

SERVICE MANUAL R410A

No. OCH636
REVISED EDITION-E

Outdoor unit [Model Name]

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

[Service Ref.]

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

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

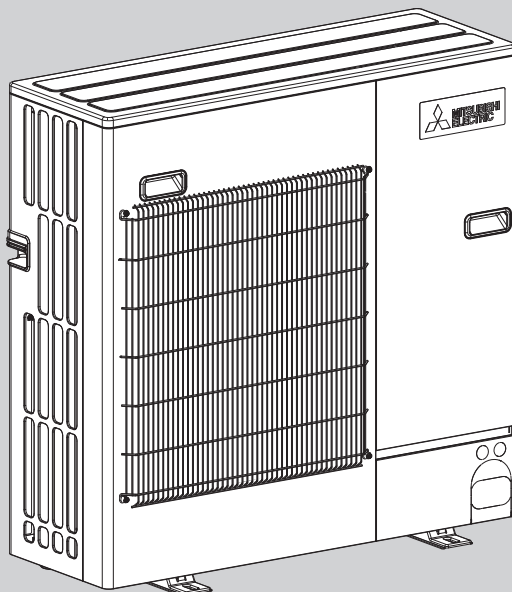
Revision:

- 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

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PARTS CATALOG (OCB636)

Mr. SLIM

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

2-1. 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

Caution 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.

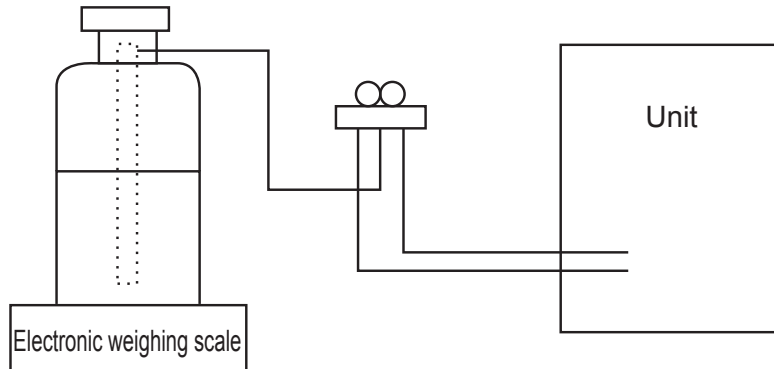
[1] Cautions for service

- (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

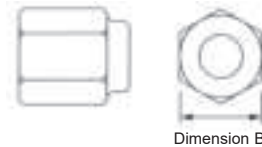
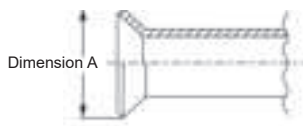
Since the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 7/256 inch [0.7 mm] or below.)

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 ($\frac{3}{4}$)	
		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	Tool exclusive for R410A	×
Charge hose	and operation check	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 adapter for reverse flow check	△ (Usable if equipped with adapter 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.

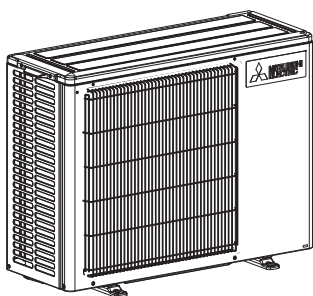
○ : Tools for other refrigerants can be used.

2-5. LOW AMBIENT COOLING

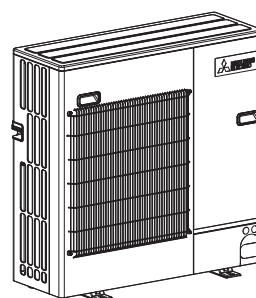
Precautions for low ambient cooling

- 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.

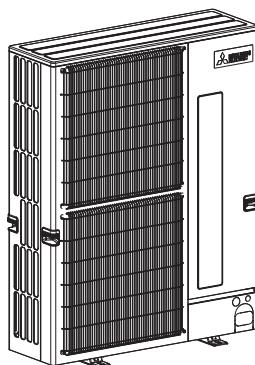
Note: During cooling operation under low ambient temperature, the bottom fan motor of A36, 42N stops occasionally. This is an intended feature, not a malfunction.



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

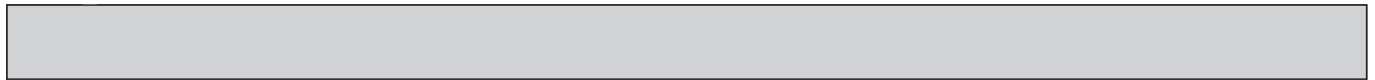
PRE-CHARGED REFRIGERANT IS SUPPLIED FOR PIPING LENGTH AT SHIPMENT.

(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.

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
Refrigerant piping	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
	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
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

5-1. 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

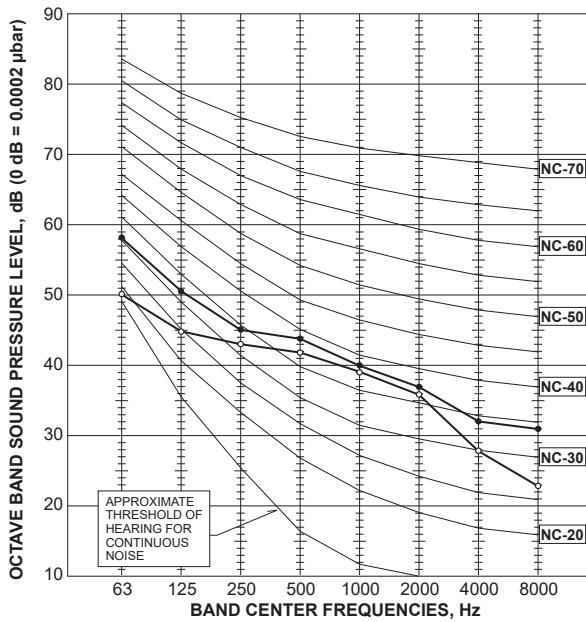
(at 68°F [20°C])

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

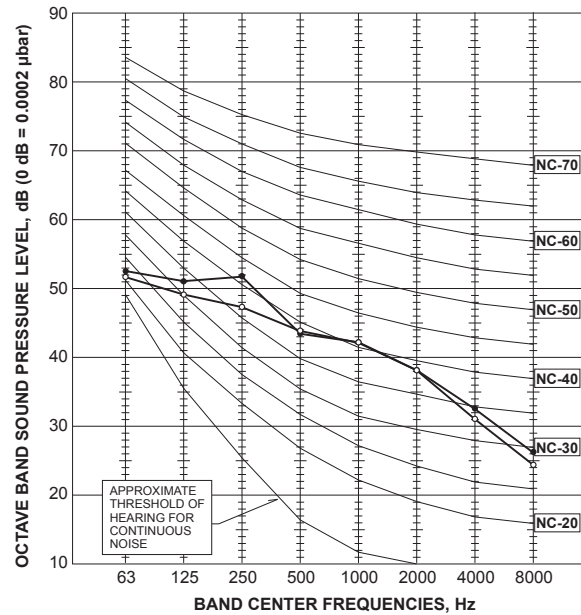
PUZ-A12/18NKA7(-BS)
PUY-A12/18NKA7(-BS)

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



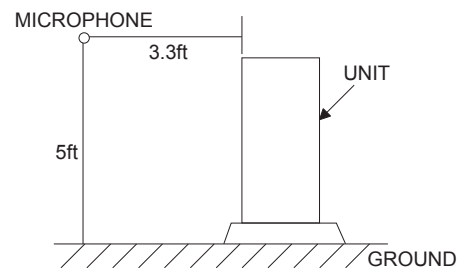
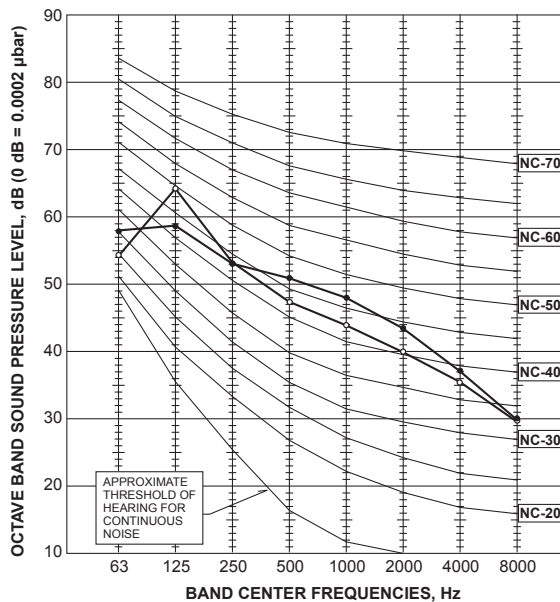
PUZ-A24/30NHA7(-BS)
PUY-A24/30NHA7(-BS)

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
Indoor side	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
	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
	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
	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
Indoor side	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
	Intake air temperature DB	°F	80	80	80	80	80	80
Indoor side	Intake air temperature WB	°F	67	67	67	67	67	67
	Discharge air temperature DB	°F	61	60	58	56	58	57
	Intake air temperature DB	°F	95	95	95	95	95	95
Outdoor side	Intake air temperature WB	°F	75	75	75	75	75	75
	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
Outdoor side	Discharge air temperature DB	°C	16.1	15.7	14.5	13.2	14.2	14.0
	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

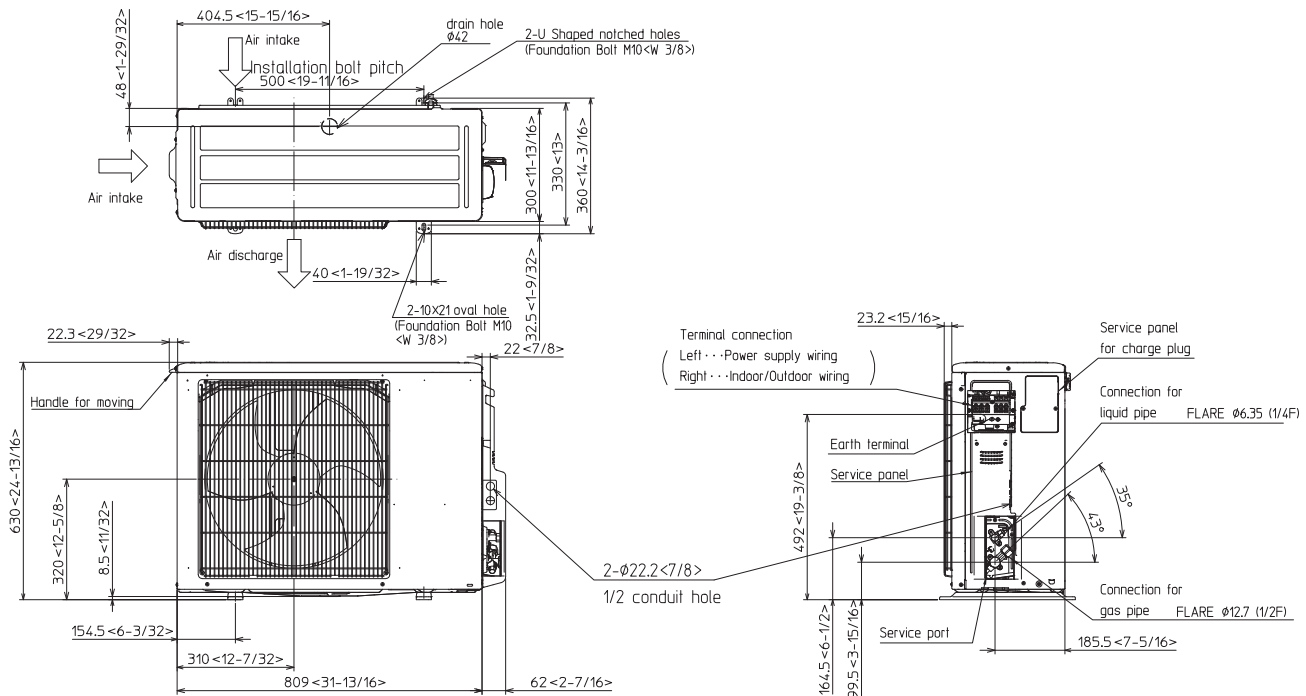
PUZ-A12NKA7
PUZ-A12NKA7-BS

PUZ-A18NKA7
PUZ-A18NKA7-BS

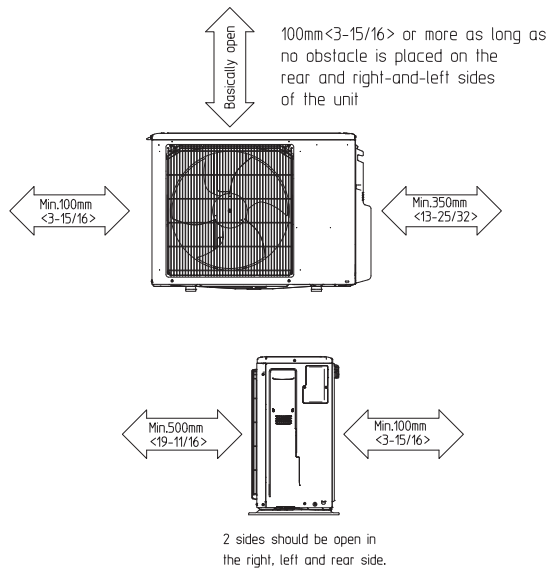
PUY-A12NKA7
PUY-A12NKA7-BS

PUY-A18NKA7
PUY-A18NKA7-BS

Unit: mm<in>

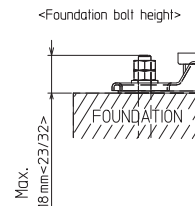


Free space around the outdoor unit
(basic example)



FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10 $< W 3/8 >$) bolts. (Bolts, washers and nut must be purchased locally).

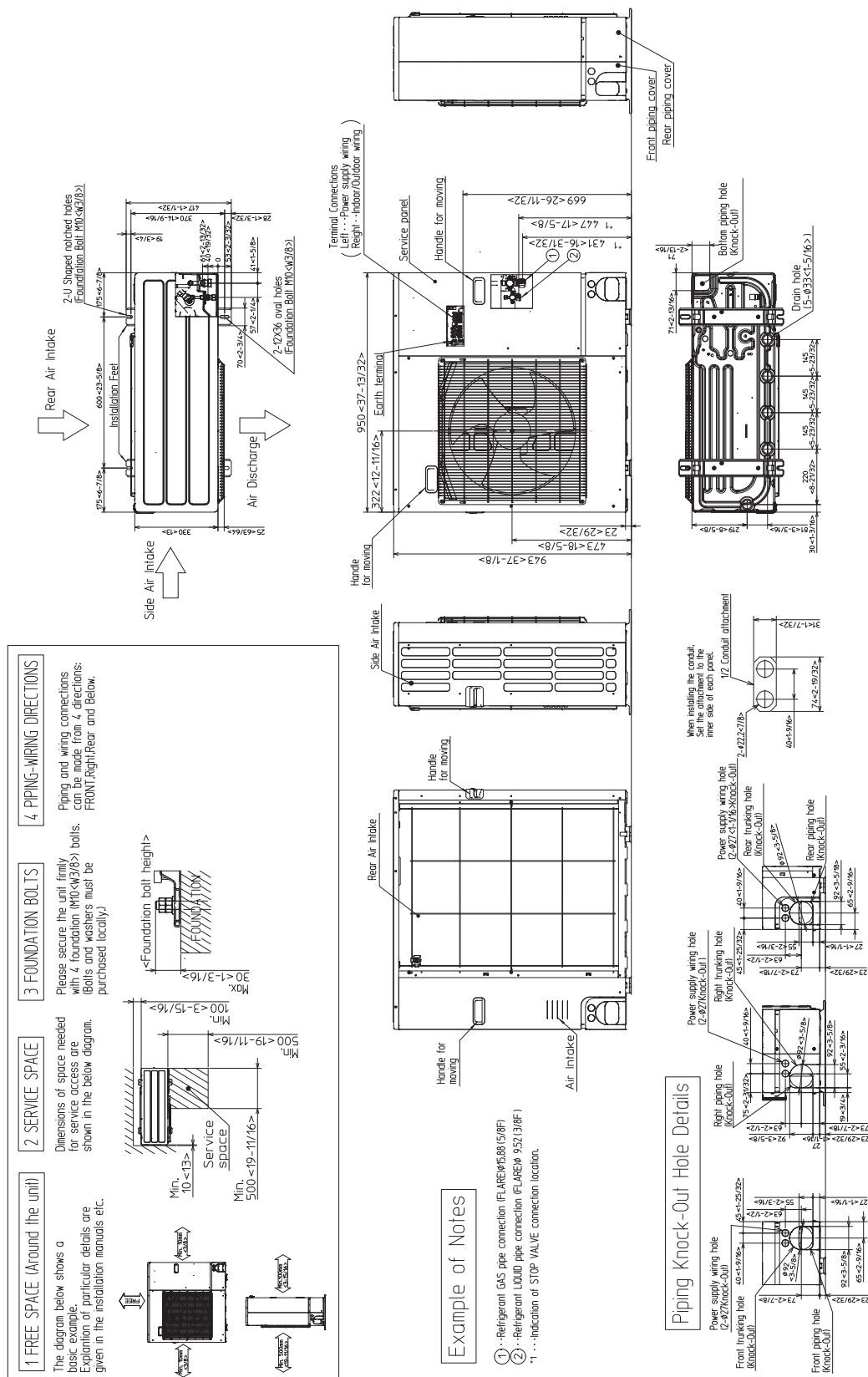


PIPING-WIRING DIRECTION

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

PUY-A30NHA7
PUY-A30NHA7-BS

Unit: mm<in>



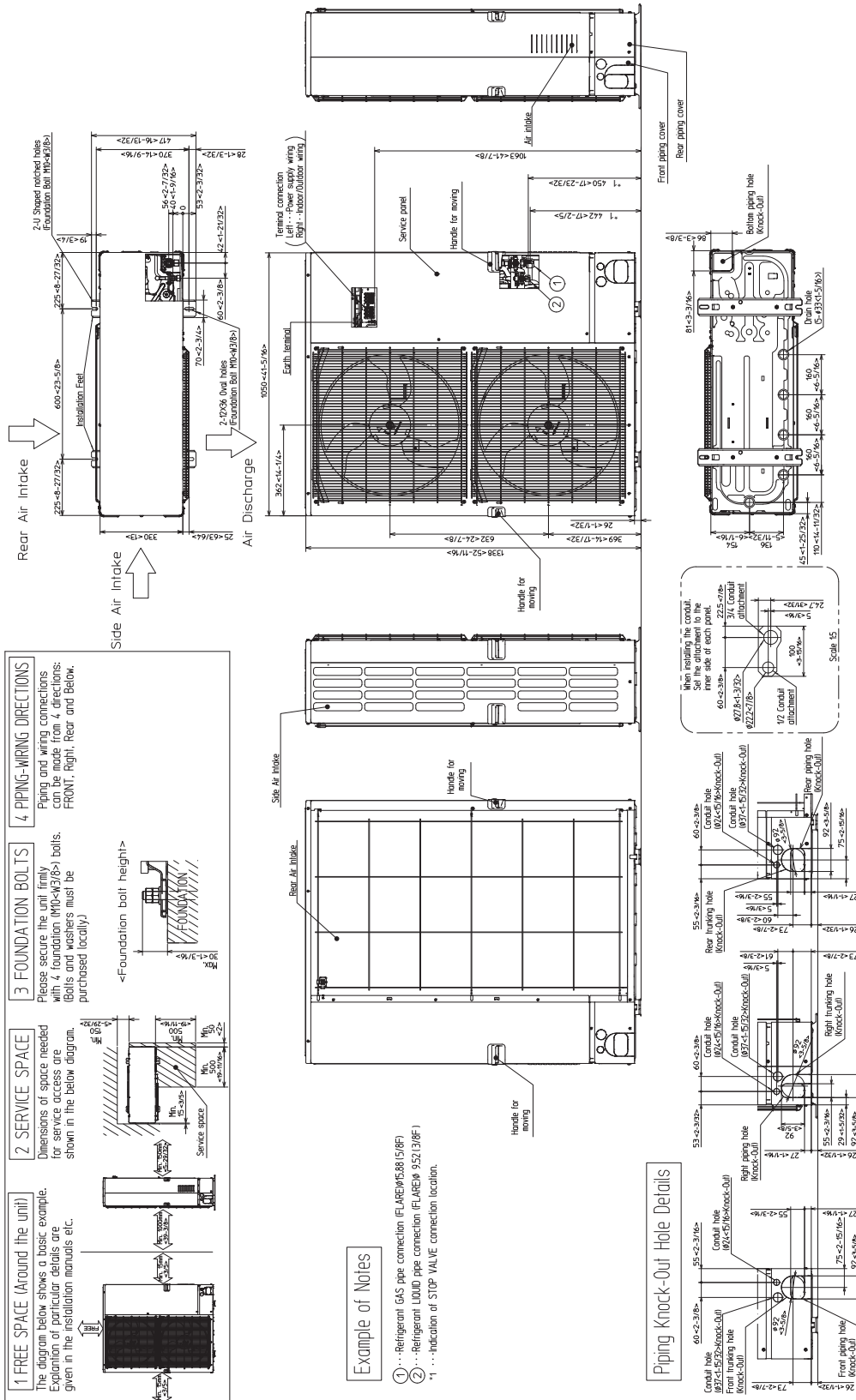
PUZ-A36NKA7
PUZ-A36NKA7-BS

PUZ-A42NKA7
PUZ-A42NKA7-BS

PUY-A36NKA7
PUY-A36NKA7-BS

PUY-A42NKA7
PUY-A42NKA7-BS

Unit: mm<in>



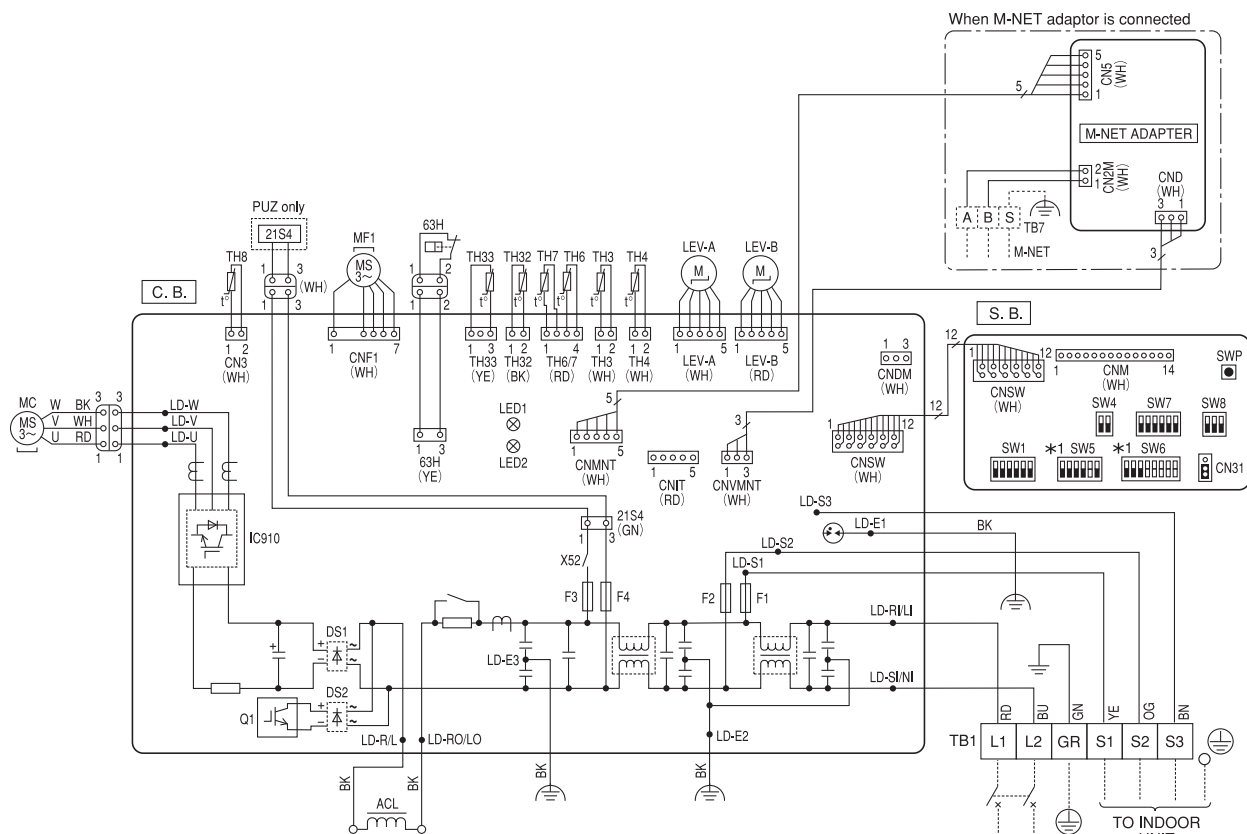
PUZ-A12NKA7
PUZ-A12NKA7-BS

PUZ-A18NKA7
PUZ-A18NKA7-BS

PUY-A12NKA7
PUY-A12NKA7-BS

PUY-A18NKA7
PUY-A18NKA7-BS

SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply, Indoor/Outdoor)	C. B.	Controller Circuit Board
MC	Motor for Compressor	F1, F2	Fuse (T10AL250V)
MF1	Fan Motor	F3, F4	Fuse (T3.15AL250V)
21S4	Solenoid Valve (4-Way Valve)	CNDM	Connector (Connection for Option)
63H	High Pressure Switch	S. B.	Switch Board
TH3	Thermistor (Liquid)	SW1	Switch (Manual Defrost, Defect History Record Reset, Refrigerant Address)
TH4	Thermistor (Discharge)	SW4	Switch (Function Switch)
TH6	Thermistor (2-Phase Pipe)	SW5	Switch (Function Switch, Model Select)
TH7	Thermistor (Ambient)	SW6	Switch (Model Select)
TH8	Thermistor (Heat Sink)	SW7	Switch (Function Switch)
TH32	Thermistor (Suction)	SW8	Switch (Function Switch)
TH33	Thermistor (Comp. Surface)	SWP	Switch (Pump Down)
LEV-A, LEV-B	Linear Expansion Valve	CNM	Connector (Connection for Option)
ACL	Reactor	CN31	Connector (Emergency Operation)



*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)

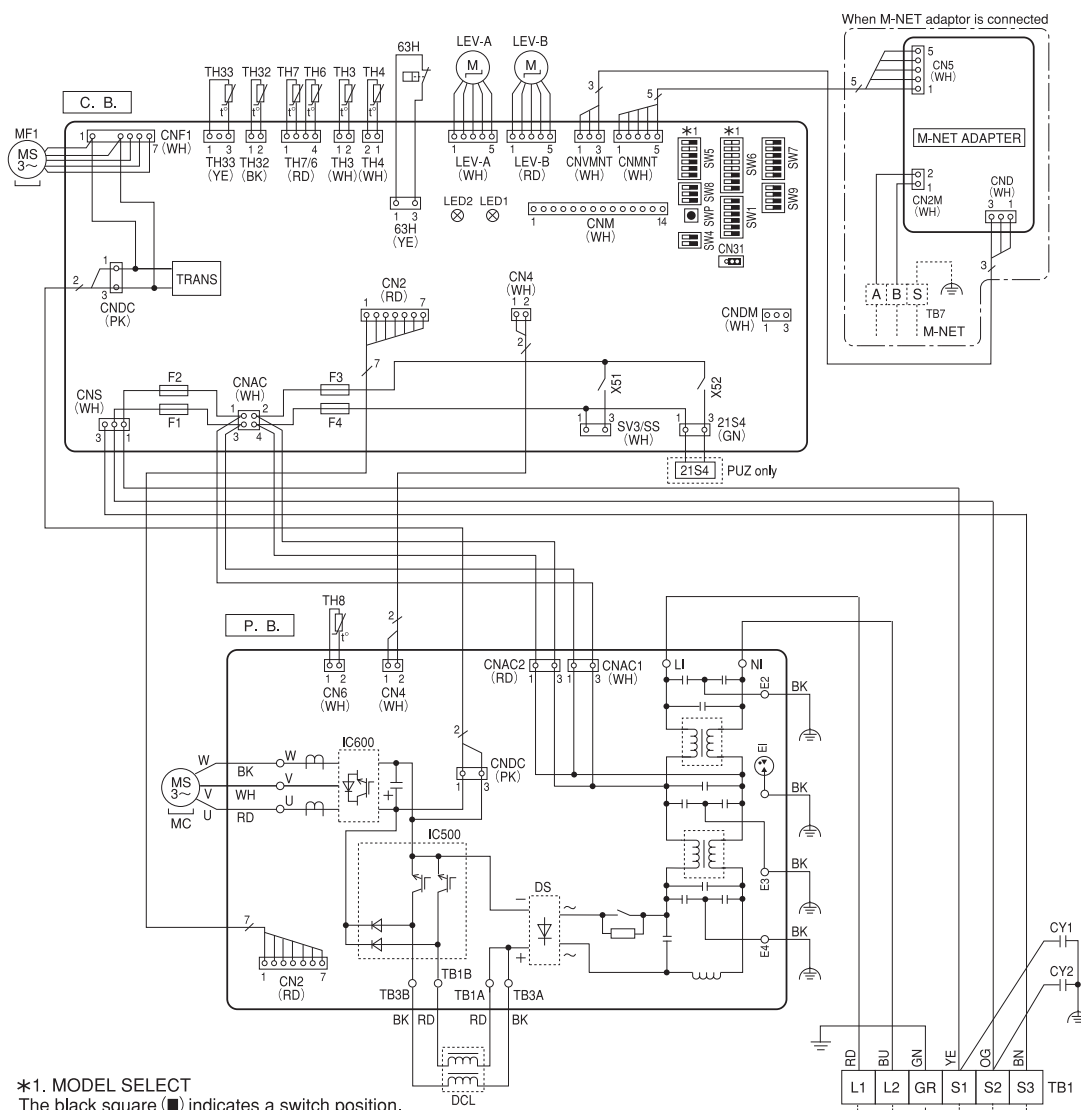
PUZ-A24NHA7
PUZ-A24NHA7-BS

PUZ-A30NHA7
PUZ-A30NHA7-BS

PUY-A24NHA7
PUY-A24NHA7-BS

PUY-A30NHA7
PUY-A30NHA7-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	Fan Motor	DCL	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)	SW4	Switch (Function Switch)	SV3/SS	Connector (Connection for Option)
TH32	Thermistor (Suction)				



*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)

POWER SUPPLY
208/230 V AC 60 Hz

*Use copper supply wires.
*Utilisez des d' alimentation en cuivre.

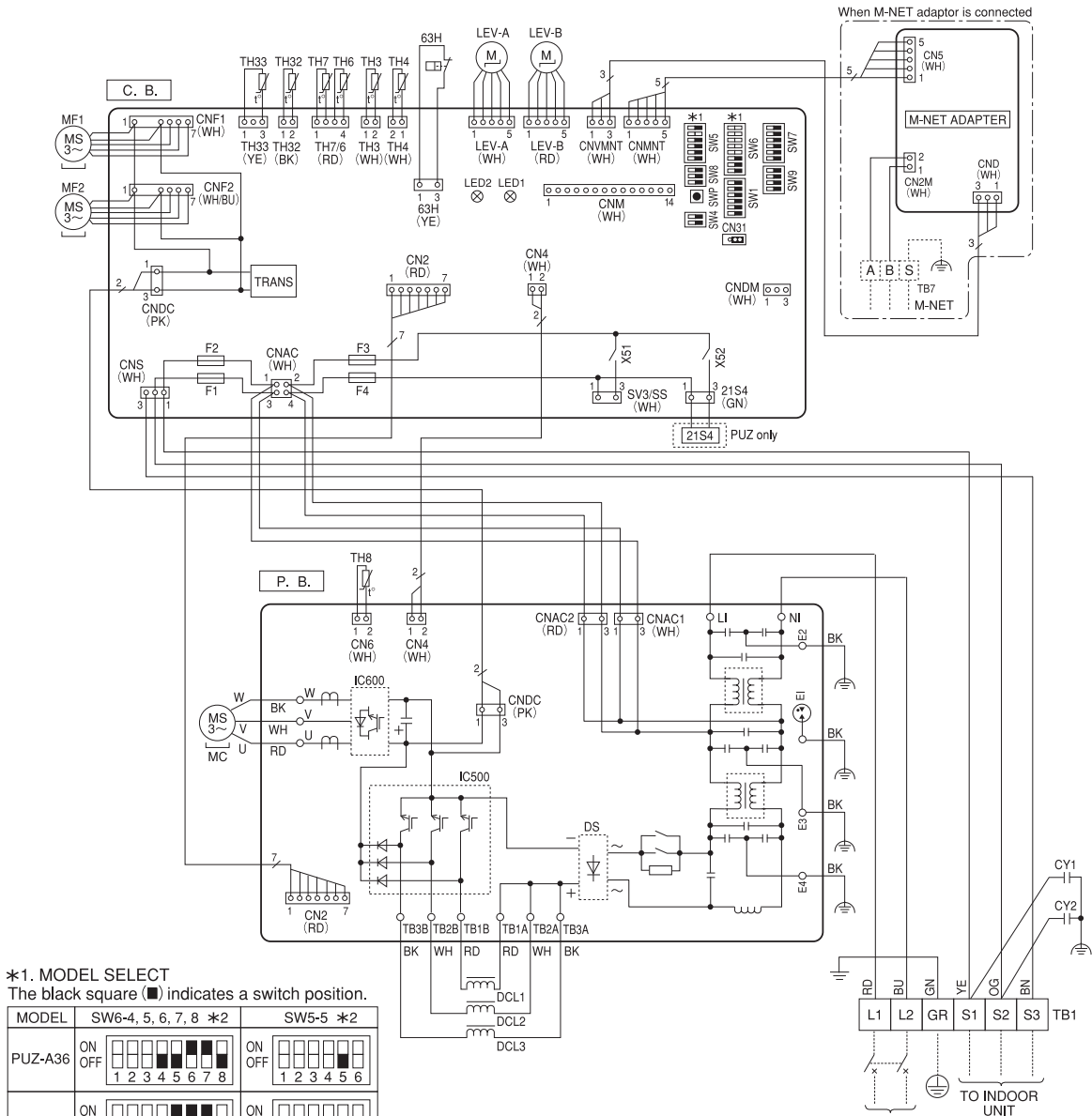
PUZ-A36NKA7
PUZ-A36NKA7-BS

PUZ-A42NKA7
PUZ-A42NKA7-BS

PUY-A36NKA7
PUY-A36NKA7-BS

PUY-A42NKA7
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)	SW4	Switch (Function Switch)	SV3/SS	Connector (Connection for Option)
TH32	Thermistor (Suction)				



***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)

POWER SUPPLY
208/230 V AC 60 Hz

*Use copper supply wires.

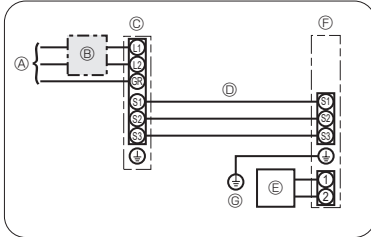
*Utilisez des d' alimentation en cuivre.

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 (mm ²)						
Outdoor unit power supply	2 x Min AWG 14	2 x Min AWG 14	2 x Min AWG 12	2 x Min AWG 12	2 x Min AWG 10	2 x 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 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)	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]

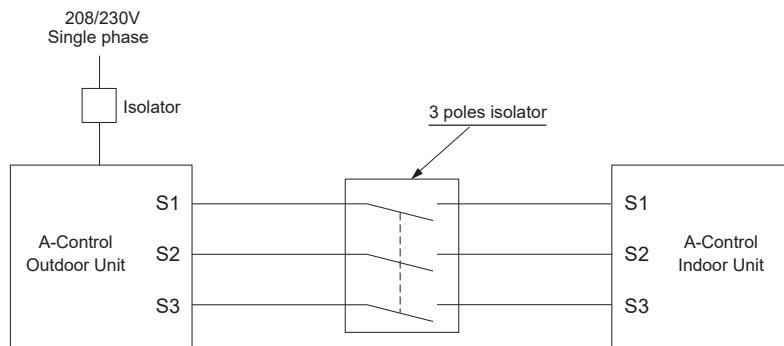
*3. The 30 ft [10 m] wire is attached in the remote controller accessory.

*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.

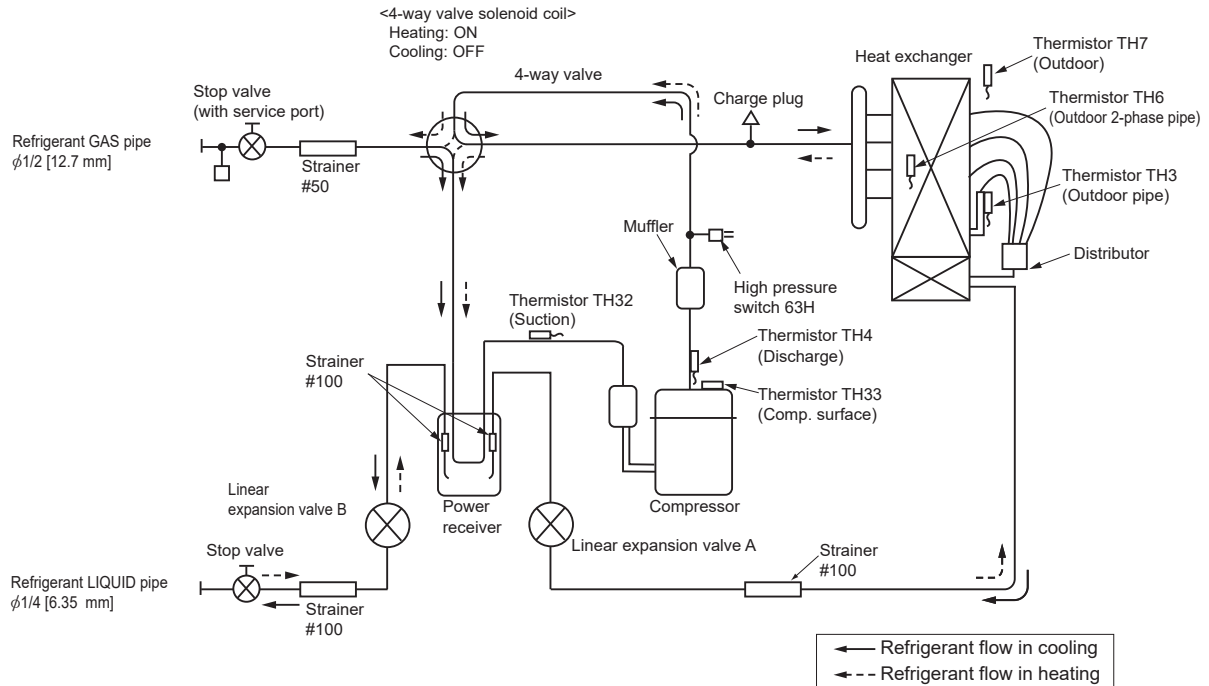
And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between indoor unit and outdoor unit, please use 3-pole type.

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

PUZ-A12NKA7
PUZ-A12NKA7-BS

PUZ-A18NKA7
PUZ-A18NKA7-BS

Unit: inch [mm]

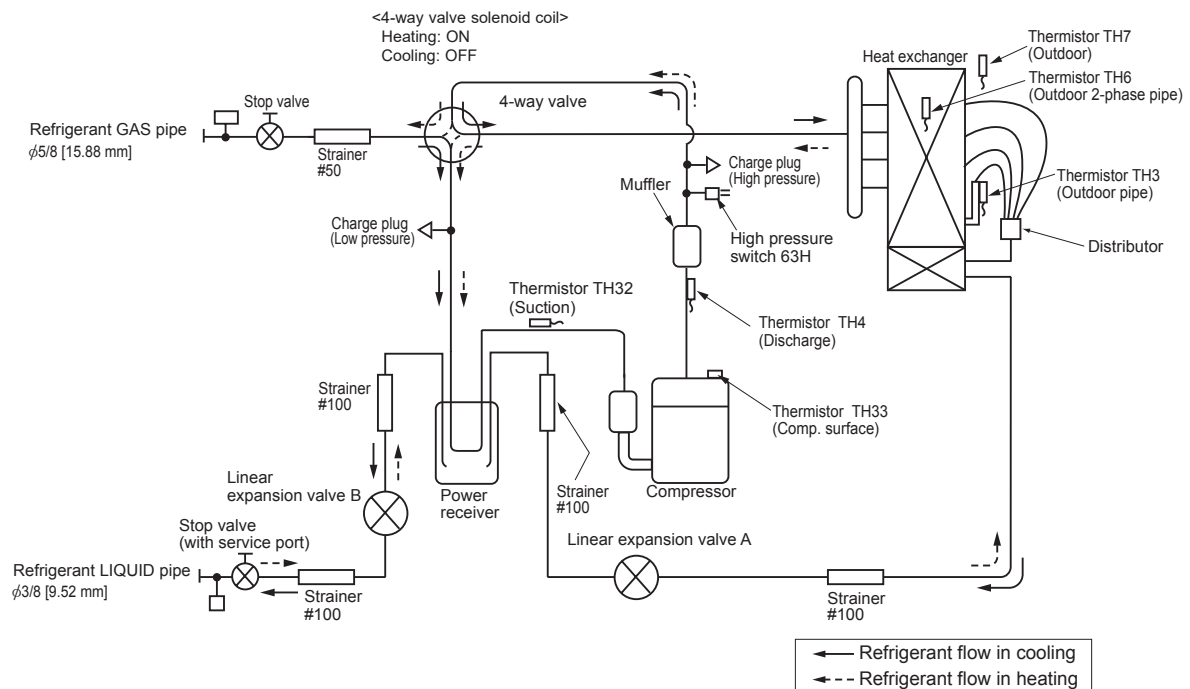


PUZ-A24NHA7
PUZ-A24NHA7-BS

PUZ-A30NHA7
PUZ-A30NHA7-BS

PUZ-A36NKA7
PUZ-A36NKA7-BS

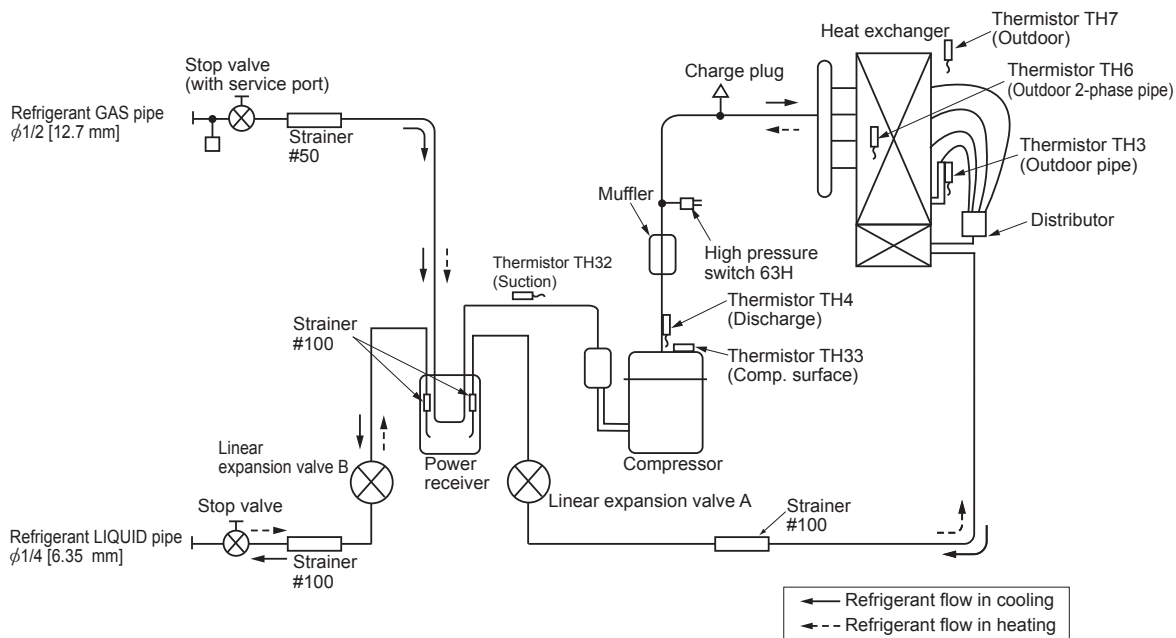
PUZ-A42NKA7
PUZ-A42NKA7-BS



PUY-A12NKA7
PUY-A12NKA7-BS

PUY-A18NKA7
PUY-A18NKA7-BS

Unit: inch [mm]

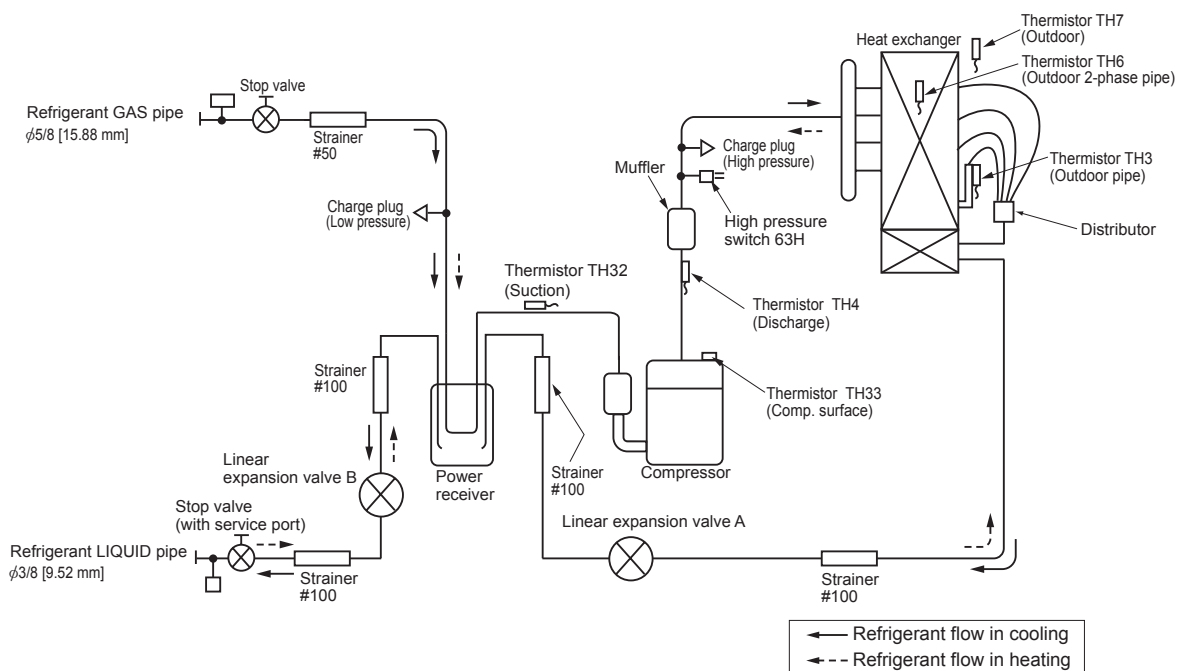


PUY-A24NHA7
PUY-A24NHA7-BS

PUY-A30NHA7
PUY-A30NHA7-BS

PUY-A36NKA7
PUY-A36NKA7-BS

PUY-A42NKA7
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.

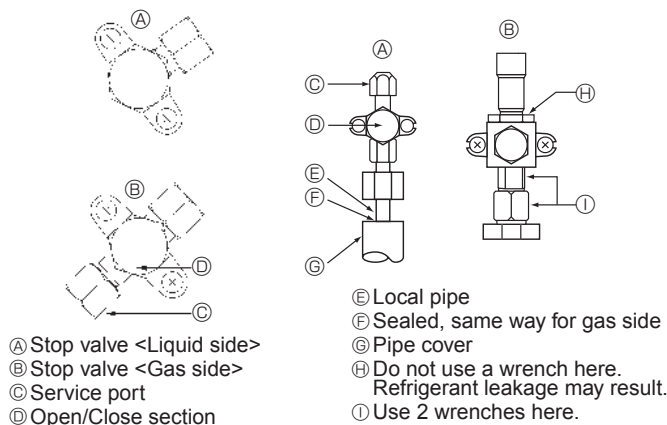
- ① Supply power (circuit breaker).
 - When power is supplied, make sure that "CENTRALLY CONTROLLED" is not displayed on the remote controller. If "CENTRALLY CONTROLLED" is displayed, the refrigerant collecting (pump down) cannot be completed normally.
 - Startup of the indoor-outdoor communication takes 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 (A) (B) are closed and do not open them.
 - Add pressure to the refrigerant lines through the service port (C) of the liquid stop valve (D).
- (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.



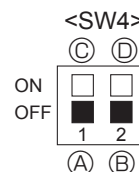
3. Start and finish of test run

- 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.

- 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.



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

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.)

10-1. 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

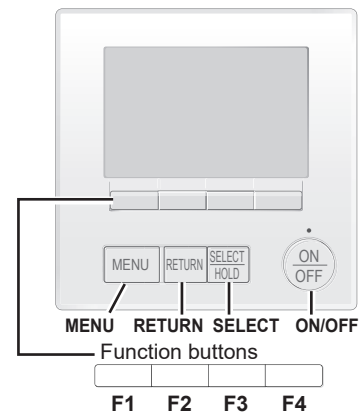
(1) Before test run

- 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.)

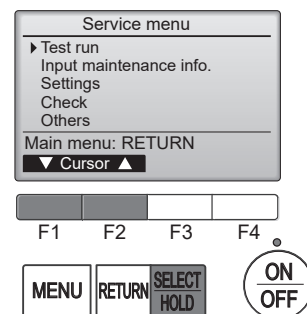
10-2-1. Test run for wired remote controller <PAR-4xMAA ("x" represents 0 or later)>



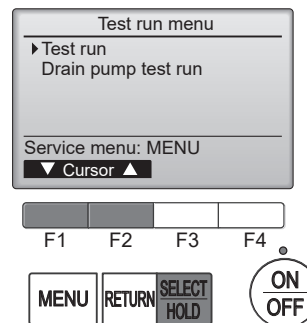
- ① Select "Service" from the Main menu, and press the [SELECT] button.



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".

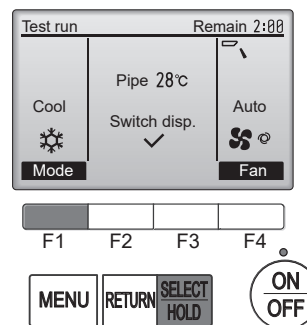
Cool mode: Check the cold air blows out.

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

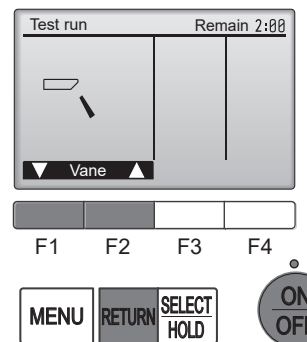
Check the auto vane with the **F1** **F2** buttons.



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.

Error information 1/2

Error code	A3
Error unit	IU 0 Unit#1
Time Occurred	02/01 4:48
Model name	
Serial No.	

Reset error: Reset button

▼ Page ▲

Reset

F1

F2

F3

F4

blinks

MENU

RETURN

SELECT
HOLD

ON

OFF

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

Error information 2/2

Contact information

Dealer

Tel

Reset error: Reset button

▼ Page ▲

Reset

- 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.

Error information 1/2

Error code	A3
Error unit	IU 0 Unit#1
Time Occurred	02/01 4:48
Model name	
Serial No.	

Reset error: Reset button

▼ Page ▲

Reset

F1

F2

F3

F4

blinks

MENU

RETURN

SELECT
HOLD

ON

OFF

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

Error reset

Reset current error?

Cancel

OK

F1

F2

F3

F4

Error reset

Error reset

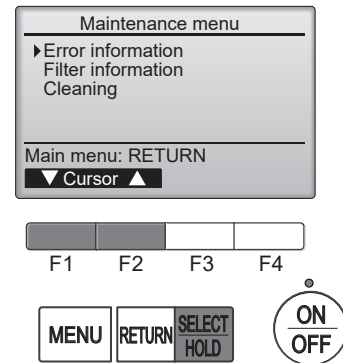
Main menu: MENU

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.

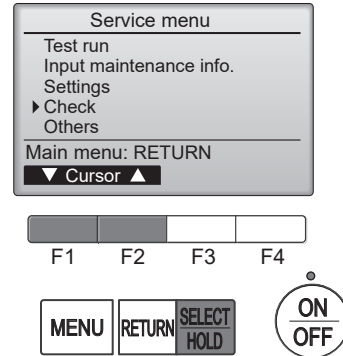


<Error history>

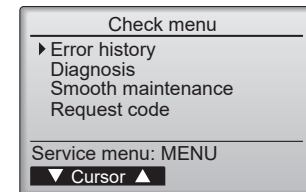
- ① Select "Service" from the Main menu, and press the [SELECT] button.



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



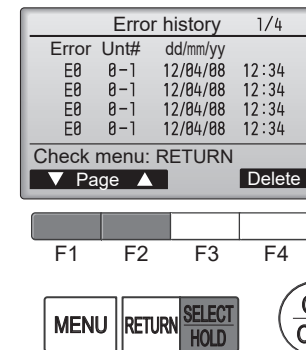
- ② Select "Error history" with the **F1** or **F2** button, and press the [SELECT] button.



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.

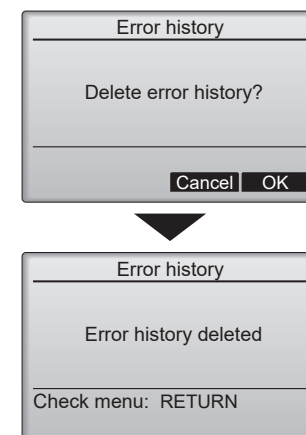


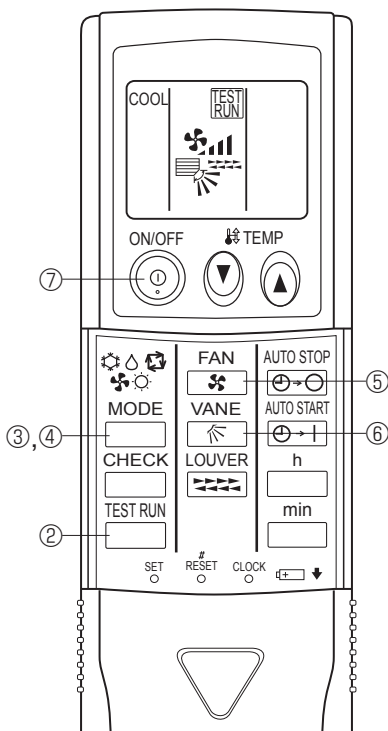
Press the **F4** button (OK) to delete the history.



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

Note:

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

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

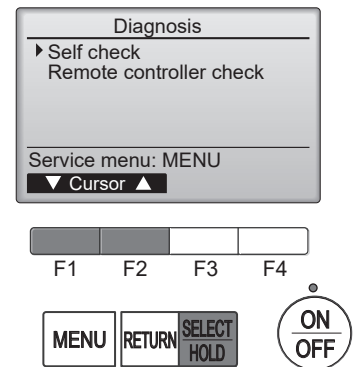
10-3-1. Self-diagnosis <PAR-4xMAA ("x" represents 0 or later)>

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

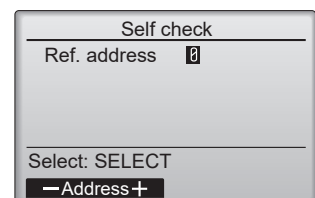
Select "Check" from the Service menu,
and press the [SELECT] button.

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

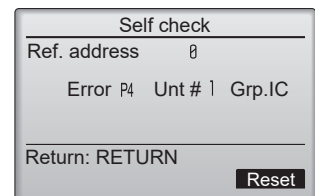
Select "Self check" with the [F1] or [F2] button,
and press the [SELECT] button.



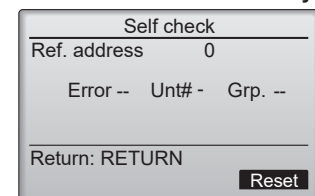
- ② With the [F1] or [F2] button, enter the refrigerant address, and press the [SELECT] button.



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



When there is no error history



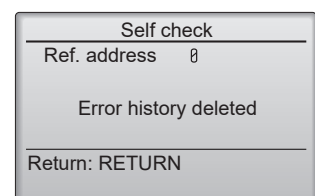
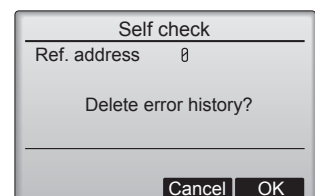
- ④ Resetting the error history

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)>

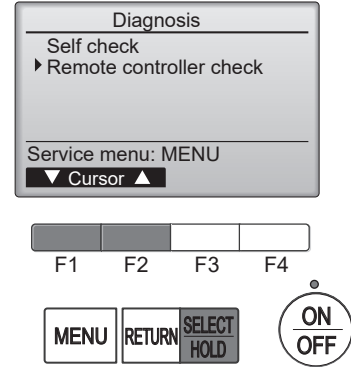
If operations cannot be completed with the remote controller, diagnose the remote controller with this function.

- 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.

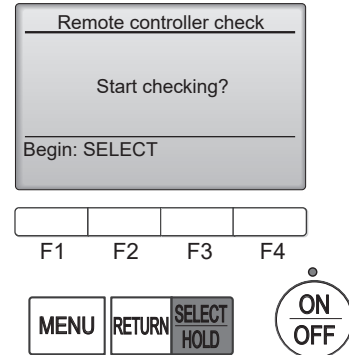
Select "Remote controller check" with the **F1** or **F2** button,
and press the [SELECT] button.



- 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.

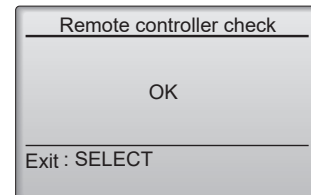
To cancel the remote controller check and exit the "Remote controller check" menu screen, press the [MENU] or the [RETURN] button.

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) 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) ③ Electric power is not supplied to outdoor controller circuit board. a) Disconnection of connector (CNDC) (A24-42N only) ④ Disconnection of reactor (DCL or ACL) ⑤ Defective outdoor power circuit board ⑥ Defective outdoor controller circuit board	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 Check following items. a) Connection of power supply terminal block (TB1) b) Connection of terminal on outdoor power circuit board 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 Check connection of reactor. (DCL or ACL) Refer to "7. WIRING DIAGRAM". ⑤ Replace outdoor power 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.
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.	Note: The descriptions above, ①—⑧, are for EA, Eb and EC.
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".) ⑭–⑰ 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 minutes. 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".

Check code	Abnormal points and detection method	Cause	Judgment and action																										
U3 (TH4:5104) (TH33:5132)	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>	① Disconnection or contact failure of connectors (TH4, TH33) on the outdoor controller circuit board ② Defective thermistor ③ Defective outdoor controller circuit board	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.																										
U4 (TH3: 5105) (TH6: 5107) (TH7: 5106) (TH8: 5110) (TH32: 5105)	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".)	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	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".																										
<table border="1"> <thead> <tr> <th colspan="2">Thermistors</th><th rowspan="2">Open detection</th><th rowspan="2">Short detection</th></tr> <tr> <th>Symbol</th><th>Name</th></tr> </thead> <tbody> <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> </tbody> </table>				Thermistors		Open detection	Short detection	Symbol	Name	TH3	Thermistor <Liquid>	−58°F [−50°C] or below	194°F [90°C] or above	TH6	Thermistor <2-phase pipe>	−58°F [−50°C] or below	194°F [90°C] or above	TH7	Thermistor <Ambient>	−58°F [−50°C] or below	194°F [90°C] or above	TH8	Thermistor <Heat sink>	−54°F [−48°C] or below	216°F [102°C] or above	TH32	Thermistor <Suction>	−58°F [−50°C] or below	194°F [90°C] or above
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TH32	Thermistor <Suction>	−58°F [−50°C] or below	194°F [90°C] or above																										
U5 (4230)	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]	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	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.																										
U6 (4250)	Power module Check abnormality by driving power module in case overcurrent is detected. (UF or UP error condition)	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	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.																										
U7 (1502)	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.	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	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".																										

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: - Increase of DC bus voltage as follows: A12, 18N: 400 V A24, 30, 36, 42N: 430 V - Decrease in PFC control voltage to 13 V DC or lower (A24–42N only) - 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 temperature 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) $\leq -5.4^{\circ}\text{F}$ [-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] $\leq$ (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)') Temperature display of indoor liquid pipe Indoor 1 Temperature display of indoor condenser/evaporator pipe Indoor 1 Temperature display of indoor liquid pipe Indoor 2 Temperature display of indoor condenser/evaporator pipe Indoor 2 A-Control Service Tool SW2 setting ②③ Check 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. <u>These detected errors will not be cancelled until the power source is reset.</u>	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 <u>When this error occurs, be sure to replace the 4-way valve.</u> 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. <u>To avoid entry of moisture or air into refrigerant circuit which could cause abnormal high pressure, purge air in refrigerant circuit or replace refrigerant.</u>

<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 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.
	(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	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.
	(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	

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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 mm² [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.	① Check 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 ② Filter clogging ③ Heat exchanger clogging ④ Air duct short cycle	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 Open intake grille and check the filter. Clean the filter by removing dirt or dust on it. 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 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. ② Refrigerant shortage ③ Lack of insulation for refrigerant piping ④ Filter clogging ⑤ Heat exchanger clogging ⑥ Air duct short cycle ⑦ Bypass circuit of outdoor unit fault	① Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. Replace linear expansion valve. 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 Check the insulation. ④ Open intake grill and check the filter. Clean the filter by removing dirt or dust on it. 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 Remove the blockage. 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
<pre> graph TD Start([Check the display time of "PLEASE WAIT" after turning on the main power.]) --> D1{How long is "PLEASE WAIT" kept being displayed on the remote controller?} D1 -- "6 minutes or more" --> P1[Check the LED display of the outdoor controller circuit board.] D1 -- "2 to 6 minutes" --> D2{Are any check codes displayed on the remote controller?} D1 -- "2 minutes or less" --> C1[• "PLEASE WAIT" will be displayed during the startup diagnosis after turning on the main power.] D2 -- NO --> C1 D2 -- YES --> C2[• Miswiring of indoor/outdoor connecting wire • Breaking of indoor/outdoor connecting wire (S3) • Defective indoor controller board • Defective outdoor controller circuit board] P1 --> D3{Are any check codes displayed on the LED?} D3 -- YES --> C2 D3 -- NO --> C3[• Defective indoor controller board • Defective remote controller] </pre>	• “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
Check the voltage between S1 and S2 on the terminal block (TB4) of the indoor unit. 198 to 264 V AC? NO Check the voltage among L1 and L2 on the terminal block (TB1) of the outdoor power circuit board. 198 to 264 V AC? NO YES Check the voltage between S1 and S2 on the terminal block (TB1) of the outdoor unit which is used to connect the indoor unit and the outdoor unit. 198 to 264 V AC? NO YES Check the voltage of indoor controller board (CN2D). 12 to 16 V DC? YES NO Check the voltage of the unit after removing the indoor power board (CN2S). 12 to 16 V DC ? YES NO	• 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
Check the voltage between S1 and S2 on the terminal block (TB4) of the indoor unit. 198 to 264 V AC? NO YES Check the status of the indoor controller board LED3 display. Not lighting. Blinking Check the looseness or disconnection of the indoor/outdoor connecting wire. Are there looseness or disconnection of the indoor/outdoor connecting wire? YES NO Check the refrigerant address of the outdoor unit. (SW1-3 to 1-6) Is the refrigerant address "0"? NO YES Check the LED display of the outdoor unit after turning on the main power again. Is anything displayed? NO YES Is "EA" or "Eb" displayed? NO YES Is "E8" displayed? YES NO Can the unit be restarted? Can all the indoor unit be operated? NO YES Check the voltage between S2 and S3 on the terminal block of the outdoor unit. 17 to 28 V DC? NO YES	• 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. • Defective outdoor controller circuit board • Defective outdoor controller circuit board • Defective indoor controller board • Influence of electromagnetic noise • Defective outdoor power circuit board • Defective indoor power board	• Fix the breaking or poor contact of the indoor/outdoor connecting wire. • Set the refrigerant address to "0". In the case of the multiple grouping system, recheck the refrigerant address again. • Replace the outdoor controller circuit board. • Replace the outdoor controller circuit board. • Replace the indoor controller board of the indoor unit which does not operate. • Not abnormal. There may be the influence of electromagnetic noise. Check the transmission wire and get rid of the causes. • Replace the outdoor power circuit 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
Check the voltage of the terminal block (TB6) of the remote controller. 10 to 16 V DC? YES NO Check the status of the LED2. Lighting Blinking Check the status of the LED2 after disconnecting the remote controller wire from the terminal block (TB5) of the indoor unit. Check the status of the LED2. Lighting Blinking	• 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-A24NHA7-BS

PUZ-A30NHA7-BS

PUZ-A12NKA7-BS

PUZ-A18NKA7-BS

PUY-A24NHA7

PUY-A30NHA7

PUY-A12NKA7

PUY-A18NKA7

PUY-A24NHA7-BS

PUY-A30NHA7-BS

PUY-A36NKA7

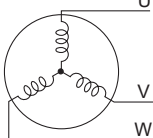
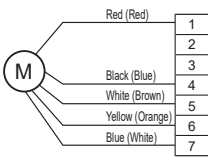
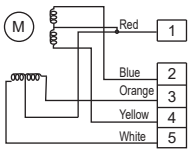
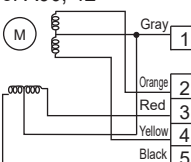
PUY-A42NKA7

PUY-A12NKA7-BS

PUY-A18NKA7-BS

PUY-A36NKA7-BS

PUY-A42NKA7-BS

Parts name	Checkpoints																								
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]) <table><tr><td></td><td>Normal</td><td>Abnormal</td></tr><tr><td>TH4 TH33</td><td>160 to 410 kΩ</td><td rowspan="4">Open or short</td></tr><tr><td>TH3 TH6 TH7 TH32</td><td>4.3 to 9.6 kΩ</td></tr><tr><td>TH8</td><td>39 to 105 kΩ</td></tr></table>		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														
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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]) <table><tr><td colspan="2">Normal</td><td>Abnormal</td></tr><tr><td>A12-30</td><td>A36, 42</td><td rowspan="2">Open or short</td></tr><tr><td>2350 ± 170 Ω</td><td>1435 ± 150 Ω</td></tr></table>	Normal		Abnormal	A12-30	A36, 42	Open or short	2350 ± 170 Ω	1435 ± 150 Ω																
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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]) <table><tr><td colspan="3">Normal</td><td>Abnormal</td></tr><tr><td>A12, 18</td><td>A24, 30</td><td>A36, 42</td><td rowspan="2">Open or short</td></tr><tr><td>0.64 Ω</td><td>1.34 Ω</td><td>0.88 Ω</td></tr></table>	Normal			Abnormal	A12, 18	A24, 30	A36, 42	Open or short	0.64 Ω	1.34 Ω	0.88 Ω													
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 20°C) Note that the resistance between the connector pins may vary depending on the ambient temperature, so use those values as reference. <table><tr><td></td><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>PUZ-A12/18NKA7</td><td>Red - Black OL*</td><td>White - Black 1.2 ± 0.6 kΩ</td><td>Yellow - Black 200 ±100 kΩ</td><td>Blue - Black OL</td><td>Open or short (short, for White - Blue)</td></tr><tr><td>PUZ-A24/30NHA7</td><td>Red - Black 1.1 ± 0.6 MΩ</td><td>White - Black 1.2 ± 0.6 kΩ</td><td>Yellow - Black 200 ± 100 kΩ</td><td>Blue - Black OL</td><td>Open or short (short, for White - Blue)</td></tr><tr><td>PUZ-A36/42NKA7</td><td>Red - Blue 1.1 ± 0.6 MΩ</td><td>Brown - Blue 40 ± 20 kΩ</td><td>Orange - Blue 220 ± 110 kΩ</td><td>White - Blue Open</td><td>Open or short (short, for White - Blue)</td></tr></table> *OL : Over Load		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)
	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)																				
Linear expansion valve (LEV-A) For A12-30 	Disconnect the connector then measure the resistance with a multimeter. (Winding temperature 68°F [20°C]) <table><tr><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>Red - White</td><td>Red - Orange</td><td>Red - Yellow</td><td>Red - Blue</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">46 ± 4 Ω</td></tr></table>	Normal				Abnormal	Red - White	Red - Orange	Red - Yellow	Red - Blue	Open or short	46 ± 4 Ω													
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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 [20°C]) <table><tr><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>Gray - Black</td><td>Gray - Red</td><td>Gray - Yellow</td><td>Gray - Orange</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">46 ± 3 Ω</td></tr></table>	Normal				Abnormal	Gray - Black	Gray - Red	Gray - Yellow	Gray - Orange	Open or short	46 ± 3 Ω													
Normal				Abnormal																					
Gray - Black	Gray - Red	Gray - Yellow	Gray - Orange	Open or short																					
46 ± 3 Ω																									

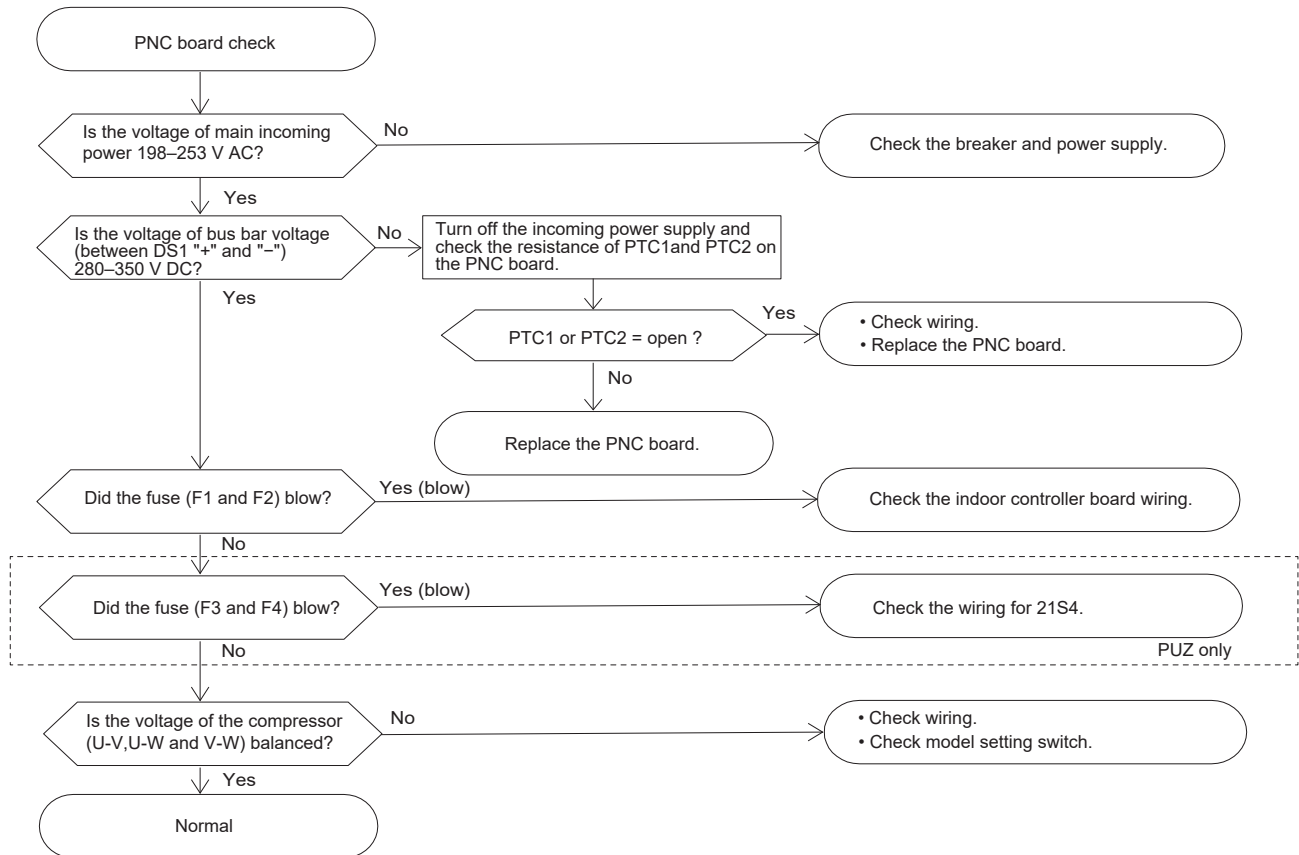
10-6-1. Check method of outdoor controller circuit board

PUZ-A12NKA7
PUZ-A12NKA7-BS

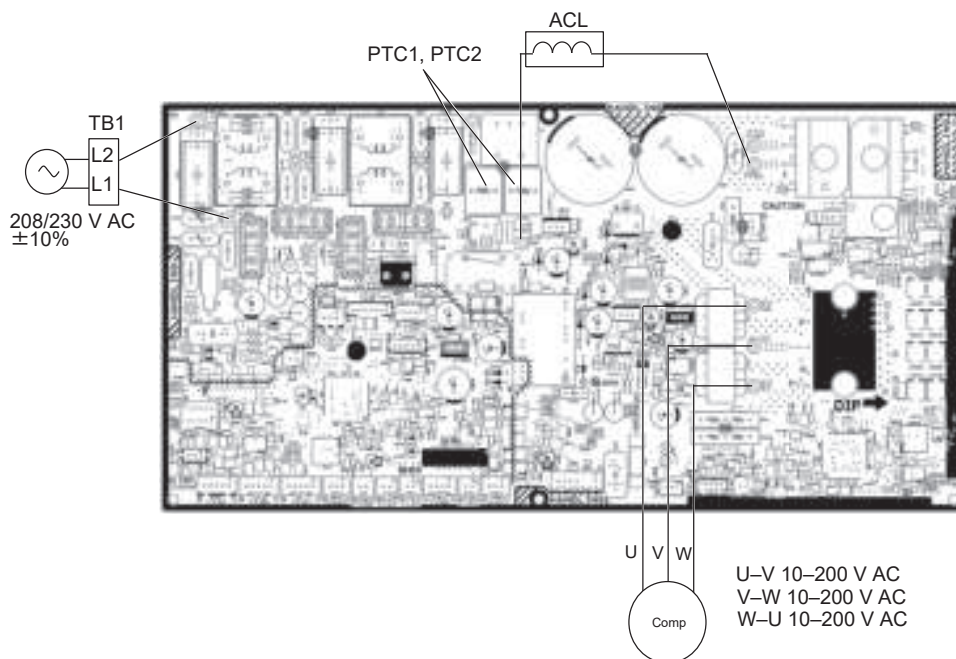
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PUZ-A18NKA7-BS

PUY-A12NKA7
PUY-A12NKA7-BS

PUY-A18NKA7
PUY-A18NKA7-BS



Outdoor controller circuit board



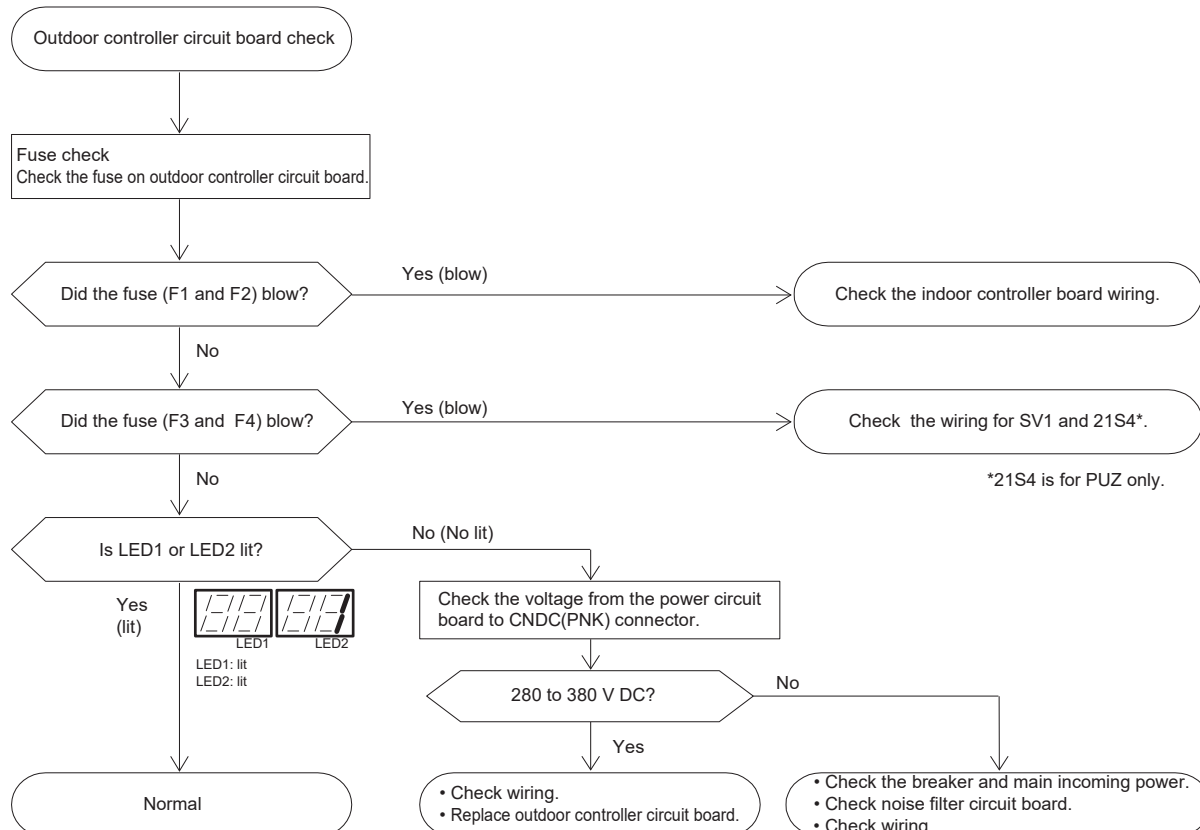
10-6-2. Check method of outdoor controller circuit board

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

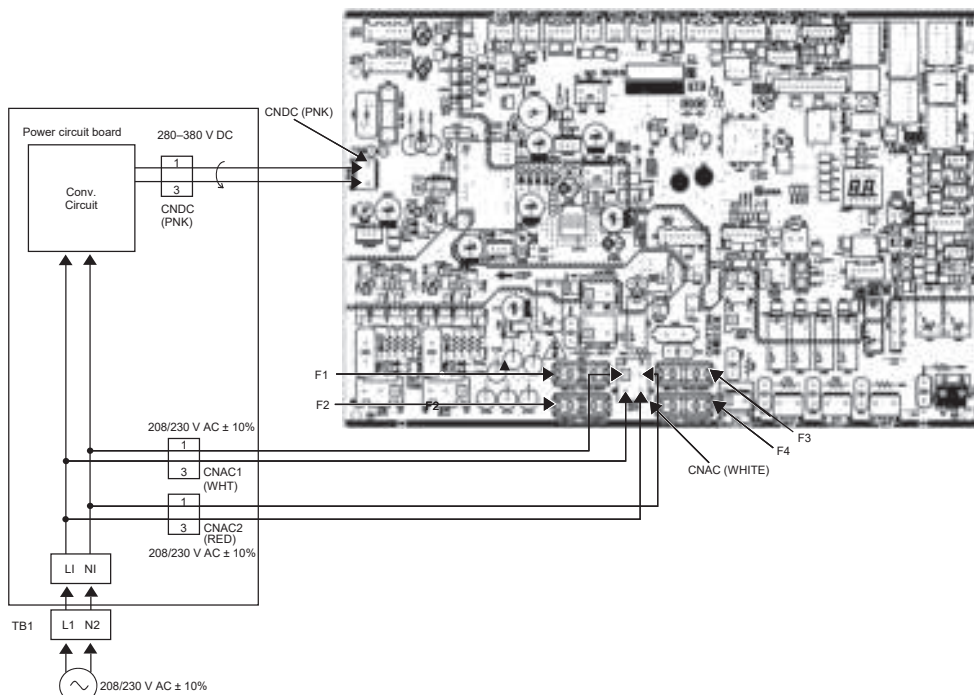
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PUZ-A30NHA7-BS
PUY-A30NHA7
PUY-A30NHA7-BS

PUZ-A36NKA7
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PUY-A36NKA7
PUY-A36NKA7-BS

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



Outdoor controller circuit board



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

PUZ-A24NHA7
PUZ-A24NHA7-BS

PUZ-A30NHA7
PUZ-A30NHA7-BS

PUY-A24NHA7
PUY-A24NHA7-BS

PUY-A30NHA7
PUY-A30NHA7-BS

