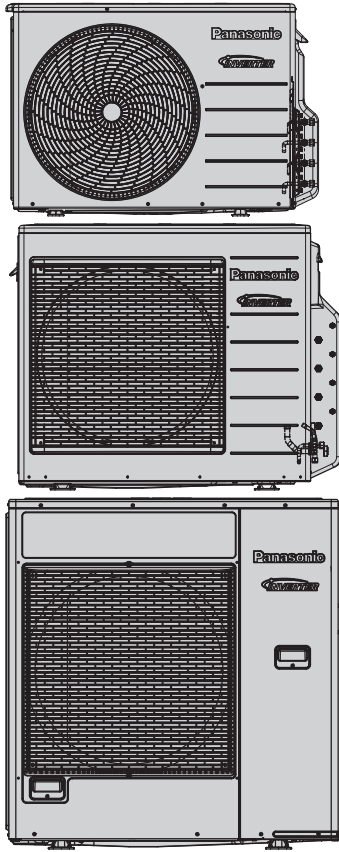


Service Manual

Air Conditioner



Outdoor Unit
CU-2Z35CBE
CU-2Z41CBE
CU-2Z50CBE
CU-3Z52CBE
CU-3Z68CBE
CU-4Z68CBE
CU-4Z80CBE
CU-5Z90CBE

Destination
Europe

Please file and use this manual together with the service manual for Model No. CS-MZ16CKE CS-Z20CKEW CS-Z25CKEW CS-Z35CKEW CS-Z42CKEW CSZ50CKEW CS-XZ20CKEW CS-XZ25CKEW CS-XZ35CKEW CS-XZ50CKEW CSXZ20CKEW-H CS-XZ25CKEW-H CS-XZ35CKEW-H CS-XZ42CKEW-H CSMTZ16CKE CS-TZ20CKEW CS-TZ25CKEW CS-TZ35CKEW CS-TZ42CKEW CS-TZ50CKEW CS-TZ60CKEW CS-RZ25CKEW CS-RZ35CKEW CSMZ20CD3EA CS-Z25CD3EAW CS-Z35CD3EAW CS-Z50CD3EAW CSZ60CD3EAWS-M20PY3E S-25PY3E S-36PY3E S-50PY3E S-60PY3E CSMZ20CFEA CS-Z25CFEAW CS-Z35CFEAW CS-Z50CFEAW
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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.

PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigerant circuit.

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1. 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.

If the equipment is transferred to a new user or delivered to a recycling plant, be sure also to hand over the manual.

 WARNING		
1.	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.	
2.	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.	
3.	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.	
4.	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.	
5.	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury. 	
6.	Do not sit or step on the unit, you may fall down accidentally. 	
7.	Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.  	
8.	When installing or relocating air conditioner, do not let any substance other than the specified 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.	
9.	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.	
10.	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.	
11.	Do not use joint cable for indoor / outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction CONNECT THE CABLE TO THE OUTDOOR UNIT 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.	
12.	• For R32/R410A model, use piping, flare nut and tools which is specified for R32/R410A 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 used. • Since the working pressure for R32/R410A is higher than that of refrigerant R22 model, replacing conventional piping and flare nuts on the outdoor unit side are recommended. • If reuse piping is unavoidable, refer to instruction "IN CASE OF REUSING EXISTING REFRIGERANT PIPING" • Thickness of copper pipes used with R32/R410A must be more than 0.8 mm (3/4 - 2.0HP), 1.0 mm (2.5HP). Never use copper pipes thinner than 0.8 mm (3/4 - 2.0HP), 1.0 mm (2.5HP). • It is desirable that the amount of residual oil less than 40 mg/10 m.	
13.	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.	

 WARNING		
14.	For refrigeration system work, install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
15.	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
16.	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.	
17.	For electrical work, follow the national regulation, legislation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in the electrical work, it will cause electrical shock or fire.	
18.	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.	
19.	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.	
20.	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.	
21.	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.	
22.	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.	
23.	After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.	
24.	Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.	
25.	Be aware that refrigerants may not contain an odour.	
26.	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

1.	Do not install the unit in a place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.	
2.	Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.	
3.	Do not release refrigerant during piping work for installation, re-installation and during repairing refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.	
4.	Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.	
5.	Do not touch the sharp aluminium fin, sharp parts may cause injury. 	
6.	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.	
7.	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.	
8.	Power supply connection to the room air conditioner. <u>For CU-2Z35, 2Z41, 2Z50CBE</u> Use power supply cord 3 x 1.5 mm² type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited. 1) Power supply connection to the receptacle using power plug. Use an approved 16A power plug with earth pin for the connection to the socket. 2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap. <u>For CU-3Z52, 3Z68, 4Z68CBE</u> Use power supply cord (3 x 2.5 mm²) type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited. 1) Power supply connection to the receptacle using power plug. Use an approved 16 A (CU-3Z52***), 20 A (CU-3Z68***, CU-4Z68***) power plug with earth pin for the connection to the socket. 2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16 A (CU-3Z52***), 20 A (CU-3Z68***, CU-4Z68***) circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap. <u>For CU-4Z80, 5Z90CBE</u> Use power supply cord 3 x 4.0 mm² type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited. 1) Power supply connection to the receptacle using power plug. Use an approved 25 A power plug with earth pin for the connection to the socket. 2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 25 A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.	
9.	Installation work. It may need two people to carry out the installation work.	
10.	Keep any required ventilation openings clear of obstruction.	

2. Precaution for Using R32 Refrigerant

- Pay careful attention to the following precaution points and the installation work procedures.

⚠ WARNING	
1.	The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than A_{min} (m ²) [refer Table A] 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.
2.	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).]
3.	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.)
4.	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.
5.	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.
6.	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.
7.	A logbook shall be maintained. The results of these checks shall be recorded in the logbook.
8.	In case of ventilations in occupied spaces shall be checked to confirm no obstruction.
9.	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.
10.	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.
11.	Air-conditioner piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
12.	Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
13.	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).
14.	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.
15.	Protect the refrigerating system from accidental rupture due to moving furniture or reconstruction activities.
16.	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. 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 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. • Electrical components that can arc or spark 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.



CAUTION

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 refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available at hand.
- Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

2.

2-7. No ignition sources

- No person carrying out work in relation to a refrigeration 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. He/She 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 flammable 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 thereafter.



CAUTION

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 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 can 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: • safely remove refrigerant following local and national regulations -> • evacuate -> • purge again with inert gas -> • evacuate -> • continuously flush with inert gas when using flame to open circuit -> • open the circuit • The refrigerant charge shall be recovered into the correct recovery cylinders. • The system shall be purged with OFN to render the appliance safe. (remark: OFN = oxygen free nitrogen, type of inert gas) • This process may need to be repeated several times. • Compressed air or oxygen shall not be used for this task. • Purging of the refrigerant circuit shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a 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 refrigeration 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 overfill 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. • 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. 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 refrigeration system unless it has been cleaned and checked.

 CAUTION

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| 9. | <p>Labelling</p> <ul style="list-style-type: none">• 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. | <p>Recovery</p> <ul style="list-style-type: none">• 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.• Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.• The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable 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 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. |

3. Specifications

3.1 CU-2Z35CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				1.6kW + 2.0kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	3.5 (1.50 ~ 4.50)
			BTU/h	11900 (5120 ~ 15300)
	Electrical Data	Running Current	A	3.60
		Power Input	kW	0.76 (0.25 ~ 1.10)
		Annual Energy Consumption (AEC)	kWh	380
		EER	W/W	4.61 (6.00 ~ 4.09)
		EER Class		A
	ERP	Pdesign	kW	3.5
		SEER	W/W	9.10
		Annual Consumption	kWh	135
		ERP Class		A+++
	Power Factor		%	92
Noise	Sound Pressure Level	dB-A (H/L)	48 / -	
	Sound Power Level	dB (H/L)	63 / -	
Heating Operation	Capacity		kW	4.20 (1.1 ~ 5.60)
			BTU/h	14300 (3750 ~ 19100)
	Electrical Data	Running Current	A	3.9
		Power Input	kW	0.83 (0.21 ~ 1.34)
		COP	W/W	5.06 (5.24 ~ 4.18)
		COP Class		A
	ERP	Pdesign	kW	3.20
		Tbivalent	°C	-10
		SCOP	W/W	4.80
		Annual Consumption	kWh	933
		ERP Class		A++
	Power Factor		%	93
	Noise	Sound Pressure Level	dB-A (H/L)	50 / -
		Sound Power Level	dB (H/L)	65 / -
Maximum Current			A	10.5
Maximum Input Power			W	2.42k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure	Mpa (bar)	4.15 (41.50)	
	Low Pressure		2.55 (25.50)	
Starting Current			A	3.90
Comp Output			W	900
FM Output			W	40
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	37

Item			Unit	OUTDOOR UNIT	
Piping	Pipe Length Range (1 room)		m	3 ~ 20	
	Maximum Pipe Length (Total Room)		m	30	
	Standard Length		m	5	
	Height Difference		m	10	
	Add. Gas Amount		g/m	15	
	Pipe Length for Add. Gas		m	20	
Connect Method				Flared Type	
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)	
	Gas Side		mm (inch)	9.52 (3/8)	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	900	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	40	
Fan Speed	High (Cooling / Heating)		RPM	850 / 850	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 28	
	FPI			17	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	28.5 (1005) / 36.9 (1305)	
Refrigerant Control Device				Expansion Valve	
Refrigerant Oil			cm ³	FW50S (450)	
Refrigerant (R32)			g	1.18k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.2 CU-2Z41CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				1.6kW + 2.5kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	4.1 (1.5 ~ 5.2)
			BTU/h	14000 (5120 ~ 17700)
	Electrical Data	Running Current	A	4.30
		Power Input	kW	0.94 (0.25 ~ 1.37)
		Annual Energy Consumption (AEC)	kWh	470
		EER	W/W	4.36 (6.00 ~ 3.80)
		EER Class		A
	ERP	Pdesign	kW	4.10
		SEER	W/W	9.10
		Annual Consumption	kWh	158
		ERP Class		A+++
	Power Factor		%	95
	Noise	Sound Pressure Level	dB-A (H/L)	48 / -
Sound Power Level		dB (H/L)	63 / -	
Heating Operation	Capacity		kW	4.6 (1.1 ~ 7.0)
			BTU/h	15700 (3750 ~ 23900)
	Electrical Data	Running Current	A	4.30
		Power Input	kW	0.93 (0.21 ~ 1.79)
		COP	W/W	4.95 (5.24 ~ 3.91)
		COP Class		A
	ERP	Pdesign	kW	3.50
		Tbivalent	°C	-10
		SCOP	W/W	4.80
		Annual Consumption	kWh	1021
		ERP Class		A++
	Power Factor		%	94
	Noise	Sound Pressure Level	dB-A (H/L)	50 / -
Sound Power Level		dB (H/L)	65 / -	
Maximum Current			A	10.9
Maximum Input Power			W	2.53k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure		Mpa (bar)	4.15 (41.50)
	Low Pressure			2.55 (25.50)
Starting Current			A	4.30
Comp Output			W	900
FM Output			W	40
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	37
Piping	Pipe Length Range (1 room)		m	3 ~ 20
	Maximum Pipe Length (Total Room)		m	30
	Standard Length		m	5
	Height Difference		m	10
	Add. Gas Amount		g/m	15
	Pipe Length for Add. Gas		m	20

Item			Unit	OUTDOOR UNIT	
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)	
	Gas Side		mm (inch)	9.52 (3/8)	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	900	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	40	
Fan Speed	High (Cooling / Heating)		RPM	850 / 850	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 28	
	FPI			17	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	32.7 (1155) / 36.9 (1305)	
Refrigerant Control Device				Expansion Valve	
Refrigerant Oil			cm ³	FW50S (450)	
Refrigerant (R32)			g	1.18k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.3 CU-2Z50CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				2.5kW + 2.5kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	5.0 (1.5 ~ 5.4)
			BTU/h	17100 (5120 ~ 18400)
	Electrical Data	Running Current	A	5.40
		Power Input	kW	1.20 (0.25 ~ 1.49)
		Annual Energy Consumption (A.E.C)	kWh	600
		EER	W/W	4.17 (6.00 ~ 3.62)
		EER Class		A
	ERP	Pdesign	kW	5.00
		SEER	W/W	8.70
		Annual Consumption	kWh	201
		ERP Class		A+++
	Power Factor		%	97
	Noise	Sound Pressure Level	dB-A (H/L)	50 / -
		Sound Power Level	dB (H/L)	65 / -
Heating Operation	Capacity		kW	5.6 (1.1 ~ 7.2)
			BTU/h	19100 (3750 ~ 24600)
	Electrical Data	Running Current	A	5.40
		Power Input	kW	1.21 (0.21 ~ 1.80)
		COP	W/W	4.63 (5.24 ~ 4.00)
		COP Class		A
	ERP	Pdesign	kW	4.2
		Tbivalent	°C	-10
		SCOP	W/W	4.60
		Annual Consumption	kWh	1278
		ERP Class		A+++
	Power Factor		%	97
	Noise	Sound Pressure Level	dB-A (H/L)	52 / -
		Sound Power Level	dB (H/L)	67 / -
Maximum Current			A	11.5
Maximum Input Power			W	2.65k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure		Mpa (bar)	4.15 (41.50)
	Low Pressure			2.55 (25.50)
Starting Current			A	5.40
Comp Output			W	900
FM Output			W	40
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	37
Piping	Pipe Length Range (1 room)		m	3 ~ 20
	Maximum Pipe Length (Total Room)		m	30
	Standard Length		m	5
	Height Difference		m	10
	Add. Gas Amount		g/m	15
	Pipe Length for Add. Gas		m	20

Item			Unit	OUTDOOR UNIT	
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)	
	Gas Side		mm (inch)	9.52 (3/8)	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	900	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	40	
Fan Speed	High (Cooling / Heating)		RPM	900 / 1000	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 18	
	FPI			17	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	36.9 (1305) / 41.1 (1450)	
Refrigerant Control Device				Expansion Valve	
Refrigerant Oil			cm ³	FW50S (450)	
Refrigerant (R32)			g	1.18k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.4 CU-3Z52CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				1.6kW + 1.6kW + 2.0kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	5.20 (1.80 ~ 7.30)
			BTU/h	17700 (6140 ~ 24900)
	Electrical Data	Running Current	A	4.80
		Power Input	W	1.09k (360 ~ 2.18k)
		Annual Energy Consumption (AEC)	kWh	545
		EER	W/W	4.77 (5.00 ~ 3.35)
		EER Class		A
	ERP	Pdesign	kW	5.20
		SEER	W/W	8.70
		Annual Consumption	kWh	209
		ERP Class		A+++
	Power Factor		%	99
	Noise	Sound Pressure Level	dB-A (H/L)	47 / -
		Sound Power Level	dB (H/L)	61 / -
Heating Operation	Capacity		kW	6.80 (1.60 ~ 8.50)
			BTU/h	23200 (5460 ~ 29000)
	Electrical Data	Running Current	A	6.10
		Power Input	W	1.38k (320 ~ 2.50k)
		COP	W/W	4.93 (5.00 ~ 3.40)
		COP Class		A
	ERP	Pdesign	kW	5.40
		Tbivalent	°C	-10
		SCOP	W/W	4.7
		Annual Consumption	kWh	1609
		ERP Class		A++
	Power Factor		%	98
	Noise	Sound Pressure Level	dB-A (H/L)	48 / -
		Sound Power Level	dB (H/L)	62 / -
Maximum Current			A	15.5
Maximum Input Power			W	3.58k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure		Mpa (bar)	4.15 (41.50)
	Low Pressure			2.55 (25.50)
Starting Current			A	6.10
Dimension	Height		mm	795
	Width		mm	875 (+95)
	Depth		mm	320
Net Weight			kg	61
Piping	Pipe Length Range (1 room)		m	3 ~ 25
	Maximum Pipe Length (Total Room)		m	50
	Standard Length		m	5
	Height Difference		m	15
	Add. Gas Amount		g/m	20
	Pipe Length for Add. Gas		m	30
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)
	Gas Side		mm (inch)	9.52 (3/8)

Item			Unit	OUTDOOR UNIT	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	1.50k	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	60	
Fan Speed	High (Cooling / Heating)		RPM	580 / 540	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 36	
	FPI			19	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	46.0 (1625) / 41.1 (1450)	
Refrigerant Control Device			min	Expansion Valve	
Refrigerant Oil			cm ³	FW50S (900)	
Refrigerant (R32)			g	1.92k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.5 CU-3Z68CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				1.6kW + 2.5kW + 2.5kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	6.8 (1.90 ~ 8.00)
			BTU/h	23200 (6480 ~ 27300)
	Electrical Data	Running Current	A	7.70
		Power Input	W	1.74k (270 ~ 2.37k)
		Annual Energy Consumption (A.E.C)	kWh	870
		EER	W/W	3.91 (7.04 ~ 3.38)
		EER Class		A
	ERP	Pdesign	kW	6.80
		SEER	W/W	8.20
		Annual Consumption	kWh	290
		ERP Class		A++
	Power Factor		%	98
	Noise	Sound Pressure Level	dB-A (H/L)	51 / -
		Sound Power Level	dB (H/L)	65 / -
Heating Operation	Capacity		kW	8.5 (1.70 ~ 10.40)
			BTU/h	29000 (5800 ~ 35500)
	Electrical Data	Running Current	A	8.80
		Power Input	W	2.00k (360 ~ 2.86k)
		COP	W/W	4.25 (4.72 ~ 3.64)
		COP Class		A
	ERP	Pdesign	kW	5.60
		Tbivalent	°C	-10
		SCOP	W/W	4.60
		Annual Consumption	kWh	1704
		ERP Class		A++
	Power Factor		%	99
	Noise	Sound Pressure Level	dB-A (H/L)	53 / -
		Sound Power Level	dB (H/L)	67 / -
Maximum Current			A	15.9
Maximum Input Power			W	3.68k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure		Mpa (bar)	4.15 (41.50)
	Low Pressure			2.55 (25.50)
Starting Current			A	8.80
Extra Low Temperature	Capacity		kW	4.45
	Input Power		W	2450
	COP		W/W	1.82
Dimension	Height		mm	795
	Width		mm	875 (+95)
	Depth		mm	320
Net Weight			kg	64

Item			Unit	OUTDOOR UNIT	
Piping	Pipe Length Range (1 room)		m	3 ~ 20	
	Maximum Pipe Length (Total Room)		m	60	
	Standard Length		m	5	
	Height Difference		m	15	
	Add. Gas Amount		g/m	20	
	Pipe Length for Add. Gas		m	30	
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)	
	Gas Side / Gas Side (using CZ-MA2PA)		mm (inch)	9.52 (3/8) / 12.7 (1/2)	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	1.50k	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	60	
Fan Speed	High (Cooling / Heating)		RPM	640 / 650	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 : 0.5 / 36:3	
	FPI			19:19	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	47.9 (1690) / 48.8 (1720)	
Refrigerant Control Device			min	Expansion Valve	
Refrigerant Oil			cm ³	FW50S (900)	
Refrigerant (R32)			g	2.25k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.6 CU-4Z68CBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				1.6kW + 1.6kW + 1.6kW + 2.0kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	6.80 (1.90 ~ 8.80)
			BTU/h	23200 (6480 ~ 30000)
	Electrical Data	Running Current	A	7.00
		Power Input	W	1.58k (340 ~ 2.47k)
		Annual Energy Consumption (A.E.C)	kWh	790
		EER	W/W	4.30 (5.59 ~ 3.56)
		EER Class		A
	ERP	Pdesign	kW	6.80
		SEER	W/W	8.50
		Annual Consumption	kWh	280
		ERP Class		A+++
	Power Factor		%	98
	Noise	Sound Pressure Level	dB-A (H/L)	49 / -
		Sound Power Level	dB (H/L)	63 / -
Heating Operation	Capacity		kW	8.50 (1.70 ~ 10.60)
			BTU/h	29000 (5800 ~ 36100)
	Electrical Data	Running Current	A	8.10
		Power Input	W	1.84k (360 ~ 2.68k)
		COP	W/W	4.62 (4.72 ~ 3.96)
		COP Class		A
	ERP	Pdesign	kW	6.00
		Tbivalent	°C	-10
		SCOP	W/W	4.60
		Annual Consumption	kWh	1826
		ERP Class		A+
	Power Factor		%	99
	Noise	Sound Pressure Level	dB-A (H/L)	52 / -
		Sound Power Level	dB (H/L)	66 / -
Maximum Current			A	15.9
Maximum Input Power			W	3.69k
Maximum High Pressure			Mpa (bar)	4.15 (41.50)
Operating Pressure	High Pressure		Mpa (bar)	4.15 (41.50)
	Low Pressure			2.55 (25.50)
Starting Current			A	8.10
Extra Low Temperature	Capacity		kW	4.45
	Input Power		W	2230
	Cop		W/W	2.00
Dimension	Height		mm	795
	Width		mm	875 (+95)
	Depth		mm	320
Net Weight			kg	64

Item			Unit	OUTDOOR UNIT	
Piping	Pipe Length Range (1 room)		m	3 ~ 25	
	Maximum Pipe Length (Total Room)		m	60	
	Standard Length		m	5	
	Height Difference		m	15	
	Add. Gas Amount		g/m	20	
	Pipe Length for Add. Gas		m	30	
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)	
	Gas Side / Gas Side (using CZ-MA2PA)		mm (inch)	9.52 (3/8) / 12.7 (1/2)	
Compressor	Type			Hermetic Motor / Rotary	
	Motor Type			Synchronous Electric Motor (6-poles)	
	Rated Output		W	1.50k	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	60	
Fan Speed	High (Cooling / Heating)		RPM	600 / 620	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 : 0.5 / 36:32	
	FPI			19	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /mm)	46.2 (1630) / 46.2 (1630)	
Refrigerant Control Device			min	Expansion Valve	
Refrigerant Oil			cm ³	FW50S (900)	
Refrigerant (R32)			g	2.25k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

3.7 CU-4Z80CBE

Item				Unit	OUTDOOR UNIT
Indoor Unit Combination					2.0kW + 2.0kW + 2.0kW + 2.0kW
Power Source					1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity			kW	8.0 (3.0 ~ 9.2)
				BTU/h	27300 (10200 ~ 31400)
	Electrical Data	Running Current		A	9.5
		Power Input		kW	1.98 (0.53 ~ 2.87)
		EER		W/W	4.04 (5.66 ~ 3.21)
		ERP	Pdesign	kW	8.0
			SEER	W/W	8.5
			Annual Consumption	kWh	329
		Power Factor		%	91
	Noise	Sound Pressure Level		dB(A) (H/L)	51 / -
Sound Power Level		dB (H/L)	67 / -		
Heating Operation	Capacity			kW	9.4 (2.48 ~ 10.60)
				BTU/h	32100 (8460 ~ 36100)
	Electrical Data	Running Current		A	9.5
		Power Input		kW	2.03 (0.50 ~ 3.06)
		EER		W/W	4.63 (4.96 ~ 3.46)
		ERP	Pdesign	kW	7.0
			Tbivalent	°C	-7
			SCOP	W/W	4.7
			Annual Consumption	kWh	2085
		Power Factor		%	93
	Noise	Sound Pressure Level		dB(A) (H/L)	52 / -
		Sound Power Level		dB (H/L)	68 / -
Maximum Current				A	21.3
Maximum Input Power				kW	4.75
Maximum High Pressure / Low Pressure				Mpa (bar)	4.15 (41.50) / 2.55 (25.50)
Starting Current				A	9.5
Circuit Breaker Capacity				A	20
Dimension	Height			mm	999
	Width			mm	940
	Depth			mm	340
Net Weight				kg	80
Connection Cable					4 x Ø1.5mm²
Pipe Length Range (1 room)				m	3 ~ 25
Maximum Pipe Length (Total Room)				m	70
Refrigerant Pipe Diameter	Liquid Side			mm (inch)	6.35 (1/4)
	Gas Side			mm (inch)	9.52 (3/8) (Z60 ~ Z71CK) : 12.7 (1/2)
Compressor	Type				Hermetic Motor / Rotary
	Motor Type				Brushless (4-poles)
	Rated Output			W	1.70k
Fan Motor	Type				Propeller Fan
	Motor Type				DC Motor (8-poles)
	Rated Output			W	90
Fan Speed	High (Cooling / Heating)			RPM	600 / 600

Item			Unit	OUTDOOR UNIT	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 46	
	FPI			19	
Air Volume	High (Cooling / Heating)		m ³ /min (ft ³ /min)	50.4 (1780) / 55.6 (1960)	
Refrigerant Control Device				Expansion Valve	
Refrigerant Oil			cm ³	FW50S (900)	
Refrigerant (R32)			g	2.72k	
				Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	°C (°F)	-46 (114.8)	26 (78.8)
		Minimum	°C (°F)	-10 (14.0)	-
	Heating	Maximum	°C (°F)	24 (75.2)	18 (64.4)
		Minimum	°C (°F)	-15 (5.0)	-16 (3.2)

Note

- Specifications are subject to change without notice for further improvement.

3.8 CU-5Z90CBE

Item				Unit	OUTDOOR UNIT
Indoor Unit Combination					1.6kW + 1.6kW + 1.6kW + 1.6kW + 2.5kW
Power Source					1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity			kW	9.0 (2.9 ~ 11.5)
				BTU/h	30700 (9890 ~ 39200)
	Electrical Data	Running Current		A	10.7
		Power Input		kW	2.24 (0.55 ~ 3.86)
		Annual Energy Consumption (A.E.C)		kWh	1120
		EER		W/W	4.02 (5.27 ~ 2.98)
		ERP	Pdesign	kW	9.0
			SEER	W/W	8.5
			Annual Consumption	kWh	371
	Power Factor			%	91
Noise	Sound Pressure Level		dB(A) (H/L)	53 / -	
	Sound Power Level		dB (H/L)	69 / -	
Heating Operation	Capacity			kW	10.40 (2.48 ~ 14.50)
				BTU/h	35500 (8460 ~ 49400)
	Electrical Data	Running Current		A	10.1
		Power Input		kW	2.15 (0.53 ~ 4.24)
		EER		W/W	4.84 (4.96 ~ 3.42)
		ERP	Pdesign	kW	8.5
			Tbivalent	°C	-7
			SCOP	W/W	4.68
			Annual Consumption	kWh	2543
	Power Factor			%	93
Noise	Sound Pressure Level		dB(A) (H/L)	54 / -	
	Sound Power Level		dB (H/L)	70 / -	
Maximum Current				A	21.7
Maximum Input Power				kW	4.84
Maximum High Pressure				Mpa (bar)	4.15 (41.50)
Operating High Pressure / Low Pressure				Mpa (bar)	4.15 (41.50) / 2.55 (25.50)
Starting Current				A	10.7
Circuit Breaker Capacity				A	25
Dimension	Height			mm	999
	Width			mm	940
	Depth			mm	340
Net Weight				kg	81
Connection Cable					4 x Ø1.5mm²
Pipe Length Range (1 room)				m	3 ~ 25
Maximum Pipe Length (Total Room)				m	80
Refrigerant Pipe Diameter	Liquid Side			mm (inch)	6.35 (1/4)
	Gas Side			mm (inch)	9.52 (3/8) (Z60~Z71CK) : 12.7 (1/2)
Compressor	Type				Hermetic Motor / Rotary
	Motor Type				Brushless (4-poles)
	Rated Output			W	1.7k

Item			Unit	OUTDOOR UNIT	
Fan Motor	Type			Propeller Fan	
	Motor Type			DC Motor (8-poles)	
	Rated Output		W	90	
Fan Speed	High (Cooling / Heating)		RPM	650 / 740	
Heat Exchanger	Type			Plate fin configuration forced draft type	
	Tube Material			Copper	
	Fin Material			Aluminum (Pre Coat)	
	Row / Stage			2 / 46	
	FPI			19	
Air Volume	High (Cooling / Heating		m³/min (ft³/mm)	60.8 (2145) / 70.1 (2475)	
Refrigerant Control Device				Expansion Valve	
Refrigerant Oil			m³	FW50S (900)	
Refrigerant (R32)			g	2.72k	
				Dry Bulb	Wet Bulb
Outdoor Operation Range	Cooling	Maximum	°C (°F)	46 (114.8)	26 (78.8)
		Minimum	°C (°F)	-10 (14.0)	-
	Heating	Maximum	°C (°F)	24 (75.2)	18 (64.4)
		Minimum	°C (°F)	-15 (5.0)	-16 (3.2)

Note

- Specifications are subject to change without notice for further improvement.

- **Multi Split Combination Possibility:**

- A single outdoor unit enables air conditioning of up to four separate rooms for CU-2Z35CBE, CU-2Z41CBE, CU-2Z50CBE.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT					
			CU-2Z35CBE		CU-2Z41CBE		CU-2Z50CBE	
ROOM			A	B	A	B	A	B
Wall	1.6kW	CS-MZ16CKE CS-MTZ16CKE	•	•	•	•	•	•
	2.0kW	CS-Z20CKEW CS-XZ20CKEW CS-XZ20CKEW-H CS-TZ20CKEW	•	•	•	•	•	•
	2.5kW	CS-Z25TKEW CS-XZ25TKEW CS-TZ25TKEW CS-TE25TKEW CS-E9PD3EA CS-E9PB4EA	•	•	•	•	•	•
	3.5kW	CS-Z35TKEW CS-XZ35TKEW CS-TZ35TKEW CS-TE35TKEW CS-E12QD3EAW CS-E12PB4EA	•	-	•	-	•	•
	4.2kW	CS-Z42TKEW CS-TZ42TKEW CS-TE42TKEW	•	-	•	-	•	-
	5.0kW	CS-Z50TKEW CS-XZ50TKEW CS-TZ50TKEW CS-TE50TKEW CS-E18RD3EAW CS-E18RB4EAW	•	-	•	-	•	-
Capacity range of connectable indoor units			3.2kW ~ 6.0kW		3.2kW ~ 6.0kW		3.2kW ~ 7.7kW	
Pipe length	1-room maximum pipe length (m)		20		20		20	
	Allowable elevation (m)		10		10		10	
	Total allowable pipe length (m)		30		30		30	
	Total pipe length for maximum chargeless length (m)		20		20		20	
	Additional gas amount over chargeless length (g/m)		15		15		15	

- **Multi Split Combination Possibility:**

- A single outdoor unit enables air conditioning of up to four separate rooms for CU-4Z68CBE.
- A single outdoor unit enables air conditioning of up to three separate rooms for CU-3Z68CBE, CU-3Z52CBE.

CONNECTABLE INDOOR UNIT			CU-4Z68CBE				CU-3Z68CBE			CU-3Z52CBE		
ROOM			A	B	C	D	A	B	C	A	B	C
Wall	1.6kW	CS-MZ16TKE CS-MTZ16CKE	●	●	●	●	●	●	●	●	●	●
	2.0kW	CS-Z20CKEW CS-XZ20CKEW CS-XZ20CKEW-H CS-TZ20CKEW CS-MZ20CD3EA S-M20PY3E	●	●	●	●	●	●	●	●	●	●
	2.5kW	CS-Z25CKEW CS-XZ25CKEW CS-XZ25CKEW-H CS-TZ25CKEW CS-RZ25CKEW CS-Z25CD3EAW S-25PY3E	●	●	●	●	●	●	●	●	●	●
	3.5kW	CS-Z35CKEW CS-XZ35CKEW CS-XZ35CKEW-H CS-TZ35CKEW CS-RZ35CKEW CS-Z35CD3EAW S-36PY3E	●	●	●	-	●	●	●	●	●	-
	4.2kW	CS-Z42CKEW CS-XZ42CKEW-H CS-TZ42CKEW	●	●	-	-	●	●	-	●	●	-
	5.0kW	CS-Z50CKEW CS-XZ50CKEW CS-TZ50CKEW CS-RZ50CKEW CS-Z50CD3EAW S-50PY3E	●	●	-	-	●	●	-	●	-	-
	6.0kW	CS-TZ60CKEW CS-Z60CD3EAW S-60PY3E	●	-	-	-	●	-	-	-	-	-
Capacity range of connectable indoor units			From 4.5kW to 11.5kW				From 4.5kW to 11.2kW			From 4.5kW to 9.5kW		
Pipe length	1-room maximum pipe length (m)		25				25			25		
	Allowable elevation (m)		15				15			15		
	Total allowable pipe length (m)		60				60			50		
	Total pipe length for maximum chargeless length (m)		30				30			30		
	Additional gas amount over chargeless length (g/m)		20				20			20		
Note: “●” : Available												
Remarks for CU-3Z52CBE / CU-3Z68CBE / CU-4Z68CBE												
1. At least two indoor units must be connected.												
2. The total nominal cooling capacity of indoor unit that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (as shown in the table above)												
Example: The indoor units' combination below is possible to connect to CU-3Z68CBE.												
(Total nominal capacity of indoor units is between 4.5kW to 11.2kW)												
1) Two CS-Z25TKEW only. (Total nominal cooling capacity is 5.0kW)												

- **Multi Split Combination Possibility:**

- A single outdoor unit enables air conditioning of up to four separate rooms for CU-4Z80CBE.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT			
			CU-4Z80CBE			
ROOM			A	B	C	D
Wall	1.6kW	CS-MZ16TKE CS-MTZ16CKE	●	●	●	●
	2.0kW	CS-Z20CKEW CS-XZ20CKEW CS-XZ20CKEW-H CS-TZ20CKEW CS-MZ20CD3EA S-M20PY3E	●	●	●	●
	2.5kW	CS-Z25CKEW CS-XZ25CKEW CS-XZ25CKEW-H CS-TZ25CKEW CS-RZ25CKEW CS-Z25CD3EAW S-25PY3E	●	●	●	●
	3.5kW	CS-Z35CKEW CS-XZ35CKEW CS-XZ35CKEW-H CS-TZ35CKEW CS-RZ35CKEW CS-Z35CD3EAW S-36PY3E	●	●	●	●
	4.2kW	CS-Z42CKEW CS-XZ42CKEW-H CS-TZ42CKEW	●	●	●	-
	5.0kW	CS-Z50CKEW CS-XZ50CKEW CS-TZ50CKEW CS-RZ50CKEW CS-Z50CD3EAW S-50PY3E	●	●	-	-
	6.0kW	CS-TZ60CKEW CS-Z60CD3EAW S-60PY3E	●	●	-	-
	7.0kW	CS-Z71CKEW CS-TZ71CKEW	●	●	-	-
Capacity range of connectable indoor units			4.5kW ~ 14.7kW			
Pipe length	1-room maximum pipe length (m)		25			
	Allowable elevation (m)		15			
	Total allowable pipe length (m)		70			
	Total pipe length for maximum chargeless length (m)		45			
	Additional gas amount over chargeless length (g/m)		20			
Note: “●” : Available						
Remarks for CU-4Z80CBE 1. At least two indoor unit must be connected. 2. The total nominal cooling capacity of indoor unit that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (as shown in the table above) Example: The indoor units' combination below is possible to CU-4Z80CBE. (Total nominal capacity of indoor units is between 4.5kW to 14.7kW) 1) Two CS-Z25CKEW only. (Total nominal cooling capacity is 5.0kW) 2) Three CS-Z35CKEW only. (Total nominal cooling capacity is 10.5kW)						

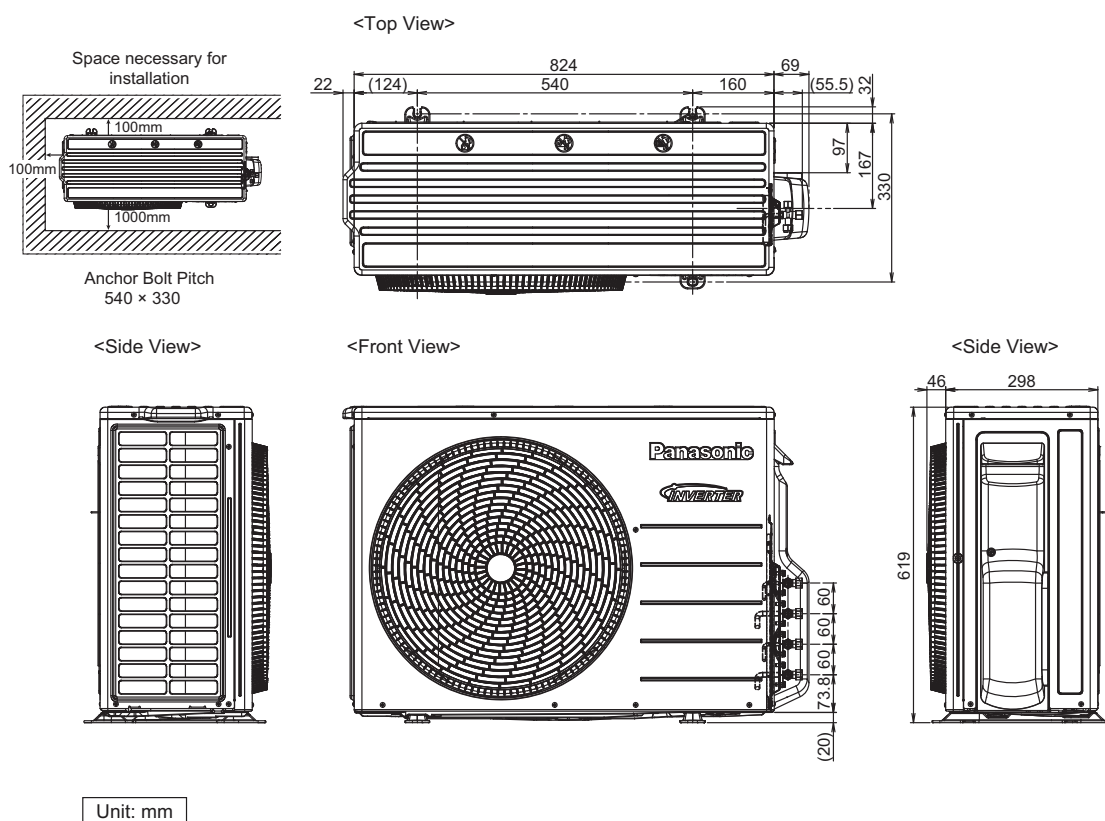
- A single outdoor unit enables air conditioning of up to five separate rooms for CU-5Z90CBE.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT				
			CU-5Z90CBE				
ROOM			A	B	C	D	E
Wall	1.6kW	CS-MZ16TKE CS-MTZ16CKE	●	●	●	●	●
	2.0kW	CS-Z20CKEW CS-XZ20CKEW CS-XZ20CKEW-H CS-TZ20CKEW CS-MZ20CD3EA S-M20PY3E	●	●	●	●	●
	2.5kW	CS-Z25CKEW CS-XZ25CKEW CS-XZ25CKEW-H CS-TZ25CKEW CS-RZ25CKEW CS-Z25CD3EAW S-25PY3E	●	●	●	●	●
	3.5kW	CS-Z35CKEW CS-XZ35CKEW CS-XZ35CKEW-H CS-TZ35CKEW CS-RZ35CKEW CS-Z35CD3EAW S-36PY3E	●	●	●	●	●
	4.2kW	CS-Z42CKEW CS-XZ42CKEW-H CS-TZ42CKEW	●	●	●	●	-
	5.0kW	CS-Z50CKEW CS-XZ50CKEW CS-TZ50CKEW CS-RZ50CKEW CS-Z50CD3EAW S-50PY3E	●	●	●	-	-
	6.0kW	CS-TZ60CKEW CS-Z60CD3EAW S-60PY3E	●	●	●	-	-
	7.0kW	CS-Z71CKEW CS-TZ71CKEW	●	●	-	-	-
Capacity range of connectable indoor units			4.5kW ~ 18.3kW				
Pipe length	1-room maximum pipe length (m)		25				
	Allowable elevation (m)		15				
	Total allowable pipe length (m)		80				
	Total pipe length for maximum chargeless length (m)		45				
	Additional gas amount over chargeless length (g/m)		20				
Note: “●” : Available							
Remarks for CU-5Z90CBE 1. At least two indoor unit must be connected. 2. The total nominal cooling capacity of indoor unit that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (as shown in the table above) Example: The indoor units' combination below is possible to CU-5Z90CBE. (Total nominal capacity of indoor units is between 4.5kW to 18.3kW) 1) Two CS-Z25CKEW only. (Total nominal cooling capacity is 5.0kW) 2) Three CS-Z42CKEW only. (Total nominal cooling capacity is 12.6kW)							

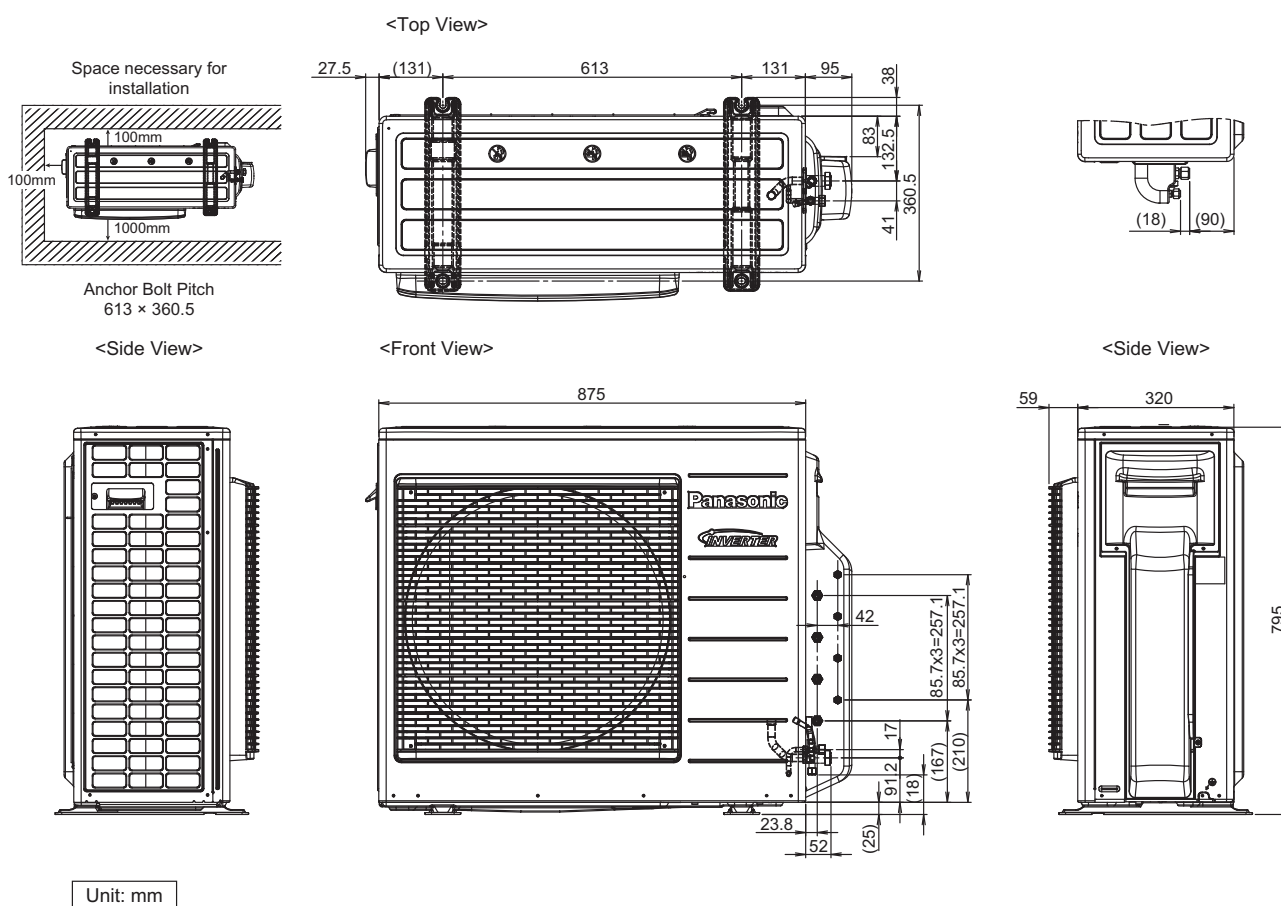
Note: Refer to Appendix 1 for Multi split Combination Possibility detail

4. Dimensions

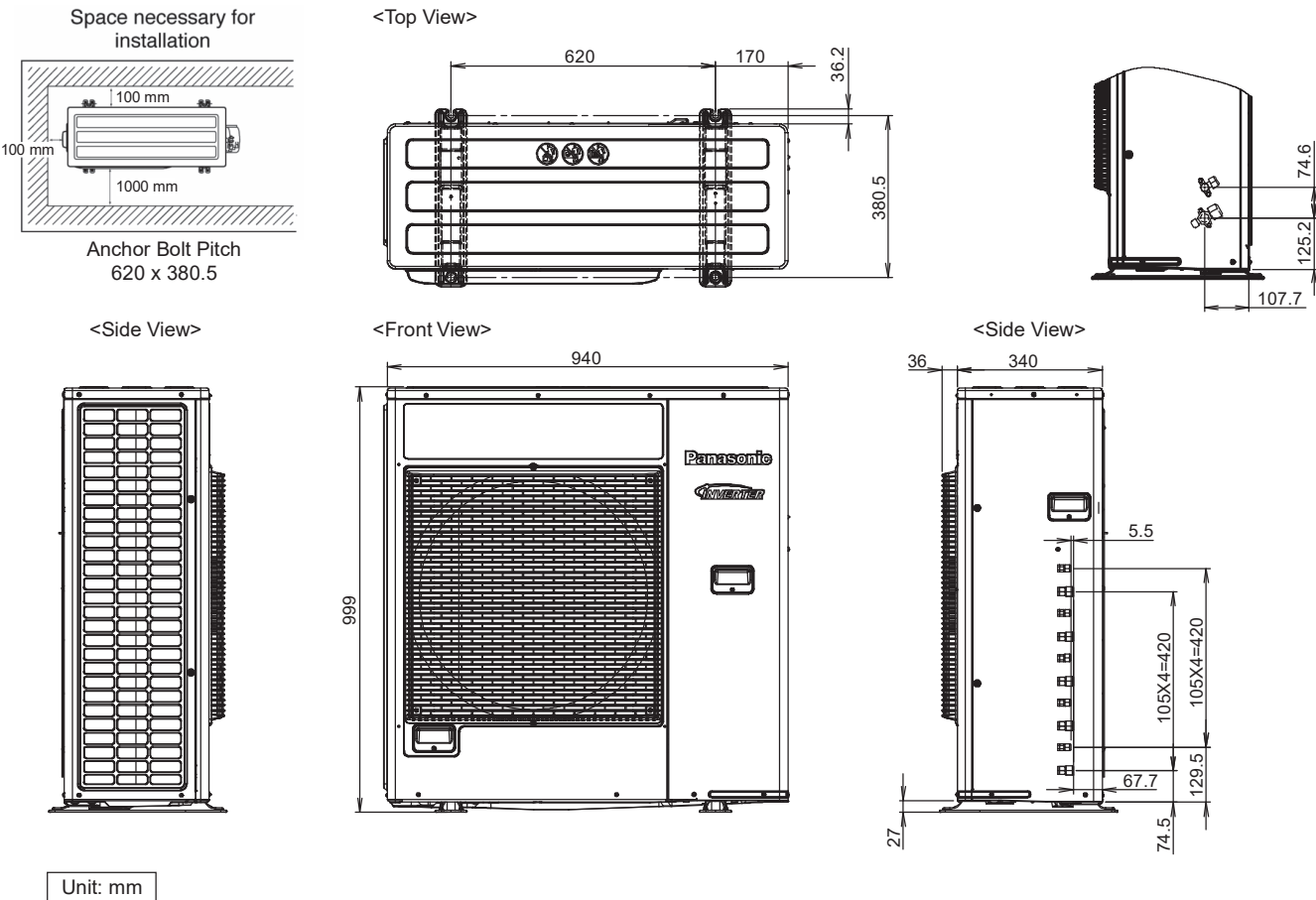
4.1 CU-2Z35CBE CU-2Z41CBE CU-2Z50CBE



4.2 CU-3Z52CBE CU-3Z68CE CU-4Z68CBE

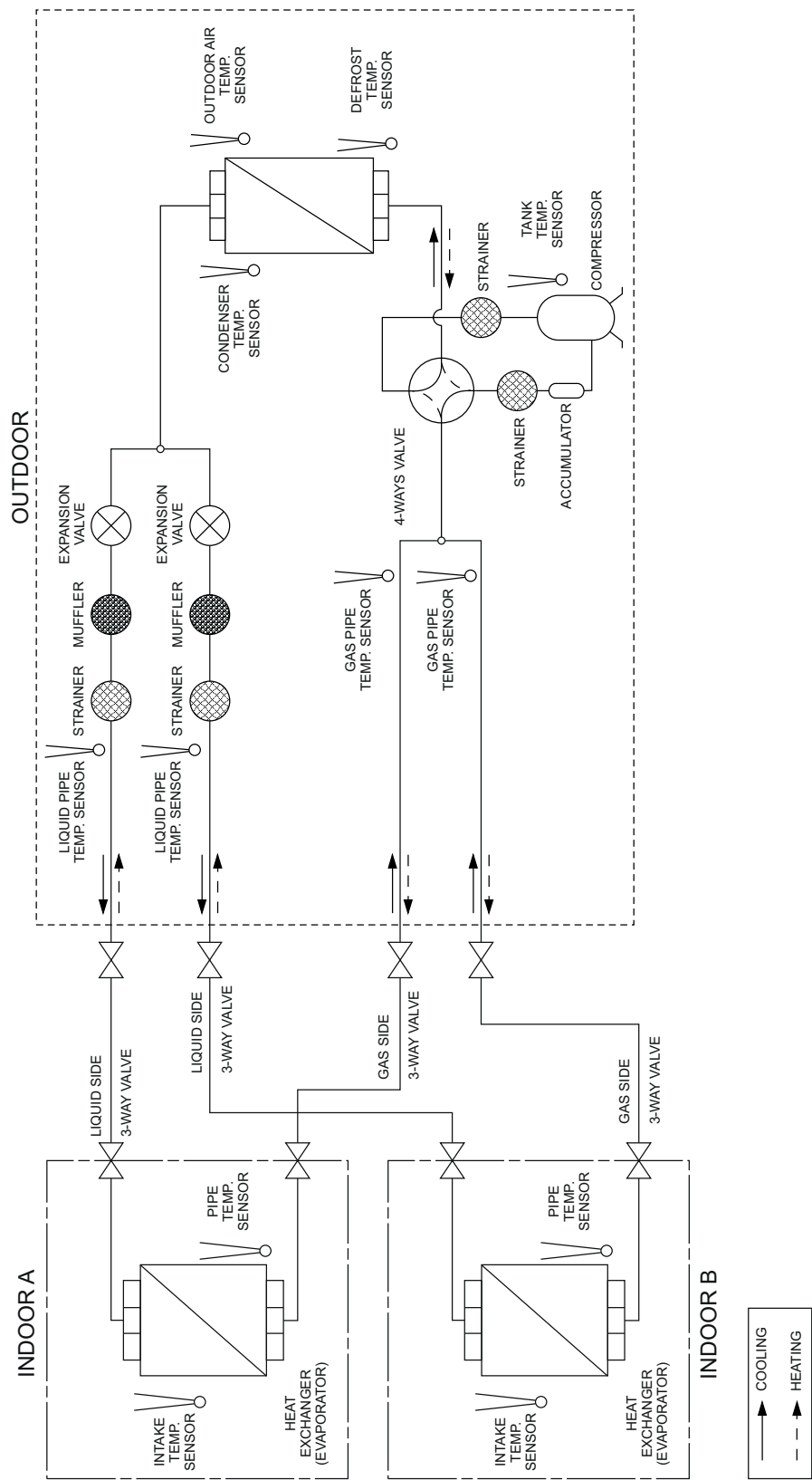


4.3 CU-4Z80CBE CU-5Z90CBE

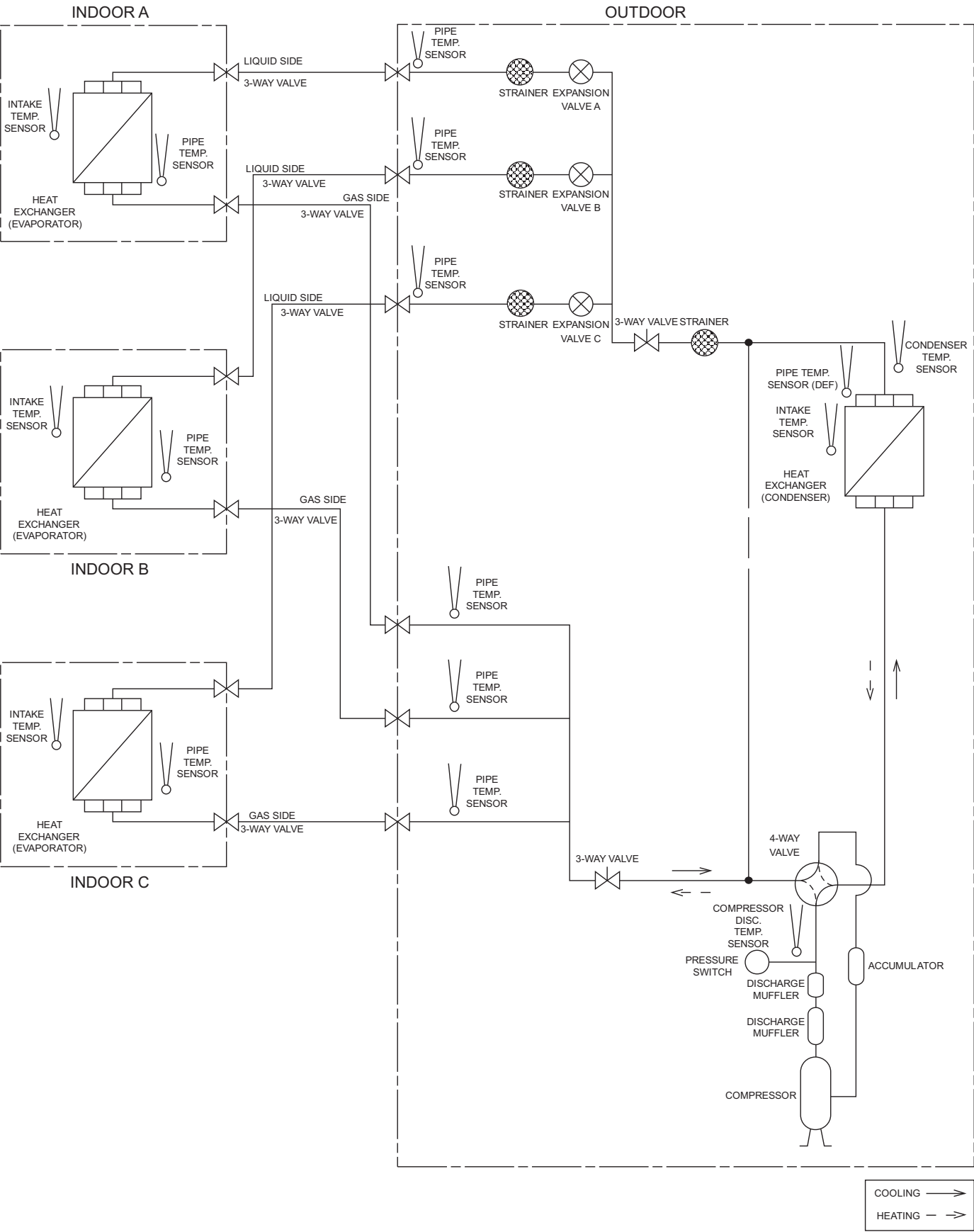


5. Refrigeration Cycle Diagram

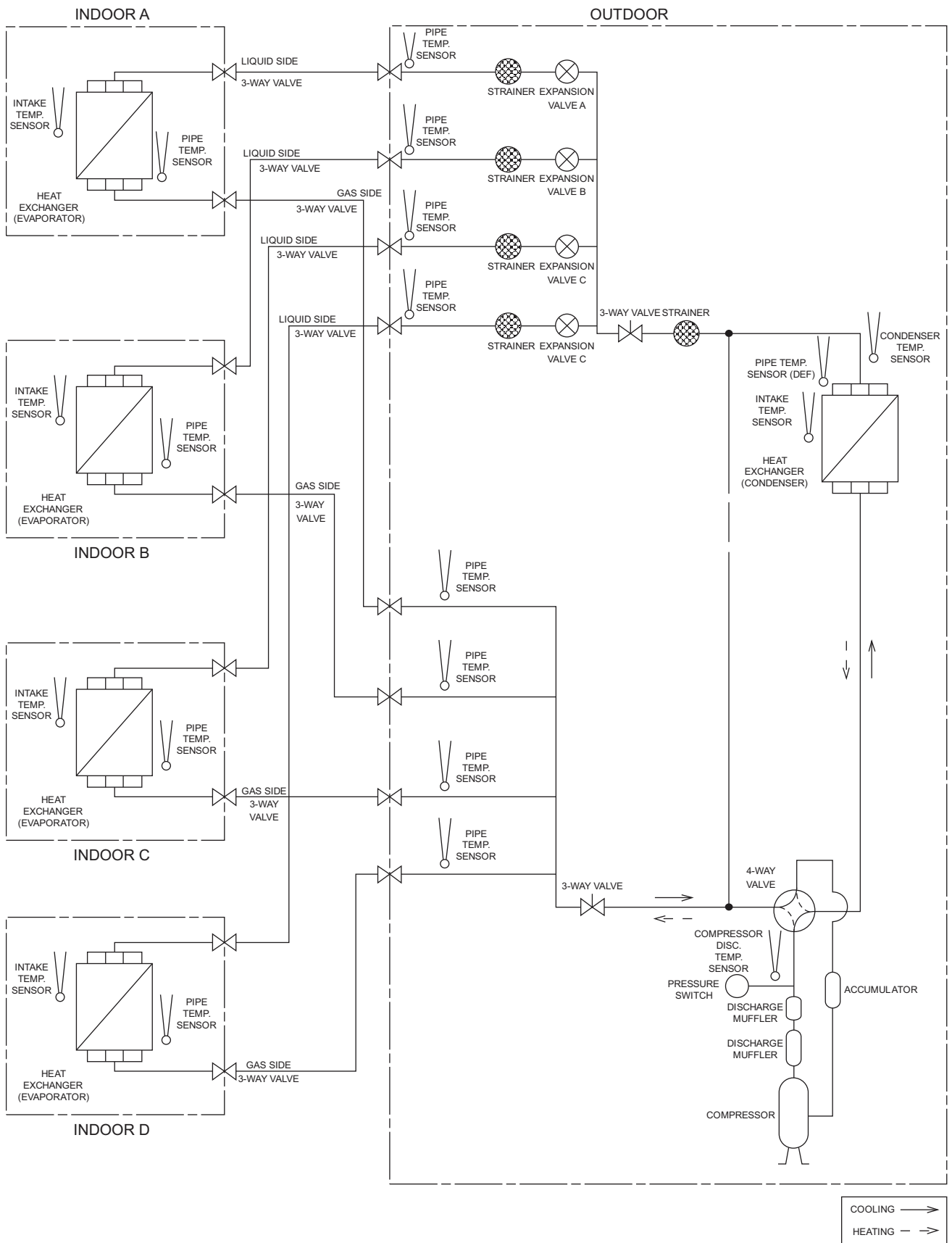
5.1 CU-2Z35/41/50CBE



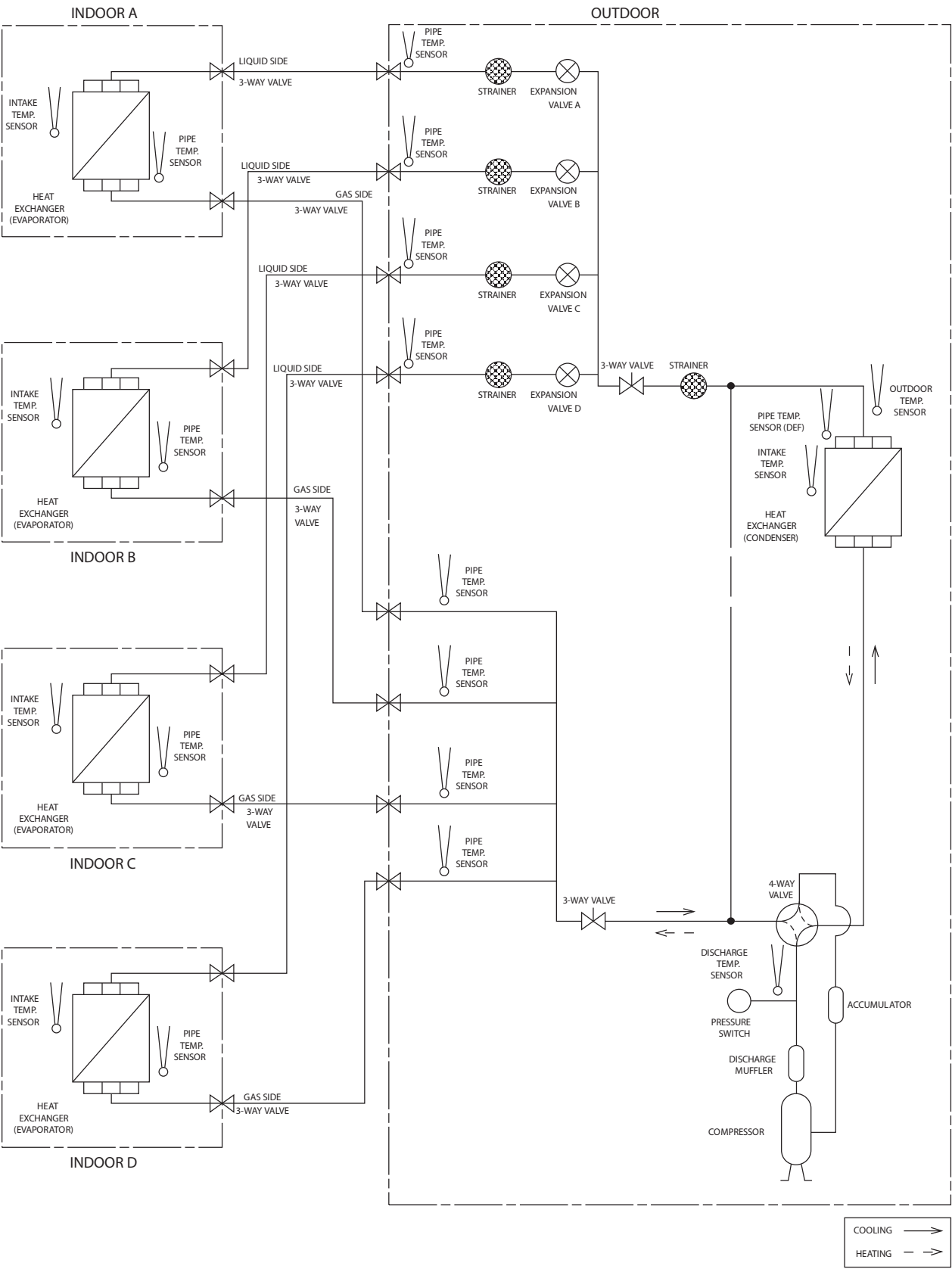
5.2 CU-3Z52CBE CU-3Z68CBE



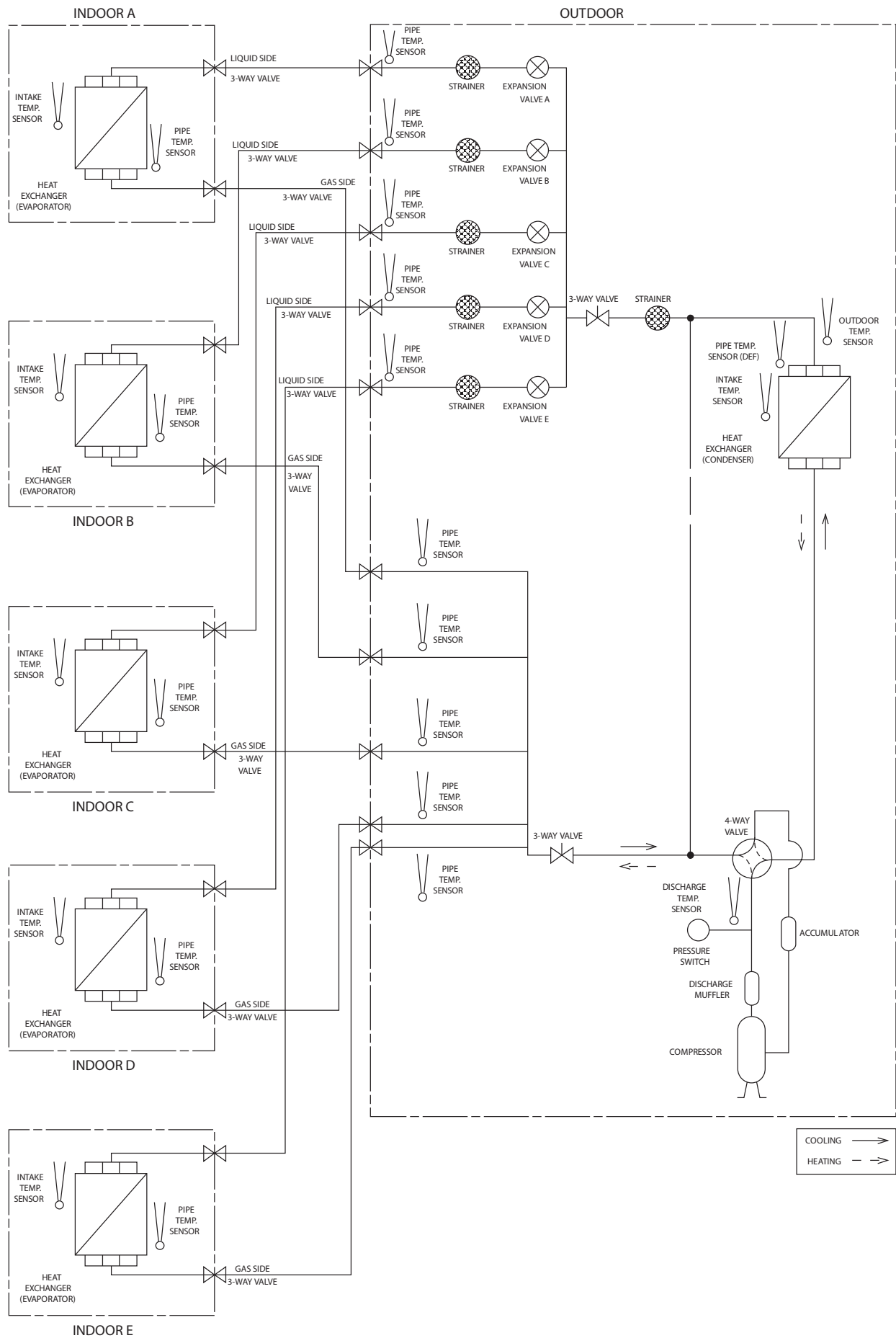
5.3 CU-4Z68CBE



5.4 CU-4Z80CBE

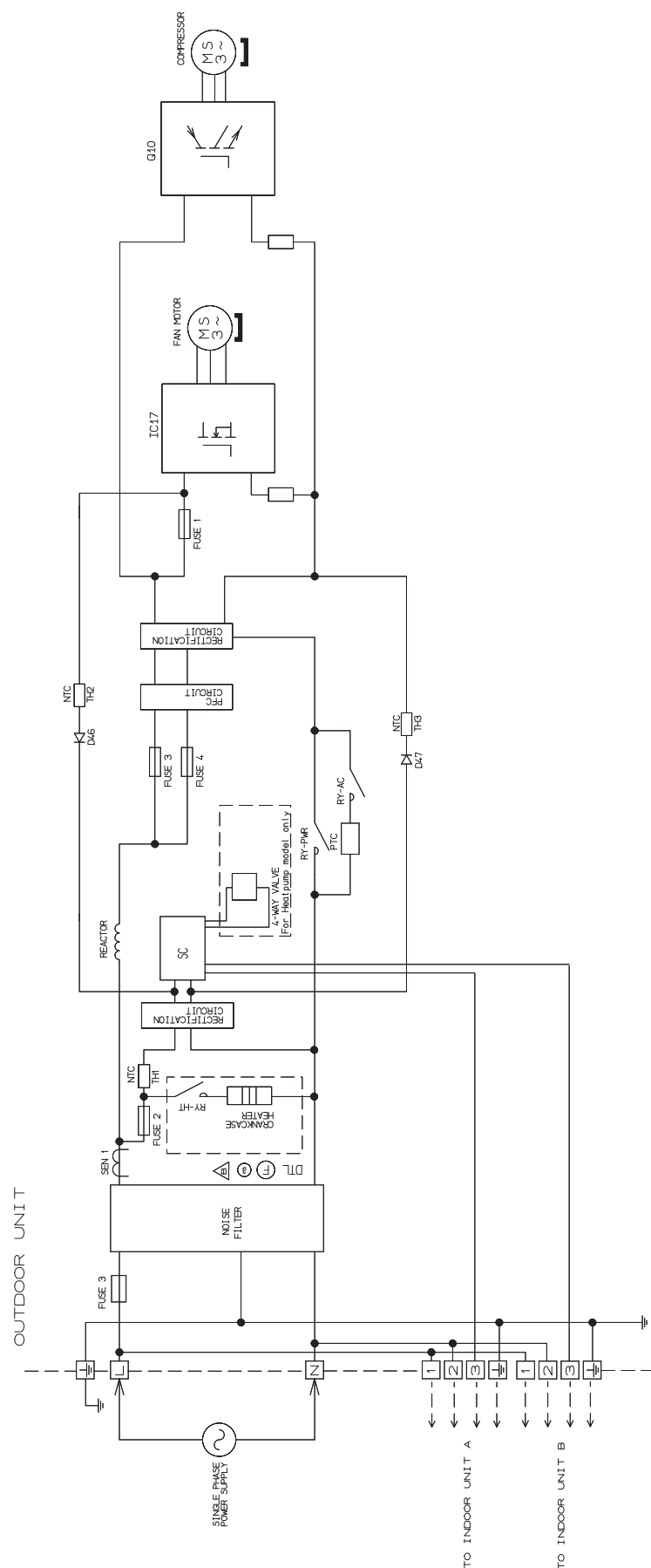


5.5 CU-5Z90CBE

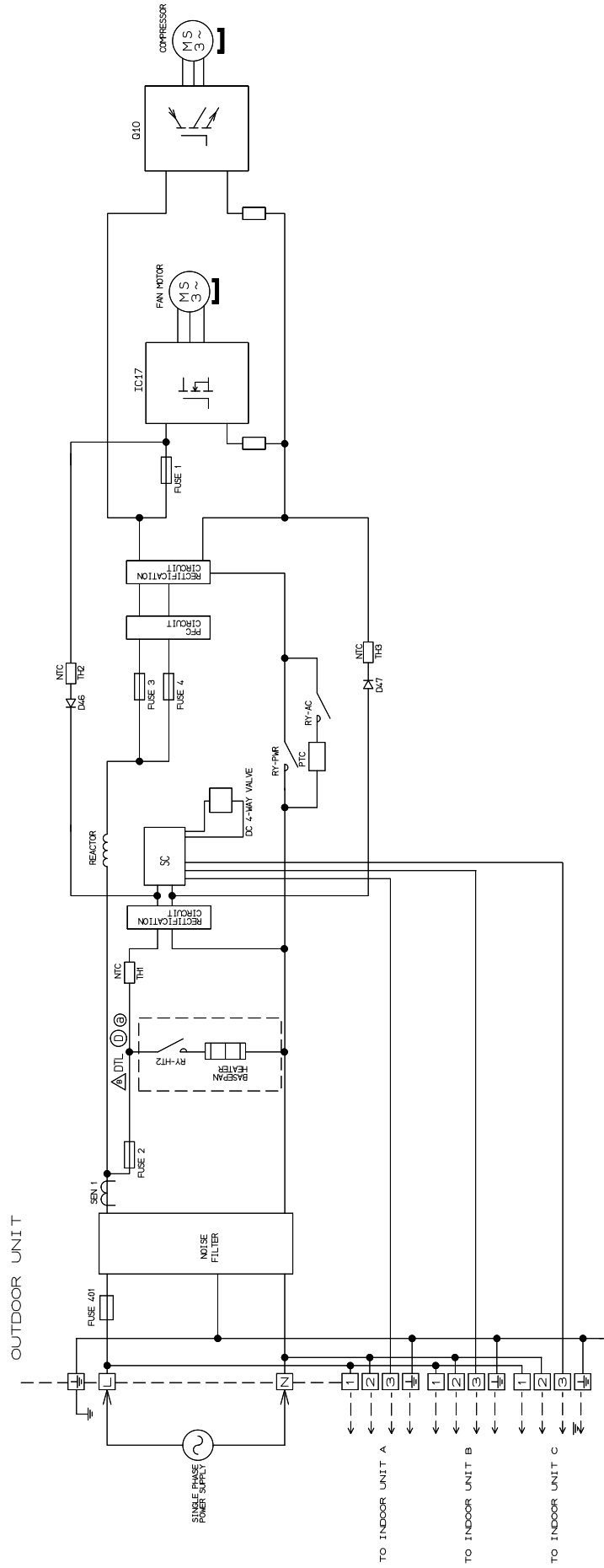


6. Block Diagram

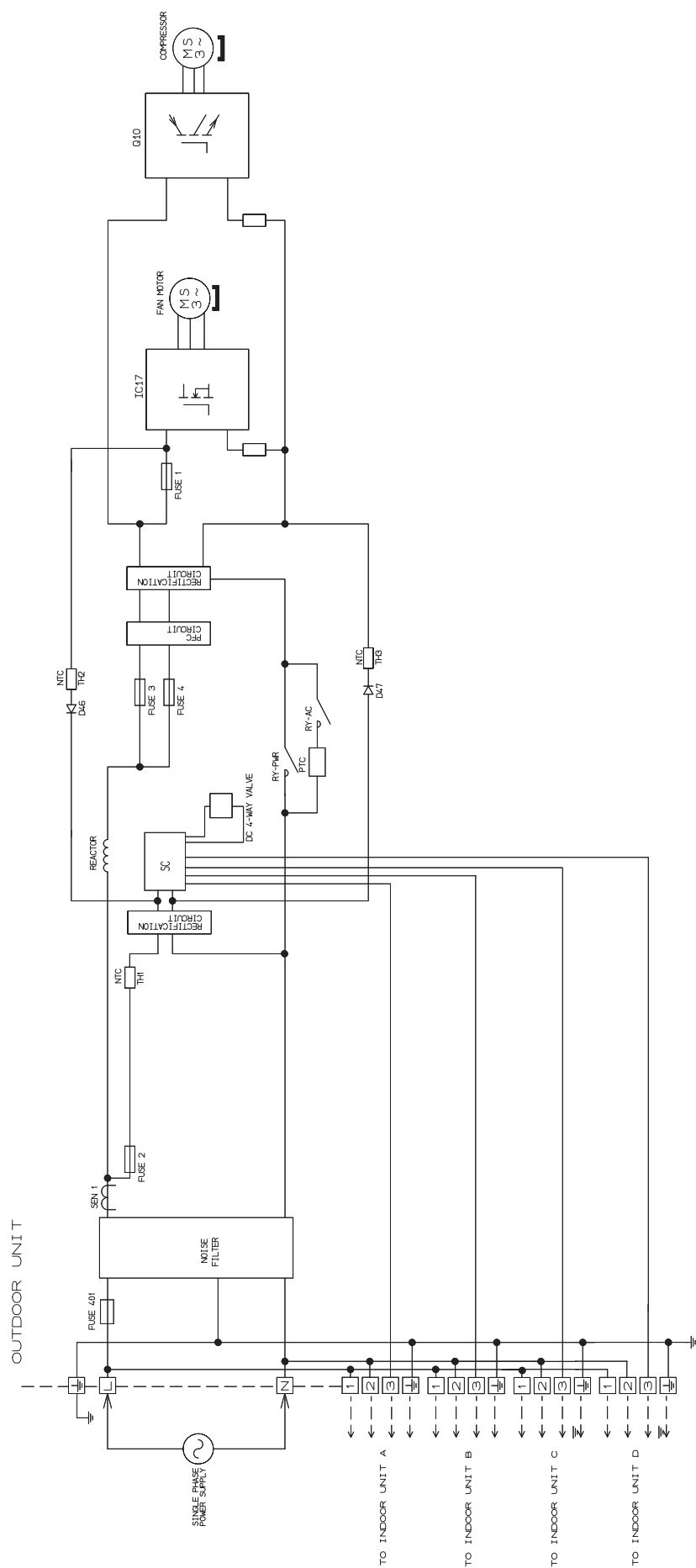
6.1 CU-2Z35/41/50CBE



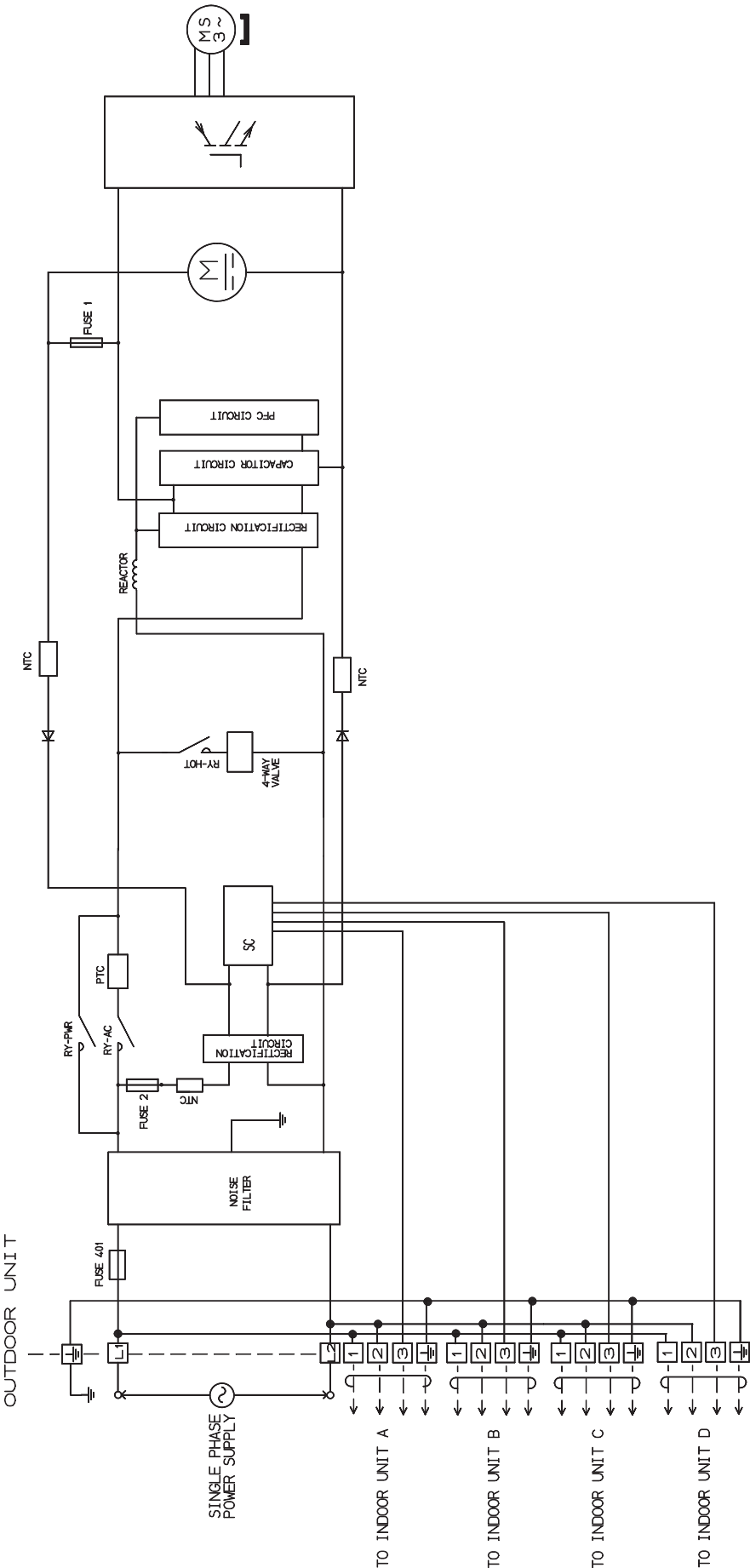
6.2 CU-3Z52/68CBE



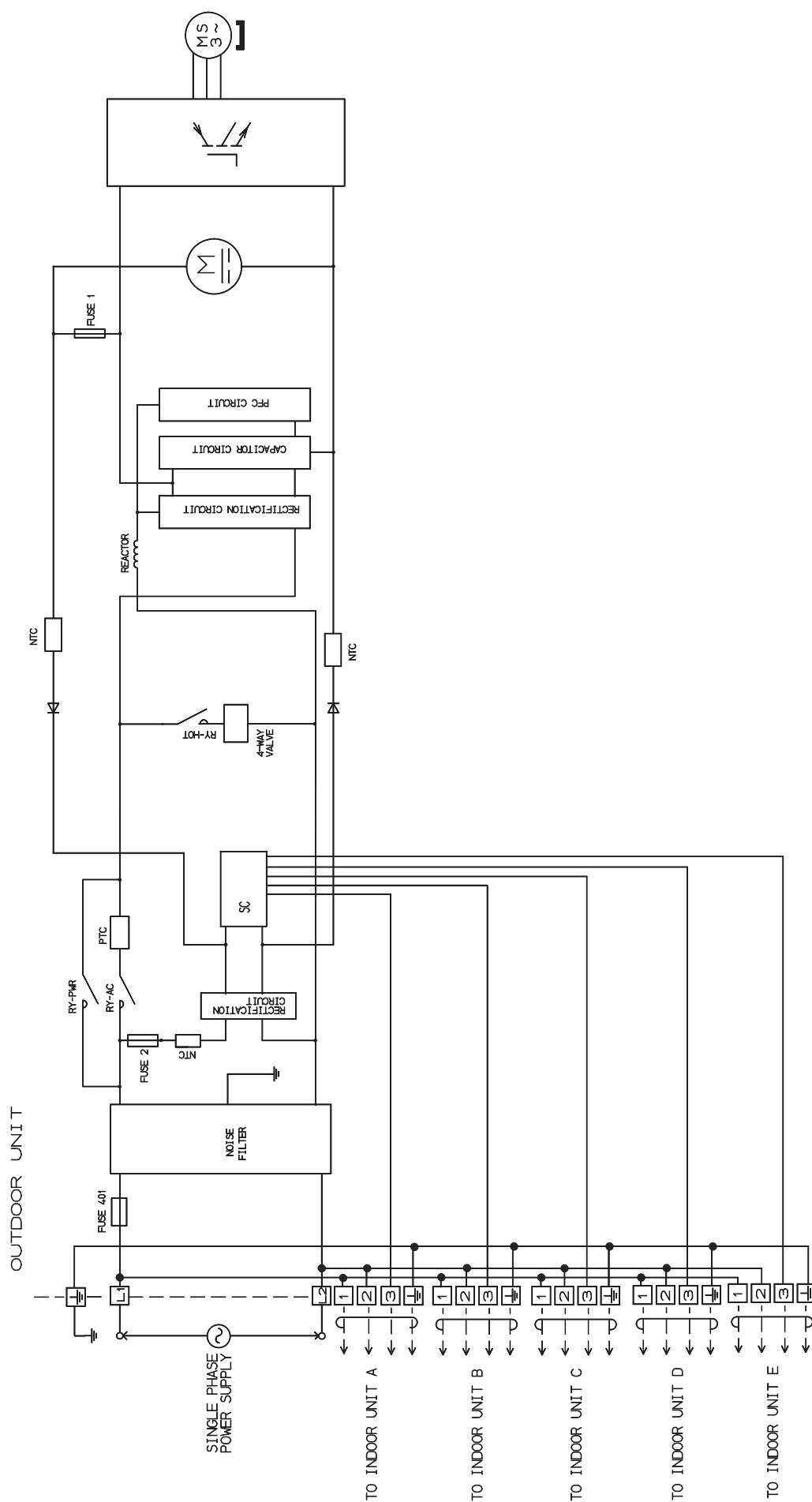
6.3 CU-4Z68CBE



6.4 CU-4Z80CBE

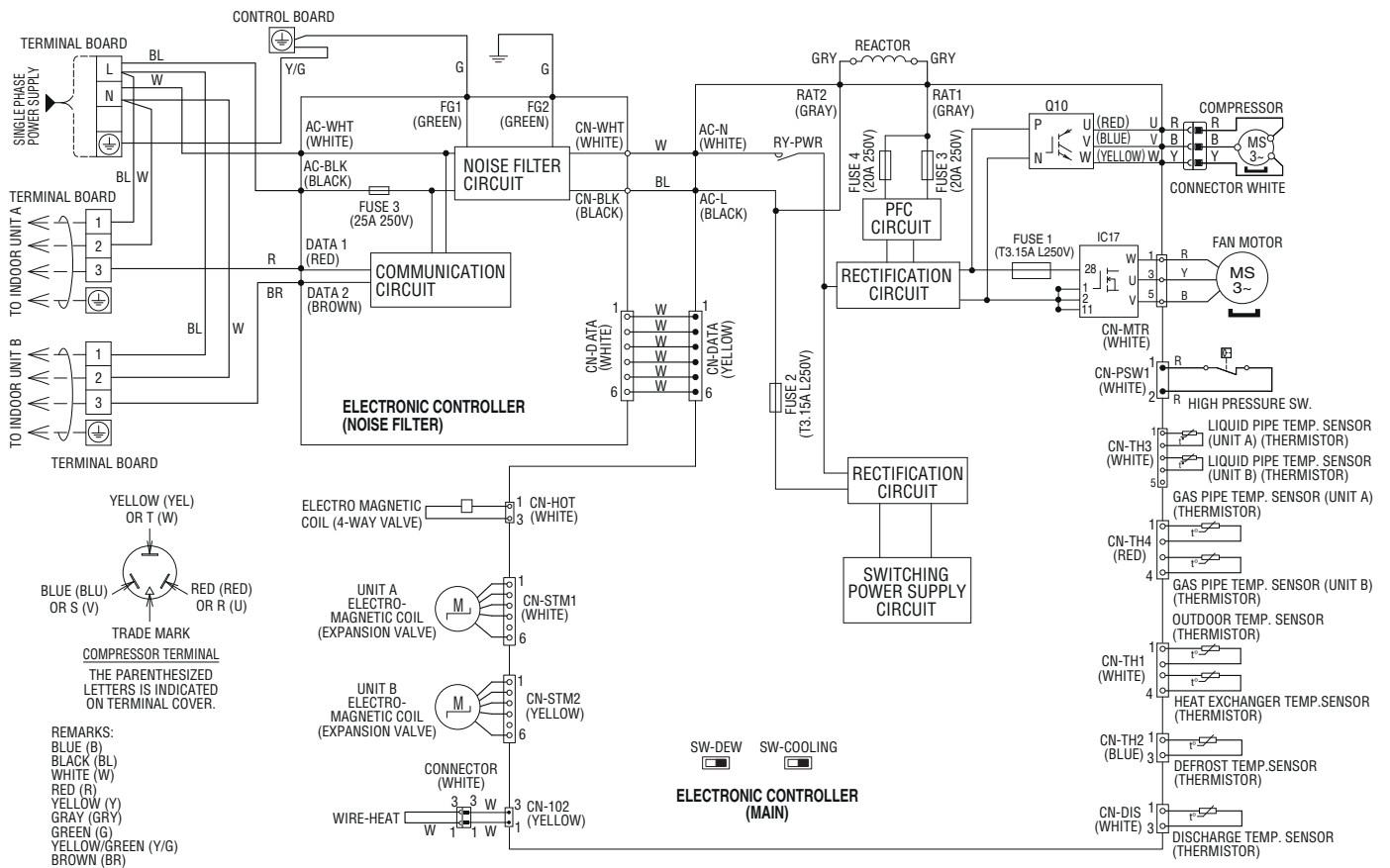


6.5 CU-5Z90CBE



7. Wiring Connection Diagram

7.1 CU-2Z35/41/50CBE

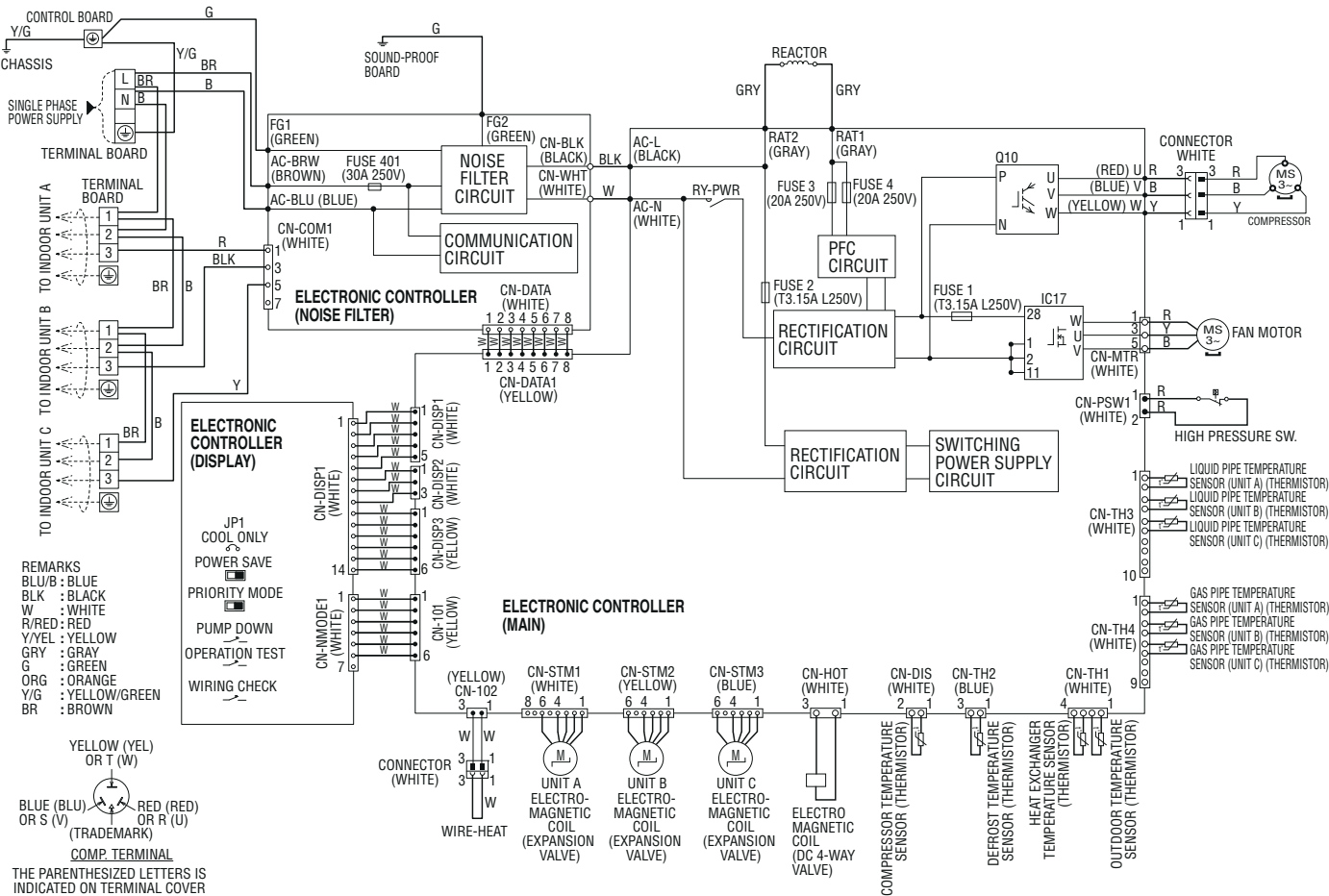


Resistance of Compressor Windings

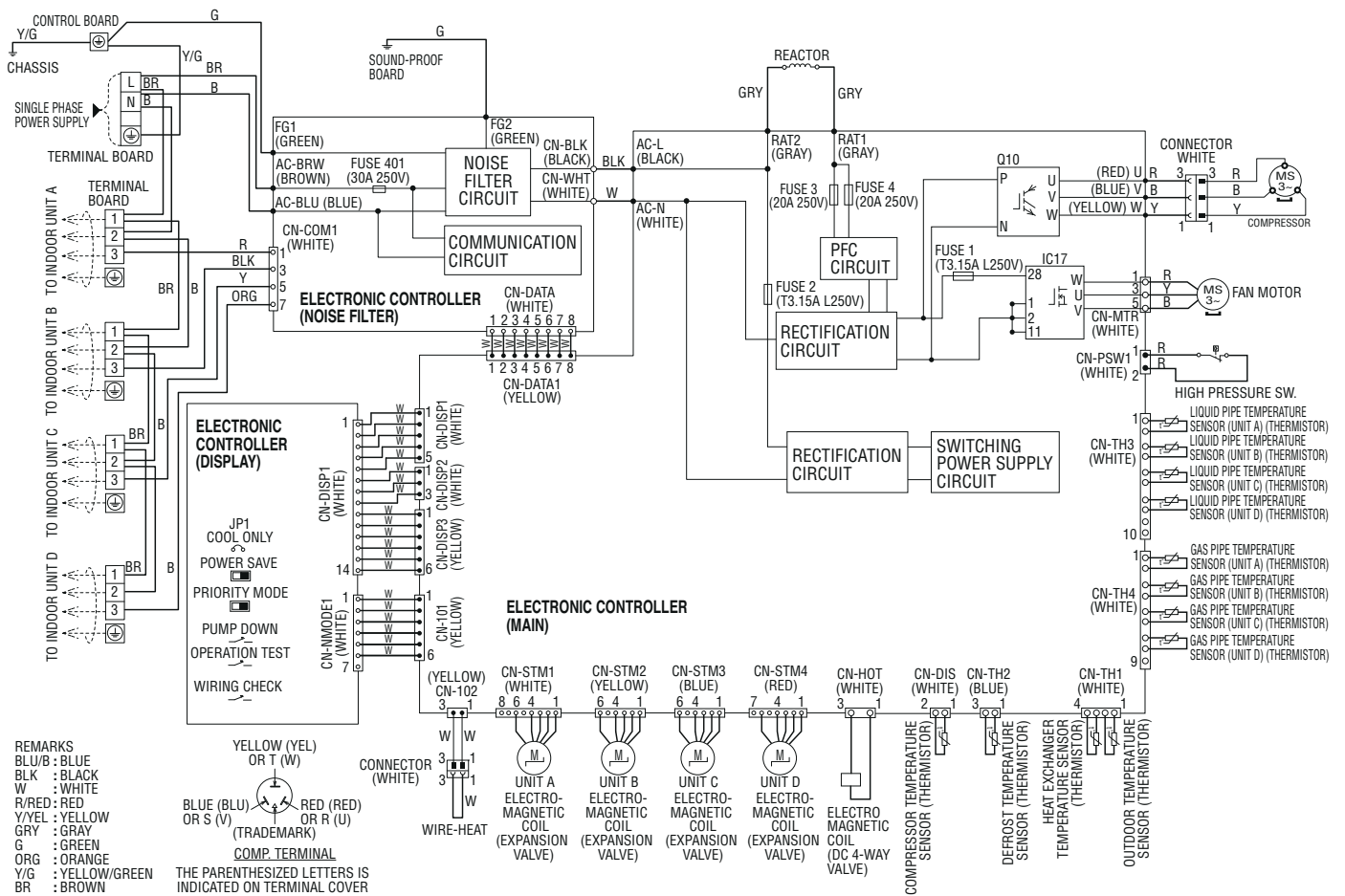
MODEL	CU-2Z35CBE / CU-2Z41CBE / CU-2Z50CBE
CONNECTION	9RD132XGC21-T01 (Ω)
U-V	1.708
U-W	1.708
V-W	1.708

Note: Winding resistance at 20°C

7.2 CU-3Z52/68CBE



7.3 CU-4Z68CBE

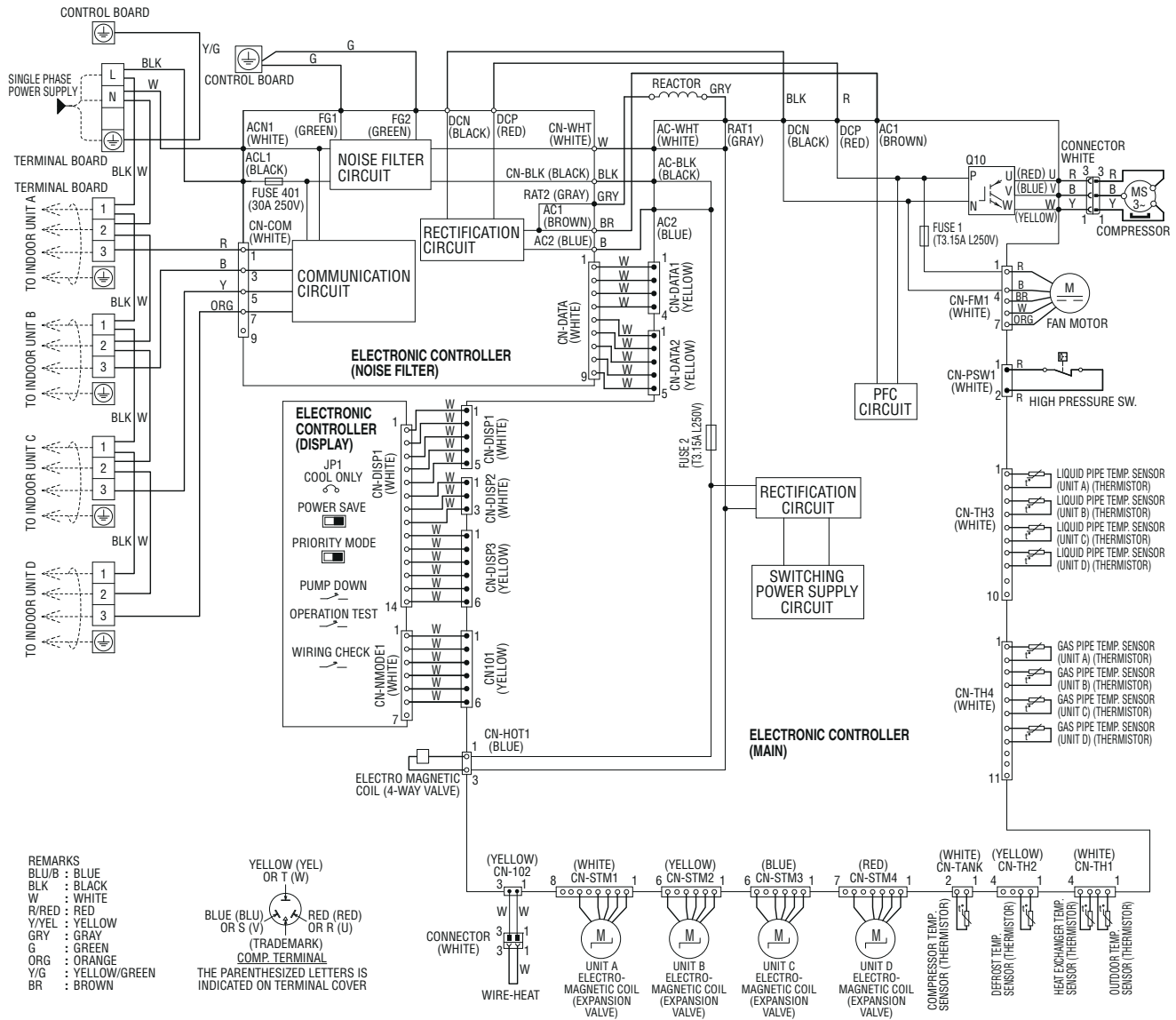


Resistance of Compressor Windings

MODEL	CU-4Z68CBE
CONNECTION	9RD220XBD21 (Ω)
U-V	0.998
U-W	0.998
V-W	0.998

Note: Winding resistance at 20°C

7.4 CU-4Z80CBE

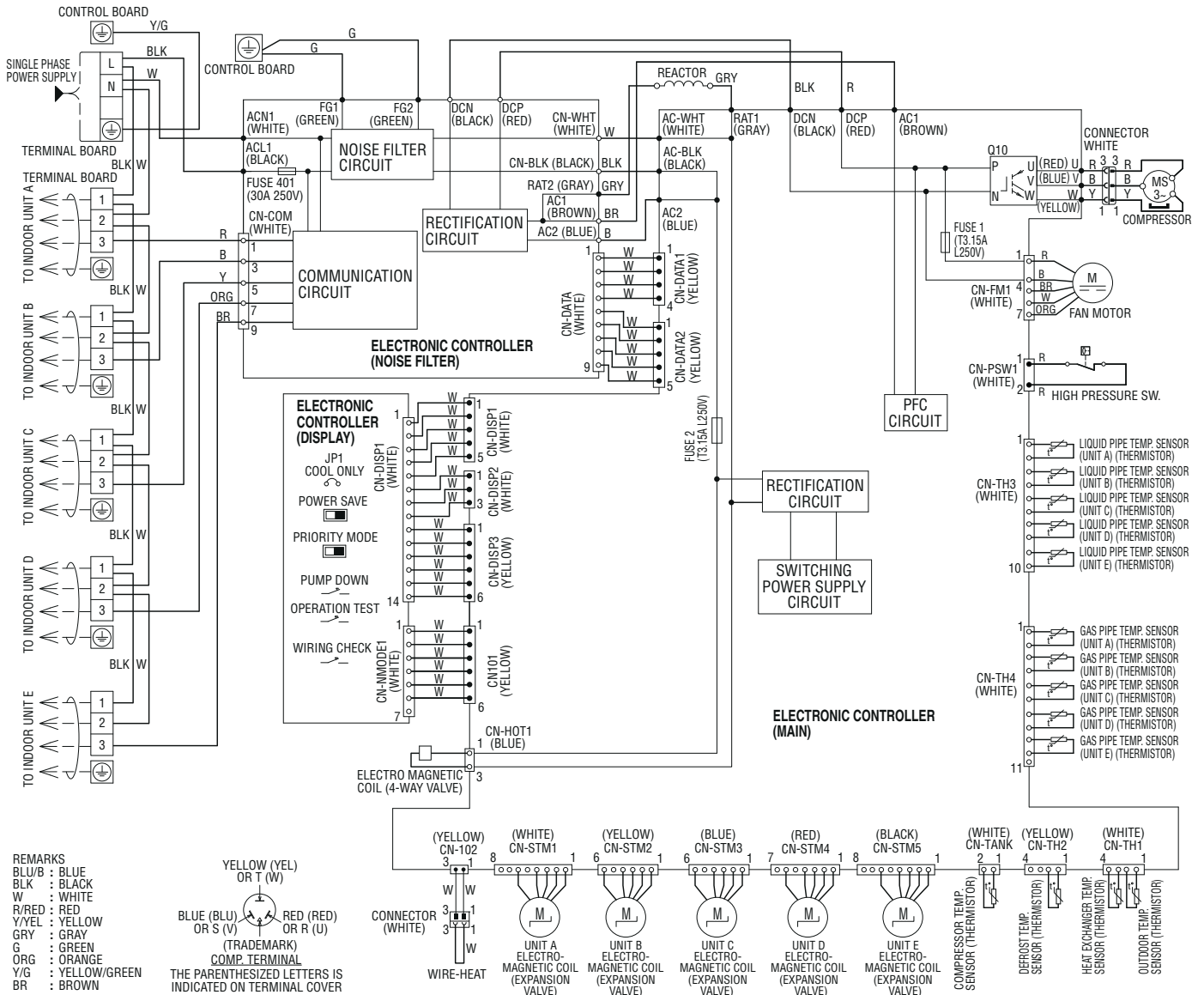


Resistance of Compressor Windings

MODEL	CU-4Z80CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

Note: Winding resistance at 20°C

7.5 CU-5Z90CBE



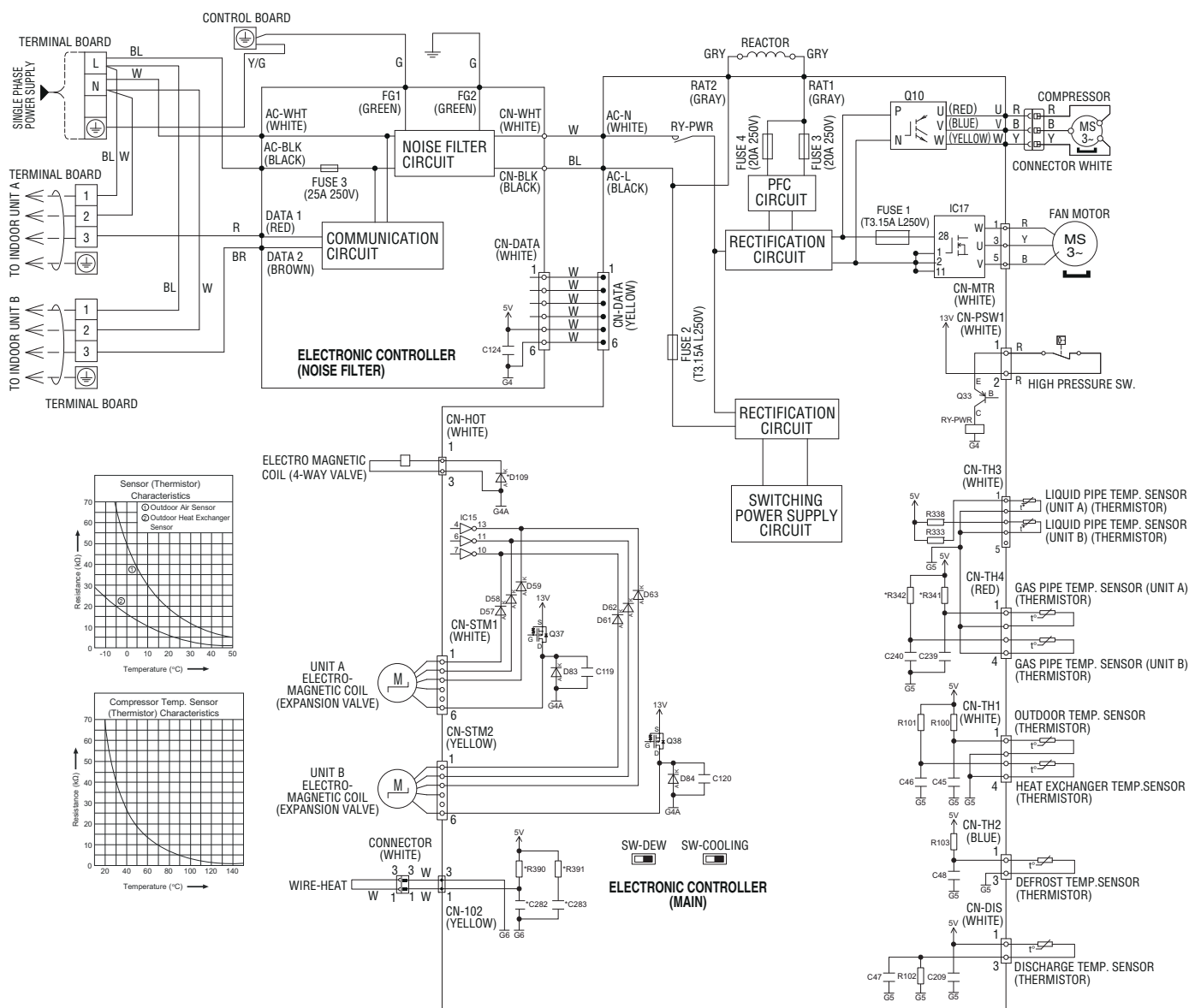
Resistance of Compressor Windings

MODEL	CU-5Z90CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

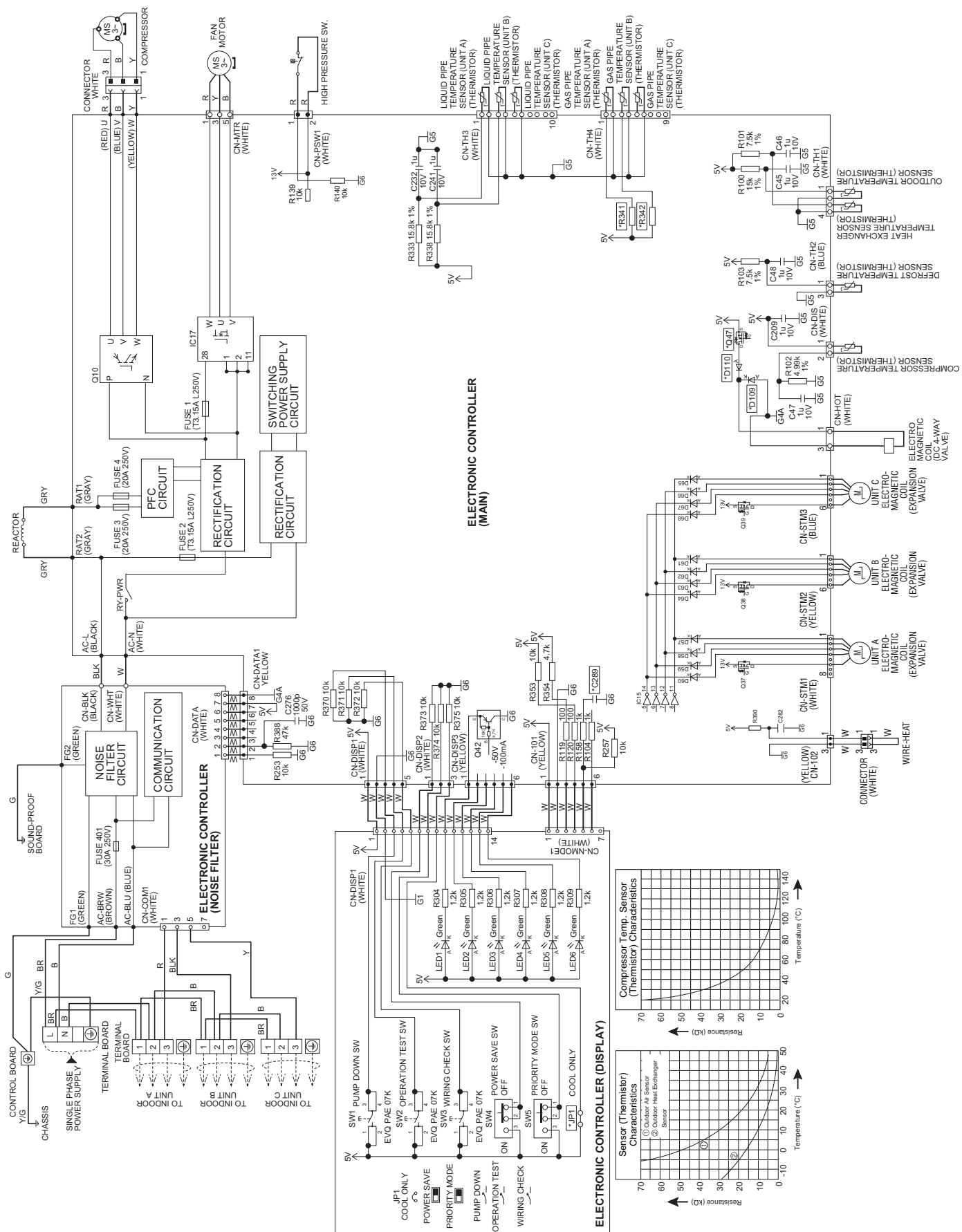
Note: Winding resistance at 20°C

8. Electronic Circuit Diagram

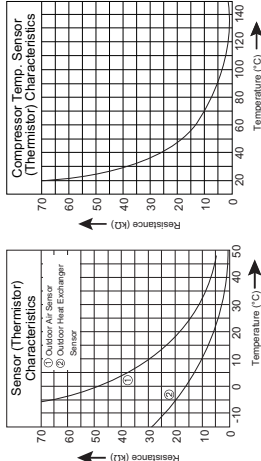
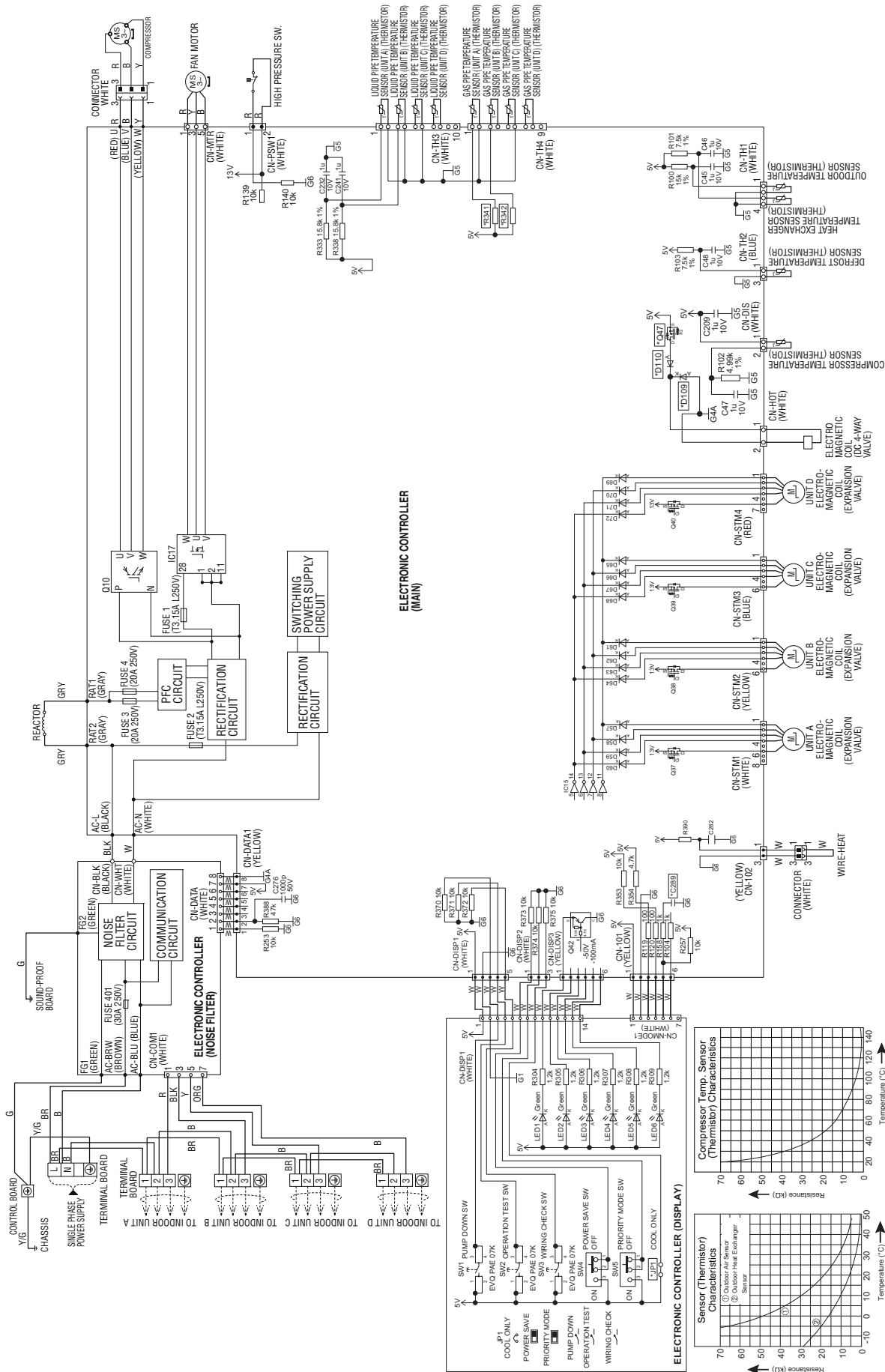
8.1 CU-2Z35/41/50CBE



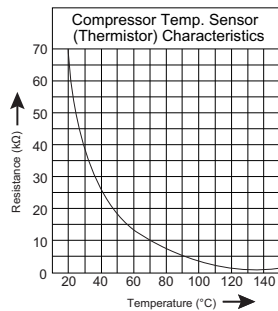
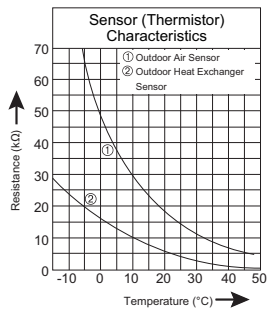
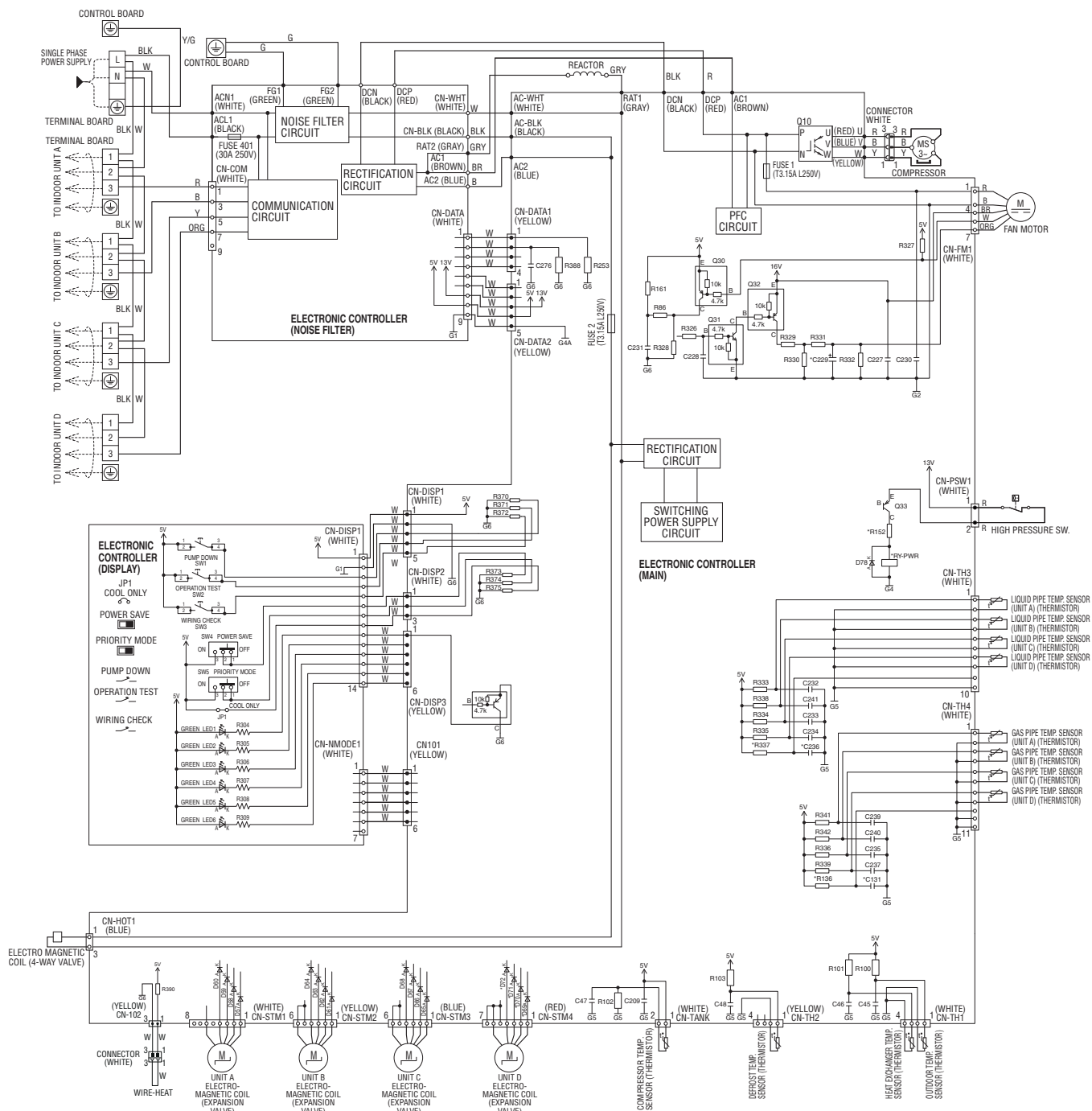
8.2 CU-3Z52/68CBE



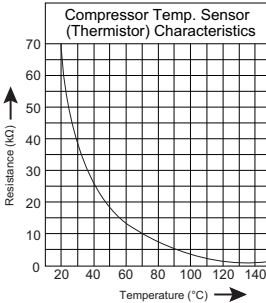
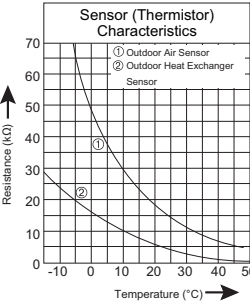
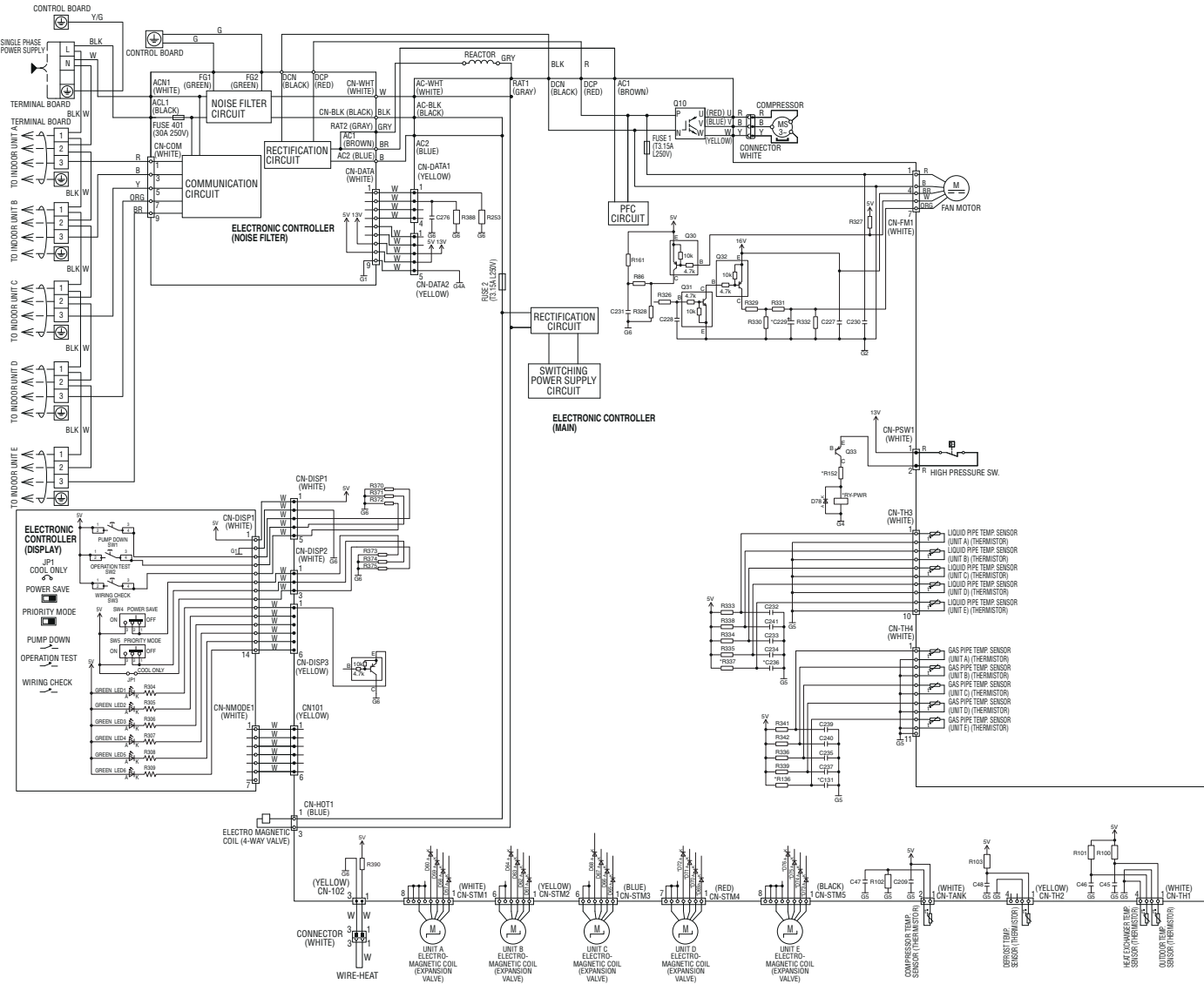
8.3 CU-4Z68CBE



8.4 CU-4Z80CBE



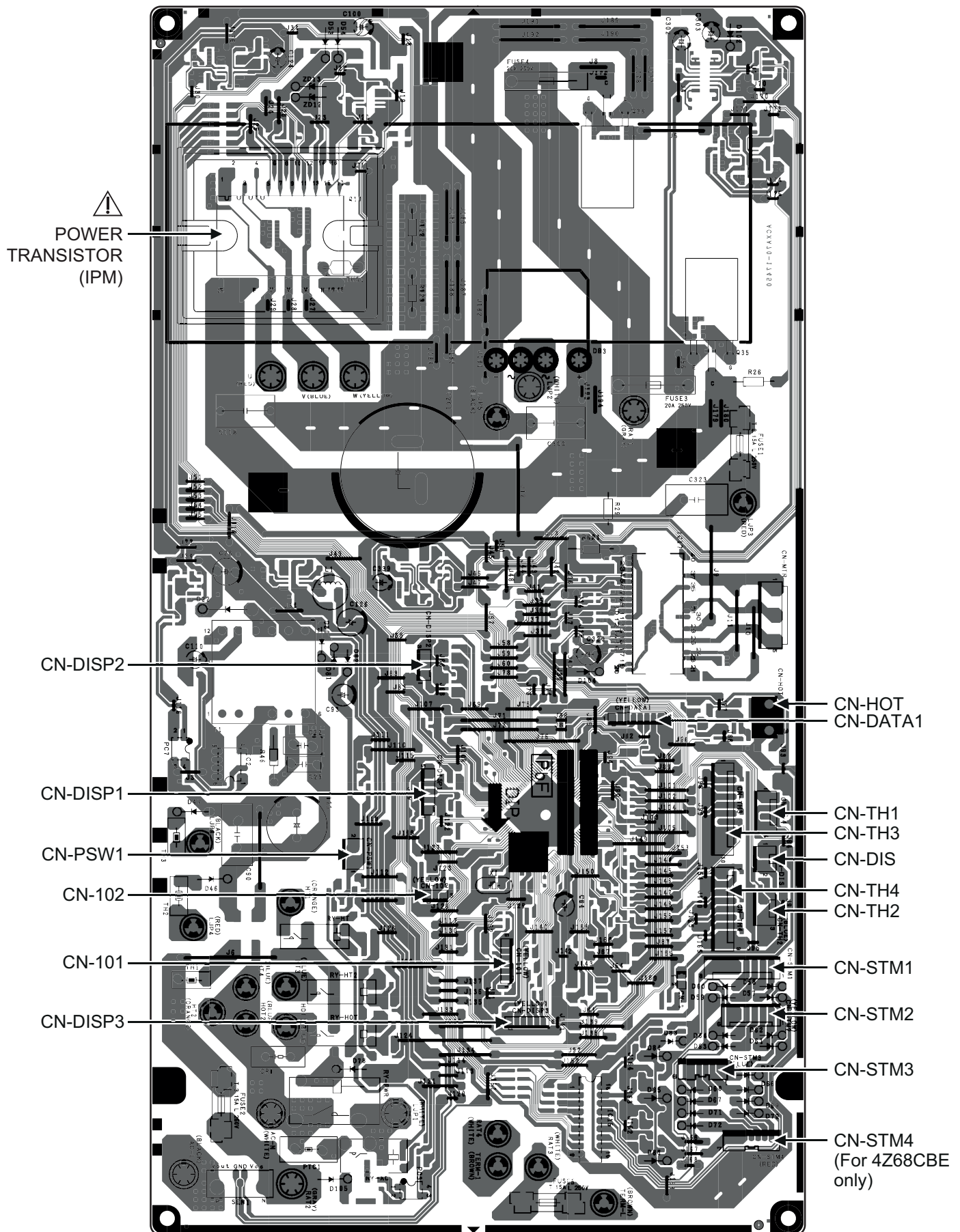
8.5 CU-5Z90CBE



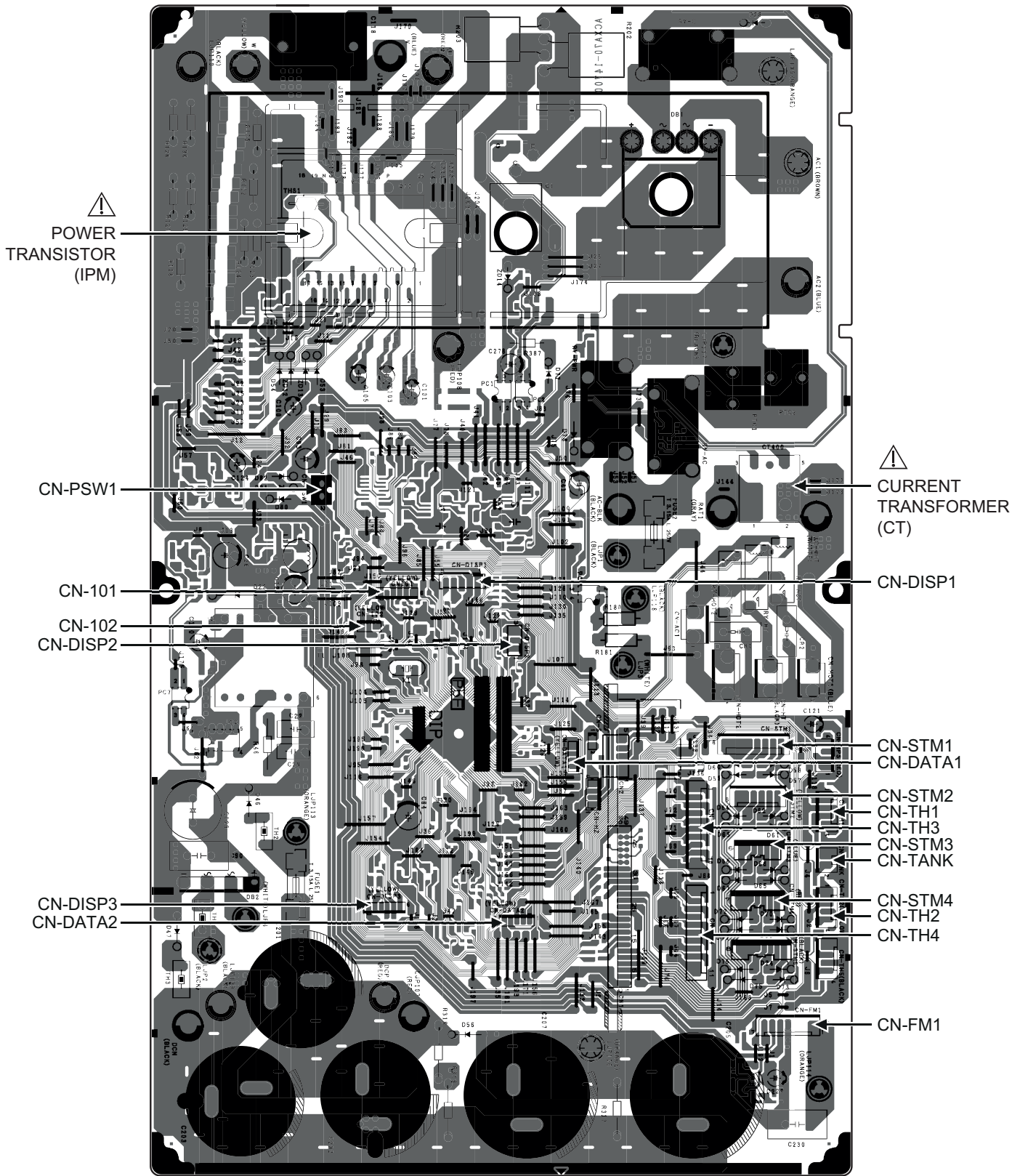
9.1.1 CU-2Z35/41/50CBE



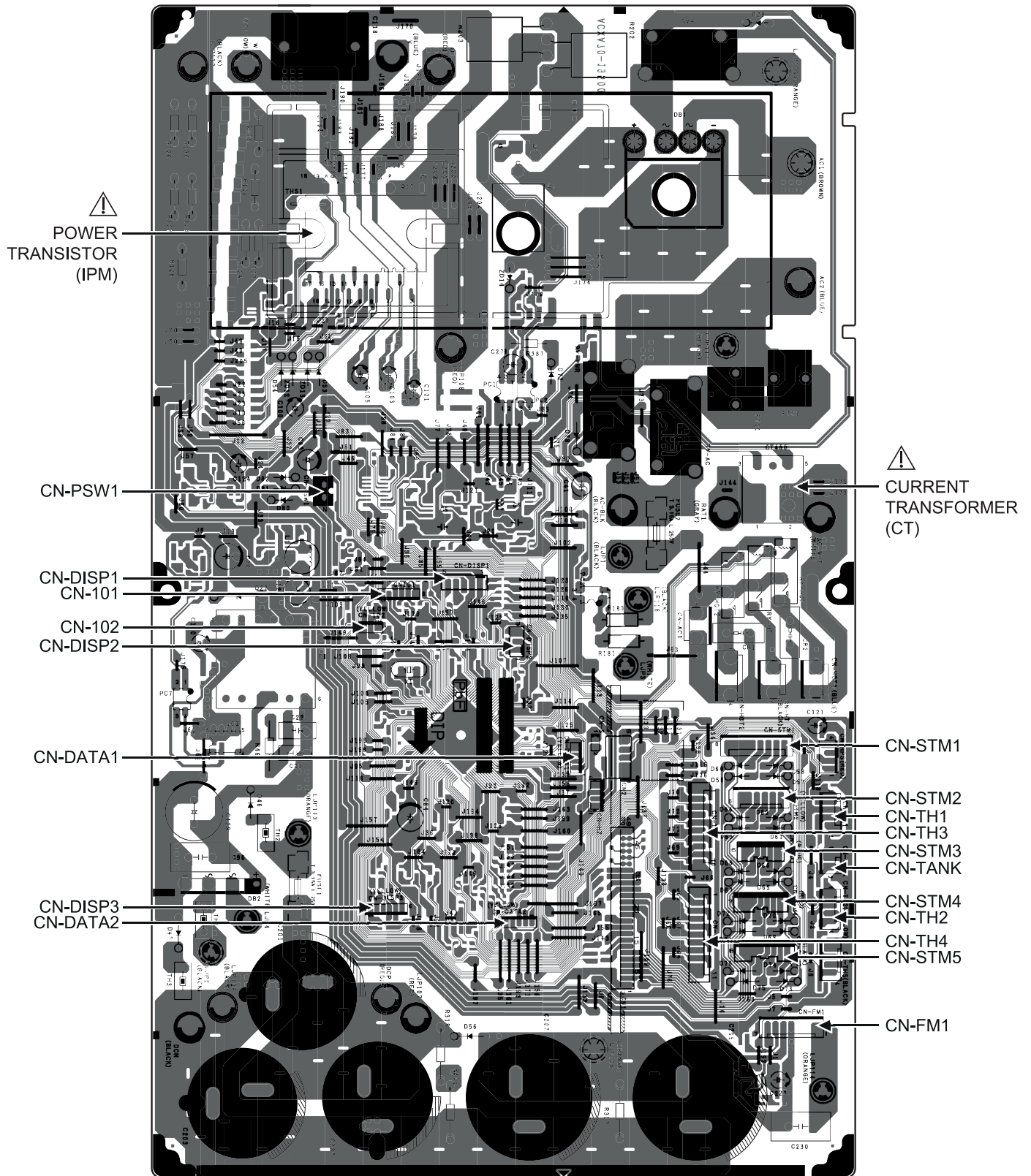
CU-3Z52/68CBE CU-4Z68CBE



9.1.3 CU-4Z80CBE

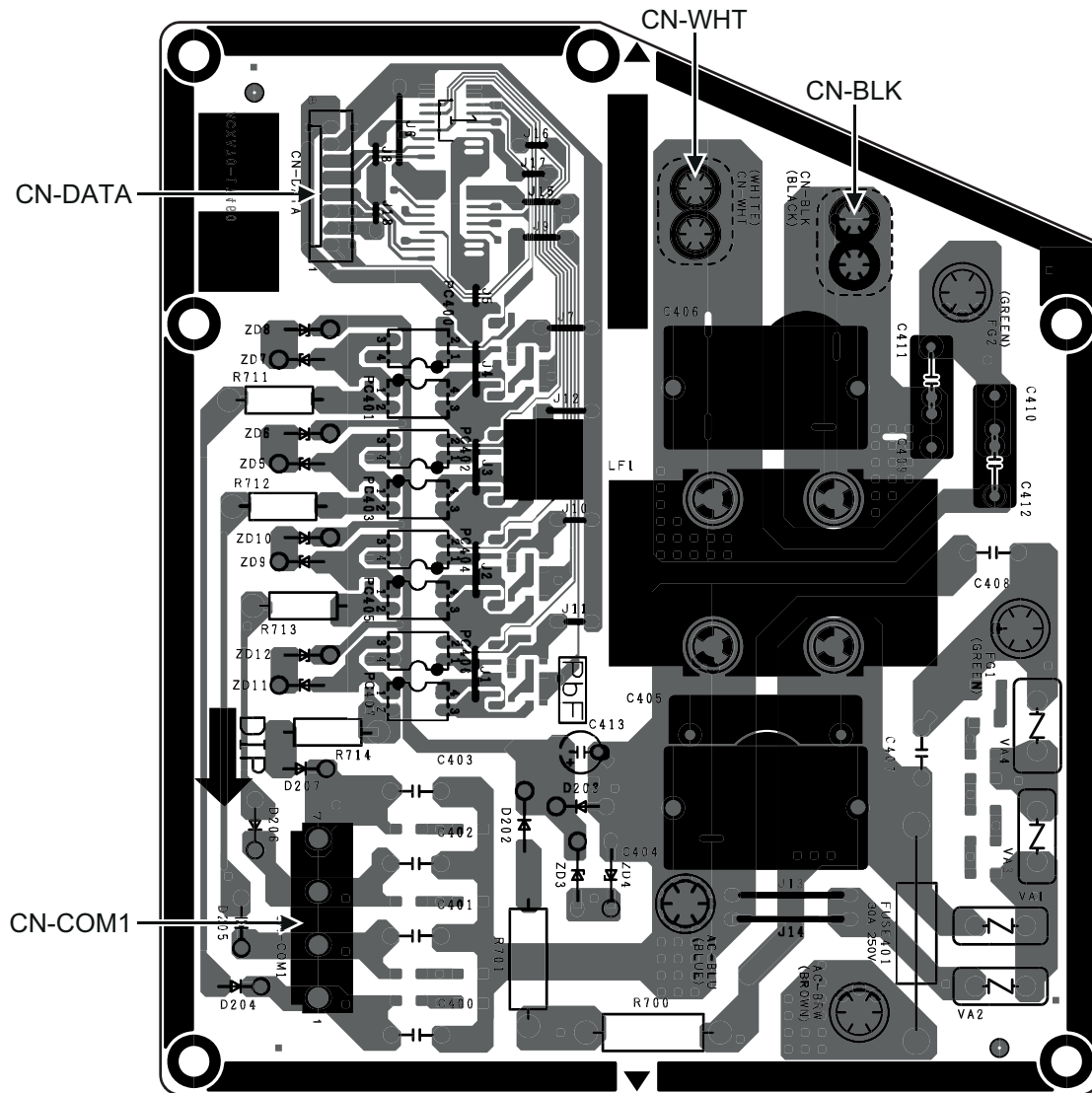


9.1.4 CU-5Z90CBE

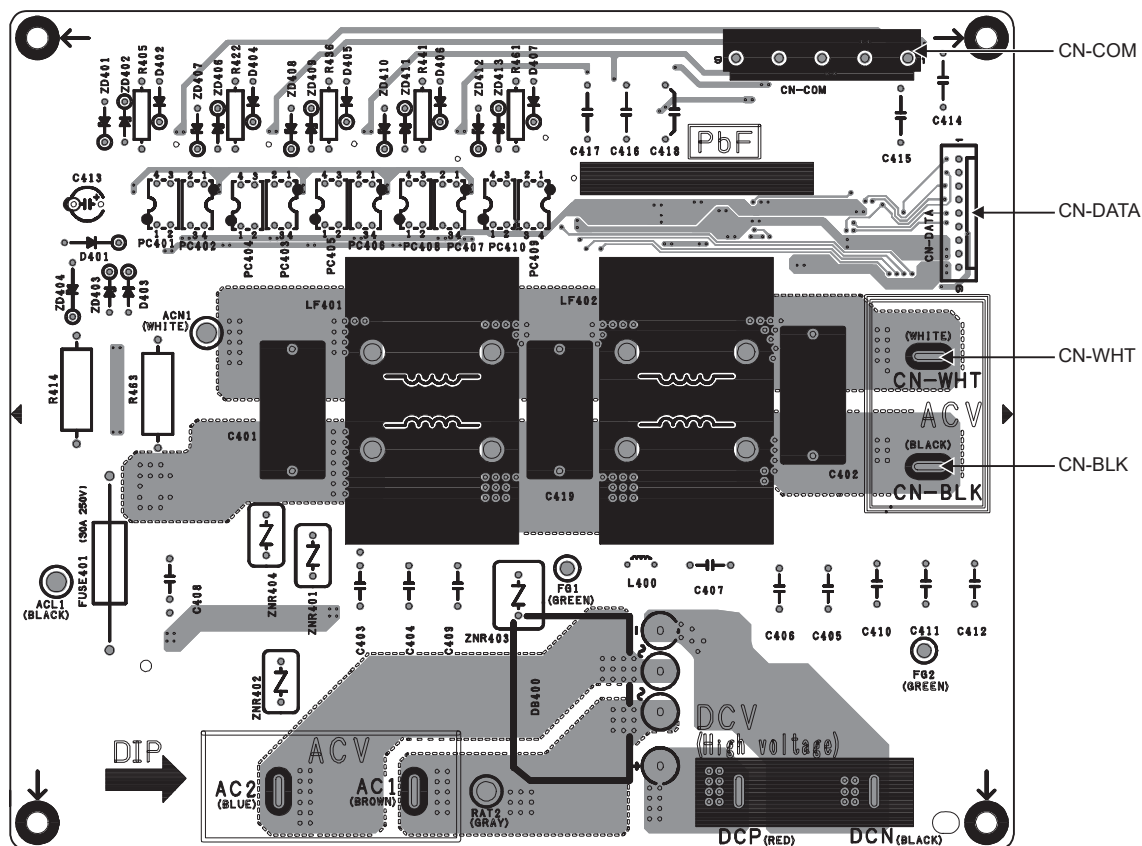


9.2.1 CU-2Z35/41/50CBE

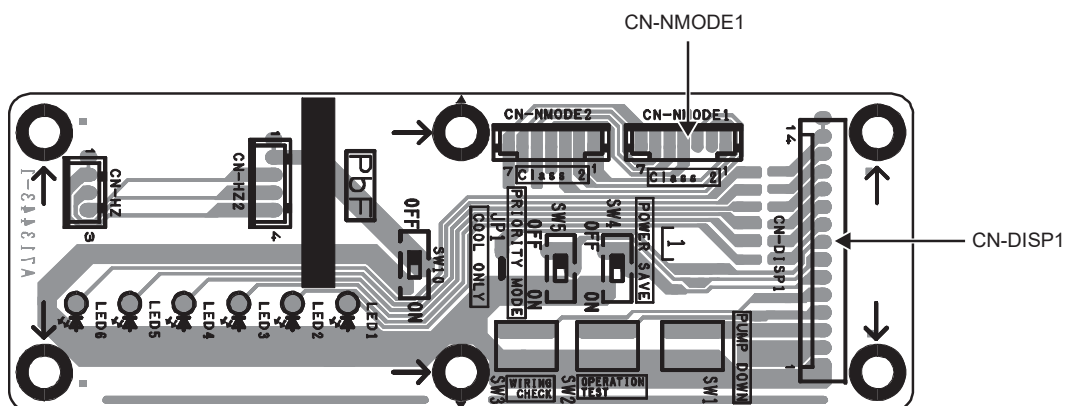




9.2.3 CU-4Z80CBE CU-5Z90CBE

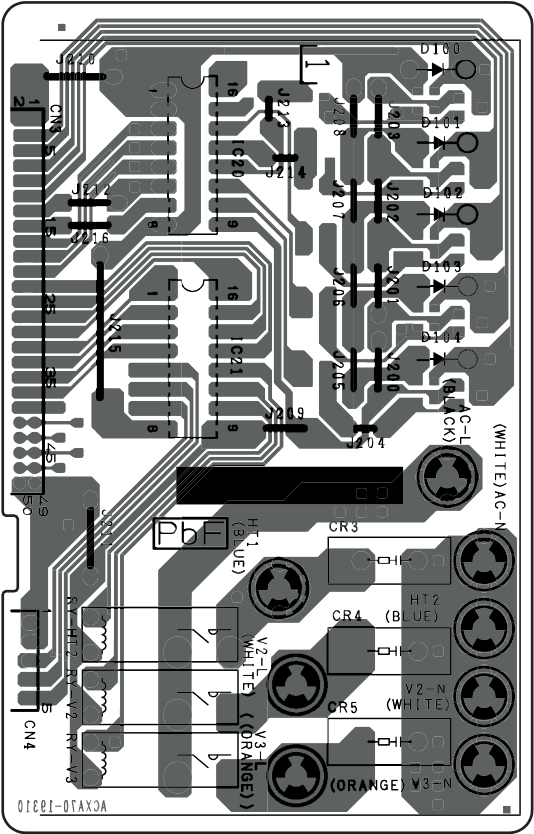


9.3 Display Printed Circuit Board



9.4 Sub Printed Circuit Board

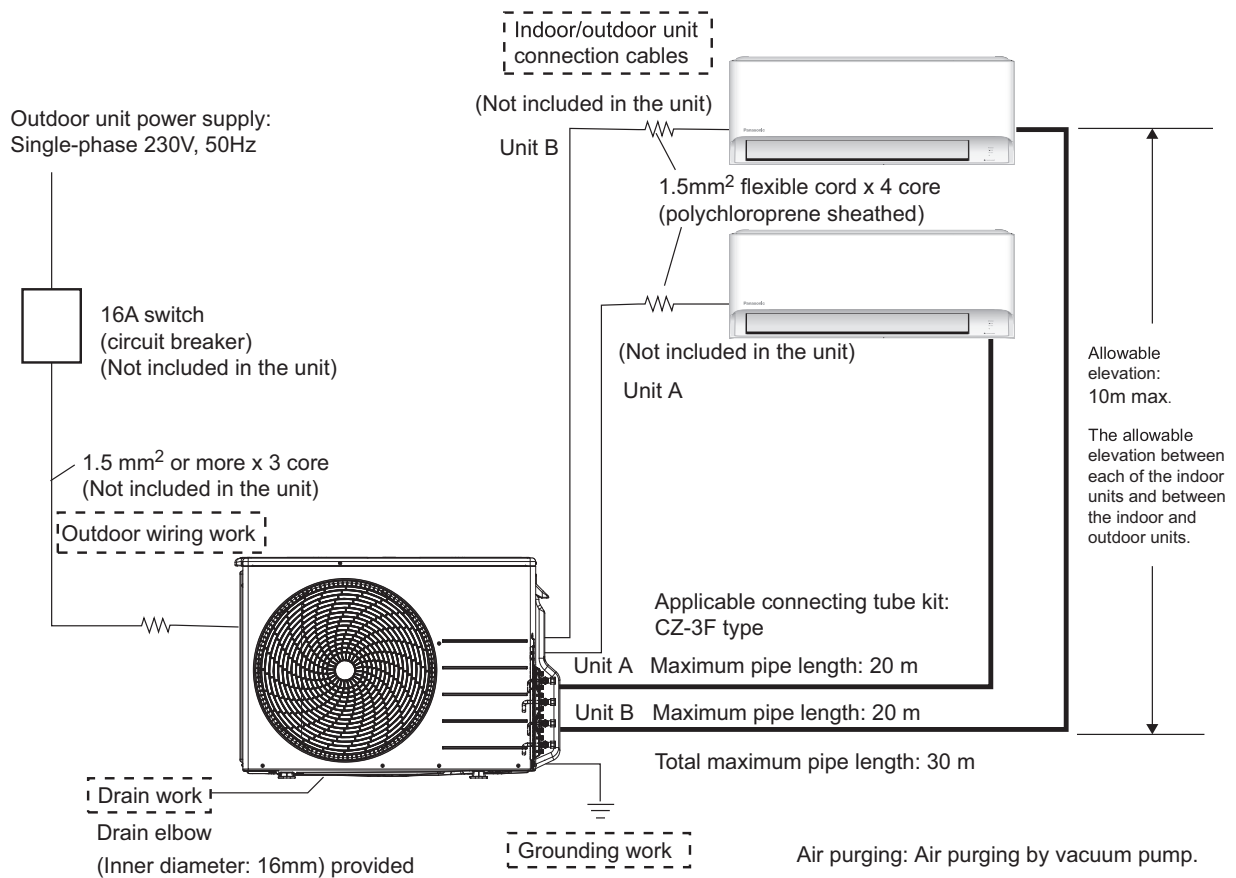
9.4.1 CU-4Z80CBE CU-5Z90CBE



10. Installation Information

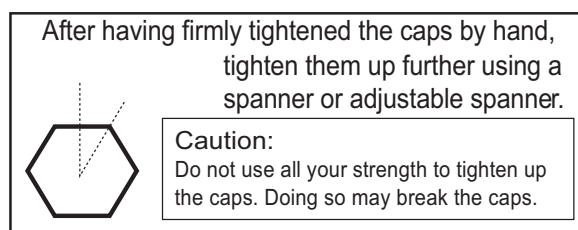
10.1 CU-2Z35CBE CU-2Z41CBE

10.1.1 Check Points



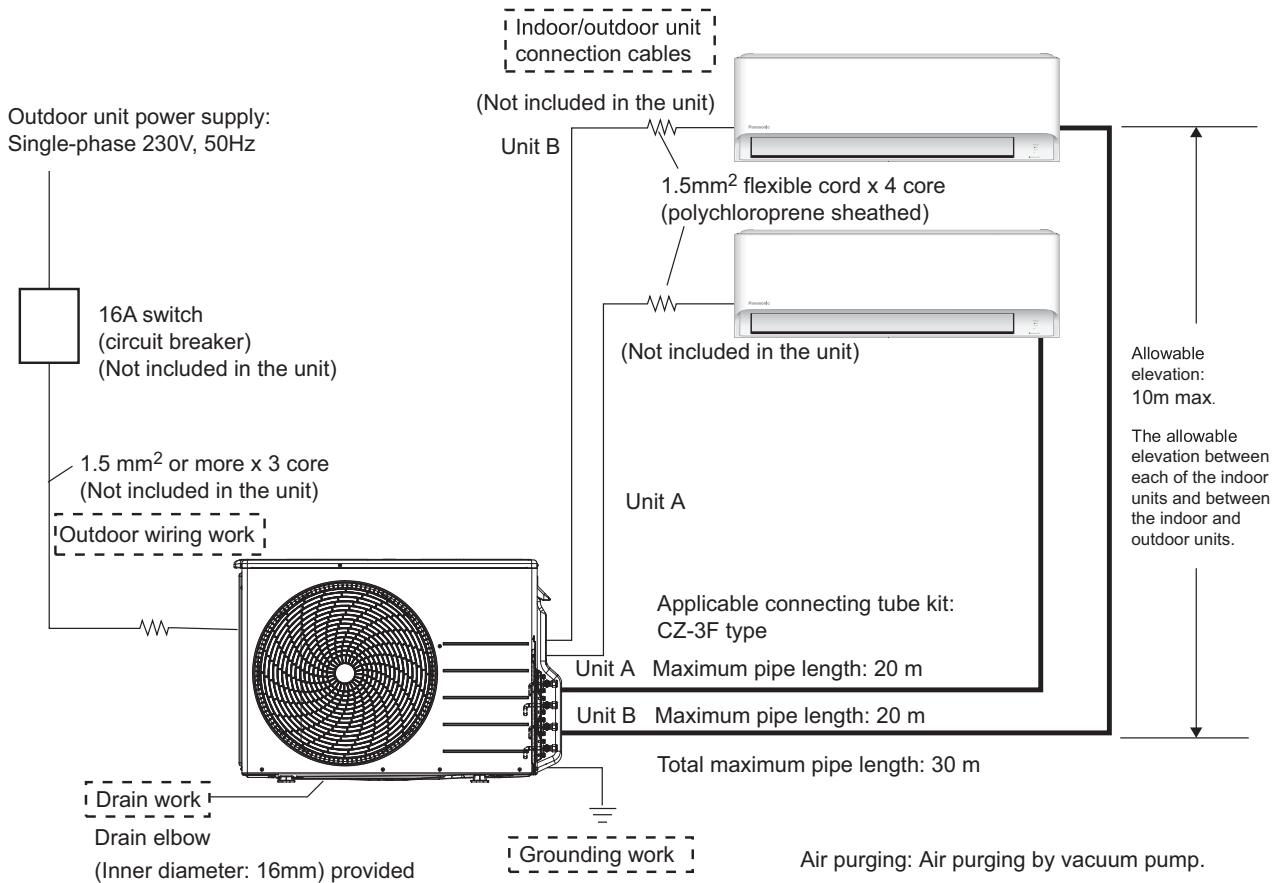
10.1.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.



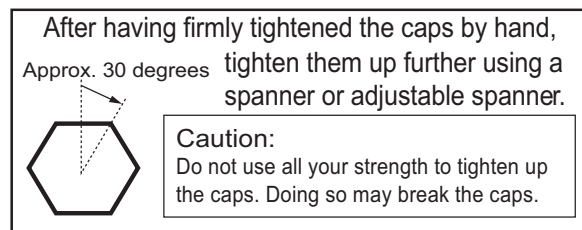
10.2 CU-2Z50CBE

10.2.1 Check Points



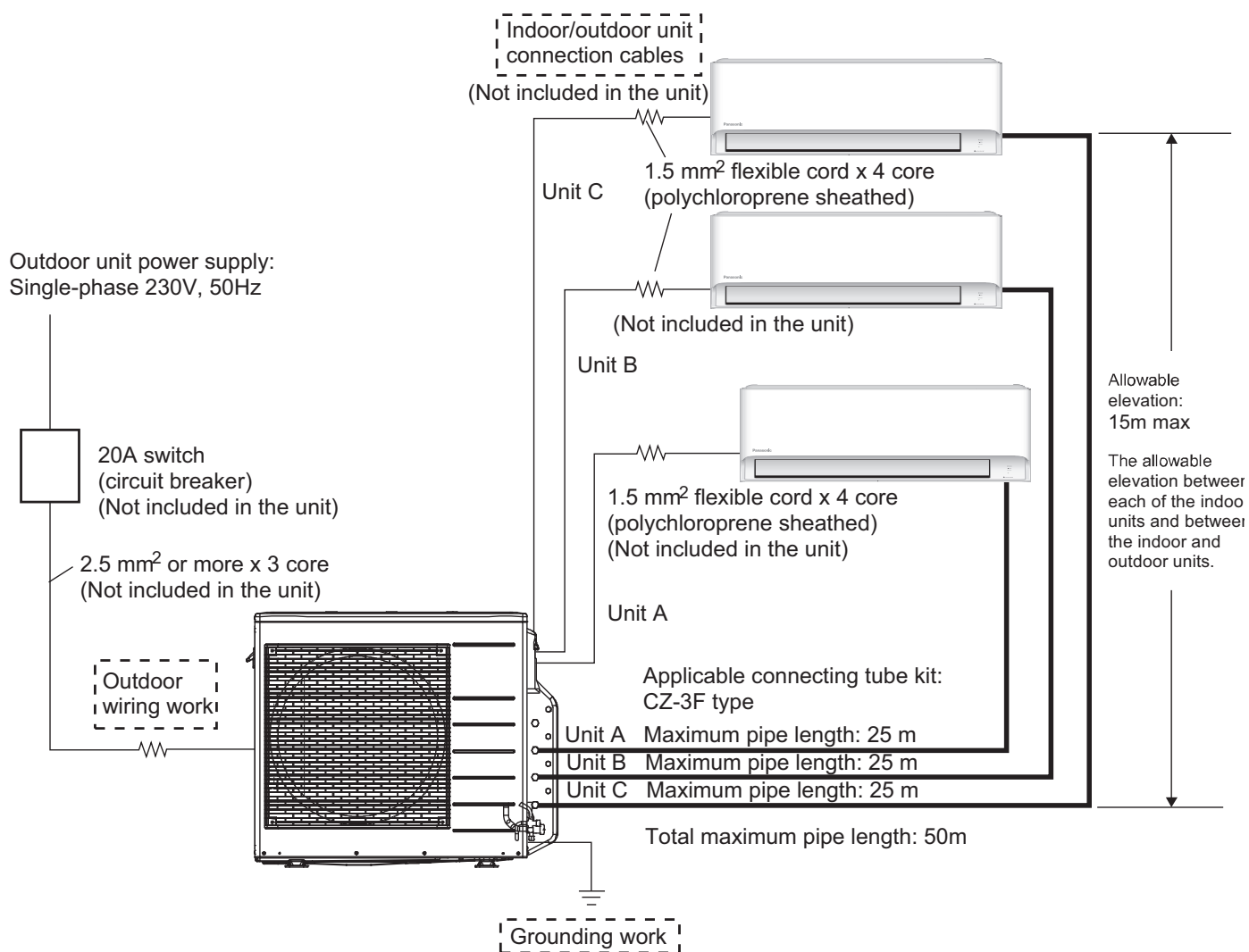
10.2.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.



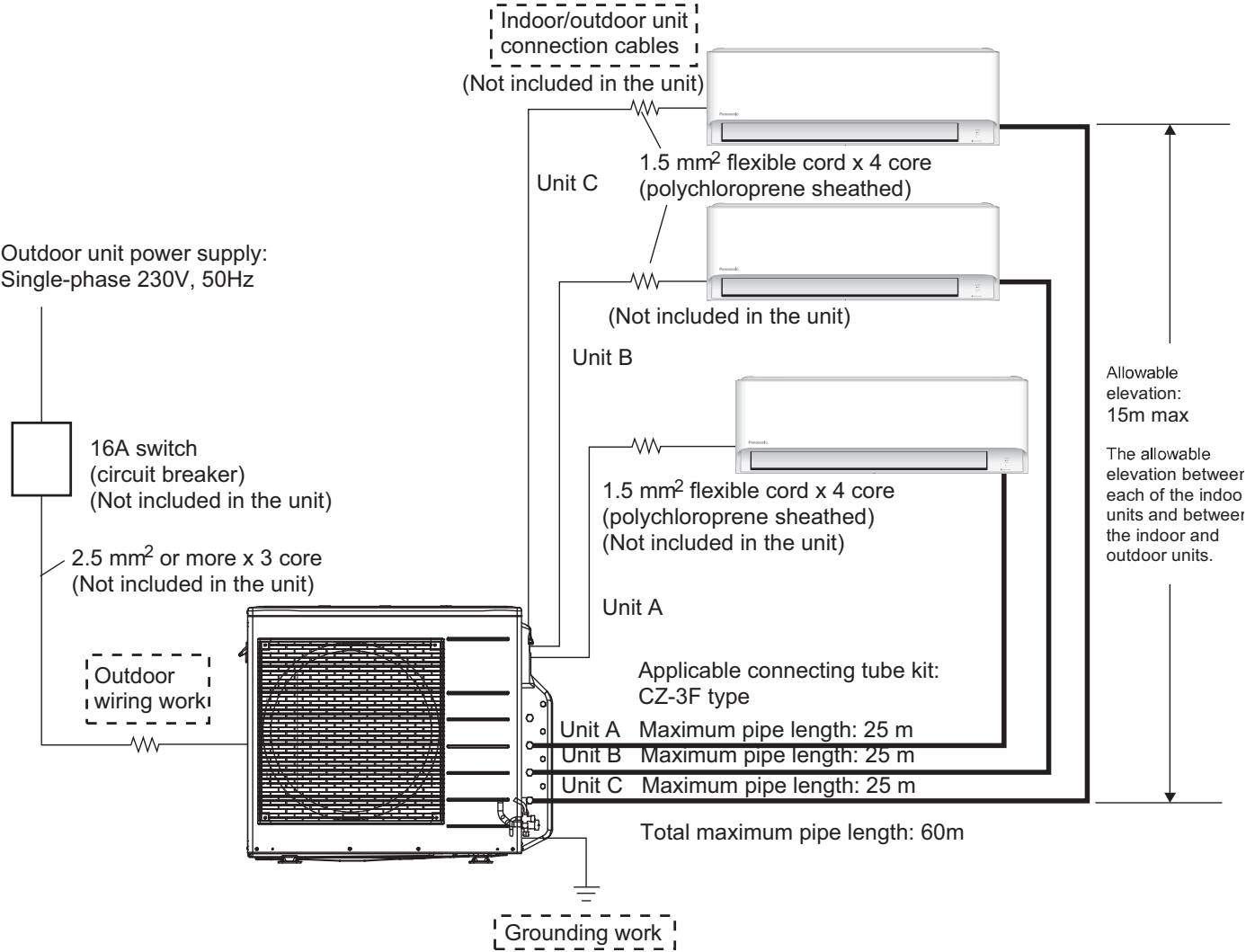
10.3 CU-3Z52CBE

10.3.1 Check Points



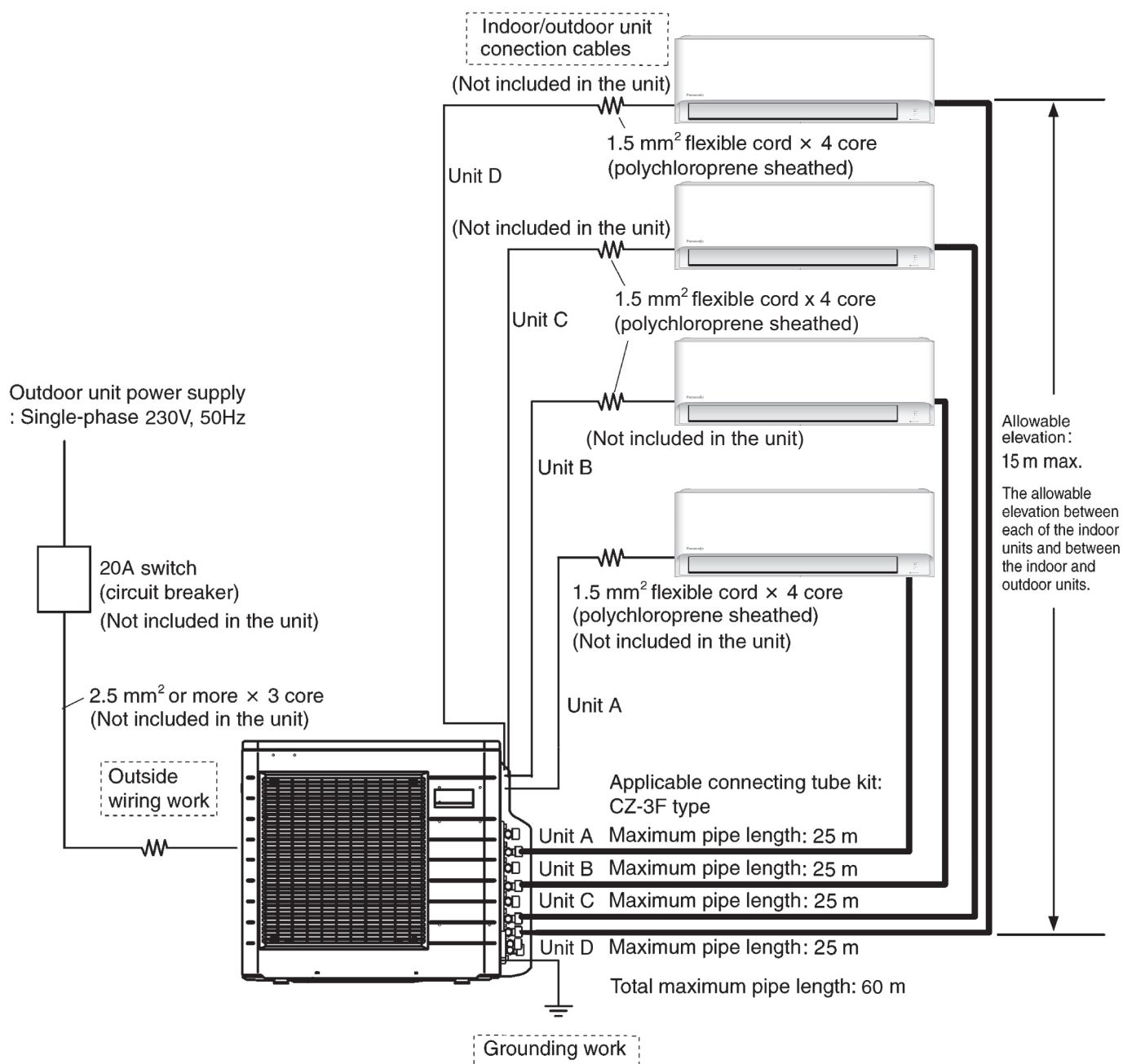
10.4 CU-3Z68CBE

10.4.1 Check Points



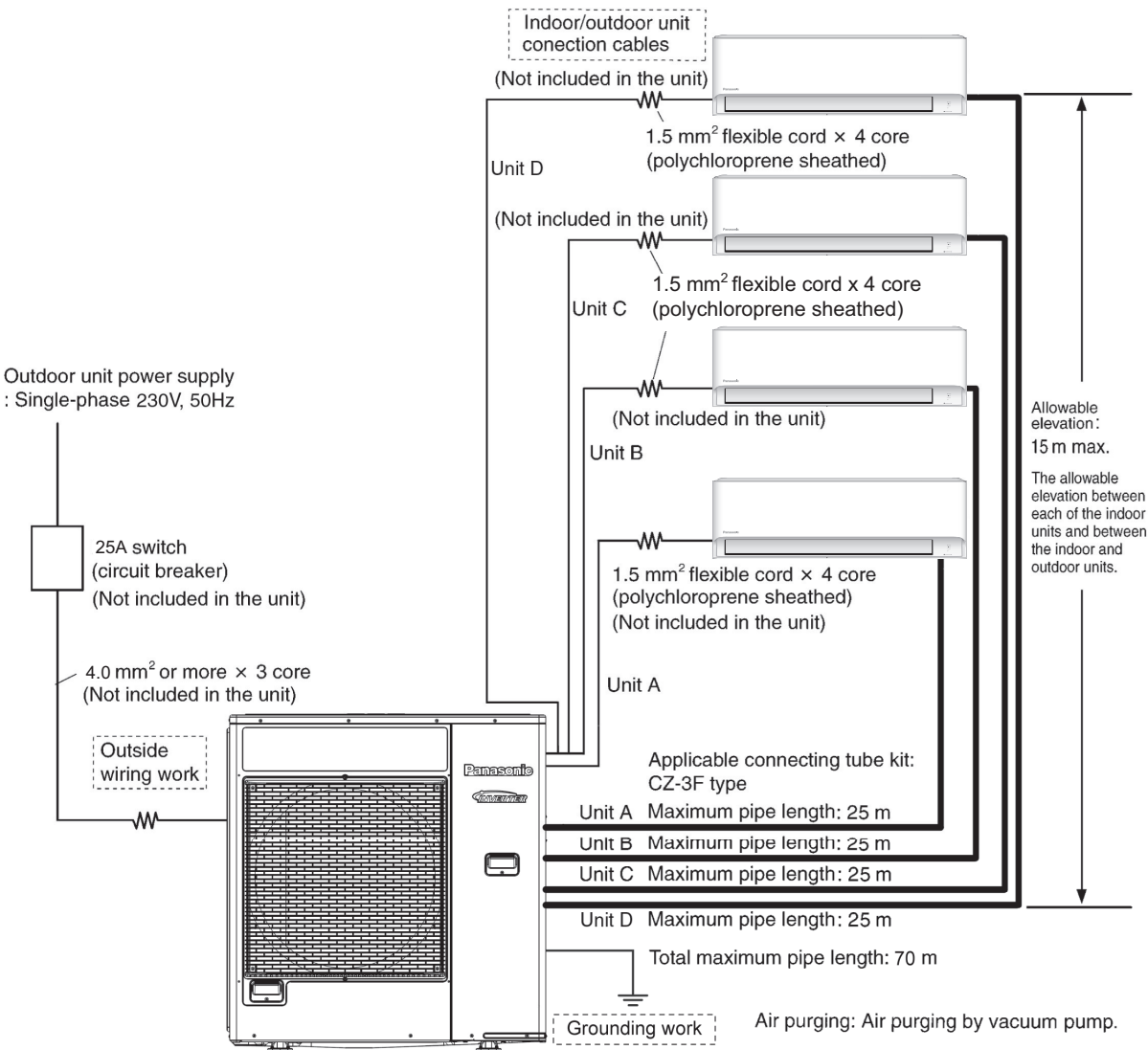
10.5 CU-4Z68CBE

10.5.1 Check Points



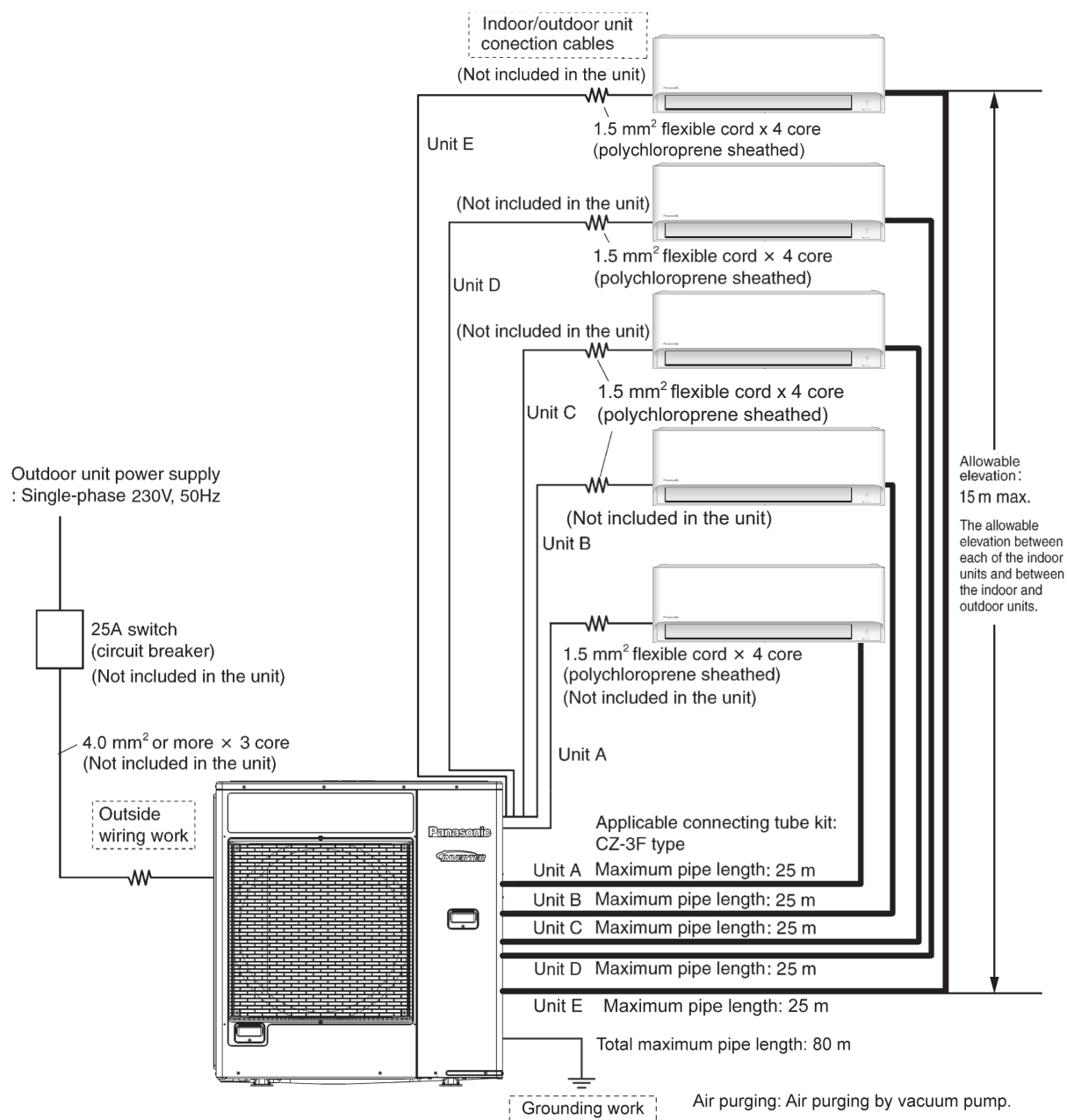
10.6 CU-4Z80CBE

10.6.1 Check Points



10.7 CU-5Z90CBE

10.7.1 Check Points



11. Installation Instruction (CU-2Z35/41/50CBE)

11.1 Select The Best Location

11.1.1 Outdoor Unit

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

Table A

Model	Std. Length (m)	Max. Elevation (m)	Min. Piping Length (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)	Piping Length for add. gas (m)	Max. Refrigerant Charge (kg)	Wall Mounted Indoor Amin (m ²)	Mini Cassette Indoor Amin (m ²)	Ducted Indoor Amin (m ²)	Floor Console Indoor Amin (m ²)
CU-2Z35*** CU-2Z41*** CU-2Z50***	5	10	3	30	15	20	1.33	Not applicable (*)	Not applicable (*)	Not applicable (*)	Not applicable (*)

(*) Systems with total refrigerant charge, m_c , lower than 1.84 kg are not subjected to any room area requirements.

Note:

(1) It is possible to extend the piping length of one unit up to 20 meters. However, the total piping length must not exceed 30 meters.

(2) If the length exceeds 20 meters, refrigerant of 15 g per meter must be added.

$$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$$

** not less than concentration factor margin

A_{min} = Required minimum room area, in m²

m_c = Refrigerant charge in appliance, in kg

LFL = Lower flammability limit (0.307 kg/m³)

h_0 = Installation height of the appliance (1.8 m for wall mounted)

(2.2 m for mini cassette and ducted)

(1.8 m for floor console)

CF = Concentration factor with a value of 0.75

** The required minimum room area, A_{min} , shall also be governed by the concentration factor margin formula below :

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

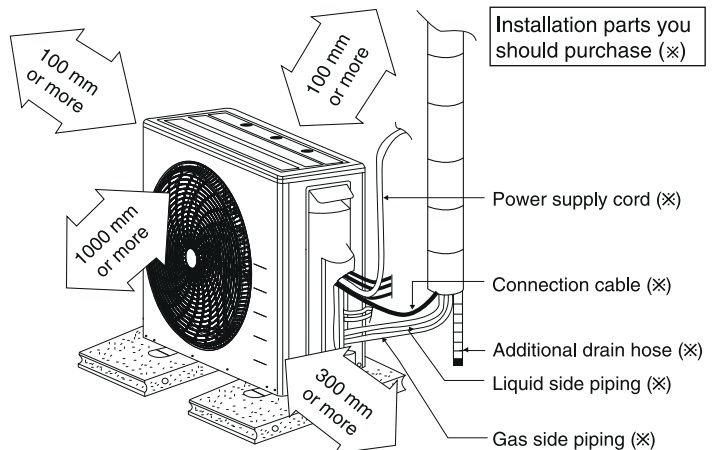
The higher value shall be taken when determining the room area.

11.1.2 Outdoor Unit Installation Diagram

Attention:

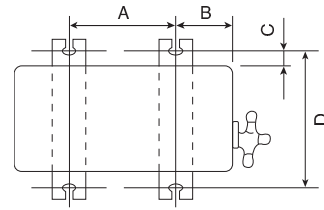
Water droplet will be formed outside the base pan due to the temperature difference. We would recommend installer to **apply insulators onto the refrigerant pipes'** and 2,3-way valve in order to minimize the amount of condensate accumulated inside the base pan which cause the temperature difference.

- This illustration is for explanation purposes only.



11.2 Install The Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
 - Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut ($\varnothing 10$ mm).
 - When installing at roof, please consider strong wind and earthquake.
Please fasten the installation stand firmly with bolt or nails.



Model	A	B	C	D
CU-2Z35***, CU-2Z41***, CU-2Z50***	540 mm	160 mm	18.5 mm	330 mm

11.3 Connect The Piping

Connecting The Piping To Indoor

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

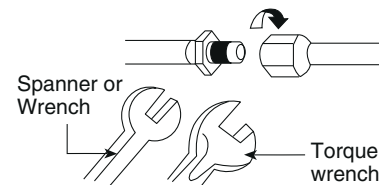
- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

⊗ Do not over tighten, over tightening may cause gas leakage	
Piping size	Torque
6.35 mm (1/4")	[18N•m (1.8 kgf.m)]
9.52 mm (3/8")	[42 N•m (4.3 kgf.m)]
12.7 mm (1/2")	[55 N•m (5.6 kgf.m)]
15.88 mm (5/8")	[65 N•m (6.6 kgf.m)]
19.05 mm (3/4")	[100N•m (10.2 kgf.m)]

Connecting The Piping To Outdoor

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.

Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

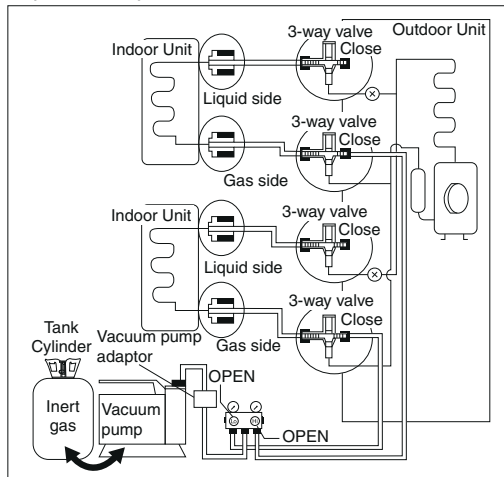
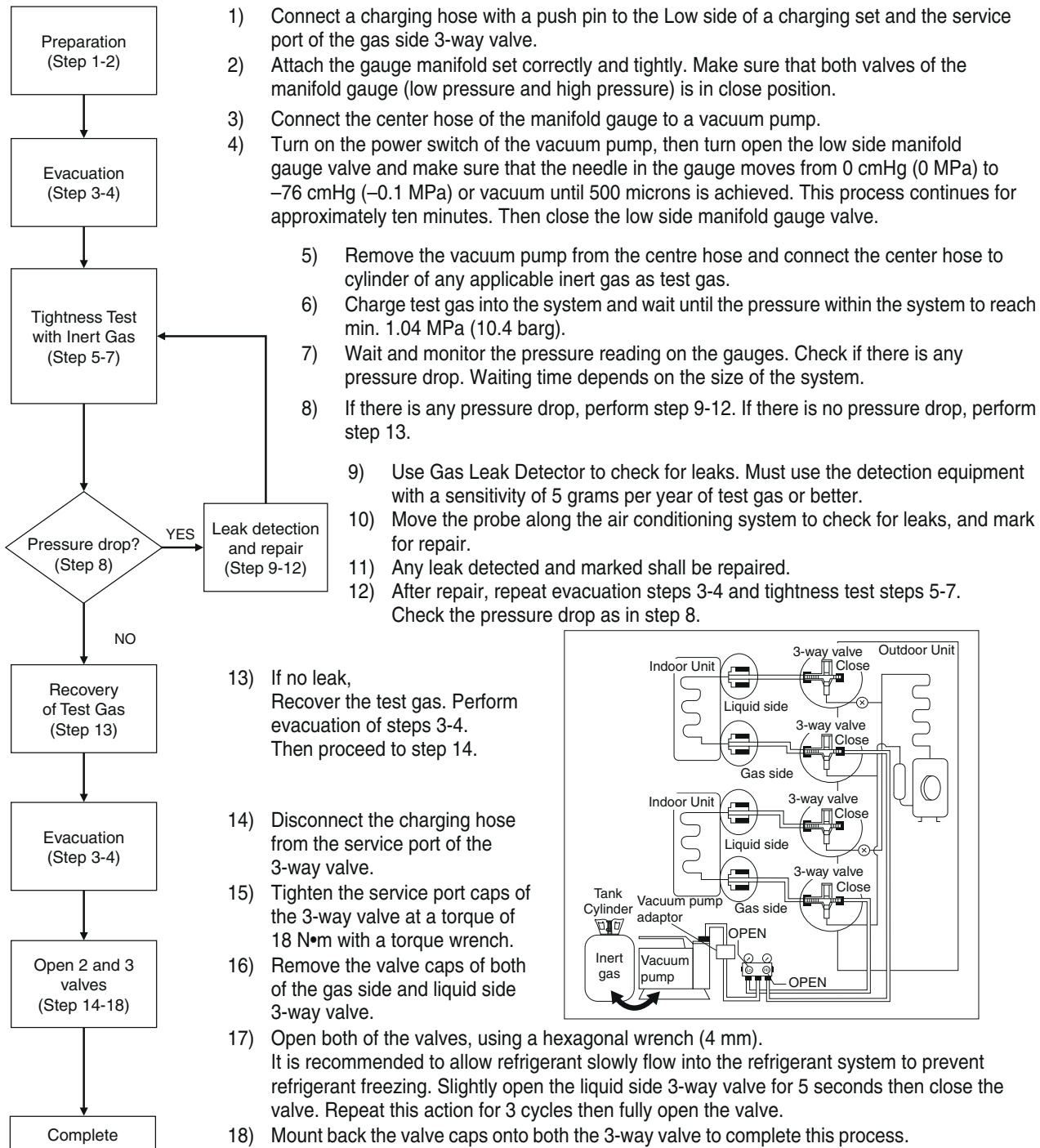


11.4 Air Tightness Test on the Refrigerating System

⊘ Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.

❗ There is no extra refrigerant in the outdoor unit for air purging.

- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.



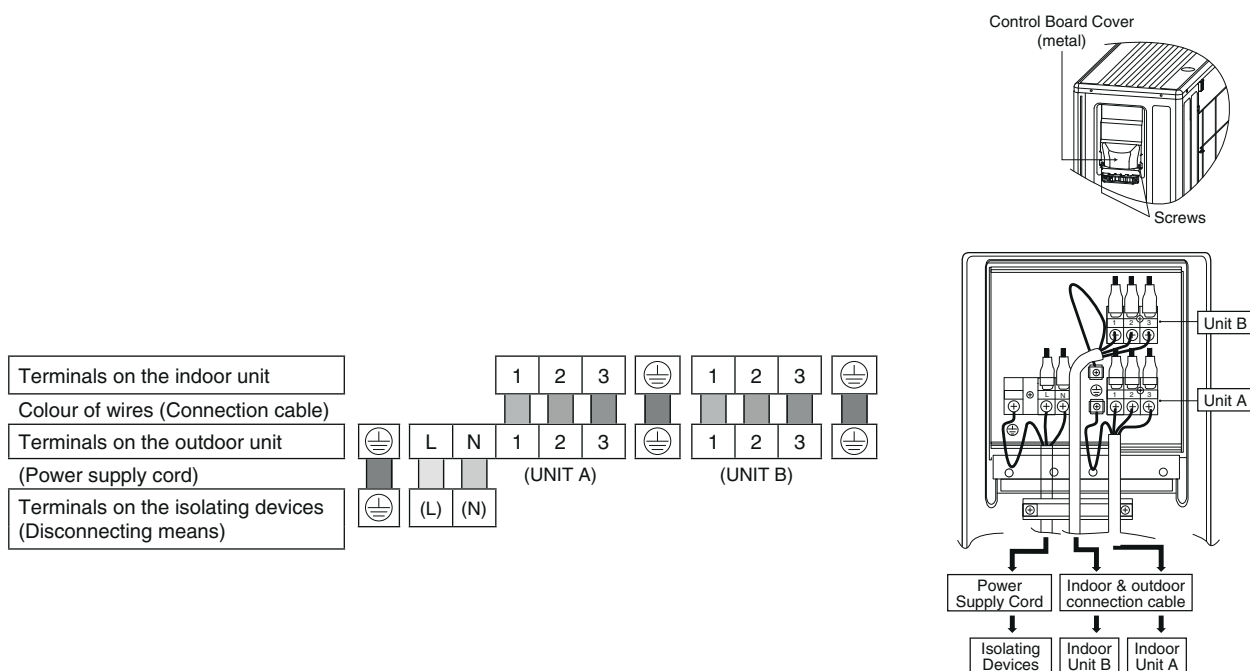
Notes:

Recommended use of any of the following leak detector,

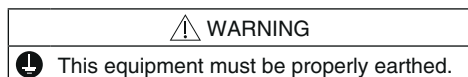
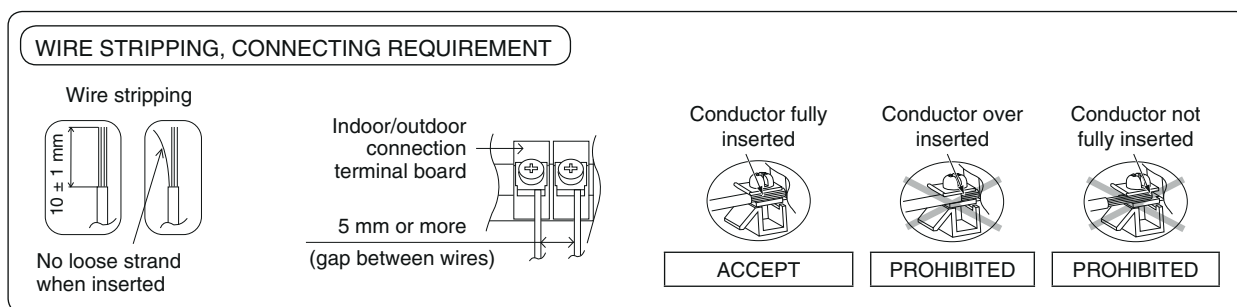
- I) Universal Sniffer leak detector
- II) Electronic halogen leak detector
- III) Ultrasonic Leak Detector

11.5 Connect The Cable To The Outdoor Unit

1. Remove the control board cover from the unit by loosening two screws.
2. Cable connection to the power supply through Isolating Devices (Disconnecting means).
 - Connect approved type polychloroprene sheathed **power supply cord** 3 x 1.5 mm² type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means)
3. **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord. Allowable connection cable length of each indoor unit shall be 30 m or less.
4. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram as shown.



5. Secure the power supply cord and connection cable onto the control board with the holder.
6. Attach the control board cover back to the original position with screw.
7. For wire stripping and connection requirement, refer to the diagram as shown.



- 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 reason.

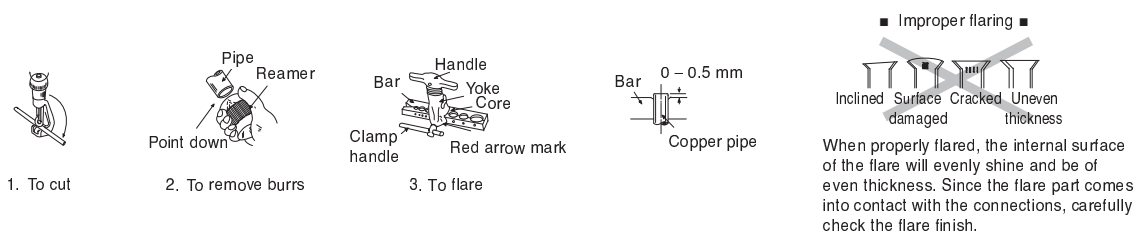
11.6 Piping Insulation

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram.
Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

	Refrigerant tubing shall be protected against mechanical damage.		
 CAUTION	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.	Liquid-side pipes	Material shall withstand 120 °C or higher
		Gas-side pipes	

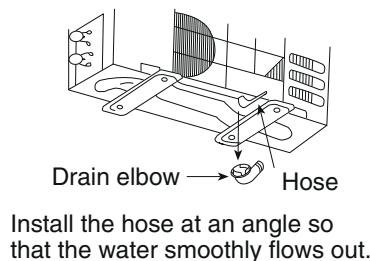
CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.
Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



11.7 Disposal Of Outdoor Unit Drain Water

- If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.
- If the unit is used in an area where temperature falls below 0 °C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.



11.8 In Case of Reusing Existing Refrigerant Piping

Observe the followings to decide reusing the existing refrigerant piping.

Poor refrigerant piping could result in product failure.

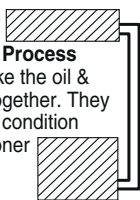
- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
 - Heat insulation is not provided for either liquid-side or gas-side piping or both.
 - The existing refrigerant pipe has been left in an open condition.
 - The diameter and thickness of the existing refrigerant piping does not meet the requirement.
 - The piping length and elevation does not meet the requirement.
- Perform proper pump down before reuse piping.
- In the circumstances listed below, clean it thoroughly before reuse.
 - Pump down operation cannot be performed for the existing air-conditioner.
 - The compressor has a failure history.
 - Oil color 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 piping, 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-side and gas-side piping.

11.9 Proper Pump Down Method

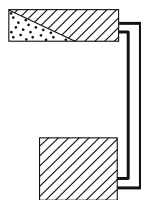
- ① Operate air conditioner at cooling mode for 10 ~ 15 minutes.

Most Important Process

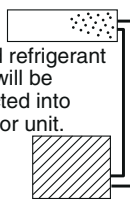
Purpose: To make the oil & refrigerant mix together. They are in separated condition when air conditioner is stopped.



- ② After 10 ~ 15 minutes of pre operation, close liquid side 3 way valve. After 3 minutes, close gas side 3 way valve.

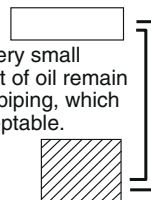


Mixed refrigerant & oil will be collected into outdoor unit.

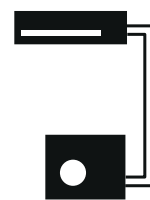


- ③ Take out air conditioner unit.

Only very small amount of oil remain inside piping, which is acceptable.



- ④ Install New Refrigerant air conditioner.



11.10 Heating Only Operation

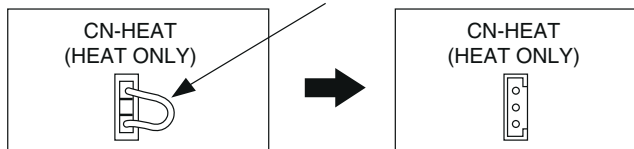
- Setting of Heating only operation.

The equipment can be set to heating only operation by some setting on the Outdoor unit main circuit board

[Setting method]

Switch off power supply to the outdoor unit, unplug and remove the lead wire on CN-HEAT

Remove the lead wire



12. Installation Instruction (CU-3Z52/68/4Z68CBE)

12.1 Select The Best Location

12.1.1 Outdoor Unit

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.

Table A

Model	Maximum Total Piping Length to Add Gas (m)	Additional Refrigerant (g/m)	Max. Refrigerant Charge (kg)	Wall Mounted Indoor Amin (m ²)	Mini Cassette Indoor Amin (m ²)	Ducted Indoor Amin (m ²)
CU-3Z52***	30	20	2.32	5.60	4.58	4.58
CU-3Z68***	30	20	2.85	7.68	5.63	5.63
CU-4Z68***	30	20	2.85	7.68	5.63	5.63

(*) Systems with total refrigerant charge, m_c , lower than 1.84 kg are not subjected to any room area requirements.

- If total piping length of all indoor units exceed the maximum total length listed above, additionally charge with 20 g of refrigerant (R32) for each additional meter of piping.

$$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$$

** not less than concentration factor margin

A_{min} = Required minimum room area, in m²

m_c = Refrigerant charge in appliance, in kg

LFL = Lower flammability limit (0.307 kg/m³)

h_0 = Installation height of the appliance (1.8 m for wall mounted)
(2.2 m for mini cassette and ducted)

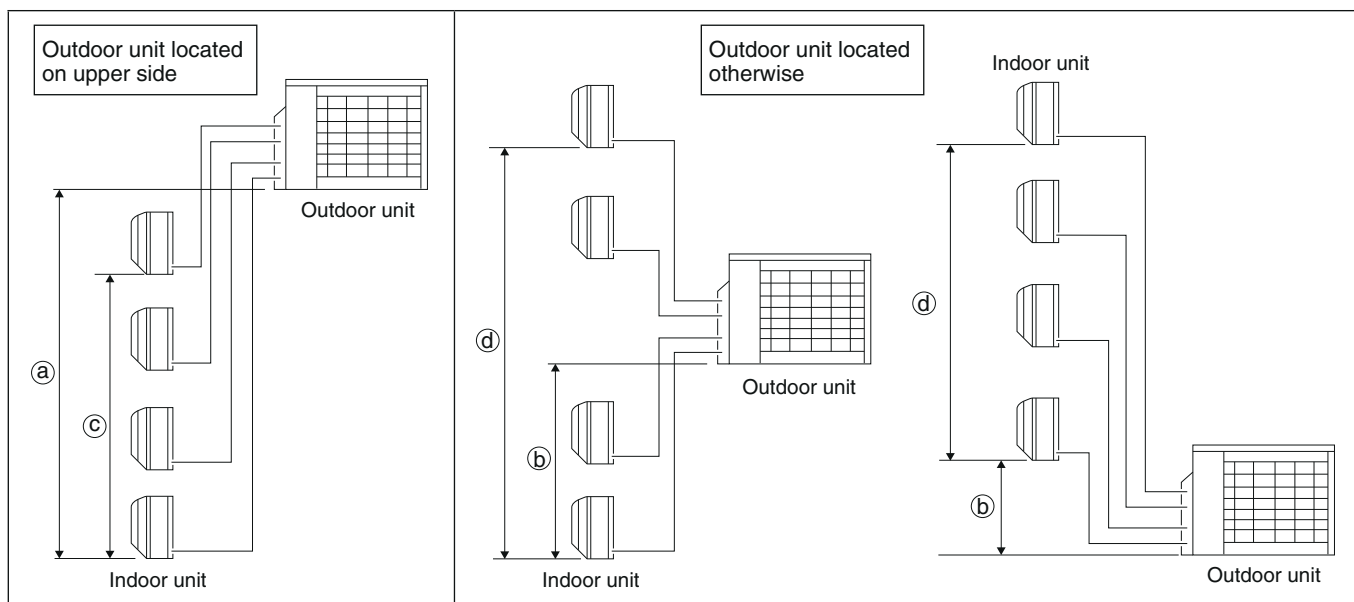
CF = Concentration factor with a value of 0.75

** The required minimum room area, A_{min} , shall also be governed by the concentration 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.

Allowable piping length				
Outdoor Unit			CU-3Z52***	CU-3Z68***, CU-4Z68***
Allowable piping length of each indoor unit (min. ~ max.)			3 m ~ 25 m	3 m ~ 25 m
Allowable total piping length of all indoor unit			50 m or less	60 m or less
Height difference between indoor and outdoor unit	Outdoor unit located on upper side	Ⓐ	15 m or less	15 m or less
	Outdoor unit located otherwise	Ⓑ	7.5 m or less	7.5 m or less
Height difference between indoor unit	Outdoor unit located on upper side	Ⓒ	7.5 m or less	7.5 m or less
	Outdoor unit located otherwise	Ⓓ	15 m or less	15 m or less



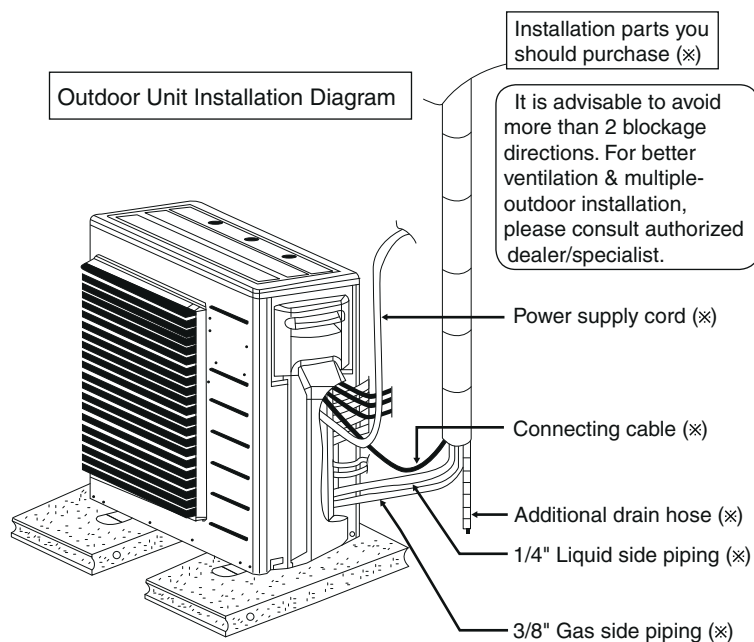
12.1.2 Outdoor Unit Installation Diagram

Refrigerant piping size		
Outdoor Unit	CU-3Z52***	CU-3Z68***, CU-4Z68***
Liquid - side	ø 6.35 t0.8	ø 6.35 t0.8
Gas - side	ø 9.52 t0.8	ø 9.52 t0.8 *(ø 12.7 t0.8)

* In case of indoor is CS-Z60***, CS-TZ60***, S-60***, then ø 12.7 t0.8 gas-pipe size must be used together with CZ-MA2PA (pipe size expander)

Attention:

Water droplet will be formed outside the base pan due to the temperature difference. We would recommend installer to apply **insulators onto the refrigerant pipes** and 2,3-way valve in order to minimize the amount of condensate accumulated inside the base pan which cause the temperature difference.

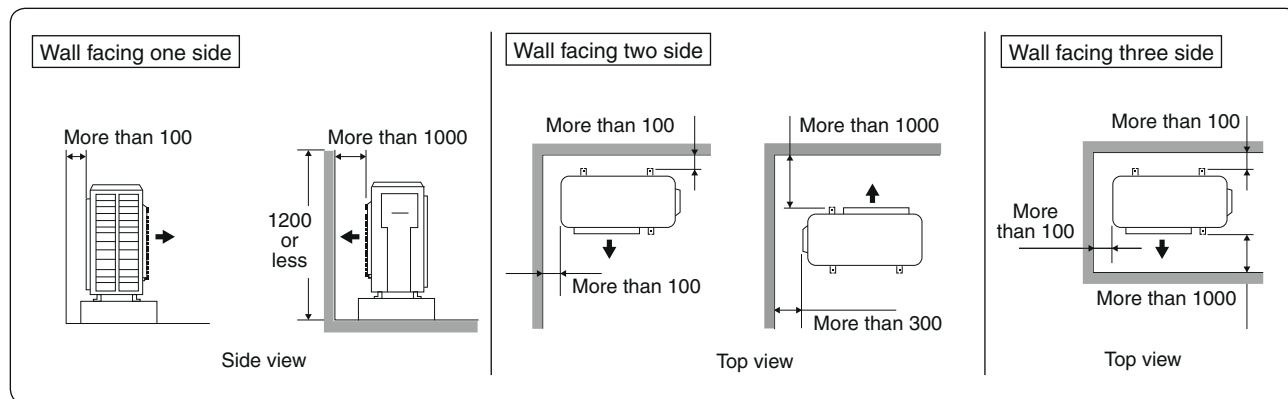


- This illustration is for explanation purposes only.

* Note:
Respective indoor unit installation procedure shall refer to instruction manual provided in the indoor unit packaging.

Outdoor Unit Installation Guidelines

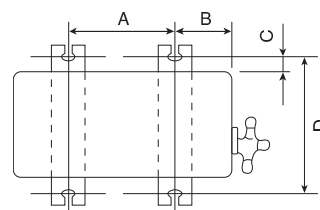
- Where a wall or other obstacle is in the path of outdoor unit's intake or exhaust airflow, follow the installation guidelines below.
- For any of the below installation patterns, the wall height on the exhaust side should be 1200 mm or less.



Unit : mm

12.2 Install The Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
 1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
 2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt, screws or nails.



Model	A	B	C	D
CU-3Z52***, CU-3Z68***, CU-4Z68***	613 mm	131 mm	24 mm	360.5 mm

12.3 Connect The Piping

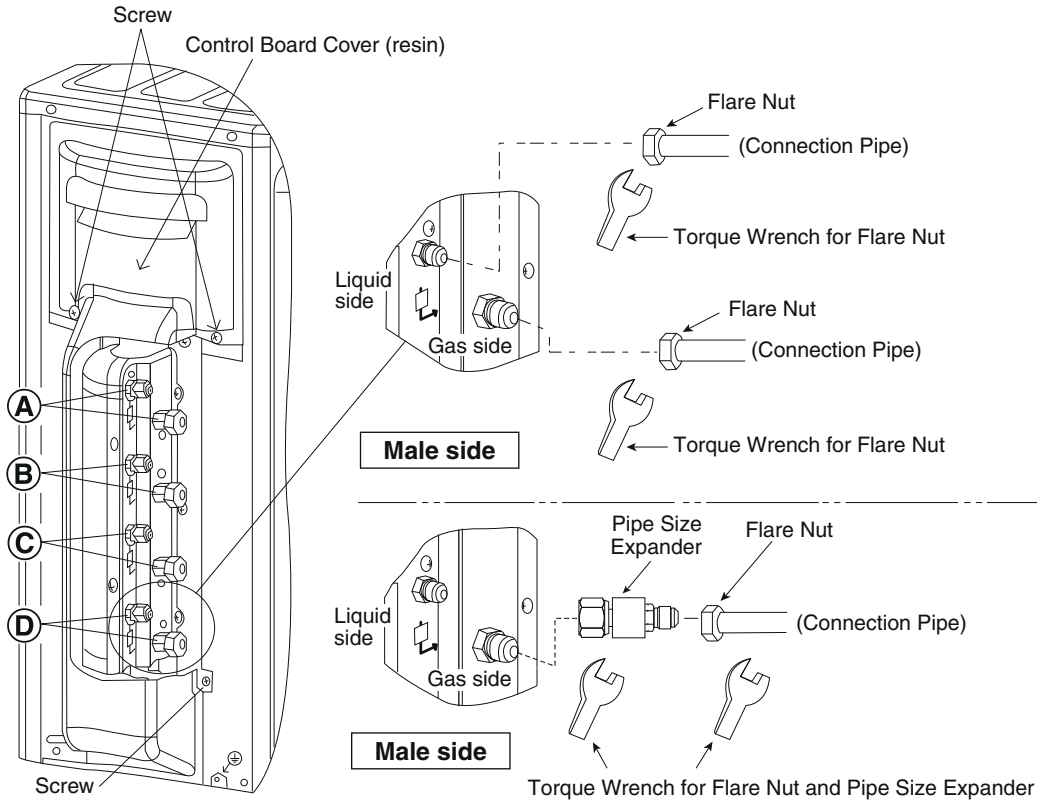
- Remove the control board cover (resin) from the unit by loosening three screws.

Connecting The Piping To Outdoor

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.

Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

 CAUTION	
 Do not over tighten, overtightening may cause gas leakage	
Piping size	Torque
1/4" (6.35 mm)	[18N•m (1.8 kgf.m)]
3/8" (9.52 mm)	[42 N•m (4.3 kgf.m)]
1/2" (12.7 mm)	[55 N•m (5.6 kgf.m)]
5/8" (15.88 mm)	[65 N•m (6.6 kgf.m)]
3/4" (19.05 mm)	[100N•m (10.2 kgf.m)]



Female side

Applicable to
Liquid and Gas side of
CS-MZ16***, CS-MZ20***,
CS-MTZ16***, CS-Z20***,
CS-Z25***, CS-Z35***,
CS-Z42***, CS-Z50***,
CS-XZ20***, CS-XZ25***,
CS-XZ35***, CS-XZ42***,
CS-XZ50***, CS-TZ20***,
CS-TZ25***, CS-TZ35***,
CS-TZ42***, CS-TZ50***,
CS-RZ25***, CS-RZ35***,
CS-RZ50***, S-M20***,
S-25***, S-36***, S-50***

Liquid side of
CS-Z60***, CS-TZ60***,
S-60***

Female side

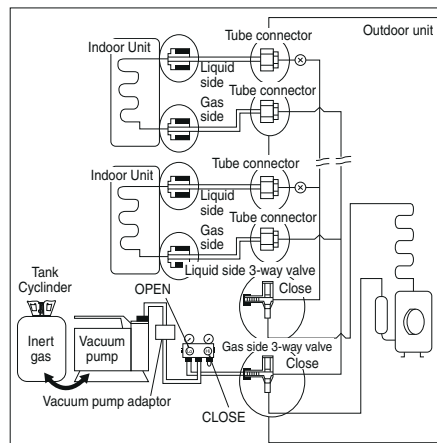
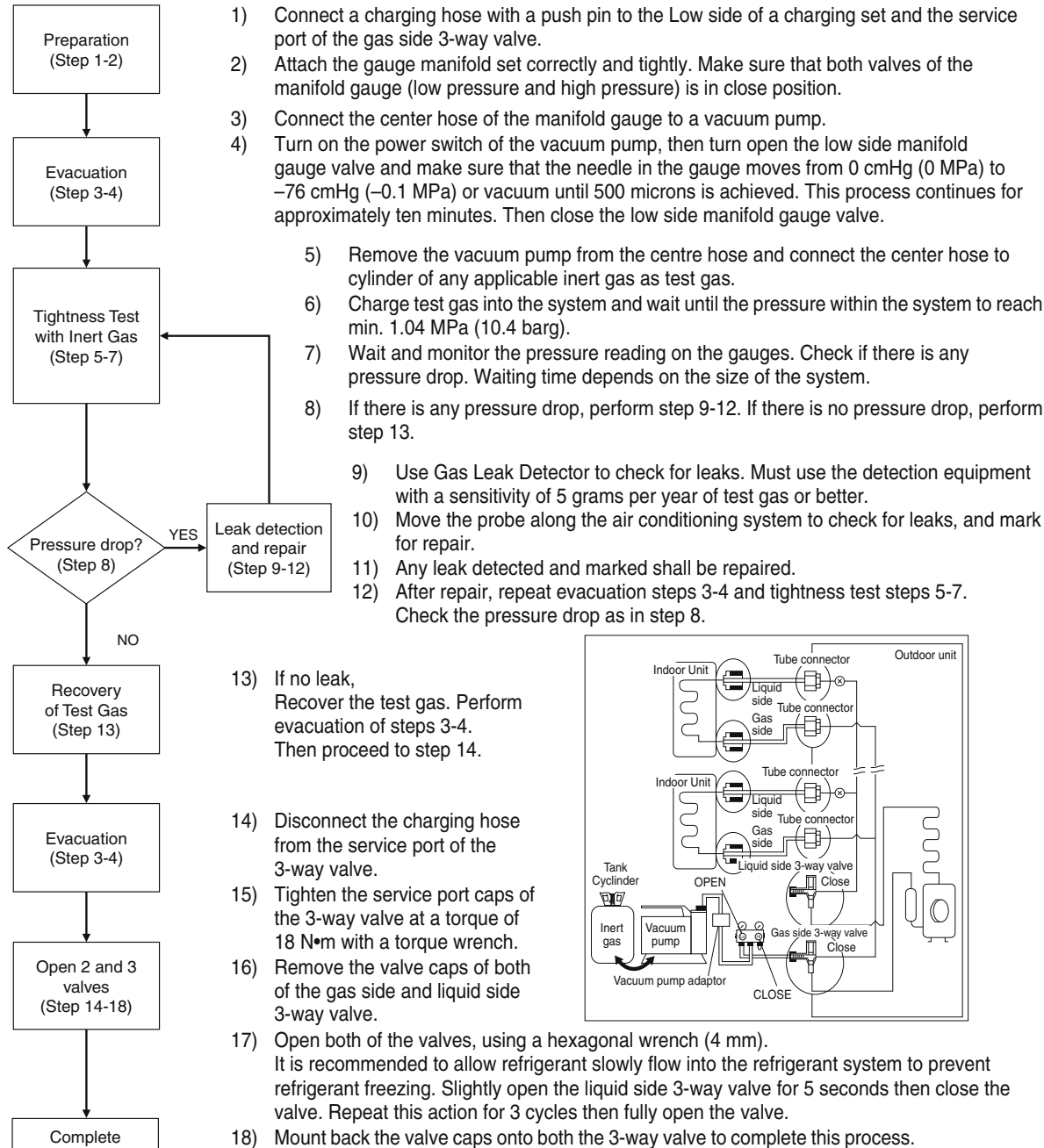
Applicable to
Gas side of CS-Z60***,
CS-TZ60***, S-60***

12.4 Air Tightness Test on the Refrigerating System

⊘ Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.

❗ There is no extra refrigerant in the outdoor unit for air purging.

- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.
- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.



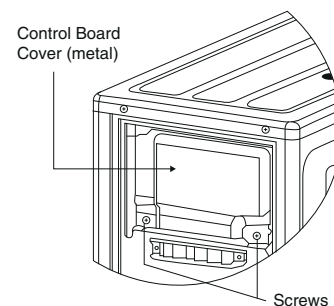
Notes:

Recommended use of any of the following leak detector,

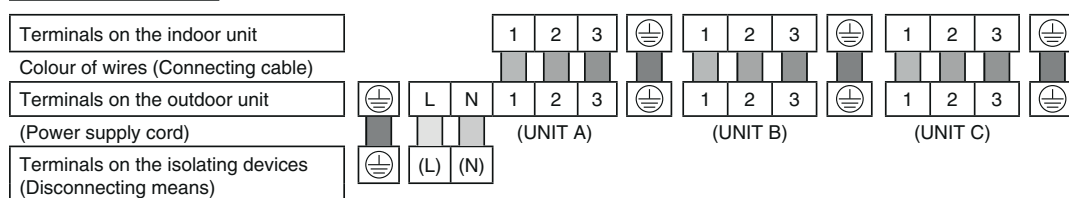
- I) Universal Sniffer leak detector
- II) Electronic halogen leak detector
- III) Ultrasonic Leak Detector

12.5 Connect The Cable To The Outdoor Unit

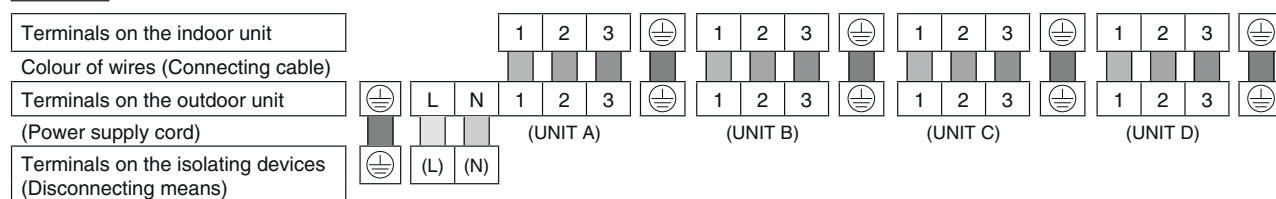
1. Remove the control board cover metal from the unit by loosening two screws.
2. Cable connection to the power supply through Isolating Devices (Disconnecting means).
 - Connect approved type polychloroprene sheathed **power supply cord** 3 x 2.5 mm² 60245 IEC 57 type designation or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means)
3. **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord. Allowable connection cable length of each indoor unit shall be 30 m or less.
4. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram as shown.



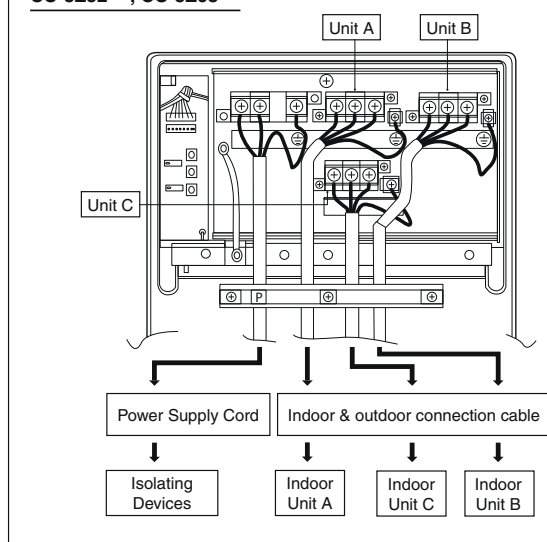
CU-3Z52***, CU-3Z68***



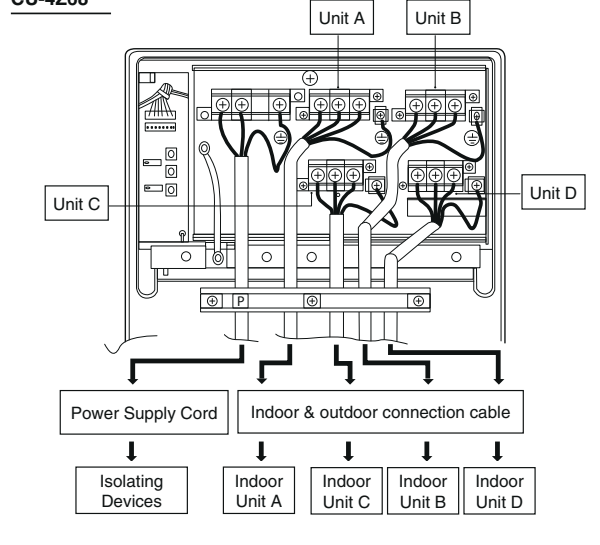
CU-4Z68***



CU-3Z52***, CU-3Z68***



CU-4Z68***



5. For wire stripping and connection requirement, refer to the diagram below.
6. Secure the power supply cord and connecting cables onto the control board with the holder.
7. Attach the control board cover back to the original position with screw.

WIRE STRIPPING AND CONNECTING REQUIREMENT

Wire stripping

10±1 mm

No loose strand when inserted

Indoor/outdoor connecting terminal board

5 mm or more (gap between wires)

Conductor fully inserted

ACCEPT

Conductor over inserted

PROHIBITED

Conductor not fully inserted

PROHIBITED

- 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 reason.

CUTTING AND FLARING THE PIPING

- Please cut using pipe cutter and then remove the burrs.
- Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
- Please make flare after inserting the flare nut onto the copper pipes.

1. To cut

2. To remove burrs

3. To flare

0 - 0.5 mm

Copper pipe

Improper flaring

Inclined Surface damaged Cracked Uneven thickness

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

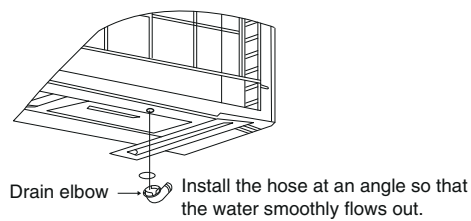
12.6 Heat Insulation

- Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
- If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

Refrigerant tubing shall be protected against mechanical damage.			
CAUTION	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.		
	<table> <tr> <td>Liquid-side pipes</td><td rowspan="2">Material shall withstand 120°C or higher</td></tr> <tr> <td>Gas-side pipes</td></tr> </table>	Liquid-side pipes	Material shall withstand 120°C or higher
Liquid-side pipes	Material shall withstand 120°C or higher		
Gas-side pipes			

12.7 Disposal Of Outdoor Unit Drain Water

- If a drain elbow is used, the unit should be placed on a stand which is taller than 5 cm.
- If the unit is used in an area where temperature falls below 0 °C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.

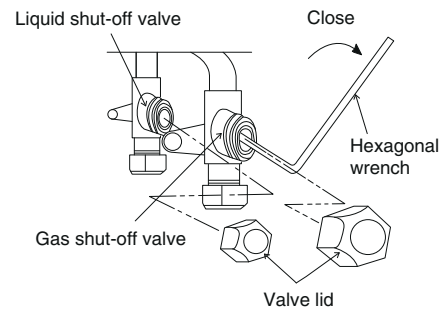


12.8 Pump Down Operation

- Operate the pump down according to the following procedures.
 - Confirm the valve on the liquid side and gas side is open.
 - Press PUMP DOWN switch (SW1) on the display printed circuit board for more than 5 seconds. Pump down (cooling) operation is performed for 15 minutes.
 - Set the liquid side 3 way valve to close position and wait until the pressure gauge indicates 0.01 MPa (0.1 kg/cm²G).
 - Immediate set the gas side valve to close position and then press the PUMP DOWN switch (SW1) to stop the pump down operation.

Note: Pump down operation will stop automatically after 15 minutes if PUMP DOWN switch (SW1) is not pressed again.

Pump down operation is not started within 3 minutes after compressor is stopped.



LED	2	3	4	5	Message
Status	O	O	O	O	Pump down operation progress
	O	O	O		3 minutes before operation end
	O	O			2 minutes before operation end
	O				1 minute before operation end
					Pump down operation end

O: Flashing

12.9 Cooling Only Operation

- Setting of Cooling only operation.

The equipment can be set to cooling only operation by setting the JP line on the outdoor unit display circuit board.

[Setting method]

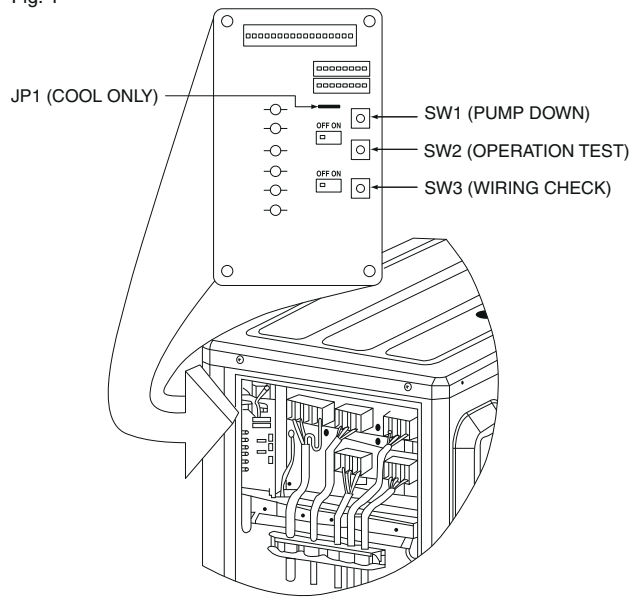
Switch off power supply to the outdoor unit, cut JPN1 (COOL ONLY) as shown in Figure 1.

After cut off the wire, switch ON the equipment power. When setting the cooling only operation, Heating operation is disable.

ODOUR WASH operation is disabled. (Odour cut operation is still enabled.)

To revert back the setting to heat pump operation, switch OFF the equipment power, reconnect JP1 (COOL ONLY) back to short circuit condition and switch ON the equipment power.

Fig. 1



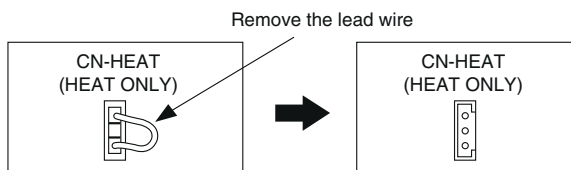
12.10 Heating Only Operation

- Setting of Heating only operation.

The equipment can be set to heating only operation by some setting on the Outdoor unit main circuit board

[Setting method]

Switch off power supply to the outdoor unit, unplug and remove the lead wire on CN-HEAT



12.11 Wiring Error Check

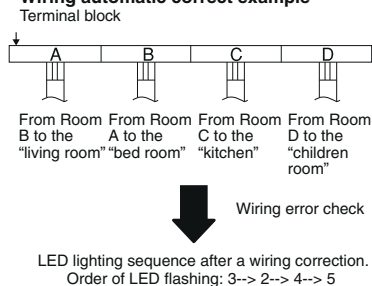
This product capable to correct the wiring error automatically by following procedures.

1. Confirm the valve on the liquid side and gas side is open.
2. Press WIRING CHECK switch (SW3) on the display printed circuit board for more than 10 seconds to start wiring check operation.
3. Wiring check process will complete in approximately 20-25 minutes. However, wiring check operation will not start within 3 minutes after compressor is stopped. When outdoor air temperature is less than 5 °C or unit has abnormality, wiring check will not start. (See NOTE 2)

The LED 2 to 6 in display printed circuit board inside the outdoor unit indicate whether correction is possible or not and the status of the correction, as shown in the table below.

LED	2	3	4	5	6	Message
ROOM	A	B	C	D	—	
Status	All flashing					Automatic correction impossible
	LED 2, 4, 6 and LED 3, 5 alternatively flashing					Wiring check in progress
	Flashing one after another					Automatic correction completed
	Other than above					Unit has abnormally (Note 4)

Wiring automatic correct example



If automatic correct is impossible, check the indoor unit wiring and piping manually.

Note:

1. For two rooms, LED 4 and 5 are not illuminated and for three rooms, LED 5 is not illuminated after wiring operation complete.
2. If the outdoor air temperature is less than 5 °C or unit has abnormality, wiring operation will not start.
3. After wiring check operation is complete, LED indication will illuminated until normal operation starts.
4. Follow the product diagnosis procedure. (Check the diagnostic label at the control board cover.)
5. When LED 1 only illuminate, indicates that outdoor unit is operating normally.

12.12 In Case of Reusing Existing Refrigerant Piping

Observe the followings to decide reusing the existing refrigerant piping.

Poor refrigerant piping could result in product failure.

- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
 - Heat insulation is not provided for either liquid-side or gas-side piping or both.
 - The existing refrigerant pipe has been left in an open condition.
 - The diameter and thickness of the existing refrigerant piping does not meet the requirement.
 - The piping length and elevation does not meet the requirement.

Perform proper pump down before reuse piping.
 - In the circumstances listed below, clean it thoroughly before reuse.
 - Pump down operation cannot be performed for the existing air-conditioner.
 - The compressor has a failure history.
 - Oil color 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 piping, 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-side and gas-side piping.

13. Installation Instruction (CU-4Z80/5Z90CBE)

13.1 Select The Best Location

13.1.1 Outdoor Unit

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

Table A

Model	Maximum Total Piping Length to Add Gas (m)	Additional Refrigerant (g/m)	Max. Refrigerant Charge (kg)	Wall Mounted Indoor Amin (m ²)	Mini Cassette Indoor Amin (m ²)	Ducted Indoor Amin (m ²)
CU-4Z80***	45	20	3.22	9.80	6.56	6.56
CU-5Z90***	45	20	3.42	11.06	7.40	7.40

(*) Systems with total refrigerant charge, m_c , lower than 1.84 kg are not subjected to any room area requirements.

- If total piping length of all indoor units exceed the maximum total length listed above, additionally charge with 20 g of refrigerant (R32) for each additional meter of piping.

$$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$$

** not less than concentration factor margin

A_{min} = Required minimum room area, in m²

m_c = Refrigerant charge in appliance, in kg

LFL = Lower flammability limit (0.307 kg/m³)

h_0 = Installation height of the appliance (1.8 m for wall mounted)
(2.2 m for mini cassette and ducted)

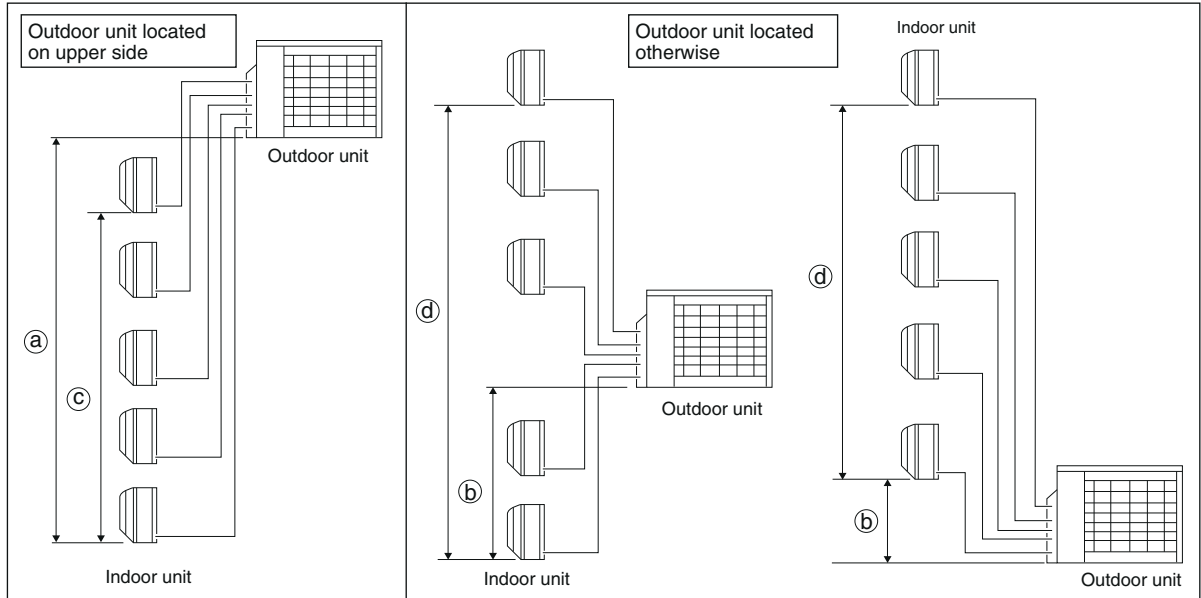
CF = Concentration factor with a value of 0.75

** The required minimum room area, A_{min} , shall also be governed by the concentration 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.

Allowable piping length				
Outdoor Unit			CU-4Z80***	CU-5Z90***
Allowable piping length of each indoor unit (min. ~ max.)			3 m ~ 25 m	3 m ~ 25 m
Allowable total piping length of all indoor unit			70 m or less	80 m or less
Height difference between indoor and outdoor unit	Outdoor unit located on upper side	(a)	15 m or less	15 m or less
	Outdoor unit located otherwise	(b)	7.5 m or less	7.5 m or less
Height difference between indoor unit	Outdoor unit located on upper side	(c)	7.5 m or less	7.5 m or less
	Outdoor unit located otherwise	(d)	15 m or less	15 m or less



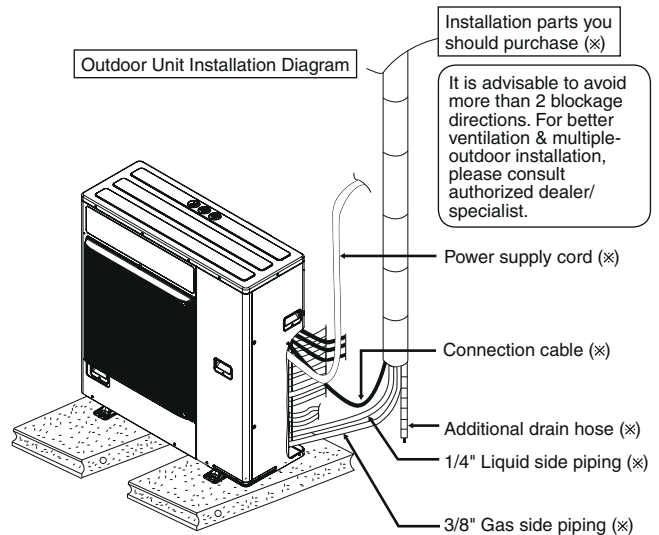
13.1.2 Outdoor Unit Installation Diagram

Refrigerant piping size		
Outdoor Unit	CU-4Z80***	CU-5Z90***
Liquid - side	ø 6.35 t0.8	ø 6.35 t0.8
Gas - side	ø 9.52 t0.8 *(ø 12.7 t0.8)	ø 9.52 t0.8 *(ø 12.7 t0.8)

* In case of indoor is CS-Z60***, CS-Z71***, CS-TZ60***, CS-TZ71***, S-60***, then ø 12.7 t0.8 gas-pipe size must be used together with CZ-MA2PA (pipe size expander).

Attention:

Water droplet will be formed outside the base pan due to the temperature difference. We would recommend installer to apply **insulators onto the refrigerant pipes** and 2,3-way valve in order to minimize the amount of condensate accumulated inside the base pan which cause the temperature difference.



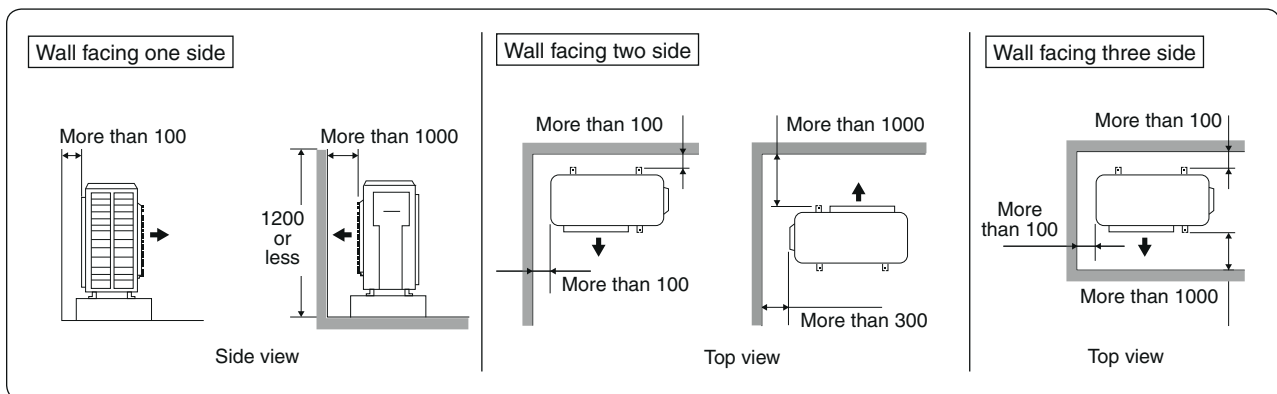
• This illustration is for explanation purposes only.

* Note:

Respective indoor unit installation procedure shall refer to instruction manual provided in the indoor unit packaging.

Outdoor Unit Installation Guidelines

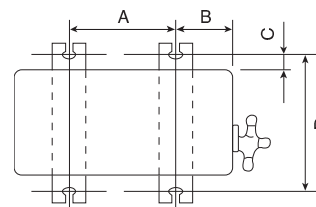
- Where a wall or other obstacle is in the path of outdoor unit's intake or exhaust airflow, follow the installation guidelines below.
- For any of the below installation patterns, the wall height on the exhaust side should be 1200 mm or less.



Unit : mm

13.2 Install The Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
 1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
 2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt, screws or nails.



Model	A	B	C	D
CU-4Z80*** CU-5Z90***	620 mm	170 mm	20 mm	380.5 mm

13.3 Connect The Piping

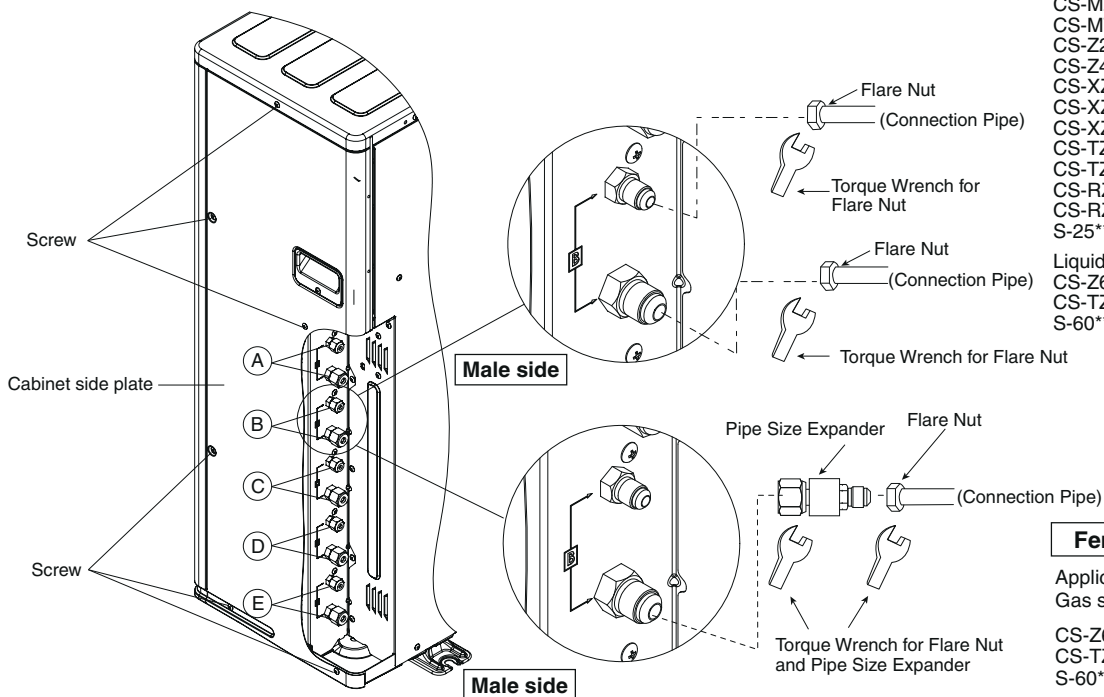
- Remove the control board cover (resin) from the unit by loosening three screws.

Connecting The Piping To Outdoor

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.

Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

 CAUTION	
 Do not over tighten, overtightening may cause gas leakage	
Piping size	Torque
1/4" (6.35 mm)	[18N•m (1.8 kgf.m)]
3/8" (9.52 mm)	[42 N•m (4.3 kgf.m)]
1/2" (12.7 mm)	[55 N•m (5.6 kgf.m)]
5/8" (15.88 mm)	[65 N•m (6.6 kgf.m)]
3/4" (19.05 mm)	[100N•m (10.2 kgf.m)]



Female side

Applicable to
Liquid and Gas side of
CS-MZ16***, CS-MZ20***,
CS-MTZ16***, CS-Z20***,
CS-Z25***, CS-Z35***,
CS-Z42***, CS-Z50***,
CS-XZ20***, CS-XZ25***,
CS-XZ35***, CS-XZ42***,
CS-XZ50***, CS-TZ20***,
CS-TZ25***, CS-TZ35***,
CS-TZ42***, CS-TZ50***,
CS-RZ25***, CS-RZ35***,
CS-RZ50***, S-M20***,
S-25***, S-36***, S-50***

Liquid side of
CS-Z60***, CS-Z71***,
CS-TZ60***, CS-TZ71***,
S-60***

Female side

Applicable to
Gas side of

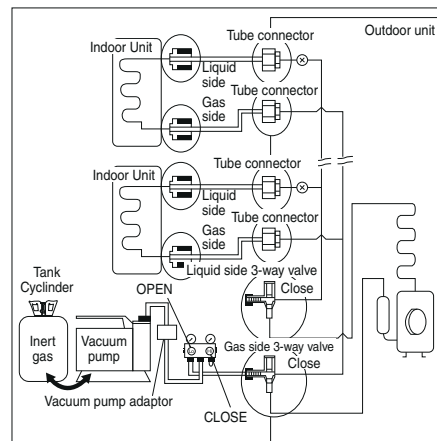
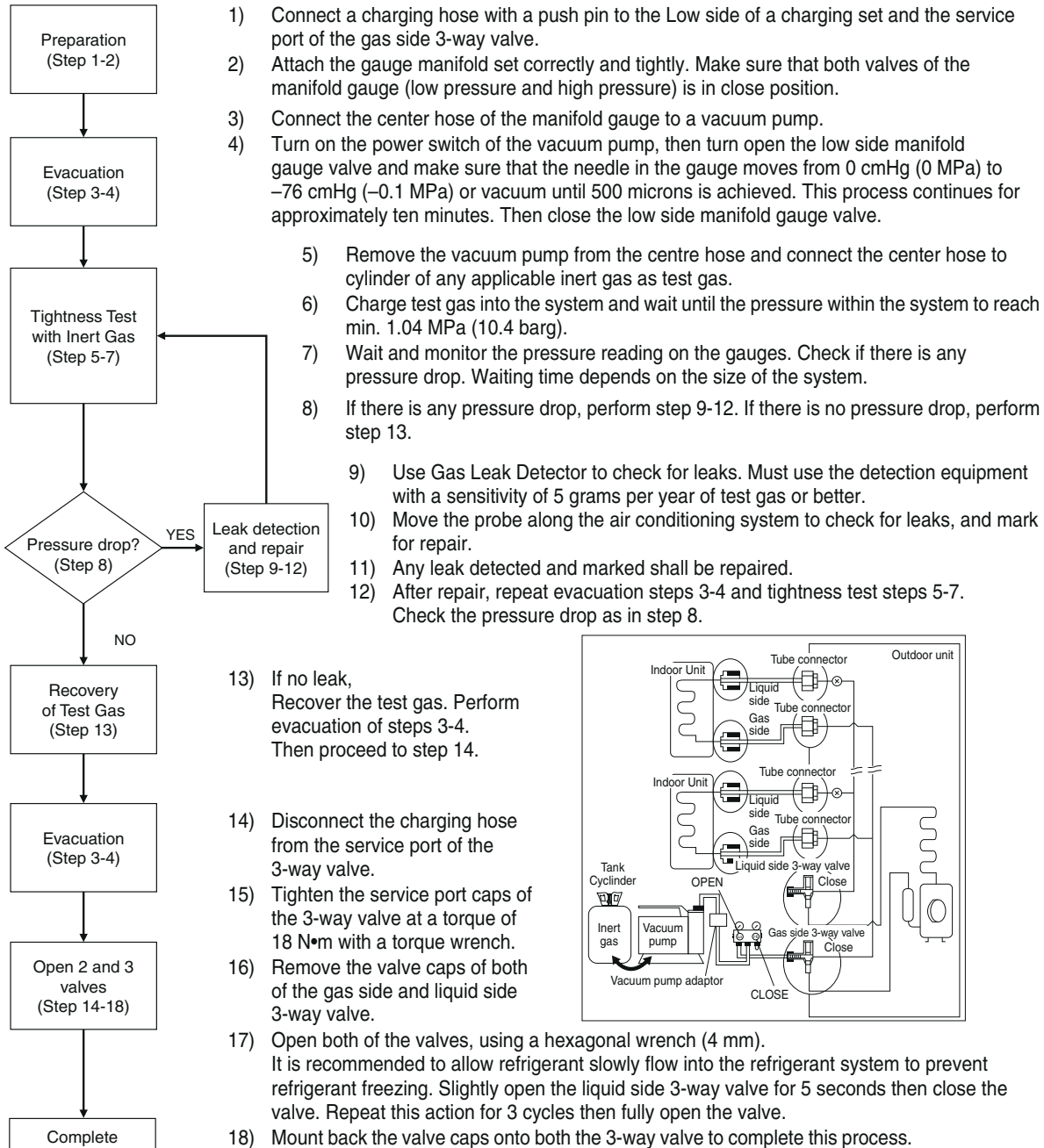
CS-Z60***, CS-Z71***,
CS-TZ60***, CS-TZ71***,
S-60***

13.4 Air Tightness Test on the Refrigerating System

⊘ Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.

❗ There is no extra refrigerant in the outdoor unit for air purging.

- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.
- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.



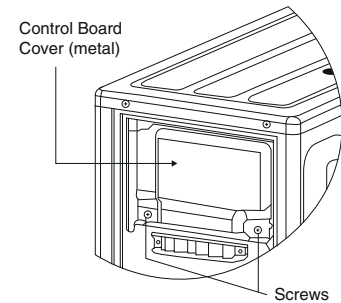
Notes:

Recommended use of any of the following leak detector,

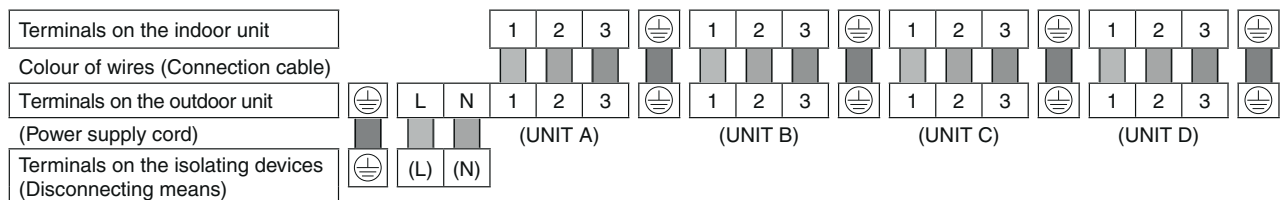
- I) Universal Sniffer leak detector
- II) Electronic halogen leak detector
- III) Ultrasonic Leak Detector

13.5 Connect The Cable To The Outdoor Unit

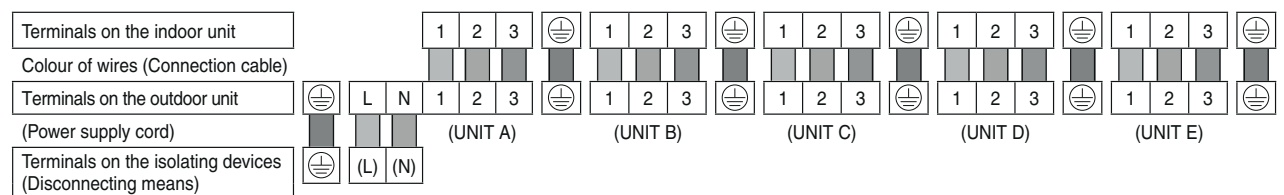
1. Remove the control board cover metal from the unit by loosening two screws.
2. Cable connection to the power supply through Isolating Devices (Disconnecting means).
 - Connect approved type polychloroprene sheathed **power supply cord** 3 x 4.0 mm² 60245 IEC 57 type designation or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means)
3. **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord. Allowable connection cable length of each indoor unit shall be 30 m or less.
4. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram as shown.



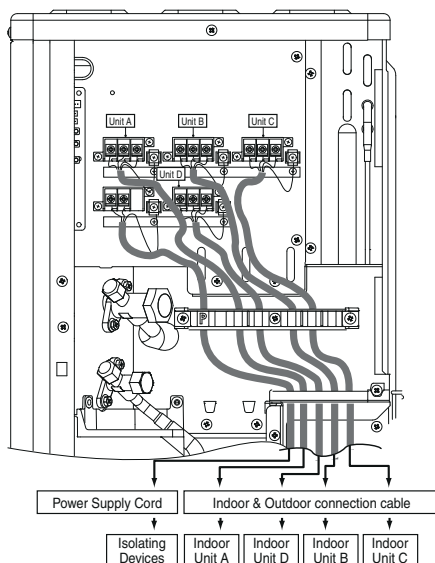
CU-4Z80***



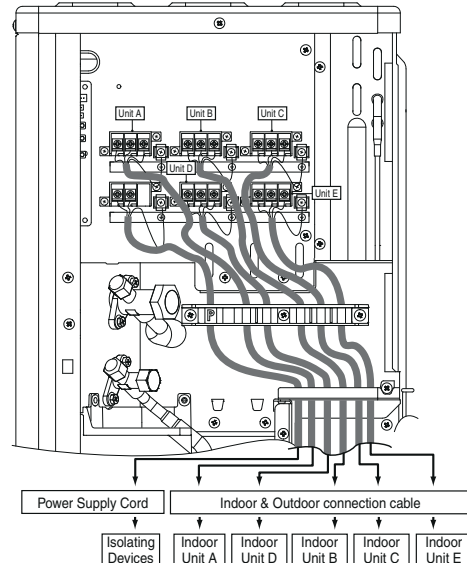
CU-5Z90***



CU-4Z80***



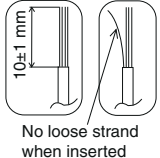
CU-5Z90***



5. For wire stripping and connection requirement, refer to the diagram below.
6. Secure the power supply cord and connecting cables onto the control board with the holder.
7. Attach the control board cover back to the original position with screw.

WIRE STRIPPING AND CONNECTING REQUIREMENT

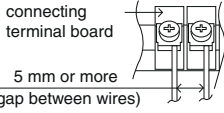
Wire stripping



10±1 mm

No loose strand when inserted

Indoor/outdoor connecting terminal board



5 mm or more (gap between wires)

Conductor fully inserted



ACCEPT

Conductor over inserted



PROHIBITED

Conductor not fully inserted



PROHIBITED

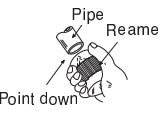
-  This equipment must be properly earthed.
- Note: Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
 - Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

CUTTING AND FLARING THE PIPING

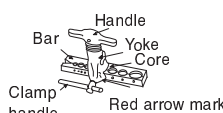
1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



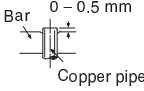
1. To cut



2. To remove burrs

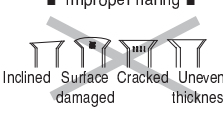


3. To flare



0 - 0.5 mm
Copper pipe

■ Improper flaring ■



Inclined Surface damaged Cracked Uneven thickness

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

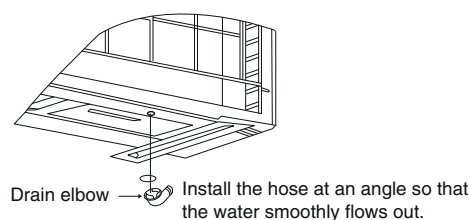
13.6 Heat Insulation

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

	Refrigerant tubing shall be protected against mechanical damage.		
 CAUTION	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.		Liquid-side pipes
			Material shall withstand 120°C or higher
		Gas-side pipes	

13.7 Disposal Of Outdoor Unit Drain Water

- If a drain elbow is used, the unit should be placed on a stand which is taller than 5 cm.
- If the unit is used in an area where temperature falls below 0 °C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.

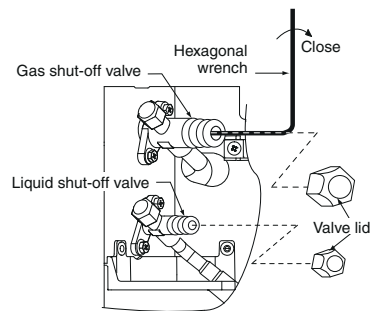


13.8 Pump Down Operation

- Operate the pump down according to the following procedures.
 - Confirm the valve on the liquid side and gas side is open.
 - Press PUMP DOWN switch (SW1) on the display printed circuit board for more than 5 seconds. Pump down (cooling) operation is performed for 15 minutes.
 - Set the liquid side 3 way valve to close position and wait until the pressure gauge indicates 0.01 MPa (0.1 kg/cm²G).
 - Immediate set the gas side valve to close position and then press the PUMP DOWN switch (SW1) to stop the pump down operation.

Note: Pump down operation will stop automatically after 15 minutes if PUMP DOWN switch (SW1) is not pressed again.

Pump down operation is not started within 3 minutes after compressor is stopped.



LED	2	3	4	5	Message
Status	○	○	○	○	Pump down operation progress
	○	○	○		3 minutes before operation end
	○	○			2 minutes before operation end
	○				1 minute before operation end
					Pump down operation end

O: Flashing

13.9 Cooling Only Operation

- Setting of Cooling only operation.

The equipment can be set to cooling only operation by setting the JP line on the outdoor unit display circuit board.

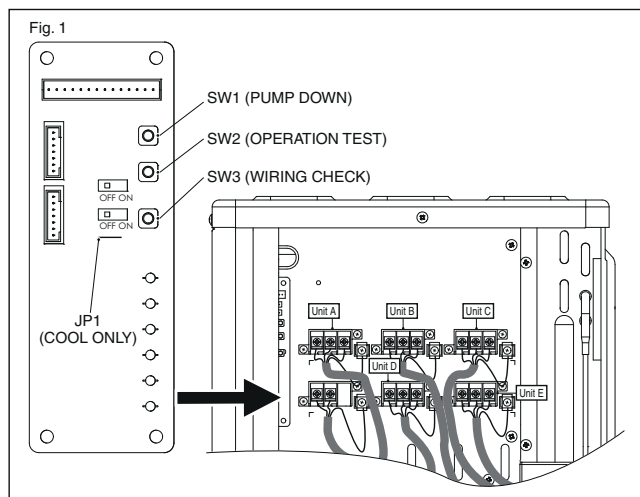
[Setting method]

Switch off power supply to the outdoor unit, cut JPN1 (COOL ONLY) as shown in Figure 1.

After cut off the wire, switch ON the equipment power. When setting the cooling only operation, Heating operation is disable.

ODOUR WASH operation is disabled. (Odour cut operation is still enabled.)

To revert back the setting to heat pump operation, switch OFF the equipment power, reconnect JPN1 (COOL ONLY) back to short circuit condition and switch ON the equipment power.



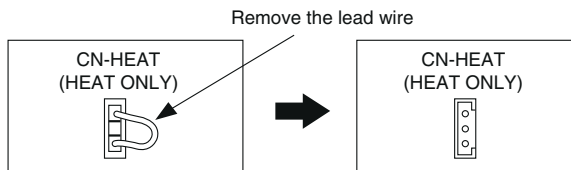
13.10 Heating Only Operation

- Setting of Heating only operation.

The equipment can be set to heating only operation by some setting on the Outdoor unit main circuit board

[Setting method]

Switch off power supply to the outdoor unit, unplug and remove the lead wire on CN-HEAT



13.11 Wiring Error Check

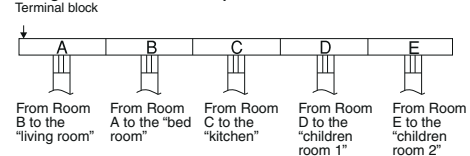
This product capable to correct the wiring error automatically by following procedures.

- Confirm the valve on the liquid side and gas side is open.
- Press WIRING CHECK switch (SW3) on the display printed circuit board for more than 10 seconds to start wiring check operation.
- Wiring check process will complete in approximately 20-25 minutes. However, wiring check operation will not start within 3 minutes after compressor is stopped. When outdoor air temperature is less than 5 °C or unit has abnormality, wiring check will not start. (See NOTE 2)

The LED 2 to 6 in display printed circuit board inside the outdoor unit indicate whether correction is possible or not and the status of the correction, as shown in the table below.

LED	2	3	4	5	6	Message
ROOM	A	B	C	D	E	
Status	All flashing					Automatic correction impossible
	LED 2, 4, 6 and LED 3, 5 alternatively flashing					Wiring check in progress
	Flashing one after another					Automatic correction completed
	Other than above					Unit has abnormally (Note 4)

Wiring automatic correct example



Wiring error check

LED lighting sequence after a wiring correction.
Order of LED flashing: 3--> 2--> 4--> 5--> 6

If automatic correct is impossible, check the indoor unit wiring and piping manually.

Note:

- For two rooms, LED 4, 5 and 6 are not illuminated, for three rooms, LED 5 and 6 is not illuminated and for four rooms, LED 6 is not illuminated after wiring operation complete.
- If the outdoor air temperature is less than 5 °C or unit has abnormality, wiring operation will not start.
- After wiring check operation is complete, LED indication will illuminated until normal operation starts.
- Follow the product diagnosis procedure. (Check the diagnostic label at the control board cover.)
- When LED 1 only illuminate, indicates that outdoor unit is operating normally.

13.12 In Case of Reusing Existing Refrigerant Piping

Observe the followings to decide reusing the existing refrigerant piping.

Poor refrigerant piping could result in product failure.

- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
 - Heat insulation is not provided for either liquid-side or gas-side piping or both.
 - The existing refrigerant pipe has been left in an open condition.
 - The diameter and thickness of the existing refrigerant piping does not meet the requirement.
 - The piping length and elevation does not meet the requirement.

Perform proper pump down before reuse piping.

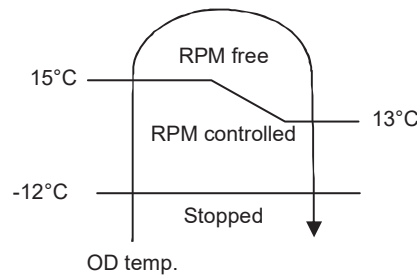
- In the circumstances listed below, clean it thoroughly before reuse.
 - Pump down operation cannot be performed for the existing air-conditioner.
 - The compressor has a failure history.
 - Oil color is darken. (ASTM 4.0 and above).
 - The existing air-conditioner is gas/oil heat pump type.
 - Do not reuse the flare to prevent gas leak. Make sure to install a new flare.
 - If there is a welded part on the existing refrigerant piping, 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-side and gas-side piping.

14. Operation Control

14.1 Cooling Operation

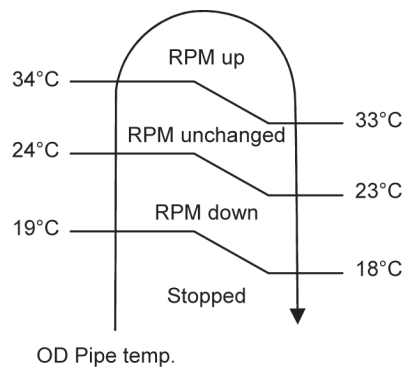
14.1.1 Outdoor fan control

- When cooling operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below:



14.1.2 Annual Cooling control

- This control is to enable cooling operation when outdoor ambient temperature is low.
- Control start conditions:
 - Cooling operation is activated with compressor ON.
 - Outdoor ambient temperature is less than 15°C.
- Control contents:
 - When the above conditions are fulfilled, based on outdoor pipe temperature, the outdoor fan motor will operate according to figure below:



- To improve the judgment accuracy during annual cooling control, outdoor ambient temperature sampling for 2 minutes will be activated every 35 minutes under designated fan speed.
- Control stop conditions:
 - When either one of the start conditions are not complied.

14.1.3 Cooling Powerful Operation 1

- During cooling operation, this control is to concentrate outdoor unit capability to the powerful operation enabled indoor unit by temporary stop the capability supply to low load demand indoor units.
- Operation start condition:
 - Powerful operation ON for targeted indoor unit
- Operation content:
 - If other indoor units (where Powerful operation are OFF) achieve setting temperature continuously for 1 minute after received powerful command from indoor unit, then capability supply to other indoor units are stopped for minimum 3 minutes.
Capability supply stop period follows powerful operation period.
- Operation stops when comply either one of the following conditions:
 - When other indoor units (where Powerful operation are OFF) is demand for capacity.
 - When the powerful operation is OFF for all indoor units.
 - When Quiet operation received from 1 indoor unit.
 - When protection control starts.

14.1.4 Outdoor Quiet Cooling Operation Control

- Purpose
Provide quiet cooling operation when only 1 indoor in operation.
- Start Condition
 - Indoor fan speed is lower than Lo fan.
 - Only 1 operation indoor unit.
 - Not in any cooling overload zone.
 - Not during annual cooling
 - Not initial frequency operation.
 - Not during starting control.
 - Not during “Electronic part temperature rise protection by outdoor air & total current”
 - Not during “Electronic part temperature rise protection by total current”
 - Not during “IPM temperature rise prevention control”
 - During cool modeAll conditions above are satisfied and function selection enable.
- Control Contents
Compressor frequency and outdoor fan speed maximum limit is set. Adjust accordingly.

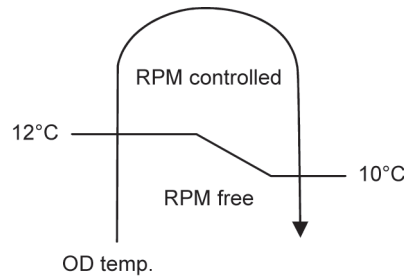
	Compressor frequency	Outdoor fan speed
Cool/Quiet	#27 Hz	#400 rpm

- Cancel Condition
 - Indoor fan speed is equal or higher than Lo fan.
 - > 1 operation indoor unit.
 - In any cooling overload zone.
 - During annual cooling
 - Initial frequency operation.
 - During starting control.
 - During “Electronic part temperature rise protection by outdoor air & total current”
 - During “Electronic part temperature rise protection by total current”
 - During “IPM temperature rise prevention control”
 - Not during cool modeWhen any above is satisfied

14.2 Heating Operation

14.2.1 Outdoor fan control

- When heating operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below for Heating overload control:



14.2.2 Heating Room Temp Sampling Control

- To improve the judgment accuracy, indoor room temperature sampling starts when any indoor unit has stopped capability supplied (heating thermo-off) during heating operation with compressor ON, outdoor unit will send signal to all thermo-off indoor units to ON fan motor and get room temperature sample.
- To prevent discharge temperature drop at indoor units which is ON when sampling the room temperature of heating thermo-off units, the compressor frequency is increased accordingly.
- However, if indoor room temperature is much higher compare to remote control setting temperature, before thermo-off, sampling of corresponding indoor unit will be cancelled.

14.2.3 Powerful Operation 2

- During cooling / heating operation, this control is to provide fast cooling / heating operation compare to normal operation.
- Operation start if all condition below are complied:
 - Powerful operation ON for indoor unit.
 - Not under Annual Cooling control.
- Operation content:
 - Outdoor fan speed will adjust automatically.
 - Compressor frequency will adjust automatically.
- Operation stop when comply either one of the follow conditions:
 - When the powerful operation is OFF for all indoor units.
 - When annual cooling control activated.

15. Simultaneous Operation Control

- Operation modes which can be selected using the remote control unit:
 - Automatic, Cooling, Dry, Heating and nanoe operation mode.
- Types of operation modes which can be performed simultaneously
 - Cooling operation and Cooling, Dry or nanoe operation.
 - Heating operation and Heating operation.
- Types of operation modes which cannot be performed simultaneously
 - During cooling operation, heating operation is impossible at another indoor unit in another room.
 - The priority is given to cooling operation if the cooling mode is selected first. In another room where heating mode is selected afterward, the POWER LED blinks to indicate the heating operation is in standby condition, where the fan is stopped hence no discharged air.
 - During heating operation, cooling operation is impossible at another indoor unit in another room.
 - The priority is given to heating operation if the heating mode is selected first. In another room where cooling mode is selected afterward, the POWER LED blinks to indicate the cooling operation is in standby condition, where the fan is stopped hence no discharged air.
- Operation mode priority control
 - The operation mode designated first by the indoor unit has priority.
 - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

“Waiting” denotes the standby status in which the POWER LED blinks (ON for 2.5 seconds and OFF for 0.5 seconds) and the fan is stopped.

ROOM A \ ROOM B		Non Priority Unit (2 nd ON)			
		Cooling	Dry	Heating	nanoe
Priority Unit (1 st ON)	Cooling	C	D	Waiting	E
		C	C	C	C
	Dry	C	D	Waiting	E
		D	D	D	D
	Heating	Waiting	Waiting	H	Stop
		H	H	H	H
	e-ion	C	D	H	E
		E	E	Stop	E

In the e-ion mode, priority is transferred to a non-priority unit.

Note

- C: Cooling operation mode
- D: Dry operation mode
- H: Heating operation mode
- E: nanoe operation mode

16. Protection Control

16.1 Freeze Prevention control (Cool)

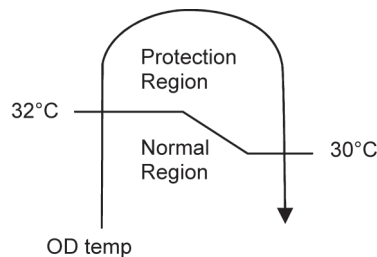
- When received freeze prevention signal from indoor unit, the compressor frequency changes according to indoor heat exchanger temperature.
- When indoor unit request capability OFF due to freeze condition, immediately the capability supply to targeted indoor unit stops.

16.2 Dew Prevention control (Cool)

- When received dew prevention signal from indoor unit, which according to indoor intake temperature and indoor heat exchanger temperature the compressor frequency changes.

16.3 Electronic Parts Temperature Rise Protection 1 (Cool)

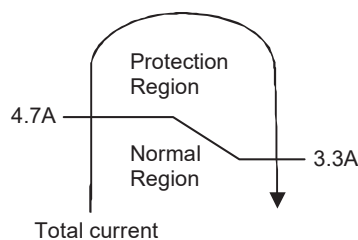
- This control prevents electronic parts temperature rise during cooling overload condition.
- Start conditions:
 - Outdoor ambient temperature is at protection region as shown in figure below:



- Outdoor unit total current is above 7.1A.
- Control content
 - Outdoor fan speed is adjusted accordingly.
- Control stop condition
 - When outdoor ambient temperature is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

16.4 Electronic Parts Temperature Rise Protection 2 (Cool)

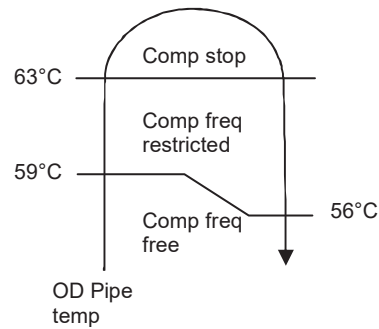
- This control prevents electronic parts temperature rise during cooling/dry operation.
- Start conditions:
 - Total current is at protection region as shown in figure below:



- Control content
 - Outdoor fan speed is adjusted accordingly.
- Control stop conditions
 - When total current is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

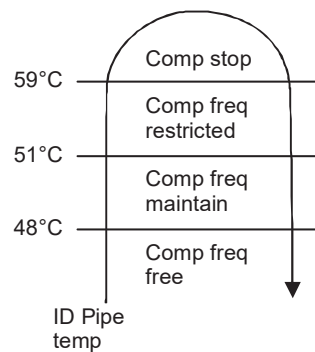
16.5 Cooling overload control (Cool)

- This control detect outdoor pipe temperature and perform the compressor frequency restriction during cooling operation.

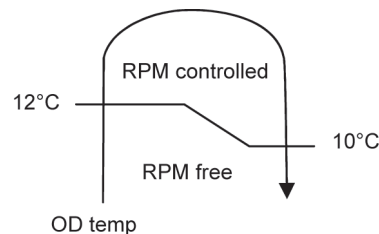


16.6 Heating overload control (Heat)

- This control detect indoor pipe temperature and perform the compressor frequency restriction during heating operation.

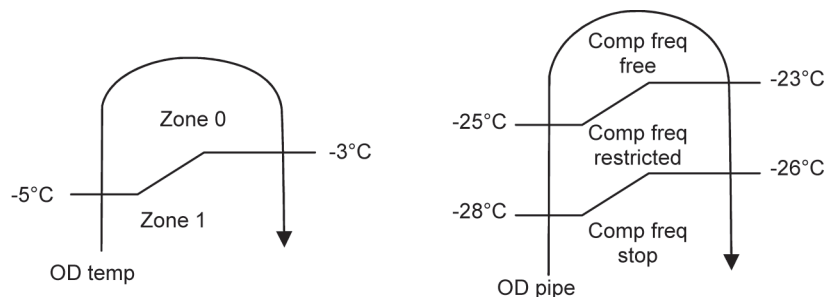


- This control detect outdoor ambient temperature and perform the fan speed adjustment during heating operation.



16.7 Extreme Low Temperature Compressor low pressure protection control (Heat)

- This control is to prevent low pressure drops too low during extremely low outdoor ambient temperature to improve the compressor reliability.
- During heating operation, when outdoor ambient temperature is in Zone 1, this control will be activated. Compressor frequency restriction will be based on outdoor piping temperature.



16.8 Deice Control

- When outdoor pipe temperature and outdoor air temperature is low, deice operation starts where indoor fan motor and outdoor fan motor stop, indoor unit horizontal vane close and operation LED blink with compressor ON.

16.9 Time Delay Safety Control (Restart Control)

- The compressor will not restart within three minutes after compressor is stopped.
- This control is not applicable if the power supply reset or after deice condition.

16.10 30 seconds Force Operation

- Once the compressor starts operation, it will not stop its operation for 30 seconds in order to cycle back compressor oil.
- However, it can be stopped using remote control or Auto OFF/ON button at indoor unit.

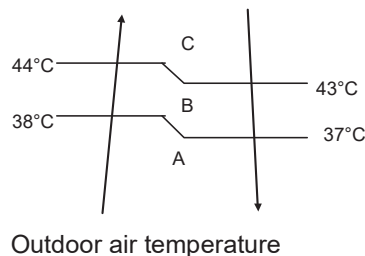
16.11 Total Current Control

- By referring to table below, during normal (default) operation, the running current refer to Hi values and during Power Save Mode, the running current refer to Lo values.
- When the outdoor unit total running current (AC) exceeds X value, compressor frequency will decrease.
- If the running current does not exceed X value for 5 seconds, compressor frequency will increase.
- However, if total outdoor unit running current exceeds Y value, compressor will be stopped immediately for 3 minutes.

Current Table

Model	CU-2Z35CBE		CU-2Z41CBE		CU-2Z50CBE		CU-3Z52CBE		CU-3Z68CBE		CU-4Z68CBE		CU-4Z80CBE		CU-5Z90CBE	
Operation Mode	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A
Cooling (A)	9.78	12.76	9.78	12.76	9.78	12.76	14.03	17.47	14.03	17.47	14.03	17.47	17.56	23.06	17.56	23.06
Cooling (B)	9.23		9.23		9.23		12.58		12.58		12.58		14.52		14.52	
Cooling (C)	9.23		9.23		9.23		12.58		12.58		12.58		13.58		13.58	
Heating	9.50		9.96		10.50		15.03		15.03		15.03		19.54		19.54	

Current Control



16.12 IPM (power transistor) Protection Control

- Overheating Prevention Control
 - If IPM temperature rises to 80°C, outdoor fan speed will be increased.
 - When the IPM temperature rises to 95°C, compressor operation will stop immediately.
 - Compressor operation restarts when temperature decreases to 90°C.
 - If IPM temperature detected less than -30°C, IPM is judged as open circuit ("F96" is indicated).
- DC peak current control
 - When IPMDC current exceeds set value, the compressor will stop.
 - If the DC peak current detected within 30 seconds after operation starts, compressor will restart after 1 minute.
 - If the DC peak current detected 30 seconds or more after operation starts, compressor will restart after 2 minutes.
 - Within 30 seconds after compressor restarts, if the DC peak current is exceeded set value continuously for 7 times, all indoor and outdoor relays will be cut off ("F99" is indicated).
- Error reset can be done by power supply reset.

16.13 Compressor Protection Control (Gas leak detection control 1)

- Control start conditions
 - For 5 minutes (cool & dry), 8 minutes (heating), the compressor continuously operates and total current is low.
 - During Cooling or Soft Dry operation:
Indoor intake temperature — indoor piping temperature is below 4°C.
 - During Heating operation:
Indoor pipe temperature — indoor intake temperature is below 3°C.
 - Not during deice control.
 - Compressor ON with maximum frequency.
- Control content
 - Compressor stops (and restart after 3 minutes)
 - If the conditions above happen 4 times within 60 minutes, the unit will stop operation ("F91" is indicated).

16.14 Compressor Protection Control (Gas leak detection control 2)

- This control detect gas leakage condition to prevent compressor damage.
- Control start condition
 - All connected indoor units capability supply ON.
 - Compressor ON with maximum frequency.
 - Not during annual cooling.
 - Compressor discharge temperature high.
- Control content
 - Compressor OFF during this control ("F91" is memorized in EEPROM)
 - If the above conditions happen 2 times within 60 minutes, indoor units' Timer LED will blinks ("F91" is indicated at all indoor units)

16.15 Valve close detection control

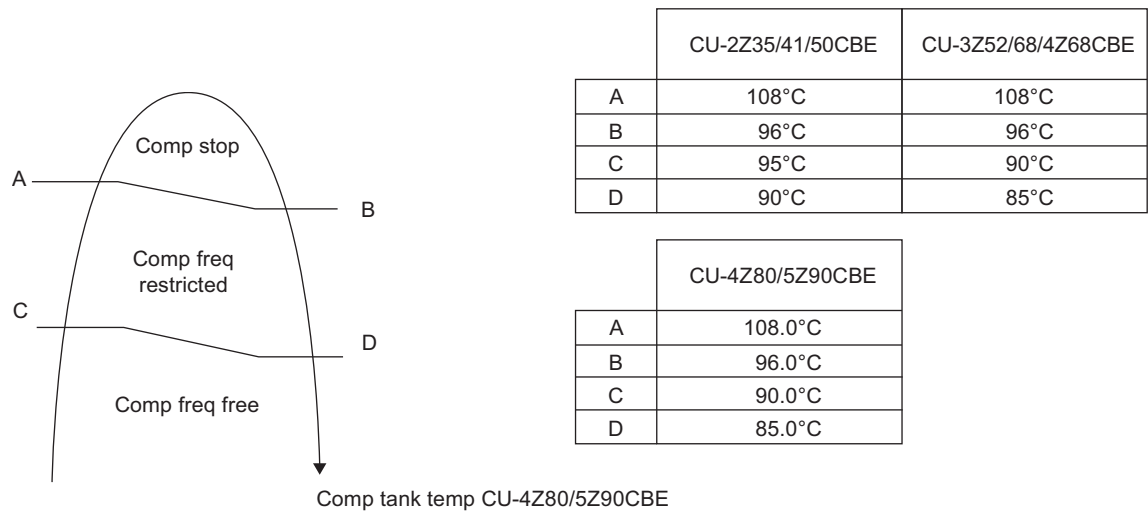
- This control detects 3-way valve close condition to prevent damage to refrigerant cycle.
- Start conditions:
 - For all connected indoor units, if Indoor intake temperature — indoor piping temperature are between -2°C and 2°C continuously for 5 minutes after compressor ON at first cooling operation.
 - The first cooling operation is defined as cooling operation is ON for less than 8 minutes after new installation or after pump down.
- Control content
 - During this control, compressor stop, indoor units' Timer LED will blink. ("F91" is indicated at indoor units)
- Error reset can be done by power supply reset or reset by using remote control.

16.16 Compressor discharge high pressure protection control

- This control protect by using high pressure switch during operation.
- Start conditions
 - High pressure switch is activated (from normally close to open) when outdoor operation mode is cooling or heating during compressor running.
- Control 1 content
 - Compressor stop when high pressure switch is opened and restart after high pressure switch closed. If this condition happen 4 times within 30 minutes, "F94" is indicated.
 - After 30 minutes, counter is reset if this condition does not happen for 4 times.
- Control 1 stop conditions
 - Power supply reset
 - Reset by using remote control

16.17 Compressor discharge high temperature protection control

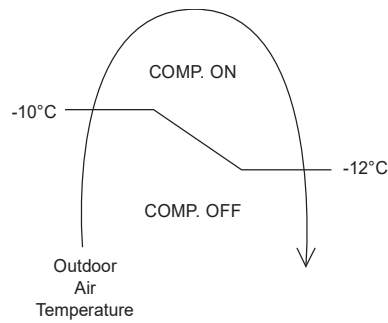
This control detect compressor tank temperature (CU-4Z80/5Z90CBE) and perform the compressor frequency restriction.



When the discharge temperature more than 108°C, the compressor stops.
If this conditions happens for 3 times within 30 minutes, “F97” is indicated.

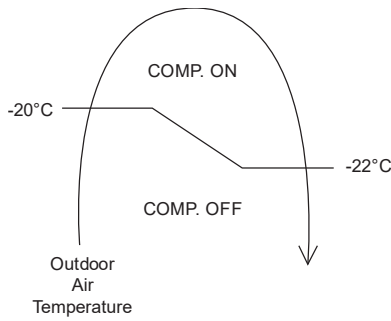
16.18 Cooling Outdoor Air Temperature Control (Cool)

- The compressor will be stopped to avoid compressor overloading.

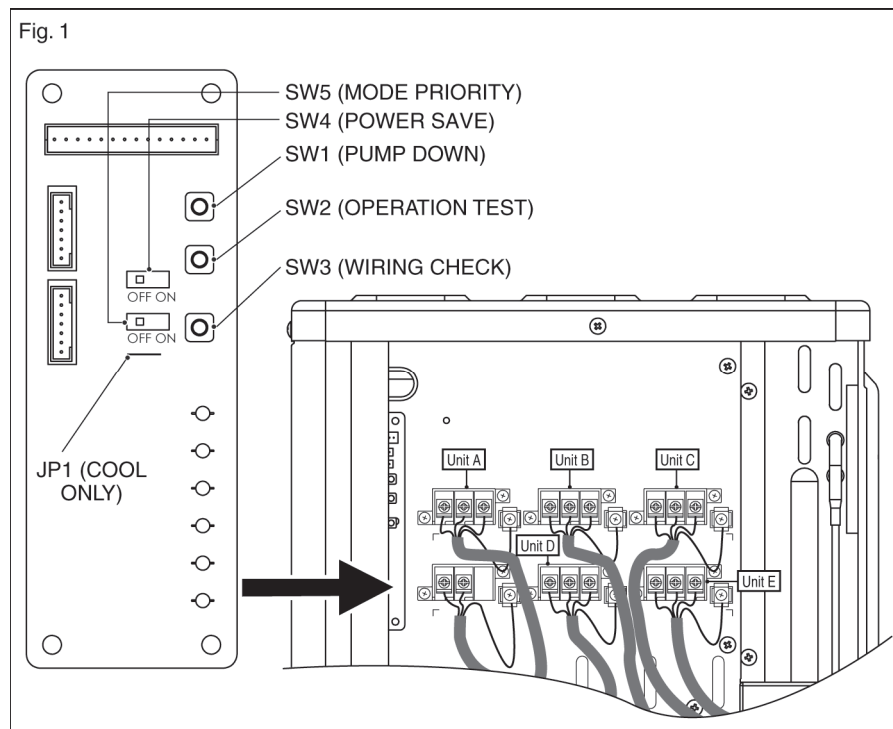


16.19 Heating Outdoor Air Temperature Control (Heat)

- The compressor will be stopped to avoid compressor overloading.



17. Servicing Mode



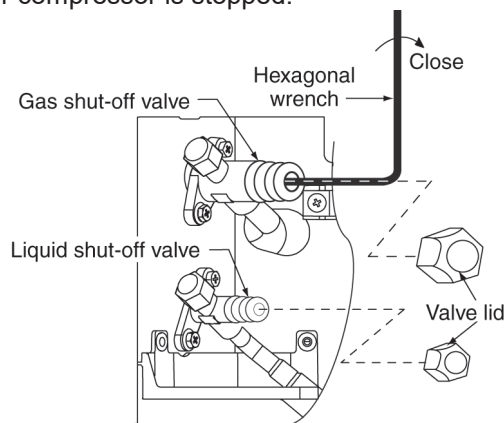
17.1.1 Pump down operation (SW1)

- Operate the pump down process according to the following procedure.
 - Confirm the valve on the liquid side and gas side are open.
 - Press PUMP DOWN button (SW1) on the Service PCB inside the outdoor unit for more than 5 seconds. Pump down (cooling) operation is performed for 15 minutes.
 - Set the liquid side 3 way valve to close position and wait until the pressure gauge indicates 0.01MPa (0.1kg/cm²G).
 - Immediate set the gas side valve to close position and then press the PUMP DOWN button (SW1) to stop the pump down operation.

NOTE: Pump down operation will stop automatically after 15 minutes if PUMP DOWN switch (SW1) is not pressed again. Pump down operation is not started within 3 minutes after compressor is stopped.

LED	2	3	4	5	Message
Status	○	○	○	○	Pump down operation in progress
	○	○	○		3 minutes before operation end
	○	○			2 minutes before operation end
	○				1 minute before operation end
					Pump down operation end

○: Flashing



17.1.2 Test Run Operation

- Test operation can be carried out using TEST OPERATION button (SW2) on the Service PCB inside the outdoor unit.
- For Cooling test, press the TEST OPERATION button (SW2) for 5 seconds or more but less than 10 seconds, LED1 and LED 2 will illuminate when shift into cooling test operation.
- For Heating test, press the TEST OPERATION button (SW2) for more than 10 seconds, LED 1 and LED 3 will illuminate when shift into heating test operation.
- Press the TEST OPERATION button (SW2) again to cancel test operation.

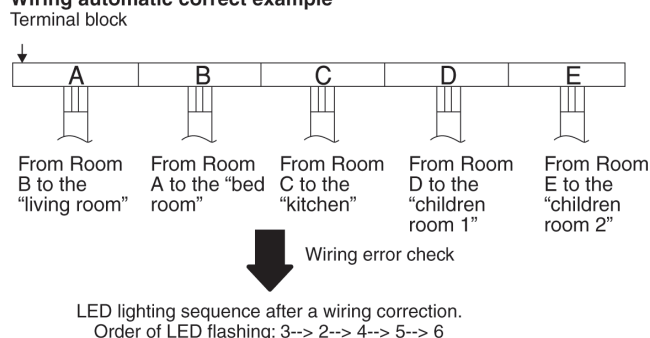
17.1.3 Wiring Error Check

- The unit capable to correct the wiring error automatically by following procedures.
 - Confirm the valve on the liquid side and gas side is open.
 - Press WIRING CHECK button (SW3) on the Service PCB inside the outdoor unit for more than 10 seconds to start wiring check operation.
 - Wiring check process will complete in approximately 20 - 25 minutes. However, wiring check operation will not start within 3 minutes after compressor is stopped. When outdoor air temperature is less than 5°C or unit has abnormality, wiring check will not start. (See NOTE 2)
- The LED 2 to LED 6 in Service PCB inside the outdoor unit indicate the possibility of the correction as shown in the table below:

LED	2	3	4	5	6	Message
Room	A	B	C	D	E	
Status	All flashing					Automatic correction impossible
	LED2, 4, 6 and LED 3, 5 alternatively flashing					Wiring check in progress
	Flashing one after another					Automatic correction completed
	Other than above					Unit has abnormality (NOTE 4)

- If automatic correct is impossible, check the indoor unit wiring and piping manually.

Wiring automatic correct example



NOTE:

- For two rooms, LED 4,5 and 6 are not illuminated, for three rooms, LED 5 and 6 are not illuminated and for four rooms, LED 6 is not illuminated after wiring operation complete.
- If the outdoor air temperature is less than 5°C or unit has abnormality, wiring operation will not start.
- After wiring check operation is complete, LED indication will illuminated until normal operation starts.
- Follow the product diagnosis procedure. (Check the diagnostic label at the cabinet side plate.)
- When LED 1 only illuminate, indicates that outdoor unit is operating normally.

17.1.4 Power Save Mode

- Power Save Mode can be enabled by pushing POWER SAVE switch (SW4) to ON before power supply ON.
- When Power Save Mode is ON, the unit can be operate at lower running current where the breaker capacity not achieve the requirement.

17.1.5 Mode priority function

- Mode priority function can be enabled by pushing MODE PRIORITY switch (SW5) to ON before power supply ON.
- When Mode Priority Function is ON, the mode priority is given to higher capacity indoor units.

17.1.6 Cooling only function

- The unit capable to limit the operation mode to Cooling Mode only (Heating mode disabled) by cutting JP1 (COOL ONLY) before power supply ON.
- This function prevent wrong operation during the unit installed in server room.
- This function could be disabled again by short the JP1 (COOL ONLY) before power supply ON.

18. Troubleshooting Guide

18.1 Self Diagnosis Function

- The display screen of wireless remote control unit and the self-diagnosis LEDs (green) on the outdoor printed circuit board in the outdoor unit can be used to identify the location of the problem.
Refer to the table below to identify and solve the cause of the problem, and then re-start the air conditioner system.
- If the problem is solved and operation returns to normal.
LED 1 illuminates and others LED are off.

Diagnosis display	Abnormality or protection control	LED 6	LED 5	LED 4	LED 3	LED 2	LED 1	Abnormality judgement	Protection operation	Problem	Check location
H11	Indoor/outdoor abnormal communication						○	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor/outdoor communication not establish	- Indoor/outdoor wire terminal - Indoor/outdoor PCB - Indoor/outdoor connection wire
H12	Indoor unit capacity unmatched					○		90s after power supply	—	Total indoor capability more than maximum limit or less than minimum limit, or number of indoor unit less than two.	- Indoor/outdoor connection wire - Indoor/outdoor PCB - Specification and combination table in catalogue
H15	Compressor temperature sensor abnormality					○	○	Continuous for 5s	—	Compressor temperature sensor open or short circuit	Compressor temperature sensor lead wire and connector
H16	Outdoor current transformer (CT) abnormality				○		○	—	—	Current transformer faulty or compressor faulty	Outdoor PCB faulty or compressor faulty
H27	Outdoor air temperature sensor abnormality				○	○		Continuous for 5s	—	Outdoor air temperature sensor open or short circuit	Outdoor air temperature sensor lead wire and connector
H28	Outdoor heat exchanger temperature sensor 1 abnormality				○	○	○	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 1 open or short circuit	Outdoor heat exchanger temperature sensor 1 lead wire and connector
H32	Outdoor heat exchanger temperature sensor 2 abnormality			○				Continuous for 5s	—	Outdoor heat exchanger temperature sensor 2 open or short circuit	Outdoor heat exchanger temperature sensor 2 lead wire and connector
H33	Indoor / outdoor misconnection abnormality			○			○	—	—	Indoor and outdoor rated voltage different	Indoor and outdoor units check
H36	Outdoor gas pipe temperature sensor abnormality			○		○		Continuous for 5s	Heating protection operation only	Outdoor gas pipe temperature sensor open or short circuit	Outdoor gas pipe temperature sensor lead wire and connector
H37	Outdoor liquid pipe temperature sensor abnormality			○		○	○	Continuous for 5s	Cooling protection operation only	Outdoor liquid pipe temperature sensor open or short circuit	Outdoor liquid pipe temperature sensor lead wire and connector

Diagnosis display	Abnormality or protection control	LED 6	LED 5	LED 4	LED 3	LED 2	LED 1	Abnormality judgement	Protection operation	Problem	Check location
H64	Outdoor high pressure sensor abnormality			○	○			Continuous for 1 minute	—	High pressure sensor open circuit during compressor stop	- High pressure sensor - Lead wire and connector
H97	Outdoor fan motor mechanism lock			○	○		○	2 times happen within 30 minutes	—	Outdoor fan motor lock or feedback abnormal	- Outdoor fan motor lead wire and connector - Fan motor lock or block
H98	Indoor high pressure protection			○	○	○		—	—	Indoor high pressure protection (Heating)	- Check indoor heat exchanger - Air filter dirty - Air circulation short circuit
H99	Indoor operating unit freeze protection			○	○	○		—	—	Indoor freeze protection (Cooling)	- Check indoor heat exchanger - Air filter dirty - Air circulation short circuit
F11	4-way valve switching abnormality			○	○	○	○	4 times happen within 30 minutes	—	4-way valve switching abnormal	4-way valve - Lead wire and connector.
F17	Indoor standby units freezing abnormality		○					3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve leakage.	- Check indoor/outdoor connection wire and pipe - Indoor heat exchanger sensor lead wire and connector - Expansion valve lead wire and connector.
F90	Power factor correction (PFC) circuit protection		○				○	4 times happen within 20 minutes	—	Power factor correction circuit abnormal	Outdoor PCB faulty
F91	Refrigeration cycle abnormality		○			○		4 times happen within 60 minutes	—	Refrigeration cycle abnormal	Insufficient refrigerant or valve close
F93	Compressor abnormal revolution		○			○	○	4 times happen within 20 minutes	—	Compressor abnormal revolution	Power transistor module faulty or compressor lock
F94	Compressor discharge pressure overshoot protection		○		○			4 times happen within 30 minutes	—	Compressor discharge pressure overshoot	Check refrigeration system
F95	Outdoor cooling high pressure protection		○		○		○	4 times happen within 20 minutes	—	Cooling high pressure protection	- Check refrigeration system - Outdoor air circuit
F96	Power transistor module overheating protection		○		○	○		4 times happen within 30 minutes	—	Power transistor module overheat	- PCB faulty - Outdoor air circuit (fan motor)

Diagnosis display	Abnormality or protection control	LED 6	LED 5	LED 4	LED 3	LED 2	LED 1	Abnormality judgement	Protection operation	Problem	Check location
F97	Compressor overheating protection		○		○	○	○	3 times happen within 30 minutes	—	Compressor overheat	• Insufficient refrigerant
F98	Total running current protection		○	○				3 times happen within 20 minutes	—	Total current protection	• Check refrigeration system • Power source or compressor lock
F99	Outdoor direct current (DC) peak detection		○	○			○	Continuous happen for 7 times	—	Power transistor module current protection	• Power transistor module faulty or compressor lock

LED 1 illuminate is indicated that outdoor unit is operating normally. If the LED 1 is switched off or flashing, check the power supply and self-diagnosis indication.

●----- Illuminate
○----- Flashing
Blank ----- OFF

18.2 Self-diagnosis Method

18.2.1 H11 (Indoor/Outdoor Abnormal Communication)

Malfunction Decision Conditions

- During standby and operation of cooling and heating, the data received from outdoor unit in indoor unit signal transmission is checked whether it is normal.

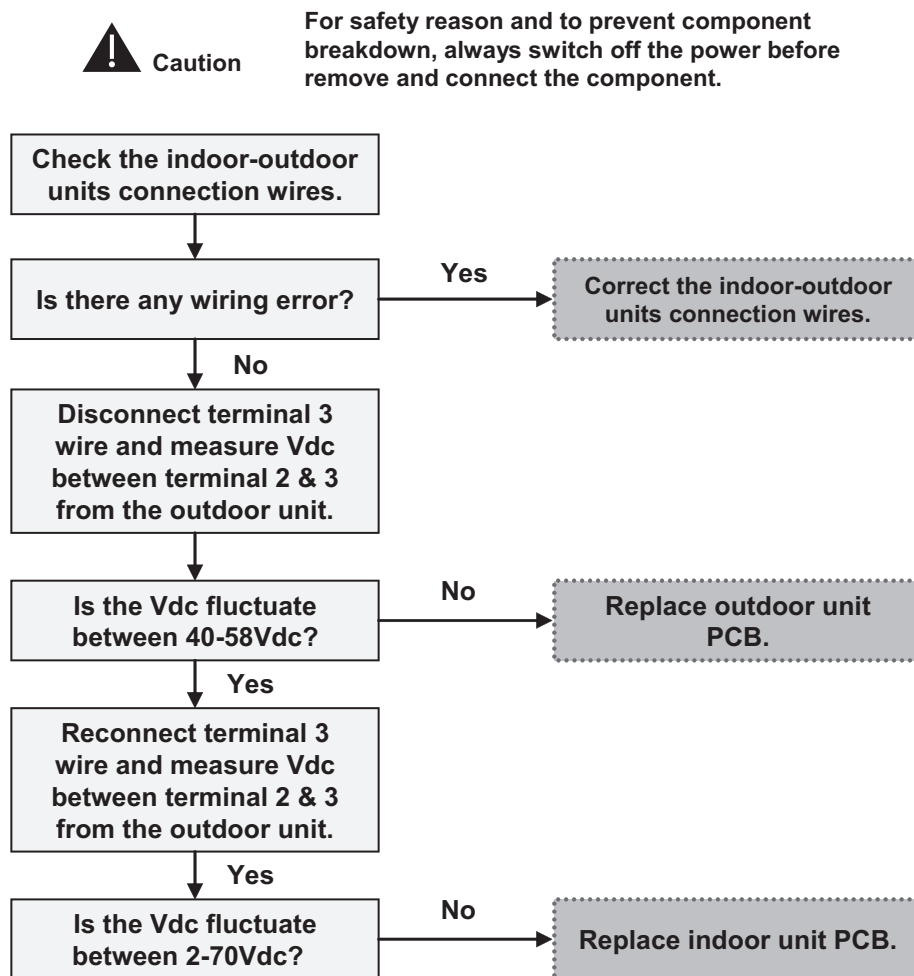
Malfunction Caused

- Faulty outdoor unit PCB.
- Faulty indoor unit PCB.
- Indoor-outdoor signal transmission error due to wrong wiring.
- Indoor-outdoor signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units.
- Indoor-outdoor signal transmission error due to disturbed power supply waveform.

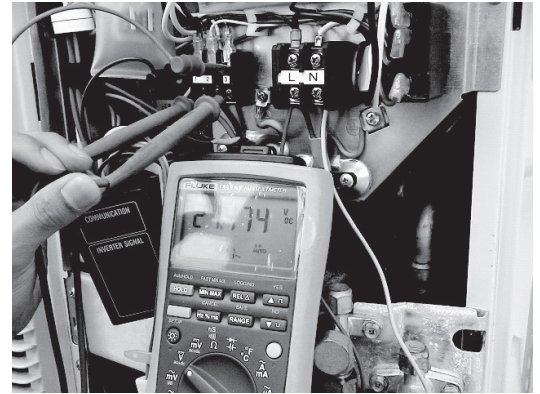
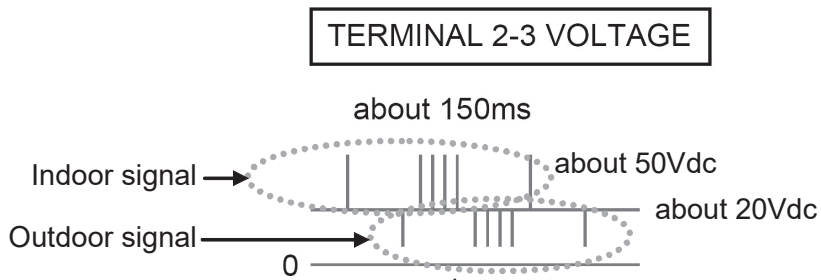
Abnormality Judgment:

- After operation for 1 minute.

Troubleshooting



Communication voltage measurement:



To determine if outdoor PCB or indoor PCB is faulty:

- Start with outdoor terminal first.
- Remove terminal 3 wire.
- Measure with a multimeter (voltage in DC range).
- If it is never constant, outdoor PCB is good fluctuating in between 10-70Vdc, outdoor PCB is in good condition.

18.2.2 H12 (Indoor Unit Capacity Unmatched)

Malfunction Decision Conditions

- Occur when connect in a multi free inverter system.
- Occur when not fulfill minimum requirement of indoor unit connection:
 - i). Minimum 2 indoor unit connected
 - ii). Minimum connected capacity – 4.5kW

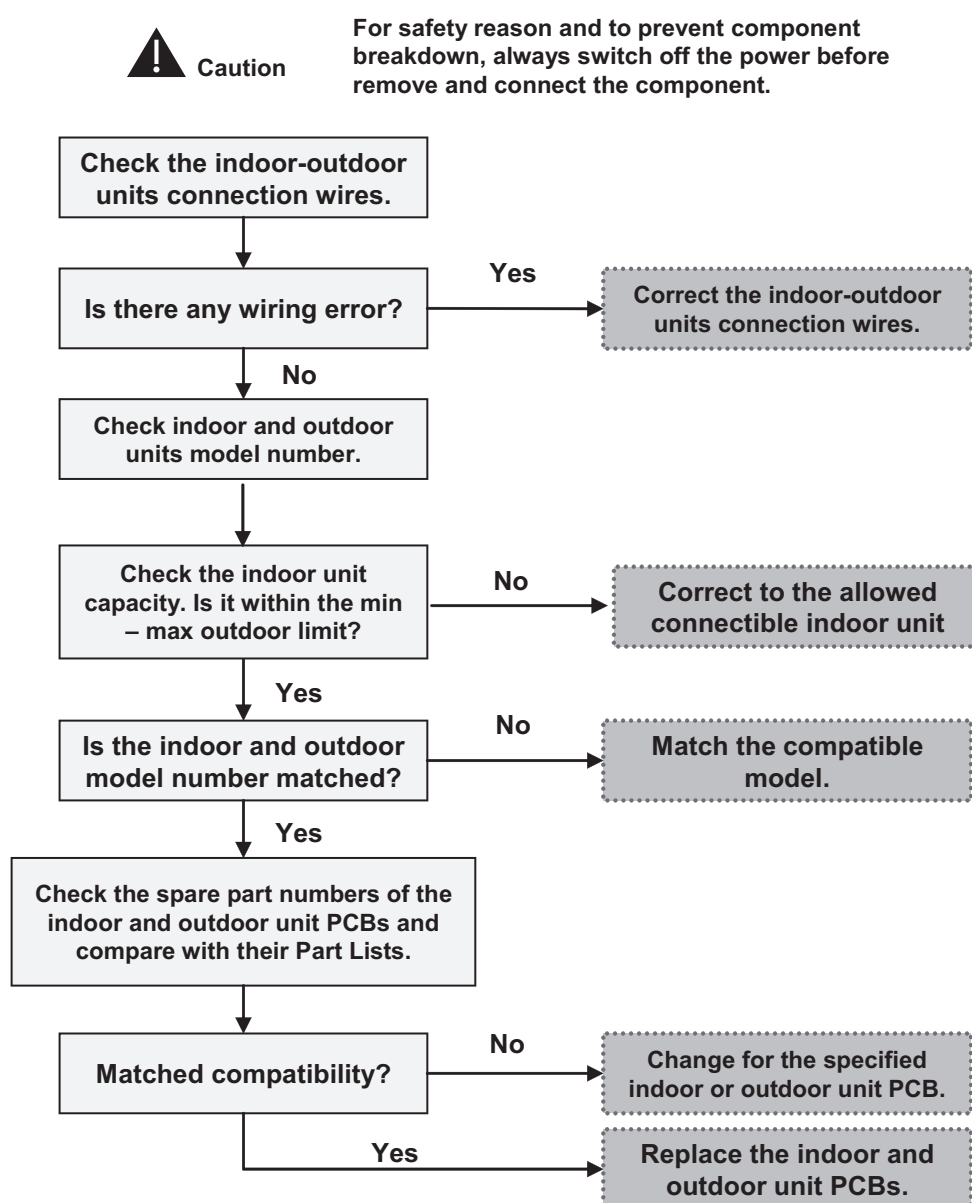
Malfunction Caused

- Wrong models interconnected.
- Wrong indoor unit and outdoor unit PCBs used.
- Indoor unit or outdoor unit PCB defective.
- Indoor-outdoor signal transmission error due to wrong wiring.
- Indoor-outdoor signal transmission error due to breaking of wire 3 in the connection wires between the indoor and outdoor units.

Abnormality Judgment:

- 90 seconds after power supply turn ON.

Troubleshooting



18.2.3 H15 (Compressor Temperature Sensor Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the compressor discharge temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty outdoor unit PCB.

Abnormality Judgment:

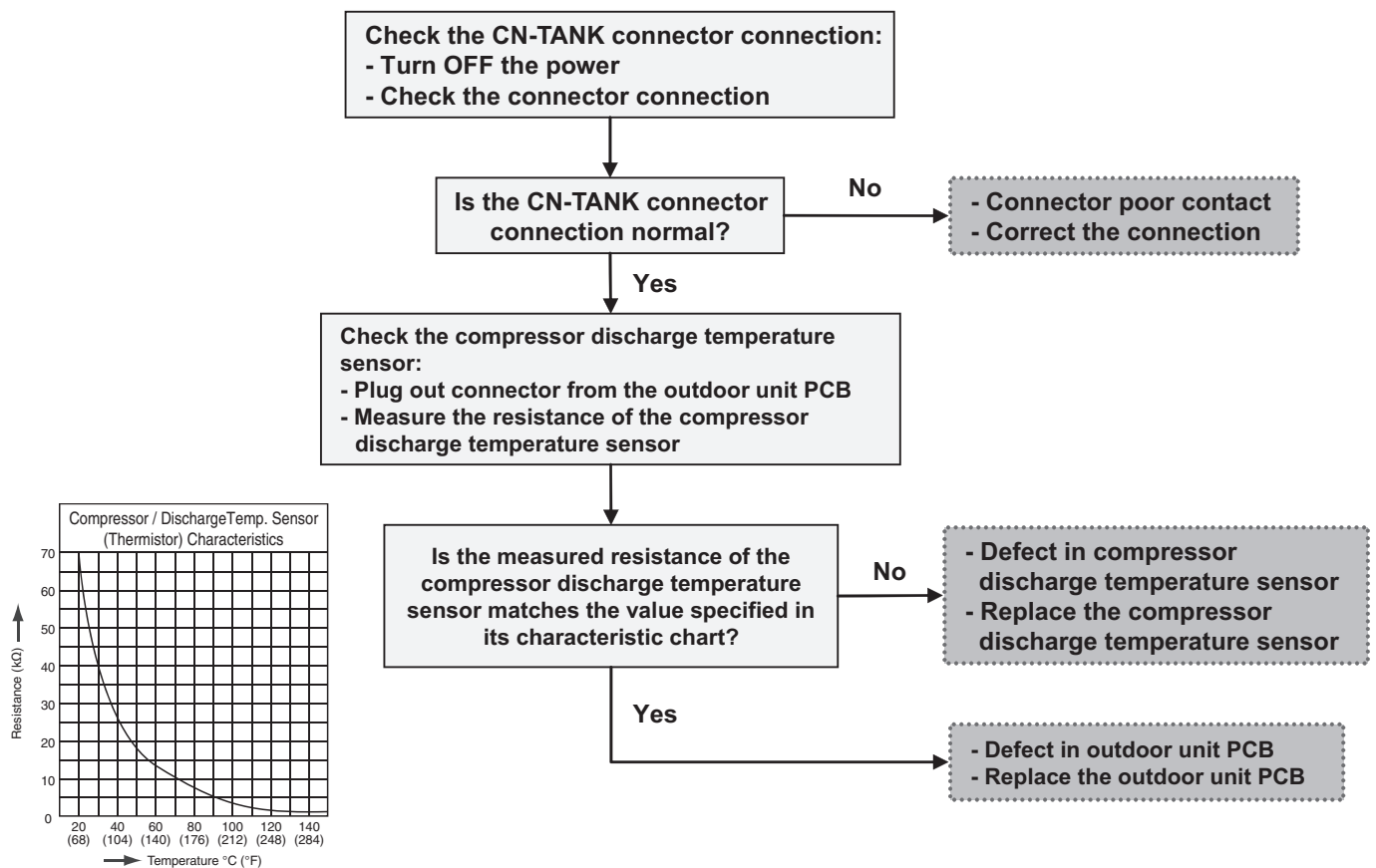
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.4 H16 (Outdoor Current Transformer (CT) Abnormality)

Malfunction Decision Conditions

- A current transformer (CT400) is detected by checking the compressor running frequency ($\geq$ rated frequency) and CT detected input current (less than 1.25A) for continuously 20 seconds.

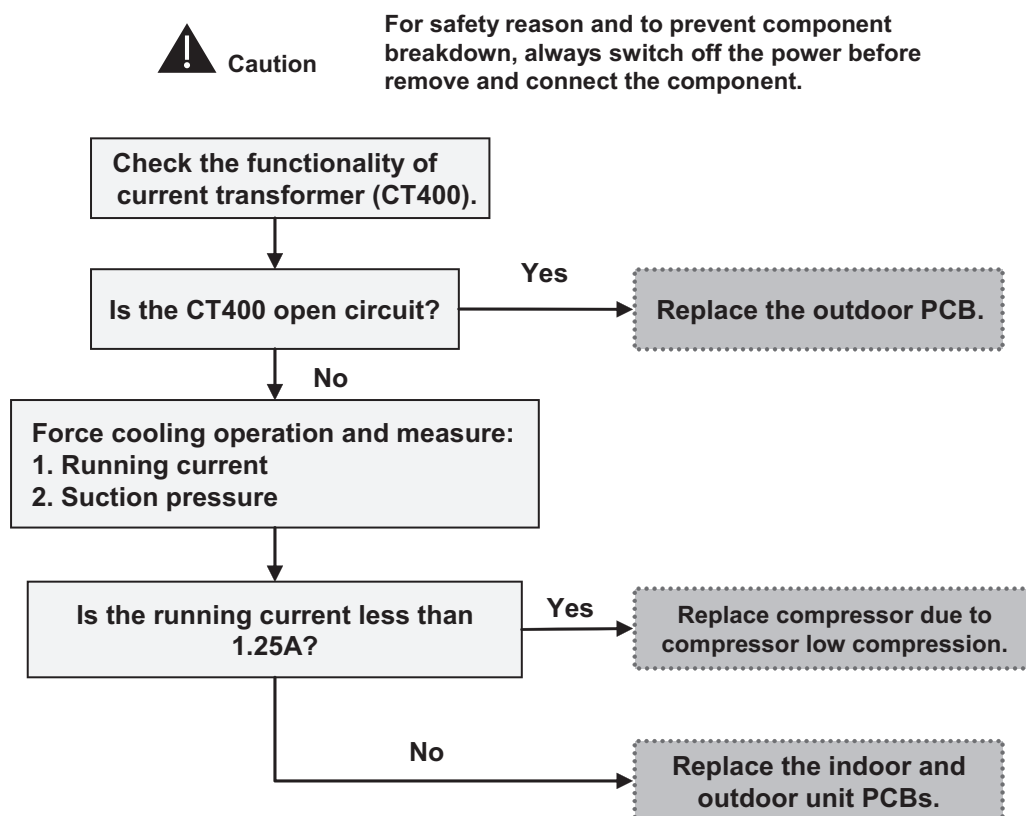
Malfunction Caused

- CT defective.
- Outdoor PCB defective.
- Compressor defective (low compression).

Abnormality Judgment:

- ---

Troubleshooting



18.2.5 H27 (Outdoor Air Temperature Sensor Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor intake air temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Abnormality Judgment:

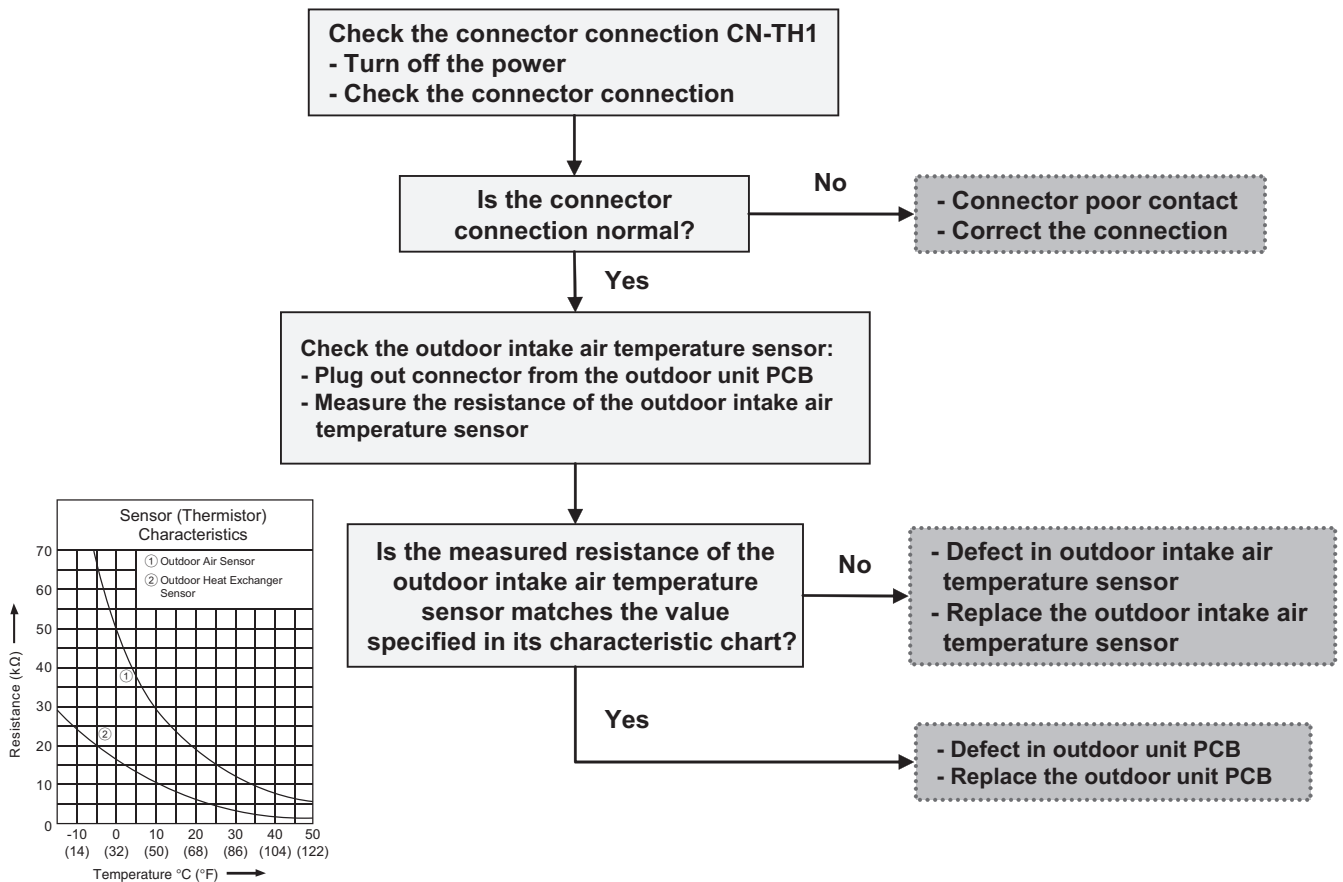
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.6 H28 (Outdoor Heat Exchanger Temperature Sensor 1 Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Abnormality Judgment:

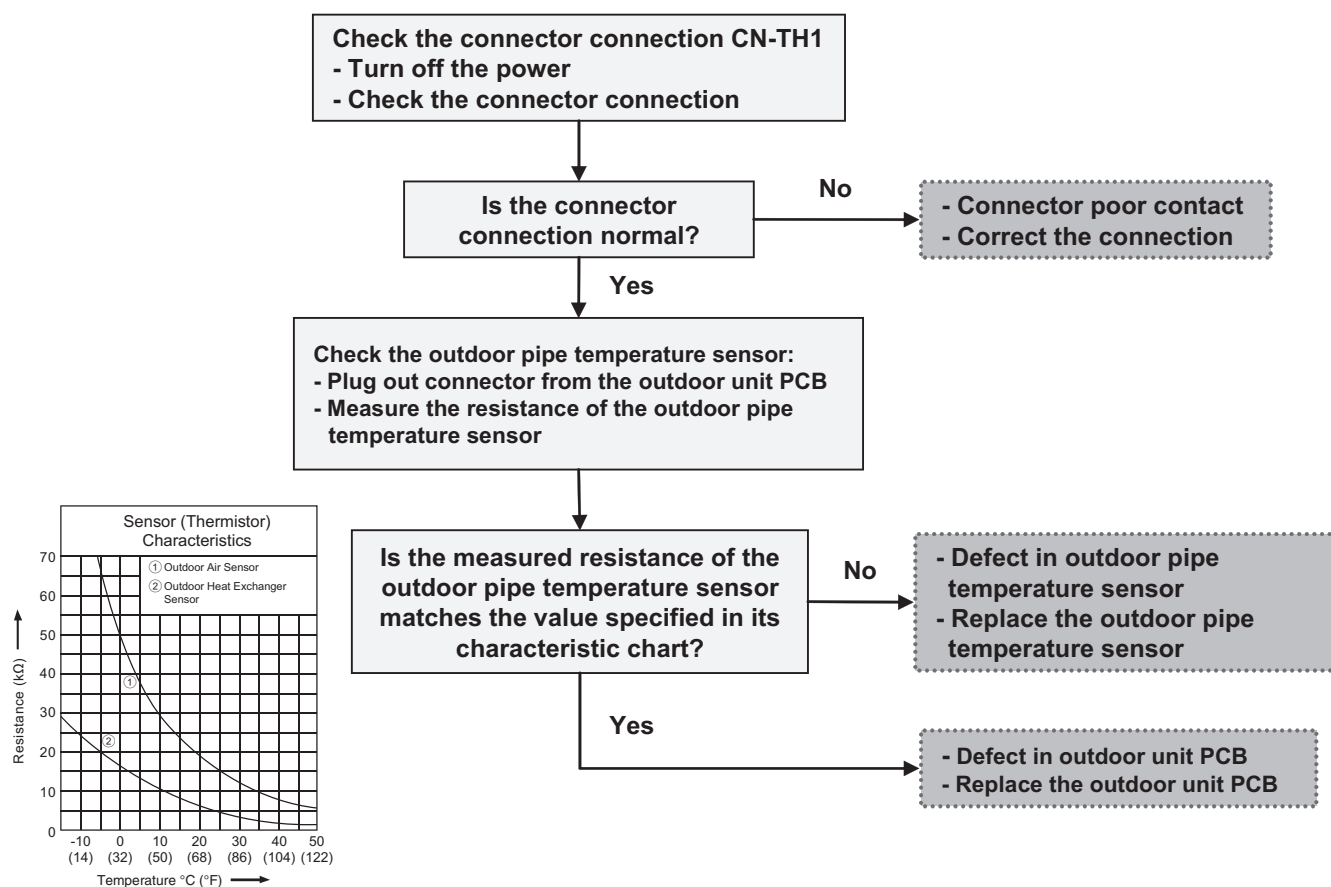
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.7 H32 (Outdoor Heat Exchanger Temperature Sensor 2 Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor pipe temperature sensor 2 are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty outdoor unit PCB.

Abnormality Judgment:

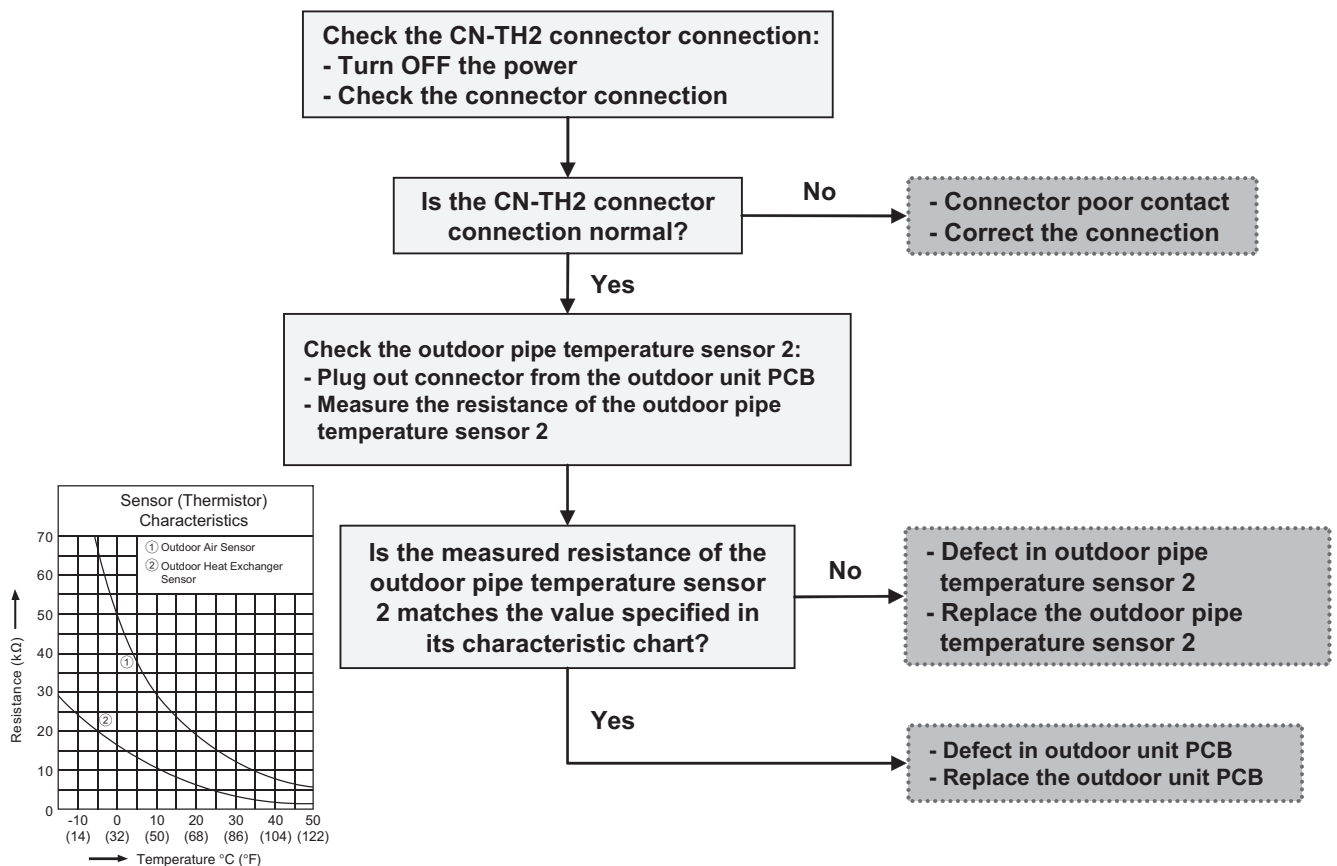
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.8 H33 (Indoor / Outdoor Misconnection Abnormality)

Malfunction Decision Conditions

- The supply power is detected for its requirement by the indoor/outdoor transmission.

Malfunction Caused

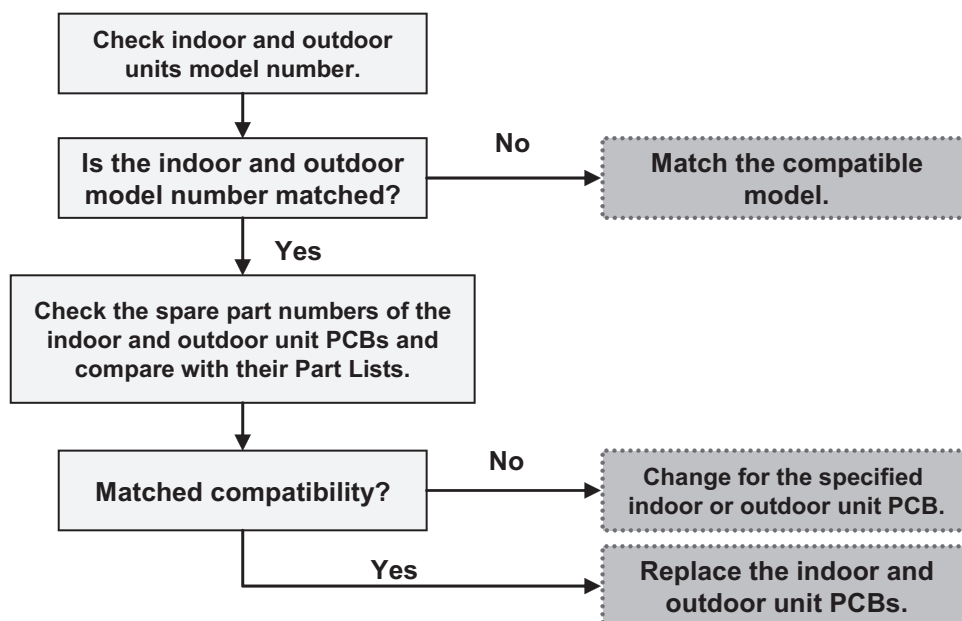
- Wrong models interconnected.
- Wrong indoor unit and outdoor unit PCBs used.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.9 H36 (Outdoor Gas Pipe Temperature Sensor Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor gas pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Abnormality Judgment:

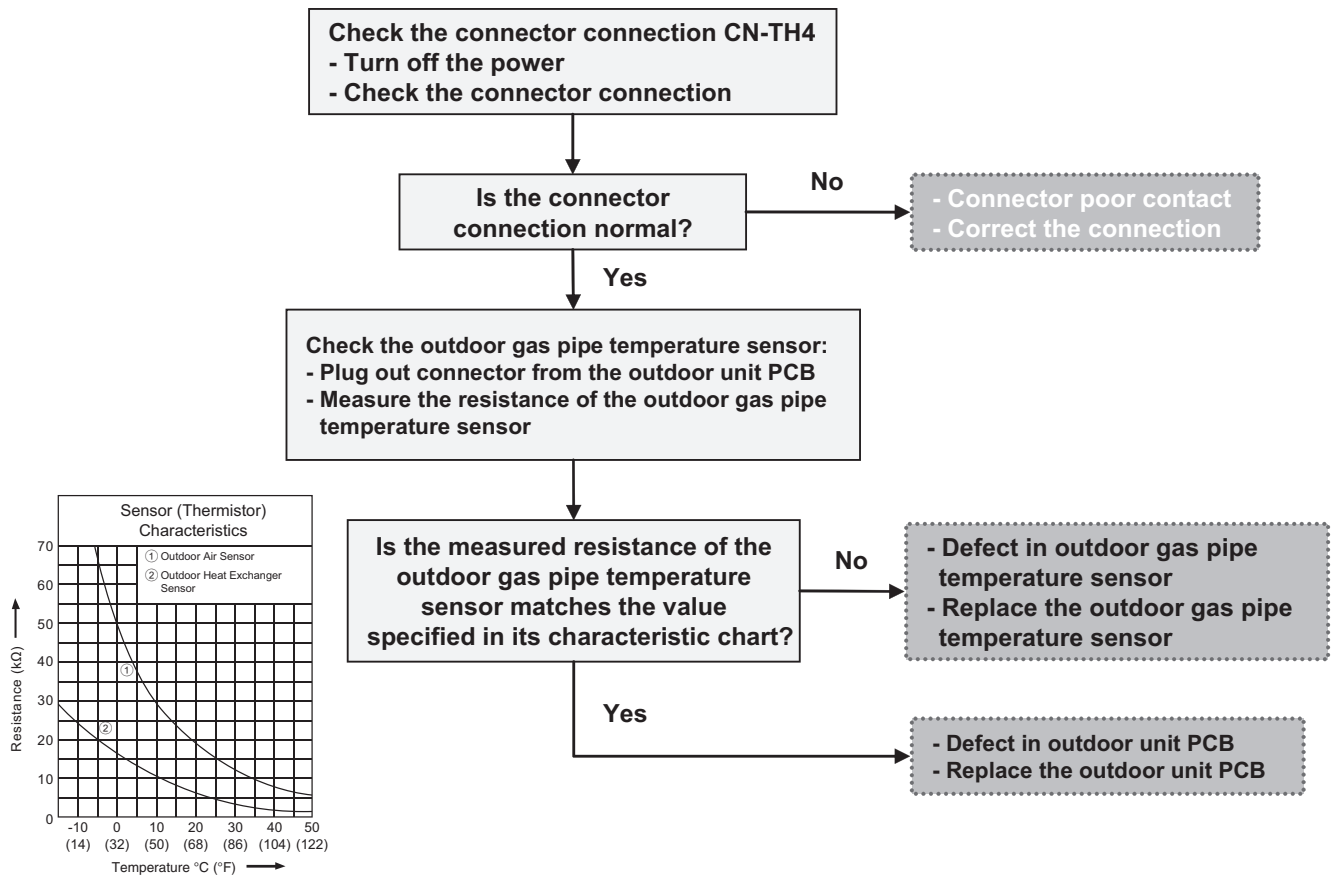
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.10 H37 (Outdoor Liquid Pipe Temperature Sensor Abnormality)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor liquid pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Abnormality Judgment:

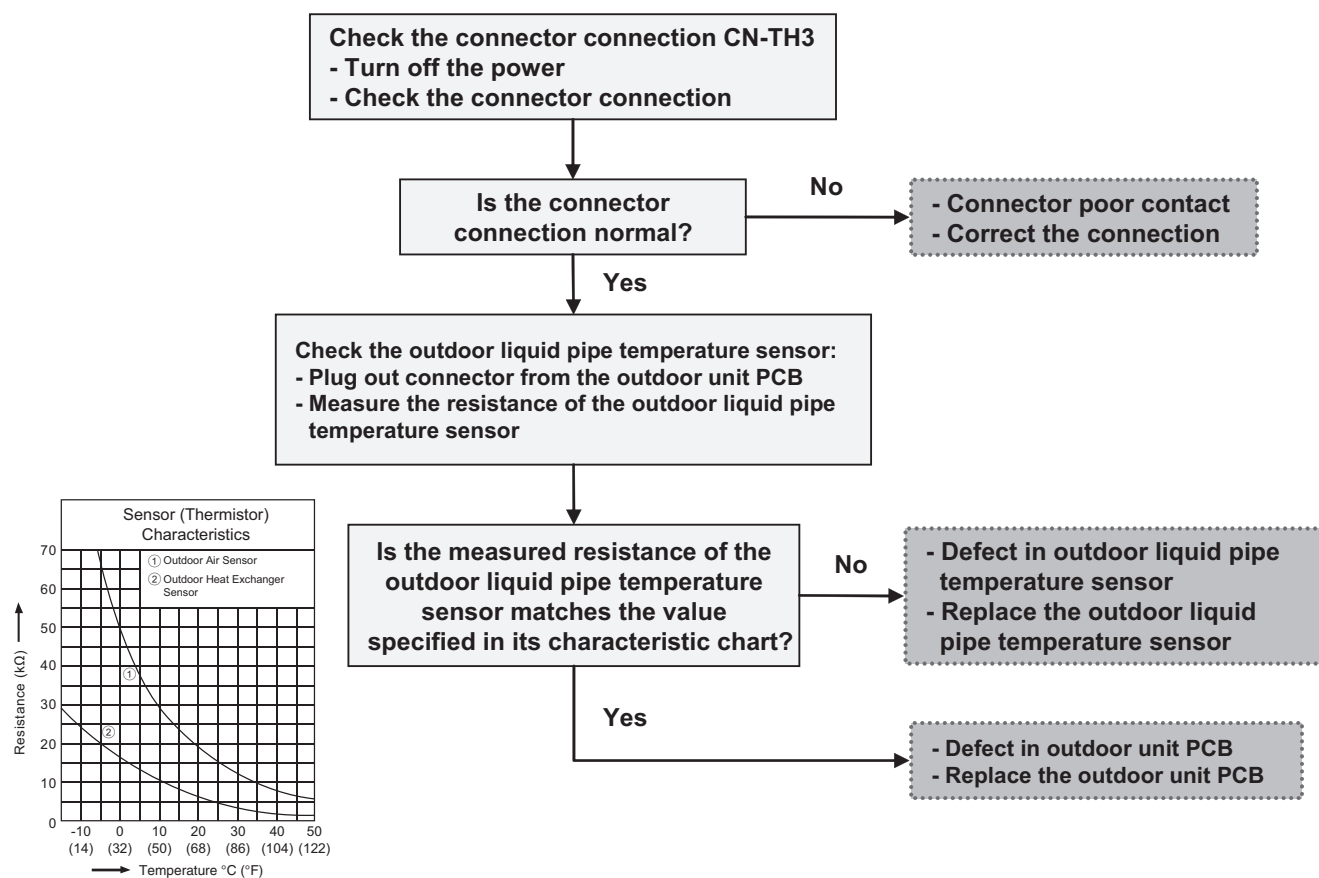
- Continue for 5 seconds.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.11 H97 (Outdoor Fan Motor Mechanism Locked)

Malfunction Decision Conditions

- The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor.

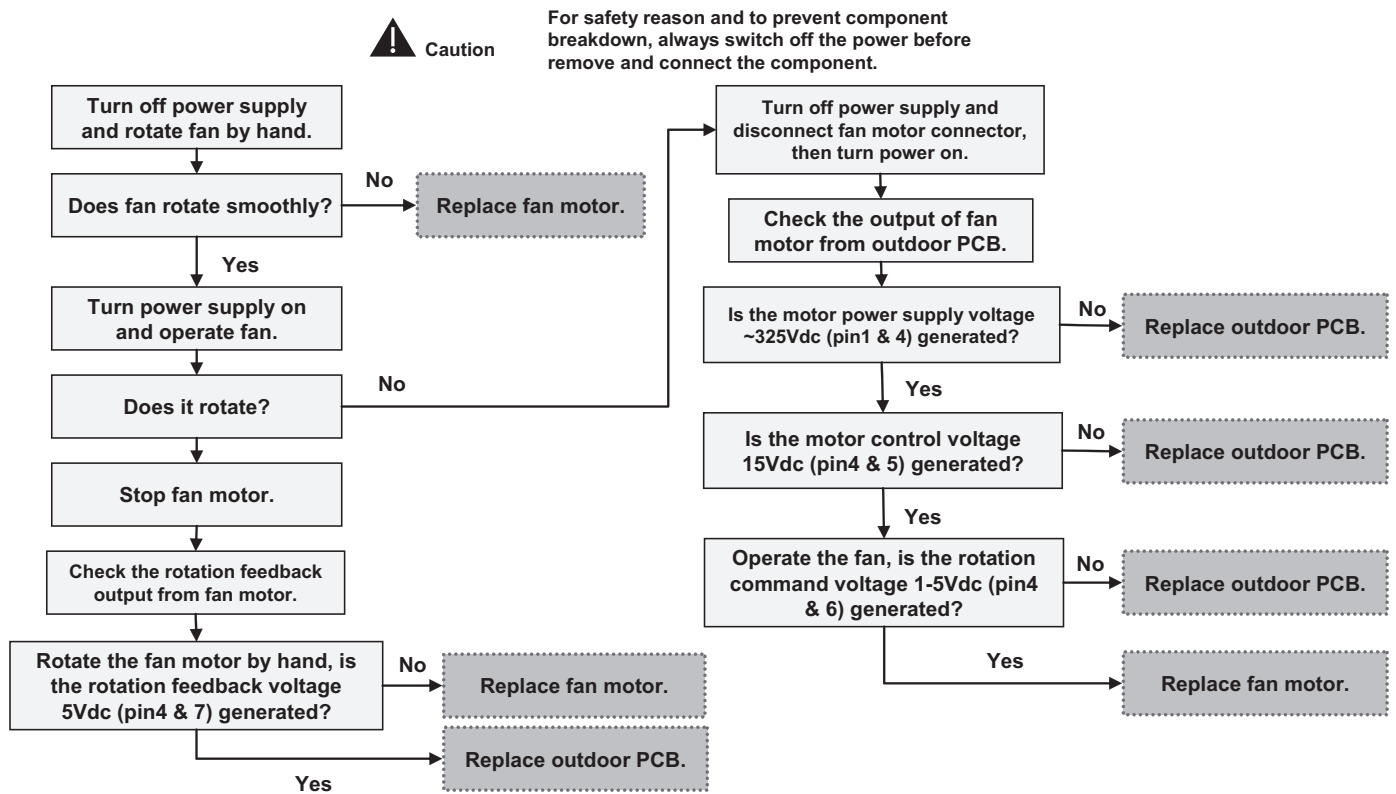
Malfunction Caused

- Operation stop due to short circuit inside the fan motor winding.
- Operation stop due to breaking of wire inside the fan motor.
- Operation stop due to breaking of fan motor lead wires.
- Operation stop due to Hall IC malfunction.
- Operation error due to faulty outdoor unit PCB.

Abnormality Judgment:

- 2 times happen within 30 minutes.

Troubleshooting



18.2.12 H98 (Indoor High Pressure Protection)

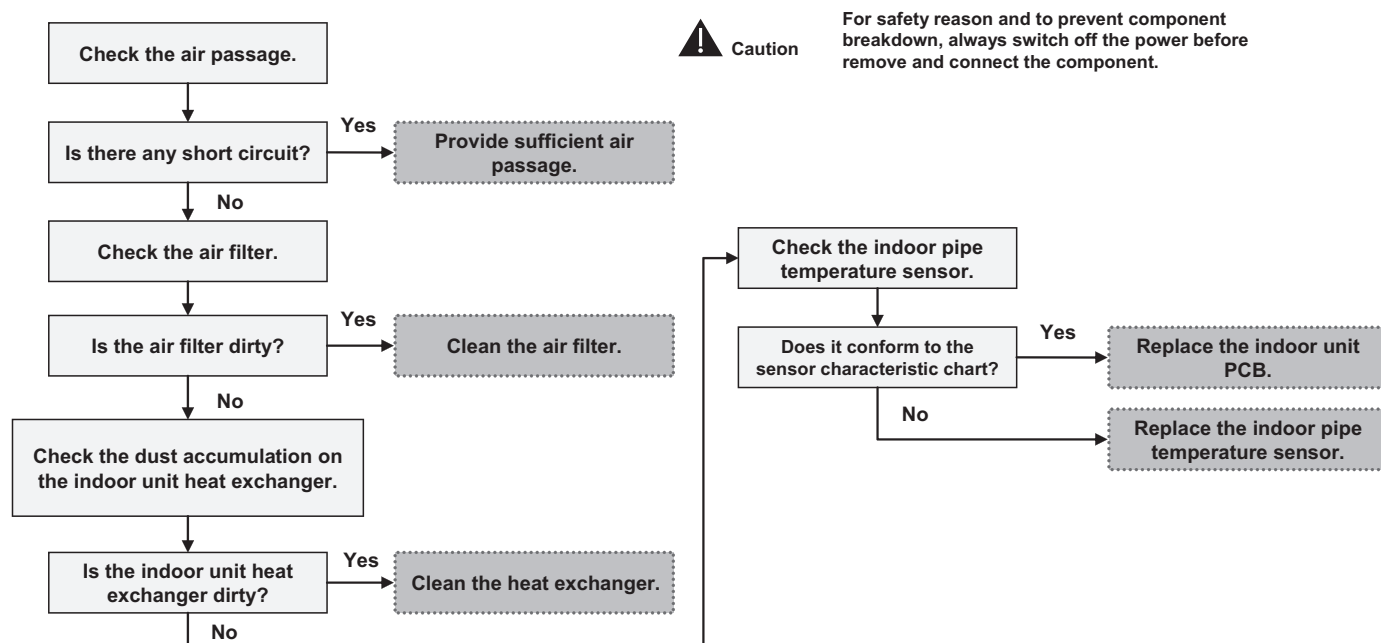
Malfunction Decision Conditions

- During heating operation, the temperature detected by the indoor pipe temperature sensor is above 60°C (140°F).

Malfunction Caused

- Clogged air filter of the indoor unit.
- Dust accumulation on the indoor unit heat exchanger.
- Air short circuit.
- Detection error due to faulty indoor pipe temperature sensor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting



18.2.13 H99 (Indoor Operating Unit Freeze Protection)

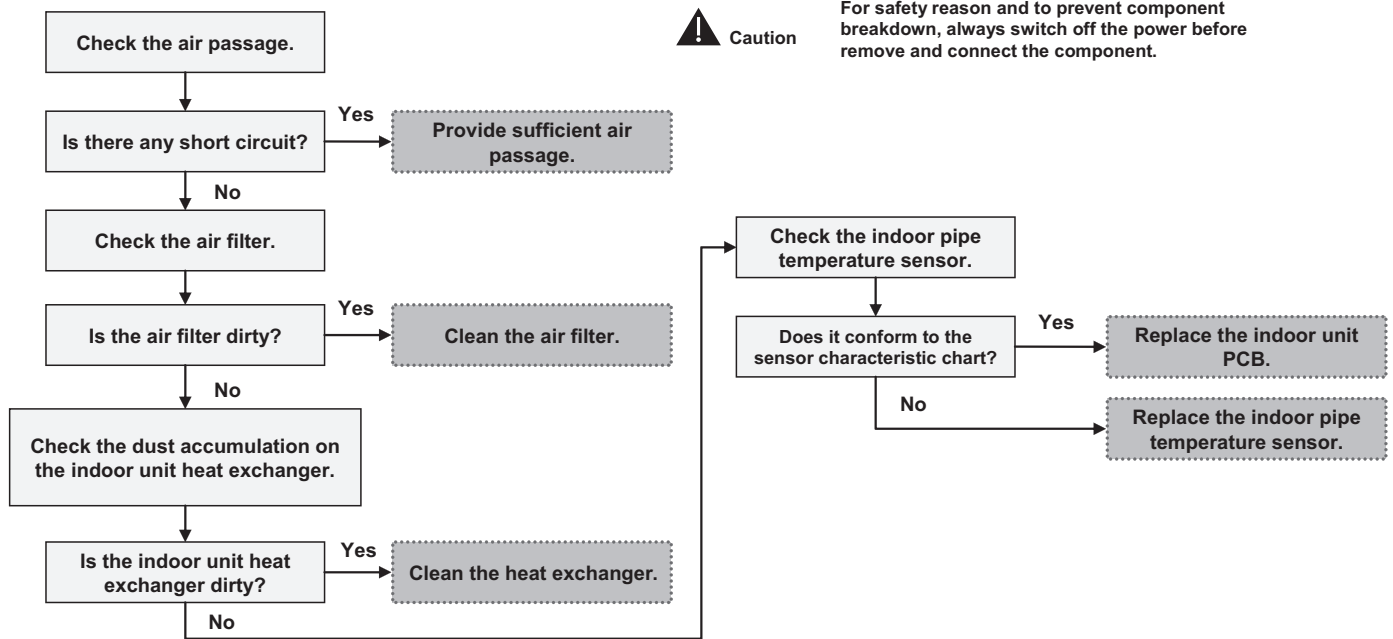
Malfunction Decision Conditions

- During cooling operation, anti-freezing control take place when indoor pipe temperature is lower than 0°C (32°F).

Malfunction Caused

- Clogged air filter of the indoor unit.
- Dust accumulation on the indoor unit heat exchanger.
- Air short circuit.
- Detection error due to faulty indoor pipe temperature sensor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting



18.2.14 F11 (4-Way Valve Switching Abnormality)

Malfunction Decision Conditions

- During heating operation, when (liquid pipe temperature – outdoor pipe temperature) is below -5°C (23°F).
- During cooling operation, when (outdoor pipe temperature – liquid pipe temperature) is below -5°C (23°F).

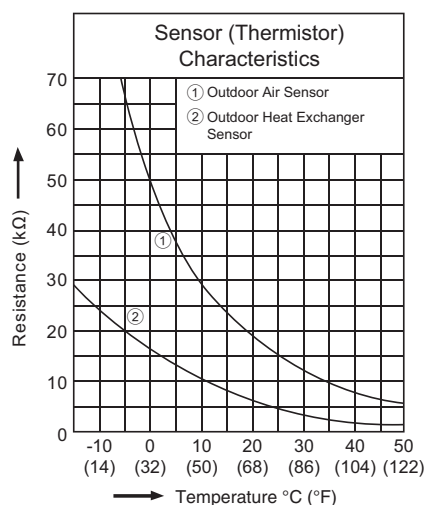
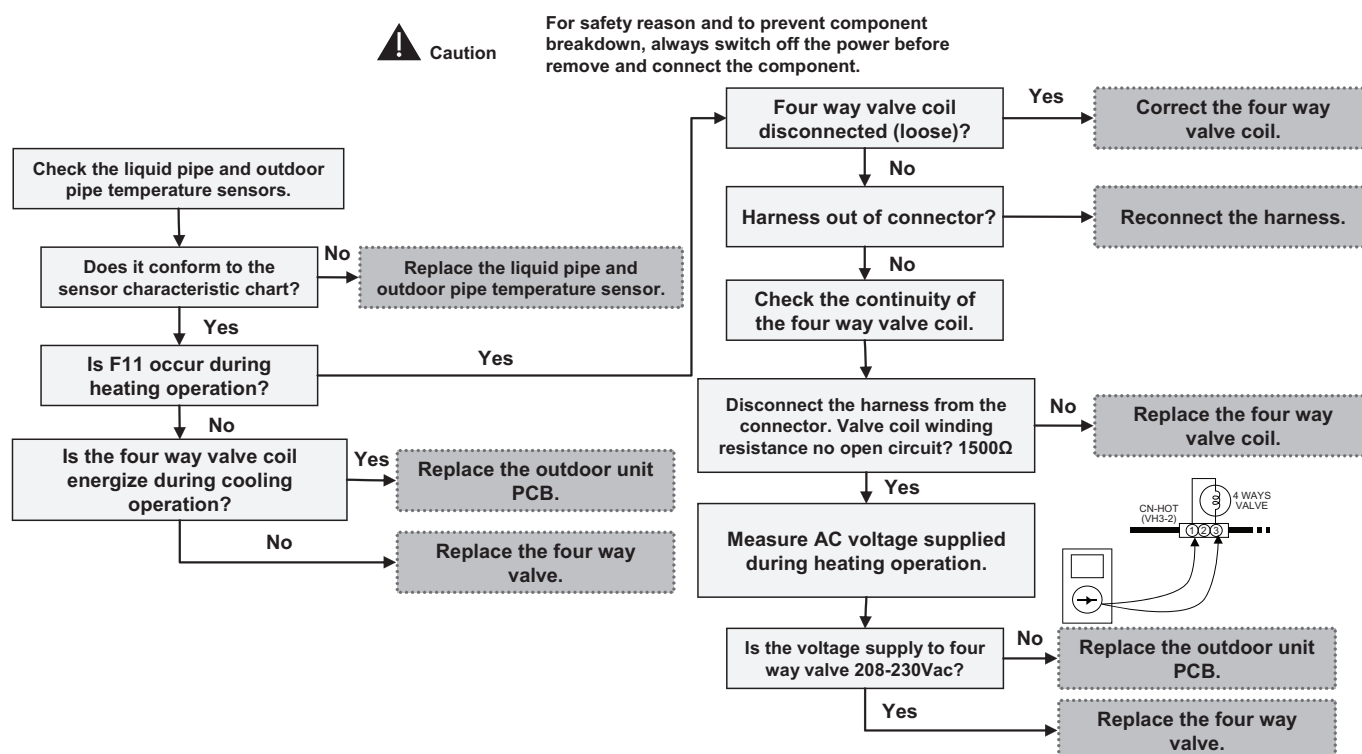
Malfunction Caused

- Connector in poor contact.
- Faulty sensor.
- Faulty outdoor unit PCB.
- Four way valve defective.

Abnormality Judgment:

- 4 times happen within 30 minutes.

Troubleshooting



18.2.15 F17 (Indoor Standby Units Freezing Abnormality)

Malfunction Decision Conditions

- When the difference between indoor intake air temperature and indoor pipe temperature is above 10°C (50°F) or indoor pipe temperature is below -1.0°C (30.2°F).

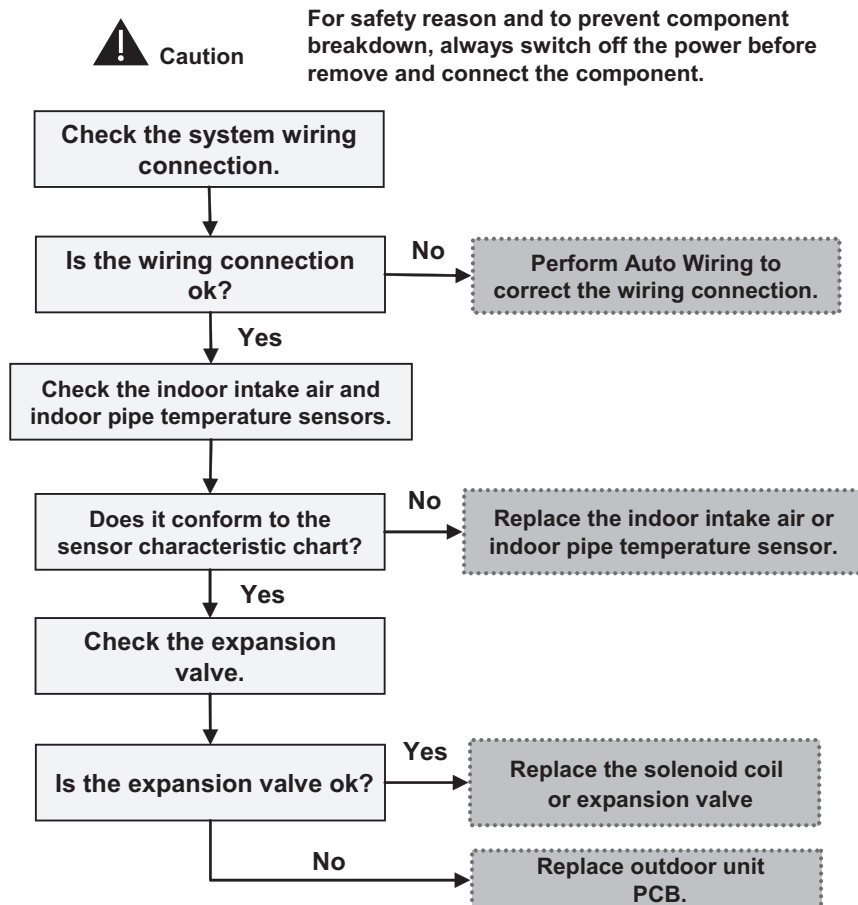
Malfunction Caused

- Wrong wiring connection.
- Faulty sensor.
- Faulty expansion valve.

Abnormality Judgment:

- 3 times happen within 40 minutes.

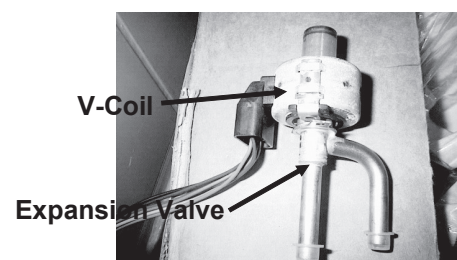
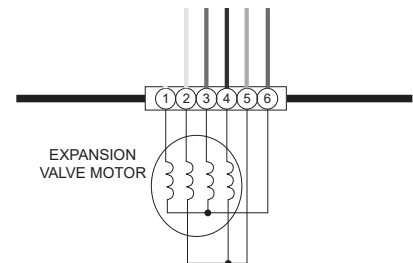
Troubleshooting



Electronic Expansion Valve Check

Conduct the following check points:

- Check if expansion valve connector is properly inserted and v-coil is properly latched to the valve.
- Turn on the power and check if latching sound is generated (touch the valve with a screw driver and bring it closer to your ear).
- If latching sound is not generated, remove the connector and check v-coil conductivity between pin 1 and other pins (~50ohm) and between each pins (~90ohm).
- If v-coil has no conductivity, v-coil is faulty.
- If v-coil has conductivity, mount good v-coil.
- If still no latching, then replace the valve unit or replace outdoor control PCB.



18.2.16 F90 (Power Factor Correction (PFC) Circuit Protection)

Malfunction Decision Conditions

- During startup and operation of cooling and heating, when PFC protection circuitry at the outdoor unit main PCB senses low DC voltage level (below 280Vdc).

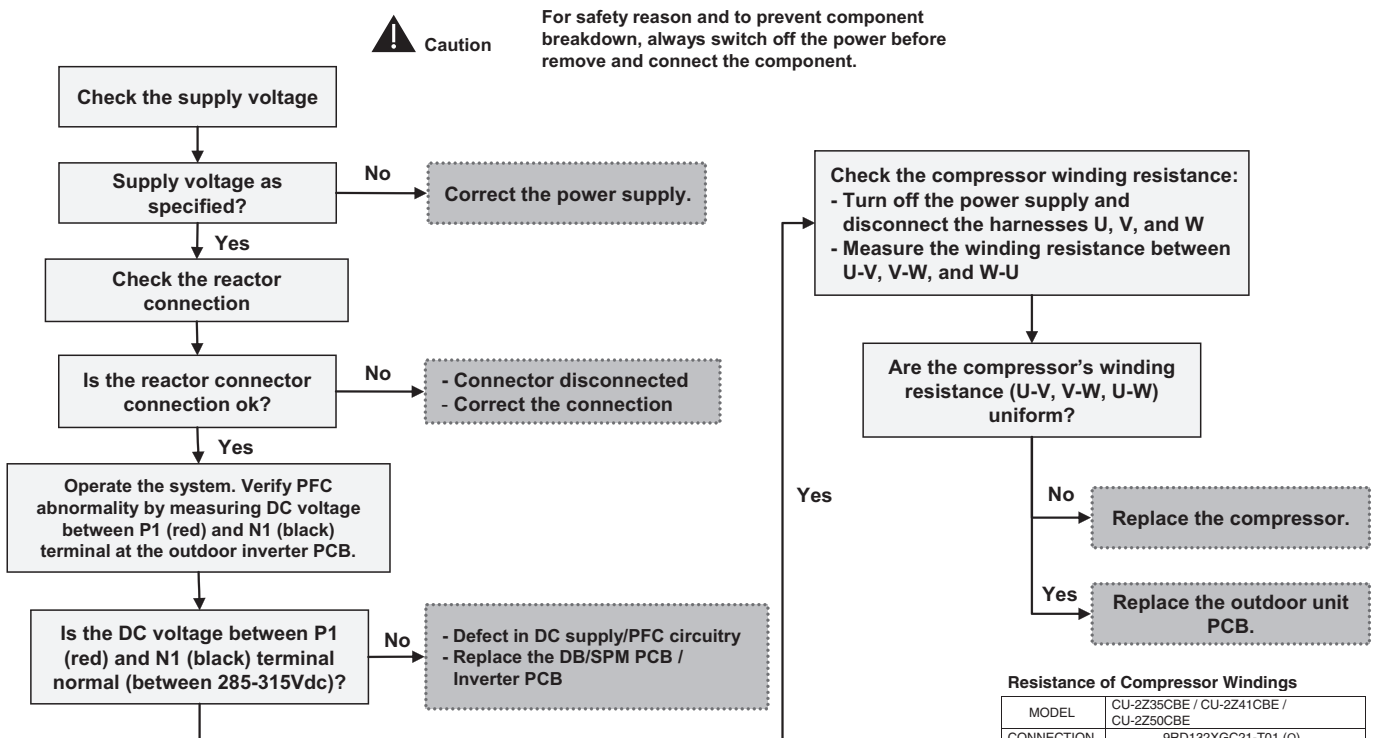
Malfunction Caused

- Low DC voltage due to power supply drop.
- Low DC voltage due to compressor windings not uniform.
- Reactor connection is disconnected.
- Faulty outdoor unit PCB.

Abnormality Judgment:

- 4 times happen within 20 minutes.

Troubleshooting



Resistance of Compressor Windings

MODEL	CU-2Z35CBE / CU-2Z41CBE / CU-2Z50CBE
CONNECTION	9RD132XGC21-T01 (Ω)
U-V	1.708
U-W	1.708
V-W	1.708

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-3Z52CBE / CU-3Z68CBE
CONNECTION	9RD220XBD21 (Ω)
U-V	0.998
U-W	0.998
V-W	0.998

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-4Z68CBE
CONNECTION	9RD220XBD21 (Ω)
U-V	0.998
U-W	0.998
V-W	0.998

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-4Z80CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-5Z90CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

Note: Winding resistance at 20°C

18.2.17 F91 (Refrigeration Cycle Abnormality)

Malfunction Decision Conditions

- *Gas shortage detection I:* A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency. During startup and operating of cooling and heating, input current $< 8.78/256$ (A/Hz) $\times$ compressor running frequency + 0.25.
- *Gas shortage detection II:* A gas shortage is detected by checking the difference between indoor pipe temperature and indoor intake air temperature during cooling and heating.

Malfunction Caused

- Refrigerant shortage (refrigerant leakage).
- Poor compression performance of compressor.
- 2/3 way valve closed.
- Detection error due to faulty indoor intake air and indoor pipe temperature sensors.

Abnormality Judgment:

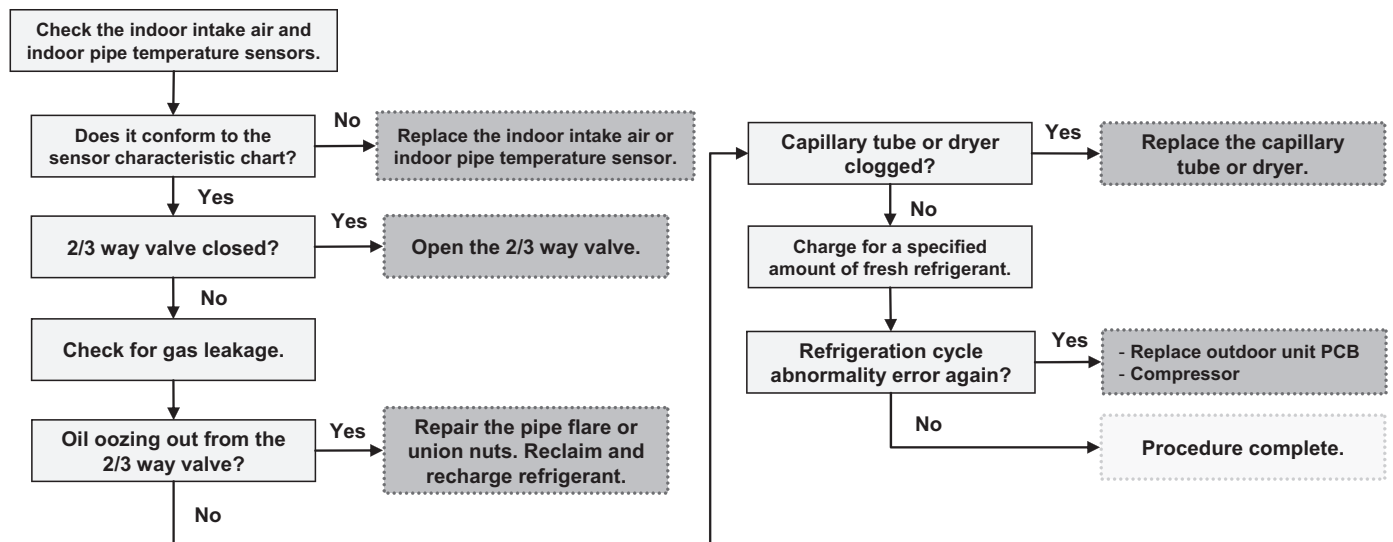
- 4 times happen within 60 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.18 F93 (Compressor Abnormal Revolution)

Malfunction Decision Conditions

- A compressor rotation failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Caused

- Compressor terminal disconnect.
- Outdoor PCB malfunction.

Abnormality Judgment:

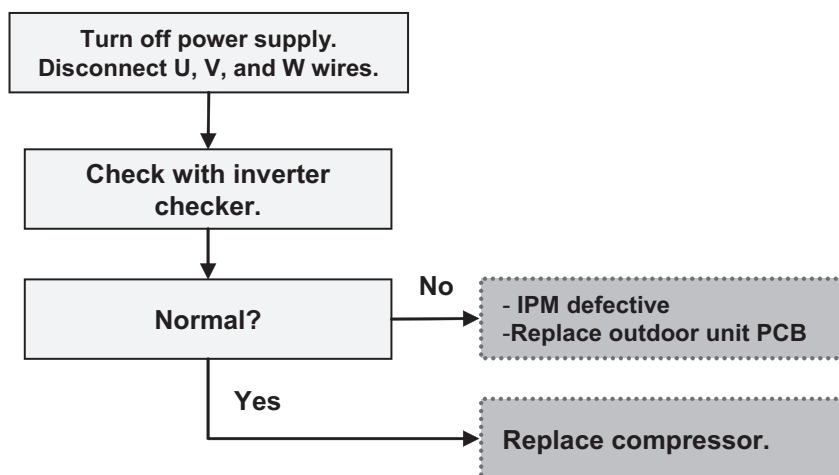
- 4 times happen within 20 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.19 F94 (Compressor Discharge Pressure Overshoot Protection)

Malfunction Decision Conditions

- During operation of cooling and heating, when the outdoor unit high pressure switch is open (4.15MPa and above).

Malfunction Caused

- Clogged air filter of indoor unit.
- Dust accumulation on the indoor/outdoor unit heat exchanger.
- Air short circuit at indoor/outdoor unit.
- 3 way valve closed.
- Faulty outdoor unit fan motor.
- Excess refrigerant.
- Clogged expansion valve or strainer.
- Faulty outdoor unit high pressure switch.
- Faulty outdoor unit PCB (main).

Abnormality Judgment:

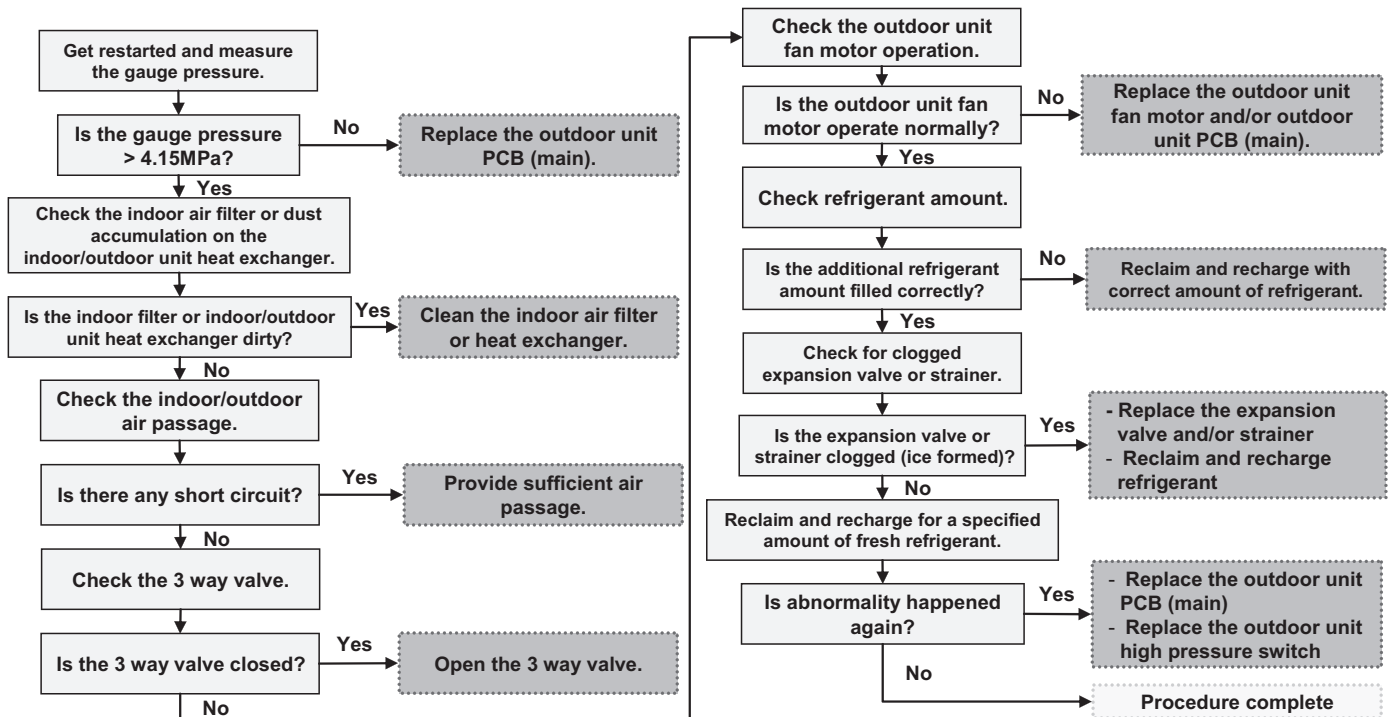
- 4 times happen within 30 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.20 F96 (Power Transistor Module Overheating Protection)

Malfunction Decision Conditions

- Compressor Overheating: During operation of cooling and heating, when the compressor OL is activated.
- Heat Sink Overheating: During operation of cooling and heating, when heat sink temperature data (90°C (194°F)) is detected by the heat sink temperature sensor.

Malfunction Caused

- Compressor OL connector poor contact.
- Compressor OL faulty.
- IPM overheat due to short circuit of hot discharge air flow.
- IPM overheat due to defective of outdoor fan motor.
- IPM overheat due to defective of internal circuitry of IPM.
- IPM overheat due to defective IPM temperature sensor.

Abnormality Judgment:

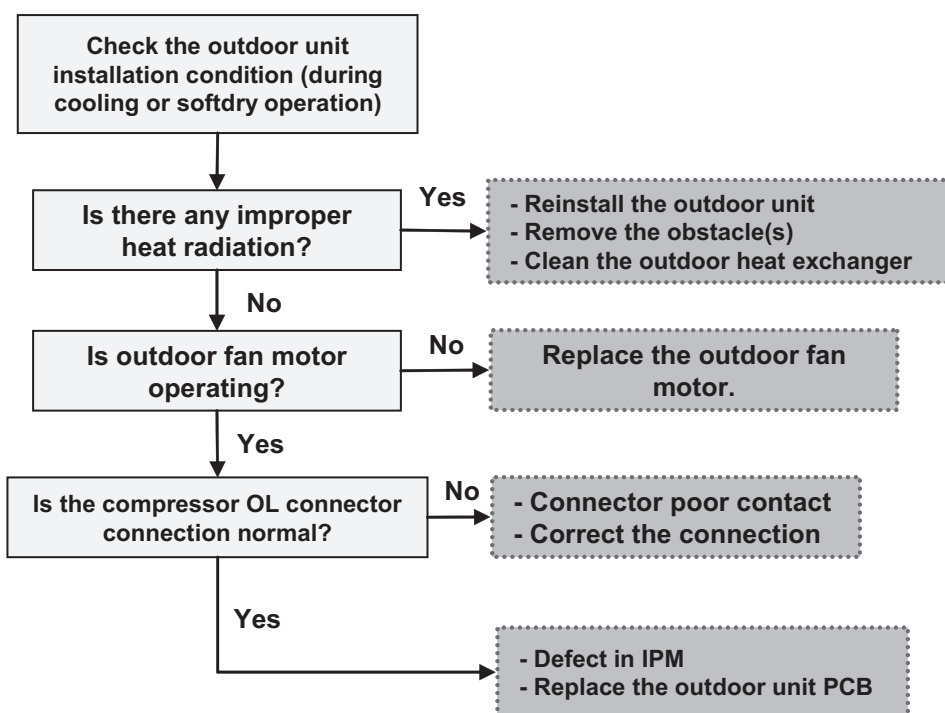
- 4 times happen within 30 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.21 F97 (Compressor Overheating Protection)

Malfunction Decision Conditions

- During operation of cooling and heating, when compressor discharge pipe temperature data (120°C (248°F)) is detected by the compressor tank pipe temperature sensor.

Malfunction Caused

- Refrigerant shortage (refrigerant leakage).
- 2/3 way valve closed.
- Detection error due to faulty compressor tank pipe temperature sensor.

Abnormality Judgment:

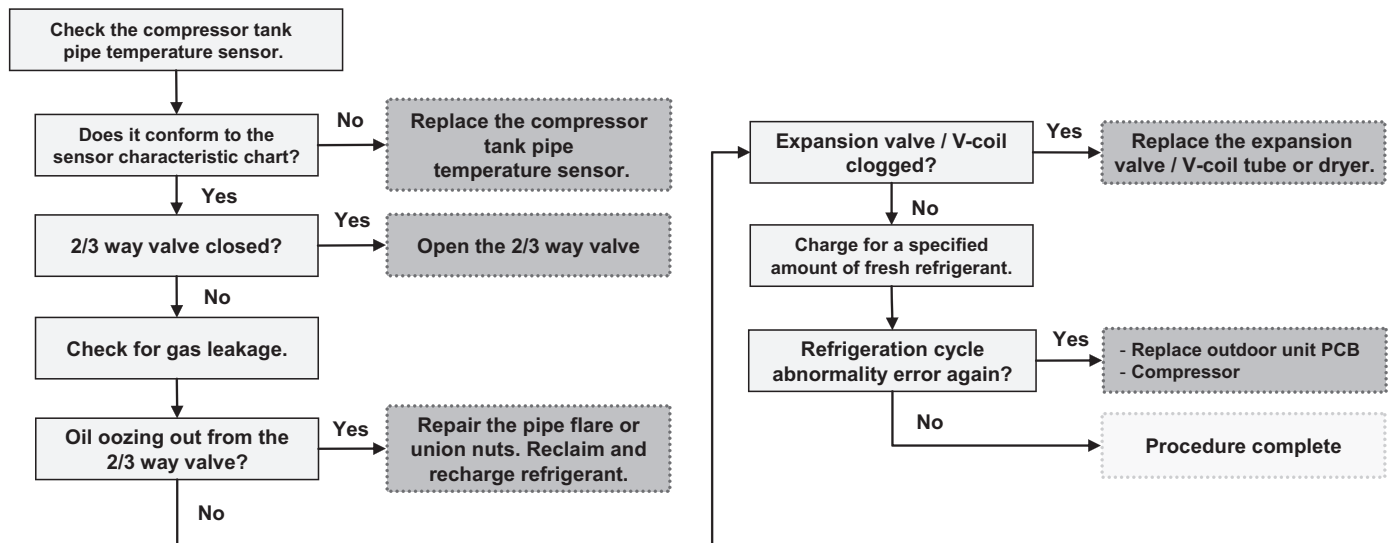
- 3 times happen within 30 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



18.2.22 F98 (Total Running Current Protection)

Malfunction Decision Conditions

- During operation of cooling and heating, when an input over-current is detected by checking the input current value being detected by current transformer (CT) with the compressor running.

Malfunction Caused

- Over-current due to compressor failure.
- Over-current due to defective outdoor unit PCB.
- Over-current due to defective inverter main circuit electrolytic capacitor.
- Over-current due to excessive refrigerant.

Abnormality Judgment:

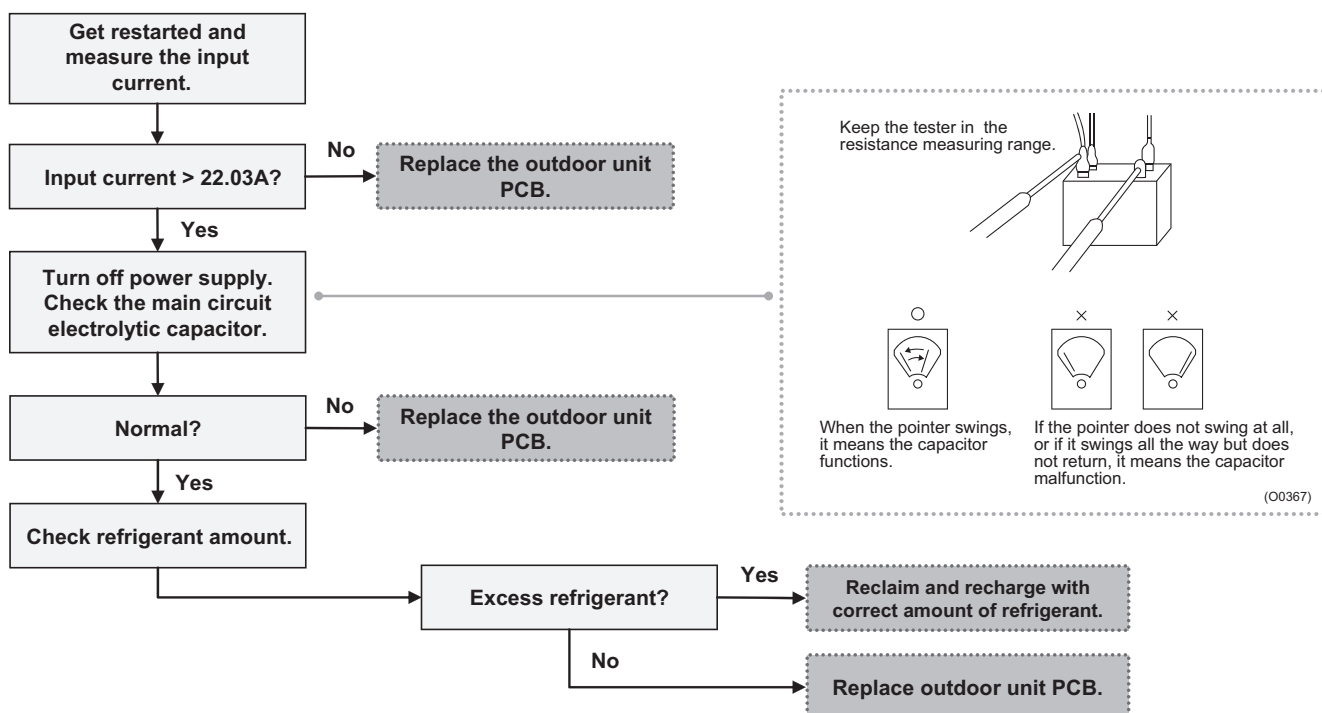
- 3 times happen within 20 minutes.

Troubleshooting



Caution

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.



Model	CU-2Z35CBE		CU-2Z41CBE		CU-2Z50CBE		CU-3Z52CBE		CU-3Z68CBE		CU-4Z68CBE		CU-4Z80CBE		CU-5Z90CBE	
Operation Mode	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A	X / A	Y / A
Cooling (A)	9.78	12.76	9.78	12.76	9.78	12.76	14.03	17.47	14.03	17.47	14.03	17.47	17.56	23.06	17.56	23.06
Cooling (B)	9.23		9.23		9.23		12.58		12.58		12.58		14.52		14.52	
Cooling (C)	9.23		9.23		9.23		12.58		12.58		12.58		13.58		13.58	
Heating	9.50		9.96		10.50		15.03		15.03		15.03		19.54		19.54	

18.2.23 F99 (Outdoor Direct Current (DC) Peak Protection)

Malfunction Decision Conditions

- During operation of cooling and heating, when an output over-current is detected by checking the current that flows in the inverter DC Peak sensing circuitry.

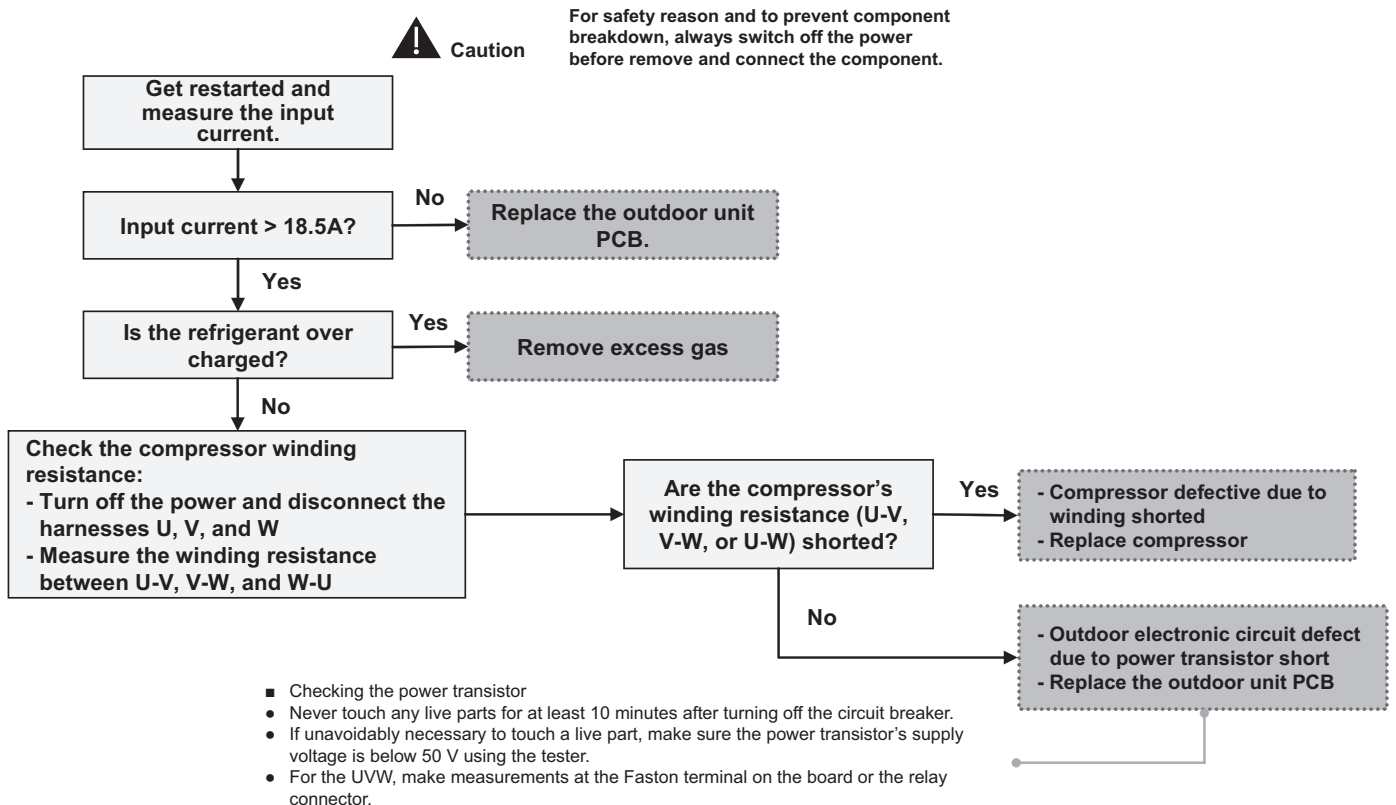
Malfunction Caused

- DC peak due to compressor failure.
- DC peak due to defective power transistor(s).
- DC peak due to defective outdoor unit PCB.

Abnormality Judgment:

- Continuous happen for 7 times.

Troubleshooting



Tester's negative terminal	Power transistor (+)	UVW	Power transistor (-)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kΩ to several MΩ			
Abnormal resistance	0 or ∞			

Resistance of Compressor Windings

MODEL	CU-2Z35CBE / CU-2Z41CBE / CU-2Z50CBE
CONNECTION	9RD132XGC21-T01 (Ω)
U-V	1.708
U-W	1.708
V-W	1.708

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-3Z52CBE / CU-3Z68CBE
CONNECTION	9RD220XBD21 (Ω)
U-V	0.998
U-W	0.998
V-W	0.998

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-4Z68CBE
CONNECTION	9RD220XBD21 (Ω)
U-V	0.998
U-W	0.998
V-W	0.998

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-4Z80CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

Note: Winding resistance at 20°C

Resistance of Compressor Windings

MODEL	CU-5Z90CBE
CONNECTION	9KD240XBB21-CA (Ω)
U-V	0.720
U-W	0.726
V-W	0.708

Note: Winding resistance at 20°C

19. Disassembly and Assembly Instructions

WARNING

High Voltage is generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

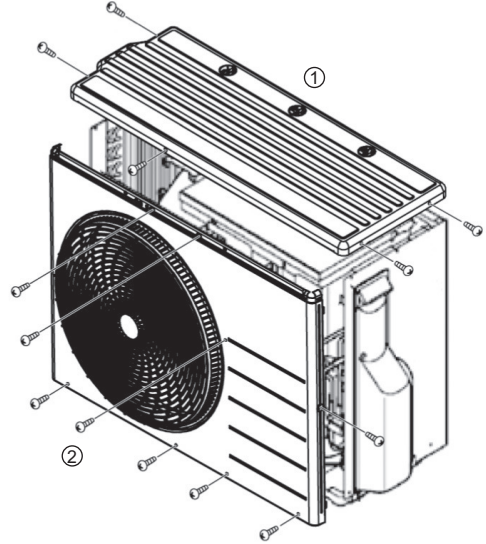
CU-2Z35CBE CU-2Z41CBE CU-2Z50CBE

19.1 Outdoor Unit Removal Procedure

 Caution! When handling electronic controller, be careful of electrostatic discharge.

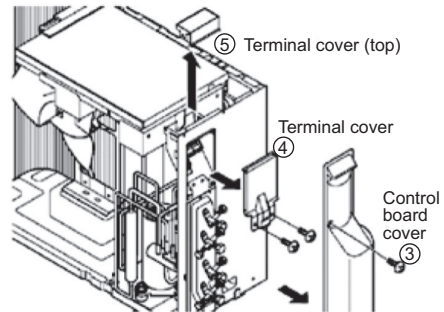
19.1.1 Removing the Cabinet Top Plate and Cabinet Front Plate

1. Remove the cabinet top plate (remove the 5 screws).
2. Remove the 8 screws fixing the cabinet front plate, release 6 hooks and pull the cabinet front plate toward front side.



19.1.2 Removing the Control Board Cover

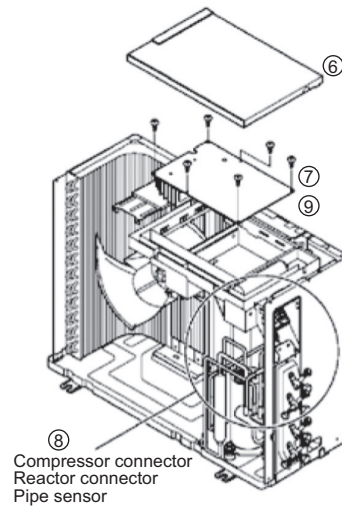
3. Remove the control board cover (remove 1 screw).
4. Remove the terminal cover (remove 2 screws)
5. Remove the terminal cover (top) and disconnect all the lead wires (3 fasten tab) inside.



19.1.3 Removing the Control Board

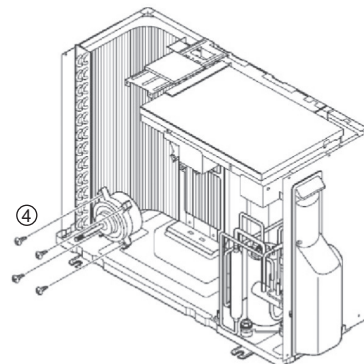
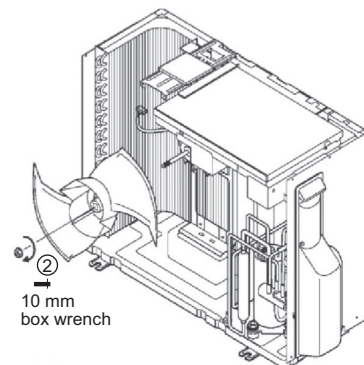
6. Remove the control board cover.
7. Remove the 6 screws at the positions on the control board indicated by arrows
8. Disconnect the connectors and pipe sensor connected to the compressor and reactor.
9. Remove the control board.

When pulling the control board upward, it may not be possible to remove it because of the way in which the ground wire and other wires are routed. In this case, it is removed after the control board cover itself has been removed.



19.1.4 Removing the Propeller Fan and Fan Motor

1. Remove the cabinet top plate and cabinet from plate.
2. Remove the propeller fan by removing the nut turning clockwise at its center.
3. Disconnect the connector of the fan motor from the control board.
4. Loosen the 4 screws at the fan motor mounting then remove the fan motor.



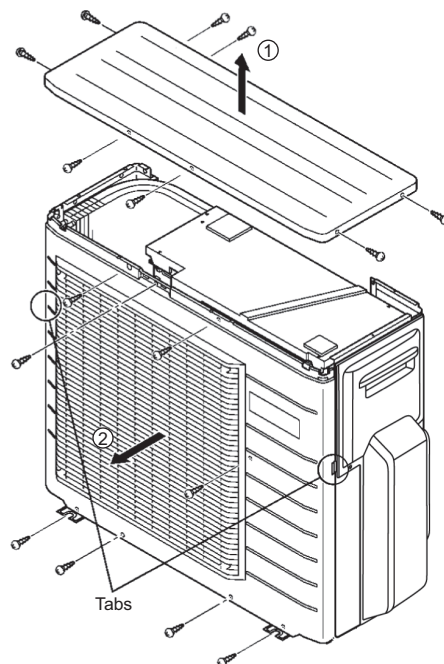
CU-3Z52CBE CU-3Z68CBE CU-4Z68CBE

19.2 Outdoor Unit Removal Procedure

⚠ Caution! When handling electronic controller, be careful of electrostatic discharge.

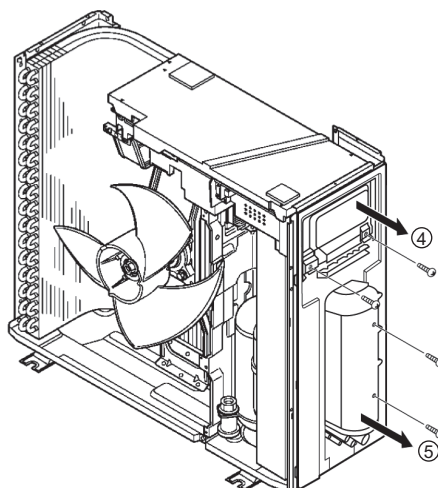
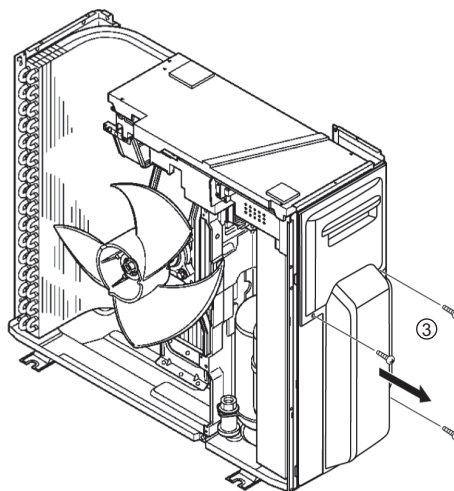
19.2.1 Removing the Cabinet Top Plate and Cabinet Front Plate

1. Remove the cabinet top plate (remove the 8 screws).
2. Remove the 8 screws (1 on the center, 3 at the top and 4 at the bottom) securing the cabinet front plate, release the 2 hooks (1 each at the left and right), and pull the cabinet front plate toward front side.



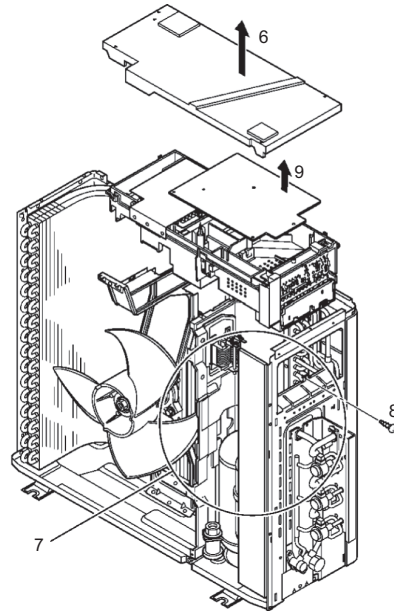
19.2.2 Remove the Control Board Cover and Particular Plates

3. Remove the cabinet top plate (remove 3 screws).
4. Remove the particular plate (remove 2 screws).
5. Remove the particular plate (remove 2 screws).



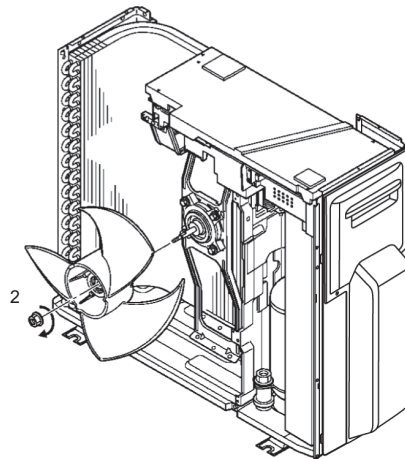
19.2.3 Removing the Control P.C. Board

6. Remove the drip proof cover.
7. Disconnect the connectors (lead wired of the compressor, sensor, and others).
8. Remove the screw at the right side of the control box, and pull out the entire control box.
9. Release the control P.C. Board tab to remove the control P.C. Board.

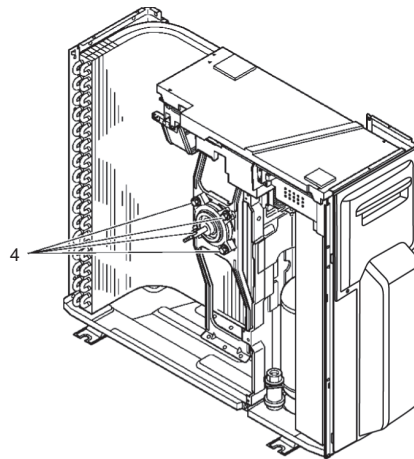


19.2.4 Removing the Propeller Fan and Fan Motor

1. Follow the steps in 18.2.1 for removing the cabinet top plate and cabinet front plate.
2. Remove the propeller fan by removing the nut turning clockwise at its center.



3. Disconnect the fan motor connector from the control P.C. Board.
4. Loosen the 4 fan motor mounting screws then remove the fan motor.



CU-4Z80CBE CU-5Z90CBE

19.3 Outdoor Unit Removal Procedure

⚠ Caution! When handling electronic controller, be careful of electrostatic discharge.

19.3.1 Removing the Cabinet Top Plate

1. Remove the cabinet top plate (remove the 11 screws).



Fig. 1

19.3.2 Remove the Control Board Cover and Particular Plates

2. Remove the control board cover (remove the 5 screws).



Fig. 2

3. Remove the particular plate (remove the 3 screws).

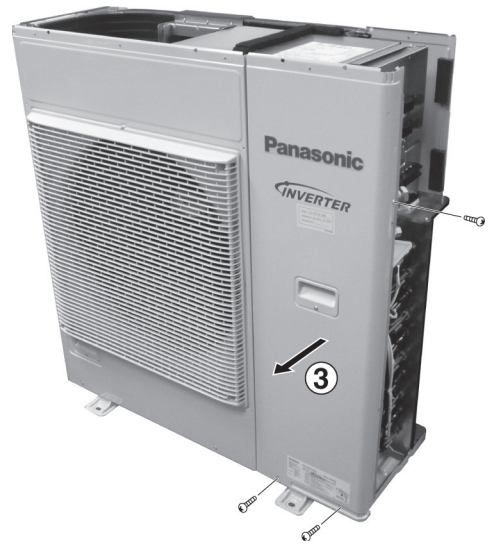


Fig. 3

4. Remove the particular plate (remove the 8 screws).



Fig. 4

19.3.3 Removing the Cabinet Front Plate

5. Remove the cabinet front plate (remove the 7 screws).



Fig. 5

19.3.4 Removing the Control P.C. Board

6. Remove the cover by release the screw.

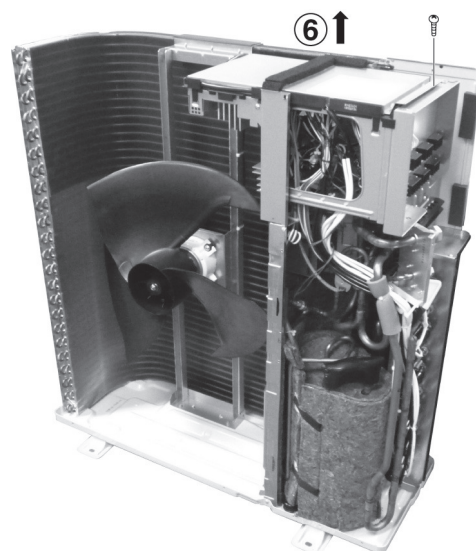


Fig. 6

7. Disconnect the connectors (lead wires of the compressor, sensors, and others).
8. Release the Control P.C. Board tab to remove the Control P.C. Board.

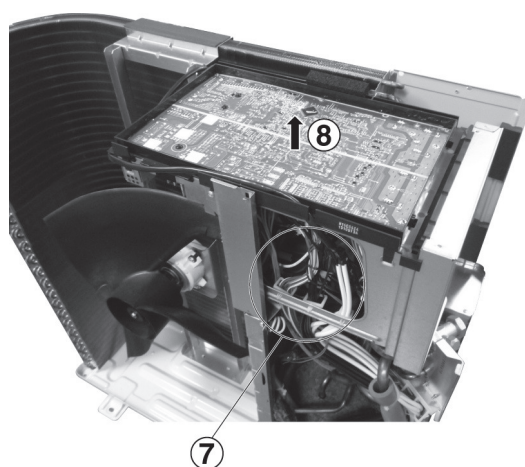


Fig. 7

19.3.5 Removing the Propeller Fan and Fan Motor

9. Remove the propeller fan by removing the nut turning clockwise as its center.
10. Disconnect the fan motor connector from the Control P.C. Board. Loosen the 4 fan motor mounting screws then remove the fan motor.

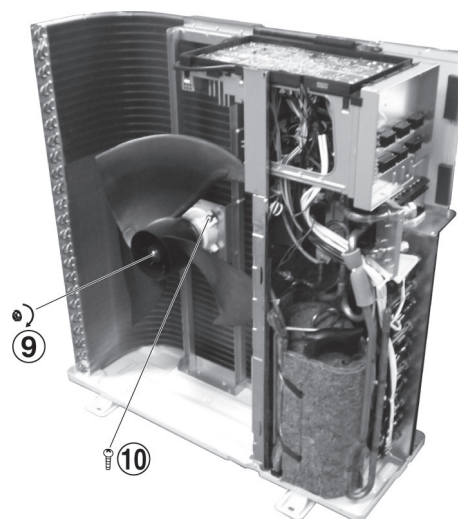


Fig. 8

20. Technical Data

Technical data provided are based on the air conditioner running under free frequency.

Note: Refer Appendix 2

21. Service Data

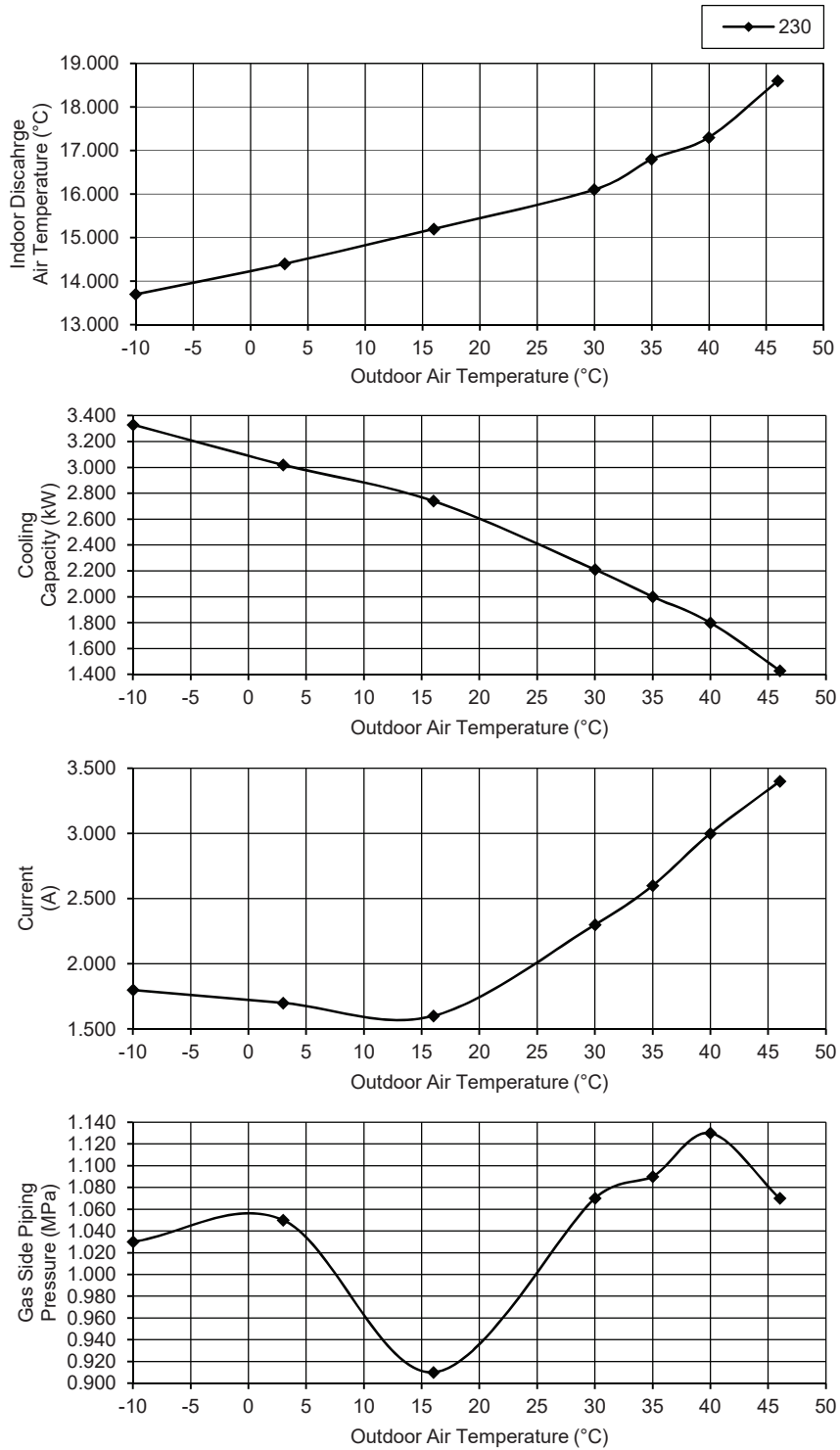
Service Data provided are based on the air conditioner running under rated frequency during forced cooling / forced heating mode.

21.1 Operation Characteristics (CU-2Z35CBE)

21.1.1 One Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic

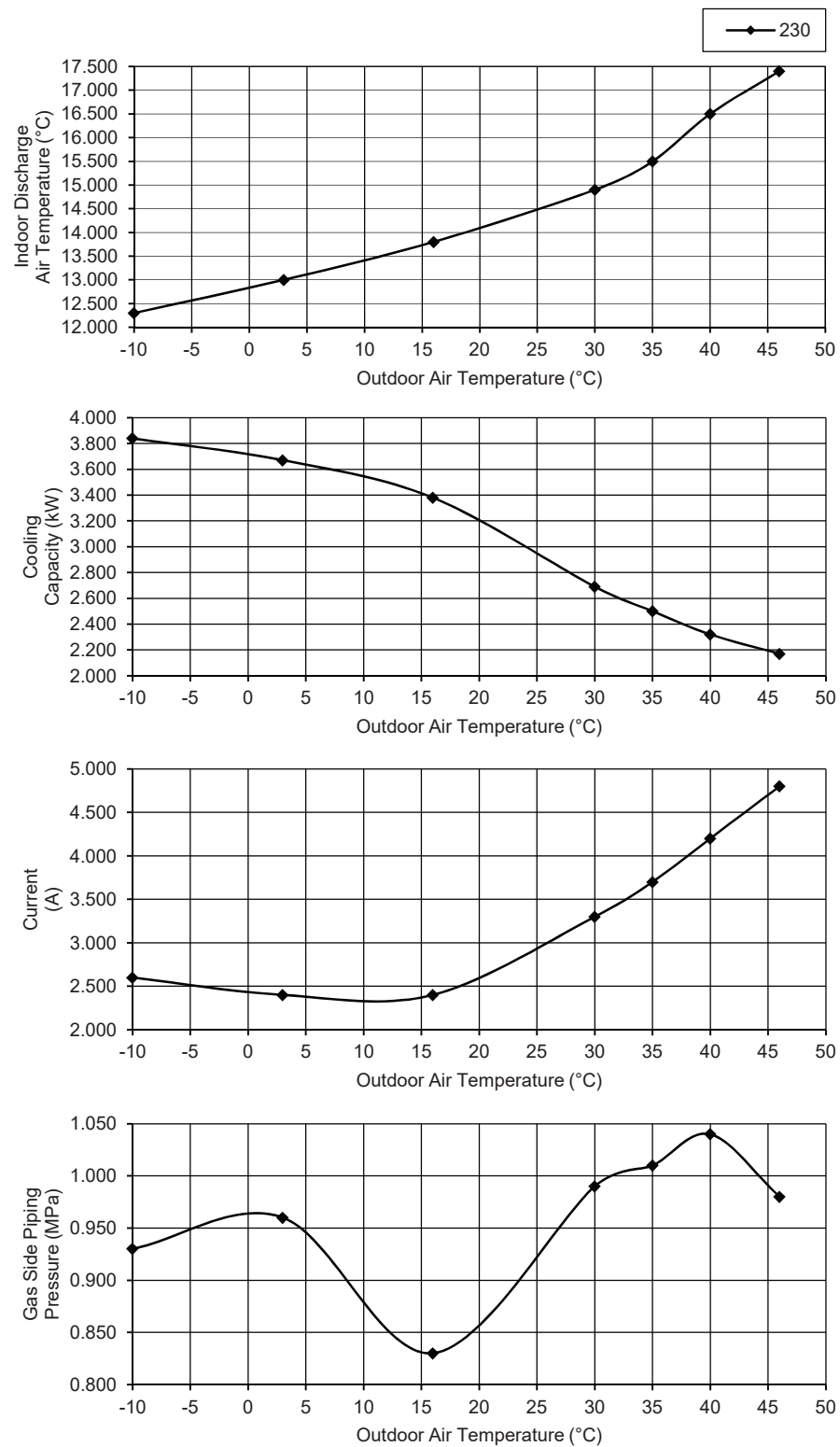
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic

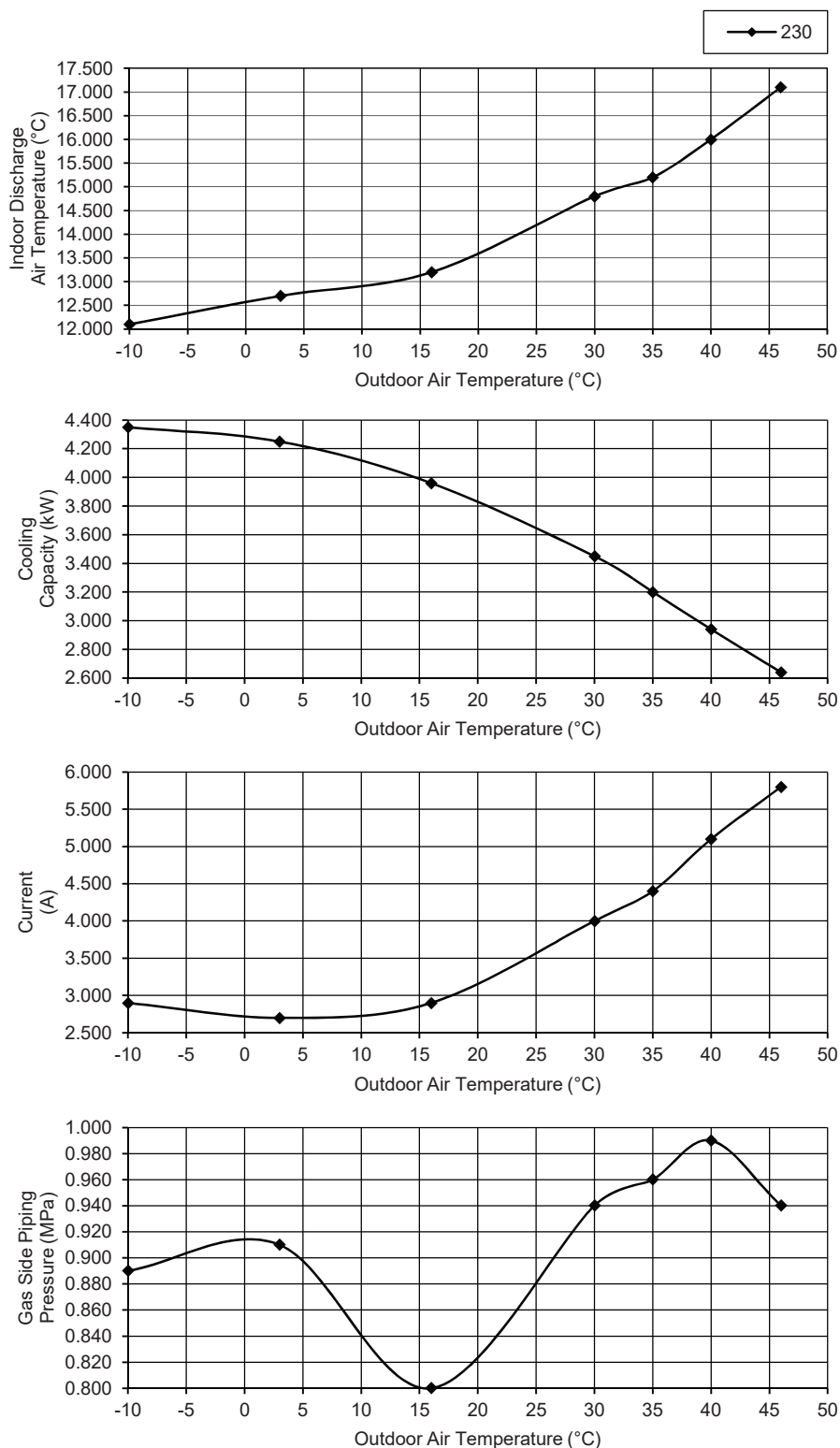
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Heating Characteristic

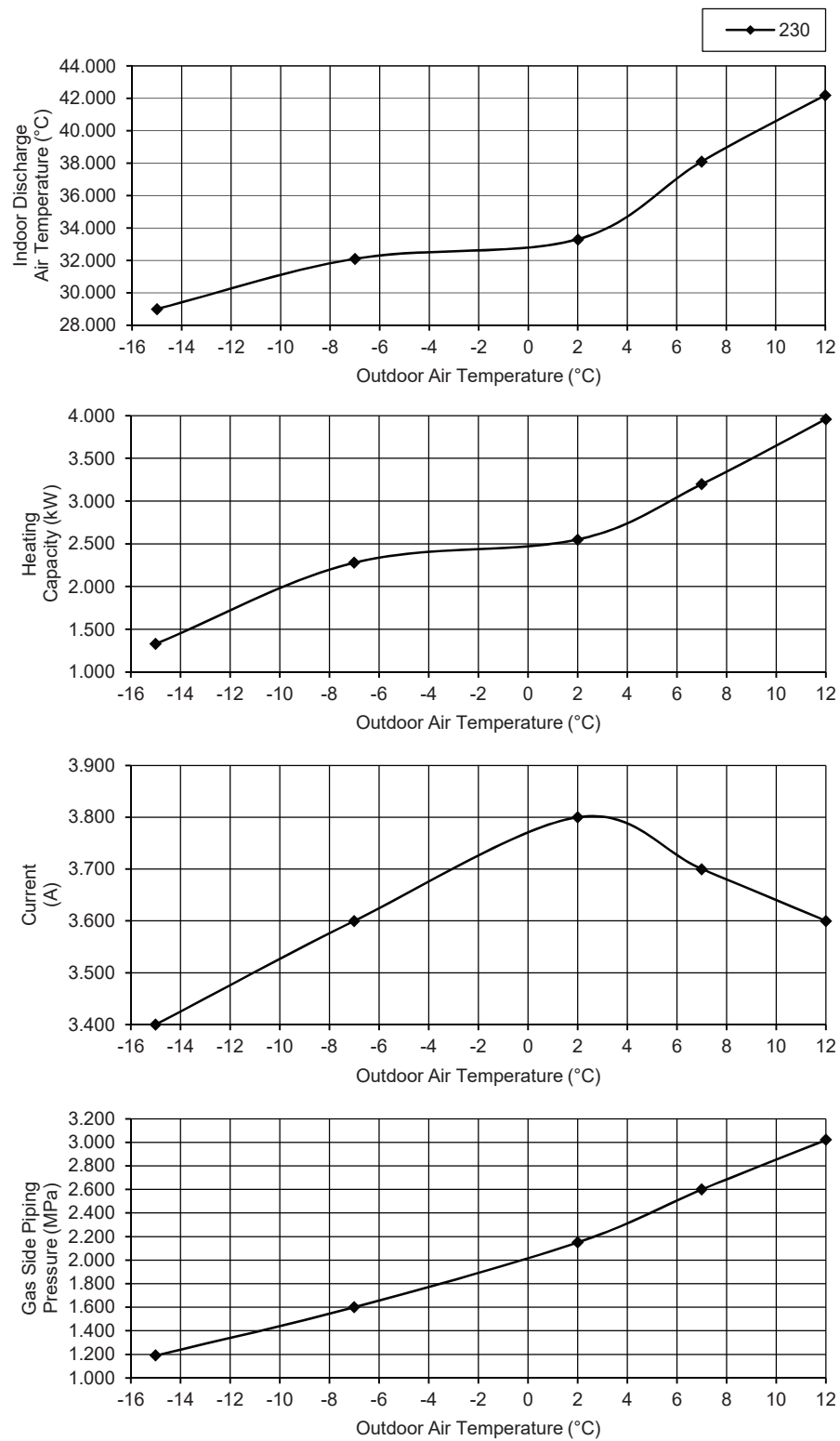
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

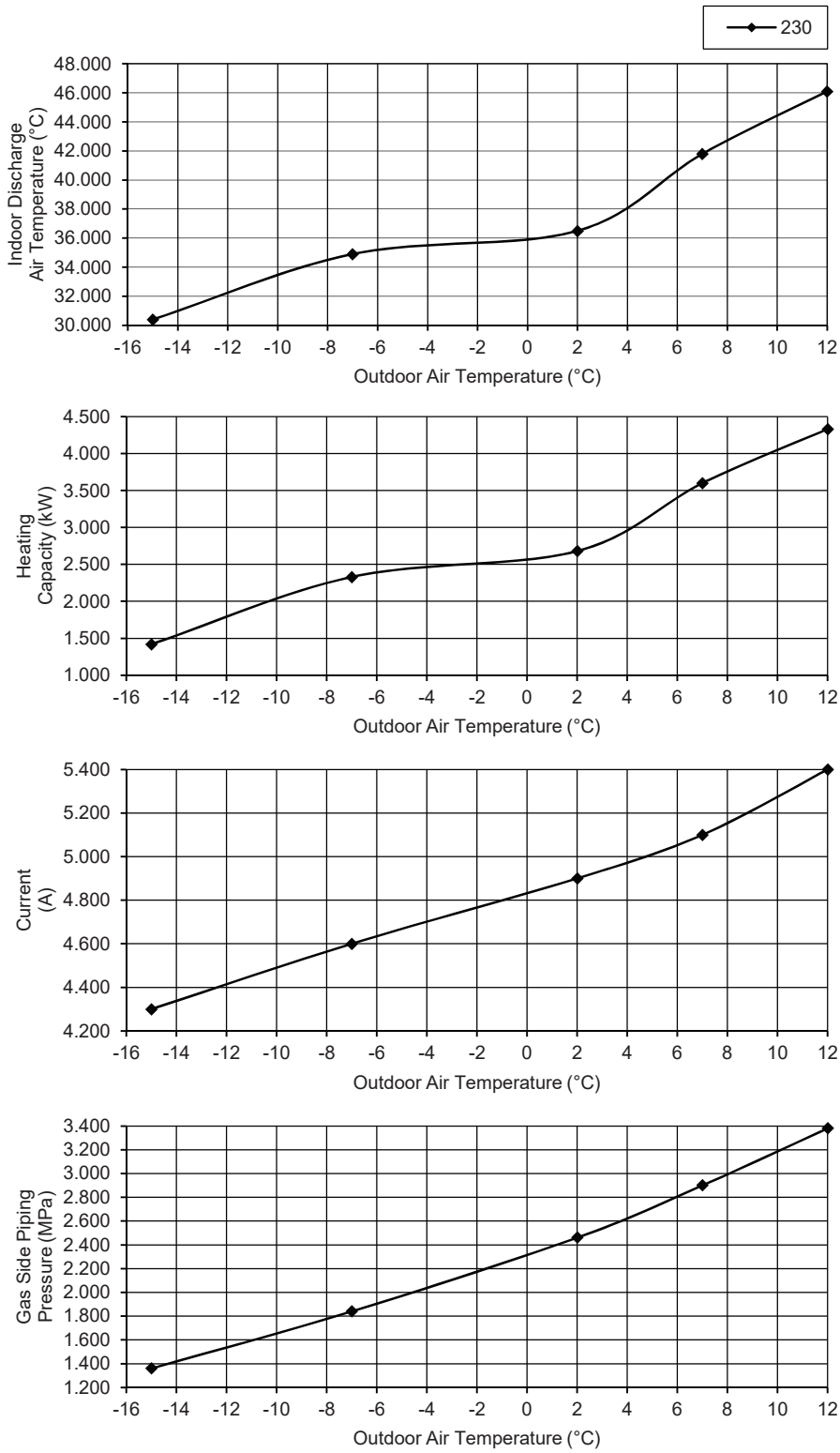
A) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



7°C & 12°C (Outdoor Air Temp.) = Heating Overload Protection activated

- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic

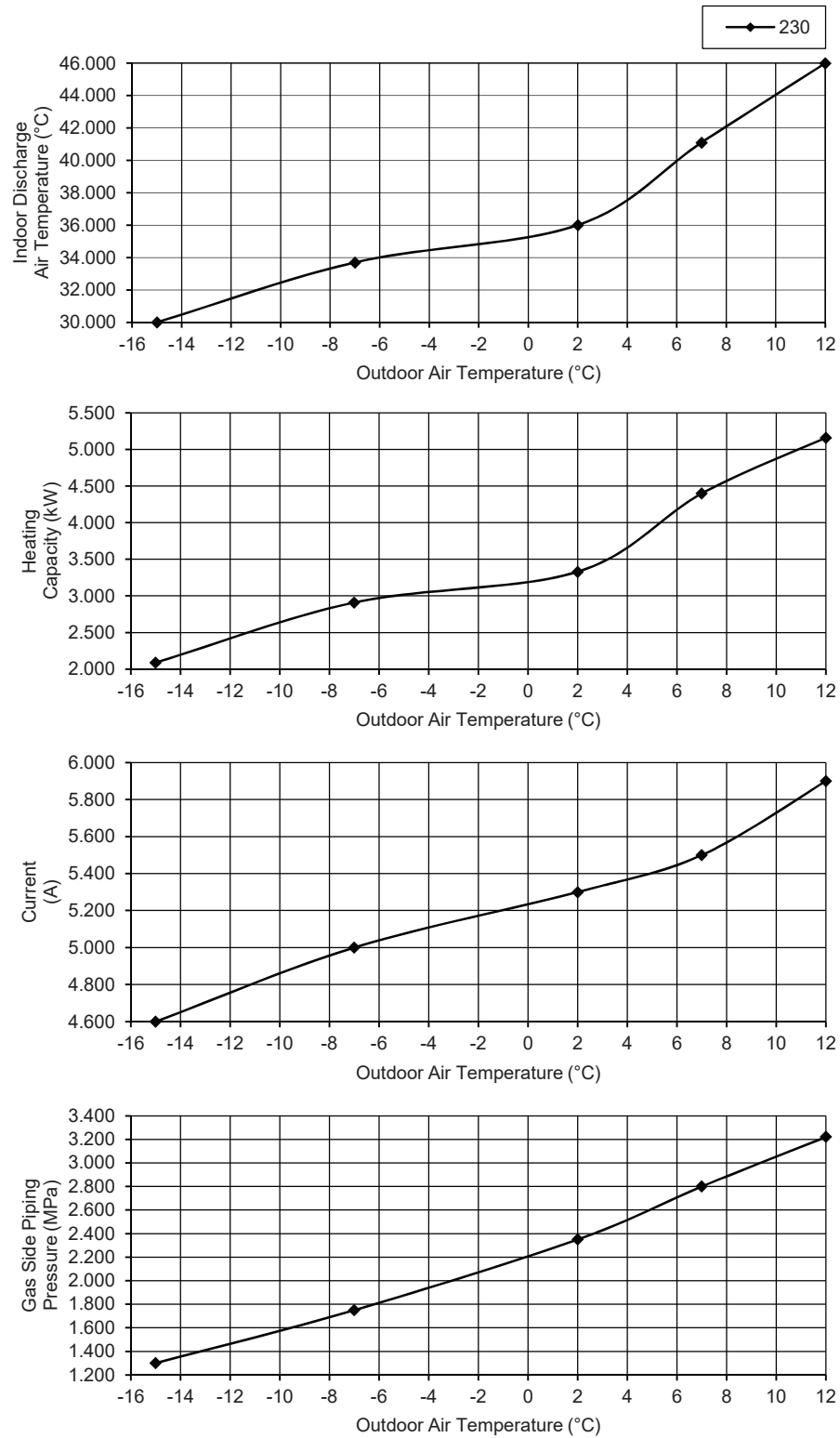
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

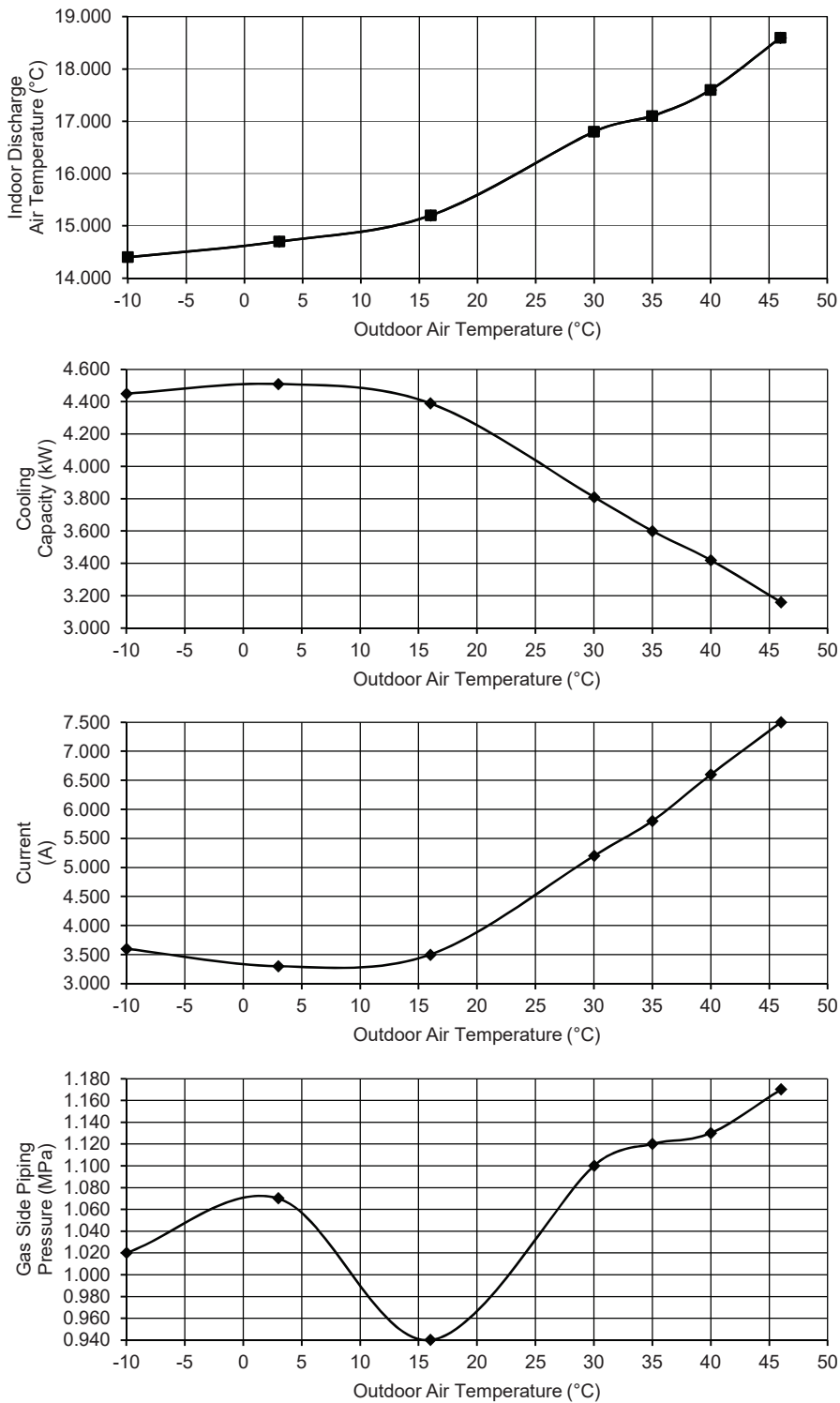
C) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



21.1.2 Two Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0), CS-Z20CKEW + CS-Z20CKEW



- Cooling Characteristic

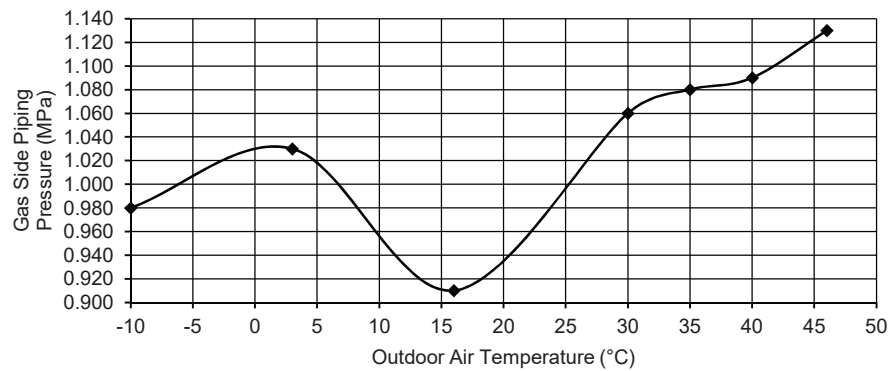
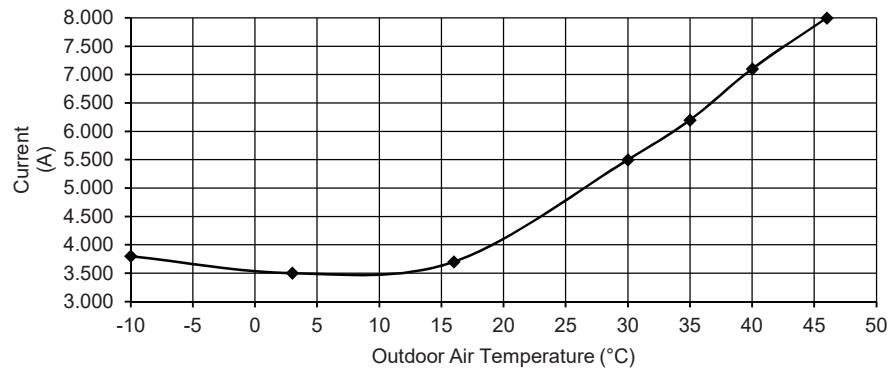
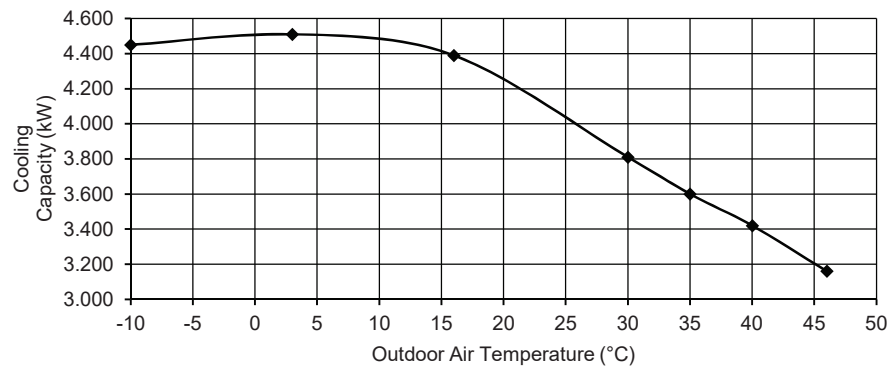
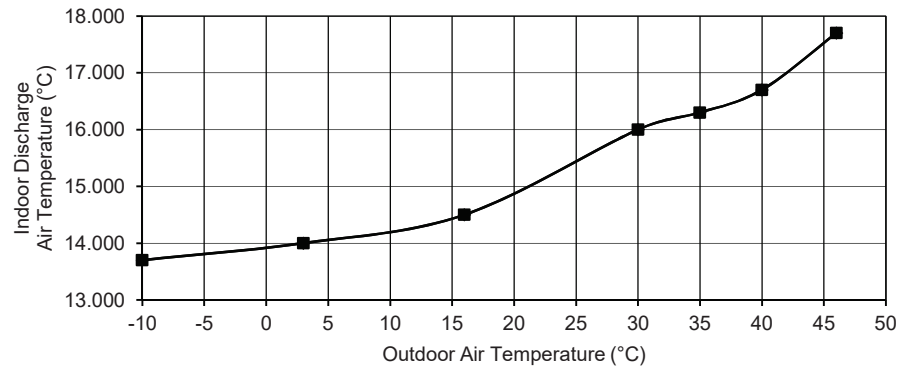
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW



- Heating Characteristic

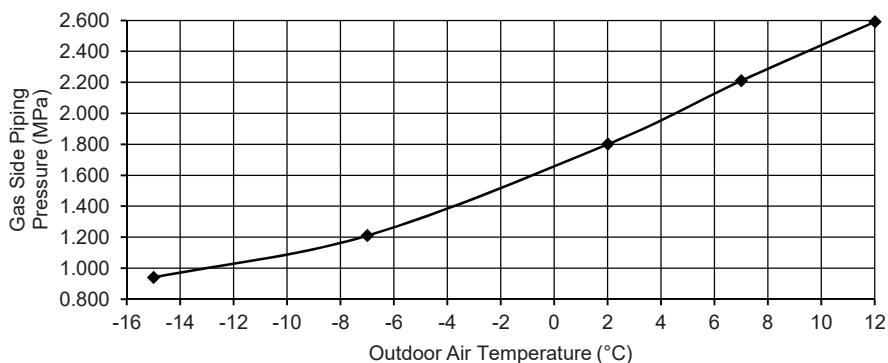
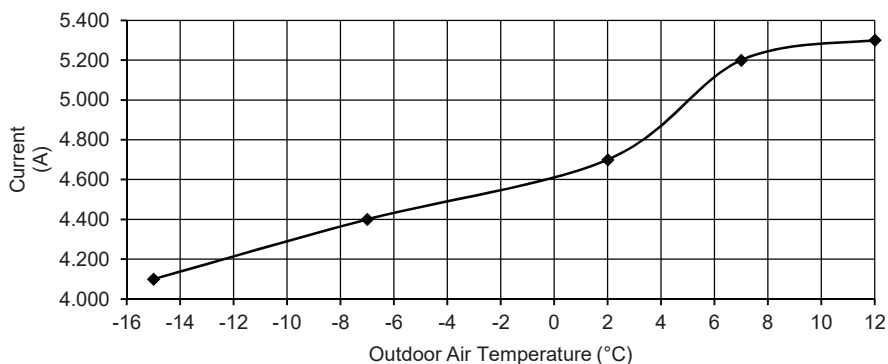
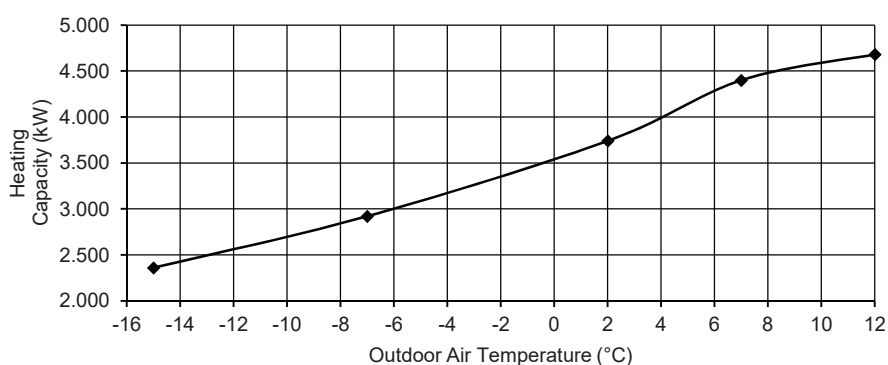
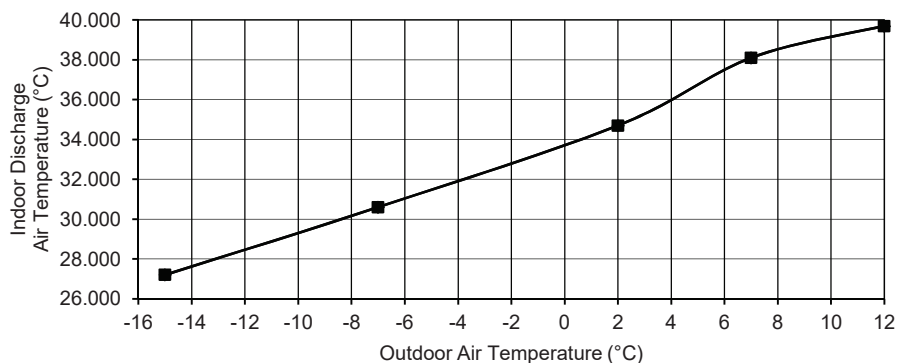
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.0), CS-Z20CKEW + CS-Z20CKEW



- Heating Characteristic

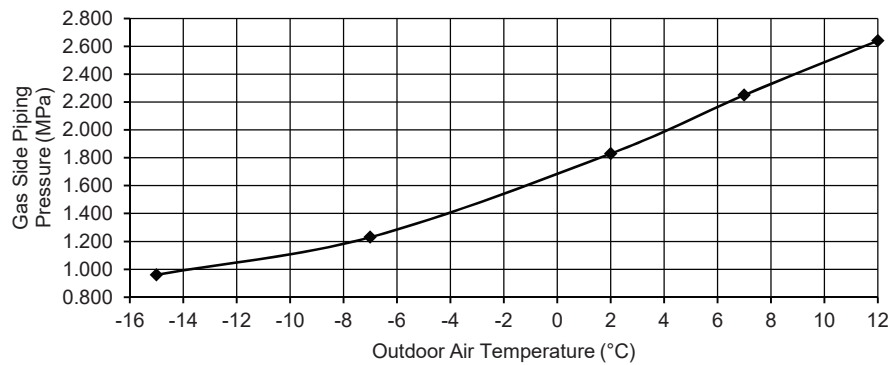
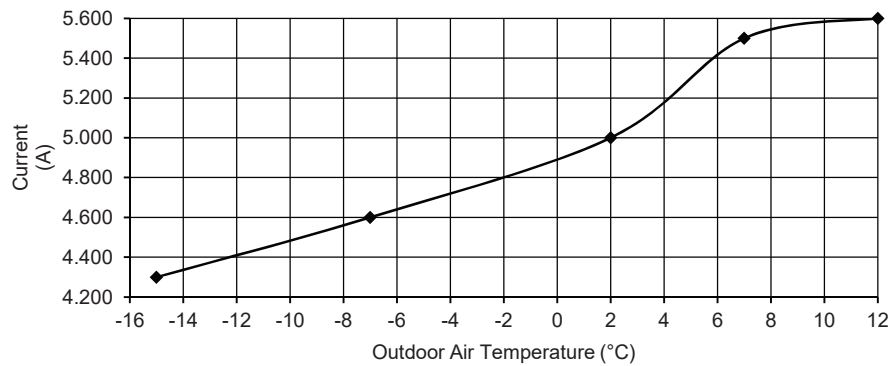
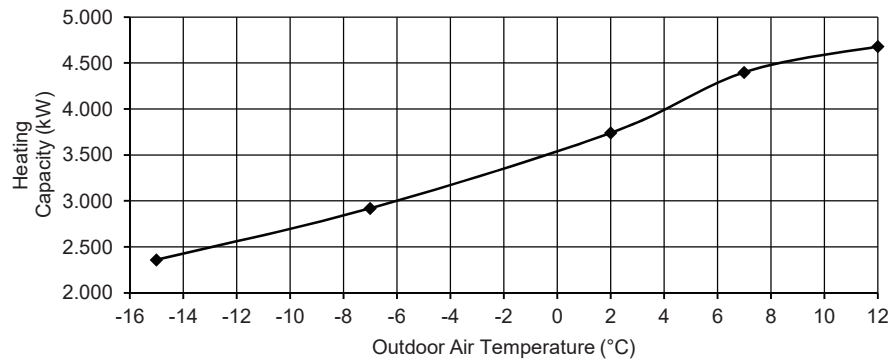
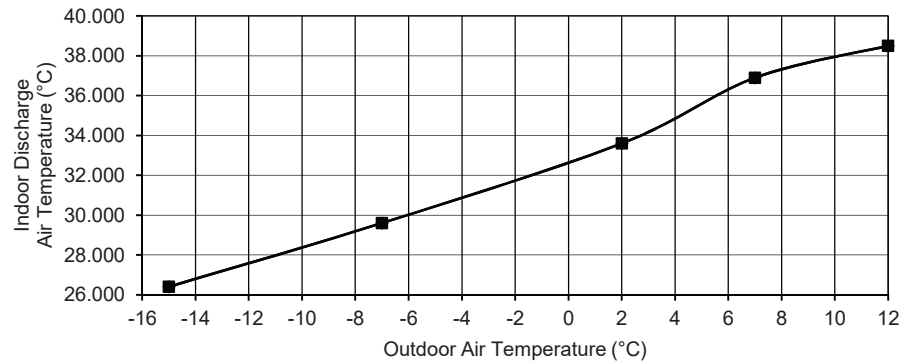
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW

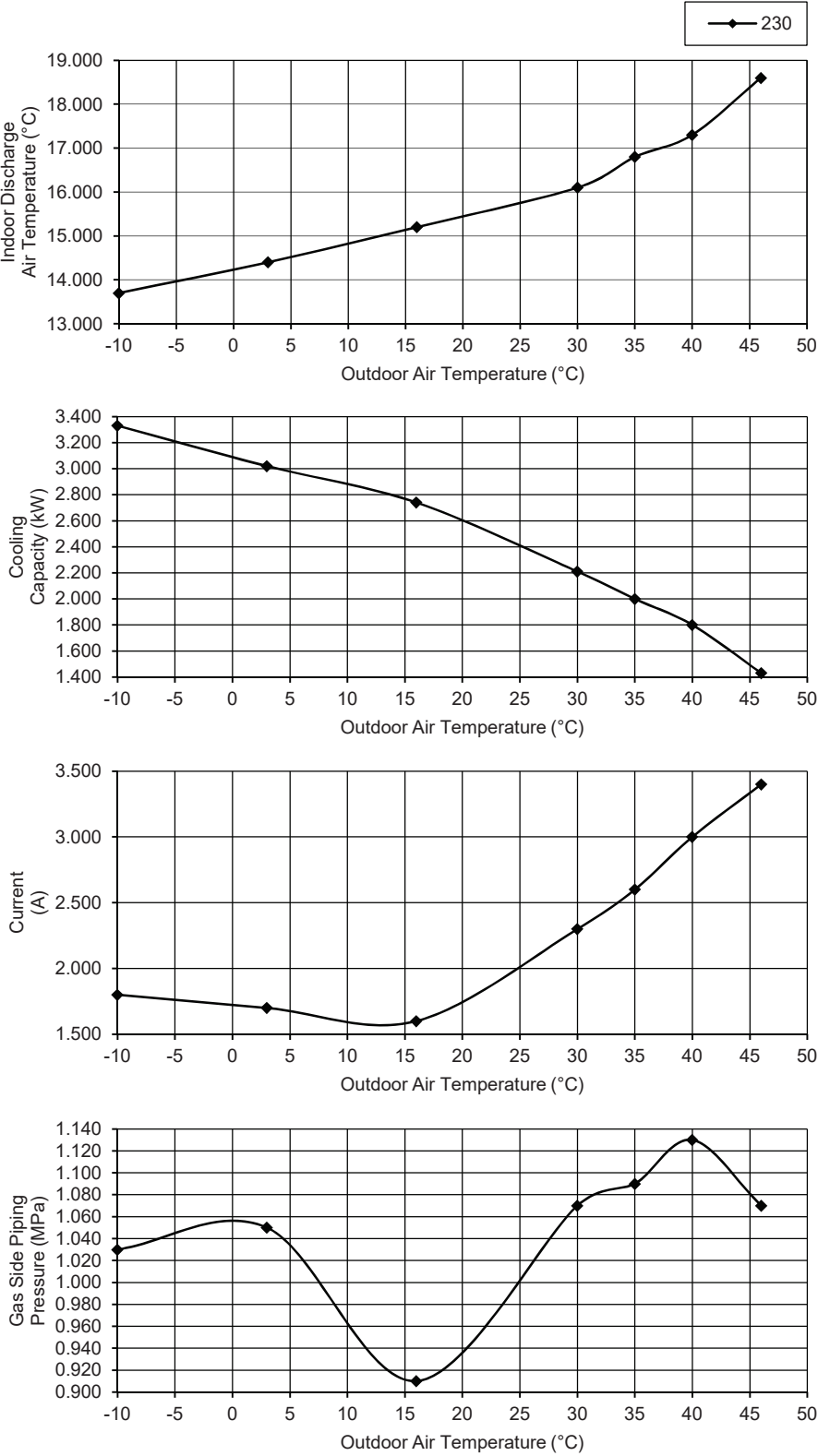


21.2 Operation Characteristics (CU-2Z41CBE)

21.2.1 One Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic

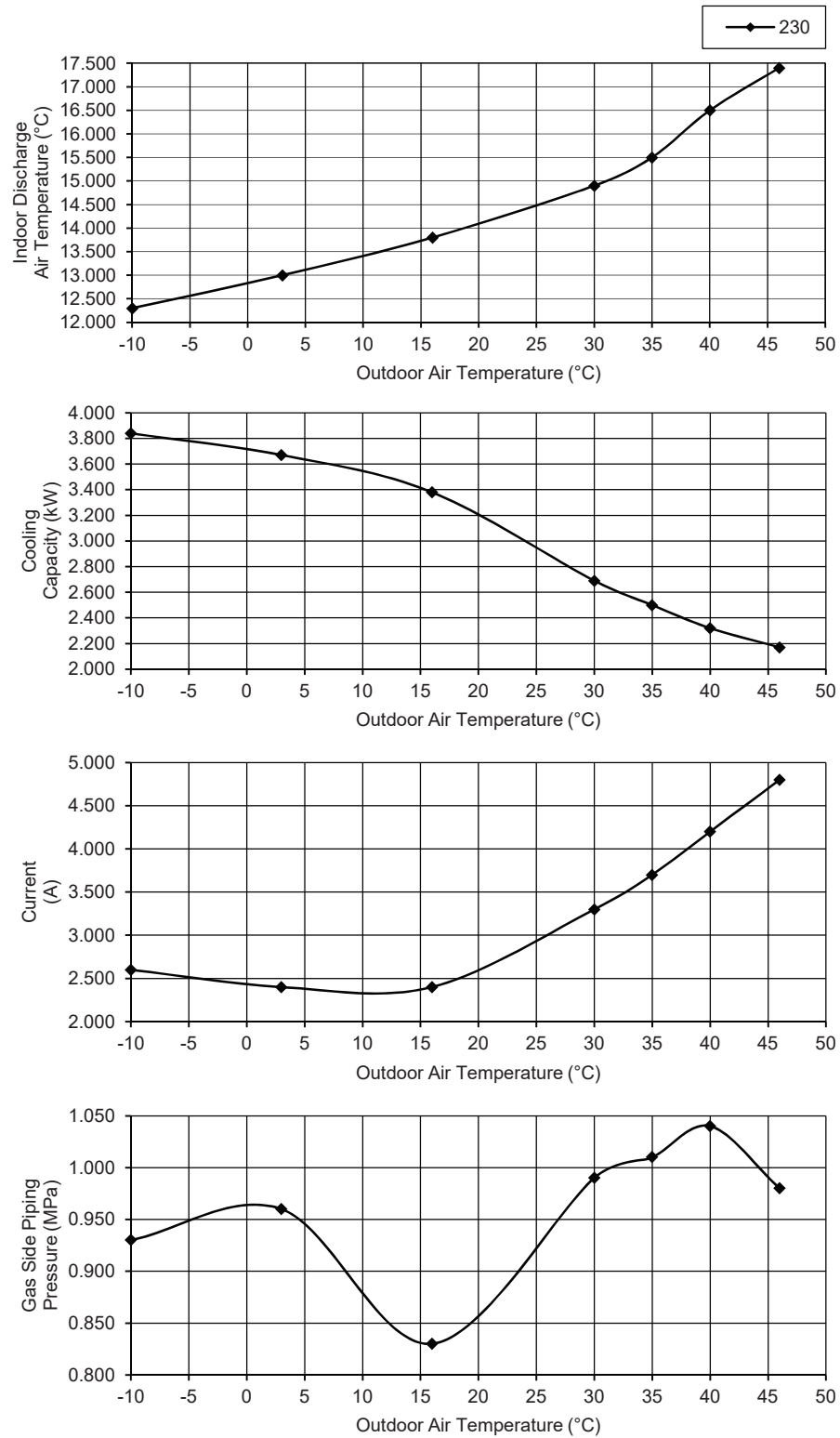
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

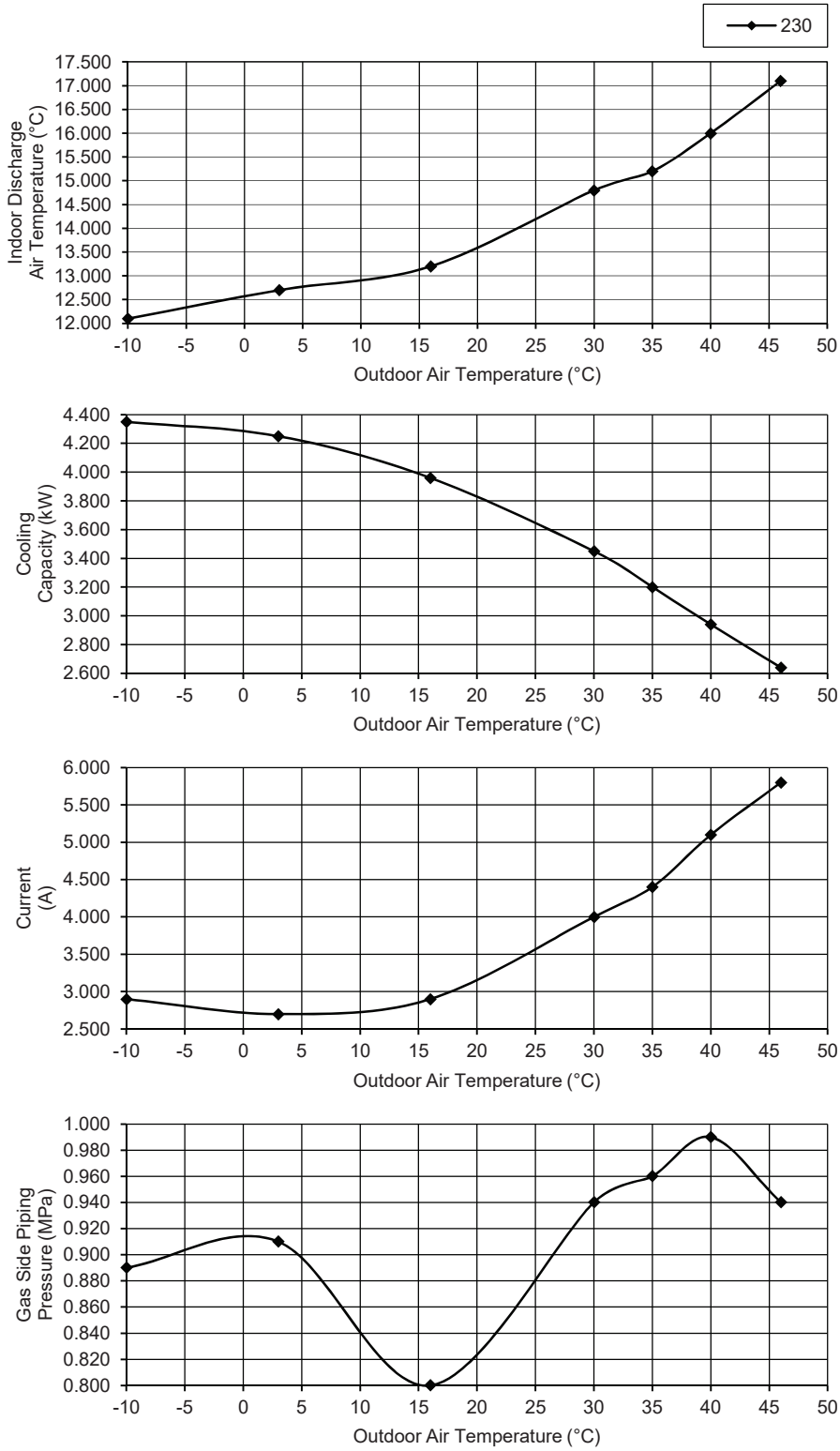
Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping length: 5.0 m
 Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Heating Characteristic

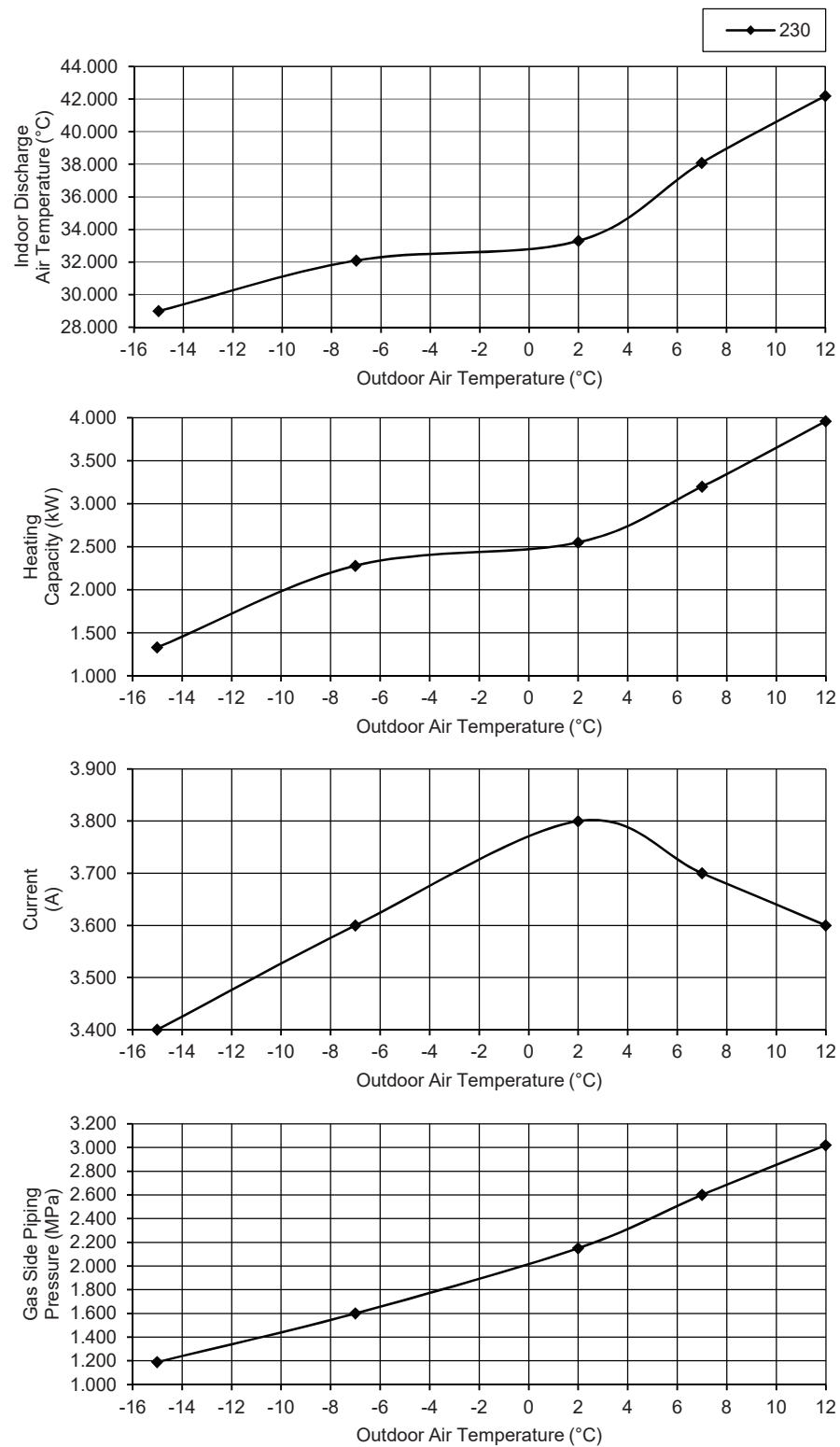
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

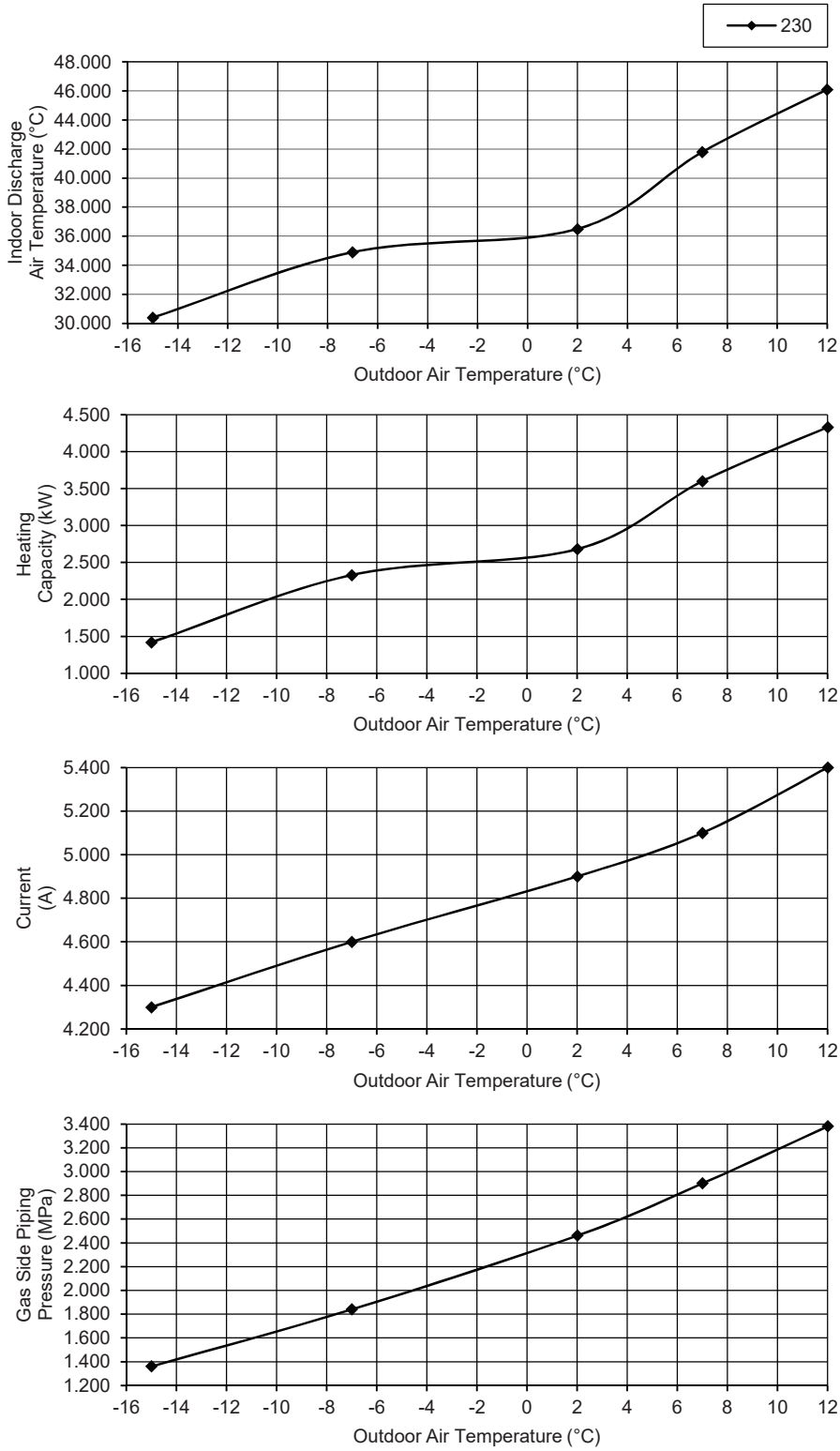
A) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



7°C & 12°C (Outdoor Air Temp.) = Heating Overload Protection activated

- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5.0 m
 Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic

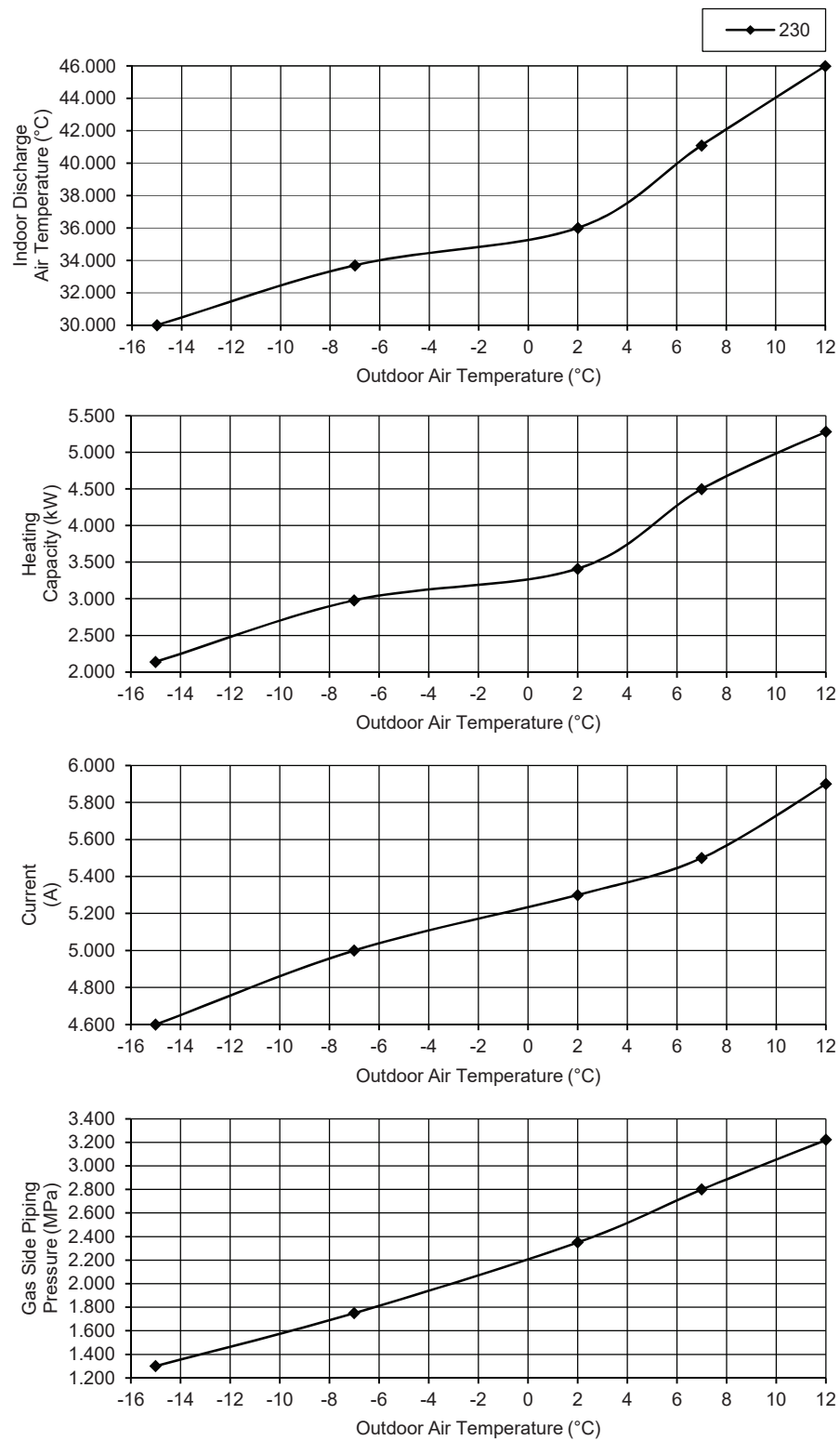
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

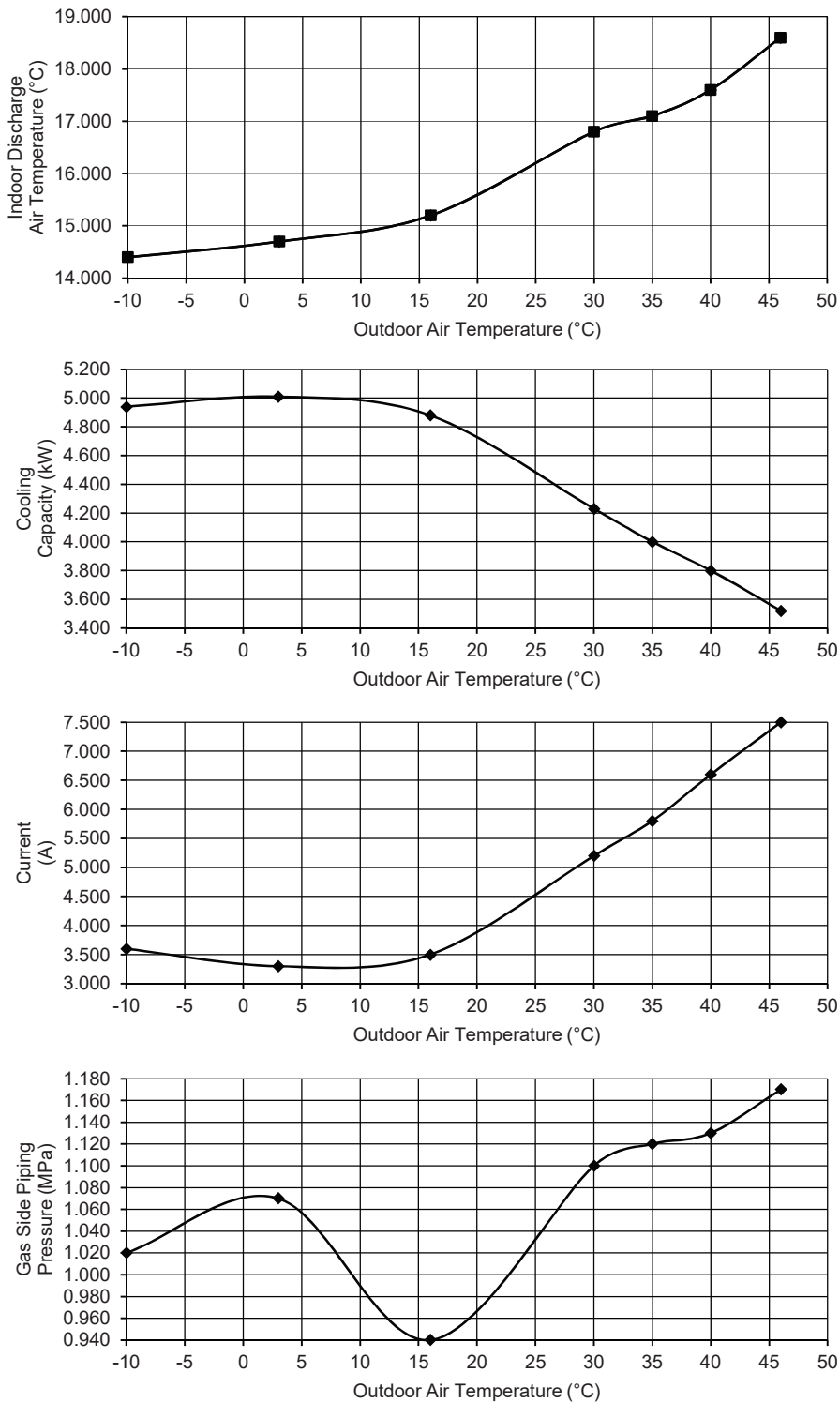
C) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



21.2.2 Two Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0), CS-Z20CKEW + CS- Z20CKEW



- Cooling Characteristic

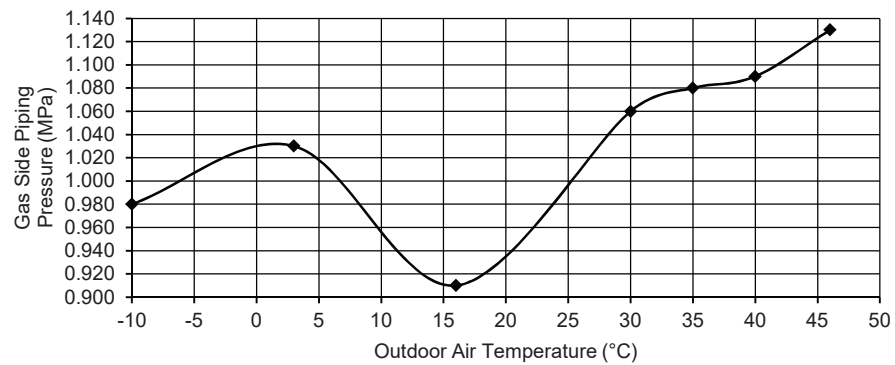
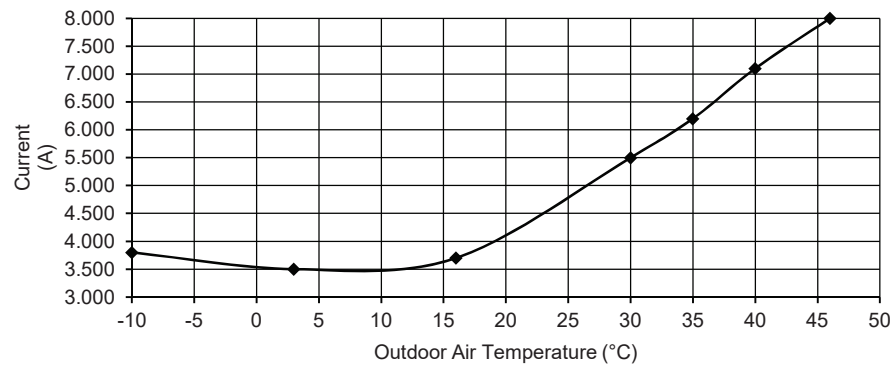
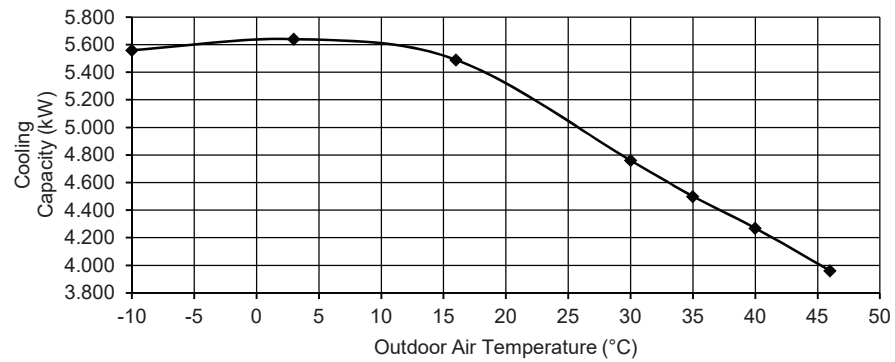
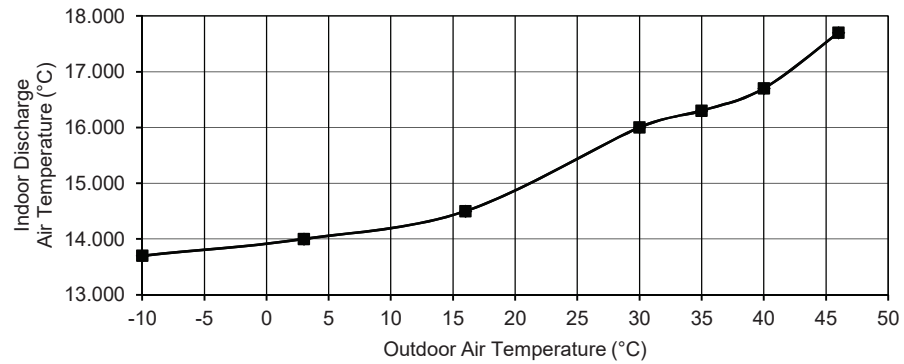
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW



- Heating Characteristic

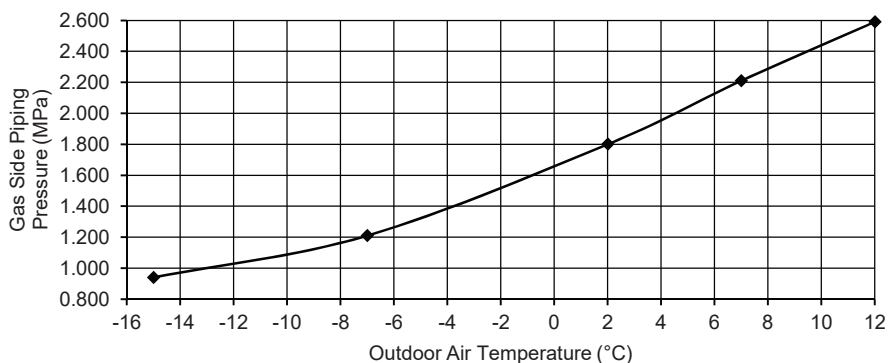
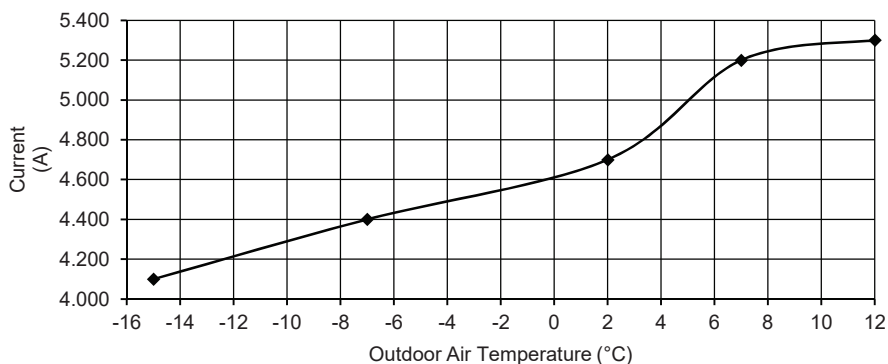
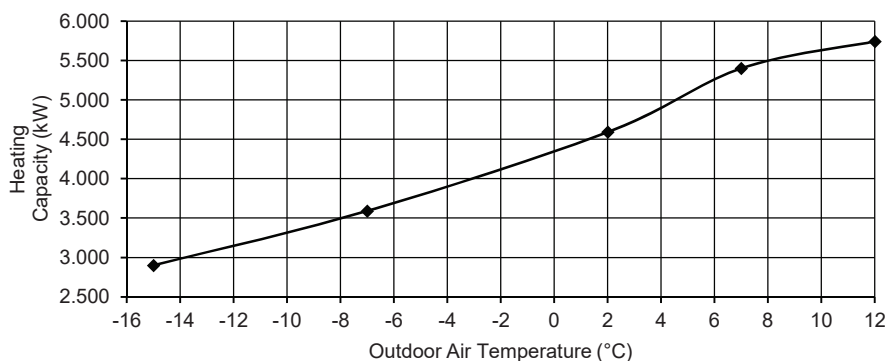
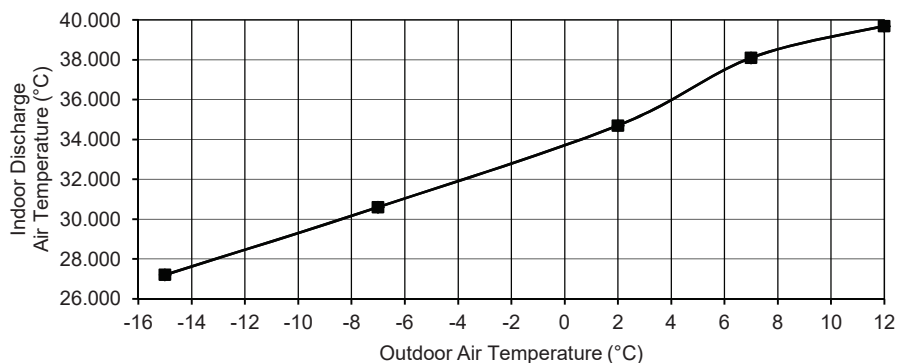
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.0), CS-Z20CKEW + CS- Z20CKEW



- Heating Characteristic

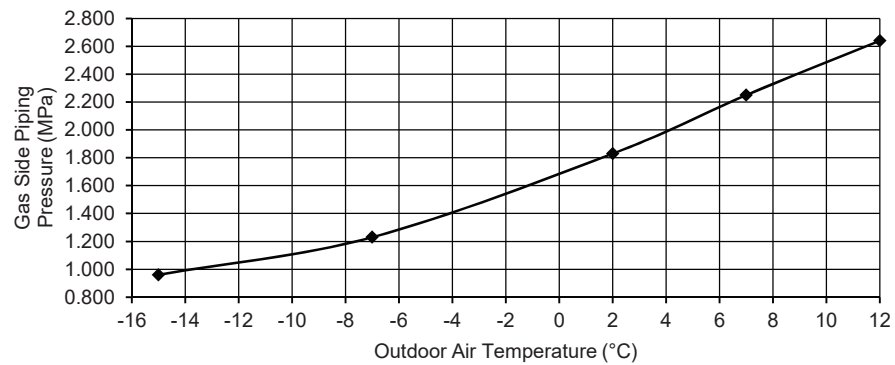
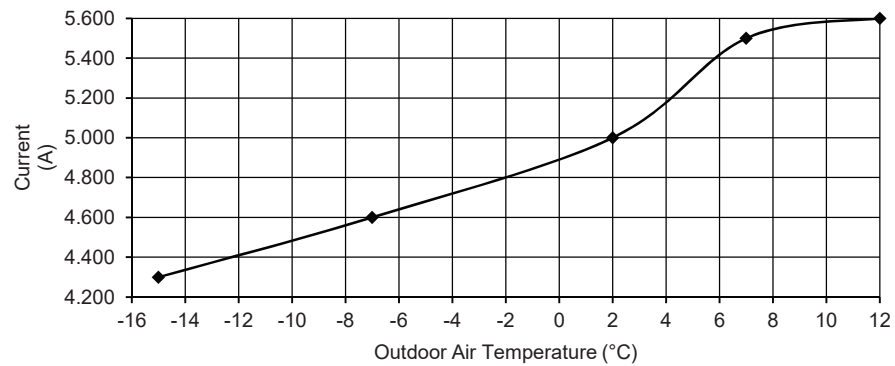
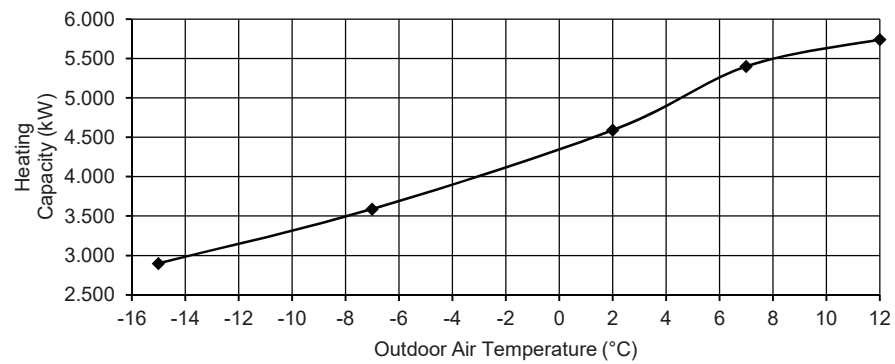
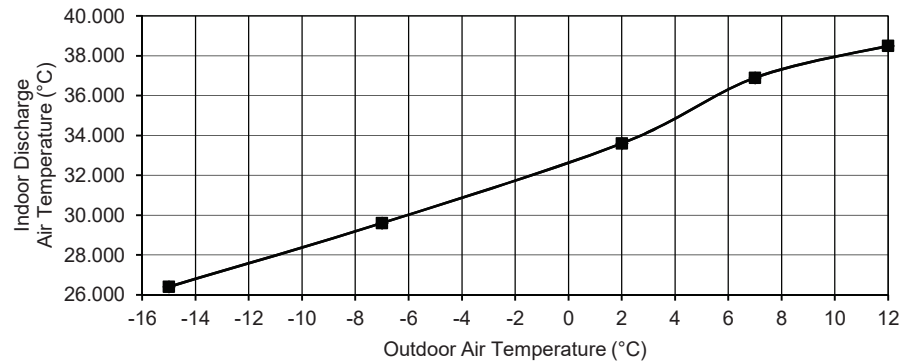
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW

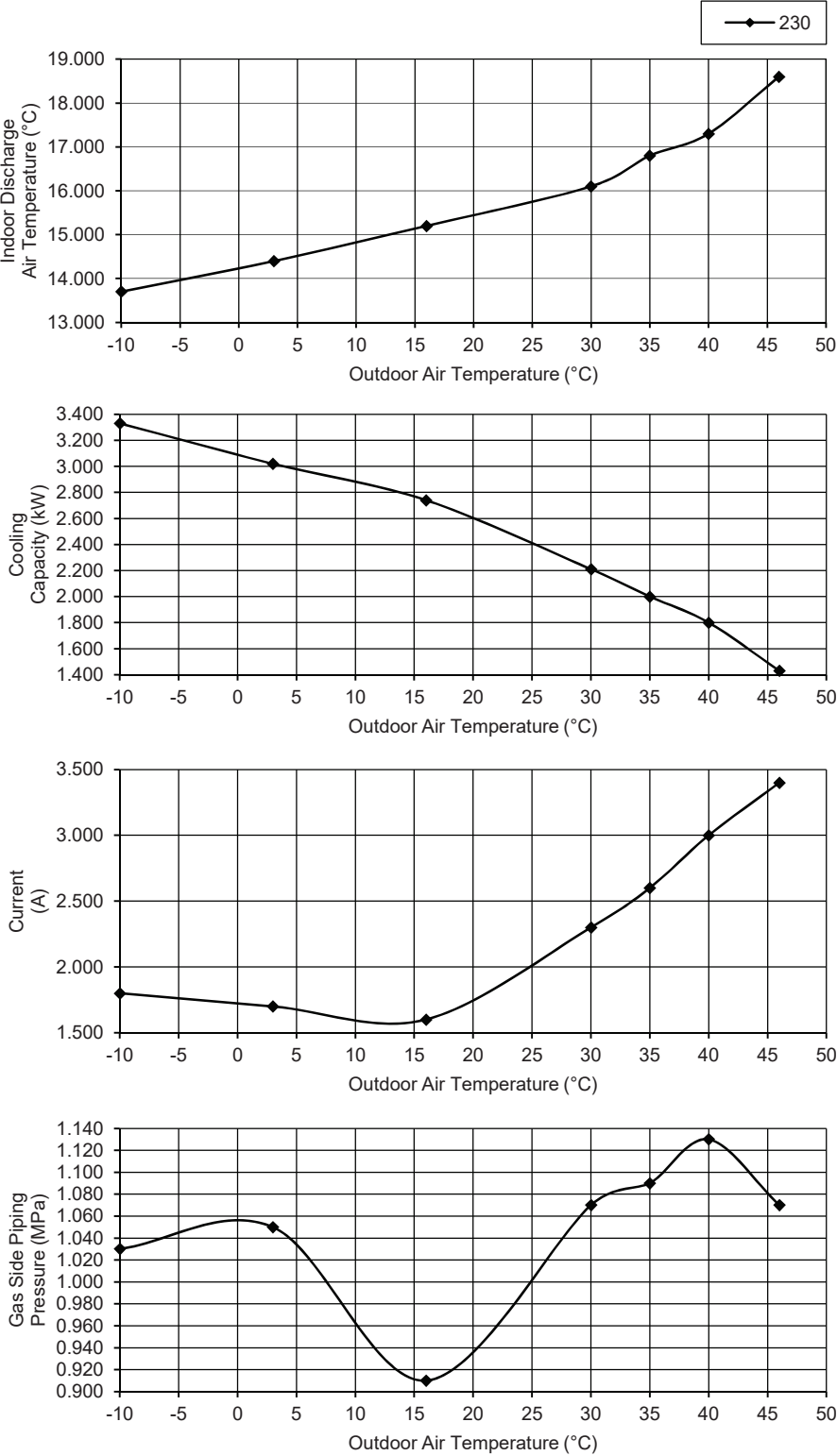


21.3 Operation Characteristics (CU-2Z50CBE)

21.3.1 One Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic

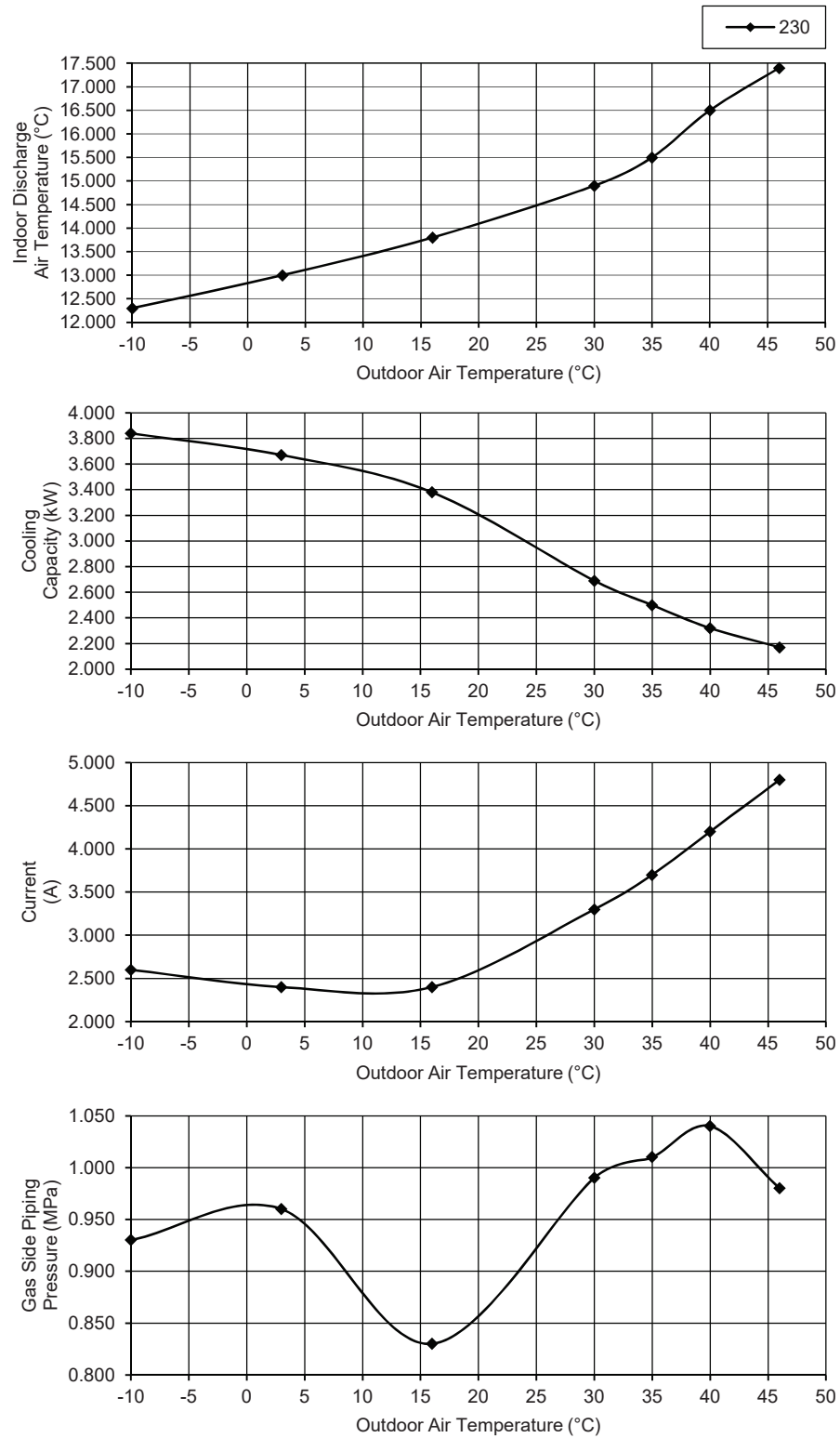
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic

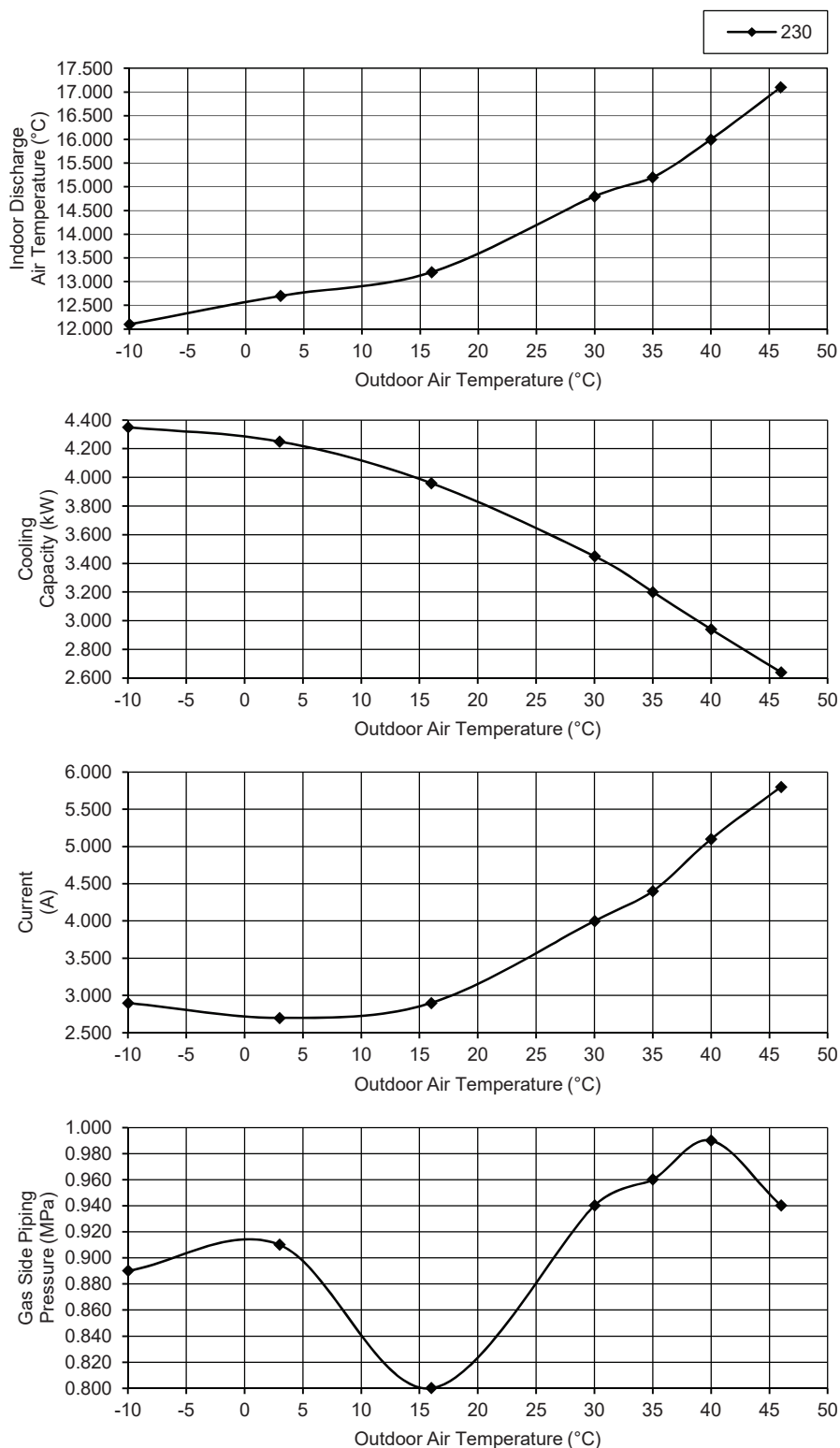
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Heating Characteristic

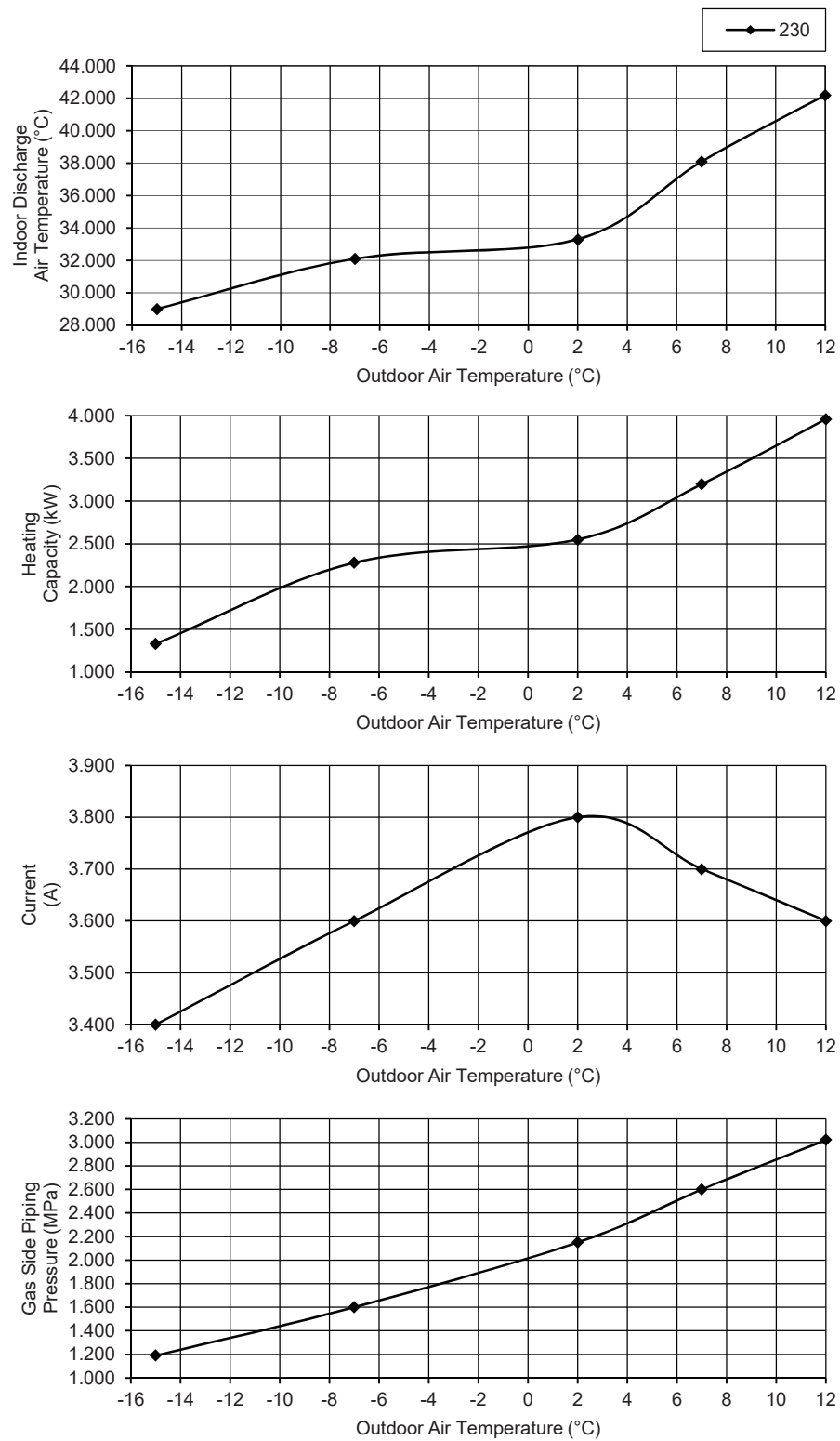
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

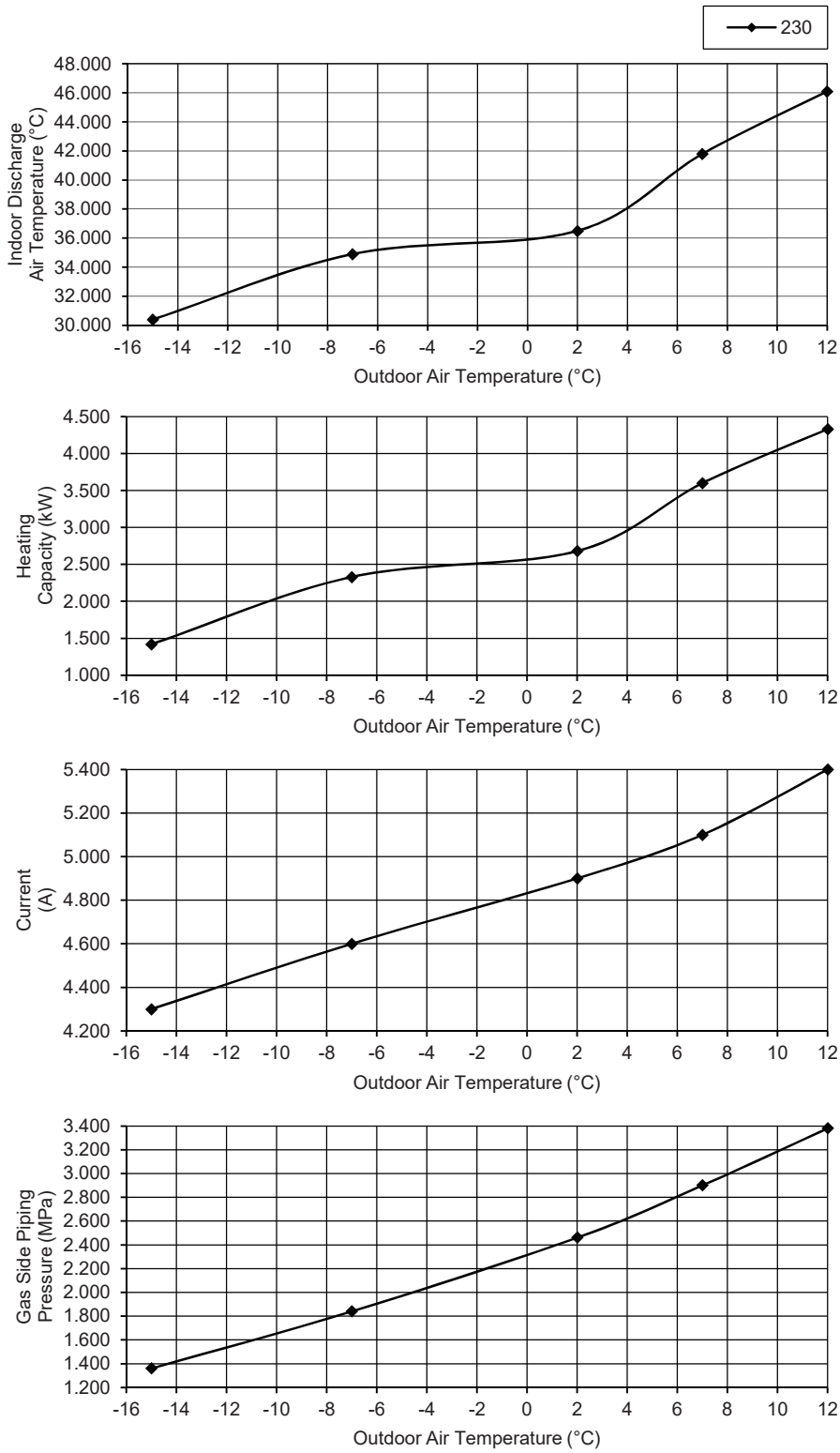
A) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



7°C & 12°C (Outdoor Air Temp.) = Heating Overload Protection activated

- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic

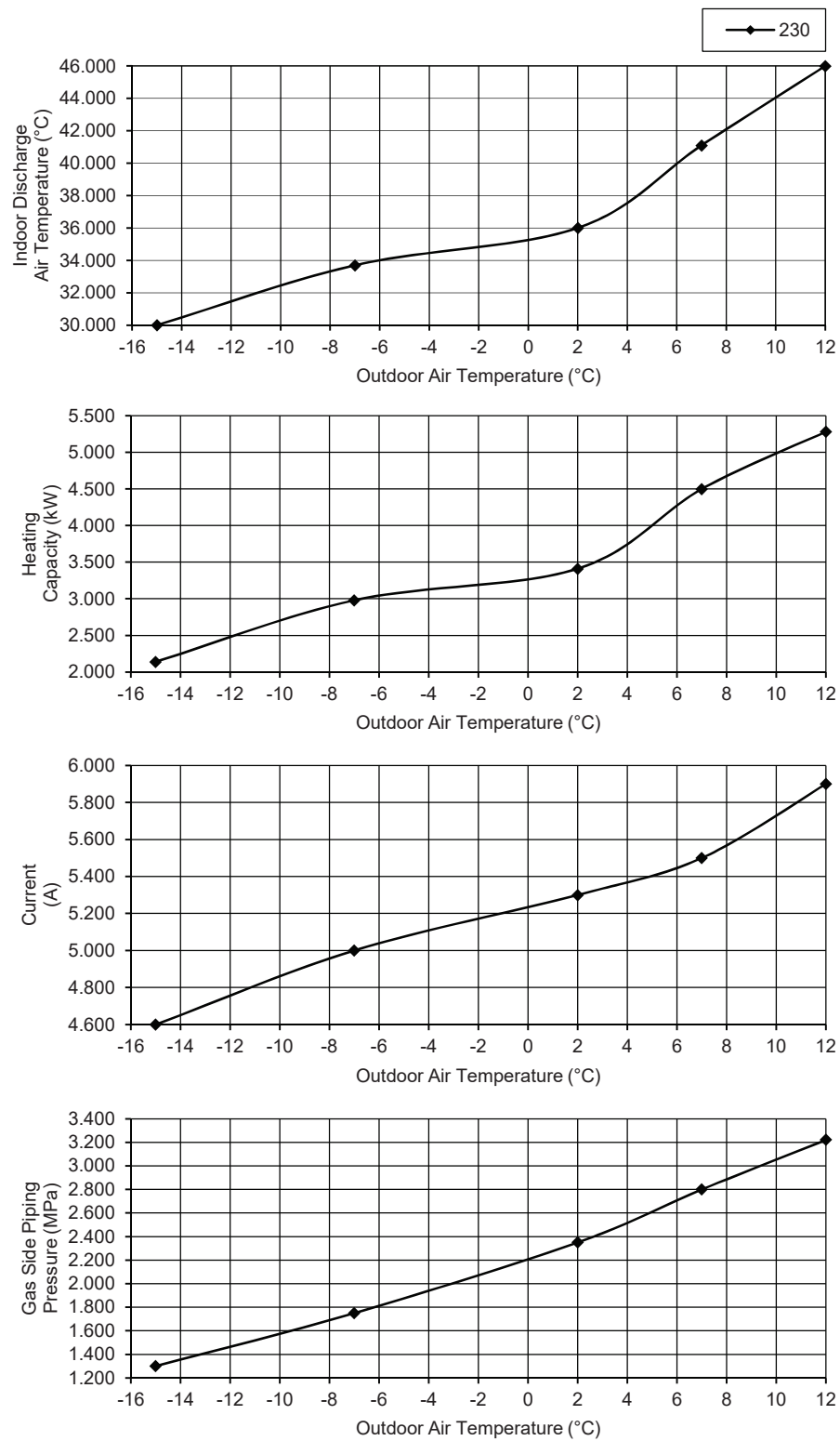
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

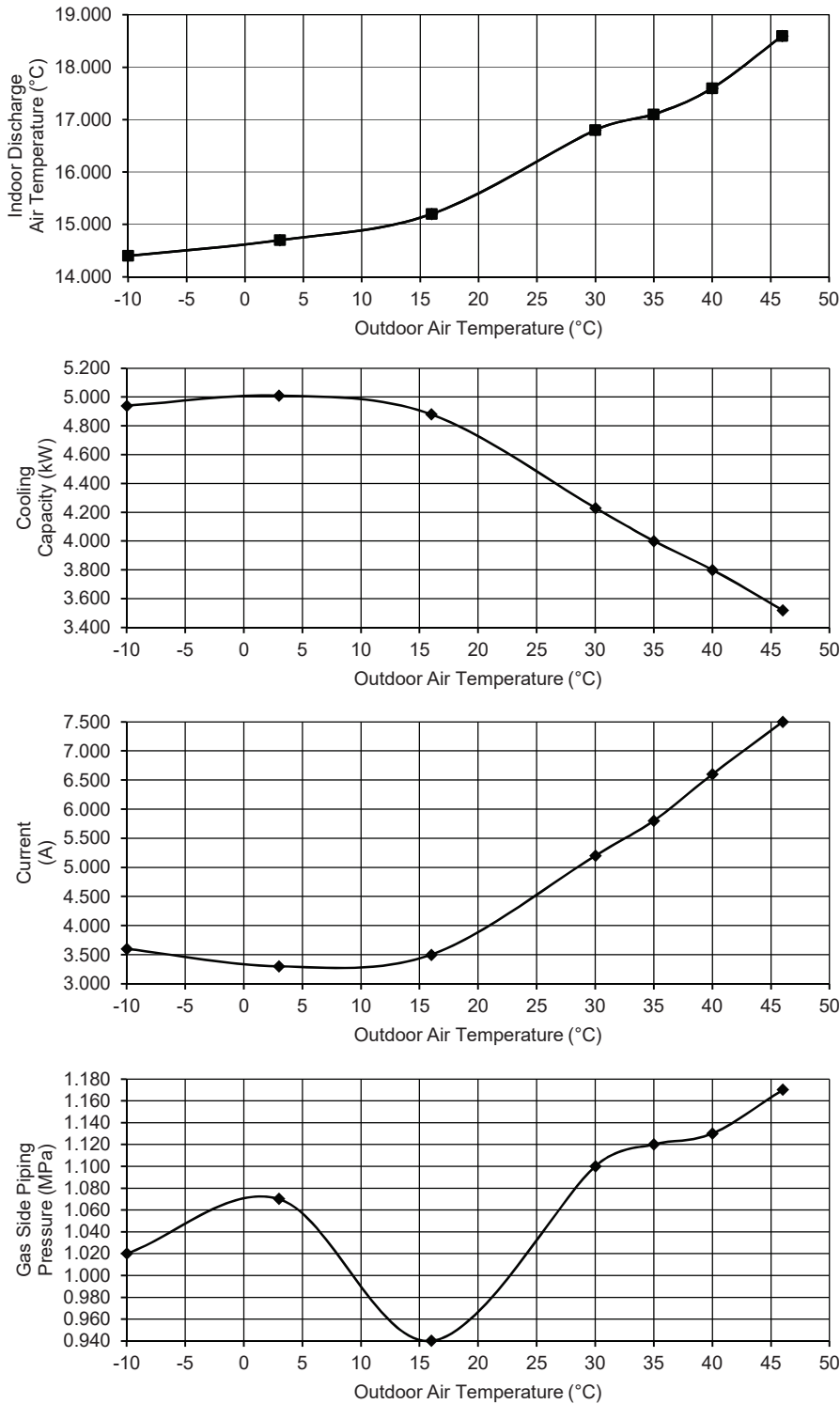
C) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



21.3.2 Two Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5.0 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0), CS-Z20CKEW + CS-Z20CKEW



- Cooling Characteristic

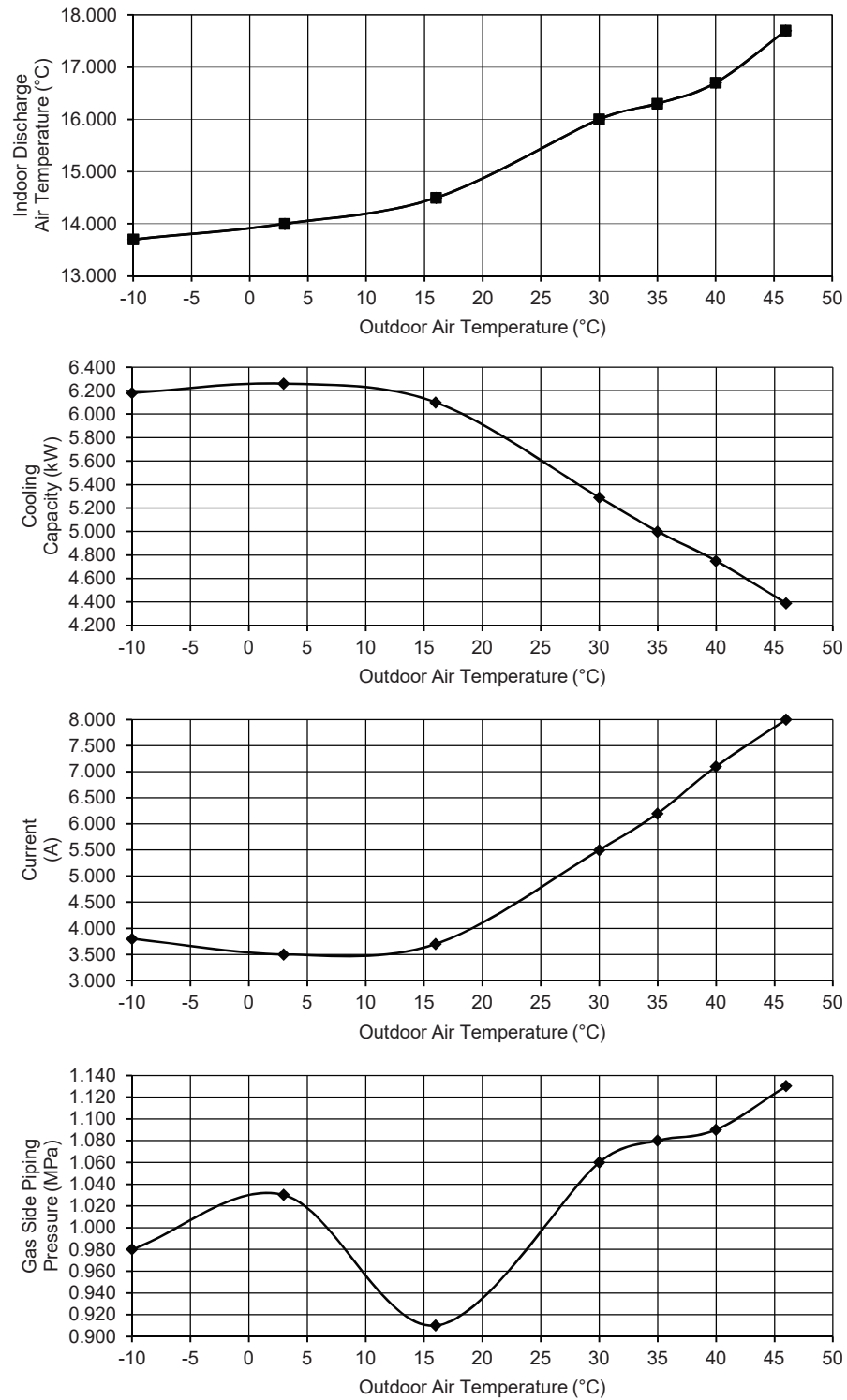
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW



- Cooling Characteristic

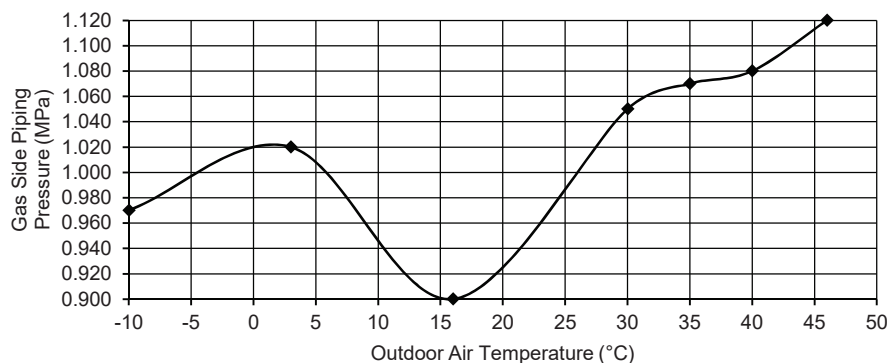
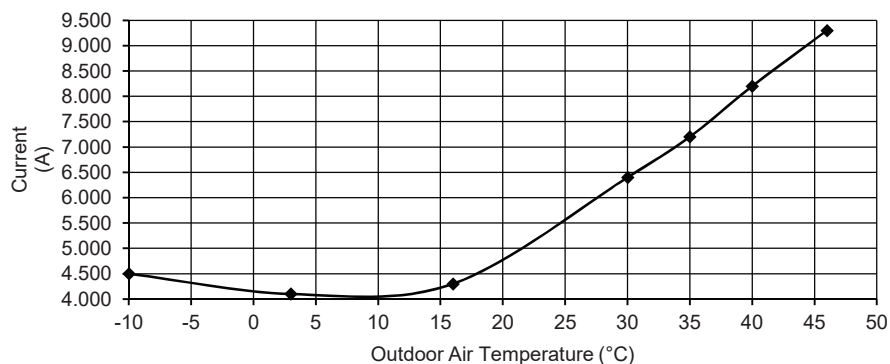
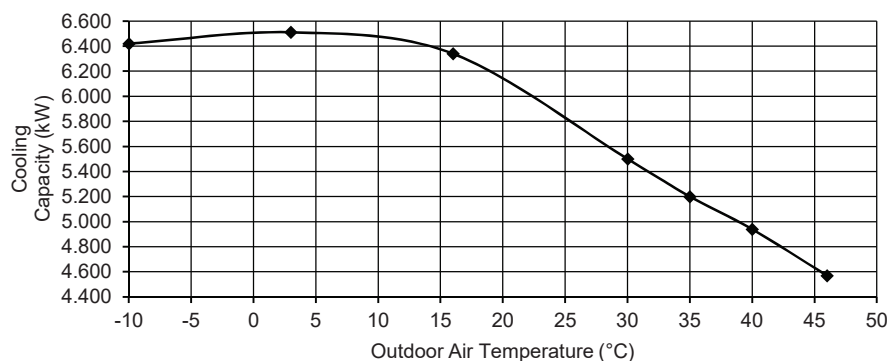
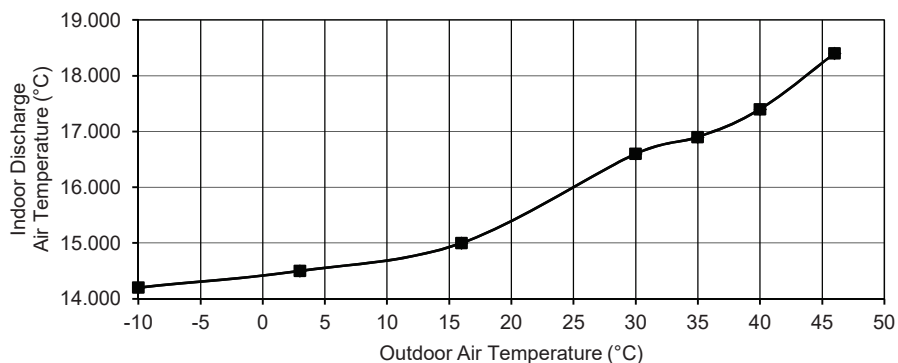
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (3.5 + 3.5), CS-Z35CKEW + CS-Z35CKEW



- Heating Characteristic

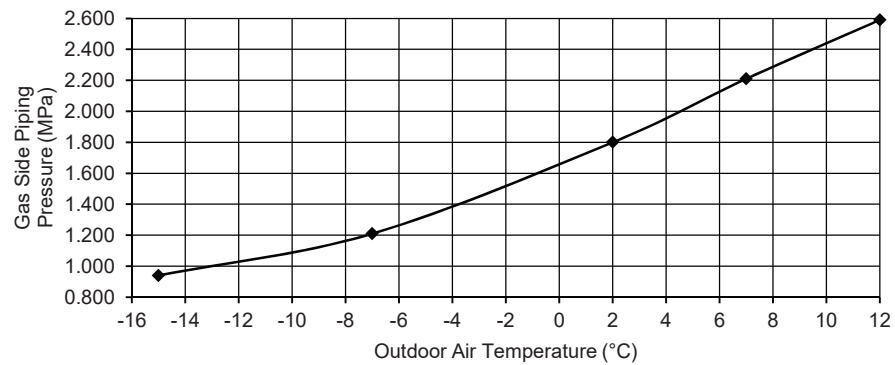
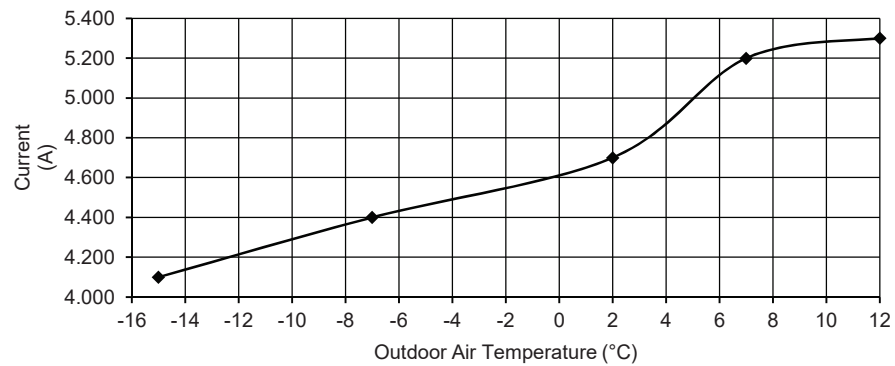
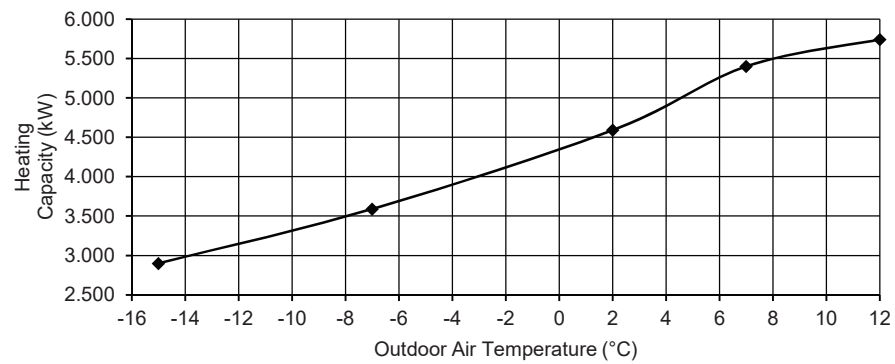
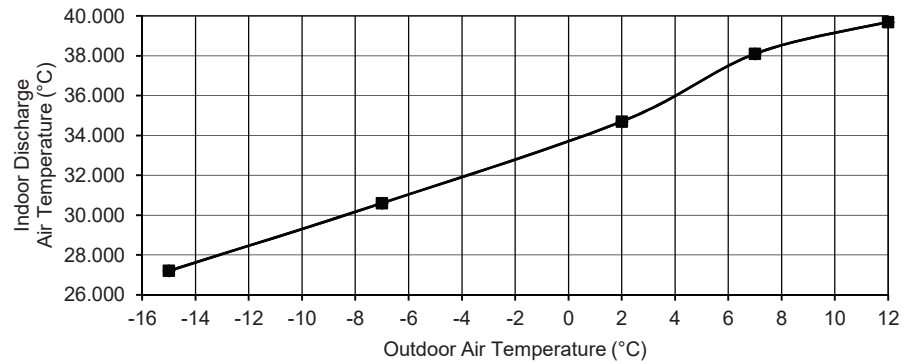
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.0), CS-Z20CKEW + CS-Z20CKEW



- Heating Characteristic

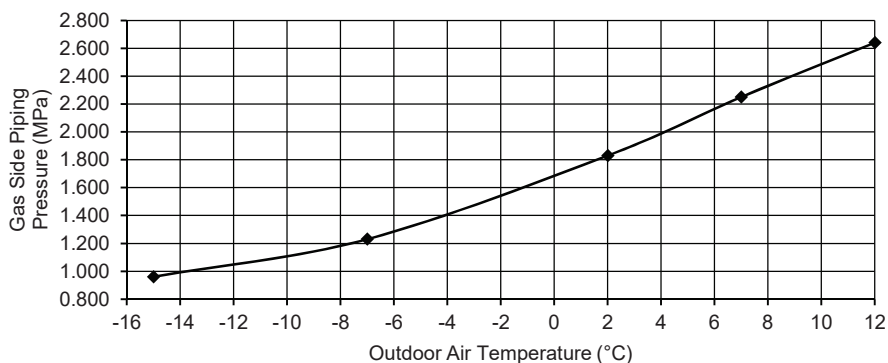
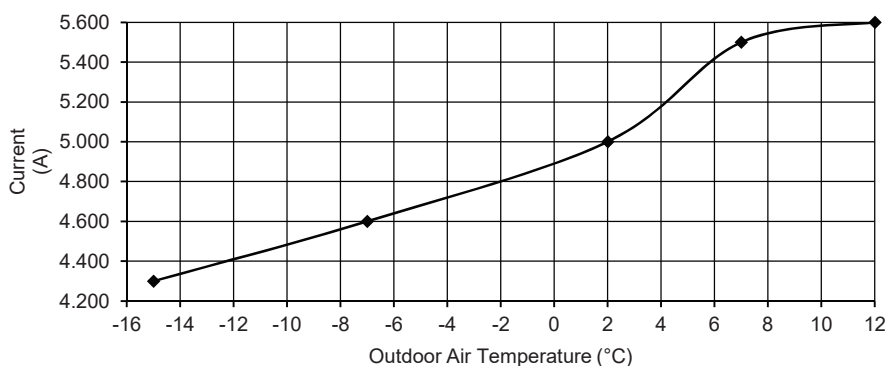
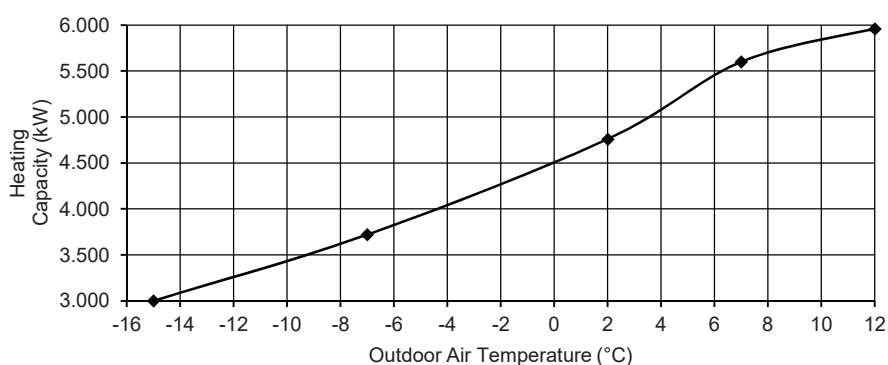
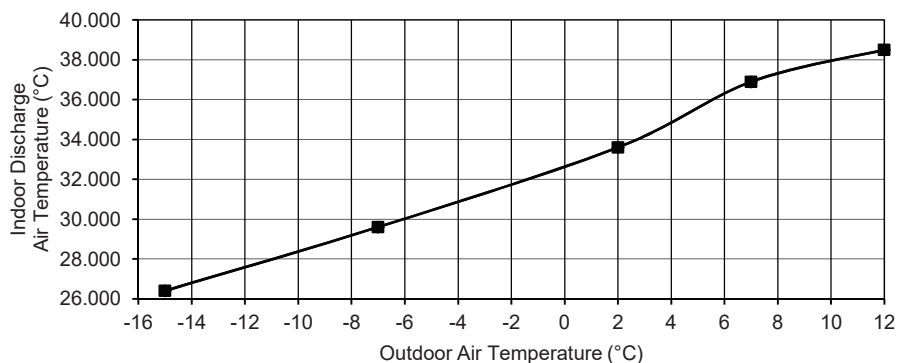
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW + CS-Z25CKEW



- Heating Characteristic

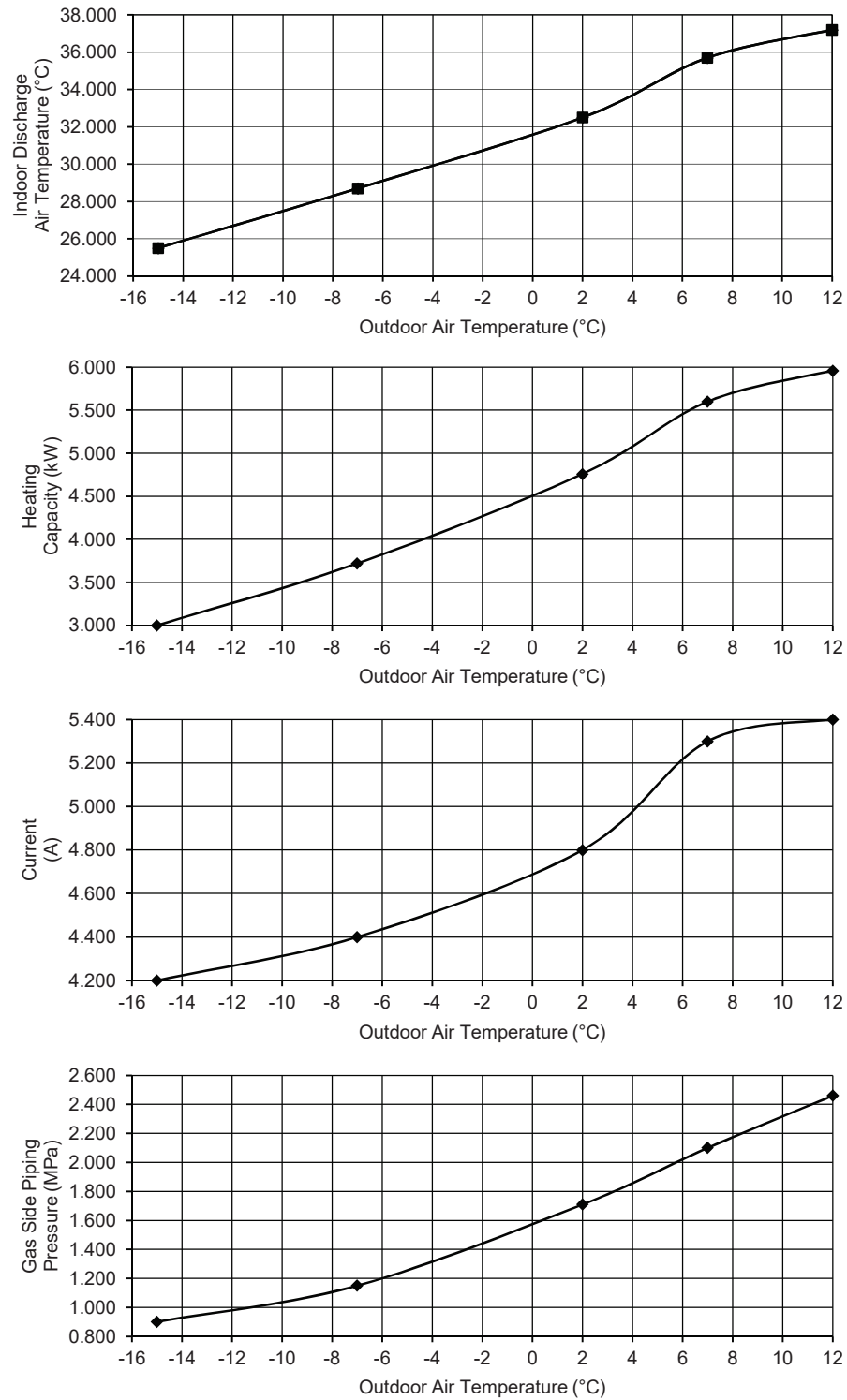
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m

Voltage: 230V, 50Hz

C) Indoor unit capacity: Heating (3.5 + 3.5), CS-Z35CKEW + CS-Z35CKEW

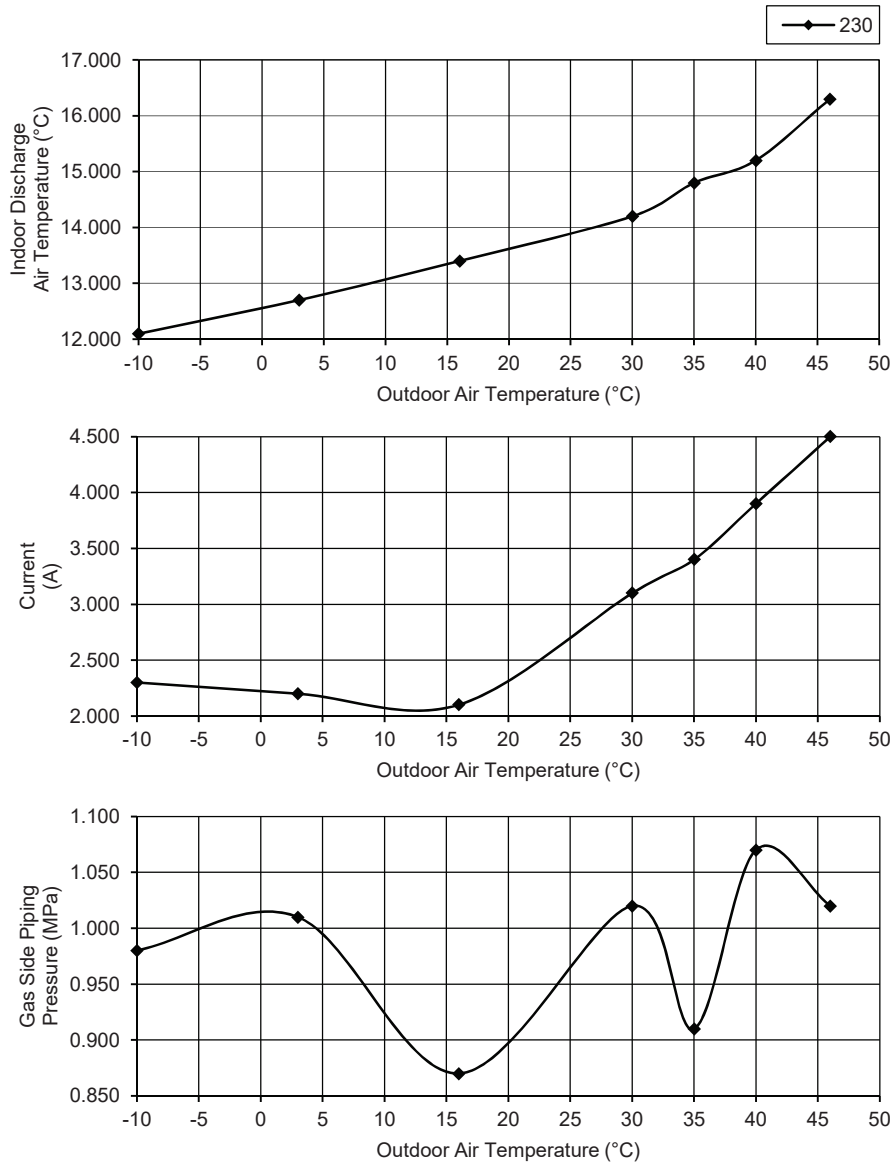


21.4 Operation Characteristics (CU-3Z52CBE)

21.4.1 One Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6), CS-MZ16CKE



- Cooling Characteristic

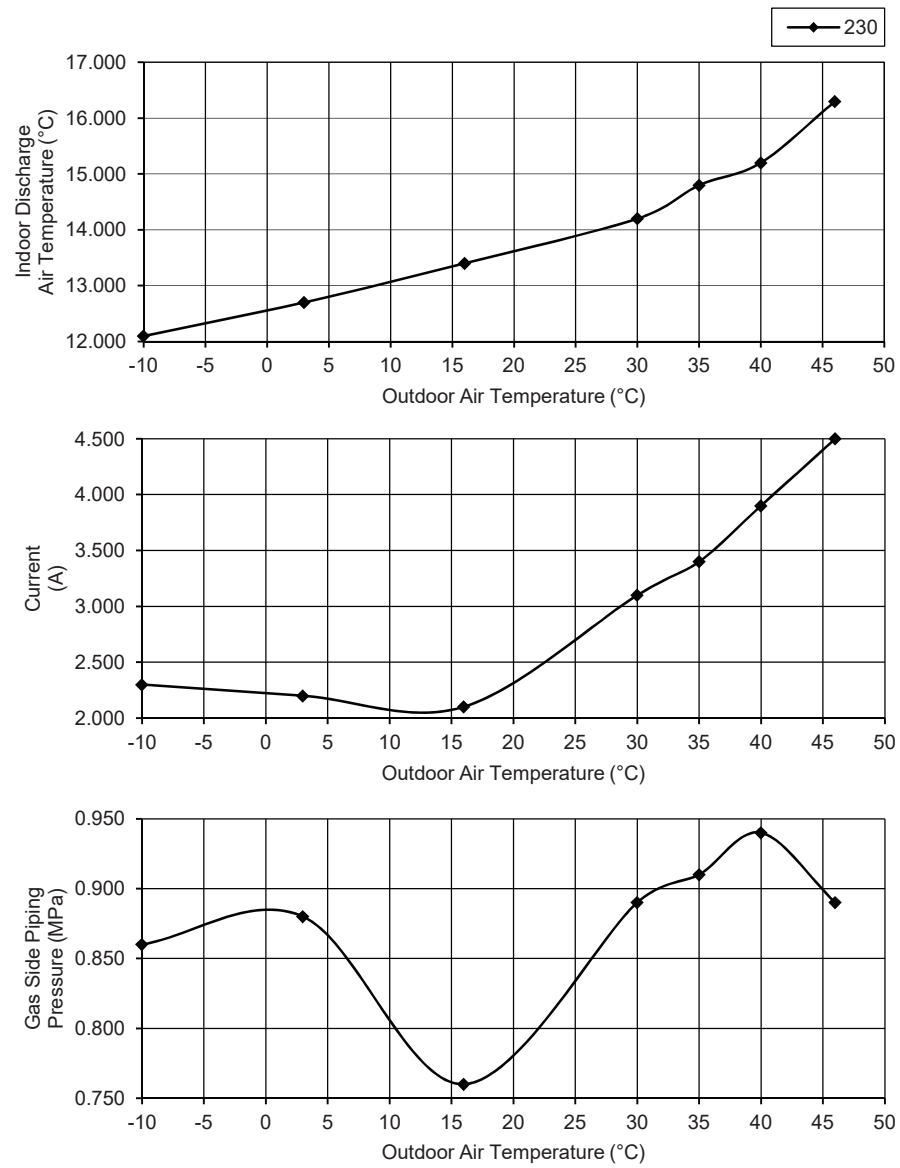
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

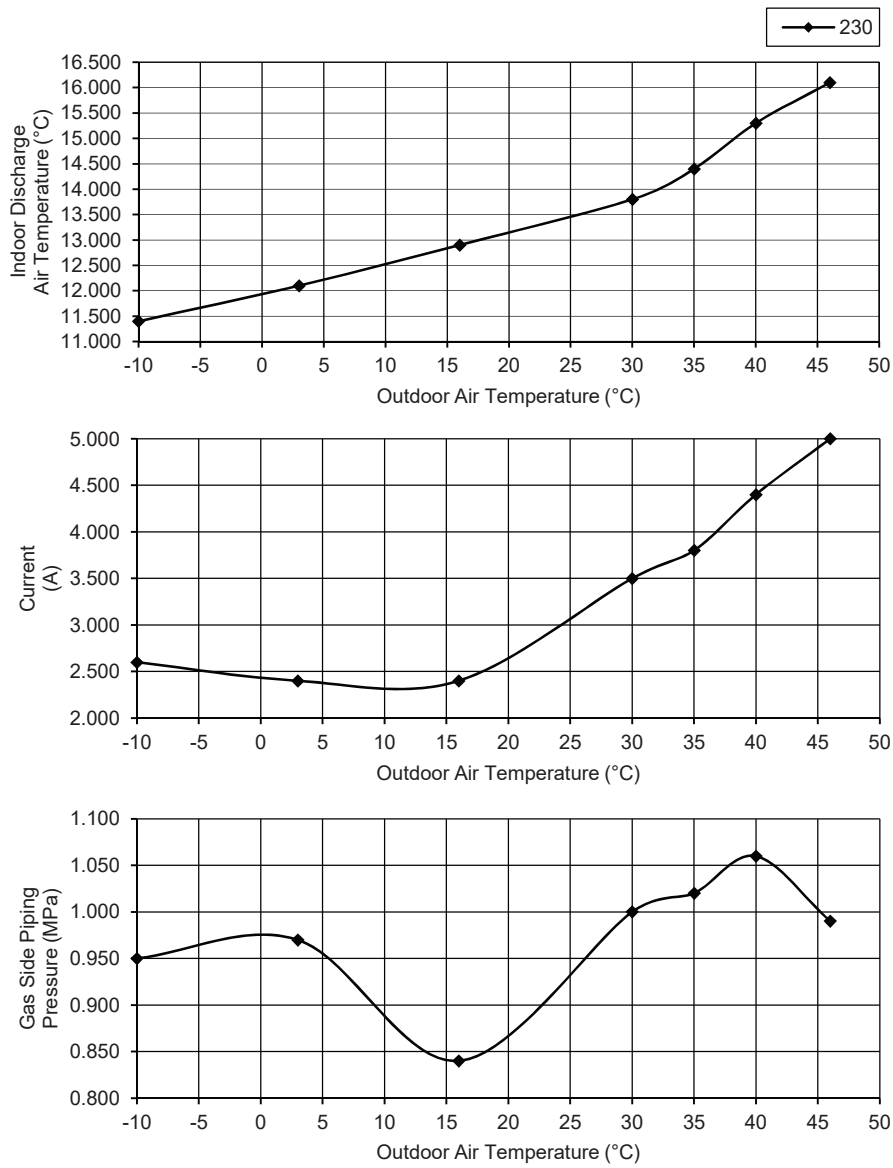
Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic

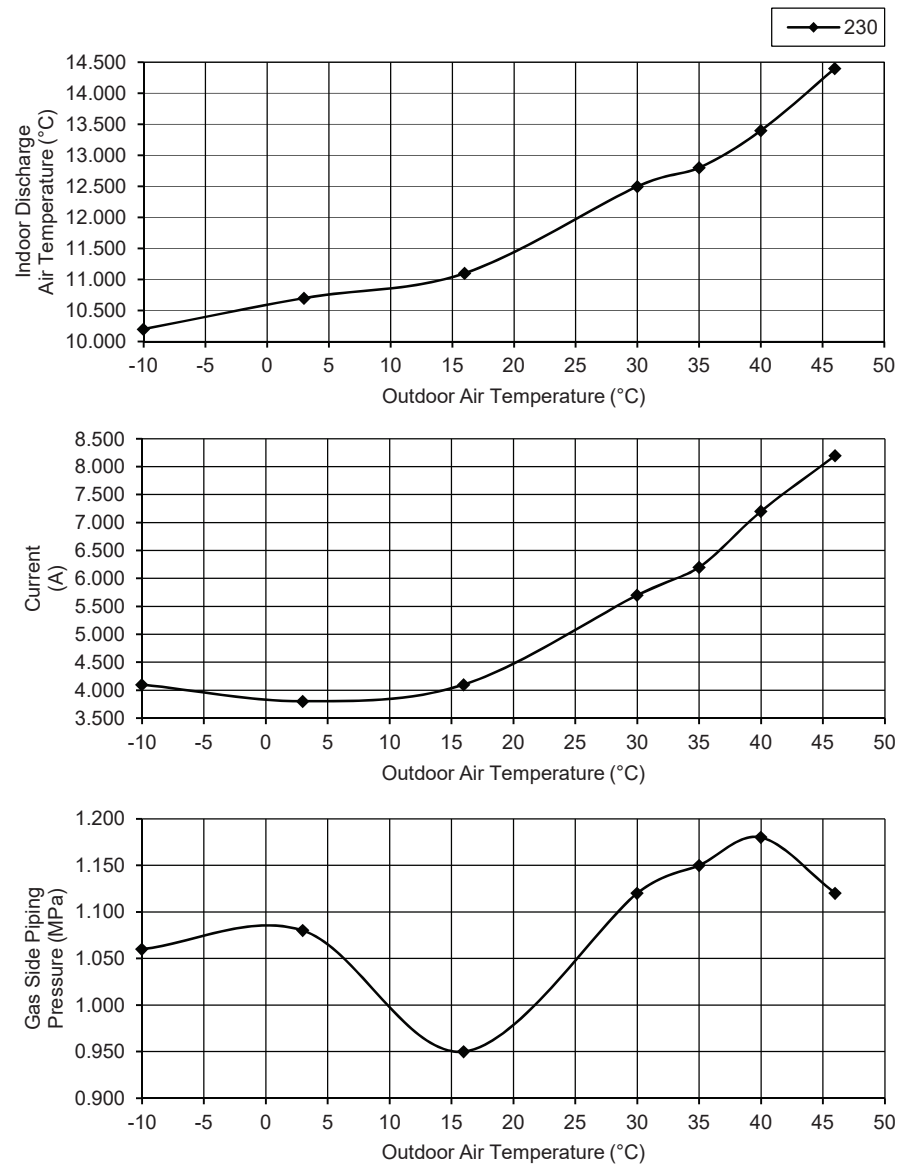
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

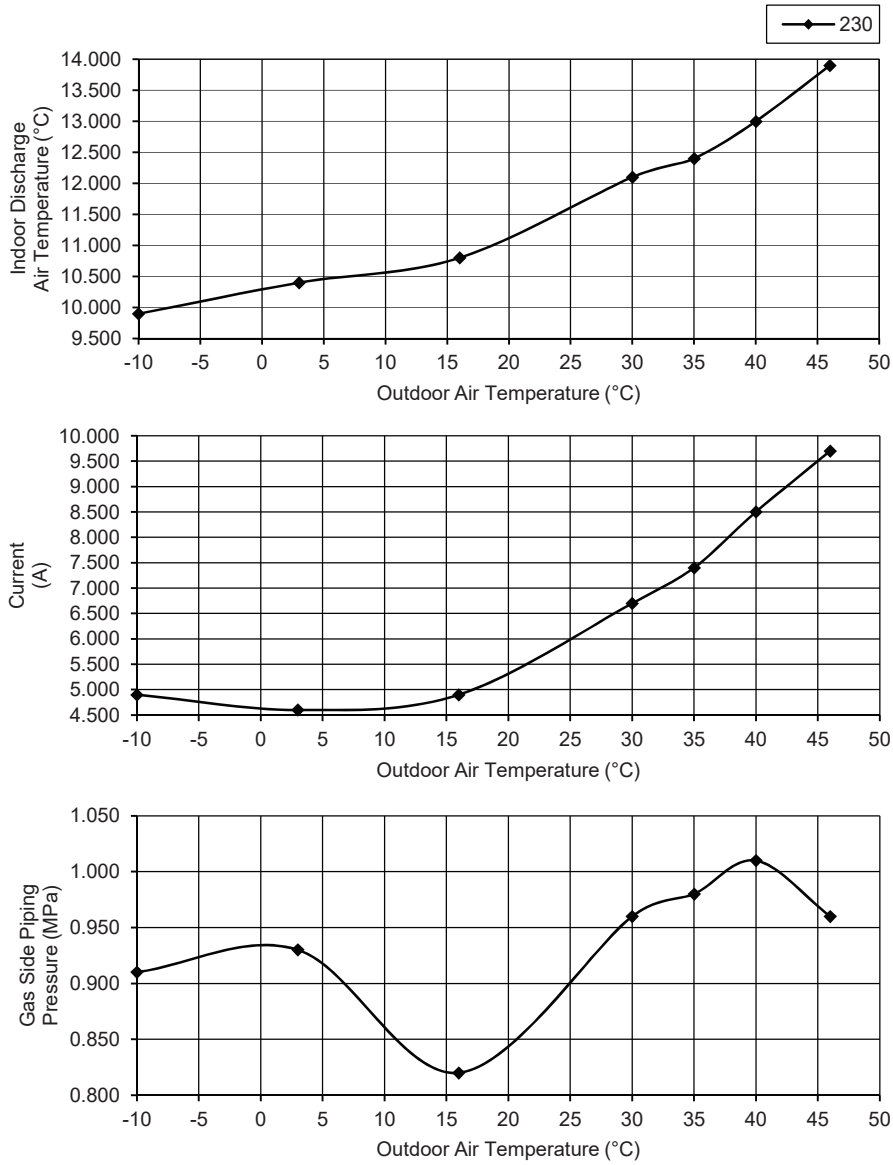
Voltage: 230V, 50Hz

D) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

E) Indoor unit capacity: Cooling (4.2), CS-Z42CKEW



- Cooling Characteristic

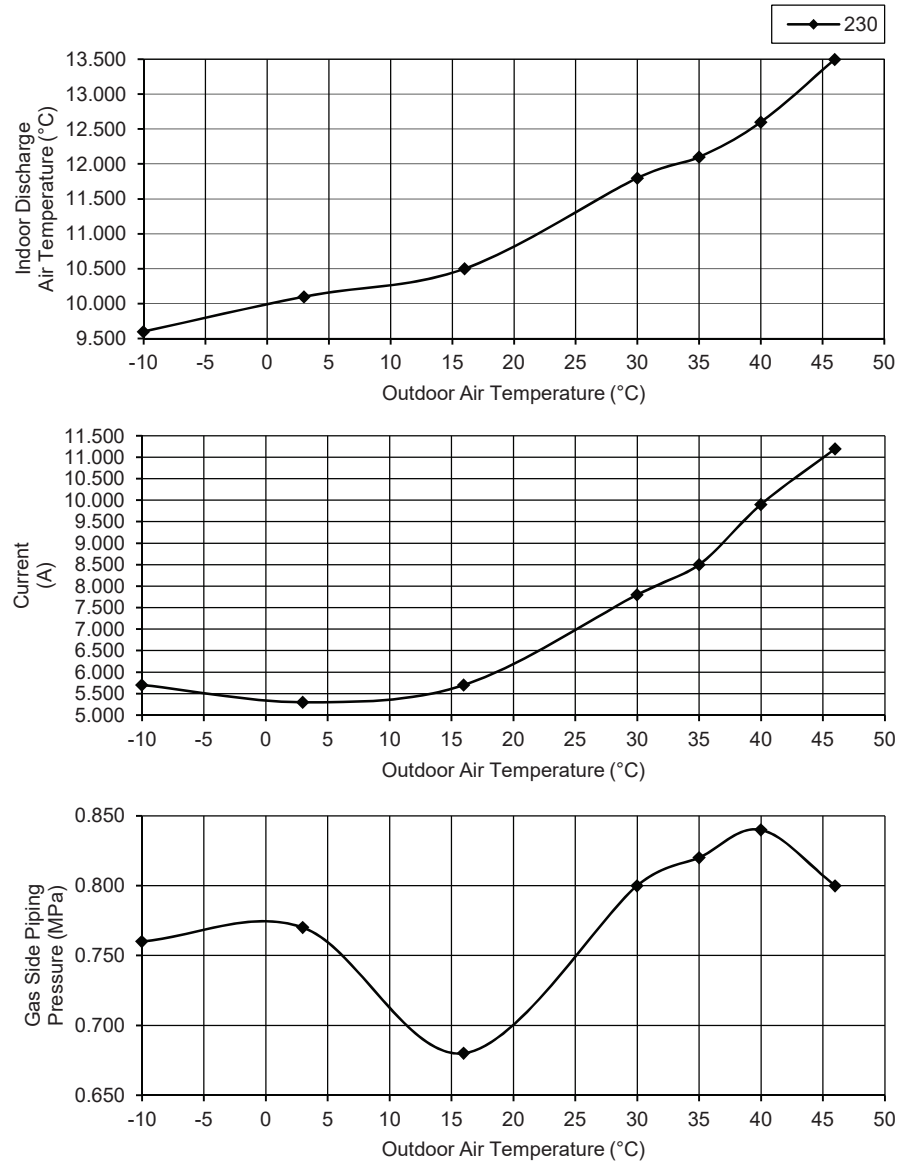
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

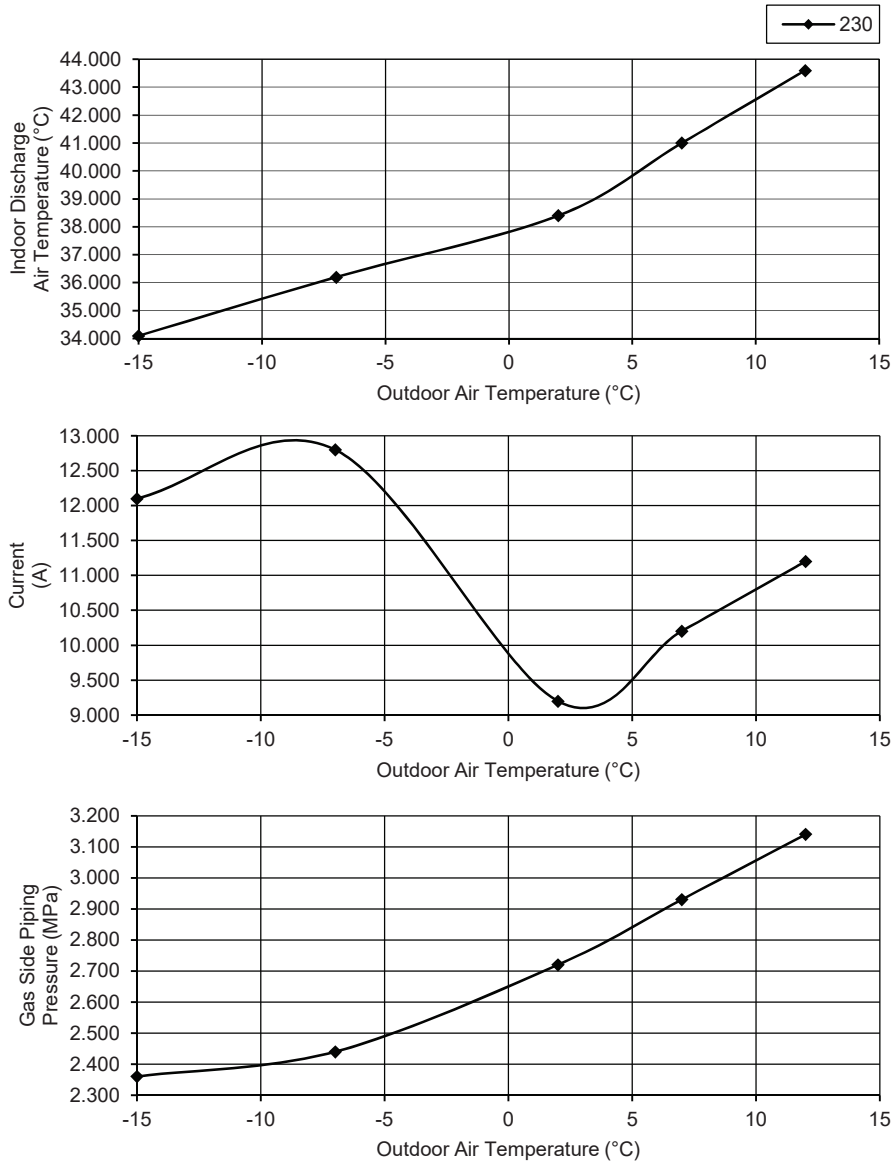
Voltage: 230V, 50Hz

F) Indoor unit capacity: Cooling (5.0), CS-Z50CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6), CS-MZ16CKE



- Heating Characteristic

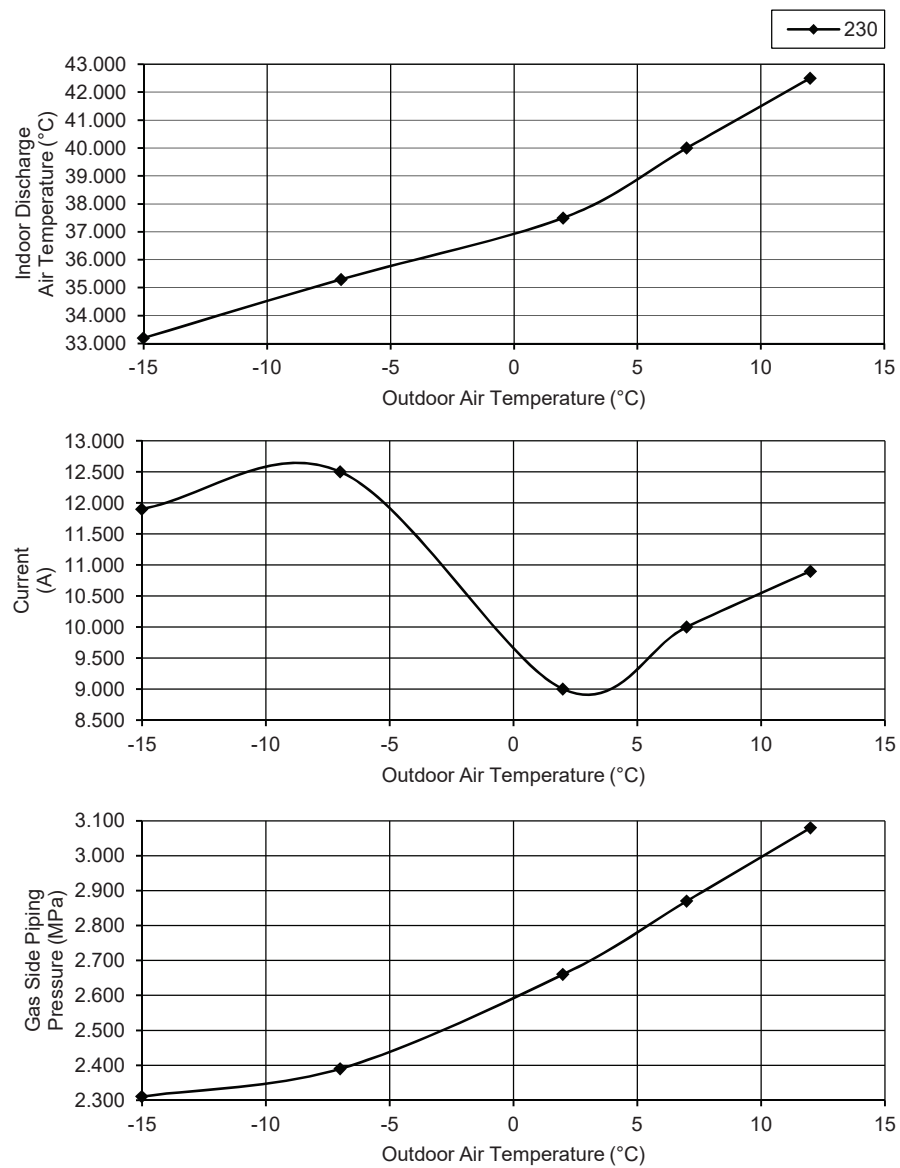
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

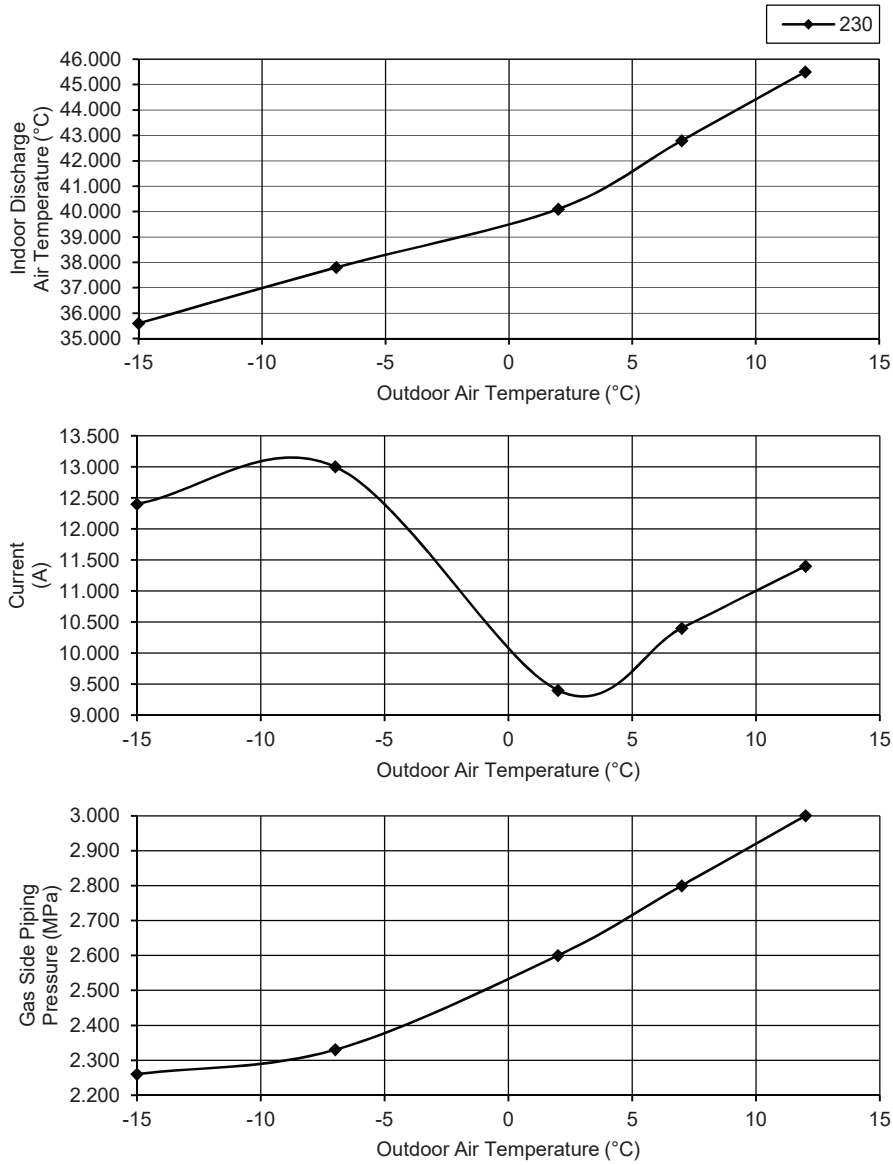
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

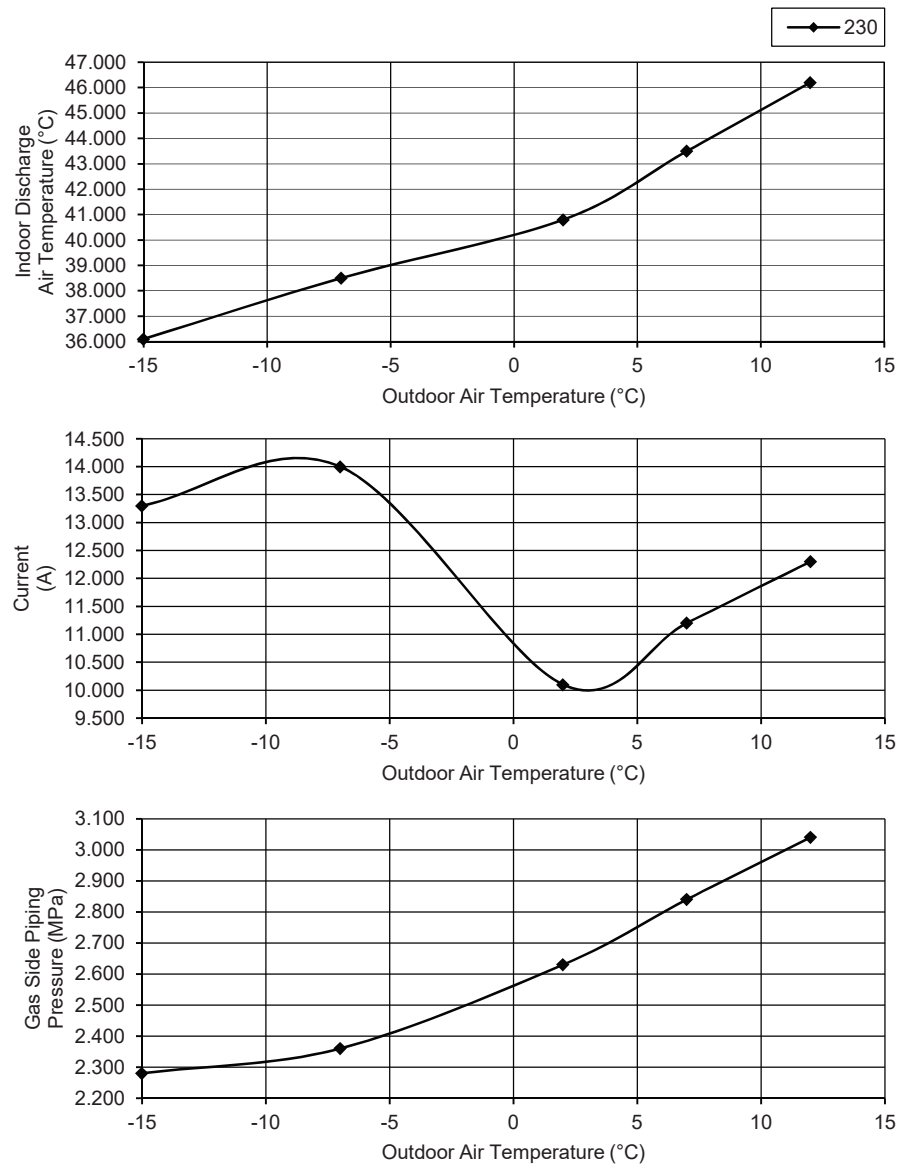
C) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic

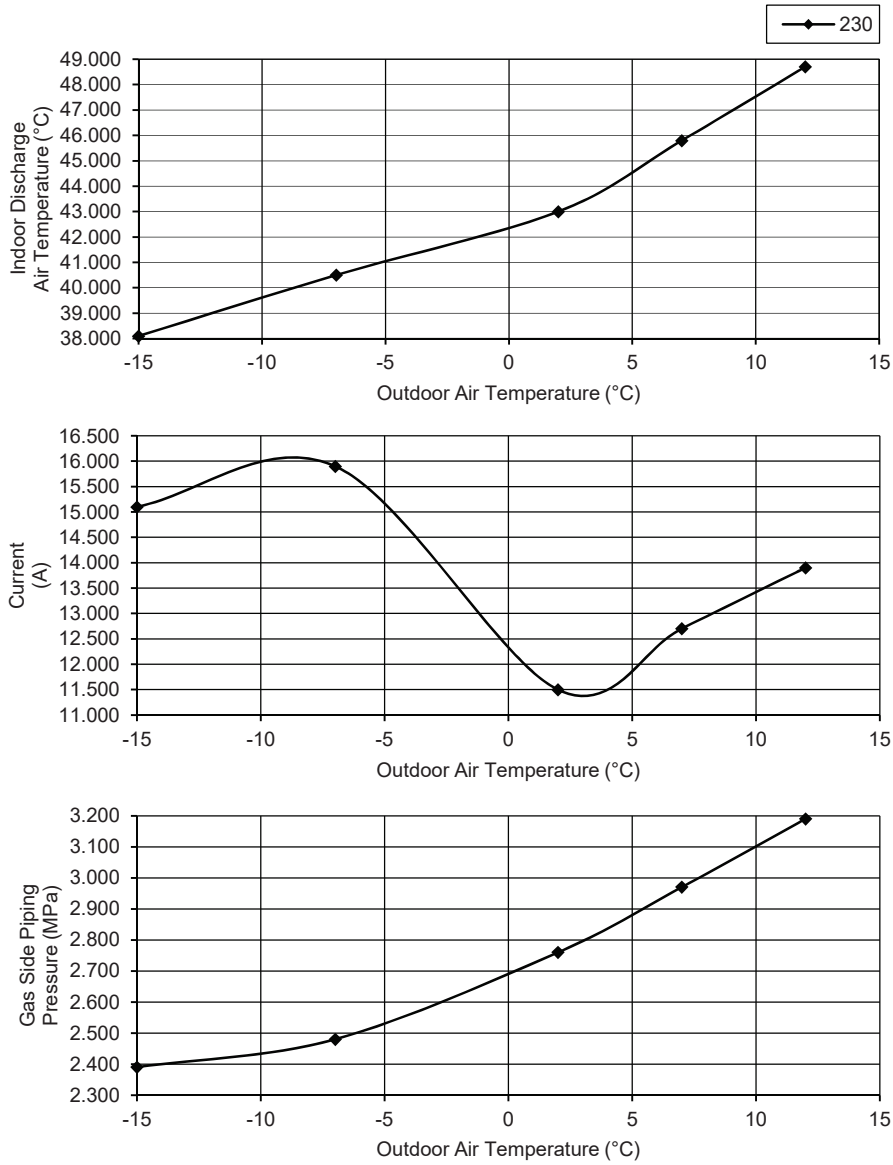
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

D) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

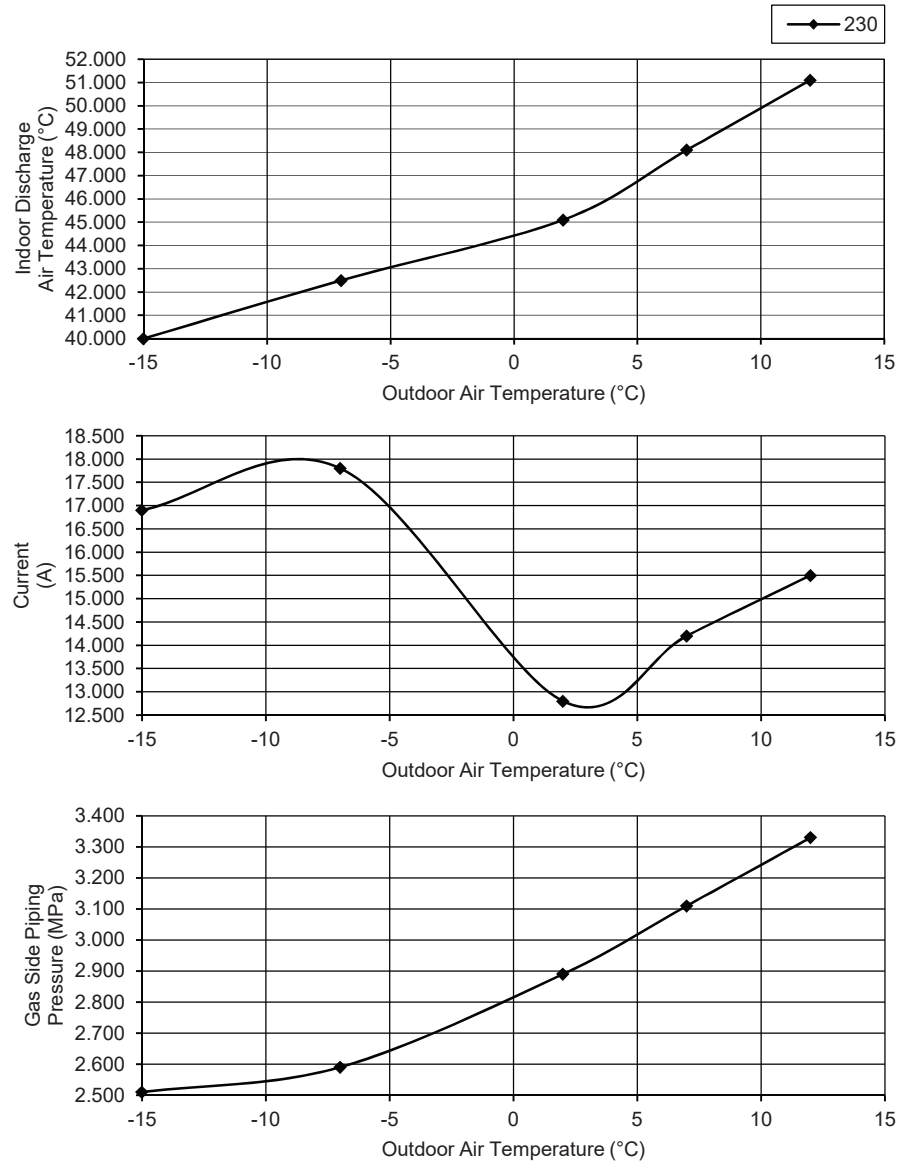
E) Indoor unit capacity: Heating (4.2), CS-Z42CKEW



- Heating Characteristic

[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

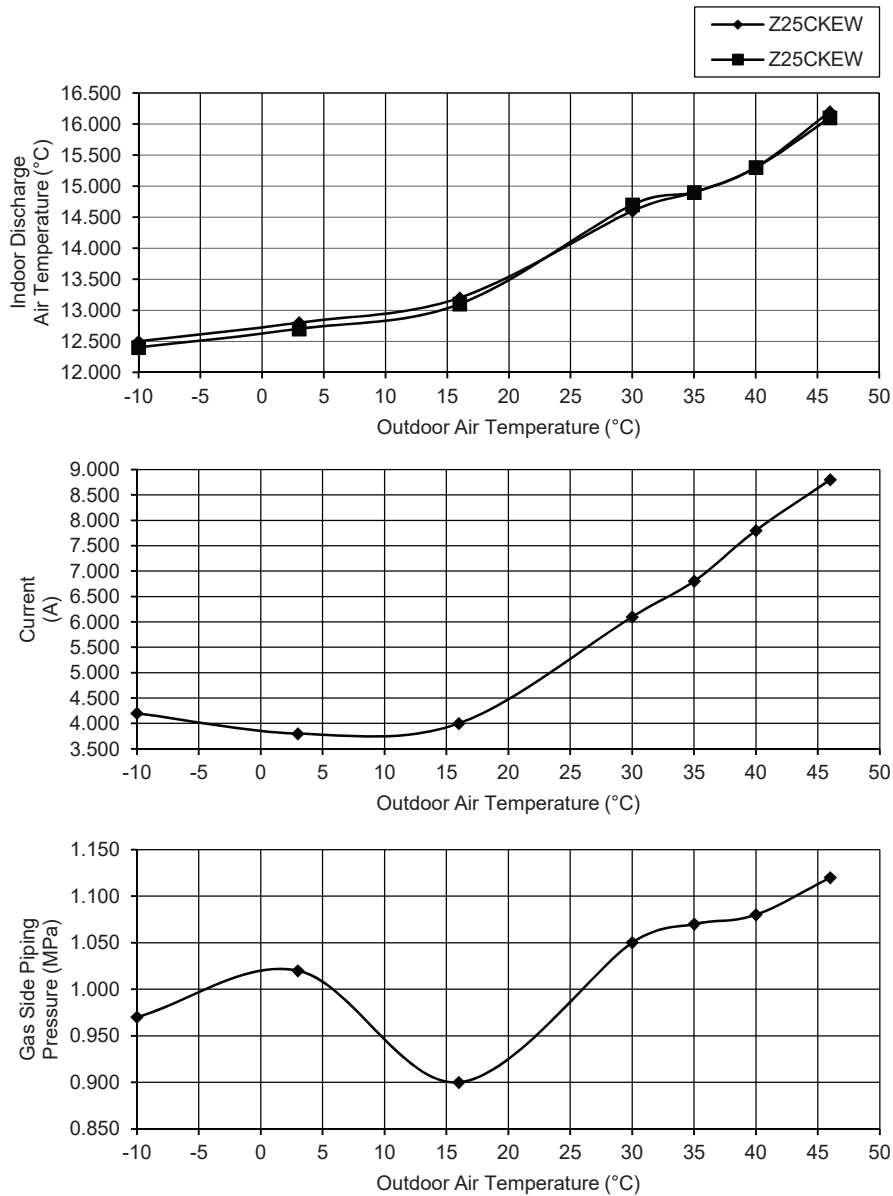
F) Indoor unit capacity: Heating (5.0), CS-Z50CKEW



21.4.2 Two Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW x2



- Heating Characteristic

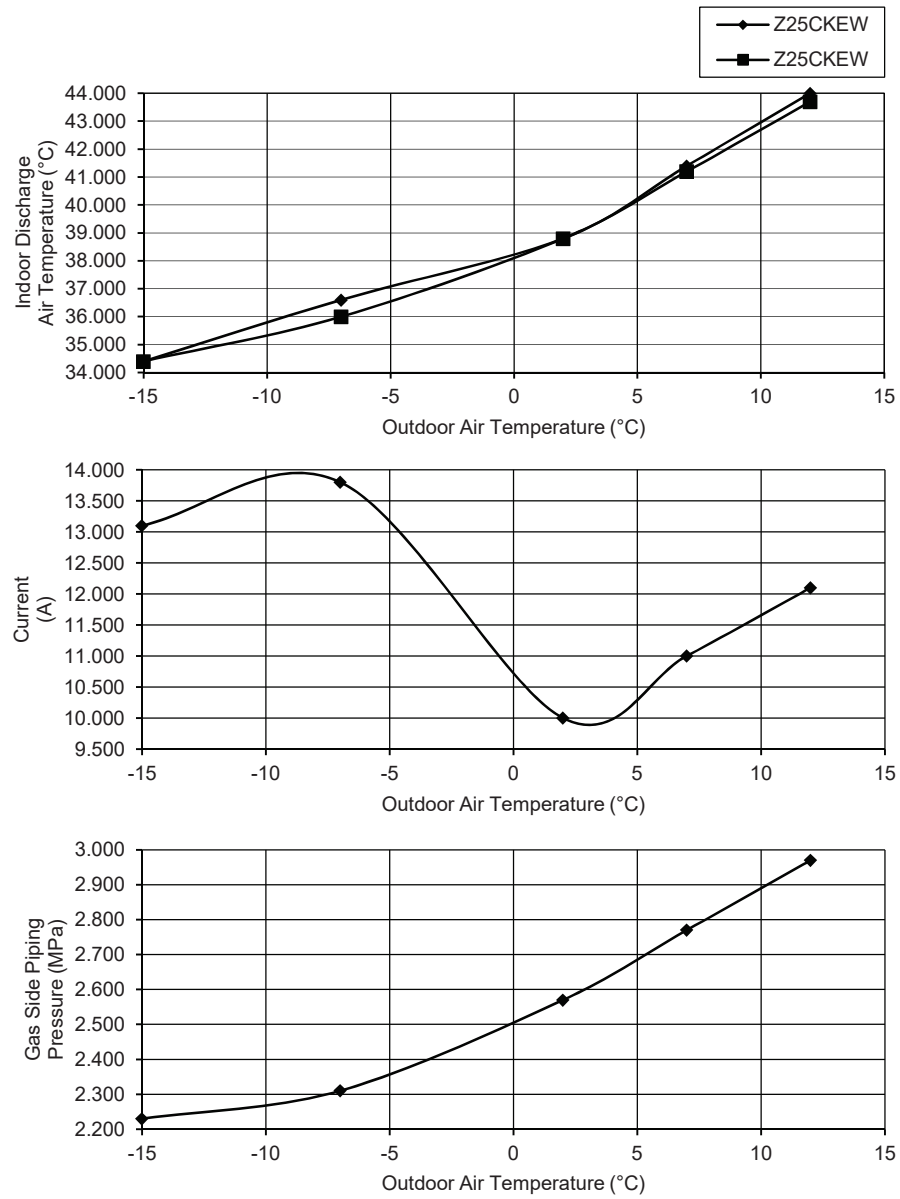
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

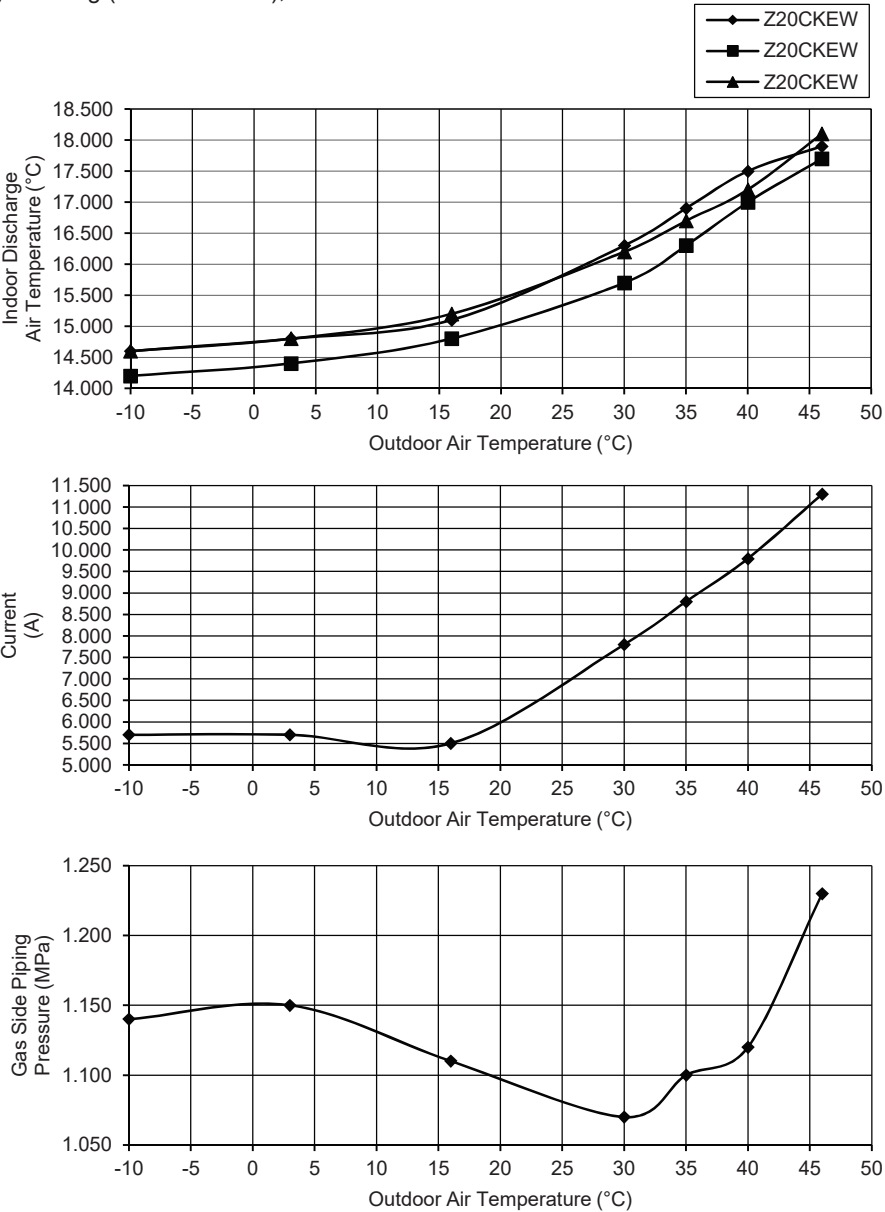
A) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW x2



21.4.3 Three Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



- Heating Characteristic

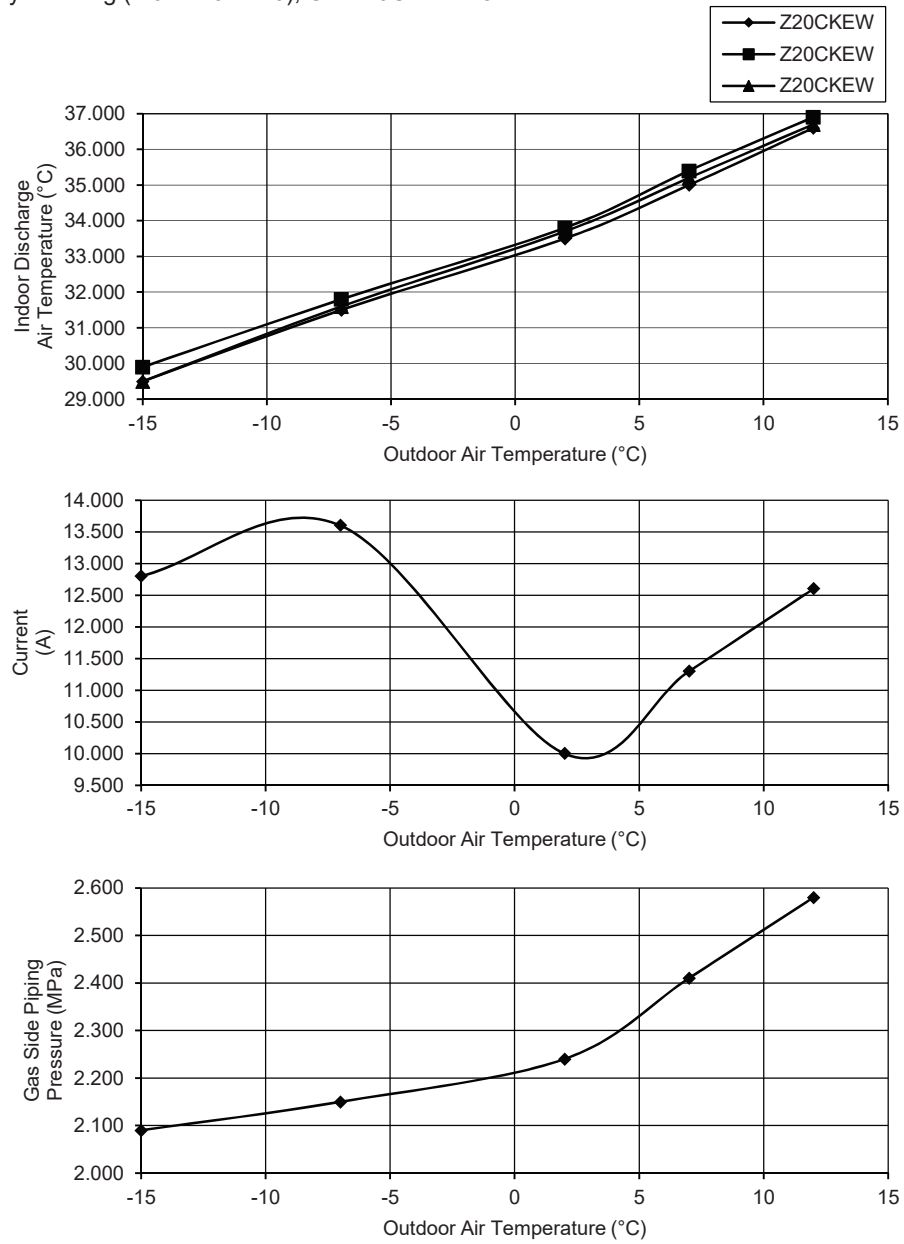
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

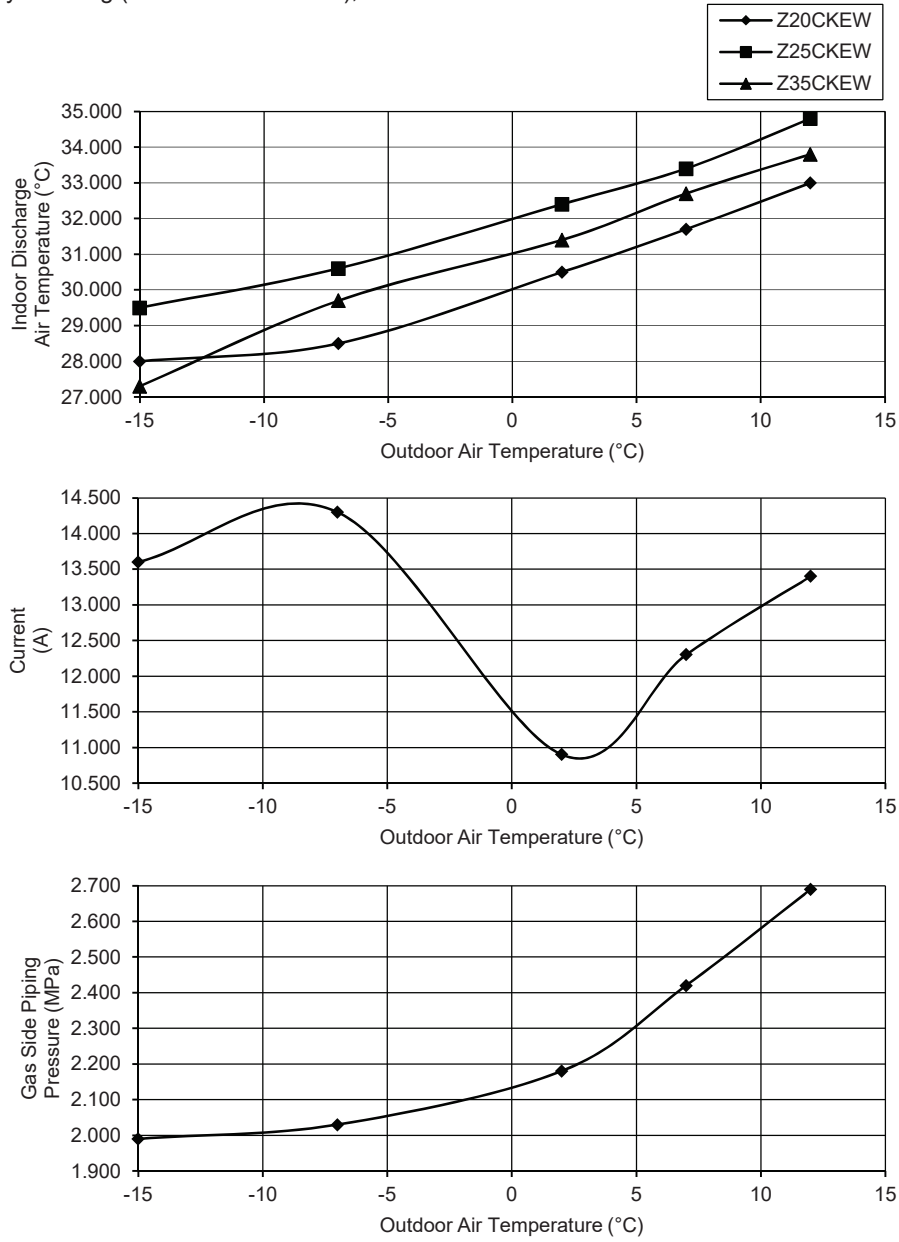
A) Indoor unit capacity: Heating (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



21.4.4 Four Indoor Unit Operation

- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.5 + 2.5 + 3.5), CS-Z20CKEW+CS-Z25CKEW x2 +CS-Z35CKEW



21.5 Operation Characteristics (CU-3Z68CBE)

21.5.1 One Indoor Unit Operation

- Cooling Characteristic

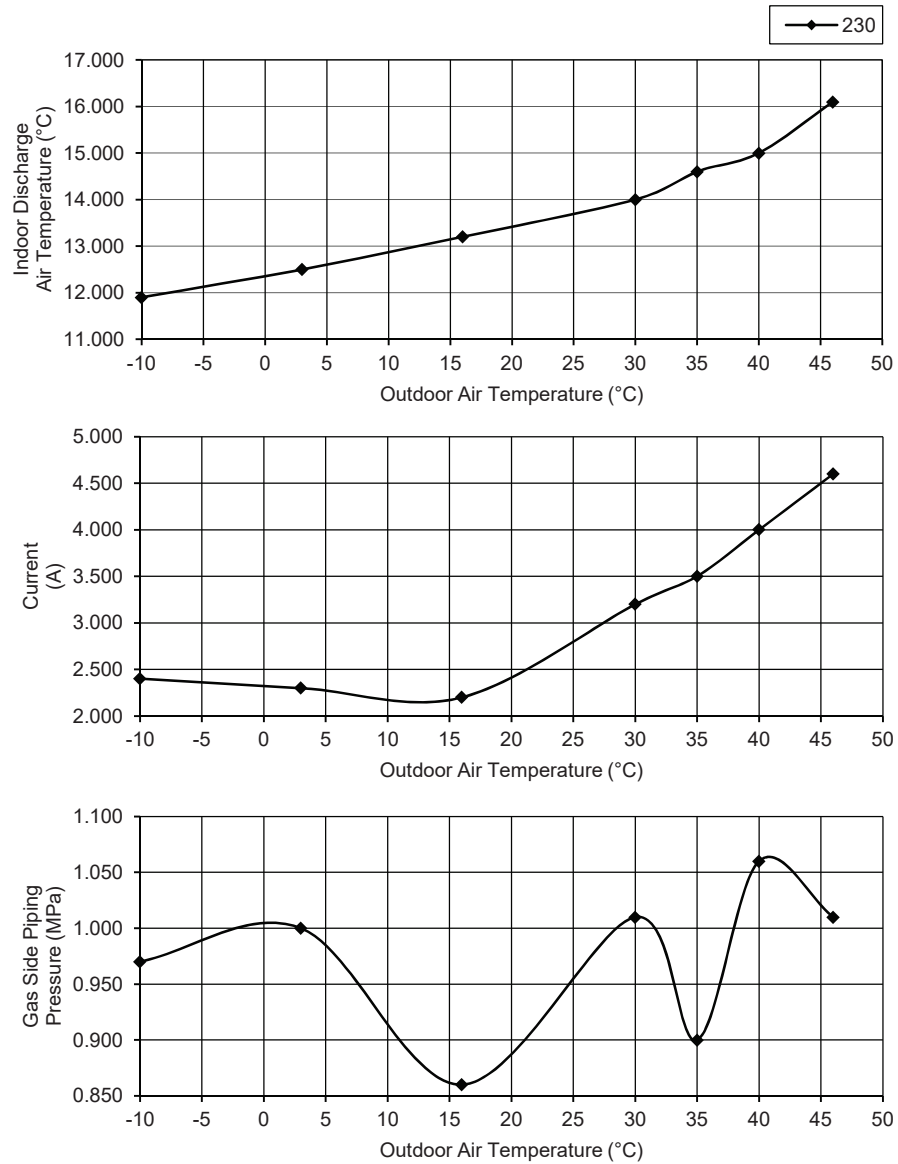
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

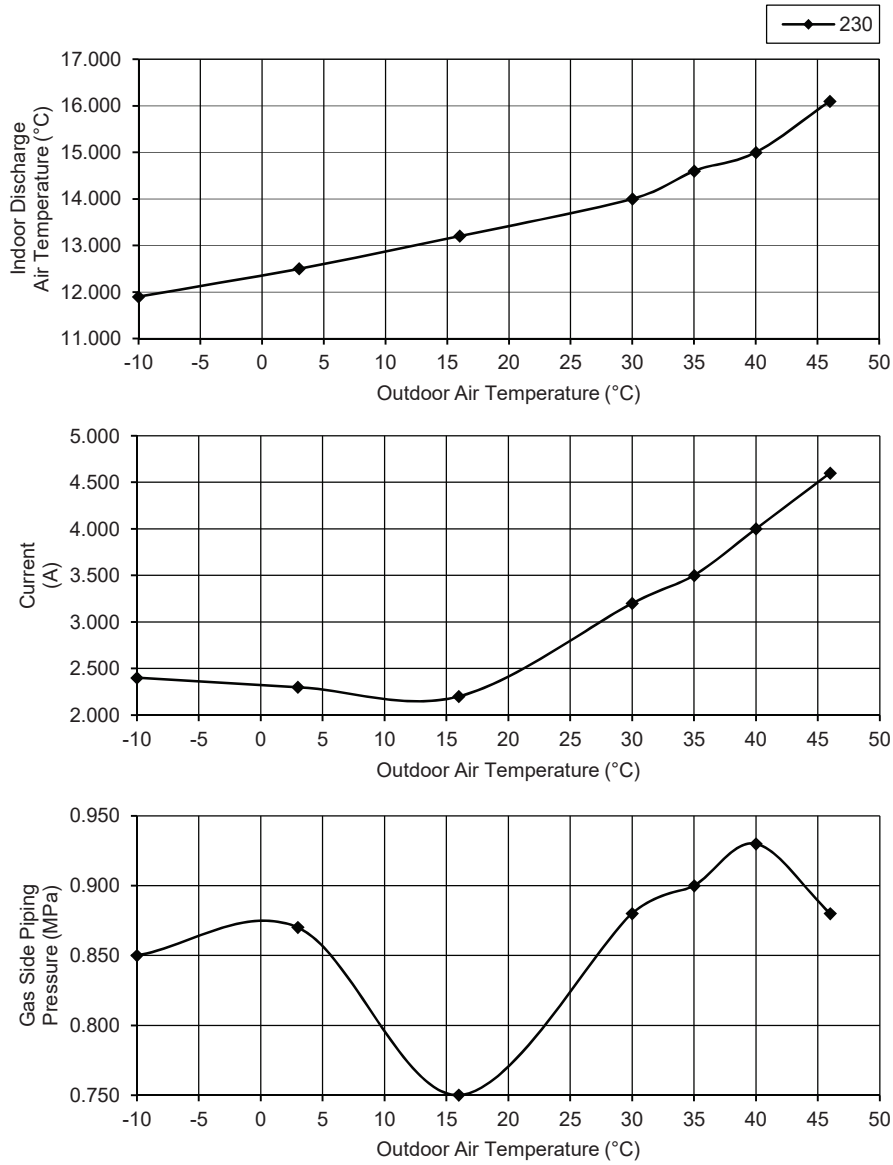
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6), CS-MZ16CKE



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

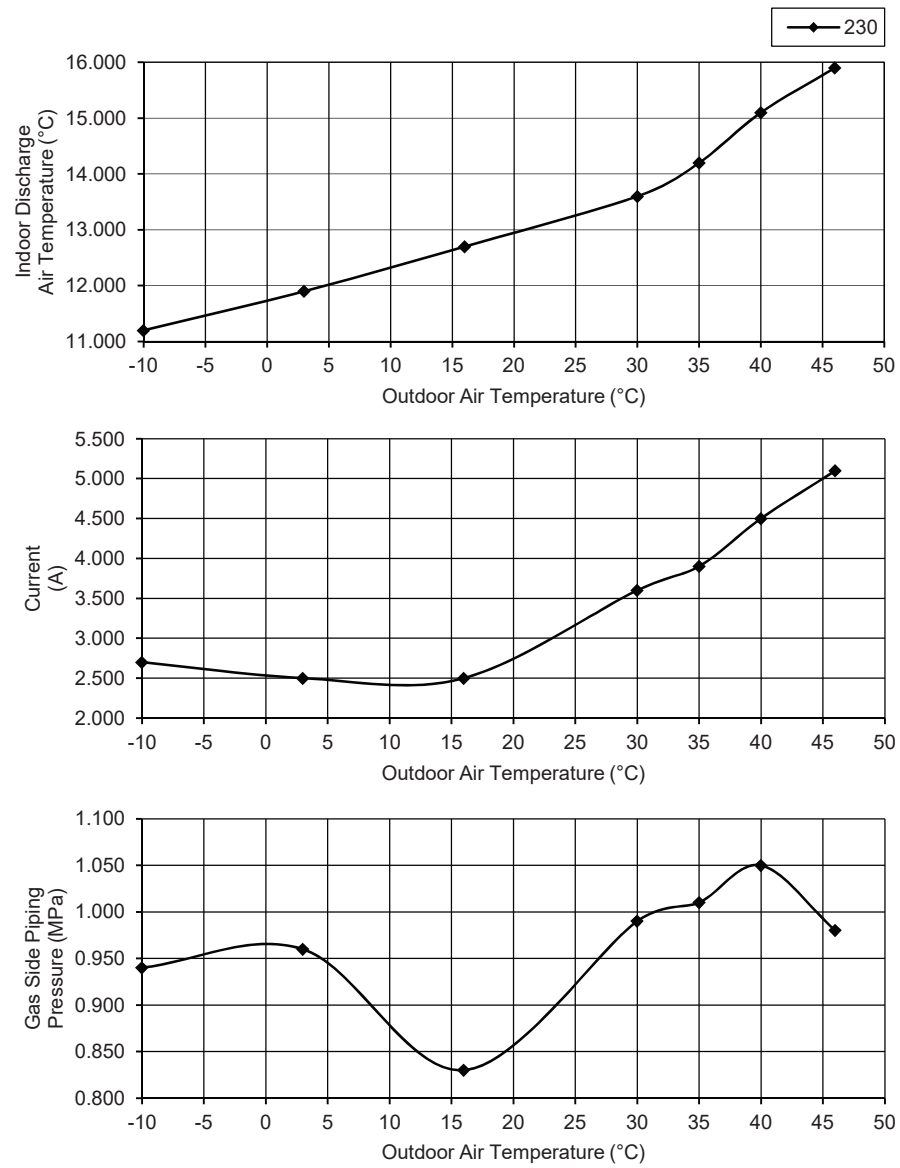
B) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic

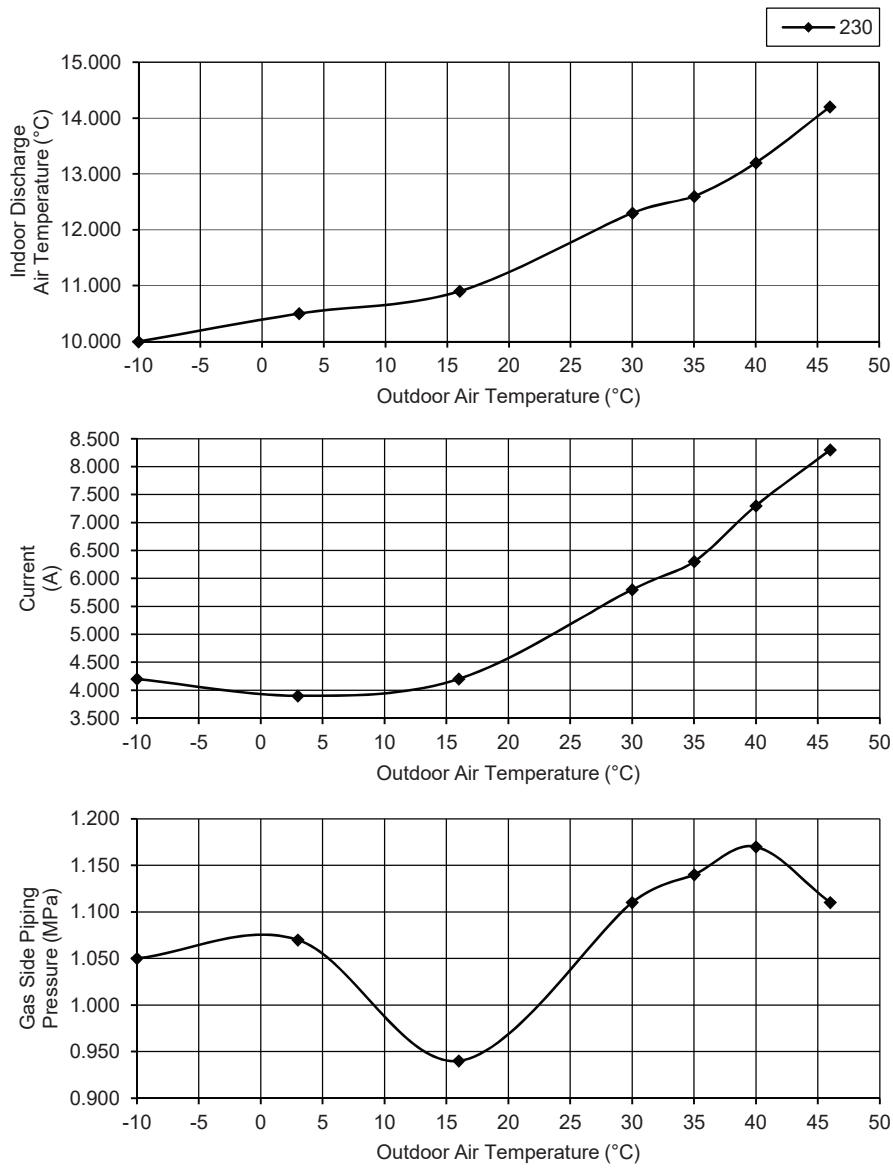
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping length: 7.5 m
 Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

D) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Cooling Characteristic

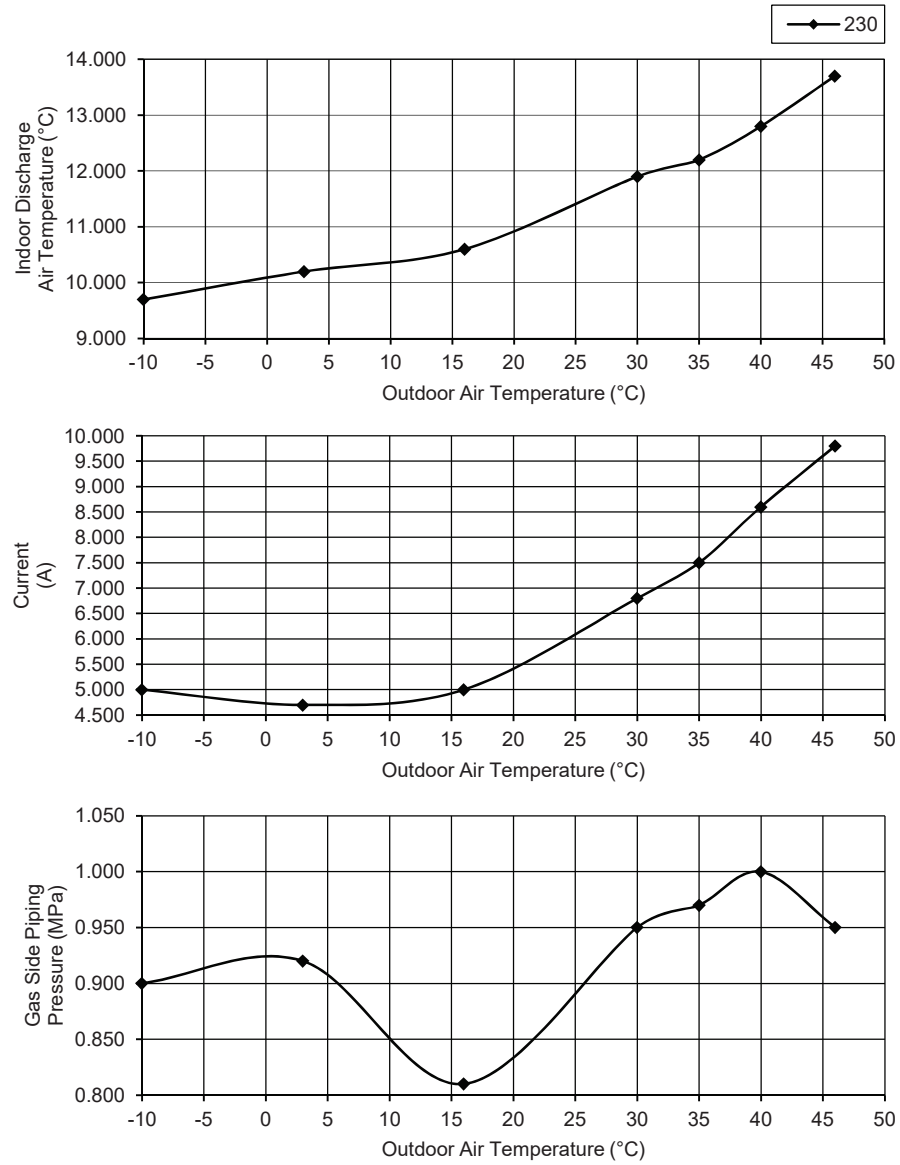
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

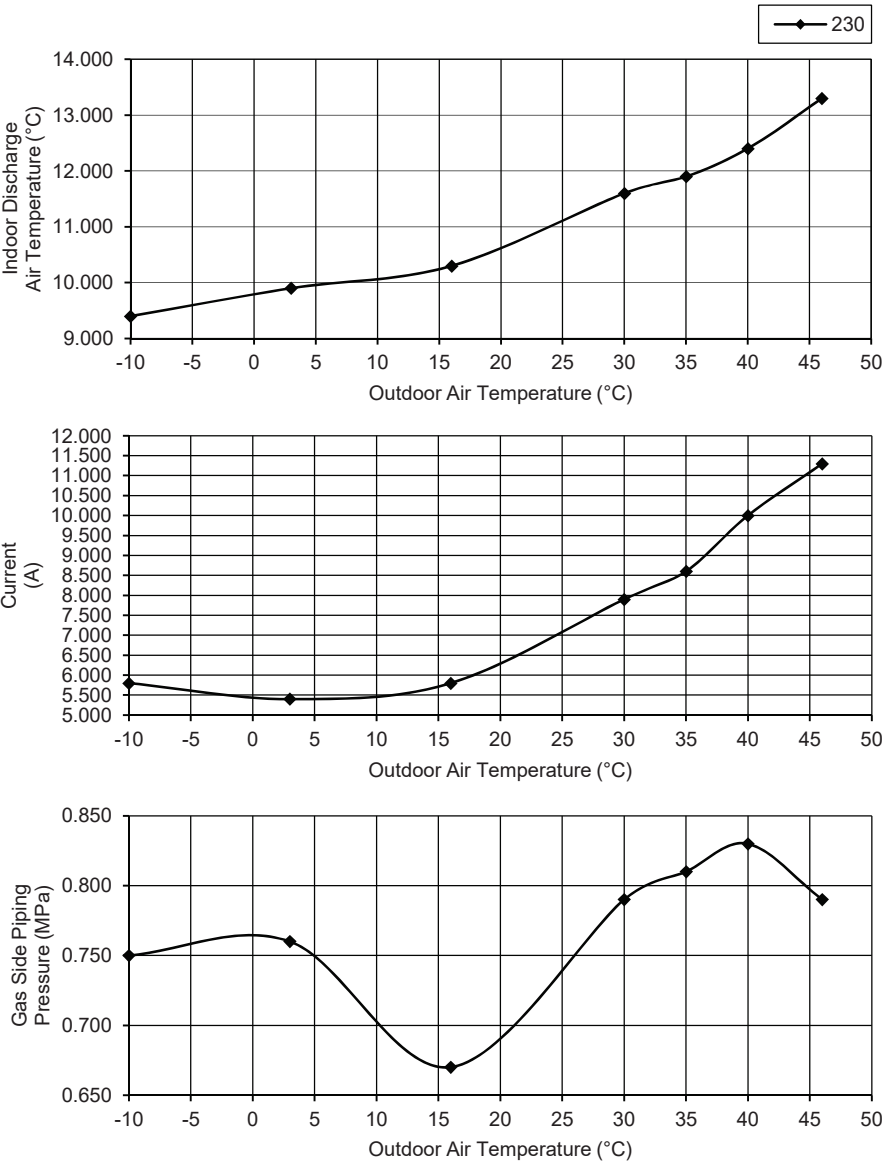
Voltage: 230V, 50Hz

E) Indoor unit capacity: Cooling (4.2), CS-Z42CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

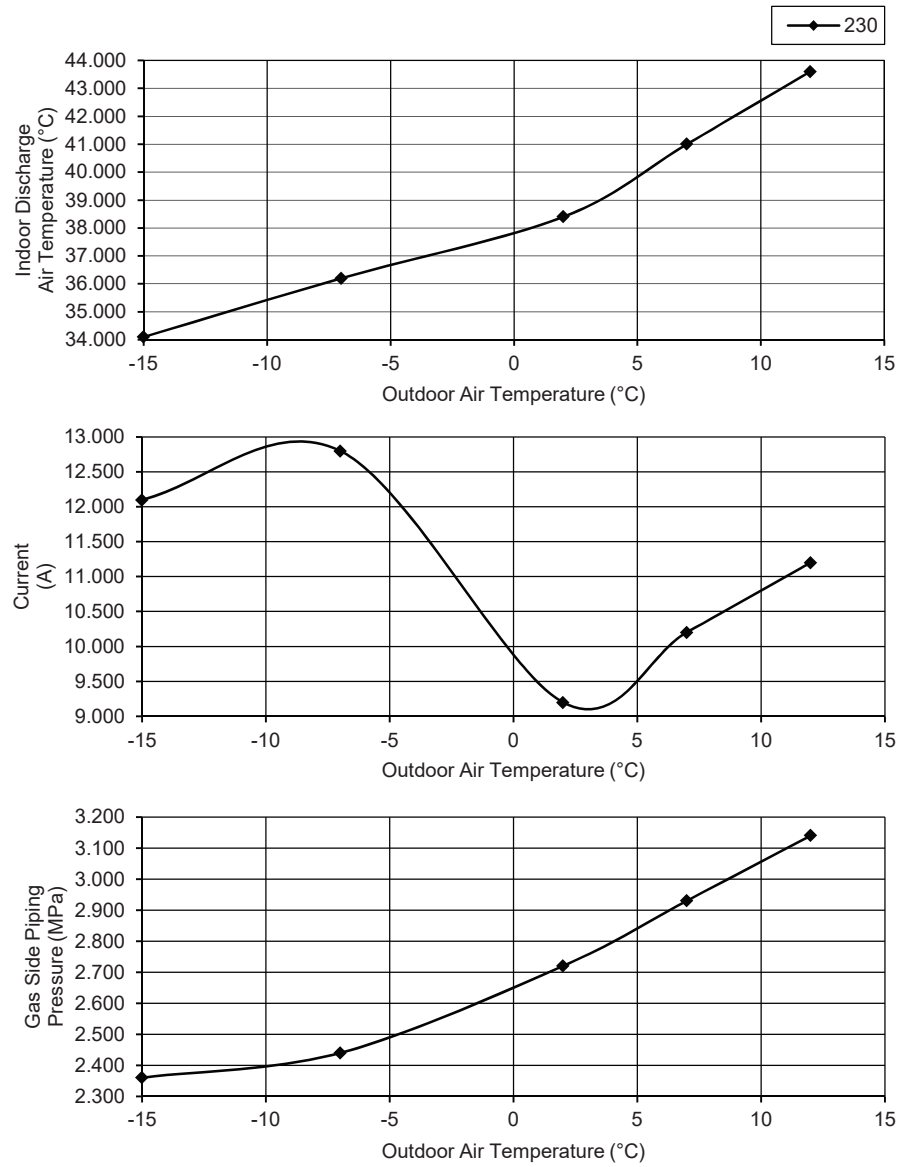
F) Indoor unit capacity: Cooling (5.0), CS-Z50CKEW



- Heating Characteristic

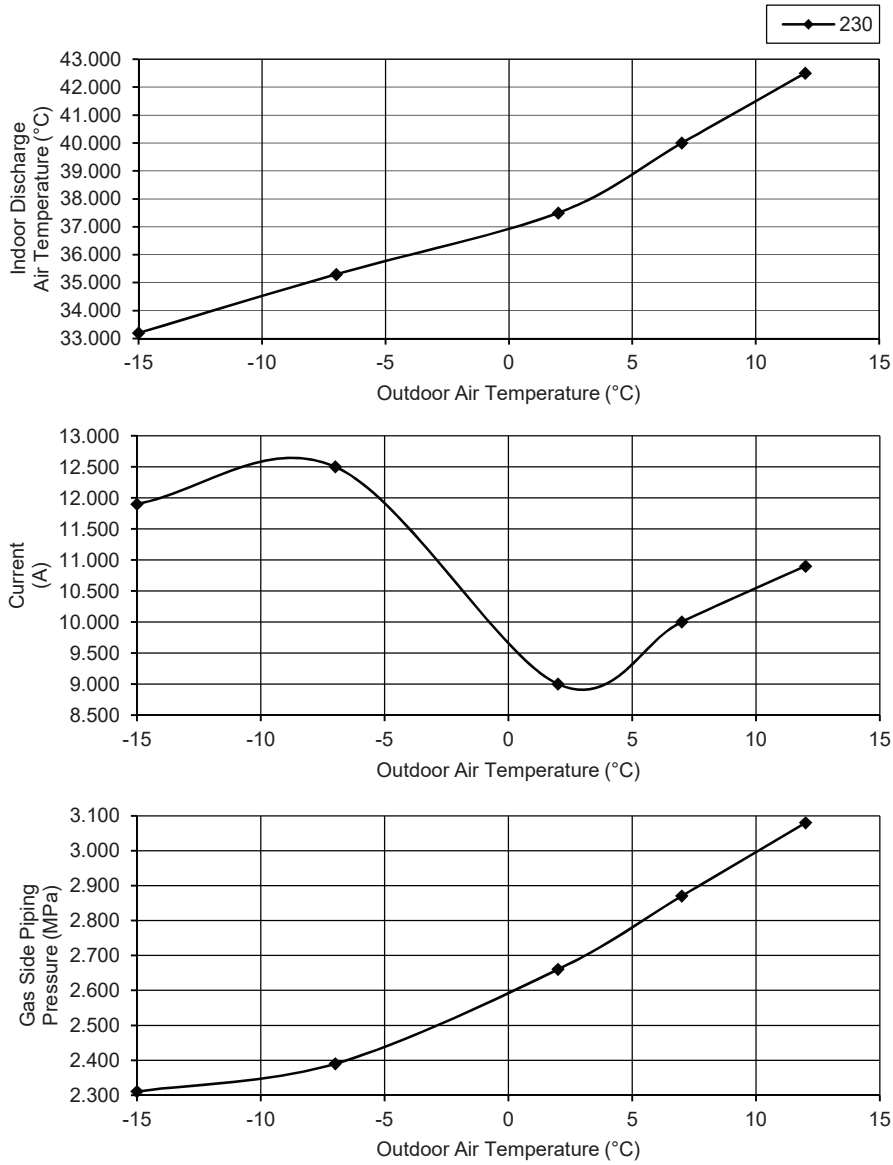
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6), CS-MZ16CKE



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



- Heating Characteristic

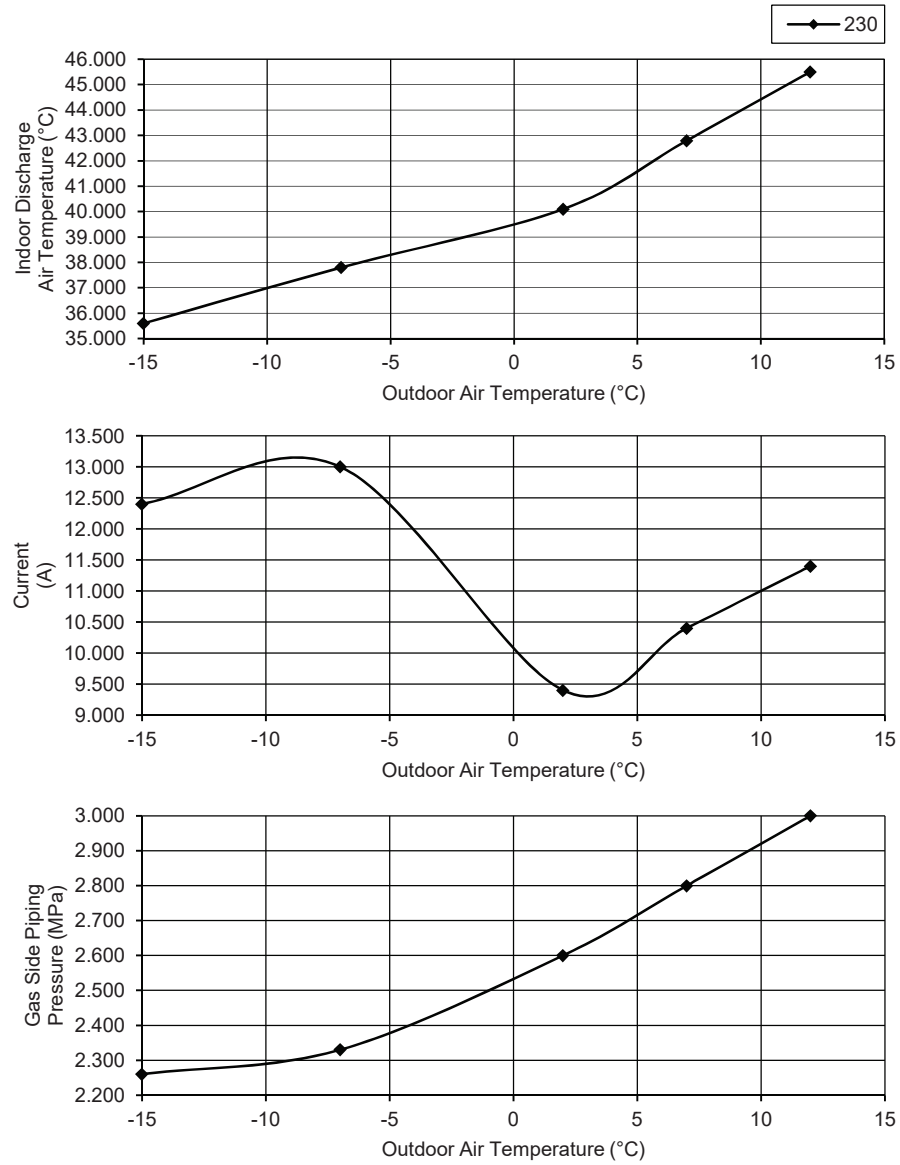
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

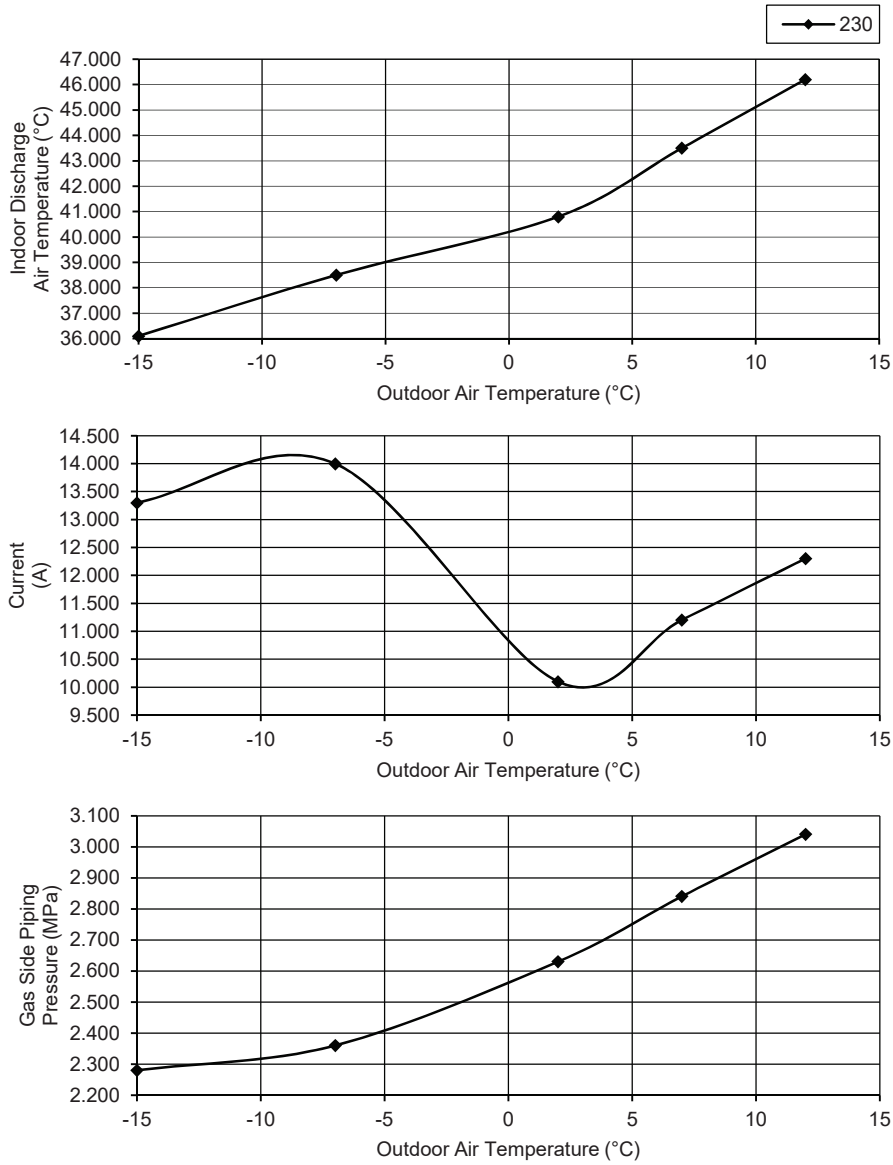
Voltage: 230V, 50Hz

C) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

D) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



- Heating Characteristic

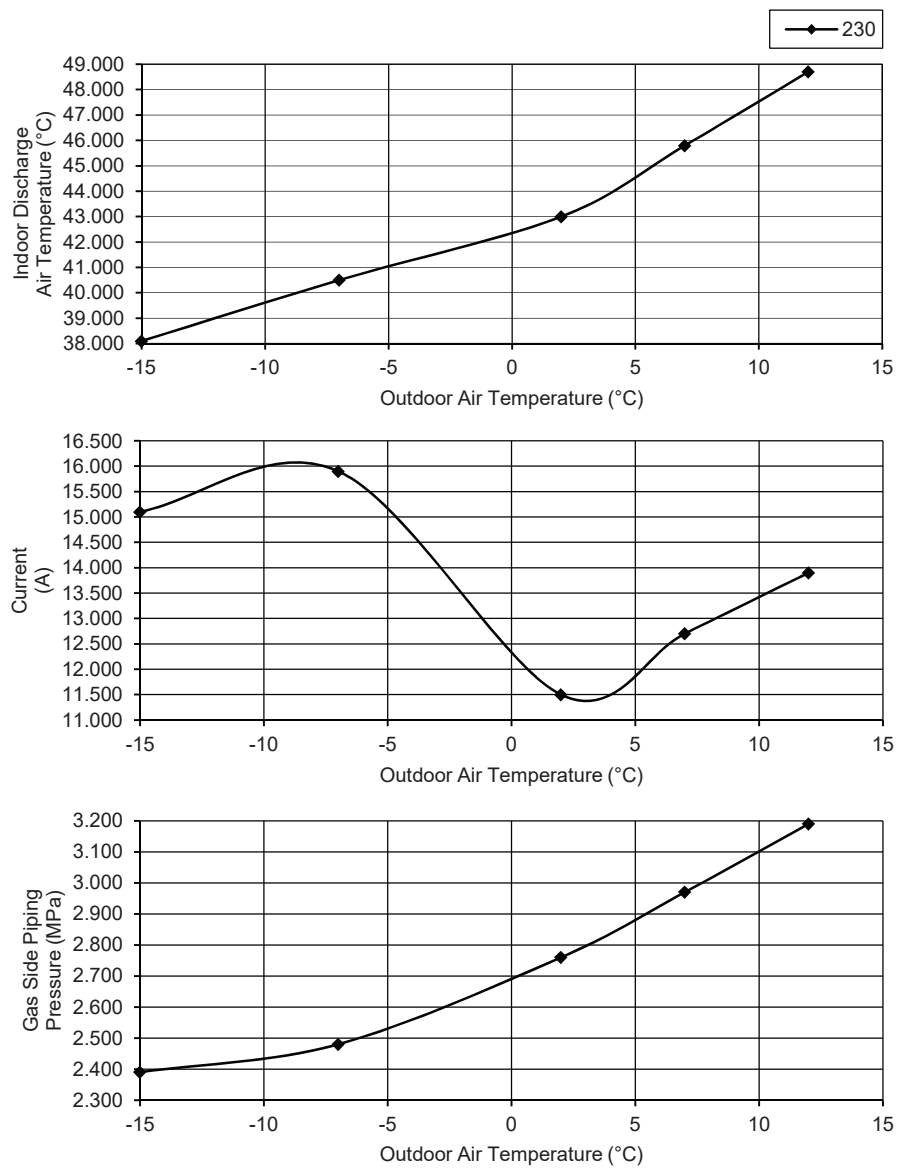
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

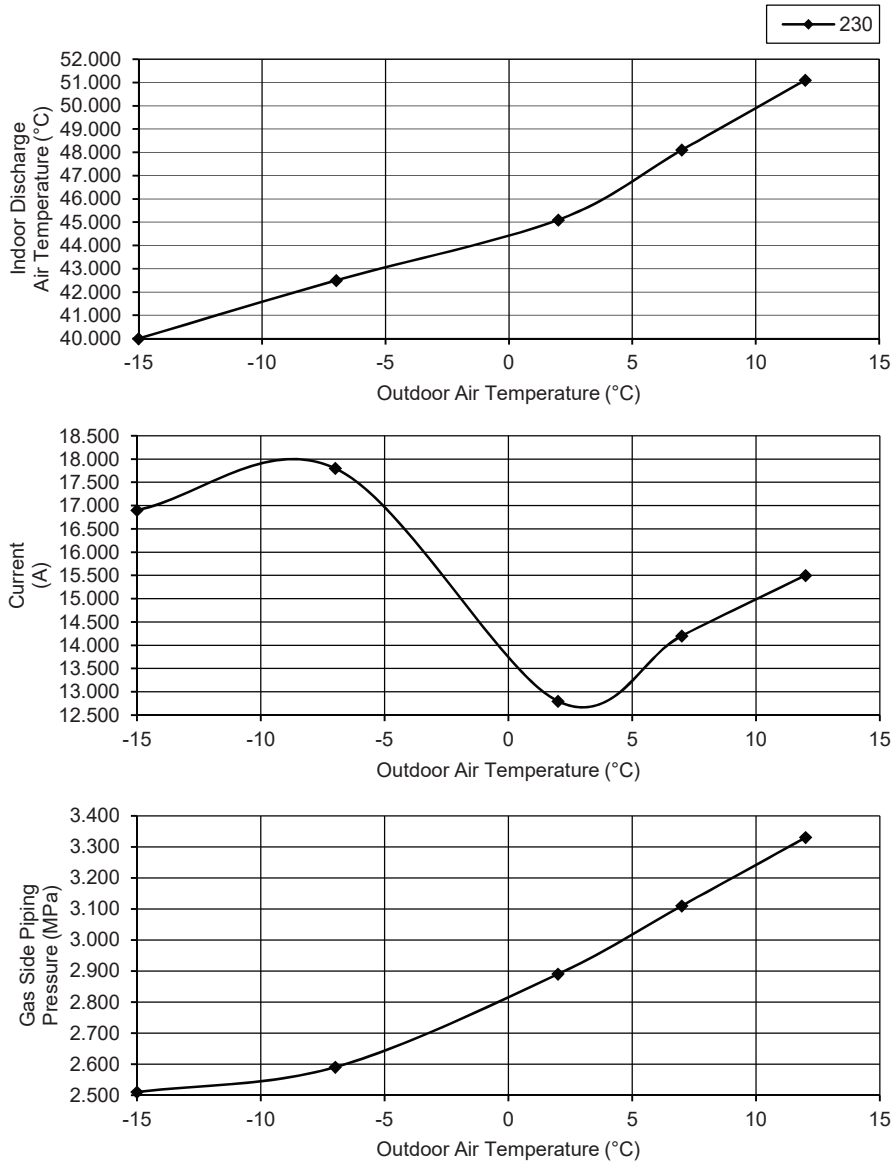
Voltage: 230V, 50Hz

E) Indoor unit capacity: Heating (4.2), CS-Z42CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

F) Indoor unit capacity: Heating (5.0), CS-Z50CKEW



21.5.2 Two Indoor Unit Operation

- Cooling Characteristic

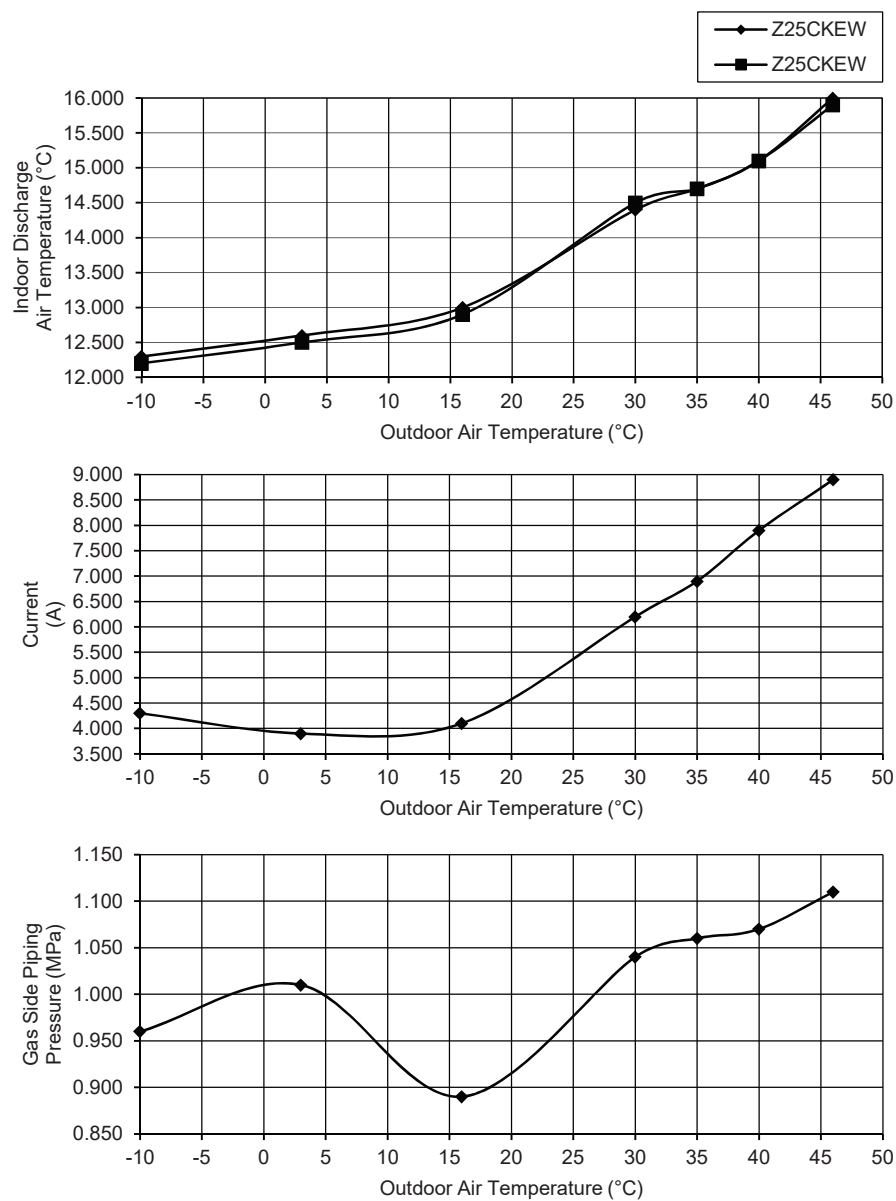
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

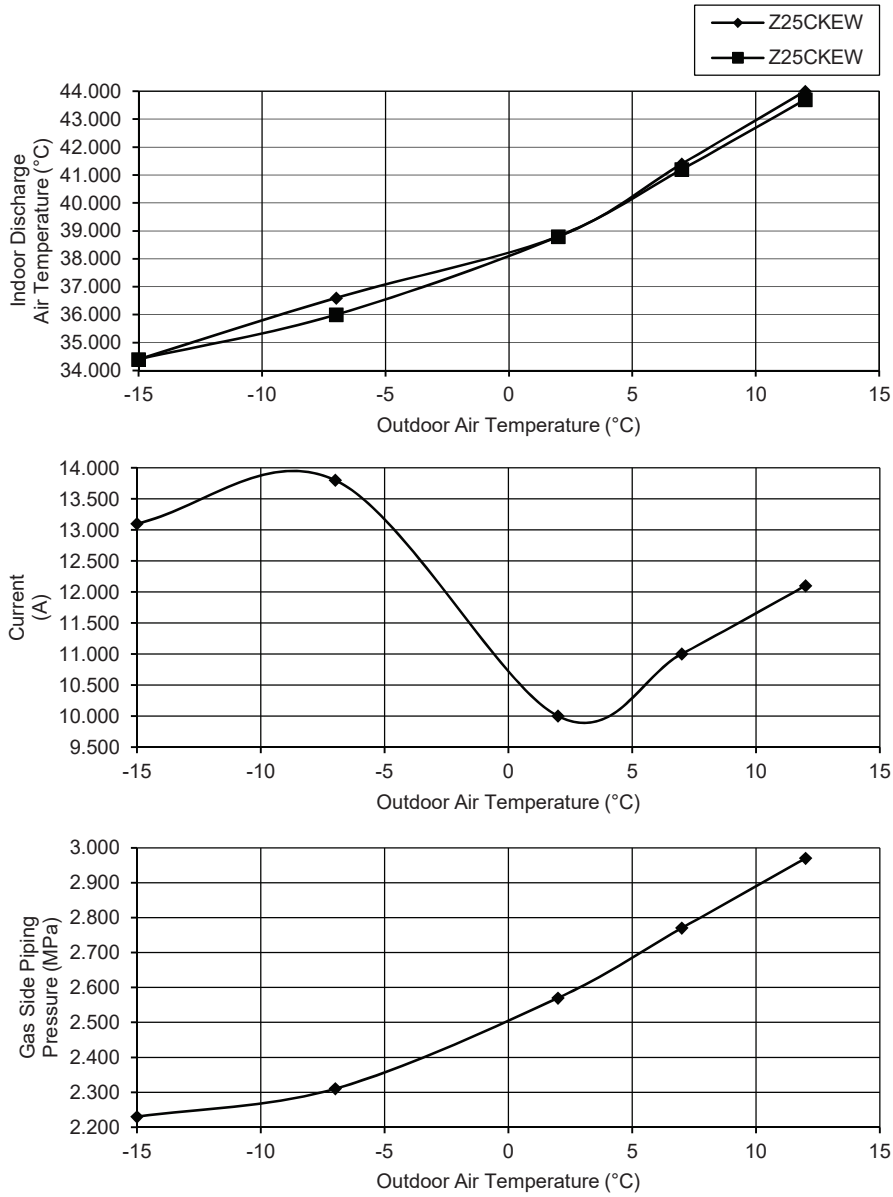
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW x2



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW x2



21.5.3 Three Indoor Unit Operation

- Cooling Characteristic

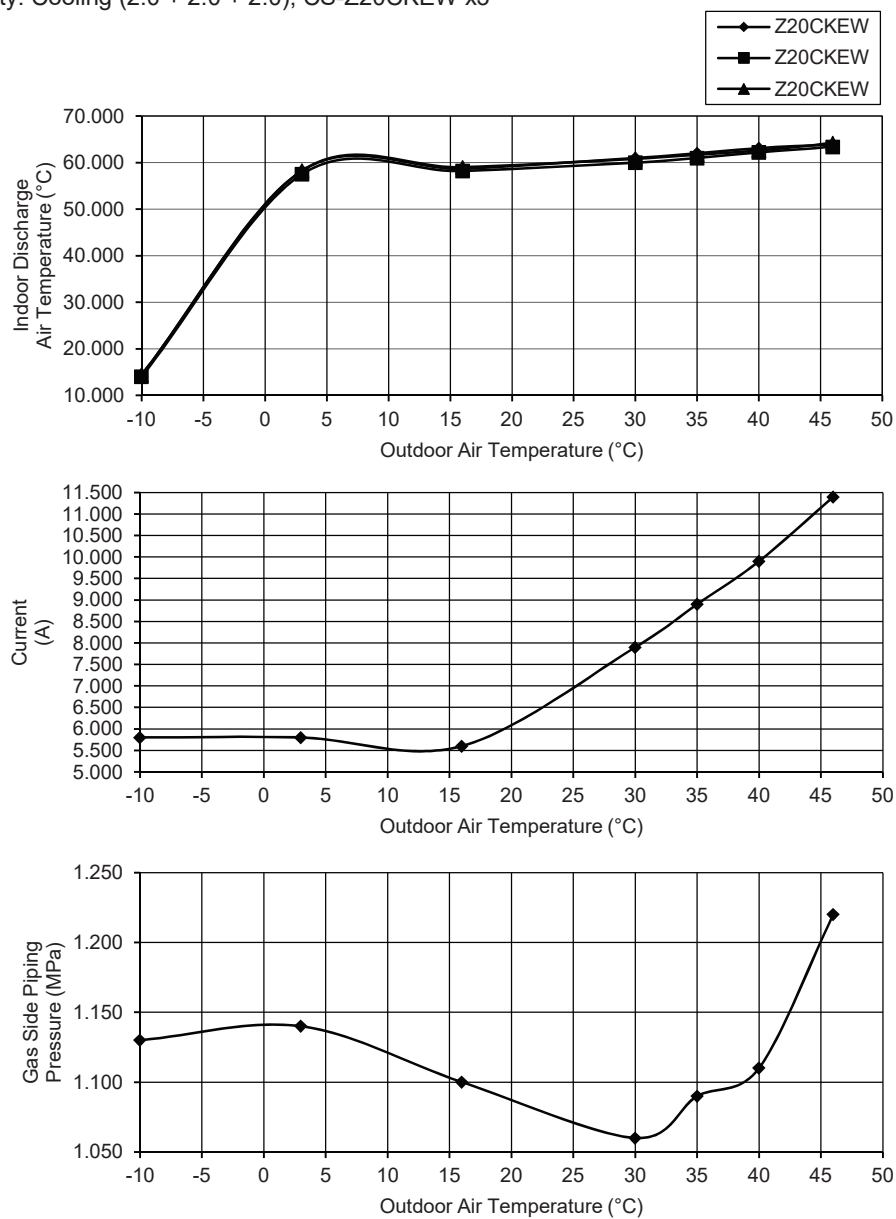
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

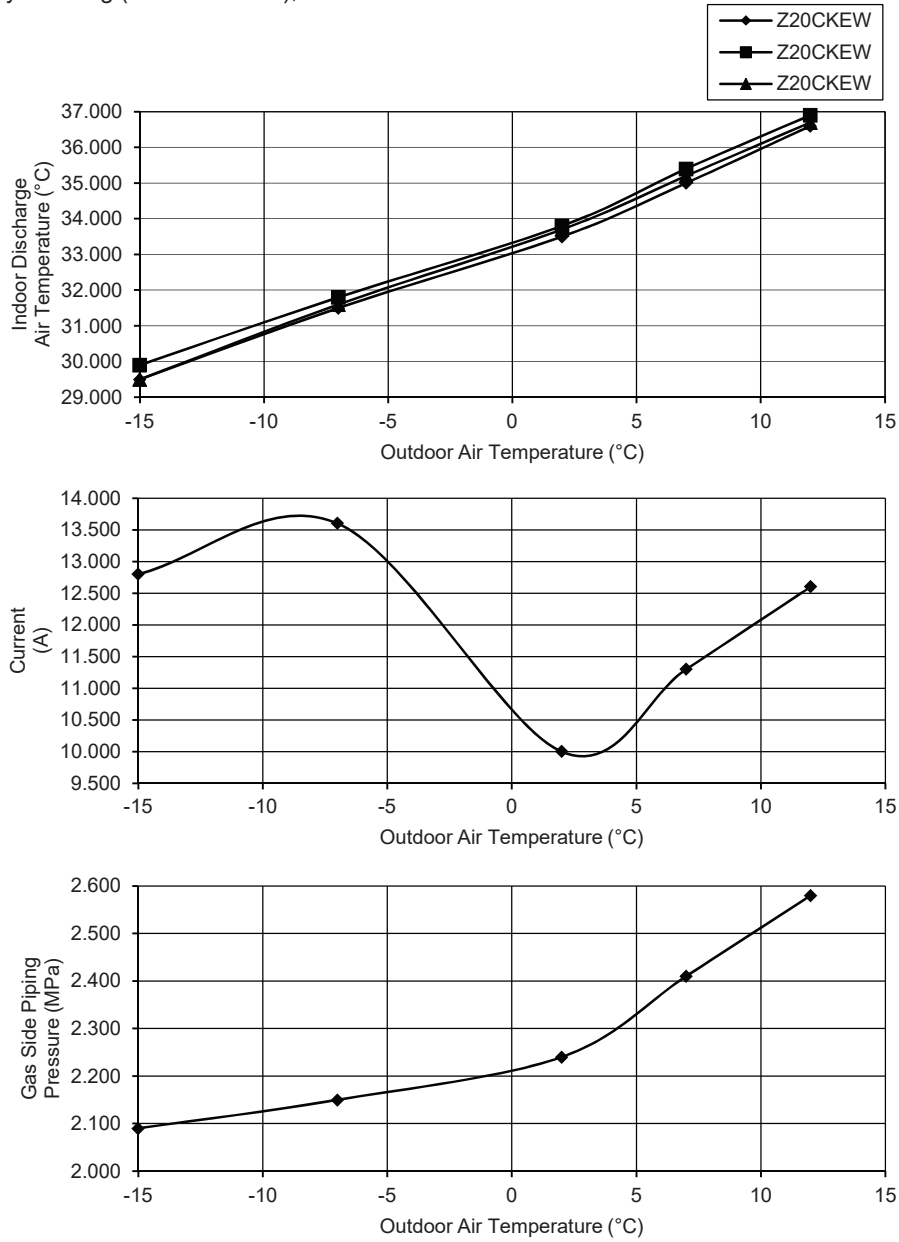
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



21.5.4 Four Indoor Unit Operation

- Heating Characteristic

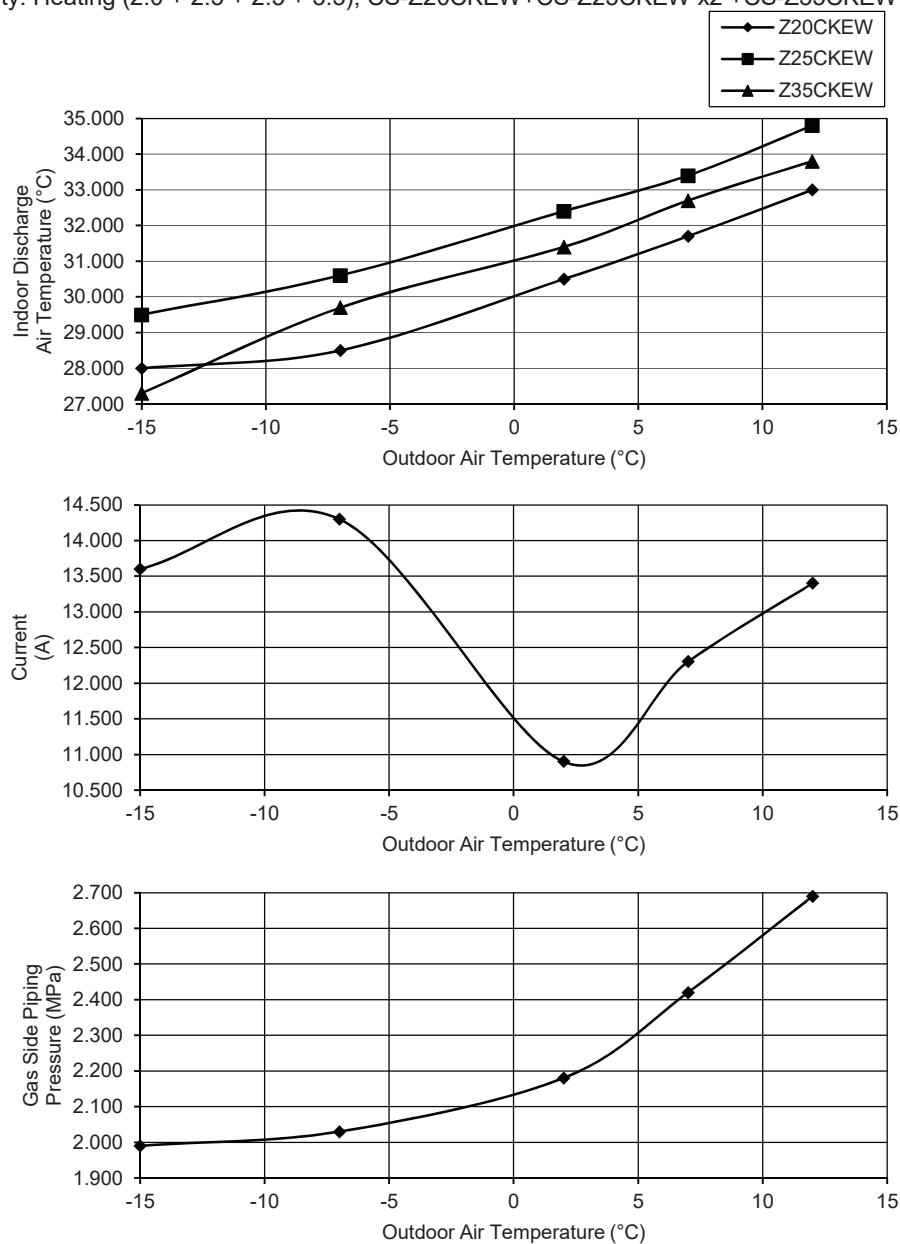
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.5 + 2.5 + 3.5), CS-Z20CKEW+CS-Z25CKEW x2 +CS-Z35CKEW

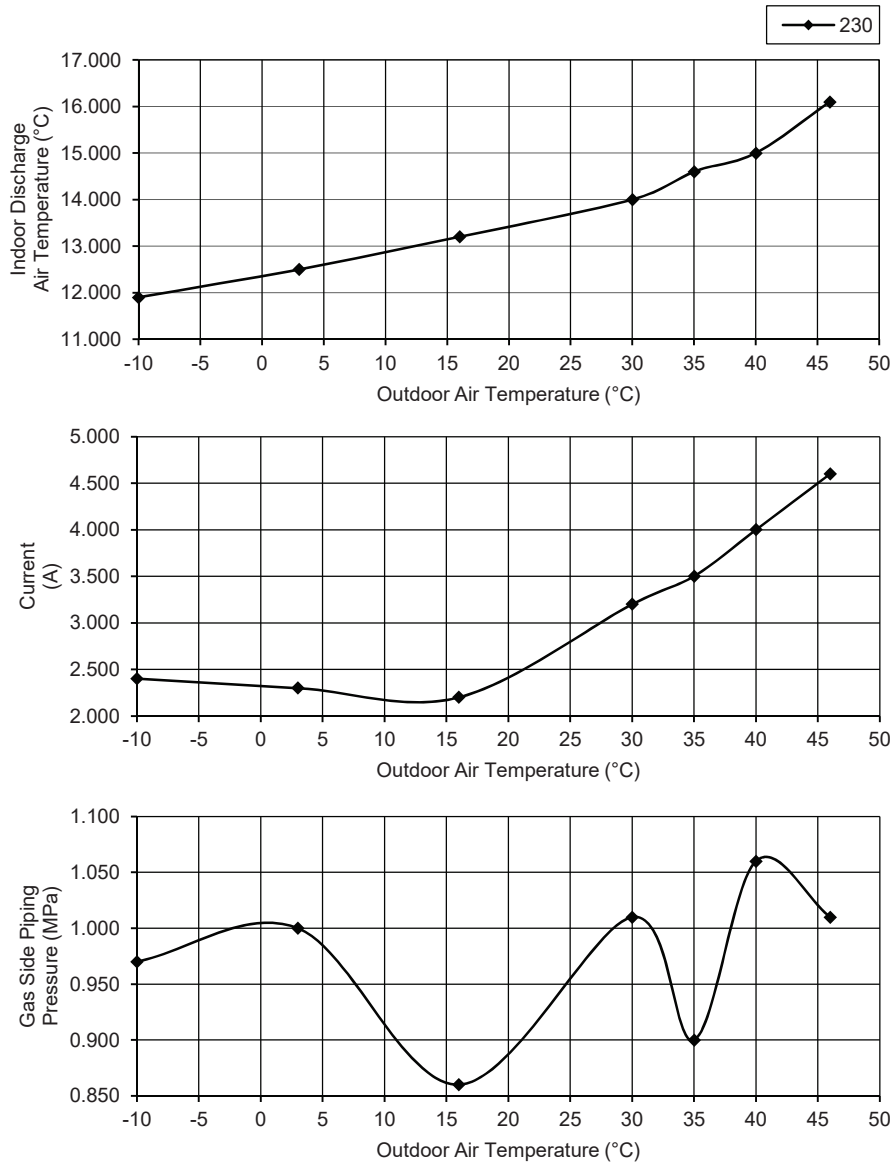


21.6 Operation Characteristics (CU-4Z68CBE)

21.6.1 One Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6), CS-MZ16CKE



- Cooling Characteristic

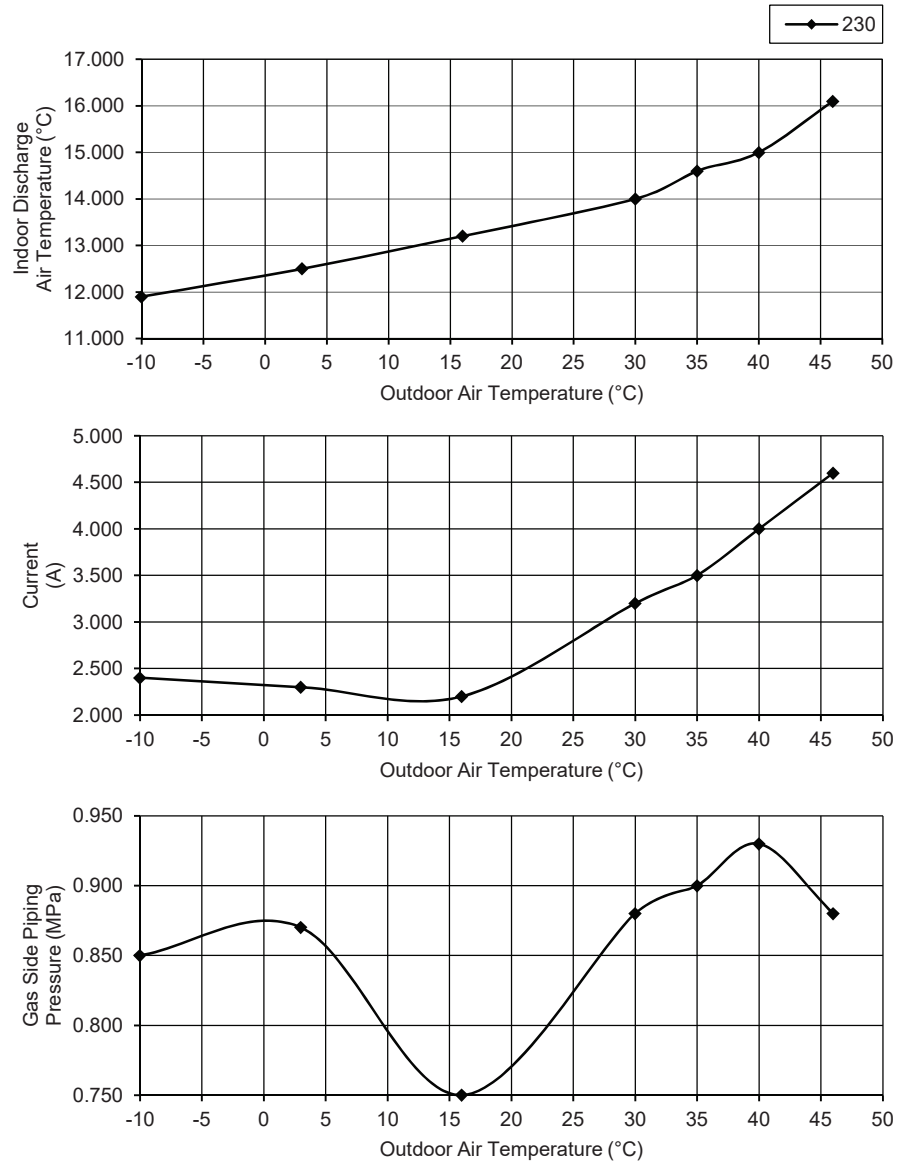
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

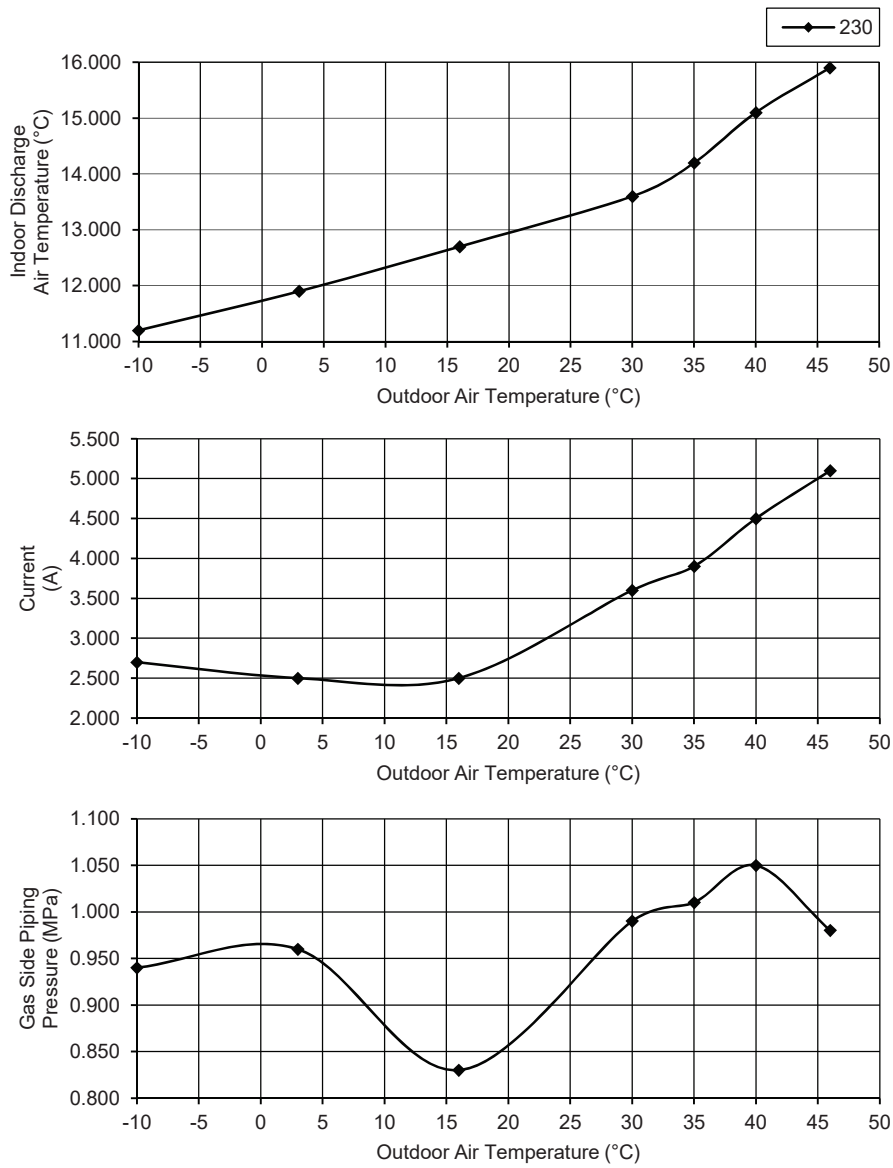
Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.0), CS-Z20CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

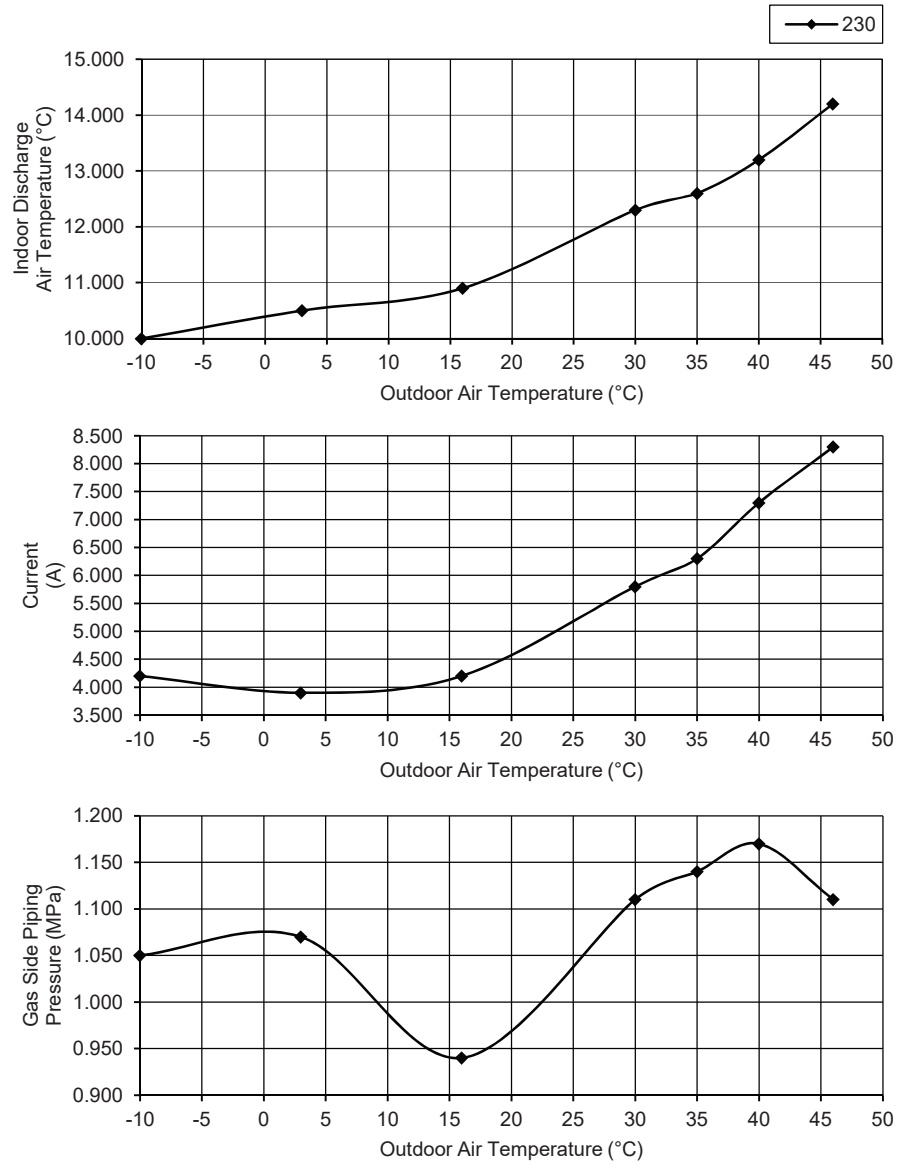
C) Indoor unit capacity: Cooling (2.5), CS-Z25CKEW



- Cooling Characteristic

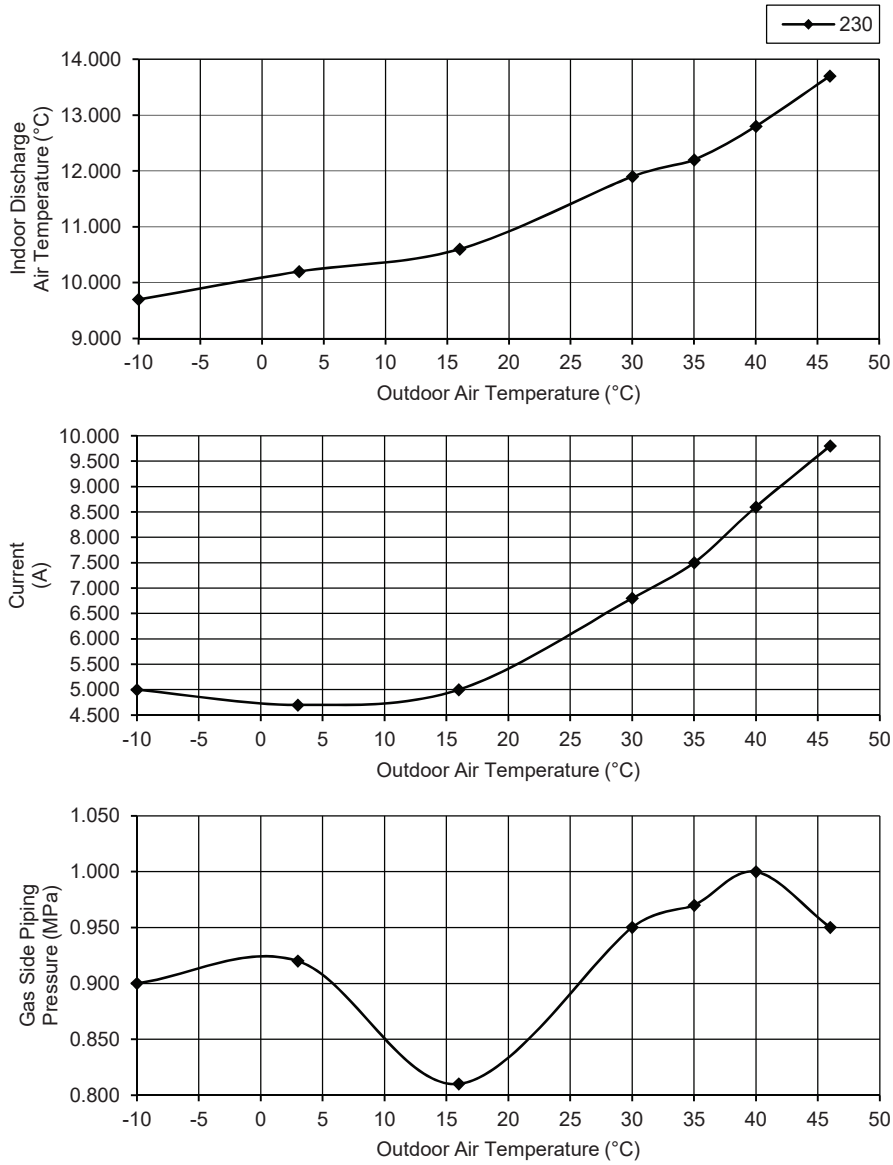
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping length: 7.5 m
 Voltage: 230V, 50Hz

D) Indoor unit capacity: Cooling (3.5), CS-Z35CKEW



- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

E) Indoor unit capacity: Cooling (4.2), CS-Z42CKEW



- Cooling Characteristic

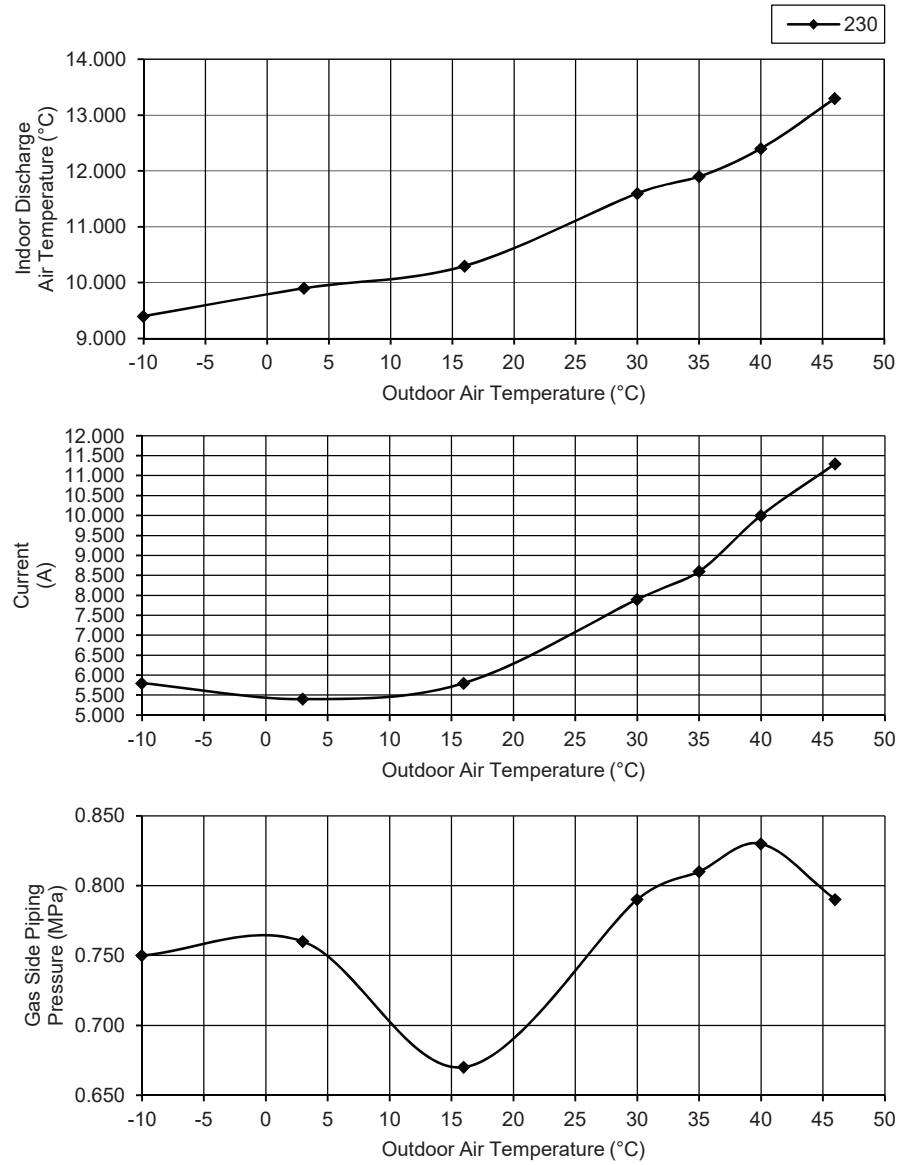
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 7.5 m

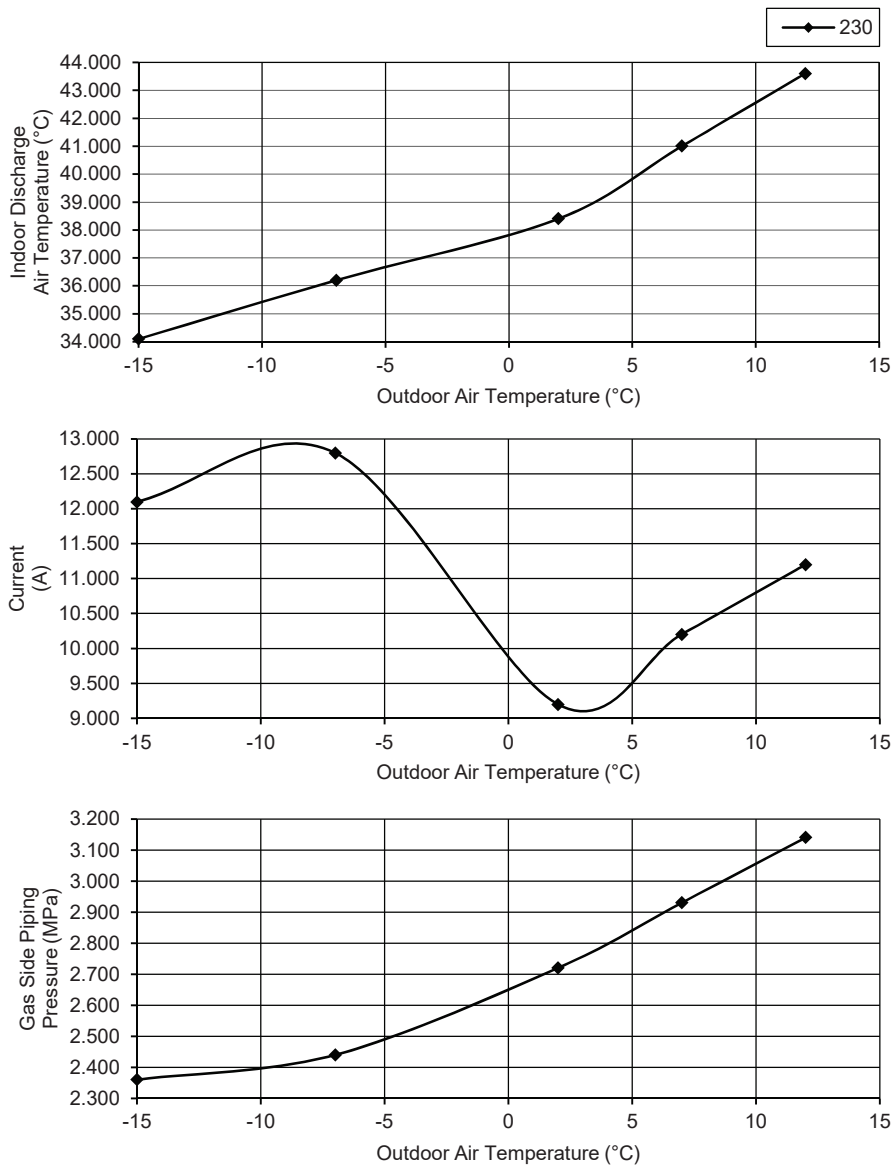
Voltage: 230V, 50Hz

F) Indoor unit capacity: Cooling (5.0), CS-Z50CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6), CS-MZ16CKE



- Heating Characteristic

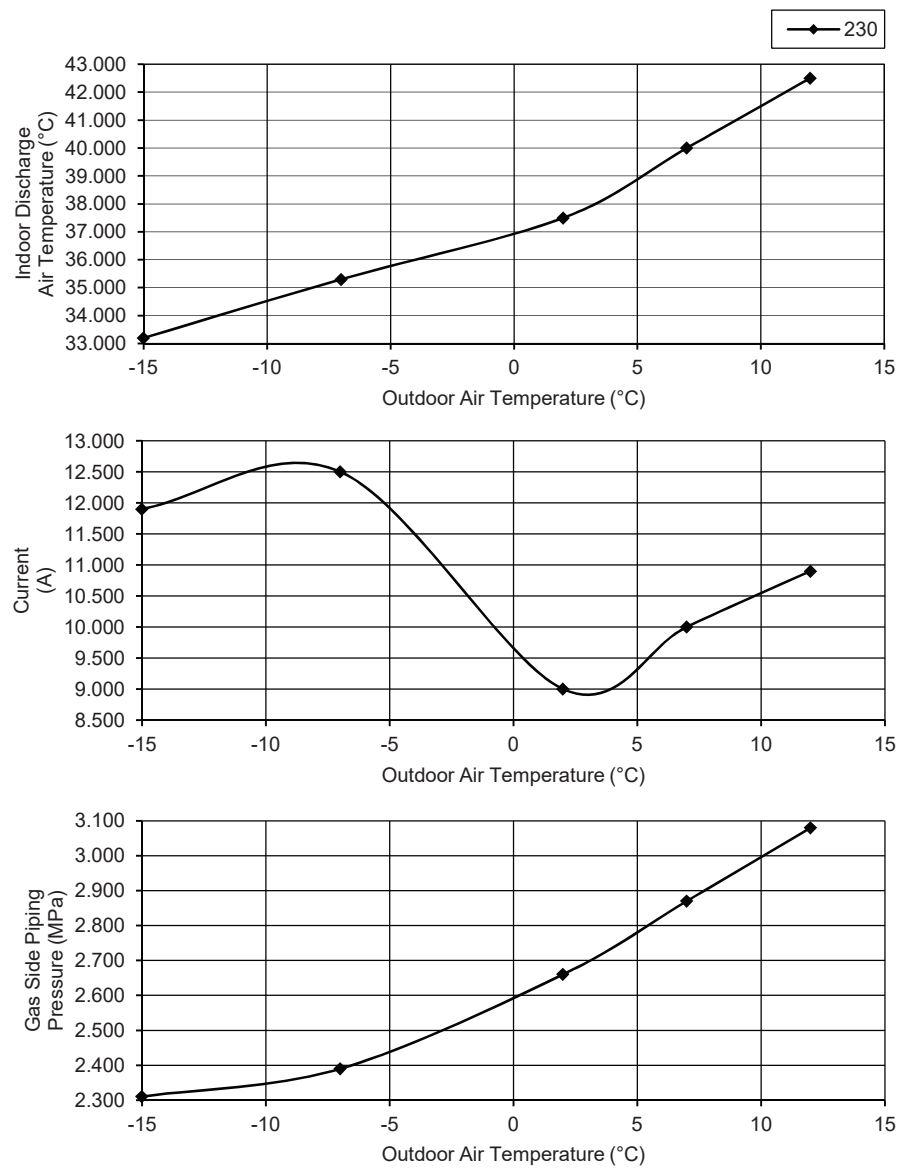
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

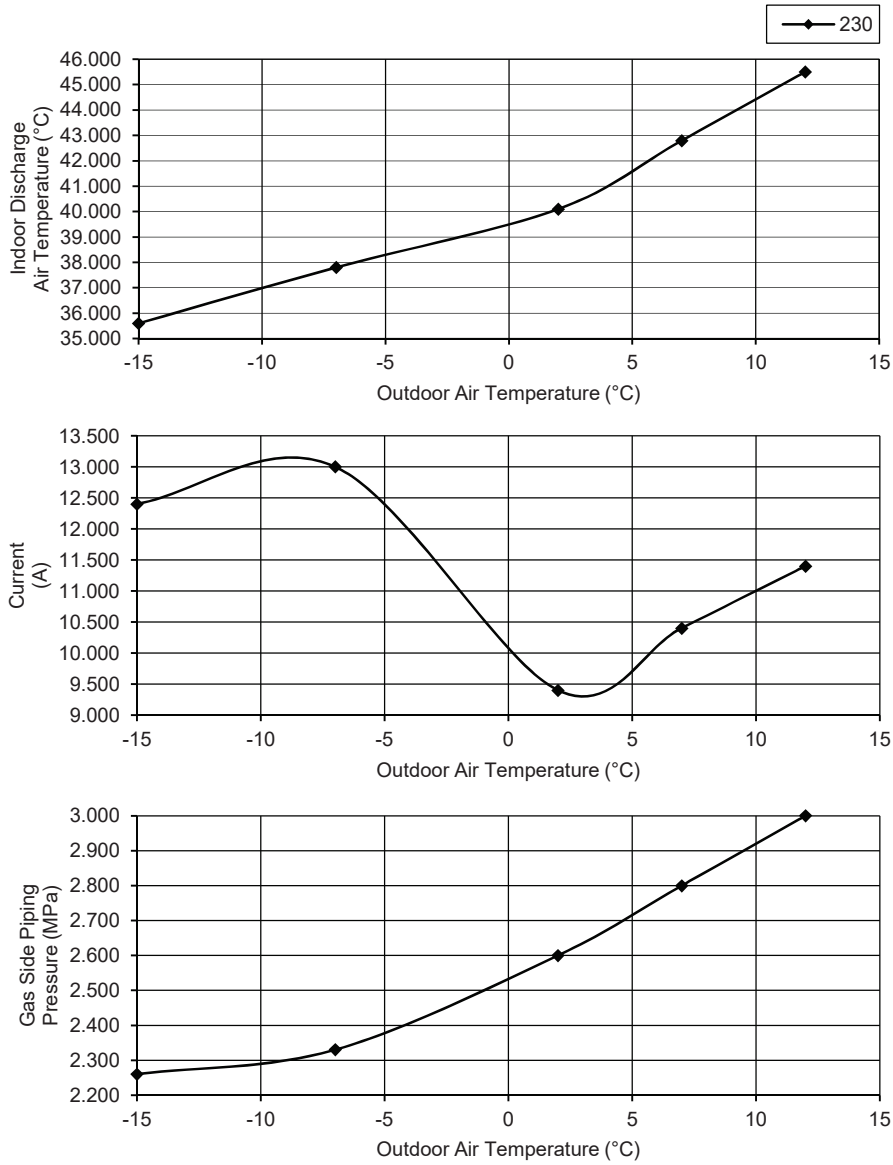
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.0), CS-Z20CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping length: 5 m
Voltage: 230V, 50Hz

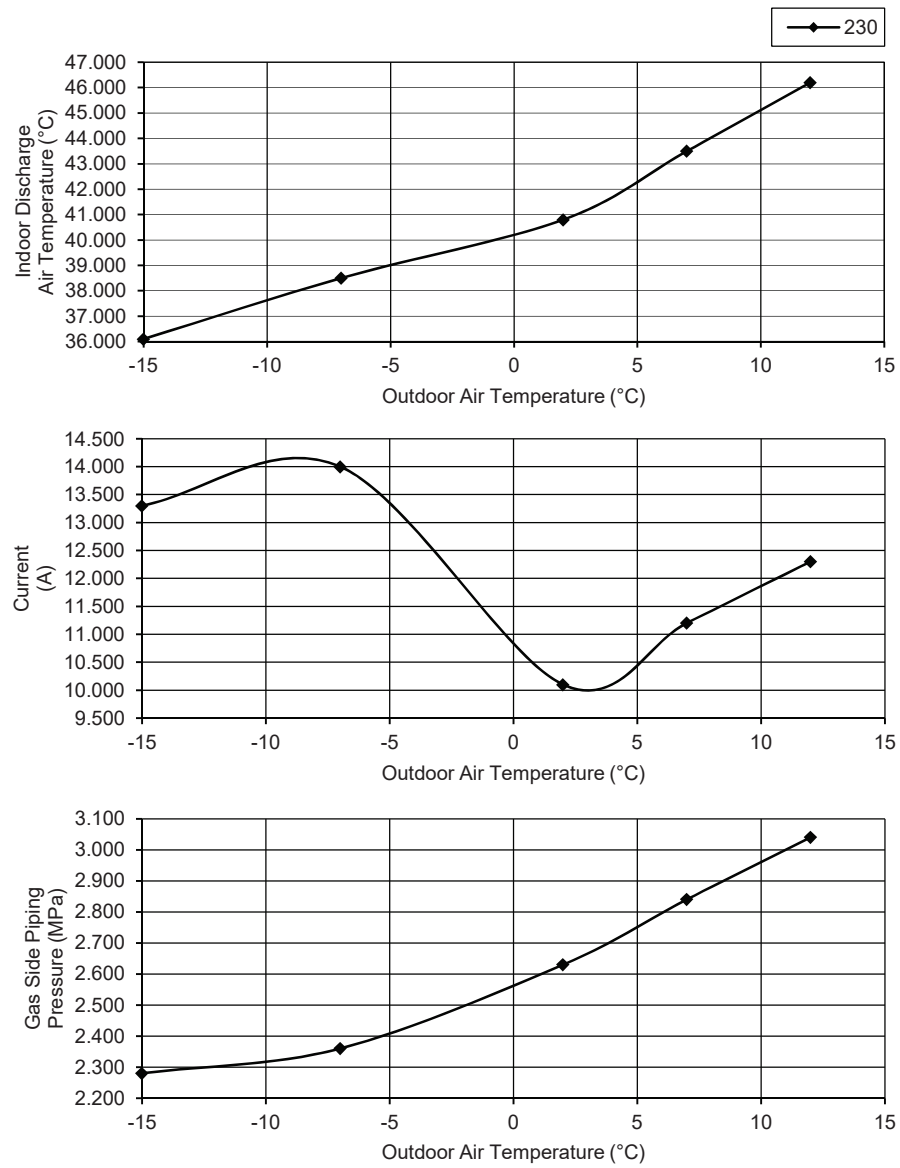
C) Indoor unit capacity: Heating (2.5), CS-Z25CKEW



- Heating Characteristic

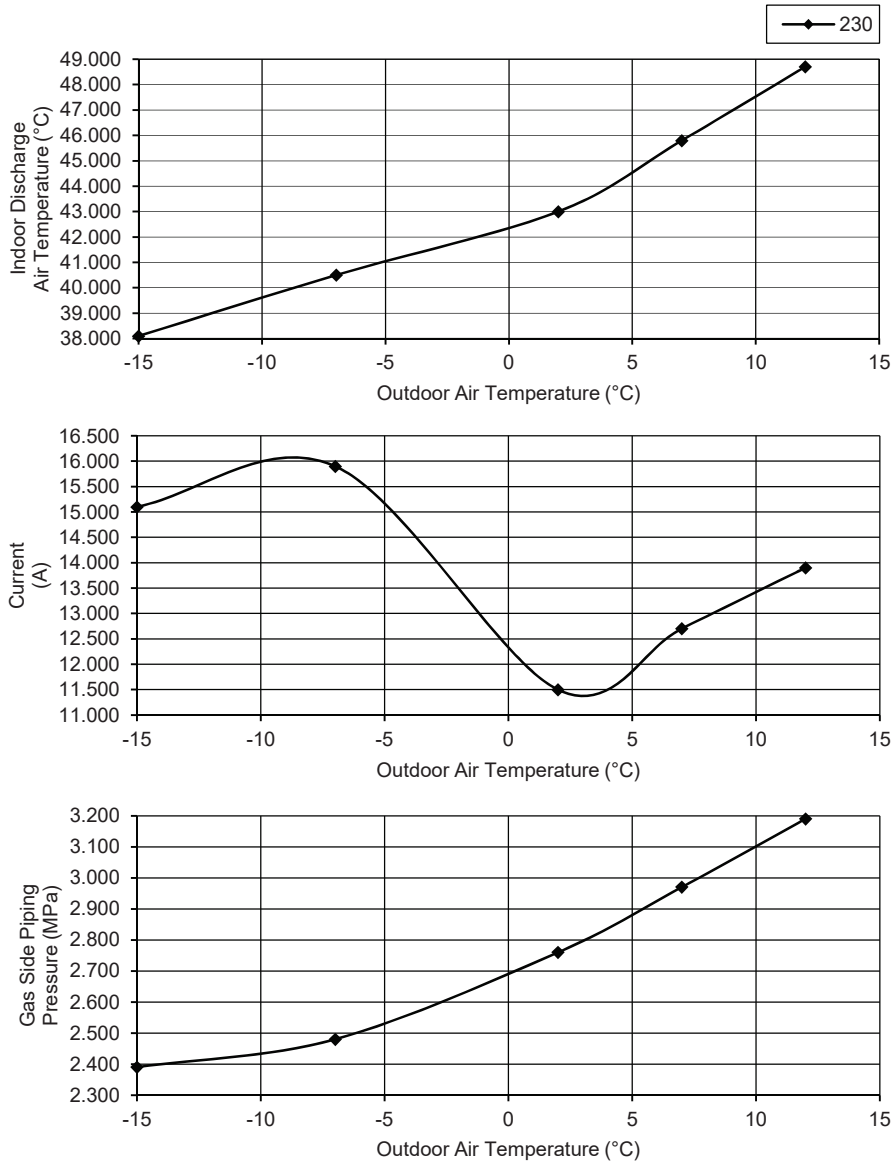
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

D) Indoor unit capacity: Heating (3.5), CS-Z35CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping length: 5 m
 Voltage: 230V, 50Hz

E) Indoor unit capacity: Heating (4.2), CS-Z42CKEW



- Heating Characteristic

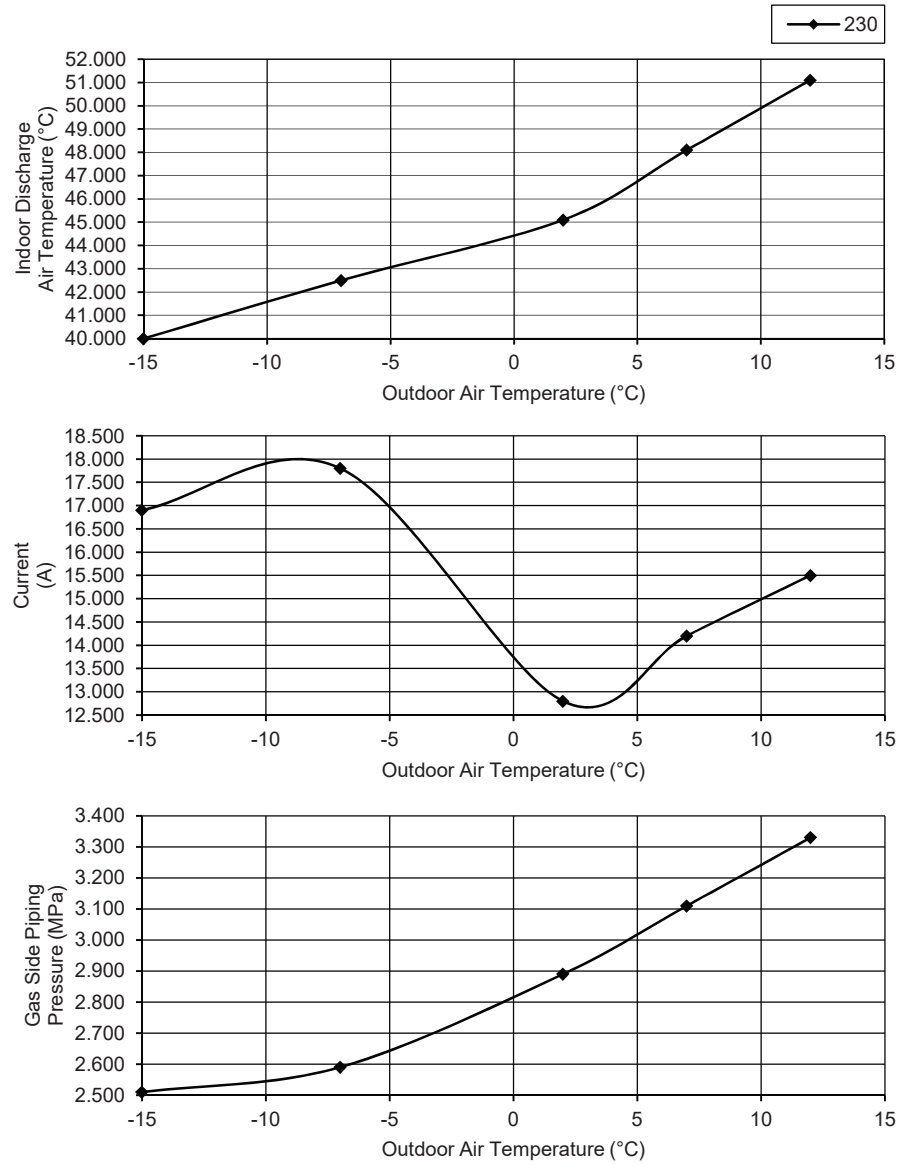
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

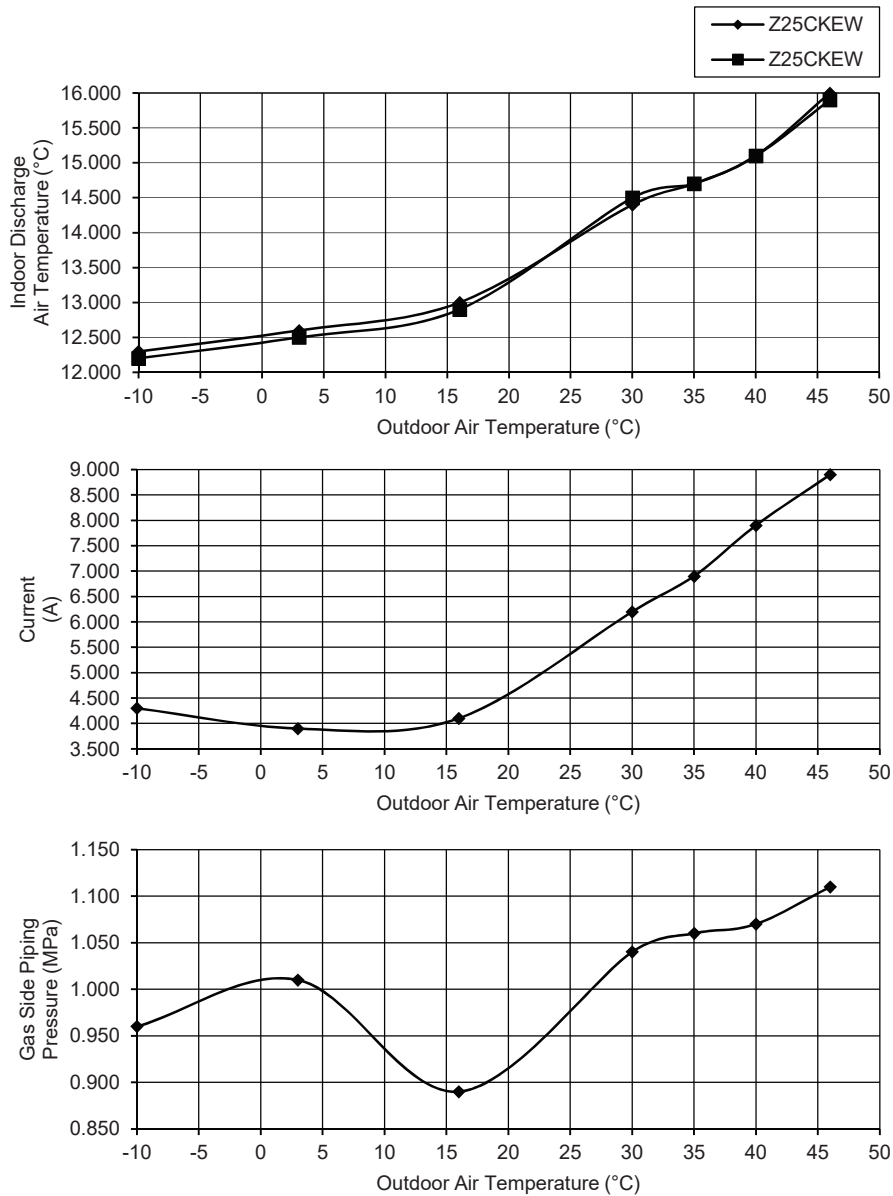
F) Indoor unit capacity: Heating (5.0), CS-Z50CKEW



21.6.2 Two Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.5 + 2.5), CS-Z25CKEW x2



- Heating Characteristic

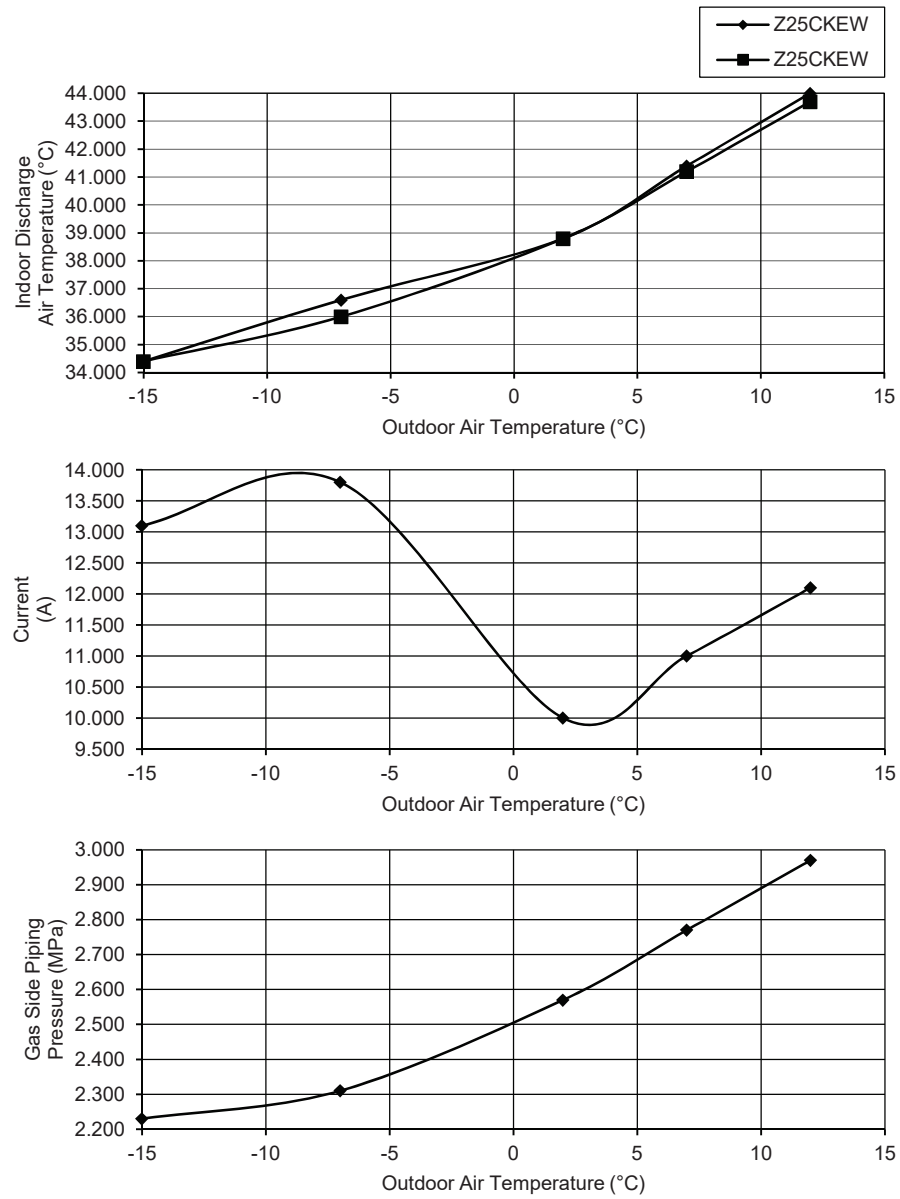
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

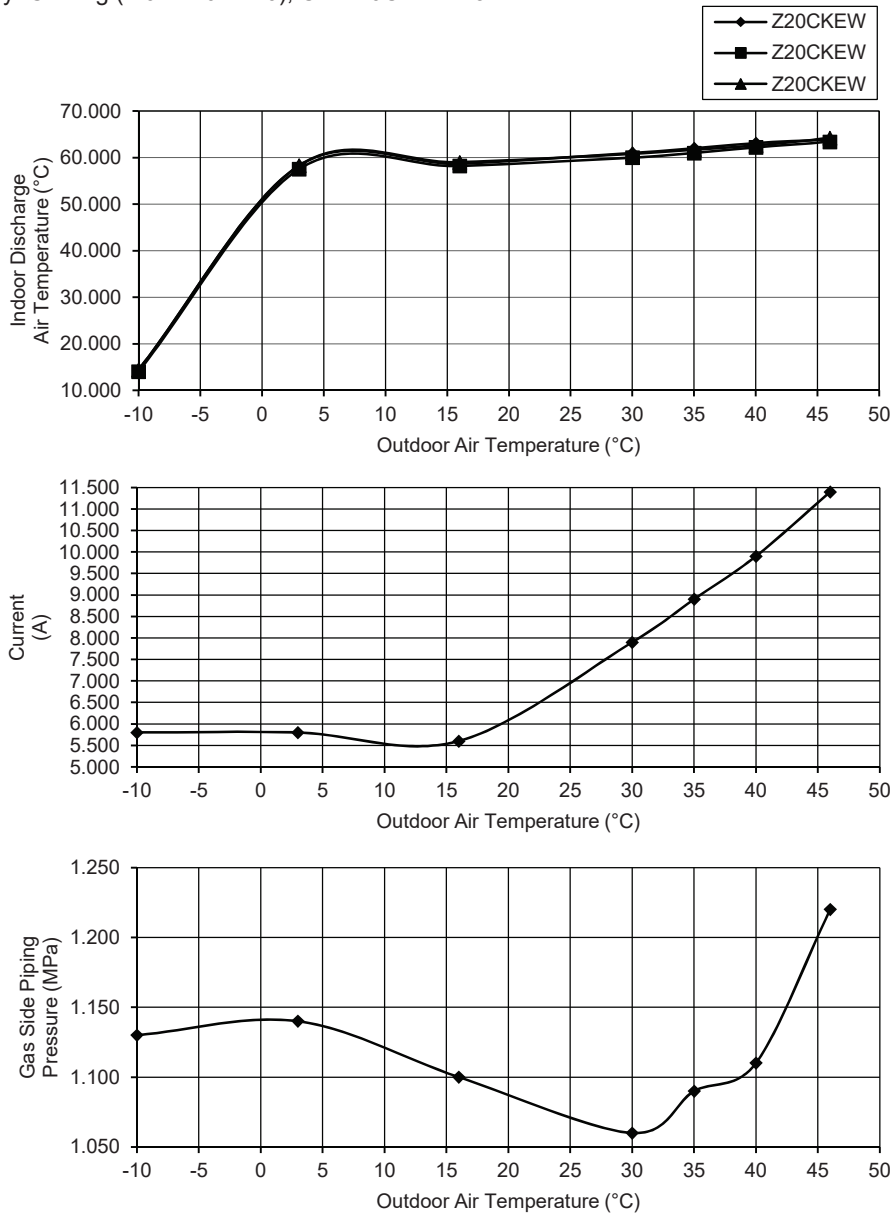
A) Indoor unit capacity: Heating (2.5 + 2.5), CS-Z25CKEW x2



21.6.3 Three Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



- Heating Characteristic

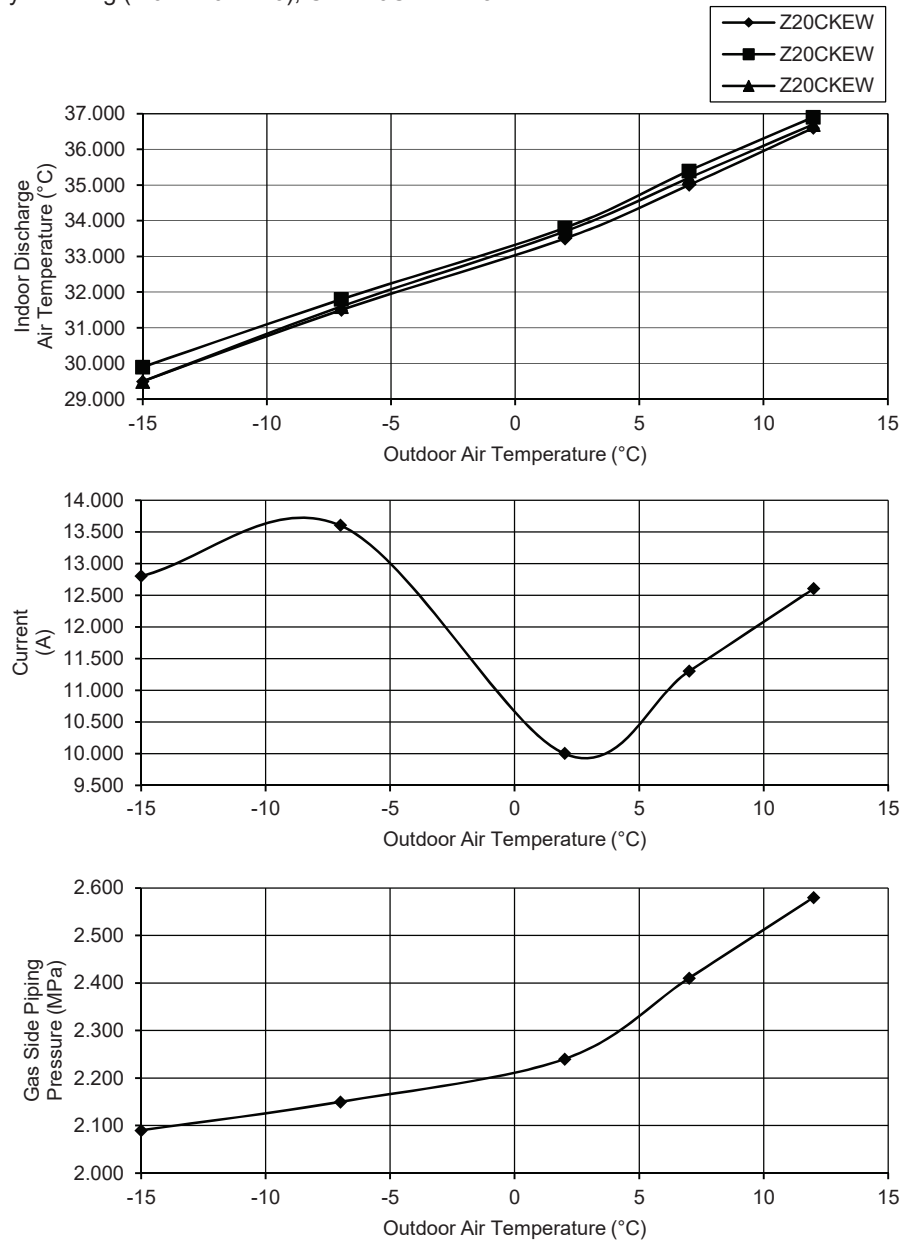
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

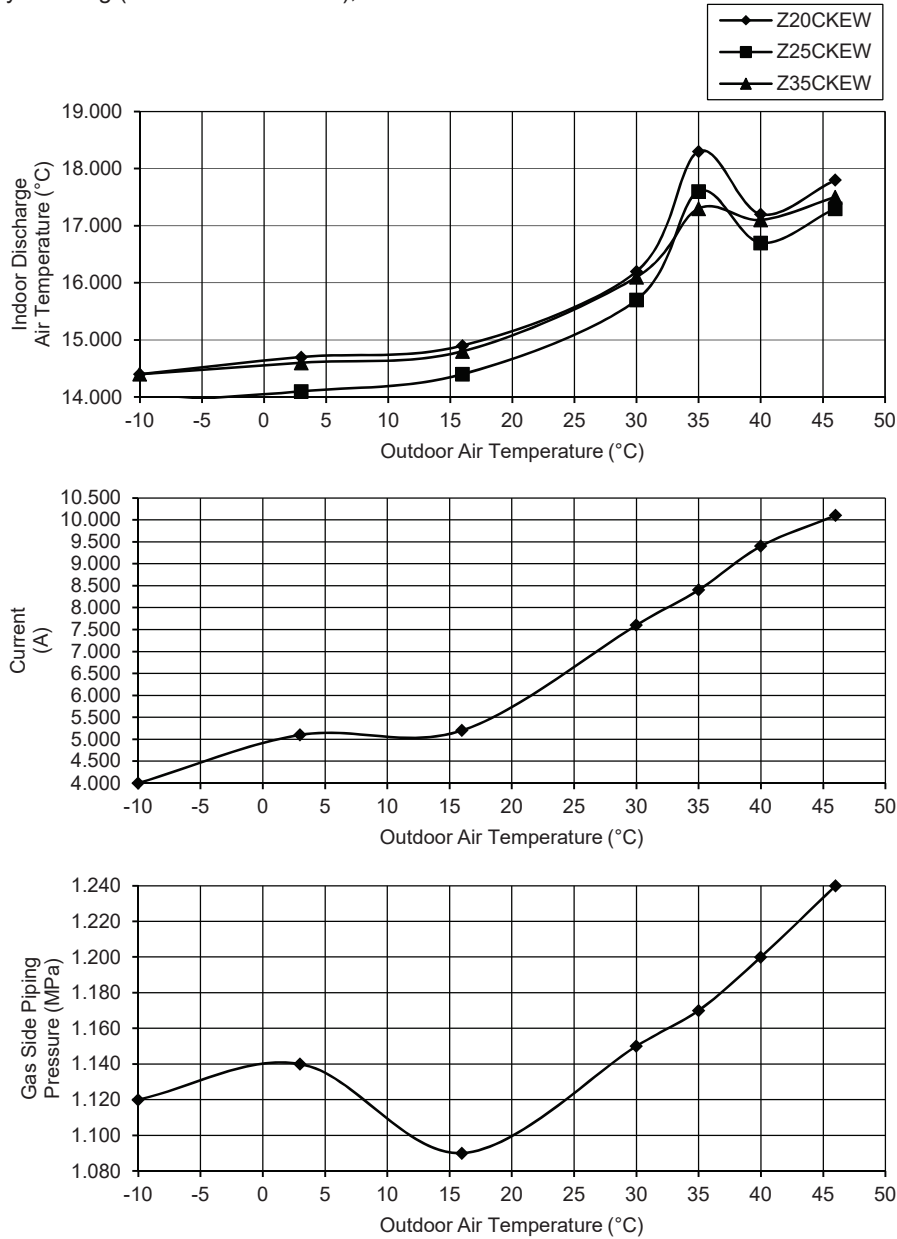
A) Indoor unit capacity: Heating (2.0 + 2.0 + 2.0), CS-Z20CKEW x3



21.6.4 Four Indoor Unit Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5 m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.0 + 2.5 + 2.5 + 3.5), CS-Z20CKEW+CS-Z25CKEW x2 +CS-Z35CKEW



- Heating Characteristic

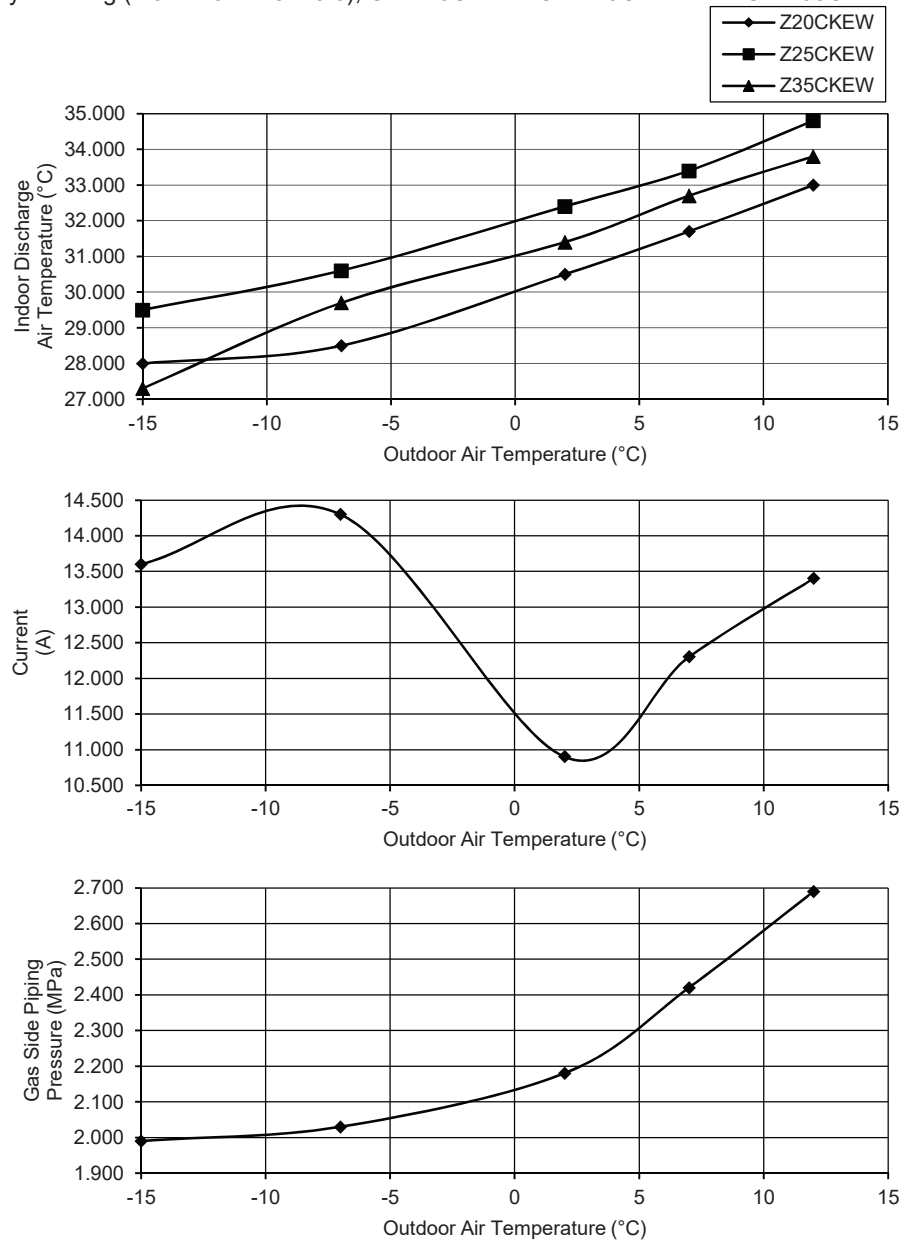
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping length: 5 m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.0 + 2.5 + 2.5 + 3.5), CS-Z20CKEW+CS-Z25CKEW x2 +CS-Z35CKEW

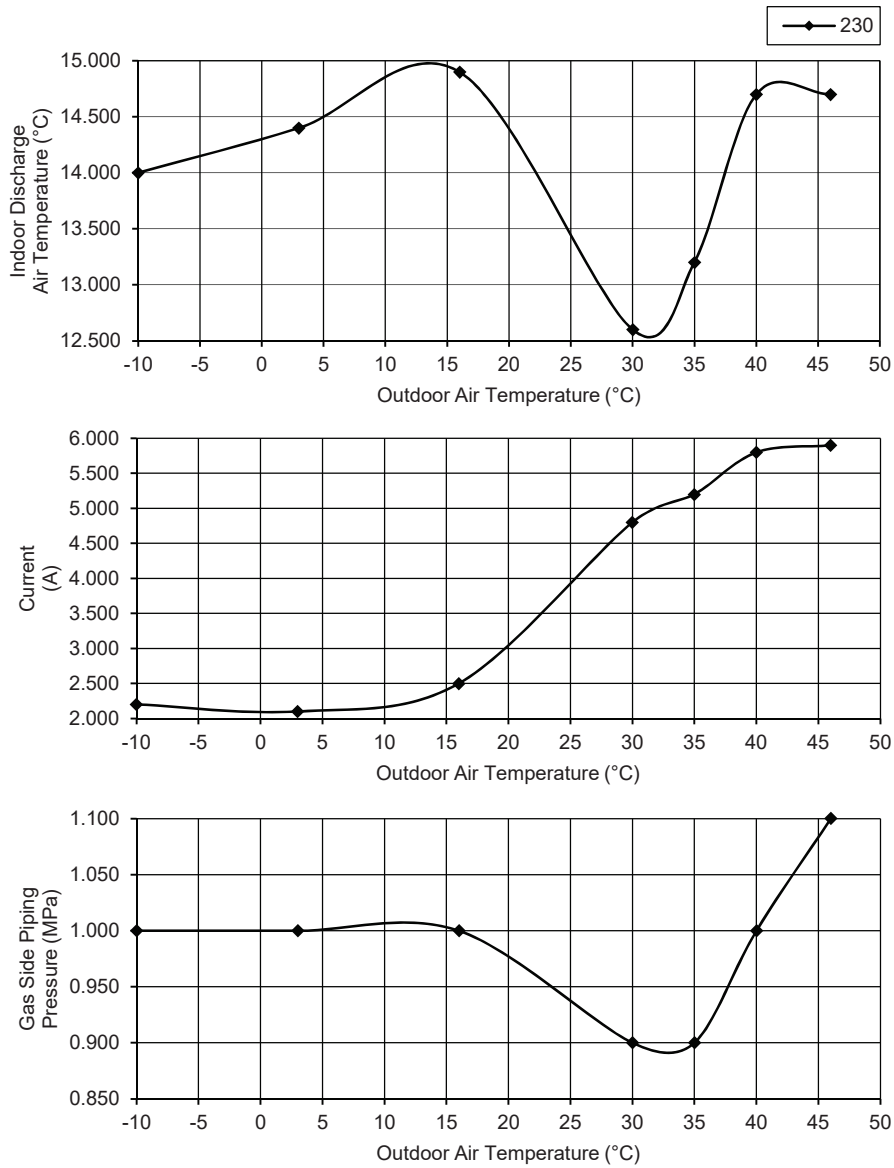


21.7 Operation Characteristics (CU-4Z80CBE)

21.7.1 One Indoor Unit Operation

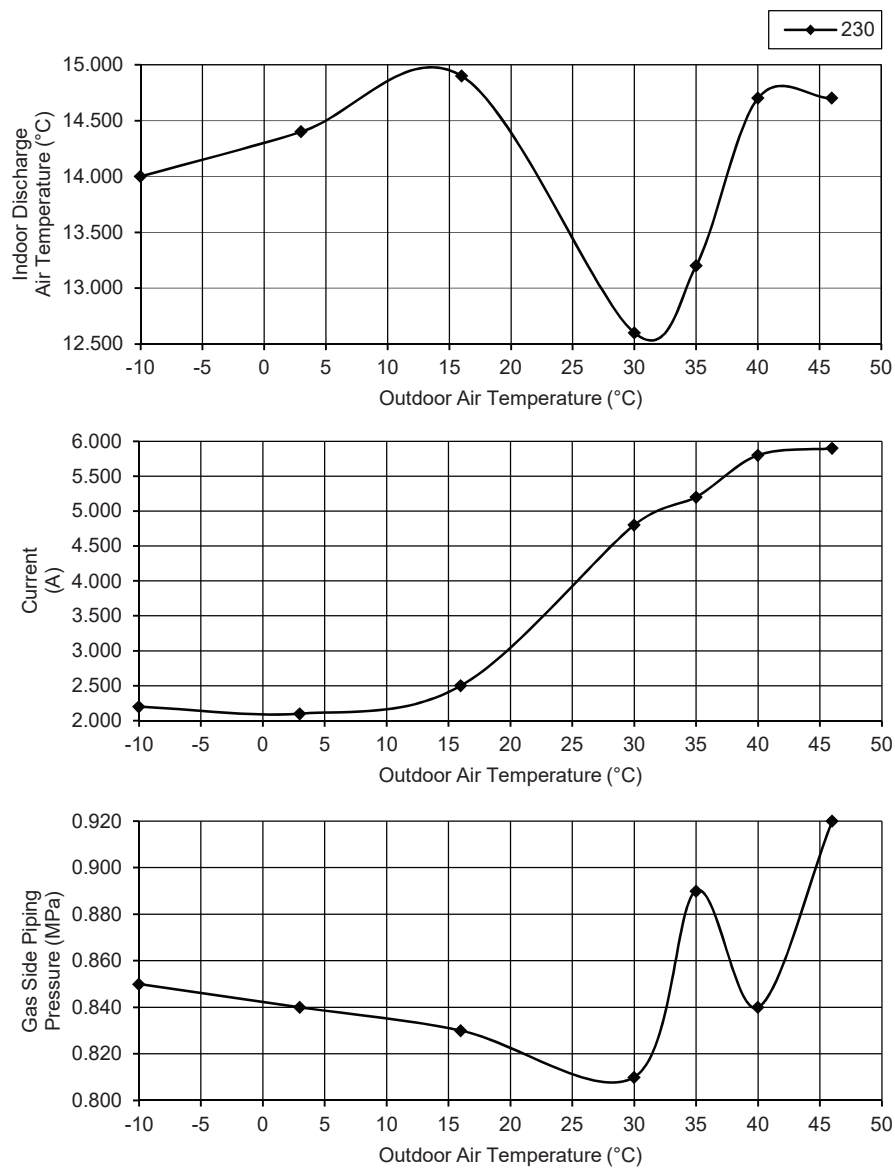
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6kW), CS-MZ16CKE



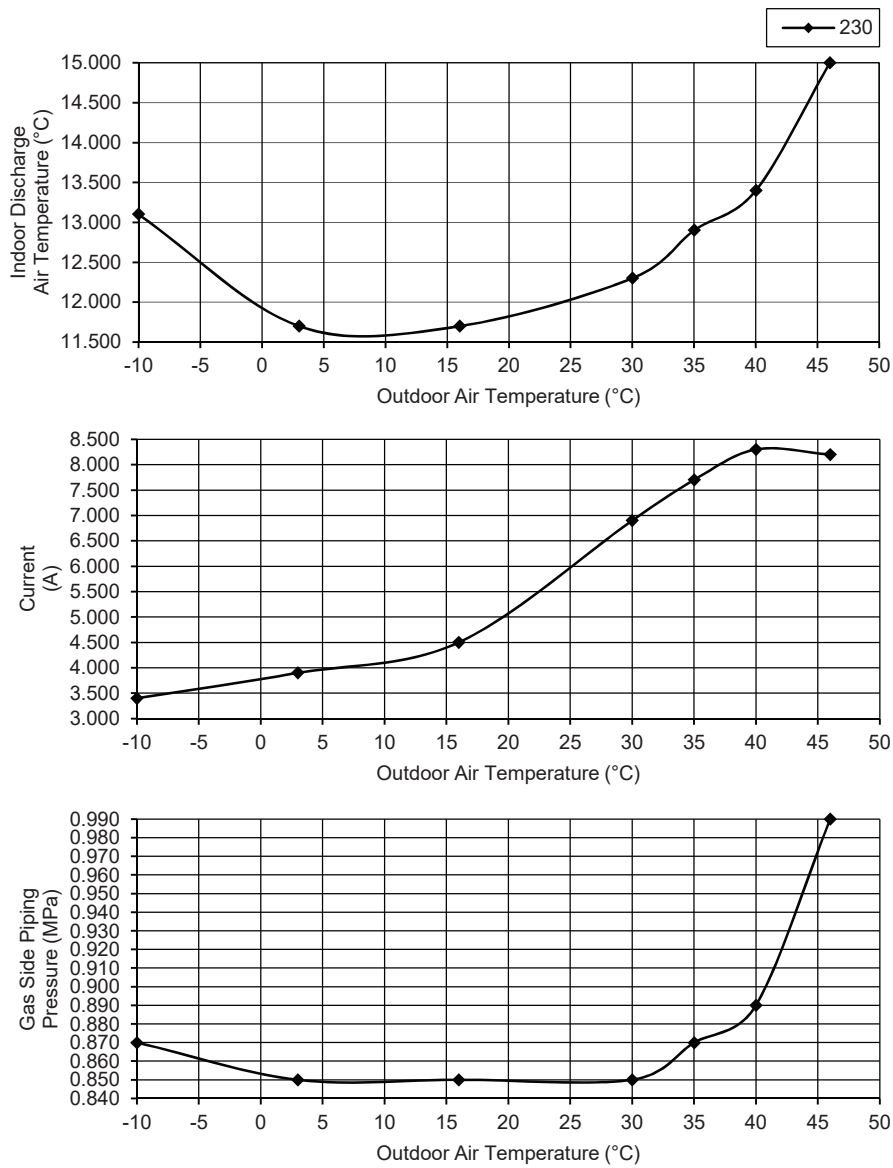
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.0kW), CS-Z20CKEW



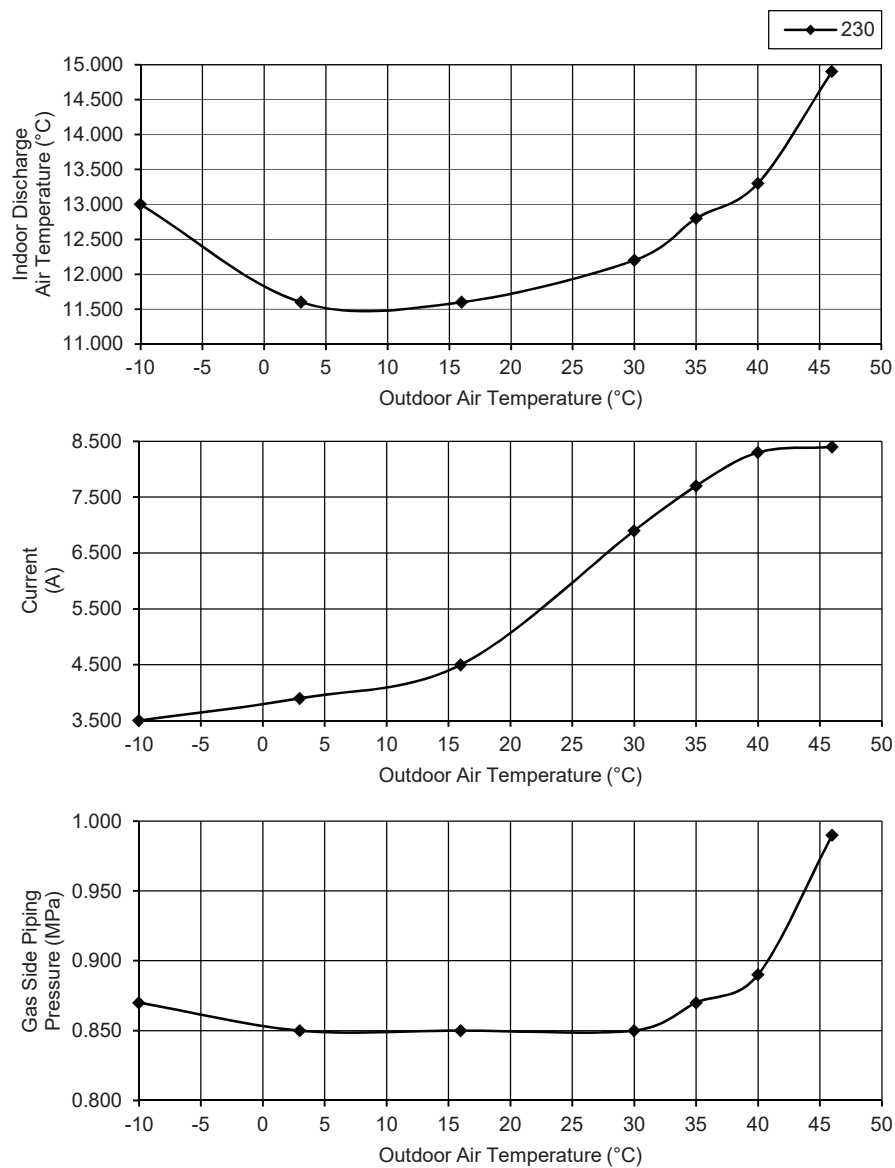
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (2.5kW), CS-Z25CKEW



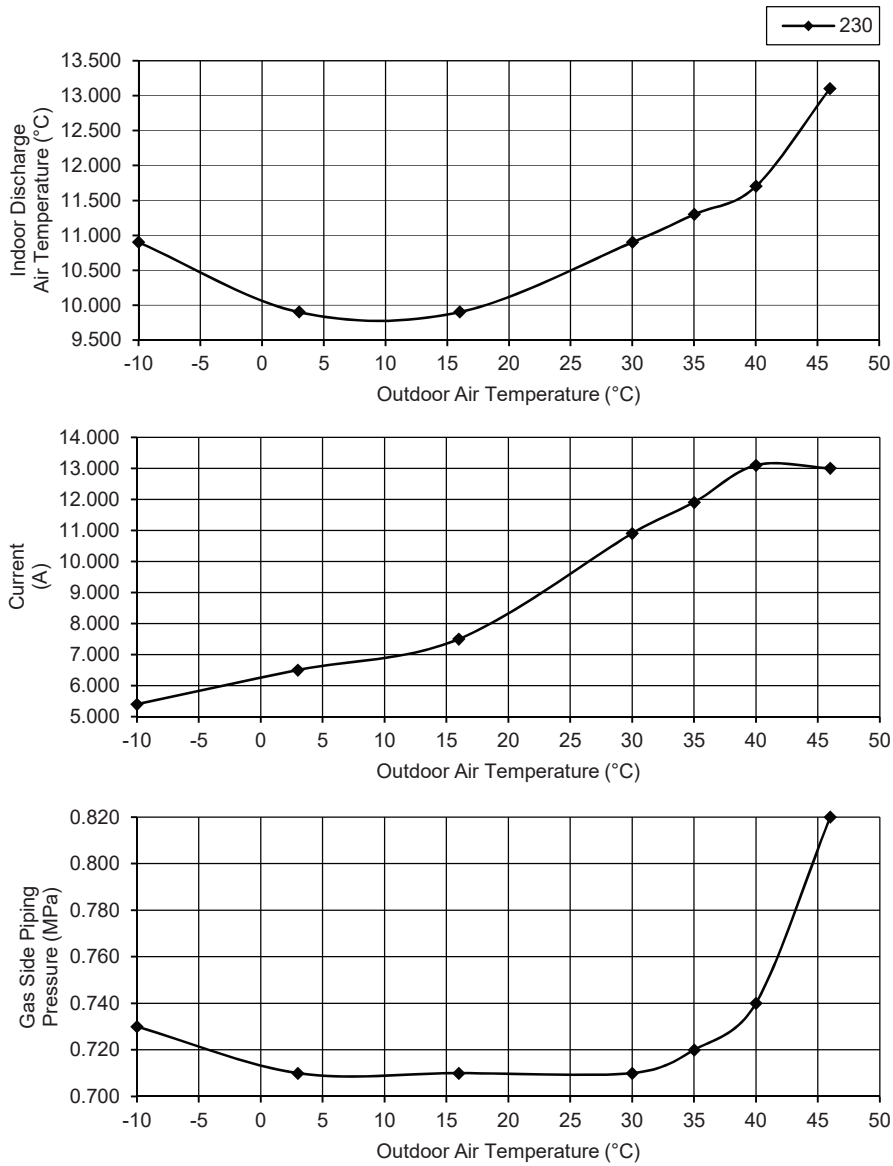
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

D) Indoor unit capacity: Cooling (3.5kW), CS-Z35CKEW



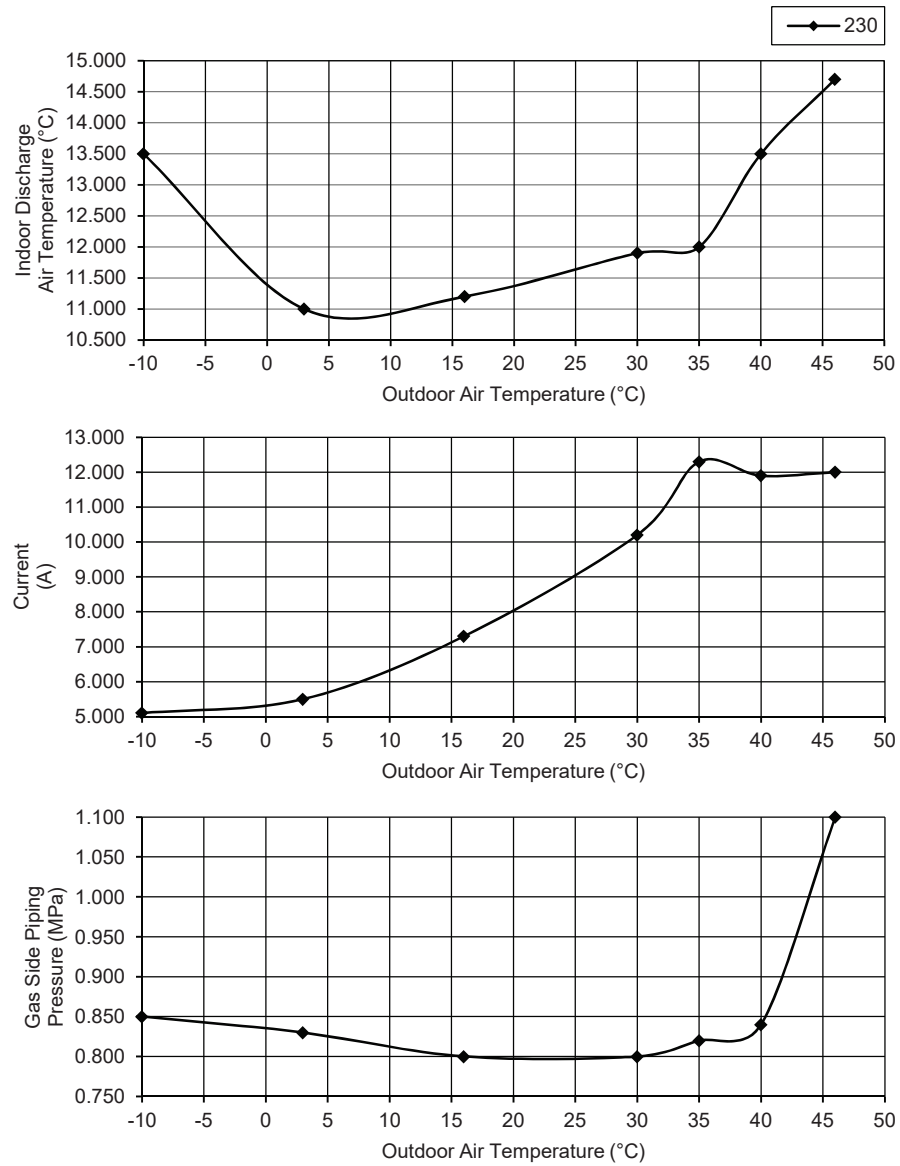
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.55m
Voltage: 230V, 50Hz

E) Indoor unit capacity: Cooling (4.2kW), CS-Z42CKEW



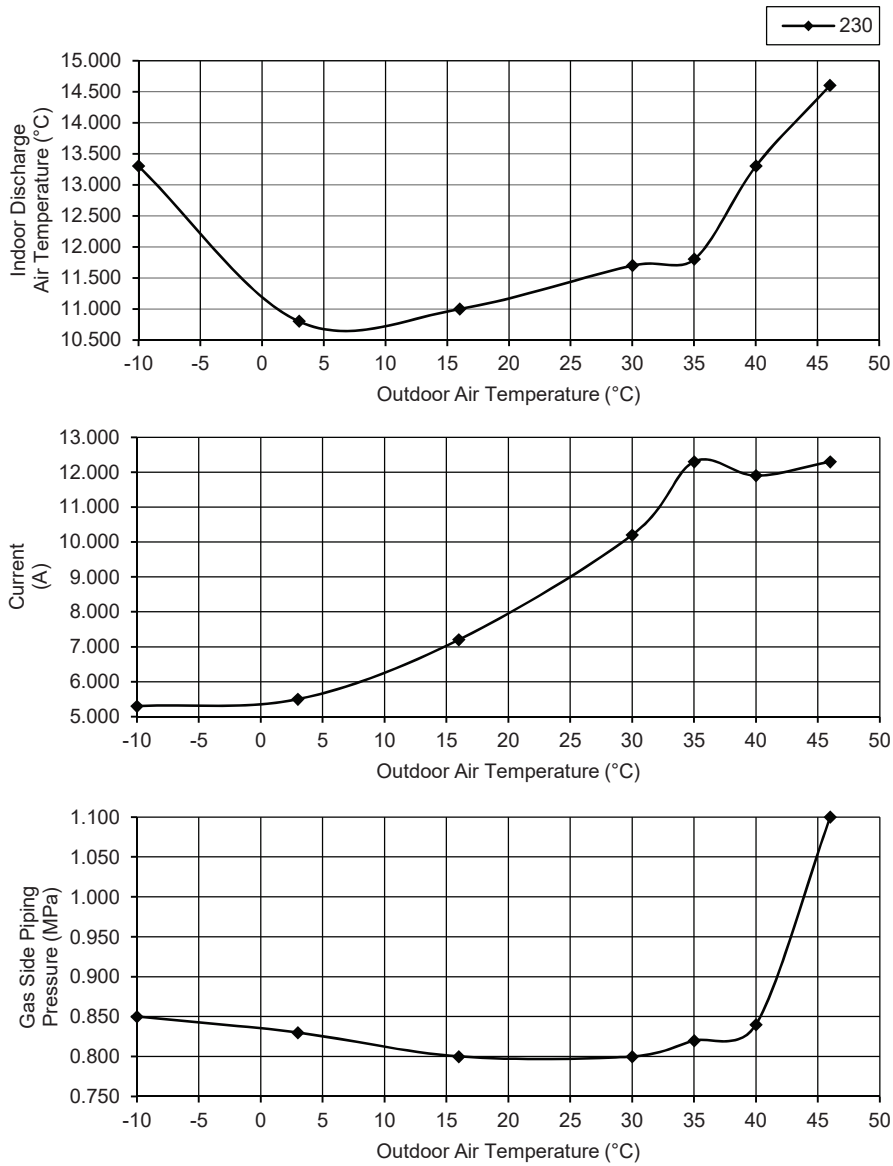
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

F) Indoor unit capacity: Cooling (5.0kW), CS-Z50CKEW



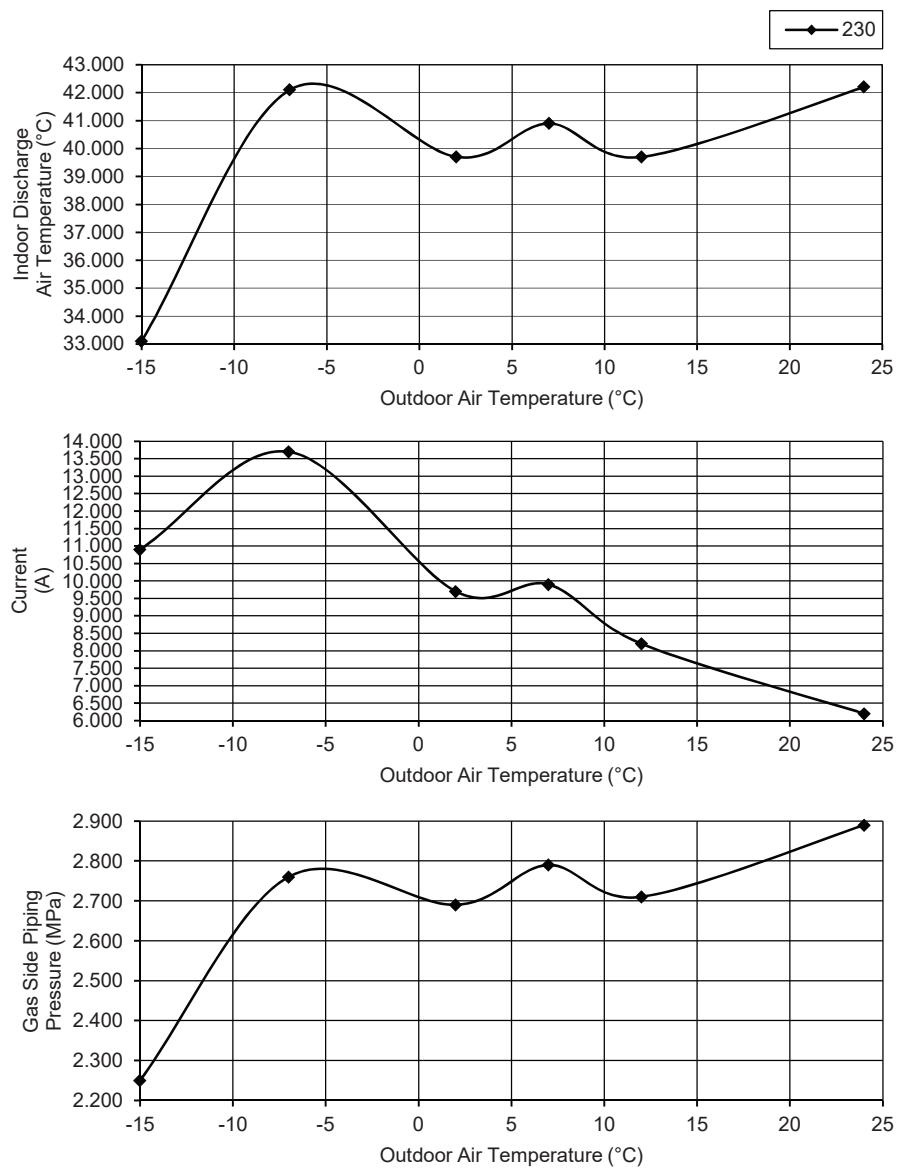
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

G) Indoor unit capacity: Cooling (7.1kW), CS-Z71CKEW



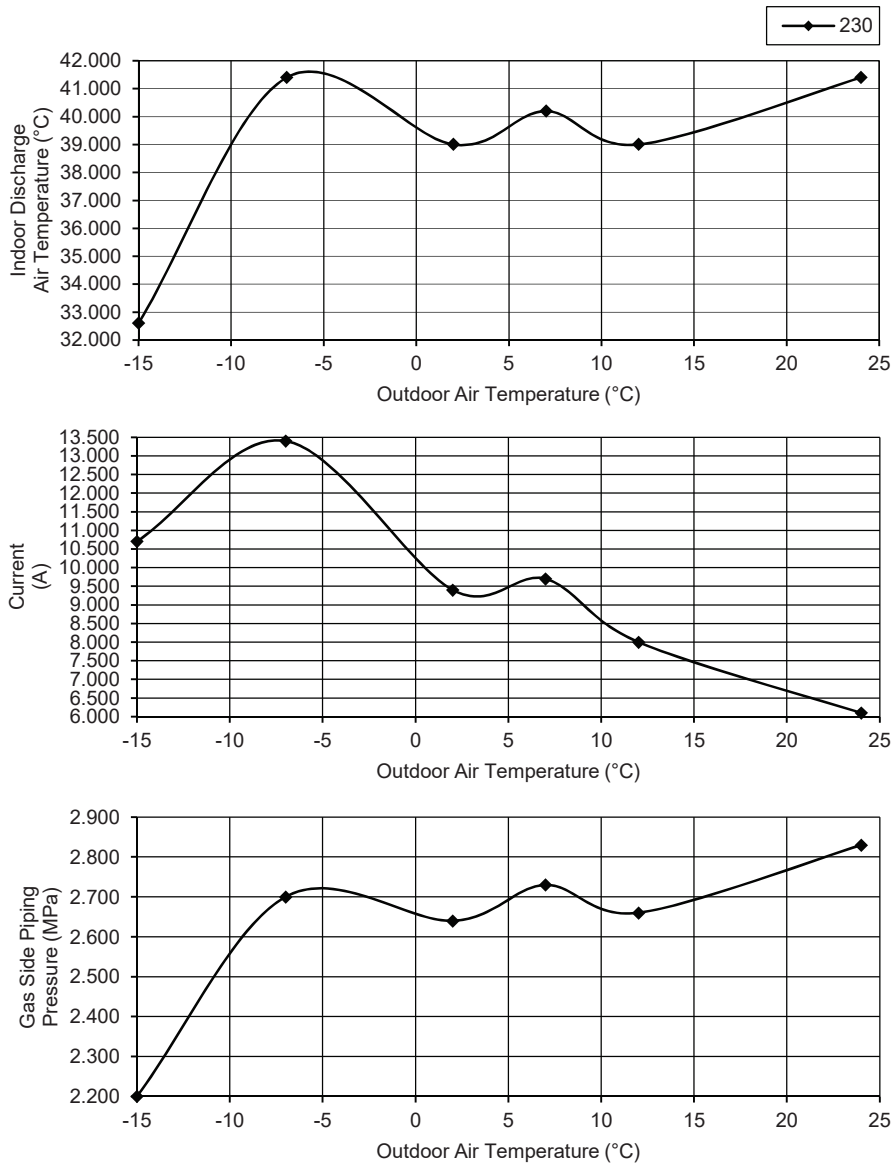
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6kW), CS-MZ16CKE



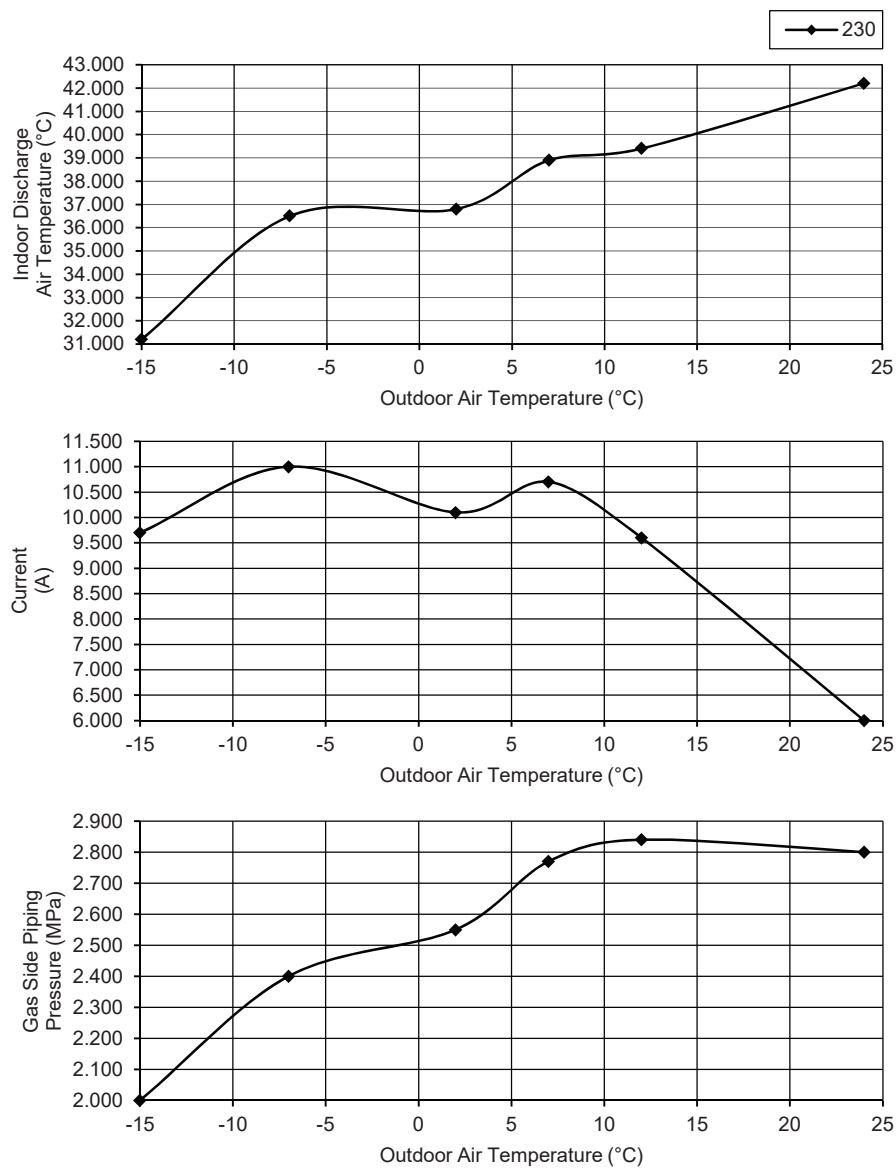
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.0kW), CS-Z20CKEW



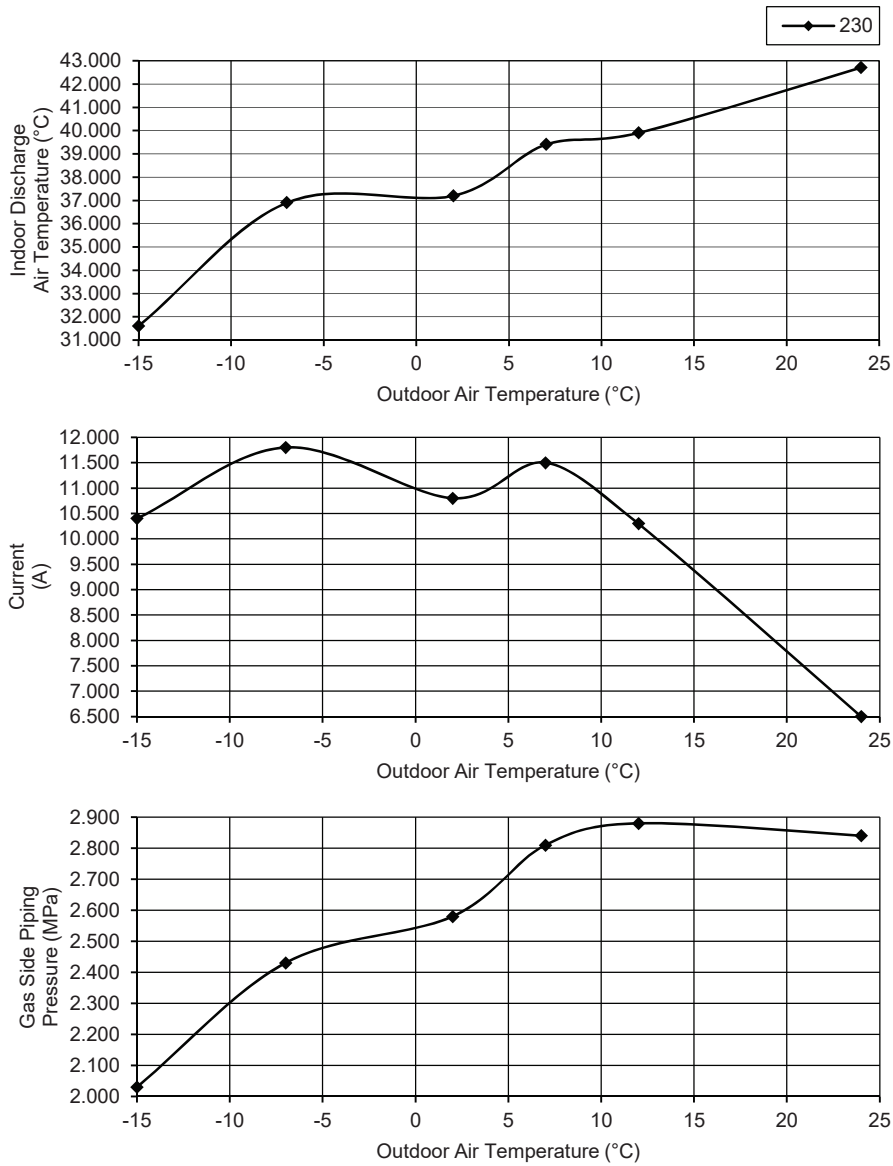
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

C) Indoor unit capacity: Heating (2.5kW), CS-Z25CKEW



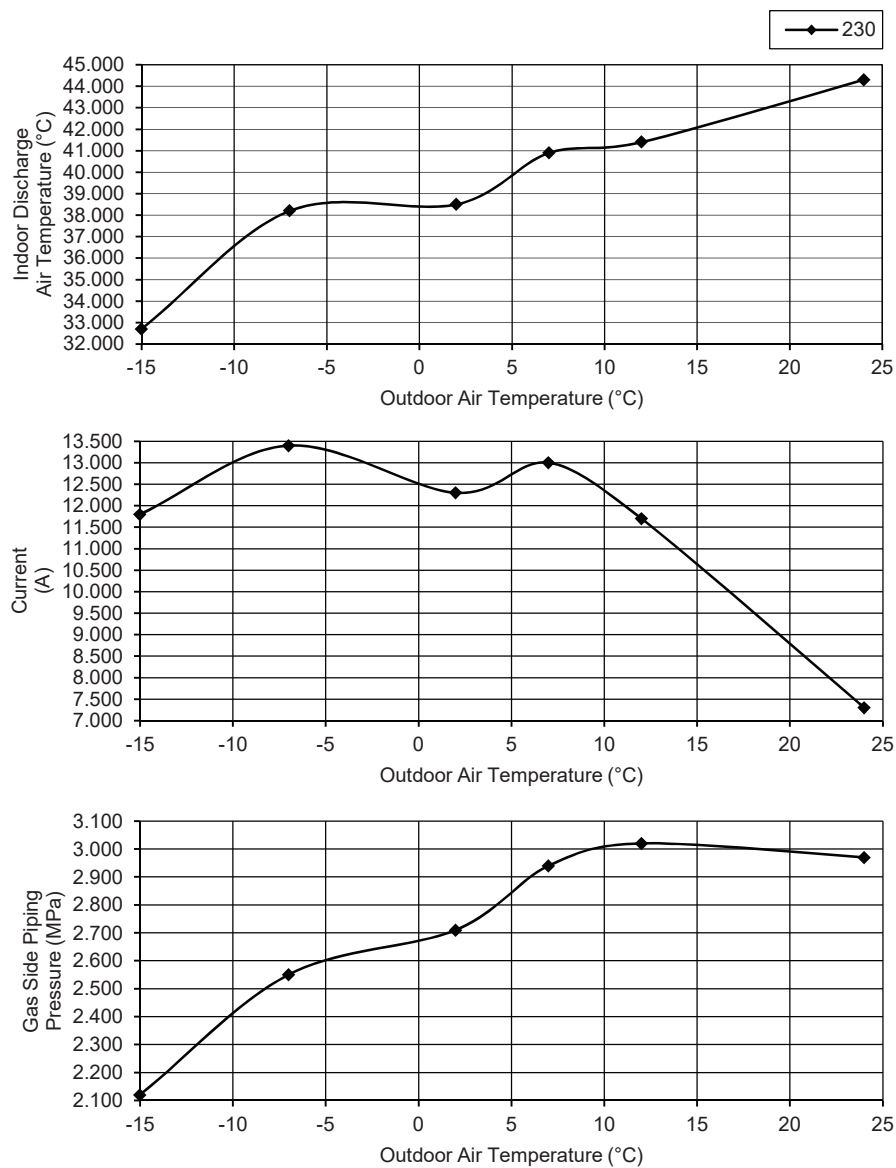
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

D) Indoor unit capacity: Heating (3.5kW), CS-Z35CKEW



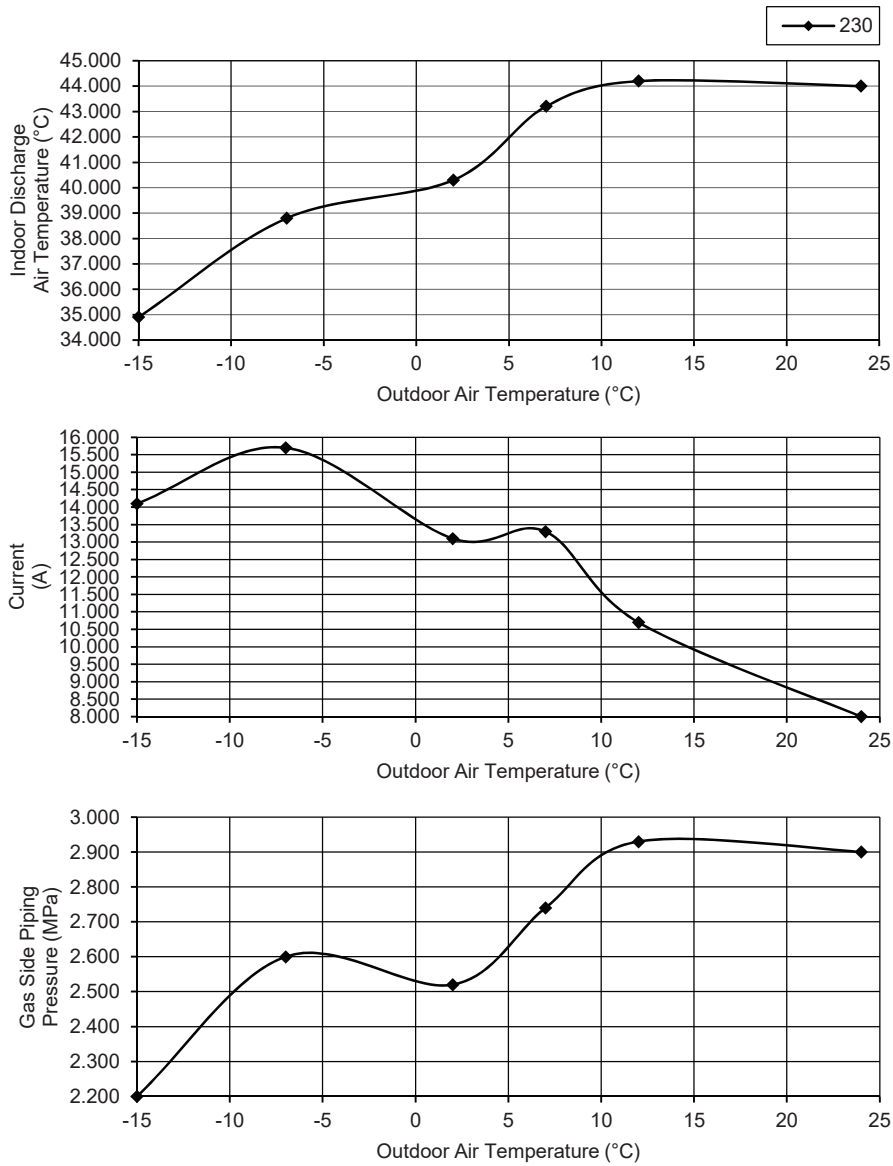
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

E) Indoor unit capacity: Heating (4.2kW), CS-Z42CKEW



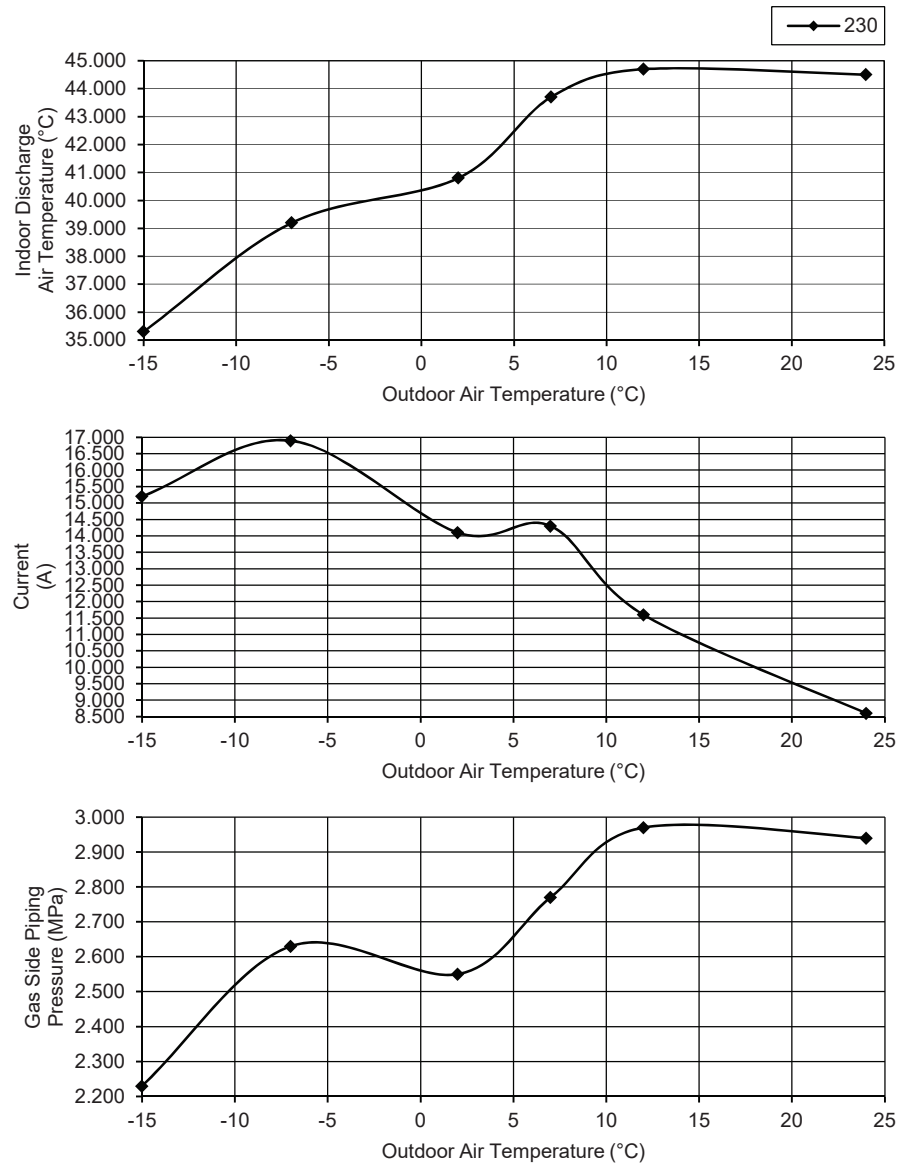
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

F) Indoor unit capacity: Heating (5.0kW), CS-Z50CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

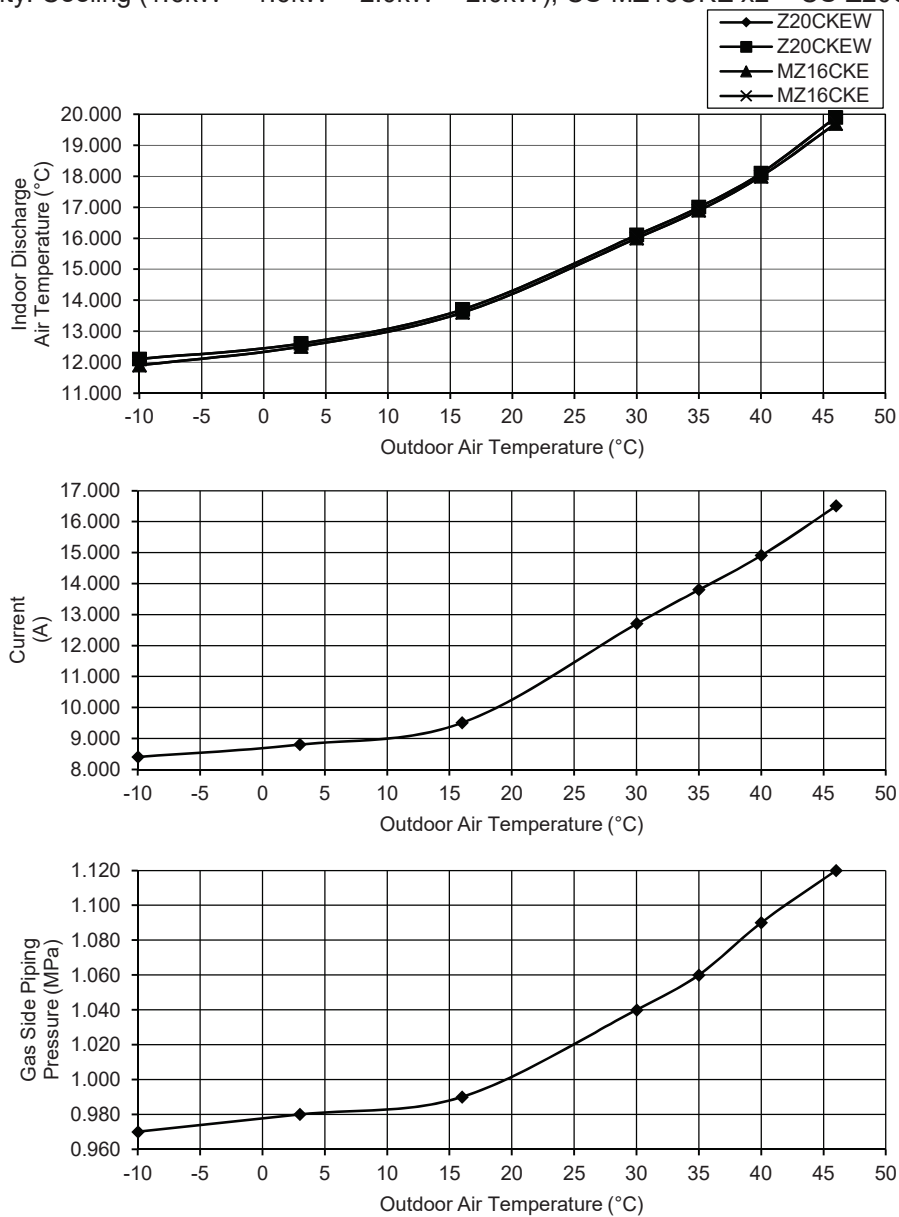
G) Indoor unit capacity: Heating (7.1kW), CS-Z71CKEW



21.7.2 Four Indoor Units Operation

- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6kW + 1.6kW + 2.0kW + 2.0kW), CS-MZ16CKE x2 + CS-Z20CKEW x2



- Heating Characteristic

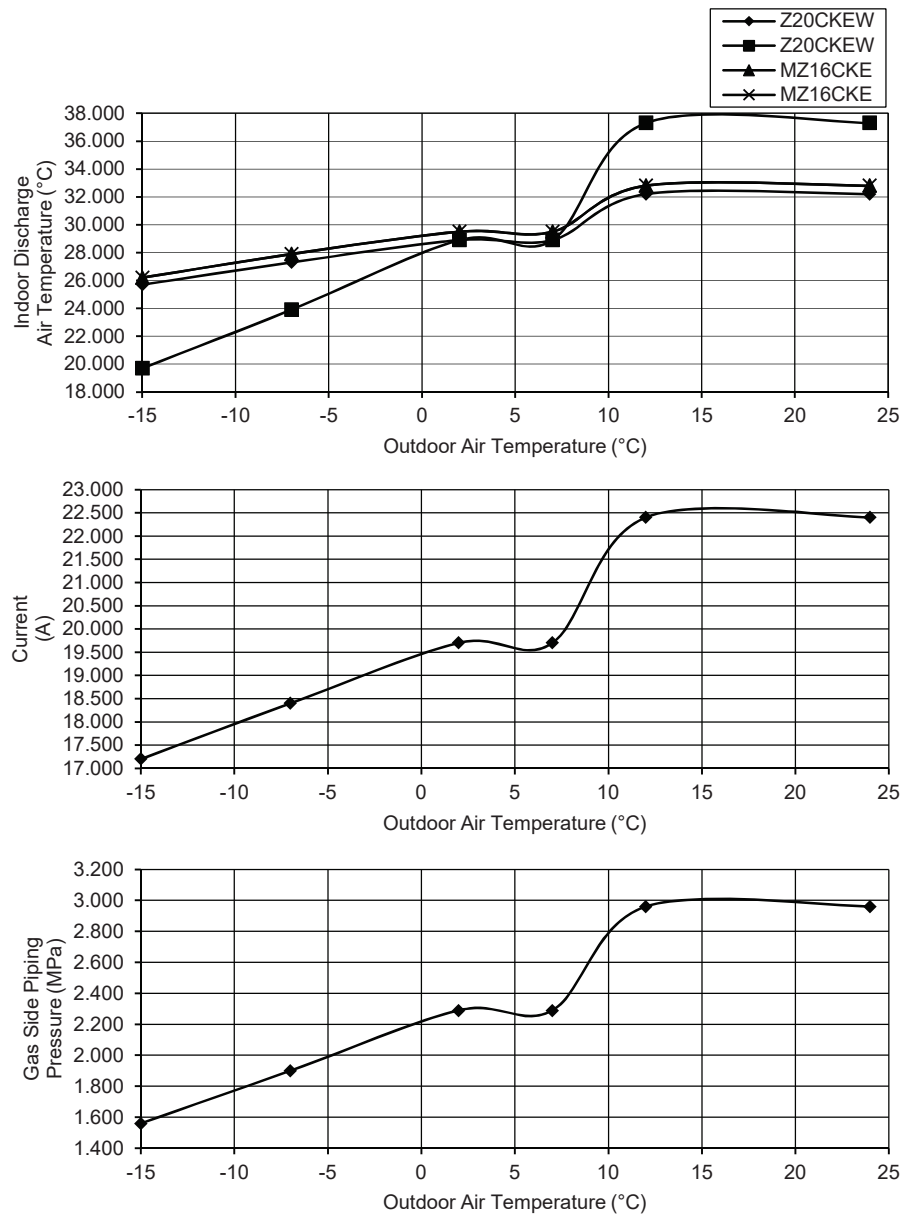
[Condition] Room temperature: 20°C (DBT), 12°C (WBT)

Operation condition: High fan speed

Piping Length: 7.5m

Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6kW + 1.6kW + 2.0kW + 2.0kW), CS-MZ16CKE x2 + CS-Z20CKEW x2

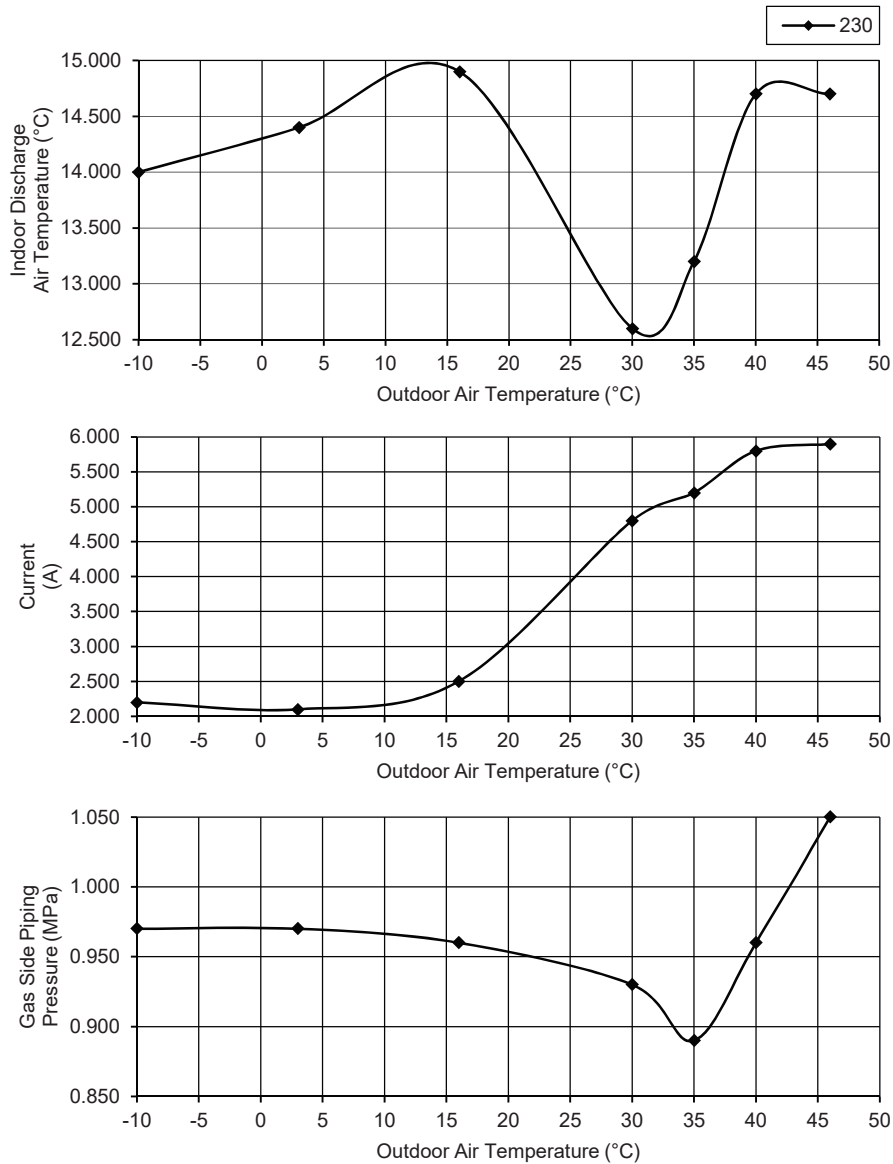


21.8 Operation Characteristics (CU-5Z90CBE)

21.8.1 One Indoor Unit Operation

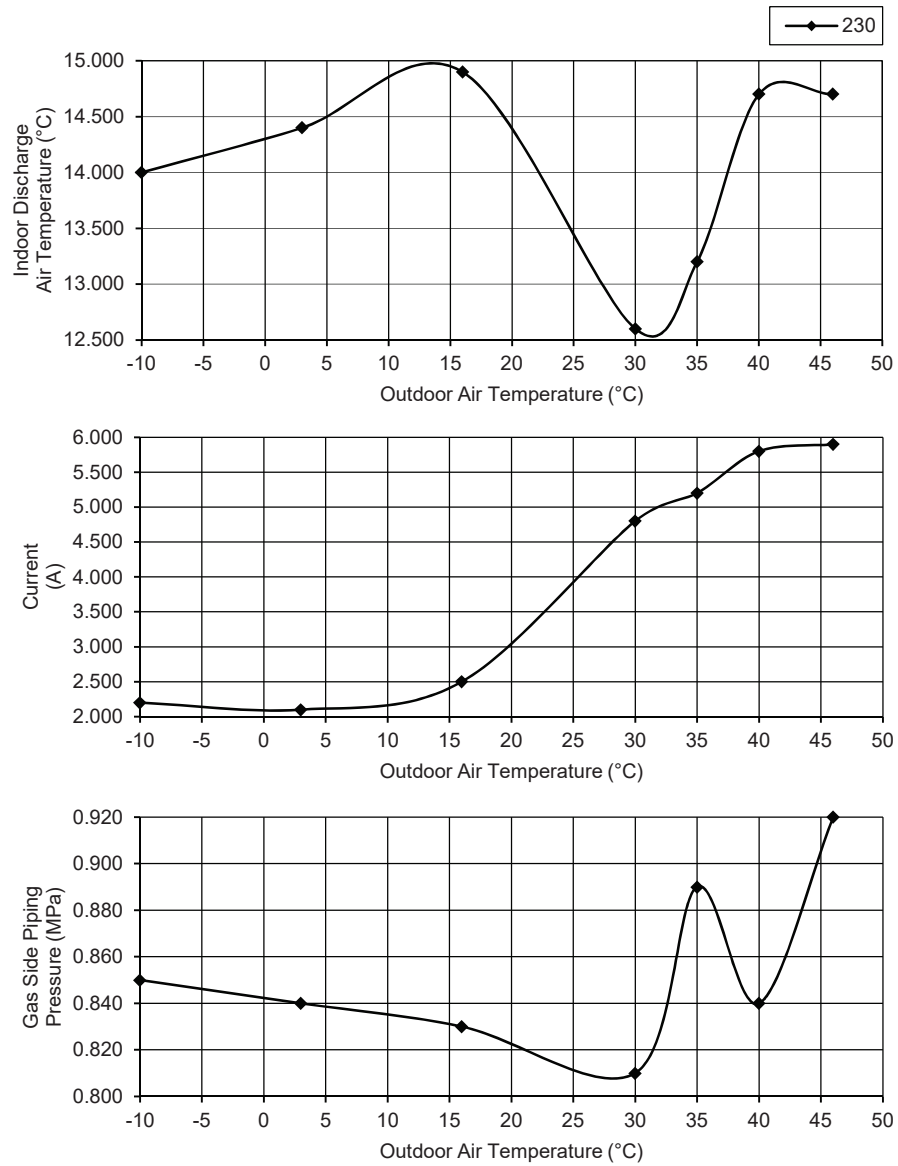
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (1.6kW), CS-MZ16CKE



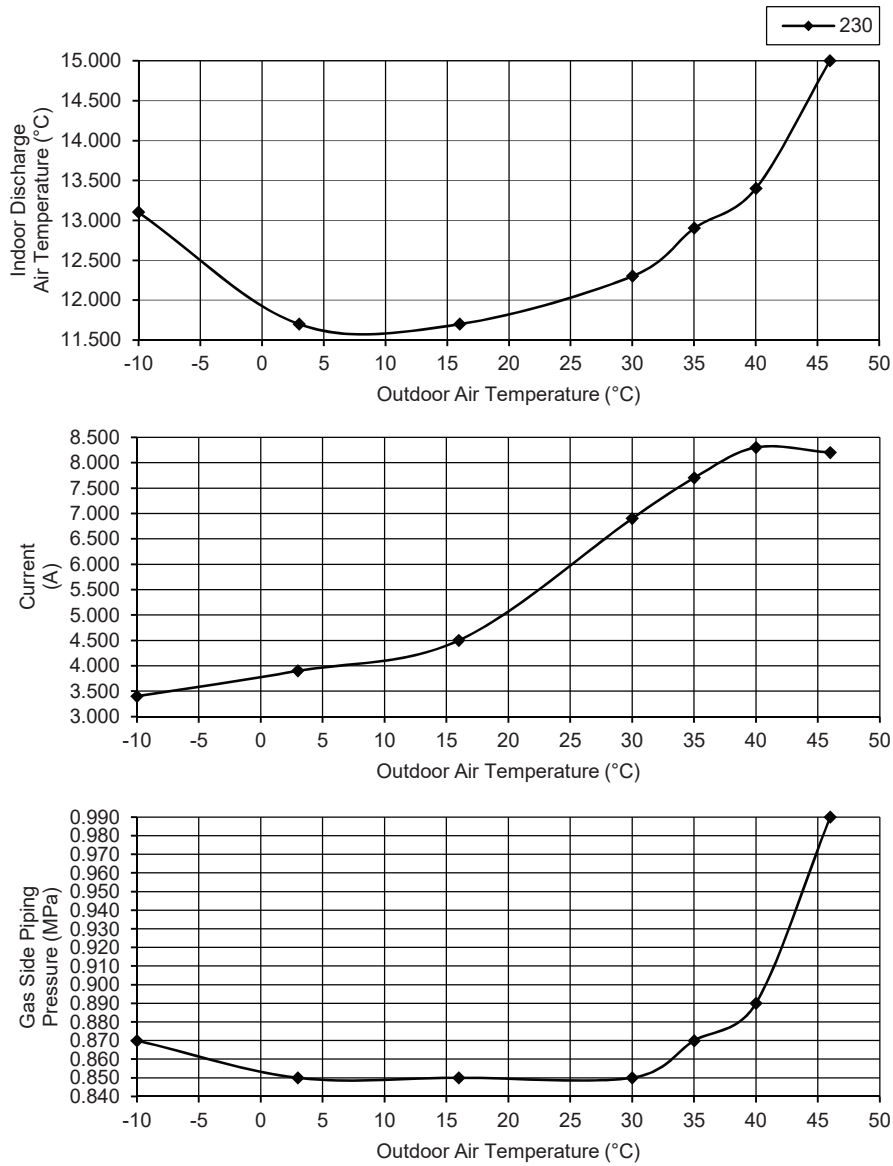
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

B) Indoor unit capacity: Cooling (2.0kW), CS-Z20CKEW



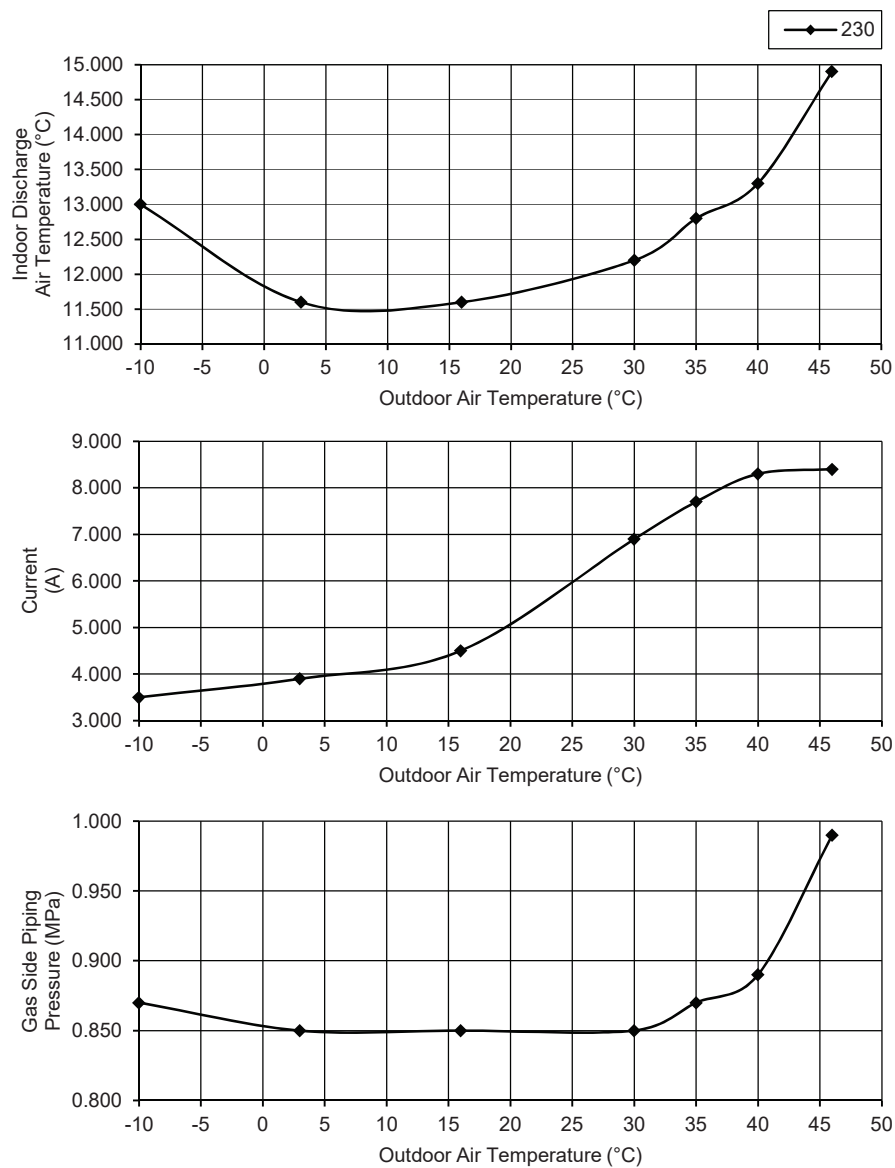
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

C) Indoor unit capacity: Cooling (2.5kW), CS-Z25CKEW



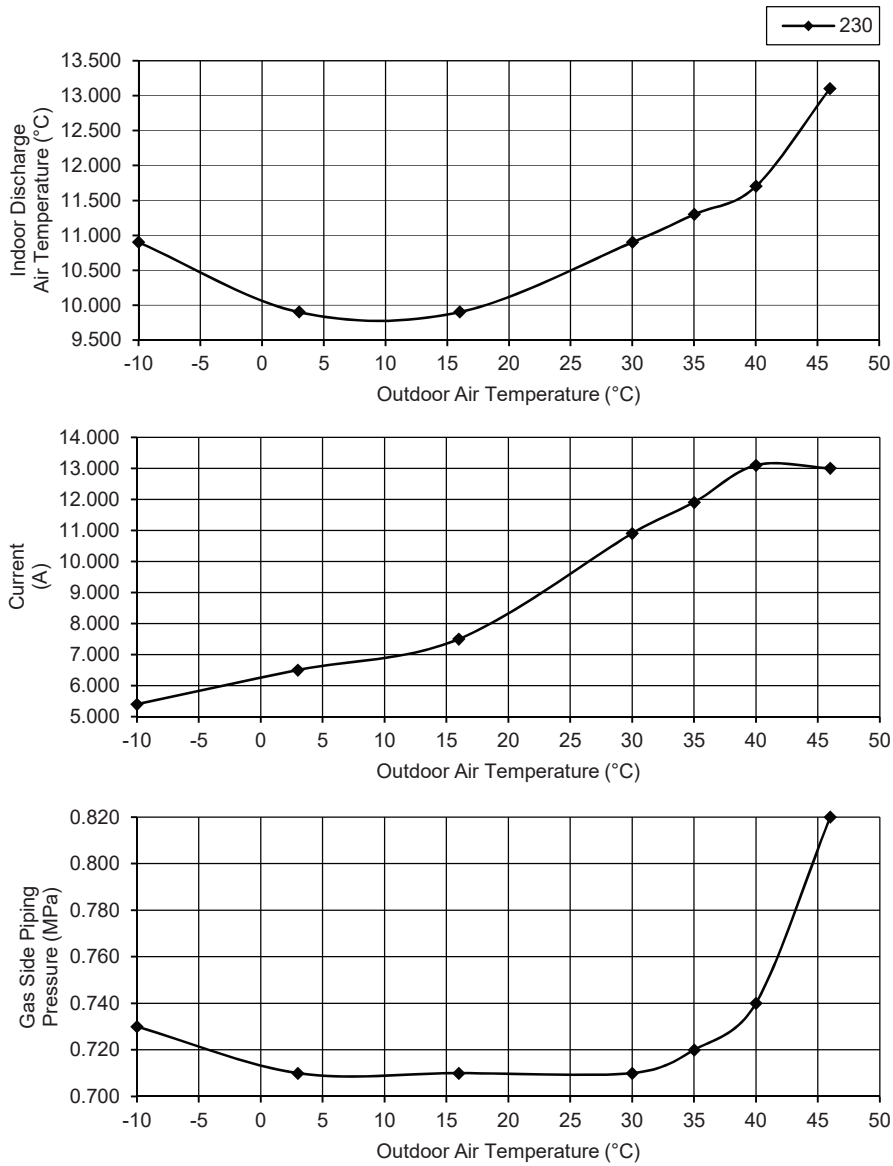
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

D) Indoor unit capacity: Cooling (3.5kW), CS-Z35CKEW



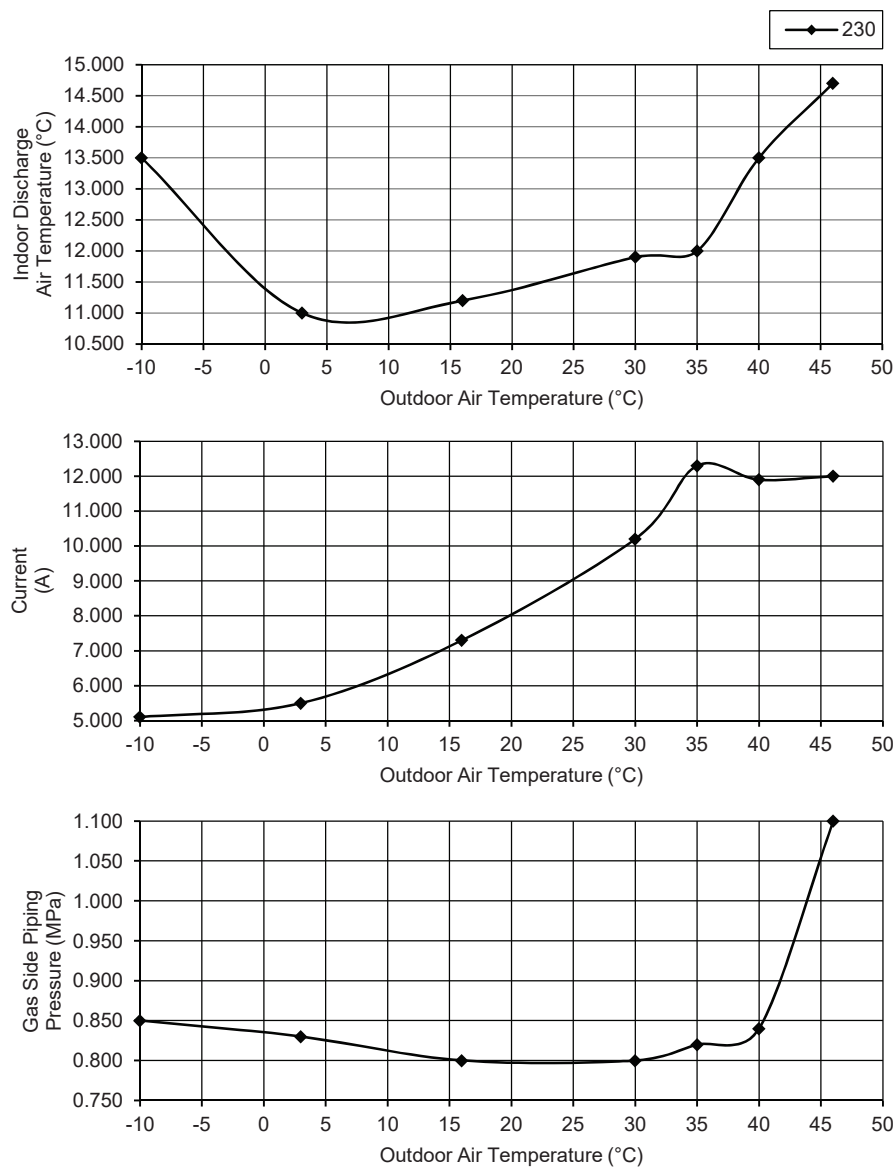
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

E) Indoor unit capacity: Cooling (4.2kW), CS-Z42CKEW



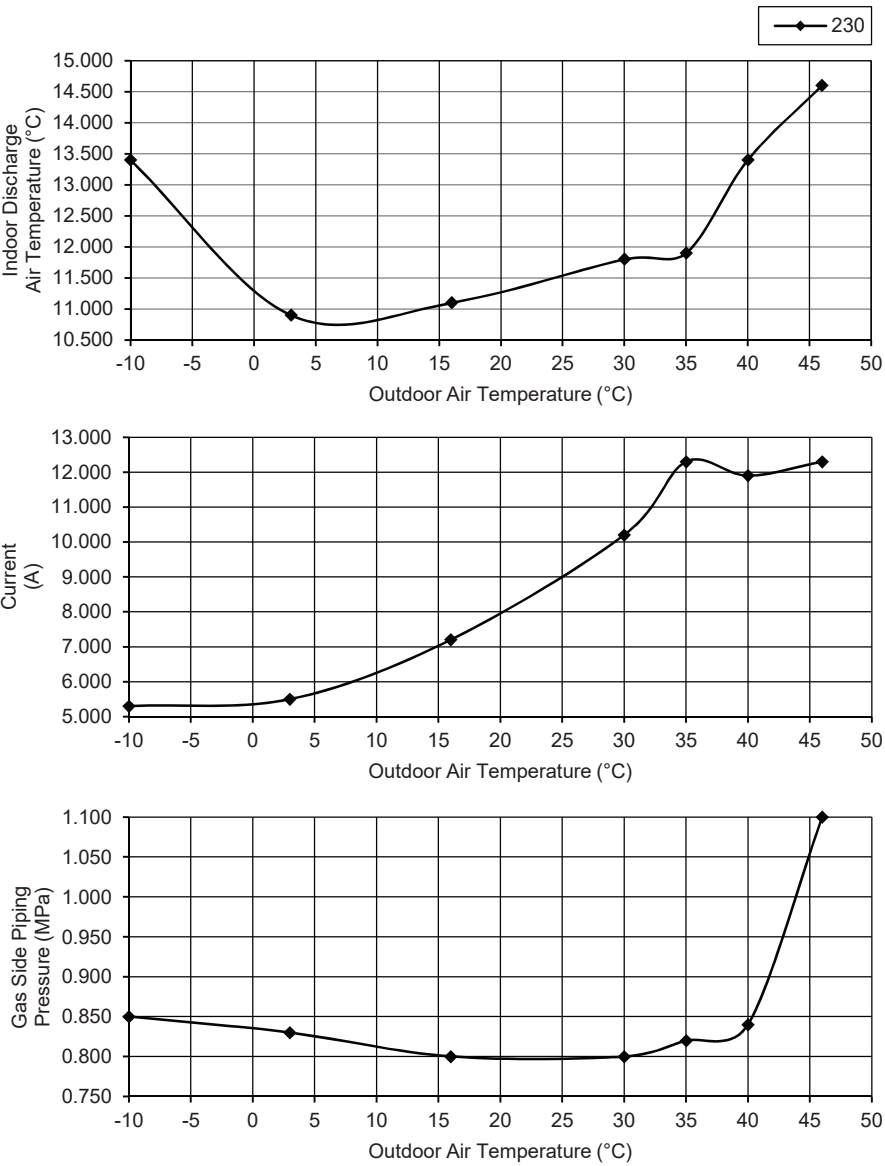
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

F) Indoor unit capacity: Cooling (5.0kW), CS-Z50CKEW



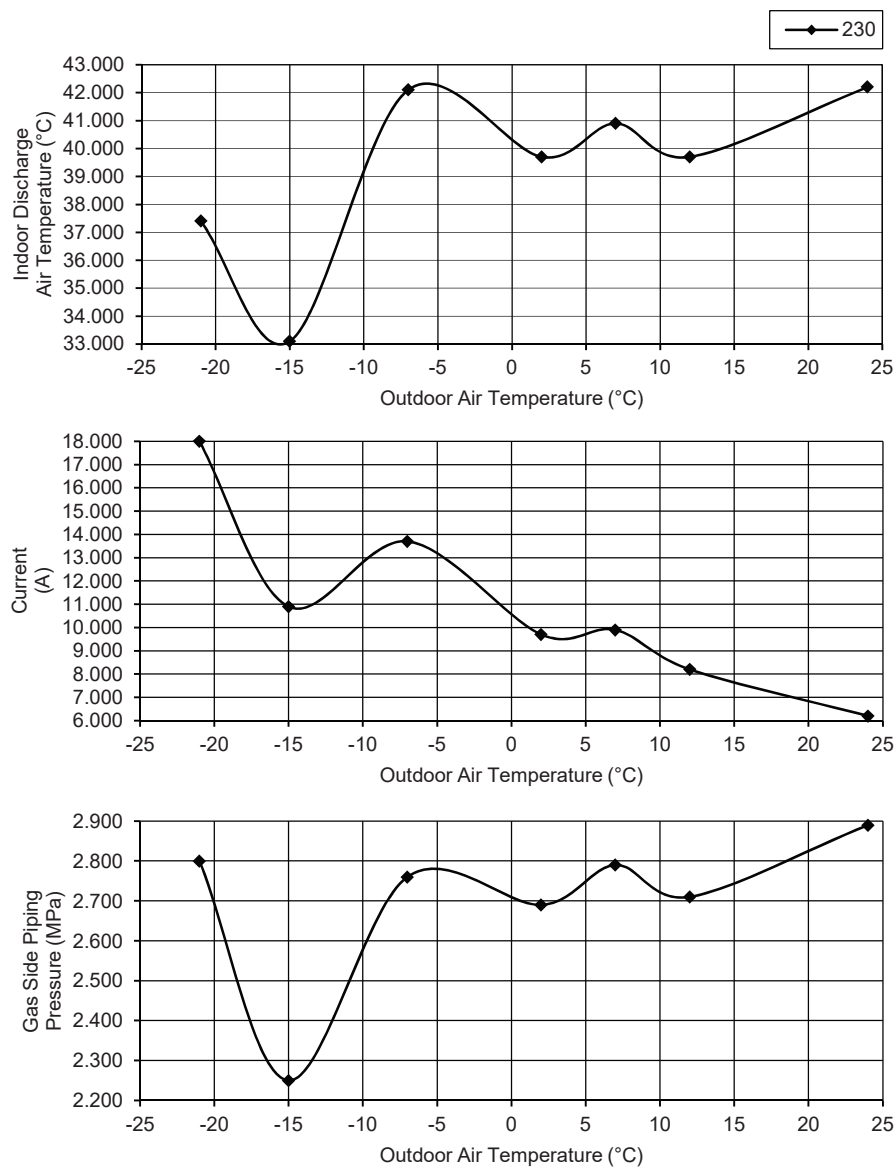
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

G) Indoor unit capacity: Cooling (7.1kW), CS-Z71CKEW



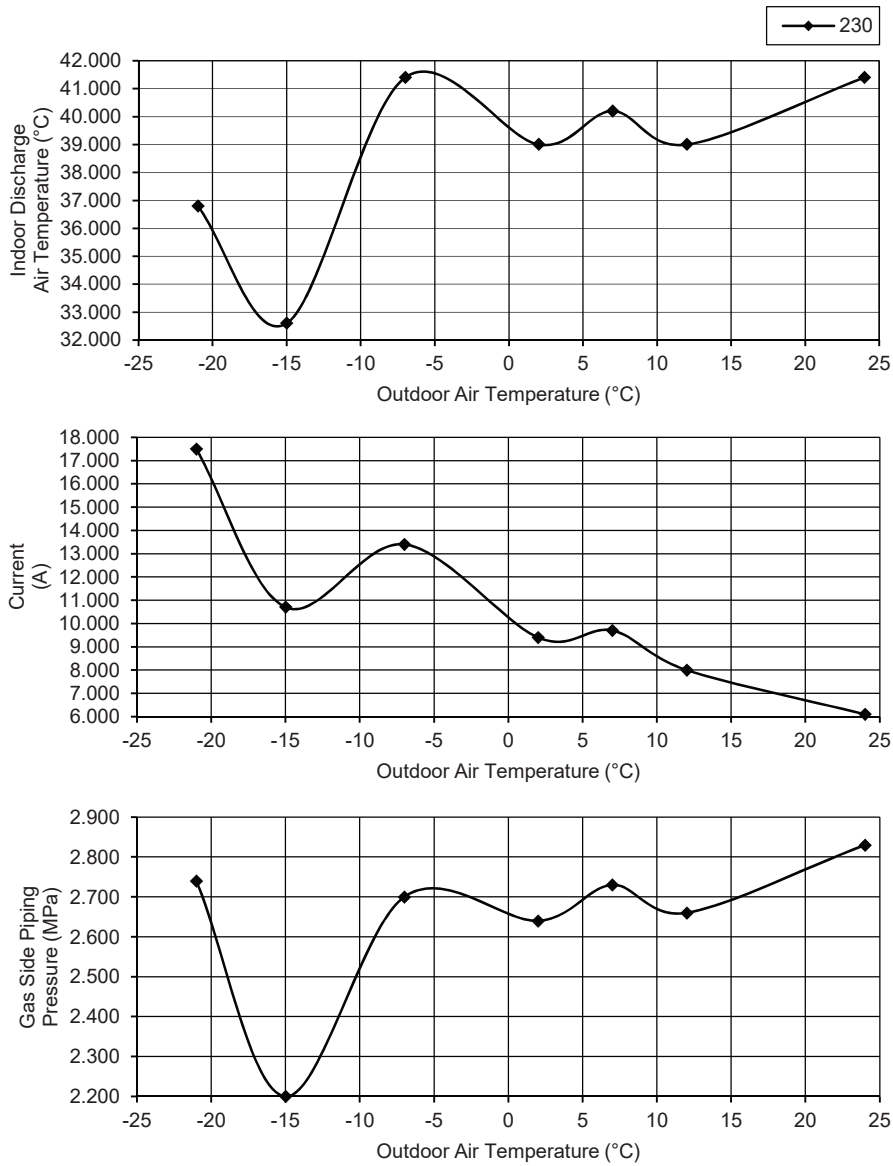
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (1.6kW), CS-MZ16CKE



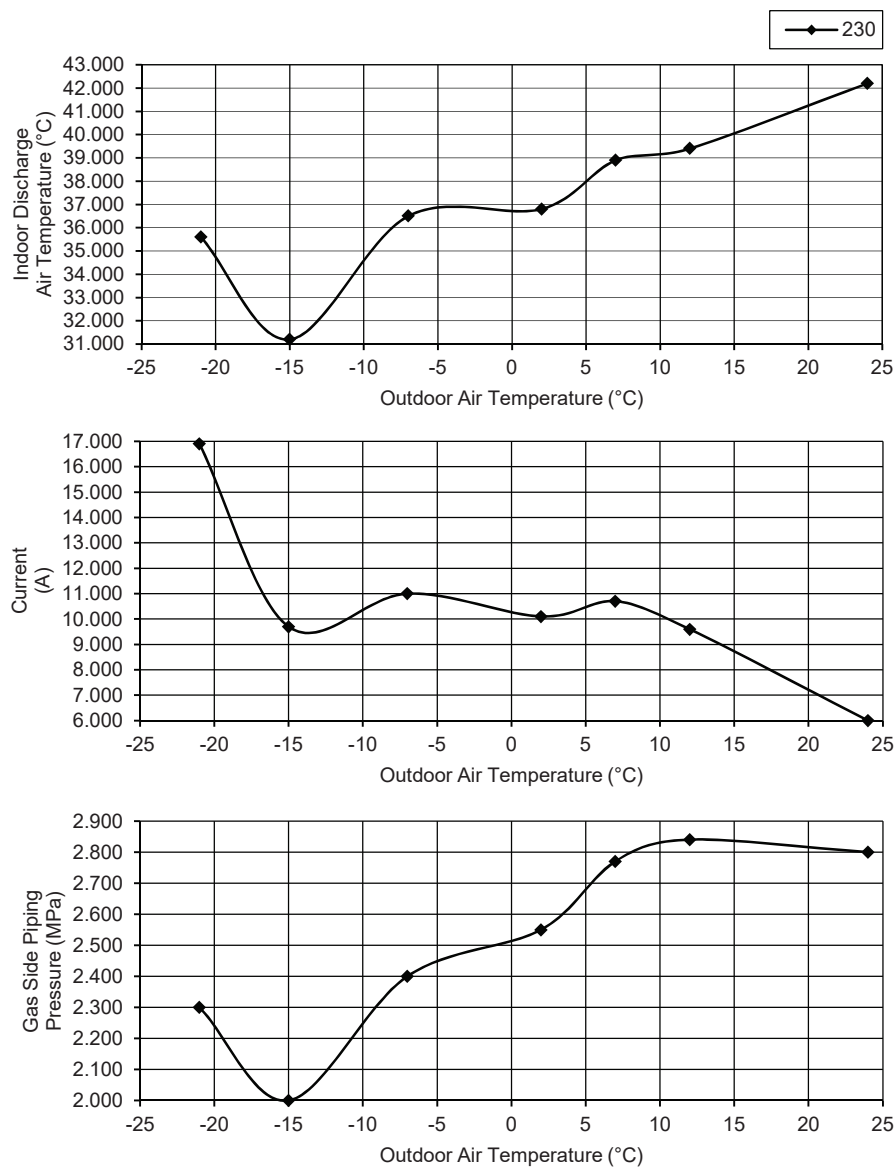
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

B) Indoor unit capacity: Heating (2.0kW), CS-Z20CKEW



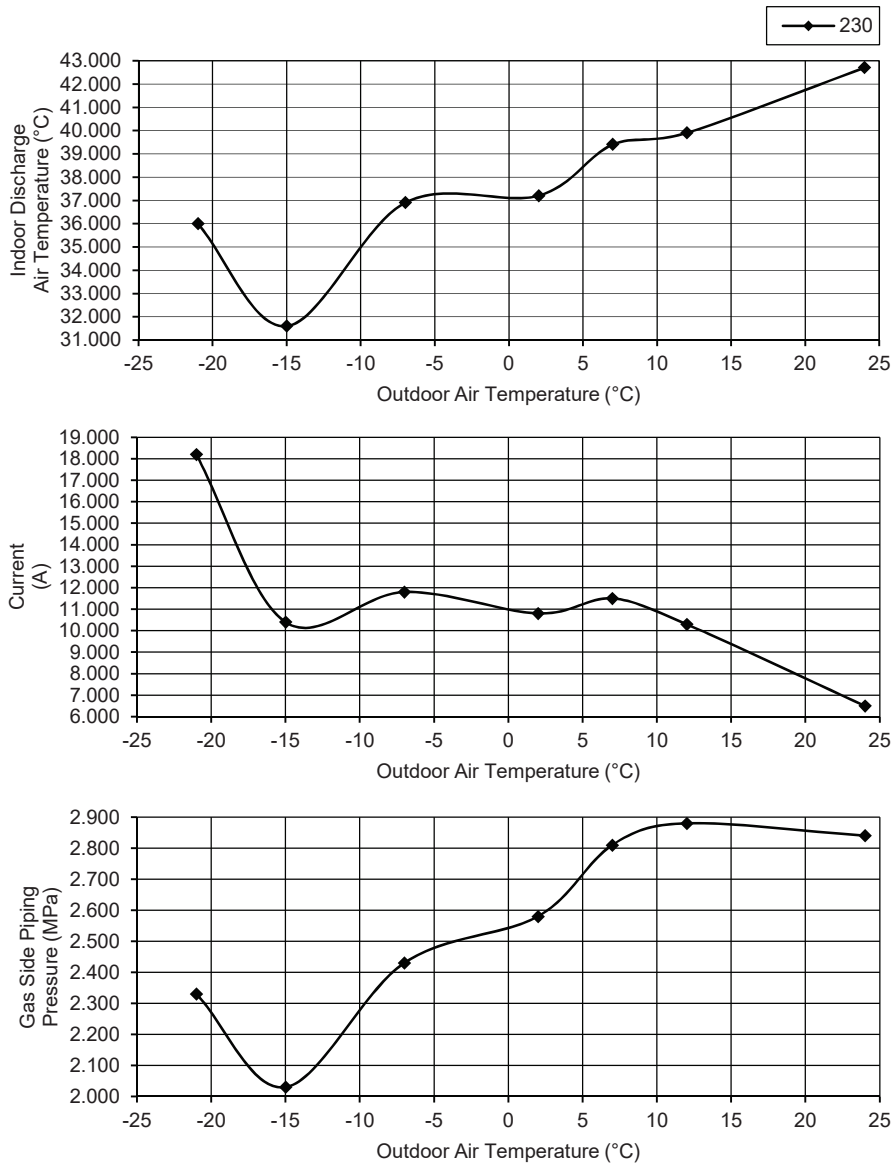
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

C) Indoor unit capacity: Heating (2.5kW), CS-Z25CKEW



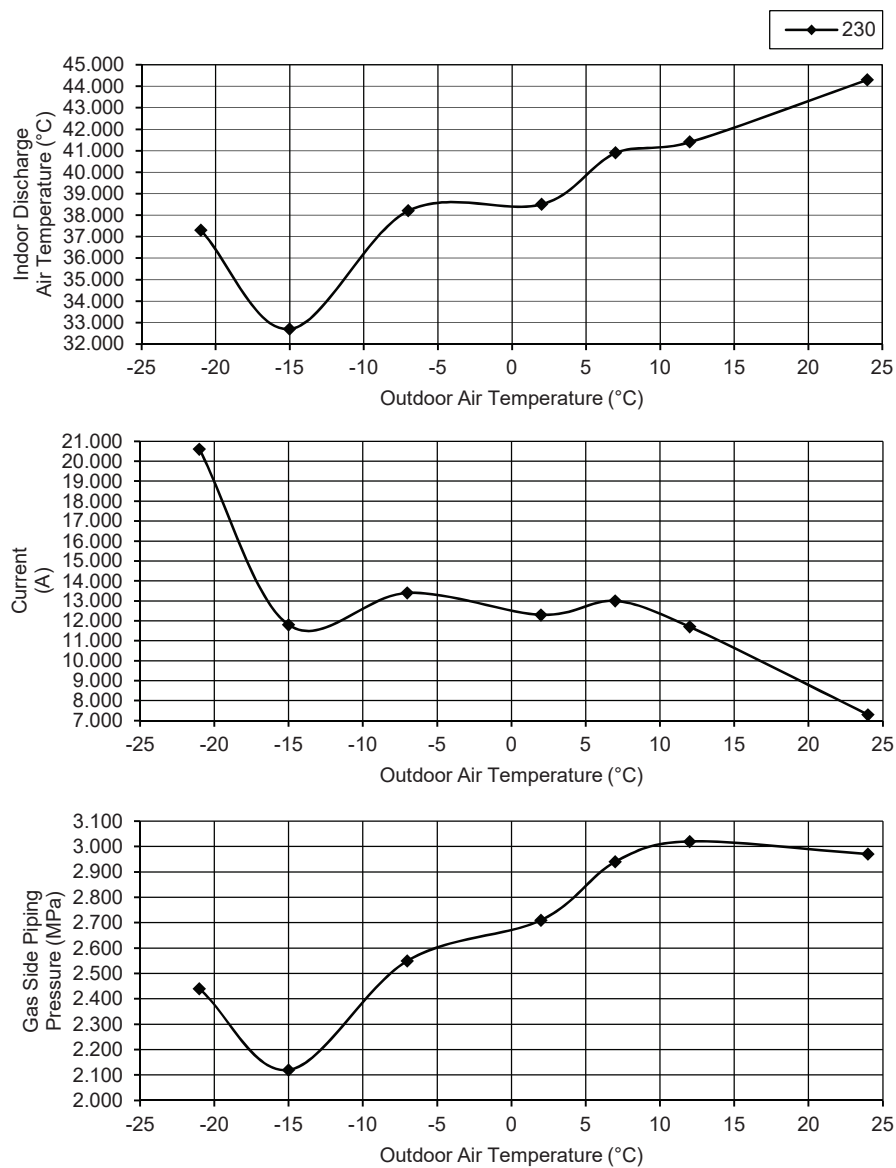
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

D) Indoor unit capacity: Heating (3.5kW), CS-Z35CKEW



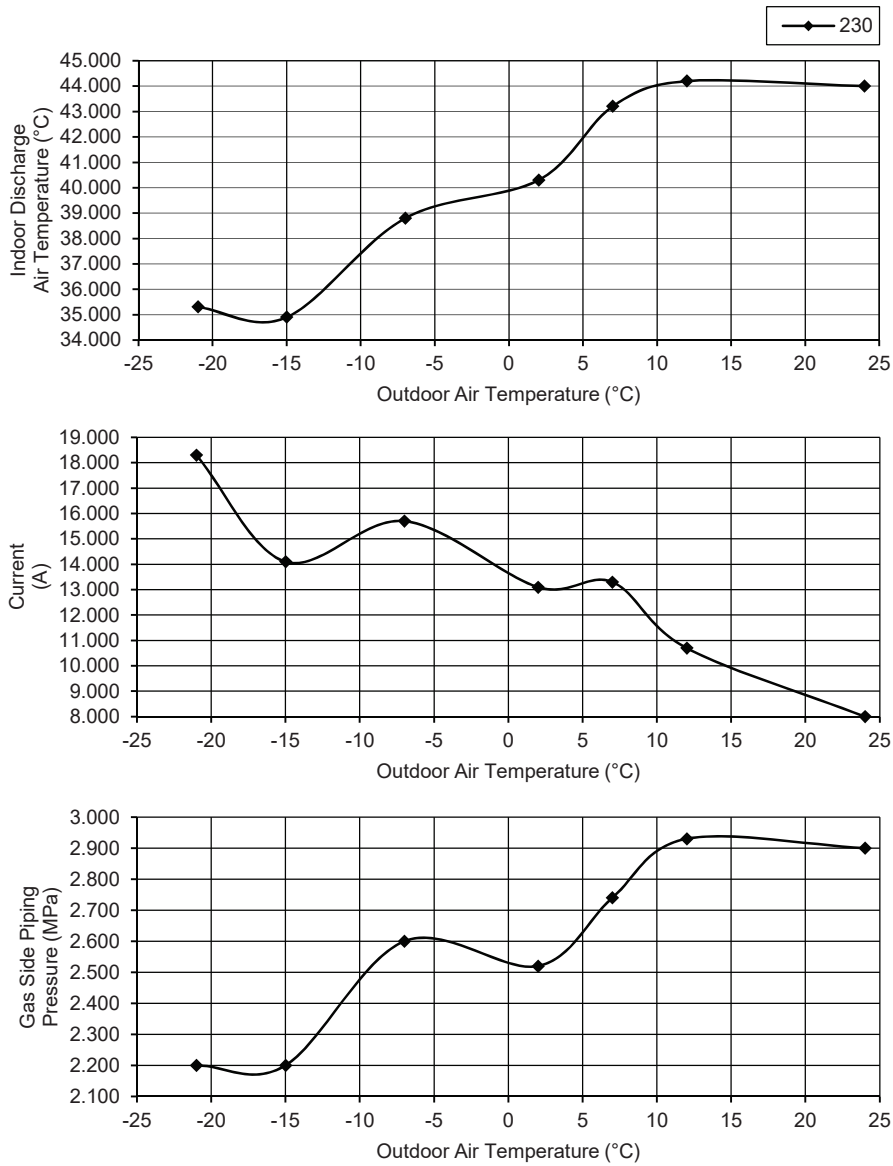
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

E) Indoor unit capacity: Heating (4.2kW), CS-Z42CKEW



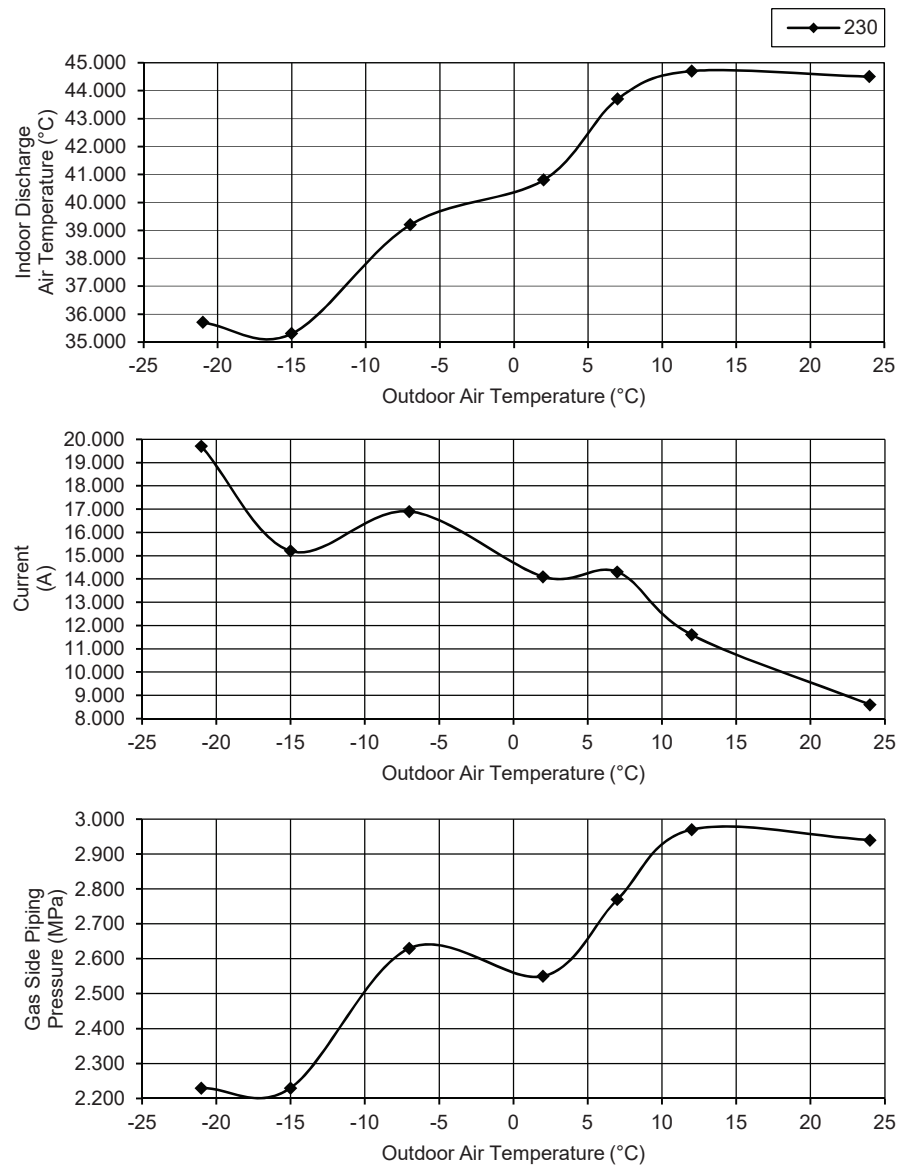
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

F) Indoor unit capacity: Heating (5.0kW), CS-Z50CKEW



- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

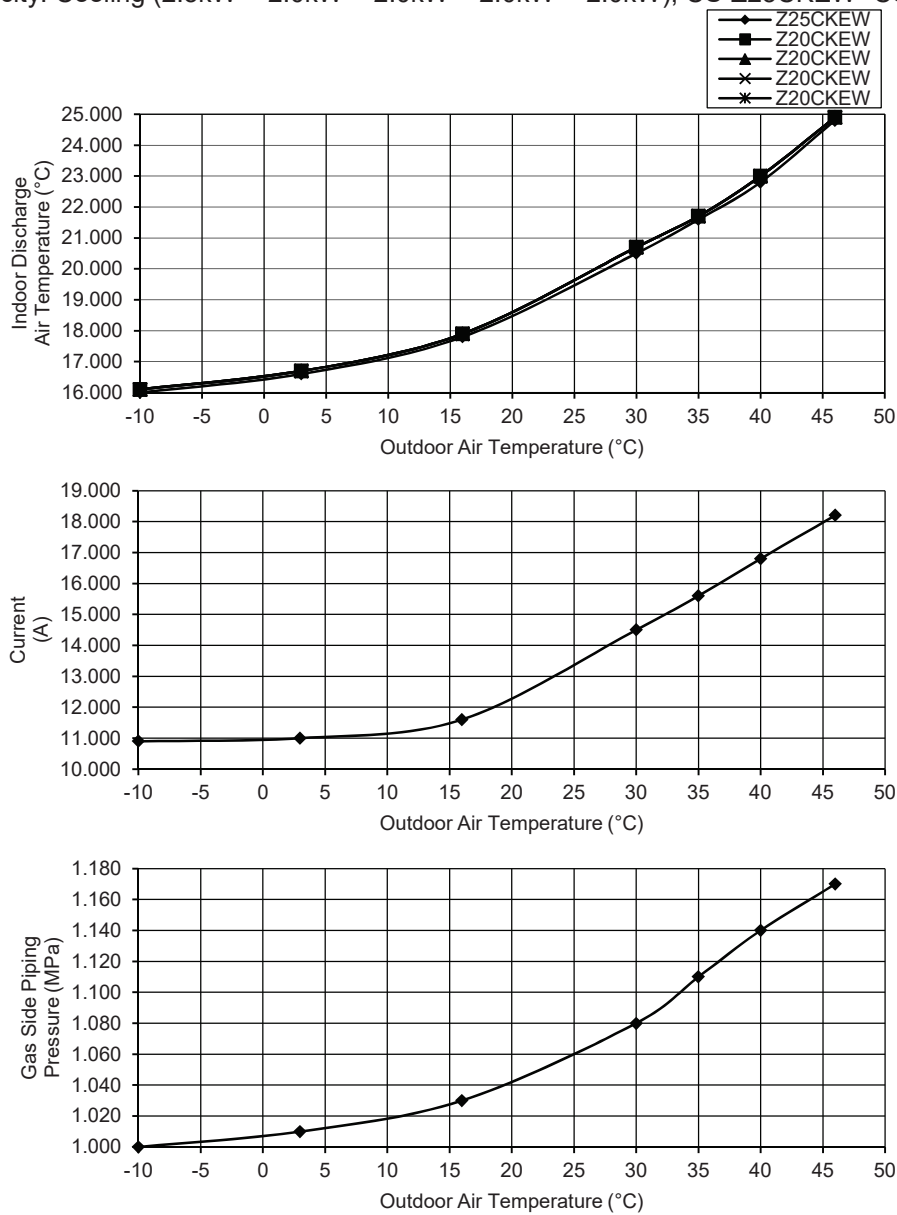
G) Indoor unit capacity: Heating (7.1kW), CS-Z71CKEW



21.8.2 Five Indoor Units Operation

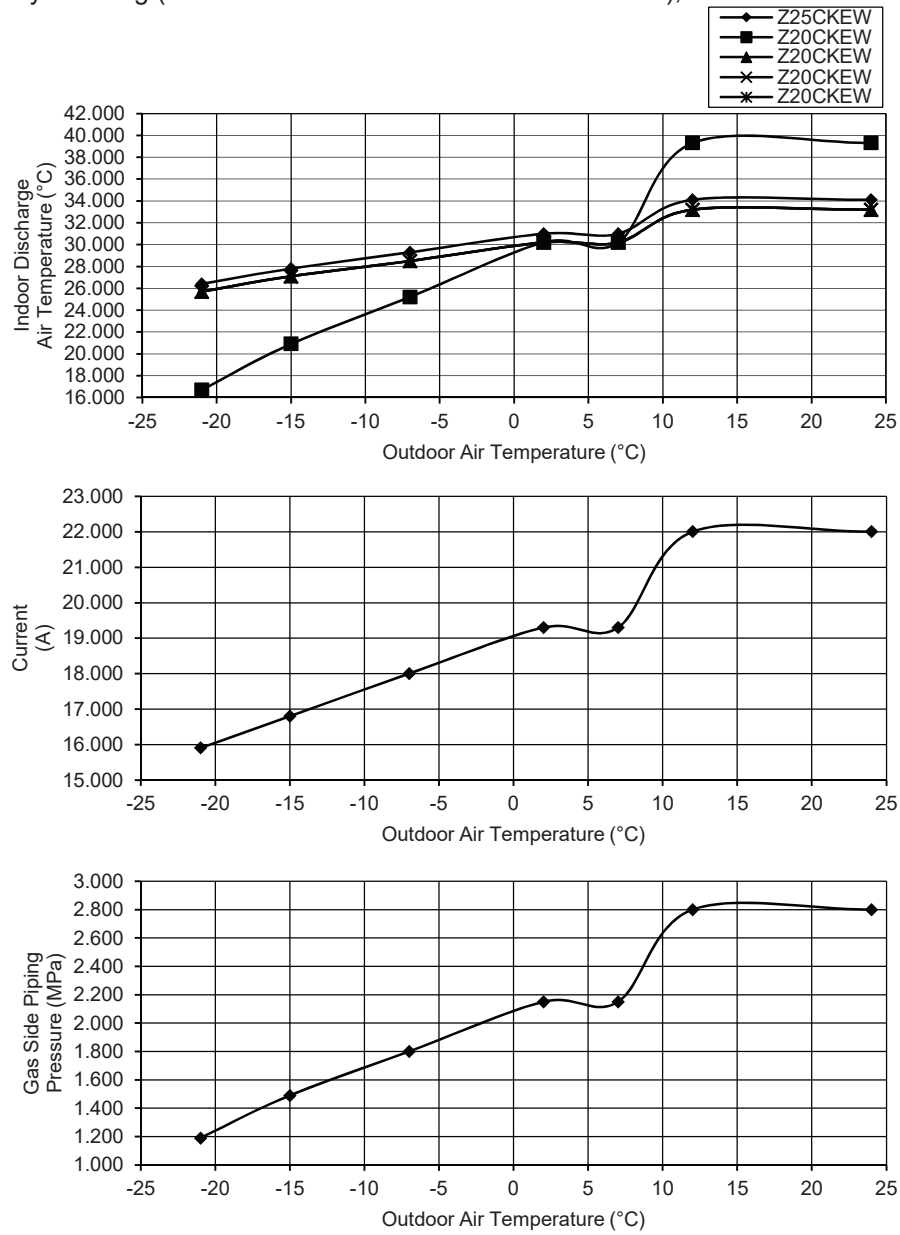
- Cooling Characteristic
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 7.5m
Voltage: 230V, 50Hz

A) Indoor unit capacity: Cooling (2.5kW + 2.0kW + 2.0kW + 2.0kW + 2.0kW), CS-Z25CKEW+CS-Z20CKEW x4



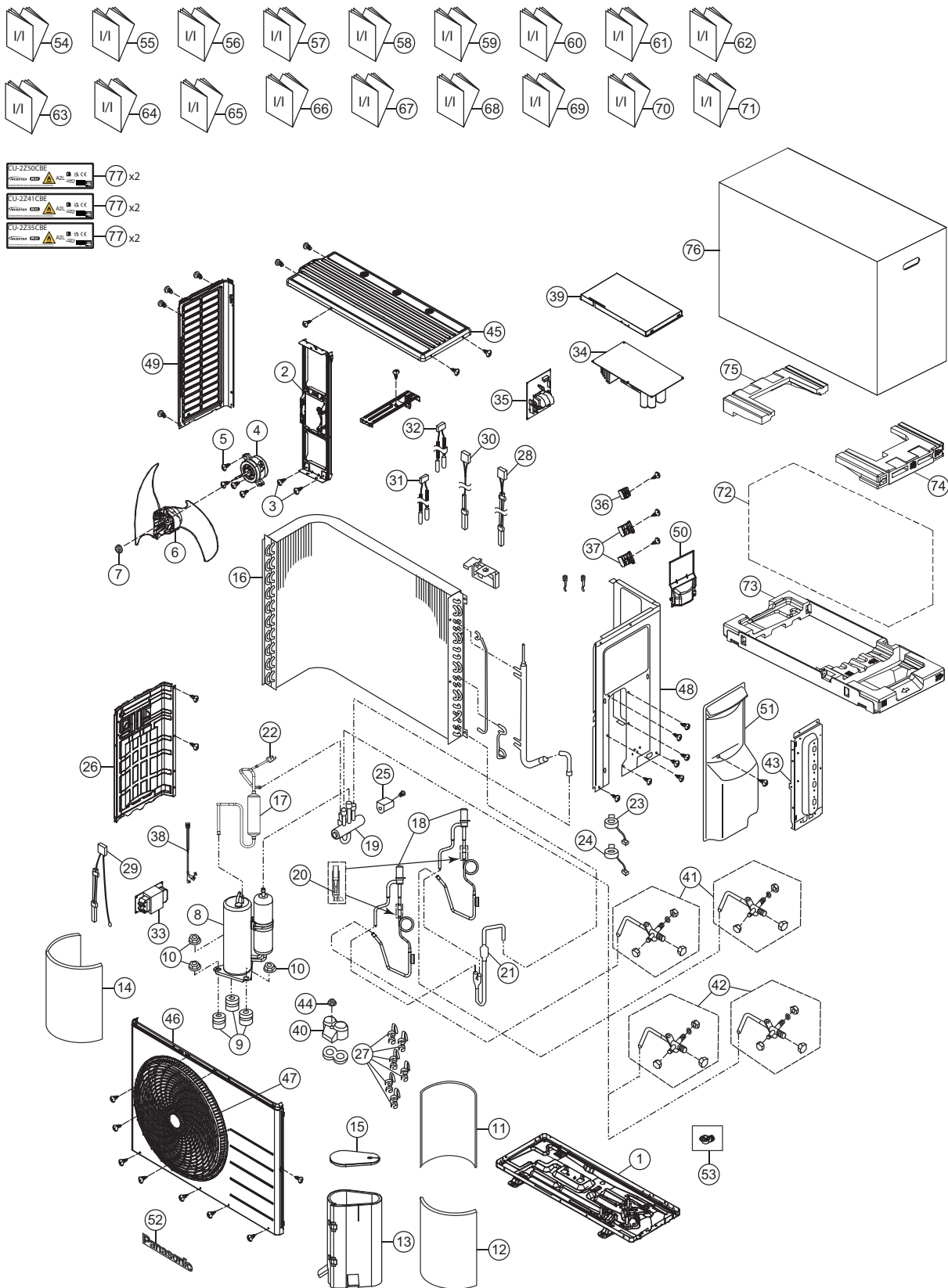
- Heating Characteristic
- [Condition] Room temperature: 20°C (DBT), 12°C (WBT)
 Operation condition: High fan speed
 Piping Length: 7.5m
 Voltage: 230V, 50Hz

A) Indoor unit capacity: Heating (2.5kW + 2.0kW + 2.0kW + 2.0kW + 2.0kW), CS-Z25CKEW+CS-Z20CKEW x4



22. Exploded View and Replacement Parts List

22.1 CU-2Z35CBE CU-2Z41CBE CU2Z50CBE



Note

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

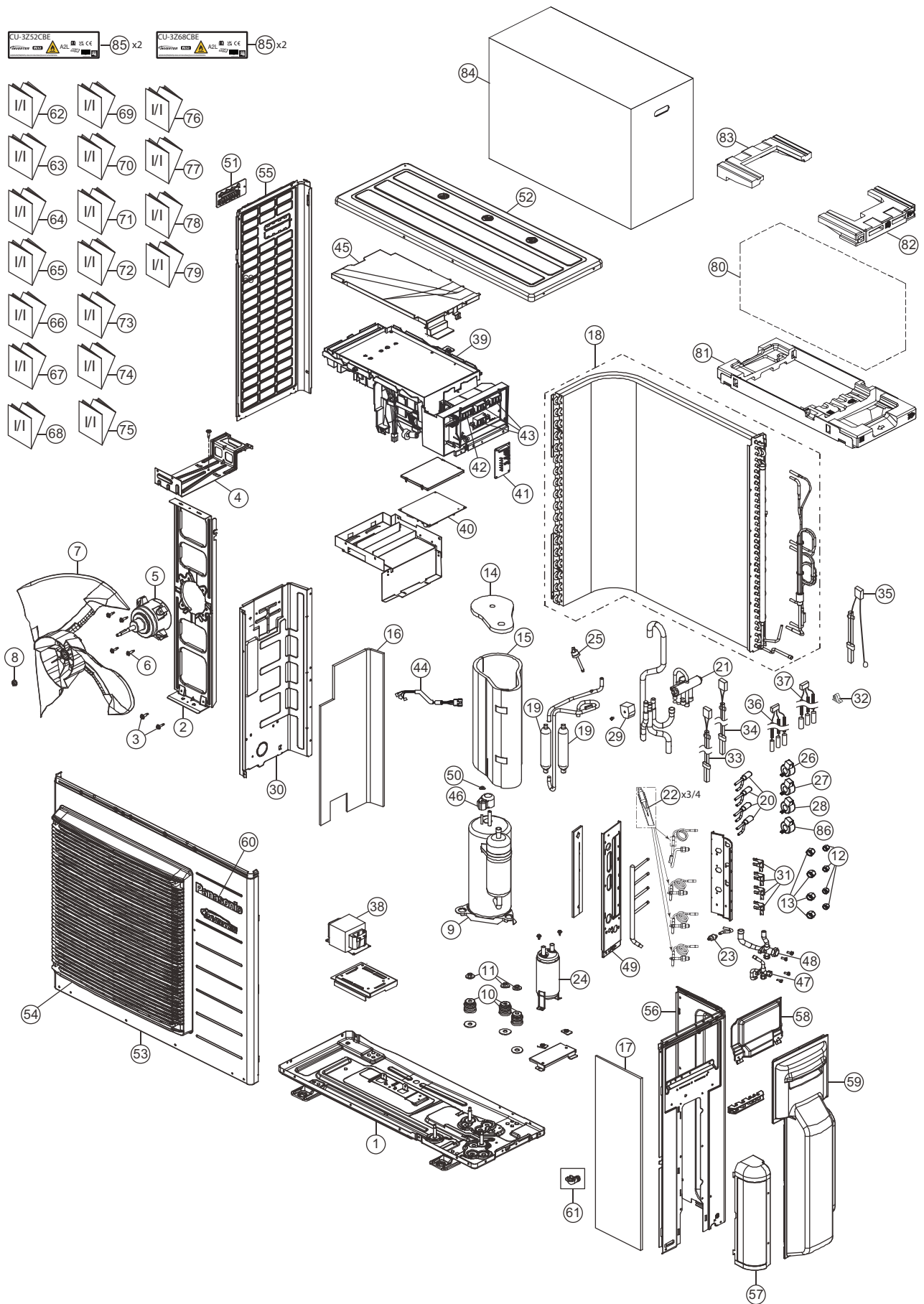
SAFETY	REF. NO.	DESCRIPTION & NAME	QTY.	CU-2Z35CBE	CU-2Z41CBE	CU-2Z50CBE	REMARK
	1	BASE PAN ASSY	1	ACXD52K05940A	←	←	
	2	BRACKET FAN MOTOR	1	CWD541167	←	←	
	3	SCREW-BRACKET FAN MOTOR	2	ACXH55-07140	←	←	
⚠	4	FAN MOTOR	1	L6CAYYYL0180	←	←	O
	5	SCREW-FAN MOTOR MOUNT	4	CWH55252J	←	←	
	6	PROPELLER FAN ASSY	1	CWH03K1066	←	←	
	7	NUT - PROPELLER FAN	1	CWH56053J	←	←	
⚠	8	COMPRESSOR	1	9RD132XGC21-T01	←	←	O
	9	ANTI-VIBRATION BUSHING	3	CWH50077	←	←	
	10	NUT-COMPRESSOR MOUNT	3	CWH561096	←	←	
	11	SOUND PROOF MATERIAL	1	CWG302806	←	←	
	12	SOUND PROOF MATERIAL	1	CWG302807	←	←	
	13	SOUND PROOF MATERIAL (COMP.BODY)	1	ACXG30-13460	←	←	
	14	SOUND PROOF MATERIAL (OVERLAP)	1	ACXG30-13470	←	←	
	15	SOUND PROOF MATERIAL (COMP.TOP)	1	ACXG30-13200	←	←	
	16	CONDENSOR CO.	1	ACXB32C32940	←	←	O
	17	DISCHARGE MUFFLER	1	ACXB12-01180	←	←	
	18	EXPANSION VALVE	2	ACXB05-01020	←	←	
	19	4-WAYS VALVE	1	ACXB00-01470	←	←	O
	20	STRAINER	2	ACXB11-01560	←	←	O
	21	STRAINER	1	CWB111080	←	←	
	22	PRESSURE SWITCH	1	ACXA10-00640	←	←	
⚠	23	V-COIL COMPLETE(CN-EV1 WHITE)	1	ACXA43C09300	←	←	O
⚠	24	V-COIL COMPLETE(CN-EV2 YELLOW)	1	ACXA43C09310	←	←	O
⚠	25	V-COIL COMPLETE(4-WAY VALVE)	1	CWA43C2585	←	←	O
	26	SOUND PROOF BOARD	1	CWH151364	←	←	
	27	HOLDER SENSOR	6	CWH32143	←	←	
⚠	28	SENSOR-COMPLETE (TANK)	1	CWA50C2894	←	←	O
⚠	29	SENSOR-COMPLETE(AIR TEMP SENSOR CN-TH1)	1	ACXA50C22870	←	←	O
⚠	30	SENSOR-COMPLETE(HEAT EXCHANGER SENSOR CN-TH2)	1	ACXA50C22970	←	←	O
⚠	31	SENSOR-COMPLETE(GAS PIPE TEMP CN-TH4)	1	ACXA50C22890	←	←	O
⚠	32	SENSOR-COMPLETE(LIQUID PIPE TEMP CN-TH3)	1	ACXA50C22900	←	←	O
⚠	33	REACTOR	1	G0C392J00027	←	←	O
⚠	34	ELECTRONIC CONTROLLER-MAIN	1	ACXA74C23770R	ACXA74C23780R	ACXA74C23790R	O
	35	ELECTRONIC CONTROLLER - NOISE FILTER	1	ACXA73-48510	←	←	
⚠	36	TERMINAL BOARD ASSY(L,N)	1	CWA28K1162	←	←	O
⚠	37	TERMINAL BOARD ASSY(1,2,3)	2	CWA28K1161	←	←	O
	38	LEAD WIRE-COMPLETE COMPRESSOR	1	ACXA60C93620	←	←	
	39	CONTROL BOARD COVER	1	CWH131473	←	←	
	40	TERMINAL COVER	1	CWH171039A	←	←	
	41	3-WAYS VALVE (LIQUID)	2	CWB011418	←	←	
	42	3-WAYS VALVE (GAS)	2	CWB011081J	←	←	O
	43	HOLDER COUPLING	1	CWH351253	←	←	O
	44	NUT-TERMINAL COVER	1	CWH7080300J	←	←	

SAFETY	REF. NO.	DESCRIPTION & NAME	QTY.	CU-2Z35CBE	CU-2Z41CBE	CU-2Z50CBE	REMARK
	45	CABINET TOP PLATE	1	ACXE03-04830A	←	←	
	46	CABINET FRONT PLATE CO.	1	ACXE06C04650	←	←	
	47	DISCHARGE GRILLE	1	CWE201285	←	←	
	48	CABINET SIDE PLATE CO.	1	ACXE04C09640	←	←	
	49	CABINET SIDE PLATE	1	ACXE04-13070A	←	←	
	50	CONTROL BOARD COVER	1	CWH131595	←	←	
	51	CONTROL BOARD COVER-COMplete	1	ACXH13C06390	←	←	
	52	BADGE	1	CWE373439	←	←	
	53	ACCESSORY-COMplete	1	ACXH82C21741	←	←	
	54	INSTALLATION INSTRUCTION	1	ACXF60-61620	←	←	
	55	INSTALLATION INSTRUCTION	1	ACXF60-62920	←	←	
	56	INSTALLATION INSTRUCTION	1	ACXF60-62930	←	←	
	57	INSTALLATION INSTRUCTION	1	ACXF60-62940	←	←	
	58	INSTALLATION INSTRUCTION	1	ACXF60-62950	←	←	
	59	INSTALLATION INSTRUCTION	1	ACXF60-62960	←	←	
	60	INSTALLATION INSTRUCTION	1	ACXF60-62970	←	←	
	61	INSTALLATION INSTRUCTION	1	ACXF60-62980	←	←	
	62	INSTALLATION INSTRUCTION	1	ACXF60-62990	←	←	
	63	INSTALLATION INSTRUCTION	1	ACXF60-63000	←	←	
	64	INSTALLATION INSTRUCTION	1	ACXF60-63010	←	←	
	65	INSTALLATION INSTRUCTION	1	ACXF60-63020	←	←	
	66	INSTALLATION INSTRUCTION	1	ACXF60-63030	←	←	
	67	INSTALLATION INSTRUCTION	1	ACXF60-63040	←	←	
	68	INSTALLATION INSTRUCTION	1	ACXF60-63050	←	←	
	69	INSTALLATION INSTRUCTION	1	ACXF60-63060	←	←	
	70	INSTALLATION INSTRUCTION	1	ACXF60-63070	←	←	
	71	INSTALLATION INSTRUCTION	1	ACXF60-63080	←	←	
	72	BAG	1	CWG861078	←	←	
	73	BASE BOARD-COMplete	1	CWG62C1144	←	←	
	74	SHOCK ABSORBER (TOP RIGHT)	1	ACXG70-14440A	←	←	
	75	SHOCK ABSORBER (TOP LEFT)	1	ACXG70-14450A	←	←	
	76	C.C.CASE	1	ACXG50-48874	←	←	
	77	MODEL LABEL	2	ACXF87-62580	ACXF87-62590	ACXF87-62570	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- “O” marked parts are recommended to be kept in stock.

22.2 CU-3Z52CBE CU-3Z68CBE CU-4Z68CBE



Note

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

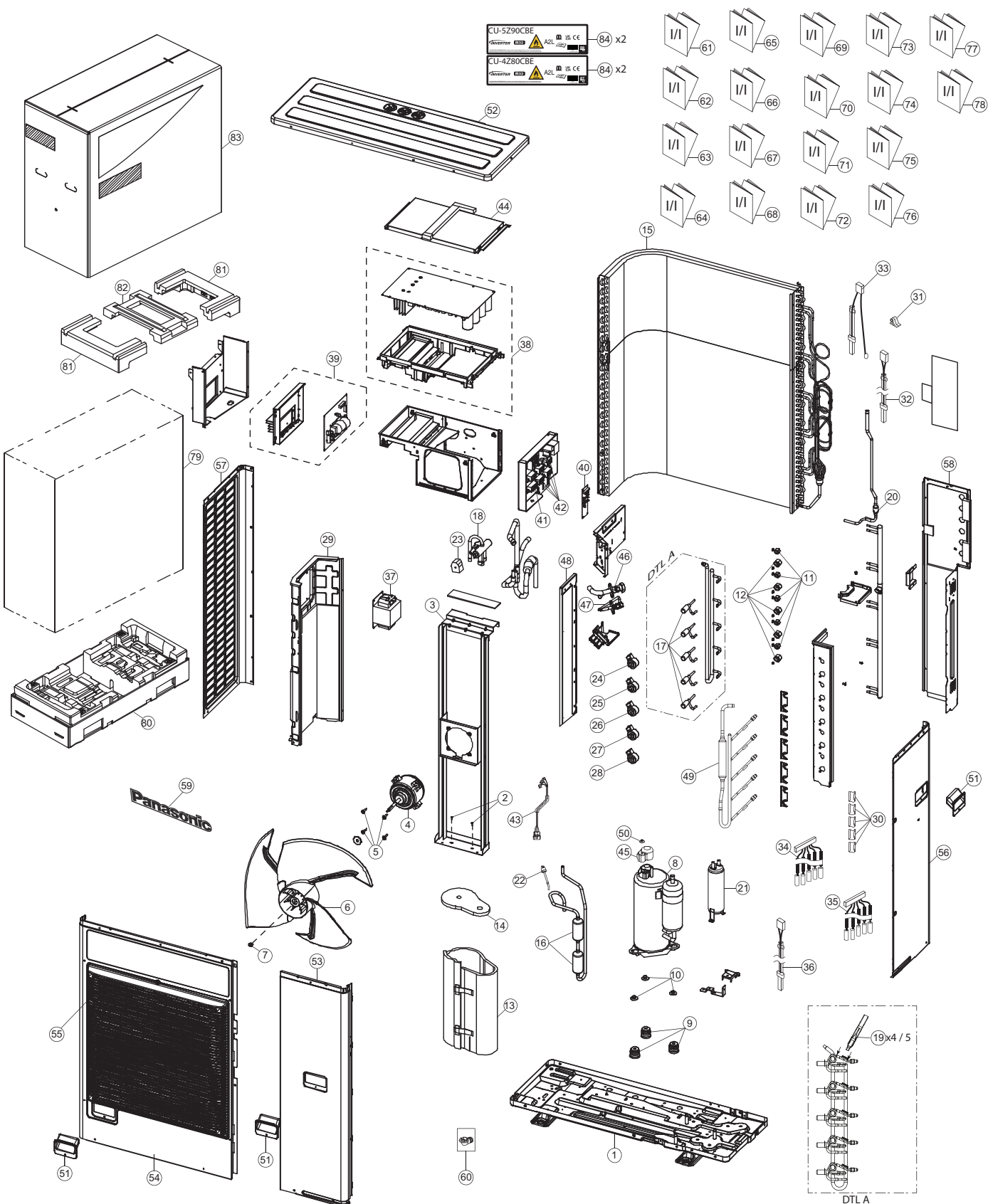
SAFETY	REF. NO.	DESCRIPTION & NAME	QTY.	CU-3Z52CBE	CU-3Z68CBE	CU-4Z68CBE	REMARK
	1	BASE PAN ASSY	1	ACXD52K05930A	←	←	
	2	BRACKET FAN MOTOR	1	ACXD54-04490	ACXD54-05430	←	
	3	SCREW-BRACKET FAN MOTOR	2	ACXH55-07140	←	←	
	4	PARTICULAR PLATE	1	CWD911802	←	←	
⚠	5	FAN MOTOR	1	L6CBYYL0422	←	←	O
	6	SCREW-FAN MOTOR MOUNT	4	CWH551323	←	←	
	7	PROPELLER FAN ASSY	1	CWH00K1006	←	←	
	8	NUT - PROPELLER FAN	1	CWH561092	←	←	
⚠	9	COMPRESSOR	1	9RD220XBD21	←	←	O
	10	ANTI-VIBRATION BUSHING	3	CWH50077	←	←	
	11	NUT-COMPRESSOR MOUNT	3	CWH561096	←	←	
	12	UNION NUT (1/4)	3/4	CWT251030	←	←	
	13	UNION NUT (3/8)	3/4	CWT251031	←	←	
	14	SOUND PROOF MATERIAL [COMP. TOP]	1	ACXG30-09050	←	←	
	15	SOUND PROOF MATERIAL [COMP.BODY]	1	ACXG30-16070	←	←	
	16	SOUND PROOF MATERIAL [OVERLAP]	1	ACXG30-16400	←	←	
	17	SOUND PROOF MATERIAL [SIDE PLATE]	1	ACXG30-13150	←	←	
	18	CONDENSOR CO.	1	ACXB32C30150	ACXB32C30170	←	O
	19	DISCHARGE MUFFLER	2	ACXB12-01180	←	←	
	20	EXPANSION VALVE	3/4	ACXB05-01020	←	←	
	21	4-WAYS VALVE	1	ACXB00-01470	←	←	O
	22	STRAINER	3/4	ACXB11-01560	←	←	O
	23	STRAINER	1	ACXB11-00570	←	←	
	24	ACCUMULATOR	1	ACXB13-01210	←	←	
	25	PRESSURE SWITCH	1	ACXA10-00640	←	←	
⚠	26	V-COIL COMPLETE (CN-STM1)	1	ACXA43C09260	←	←	O
⚠	27	V-COIL COMPLETE (CN-STM2)	1	ACXA43C09270	←	←	O
	28	V-COIL COMPLETE (CN-STM3)	1	ACXA43C09280	←	←	
⚠	29	V-COIL COMPLETE (4-WAY VALVE)	1	CWA43C2585	←	←	O
	30	SOUND PROOF BOARD	1	ACXH15-03850	←	←	
	31	HOLDER SENSOR	3/4	CWH32074	←	←	
	32	HOLDER SENSOR	1	CWH321113	←	←	
⚠	33	SENSOR-COMPLETE -CN-TH2	1	ACXA50C21280	←	←	O
⚠	34	SENSOR-COMPLETE -CN-DIS	1	ACXA50C23270	←	←	O
⚠	35	SENSOR-COMPLETE -CN-TH1	1	ACXA50C21290	←	←	O
⚠	36	SENSOR-COMPLETE -CN-TH4	1	ACXA50C21430	←	ACXA50C22810	O
⚠	37	SENSOR-COMPLETE -CN-TH3	1	ACXA50C21440	←	ACXA50C22820	O
⚠	38	REACTOR	1	G0C392J00029	←	←	O
⚠	39	ELECTRONIC CONTROLLER-MAIN	1	ACXA74C23840R	ACXA74C23800R	ACXA74C23810R	O
	40	ELECTRONIC CONTROLLER -NOISE FILTER	1	ACXA73-58040	←	←	
	41	ELECTRONIC CONTROLLER -DISPLAY	1	CWA747223	←	←	
⚠	42	TERMINAL BOARD ASSY	1	CWA28K1195	←	←	O
⚠	43	TERMINAL BOARD ASSY	3/4	CWA28K1196	←	←	O
	44	LEAD WIRE-COMPLETE COMPRESSOR	1	CWA67C7213	←	←	
	45	CONTROL BOARD COVER	1	ACXH13-09170	←	←	
	46	TERMINAL COVER	1	CWH171039A	←	←	

SAFETY	REF. NO.	DESCRIPTION & NAME	QTY.	CU-3Z52CBE	CU-3Z68CBE	CU-4Z68CBE	REMARK
	47	3-WAYS VALVE (LIQUID)	1	ACXB01-05000	←	←	
	48	3-WAYS VALVE (GAS)	1	ACXB01-05010	←	←	O
	49	HOLDER COUPLING	1	CWH351258	←	←	O
	50	NUT-TERMINAL COVER	1	CWH7080300J	←	←	
	51	HANDLE	1	CWE161010	←	←	
	52	CABINET TOP PLATE	1	CWE031083A	←	←	
	53	CABINET FRONT PLATE ASSY	1	ACXE06K02090	←	←	
	54	DISCHARGE GRILLE	1	CWE201154	←	←	
	55	CABINET SIDE PLATE (LEFT)	1	CWE041585A	←	←	
	56	CABINET SIDE PLATE	1	ACXE04-13890A	←	←	
	57	PARTICULAR PLATE-ASSY	1	CWD90K1042	←	←	
	58	CONTROL BOARD COVER	1	CWH131364	←	←	
	59	CONTROL BOARD COVER-COMPLETE	1	ACXH13C06370	←	←	
	60	BADGE	1	CWE373439	←	←	
	61	ACCESSORY-COMPLETE	1	ACXH82C21741	←	←	
	62	INSTALLATION INSTRUCTION	1	ACXF60-61630	←	←	
	63	INSTALLATION INSTRUCTION	1	ACXF60-62470	←	←	
	64	INSTALLATION INSTRUCTION	1	ACXF60-62480	←	←	
	65	INSTALLATION INSTRUCTION	1	ACXF60-62490	←	←	
	66	INSTALLATION INSTRUCTION	1	ACXF60-62500	←	←	
	67	INSTALLATION INSTRUCTION	1	ACXF60-62510	←	←	
	68	INSTALLATION INSTRUCTION	1	ACXF60-62520	←	←	
	69	INSTALLATION INSTRUCTION	1	ACXF60-62530	←	←	
	70	INSTALLATION INSTRUCTION	1	ACXF60-62540	←	←	
	71	INSTALLATION INSTRUCTION	1	ACXF60-62550	←	←	
	72	INSTALLATION INSTRUCTION	1	ACXF60-62560	←	←	
	73	INSTALLATION INSTRUCTION	1	ACXF60-62570	←	←	
	74	INSTALLATION INSTRUCTION	1	ACXF60-62580	←	←	
	75	INSTALLATION INSTRUCTION	1	ACXF60-62590	←	←	
	76	INSTALLATION INSTRUCTION	1	ACXF60-62600	←	←	
	77	INSTALLATION INSTRUCTION	1	ACXF60-62610	←	←	
	78	INSTALLATION INSTRUCTION	1	ACXF60-62620	←	←	
	79	INSTALLATION INSTRUCTION	1	ACXF60-62630	←	←	
	80	BAG	1	ACXG86-02430	←	←	
	81	BASE BOARD-COMPLETE	1	ACXG62C01000	←	←	
	82	SHOCK ABSORBER (TOP RIGHT)	1	ACXG70-07160	←	←	
	83	SHOCK ABSORBER (TOP LEFT)	1	ACXG70-07170	←	←	
	84	C.C.CASE	1	ACXG50-52324	←	←	
	85	MODEL LABEL	2	ACXF87-62630	ACXF87-62410	ACXF87-62400	
	86	V-COIL (CN-STM4)	1	-	-	ACXA43C09290	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

22.3 CU-4Z80CBE CU-5Z90CBE



Note

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

SAFETY	REF.NO.	DESCRIPTION & NAME	QTY.	CU-4Z80CBE	CU-5Z90CBE	REMARK
	1	BASE PAN ASSY	1	ACXD52K05920A	←	
	2	SCREW-BRACKET FAN MOTOR	2	ACXH55-07140	←	
	3	FAN MOTOR BRACKET ASSY	1	ACXD54K02270	←	
⚠	4	FAN MOTOR	1	L6CBYYYL0098	←	O
	5	SCREW-FAN MOTOR MOUNT	4	CWH551323	←	
	6	PROPELLER FAN ASSY	1	CWH03K1075	←	
	7	NUT - PROPELLER FAN	1	CWH561092	←	
⚠	8	COMPRESSOR	1	9KD240XBB21-CA	←	O
	9	ANTI-VIBRATION BUSHING	3	CWH50055-3	←	
	10	NUT-COMPRESSOR MOUNT	3	CWH561049	←	
	11	UNION NUT	4/5	CWT251030	←	
	12	UNION NUT	4/5	CWT251031	←	
	13	SOUND PROOF MATERIAL [COMP. BODY]	1	CWG302801	←	
	14	SOUND PROOF MATERIAL [COMP.TOP]	1	CWG302804	←	
	15	CONDENSOR CO.	1	ACXB32C32770	←	O
	16	DISCHARGE MUFFLER	2	ACXB12-00650	←	
	17	EXPANSION VALVE	4/5	ACXB05-01020	←	
	18	4-WAYS VALVE	1	ACXB00-01470	←	O
	19	STRAINER	4/5	ACXB11-01560	←	O
	20	STRAINER	1	CWB11061	←	
	21	ACCUMULATOR	1	CWB131064	←	
	22	PRESSURE SWITCH	1	ACXA10-00640	←	
⚠	23	V-COIL COMPLETE	1	A43C2586	←	O
⚠	24	V-COIL COMPLETE [CN-STM1]	1	ACXA43C08950	←	O
	25	V-COIL COMPLETE [CN-STM2]	1	ACXA43C08960	←	
⚠	26	V-COIL COMPLETE [CN-STM3]	1	ACXA43C08970	←	O
	27	V-COIL COMPLETE [CN-STM4]	1	ACXA43C08980	←	
	28	V-COIL COMPLETE [CN-STM5]	1	-	ACXA43C08990	
	29	SOUND PROOF BOARD	1	ACXH15C00510	←	
	30	HOLDER SENSOR	4/5	CWH32074	←	
	31	HOLDER SENSOR	1	CWH321113	←	
⚠	32	SENSOR-COMPLETE [CN-TH2]	1	ACXA50C23040	←	O
⚠	33	SENSOR-COMPLETE [CN-TH1]	1	ACXA50C22950	←	O
⚠	34	SENSOR-COMPLETE [CN-TH4]	1	ACXA50C22930	ACXA50C22840	O
⚠	35	SENSOR-COMPLETE [CN-TH3]	1	ACXA50C22920	ACXA50C22850	O
⚠	36	SENSOR-COMPLETE [CN-TANK]	1	ACXA50C23100	←	O
⚠	37	REACTOR	1	G0C602J00013	←	O
⚠	38	ELECTRONIC CONTROLLER-MAIN	1	ACXA74C23820R	ACXA74C23830R	O
	39	ELECTRONIC CONTROLLER -NOISE FILTER	1	ACXA73-22710	←	
	40	ELECTRONIC CONTROLLER -DISPLAY	1	CWA747223	←	
⚠	41	TERMINAL BOARD ASSY	1	CWA28K1195	←	O
⚠	42	TERMINAL BOARD ASSY	4/5	CWA28K1196	←	O
	43	LEAD WIRE-COMPLETE COMPRESSOR	1	CWA68C1395	←	
	44	CONTROL BOARD COVER	1	CWH131613	←	
	45	TERMINAL COVER	1	CWH171039A	←	
	46	3-WAYS VALVE [GAS]	1	ACXB01-05020	←	
	47	3-WAYS VALVE [LIQUID]	1	ACXB01-05030	←	O

SAFETY	REF.NO.	DESCRIPTION & NAME	QTY.	CU-4Z80CBE	CU-5Z90CBE	REMARK
	48	HOLDER COUPLING	1	CWH351262	←	O
	49	RECEIVER	1	ACXB14-00640	←	
	50	NUT-TERMINAL COVER	1	CWH7080300J	←	
	51	HANDLE	3	CWE161021	←	
	52	CABINET TOP PLATE	1	CWE03C1150	←	
	53	CABINET FRONT PLATE COMP	1	CWE06C1476	←	
	54	CABINET FRONT PLATE COMP	1	CWE06C1475	←	
	55	DISCHARGE GRILLE	1	ACXE20-01960	←	
	56	CABINET SIDE PLATE CO.	1	CWE04C1462	←	
	57	CABINET SIDE PLATE [LEFT]	1	CWE041734A	←	
	58	CABINET REAR PLATE-COMPLETE	1	ACXE02C01670	←	
	59	BADGE	1	CWE373439	←	
	60	ACCESSORY-COMPLETE	1	ACXH82C21741	←	
	61	INSTALLATION INSTRUCTION	1	ACXF60-61640	←	
	62	INSTALLATION INSTRUCTION	1	ACXF60-62040	←	
	63	INSTALLATION INSTRUCTION	1	ACXF60-62050	←	
	64	INSTALLATION INSTRUCTION	1	ACXF60-62060	←	
	65	INSTALLATION INSTRUCTION	1	ACXF60-62070	←	
	66	INSTALLATION INSTRUCTION	1	ACXF60-62080	←	
	67	INSTALLATION INSTRUCTION	1	ACXF60-62090	←	
	68	INSTALLATION INSTRUCTION	1	ACXF60-62100	←	
	69	INSTALLATION INSTRUCTION	1	ACXF60-62110	←	
	70	INSTALLATION INSTRUCTION	1	ACXF60-62120	←	
	71	INSTALLATION INSTRUCTION	1	ACXF60-62130	←	
	72	INSTALLATION INSTRUCTION	1	ACXF60-62140	←	
	73	INSTALLATION INSTRUCTION	1	ACXF60-62150	←	
	74	INSTALLATION INSTRUCTION	1	ACXF60-62160	←	
	75	INSTALLATION INSTRUCTION	1	ACXF60-62170	←	
	76	INSTALLATION INSTRUCTION	1	ACXF60-62180	←	
	77	INSTALLATION INSTRUCTION	1	ACXF60-62190	←	
	78	INSTALLATION INSTRUCTION	1	ACXF60-62200	←	
	79	BAG	1	ACXG86-02960	←	
	80	BASE BOARD-COMPLETE	1	ACXG62C01180	←	
	81	SHOCK ABSORBER (TOP RIGHT & LEFT)	1	ACXG70-08370	←	
	82	SHOCK ABSORBER	1	ACXG70-08380	←	
	83	C.C.CASE	1	ACXG50-52044	←	
	84	MODEL LABEL	2	ACXF87-61790	ACXF87-61780	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- “O” marked parts are recommended to be kept in stock.