

TECHNICAL & SERVICE MANUAL

Series PLFY Ceiling Cassettes R32/R410A

Indoor unit
[Model Name]

 PLFY-MS15VFM2-E
 PLFY-MS15VFM2-ET

 PLFY-MS20VFM2-E
 PLFY-MS20VFM2-ET

 PLFY-MS25VFM2-E
 PLFY-MS25VFM2-ET

 PLFY-MS32VFM2-E
 PLFY-MS32VFM2-ET

 PLFY-MS40VFM2-E
 PLFY-MS40VFM2-ET

 PLFY-MS50VFM2-E
 PLFY-MS50VFM2-ET

[Service Reference]

 PLFY-MS15VFM2-E.TH
 PLFY-MS15VFM2-ET.TH

 PLFY-MS20VFM2-E.TH
 PLFY-MS20VFM2-ET.TH

 PLFY-MS25VFM2-E.TH
 PLFY-MS25VFM2-ET.TH

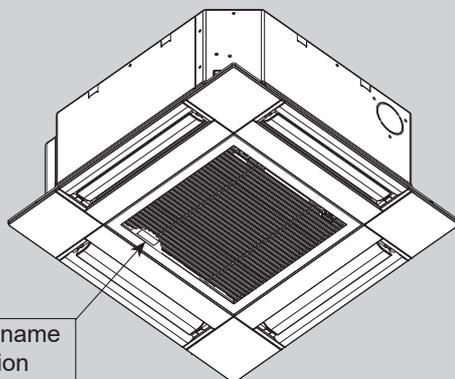
 PLFY-MS32VFM2-E.TH
 PLFY-MS32VFM2-ET.TH

 PLFY-MS40VFM2-E.TH
 PLFY-MS40VFM2-ET.TH

 PLFY-MS50VFM2-E.TH
 PLFY-MS50VFM2-ET.TH

Notes:

- This manual describes only service data of the indoor units.


INDOOR UNIT

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PARTS CATALOG (OCB924)

CITY MULTI

MEANINGS OF SYMBOLS DISPLAYED ON THE UNIT

	WARNING (Risk of fire)	This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R32, this unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is 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

Caution for units utilizing refrigerant R32/R410A

Preparation before the repair service.

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air conditioner, turn off the power-supply breaker.
- Discharge the condenser before the work involving the electric parts.

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the following.

- Be sure to clean the pipes and make sure that the insides of the pipes are clean.
- Change flare nut to the one provided with this product. Use a newly flared pipe.
- Avoid using thin pipes.
- In case of reconnecting the refrigerant pipes after detaching, make the flared part of pipe re-fabricated.

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.

Precautions during the repair service.

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigerating cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.
- When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.

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/R410A refrigerant.

The following tools are necessary to use R32/R410A refrigerant.

Tools for R32/R410A	
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.

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.

Do not use refrigerant other than R32/R410A.

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

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.

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

[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 2.5 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 odour.
- (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.

[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/R410A 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 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 systems, (1-3) to (1-7) shall be completed prior to conducting work on the systems.
 - (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. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.
 - (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 refrigeration 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 refrigeration 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 charge size 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.
 - Refrigeration 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 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;
 - no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - 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.

(6) Leak Detection Methods

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 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. For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

(7) Removal and Evacuation

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

- remove refrigerant
- purge the circuit with inert gas
- evacuate
- purge again with inert gas
- open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants, the system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times.

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

For appliances containing flammable refrigerants, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

(8) 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 upright.
- Ensure that the refrigeration 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 refrigeration 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.

(9) 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 reclaimed 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 manufacturer's 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 refrigeration system unless it has been cleaned and checked.

(10) Labelling

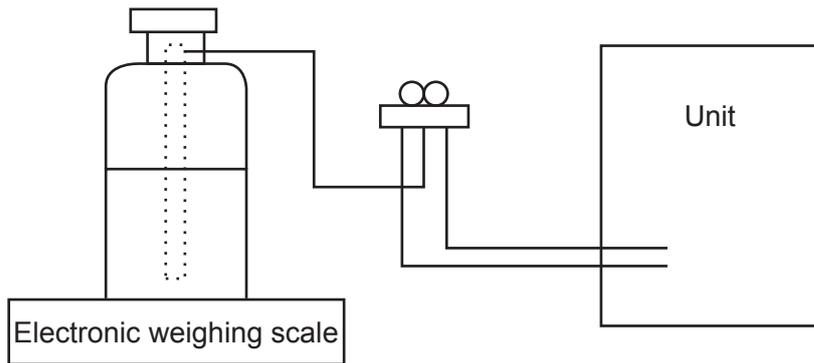
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

(11) 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 are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. 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. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed 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/R410A refrigerant.

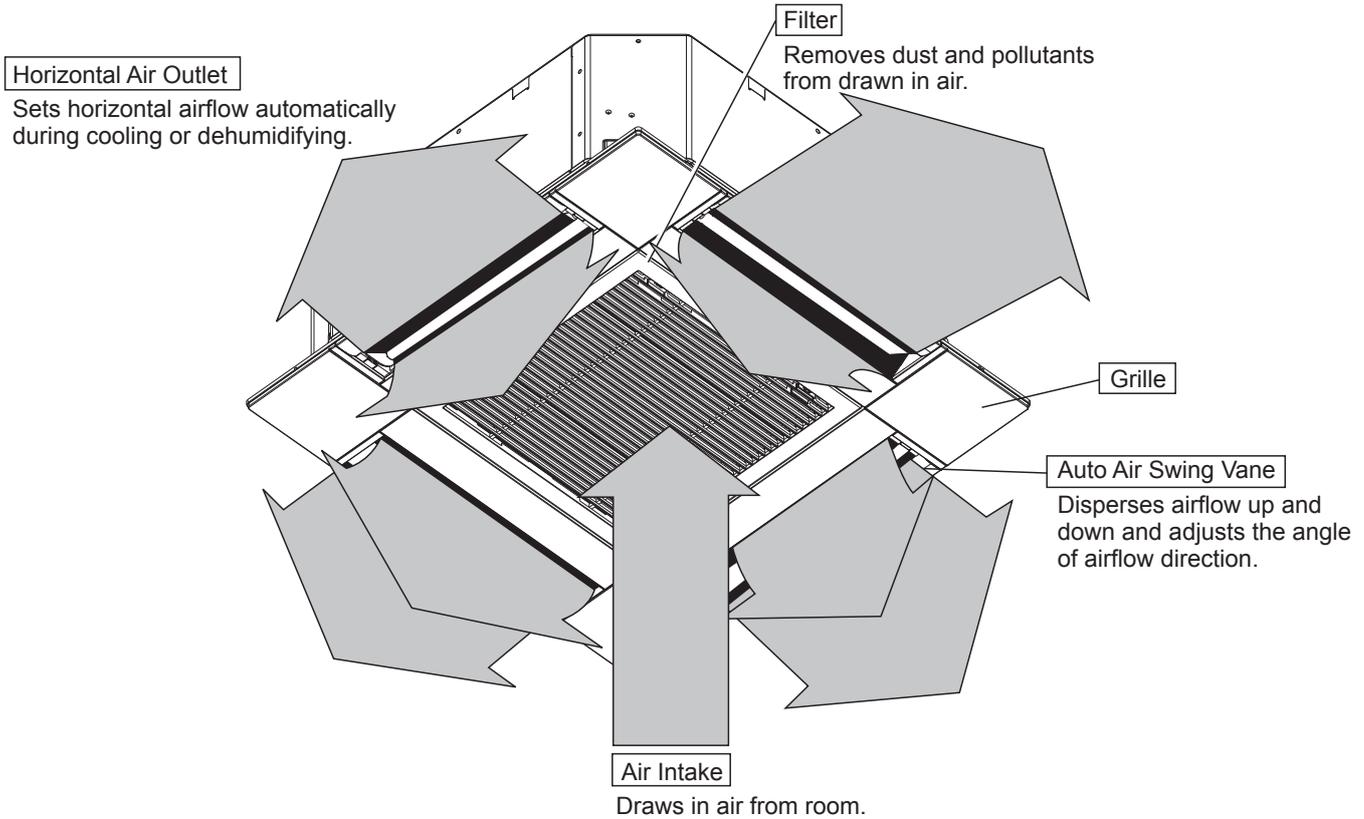
Refer to the spec name plate on outdoor unit for the type of refrigerant being used.

No.	Tool name	Specifications
1	Gauge manifold	<ul style="list-style-type: none"> · Use the existing fitting specifications. (UNF1/2) · Use high-tension side pressure of 5.3MPa·G or over.
2	Charge hose	<ul style="list-style-type: none"> · Use pressure performance of 5.09MPa·G or over.
3	Electronic weighing scale	
4	Gas leak detector	<ul style="list-style-type: none"> · Use the detector for R410A or R32.
5	Adaptor for reverse flow check	<ul style="list-style-type: none"> · Attach on vacuum pump.
6	Refrigerant charge base	
7	Refrigerant cylinder	<ul style="list-style-type: none"> · R32 or R410A refrigerant · Cylinder with syphon
8	Refrigerant recovery equipment	

2

PARTS NAMES AND FUNCTIONS

2-1. Indoor Unit



2-2. WIRED REMOTE CONTROLLER <PAR-42MAAB>

Wired remote controller function

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

○ : Supported × : Unsupported

	Function	PAR-42MAAB	
		Slim	CITY MULTI
Body	Product size H × W × D (mm)	120 × 120 × 14.5	
	LCD	Full Dot LCD	
	Backlight	○	
Energy-saving	Energy-saving operation schedule	○	×
	Automatic return to the preset temperature	○	
Restriction	Setting the temperature range restriction	○	
Function*	Operation lock function	○	
	Weekly timer	○	
	ON/OFF timer	○	
	High Power	○	×
	Manual vane angle	○	

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

Refer to "10-1. REMOTE CONTROLLER FUNCTIONS" for details.

3

SPECIFICATIONS

3-1. SPECIFICATIONS

Model		PLFY-MS15VFM2-E	PLFY-MS20VFM2-E	PLFY-MS25VFM2-E	PLFY-MS32VFM2-E	PLFY-MS40VFM2-E	PLFY-MS50VFM2-E	
		PLFY-MS15VFM2-ET	PLFY-MS20VFM2-ET	PLFY-MS25VFM2-ET	PLFY-MS32VFM2-ET	PLFY-MS40VFM2-ET	PLFY-MS50VFM2-ET	
power source		1-phase 220-240 V 50 Hz, 1-phase 220-240 V 60 Hz						
cooling capacity	*1 kW	1.7	2.2	2.8	3.6	4.5	5.6	
	*1 kcal/h	1,450	1,900	2,400	3,100	3,900	4,800	
	*1 Btu/h	5,800	7,500	9,600	12,300	15,400	19,100	
	*2 kcal/h	1,500	2,000	2,500	3,150	4,000	5,000	
	Power input kW	0.02	0.02	0.02	0.02	0.03	0.04	
	Current input A	0.21	0.22	0.23	0.24	0.28	0.40	
Heating capacity	*3 kW	1.9	2.5	3.2	4.0	5.0	6.3	
	*3 kcal/h	1,600	2,200	2,800	3,400	4,300	5,400	
	*3 Btu/h	6,500	8,500	10,900	13,600	17,100	21,500	
	Power input kW	0.02	0.02	0.02	0.02	0.03	0.04	
		Current input A	0.16	0.17	0.18	0.19	0.23	0.35
External finish		Galvanized steel sheet						
External dimension	mm	208 × 570 × 570						
	in.	8-1/4" × 22-1/2" × 22-1/2"						
H × W × D								
Net wight		kg (lb)			13 (29)			14 (31)
Decoration panel	model		SLP-2FA(L)(E)					
	External finish		Munsell 1.0Y 9.2/0.2					
	Dimension	mm	10 × 625 × 625					
	H × W × D		in.					
	Net weight		kg (lb)					
		3 (7)						
Heat exchanger		Cross fin (Aluminum fin and copper tube)						
FAN	Type		Turbo fan × 1					
	External pressure		0 Pa (0 mmH ₂ O)					
	Motor type		DC motor					
	Motor output kW		0.05					
	Driving mechanism		Direct driven					
	Airflow rate	m ³ /min	6.5-7.5-8	6.5-7.5-8.5	6.5-8-9	7-8-9.5	7.5-9-11	9-11-13
		L/s	108-125-133	108-125-142	108-133-150	117-133-158	125-150-183	150-183-217
cfm		230-265-282	230-265-300	230-282-318	247-282-335	265-318-388	318-388-459	
Noise level (Low-Mid-High) (measured in anechoic room)		dB <A>	26-28-30	26-29-31	26-30-33	26-30-34	28-33-39	33-39-43
Insulation material		PS						
Air filter		PP honeycomb fabric (long life type)						
Protection device		Fuse						
Refrigerant control device		LEV						
Connectable outdoor unit		R32/R410A CITY MULTI						
Diameter of refrigerant pipe	Liquid	mm (in.)	ø6.35 (ø1/4") Flare					
	Gas	mm (in.)	ø12.7 (ø1/2") Flare					
Field drain pipe size		mm (in.)	O.D. 32 mm (1-1/4") (PVC pipe VP-25 connectable)					
Standard attachment		Installation manual, Instruction book						
Remark	Optional parts		Decoration panel : SLP-2FA, SLP-2FAE, SLP-2FAL, SLP-2FALE, SLP-2FALM3, or SLP-2FALME3 *PLFY-MS-VFM2-(E/ET) should be used together with decoration panel.					
	Installation		Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.					
		*1 Nominal cooling condition		*2 Nominal cooling condition		*3 Nominal heating condition		Unit converter
		Indoor : 27°CDB/19°CWB (81°FDB/66°FWB) Outdoor : 35°CDB (95°FDB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0 m (0 ft)		Indoor : 27°CDB/19.5°CWB (81°FDB/67°FWB) Outdoor : 35°CDB (95°FDB) Pipe length : 5 m (16-3/8 ft) Level difference : 0 m (0 ft)		Indoor : 20°CDB (68°FDB) Outdoor : 7°CDB/6°CWB (45°FDB/43°FWB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0 m (0 ft)		kcal= kW × 860 Btu/h =3,412 cfm = m ³ /min × 35.31 lb = kg/0.4536
Notes:		1. Nominal conditions*1 and *3 are subject to JIS B8615-1. 2. Due to continuing improvement, above specification may be subject to change without notice.						

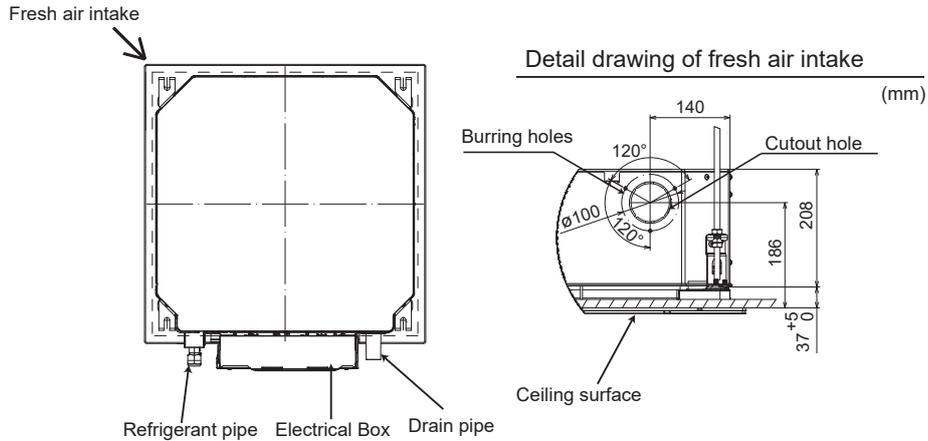
3-2. ELECTRICAL PARTS SPECIFICATIONS

Service reference Parts name	Symbol	PLFY-MS15VFM2-E.TH	PLFY-MS20VFM2-E.TH	PLFY-MS25VFM2-E.TH	PLFY-MS32VFM2-E.TH	PLFY-MS40VFM2-E.TH	PLFY-MS50VFM2-E.TH
		PLFY-MS15VFM2-ET.TH	PLFY-MS20VFM2-ET.TH	PLFY-MS25VFM2-ET.TH	PLFY-MS32VFM2-ET.TH	PLFY-MS40VFM2-ET.TH	PLFY-MS50VFM2-ET.TH
Thermistor (Room temperature detection)	TH21	Resistance 0°C/15 Ω, 10°C/9.6 Ω, 20°C/6.3 Ω, 25°C/5.4 Ω, 30°C/4.3 Ω, 40°C/3.0 Ω					
Thermistor (Pipe temperature detection/Liquid)	TH22	Resistance 0°C/15 Ω, 10°C/9.6 Ω, 20°C/6.3 Ω, 25°C/5.4 Ω, 30°C/4.3 Ω, 40°C/3.0 Ω					
Thermistor (Pipe temperature detection/Gas)	TH23	Resistance 0°C/15 Ω, 10°C/9.6 Ω, 20°C/6.3 Ω, 25°C/5.4 Ω, 30°C/4.3 Ω, 40°C/3.0 Ω					
Fuse (Indoor controller board)	F1	250 V 6.3 A					
Fan motor	MF	OUTPUT 50 W					
Vane motor	MV	MSBPC20M32 (green label)/MSBPC20M33 (blue label) 12 VDC 300 Ω/phase					
Drain pump	DP	PMD-12D13ME INPUT 3 W (13 VDC) 24 ℓ /Hr					
Drain float switch	FS	Open/short detection					
Linear expansion valve [coil]	LEV	12 VDC Stepping motor drive, Port dimension ø3.0 (0-2000pulse) PAM-B40YGME					
Power supply terminal block	TB2	(L, N) Rated to 250 V 20 A*					
Transmission terminal block	TB5	(M1, M2, S) Rated to 250 V 20 A*					
MA remote controller terminal block	TB15	(1, 2) Rated to 250 V 10 A*					
3D i-See sensor	—	5 VDC					
Motor for 3D i-See sensor	MT	MSBPC20M16 12 VDC 4 phase 250 Ω/phase					
Refrigerant sensor	RS	5 VDC					

* Refer to WIRING DIAGRAM for the supplied voltage.

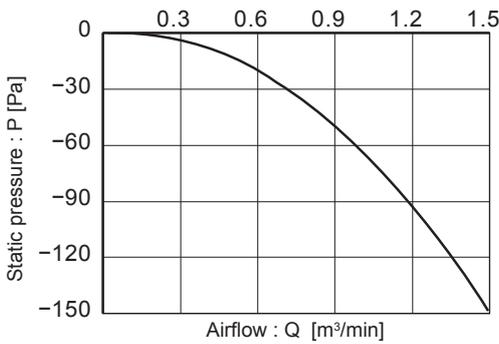
4-1. FRESH AIR INTAKE (Location for installation)

At the time of installation, use the duct holes (cut out) located at the positions shown in following diagram, as and when required.



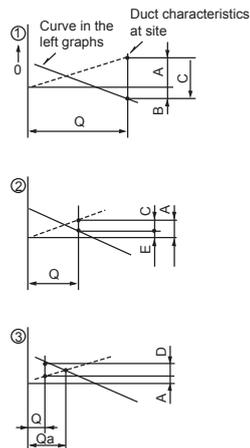
4-2. FRESH AIR INTAKE AMOUNT & STATIC PRESSURE CHARACTERISTICS

Taking air into the unit



NOTE: Fresh air intake amount should be 10% or less of whole air amount to prevent dew dripping.

How to read curves



- Q...Designed amount of fresh air intake $\lt; m^3/min >$
- A...Static pressure loss of fresh air intake duct system with airflow amount Q $\lt; Pa >$
- B...Forced static pressure at air conditioner inlet with airflow amount Q $\lt; Pa >$
- C...Static pressure of booster fan with airflow amount Q $\lt; Pa >$
- D...Static pressure loss increase amount of fresh air intake duct system for airflow amount Q $\lt; Pa >$
- E...Static pressure of indoor unit with airflow amount Q $\lt; Pa >$
- Qa...Estimated amount of fresh air intake without D $\lt; m^3/min >$

4-3. OPERATION IN CONJUNCTION WITH DUCT FAN (Booster fan)

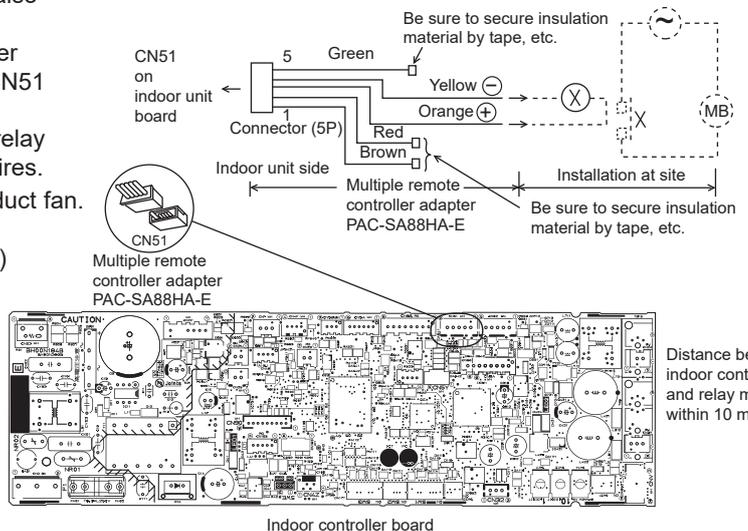
• Whenever the indoor unit operates, the duct fan also operates.

- (1) Connect the optional multiple remote controller adapter (PAC-SA88HA-E) to the connector CN51 on the indoor controller board.
- (2) Drive the relay after connecting the 12 VDC relay between the Yellow and Orange connector wires.

MB: Electromagnetic switch power relay for duct fan.

X: Auxiliary relay

(For 12 VDC, coil rating: 1.0 W or below)



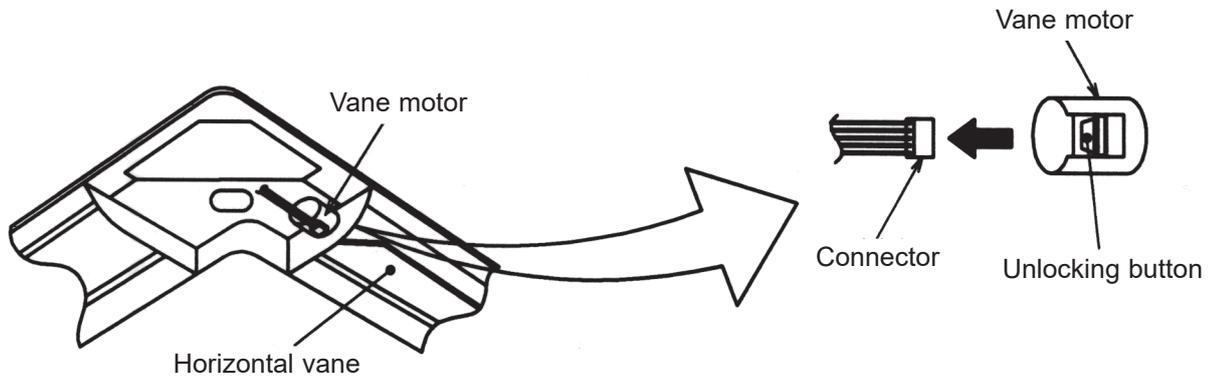
4-4. FIXING HORIZONTAL VANE

Horizontal vane of each air outlet can be fixed according to the environment where it is installed.

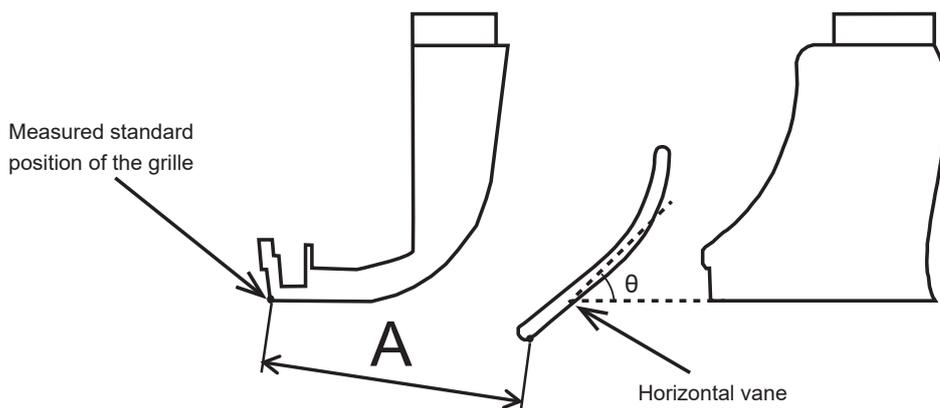
Setting procedures

- 1) Turn off a main power supply (Turn off a breaker).
- 2) Disconnect the vane motor connector of the direction of the arrow with pressing the unlocking button as shown in figure below.

Insulate the disconnected connector with the plastic tape.



- 3) Set the vertical vane of the air outlet by hand slowly within the range in the table below.



<Set range>

Standard of horizontal position	Angle $\theta = 21^\circ$ (Horizontal)	Angle $\theta = 24^\circ$	Angle $\theta = 39^\circ$	Angle $\theta = 42^\circ$	Angle $\theta = 45^\circ$ (Downward)
Dimension A (mm)	39	41	47	48	49

Note: Dimension between 39 mm and 49 mm can be arbitrarily set.

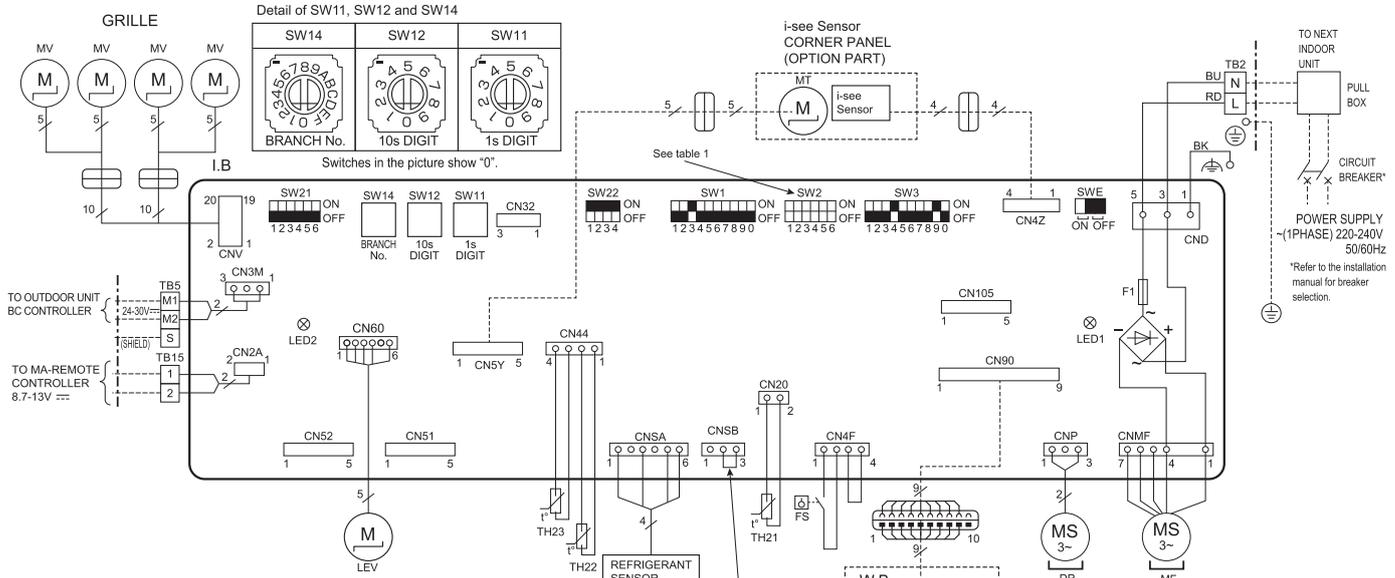
Caution



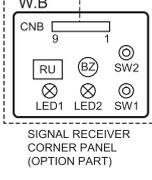
Do not set the dimension out of the range.

Wrong setting could cause dew drips or malfunction of unit.

PLFY-MS15VFM2-E
 PLY-MS20VFM2-E
 PLY-MS25VFM2-E
 PLY-MS32VFM2-E
 PLY-MS40VFM2-E
 PLY-MS50VFM2-E



When you install indoor units in a large space or Sensor and alarm kit is used, the refrigerant sensor built into the indoor unit can be disabled by disconnecting the jumper connector. Refer to the installation manual for definition of a large space.



[LEGEND]

SYMBOL	NAME
I.B	INDOOR CONTROLLER BOARD
CN32	CONNECTOR REMOTE SWITCH
CN51	CENTRALLY CONTROL
CN52	REMOTE INDICATION
CN105	IT TERMINAL
F1	FUSE(T6.3AL250V)
LED1	MAIN POWER SUPPLY (I.B)
LED2	POWER SUPPLY FOR MA-REMOTE CONTROLLER
SW1	SWITCH MODE SELECTION
SW2	SWITCH CAPACITY CODE
SW3	SWITCH MODE SELECTION
SW11	SWITCH ADDRESS SETTING 1s DIGIT
SW12	SWITCH ADDRESS SETTING 10s DIGIT
SW14	SWITCH BRANCH No.
SW21	SWITCH CEILING HEIGHT SELECTOR
SW22	SWITCH PAIR NO. SETTING
SWE	SWITCH DRAIN PUMP(TEST MODE)
DP	DRAIN PUMP
LEV	LINEAR EXPANSION VALVE
MF	FAN MOTOR
MV	VANE MOTOR
FS	DRAIN FLOAT SWITCH
TB2	TERMINAL POWER SUPPLY
TB5	BLOCK TRANSMISSION
TB15	MA-REMOTE CONTROLLER
TH21	THERMISTOR ROOM TEMP. DETECTION (0°C / 15kΩ, 25°C / 5.4kΩ DETECT)
TH22	THERMISTOR PIPE TEMP. DETECTION / LIQUID (0°C / 15kΩ, 25°C / 5.4kΩ DETECT)
TH23	THERMISTOR PIPE TEMP. DETECTION / GAS (0°C / 15kΩ, 25°C / 5.4kΩ DETECT)
OPTIONAL PARTS	
W.B	PCB FOR WIRELESS REMOTE CONTROLLER
BZ	BUZZER
LED1	OPERATION (GREEN)
LED2	LED (PREPARATION FOR HEATING : ORANGE)
RU	RECEIVING UNIT
SW1	EMERGENCY OPERATION(HEAT)
SW2	EMERGENCY OPERATION(COOL)
MT	i-see Sensor MOTOR

<Table 1> SW2 (CAPACITY CODE)

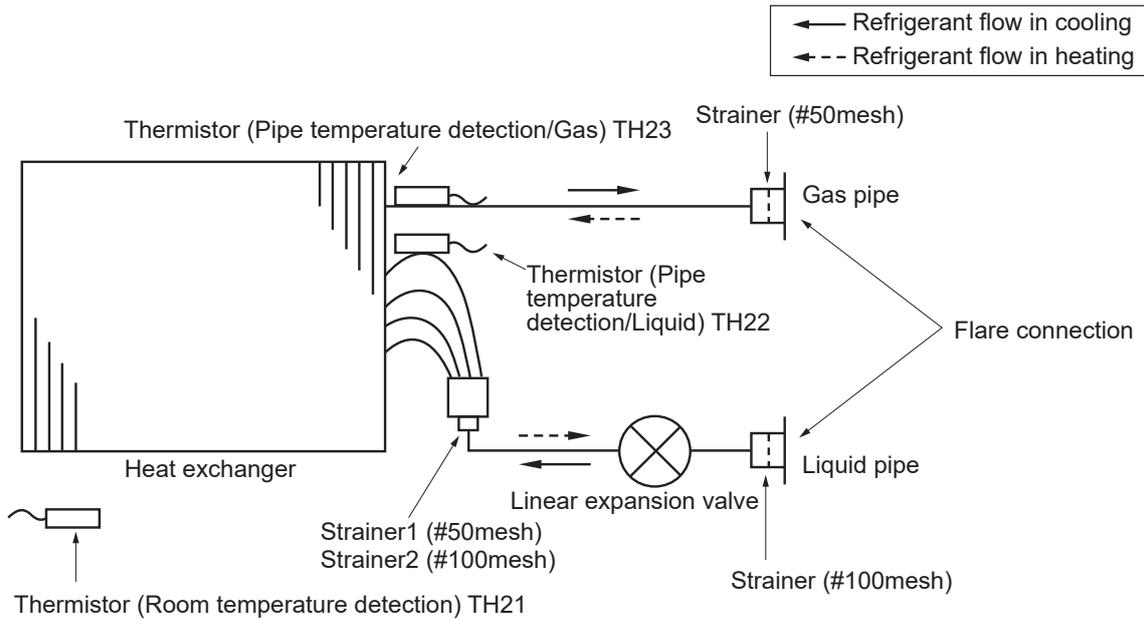
MODEL	SW2	MODEL	SW2
15	ON OFF 123456	32	ON OFF 123456
20	ON OFF 123456	40	ON OFF 123456
25	ON OFF 123456	50	ON OFF 123456

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.
- Make sure to turn off the indoor and the outdoor units before replacing indoor controller board.
- The black square (■) in the wiring diagram indicates a switch position.

7

REFRIGERANT SYSTEM DIAGRAM



Unit: mm (inch)

Gas pipe	ø12.7 (1/2)
Liquid pipe	ø6.35 (1/4)

8

TROUBLESHOOTING

8-1. COUNTERMEASURES 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.

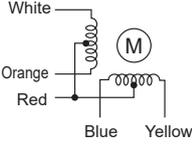
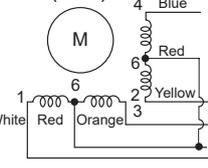
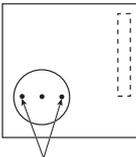
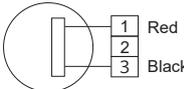
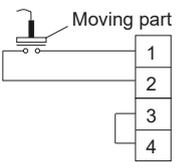
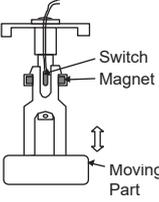
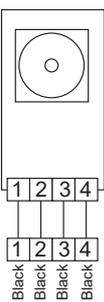
Refer to the connected outdoor unit service manual in order to determine the nature of the abnormality and apply corrective measure.

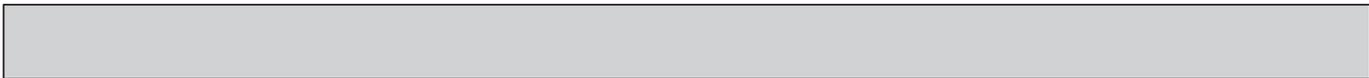


Error code	Trouble	Detected Unit				Remarks
		Indoor	Outdoor	Shut off valve kit/Power Supply Interface for Alarm Kit	Remote Controller	
0403	Serial communication error		○			Outdoor unit Multi controller board ~ Power board communication trouble
0910	Circuit inspection (Own unit)	○				
0911	Circuit inspection (Other unit)	○		○		
0912	Circuit inspection (Alarm kit)			○		
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 (Own unit)	○				
1522	Refrigerant leakage (Other unit)	○		○		
1524	Refrigerant leakage (Sensor and Alarm Kit)			○		
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	○				
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 sub 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		○			
7111	Remote controller sensor fault	○				
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	○		○		
7124	Installation error with refrigerant sensor	○				
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

8-2. HOW TO CHECK THE PARTS

Parts name	Checkpoints														
Thermistor (TH21) (Room temperature detection) Thermistor (TH22) (Pipe temperature detection/Liquid) Thermistor (TH23) (Pipe temperature detection/Gas)	Disconnect the connector then measure the resistance with a multimeter. (At the ambient temperature 10 to 30°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>4.3 to 9.6 kΩ</td> <td>Open or short</td> </tr> </tbody> </table> Refer to "8-2-1. Thermistor Characteristic Graph".	Normal	Abnormal	4.3 to 9.6 kΩ	Open or short										
Normal	Abnormal														
4.3 to 9.6 kΩ	Open or short														
Vane motor (MV) 	Measure the resistance between the terminals with a multimeter. (At the ambient temperature 20 to 30°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="4">Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>Red-Yellow</td> <td>Red-Blue</td> <td>Red-Orange</td> <td>Red-White</td> <td rowspan="2">Open or short</td> </tr> <tr> <td colspan="4" style="text-align: center;">300 Ω (typ)</td> </tr> </tbody> </table>	Normal				Abnormal	Red-Yellow	Red-Blue	Red-Orange	Red-White	Open or short	300 Ω (typ)			
Normal				Abnormal											
Red-Yellow	Red-Blue	Red-Orange	Red-White	Open or short											
300 Ω (typ)															
Linear expansion valve (LEV) 	Disconnect the connector then measure the valve resistance with a multimeter. (Coil temperature 20°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="4">Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>White-Red</td> <td>Yellow-Red</td> <td>Orange-Red</td> <td>Blue-Red</td> <td rowspan="2">Open or short</td> </tr> <tr> <td colspan="4" style="text-align: center;">150 Ω ±10%</td> </tr> </tbody> </table> Refer to "8-2-2. Linear Expansion Valve".	Normal				Abnormal	White-Red	Yellow-Red	Orange-Red	Blue-Red	Open or short	150 Ω ±10%			
Normal				Abnormal											
White-Red	Yellow-Red	Orange-Red	Blue-Red	Open or short											
150 Ω ±10%															
Refrigerant sensor	Measure the resistance between the terminals with a multimeter. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>Below 10 Ω</td> <td>Open (10 Ω or more)</td> </tr> </tbody> </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)														
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 fan starts to rotate.														
Drain float switch (FS) 	Measure the resistance between the terminals with a multimeter. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>State of moving part</th> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>UP</td> <td>Short</td> <td>Other than short</td> </tr> <tr> <td>DOWN</td> <td>Open</td> <td>Other than open</td> </tr> </tbody> </table> 	State of moving part	Normal	Abnormal	UP	Short	Other than short	DOWN	Open	Other than open					
State of moving part	Normal	Abnormal													
UP	Short	Other than short													
DOWN	Open	Other than open													
3D i-see Sensor * 	Turn the power ON while the i-see Sensor connector is connected to the CN4Z on indoor controller board. A communication between the indoor controller board and i-see Sensor board is made to detect the connection. Normal: When the operation starts, the motor for i-see Sensor is driven to rotate the i-see Sensor. Abnormal: The motor for i-see Sensor is not driven when the operation starts. Note: The voltage between the terminals cannot be measured accurately since it is pulse output.														



3D i-see Sensor motor *

Measure the resistance between the terminals with a multimeter.
(At the ambient temperature 20 to 30°C)

Normal				Abnormal
Red-Yellow	Red-Blue	Red-Orange	Red-White	Open or short
250 Ω (typ)				

*i-see Sensor is available with optional "i-see Sensor corner panel" (SLP-2FAE, SLP-2FALE, and SLP-2FALME3, PAC-SF1ME).

8-2-1. Thermistor Characteristic Graph

Thermistors for lower temperature

Thermistor (TH21)
(Room temperature detection)

Thermistor (TH22)
(Pipe temperature detection/Liquid)

Thermistor (TH23)
(Pipe temperature detection/Gas)

Thermistor $R_0 = 15 \text{ k}\Omega \pm 3\%$
Fixed number of $B = 3480 \pm 1\%$

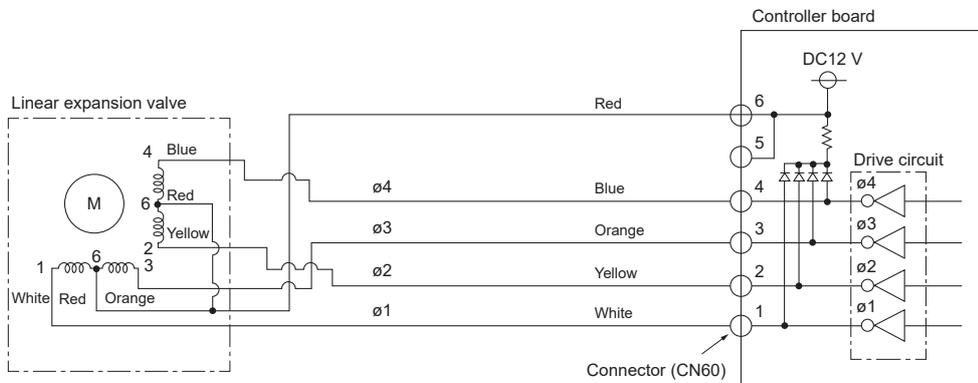
$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273+t} - \frac{1}{273} \right) \right\}$$

0°C	15 kΩ
10°C	9.6 kΩ
20°C	6.3 kΩ
25°C	5.4 kΩ
30°C	4.3 kΩ
40°C	3.0 kΩ

< Thermistor for lower temperature >

8-2-2. Linear Expansion Valve

- ① Operation summary of the linear expansion valve
- The linear expansion valves open/close through the use of a stepping motor after receiving the pulse signal from the indoor controller board.
 - Valve position can be changed in proportion to the number of pulse signals.
- <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.

<Output pulse signal and the valve operation>

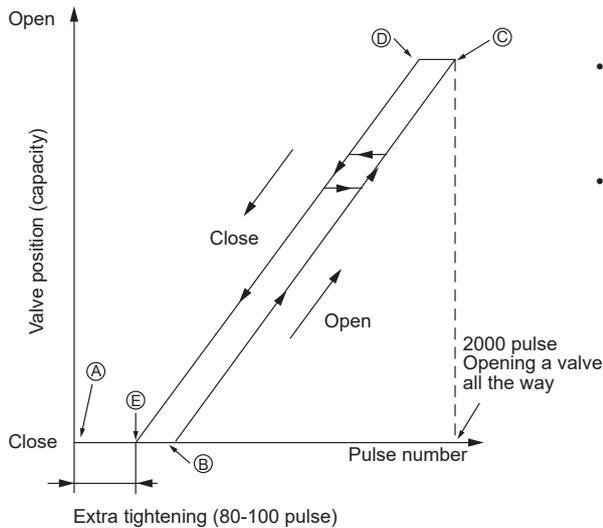
Output (Phase)	Output			
	1	2	3	4
ø1	ON	OFF	OFF	ON
ø2	ON	ON	OFF	OFF
ø3	OFF	ON	ON	OFF
ø4	OFF	OFF	ON	ON

The output pulse shifts in the following order.

Closing a valve : 1 → 2 → 3 → 4 → 1
 Opening a valve : 4 → 3 → 2 → 1 → 4

- 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.
- When the power is turned on, 2200 pulse closing the valve signal will be send till it goes to point (A) 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 (E) to (A) 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 micro processor	Disconnect the connector on the controller board, then connect LED for checking. 1kΩ LED <p>When power is turned on, pulse signals will be 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.</p>	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) with a multimeter. It is normal if the resistance is in the range of $150 \Omega \pm 10\%$.	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 leaks, 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.

8-2-3. DC Fan Motor (Fan Motor/Indoor Controller Board)

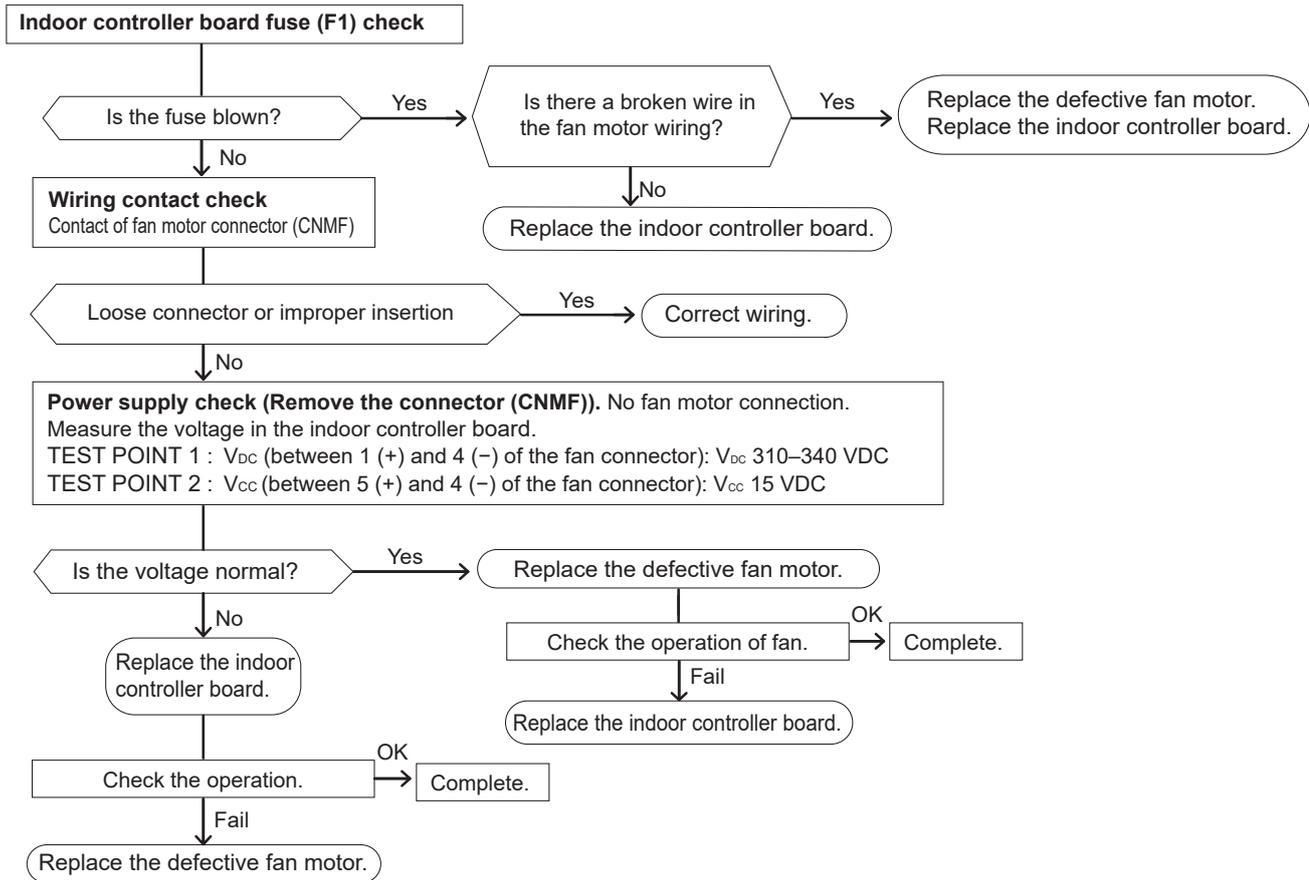
Check method of indoor fan motor (fan motor/indoor controller board)

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 causes trouble of the indoor controller board and fan motor.)

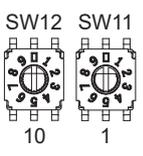
2. Self check

Conditions : The indoor fan cannot turn around.



*The fan motor starts running on its own when the breaker is turned on
/The fan motor does not stop even when operated with the remote control.
Measures: The emergency operation connector on the indoor control board may be set to ON.
Check the SWE setting and if it is set to ON, set it to OFF.

8-3. FUNCTION OF DIP SWITCH/JUMPER WIRE

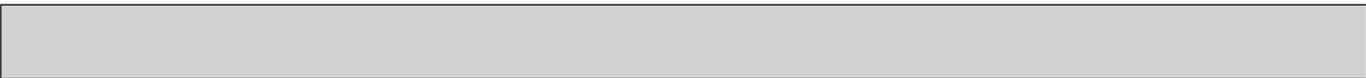
Switch	Pole	Function	Operation by switch		Effective timing	Remarks (Initial settings)
			ON	OFF		
SW1 Mode Selection	1	Thermistor <Room temperature detection> position	Built-in remote controller	Indoor unit	Under suspension	Refer to "6. WIRING DIAGRAM"
	2	Filter cleaning sign	Provided	Not provided		
	3	Filter cleaning	2,500h	100h		
	4	Fresh air intake	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 *1	Extra low *1		
	8	Auto restart function	Effective	Not effective		
	9	Power ON/OFF	Effective	Not effective		
	0	Power ON/OFF	Effective	Not effective		
SW2 Capacity code setting	1-6	Refer to "6. WIRING DIAGRAM"			Before power supply ON	Set for each capacity.
SW3 Mode setting	1	Heat pump/Cooling only	Cooling only	Heat pump	Under suspension	Refer to "6. WIRING DIAGRAM"
	2	—	—	—		
	3	—	—	—		
	4	Setting i-see Sensor installation position	Setting pattern ③	Setting pattern ①		
	5	Vane horizontal angle	Second setting	First setting		
	6	—	—	—		
	7	Indoor linear expansion valve opening	Effective	Not effective		
	8	Heat 4 degrees up	Not effective	Effective		
	9	—	—	—		
	0	—	—	—		
SW11 1s digit address setting SW12 10s digit address setting	Rotary switch		Address setting should be done when M-NET remote controller is being used.		Before power supply ON	Refer to "6. WIRING DIAGRAM"
SW14 Branch No. setting	Rotary switch		This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.			

*1 Refer to the <Table A> below.

<Table A>

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

Continue to the next page



Switch	Pole	Function	Operation by switch		Effective timing	Remarks (Initial settings)																
			ON	OFF																		
SW21 Ceiling height selector	1	Setting ceiling height	Depends on SW21-1, SW21-2		Under suspension	Refer to "6. WIRING DIAGRAM"																
	2																					
	3	—	—																			
	4	—	—																			
	5	—	—																			
	6	—	—																			
			<table border="1"> <thead> <tr> <th></th> <th>SW21-1</th> <th>SW21-2</th> <th>Height</th> </tr> </thead> <tbody> <tr> <td>Silent</td> <td>—</td> <td>ON</td> <td>2.5 m</td> </tr> <tr> <td>Standard</td> <td>OFF</td> <td>OFF</td> <td>2.7 m (default setting)</td> </tr> <tr> <td>High</td> <td>ON</td> <td>OFF</td> <td>3.0 m</td> </tr> </tbody> </table>			SW21-1	SW21-2	Height	Silent	—	ON	2.5 m	Standard	OFF	OFF	2.7 m (default setting)	High	ON	OFF	3.0 m		
	SW21-1	SW21-2	Height																			
Silent	—	ON	2.5 m																			
Standard	OFF	OFF	2.7 m (default setting)																			
High	ON	OFF	3.0 m																			

SW22 Pair No. setting	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> <p> <ul style="list-style-type: none"> To operate each indoor unit by each remote controller when installed 2 indoor units or more are near, Pair No. setting is necessary. <ul style="list-style-type: none"> Pair No. setting is available with the 4 patterns. Make setting for SW22-3, 22-4 of indoor controller board and the Pair No. of wireless remote controller. Pair No. setting is not set necessarily when operating it by one remote controller. </p> <p>① Setting for indoor unit</p> <ul style="list-style-type: none"> Set SW22-3, 22-4 on the indoor controller board according to the table below. <p>② Wireless remote controller pair number:</p> <ul style="list-style-type: none"> Setting operation (Fig. 1 ,A) <ol style="list-style-type: none"> Press the STOP button ① to stop the air conditioner. Press the MENU button ②. Check that function No."1" is displayed, and then press the SET button ③. The Screen display setting screen will be displayed. (Fig. 2.) Pair No. changing operation (Fig. 2 ,B) <ol style="list-style-type: none"> Press the DOWN button ④. Each time the DOWN button ④ is pressed, the pair No.0-3 changes. Press the SET button ③ to check the setting. Press the MENU button ②. <table border="1"> <thead> <tr> <th colspan="2">Indoor unit SW22</th> <th colspan="2">Pair No. of wireless remote controller</th> </tr> <tr> <th>SW22-3</th> <th>SW22-4</th> <th></th> <th></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 suspension	<p>Refer to "6. WIRING DIAGRAM"</p> <p>Fig. 1</p> <p>Fig. 2</p>
			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	—																																											

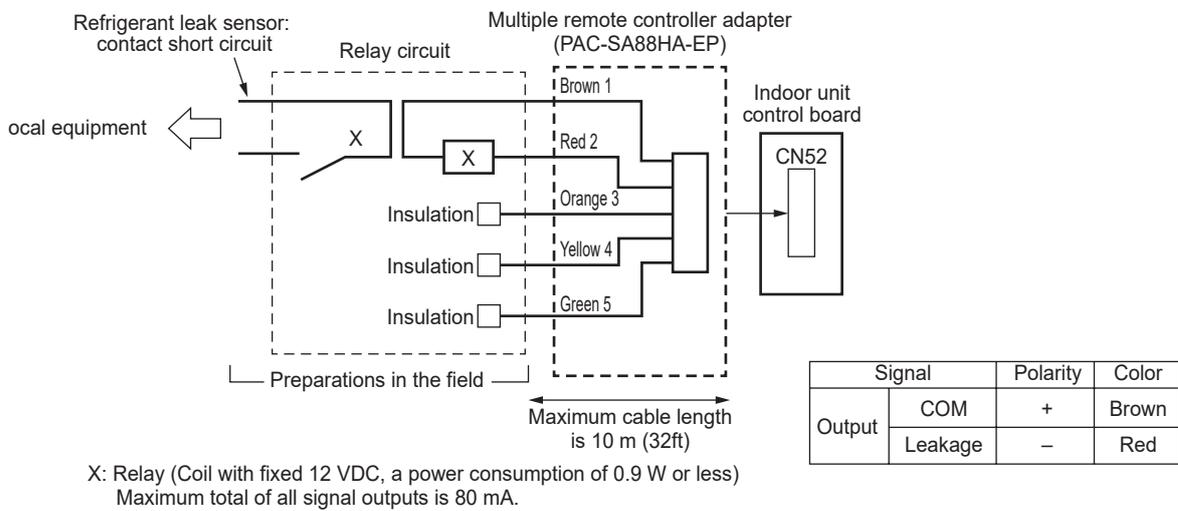
SWE Test run for Drain pump	Connector	<p>Drain pump and fan are activated simultaneously after the connector SWE is set to ON and turn on the power.</p> <p>The connector SWE is set to OFF after test run.</p>	Under suspension	
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Switch	Pole	Function	Operation by switch		Effective timing	Remarks (Initial settings)	
			ON	OFF			
CNSB	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 or the sensor and alarm kit is used, remove the short-circuit connector.				Before power supply ON (only for the first time)	Short-circuit connector mounted
		Short-circuit connector	Refrigerant sensor mounted to the indoor unit				
		Yes	Activated				
		No	Deactivated				

8-4. Wiring for interlock between the refrigerant leak sensor output and local equipment

Using the external output of the air conditioning system allows the refrigerant leak output function to interlock with local equipment such as dampers. For the interlock with local equipment, consider the wiring referring to the following.



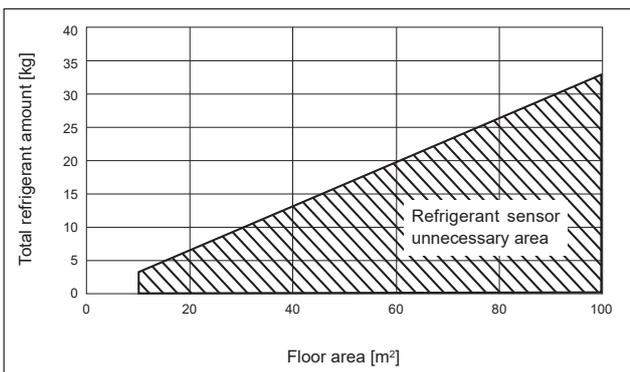
When using the leak output function of CN52, set the function setting No. 168 to "5."

Function setting No. 168	Remote display switch2	Initial setting
1	Disabled	○
5	A signal will be output when a refrigerant leak is detected or the leak sensor fails.	

Note:

- When the function setting is set to "5," the Thermo-ON signal and the fan output signal that are set by SW1-5 will not be output from CN52.
- When setting function No. 168 to "5," check that No. 169 is set to "1."

8-5. REFRIGERANT SENSOR UNNECESSARY SETTING



If $M/A \leq 0.33$, the refrigerant sensor can be disabled by disconnecting the CNSB connector on the control board.

M: Total refrigerant amount [kg]

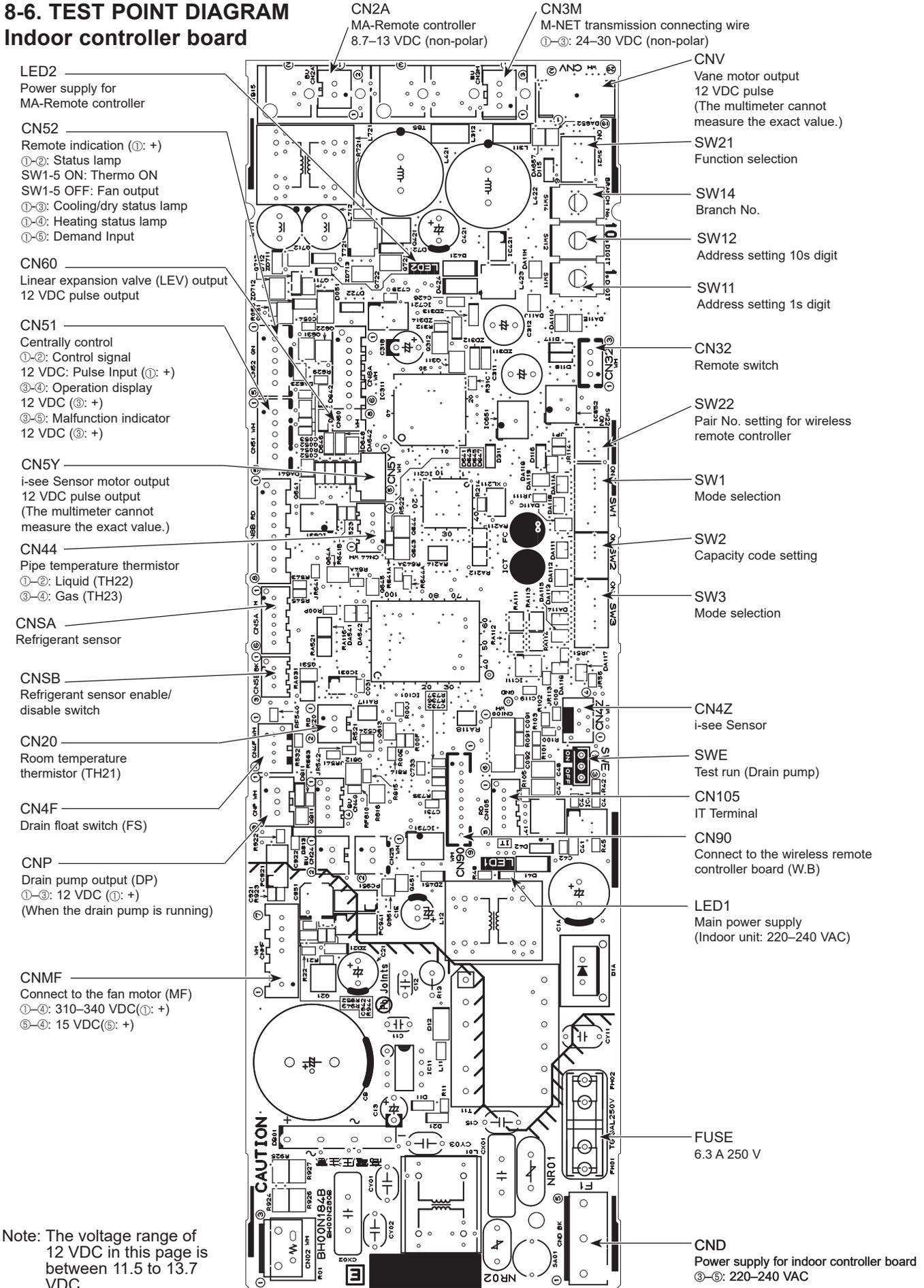
A: Floor area [m²]

Caution: Do not disconnect the CNSB connector in an environment where $M/A \geq 0.33$.

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

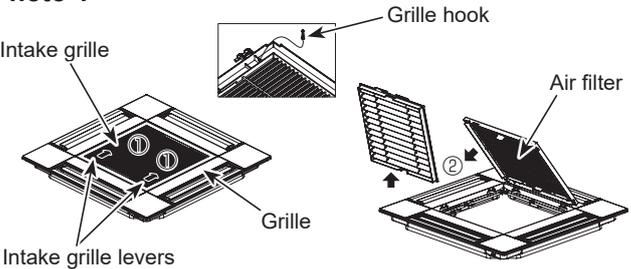
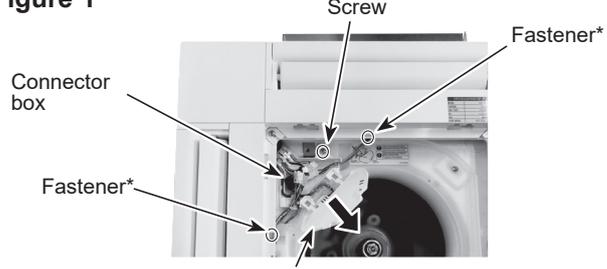
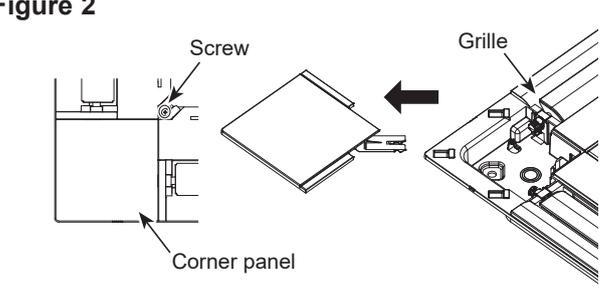
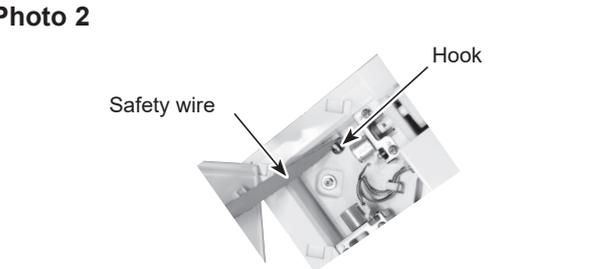
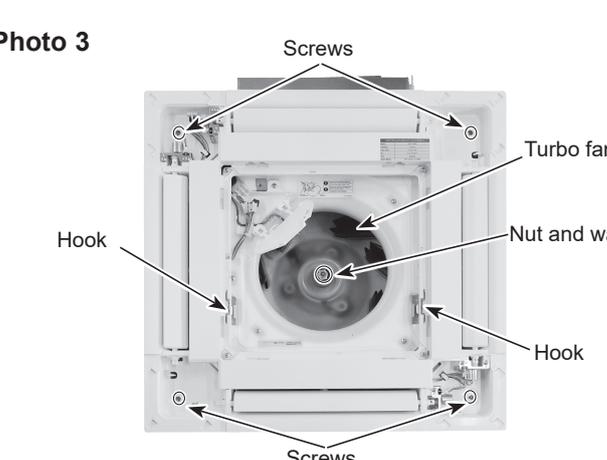
Even if you are using the Sensor and Alarm Kit, you can disable the refrigerant sensor by disconnecting the CNSB connector on the control board.

8-6. TEST POINT DIAGRAM Indoor controller board



—————> : Indicates the visible parts in the photos/figures.
> : Indicates the invisible parts in the photos/figures.

Be careful when removing heavy parts.

PROCEDURE	PHOTOS/FIGURES
<p>1. Removing the intake grille and air filter</p> <p>(1) Slide the levers in the direction indicated by the arrow ① to open the intake grille.</p> <p>(2) Unlatch the hook that secures the grille. *Do not unlatch the hook for the intake grille.</p> <p>(3) With the intake grille in the "open" position, remove the hinge of the intake grille from the grille as indicated by the arrow ②.</p>	<p>Photo 1</p>  <p>Intake grille, Grille hook, Air filter, Intake grille levers, Grille</p>
<p>2. Removing the panel</p> <p>(1) Remove the intake grille. (Refer to procedure 1)</p> <p>Connector box (See Figure 1)</p> <p>(2) Remove the screw of the connector cover.</p> <p>(3) Slide the connector cover to the direction of the arrow to open the cover.</p> <p>(4) Disconnect all the connectors, then pull out the connectors that are coming from panel side from the connector box.</p> <p>Corner panel (See Figure 2 and Photo 2)</p> <p>(5) Loosen the screw from the corner of the corner panel.</p> <p>(6) Slide the corner panel as indicated by the arrow.</p> <p>(7) Remove the safety wire from the hook, then remove the corner panel from the panel. (The safety wire is not equipped for the signal receiver panel and i-see Sensor corner panel.)</p> <p>(8) Remove the fastener (*), then remove the corner panel.</p> <p>Panel (See Photo 3)</p> <p>(9) Remove the 4 screws.</p> <p>(10) Unlatch the 2 hooks.</p> <p>*Fastener is only for the signal receiver and i-see Sensor corner panel.</p>	<p>Figure 1</p>  <p>Screw, Fastener*, Connector box, Fastener*, Connector cover</p> <p>Figure 2</p>  <p>Screw, Grille, Corner panel</p> <p>Photo 2</p>  <p>Safety wire, Hook</p> <p>Photo 3</p>  <p>Screws, Turbo fan, Nut and washer, Hook, Hook, Screws</p>



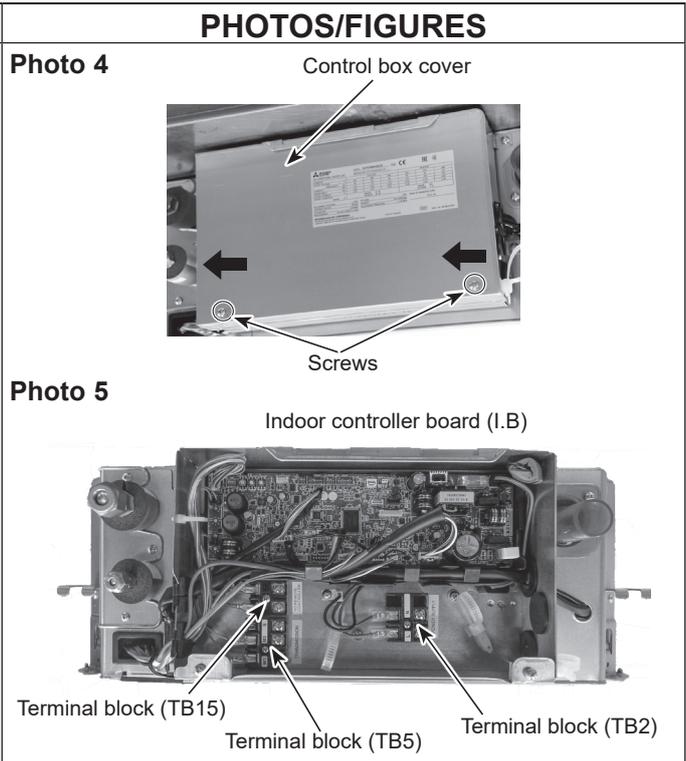
PROCEDURE

3. Removing the electrical parts

(1) Loosen the 2 screws on the control box cover.
 (2) Slide the control box cover as indicated by the arrow to remove.

<Electrical parts in the control box>

- Indoor controller board (I.B)
- Terminal block (TB2)
- Terminal block (TB5)
- Terminal block (TB15)



4. Removing the room temperature thermistor (TH21)

(1) Remove the panel. (Refer to procedure 2)

Room temperature thermistor (TH21) (See Photo 6)

(2) Remove the 2 lead wire cover fixing screws. (See Photo 6)

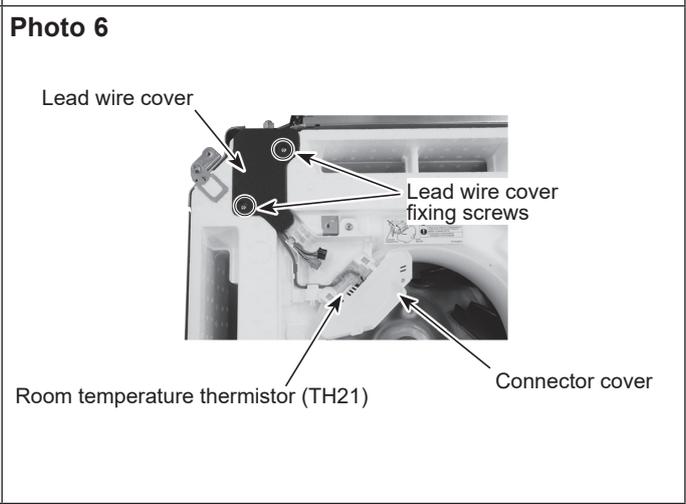
(3) Open the lead wire cover, then remove the connector cover from the connector box.

(4) Remove the band that fixes the room temperature thermistor (TH21) to the connector box.

(5) Remove the room temperature thermistor (TH21) from the connector box.

(6) Remove the connector (CN20) from the indoor controller board, and disconnect the room temperature thermistor (TH21).

Note: When fixing the thermistor, make sure to fix it to the connector box using a band.



5. Removing the drain pan

(1) Remove the panel. (Refer to procedure 2)

(2) Remove the room temperature thermistor (TH21). (Refer to procedure 4)

Connector box (See Photo 7)

(3) Remove the connector box fixing screw.

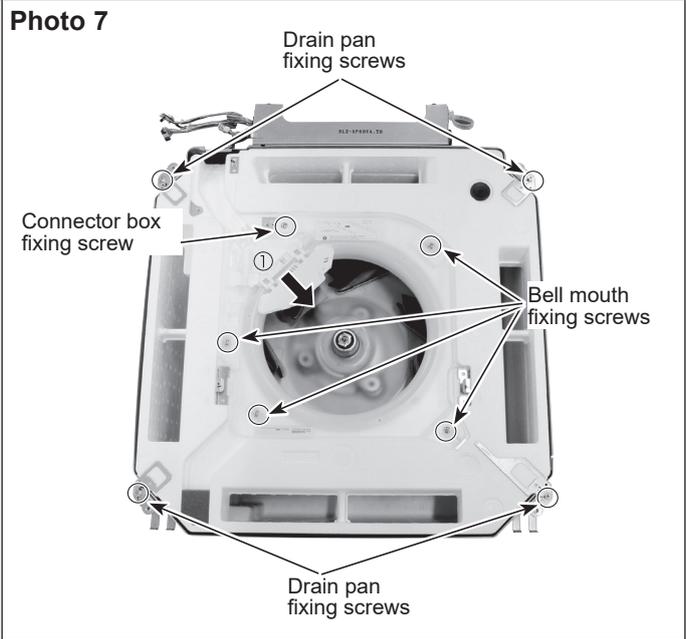
(4) Slide the connector box as indicated by the arrow ①, then remove the claw from bell mouth.

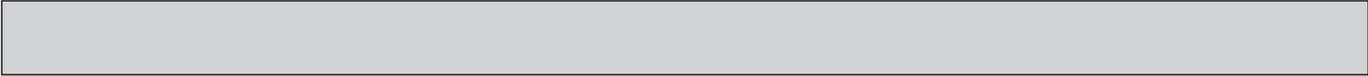
Bell mouth (See Photo 7)

(5) Remove the 4 bell mouth fixing screws, then remove the bell mouth.

Drain pan (See Photo 7)

(6) Remove the 4 drain pan fixing screws, then remove the drain pan.





PROCEDURE

6. Removing the pipe temperature thermistor/liquid (TH22) and pipe temperature thermistor/gas (TH23)

- (1) Remove the panel. (Refer to procedure 2)
- (2) Remove the room temperature thermistor (TH21). (Refer to procedure 4)
- (3) Remove the drain pan. (Refer to procedure 5)

Pipe temperature thermistor/liquid (TH22) and pipe temperature thermistor/gas (TH23) (See Photo 8-1)

- (4) Remove the control box cover. (Refer to procedure 3)
- (5) Disconnect the thermistor connectors from the CN44 on the indoor controller board.
- (6) Cut the band fixing the thermistor connectors to the fan motor cable.
- (7) Remove the thermistors from the holders on heat exchanger.

Note: When re-attaching the thermistor connectors to the fan motor cable, make sure to put the fixed band into the groove. (See Photo 8-2)

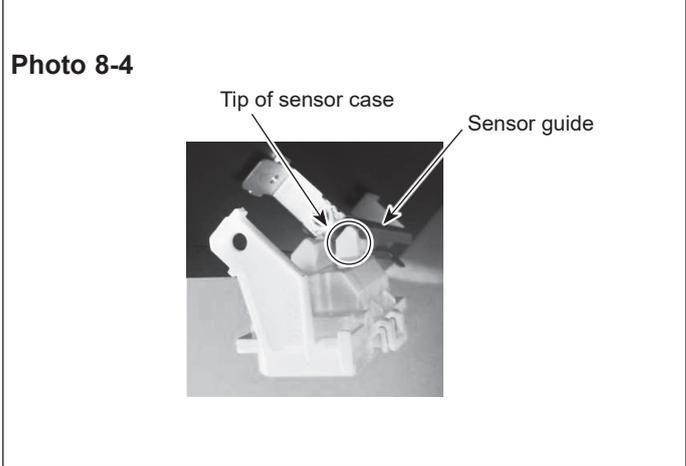
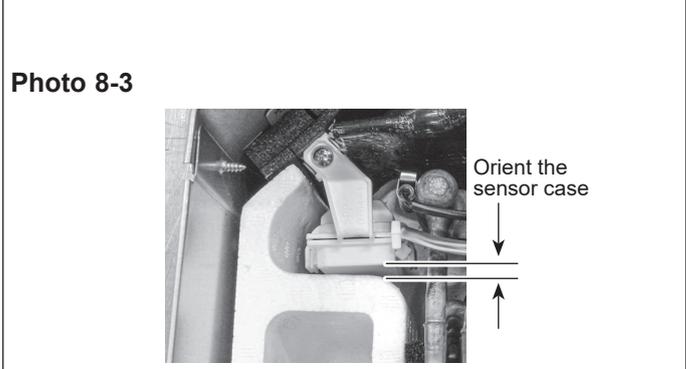
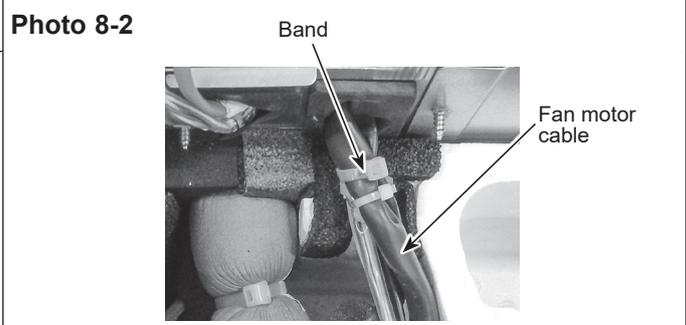
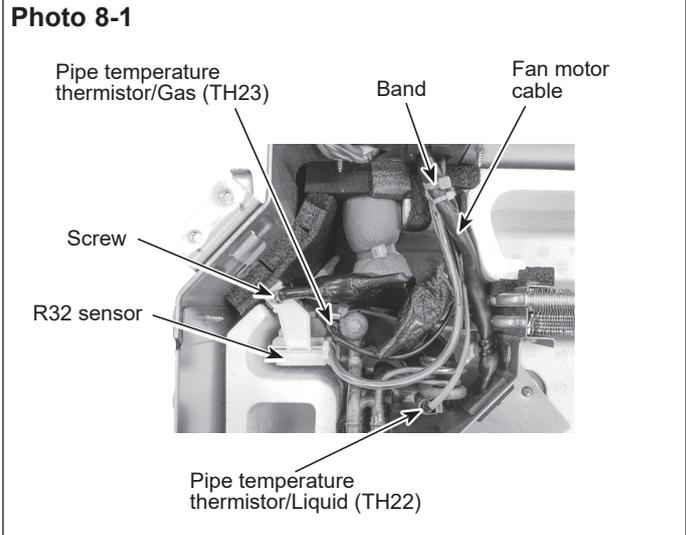
7. Removing the R32 sensor (See Photo 8-1)

- (1) Remove the band.
- (2) Remove the screw.
- (3) Remove the R32 sensor.

Note 1: To install the R32 sensor, orient the sensor case (See Photo 8-3) and insert the tip of sensor case into the sensor guide (See Photo 8-4).

Note 2: When re-attaching the lead wire of the R32 sensor to the fan motor cable with the thermistor connectors, make sure to put the fixed band into the groove. (See Photo 8-2)

PHOTOS/FIGURES



PROCEDURE

8. Removing the fan motor (MF)

- (1) Remove the panel. (Refer to procedure 2)
- (2) Remove the room temperature thermistor (TH21). (Refer to procedure 4)
- (3) Remove the drain pan. (Refer to procedure 5)

Turbo fan (See Photo 3)

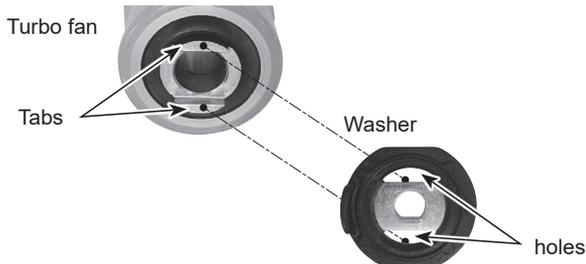
- (4) Remove the nut and washer from the turbo fan.
- (5) Remove the turbo fan from the motor shaft.

< Nut and washer >



Note 1: When assembling the turbo fan, attach it so that its tabs fit the holes of washer.

Note 2: Nut tightening torque: 4.5 ± 0.5 Nm.



Fan motor (See Photo 9)

- (6) Remove the control box cover. (Refer to procedure 3)
- (7) Disconnect the fan motor cable from the CNMF on the indoor controller board.
- (8) Remove the 2 motor lead cover fixing screws, then remove the motor lead cover.
- (9) Loosen the 3 clamps fixing the fan motor cable.
- (10) Cut the band.
- (11) Remove the 3 nuts and washers, then remove the fan motor.
- (12) Remove the 3 motor mounts.

Note 1: When re-attaching the motor mount, make sure that the thicker end faces the motor shaft. (See Photo 10-1)

Note 2: When re-attaching the turbo fan, make sure that the tightening torque for nuts is 5 N·m or lower.

PHOTOS/FIGURES

Photo 9

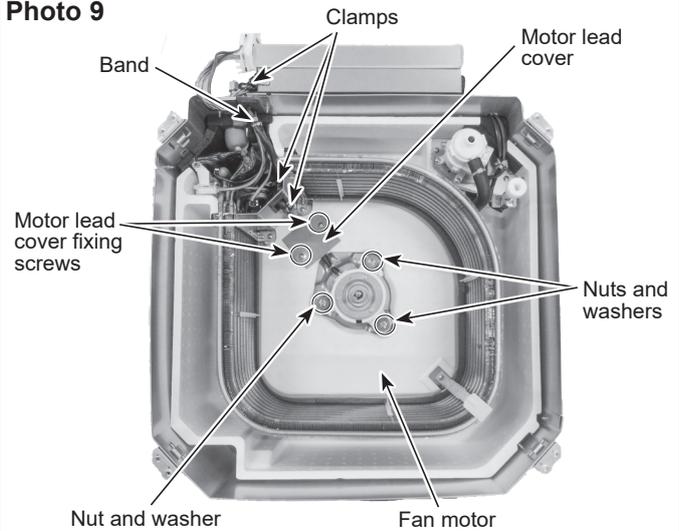
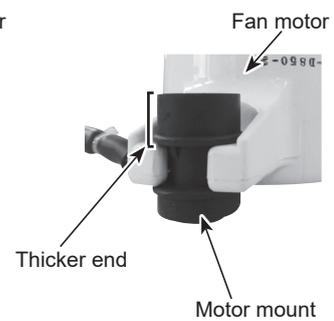
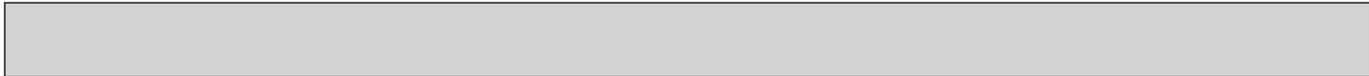


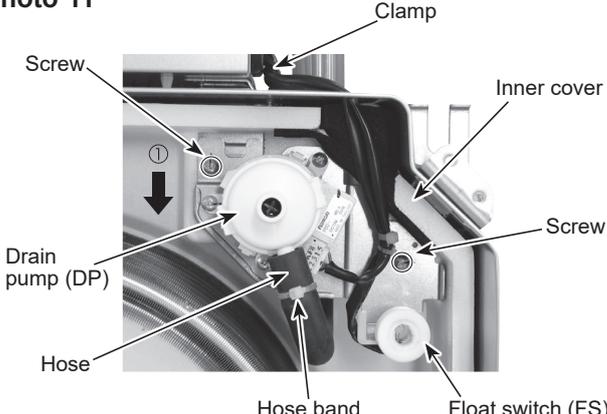
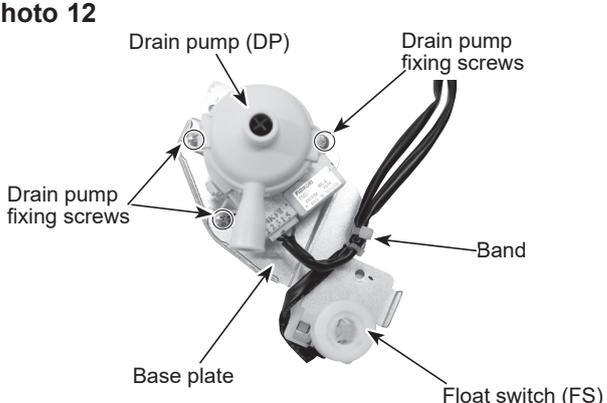
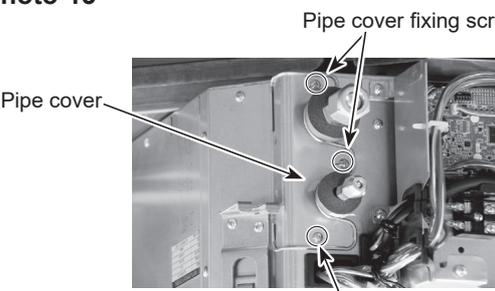
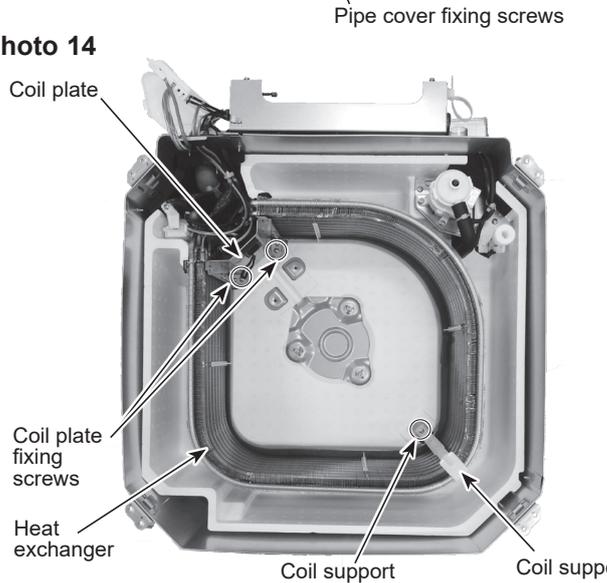
Photo 10

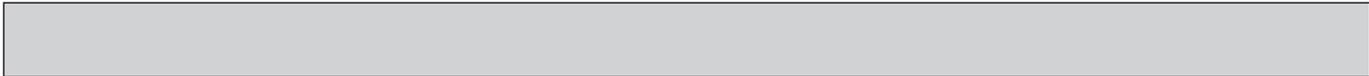


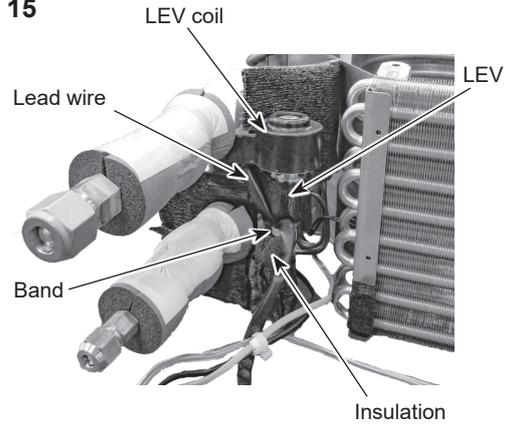
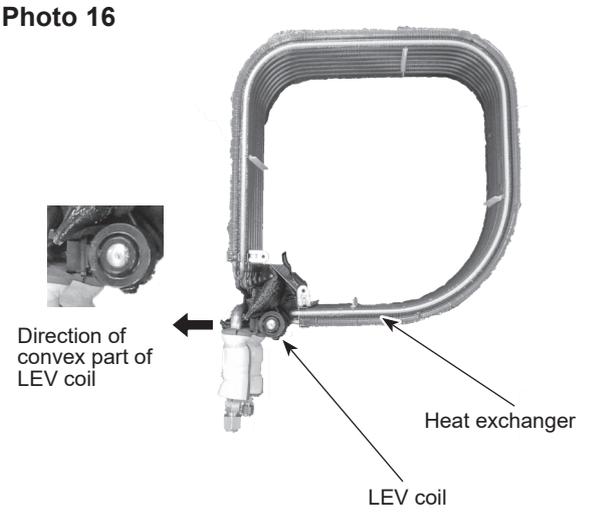
Photo 10-1





PROCEDURE	PHOTOS/FIGURES
<p>9. Removing the drain pump (DP) and float switch (FS)</p> <ol style="list-style-type: none"> (1) Remove the panel. (Refer to procedure 2) (2) Remove the room temperature thermistor (TH21). (Refer to procedure 4) (3) Remove the control box cover. (Refer to procedure 3) (4) Remove the drain pan. (Refer to procedure 5) <p>Drain pump (See Photo 11 and 12)</p> <ol style="list-style-type: none"> (5) Disconnect the drain pump connector from the CNP and float switch connector from CN4F on the indoor controller board. (6) Loosen the clamp fixing the connectors on the side of the control box. (7) Cut the hose band and release the hose. (8) Remove the 2 screws fixing the drain pump and float switch to the inner cover. (9) Slide the base plate of the drain pump and float switch as indicated by the arrow ① to remove. (10) Cut the band. (See Photo 12) (11) Remove the 3 drain pump fixing screws, then remove the drain pump. (See Photo 12) <p>Note 1: When re-attaching the drain pump, make sure to use a band to fix the connector to the base plate.</p> <p>Note 2: Do not give a shock to the float switch. Otherwise it can cause damage or malfunction.</p>	<p>Photo 11</p>  <p>Photo 12</p> 
<p>10. Removing the heat exchanger</p> <ol style="list-style-type: none"> (1) Remove the panel. (Refer to procedure 2) (2) Remove the room temperature thermistor (TH21). (Refer to procedure 4) (3) Remove the drain pan. (Refer to procedure 5) (4) Remove the turbo fan and fan motor. (Refer to procedure 8) <p>Heat exchanger (See Photo 13 and 14)</p> <ol style="list-style-type: none"> (5) Remove the 3 pipe cover fixing screws to remove the pipe cover. (6) Remove the 2 coil plate fixing screws. (7) Remove the coil support fixing screw, then remove the coil support. (8) Remove the heat exchanger. 	<p>Photo 13</p>  <p>Photo 14</p> 

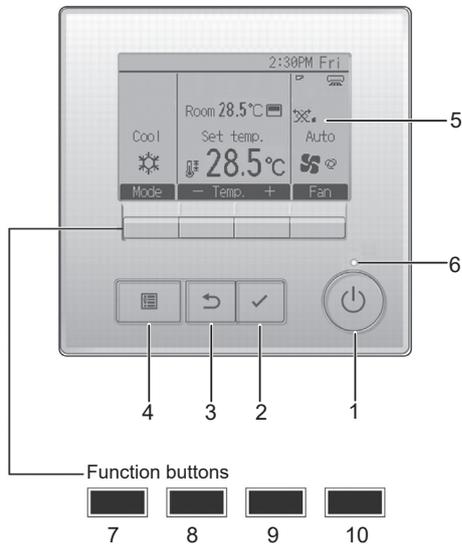


PROCEDURE	PHOTOS/FIGURES
<p>11. Removing the LEV coil</p> <ol style="list-style-type: none">(1) Remove the heat exchanger.(2) Cut the band.(3) Rotate the LEV coil and remove it. <p>Note: When reattaching the LEV coil (See Photo 15 and 16)</p> <ol style="list-style-type: none">(1) Install the LEV coil in the direction shown in Photo 16.(2) Bind the lead wire to LEV with the band so that the insulation bends into U shape on the bottom side (as a trap).	<p>Photo 15</p>  <p>Photo 16</p> 

10-1. REMOTE CONTROLLER FUNCTIONS

<PAR-42MAAB>

Controller interface

**1. [ON/OFF] button**

Press to turn ON/OFF the indoor unit.

2. [SELECT] button

Press to save the setting.

3. [RETURN] button

Press to return to the previous screen.

4. [MENU] button

Press to bring up the Main menu.

5. Backlit LCD

Operation settings will appear.

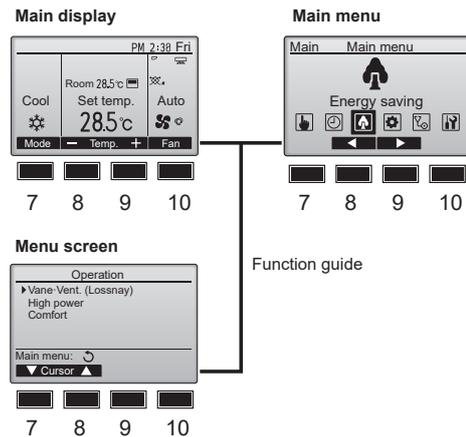
When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the [ON/OFF] button)

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.

**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.

7. Function button [F1]

Main display: Press to change the operation mode.

Menu screen: The button function varies with the screen.

8. Function button [F2]

Main display: Press to decrease temperature.

Main menu: Press to move the cursor left.

Menu screen: The button function varies with the screen.

9. Function button [F3]

Main display: Press to increase temperature.

Main menu: Press to move the cursor right.

Menu screen: The button function varies with the screen.

10. Function button [F4]

Main display: Press to change the fan speed.

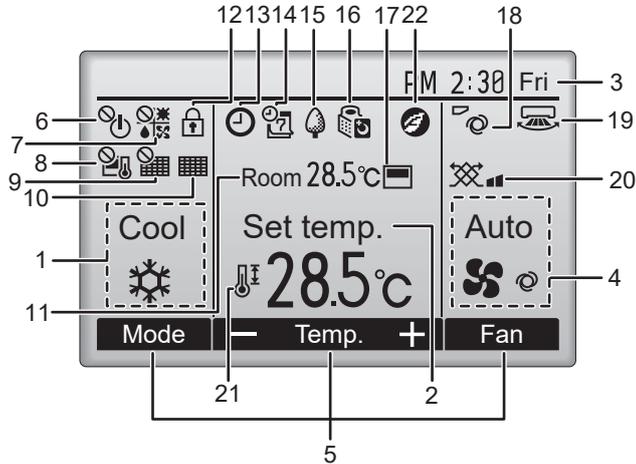
Menu screen: The button function varies with the screen.

Display

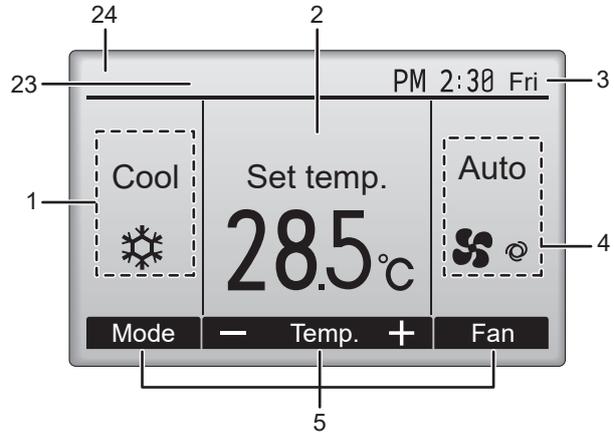
The main display can be displayed in two different modes: "Full" and "Basic". The initial setting is "Full". To switch to the "Basic" mode, change the setting on the Main display setting. (Refer to operation manual included with remote controller.)

<Full mode>

*All icons are displayed for explanation.



<Basic mode>



1. Operation mode

2. Preset temperature

3. Clock

4. Fan speed

5. Button function guide

Functions of the corresponding buttons appear here.



Appears when the ON/OFF operation is centrally controlled.



Appears when the operation mode is centrally controlled.



Appears when the preset temperature is centrally controlled.



Appears when the filter reset function is centrally controlled.



Indicates when filter needs maintenance.

11. Room temperature



Appears when the buttons are locked.



Appears when the On/Off timer, Night setback, or Auto-off timer function is enabled.



appears when the timer is disabled by the centralized control system.



Appears when the Weekly timer is enabled.



Appears while the units are operated in the energy saving mode. (Will not appear on some models of indoor units)

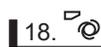


Appears while the outdoor units are operated in the silent mode.



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.



Indicates the vane setting.



Indicates the louver setting.



Indicates the ventilation setting.



Appears when the preset temperature range is restricted.



Appears when an energy saving operation is performed using a "3D i-see Sensor" function.

23. Centrally controlled

Appears for a certain period of time when a centrally controlled item is operated.

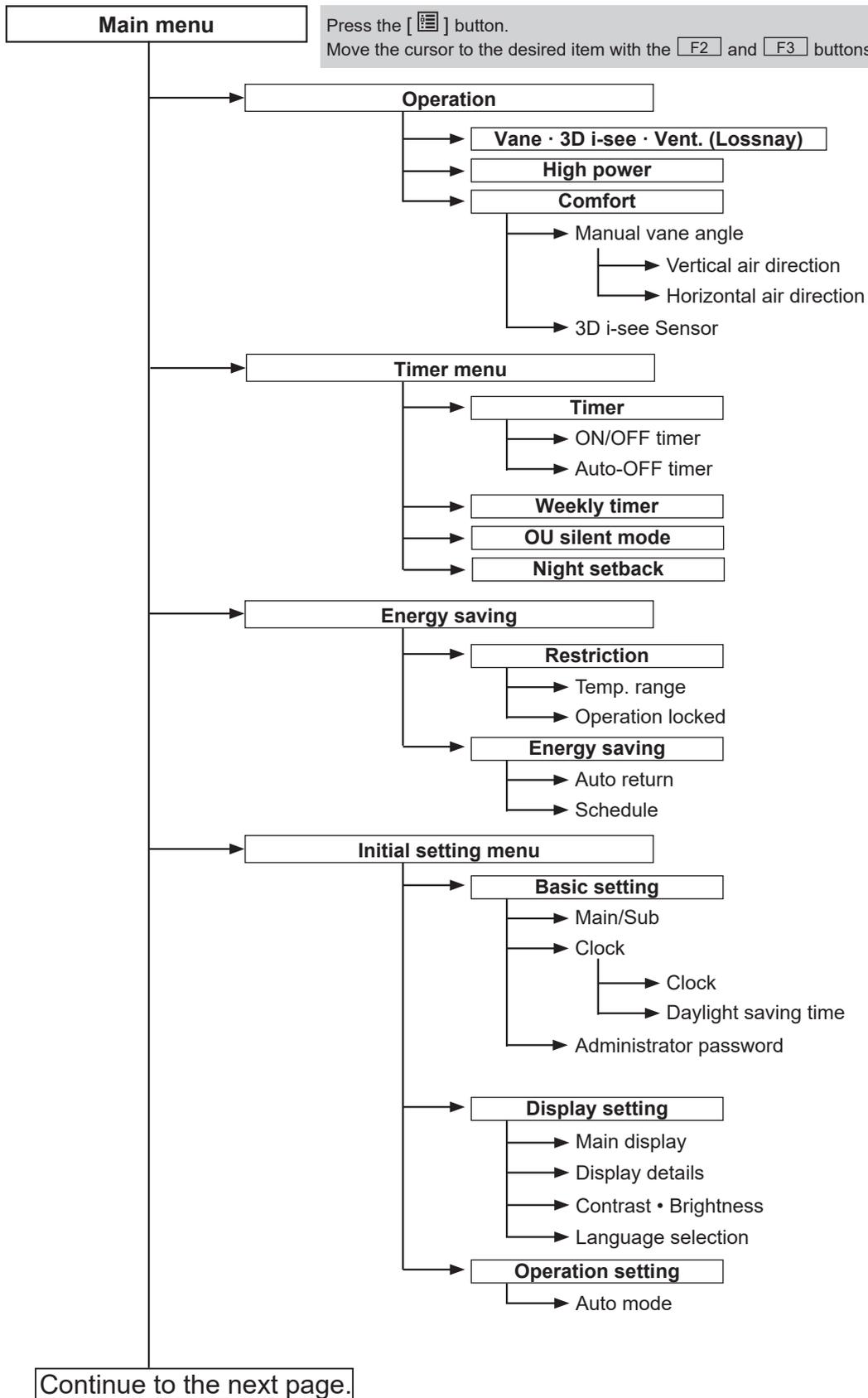
24. Preliminary error display

An error code appears during the preliminary error.

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

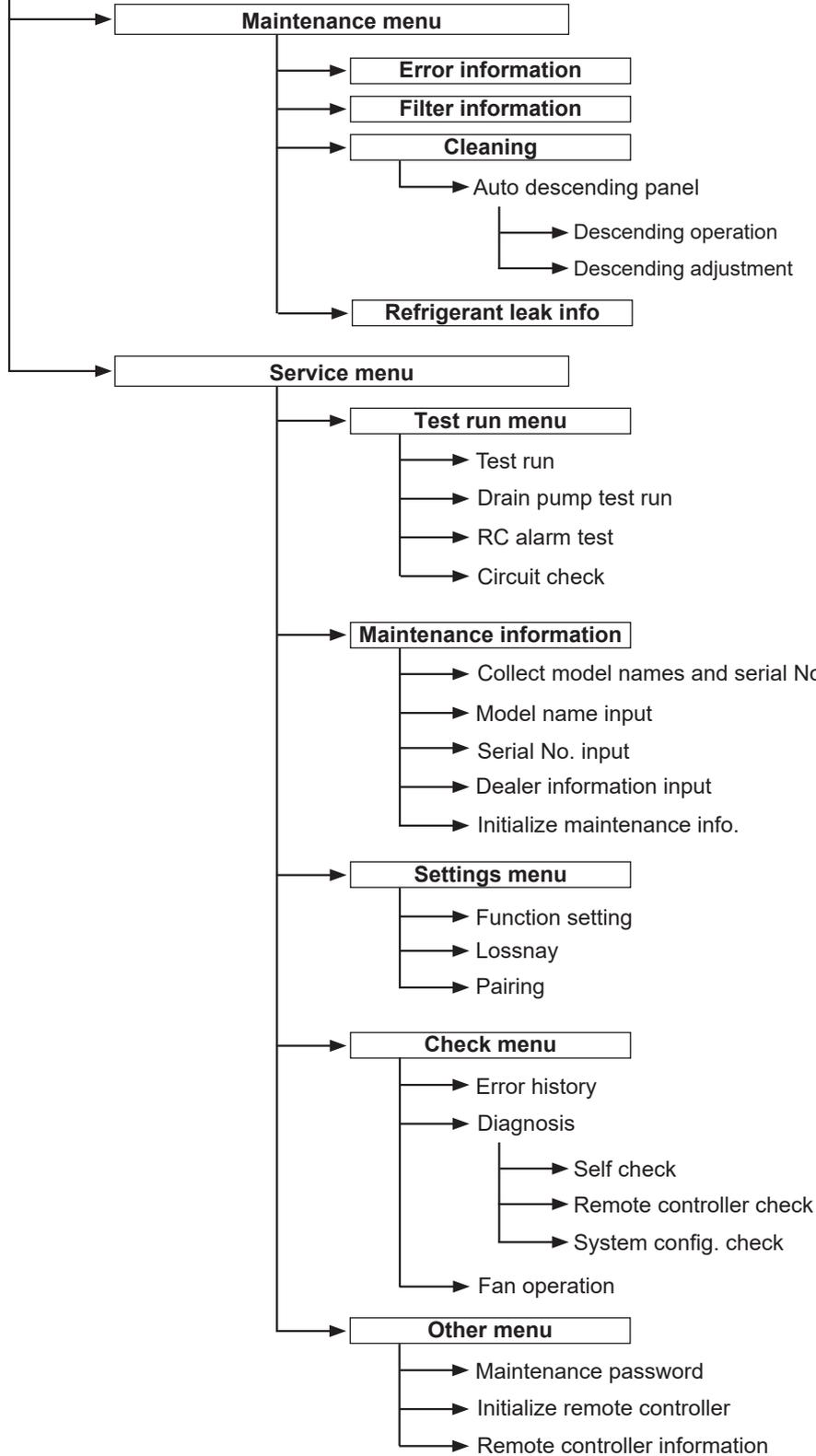
*1 These functions are not applied to the floor standing models.

Menu structure

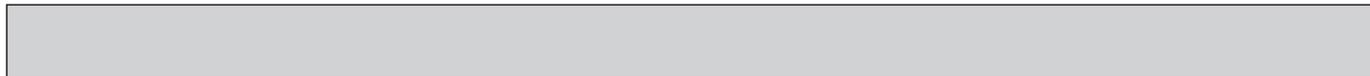


Not all functions are available on all models of indoor units.

Continue from the previous page.



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



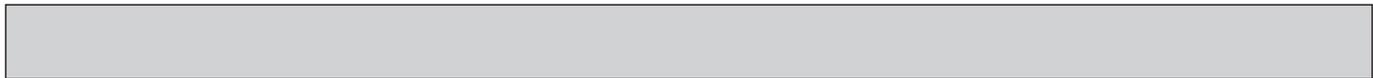
Main menu list

Main menu	Setting and display items		Setting details
Operation	Vane · 3D i-see · Vent. (Vane.Vent. (Lossnay))		Vane: Use to set the vertical air direction. Louver: Use to set the horizontal air direction. 3D i-see Sensor: This setting is available only for the air conditioners that support easy setting function of motion sensing air direction. Vent: Use to set the amount of ventilation.
	High power ^{*3}		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	Vertical air direction • Sets the vertical airflow direction (vane) of each unit. Horizontal air direction • Sets the horizontal airflow direction (vane) of each unit.
		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 timer	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 the ON/OFF timer is enabled.)
	OU silent mode ^{*1, *3}		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."
	Night setback ^{*1}		Use to make Night setback settings. • Select "Yes" to enable the setting, and "No" to disable the setting. The temperature range and the start/stop times can be set.
Energy saving	Restriction	Temp. range ^{*2}	Use to restrict the preset temperature range. • Different temperature ranges can be set for different operation modes.
		Operation lock	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, *3}	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.

*1 Clock setting is required.

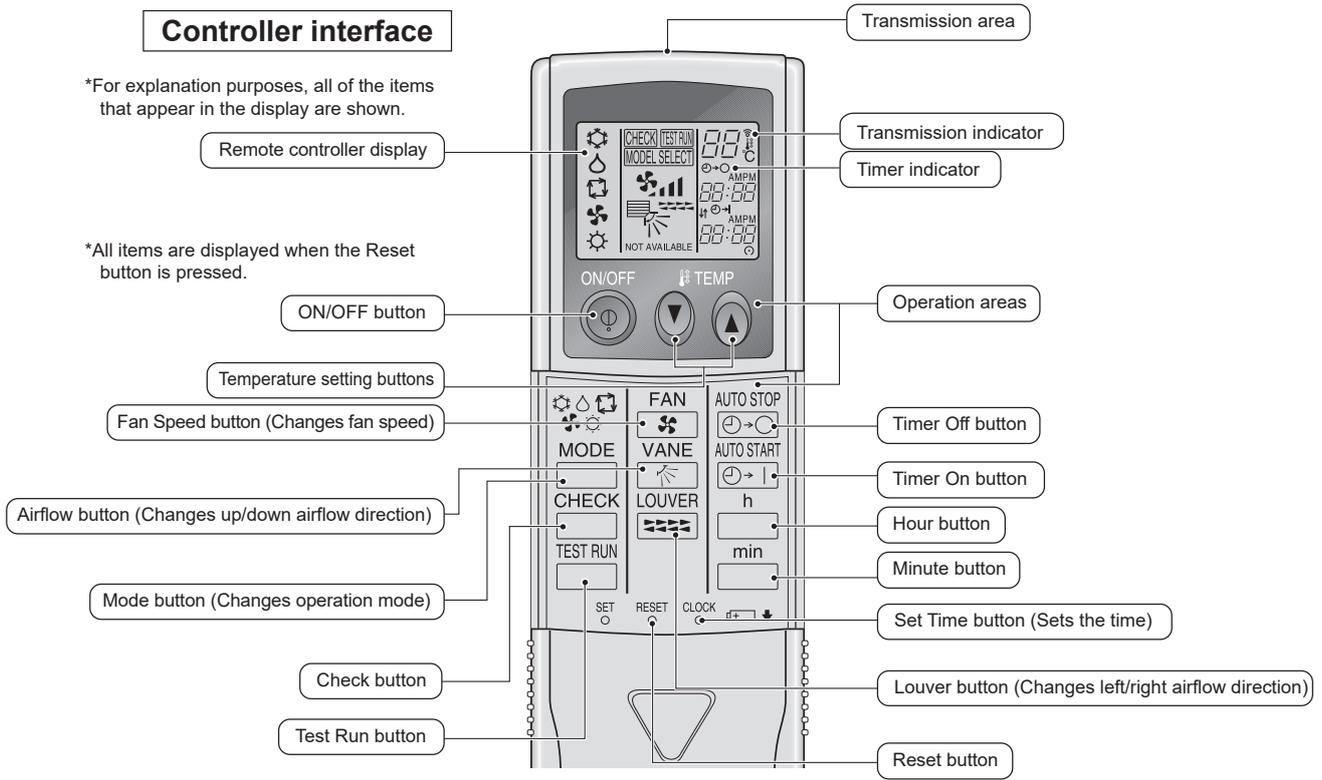
*2 1°C increments

*3 This function is available only when certain outdoor units are connected.



Main menu	Setting and display items		Setting details
Initial setting	Basic setting	Main/Sub	For a system that requires sub remote controller, set the remote controller to "Sub" from this setting.
		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 • Outdoor unit 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 either Celsius (°C) or Fahrenheit (°F). Room temp.: Set 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.	
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.)
	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).
	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.
Service	Test run		Select "Test run" from the Service menu to bring up the Test run menu. • Test run • Drain pump test run • Refrigerant system check
	Input maintenance info.		Select "Input maintenance Info." from the Service menu to bring up the Maintenance information screen. The following settings can be made from the 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.
		LOSSNAY setting	This setting is required only when the operation of CITY MULTI units is interlocked with LOSSNAY units.
	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.	

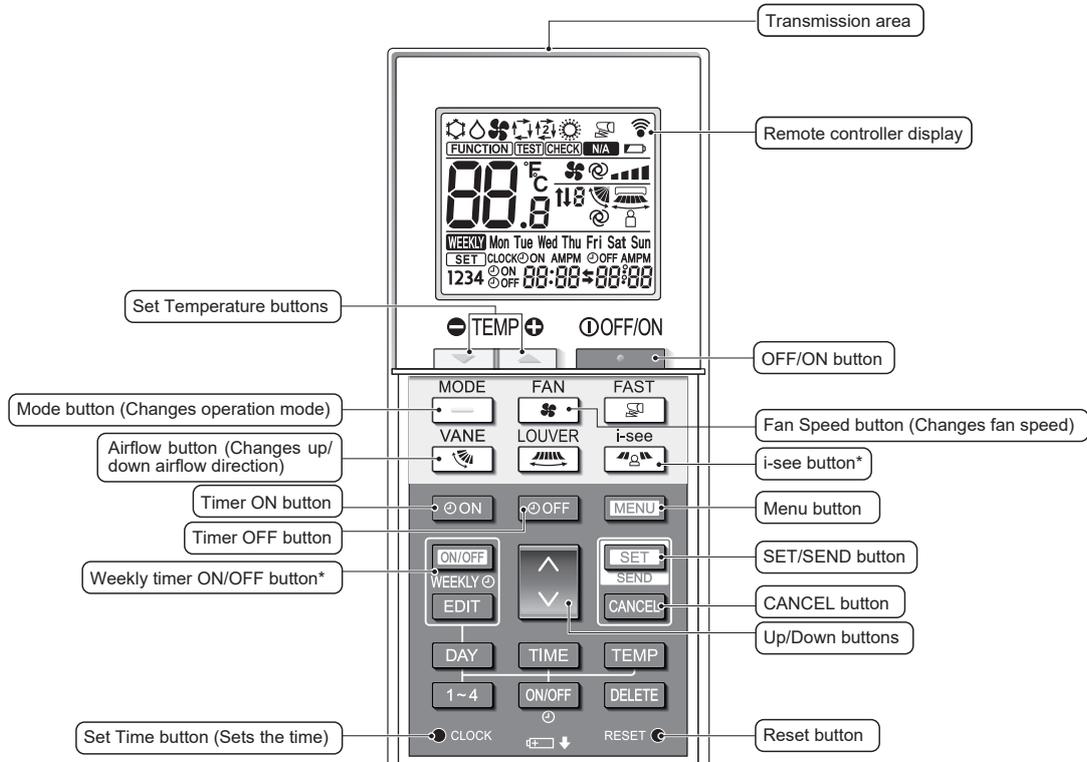
<PAR-SL97A-E>



- 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 degrees 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.

<PAR-SL103A-E>

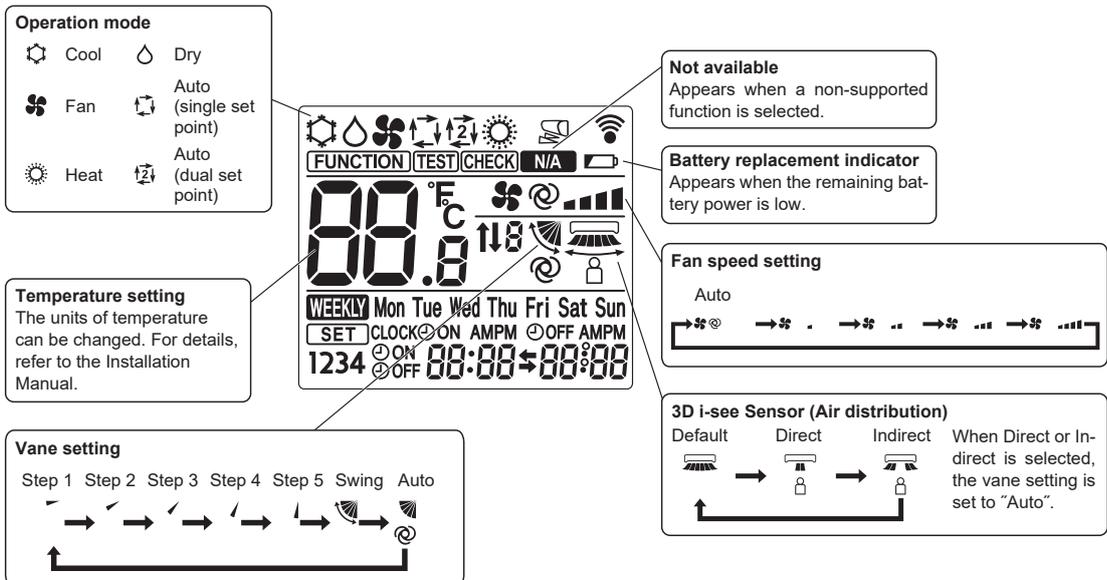
Controller interface



Note:

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

Display



10-2. ERROR INFORMATION

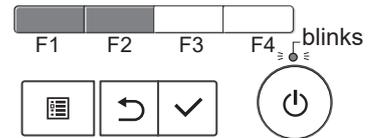
When an error occurs, the following screen will appear.
Check the error status, stop the operation, and consult your dealer.

1. 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. If the information has been registered.

Error information				1/2
Error	Unt#	mm/dd/yy		
▶ 6681	1	09/22/24	12:33PM	
6681	2	09/22/24	12:33PM	
6681	4	09/22/24	12:33PM	
6681	6	09/22/24	12:33PM	
Reset error: Reset button				
▼ Cursor ▲		Inf	Reset	



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 have been registered.

Error information			
Error code	6681		
Error unit	IU	1	Unt#1
Time Occurred	09/22	12:33PM	
1234567890123456789012345			
123456789012345			
Reset error: Reset button			
		List	Reset



Contact information (dealer's phone number) will appear on the last page.

Contact information (dealer's phone number) will appear if the information have been registered.

Error information		2/2
Contact information		
Dealer		
Tel		
Reset error: Reset button		
▼ Page ▲		Reset

2. Press the **F4** button or the  button to reset the error that is occurring.

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

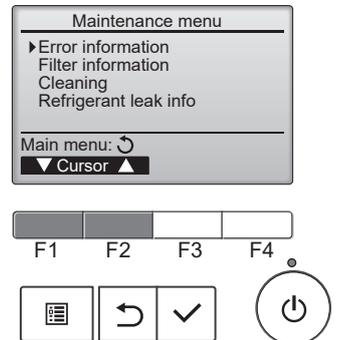
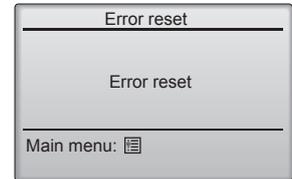
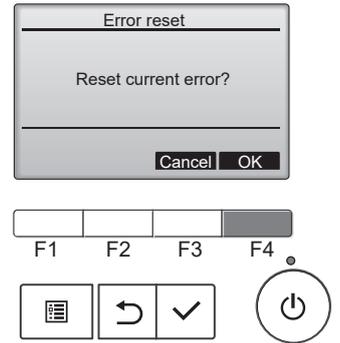
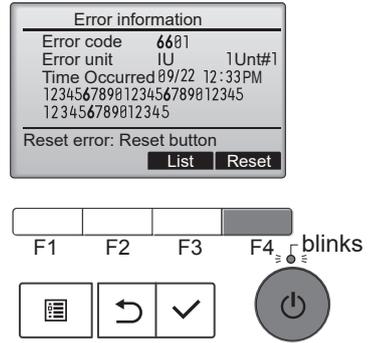
Select "OK" with the **F4** button.

A confirmation screen will appear.

- Navigating through the screens**
- To go back to the Service menu [] button

• 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.

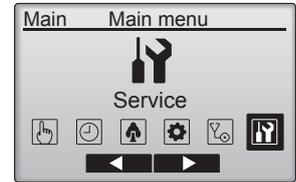


10-3. SERVICE MENU

Maintenance password is required

1. Select "Service" from the Main menu, and press the [✓] button.

*At the main display, the menu button and select "Service" to make the maintenance setting.



2. When the Service menu is selected, a window will appear asking for the password.

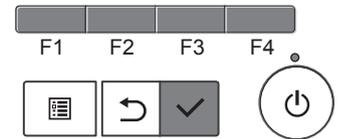
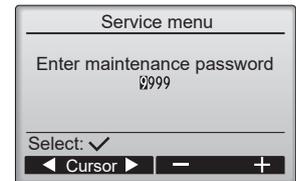
To enter the current maintenance password (4 numerical digits), move the cursor to the digit you want to change with the [F1] or [F2] button.



Set each number (0 through 9) with the [F3] or [F4] button.



Then, press the [✓] button.



Note: 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 the [F1] button for 10 seconds on the maintenance password setting screen.

3. If the password matches, the Service menu will appear.

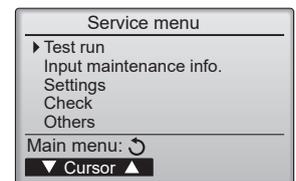
Note: Air conditioning units may need to be stopped to make only at "Settings". There may be some settings that cannot be made when the system is centrally controlled.



A screen will appear that indicates the setting has been saved.

Navigating through the screens

- To go back to the Service menu[List icon] button
- To return to the previous screen.....[Refresh] button

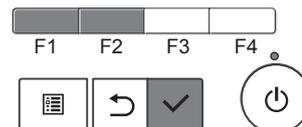
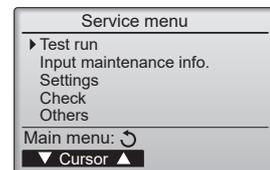


10-4. TEST RUN

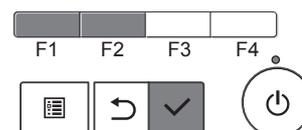
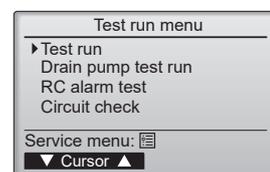
10-4-1. PAR-42MAAB

1. Select "Service" from the Main menu, and press the [✓] button.

Select "Test run" with the [F1] or [F2] button, and press the [✓] button.



2. Select "Test run" with the [F1] or [F2] button, and press the [✓] button.



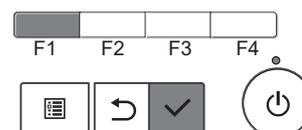
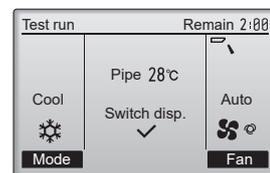
Test run operation

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

Cool mode: Check if the cold air blows out.
Heat mode: Check if the heat blows out.

Check the operation of the outdoor unit's fan.

Press the [✓] button and open the Vane setting screen.



Auto vane check

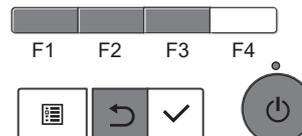
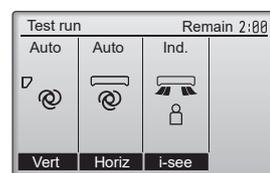
Check the auto vane with the [F1] [F2] [F3] buttons.

Press the [↶] button to return to "Test run operation".

Press the [⏻] button.

When the test run is completed, the "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.



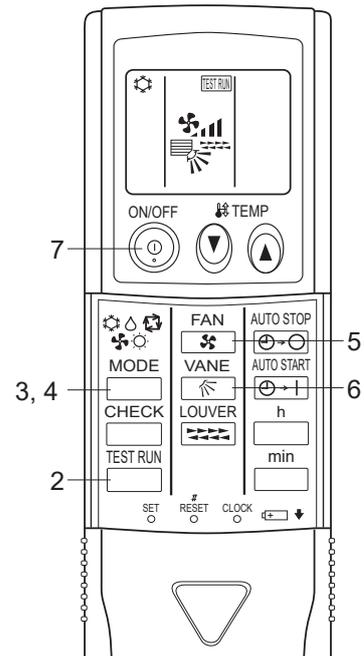
10-4-2. PAR-SL97A-E

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.

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

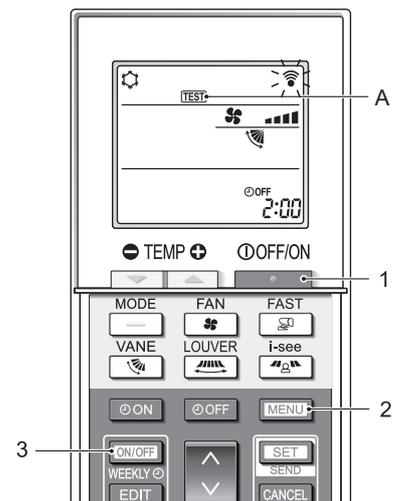
Note:

- Point the remote controller towards the indoor unit receiver while following steps 2 to 7.
- It is not possible to run in FAN, DRY or AUTO mode.



10-4-3. PAR-SL103A-E

1. Press the  button 1 to stop the air conditioner.
 - If the weekly timer is enabled ( is on), press the  button 3 to disable it ( is off).
2. Press the  button 2 for 5 seconds.
 -  comes on and the unit enters the service mode.
3. Press the  button 2.
 -  A comes on and the unit enters the test run mode.
4. 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.
5. Stop the test run.
 - Press the  button 1 to stop the test run.
 - After 2 hours, the stop signal is transmitted.



10-5. FUNCTION SETTING

10-5-1. PAR-42MAAB

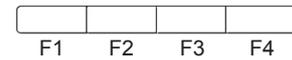
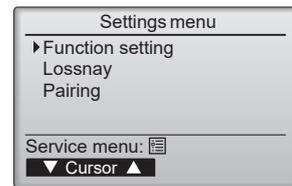
1. Select "Service" from the Main menu, and press the [✓] button.



Select "Setting" from the Service menu, and press the [✓] button.



Select "Function setting", and press the [✓] button.



2. The Function setting screen will appear.

Press the [F1] or [F2] button to move the cursor to one of the following: M-NET address, function setting number, or setting value. Then, press the [F3] or [F4] button to change the settings to the desired settings.



Once the settings have been completed, press the [✓] button.

A screen will appear indicating that the settings information is being sent.

To check the current settings of a given unit, enter the setting for its M-NET address and function setting number, select Conf for the Function, and press the [✓] button.

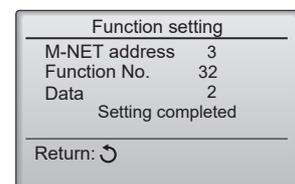
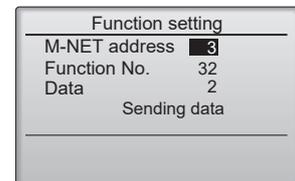
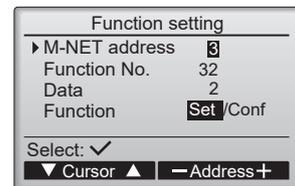
A screen will appear indicating that the settings are being searched for.

When the search is done, the current settings will appear.



When the settings information has been sent, a screen will appear indicating its completion.

To make additional settings, press the [↺] button to return to the screen shown in the above step. Set the function numbers for other indoor units by following the same steps.



Note:

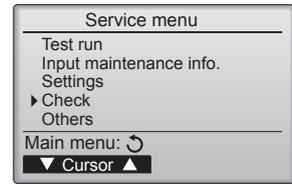
- Refer to the indoor unit Installation Manual for information about the factory settings of indoor units, function setting numbers, and setting values.
- Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.

10-6. ERROR HISTORY

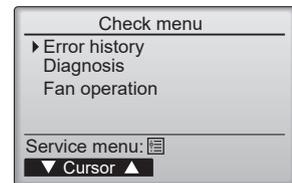
1. Select "Service" from the Main menu, and press the [✓] button.



Select "Check" with the [F1] or [F2] button, and press the [✓] button.

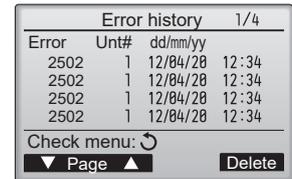


2. Select "Error history" with the [F1] or [F2] button, and press the [✓] button.



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.



4. Deleting the error history

To delete the error history, press the [F4] button (Delete) on the screen that shows error history.

A confirmation screen will appear asking if you want to delete the error history.

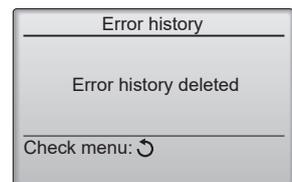


Press the [F4] button (OK) to delete the history.



"Error history deleted" will appear on the screen.

Press the [↶] button to go back to the Check menu screen.



10-7. SELF-DIAGNOSIS

10-7-1. PAR-42MAAB

1. Select "Service" from the Main menu, and press the [✓] button.



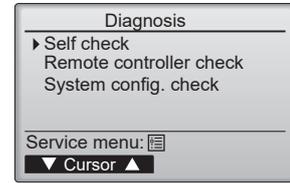
Select "Check" from the Service menu, and press the [✓] button.



Select "Diagnosis" from the Check menu, and press the [✓] button.



Select "Self check" with the [F1] or [F2] button, and press the [✓] button.



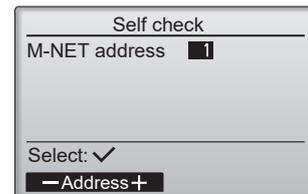
2. Select "Self check" from the Diagnosis menu, and press the [✓] button to view the Self check screen.



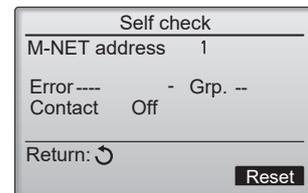
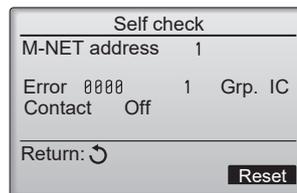
With the [F1] or [F2] button, enter the M-NET address, and press the [✓] button.



Error code, unit number, attribute, and indoor unit demand signal ON/OFF status at the contact will appear. "-" will appear if no error history is available.



When there is no error history

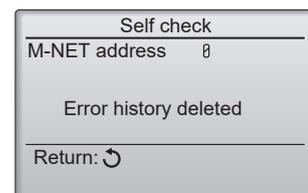
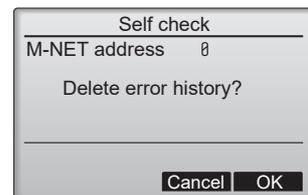


3. Resetting the error history

Press the [F4] button (Reset) on the screen that shows the error history. A confirmation screen will appear asking if you want to delete the error history.

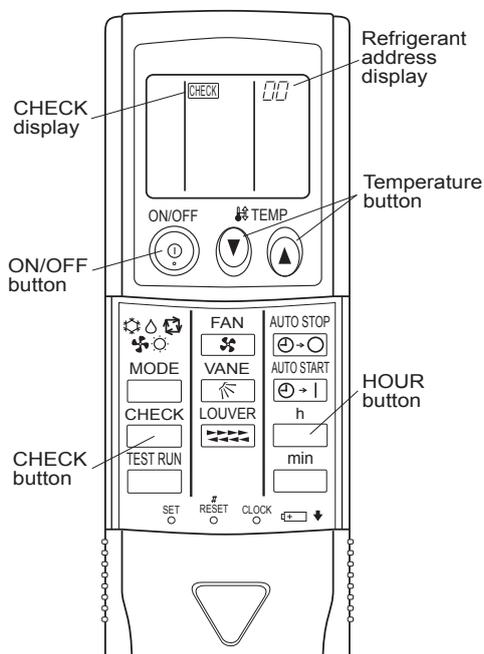


Press the [F4] button (OK) to delete the error history. If deletion fails, "Request rejected" will appear, and "Unit not exist" will appear if indoor units that correspond to the entered address are not found.



10-7-2. PAR-SL97A-E

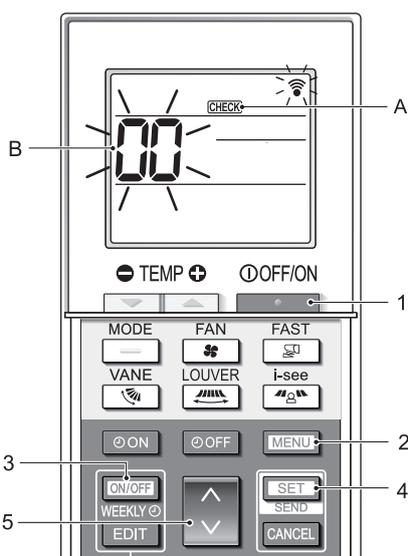
<Malfunction-diagnosis method at maintenance service>



[Procedure]

1. Press the CHECK button twice.
 - "CHECK" lights, and refrigerant address "00" blinks.
 - Check that the remote controller's display has stopped before continuing.
2. Press the TEMP (down) (up) 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 on the indoor unit and press the HOUR 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 on the indoor unit and press the ON/OFF button.
 - The check mode is cancelled.

10-7-3. PAR-SL103A-E



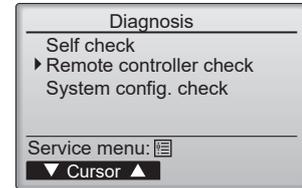
[Procedure]

1. Press the [ON/OFF] button 1 to stop the air conditioner.
 - If the weekly timer is enabled (WEEKLY is on), press the [ON/OFF WEEKLY] button 3 to disable it (WEEKLY is off).
2. Press the [MENU] button 2 for 5 seconds.
 - [CHECK] A comes on and the unit enters the self-check mode.
3. Press the [ON/OFF] button 5 to select the refrigerant address (M-NET address) B of the indoor unit for which you want to perform the self-check.
4. Press the [SET] button 4.
 - If an error is detected, the check code is indicated by the number of beeps from the indoor unit and the number of blinks of the operation indicator lamp.
5. Press the [ON/OFF] button 1.
 - [CHECK] A and the refrigerant address (M-NET address) B go off and the self-check is completed.

10-8. REMOTE CONTROLLER CHECK

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

1. Select "Service" from the Main menu, and press the [✓] button.



Select "Check" from the Service menu, and press the [✓] button.

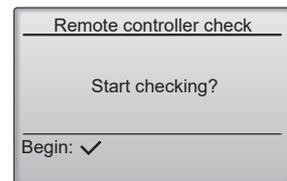


Select "Diagnosis" from the Check menu, and press the [✓] button.



Select "Remote controller check" with the [F1] or [F2] button, and press the [✓] button.

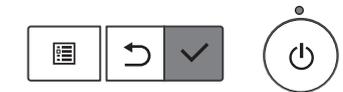
2. Select "Remote controller check" from the Diagnosis menu, and press the [✓] button to start the remote controller check and see the check results.



To cancel the remote controller check and exit the "Remote controller check" menu screen, press the [List] or the [Refresh] button.

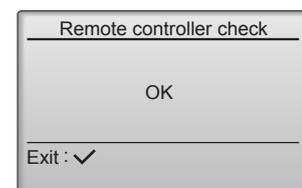


The remote controller will not reboot itself.



3.
 - OK: No problems are found with the remote controller. Check other parts for 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 replacing.
 - 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.

Remote controller check results screen



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

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.

11-1. GUIDELINE FOR PREVENTIVE MAINTENANCE

The following maintenance intervals indicate the estimated intervals of parts replacement and repair to be required as a result of periodic inspections. They do not necessarily mean that replacement is required at the maintenance intervals. The maintenance intervals do not indicate the warranty period.

Parts	Inspection interval	Maintenance interval*
Motor (Fan, drain pump)	1 year	20,000 hours
Bearing		15,000 hours
Electrical box		25,000 hours
Heat exchanger		5 years
Electronic expansion valve		20,000 hours
Sensor (Thermistor, refrigerant sensor, etc.)		5 years
Drain pan		8 years

- The table above shows the main parts. Check the maintenance contract for details.
- This maintenance interval is an estimated period until the day when the maintenance should be conducted to use the product safely for a long time.
Make use of the table above for maintenance planning (such as planning budget for maintenance inspection cost). Depending on the contents of the maintenance contract, the actual inspection and maintenance intervals may shorter than those in the table above.
- The maintenance and inspection items may differ depending on maintenance providers.
Please check with your maintenance provider when concluding a maintenance contract.

*The following usage conditions are assumed.

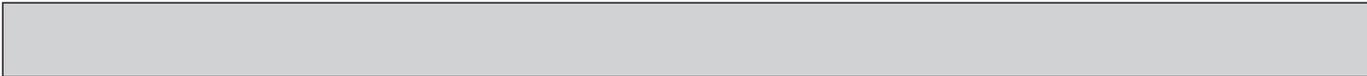
- Normal use without frequent START/STOPs (The number of START/STOPs is assumed to be less than 6 times per hour in normal use)
- Operating hours are assumed to be 10 hours per day/2500 hours per year.

When the equipment is used under the following conditions, the maintenance interval may be shortened.

- When equipment is used in an environment where temperature and humidity are high or change dramatically
- When equipment is used in an environment where power supply fluctuations (the distortion of voltage, frequency, and waveform) are large (only within the allowable range)
- When equipment is used in an environment where the equipment may receive vibration or mechanical shock
- When equipment is used in an environment where dust, salt, toxic gases such as sulfur dioxide and hydrogen sulfide, and oil mist are present
- When equipment starts/stops frequently and operates for long periods (24-hour air-conditioning operation)

11-2. RECOMMENDED PARTS INSPECTION INTERVAL

Parts	Inspection interval	Maintenance interval	Inspection items	Criteria	Measures
Long-life filter	1 year	5 years	<ul style="list-style-type: none"> • Visual check for dirt or torn. 	<ul style="list-style-type: none"> • Filter element is seen through. • No torn or deformation. 	<ul style="list-style-type: none"> • Clean the filter if it is dirty. • Replace the filter if it is torn.
High-performance filter		1 year	<ul style="list-style-type: none"> • Check for clogging. • Check the appearance. 	<ul style="list-style-type: none"> • No notable clogging in a short period of time. • No deformation or damage. 	<ul style="list-style-type: none"> • Replace the filter if it is clogged. • Replace the filter if it is deformed or damaged. • Replace the filter periodically.
Smoothing capacitor		10 years	<ul style="list-style-type: none"> • Check the appearance of electrolytic capacitors. 	<ul style="list-style-type: none"> • No liquid leakage, deformation, or sleeve (outer film) shrinkage. 	<ul style="list-style-type: none"> • Replace the electrolytic capacitor if there is leakage, deformation, or shrinkage of the sleeve (outer film).
Fuse		10 years	<ul style="list-style-type: none"> • Check the appearance. 	<ul style="list-style-type: none"> • No deformation or discoloration. 	<ul style="list-style-type: none"> • Replace the fuse if the circuit is cut off.
Motor (Fan, drain pump)		20,000 hours	<ul style="list-style-type: none"> • Auditory check for operating sounds. • Measure the insulation resistance. 	<ul style="list-style-type: none"> • No abnormal sounds. • Insulation resistance must be 1 MΩ or above. 	<ul style="list-style-type: none"> • Replace the fan motor if an insulation problem is found.
Bearing		15,000 hours	<ul style="list-style-type: none"> • Fill oil periodically. 	<ul style="list-style-type: none"> • No abnormal sound. 	<ul style="list-style-type: none"> • Periodically replace the parts.
Electrical box		25,000 hours	<ul style="list-style-type: none"> • Check the insulation resistance of the circuit (500 V) • Check for loose terminals and connectors. 	<ul style="list-style-type: none"> • Insulation resistance must be 1 MΩ or above. • No loose connections. • No accumulated foreign objects. • No error display. 	<ul style="list-style-type: none"> • Clean with a brush if dust accumulation is found. • Replace the electrical part if the insulation resistance is 1 MΩ or below. • Tighten the loose terminals and reconnect the connectors.
Heat exchanger		5 years	<ul style="list-style-type: none"> • Check for clogging, contamination, and damage. 	<ul style="list-style-type: none"> • No clogging, contamination, or damage. 	<ul style="list-style-type: none"> • Perform cleaning.
Electronic expansion valve		20,000 hours	<ul style="list-style-type: none"> • Operation check using operation data. 	<ul style="list-style-type: none"> • Temperature must change in proportion to the valve position. (Check the temperature variation with the centralized controller.) 	<ul style="list-style-type: none"> • Replace the valve if the operation data show an operation failure due to valve problems.
Sensor (Thermistor, refrigerant sensor, etc.)		5 years	<ul style="list-style-type: none"> • Check for breakage and deterioration of the cables, and for disconnection of the connectors. • Measure the insulation resistance. 	<ul style="list-style-type: none"> • No breakage or deterioration of the cables or disconnected connectors. • Insulation resistance must be 1 MΩ or above. 	<ul style="list-style-type: none"> • Replace the sensor if the cable is broken, short-circuited, or severely deteriorated, or an insulation problem is found.
Drain pan	8 years	<ul style="list-style-type: none"> • Check for clogging and drain water flow. • Check for coating's peeling or separation. 	<ul style="list-style-type: none"> • No drain clogging. • No abnormal rust or hole. 	<ul style="list-style-type: none"> • Clean the drain pan and check that the drain pan is tilted properly. • Replace the drain pan depending on the repairing coating or conditions. 	



- The table above shows the main parts. Check the maintenance contract for details.
- This maintenance interval is an estimated period until the day when the maintenance should be conducted to use the product safely for a long time.
Make use of the table above for maintenance planning (such as planning budget for parts replacement cost).
- The inspection intervals depend on the usage and environment.
The inspection intervals do not indicate the warranty period.
- The maintenance and inspection items may differ depending on maintenance providers. Please check with your maintenance provider when concluding a maintenance contract.
- Repairs outside the warranty period will be charged, even if periodic inspections have been performed at the recommended intervals.

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