

SERVICE MANUAL

Series PMFY

Ceiling Cassettes

R32/R454B

Indoor unit

[Model Name]

[Service Reference]

PMFY-M06NCMU-A

PMFY-M06NCMU-A

PMFY-M08NCMU-A

PMFY-M08NCMU-A

PMFY-M12NCMU-A

PMFY-M12NCMU-A

PMFY-M15NCMU-A

PMFY-M15NCMU-A

PMFY-M18NCMU-A

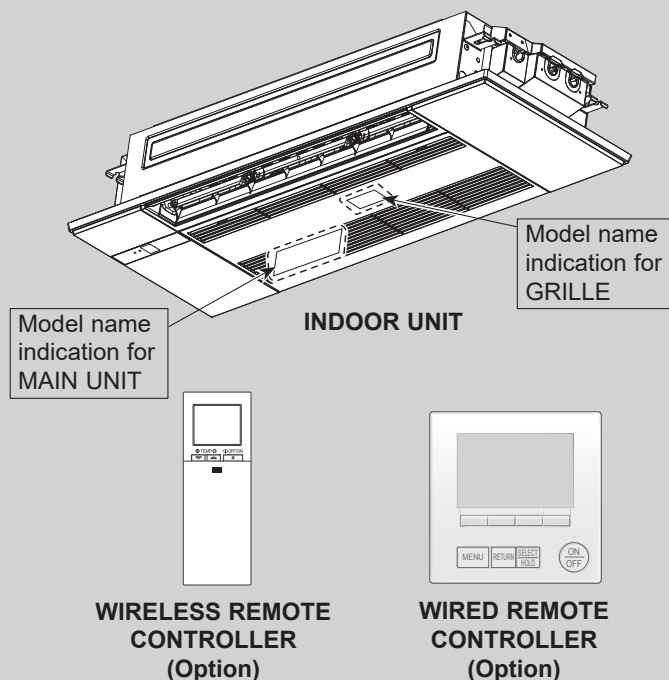
PMFY-M18NCMU-A

Grille model

[Model Name]

MLP-449WU-U1

MLP-449WCA-CA1



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PARTS CATALOG (OCB910)

CITY MULTI

MEANINGS OF SYMBOLS DISPLAYED ON THE UNIT

	WARNING (Risk of fire)	This unit uses a flammable refrigerant. If the refrigerant leaks and comes in contact with fire or a heating part, it will create a harmful gas and there is a risk of fire.
	Read the operation manual carefully before operation.	
	Service personnel are required to carefully read the operation manual and installation manual before operation.	
	Further information is available in the operation manual, installation manual, and the like.	

1-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuits must be disconnected.

1-2. CAUTIONS RELATED TO REFRIGERANT

Cautions for units utilizing refrigerant R32/R454B

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

Make sure that the inside and outside of refrigerant piping is clean and it has no contaminants such as sulfur, oxides, dirt, shaving particles, etc., which are hazard to refrigerant cycle.

In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil, etc.

Store the piping indoors, and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil, etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil, etc.

Use the following tools specifically designed for use with R32/R454B refrigerant.

The following tools are necessary to use R32/R454B refrigerant.

Tools for R32/R454B	
Gauge manifold	Flaring tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Use the specified refrigerant only.

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified on name plate of outdoor unit.

If other refrigerant (R22, etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil, etc.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

[1] Warning for service

- (1) Do not alter the unit.
- (2) For installation and relocation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with refrigerant specified in the outdoor unit installation manual.
- (3) Ask a dealer or an authorized technician to install, relocate and repair the unit.
- (4) This unit should be installed in rooms which exceed the floor space specified in outdoor unit installation manual. Refer to outdoor unit installation manual.
- (5) Install the indoor unit at least 2.2 m above floor or grade level.
For appliances not accessible to the general public.
- (6) Refrigerant pipes connection shall be accessible for maintenance purposes.
- (7) If the air conditioner is installed in a small room or closed room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.
- (8) Keep gas-burning appliances, electric heaters, and other fire sources (ignition sources) away from the location where installation, repair, and other air conditioner work will be performed.
If refrigerant comes into contact with a flame, poisonous gases will be released.
- (9) When installing or relocating, or servicing the air conditioner, use only the specified refrigerant written on outdoor unit to charge the refrigerant lines.
Do not mix it with any other refrigerant and do not allow air to remain in the lines.
If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.
- (10) After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.
- (11) Do not use low temperature solder alloy in case of brazing the refrigerant pipes.
- (12) When performing brazing work, be sure to ventilate the room sufficiently. Make sure that there are no hazardous or flammable materials nearby.
When performing the work in a closed room, small room, or similar location, make sure that there are no refrigerant leaks before performing the work.
If refrigerant leaks and accumulates, it may ignite or poisonous gases may be released.
- (13) Do not install the unit in places where refrigerant may build-up or places with poor ventilation such as a semi-basement or a sunken place in outdoor: Refrigerant is heavier than air, and inclined to fall away from the leak source.
- (14) Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- (15) The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- (16) Do not pierce or burn.
- (17) Be aware that refrigerants may not contain an odor.
- (18) Pipe-work shall be protected from physical damage.
- (19) The installation of pipe-work shall be kept to a minimum.
- (20) Compliance with national gas regulations shall be observed.
- (21) Keep any required ventilation openings clear of obstruction.
- (22) Servicing shall be performed only as recommended by the manufacturer.
- (23) The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- (24) Maintenance, service and repair operations shall be performed by authorized technician with required qualification.
- (25) Pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical code, ICC International Mechanical Code, or CSA 852.
- (26) All field joints shall be accessible for inspection prior to being covered or enclosed.

[2] Cautions for service

- (1) Perform service after recovering the refrigerant left in unit completely.
- (2) Do not release refrigerant in the air.
- (3) After completing service, charge the cycle with specified amount of refrigerant.
- (4) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[3] Additional refrigerant charge

When charging directly from cylinder

- (1) Check that cylinder for R32/R454B available on the market is a syphon type.
- (2) Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)

[4] Cautions for unit using R32/R454B refrigerant

Basic work procedures are the same as those for conventional units using refrigerant R410A. However, pay careful attention to the following points:

(1) Information on servicing

(1-1) Checks on the area

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

For repair to the REFRIGERATING SYSTEM, 1-2 to 1-6 shall be completed prior to conducting work on the system.

(1-2) Work procedure

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

(1-3) General work area

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

Work in confined spaces shall be avoided.

(1-4) Checking for presence of refrigerant

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

(1-5) Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.

Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

(1-6) No ignition sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

(1-7) 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

(1-8) Checks on the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.

At all times the manufacturer's maintenance and service guidelines shall be followed.

If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

(1-9) Checks on electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.

If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

(2) Repairs to sealed components

(2-1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

(2-2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

(3) Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

(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 for 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.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need 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 but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to 2-4.6.

(6) Removal and evacuation

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

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas;
- evacuate;
- continuously flush or purge with inert gas when using flame to open circuit;
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.

Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

(7) Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of REFRIGERANT contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning.

A follow up leak test shall be carried out prior to leaving the site.

(8) Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80 % volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

(9) Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.

The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

(10) Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.

Ensure that the correct number of cylinders for holding the total system charge is available.

All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.

Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

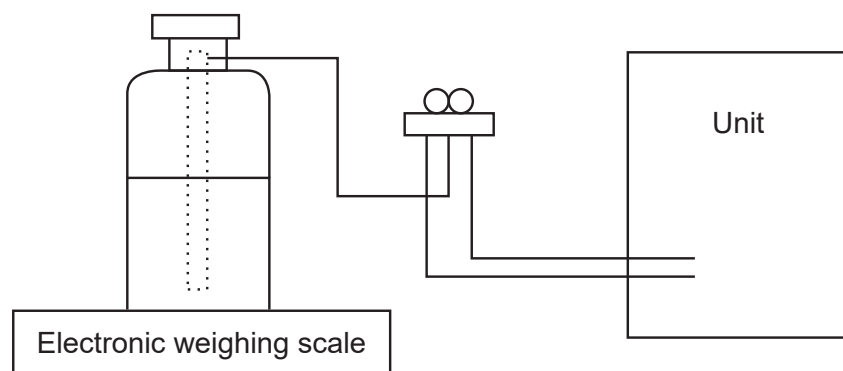
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant.

If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be 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. When oil is drained from a system, it shall be carried out safely.



[5] Service tools

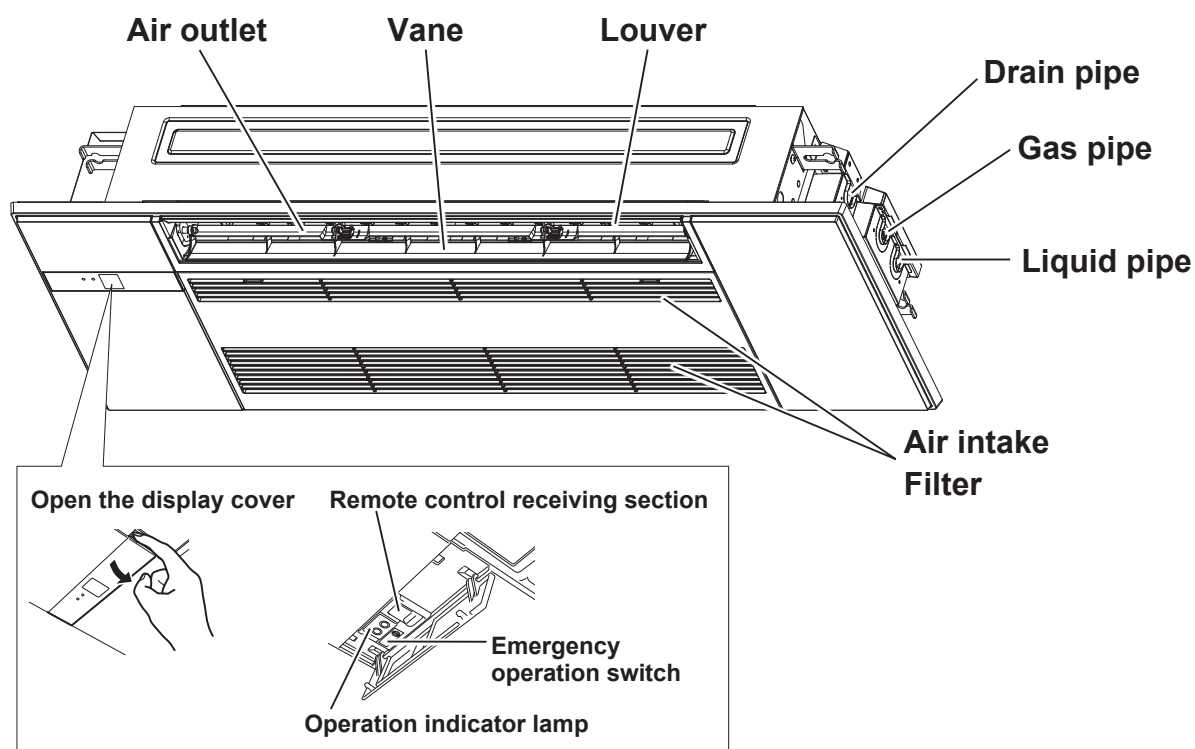
Use the below service tools as exclusive tools for R32/R454B refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R32/R454B
		· Use the existing fitting specifications. (UNF1/2)
		· Use high-tension side pressure of 768.7 psig [5.3MPa.G] or over.
②	Charge hose	· Only for R32/R454B
		· Use pressure performance of 738.2 psig [5.09MPa.G] or over.
③	Electronic weighing scale	—
④	Gas leak detector	· Use the detector for R32/R454B.
⑤	Adaptor for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· Only for R32/R454B Cylinder with syphon
⑧	Refrigerant recovery equipment	—

2

PART NAMES AND FUNCTIONS

2-1. Indoor unit



2-2. Wired Remote Controller <PAR-43MAAUB> <PAC-YT53CRAU>

Wired remote controller function

The functions which can be used are restricted according to each model.

○ : Supported ✕ : Unsupported

	Function	PAR-43MAAUB	PAC-YT53CRAU
Body	Product size H × W × D in. (mm)	4-3/4 × 4-3/4 × 9/16 (120 × 120 × 14.5)	4-3/4 × 2-3/4 × 9/16 (120 × 70 × 14.5)
	LCD	Full Dot LCD	Partial Dot LCD
	Backlight	○	○
Energy saving	Automatic return to the preset temperature	○	✕
Restriction	Setting the temperature range restriction	○	○
Function*	Operation lock function	○	○
	Weekly timer	○	✕
	ON/OFF timer	○	✕
	Manual vane angle	○	✕

*Some functions may not be available depending on model types.

3-1. SPECIFICATIONS

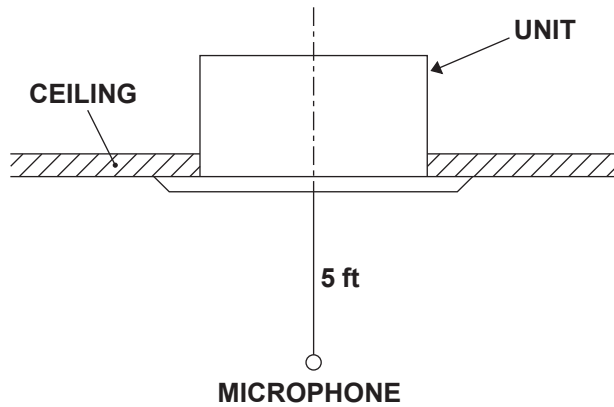
Model			PMFY-M06NCMU-A	PMFY-M08NCMU-A	PMFY-M12NCMU-A	PMFY-M15NCMU-A	PMFY-M18NCMU-A
Power source			1-phase 208/230 V 60 Hz				
Cooling capacity (Nominal)	*1	kW	1.8	2.3	3.5	4.4	5.3
		Btu/h	6000	8000	12000	15000	18000
	Power input	kW	0.02	0.03	0.03	0.04	0.05
	Current input	A	0.29	0.32	0.35	0.44	0.58
Heating capacity (Nominal)	*2	kW	2.0	2.6	4.0	5.0	5.9
		Btu/h	6700	9000	13500	17000	20000
	Power input	kW	0.02	0.03	0.03	0.04	0.05
	Current input	A	0.24	0.27	0.30	0.39	0.53
External finish(Munsell No.)			Galvanized steel sheet				
External dimension H × W × D		in. [mm]	7-5/16 × 44-1/8 × 14-3/16 [185 × 1121 × 360]				
Net weight		lbs. [kg]	35.3 [16.0]	35.3 [16.0]	36.0 [16.3]	36.0 [16.3]	36.0 [16.3]
Grille	External finish		White				
	Dimension H × W × D	in. [mm]	0-15/16 × 47-1/4 × 16-11/16 [24 × 1200 × 424]				
	Net weight	lbs. [kg]	8.2 [3.7]				
Heat exchanger			Cross fin (Aluminum fin and copper tube)				
Fan	Type × Quantity		Line flow fan × 1				
	External static press	Pa	0 (0)				
	Motor type		DC motor				
	Motor output	kW	0.03				
	Driving mechanism		Direct driven				
	Airflow rate (Low-Mid2-Mid1-High)	m³/min	5.6-5.9-6.2-6.5	5.6-6.4-7.3-8.1	6.7-7.4-8.1-8.8	6.7-7.9-9.0-10.2	6.7-8.5-10.2-12.0
cfm		195-205-215-225	195-225-255-285	235-260-285-310	235-275-315-360	235-300-360-420	
Noise level (Low-Mid2-Mid1-High) (measured in anechoic room)		dB <A>	25-27-28-29	25-29-32-35	29-32-35-37	29-34-38-41	29-36-41-45
Insulation material			Polyethylene sheet				
Air filter			PP Honeycomb				
Protection device			Fuse				
Refrigerant control device			LEV				
Connectable outdoor unit			R32, R454B CITY MULTI				
Diameter of refrigerant pipe	Liquid	in. [mm]	ø1/4 [ø6.35]				
	Gas	in. [mm]	ø1/2 [ø12.7]				
Field drain pipe size		in. [mm]	I.D. 5/8 [16]				
Standard attachment			Installation Manual, Instruction Book				
Remark			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.				
Notes:						Unit converter	
*1.Nominal cooling conditions (subject to JIS B8615-1) Indoor: 27°C.D.B./19°C.W.B. (81°F.D.B./66°F.W.B.), Outdoor: 35°C.D.B. (95°F.D.B.) Pipe length: 7.5 m (24-9/16 ft), Level difference: 0 m (0 ft)						kcal/h = kW × 860 Btu/h = kW × 3,412 cfm = m³/min × 35.31 lb. = kg/0.4536	
*2.Nominal heating conditions (subject to JIS B8615-1) Indoor: 20°C.D.B. (68°F.D.B.), Outdoor: 7°C.D.B./6°C.W.B. (45°F.D.B./43°F.W.B.) Pipe length: 7.5 m (24-9/16 ft), Level difference: 0 m (0 ft)						Note: Above specification data is subject to rounding variation.	

3-2. ELECTRICAL PARTS SPECIFICATIONS

Service reference Parts name	Symbol	PMFY- M06NCMU-A	PMFY- M08NCMU-A	PMFY- M12NCMU-A	PMFY- M15NCMU-A	PMFY- M18NCMU-A
Room temperature detection thermistor	TH21	Resistance 32°F/15 kΩ, 50°F/9.6 kΩ, 68°F/6.3 kΩ, 77°F/5.4 kΩ, 86°F/4.3 kΩ, 104°F/3.0 kΩ				
Pipe temperature detection thermistor/liquid	TH22	Resistance 32°F/15 kΩ, 50°F/9.6 kΩ, 68°F/6.3 kΩ, 77°F/5.4 kΩ, 86°F/4.3 kΩ, 104°F/3.0 kΩ				
Pipe temperature detection thermistor/gas	TH23	Resistance 32°F/15 kΩ, 50°F/9.6 kΩ, 68°F/6.3 kΩ, 77°F/5.4 kΩ, 86°F/4.3 kΩ, 104°F/3.0 kΩ				
Fuse (Indoor controller board)	F1	T3.15AL250V				
Fan motor	MF	8 × 30W / RC0J30-SE				
Vane motor	MV1	MSBPC20 DC12V				
Linear expansion valve	LEV	DC12V Stepping motor drive (0-2000pulse) PAM-B40YGME / PAM-MD12ME				
Power supply terminal block	TB2	(L1, L2) Rated to 264V 15A *				
Transmission terminal block	TB5	(M1, M2, S) Rated to 250V 10A *				
MA-Remote controller terminal block	TB15	(1, 2) Rated to 250V 10A *				

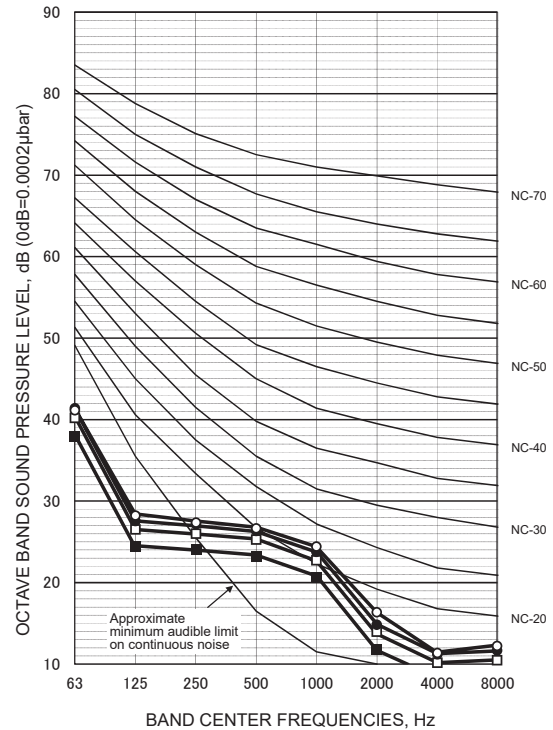
* Refer to WIRING DIAGRAM for the supplied voltage.

NOISE CRITERION CURVES



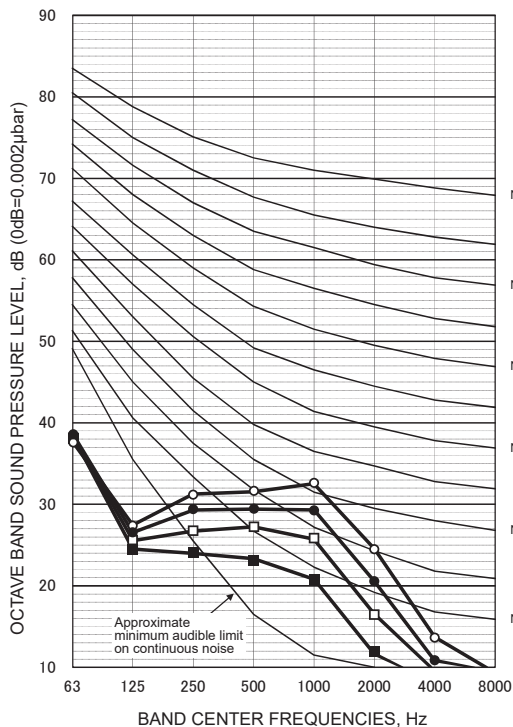
PMFY-M06NCMU-A

FAN	SPL (dB)	LINE
High	29	○—○
Medium 1	28	●—●
Medium 2	27	□—□
Low	25	■—■



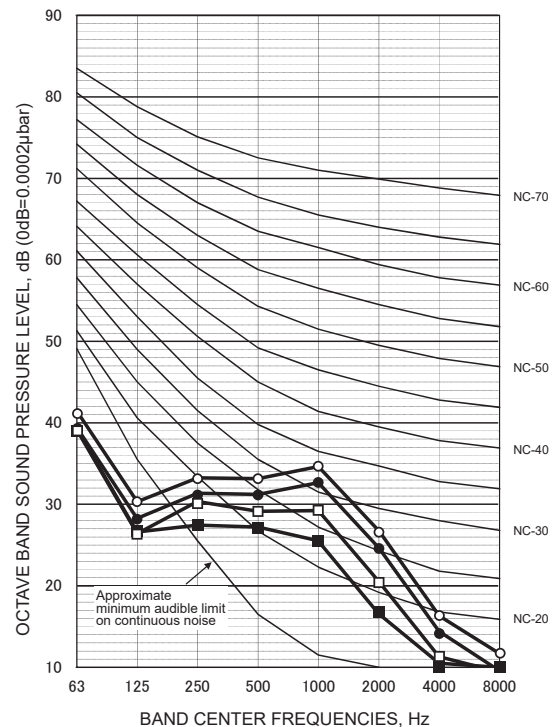
PMFY-M08NCMU-A

FAN	SPL (dB)	LINE
High	35	○—○
Medium 1	32	●—●
Medium 2	29	□—□
Low	25	■—■



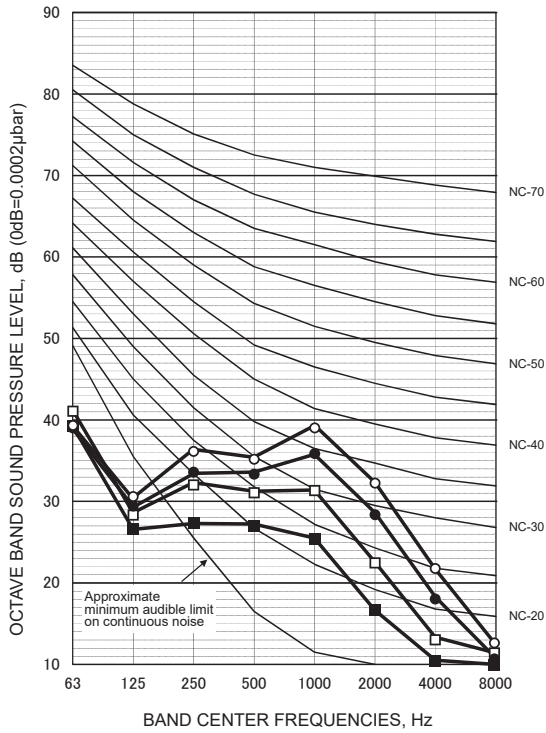
PMFY-M12NCMU-A

FAN	SPL (dB)	LINE
High	37	○—○
Medium 1	35	●—●
Medium 2	32	□—□
Low	29	■—■



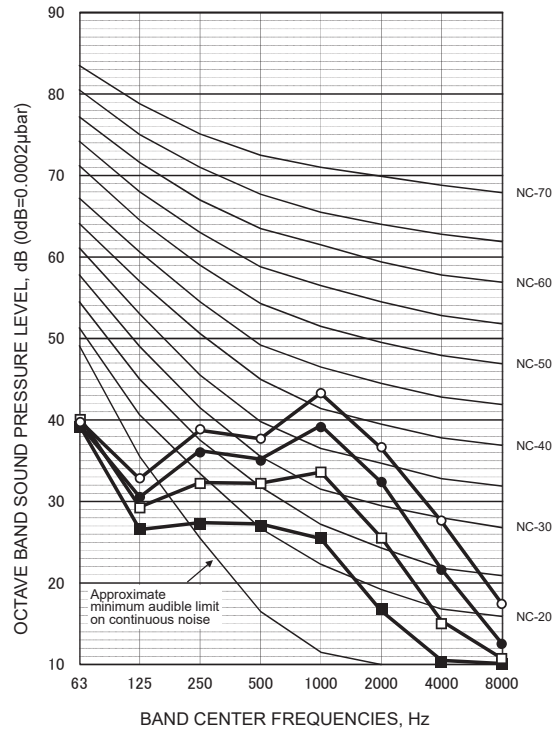
PMFY-M15NCMU-A

FAN	SPL (dB)	LINE
High	41	○—○
Medium 1	38	●—●
Medium 2	34	□—□
Low	29	■—■



PMFY-M18NCMU-A

FAN	SPL (dB)	LINE
High	45	○—○
Medium 1	41	●—●
Medium 2	36	□—□
Low	29	■—■

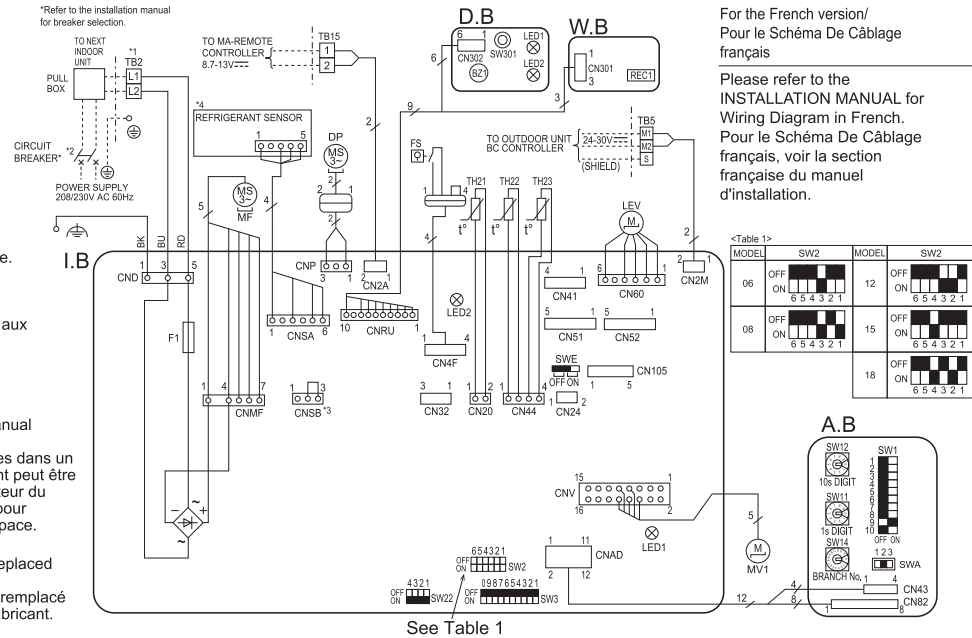




Please refer to the back side of the board box for an explanation of the symbols.

[LEGEND]

SYMBOL	NAME
TB2	TERMINAL POWER SUPPLY
TB5	BLOCK TRANSMISSION
TB15	MA-REMOTE CONTROLLER
A.B	ADDRESS BOARD
SWA	SWITCH FAN SPEED SELECTOR
SW1	MODE SELECTION
SW11	ADDRESS SETTING 1s DIGIT
SW12	ADDRESS SETTING 10s DIGIT
SW14	BRANCH No.



*1 Use copper supply wires.
Utiliser des fils d'alimentation en cuivre.

*2 A disconnect should be required by
local code.
Se procurer un sectionneur conforme aux
réglementations locales.

*3 When installing indoor units in a large
space, the refrigerant sensor can be
disabled by disconnecting the jumper
connector. Refer to the installation manual
for the definition of a large space.
Lors de l'installation d'unités intérieures dans un
grand espace, le capteur de réfrigérant peut être
désactivé en déconnectant le connecteur du
cavalier. Voir le manuel d'installation pour
savoir ce que représente un grand espace.

*4 This refrigerant sensor shall only be replaced
with manufacturer approved sensor.
Ce capteur de réfrigérant ne doit être remplacé
que par un capteur approuvé par le fabricant.

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME
I.B	INDOOR CONTROLLER BOARD	TH21	THERMISTOR ROOM TEMP. DETECTION (0°C / 15kΩ, 25°C / 5.4kΩ) (32°F / 15kΩ, 77°F / 5.4kΩ)
CN24	CONNECTOR EXTERNAL HEATER	TH22	PIPE TEMP. DETECTION/LIQUID (0°C / 15kΩ, 25°C / 5.4kΩ) (32°F / 15kΩ, 77°F / 5.4kΩ)
CN32	CONNECTOR REMOTE SWITCH	TH23	PIPE TEMP. DETECTION/GAS (0°C / 15kΩ, 25°C / 5.4kΩ) (32°F / 15kΩ, 77°F / 5.4kΩ)
CN51	CONNECTOR CENTRALLY CONTROL	D.B	DISPLAY BOARD
CN52	CONNECTOR REMOTE INDICATION	SW301	EMERGENCY OPERATION
CN105	CONNECTOR IT TERMINAL	LED1	LED(OPERATING INDICATOR)
F1	FUSE (T3.15AL250V)	LED2	LED(STANDBY FOR HEATING)
SW2	SWITCH CAPACITY CODE	BZ1	BUZZER
SW3	SWITCH MODE SELECTION	W.B	WIRELESS RECEIVING BOARD
SW22	SWITCH PAIR NO. SETTING	REC1	RECEIVING UNIT
SWE	SWITCH FAN-DRAIN PUMP (TEST MODE)	DP	DRAIN PUMP
LEV	LINEAR EXPANSION VALVE	FS	DRAIN FLOAT SWITCH
MF	FAN MOTOR		
MV1	VANE MOTOR		

LED on indoor controller board for service

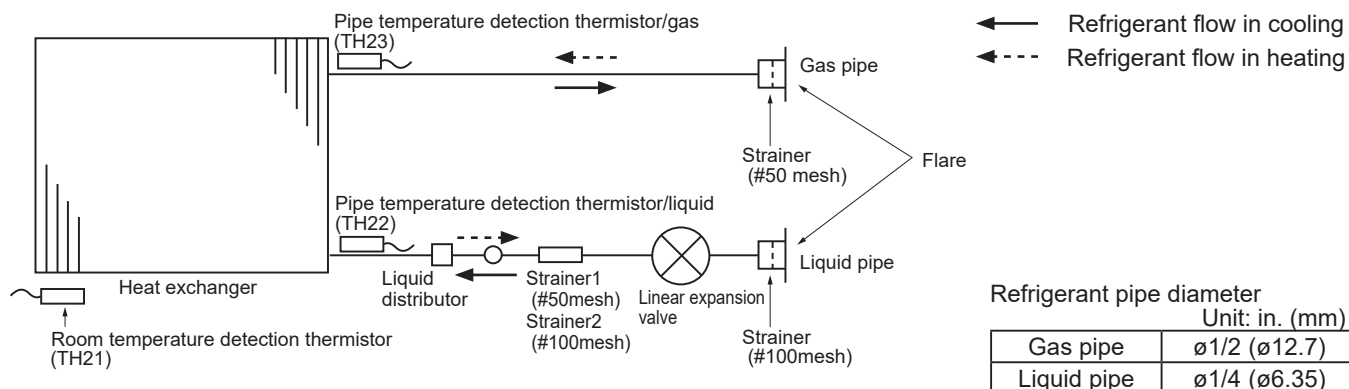
Symbol	Meaning	Function
LED1	Main power supply	Main power supply (Indoor unit) Power on → lamp is lit
LED2	Power supply for MA-Remote controller	Power supply for MA-Remote controller on → lamp is lit

NOTES:

- At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
- In case of using MA-Remote controller, please connect to TB15.
(Remote controller wire is non-polar.)
- In case of using M-NET, please connect to TB5.
(Transmission line is non-polar.)
- Symbol [S] of TB5 is the shield wire connection.
- Symbols used in wiring diagram are,
□ □ □ : terminal block, □ □ □ : connector.
- The setting of the SW2 dip switches differs in the capacity.
For the detail, see Table 1.
- The black square (■) in the wiring diagram indicates a switch position.

7

REFRIGERANT SYSTEM DIAGRAM

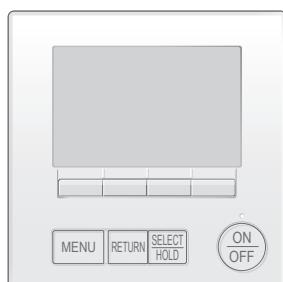


8

MICROPROCESSOR CONTROL

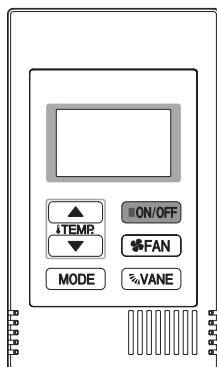
INDOOR UNIT CONTROL

8-1. COOL OPERATION



<How to operate>

- (1) Press ON/OFF button.
 - (2) Press [F1] button to display COOL.
 - (3) Press [F2] [F3] button to set the set temperature.
- Note:** The settable temperature range varies with the model of outdoor units and remote controller.



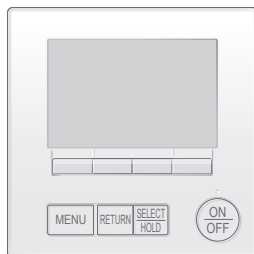
<How to operate>

- (1) Press POWER ON/OFF button.
 - (2) Press the operation MODE button to display COOL.
 - (3) Press the TEMP. button to set the set temperature.
- Note:** The set temperature changes 1°F when the or button is pressed one time. Cooling 67 to 87°F

Refer to "11-1. REMOTE CONTROLLER FUNCTIONS" for details.

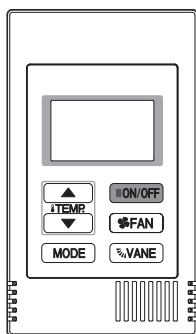
Control Mode	Control Details	Remarks														
1. Temperature adjustment function	1-1. Determining temperature adjustment function (Function to prevent restarting for 3 minutes) - Room temperature $\geq$ Set temperature + 1°F ...Thermo-ON - Room temperature < Set temperature - 1°F ...Thermo-OFF 1-2. Anti-freeze control ■ Condition to detect When the pipe temperature detection thermistor/liquid (TH22) detects 32°F or less in 16 minutes from thermo-ON, the anti-freeze control initiates, and the unit enters to the thermo-OFF. ■ Condition to release The timer which prevents reactivating is set for 3 minutes, and anti-freeze control is cancelled when any one of the following conditions has been satisfied: (1) Pipe temperature detection thermistor/liquid (TH22) reaches 50°F or above. (2) The condition of thermo-OFF has been completed by the thermostat. (3) The operation has changed to a mode other than COOLING.	The ON/OFF commands by the indoor unit thermostatic control are not an ON/OFF commands to the compressor but an open/close commands to the linear expansion valve. (The compressor stops only when the thermostatic control for all the indoor units connected to the same outdoor unit turns OFF.)														
2. Fan	By the remote controller setting (switch of 4 speeds + Auto) <table><tr><th>Type</th><th>Fan speed notch</th></tr><tr><td>4 speeds + Auto type</td><td></td></tr></table> When Auto is set, fan speed is changed depending on the value of: $\Delta T = \text{Room temperature} - \text{Set temperature}$ <table><tr><td>High</td><td>-----</td></tr><tr><td>Med2</td><td>-----</td></tr><tr><td>Med1</td><td>----</td></tr><tr><td>Low</td><td>-----</td></tr><tr><td></td><td>4.5°F 6.3°F 8.1°F 9.9°F 11.7°F 13.5°F ΔT</td></tr></table>	Type	Fan speed notch	4 speeds + Auto type		High	-----	Med2	-----	Med1	----	Low	-----		4.5°F 6.3°F 8.1°F 9.9°F 11.7°F 13.5°F ΔT	
Type	Fan speed notch															
4 speeds + Auto type																
High	-----															
Med2	-----															
Med1	----															
Low	-----															
	4.5°F 6.3°F 8.1°F 9.9°F 11.7°F 13.5°F ΔT															
3. Drain pump	3-1. Drain pump control - The drain pump will always run when the unit is in COOL or DRYING mode. (Regardless of the thermo ON/OFF) - Whenever the operation is changed over to the other modes (including Stop), the drain pump will stop pumping after approximately 3 minutes. 3-2. Float switch control - Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. - In the water: Detected that the float switch is ON for 15 seconds. - In the air : Detected that the float switch is OFF for 15 seconds. Float SW															
4. Vane (up/down vane change)	4-1. The initial vane setting for COOL mode is the horizontal position. 4-2. Vane position: Horizontal →Downward A →Downward B →Downward C→Downward D→Swing→Auto 4-3. Restriction of the downward vane setting If the vane position is set to Downward A/B/C/D in Med1, Med2, or Low, the vane will return to the horizontal position after 1 hour has passed.	"1h" appears on the wired remote controller.														

8-2. DRYING OPERATION



<How to operate>

- (1) Press ON/OFF button.
- (2) Press [F1] button to display DRYING.
- (3) Press [F2] [F3] button to set the set temperature.



<How to operate>

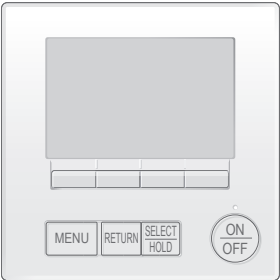
- (1) Press POWER ON/OFF button.
- (2) Press the operation MODE button to display DRYING.
- (3) Press the TEMP. button to set the set temperature.

Note: The set temperature changes 1°F when the ∇ or Δ button is pressed one time. Dry 67 to 87°F

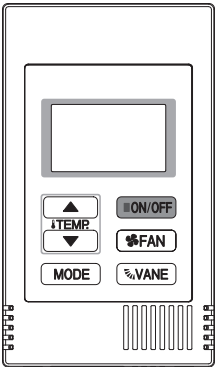
Refer to "11-1. REMOTE CONTROLLER FUNCTIONS" for details.

Control Mode	Control Details	Remarks																															
1. Temperature adjustment function	1-1. Determining temperature adjustment function (Function to prevent restarting for 3 minutes) Setting the Dry thermo by the thermostat signal and the room temperature (TH21). - Room temperature ≥ Set temperature + 1°F …Thermostat signal-ON - Room temperature < Set temperature – 1°F …Thermostat signal-OFF																																
	<table><tr><td rowspan="2">Room temperature</td><td colspan="2">3 minutes passed since starting operation</td><td rowspan="2">Dry thermo-ON time (min)</td><td rowspan="2">Dry thermo-OFF time (min)</td></tr><tr><td>Thermostat signal</td><td>Room temperature (T1)</td></tr><tr><td rowspan="4">Over 64°F</td><td rowspan="4">ON</td><td>T1 ≥ 83°F</td><td>9</td><td>3</td></tr><tr><td>83°F > T1 ≥ 79°F</td><td>7</td><td>3</td></tr><tr><td>79°F > T1 ≥ 75°F</td><td>5</td><td>3</td></tr><tr><td>75°F > T1</td><td>3</td><td>3</td></tr><tr><td></td><td>OFF</td><td>Unconditional</td><td>3</td><td>10</td></tr><tr><td>Below 64°F</td><td colspan="4">Dry thermo OFF</td></tr></table>	Room temperature	3 minutes passed since starting operation		Dry thermo-ON time (min)	Dry thermo-OFF time (min)	Thermostat signal	Room temperature (T1)	Over 64°F	ON	T1 ≥ 83°F	9	3	83°F > T1 ≥ 79°F	7	3	79°F > T1 ≥ 75°F	5	3	75°F > T1	3	3		OFF	Unconditional	3	10	Below 64°F	Dry thermo OFF				
	Room temperature		3 minutes passed since starting operation				Dry thermo-ON time (min)	Dry thermo-OFF time (min)																									
		Thermostat signal	Room temperature (T1)																														
	Over 64°F	ON	T1 ≥ 83°F	9	3																												
			83°F > T1 ≥ 79°F	7	3																												
			79°F > T1 ≥ 75°F	5	3																												
			75°F > T1	3	3																												
		OFF	Unconditional	3	10																												
	Below 64°F	Dry thermo OFF																															
1-2. Anti-freeze control No control function																																	
2. Fan	Indoor fan operation controlled depends on the compressor conditions.																																
	<table><tr><td>Dry thermo</td><td colspan="2">Fan speed notch</td></tr><tr><td>ON</td><td colspan="2">Low</td></tr><tr><td rowspan="2">OFF</td><td>Excluding the following</td><td>Stop</td></tr><tr><td>Room temp. < 64°F</td><td>Low</td></tr></table>	Dry thermo	Fan speed notch		ON	Low		OFF	Excluding the following	Stop	Room temp. < 64°F	Low																					
	Dry thermo	Fan speed notch																															
	ON	Low																															
	OFF	Excluding the following	Stop																														
		Room temp. < 64°F	Low																														
	Note: Fan speed change is not allowed during DRYING operation.																																
3. Drain pump	Operates as it would in COOL operation.																																
4. Vane (up/down vane change)	Settings are the same in DRYING operation as they are in COOL operation.																																

8-3. FAN OPERATION

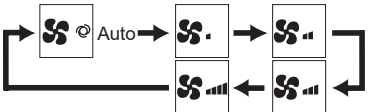
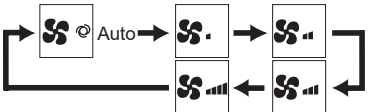
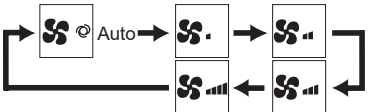


- <How to operate>
- (1) Press ON/OFF button.
 - (2) Press [F1] button to display FAN.

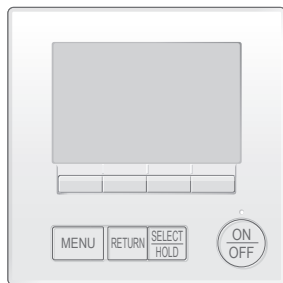


- <How to operate>
- (1) Press POWER ON/OFF button.
 - (2) Press the operation MODE button to display FAN.

Refer to "11-1. REMOTE CONTROLLER FUNCTIONS" for details.

Control Mode	Control Details	Remarks				
1. Temperature adjustment function	Set by remote controller. <table border="1"><thead><tr><th>Type</th><th>Fan speed notch</th></tr></thead><tbody><tr><td>4 speeds + Auto type</td><td></td></tr></tbody></table> When Auto is set, fan speed becomes Low.	Type	Fan speed notch	4 speeds + Auto type		
Type	Fan speed notch					
4 speeds + Auto type						
2. Drain pump	2-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions has been satisfied: (1) ON for 3 minutes after the operation mode is switched from COOL or DRYING to another operation mode (FAN). (2) ON for 6 minutes after the float switch is submerged in the water when the float switch control judges the sensor is in the water. 2-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds.	• Operates as it would in COOL operation.				
3. Vane (up/down vane change)	Same as the control performed during the COOL operation, but with no restriction on the vane's downward blow setting.					

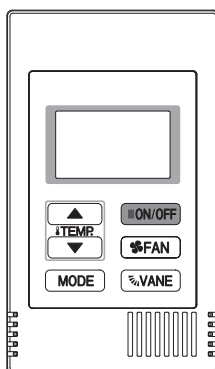
8-4. HEAT OPERATION



<How to operate>

- (1) Press ON/OFF button.
- (2) Press [F1] button to display HEAT.
- (3) Press [F2] [F3] button to set the set temperature.

Note: The settable temperature range varies with the model of outdoor units and remote controller.

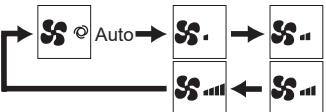
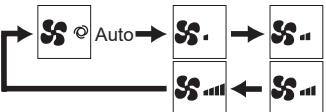
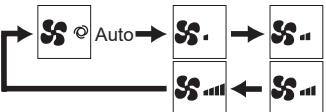


<How to operate>

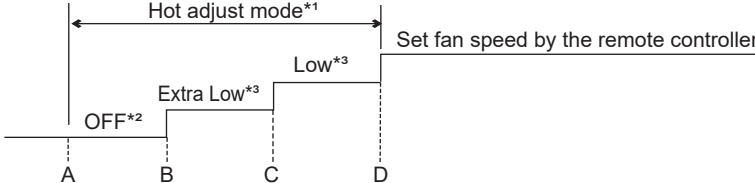
- (1) Press POWER ON/OFF button.
- (2) Press the operation MODE button to display HEAT.
- (3) Press the TEMP. button to set the set temperature.

Note: The set temperature changes 1°F when the ∇ or Δ button is pressed one time. Heating 63 to 83°F

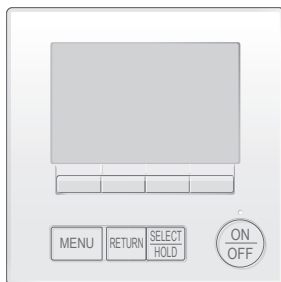
Refer to "11-1. REMOTE CONTROLLER FUNCTIONS" for details.

Control Mode	Control Details	Remarks														
1. Temperature adjustment function	1-1. Determining temperature adjustment function (Function to prevent restarting for 3 minutes) - Room temperature < Set temperature -1°F ...Thermo-ON - Room temperature ≥ Set temperature +1°F ...Thermo-OFF															
2. Fan	By the remote controller setting (switch of 4 speeds + Auto) <table border="1"><thead><tr><th>Type</th><th>Fan speed notch</th></tr></thead><tbody><tr><td>4 speeds + Auto type</td><td></td></tr></tbody></table> When Auto is set, fan speed is changed depending on the value of: $\Delta T = \text{Set temperature} - \text{Room temperature}$ <table border="1"><thead><tr><th>Fan Speed</th><th>ΔT Range (°F)</th></tr></thead><tbody><tr><td>High</td><td>12.6°F - 14.4°F</td></tr><tr><td>Med2</td><td>10.8°F - 12.6°F</td></tr><tr><td>Med1</td><td>9.0°F - 10.8°F</td></tr><tr><td>Low</td><td>5.4°F - 7.2°F</td></tr></tbody></table> Give priority to under-mentioned controlled mode 2-1. Hot adjust mode 2-2. Residual heat exclusion mode 2-3. Thermo-OFF mode (When the compressor off the temperature adjustment function) 2-4. Cool air prevention mode (Defrosting mode)	Type	Fan speed notch	4 speeds + Auto type		Fan Speed	ΔT Range (°F)	High	12.6°F - 14.4°F	Med2	10.8°F - 12.6°F	Med1	9.0°F - 10.8°F	Low	5.4°F - 7.2°F	
Type	Fan speed notch															
4 speeds + Auto type																
Fan Speed	ΔT Range (°F)															
High	12.6°F - 14.4°F															
Med2	10.8°F - 12.6°F															
Med1	9.0°F - 10.8°F															
Low	5.4°F - 7.2°F															

Continue to the next page.

Control Mode	Control Details	Remarks													
	2-1. Hot adjust mode The fan controller becomes hot adjust mode for the following conditions. (1) When starting HEAT operation (2) When the temperature adjustment function changes from OFF to ON (3) When release HEAT defrosting operation  A: Hot adjust mode starts. B: 5 minutes have passed since the condition A or the indoor liquid pipe temperature reached 86°F or more. C: 5 minutes have passed since the condition A or the indoor liquid pipe temperature reached 95°F or more. D: 2minutes have passed since the condition C. (Terminating the hot adjust mode) <table><tr><th colspan="2" rowspan="2"></th><th colspan="2">DIP SW 1-8</th></tr><tr><th>ON</th><th>OFF</th></tr><tr><td rowspan="2">DIP SW 1-7</td><td>ON</td><td>B to C: Extra Low C to D: Low</td><td>B to C: Low C to D: Low</td></tr><tr><td>OFF</td><td>B to C: Setting airflow C to D: Setting airflow</td><td>B to C: Extra Low C to D: Low Note: Initial setting</td></tr></table>			DIP SW 1-8		ON	OFF	DIP SW 1-7	ON	B to C: Extra Low C to D: Low	B to C: Low C to D: Low	OFF	B to C: Setting airflow C to D: Setting airflow	B to C: Extra Low C to D: Low Note: Initial setting	*1 [Heat Standby] will be displayed during the hot adjust mode. *2 The step change of A to B will not be performed at the first thermo-ON mode since HEAT operation has started. *3 The fan speed varies according to the setting of DIP SW1-7 and 1-8 as shown in the table below.
				DIP SW 1-8											
		ON	OFF												
DIP SW 1-7	ON	B to C: Extra Low C to D: Low	B to C: Low C to D: Low												
	OFF	B to C: Setting airflow C to D: Setting airflow	B to C: Extra Low C to D: Low Note: Initial setting												
	2-2. Residual heat exclusion mode When the condition changes the auxiliary heater ON to OFF (temperature adjustment function, or operation stop, etc.), the indoor fan operates in Low mode for 1 minute. 2-3. Thermo-OFF mode When the temperature adjustment function changes to OFF, the indoor fan operates in Extra low. 2-4. Heat defrosting mode The indoor fan stops.	• This control is same for the model without auxiliary heater.													
3. Drain pump	3-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions has been satisfied: (1) ON for 3 minutes after the operation mode is switched from COOL or DRYING to another operation mode (FAN). (2) ON for 6 minutes after the float switch is submerged in the water when the float switch control judges the sensor is in the water. 3-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds.	• Operates as it would in COOL operation.													
4. Vane control (up/down vane change)	4-1. Initial setting: OFF → HEAT…last setting When the last setting is Swing … Downward D When changing the mode from exception of HEAT to HEAT operation …Downward D 4-2. Vane position: Horizontal →Downward A →Downward B →Downward C→Downward D→Swing→Auto 4-3. Restriction of vane position The vane is horizontally fixed for the following modes. (The control by the remote controller is temporally invalidated and control by the unit.) • Thermo-OFF • Hot adjust mode (Extra low) • Heat defrost mode														

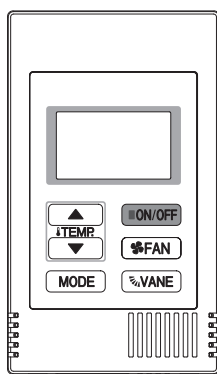
8-5. AUTO OPERATION [AUTOMATIC COOL/HEAT CHANGE OVER OPERATION]



<How to operate>

- (1) Press ON/OFF button.
- (2) Press [F1] button to display AUTO.
- (3) Press [F2] [F3] button to set the set temperature.

Note: The settable temperature range varies with the model of outdoor units and remote controller.



<How to operate>

- (1) Press POWER ON/OFF button.
- (2) Press the operation MODE button to display AUTO.
- (3) Press the TEMP. button to set the set temperature.

Note: The set temperature changes 1°F when the ∇ or Δ button is pressed one time. Automatic 67 to 83°F

Refer to "11-1. REMOTE CONTROLLER FUNCTIONS" for details.

Control Mode	Control Details	Remarks
1. Initial value of operation mode	HEAT mode for room temperature $\leq$ Set temperature COOL mode for room temperature $\geq$ Set temperature	
2. Mode change	(1) HEAT mode $\rightarrow$ COOL mode Room temperature $\geq$ Set temperature + 3°F and 3 minutes have passed. (2) COOL mode $\rightarrow$ HEAT mode Room temperature $\leq$ Set temperature - 3°F and 3 minutes have passed.	
3. COOL mode	Operates as it would in COOL operation.	
4. HEAT mode	Operates as it would in HEAT operation.	

8-6. WHEN UNIT IS STOPPED CONTROL MODE

Control Mode	Control Details	Remarks
1. Drain pump	1-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions has been satisfied: (1) ON for 3 minutes after the operation mode is switched from COOL or DRYING to another operation mode (FAN). (2) ON for 6 minutes after the float switch is submerged in the water when the float switch control judges the sensor is in the water.	
	1-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds	• Operates as it would in COOL operation.

9-1. COUNTERMEASURE FOR ERROR DURING TEST RUN

If a problem occurs during test run, a code number will appear on the remote controller (or LED on the outdoor unit), and the air conditioning system will automatically cease operating.

Refer to the connected outdoor unit service manual in order to determine the nature of the abnormality and apply corrective measure.

Error code	Trouble	Detected Unit				Remarks
		Indoor	Outdoor	Power Supply Interface	Remote Controller	
0403	Serial communication error/Model selection SW error		○			Outdoor unit multi controller board ~ Power board communication trouble
1102	Compressor temperature		○			Check delay code 1202
1300	Low pressure		○			
1302	High pressure		○			Check delay code 1402
1500	Superheat due to low discharge temperature		○			Check delay code 1600
1501	Refrigerant shortage		○			Check delay code 1601
	Closed valve in cooling mode		○			Check delay code 1501
1503	Freeze protection of branch box or indoor unit		○			
1508	4-way valve trouble in heating mode		○			Check delay code 1608
1521	Refrigerant leakage	○				
1522	Refrigerant leakage or refrigerant sensor error	○				
2500	Water leakage	○				
2502	Drain overflow protection	○				
2503	Drain sensor abnormality	○				
4100	Compressor current interruption (locked compressor)		○			Check delay code 4350
4114	Fan motor error	○				
4130	Power source failure of control board			○		
4136	Circuit failure of safety shut-off valve			○		
4210	Compressor overcurrent interruption		○			
4220	Undervoltage/overvoltage/PAM error/L1 open phase/power synchronization signal error		○			Check delay code 4320
4230	Heat Sink temperature		○			Check delay code 4330
4250	Power module		○			Check delay code 4350
4400	Fan trouble		○			Check delay code 4500
5101	Air inlet thermistor (TH21) open/short	○				
	Compressor temperature thermistor (TH4) open/short		○			Check delay code 1202
5102	Liquid pipe temperature thermistor (TH22) open/short	○				
	Suction pipe temperature thermistor (TH6) open/short		○			Check delay code 1211
5103	Gas pipe temperature thermistor (TH23) open/short	○				
5105	Outdoor liquid pipe temperature thermistor (TH3) open/short		○			Check delay code 1205
5106	Ambient thermistor (TH7) open/short		○			Check delay code 1221
5109	HIC pipe temperature thermistor (TH2) open/short		○			Check delay code 1222
5110	Heat Sink temperature thermistor (TH8) open/short		○			Check delay code 1214
5201	High pressure sensor (63HS)		○			Check delay code 1402
5202	Low pressure sensor (63LS)		○			Check delay code 1400
5558	Refrigerant sensor error	○				
5701	Contact failure of drain float switch	○				
6600	Duplex address error	○	○	○	○	Only M-NET Remote controller is detected.
6602	Transmission processor hardware error	○	○	○	○	Only M-NET Remote controller is detected.
6603	Transmission bus BUSY error	○	○	○	○	Only M-NET Remote controller is detected.
6606	Signal communication error with transmission processor	○	○	○	○	Only M-NET Remote controller is detected.
6607	No ACK error	○	○	○	○	Only M-NET Remote controller is detected. *
6608	No response frame error	○	○	○	○	Only M-NET Remote controller is detected. *
6815	MA supervisor remote controller communication error	○				
6831	MA communication receive error (no receive signal)	○			○	Only MA Remote controller is detected.
6832	MA communication send error	○			○	Only MA Remote controller is detected.
6833	MA communication send error	○			○	Only MA Remote controller is detected.
6834	MA communication receive error	○			○	Only MA Remote controller is detected.
7100	Total capacity error		○			
7101	Capacity code error	○	○			
7102	Connecting excessive number of units		○	○		
7105	Address setting error		○			
7118	Refrigerant leak detection system error		○	○		
7119	Connection error of M-NET line (origin)	○		○		
7120	Connection error of M-NET line (not origin)	○		○		
7121	Power supply failure	○		○		
7123	Alarm Kit connection error			○		
7130	Incompatible unit combination		○			

Note: When the outdoor unit detects No ACK error/No response error, an object indoor unit is treated as a stop, and not assumed to be abnormal.

*Abnormality for PWFY series

9-2. HOW TO CHECK THE PARTS

Parts name	Checkpoints																						
Room temperature detection thermistor (TH21) Pipe temperature detection thermistor/liquid (TH22) Pipe temperature detection thermistor/gas (TH23)	Disconnect the connector then measure the resistance with a multimeter. (At the ambient temperature 50 to 86°F) <table><tr><th>Normal</th><td rowspan="2">Refer to “9-2-1. Thermistor”</td></tr><tr><td>4.3 to 9.6 kΩ</td></tr></table>	Normal	Refer to “9-2-1. Thermistor”	4.3 to 9.6 kΩ																			
Normal	Refer to “9-2-1. Thermistor”																						
4.3 to 9.6 kΩ																							
Vane motor (MV1) 	Measure the resistance between the terminals with a multimeter. (At the ambient temperature 77°F) <table><tr><th colspan="4">Normal</th></tr><tr><td>⑩ - ⑨ Red - Sky blue</td><td>⑩ - ⑧ Red - Sky blue</td><td>⑩ - ⑦ Red - Sky blue</td><td>⑩ - ⑥ Red - Sky blue</td></tr><tr><td colspan="4">300 Ω ± 7%</td></tr></table>	Normal				⑩ - ⑨ Red - Sky blue	⑩ - ⑧ Red - Sky blue	⑩ - ⑦ Red - Sky blue	⑩ - ⑥ Red - Sky blue	300 Ω ± 7%													
Normal																							
⑩ - ⑨ Red - Sky blue	⑩ - ⑧ Red - Sky blue	⑩ - ⑦ Red - Sky blue	⑩ - ⑥ Red - Sky blue																				
300 Ω ± 7%																							
Fan motor (MF)	Refer to “9-2-3. DC Fan motor (fan motor/indoor controller board)																						
Linear expansion valve (LEV) 	Disconnect the connector then measure the resistance valve with a multimeter. (Coil temperature 68°F) <table><tr><th colspan="4">Normal</th></tr><tr><td>(1) - (5) White - Red</td><td>(2) - (6) Yellow - Red</td><td>(3) - (5) Orange - Red</td><td>(4) - (6) Blue - Red</td></tr><tr><td colspan="4">150 Ω ± 10%</td></tr></table>	Normal				(1) - (5) White - Red	(2) - (6) Yellow - Red	(3) - (5) Orange - Red	(4) - (6) Blue - Red	150 Ω ± 10%													
Normal																							
(1) - (5) White - Red	(2) - (6) Yellow - Red	(3) - (5) Orange - Red	(4) - (6) Blue - Red																				
150 Ω ± 10%																							
Drain pump (DP) 	① Check if the drain float switch works properly. ② Check if the drain pump works and drains water properly in cooling operation. ③ If no water drains, confirm that the error code 2502 will not be displayed 10 minutes after the operation starts. Note: The drain pump for this model is driven by the internal DC motor, so it is not possible to measure the resistance between the terminals. Normal: Red-Black: Input 13 VDC → The pump motor starts to rotate.																						
Drain float switch (FS) 	Measure the resistance between the terminals with a multimeter. <table><tr><th>State of moving part</th><th>Normal</th><th>Abnormal</th><th>Drain float switch connector terminal</th></tr><tr><td>UP</td><td>Short</td><td>Other than short</td><td>①(+)-②(-)</td></tr><tr><td>DOWN</td><td>Open</td><td>Other than open</td><td>①(+)-②(-)</td></tr><tr><td>-</td><td>Short</td><td>Other than short</td><td>③(+)-④(-)</td></tr></table> <table><tr><th>Float position</th><th>Float switch</th><th>Float switch</th></tr><tr><td rowspan="2">Normal</td><td>Open</td><td>Short</td></tr></table>	State of moving part	Normal	Abnormal	Drain float switch connector terminal	UP	Short	Other than short	①(+)-②(-)	DOWN	Open	Other than open	①(+)-②(-)	-	Short	Other than short	③(+)-④(-)	Float position	Float switch	Float switch	Normal	Open	Short
State of moving part	Normal	Abnormal	Drain float switch connector terminal																				
UP	Short	Other than short	①(+)-②(-)																				
DOWN	Open	Other than open	①(+)-②(-)																				
-	Short	Other than short	③(+)-④(-)																				
Float position	Float switch	Float switch																					
Normal	Open	Short																					
	Refrigerant sensor 	Measure the resistance between the terminals with a multimeter. <table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>Below 10 Ω</td><td>Open (10 Ω or more)</td></tr></table> After turning off the indoor unit breaker and leaving it for 5 minutes, measure the resistance value between the sensor terminals. < Back side of the sensor > Measure the both sides of the sensor pin.	Normal	Abnormal	Below 10 Ω	Open (10 Ω or more)																	
Normal	Abnormal																						
Below 10 Ω	Open (10 Ω or more)																						

9-2-1. Thermistor

<Thermistor characteristic graph>

Thermistors for
lower temperature

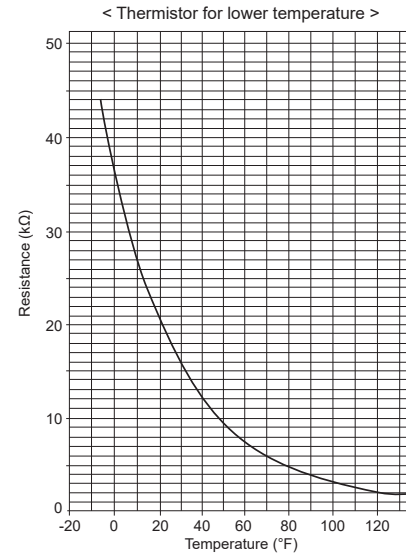
Room temperature detection thermistor (TH21)
Pipe temperature detection thermistor/liquid (TH22)
Pipe temperature detection thermistor/gas (TH23)

Thermistor $R_0 = 15 \text{ k}\Omega \pm 3\%$

Fixed number of $B = 3480 \pm 2\%$

$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273 + (t - 32) / 1.8} - \frac{1}{273} \right) \right\}$$

30°F	15.8 kΩ
50°F	9.6 kΩ
70°F	6.0 kΩ
80°F	4.8 kΩ
90°F	3.9 kΩ
100°F	3.2 kΩ

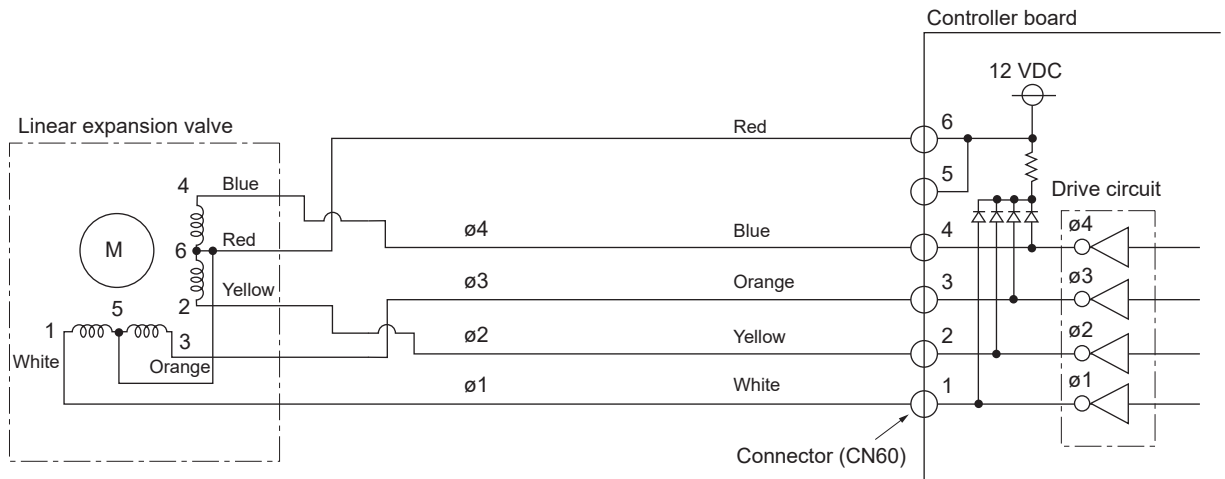


9-2-2. Linear expansion valve

① Operation summary of the linear expansion valve

- The linear expansion valve opens/closes through stepping motor after receiving the pulse signal from the indoor controller board.
- The valve position can be changed in proportion to the number of the pulse signal.

<Connection between the indoor controller board and the linear expansion valve>



Note : Since the number of the connector at the controller board side and the relay connector are different, follow the color of the lead wire.

9-2-3. DC Fan motor (fan motor/indoor controller board)

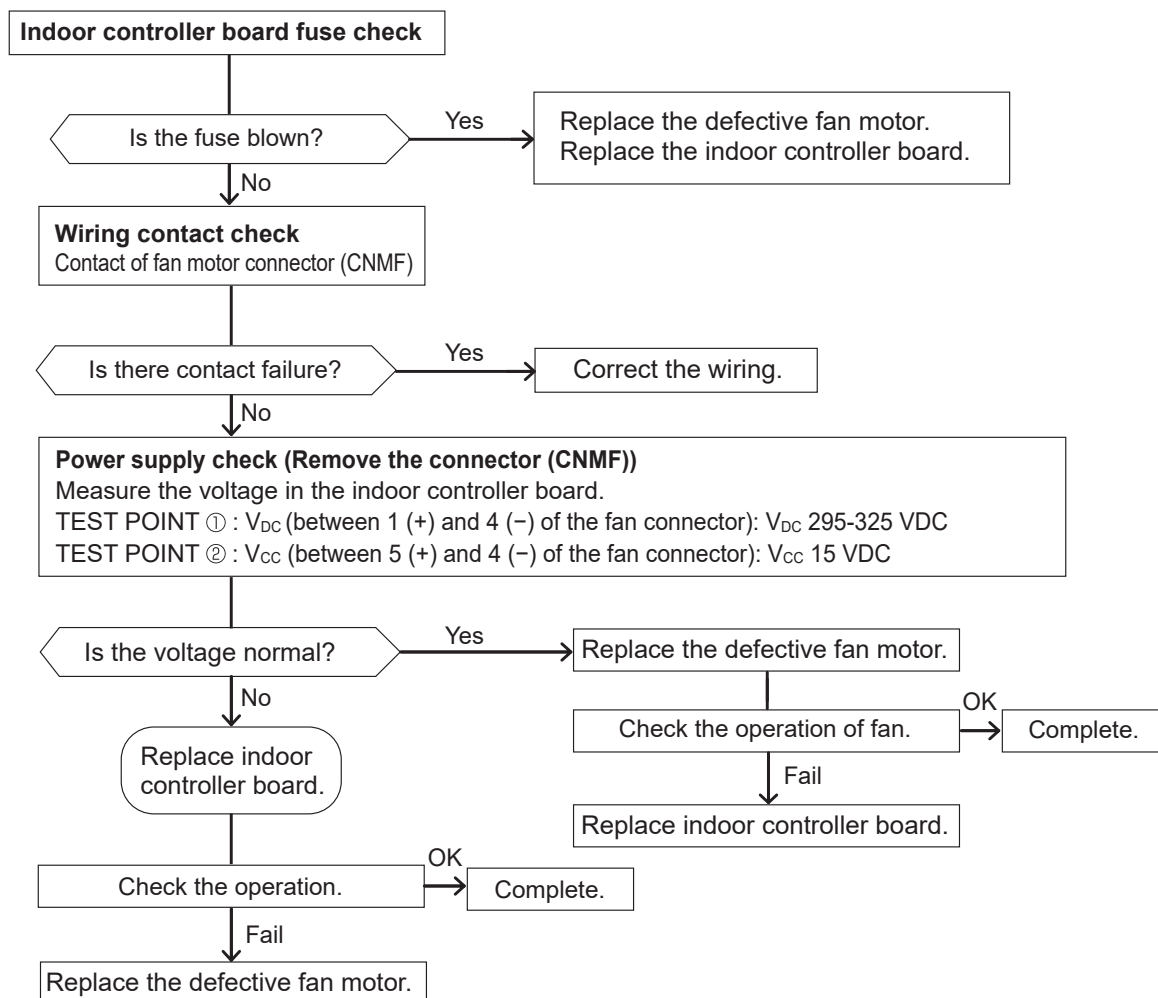
Check method of indoor fan motor (fan motor/indoor controller board)

① Notes

- High voltage is applied to the connector (CNMF) for the fan motor. Pay attention to the service.
- Do not pull out the connector (CNMF) for the motor with the power supply on.
(It will damage the indoor controller board and fan motor)

② Self check

Conditions : The indoor fan cannot turn around.



<Output pulse signal and the valve operation>

Output (Phase)	Output			
	1	2	3	4
ø1	ON	OFF	OFF	ON
ø2	ON	ON	OFF	OFF
ø3	OFF	ON	ON	OFF
ø4	OFF	OFF	ON	ON

The output pulse shifts in below order.

Closing a valve: 1 → 2 → 3 → 4 → 1

Opening a valve: 4 → 3 → 2 → 1 → 4

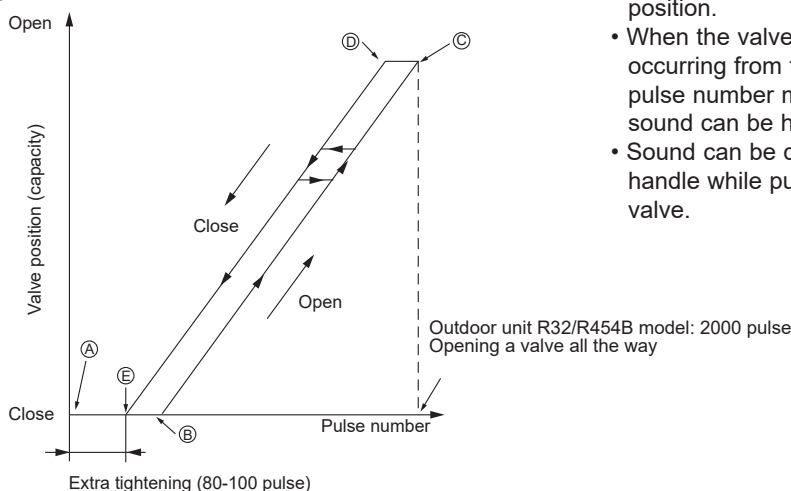
Notes:

- When the linear expansion valve operation stops, all output phases become OFF.
- At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will lock and vibrate.

Notes:

- When the power is turned on, 2200 pulse closing the valve signal will be sent till it goes to point ① in order to define the valve position.
- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valves, however, when the pulse number moves from ⑤ to ① or when the valve is locked, more sound can be heard than in a normal situation.
- Sound can be detected by placing the ear against the screw driver handle while putting the screw driver tip to the linear expansion valve.

② Linear expansion valve operation



③ Troubleshooting

Symptom	Checkpoints	Countermeasures
Operation circuit failure of the microprocessor	Disconnect the connector on the controller board, then connect LED for checking. 1 kΩ LED When power is turned on, pulse signals will output for 10 seconds. There must be some defects in the operation circuit if the LED does not light while the signals are output or keeps lighting even after the signals stop.	Exchange the indoor controller board at drive circuit failure.
Linear expansion valve mechanism is locked.	Motor will idle and make a ticking noise when the motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality.	Exchange the linear expansion valve.
Short or breakage of the motor coil of the linear expansion valve	Measure the resistance between each coil (white-red, yellow-red, orange-red, blue-red) using a multimeter. It is normal if the resistance is in the range of 150 Ω ±10%.	Exchange the linear expansion valve.
Valve does not close completely.	To check the linear expansion valve, operate the indoor unit in fan mode and at the same time operate other indoor units in cooling mode, then check the pipe temperature <liquid pipe temperature> of the indoor unit by the outdoor multi controller board operation monitor. During fan operation, the linear expansion valve is closed completely and if there is any leaking, detecting temperature of the thermistor will go lower. If the detected temperature is much lower than the temperature indicated in the remote controller, it means the valve is not closed all the way. It is not necessary to exchange the linear expansion valve, if the leakage is small and not affecting normal operation. Thermistor (Liquid pipe) Linear expansion valve	If large amount of refrigerant is leaked, exchange the linear expansion valve.
Wrong connection of the connector or contact failure	Check the color of lead wire and missing terminal of the connector.	Disconnect the connector at the controller board, then check the continuity.

9-2-4. Refrigerant sensor

Error code

1521/1522
(FL)

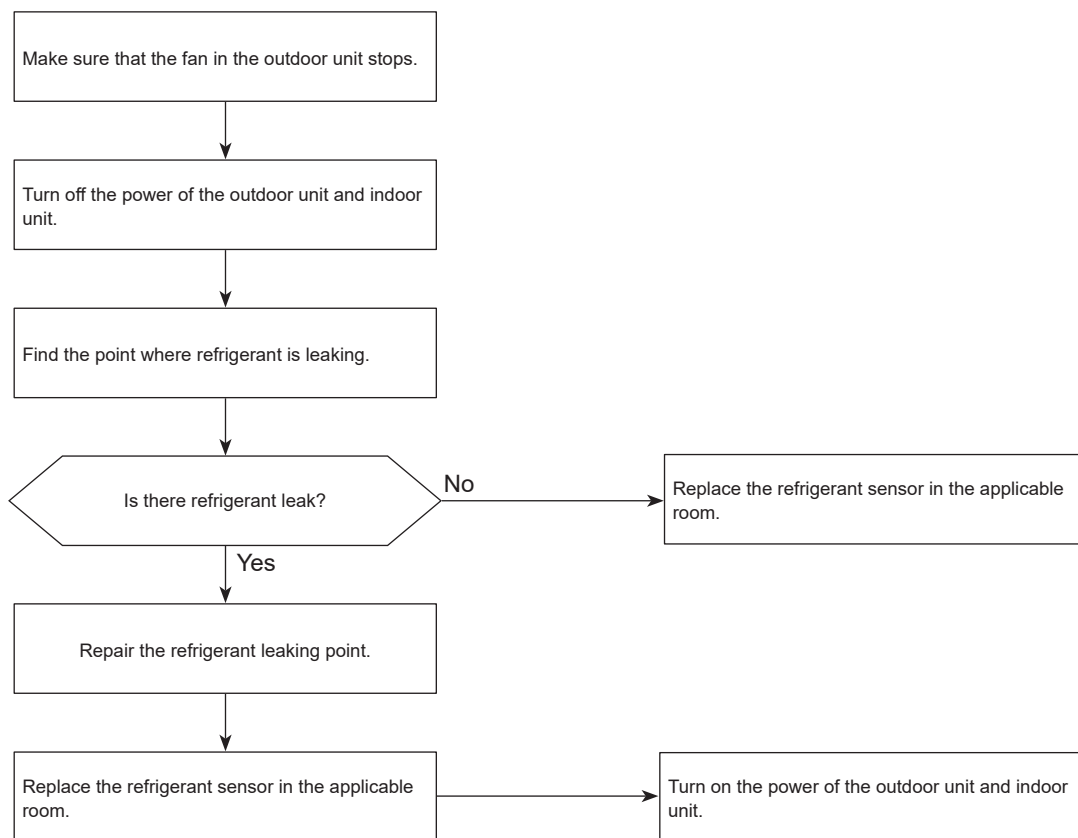
Refrigerant leakage

Abnormal points and detection methods	Causes and checkpoints
Refrigerant is leaking from the air conditioner. The refrigerant sensor has detected refrigerant leak. Refrigerant is leaking in the room where the alarm is beeping. (Optional) A refrigerant sensor has failed.	- Refrigerant leak from air conditioner - Refrigerant leak from piping - False detection (The refrigerant sensor reacted to other gas.)

Notes:

- When this error occurs, both of the alarm in the applicable room and the supervisor mode alarm beep. Also, the system closes the shut-off valve and performs refrigerant recovery.
- When this error occurs, ventilate the room.
- When this error occurs, do not turn off the power until the fan in the outdoor unit stops.

Diagnosis of failure



Error code	
5558 (FH)	Refrigerant sensor error

Abnormal points and detection methods	Causes and checkpoints
A refrigerant sensor has failed.	A refrigerant sensor connected to an M-IC has failed.

Diagnosis of failure

Check for a disconnected or loose connector (CNSA) on the indoor controller board.
When the shut off valve kit is installed, check for disconnected or loose wiring on the terminal block.

Is the connector or wire correctly connected?

No

Yes

Connect it properly.

Replace the refrigerant sensor. *1, *2

Note:

- Always turn off the power before connecting or disconnecting a connector.

*1. To confirm that the error does not occur, wait for one minute after replacing the refrigerant sensor.

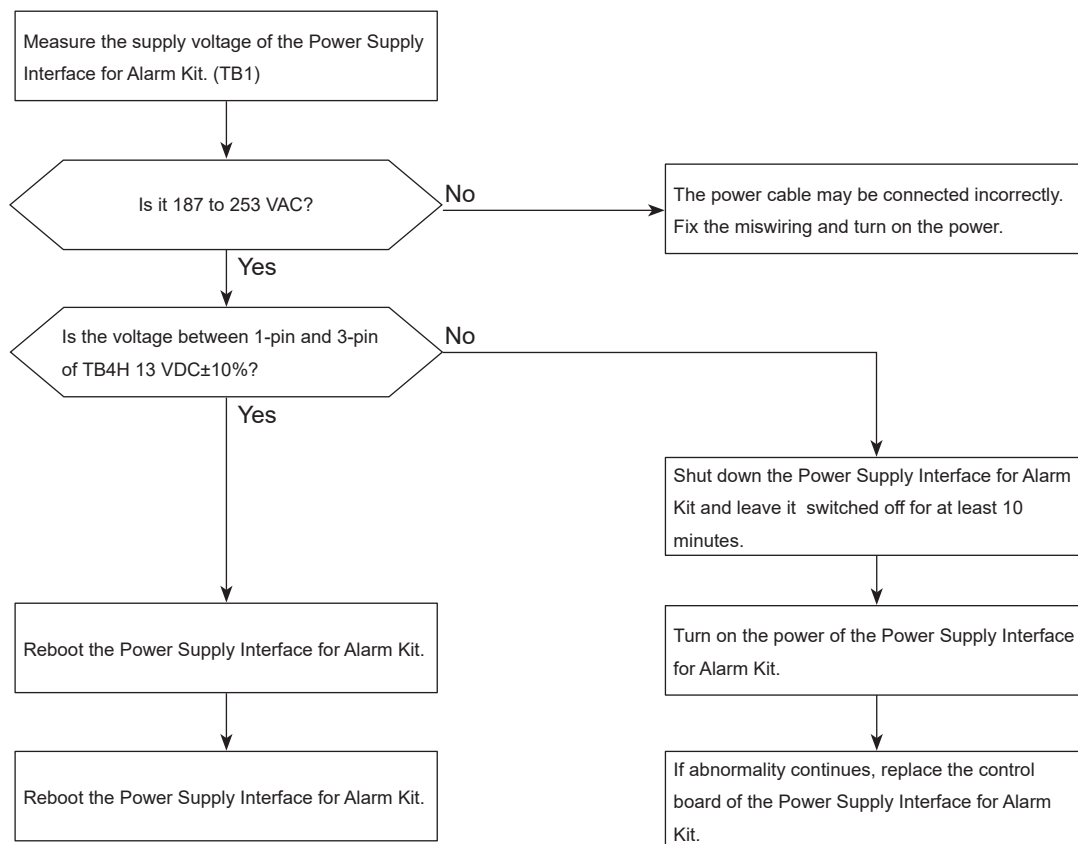
The output of the refrigerant sensor will be unstable for about one minute, so the error will not occur within this period.

*2. Turn off the power of the indoor unit that requires the refrigerant sensor to be replaced.

Power source failure of control board

Abnormal points and detection methods	Causes and checkpoints
When the power is not supplied to the Power Supply Interface for Alarm Kit	- The power is not supplied to the Power Supply Interface for Alarm Kit - The Power Supply Interface for Alarm Kit is not correctly connected

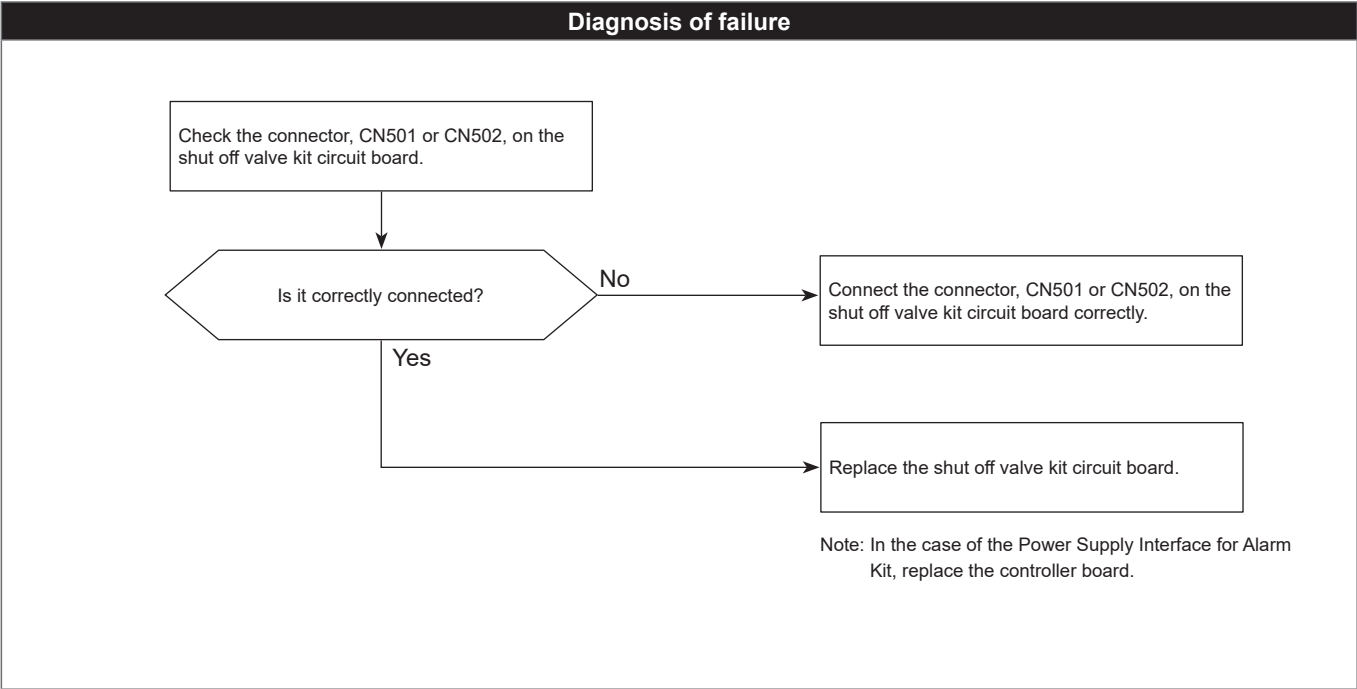
Diagnosis of failure



Error code
4136 (EF)

Circuit failure of safety shut-off valve

Abnormal points and detection methods	Causes and checkpoints
If the shut off valve kit detects an abnormality in the control signal of the safety shut-off valve	• Poor connection. • Circuit board failure.



Error code	
7119 (EF)	Connection error of M-NET line (origin)
Error code	
7120 (EF)	Connection error of M-NET line (not origin)

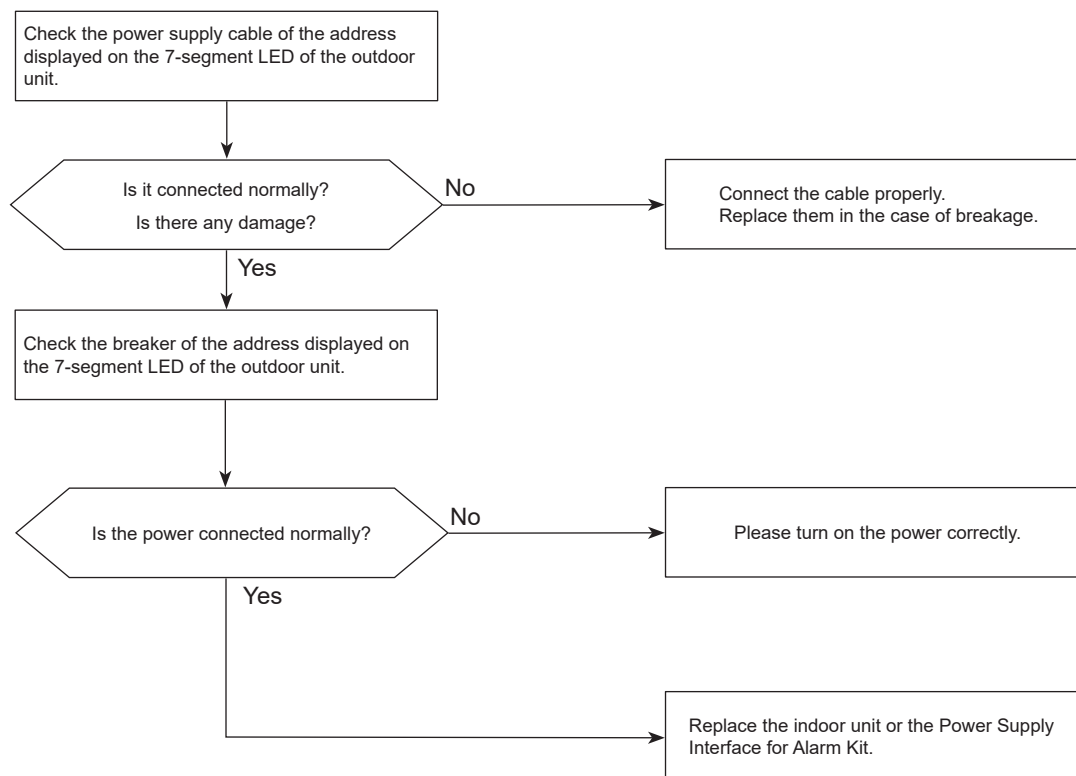
Abnormal points and detection methods	Causes and checkpoints
The Power Supply Interface for Alarm Kit searches the indoor unit which is connected to the TB3 terminal of the Power Supply Interface for Alarm Kit. An error is detected when the M-NET wiring connection is abnormal.	• If the indoor units with the same address are connected to the multiple Power Supply Interface for Alarm Kit. • If the indoor unit is connected to the multiple Power Supply Interface for Alarm Kit. • If the indoor unit is not connected to TB3 terminal of the Power Supply Interface for Alarm Kit. • If the Power Supply Interface for Alarm Kit is connected to the TB3 terminal of the Power Supply Interface for Alarm Kit. • If the outdoor unit is connected to the TB3 terminal of the Power Supply Interface for Alarm Kit.

Diagnosis of failure	
Factors	Checking methods and measures
(1) Overlapped M-NET address of the indoor unit	• If the indoor unit address is 00, wait 10 minutes and confirm that the abnormality is no longer displayed. • If the indoor unit address is overlapped with other than 00, an error code (7119) will be displayed on the multiple remote controllers. Change the address and turn the power of the outdoor unit back on.
(2) Miswired M-NET wires	Check the M-NET wiring of the indoor unit which is connected to the remote controller with an error code (7119) displayed, resolve the following factors, and turn the power of the outdoor unit back on. • M-NET line is connected to the TB3 terminals of 2 or more Power Supply Interface for Alarm Kit from the TB5 terminal of the indoor unit. • The TB3 terminal of the Power Supply Interface for Alarm Kit and the TB2 terminal of the other shut-off valves are connected. • The TB3 and TB2 terminals of the Power Supply Interface for Alarm Kit are connected in reverse.
(3) Indoor unit is not connected to TB3 terminal of Power Supply Interface for Alarm Kit	If the error code (7119) is not displayed on the remote controller and the error code (7120) is displayed on all the remote controllers, the indoor unit may not be connected to the TB3 terminal of the Power Supply Interface for Alarm Kit. Connect the indoor unit, which is to be installed in a room where you want to sound an alarm in case of refrigerant leakage, to the TB3 terminal of the Power Supply Interface for Alarm Kit. Then turn the power of the outdoor unit back on.

Power supply failure

Abnormal points and detection methods	Causes and checkpoints
Occurs when power is not supplied to the indoor unit of the Power Supply Interface for Alarm Kit at the initial startup of the outdoor unit.	- Power is not supplied to the indoor unit or Power Supply Interface for Alarm Kit. - Check whether the indoor unit or the Power Supply Interface for Alarm Kit is properly connected.

Diagnosis of failure

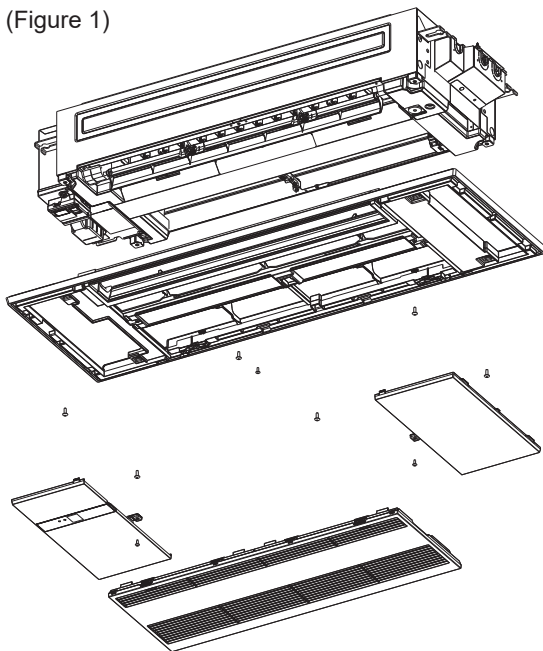


9-2-5. Drain pan inspection window

A drain pan can be simply inspected without removing the drain pan by checking the drain pan inspection window with the following procedure.

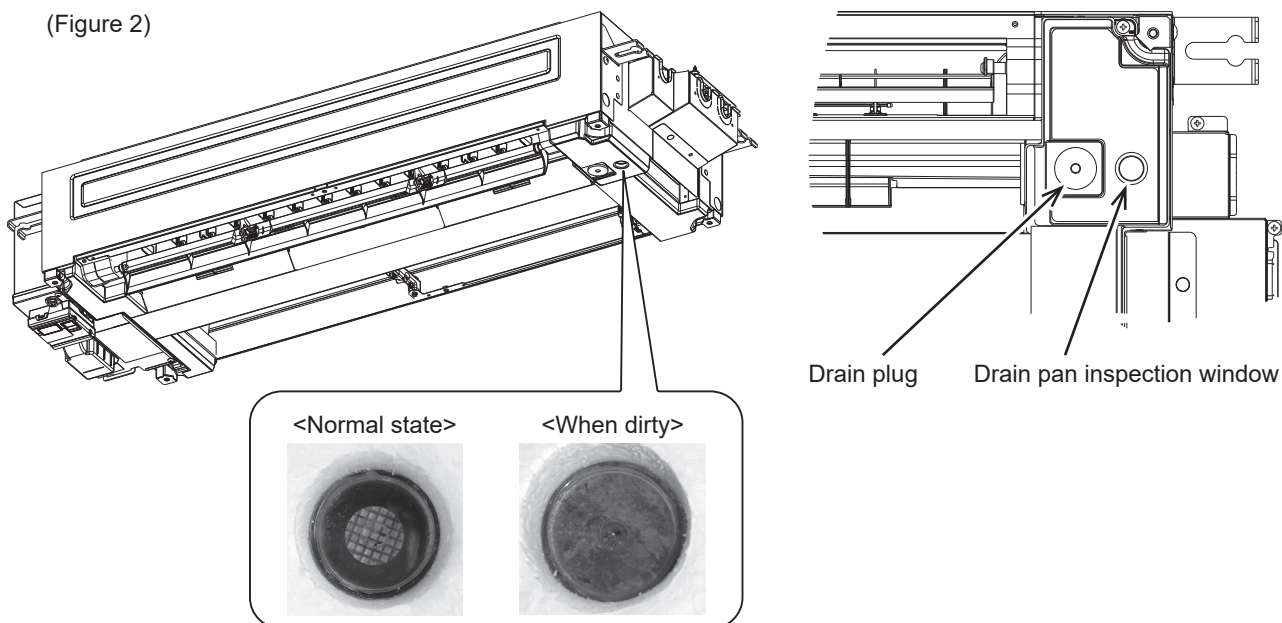
(1) Remove the intake grille. (Figure 1)

(Figure 1)



(2) Check the drain pan inspection window with the light. If the marker is not visible, the drain pan may be dirty. (Figure 2)

(Figure 2)



Note:

- Be careful not to damage the marker on the drain pan inspection window when cleaning the drain pan.

9-3. FUNCTION OF DIP SWITCH

The black square (■) indicates a switch position.

Switch	Pole	Function	Operation by switch		Effective timing	Remarks
			ON	OFF		
SW1 Mode Selection	1	Thermistor <Intake temperature detection> position	Built-in remote controller	Indoor unit	Under suspension	Address board <Initial setting> ON OFF 1 2 3 4 5 6 7 8 9 10 *1 The model is not capable of fresh air intake. *2 Refer to <Table A> below.
	2	Filter clogging	Provided	Not provided		
	3	Filter sign indication	2,500 hr	100 hr		
	4	Air intake*1	Not effective	Not effective		
	5	Remote indication switching	Thermo-ON signal indication	Fan output indication		
	6	—	—	—		
	7	Airflow set in case of heat thermo-OFF	Low*2	Extra low*2		
	8		Setting airflow*1	Depends on SW1-7		
	9	Auto restart function	Effective	Not effective		
	10	Power ON/OFF	Effective	Not effective		
SW2 Capacity code setting	1-4	Refer to "6. WIRING DIAGRAM" for details.			Before power supply ON	Indoor controller board <Initial setting> Set for each capacity.
SW3 Function Selection	1	Heat pump/Cool only	Cooling only	Heat pump	Under suspension	Indoor controller board <Initial setting> ON OFF 1 2 3 4 5 6 7 8 9 0 *3 Refer to <Table B> below.
	2	—	—	—		
	3	—	—	—		
	4	—	—	—		
	5	Vane horizontal angle	Second setting*3	First setting*3		
	6	—	—	—		
	7	Changing the opening of linear expansion valve	Effective	Not effective		
	8	Heating 4 degree up	Not effective	Effective		
	9	—	—	—		
	10	—	—	—		

<Table A>

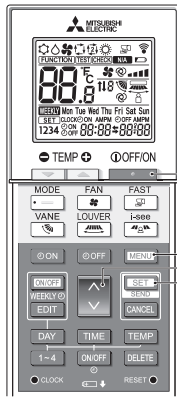
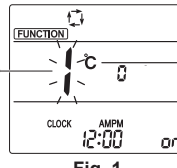
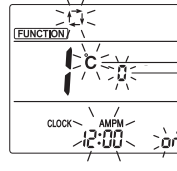
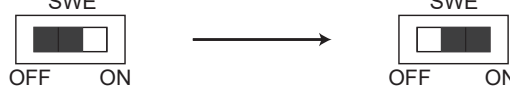
SW1-7	SW1-8	
OFF	OFF	Extra low
ON	OFF	Low
OFF	ON	Setting airflow
ON	ON	stop

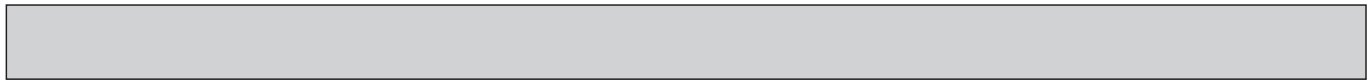
<Table B>

SW3-5	Vane setting	Initial setting	Setting	Vane position
OFF	First setting	●	Standard	Standard
ON	Second setting		Less draft	Upward position than the standard

Continue to the next page

The black square (■) indicates a switch position.

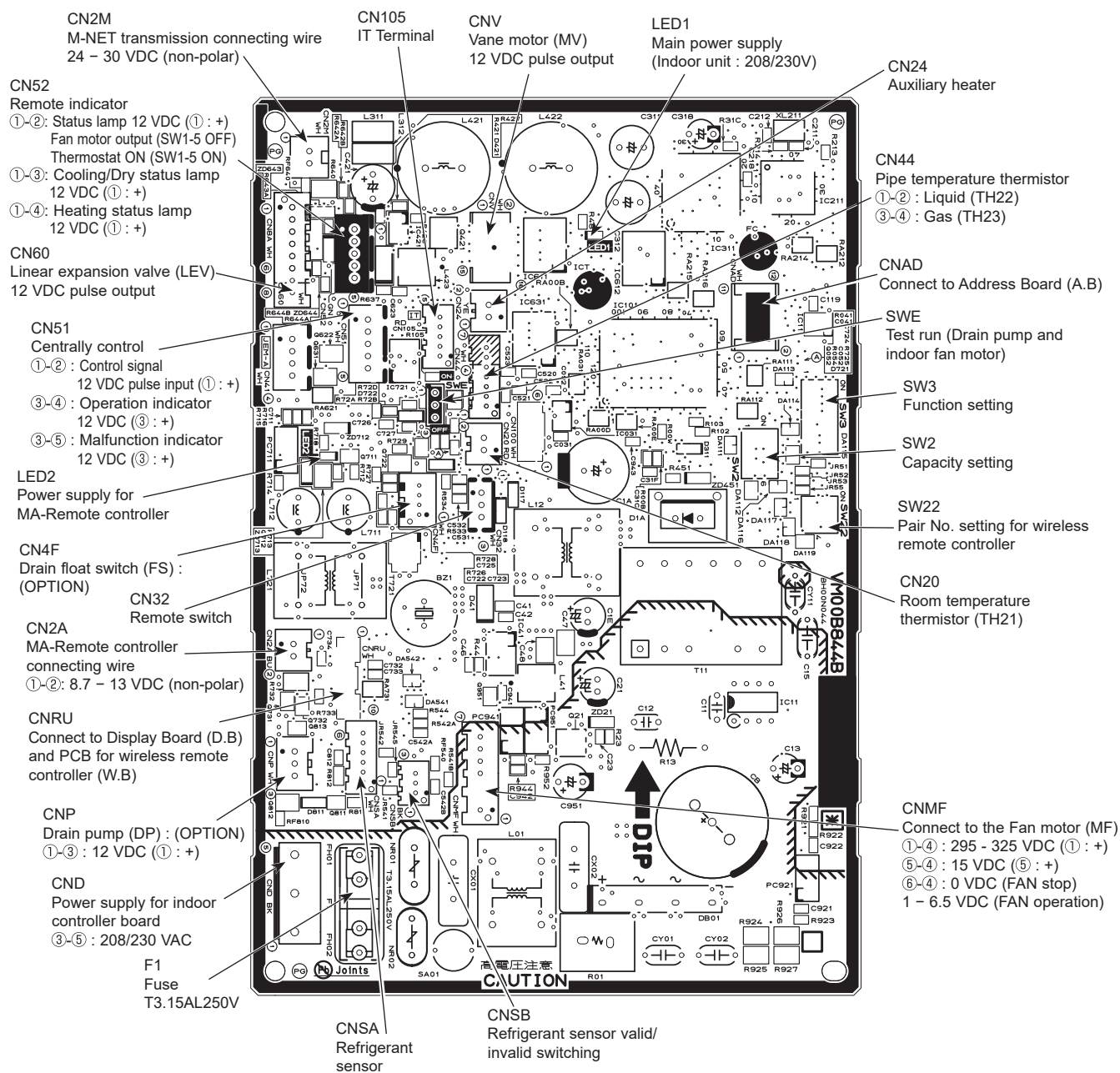
Switch	Pole	Function	Effective timing	Remarks																																								
SW11 1s digit address setting SW12 10s digit address setting	Rotary switch	SW12 SW11   10 1 Address setting should be done when M-NET remote controller is being used.	Before power supply ON	Address board <Initial setting> SW12 SW11  																																								
SW14 Connection No. setting	Rotary switch	SW14  This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.		Address board <Initial setting> SW14 																																								
SW22 Function selection	Switch	<table border="1"><thead><tr><th></th><th>Function</th><th>ON</th><th>OFF</th></tr></thead><tbody><tr><td>1</td><td>—</td><td>—</td><td>—</td></tr><tr><td>2</td><td>—</td><td>—</td><td>—</td></tr><tr><td>3</td><td>Pair No. of wireless remote controller</td><td colspan="2" rowspan="2">Depends on SW22-3, 22-4</td></tr><tr><td>4</td><td>Pair No. of wireless remote controller</td></tr></tbody></table> • To operate each indoor unit by each remote controller when installed 2 indoor units or more are near, Pair No. setting is necessary. • Pair No. setting is available with the 4 patterns (Setting patterns A to D). • Pair No. setting is not set necessarily when operating it by one remote controller. Setting for indoor unit. Wireless remote controller pair number: • Setting operation (Fig. 1 A) 1. Press the  button ① to stop the air conditioner. 2. Press the  button ②. 3. Check that function No."1" is displayed, and then press the  button ③. The Screen display setting screen will be displayed. (Fig. 2.) • Pair No. changing operation (Fig. 2 B) 1. Press the  button ④. 2. Each time the  button ④ is pressed, the pair No.0-3 changes. 3. Press the  button ③ to check the setting. 4. Press the  button ②. <table border="1"><thead><tr><th colspan="2">Indoor unit SW22</th><th rowspan="2">Pair No. of wireless remote controller</th><th rowspan="2"></th></tr><tr><th>SW22-3</th><th>SW22-4</th></tr></thead><tbody><tr><td>ON</td><td>ON</td><td>0</td><td>Initial setting</td></tr><tr><td>OFF</td><td>ON</td><td>1</td><td>—</td></tr><tr><td>ON</td><td>OFF</td><td>2</td><td>—</td></tr><tr><td>OFF</td><td>OFF</td><td>3-9</td><td>—</td></tr></tbody></table>		Function	ON	OFF	1	—	—	—	2	—	—	—	3	Pair No. of wireless remote controller	Depends on SW22-3, 22-4		4	Pair No. of wireless remote controller	Indoor unit SW22		Pair No. of wireless remote controller		SW22-3	SW22-4	ON	ON	0	Initial setting	OFF	ON	1	—	ON	OFF	2	—	OFF	OFF	3-9	—	Under operation or suspension	<Initial setting> ON  OFF  1 2 3 4   Fig. 1  Fig. 2
	Function	ON	OFF																																									
1	—	—	—																																									
2	—	—	—																																									
3	Pair No. of wireless remote controller	Depends on SW22-3, 22-4																																										
4	Pair No. of wireless remote controller																																											
Indoor unit SW22		Pair No. of wireless remote controller																																										
SW22-3	SW22-4																																											
ON	ON	0	Initial setting																																									
OFF	ON	1	—																																									
ON	OFF	2	—																																									
OFF	OFF	3-9	—																																									
SWE Test run for Drain pump	Connector	Drain pump and fan are activated simultaneously after the connector SWE is set to ON and turn on the power.  The connector SWE is set to OFF after test run.	Under operation	<Initial setting> SWE  OFF ON																																								



Switch	Pole	Function		Effective timing	Remarks											
SWA Fan speed selector	1~3	(High ceiling) 3 (Standard) 2 (Silent) 1	Fan speed can be changed depending on SWA setting <table><tr><td></td><td>Setting</td></tr><tr><td>PMFY-M**NCMU-A</td><td>2</td></tr></table>		Setting	PMFY-M**NCMU-A	2	Under suspension	Address board <Initial setting> It follows as the left table.							
	Setting															
PMFY-M**NCMU-A	2															
CNSB Activation switch for CNSA refrigerant sensor	Short-circuit connector	It is to enable/disable the refrigerant sensor mounted to the indoor unit. If the indoor unit is installed in a large space, remove the short-circuit connector. <table><tr><td>Short-circuit connector</td><td>Refrigerant sensor mounted to the indoor unit</td></tr><tr><td>Yes</td><td>Activated</td></tr><tr><td>No</td><td>Deactivated</td></tr></table>		Short-circuit connector	Refrigerant sensor mounted to the indoor unit	Yes	Activated	No	Deactivated	Before power supply ON (only for the first time)	<Initial setting> Short-circuit connector mounted					
Short-circuit connector	Refrigerant sensor mounted to the indoor unit															
Yes	Activated															
No	Deactivated															
External heater Switching the external heater output	Function setting	It is to switch permission/prohibition of the external heater output when the refrigerant sensor is in the abnormal state. Refer to the operation manual included in the remote controller for the setting. <table><tr><td>Function setting No.171</td><td>External heater operation</td><td>Remarks</td></tr><tr><td>1</td><td>Permission</td><td></td></tr><tr><td>2</td><td>Prohibition</td><td>Initial setting</td></tr><tr><td>15</td><td>Initializing this item</td><td></td></tr></table>			Function setting No.171	External heater operation	Remarks	1	Permission		2	Prohibition	Initial setting	15	Initializing this item	
Function setting No.171	External heater operation	Remarks														
1	Permission															
2	Prohibition	Initial setting														
15	Initializing this item															

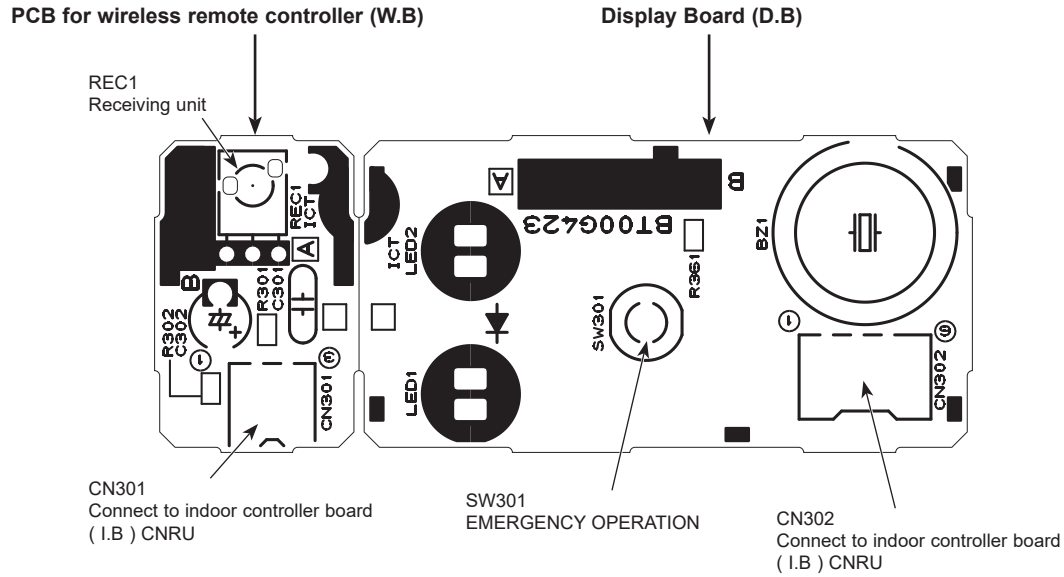
9-4. TEST POINT DIAGRAM

9-4-1. Indoor controller board (I.B)

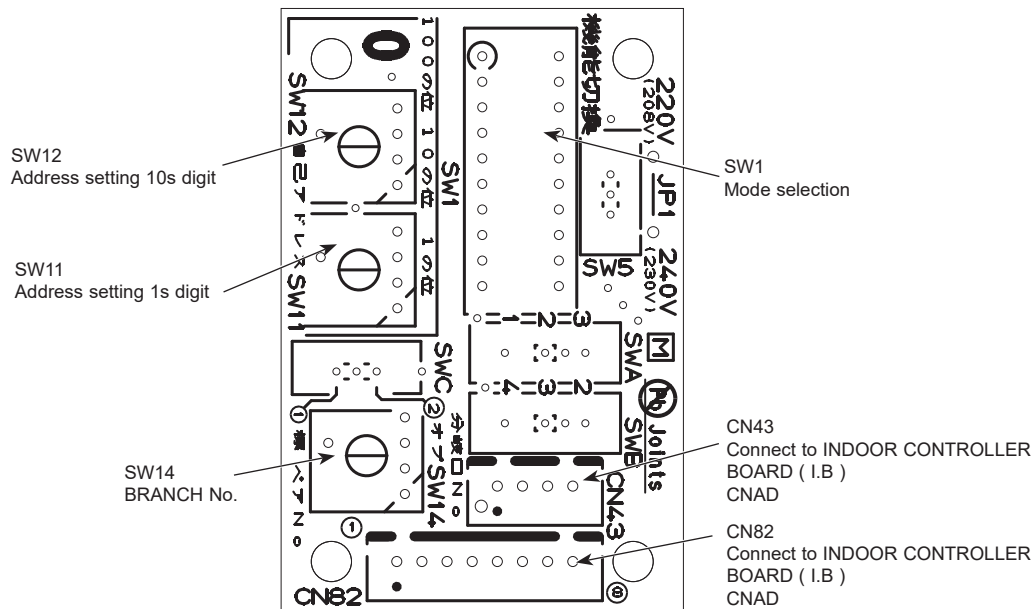


Note: The voltage range of 12 VDC in this page is between 11.5 to 13.7 VDC.

9-4-2. PCB for wireless remote controller (W.B) and Display Board (D.B)



9-4-3. Address Board (A.B)



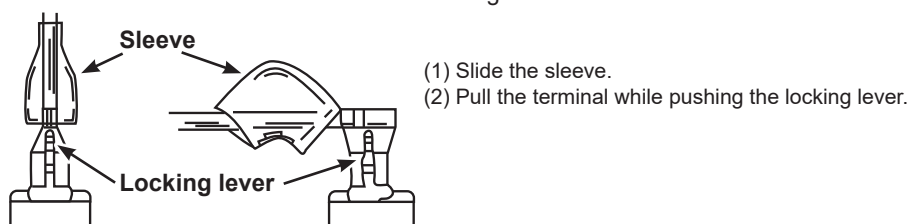
<Detaching method of the terminal with locking mechanism>

The terminal which has the locking mechanism can be detached as shown below.

The terminal without locking mechanism can be detached by pulling it out.

Check the shape of the terminal before detaching.

Slide the sleeve and check if there is a locking lever or not.



Note: Turn OFF the power supply before disassembly.

→: Indicates the visible parts in the photos/figures.

---→: Indicates the invisible parts in the photos/figures.

PROCEDURE	PHOTOS/FIGURES
1. Removing the intake grille (1) Slide the tabs (2 places) of intake grille in the direction of the arrow (Figure 1). (2) Hold the intake grille and pull it down to open (Figure 2). (3) Slide the grille shafts (1 each on the left and right sides) off the intake grille and remove the intake grille (Figure 3). (4) Remove the safety strings of intake grille from the hooks (Figure 4).	Photo 1
Figure 1	Figure 2
Figure 3	Figure 4

PROCEDURE

2. Removing the grille

- (1) Remove the intake grille.
- (2) Remove the fixing screws for side panels (2 screws) on the left and right sides (Figure 5).
- (3) Open the side panels on the left and right sides.
Remove the safety strings from the grille and remove the side panels (Figure 5).
- (4) Open the horizontal vane completely.
- (5) Remove the screw cap in the center of air outlet (Figure 5).
- (6) Remove the fixing screws ① at 4 places on the left and right sides (Figure 6).
- (7) Remove the fixing screws ① at 2 places in the middle and the fixing screw ② in the center (Figure 6).
- (8) Remove the temporary holding tabs of the grille from the hooks of the indoor unit (Figure 6).

<Installing the grille>

- (1) Open the horizontal vane completely.
- (2) Remove the screw cap in the center of air outlet (Figure 5).
- (3) Attach the temporary holding tabs of the grille to the hooks of the indoor unit (Figure 6).
- (4) Place the grille so that it fits closely with the ceiling surface. Loosely fasten with the provided fixing screws ① at 4 places on the left and right side (Figure 6).
- (5) Tighten the fixing screws ① at 2 places in the middle and the fixing screw ② in the center (Figure 6).

Note: Tighten the fixing screws ① and ② completely (Figure 6).

Tightening torque range of screws is as follows.

- screw ①: 1.7 - 2.3 N·m (15.0 - 20.4 lbf·in)
- screw ②: 1.4 - 1.7 N·m (12.4 - 15.0 lbf·in)

- (6) Tighten the fixing screws ① at 4 places on the left and right sides.

Note:

- Make sure there are no gaps between the indoor unit and the grille, or between the grille and the ceiling surface. If there are any gaps, the wind may come in and it may cause water to drip (Figure 7).
- If there are any gaps between the grille and the ceiling, with the grille attached, slightly adjust the installation height of the unit and clear the gap (Figure 8).

PHOTOS/FIGURES

Figure 5

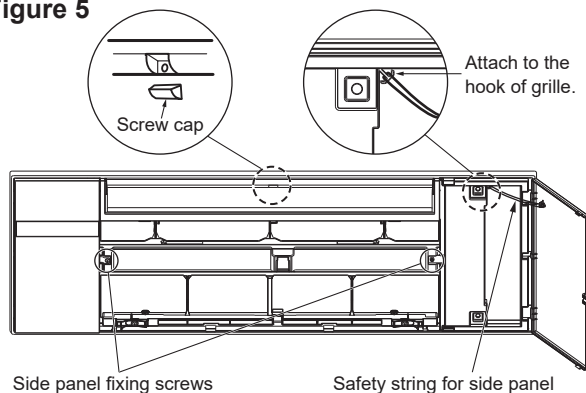


Figure 6

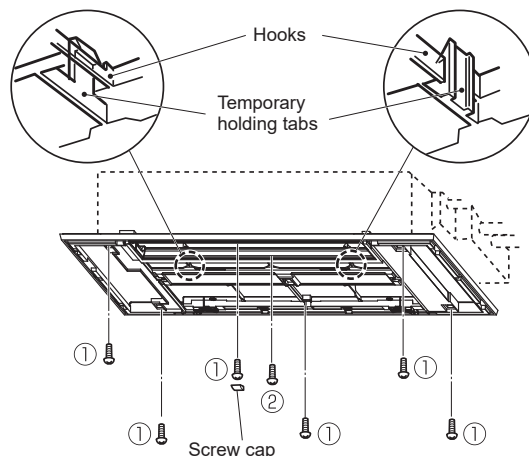


Figure 7

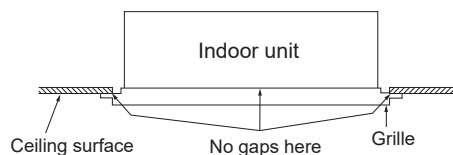
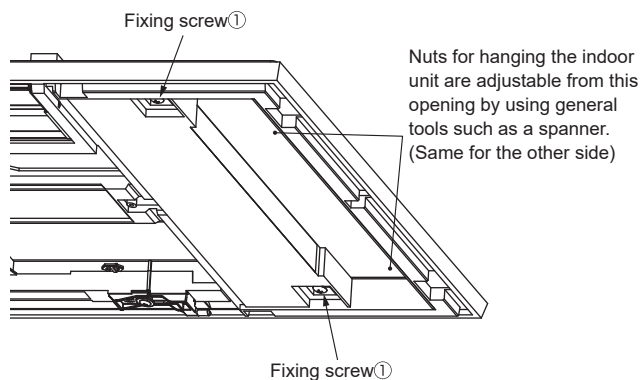


Figure 8



PROCEDURE

- (7) Install the screw cap.
- (8) After attaching the safety strings for the left and right side panels to the grille, install the side panels (Figure 9).

Note:

- Make sure that the tabs of the side panels securely fit into place (Figure 9).
- Open the display cover to make sure the positioning marks are aligned.
- Make sure that there are no gaps between the emergency operation switch and the side panel (Figure 10).
- Make sure that the safety strings do not hang out of the side panels.

- (9) Fix with the side panel fixing screws on the left and right sides (Figure 10).
- (10) Attach the air cleaning filters (Anti-Allergy Enzyme filters), if any, to the catches on the air filters (Air purifier filters) (Figure 11).
- (11) Attach the safety strings for intake grille to the grille and insert the grille shafts into the holes of the intake grille (Figure 11).
- (12) Close the intake grille (Figure 12).

Note: Press the intake grille firmly against the grille until a click is heard from each tab on the left and right sides.

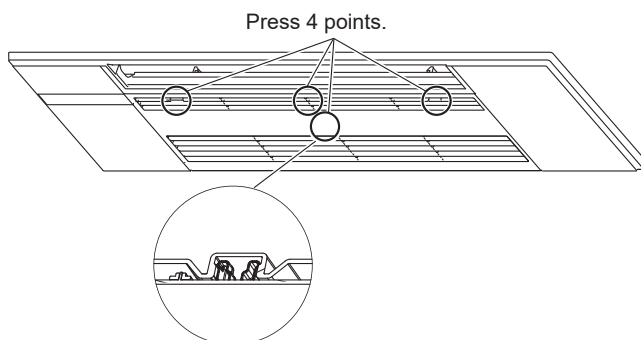
<Check after installing>

- (1) Check that there are no gaps between the indoor unit and the grille, or between the grille and the ceiling surface.

Note: If there are any gaps, the wind may come in and it may cause water to drip.

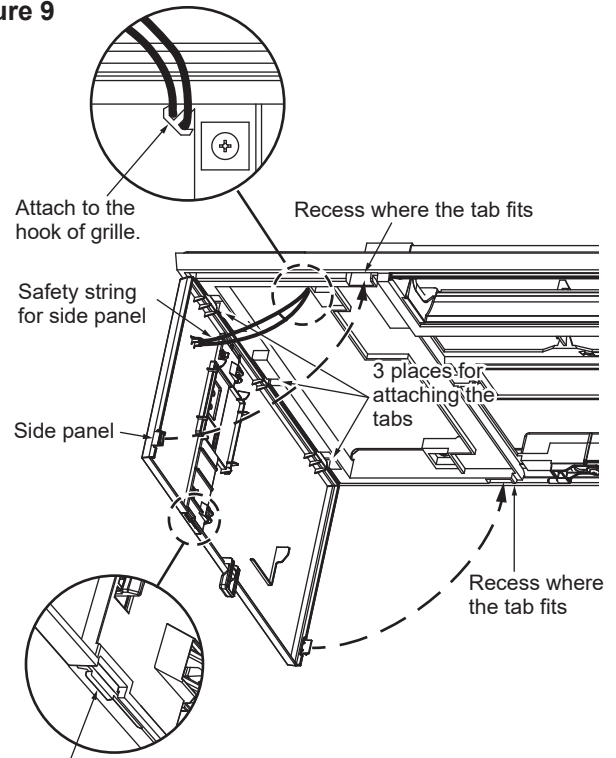
- (2) Check that the screw cap is installed.
 - (3) Check that the left and right side panels are installed securely.
 - (4) Check that the emergency operation switch is installed securely.
 - (5) Check that the display cover of side panel is installed securely.
 - (6) Check that the filters are installed securely.
- Note:** If the filters are not installed securely, the intake grille may not close properly.
- (7) Check that the safety strings (4 places) are attached securely.

Figure 12



PHOTOS/FIGURES

Figure 9



Tab for opening/closing the display cover

Figure 10

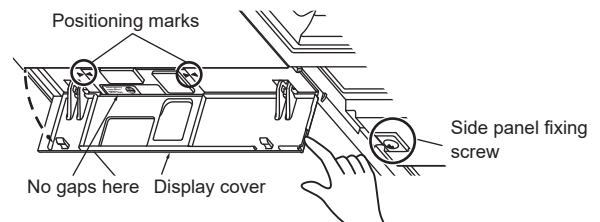
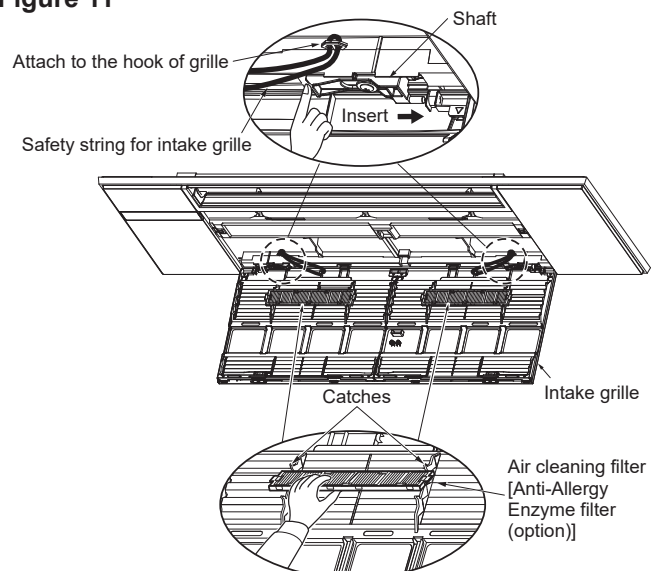


Figure 11



PROCEDURE

3. Removing the indoor electronic control P.C. board, the receiver P.C. board and the display P.C. board

- (1) Remove the intake grille.
- (2) Remove the side panel (L).
- (3) Remove the elect cover (2 fixing screws) (Photo 2).
- (4) Remove 1 fixing screw from the electrical box and pull out the electrical box (Photo 3).
- (5) Partially slide the indoor electronic control P.C. board out (1 fixing screw).
- (6) Disconnect all the connectors and lead wires on the board to remove the indoor electronic control P.C. board.
- (7) Remove the tabs at the top and bottom of lamp cover, and open the lamp cover.
- (8) Disconnect the connectors and lead wires, and remove the receiver P.C. board and the display P.C. board.
- (9) Remove the address board cover.
- (10) Disconnect the connector from the address board.

PHOTOS/FIGURES

Photo 2

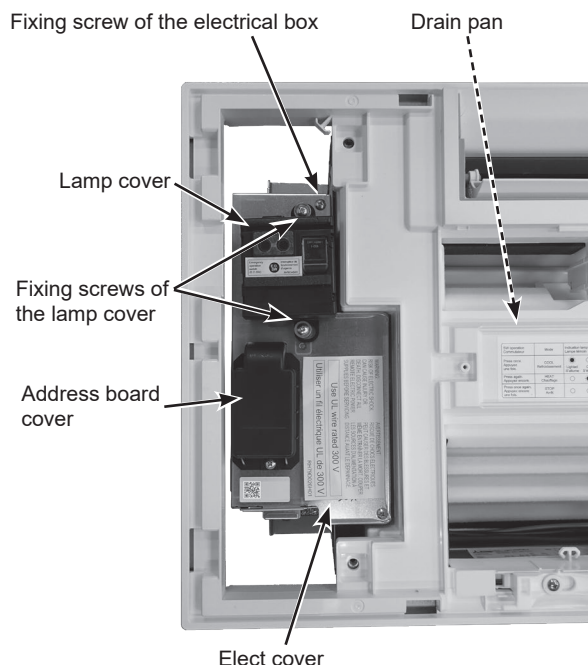
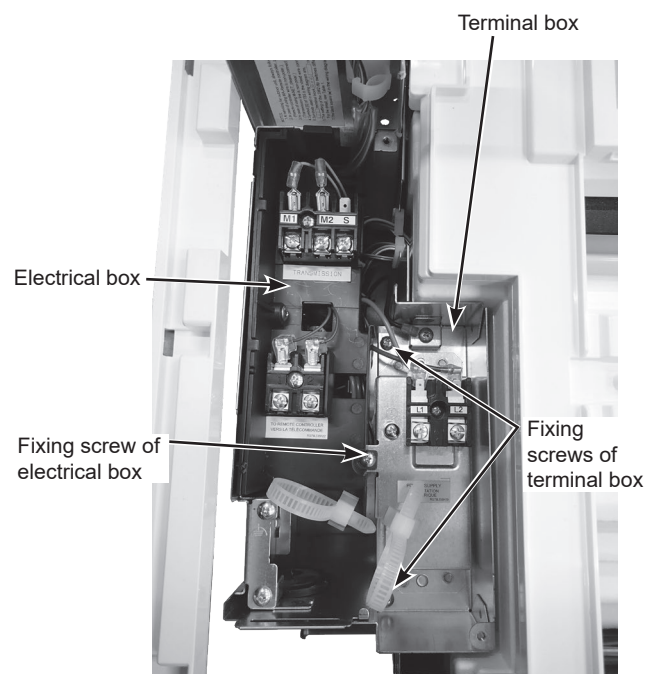


Photo 3



PROCEDURE

4. Removing the LEV and the stabilizer

- (1) Remove the intake grille.
- (2) Remove the room temperature thermistor and the refrigerant sensor from the drain pan.
- (3) Remove the tabs (2 places) of the stabilizer and remove the drain pan (4 fixing screws).
- (4) Remove the elect cover.
- (5) Pull out the electrical box.
- (6) Remove the LEV connector (CN60).
- (7) Remove the vane motor connector (CNV).
- (8) Remove the terminal box (2 fixing screws).
- (9) Remove the safety straps from the clamps (2 places) and untangle them.
- (10) Hook the safety straps onto the clips on the side cover of the heat exchanger.
- (11) Remove the drain cover (3 fixing screws).
- (12) Remove the pipe band (1 or 3 fixing screws).
- Note:** When installing the LEV coil, mount it in the orientation shown in Figure 13.
- (13) Remove the ground on the heat exchanger and 5 fixing screws securing the heat exchanger. Allow the heat exchanger to hang down.
- (14) Rotate and remove the LEV coil (1 fixing band).
- (15) Remove the stabilizer (2 fixing screws).

5. Removing the heat exchanger

- (1) Remove the intake grille.
- (2) Remove the room temperature thermistor and the refrigerant sensor from the drain pan.
- (3) Remove the tabs (2 places) in the center of stabilizer and remove the drain pan (4 fixing screws).
- (4) Remove the elect cover.
- (5) Pull out the electrical box.
- (6) Remove the LEV connector (CN60).
- (7) Remove the terminal box (2 fixing screws).
- (8) Remove the drain cover (3 fixing screws).
- (9) Remove the pipe band.
- (10) Remove the pipe temperature thermistor (gas and liquid pipe) from the heat exchanger.
- (11) Remove the ground on the heat exchanger.
- (12) Remove the heat exchanger (5 fixing screws).

Note: Red labels on the liquid pipe and the gas pipe indicate that flammable refrigerant is used. If you removed them for piping work, be sure to return them to their original positions after the work is completed. (Figure 14)

Figure 13

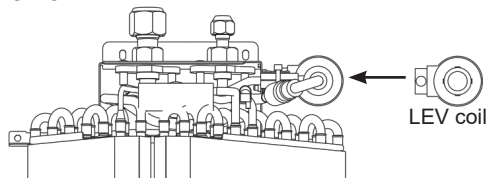
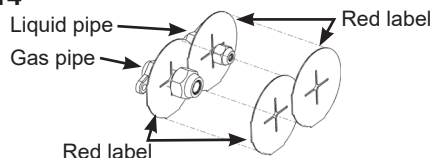


Figure 14



PHOTOS/FIGURES

Photo 4

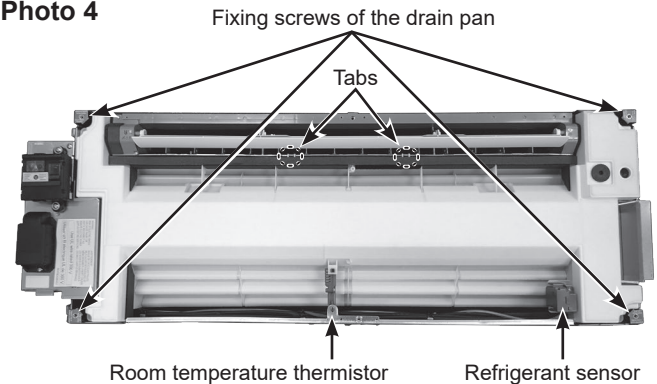


Photo 5

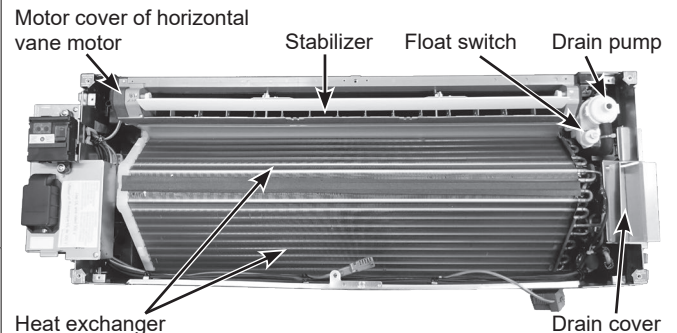


Photo 6

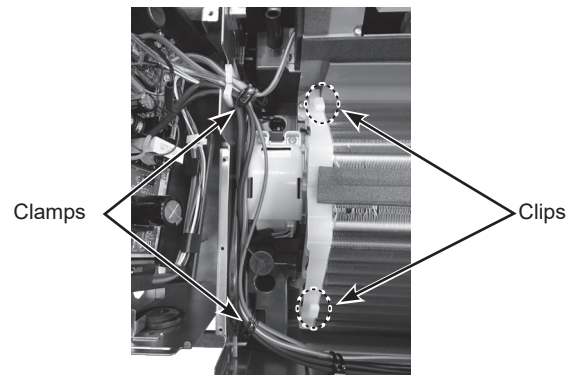
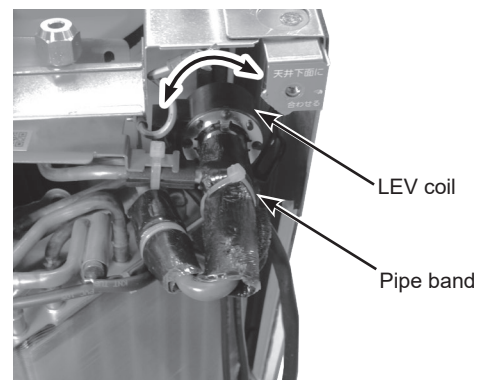
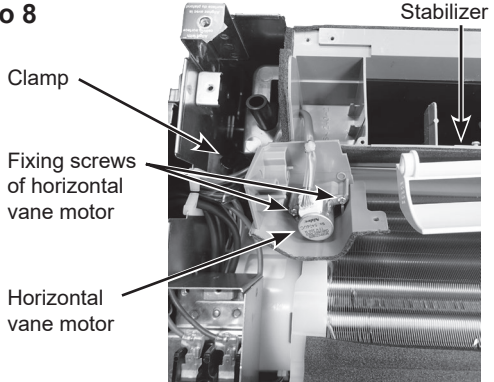
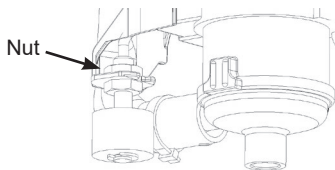
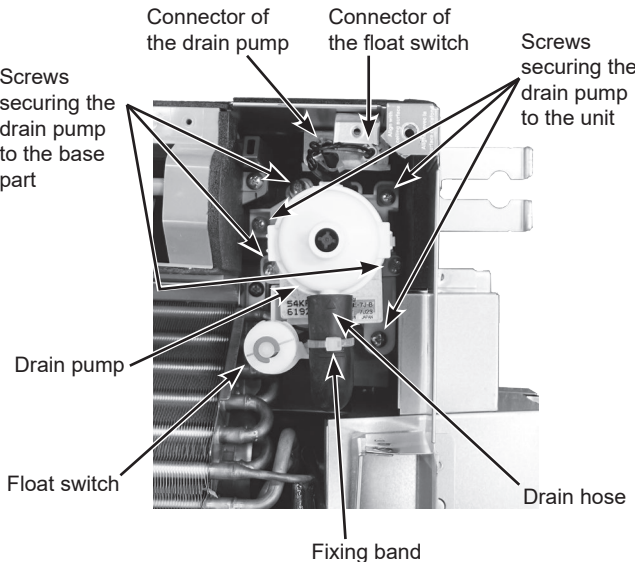
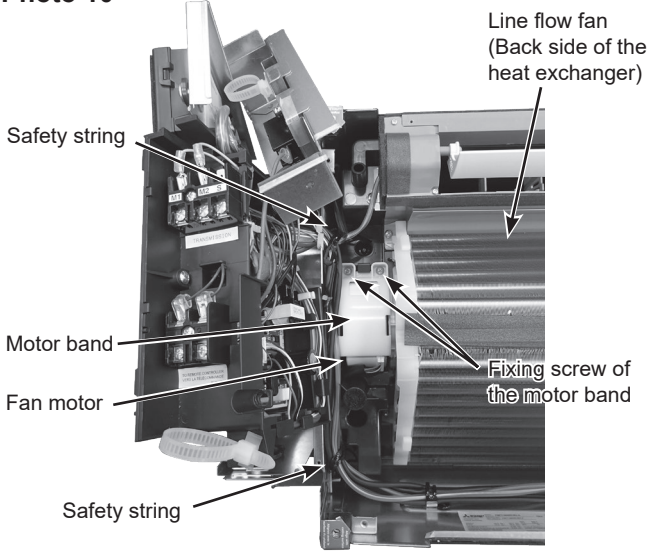
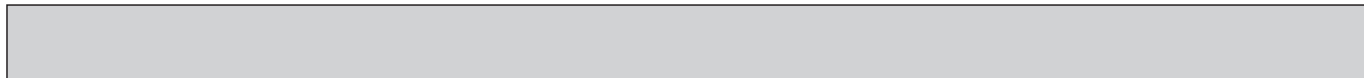
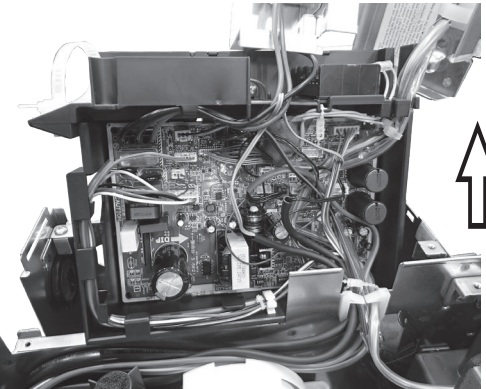
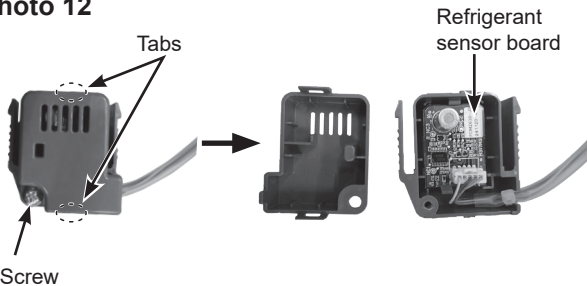
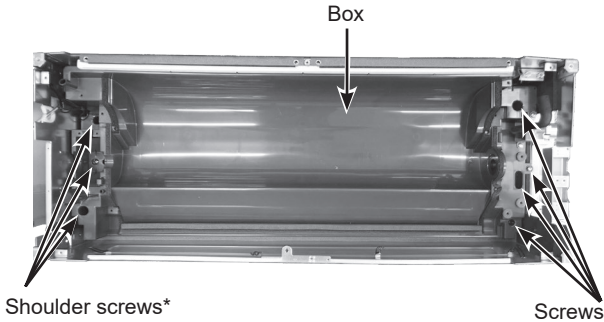
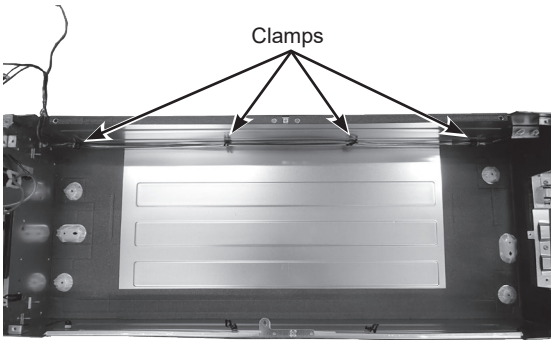


Photo 7



PROCEDURE	PHOTOS/FIGURES
6. Removing the horizontal vane motor (1) Remove the intake grille. (2) Remove the drain pan. (3) Remove the horizontal vane. (4) After removing the clamp securing the lead wires, remove the cover of horizontal vane motor (2 fixing screws). (5) Remove the horizontal vane motor (2 fixing screws) and disconnect the connector (Photo 8).	Photo 8 
7. Removing the drain pump and float switch (1) Remove the intake grille. (2) Remove the room temperature thermistor and the refrigerant sensor from the drain pan. (3) Remove the drain pan. (4) Disconnect the connector of the drain pump (Photo 9). (5) Disconnect the connector of the float switch (Photo 9). (6) Remove the drain hose (1 fixing band) (Photo 9). (7) Remove the drain pump from the unit (3 fixing screws) (Photo 9). (8) Remove the drain pump from the base part (3 fixing screws) (Photo 9). • Tightening torque range of screws is 0.5 - 0.8 N·m (4.4 - 7.1 lbf-in). (9) Loosen the float switch nut and remove it from the drain pump. (Figure15) Figure 15 	Photo 9 
8. Removing the fan motor and line flow fan (1) Remove the intake grille. (2) Remove the drain pan. (3) Remove the drain cover (3 fixing screws). (4) Remove the pipe band. (5) Remove the elect cover. (6) Remove the terminal box (2 fixing screws). (7) Remove the safety strings (2 places) from the clamps and untie (Photo 10). (8) Hook the safety strings to the tabs on the side plate of indoor heat exchanger. (9) Remove the indoor heat exchanger (6 fixing screws) and slide it downward. (10) Remove the stabilizer (2 fixing screws). (11) Partially slide the indoor electronic control P.C. board out. (12) Disconnect the connector (CNMF) of indoor fan motor. (13) Remove the motor band (2 fixing screws) (Photo 10). (14) Remove the indoor fan motor and line flow fan. (No need to remove the indoor heat exchanger to remove these 2 items.)	Photo 10 

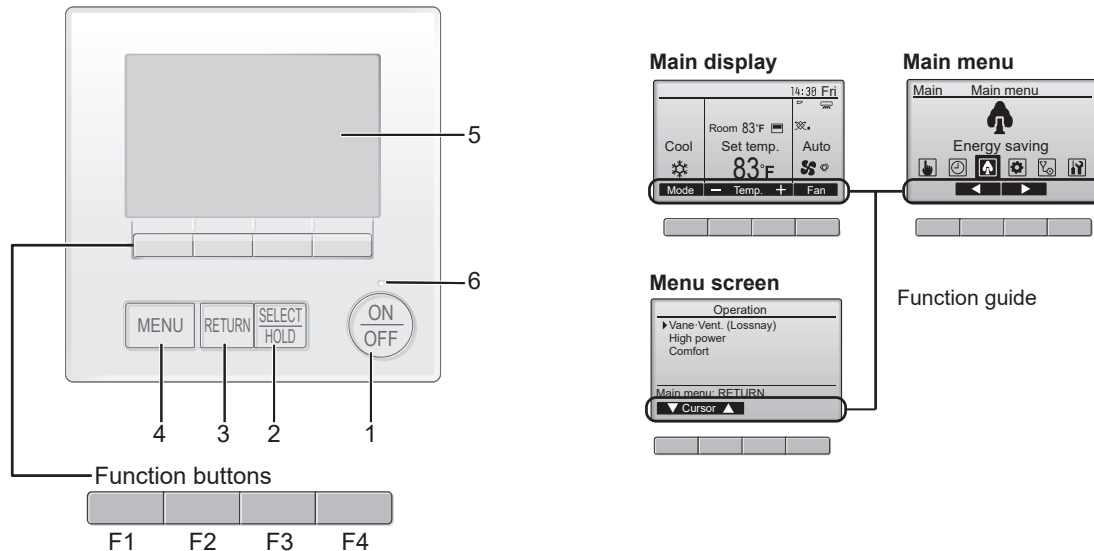


PROCEDURE	PHOTOS/FIGURES
9. Removing the refrigerant sensor (1) Remove the intake grille. (2) Remove the room temperature thermistor and the refrigerant sensor from the drain pan. (3) Remove the screw and tab, and open the refrigerant sensor. (Photo 12) (4) Remove the connector from the refrigerant sensor board. (5) Remove the drain pan. (6) Remove the elect cover. (7) Pull out the electrical box. (8) Remove the terminal box (2 fixing screws). (9) Remove the refrigerant sensor connector (CNSA).	Photo 11  Photo 12 
10. Removing the lead wire assembly (drain pump and float switch) (1) Remove the intake grille. (2) Remove the room temperature thermistor and the refrigerant sensor from the drain pan. (3) Remove the drain pan. (4) Remove the elect cover. (5) Pull out the electrical box. (6) Remove the LEV connector (CN60). (7) Remove the vane motor connector (CNV). (8) Disconnect the connector (CNMF) of indoor fan motor. (9) Disconnect the connector (CNP) of the drain pump. (10) Disconnect the connector (CN4F) of the float switch. (11) Remove the terminal box (2 fixing screws). (12) Remove the drain cover (3 fixing screws). (13) Remove the pipe band. (14) Remove the pipe temperature thermistor (gas and liquid pipe) from the heat exchanger. (15) Remove the heat exchanger (5 fixing screws). (16) Remove the stabilizer (2 fixing screws). (17) Remove the motor band (2 fixing screws) (Photo 10). (18) Remove the indoor fan motor and line flow fan. (19) Disconnect the connector of the drain pump (Photo 9). (20) Disconnect the connector of the float switch (Photo 9). (21) Remove the drain hose (1 fixing band) (Photo 9). (22) Remove the drain pump set from the unit (3 fixing screws) (Photo 9). (No need to separate the drain pump set into the drain pump base, the drain pump, and the float switch.) (23) Remove the box (3 shoulder screws, 4 fixing screws) (Photo 13). (24) Remove the lead wire assembly (drain pump and float switch) (4 clamps) (Photo 14).	Photo 13  Photo 14 

11-1. REMOTE CONTROLLER FUNCTIONS

11-1-1. PAR-43MAAUB

Controller interface



Note:

- The functions of the function buttons change depending on the screen. Refer to the button function guide that appears at the bottom of the LCD for the functions they serve on a given screen. When the system is centrally controlled, the button function guide that corresponds to the locked button will not appear.

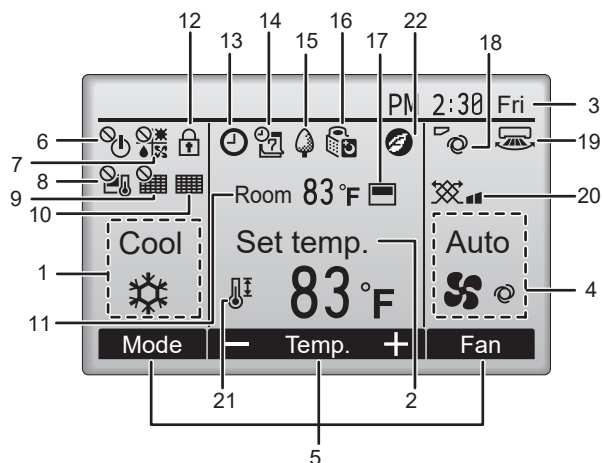
1. [ON/OFF] button
Press to turn ON/OFF the indoor unit.
 2. [SELECT/HOLD] button
Press to save the setting.
When the main menu is displayed, pressing this button will enable/disable the [HOLD] function.
 3. [RETURN] button
Press to return to the previous screen.
 4. [MENU] button
Press to open the main menu.
 5. Backlit LCD
Operation settings will appear.
When the backlight is off, pressing any button, except for the [ON/OFF] button, turns the backlight on, and it will stay lit for a certain period of time depending on the screen.
 6. ON/OFF lamp
This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.
- F1: Function button 1
Main display: Press to change the operation mode.
Menu screen: The button function varies depending on the screen.
- F2: Function button 2
Main display: Press to decrease temperature.
Main menu: Press to move the cursor left.
Menu screen: The button function varies depending on the screen.
- F3: Function button 3
Main display: Press to increase temperature.
Main menu: Press to move the cursor right.
Menu screen: The button function varies depending on the screen.
- F4: Function button 4
Main display: Press to change the fan speed.
Menu screen: The button function varies depending on the screen.

Display

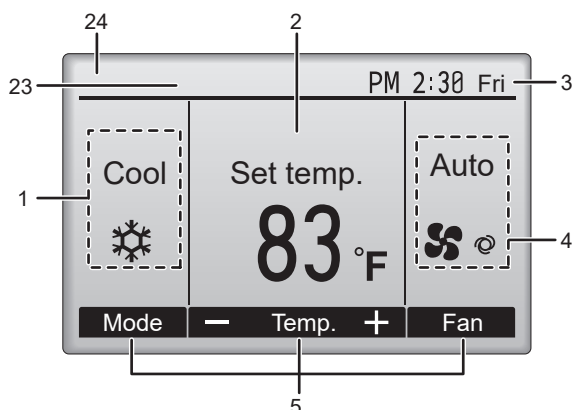
The main display can be displayed in 2 different modes: [Full] and [Basic]. The initial setting is [Full]. To switch to [Basic] mode, change the setting on the [Main display] setting. (Refer to operation manual included with remote controller.)

■ [Full] mode

All icons are displayed for explanation.



■ [Basic] mode



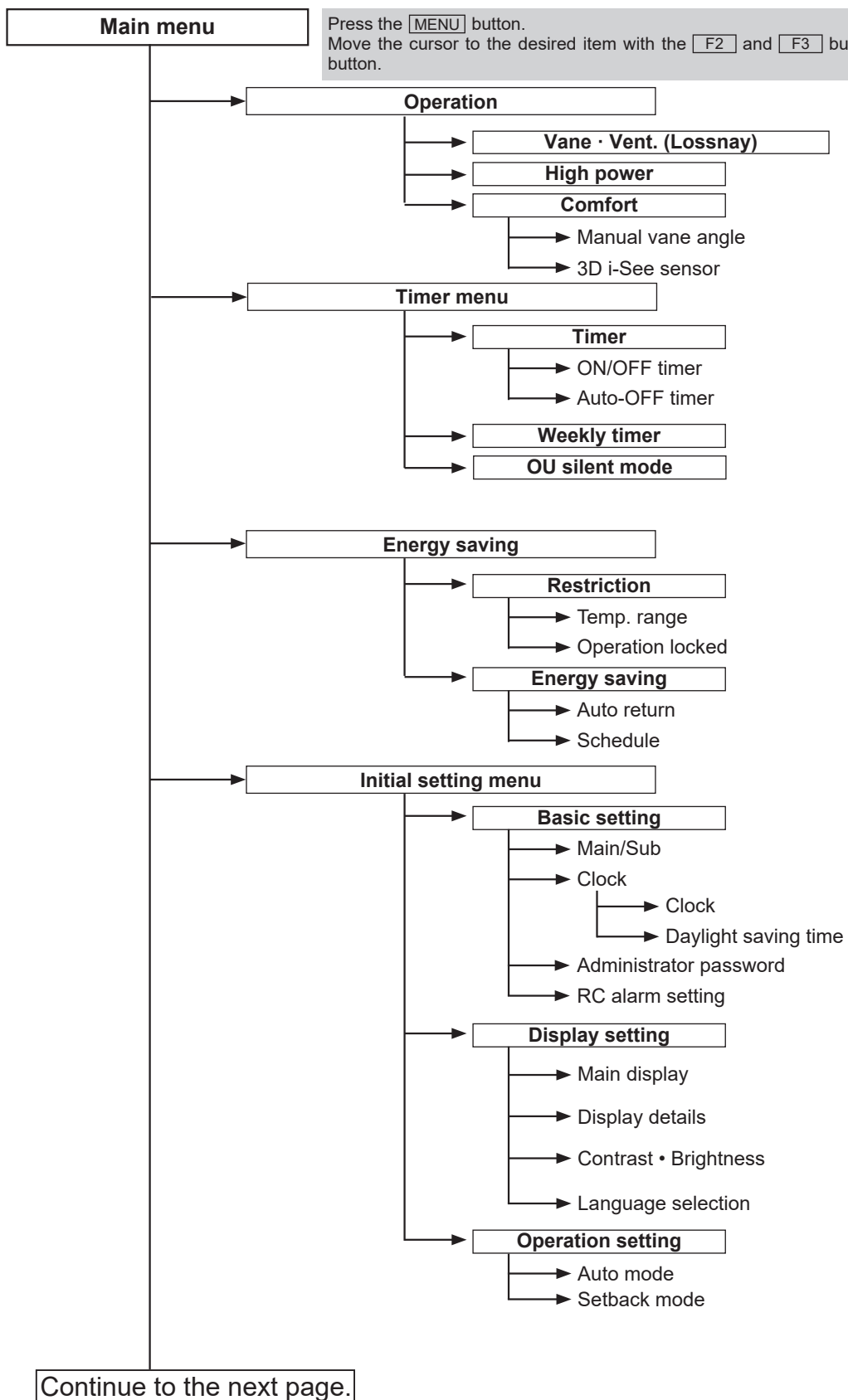
Note:

- Most settings (except ON/OFF, mode, fan speed, temperature) can be made from the main menu.

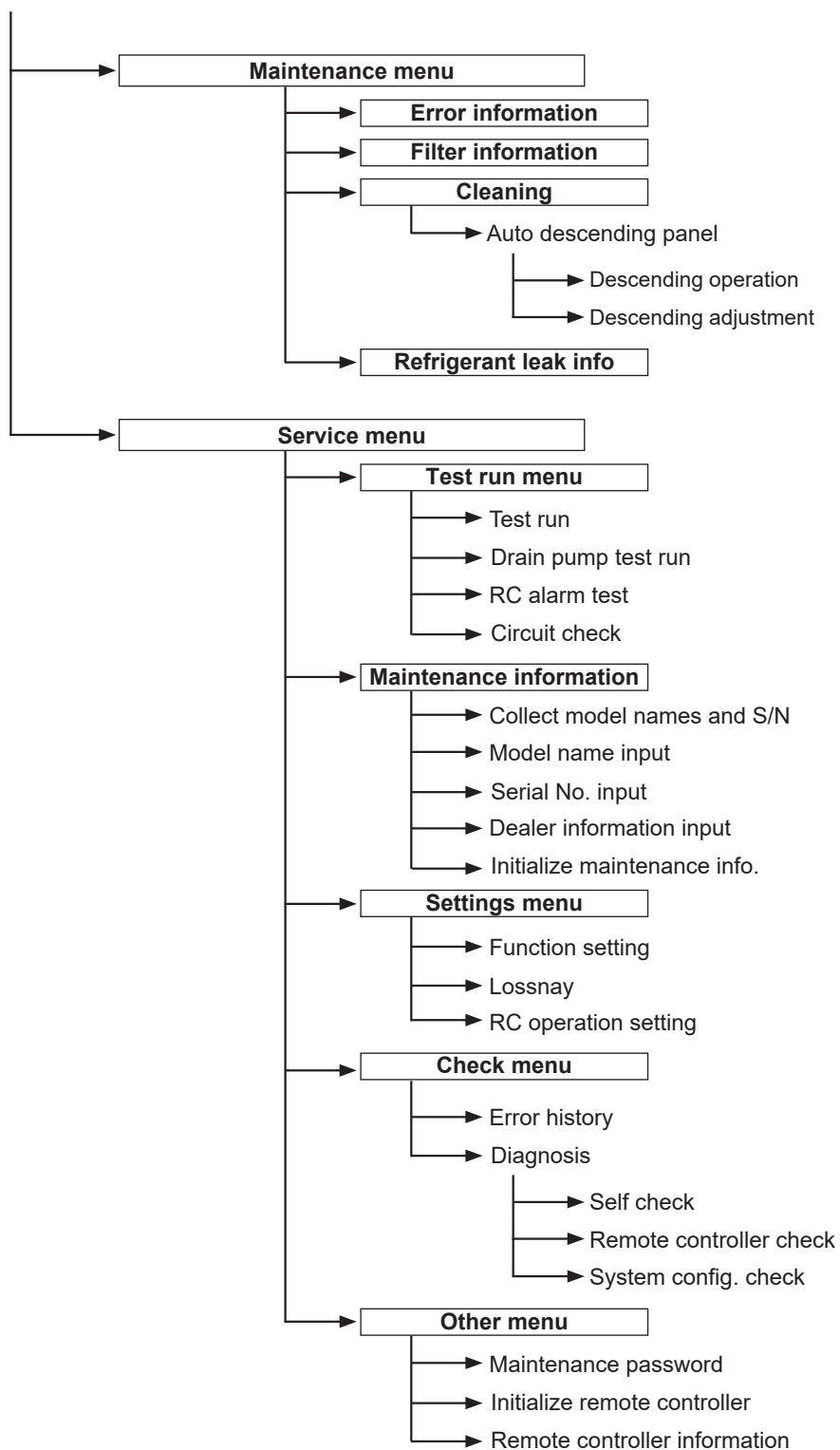
1. Operation mode
2. Preset temperature
3. Clock
4. Fan speed
5. Button function guide: Functions of the corresponding buttons appear here.
6. : Appears when the ON/OFF operation is centrally controlled.
7. : Appears when the operation mode is centrally controlled.
8. : Appears when the preset temperature is centrally controlled.
9. : Appears when the filter reset function is centrally controlled.
10. : Appears when filter needs maintenance.
11. Room temperature
12. : Appears when the buttons are locked.
13. : Appears when [On/Off timer] or [Auto-Off] function is enabled.
: Appears when the timer is disabled by the centralized control system.
: Appears when the HOLD function is enable.
14. : Appears when [Weekly timer] is enabled.
15. : Appears while the units are operated in the energy saving mode.
 (Will not appear on some models of indoor units)
16. : Appears while the outdoor units are operated in the silent mode.
17. : Appears when the built-in thermistor on the remote controller is activated to monitor the room temperature (11).
: Appears when the thermistor on the indoor unit is activated to monitor the room temperature.
18. : Indicates the vane setting.
19. : Indicates the louver setting.*1
20. : Indicates the ventilation setting.
21. : Appears when the preset temperature range is restricted.
22. : Appears when an energy saving operation is performed using [3D i-See sensor] function.*1
23. Centrally controlled: Appears for a certain period of time when a centrally-controlled item is operated.
24. Preliminary error display: An error code appears during the preliminary error.

*1. These functions are not applied to the floor standing models.

Menu structure



Not all functions are available on all models of indoor units.



Not all functions are available on all models of indoor units.

Main menu list

[Main menu]	Setting and display items		Setting details
[Operation]	[Vane · Vent. (Lossnay)]		Use to set the vane angle. • Select a desired vane setting. Use to turn on/off the louver. • Select a desired setting from [On] and [Off]. Use to set the amount of ventilation. • Select a desired setting from [Off], [Low], and [High].
	[High power]		Use to reach the comfortable room temperature quickly. • Units can be operated in the High-power mode for up to 30 minutes.
	[Comfort]	[Manual vane angle]	• Use to fix each vane angle.
		[3D i-See sensor]	Use to set the following functions for 3D i-See sensor. • Air distribution • Energy saving option • Seasonal airflow
[Timer]	[Timer]	[On/Off timer] *1	Use to set the operation ON/OFF time. • Time can be set in 5-minute increments.
		[Auto-Off]	Use to set the Auto-Off time. • Time can be set to a value from 30 to 240 in 10-minute increments.
	[Weekly timer] *1, *2		Use to set the weekly operation ON/OFF time. • Up to 8 operation patterns can be set for each day. (Not valid when [On/Off timer] is enabled.)
	[OU silent mode] *1		Use to set the time periods in which priority is given to quiet operation of outdoor units over temperature control. Set the start/stop time for each day of the week. • Select the desired silent level from normal, middle, and quiet.
[Energy saving]	[Restriction]	[Temp. range] *2	Use to restrict the preset temperature range. • Different temperature ranges can be set for different operation modes.
		[Operation locked]	Use to lock selected functions. • The locked functions cannot be operated.
	[Energy saving]	[Auto return] *2	Use to get the units to operate at the preset temperature after performing energy saving operation for a specified time period. • Time can be set to a value from 30 and 120 in 10-minute increments. (This function will not be valid when the preset temperature ranges are restricted.)
		[Schedule] *1	Set the start/stop time to operate the units in the energy saving mode for each day of the week, and set the energy saving rate. • Up to 4 energy saving operation patterns can be set for each day. • Time can be set in 5-minute increments. • Energy saving rate can be set to a value from 0% or 50 to 90% in 10% increments.
[Initial setting]	[Basic setting]	[Main/Sub]	When connecting 2 remote controllers, one of them needs to be designated as a sub controller.
		[Clock]	Use to set the current time.
		[Daylight saving time]	Set the daylight saving time.
		[Administrator password]	The administrator password is required to make the settings for the following items. • [Timer] setting • [Energy saving] setting • [Weekly timer] setting • [Restriction] setting • [OU silent mode] setting • Night set back
	[Display setting]	[Main display]	Use to switch between [Full] and [Basic] modes for the main display, and use to change the background colors of the display to black.
		[Display details]	Make the settings for the remote controller related items as necessary. [Clock]: The initial settings are [Yes] and [24h] format. [Temperature]: Set to either Celsius (°C) or Fahrenheit (°F). [Room temp.]: Set to Show or Hide. Auto mode: Set Auto mode display or Only Auto display.
		[Contrast · Brightness]	Use to adjust screen contrast and brightness.
		[Language selection]	Use to select the desired language.
	[Operation setting]	[Auto mode]	Whether or not to use [Auto mode] can be selected by using the button. This setting is valid only when indoor units with [Auto mode] function are connected.
		[Setback mode]	Whether or not to use [Setback mode] can be selected by using the button. This setting is valid only when indoor units with [Setback mode] function are connected.

[Main menu]	Setting and display items		Setting details
[Maintenance]	[Error information]		Use to check error information when an error occurs. • Error code, error source, refrigerant address, model name, manufacturing number, contact information (dealer's phone number) can be displayed. (The model name, manufacturing number, and contact information need to be registered in advance to be displayed.)
	[Refrigerant leak info]		Use to check error information when a refrigerant leakage occurs. • Error code, error source, error source address, unit model, manufacturing number, contact information (dealer's phone number) can be displayed. * The unit model, manufacturing number, and contact information need to be registered in advance to be displayed
	[Filter information]		Use to check the filter status. • The filter sign can be reset.
	[Cleaning]	[Auto descending panel]	Use to lift and lower the auto descending panel (Optional parts).
[Service]	[Test run]		Select [Test run] from [Service menu] to bring up the [Test run menu]. • [Test run] • [Drain pump test run] • [RC alarm test] • [Circuit check]
	[Input maintenance information]		Select [Input maintenance Info.] from [Service menu] to bring up [Maintenance information] screen. The following settings can be made from [Maintenance information] screen. • [Model name input] • [Serial No. input] • [Dealer information input] • [Initialize maintenance info.]
	[Settings]	[Function setting]	Make the settings for the indoor unit functions via the remote controller as necessary.
	[Check]	[Error history]	Display the error history and execute [Delete error history?].
		[Diagnosis]	[Self check]: Error history of each unit can be checked via the remote controller. [Remote controller check]: When the remote controller does not work properly, use the remote controller checking function to troubleshoot the problem.
	[Others]	[Maintenance password]	Use to change the maintenance password.
		[Initialize remote controller]	Use to initialize the remote controller to the factory shipment status.
		[Remote controller information]	Use to display the remote controller model name, software version, and serial number.

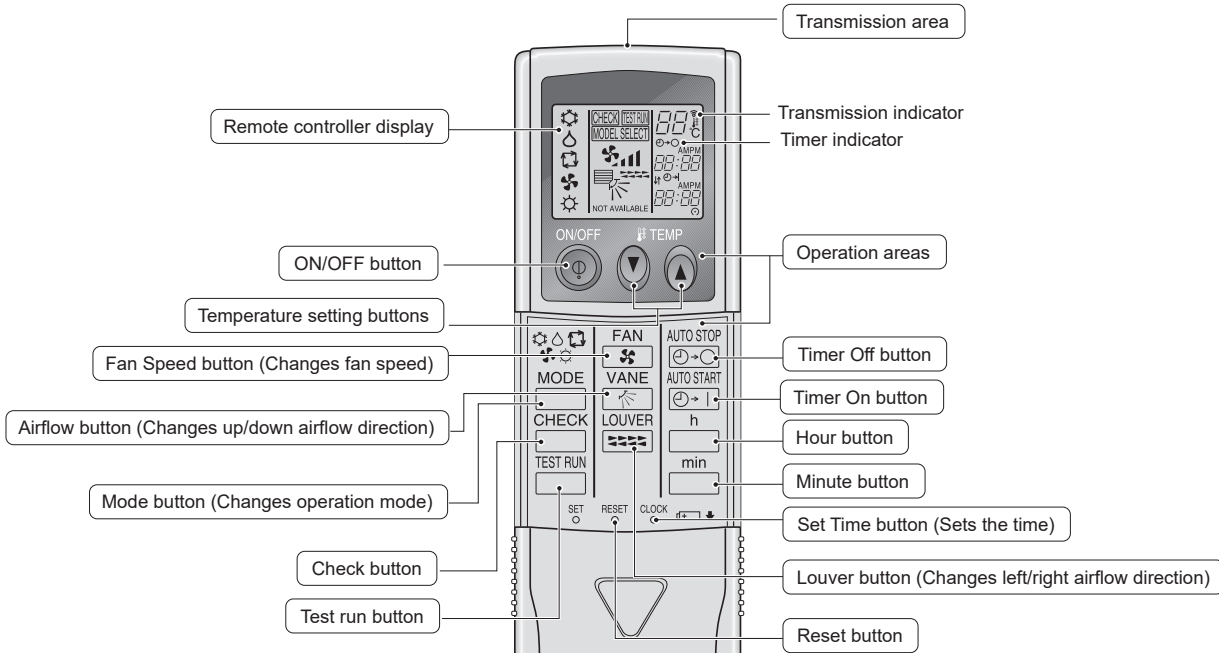
*1. Clock setting is required.

*2. 1°F (2°C) increments

11-1-2. PAR-FL32MA

Controller interface

- For explanation purposes, all of the items that appear in the display are shown.
- All items are displayed when the reset button is pressed.

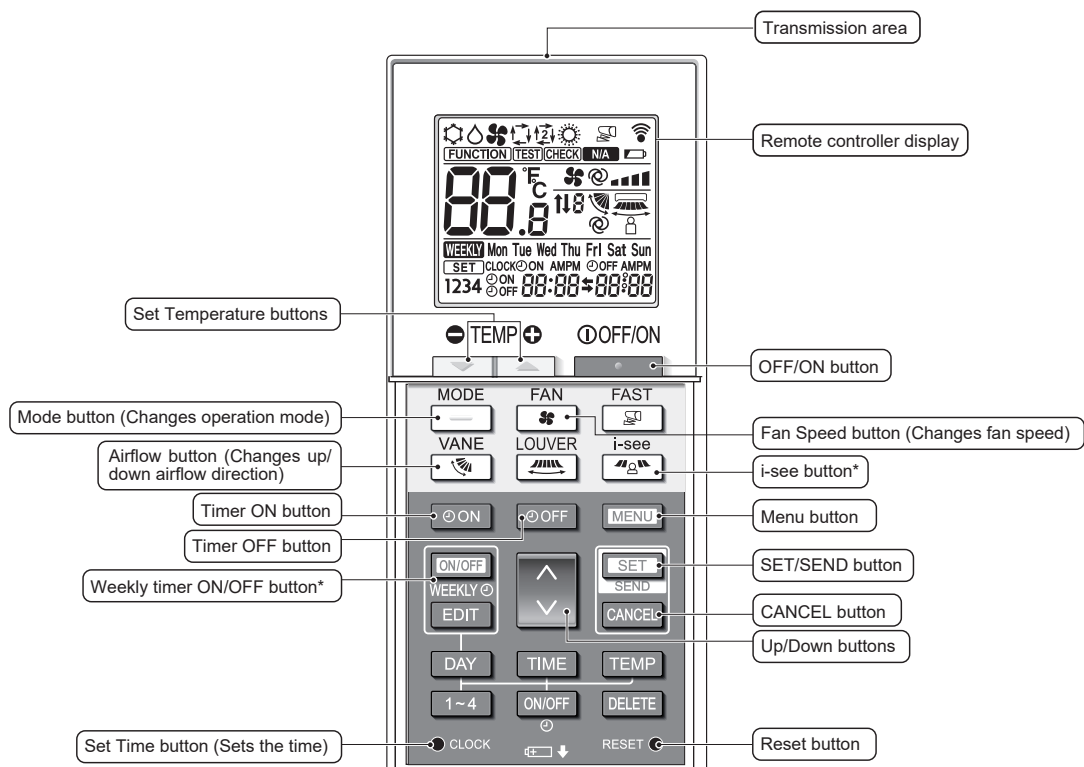


Instructions for use

- When using the wireless remote controller, point it towards the receiver on the indoor unit.
- If the remote controller is operated within approximately three minutes after power is supplied to the indoor unit, the indoor unit may beep three times as the unit is performing the initial automatic check.
- The indoor unit beeps to confirm that the signal transmitted from the remote controller has been received. Signals can be received up to approximately 7 meters in a direct line from the indoor unit in an area 45° to the left and right of the unit. However, illumination such as fluorescent lights and strong light can affect the ability of the indoor unit to receive signals.
- If the operation lamp near the receiver on the indoor unit is blinking, the unit needs to be inspected. Consult your dealer for service.
- Handle the remote controller carefully. Do not drop the remote controller or subject it to strong shocks. In addition, do not get the remote controller wet or leave it in a location with high humidity.
- To avoid misplacing the remote controller, install the holder included with the remote controller on a wall and be sure to always place the remote controller in the holder after use.

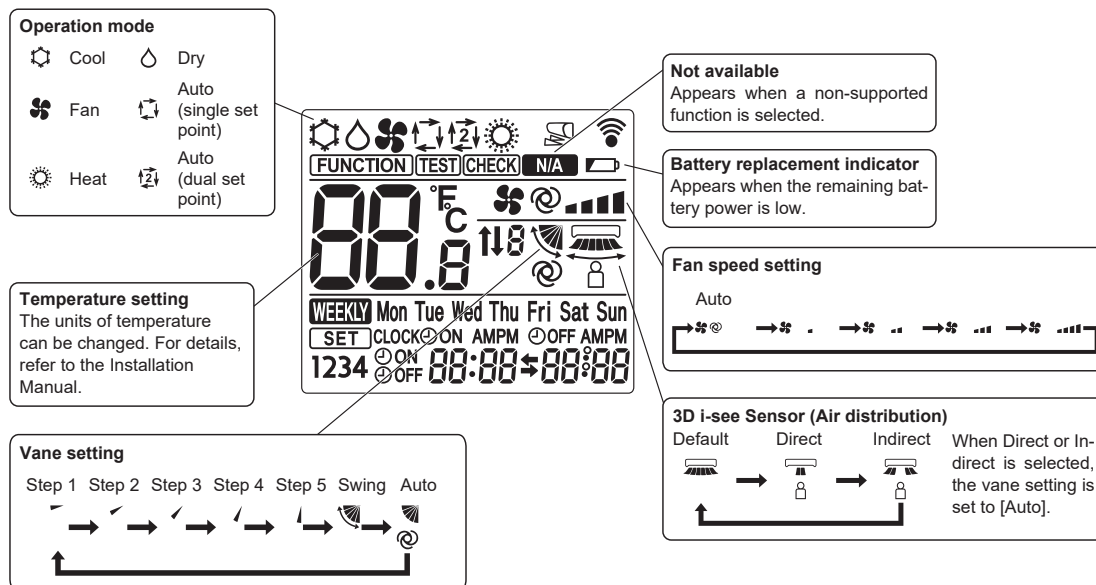
11-1-3. PAR-SL103A-E

Controller interface



*1. This button is enabled or disabled depending on the model of the indoor unit.

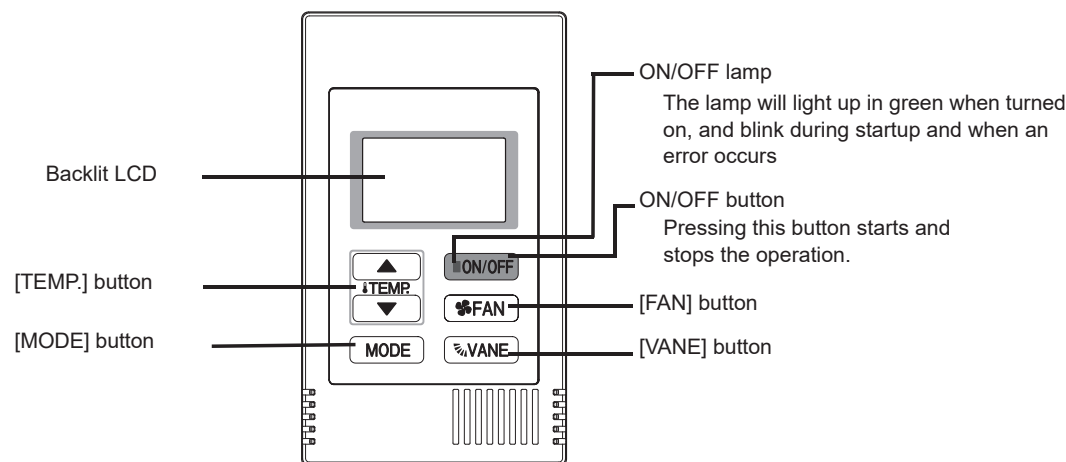
Display



11-1-4. PAC-YT53CRAU

Controller interface

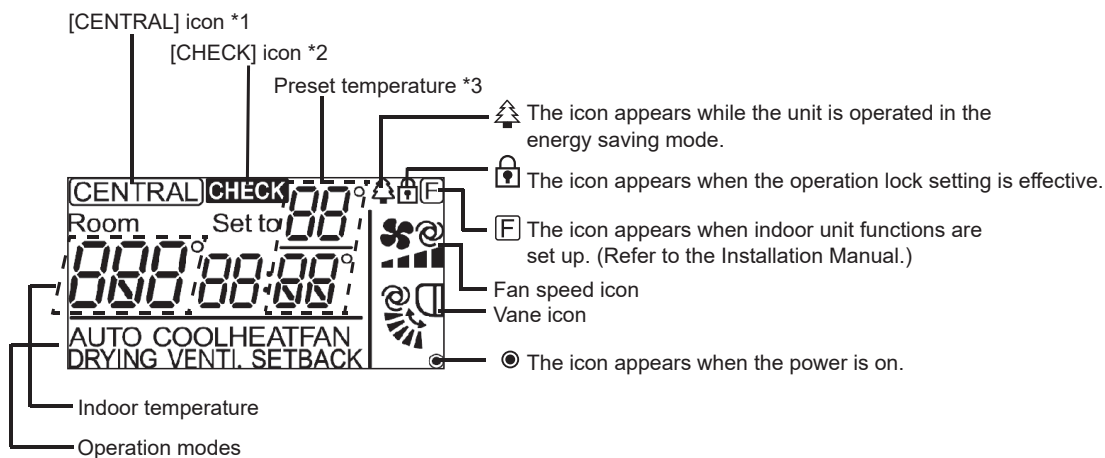
- Note:**
- The phrase "Wired remote controller" in this manual refers only to the PAC-YT53CRAU.
 - If you need any information for the other remote controller, please refer to either the installation manual or initial setting manual which are included in remote controller's box.



- Note:**
- To set the functions that are not available on this controller (TAC-YT53CRAU) such as Louver, use the centralized controller.

Display

- Note:**
- All icons are displayed for explanation purpose.



***1 [CENTRAL] icon**

This icon appears when one of the following local operations is prohibited: ON/OFF; operation mode; preset temperature; fan speed; vane.

***2 [CHECK] icon**

For City Multi, when an error occurs, the power indicator will blink, and an unit address (3 digits) and an error code (4 digits) will blink. Check the error status, stop the operation, and consult your dealer.

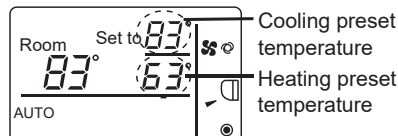
***3 Preset temperature**

Celsius or Fahrenheit is selectable. Refer to the installation manual for details.

In Cool, Dry, Heat, or Auto
(single set point) modes



In Auto (dual set point) or
Setback modes



11-2. [ERROR INFORMATION]

Operating instructions

When an error occurs, the following screen will appear and the ON/OFF LED will blink.
Check the error status, stop the operation, and consult your dealer.

1. Check the error information

- A list of errors that are occurring will appear.
Press the F1 or F2 button to select the error, and press the F3 button.
- Pressing the F1 button while the cursor is on the bottom line will display the next page.
- Error code, error source, error source address, unit model name, date and time on which an error occurred, and serial number will appear.
- The model name and serial number will appear only if the information has been registered.
- Contact information (dealer's phone number) will appear on the last page.
Contact information (dealer's phone number) will appear if the information has been registered.

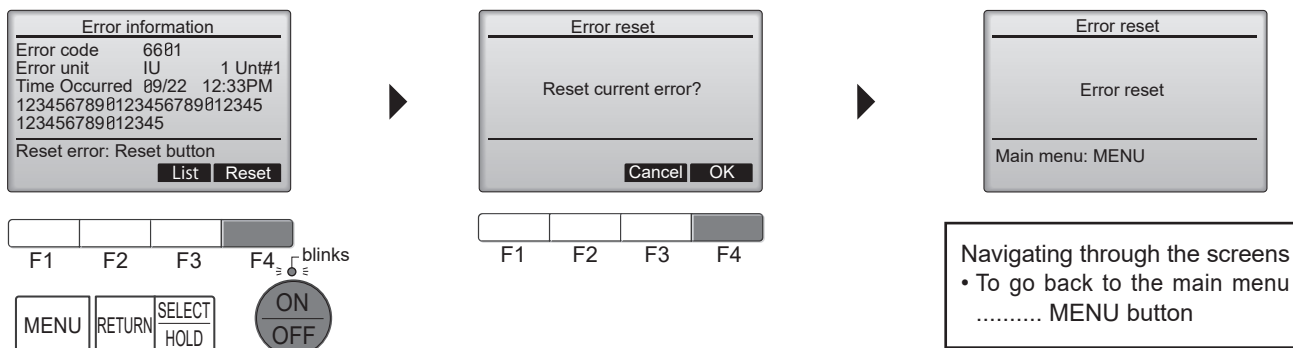


2. Reset the error

- Press the F4 button or the ON/OFF button to reset the error that is occurring.
- Select [OK] with the F4 button.
- A confirmation screen will appear.

Note:

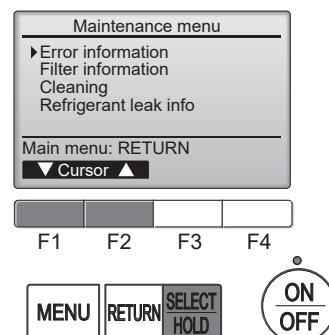
- All the errors that are occurring will be reset collectively.
- Errors cannot be reset while the ON/OFF operation is prohibited.



• Checking the error information

While no errors are occurring, page 2/2 of the error information can be viewed by selecting "Error information" from the Maintenance menu.

Errors cannot be reset from this screen.



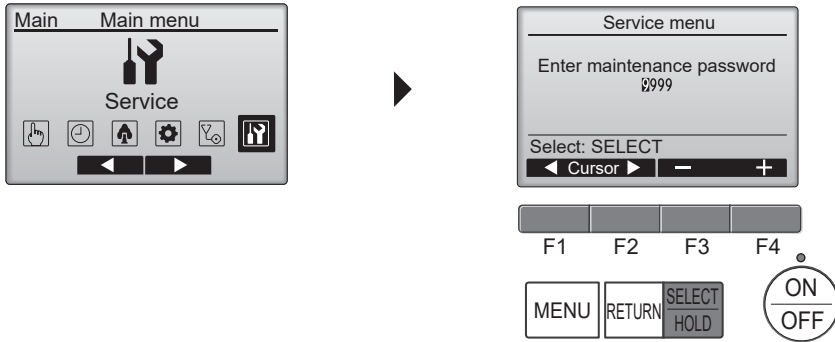
11-3. [SERVICE MENU]

Note:

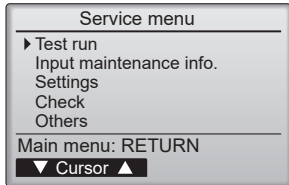
- Maintenance password is required to set each item in the service menu.

Operating instructions

1. Press [MENU] button to open the main menu.
2. Select [Service] from [Main menu], and press [SELECT] button.
A window asking for the password will appear when [Service menu] is selected.



3. Enter the current maintenance password (4 numerical digits).
Move the cursor to the digit you want to change with F1 or F2 button and set each number (0 through 9) with F3 or F4 button.
4. Press [SELECT] button.
[Service menu] will appear if the password matches.



Notes:

- The initial maintenance password is "9999". Change the default password as necessary to prevent unauthorized access. Have the password available for those who need it.
- If you forget your maintenance password, you can initialize the password to the default password "9999" by pressing and holding F1 button for 10 seconds on the maintenance password setting screen.
- Air conditioning units need to be stopped depending on the item you want to set. Remote controller might not be used when the system is centrally controlled. The following screen will appear in this case.



Notes:

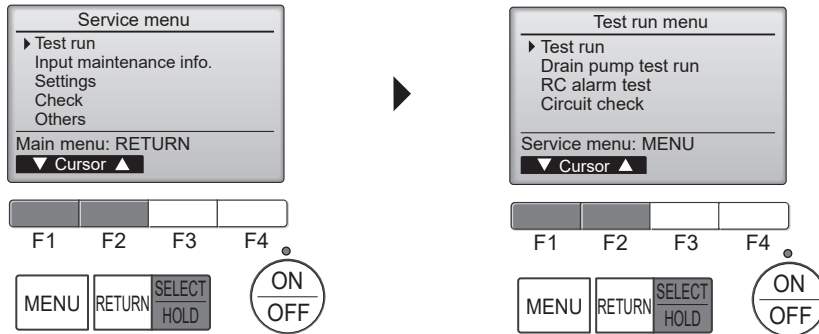
- To go back to [Service menu], press [MENU] button.
- To return to the previous screen, press [RETURN] button.

11-4. [TEST RUN]

11-4-1. PAR-43MAAUB

Operating instructions

1. Select [Service] from [Main menu], and press [SELECT] button.
2. Select [Test run] with F1 or F2 button, and press [SELECT] button.



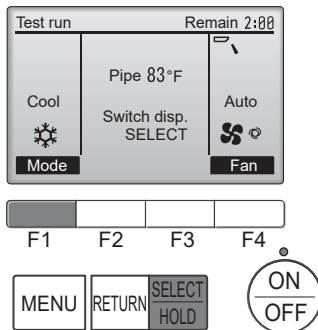
■ Test run operation

1. Press F1 button to go through the operation modes in the order of [Cool] and [Heat].

Cooling mode: Check if the cold air blows out.

Heating mode: Check if the heat blows out.

2. Check the operation of the outdoor unit's fan.
3. Press [SELECT] button and open the vane setting screen.

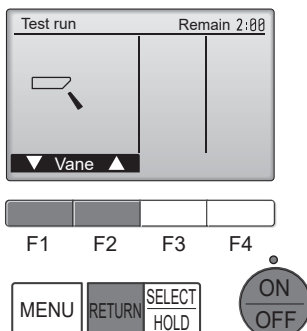


■ Auto vane check

1. Check the auto vane with F1 and F2 buttons.
2. Press [RETURN] button to return to test run operation.
3. Press [ON/OFF] button.

Notes:

- When the test run is completed, [Test run menu] screen will appear.
- The test run will automatically stop after 2 hours.
- The function is available only for the model with vanes.



11-4-2. PAR-FL32MA

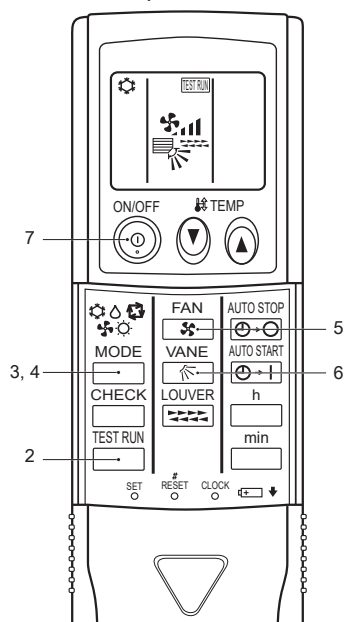
Measure an impedance between the power supply terminal block on the outdoor unit and ground with a 500 V megohmmeter and check that it is equal to or greater than 1.0 MΩ.

Operating instructions

1. Turn on the main power to the unit.
2. Press  button twice continuously.
(Start this operation from the status of remote controller display turned off.)
The symbol of  and current operation mode are displayed.
3. Press  button to activate the cool mode , then check whether cool air blows out from the unit.
4. Press  button to activate the heat mode , then check whether warm air blows out from the unit.
5. Press  button and check whether strong air blows out from the unit.
6. Press  button and check whether the auto vane operates properly.
7. Press  button to stop the test run.

Notes:

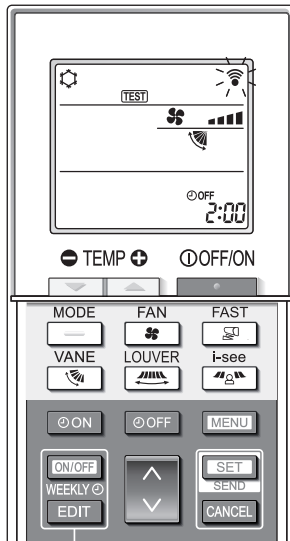
- Point the remote controller towards the indoor unit receiver to perform steps 2 to 7.
- It is not possible to run in the fan, the dry or the auto mode.



11-4-3. PAR-SL103A-E

Operating instructions

1. Stop the air conditioner.
 - Press  button to stop the air conditioner.
 - If the weekly timer is enabled (**WEEKLY** is shown on the display), press  button to disable it (**WEEKLY** is off).
2. Start the test run.
 - Press  button for 5 seconds.
CHECK appears on the display and the unit starts the service mode.
 - Press  button.
TEST appears on the display and the unit starts the test run mode.
 - Press the following buttons to start the test run.
 -  : Switch the operation mode between cooling and heating and start the test run.
 -  : Switch the fan speed and start the test run.
 -  : Switch the airflow direction and start the test run.
 -  : Switch the louver and start the test run.
 -  : Start the test run.
3. Stop the test run.
 - Press  button to stop the test run.
 - After 2 hours, the stop signal is transmitted.



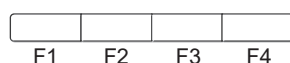
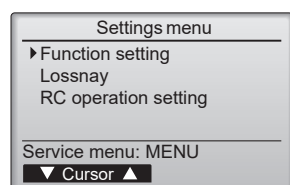
11-5. [FUNCTION SETTING]

11-5-1. PAR-43MAAUB

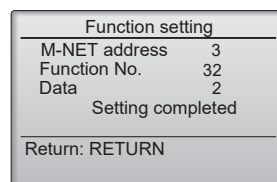
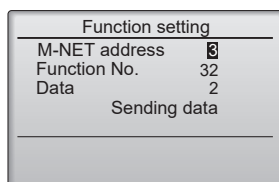
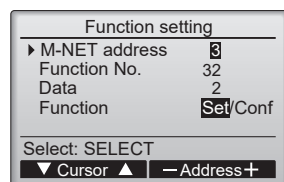
Operating instructions

1. Open the [Function setting] screen
 - Select [Service] from [Main menu], and press [SELECT] button.
 - Select [Settings] from [Service menu], and press [SELECT] button.
 - Select [Function setting] and press [SELECT] button.

[Function setting] screen will appear.



2. Set the [M-NET address], [Function No.] and setting value
 - Enter the [M-NET address], [Function No.] and setting value with F1 - F4 buttons, and then press [SELECT] button to confirm the current setting. A screen will appear indicating that the settings information is being sent. When the settings information has been sent, a screen will appear indicating its completion.
 - To check the current settings of a given unit, enter the setting for its M-NET address and function No., select [Conf] for [Function], and press [SELECT] button. A screen will appear indicating that the settings are being searched for. When the search is done, the current settings will appear.
 - To make additional settings, press [RETURN] button to return to the previous screen. Set the function numbers for other indoor units by following the same steps.



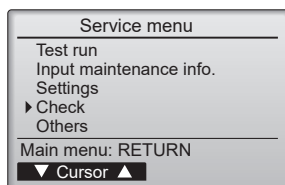
Notes:

- Refer to the installation manual of the indoor unit for the information about initial settings, function numbers, and setting values of indoor units.
- Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.

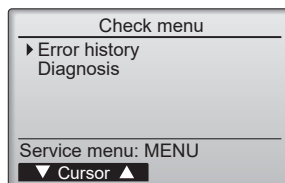
11-6. [ERROR HISTORY]

Operating instructions

1. Open [Service menu] and select [Check]
 - Select [Service] from [Main menu], and press [SELECT] button.
 - Select [Check] with F1 or F2 button, and press [SELECT] button.



2. Select [Error history] with F1 or F2 button, and press [SELECT] button

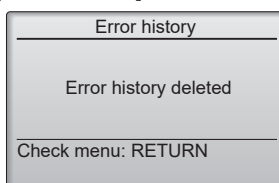
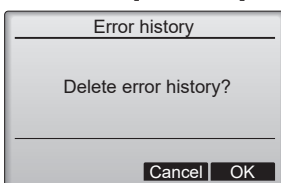


3. 16 error history records will appear
4 records are shown per page, and the top record on the first page indicates the latest error record.

Error history				1/4
Error	Unt#	dd/mm/yy		
6831	1	12/04/20	12:34	
6831	1	12/04/20	12:34	
6831	1	12/04/20	12:34	
6831	1	12/04/20	12:34	

Check menu: RETURN
▼ Page ▲ Delete

4. Delete the error history
 - Press F4 button [Delete].
A confirmation screen will appear asking if you want to delete the error history.
 - Press F4 button [OK] to delete the history.
[Error history deleted] will appear on the screen.
 - Press [RETURN] button to go back to [Check menu] screen.

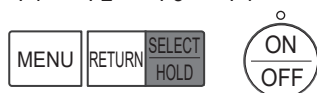
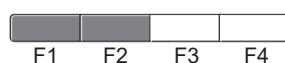
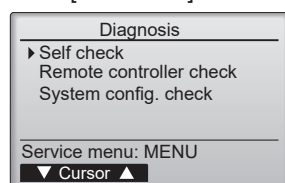


11-7. SELF-DIAGNOSIS

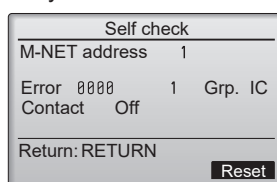
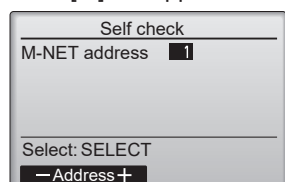
11-7-1. PAR-43MAAUB

Operating instructions

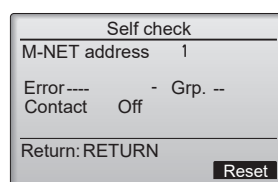
- Open [Self check] screen
 - Select [Service] from [Main menu], and press [SELECT] button.
 - Select [Check] from [Service menu], and press [SELECT] button.
 - Select [Diagnosis] from [Check menu], and press [SELECT] button.
 - Select [Self check] with F1 or F2 button, and press [SELECT] button.
 [Self check] screen will appear.



- Enter the M-NET address with F1 or F2 button, and press [SELECT] button
 - Error code, unit number, attribute, and indoor unit demand signal ON/OFF status at the contact will appear. [-] will appear when there is no error history.

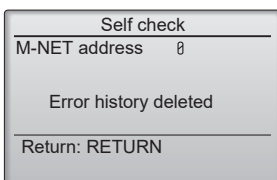
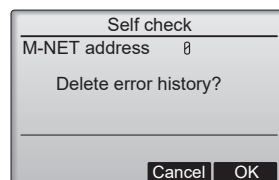


<Error history is shown.>



<When there is no error history.>

- Reset the error history
 - Press F4 button [Reset].
 - A confirmation screen will appear to ask you if you want to delete the error history.
 - Press F4 button [OK] to delete the error history.
 - [Request rejected] will appear if deletion fails.
 - [Unit not exist] will appear if no indoor unit is assigned to the entered address.



Notes:

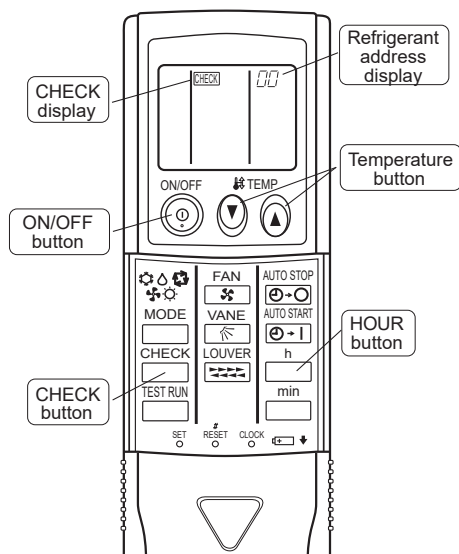
- To go back to [Service menu], press [MENU] button
- To return to the previous screen, press [RETURN] button

11-7-2. PAR-FL32MA

When a malfunction occurs to air conditioners, both of the indoor unit and the outdoor unit will stop and the operation lamp will blink to inform the unusual stop.

Operating instructions

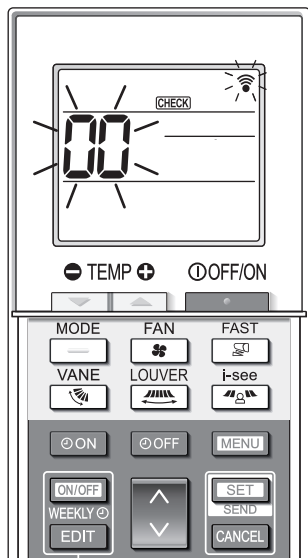
1. Press  button twice.
 appears, and the refrigerant address "00" blinks.
Make sure that the remote controller's display has stopped before continuing.
2. Press   buttons to select the refrigerant address of the indoor unit for self-diagnosis.
Set the address of the indoor unit that is to be self-diagnosed.
3. Point the remote controller at the sensor of the indoor unit and press  button.
If an air conditioner error occurs, the indoor unit's sensor emits an intermittent buzzer sound, the operation light blinks, and the error code is output.
4. Point the remote controller at the sensor of the indoor unit and press  button.
The check mode is cancelled.



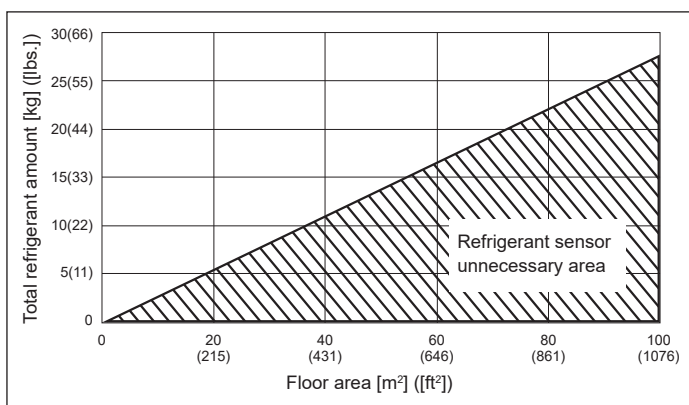
11-7-3. PAR-SL103A-E

Operating instructions

1. Press  button to stop the air conditioner.
If the weekly timer is enabled (**WEEKLY** is shown on the display), press  button to disable it (**WEEKLY** is off).
2. Press  button for 5 seconds. **CHECK** appears and the unit starts the self-check mode.
3. Press  button to select the refrigerant address (M-NET address) of the indoor unit for which you want to perform the self-check.
4. Press  button.
If an error is detected, the error code is indicated by the number of beeps from the indoor unit and the number of blinks of the operation indicator lamp.
5. Press  button.
CHECK and the refrigerant address (M-NET address) go off and the self-check is completed.



11-8. REFRIGERANT SENSOR UNNECESARY SETTING



If $M/A \leq 0.27$, the refrigerant sensor can be disabled by disconnecting the CNSB connector on the control board.

M: Total refrigerant amount [kg] ([lbs.])

A: Floor area [m²] ([ft²])

Caution: Do not disconnect the CNSB connector in an environment where $M/A \geq 0.27$.

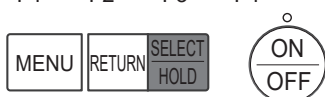
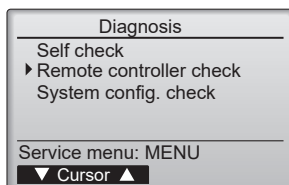
If a refrigerant leak occurs with the refrigerant sensor disabled, the safety device will not be able to operate.

11-9. [REMOTE CONTROLLER CHECK]

Operating instructions

If operations cannot be completed with the remote controller, diagnose the remote controller with this function.

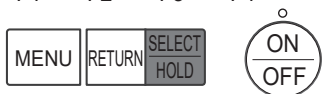
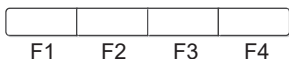
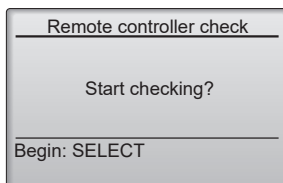
1. Go to [Remote controller check] screen
 - Select [Service] from [Main menu], and press [SELECT] button.
 - Select [Check] from [Service menu], and press [SELECT] button.
 - Select [Diagnosis] from [Check menu], and press [SELECT] button.
 - Select [Remote controller check] with F1 or F2 button, and press [SELECT] button.



2. Start the remote controller check
 - Select [Remote controller check] from [Diagnosis], and press [SELECT] button to start the remote controller check and see the check results.

Notes:

- To cancel the remote controller check and exit [Remote controller check] menu screen, press [MENU] or [RETURN] button.
- The remote controller will not reboot itself.



3. Check the result of the remote controller check
See the following descriptions for each result:

[OK]:

- The remote controller has no problem. Check other parts to find problems.

[E3], [6832]:

- There is noise on the transmission line, or the indoor unit or another remote controller is faulty. Check the transmission line and the other remote controllers.

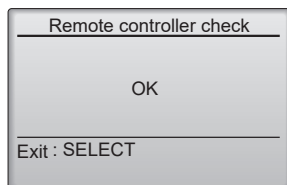
[NG] (ALL0, ALL1):

- Send-receive circuit fault. The remote controller needs to be replaced.

[ERC]:

- The number of data errors is the discrepancy between the number of bits in the data transmitted from the remote controller and that of the data that was actually transmitted over the transmission line. If data errors are found, check the transmission line for external noise interference.

If [SELECT] button is pressed after the remote controller check results are displayed, remote controller check will end, and the remote controller will automatically reboot itself.



Note:

- Check the remote controller display and see if anything is displayed (including lines). Nothing will appear on the remote controller display if the correct voltage (8.5 – 12 VDC) is not supplied to the remote controller. If this is the case, check the remote controller wiring and indoor units.

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