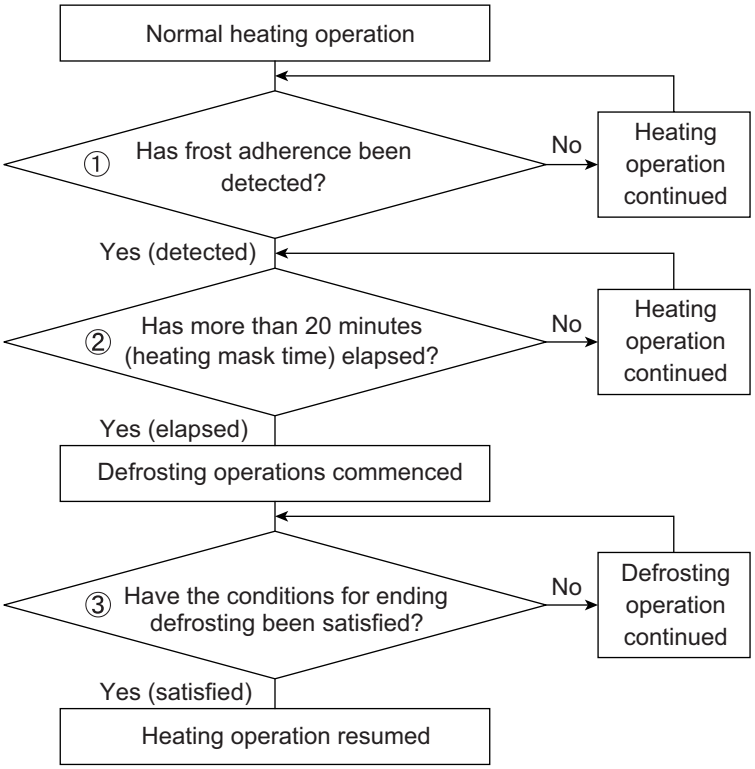


* If the discharge temperature exceeds 101°C, operations of the compressor are halted and restarted after 3 minutes.
If this start/stop activity is repeated 4 times, the alarm “P03” (abnormal discharge temperature) occurs.

8) Defrosting Control

This control function removes frost that has adhered to the outdoor heat exchanger during the heating operation. The control is performed to prevent the deterioration of the heating capabilities attributed to the adherence of frost, and to prevent the crack or crush of pipes attributed to the accretion of ice.
The following control is performed in accordance with the ambient temperature and the outdoor heat exchanger temperature sensor (C1).

Overall Flow Chart of Defrosting Control



① Frost adherence detection

- If the following conditions are satisfied during heating operations, it is regarded as “frost adherence is detected”.
- Frost adherence detection is performed in accordance with the ambient temperature (TO) and the outdoor heat exchanger temperature sensor min(C1, C2).
- Frost adherence detection conditions

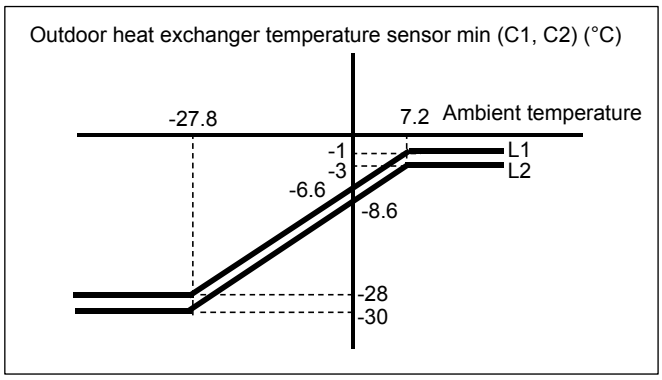
  (a) Following satisfied condition is detected for accumulation of 60 minutes.

  Outdoor heat exchanger temperature sensor min(C1, C2) ≤ L1

  (b) Following satisfied condition is detected for consecutive 1 minutes or more, 2 times.

  Outdoor heat exchanger temperature sensor min(C1, C2) ≤ L2

<U-200PZH4E8, U-250PZH4E8>



(c) Following satisfied condition is detected for accumulation of over 80 minutes.
Outdoor heat exchanger temperature sensor min(C1, C2) < -3 °C

② Heating Mask Time

This refers to the shortest time that heating operations must be performed without defrosting operations being executed. The mask time for this model is 20 minutes.

* Defrosting operations will not be commenced until the defrosting mask time has elapsed, even if frost adherence has been detected.

③ Ending Defrosting

Defrosting operations are ended when the following conditions are satisfied.

- Ending defrosting conditions

(a) When the temperature of the outdoor heat exchanger temperature sensor (C1) is 10°C or higher.

(b) When the temperature of the outdoor heat exchanger temperature sensor (C1) is 6°C or higher for consecutive 60 seconds.

(c) When a maximum of 15 minutes defrosting time has elaped.

9) Outdoor Unit Fan Control

The appropriate rotations per minute for the outdoor unit fan are determined in accordance with the ambient temperature and the frequency of the compressor inverter.
The outdoor unit fan step is controlled between a range of W0 (Step 1) and WF (Step 16).

10) Outdoor Unit's Electrical Expansion Valve Control

The electrical expansion valve controls the amount of refrigerant that is allowed to flow in accordance with the operation status.
The valve is adjusted in accordance with the discharge temperature (TD), the outdoor heat exchanger temperature sensor (C1), the suction temperature sensor (TS), and the indoor unit's heat exchanger temperature sensors (E1 and E2).

(1) Cooling Mode
Controlled so that the suction temperature (TS) - indoor heat exchanger temperature minimum (E1 and E2) is between 0 degree and 2 degrees under normal conditions.
There are cases where the aperture opens wider than normal operation if the discharge temperature increases.

(2) Heating Mode
Controlled so that the suction temperature (TS) - outdoor heat exchanger temperature (C1) is between 0 degree and 2 degrees under normal conditions.
There are cases where the aperture opens wider than normal operation if the discharge temperature increases.

11) Silent mode

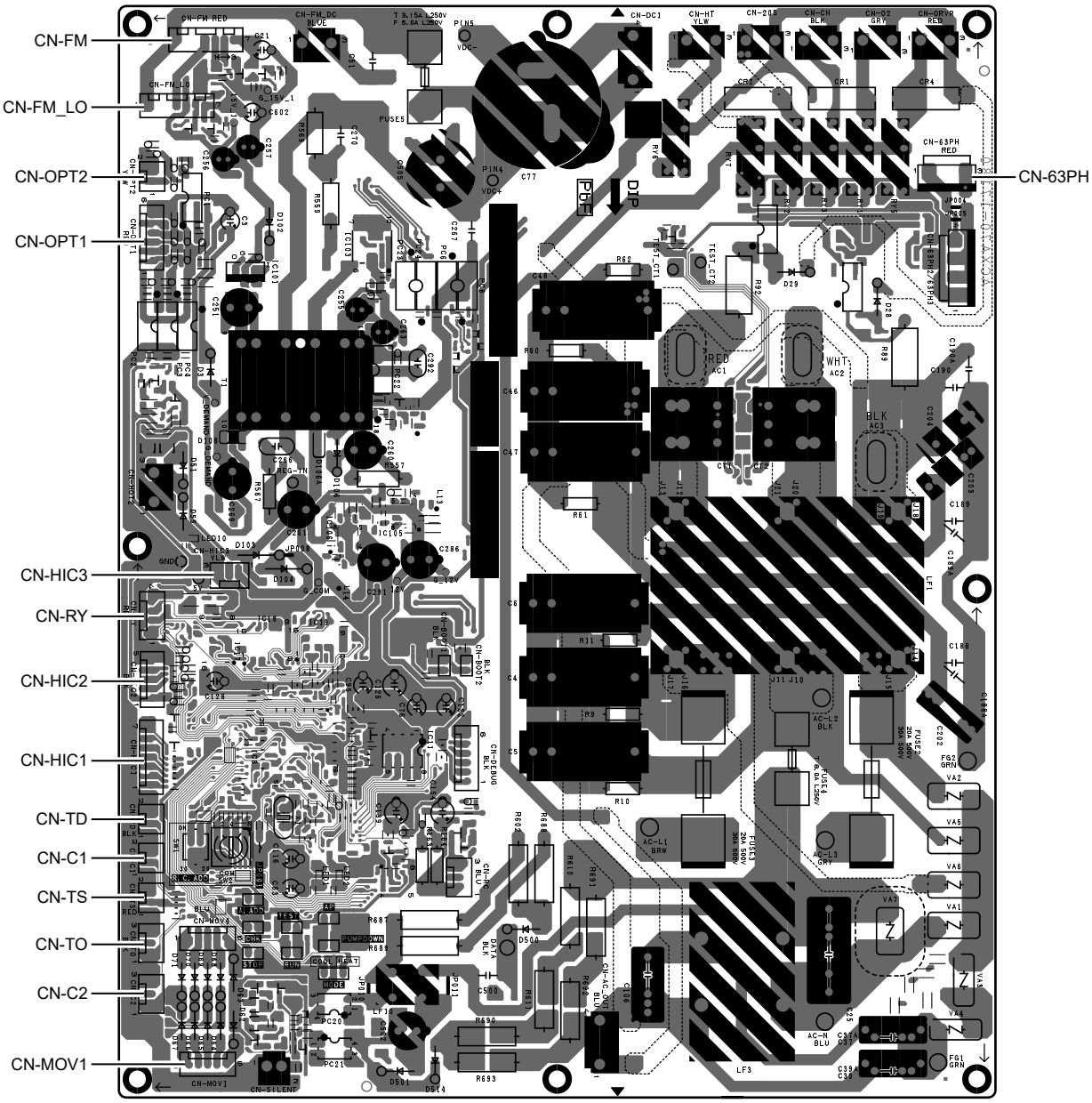
It is avilable to select one of 3 levels of silent mode as listed in the table below.
Outdoor maintenance remote controller: Item code “301” (1: Silent level 1, 2: Silent level 2, 3: Silent level 3)
Attention: Due to decrease of operating noise level, the air conditioner's capacity can be reduced.
Silent mode is ineffective during the test run operation.

Model		U-200PZH4E8	U-250PZH4E8
Operating mode		dB(A)	dB(A)
Cooling	Rated value	58	58
	Silent level 1	56	56
	Silent level 2	54	54
	Silent level 3	52	52
Heating	Rated value	62	62
	Silent level 1	60	60
	Silent level 2	58	58
	Silent level 3	56	56

There are two types of conditions when entering into a silent mode.
(1) From external input: When short-circuiting the silent pin of the outdoor unit control PCB
(2) From software input: The automatic silent-mode operation can be available in the following procedure. (However, use the Schedule Timer to set the present time and check for the Schedule Timer from the outdoor unit.)

4-2. Outdoor Unit Control PCB

U-200PZH4E8, U-250PZH4E8



Explanation of Functions

A. ADD pin	(2P, Black)	Auto address setting pin • Short-circuit this pin for 1 second or longer to automatically set the addresses at the indoor units that are connected to that outdoor unit and are within the same system. • The system address is “0” at the time of shipment. Auto address setting is necessary even for communications lines in a single system where the inter-unit control wiring does not cross to any other systems. • While auto address setting is in progress, the 2 LEDs (LED1, 2: Red) on the outdoor unit control PCB blink alternately. (Short-circuiting this pin while auto address setting is in progress will stop the auto address setting operation.)
SW2 Rotary switch	(10 positions, Yellow)	Outdoor system address setting switch • The setting is “0” at the time of shipment. It is not necessary to change the setting if wiring is connected only to an outdoor unit and indoor units in a single system and the inter-unit control wiring does not cross multiple systems. • If wiring links the inter-unit control wiring for multiple systems to the same communications lines, then a different address must be set for each refrigerant tubing system. • If wiring links multiple systems, a maximum of 30 systems (up to 64 indoor units) can be connected. This setting can be set up to “39,” however, control will be for 30 systems even if the setting is set to higher than 30. An alarm will be displayed if system addresses are duplicated. (For details, see Table 4-1.)
SW1 DIP switch	(2P, Black)	Switches for setting system address 10s digit and 20s digit • If 10 systems or more are set, the setting is made by a combination of this DIP switch and SW2. • If 10 - 19 systems are set, set switch 1 (10s digit) to ON. • If 20 - 29 systems are set, set switch 2 (20s digit) to ON, and set switch 1 (10s digit) to OFF. • If 30 systems are set, set both switch 1 (10s digit) and switch 2 (20s digit) to ON.(For details, see Table 4-1.)
PUMP DOWN	(2P, Black)	Refrigerant recovery Pin • Short circuit this pin to perform refrigerant recovery control using cooling operation. The indoor unit fan will operate at HIGH and 60Hz for a maximum of 10 minutes When refrigerant recovery is completed, close the valves and open circuit this pin to stop the operation.
LED 1 LED 2	(D302) (D303)	LED (red × 2) • LED 1 and 2 blink alternately while automatic address setting is in progress. • Display the alarm contents for alarms that are detected by the outdoor unit.
RUN	(2P, Black)	Start pin • Short-circuit this pin and apply a pulse signal to start all indoor units in that refrigerant system.
Stop	(2P, Black)	Stop pin • Short-circuit this pin and apply a pulse signal to stop all indoor units in that refrigerant system.
Mode change	(3P, Black)	Indoor unit Heating/Cooling mode change pin • Short-circuiting this pin during ordinary operation changes the mode from Cooling to Heating (if the current mode is Cooling) or from Heating to Cooling (if the current mode is Heating).
Test	(2P, Black)	• This pin is used to test the PCB at the factory. • When the power is turned ON after this pin has been short-circuited, all output signals will be output in sequence. (Sequential output does not occur if this pin is short-circuited when the power is already ON.) Releasing this pin returns the unit to normal control.
CHK	(2P, Black)	• Short-circuit during the test run operation. • Open the circuit after the test run.

Table 4-1. Method of System Address Setting

[SW2 (rotary, yellow), SW1 (2P DIP switch, black)]

	Outdoor system address No.	SW2 setting (system address switch)	SW1 setting	
			1P (10s-digit place)	2P (20s-digit place)
1 system only	1	0	OFF	OFF
Central control	1	1	OFF	OFF
	2	2	OFF	OFF
	3	3	OFF	OFF
	4	4	OFF	OFF
	5	5	OFF	OFF
	6	6	OFF	OFF
	7	7	OFF	OFF
	8	8	OFF	OFF
	9	9	OFF	OFF
	10	0	ON	OFF
	11	1	ON	OFF
	12	2	ON	OFF
	13	3	ON	OFF
	14	4	ON	OFF
	15	5	ON	OFF
	16	6	ON	OFF
	17	7	ON	OFF
	18	8	ON	OFF
	19	9	ON	OFF
	20	0	OFF	ON
	21	1	OFF	ON
	22	2	OFF	ON
	23	3	OFF	ON
	24	4	OFF	ON
	25	5	OFF	ON
	26	6	OFF	ON
	27	7	OFF	ON
	28	8	OFF	ON
	29	9	OFF	ON
	30	0	ON	ON

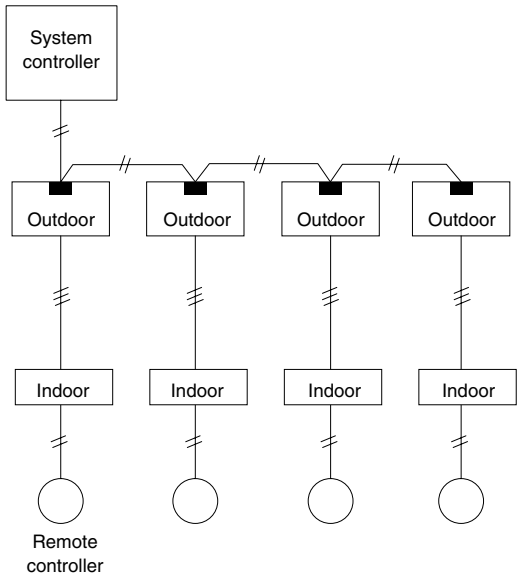
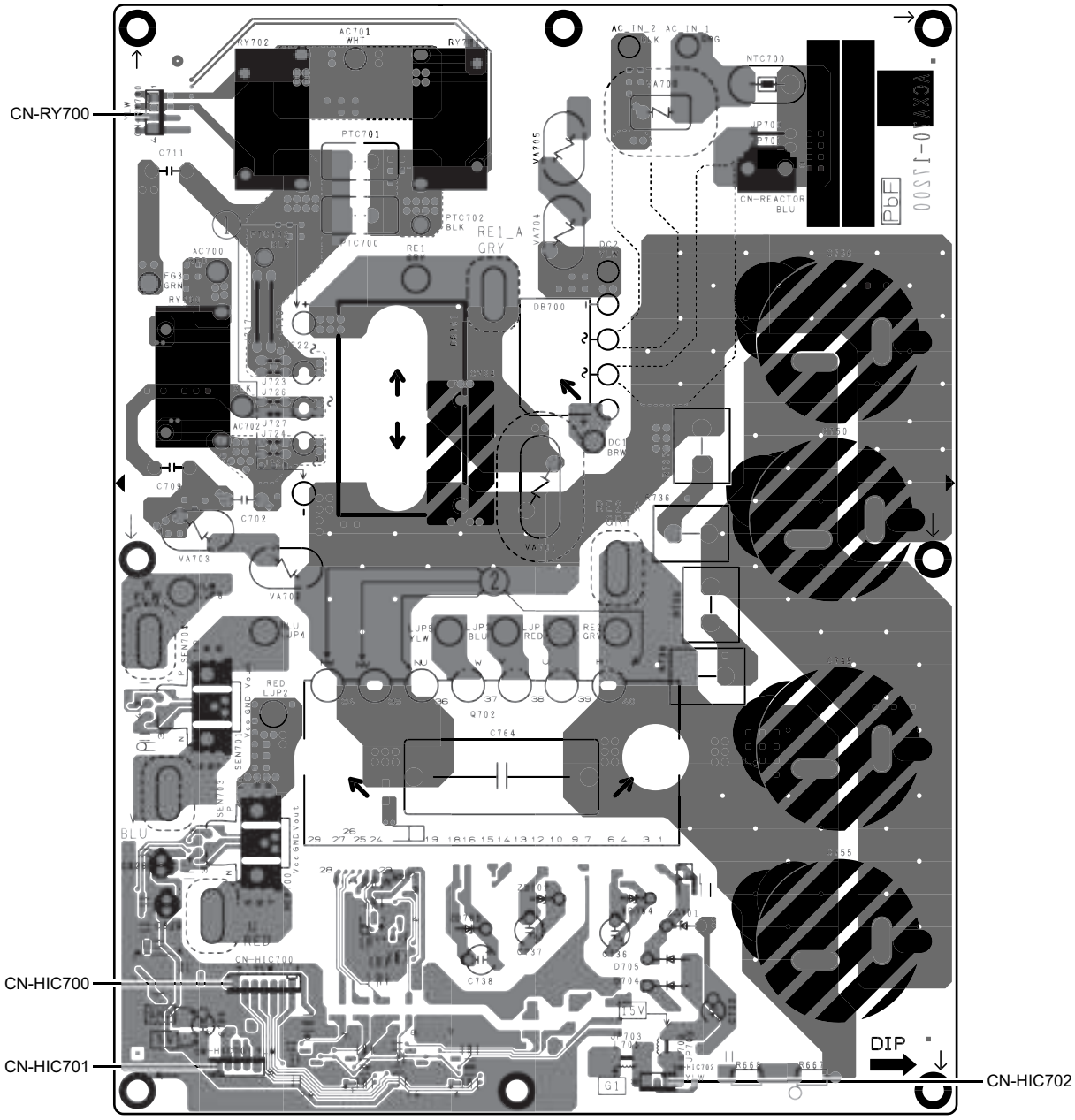


Fig. 1

4

4-3. Outdoor Unit HIC Board

U-200PZH4E8, U-250PZH4E8



4-4. Indoor Unit Control PCB Switches and Functions

[Indoor unit control PCB]

T10 (CN061): **6P plug (YEL)** / Used for remote control operation. (Refer to the Remote Control Section.)

Control items: (1) Start/stop input (2) Remote controller prohibit input
(3) Start signal output (4) Alarm signal output

EXCT (CN073): **2P plug (RED)** / Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.

DISP (CN063): **2P plug (WHT) Type E1:**
2P plug (BLK) Type E3/E4:

Short-circuiting this plug allows operation to be controlled by the remote controller even when an outdoor unit is not connected. (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)

CHK (CN062): **2P plug (WHT) Type E1:**
2P plug (BLK) Type E3/E4:

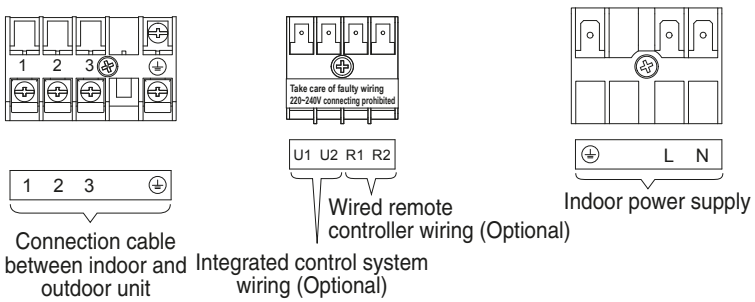
Test pin. Short-circuiting this pin allows the indoor FM (H fan speed), drain pump, flap motor (F1 position), and electronic expansion valve full-open position to be checked.
However this function turns OFF if the indoor unit protection mechanism is activated.
The components will operate even if the remote controller and outdoor unit are not connected, however the remote control cannot be used for control even if it is connected.
This plug can be used for short-term tests.

JP1 (JP001): **Jumper wire** / Allows selection of the T10 terminal start/stop signal. (Refer to the Remote Control Section.)
Setting at time of shipment: Pulse signal
Jumper wire cut: Static signal (continuous signal)

Fan drive (CN032): **2P plug (WHT)** / This terminal sends the signal to the ventilation fan when a commercially available ventilation fan is operated by the FAN button on the wired remote controller. (Refer to the Remote Control Section.)
Use a ventilation fan which can accept the no-voltage contact A signal as the external input signal.

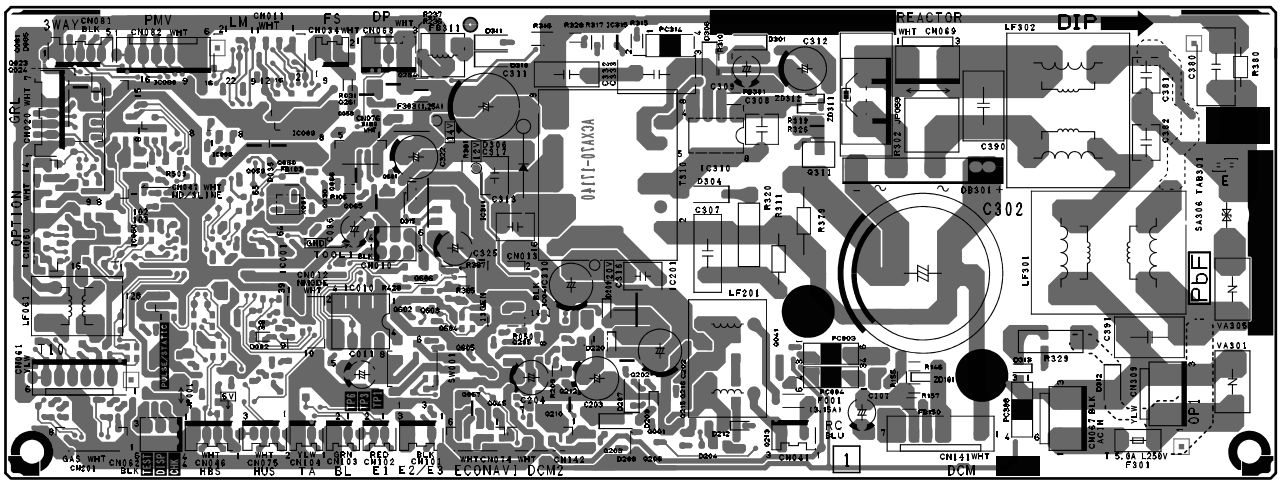
Power LED: **LED (RED)** / Illuminates when the power is ON. Flashes when there is trouble with the EEPROM (IC10, IC010: nonvolatile memory).

EEPROM (IC010): **Nonvolatile memory** / Used to store model information and other data. When replacing the PCB, remove the EEPROM from the old PCB and install it onto the new PCB. If there is IC trouble, replace with a new IC (provided with the servicing PCB), and set the necessary information using the wired remote controller. (For the setting procedure, refer to the servicing technical materials.)



High Static Pressure Ducted Type
S-200PE4E, S-250PE4E

Indoor Unit Control Board



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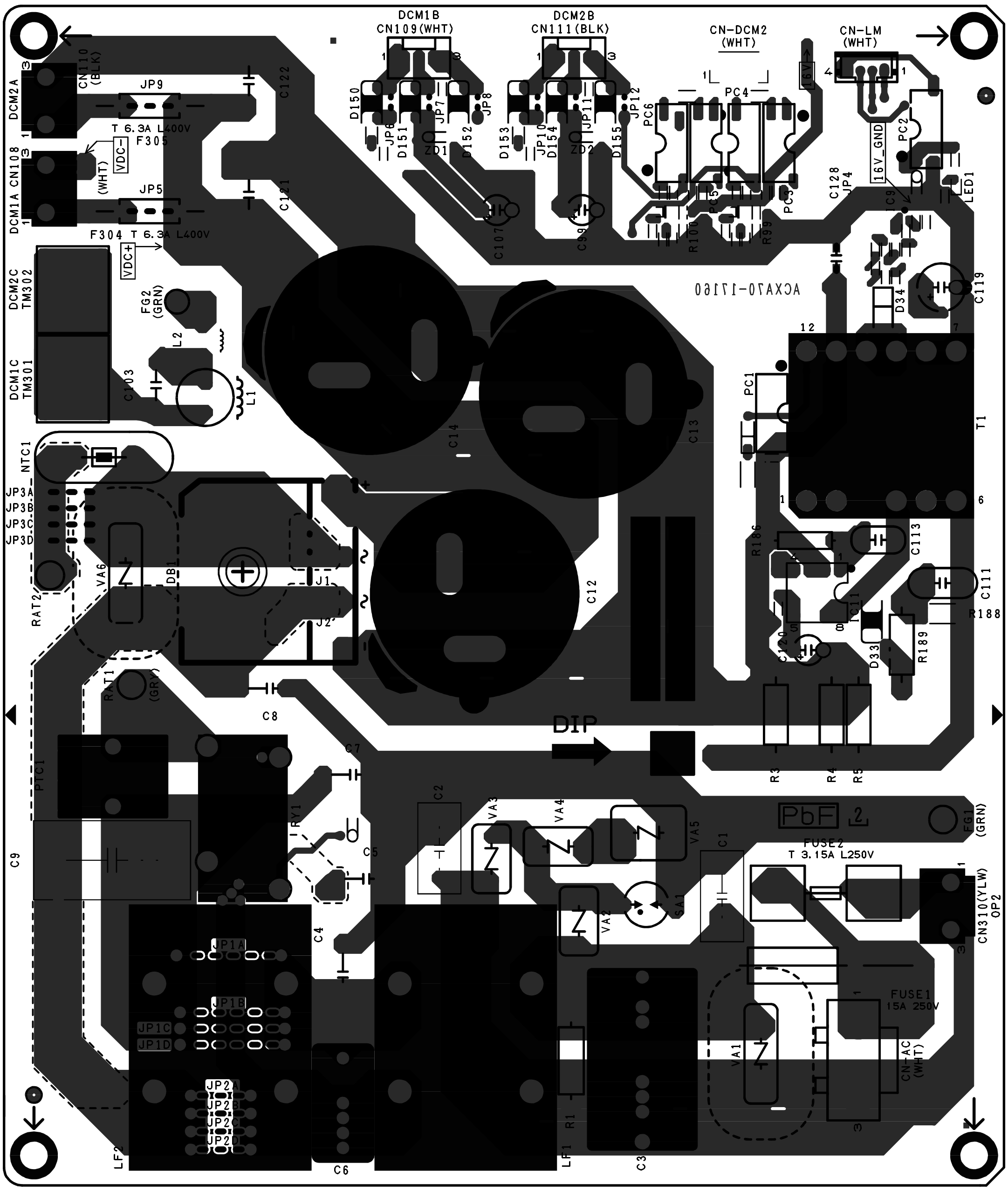
S-200PE4E, S-250PE4E



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