MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS
SPLIT-TYPE, AIR CONDITIONERS

January 2023

SERVICE MANUAL R410A

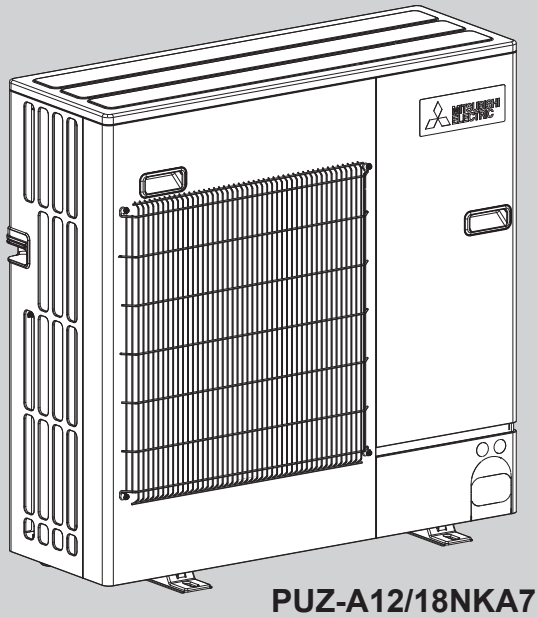
No. OCH636
REVISED EDITION-E

Outdoor unit [Model Name]	[Service Ref.]
PUZ-A12NKA7	PUZ-A12NKA7
PUZ-A18NKA7	PUZ-A18NKA7
PUZ-A24NHA7	PUZ-A24NHA7
PUZ-A30NHA7	PUZ-A30NHA7
PUZ-A36NKA7	PUZ-A36NKA7
PUZ-A42NKA7	PUZ-A42NKA7
PUZ-A12NKA7-BS	PUZ-A12NKA7-BS
PUZ-A18NKA7-BS	PUZ-A18NKA7-BS
PUZ-A24NHA7-BS	PUZ-A24NHA7-BS
PUZ-A30NHA7-BS	PUZ-A30NHA7-BS
PUZ-A36NKA7-BS	PUZ-A36NKA7-BS
PUZ-A42NKA7-BS	PUZ-A42NKA7-BS
PUY-A12NKA7	PUY-A12NKA7
PUY-A18NKA7	PUY-A18NKA7
PUY-A24NHA7	PUY-A24NHA7
PUY-A30NHA7	PUY-A30NHA7
PUY-A36NKA7	PUY-A36NKA7
PUY-A42NKA7	PUY-A42NKA7
PUY-A12NKA7-BS	PUY-A12NKA7-BS
PUY-A18NKA7-BS	PUY-A18NKA7-BS
PUY-A24NHA7-BS	PUY-A24NHA7-BS
PUY-A30NHA7-BS	PUY-A30NHA7-BS
PUY-A36NKA7-BS	PUY-A36NKA7-BS
PUY-A42NKA7-BS	PUY-A42NKA7-BS

Revision:
- Abnormal conditions have been added in "10. TROUBLESHOOTING" in REVISED EDITION-E.

OCH636D is void.

Notes:
- This manual describes service data of the outdoor units only.



PUZ-A12/18NKA7
PUY-A12/18NKA7

CONTENTS

PARTS CATALOG (OCB636)

Mr.SLIM

1 REFERENCE MANUAL

INDOOR UNIT

Model name	Service Ref.	Service manual No. Parts catalog No
PLA-A12/18/24/30/36/42EA7	PLA-A12/18/24/30/36/42EA7	OCH640 OCB640
PCA-A24/30/36/42KA7	PCA-A24/30/36/42KA7.TH	OCH638 OCB638
PKA-A12/18HA7	PKA-A12/18HA7	OCH637 OCB637
PKA-A24/30/36KA7	PKA-A24/30/36KA7.TH	OCH639 OCB639
PKA-A12/18LA	PKA-A12/18LA.TH	OCH761 OCB761
PEAD-A12/18/24/30/36/42AA7	PEAD-A12/18/24/30/36/42AA7	HWE1608A BWE01629A
PVA-A12/18/24/30/36/42AA7	PVA-A12/18/24/30/36/42AA7	MD-1404-K011 MD-1404-K012

2 SAFETY PRECAUTION

2-1. ALWAYS OBSERVE FOR SAFETY

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

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.

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.

2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R410A

Use new refrigerant pipes.

In the 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.

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 to be used indoors during installation and both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

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

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

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

Charge refrigerant from liquid phase of gas cylinder.

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

Do not use refrigerant other than R410A.

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

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 R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare 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.

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

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 in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

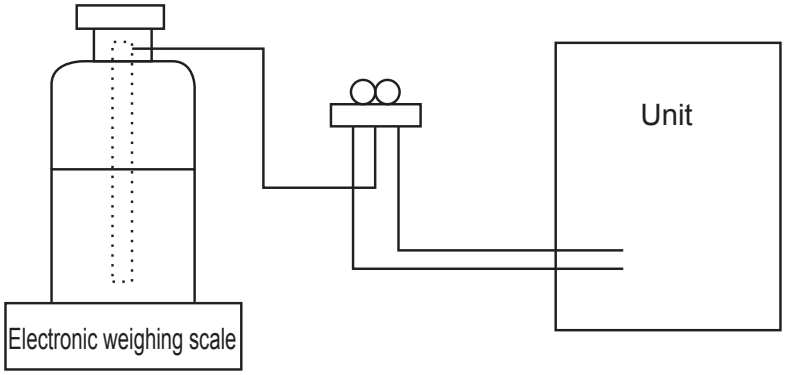
[1] Cautions for service

(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) If moisture or foreign matter might have entered the refrigerant piping during service, ensure to remove them.

[2] Additional refrigerant charge

When charging directly from cylinder

(1) Check that cylinder for R410A 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.)



[3] Service tools

Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R410A
		· Use the existing fitting specifications.
		· Use high-tension side pressure of 768.7 PSIG [5.3 MPa.G] or over.
②	Charge hose	· Only for R410A
		· Use pressure performance of 738.2 PSIG [5.09 MPa.G] or over.
③	Electronic weighing scale	—
④	Gas leak detector	· Use the detector for R134a, R407C or R410A
⑤	Adaptor for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· Only for R410A ·Top of cylinder (Pink) · Cylinder with syphon
⑧	Refrigerant recovery equipment	—

2-3. PRECAUTIONS FOR SALT PROOF TYPE "-BS" MODEL

Although "-BS" model has been designed to be resistant to salt damage, observe the following precautions to maintain the performance of the unit.

(1) Avoid installing the unit in a location where it will be exposed directly to seawater or sea breeze.
(2) If the cover panel may become covered with salt, be sure to install the unit in a location where the salt will be washed away by rainwater. (If a sunshade is installed, rainwater may not clean the panel.)
(3) To ensure that water does not collect in the base of the outdoor unit, make sure that the base is level, not at angle. Water collecting in the base of the outdoor unit could cause rust.
(4) If the unit is installed in a coastal area, clean the unit with water regularly to remove any salt build-up.
(5) If the unit is damaged during installation or maintenance, be sure to repair it.
(6) Be sure to check the condition of the unit regularly.
(7) Be sure to install the unit in a location with good drainage.

2-4. CAUTIONS FOR REFRIGERANT PIPING WORK

New refrigerant R410A is adopted for replacement inverter series. Although the refrigerant piping work for R410A is same as for R22, exclusive tools are necessary so as not to mix with different kind of refrigerant. Furthermore as the working pressure of R410A is 1.6 times higher than that of R22, their sizes of flared sections and flare nuts are different.

① Thickness of pipes

Since the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 7/256 inch [0.7 mm] or below.)

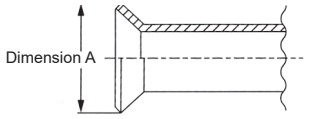
Diagram below: Piping diameter and thickness

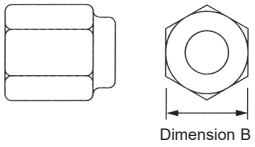
Nominal dimensions (inch)	Outside diameter (mm)	Thickness : inch [mm]	
		R410A	R22
1/4	6.35	1/32 [0.8]	1/32 [0.8]
3/8	9.52	1/32 [0.8]	1/32 [0.8]
1/2	12.70	1/32 [0.8]	1/32 [0.8]
5/8	15.88	5/128 [1.0]	5/128 [1.0]
3/4	19.05	—	5/128 [1.0]

② Dimensions of flare cutting and flare nut

The component molecules in HFC refrigerant are smaller compared to conventional refrigerants. In addition to that, R410A is a refrigerant, which has higher risk of leakage because its working pressure is higher than that of other refrigerants. Therefore, to enhance air tightness and strength, flare cutting dimension of copper pipe for R410A has been specified separately from the dimensions for other refrigerants as shown below. The dimension B of flare nut for R410A also has partly been changed to increase strength as shown below. Set copper pipe correctly referring to copper pipe flaring dimensions for R410A below. For 1/2 and 5/8 inch pipes, the dimension B changes.

Use torque wrench corresponding to each dimension.





Flare cutting dimensions

Nominal dimensions (inch)	Outside diameter (mm)	Dimension A ($^{+0}_{-0.4}$)	
		R410A (inch [mm])	R22 (mm)
1/4	6.35	11/32-23/64 [9.1]	9.0
3/8	9.52	1/2-33/64 [13.2]	13.0
1/2	12.70	41/64-21/32 [16.6]	16.2
5/8	15.88	49/64-25/32 [19.7]	19.4
3/4	19.05	—	23.3

Flare nut dimensions

Nominal dimensions (inch)	Outside diameter (mm)	Dimension B	
		R410A (inch [mm])	R22 (mm)
1/4	6.35	43/64 [17.0]	17.0
3/8	9.52	7/8 [22.0]	22.0
1/2	12.70	1-3/64 [26.0]	24.0
5/8	15.88	1-9/64 [29.0]	27.0
3/4	19.05	—	36.0

③ Tools for R410A (The following table shows whether conventional tools can be used or not.)

Tools and materials	Use	R410A tools	Can R22 tools be used?
Gauge manifold	Air purge, refrigerant charge and operation check	Tool exclusive for R410A	×
Charge hose		Tool exclusive for R410A	×
Gas leak detector	Gas leak check	Tool for HFC refrigerant	×
Refrigerant recovery equipment	Collection of refrigerant	Tool exclusive for R410A	×
Refrigerant cylinder	Refrigerant charge	Tool exclusive for R410A	×
Applied oil	Apply to flared section	Ester oil, ether oil and alkylbenzene oil(minimum amount)	×
Safety charger	Prevent compressor malfunction when charging refrigerant by spraying liquid refrigerant	Tool exclusive for R410A	×
Charge valve	Prevent gas from blowing out when detaching charge hose	Tool exclusive for R410A	×
Vacuum pump	Vacuum dry and air purge	Tools for other refrigerants can be used if equipped with adopter for reverse flow check	△ (Usable if equipped with adopter for reverse flow)
Flare tool	Flaring work of piping	Tools for other refrigerants can be used by adjusting flaring dimension	△ (Usable by adjusting flaring dimension)
Bender	Bend the pipes	Tools can be used for other refrigerants	○
Pipe cutter	Cut the pipes	Tools can be used for other refrigerants	○
Welder and nitrogen gas cylinder	Weld the pipes	Tools can be used for other refrigerants	○
Refrigerant charging scale	Refrigerant charge	Tools can be used for other refrigerants	○
Vacuum gauge or thermistor vacuum gauge and vacuum valve	Check the degree of vacuum. (Vacuum valve prevents back flow of oil and refrigerant to thermistor vacuum gauge)	Tools can be used for other refrigerants	○
Charging cylinder	Refrigerant charge	Tool exclusive for R410A	×

× : Prepare a new tool. (Use the new tool as the tool exclusive for R410A.)
△ : Tools for other refrigerants can be used under certain conditions.
○ : Tools for other refrigerants can be used.

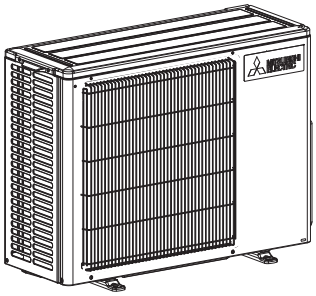
2-5. LOW AMBIENT COOLING

Precautions for low ambient cooling

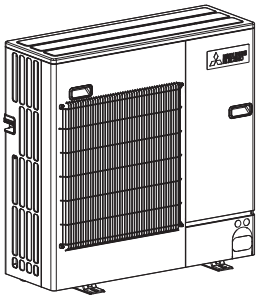
- If the outdoor temperature is 23°F or lower during cooling operation, install an optional air guide to prevent wind from blowing into the outdoor unit.
- Install the outdoor unit in a location where wind will not blow onto the back of the unit.
- To prevent damage to the parts, be sure to install the unit, turn on the main power, and perform service in an environment where the ambient temperature is 0°F or higher.
- In order to protect the compressor and electrical components, do not turn off the circuit breaker if the unit is installed in an environment where the ambient temperature is 0°F or lower.
- It needs at least 12 hr standby to operation in order to warm the electrical parts.

Note: During cooling operation under low ambient temperature, the bottom fan motor of A36, 42N stops occasionally. This is an intended feature, not a malfunction.

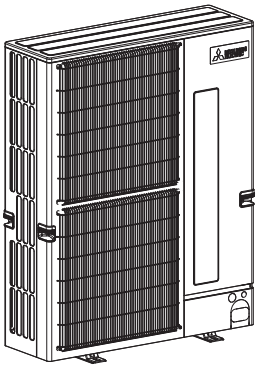
3 FEATURES



PUZ-A12NKA7
PUZ-A18NKA7
PUZ-A12NKA7-BS
PUZ-A18NKA7-BS
PUY-A12NKA7
PUY-A18NKA7
PUY-A12NKA7-BS
PUY-A18NKA7-BS



PUZ-A24NHA7
PUZ-A30NHA7
PUZ-A24NHA7-BS
PUZ-A30NHA7-BS
PUY-A24NHA7
PUY-A30NHA7
PUY-A24NHA7-BS
PUY-A30NHA7-BS



PUZ-A36NKA7
PUZ-A42NKA7
PUZ-A36NKA7-BS
PUZ-A42NKA7-BS
PUY-A36NKA7
PUY-A42NKA7
PUY-A36NKA7-BS
PUY-A42NKA7-BS

CHARGELESS SYSTEM
PRE-CHARGED REFRIGERANT IS SUPPLIED FOR PIPING LENGTH AT SHIPMENT.
(Maximum 100 ft [30 m] (A36, 42)/ Maximum 70 ft [21 m] (A12–30))

The refrigerant circuit with LEV(Linear Expansion Valve) and accumulator always control the optimal refrigerant level regardless of the length (A36, 42: 100 ft [30 m] maximum/ A12–30: 70 ft [21 m] maximum and 16 ft [5 m] minimum) of piping. The additional refrigerant charging work during installation often causes problems.
It is completely eliminated by chargeless system. This unique system improves the quality and reliability of the work done. It also helps to speed up the installation time.

4 SPECIFICATIONS

Service Ref.			PUZ-A12NKA7 PUZ-A12NKA7-BS	PUZ-A18NKA7 PUZ-A18NKA7-BS	PUZ-A24NHA7 PUZ-A24NHA7-BS	PUZ-A30NHA7 PUZ-A30NHA7-BS	PUZ-A36NKA7 PUZ-A36NKA7-BS	PUZ-A42NKA7 PUZ-A42NKA7-BS
Power supply	Phase		Single					
	Frequency		60 Hz					
	Voltage		208/230 V					
MCA		A	11	11	19	19	25	25
MOCP		A	28	28	26	26	31	31
Breaker size		A	15	15	25	25	30	30
External finish			Munsell 3Y 7.8/1.1					
Heat exchanger			Cross fin					
Defrost method			Reverse cycle					
Crankcase heater		kW	—					
Compressor			Hermetic					
	Model		SNB092FNCM	SNB130FBCM2	SNB172FWHM1	SNB172FWHM1	MNB33FBRMC-L	MNB33FBRMC-L
	Motor output	kW	0.65	0.9	1.2	1.2	2.5	2.5
	R.L.A		7	7	7	7	8	8
	L.R.A		12	12	11	11	13	13
	Starter type		Inverter					
Fan	Fan (drive) × No.		Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	Propeller fan × 2	Propeller fan × 2
	Fan motor output	kW	0.046	0.046	0.086	0.086	0.074 + 0.074	0.074 + 0.074
	Fan motor	F.L.A	0.5	0.5	0.4	0.4	0.50 + 0.50	0.50 + 0.50
	Airflow	CFM	1,590	1,590	1,940	1,940	3,880	3,880
		m^3/min	45	45	55	55	110	110
Sound pressure level	Cooling	dB	44	44	47	47	52	52
	Heating	dB	46	46	48	48	53	53
Protection devices			HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo
Dimension	W	inch	31-13/16 + 2-7/16	31-13/16 + 2-7/16	37-13/32	37-13/32	41-5/16	41-5/16
	D	inch	11-13/16	11-13/16	13 + 63/64	13 + 63/64	13 + 63/64	13 + 63/64
	H	inch	24-13/16	24-13/16	37-1/8	37-1/8	52-11/16	52-11/16
	W	mm	809 + 62	809 + 62	950	950	1050	1050
	D	mm	300	300	330 + 25	330 + 25	330 + 25	330 + 25
	H	mm	630	630	943	943	1338	1338
Weight		lb	93	100	153	153	214	214
		kg	42	45	69	69	97	97
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A
	Charged	lb	4 + 7/16	4 + 14/16	7 + 11/16	7 + 11/16	10 + 6/16	10 + 6/16
		kg	2.0	2.2	3.5	3.5	4.7	4.7
	Control		Linear expansion valve					
	Oil charged	Model	Ether (FV50S)					
		oz	12	16	23	23	45	45
		L	0.35	0.5	0.7	0.7	1.4	1.4
Refrigerant piping	Pipe size OD liquid	inch	1/4	1/4	3/8	3/8	3/8	3/8
		mm	6.35	6.35	9.52	9.52	9.52	9.52
	Pipe size OD gas	inch	1/2	1/2	5/8	5/8	5/8	5/8
		mm	12.7	12.7	15.88	15.88	15.88	15.88
	Connection method - Indoor		Flared					
	Connection method - Outdoor		Flared					
	Height difference IU-OU	ft	Maximum 100					
		m	Maximum 30					
	Piping length	ft	Maximum 100	Maximum 100	Maximum 165	Maximum 165	Maximum 165	Maximum 165
		m	Maximum 30	Maximum 30	Maximum 50	Maximum 50	Maximum 50	Maximum 50

Service Ref.			PUY-A12NKA7 PUY-A12NKA7-BS	PUY-A18NKA7 PUY-A18NKA7-BS	PUY-A24NHA7 PUY-A12NHA7-BS	PUY-A30NHA7 PUY-A30NHA7-BS	PUY-A36NKA7 PUY-A36NKA7-BS	PUY-A42NKA7 PUY-A42NKA7-BS
Power supply	Phase		Single					
	Frequency		60 Hz					
	Voltage		208/230 V					
MCA		A	11	11	19	19	25	25
MOCP		A	28	28	26	26	31	31
Breaker size		A	15	15	25	25	30	30
External finish			Munsell 3Y 7.8/1.1					
Heat exchanger			Cross fin					
Defrost method			Reverse cycle					
Crankcase heater		kW	—					
Compressor			Hermetic					
	Model		SNB092FNCM	SNB130FBCM2	SNB172FWHM1	SNB172FWHM1	MNB33FBRMC-L	MNB33FBRMC-L
	Motor output	kW	0.65	0.9	1.2	1.2	2.5	2.5
	R.L.A		7	7	7	7	8	8
	L.R.A		12	12	11	11	13	13
	Starter type		Inverter					
Fan	Fan (drive) × No.		Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	Propeller fan × 2	Propeller fan × 2
	Fan motor output	kW	0.046	0.046	0.086	0.086	0.074 + 0.074	0.074 + 0.074
	Fan motor	F.L.A	0.5	0.5	0.4	0.4	0.50 + 0.50	0.50 + 0.50
	Airflow	CFM	1,590	1,590	1,940	1,940	3,880	3,880
		m^3/min	45	45	55	55	110	110
Sound pressure level	Cooling	dB	44	44	47	47	52	52
	Heating	dB	—	—	—	—	—	—
Protection devices			HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo	HP switch Comp. shell thermo
Dimension	W	inch	31-13/16 + 2-7/16	31-13/16 + 2-7/16	37-13/32	37-13/32	41-5/16	41-5/16
	D	inch	11-13/16	11-13/16	13 + 63/64	13 + 63/64	13 + 63/64	13 + 63/64
	H	inch	24-13/16	24-13/16	37-1/8	37-1/8	52-11/16	52-11/16
	W	mm	809 + 62	809 + 62	950	950	1050	1050
	D	mm	300	300	330 + 25	330 + 25	330 + 25	330 + 25
	H	mm	630	630	943	943	1338	1338
Weight		lb	92	99	151	151	211	211
		kg	41	44	68	68	96	96
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A
	Charged	lb	4 + 7/16	4 + 14/16	7 + 11/16	7 + 11/16	10 + 6/16	10 + 6/16
		kg	2.0	2.2	3.5	3.5	4.7	4.7
	Control		Linear expansion valve					
	Oil charged	Model	Ether (FV50S)					
		oz	12	16	23	23	45	45
		L	0.35	0.5	0.7	0.7	1.4	1.4
Refrigerant piping	Pipe size OD liquid	inch	1/4	1/4	3/8	3/8	3/8	3/8
		mm	6.35	6.35	9.52	9.52	9.52	9.52
	Pipe size OD gas	inch	1/2	1/2	5/8	5/8	5/8	5/8
		mm	12.7	12.7	15.88	15.88	15.88	15.88
	Connection method - Indoor		Flared					
	Connection method - Outdoor		Flared					
	Height difference IU-OU	ft	Maximum 100					
		m	Maximum 30					
	Piping length	ft	Maximum 165	Maximum 165	Maximum 225	Maximum 225	Maximum 225	Maximum 225
		m	Maximum 50	Maximum 50	Maximum 69	Maximum 69	Maximum 69	Maximum 69

5 DATA

5-1. REFILLING REFRIGERANT CHARGE (R410A: oz, kg)

Service Ref.	Piping length (one way)																				Factory charged
	50 ft	60 ft	70 ft	80 ft	90 ft	100 ft	110 ft	120 ft	130 ft	140 ft	150 ft	160 ft	165 ft	170 ft	180 ft	190 ft	200 ft	210 ft	220 ft	225 ft	
	15 m	18 m	21 m	24 m	27 m	30 m	33 m	37 m	40 m	43 m	46 m	49 m	50 m	52 m	55 m	58 m	61 m	64 m	67 m	69 m	
PUZ-A12NKA7	71 oz	71 oz	71 oz	73 oz	75 oz	77 oz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	71 oz
PUZ-A12NKA7-BS	2.0 kg	2.0 kg	2.0 kg	2.1 kg	2.1 kg	2.2 kg	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.0 kg
PUZ-A18NKA7	78 oz	78 oz	78 oz	80 oz	82 oz	84 oz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	78 oz
PUZ-A18NKA7-BS	2.2 kg	2.2 kg	2.2 kg	2.3 kg	2.3 kg	2.4 kg	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2 kg
PUZ-A24NHA7	123 oz	123 oz	123 oz	130 oz	137 oz	144 oz	151 oz	158 oz	165 oz	172 oz	179 oz	186 oz	190 oz	—	—	—	—	—	—	—	123 oz
PUZ-A24NHA7-BS	3.5 kg	3.5 kg	3.5 kg	3.7 kg	3.9 kg	4.1 kg	4.3 kg	4.5 kg	4.7 kg	4.9 kg	5.1 kg	5.3 kg	5.4 kg	—	—	—	—	—	—	—	3.5 kg
PUZ-A30NHA7	123 oz	123 oz	123 oz	130 oz	137 oz	144 oz	151 oz	158 oz	165 oz	172 oz	179 oz	186 oz	190 oz	—	—	—	—	—	—	—	123 oz
PUZ-A30NHA7-BS	3.5 kg	3.5 kg	3.5 kg	3.7 kg	3.9 kg	4.1 kg	4.3 kg	4.5 kg	4.7 kg	4.9 kg	5.1 kg	5.3 kg	5.4 kg	—	—	—	—	—	—	—	3.5 kg
PUZ-A36NKA7	166 oz	166 oz	166 oz	166 oz	166 oz	166 oz	173 oz	180 oz	187 oz	194 oz	201 oz	208 oz	211 oz	—	—	—	—	—	—	—	166 oz
PUZ-A36NKA7-BS	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.9 kg	5.1 kg	5.3 kg	5.5 kg	5.7 kg	5.9 kg	6.0 kg	—	—	—	—	—	—	—	4.7 kg
PUZ-A42NKA7	166 oz	166 oz	166 oz	166 oz	166 oz	166 oz	173 oz	180 oz	187 oz	194 oz	201 oz	208 oz	211 oz	—	—	—	—	—	—	—	166 oz
PUZ-A42NKA7-BS	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.9 kg	5.1 kg	5.3 kg	5.5 kg	5.7 kg	5.9 kg	6.0 kg	—	—	—	—	—	—	—	4.7 kg
PUY-A12NKA7	71 oz	71 oz	71 oz	72 oz	73 oz	74 oz	75 oz	76 oz	77 oz	78 oz	79 oz	80 oz	80 oz	—	—	—	—	—	—	—	71 oz
PUY-A12NKA7-BS	2.0 kg	2.0 kg	2.0 kg	2.0 kg	2.1 kg	2.1 kg	2.1 kg	2.1 kg	2.2 kg	2.2 kg	2.2 kg	2.3 kg	2.3 kg	—	—	—	—	—	—	—	2.0 kg
PUY-A18NKA7	78 oz	78 oz	78 oz	79 oz	80 oz	81 oz	82 oz	83 oz	84 oz	85 oz	86 oz	87 oz	87 oz	—	—	—	—	—	—	—	78 oz
PUY-A18NKA7-BS	2.2 kg	2.2 kg	2.2 kg	2.2 kg	2.3 kg	2.3 kg	2.3 kg	2.3 kg	2.4 kg	2.4 kg	2.4 kg	2.5 kg	2.5 kg	—	—	—	—	—	—	—	2.2 kg
PUY-A24NHA7	123 oz	123 oz	123 oz	126 oz	129 oz	132 oz	135 oz	138 oz	141 oz	144 oz	147 oz	150 oz	152 oz	153 oz	156 oz	159 oz	162 oz	165 oz	168 oz	170 oz	123 oz
PUY-A24NHA7-BS	3.5 kg	3.5 kg	3.5 kg	3.6 kg	3.7 kg	3.8 kg	3.8 kg	3.9 kg	4.0 kg	4.1 kg	4.2 kg	4.3 kg	4.3 kg	4.4 kg	4.4 kg	4.5 kg	4.6 kg	4.7 kg	4.8 kg	4.8 kg	3.5 kg
PUY-A30NHA7	123 oz	123 oz	123 oz	126 oz	129 oz	132 oz	135 oz	138 oz	141 oz	144 oz	147 oz	150 oz	152 oz	153 oz	156 oz	159 oz	162 oz	165 oz	168 oz	170 oz	123 oz
PUY-A30NHA7-BS	3.5 kg	3.5 kg	3.5 kg	3.6 kg	3.7 kg	3.8 kg	3.8 kg	3.9 kg	4.0 kg	4.1 kg	4.2 kg	4.3 kg	4.3 kg	4.4 kg	4.4 kg	4.5 kg	4.6 kg	4.7 kg	4.8 kg	4.8 kg	3.5 kg
PUY-A36NKA7	166 oz	166 oz	166 oz	166 oz	166 oz	166 oz	169 oz	172 oz	175 oz	178 oz	181 oz	184 oz	185 oz	187 oz	190 oz	193 oz	196 oz	199 oz	202 oz	203 oz	166 oz
PUY-A36NKA7-BS	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.8 kg	4.9 kg	5.0 kg	5.0 kg	5.1 kg	5.2 kg	5.3 kg	5.3 kg	5.4 kg	5.5 kg	5.6 kg	5.6 kg	5.7 kg	5.8 kg	4.7 kg
PUY-A42NKA7	166 oz	166 oz	166 oz	166 oz	166 oz	166 oz	169 oz	172 oz	175 oz	178 oz	181 oz	184 oz	185 oz	187 oz	190 oz	193 oz	196 oz	199 oz	202 oz	203 oz	166 oz
PUY-A42NKA7-BS	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.7 kg	4.8 kg	4.9 kg	5.0 kg	5.0 kg	5.1 kg	5.2 kg	5.3 kg	5.3 kg	5.4 kg	5.5 kg	5.6 kg	5.6 kg	5.7 kg	5.8 kg	4.7 kg

For pipes longer than 70 or 100 ft, additional charge is required.

5-2. COMPRESSOR TECHNICAL DATA

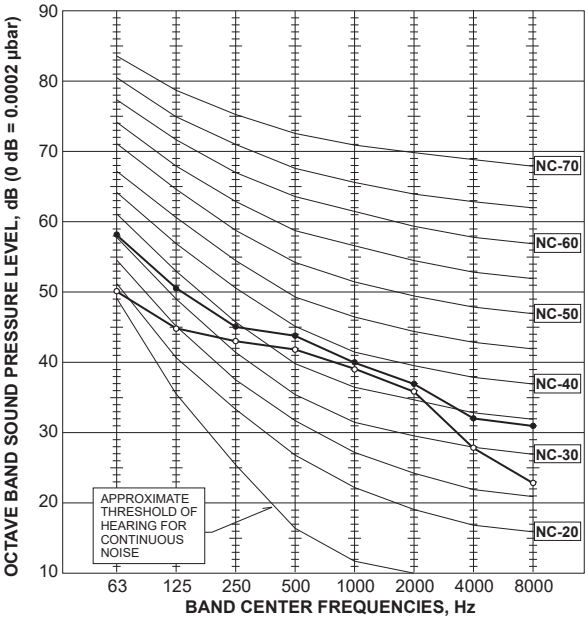
(at 68°F [20°C])

Service Ref.		PUZ-A12NKA7 PUZ-A12NKA7-BS PUY-A12NKA7 PUY-A12NKA7-BS	PUZ-A18NKA7 PUZ-A18NKA7-BS PUY-A18NKA7 PUY-A18NKA7-BS	PUZ-A24/30NHA7 PUZ-A24/30NHA7-BS PUY-A24/30NHA7 PUY-A24/30NHA7-BS	PUZ-A36/42NKA7 PUZ-A36/42NKA7-BS PUY-A36/42NKA7 PUY-A36/42NKA7-BS
Compressor model		SNB092FNCM	SNB130FBCM2	SNB172FWHM1	MNB33FBRMC-L
Winding resistance (Ω)	U-V	0.64	0.64	1.34	0.88
	U-W	0.64	0.64	1.34	0.88
	W-V	0.64	0.64	1.34	0.88

5-3. NOISE CRITERION CURVES

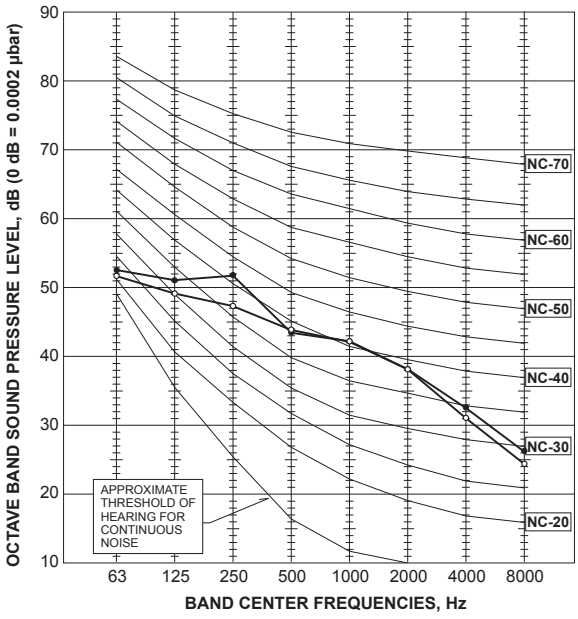
PUZ-A12/18NKA7(-BS)
PUY-A12/18NKA7(-BS)

MODE	SPL(dB)	LINE
COOLING	44	○—○
HEATING	46	●—●



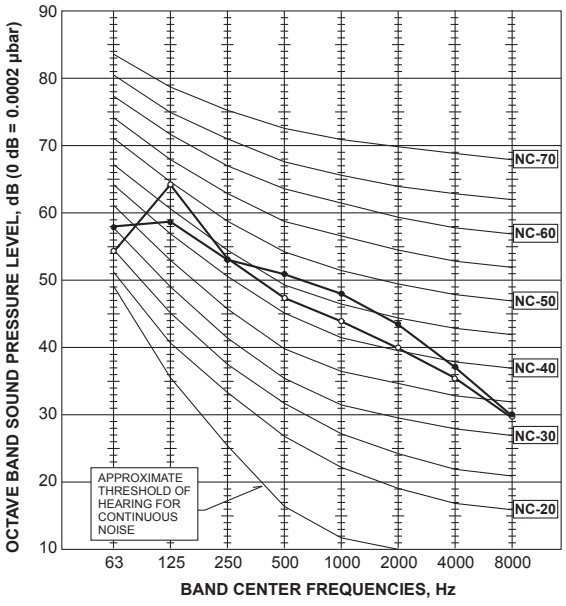
PUZ-A24/30NHA7(-BS)
PUY-A24/30NHA7(-BS)

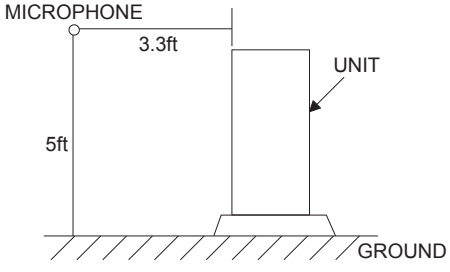
MODE	SPL(dB)	LINE
COOLING	47	○—○
HEATING	48	●—●



PUZ-A36/42NKA7(-BS)
PUY-A36/42NKA7(-BS)

MODE	SPL(dB)	LINE
COOLING	52	○—○
HEATING	53	●—●





5-4. STANDARD OPERATION DATA

5-4-1. Heat pump

Representative matching			PVA-A12AA7		PVA-A18AA7		PVA-A24AA7		PVA-A30AA7		PVA-A36AA7		PVA-A42AA7	
Mode			COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING
Total	Capacity	Btu/h	12,000	14,000	18,000	19,000	24,000	26,000	30,000	32,000	36,000	38,000	42,000	46,000
	Input	W	890	1,070	1,570	1,470	1,960	1,920	3,000	2,640	3,250	3,030	4,150	3,900
Electrical circuit	Indoor unit model		PVA-A12AA7		PVA-A18AA7		PVA-A24AA7		PVA-A30AA7		PVA-A36AA7		PVA-A42AA7	
	Phase		Single		Single		Single		Single		Single		Single	
	Cycle		60 Hz		60 Hz		60 Hz		60 Hz		60 Hz		60 Hz	
	Voltage		208/230 V		208/230 V		208/230 V		208/230 V		208/230 V		208/230 V	
	Current		0.80 A	0.80 A	1.60 A	1.60 A	3.30 A	3.30 A	3.30 A	3.30 A	4.40 A	4.40 A	4.50 A	4.50 A
	Outdoor unit model		PUZ-A12NKA7		PUZ-A18NKA7		PUZ-A24NHA7		PUZ-A30NHA7		PUZ-A36NKA7		PUZ-A42NKA7	
	Phase		Single		Single		Single		Single		Single		Single	
	Cycle		60 Hz		60 Hz		60 Hz		60 Hz		60 Hz		60 Hz	
	Voltage		208/230 V		208/230 V		208/230 V		208/230 V		208/230 V		208/230 V	
	Current		3.39 A	4.10 A	5.45 A	5.01 A	5.49 A	5.30 A	10.01 A	8.40 A	10.05 A	9.00 A	13.95 A	12.90 A
Electrical circuit	Discharge pressure	PSIG	380	336	397	337	388	341	418	371	379	344	394	367
	Suction pressure	PSIG	157	105	143	100	145	98	128	95	136	104	127	99
	Discharge temperature	°F	142	155	151	159	155	171	176	182	144	145	167	148
	Condensing temperature	°F	111	102	114	102	114	104	120	113	111	104	114	108
	Suction temperature	°F	49	36	51	42	58	50	57	48	50	38	57	33
	Ref. pipe length	ft	25	25	25	25	25	25	25	25	25	25	25	25
	Discharge pressure	MPa	2.62	2.32	2.73	2.32	2.67	2.35	2.88	2.56	2.62	2.37	2.72	2.53
	Suction pressure	MPa	1.08	0.72	0.99	0.69	1.00	0.68	0.88	0.65	0.94	0.72	0.88	0.69
	Discharge temperature	°C	61.1	68.2	65.9	70.5	68.5	77.1	80.2	83.6	62.1	63.0	75.0	64.5
	Condensing temperature	°C	43.9	38.9	45.7	38.9	45.7	40.2	48.8	45.0	44.1	40.0	45.7	42.4
	Suction temperature	°C	9.6	2.4	10.4	5.4	14.3	10.2	13.9	8.9	9.8	3.1	13.9	0.5
	Ref. pipe length	m	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Indoor side	Intake air temperature DB	°F	80	70	80	70	80	70	80	70	80	70	80	70
	Intake air temperature WB	°F	67	60	67	60	67	60	67	60	67	60	67	60
	Discharge air temperature DB	°F	61	96	60	96	58	100	56	107	58	101	57	103
Outdoor side	Intake air temperature DB	°F	95	47	95	47	95	47	95	47	95	47	95	47
	Intake air temperature WB	°F	75	43	75	43	75	43	75	43	75	43	75	43
Indoor side	Intake air temperature DB	°C	26.7	21.1	26.7	21.1	26.7	21.1	26.7	21.1	26.7	21.1	26.7	21.1
	Intake air temperature WB	°C	19.4	15.6	19.4	15.6	19.4	15.6	19.4	15.6	19.4	15.6	19.4	15.6
	Discharge air temperature DB	°C	16.1	35.6	15.7	35.6	14.5	37.5	13.2	41.5	14.2	38.1	14.0	39.6
Outdoor side	Intake air temperature DB	°C	35.0	8.3	35.0	8.3	35.0	8.3	35.0	8.3	35.0	8.3	35.0	8.3
	Intake air temperature WB	°C	23.9	6.1	23.9	6.1	23.9	6.1	23.9	6.1	23.9	6.1	23.9	6.1
SHF			0.77	—	0.76	—	0.83	—	0.74	—	0.77	—	0.81	—
BF			0.11	—	0.12	—	0.07	—	0.07	—	0.08	—	0.08	—

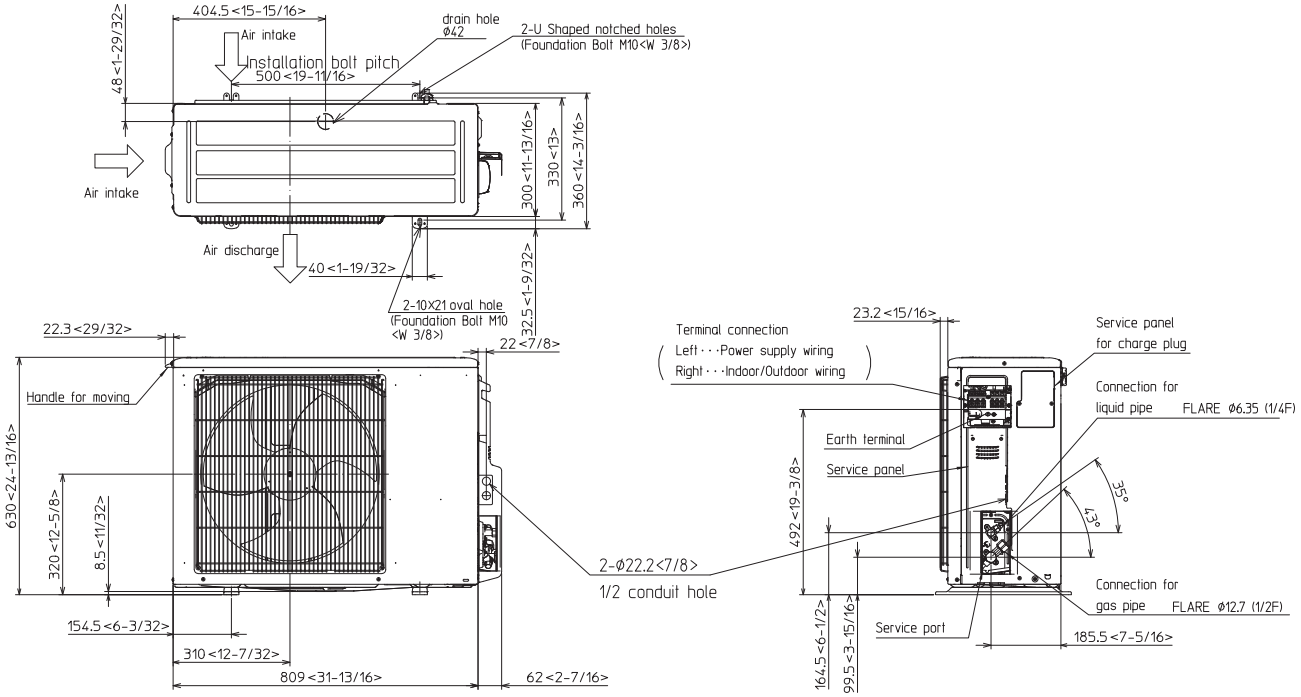
5-4-2. Cooling only

Representative matching			PVA-A12AA7	PVA-A18AA7	PVA-A24AA7	PVA-A30AA7	PVA-A36AA7	PVA-A42AA7
Mode			COOLING	COOLING	COOLING	COOLING	COOLING	COOLING
Total	Capacity	Btu/h	12,000	18,000	24,000	30,000	36,000	42,000
	Input	W	890	1,570	1,960	3,000	3,250	4,150
Electrical circuit	Indoor unit model		PVA-A12AA7	PVA-A18AA7	PVA-A24AA7	PVA-A30AA7	PVA-A36AA7	PVA-A42AA7
	Phase		Single	Single	Single	Single	Single	Single
	Cycle		60 Hz	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
	Voltage		208/230 V	208/230 V	208/230 V	208/230 V	208/230 V	208/230 V
	Current		0.80 A	1.60 A	3.30 A	3.30 A	4.40 A	4.50 A
	Outdoor unit model		PUY-A12NKA7	PUY-A18NKA7	PUY-A24NHA7	PUY-A30NHA7	PUY-A36NKA7	PUY-A42NKA7
	Phase		Single	Single	Single	Single	Single	Single
	Cycle		60 Hz	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
	Voltage		208/230 V	208/230 V	208/230 V	208/230 V	208/230 V	208/230 V
	Current		3.39 A	5.45 A	5.49 A	10.01 A	10.05 A	13.95 A
Electrical circuit	Discharge pressure	PSIG	380	397	388	418	379	394
	Suction pressure	PSIG	157	143	145	128	136	127
	Discharge temperature	°F	142	151	155	176	144	167
	Condensing temperature	°F	111	114	114	120	111	114
	Suction temperature	°F	49	51	58	57	50	57
	Ref. pipe length	ft	25	25	25	25	25	25
	Discharge pressure	MPa	2.62	2.73	2.67	2.88	2.62	2.72
	Suction pressure	MPa	1.08	0.99	1.00	0.88	0.94	0.88
	Discharge temperature	°C	61.1	65.9	68.5	80.2	62.1	75.0
	Condensing temperature	°C	43.9	45.7	45.7	48.8	44.1	45.7
	Suction temperature	°C	9.6	10.4	14.3	13.9	9.8	13.9
	Ref. pipe length	m	7.6	7.6	7.6	7.6	7.6	7.6
Indoor side	Intake air temperature DB	°F	80	80	80	80	80	80
	Intake air temperature WB	°F	67	67	67	67	67	67
	Discharge air temperature DB	°F	61	60	58	56	58	57
Outdoor side	Intake air temperature DB	°F	95	95	95	95	95	95
	Intake air temperature WB	°F	75	75	75	75	75	75
Indoor side	Intake air temperature DB	°C	26.7	26.7	26.7	26.7	26.7	26.7
	Intake air temperature WB	°C	19.4	19.4	19.4	19.4	19.4	19.4
	Discharge air temperature DB	°C	16.1	15.7	14.5	13.2	14.2	14.0
Outdoor side	Intake air temperature DB	°C	35.0	35.0	35.0	35.0	35.0	35.0
	Intake air temperature WB	°C	23.9	23.9	23.9	23.9	23.9	23.9
SHF			0.77	0.76	0.83	0.74	0.77	0.81
BF			0.11	0.12	0.07	0.07	0.08	0.08

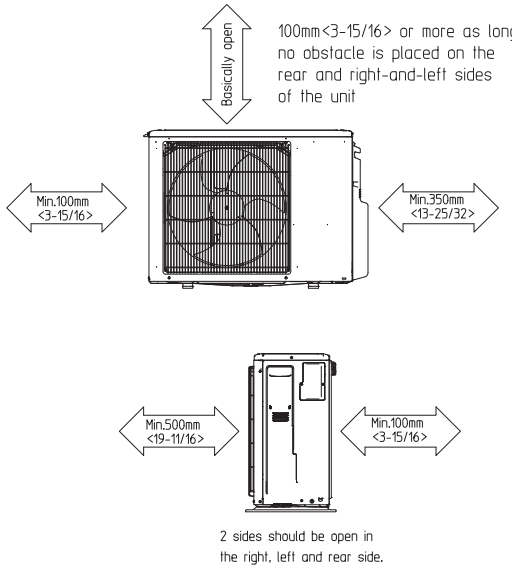
6 OUTLINES AND DIMENSIONS

PUZ-A12NKA7 **PUZ-A18NKA7** **PUY-A12NKA7** **PUY-A18NKA7**
PUZ-A12NKA7-BS **PUZ-A18NKA7-BS** **PUY-A12NKA7-BS** **PUY-A18NKA7-BS**

Unit: mm<in>



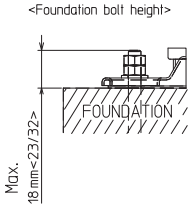
Free space around the outdoor unit (basic example)



2 sides should be open in the right, left and rear side.

FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10<W3/8>) bolts. (Bolts, washers and nut must be purchased locally).

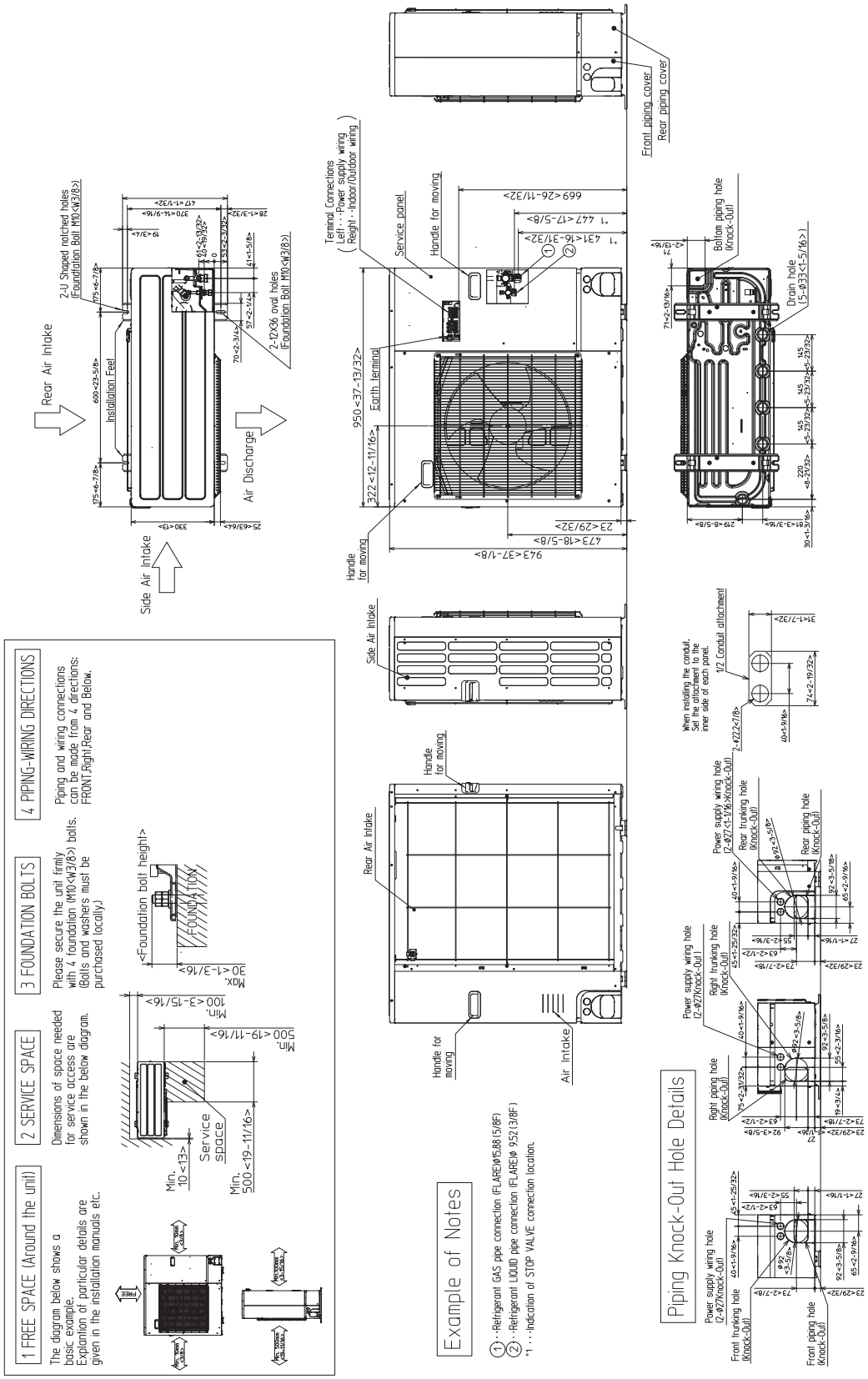


PIPING-WIRING DIRECTION

Piping and wiring connection can be made from the rear direction only.

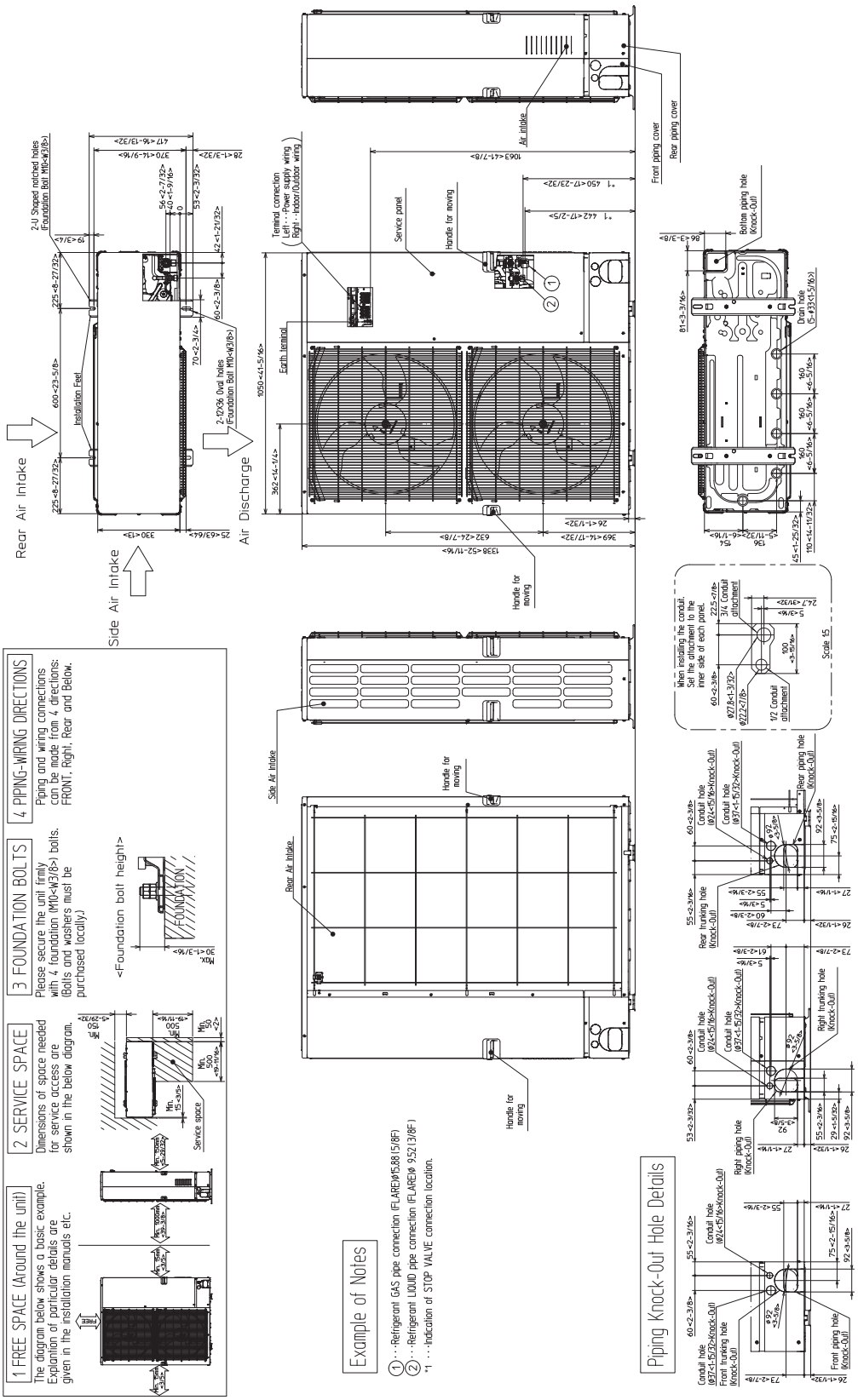
PUZ-A24NHA7 **PUZ-A30NHA7** **PUY-A24NHA7** **PUY-A30NHA7**
PUZ-A24NHA7-BS **PUZ-A30NHA7-BS** **PUY-A24NHA7-BS** **PUY-A30NHA7-BS**

Unit: mm<in>



PUZ-A36NKA7 **PUZ-A42NKA7** **PUY-A36NKA7** **PUY-A42NKA7**
PUZ-A36NKA7-BS **PUZ-A42NKA7-BS** **PUY-A36NKA7-BS** **PUY-A42NKA7-BS**

Unit: mm<in>

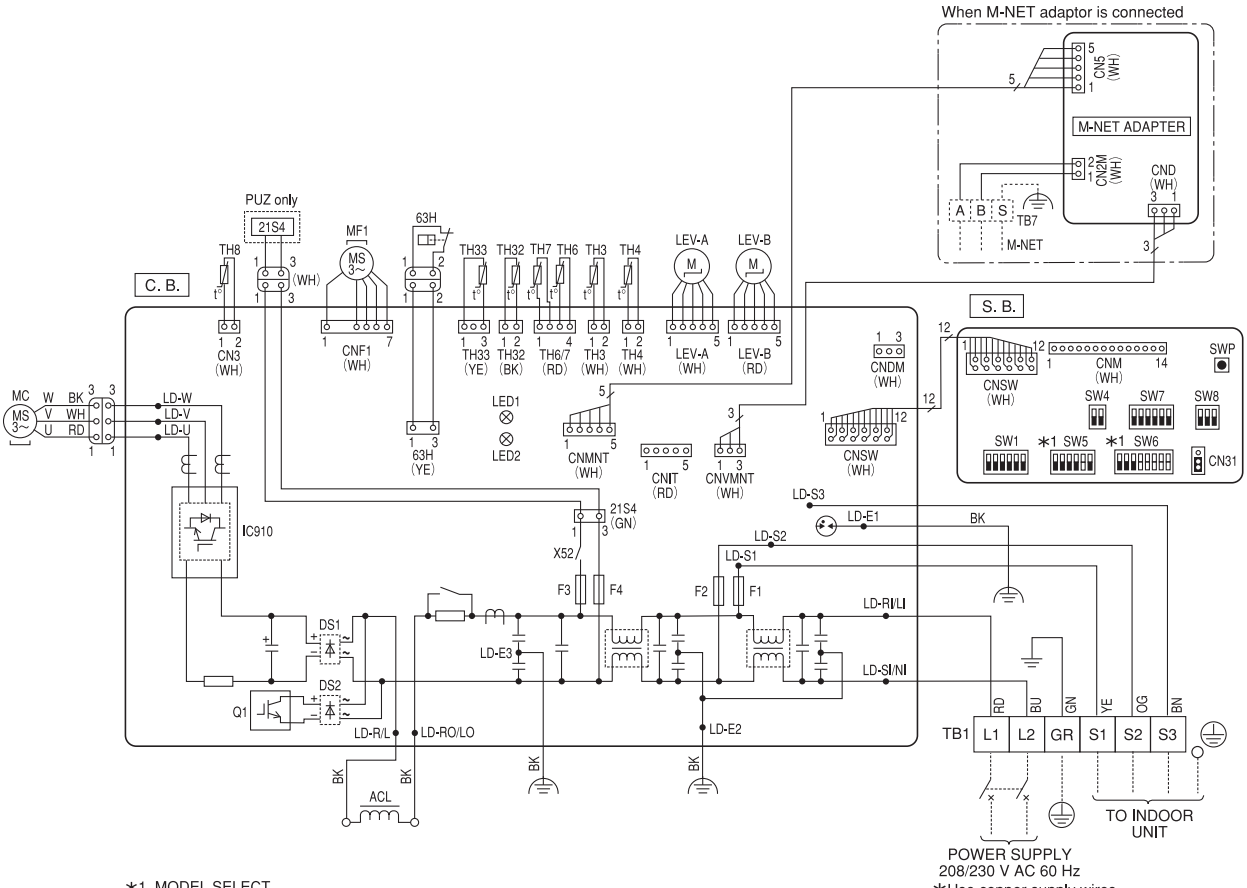


7 WIRING DIAGRAM

PUZ-A12NKA7 **PUZ-A18NKA7** **PUY-A12NKA7** **PUY-A18NKA7**
PUZ-A12NKA7-BS **PUZ-A18NKA7-BS** **PUY-A12NKA7-BS** **PUY-A18NKA7-BS**

SYMBOL	NAME
TB1	Terminal Block 〈Power Supply, Indoor/Outdoor〉
MC	Motor for Compressor
MF1	Fan Motor
21S4	Solenoid Valve 〈4-Way Valve〉
63H	High Pressure Switch
TH3	Thermistor 〈Liquid〉
TH4	Thermistor 〈Discharge〉
TH6	Thermistor 〈2-Phase Pipe〉
TH7	Thermistor 〈Ambient〉
TH8	Thermistor 〈Heat Sink〉
TH32	Thermistor 〈Suction〉
TH33	Thermistor 〈Comp. Surface〉
LEV-A, LEV-B	Linear Expansion Valve
ACL	Reactor

SYMBOL	NAME
C. B.	Controller Circuit Board
F1, F2	Fuse 〈T10AL250V〉
F3, F4	Fuse 〈T3.15AL250V〉
CNDM	Connector 〈Connection for Option〉
S. B.	Switch Board
SW1	Switch 〈Manual Defrost, Defect History Record Reset, Refrigerant Address〉
SW4	Switch 〈Function Switch〉
SW5	Switch 〈Function Switch, Model Select〉
SW6	Switch 〈Model Select〉
SW7	Switch 〈Function Switch〉
SW8	Switch 〈Function Switch〉
SWP	Switch 〈Pump Down〉
CNM	Connector 〈Connection for Option〉
CN31	Connector 〈Emergency Operation〉



∗Use copper supply wires.
∗Utilisez des d' slimentation en cuivre.

∗1. MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6-4, 5, 6, 7, 8 ∗2	SW5-5 ∗2
PUZ-A12	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUZ-A18	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A12	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A18	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

∗2. SW6 -1 to 3, SW5-1 to 4, 6 : Function Switch

M-NET ADAPTER

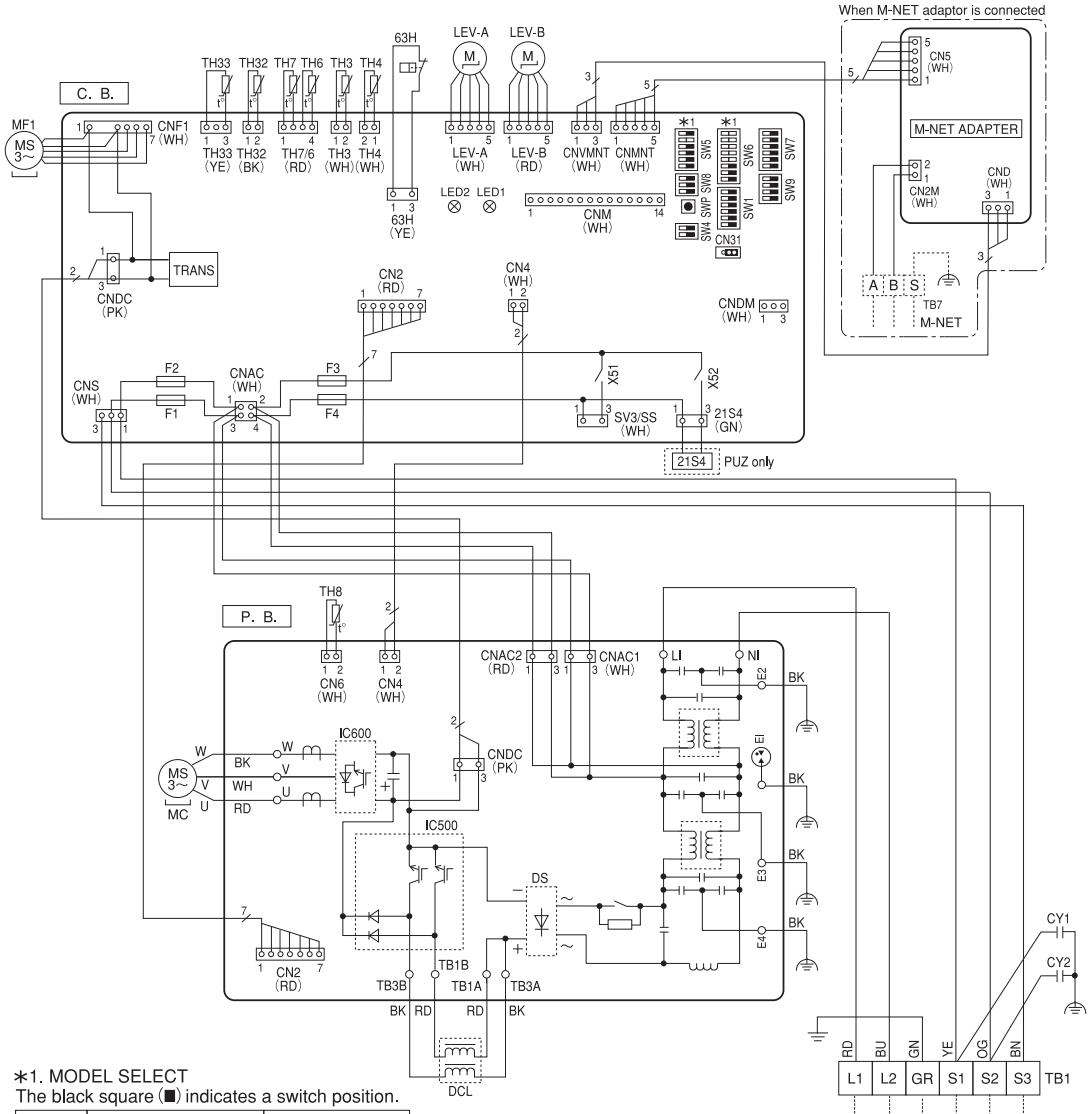
SYMBOL	NAME
TB7	Terminal Block 〈M-NET connection〉
CN5	Connector 〈Transmission〉
CND	Connector 〈Power Supply〉
CN2M	Connector 〈M-NET communication〉

PUZ-A24NHA7 **PUZ-A30NHA7** **PUY-A24NHA7** **PUY-A30NHA7**
PUZ-A24NHA7-BS **PUZ-A30NHA7-BS** **PUY-A24NHA7-BS** **PUY-A30NHA7-BS**

SYMBOL	NAME
TB1	Terminal Block 〈Power Supply, Indoor/Outdoor〉
MC	Motor for Compressor
MF1	Fan Motor
21S4	Solenoid Valve 〈4-Way Valve〉
63H	High Pressure Switch
TH3	Thermistor 〈Liquid〉
TH4	Thermistor 〈Discharge〉
TH6	Thermistor 〈2-Phase Pipe〉
TH7	Thermistor 〈Ambient〉
TH8	Thermistor 〈Heat Sink〉
TH32	Thermistor 〈Suction〉

SYMBOL	NAME
TH33	Thermistor 〈Comp. Surface〉
LEV-A, LEV-B	Linear Expansion Valve
DCL	Reactor
CY1, CY2	Capacitor
P. B.	Power Circuit Board
C. B.	Controller Circuit Board
F1, F2	Fuse 〈T10AL250V〉
F3, F4	Fuse 〈T6.3AL250V〉
SW1	Switch 〈Manual Defrost, Defect History Record Reset, Refrigerant Address〉
SW4	Switch 〈Function Switch〉

SYMBOL	NAME
SW5	Switch 〈Function Switch, Model Select〉
SW6	Switch 〈Model Select〉
SW7	Switch 〈Function Switch〉
SW8	Switch 〈Function Switch〉
SW9	Switch 〈Function Switch〉
SWP	Switch 〈Pump Down〉
CNM	Connector 〈Connection for Option〉
CN31	Connector 〈Emergency Operation〉
CNDM	Connector 〈Connection for Option〉
SV3/SS	Connector 〈Connection for Option〉



∗Use copper supply wires.
∗Utilisez des d' slimentation en cuivre.

∗1. MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6-4, 5, 6, 7, 8 ∗2	SW5-5 ∗2
PUZ-A24	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUZ-A30	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A24	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A30	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

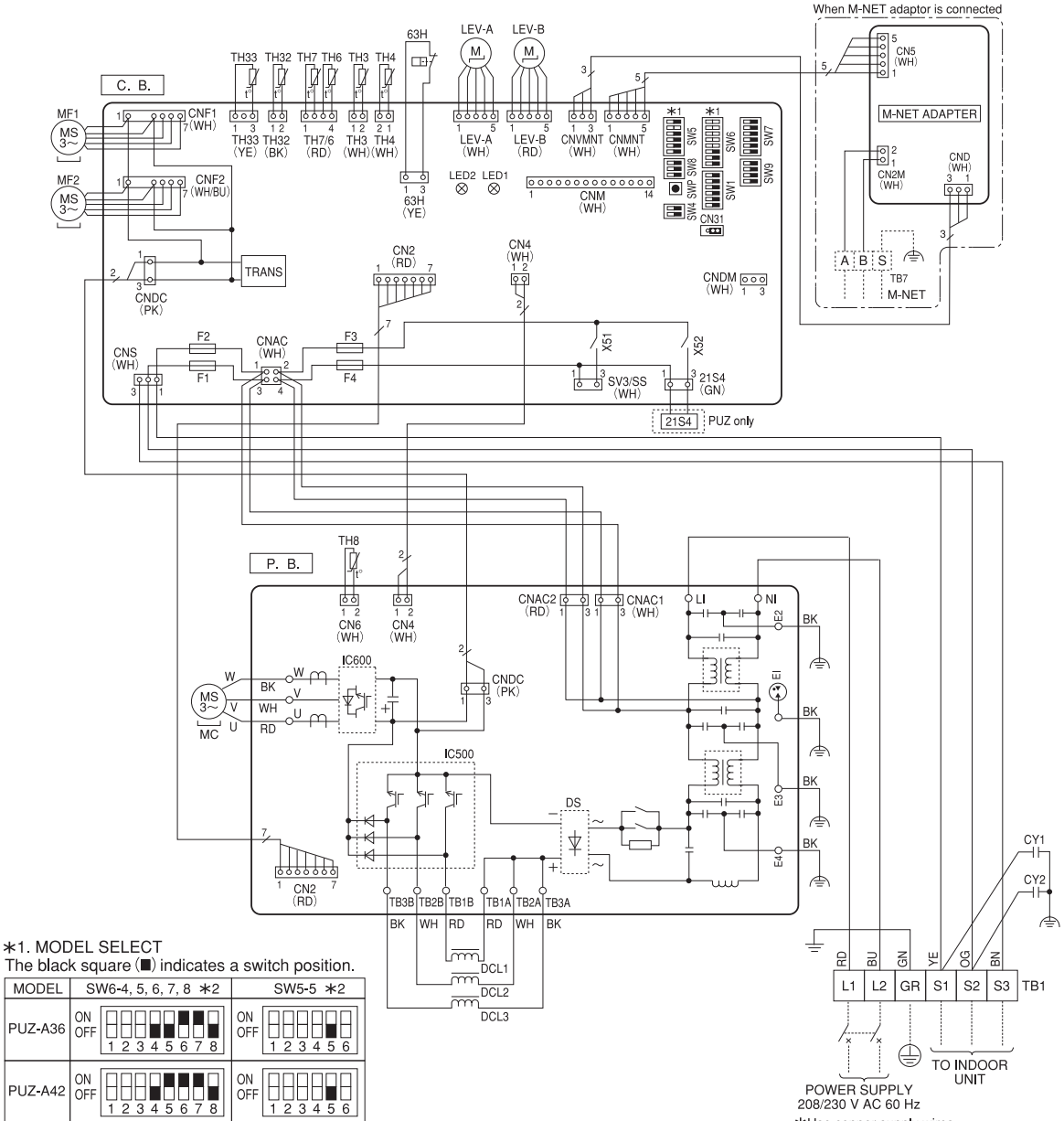
∗2. SW6-1 to 3, SW5-1 to 4, 6 : Function Switch

M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block 〈M-NET connection〉
CN5	Connector 〈Transmission〉
CND	Connector 〈Power Supply〉
CN2M	Connector 〈M-NET communication〉

PUZ-A36NKA7 **PUZ-A42NKA7** **PUY-A36NKA7** **PUY-A42NKA7**
PUZ-A36NKA7-BS **PUZ-A42NKA7-BS** **PUY-A36NKA7-BS** **PUY-A42NKA7-BS**

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block 〈Power Supply, Indoor/Outdoor〉	TH33	Thermistor 〈Comp. Surface〉	SW5	Switch 〈Function Switch, Model Select〉
MC	Motor for Compressor	LEV-A, LEV-B	Linear Expansion Valve	SW6	Switch 〈Model Select〉
MF1, MF2	Fan Motor	DCL1, DCL2, DCL3	Reactor	SW7	Switch 〈Function Switch〉
21S4	Solenoid Valve 〈4-Way Valve〉	CY1, CY2	Capacitor	SW8	Switch 〈Function Switch〉
63H	High Pressure Switch	P. B.	Power Circuit Board	SW9	Switch 〈Function Switch〉
TH3	Thermistor 〈Liquid〉	C. B.	Controller Circuit Board	SWP	Switch 〈Pump Down〉
TH4	Thermistor 〈Discharge〉	F1, F2	Fuse 〈T10AL250V〉	CNM	Connector 〈Connection for Option〉
TH6	Thermistor 〈2-Phase Pipe〉	F3, F4	Fuse 〈T6.3AL250V〉	CN31	Connector 〈Emergency Operation〉
TH7	Thermistor 〈Ambient〉	SW1	Switch 〈Manual Defrost, Defect History Record Reset, Refrigerant Address〉	CNDM	Connector 〈Connection for Option〉
TH8	Thermistor 〈Heat Sink〉			SV3/SS	Connector 〈Connection for Option〉
TH32	Thermistor 〈Suction〉	SW4	Switch 〈Function Switch〉		



∗1. MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6-4, 5, 6, 7, 8 ∗2	SW5-5 ∗2
PUZ-A36	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUZ-A42	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A36	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
PUY-A42	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

∗2. SW6-1 to 3, SW5-1 to 4, 6 : Function Switch

M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block 〈M-NET connection〉
CN5	Connector 〈Transmission〉
CND	Connector 〈Power Supply〉
CN2M	Connector 〈M-NET communication〉

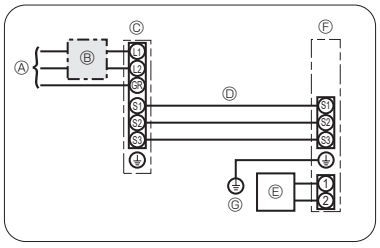
∗Use copper supply wires.
∗Utilisez des d' slimentation en cuivre.

8 WIRING SPECIFICATIONS

8-1. INDOOR UNIT POWER SUPPLIED FROM OUTDOOR UNIT (A-control application)

The following connection patterns are available.
The outdoor unit power supply patterns vary on models.

1:1 System



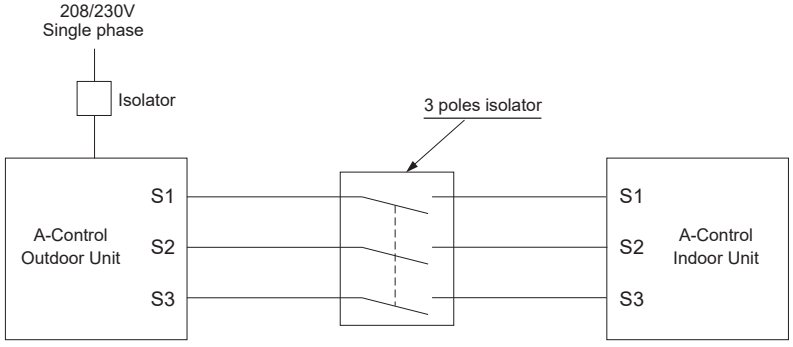
Ⓐ Outdoor unit power supply
Ⓑ Wiring circuit breaker or isolating switch
Ⓒ Outdoor unit
Ⓓ Indoor unit/outdoor unit connecting cords
Ⓔ Remote controller
Ⓕ Indoor unit
Ⓖ Indoor unit earth

Note: Affix a label A that is included with the manuals near each wiring diagram for the indoor and outdoor units.

Outdoor unit model			A12	A18	A24	A30	A36	A42
Outdoor unit power supply			~/N (single), 60Hz, 208/230 V	~/N (single), 60Hz, 208/230 V	~/N (single), 60Hz, 208/230 V	~/N (single), 60Hz, 208/230 V	~/N (single), 60Hz, 208/230 V	~/N (single), 60Hz, 208/230 V
Outdoor unit input capacity Main switch (Breaker)		*1	15 A	15 A	25 A	25 A	30 A	30 A
Wiring Wire No. x size (mm²)	Outdoor unit power supply		2 x Min AWG 14	2 × Min AWG 14	2 × Min AWG 12	2 × Min AWG 12	2 × Min AWG 10	2 × Min AWG 10
	Indoor unit-Outdoor unit	*2	3 x AWG 14 (polar)	3 x AWG 14 (polar)	3 x AWG 14 (polar)	3 x AWG 14 (polar)	3 x AWG 14 (polar)	3 x AWG 14 (polar)
	Indoor unit-Outdoor unit earth	*2	1 x Min AWG 14 (polar)	1 x Min AWG 14 (polar)	1 x Min AWG 14 (polar)	1 x Min AWG 14 (polar)	1 x Min AWG 14 (polar)	1 x Min AWG 14 (polar)
	Remote controller-Indoor unit	*3	2 × AWG 22 (Non-polar)	2 x AWG 22 (Non-polar)	2 x AWG 22 (Non-polar)	2 x AWG 22 (Non-polar)	2 x AWG 22 (Non-polar)	2 x AWG 22 (Non-polar)
Circuit rating	Outdoor unit L1-L2 (single)	*4	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC
	Indoor unit-Outdoor unit S1-S2 (single)	*4	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC
	Indoor unit-Outdoor unit S2-S3 (single)	*4	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
	Remote controller-Indoor unit	*4	12 V DC	12 V DC	12 V DC	12 V DC	12 V DC	12 V DC

*1. Be sure to earth ground construction work. As required to the leakage prevention measures.
*2. Max. 50 m, 164 ft
S3 separated, Max. 262 ft [80 m]
*3. The 30 ft [10 m] wire is attached in the remote controller accessory.
*4. The figures are NOT always against the ground.
S3 terminal has 24 V DC against S2 terminal. However between S3 and S1, these terminals are NOT electrically insulated by the transformer or other device.

Notes: 1. Wiring size must comply with the applicable local and national code.
2. Power supply cords, the Indoor-Outdoor connecting cable and the water heater-Outdoor connecting cable shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)



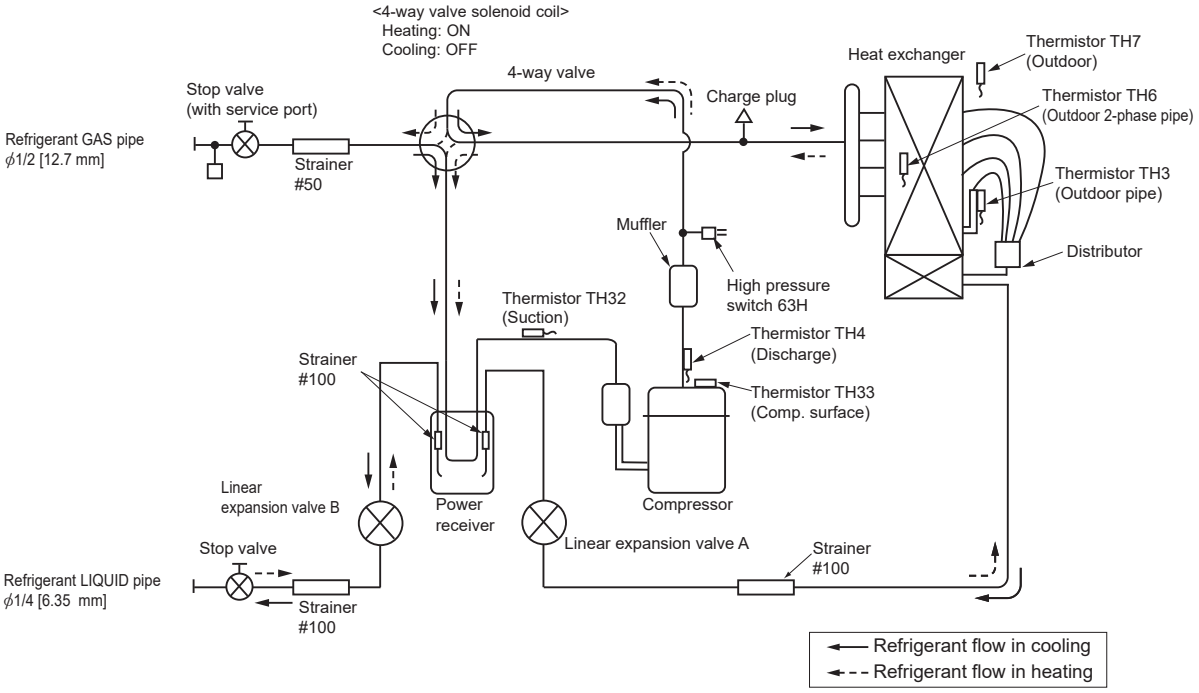
⚠ **Warning:**
In the case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing.
And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between indoor unit and outdoor unit, please use 3-pole type.

Never splice the power cable or the indoor-outdoor connection cable, otherwise it may result in a smoke, a fire, or communication failure.

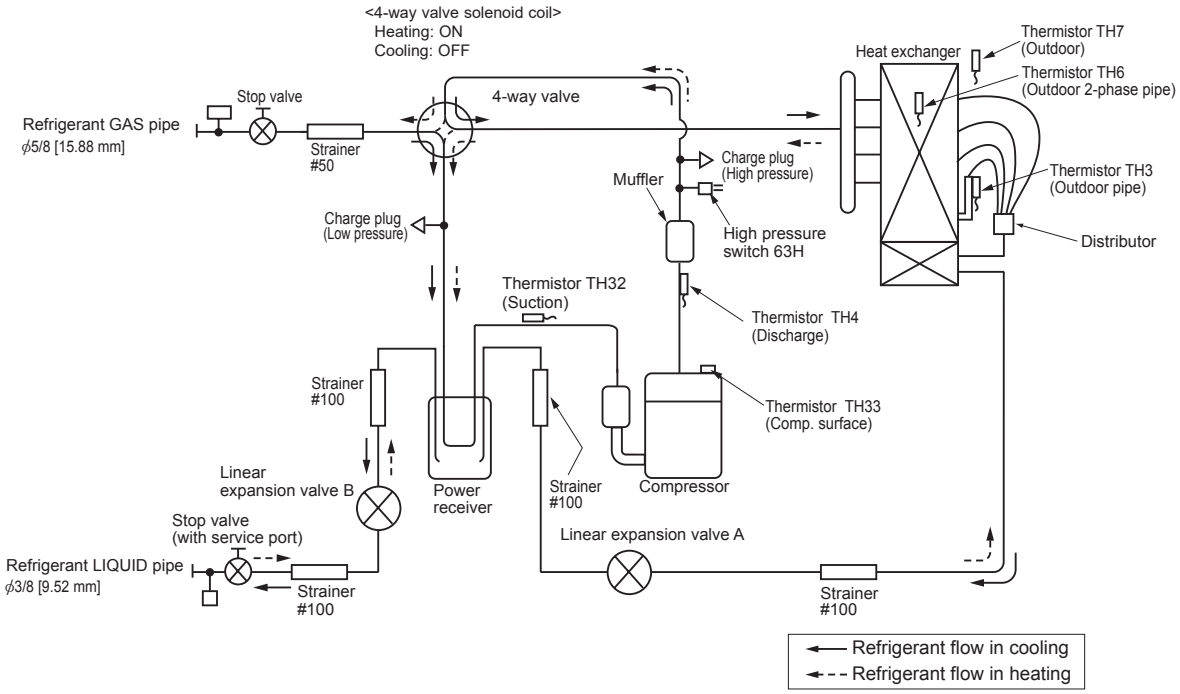
9 REFRIGERANT SYSTEM DIAGRAM

PUZ-A12NKA7 **PUZ-A18NKA7**
PUZ-A12NKA7-BS **PUZ-A18NKA7-BS**

Unit: inch [mm]

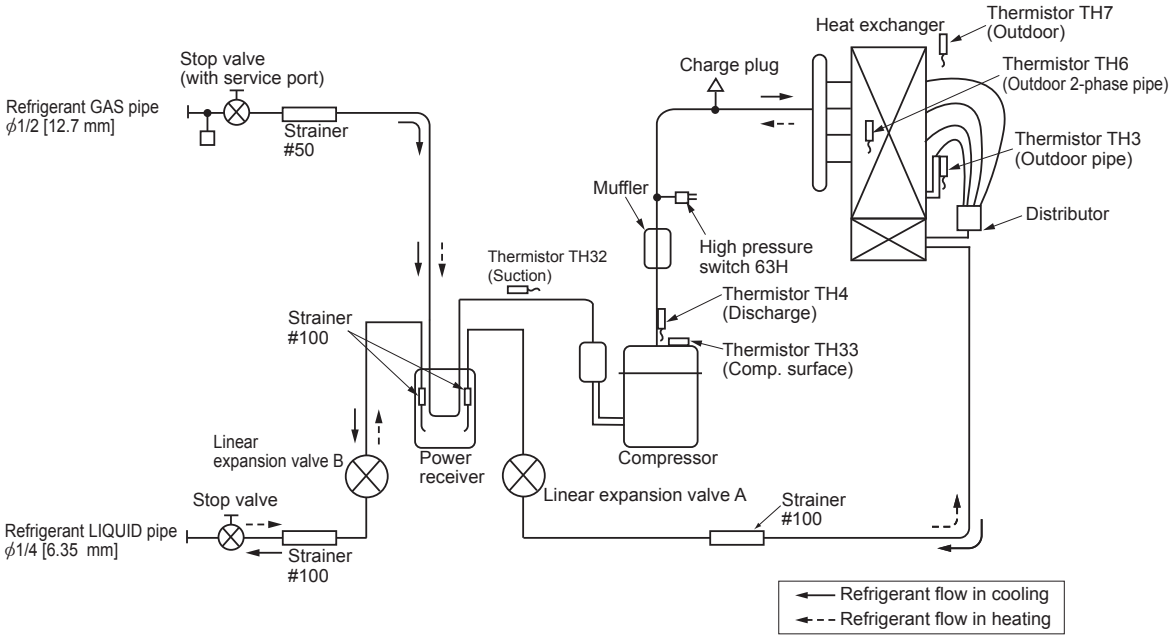


PUZ-A24NHA7 **PUZ-A30NHA7** **PUZ-A36NKA7** **PUZ-A42NKA7**
PUZ-A24NHA7-BS **PUZ-A30NHA7-BS** **PUZ-A36NKA7-BS** **PUZ-A42NKA7-BS**

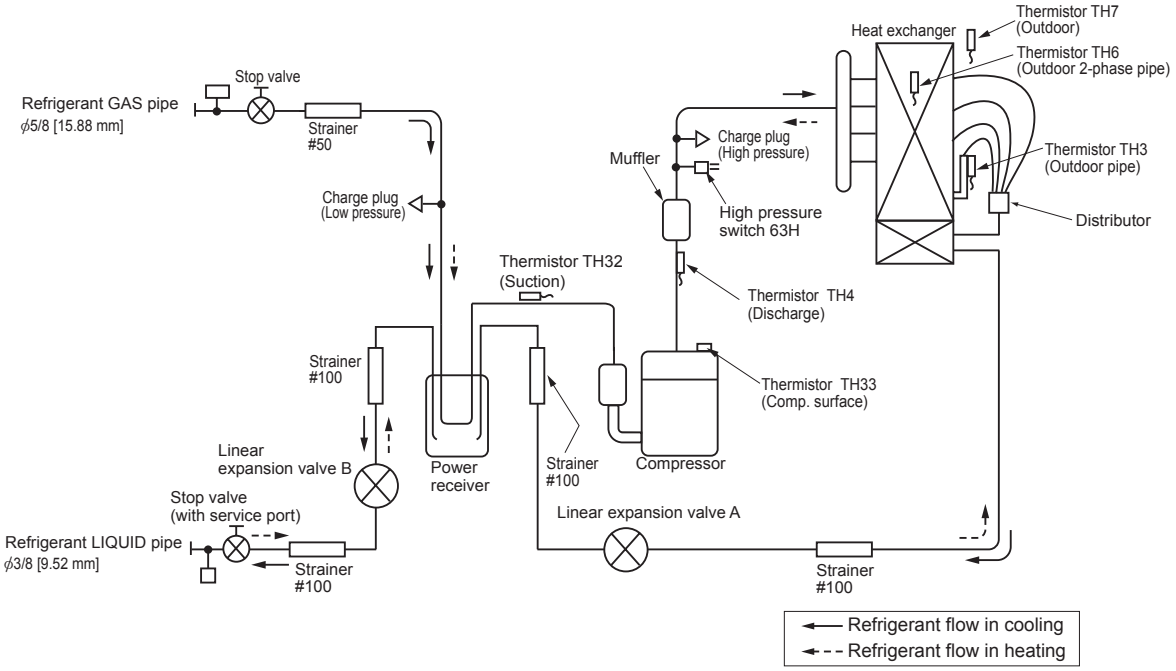


PUY-A12NKA7 **PUY-A18NKA7**
PUY-A12NKA7-BS **PUY-A18NKA7-BS**

Unit: inch [mm]



PUY-A24NHA7 **PUY-A30NHA7** **PUY-A36NKA7** **PUY-A42NKA7**
PUY-A24NHA7-BS **PUY-A30NHA7-BS** **PUY-A36NKA7-BS** **PUY-A42NKA7-BS**



1. Refrigerant collecting (pump down)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

① Supply power (circuit breaker).
- When power is supplied, make sure that “CENTRALLY CONTROLLED” is not displayed on the remote controller. If “CENTRALLY CONTROLLED” is displayed, the refrigerant collecting (pump down) cannot be completed normally.
- Startup of the indoor-outdoor communication takes about 3 minutes after the power (circuit breaker) is turned on. Start the pump-down operation 3 to 4 minutes after the power (circuit breaker) is turned ON.

② After the liquid stop valve is closed, set SWP on the control board of the outdoor unit to ON. The compressor (outdoor unit) and ventilators (indoor and outdoor units) start operating and refrigerant collecting operation begins. LED1 and LED2 on the control board of the outdoor unit are lit.
- Only set SWP to ON if the unit is stopped. However, even if the unit is stopped and SWP is set to ON less than 3 minutes after the compressor stops, the refrigerant collecting operation cannot be performed. Wait until compressor has been stopped for 3 minutes and then set SWP to ON again.

③ Because the unit automatically stops in about 2 to 3 minutes when the refrigerant collecting operation is completed (LED1 off, LED2 lit), be sure to quickly close the gas stop valve. If LED1 is lit and LED2 is off and the outdoor unit is stopped, refrigerant collection is not properly performed. Open the liquid stop valve completely, and then repeat step ② after 3 minutes have passed.
- If the refrigerant collecting operation has been completed normally (LED1 off, LED2 lit), the unit will remain stopped until the power supply is turned off.

④ Turn off the power supply (circuit breaker).
- Note that it may not be possible to perform a pump-down operation when the extension piping is very long with large refrigerant amount.

⚠ Warning:
- **When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst if air etc. get into it.**
- **Do not perform pump down work when there is a gas leak. The intake of air or other gases causes abnormally high pressure in the refrigeration cycle, which may cause explosion or injury.**

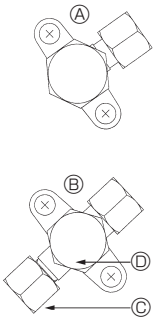
2. Refrigerant pipe airtight testing method

(1) Connect the testing tools.
- Make sure the stop valves Ⓐ Ⓑ are closed and do not open them.
- Add pressure to the refrigerant lines through the service port Ⓒ of the liquid stop valve Ⓓ.

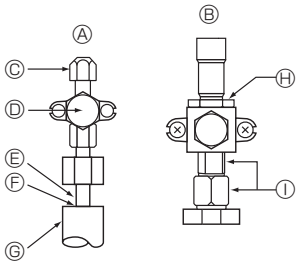
(2) Do not add pressure to the specified pressure all at once; add pressure little by little.
① Pressurize to 0.5 MPa (5 kgf/cm²G), wait 5 minutes, and make sure the pressure does not decrease.
② Pressurize to 1.5 MPa (15 kgf/cm²G), wait 5 minutes, and make sure the pressure does not decrease.
③ Pressurize to 4.15 MPa (41.5 kgf/cm²G) and measure the surrounding temperature and refrigerant pressure.

(3) If the specified pressure holds for about one day and does not decrease, the pipes have passed the test and there are no leaks.
- If the surrounding temperature changes by 1°C, the pressure will change by about 0.03 MPa (0.3 kgf/cm²G). Make the necessary corrections.

(4) If the pressure decreases in steps (2) or (3), there is a gas leak. Look for the source of the gas leak.



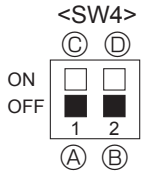
Ⓐ Stop valve <Liquid side>
Ⓑ Stop valve <Gas side>
Ⓒ Service port
Ⓓ Open/Close section



Ⓔ Local pipe
Ⓕ Sealed, same way for gas side
Ⓖ Pipe cover
Ⓗ Do not use a wrench here. Refrigerant leakage may result.
Ⓘ Use 2 wrenches here.

3. Start and finish of test run

- Operation from the indoor unit
  Execute the test run using the installation manual for the indoor unit.
- Operation from the outdoor unit
  By using the DIP switch SW4 on the control board of outdoor unit, test run can be started and finished, and its operation mode (cooling/heating) can be set up.
  ① Set the operation mode (cooling/heating) using SW4-2.
  ② Turn on SW4-1 to start test run with the operation mode set by SW4-2.
  ③ Turn off SW4-1 to finish the test run.



Ⓐ Stop Ⓒ Operation
Ⓑ Cooling Ⓓ Heating (PUZ only)

- There may be a faint knocking sound around the machine room after power is supplied. However, this is not a problem with the product because the linear expansion valve is just moving to adjust opening pulse.
- There may be a knocking sound around the machine room for several seconds after compressor starts operating. However, this is not a problem with product because the check valve itself generates the sound because pressure difference is small in the refrigerant circuit.

Note:
The operation mode cannot be changed by SW4-2 during test run. (To change test run mode, stop the unit by SW4-1, change the operation mode and restart the test run by SW4-1.)

10 TROUBLESHOOTING

10-1. TROUBLESHOOTING

<Check code displayed by self-diagnosis and actions to be taken for service (summary)>

Present and past check codes are logged, and they can be displayed on the wired remote controller and control board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring in the field, are summarized in the table below. Check the contents below before investigating details.

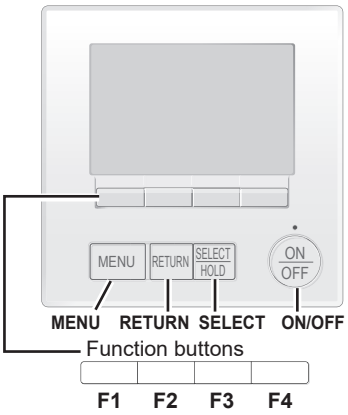
Unit conditions at service	Check code	Actions to be taken for service (summary)
The trouble is reoccurring.	Displayed	Judge the problem and take a corrective action according to “10-4. SELF-DIAGNOSIS ACTION TABLE”.
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble according to “10-5. TROUBLESHOOTING OF PROBLEMS”.
The trouble is not reoccurring.	Logged	①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise, etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring, etc. ②Reset check code logs and restart the unit after finishing service. ③There is no abnormality in electrical component, controller board, remote controller, etc.
	Not logged	①Re-check the abnormal symptom. ②Conduct troubleshooting and ascertain the cause of the trouble according to “10-5. TROUBLESHOOTING OF PROBLEMS”. ③Continue to operate unit for the time being if the cause is not ascertained. ④There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.

10-2. CHECK POINT UNDER TEST RUN

(1) Before test run

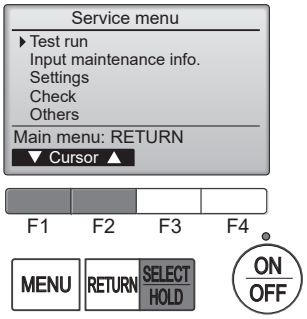
- After installation of indoor and outdoor units, piping work and electric wiring work, re-check that there is no refrigerant leakage, loosened connections and incorrect polarity.
- Measure impedance between the ground and the power supply terminal block (L1, L2) on the outdoor unit by 500V Megger and check that it is 1.0MΩ or over.
  Note: Do not use 500V Megger to indoor/outdoor connecting wire terminal block (S1, S2, S3) and remote controller terminal block (1, 2). This may cause malfunction.
- Make sure that test run switch (SW4) is set to OFF before turning on power supply.
- Turn on power supply 12 hours before test run in order to protect compressor.
- For specific models which requires higher ceiling settings or auto-recovery feature from power failure, make proper changes of settings referring to the description of “12. FUNCTION SETTING”.
- Make sure to read operation manual before test run. (Especially items to secure safety.)

10-2-1. Test run for wired remote controller <PAR-4xMAA ("x" represents 0 or later)>

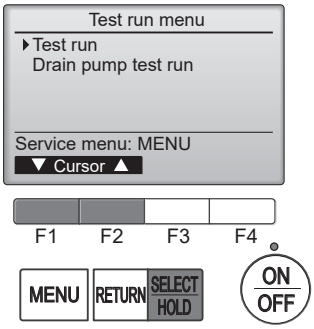


① Select "Service" from the Main menu, and press the [SELECT] button.

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



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



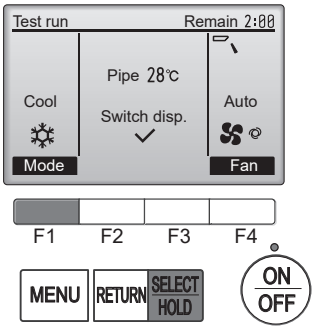
Test run operation

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

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

Check the operation of the outdoor unit's fan.

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



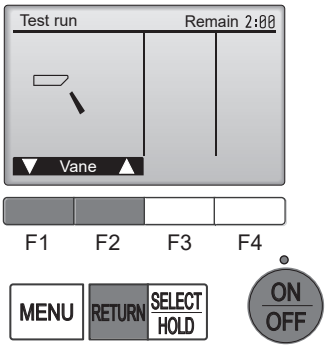
Auto vane check

Check the auto vane with the F1 F2 buttons.

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

Press the [ON/OFF] button.

When the test run is completed, the "Test run menu" screen will appear.
The test run will automatically stop after 2 hours.

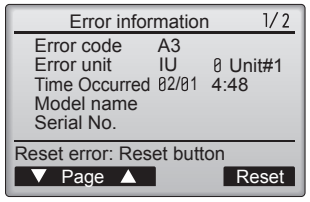


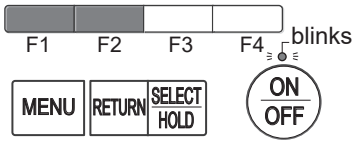
<Error information>

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

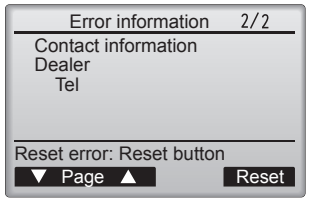
① Check code, error unit, refrigerant address, unit model name, and serial number will appear. (Date and time of occurrence of the error will also appear on PAR-4xMAA.)
The model name and serial number will appear only if the information has been registered.

Press the F1 or F2 button to go to the next page.





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



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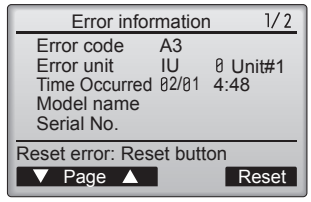
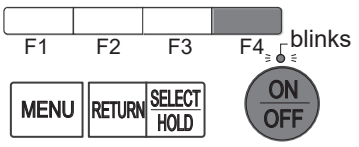
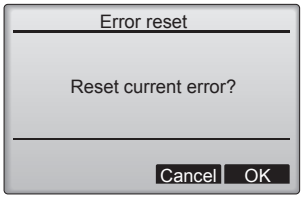
② Press the F4 button or the [ON/OFF] button to reset the error that is occurring.

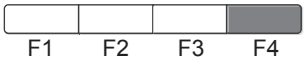
Errors cannot be reset while the ON/OFF operation is prohibited.

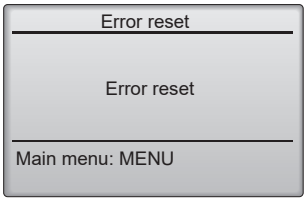




Select "OK" with the F4 button.





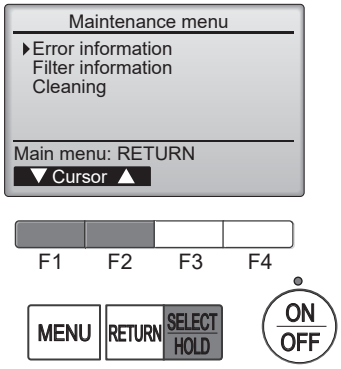


Navigating through the screens

• To go back to the Main menu ..... [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 (PAR-4xMAA) or Main menu (PAR-3xMAA).
Errors cannot be reset from this screen.

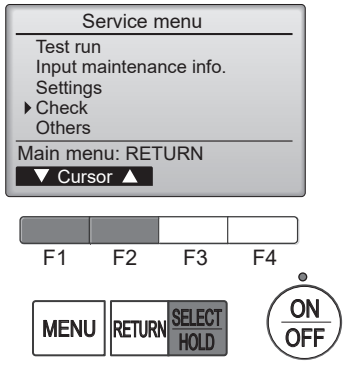


<Error history>

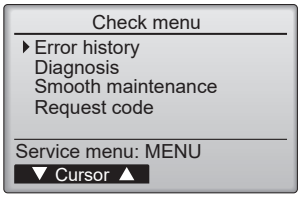
① Select "Service" from the Main menu, and press the [SELECT] button.

▼

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



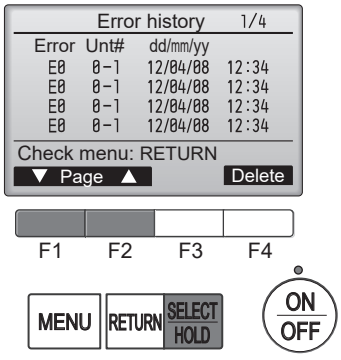
② Select "Error history" with the F1 or F2 button, and press the [SELECT] button.



Error history

③ Select "Error history" from the Check menu, and press the [SELECT] button to view up to 16 error history records.

4 records are shown per page, and the top record on the first page indicates the latest error record.



Deleting the error history

④ 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.

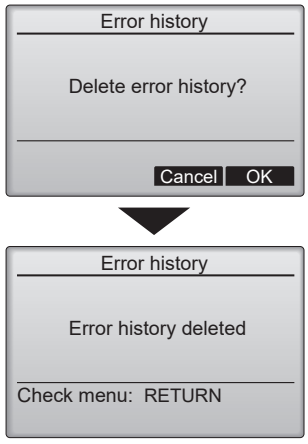
▼

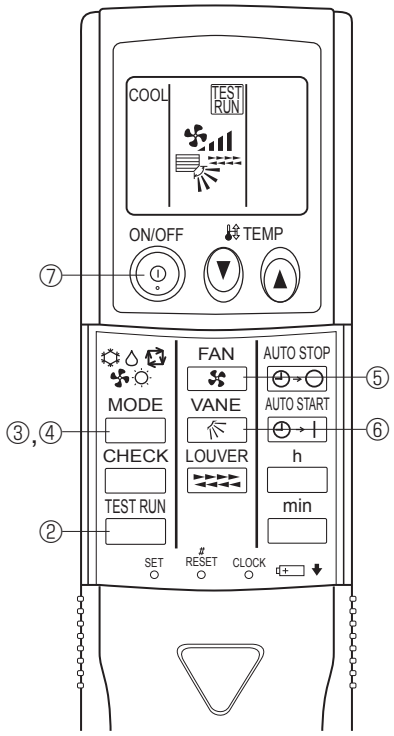
Press the F4 button (OK) to delete the history.

▼

"Error history deleted" will appear on the screen.

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





Test run [for IR wireless remote controller]

Measure an impedance between the power supply terminal block on the outdoor unit and ground with a 500 V Megger 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 TEST RUN button twice continuously.
(Start this operation from the turned off status of remote controller display.)
TEST RUN and current operation mode are displayed.

③ Press the MODE (☼♢♣☼⮌) button to activate COOL☼ mode, then check whether cool air blows out from the unit.

④ Press the MODE (☼♢♣☼⮌) button to activate HEAT☼ mode, then check whether warm air blows out from the unit.

⑤ Press the FAN button and check whether strong air blows out from the unit.

⑥ Press the VANE 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.**

10-3. HOW TO PROCEED "SELF-DIAGNOSIS"

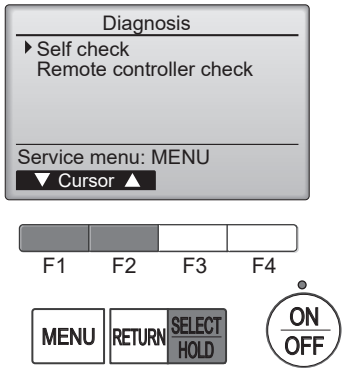
10-3-1. Self-diagnosis <PAR-4xMAA ("x" represents 0 or later)>

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

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

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

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



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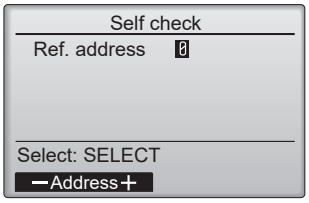
② With the F1 or F2 button, enter the refrigerant address, and press the [SELECT] button.



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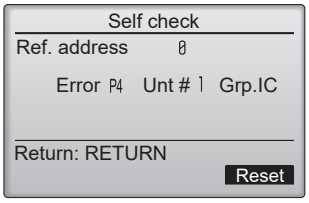
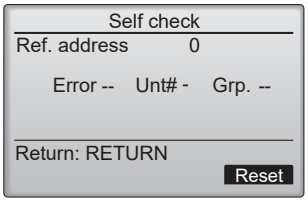
③ Check code, unit number, attribute will appear.
"-" will appear if no error history is available.



When there is no error history



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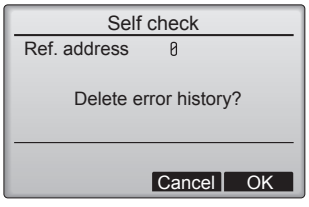
④ Resetting the error history

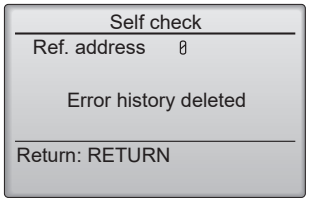
Press the F4 button (Reset) on the screen that shows the error history.

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.
"Unit not exist" will appear if no indoor units that are correspond to the entered address are found.





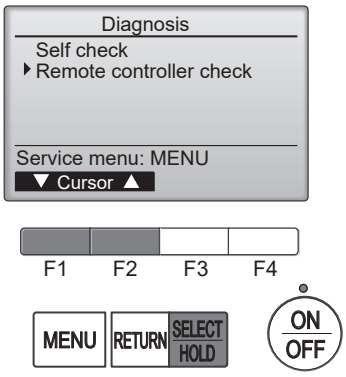
Navigating through the screens

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

10-3-2. Remote controller check <PAR-4xMAA ("x" represents 0 or later)>

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 [SELECT] button.



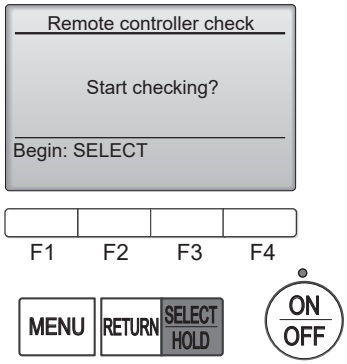
Select "Check" from the Service menu,
and press the [SELECT] button.

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

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

---

② Select "Remote controller check" from the Diagnosis menu (PAR-4xMAA) or Service menu (PAR-3xMAA), and press the [SELECT] button to start the remote controller check and see the check results.



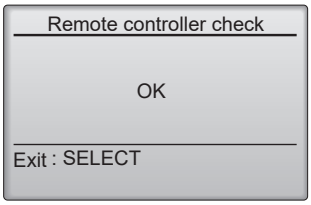
To cancel the remote controller check and exit the "Remote controller check" menu screen, press the [MENU] or the [RETURN] button.

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

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.

10-4. SELF-DIAGNOSIS ACTION TABLE

<Abnormalities detected when the power is turned on>

Note: Refer to indoor unit section for code P and code E.

Check code	Abnormal points and detection method	Cause	judgment and action
None	—	① No voltage is supplied to terminal block (TB1) of outdoor unit. a) Power supply breaker is turned off. b) Contact failure or disconnection of power supply terminal c) Open phase (L1 or L2 phase)	① Check following items. a) Power supply breaker b) Connection of power supply terminal block (TB1) c) Connection of power supply terminal block (TB1)
		② Electric power is not charged to power supply terminal of outdoor power circuit board. a) Contact failure of power supply terminal b) Open phase on the outdoor power circuit board (Disconnection of terminal on outdoor power circuit board)	② Check following items. a) Connection of power supply terminal block (TB1) b) Connection of terminal on outdoor power circuit board
		③ Electric power is not supplied to outdoor controller circuit board. a) Disconnection of connector (CNDC) (A24-42N only)	③ Check connection of the connector (CNDC) on the outdoor controller circuit board. Check connection of the connector CNDC on the outdoor power circuit board. (A24-42N only) Refer to "10-9. TEST POINT DIAGRAM".
		④ Disconnection of reactor (DCL or ACL)	④ Check connection of reactor. (DCL or ACL) Refer to "7. WIRING DIAGRAM".
		⑤ Defective outdoor power circuit board	⑤ Replace outdoor power circuit board.
		⑥ Defective outdoor controller circuit board	⑥ Replace controller board (When items above are checked but the units cannot be repaired).

Check code	Abnormal points and detection method	Cause	judgment and action
F5 (5201)	**63H connector open** Abnormal if 63H connector circuit is open for 3 minutes continuously after power supply. 63H: High-pressure switch	① Disconnection or contact failure of 63H connector on outdoor controller circuit board ② Disconnection or contact failure of 63H ③ 63H is working due to defective parts. ④ Defective outdoor controller circuit board	① Check connection of 63H connector on outdoor controller circuit board. Refer to "10-9. TEST POINT DIAGRAM". ② Check the 63H side of connecting wire. ③ Check continuity by multimeter. Replace the parts if the parts are defective. ④ Replace outdoor controller circuit board.
EA (6844)	**Miswiring of indoor/outdoor unit connecting wire** (1) Outdoor controller circuit board can automatically check the number of connected indoor units. Abnormal if the number cannot be checked automatically due to miswiring of indoor/outdoor unit connecting wire, etc. after power is turned on for 4 minutes. (2) Abnormal if outdoor controller circuit board recognizes excessive number of indoor units.	① Contact failure or miswiring of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ③ Excessive number of indoor units are connected to 1 indoor unit. (4 units or more) ④ Defective transmitting receiving circuit of outdoor controller circuit board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Defective indoor power board ⑦ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ⑧ Noise has entered into power supply or indoor/outdoor unit connecting wire.	① Check disconnection or looseness or polarity of indoor/outdoor unit connecting wire of indoor and outdoor units. ② Check diameter and length of indoor/outdoor unit connecting wire. Total wiring length: 262 ft [80 m] (including wiring connecting each indoor unit and between indoor and outdoor unit) Also check if the connection order of flat cable is S1, S2, S3. ③ Check the number of indoor units that are connected to one outdoor unit. (If EA is detected) ④–⑥ Turn the power off once, and on again to check. Replace outdoor controller circuit board, indoor controller board or indoor power board if abnormality is detected again. ⑦ Check if refrigerant addresses (SW1-3 to SW1-6 on outdoor controller circuit board) are overlapping in the case of group control system. ⑧ Check transmission path, and remove the cause. Note: The descriptions above, ①–⑧, are for EA, Eb and EC.
Eb (6845)	**Miswiring of indoor/outdoor unit connecting wire (converse wiring or disconnection)** (1) Outdoor controller circuit board can automatically set the unit number of indoor units. (2) Abnormal if the indoor unit number cannot be set within 4 minutes after power on because of miswiring (converse wiring or disconnection) of indoor/outdoor unit connecting wire.	① Contact failure or miswiring of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ④ Defective transmitting receiving circuit of outdoor controller circuit board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Defective indoor power board ⑦ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ⑧ Noise has entered into power supply or indoor/outdoor unit connecting wire.	
EC (6846)	**Startup time over** The unit cannot finish Startup process within 4 minutes after power on.	① Contact failure of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ⑦ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ⑧ Noise has entered into power supply or indoor/outdoor unit connecting wire.	

<Abnormalities detected while unit is operating>

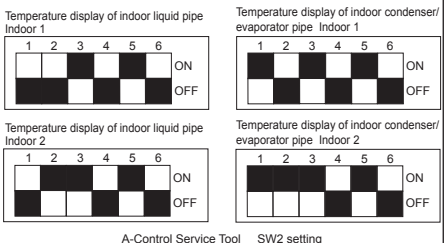
Check code	Abnormal points and detection method	Cause	judgment and action
U1 (1302)	**High pressure (High-pressure switch 63H operated)** Abnormal if High-pressure switch 63H worked (*) during compressor operation. *602 PSIG [4.15 MPa] 63H: High-pressure switch	① Short cycle of indoor unit ② Clogged filter of indoor unit ③ Decreased airflow caused by dirt of indoor fan ④ Dirt of indoor heat exchanger ⑤ Locked indoor fan motor ⑥ Malfunction of indoor fan motor ⑦ Defective operation of stop valve (Not full open) ⑧ Clogged or broken pipe ⑨ Locked outdoor fan motor ⑩ Malfunction of outdoor fan motor ⑪ Short cycle of outdoor unit ⑫ Dirt of outdoor heat exchanger ⑬ Decreased airflow caused by defective inspection of outside temperature thermistor (It detects lower temperature than actual temperature.) ⑭ Disconnection or contact failure of connector (63H) on outdoor controller board ⑮ Disconnection or contact failure of 63H connection ⑯ Defective outdoor controller board ⑰ Defective action of linear expansion valve ⑱ Malfunction of fan driving circuit	①–⑥ Check indoor unit and repair the defect. ⑦ Check if stop valve is fully open. ⑧ Check piping and repair the defect. ⑨–⑫ Check outdoor unit and repair the defect. ⑬ Check the inspected temperature of outside temperature thermistor on LED display. (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ⑭–⑯ Turn the power off and check F5 is displayed when the power is on again. When F5 is displayed, refer to “Judgment and action” for F5. ⑰ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS" and "10-7. HOW TO CHECK THE COMPONENTS". ⑱ Replace outdoor controller board.
U2 (TH4: 1102) (TH33: 1132)	**High discharge temperature** **High comp. surface temperature** (1) Abnormal if discharge temperature thermistor (TH4) exceeds 257˚F [125°C] or 230˚F [110°C] continuously for 5 minutes. Abnormal if condenser/evaporator temperature thermistor (TH5) exceeds 104˚F [40°C] during defrosting and discharge temperature thermistor (TH4) exceeds 230˚F [110°C]. (2) Abnormal if discharge superheat (Cooling: TH4−TH5 Heating: TH4−TH6) increases. All the conditions in A or B are detected simultaneously for 10 minutes continuously after 6 minutes past from compressor Startup (including the thermostat indication or recovery from defrosting). <Condition A> • Heating mode • When discharge superheat is less than 126˚F [70°C]. • When the TH6 temp is more than the value obtained by TH7−9˚F [5°C]. • When the condensing temp of TH5 is less than 95˚F [35°C]. <Condition B> • During comp. operation (Cooling and Heating) • When discharge superheat is less than 144˚F [80°C] in cooling. • When discharge super heat is less than 162˚F [90°C] in heating. • When condensing temp of TH6 is more than −40˚F [−40°C] (In cooling only). (3) Abnormal if comp. surface temperature thermistor (TH33) exceeds 239˚F [115°C] or 221˚F [105°C] continuously for 5 monitues. A12–30N: 257˚F [125°C] or 230˚F [110°C] A36, 42N: 239˚F [115°C] or 221˚F [105°C]	① Overheated compressor operation caused by shortage of refrigerant ② Defective operation of stop valve ③ Defective thermistor ④ Defective outdoor controller board ⑤ Defective action of linear expansion valve	① Check intake superheat. Check leakage of refrigerant. Charge additional refrigerant. ② Check if stop valve is fully open. ③④ Turn the power off and check if U3 is displayed when the power is on again. When U3 is displayed, refer to “Judgment and action” for U3. ⑤ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS" and "10-7. HOW TO CHECK THE COMPONENTS".

<table>
<tr><th>Check code</th><th>Abnormal points and detection method</th><th>Cause</th><th>judgment and action</th></tr>
<tr><td>U3
(TH4:5104)
(TH33:5132)</td><td>Open/short circuit of outdoor unit temperature thermistor (TH4, TH33)
Abnormal if open (−4˚F [−20°C] or less) or short (422˚F [217°C] or more) is detected during compressor operation.
(Detection is inoperative for 10 minutes of compressor starting process and for 10 minutes after and during defrosting.)
TH33: Thermistor <Comp. surface></td><td>① Disconnection or contact failure of connectors (TH4, TH33) on the outdoor controller circuit board
② Defective thermistor
③ Defective outdoor controller circuit board</td><td>① Check connection of connector (TH4, TH33) on the outdoor controller circuit board. Check breaking of the lead wire for TH4 or TH33. Refer to "10-9. TEST POINT DIAGRAM".
② Check resistance value of TH4, TH33, or temperature by microprocessor. (Thermistor/TH4, TH33: Refer to "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".)
③ Replace outdoor controller board.</td></tr>
<tr><td>U4
(TH3: 5105)
(TH6: 5107)
(TH7: 5106)
(TH8: 5110)
(TH32: 5105)</td><td>Open/short of outdoor unit thermistors (TH3, TH6, TH7, TH8 and TH32)
Abnormal if open or short is detected during compressor operation.
Open detection of thermistors TH3 and TH6 is inoperative for 10 seconds to 10 minutes after compressor starting and 10 minutes after and during defrosting.
Note: Check which unit has abnormality in its thermistor by switching the mode of SW2. (PAC-SK52ST) (Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".)
<table><tr><th colspan="2">Thermistors</th><th>Open detection</th><th>Short detection</th></tr><tr><th>Symbol</th><th>Name</th><td></td><td></td></tr><tr><td>TH3</td><td>Thermistor <Liquid></td><td>−58°F [−50°C] or below</td><td>194°F [90°C] or above</td></tr><tr><td>TH6</td><td>Thermistor <2-phase pipe></td><td>−58°F [−50°C] or below</td><td>194°F [90°C] or above</td></tr><tr><td>TH7</td><td>Thermistor <Ambient></td><td>−58°F [−50°C] or below</td><td>194°F [90°C] or above</td></tr><tr><td>TH8</td><td>Thermistor <Heat sink></td><td>−54°F [−48°C] or below</td><td>216°F [102°C] or above</td></tr><tr><td>TH32</td><td>Thermistor <Suction></td><td>−58°F [−50°C] or below</td><td>194°F [90°C] or above</td></tr></table></td><td>① Disconnection or contact failure of connectors
Outdoor controller circuit board: TH3,TH6/TH7, TH32
Outdoor power circuit board: CN3
② Defective thermistor
③ Defective outdoor controller circuit board</td><td>① Check connection of connector (TH3,TH6/TH7, TH32) on the outdoor controller circuit board. Check connection of connector (CN3) on the outdoor power circuit board. Check breaking of the lead wire for thermistor (TH3,TH6,TH7,TH8, TH32). Refer to "10-9. TEST POINT DIAGRAM".
② Check resistance value of thermistor (TH3,TH6,TH7,TH8, TH32) or check temperature by microprocessor. (Thermistor/TH3, TH6, TH7, TH8, TH32: Refer to "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".)
③ Replace outdoor controller circuit board.
Note: Emergency operation is available in the case of abnormalities of TH3, TH6, TH7 and TH32. Refer to "10-8. EMERGENCY OPERATION".</td></tr>
<tr><td>U5
(4230)</td><td>Temperature of heat sink
Abnormal if heat sink thermistor (TH8) detects temperature indicated below.
A12, 18N ····· 183˚F [84°C]
A24, 30N ····· 170˚F [77°C]
A36, 42N ····· 190˚F [83°C]</td><td>① The outdoor fan motor is locked.
② Failure of outdoor fan motor
③ Airflow path is clogged.
④ Rise of ambient temperature
⑤ Defective thermistor
⑥ Defective input circuit of outdoor power circuit board
⑦ Failure of outdoor fan drive circuit</td><td>①② Check outdoor fan.
③ Check airflow path for cooling.
④ Check if there is something which causes temperature rise around outdoor unit. (Upper limit of ambient temperature is 114˚F [46°C].) Turn off power, and on again to check if U5 is displayed within 30 minutes. If U4 is displayed instead of U5, follow the action to be taken for U4.
⑤ Check resistance value of thermistor (TH8) or temperature by microprocessor. (Thermistor/TH8: Refer to "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".
⑥ Replace outdoor power circuit board.
⑦ Replace outdoor controller circuit board.</td></tr>
<tr><td>U6
(4250)</td><td>Power module
Check abnormality by driving power module in case overcurrent is detected.
(UF or UP error condition)</td><td>① Outdoor stop valve is closed.
② Decrease of power supply voltage
③ Looseness, disconnection or converse of compressor wiring connection
④ Defective compressor
⑤ Defective outdoor power circuit board</td><td>① Open stop valve.
② Check facility of power supply.
③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board).
④ Check compressor referring to "10-6. HOW TO CHECK THE PARTS".
⑤ Replace outdoor power circuit board.</td></tr>
<tr><td>U7
(1502)</td><td>Too low superheat due to low discharge temperature
Abnormal if discharge superheat is continuously detected less than or equal to 5˚F [−15˚C] for 3 minutes even though linear expansion valve has minimum open pulse after compressor starts operating for 10 minutes.</td><td>① Disconnection or loose connection of discharge temperature thermistor (TH4)
② Defective holder of discharge temperature thermistor
③ Disconnection or loose connection of linear expansion valve's coil
④ Disconnection or loose connection of linear expansion valve's connector
⑤ Defective linear expansion valve</td><td>①② Check the installation conditions of discharge temperature thermistor (TH4).
③ Check the coil of linear expansion valve. Refer to "10-6. HOW TO CHECK THE COMPONENTS".
④ Check the connection or contact of LEV-A and LEV-B on outdoor controller circuit board.
⑤ Check linear expansion valve. Refer to "10-5. HOW TO CHECK THE PARTS".</td></tr>
</table>

Check code	Abnormal points and detection method		Cause	judgment and action
U8 (4400)	**Outdoor fan motor** Abnormal if the rotational frequency of fan motor is not detected during DC fan motor operation. Fan motor rotational frequency is abnormal if; • 100 rpm or below detected continuously for 15 seconds at 68˚F [20°C] or more outside air temperature. • 50 rpm or below or 1500 rpm or more detected continuously for 1 minute.		① Failure in the operation of the DC fan motor ② Failure in the outdoor circuit controller board	① Failure in the operation of the DC fan motor ② Failure in the outdoor circuit controller board
U9 (4220)	Detailed codes	To find out the detail history (latest) about U9 error, turn ON SW2-1, 2-2, and 2-6. Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".		
	01	**Overvoltage error** • Increase in DC bus voltage to: A12, 18N: 400 V A24, 30, 36, 42N: 430 V	① Abnormal increase in power source voltage ② Disconnection of compressor wiring ③ Defective outdoor power circuit board ④ Compressor has a ground fault.	① Check the field facility for the power supply. ② Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ③ Replace outdoor power circuit board. ④ Check compressor for electrical insulation. Replace compressor.
	02	**Undervoltage error** • Instantaneous decrease in DC bus voltage to 200 V	① Decrease in power source voltage, instantaneous stop. ② Defective converter drive circuit in outdoor power circuit board ③ Defective 52C drive circuit in outdoor power circuit board ④ Disconnection or loose connection of CN2 on the outdoor power circuit board/ controller circuit board ⑤ Power circuit failure on DC supply for 15 V DC output on outdoor controller circuit board	① Check the field facility for the power supply. ② Replace outdoor power circuit board. ③ Replace outdoor power circuit board. ④ Check CN2 wiring. ⑤ Replace outdoor controller circuit board.
	04	**Input current sensor error** • Decrease in input current through outdoor unit to 0.1 A only if operation frequency is more than or equal to 40 Hz or compressor current is more than or equal to 6 A.	① Defective input current detection circuit in outdoor power circuit board ② Defective outdoor controller circuit board	① Replace outdoor power circuit board. ② Replace outdoor controller circuit board.
	08	**Abnormal power synchronous signal** • No input of power synchronous signal to power circuit board • Power synchronous signal of 44 Hz or less, or 65 Hz or more is detected on power circuit board.	① Distortion of power source voltage, noise superimposition ② Disconnection or loose connection of earth wiring ③ Disconnection or loose connection of CN2 on the outdoor power circuit board/ controller circuit board ④ Defective power synchronous signal in outdoor controller circuit board ⑤ Defective power synchronous signal circuit in outdoor power circuit board	① Check the field facility for the power supply. ② Check earth wiring. ③ Check CN2 wiring. (A24–42N only) ④ Replace outdoor controller circuit board. ⑤ Replace outdoor power circuit board. (A24–42N only)
	10	**PFC error (Overvoltage/ Undervoltage/Overcurrent)** • PFC detected any of the following: a) Increase of DC bus voltage as follows: A12, 18N: 400 V A24, 30, 36, 42N: 430 V b) Decrease in PFC control voltage to 13 V DC or lower (A24–42N only) c) Increase in input current as follows: A12, 18N: 50 A peak A24, 30N: 42 A peak A36, 42N: 62 A peak	① Abnormal increase in power source voltage ② Decrease in power source voltage, instantaneous stop ③ Disconnection of compressor wiring ④ Misconnection of reactor (DCL) ⑤ Defective outdoor power circuit board ⑥ Defective reactor (DCL) ⑦ Disconnection or loose connection of CN2 on the outdoor power circuit board/ controller circuit board	①② Check the field facility for the power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM". ④ Correct the wiring (U·V·W phase) or reactor (DCL). (A24–42N only) ⑤ Replace outdoor power circuit board. ⑥ Replace reactor (DCL). (A24–42N only) ⑦ Check CN2 wiring. (A24–42N only)

Check code	Abnormal points and detection method	Cause	judgment and action
UF (4100)	**Compressor overcurrent interruption (When compressor locked)** Abnormal if overcurrent of DC bus or compressor is detected within 30 seconds after compressor starts operating.	① Stop valve is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or reverse of compressor wiring connection ④ Defective compressor ⑤ Defective outdoor power board ⑥ DIP Switch setting for selecting model is incorrect on the outdoor power circuit board.	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM".(Outdoor power circuit board). ④ Check compressor. Refer to "10-6. HOW TO CHECK THE PARTS". ⑤ Replace outdoor power circuit board. ⑥ Check that the DIP Switch setting is correct on the outdoor power circuit board by referring to "Model Select" in "1) Function of switches" in "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".
UH (5300)	**Current sensor error** • It is abnormal for 38A the input current or 10 seconds continuous 34A or more.	① Defective circuit of current sensor on outdoor power circuit board ② Decrease of power supply voltage	① Replace outdoor power circuit board. ② Check the facility of power supply.
Ud (1504)	**Overheat protection** Abnormal if outdoor pipe thermistor (TH3), condensing temperature T_{63HS} detects 158˚F [70°C] or more during compressor operation.	① Defective outdoor fan (fan motor) or short cycle of outdoor unit during cooling operation ② Defective outdoor pipe thermistor (TH3), condensing temperture T_{63HS} ③ Defective outdoor controller board	① Check outdoor unit air passage. ②③ Turn the power off and on again to check the check code. If U4 is displayed, follow the U4 processing direction.
UL (1300)	**Low pressure** Abnormal if the following conditions are detected for continuously 3 minutes after compressor starts heating operating for 10 minutes. (1) Heating mode Detection mode 1 TH7−TH3 ≤ 4°C and TH5−Indoor room temperature ≤ 2°C Detection mode 2 TH7−TH3 ≤ 2°C and TH5−Indoor room temperature ≤ 4°C and TH2−Indoor room temperature ≤ 4°C Detection mode 3 TH7−TH3 ≤ 4°C and TH5−Indoor room temperature ≤ 2°C and TH4−TH5 ≥ 20°C (2) Cooling mode TH6−TH7 ≤ 2°C and TH3−TH7 ≤ 2°C and Indoor room temperature - Indoor liquid pipe temperature (TH2) ≤ 5°C Note that it applies when the compressor accumulated operating time is under 30 minutes, and 7 minutes has passed after the compressor operation. TH32 - TH4 ≥ 20°C and TH32 > 80°C Thermistors: TH3: Liquid pipe temperature TH33: Comp. Surface temperature TH4: Discharge temperature TH5: Indoor 2-phase pipe temperature TH7: Ambient temperature Thermistor TH3: Outdoor liquid pipe temperature TH4: Discharge temperature TH5: Indoor cond./eva. temperature TH6: Outdoor 2-phase pipe temperature TH7: Outdoor temperature	① Stop valve of outdoor unit is closed during operation. ② Leakage or shortage of refrigerant ③ Malfunction of linear expansion valve ④ Clogging with foreign objects in refrigerant circuit Note: If water enters in refrigerant circuit, clogging may occur where the part becomes below freezing point.	① Check stop valve. ② Check intake superheat. Check leakage of refrigerant. Check additional refrigerant. ③ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS". ④ After recovering refrigerant, remove water from entire refrigerant circuit under vacuum more than 1 hour.
UP (4210)	**Compressor overcurrent interruption** Abnormal if overcurrent DC bus or compressor is detected after compressor starts operating for 30 seconds.	① Stop valve of outdoor unit is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or reverse of compressor wiring connection ④ Defective fan of indoor/outdoor units ⑤ Short cycle of indoor/outdoor units ⑥ Defective input circuit of outdoor controller board ⑦ Defective compressor	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check indoor/outdoor fan. ⑤ Solve short cycle. ⑥ Replace outdoor controller circuit board. Check compressor. ⑦ Refer to "10-6. HOW TO CHECK THE PARTS". Note: Before the replacement of the outdoor controller circuit board, disconnect the wiring to compressor from the outdoor power circuit board and check the output voltage among phases, U, V, W, during test run. No defect on board if voltage among phases (U-V, V-W and W-U) is same. Make sure to perform the voltage check with same performing frequency.

Check code	Abnormal points and detection method	Cause	judgment and action
E0 or E4 (6831, 6834)	**Remote controller transmission error (E0)/signal receiving error (E4)** (1) Abnormal if main or sub remote controller cannot receive normally any transmission from indoor unit of refrigerant address “0” for 3 minutes. (Check code: E0) (2) Abnormal if sub-remote controller could not receive for any signal for 2 minutes. (Check code: E0) (1) Abnormal if indoor controller board cannot receive any data normally from remote controller board or from other indoor controller board for 3 minutes. (Check code: E4) (2) Indoor controller board cannot receive any signal from remote controller for 2 minutes. (Check code: E4)	① Contact failure at transmission wire of remote controller ② All remote controllers are set as “sub” remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board. ③ Miswiring of remote controller ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board of refrigerant address “0”. ⑥ Noise has entered into the transmission wire of remote controller.	① Check disconnection or looseness of indoor unit or transmission wire of remote controller. ② Set one of the remote controllers “main”. If there is no problem with the action above. ③ Check wiring of remote controller. • Total wiring length: max. 500 m [1640ft] (Do not use cable with 3 or more cores.) • The number of connecting indoor units: max. 16 units • The number of connecting remote controller: max. 2 units If the cause of trouble is not in above ①–③, ④ Diagnose remote controllers. a) When “RC OK” is displayed, remote controllers have no problem. Turn the power off, and on again to check. If abnormality occurs again, replace indoor controller board. b) When “RC NG” is displayed, replace remote controller. c) When “RC E3” or "ERC 00-66" is displayed, noise may be causing abnormality. Note: If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address “0” may be abnormal.
E1 or E2 (6832, 6833)	**Remote controller control board** (1) Abnormal if data cannot be normally read from the nonvolatile memory of the remote controller control board. (Check code: E1) (2) Abnormal if the clock function of remote controller cannot be normally operated. (Check code: E2)	① Defective remote controller	① Replace remote controller.
E3 or E5 (6201, 6203)	**Remote controller transmission error (E3)/ signal receiving error (E5)** (1) Abnormal if remote controller could not find blank of transmission path for 6 seconds and could not transmit. (Check code: E3) (2) Remote controller receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Check code: E3) (1) Abnormal if indoor controller board could not find blank of transmission path. (Check code: E5) (2) Indoor controller board receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Check code: E5)	① 2 remote controller are set as “main.” (In the case of 2 remote controllers) ② Remote controller is connected with 2 indoor units or more. ③ Repetition of refrigerant address ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Noise has entered into transmission wire of remote controller.	① Set a remote controller to main, and the other to sub. ② Remote controller is connected with only one indoor unit. ③ The address changes to a separate setting. ④–⑥ Diagnose remote controller. a) When “RC OK” is displayed, remote controllers have no problem. Turn the power off, and on again to check. When becoming abnormal again, replace indoor controller board. b) When “RC NG”is displayed, replace remote controller. c) When “RC E3”or “ERC 00-66”is displayed, noise may be causing abnormality.
E6 (6840)	**Indoor/outdoor unit communication error (Signal receiving error)** (1) Abnormal if indoor controller board could not receive any signal normally for 6 minutes after turning the power on. (2) Abnormal if indoor controller board could not receive any signal normally for 3 minutes. (3) Consider the unit as abnormal under the following condition; When 2 or more indoor units are connected to an outdoor unit, indoor controller board could not receive a signal for 3 minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals.	① Contact failure, short circuit or miswiring (reversed wiring) of indoor/outdoor unit connecting wire ② Defective transmitting receiving circuit of outdoor controller circuit board ③ Defective transmitting receiving circuit of indoor controller board ④ Noise has entered into indoor/ outdoor unit connecting wire. ⑤ Defective fan motor ⑥ Defective rush current resistor	Note: Check LED display on outdoor controller circuit board. (Connect A-Control service tool (PAC-SK52ST)) Refer to EA–EC item if LED displays EA–AC. ① Check disconnecting or looseness of indoor/outdoor unit connecting wire of indoor unit or outdoor unit. Check all the units in the case of twin indoor unit system. ②–④ Turn the power off, and on again to check. If abnormality occurs again, replace indoor controller board or outdoor controller circuit board. ⑤ Turn the power off, and detach fan motor from connector (CNF1,2). Then turn the power on again. If abnormality is not displayed, replace fan motor. If abnormality is displayed, replace outdoor controller circuit board. ⑥ Check RS1 on outdoor noise filter board with multimeter. If open is detected, replace the board. Note: Other indoor controller board may have defect in the case of twin indoor unit system.

Check code	Abnormal points and detection method	Cause	judgment and action
E8 (6840)	**Indoor/outdoor unit communication error (Signal receiving error) (Outdoor unit)** (1) Abnormal if outdoor controller circuit board could not receive anything normally for 3 minutes.	① Contact failure of indoor/outdoor unit connecting wire ② Defective communication circuit of outdoor controller circuit board ③ Defective communication circuit of indoor controller board ④ Noise has entered into indoor/outdoor unit connecting wire.	① Check disconnection or looseness of indoor/outdoor unit connecting wire of indoor or outdoor units. ②–④ Turn the power off, and on again to check. Replace indoor controller board or outdoor controller circuit board if abnormality is displayed again.
E9 (6841)	**Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)** (1) Abnormal if "0" receiving is detected 30 times continuously though outdoor controller circuit board has transmitted "1". (2) Abnormal if outdoor controller circuit board could not find blank of transmission path for 3 minutes.	① Indoor/outdoor unit connecting wire has contact failure. ② Defective communication circuit of outdoor controller circuit board ③ Noise has entered power supply. ④ Noise has entered indoor/outdoor unit connecting wire.	① Check disconnection or looseness of indoor/outdoor unit connecting wire. ②–④ Turn the power off, and on again to check. Replace outdoor controller circuit board if abnormality is displayed again.
EF (6607 or 6608)	**Non defined check code** This code is displayed when non defined check code is received.	① Noise has entered transmission wire of remote controller. ② Noise has entered indoor/outdoor unit connecting wire. ③ Outdoor unit is not a power-inverter models.	①② Turn the power off, and on again to check. Replace indoor controller board or outdoor controller circuit board if abnormality is displayed again. ③ Replace outdoor unit with power-inverter type outdoor unit.
Ed (0403)	**Serial communication error** (1) Abnormal if serial communication between outdoor controller circuit board and outdoor power circuit board is defective.	① Breaking of wire or contact failure of connector CN2 between the outdoor controller circuit board and the outdoor power circuit board ② Breaking of wire or contact failure of connector CN4 between the outdoor controller circuit board and the outdoor power circuit board ③ Defective communication circuit of outdoor power circuit board ④ Defective communication circuit of outdoor controller circuit board for outdoor power circuit board	①② Check connection of each connector CN2 and CN4 between the outdoor controller circuit board and the outdoor power circuit board. ③ Replace outdoor power circuit board. ④ Replace outdoor controller circuit board.
	(2) Abnormal if communication between outdoor controller circuit board and M-NET board is not available.	① Breaking of wire or contact failure of connector between outdoor controller circuit board and M-NET board ② Contact failure of M-NET board power supply line ③ Noise has entered into M-NET transmission wire.	① Check disconnection, looseness, or breaking of connection wire between outdoor controller circuit board (CNMNT) and M-NET board (CN5). ② Check disconnection, looseness, or breaking of connection wire between outdoor controller circuit board (CNVMNT) and M-NET board (CND). ③ Check M-NET transmission wiring method.
P8	**Pipe temperature** <Cooling mode> Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes after compressor start and 6 minutes after the liquid or condenser/evaporator pipe is out of cooling range. Note 1: It takes at least 9 minutes to detect. Note 2: Abnormality P8 is not detected in dry mode. Cooling range: Indoor pipe temperature (TH2 or TH5) − intake temperature (TH1) ≤ −5.4˚F [−3°C] TH: Lower temperature between liquid pipe temperature and condenser/evaporator temperature <Heating mode> When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/evaporator pipe temperature is not in heating range within 20 minutes. Note 3: It takes at least 27 minutes to detect abnormality. Note 4: It excludes the period of defrosting (Detection restarts when defrosting mode is over) Heating range: 5.4˚F [3°C] ≤ (Condenser/evaporator temperature (TH5) − intake temperature (TH1))	① Slight temperature difference between indoor room temperature and pipe <liquid or condenser/evaporator> temperature thermistor • Shortage of refrigerant • Disconnected holder of pipe <liquid or condenser/evaporator> thermistor • Defective refrigerant circuit ② Reversed connection of extension pipe (on plural units connection) ③ Reversed wiring of indoor/outdoor unit connecting wire (on plural units connection) ④ Defective detection of indoor room temperature and pipe <condenser/evaporator> temperature thermistor ⑤ Stop valve is not opened completely.	①–④ Check pipe <liquid or condenser/evaporator> temperature with room temperature display on remote controller and outdoor controller circuit board. Pipe <liquid or condenser/evaporator> temperature display is indicated by setting SW2 of outdoor controller circuit board as follows. (Conduct temperature check with outdoor controller circuit board after connecting 'A-Control Service Tool (PAC-SK52ST)'.)  ②③Check reversed connection of extension pipe or reversed wiring of indoor/outdoor unit connecting wire.

Check code	Abnormal points and detection method	Cause	judgment and action
PL	**Abnormal refrigerant circuit** During Cooling, Dry, or Auto Cooling operation, the following conditions are regarded as failures when detected for 1 second. a)The compressor continues to run for 30 or more seconds. b)The liquid pipe temperature or the condenser/evaporator temperature is 167˚F [75°C] or more. **These detected errors will not be cancelled until the power source is reset.**	① Abnormal operation of 4-way valve ② Disconnection of or leakage in refrigerant pipes ③ Air into refrigerant piping ④ Abnormal operation (no rotation) of indoor fan · Defective fan motor. · Defective indoor control board. ⑤ Defective refrigerant circuit (clogging)	① **When this error occurs, be sure to replace the 4-way valve.** ② Check refrigerant pipes for disconnection or leakage. ③ After the recovery of refrigerant, vacuum dry the whole refrigerant circuit. ④ Refer to “10-6. HOW TO CHECK THE PARTS”. ⑤ Check refrigerant circuit for operation. **To avoid entry of moisture or air into refrigerant circuit which could cause abnormal high pressure, purge air in refrigerant circuit or replace refrigerant.**

<M-NET communication error>

Note: “Indoor unit” in the text indicates M-NET board in outdoor unit.

Check code	Abnormal points and detection method	Cause	judgment and action
A0 (6600)	**Address duplicate definition** This error is displayed when transmission from the units of same address is detected. Note: The address and attribute displayed at remote controller indicate the controller that detected abnormality.	① There are 2 or more same address of controller of outdoor unit, indoor unit, FRESH MASTER, or LOSSNAY. ② Noise has entered into transmission signal and signal was transformed.	Search the unit with same address as abnormality is detected. If the same address is found, turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more after the address is corrected, and turn the power on again. Check transmission waveform or noise on transmission wire.
A2 (6602)	**Hardware error of transmission processor** Transmission processor intended to transmit “0”, but “1” appeared on transmission wire. Note: The address and attribute display at remote controller indicate the controller that detected abnormality.	① Error is detected if waveform is transformed when wiring works of transmission wire of outdoor unit, indoor unit, FRESH MASTER or LOSSNAY are done, or polarity is changed with the power on and transmission data collide each other. ② Defective transmitting receiving circuit of transmission processor ③ Transmission data is changed by the noise on transmission.	① If the works of transmission wire is done with the power on, turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. ② Check transmission waveform or noise on transmission wire.
A3 (6603)	**BUS BUSY** (1) Overtime error by collision damage Abnormal if transmitting signal is not possible for 8–10 minutes continuously because of collision of transmission. (2) Data could not reach transmission wire for 8–10 minutes continuously because of noise, etc. Note: The address and attribute displayed at remote controller indicate the controller that detected abnormality.	① Transmission processor could not transmit signal because short cycle voltage of noise and the like have entered into transmission wire continuously. ② Transmission quantity has increased and transmission is not possible because there was wiring mistake of terminal block for transmission wire (TB3) and terminal block for central control (TB7) in outdoor unit. ③ Transmission are mixed with others and occupation rate on transmission wire rose because of defective repeater (a function to connector or disconnect transmission of control and central control system) of outdoor unit, then abnormality is detected.	① Check if transmission wire of indoor unit, FRESH MASTER, LOSSNAY, or remote controller is not connected to terminal block for central control (TB7) of outdoor unit. ② Check if transmission wire of indoor unit, FRESH MASTER or LOSSNAY is not connected to terminal block for transmission wire of outdoor unit. ③ Check if terminal block for transmission wire (TB3) and terminal block for central control (TB7) are not connected. ④ Check transmission waveform or noise on transmission wire.
A6 (6606)	**Communication error with communication processor** Defective communication between unit processor and transmission processor Note: The address and attribute display at remote controller indicate the controller that detected abnormality.	① Data of transmission processor or unit processor is not transmitted normally because of accidental trouble such as noise or lightning surge. ② Address forwarding from unit processor is not transmitted normally because of defective transmission processor hardware.	Turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. System returns to normal if abnormality was accidental malfunction. If the same abnormality occurs again, abnormality-occurred controller may be defective.

Check code	Abnormal points and detection method	Cause	judgment and action
A7 (6607)	**NO ACK signal** (1) Transmitting side controller detects abnormal if a message was transmitted but there is no reply (ACK) that a message was received. Transmitting side detects abnormality every 30 seconds, 6 times continuously. Note: The address and attribute displayed at remote controller is indicate the controller that did not reply (ACK).	Common factor that has no relation with abnormality source. ① The unit of former address does not exist as address switch has changed while the unit was energized. ② Voltage drop and weak signal which lead communication error are caused by over-range transmission wire. • Maximum distance ····· 656 ft [200 m] • Remote controller line·· (39ft [12 m]) ③ Voltage drop and weak signal which lead communication error are caused by type-unmatched transmission wire. Type····· With shield wire- CVVS, CPEVS With normal wire (no shield)- VCTF, VCTFK, CVV CVS, VVR, VVF, VCT Diameter···1.25 mm^2 [AWG16] or more ④ Voltage drop and weak signal which lead communication error are caused by over-numbered units. ⑤ Accidental malfunction of abnormality-detected controller (noise, lightning surge) ⑥ Defective of abnormality occurred controller	**Always try the following when the error "A7" occurs.** ① Turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. If malfunction was accidental, the unit returns to normal. ② Check address switch of abnormality occurred address. ③ Check disconnection or looseness of abnormality occurred or abnormality detected transmission wire (terminal block and connector) ④ Check if tolerance range of transmission wire is not exceeded. ⑤ Check if type of transmission wire is correct or not. If the cause of trouble is in ①–⑤ above, repair the defective, then turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. • If the cause of trouble is not in ①–⑤ above in single refrigerant system (one outdoor unit), controller of displayed address or attribute is defective. • If the cause of trouble is not in ①–⑤ above in different refrigerant system (2 or more outdoor units), judge with ⑥. ⑥ If address of abnormality source is the address that should not exist, there is the unit that memorizes nonexistent address information. Delete unused address information with manual setting function of remote controller. Only the system FRESH MASTER or LOSSNAY are connected to, or the system that is equipped with group setting of different refrigerant system. If the cause of trouble is not any of ①–⑥ above, replace the controller board of displayed address or attribute. If the unit does not return to normal, multi controller board of outdoor unit may be defective (repeater circuit). Replace multi-controller board one by one to check if the unit returns to normal.
	(2) If displayed address or attribute is outdoor unit, Indoor unit detects abnormality when indoor unit transmitted to outdoor unit and there was no reply (ACK).	① Contact failure of transmission wire of outdoor unit or indoor unit ② Disconnection of transmission connector (CN2M) of outdoor unit ③ Defective transmitting receiving circuit of outdoor unit or indoor unit	
	(3) If displayed address or attribute is indoor unit, remote controller detects abnormality when remote controller transmitted to indoor unit and there was no reply (ACK).	① During group operation with indoor unit of multi- refrigerant system, if remote controller transmit to indoor unit while outdoor unit power supply of one refrigerant system is turned off or within 2 minutes of restart, abnormality is detected. ② Contact failure of transmission wire of remote controller or indoor unit ③ Disconnection of transmission connector (CN2M) of indoor unit ④ Defective transmitting receiving circuit of indoor unit or remote controller	
	(4) If displayed address or attribute is remote controller, Indoor unit detects abnormality when indoor unit transmitted to remote controller and there was no reply (ACK).	① During group operation with indoor unit of multi- refrigerant system, if indoor unit transmit to remote controller while outdoor unit power supply of one refrigerant system is turned off or within 2 minutes of restart, abnormality is detected. ② Contact failure of transmission wire of remote controller or indoor unit ③ Disconnection of transmission connector (CN2M) of indoor unit ④ Defective transmitting receiving circuit of indoor unit or remote controller	

Continued to the next page.

From the previous page.

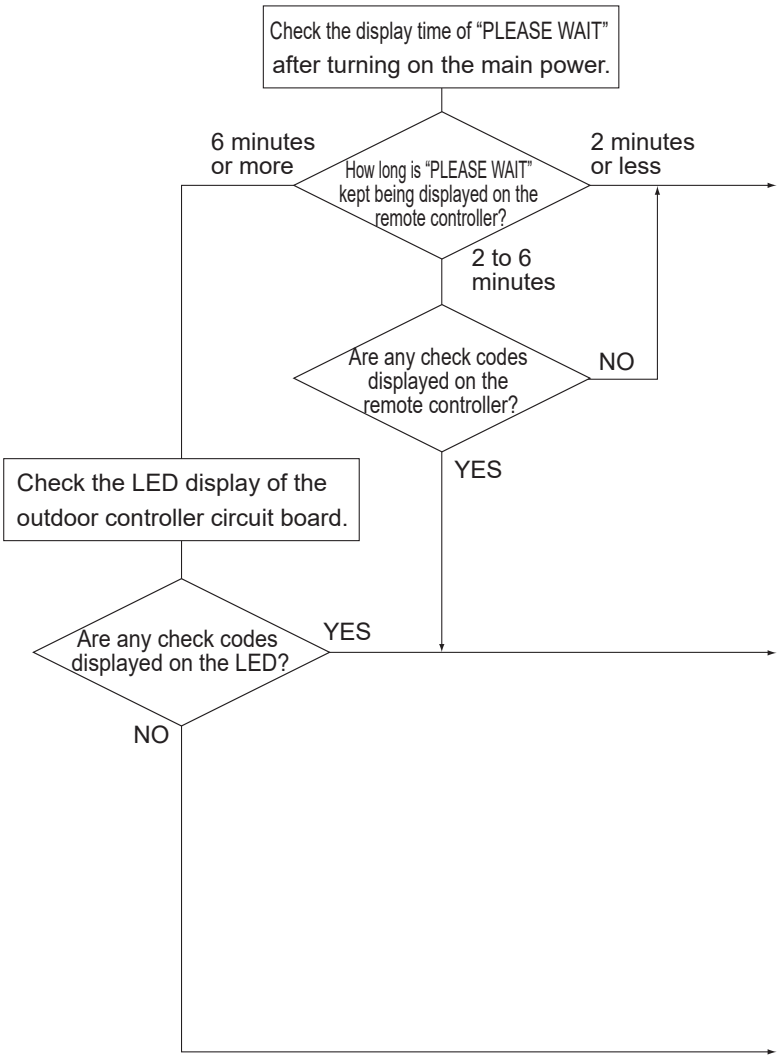
Check code	Abnormal points and detection method	Cause	judgment and action
A7 (6607)	(5) If displayed address or attribute is FRESH MASTER, Indoor unit detects abnormality when indoor unit transmitted to FRESH MASTER and there was no reply (ACK).	① During sequential operation of indoor unit and FRESH MASTER of other refrigerant system, if indoor unit transmits to FRESH MASTER while outdoor unit power supply of same refrigerant system with FRESH MASTER is turned off or within 2 minutes of restart, abnormality is detected. ② Contact failure of transmission wire of indoor unit or FRESH MASTER ③ Disconnection of transmission connector (CN2M) of indoor unit or FRESH MASTER ④ Defective transmitting receiving circuit of indoor unit or FRESH MASTER	**Same as mentioned in "A7" of the previous page.**
	(6) If displayed address or attribute is LOSSNAY, Indoor unit detects abnormality when indoor unit transmitted to LOSSNAY and there was no reply (ACK).	① If the power supply of LOSSNAY is turned off, indoor unit detects abnormality when it transmits to LOSSNAY. ② During sequential operation of indoor unit and LOSSNAY of other refrigerant system, if indoor unit transmits to LOSSNAY while outdoor unit power supply of same refrigerant system with LOSSNAY is turned off or within 2 minutes of restart, abnormality is detected. ③ Contact failure of transmission wire of indoor unit of LOSSNAY ④ Disconnection of transmission connector (CN2M) of indoor unit ⑤ Defective transmitting receiving circuit of indoor unit or LOSSNAY	
	(7) If displayed address or attribute is non-existent,	① The unit of former address does not exist as address switch has changed while the unit was energized. ② Abnormality is detected when indoor unit transmitted because the address of FRESH MASTER and LOSSNAY are changed after sequential operation of FRESH MASTER and LOSSNAY by remote controller.	
A8 (6608)	**M-NET NO RESPONSE** Abnormal if a message was transmitted and there were reply (ACK) that message was received, but response command does not return. Transmitting side detects abnormality every 30 seconds, 6 times continuously. Note: The address and attribute displayed at remote controller indicate the controller that did not reply (ACK).	① Transmitting condition is repeated fault because of noise and the like. ② Extension of transmission wire voltage and signal is caused by over-range transmission wire. • Maximum distance ····· 656 ft [200 m] • Remote controller line ··· (39 ft [12 m]) ③ Extension of transmission wire voltage and signal is caused by type-unmatched transmission wire. Type····· With shield wire- CVVS, CPEVS With normal wire (no shield)- VCTF, VCTFK, CVV CVS, VVR, VVF, VCT Diameter ··· 1.25 mm^2 [AWG16] or more ④ Accidental malfunction of abnormality-occurred controller	① Check transmission waveform or noise on transmission wire. ② Turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. If malfunction was accidental, the unit returns to normal. If the same abnormality occurs again, controller of displayed address and attribute may be defective.

10-5. TROUBLESHOOTING OF PROBLEMS

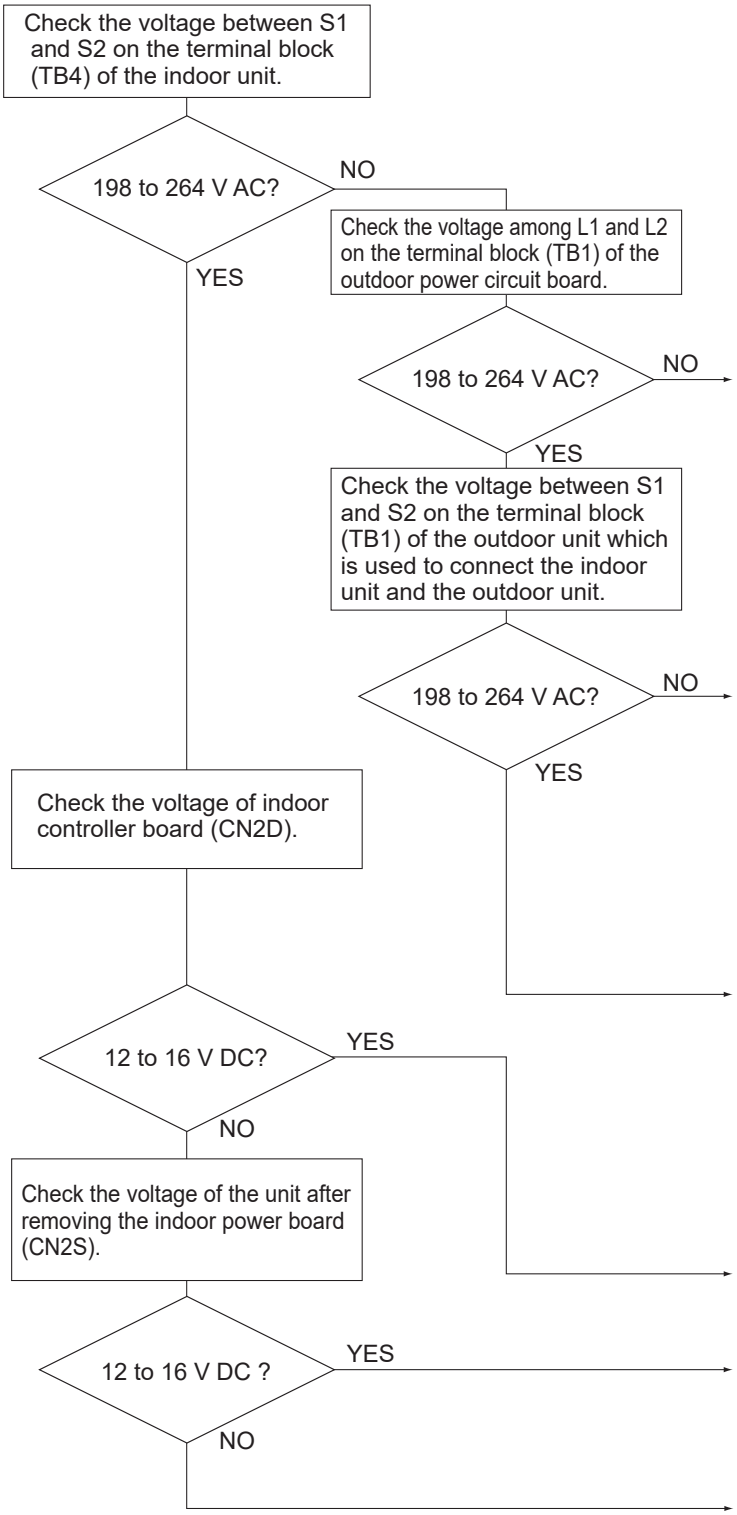
Phenomena	Factor	Countermeasure
(1) Remote controller display does not work.	① 12 V DC is not supplied to remote controller. (Power supply display ◉ is not indicated on LCD.) ② 12–15 V DC is supplied to remote controller, however, no display is indicated. • "PLEASE WAIT" is not displayed. • "PLEASE WAIT" is displayed.	①Check LED2 on indoor controller board. (1) When LED2 is lit, check the remote controller wiring for breaking or contact failure. (2) When LED2 is blinking, check short circuit of remote controller wiring. (3) When LED2 is not lit, refer to phenomena No.3 below. ② Check the following. • Failure of remote controller if "PLEASE WAIT" is not displayed • Refer to phenomena No.2 below if "PLEASE WAIT" is displayed.
(2) "PLEASE WAIT" display is remained on the remote controller.	① At longest 2 minutes after the power supply "PLEASE WAIT" is displayed to start up. ② Communication error between the remote controller and indoor unit ③ Communication error between the indoor and outdoor unit ④ Outdoor unit protection device connector is open.	① Normal operation ② Self-diagnosis of remote controller ③ "PLEASE WAIT" is displayed for 6 minutes at most in the case of indoor/outdoor unit communication error. Check LED3 on indoor controller board. (1) When LED3 is not blinking, check indoor/outdoor connecting wire for miswiring. (Reversed wiring of S1 and S2, or break of S3 wiring.) (2) When LED3 is blinking, indoor/outdoor connecting wire is normal. ④ Check LED display on outdoor controller circuit board. Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS". Check protection device connector (63L and 63H) for contact failure. Refer to "10-9. TEST POINT DIAGRAM".
(3) When pressing the remote controller operation switch the OPERATION display is appeared but it will be turned off soon.	① After cancelling to select function from the remote controller, the remote controller operation switch will not be accepted for approx. 30 seconds.	① Normal operation
(4) Even controlling by the IR wireless remote controller no beep is heard and the unit does not start operating. Operation display is indicated on IR wireless remote controller.	① The pair number settings of the IR wireless remote controller and indoor controller board are mismatched.	① Check the pair number settings.
(5) When operating by the IR wireless remote controller, beep sound is heard, however, unit does not start operating.	① No operation for 2 minutes at most after the power supply ON. ② Hand-held remote controller operation is prohibited. • Remote controlling adaptor is connected to CN32 on the indoor controller board. • Hand-held remote controller operation is prohibited by centralized controller etc. since it is connected to MELANS. ③ Refer to factor of phenomena No.2.	① Normal operation ② Normal operation ③ Check the details of phenomena No.2.

Phenomena	Factor	Countermeasure
(6) Remote controller display works normally and the unit performs cooling operation, however, the capacity cannot be fully obtained. (The air does not cool well.)	① Refrigerant shortage	① If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.
	② Filter clogging	② Open intake grille and check the filter. Clean the filter by removing dirt or dust on it.
	③ Heat exchanger clogging	③ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.
	④ Air duct short cycle	④ Remove the blockage.
(7) Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	① Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault.	① Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. Replace linear expansion valve.
	② Refrigerant shortage	② If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.
	③ Lack of insulation for refrigerant piping	③ Check the insulation.
	④ Filter clogging	④ Open intake grill and check the filter. Clean the filter by removing dirt or dust on it.
	⑤ Heat exchanger clogging	⑤ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.
	⑥ Air duct short cycle	⑥ Remove the blockage.
	⑦ Bypass circuit of outdoor unit fault	⑦ Check refrigerant system during operation.
(8) ① For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ② For 3 minutes after temperature adjuster turns on, the compressor will not stop operating even if temperature adjuster is turned off. (Compressor stops operating immediately when turning off by the remote controller.)	①② Normal operation (For protection of compressor)	①② Normal operation

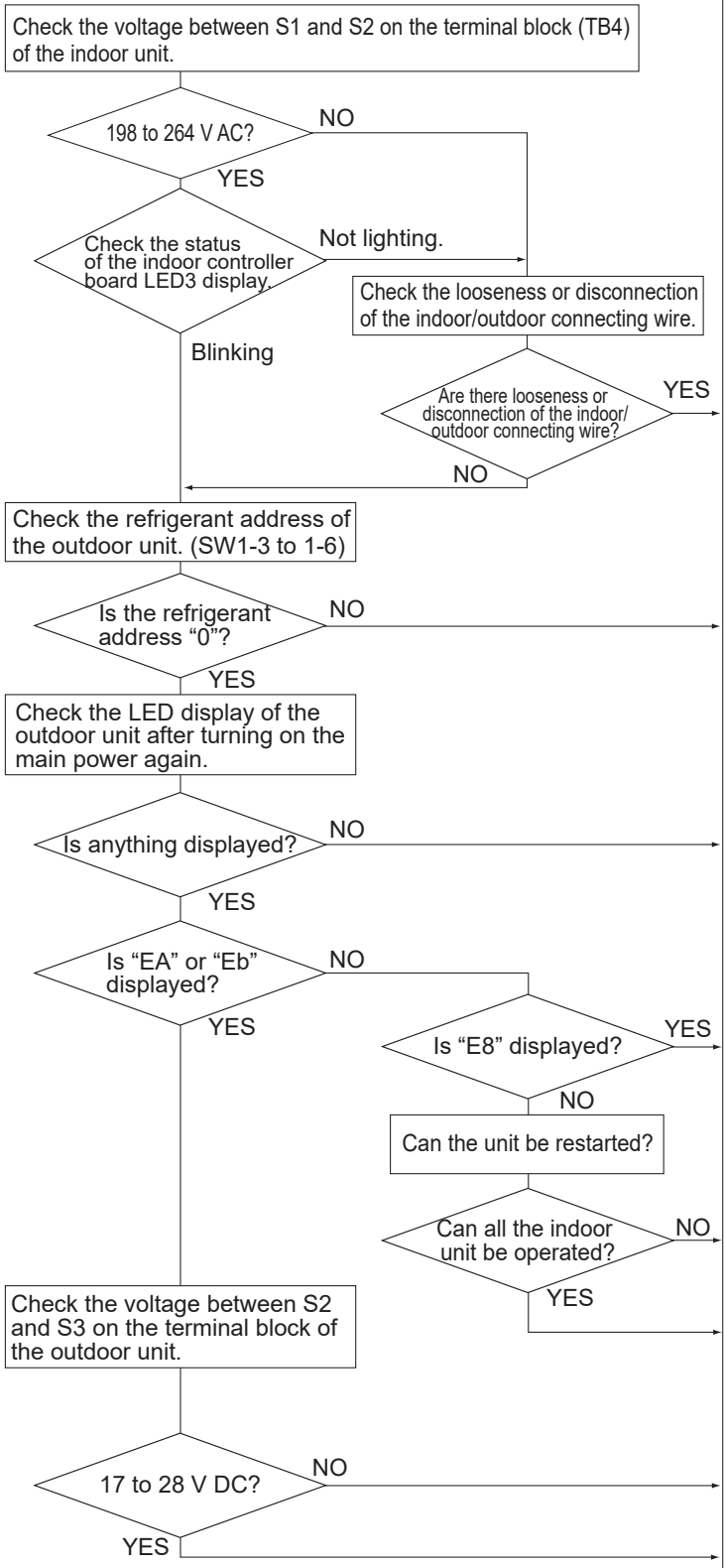
Symptoms: “PLEASE WAIT” is kept being displayed on the remote controller.

Diagnosis flow	Cause	Inspection method and troubleshooting
	• “PLEASE WAIT” will be displayed during the startup diagnosis after turning on the main power. • Miswiring of indoor/ outdoor connecting wire • Breaking of indoor/ outdoor connecting wire (S3) • Defective indoor controller board • Defective outdoor controller circuit board • Defective indoor controller board • Defective remote controller	• Normal The startup diagnosis will be over in around 2 minutes. • Refer to “Self-diagnosis action table” in order to solve the trouble. • In the case of communication errors, the display of remote controller may not match the LED display of the outdoor unit.

Symptoms: Nothing is displayed on the remote controller. ①	LED display of the indoor controller board LED1: ○ LED2: ○ LED3: ○

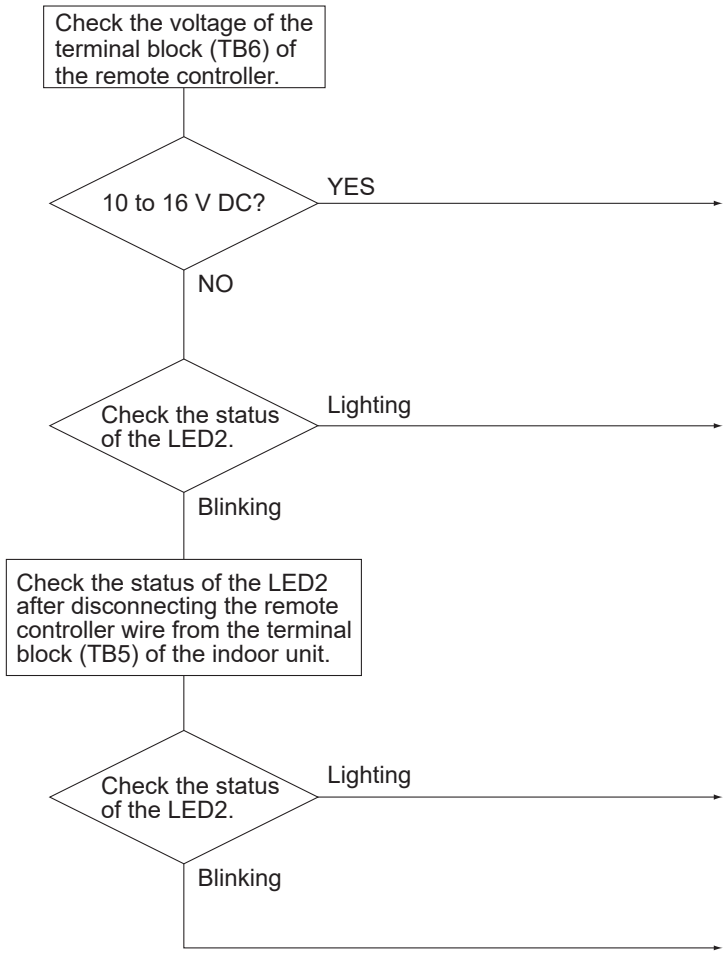
Diagnosis flow	Cause	Inspection method and troubleshooting
	• Troubles concerning power supply • Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown. • Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown. • Defective indoor controller board • Miswiring, breaking or poor connection of indoor/outdoor connecting wire • Defective indoor power board	• Check the power wiring to the outdoor unit. • Check the breaker. • Check the wiring of the outdoor unit. • Check if the wiring is bad. Check if the fuses are blown. The fuses on the outdoor controller circuit board will be blown when the indoor /outdoor connecting wire short-circuits. • Check if miswiring, breaking or poor contact is causing this problem. Indoor/outdoor connecting wire is polarized 3-core type. Connect the indoor unit and the outdoor unit by wiring each pair of S1, S2 and S3 on the both side of indoor/outdoor terminal blocks. • Replace the indoor controller board. • Check if there is miswiring or breaking of wire. • Replace the indoor power board.

Symptoms: Nothing is displayed on the remote controller. ②	LED display of the indoor controller board LED1: ☀ LED2: ○ LED3: ○ or ◐



Diagnosis flow	Cause	Inspection method and troubleshooting
	• Breaking or poor contact of the indoor/ outdoor connecting wire	• Fix the breaking or poor contact of the indoor/outdoor connecting wire.
	• Normal Only the unit which has the refrigerant address "0" supplies power to the remote controller.	• Set the refrigerant address to "0". In the case of the multiple grouping system, recheck the refrigerant address again.
	• Defective outdoor controller circuit board	• Replace the outdoor controller circuit board.
	• Defective outdoor controller circuit board	• Replace the outdoor controller circuit board.
	• Defective indoor controller board	• Replace the indoor controller board of the indoor unit which does not operate.
	• Influence of electromagnetic noise	• Not abnormal. There may be the influence of electromagnetic noise. Check the transmission wire and get rid of the causes.
	• Defective outdoor power circuit board	• Replace the outdoor power circuit board.
	• Defective indoor power board	• Replace the indoor power board.

Symptoms: Nothing is displayed on the remote controller. ③	LED display of the indoor controller board LED1: ☀ LED2: ◐ or ☀ LED3: —

Diagnosis flow	Cause	Inspection method and troubleshooting
	• Defective remote controller • Breaking or poor contact of the remote controller wire • The remote controller wire short-circuits • Defective indoor controller board	• Replace the remote controller. • Check if there is breaking or poor contact of the remote controller wire. Check the voltage of the terminal block (TB5) connecting the remote controller wire. If it is not between 10 and 16 V DC, the indoor controller board must be defective. • Check if the remote controller wire is short-circuited. • Replace the indoor controller board.

• Before repair

Frequent calls from customers

Phone Calls From Customers		How to Respond	Note
Unit does not operate at all.	① The operating display of remote controller does not come on.	① Check if power is supplied to air conditioner. Nothing appears on the display unless power is supplied.	
	② Unit cannot be restarted for a while after it's stopped.	② Wait around 3 minutes to restart unit. The air conditioner is in a state of being protected by the microprocessor's directive. Once the compressor is stopped, the unit cannot be restarted for 3 minutes. This control is also applied when the unit is turned on and off by remote controller or thermostat.	
	③ Check code appears and blinks on the display of remote controller.	③ Check code will be displayed if any protection devices of the air conditioner are actuated. What is check code?	Refer to "SELF-DIAGNOSIS ACTION TABLE". Check if servicing is required for the error.
Remote controller	① "PLEASE WAIT" is displayed on the screen.	① Wait around 2 minutes. An automatic startup test will be conducted for 2 minutes when power is supplied to the air conditioner. "PLEASE WAIT" will be kept displayed while that time.	
	② "FILTER" is displayed on the screen.	② This indicates that it is time to clean the air filters. Clean the air filters. Press the FILTER button on the remote controller twice to clear "FILTER" from the display. See the operation manual that came with the product for how to clean the filters.	Display time of "FILTER" depends on the model. Long life filter: 2500 hrs. Standard filter: 100 hrs.
	③ "STANDBY" is displayed on the screen.	③ This is displayed when the unit starts HEAT operation, when the thermostat puts the compressor in operation mode, or when the outdoor unit ends DEFROST operation and returns to HEAT operation. The display will automatically disappear around 10 minutes later. While "STANDBY" is displayed on the remote controller, the airflow amount will be restricted because the indoor unit's heat exchanger is not fully heated up. In addition to that, the up/down vane will be automatically set to horizontal blow in order to prevent cold air from directly blowing out to human body. The up/down vane will return to the setting specified by the remote controller when "STANDBY" is released.	
	④ "DEFROST" is displayed on the screen. (No air comes out of the unit.)	④ The outdoor unit gets frosted when the outside temperature is low and the humidity is high. "DEFROST" indicates the DEFROST operation is being performed to melt this frost. The DEFROST operation ends in around 10 minutes (at most 15 minutes). During the DEFROST operation, the indoor unit's heat exchanger becomes cold, so the blower is stopped. The up/down vane will be automatically set to horizontal blow in order to prevent cold air from directly blowing out to human body. The display will turn into "STANDBY" when DEFROST operation ends.	

Phone Calls From Customers		How to Respond	Note
The room cannot be cooled or heated sufficiently.		① Check the set temperature of remote controller. The outdoor unit cannot be operated if the set temperature is not appropriate. The outdoor unit operates in the following modes. COOL: When the set temperature is lower than the room temperature. HEAT: When the set temperature is higher than the room temperature.	
		② Check if filters are not dirty and clogged. If filters are clogged, the airflow amount will be reduced and the unit capacity will be lowered. See the instruction manual that came with the product for how to clean the filters.	
		③ Check there is enough space around the air conditioner. If there are any obstacles in the air intake or air outlet of indoor/outdoor units, they block the airflow direction so that the unit capacity will be lowered.	
Sound comes out from the air conditioner.	① A gas escaping sound is heard sometimes.	① This is not a malfunction. This is the sound when the flow of refrigerant in the air conditioner is switched.	
	② A cracking sound is heard sometimes.	② This is not a malfunction. This is the sound when internal parts of units expand or contract when the temperature changes.	
	③ A buzzing sound is heard sometimes.	③ This is not a malfunction. This is the sound when the outdoor unit starts operating.	
	④ A ticking sound is heard from the outdoor unit sometimes.	④ This is not a malfunction. This is the sound when the fan of the outdoor unit is controlling the airflow amount in order to keep the optimum operating condition.	
	⑤ A sound, similar to water flowing, is heard from the unit.	⑤ This is not a malfunction. This is the sound when the refrigerant is flowing inside the indoor unit.	
Something is wrong with the blower…..	① The fan speed does not match the setting of the remote controller during DRY operation.(No air comes out sometimes during DRY operation.)	① This is not a malfunction. During the DRY operation, the blower's ON/OFF is controlled by the microprocessor to prevent overcooling and to ensure efficient dehumidification. The fan speed cannot be set by the remote controller during DRY operation.	
	② The fan speed does not match the setting of the remote controller in HEAT operation.	② This is not a malfunction. 1) When the HEAT operation starts, to prevent the unit from blowing cold air, the fan speed is gradually increased from 0 to the set speed, in proportion to the temperature rise of the discharged air. 2) When the room temperature reaches the set temperature and the outdoor unit stops, the unit starts the LOW AIR operation. 3) During the HEAT operation, the DEFROST operation is performed to defrost the outdoor unit. During the DEFROST operation, the fan is stopped to prevent cold air coming out of the indoor unit.	The up/down vane will be automatically set to horizontal blow in these cases listed up on the left (1)–3)). After a while, the up/down vane will be automatically moved according to the setting of the remote controller.

Phone Calls From Customers		How to Respond	Note
Something is wrong with the blower…..	③ Air blows out for a while after HEAT operation is stopped.	③ This is not a malfunction. The blower is operating just for cooling down the heated-up air conditioner. This will be done within 1 minute. This control is conducted only when the HEAT operation is stopped with the electric heater ON.	However, this control is also applied to the models which has no electric heater.
Something is wrong with the airflow direction….	① The airflow direction is changed during COOL operation.	① If the up/down vane is set to downward in COOL operation, it will be automatically set to horizontal blow by the microprocessor in order to prevent water from dropping down. "1 Hr." will be displayed on the remote controller if the up/down vane is set to downward with the fan speed set to be less than "LOW".	
	② The airflow direction is changed during HEAT operation. (The airflow direction cannot be set by remote controller.)	② In HEAT operation, the up/down vane is automatically controlled according to the temperature of the indoor unit's heat exchanger. In the following cases written below, the up/down vane will be set to horizontal blow, and the setting cannot be changed by remote controller. 1) At the beginning of the HEAT operation 2) While the outdoor unit is being stopped by thermostat or when the outdoor unit gets started to operate. 3) During DEFROST operation The airflow direction will be back to the setting of remote controller when the above situations are released.	"STANDBY" will be displayed on the remote controller in the case of 1) and 2). "DEFROST" will be displayed on the screen in the case of 3).
	③ The airflow direction does not change. (Up/down vane, left/right louver)	③ 1) Check if the vane is set to a fixed position. (Check if the vane motor connector is removed.) 2) Check if the air conditioner has a function for switching the air direction. 3) If the air conditioner does not have that function, "NOT AVAILABLE" will be displayed on the remote controller when "AIR DIRECTION" or "LOUVER" button is pressed.	
The air conditioner starts operating even though any buttons on the remote controller are not pressed.		① Check if you set ON/OFF timer. The air conditioner starts operating at the time designated if ON timer has been set before.	
		② Check if any operations are ordered by distant control system or the central remote controller. While "CENTRALLY CONTROLLED INDICATOR" is displayed on the remote controller, the air conditioner is under the control of external directive.	There might be a case that "CENTRALLY CONTROLLED INDICATOR" will not be displayed.
		③ Check if power is recovered from power failure (black out). The units will automatically start operating when power is recovered after power failure (black out) occurs. This function is called "auto recovery feature from power ".	
The air conditioner stops even though any buttons on the remote controller are not pressed.		① Check if you set ON/OFF timer. The air conditioner stops operating at the time designated if OFF timer has been set before. ② Check if any operations are ordered by distant control system or the central remote controller. While "CENTRALLY CONTROLLED INDICATOR" is displayed on the remote controller, the air conditioner is under the control of external directive.	There might be a case that "CENTRALLY CONTROLLED INDICATOR" will not be displayed.

Phone Calls From Customers	How to Respond	Note
A white mist is expelled from the indoor unit.	This is not a malfunction. This may occur when the operation is started in the room of high humidity.	
Water or moisture is expelled from the outdoor unit.	COOL: when pipes or piping joints are cooled, they sweat and water drips down. HEAT: water drips down from the heat exchanger. Note: Use optional parts “Drain Socket” and “Drain pan” if these water needs to be collected and drained out for once.	
The display of IR wireless remote controller gets dim or does not come on. The indoor unit does not receive a signal from remote controller at a long distance.	Batteries are being exhausted. Replace them and press the reset button of remote controller.	

10-6. HOW TO CHECK THE PARTS

PUZ-A12NKA7 PUZ-A18NKA7 PUZ-A24NHA7 PUZ-A30NHA7
PUZ-A36NKA7 PUZ-A42NKA7
PUZ-A12NKA7-BS PUZ-A18NKA7-BS PUZ-A24NHA7-BS PUZ-A30NHA7-BS
PUZ-A36NKA7-BS PUZ-A42NKA7-BS
PUY-A12NKA7 PUY-A18NKA7 PUY-A24NHA7 PUY-A30NHA7
PUY-A36NKA7 PUY-A42NKA7
PUY-A12NKA7-BS PUY-A18NKA7-BS PUY-A24NHA7-BS PUY-A30NHA7-BS
PUY-A36NKA7-BS PUY-A42NKA7-BS

Thermistor (TH3) <Liquid> / Thermistor (TH4) <Discharge> / Thermistor (TH6) < 2-phase pipe> / Thermistor (TH7) <Ambient> / Thermistor (TH8) <Heat sink> / Thermistor (TH32) <Suction> / Thermistor (TH33) <Comp. surface>

Disconnect the connector then measure the resistance with a multimeter.
(At the ambient temperature 50 to 86°F [10 to 30°C])

	Normal	Abnormal
TH4 TH33	160 to 410 kΩ	Open or short
TH3 TH6 TH7 TH32	4.3 to 9.6 kΩ	
TH8	39 to 105 kΩ	

Fan motor (MF1,MF2)

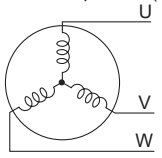
Refer to “10-6-5. Check method of DC fan motor (fan motor/ outdoor controller circuit board)”.

Solenoid valve coil <4-way valve> (21S4)

Measure the resistance between the terminals with a multimeter.
(At the ambient temperature 68°F [20°C])

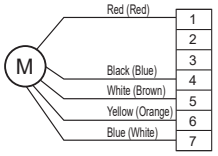
Normal		Abnormal
A12–30	A36, 42	Open or short
2350 ± 170 Ω	1435 ± 150 Ω	

Motor for compressor (MC)



Measure the resistance between the terminals with a multimeter.
(Winding temperature 68°F [20°C])

Normal			Abnormal
A12, 18	A24, 30	A36, 42	Open or short
0.64 Ω	1.34 Ω	0.88 Ω	



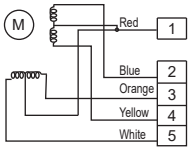
Note: The colors in parentheses are for A36/42 models.

Measure the resistance between the connector pins with a multimeter.
(At the ambient temperature 20ºC)
Note that the resistance between the connector pins may vary depending on the ambient temperature, so use those values as reference.

	Normal				Abnormal
PUZ-A12/18NKA7	Red - Black OL*	White - Black 1.2 ± 0.6 kΩ	Yellow - Black 200 ±100 kΩ	Blue - Black OL	Open or short (short, for White - Blue)
PUZ-A24/30NHA7	Red - Black 1.1 ± 0.6 MΩ	White - Black 1.2 ± 0.6 kΩ	Yellow - Black 200 ± 100 kΩ	Blue - Black OL	Open or short (short, for White - Blue)
PUZ-A36/42NKA7	Red - Blue 1.1 ± 0.6 MΩ	Brown - Blue 40 ± 20 kΩ	Orange - Blue 220 ± 110 kΩ	White - Blue Open	Open or short (short, for White - Blue)

*OL : Over Load

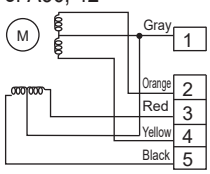
Linear expansion valve (LEV-A) For A12–30



Disconnect the connector then measure the resistance with a multimeter.
(Winding temperature 68°F [20°C])

Normal				Abnormal
Red - White	Red - Orange	Red - Yellow	Red - Blue	Open or short
46 ± 4 Ω				

Linear expansion valve (LEV-A) For A36, 42

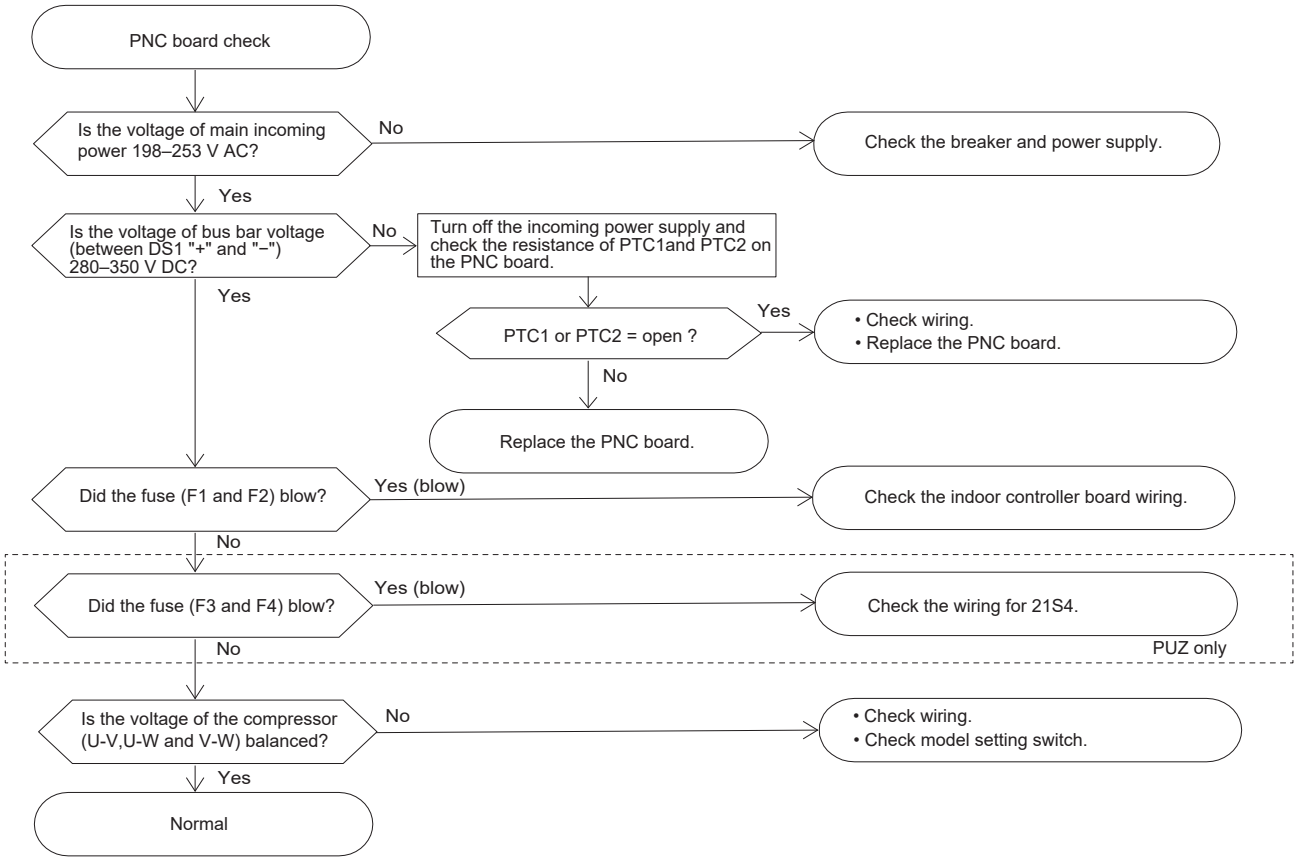


Disconnect the connector then measure the resistance with a multimeter.
(Winding temperature 68°F [20ºC])

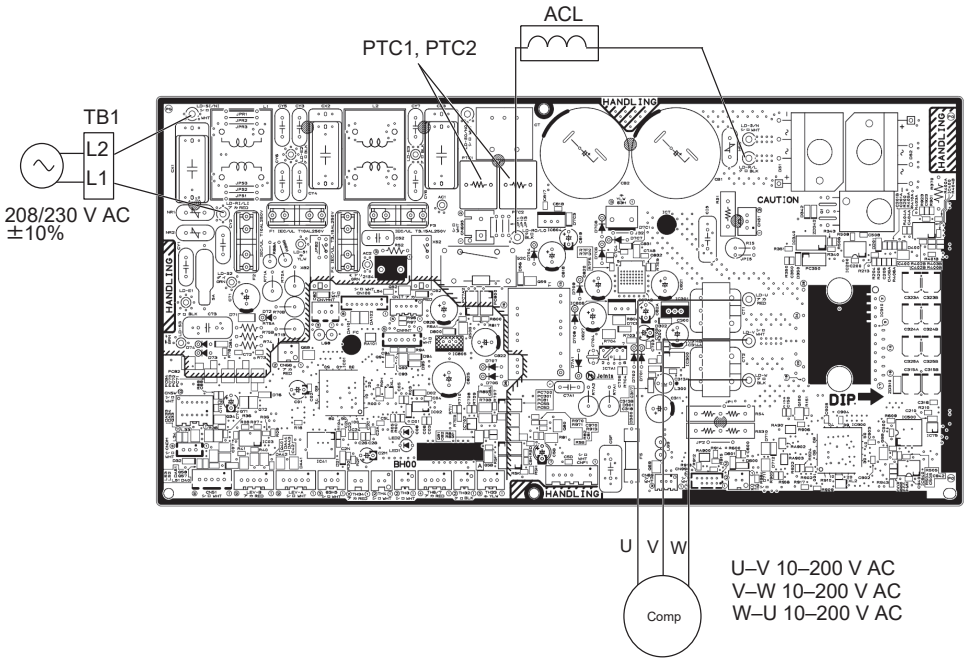
Normal				Abnormal
Gray - Black	Gray - Red	Gray - Yellow	Gray - Orange	Open or short
46 ± 3 Ω				

10-6-1. Check method of outdoor controller circuit board

PUZ-A12NKA7 PUZ-A18NKA7 PUY-A12NKA7 PUY-A18NKA7
PUZ-A12NKA7-BS PUZ-A18NKA7-BS PUY-A12NKA7-BS PUY-A18NKA7-BS

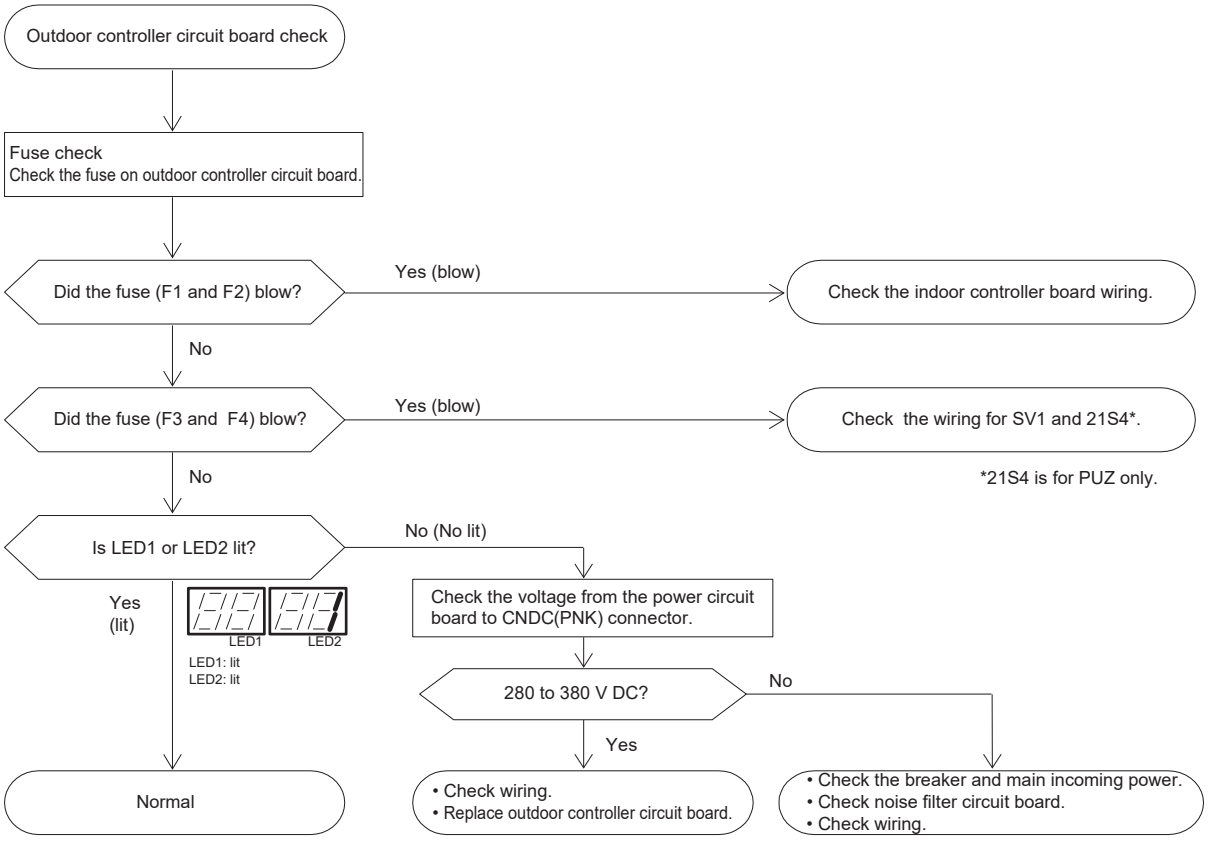


Outdoor controller circuit board

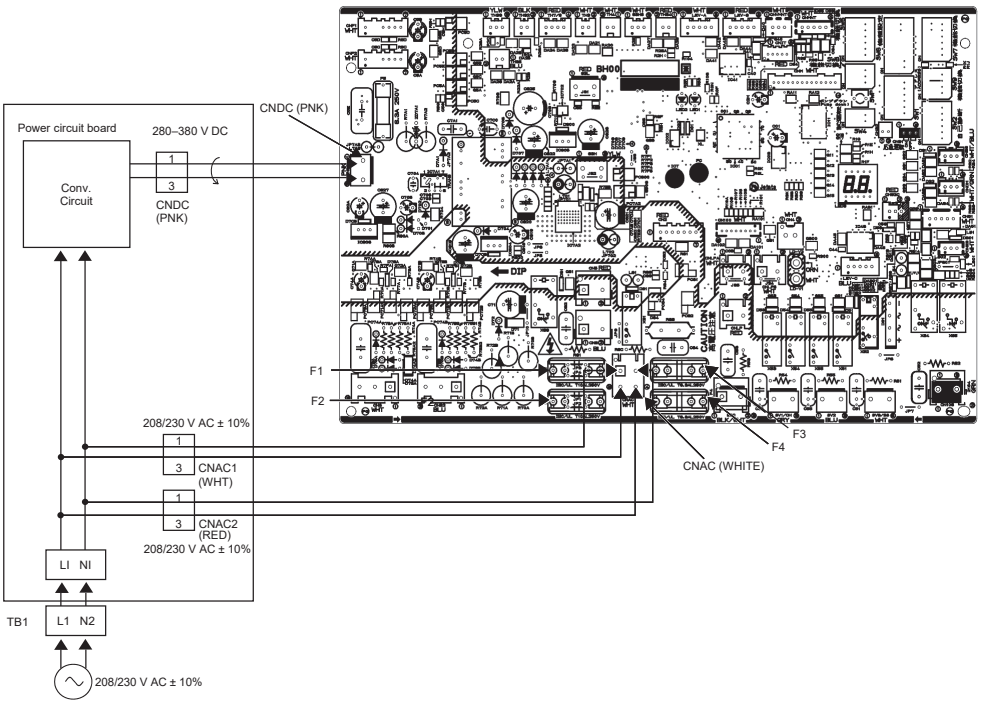


10-6-2. Check method of outdoor controller circuit board

PUZ-A24NHA7	**PUZ-A30NHA7**	**PUZ-A36NKA7**	**PUZ-A42NKA7**
PUZ-A24NHA7-BS	**PUZ-A30NHA7-BS**	**PUZ-A36NKA7-BS**	**PUZ-A42NKA7-BS**
PUY-A24NHA7	**PUY-A30NHA7**	**PUY-A36NKA7**	**PUY-A42NKA7**
PUY-A24NHA7-BS	**PUY-A30NHA7-BS**	**PUY-A36NKA7-BS**	**PUY-A42NKA7-BS**

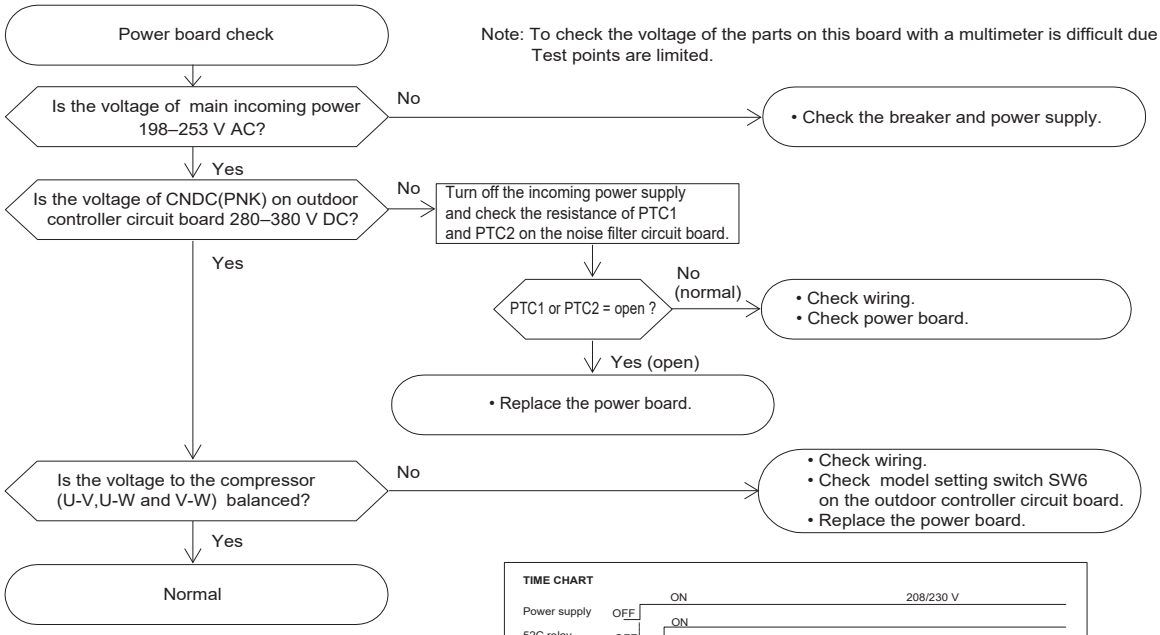


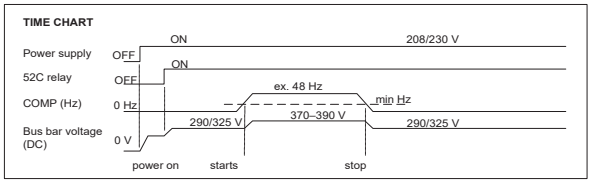
Outdoor controller circuit board

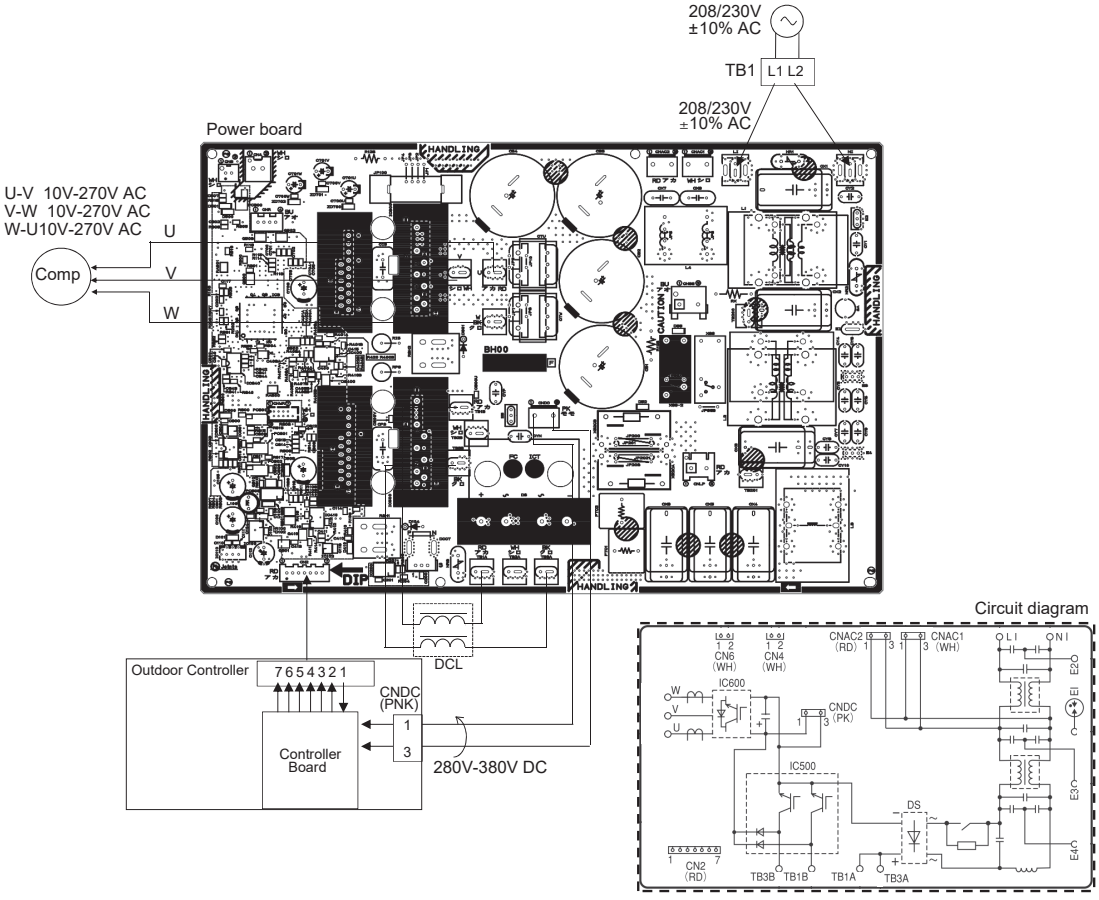


10-6-3. Check method of power circuit board

PUZ-A24NHA7 **PUZ-A30NHA7** **PUY-A24NHA7** **PUY-A30NHA7**
PUZ-A24NHA7-BS **PUZ-A30NHA7-BS** **PUY-A24NHA7-BS** **PUY-A30NHA7-BS**

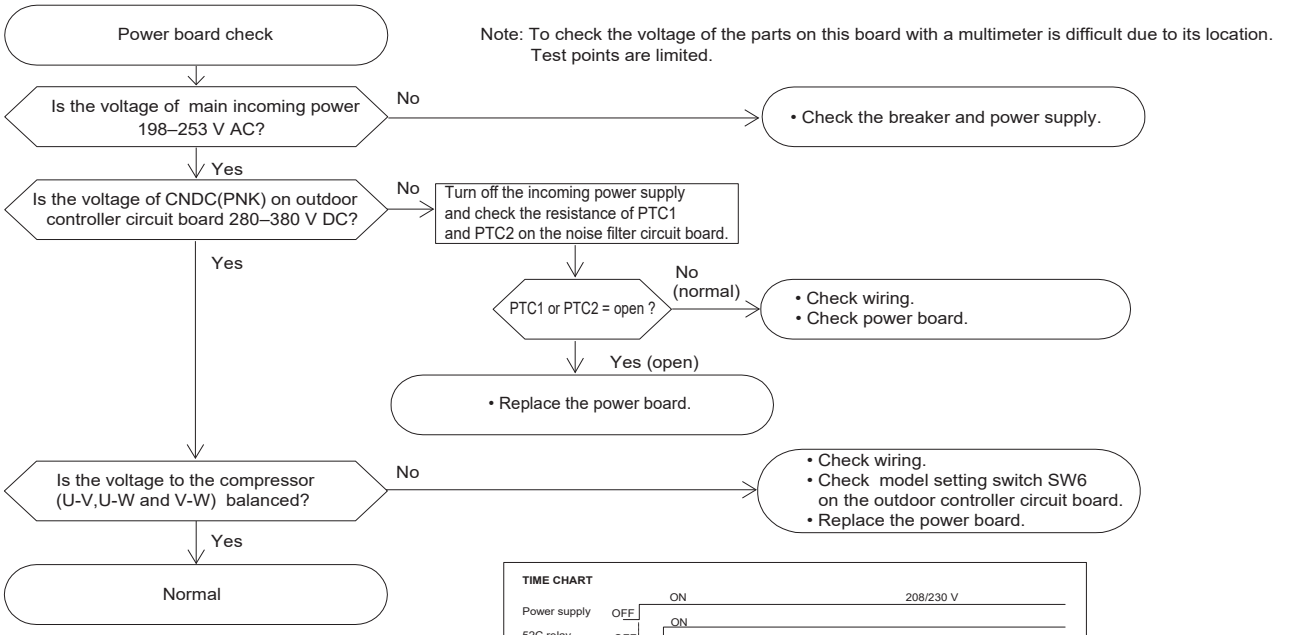


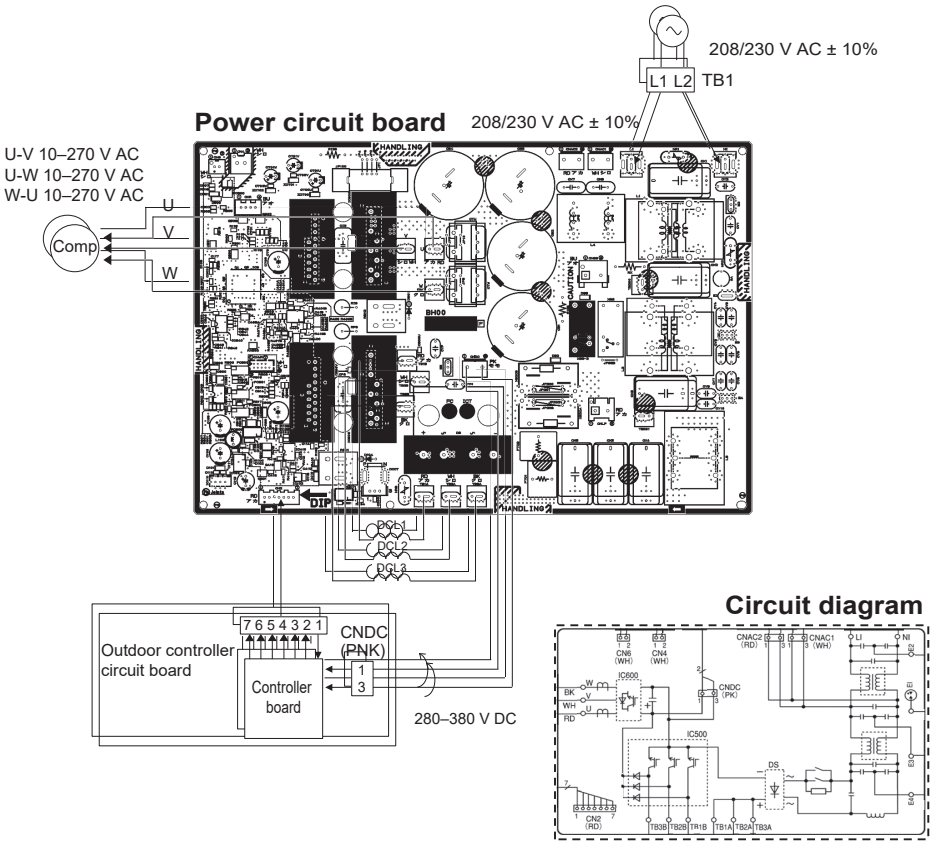




10-6-4. Check method of power circuit board

PUZ-A36NKA7 PUZ-A42NKA7 PUY-A36NKA7 PUY-A42NKA7
PUZ-A36NKA7-BS PUZ-A42NKA7-BS PUY-A36NKA7-BS PUY-A42NKA7-BS



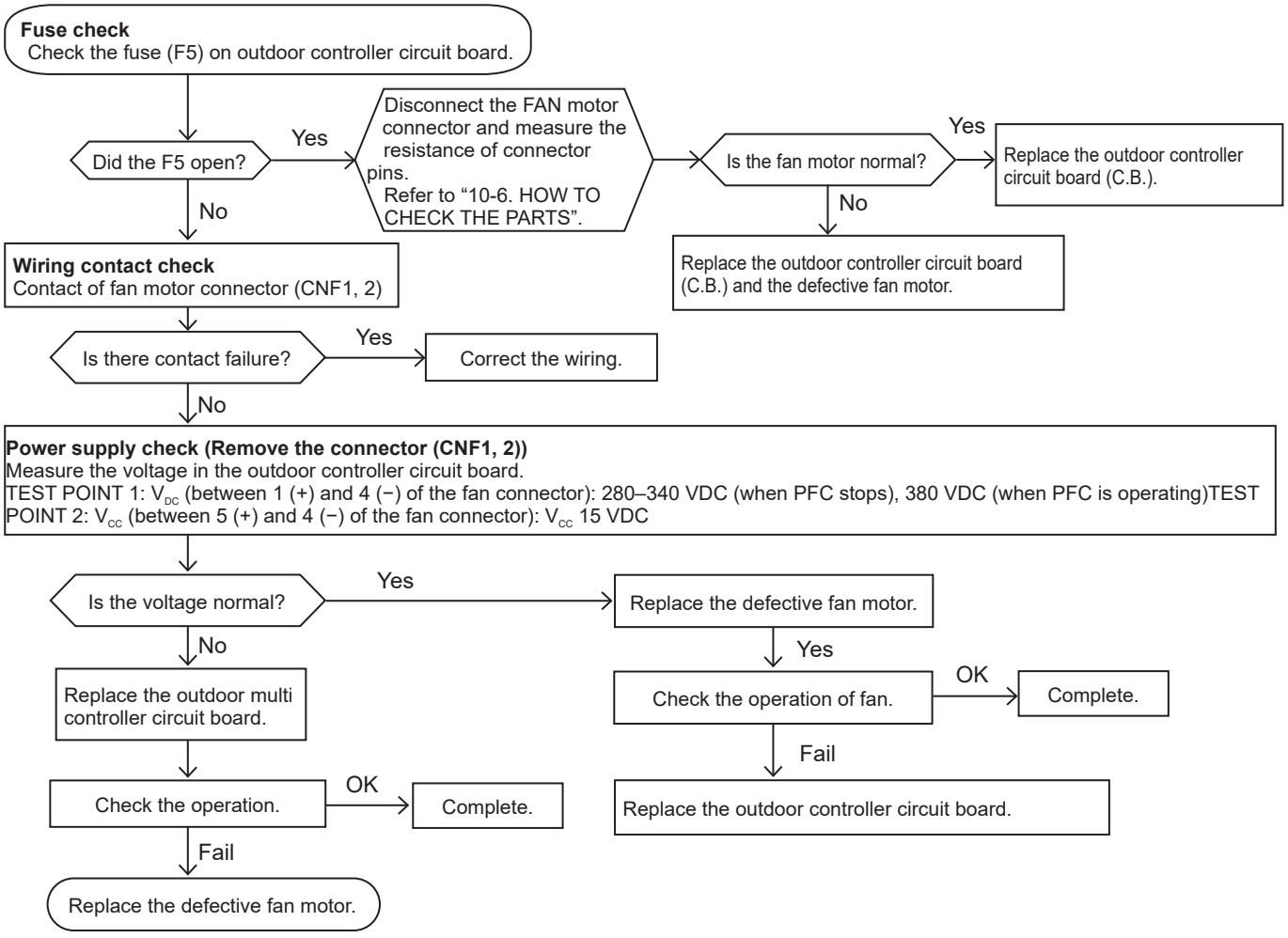


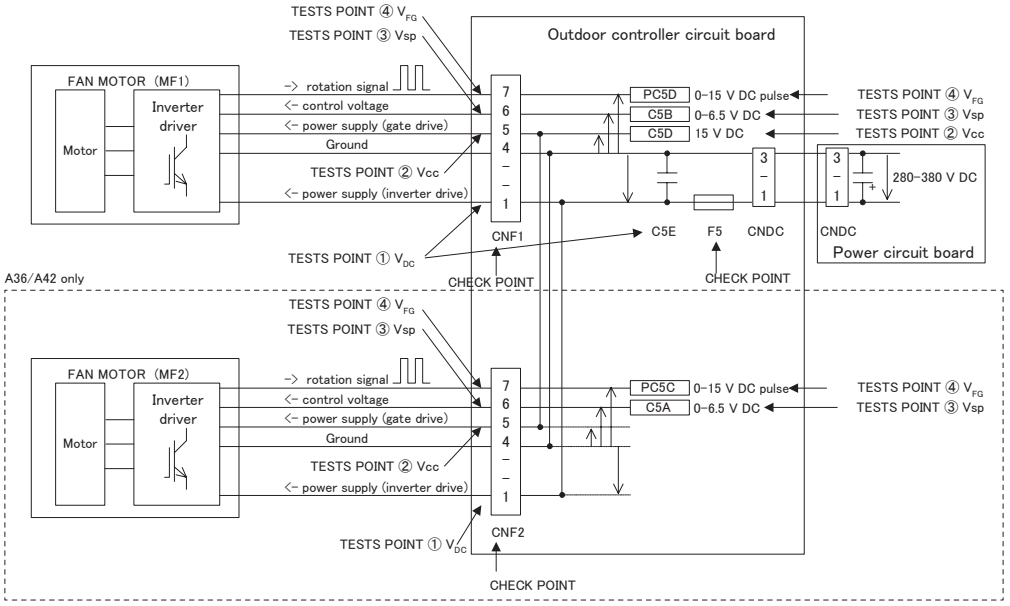
10-6-5. Check method of DC fan motor (fan motor/outdoor controller circuit board)

① Notes
- · High voltage is applied to the connector (CNF1, 2) for the fan motor. Pay attention to the service.
- · Do not pull out the connector (CNF1, 2) for the motor with the power supply on. (It causes trouble of the outdoor multi controller circuit board and fan motor.)

② Self check

Symptom: The outdoor fan cannot rotate.





- · The inverter control P.C. board is built in the fan motor of this outdoor unit.
- · When F5 that is on controller board is opened, change the fan motor and outdoor controller board at the same time (F5 is impossible to change).
- · It is abnormal when the abnormality is detected from either both fan motors or only one side.

10-7. HOW TO CHECK THE COMPONENTS

<Thermistor feature chart>

Low temperature thermistors

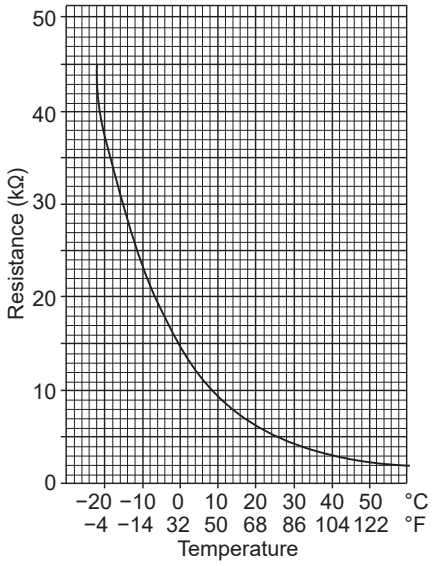
- Thermistor <Liquid> (TH3)
- Thermistor <2-phase pipe> (TH6)
- Thermistor <Ambient> (TH7)
- Thermistor <Suction> (TH32)

Thermistor R0 = 15 kΩ ± 3%
B constant = 3480 ± 1%

t (°C): $R_t = 15\exp\{3480(\frac{1}{273+t} - \frac{1}{273})\}$

T (°F): $R_T = 15\exp\{3480(\frac{1}{273+(T-32)/1.8} - \frac{1}{273})\}$

32°F [0°C]	15 kΩ	86°F [30°C]	4.3 kΩ
50°F [10°C]	9.6 kΩ	104°F [40°C]	3.0 kΩ
68°F [20°C]	6.3 kΩ		
77°F [25°C]	5.2 kΩ		



Medium temperature thermistor

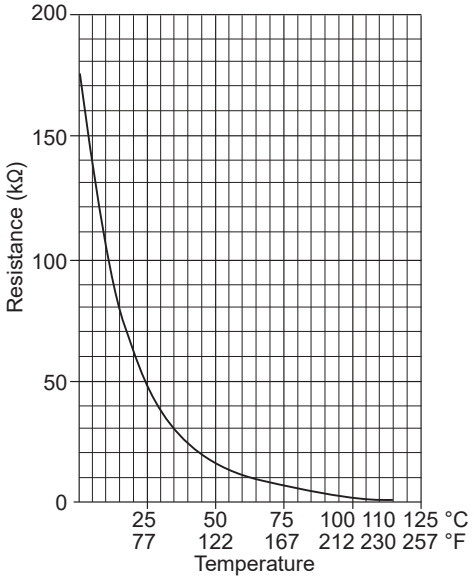
- Thermistor <Heat sink> (TH8)

Thermistor R50 = 17 kΩ ± 2%
B constant = 4150 ± 3%

t (°C): $Rt = 17\exp\{4150(\frac{1}{273+t} - \frac{1}{323})\}$

T (°F): $R_T = 17\exp\{4150(\frac{1}{273+(T-32)/1.8} - \frac{1}{323})\}$

32°F [0°C]	180 kΩ
77°F [25°C]	50 kΩ
122°F [50°C]	17 kΩ
158°F [70°C]	8 kΩ
194°F [90°C]	4 kΩ



High temperature thermistor

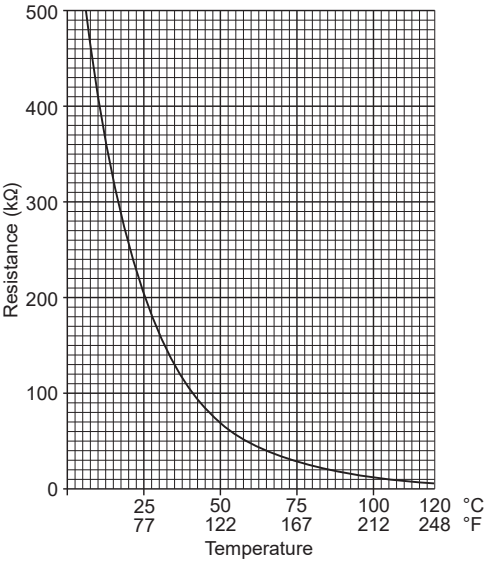
- Thermistor <Comp. surface> (TH33)
- Thermistor <Discharge> (TH4)

Thermistor R120 = 7.465 kΩ ± 2%
B constant = 4057 ± 2%

t (°C): $Rt = 7.465\exp\{4057(\frac{1}{273+t} - \frac{1}{393})\}$

T (°F): $R_T = 7.465\exp\{4057(\frac{1}{273+(T-32)/1.8} - \frac{1}{393})\}$

68°F [20°C]	250 kΩ	158°F [70°C]	34 kΩ
86°F [30°C]	160 kΩ	176°F [80°C]	24 kΩ
104°F [40°C]	104 kΩ	194°F [90°C]	17.5 kΩ
122°F [50°C]	70 kΩ	212°F [100°C]	13.0 kΩ
140°F [60°C]	48 kΩ	230°F [110°C]	9.8 kΩ

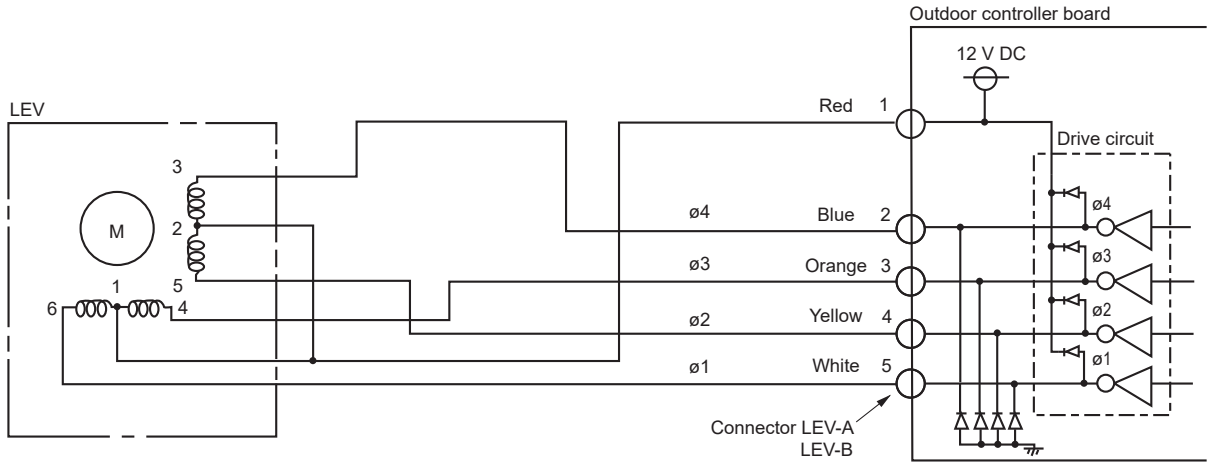


Linear expansion valve (A12, 18, 24, 30)

(1) Operation summary of the linear expansion valve

• Linear expansion valve opens/closes through stepping motor after receiving the pulse signal from the outdoor controller board.
• Valve position can be changed in proportion to the number of pulse signal.

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



<Output pulse signal and the valve operation>

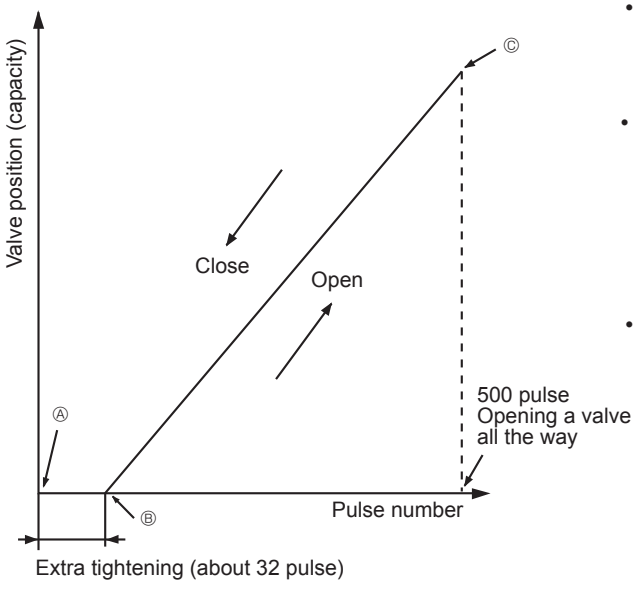
Output (Phase)	Output							
	1	2	3	4	5	6	7	8
ø1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
ø2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
ø3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
ø4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

The output pulse shifts in the following order.

Opening a valve: 8 → 7 → 6 →5 → 4 → 3 → 2 → 1 → 8
Closing a valve: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1

• When linear expansion valve operation stops, all output phases become OFF.

(2) Linear expansion valve operation



• When the power is turned on, 700 pulse closing valve signal will be sent till it goes to Ⓐ point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)

• When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve; however, when the pulse number moves from Ⓑ to Ⓐ or when the valve is locked, sound can be heard than normal situation.
No sound is heard when the pulse number moves from Ⓑ to Ⓐ in case coil is burn out or motor is locked by open-phase.

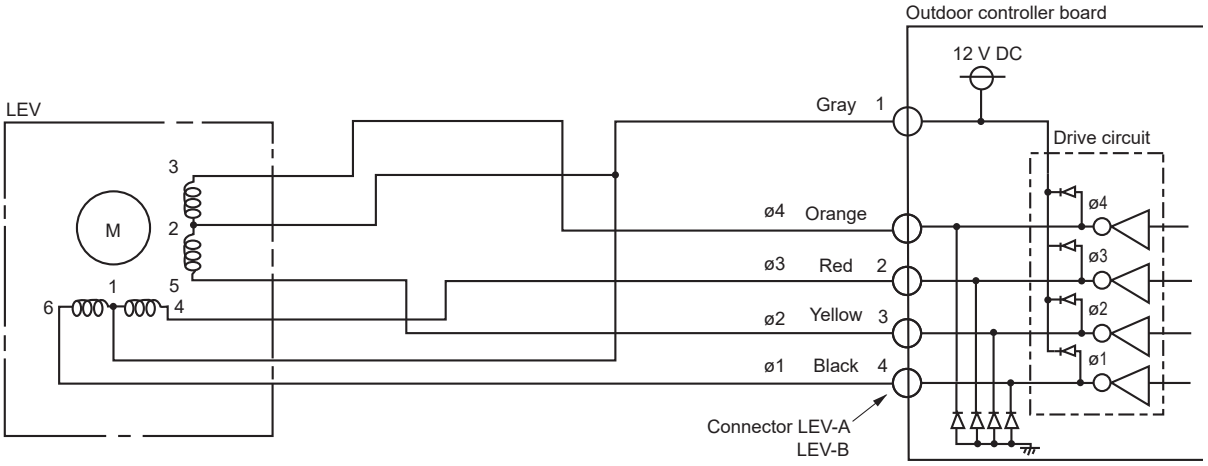
• Sound can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

Linear expansion valve (A36, 42)

(1) Operation summary of the linear expansion valve

• Linear expansion valve opens/closes through stepping motor after receiving the pulse signal from the outdoor controller board.
• Valve position can be changed in proportion to the number of pulse signal.

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



<Output pulse signal and the valve operation>

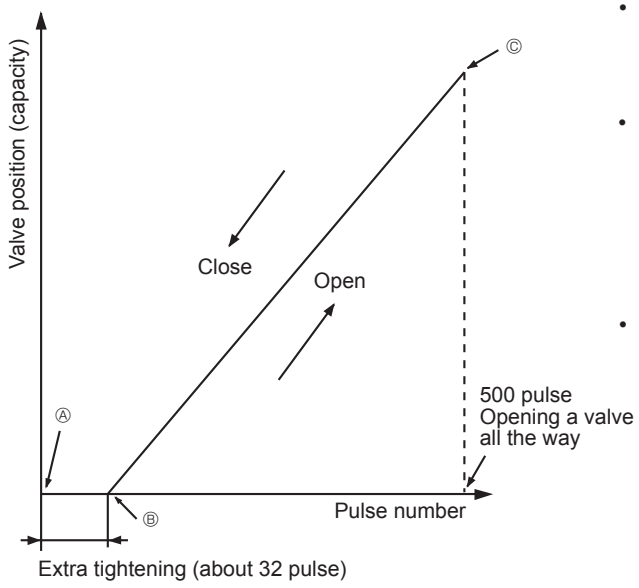
Output (Phase)	Output							
	1	2	3	4	5	6	7	8
ø1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
ø2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
ø3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
ø4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

The output pulse shifts in the following order.

Opening a valve: 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8
Closing a valve: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1

- When linear expansion valve operation stops, all output phases become OFF.

(2) Linear expansion valve operation

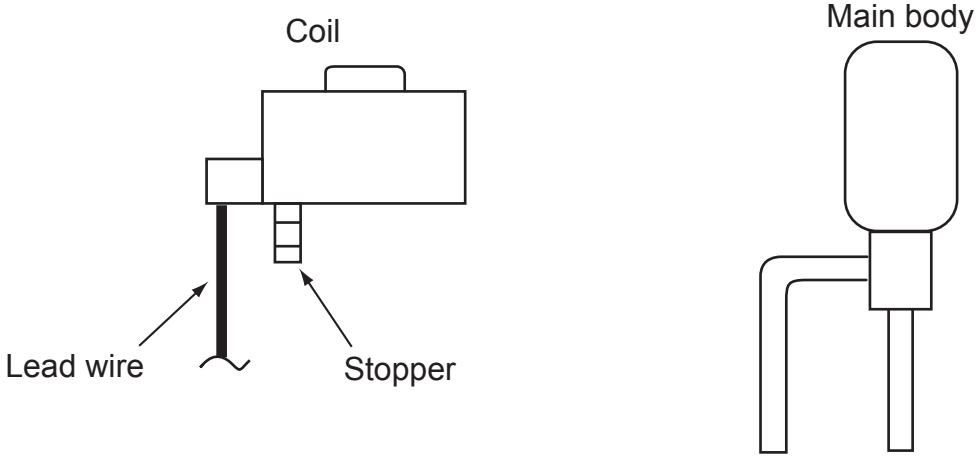


- When the power is turned on, 700 pulse closing valve signal will be sent till it goes to Ⓐ point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)
- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve; however, when the pulse number moves from Ⓑ to Ⓐ or when the valve is locked, sound can be heard than normal situation.
  No sound is heard when the pulse number moves from Ⓑ to Ⓐ in case coil is burn out or motor is locked by open-phase.
- Sound can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

(3) How to attach and detach the coil of linear expansion valve (A12, 18, 24, 30)

<Composition>

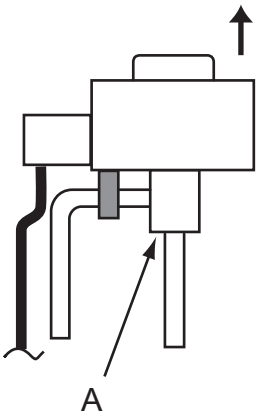
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and detach the coil by pulling it upward.

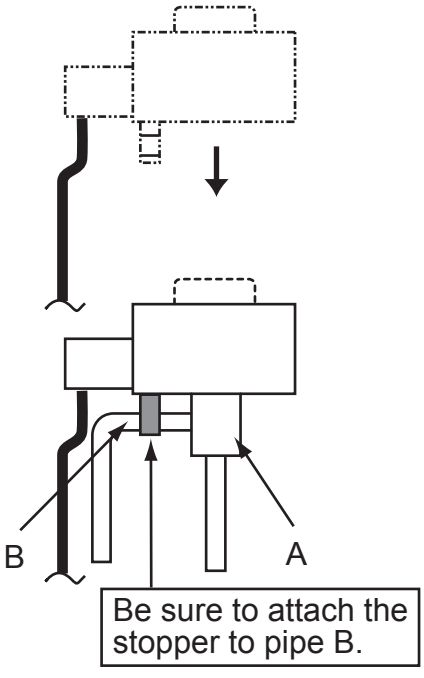
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<How to attach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and attach the coil by inserting it downward into the main body. Then securely attach the coil stopper to pipe B. (At this time, be careful that stress is not added to lead wire and main body is not wound by lead wire.) If the stopper is not firmly attached to pipe B, coil may be detached from the main body and that can cause defective operation of linear expansion valve.

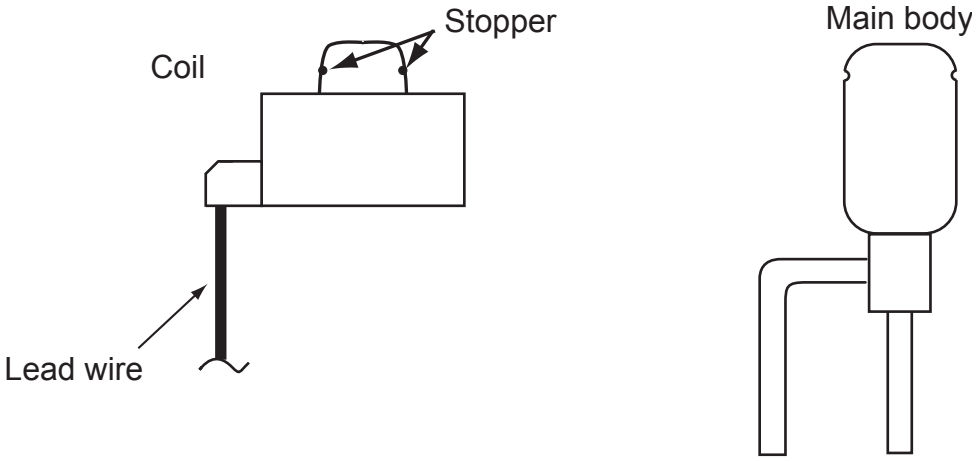
To prevent piping stress, be sure to attach the coil holding the main body of linear expansion valve firmly. Otherwise pipe may break.



(4) How to attach and detach the coil of linear expansion valve (A36, 42)

<Composition>

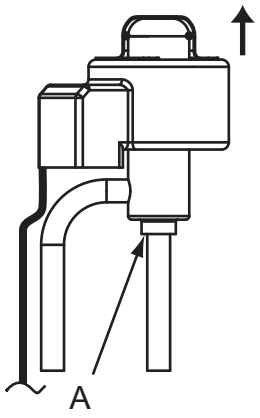
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and detach the coil by pulling it upward.

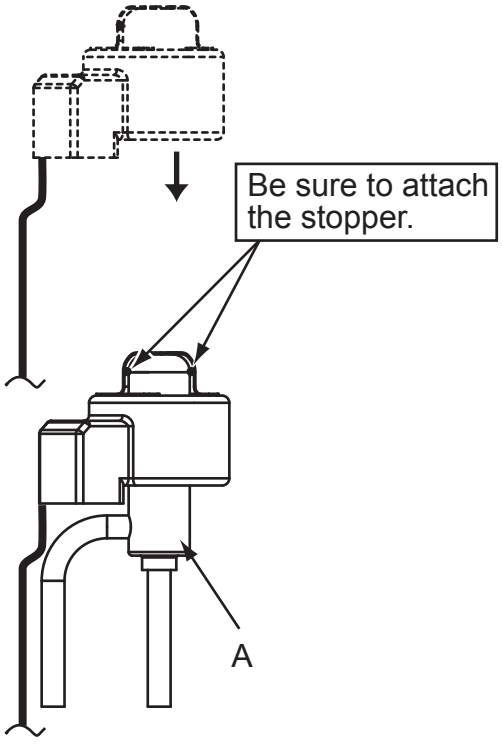
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<How to attach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and attach the coil by inserting it downward into the main body. Then securely attach the coil stopper to main body. (At this time, be careful that stress is not added to lead wire and main body is not wound by lead wire.) If the stopper is not firmly attached to main body, coil may be detached from the main body and that can cause defective operation of linear expansion valve.

To prevent piping stress, be sure to attach the coil holding the main body of linear expansion valve firmly. Otherwise pipe may break.



10-8. EMERGENCY OPERATION

(1) When the check codes shown below are displayed on outdoor unit or microprocessor for wired remote controller or indoor unit has a failure, but no other problems are found, emergency operation will be available by setting the emergency operation switch (SWE) to ON and short-circuiting the connector (CN31) on outdoor controller board.

When following abnormalities occur, emergency operation will be available.

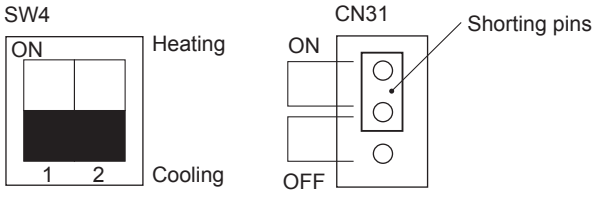
Check code	Inspected content
U4	Open/short of pipe thermistor (TH3/TH6)
E8	Indoor/outdoor unit communication error •Signal receiving error (Outdoor unit)
E9	Indoor/outdoor unit communication error •Transmitting error (Indoor unit)
E0–7	Communication error other than outdoor unit
Ed	Communication error between outdoor controller board and M-NET board (Serial communication error)

(2) Check the following items and cautions for emergency operation

① Make sure that there is no abnormality in outdoor unit other than the above abnormalities. (Emergency operation will not be available when check codes other than the above are indicated.)
② For emergency operation, it is necessary to set the emergency operation switch (SWE) on indoor controller board. Refer to the electrical wiring diagram of indoor unit for how to set the indoor unit.)
③ During emergency operation, the air-conditioner will continuously be operated by supplying power and stopping it: It cannot be turned on or off by remote control, and temperature control is not possible.
④ Do not perform emergency heating operation for an extended period of time: If the outdoor unit starts defrosting during this period, cold air will blow out from the indoor unit.
⑤ Do not perform emergency cooling operation for more than 10 hours: Neglecting this could result in freezing the heat exchanger in indoor unit.

(3) Emergency operation procedure

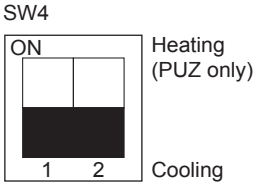
① Turn the main power supply off.
② Turn on the emergency operation switch (SWE) on indoor controller board.
③ Set the shorting pins of emergency operation connector (CN31) on outdoor controller board to ON.
④ Use SW4-2 on outdoor controller board to set the operation mode (cooling or heating). (SW4-1 is not used.)
⑤ Turning the main power supply on will start the emergency operation.



(4) Releasing emergency operation

① Turn the main power supply off.
② Set the emergency operation switch (SWE) on indoor controller board to OFF.
③ Set the shorting pins of emergency operation connector (CN31) on outdoor controller board to OFF.
④ Set SW4-2 on outdoor controller board as shown in the right.

Note: If shorting pins are not set on emergency operation connector (CN31), the setting remains OFF.



(5) Operation data during emergency operation

During emergency operation, no communication is performed with the indoor unit, so the data items needed for operation are set to the following values:

Operation data	Operation mode		Remarks
	COOL	HEAT	
Intake temperature (TH1)	81°F [27°C]	69°F [20.5°C]	
Indoor fluid pipe temperature (TH2)	41°F [5°C]	113°F [45°C]	
Indoor 2-phase pipe temperature (TH5)	41°F [5°C]	122°F [50°C]	
Set temperature	77°F [25°C]	72°F [22°C]	
Outdoor liquid pipe temperature (TH3)	113°F [45°C]	41°F [5°C]	*1
Outdoor 2-phase pipe temperature (TH6)	122°F [50°C]	41°F [5°C]	*1
Outdoor air temperature (TH7)	95°F [35°C]	45°F [7°C]	*1
Outdoor suction (TH32)	41°F [5°C]	41°F [5°C]	*2
Temperature difference code (intake temperature−set temperature) (ΔTj)	5	5	
Discharge super heat (SHd)	54°F [30°C]	54°F [30°C]	*2
Sub-cool (SC)	9°F [5°C]	9°F [5°C]	*2

*1 If the thermistor temperature data is normal (not open/short), that data is loaded into the control as valid data. When the unit enters emergency operation and TH values are mismatched, set the thermistors to open/short. And the unit runs emergency operation with the values listed above.

*2 If one thermistor is set to open/short, the values of SHd/SC will be different from the list above.

[Example] When liquid temperature thermistor (TH3) has an open or short circuit.

Thermistor	COOL	HEAT
TH3	113°F [45°C]	41°F [5°C]
TH6	Ta	Tb
	Regard normal figure as effective data.	
TH4	Tc	Td
	Regard normal figure as effective data.	
TH5	41°F [5°C]	122°F [50°C]
TH2	41°F [5°C]	113°F [45°C]
TH33	Regard normal figure as effective data.	

Discharge superheat (SHd)
Cooling = TH4−TH6 = Tc−Ta
Heating = TH4−TH5 = Td−122°F [50°C]
Degree of subcooling (SC)
Cooling = TH6−TH3 = Ta−113°F [45°C]
Heating = TH5−TH2 = 50°C−45°C = 5°C
or
= 122°F−113°F = 9˚F

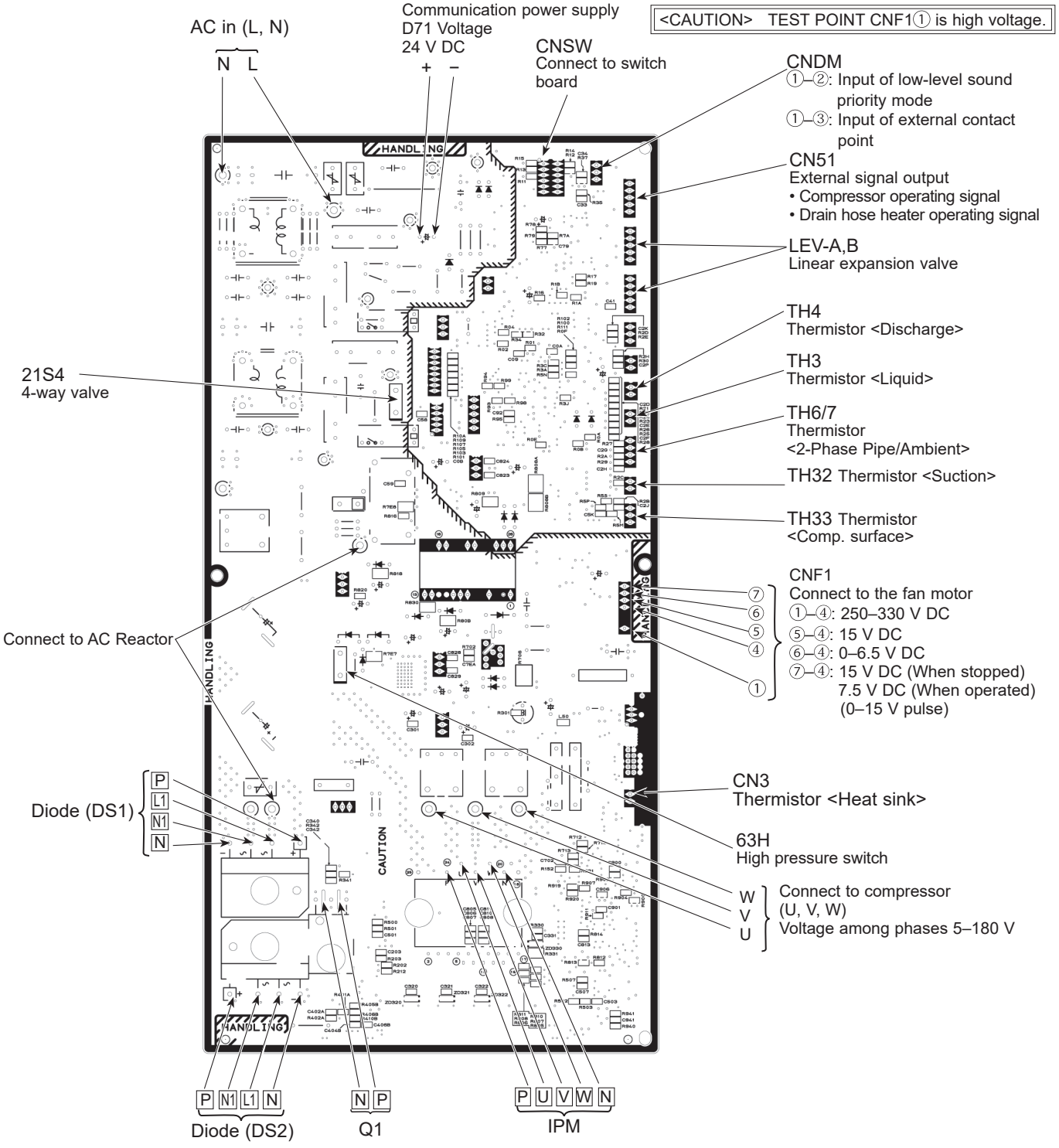
10-9. TEST POINT DIAGRAM
Outdoor controller circuit board
PUZ-A12NKA7
PUZ-A18NKA7
PUY-A12NKA7
PUY-A18NKA7
PUZ-A12NKA7-BS
PUZ-A18NKA7-BS
PUY-A12NKA7-BS
PUY-A18NKA7-BS

Note: PUZ-A12//18NKA checks solder side.

Brief Check of POWER MODULE
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).

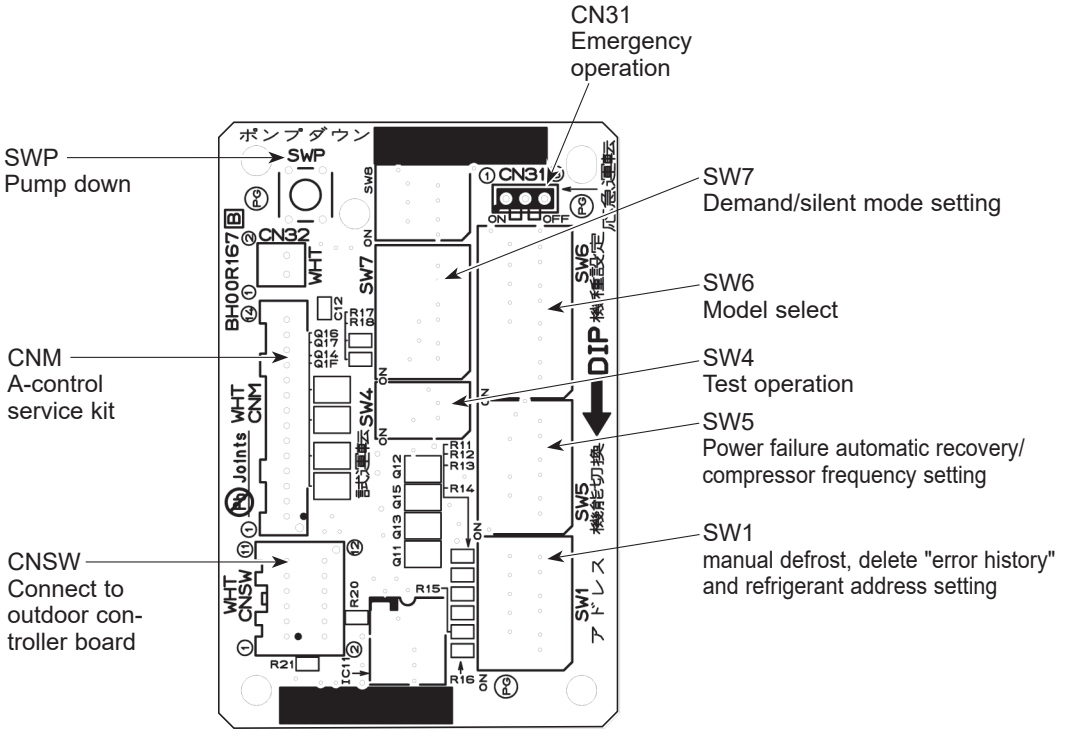
1. Check of Diode (DS1, DS2)
   P - L1, P - N1, N - L1, N - N1
2. Check of Q1
   P - N
3. Check of IPM
   P - N , P - U , P - V , P - W , N - U , N - V , N - W
   P-N keeps being shirt-circuited until the smoothing condenser is charged by a multimeter.

Note: The marks, P, N, L, L1, N1, U, V and W shown in the diagram are not actually printed on the board.



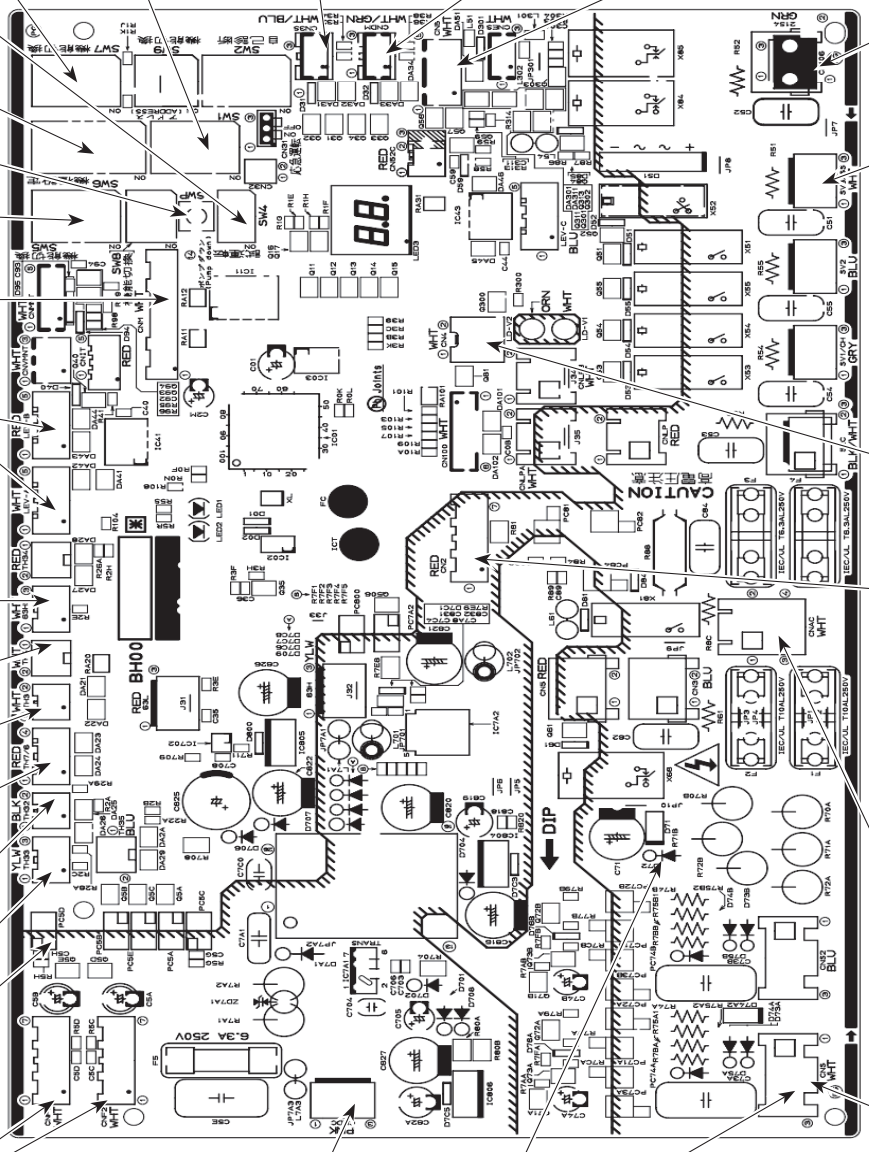
Switch board

PUZ-A12NKA7	**PUZ-A18NKA7**	**PUY-A12NKA7**	**PUY-A18NKA7**
PUZ-A12NKA7-BS	**PUZ-A18NKA7-BS**	**PUY-A12NKA7-BS**	**PUY-A18NKA7-BS**



Outdoor controller circuit board

PUZ-A24NHA7	**PUZ-A30NHA7**	**PUZ-A36NKA7**	**PUZ-A42NKA7**
PUZ-A24NHA7-BS	**PUZ-A30NHA7-BS**	**PUZ-A36NKA7-BS**	**PUZ-A42NKA7-BS**
PUY-A24NHA7	**PUY-A30NHA7**	**PUY-A36NKA7**	**PUY-A42NKA7**
PUY-A24NHA7-BS	**PUY-A30NHA7-BS**	**PUY-A36NKA7-BS**	**PUY-A42NKA7-BS**



SW7
Demand control setting
Model select

SW1
Manual defrost, detect history record reset, refrigerant address

CN3S
Water heater

CNDM
① to ②: Input of low-level sound priority mode
① to ③: Input of external contact point

CN51
Water heater Comp protect

SW4
Test operation

SW6
Model select

SWP
Pump down

SW5
Function switch
Model select

CNM
Connect to A control service tool

LEV-A,B
Linear expansion valve

63HS
High pressure switch

TH4
Thermistor <Discharge>

TH3
Thermistor <Liquid>

TH7/6
Thermistor <Outdoor/Outdoor 2-phase pipe>

TH32
Thermistor <Suction>

TH33
Thermistor <Comp. surface>

V_{FG}
(Voltage between right pins of PC5D, pin 3 and pin 4)
(Same as (CNF1⑦ (+)–④(−))

21S4
4-way valve

SV3
Solenoid valve

CN4
Transmission to outdoor power circuit board (CN4)

CN2
Connect to the outdoor power circuit board (CN2)
①–⑤: Reception from power circuit board
②–⑤: Zero cross signal (0–5 V DC)
③,④: Not used
⑥–⑤: 15 V DC
⑦–⑤: 15 V DC

CNAC
② to ④: Power supply for outdoor controller circuit board (230 V AC)
① to ③: Power supply for indoor and outdoor unit connection wire (230 V AC)

CNS
S1-S2: 230 V AC

CNF1, CNF2 (CNF2: A36, 42 only)
Connect to the fan motor
①-④: 280–380 V DC
⑤-④: 15 V DC
⑥-④: 0–6.5 V DC
⑦-④: 15 V DC (When stopped)
7.5 V DC (When operated, 0–15 V pulse)

CNDC
280–380 V DC
(①+, ③−)
Outdoor power circuit board

\+ − (+: D72 Cathode, −: CNS-A 2pin)
Communication power supply
DC Voltage
24 V DC

Outdoor power circuit board

PUZ-A24NHA7
PUZ-A30NHA7
PUZ-A24NHA7-BS
PUZ-A30NHA7-BS
PUY-A24NHA7
PUY-A30NHA7
PUY-A24NHA7-BS
PUY-A30NHA7-BS

Brief Check of POWER MODULE
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).

1. Check POWER MODULE
   ① Check of DIODE circuit

R	–	P1	S	–	P1	R	–	N1	S	–	N1

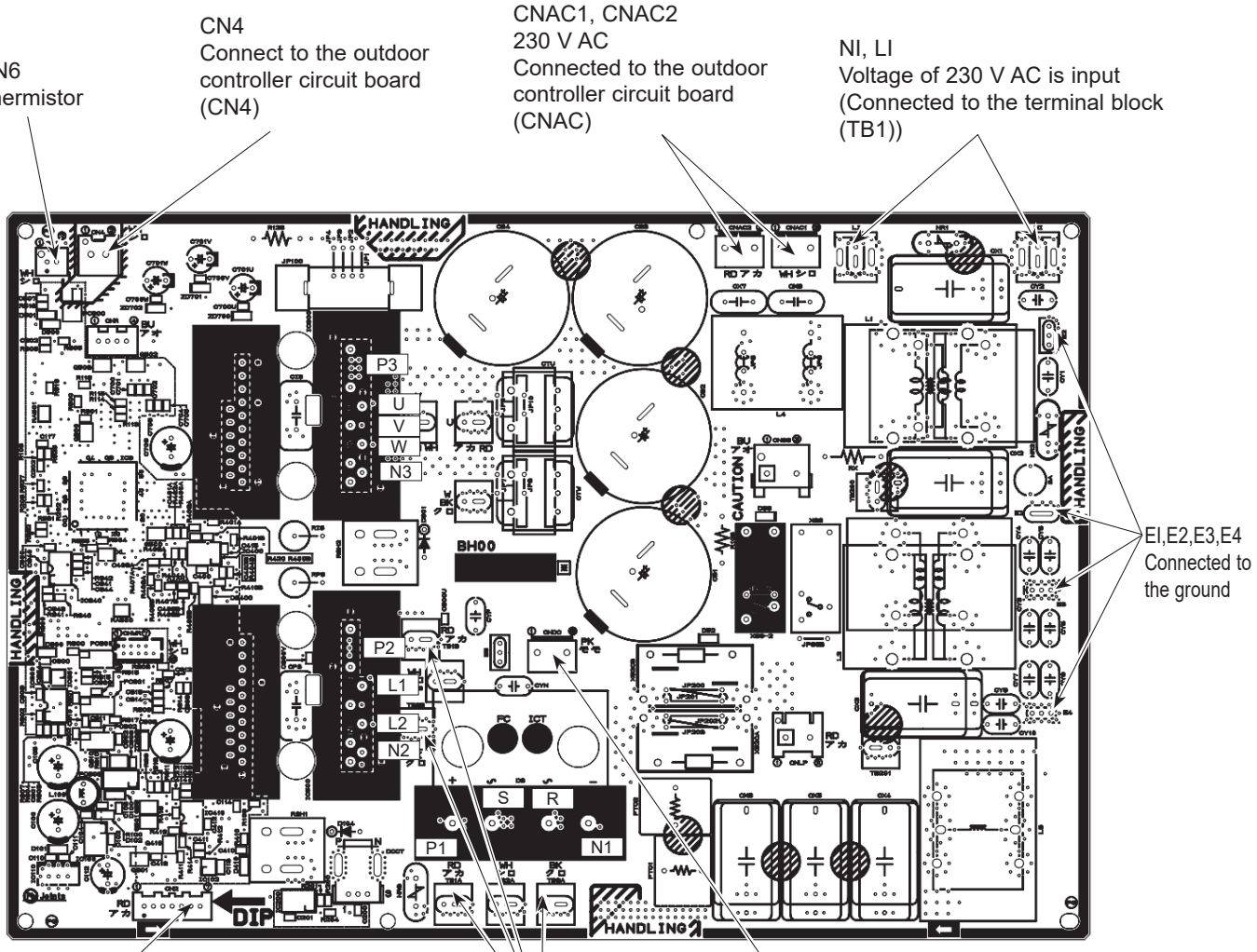
   ② Check of IGBT circuit

P2	–	L1	P2	–	L2	N2	–	L1	N2	–	L2

   ③ Check of INVERTER circuit

P3	–	U	,	P3	–	V	,	P3	–	W	,	N3	–	U	,	N3	–	V	,	N3	–	W

Note: The marks R, S, L1, L2, P1, N1, U, V and W show in the diagram are not actually printed on the board.



Outdoor power circuit board

PUZ-A36NKA7
PUZ-A42NKA7
PUZ-A36NKA7-BS
PUZ-A42NKA7-BS
PUY-A36NKA7
PUY-A42NKA7
PUY-A36NKA7-BS
PUY-A42NKA7-BS

Brief Check of POWER MODULE
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).

1. Check POWER MODULE
   ① Check of DIODE circuit

R	–	P1	S	–	P1	R	–	N1	S	–	N1

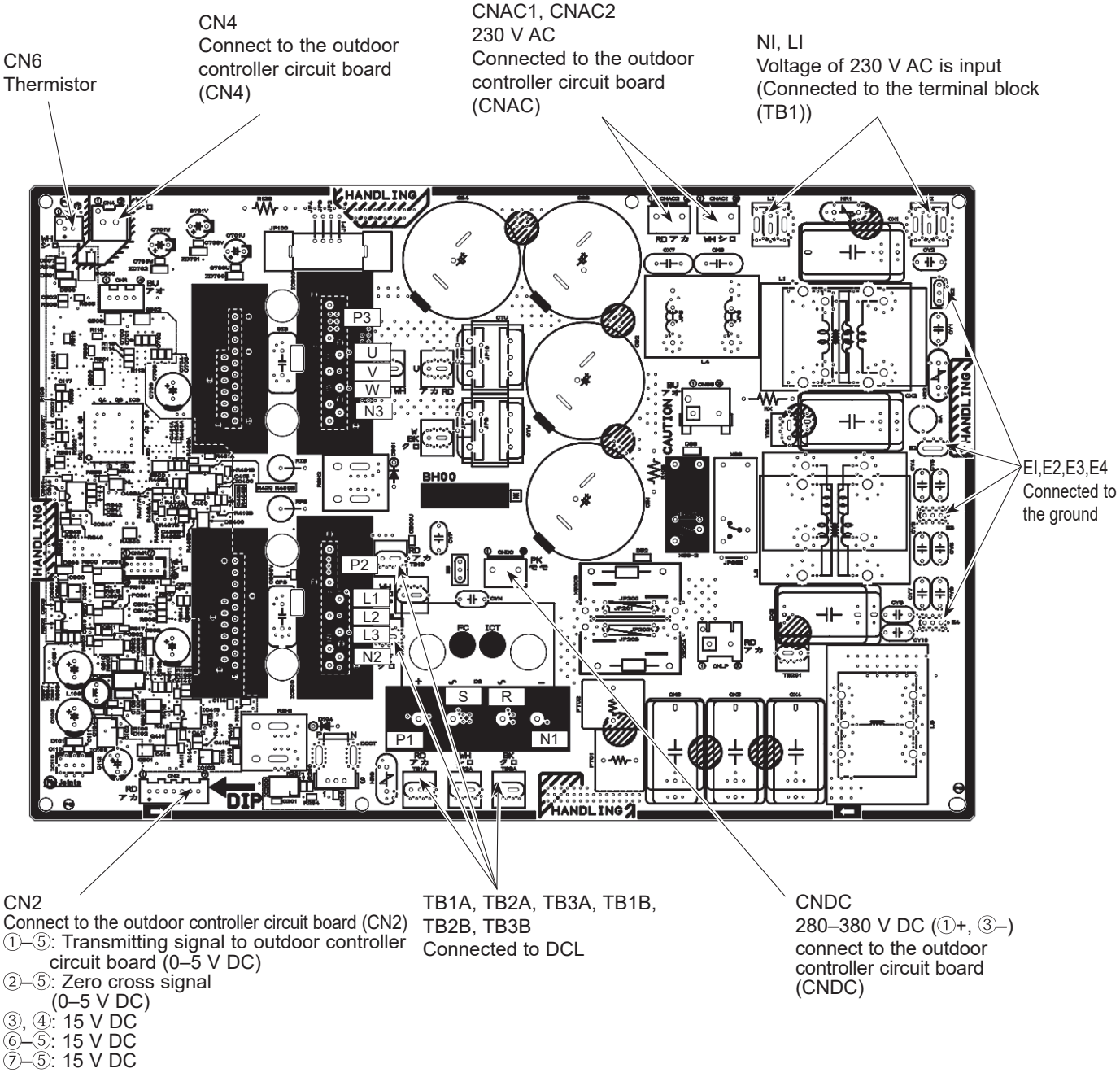
   ② Check of IGBT circuit

P2	–	L1	P2	–	L2	P2	–	L3	N2	–	L1	N2	–	L2	N2	–	L3

   ③ Check of INVERTER circuit

P3	–	U	,	P3	–	V	,	P3	–	W	,	N3	–	U	,	N3	–	V	,	N3	–	W

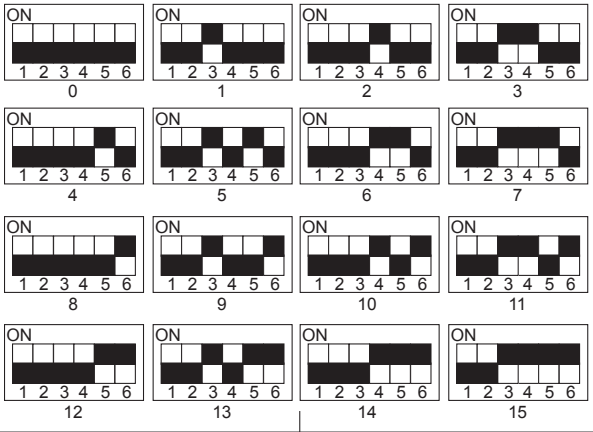
Note: The marks R, S, L1, L2, L3, P1, N1, U, V and W show in the diagram are not actually printed on the board.



10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS

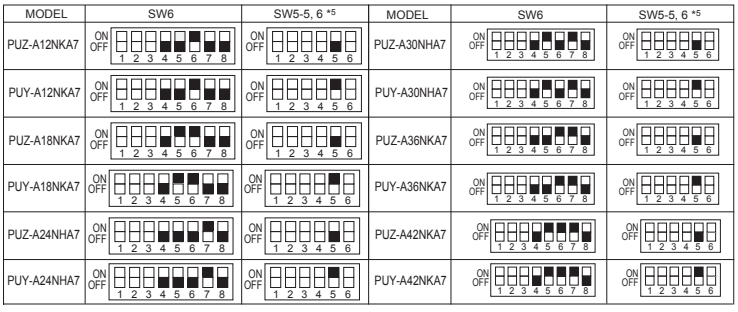
(1) Function of switches

The black square (■) indicates a switch position.

Type of switch	Switch	No.	Function	Action by the switch operation		Effective timing
				ON	OFF	
DIP switch	SW1	1	Manual defrost *1	Start	Normal	When compressor is operating in heating operation. *1
		2	Abnormal history clear	Clear	Normal	Off or operating
		3	Refrigerant address setting			When power supply ON
		4				
		5				
		6				
	SW4	1	Test run	Operating	OFF	Under suspension
		2	Test run mode setting	Heating	Cooling	
	SW8	1	No function	—	—	—
		2	No function	—	—	—
		3	No function	—	—	—
Push switch	SWP		Pump down	Start	Normal	Under suspension

*1 Manual defrost should be done as follows.
①Change the DIP SW1-1 on the outdoor controller board from OFF to ON.
②Manual defrost will start by the above operation 1 if all these conditions written below are satisfied.
· Heat mode setting
· 10 minutes have passed since compressor started operating or previous manual defrost is finished.
· Pipe temperature is less than or equal to 46°F [8°C].
Manual defrost will finish if certain conditions are satisfied.
Manual defrost can be done if above conditions are satisfied when DIP SW1-1 is changed from OFF to ON.
After DIP SW1-1 is changed from OFF to ON, there is no problem if DIP SW1-1 is left ON or changed to OFF again. This depends on the service conditions.

Continue to the next page.

Type of Switch	Switch	No.	Function	Action by the switch operation		Effective timing
				ON	OFF	
DIP switch	SW5	1	No function	—	—	—
		2	Power failure automatic recovery *2	Auto recovery	No auto recovery	When power supply ON
		3,4,6	No function	—	—	—
	SW7 *4	1	Mode select *3	Demand function	Low noise mode	Always
		2	No function	—	—	—
		3	Max Hz setting (cooling)	Max Hz (cooling) × 0.8	Normal	Always
		4	Max Hz setting (heating)	Max Hz (heating) × 0.8	Normal	Always
		5	No function	—	—	—
		6	Defrost setting	For high humidity	Normal	Always
	SW9	1	No function	—	—	—
		2	Function switch	Valid	Normal	Always
		3,4	No function	—	—	—
	SW6	1	No function			
		2				
		3				
		4	Model select			
		5				
		6				
		7				
		8				
	SW5	5				

The black square (■) indicates a switch position.

*2 Power failure automatic recovery can be set by either remote controller or this DIP SW. If one of them is set to ON, Auto recovery activates. Please set Auto recovery basically by remote controller because not all units have DIP SW. Please refer to the indoor unit installation manual.

*3 SW7-1 is setting change over of Demand/Low noise. It is effective only in the case of external input. (Local wiring is necessary. Refer to the next page: Special function)

*4 Please do not use SW7-3 to 6 usually. Trouble might be caused by the usage condition.

*5 SW6-1 to 3, SW5-1 to 4, 6: Function switch

(2) Function of connector

Type	Connector	Function	Action by open/ short operation		Effective timing
			Short	Open	
Connector	CN31	Emergency operation	Start	Normal	When power supply ON

(3) Special function

Low-level noise priority mode / Demand control function (Field wiring)

The low-level noise priority mode and the demand control function are available by connection of a commercially available timer or ON-OFF contactor to the CNDM connector (an optional demand control input).

• In the low-level noise priority mode, the outdoor unit operation noise decreases by approx. 3 to 4 dB compared to usual

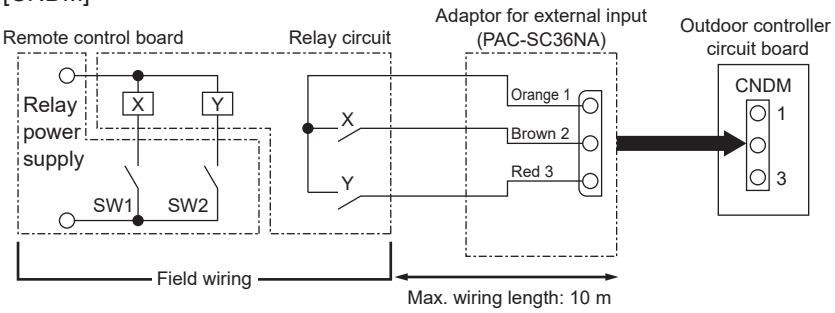
• The demand control function decreases the power consumption by 0 to 100% compared to usual.

Notes:

1. The performance may decrease depending on the outdoor temperature or other conditions.
2. To protect the unit from failure, it may not enter to the low-level noise priority mode during cooling operation and at high ambient temperature.

Wiring example

[CNDM]



SW1: Refer to the table below.
SW2: Refer to the table below.
X, Y: Relay (Contact rating: 15 V DC 0.1 A or more; Min. applied load: 5 V DC 1 mA or less)

1) Wire a circuit as shown above using an adaptor for external input (PAC-SC36NA).
2) Use SW7-1 on the outdoor controller circuit board to select the low-level noise priority mode or the demand control function.
3) In the demand control function, set the maximum power consumption (power rating ratio) by combination of two switch settings as shown in the table below.

	Outdoor controller circuit board SW7-1	SW1	SW 2	Function
Low level sound priority mode	OFF	ON	—	Low level sound priority mode activated
Demand control function	ON	OFF	OFF	100% (Normal)
		ON	OFF	75%
		ON	ON	50%
		OFF	ON	0% (Stop)

<Display function of inspection for outdoor unit>

The blinking patterns of both LED1 (green) and LED2 (red) indicate the types of abnormality when it occurs. Types of abnormality can be indicated in details by connecting an optional part 'A-Control Service Tool (PAC-SK52ST)' to connector CNM on outdoor controller board.

[Display]

(1)Normal condition

Unit condition	Outdoor controller board		A-Control Service Tool	
	LED1 (Green)	LED2 (Red)	Check code	Indication of the display
When the power is turned on	Lit	Lit	—⇔—	Alternately blinking display
When unit stops	Lit	Not lit	00, etc.	Operation mode
When compressor is warming up	Lit	Not lit	08, etc.	
When unit operates	Lit	Lit	C5, H7 etc.	

(2) Abnormal condition

Indication		Error			
Outdoor controller board		Contents	Check code*1	Inspection method	Detailed reference page
LED (Green)	LED2 (Red)				
1 blinking	2 blinking	Connector (63H) is open.	F5	① Check if connector (63H) on the outdoor controller board is not disconnected. ② Check continuity of pressure switch (63H) by multimeter.	P.32
	4 blinking	Abnormality of indoor controller board	Fb	① Replace indoor controller board.	*2
2 blinking	1 blinking	Miswiring of indoor/outdoor unit connecting wire, excessive number of indoor units (4 units or more)	—	① Check if indoor/outdoor connecting wire is connected correctly. ② Check if 4 or more indoor units are connected to outdoor unit. ③ Check if noise entered into indoor/outdoor connecting wire or power supply. ④ Re-check error by turning off power, and on again.	P.32 (EA)
		Miswiring of indoor/outdoor unit connecting wire (reversed wiring or disconnection)	—		P.32 (Eb)
		Startup time over	—		P.32 (EC)
	2 blinking	Indoor/outdoor unit communication error signal receiving error) is detected by indoor unit.	E6	① Check if indoor/outdoor connecting wire is connected correctly. ② Check if noise entered into indoor/outdoor connecting wire or power supply. ③ Check if noise entered into indoor/outdoor controller board. ④ Re-check error by turning off power, and on again.	*2
		Indoor/outdoor unit communication error (transmitting error) is detected by indoor unit.	E7		*2
		Indoor/outdoor unit communication error (signal receiving error) is detected by outdoor unit.	—		P.37 (E8)
		Indoor/outdoor unit communication error (transmitting error) is detected by outdoor unit.	—		P.38 (E9)
	3 blinking	Remote controller signal receiving error is detected by remote controller.	E0	① Check if connecting wire of indoor unit or remote controller is connected correctly. ② Check if noise entered into transmission wire of remote controller. ③ Re-check error by turning off power, and on again.	P.37
		Remote controller transmitting error is detected by remote controller.	E3		P.37
		Remote controller signal receiving error is detected by indoor unit.	E4		P.37
		Remote controller transmitting error is detected by indoor unit.	E5		P.37
	4 blinking	Check code is not defined.	EF	① Check if remote controller is MA remote controller(PAR-21MAA). ② Check if noise entered into transmission wire of remote controller. ③ Check if noise entered into indoor/outdoor connecting wire. ④ Re-check error by turning off power, and on again.	P.38
		Abnormal refrigerant circuit	PL	① Be sure to replace the 4-way valve. ② Check refrigerant pipes for disconnection or leakage. ③ After the recovery of refrigerant, vacuum dry the whole refrigerant circuit. ④ Refer to "10-6. HOW TO CHECK THE PARTS". ⑤ Check refrigerant circuit for operation.	P.39
		Float switch connector open (FS)	P4	① Check if connector (CN4F) on indoor controller board is not disconnected. ② Measure resistance value among terminals on drain pump using a multimeter. ③ Check if drain pump works. ④ Check drain function.	*2

*1 Check code displayed on remote controller

*2 Refer to the indoor unit service manual.

Continue to the next page.

Indication		Error			
Outdoor controller board		Contents	Check code*1	Inspection method	Detailed reference page
LED (Green)	LED2 (Red)				
2 blinking	5 blinking	Serial communication error <Communication between outdoor controller board and outdoor power board> <Communication between outdoor controller board and M-NET P.C. board>	Ed	① Check if connector (CN4) on outdoor controller board and outdoor power board is not disconnected. ② Check if there is poor connection of connector on outdoor controller board(CNMNT and CNVMNT). ③ Check M-NET communication signal.	P.38
		Communication error of M-NET system	A0–A8		P.39–P.41
3 blinking	1 blinking	Abnormality of shell thermistor (TH32) and discharging temperature (TH4)	U2	① Check if stop valves are open. ② Check if connectors (TH4, TH33, LEV-A, and LEV-B) on outdoor controller board are not disconnected. ③ Check if unit is filled with specified amount of refrigerant. ④ Measure resistance values among terminals on indoor valve and outdoor linear expansion valve using a multimeter.	P.33
		Abnormality of superheat due to low discharge temperature	U7		
	2 blinking	Abnormal high pressure (High pressure switch 63H operated.)	U1	① Check if indoor/outdoor units have a short cycle on their air ducts. ② Check if connector (63H) on outdoor controller board is not disconnected. ③ Check if heat exchanger and filter is not dirty. ④ Measure resistance values among terminals on linear expansion valve using a multimeter.	P.33
		Abnormal low pressure (Low pressure switch 63L worked.)	UL		
	3 blinking	Abnormality of outdoor fan motor rotational speed	U8	① Check the outdoor fan motor. ② Check if connector (TH3) (T_{63HS}) on outdoor controller board is disconnected.	P.34
		Protection from overheat operation(TH3)(T_{63HS})	Ud		
	4 blinking	Compressor overcurrent breaking (Startup locked)	UF	① Check if stop valves are open. ② Check looseness, disconnection, and reversed connection of compressor wiring.	P.36
		Compressor overcurrent breaking	UP	③ Measure resistance values among terminals on compressor using a multimeter ④ Check if outdoor unit has a short cycle on its air duct.	P.36
		Abnormality of current sensor (P.B.)	UH		P.36
		Abnormality of power module	U6		P.34
	5 blinking	Open/short of discharge thermistor (TH4)	U3	① Check if connectors (TH3, TH4, TH6, TH7 and TH32) on outdoor controller board and connector (CN3) on outdoor power board are not disconnected. ② Measure resistance value of outdoor thermistors	P.34
		Open/short of outdoor thermistors (TH3, TH6, TH7, TH8, and TH33)	U4		P.34
	6 blinking	Abnormality of Heat sink temperature	U5	① Check if indoor/outdoor units have a short cycle on their air ducts. ② Measure resistance value of outdoor Heat sink thermistor(TH8).	P.34
	7 blinking	Abnormality of voltage	U9	① Check looseness, disconnection, and reversed connection of compressor wiring. ② Measure resistance value among terminals on compressor using a multimeter. ③ Check the continuity of contactor (52C). ④ Check if power supply voltage decreases. ⑤ Check the wiring of CN52C. ⑥ Check the wiring of CNAF.	P.35
4 blinking	1 blinking	Abnormality of room temperature thermistor (TH1)	P1	① Check if connectors (CN20, CN21, CN29, and CN44) on indoor controller board are not disconnected. ② Measure resistance value of indoor thermistors.	*2
		Abnormality of pipe temperature thermistor/Liquid (TH2)	P2		*2
		Abnormality of pipe temperature thermistor/Condenser-Evaporator (TH5)	P9		*2
	2 blinking	Abnormality of drain sensor (DS)	P4	① Check if connector (CN31) on indoor controller board is not disconnected.	*2
		Indoor drain overflow protection	P5	② Measure resistance value of indoor thermistors. ③ Measure resistance value among terminals on drain pump using a multimeter. ④ Check if drain pump works. ⑤ Check drain function.	*2
	3 blinking	Freezing (cooling)/overheating (heating) protection	P6	① Check if indoor unit has a short cycle on its air duct. ② Check if heat exchanger and filter is not dirty. ③ Measure resistance value on indoor and outdoor fan motors. ④ Check if the inside of refrigerant piping is not clogged.	*2
	4 blinking	Abnormality of pipe temperature	P8	① Check if indoor thermistors (TH2 and TH5) are not disconnected from holder. ② Check if stop valve is open. ③ Check reversed connection of extension pipe. (on plural units connection) ④ Check if indoor/outdoor connecting wire is connected correctly. (on plural units connection)	*2
	5 blinking	Inndoor fan motor trouble	Pb	① Check the winding of an indoor unit fan motor.	*2
—	—	Abnormality of remote controller board	E1 E2	① Replace remote controller.	P.37

*1 Check code displayed on remote controller
*2 Refer to the indoor unit service manual.

<Outdoor unit operation monitor function>
[When optional part 'A-Control Service Tool (PAC-SK52ST)' is connected to outdoor controller board (CNM)]
Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of check code by controlling DIP SW2 on 'A-Control Service Tool'.

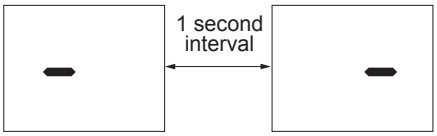
Operation indicator SW2: Indicator change of self diagnosis

The black square (■) indicates a switch position.

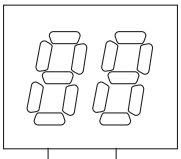
SW2 setting	Display detail	Explanation for display	Unit
ON 1 2 3 4 5 6			

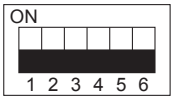
<Digital indicator LED1 working details>
(Be sure that 1 to 6 in the SW2 are set to OFF.)

(1) Display when the power supply ON.
When the power supply ON, blinking displays by turns.
Wait for 4 minutes at the longest.



(2) When the display lights. (Normal operation)
① Operation mode display





The tens digit: Operation mode

Display	Operation Model
O	OFF/FAN
C	COOLING/DRY
H	HEATING
d	DEFROSTING

The ones digit: Relay output

Display	Warming-up Compressor	Compressor	4-way valve	Solenoid valve
0	—	—	—	—
1	—	—	—	ON
2	—	—	ON	—
3	—	—	ON	ON
4	—	ON	—	—
5	—	ON	—	ON
6	—	ON	ON	—
7	—	ON	ON	ON
8	ON	—	—	—
A	ON	—	ON	—

②Display during error postponement
Postponement code is displayed when compressor stops due to the work of protection device.
Postponement code is displayed while error is being postponed.

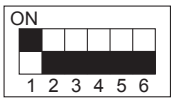
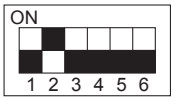
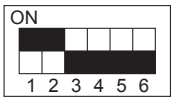
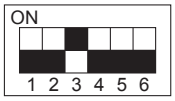
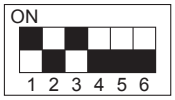
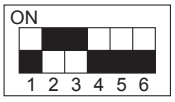
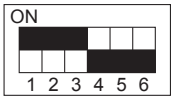
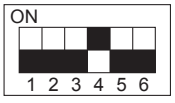
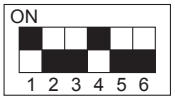
(3) When the display blinks
Inspection code is displayed when compressor stops due to the work of protection devices.

Display	Contents to be inspected (During operation)
U1	Abnormal high pressure (63H worked)
U2	Abnormal high discharge temperature, shortage of refrigerant
U3	Open/short circuit of comp. surface thermistor (TH33)
U4	Open/short of outdoor unit thermistors (TH3, TH6, TH7, TH8, and TH32)
U5	Abnormal temperature of heat sink
U6	Abnormality of power module
U8	Abnormality in outdoor fan motor.
UF	Compressor overcurrent interruption (When Comp. locked)
UH	Current sensor error
UL	Abnormal low pressure
UP	Compressor overcurrent interruption
P1–P8	Abnormality of indoor units
A0–A7	Communication error of M-NET system

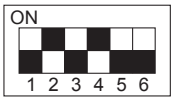
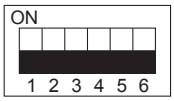
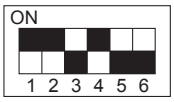
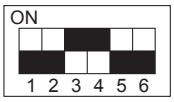
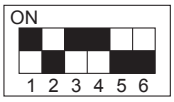
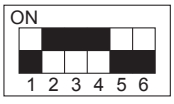
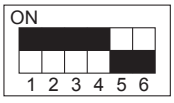
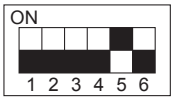
Display	Inspection unit
0	Outdoor unit
1	Indoor unit 1
2	Indoor unit 2

Display	Contents to be inspected (When power is turned on)
F3	63L connector(red) is open.
F5	63H connector(yellow) is open.
F9	2 connectors (63H) are open.
E8	Indoor/outdoor communication error (Signal receiving error) (Outdoor unit)
E9	Indoor/outdoor communication error (Transmitting error) (Outdoor unit)
EA	Miswiring of indoor/outdoor unit connecting wire, excessive number of indoor units (4 units or more)
Eb	Miswiring of indoor/outdoor unit connecting wire(reversed wiring or disconnection)
EC	Startup time over
E0–E7	Communication error except for outdoor unit

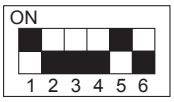
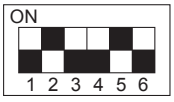
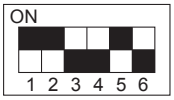
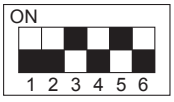
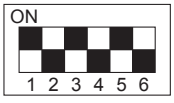
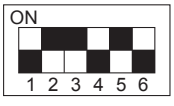
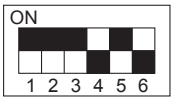
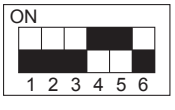
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Pipe temperature/Liquid (TH3) −58 to 194	−58 to194 [−50 to 90˚C] (When the coil thermistor detects 0˚F or below, "–" and temperature are displayed by turns.) (Example) When −10˚F; 0.5 s 0.5 s 2 s –□ →10 →□□	˚F [˚C]
	Discharge temperature (TH4) −4 to 422	−4 to 422 [−20 to 217˚C] (When the discharge thermistor detects 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105˚F; 0.5 s 0.5 s 2 s □1 →05 →□□	˚F [˚C]
	Output step of outdoor FAN 0 to 10	0 to 10	Step
	The number of ON/OFF times of compressor 0 to 9999	0 to 9999 (When the number of times is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 42500 times (425 × 100 times); 0.5 s 0.5 s 2 s □4 →25 →□□	100 times
	Compressor integrating operation times 0 to 9999	0 to 9999 (When it is 100 hours or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 2450 hours (245 × 10 hours); 0.5 s 0.5 s 2 s □2 →45 →□□	10 hours
	Compressor operating current 0 to 50	0 to 50 Note: Omit the figures after the decimal fractions.	A
	Compressor operating frequency 0 to 9999	0 to 9999 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 125Hz; 0.5 s 0.5 s 2 s 12 →50 →□□	Hz
	LEV-A opening pulse 0 to 480	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 s 0.5 s 2 s □1 →50 →□□	Pulse
	Error postponement code history (1) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement "00" is displayed in the case of no postponement.	Code display

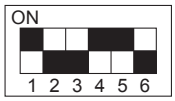
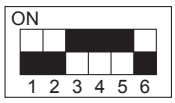
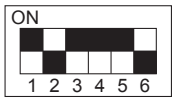
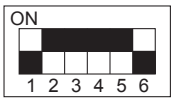
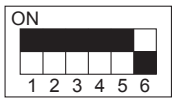
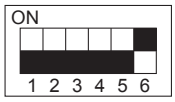
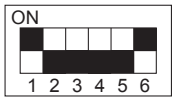
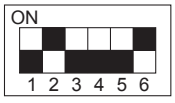
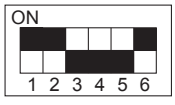
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Operation mode on error occurring	Operation mode of when operation stops due to error is displayed by setting SW2 as below. (SW2) 	Code display
	Pipe temperature/Liquid (TH3) on error occurring −58 to 194	−58 to 194 [−50 to 90˚C] (When the coil thermistor detects 0˚F or below, "–" and temperature are displayed by turns.) (Example) When −15˚F; 0.5 s 0.5 s 2 s -□ →15 →□□	˚F [˚C]
	Discharge temperature (TH4) on error occurring −4 to 422	−4 to 422 [−20 to 217˚C] (When the temperature is 100˚F or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130˚F; 0.5 s 0.5 s 2 s □1 →30 →□□	˚F [˚C]
	Compressor operating current on error occurring 0 to 50	Compressor operating current on error occurring 0 to 50	A
	Error history (1) (latest) Alternate display of abnormal unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Error history (2) Alternate display of error unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Thermostat ON time 0 to 999	0 to 999 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 245 minutes; 0.5 s 0.5 s 2 s □2 →45 →□□	Minute
	Test run elapsed time 0 to 120	0 to 120 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105 minutes; 0.5 s 0.5 s 2 s □1 →05 →□□	

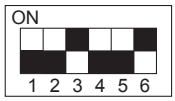
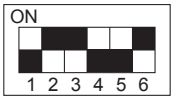
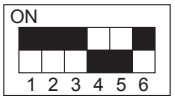
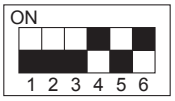
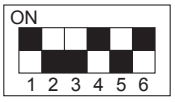
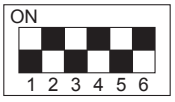
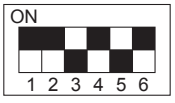
The black square (■) indicates a switch position.

<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr><td> 
</td><td>The number of connected indoor units</td><td>0 to 3
(The number of connected indoor units are displayed.)</td><td>Unit</td></tr>
<tr><td> 
</td><td>Capacity setting display</td><td>Displayed as an outdoor capacity code
<table>
<tr><th>Capacity</th><th>Code</th><th>Capacity</th><th>Code</th></tr>
<tr><td>A12N</td><td>9</td><td>A30N</td><td>14</td></tr>
<tr><td>A18N</td><td>10</td><td>A36N</td><td>20</td></tr>
<tr><td>A24N</td><td>11</td><td>A42N</td><td>25</td></tr>
</table></td><td>Code display</td></tr>
<tr><td> 
</td><td>Outdoor unit setting information</td><td>• The tens digit (Total display for applied setting)
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>H·P/Cooling only</td><td>0: H·P 1: Cooling only</td></tr>
<tr><td>Single phase/3 phase</td><td>0: Single phase 2: 3 phase</td></tr>
</table>
• The ones digit
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>Defrosting switch</td><td>0: Normal 1: For high humidity</td></tr>
</table>
(Example) When heat pump, 3 phase and defrosting (normal) are set up, “20” is displayed.</td><td>Code display</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature/Liquid (TH2(1))
Indoor 1
−38 to 190</td><td>−38 to 190 [−39 to 88˚C]
(When the temperature is 0ºF or less, “–” and temperature are displayed by turns.)</td><td>˚F
[˚C]</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature/Cond./ Eva. (TH5(1))
Indoor 1
−38 to 190</td><td>−38 to 190 [−39 to 88˚C]
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F
[˚C]</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature/Liquid (TH2(2))
Indoor 2
−38 to 190</td><td>−38 to 190 [−39 to 88˚C]
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F
[˚C]</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature/Cond./ Eva. (TH5(2))
Indoor 2
−38 to 190</td><td>−38 to 190 [−39 to 88˚C]
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F
[˚C]</td></tr>
<tr><td> 
</td><td>Indoor room temperature (TH1)
46 to 102</td><td>Indoor room temperature (TH1)
46 to 102</td><td>˚F
[˚C]</td></tr>
</table>

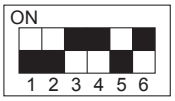
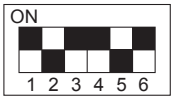
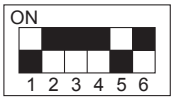
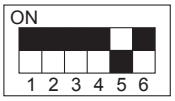
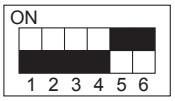
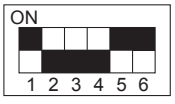
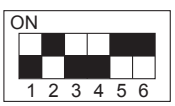
The black square (■) indicates a switch position.

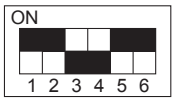
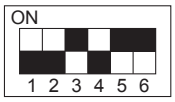
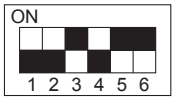
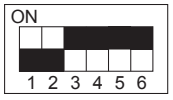
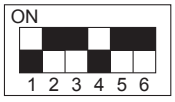
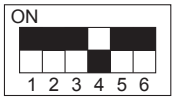
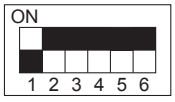
SW2 setting	Display detail	Explanation for display	Unit
	Indoor setting temperature 62 to 86	62 to 86 [17 to 30˚C]	˚F [˚C]
	Outdoor pipe temperature/2-phase pipe (TH6) −58 to 194	−58 to 194 [−50 to 90˚C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.)	˚F [˚C]
	Outdoor outside temperature (TH7) −58 to 194	−58 to 194 [−50 to 90˚C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.)	˚F [˚C]
	Outdoor heat sink temperature (TH8) −40 to 327	−40 to 327 [−40 to 164˚C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (When the thermistor detects 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	˚F [˚C]
	Discharge superheat. SHd 32 to 360 [Cooling = TH4 or TH33−TH6 Heating = TH4 or TH33−TH5]	32 to 360 [0 to 182˚C] (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	˚F [˚C]
	Number of defrost cycles 0 to FFFE	0 to FFFE (in hexadecimal notation) (When more than FF in hex (255 in decimal), the number is displayed in order of 16^3's and 16^2's, and 16^1's and 16^0's places. (Example) When 5000 cycles; 0.5 s 0.5 s 2 s □9 → C4 → □□	2 cycles
	Input current of outdoor unit	0 to 500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)	0.1 A
	LEV-B opening pulse	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.)	Pulse
	U9 error detail history (latest)	<table><tr><th>Description</th><th>Display</th></tr><tr><td>Normal</td><td>00</td></tr><tr><td>Overvoltage error</td><td>01</td></tr><tr><td>Undervoltage error</td><td>02</td></tr><tr><td>Input current sensor error L_1-phase open error</td><td>04</td></tr><tr><td>Abnormal power synchronous signal</td><td>08</td></tr><tr><td>PFC error (Overvoltage / Undervoltage / Overcurrent)</td><td>10</td></tr></table> * Display examples for multiple errors: Overvoltage (01) + Undervoltage (02) = 03 Undervoltage (02) + Power-sync signal error (08) = 0A L_1 phase open error (04) + PFC error (10) = 14	Code display

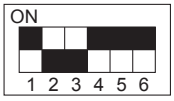
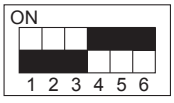
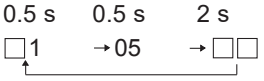
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	DC bus voltage 180 to 500	180 to 500 (When it is 100V or more, hundreds digit, tens digit and ones digit are displayed by turns.)	V
	Capacity save 0 to 100 When air conditioner is connected to M-NET and capacity save mode is demanded, a value from “0” to ”100” is displayed. [When there is no setting of capacity save, “100” is displayed.]	0 to 100 (When the capacity is 100%, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 100%; 0.5 s 0.5 s 2 s □1 →00 →□□	%
	Error postponement code history (2) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement “00” is displayed in the case of no postponement.	Code display
	Error postponement code history (3) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement “00” is displayed in the case of no postponement.	Code display
	Check code history (3) (Oldest) Alternate display of abnormal unit number and code.	When no error history, “0” and “– –“ are displayed by turns.	Code display
	Error thermistor display [When there is no error thermistor, “–“ is displayed.]	3: Outdoor pipe temperature/Liquid (TH3) 6: Outdoor pipe temperature/2-phase (TH6) 7: Outdoor ambient temperature (TH7) 8: Outdoor heat sink (TH8)	Code display
	Operation frequency on error occurring 0 to 255	0 to 255 (When it is 100 Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 125 Hz; 0.5 s 0.5 s 2 s □1 →25 →□□	Hz
	Fan step on error occurring 0 to 10	0 to 10	Step

The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	LEV-A opening pulse on error occurring 0 to 480	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130 pulse; 0.5 s 0.5 s 2 s □1 →30 →□□	Pulse
	Indoor room temperature (TH1) on error occurring 46 to 102	46 to 102 [8 to 39°C]	˚F [˚C]
	Indoor pipe temperature/Liquid (TH2) on error occurring −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 s 0.5 s 2 s -□ →15 →□□	˚F [˚C]
	Indoor pipe temperature/Cond./ Eva. (TH5) on error occurring −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 s 0.5 s 2 s -□ →15 →□□	˚F [˚C]
	Outdoor pipe temperature/2-phase (TH6) on error occurring −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 s 0.5 s 2 s -□ →15 →□□	˚F [˚C]
	Outdoor outside temperature (TH7) on error occurring −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 s 0.5 s 2 s -□ →15 →□□	˚F [˚C]
	Outdoor heat sink temperature (TH8) on error occurring −40 to 327	−40 to 327 [−40 to 164°C] (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	˚F [˚C]

SW2 setting	Display detail	Explanation for display	Unit
	Discharge superheat on error occurring SHd 32 to 360 [Cooling = TH4−TH6 Heating = TH4−TH5]	32 to 360 [0 to 182˚C] (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 150˚F; 0.5 s 0.5 s 2 s □1 →50 →□□	˚F [˚C]
	Sub cool on error occurring. SC 32 to 266 [Cooling = TH6-TH3 Heating = TH5-TH2]	32 to 266 [0 to 130˚C] (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 115˚F; 0.5 s 0.5 s 2 s □1 →15 →□□	˚F [˚C]
	Thermostat-on time until error stops 0 to 999	0 to 999 (When it is 100 minutes or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 415 minutes; 0.5 s 0.5 s 2 s □4 →15 →□□	Minute
	Pipe temperature/Suction (TH32) −58 to 194	−58 to194 [−50 to 90˚C] (When the coil thermistor detects 0˚F or below, “–” and temperature are displayed by turns.) (Example) When -10˚F; 0.5 s 0.5 s 2 s -□ →10 →□□	˚F [˚C]
	Indoor pipe temperature/Liquid (TH2 (3)) Indoor 3 −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	˚F [˚C]
	Indoor pipe temperature/Cond./ Eva. (TH5 (3)) Indoor 3 −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0°C or less, “–” and temperature are displayed by turns.) When there is no indoor unit, “00” is displayed.	˚F [˚C]
	Indoor pipe temperature/Liquid (TH2 (4)) Indoor 4 −38 to 190	−38 to 190 [−39 to 88°C] (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	˚F [˚C]

<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr>
<td> 
</td>
<td>Controlling status of compressor operating frequency</td>
<td>The following code will be a help to know the operating status of unit.
•The tens digit
<table>
<tr><th>Display</th><th>Compressor operating frequency control</th></tr>
<tr><td>1</td><td>Primary current control</td></tr>
<tr><td>2</td><td>Secondary current control</td></tr>
</table>
•The ones digit (In this digit, the total number of activated control is displayed.)
<table>
<tr><th>Display</th><th>Compressor operating frequency control</th></tr>
<tr><td>1</td><td>Preventive control for excessive temperature rise of discharge temperature</td></tr>
<tr><td>2</td><td>Preventive control for excessive temperature rise of condensing temperature</td></tr>
<tr><td>4</td><td>Frost prevention control</td></tr>
<tr><td>8</td><td>Preventive control for excessive temperature rise of heatsink</td></tr>
</table>
(Example)
The following controls are activated.
• Primary current control
• Preventive control for excessive temperature rise of condensing temperature
• Preventive control for excessive temperature rise of heatsink
LED
  </td>
<td>Code display</td>
</tr>
<tr>
<td> 
</td>
<td>Comp. surface temperature (TH33)
−4 to 422</td>
<td>−4 to 422 [−20 to 217˚C]
(When the comp. surface thermistor detects 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)
(Example) When 105°C;
 
</td>
<td>˚F
[˚C]</td>
</tr>
</table>

11 EASY MAINTENANCE FUNCTION

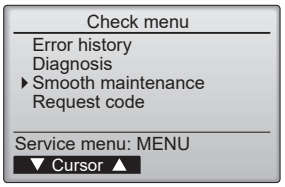
11-1. SMOOTH MAINTENANCE

Maintenance data, such as the indoor/outdoor unit's heat exchanger temperature and compressor operation current can be displayed with "Smooth maintenance".

This cannot be executed during test operation.

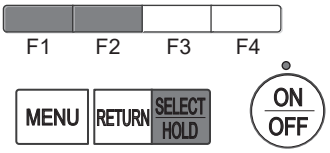
Depending on the combination with the outdoor unit, this may not be supported by some models.

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



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

Select "Smooth maintenance" with the F1 or F2 button, and press the [SELECT] button.



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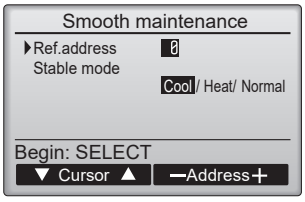
② Set each item.

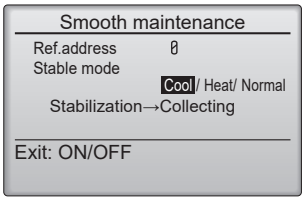
Select the item to be changed with the F1 or F2 button.

Select the required setting with the F3 or F4 button.

■<Ref.address>setting [0] – [15]
■<Stable mode>setting [Cool] / [Heat] / [Normal]

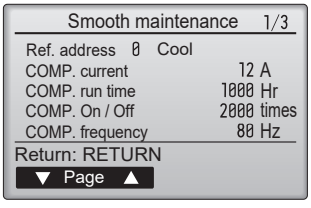


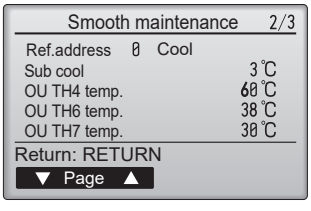
Press the [SELECT] button, Fixed operation will start.
Note: Stable mode will take approx. 20 minutes.

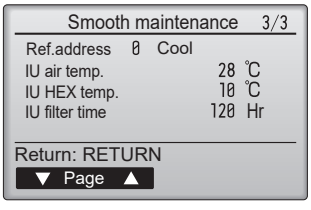


③ The operation data will appear.

The Compressor-Accumulated operating (COMP. run) time is 10-hour unit, and the Compressor-Number of operation times (COMP. ON/OFF) is a 100-time unit (fractions discarded).







Navigating through the screens

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

11-2.GUIDE FOR OPERATION CONDITION

Checkpoints

Enter the temperature differences between ⑤, ④, ⑦ and ⑧ into the graph given below.
Operation state is determined according to the plotted areas on the graph.
For data measurements, set the fan speed to "Hi" before activating maintenance mode.

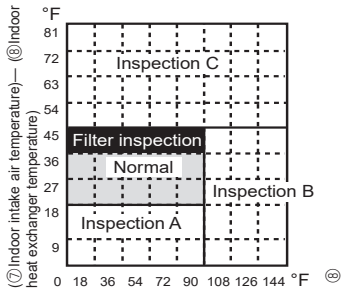
Inspection item				Result	
Power supply	Loose connection	Terminal block	Breaker	Good	Retightened
			Outdoor Unit	Good	Retightened
			Indoor Unit	Good	Retightened
		(Insulation resistance)			MΩ
		(Voltage)			V
Compressor		① Accumulated operating time			Time
		② Number of ON/OFF times			Times
		③ Current			A
Outdoor Unit	Temperature	④ Refrigerant/heat exchanger temperature		COOL °F	HEAT °F
		⑤ Refrigerant/discharge temperature		COOL °F	HEAT °F
		⑥ Air/outside air temperature		COOL °F	HEAT °F
		(Air/discharge temperature)		COOL °F	HEAT °F
	Cleanliness	Appearance		Good	Cleaning required
		Heat exchanger		Good	Cleaning required
		Sound/vibration		None	Present
Indoor Unit	Temperature	⑦ Air/intake air temperature		COOL °F	HEAT °F
		(Air/discharge temperature)		COOL °F	HEAT °F
		⑧ Refrigerant/heat exchanger temperature		COOL °F	HEAT °F
		⑨ Filter operating time*			Time
	Cleanliness	Decorative panel		Good	Cleaning required
		Filter		Good	Cleaning required
		Fan		Good	Cleaning required
		Heat exchanger		Good	Cleaning required
		Sound/vibration		None	Present

* The filter operating time is the time that has elapsed since the filter was reset.

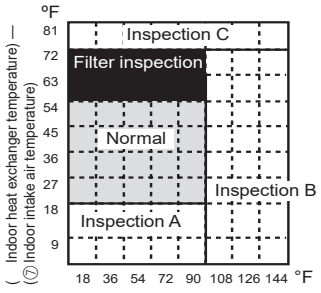
Classification		Item	Result	
Cool	Inspection	Is "000" displayed stably in Display Ⓓ on the remote controller?	Stable	Unstable
	Temperature difference	(⑤ Discharge temperature) – (④ Outdoor heat exchanger temperature)	°F	
		(⑦ Indoor intake air temperature) – (⑧ Indoor heat exchanger temperature)	°F	
Heat	Inspection	Is "000" displayed stably in Display Ⓓ on the remote controller?	Stable	Unstable
	Temperature difference	(⑤ Discharge temperature) – (⑧ Indoor heat exchanger temperature)	°F	
		(⑧ Indoor heat exchanger temperature) – (⑦ Indoor intake air temperature)	°F	

Notes:
1. Fixed Hz operation may not be possible under the following temperature ranges.
   A) In cool mode, outdoor intake air temperature is 104°F or higher or indoor intake air temperature is 73°F or lower.
   B) In heat mode, outdoor intake air temperature is 68 °F or higher or indoor intake air temperature is 77 °F or lower.
2. If the air conditioner is operated at a temperature range other than the ones above but operation is not stabilized after 30 minutes or more have elapsed, carry out inspection.
3. In heat mode, the operation state may vary due to frost forming on the outdoor heat exchanger.

Cool mode



Heat mode



Result

Area	Check item	Judgment	
		Cool	Heat
Normal	Normal operation state		
Filter inspection	Filter may be clogged.*		
Inspection A	Performance has dropped. Detailed inspection is necessary.		
Inspection B	Refrigerant amount is dropping.		
Inspection C	Filter or indoor heat exchanger may be clogged.		

Note: The above judgment is just guide based on Japanese standard conditions. It may be changed depending on the indoor and outdoor temperature.
* It may be judged as "filter inspection" due to the outdoor and indoor temperature, even though it is not clogged.

12 FUNCTION SETTING

12-1. UNIT FUNCTION SETTING BY THE REMOTE CONTROLLER

Each function can be set as necessary using the remote controller. The setting of function for each unit can only be done by the remote controller. Select function available from the table 1.

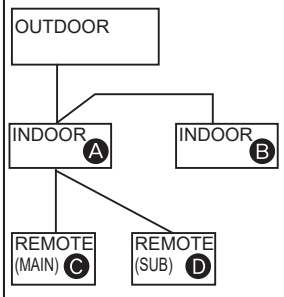
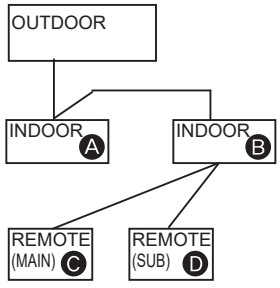
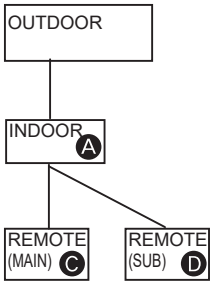
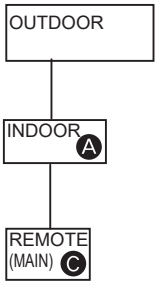
(1) Functions available when setting the unit number to 00 (Select 00 referring to ④ setting the indoor unit number.)

<Table 1> Function selections

Function	Settings	Mode No. Wired remote controller (RF thermistor)	Setting No.	●: Initial setting (when sent from the factory)	Remarks
Power failure automatic recovery	Not available	01	1		The setting is applied to all the units in the same refrigerant system.
	Available		2	●	
Indoor temperature detection	Average data from each indoor unit	02	1	●	
	Data from the indoor unit with remote controllers		2		
	Data from main remote controller		3		
LOSSNAY connectivity	Not supported	03	1	●	
	Supported (indoor unit dose not intake outdoor air through LOSSNAY)		2		
	Supported (indoor unit intakes outdoor air through LOSSNAY)		3		
Power supply voltage	230V	04	1	●	
	208V		2		
Frost prevention temperature	2°C [36°F] (Normal)	15	1	●	
	3°C [37°F]		2		
Humidifier control	When the compressor operates, the humidifier also operates.	16	1		
	When the fan operates, the humidifier also operates.		2	●	
Change of defrosting control	Standard	17	1	●	
	For high humidity		2		

Meaning of "Function setting"

Mode02: indoor temperature detecting

No.	Indoor temperature(ta)=					
No1.	Average data of the sensor on all the indoor units	Initial setting	ta=(A+B)/2	ta=(A+B)/2	ta=A	ta=A
No2.	Data of the sensor on the indoor unit that connected with remote controller	Initial setting	ta=A	ta=B	ta=A	ta=A
No3.	Data of the sensor on main remote controller	Initial setting	ta=C	ta=C	ta=C	ta=C

(2) Functions available when setting the unit number to 01–02 or AL (07 in the case of wireless remote controller).
Refer to the service manual that comes with each indoor unit.

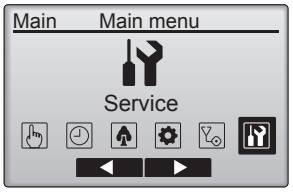
12-1-1. Selecting functions using the wired remote controller <PAR-4xMAA ("x" represents 0 or later)>

<Service menu>

Maintenance password is required

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

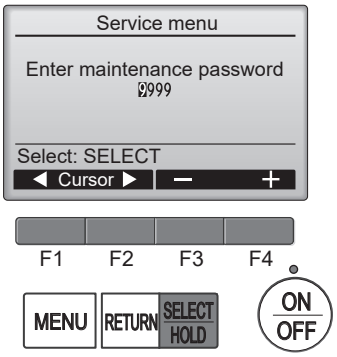
To enter the current maintenance password (4 numerical digits), move the cursor to the digit you want to change with the F1 or F2 button.

▼

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

▼

Then, press the [SELECT] 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 (PAR-4xMAA) or F1 and F2 buttons simultaneously for 3 seconds (PAR-3xMAA) on the maintenance password setting screen.

---

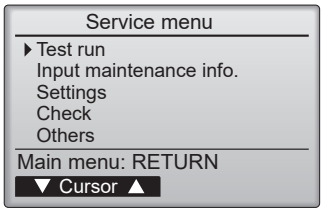
③ If the password matches, the Service menu will appear.

The type of menu that appears depends on the connected indoor units' type.

Note: Air conditioning units may need to be stopped to make certain settings. There may be some settings that cannot be made when the system is centrally controlled. (As for PAR-4xMAA, the units need to be stopped only at "Settings".)

▼

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



▼

Navigating through the screens

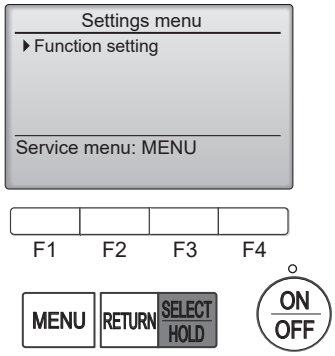
- To go back to the Service menu ..... [MENU] button
- To return to the previous screen..... [RETURN] button

<Function setting>

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

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

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



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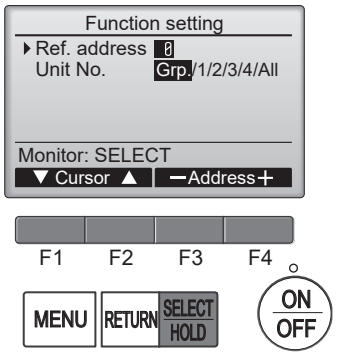
② Set the indoor unit refrigerant addresses and unit numbers with the F1 through F4 buttons, and then press the [SELECT] button to confirm the current setting.

Note: Checking the indoor unit No.
When the [SELECT] button is pressed, the target indoor unit will start fan operation. If the unit is common or when running all units, all indoor units for the selected refrigerant address will start fan operation.



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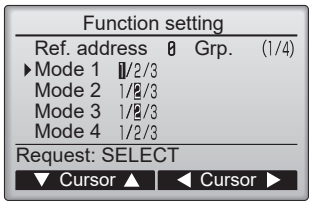
③ When data collection from the indoor units is completed, the current settings appears highlighted.
Non-highlighted items indicate that no function settings are made.
Screen appearance varies depending on the "Unit No." setting.



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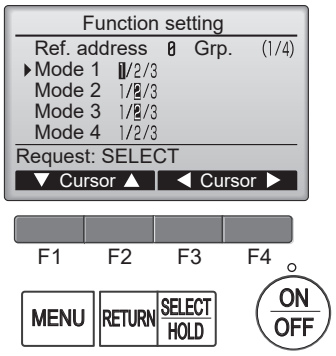
④ Use the F1 or F2 button to move the cursor to select the mode number, and change the setting number with the F3 or F4 button.



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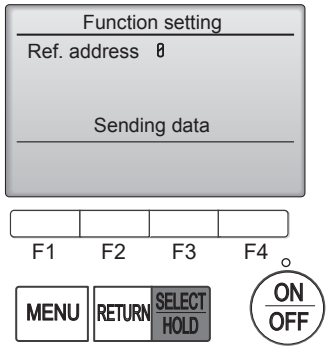
⑤ When the settings are completed, press the [SELECT] button to send the setting data from the remote controller to the indoor units.
When the transmission is successfully completed, the screen will return to the Function setting screen.

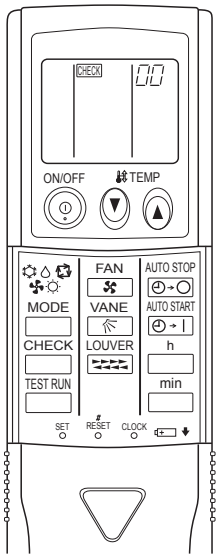
Note: • Make the above settings only on Mr. Slim units as necessary.
• The above function settings are not available for the CITY MULTI units.
• Table 1 summarizes the setting options for each mode number. Refer to the indoor unit Installation Manual for the detailed information about initial settings, mode numbers, and setting numbers for the indoor units.
• Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.



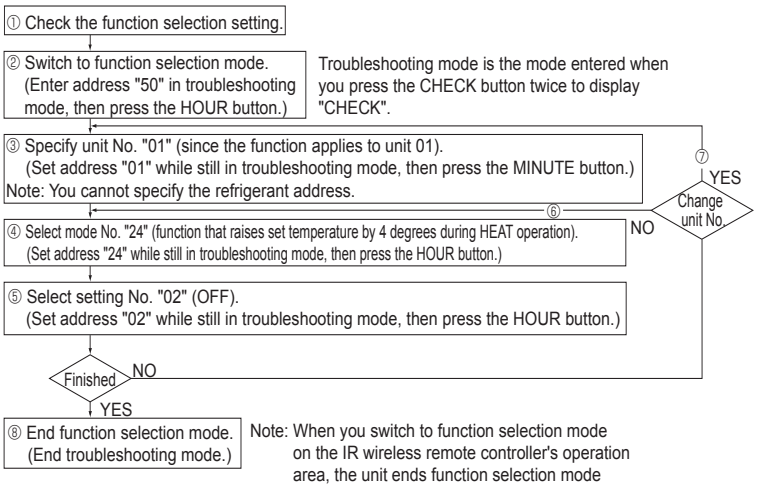
12-1-2. Selecting functions using the IR wireless remote controller (Type C)

Functions can be selected with the IR wireless remote controller. Function selection using IR wireless remote controller is available only for refrigerant system with wireless function. Refrigerant address cannot be specified by the IR wireless remote controller.

[Flow of function selection procedure]



The flow of the function selection procedure is shown below. This example shows how to turn off the function that raises the set temperature by 4 degrees during HEAT operation. The procedure is given after the flow chart.



[Operating instructions]

① Check the function settings.

② Press the CHECK button twice continuously. → CHECK is lit and “00” blinks.
Press the TEMP ▲ button once to set “50”. Direct the IR wireless remote controller toward the receiver of the indoor unit and press the h button.

③ Set the unit number.
Press the TEMP ▲▼ button to set the unit number. (Press “01” to specify the indoor unit whose unit number is 01.)
Direct the IR wireless remote controller toward the receiver of the indoor unit and press the min button.

(By setting unit number with the min button, specified indoor unit starts performing fan operation.
Detect which unit is assigned to which number using this function. If unit number is set to AL, all the indoor units in same refrigerant system start performing fan operation simultaneously.)

Notes:
1. If a unit number that cannot be recognized by the unit is entered, 3 beeps of 0.4 seconds will be heard. Reenter the unit number setting.
2. If the signal was not received by the sensor, you will not hear a beep or a “double ping sound” may be heard. Reenter the unit number setting.

④ Select a mode.
Press the TEMP ▲▼ button to set a mode. Press “24” to turn on the function that raises the set temperature by 4 degrees during heat operation. Direct the IR wireless remote controller toward the sensor of the indoor unit and press the h button.
→ The sensor-operation indicator will blink and beeps will be heard to indicate the current setting number.
Current setting number: 1 = 1 beep (one second)
2 = 2 beeps (one second each)
3 = 3 beeps (one second each)

Notes:
1. If a mode number that cannot be recognized by the unit is entered, 3 beeps of 0.4 seconds will be heard. Reenter the mode number.
2. If the signal was not received by the sensor, you will not hear a beep or a “double ping sound” may be heard. Reenter the mode number.

⑤ Select the setting number.
Press the TEMP ▲▼ button to select the setting number. (02: Not available)
Direct the IR wireless remote controller toward the receiver of the indoor unit and press the h button.
→ The sensor-operation indicator will blink and beeps will be heard to indicate the setting number.
Setting number: 1 = 2 beeps (0.4 seconds each)
2 = 2 beeps (0.4 seconds each, repeated twice)
3 = 2 beeps (0.4 seconds each, repeated 3 times)

Notes:
1. If a setting number that cannot be recognized by the unit is entered, the setting will turn back to the original setting.
2. If the signal was not received by the sensor, you will not hear a beep or a “double ping sound” may be heard. Reenter the setting number.

⑥ Repeat steps ④ and ⑤ to make an additional setting without changing unit number.

⑦ Repeat steps ③ to ⑤ to change unit number and make function settings on it.

⑧ Complete the function settings
Press ◎ button.
Note: Do not use the IR wireless remote controller for 30 seconds after completing the function setting.

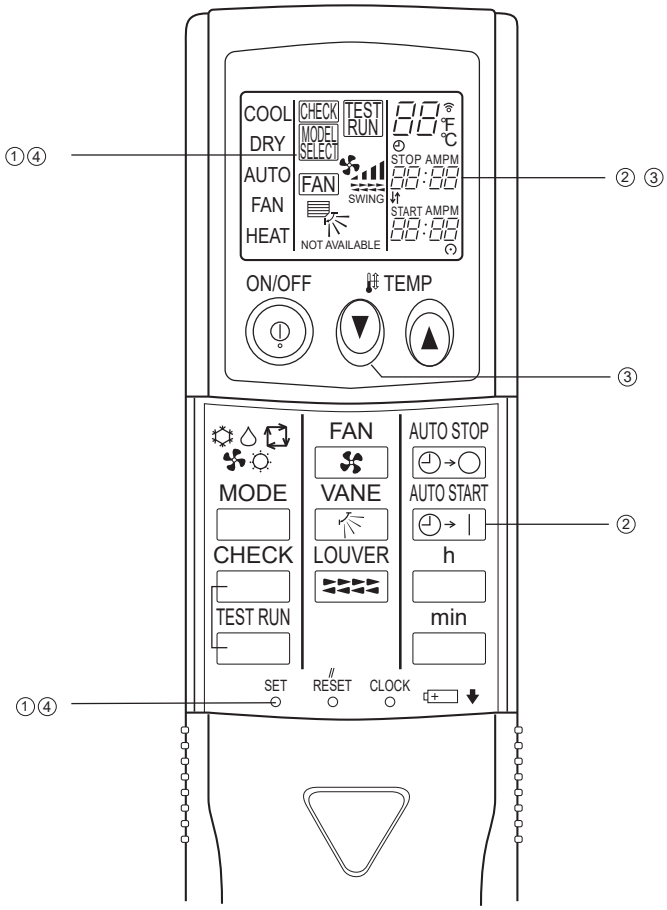
12-2. Function selection of IR wireless remote controller
TEMPERATURE DISPLAY °C/°F SETTING (Change of temp mode from °F to °C)

① Press the set button with something sharp at the end. MODEL SELECT blinks.

② Press the AUTO START button. "°F" blinks.

③ Press the ▼ button. "°C" blinks.

④ Press the set button with something sharp at the end. MODEL SELECT is lighted for 3 seconds, then turned off.



13 MONITORING THE OPERATION DATA BY THE REMOTE CONTROLLER

13-1. HOW TO "MONITOR THE OPERATION DATA"

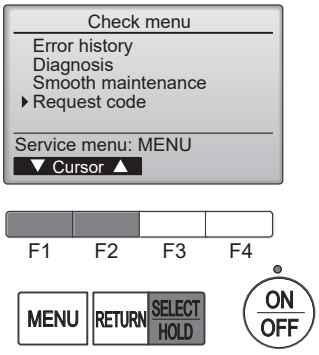
13-1-1. PAR-4xMAA ("x" represents 0 or later)

Details on the operation data including each thermistor temperature and error history can be confirmed with the remote controller.

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

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

Select "Request code" with the F1 or F2 button, and press the [SELECT] button.



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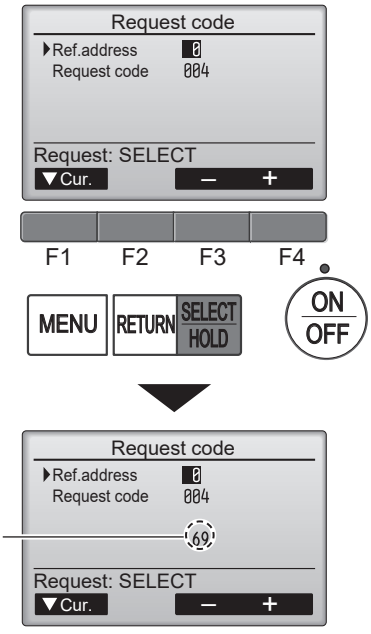
② Set the Refrigerant address and Request code.

Select the item to be changed with the F1 or F2 button.

Select the required setting with the F3 or F4 button.

■<Ref.address>setting [0] – [15]
■<Request code>setting

Press the [SELECT] button, Data will be collected and displayed.



Request code: 004
Discharge temperature: 69˚C

13-2. REQUEST CODE LIST

Certain indoor/outdoor combinations do not have the request code function; therefore, no request codes are displayed.

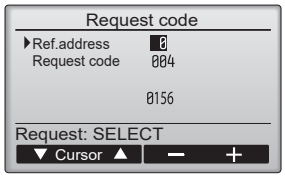
Request code	Request content	Description (Display range)	Unit	Remarks
0	Operation state	Refer to 13-2-1. Detail Contents in Request Code.	–	
1	Compressor-Operating current (rms)	0–50	A	
2	Compressor-Accumulated operating time	0–9999	10 hours	
3	Compressor-Number of operation times	0–9999	100 times	
4	Discharge temperature (TH4)	37– 327	°F	
5	Outdoor unit - Liquid pipe 1 temperature (TH3)	−58–194	°F	
6	Outdoor unit - Liquid pipe 2 temperature	−40–194	°F	
7	Outdoor unit-2-phase pipe temperature (TH6)	−58–190	°F	
8	Suction temperature (TH32)	−58–194	°F	
9	Outdoor unit-Outside air temperature (TH7)	−58–190	°F	
10	Outdoor unit-Heatsink temperature (TH8)	−40–327	°F	
11				
12	Discharge super heat (SHd)	0–327	°F	
13	Sub-cool (SC)	0–234	°F	
14				
15				
16	Compressor-Operating frequency	0–255	Hz	
17	Compressor-Target operating frequency	0–255	Hz	
18	Outdoor unit-Fan output step	0–10	Step	
19	Outdoor unit-Fan 1 speed (Only for air conditioners with DC fan motor)	0–9999	rpm	
20	Outdoor unit-Fan 2 speed (Only for air conditioners with DC fan motor)	0–9999	rpm	"0" is displayed if the air conditioner is a single-fan type.
21				
22	LEV (A) opening	0–500	Pulses	
23	LEV (B) opening	0–500	Pulses	
24				
25	Primary current	0–50	A	
26	DC bus voltage	180–370	V	
27				
28				
29	Number of connected indoor units	0–4	Units	
30	Indoor unit-Setting temperature	62–86	°F	
31	Indoor unit-Intake air temperature <Measured by thermostat>	46–102	°F	
32	Indoor unit-Intake air temperature (Unit No. 1) <Heat mode-4-degree correction>	46–102	°F	"0"is displayed if the target unit is not present.
33	Indoor unit-Intake air temperature (Unit No. 2) <Heat mode-4-degree correction>	46–102	°F	↑
34	Indoor unit-Intake air temperature (Unit No. 3) <Heat mode-4-degree correction>	46–102	°F	↑
35	Indoor unit-Intake air temperature (Unit No. 4) <Heat mode-4-degree correction>	46–102	°F	↑
36				
37	Indoor unit - Liquid pipe temperature (Unit No. 1)	−38–190	°F	"0" is displayed if the target unit is not present.
38	Indoor unit - Liquid pipe temperature (Unit No. 2)	−38–190	°F	↑
39	Indoor unit - Liquid pipe temperature (Unit No. 3)	−38–190	°F	↑
40	Indoor unit - Liquid pipe temperature (Unit No. 4)	−38–190	°F	↑
41				
42	Indoor unit-Cond./Eva. pipe temperature (Unit No. 1)	−38–190	°F	"0" is displayed if the target unit is not present.
43	Indoor unit-Cond./Eva. pipe temperature (Unit No. 2)	−38–190	°F	↑
44	Indoor unit-Cond./Eva. pipe temperature (Unit No. 3)	−38–190	°F	↑
45	Indoor unit-Cond./Eva. pipe temperature (Unit No. 4)	−38–190	°F	↑
46				
47				
48	Thermo ON operating time	0–999	Minutes	
49	Test run elapsed time	0–120	Minutes	← Not possible to activate maintenance mode during the test run.

Request code	Request content	Description (Display range)	Unit	Remarks
50	Indoor unit-Control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
51	Outdoor unit-Control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
52	Compressor-Frequency control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
53	Outdoor unit-Fan control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
54	Actuator output state	Refer to 13-2-1.Detail Contents in Request Code.	–	
55	Error content (U9)	Refer to 13-2-1.Detail Contents in Request Code.	–	
56				
57				
58				
59				
60	Signal transmission demand capacity	0–255	%	
61	Contact demand capacity	Refer to 13-2-1.Detail Contents in Request Code.	–	
62	External input state (silent mode, etc.)	Refer to 13-2-1.Detail Contents in Request Code.	–	
63				
64				
65				
66				
67				
68				
69				
70	Outdoor unit-Capacity setting display	Refer to 13-2-1.Detail Contents in Request Code.	–	
71	Outdoor unit-Setting information	Refer to 13-2-1.Detail Contents in Request Code.	–	
72				
73			–	
74			–	
75				
76			–	
77			–	
78			–	
79			–	
80			–	
81			–	
82			–	
83				
84	M-NET adapter connection (presence/absence)	"0000": Not connected "0001": Connected	–	
85				
86				
87				
88				
89	Display of execution of replace/wash operation	"0000": Not washed "0001": Washed	–	
90	Outdoor unit-Microprocessor version information	Examples) Ver 5.01 → "0501"	Ver	
91	Outdoor unit-Microprocessor version information (sub No.)	Auxiliary information (displayed after version information) Examples) Ver 5.01 A000 → "A000"	–	
92				
93				
94				
95				
96				
97				
98				
99				
100	Outdoor unit - Error postponement history 1 (latest)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	
101	Outdoor unit - Error postponement history 2 (previous)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	
102	Outdoor unit - Error postponement history 3 (last but one)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	

Request code	Request content	Description (Display range)	Unit	Remarks
103	Error history 1 (latest)	Displays error history. ("--" is displayed if no history is present.)	Code	
104	Error history 2 (second to last)	Displays error history. ("--" is displayed if no history is present.)	Code	
105	Error history 3 (third to last)	Displays error history. ("--" is displayed if no history is present.)	Code	
106	Abnormal thermistor display (TH3/TH6/TH7/TH8)	3 : TH3 6 : TH6 7 : TH7 8 : TH8 0 : No thermistor error	Sensor number	
107	Operation mode at time of error	Displayed in the same way as request code "0".	–	
108	Compressor-Operating current at time of error	0–50	A	
109	Compressor-Accumulated operating time at time of error	0–9999	10 hours	
110	Compressor-Number of operation times at time of error	0–9999	100 times	
111	Discharge temperature at time of error	37–327	°F	
112	Outdoor unit - Liquid pipe 1 temperature (TH3) at time of error	−40–194	°F	
113	Outdoor unit - Liquid pipe 2 temperature at time of error	−40–194	°F	
114	Outdoor unit-2-phase pipe temperature (TH6) at time of error	−38–194	°F	
115				
116	Outdoor unit-Outside air temperature (TH7) at time of error	−38–194	°F	
117	Outdoor unit-Heatsink temperature (TH8) at time of error	−40–327	°F	
118	Discharge super heat (SHd) at time of error	0–327	°F	
119	Sub-cool (SC) at time of error	0–234	°F	
120	Compressor-Operating frequency at time of error	0–255	Hz	
121	Outdoor unit at time of error • Fan output step	0–10	Step	
122	Outdoor unit at time of error • Fan 1 speed (Only for air conditioners with DC fan)	0–9999	rpm	
123	Outdoor unit at time of error • Fan 2 speed (Only for air conditioners with DC fan)	0–9999	rpm	"0"is displayed if the air conditioner is a single-fan type.
124				
125	LEV (A) opening at time of error	0–500	Pulses	
126	LEV (B) opening at time of error	0–500	Pulses	
127				
128				
129				
130	Thermo ON time until operation stops due to error	0–999	Minutes	
131				
132	Indoor - Liquid pipe temperature at time of error	−38–190	°F	Average value of all indoor units is displayed if the air conditioner consists of two or more indoor units (twin, triple, quad).
133	Indoor-Cond./Eva. pipe temperature at time of error	−38–190	°F	Average value of all indoor units is displayed if the air conditioner consists of two or more indoor units (twin, triple, quad).
134	Indoor at time of error • Intake air temperature <Thermostat judge temperature>	−38–190	°F	
135				
136				
137				
138				
139				
140				
~				
146				
147				
148				
149				
150	Indoor-Actual intake air temperature	−38–190	°F	
151	Indoor - Liquid pipe temperature	−38–190	°F	
152	Indoor-Cond./Eva. pipe temperature	−38–190	°F	

Request code	Request content	Description (Display range)	Unit	Remarks
153				
154	Indoor-Fan operating time (After filter is reset)	0–9999	1 hour	
155	Indoor-Total operating time (Fan motor ON time)	0–9999	10 hours	
156				
157	Indoor fan output value (Sj value)	0–255 Fan control data	–	For indoor fan phase control
158	Indoor fan output value (Pulsation ON/OFF)	"00 **" "**" indicates fan control data.	–	For indoor fan pulsation control
159	Indoor fan output value (duty value)	"00 **" "**" indicates fan control data.	–	For indoor DC brushless motor control
160				
161				
162				
163	Indoor unit-Capacity setting information	Refer to 13-2-1 Detail Contents in Request Code.	–	
164	Indoor unit-SW3 information	Undefined	–	
165	Wireless pair No. (indoor control board side) setting	Refer to 13-2-1 Detail Contents in Request Code.	–	
166	Indoor unit-SW5 information	Undefined	–	
167				
~				
189				
190	Indoor unit-Microprocessor version information	Examples) Ver 5.01 → "0501"	Ver	
191	Indoor unit-Microprocessor version information (sub No.)	Auxiliary information (displayed after version information) Examples) Ver 5.01 A000 → "A000"	–	
192				

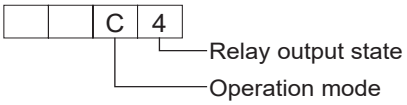
13-2-1. Detail Contents in Request Code



Example) Request code "004"
Discharge temperature 156°F
Refrigerant address "00"

[Operation state] (Request code "0")

Data display



Operation mode

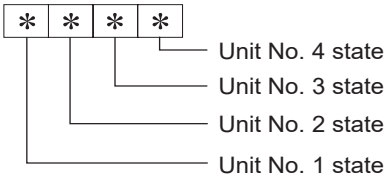
Display	Operation mode
0	STOP • FAN
C	COOL • DRY
H	HEAT
d	DEFROST

Relay output state

Display	Power currently supplied to compressor	Compressor	4-way valve	Solenoid valve
0	–	–	–	–
1				ON
2			ON	
3			ON	ON
4		ON		
5		ON		ON
6		ON	ON	
7		ON	ON	ON
8	ON			
A	ON		ON	

[Indoor unit – Control state] (Request code :" 50 ")

Data display



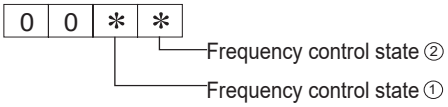
Display	State
0	Normal
1	Preparing for heat operation.
2	–
3	–
4	Heater is ON.
5	Anti-freeze protection is ON.
6	Overheat protection is ON.
7	Requesting compressor to turn OFF.
F	There are no corresponding units.

[Outdoor unit – Control state] (Request code "51")

Data display				State
0	0	0	0	Normal
0	0	0	1	Preparing for heat operation.
0	0	0	2	Defrost

[Compressor – Frequency control state] (Request code "52")

Data display



Frequency control state ①

Display	Current limit control
0	No current limit
1	Primary current limit control is ON.
2	Secondary current limit control is ON.

Frequency control state ②

Display	Discharge temperature overheat prevention	Condensation temperature overheat prevention	Anti-freeze protection control	Heat sink temperature overheat prevention
0				
1	Controlled			
2		Controlled		
3	Controlled	Controlled		
4			Controlled	
5	Controlled		Controlled	
6		Controlled	Controlled	
7	Controlled	Controlled	Controlled	
8				Controlled
9	Controlled			Controlled
A		Controlled		Controlled
b	Controlled	Controlled		Controlled
C			Controlled	Controlled
d	Controlled		Controlled	Controlled
E		Controlled	Controlled	Controlled
F	Controlled	Controlled	Controlled	Controlled

[Fan control state] (Request code : "53")

Data display 0 0 * *

Fan step correction value by heatsink temperature overheat prevention control

Fan step correction value by cool condensation temperature overheat prevention control

Display	Correction value
- (minus)	– 1
0	0
1	+1
2	+2

[Actuator output state] (Request code : "54")

Data display 0 0 * *

Actuator output state ①

Actuator output state ②

Actuator output state ①

Display	SV1	Four-way valve	Compressor	Compressor is warming up
0				
1	ON			
2		ON		
3	ON	ON		
4			ON	
5	ON		ON	
6		ON	ON	
7	ON	ON	ON	
8				ON
9	ON			ON
A		ON		ON
b	ON	ON		ON
C			ON	ON
d	ON		ON	ON
E		ON	ON	ON
F	ON	ON	ON	ON

Actuator output state ②

Display	52C	SV2	SS
0			
1	ON		
2		ON	
3	ON	ON	
4			ON
5	ON		ON
6		ON	ON
7	ON	ON	ON

[Error content (U9)] (Request code : "55")

Data display 0 0 * *

Error content ①

Error content ②

Error content ① ●: Detected

Display	Overvoltage error	Undervoltage error	L_1-phase open error	Power synchronizing signal error
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
A		●		●
b	●	●		●
C			●	●
d	●		●	●
E		●	●	●
F	●	●	●	●

Error content ② ●: Detected

Display	Converter Fo error	PAM error
0		
1	●	
2		●
3	●	●

[Contact demand capacity] (Request code : "61")

Data display 0 0 0 ✻

Setting content

Setting content

Display	Setting value	Setting	
		SW7-1	SW7-2
0	0%		
1	50%	ON	
2	75%		ON
3	100%	ON	ON

[External input state] (Request code : "62")

Data display 0 0 0 ✻

Input state

Input state ● : Input present

Display	Contact demand input	Silent mode input	Spare 1 input	Spare 2 input
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
A		●		●
b	●	●		●
C			●	●
d	●		●	●
E		●	●	●
F	●	●	●	●

[Outdoor unit – Capacity setting display] (Request code : "70")

Data display	Capacity
9	12
10	18
11	24
14	30
20	36
25	42

[Outdoor unit – Setting information] (Request code : "71")

Data display 0 0 ✻ ✻

Setting information ①

Setting information ②

Setting information①

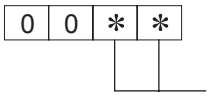
Display	Defrost mode
0	Standard
1	For high humidity

Setting information②

Display	Single-/ 3-phase	Heat pump/ cooling only
0	Single-phase	Heat pump
1		Cooling only
2	3-phase	Heat pump
3		Cooling only

[Indoor unit – Capacity setting information] (Request code : 163)

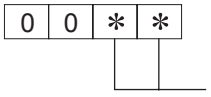
Data display



Display	Capacity setting state	Display	Capacity setting state
00		10	42
01		11	
02		12	
03		13	
04		14	
05		15	
06	12	16	
07		17	
08		18	
09	18	19	
0A		1A	
0b	24	1b	
0C		1C	
0d	30	1d	
0E		1E	
0F	36	1F	

[Wireless pair No. (indoor control board side) setting] (Request code : 165)

Data display



Display	Pair No. setting state
00	No. 0
01	No. 1 J41 disconnected
02	No. 2 J42 disconnected
03	No. 3 J41, J42 disconnected

14 DISASSEMBLY PROCEDURE

PUZ-A12NKA7 **PUZ-A18NKA7** **PUY-A12NKA7** **PUY-A18NKA7**
PUZ-A12NKA7-BS **PUZ-A18NKA7-BS** **PUY-A12NKA7-BS** **PUY-A18NKA7-BS**

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

PHOTO: PUZ-A12NKA7

OPERATING PROCEDURE

1. Removing the top panel, service panel, front panel, back panel, and grille

(1) Remove the top panel fixing screws (4 × 10), one from the right and two from the left side, and detach the top panel.
(2) Remove 2 service panel fixing screws (4 × 10) and detach the service panel by pulling it downward. (See Photo 2)
(3) Remove the front panel fixing screws (4 × 10), 3 from the front, 2 from the right and 2 from the left side, and detach the front panel.
(4) Remove the back panel fixing screws (4 × 10), 5 from the right and 2 from the rear side, and detach the back panel.
(5) Remove 2 grille fixing screws (4 × 10) and detach the grille.

2. Removing the fan motor

(1) Remove the top panel. (See Photo 1)
(2) Remove the front panel. (See Photo 1)
(3) Remove 1 nut (M6, left-screw) and detach the propeller.
(4) Disconnect the connector CNF1 on the controller circuit board in the electrical parts box.
(5) Loosen the clamp for the lead wire in the motor support.
(6) Remove 4 fan motor fixing screws (5 × 20) and detach the fan motor. (See Photo 4)

PHOTOS/FIGURES

Photo 1

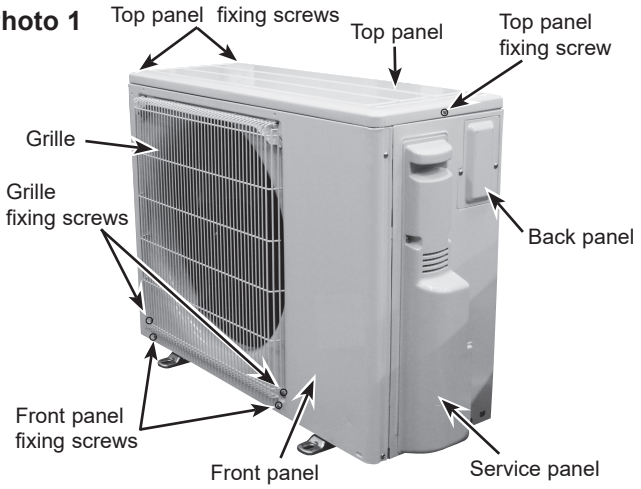


Photo 2

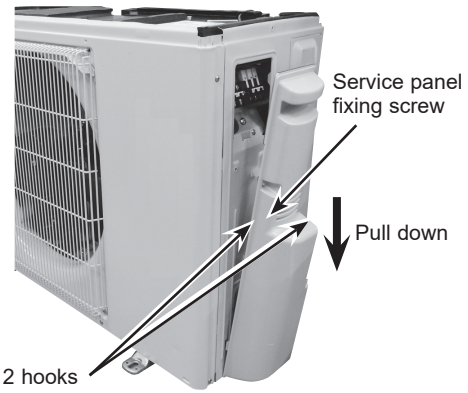


Photo 3

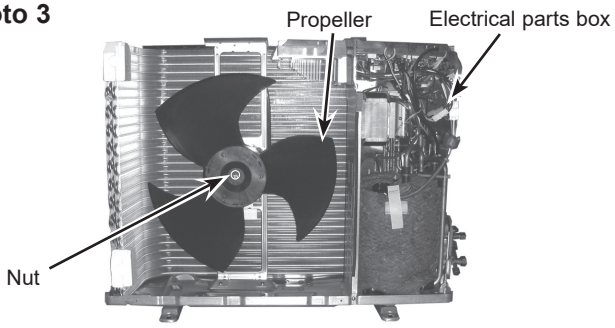
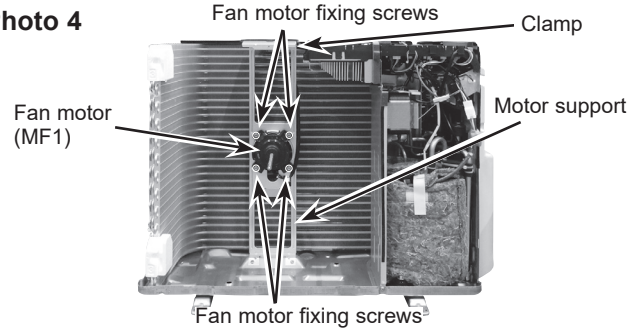
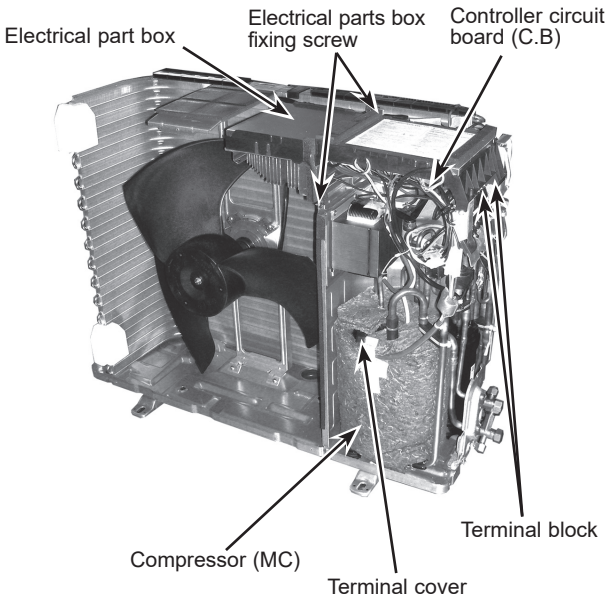
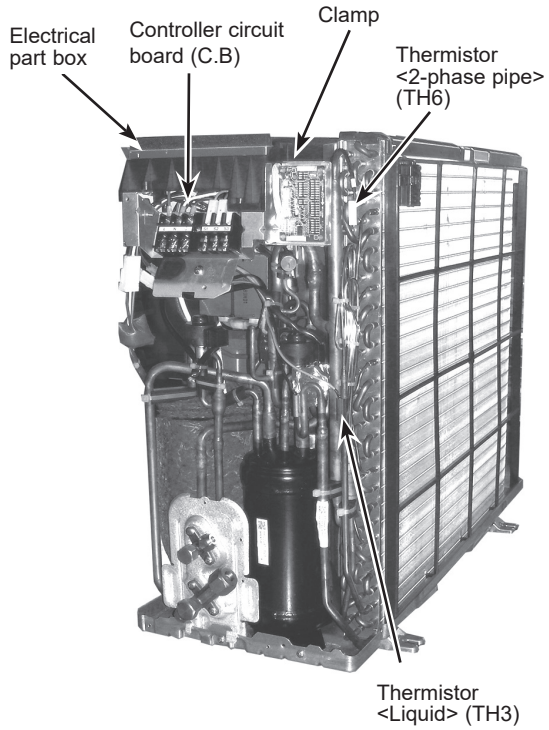
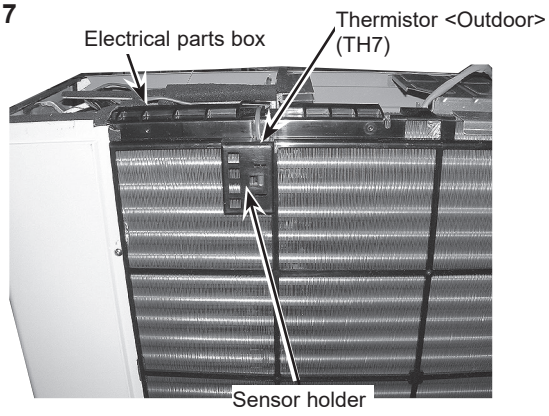
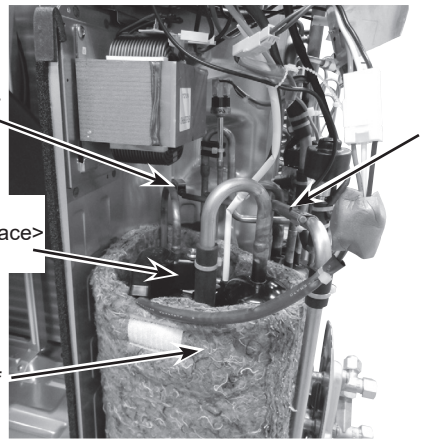
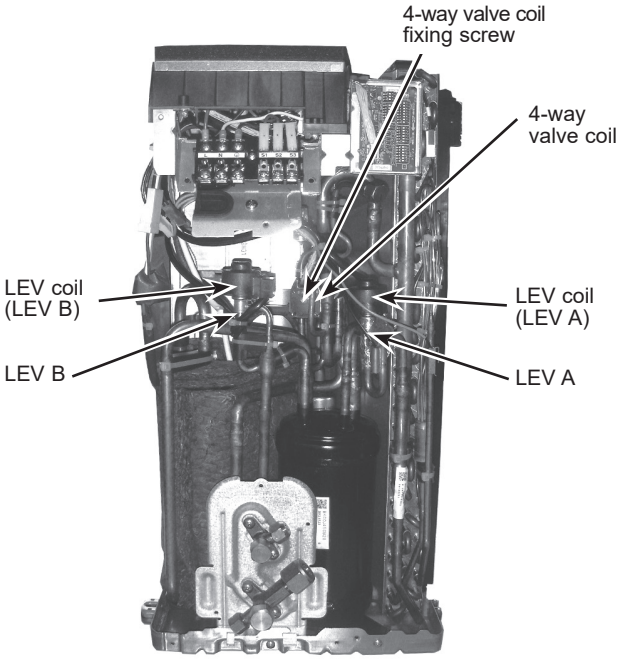


Photo 4



OPERATING PROCEDURE	PHOTOS/FIGURES
3. Removing the electrical parts box (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel. (See Photo 1) (5) Disconnect the indoor/outdoor connecting wire from terminal block. (6) Disconnect the connector CNF1, LEV-A and LEV-B on the controller circuit board. <Symbols on the board> • CNF1 : Fan motor • LEV-A, LEV-B : LEV (7) Disconnect the pipe-side connections of the following parts. • 4-way valve (21S4) • Thermistor <Liquid> (TH3) • Thermistor <Comp. surface> (TH33) • Thermistor <Discharge> (TH4) • Thermistor <2-phase pipe, Ambient> (TH6/7) • Thermistor <Suction> (TH32) • High pressure switch (63H) (8) Remove the terminal cover and disconnect the compressor lead wire. (9) Remove the electrical parts box fixing screws, 1 from the front, and 1 from the top side, and detach the electrical parts box by pulling it upward.	**Photo 5** 
4. Removing the thermistor <2-phase pipe> (TH6) and thermistor <Liquid> (TH3) (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel fixing screws, 5 from the right and 2 from the rear side, and detach the back panel. (See Photo 1) (5) Disconnect the connector TH3 (white) or TH6/7 (red) on the controller circuit board in the electrical parts box. (6) Loosen the clamp for the lead wire in the rear of the electrical parts box. (7) Pull out the thermistor <Liquid> (TH3), and thermistor <2-phase pipe> (TH6) from the sensor holder. **Note: Replace the thermistor <2-phase pipe> (TH6) and the thermistor <Ambient> (TH7) together since they are combined.** **Refer to procedure No. 5. to remove the thermistor <Ambient> (TH7).**	**Photo 6** 

OPERATING PROCEDURE	PHOTOS/FIGURES
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7 (red) on the controller circuit board in the electrical parts box. (4) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 6) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together. Refer to procedure No.4. to remove thermistor <2-phase pipe>.**	**Photo 7** 
6. Removing the thermistor <Discharge> (TH4), thermistor <Suction> (TH32), and thermistor <Comp. surface> (TH33) (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel. (See Photo 1) (5) Remove the electrical parts box. (See Photo 5) (6) Remove the sound proof cover from the compressor. [Thermistor <Discharge> (TH4)] (7) Pull out the thermistor <Discharge> (TH4) from the sensor holder. (See Photo 8) [Thermistor <Suction> (TH32)] (7) Pull out the thermistor <Suction> (TH32) from the sensor holder. (See Photo 8) [Thermistor <Comp. surface> (TH33)] (7) Pull out the thermistor <Comp. surface> (TH33) from the sensor holder. (See Photo 8)	**Photo 8** 
7. Removing the 4-way valve coil (21S4) and LEV coil (LEV(A), LEV(B)) (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel. (See Photo 1) (5) Remove the electrical parts box. (See Photo 5) [Removing the 4-way valve (21S4)] (6) Remove 1 4-way valve fixing screw (M4 × 6). (7) Remove the 4-way valve by sliding the coil to the right. [Removing the LEV coil (LEV (A), LEV (B))] (6) Remove the LEV coil by sliding the coil upward.	**Photo 9** 

OPERATING PROCEDURE

8. Removing the 4-way valve

(1) Remove the service panel. (See Photo 2)
(2) Remove the top panel. (See Photo 1)
(3) Remove the front panel. (See Photo 1)
(4) Remove the back panel. (See Photo 1)
(5) Remove the electrical parts box. (See Photo 5)
(6) Remove the 4-way valve (See Photo 9)
(7) Recover refrigerant.
(8) Remove the welded part of 4-way valve.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the back panel.
Note 3: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.

9. Removing LEV

(1) Remove the service panel. (See Photo 2)
(2) Remove the top panel. (See Photo 1)
(3) Remove the front panel. (See Photo 1)
(4) Remove the back panel. (See Photo 1)
(5) Remove the electrical parts box. (See Photo 5)
(6) Remove the LEV coil. (See Photo 9)
(7) Recover refrigerant.
(8) Remove the welded part of LEV.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the back panel.
Note 3: When installing the LEV, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.

10. Removing the high pressure switch (63H)

(1) Remove the service panel. (See Photo 2)
(2) Remove the top panel. (See Photo 1)
(3) Remove the front panel. (See Photo 1)
(4) Remove the back panel. (See Photo 1)
(5) Remove the electrical parts box. (See Photo 5)
(6) Pull out the lead wire of high pressure switch.
(7) Recover refrigerant.
(8) Remove the welded part of high pressure switch.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the back panel.
Note 3: When installing the high pressure switch, cover it with a wet cloth to prevent it from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.

11. Removing the reactor (ACL)

(1) Remove the service panel. (See Photo 2)
(2) Remove the top panel. (See Photo 1)
(3) Remove the front panel. (See Photo 1)
(4) Remove the back panel. (See Photo 1)
(5) Remove 2 reactor fixing screws (4 × 10) and remove the reactor.

Note: The reactor is attached to the rear of the electrical parts box.

PHOTOS/FIGURES

Photo 10-1: PUZ model

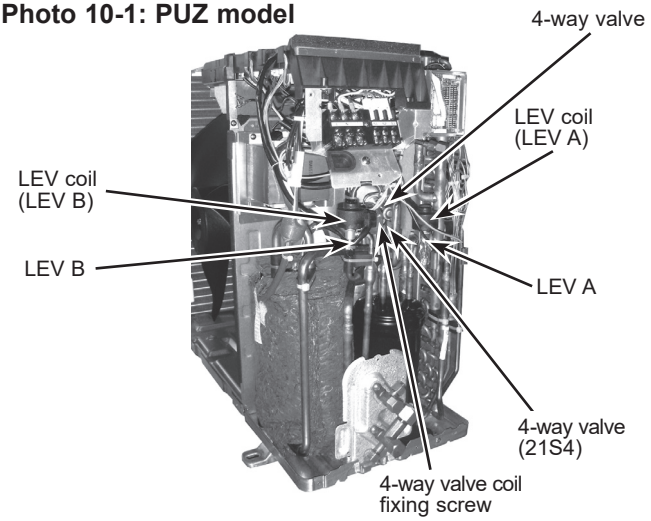


Photo 10-2: PUY model

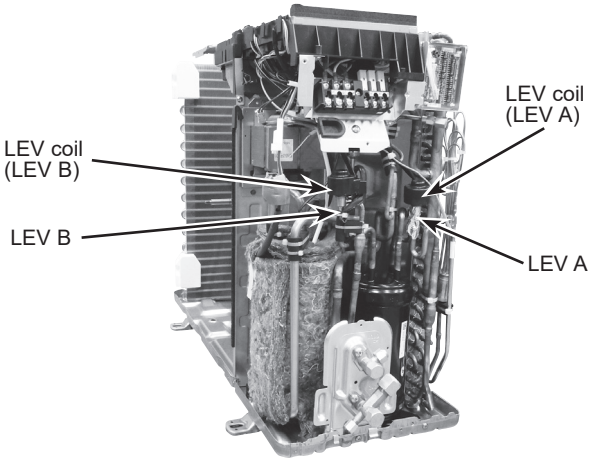
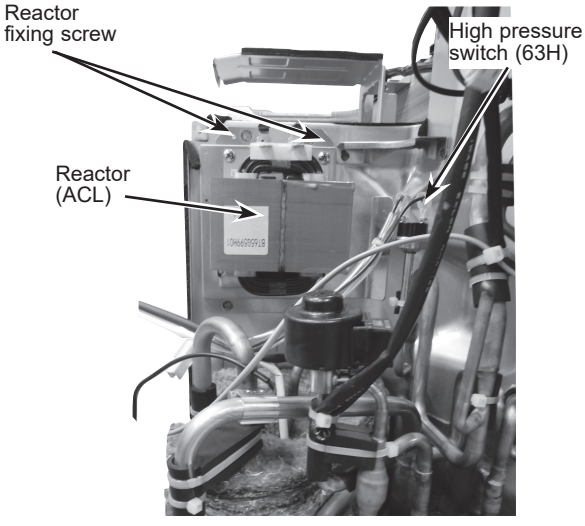
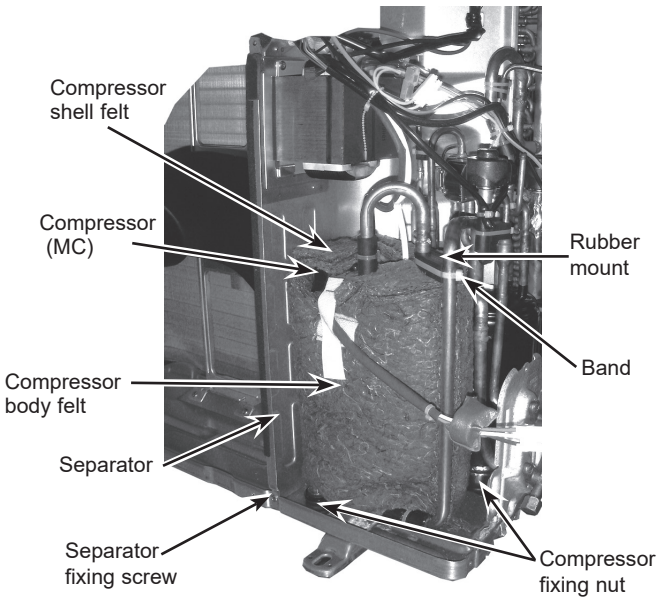
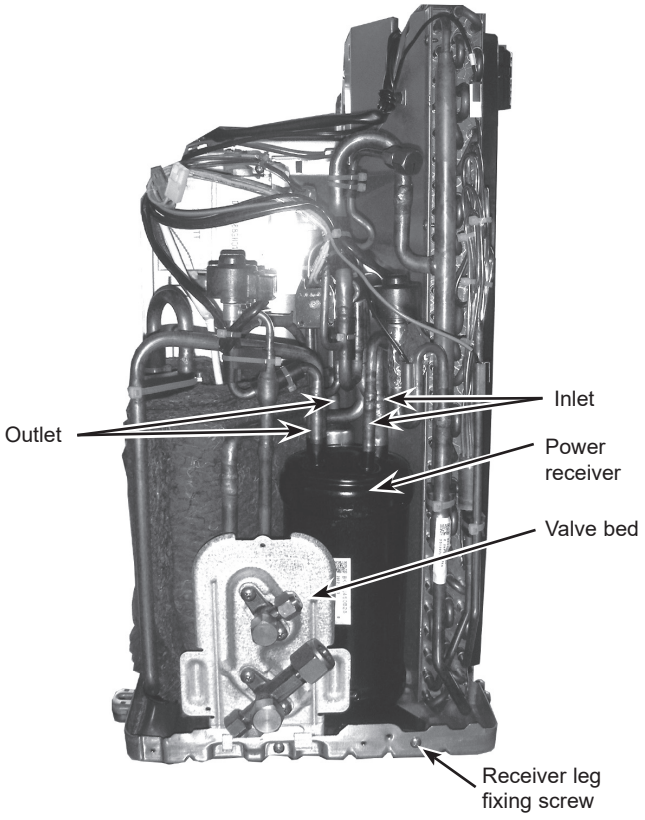


Photo 11



OPERATING PROCEDURE	PHOTOS/FIGURES
12. Removing the compressor (MC) (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel. (See Photo 1) (5) Remove the electrical parts box. (See Photo 5) (6) Remove the thermistor <Discharge> (TH4) and thermistor <Comp. surface> (TH33). (See Photo 8) (7) Remove 3 separator fixing screws (4 × 10) and remove the separator. (8) Remove the compressor body felt and compressor shell felt. (9) Cutting the band and remove the rubber mount. (10) Recover refrigerant. (11) Remove 3 compressor fixing nuts by using a spanner or a adjustable wrench. (12) Remove the welded pipe of compressor inlet and outlet. **Note: Recover refrigerant without spreading it in the air.**	**Photo 12** 
13. Removing the power receiver (1) Remove the service panel. (See Photo 2) (2) Remove the top panel. (See Photo 1) (3) Remove the front panel. (See Photo 1) (4) Remove the back panel. (See Photo 1) (5) Remove the electrical parts box. (See Photo 5) (6) Recover refrigerant. (7) Remove 4 welded pipes of power receiver inlet and outlet. (8) Remove 2 receiver leg fixing screws (4 × 10). (9) Remove the power receiver together with the receiver leg. **Note: Recover refrigerant without spreading it in the air.**	**Photo 13** 

PUZ-A24NHA7 **PUZ-A30NHA7** **PUY-A24NHA7** **PUY-A30NHA7**
PUZ-A24NHA7-BS **PUZ-A30NHA7-BS** **PUY-A24NHA7-BS** **PUY-A30NHA7-BS**

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

PHOTO: PUZ-A24NHA7

OPERATING PROCEDURE

1. Removing the service panel and top panel

(1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel.

(2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it.

2. Removing the fan motor (MF1)

(1) Remove the service panel. (See Photo 1)

(2) Remove the top panel. (See Photo 1)

(3) Remove 4 fan grille fixing screws (5 × 12) to detach the fan grille. (See Photo 1)

(4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2)

(5) Disconnect the connector CNF1 on controller circuit board in electrical parts box.

(6) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (See Photo 3)

3. Removing the electrical parts box

(1) Remove the service panel. (See Photo 1)

(2) Remove the top panel. (See Photo 1)

(3) Disconnect the indoor/outdoor connecting wire from terminal block.

(4) Disconnect the connector CNF1, LEV-A and LEV-B on the controller circuit board.

<Symbols on the board>

- CNF1 : Fan motor
- LEV-A, LEV-B : LEV

(5) Disconnect the pipe-side connections of the following parts.

- Thermistor <Liquid> (TH3)
- Thermistor <Discharge> (TH4)
- Thermistor <2-phase pipe, Ambient> (TH7/6)
- Thermistor <Heat sink> (TH8)
- High pressure switch (63H)
- 4-way valve coil (21S4)
- Thermistor <Suction> (TH32)
- Thermistor <Comp. surface> (TH33)

(6) Remove the terminal cover and disconnect the compressor lead wire.

(7) Remove an electrical parts box fixing screw (4 × 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.

PHOTOS/FIGURES

Photo 1

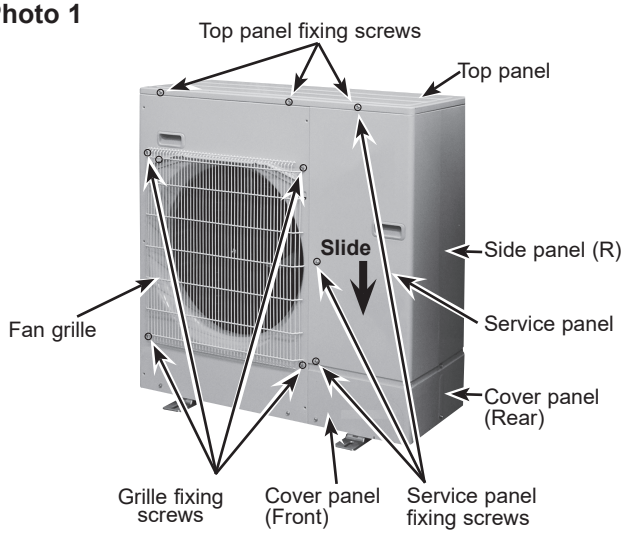


Photo 2

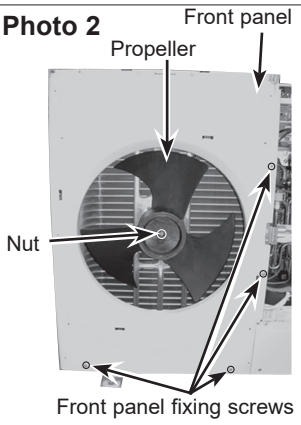


Photo 3

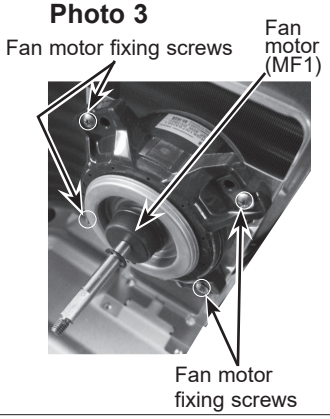
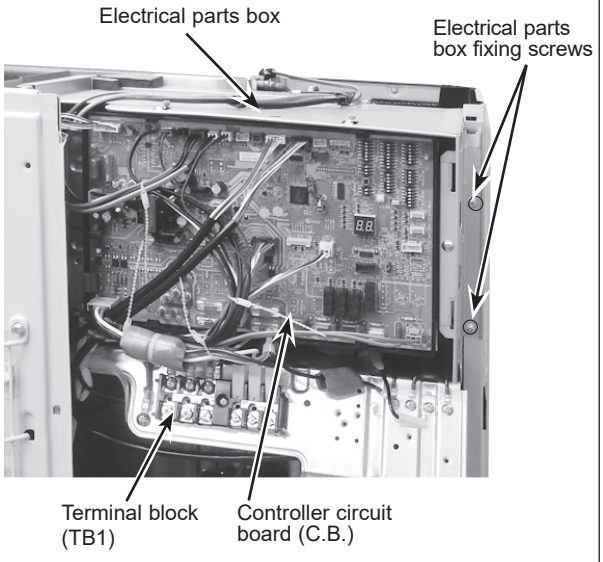
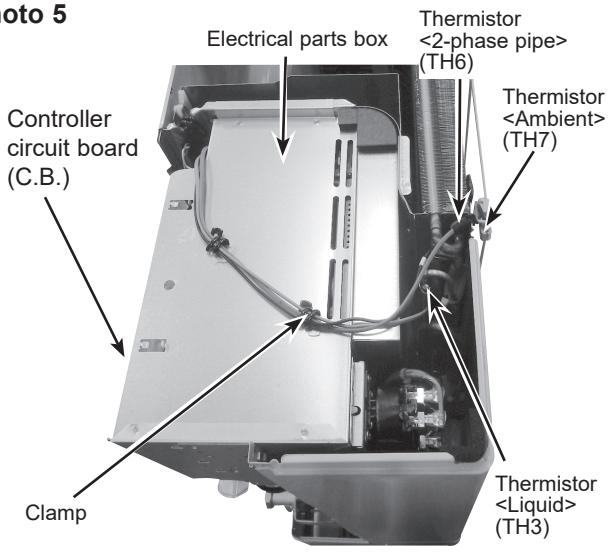
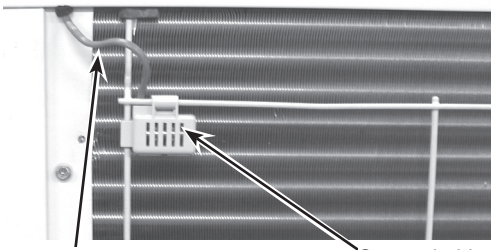
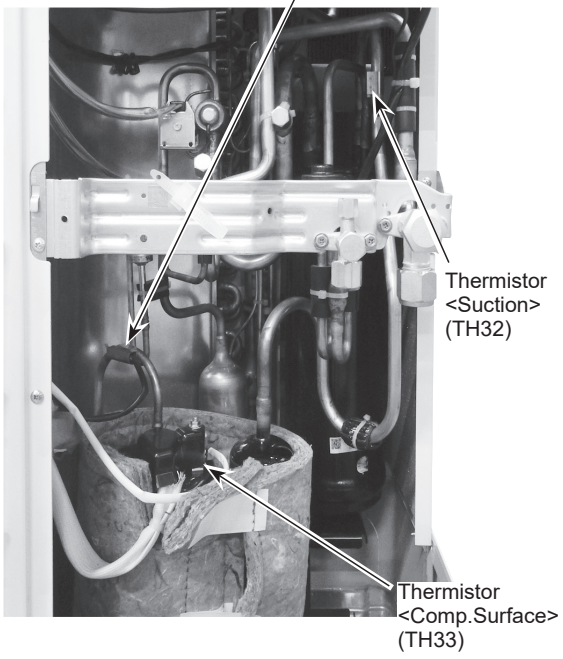


Photo 4



OPERATING PROCEDURE	PHOTOS/FIGURES
4. Removing the thermistor <Liquid> (TH3) and thermistor <2-phase pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (red) and TH3 (white) on the controller circuit board in the electrical parts box. (4) Loosen the 2 clamps for the lead wires on the top of the electrical parts box. (5) Pull out the thermistor <2-phase pipe> (TH6) and the thermistor <Liquid> (TH3) from each sensor holders. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7), since they are combined together. Refer to procedure No.5 below to remove thermistor <Ambient>.**	**Photo 5** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (red) on the controller circuit board in the electrical parts box. (4) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 5) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together. Refer to procedure No.4 above to remove thermistor <2-phase pipe>.**	**Photo 6** 
6. Removing the thermistor <Discharge> (TH4) and thermistor <Comp. surface> (TH33) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connectors, TH4 (white) and TH33 (yellow), on the controller circuit board in the electrical parts box. (3) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 5) (4) Pull out the thermistor <Discharge> (TH4) from the sensor holder. [Removing the thermistor<Comp. surface> (TH33)] (5) Remove the compressor cover (upper) and pull out the thermistor <Comp. surface> (TH33) from the holder of the compressor shell.	**Photo 7** 
7. Removing the thermistor <Suction> (TH32) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connectors TH32 (black) on the controller circuit board in the electrical parts box. (3) Disconnect the lead wires from the wire clip on the outdoor controller board in the electrical parts box. (4) Loosen the clamp for the lead wire in the electrical parts box. (See Photo 5) (5) Pull out the thermistor <Suction> (TH32) from the sensor holder.	

OPERATING PROCEDURE

8. Removing the 4-way valve coil (21S4), LEV coil (LEV(A), LEV(B))

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 4)

[Removing the 4-way valve coil]

(4) Remove 4-way valve coil fixing screw (M4 × 6).
(5) Remove the 4-way valve coil by sliding the coil toward you.
(6) Disconnect the connector 21S4 (green) on the controller board in the electrical parts box.

[Removing the LEV coil]

(4) Remove the LEV coil by sliding the coil upward.
(5) Disconnect the connectors, LEV A (white) and LEV B (red), on the controller circuit board in the electrical parts box.

9. Removing the 4-way valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 4)
(4) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) and then remove the valve bed.
(5) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit and then remove the right side panel.
(6) Remove the 4-way valve coil. (See Photo 8)
(7) Recover refrigerant.
(8) Remove the welded part of 4-way valve.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.

10. Removing the LEV

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 4)
(4) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) and then remove the valve bed.
(5) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit and then remove the right side panel.
(6) Remove the LEV.
(7) Recover refrigerant.
(8) Remove the welded part of linear expansion valve.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing the LEV, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.

PHOTOS/FIGURES

Photo 8

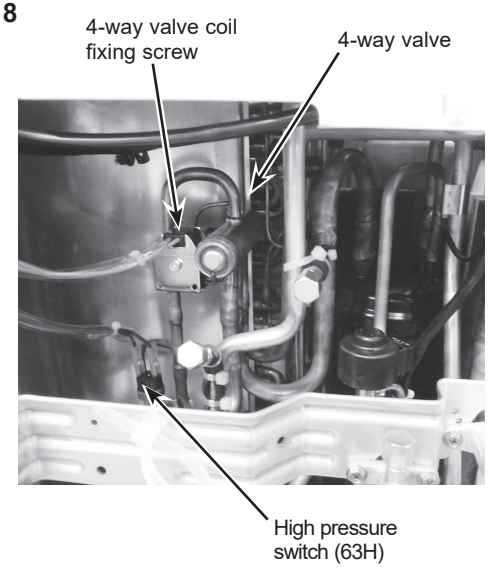
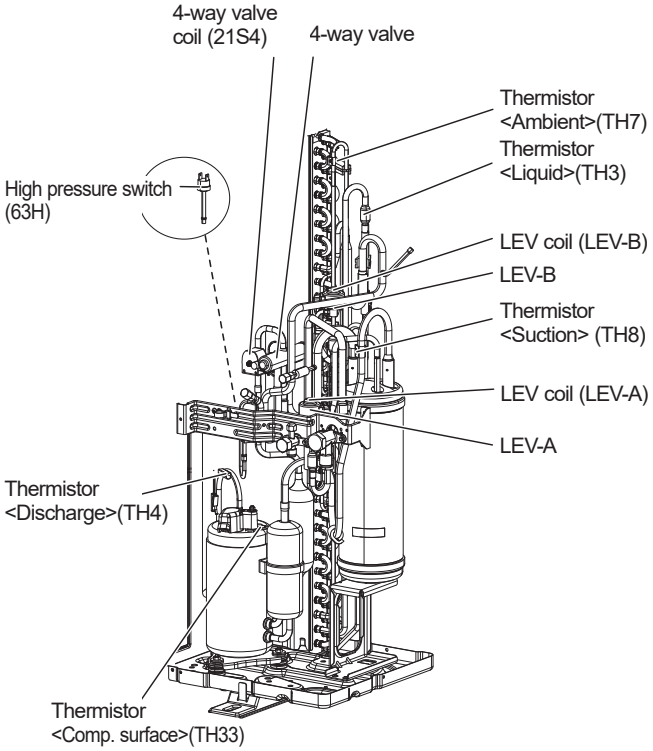
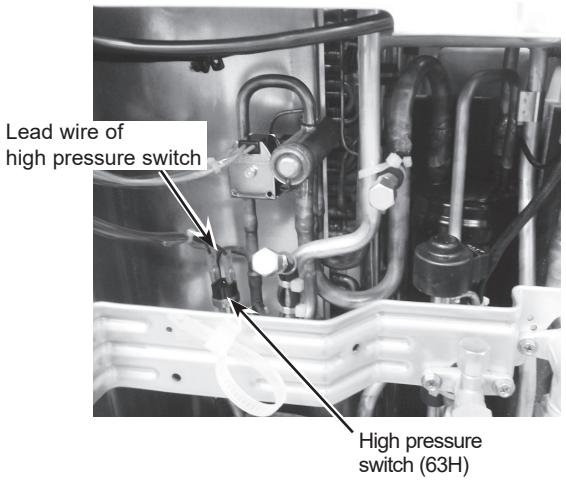
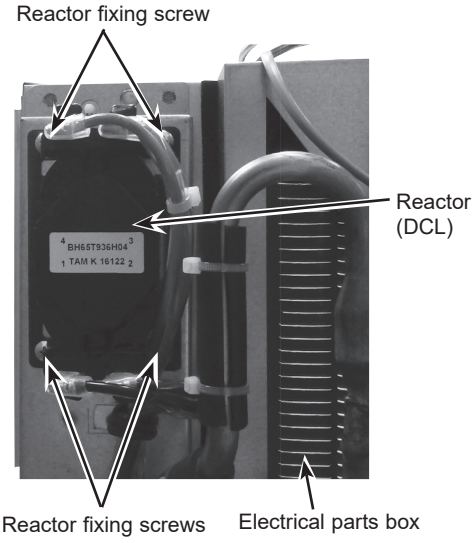
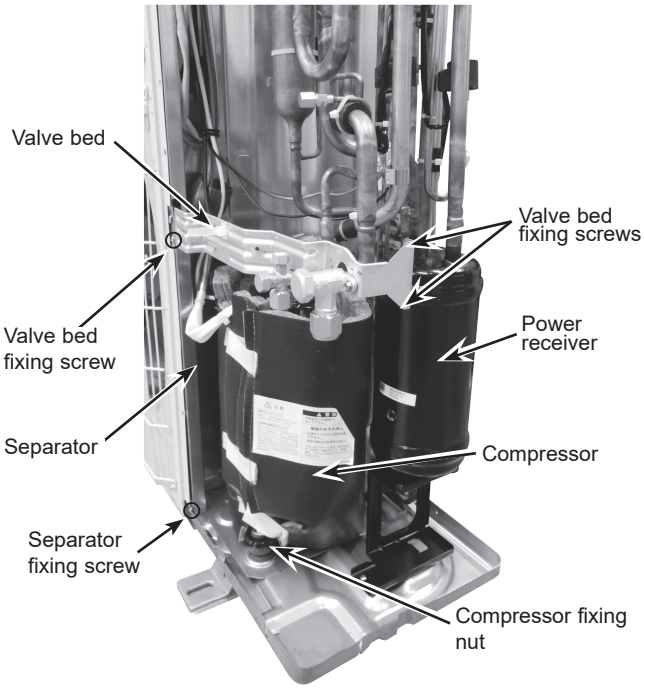
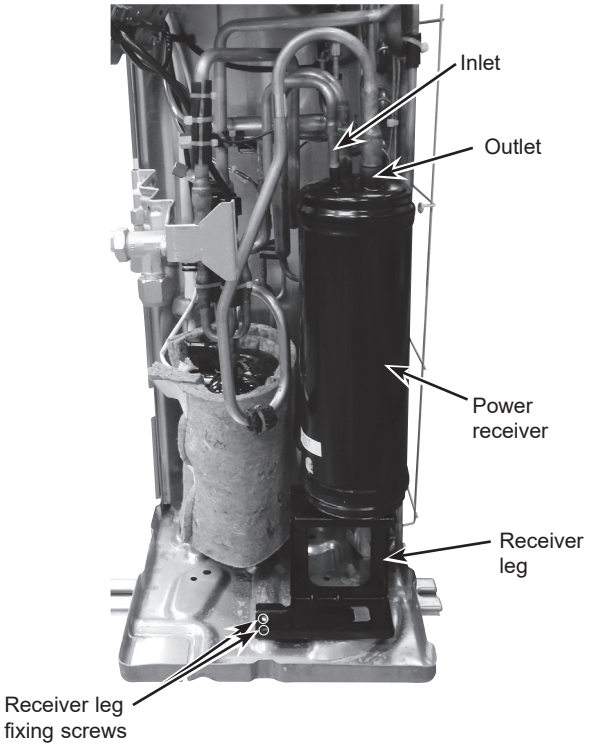


Figure 1



OPERATING PROCEDURE	PHOTOS/FIGURES
11. Removing the high pressure switch (63H) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 4) (4) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit and remove the right side panel. (5) Pull out the lead wire of high pressure switch. (6) Recover refrigerant. (7) Remove the welded part of high pressure switch. **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the right side panel.** **Note 3: When installing the high pressure switch, cover it with a wet cloth to prevent it from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.**	**Photo 9** 
12. Removing the reactor (DCL) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 4) (4) Remove the reactor fixing screws (4 places, 4 × 10) **Note: The reactor is attached to the rear of the electrical parts box.**	**Photo10** 

OPERATING PROCEDURE	PHOTOS/FIGURES
13. Removing the compressor (MC) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 2 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 1) (4) Remove 2 back cover panel fixing screws (5 × 12) and remove the back cover panel. (5) Remove the electrical parts box. (See Photo 4) (6) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) and then remove the valve bed. (7) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit then remove the right side panel. (8) Remove 2 separator fixing screws (4 × 10) and remove the separator. (9) Recover refrigerant. (10) Remove the 3 points of the compressor fixing nut using a spanner or a adjustable wrench. (11) Remove the welded pipe of compressor inlet and outlet then remove the compressor. **Note: Recover refrigerant without spreading it in the air.**	**Photo 11** 
14. Removing the power receiver (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 2 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 1) (4) Remove 2 back cover panel fixing screws (5 × 12) and remove the back cover panel. (5) Remove the electrical parts box. (See Photo 4) (6) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) then remove the valve bed. (7) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit then remove the right side panel. (8) Recover refrigerant. (9) Remove 4 welded pipes of power receiver inlet and outlet. (10) Remove 2 receiver leg fixing screws (4 × 10). **Note: Recover refrigerant without spreading it in the air.**	**Photo 12** 

PUZ-A36NKA7 **PUZ-A42NKA7** **PUY-A36NKA7** **PUY-A42NKA7**
PUZ-A36NKA7-BS **PUZ-A42NKA7-BS** **PUY-A36NKA7-BS** **PUY-A42NKA7-BS**

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

PHOTO: PUZ-A36NKA7

OPERATING PROCEDURE

1. Removing the service panel, top panel, ice guard, and propeller

(1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel. (See Photo 1)
(2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it. (See Photo 1)
(3) Remove 4 grille fixing screws (5 × 12) from each grille and remove it. (See Photo 1)
(4) Pull down the ice guard and remove it.
(5) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2)

2. Removing the fan motor (MF1, MF2)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 5 fan grille fixing screws (5 × 12) to detach the front panel and the fan grille together. (See Photo 1)
(4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2)
(5) Disconnect the connectors, CNF1, CNF2 (white) on the controller circuit board in electrical parts box.
(6) Remove 4 fan motor fixing screws (5 × 25) to detach the fan motor. (See Photo 3)
(7) When attaching the fan motor, make sure to route the cable through the hook below the fan motor and fix firmly with the clamp.

3. Removing the electrical parts box

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Disconnect the indoor/outdoor connecting wire from terminal block.
(4) Remove all the following connectors from controller circuit board; fan motor, linear expansion valve, thermistor <Liquid>, thermistor <2-phase pipe>, thermistor <Ambient>, high pressure switch, 4-way valve coil. Then remove a screw (4 × 8) from the valve bed to remove the lead wire.
Pull out the disconnected wire from the electrical parts box.
<Diagram symbol in the connector housing>
• Fan motor (CNF1, CNF2)
• Linear expansion valve (LEV-A, B)
• Thermistor <Liquid> (TH3)
• Thermistor <Comp. surface> (TH33)
• Thermistor <2-phase pipe, Ambient> (TH6/7)
• Thermistor <Suction> (TH32)
• High pressure switch (63H)
• 4-way valve coil (21S4)
(5) Remove the terminal cover and disconnect the compressor lead wire.
(6) Remove an electrical parts box fixing screw (2 for front /4 × 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.

PHOTOS/FIGURES

Photo 1

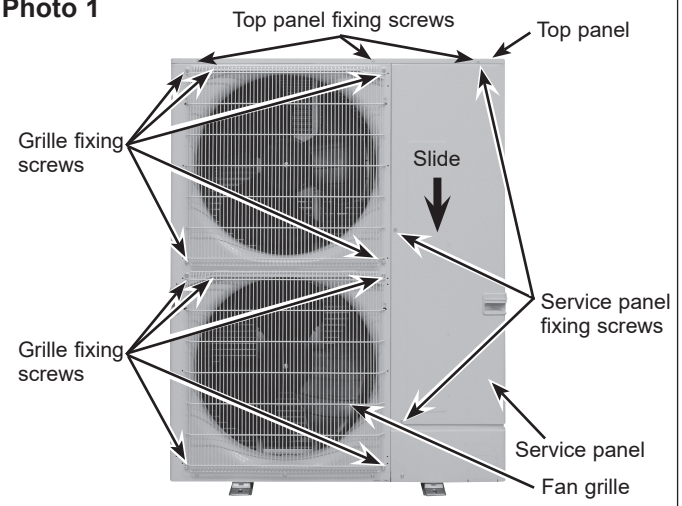


Photo 2

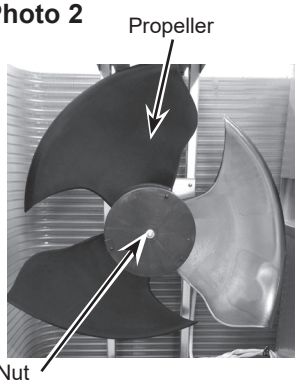


Photo 3

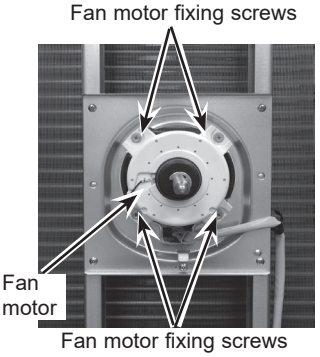
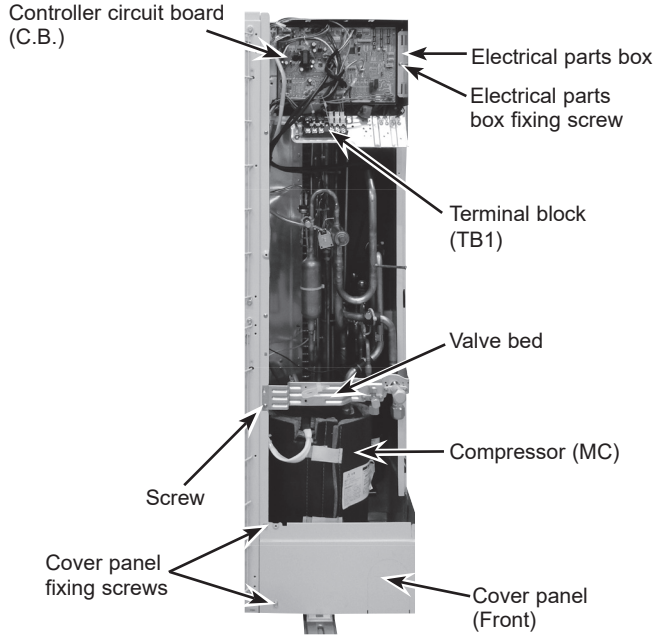
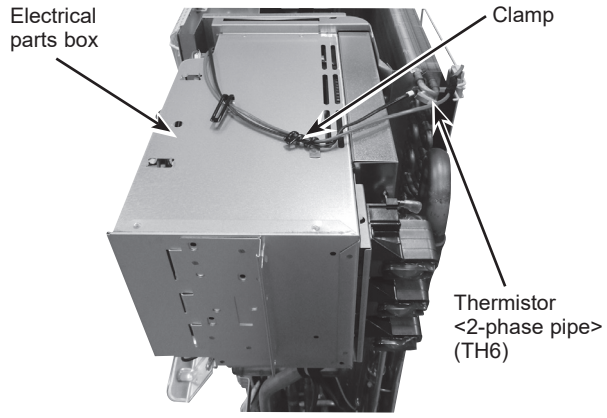
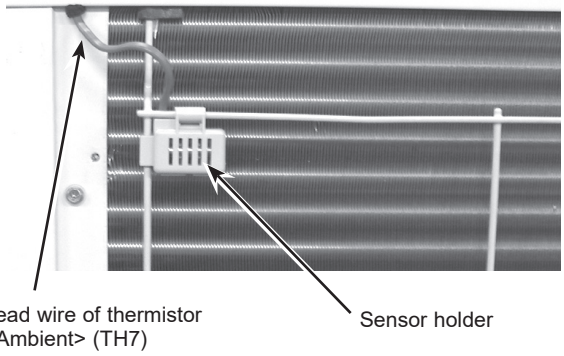
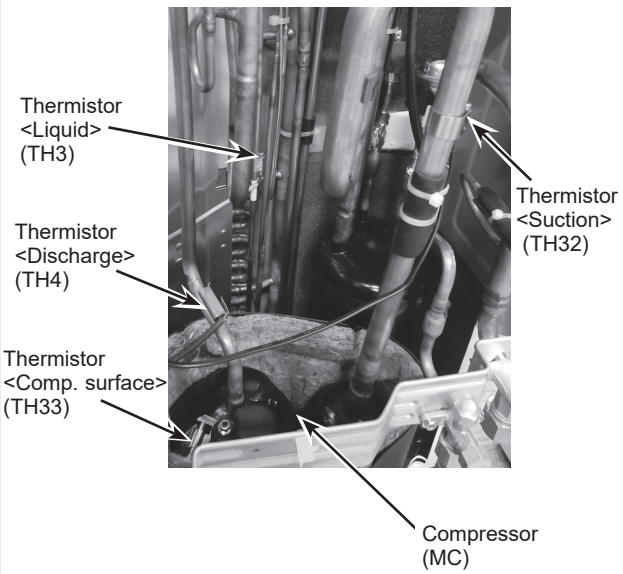


Photo 4



OPERATING PROCEDURE	PHOTOS/FIGURES
4. Removing the thermistor <2-phase pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connectors, TH6 and TH7 (red), on the controller circuit board in the electrical parts box. (4) Loosen the clamp for the lead wire in the rear of the electrical parts box. (5) Pull out the thermistor <2-phase pipe> (TH6) from the sensor holder. **Note: In the case of replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together.** **Refer to No.5 below to remove thermistor <Ambient>.**	**Photo 5** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Figure 1) (3) Disconnect the connector TH7 (red) on the controller circuit board in the electrical parts box. (4) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 5) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: In the case of replacing thermistor <Ambient> (TH7),** **replace it together with thermistor <2-phase pipe> (TH6), since they are combined together.** **Refer to No.4 above to remove thermistor <2-phase pipe>.**	**Photo 6** 
6. Removing the thermistor <Liquid> (TH3), thermistor <Discharge> (TH4), thermistor <Comp. surface> (TH33), and thermistor <Suction> (TH32) (1) Remove the service panel.(See Photo 1) (2) Disconnect the connectors, TH3 (white), TH32 (black), TH4 (white), and TH33 (yellow), on the controller circuit board in the electrical parts box. (3) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 5) (4) Pull out the thermistor <Liquid> (TH3), thermistor <Comp. surface> (TH33) and thermistor <Suction> (TH32) from the sensor holder.	**Photo 7** 

OPERATING PROCEDURE

7. Removing the 4-way valve coil (21S4) and linear expansion valve coil (LEV-A, B)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)

[Removing the 4-way valve coil]

(3) Remove 4-way valve coil fixing screw (M4 × 6).
(4) Remove the 4-way valve coil by sliding the coil toward you.
(5) Disconnect the connector 21S4 (green) on the controller circuit board in the electrical parts box.

[Removing the linear expansion valve coil]

(3) Remove the linear expansion valve coil by sliding the coil upward.
(4) Disconnect the connectors, LEV-A (white) and LEV-B (red), on the controller circuit board in the electrical parts box.

8. Removing the 4-way valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 3 valve bed fixing screws (4 × 10), 4 ball valve and stop valve fixing screws (5 × 16), then remove the valve bed.
(4) Remove 4 right side panel fixing screws (5 × 12) in the rear of the unit and then remove the right side panel.
(5) Remove the 4-way valve coil. (See Photo 8)
(6) Recover refrigerant.
(7) Remove the welded part of 4-way valve.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating (250˚F or more), then braze the pipes so that the inside of pipes are not oxidized.

9. Removing linear expansion valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 3 valve bed fixing screws (4 × 10), 4 ball valve and stop valve fixing screws (5 × 16), then remove the valve bed.
(4) Remove 4 right side panel fixing screws (5 × 12) in the rear of the unit and then remove the right side panel.
(5) Remove the linear expansion valve. (See Photo 8)
(6) Recover refrigerant.
(7) Remove the welded part of linear expansion valve.

Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing the linear expansion valve, cover it with a wet cloth to prevent it from heating (250˚F or more), then braze the pipes so that the inside of pipes are not oxidized.

PHOTOS/FIGURES

Photo 8-1: PUZ model

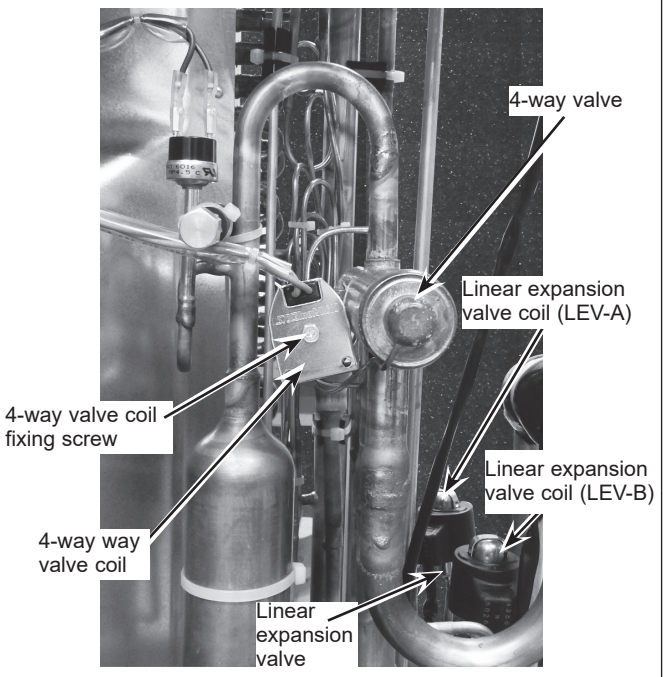
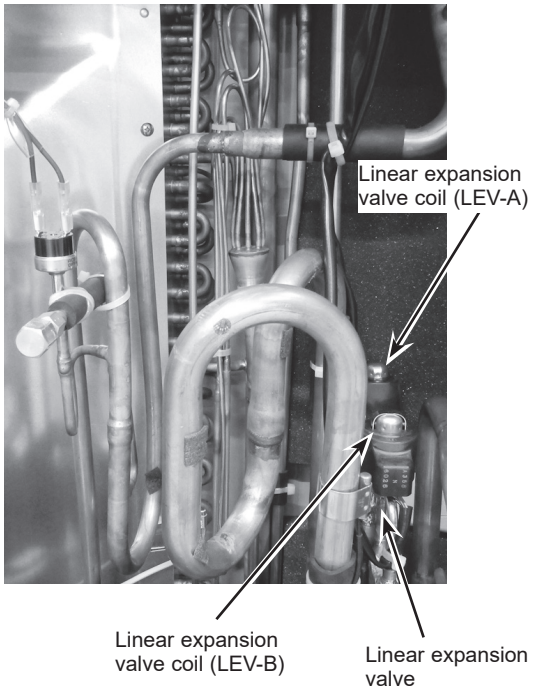
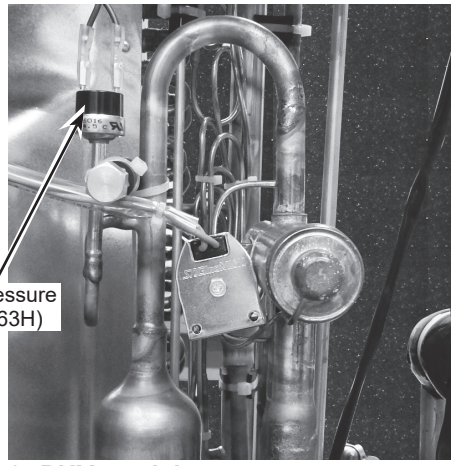
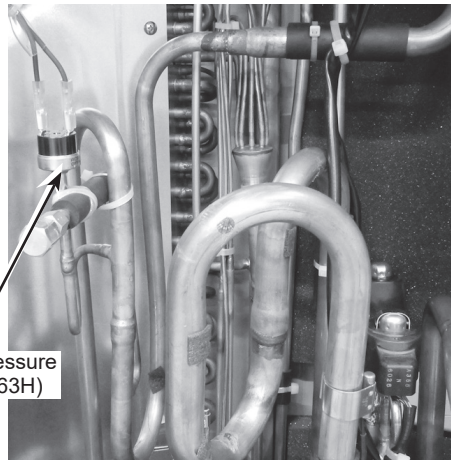
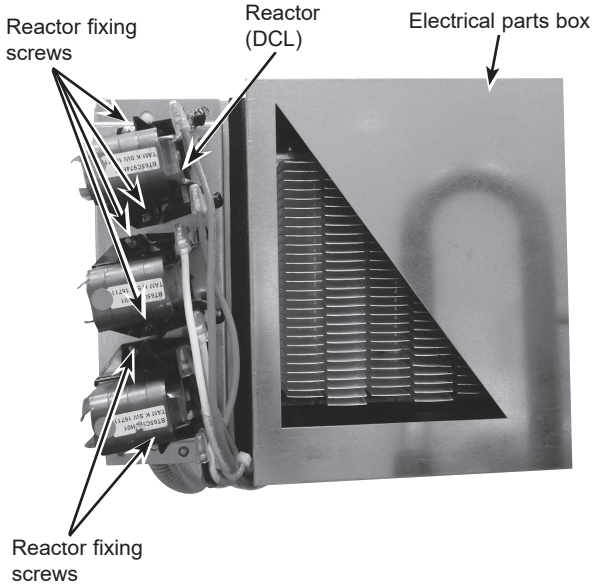
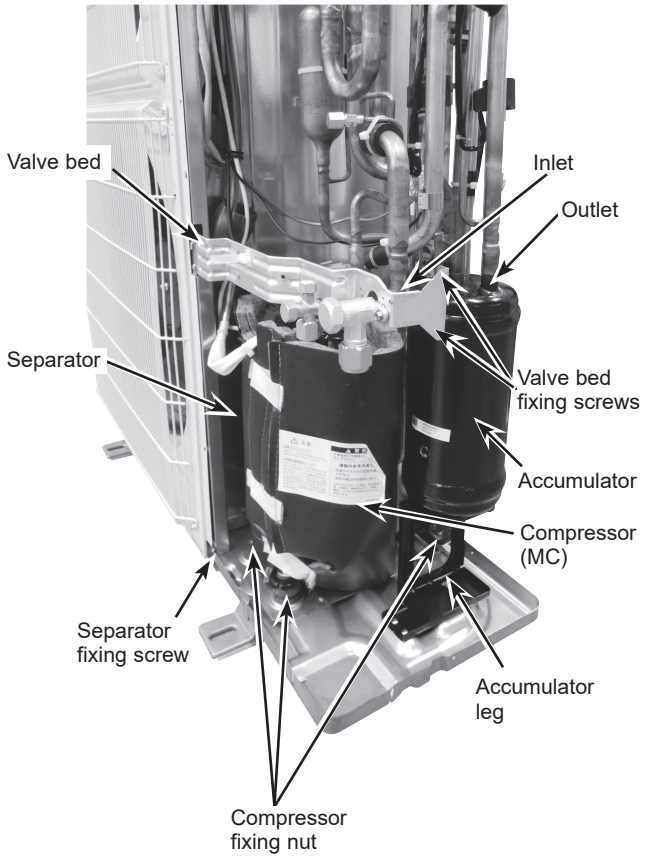


Photo 8-2: PUY model



OPERATING PROCEDURE	PHOTOS/FIGURES
10. Removing the high pressure switch (63H) (1) Remove the service panel. (See photo 1) (2) Remove the top panel. (See photo 1) (3) Remove 3 right side panel fixing screws (5 × 12) in the rear of the unit and remove the right side panel. (4) Pull out the lead wire of high pressure switch. (5) Recover refrigerant. (6) Remove the welded part of high pressure switch. **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the right side panel.** **Note 3: When installing the high pressure switch, cover it with a wet cloth to prevent it from heating (210°F or more), then braze the pipes so that the inside of pipes are not oxidized.**	**Photo 9-1: PUZ model**  **Photo 9-2: PUY model** 
11. Removing the reactor (DCL) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 5) <Removing the reactor> (4) Remove the reactor fixing screws (6 places, 4 × 10) and remove the reactor. **Note 1: The reactor is attached to the rear of the electrical parts box.** **Note 2: The 3 pieces of reactors to be replaced must have the same color of sticker. (Green, Orange, or Blue)**	**Photo 10** 

OPERATING PROCEDURE	PHOTOS/FIGURES
12. Removing the compressor (MC) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 1 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 4) (4) Remove 4 back cover panel fixing screws (5 × 12) and remove the back cover panel. (5) Remove the electrical parts box. (See Photo 5) (6) Remove 3 valve bed fixing screws (2 × 12), 4 ball valve and stop valve fixing screws (5 × 16), then remove the valve bed. (7) Remove 4 right side panel fixing screws (5 × 12) in the rear of the unit and then remove the right side panel. (8) Remove 3 separator fixing screws (4 × 10) and remove the separator. (9) Recover refrigerant. (10) Remove the 3 points of the compressor fixing nut using spanner or adjustable wrench. (11) Remove the welded pipe of the compressor inlet and outlet and then remove the compressor. **Note: Recover refrigerant without spreading it in the air.**	**Photo 11** 
13. Removing the power receiver (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 2 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 4) (4) Remove 2 back cover panel fixing screws (5 × 12) and remove the back cover panel. (5) Remove the electrical parts box. (See Photo 5) (6) Remove 3 valve bed fixing screws (4 × 10), 4 ball valve and stop valve fixing screws (5 × 16), then remove the valve bed. (7) Remove the right side panel fixing screws (4 for the rear, 1 on the right/5 × 12) and then remove the right side panel. (See Photo 1) (8) Remove 3 separator fixing screws (5 × 12) Recover refrigerant. (9) Remove 2 welded pipes of accumulator inlet and outlet. (10) Remove 2 accumulator leg fixing screws (4 × 10). **Note: Recover refrigerant without spreading it in the air.**	

Mr.SLIM

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