Changes for the Better

MITSUBISHI ELECTRIC

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

No. OCT03
REVISED EDITION-E

SERVICE TECHNICAL GUIDE R407C

<Indoor unit> [Model names]	[Service Ref]		
PLH–P·KAH	PLH–P·KAH		
PLA–P·KA	PLA–P·KA	PLA–P·KA$_1$	
PCH–P·GAH	PCH–P·GAH	PCH–P·GAH$_1$	
PCA–P·GA	PCA–P·GA	PCA–P·GA$_1$	
PCA–P·HA	PCA–P·HA		
PKH–P·GALH	PKH–P·GALH	PKH–P·GALH$_1$	
PKA–P·GAL	PKA–P·GAL	PKA–P·GAL$_1$	
PKH–P·FALH	PKH–P·FALH	PKH–P·FALH$_1$	PKH–P·FALH$_2$
PKA–P·FAL	PKA–P·FAL	PKA–P·FAL$_1$	PKA–P·FAL$_2$
PKA–P·FAL-H	PKA–P·FAL-H		
PSH–P·GAH	PSH–P·GAH	PSH–P·GAH$_1$	
PSA–P·GA	PSA–P·GA	PSA–P·GA$_1$	
PMH–P·BA	PMH–P·BA	PMH–P·BA$_1$	PMH–P·BA$_2$
PLH–P·AAH	PLH–P·AAH.UK	PLH–P·AAH$_1$.UK	
PLA–P·AA	PLA–P·AA(.UK)	PLA–P·AA$_1$.UK	
PLH–P·KAH	PLH–P·KAH.UK	PLH–P·KAH$_1$.UK	
PLA–P·KA	PLA–P·KA(.UK)	PLA–P·KA$_1$(.UK)	
PEHD–P·EAH	PEHD–P·EAH.UK		
PEAD–P·EA	PEAD–P·EA.UK		

<Outdoor unit> [Model names]	[Service Ref]	
PUH–P·GA	PUH-P·GA	PUH-P·GA$_1$
PU–P·GA	PU-P·GA	PU-P·GA$_1$
PUH–P·GAA	PUH-P·GAA(.UK)	PUH-P·GAA$_1$.UK
PU–P·GAA	PU-P·GAA(.UK)	PU-P·GAA$_1$.UK

Revision:
- PCA-P•HA and PKA-P•FAL-H are added.
- WIRING DIAGRAM of PCA-P•HA, PKA-P•FAL-H, PUH-P•GAA and PU-P•GAA.
- REFRIGERANT SYSTEM DIAGRAM of PUH-P•GAA, and PU-P•GAA.
- HOW TO CHECK THE PARTS of PCA-P•HA, PKA-P•FAL-H, PUH-P•GAA and PU-P•GAA.

Please void OCT03 REVISED EDITION-D.

CONTENTS

Mr.SLIM™

1 PAIRING TABLE OF THE INDOOR AND OUTDOOR UNITS

Indoor unit		Outdoor unit [PUH/PU]						
		OC180 REVISED EDITION-A						
		P1.6GA	P2GA	P2.5GA	P3GA	P4GA	P5GA	P6GA
PLH–P·KAH	OC181 REVISED EDITION-A	○	○	○	○	○	○	○
PLA–P·KA								
PCH–P·GAH	OC182 REVISED EDITION-B	—	○	○	○	○	○	○
PCA–P·GA								
PKH–P·GALH	OC176 REVISED EDITION-B	○	○	—	—	—	—	—
PKA–P·GAL								
PKH–P·FALH$_1$	OC175 REVISED EDITION-B	—	—	○	○	○	—	—
PKA–P·FAL$_1$								
PSH–P·GAH	OC212 REVISED EDITION-A	—	—	—	○	○	○	○
PSA–P·GA								
PMH–P·BA	OC238 REVISED EDITION-B	○	○	—	—	—	—	—
PLH–P·AAH.UK	OC236 REVISED EDITION-A	—	—	—	○	○	○	○
PLA–P·AA.UK	OC241 REVISED EDITION-A							
PLH–P·KAH.UK	OC235 REVISED EDITION-A	○	○	○	—	—	—	—
PLA–P·KA.UK	OC240 REVISED EDITION-A							

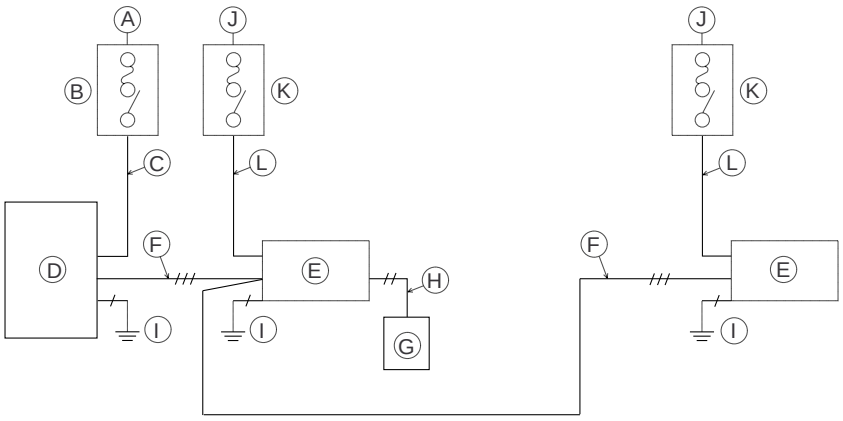
Indoor unit Service ref.		Outdoor unit [PUH/PU]							
		OC261 REVISED EDITION-A							
		P1GAA1.UK	P1.6GAA1.UK	P2GAA1.UK	P2.5GAA1.UK	P3GAA1.UK	P4GAA1.UK	P5GAA1.UK	P6GAA1.UK
PCH–P·GAH1	OC182 REVISED EDITION-B	—	—	○	○	○	○	○	○
PCA–P·GA1									
PKH–P·GALH1	OC176 REVISED EDITION-B	—	○	○	—	—	—	—	—
PKA–P·GAL1									
PKH–P·FALH2	OC175 REVISED EDITION-B	—	—	—	○	○	○	—	—
PKA–P·FAL2									
PSH–P·GAH1	OC212 REVISED EDITION-A	—	—	—	—	○	○	○	○
PSA–P·GA1									
PMH–P·BA1	OC238 REVISED EDITION-B	○	○	○	—	—	—	—	—
PMH–P·BA2	OC279	○	○	○	—	—	—	—	—
PLA–P·AA	OC287 REVISED EDITION-A	—	—	—	—	○	○	○	○
PLA–P·KA	OC286 REVISED EDITION-A	—	○	○	○	—	—	—	—
PCA–P·HA	OC289	—	—	—	—	○	—	○	—
PLH–P·AAH1.UK	OC236 REVISED EDITION-A	—	—	—	—	○	○	○	○
PLA–P·AA1.UK	OC241 REVISED EDITION-A								
PLH–P·KAH1.UK	OC235 REVISED EDITION-A	—	○	○	○	—	—	—	—
PLA–P·KA1.UK	OC240 REVISED EDITION-A								
PEHD–P·EAH.UK	MEE01K 048	—	○	○	○	○	○	○	○
PEAD–P·EA.UK									

Indoor unit	Service ref.	Outdoor unit [PUH]							Outdoor unit [PU]						
		OC285							OC298						
		P1.6GAA	P2GAA	P2.5GAA	P3GAA	P4GAA	P5GAA	P6GAA	P1.6GAA	P2GAA	P2.5GAA	P3GAA	P4GAA	P5GAA	P6GAA
PCH–P·GAH$_1$	OC182	—	○	○	○	○	○	○	—	○	○	○	○	○	○
PCA–P·GA$_1$	REVISED EDITION-B														
PKH–P·GALH$_1$	OC176	○	○	—	—	—	—	—	○	○	—	—	—	—	—
PKA–P·GAL$_1$	REVISED EDITION-B														
PKH–P·FALH$_2$	OC175	—	—	○	○	○	—	—	—	—	○	○	○	—	—
PKA–P·FAL$_2$	REVISED EDITION-B														
PSH–P·GAH$_1$	OC212	—	—	—	○	○	○	○	—	—	—	○	○	○	○
PSA–P·GA$_1$	REVISED EDITION-A														
PMH–P·BA$_1$	OC238 REVISED EDITION-B	○	○	—	—	—	—	—	—	—	—	—	—	—	—
PMH–P·BA$_2$	OC279	○	○	—	—	—	—	—	—	—	—	—	—	—	—
PLA–P·AA	OC287 REVISED EDITION-A	—	—	—	○	○	○	○	—	—	—	○	○	○	○
PLA–P·KA	OC286 REVISED EDITION-A	○	○	○	—	—	—	—	○	○	○	—	—	—	—
PCA–P·HA	OC289	—	—	—	○	—	○	—	—	—	—	○	—	○	—
PEHD–P·EAH.UK PEAD–P·EA.UK	MEE01K 048	—	○	○	○	○	○	○	—	○	○	○	○	○	○

2 SPECIFICATIONS FOR ELECTRICAL WORK

2-1. Electrical check

1) Simultaneous twin system

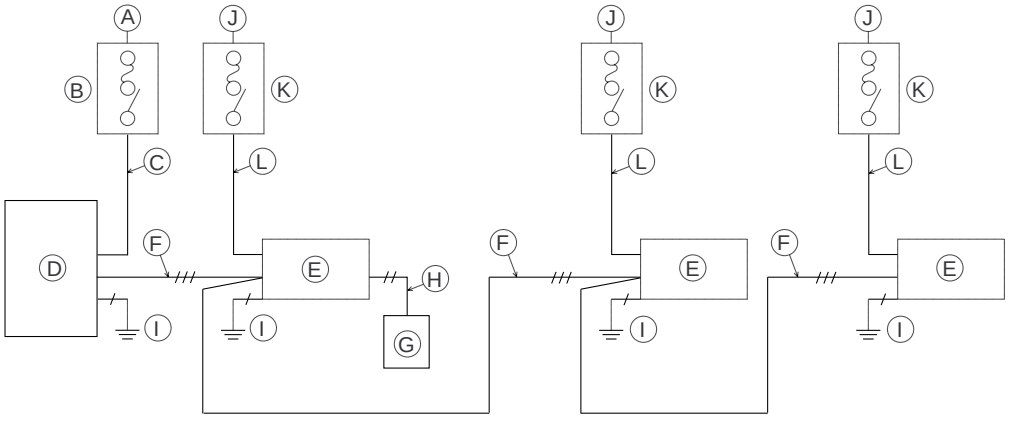


Ⓐ Power supply for outdoor unit
Ⓑ Main switch/fuse(purchased locally)for outdoor unit
Ⓒ Power supply wiring for outdoor unit
Ⓓ Outdoor unit
Ⓔ Indoor unit
Ⓕ Connection wiring for indoor/outdoor units(polarity)
Ⓖ Remote controller
Ⓗ Connection wiring for indoor/remote controller(no polarity)
Ⓘ Grounding

Ⓙ,Ⓚ,Ⓛ:with electric heater model only
Ⓙ Power supply for electric heater
Ⓚ Main switch/fuse for electric heater
Ⓛ Power supply wiring for electric heater

⚠ Caution:
Both the indoor unit and the outdoor unit must be grounded.

2) Simultaneous triple system



2-2. Field electrical wiring(power wiring specifications)
PU(H)-P•GA, PU(H)-P•GA$_1$

Models (Outdoor unit)			P1.6, 2, 2.5V	P3V	P1.6, 2, 2.5Y	P3, 4Y	P5, 6Y
indoor unit power supply			~ / N (Single), 50Hz, 220-230-240V				
Outdoor unit		Phase	~ / N (Single)		3N ~ (3ph)		
Power supply		Frequency & Voltage	50Hz, 220-230-240V		50Hz, 380/220-400/230-415/240V		
Input capacity		Indoor unit (A)	16/16	16/16	16/16	16/16	16/16
Main switch/Fuse		Outdoor unit (A)	32/32	63/63	25/16	32/25	32/32
Wiring	Heater	Wire No.	3	3	3	3	3
	Power supply	Size (mm^2)	1.5	1.5	1.5	1.5	1.5
	Outdoor unit	Wire No.	3	3	5	5	5
	Power supply	Size (mm^2)	4	10	2.5	2.5	4
	Indoor unit/Outdoor unit connecting Wire No. × size (mm^2)		3 × 2.5 flat cable (Polar)				
	Remote controller-indoor unit connecting Wire No. × size (mm^2)		Cable 2C × 0.69 This wire is accessory of remote controller (Wire length: 10m,Non-polar)				
Control circuit rating			Indoor unit-Outdoor unit: S1-S2 AC220V-230V-240V S2-S3 DC24V Remote controller-Indoor unit: DC14V				
Heater power supply			~ / N (Single phase), 50Hz, 220-230-240V				

Check items

1. Grounding protection with a no-fuse breaker (earth leakage breaker[ELB]) is usually installed for Ⓑ and Ⓚ.
2. The power cable thickness of Ⓒ and Ⓑ have been selected for a voltage drop up to 20m.If the cable length exceeds 20m,select a cable thickness appropriate to that estimated voltage drop.
3. The connection wiring Ⓕ between the outdoor and indoor units can be extended up to a maximum of 50 meters,and the total extension including the crossover wiring between rooms is a maximum of 80m.
   Use flat cable (three core wires) for indoor and outdoor connection wiring,and connect the core wires in their line-up order to S1,S2,and S3 of the outdoor unit's terminal board.(The core wire connected to terminal S2 should be in the center.)
4. Be careful about choosing the installation location for the earth leakage breaker and how it is installed as the initial electric current may cause it to malfunction.

PU(H)-P•GAA.(UK), PU(H)-P•GAA$_1$.(UK)

Models (Outdoor unit)			P1V	P1.6, 2, 2.5V	P3, 4V	P1.6, 2, 2.5, 3, 4Y	P5, 6Y
Indoor unit power supply			~ / N (Single), 50Hz, 220-230-240V				
Outdoor unit		Phase	~ / N (Single)			3N ~ (3ph)	
Power supply		Frequency & Voltage	50Hz, 220-230-240V			50Hz, 380/220-400/230-415/240V	
Input capacity		Indoor unit(A)	—	16/16	16/16	16/16	16/16
Main switch/Fuse		Outdoor unit(A)	25/25	32/32	63/63	25/25	32/32
Wiring	Heater	Wire No.	—	3	3	3	3
	Power supply	Size(mm^2)	—	1.5	1.5	1.5	1.5
	Outdoor unit	Wire No.	3	3	3	5	5
	Power supply	Size(mm^2)	2.5	4	10	2.5	4
	Indoor unit/Outdoor unit connecting Wire No. × size (mm^2)		3 × 2.5 cable (Polar)				
	Remote controller-indoor unit connecting Wire No. × size (mm^2)		Cable 2C × 0.69 This wire is accessory of remote controller (Wire length: 10m, Non-polar)				
Control circuit rating			Indoor unit-Outdoor unit: S1-S2 AC220V-230V-240V S2-S3 DC24V Remote controller-Indoor unit: DC14V				
Heater power supply			—	~ / N (Single phase), 50Hz, 220-230-240V			

Check items

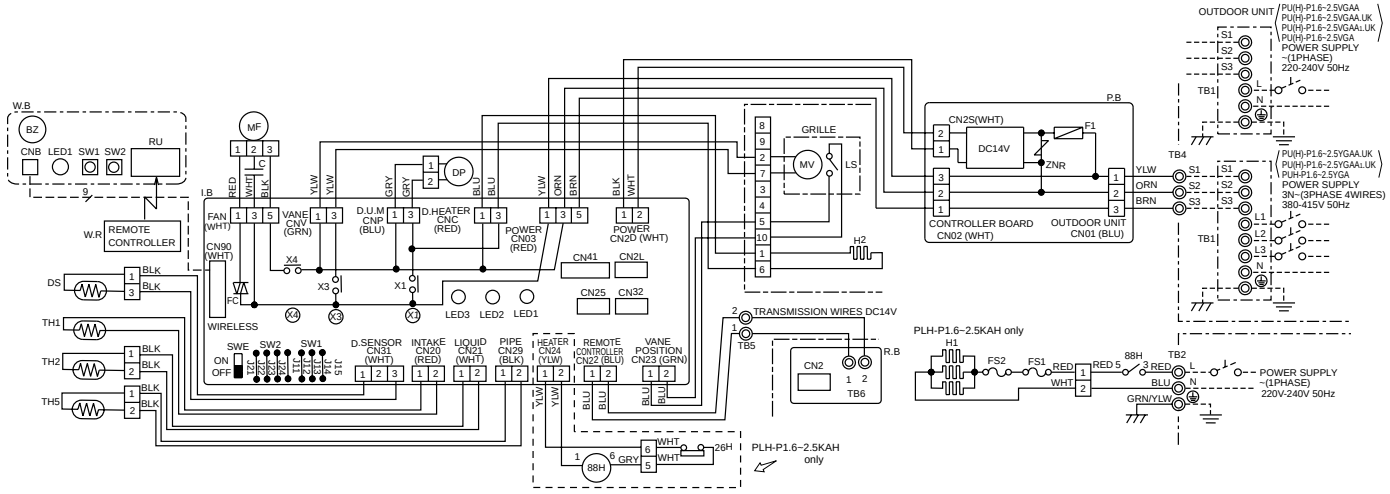
1. The power cable thickness have been selected for a voltage drop up to 20 m. If the cable length exceeds 20 m, select a cable thickess appropriate to tthat estimated voltage drop.
2. Be careful about choosing the installation location for the earth leakage breaker and how it is installed as the initial electric current may cause it to maifunction.
3. Power supply cords and indoor unit / Outdoor unit connecting cords shall not be llghter than polychloroprene sheathed flexible cord. (design 254 IEC 57)

⚠Caution:

Do not push the contactor button (52C) on the outdoor unit, otherwise the compressor may be damaged.

3 WIRING DIAGRAM

PLH-P1.6KAH PLH-P2KAH PLH-P2.5KAH
PLA-P1.6KA PLA-P2KA PLA-P2.5KA
PLA-P1.6KA$_1$ PLA-P2KA$_1$ PLA-P2.5KA$_1$



SW1		
MODELS	Manufacture	Service board
PLH-1.6~2.5KAH	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF
PLA-1.6~2.5KA	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF

SW2		
MODELS	Manufacture	service board
PLH-1.6KAH PLA-1.6KA	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-2KAH PLA-2KA	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-2.5KAH PLA-2.5KA	J21 J22 J23 J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller. For the setting method,please refer to the indoor unit Installation Manual.

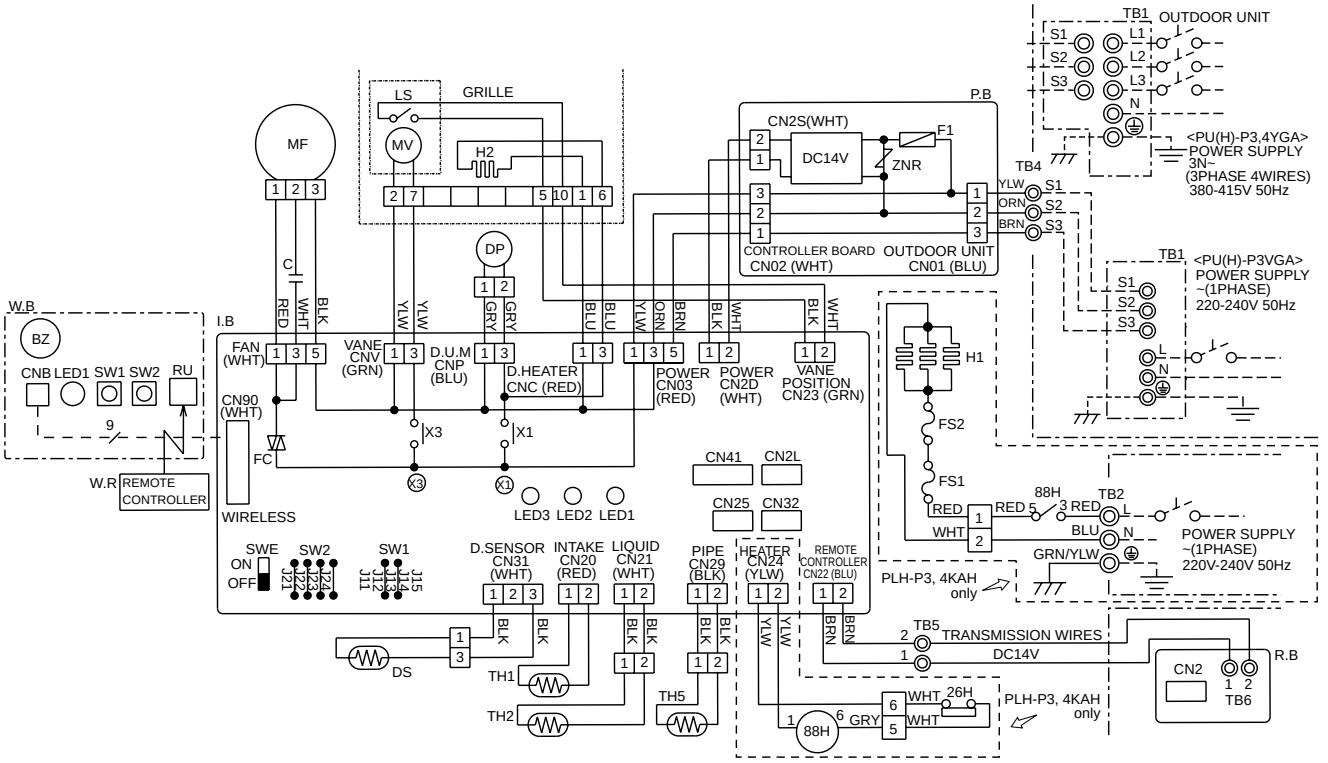
NOTES:

1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□ :Connector,◎:Terminal block.

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	I.B	INDOOR CONTROLLER BOARD	LS	LIMIT SWITCH
F1	FUSE (4A)	CN2L	CONNECTOR (LOSSNAY)	MF	FAN MOTOR
ZNR	VARISTOR	CN25	CONNECTOR (HUMIDIFIER)	MV	VANE MOTOR
R.B	REMOTE CONTROLLER BOARD	CN32	CONNECTOR (REMOTE SWITCH)	TB2	TERMINAL BLOCK (HEATER)
CN2	CONNECTOR (SCHEDULE TIMER)	CN41	CONNECTOR (HA TERMINAL-A)	TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)	FC	FAN PHASE CONTROL	TB5	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
W.B	WIRELESS REMOTE CONTROLLER BOARD (OPTION)	LED1	POWER SUPPLY (I.B)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
RU	RECEIVING UNIT	LED2	POWER SUPPLY (R.B)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15KΩ, 25℃/5.4KΩ DETECT)
BZ	BUZZER	LED3	TRANSMISSION (INDOOR-OUTDOOR)	TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
LED1	LED (RUN INDICATOR)	SW1	JUMPER WIRE (MODEL SELECTION)	HEATER	
SW1	SWITCH (HEATING ON/OFF)	SW2	JUMPER WIRE (CAPACITY CODE)	FS1,2	THERMAL FUSE (98℃, 10A),(77℃,10A)
SW2	SWITCH (COOLING ON/OFF)	SWE	SWITCH (EMERGENCY OPERATION)	H1	HEATER
W.R	WIRELESS REMOTE CONTROLLER (OPTION)	X1	RELAY (DRAIN PUMP/D.HEATER)	26H	HEATER THERMAL SWITCH
		X3	RELAY (VANE MOTOR)	88H	HEATER CONTACTOR
		X4	RELAY (FAN MOTOR)		
		C	CAPACITOR (FAN MOTOR)		
		DP	DRAIN-UP MACHINE		
		DS	DRAIN SENSOR		
		H2	DEW PREVENTION HEATER		

PLH-P3KAH PLH-P4KAH
PLA-P3KA PLA-P4KA



SW1		
MODELS	Manufacture	Service board
PLH-3, 4KAH	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF
PLA-3, 4KA	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF

SW2		
MODELS	Manufacture	service board
PLH-3KAH PLA-3KA	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-4KAH PLA-4KA	J21 J22 J23 J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller. For the setting method,please refer to the indoor unit Installation Manual.

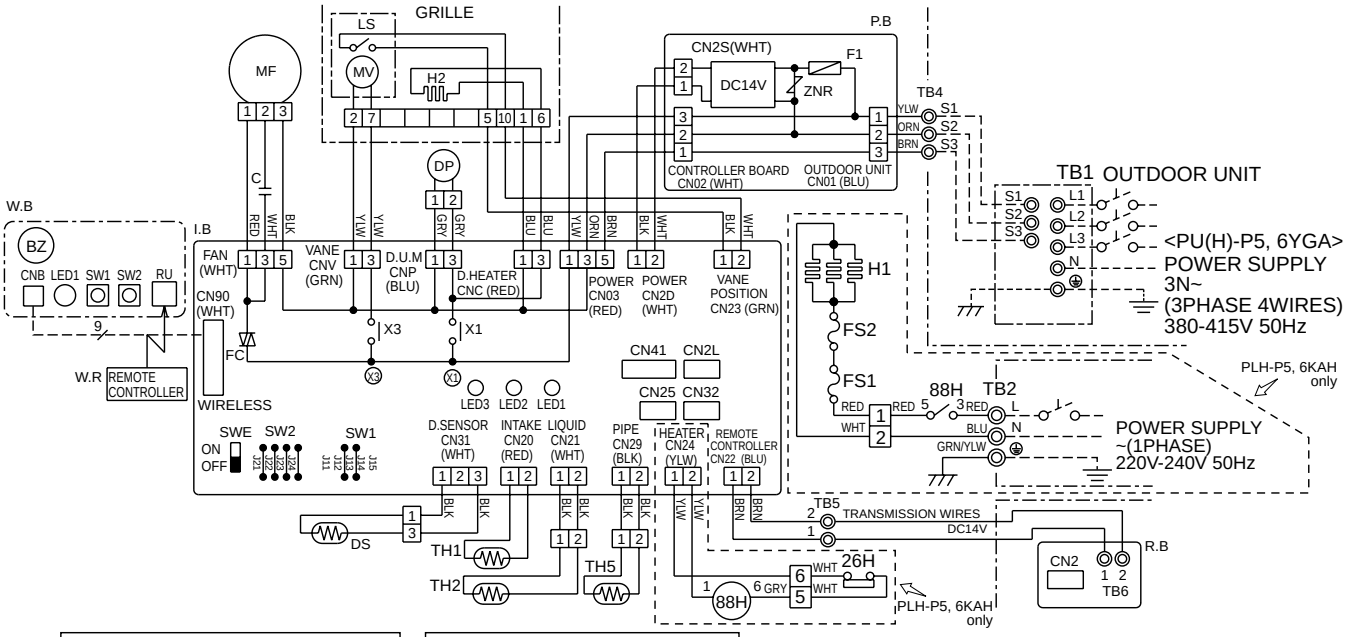
NOTES:

1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□ :Connector, ◎ :Terminal (block).

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	I.B	INDOOR CONTROLLER BOARD	LS	LIMIT SWITCH
F1	FUSE (4A)	CN2L	CONNECTOR (LOSSNAY)	MF	FAN MOTOR
ZNR	VARISTOR	CN25	CONNECTOR (HUMIDIFIER)	MV	VANE MOTOR
R.B	REMOTE CONTROLLER BOARD	CN32	CONNECTOR (REMOTE SWITCH)	TB2	TERMINAL BLOCK (HEATER)
CN2	CONNECTOR (SCHEDULE TIMER)	CN41	CONNECTOR (HA TERMINAL-A)	TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)	FC	FAN PHASE CONTROL	TB5	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
W.B	WIRELESS REMOTE CONTROLLER BOARD (OPTION)	LED1	POWER SUPPLY (I.B)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
RU	RECEIVING UNIT	LED2	POWER SUPPLY (R.B)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15KΩ, 25℃/5.4KΩ DETECT)
BZ	BUZZER	LED3	TRANSMISSION (INDOOR-OUTDOOR)	TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
LED1	LED (RUN INDICATOR)	SW1	JUMPER WIRE (MODEL SELECTION)	HEATER	
SW1	SWITCH (HEATING ON/OFF)	SW2	JUMPER WIRE (CAPACITY CODE)	FS1,2	THERMAL FUSE (77℃,15A)
SW2	SWITCH (COOLING ON/OFF)	SWE	SWITCH (EMERGENCY OPERATION)	H1	HEATER
W.R	WIRELESS REMOTE CONTROLLER (OPTION)	X1	RELAY (DRAIN PUMP/D.HEATER)	26H	HEATER THERMAL SWITCH
		X3	RELAY (VANE MOTOR)	88H	HEATER CONTACTOR
		C	CAPACITOR (FAN MOTOR)		
		DP	DRAIN-UP MACHINE		
		DS	DRAIN SENSOR		
		H2	DEW PREVENTION HEATER		

PLH-P5KAH PLH-P6KAH
PLA-P5KA PLA-P6KA



SW1		
MODELS	Manufacture	Service board
PLH-5, 6KAH	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF
PLA-5, 6KA	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF

SW2		
MODELS	Manufacture	service board
PLH-5KAH PLA-5KA	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-6KAH PLA-6KA	J21 J22 J23 J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller. For the setting method,please refer to the indoor unit Installation Manual.

NOTES:

1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□ :Connector, ◎:Terminal (block).

[LEGEND]

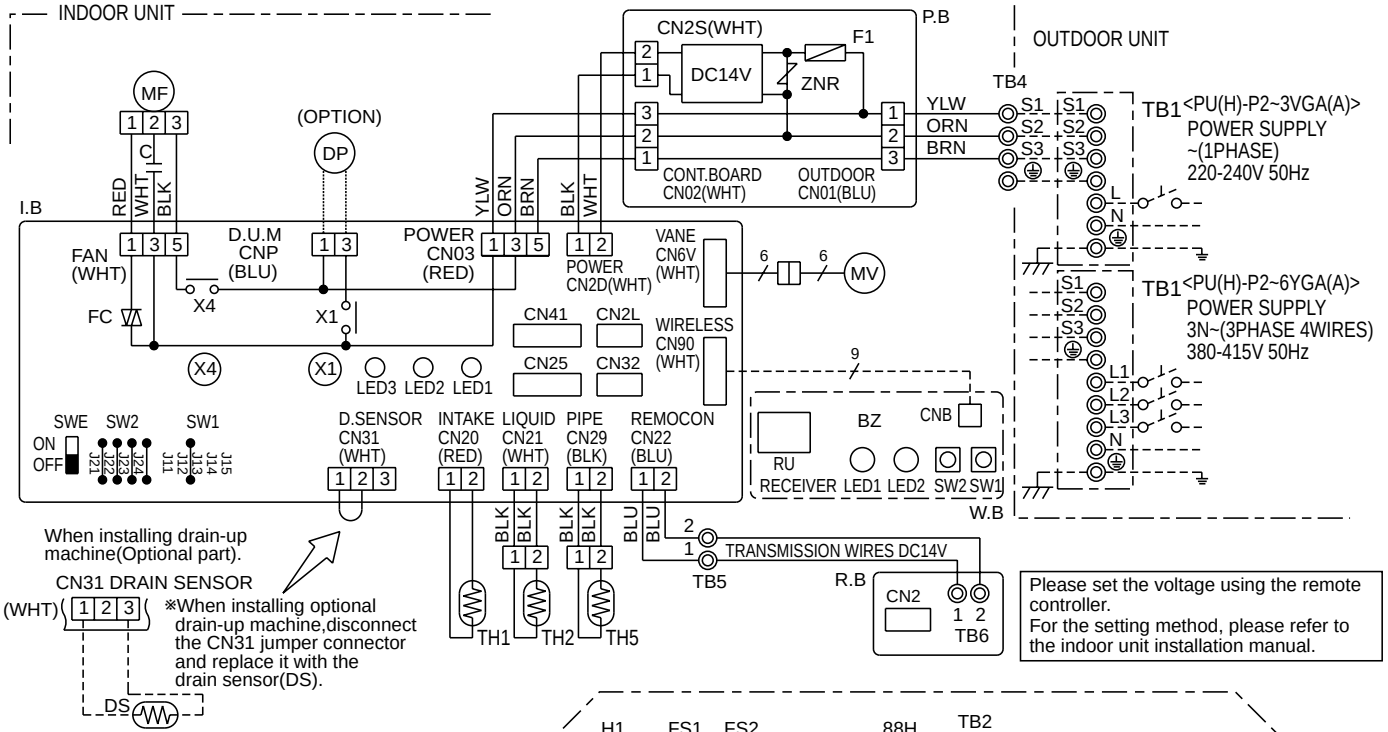
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	I.B	INDOOR CONTROLLER BOARD	LS	LIMIT SWITCH
F1	FUSE (4A)	CN2L	CONNECTOR (LOSSNAY)	MF	FAN MOTOR
ZNR	VARISTOR	CN25	CONNECTOR (HUMIDIFIER)	MV	VANE MOTOR
R.B	REMOTE CONTROLLER BOARD	CN32	CONNECTOR (REMOTE SWITCH)	TB2	TERMINAL BLOCK (HEATER)
CN2	CONNECTOR (SCHEDULE TIMER)	CN41	CONNECTOR (HA TERMINAL-A)	TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)	FC	FAN PHASE CONTROL	TB5	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
W.B	WIRELESS REMOTE CONTROLLER BOARD (OPTION)	LED1	POWER SUPPLY (I.B)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
RU	RECEIVING UNIT	LED2	POWER SUPPLY (R.B)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15KΩ, 25℃/5.4KΩ DETECT)
BZ	BUZZER	LED3	TRANSMISSION (INDOOR-OUTDOOR)	TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
LED1	LED (RUN INDICATOR)	SW1	JUMPER WIRE (MODEL SELECTION)	HEATER	
SW1	SWITCH (HEATING ON/OFF)	SW2	JUMPER WIRE (CAPACITY CODE)	FS1,2	THERMAL FUSE (77℃,15A)
SW2	SWITCH (COOLING ON/OFF)	SWE	SWITCH (EMERGENCY OPERATION)	H1	HEATER
W.R	WIRELESS REMOTE CONTROLLER (OPTION)	X1	RELAY (DRAIN PUMP/D.HEATER)	26H	HEATER THERMAL SWITCH
		X3	RELAY (VANE MOTOR)	88H	HEATER CONTACTOR
		C	CAPACITOR (FAN MOTOR)		
		DP	DRAIN-UP MACHINE		
		DS	DRAIN SENSOR		
		H2	DEW PREVENTION HEATER		

PCH-P2GAH PCH-P2.5GAH PCH-P3GAH PCH-P4GAH PCH-P5GAH PCH-P6GAH
PCH-P2GAH$_1$ PCH-P2.5GAH$_1$ PCH-P3GAH$_1$ PCH-P4GAH$_1$ PCH-P5GAH$_1$ PCH-P6GAH$_1$
PCA-P2GA PCA-P2.5GA PCA-P3GA PCA-P4GA PCA-P5GA PCA-P6GA
PCA-P2GA$_1$ PCA-P2.5GA$_1$ PCA-P3GA$_1$ PCA-P4GA$_1$ PCA-P5GA$_1$ PCA-P6GA$_1$

SYMBOL	NAME
P.B	INDOOR POWER BOARD
F1	FUSE(4A)
ZNR	VARISTOR
I.B	INDOOR CONTROLLER BOARD
CN2L	CONNECTOR(LOSSNAY)
CN32	CONNECTOR(REMOTE SWITCH)
CN41	CONNECTOR(HA TERMINAL-A)
SW1	JUMPER WIRE(MODEL SELECTION)
SW2	JUMPER WIRE(CAPACITY CODE)
SWE	SWITCH(EMERGENCY OPERATION)
X1	RELAY(DRAIN PUMP)
X4	RELAY(FAN MOTOR)
FC	FAN PHASE CONTROL
LED1	POWER SUPPLY(I.B)
LED2	POWER SUPPLY(R.B)
LED3	TRANSMISSION(INDOOR-OUTDOOR)
C	CAPACITOR(FAN MOTOR)
MF	FAN MOTOR

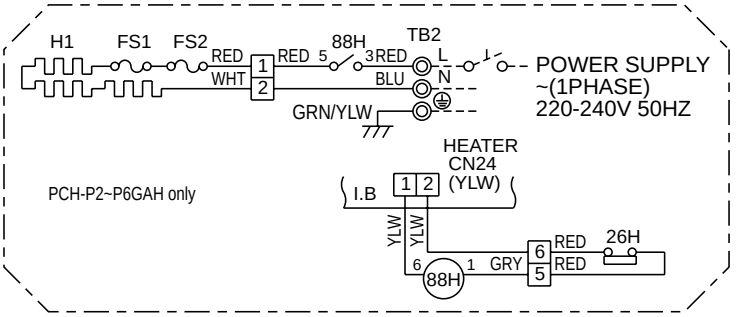
SYMBOL	NAME
MV	VANE MOTOR
DP	DRAIN-UP MACHINE(OPTION)
DS	DRAIN SENSOR(OPTION)
TB2	TERMINAL BLOCK(HEATER)
TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)
TB5	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
TH1	ROOM TEMPERATURE THERMISTOR (0℃/15kΩ ,25℃/5.4kΩ DETECT)
TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15kΩ, 25℃/5.4kΩ DETECT)
TH5	CONDENSER/ EVAPORATOR TEMPERATURE THERMISTOR (0℃/15kΩ, 25℃/5.4kΩ DETECT)
R.B	REMOTE CONTROLLER BOARD
CN2	CONNECTOR(PROGRAM TIMER)
TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)

SYMBOL	NAME
W.B	WIRELESS REMOTE CONTROLLER BOARD(OPTION)
RU	RECEIVING UNIT
BZ	BUZZER
LED1	LED(RUN INDICATOR)
LED2	LED(HOT ADJUST)
SW1	SWITCH(HEATING ON/OFF)
SW2	SWITCH(COOLING ON/OFF)
HEATER	
FS1,2	THERMAL FUSE<98℃10A:2GAH / 117℃16A:4GAH 110℃16A:2.5,3GAH,5,6GAH>
H1	HEATER
26H	HEATER THERMAL SWITCH
88H	HEATER CONTACTOR



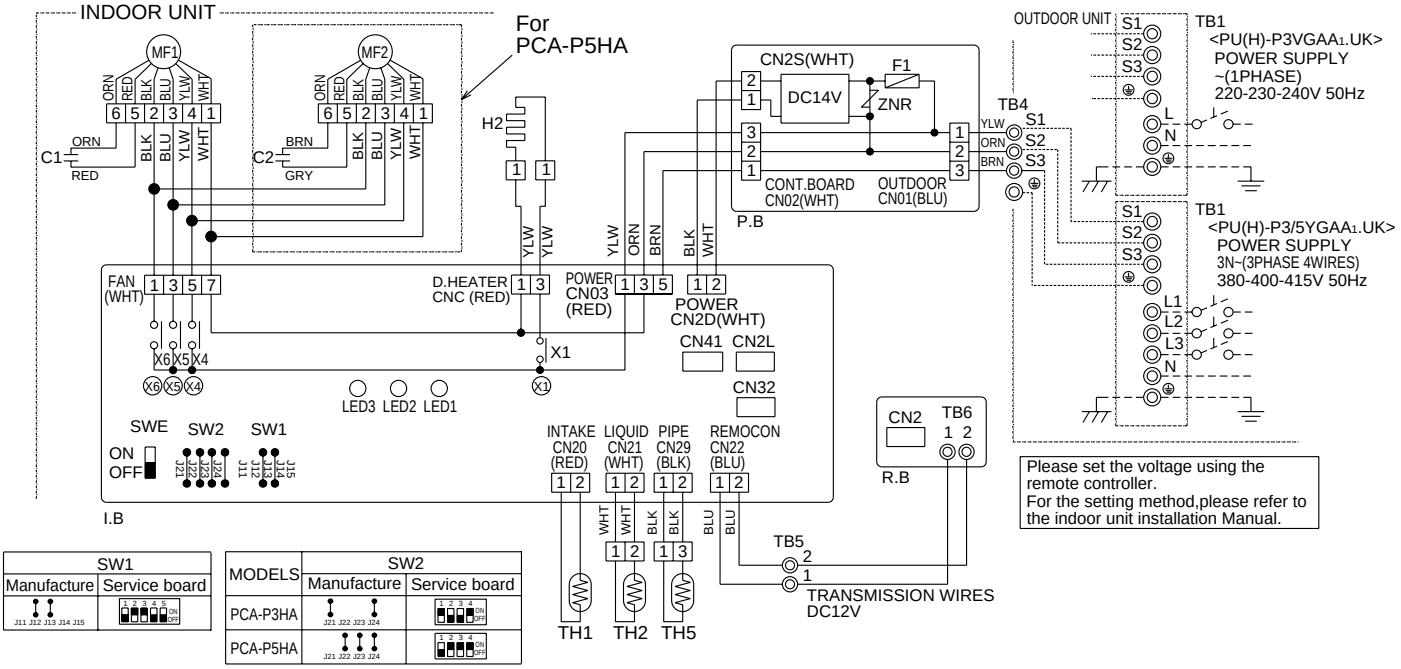
Please set the voltage using the remote controller.
For the setting method, please refer to the indoor unit installation manual.

MODELS	SW1	SW2 Manufacture	SW2 Service board
P2	<For manufacture>	J21 J22 J23 J24	1 2 3 4 ON OFF
P2.5	J11 J12 J13 J14 J15	J21 J22 J23 J24	1 2 3 4 ON OFF
P3		J21 J22 J23 J24	1 2 3 4 ON OFF
P4	<For service board>	J21 J22 J23 J24	1 2 3 4 ON OFF
P5	1 2 3 4 5 ON OFF	J21 J22 J23 J24	1 2 3 4 ON OFF
P6		J21 J22 J23 J24	1 2 3 4 ON OFF



NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□ :Connector, ◎ :Terminal block.

PCA-P3HA
PCA-P5HA



SW1	
Manufacture	Service board

MODELS	SW2	
	Manufacture	Service board
PCA-P3HA		
PCA-P5HA		

LEGEND

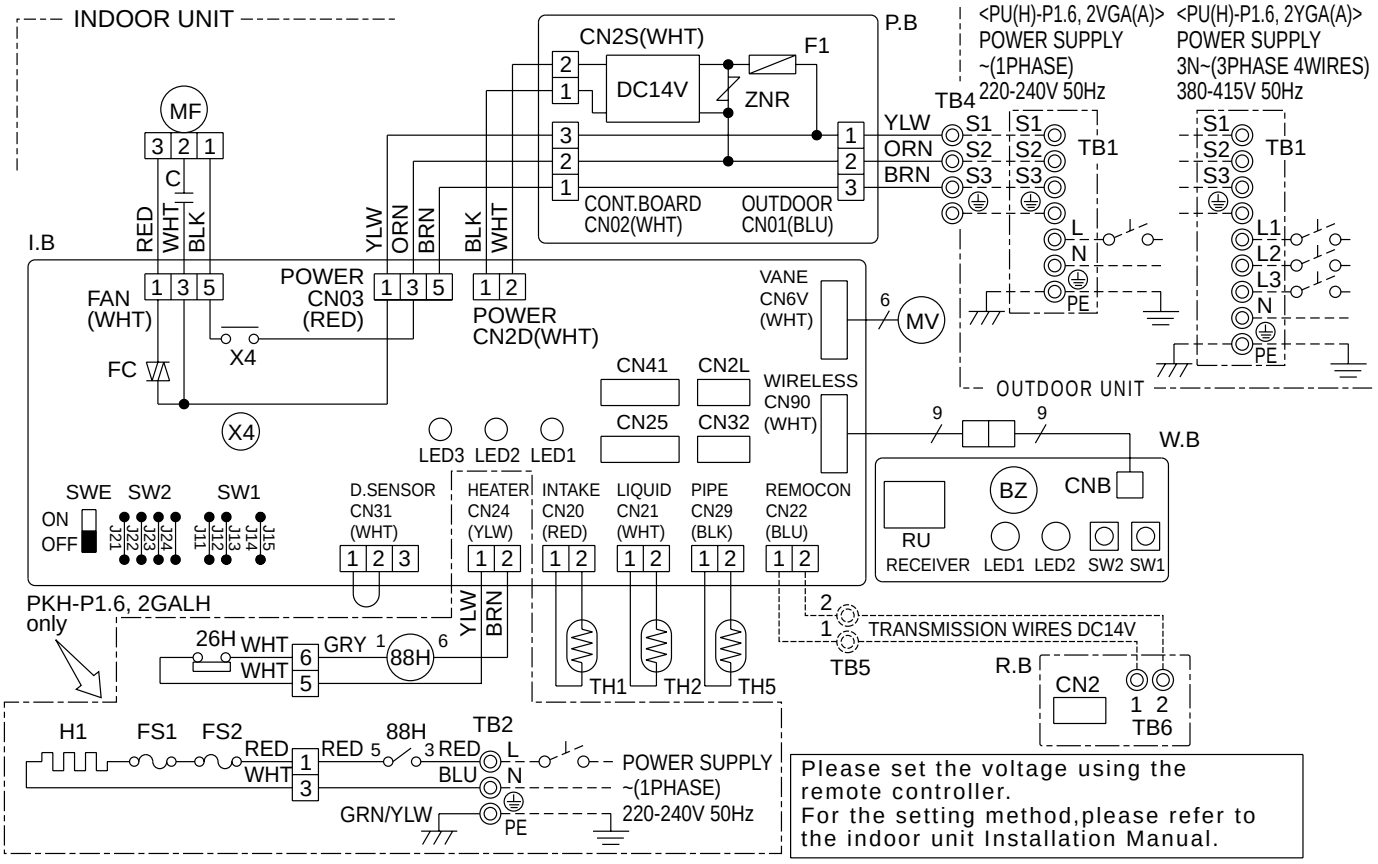
SYMBOL		NAME	SYMBOL	NAME
P.B		INDOOR POWER BOARD	MF1,MF2	FAN MOTOR
	F1	FUSE(4A)	C1,C2	CAPACITOR(FAN MOTOR)
	ZNR	VARISTOR	H2	DEW PREVENTION HEATER
I.B		INDOOR CONTROLLER BOARD	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)
	CN2L	CONNECTOR(LOSSNAY)		
	CN32	CONNECTOR(REMOTE SWITCH)	TB5	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
	CN41	CONNECTOR(HA TERMINAL-A)		
	LED1	POWER SUPPLY(I.B)	TH1	ROOM TEMPERATUR THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	LED2	POWER SUPPLY(R.B)		
	LED3	TRANSMISSION(INDOOR-OUTDOOR)	TH2	PIPE TEMPERATUR THERMISTOR/LIQUID (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	X1	RELAY(DEW PREVENTION HEATER)		
	X4	RELAY(FAN MOTOR)	TH5	CONDENSER / EVAPORATOR TEMPERATUR THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	X5	RELAY(FAN MOTOR)		
	X6	RELAY(FAN MOTOR)	R.B	REMOTE CONTROLLER BOARD
	SW1	JUMPER WIRE(MODEL SELECTION)	CN2	CONNECTOR(PROGRAM TIMER)
	SW2	JUMPER WIRE(CAPACITY CODE)	TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
	SWE	SWITCH(EMERGENCY OPERATION)		

[Servicing]
Fasten terminal of the terminal board "TB4" equips lock system.
To remove the fastened terminal,pull it while pressing the protruding portion(locking lever)of the terminal.The fastened terminal protruding portion should face upward.

Check code	Symptom
P1	Abnormality of room temperature thermistor(TH1).
P2	Abnormality of pipe temperature thermistor/Liquid(TH2).
P6	Freezing /overheating protection is working.
P8	Abnormality of pipe temperature.
P9	Abnormality of pipe temperature thermistor/ Condenser/Evaporator(TH5).
E0—E5	Abnormality of the signal transmission between remote controller and indoor unit.
E6—EF	Abnormality of the signal transmission between indoor unit and outdoor unit("EE" indicates abnormality of combination).
U✶	Abnormality in outdoor unit. Refer to outdoor unit wiring diagram.
F✶	Abnormality in outdoor unit. Refer to outdoor unit wiring diagram.
----	No trouble generated in the past.
FFFF	No corresponding unit.

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Symbols used in wiring diagram above are, ▭▭▭ :Connector, ⓞ:Terminal (block).

PKH-P1.6GALH PKH-P2GALH PKH-P1.6GALH$_1$ PKH-P2GALH$_1$
PKA-P1.6GAL PKA-P2GAL PKA-P1.6GAL$_1$ PKA-P2GAL$_1$



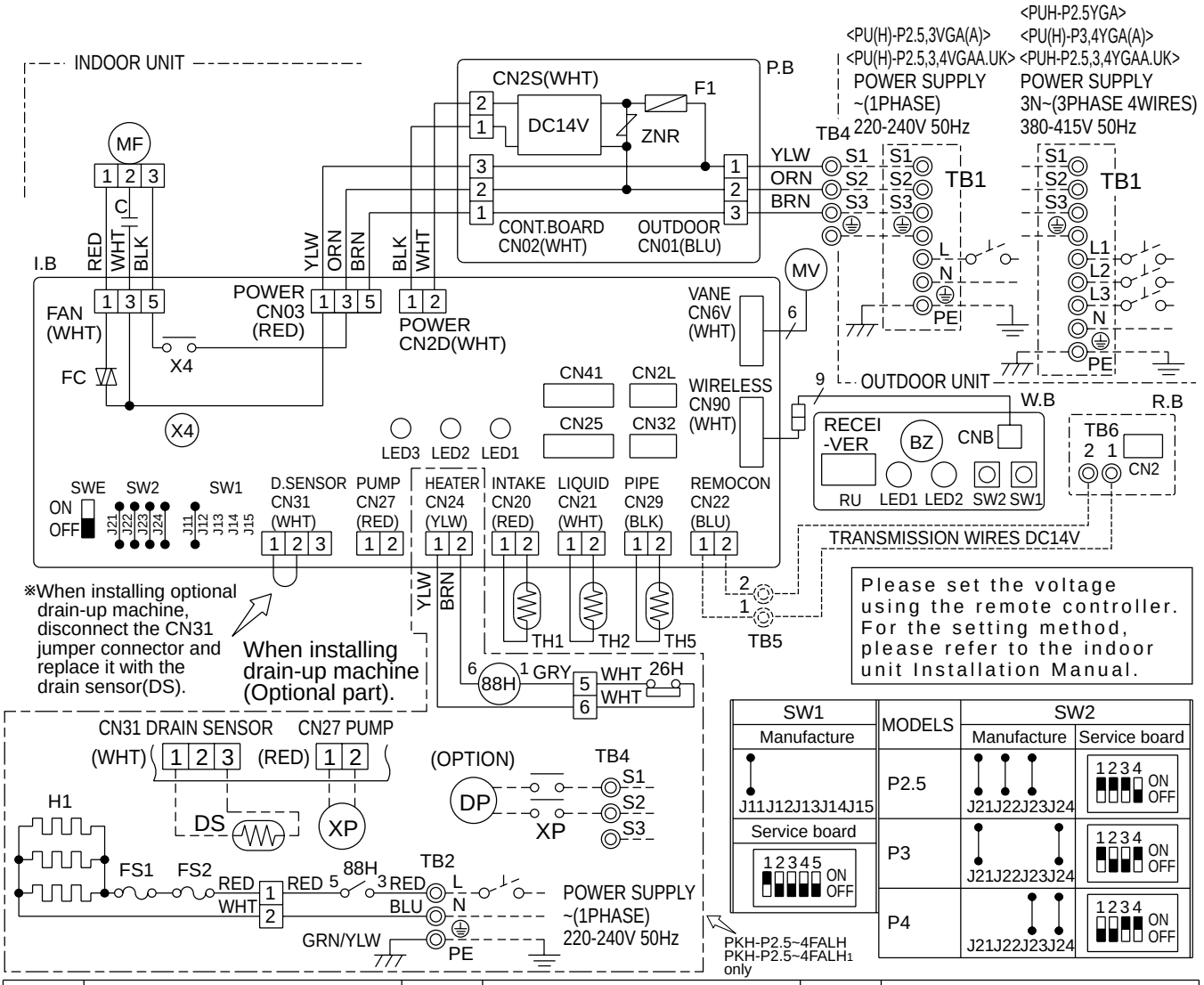
Please set the voltage using the remote controller.
For the setting method,please refer to the indoor unit Installation Manual.

SW1		MODEL	SW2		MODEL	SW2	
Manufacture	Service board		Manufacture	Service board		Manufacture	Service board
J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF	P1.6	J21 J22 J23 J24	1 2 3 4 ON OFF	P2	J21 J22 J23 J24	1 2 3 4 ON OFF

SYMBOL		NAME	SYMBOL	NAME	SYMBOL		NAME
P.B		INDOOR POWER BOARD	C	CAPACITOR(FAN MOTOR)	W.B		WIRELESS REMOTE CONTROLLER BOARD
	F1	FUSE(4A)	MF	FAN MOTOR		RU	RECEIVING UNIT
	ZNR	VARISTOR	MV	VANE MOTOR		BZ	BUZZER
I.B		INDOOR CONTROLLER BOARD	TB2	TERMINAL BLOCK(HEATER)		LED1	LED(RUN INDICATOR)
	CN2L	CONNECTOR(LOSSNAY)	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)		LED2	LED(HOT ADJUST)
	CN32	CONNECTOR(REMOTE SWITCH)				SW1	SWITCH(HEATING ON/OFF)
	CN41	CONNECTOR(HA TERMINAL-A)	TB5	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)(OPTION)		SW2	SWITCH(COOLING ON/OFF)
	SW1	JUMPER WIRE(MODEL SELECTION)			HEATER		
	SW2	JUMPER WIRE(CAPACITY CODE)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15kΩ,25℃/5.4kΩ DETECT)		FS1	THERMAL FUSE<104℃10A>
	SWE	SWITCH(EMERGENCY OPERATION)				FS2	THERMAL FUSE<84℃10A>
	X4	RELAY(FAN MOTOR)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15kΩ,25℃/5.4kΩ DETECT)		H1	HEATER
	FC	FAN PHASE CONTROL				26H	HEATER THERMAL SWITCH
	LED1	POWER SUPPLY(I.B)	TH5	CONDENSER /EVAPORATOR TEMPERATURE THERMISTOR (0℃/15kΩ,25℃/5.4kΩ DETECT)		88H	HEATER CONTACTOR
	LED2	POWER SUPPLY(R.B)			R.B		REMOTE CONTROLLER BOARD(OPTION)
	LED3	TRANSMISSION(INDOOR-OUTDOOR)				CN2	CONNECTOR(PROGRAM TIMER)
						TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□:Connector, ◎:Terminal (block).

PKH-P2.5FALH PKH-P3FALH PKH-P4FALH
PKH-P2.5FALH$_1$ PKH-P3FALH$_1$ PKH-P4FALH$_1$
PKH-P2.5FALH$_2$ PKH-P3FALH$_2$ PKH-P4FALH$_2$
PKA-P2.5FAL PKA-P3FAL PKA-P4FAL
PKA-P2.5FAL$_1$ PKA-P3FAL$_1$ PKA-P4FAL$_1$
PKA-P2.5FAL$_2$ PKA-P3FAL$_2$ PKA-P4FAL$_2$

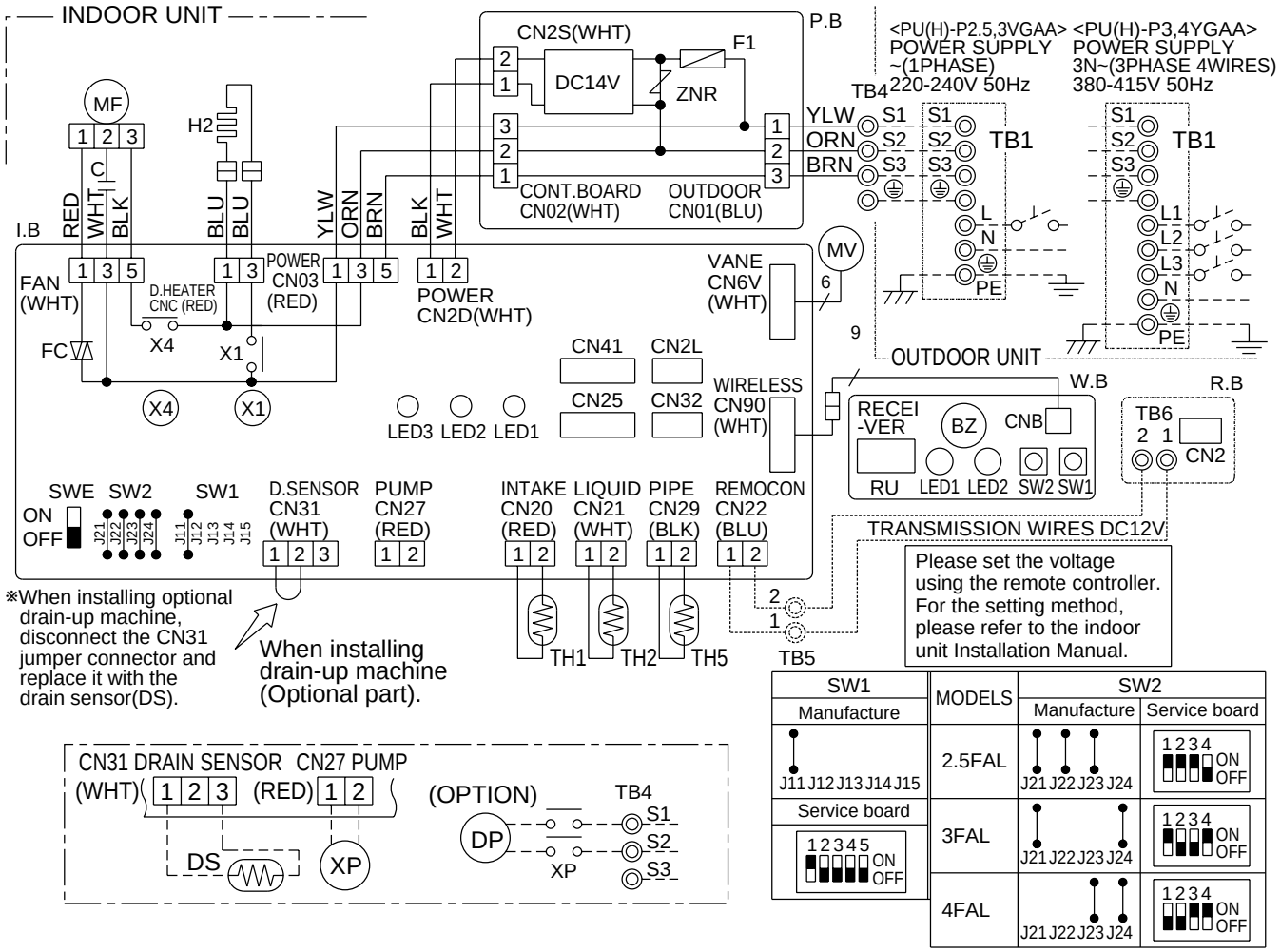


SW1		MODELS	SW2	
Manufacture			Manufacture	Service board
J11 J12 J13 J14 J15		P2.5	J21 J22 J23 J24	1 2 3 4 ON OFF
Service board		P3	J21 J22 J23 J24	1 2 3 4 ON OFF
1 2 3 4 5 ON OFF		P4	J21 J22 J23 J24	1 2 3 4 ON OFF

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	MV	VANE MOTOR	SW1	SWITCH(HEATING ON/OFF)
F1	FUSE(4A)	TB2	TERMINAL BLOCK(HEATER)	SW2	SWITCH(COOLING ON/OFF)
ZNR	VARISTOR	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)	HEATER	
I.B	INDOOR CONTROLLER BOARD			FS1,2	THERMAL FUSE<117℃ 10A : 2.5 • 3FALH>
CN2L	CONNECTOR(LOSSNAY)	TB5	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)(OPTION)	FS1,2	THERMAL FUSE<117℃ 16A : 4FALH>
CN32	CONNECTOR(REMOTE SWITCH)			H1	HEATER
CN41	CONNECTOR(HA TERMINAL-A)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15kΩ,25℃/5.4kΩ DETECT)	26H	HEATER THERMAL SWITCH
SW1	JUMPER WIRE(MODEL SELECTION)			88H	HEATER CONTACTOR
SW2	JUMPER WIRE(CAPACITY CODE)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15kΩ,25℃/5.4kΩ DETECT)	R.B	REMOTE CONTROLLER BOARD(OPTION)
SWE	SWITCH(EMERGENCY OPERATION)			CN2	CONNECTOR(PROGRAM TIMER)
X4	RELAY(FAN MOTOR)	TH5	CONDENSER / EVAPORATOR TEMPERATURE THERMISTOR (0℃/15kΩ,25℃/5.4kΩ DETECT)	TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
FC	FAN PHASE CONTROL			DRAIN-UP MACHINE(OPTION)	
LED1	POWER SUPPLY(I.B)	W.B	WIRELESS REMOTE CONTROLLER BOARD	DP	DRAIN PUMP
LED2	POWER SUPPLY(R.B)	RU	RECEIVING UNIT	DS	DRAIN SENSOR
LED3	TRANSMISSION(INDOOR-OUTDOOR)	BZ	BUZZER	XP	RELAY(DRAIN PUMP)
C	CAPACITOR(FAN MOTOR)	LED1	LED(RUN INDICATOR)		
MF	FAN MOTOR	LED2	LED(HOT ADJUST)		

NOTES:
1.Since the outdoor side electric wiring may change, be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□:Connector, ◎:Terminal (block).

PKA-P2.5FAL-H
PKA-P3FAL-H
PKA-P4FAL-H



SW1	MODELS	SW2	
Manufacture		Manufacture	Service board
J11 J12 J13 J14 J15	2.5FAL	J21 J22 J23 J24	1 2 3 4 ON OFF
Service board	3FAL	J21 J22 J23 J24	1 2 3 4 ON OFF
1 2 3 4 5 ON OFF	4FAL	J21 J22 J23 J24	1 2 3 4 ON OFF

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	MV	VANE MOTOR	R.B	REMOTE CONTROLLER BOARD(OPTION)
F1	FUSE(4A)	TB2	(HEATER)TERMINAL BLOCK	CN2	(SCHEDULE TIMER)CONNECTOR
ZNR	VARISTOR	TB4	(INDOOR/OUTDOOR CONNECTING LINE) TERMINAL BLOCK	TB6	(REMOTE CONTROLLER TRANSMISSION LINE) TERMINAL BLOCK
I.B	INDOOR CONTROLLER BOARD			DRAIN-UP MACHINE(OPTION)	
CN2L	(LOSSNAY)CONNECTOR	TB5	(REMOTE CONTROLLER TRANSMISSION LINE) TERMINAL BLOCK(OPTION)	DP	DRAIN PUMP
CN32	(REMOTE SWITCH)CONNECTOR			DS	DRAIN SENSOR
CN41	(HA TERMINAL-A)CONNECTOR	TH1	ROOM TEMPERATURE THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)	XP	(DRAIN PUMP)RELAY
SW1	(MODEL SELECTION)JUMPER WIRE				
SW2	(CAPACITY CORD)JUMPER WIRE	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)		
SWE	(EMERGENCY OPERATION)SWITCH				
X1	(D.HEATER)RELAY	TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)		
X4	(FAN MOTOR)RELAY				
FC	FAN PHASE CONTROL	W.B	WIRELESS REMOTE CONTROLLER BOARD		
LED1	(I.B)POWER SUPPLY	RU	RECEIVING UNIT		
LED2	(R.B)POWER SUPPLY	BZ	BUZZER		
LED3	(INDOOR-OUTDOOR)TRANSMISSION	LED1	(RUN INDICATOR)LED		
C	(FAN MOTOR)CAPACITOR	LED2	(HOT ADJUST)LED		
MF	FAN MOTOR	SW1	(HEATING ON/OFF)SWITCH		
H2	DEW PREVENTION HEATER	SW2	(COOLING ON/OFF)SWITCH		

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are, □□□:Connector, ◎:Terminal (block).

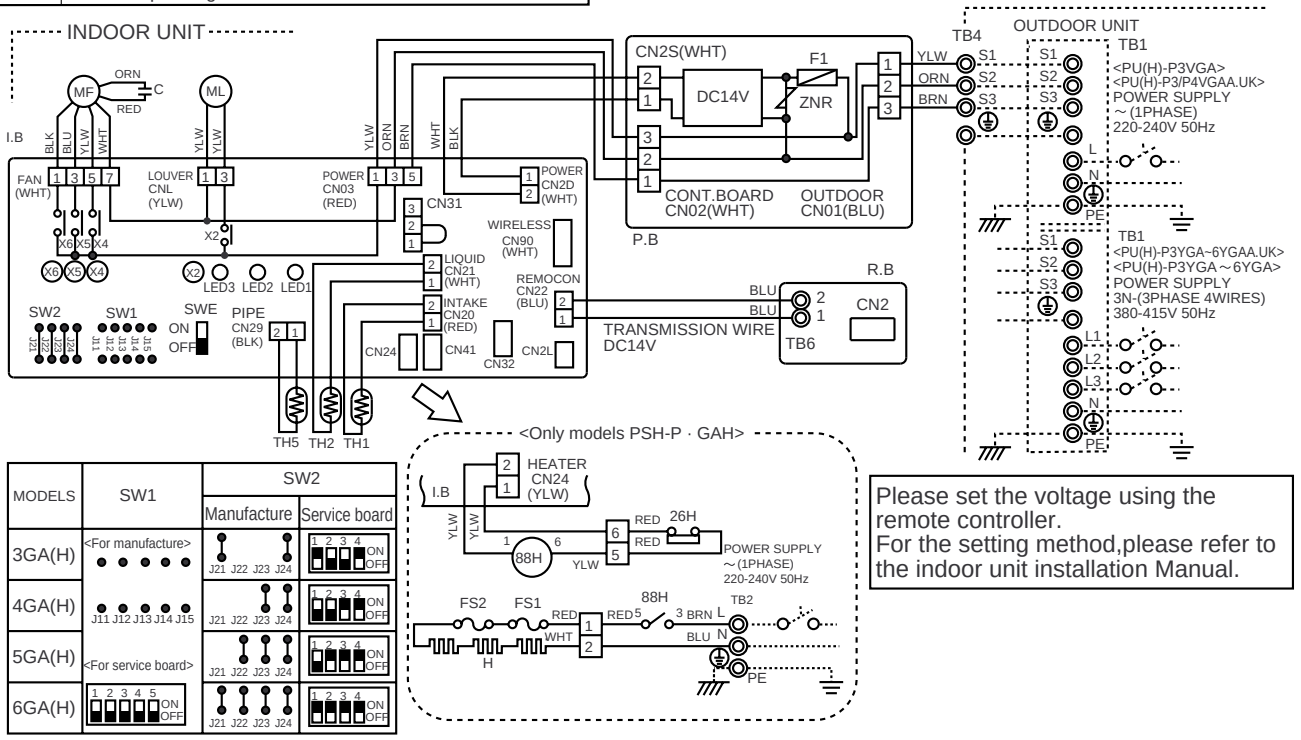
PSH-P3GAH PSH-P4GAH PSH-P5GAH PSH-P6GAH
PSH-P3GAH$_1$ PSH-P4GAH$_1$ PSH-P5GAH$_1$ PSH-P6GAH$_1$
PSA-P3GA PSA-P4GA PSA-P5GA PSA-P6GA
PSA-P3GA$_1$ PSA-P4GA$_1$ PSA-P5GA$_1$ PSA-P6GA$_1$

SYMBOL	NAME
I.B	INDOOR CONTROLLER BOARD
CN2L	CONNECTOR(LOSSNAY)
CN32	CONNECTOR(REMOTE SWITCH)
CN41	CONNECTOR(HA TERMINAL-A)
LED1	POWER SUPPLY(I.B)
LED2	POWER SUPPLY(R.B)
LED3	TRANSMISSOION(INDOOR • OUTDOOR)
SW1	JUMPER WIRE(MODEL SELECTION)
SW2	JUMPER WIRE(CAPACITY CORD)
SWE	SWITCH(EMERGENCY OPERATION)
X2	RELAY(LOUVER)
X4	RELAY(FAN MOTOR)
X5	RELAY(FAN MOTOR)
X6	RELAY(FAN MOTOR)

SYMBOL	NAME
P.B	INDOOR POWER BOARD
F1	FUSE(4A)
ZNR	VARISTOR
R.B	REMOTE CONTROLLER BOARD
CN2	CONNECTOR(PROGRAM TIMER)
TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSON LINE)
HEATER	
FS1,2	THERMAL FUSE (110°C 16A)
H	HEATER
26H	HEATER THERMAL SWITCH
88H	HEATER CONTACTOR

SYMBOL	NAME
C	CAPACITOR(FAN MOTOR)
MF	FAN MOTOR
ML	LOUVER MOTOR
TB2	TERMINAL BLOCK(HEATER)
TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TH1	ROOM TEMPERATURE THERMISTOR (0°C/15kΩ,25°C/5.4kΩ DETECT)
TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0°C/15kΩ,25°C/5.4kΩ DETECT)
TH5	COND./EVA. TEMPERATURE THERMISTOR (0°C/15kΩ,25°C/5.4kΩ DETECT)

Check code	Symptom
P1	Abnormality of room temperture thermistor(TH1).
P2	Abnormality of pipe temperture thermistor/liquid(TH2).
P6	Freezing/overheating protection is working.
P8	Abnormality of pipe temperature.
P9	Abnormality of pipe temperature thermistor/Cond./Eva.(TH5).
E0～E5	Abnormality of the signal transmission between remote controller and indoor unit.
E6～EF	Abnormality of the signal transmission between indoor unit outdoor unit (“EE” indicates abnormality of combination).
U0～UL	Abnormality in outdoor unit.Refer to outdoor unit wiring diagram.
F1～F9	Abnormality in outdoor unit.Refer to outdoor unit wiring diagram.
- - - -	No trouble generated in the past.
F F F F	No corresponding unit.



MODELS	SW1	SW2	
		Manufacture	Service board
3GA(H)	<For manufacture>	J21 J22 J23 J24	ON OFF
4GA(H)	J11 J12 J13 J14 J15	J21 J22 J23 J24	ON OFF
5GA(H)	<For service board>	J21 J22 J23 J24	ON OFF
6GA(H)	ON OFF	J21 J22 J23 J24	ON OFF

Please set the voltage using the remote controller.
For the setting method,please refer to the indoor unit installation Manual.

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Make sure that the main power supply of the booster heater is independent.
4.Symbols used in wiring diagram above are,□□□:Connector,◎:Terminal (block).

PMH-P1BA PMH-P1.6BA PMH-P2BA
PMH-P1BA$_1$ PMH-P1.6BA$_1$ PMH-P2BA$_1$
PMH-P1BA$_2$ PMH-P1.6BA$_2$ PMH-P2BA$_2$

[LEGEND]

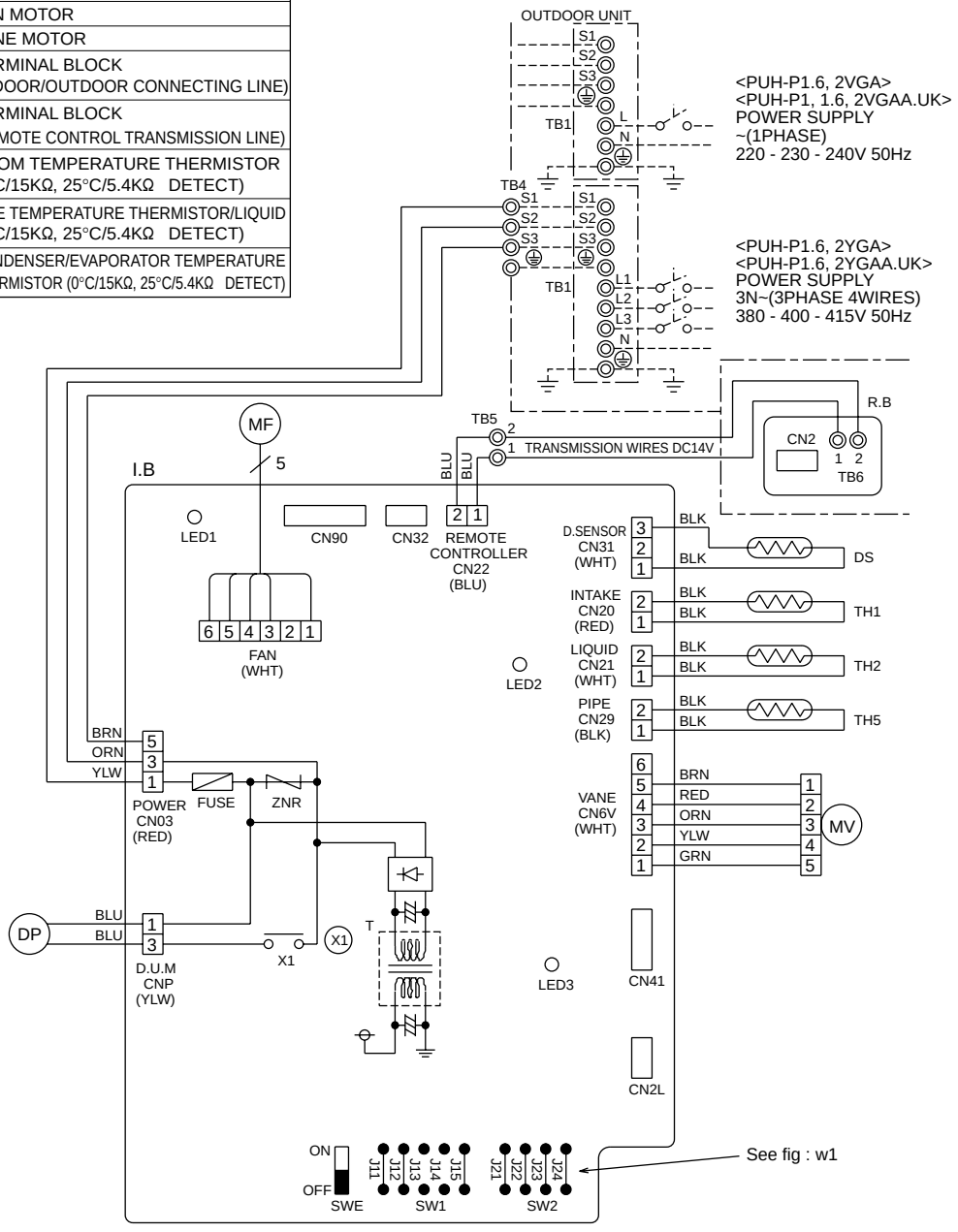
SYMBOL		NAME
I.B		INDOOR CONTROLLER BOARD
	CN2L	CONNECTOR (LOSSNAY)
	CN32	CONNECTOR (REMOTE SWITCH)
	CN41	CONNECTOR (HA TERMINAL-A)
	FUSE	FUSE (6.3A, 250V)
	LED1	POWER SUPPLY (I.B)
	LED2	POWER SUPPLY (R.B)
	LED3	TRANSMISSION (INDOOR-OUTDOOR)
	SW1	JUMPER WIRE (MODEL SELECTION)
	SW2	JUMPER WIRE (CAPACITY CODE)
	SWE	SWITCH (EMERGENCY OPERATION)
	T	TRANSFORMER
	X1	RELAY (DRAIN PUMP)
	ZNR	VARISTOR
R.B		REMOTE CONTROLLER BOARD
	CN2	CONNECTOR (PROGRAM TIMER)
	TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)
DP		DRAIN-UP MACHINE
DS		DRAIN SENSOR
MF		FAN MOTOR
MV		VANE MOTOR
TB4		TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB5		TERMINAL BLOCK (REMOTE CONTROL TRANSMISSION LINE)
TH1		ROOM TEMPERATURE THERMISTOR (0°C/15KΩ, 25°C/5.4KΩ DETECT)
TH2		PIPE TEMPERATURE THERMISTOR/LIQUID (0°C/15KΩ, 25°C/5.4KΩ DETECT)
TH5		CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0°C/15KΩ, 25°C/5.4KΩ DETECT)

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers(S1, S2, S3).
3.Symbols used in wiring diagram above are, □□□ :Connector, ◎ :Terminal (block).

Please set the voltage using the remote controller.
For the setting method, please refer to the indoor unit Installation Manual.

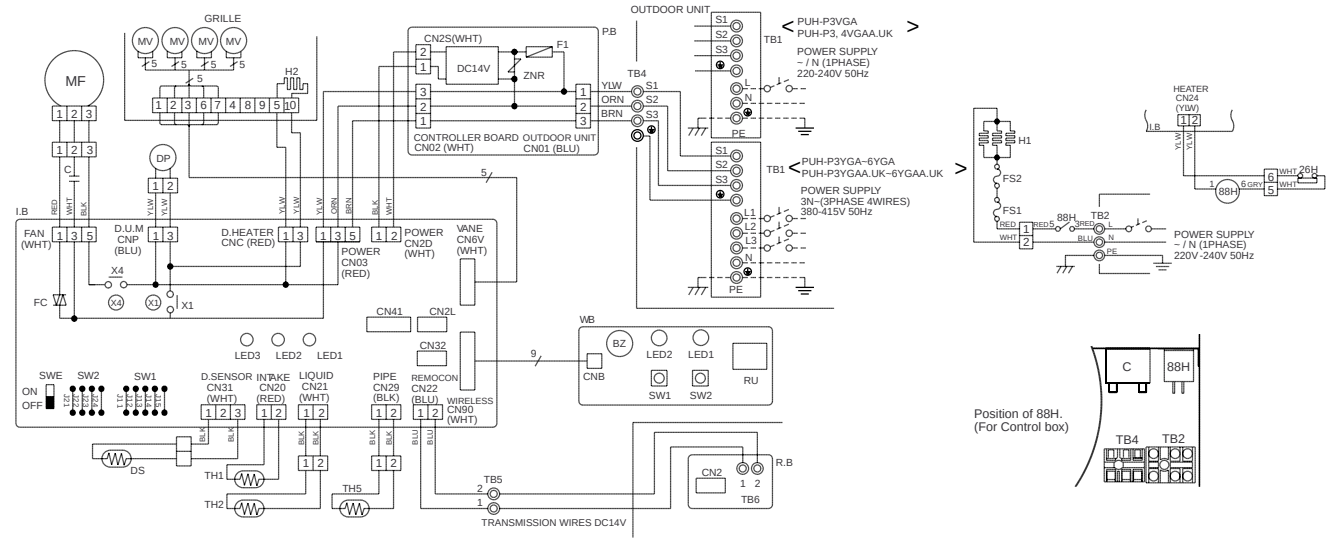
<w1>

	MODELS	Manufacture	Service board
SW1	PMH-P1/1.6/2BA PMH-P1/1.6/2BA$_1$	J11 J12 J13 J14 J15	J11 J12 J13 J14 J15
	PMH-P1/1.6/2BA$_2$	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF
SW2	PMH-P1BA PMH-P1BA$_1$ PMH-P1BA$_2$	J21 J22 J23 J24	1 2 3 4 ON OFF
	PMH-P1.6BA PMH-P1.6BA$_1$ PMH-P1.6BA$_2$	J21 J22 J23 J24	1 2 3 4 ON OFF
	PMH-P2BA PMH-P2BA$_1$ PMH-P2BA$_2$	J21 J22 J23 J24	1 2 3 4 ON OFF



PLH-P3AAH.UK PLH-P4AAH.UK PLH-P5AAH.UK PLH-P6AAH.UK
PLH-P3AAH1.UK PLH-P4AAH1.UK PLH-P5AAH1.UK PLH-P6AAH1.UK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	MV	VANE MOTOR	W.B	WIRELESS REMOTE CONTROLLER BOARD
F1	FUSE(4A)	DP	DRAIN-UP MACHINE	RU	RECEIVING UNIT
ZNR	VARISTOR	DS	DRAIN SENSOR	BZ	BUZZER
I.B	INDOOR CONTROLLER BOARD	H2	DEW PREVENTION HEATER	LED1	LED(RUN INDICATOR)
CN2L	CONNECTOR(LOSSNAY)	TB2	TERMINAL BLOCK(HEATER)	LED2	LED(HOT ADJUST)
CN32	CONNECTOR(REMOTE SWITCH)	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)	SW1	SWITCH(HEATING ON/OFF)
CN41	CONNECTOR(HA TERMINAL-A)	TB5	TERMINAL BLOCK(REMOTE	SW2	SWITCH(COOLING ON/OFF)
SW1	JUMPER WIRE(MODEL SELECTION)		CONTROLLER TRANSMISSION LINE)	HEATER	
SW2	JUMPER WIRE(CAPACITY CORD)	TH1	ROOM TEMP.THERMISTOR	FS1	THERMAL FUSE(72℃,16A)
SWE	SWITCH(EMERGENCY OPERATION)		(0℃/15kΩ,25℃/5.4kΩ DETECT)	FS2	THERMAL FUSE(104℃,16A)
X1	RELAY(DRAIN PUMP)	TH2	PIPE TEMP.THERMISTOR/LIQUID	H1	HEATER
X4	RELAY(FAN MOTOR)		(0℃/15kΩ,25℃/5.4kΩ DETECT)	26H	HEATER THERMAL SWITCH
FC	FAN PHASE CONTROL	TH5	COND./EVA.TEMP.THERMISTOR	88H	HEATER CONTACTOR
LED1	POWER SUPPLY(I.B)		(0℃/15kΩ,25℃/5.4kΩ DETECT)		
LED2	POWER SUPPLY(R.B)	R.B	REMOTE CONTROLLER BOARD		
LED3	TRANSMISSION(INDOOR-OUTDOOR)	CN2	CONNECTOR(PROGRAM TIMER)		
C	CAPACITOR(FAN MOTOR)	TB6	TERMINAL BLOCK(REMOTE		
MF	FAN MOTOR		CONTROLLER TRANSMISSION LINE)		



SW1		
MODELS	Manufacture	Service board
PLH-P3,4,5,6AAH.UK PLH-P3,4,5,6AAH1.UK	J11,J12,J13,J14,J15	ON OFF

SW2		
MODELS	Manufacture	Service board
PLH-P3AAH.UK PLH-P3AAH1.UK	J21,J22,J23 J24	ON OFF
PLH-P4AAH.UK PLH-P4AAH1.UK	J21,J22,J23,J24	ON OFF
PLH-P5AAH.UK PLH-P5AAH1.UK	J21,J22,J23 J24	ON OFF
PLH-P6AAH.UK PLH-P6AAH1.UK	J21,J22,J23,J24	ON OFF

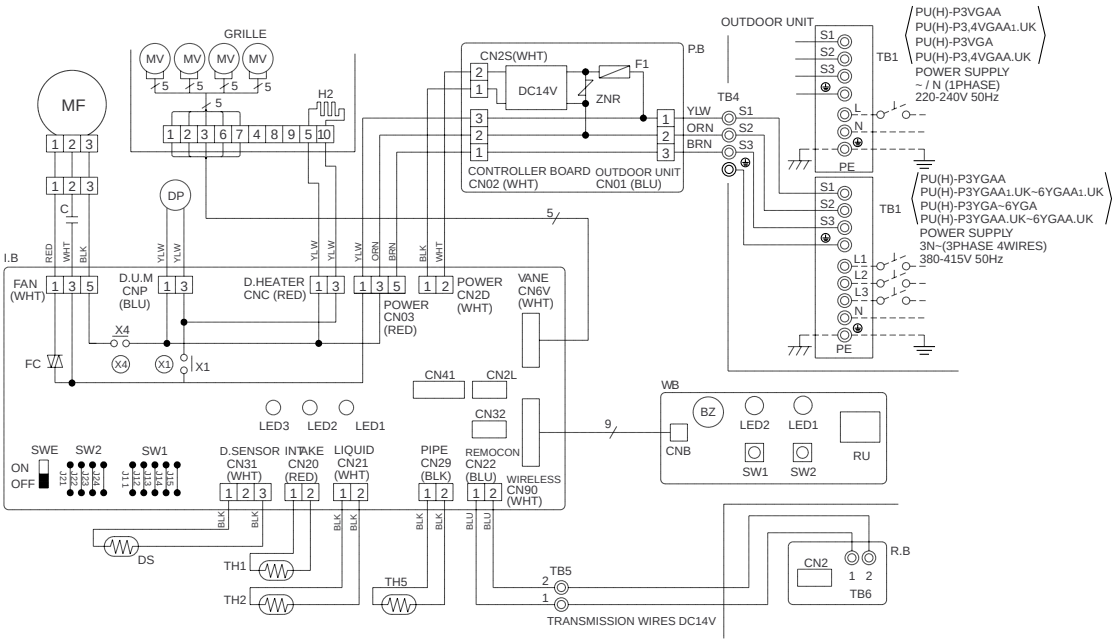
Please set the voltage using the remote controller
For the setting method,please refer to the indoor unit Installation Manual.

NOTE:

1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2. Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers (S1,S2,S3).
3. Make sure that the main power supply of the booster heater is independent.
4. Symbols used in wiring diagram above are,
   ◎ : Terminal , □□□ : Connector.

PLA-P3AA PLA-P4AA PLA-P5AA PLA-P6AA
PLA-P3AA.UK PLA-P4AA.UK PLA-P5AA.UK PLA-P6AA.UK
PLA-P3AA1.UK PLA-P4AA1.UK PLA-P5AA1.UK PLA-P6AA1.UK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	MV	VANE MOTOR	W.B	WIRELESS REMOTE CONTROLLER BOARD
F1	FUSE(4A)	DP	DRAIN-UP MACHINE	RU	RECEIVING UNIT
ZNR	VARISTOR	DS	DRAIN SENSOR	BZ	BUZZER
I.B	INDOOR CONTROLLER BOARD	H2	DEW PREVENTION HEATER	LED1	LED(RUN INDICATOR)
CN2L	CONNECTOR(LOSSNAY)	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)	LED2	LED(HOT ADJUST)
CN32	CONNECTOR(REMOTE SWITCH)	TB5	TERMINAL BLOCK(REMOTE	SW1	SWITCH(HEATING ON/OFF)
CN41	CONNECTOR(HA TERMINAL-A)		CONTROLLER TRANSMISSION LINE)	SW2	SWITCH(COOLING ON/OFF)
SW1	JUMPER WIRE(MODEL SELECTION)	TH1	ROOM TEMP.THERMISTOR		
SW2	JUMPER WIRE(CAPACITY CODE)		(0℃/15kΩ,25℃/5.4kΩ DETECT)		
SWE	SWITCH(EMERGENCY OPERATION)	TH2	PIPE TEMP.THERMISTOR/LIQUID		
X1	RELAY(DRAIN PUMP)		(0℃/15kΩ,25℃/5.4kΩ DETECT)		
X4	RELAY(FAN MOTOR)	TH5	COND./EVA.TEMP.THERMISTOR		
FC	FAN PHASE CONTROL		(0℃/15kΩ,25℃/5.4kΩ DETECT)		
LED1	POWER SUPPLY(I.B)	R.B	REMOTE CONTROLLER BOARD		
LED2	POWER SUPPLY(I.B)	CN2	CONNECTOR(PROGRAM TIMER)		
LED3	TRANSMISSION(INDOOR-OUTDOOR)	TB6	TERMINAL BLOCK(REMOTE		
C	CAPACITOR(FAN MOTOR)		CONTROLLER TRANSMISSION LINE)		
MF	FAN MOTOR				



SW1		
MODELS	Manufacture	Service board
PLA-P3,4,5,6AA	J11J12J13J14J15	1 2 3 4 5 ON OFF

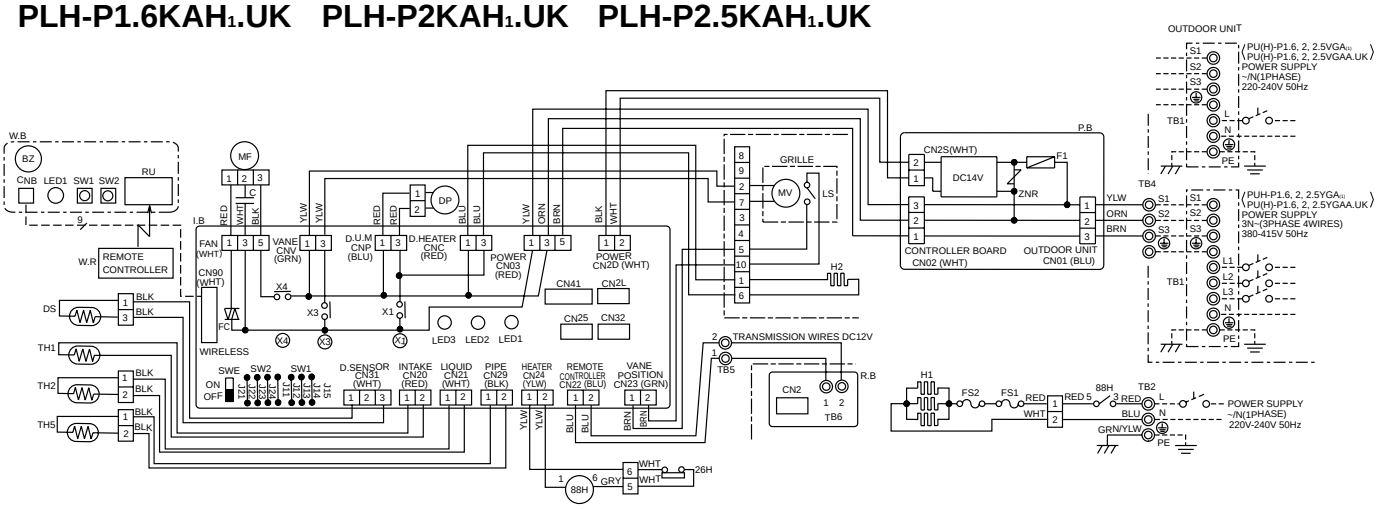
SW2		
MODELS	Manufacture	Service board
PLA-P3AA	J21J22J23 J24	1 2 3 4 ON OFF
PLA-P4AA	J21J22J23J24	1 2 3 4 ON OFF
PLA-P5AA	J21J22J23 J24	1 2 3 4 ON OFF
PLA-P6AA	J21J22J23J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller
For the setting method,please refer to the indoor unit Installation Manual.

NOTE:

1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2. Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers (S1,S2,S3).
3. Symbols used in wiring diagram above are,
   ◎ : Terminal , □□□ : Connector.

PLH-P1.6KAH.UK PLH-P2KAH.UK PLH-P2.5KAH.UK
PLH-P1.6KAH$_1$.UK PLH-P2KAH$_1$.UK PLH-P2.5KAH$_1$.UK



SW1		
MODELS	Manufacture	Service board
PLH-P1.6KAH.UK PLH-P1.6KAH$_1$.UK PLH-P2KAH.UK PLH-P2KAH$_1$.UK PLH-P2.5KAH.UK PLH-P2.5KAH$_1$.UK	J11 J12 J13 J14 J15	1 2 3 4 5 ON OFF

SW2		
MODELS	Manufacture	service board
PLH-P1.6KAH.UK PLH-P1.6KAH$_1$.UK	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-P2KAH.UK PLH-P2KAH$_1$.UK	J21 J22 J23 J24	1 2 3 4 ON OFF
PLH-P2.5KAH.UK PLH-P2.5KAH$_1$.UK	J21 J22 J23 J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller. For the setting method, please refer to the indoor unit Installation Manual.

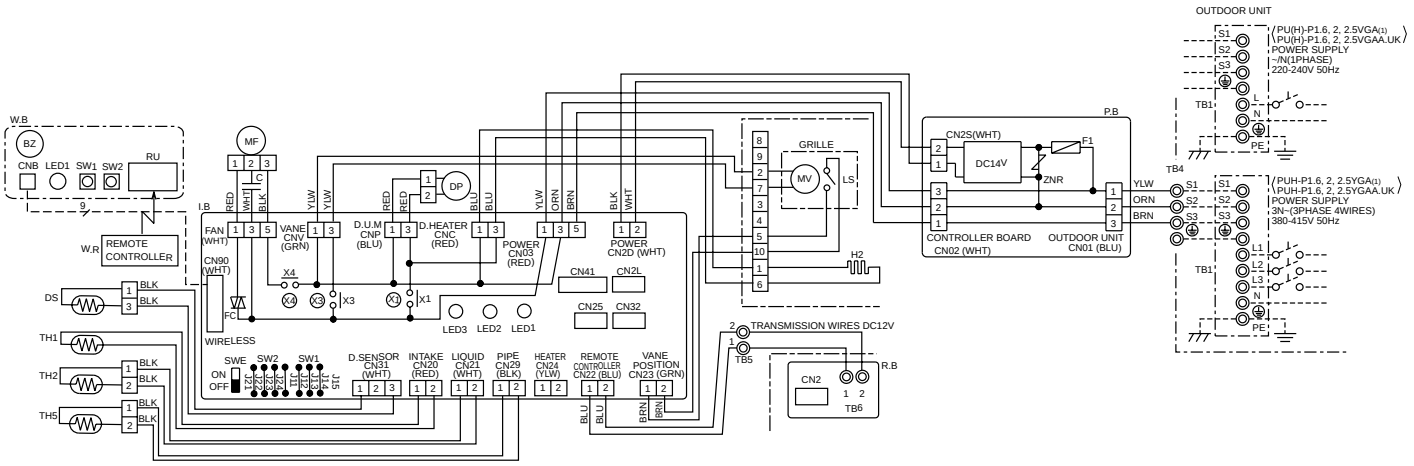
NOTES:

1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2. Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers(S1,S2,S3).
3. Make sure that the main power supply of the booster heater is independent.
4. Symbols used in wiring diagram above are, □□□ :Connector, ◎:Terminal block.

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	I.B	INDOOR CONTROLLER BOARD	LS	LIMIT SWITCH
F1	FUSE (4A)	CN2L	CONNECTOR (LOSSNAY)	MF	FAN MOTOR
ZNR	VARISTOR	CN25	CONNECTOR (HUMIDIFIER)	MV	VANE MOTOR
R.B	REMOTE CONTROLLER BOARD	CN32	CONNECTOR (REMOTE SWITCH)	TB2	TERMINAL BLOCK (HEATER)
CN2	CONNECTOR (PROGRAM TIMER)	CN41	CONNECTOR (HA TERMINAL-A)	TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)	FC	FAN PHASE CONTROL	TB5	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
W.B	WIRELESS REMOTE CONTROLLER BOARD (OPTION)	LED1	POWER SUPPLY (I.B)	TH1	ROOM TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
RU	RECEIVING UNIT	LED2	POWER SUPPLY (R.B)	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15KΩ, 25℃/5.4KΩ DETECT)
BZ	BUZZER	LED3	TRANSMISSION (INDOOR-OUTDOOR)	TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
LED1	LED (RUN INDICATOR)	SW1	JUMPER WIRE (MODEL SELECTION)	HEATER	
SW1	SWITCH (HEATING ON/OFF)	SW2	JUMPER WIRE (CAPACITY CODE)	FS1,2	THERMAL FUSE (98℃,10A), (77℃,10A)
SW2	SWITCH (COOLING ON/OFF)	SWE	SWITCH (EMERGENCY OPERATION)	H1	HEATER
W.R	WIRELESS REMOTE CONTROLLER (OPTION)	X1	RELAY (DRAIN PUMP/D.HEATER)	26H	HEATER THERMAL SWITCH
		X3	RELAY (VANE MOTOR)	88H	HEATER CONTACTOR
		X4	RELAY (FAN MOTOR)		
		C	CAPACITOR (FAN MOTOR)		
		DP	DRAIN-UP MACHINE		
		DS	DRAIN SENSOR		
		H2	DEW PREVENTION HEATER		

PLA-P1.6KA.UK PLA-P2KA.UK PLA-P2.5KA.UK
PLA-P1.6KA$_1$.UK PLA-P2KA$_1$.UK PLA-P2.5KA$_1$.UK



SW1		
MODELS	Manufacture	Service board
PLA-P1.6KA.UK PLA-P2KA.UK PLA-P2.5KA.UK PLA-P1.6KA$_1$.UK PLA-P2KA$_1$.UK PLA-P2.5KA$_1$.UK	J11 J12J13J14J15	1 2 3 4 5 ON OFF

SW2		
MODELS	Manufacture	service board
PLA-P1.6KA.UK PLA-P1.6KA$_1$.UK	J21J22J23J24	1 2 3 4 ON OFF
PLA-P2KA.UK PLA-P2KA$_1$.UK	J21J22J23J24	1 2 3 4 ON OFF
PLA-P2.5KA.UK PLA-P2.5KA$_1$.UK	J21J22J23J24	1 2 3 4 ON OFF

Please set the voltage using the remote controller. For the setting method, please refer to the indoor unit Installation Manual.

NOTES:

1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2. Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers(S1,S2,S3).
3. Make sure that the main power supply of the booster heater is independent.
4. Symbols used in wiring diagram above are, □□□ :Connector, ◎:Terminal block.

[LEGEND]

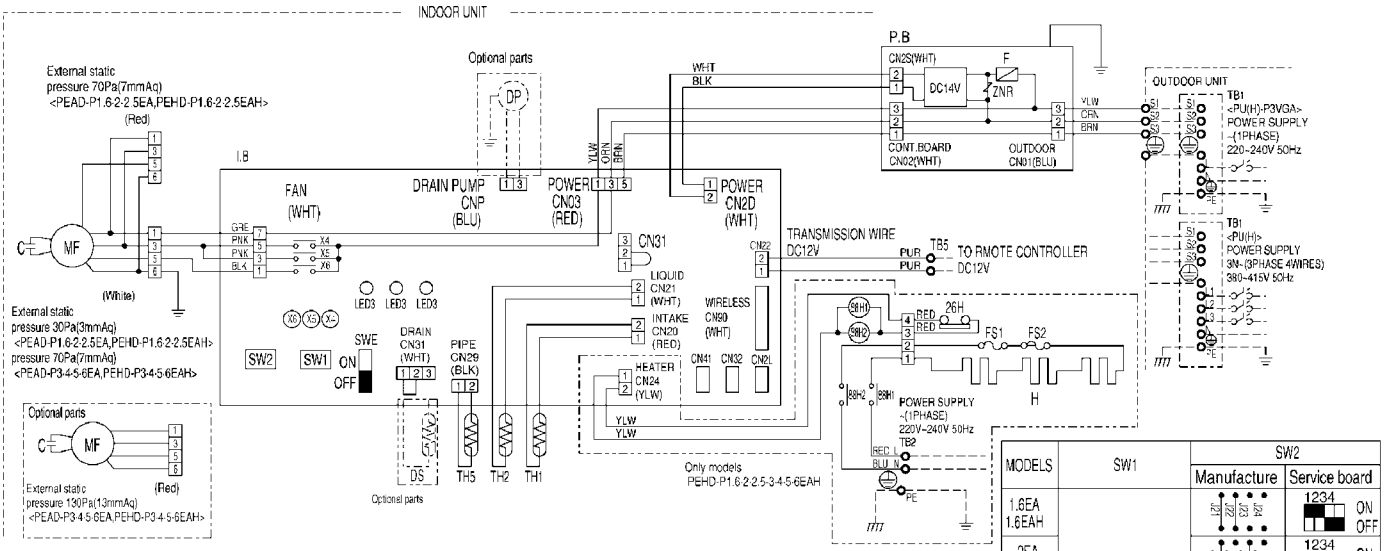
SYMBOL	NAME
P.B	INDOOR POWER BOARD
F1	FUSE (4A)
ZNR	VARISTOR
R.B	REMOTE CONTROLLER BOARD
CN2	CONNECTOR (PROGRAM TIMER)
TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRAMSMISSION LINE)
W.B	WIRELESS REMOTE CONTROLLER BOARD (OPTION)
RU	RECEIVING UNIT
BZ	BUZZER
LED1	LED (RUN INDICATOR)
SW1	SWITCH (HEATING ON/OFF)
SW2	SWITCH (COOLING ON/OFF)
W.R	WIRELESS REMOTE CONTROLLER (OPTION)

SYMBOL	NAME
I.B	INDOOR CONTROLLER BOARD
CN2L	CONNECTOR (LOSSNAY)
CN25	CONNECTOR (HUMIDIFIER)
CN32	CONNECTOR (REMOTE SWITCH)
CN41	CONNECTOR (HA TERMINAL-A)
FC	FAN PHASE CONTROL
LED1	POWER SUPPLY (I.B)
LED2	POWER SUPPLY (R.B)
LED3	TRANSMISSION (INDOOR-OUTDOOR)
SW1	JUMPER WIRE (MODEL SELECTION)
SW2	JUMPER WIRE (CAPACITY CODE)
SWE	SWITCH (EMERGENCY OPERATION)
X1	RELAY (DRAIN PUMP/D.HEATER)
X3	RELAY (VANE MOTOR)
X4	RELAY (FAN MOTOR)
C	CAPACITOR (FAN MOTOR)
DP	DRAIN-UP MACHINE
DS	DRAIN SENSOR
H2	DEW PREVENTION HEATER

SYMBOL	NAME
LS	LIMIT SWITCH
MF	FAN MOTOR
MV	VANE MOTOR
TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
TB5	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
TH1	ROOM TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)
TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0℃/15KΩ, 25℃/5.4KΩ DETECT)
TH5	CONDENSER/EVAPORATOR TEMPERATURE THERMISTOR (0℃/15KΩ, 25℃/5.4KΩ DETECT)

PEHD-P1.6EAH.UK PEHD-P2EAH.UK PEHD-P2.5EAH.UK PEHD-P3EAH.UK
PEHD-P1.6EAH$_1$.UK PEHD-P2EAH$_1$.UK PEHD-P2.5EAH$_1$.UK PEHD-P3EAH$_1$.UK
PEHD-P4EAH.UK PEHD-P5EAH.UK PEHD-P6EAH.UK
PEHD-P4EAH$_1$.UK PEHD-P5EAH$_1$.UK PEHD-P6EAH$_1$.UK

PEAD-P1.6EA.UK PEAD-P2EA.UK PEAD-P2.5EA.UK PEAD-P3EA.UK
PEAD-P1.6EA$_1$.UK PEAD-P2EA$_1$.UK PEAD-P2.5EA$_1$.UK PEAD-P3EA$_1$.UK
PEAD-P4EA.UK PEAD-P5EA.UK PEAD-P6EA.UK
PEAD-P4EA$_1$.UK PEAD-P5EA$_1$.UK PEAD-P6EA$_1$.UK

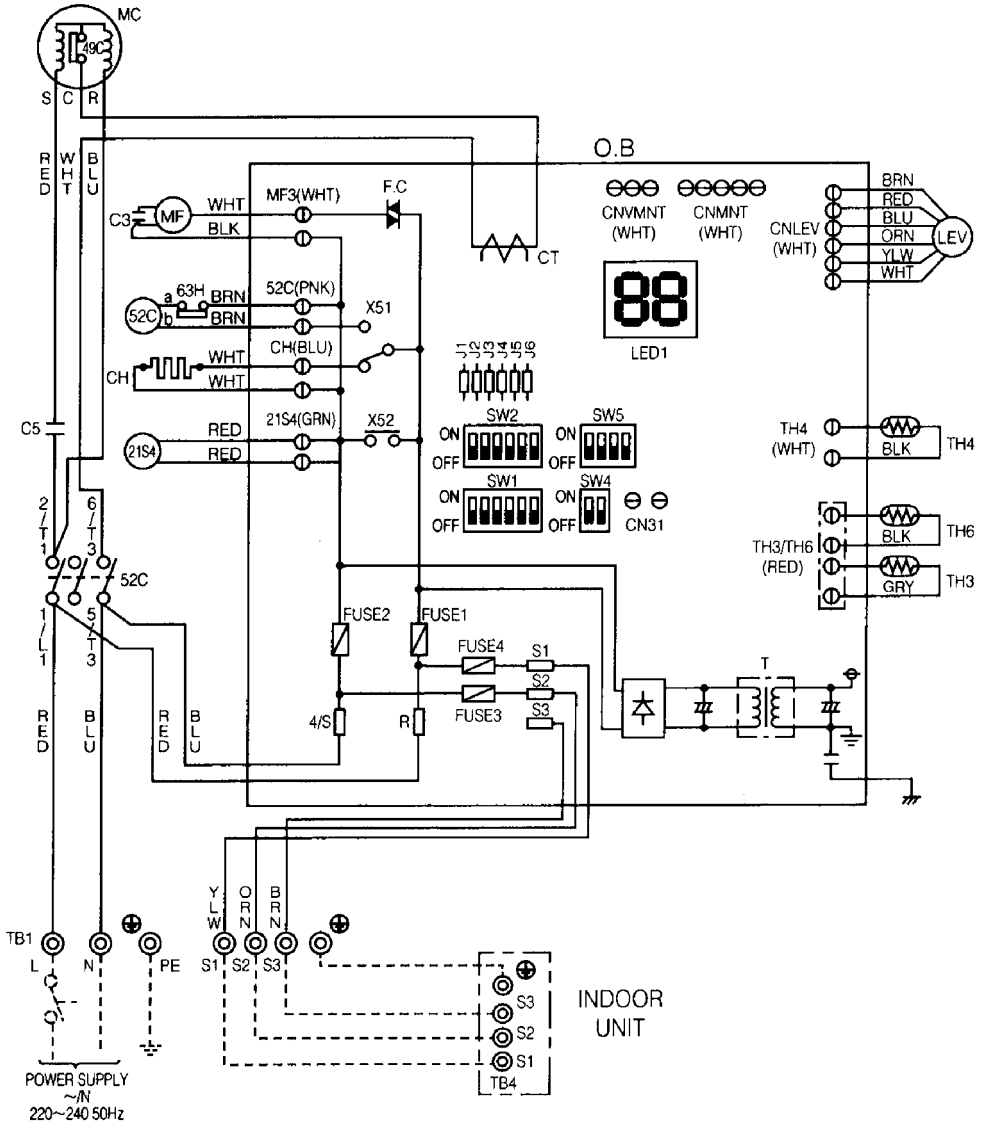


SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
I.B	INDOOR CONTROLLER BOARD	P.B	INDOOR POWER BOARD	C	CAPACITOR(FAN MOTOR)
CN2L	CONNECTOR(LOSSNAY)	F1	FUSE(4A)	MF	FAN MOTOR
CN32	CONNECTOR(REMOTE SWITCH)	ZNR	VARISTOR	TB2	TERMINAL BLOCK(HEATER)
CN41	CONNECTOR(HA TERMINAL-A)			TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
LED1	POWER SUPPLY(I.B)	HEATER			
LED2	POWER SUPPLY(REMOTE CONTROLLER)	FS1,2	THERMAL FUSE	TH1	ROOM TEMPERATURE THERMISTOR (0°C/15KΩ,25Ω/5.4KΩ DETECT)
LED3	TRANSMISSION(INDOOR-OUTDOOR)	H	HEATER		
SW1	JUMPER WIRE(MODEL SELECTION)	26H	HEATER THERMAL SWITCH	TH2	PIPE TEMPERATURE THERMISTOR/LIQUID (0°C/15KΩ,25Ω/5.4KΩ DETECT)
SW2	JUMPER WIRE(CAPACITY CORD)	88H1,2	HEATER CONTACTOR		
SWE	SWITCH(EMERGENCY OPERATION)			TH5	COND./EVA. TEMPERATURE THERMISTOR (0°C/15KΩ,25Ω/5.4KΩ DETECT)
X4	RELAY(FAN MOTOR)	DRAIN PUMP	(OPTIONAL PARTS)		
X5	RELAY(FAN MOTOR)	DP	DRAIN PUMP		
X6	RELAY(FAN MOTOR)	DS	DRAIN SENSOR		

MODELS	SW1	SW2 Manufacture	SW2 Service board
1.6EA 1.6EAH	<For manufacture> J11 J12 J13 J14 J15 <For service board> 1 2 3 4 5 ON OFF	J21 J22 J23 J24	1234 ON OFF
2EA 2EAH		J21 J22 J23 J24	1234 ON OFF
2.5EA 2.5EAH		J21 J22 J23 J24	1234 ON OFF
3EA 3EAH		J21 J22 J23 J24	1234 ON OFF
4EA 4EAH		J21 J22 J23 J24	1234 ON OFF
5EA 5EAH		J21 J22 J23 J24	1234 ON OFF
6EA 6EAH		J21 J22 J23 J24	1234 ON OFF

PUH-P1.6 VGA PUH-P2VGA PUH-P2.5VGA PUH-P 3VGA
PUH-P2.5VGA1

SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMPERATURE	FUSE2	FUSE (6.3A)
TH4		DISCHARGE TEMPERATURE	FUSE3	FUSE (6.3A)
TH6		CONDENSER / EVAPORATOR TEMPERATURE	FUSE4	FUSE (6.3A)
			X51	MC/CH RELAY
C3	MF CAPACITOR		X52	21S4 RELAY
C5	MC CAPACITOR		F.C	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW2	DISPLAY SELECTION SELF DIAGNOSIS
21S4	R.V. COIL		SW4	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5	FUNCTION SELECTION
49C	INNER THERMOSTAT FOR MC		J1~J6	MODEL SELECTION
TB1	TERMINAL BLOCK		T	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT	CURRENT TRANSFORMER
			LED1	DIGITAL INDICATION LED
			CN31	EMERGENCY OPERATION CONNECTOR

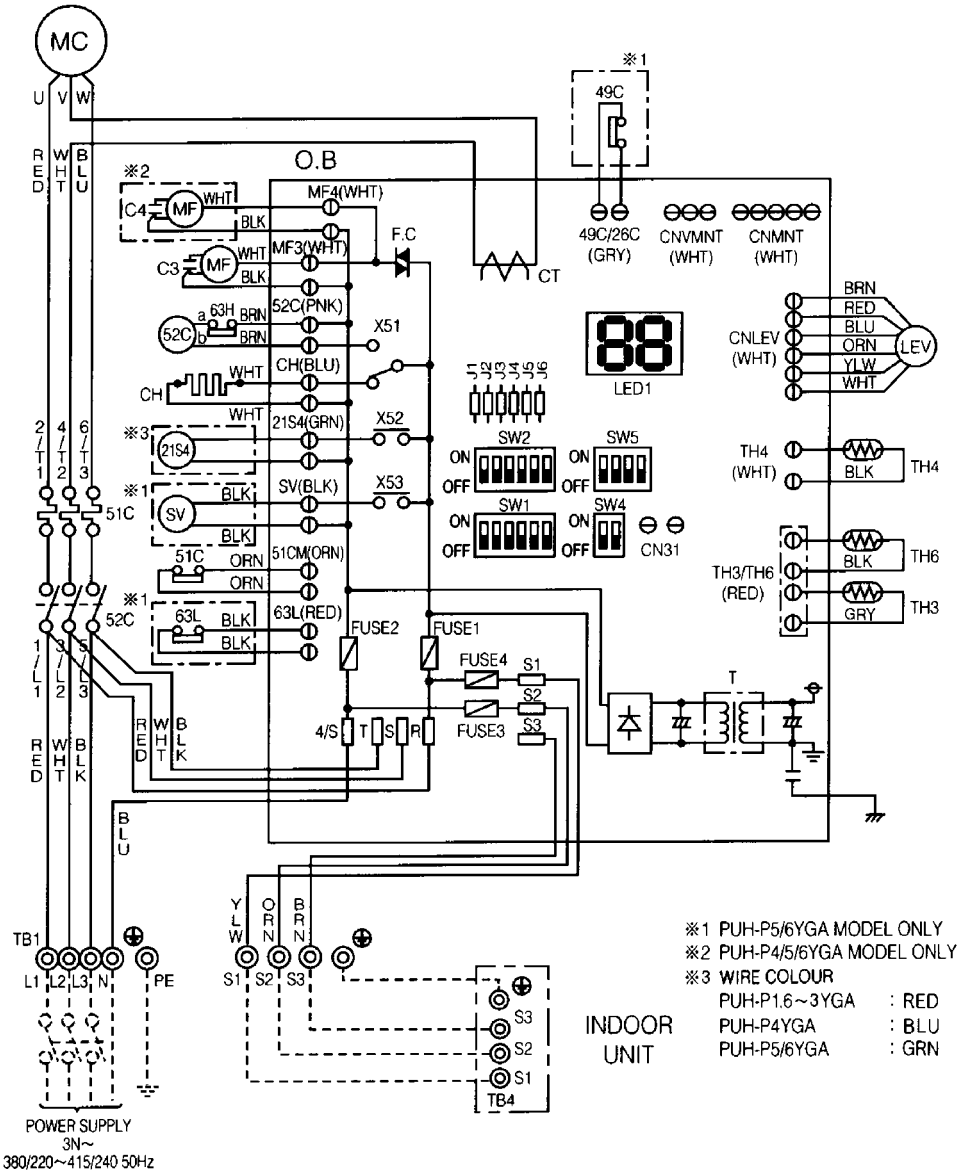


<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PUH-P1.6YGA PUH-P2YGA PUH-P2.5YGA PUH-P3YGA PUH-P4YGA PUH-P5YGA PUH-P6YGA

PUH-P2.5YGA$_1$

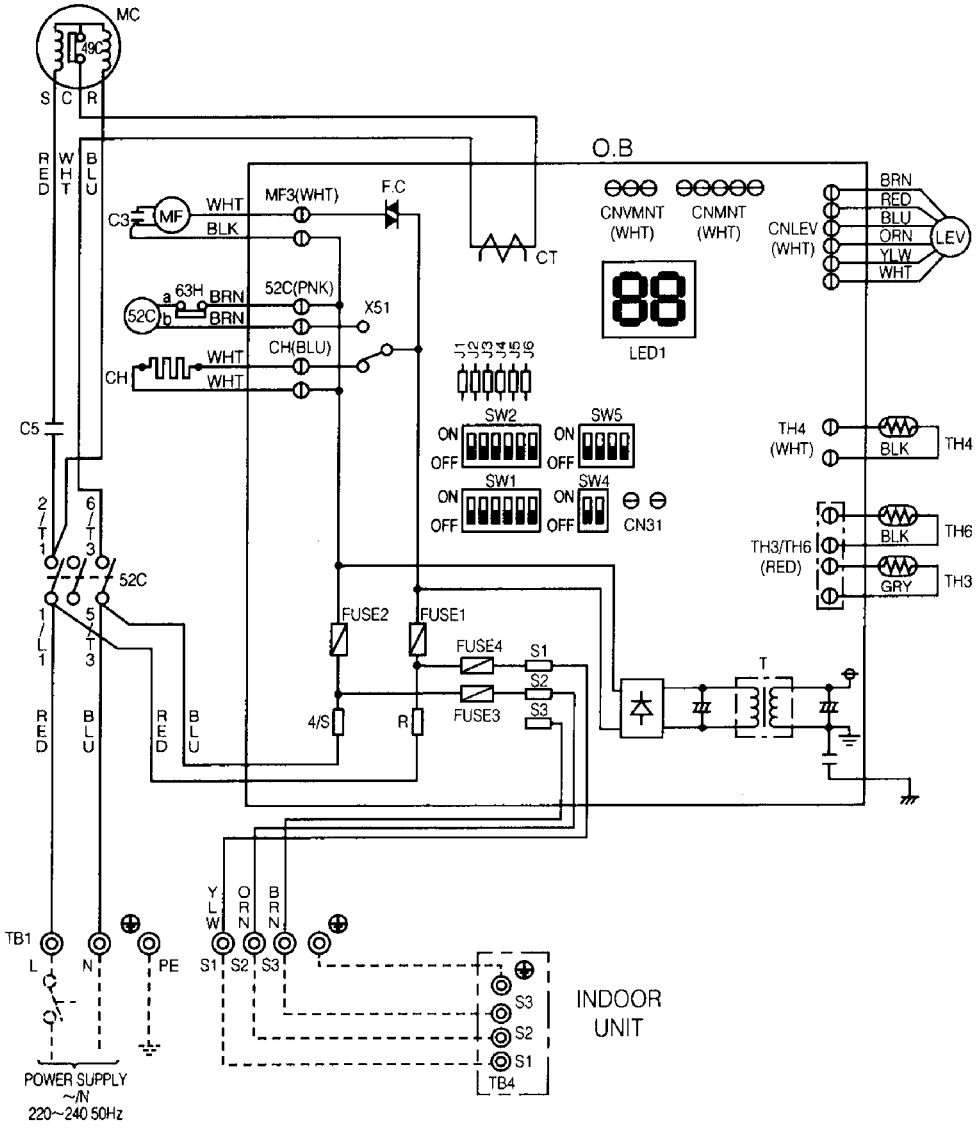
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMPERATURE	FUSE2	FUSE (6.3A)
TH4		DISCHARGE TEMPERATURE	FUSE3	FUSE (6.3A)
TH6		CONDENSER / EVAPORATOR TEMPERATURE	FUSE4	FUSE (6.3A)
			X51	MC/CH RELAY
C3	MF CAPACITOR		X52	21S4 RELAY
C4	MF CAPACITOR		X53	SV RELAY
CH	CRANKCASE HEATER		F.C	FAN CONTROLLER
52C	MC CONTACTOR		SW1	GROUP NUMBER ADDRESS
21S4	R.V. COIL		SW2	DISPLAY SELECTION SELF DIAGNOSIS
SV	BYPASS VALVE SOLENOID COIL		SW4	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5	FUNCTION SELECTION
63L	LOW PRESSURE PROTECT SWITCH		J1~J6	MODEL SELECTION
49C	INNER THERMOSTAT FOR MC (COMP)		T	TRANSFORMER
51C	THERMAL RELAY		CT	CURRENT TRANSFORMER
TB1	TERMINAL BLOCK		LED1	DIGITAL INDICATION LED
LEV	LINEAR EXPANSION VALVE		CN31	EMERGENCY OPERATION CONNECTOR



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P1.6VGA PU-P2VGA PU-P2.5VGA PU-P3VGA
PU-P2.5VGA1

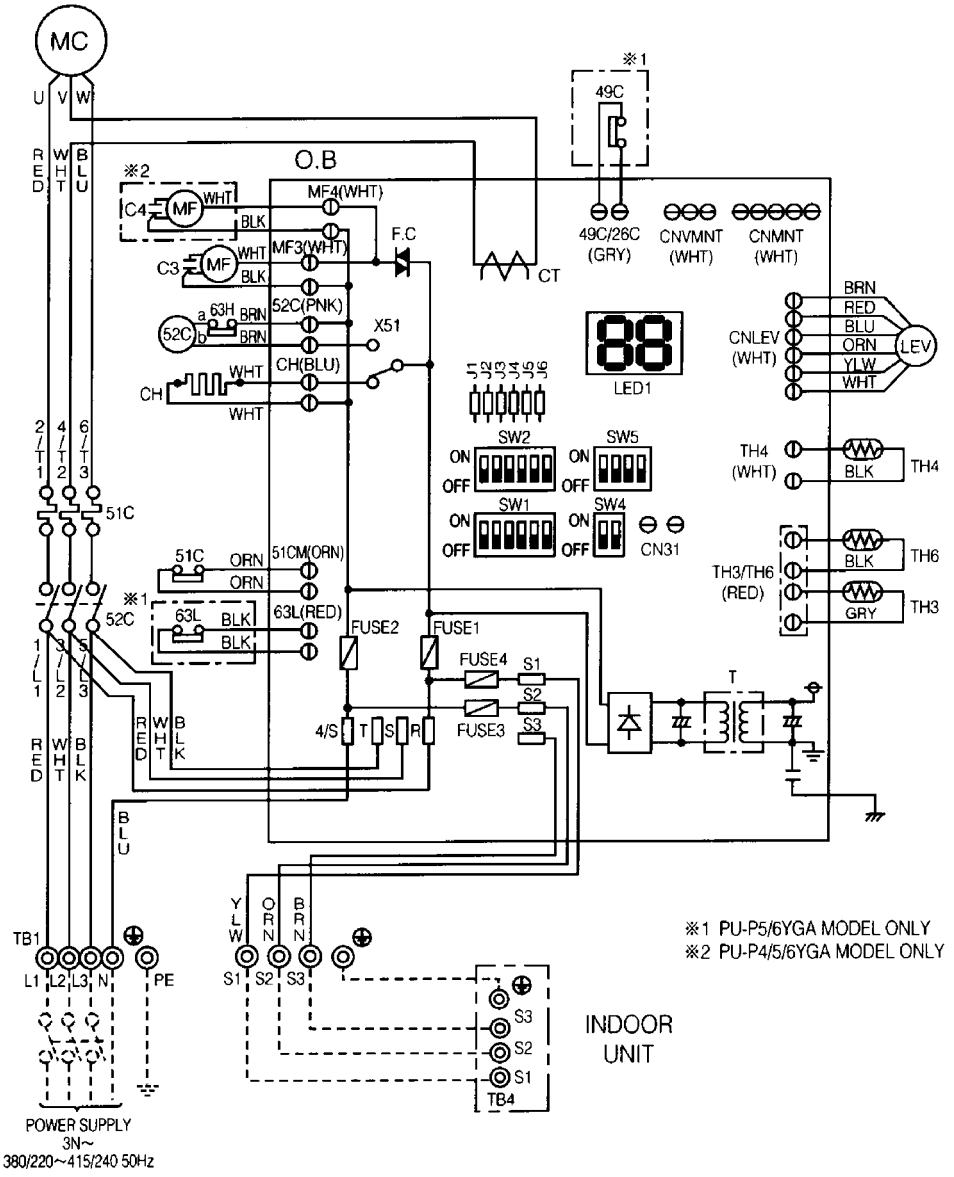
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMPERATURE	FUSE2	FUSE (6.3A)
TH4		DISCHARGE TEMPERATURE	FUSE3	FUSE (6.3A)
TH6		CONDENSER TEMPERATURE	FUSE4	FUSE (6.3A)
C3	MF CAPACITOR		X51	MC/CH RELAY
C5	MC CAPACITOR		F.C	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW2	DISPLAY SELECTION SELF DIAGNOSIS
63H	HIGH PRESSURE PROTECT SWITCH		SW4	TEST RUN
49C	INNER THERMOSTAT FOR MC		SW5	FUNCTION SELECTION
TB1	TERMINAL BLOCK		J1~J6	MODEL SELECTION
LEV	LINEAR EXPANSION VALVE		T	TRANSFORMER
			CT	CURRENT TRANSFORMER
			LED1	DIGITAL INDICATION LED
			CN31	EMERGENCY OPERATION CONNECTOR



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P3YGA PU-P4YGA PU-P5YGA PU-P6YGA

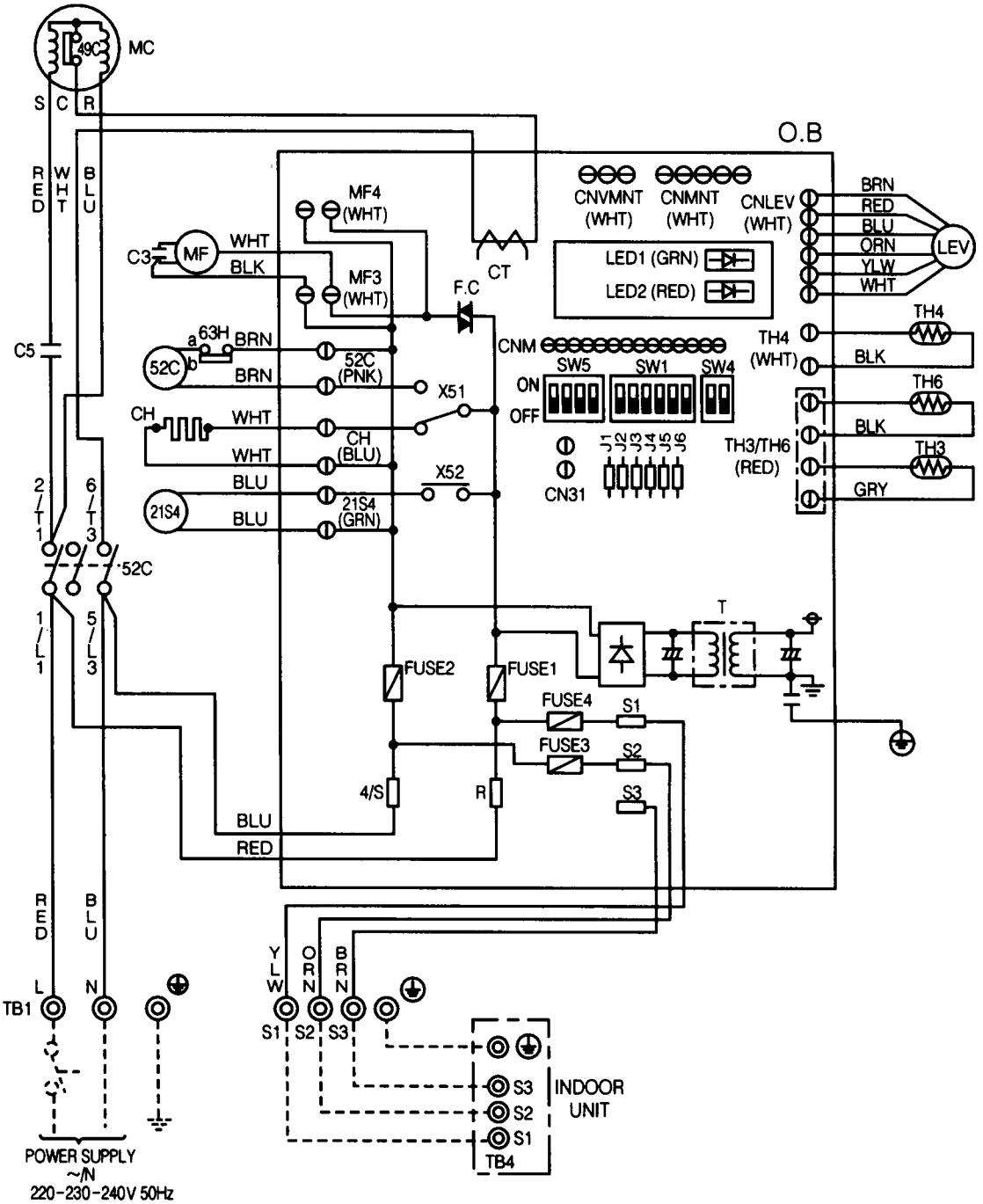
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMPERATURE	FUSE2	FUSE (6.3A)
TH4		DISCHARGE TEMPERATURE	FUSE3	FUSE (6.3A)
TH6		CONDENSER TEMPERATURE	FUSE4	FUSE (6.3A)
C3	MF CAPACITOR		X51	MC/CH RELAY
C4	MF CAPACITOR		F.C	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW2	DISPLAY SELECTION SELF DIAGNOSIS
63H	HIGH PRESSURE PROTECT SWITCH		SW4	TEST RUN
63L	LOW PRESSURE PROTECT SWITCH		SW5	FUNCTION SELECTION
49C	INNER THERMOSTAT FOR MC (COMP)		J1~J6	MODEL SELECTION
51C	THERMAL RELAY		T	TRANSFORMER
TB1	TERMINAL BLOCK		CT	CURRENT TRANSFORMER
LEV	LINEAR EXPANSION VALVE		LED1	DIGITAL INDICATION LED
			CN31	EMERGENCY OPERATION CONNECTOR



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PUH-P1.6VGAA PUH-P2VGAA PUH-P2.5VGAA PUH-P3VGAA

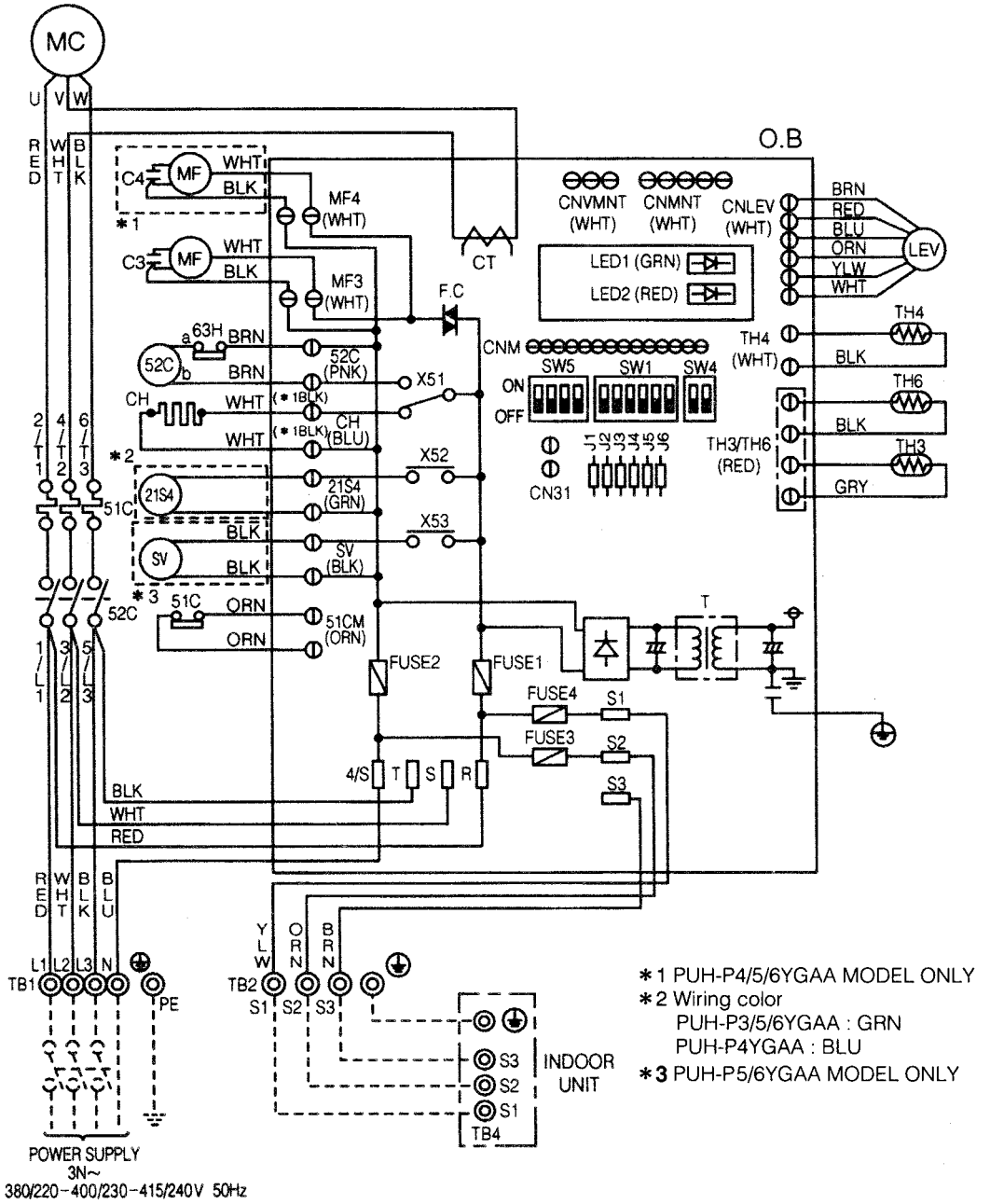
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C5	MC CAPACITOR		X52 (O.B)	21S4 RELAY
CH	CRANKCASE HEATER		F.C (O.B)	FAN CONTROLLER
52C	MC CONTACTOR		SW1 (O.B)	GROUP NUMBER ADDRESS
21S4	4-WAY VALVE SOLENOID COIL		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
49C	INNER THERMOSTAT FOR MC		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK		LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PUH-P3YGAA PUH-P4YGAA PUH-P5YGAA PUH-P6YGAA

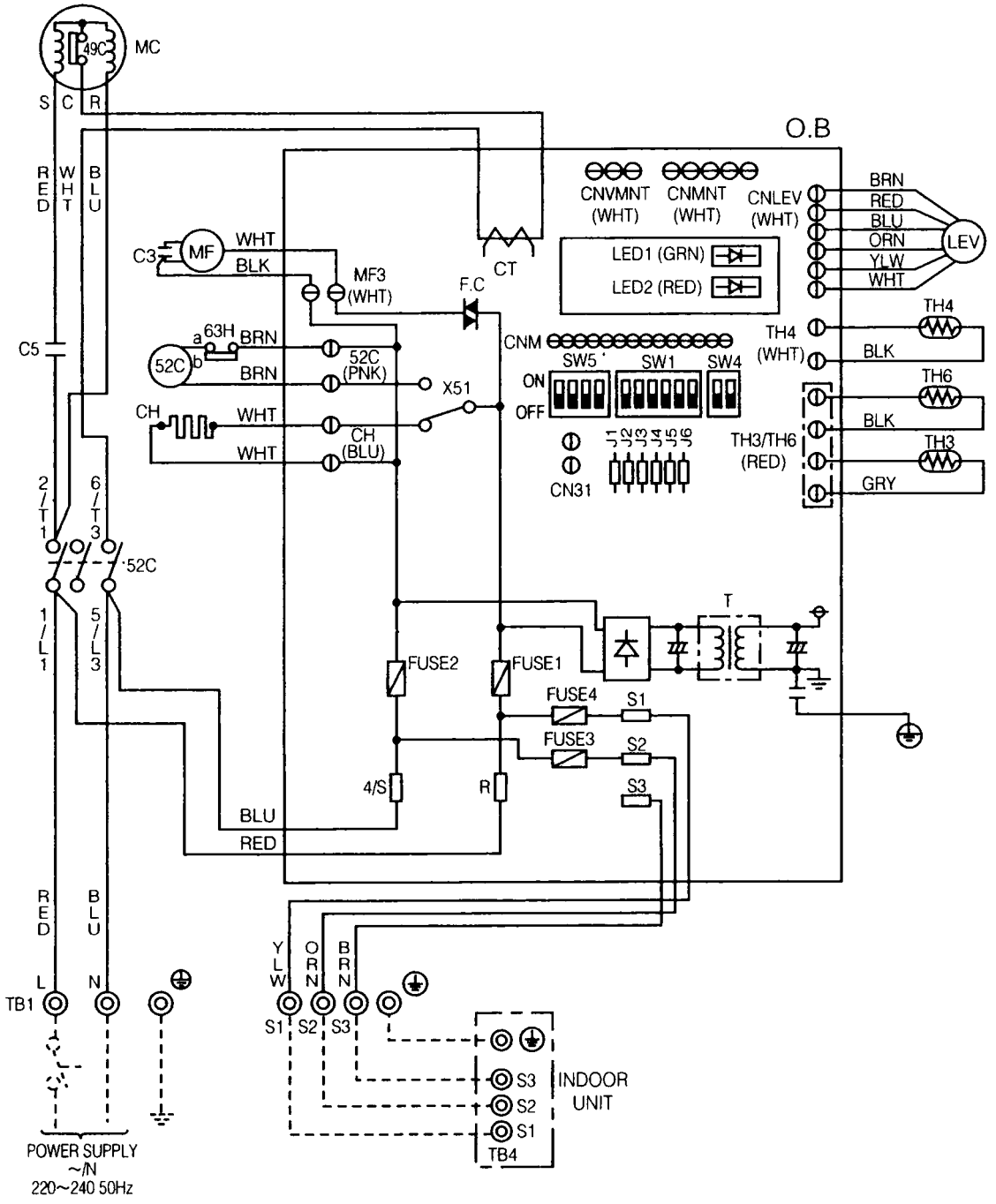
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		X52 (O.B)	21S4 RELAY
CH	CRANKCASE HEATER		X53 (O.B)	SV RELAY
52C	MC CONTACTOR		F.C (O.B)	FAN CONTROLLER
21S4	4-WAY VALVE SOLENOID COIL		SW1 (O.B)	GROUP NUMBER ADDRESS
SV	BYPASS VALVE SOLENOID COIL		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
51C	THERMAL RELAY		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK		LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P1.6VGAA PU-2VGAA PU-2.5VGAA PU-3VGAA

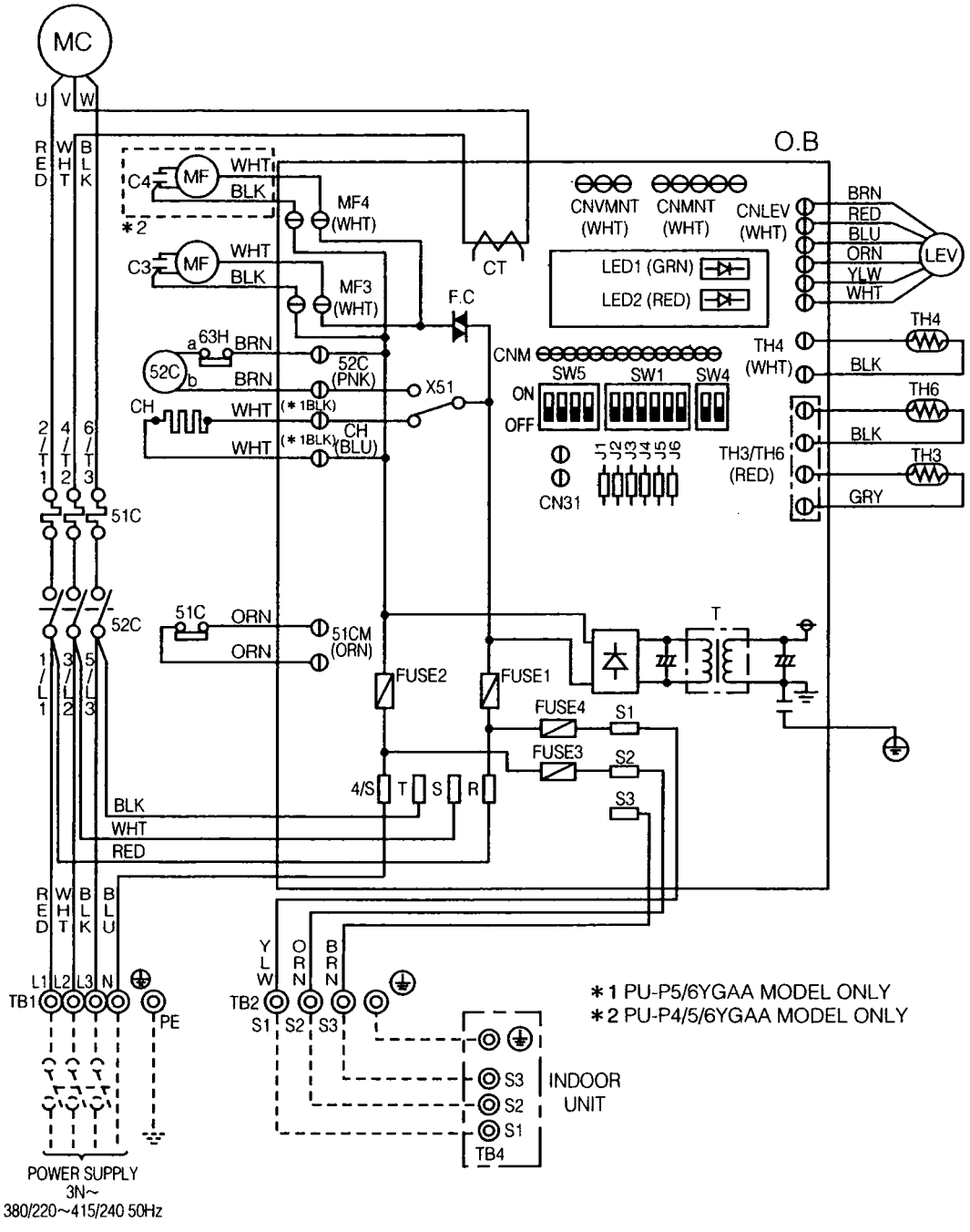
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C5	MC CAPACITOR		F.C (O.B)	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1 (O.B)	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
49C	INNER THERMOSTAT FOR MC		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
			LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P3YGAA PU-P4YGAA PU-P5YGAA PU-P6YGAA

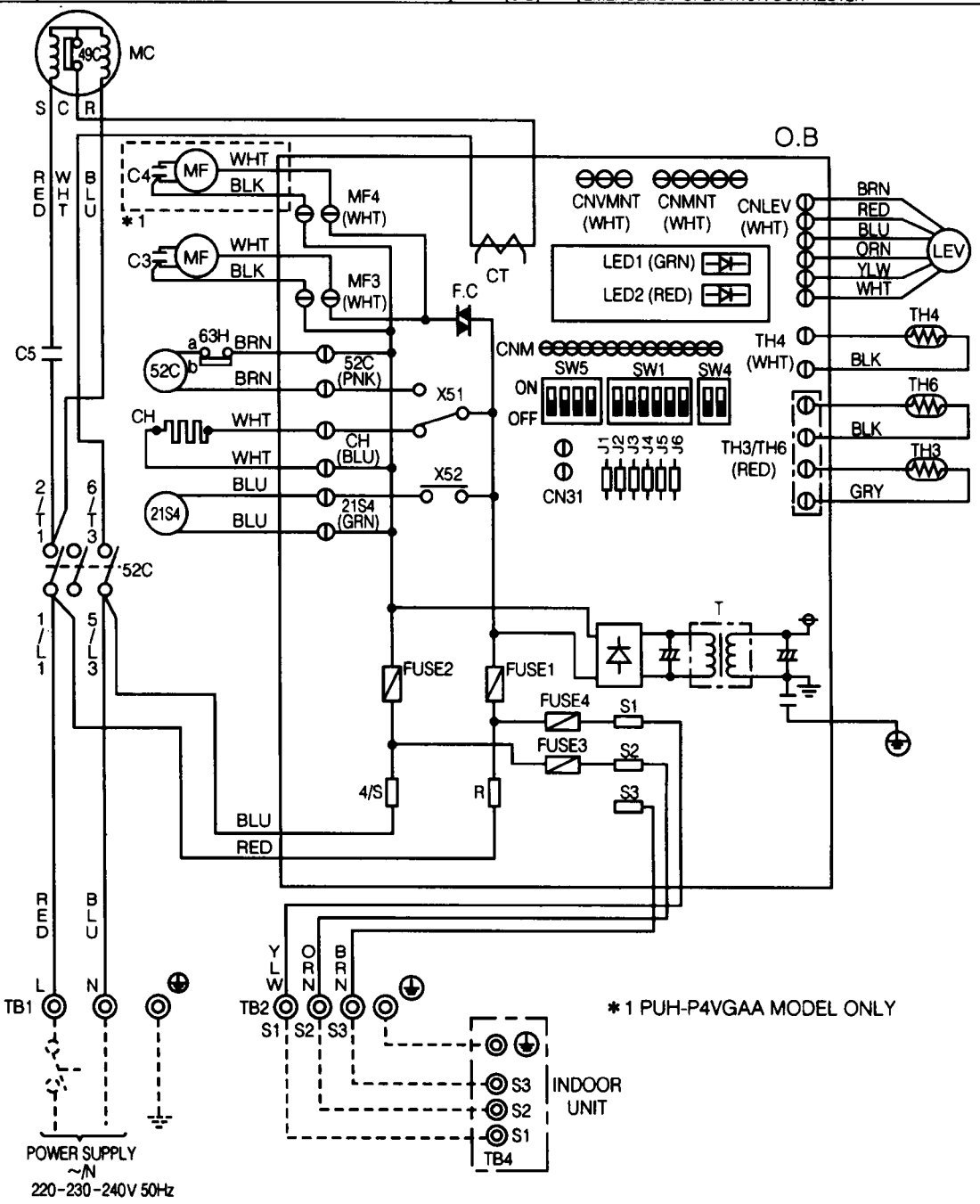
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		F.C (O.B)	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1 (O.B)	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
51C	THERMAL RELAY		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK		LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PUH-P1VGAA.UK PUH-P1.6VGAA.UK PUH-P2VGAA.UK PUH-P2.5VGAA.UK PUH-P3VGAA.UK PUH-P4VGAA.UK
PUH-P1VGAA1.UK PUH-P1.6VGAA1.UK PUH-P2VGAA1.UK PUH-P2.5VGAA1.UK PUH-P3VGAA1.UK PUH-P4VGAA1.UK

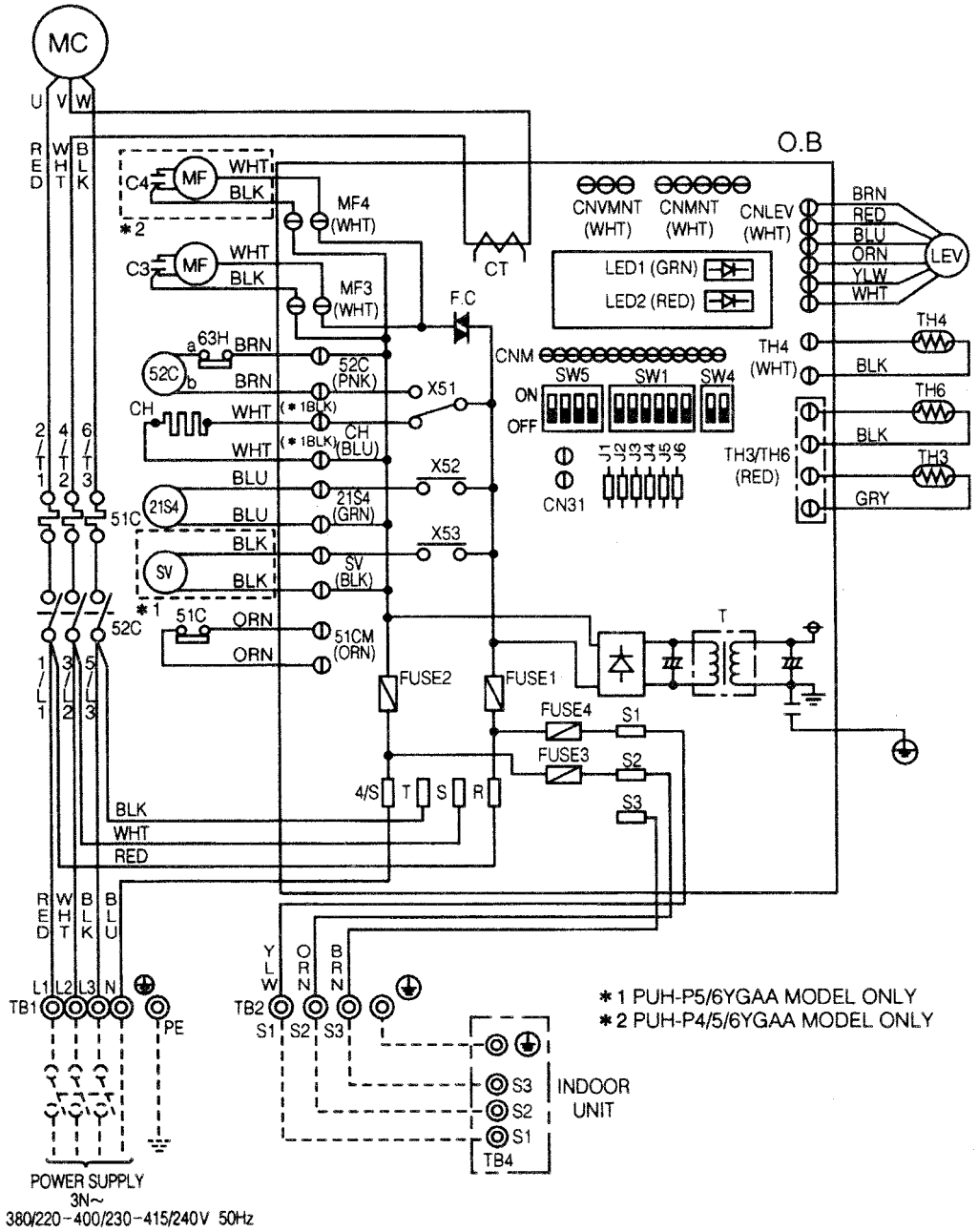
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		X52 (O.B)	21S4 RELAY
C5	MC CAPACITOR		F.C (O.B)	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1 (O.B)	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW4 (O.B)	TEST RUN
21S4	4-WAY VALVE SOLENOID COIL		SW5 (O.B)	FUNCTION SELECTION
63H	HIGH PRESSURE PROTECT SWITCH		J1~J6 (O.B)	MODEL SELECTION
49C	INNER THERMOSTAT FOR MC		T (O.B)	TRANSFORMER
TB1	TERMINAL BLOCK		CT (O.B)	CURRENT TRANS
LEV	LINEAR EXPANSION VALVE		LED1 (O.B)	OPERATION CHECK DISPLAY LED
TB2	TERMINAL BLOCK		LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PUH-P1.6YGAA.UK PUH-P2YGAA.UK PUH-P2.5YGAA.UK PUH-P3YGAA.UK
PUH-P4YGAA.UK PUH-P5YGAA.UK PUH-P6YGAA.UK
PUH-P1.6YGAA1.UK PUH-P2YGAA1.UK PUH-P2.5YGAA1.UK PUH-P3YGAA1.UK
PUH-P4YGAA1.UK PUH-P5YGAA1.UK PUH-P6YGAA1.UK

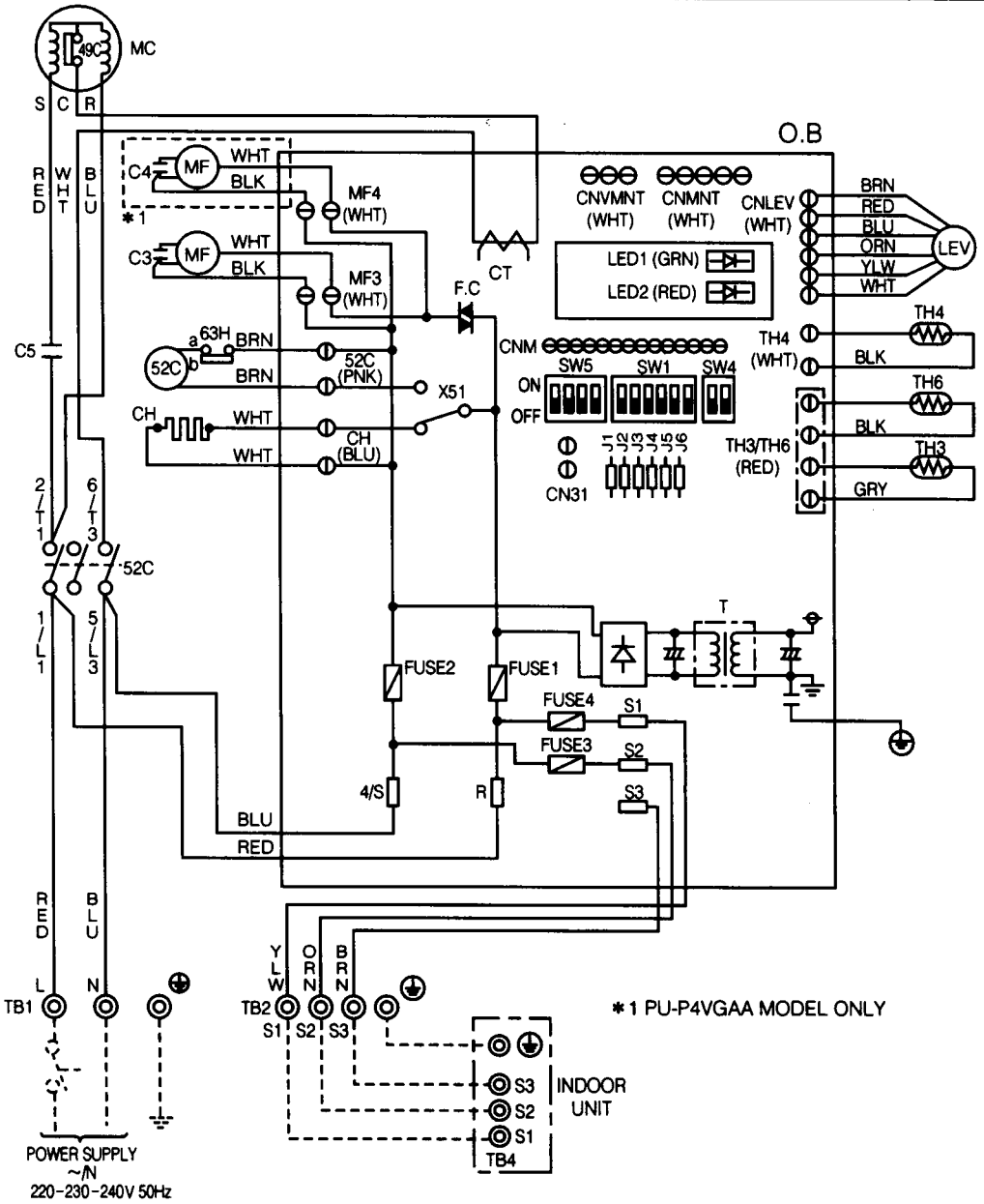
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. / EVA. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		X52 (O.B)	21S4 RELAY
CH	CRANKCASE HEATER		X53 (O.B)	SV RELAY
52C	MC CONTACTOR		F.C (O.B)	FAN CONTROLLER
21S4	4-WAY VALVE SOLENOID COIL		SW1 (O.B)	GROUP NUMBER ADDRESS
SV	BYPASS VALVE SOLENOID COIL		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
51C	THERMAL RELAY		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK		LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P1.6VGAA.UK PU-P2VGAA.UK PU-P2.5VGAA.UK PU-P3VGAA.UK PU-P4VGAA.UK
PU-P1.6VGAA1.UK PU-P2VGAA1.UK PU-P2.5VGAA1.UK PU-P3VGAA1.UK PU-P4VGAA1.UK

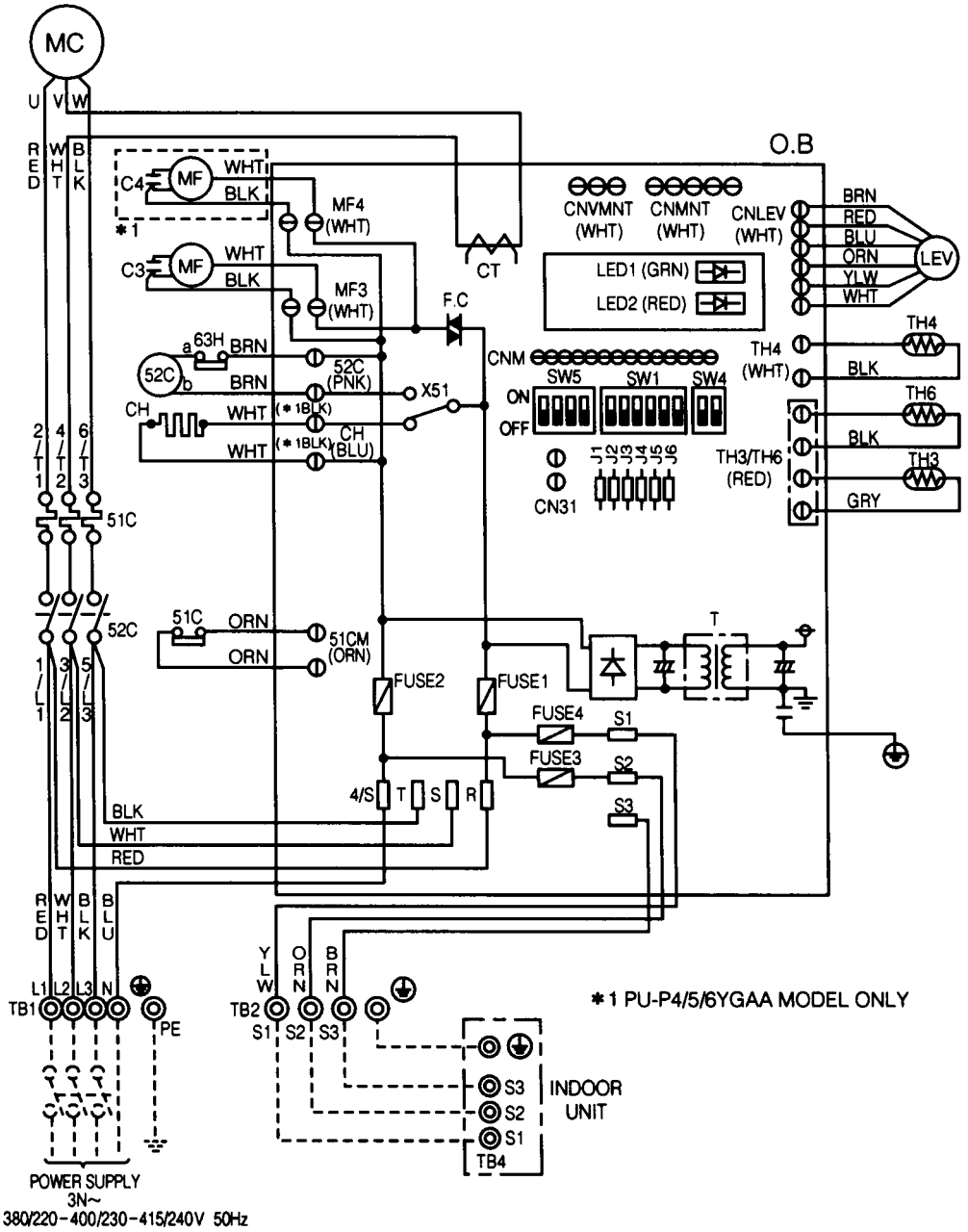
SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		F.C (O.B)	FAN CONTROLLER
C5	MC CAPACITOR		SW1 (O.B)	GROUP NUMBER ADDRESS
CH	CRANKCASE HEATER		SW4 (O.B)	TEST RUN
52C	MC CONTACTOR		SW5 (O.B)	FUNCTION SELECTION
63H	HIGH PRESSURE PROTECT SWITCH		J1~J6 (O.B)	MODEL SELECTION
49C	INNER THERMOSTAT FOR MC		T (O.B)	TRANSFORMER
TB1	TERMINAL BLOCK		CT (O.B)	CURRENT TRANS
LEV	LINEAR EXPANSION VALVE		LED1 (O.B)	OPERATION CHECK DISPLAY LED
TB2	TERMINAL BLOCK		LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

PU-P1.6YGAA.UK PU-P2YGAA.UK PU-P2.5YGAA.UK PU-P3YGAA.UK PU-P4YGAA.UK PU-P5YGAA.UK PU-P6YGAA.UK
PU-P1.6YGAA1.UK PU-P2YGAA1.UK PU-P2.5YGAA1.UK PU-P3YGAA1.UK PU-P4YGAA1.UK PU-P5YGAA1.UK PU-P6YGAA1.UK

SYMBOL	NAME		SYMBOL	NAME
MC	COMPRESSOR		O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)		FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	LIQUID TEMP	FUSE2 (O.B)	FUSE (6.3A)
TH4		DISCHARGE TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6		COND. TEMP	FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR		X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR		F.C (O.B)	FAN CONTROLLER
CH	CRANKCASE HEATER		SW1 (O.B)	GROUP NUMBER ADDRESS
52C	MC CONTACTOR		SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH		SW5 (O.B)	FUNCTION SELECTION
51C	THERMAL RELAY		J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK		T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE		CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK		LED1 (O.B)	OPERATION CHECK DISPLAY LED
			LED2 (O.B)	OPERATION CHECK DISPLAY LED
			CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>
Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

4 REFRIGERANT SYSTEM DIAGRAM

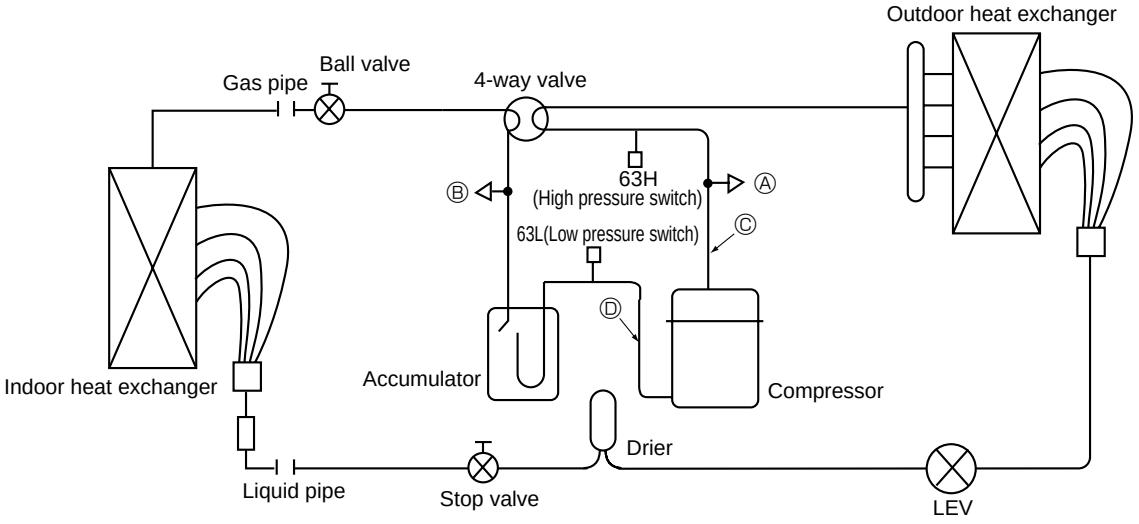
4-1. Checking operation statuses

Measurement points and items

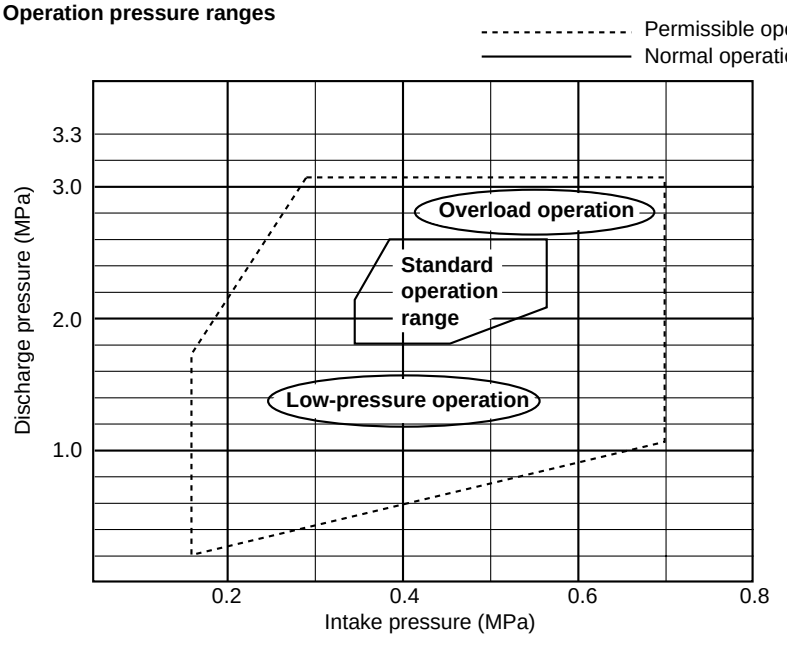
- The table and diagrams below show the measurement item for each measurement point, and the pressure and temperature near the JIS standard operating conditions.
- Measure the temperature and pressure of each part by following the descriptions in the table.
- Measurement time: Be sure to wait until the refrigerant circuit has stabilized (30 minutes to 1 hour) before taking measurements.

	Measurement item	Pressure/temperature near JIS standard operating conditions	Measurement method, remarks
Ⓐ	High pressure (MPa)	COOL: 1.8 ~ 2.4 HEAT: 1.8 ~ 2.6	Connect the pressure gauge to the high-pressure check valve.
Ⓑ	Low pressure (MPa)	0.33 ~ 0.55	Connect the pressure gauge to the low-pressure check valve.
Ⓒ	Discharge pipe temperature (℃)	72 ~ 105	Measure with piping surface thermometer.
Ⓓ	Suction pipe temperature (℃)	-2 ~ 14	Measure with piping surface thermometer.
Ⓔ	Indoor intake temperature (℃)	COOL: 27℃ HEAT: 20℃	Can be displayed on remote controller.
Ⓕ	Indoor outlet temperature (℃)	COOL: 8 ~ 12 HEAT: 40 ~ 50	
Ⓖ	Outdoor intake temperature (℃)	COOL: 35 HEAT: 7	Measure with piping surface thermometer.
Ⓗ	Outdoor outlet temperature (℃)	COOL: 40 ~ 50 HEAT: 0 ~ 16	Measure with piping surface thermometer.

When outdoor units (P1 to P6) and indoor units (P1 to P6) are combined in a proportion of 1:1 ("Hi" notch on indoor unit)



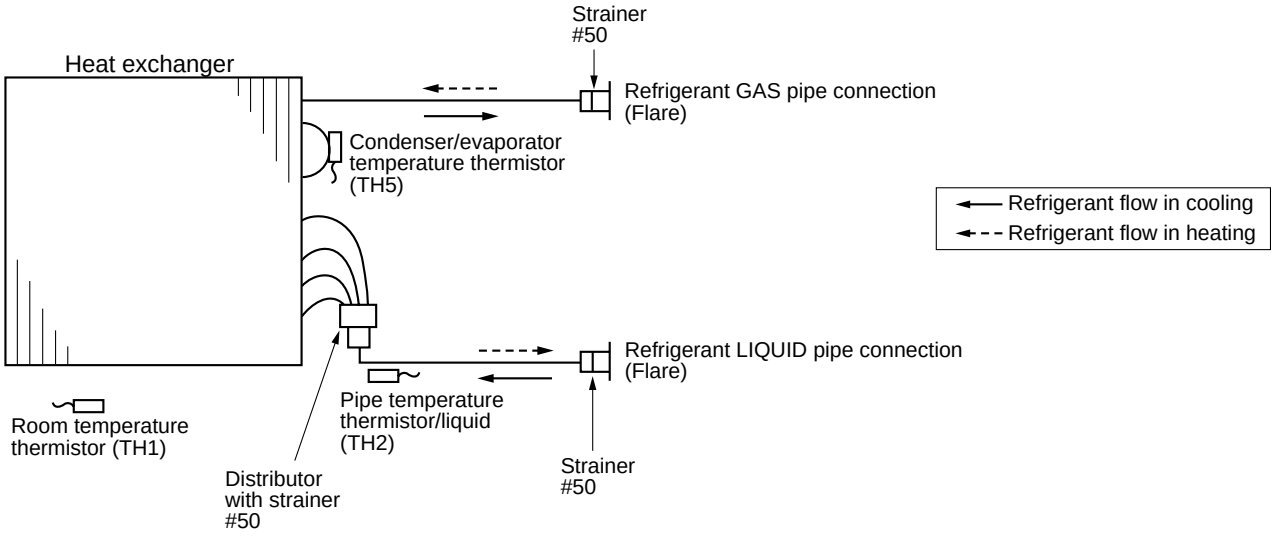
Operation pressure ranges



Note 1: When draining the outdoor unit's refrigerant, you must attach a new drier amid the extension piping. Be sure you have the drier specified for your model before beginning the operation. The drier model used with R22 can't be used.

4-2. Refrigerant system Diagram

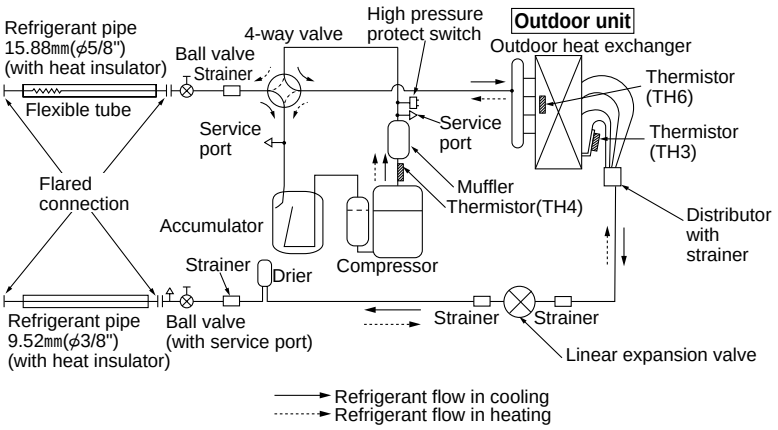
4-2-1. Indoor unit



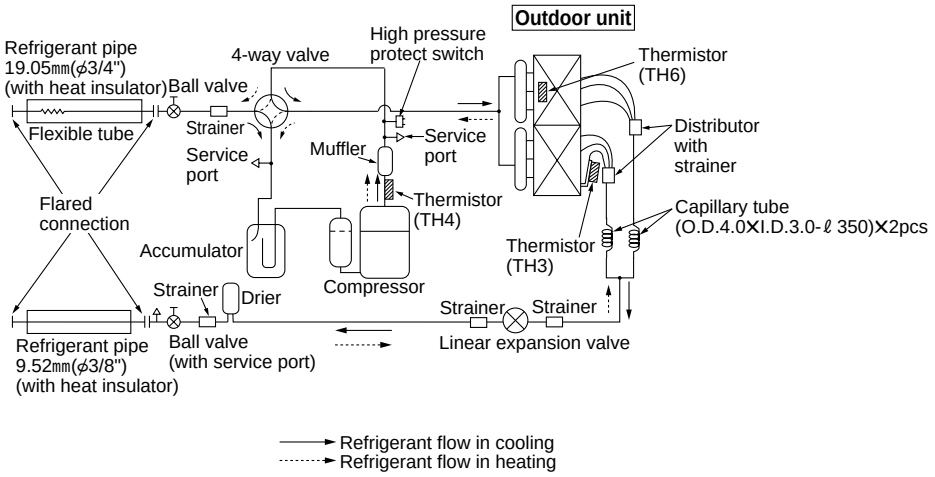
4-2-2. Outdoor unit

PUH-P1.6VGA PUH-P2VGA PUH-P2.5VGA PUH-P2.5VGA$_1$ PUH-P3VGA
PUH-P1.6YGA PUH-P2YGA PUH-P2.5YGA PUH-P2.5YGA$_1$ PUH-P3YGA

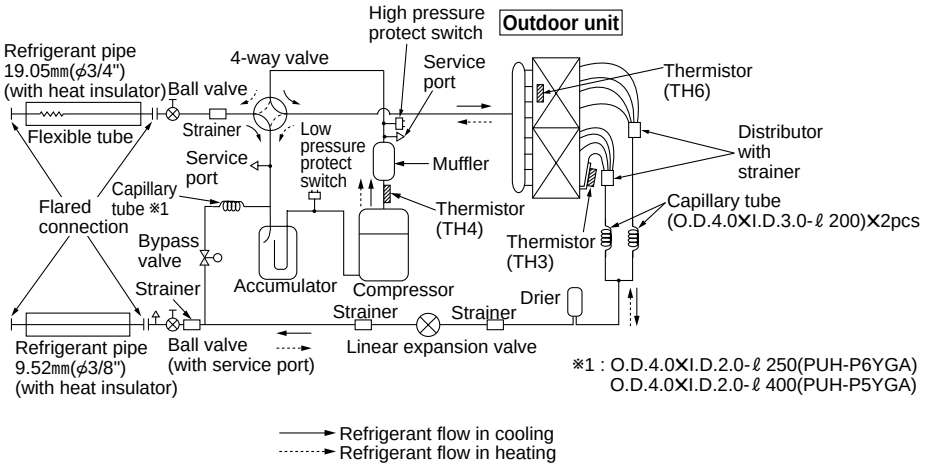
<4-way valve solenoid coil>
Heating : ON
Cooling : OFF



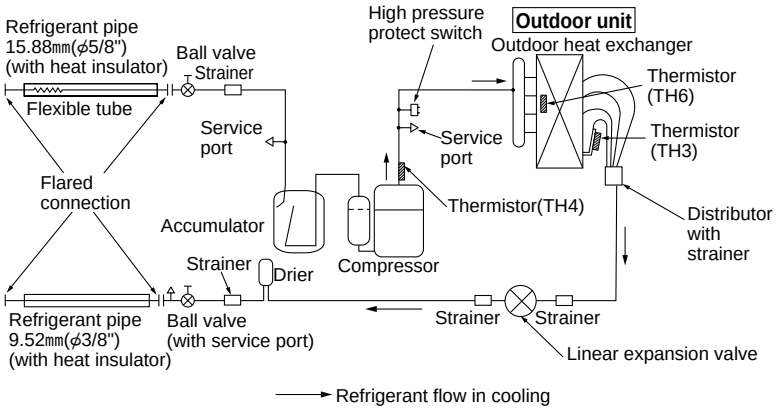
PUH-P4YGA



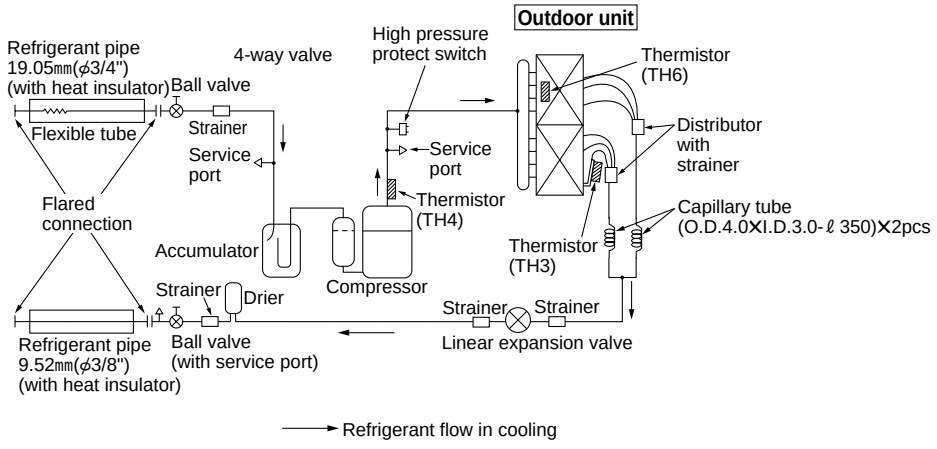
PUH-P5YGA
PUH-P6YGA



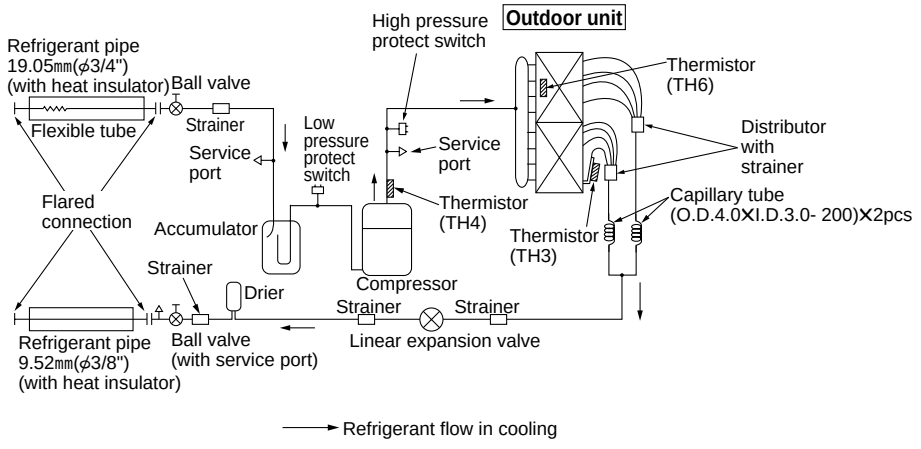
PU-P1.6VGA PU-P2VGA PU-P2.5VGA PU-P2.5VGA$_1$ PU-P3VGA PU-P3YGA



PU-P4YGA

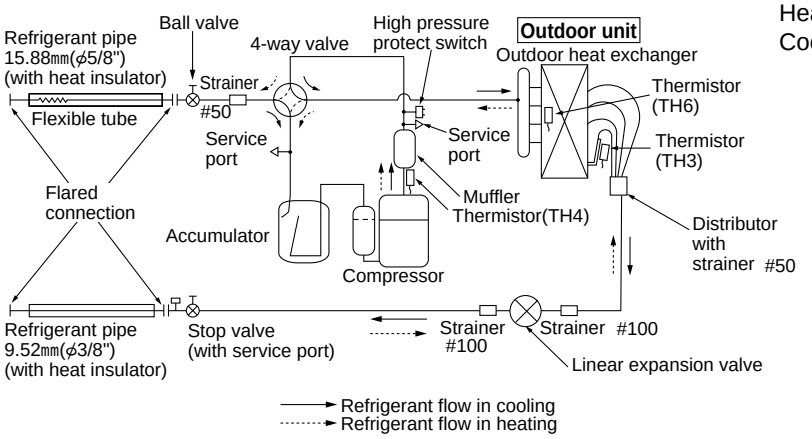


PU-P5YGA
PU-P6YGA

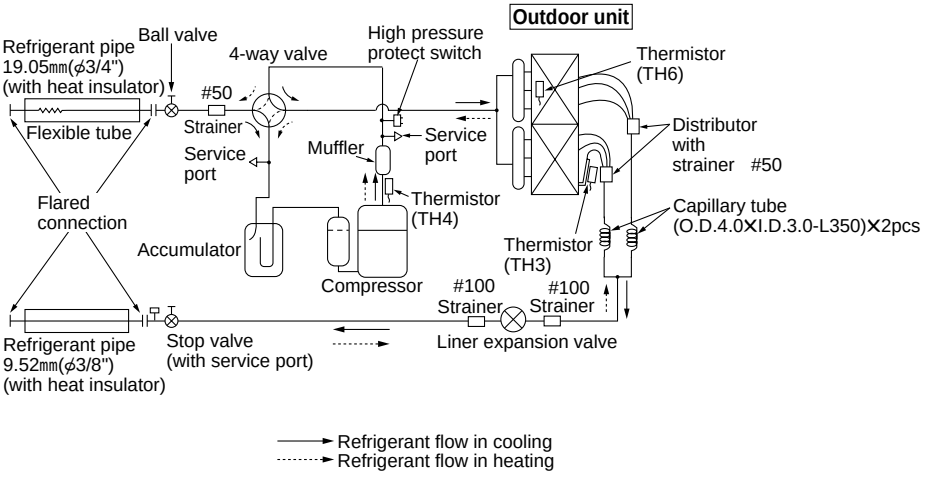


PUH-P1.6VGAA PUH-P2VGAA PUH-P2.5VGAA PUH-P3VGAA PUH-P3YGAA

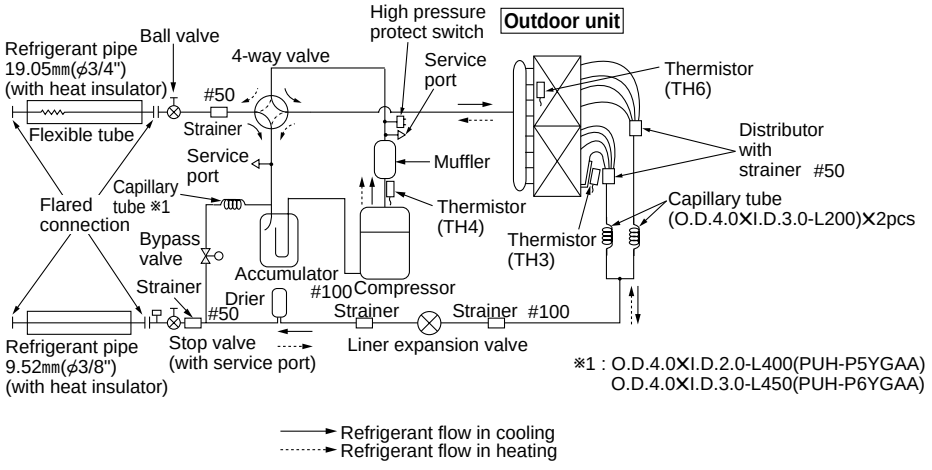
<4-way valve solenoid coil>
Heating : ON
Cooling : OFF



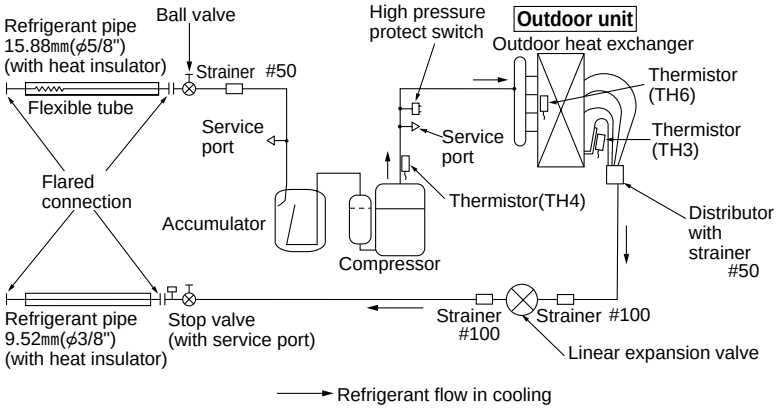
PUH-P4YGAA



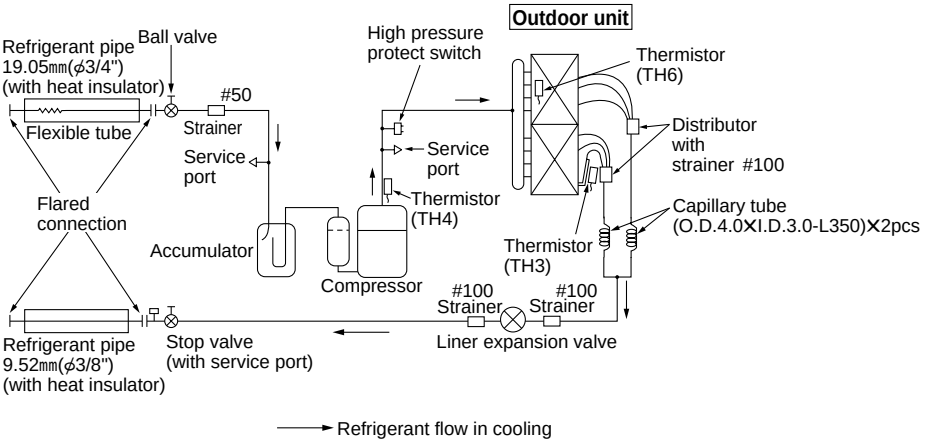
PUH-P5YGAA
PUH-P6YGAA



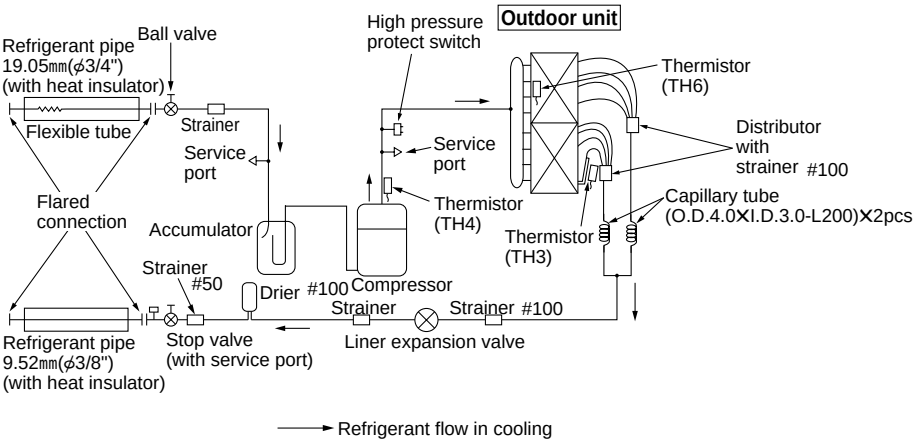
PU-P1.6VGAA PU-P2VGAA PU-P2.5VGAA PU-P3VGAA PU-P3YGAA



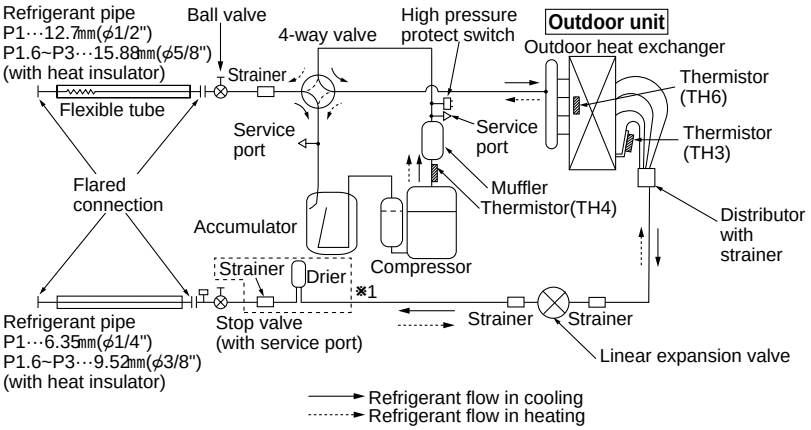
PU-P4YGAA



PU-P5YGAA
PU-P6YGAA

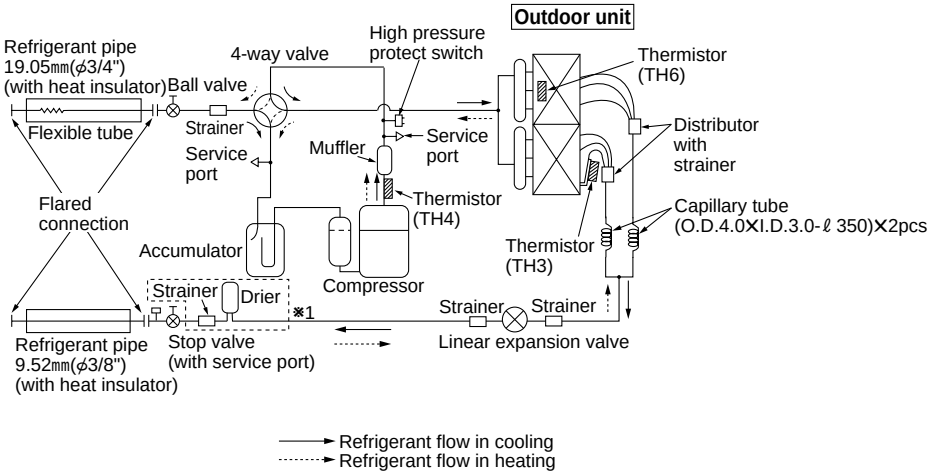


PUH-P1VGAA.UK PUH-P1.6VGAA.UK PUH-P2VGAA.UK PUH-P2.5VGAA.UK PUH-P3VGAA.UK
PUH-P1.6YGAA.UK PUH-P2YGAA.UK PUH-P2.5YGAA.UK PUH-P3YGAA.UK
PUH-P1VGAA1.UK PUH-P1.6VGAA1.UK PUH-P2VGAA1.UK PUH-P2.5VGAA1.UK PUH-P3VGAA1.UK
PUH-P1.6YGAA1.UK PUH-P2YGAA1.UK PUH-P2.5YGAA1.UK PUH-P3YGAA1.UK

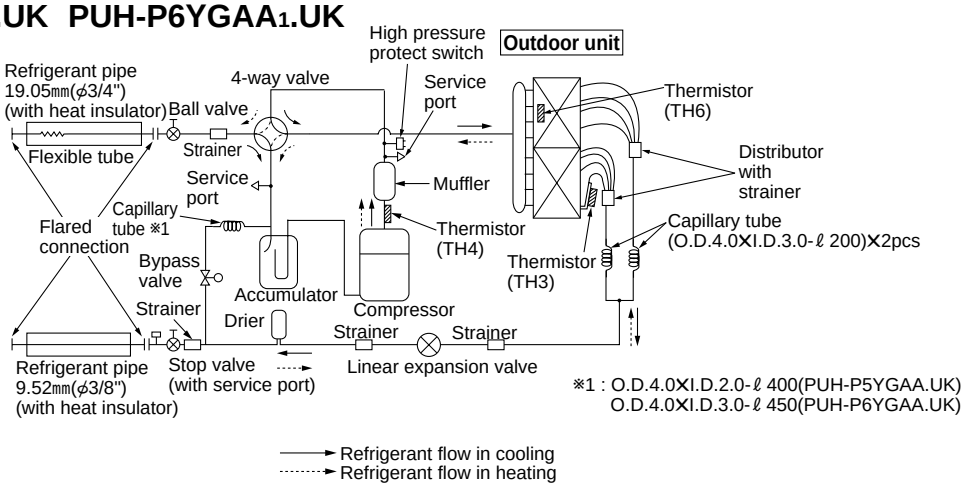


※1 : Only PUH-P·GAA.UK
<4-way valve solenoid coil>
Heating : ON
Cooling : OFF

PUH-P4VGAA.UK PUH-P4YGAA.UK
PUH-P4VGAA1.UK PUH-P4YGAA1.UK

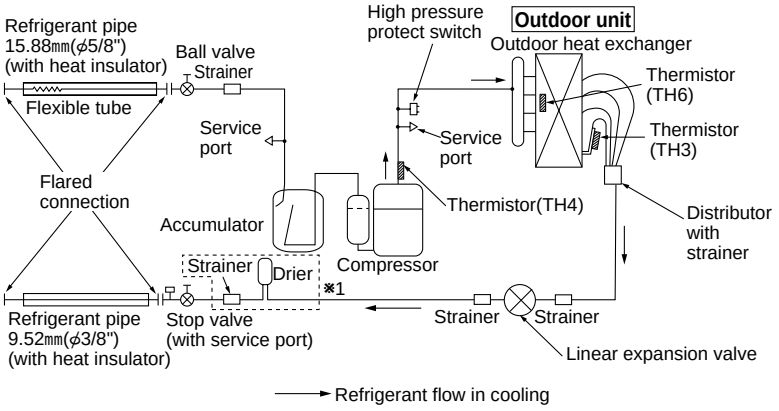


PUH-P5YGAA.UK PUH-P6YGAA.UK
PUH-P5YGAA1.UK PUH-P6YGAA1.UK

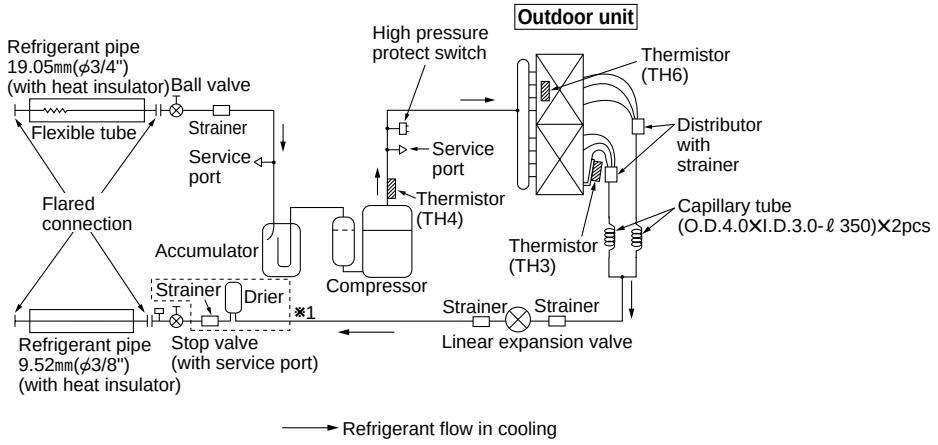


PU-P1.6VGAA.UK PU-P2VGAA.UK PU-P2.5VGAA.UK PU-P3VGAA.UK
PU-P1.6YGAA.UK PU-P2YGAA.UK PU-P2.5YGAA.UK PU-P3YGAA.UK
PU-P1.6VGAA1.UK PU-P2VGAA1.UK PU-P2.5VGAA1.UK PU-P3VGAA1.UK
PU-P1.6YGAA1.UK PU-P2YGAA1.UK PU-P2.5YGAA1.UK PU-P3YGAA1.UK

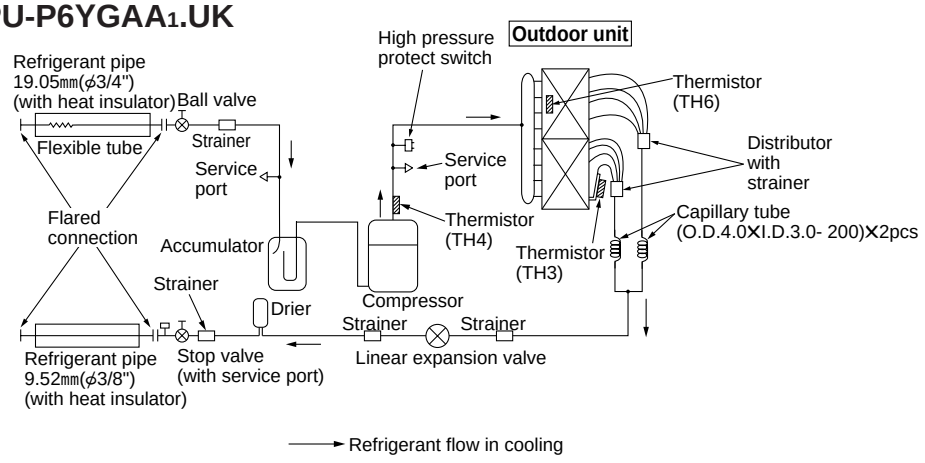
※1 : Only PU-P·GAA.UK



PU-P4VGAA.UK PU-P4YGAA.UK
PU-P4VGAA1.UK PU-P4YGAA1.UK



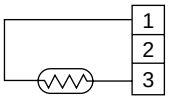
PU-P5YGAA.UK PU-P6YGAA.UK
PU-P5YGAA1.UK PU-P6YGAA1.UK



5 HOW TO CHECK THE PARTS

5-1. Indoor unit

① Common parts

Parts name	Check points
Room temperature thermistor (TH1) Pipe temperature thermistor (TH2) Condenser/evaporator temperature thermistor (TH5)	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 10℃~30℃) Normal: 4.3kΩ~9.6kΩ / Abnormal: Open or short (Refer to below for a detail.)
Drain sensor 	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃~30℃) Normal: 0.6kΩ~6.0kΩ / Abnormal: Open or short (Refer to below for a detail.)

<Thermistor Characteristic graph>

Thermistor for lower temperature

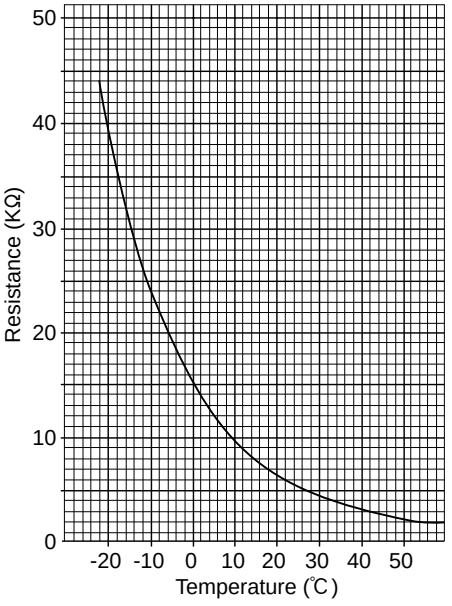
Room temperature thermistor(TH1)
Pipe temperature thermistor(TH2)
Condenser/evaporator temperature thermistor(TH5)

Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480K ± 2%

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

0℃	15kΩ
10℃	9.6kΩ
20℃	6.3kΩ
25℃	5.2kΩ
30℃	4.3kΩ
40℃	3.0kΩ

< Thermistor for lower temperature >



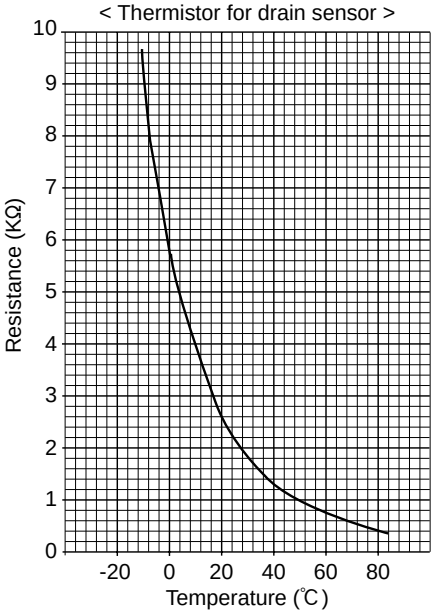
Drain sensor

Thermistor R_0=6.0kΩ ±5%
Fixed number of B=3390K ±2%

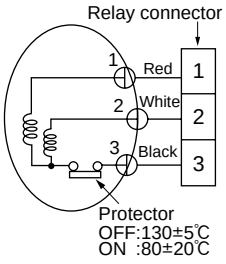
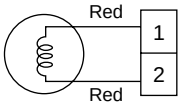
$$Rt=6\exp\{3390(\frac{1}{273+t}-\frac{1}{273})\}$$

0℃	6.0kΩ
10℃	3.9kΩ
20℃	2.6kΩ
25℃	2.2kΩ
30℃	1.8kΩ
40℃	1.3kΩ

< Thermistor for drain sensor >

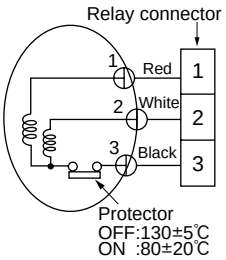


② PLH-P1.6, P2, P2.5, P3, P4, P5, P6KAH
PLA-P1.6, P2, P2.5, P3, P4, P5, P6KA
PLA-P1.6, P2, P2.5KA$_1$
PLH-P1.6, P2, P2.5KAH.UK
PLA-P1.6, P2, P2.5KA.UK

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Fan motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Winding temperature 20℃)
<table>
<tr><th>Motor terminal
or
Relay connector</th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>Red–Black</td><td>87.2Ω</td><td rowspan="2">Open or short</td></tr>
<tr><td>White–Black</td><td>104.1Ω</td></tr>
</table></td></tr>
<tr><td>Vane motor</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20℃~30℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>15kΩ</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Heater
(Only P·KAH type)</td><td>Measure the resistance of each heater element by using a tester.
<table>
<tr><th colspan="3">Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><td>P1.6, P2</td><td>P2.5, P3, P4</td><td>P5, P6</td></tr>
<tr><td>123.3kΩ</td><td>82.3kΩ</td><td>57.6kΩ</td><td rowspan="2">Open or short</td></tr>
<tr><td>0.467kW 240V</td><td>0.7kW 240V</td><td>1.0kW 240V</td></tr>
</table></td></tr>
<tr><td>Drain-up
mechanism
 
</td><td>Measure the resistance between the terminals using a tester.
(Winding temperature 20℃~30℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>327kΩ</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Contactor
(for heater)
(Only P·KAH type)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>P1.6~P6
10 — 88H — 11
107Ω</td><td>Open or short</td></tr>
</table></td></tr>
</table>

③ PCH-P2, P2.5, P3, P4, P5, P6GAH
PCA-P2, P2.5, P3, P4, P5, P6GA

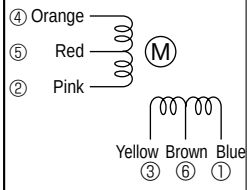
Fan motor



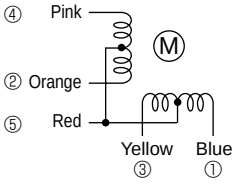
Measure the resistance between the terminals using a tester.
(Winding temperature 20℃)

Motor terminal or Relay connector	Normal				Abnormal
	P2	P2.5, P3	P4	P5, P6	
Red–Black	70.6Ω	45.0Ω	43.7Ω	20.4Ω	Open or short
White–Black	69.6Ω	44.8Ω	55.3Ω	20.7Ω	

Vane motor



Connector	Normal		Abnormal
	P2	P2.5, P3	
Brown–Yellow	186~214Ω	140~160Ω	Open or short
Brown–Blue			
Red–Orange			
Red–Pink			



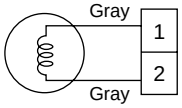
Connector	Normal	Abnormal
	P4, P5, P6	
Brown–Yellow	140~160Ω	Open or short
Brown–Blue		
Red–Orange		
Red–Pink		

Heater
(Only P2~P6GAH)

Measure the resistance of each heater element by using a tester.
(Surrounding temperature 20℃)

Normal				Abnormal
P2	P2.5, P3	P4	P5, P6	
13.7Ω	9.1Ω	7.1Ω	6.4Ω	Open or short
0.467kW 80V	0.7kW 80V	0.9kW 80V	1.0kW 80V	

Drain-up mechanism (Option)



Measure the resistance between the terminals using a tester.
(Winding temperature 20℃)

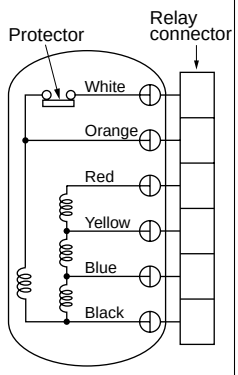
Normal	Abnormal
195Ω	Open or short

Contactor
(Only P2~P6GAH)

Measure the resistance between the terminals using a tester.

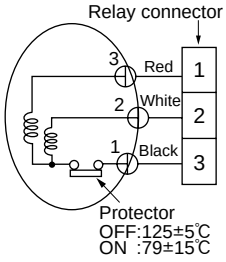
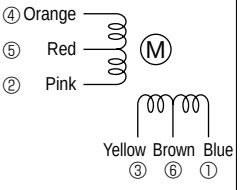
Normal	Abnormal
P2~P6	Open or short
10 — 88H — 11 107Ω	

④ PCA-P3HA
PCA-P5HA

Parts name	Check points
Fan motor 	Measure the resistance between the terminals using a tester. (Winding temperature 20℃) Protector OPEN : 135±5℃ CLOSE : 95±15℃

Connector	Normal		Abnormal
	PCH-P3HA	PCH-P5HA	
White–Black	140.5Ω	75.6Ω	Open or short
Brown–Blue	15.4Ω	36.7Ω	
Blue–Yellow	28.5Ω	23.6Ω	
Yellow–Red	80.4Ω	47.8Ω	

⑤ PKH-P1.6, P2GALH
PKA-P1.6, P2GAL

Parts name	Check points
Fan motor 	Measure the resistance between the terminals using a tester. (Winding temperature 20℃)
Vane motor 	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃~30℃)
Heater (Only P1.6, P2GALH)	Measure the resistance of each heater element by using a tester.
Contactor (for heater) (Only P1.6, P2GALH)	Measure the resistance between the terminals using a tester.

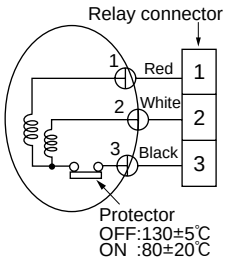
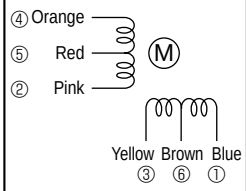
Motor terminal or Relay connector	Normal	Abnormal
	P1.6, P2	
Red–Black	120.5Ω	Open or short
White–Black	111.3Ω	

Connector	Normal	Abnormal
Brown–Yellow	186~214Ω	Open or short
Brown–Blue		
Red–Orange		
Red–Pink		

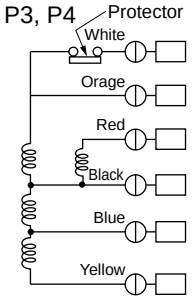
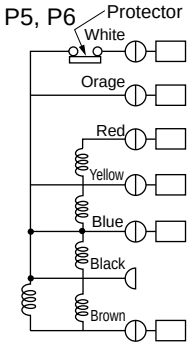
Normal	Abnormal
72Ω	Open or short
800W 240V	

Normal	Abnormal
7 — 88H — 8 160Ω	Open or short

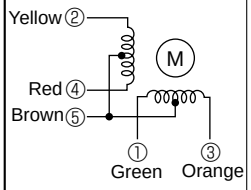
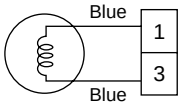
⑥ PKH-P2.5, P3, P4FALH
PKA-P2.5, P3, P4FAL
PKA-P2.5, P3, P4FAL-H

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Fan motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Winding temperature 20℃)
<table>
<tr><td rowspan="2">Motor terminal
or
Relay connector</td><td colspan="2">Normal</td><td rowspan="2">Abnormal</td></tr>
<tr><td>P2.5, P3</td><td>P4</td></tr>
<tr><td>Red–Black</td><td>99.5Ω</td><td>62.6Ω</td><td rowspan="2">Open or short</td></tr>
<tr><td>White–Black</td><td>103.9Ω</td><td>74.0Ω</td></tr>
</table></td></tr>
<tr><td>Vane motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20℃~30℃)
<table>
<tr><td rowspan="2">Connector</td><td>Normal</td><td rowspan="2">Abnormal</td></tr>
<tr><td>P2.5, P3, P4</td></tr>
<tr><td>Brown–Yellow</td><td rowspan="4">186~214Ω</td><td rowspan="4">Open or short</td></tr>
<tr><td>Brown–Blue</td></tr>
<tr><td>Red–Orange</td></tr>
<tr><td>Red–Pink</td></tr>
</table></td></tr>
<tr><td>Heater
(Only P2.5~P4FALH)</td><td>Measure the resistance of each heater element by using a tester.
<table>
<tr><td colspan="2">Normal</td><td>Abnormal</td></tr>
<tr><td>P2.5, P3</td><td>P4</td><td rowspan="3">Open or short</td></tr>
<tr><td>18.9Ω</td><td>16.5Ω</td></tr>
<tr><td>700W 240V</td><td>800W 240V</td></tr>
</table></td></tr>
<tr><td>Contactor
(for heater)
(Only P2.5~P4FALH)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><td>Normal</td><td>Abnormal</td></tr>
<tr><td>P2.5, P3, P4
10 — 88H — 11
107Ω</td><td>Open or short</td></tr>
</table></td></tr>
</table>

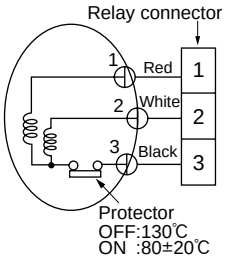
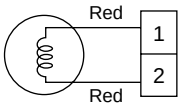
⑦ PSH-P3, P4, P5, P6GAH
PSA-P3, P4, P5, P6GA

Parts name	Check points
Fan motor P3, P4  P5, P6  	Measure the resistance between the terminals using a tester. (Winding temperature 20℃) Motor terminal or Relay connector / Normal: P3, P4 / Abnormal White–Black: P3 112.1Ω, P4 91.5Ω Black–Blue: P3 22.1Ω, P4 18.0Ω Blue–Yellow: P3 41.0Ω, P4 29.6Ω Black–Red: P3 178.5Ω, P4 174.9Ω Abnormal: Open or short Motor terminal or Relay connector / Normal: P5, P6 / Abnormal White–Brown: P5 28.0Ω, P6 21.7Ω Brown–Black: P5 6.9Ω, P6 7.8Ω Black–Blue: P5 13.3Ω, P6 14.3Ω Blue–Yellow: P5 8.4Ω, P6 7.7Ω Yellow–Red: P5 53.6Ω, P6 54.4Ω Abnormal: Open or short Protector OFF:135±5℃ ON :86±15℃
Timing motor	Measure the resistance between the terminals using a tester. (Surrounding temperature 25℃) Normal: 11000~13000Ω Abnormal: Open or short
Heater (Only P3~P6GAH)	Measure the resistance of each heater element by using a tester. Normal: P3 18.9Ω 0.7kW 80V; P4 14.7Ω 0.9kW 80V; P5, P6 13.2Ω 1kW 80V Abnormal: Open or short

⑧ PMH-P1, P1.6, P2BA

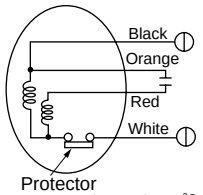
Parts name	Check points
Vane motor  	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃~30℃) Connector: Brown — Yellow / Brown — Red / Brown — Orange / Brown — Green Normal: 380Ω ±7% Abnormal: Open or short
Drain-up mechanism  	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃) Normal: 400Ω~480Ω Abnormal: Open or short

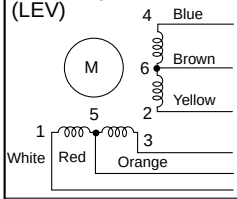
⑨ PLH-P3, P4, P5, P6AAH
PLA-P3, P4, P5, P6AA

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Vane motor</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>15kΩ</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Fan motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20℃)
<table>
<tr><th rowspan="2">Motor terminal
or
Relay connector</th><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><th>PLH-P3, 4, 5, 6AAH
PLA-P3AA</th><th>PLA-P4, 5, 6AA</th></tr>
<tr><td>Red–Black</td><td>87.2Ω</td><td>28.7Ω</td><td rowspan="2">Open or short</td></tr>
<tr><td>White–Black</td><td>104.1Ω</td><td>41.6Ω</td></tr>
</table></td></tr>
<tr><td>Drain pump
 
</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>290Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Heater
(Only P3~P6AAH)</td><td>Measure the resistance of each heater element by using a tester.
<table>
<tr><th colspan="3">Normal</th><th>Abnormal</th></tr>
<tr><td>P3</td><td>P4</td><td>P5, P6</td><td rowspan="3">Open or short</td></tr>
<tr><td>18.9Ω</td><td>15.3Ω</td><td>13.2Ω</td></tr>
<tr><td>0.7kW 240V</td><td>0.867kW 240V</td><td>1.0kW 240V</td></tr>
</table></td></tr>
<tr><td>Contactor
(for heater)
(Only P3~P6AAH)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>P3~P6
10 — 88H — 11
107Ω</td><td>Open or short</td></tr>
</table></td></tr>
</table>

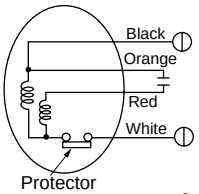
5-2. Outdoor unit

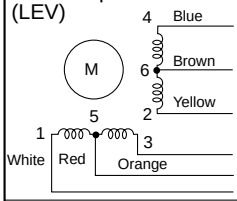
PUH-P1.6, P2, P2.5, P3VGA **PUH-P1.6, P2, P2.5, P3, P4, P5, P6YGA**
PU-P1.6, P2, P2.5, P3VGA **PU-P2, P2.5, P3, P4, P5, P6YGA**

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Liquid temperature thermistor (TH3)
Discharge temperature thermistor (TH4)
Condenser/evaporator temperature thermistor (TH6)</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 10℃~30℃)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH3</td><td>4.3kΩ~9.6kΩ</td><td rowspan="3">Open or short</td></tr>
<tr><td>TH4</td><td>160kΩ~410kΩ</td></tr>
<tr><td>TH6</td><td>4.3kΩ~9.6kΩ</td></tr>
</table>
(Refer to the P.42 for a detail.)</td></tr>
<tr><td>FAN MOTOR(MF)
 

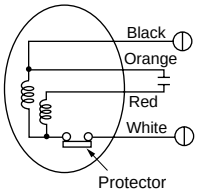
Protector
<PUH> OFF:135±5℃
<PU> OFF:120±5℃</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th>Motor lead wire</th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>White — Black</td><td>57.4Ω ±10%</td><td rowspan="2">Open or short</td></tr>
<tr><td>White — Red</td><td>99.7Ω ±10%</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve (LEV)
 
</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 20℃)
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>(1) - (5)
White - Red</td><td>(2) - (6)
Yellow - Brown</td><td>(3) - (5)
Orange - Red</td><td>(4) - (6)
Blue - Brown</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">150Ω ±10%</td></tr>
</table></td></tr>
<tr><td>4-WAY VALVE SOLENOID COIL (21S4)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1430Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>BYPASS VALVE SOLENOID COIL (21R)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20°)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>P5, P6</td><td rowspan="2">Open or short</td></tr>
<tr><td>1970Ω</td></tr>
</table></td></tr>
<tr><td>CRANKCASE HEATER (HC)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><th colspan="2">Normal</th><th>Abnormal</th></tr>
<tr><td>P1, P1.6</td><td>P2~P6</td><td rowspan="2">Open or short</td></tr>
<tr><td>1920Ω ±7%</td><td>1516Ω ±7%</td></tr>
</table></td></tr>
</table>

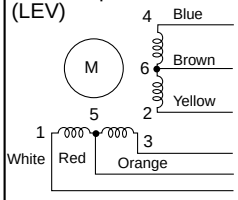
PU(H)-P1, P1.6, P2, P2.5, P3VGAA.UK
PU(H)-P1.6, P2, P2.5, P3, P4, P5, P6YGAA.UK

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Liquid temperature thermistor (TH3)
Discharge temperature thermistor (TH4)
Condenser/evaporator temperature thermistor (TH6)</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 10℃~30℃)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH3</td><td>4.3kΩ~9.6kΩ</td><td rowspan="3">Open or short</td></tr>
<tr><td>TH4</td><td>160kΩ~410kΩ</td></tr>
<tr><td>TH6</td><td>4.3kΩ~9.6kΩ</td></tr>
</table>
(Refer to the P.42 for a detail.)</td></tr>
<tr><td>FAN MOTOR(MF)
 

<PUH> OFF:135±5℃
<PU> OFF:120±5℃</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th>Motor lead wire</th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>White — Black</td><td>57.4Ω ±10%</td><td rowspan="2">Open or short</td></tr>
<tr><td>White — Red</td><td>99.7Ω ±10%</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve (LEV)
 
</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 20℃)
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>(1) - (5)
White - Red</td><td>(2) - (6)
Yellow - Brown</td><td>(3) - (5)
Orange - Red</td><td>(4) - (6)
Blue - Brown</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">150Ω ±10%</td></tr>
</table></td></tr>
<tr><td>4-WAY VALVE SOLENOID COIL (21S4)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1430Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>BYPASS VALVE SOLENOID COIL (21R)
(Only PUH-P5,P6YGAA.UK)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20°)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>P5, P6</td><td rowspan="2">Open or short</td></tr>
<tr><td>1970Ω</td></tr>
</table></td></tr>
<tr><td>CRANKCASE HEATER (HC)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><th colspan="2">Normal</th><th>Abnormal</th></tr>
<tr><td>P1, P1.6</td><td>P2~P6</td><td rowspan="2">Open or short</td></tr>
<tr><td>1920Ω ±7%</td><td>1516Ω ±7%</td></tr>
</table></td></tr>
</table>

PU(H)-P1.6, 2, 2.5, 3VGAA PU(H)-P3, 4, 5, 6YGAA

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Liquid temperature thermistor (TH3)
Discharge temperature thermistor (TH4)
Condenser/evaporator temperature thermistor (TH6)</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 10℃~30℃)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH3</td><td>160kΩ~410kΩ</td><td rowspan="3">Open or short</td></tr>
<tr><td>TH4</td><td>4.3kΩ~9.6kΩ</td></tr>
<tr><td>TH6</td><td>4.3kΩ~9.6kΩ</td></tr>
</table>
(Refer to the next pege for a detail.)</td></tr>
<tr><td>FAN MOTOR(MF)
 

OPEN :135±5℃
CLOSE:86±15℃</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th rowspan="2">Motor lead wire</th><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><th>P1.6, 2, 2.5, 3, 4</th><th>P5, 6</th></tr>
<tr><td>White — Black</td><td>96.5Ω ±10%</td><td>73.3Ω ±10%</td><td rowspan="2">Open or short</td></tr>
<tr><td>White — Red</td><td>138.8Ω ±10%</td><td>132.6Ω ±10%</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve (LEV)
 
</td><td>Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 20℃)
<table>
<tr><th colspan="4">Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><th>(1) - (5)
White - Red</th><th>(2) - (6)
Yellow - Brown</th><th>(3) - (5)
Orange - Red</th><th>(4) - (6)
Blue - Brown</th></tr>
<tr><td colspan="4">150Ω ±10%</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>4-WAY VALVE SOLENOID COIL (21S4)
(Only PUH-)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20C°)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1430Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>BYPASS VALVE SOLENOID COIL (SV)
(Only PUH-P5, 6YGAA)</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 20°)
<table>
<tr><th>Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><th>P5, P6</th></tr>
<tr><td>1970Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>CRANKCASE HEATER (CH)</td><td>Measure the resistance between the terminals using a tester.
<table>
<tr><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr>
<tr><th>P1.6</th><th>P2~P6</th></tr>
<tr><td>1920Ω ±7%</td><td>1516Ω ±7%</td><td>Open or short</td></tr>
</table></td></tr>
</table>

COMPRESSOR TECHNICAL DATA

(at 20°C)

Unit		PUH-P1.6VGA PU-P1.6VGA	PUH-P1.6YGA	PUH-P2VGA PU-P2VGA	PUH-P2YGA	PUH-P2.5VGA(1) PU-P2.5VGA(1)	PUH-P2.5YGA(1)
Compressor model		RE277VHSM	RE277YFKM	NE38VMJM	NE38YEJM	NE41VMJM	NE41YEJM
Winding Resistance (Ω)	U-V (R-C)	1.80	10.8	0.85	5.21	0.79	5.00
	U-W (S-C)	3.00	10.8	2.15	5.21	2.19	5.00
	W-V	—	10.8	—	5.21	—	5.00
Protection device	OPEN	160 ± 5℃	—	160 ± 5℃	—	160 ± 5℃	—
	CLOSE	90 ± 10℃	—	90 ± 10℃	—	90 ± 10℃	—

(at 20°C)

Unit		PUH-P3VGA PU-P3VGA	PUH-P3YGA PU-P3YGA	PUH-P4YGA PU-P4YGA	PUH-P5YGA PU-P5YGA	PUH-P6YGA PU-P6YGA
Compressor model		NE52VNJM	NE52YDJM	NE56YDJM	HE86YAA	HE101YAA
Winding Resistance (Ω)	U-V (R-C)	0.64	3.70	3.20	2.40	2.20
	U-W (S-C)	1.67	3.70	3.20	2.40	2.20
	W-V	—	3.70	3.20	2.40	2.20
Protection device	OPEN	155 ± 5℃	—	—	130 ± 5℃	130 ± 5℃
	CLOSE	90 ± 10℃	—	—	108 ± 11℃	108 ± 11℃
					<Inner thermostat (49C)>	<Inner thermostat (49C)>

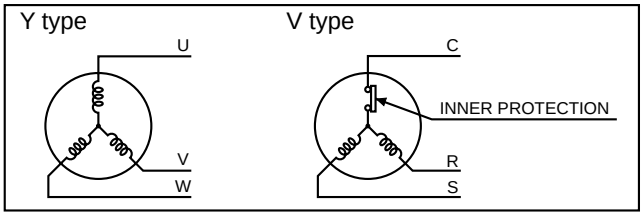
(at 20°C)
[Except P5, P6]

Unit		PUH-P1VGAA.UK	PUH-P1.6VGAA.UK PU-P1.6VGA.UK	PUH-P1.6YGAA.UK PU-P1.6YGA.UK	PUH-P2VGAA.UK PU-P2VGAA.UK	PUH-P2YGAA.UK PU-P2YGAA.UK
Compressor model		RE189VHSMT	RE277VHSMT	RE277YFKM	NE36VMJMT	NE36YEKMT
Winding Resistance (Ω)	U-V (R-C)	2.79	1.80	10.8	0.89	5.01
	U-W (S-C)	3.36	3.00	10.8	2.03	5.01
	W-V	—	—	10.8	—	5.01
Protection device	OPEN	155 ± 5℃	160 ± 5℃	—	160 ± 5℃	—
	CLOSE	90 ± 10℃	90 ± 10℃	—	90 ± 10℃	—

Unit		PUH-P2.5VGAA.UK PU-P2.5VGAA.UK	PUH-P2.5YGAA.UK PU-P2.5YGAA.UK	PUH-P3VGAA.UK PU-P3VGAA.UK	PUH-P3YGAA.UK PU-P3YGAA.UK
Compressor model		NE41VMJMT	NE41NEKMT	NE52VNJMT	NE52YDKMT
Winding Resistance (Ω)	U-V (R-C)	0.87	5.00	0.64	3.59
	U-W (S-C)	2.22	5.00	1.67	3.59
	W-V	—	5.00	—	3.59
Protection device	OPEN	160 ± 5℃	—	155 ± 5℃	—
	CLOSE	90 ± 10℃	—	90 ± 10℃	—

(at 25°C) (at 25°C)

Unit		PUH-P4VGAA.UK PU-P4VGAA.UK	PUH-P4YGAA.UK PU-P4YGAA.UK	PUH-P5YGAA.UK PU-P5YGAA.UIK	PUH-P6YGAA.UK PU-P6YGAA.UK
Compressor model		NE56VNJMT	NE56YDKMT	ZR61KCE-TFD	ZR72KCE-TFD
Winding Resistance (Ω)	U-V (R-C)	0.62	3.32	0.628 ~ 0.722	0.517
	U-W (S-C)	1.59	3.32	0.628 ~ 0.722	0.517
	W-V	—	3.32	0.628 ~ 0.722	0.517
Protection device	OPEN	160 ± 5℃	—	—	—
	CLOSE	90 ± 10℃	—	—	—



Parts name	Check points
COMPRESSER (MC)  (P1.6~P2.5)  (P3~P6)	①Winding resistance(Ω) Mersure the resistance between the terminals using a tester. (Surrouding temperature 20℃)

Terminals	Normal					Abnormal
	PU(H)-P1.6VGAA	PU(H)-P2VGAA	PU(H)-P2.5VGAA	PU(H)-P3VGAA	PU(H)-P3YGAA	
	RE277VHSM	NE36VMJMT	NE41VMJMT	NE52VNJMT	NE52YDKMT	
U-V(R-C)	1.80Ω	0.89Ω	0.87Ω	0.64Ω	3.59Ω	
U-W(S-C)	3.00Ω	2.03Ω	2.22Ω	1.67Ω	3.59Ω	Open or short
W-U	—	—	—	—	3.59Ω	

Terminals	Normal			Abnormal
	PU(H)-P4YGAA	PU(H)-P5YGAA	PU(H)-P6YGAA	
	NE56YDKMT	ZR61KCE-TFD-230	ZR72KCE-TFD-230	
U-V(R-C)	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	
U-W(S-C)	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	Open or short
W-U	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	

②Internal inhrent moter protection(49C)

Internal inhrent motor protection	PU(H)-P1.6VGAA	PU(H)-P2VGAA	PU(H)-P2.5VGAA	PU(H)-P3VGAA	PU(H)-P3YGAA
	RE277VHSM	NE36VMJMT	NE41VMJMT	NE52VNJMT	NE52YDKMT
Opening temp	115±5℃	115±5℃	115±5℃	115±5℃	115±5℃
Closing temp	85±7℃	85±7℃	85±7℃	85±7℃	85±7℃

Internal inhrent motor protection	PU(H)-P4YGAA	PU(H)-P5YGAA	PU(H)-P6YGAA
	NE56YDKMT	ZR61KCE-TFD-230	ZR72KCE-TFD-230
Opening temp	115±5℃	130±5℃	175±5℃
Closing temp	85±7℃	61±9℃	61±9℃

<Thermistor characteristic graph>

Thermistor for lower temperature

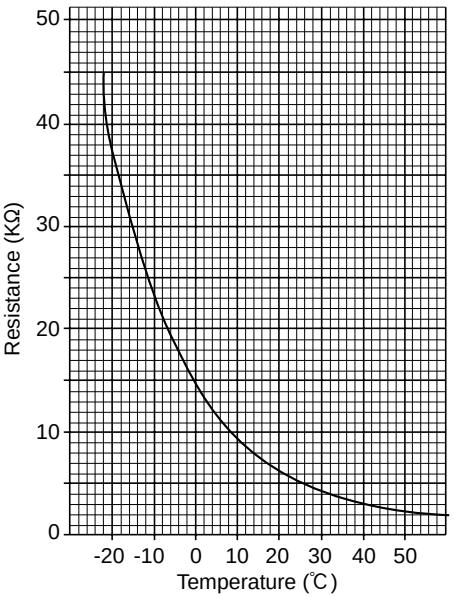
Liquid temperature thermistor(TH3)
Condenser/evaporator temperature thermistor(TH6)

Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480K ± 2%

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

0℃	15kΩ
10℃	9.6kΩ
20℃	6.3kΩ
25℃	5.2kΩ
30℃	4.3kΩ
40℃	3.0kΩ

< Thermistor for lower temperature >



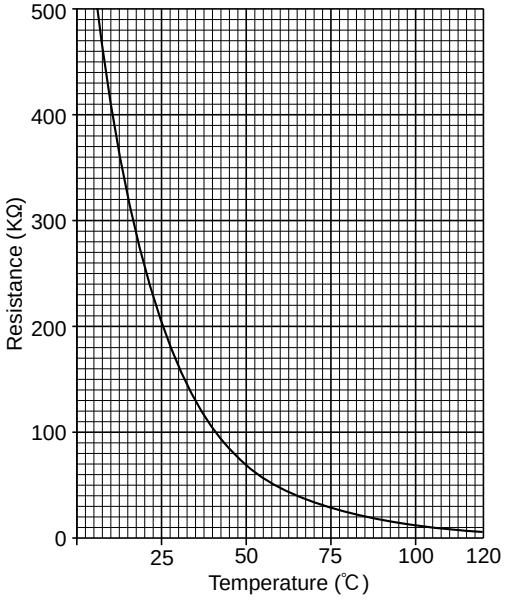
Thermistor for higher temperature

Discharge temperature thermistor(TH4)

Thermistor R120=7.465kΩ ±2%
Fixed number of B=4057K ±2%

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

20℃	250kΩ
30℃	160kΩ
40℃	104kΩ
50℃	70kΩ
60℃	48kΩ
70℃	34kΩ
80℃	24kΩ
90℃	17.5kΩ
100℃	13.0kΩ
110℃	9.8kΩ



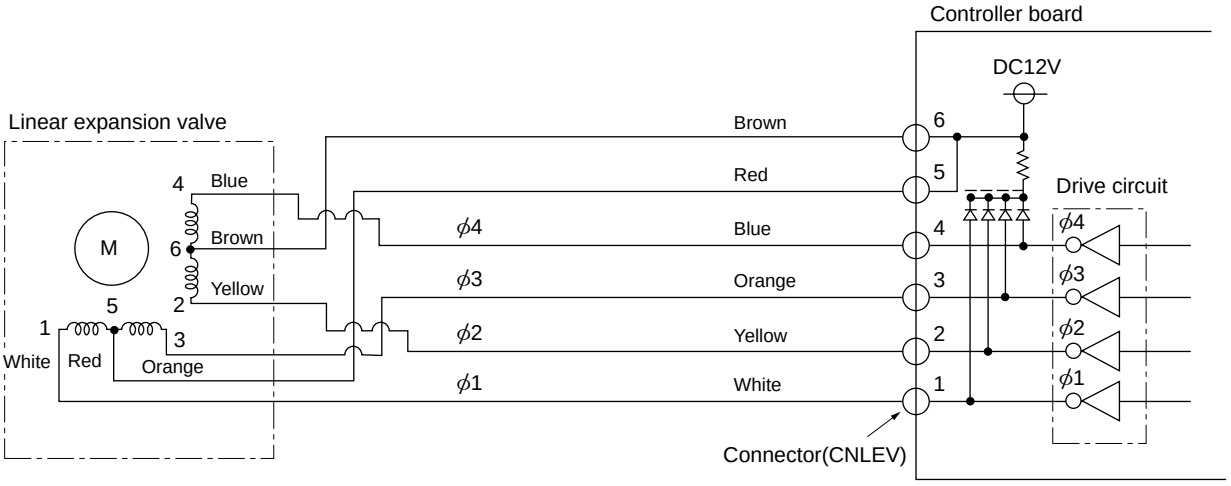
Linear expansion valve

① **Operation summary of the linear expansion valve.**

• Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.

• Valve position can be changed in proportion to the number of pulse signal.

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



<Output pulse signal and the valve operation>

Output (Phase)	Output			
	1	2	3	4
ϕ1	ON	OFF	OFF	ON
ϕ2	ON	ON	OFF	OFF
ϕ3	OFF	ON	ON	OFF
ϕ4	OFF	OFF	ON	ON

Closing a valve : 1 → 2 → 3 → 4 → 1

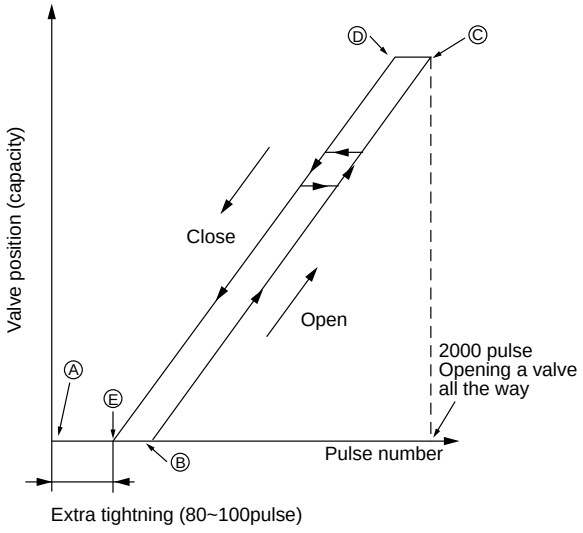
Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

✵ 1. When linear expansion valve operation stops, all output phase become OFF.

2. At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will locks and vibrates.

② Linear expansion valve operation

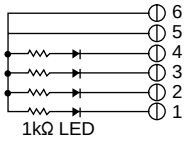


✵ When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to Ⓐ point in order to define the valve position.

When the valve move smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more noise can be heard than normal situation.

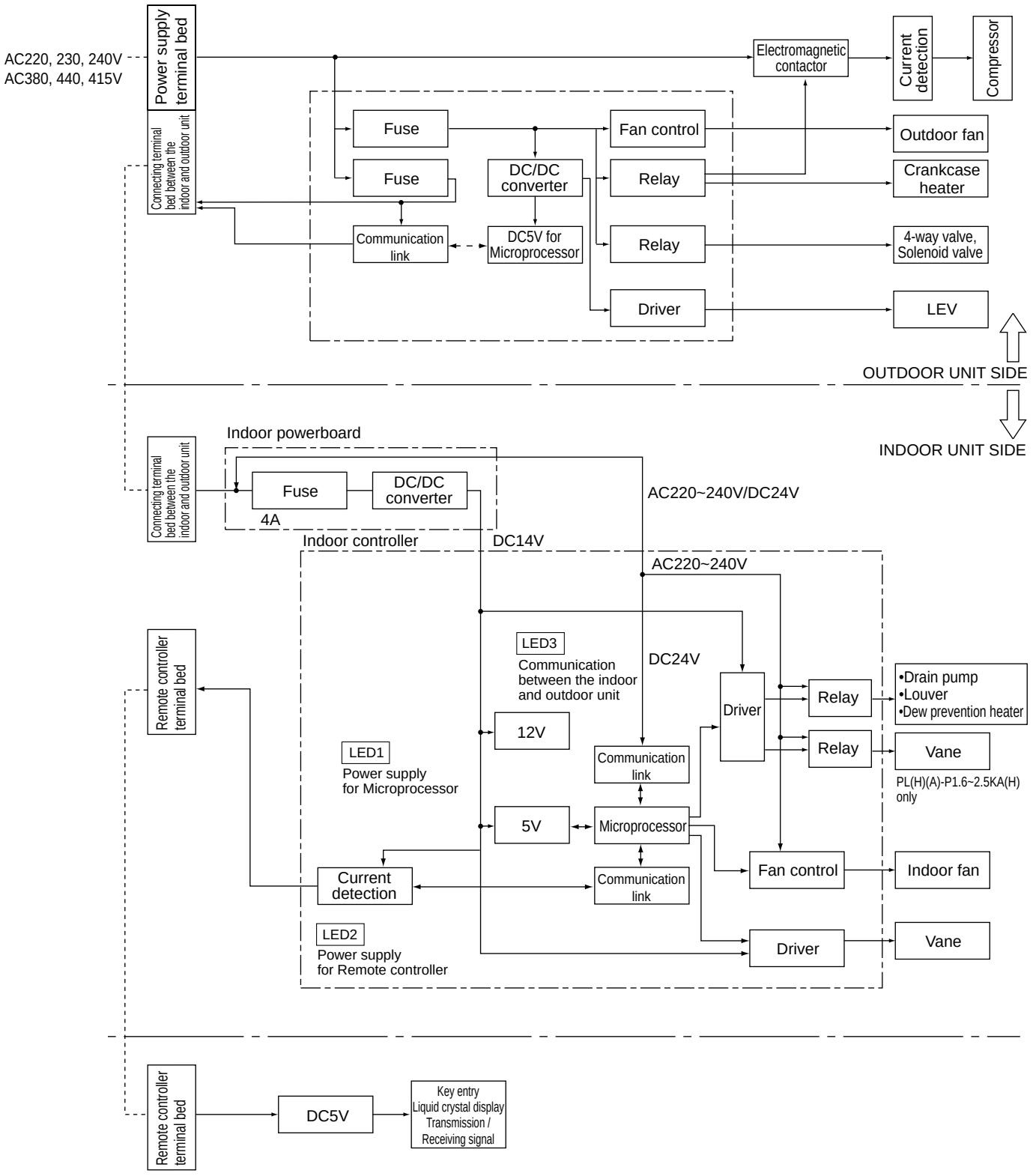
✵ Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

③ Trouble shooting

Problem	Check point	Corrective measure
Operation circuit failure of the micro processor.	Remove the connector from the controller board and connect diagnostic LEDs.  Pulse signal will be sent out for 10 seconds as soon as the main switch is turn on. If there is LED with lights on or lights off, it means the operation circuit is abnormal.	Exchange the indoor controller board at drive circuit failure.
Linear expansion valve mechanism is locked.	Motor will idle and make ticking noise when motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality.	Exchange the linear expansion vale.
Short or breakage of the motor coil of the linear expansion valve.	Measure the resistance between the each coil (red-white, red-orange, brown-yellow, brown-blue) using a tester. It is normal if the resistance is in the range of 150Ω±10%.	Exchange the linear expansion valve.
Wrong connection of the connector or contact failure.	① Check improperly connected connector terminals and the wire colors. ② Remove the connector on the controller board side and check electrical conductance	Disconnect the connector at the controller board, then check the continuity.

6 MICROPROCESSOR CONTROL

6-1. FUNCTIONAL BLOCK CHART

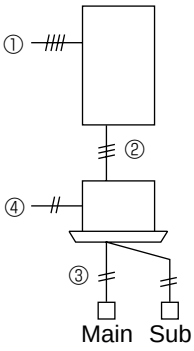


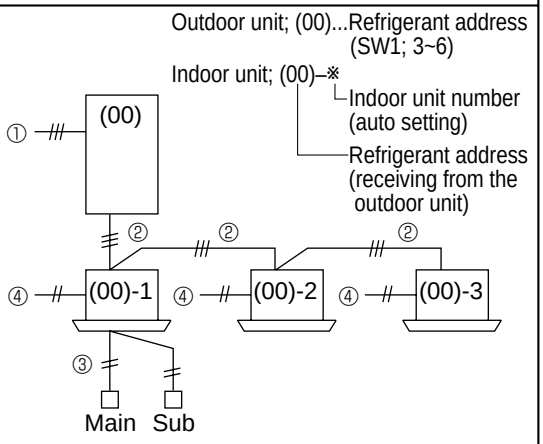
Notes : As for PMH-P•BA, Indoor powerboard and Indoor controller on the whole.

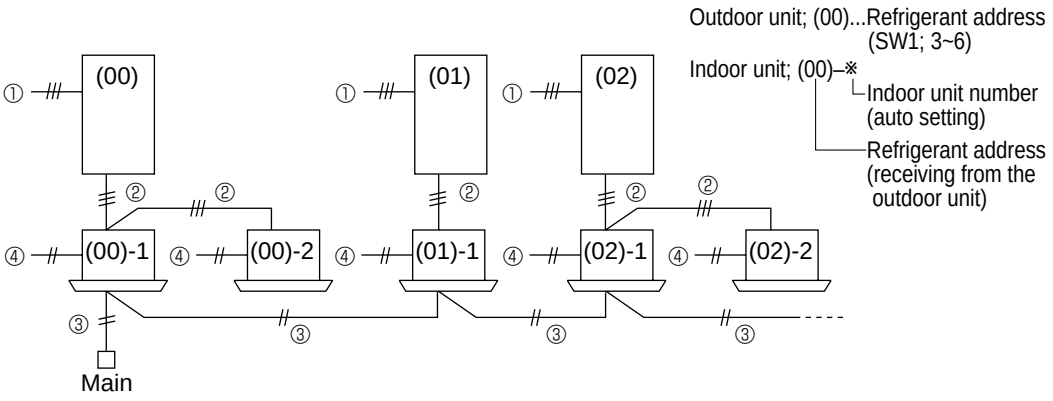
6-2. System construction

(1) System construction

A-control model which just wires the connecting line between the indoor and outdoor unit and supply the power is applicable to any models of standard (1:1), twin and triple. (Refer to 2 Start-up system.)

<table>
<tr><td colspan="2"></td><td>Standard 1:1</td><td>Synchronized twin. Triple</td></tr>
<tr><td colspan="2">System construction</td><td> 

①Unit (indoor/outdoor) power supply L1/L2/L3/N
②Connecting line between the indoor and outdoor; S1/S2/S3, Polarized 3-wire
③Remote controller transmission line; Non polarezed 2-wire
④Auxiliary heater exclusive power supply; L/N</td><td> 

①Unit (indoor/outdoor) power supply L1/L2/L3
②Connecting line between the indoor and outdoor; S1/S2/S3, Polarized 3-wire
③Remote controller transmission line; Non polarezed 2-wire
④Auxiliary heater exclusive power supply; L/N</td></tr>
<tr><td rowspan="3">Various setting</td><td>Remote controller</td><td>Remote control main/sub setting necessity
(In case of 2 remote controllers)</td><td>Remote control main/sub setting necessity
(In case of 2 remote controllers)</td></tr>
<tr><td>Indoor unit</td><td>No setting</td><td>No setting (initial setting)</td></tr>
<tr><td>Outdoor unit</td><td>No setting</td><td>No setting (initial setting)</td></tr>
<tr><td colspan="2">Remarks</td><td></td><td>(1) Indoor unit number is set automatically</td></tr>
<tr><td colspan="2"></td><td colspan="2">Group control</td></tr>
<tr><td colspan="2">System construction</td><td colspan="2"> 

①Unit (indoor/outdoor) power supply L1/L2/L3/N
②Connecting line between the indoor and outdoor; S1/S2/S3, Polarized 3-wire
③Remote controller transmission line; Non polarezed 2-wire
④Auxiliary heater exclusive power supply; L/N</td></tr>
<tr><td rowspan="3">Various setting</td><td>Remote controller</td><td colspan="2">Remote control main/sub setting necessity
(In case of 2 remote controllers)</td></tr>
<tr><td>Indoor unit</td><td colspan="2">No setting (initial setting)</td></tr>
<tr><td>Outdoor unit</td><td colspan="2">Refrigerant address setting; SW1; 3~6</td></tr>
<tr><td colspan="2">Remarks</td><td colspan="2">(1) Indoor unit number is set automatically
(2) When the refrigerant address of the unit is "00", Remote controller is supplied.</td></tr>
</table>

(2) The transmitting specification for “A” control

①Wiring regulations

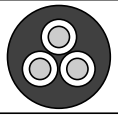
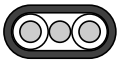
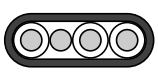
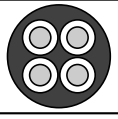
Section	Communications from remote controllers	Communications between indoor and outdoor units
The maximum length of total wiring	500m	80m (50m for the wirings between indoor and outdoor units; 30m for the wirings among indoor units)
The maximum numbers for connection	One remote controller can connect and operate up to 16 indoor units by grouping them.*1 One group can connect up to two remote controllers.*2 *1 Remote controller considers multiplex units as a single group. *2 PSA-JGA should be excluded.	One outdoor unit can connect up to four indoor units.
The cables applicable	0.3mm^2 to 1.25mm^2	Use either VVF flat-type cable (3 cores: ϕ1.6mm or more) or wires in the table below. *3 The diameter of the cables depends on each unit.
Others	The wirings as follows are not allowed: • The wiring that the indoor units of the same refrigerant system are connected through TB5. • The wiring which directly connects the terminals for remote controllers.	The core wire connected to terminal S2 shall be placed at the center of VVF flat-type cable.

②Transmitting specification

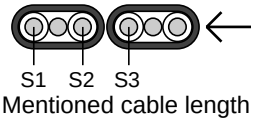
Section	Communications from remote controllers	Communications between indoor and outdoor units
Transmitting speed	83.3 bit/sec. (1 bit = 12ms)	83.3 bit/sec. (1 bit = 12ms)
Normal transmission	The terminal for remote controller transmits signals every 7.5 seconds; the indoor unit whose refrigerant address is “0” responds them.	Outdoor unit transmits signals every 3 seconds; all the connected indoor units respond them.
Modulation	The waveform modulates at 50kHz.	There is no modulation.
Detection of abnormal communication	When transmitting error is detected for three consecutive minutes.	When transmitting error is detected for three consecutive minute.

WIRING SPECIFICATIONS FOR 220~240V 50Hz
(INDOOR-OUTDOOR CONNECTING CABLE)

PU(H)-P1.6VGA~P6YGA
PU(H)-P1VGAA.UK~P6YGAA(.UK)
(Except PUH-8YE,PUH-10YE)

Cross section of cable	Wire size (mm^2)	Number of wires	Polarity	L(m) *6
Round 	2.5	3	Clockwise : S1-S2-S3 ※ Pay attention to stripe of yellow and green	(50) *2
Flat 	2.5	3	Not applicable (Because center wire has no cover finish)	Not applicable *5
Flat 	1.5	4	From left to right : S1-Open-S2-S3	(45) *3
Round 	2.5	4	Clockwise : S1-S2-S3-Open ※ Connect S1 and S3 to the opposite angle	60 *4

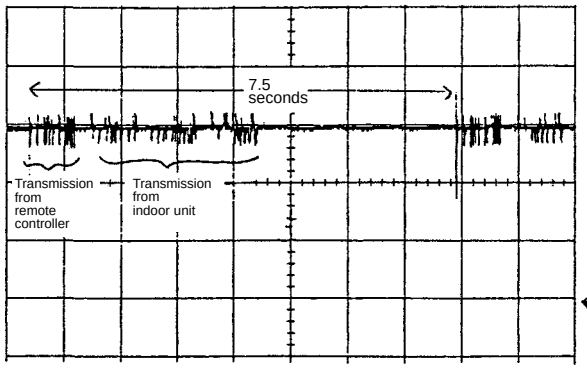
*1 : Power supply cords of appliances shall not be lighter than design 245 IEC or 227 IEC.
*2 : In case that cable with stripe of yellow and green is available.
*3 : In case of regular polarity connection (S1-S2-S3), wire size is 1.5mm^2.
*4 : In case of regular polarity connection (S1-S2-S3).
*5 : In the flat cables are connected as this picture, they can be used up to 80m.



*6 : Mentioned cable length is just a reference value.
It may be different depending on the condition of installation, Humidity or materials, etc.

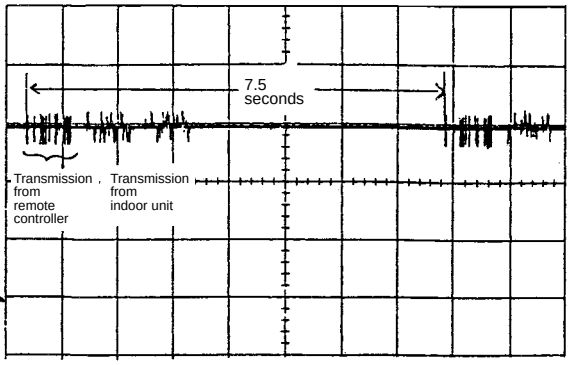
(3) The waveforms of from remote controller communications
The following graphs are the examples for measuring waveforms on the wirings of remote controlled transmission at the terminal block for remote controller.

a) A measuring example in the sequence of startup



5V/div, 1sec/div:

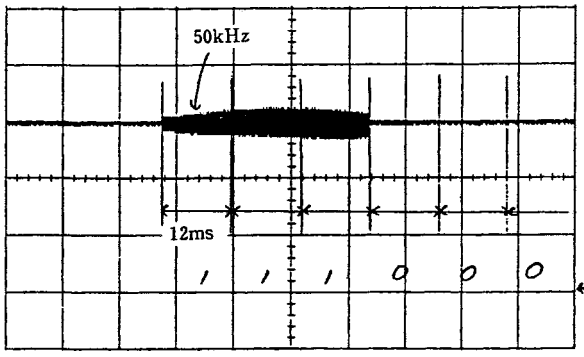
b) A measuring example during normal stop



GND

5V/div, 1sec/div:

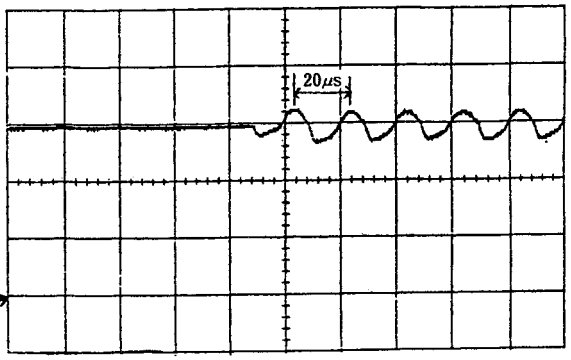
c) Expanded waveform 1 (signal 111000....)



GND

5V/div, 10msec/div:

d) Expanded waveform 2 (50Hz carrier)

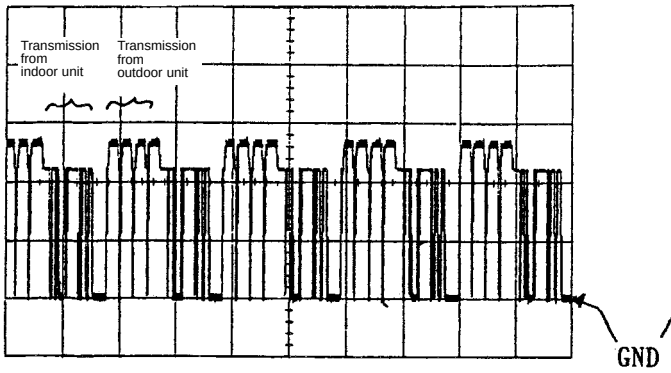


5V/div, 2μsec/div:

• During normal operation, the remote controller interactively exchanges signals with the indoor unit of refrigerant address “0”. When the remote controller cannot receive signals from the indoor unit of refrigerant address “0” for 3 minutes, it is considered as abnormal. E0 is displayed on the remote controller as an error.

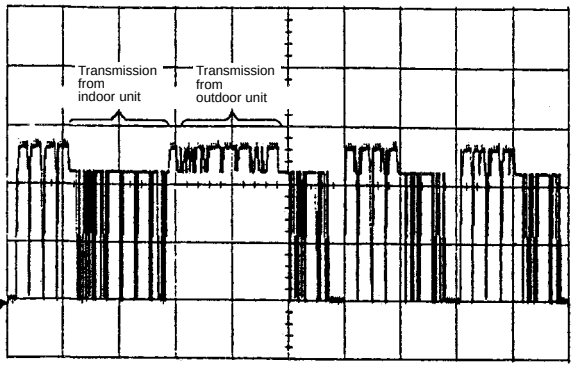
(4) The waveforms of communications between indoor and outdoor units
The following graphs are the examples for measuring waveforms on the wirings of connecting indoor and outdoor units at between S2 and S3 of the outdoor terminal block TB1.

a) A measuring example the sequence of startup: 1



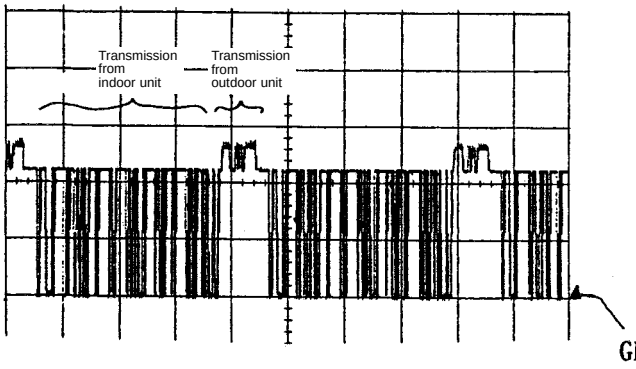
10V/div, 500msec/div:

b) A measuring example in the sequence of startup: 2



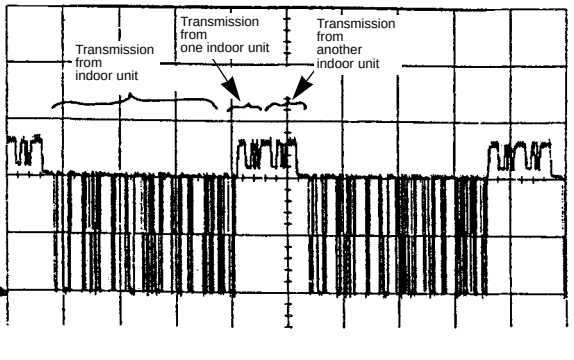
10V/div, 500msec/div:

c) A measuring example during normal stop
(When one outdoor unit connects one indoor unit)



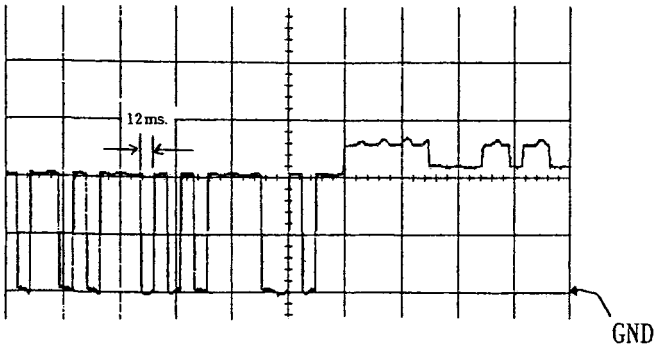
10V/div, 500msec/div:

d) A measuring example during normal stop
(When one outdoor unit connects two indoor units)



10V/div, 500msec/div:

c) Expanded waveform



10V/div, 50msec/div:

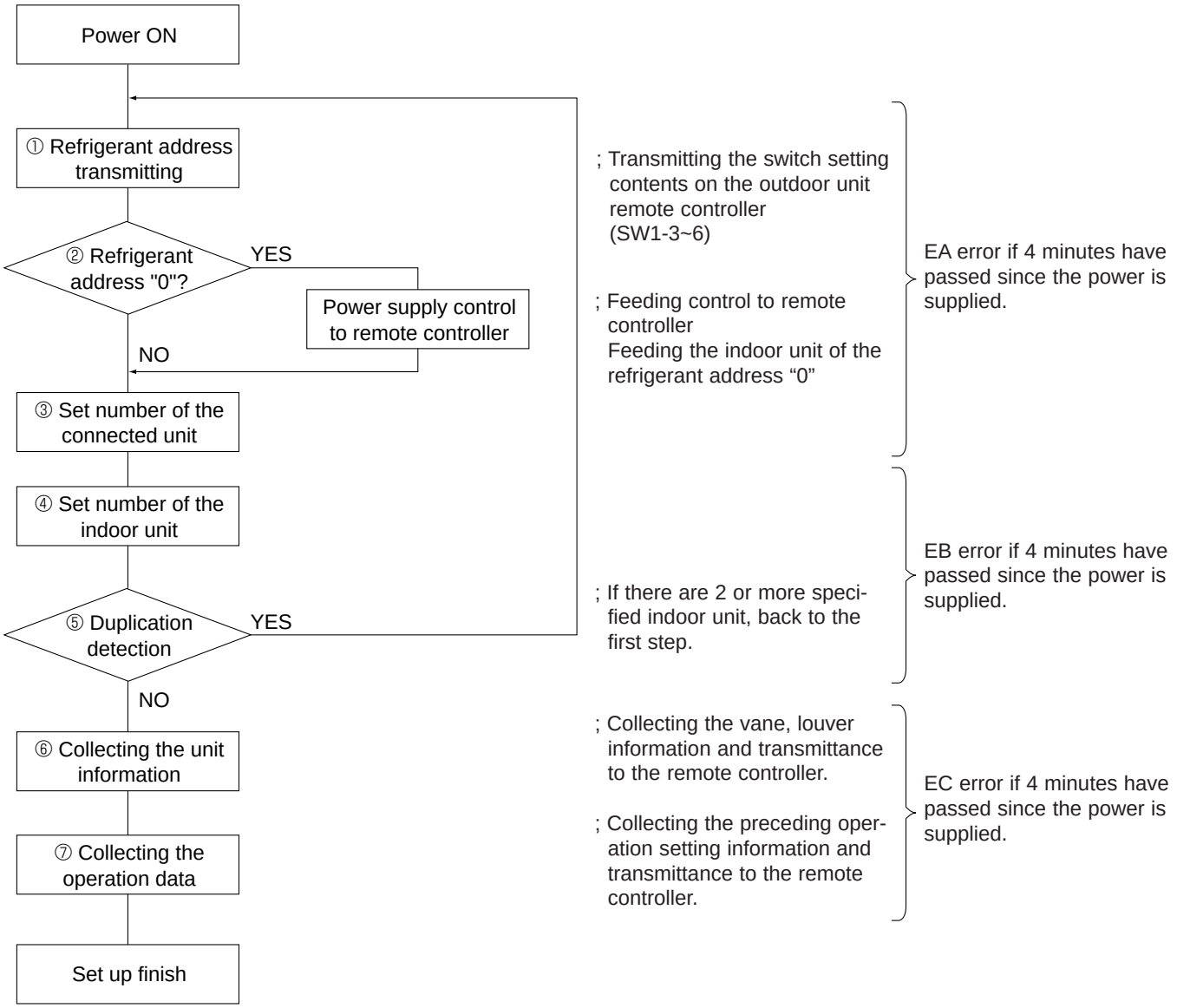
- During normal operation, outdoor unit interactively exchanges signals with all the connected indoor units.
- When outdoor unit cannot receive signals for three minutes from an indoor unit due to any trouble like cable disconnection, it is considered as abnormal and the outdoor unit stops. E8 is displayed on the remote controller. This is to avoid independent operation of indoor units.

(5) Start-up system

A control unit is applicable to any models of standard (1:1), twin and triple without switch setting according to carrying out the below process automatically when the power is supplied.

When the power is supplied, following processes of ① Refrigerant address transmitting, ② Power supply control to remote controller, ③ Set number of the connected unit, ④ Set number of the indoor unit, ⑤ Duplication detection, ⑥ Collecting the unit information and ⑦ Collecting the operation data are carried out as shown on the figure.

Also when detecting the duplicated setting in the step ⑤, back to the first step and reset it.



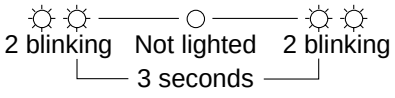
<<Feature>>

A. Start-up time from the second time will be shorter since setting of the number of connected units is memorized once set.
   Start-up time can be estimated as following;
   - •When installing ... 1~2 minutes (Depending the number of connecting units)
   - •Since the second time .... 20 seconds ~ 1 minute (Depending the number of connecting units)
   - ※ When the above processing does not finish, even if 4 minutes have passed, consider the processing an error and Ea, Eb or Ec will be displayed.
     However if power is not supplied to the indoor unit due to miss-wiring or looseness of the connecting lines between the indoor and outdoor unit, there will be no display on the remote controller. Also when the data can not be received from the outdoor unit, E6 is displayed on the remote controller after 6 minutes.

B. When replacing the controller board, only the unit number which has had it`s controller board replaced is reset.
   Even if the power supply is reset, the unit number which has not had it`s replaced does not change.

C. Automatic set unit is possible to confirm by blinking the frequency of LED3 in the indoor controller board.
   At intervals of approx. 3 seconds, the number of the unit-number blinks.(Example:The unit(unit number:2) blinks twice at 3-second intervals.

Example



Function/control specifications

	Item		4-way ceiling cassette		1-way ceiling cassette	Ceiling suspended	Wall mounted		Floor standing	Ceiling concealed
			PLH-P•KAH(.UK) PLA-P•KA(.UK)	PLH-P•AAH.UK PLA-P•AA(.UK)	PMH-P•BA	PCH-P•GAH PCA-P•GA	PKH-P•GALH PKA-P•GAL	PKH-P•FALH PKA-P•FAL	PSH-P•GAH PSA-P•GA	PEHD-P•EAH.UK PEAD-P•EA.UK
Function / specification	Fan	Number of fan speed	4	4	4	4	4	2	2	2
		Drive method	Pulsation (AC motor)	Pulsation (AC motor)	Sine wave drive (DC motor)	Phase control (AC motor)	Phase control (AC motor)	Phase control (AC motor)	Tap-changing (AC motor)	Tap-changing (AC motor)
	Up/down auto vane	Provided	○	○	○	○	○	○	—	—
		Swing function	○	○	○	○	○	○	—	—
		Shutter mechanism	—	○	○	○	○	○	—	—
		Moter type	Timing (220-240V AC)	Stepping (12V DC)	Stepping (12V DC)	Stepping (12V DC)	Stepping (12V DC)	Stepping (12V DC)	—	—
	Left/right swing louver	Provided	—	—	—	—	—	—	○	—
		Moter type	—	—	—	—	—	—	Timing (220-240V AC)	—
	Drain pump		○	○	○	△	—	△	—	△

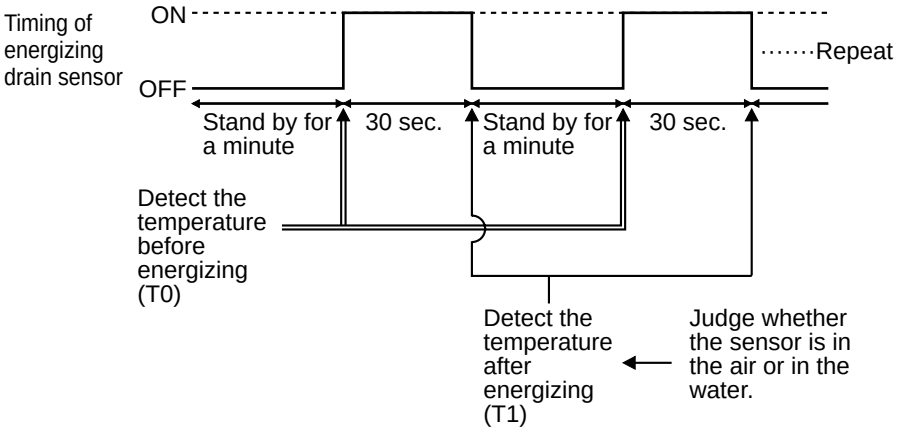
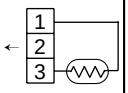
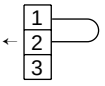
Note: The parts marked △ are optional.

7 INDOOR UNIT CONTROL

7-1. COOL operation

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td rowspan="3">1. Compressor</td><td>1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)
• Room temp. ≧ desired temp. +1℃ (※2)···Compressor ON
• Room temp. ≦ desired temp. ···Compressor OFF
Crankcase heater: OFF when compressor operates
ON when compressor stopped (including when thermo is OFF)
■Crankcase heater switches ON when 200V AC current is applied between connectors CH ① and ② on the outdoor control p.c. board.</td><td>※1 The thermoregulating function is provided in the outdoor unit.
The indoor unit transmits the indoor room temp. and set temp. data to outdoor unit, then the outdoor unit controls thermoregulation.
※2 Can be set to 1,5 or 10℃ using function selection mode 19.</td></tr>
<tr><td>1-2. Anti-freezing control
Detected condition : When the liquid pipe temp. (TH2) or Condenser/ Evaporator temp. (TH5) (※3) is 2℃ or less (※4) in 16 minutes from compressors start up, anti-freezing control starts and the compressor will be suspended.
Released condition : The timer which prevents reactivating is set for 3 minutes, and anti- freezing control is cancelled when any one of the following conditions is satisfied.
① Liquid pipe temp. (TH2) and Condenser / Evaporator temp (TH5) turn 10℃ or above.
② The condition of the compressor stop has become complete by thermoregulating, etc.
③ The operation modes became mode other than COOL.
④ The operation stopped.</td><td rowspan="2">Refer to ※3.
Refer to ※4.</td></tr>
<tr><td>1-3. Frozen protection
Detected condition : When the indoor pipe temp. (TH2) or Condenser/ Evaporator temp.
(TH5) continues -15℃ for 3 minutes since 3 minutes has passed after the compressor start, the compressor stops and then the mode changes to prevent restarting for 6 minutes.
After restarting of 6 minutes, when the indoor pipe temp. (TH2) or Condenser / Evaporator temp. (TH5) continues -15 or less for three minutes again by the time 16 minutes have passed, the frozen protection operates. (P6)
Released condition : When the operation stops by the remote controller operation.</td></tr>
<tr><td>2. Fan</td><td>By the remote controller setting (switch of 4 speeds or 2 speeds)
When determining the abnormality of the pipe temp. low speed fan is fixed.
<table><tr><th>Number of fan speeds</th><th>Fan speed notches</th></tr><tr><td>4</td><td>[Low], [Mid2], [Mid1], [High]</td></tr><tr><td>2</td><td>[Low] [High]</td></tr></table></td><td></td></tr>
</table>

※3 Compare liquid pipe temperature to Condenser/ Evaporator temperature, and the lower one is applied to anti-freezing control.
• Liquid pipe temperature ≦ Condenser/ Evaporator temperature····· Liquid pipe
• Liquid pipe temperature > Condenser/ Evaporator temperature····· Condenser/ Evaporator pipe
※4 The function of remote controller can change the temperature to start anti-freezing control.

Control modes	Control details	Remarks
3. Drain pump	3-1. Drain pump control •Always drain pump ON during the COOL and DRY mode operation. (Regardless of the compressor ON/ OFF) •When the operation mode has changed from the COOL or DRY to the others (including Stop), OFF the control after the drain pump ON for 3 minutes.	
	Drain sensor function • Energize drain sensor at a fixed voltage for a fixed duration. After energizing, compare the drain sensor's temperature to the one before energizing, and judge whether the sensor is in the air or in the water. **Basic control system** • While drain pump is turned on, repeat the following control system and judge whether the sensor is in the air or in the water.  •Drain sensor temperature rise (Δt) •Temperature of drain sensor before current is applied (T_0) •Temperature of drain sensor after current is applied (T_1) [$\Delta t = T_1 - T_0$]	∗1 Drain sensor Indoor controller board CN31  ∗2 If the unit is without the drain sensor, install the jumper connector. Indoor controller board CN31  When installing the jumper connector, determine to detect compulsorily in the air.
4. Vane (up/ down vane change)	(1) Initial setting : Start at COOL mode and horizontal vane. (2) Vane position : Horizontal →Downward A →Downward B →Downward C→Swing (3) Detecting position (AC 200-240V timing motor) Positioning the each vane as a basic position (horizontal or shutter) the starting OFF → ON of the limited switch. When the basic position is not able to detect for 10 minutes, the vane will be stopped at that time. (vane swing motion for 10 minutes) (4) Restriction of the downward vane setting When setting the downward vane A, B and C in [Mid2] or [Low] of the fan speed notch, the vane changes to horizontal position after 1 hour have passed.	∗1 Whether the unit has a swing function is listed in the function/ control specifications. ∗2 See the function/control specifications for the vane motor type. ∗3 "SET FOR 1 HOUR" appears on the wired remote controller.
5. Louver (Left / right change)	By the remote controller setting	※Model which is installed louver function.

7-2. DRY operation

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td>1. Compressor</td><td>1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)
Setting the compressor operation time by the thermoregulating signal and the room temperature (TH1).
Thermoregulating signal ON Room temp. ≧ desired temp. +1℃
Thermoregulating signal OFF Room temp. ≦ desired temp.
<table>
<tr><th rowspan="2">Room temp.</th><th colspan="2">3 min. passed since starting operation</th><th rowspan="2">Operating time (min)</th><th rowspan="2">OFF time (min)</th></tr>
<tr><th>Thermoregulating signal</th><th>Room temp. (T1)</th></tr>
<tr><td rowspan="4">Over 18℃</td><td rowspan="4">ON</td><td>T1 ≧ 28℃</td><td>9</td><td>3</td></tr>
<tr><td>28℃ > T1 ≧ 26℃</td><td>7</td><td>3</td></tr>
<tr><td>26℃ > T1 ≧ 24℃</td><td>5</td><td>3</td></tr>
<tr><td>24℃ > T1</td><td>3</td><td>3</td></tr>
<tr><td>OFF</td><td>Unconditional</td><td>3</td><td>10</td></tr>
<tr><td>Less than 18℃</td><td colspan="4">Compressor operation stop</td></tr>
</table>
</td><td rowspan="2">∗1 The thermoregulating function is provided in the outdoor unit.

The indoor unit transmits the indoor room temp. and set temp. data to outdoor unit, then the outdoor unit controls thermoregulation.</td></tr>
<tr><td>1-2. Frozen prevention control
No control function</td></tr>
<tr><td></td><td>1-3. Frozen protection
Same control as COOL operation</td><td></td></tr>
<tr><td>2. Fan</td><td>Indoor fan operation controlled depends on the compressor conditions.
<table>
<tr><th>Compressor</th><th>Fan speed notches</th></tr>
<tr><td>ON</td><td>[Low]</td></tr>
<tr><td>OFF</td><td>Stop(∗2)</td></tr>
</table>
Note: Remote controller setting is not acceptable.</td><td>∗2
Start condition:
The piping temperature (fluid piping or 2-phase piping) has fallen to 1℃ or less.
Release condition:
The piping temperature (fluid piping or 2-phase piping) has returned to at least 10℃.</td></tr>
<tr><td>3. Drain pump</td><td>Same control as COOL operation</td><td></td></tr>
<tr><td>4. Vane
(up/ down vane change)</td><td>Same control as COOL operation</td><td></td></tr>
<tr><td>5. Louver
(Left/ right change)</td><td>Remote controller setting</td><td>∗1 Model which is installed louver function.</td></tr>
</table>

7-3. FAN operation

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td>1. Compressor</td><td>None (always stopped)</td><td></td></tr>
<tr><td>2. Fan</td><td>Set by remote controller.
<table>
<tr><th>Number of fan speeds</th><th>Fan speed notches</th></tr>
<tr><td>4</td><td>[Low], [Mid2], [Mid1], [High]</td></tr>
<tr><td>2</td><td>[Low] [High]</td></tr>
</table>
</td><td></td></tr>
<tr><td rowspan="2">3. Drain pump</td><td>3.1 Drain pump control
The drain pump turns ON for the specified amount of time when any of the following conditions is met:
① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (FAN).
② ON for 6 minutes after the drain sensor is determined to be submerged using the liquid level detection method given below.
③ ON for 6 minutes after indoor piping (liquid piping) temperature - indoor intake temperature ≦ -10℃, AND the drain sensor input is at the short or open level.
(If condition ② or ③ is still being met after the drain pump has been turned ON for 6 minutes, the drain pump is kept ON for a further 6 minutes.)</td><td></td></tr>
<tr><td>3.2 Liquid level detection method
The liquid level is detected by determining whether or not the drain sensor is submerged, based on the amount the temperature rises after self-heating the sensor. This process is performed if any of the following conditions is met:
① Drain pump is ON.
② Indoor piping (liquid piping) temperature - indoor intake temperature ≦ -10℃
③ Indoor piping (liquid piping) temperature or indoor intake temperature is at the short or open level temperature.
④ Every hour after the drain pump has been switched from ON to OFF.</td><td></td></tr>
<tr><td>4. Vane
(up/ down vane change)</td><td>Same as the control performed during the COOL operation, but with no restriction on the vane's downward blow setting.</td><td></td></tr>
</table>

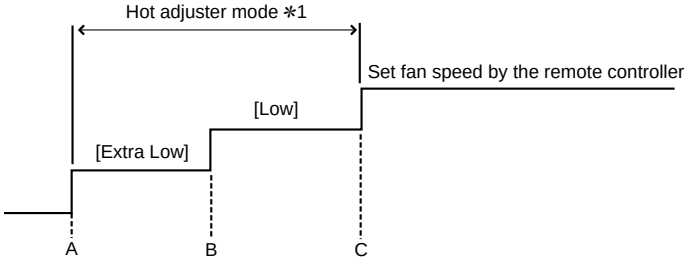
7-4. HEAT operation

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td rowspan="2">1. Compressor</td><td>1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)
•Room temp. ≦ desired temp.-1℃ ⋯Compressor ON
•Room temp. ≧ desired temp. ⋯Compressor OFF</td><td>∗1
The thermoregulating function is provided in the outdoor unit.

The indoor unit transmits the indoor room temp. and set temp. data to outdoor unit, then the outdoor unit controls thermoregulation.</td></tr>
<tr><td>1-2. Over- rise protection control
Detected control : When Condenser/ Evaporator temp. turns 74℃ or more, less than 90℃ after starting compressor, stop the compressor, then the mode changes to restarting compressor, stop the compressor, then the mode changes to restarting protection mode after 6 minutes. After restarting after 6 minutes when the Condenser/ Evaporator temp. became 74℃ or more, less than 90℃ by the time 10 minutes pass, the mode changes to over-rise protection control.
Release control : When the operation stops by the remote controller.</td><td></td></tr>
<tr><td>2. Auxiliary heater</td><td>2-1. Thermoregulating function
When the mode is not Hot adjust or Defrosting mode during HEAT compressor operation, the controller changes to auxiliary heater ON.
Thermoregulating function follows the below table with according to desired temp. and room temp.
<table><tr><th>Temp. difference</th><th>Auxiliary heater</th></tr><tr><td>z < 0</td><td>OFF</td></tr><tr><td>0 ≦ z < 3</td><td>Keeping condition</td></tr><tr><td>3 ≦ z</td><td>ON</td></tr></table>Temp. difference Z=Desired temp. - Room temp.

2-2. Over-rise prevention control
During the HEAT compressor operation, when the Condenser/ Evaporator temp. became 60℃ or more, over-rise prevention control operates and the auxiliary heater prohibits for ON operation. When the indoor Cond./Eva. temp. is 55℃ or less during over-rise prevention, over-rise prevention control will be released and auxiliary heater ON will be allowed.</td><td>∗1 Models without auxiliary heater also control the units in the same way as shown in the left.

∗2 During the over-rise prevention control, "Airflow increasing" in the indoor fan is controlled.
(Only the model of fan 4-speed)</td></tr>
</table>

Control modes	Control details	Remarks
3. Fan	Controlled by the remote controller (4-speed or 2-speed) Give priority to under-mentioned controlled mode 3-1. Hot adjuster mode 3-2. Preheating exclusion mode 3-3. Thermo OFF mode (When the compressor off by the thermoregulating) 3-4. Cool air prevention mode (Defrosting mode) 3-5. Capacity increasing mode	∗1 Fan speed change notch Refer to the model function table
	3-1. Hot adjuster mode The fan controller becomes the hot adjuster mode for the following conditions. ① When starting the HEAT operation ② When starting the compressor by the thermoregulating ③ When release the HEAT defrosting operation  A: HOT adjuster mode start B: 5 min have passed since the condition A or the indoor Condenser/ Evaporator temp. turned 35℃ or more C: 2 min have passed since the condition A (Terminating the hot adjuster mode)	∗1 "STAND BY" will be displayed during the hot adjuster mode.
	3-2. Preheating exclusion mode When the condition changes the auxiliary heater ON to OFF (thermoregulating or operation stop, etc), the indoor fan operates in [Low] mode for 1 minute.	∗1 This control is same for the model without auxiliary heater. ∗2 Unit, which has two levels of fan speed, operates at "Low."
	3-3. Thermo OFF mode When the compressor stops by the thermoregulating, etc., the indoor fan operates in [Extra low].	∗1 Fan's airflow volume, when thermostat is OFF, can be changed by selecting the function of remote controller.
	3-4. Cool air prevention mode (Heat defrosting mode) After "not adjustment" mode is finished, the indoor fan will stop if ① or ② mentioned below is detected. When receiving "DEFROST" from the outdoor unit, the mode changes to defrosting mode. Pipe temp. (Condenser/ Evaporator) - Room temp. ≦ -5deg …① -5deg < pipe temp. (Condenser/ Evaporator) - Room temp. ≦ 5deg …② 5deg < pipe temp. (Condenser/ Evaporator) - Room temp. …③	∗1 "DEFROST "will be displayed on the remote controller during the defrost operation.
	3-5. Fan speed up mode •When the control changes to over-rise prevention. The condition of over-rise prevention (Prohibit for auxiliary heater ON) continues for 3 minutes or more and the set fan speed is [Low] or [Mid2], the fan speed changes to [Mid1]. •When the control changes to over-rise prevention during the heater OFF, the mode changes to capacity increasing mode immediately. The capacity increasing mode is canceled by canceling the over-rise prevention mode.	∗1 This control is applied for only 4-speed model.

Control modes	Control details	Remarks
4. Drain pump	No drain pump operation However, when the control changes from COOL or DRY operation, the drain pump operates for 3 minutes.	
5. Vane control (Up/ down vane change)	(1) Initial setting : OFF → HEAT⋯[last setting] When changing the mode from exception of HEAT to HEAT operation. ⋯[Downward C] (2) Air flow direction [Horizontal]→[Downward A]→Downward B]→Downward C]→[Swing] (3) Determining position (When the timing motor of AC 200-240V) Control each air outlet angle considering the starting OFF → ON of limit switch to be a standard position (Horizontal or shutter). When the standard position can not be determined for 10 minutes, the vane stops at the arbitrary position. (Vane swing motion for 10 minutes) (4) Restriction of vane position ① The vane is horizontally fixed for the following modes. (The control by the remote controller is temporally invalidated and control by the unit.) •Compressor OFF mode (Thermoregulating, etc.) •Hot adjuster [Extra low] mode •Cool prevention mode (Determining except for Heat area) •Heat defrost mode •Piping (Condenser/ Evaporator) temperature is 37℃ or less. ② Short cycle protection (Only model PLH-P1.6, 2, 2.5KAH PLA-P1.6, 2, 2.5KA PLH-P•KAH.UK PLA-P•KA.UK supports this control mode.) If the short cycle status was detected by the vane setting (downward blow C), the vane angle (downward blow B) is restricted for short cycle protection. This control mode only changes the vane angle. No subsequent control is performed. The remote controller display doesn't change.	✻1 Whether the unit has a swing function is listed in the function/control specifications. ✻ See the function/control specifications for the vane motor type. ✻ Unit is under “heating,” “hot adjustment,” and “Compressor ON” mode, and is set to “Low,” the intake temperature has risen by over 7℃.
6. Louver (Left/ right vane)	Setting by the remote controller	✻1 Model which is installed louver function. Refer to the table of the unit function.

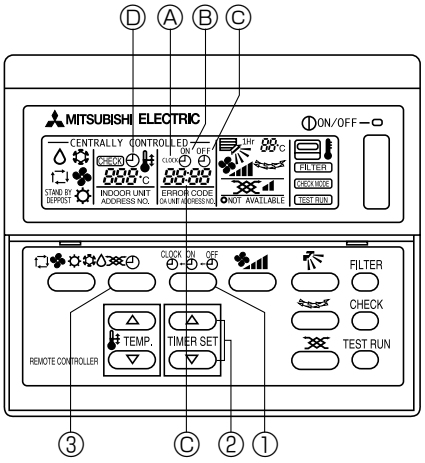
7-5. AUTO operation

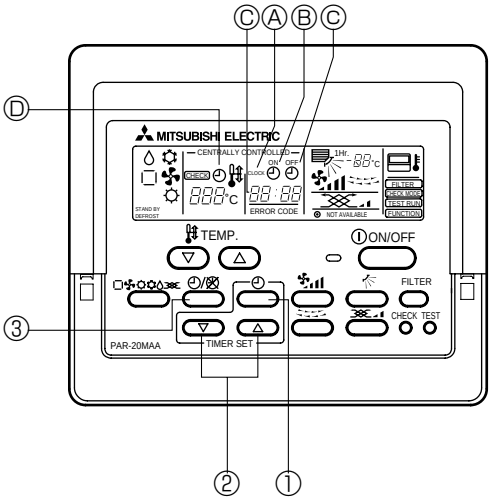
Control modes	Control details	Remarks
1. Initial value of operation mode	HEAT mode for room temp. < Desired temp. COOL mode for room temp. ≧ Desired temp.	✻This mode is provide in the outdoor unit. The indoor unit follows the instruction from the outdoor unit.
2. Mode change	(1) HEAT mode → COOL mode Room temp. ≧ Desired temp. + 2deg. or 15 min. has passed (2) COOL mode → HEAT mode Room temp. ≦ Desired temp. - 2deg. or 15 min. has passed	✻This mode is provide in the outdoor unit. The indoor unit follows the instruction from the outdoor unit.
3. COOL mode	Same control as cool operation	
4. HEAT mode	Same control as heat operation	

7-6. When unit is stopped Control mode

Control modes	Control details	Remarks
1. Drain pump	1.1 Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions is met (regardless of whether the compressor is ON or OFF) ① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (HEAT mode). ② ON for 6 minutes after the drain sensor is determined to be submerged using the liquid level detection method given below. ③ ON for 6 minutes after indoor piping (liquid piping) temperature - indoor intake temperature ≦ -10deg, AND the drain sensor input is at the short or open level. (If condition ② or ③ is still being met after the drain pump has been turned ON for 6 minutes, the drain pump is kept ON for a further 6 minutes.)	
	1.2 Liquid level detection method The liquid level is detected by determining whether or not the drain sensor is submerged, based on the amount the temperature rises after self-heating the sensor. This process is performed if any of the following conditions is met: ① Drain pump is ON. ② Indoor piping (liquid piping) temperature - indoor intake temperature ≦ -10deg (except during defrosting) ③ Indoor piping (liquid piping) temperature or indoor intake temperature is at the short or open level temperature. ④ Every hour after the drain pump has been switched from ON to OFF.	

7-7. TIMER operation





▶ Available Timer-Interlocked Operation Modes

1. AUTO START/STOP:Allows both start and shutdown to be interlocked with the timer.
2. AUTO START: Allows automatic start in response to the timer setting and shutdown to be proceeded by manually pressing the ON/OFF button.
3. AUTO STOP: Allows the start of the operation to be manually invoked by pressing the ON/OFF button and automatic shutdown based on the timer setting.

▶ Timer-interlocked operation is available only once for both start and shutdown in 24 hours.

While Ⓓ ◴ is displayed, setting and changing of time for timer-interlocked operation is disabled.

In this case, press ③ button once to turn off the Ⓓ ◴ display on the remote controller. This is referred to as TIMER OFF operation.

1) Set the current time

1-1) Press the ① button and “CLOCK” Ⓐ will be displayed.
1-2) Press the ② button once to advance the current time by one.
Press the ② button once to set back the current time by one.

- Press and hold down either button to fast-forward (-reverse) the time setting.
- The display will disappear from about 10 seconds after the setting has been entered.

2) Set the time to start the unit as follows

2-1) Press the ① button and ON ◴ Ⓑ will be displayed.
2-2) Press the ② button to set the current time.
2-3) The --:-- field Ⓒ will be displayed.
The --:-- field Ⓒ will display a range of time between 23:50 and 00:00.
2-4) Press the ③ button and ◴ Ⓓ will be displayed.

3) Set time to stop the unit as follows

3-1) Press the ① button and OFF ◴ Ⓒ will be displayed.
3-2) Press the ② button to set the current time.
3-3) Set the automatic shutdown timer in the --:-- Ⓑ display.
3-4) Press the ③ button and ◴ Ⓓ will be displayed.

4) Changing the set times

- Enter a start time/shutdown time.
- Press the ③ button and ◴ Ⓓ will be displayed.

5) Cancelling the set times

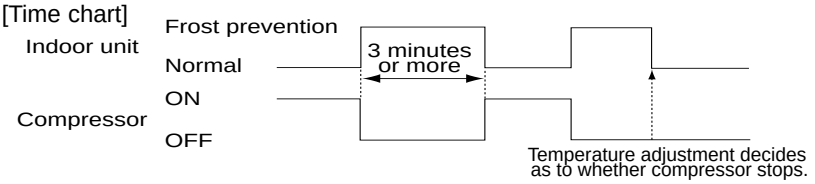
- Press the ③ button to clear the remote controller`s display.

Note:

When the air conditioner is operated or is turned off after the timer setting has finished, the unit will automatically run without interruption the next time it is operated.

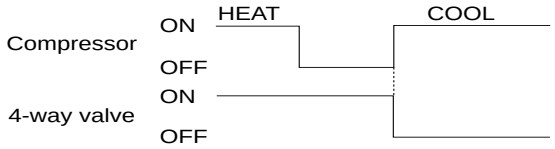
8 OUTDOOR UNIT CONTROL

8-1. COOL operation

<table>
<tr><th colspan="2">Control mode</th><th rowspan="2">Control</th><th rowspan="2">Remarks</th></tr>
<tr><th>mode</th><th>Function</th></tr>
<tr><td>Compressor</td><td>Thermostat</td><td>Thermostat starts or stops by the signal of the set temperature and room temperature from the indoor unit.
(Detecting method depends on indoor unit.)</td><td></td></tr>
<tr><td></td><td>Indoor frost prevention</td><td>[Operating condition]
When there is at least 1 indoor unit which has changed to frost prevention mode, the compressor will stop. After stop the compressor when the frost prevention mode is released, the compressor will restart.
[Time chart]
 
</td><td>The condition that prevents indoor unit from freezing up is subject to the operational condition of indoor unit.</td></tr>
<tr><td>Outdoor fan control</td><td>Desired condensing temperature</td><td>By means of outdoor Condenser/ Evaporator temperature thermistor (TH6), adjust the condensing temperature at 30-40℃. When anti-freezing control is reactivated, however, adjust the condensing temperature at 40-45℃.</td><td></td></tr>
<tr><td></td><td>Normal</td><td>Outdoor fan rotation frequency depends on the outdoor condenser temperature (TH6)
• Rotation frequency control : Pulsation control
• Rotation frequency : Output step N=0, 6~15 (Output voltage=0~230V)
• Condenser temperature range: 20˚C ~ 50˚C
• Compressor starting :When the compressor restarting, the outdoor fan is locked for 2 minutes of initial step.</td><td>Target control
Temperature 30°C~40°C</td></tr>
<tr><td></td><td>Others</td><td>①Outdoor fan stops (Output step=0) during the compressor OFF.
②When compressor started operating, fix the initial step for two minutes.
③When the SW5-1 in the outdoor controller p.c.board set to ON, the outdoor fan output is always locked to 16. (100% output)</td><td><table><tr><th>TH6 [˚C]</th><th>Fan's output step</th></tr><tr><td>TH6<0</td><td>9</td></tr><tr><td>0≦TH6<8</td><td>11</td></tr><tr><td>8≦TH6</td><td>14</td></tr></table></td></tr>
<tr><td>LEV control</td><td>Normal control</td><td>LEV opening should be controlled to become the SC level of the target at regular intervals, according to the detection temperature of thermistors installed in the heat exchanger of the condenser.
※ The target, SC level is different according to the capacity, the type of the indoor unit, and the operating state. (Normal: 4~10˚C)
※ The SC level are calculated as follows;
COOL : TH6–TH3

Unit is controlled at one-minute intervals.
Desired subcooling degree: 4-10˚C (It depends on each model and the operating condition.)
Pulse width: ±30 pulse at the maximum
Opening at upper and lower limit
<table><tr><th>Model</th><th>Upper limit</th><th>Lower limit</th><th>Model</th><th>Upper limit</th><th>Lower limit</th></tr><tr><td>P1</td><td>500</td><td>330</td><td>P3</td><td>800</td><td>330</td></tr><tr><td>P1.6</td><td>600</td><td>360</td><td>P4</td><td>1500</td><td>440</td></tr><tr><td>P2</td><td>700</td><td>240</td><td>P5</td><td>1200</td><td>540</td></tr><tr><td>P2.5</td><td>800</td><td>300</td><td>P6</td><td>1500</td><td>550</td></tr></table></td><td></td></tr>
</table>

<table>
<tr><th colspan="2">Control mode</th><th rowspan="2">Control</th><th rowspan="2">Remarks</th></tr>
<tr><th>mode</th><th>Function</th></tr>
<tr><td>LEV control</td><td>Fixed control</td><td>Under one of the following conditions, the LEV opening is fixed during the fixed time.
① When the compressor stops.
The LEV opening is determined with the unit operating state before the compressor stops and the capacity.
② When the compressor starts.
The LEV opening is determined by the operating state, the ambient temperature, and the capacity.
③ When detecting temperature-rise over.
When detecting over rise of the condensing temperature and the discharging temperature because of an increase in the load etc. during operation.
The LEV opening is different according to the operating state and the capacity.
※ Detecting the condensing temperature COOL : TH6
※ Detecting the discharging temperature COOL/HEAT : TH4

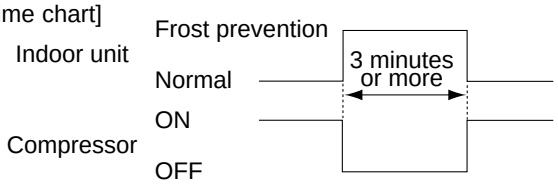
The opening is fixed for three minutes from the startup.
Opening in the startup (Normal operation)
<table><tr><th>Model</th><th>1 min. from startup</th><th>1-3 min.</th><th>Model</th><th>1 min. from startup</th><th>1-3 min.</th></tr><tr><td>P1</td><td>500</td><td>500</td><td>P3</td><td>800</td><td>600</td></tr><tr><td>P1.6</td><td>600</td><td>600</td><td>P4</td><td>800</td><td>600</td></tr><tr><td>P2</td><td>500</td><td>500</td><td>P5</td><td>1000</td><td>1000</td></tr><tr><td>P2.5</td><td>600</td><td>600</td><td>P6</td><td>1200</td><td>1200</td></tr></table></td><td></td></tr>
<tr><td rowspan="2">4-way valve</td><td>Normal operating</td><td>Always OFF during normal operation</td><td></td></tr>
<tr><td>Operation mode change</td><td>When the mode changes HEAT → COOL
 
</td><td></td></tr>
<tr><td>Bypass valve (For PUH-P5,6YGA)</td><td></td><td>Always OFF during cooling</td><td></td></tr>
</table>

8-2. DRY operation

Control mode		Control	Remarks
Mode	**Function**		
Compressor	Thermostat	The outdoor unit receives the setting temperature and the suction temperature from the indoor unit by communication and judges by the temperature difference between the setting temperature and the suction temperature . (The judgement method depends on the operation of the indoor unit .)	
	Indoor frost prevention	Not available	

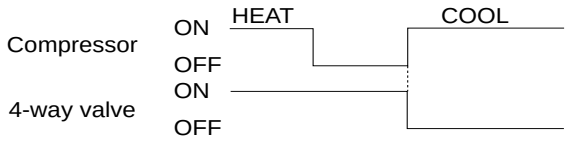
※ Other actuator control is same as the control in the cooling mode.

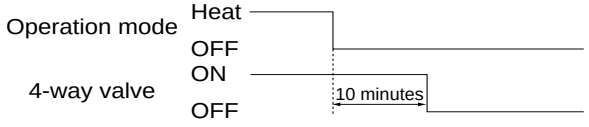
8-3. HEAT operation

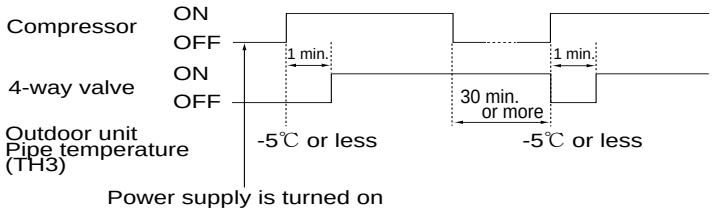
<table>
<tr><th colspan="2">Control mode</th><th rowspan="2">Control</th><th rowspan="2">Remarks</th></tr>
<tr><th>Mode</th><th>Function</th></tr>
<tr><td>Compressor</td><td>Thermostat</td><td>Thermostat starts or stops by the signal of the set temperature and room temperature from the indoor unit.
(Detecting method depends on indoor unit.)</td><td></td></tr>
<tr><td></td><td>Indoor frost prevention</td><td>[Operating condition]
When there is at least 1 indoor unit which has changed to frost prevention mode, the compressor will stop. After stop the compressor when the frost prevention mode is released, the compressor will restart.
[Time chart]
 
</td><td></td></tr>
<tr><td>Outdoor fan control</td><td>Normal</td><td>Outdoor fan rotation frequency depends on the evaporating temperature (TH3).
• Rotation frequency control : Pulsation control
• Rotation frequency : Output step N=1~15 (Output voltage=0~230V)
• Evaporating temperature range: –5 ~ 15˚C
• Compressor starting :When the compressor starting, the outdoor fan is locked for 2 minutes of initial step.</td><td>Target control
Temperature 5~10°C
<table><tr><th>Model</th><th>Step</th></tr><tr><td>P1</td><td>3</td></tr><tr><td>P1.6</td><td>3</td></tr><tr><td>P2</td><td>3</td></tr><tr><td>P2.5</td><td>3</td></tr><tr><td>P3</td><td>3</td></tr><tr><td>P4</td><td>3</td></tr><tr><td>P5</td><td>1</td></tr><tr><td>P6</td><td>1</td></tr></table></td></tr>
<tr><td></td><td>Others</td><td>①Outdoor fan stops (output step = 0) during the suspension of compressor or defrosting.
②When the SW5-1 in the outdoor controller board set to ON, the outdoor fan output is always locked to 16 (100% output).</td><td>Refer to page 75 for defrosting.
Note1: Refer to the table below for lower limit of output step.
<table><tr><th>TH3 [˚C]</th><th>Fan's output step</th></tr><tr><td>TH3<10</td><td>14</td></tr><tr><td>10≦TH3<8</td><td>9</td></tr><tr><td>18≦TH3</td><td>Lower limit</td></tr></table></td></tr>
<tr><td>LEV control</td><td>Normal control</td><td>LEV opening should be controlled to become the SC level of the target at regular intervals, according to the detection temperature of thermistors installed in the heat exchanger of the condenser.
※ The target, SC level is different according to the capacity, the type of the indoor unit, and the operating state. (Normal: 4~10˚C)
※ The SC level are calculated as follows;
HEAT : TH5–TH2
Unit is controlled at one-minute intervals.
Desired subcooling degree: 4-10˚C (It depends on each model and the operating condition.)
Pulse width: ±30 pulse at the maximum
Opening at upper and lower limit
<table><tr><th>Model</th><th>Upper limit</th><th>Lower limit</th><th>Model</th><th>Upper limit</th><th>Lower limit</th></tr><tr><td>P1</td><td>500</td><td>300</td><td>P3</td><td>800</td><td>320</td></tr><tr><td>P1.6</td><td>600</td><td>330</td><td>P4</td><td>1500</td><td>420</td></tr><tr><td>P2</td><td>1000</td><td>300</td><td>P5</td><td>1200</td><td>450</td></tr><tr><td>P2.5</td><td>800</td><td>280</td><td>P6</td><td>1500</td><td>490</td></tr></table></td><td></td></tr>
</table>

<table>
<tr><th colspan="2">Control mode</th><th rowspan="2">Control</th><th rowspan="2">Remarks</th></tr>
<tr><th>Mode</th><th>Function</th></tr>
<tr><td>LEV control</td><td>Fixed control</td><td>When becoming to be the following, the LEV opening is fixed during the fixed time.
① When the compressor stops.
The LEV opening is determined with the unit operating state before the compressor stops and the capacity.
② When the compressor starts.
The LEV opening is determined by the operating state, the temperature of the ambient air, and the capacity.
③ When detecting temperature-rise over.
When detecting over rise of the condensing temperature and the discharging temperature because of an increase in the load etc. during operation.
The LEV opening is different according to the operating state and the capacity.
※ Detecting the condensing temperature HEAT : TH5
※ Detecting the discharging temperature COOL/HEAT : TH4
④ Defrosting
When defrosting, the LEV opening is fixed. Also the opening is different according to the capacity.
※ Detecting the defrosting : TH3

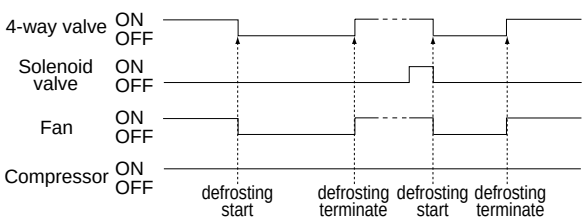
The opening is fixed for three minutes from the startup.
Opening in the startup (Normal operation)
<table><tr><th>Model</th><th>1 min. from startup</th><th>1-3 min.</th><th>Model</th><th>1 min. from startup</th><th>1-3 min.</th></tr><tr><td>P1</td><td>500</td><td>500</td><td>P3</td><td>800</td><td>600</td></tr><tr><td>P1.6</td><td>600</td><td>600</td><td>P4</td><td>800</td><td>600</td></tr><tr><td>P2</td><td>500</td><td>500</td><td>P5</td><td>1000</td><td>1000</td></tr><tr><td>P2.5</td><td>600</td><td>600</td><td>P6</td><td>1500</td><td>1500</td></tr></table></td><td></td></tr>
<tr><td>Bypass valve control
Only PUH–P5,6YGA</td><td>ON/OFF condition</td><td>ON condition
• Start up at outdoor piping temperature (TH3) ≧12˚C, after resetting or since 30 minutes has passed after the compressor OFF.
• Start up at room temperature (TH1) ≧ 22˚C.
• When the following abnormalities are detected during the heat compressor operation.
①Abnormal discharging temperature (U2)
②Abnormal high pressure (U1)
③Breaking of the compressor over current (lock)(UF)
④Breaking of the compressor over current (U6)
• When either below 1 or 2 is satisfied during the heat compressor operation.
①Indoor Cond./Eva. temperature (TH5)≧CTa+2˚C
②Discharge temperature (TH4)≧Tda+15˚C
•When restarting within 30 minutes since the heat compressor stops, the solenoid valve (SV) is ON at the compressor OFF.

OFF condition
When “Indoor condenser temperature (TH5) ≦ 54˚C” or “Outdoor discharging temperature (TH4) ≦ 105˚C” since 15 minutes has passed after the solenoid valve ON.
<table><tr><th>model</th><th>CTa [˚C]</th><th>Tda [˚C]</th></tr><tr><td>PUH–P5YGA</td><td>55</td><td>95</td></tr><tr><td>–P6YGA</td><td>55</td><td>95</td></tr></table>CTa : Condensing temperature
Tda : Discharge temperature</td><td></td></tr>
<tr><td rowspan="3">4-way valve control</td><td>Normal operating</td><td>OFF ordinary during normal operation</td><td></td></tr>
<tr><td>Operation mode change</td><td>• When the mode changes HEAT → COOL.
 

• When the mode changes HEAT → OFF.
 
</td><td></td></tr>
<tr><td>Defrosting</td><td>OFF ordinary during defrosting.</td><td></td></tr>
</table>

Control mode		Control	Remarks
Mode	Function		
4-way valve control	Start-up when outside temperature is low	It takes compressor one minute to restart its operation under one of the following circumstances: ①The power supply has been turned on (reset). ②Over 30 minutes have passed since compressor stops, and the pipe temperature of outdoor unit (TH3) is -5℃ or below. 	

8-4. Defrosting operation

Control		Operation	Remarks
Condition	Control name		
Start		Defrosting starts when either of below item is satisfied. 1.When the compressor integrating operation time fulfils defrosting time and when the present outdoor fan step is rated step (15) and the outdoor piping temperature (TH3) is –5˚C or below after 12 minutes have passed since the compressor start. 2.When the compressor integrating operation time fulfils defrosting time and when the present outdoor fan step is rated step (15) and the outdoor piping temperature (TH3) is –5˚C or below after 2 minutes have passed since the compressor start and after reading thermostat OFF/ON 3 times more by the indoor unit room or set temperature. 3.When the compressor integrating operation time is 30 minutes more and when the outdoor piping temperature (TH3) fulfils below formula, the present outdoor fan step is rated step (15) and the outdoor piping temperature (TH3) is –5˚C or below after 12 minutes have passed since the compressor start. [Formula] △Te=Te10–Te≧7°C ∴ Te10 : Coil thermistor temp. (TH3) when 10 minutes have passed since the compressor start. Te : Current coil thermistor temp. (TH3)	The indoor unit starts defrosting operation when the defrosting signal is transmitted with simultaneous defrosting operation from the outdoor unit.
Stop		Defrosting stops when either of below item is satisfied. 1.When the outdoor piping temperature (TH3) is 22˚C or more within 75 seconds since the defrosting operation starts. 2.When the outdoor piping temperature (TH3) is 13˚C or more after 75 seconds have passed since the defrosting operation starts. 3.When 15 minutes have passed since the defrosting operation starts. 4.When the outdoor unit functions and stops abnormally during defrosting.	
Actuator	Compressor	Operating except for the following 1.When the outdoor unit reads abnormality.	
	Fan	Stop ordinarily	
	4-way valve	OFF ordinarily	
	Bypass solenoid valve	OFF ordinarily except for the following. 1.U6 (When reading the [Breaking of the compressor over current]) 2.UF (When reading the [Breaking of the compressor over current] (lock) 3.U2 (Abnormal discharge temperature) 4.U1 (Abnormal high pressure)	
	Operation time chart		

Continued to the next page.

From the previous page.

<table>
<tr><th colspan="2">Control</th><th rowspan="2">Operation</th><th rowspan="2">Remarks</th></tr>
<tr><th>Condition</th><th>Control name</th></tr>
<tr><td>Prohibit defrosting</td><td></td><td>Interval to next defrosting are determined depending the defrosting time.
1.When defrosting control mode [STANDARD]
<table><tr><th>Defrosting operation time</th><th>Interval to the next defrosting</th></tr><tr><td>3 minutes or below</td><td>120 minutes</td></tr><tr><td>3 to 7 minutes</td><td>80 minutes</td></tr><tr><td>7 to 10 minutes</td><td>60 minutes</td></tr><tr><td>10 to 15 minutes</td><td>40 minutes</td></tr><tr><td>15 minutes (Maximum)</td><td>30 minutes</td></tr></table>
2.When defrosting control mode [High humidity region]
<table><tr><th>Defrosting operation time</th><th>Interval to the next defrosting</th></tr><tr><td>7 minutes or below</td><td>60 minutes</td></tr><tr><td>7 to 15 minutes</td><td>30 minutes</td></tr></table></td><td>(Note 1)
Defrosting mode is changeable by the remote controller.

(Note 2)
When not setting the remote controller, the mode is set to STANDARD.</td></tr>
<tr><td rowspan="2">Forced defrosting</td><td>Start condition</td><td>Forced defrosting starts if all of conditions ① through ③ below are met when the unit detects that switch SW1-1 has been turned from OFF to ON during operation in HEAT mode.
Conditions:
① Compressor is operating.
② Setting of self-diagnosis display switch (SW2) is "OUTDOOR LIQUID PIPING TEMPERATURE".
③ Temperature detected by outdoor piping sensor (TH3) is less than 8℃.</td><td></td></tr>
<tr><td>End condition</td><td>(Same as end condition above.)</td><td></td></tr>
</table>

8-5. AUTO operation

Control		Operation	Remarks
Condition	**Control name**		
Initial operation mode		Given in description of indoor unit operation.	
Operation mode change		Given in description of indoor unit operation.	
COOL mode		Same as for COOL operation.	
HEAT mode		Same as for HEAT operation and DEFROST operation.	

9 DIP SWITCH FUNCTION

9-1. Indoor unit

DIP switch and jumper connector functions.
Each function is controlled by the jumper connector in the controller board. Below table shows that the function setting by the jumper connector is available or not in the controller board of applicable units. Also J11~15 (SW1) and J21~24 (SW2) has Dip switch with their jumper connector.

	INDOOR CONTROLLER BOARD	
	type A	type B
Applicable units	PKH–P·GALH / PKA-P·GAL PKH–P·FALH / PKA-P·FAL PCH–P·GAH / PCA-P·GA PCA–P·HA PLH–P·KAH / PLA-P·KA PLH–P·AAH / PLA-P·AA PMH–P·BA	PSH–P·GAH / PSA-P·GA
J11~J15 (SW1) ; Unit setting	○	○
J21~J24 (SW2) ; Capacity setting	○	○

○;Changeable function
×;Not changeable function

Functions and signification of the jumper connector (Dip switch)

J11~J15 (SW1) — **Model settings**

type A

J11~J15 (SW1)					Models
J11	J12	J13	J14	J15	
○	×	×	×	×	PKH–P2.5, 3, 4FALH / PKA–P2.5, 3, 4FAL
×	○	×	×	×	PCH–P2, 2.5, 3, 4, 5, 6GAH / PCA–P2, 2.5, 3, 4, 5, 6GA
○	○	×	×	×	PLA–P1.6, 2, 2.5KA
×	×	○	×	×	PLA–P3, 4, 5, 6KA
×	○	○	×	×	PLH–P3, 4, 5, 6KAH / PCA-P3, 5HA
○	○	○	×	×	PLH–P1.6, 2, 2.5KAH
○	○	×	○	×	PKH–P1.6, 2GALH / PKA–P1.6, 2GAL
○	○	○	○	×	PLA–P3, 4, 5, 6AA
○	×	×	×	○	PLH–P3, 4, 5, 6AAH
○	○	×	×	○	PMH–P1, 1.6, 2BA, BA_1
○	×	○	×	○	PMH–P1, 1.6, $2BA_2$

type B

J11~J15 (SW1)					Models
J11	J12	J13	J14	J15	
×	×	×	×	×	PSH–P·GAH / PSA–P·GA

J21~J24 (SW2) — **Capacity settings**

J21~J24 (SW2)				Models
J21	J22	J23	J24	
○	×	×	×	P1
○	○	×	×	P1.6
○	×	○	×	P2
○	○	○	×	P2.5
○	×	×	○	P3
×	×	○	○	P4
×	○	○	○	P5
○	○	○	○	P6

Service PCB

SW2				Models
1	2	3	4	
ON	OFF	OFF	OFF	P1
ON	ON	OFF	OFF	P1.6
ON	OFF	ON	OFF	P2
ON	ON	ON	OFF	P2.5
ON	OFF	OFF	ON	P3
OFF	OFF	ON	ON	P4
OFF	ON	ON	ON	P5
ON	ON	ON	ON	P6

J41 J42 — **Pair number setting with wireless remote controller**

Control PCB setting		Wireless remote controller setting
J41	J42	
○	○	0
×	○	1
○	×	2
×	×	3 ~ 9

<Settings at time of factory shipment>
Wireless remote controller: 0
Control PCB: ○ (for both J41 and J42)
Four pair number settings are supported.
The pair number settings of the wireless remote controller and indoor control PCB (J41/J42) are given in the table on the left. ('×' in the table indicates the jumper line is disconnected.)

In above table Jumper connector: ○Short, ×Open

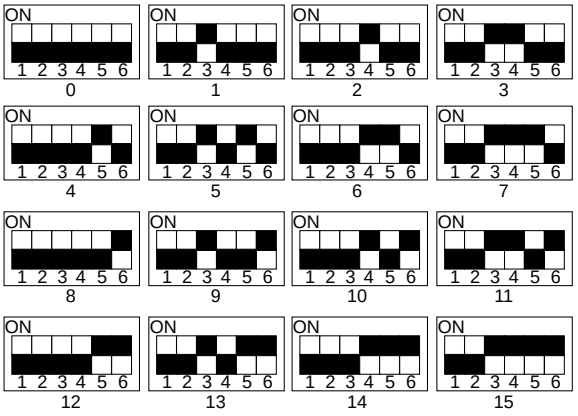
Note 1: If the settings of SW1 (model settings) or SW2 (capacity settings) on the service PCB are made incorrectly:
- •If the SW1 settings are made incorrectly, the unit will not operate, or won't be able to operate normally.
- •The SW1 (model) and SW2 (capacity) settings are used to send the indoor unit's model and capacity information to the outdoor unit. The outdoor unit uses this information to perform control, so the expected performance may not be achieved if the information is incorrect.
- •In models with indoor fan phase control, pulsation control or DC fan control, the SW2 (capacity) settings are used to control the fan air volume. If the settings are made incorrectly, the air volume may be higher or lower than expected, performance may drop, or the noise level may increase.

9-2. Outdoor unit

9-2-1. Standard control board & Service control board

PUH-P1.6, P2, P2.5, P3VGA **PUH-P1.6, P2, P2.5, P3, P4, P5, P6YGA**
PU-P1.6, P2, P2.5, P3VGA **PU-P3, P4, P5, P6YGA**

● Outdoor switch for a new freon function table

Switch		Function	Action by the switch operation		Effective timing
Signal	No.		ON	OFF	
SW1	1	Compulsory defrosting ※1	Start	Normal	Heat compressor operating
	2	Abnormal history clear	Clear	Normal	off or operating
	3 ~ 6	Refrigerant address setting			When power supply ON
SW2	1 ~ 6	Self diagnosis	Refer to the outdoor unit operation monitor function on page 82.	Refer to the outdoor unit operation monitor function on page 82.	off or operating
SW4	1	Trial run ON/OFF	ON	OFF	OFF
	2	Trial run mode setting	Heat	Cool	
SW5	1	Fan 100% fix	100% fix	Normal	off or operating
	2	Outdoor LEV opening fix ※2	Fix	Normal	off or operating
	3	No function	No function	No function	–
	4	No function	No function	No function	–

※1 Compulsory defrosting should be done as follows.
①Change to ON (coil thermistor indication) the DIP SW2-1 in the outdoor controller board.
②Change the DIP SW1-1 in the outdoor controller board OFF➔ ON (compulsory defrosting start).
According to the ① and ② operation,
- Heat mode setting • Compressor operating • The defrosting starts when the piping temperature is 8˚C and below.
- When the stated condition is satisfied, the defrosting operation will be completed.

※2 Ignore the change of LEV opening by change of subcooling, the opening is fixed on the position of DIP SW 5-2.
When air conditioner is overloaded for some reasons, LEV opening varies in accordance with overload condition.
(Normal LEV control system changes the opening regularly so that the degree of subcooling will remain constant.
Fixed opening is different between cooling operation and heating operation. Refer to page 71 to 74 for further details.)

● Jumper connector function table

Switch Signal	Switch No.	Function	Action by the switch operation ON	Action by the switch operation OFF	Effective timing
J1		Switch of single phase and 3 phase power supply	3 phase	Single phase	When power supply ON
J2		Switch of cooling only/cooling and heat pump	Cooling only	Cooling and heat pump	When power supply ON
J3		Capacity switch	○:Short ×:Open (see table below)		When power supply ON
J4					
J5					
J6					
CN31		Emergency operation	Emergency operation	Normal	When power supply ON

Model	Setting J3	J4	J5	J6
P1	×	×	×	×
P1.6	×	○	×	×
P2	○	○	×	×
P2.5	×	×	○	×
P3	×	○	○	×
P4	○	×	×	○
P5	○	○	×	○
P6	×	×	○	○

● Function of switches on M-NET board

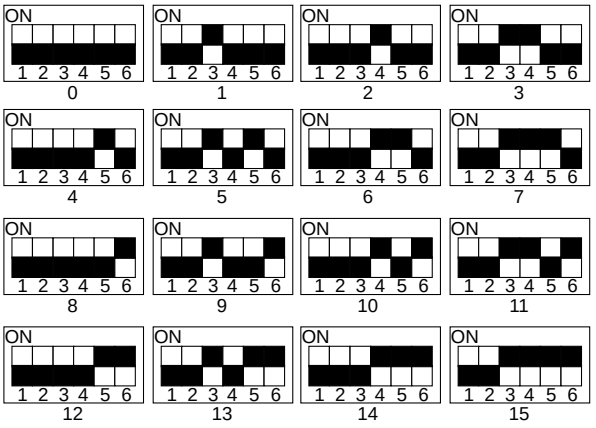
Type of Switch	Switch	No.	Function	Action by the switch operation ON	Action by the switch operation OFF	Effective timing
Dip Switch	SW1	1	Switching the display of M-NET/Communications among boards	Communication among boards (serial communication)	M-NET communication	Always
		2	No function	—	—	—
		3	No function	—	—	—
		4	No function	—	—	—
Rotary Switch	SW11 SW12	0	M-NET address No. SW11(Unit's place) SW12(Ten's place)	<Example of arrangement> (see table below)		Under suspension
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				

M-NET address No.		1	2		50
Arrangement of switches	SW11 (Unit's place)			~	
	SW12 (Ten's place)				

9-2-2. Standard control board & Service control board

PUH-P1, P1.6, P2, P2.5, P3V, P4VGAA.UK **PUH-P1.6, P2, P2.5, P3, P4, P5, P6YGAA.UK**
PU-P1.6, P2, P2.5, P3V, P4VGAA.UK **PU-P1.6, P2, P2.5, P3, P4, P5, P6YGAA.UK**
PUH-P1.6, P2, P2.5, P3VGAA **PUH-P3, P4, P5, P6YGAA**
PU-P1.6, P2, P2.5, P3VGAA **PU-P3, P4, P5, P6YGAA**

● **Outdoor switch for a new freon function table**

Switch		Function	Action by the switch operation		Effective timing
Signal	No.		ON	OFF	
SW1	1	Compulsory defrosting ※1	Start	Normal	Heat compressor operating
	2	Abnormal history clear	Clear	Normal	off or operating
	3 ~ 6	Refrigerant address setting			When power supply ON
SW4	1	Trial run ON/OFF	ON	OFF	OFF
	2	Trial run mode setting	Heat	Cool	
SW5	1	Fan 100% fix	100% fix	Normal	off or operating
	2	Outdoor LEV opening fix ※2	Fix	Normal	off or operating
	3	No function	No function	No function	–
	4	No function	No function	No function	–

※1 Compulsory defrosting should be done as follows.
①Change the DIP SW1-1 in the outdoor controller board OFF→ ON (compulsory defrosting start).
According to the ① operation,
- Heat mode setting • Compressor operating • The defrosting starts when the piping temperature is 8˚C and below.
- When the stated condition is satisfied, the defrosting operation will be completed.

※2 Ignore the change of LEV opening, which is subject to change of subcooling, and fix DIP SW 5-2 in the on position. Then LEV opening is fixed. When air conditioner is overloaded for some reasons, ignore the change of subcooling and adjust the LEV opening in accordance with overload condition.
(Normal LEV control system changes the opening regularly so that the degree of subcooling will remain constant. Fixed opening is different between cooling operation and heating operation. Refer to page 71 to 74 for further details.)

● **Jumper connector function table**

<table>
<tr><th colspan="2">Switch</th><th rowspan="2">Function</th><th colspan="2">Action by the switch operation</th><th rowspan="2">Effective timing</th></tr>
<tr><th>Signal</th><th>No.</th><th>ON</th><th>OFF</th></tr>
<tr><td colspan="2">J1</td><td>Switch of single phase and 3 phase power supply</td><td>3 phase</td><td>Single phase</td><td>When power supply ON</td></tr>
<tr><td colspan="2">J2</td><td>Switch of cooling only/cooling and heat pump</td><td>Cooling only</td><td>Cooling and heat pump</td><td>When power supply ON</td></tr>
<tr><td colspan="2">J3
J4
J5
J6</td><td>Capacity switch</td><td colspan="2">○:Short ×:Open
<table><tr><th rowspan="2">Model</th><th colspan="4">Setting</th></tr><tr><th>J3</th><th>J4</th><th>J5</th><th>J6</th></tr><tr><td>P1</td><td>×</td><td>×</td><td>×</td><td>×</td></tr><tr><td>P1.6</td><td>×</td><td>○</td><td>×</td><td>×</td></tr><tr><td>P2</td><td>○</td><td>○</td><td>×</td><td>×</td></tr><tr><td>P2.5</td><td>×</td><td>×</td><td>○</td><td>×</td></tr><tr><td>P3</td><td>×</td><td>○</td><td>○</td><td>×</td></tr><tr><td>P4</td><td>○</td><td>×</td><td>×</td><td>○</td></tr><tr><td>P5</td><td>○</td><td>○</td><td>×</td><td>○</td></tr><tr><td>P6</td><td>×</td><td>×</td><td>○</td><td>○</td></tr></table></td><td>When power supply ON</td></tr>
<tr><td colspan="2">CN31</td><td>Emergency operation</td><td>Emergency operation</td><td>Normal</td><td>When power supply ON</td></tr>
</table>

9-2-3. Optional parts
A-control Service Tool [PAC-SK52ST]

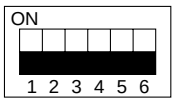
● **Function of switches**

Type of switches	Switch	No.	Function	Action by the switch operation		Effective timing
				ON	OFF	
DIP SW	**SW2**	1 2 3 4 5 6	Changing of LED display <Self-diagnosis>	Operation monitor	Operation monitor	Under operation or suspension

Note : Do not use CN33.

● **Outdoor unit operation monitor function**

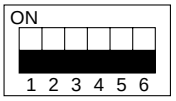
Operation indicator SW2 : Indicator change of self diagnosis

SW2 setting	Display detail	Explanation for display	Unit
			Code indication

<Digital indicator LED1 working details>

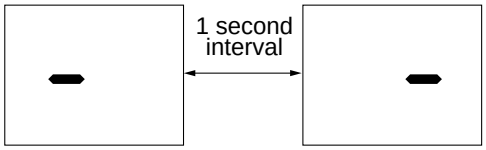
・Lighting (Normal operation) : Indicating the operation mode.
(Be sure the 1 to 6 in the SW2 are set to OFF)

SW2



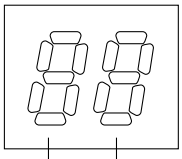
(Initial setting)

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



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

LED1



(Lighting)

The tens digit : Operation mode

Display	Operation mode
O	OFF
C	COOL
H	HEAT
d	DEFROSTING

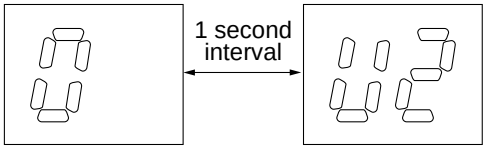
The units digit : Relay output

Display	Compressor	4-way valve	Bypass solenoid valve
0	—	—	—
1	—	—	ON
2	—	ON	—
3	—	ON	ON
4	ON	—	—
5	ON	—	ON
6	ON	ON	—
7	ON	ON	ON

②Error postponing display
(Compressor stop by the protection device working) : Display the postponement code.
Postponement code is display during the error postponing.

(3) When the display blinks (Operation stop by the protection device working) : Display the inspection code.
An error unit number and code are displayed by turns.

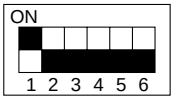
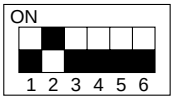
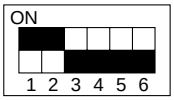
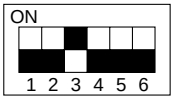
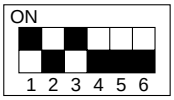
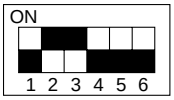
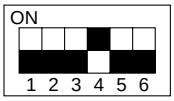
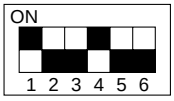
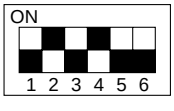
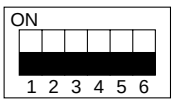
<Abnormal unit number> <Abnormal code>

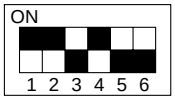
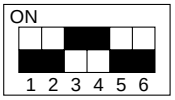
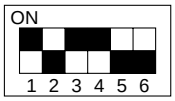
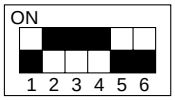
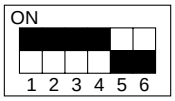
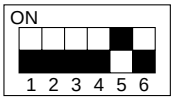
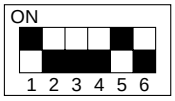


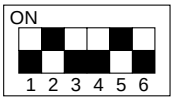
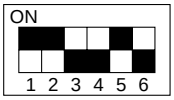
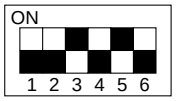
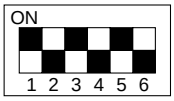
Display	Inspection unit
0	Outdoor unit
1	Indoor unit 1
2	Indoor unit 2
3	Indoor unit 3
4	Indoor unit 4

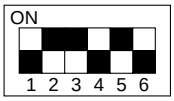
・Refer to the “9-3 (1) Error code list” for the code details.

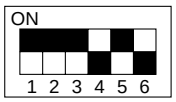
(4) When 7SEG display lights up (Protective device stops compressor operating.):
The screen displays the corresponding code when abnormality is being recorded.

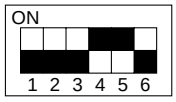
SW2 setting	Display detail	Explanation for display	Unit
	Piping temperature. (TH3) – 40~90	– 40~90 (When the coil thermistor is 0℃ or below, "–" and temperature displays by turns.) (Example) When -10℃ One second interval – □⟷10	℃
	Discharge temperature. (TH4) 0~216	0~216 (When the discharge thermistor is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 150℃ One second interval 1□⟷ 50	℃
	FAN output step. 0~16	0~16	Step
	The number of ON / OFF times. 0~9999	0~9999 (When the number of times is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 42500 times One second interval 4□⟷ 25	100 times
	Compressor integrating operation times. 0~9999	0~9999 (When the time is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 2450 hours One second interval 2□⟷ 45	10 hours
	Compressor operating current. 0~40	0~40	A
	LEV opening. 0~440	Output pulse is displayed by one fifth of actual value. (Example) When the display shows 300 300 × 5 = 1500 pulse 1500 pulse is the actual output pulse	Pulse
	New error postponement code. New outdoor unit error postponement display.	No postponement code is "00".	Code display
	Operation mode on error occurring.	Operation mode on error stop. SW2 setting is displayed at below code. (SW2) 	Code display

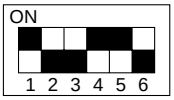
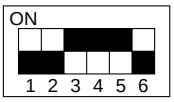
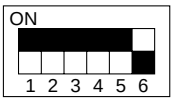
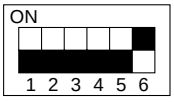
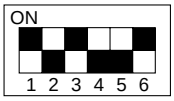
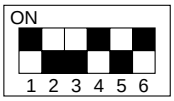
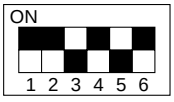
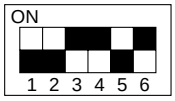
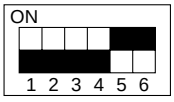
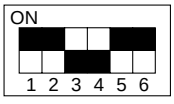
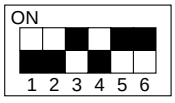
SW2 setting	Display detail	Explanation for display	Unit
	Piping temperature (TH3) on error occurring – 40~90	– 40~90 (When the coil thermistor is 0℃ and less, "–" and temperature are displayed by turns) (Example) When –15℃ One second interval – □⟷15	℃
	Compressor temperature (TH4) or discharge temperature (TH4) on error occurring. 0~216	0~216 (When the temperature is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 130℃ One second interval 1□⟷ 30	℃
	Compressor operating current on error occurring. 0~40	0~40	A
	Error code history (1) (latest) Alternate display of abnormal unit number and code.	When no error history, " 0 " and "– –" and displayed by turns.	Code display
	Error code history (2) Alternate display of error unit number and code.	When no error history, " 0 " and "– –" and displayed by turns.	Code display
	Thermistor ON time . 0~999	0~999 (When the time is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 245 minutes One second interval 2□⟷ 45	Minute
	Trial run elapsed time. 0~120	0~120 (When the time is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 105 minutes One second interval 1□⟷ 05	Minute
	The number of connected indoor unit. 0~4	0~4	Unit

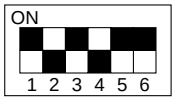
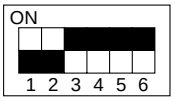
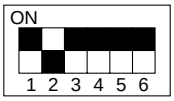
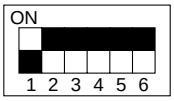
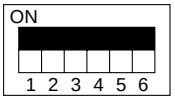
<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr><td> 
</td><td>Capacity setting display</td><td>Display as an outdoor capacity code
<table>
<tr><th>Capacity</th><th>Code</th></tr>
<tr><td>P1</td><td>6</td></tr>
<tr><td>P1.6</td><td>9</td></tr>
<tr><td>P2</td><td>10</td></tr>
<tr><td>P2.5</td><td>11</td></tr>
<tr><td>P3</td><td>14</td></tr>
<tr><td>P4</td><td>20</td></tr>
<tr><td>P5</td><td>25</td></tr>
<tr><td>P6</td><td>28</td></tr>
</table></td><td>Code display</td></tr>
<tr><td> 
</td><td>Outdoor unit setting advice</td><td>● The tens digit (Total display for applied setting)
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>H·P / Cooling only</td><td>0 : H·P 1 : Cooling only</td></tr>
<tr><td>Single phase / Three phase</td><td>0 : Single phase 2 : Three phase</td></tr>
</table>
● The units digit
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>Defrosting switch</td><td>0 : Normal 1 : High humidity region</td></tr>
</table>
(Example) When switching cooing and heat pump, three phase, defrosting (normal)
“20”</td><td>Code display</td></tr>
<tr><td> 
</td><td>Indoor unit piping temperature / LIQUID (TH2)
Indoor 1
– 39~88</td><td>– 39~88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
<tr><td> 
</td><td>Indoor unit piping temperature / LIQUID (TH2)
Indoor 2
– 39~88</td><td>– 39~88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)

When no indoor unit, “00” is displayed.</td><td>℃</td></tr>
<tr><td> 
</td><td>Indoor unit piping temperature / LIQUID (TH2)
Indoor 3
– 39~88</td><td>– 39~88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)

When no indoor unit, “00” is displayed.</td><td>℃</td></tr>
<tr><td> 
</td><td>Indoor unit piping temperature / LIQUID (TH2)
Indoor 4
– 39~88</td><td>– 39~88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns)

When no indoor unit, “00” is displayed.</td><td>℃</td></tr>
<tr><td> 
</td><td>Indoor room temperature (TH1)
8~39</td><td>8~39</td><td>℃</td></tr>
</table>

SW2 setting	Display detail	Explanation for display	Unit
	Indoor setting temperature 17~30	17~30	℃
	Outdoor piping temperature/Cond./Eva. (TH6) – 39~88	– 39~88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns)	℃
	Discharge super heat. SHd 0~255 [Cool = TH4-TH6 Heat = TH4-TH5]	0~255 (When the temperature is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) 115 ℃ One second interval. 1□⟷15	℃
	Sub cool. SC 0~130 [Cool = TH6-TH3 Heat = TH5-TH2]	0~130 (When the temperature is 100 or more, the hundreds digit and tens, units digit are displayed by turns.)	℃
	Communication demanded capacity. 0~255 [When air conditioners are connected to M-NET and under central control.] [When no communication demanded setting, "100" is displayed.]	0~255 (When the capacity is 100 or more, the hundreds digit and tens, units digit are displayed by turns) (Example) When 100 One second interval. 1□⟷00	%
	Error thermistor display	3: Outdoor liquid piping thermistor (TH3) 6: Outdoor condenser thermistor (TH6) [When no error thermistor, "–" is displayed.]	Code
	Fan step on error occurring. 0~16	0~16	Step
	LEV opening on error occurring 0~440 Display by scaled 1/5 to actual opening	0~440 (When the pulse is 100 or more, the hundreds digit and tens, units digit are displayed by turns) (Example) When the display shows 300. 300 × 5 = 1500 pulse	Pulse
	Outdoor piping temperature/Cond./Eva. on error occurring. (TH6) – 39~88	– 39~88 (When the thermistor is 0℃ and less, "–" and temperature are displayed by turns.) (Example) When –15℃ One second interval –□⟷15	℃
	Discharge super heat on error occurring. SHd 0~255 [Cool = TH4-TH6 Heat = TH4-TH5]	0~255 (When the temperature is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 150℃ One second interval 1□⟷50	℃
	Sub cool on error occurring. SC 0~130 [Cool = TH6-TH3 Heat = TH5-TH2]	0~130 (When the temperature is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 115℃ One second interval 1□⟷15	℃

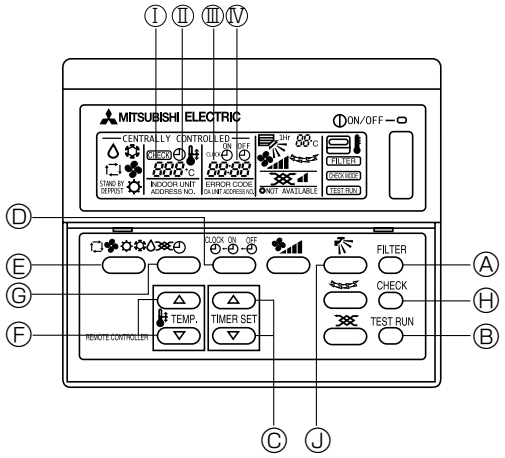
SW2 setting	Display detail	Explanation for display	Unit
	Thermo-on time to error stop. 0~999	0~999 (When the time is 100 or more, the hundreds digit and tens, units digit are displayed by turns.) (Example) When 415 minutes One second interval 4 □⟷15	Minute
	Indoor unit piping temperature / cond. / Eva. (TH5) indoor 1 –39~88	–39~88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	Indoor unit piping temperature / cond. / Eva. (TH5) indoor 2 –39~88	–39~88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) When no indoor unit, "00" is displayed.	°C
	Indoor unit piping temperature / cond. / Eva. (TH5) indoor 3 –39~88	–39~88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) When no indoor unit, "00" is displayed.	°C
	Indoor unit piping temperature / cond. / Eva. (TH5) indoor 4 –39~88	–39~88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) When no indoor unit, "00" is displayed.	°C

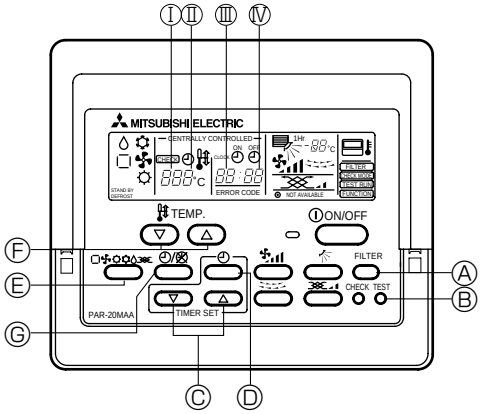
● **For A-control Service Tool [PAC-SK52ST]**

[Operation for A-control Service Tool]

1. By operating the dip switch SW2 on A-control Service Tool, the digital display of light-emitting diode (LED1) indicates the operation mode and types of inspection with a tow-digit number and symbol.
2. After the inspection, A-control Service Tool shall be removed out of outdoor unit control board.

10 FUNCTION SETTING





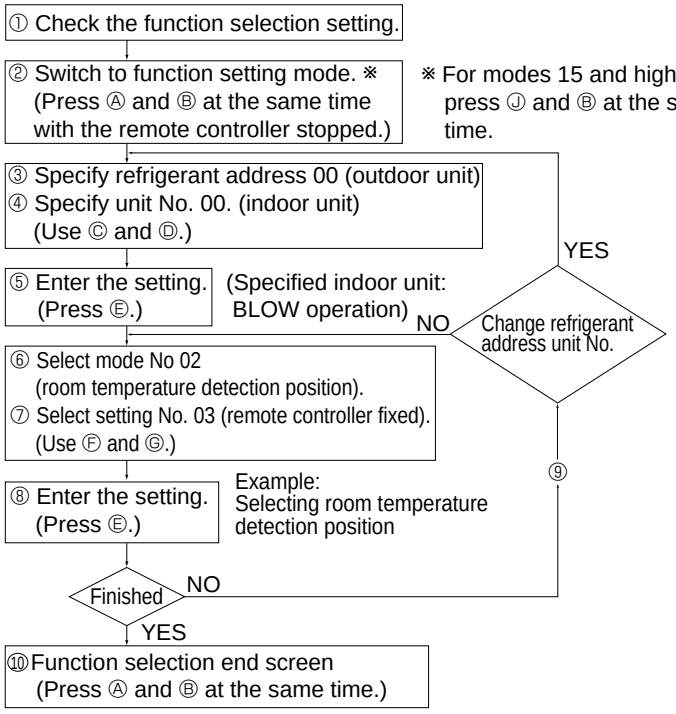
Wired type

Ⅰ Mode number
Ⅱ Setting number
Ⅲ Refrigerant address
Ⅳ Unit number

Changing the power voltage setting

- Be sure to change the power voltage setting depending on the voltage used.

Selecting functions using the wired remote controller



[Operating instructions] (entering settings with a wired remote controller)

① **Go to the function setting mode.**

Switch OFF the remote controller.

Press the Ⓐ FILTER and Ⓑ TEST RUN buttons simultaneously and hold them for at least 2 seconds. FUNCTION will start to flash. The refrigerant address display will start to flash momentarily (see diagram ①).

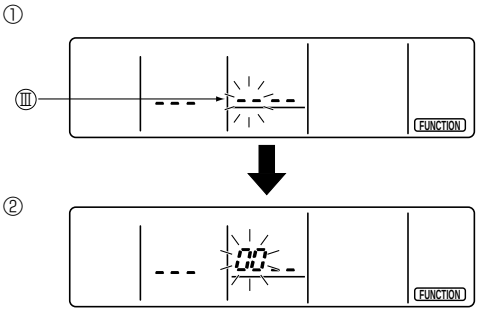
② **Setting the refrigerant address**

Use the Ⓒ (▲) (▼) (TIMER SET) button to set the refrigerant address (Ⅲ) to 00 (see diagram ②). Press (▲) to increase the value or (▼) to decrease it.

* 00 is the typical setting. When operating in a group configuration, use the correlating refrigerant address (see the technical manual for details on setting the refrigerant address for a group). The refrigerant addresses must be set in order when performing the following operation.

If the unit stops two seconds after the FUNCTION display starts to flash or [88] starts to flash in the room temperature display, a transmission problem may have occurred. Check to see if there is some source of transmission interference (noise) nearby.

If you make a mistake during any point of this procedure, you can quit the function setting mode by pressing ⑧ once and then return to step ①.

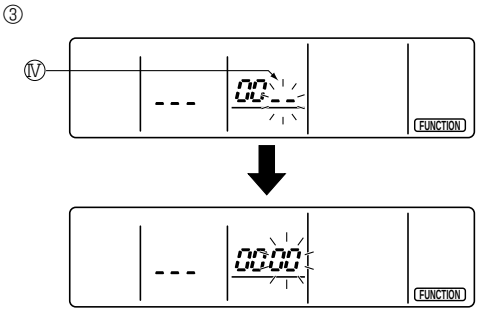


③ **Setting the unit number**

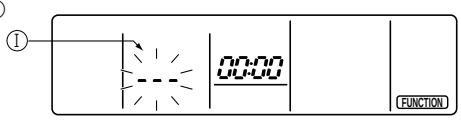
Press Ⓓ (CLOCK ON OFF) and [--] will start to flash in the unit number (Ⅳ) display (see diagram ③).

Use the Ⓒ (▲) (▼) (TIMER SET) button to set the unit number to 00 (see diagram ③). Press (▲) to increase the value or (▼) to decrease it.

Unit number 00 = the function setting selection for the entire refrigerant system.



④



④ **Setting the refrigerant address/unit number**

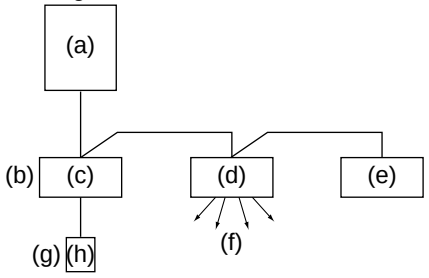
Press the Ⓔ MODE button to designate the refrigerant address/unit number. [--] will flash in the mode number (Ⅰ) display momentarily (see diagram ④).

* If [88] appears in the room temperature section, the selected refrigerant address does not exist in the system. Also, if [F] appears in the unit number display section, the selected unit number does not exist. Enter the correct refrigerant address and unit number at steps ② and ③.

Fan draft operation will start when settings are confirmed using the Ⓔ MODE button. You can also use this operation to find out what functions are assigned to which unit numbers and the locations of those indoor units. Note that the fan draft operation will start for all of the indoor units that have been assigned refrigerant addresses when 00 or AL is the assigned unit number.

* If an indoor unit other than those designated with refrigerant addresses emits a fan draft when a different refrigerant grouping is being used, the set refrigerant address have probably overlapped. Reassign the refrigerant addresses at the DIP switch of the outdoor unit.

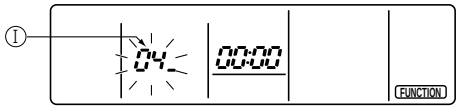
Ⅲ 00 refrigerant address



Example) When the refrigerant address is set to 00 and the unit number is 02.

(a) Outdoor unit
(b) Indoor unit
(c) Unit number 01
(d) Unit number 02
(e) Unit number 03
(f) Fan draft
(g) Designate operation
(h) Remote controller

⑤

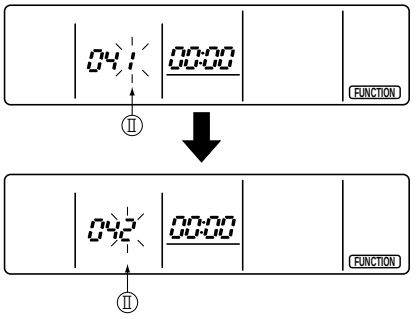


⑤ **Selecting the mode number**

Press the Ⓕ ▲ ▼ (TEMP) buttons to set the mode number (Ⅰ) to 04 (see diagram ⑤). Press ▲ to increase the value or ▼ to decrease it.

Mode number 04 ⓘ=power voltage switching mode

⑥

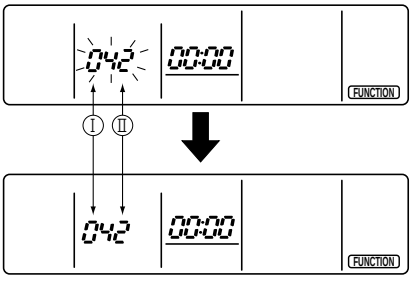


⑥ **Selecting the setting number**

1 will start to flash as the currently specified setting number (Ⅱ) when the ◴ button Ⓖ is pressed (see diagram ⑥). Use the ▲ ▼ (TEMP) buttons to specify 2 as the setting number (see diagram ⑥). Press ▲ to increase the value or ▼ to decrease it.

(Ⅱ) Setting number 1 = 240V
(Ⅱ) Setting number 2 = 220V/230V

⑦

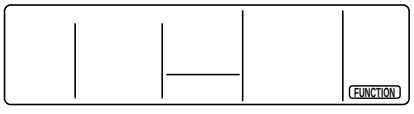


⑦ **Designating the mode and setting numbers**

The mode and setting numbers (Ⅰ) (Ⅱ) will start to flash when the MODE button Ⓔ is pressed and the designation operation will begin (see diagram ⑦). The numbers are set when the flashing settings stay lit (see diagram ⑦).

* If [---] appears in the room temperature display as the mode/setting number, or if a flashing [88] display appears, a transmission problem may have occurred. Check to see if there is some source of transmission interference (noise) nearby.

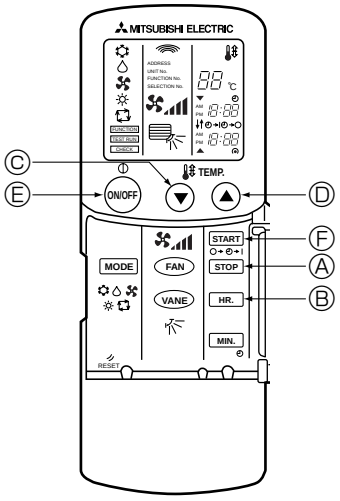
⑧



⑧ **Complete function selection**

Press the FILTER Ⓐ and TEST RUN Ⓑ buttons simultaneously for at least two seconds. The function selection screen will disappear momentarily and air conditioner OFF display will appear. (See diagram ⑧)

* Do not use the remote controller for 30 seconds after completing the function selection.



Wireless remote controller type

Flow of function selection procedure

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

① Check the function selection setting.

② Switch to function selection mode. (Press the TIMER OFF button in troubleshooting mode.)

Troubleshooting mode is the mode entered when you set the adjustment switch on the back of the wireless remote controller operation area to "ADJUST".

③ Specify unit No. "01" (since the function applies to unit 01). (Set address "01" while still in troubleshooting mode, then press the HOUR button.)
Note: You can't specify the refrigerant address.

④ Select mode No. "24" (function that raises set temperature by 4 degrees during HEAT operation). (Set address "24" while still in troubleshooting mode, then press the HOUR button.)

⑤ Select setting No. "02" (OFF). (Set address "02" while still in troubleshooting mode, then press the HOUR button.)

Finished? NO → ⑥

YES

⑦ End function selection mode. (End troubleshooting mode.)

Note: When you switch to function selection mode on the wireless remote controller, the unit ends function selection mode automatically if nothing is input for 10 minutes or longer.

[Operating instructions] (entering settings with a wireless remote controller)

Changing the power voltage setting

Be sure to change the power voltage setting depending on the voltage used.

Diagram 1

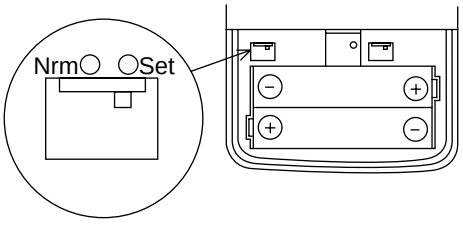
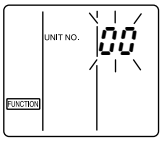
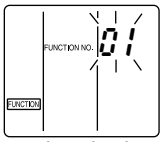


Diagram 2



Unit number setting

Diagram 3



Mode selection

① **Go to the set mode**
Set the Nrm/Set switch of the remote controller to Set. (see diagram 1)
FUNCTION , TEST RUN and CHECK will start to flash.

② **Go to the function select mode**
Direct the wireless remote controller toward the sensor of the indoor unit and press the STOP button Ⓐ.
➜ FUNCTION will become lit and "00" will start to flash in the unit number display (see diagram 2). When the signal from the remote controller is received by the sensor, a single "beep" can be heard and the sensor-operation indicator will flash.
* If the signal was not received by the sensor or an error occurred during transmission, you will not hear a beep or a "double beep" may be heard. Press the ON/OFF button Ⓔ and repeat the procedure.

③ **Setting the unit number**
Make sure that "00" is flashing in the unit number display. Direct the wireless remote controller toward the sensor of the indoor unit and press the HR button Ⓑ. (The display changes at each press: 00 ➜ 01 ➜ 02 ➜ 03 ➜ 04 ➜ AL)
➜ "01" will flash in the mode display (see diagram 3).
When the signal from the remote controller is received by the sensor, a single "beep" can be heard, the sensor-operation indicator will flash and the draft operation will start.
* If a unit number that cannot be recognized by the unit is entered, three beeps (3 deeps of 0.4 seconds duration) will be heard. Press the START button Ⓕ and reenter the unit number setting.
* If the signal was not received by the sensor or an error occurred during transmission, you will not hear a beep or a "double beep" may be heard. Press the START button Ⓕ and reenter the unit number setting.

•When controlling each unit (unit 01 to 04) individually ➜ Select "01" to "04."
•When controlling all the units (unit 01 to 04) at once ➜ Select "AL" (all).

Diagram 4

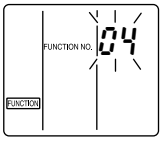
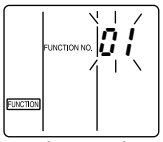
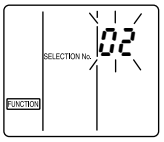


Diagram 5



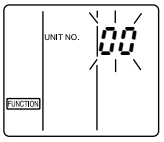
Setting number

Diagram 6



Setting number

Diagram 7



④ **Selecting a mode**

Enter 04 to change the power voltage setting using the ▲ Ⓒ and ▼ Ⓓ buttons (see diagram 4). Direct the wireless remote controller toward the sensor of the indoor unit and press the HR button Ⓑ.

➜ "01" will flash in the setting number display (see diagram 5).
The sensor-operation indicator will flash and beeps will sound to indicate the current setting number relative to the selected mode number.
Current setting number : 1 = 1 beep (one second)
2 = 2 beeps (one second each)
3 = 3 beeps (one second each)

* If a mode number that cannot be recognized by the unit is entered, three beeps (3 deeps of 0.4 seconds duration) will be heard. Press the START button Ⓕ and reenter the mode number setting.

* If the signal was not received by the sensor or an error occurred during transmission, you will not hear a beep or a "double beep" may be heard. Press the START button Ⓕ and start over from the procedure for entering the unit number.

⑤ **Selecting the setting number**

Refer to (Ⅱ) and change the setting of power supply and voltage with ▼ Ⓒ button and ▲ Ⓓ button .
(see diagram 6). Direct the wireless remote controller toward the sensor of the indoor unit and press the HR button Ⓑ.
(Ⅱ) setting number "01" = 240V
(Ⅱ) setting number "02" = 220V/230V

➜ "00" will flash in the setting number display (see diagram 7).
The sensor-operation indicator will flash and beeps will sound to indicate the setting number that you entered.
Setting number : 1 = 2 beeps (0.4-seconds each)
2 = 2 beeps (0.4-seconds each, repeated twice)
(When the setting number is 02.)
3 = 2 beeps (0.4-seconds each, repeated three times)

* If a setting number that cannot be recognized by the unit is entered, three beeps (3 beeps of 0.4 seconds duration) will be heard (unit will beep only). Press the START button Ⓕ and start over from the procedure for entering the unit number.

* If the signal was not received by the sensor or an error occurred during transmission, you will not hear a beep or a "double beep" may be heard. Press the START button Ⓕ and start over from the procedure for entering the unit number.

⑥ **To select multiple functions continuously**

Repeat steps ③, ④ and ⑤ to change multiple function settings continuously.

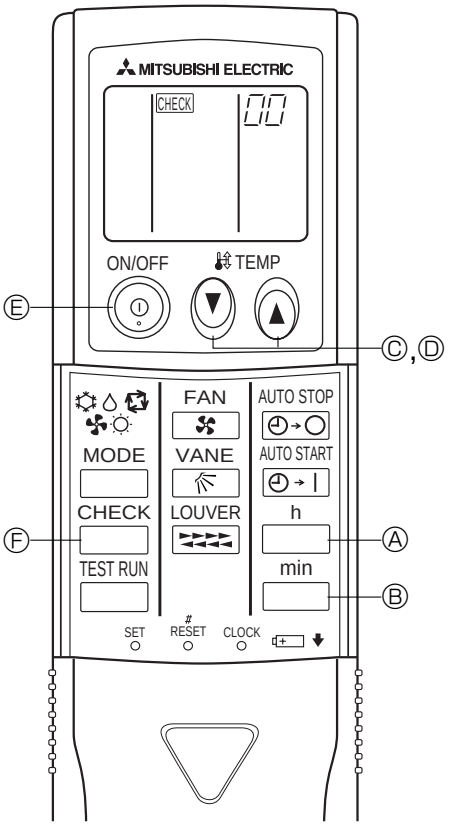
⑦ **Complete function selection**

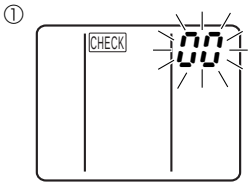
Direct the wireless remote controller toward the sensor of the indoor unit and press the ON/OFF button Ⓔ.

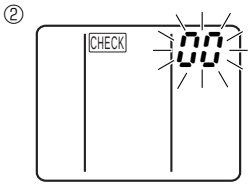
➜ FUNCTION , TEST RUN and CHECK will start to flash.
Set the Nrm/Set switch of the remote controller to Nrm.

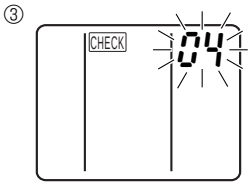
* Do not use the wireless remote controller for 30 seconds after completing the function selection (the unit will not operate).

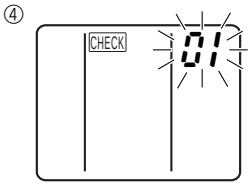
Note:
Whenever changes are made to the function settings after construction or maintenance, be sure to record the added functions with an "○", in the "Check" column provided on the chart.







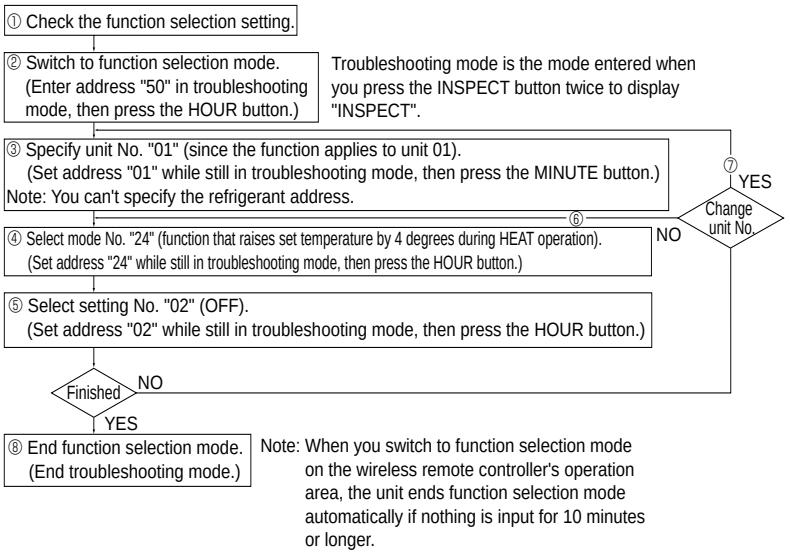




Wireless remote controller type

Flow of function selection procedure

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



[Operating instructions] (entering settings with a wireless remote controller)

Changing the power voltage setting

Be sure change the power voltage setting depending on the voltage used.

① **Go to the function select mode**

Press the CHECK button Ⓕ twice continuously.

(Start this operation from the status of remote controller display turned off.)

CHECK is lighted and “00” blinks.

Press The temp ▼ button Ⓒ once to set “50”. Direct the wireless remote controller toward the receiver of the indoor unit and press the h button Ⓐ.

② **Setting the unit number**

Press the temp ▼▲ button Ⓒ and Ⓓ to set the unit number “00”. Direct the wireless remote controller toward the receiver of the indoor unit and press the min button Ⓑ. (The display changes at each press: 01 to 50)

•When controlling each unit (unit 01 to 04) individually ➜ Select "01" to "04."
•When controlling all the units (unit 01 to 04) at once ➜ Select "07."

③ **Selecting a mode**

Enter 04 to change the power voltage setting using the ▼ Ⓒ and ▲ Ⓓ buttons.

Direct the wireless remote controller toward the receiver of the indoor unit and press the h button Ⓐ.

Current setting number: 1 = 1 beep (one second)
2 = 2 beeps (one second each)
3 = 3 beeps (one second each)

④ **Selecting the setting number**

Use the ▼ Ⓒ and ▲ Ⓓ buttons to change the power voltage setting to 01 (240V).

Direct the wireless remote controller toward the sensor of the indoor unit and press the h button Ⓐ.

⑤ **To select multiple functions continuously**
Repeat steps ③ and ④ to change multiple function settings continuously.

⑥ **Complete function selection**
Direct the wireless remote controller toward the sensor of the indoor unit and press the ((⊙)) button Ⓔ.

Note:
Whenever changes are made to the function settings after construction or maintenance, be sure to record the added functions with an " ◯", in the "Check" column provided on the chart.

Things to remember when entering function selections:
The basic procedure for entering function selections is the same as described for switching between power voltages. However, there are some differences at step ⑨ for selecting the unit number, step ⑮ for selecting the mode number and step ⑱ for selecting the unit number. The following Tables 2 and 3 list the various function settings, mode numbers and setting numbers. Table 2 details the functions of the entire refrigerant system while Table 3 shows the functions that can be set for the indoor unit.
In case of setting the mode number from 15 to 28 with the wired remote controller, shift to the function selecting mode by pressing ⑫ (Air direction) button and ⑧ (TEST RUN) button at the same time for 2 seconds or more.
(The function selecting mode will be released in the same way as the one of setting it.)

Other function selections
Now that you know how to change the power voltage setting, there are several other settings that can be changed as well. The following Table lists the various settings that can be changed through the remote controller and the default settings of the various units.

Table 1

Mode No.	Function	Settings	PLH-P·KAH PLA-P·KA	PCH-P·GAH PCA-P·GA	PKH-P·GALH PKA-P·GAL	PKH-P·FAH PKA-P·FAL	PSH-P·GAH PSA-P·GA	PLH-P·AAH PLA-P·AA	PMH-P·BA	PLH-P·KAH.UK PLA-P·KA.UK	PEHD-P·EAH PEAD-P·EA	PCA-P·HA
01	Power failure automatic recovery	Not available	○	○	○	○	○	○	○	○	○	○
		Available										
02	Indoor temperature detecting	Indoor unit operating average	○	○	○	○	○	○	○	○	○	○
		Set by indoor unit's remote controller										
		Remote controller's internal sensor			—	—	—					
03	LOSSNAY connectivity	Not supported	○	○	○	○	○	○	○	○	○	○
		Supported (indoor unit in not equipped with outdoor-air intake)										
		Supported (indoor unit in equipped with outdoor-air intake)		—	—	—	—					
04	Power voltage	240V										
		220V, 230V	○	○	○	○	○	○	○	○	○	○
15	Frost prevention temperature	2℃	○	○	○	○	○	○	○	○	○	
		3℃										
16	Humidifier control	When the compressor operates, the humidifier also operates.	○	○	○	○	○	○	○	○	○	
		When the fan operates, the humidifier also operates.										
17	Change of defrosting control	Standard	○	○	○	○	○	○	○	○	○	
		High humidity region										
19	Thermo differential setting	Normal	○	○	○	○	○	○	○	○	○	
		5℃										
		10℃										
07	Filter sign	100Hr			○	○			○			
		2500Hr	○	○			○	○		○		
		No filter sign indicator									○	
08	Fan speed	Quiet (standard)			—	—	—	○	—		—	—
		Standard (High ceiling ① } PLH-P·AAH/PLA-P·AA type)	○	○	—	—	—		—	○	—	—
		High ceiling (High ceiling ② } PLH-P·AAH/PLA-P·AA type)			—	—	—		—		—	—
09	No. of air outlets	4 directions	○	—	—	—	—	○	—	○	—	—
		3 directions		—	—	—	—		—		—	—
		2 directions	—	—	—	—	—		—	—	—	—
10	Installed options (high-performance filter)	Not supported	○	○	—	—	—	○	○	○	—	—
		Supported			—	—	—				—	—
11	Up/down vane setting	No vanes			—	—	—		—		—	—
		Equipped with vanes (No.1 set)	○	○	—	—	—	○	—	○	—	—
		Equipped with vanes (No.2 set)			—	—	—		—		—	—
12	Energy saving air flow (Heating mode)	Disabled	○	○	—	—	—	○	○	○	—	—
		Enabled			—	—	—				—	—
13	Humidifier (Direct Add-on type)	Not supported	—	—	—	—	—	○	—	—	—	—
		supported	—	—	—	—	—		—	—	—	—
23	Swing	Not available					—				—	—
		Available	○	○	○	○	—	○	○	○	—	—
24	Set temperature in heating mode 4deg-up	Available	○	○	○	○		○	○	○	○	○
		Not available					○					
25	Fan speed when the heating thermostat is OFF.	Extra low	○	○	○	○	○	○	○	○		○
		Low									○	
		Setting fan speed										
27	Fan speed when the cooling thermostat is OFF.	Setting fan speed	○	○	○	○	○	○	○	○	○	○
		Stop										
28	Detection of abnormality	Available	○	○	○	○	○	○	○	○	○	○
		Not available										

Table 2. Itemised functions of the entire refrigerant system (select unit number 00)

Function	Settings	Mode No.	Setting No.	Check	Remarks
Power failure automatic recovery	Not available	01	1		
	Available		2		Approx. 4-minute wait-period after power is restored.
Indoor temperature detecting	Indoor unit operating average	02	1		
	Set by indoor unit's remote controller		2		
	Remote controller's internal sensor		3		
LOSSNAY connectivity	Not supported	03	1		
	Supported (indoor unit in not equipped with outdoor-air intake)		2		
	Supported (indoor unit in equipped with outdoor-air intake)		3		
Power voltage	240V	04	1		
	220V, 230V		2		
Frost prevention temperature	2℃	15	1		
	3℃		2		
Humidifier control	When the compressor operates, the humidifier also operates.	16	1		
	When the fan operates, the humidifier also operates.		2		
Change of defrosting control	Standard	17	1		
	High humidity region		2		
Thermo differential setting	Normal	19	1		Only for PU(H)-P•GAA
	5℃		2		
	10℃		3		

Table 3. Itemised functions of the indoor unit (select unit numbers 01 to 03 or AL [Wired remote controller] / 07 Wireless remote controller])

Function	Settings	Mode No.	Setting No.	Check	Remarks
Filter sign	100Hr	07	1		
	2500Hr		2		
	No filter sign indicator		3		
Fan speed	Quiet / standard	08	1		
	Standard / High ceiling ① (PL(H)(A)-P·AA type)		2		
	High ceiling / High ceiling ②		3		
No. of air outlets	4 directions	09	1		
	3 directions		2		
	2 directions		3		
Installed options (high-performance filter)	Not supported	10	1		
	Supported		2		
Horizontal vane setting	No vanes	11	1		
	Equipped with vane (No.1 set)		2		Refer to ※1.
	Equipped with vane (No.2 set)		3		Refer to ※2.
Energy saving air flow (Heating mode)	Disabled	12	1		
	Enabled		2		
Humidifier (Direct Add-on type)	Not supported	13	1		
	supported		2		
Swing	Not available	23	1		
	Available		2		
Set temperature in heating mode 4deg-up	Available	24	1		
	Not available		2		
Fan speed when the heating thermostat is OFF	Extra low	25	1		
	Low		2		
	Setting fan speed		3		
Fan speed when the cooling thermostat is OFF	Setting fan speed	27	1		
	Stop		2		
Detection of abnormality (P8) of the pipe temperature	Available	28	1		
	Not available		2		

③ Setting the unit numbers
Set “00” as the unit number when setting functions from Table 2.
When setting functions from Table 3:
- When setting functions for an indoor unit in an independent system, set the unit number to 01.
- When setting functions for a simultaneous-Twin Triple indoor unit system, assign unit numbers from 01 to 03 each indoor unit.
- When setting the same functions for an entire simultaneous Twin Triple-indoor unit system, assign “AL” as the unit number.

⑤ Selecting the mode number
Selecting from Table 2 and Table 3.

⑥ Selecting the setting number
Selecting from Table 2 and Table 3.

※1 Horizontal vane First setting: The angle of the vane is set to standard.
※2 Horizontal vane Second setting: The angle of the vane is finely changed as a measure against smudging.

Supplementary information

1) Energy-saving warm airflow control

Start timing: Starts when thermo is switched from ON to OFF after HEAT mode and the hot adjust process have finished.

End timing: Ends when any of the following conditions is met:

(1) The unit is switched to any mode other than HEAT.
(2) The unit enters DEFROST operation.
(3) Intake temperature ! Set temperature
(4) More than 5 minutes after the start of energy-saving warm airflow fan control
(5) The unit is switched to hot adjust.

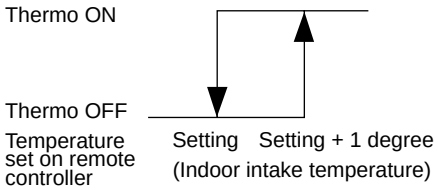
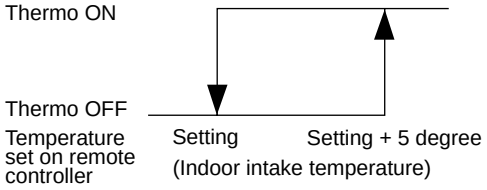
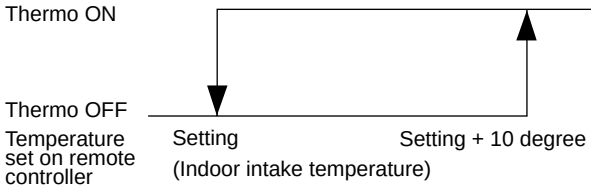
•Energy-saving warm airflow control keeps the vane in the downward position and maintains the fan speed when thermo is turned OFF.

2) Thermo differential setting

Overview: Enables the thermo differential feature to be switched by remote controller function selection during COOL operation. Settings are normal (1 degree), 5 degrees or 10 degrees.

Purpose: When the unit is installed to air-condition equipment items or for similar applications where the COOL operation is used year-round, the compressor is frequently switched ON and OFF in winter when the air conditioning load is low. This frequent switching can shorten the compressor service life.
The thermo differential feature is used to reduce the number of times the compressor is switched ON and OFF, to prevent its service life from being shortened.

Changes: "COOL thermo differential switching" has been added to function selection (mode: 19).

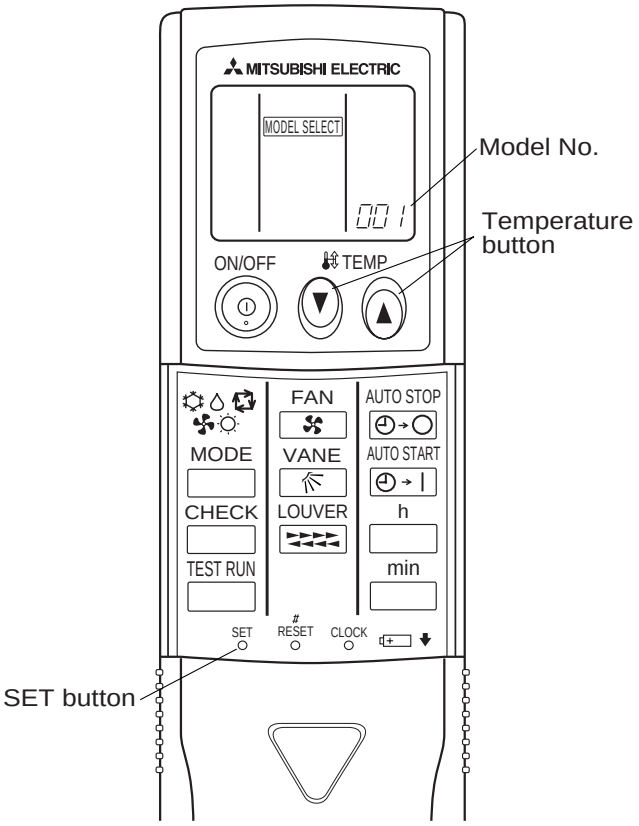
<table>
<tr><th>Mode</th><th>Setting</th><th>Status change diagram</th><th>Example</th></tr>
<tr><td rowspan="3">19</td><td>Normal thermo
(mode: 01)</td><td> 
</td><td>※ When remote controller setting = 20℃
<table><tr><th></th><th>Intake temperature</th></tr><tr><td>Thermo ON</td><td>21℃</td></tr><tr><td>Thermo OFF</td><td>20℃</td></tr></table></td></tr>
<tr><td>5 degree thermo
(mode: 02)</td><td> 
</td><td>※ When remote controller setting = 20℃
<table><tr><th></th><th>Intake temperature</th></tr><tr><td>Thermo ON</td><td>25℃</td></tr><tr><td>Thermo OFF</td><td>20℃</td></tr></table></td></tr>
<tr><td>10 degree thermo
(mode: 03)</td><td> 
</td><td>※ When remote controller setting = 20℃
<table><tr><th></th><th>Intake temperature</th></tr><tr><td>Thermo ON</td><td>30℃</td></tr><tr><td>Thermo OFF</td><td>20℃</td></tr></table></td></tr>
</table>

Applicable mode: COOL THERMO only. HEAT THERMO settings can't be changed.

Other: Setting at time of factory shipment is "NORMAL THERMO" (mode: 01).

Setting model No.

•By setting the wireless remote controller model No., you can change the functions that the remote controller provides. Change the model No. as needed.



Procedure

1. Press the SET button using a pointed implement. "MODEL SELECT" flashes and the currently set model No. appears (steadily-lit).
2. Press the temperature ▼▲ buttons to select the model No. to set.
3. Press the SET button using a pointed implement. "MODEL SELECT" and the set model No. appear (steadily-lit) for 3 seconds, then disappear.

•When setting a model No., make sure it is the correct model No. for the unit's functions. If an incorrect model No. is set, the unit's operation will not correspond with the remote controller's display.

Type	Model No.	Model
Heat pump	001	PLH–P·KAH / PLA-P·KA
		PLH–P·AAH / PLA-P·AA
		PCH–P·GAH / PCA-P·GA
		PKH–P·GALH / PKA-P·GAL
	003	PKH–P·FALH / PKA-P·FAL
Cooling only	033	PLA-P·KA
		PLA-P·AA
		PCA-P·GA
		PKA-P·GAL
	035	PKA-P·FAL

List of function for all the models [Wireless remote controller]

Model No.		001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043
1.Fan speed	① Speed 4	○				○				○				○				○				○				○				○				○				○				○		
	② Speed 3		○				○				○				○				○				○				○				○				○				○				○	
	③ Speed 2			○				○				○				○				○				○				○				○				○				○				○
	④ Speed 1				○				○				○				○				○				○				○				○				○				○			
2.Vertical vane	① Louver [None]	○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○
	② Louver [Equipped]					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○			
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]	○	○	○	○	○	○	○	○																									○	○	○	○	○	○	○	○			
	② Vane [Equipped]/ Swing function [None]									○	○	○	○	○	○	○	○																									○	○	○
	③ Vane [None]																	○	○	○	○	○	○	○	○																			
	④ No definition (Vane [None])																									○	○	○	○	○	○	○	○											
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○											
	② Cool/ Dry/ Fan																																	○	○	○	○	○	○	○	○	○	○	○
	③ Cool/ Dry/ Automatic/ Heat																																											
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat																																											
	⑤ Cool/ Fan																																											
	⑥ Cool/ Automatic/ Fan/ Heat																																											
	⑦ Cool/ Fan/ Heat																																											
	⑧ Cool/ Dry/ Fan/ Heat																																											

		044	045	046	047	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086
1.Fan speed	① Speed 4		○				○				○				○				○				○				○				○				○				○				○	
	② Speed 3			○				○				○				○				○				○				○				○				○				○				○
	③ Speed 2				○				○				○				○				○				○				○				○				○				○		
	④ Speed 1	○				○				○				○				○				○				○				○				○				○				○		
2.Vertical vane	① Louver [None]	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○		
	② Louver [Equipped]		○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]																						○	○	○	○	○	○	○	○														
	② Vane [Equipped]/ Swing function [None]	○	○	○	○	○																									○	○	○	○	○	○	○	○						
	③ Vane [None]						○	○	○	○	○	○	○	○																											○	○	○	○	○
	④ No definition (Vane [None])														○	○	○	○	○	○	○	○																							
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat																																											
	② Cool/ Dry/ Fan	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																						
	③ Cool/ Dry/ Automatic/ Heat																						○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat																																											
	⑤ Cool/ Fan																																											
	⑥ Cool/ Automatic/ Fan/ Heat																																											
	⑦ Cool/ Fan/ Heat																																											
	⑧ Cool/ Dry/ Fan/ Heat																																											

List of function for all the models

Model No.		087	088	089	090	091	092	093	094	095	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129
1.Fan speed	① Speed 4			○				○				○				○				○				○				○				○				○				○				○
	② Speed 3				○				○				○				○				○				○				○				○				○				○		
	③ Speed 2	○				○				○				○				○				○				○				○				○				○						
	④ Speed 1		○				○				○				○				○				○				○				○				○				○				
2.Vertical vane	① Louver [None]			○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○
	② Louver [Equipped]	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○	
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]											○	○	○	○	○	○	○	○																									○
	② Vane [Equipped]/ Swing function [None]																			○	○	○	○	○	○	○	○																	
	③ Vane [None]	○	○																									○	○	○	○	○	○	○	○									
	④ No definition (Vane [None])			○	○	○	○	○	○	○	○																									○	○	○	○	○	○	○	○	
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat																																											
	② Cool/ Dry/ Fan																																											
	③ Cool/ Dry/ Automatic/ Heat	○	○	○	○	○	○	○	○	○	○																																	
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	⑤ Cool/ Fan																																											○
	⑥ Cool/ Automatic/ Fan/ Heat																																											
	⑦ Cool/ Fan/ Heat																																										
	⑧ Cool/ Dry/ Fan/ Heat																																										

		130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172
1.Fan speed	① Speed 4				○				○				○				○				○				○				○				○				○				○			
	② Speed 3	○				○				○				○				○				○				○				○				○				○				○		
	③ Speed 2		○				○				○				○				○				○				○				○				○				○				
	④ Speed 1			○				○				○				○				○				○				○				○				○				○				○
2.Vertical vane	① Louver [None]	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○
	② Louver [Equipped]				○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○				
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]	○	○	○	○	○	○	○																									○	○	○	○	○	○	○	○				
	② Vane [Equipped]/ Swing function [None]								○	○	○	○	○	○	○	○																									○	○	○	○
	③ Vane [None]																○	○	○	○	○	○	○	○																					
	④ No definition (Vane [None])																								○	○	○	○	○	○	○	○													
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat																																											
	② Cool/ Dry/ Fan																																											
	③ Cool/ Dry/ Automatic/ Heat																																												
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat																																											
	⑤ Cool/ Fan	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○												
	⑥ Cool/ Automatic/ Fan/ Heat																																○	○	○	○	○	○	○	○	○	○	○	○
	⑦ Cool/ Fan/ Heat																																											
	⑧ Cool/ Dry/ Fan/ Heat																																											

List of function for all the models

Model No.		173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
1.Fan speed	① Speed 4	○				○				○				○				○				○				○				○				○				○				○		
	② Speed 3		○				○				○				○				○				○				○				○				○				○				○	
	③ Speed 2			○				○				○				○				○				○				○				○				○				○				○
	④ Speed 1				○				○				○				○				○				○				○				○				○				○		
2.Vertical vane	① Louver [None]					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○			
	② Louver [Equipped]	○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]																					○	○	○	○	○	○	○	○															
	② Vane [Equipped]/ Swing function [None]	○	○	○	○																									○	○	○	○	○	○	○	○							
	③ Vane [None]					○	○	○	○	○	○	○	○																									○	○	○	○	○	○	○
	④ No definition (Vane [None])													○	○	○	○	○	○	○	○																							
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat																																										
	② Cool/ Dry/ Fan																																										
	③ Cool/ Dry/ Automatic/ Heat																																										
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat																																										
	⑤ Cool/ Fan																																										
	⑥ Cool/ Automatic/ Fan/ Heat	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																							
	⑦ Cool/ Fan/ Heat																					○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	⑧ Cool/ Dry/ Fan/ Heat																																										

		216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256
1.Fan speed	① Speed 4		○				○				○				○				○				○				○				○				○				○			
	② Speed 3			○				○				○				○				○				○				○				○				○				○		
	③ Speed 2				○				○				○				○				○				○				○				○				○				○	
	④ Speed 1	○				○				○				○				○				○				○				○				○				○				○
2.Vertical vane	① Louver [None]		○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○			
	② Louver [Equipped]	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○					○	○	○	○
3.Horizontal vane	① Vane [Equipped]/ Swing function [Equipped]										○	○	○	○	○	○	○	○																								
	② Vane [Equipped]/ Swing function [None]																		○	○	○	○	○	○	○	○																	
	③ Vane [None]	○																									○	○	○	○	○	○	○	○									
	④ No definition (Vane [None])		○	○	○	○	○	○	○	○																									○	○	○	○	○	○	○	○
4.Operation mode	① Cool/ Dry/ Automatic/ Fan/ Heat																																									
	② Cool/ Dry/ Fan																																									
	③ Cool/ Dry/ Automatic/ Heat																																									
	④ Cool/ Dry/ Automatic/ Fan/ Burner-used heat/ Heat																																									
	⑤ Cool/ Fan																																									
	⑥ Cool/ Automatic/ Fan/ Heat																																									
	⑦ Cool/ Fan/ Heat	○	○	○	○	○	○	○	○	○																																
	⑧ Cool/ Dry/ Fan/ Heat										○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

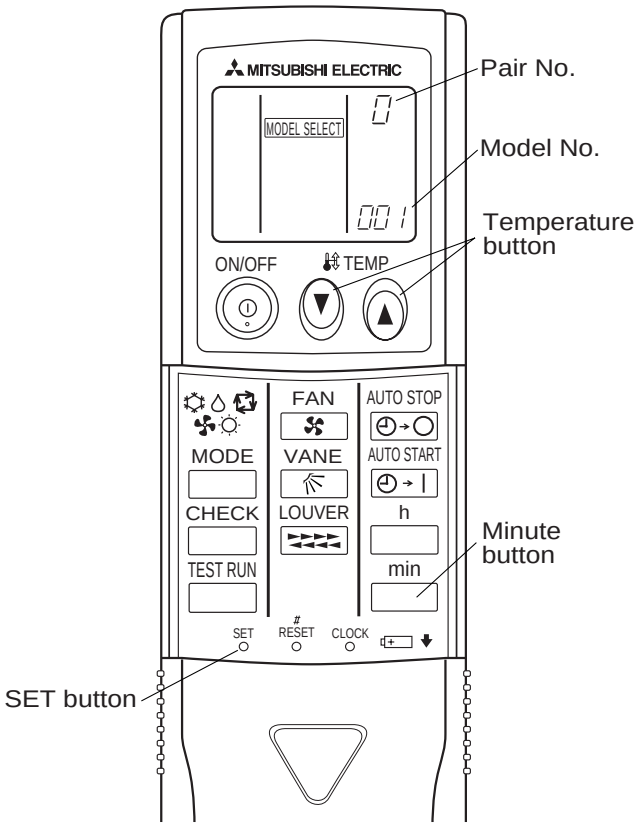
Wireless remote controller pair number: Setting operation

1. Press the SET button (using a pointed implement).
   Check that the remote controller's display has stopped before continuing.
   MODEL SELECT flashes, and the model No. (3 digits) appears (steadily-lit).

2. Press the MINUTE button twice.
   The pair number appears flashing.

3. Press the temperature ▼▲ buttons to select the pair number to set.

4. Press the SET button (using a pointed implement).
   The set pair number is displayed (steadily-lit) for 3 seconds, then disappears.



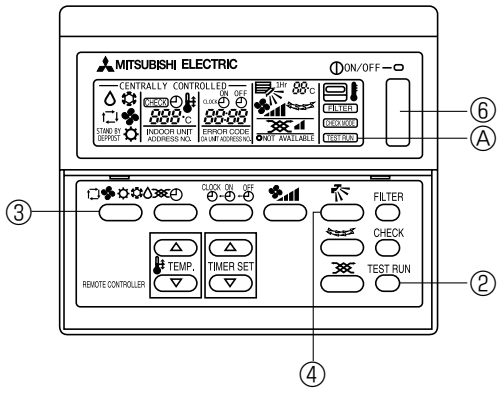
11 TEST RUN & EMERGENCY OPERATION

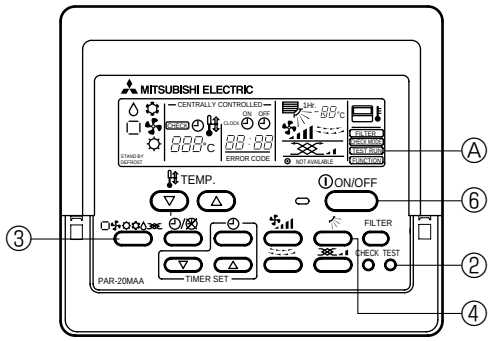
11-1. Before test run

- ▶ **After installation of indoor and outdoor units, and piping and electric wiring work, re-check that the unit is free from leaks of refrigerant, loosened connections, and incorrect polarity.**

- ▶ **Measure and impedance between the power supply terminal block on the outdoor unit and the ground with a 500V Merger and check that it is equal to or greater than 1.0MΩ.**
  For the heater integrated units, make the similar measurement on the heater power supply terminal block (L, N, ⏚).
  (*) Never apply any voltage to the both terminal blocks for the indoor and outdoor unit connection (S1, S2, S3) and the remote controller (1,2).

- ▶ **For specific models requiring changing of settings for higher ceilings or selection of power supply ON/OFF capability, make proper changes referring to the description for Selection of Functions through Remote Controller.**





11-2. Test run procedures

(1) Indoor unit

Wired type

Operating procedures

① **Turn on the main power supply.**
While the room temperature display on the remote controller reads “H0”, the remote controller is disabled. Turn off the “Ho” display before using the remote controller.

② **Press “TEST RUN” button twice.**
Ⓐ the ‘TEST RUN’ indicator should light up.

③ **Press button.**
Cool in/drying mode: Cool air should start to blow.
Heating mode: Warm air should start to blow (after a while).

④ **Press button.**
Check for correct motion of auto-vanes.

⑤ **Check the outdoor unit fan for correct running.**
The outdoor unit features automatic capacity control to provide optimum fan speeds. The fan keeps running at a low speed to meet the current outside air condition unless it exceeds its available maximum power. Then, in actuality, the fan may stop or run in the reverse direction depending on the outside air, which does not mean malfunction.

⑥ **Press the “ON/OFF” button to reset the test run in progress.**
- The test run will be automatically shut down after two hours in response to the AUTO STOP setting of two hours on the timer.
- During the test run, the room temperature display shows the indoor unit tubing temperatures.

- In the case of the test run, the OFF timer will activate, and the test run will automatically stop after two hours.
- The room temperature display section shows the pipe temperature for indoor units during the test run.
- Check that all the indoor units are running properly for simultaneous twin and triple operation.
  Malfunctions may not be displayed even if the wiring is incorrect.

(*1)
After turning ON the power supply, the system will go into start up mode and “ H0” will be blinked on the operation lamp of the remote controller (green) and the display section of the room temperature .
As to INDOOR BOARD LED , LED1 and LED2 will be lit up (In case the address is 0.) or turned off (In case the address is not 0.) and LED3 will be blinked.
As to OUTDOOR BOARD LED , LED1(green) and LED2(red) will be lit up.(After the startup mode of the system will be finished ,LED2(red) will be turned off.)
In case OUTDOOR BOARD LED is the digital display, [—] and [—] will be displayed alternately every second.

- If one of the above operations does not function correctly, the following causes should be considered, and if applicable, dealt with. (The following symptoms have been determined under test run mode. Note that “start up” in the chart means the *1 display above.)

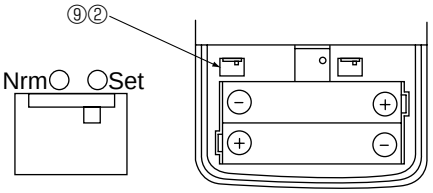
Symptoms		Cause
Remote Controller Display	**OUTDOOR BOARD LED Display** In case of digital display, < > is displayed.	
Remote controller is displaying "H0", and operation is not possible.	After "startup" is displayed, only green is lit up. < 00 >	• After power is turned ON, system startup lasts for about 2 mins., and "H0" is displayed (correct operation).
After power is turned ON, "H0" is displayed for 3 mins., then error code is displayed.	After "startup" is displayed, the green(once) and red(once) are blinked alternately. <F1,F2>	• Outdoor unit`s safeguard installation connector is open. • Negative phase and open phase of outdoor unit`s power terminal board (Single phase: L,N⏚/triple phase: L1,L2,L3⏚)
	After "startup" is displayed, the green(once) and red(twice) are blinked alternately. <F3,F5,F9>	• Incorrect connection of outdoor terminal board (Single phase: L,N ⏚/triple phase: L1,L2,L3 ⏚grounding and S1,S2,S3)
Power is turned ON, and "EE" or "EF" are displayed after "H0" is displayed.	After "startup" is displayed, only green is lit up. < 00,EE>	• The refrigerant system of outdoor unit is different from that of indoor unit.
Display messages do not appear even when remote controller operation switch is turned ON (operation lamp does not light up).	After "startup" is displayed, the green(twice) and red(once) are blinked althernately. <EA,Eb>	• Wiring for the indoor and outdoor unit is not connected correctly. (Polarity is wrong for S1,S2,S3) • Remote controller transmission wire short
	After "startup" is displayed, only green is lit up. < 00 >	•There is no outdoor unit for address 0 (address is something other than 0). • Remote controller transmission wire burnout
Operation display appears but soon disappears even when remote controller operations are executed.	After "startup" is displayed, only green is lit up. < 00 >	• After cancellation of function selection, operation is not possible for about 30 secs. (correct operation).

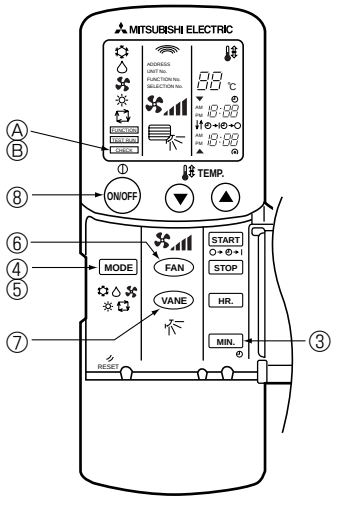
* Press the remote controller`s “CHECK” button twice consecutively to be able to run a self diagnosis. See the chart below for content of error code displays.

LCD	Nonconformity Content	LCD	Nonconformity Content
P1	Abnormality of room temperature thermistor (TH1).	E0~E5	Abnormality of the signal transmission between remote controller and indoor unit.
P2	Abnormality of pipe temperature thermistor/Liquid (TH2)		
P4	Abnormality of drain sensor (DS)	E6~EF	Abnormality of the signal transmission between indoor unit and outdoor unit.
P5	Malfunction of drain-up machine		
P6	Freezing/overheating protection is working	U0~UL	Abnormality in outdoor unit.
P8	Abnormality of pipe temperature	F1~F9	Abnormality in outdoor unit.
P9	Abnormality of pipe temperatuer thermistor/Cond./Eva. (TH5)	----	No trouble generated in the past.
		FFFF	No corresponding unit.

See the chart below for details of the LED displays (LED 1,2,3) on the indoor substrate.

LED 1 (microcomputer power supply)	Displays the ON/OFF of power for control. Check that this is lit during normal use.
LED 2 (remote controller feed)	Displays the ON/OFF of feed to wired remote controller. Is only lit for indoor unit linked to outdoor unit with address "00".
LED 3 (indoor and outdoor signals)	Displays signal between indoor and outdoor units. Check that this is flashing during normal use.





Wireless remote controller type

Operating procedures

① **Turn on the main power to the unit.**

② **Set the Nrm/Set selector switch (on the back of the controller) to “Set”.**

Ⓐ The [FUNCTION] , [TEST RUN] and [CHECK] begin to blink.

③ **Press the [MIN.] button.**

Ⓑ [TEST RUN] and current operation mode are displayed.

④ **Press the [MODE] (☼⌂☘✲✪) button to activate COOL☼ mode, then check whether cool air is blown out from the unit.**

⑤ **Press the [MODE] (☼⌂☘✲✪) button to activate HEAT☼ mode, then check whether warm air is blown out from the unit.**

⑥ **Press the [FAN] button and check whether strong air is blown out from the unit.**

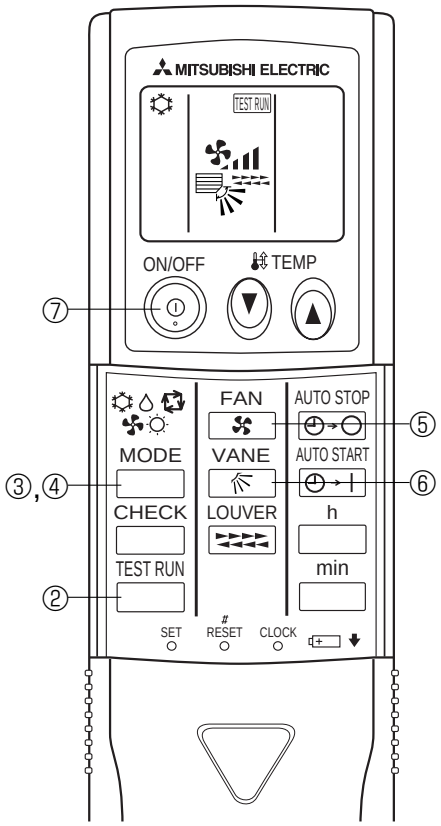
⑦ **Press the [VANE] button and check whether the auto vane operates properly.**

⑧ **Press the ON/OFF button to stop the trial run.**

⑨ **After trial run is complete, set the Nrm/Set selector switch to “Nrm”.**

Note:

- **Point the remote controller toward the inside unit’s receiver while following steps ③ though ⑧.**
- **It is not possible to run the unit in BLOW, DRY or AUTO mode.**



Test run [for wireless remote controller]

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

① Turn on the main power to the unit.

② Press the TEST RUN button twice continuously.
(Start this operation from the status of remote controller display turned off.)
A TEST RUN and current operation mode are displayed.

③ Press the MODE (☼♢✤☼⊏) button to activate COOL ☼ mode, then check whether cool air is blown out from the unit.

④ Press the MODE (☼♢✤☼⊏) button to activate HEAT ☼ mode, then check whether warm air is blown out from the unit.

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

⑥ Press the VANE button and check whether the auto vane operates properly.

⑦ Press the ON/OFF button to stop the test run.

Note:

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

(2) Outdoor Unit

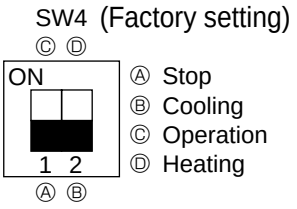
1) Check Items

- After installation of indoor and outdoor units, and tubing and electric wiring work, check that the unit is free from leaks of refrigerant, loosened connections, and incorrect polarity.
- Check that there is no negative phase and open phase. (The F1 message for negative phase and the F2 message for open phase will flash at digital indicator LED 1 on the outdoor substrate. If this happens, rewire correctly.)
- Measure the impedance between power terminals (Single phase: L,N,⏚/ triple phase: L1,L2,L3,⏚) and the ground with a 500V Merger and check that it is 1.0MΩ or more. Do not operate the equipment if measurement is less than 1.0mΩ. *Never conduct this operation on the outdoor connection wiring terminals (S1,S2,S3) as this causes damage.
- When there is no error at the outdoor unit.
  (If there is an error at the outdoor unit, it can be evaluated at LED 1 [digital display] of the outdoor substrate.)
- The stop valves are open both the liquid and gas sides.
  After checking the above, execute the test run in accordance with the following.

2) Test run start and finish

- Operation from the indoor unit
  Execute the test run using the installation manual for the indoor unit.
- Operation from the outdoor unit.
  Execute settings for test run start, finish and operation mode (cooling, heating) using the DIP switch SW 4 on the outdoor substrate.

① Set the operation mode (cooling, heating) using SW4-2.
② Turn ON SW 4-1, The operation mode for SW 4-2 will be adhered to, and the test run will commence.
③ Turn OFF SW 4-1 to finish the test run.



- There may be a faint knocking noise emitted from the proximity of the fan during the test run. This is torque fluctuation occurring due to control of fan revolutions. There is no problem with the product.

Note:
The SW 4-2 operation mode cannot be changed during the test run. (To change run mode, stop the equipment with SW 4-1, change the operation mode, then restart test run with SW 4-1.)

11-3. Emergency Operation

(1) Indoor unit

1. When the wired remote controller or indoor unit micro computer troubles if there is not any other wrong, emergency operation starts as the indoor control board switch (SWE) is set to ON.
   During the emergency operation the indoor unit is as follows;
   (1) Indoor fan high speed operation (2) Drain pump. (only provided model)
   ※ When the remote controller cannot be used for the wireless remote controller, emergency operation is available by operating the emergency operation switch (SW1, SW2 in the wireless remote controller receiving board) in the indoor unit.

2. When emergency operating for COOL or HEAT, setting of the switch (SWE) in the indoor controller board and outdoor unit emergency operation are necessary.

3. Check items and notices as the emergency operation
   (1) Emergency operation cannot be used as follows;
   - When the outdoor unit is something wrong.
   - When the indoor fan is something wrong.
   - When drain over flow protected operation is detected during self-diagnosis. (optional drain up mach.)

   (2) Emergency operation will be serial operation by the power supply ON/OFF.
   ON/OFF or temperature, etc. adjustment is not operated by the remote controller.
   (3) Do not operate for a long time as cold air is blown when the outdoor unit starts defrosting operation during heat emergency operation.
   (4) Cool emergency operation must be within 10 hours at most. It may cause heat exchanger frosting in the indoor unit.
   (5) After completing the emergency operation, return the switch setting, etc. in former state.
   (6) As for PL-P·AA Type or PC, PK Type series, since vane does not work at emergency operation position the vane manually and slowly.

(2) Outdoor unit

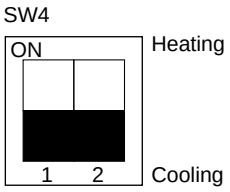
1. When the outdoor unit becomes under mentioned inspection display. Also when the wired remote controller or micro computer in the indoor unit is broken. If there is not any wrong section, short-circuited connector (CN31) in the outdoor controller board is possible to emergency operation.

● Trouble to which emergency operation can be set

Display	Inspections details	
U4	Piping thermistor (TH3) or condenser thermistor (TH6) open/short	
E8	Transmission between indoor and outdoor unit	Receiving trouble (outdoor unit)
E9	Transmission between indoor and outdoor unit	Transmission trouble (outdoor unit)
E0~E7	Transmission trouble except for outdoor unit	

2. Check items and notices as the emergency operation
   (1) Be sure that there is no trouble in the outdoor unit any more besides above mentioned.
   (When there is trouble besides above mentioned, emergency operation is not available.)
   (2) When the emergency operation, their switch (SWE) setting in the indoor controller board is necessary.
   (3) Emergency operation will be serial operation by the power supply ON/OFF.
   ON/OFF or temperature, etc. adjustment is not operated by the remote controller.
   (4) Do not operate for a long time as cold air is blown from the indoor unit, when the outdoor unit starts defrosting operation during heating emergency operation.
   (5) Cool emergency operation must be within 10 hours at most. It may cause heat exchanger frosting in the indoor unit.
   (6) After completing the emergency operation, return the switch setting, etc. in former state.

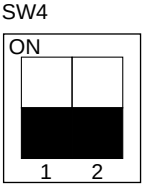
3. How to operate the emergency operation
   (1) Turn off the main power supply.
   (2) Turn on the emergency switch (SWE) in the indoor controller board.
   (3) Short-circuit the CN31 (emergency operation connector) in the outdoor controller board.
   (4) Set the operation mode (COOL or HEAT) with the SW4-2 in the outdoor controller board.
   (SW4-1 cannot be used.)



   (5) Turn on the main power supply.
   (6) The emergency operation starts and be sure of blinking the operation mode display.

4. Emergency operation details
   (1) Operate with the operation mode which has set (COOL or HEAT) by the SW4-2.
   (2) In the fan operation conditions, the fan is always operated by 100 percent.
   (3) The operation mode display blinks at intervals of 1 second.

5. How to release the emergency operation
   (1) Turn off the main power supply.
   (2) Turn off the emergency switch (SWE) in the indoor controller board.
   (3) Open the CN31 (emergency operation connector) in the outdoor controller board.
   (4) Set the SW4-2 on the outdoor controller board as in the right.



(3) Unit operation during emergency operation

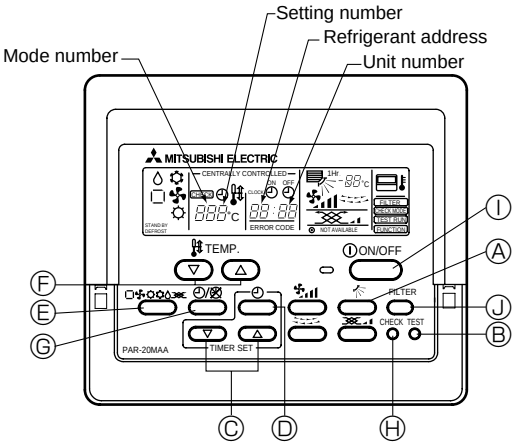
Parts name	Operation
Compressor	Always ON
Four way valve	Changeable with SW 4-2
Outdoor fan motor	Max. speed
LEV	Full opening
Indoor fan motor	High

12 SELF-DIAGNOSIS

12-1. Malfunction-diagnosis method by remote controller

12-1-1. Error history of unit

(1) Wired remote controller



<In case of trouble during operation>

If there is a trouble on air conditioner, both indoor unit and outdoor unit will stop and digital display shows what was wrong.

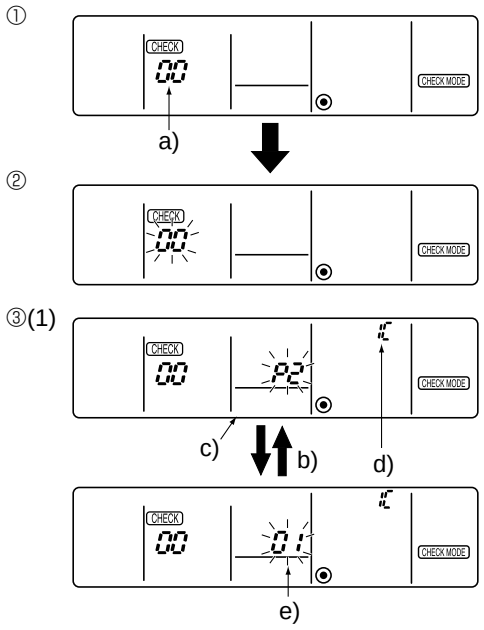
① "CHECK" and refrigerant address are displayed at set temperature display, check code and unit number are displayed at clock display alternately.
(If outdoor unit is malfunctioning, unit number is 00.)

② The refrigerant address of unit that first made trouble (that received check code) and check code are displayed, if group control system of plural refrigerant is set by one remote controller.

③ Press the "ON/OFF" button to cancel check code.
[Remote controller can not cancel check code at the case of distant operation of distant-handy combined operation and the case of central control by controller of MELANS.
Cancel distant operation or central control to cancel check code.]

<Malfunction-diagnosis method at maintenance service>

Digital control has memory function that menorizes latest check code even if it is cancelled by remote controller or power is shut off.
Indoor unit fan stops during malfunction-diagnosis process on maintenance service.

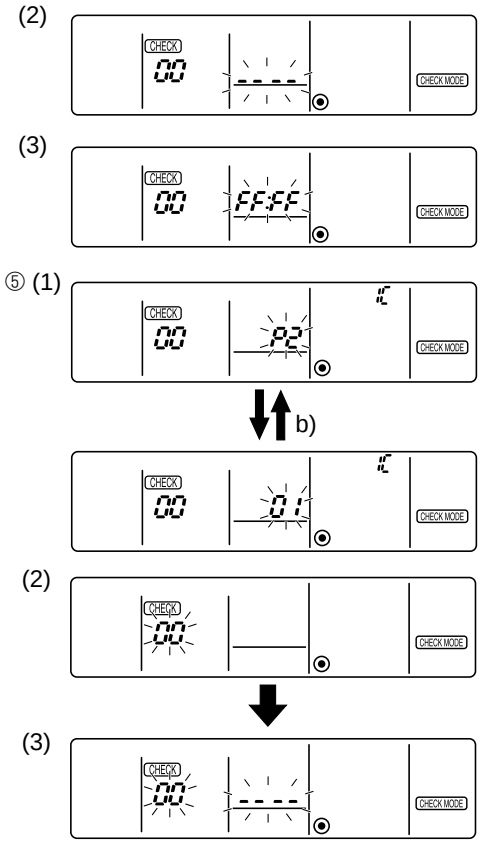


Search error histories of each unit by remote controller.

① Turn to self-diagnosis mode.
Press the Ⓗ "CHECK" button twice within three seconds, and following display appears.
a) Error code

② Set refrigerant address number that you want to diagnose.
Press the Ⓕ ▽△ (temp.) button to set refrigerant address to be diagnosed.
Refrigerant address has number from 00 to 15.
Three seconds after setting, lighted self-diagnosed refrigerant address begins blinking and self-diagnosis process begins.

③ Self-diagnosis result display
See the above chart for details of error code contents.
(1) When there is an error history.
b) Alternating display
c) Error code
d) Attribute of error search
e) Unit number
(2) When there is no error history.
(3) When the address does not exist.



④ To cancel self-diagnosis

There are following two methods to cancel self-diagnosis:

Press the Ⓗ "CHECK" button twice within three seconds.

➜Self-diagnosis is cancelled and the display screen will return to the status before self-diagnosis.

Press the ① "ON/OFF" button.

➜Self-diagnosis is cancelled and indoor unit will stop.

(This operation is ineffectual when operation is prohibited.)

⑤ Tor delete check code

When something is wrong with air conditioner, check code (P1 etc.) is memorized, but check code can be deleted after termination of service.

<To delete error record with remote controller>

(1) Display the error record at the self-diagnosis result display screen.

b) Alternating display

(2) The address for self-diagnosis will blink when the Ⓓ CLOCK ON OFF <⏲> button is pressed twice within three seconds.

(3) The diagram below will be displayed when the error record has been reset. Note that the error content will be redisplayed if error record resetting is unsuccessful.

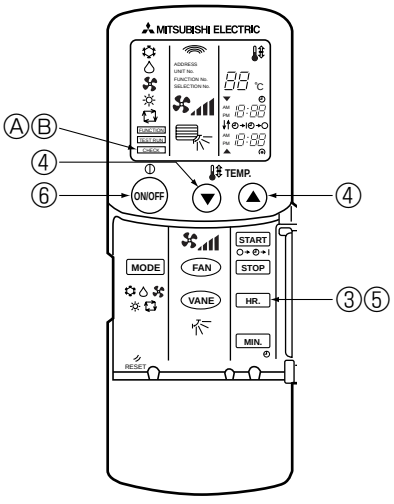
<To delete error record with switch of outdoor unit>

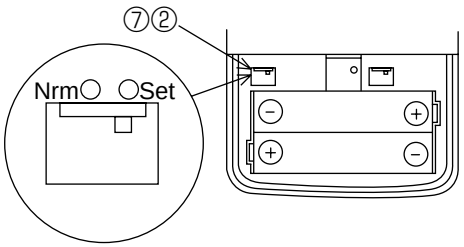
Refer to **9-2. Outdoor unit** on page 78.

(2) Digital wireless remote controller

<In case of trouble during operation>

When a malfunction occurs to air conditioner, both indoor unit and outdoor unit will stop and operation lamp blinks to inform unusual stop.





<Self-diagnosis method at maintenance service>

Direct transmitting section to receiving section at the operation of * mark. (Make sure that beep sounds.)

① Turn on the main power of air conditioner.

② On the other side of wireless remote controller, change adjust switch to "SET".

Ⓐ "FUNCTION", "TEST RUN", "CHECK" will blink alternately.

③ Press "HR" button.

Ⓑ "CHECK" blinks.

Refrigerant address display "00" blinks.

④ Press the "↑","↓" button to set refrigerant address of air conditioner to self-diagnose.

*⑤ Press the "HR" button, directing transmitting section to receiving section.

• The buzzer informs the latest error history of the unit to be checked

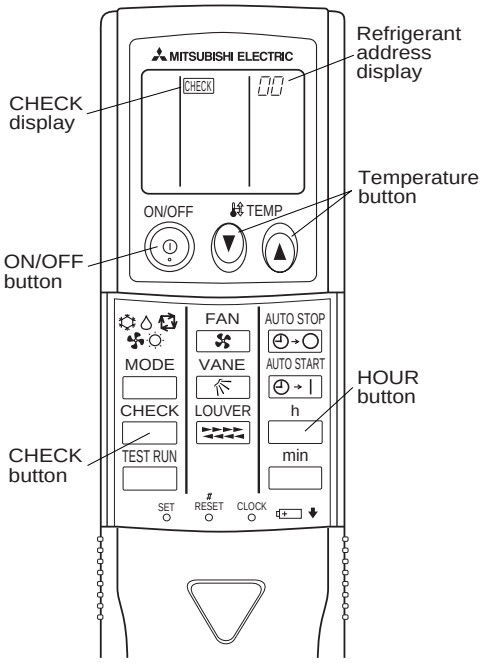
*⑥ Press the "ON/OFF" button to cancel check.

⑦ Be sure to turn adjust switch to "Nrm" after termination of check.

✻ Wireless remote controller can malfunction-diagnose refrigerant that is connected to wireless unit.

• In case that air conditioner has malfunction, continuous beep and blinking of operation lamp inform check code at the operation of ⑤.
(It takes 3 seconds, the maximum, for check code to appear.)

Inspected unit	Check code	Beep output	Operation LED	Inspected unit	Check code	Beep output	Operation LED
Indoor unit	P1	beep × 1 time	1 sec. × 1 time	Outdoor unit	F1–F9	beep beep × 1 time	(0.4sec+0.4sec) × 1 time
	P2	beep × 2 time	1 sec.× 2 time		U0–UP		
	P4	beep × 4 time	1 sec.× 4 time		E6–EE	Other than above	Other than above
	P5	beep × 5 time	1 sec.× 5 time	—	No check code (normal)	No output	Lights off
	P6	beep × 6 time	1 sec.× 6 time		No check code (mistake of matching with refrigerant address)	beep beep beep	Lights off
	P8	beep × 8 time	1 sec.× 8 time				
	P9	beep × 2 time	1 sec.× 2 time				
	E4, E5	Other than above	Other than above				



[Procedure]

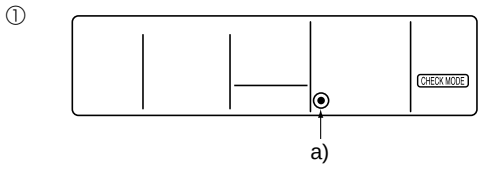
1. Press the CHECK button twice.
   - "CHECK" lights, and refrigerant address "00" flashes.
   - Check that the remote controller's display has stopped before continuing.
2. Press the temperature buttons.
   - Select the refrigerant address of the indoor unit for the self-diagnosis.

   Note: The refrigerant address is set using the outdoor unit's dip switch (SW1). (For more information, see the outdoor unit installation manual.)
3. Point the remote controller at the sensor on the indoor unit and press the HOUR button.
   - If an air conditioner error occurs, the indoor unit's sensor emits an intermittent buzzer sound, the operation light flashes, and the inspection code is output.
4. Point the remote controller at the sensor on the indoor unit and press the ON/OFF button.
   - The check mode is released.

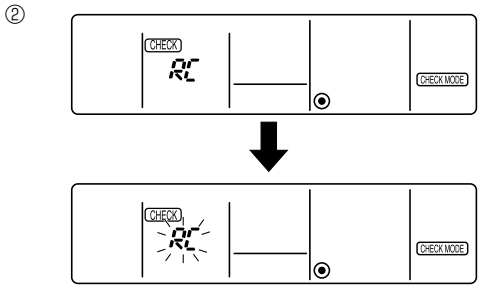
12-1-2. Remote controller Diagnosis

If operation can not be carried out from remote controller, try remote controller diagnosis with following process.

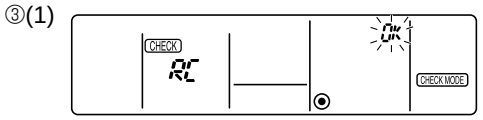
① First, check the electricity current marker.
When correct voltage (DC12V) is not supplied to remote controller, the electricity current marker is put out.
If the electricity current marker is not lighted, check the remote controller wiring and the indoor units.
a) Electric current marker



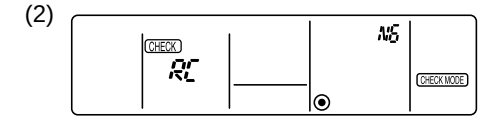
② Transfer to remote controller diagnosis mode
Hold down the Ⓗ “CHECK” button for five seconds or more, and following display appears.
Press the Ⓐ “FILTER” button, and remote controller diagnosis will begin.



③ Remote controller diagnosis result
(1) When the remote controller is functioning correctly
Check other possible causes, as there is no problem with remote controller.
Consider the unit is normal when remote controller transmits the result of diagnosis to indoor or outdoor unit, and receives the same data back.

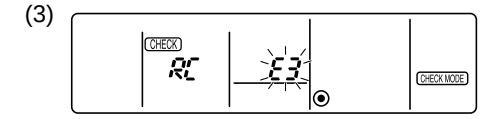


(2) When remote controller has malfunction
The remote controller must be replaced.
If the transmitting-receiving circuit is deffective, [‘NG’] blinks.
"NG" will be displayed when remote controller transmits the result of diagnosis to indoor or outdoor unit, and receives no response.

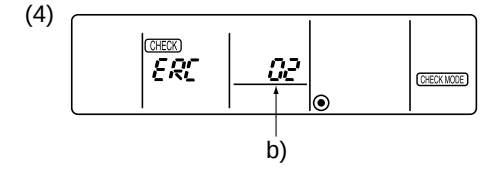


When there might be other problems than diagnosed remote controller,

(3) There might be ‘noise’ on transmission path or damage of other remote controllers or indoor units. Check the transmission path and other controllers.
If the transmission is not possible, [E3] blinks.
"E3" will be displayed when remote controller transmits the result of diagnosis to indoor or outdoor unit and receives different data back.



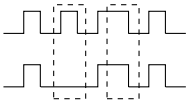
(4) The number of data errors is the number of margin between the number of generated data from the remote controller and the actual number of bits that were transmitted along the transmission path. If the data error is displayed, noise and the like are interfering with the transmission data. Check the transmission path.
If the data error has occurred, [ERC] and number of data errors are displayed.
b) Number of generated data errors (maximum 66 errors)



When the number of data errors is 02.

Transmission data from remote controller

Transmission data on transmission path



④ Cancel the remote controller diagnosis
Hold down the Ⓗ “CHECK” button for five seconds or more to cancel remote controller diagnosis, then [H0] operation lamp will blink and the display screen will return to the status before remote controller diagnosis in about 30 seconds.

12-2. Trouble shooting by inferior phenomena

Phenomena	Factor	Countermeasure
(1)Remote controller display does not work. (Electric current marker " ◉ " is not displayed on the remote controller.) Reference (Meaning of the indoor control board LED) LED1 : Micro computer power supply ....Display of DC14V is supply or not from indoor power. LED2 : Power output supplied to remote controller ....Display the power condition supplied to wired remote controller. When the refrigerant address is "0" supplied power output ON. LED3 : Indoor outdoor communication monitor ....Blinking, when receiving the signal normally from the outdoor unit.		
Indoor control p.c.board LED LED1 / LED2 / LED3		
① off / off / off	①Main power is not turned on. (Power supply inferior) ②Mis-wiring, breaking or contact failure of the connecting line.	①Check the power wiring to the outdoor unit and the breaker. ②Check for incorrect wiring, wiring breaks and poor connections between the indoor and outdoor units.
② Lighting / off / off (or blinking)	①Refrigerant address excepts "0". ②Mis-wiring, breaking or contact failure of the connecting line.	①Set the refrigerant address to "0" (only 1 refrigerant can be "0" for group control). ②Check for incorrect wiring, wiring breaks and poor connections between the indoor and outdoor units.
③ Lighting / Blinking (or lighting) / –	①Short circuit, miswiring and breaking	①Check for shorts, incorrect wiring and wiring breaks in the remote controller wires. ②Replace the remote controller if the voltage to the remote controller terminal block (TB6) is between 10 and 16V DC.
(2)Remaining "H0" display on the remote controller.	①At longest 2 minutes after the power supply "H0" is displayed to start up.	Normal operation
	①Communication fault between the remote controller and indoor. ②Communication fault between the indoor and outdoor. ③Outdoor unit protection device is opened. (Abnormal code will be displayed after 2~6 minutes.)	Turn the power supply OFF/ON, and check the following: ①If an error is displayed on the remote controller or outdoor unit's LED within 6 minutes: Refer to the self-diagnosis table on p. 115 to take appropriate action. ②If "H0" display remains for 6 minutes: Failure in indoor control PCB or remote controller
(3)When pressing the remote controller operation switch the OPERATION display is appeared but it will be turned off soon.	①After cancelling to select function from the remote controller, the remote controller operation switch will be not accepted for approx 30 seconds.	Normal operation
(4)Even controlling by the wireless remote controller no beep and not working. (Display is available on the wireless remote controller)	①The pair number settings of the wireless remote controller and indoor control PCB are mismatched. ②Disconnecting of wireless receiving board and contact failure. ③Factor of the above (1).	①Check the pair number settings. ②Check the indoor controller board connector (CN90). Check the wireless receiving board connector (CNB) ③Check the details of above (1).
(5)When operating by the wireless remote controller, beep sound is heard without working.	①No operation for max. 2 minutes after the power supply ON. ②Remote operation is prohibited. •Remote controlling adaptor is connected to the indoor controller board (CN32). •Remote operation is prohibited by centralised controller etc. since it is connected to MELANS. ③Factor of the above (2).	①Normal operation ②Normal operation ③Check the details of above (2).
(6)Upward/downward vane performance fault.	①When the unit is as follows in the HEAT mode, the vane is not downward. (Working of COOL protection function) •During HEAT preparation. •During defrosting. •During compressor stop. ②When setting the downward vane in the cool/dry mode, the vane changes to Horizontal position after 1 hour. ③Vane motor does mot rotate. A) Vane motor fault. B) Disconnecting, breaking and contact fault of the connector. C) Setting to no vane unit. ④Standard position reading fault (Vane motor does not stop). A) Limited switch fault. B) Disconnecting breaking and contact fault of the connector. ※ Only AC timing motor adopting mode. (No limited switch for stepping motor adopting model.)	①Normal operation ②Normal operation ③ A) Vane motor resistance value check. B) Disconnecting, breaking, and contact fault of the connector. Stepping motor adopting model .... CN6V check AC timing motor adopting model .... CNV check C) Check the setting details by selecting the remote controller function. Setting check of the indoor controller board J11~J15 (SW1). ④ A) Limiteds witch (LS) conductance check. B) Check the removing of indoor controller board (CN23), breaking line and contact fault.

Phenomena	Factor	Countermeasure
(7)Left/right louver performance fault.	①Louver motor fault. ②Disconnecting, breaking and contact fault of the connector.	①Louver motor resistance value check ②Check the removing of indoor controller board (CNL) breaking line and contact fault.
(8)Though the remote controller display is normal in cool mode, the capacity is not enough.	①Filter clogging (dirt) ②Heat exchanger clogging (dirt) ③Air duct short cycle. ④Refrigerant shortage. ⑤Operation failure in electronic expansion valve ⑥Thermistor connection failure ⑦Incorrect piping size ⑧Piping is too long.	①Open the grille to check the filter. Clean the filter and remove dust or dirt away. ②Clean the heat exchanger. Lowering the indoor piping temperature and intake pressure means clogging in the heat exchanger. ③Remove screen in the air duct (air outlet/intake). ④Check if gas leaks or not in the piping joint. ⑤,⑥Check the refrigerant circuit operation status. ⑦Check the piping size. ⑧Check the capacity loss characteristic for the piping length.
(9)Though the remote controller display is normal in Heat mode, the capacity is not enough.	①Filter clogging (dirt) ②Heat exchanger clogging (dirt) ③Air duct short cycle. ④Refrigerant shortage. ⑤Outdoor unit bypass circuit failure ⑥Indoor reverse check valve failure Reverse check valve failure may cause refrigerant leakage and restrictor failure. ⑦Heat insulator of refrigerant pipes is defective. ⑧Malfunction of LEV. ⑨Loose connection in thermistor.	①Open the grille to check the filter. Clean the filter and remove dust or dirt away. ②Clean the heat exchanger. Rising the indoor piping temperature and outlet pressure means clogging in the heat exchanger. ③Remove screen in the air duct (air outlet/intake). ④Check if gas leaks or not in the piping joint. ⑤Operating condition check in the refrigerant cycle. ⑥Since outlet temperature and indoor heat exchanger temperature does not rise, measure the outlet pressure and determine the countermeasure. ⑦Check the heat insulator. ⑧,⑨Check the function of refrigerant circuit.

12-3. Error code list.

Error code is displayed under following conditions.

※1. When occurring a communication error, the remote controller display does not match with the outdoor LED display: (or does not display).
※2. Beep tone is heard during trouble shooting by the wireless remote controller.

①Indoor unit error

Indication		Error code			Inspected unit	Error details
LED1(Green)	LED2(Red)	Display of remote controller or outdoor LED	Beep output	Main remote controller		
4 blinking	1 blinking	P1	Beep ×1	5101	Indoor	Abnormality of room temperature thermistor (TH1).
		P2	Beep ×2	5102	Indoor	Abnormality of pipe temperature thermistor/Liquid (TH2).
		P9	Beep ×2	5103	Indoor	Abnormality of pipe temperature thermistor/Cond./Eva. (TH5)
	2 blinking	P4	Beep ×4	2503	Indoor	Abnormality of drain sensor (DS).
		P5	Beep ×5	2500, 2502	Indoor	Malfunction of drain-up machine.
	3 blinking	P6	Beep ×6	1503/1504	Indoor	Freezing / overheating protection is working.
	4 blinking	P8	Beep ×8	1110	Indoor	Abnormality of pipe temperature.

② Remote controller, indoor/outdoor unit transmission error

Indication		Error code			Inspected unit	Error details
LED1(Green)	LED2(Red)	Display of remote controller or outdoor LED	Beep output	Main remote controller		
2 blinking	1 blinking	EA	Short 2 beep ×2 times	6844	Outdoor	Indoor/outdoor unit connector mis-wiring, Number of indoor unit over (5 numit or more)
		Eb	Short 2 beep ×2 times	6845	Outdoor	Indoor/outdoor unit connector mis-wiring (Mis-wiring, disconnection)
		EC	Short 2 beep ×2 times	6846	Outdoor	Start-up timer over
	2 blinking	E6	Beep ×3	6840	Indoor	Indoor/outdoor unit transmission error (Signal receiving error)
		E7	Beep ×3	6841	Indoor	Indoor/outdoor unit transmission error (Transmitting error)
		E8	Short 2 beep ×3 times	6840	Outdoor	Indoor/outdoor unit transmission error (Signal receiving error)
		E9	Short 2 beep ×3 times	6841	Outdoor	Indoor/outdoor unit transmission error (Transmitting error)
	3 blinking	E0	No output	No display	Remote controller	Remote controller transmission error (Signal receiving error)
		E3	No output	No display	Remote controller	Remote controller transmission error (Transmitting error)
		E4	Beep ×9	6831	Indoor	Remote controller transmission error (Signal receiving error)
		E5	Beep ×9	6832	Indoor	Remote controller transmission error (Transmitting error)
	4 blinking	EF	Beep ×10	6607	Indoor	M-NET transmission error
			Short 2 beep ×10	6608	Outdoor	M-NET transmission error
	5 blinking	Ed	timesShort 2 beep ×4	0403	Outdoor	Serial transmission error

③ M-NET Transmission error

Indication		Error code			Inspected unit	Error details
LED1(Green)	LED2(Red)	Display of remote controller or outdoor LED	Beep output	Main remote controller		
2 blinking	5 blinking	A0	Short 2 beep ×4 times	6600	Outdoor	M-NET•Address duplicate definition
		A2	Short 2 beep ×4 times	6602	Outdoor	M-NET•Hard ware error of transmission P line
		A3	Short 2 beep ×4 times	6603	Outdoor	M-NET•BUS BUSY
		A6	Short 2 beep ×4 times	6606	Outdoor	M-NET•Transmission error with transmission P line
		A7	Short 2 beep ×4 times	6607	Outdoor	M-NET•NO ACK
		A8	Short 2 beep ×4 times	6608	Outdoor	M-NET•NO RESPONSE

④ Outdoor unit error

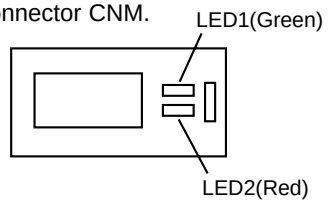
Group	Indication LED1 (Green)	Indication LED2 (Red)	Error code	Error Name	Inspection method	Remarks
Inspected error when the power supply ON.	1 blinking	1 blinking	F1 (4103)	Reverse phase detection	Reverse phase detection, Power source and indoor/outdoor connecting lines erroneous connection.	
			F2 (4102)	L3-phased open phase detection	Detection the L3-phased open phase	
		2 blinking	F3 (5202)	63L connector open	3 minutes sequence detection of 63L connector open	
			F4 (4124)	49C connector open	3 minutes sequence detection of 49C connector open	
			F9 (4119)	Connector 2 or more open	Connector 2 or more open	
		3 blinking	FA (4108)	L2-phased open phase or 51CM connector open	3 minutes continuous detection of L2-phased open phase or 51CM connector open	
			F7 (4118)	Reverse phase detector circuit (Controller board) fault.	Detection the signal inputless of controller board	
			F8	Input circuit fault	Consider the unit abnormal when a synchronizing signal of power supply has not been inputted for 0.5 second.	
Inspected error when the power supply ON.	3 blinking	1 blinking	U2 (1102)	Abnormal high discharging temperature	Detection the 3 minutes sequence of "Discharging thermistor (TH4) ≧ 125˚C" or "Discharging thermistor (TH4) ≧ 135˚C	
			U2 (1108)	Inner thermostat (49C) working detector	Inner thermostat working detector	Only PU(H)-P5,P6YGA (functioning : 125±5˚C) (return : 98±11˚C)
		2 blinking	U1 (1302)	Abnormal high pressure (High pressure switch 63H worked)	1 second detection of no compressor current after 1 second of start-up	•Detected by CT •Working : 3.3MPa •Reset : 2.6MPa
			U1	Direct cut working detector	1 second detection of no compressor current	Detected by CT
			UE (1509)	High pressure error (ball valve closed)	1 second detection of no compressor current within 20 seconds of Heat Start-up	Detected by CT
			UL (1300)	Abnormal low pressure	Low pressure switch working detection	Only PU(H)-P5,P6YGA
		3 blinking	Ud (1504)	Over heat protection	Detection the formula of liquid pipe thermistor (TH3) ≧ heat protected temperature	
		4 blinking	U6 (4101)	Compressor over current (Overload) breaking	3 seconds detection of over loaded current value	
			UA (4101)	Compressor over current (Terminal overload relay working)	Thermal overload relay working detection	Only PU(H)-P•YGA(A) type
			UF (4100)	Compressor over current (start-up locked) breaking	Locked current detection within 5 seconds of start-up	
			UF (4100)	Compressor over current (operating locked) switching	Locked current detection during the compressor operation	
			UH (5300)	Current sensor error	One second detection of no compressor current at the compressor start-up	
		5 blinking	U3 (5104)	Discharging thermistor error detection	Open/short circuit of discharging thermistor (TH4)	
			U4 (TH3:5105) (TH6:5107)	Outdoor thermistor error	Open/short circuit of the liquid pipe thermistor (TH3) or EVA/COND pipe thermistor (TH6)	

※ Beep of "U" error and "F" error is be-beep.

<Inspection function of units>

[For inspection, use outdoor controller board that is normally equipped.]

The blinking patterns of both LED1 (green) and LED2 (red) indicate the types of abnormality when it occurs.
Types of abnormality can be indicated in details by connecting inspectionkit for servicing A-controlled units PAC-SK52ST to connector CNM on outdoor controller board,
Refer to page 132 for the position of connector CNM.



Display examples (Abnormal : E6)

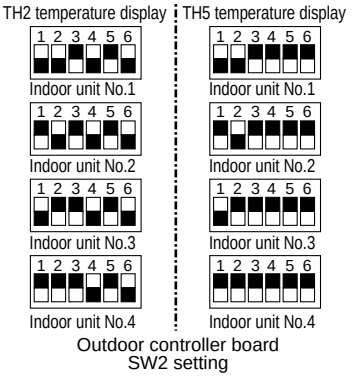
LED1	☼ ☼	Not lighted	Not lighted
LED2	Not lighted	☼ ☼	Not lighted
Duration	Continuous	Continuous	2 seconds

[Display] Normal condition

Unit	Condition of LEDs		Digital display	
	LED1(Green)	LED2(Red)	Code	Indication of the display
When the power is turned on.	Lighted	Lighted	—⇔—	Alternately blinking display
When unit stops	Lighted	Not lighted	00,02,etc.	Operation mode
When unit operates	Lighted	Lighted	C4,H6,etc.	Operation mode

12-4. SELF-DIAGNOSIS ACTION TABLE

Error Code	Meaning of error code and detection method	Case	Judgment and action
P1	**Abnormality of room temperature thermistor (TH1)** ① The unit is in three-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit dose not reset normally after three minutes. (The unit returns to normal operation, if it has normally reset.) ② Constantly detected during Cooling, drying, and heating operation. Short: 90℃ or more Open: -40℃ or less	① Defective thermistor characteristics ② Contact failure of connector (CN20) on the indoor controller board. (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Defective indoor controller board	①–③ Check resistance value of thermistor. 0℃ ……15.0kΩ 30℃ ….1.8kΩ 10℃ ….9.6kΩ 40℃ ….1.3kΩ 20℃ ….6.3kΩ If you put force on (draw or bend) the lead wire with measuring resistance value of thermistor breaking of wire or contact failure can be detected. ② Check contact failure of connector (CN20) on the indoor controller board. Refer to page 128 to 130. Put the power on again and check restart after inserting connector again. ④ Check room temperature display on remote controller. Replace indoor controller board if there is abnormal difference with actual room temperature. There is no abnormality if none of above comes within the unit. Put the power off, and on again to operate.
P2	**Abnormality of pipe temperature thermistor/Liquid (TH2)** ① The unit is in three-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after three minutes. (The unit returns to normal operation, if it has normally reset.) ② Constantly detected during Cooling, drying, and heating (except defrosting) operation. Short: 90℃ or more Open: -40℃ or less	① Defective thermistor characteristics ② Contact failure of connector (CN21) on the indoor controller board.(Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Defective refrigerant circuit is causing thermistor temperature of 90℃ or more or -40℃ or less. ⑤ Defective indoor controller board.	①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN21) on the indoor controller board. Refer to page 128 to 130. Put the power on and check restart after inserting connector again. ④ Check pipe <liquid> temperature with remote controller in trial run mode. If pipe <liquid> temperature is exclusively low (in cooling mode) or high (in heating mode), refrigerant circuit may have defective. ⑤ Check pipe <liquid> temperature with remote controller in trial run mode. If there is exclusive difference with actual pipe <liquid> temperature, replace indoor controller board. There is no abnormality if none of above comes within the unit. Put the power off, and on again to operate.
P4	**Abnormality of drain sensor (DS)** ① Suspensive abnormality, if short/open of thermistor is detected for 30 seconds continuously. Put off compressor and indoor fan. ② Short/open is detected for 30 seconds continuously during suspensive abnormality. (The unit returns to normal operation, if it has normally reset.) ③ Detect the following condition. • During cooling and drying operation. • In case that pipe <liquid> temperature-room temperature <-10deg (Except defrosting) • When pipe <liquid> temperature or room temperature is short/open temperature. • During drain pomp operation. Short: 90℃ or more Open: -20℃ or less	① Defective thermistor characteristics ② Contact failure of connector (CN31) on the indoor controller board. (Insert failure) ③ Breaking of wire or contact failure of drain sensor wiring ④ Defective indoor controller board.	①–③ Check resistance value of thermistor. 0℃ ……6.0kΩ 10℃ ….3.9kΩ 20℃ ….2.6kΩ 30℃ ….1.8kΩ 40℃ ….1.3kΩ ② Check contact failure of connector (CN31) on the indoor controller board. Refer to page 128 to 130. Put the power on again and check restart after inserting connector again. ④ Replace indoor controller board if drain pomp operates with the line of drain sensor connector CN31-① and ② is short-circuited, and abnormality reappears. There is no abnormality if none of above comes within the unit. Put the power off, and on again to operate.
P5	**Malfunction of drain pump (DP)** ① Suspensive abnormality, if thermistor of drain sensor is let heat itself and temperature rises slightly. Put off compressor and indoor fan. ② Drain pomp is abnormal if the condition above is detected during suspensive abnormality. ③ Constantly detected during drain pomp operation.	① Malfunction of drain pomp ② Defective drain Clogged drain pomp Clogged drain pipe ③ Attached drop of water at the drain sensor • Drops of drain trickles from lead wire. • Clogged filter is causing wave of drain. ④ Defective indoor controller board.	① Check if drain-up machine works. ② Check drain function. ③ Check the setting of lead wire of drain sensor and check clogs of the filter. ④ Replace indoor control p.c. board if drain pomp operates with the line of drain sensor connector CN31-① and ② is short-circuited and abnormality reappears. Refer to page 128 to 130. There is no abnormality if none of above comes within the unit. Put the power off, and on again to operate.

Error Code	Meaning of error code and detection method	Case	Judgment and action
P6	**Freezing/overheating protection is working** ① Freezing protection The unit is in six-minute resume prevention mode if pipe <liquid or condenser-evaporator> temperature stays under -15℃ for three minutes, three minutes after the compressor started. Abnormal if it stays under -15℃ for three minutes again within 16 minutes after six-minute resume prevention mode. ② Overheating protection The units is in six-minute resume prevention mode if pipe <condenser-evaporator> temperature is detected as over 74℃ after the compressor started. The temperature of over 74℃ is detected again within 10 minutes after six-minute resume prevention mode.	(Cooling or drying mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Low-load (low temperature) operation beyond the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • Indoor controller board is defective. ⑤ Overchange of refrigerant ⑥ Defective refrigerant circuit (clogs) (Heating mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Over-load (high temperature) operation beyond the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • indoor controller board is defective. ⑤ Overcharge of refrigerant ⑥ Defective refrigerant circuit (clogs) ⑦ Bypass circuit of outdoor unit is defective.	(Cooling or drying mode) ① Check clogs of the filter. ② Remove shields. ④ Measure the resistance of fan motor's winding. Measure the output voltage of fan's connector (FAN) on indoor controller board. ※The indoor controller board should be normal when a current of AC 220V to 240V is detected while fan motor is connected. Refer to page 128 to 130. ⑤⑥Check operating condition of refrigerant circuit. (Heating mode) ① Check clogs of the filter. ② Remove shields. ④ Measure the resistance of fan motor's winding. Measure the output voltage of fan's connector (FAN) on indoor controller board. ※The indoor controller board should be normal when a current of AC 220V to 240V is detected while fan motor is connected. Refer to page 128 to 130. ⑤~⑦Check operating condition of refrigerant circuit.
P8	**Abnormality of pipe temperature** (Cooling mode) Detected as abnomal when the pipe temperature is not in the cooling range 3 minutes later of compressor start and 6 minutes later of the liquid or condenser/evaporator pipe is out of cooling range. Note 1) It takes at least 9 min. to detect. Note 2) Abnormality P8 is not detected in drying mode. Cooling range : Indoor pipe temperature (TH2 or TH5) – intake temperature (TH1) ≦ -3 deg 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 with in 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 operation = 5 deg ≦ (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 Converse connection of extension pipe (on plural units connection) ③ Converse 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.	①④Check pipe <liquid or condenser-evaporator> temperature with room temperature display on remote controller and outdoor controller board. Pipe <liquid or condenser-evaporator> temperature display is indicated by setting SW2 of outdoor controller board as follows. ②③Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire. ⑤Check outdoor four way valve action 

Error Code	Meaning of error code and detection method	Case	Judgment and action
P9	**Abnormality of pipe temperature thermistor / Condenser-Evaporator (TH5)** ① The unit is in three-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit is not get back to normal within three minutes. (The unit returns to normal operation, if it has normally reset.) ② Constantly detected during cooling, drying, and heating operation (except defrosting) Short: 90℃ or more Open: -40℃ or less TH5 temperature display  Outdoor controller board SW2 setting	① Defective thermistor characteristics ② Contact failure of connector (CN29) on the indoor controller board. (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Temperature of thermistor is 90℃ or more or -40℃ or less caused by defective refrigerant circuit. ⑤ Defective indoor controller board	①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN29) on the indoor controller board. Refer to page 128 to 130. Put the power on and check restart after inserting connector again. ④ Operate in trial run mode and check pipe <condenser- evaporator> temperature with outdoor controller board. If pipe <condenser-evaporator> temperature is exclusively low (in cooling mode) or high (in heating mode), refrigerant circuit may have defective. ⑤ Operate in trial run mode and check pipe <condenser- evaporator> temperature with outdoor controller board. If there is exclusive difference with actual pipe <condenser-evaporator> temperature replace indoor controller board There is no abnormality if none of above comes within the unit. Put the power off and on again to operate. Pipe <condenser-evaporator> temperature display is indicated by setting SW2 of outdoor controller board as follows.
E4	**Remote controller signal receiving error** ① Abnomal if indoor controller board can not receive normally any data from remote controller or from other indoor controller board for three minutes. ② Indoor controller board can not receive any signal from remote controller for two minutes.	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 outdoor LED. ③ Defective transmitting receiving circuit of remote controller ④ Defective transmitting receiving circuit of indoor controller board ⑤ Noise has entered into the transmission wire of remote controller. ⑥ Remote controller is connected to the unit once, and removed without power reset. ⑦ Wiring regulations are not observed. Refer to (2) The transmitting specification for “A” control on page 59. •Length of wires •Number of remote controllers •Diameter of wires •Number of indoor units	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 Diagnose remote controllers. a) When “RC OK” is displayed, Remote controllers have no problem. Put the power off, and on again to check. If abnormality generates again, replace indoor controller board. b) When “RC NG” is displayed, Replace remote controller. c) When “RC E3” is displayed, d) When “ERC 00-06” is displayed, [c),d) ➜Noise may be causing abnormality.] ✻ If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address “0” may be abnormal.
E5	**Remote controller transmitting error** ① Abnormal if indoor controller board can not check the blank of transmission path for three minutes. ② Abnormal if indoor controller board can not finish transmitting 30 times consecutively.	① Defective transmitting receiving circuit of indoor controller board ② Noise has entered into the transmittion wire of remote controller. ③ Duplicate setting of refrigerant address (In group control) ④ Remote controller is wired up among indoor units (twin, triple or quadro units).	①② Put the power off, and on again to check. If abnormality generates again, replace indoor controller board. ③ Check duplicate setting of refrigerant address (outdoor controller board) SW1 (3 to 6).

Error Code	Meaning of error code and detection method	Case	Judgment and action
E6 (ξδ)	**Indoor/outdoor unit communication error (Signal receiving error)** ① Abnormal if indoor controller board can not receive any signal normally for six minutes after putting the power on. ② Abnormal if indoor controller board can not receive any signal normally for three minutes. ③ Consider the unit abnormal under the following condition: When two or more indoor units are connected to one outdoor unit, outdoor unit cannot receive a signal for three minutes from indoor controller board, a signal which allows outdoor controller board to transmit signals.	① Contact failure, short circuit or, mis-wiring (converse wiring) of indoor/outdoor unit connecting wire. ② Mis-wiring of outdoor power supply wire and indoor/outdoor unit connecting wire ③ Defective transmitting receiving circuit of indoor controller board ④ Defective transmitting receiving circuit of indoor controller board ⑤ Noise has entered into indoor/outdoor unit connecting wire.	✻ Check LED display on outdoor controller board. Refer to EA-EC item (on outdoor unit section) if LED displays EA-EC. ① Check disconnection or looseness of indoor/outdoor unit connecting wire of indoor unit or outdoor unit. ② Check wiring of outdoor power supply wire and indoor/outdoor unit connecting wire ③-⑤ Put the power off, and of again to check. If abnormality generates again, replace indoor controller board or outdoor controller board. ✻ Other indoor controller board may have defective in case of twin triple indoor unit system.
E7	**Indoor/outdoor unit communication error (Transmitting error)** Abnormal if "1" receiving is detected 30 times continuously though indoor controller board has transmitted "0".	① Defective transmitting receiving circuit of indoor controller board ② Noise has entered into power supply. ③ Noise has entered into outdoor control wire.	①-③ Put the power off, and on again to check. If abnormality generates again, replace indoor controller board.

<Abnormalities detected when the power is put on>

(Note 1) The number in ( ) is the error cord of upper remote controller (M-NET)
(Note 2) Refer to indoor unit section for code P and code E.

Error Code	Meaning of error code and detection method	Case	Judgment and action
None	—	① No voltage is supplied to terminal block (TB1) of indoor unit. a) Power supply breaker is put off. b) Contact failure or disconnection of power supply terminal c) L1-phased open phase ② Electric power is not charged to power supply terminal of controller board. a) Contact failure of power supply terminal b) Disconnection of terminal R or 4/S on controller board ③ Defective outdoor controller board a) Fuse 5A on controller board is blown. b) Defective parts	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 controller board ③ Replace following items. a) Fuse 5A b) Controller board (When items above are checked but the units can not be repaired)
F1 (4103)	**Reverse phase detection, Power supply and indoor/outdoor unit connecting wire converse connection** 1. Three seconds after power on, judge reverse phase by detecting voltage phase of each phase. 2. Abnormal four minutes after power on if power supply and indoor/outdoor unit connecting wire have converse connection.	① L1, L2, L3 are not connected correctly. ② Converse wiring of outdoor power supply line (TB1) and indoor power supply wire (TB4)	① • Check outdoor power supply connection (TB1) • Replace two phases (for example phase L1 and phase L2) out of three phases of outdoor power supply line (TB1) ② Check wiring connection.
F2 (4102)	**L3-phased open phase detection** Detect open phase two seconds after power on.	① L3-phased open-phase	① Check power supply.

Error Code	Meaning of error code and detection method	Case	Judgment and action
F3 (5202)	**63L connector open** Abnormal if 63L connector circuit is open for three minutes continuously after power supply. 63L: Low-pressure switch (PUH-P5, 6YGA and PU-P5, 6YGA Only.)	① Disconnection or contact failure of 63L connector on outdoor controller board ② Disconnection or contact failure of 63L ③ 63L is working due to refrigerant leakage or defective parts. ④ Defective outdoor controller board	① Check connection of 63L connector on outdoor controller board. Refer to page 131. ② Check the 63L side of connecting wire. ③ Check refrigerant pressure. Charge additional refrigerant. Check continuity by tester. Replace the parts if the parts are defective. ④ Replace outdoor controller board.
F4 (4124)	**The connector of 49C is open** Consider the unit abnormal when the circuit of connector (49C) remains open for three consecutive minutes with the power on. 49C: Inner thermostat (Compressor) (PUH-P5, 6YGA and PU-P5, 6YGA Only.)	① The connector of 49C on outdoor controller board has contact failure or disconnection. ② The switch of 49C has contact failure or disconnection. ③ Power supply was turned on when 49C has been tripped. ④ 49C has been tripped (defective parts). ⑤ Outdoor controller board is defective.	① Check connection of 49C connector on outdoor controller board. Refer to page 131. ② Check the 49C side of connecting wire. ③④ Check the continuity by tester. Replace defective parts. ⑤ Replace the outdoor controller board.
F7 (4118)	**Reverse phase detector circuit (controller board) fault** Abnormal if some of each phase detection signal is not input three seconds after power supply.	Detective outdoor controller board	Replace outdoor controller board.
F9 (4119)	**2 or more connectors open** Abnormal if two more out of connector (63L, 49C, 51CM) circuits are open for three minutes continuously after power on.	① Disconnection or contact failure of connector (63L, 49C, 51CM) on outdoor controller board ② Disconnection or contact failure of (63L, 49C, 51C). ③ Defective (63L, 49C, 51C) (defective parts) ④ Defective outdoor controller board.	① Check connection of (63L, 49C, 51CM) connector on outdoor controller board. Refer to page 131. ② Check the (63L, 49C, 51CM) side of connecting wire. ③ Check continuity by tester. Replace the parts if the parts are defective. ④ Replace outdoor controller board.
FA (4108)	**51CM connector open** Abnormal if 51CM connector circuit is open for three minutes continuously after power on. 51CM: Thermal Relay	① Disconnection or contact failure of 51CM connector on outdoor controller board ② Disconnection or contact failure of 51CM ③ Defective 51CM (defective parts) ④ Defective outdoor controller	① Check connecting wire. ② Check connecting wire. ③ Check continuity by tester. Replace the parts if the parts are defective. ④ Replace outdoor controller board.

Error Code	Meaning of error code and detection method	Case	Judgment and action
EA (6844)	**Indoor/outdoor unit connector mis-wiring, excessive number of units (5 units or more)** 1. Outdoor controller board can automatically check the number of connected indoor units. Abnormal if the number of connected indoor units can not be set within four minutes after power on because of mis-wiring of indoor/outdoor unit connecting wire and the like. 2. Abnormal if outdoor controller board recognizes the number of connected indoor units as “5 units or more”.	① Contact failure or mis-wiring of indoor/outdoor unit connecting wire. ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ③ Five or more indoor units are connected to one outdoor unit. ④ Defective transmitting receiving circuit of outdoor controller board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Noise has entered into power supply or indoor/outdoor unit connecting wire. ⑦ Remote controller is wired up among indoor units (twin, triple or quadro units). ⑧ Two or more outdoor units has refrigerant address “0.” (In case of group control).	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. Outdoor-indoor units’ interval: 50m maximum Indoor-indoor units’ interval: 30m maximum Also check if the connection order of flat cable (VVF etc.) is S1, S2, S3. ③ Check the number of indoor units that are connected to one outdoor unit. (If EA is detected.) ④⑤ Put the power off, and on again to check. Replace outdoor controller board or indoor controller board if abnormality is displayed again. Check the indoor/ outdoor unit connecting wire. ⑥ Inspect transmission line to solve the problem.
Eb (6845)	**Mis-wiring of indoor/outdoor unit connecting wire (converse wiring or disconnection)** Outdoor controller board can automatically set the unit number of indoor units. Abnormal if the indoor unit number can not be set within four minutes after power on because of mis-wiring (converse wiring or disconnection) of indoor/outdoor unit connecting wire.	① Contact failure or mis-wiring 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 board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Noise has entered into power supply or indoor/outdoor unit connecting wire. ⑦ Remote controller is wired up among indoor units (twin, triple or quadro units). ⑧ Two or more outdoor units has refrigerant address “0.” (In case of group control). ⑨ Outdoor power supply board is defective.	⑦ Wire the remote controller to one of the multiple indoor units. ⑧ Set the refrigerant address of outdoor units with different number starting from “0.” ⑨ Unless the wire has contact failure, disconnect CN2S on indoor power supply board to measure the voltage. When CN2S does not have a current of DC12V to DC16V, replace the indoor power supply board. ※ The descriptions above, ①-⑨, are for EA, Eb and EC.
EC (6846)	**Start-up time over** The unit can not finish start-up process within four 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. ⑥ Noise has entered into power supply or indoor/outdoor unit connecting wire. ⑦ Remote controller is wired up among indoor units (twin, triple or quadro units). ⑧ Two or more outdoor units has refrigerant address “0.” (In case of group control).	
Ed (0403)	**Serial communication error** The communication between outdoor controller board and M-NET p.c. board is not available.	① Breaking of wire or contact failure of connector between outdoor controller board and M-NET p.c. board. ② Contact failure of M-NET p.c. board power supply line ③ Entrance of noise into transmission wire ④ Defective transmitting receiving circuit of M-NET p.c. board ⑤ Defective serial transmitting receiving circuit of outdoor controller board	① Check disconnection, looseness, or breaking of connecting wire between outdoor controller board CN1 and M-NET p.c. board CN5. ② Check departure or looseness of M-NET p.c. board power supply line (CND-TB1). ③ Replace M-NET p.c. board. ④ Replace outdoor controller board.

<table>
<tr><th>Error Code</th><th>Meaning of error code and detection method</th><th>Case</th><th>Judgment and action</th></tr>
<tr><td>U1
(1302)</td><td>Abnormal high pressure (High-pressure switch 63H worked)
Abnormal if high-pressure switch 63H worked (more than 3.24 MPa) during compressor operation.
63H: High-pressure switch
✻ Use current sensor to detect work or return of 63H.</td><td>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 Disconnection or contact failure of 63H connection
⑭ Defective outdoor controller board
⑮ Defective action of liner expansion valve
⑯ Refrigerant overcharge</td><td>①-⑥ Check indoor unit and repair defectives.
⑦ Check full open stop valve.
⑧ Check piping and repair defectives.
⑨-⑫ Check indoor unit and repair defectives.
⑬,⑭ Put the power off and check UH display when the power is put again.
Follow the UH display if UH is displayed.
⑮ Check linear expansion valve.
Refer to page 49 to 51.
⑯ Replace refrigerant.</td></tr>
<tr><td>U1</td><td>Abnormal low current or open phase
• An extreme degradation of current value causes abnormal stop.
• Abnormal if current detected phase (V-phase) is open phase after first compressor start-up after supplying the power by three phase power supply model.
• When compressor is operating, compressor is suspended under the following condition: and when current detector (CT) detects a current, which is lower than the detected current specified in the table below, under the following condition:

<Condition>
① For PUH-P1VGA, VGAA. UK/ PU(H)-P1.6 ~ P4VGA, VGAA. UK
Current detector (CT) has detected a current, which is lower than the detected current specified in the table below, for 0.7-0.8 second.
② For PU(H)-P1.6 ~ P6YGA, YGAA. UK
Current detector (CT) has detected a current, which is lower than the detected current specified in the table below, for 0.4-0.5 second.
[A]
<table>
<tr><th>Model</th><th>Detected current</th><th>Model</th><th>Detected current</th></tr>
<tr><td>P1V</td><td>1.0</td><td>P3V</td><td>2.4</td></tr>
<tr><td>P1.6V</td><td>1.3</td><td>P3Y</td><td>1.0</td></tr>
<tr><td>P1.6Y</td><td>1.0</td><td>P4V</td><td>1.0</td></tr>
<tr><td>P2V</td><td>1.6</td><td>P4Y</td><td>1.0</td></tr>
<tr><td>P2Y</td><td>1.0</td><td>P5Y</td><td>1.5</td></tr>
<tr><td>P2.5V</td><td>1.8</td><td>P6Y</td><td>1.7</td></tr>
<tr><td>P2.5Y</td><td>1.0</td><td></td><td></td></tr>
</table></td><td>① Shortage of refrigerant
② Abnormal pressure degradation by pomp down operation
③ V-phased open phase of compressor
④ Abnormal compressor
Not abnormal if V is instantly displayed when the main power is put off.</td><td>① Check if refrigerant pressure is not degraded.
② Check current of compressor operation when abnormality occurred.
③ Check wiring of compressor.

④ Check or replace compressor.</td></tr>
<tr><td>U2
(1102)</td><td>Abnormal high discharging temperature
Abnormal if discharging temperature thermistor (TH4) exceeds following temperature during compressor operation.
Normal operation: 125℃ or more for three minutes continuously or 135℃
During defrosting: 135℃</td><td>① Over-heated 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</td><td>① Check intake super heat.
Check leakage of refrigerant.
Charge refrigerant.
② Check if stop valve is full open.
③④ Put the power off and check if U3 is displayed when the power is put again.
When U3 is displayed, refer to “Judgement and action” for U3.
⑤ Check linear expansion valve.
Refer to page 49 to 51.</td></tr>
</table>

Error Code	Meaning of error code and detection method	Case	Judgment and action
U2 (1108)	**Inner thermostat (49C) working detector** Abnormal if inner thermostat (49C) works during compressor operation. 49C: inner thermostat 135±5℃ [PU(H)-P5, 6YGA]	① Over-heated compressor operation caused by shortage of refrigerant ② Defective operation of stop valve ③ Disconnection or contact failure of connector (26C/49C) on outdoor controller board ④ Disconnection or contact failure of 26C/49C ⑤ Defective outdoor controller board ⑥ Defective action of linear expansion valve	① Check intake super heat. Check leakage of refrigerant. Charge refrigerant. ② Check if stop valve is full open. ③-⑤ After checking connection, operate again to check operation. ⑥ Check linear expansion valve. Refer to page 49 to 51.
U2 (1501)	**Abnormal shortage of refrigerant** Abnormal if intake super heat exceeds following temperature during heating compressor operation. 70℃ or more, and indoor pipe <condenser- evaporator> temperature (TH5) is 35℃ or less.	① Leakage or shortage of refrigerant ② Defective operation of stop valve (not full open) ③ Defective thermistor (TH4, TH5, TH6) ④ Defective outdoor controller board ⑤ Defective action of electric expansion valve	① Check leakage of refrigerant. Charge refrigerant. ② Check if stop valve is full open. ③④ Put the power off and check if U3 or U4 is displayed when the power is put again. When U3 or U4 is displayed, refer to "Judgement and action" for U3 or U4. ⑥ Check linear expansion valve. Refer to page 49 to 51.
U3 (5104)	**Open/short circuit of discharging thermistor (TH4)** Abnormal if open (0℃ or less) or short (216℃ or more) is detected during compressor operation. (Detection is inoperative for five minutes of compressor starting process and for 10 minutes after defrosting.)	① Disconnection or contact failure of connector (TH4) on the indoor controller board. ② Defective thermistor ③ Defective outdoor controller board	① Check contact of connector (TH4) on the indoor controller board. Refer to page 49 to 51. Check breaking of the lead wire for thermistor (TH4). Refer to page 131 and 132. ② Check resistance value of thermistor(Refer to page 49 to 51), or check temperature by microcomputer(Mode switch of SW2). ③ Replace outdoor controller board.
U4 (5105) (5107)	**Open/short circuit of the liquid pipe thermistor (TH3) or outdoor Condenser-Evaporator pipe thermistor (TH6)** Abnormal if open (-39℃ or less) or short (88℃ or more) is detected during compressor operation. (Detection is inoperative for seven minutes after 10 seconds of compressor starting and for 10 minutes after defrosting.)	① Disconnection or contact failure of connector (TH3/TH6) on the indoor controller board. ② Defective thermistor ③ Defective outdoor controller board	① Check contact of connector (TH3/TH6) on the indoor controller board. Refer to page 49 to 51. Check breaking of the lead wire for thermistor (TH3/TH6). Refer to page 131 and 132. ② Check resistance value of thermistor(Refer to page 49 to 51), or check temperature by microcomputer(Mode switch of SW2). ③ Replace outdoor controller board.
U6 (4101)	**Compressor over current (overload) breaking** Abnormal if current value exceeds overload set value during compressor operation. P1.6 ·····4.5 P2 ·····5.8 P2.5 ·····6.4 P3 ·····9.0 P4 ·····9.0 P5 ·····15.0 P6 ·····17.0	① Gas pipe side ball valve and liquid pipe side stop valve are shut during operation. ② Abnormal compressor ③ Abnormal power supply voltage ④ Overload operation	① Open ball valve and stop valve. ② Check or replace compressor. Refer to page 52 and 53. ③ Check power supply voltage. ④ Check short cycle.
Ud (1504)	**Over heat protection (over-load operation protection/abnormal fan)** Abnormal if pipe thermistor detects the value that exceeds set value during compressor operation. P1.6-P6·····70℃	① In cooling mode: defective outdoor fan (fan motor) or short cycle of air path ② Defective thermistor ③ Defective outdoor controller board	① Check outdoor fan (fan motor) Refer to page 49 to 51. ②④ Put the power off and operate again to check if U4 is displayed. If U4 is displayed, follow the U4 processing direction.
UE (1302)	**Abnormal High pressure (63H worked)** This error is detected (3.24MPa) from 63H action within 20 seconds of compressor starting in the first heating mode after power on. 63H: high-pressure switch	① Gas pipe side ball valve and liquid pipe side stop valve are shut during operation. ② Disconnection or contact failure of 63H ③ Defective outdoor controller board ④ Power supply reset is detected while indoor filter clogs and overload heating operation. ⑤ Defective outdoor controller board ⑥ Defective action of linear expansion valve	① Open ball valve and stop valve. ②③ Put the power off, and operate again to check if F5 is displayed. If F5 is displayed, follow the F5 processing direction. ④ Check indoor filter. ⑤ Replace outdoor controller board. ⑥ Check linear expansion valve. Refer to page 49 to 51.

Error Code	Meaning of error code and detection method	Case	Judgment and action
UF (4100)	**Compressor over current (start-up locked) breaking** Abnormal if compressor current exceeds 1.2 times of overload set value.	① Abnormal compressor ② Clogged indoor filter ③ Open-phase compressor	① Check compressor. Refer to page 52 and 53. ② Check indoor unit and repair defective. ③ Check connection.
UH (5300)	**Current sensor error** Abnormal if compressor current is not detected on first compressor start-up after power supply is put on.	① Disconnection or contact failure of connector (52C) on outdoor controller board ② Disconnection or contact failure of coil 52C ③ Defective outdoor controller board ④ Defective parts of 52C ⑤ Compressor V-phased wire does not penetrate through current detector.	①② Check connection. ③ Replace outdoor controller board. ④ Check 52C. ⑤ Check wiring.
UL (1300)	**Abnormal low pressure (63H worked)** Abnormal if connector (63L) is open (under- 0.03MPa) during compressor operation.	① Gas pipe side ball valve and liquid pipe side stop valve are shut during operation. ② Disconnection or contact failure of connector (63L) on outdoor controller board. ③ Disconnection or contact failure of 63L. ④ Defective outdoor controller board ⑤ Leakage or defective of refrigerant ⑥ Defective action of linear expansion valve	① Open ball valve and stop valve. ②③④ Put the power off and on again to check if F3 is displayed on restarting. If F3 is displayed, follow the F3 processing direction. ⑤ Leakage or defective of refrigerant ⑥ Check linear expansion valve Refer to page 49 to 51.
E0 (No display)	**Remote controller communication error (Signal receiving error)** (1) Abnormal if any signal from IC of refrigerant address “0” could not normally received for three minutes. (2) Abnormal if sub remote controller could not receive any signal for two minutes.	① Defective communication circuit of remote controller ② Defective communication circuit of indoor controller board of refrigerant address “0”. ③ Noise has entered transmission wire of remote controller. ④ All remote controllers are set as “sub” remote controller. In this case, E4 is displayed at outdoor LED, and E0 is displayed at remote controller. ⑤ Wiring regulations are not observed. Refer to (2) The transmitting specification for “A” control on page 59. •Length of wires •Number of remote controllers •Diameter of wires •Number of indoor units	①②③ Diagnose remote controller Dispose as follows according to diagnosis result. a) When “RC OK” is displayed, Remote controllers have no problem. Put the power off, and on again to check. If, “H0” is displayed for four minutes or more, 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. ④ Set one of the remote controllers “main”, if outdoor LED is E4 while E0 is displayed at remote controller.
E3 (No display)	**Remote controller communication error (Transmitting error)** (1) Abnormal if sub remote controller could not find blank of transmission path for six seconds. (2) Abnormal if remote controller could not finish transmitting 30 times continuously.	① Defective communication circuit of remote controller. ② Noise has entered transmission wire of remote controller. ③ Two or more remote controllers are set as "main."	
E8 (6840)	**Indoor/outdoor unit communication error (Signal receiving error) (Outdoor unit)** (1) Abnormal if outdoor controller could not receive anything normally for three minutes.	① Contact failure of indoor/outdoor unit connecting wire ② Defective communication circuit of indoor controller board ③ Defective communication circuit of indoor controller board ④ Noise has entered indoor/ outdoor unit connecting wire.	① Check disconnection or looseness of indoor/ outdoor unit connecting wire of indoor or outdoor units. ②③④ Put the power off, and on again to check. Replace indoor controller board or outdoor controller board if abnormality is displayed again.

Error Code	Meaning of error code and detection method	Case	Judgment and action
E9 (6841)	**Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)** (1) Abnormal if "0" receiving is detected 30 times continuously though indoor controller has transmitted "1". (2) Abnormal if outdoor controller could not find blank of transmission path for three minutes.	① Defective communication circuit of outdoor controller ② Noise has entered power supply. ③ Noise has entered indoor/ outdoor unit connecting wire. ④ Indoor/ outdoor unit connecting wire has contact failure. ⑤ Defective communication circuit between indoor and outdoor unit on indoor controller board.	①②③ Put the power off, and on again to check. Replace outdoor controller board if abnormality is displayed again.
EF (6607 or 6608)	**Not defined error code** This code is displayed when not defined error code is received.	① Noise has entered transmission wire of remote controller. ② Noise has entered indoor/ outdoor unit connecting wire.	①② Put the power off, and on again to check. Replace indoor controller board or outdoor controller board if abnormality is displayed again.

<M-NET communication error>

(Note) "Indoor unit" in the text indicates M-NET p.c. board in outdoor unit.

Error Code	Meaning of error code and detection method	Case	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 two 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 occurred. If the same address is found, shut of the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more after the address is corrected, and put the power on again. Check transmission waveform or noise on transmission wire.
A2 (6602)	**Hard ware error of transmission Pline** 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, shut off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more, and put the power on again. ② Check transmission waveform or noise on transmission wire.
A3 (6603)	**BUS BUSY** 1. Over error by collision damage Abnormal if transmitting 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 or etc. Note) The address and attribute displayed at remote controller indicate the controller that detected abnormality.	① Transmission processor could not transmit 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 wore 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) is not connected. ④ Check transmission waveform or noise on transmission wire.
A6 (6606)	**Communication error with communication Pline** 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 thunder surge. ② Address forwarding from unit processor is not transmitted normally because of defective transmission processor hardware.	Shut of the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more, and put the power on again. System returns normally if abnormality was accidental malfunction. If the same abnormality generates again, abnormality-generated controller may be defective.

Error Code	Meaning of error code and detection method	Case	Judgment and action
A7 (6607)	**NO ACK** 1. Transmitting side controller detects abnormal if a massage was transmitted but there is no reply (ACK) that a massage was received. Transmitting side detects abnormality every 30 seconds, six times continuously. Note) The address and attribute displayed at remote controller is indicate the controller that did not reply (ACK).	Common factor that has no relation with abnormality source. ① The unit of former address does not exist as address switch has changed while the unit was energized. ② Extinction of transmission wire voltage and signal is caused by over-range transmission wire. • Maximum distance ·····200m • Remote controller line ··(12m) ③ Extinction 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····125mm² or more ④ Extinction of transmission wire voltage and signal is caused by over-numbered units. ⑤ Accidental malfunction of abnormality-detected controller (noise, thunder surge) ⑥ Defective of abnormality-generated controller	**Always try the followings when the error "A7" occures.** ① Shut off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more, and put the power on again. If malfunction was accidental, the unit returns to normal. ② Check address switch of abnormality-generated address. ③ Check disconnection or looseness of abnormality-generated 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 there were some trouble of ①-⑤ above, repair the defective, then shut off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more, and put the power on again. • If there was no trouble with ①-⑤ above in single refrigerant system (one outdoor unit), controller of displayed address or attribute is defective. • If there was no trouble with ①-⑤ above in different refrigerant system (two 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 useless address information with manual setting function of remote controller. Only the system FRESH MASTER or LOSSNAY are connected to, or the system that is equipped with group setting of different refrigerant system. If there was no trouble with ①-⑥ above, replace the controller board of displayed address or attribute. If the unit does not return normally, multi-controller board of outdoor unit may be defective
	2. If displayed address or attribute is outdoor unit, Indoor unit detects abnormality when indoor unit transmitted to outdoor unit and there was no reply (ACK).	① Contact failure of transmission wire of outdoor unit or indoor unit ② Disconnection of transmission connector (CN2M) of outdoor unit ③ Defective transmitting receiving circuit of outdoor unit or indoor unit	
	3. If displayed address or attribute is indoor unit, Remote controller detects abnormality when remote controller transmitted to indoor unit and there was no reply (ACK).	① During group operation with indoor unit of multi- refrigerant system, if remote controller transmit to indoor unit while outdoor unit power supply of one refrigerant system is put off or within two 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 trnamsitting 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 put off or within two 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 trnamsitting receiving circuit of indoor unit or remote controller	

Continued to the next page.

From the previous page.

Error Code	Meaning of error code and detection method	Case	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 put off or within two 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 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 put off or within two 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 nonexistent,	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 massage was transmitted and there were reply (ACK) that massage was received, but response command does not return. Transmitting side detects abnormality every 30 seconds, six times continuously. Note) The address and attribute displayed at remote controller is 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 ·····200m • Remote controller line ··(12m) 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····125mm² or more ④ Accidental malfunction of abnormality-generated controller	① Check transmission waveform or noise on transmission wire. ② Shut off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for two minutes or more, and put the power on again. If malfunction was accidental, the unit returns to normal. If the same abnormality generates again, controller of displayed address and attribute may be defective.

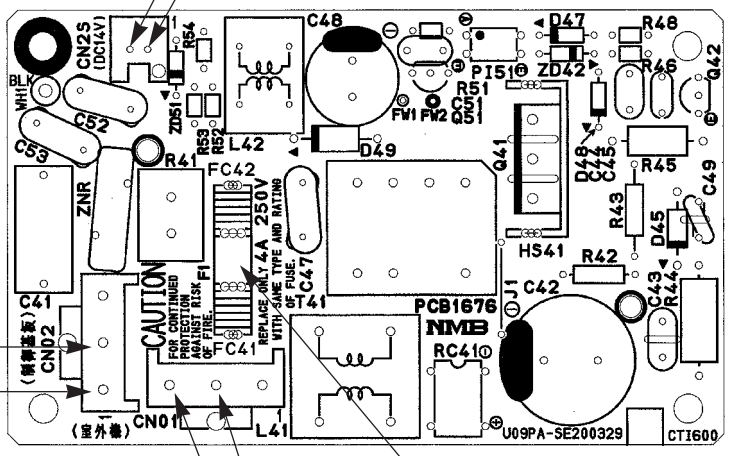
13 TEST POINT DIAGRAM

13-1. INDOOR UNIT

13-1-1. Indoor power board

● **PLH-P•KAH, PLA-P•KA**
PCH-P•GAH, PCA-P•GA
PCA-P•HA
PKH-P•GAH, PKA-P•GA
PKH-P•FALH, PKA-P•FAL
PSH-P•GAH, PSA-P•GA
PLH-P•AAH, PLA-P•AA
PEHD-P•EAH, PEAD-P•EA

CN2S
Connect to the indoor controller board (CN2D)
(12~16V DC)



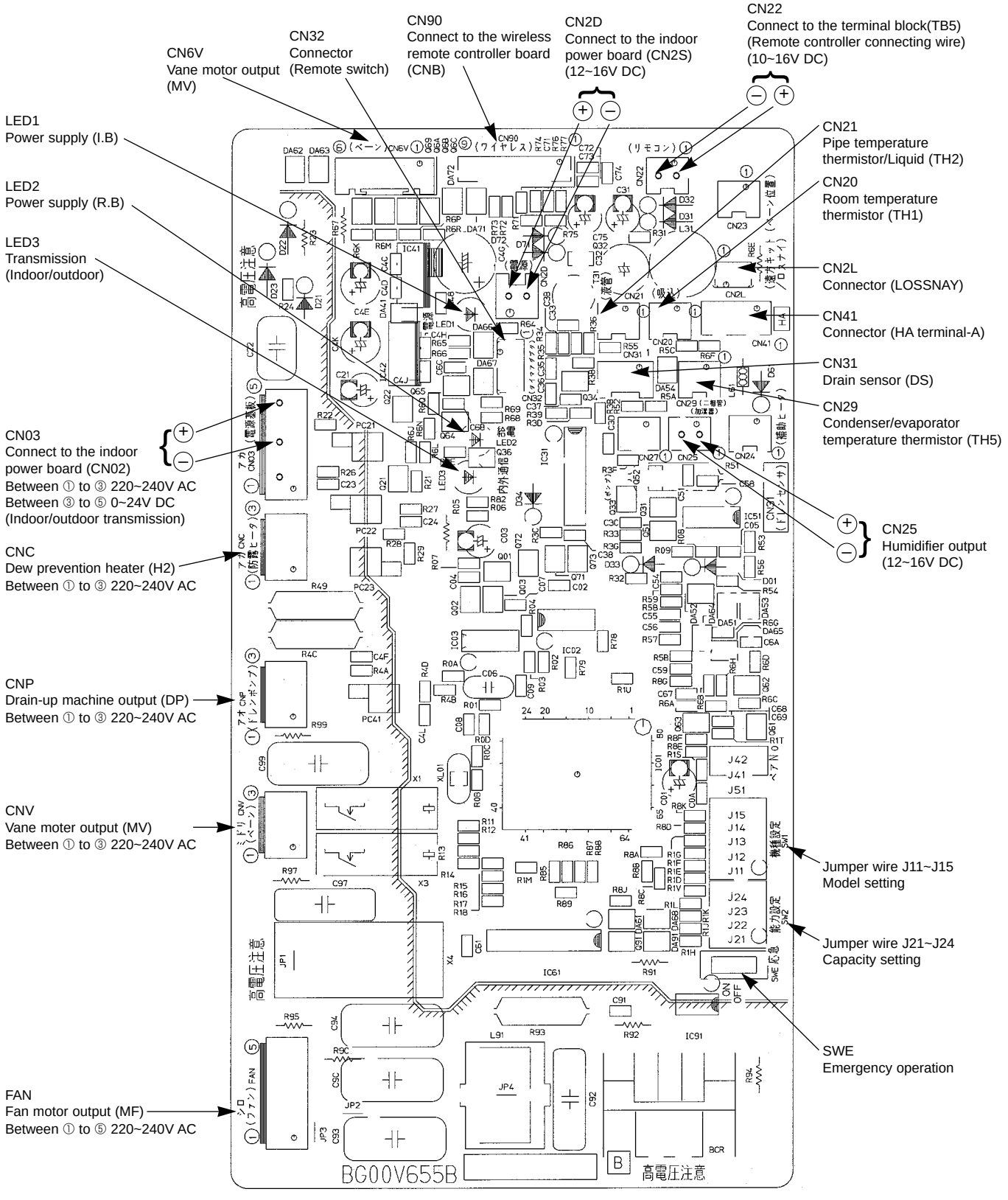
CN02
Connect to the indoor controller board (CN03)
Between ① and ② 0~24V DC
(Indoor/Outdoor transmission)
Between ② and ③ 220~240V AC

Fuse 4A/250V

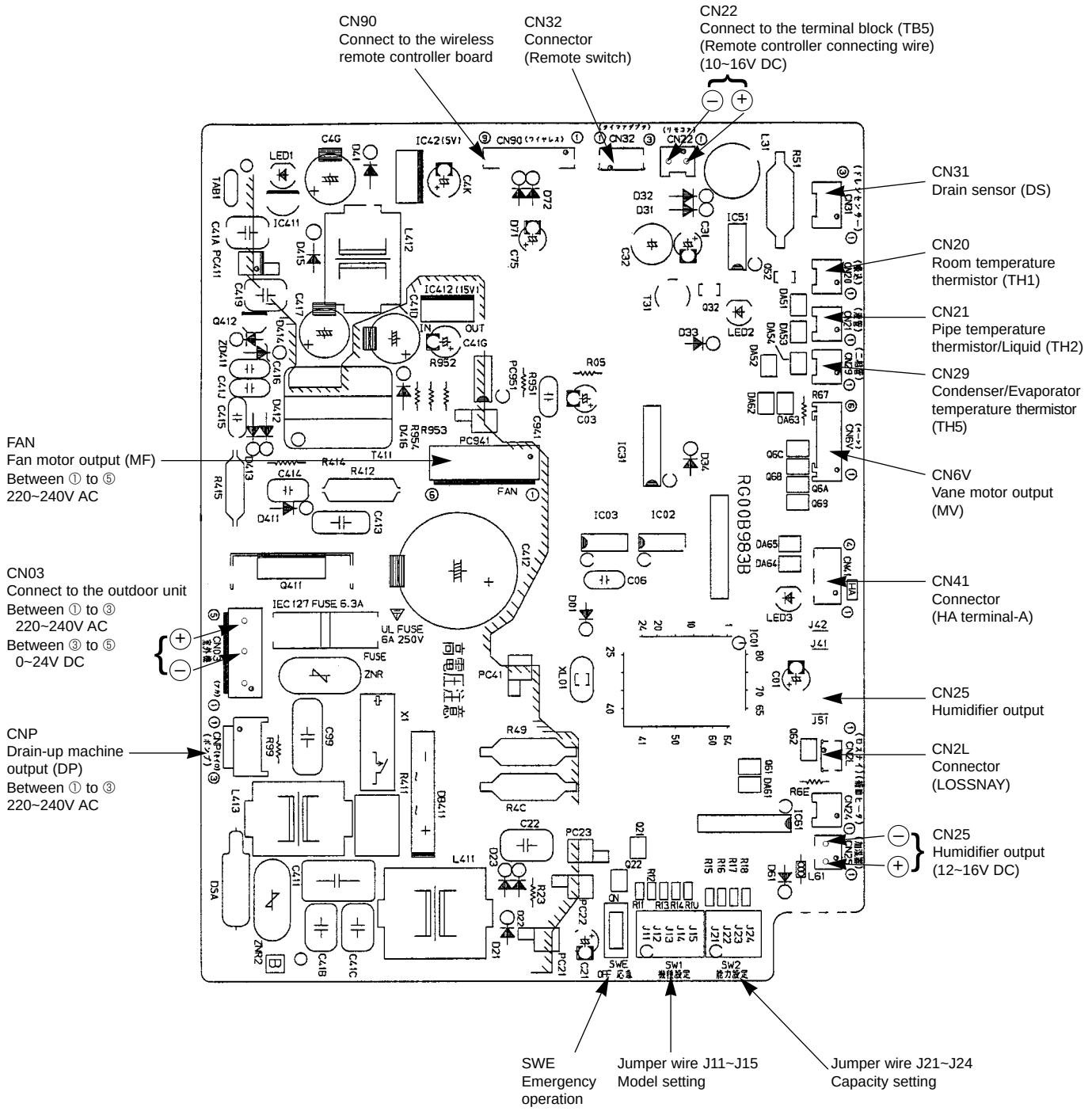
CN01
Connect to the Terminal Block (TB4)
(Indoor/outdoor connecting line)
Between ① and ② 220~240V AC
Between ② and ③ 0~24V DC
(Indoor/outdoor transmission)

13-1-2. Indoor controller board

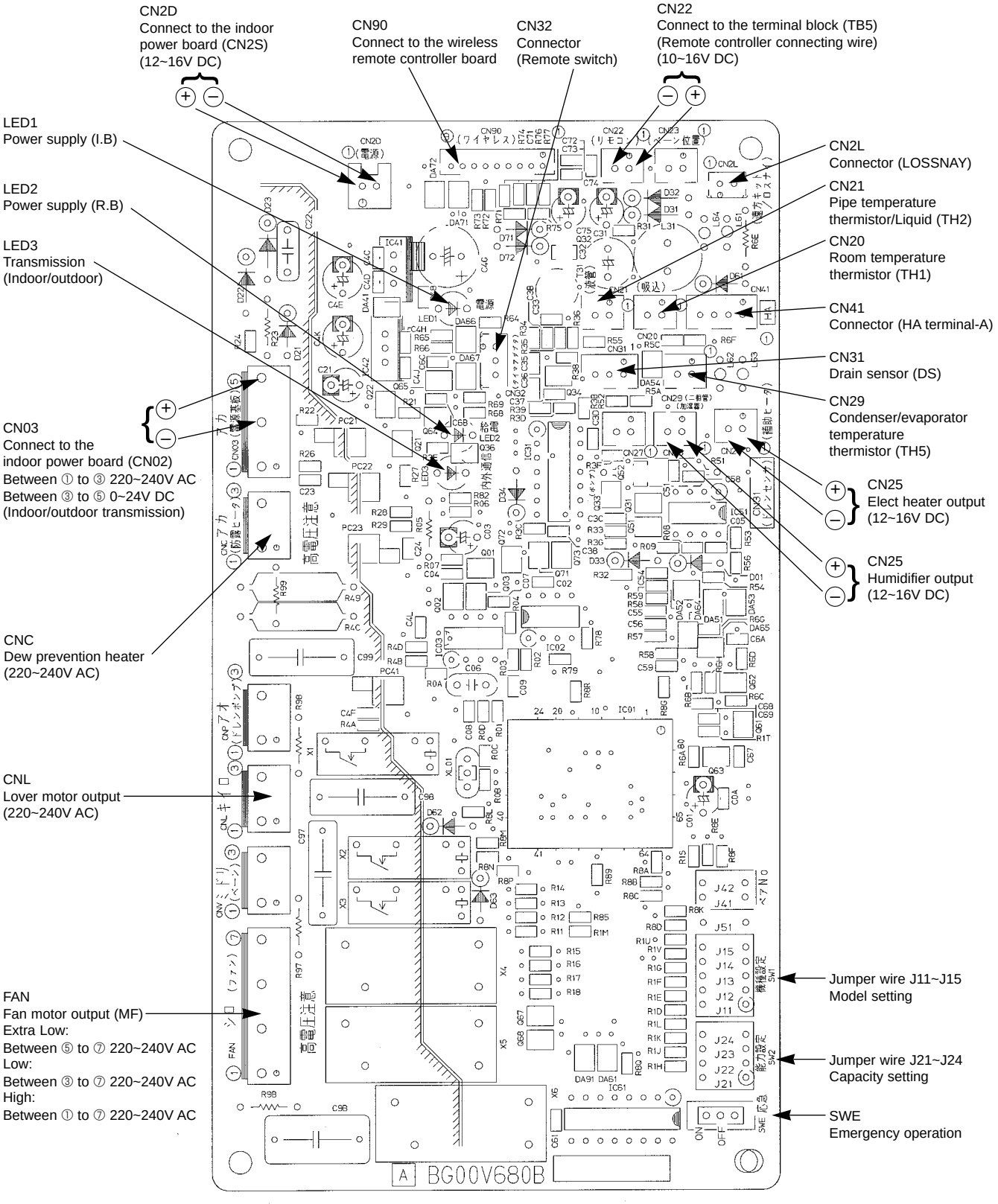
● **PLH-P•KAH, PLA-P•KA**
PLH-P•AAH, PLA-P•AA
PCH-P•GAH, PCA-P•GA
PKH-P•FALH, PKA-P•FAL
PKH-P•GALH, PKA-P•GAL



● **PMH-P•BA**


CN90
Connect to the wireless remote controller board
CN32
Connector
(Remote switch)
CN22
Connect to the terminal block (TB5)
(Remote controller connecting wire)
(10~16V DC)
CN31
Drain sensor (DS)
CN20
Room temperature thermistor (TH1)
CN21
Pipe temperature thermistor/Liquid (TH2)
CN29
Condenser/Evaporator temperature thermistor (TH5)
FAN
Fan motor output (MF)
Between ① to ⑤
220~240V AC
CN6V
Vane motor output (MV)
CN03
Connect to the outdoor unit
Between ① to ③
220~240V AC
Between ③ to ⑤
0~24V DC
CN41
Connector
(HA terminal-A)
CN25
Humidifier output
CNP
Drain-up machine output (DP)
Between ① to ③
220~240V AC
CN2L
Connector
(LOSSNAY)
CN25
Humidifier output
(12~16V DC)
SWE
Emergency operation
Jumper wire J11~J15
Model setting
Jumper wire J21~J24
Capacity setting

● **PSH-P•GAH, PSA-P•GA**
PEHD-P•EAH, PEAD-P•EA
PCA-P•HA

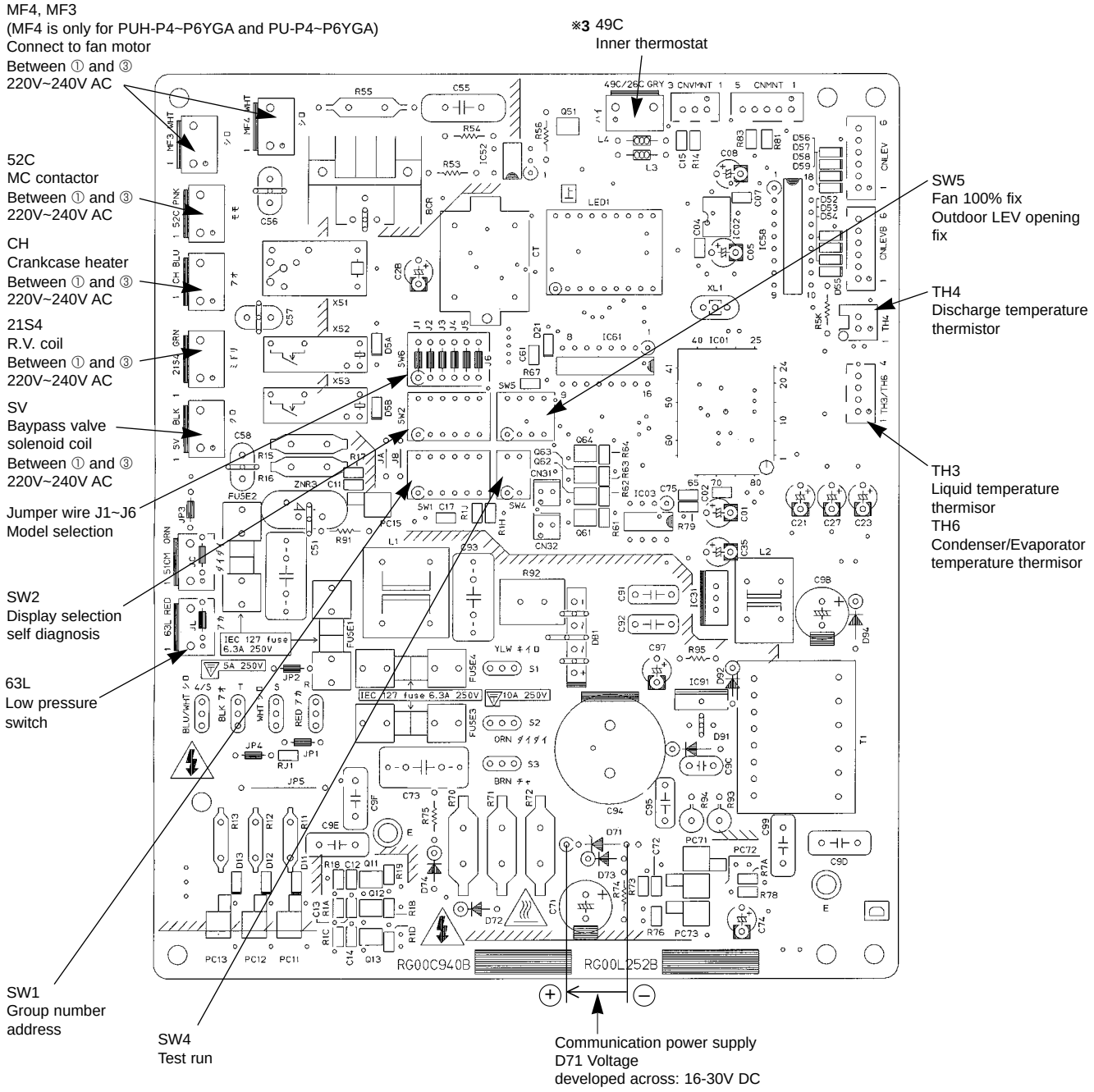


13-2. OUTDOOR UNIT

13-2-1. Outdoor controller board

● **PUH-P1.6VGA PUH-P2VGA PUH-P2.5VGA PUH-P3VGA**
PUH-P1.6YGA PUH-P2YGA PUH-P2.5YGA PUH-P3YGA PUH-P4YGA PUH-P5YGA PUH-P6YGA

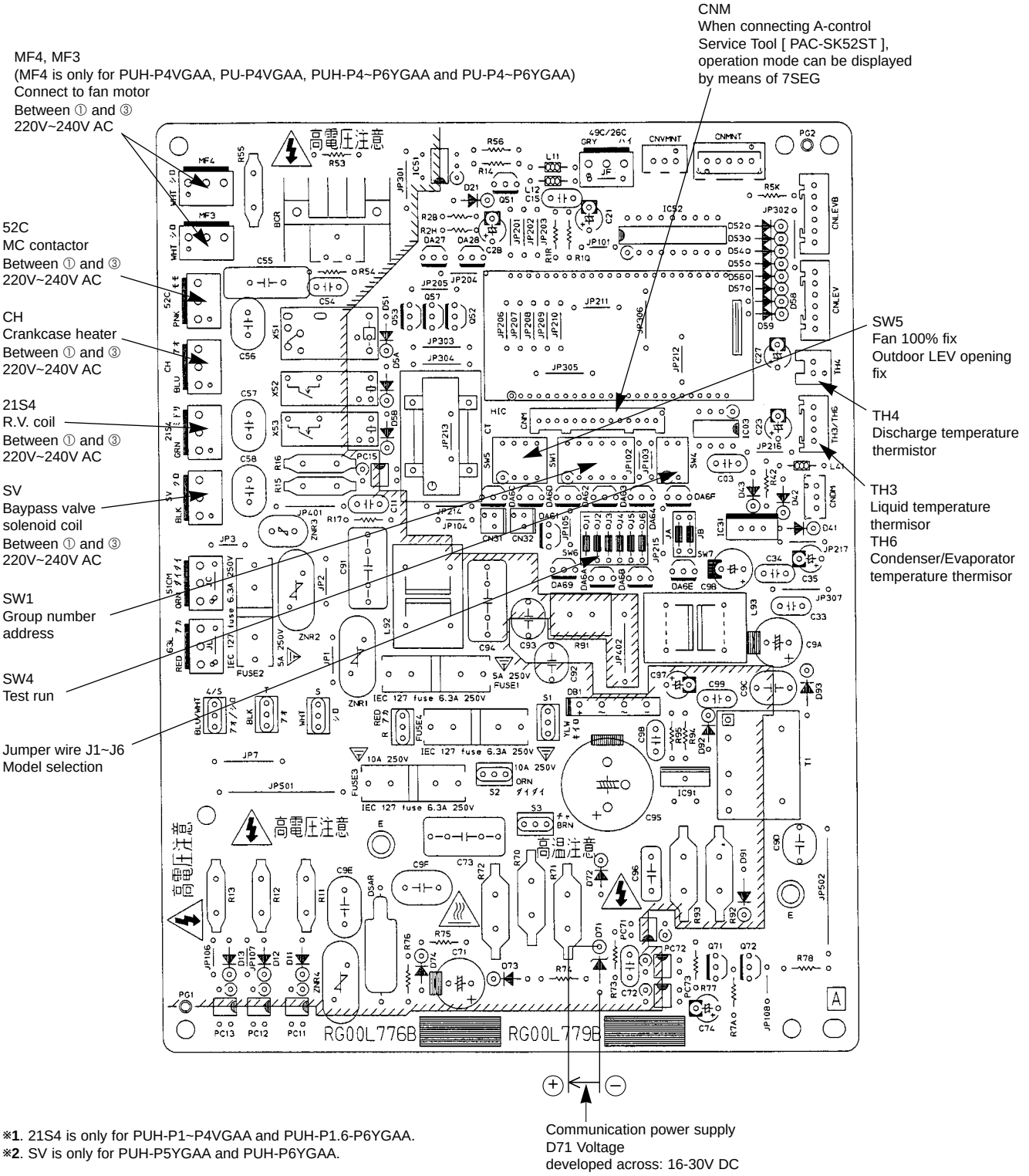
PU-P1.6VGA PU-P2VGA PU-P2.5VGA PU-P3VGA
PU-P3YGA PU-P4YGA PU-P5YGA PU-P6YGA



※**1**. 21S4 is only for PUH-P1.6~P3VGA and PUH-P3-P6YGA.
※**2**. SV is only for PUH-P5YGA and PUH-P6YGA.
※**3**. 63L and 49C are only for PUH-P5,P6YGA and PU-P5,P6YGA.

● **PUH-P1VGAA PUH-P1.6VGAA PUH-P2VGAA PUH-P2.5VGAA PUH-P3VGAA PUH-P4VGAA**
PUH-P1.6YGAA PUH-P2YGAA PUH-P2.5YGAA PUH-P3YGAA PUH-P4YGAA
PUH-P5YGAA PUH-P6YGAA

PU-P1.6VGAA PU-P2VGAA PU-P2.5VGAA PU-P3VGAA PU-P4VGAA
PU-P1.6YGAA PU-P2YGAA PU-P2.5YGAA PU-P3YGAA PU-P4YGAA
PU-P5YGAA PU-P6YGAA



※**1**. 21S4 is only for PUH-P1~P4VGAA and PUH-P1.6-P6YGAA.
※**2**. SV is only for PUH-P5YGAA and PUH-P6YGAA.

14 TROUBLESHOOTING

[for wired remote controller]

Before you call out a repair man, check the following table to see whether there is a simple solution to your problem.

Problem	Solution
The room neither gets cool nor warm very much.	Clean the filter. (Dust and rebris that collects in the filter will decrease air-flow.)
	Check the temperature setting and adjust it if necessary.
	Increase the space surrounding the outdoor unit.
	Is the air intake or air outlet blocked?
	Is a window or door open?
The unit does not blow air out right away in the heating mode.	The unit is preparing to deliver warm air.
The unit stops operating before arriving at the set temperature in the heating mode.	Frost forms when the outdoor temperature is low and humidity is high. Wait for about 10 minutes for the frost to melt.
The airflow direction suddenly changes.	After one hour of cooling-mode operation with the airflow in a downward direction, the unit will automatically change to the “Horizontal air-flow” mode. This is to prevent any moisture that may have collected from dripping.
	When the unit is in the heating or defrosting mode, it will automatically change to the “Horizontal airflow mode”. The vanes will go through a test run before they situate into the specified angle.
Air direction doesn't move (change). (Up/down vane, left/right louver)	1) Check whether the vane has been set to a fixed position (check whether the vane motor connector has been removed). 2) Check whether the unit has a function for switching the air direction. If the unit doesn't have this function, "FUNCTION DOESN'T EXIST" appears when you press the remote control's UP/DOWN VANE or LOUVER button.
When changing the airflow direction, the vanes make at least a complete rotation before stopping in place.	The vanes will go through a test run before they situate into the specified angle
There is a “swishing” noise that occurs from the unit when water flows.	This sound is made when refrigerant inside of the unit is flowing or refilling.
Unit occasionally makes a gurgling sound.	Not an error. This sound is caused by the flow of the refrigerant in the air conditioner being switched.
Unit occasionally thuds.	Not an error. This sound is emitted when the air conditioner (outdoor unit) starts operating.
Outdoor unit occasionally rattles.	Not an error. This sound is caused by the blower air volume control that the outdoor unit performs to maintain the optimum operation status.

Problem	Solution
A ticking noise is heard from inside of the unit.	This sound is made when internal parts of the unit expand or contract when the temperature changes.
An odour is detected in the room.	This is caused when the unit expels odours that have been absorbed from the walls, carpets, furniture or clothing.
A white mist is expelled from the indoor unit.	This may occur just after the unit is turned on when a high level of humidity is present in the room.
Water or moisture is expelled from the outdoor unit.	This occurs to expel water or moisture that may have collected in the
	pipes or around piping fixtures. This occurs to dispel water from the heat exchanger.
The indicators of the remote controller do not light up when operated.	Turn on the power switch “ ◉“ will be displayed.
CENTRALLY CONTROLLED is displayed in the remote controller.	The start and stop function of the remote controller are not available when the CENTRALLY CONTROLLED message is lit.
The start and stop functions are not available just after restarting the unit.	Wait about three minutes (operation has stopped to prevent damage to the air conditioner).
Fan speed doesn't match set fan speed during DRY operation. (Sometimes no air comes out during DRY operation.)	Not an error. During the DRY operation, blower ON/OFF is controlled by a microprocessor to prevent overcooling and to ensure efficient dehumidification. The fan speed can't be set by the remote controller during DRY operation.
Fan speed doesn't match set fan speed during HEAT operation. (Sometimes no air comes out during HEAT operation.)	Not an error. 1). When the HEAT operation starts, to prevent the unit from emitting cold air, the fan speed is gradually increased from zero to the set speed, in proportion to the temperature rise of the air emitted. 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 melt the frost adhering to the outdoor unit. During the DEFROST operation, the blower is stopped to prevent cold air coming from the indoor unit.
Air sometimes comes out when operation is stopped after HEAT operation.	Not an error. The blower operates to eliminate the residual heat in the heated air conditioner. It stops after about 1 minute. This operation is performed when operation is stopped with the electric heater ON.

Problem	Solution
The unit started even though the start/stop button was not pushed.	Is this timer on? Press the start/stop button to stop the unit.
	Was a distant commend sent from the remote controller? Find out if the remote controller was used.
	Is the CENTRALLY CONTROLLED message lit? Find out if the remote controller was used.
	Is the automatic (cooling/heating) mode selected? Press the start/ stop button to stop the unit.
The unit stopped even though the start/stop button was not pushed.	Is the timer on? Press the start/stop button to restart the unit.
	Was a distant command sent from the remote controller? Find out if the remote controller was used.
	Is the CENTRALLY CONTROLLED message lit? Find out if the remote controller was used.
The remote controller`s timer cannot be set.	Set the schedule timer if one is connected.
“H0” is displayed in the remote controller.	An automatic startup test is being performed (will last for about two minutes).
"FILTER" is displayed.	Indicates that it is time to clean the air filter. Clean the air filter. Press the FILTER button on the remote controller twice to make the display disappear. See the instruction manual that came with the product for how to clean the filter.
"HEAT SETUP" is displayed.	Displayed when the unit starts HEAT operation, when the air conditioning function puts the compressor in operation mode, or when the outdoor unit ends DEFROST operation and returns to HEAT operation. The display disappears after about 10 minutes. "HEAT SETUP" displayed on the remote controller indicates that the indoor unit's heat exchanger hasn't fully heated up, so the blower air volume is restricted. To prevent cold air from being felt at this time, the up/down vane is automatically set to horizontal blow. When "HEAT SETUP" is released, the up/down vane returns to the setting specified by the remote controller.

Problem	Solution
"DEFROSTING" is displayed (no air comes out the unit).	Frost adheres to the outdoor unit when the outside air temperature is low and the humidity is high. This display indicates that the DEFROST operation is being performed to melt this frost. The DEFROST operation ends after about 10 minutes (15 minutes maximum). During the DEFROST operation, the indoor unit's heat exchanger becomes cold, so the blower is stopped. The up/down vane is automatically set to horizontal blow. When the DEFROST operation ends, the unit switches to the HEAT SETUP operation.
An error code is displayed in the remote controller.	A self-diagnostic function is being performed to preserve the air conditioner. * Do not attempt to make repairs yourself. Turn the main switch off and contact the dealer from whom you bought the air conditioner. Provide him or her with the name of the unit and the information displayed in the remote controller.
No display appears on the wireless remote controller. Signals are not received by the thin sensor unless sent from close up.	The batteries are becoming weak. Replace the batteries and press the reset button. * If the display does not appear after replacing the batteries, make sure that the (+,–) cells are aligned correctly.
The operating display of the wireless remote controller`s receiver is flashing.	A self-diagnostic function is being performed to preserve the air conditioner. * Do not attempt to make repairs yourself. Turn the main switch off and contact the dealer from whom you bough the air conditioner. Provide him or her with the name of the unit.

[for wireless remote controller]

Before you call out a repair man, check the following table to see whether there is a simple solution to your problem.

Problem	Display reading	Cause	Solution
Unit does not operate at all.	When POWER ON/OFF button is pushed, there is not beep and nothing is displayed.	Main power switch is turned off.	Turn main power on. Then press the POWER ON/OFF button to turn the unit on.
		Main power fuse has blown.	Replace the fuse.
		Outdoor unit`s ground fault breaker is open.	Replace the ground fault breaker.
		A power cut has occurred (see NOTE below).	Wait until power is restored, then press the POWER ON/OFF button to turn the unit on.
Unit discharges air well, but fails to cool or heat the room well.	Liquid-crystal display indicates that the unit operates.	Improper temperature setting.	After checking the temperature setting.
		Filters are clogged.	Clean the filter and resume operation.
		Outdoor unit`s intake or outlet is obstructed.	Remove the obstruction.
		A door or window has been open.	Shut door or window.
Unit does not start immediately.	Liquid-crystal display indicates that the unit operates.	Unit is waiting three minutes before restarting.	Wait until the unit restarts automatically. The compressor may hesitate resuming because a three-minute resume prevention circuit is incorporated in the outdoor unit for protection of the compressor.

NOTE: After a power cut, the unit will not restart automatically. You will have to restart it by pressing the POWER - ON/OFF button on the remote controller.

If none of the above apply, turn the main switch off and contact the dealer from whom you bough the air-conditioner, telling him the model name and the nature of the problem. Do not try to fix the unit yourself.

In any of the following cases, turn off the main power switch and contact your local dealer for service:

- The operation lamp (on the main unit) flashes.
- The switches do not work properly.
- The circuit breaker trips frequently (or the fuse blows frequently).
- Water has accidentally been splashed into the unit.
- Water leaks from the unit.
- Something is accidentally dropped into the air-conditioner.
- An unusual noise is heard during operation.

The following do not indicate any malfunction:

·Odours :Smells such as tobacco or cosmetic odours may persist after they have been sucked into the unit.

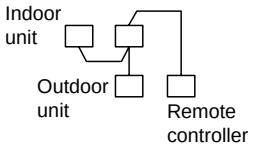
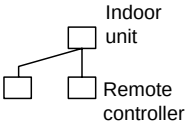
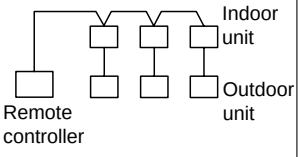
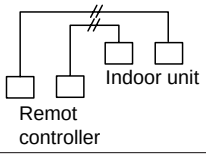
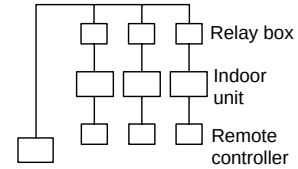
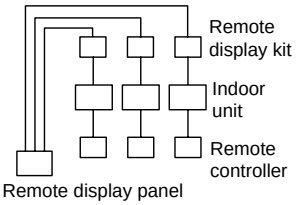
·Sound of liquid flowing inside indoor unit :This can occur during or after operation and is simply the sound of refrigerant being circulated inside the unit.

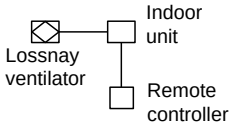
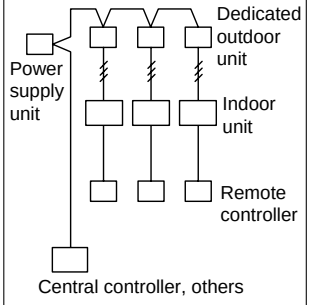
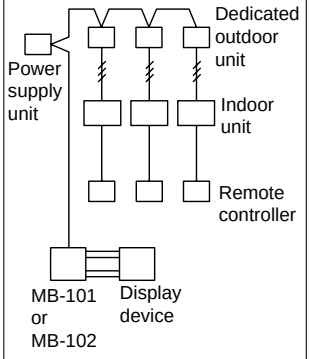
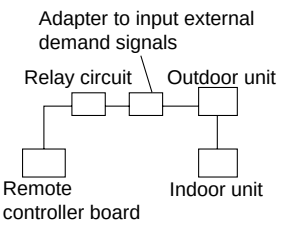
·Ticking sound coming from indoor unit :This can occur when cooling or heating has just begun or has just stopped. It is caused by the indoor unit shrinking or expanding slightly due to the change in temperature.

·The message “CENTRALLY CONTROLLED” appearing on the LCD panel : From time to time, this message may come up on the LCD panel. This does not indicate any malfunction.

15 SYSTEM CONTROL

15-1. VARIETY OF SYSTEM CONTROL FUNCTIONS

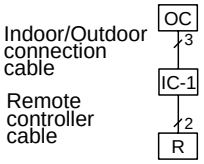
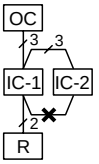
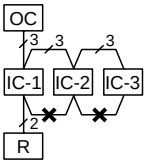
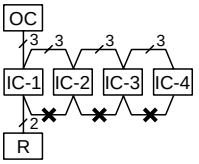
System Name	System Digram	Features	Parts To Be Procured (Sold separately or obtained locally.)
A. Remote controller operation (Standard type)		• There are two types of remote controllers: wired type and wireless type. • Simultaneous twin, triple and quad units are counted as one unit and the indoor units can be operated or stopped simultaneously. • An individual twin is counted as two units and the indoor units can be operated independently. Each can perform a different operation. For example, one unit can be used for cooling while another is used for heating.	———
B. Two remote controller operation		• Up to two remote controller can be connected to one group. • Simultaneously twin, triple and quad units are counted as one group. • The operating control is the most recent command (last entered priority).	• Wired remote controller • Wireless remote controller
C. 1 remote controller group operation		• The remote controller is connected and the address for each outdoor unit is set so that a group of up to 16 units can be started sequentially. • Simultaneous twin, triple and quad units are counted as one unit. • One group can operate in the same mode but the on/off operation of the thermostat is performed independently by each outdoor unit.	• Wired remote controller
D. Power failure automatic recovery operation	———	• This can be set by using the function selection from the remote controller.	———
E. Individual operation from separate room		• The remote controller cord for the wired remote controller can be extended to up to 500 meters. ※ The optical receiving section cord for the wireless remote controller cannot be extended.	• Remote controller extension cord (0.3 to 1.25 mm²)
F. Control operation of joint remote/ hand-held units.		• Group on/off of all air conditioners can be done from remote unit. • Switching of remote control/hand-held control can be performed.	• Remote ON/OFF (PAC-SE55RA-E) Relay box (Installed locally)
G. Operation by external signal	———	• Compatible with either level or pulse signals.	• Remote ON/OFF (PAC-SE55RA-E)
H. Erasing of remote display		• Connect the "Remote Operation Adapter" (sold separately) and "Remote Display Panel" (Installed locally) to permit no-voltage contact output of each signal for operation and error and remote input functions (pulse input) to be added.	• Remote operation adapter (PAC-SF40RM-E) • Remote Display Panel (Installed locally)
I. Timer operation	———	① On/Off time can be set in increments of 10 minutes. The standard model allows for up to one control cycle in a 24 hour period. There are three kinds of timers: on timer, off, timer and on/off timer.	———
		② Connecting the "Program Timer" (sold separately) to the remote controller will provide setting control for On/Off in 30 minute increments in day increments.	• Program timer (PAC-SC32PTA)
		③ Connection the "Remote Operation Adapter" to the circuit board of the indoor unit will allow operating control to be performed by a commercially available timer	• Remote Operation Adapter (PAC-SE55RA-E) • Timer (Commercially available)

System Name	System Digram	Features	Parts To Be Procured (Sold separately or obtained locally.)
J. Air conditioners operating control together with peripheral equipment		• Connect the indoor unit with a Mitsubishi Lossnay ventilator and the function selection of the remote controller can be used to change the fan speed of the Lossnay and operate it linked with or independent of the indoor unit.	• Wired remote controller • Lossnay operating cable (PAC-SB81VS)
K. Method for obtaining humidifier signal	————	• It can obtain the humidifying signal linked to the heater operation of the air conditioners.	————
L. Temperature sensor external mounting method	————	• Temperature sensors for the air conditioners are provided as standard equipment at the intake port of the indoor unit and two locations of the wired remote controller. The function selection from the wired remote controller can be used for switching.	• Wired remote controller
	————	• If the sensor in the intake port of the indoor unit is replaced with a "Temperature Sensor" (sold separately), it can be externally mounted.	• Temperature sensor (PAR-SE40TS-E)
M. Central control		• If a dedicated outdoor unit (PUH-J**GAM) is used, it can be connected to a MELANS system controller (for M-NET). • The hand held remote controller is the Slim A control remote controller . • In the restriction of the MELANS system, the number of indoor units controlled is calculated as the number of dedicated outdoor units in the case of the A controller. (Any of from among simultaneous twin, triple and quad is counted as one unit.) • Number of dedicated outdoor units controlled: Central controller (MJ-102MTR-B): 50 units Multi-panel controller (MJ-111AN-B): 50 units Group remote controller (PAC-SC30GR): 16 units	• Outdoor unit for connecting to M-NET • Central controller (MJ-102MTR-B) • Group remote controller (PAC-SC30GR) • Multi-panel controller (MJ-111AN-B)
L. Operation with external display device and control panel		• It is possible to form blocks (collections of multiple groups) to obtain contact points for operation settings (starting, stopping) and contact points for status monitoring (operation, error). MB-101: Maximum of 48 contact points. 12 blocks. MB-102: Maximum of 96 contact points, 24 blocks. • Operation setting Starting and stopping can be done by block units or all at once. • Status monitoring It is possible to monitor operation or stop status and error or normal operation status.	• Outdoor unit for connecting to M-NET • Parallel interface kit (MB-101, MB-102)
M. Demand control		• When outdoor controller board receives demand signals, outdoor unit is suspended and indoor units run under “fan” operation mode.	• Adapter to input external demand signals (PAC-SC36NA) • Relay circuit (PAC-SA86SK)

15-2. One Remote Controller (Standard) Operation

(1) One Wired Remote Controller

(OC: Outdoor unit IC: Indoor unit R: Remote controller (for wireless type: optical receiver adapter)

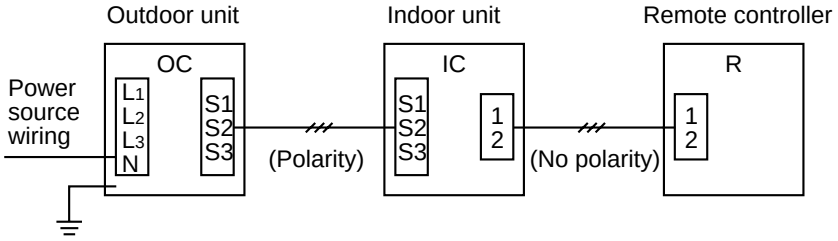
Slim Air Conditioners System		Standard 1:1	Simultaneous Twin	Simultaneous Triple	Simultaneous Quadro
Remote controller connection circuit (Controller cable)	Outdoor unit OC Indoor unit IC Wired remote controller R				

(Reference)

① If simultaneous twin, triple or four, connect the remote controller to anyone of the indoor units. Can control all functions of the indoor unit even if different models (different types) are mixed. Note that there may be some restrictions of the functions.

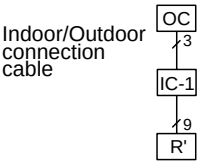
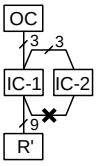
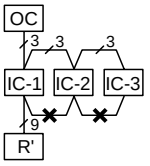
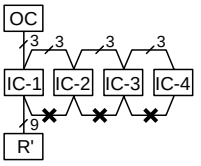
② Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units. (Prohibited item.)

③ Electrical wiring diagram



- Power supply terminal block L_1, L_2, L_3, N
- Indoor/outdoor connection cable terminal block S1, S2, S3 (Polarity)
- Remote controller cable terminal block 1,2 (No polarity)

(2) Wireless remote controller

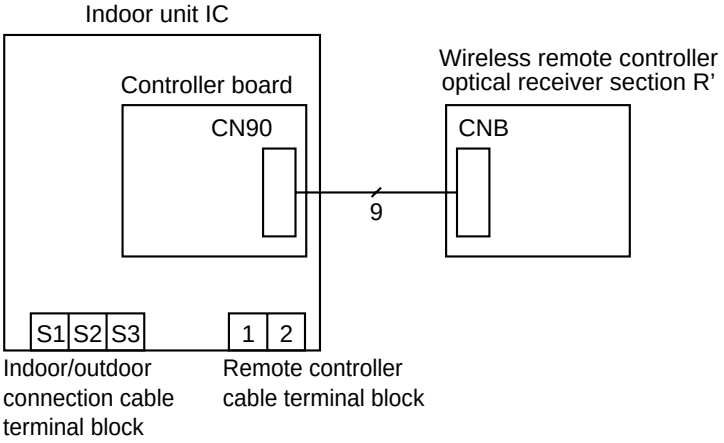
Slim Air Conditioners System		Standard 1:1	Simultaneous Twin	Simultaneous Triple	Simultaneous Quadro
Remote controller optical receiver section connection circuit	Outdoor unit OC Indoor unit IC Wireless remote controller optical receiver section R'				

(Reference)

① If simultaneous twin, triple or four, connect the remote controller to anyone of the indoor units. Can control all functions of the indoor unit even if different models (different types) are mixed. Note that there may be some restrictions of the functions.

② Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units. (Prohibited item.)

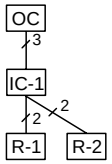
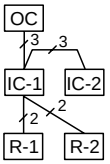
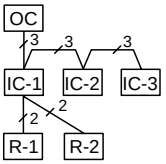
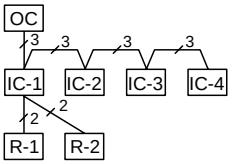
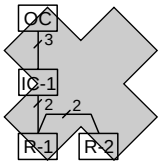
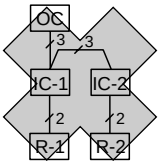
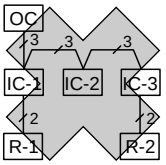
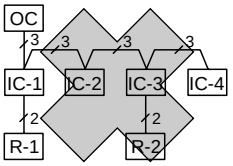
③ Electrical wiring diagram



15-3. Two remote controller control operation

(1) Two Wired Remote Controllers

(OC: Outdoor unit IC: Indoor unit R-1 Master remote controller R-2 Slave remote controller)

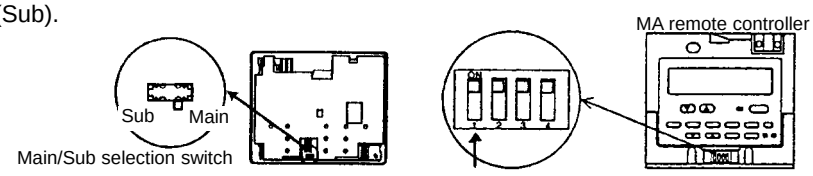
Slim Air Conditioners System		Standard 1:1	Simultaneous Twin	Simultaneous Triple	Simultaneous Quadro
Remote controller connection circuit (Controller cable)	Outdoor unit OC Indoor unit IC Wired remote controller R				
	Outdoor unit OC Indoor unit IC Wired remote controller R				

(Reference)

① If simultaneous twin, triple or four, connect the remote controller to anyone of the indoor units. Can control all functions of the indoor unit even if different models (different types) are mixed. Note that there may be some restrictions of the functions.

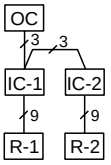
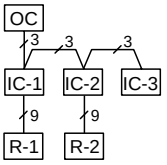
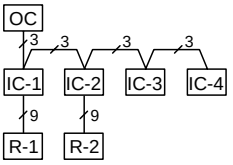
② Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units. (Prohibited item.)

③ On the main body of each remote controller, set the "Main/Sub selection switch" on one unit to "Main" (factory setting) and the other to "Sub". If MA remote controller, set switch No.1 to ON [(Main) Factory setting] and remaining switches to OFF (Sub).



(2) Two wireless remote controllers

(OC: Outdoor unit IC: Indoor unit R: Master remote controller R': Wireless remote controller optical receiver section)

Slim Air Conditioners System		Standard 1:1	Simultaneous Twin	Simultaneous Triple	Simultaneous Quadro
Remote controller optical receiver section connection circuit	Outdoor unit OC Indoor unit IC Wireless remote controller optical receiver section R'	Cannot use two remote controllers.			

(Reference)

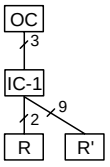
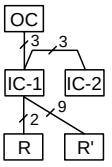
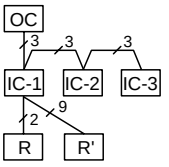
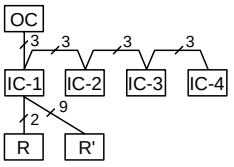
① If simultaneous twin, triple or four, connect the remote controller to anyone of the indoor units. Can control all functions of the indoor unit even if different models (different types) are mixed. Note that there may be some restrictions of the functions.

② Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units. (Prohibited item.)

③ Standard 1:1 While it is not possible to connect two remote controller optical sections to an indoor unit, it is possible to connect one each of the remote controller optical sections to each indoor unit. When this is done, all pair numbers are set to "0" (No setting required. Factory setting) and they can be stopped and started simultaneously.

(3) One each of wired and wireless remote controllers

(OC: Outdoor unit IC: Indoor unit R: Master remote controller R': Wireless remote controller optical receiver section)

Slim Air Conditioners System		Standard 1:1	Simultaneous Twin	Simultaneous Triple	Simultaneous Quadro
Remote controller optical receiver section connection circuit	Outdoor unit OC Indoor unit IC Remote controller optical receiver section R-R'				

(Reference)

① If simultaneous twin, triple or four, connect the remote controller to anyone of the indoor units. Can control all functions of the indoor unit even if different models (different types) are mixed. Note that there may be some restrictions of the functions.

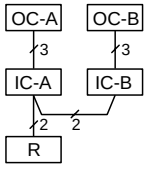
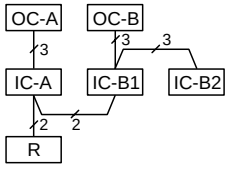
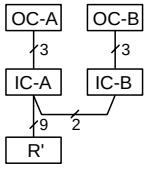
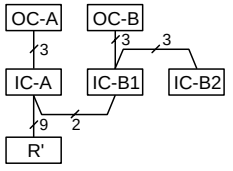
② Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units. (Prohibited item.)

③ On simultaneous twin, triple or four, it is possible to connect one each of the remote controller optical receiving section to each indoor unit.

15-4. Group control operation (Operating control of multiple refrigerant systems (2 to 16) as one group)

- Multiple Slim air conditioners operate at the same setting (operating mode, set temperature, etc.). However, each outdoor unit is turned on and off individually by the intake sensor.
- Can be used when there are restrictions when combining Free Combo Multi units (such as floor mount type and ceiling cassette, ceiling suspended, ceiling recessed, etc.) Up to 16 refrigerant systems can be controlled as a group by one remote controller.
- The outdoor unit addresses must be set. An address can be between 0 and 15 with no duplicates. Also, always set one unit as zero (0).

※ Simultaneous twin, triple and quad are one refrigerant systems. They are not multiple refrigerant systems. Individual twin is a two refrigerant system and addresses must be set for two refrigerant systems.

Slim Air Conditioners System		Standard 1:1 x 2	Standard 1:1 + simultaneous twin
Remote controller connection circuit (Controller cable)	Outdoor unit OC Indoor unit IC Wired remote controller R		
	Outdoor unit OC Indoor unit IC Remote controller optical receiver section R'		

(Reference)

① When there is two remote controller control, refer to two remote controller control operation.

② When there are different indoor unit models mixed within the same group, always set the outdoor unit that is connected to the indoor unit with the most functions (fan speed, vanes, louvers, etc.) as the host (refrigerant address = 00).

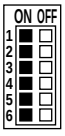
③ Do not use crossover wiring among indoor units with simultaneous twin, triple or quadro units.

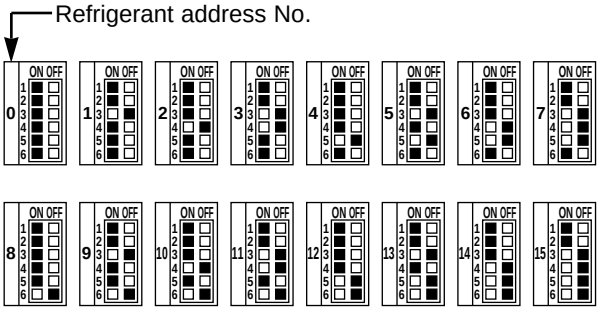
■ Outdoor unit address setting

- The address of each outdoor unit must be set when there is to be group control.
- The setting of the address of the outdoor unit is done by using DIP switch SW1 (3 to 6) on the circuit board of each outdoor unit. (Factory setting: all are set to off).
- The address setting by SW1 is as follows.

	Function	Operation by switch operation	
		ON	OFF
SW1 function selection	1. Forced defrosting		Normal
	2. –		Normal
	3. Refrigerant address setting 4. ↑ 5. ↑ 6. ↑	Set outdoor unit address between 0 and 15	

<SW1>





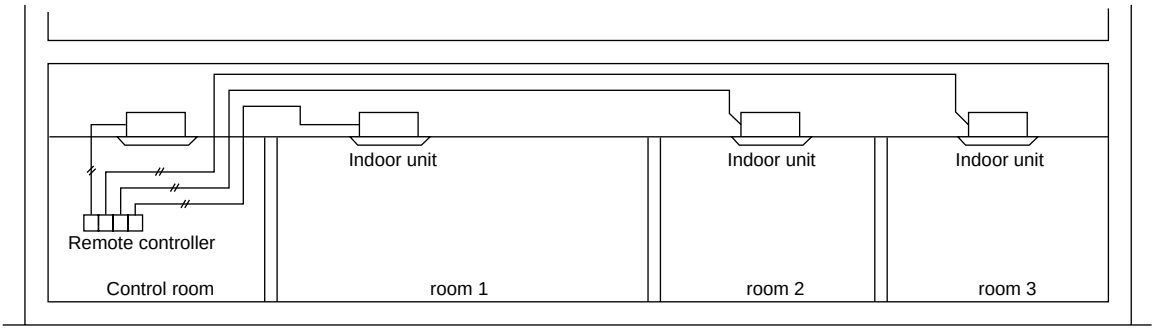
Factory setting: All off refrigerant addresses are No. 0.

15-5. Power Outage Automatic Recovery Operation

- Whenever a power outage or switching of the power supply causes the power supply of an operating air conditioner to go from OFF to ON, this function will automatically restore the operation of the air conditioner to its previous operating mode.
  ※ If the power is turned from OFF to ON when the air conditioner is not in operation, the air conditioner will not automatically be turned on. However, the timer operation will be cancelled if the air conditioner is in timer operation (including when the unit is waiting for its start time). Setting for timer operation must be performed once again.
- If there is a momentary power outage of less than one second while the air conditioner is in operation, there may not be a clear determination of whether or not there was a power failure. When it has been determined that there has been a power failure, recovery will take approximately four minutes after the power is restored. Please wait. (Once "H0" has appeared on the display, a protection system will operate to prevent the unit from restarting for three minutes.)
  When it has been determined that there has been no power failure, operation will continue as is.
- Settings can be made by function selections from the remote controller.
- When there is group control, selection of all refrigerants is required.

15-6. Individual control operation from a separate room

- By simply centralizing the remote controllers installed in each room in a separate control room, individual control or centralized monitoring of the air conditioners in each room can be attained.
- Air conditioner control can be performed up to a total of 500 meters away by connecting the indoor units and remote controllers with 0.3 to 1.25 mm^2 2-core cable.



- If a remote controller is installed in a room and control room, refer to the section on operating with two remote controllers.

15-7. Combined Remote/Hand-held Control

- Operation/remote controller prohibit/ stop can be controlled from a remote location by routing the remote stop/start adapter (PAC-SE55RA-E sold separately) through the relay box installed on site. When this remote control is cancelled, the hand-held remote controller can be used for operating and stopping the air conditioner.

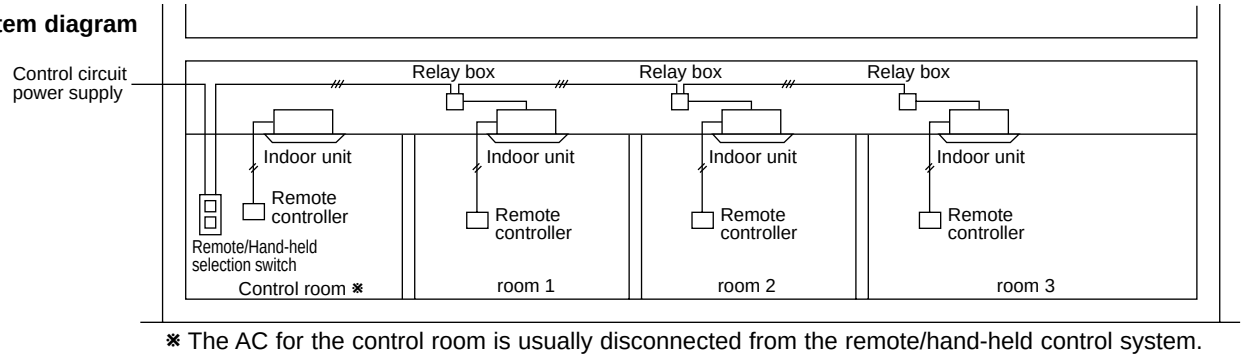
1. Basic system wiring

- Use the remote start/stop adapter (PAC-SE55RA-E) and connect the "Start/Stop Circuit From Remote Location" that comes from the relay box and remote/hand-held selection switch and connect it to the CN32 connector on the printed circuit board for the indoor unit

<Points of precaution>

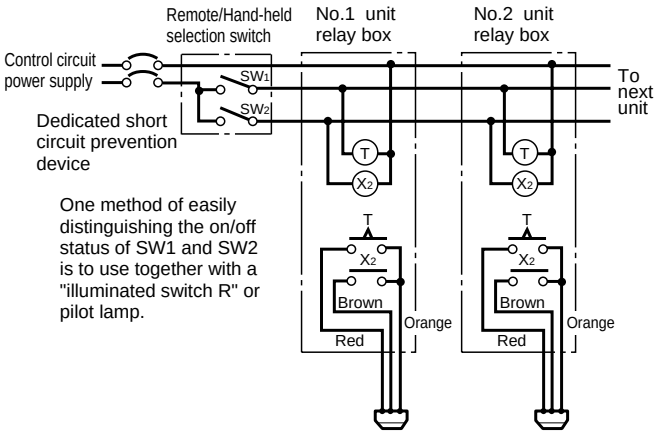
① Match the rated power supply voltage of the remote/hand-held selection switch and relay (X2) with the power supply for the controller.
② When performing group control of multiple outdoor unit using a timer, be sure to arrange the timer so that all units do not start at the same time. If this is not performed, all of the units will start at one time creating an over current that will cause the circuit breaker to operate.
③ An on-delay system is one that includes specifications for operating a limited time when an on signal is received and has a temporary off timer for recovery operations.
④ Use a connecting relay when the wiring length exceeds 10 meters, such as when performing remote wiring. If this is not provided, abnormal operation will occur.

(1). System diagram



※ The AC for the control room is usually disconnected from the remote/hand-held control system.

(2). Basic wiring diagram



Note: When using group address, connect to refrigerant address "0" on the inside.

(3). Part specifications

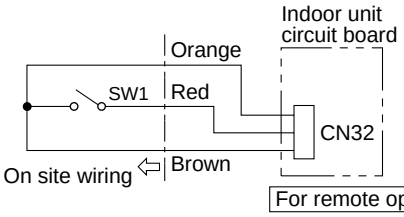
① Remote/Hand-held selection switch	② Adapter for remote start/stop	③ Relay box
(Example) Single polarity single-throw switch (125V rating)	Model PAC-SE55RA-E (Sold separately)	Ⓣ Timer (On delay system) Ⓧ Relay

Remote control	SW1	ON		OFF	
Remote/Hand-held selection switch	SW2	ON	OFF	ON	OFF
Description of functions		• Starting/stopping with remote controller disabled. • AC is in operation. • Starting/stopping by remote operation enabled.	• Starting/stopping with remote controller disabled. • Starting/stopping by remote operation enabled.	• Starting/stopping with remote controller disabled. • AC is in operation. • Starting/stopping by remote operation enabled.	• Starting/stopping with remote controller disabled. • Starting/stopping by remote operation enabled.

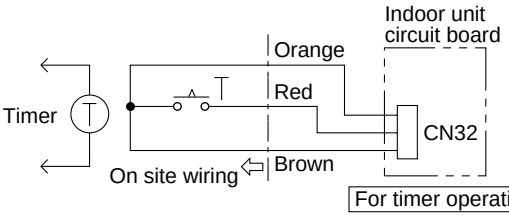
2. Examples of system applications

In any of the following examples, there is a five to six second delay from the time the operating command is issued until the operation begins.

① This is when starting and stopping is performed by remote operation or external timer and when starting and stopping by the remote controller is to be prohibited.

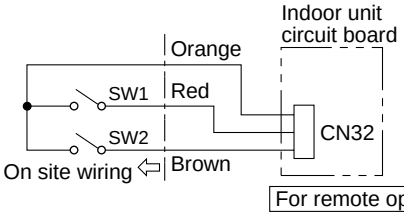


For remote operation

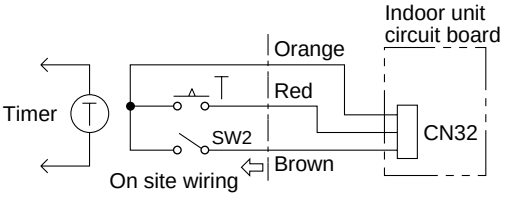


For timer operation

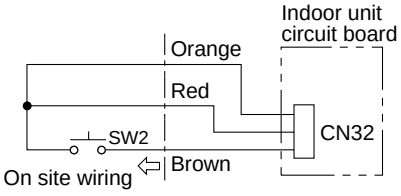
② This is when starting and stopping is performed by remote operation or external timer and when starting and stopping by the remote controller is to be separated.



For remote operation

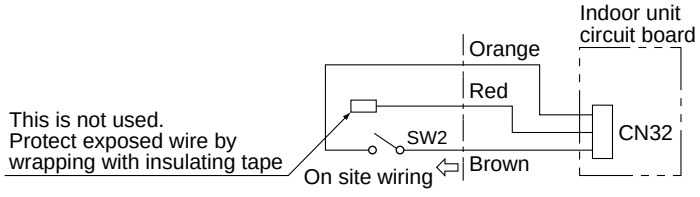


③ This is when starting and stopping is performed by remote operation and then allowing starting or stopping by remote control at any time.



Use momentary switch for SW2. (Manual operation/automatic recover switch on time is more than one second.)
Press SW2 (on time is more than one second) and operation starts. After this has been done, stopping or restarting can be down by remote controller.

④ This is when permitting or prohibiting operation by remote controller is performed by external circuit.

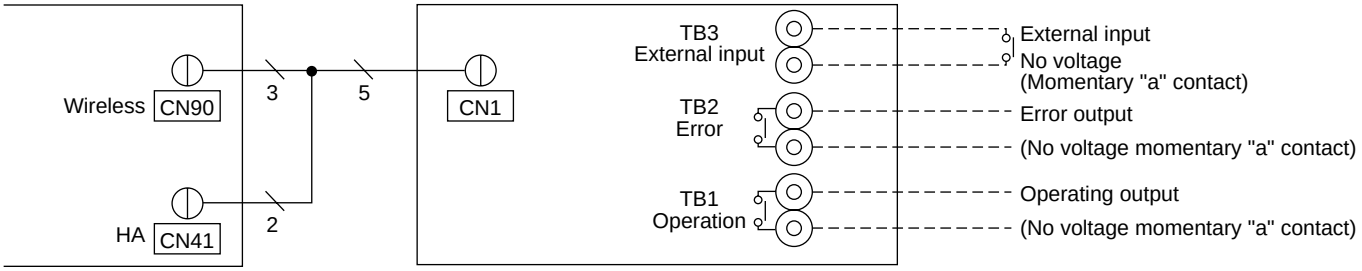


If SW2 is on, operation by remote controller cannot be performed.
If SW2 is off, operation by remote controller is permitted.

15-8. Obtaining remote display

Use the A control operating display kit (PAC-SF40RM-E) to provide operation/error non-voltage contact output and on/off input function.

(1). Wiring method



A control indoor control circuit board

A control operating display kit

⚠Caution	**TB3 is a dedicated terminal for contact point input. Never input voltage. It will damage the indoor control circuit board.**

<Connections on the indoor unit side>

① When using external output function
Insert the 9-prong connector (3-core) of the attached cable to CN90 on the indoor control circuit board.

② When using the external input function
Insert the 4-prong connector (2-core) of the attached cable to CN41 on the indoor control circuit board.

※ The connector is direction-sensitive. Use care not to make an error when inserting.
Never force the connectors. This will result in damage.

(2). Locally procured parts

Item	Name	Model and specifications
External output function	External output signal wire	Use sheathed vinyl coated cord or cable. Wire type: CV, CVS or equivalent. Wire size: Stranded wire 0.5mm² to 1.25mm² Single straged: ϕ0.65mm to 1.25mm
	Display lamp, etc.	No voltage “a” contact AC200V (DC30V), 1A or less
External input function	External input signal wire	Use sheathed vinyl coated cord or cable. Wire type: CV, CVS or equivalent. Wire size: Stranded wire 0.5mm² to 1.25mm² Single straged: ϕ0.65mm to 1.2mm
	Switch	No voltage “a” contact (Start and stop operation is switched by inputting a pulse of 200ms or more)

15-9. Timer operation

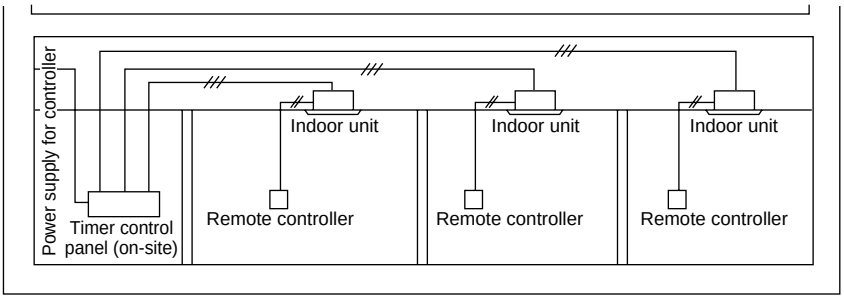
- Timer operation can be performed by setting the wired or wireless remote controller timer. Start and stop times can be set in 10-minute increments within a 24-hour period.
- When used in combination with the central control remote controller of the M-NET control system for the outdoor unit, one program timer can be used for individual timer settings for each group of the central control system. (Each timer setting can be stored in data memory so timer settings for up to 50 groups can be set individually.)

※ Please refer to the MELANS catalog or technical information for details about the central control remote controller.

1.Operating with on-site timer

(1). Summary of system

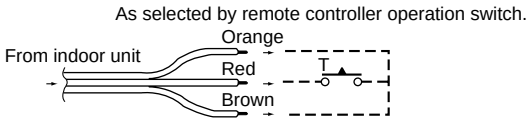
If the “Remote ON/OFF adaptor” (PAC-SE55RA-E) (sold separately) is used, the on-site timer can be operated to turn each unit on and off.



(2). Basic pattern for timer control

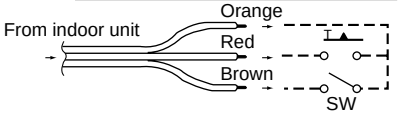
Use a no-voltage contact point output timer (one that has separate circuits for the load side and timer power supply).

a) Timer-independent control



b) Combined control by timer and remote controller

SW ON	Timer control
SW OFF	Remote controller control



(3). Basic system

12-6 Refer to the section on combined control by remote control and hand-held remote controller.

15-10. Linked operation with peripheral air conditioners equipment

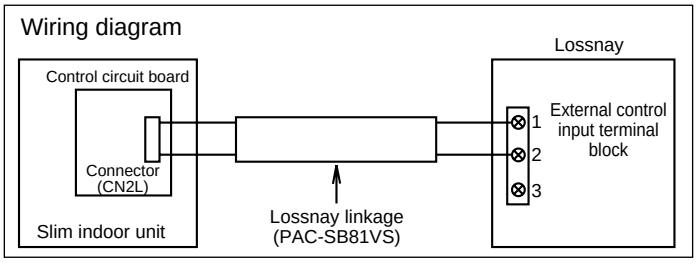
■ Lossnay operation

● Linked operation with a Lossnay unit can be obtained by connecting Lossnay linkage cable (Model PAC-SB81VS - sold separately) to the CN2L (Remote kit) on the circuit board of the indoor unit. This function must be selected from the remote controller.
Refer to “7. Function Setting.”

① Summary of wiring

● Connect the Lossnay linkage cable (Model PAC-SB81VS) connector to CN2L on the indoor unit on the circuit board of the indoor unit.

● Connect the lead wire of the Lossnay linkage cable to the Lossnay external control input terminal blocks (1) and (2).
(At this time, the input terminal blocks (1) and (2) have no polarity.)



② Precautions when wiring

● The Lossnay linkage cable can be extended up to a maximum of 500 meters.
When extending the Lossnay linkage cable, be sure to connect securely and take proper steps to ensure insulation.
(Extension cable specifications: Sheathed vinyl cord or cable 0.5 to 0.75mm^2)

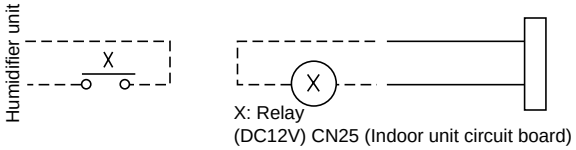
● Lossnay linked cable

● Arrange wiring so that there can be no contact between the Lossnay linkage cable and the power supply cord. Contact may cause malfunctioning. (Separate by 5cm or more.)

15-11. Obtaining humidifier signal

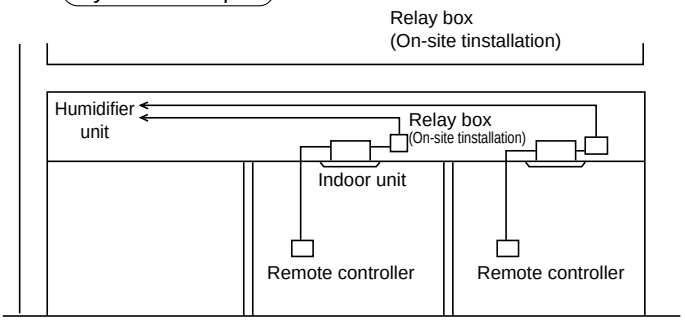
● The humidifier signal that is linked to the AC heating operation (indoor unit ventilator) can be obtained by connecting the adaptor for the humidifier signal to connector CN25 on the printed circuit for the indoor unit and wiring it to the humidifier unit via the on-site relay box. There is no output when the thermostat is off, during heating preparation and during defrosting.

Basic wiring



※ Please consult your nearest Mitsubishi Electric representative for information about obtaining the adapter for humidifier signal.

System example



15-12. External mounting of temperature sensor

● Temperature control from an alternative external location can be performed by connecting the temperature sensor (Model PAC-SE41TS-E - sold separately) to the CN20 connector on the circuit board for the indoor unit.

● The wired remote controller also has an internal temperature sensor. Function selection from the remote controller is required.
Refer to “10. FUNCTION SETTING” for information about selecting functions with the remote controller.

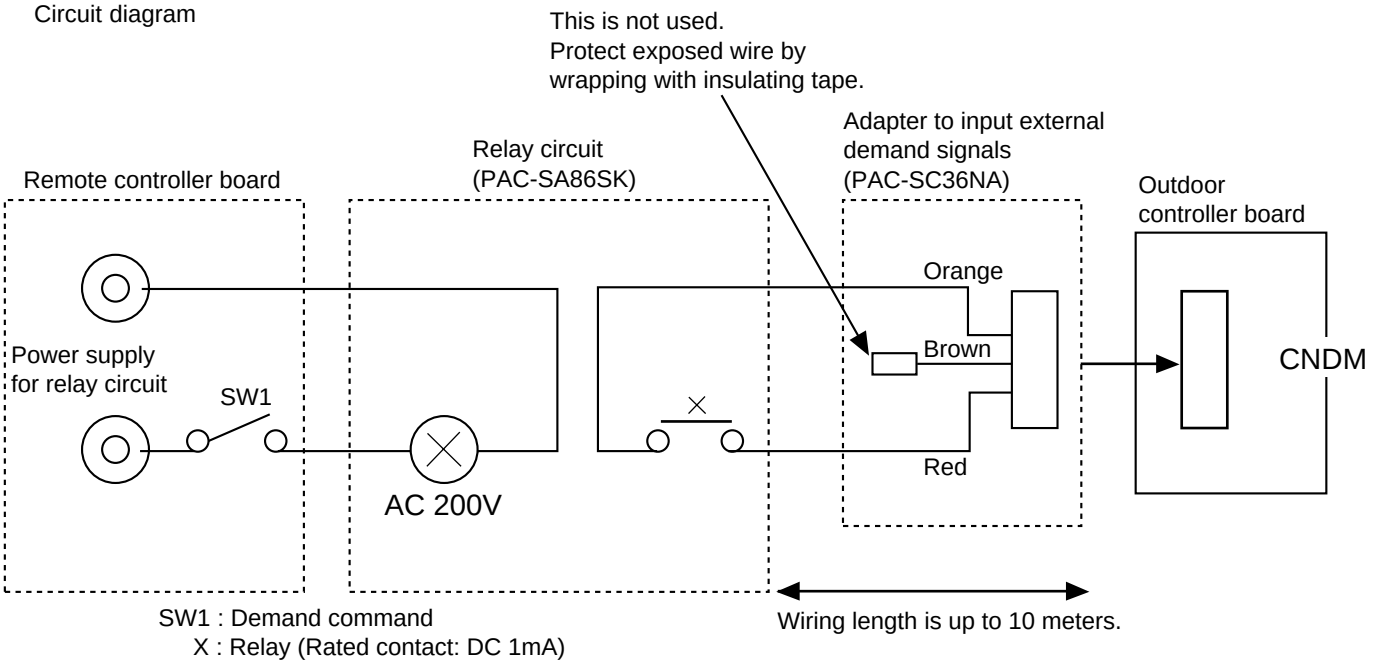
15-13. Demand control

• When outdoor controller board receives demand signals, outdoor unit is suspended and indoor units run under “fan” operation mode.

Required parts

Adapter to input external demand signals	PAC-SC36NA
Relay circuit	PAC-SA86SK
Remote controller board	

Circuit diagram



When remote controller board transmits demand signals

When SW1 is turned on, thermostat is compulsorily turned off and indoor units run under “fan” operation mode. (Remote controller indicates the same display as thermostat is turned off.)

When remote controller board does not transmit demand signals

When SW1 is turned off, the compulsory suspension of thermostat is cancelled.

Mr.SLIM™

MITSUBISHI ELECTRIC CORPORATION

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