Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

October 2012
No. OC231
REVISED EDITION-A

TECHNICAL & SERVICE MANUAL

Series PKH Wall Mounted R22

Indoor unit
[Model names] **[Service Ref.]**

PKH-2GKLA **PKH-2GKLA**

Revision :
- The indicated No. of CORNER COVER (page 65) has been corrected in REVISED EDITION-A.
- Some descriptions have been modified.

- Please void OC231.

- This manual does not cover the following outdoor units. When servicing them, please refer to the following service manual and this manual in a set.

[Service Ref.]
PUH-2VKA$_2$
(OC128 REVISED EDITION-A)
PUH-2AKA$_1$·TH-A (OC156)
PUH-2NKA$_1$ (OC145)

Indoor unit

Remote controller

CONTENTS

Mr.SLIM™

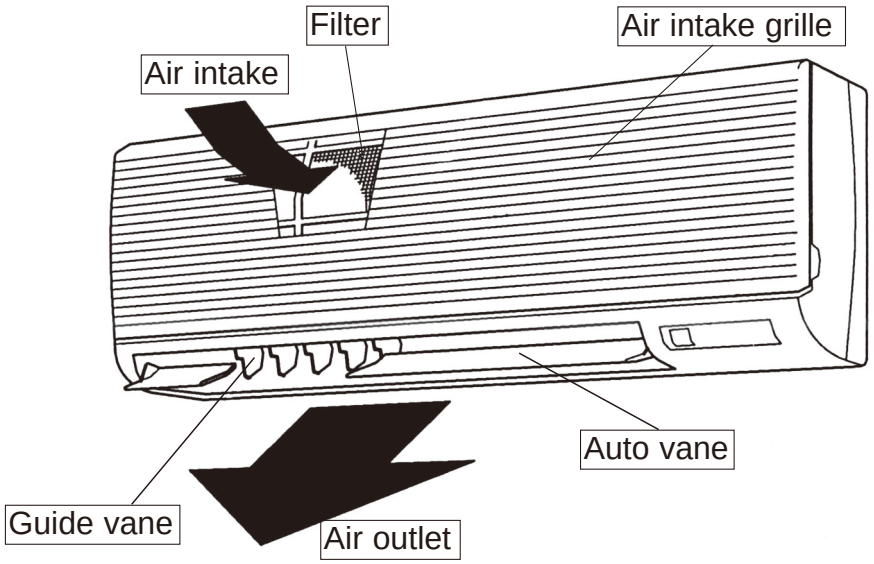
Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.
Correct refrigerant is specified in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

1 PART NAMES AND FUNCTIONS

● **Indoor Unit**



● Wireless remote controller

● When cover is open.

display

Lights up while transmission to the indoor unit is mode using switches.

display

OPERATION MODE display
Operation mode display indicates which operation mode is in effect.

• FUNCTION display

Lights up when function are set.

• TEST RUN • CHECK display

CHECK&TEST RUN display indicates that the unit is being checked or test-run.

display

Displays when batteries are dead.

display

The vertical direction of airflow is indicated.

display

FAN SPEED display indicates which fan speed has been selected.

display

The unit is turned ON and OFF alternately each time the button is pressed.

ADDRESS display

Displays the refrigerant address.

UNIT NO. display

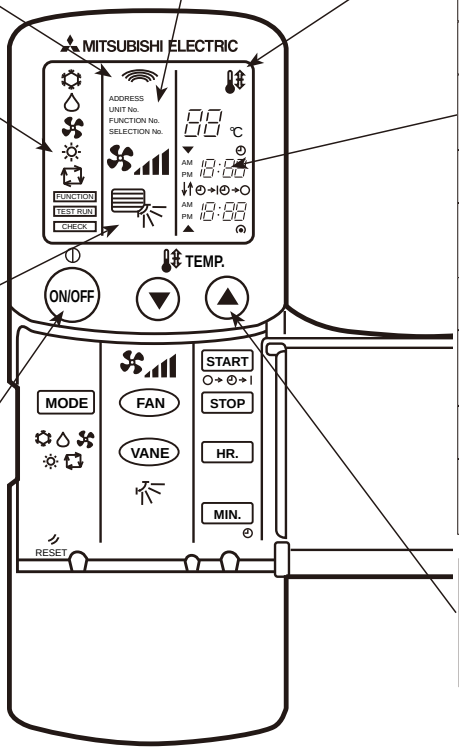
Displays the number of unit.

FUNCTION NO. display

Displays the mode.

SELECTION NO. display

Displays the selection number.



display

SET TEMP. display indicates desired temperature set.

CLOCK display

Displays the current time.

“ ◴ ”display

Flashes when the current time is displayed.

TIMER display

Displays when in timer operation or when setting timer.

“ ▼ ” “ ▲ ” display

Displays the order of timer operation.

“ ◴-| ” “ ◴-○ ” display

Displays whether timer is on or off.

“ ▼ ” “ ▲ ” display

Displays when the current time and the timer time can be changed.

TEMP. button

SET TEMPERATURE button sets any desired room temperature.

● When cover is open.

MODE SELECT button

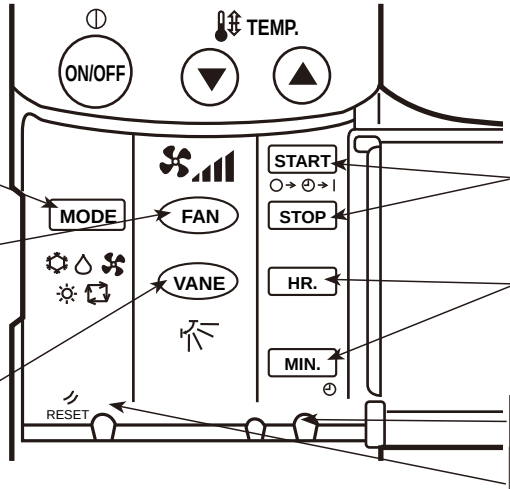
Used to switch the operation mode between cooling ,drying ,blowing ,heating and auto mode.

FAN SPEED SELECT button

Used to change the fan speed.

VANE CONTROL button

Used to change the airflow direction.



TIMER CONTROL buttons

STOP (OFF timer): when this switch is set, the air conditioner will be automatically stopped at the preset time.
START (ON timer): when this switch is set, the air conditioner will be automatically started at the preset time.

HR. and MIN.buttons

Buttons used to set the “hour and minute” of the current time and timer settings.

◴ button

RESET button

2 SPECIFICATIONS

Item / Service Ref.				PKH-2GKLA	
Function				Cooling	Heating
Capacity			W	5,500	6,250
			Btu/h	18,800	21,300
Total input			kW	2.27	2.29
INDOOR UNIT	**Service Ref.**			**PKH-2GKLA**	
	Power supply(phase,cycle,voltage)			Single, 50Hz, 220-240V	
		Input	kW	0.07	0.07
		Running current	A	0.33	0.33
		Starting current	A	0.40	0.40
	External finish			Munsell 0.70Y 8.59/0.97	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) × No.		Line flow(direct) × 1	
		Fan motor output	kW	0.030	
		Airflow(Low-High)	m^3/min<CFM>	9-12 (318-424)	
		External static pressure	Pa(mmAq)	0(direct blow)	
	Booster heater		kW	-	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Low-High)		dB	36-43	
	Unit drain pipe O.D.		mm(in.)	20 (13/16)	
	Dimensions	W	mm(in.)	990 (39)	
		D	mm(in.)	235 (9-1/4)	
		H	mm(in.)	340 (13-3/8)	
	Weight		kg(lbs)	16(35)	
OUTDOOR UNIT	**Service Ref.**			**PUH-2VKA2**	
	Power supply (phase, cycle, voltage)			Single, 50Hz, 220-240V	
		Input	kW	2.20	2.22
		Running current	A	9.86	9.95
		Starting current	A	45	
	External finish			Munsell 5Y 7/1	
	Refrigerant control			Capillary tube	
	Compressor			Hermetic	
		Model		NH38VMD	
		Motor output	kW	1.7	
		Starter type		Line start	
		Protection devices		Internal thermostat,HP switch	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive)×No.		Propeller (direct) × 1	
		Fan motor output	kW	0.065	
		Airflow	m^3/min<CFM>	45(1,590)	
	Defrost method			Reverse cycle	
	Noise level		dB	49	
	Dimensions	W	mm(in.)	870(34-1/4)	
		D	mm(in.)	295+24(11-5/8 add 1)	
		H	mm(in.)	650(25-5/8)	
	Weight		kg(lbs)	64(141)	
REFRIGERANT PIPING	Refrigerant			R-22	
		Charge	kg(lbs)	2.2(4.9)	
		Oil<Model>	L	1.2<MS-32>	
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)	
		Gas	mm(in.)	15.88(5/8)	
	Connection method	Indoor side		Flared	
		Outdoor side		Flared	
	Between the indoor & outdoor unit	Height difference		Max. 40m	
		Piping length		Max. 40m	

Note1. Rating Conditions (JIS B 8616)
Cooling : Indoor : D.B. 27°C (80°F), W.B. 19°C (66°F)
Outdoor : D.B. 35°C (95°F), W.B. 24°C (75°F)
Heating : Indoor : D.B. 20°C (68°F)
Outdoor : D.B. 7°C (45°F), W.B. 6°C (43°F)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35℃, W.B. 22.5℃	D.B. 46℃
	Lower limit	D.B. 21℃, W.B. 15.5℃	D.B. -5℃
Heating	Upper limit	D.B. 27℃	D.B. 21℃, W.B. 15.5℃
	Lower limit	D.B. 20℃	D.B. -8.5℃, W.B. -9.5℃

Item				Service Ref.	PKH-2GKLA	
Function					Cooling	Heating
Capacity				W	5,400	6,100
				Btu/h	18,400	20,800
Total input				kW	2.25	2.26
INDOOR UNIT	**Service Ref.**				**PKH-2GKLA**	
	Power supply(phase,cycle,voltage)				Single, 50Hz, 240V	
		Input		kW	0.07	0.07
		Running current		A	0.33	0.33
		Starting current		A	0.40	0.40
	External finish				Munsell 0.70Y 8.59/0.97	
	Heat exchanger				Plate fin coil	
	Fan	Fan(drive) × No.			Line flow(direct) × 1	
		Fan motor output		kW	0.030	
		Airflow(Low-High)		m^3/min<CFM>	9-12 (318-424)	
		External static pressure		Pa(mmAq)	0(direct blow)	
	Booster heater			kW	-	
	Operation control & Thermostat				Remote controller & built-in	
	Noise level(Low-High)			dB	36-43	
	Unit drain pipe O.D.			mm(in.)	20 (13/16)	
	Dimensions		W	mm(in.)	990 (39)	
			D	mm(in.)	235 (9-1/4)	
			H	mm(in.)	340 (13-3/8)	
	Weight			kg(lbs)	16(35)	
OUTDOOR UNIT	**Service Ref.**				**PUH-2AKA1.TH-A**	
	Power supply (phase, cycle, voltage)				Single, 50Hz, 240V	
		Input		kW	2.18	2.19
		Running current		A	9.77	9.81
		Starting current		A	45	
	External finish				Munsell 5Y 7/1	
	Refrigerant control				Capillary tube	
	Compressor				Hermetic	
		Model			NH38AMDT	
		Motor output		kW	1.7	
		Starter type			Line start	
		Protection devices			Internal thermostat,High-pressure switch	
	Heat exchanger				Plate fin coil	
	Fan	Fan(drive)×No.			Propeller (direct) × 1	
		Fan motor output		kW	0.065	
		Airflow		m^3/min<CFM>	45(1,590)	
	Defrost method				Reverse cycle	
	Noise level			dB	49	
	Dimensions		W	mm(in.)	870(34-1/4)	
			D	mm(in.)	295+24(11-5/8 add 1)	
			H	mm(in.)	650(25-5/8)	
	Weight			kg(lbs)	64(141)	
REFRIGERANT PIPING	Refrigerant				R-22	
		Charge		kg(lbs)	2.7(6.0)	
		Oil<Model>		L	1.2<MS-32>	
	Pipe size O.D.		Liquid	mm(in.)	9.52(3/8)	
			Gas	mm(in.)	15.88(5/8)	
	Connection method		Indoor side		Flared	
			Outdoor side		Flared	
	Between the indoor & outdoor unit		Height difference		Max. 40m	
			Piping length		Max. 40m	

Note1. Rating Conditions (JIS B 8616)
Cooling : Indoor : D.B. 27°C (80°F), W.B. 19°C (66°F)
Outdoor : D.B. 35°C (95°F), W.B. 24°C (75°F)
Heating : Indoor : D.B. 20°C (68°F)
Outdoor : D.B. 7°C (45°F), W.B. 6°C (43°F)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35℃, W.B. 22.5℃	D.B. 46℃
	Lower limit	D.B. 21℃, W.B. 15.5℃	D.B. -5℃
Heating	Upper limit	D.B. 27℃	D.B. 21℃, W.B. 15.5℃
	Lower limit	D.B. 20℃	D.B. -8.5℃, W.B. -9.5℃

Item / Service Ref.				PKH-2GKLA	
Function				CoolingT1/T2	HeatingT2
Capacity			W	5,800/4,800	6,250
			Btu/h	19,800/16,400	21,300
Total input			kW	2.48/2.90	2.52
INDOOR UNIT	**Service Ref.**			**PKH-2GKLA**	
	Power supply(phase,cycle,voltage)			Single, 60Hz, 220V	
		Input	kW	0.07	0.07
		Running current	A	0.33	0.33
		Starting current	A	0.40	0.40
	External finish			Munsell 0.70Y 8.59/0.97	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) × No.		Line flow(direct) × 1	
		Fan motor output	kW	0.030	
		Airflow(Low-High)	m^3/min<CFM>	9-12 (318-424)	
		External static pressure	Pa(mmAq)	0(direct blow)	
	Booster heater		kW	-	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Low-High)		dB	36-43	
	Unit drain pipe O.D.		mm(in.)	20 (13/16)	
	Dimensions	W	mm(in.)	990 (39)	
		D	mm(in.)	235 (9-1/4)	
		H	mm(in.)	340 (13-3/8)	
	Weight		kg(lbs)	16(35)	
OUTDOOR UNIT	**Service Ref.**			**PUH-2NKA$_1$**	
	Power supply (phase, cycle, voltage)			Single, 60Hz, 220V	
		Input	kW	2.41/2.83	2.45
		Running current	A	11.07/12.99	11.2
		Starting current	A	54	
	External finish			Munsell 5Y 7/1	
	Refrigerant control			Capillary tube	
	Compressor			Hermetic	
		Model		NHJ33NBD	
		Motor output	kW	1.5	
		Starter type		Line start	
		Protection devices		Internal thermostat,High-pressure switch	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive)×No.		Propeller (direct) × 1	
		Fan motor output	kW	0.065	
		Airflow	m^3/min<CFM>	45(1,590)	
	Defrost method			Reverse cycle	
	Noise level		dB	49	
	Dimensions	W	mm(in.)	870(34-1/4)	
		D	mm(in.)	295+24(11-5/8 add 1)	
		H	mm(in.)	650(25-5/8)	
	Weight		kg(lbs)	66.5(147)	
REFRIGERANT PIPING	Refrigerant			R-22	
		Charge	kg(lbs)	2.7(6.0)	
		Oil<Model>	L	1.2<MS-32>	
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)	
		Gas	mm(in.)	15.88(5/8)	
	Connection method	Indoor side		Flared	
		Outdoor side		Flared	
	Between the indoor & outdoor unit	Height difference		Max. 40m	
		Piping length		Max. 40m	

Note1. *1.Rating Conditions (JIS B 8616)
Cooling : Indoor : D.B. 27°C (80°F), W.B. 19°C (66°F)
Outdoor : D.B. 35°C (95°F), W.B. 24°C (75°F)
*2.Rating Conditions (SSA385)
Cooling : Indoor : D.B. 29°C , W.B. 19°C
Outdoor : D.B. 46°C
Heating : Indoor : D.B. 21°C
Outdoor : D.B. 7°C , W.B. 6°C

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35℃, W.B. 22.5℃	D.B. 52℃
	Lower limit	D.B. 21℃, W.B. 15.5℃	D.B. -5℃
Heating	Upper limit	D.B. 27℃	D.B. 21℃, W.B. 15.5℃
	Lower limit	D.B. 20℃	D.B. -8.5℃, W.B. -9.5℃

3 DATA

1. PERFORMANCE DATA

1) COOLING CAPACITY<1>

PKH-2GKLA **50Hz** **(Outdoor unit : PUH-2VKA$_2$)**

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		20				25				30			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	5549	3274	0.59	1.82	5397	3184	0.59	1.90	5198	3067	0.59	2.04
20	18	5908	2777	0.47	1.86	5752	2704	0.47	1.94	5543	2605	0.47	2.09
20	20	6271	2195	0.35	1.89	6124	2143	0.35	1.97	5905	2067	0.35	2.13
22	16	5549	3718	0.67	1.82	5397	3616	0.67	1.90	5198	3483	0.67	2.04
22	18	5908	3249	0.55	1.86	5752	3164	0.55	1.94	5543	3049	0.55	2.09
22	20	6271	2696	0.43	1.89	6124	2633	0.43	1.97	5905	2539	0.43	2.13
24	16	5549	4161	0.75	1.82	5397	4048	0.75	1.90	5198	3899	0.75	2.04
24	18	5908	3722	0.63	1.86	5752	3624	0.63	1.94	5543	3492	0.63	2.09
24	20	6271	3198	0.51	1.89	6124	3123	0.51	1.97	5905	3012	0.51	2.13
24	22	6638	2589	0.39	1.93	6511	2539	0.39	2.01	6285	2451	0.39	2.18
26	16	5549	4605	0.83	1.82	5397	4479	0.83	1.90	5198	4315	0.83	2.04
26	18	5908	4195	0.71	1.86	5752	4084	0.71	1.94	5543	3935	0.71	2.09
26	20	6271	3700	0.59	1.89	6124	3613	0.59	1.97	5905	3484	0.59	2.13
26	22	6638	3120	0.47	1.93	6511	3060	0.47	2.01	6285	2954	0.47	2.18
27	16	5549	4827	0.87	1.82	5397	4695	0.87	1.90	5198	4523	0.87	2.04
27	18	5908	4431	0.75	1.86	5752	4314	0.75	1.94	5543	4157	0.75	2.09
27	20	6271	3951	0.63	1.89	6124	3858	0.63	1.97	5905	3720	0.63	2.13
27	22	6638	3385	0.51	1.93	6511	3320	0.51	2.01	6285	3205	0.51	2.18
28	16	5549	5049	0.91	1.82	5397	4911	0.91	1.90	5198	4731	0.91	2.04
28	18	5908	4667	0.79	1.86	5752	4544	0.79	1.94	5543	4379	0.79	2.09
28	20	6271	4202	0.67	1.89	6124	4103	0.67	1.97	5905	3956	0.67	2.13
28	22	6638	3651	0.55	1.93	6511	3581	0.55	2.01	6285	3457	0.55	2.18
30	16	5549	5493	0.99	1.82	5397	5343	0.99	1.90	5198	5146	0.99	2.04
30	18	5908	5140	0.87	1.86	5752	5004	0.87	1.94	5543	4822	0.87	2.09
30	20	6271	4703	0.75	1.89	6124	4593	0.75	1.97	5905	4429	0.75	2.13
30	22	6638	4182	0.63	1.93	6511	4102	0.63	2.01	6285	3960	0.63	2.18
32	16	5549	5549	1.00	1.82	5397	5397	1.00	1.90	5198	5198	1.00	2.04
32	18	5908	5612	0.95	1.86	5752	5465	0.95	1.94	5543	5266	0.95	2.09
32	20	6271	5205	0.83	1.89	6124	5083	0.83	1.97	5905	4901	0.83	2.13
32	22	6638	4713	0.71	1.93	6511	4623	0.71	2.01	6285	4462	0.71	2.18

CA : Capacity (W)
SHC(W) : Sensible heat capacity
P.C. : Power consumption (kW)
SHF : Sensible heat factor

COOLING CAPACITY<2>
PKH-2GKLA

50Hz **(Outdoor unit : PUH-2VKA$_2$)**

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		35				40				45			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	4988	2943	0.59	2.19	4765	2811	0.59	2.34	4530	2673	0.59	2.49
20	18	5323	2502	0.47	2.24	5093	2394	0.47	2.40	4852	2281	0.47	2.55
20	20	5677	1987	0.35	2.30	5440	1904	0.35	2.46	5193	1818	0.35	2.63
22	16	4988	3342	0.67	2.19	4765	3192	0.67	2.34	4530	3035	0.67	2.49
22	18	5323	2928	0.55	2.24	5093	2801	0.55	2.40	4852	2669	0.55	2.55
22	20	5677	2411	0.43	2.30	5440	2339	0.43	2.46	5193	2233	0.43	2.63
24	16	4988	3741	0.75	2.19	4765	3574	0.75	2.34	4530	3397	0.75	2.49
24	18	5323	3353	0.63	2.24	5093	3208	0.63	2.40	4852	3057	0.63	2.55
24	20	5677	2895	0.51	2.30	5440	2774	0.51	2.46	5193	2648	0.51	2.63
24	22	6050	2360	0.39	2.35	5806	2264	0.39	2.53	5552	2165	0.39	2.71
26	16	4988	4140	0.83	2.19	4765	3955	0.83	2.34	4530	3760	0.83	2.49
26	18	5323	3779	0.71	2.24	5093	3616	0.71	2.40	4852	3445	0.71	2.55
26	20	5677	3349	0.59	2.30	5440	3209	0.59	2.46	5193	3064	0.59	2.63
26	22	6050	2844	0.47	2.35	5806	2729	0.47	2.53	5552	2610	0.47	2.71
27	16	4988	4339	0.87	2.19	4765	4145	0.87	2.34	4530	3941	0.87	2.49
27	18	5323	3992	0.75	2.24	5093	3820	0.75	2.40	4852	3639	0.75	2.55
27	20	5677	3577	0.63	2.30	5440	3427	0.63	2.46	5193	3272	0.63	2.63
27	22	6050	3086	0.51	2.35	5806	2961	0.51	2.53	5552	2832	0.51	2.71
28	16	4988	4539	0.91	2.19	4765	4336	0.91	2.34	4530	4122	0.91	2.49
28	18	5323	4205	0.79	2.24	5093	4023	0.79	2.40	4852	3833	0.79	2.55
28	20	5677	3804	0.67	2.30	5440	3645	0.67	2.46	5193	3479	0.67	2.63
28	22	6050	3328	0.55	2.35	5806	3193	0.55	2.53	5552	3054	0.55	2.71
30	16	4988	4938	0.99	2.19	4765	4717	0.99	2.34	4530	4484	0.99	2.49
30	18	5323	4631	0.87	2.24	5093	4431	0.87	2.40	4852	4221	0.87	2.55
30	20	5677	4258	0.75	2.30	5440	4080	0.75	2.46	5193	3895	0.75	2.63
30	22	6050	3812	0.63	2.35	5806	3658	0.63	2.53	5552	3498	0.63	2.71
32	16	4988	4988	1.00	2.19	4765	4765	1.00	2.34	4530	4530	1.00	2.49
32	18	5323	5057	0.95	2.24	5093	4838	0.95	2.40	4852	4610	0.95	2.55
32	20	5677	4712	0.83	2.30	5440	4515	0.83	2.46	5193	4310	0.83	2.63
32	22	6050	4296	0.71	2.35	5806	4122	0.71	2.53	5552	3942	0.71	2.71

CA : Capacity (W)
P.C. : Power consumption (kW)
SHC(W) : Sensible heat capacity
SHF : Sensible heat factor

COOLING CAPACITY<3>
PKH-2GKLA

50Hz **(Outdoor unit : PUH-2AKA$_1$·TH-A)**

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		20				25				30			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	5448	3269	0.60	1.80	5299	3179	0.60	1.88	5104	3062	0.60	2.02
20	18	5800	2784	0.48	1.84	5648	2711	0.48	1.92	5442	2612	0.48	2.07
20	20	6157	2216	0.36	1.87	6012	2164	0.36	1.96	5798	2087	0.36	2.12
22	16	5448	3704	0.68	1.80	5299	3603	0.68	1.88	5104	3471	0.68	2.02
22	18	5800	3248	0.56	1.84	5648	3163	0.56	1.92	5442	3048	0.56	2.07
22	20	6157	2709	0.44	1.87	6012	2645	0.44	1.96	5798	2551	0.44	2.12
24	16	5448	4140	0.76	1.80	5299	4027	0.76	1.88	5104	3879	0.76	2.02
24	18	5800	3712	0.64	1.84	5648	3615	0.64	1.92	5442	3483	0.64	2.07
24	20	6157	3202	0.52	1.87	6012	3126	0.52	1.96	5798	3015	0.52	2.12
24	22	6517	2607	0.40	1.91	6392	2557	0.40	2.00	6171	2468	0.40	2.16
26	16	5448	4576	0.84	1.80	5299	4451	0.84	1.88	5104	4287	0.84	2.02
26	18	5800	4176	0.72	1.84	5648	4066	0.72	1.92	5442	3918	0.72	2.07
26	20	6157	3694	0.60	1.87	6012	3607	0.60	1.96	5798	3479	0.60	2.12
26	22	6517	3128	0.48	1.91	6392	3068	0.48	2.00	6171	2962	0.48	2.16
27	16	5448	4794	0.88	1.80	5299	4663	0.88	1.88	5104	4491	0.88	2.02
27	18	5800	4408	0.76	1.84	5648	4292	0.76	1.92	5442	4136	0.76	2.07
27	20	6157	3940	0.64	1.87	6012	3848	0.64	1.96	5798	3710	0.64	2.12
27	22	6517	3389	0.52	1.91	6392	3324	0.52	2.00	6171	3209	0.52	2.16
28	16	5448	5012	0.92	1.80	5299	4875	0.92	1.88	5104	4696	0.92	2.02
28	18	5800	4640	0.80	1.84	5648	4518	0.80	1.92	5442	4354	0.80	2.07
28	20	6157	4187	0.68	1.87	6012	4008	0.68	1.96	5798	3942	0.68	2.12
28	22	6517	3650	0.56	1.91	6392	3580	0.56	2.00	6171	3456	0.56	2.16
30	16	5448	5448	1.00	1.80	5299	5299	1.00	1.88	5104	5104	1.00	2.02
30	18	5800	5104	0.88	1.84	5648	4970	0.88	1.92	5442	4789	0.88	2.07
30	20	6157	4679	0.76	1.87	6012	4569	0.76	1.96	5798	4406	0.76	2.12
30	22	6517	4171	0.64	1.91	6392	4091	0.64	2.00	6171	3949	0.64	2.16
32	16	5448	5448	1.00	1.80	5299	5299	1.00	1.88	5104	5104	1.00	2.02
32	18	5800	5568	0.96	1.84	5648	5422	0.96	1.92	5442	5224	0.96	2.07
32	20	6157	5172	0.84	1.87	6012	5050	0.84	1.96	5798	4870	0.84	2.12
32	22	6517	4692	0.72	1.91	6392	4602	0.72	2.00	6171	4443	0.72	2.16

CA : Capacity (W)
P.C. : Power consumption (kW)
SHC(W) : Sensible heat capacity
SHF : Sensible heat factor

COOLING CAPACITY<4>
PKH-2GKLA **50Hz** **(Outdoor unit : PUH-2AKA$_1$·TH-A)**

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		35				40				45			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	4897	2938	0.60	2.17	4678	2807	0.60	2.32	4447	2668	0.60	2.46
20	18	5226	2509	0.48	2.22	5000	2400	0.48	2.38	4764	2287	0.48	2.53
20	20	5574	2007	0.36	2.28	5341	1923	0.36	2.44	5099	1836	0.36	2.60
22	16	4897	3330	0.68	2.17	4678	3181	0.68	2.32	4447	3024	0.68	2.46
22	18	5226	2927	0.56	2.22	5000	2800	0.56	2.38	4764	2668	0.56	2.53
22	20	5574	2452	0.44	2.28	5341	2350	0.44	2.44	5099	2243	0.44	2.60
24	16	4897	3772	0.76	2.17	4678	3555	0.76	2.32	4447	3380	0.76	2.46
24	18	5226	3345	0.64	2.22	5000	3200	0.64	2.38	4764	3049	0.64	2.53
24	20	5574	2898	0.52	2.28	5341	2777	0.52	2.44	5099	2651	0.52	2.60
24	22	5940	2376	0.40	2.33	5700	2280	0.40	2.51	5451	2181	0.40	2.69
26	16	4897	4114	0.84	2.17	4678	3930	0.84	2.32	4447	3736	0.84	2.46
26	18	5226	3763	0.72	2.22	5000	3600	0.72	2.38	4764	3430	0.72	2.53
26	20	5574	3344	0.60	2.28	5341	3205	0.60	2.44	5099	3059	0.60	2.60
26	22	5940	2851	0.48	2.33	5700	2736	0.48	2.51	5451	2617	0.48	2.69
27	16	4897	4309	0.88	2.17	4678	4117	0.88	2.32	4447	3914	0.88	2.46
27	18	5226	3972	0.76	2.22	5000	3800	0.76	2.38	4764	3621	0.76	2.53
27	20	5574	3567	0.64	2.28	5341	3418	0.64	2.44	5099	3263	0.64	2.60
27	22	5940	3089	0.52	2.33	5700	2964	0.52	2.51	5451	2835	0.52	2.69
28	16	4897	4505	0.92	2.17	4678	4304	0.92	2.32	4447	4092	0.92	2.46
28	18	5226	4181	0.80	2.22	5000	4000	0.80	2.38	4764	3811	0.80	2.53
28	20	5574	3790	0.68	2.28	5341	3632	0.68	2.44	5099	3467	0.68	2.60
28	22	5940	3327	0.56	2.33	5700	3192	0.56	2.51	5451	3053	0.56	2.69
30	16	4897	4897	1.00	2.17	4678	4678	1.00	2.32	4447	4447	1.00	2.46
30	18	5226	4599	0.88	2.22	5000	4400	0.88	2.38	4764	4192	0.88	2.53
30	20	5574	4236	0.76	2.28	5341	4059	0.76	2.44	5099	3875	0.76	2.60
30	22	5940	3802	0.64	2.33	5700	3648	0.64	2.51	5451	3489	0.64	2.69
32	16	4897	4897	1.00	2.17	4678	4678	1.00	2.32	4447	4447	1.00	2.46
32	18	5226	5017	0.96	2.22	5000	4800	0.96	2.38	4764	4573	0.96	2.53
32	20	5574	4682	0.84	2.28	5341	4486	0.84	2.44	5099	4283	0.84	2.60
32	22	5940	4277	0.72	2.33	5700	4104	0.72	2.51	5451	3925	0.72	2.69

CA : Capacity (W)
P.C. : Power consumption (kW)
SHC(W) : Sensible heat capacity
SHF : Sensible heat factor

COOLING CAPACITY<5>
PKH-2GKLA **60Hz** **(Outdoor unit : PUH-2NKA1)**

Indoor intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
	20		25		30		35		40		45	
	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.
16	5,851	1.99	5,691	2.07	5,482	2.23	5,260	2.39	5,025	2.55	4,777	2.72
18	6,230	2.03	6,066	2.11	5,845	2.28	5,613	2.45	5,371	2.62	5,117	2.79
20	6,613	2.07	6,458	2.16	6,227	2.33	5,987	2.51	5,736	2.69	5,476	2.87
22	7,000	2.10	6,866	2.20	6,628	2.38	6,380	2.57	6,123	2.76	5,855	2.97

CA : Capacity(W)
P.C. : Power consumption (kW)

Cooling capacity correction factors

Service Ref.	Refrigerant piping length(one way)									
	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
PKH-2GKLA	1.00	0.992	0.983	0.978	0.966	0.959	0.950	0.945	—	—

CA : Capacity (W)
P.C. : Power consumption (kW)

2) HEATING CAPACITY **50Hz** **(Outdoor unit : PUH-2VKA2)**

Service Ref.	Indoor intake air D.B.(°C)	Outdoor intake air W.B.(°C)											
		-10		-5		0		5		10		15	
		CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.
PKH-2GKLA	15	4,280	1.56	4,905	1.73	5,591	1.90	6,336	2.09	7,139	2.28	8,000	2.49
	20	4,098	1.68	4,713	1.86	5,380	2.05	6,100	2.25	6,871	2.46	7,693	2.68
	25	3,939	1.79	4,521	1.98	5,167	2.19	5,874	2.41	6,643	2.64	7,473	2.87

CA : Capacity (W)
P.C. : Power consumption (kW)

HEATING CAPACITY **50Hz** **(Outdoor unit : PUH-2AKA1·TH-A)**

Service Ref.	Indoor intake air D.B.(°C)	Outdoor intake air W.B.(°C)											
		-10		-5		0		5		10		15	
		CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.
PKH-2GKLA	15	4,177	1.54	4,788	1.70	5,457	1.88	6,184	2.06	6,968	2.25	7,808	2.46
	20	4,000	1.66	4,600	1.84	5,251	2.02	5,953	2.22	6,706	2.43	7,509	2.64
	25	3,844	1.76	4,413	1.96	5,043	2.16	5,733	2.38	6,483	2.60	7,294	2.84

CA : Capacity (W)
P.C. : Power consumption (kW)

HEATING CAPACITY **60Hz** **(Outdoor unit : PUH-2NKA1)**

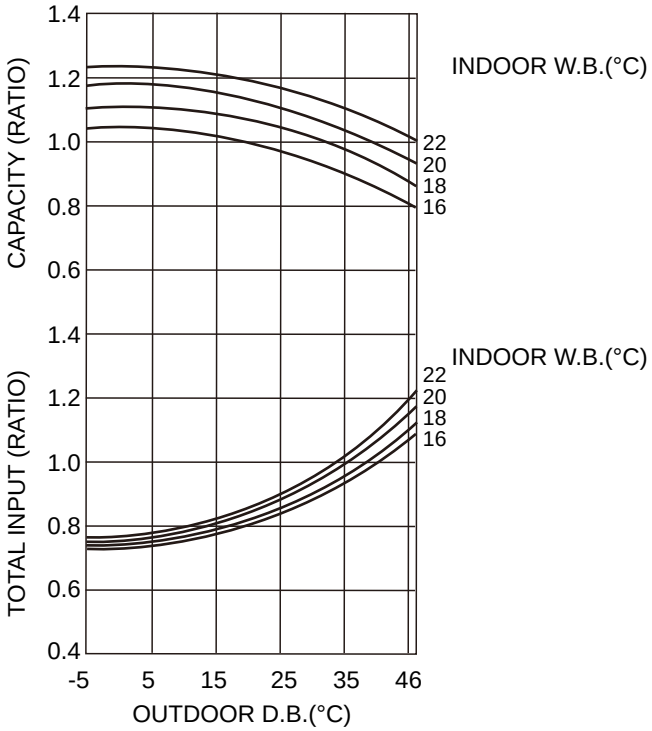
Service Ref.	Indoor intake air D.B.(°C)	Outdoor intake air W.B.(°C)											
		-10		-5		0		5		10		15	
		CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.
PKH-2GKLA	15	4,314	1.64	4,945	1.81	5,636	1.99	6,387	2.19	7,197	2.39	8,064	2.61
	20	4,131	1.76	4,750	1.95	5,423	2.15	6,149	2.36	6,926	2.58	7,755	2.81
	25	3,970	1.87	4,558	2.08	5,208	2.30	5,921	2.52	6,696	2.76	7,533	3.01

Heating capacity correction factors

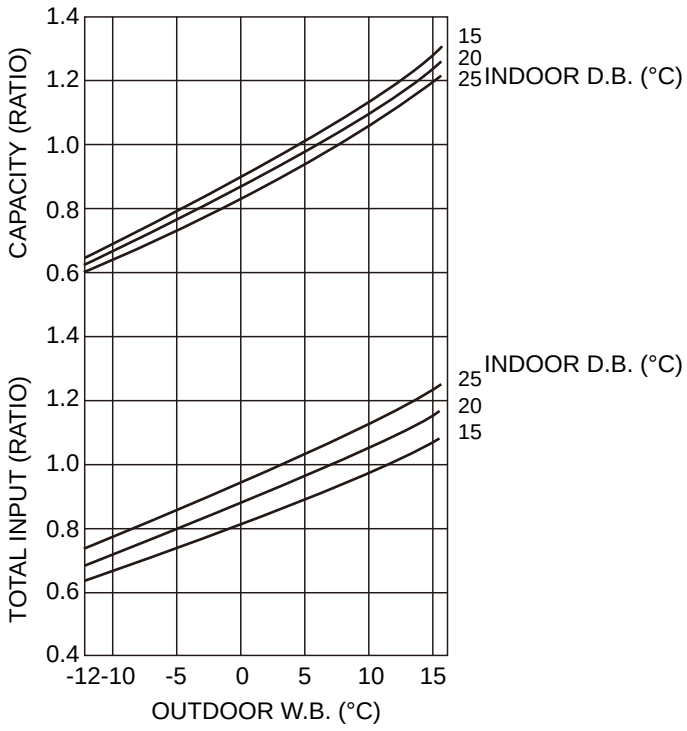
Service Ref.	Refrigerant piping length(one way)									
	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
PKH-2GKLA	1.00	1.00	1.00	1.00	1.00	1.00	0.998	0.995	—	—

2. PERFORMANCE CURVE

Cooling



Heating



3. ELECTRICAL DATA

Indoor unit 220V 50Hz 1phase, 230V 50Hz 1phase, 230V 50Hz 1phase
Outdoor unit 220V 50Hz 1phase, 230V 50Hz 1phase, 240V 50Hz 1phase

Service Ref.		Indoor unit	PKH-2GKLA		PKH-2GKLA		PKH-2GKLA	
		Outdoor unit	PUH-2VKA2		PUH-2VKA2		PUH-2VKA2	
Mode			Cool	Heat	Cool	Heat	Cool	Heat
Capacity(W)			5,400	6,150	5,450	6,200	5,500	6,250
Total Input(kW)			2.19	2.21	2.23	2.25	2.27	2.29
Indoor unit	Input(kW)		0.07	0.07	0.07	0.07	0.07	0.07
	Current(A)		0.33	0.33	0.33	0.33	0.33	0.33
	Starting current(A)		0.40	0.40	0.40	0.40	0.40	0.40
Outdoor unit	Input(kW)		2.12	2.14	2.16	2.18	2.20	2.22
	Current(A)		9.83	9.93	9.78	9.87	9.86	9.95
	Starting current(A)		43	43	44	44	45	45

Indoor unit 240V 50Hz 1phase
Outdoor unit 240V 50Hz 1phase

Service Ref.		Indoor unit	PKH-2GKLA	
		Outdoor unit	PUH-2AKA1·TH-A	
Mode			Cool	Heat
Capacity(W)			5,400	6,100
Total Input(kW)			2.25	2.26
Indoor unit	Input(kW)		0.07	0.07
	Current(A)		0.33	0.33
	Starting current(A)		0.40	0.40
Outdoor unit	Input(kW)		2.18	2.19
	Current(A)		9.77	9.81
	Starting current(A)		45	45

Indoor unit 220V 60Hz 1phase
Outdoor unit 220V 60Hz 1phase

Rating Conditions (Cooling)
Indoor : D.B. 27°C , W.B. 19°C
Outdoor : D.B. 35°C

Rating Conditions
(Cooling) : Indoor : D.B. 29°C , W.B. 19°C
Outdoor : D.B. 46°C
(Heating): Indoor : D.B. 21°C
Outdoor : D.B. 7°C , W.B. 6°C

Service Ref.		Indoor unit	PKH-2GKLA	PKH-2GKLA	
		Outdoor unit	PUH-2NKA1	PUH-2NKA1	
Mode			Cool	Cool	Heat
Capacity(W)			5,800	4,800	6,250
Total Input(kW)			2.48	2.90	2.52
Indoor unit	Input(kW)		0.07	0.07	0.07
	Current(A)		0.33	0.33	0.33
	Starting current(A)		0.40	0.40	0.40
Outdoor unit	Input(kW)		2.41	2.83	2.45
	Current(A)		11.07	12.99	11.2
	Starting current(A)		54	54	54

4. STANDARD OPERATION DATA

Service Ref.				PKH-2GKLA		PKH-2GKLA		PKH-2GKLA	
Mode				Cooling	Heating	Cooling	Heating	Cooling	Heating
Total	Capacity		W	5,500	6,250	5,400	6,100	5,800	6,250
	Input		kW	2.27	2.29	2.25	2.26	2.48	2.52
Electrical circuit	**Indoor unit Service Ref.**			**PKH-2GKLA**		**PKH-2GKLA**		**PKH-2GKLA**	
	Phase,Hz			1,50		1,50		1,60	
	Volts		V	240		240		220	
	Amperes		A	0.33	0.33	0.33	0.33	0.33	0.33
	Outdoor unit Service Ref.			**PUH-2VKA2**		**PUH-2AKA1·TH-A**		**PUH-2NKA1**	
	Phase,Hz			1, 50		1, 50		1, 60	
	Volts		V	240		240		220	
	Amperes		A	9.86	9.95	9.77	9.81	11.07	11.20
Refrigerant circuit	Discharge pressure		MPa (kg/cm²)	1.92 (19.6)	2.08 (21.2)	1.95 (19.9)	2.08 (21.2)	1.97 (20.1)	2.15 (21.9)
	Suction pressure		MPa (kg/cm²)	0.46 (4.7)	0.39 (3.8)	0.47 (4.8)	0.39 (3.8)	0.44 (4.5)	0.39 (3.8)
	Discharge temperature		°C	87	93	92	95	70	99
	Condensing temperature		°C	51	54	51	54	51	55
	Suction temperature		°C	4	–2	4	4	3	–2
	Ref.pipe length		m	5	5	5	5	5	5
Indoor side	Intake air temperature	D.B.	°C	27	20	27	20	27	21
		W.B.	°C	19	15	19	15	19	15
	Discharge air temperature	D.B.	°C	11.7	45.4	11.9	44	11.2	46
Outdoor side	Intake air temperature	D.B.	°C	35	7	35	7	35	7
		W.B.	°C	24	6	24	6	24	6
SHF				0.69	—	0.70	—	0.68	—
BF				0.12	—	0.12	—	0.12	—

The unit of pressure has been changed to Mpa on the international system of unit (SI unit system).
The converted score against the traditional unit system can be gotten according to the formula below.
1(Mpa) = 10.2(kg/cm²)

5. OUTLET AIR SPEED AND COVERAGE RANGE

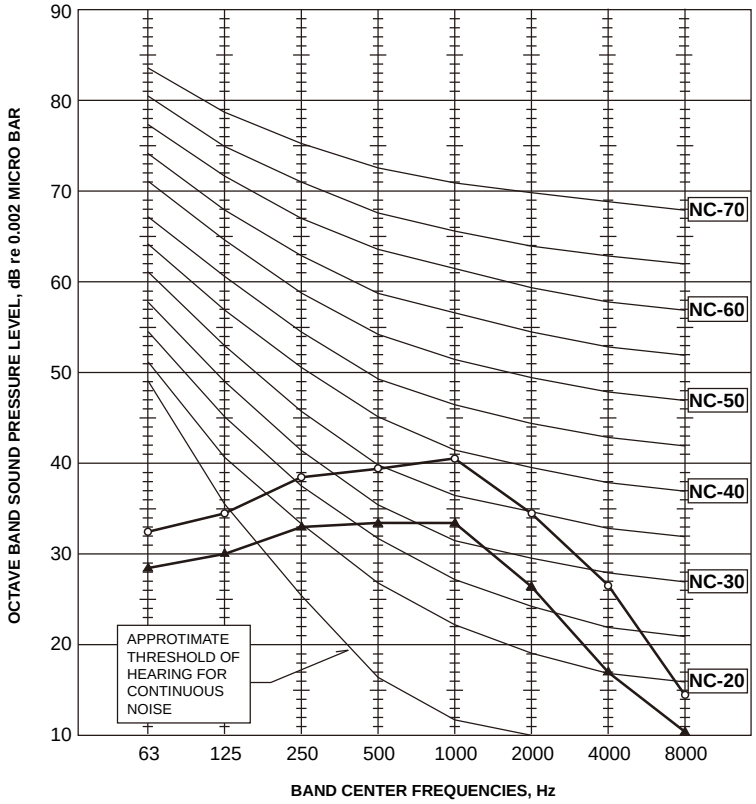
Item \ Service Ref.	PKH-2GKLA
Air flow m³/min	12
Air speed m/sec	5.3
Coverage range m (ft)	10(32.8)

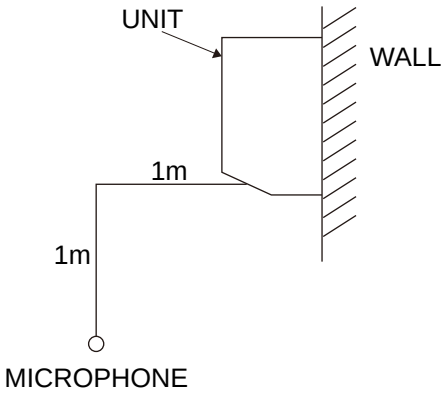
The air coverage range is the value up to the position where the air speed is 0.25m/sec. when air is blown out horizontally from the unit at the Hi notch position.
The coverage range should be used only as a general guideline since it varies according to the size of the room and the furniture inside the room.

6. NOISE CRITERION CURVES

PKH-2GKLA

NOTCH	SPL(dB)	LINE
Hi	43	○—○
Lo	36	▲—▲





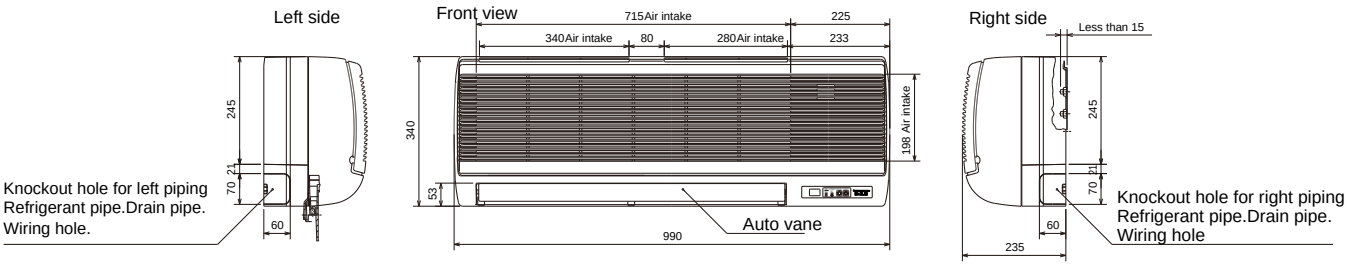
Ambient temperature 27℃

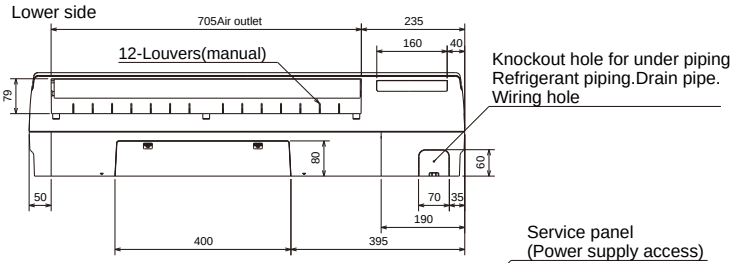
Test conditions are based on JIS Z8731

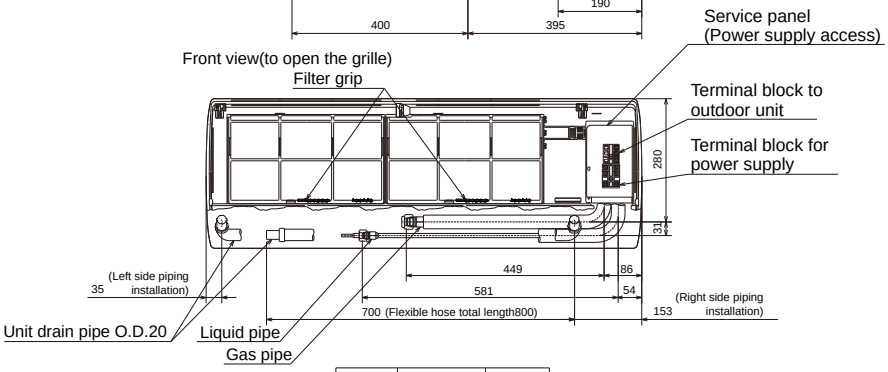
4 OUTLINES AND DIMENSIONS

INDOOR UNIT
PKH-2GKLA

Unit : mm

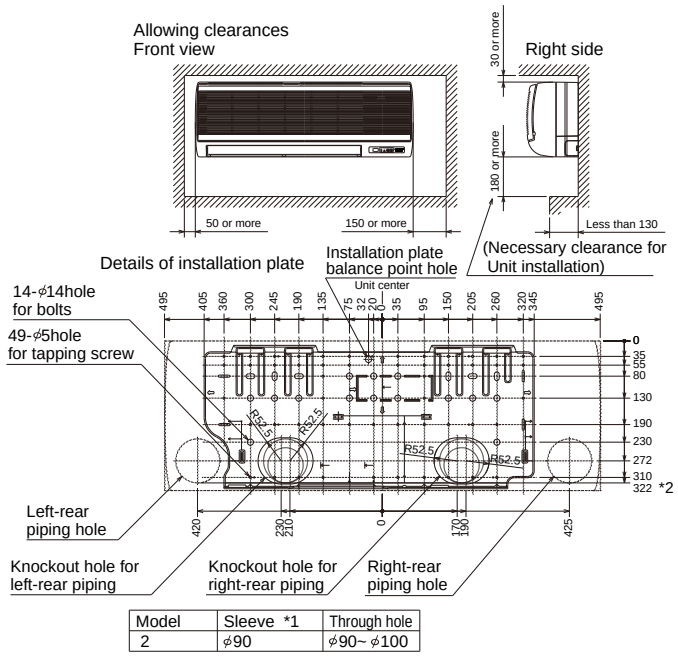






Model	Liquid pipe	Gas pipe
2	3/8F	5/8F

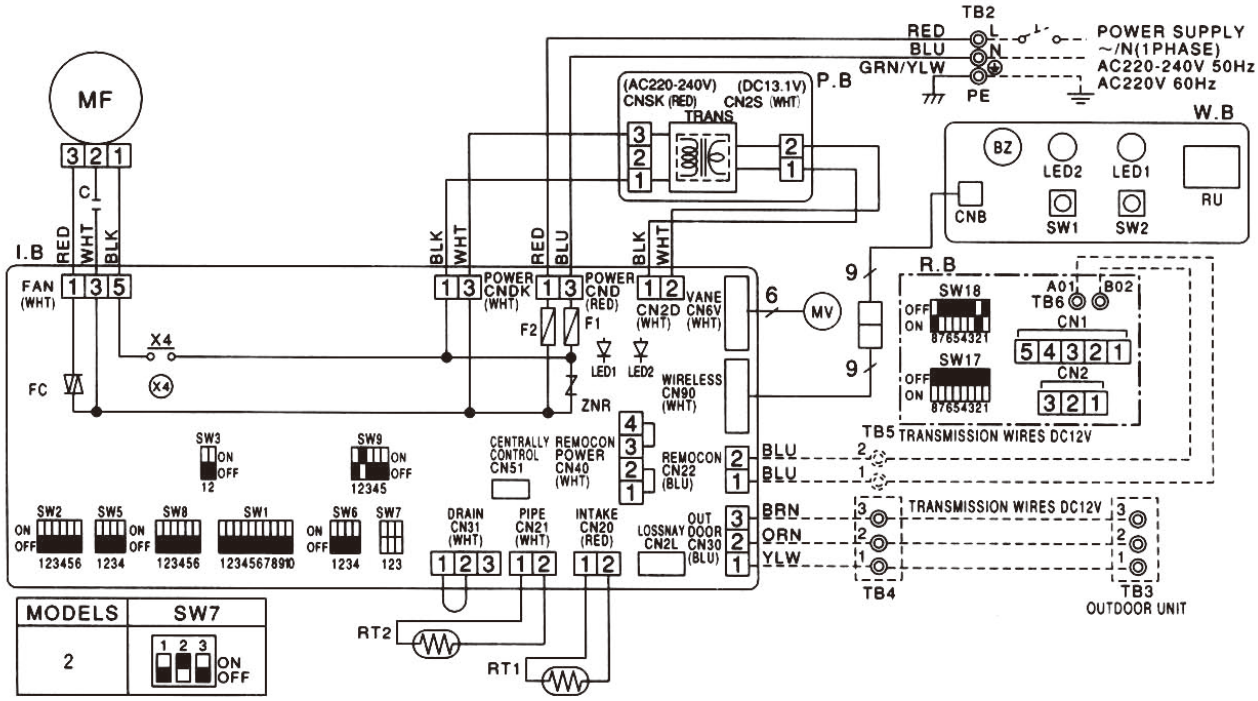
*1 Sleeves are available on the market.
*2 This size shows the lower end of through hole.



Model	Sleeve *1	Through hole
2	ϕ90	ϕ90~ ϕ100

5 WIRING DIAGRAM

PKH-2GKLA



The black square (■) indicates a switch position.

〔LEGEND〕

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	C	CAPACITOR (FAN MOTOR)	W.B	WIRELESS REMOTE CONTROLLER BOARD
I.B	INDOOR CONTROLLER BOARD	MF	FAN MOTOR	RU	RECEIVING UNIT
CN2L	CONNECTOR (LOSSNAY)	MV	VANE MOTOR	BZ	BUZZER
CN51	CONNECTOR (CENTRALLY CONTROL)	TB2~TB6	TERMINAL BLOCK	LED1	LED (RUN INDICATOR)
FC	FAN PHASE CONTROL	RT1	ROOM TEMPERATUER THERMISTOR (0℃ / 15kΩ,25℃ / 5.4kΩ DETECT)	LED2	LED (HOT ADJUST)
SW1	SWITCH (FUNCTION SELECTOR)			SW1	SWITCH (HEATING ON / OFF)
SW2	SWITCH (ADDRESS SELECTOR)	RT2	PIPE TEMPERATUER THERMISTOR / LIQUID (0℃ / 15kΩ,25℃ / 5.4kΩ DETECT)	SW2	SWITCH (COOLING ON / OFF)
SW3	SWITCH (EMERGENCY OPERATION)				
SW5	SWITCH (MODEL SELECTOR)	R.B	REMOTE CONTROLLER BOARD (OPTION)		
SW6	SWITCH (TWIN / TRIPLE SELECTOR)	CN1	CONNECTOR (PROGRAM TIMER)		
SW7	SWITCH (MODEL SELECTOR)	CN2	CONNECTOR (REMOTE SWITCH)		
SW8	SWITCH (OPTION)	SW17	SWITCH (ADDRESS SELECTOR)		
SW9	SWITCH (MODEL SELECTOR)	SW18	SWITCH (FUNCTION SELECTOR)		
X4	RELAY (FAN MOTOR)				
F1,F2	FUSE (6.3A / 250V)				
ZNR	VARISTOR				
LED1	LED (DC 12V POWER)				
LED2	LED (DC 5V POWER)				

NOTES:

1.Since the indoor fan motor (MF) is connected with 230,240V power, if 220V power is used, change the dip switch (SW8) on the indoor controller board as shown in fig:＊2.

fig:＊2 Indoor fan motor (MF) for 220V. SW8 ON OFF 123456 → SW8 ON OFF 123456

2.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.

3.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers.

4.Symbols used in wiring diagram above are, □□□ : Connector, ◎ : Terminal block.

5.Emergency operation

If remote controller or microcomputer fails but there is no other trouble, emergency operation is possible by setting dip switch (SW3<I.B>) on the indoor controller board.

[Check items]

(1) Make sure that no other trouble exists with the outdoor unit. Trouble with the outdoor unit prevents emergency operation. (If any trouble exists with the outdoor unit error code "P8" will be displayed on the remote controller and the trouble position will be shown on the outdoor controller board LED. See electric wiring diagram of the outdoor unit for details.)

(2) Make sure that there is no trouble with the indoor fan. Emergency operation will be a continuous run with the power ON/OFF (ON/OFF with the remote controller is not possible).

[Emergency operation procedure]

(1) Set the dip switch (SW3<I.B>) on the indoor controller board to 1 on and 2 off for cooling. and 1 • 2 on for heating.

(2) Turn on are outdoor unit side circuit breaker, then indoor unit side circuit breaker.

(3) During emergency operation indoor fan runs at high speed but auto-vane does not work.

(4) Thermostat will not function. Cold air blows out for defrosting during heating thus do not operate defrosting for a long time.

(5) Emergency cooling should be limited to 10 hours maximum (the indoor unit heat exchanger may freeze).

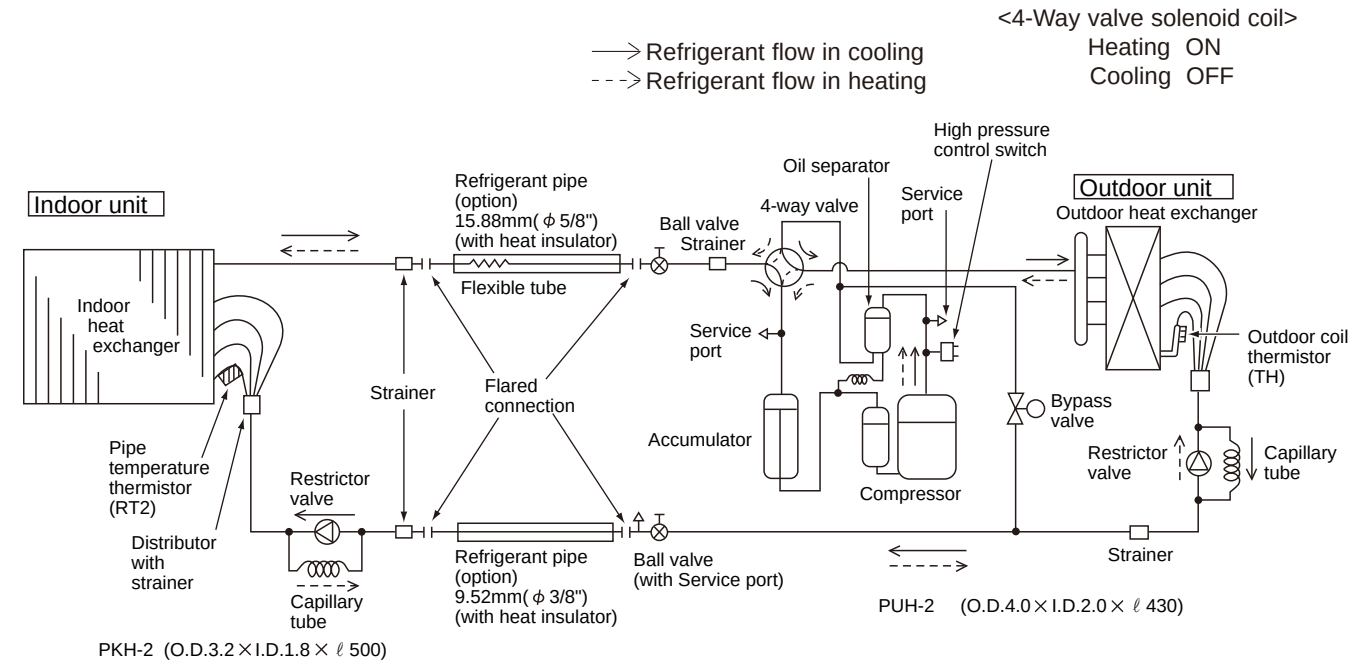
(6) After every emergency operation, set all dip switches (SW3<I.B>) to OFF.

(7) Movement of the vanes does not work in emergency operation, therefore you have to slowly set them manually to the apporopriate position.

6 REFRIGERANT SYSTEM DIAGRAM

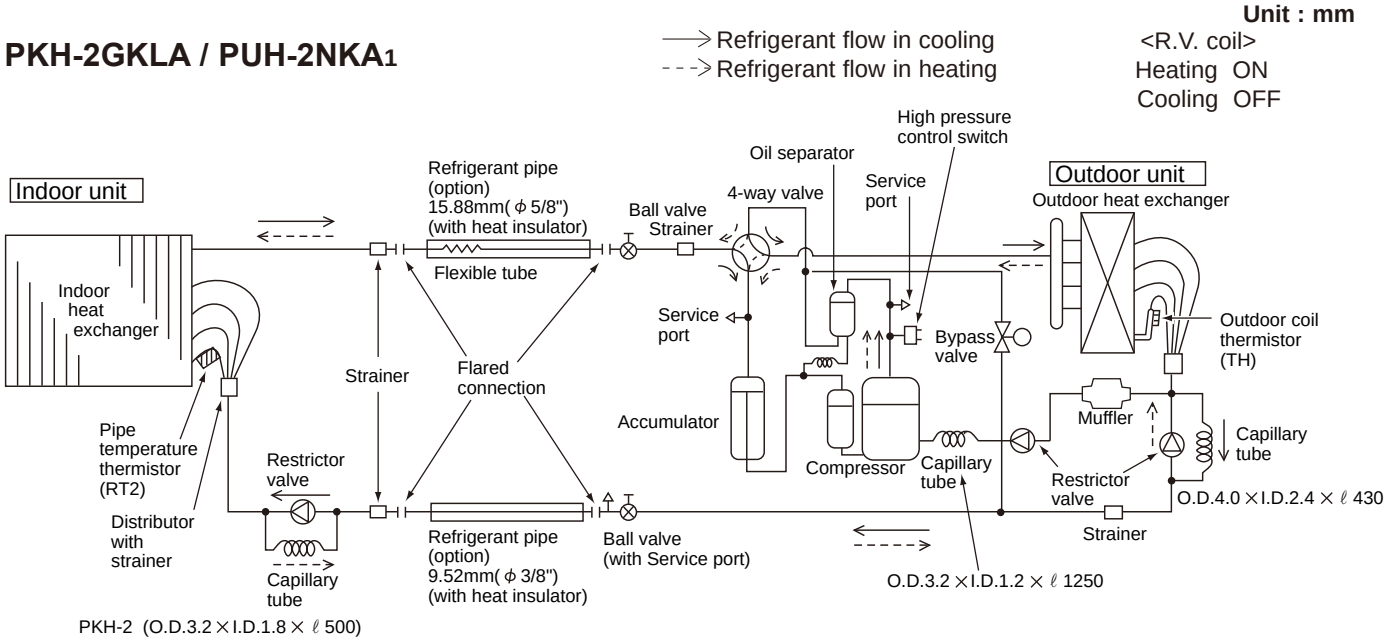
PKH-2GKLA / PUH-2VKA2 PUH-2AKA1·TH-A

Unit : mm



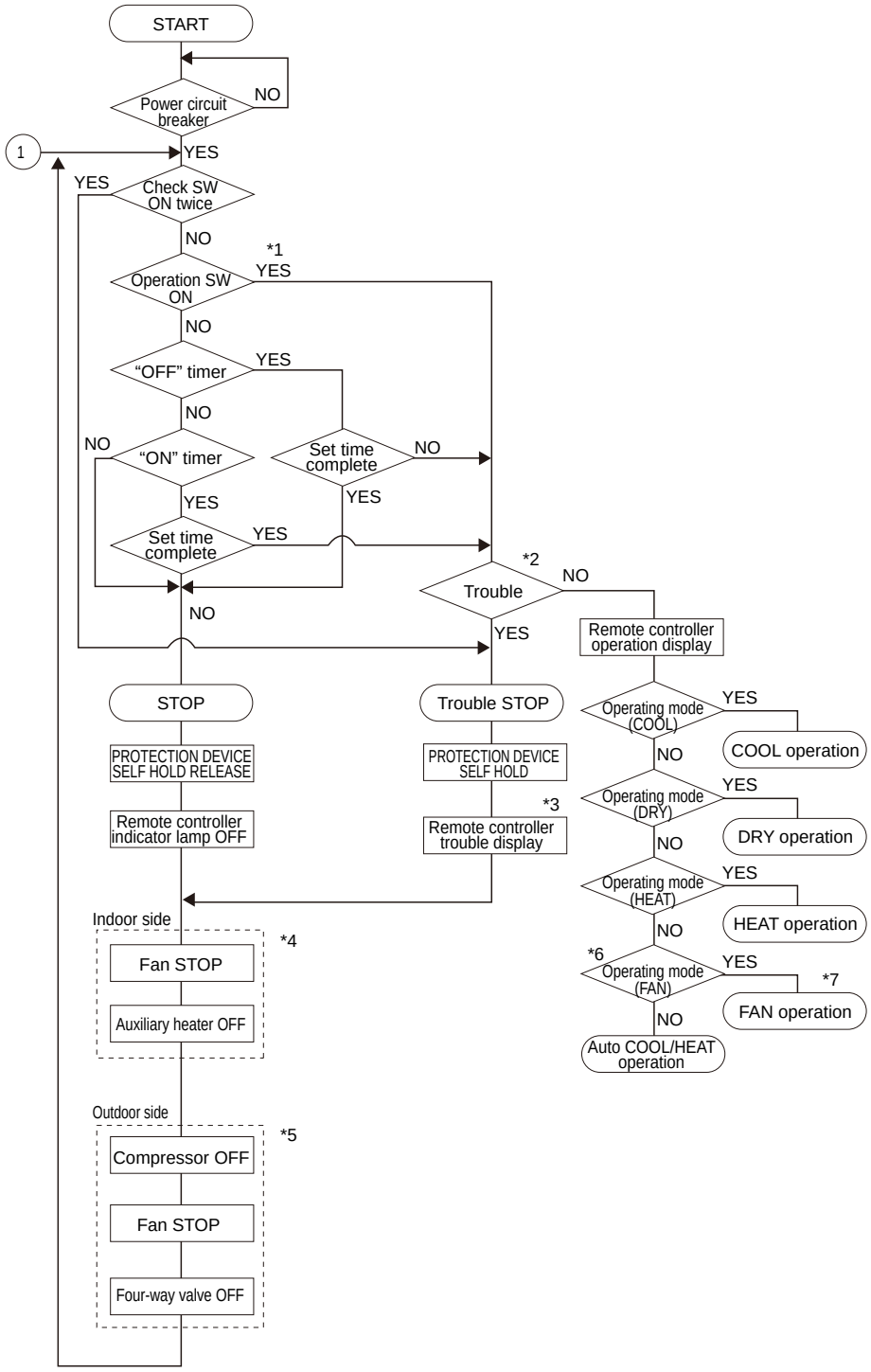
Unit : mm

PKH-2GKLA / PUH-2NKA1



7 OPERATION FLOW-CHART

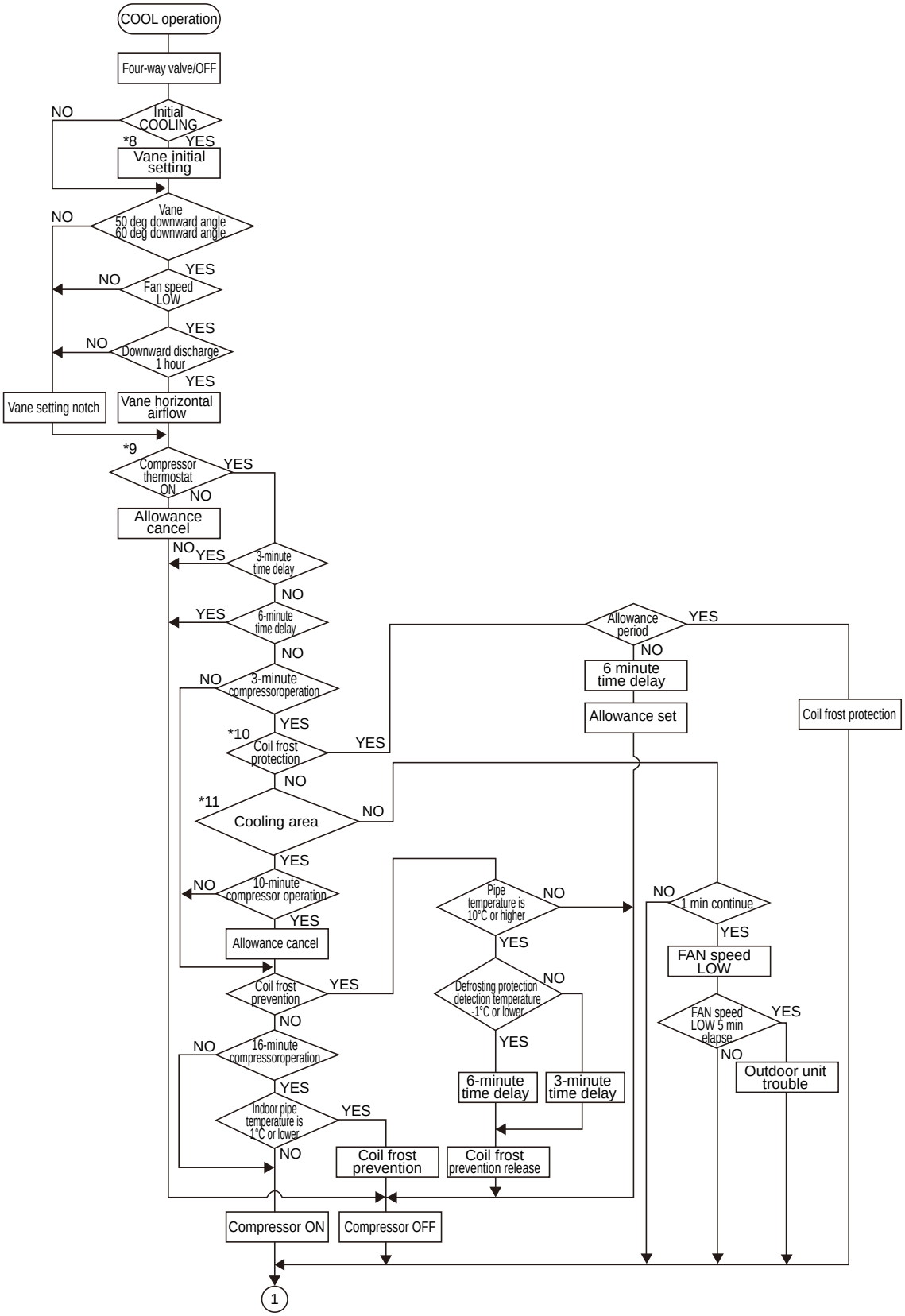
MAIN OPERATION



*1 In addition, the centralized control and remote control can be operated.
*2 The modes which indicate the sources of trouble are listed below.
- EO-Signal transmitting/receiving error
- P1-Room temperature thermistor malfunction
- P2-Pipe temperature thermistor malfunction
- P6-Coil frost/overheat protection
- P7-System error
- P8-Outdoor unit trouble

*3 The CHECK switch will show if an error has occurred in the past.
*4 Fan runs on low speed for 1 minute in order to remove overheat air.
*5 The 3-minute (6 minutes ··· heating mode) time-delay functions after compressor stops.
*6 FAN or AUTO mode is selected by the indoor dip switch setting.
*7 In FAN mode, fan speed and vane operation depend on the remote controller setting. (Compressor is OFF.)

COOLING OPERATION



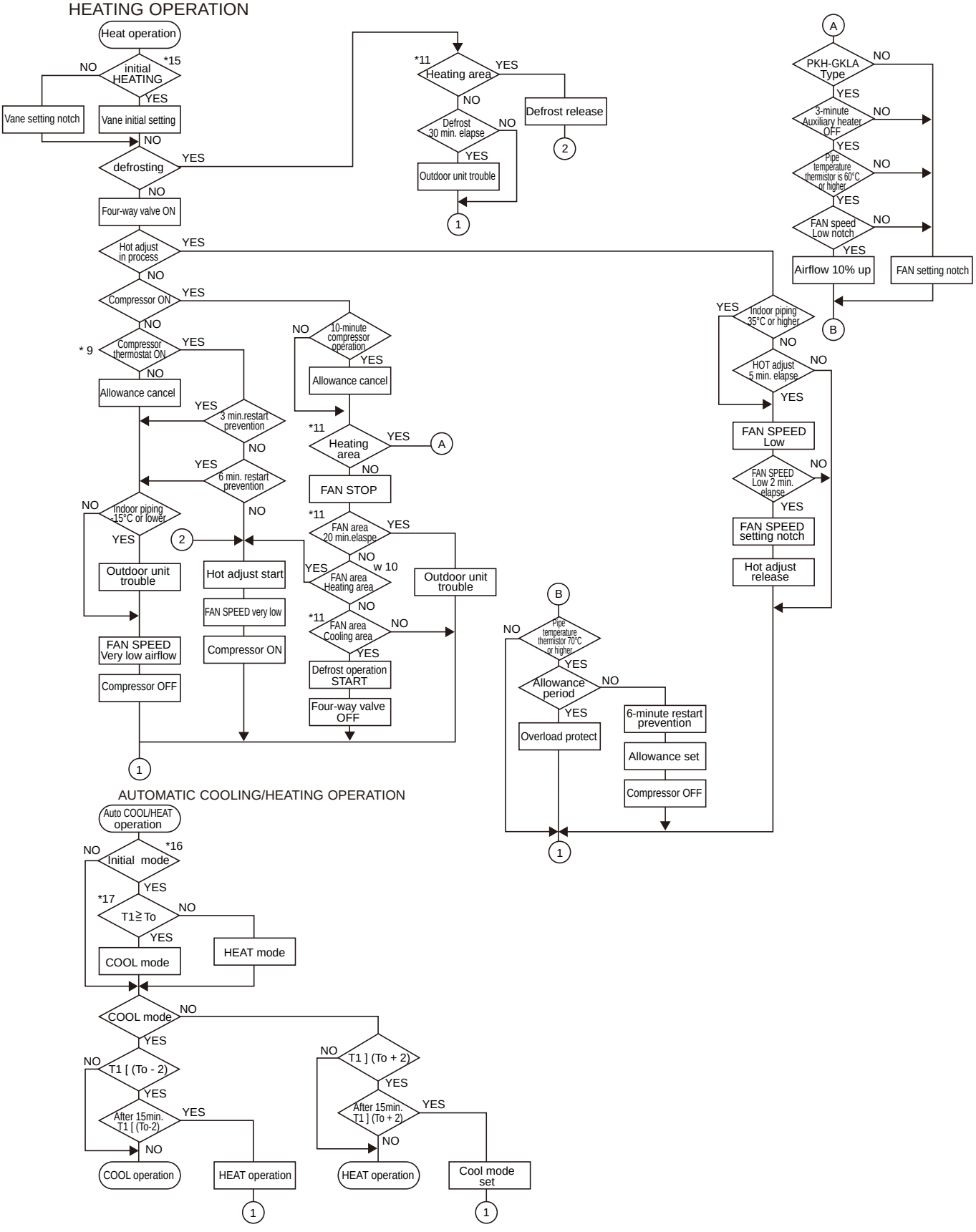
*8 When operation stops or changes to cooling or dry mode, the auto vane turns to a horizontal angle. If operation changes during auto vane SWING, the auto vane will continue to swing.

*9 When operating TEST RUN, the thermostat will be continuously ON.

*10 After 3 minute compressor operation, if the pipe temperature thermistor reads -15°C or below for 3 minutes, the compressor will stop for 6 minutes.

*11 Heating area : Pipe temperature is more than 5 degrees above the room temperature.
Cooling area : Pipe temperature is more than 5 degrees below the room temperature.
FAN area : Pipe temperature is within 5 degrees either way of the room temperature.

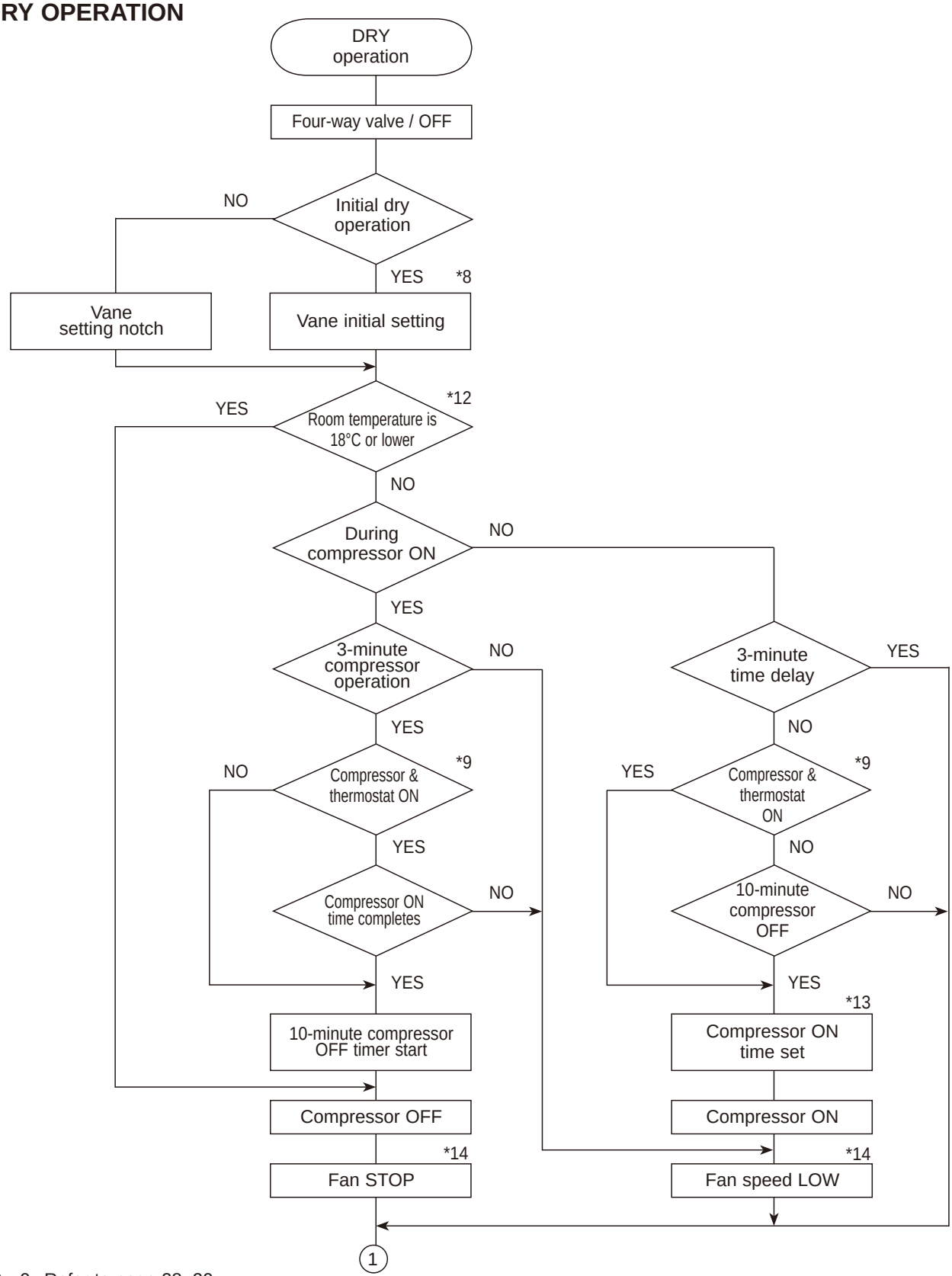
HEATING OPERATION



AUTOMATIC COOLING/HEATING OPERATION

*15 (i) Until Low airflow is set while in hot adjustment
(ii)While defrosting (FAN STOP)
(iii)When thermostat is OFF
In the case of(i), (ii) and (iii) above, airflow is horizontal regardless the VANE setting.
*16 When AUTO operation is started, COOL or HEAT mode is selected automatically.
*17 T1 : Room temperature
To : Set temperature

DRY OPERATION



*8—9 Refer to page 28~29.

*12 When room temperature is 18°C or below, the compressor cannot operate.
When room temperature rises over 18°C, the compressor starts after a 3-minute time delay.

*13 Compressor ON time is decided by room temperature. Refer to page 28~29.

*14 In dry operation, compressor ON makes the fan speed LOW. Also, when the compressor OFF and the pipe temperature is 26°C or less, the fan stops, or when the compressor OFF and the pipe temperature is below 6°C, the fan speed changes to LOW mode.
It is not possible to set the fan speed with the remote controller.

8 MICROPROCESSOR CONTROL

1. OUTLINE OF MICROPROCESSOR CONTROL

INPUT to remote controller

- OFF-ON switching
- COOL/DRY-AUTO-HEAT selector switching
- Thermostat setting
- TIMER mode selector-switching and Timer setting
- HIGH-LOW fan speed switching
- AUTO Vane selector (AIR DISCHARGE) switching
- TEST RUN switching
- CHECK mode switching (Self diagnostic trouble shooting)

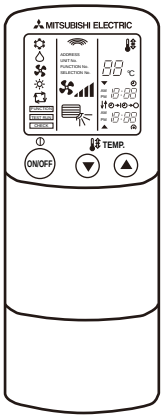
Remote controller board

- Processes and transmits orders

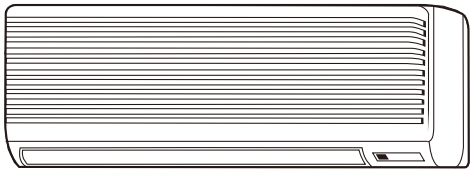
OUTPUT to remote controller

Remote controller

- LCD indicator



Indoor unit



12VDC

Non-polar, two-wire cable maximum length 500 meters (WIRED only)

Signal

INPUT from indoor unit

- Room temperature thermistor (RT1)
- Pipe temperature thermistor (RT2)

Indoor controller board

- Receives orders from remote controller and temperature data from indoor unit
- Processes orders and data
- Controls indoor and outdoor operation
- Self diagnostic function
  - * System control operation
  - * Emergency operation
  - * Set by dip switch on indoor controller board.
- Transmits the power to remote controller.

1 2 3

OUTPUT to indoor unit

- Auto vane's angle setting
- Emergency stop

Polar three-wire cable

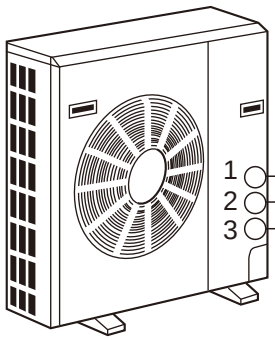
OUTPUT to outdoor unit

- Compressor and outdoor fan : ON-OFF
- Operation mode change :COOL-HEAT

Independent Control of Outdoor Unit

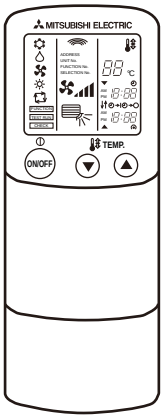
- Compressor protection device working
- Defrosting START-STOP
- Fan speed control
- Crankcase heater control ON-OFF
- Self diagnostic function

Outdoor unit



2. INDOOR UNIT CONTROL

2-1 COOL operation



<How to operate>

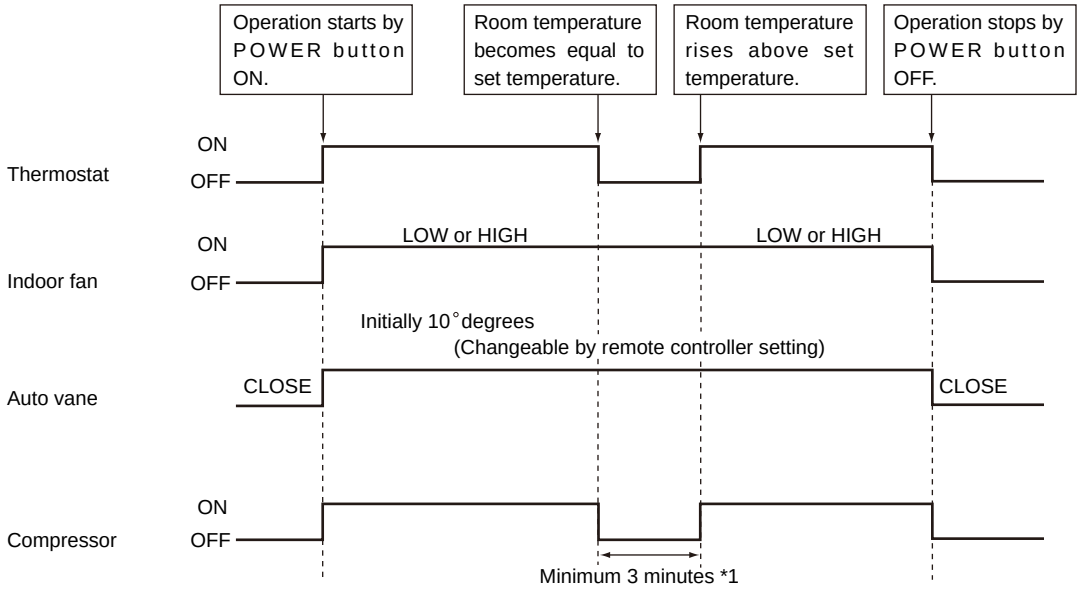
① Press POWER ON/OFF button.

② Press the MODE button to display " ✿ ".

③ Press the TEMP button to set the desired temperature.

NOTE: The set temperature changes 1°C when the ▲ or ▼ button is press one time Cooling 19 to 30°C.

<COOL operation time chart>



* 1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

① 3-minute time delay
To prevent overload, the compressor will not start within 3 minutes after stop.

② The compressor runs when room temperature is higher than set temperature.
The compressor stops when room temperature is equal to or lower than the set temperature.
The compressor maintains the previous state when the discharge temperature minus the set temperature is 0°C or more, or lower than 1°C.

③ The compressor stops in check mode or during protective functions.

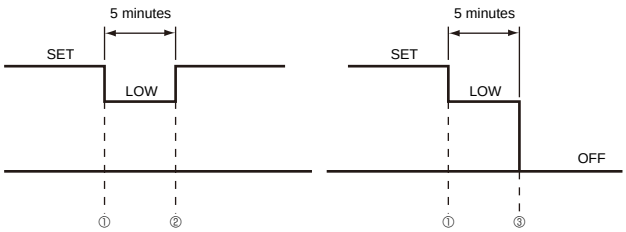
④ Coil frost prevention
To prevent indoor coil frost, the compressor will stop when the pipe temperature thermistor (RT2) reads 1°C or below after the compressor has been continuously operated for at least 16 minutes or more. When the pipe temperature rises to 10°C or above, the compressor will start in a 3-minute(* 2) time delay.
* 2 When the pipe temperature is -1°C or less, the compressor starts in 6 minutes.

NOTE : By turning OFF the dip switch SW1-3 on indoor controller board, the start temperature of coil frost prevention changes from 1°C to -3°C.

(2) Indoor fan control

Indoor fan speed LOW/HIGH depends on the remote controller setting.
However, if an outdoor unit abnormality is detected, the indoor fan speed will be LOW, regardless of the remote controller setting.

(i) Fan speed LOW/HIGH depends on the remote controller setting regardless of the thermostat ON/OFF.
(ii) Fan speed will remain on LOW if an abnormality in outdoor unit is detected. (5 minutes)
When the abnormality detection is released, the fan speed returns to the set speed.



①Start-up of outdoor unit abnormality detection
②Release of outdoor unit abnormality detection
③Unit stop due to outdoor unit abnormality with P8 indication

NOTE 1 : Fan stops immediately if the unit stops or the check mode is started.

(3) Auto vane control

Auto vane position is set to 10 degrees airflow at the start-up of COOL operation. It can then be changed by the remote controller.

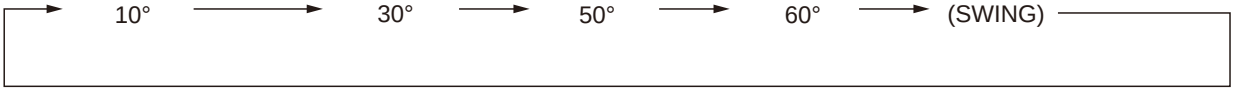
(a) Stop mode (fixed operation)

(i) At start-up of COOL operation, the auto vane is set to 10 degrees airflow direction.

(ii) Discharge direction can be changed with (VANE) button.

① Fan speed : LOW

② Fan speed : HIGH

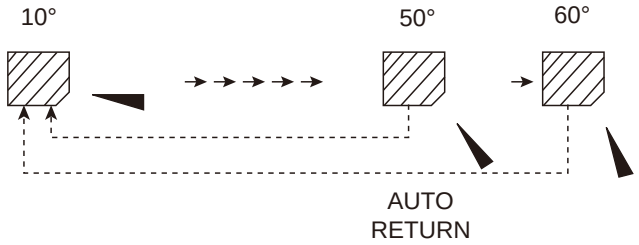


(b) SWING mode

(i) The vane motor turns ON when the SWING mode is selected. The vane motor is continuously ON during SWING mode.

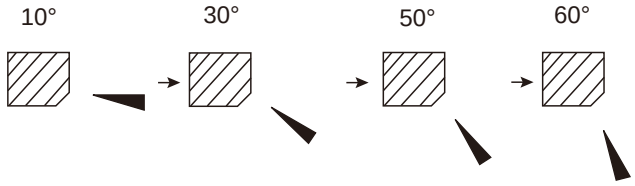
<VANE POSITION>

① Fan speed : LOW



Vane is in motion at the angle of 50° or 60°.
(After an hour, the vane is automatically set at the angle of 10°)

② Fan speed : HIGH



As for the unit operated with only wired remote controller;
When 50 degrees or 60 degrees airflow is selected with the LOW fan speed in COOL operation, “1Hr” will appear right side of the air direction display. Only weird remote controller. One hour later, the airflow direction returns to 10 degrees automatically and “1Hr” will disappear. If the airflow direction is set to 10 degrees during “1Hr” indication, the time counting for AUTO RETURN is cancelled. (Only weird remote controller.)

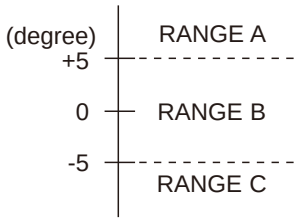
<Auto vane drive>
(a) The vane is driven by DC12V motor.
(b) Airflow direction is selected depends on the number of pulse were sent.
(c) Before start driving the auto vane, detect the standard position first, output the number of pulse to each airflow.
(d) The speed of the auto vane drive for both open and close are set at 200 pulse/sec.
(e) Method of driving the auto vane.
① Detecting the standard position:
Output 1600 pulse to the opening direction.
② Position setting: Output the number of pulse indicated no below chart to the closing direction.

	The number of pulse output after detecting the standard position
Close	1,600
Horizontal	697
Downward A	570
Downward B	465
Downward C	362

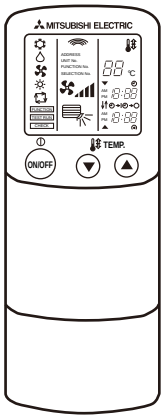
(4) Detecting abnormalities in the outdoor unit

After the compressor has been continuously operated for 3 minutes, if the difference between the pipe temperature and room temperature is out of RANGE C for 1 minute, the indoor fan speed will turn to LOW. Five minutes later, if the difference is still out of RANGE C, the outdoor unit is functioning abnormally. Thus, the compressor stops and check code “P8” appears on remote controller.
RANGE A : Pipe temperature is more than 5 degrees above room temperature.
RANGE B : Pipe temperature is within 5 degrees either way of room temperature.
RANGE C : Pipe temperature is more than 5 degrees below room temperature.

Pipe temperature
minus room temperature



2-2 DRY operation



<How to operate>

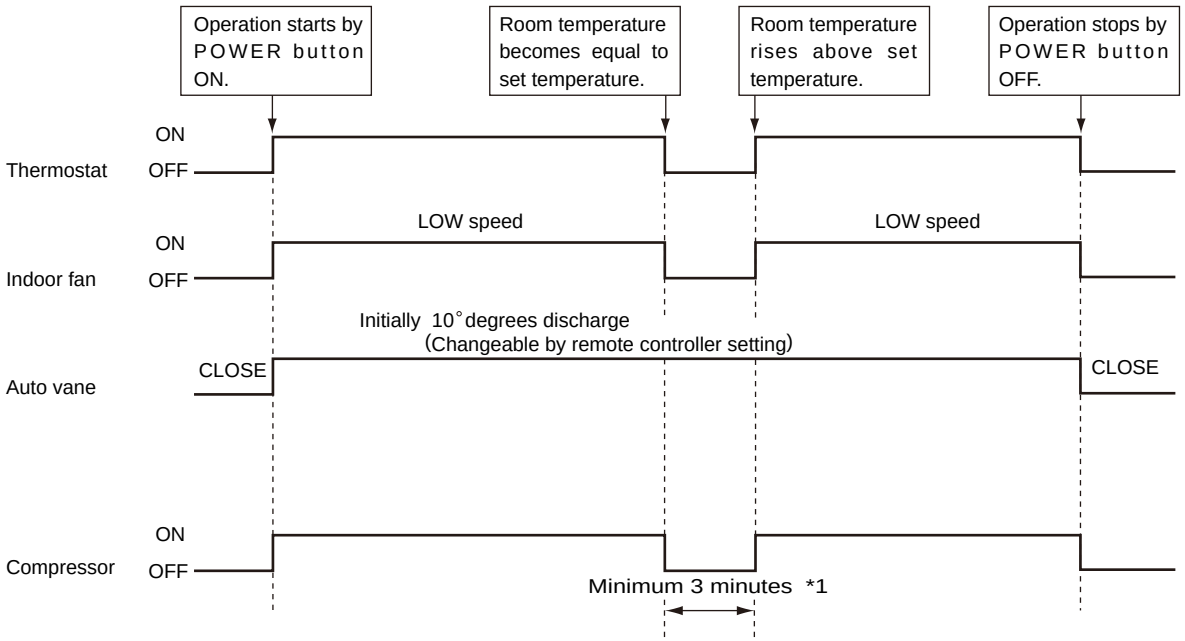
① Press POWER ON/OFF button.

② Press the MODE button to display " ♺ ".

③ Press the TEMP button to set the desired temperature.

NOTE: The set temperature changes 1°C when the ▲ or ▼ button is press one time DRY 19 to 30°C.

<DRY operation time chart>



*1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

①3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

②The compressor runs when the room temperature is higher than the set temperature.

The compressor stops when the room temperature is equal to or lower than the set temperature.

③The compressor stops in check mode or during protective functions.

④The compressor will not start when the room temperature is below 18°C.

The compressor starts intermittent operation when the power is turned ON with room temperature above 18°C. The compressor ON/OFF time depends on the thermostat ON/OFF and the following room temperatures. After 3-minute compressor operation,

- If the room temperature thermistor reads above 28°C with thermostat ON, the compressor will operate for 6 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads above 26°C—28°C with thermostat ON, the compressor will operate for 4 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 24°C—26°C with thermostat ON, the compressor will operate for 2 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads below 24°C with thermostat ON, the compressor will stop for 3 minutes.
- If the thermostat is OFF regardless of room temperature, the compressor will stop for 10 minutes.

⑤Coil frost protection

Coil frost protection in DRY operation is the same as in COOL operation.

⑥Coil frost prevention

Coil frost prevention does not operate in DRY operation.

(2) Indoor fan control

The indoor fan runs on LOW speed during compressor operation. The fan speed cannot be changed with the remote controller. Also, the fan runs on LOW speed when the pipe temperature is 6°C or more, or the compressor is OFF and the pipe temperature is below 6°C.

(a)During compressor OFF

- When the pipe temperature is 6°C or above, the indoor fan will stop.
- When the pipe temperature is below 6°C, the indoor fan will run on LOW speed.

(b)During compressor ON

- The indoor fan runs on LOW speed.

<Dry mode>

The fan notch is controlled by the pipe temperature every 30 seconds.

Fan control in DRY operation.

	Pipe temp.	Fan
Compressor OFF	6C or more	STOP
	Below 6 °C	LOW
Compressor ON	All	LOW

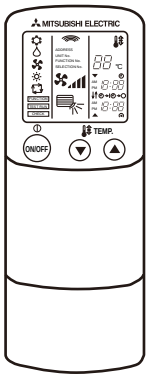
(3) Auto vane

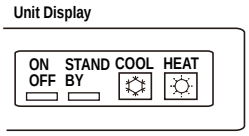
The same operation as that in COOL.

(4) Detecting abnormalities in the outdoor unit

An abnormality in the outdoor unit can not be detected in DRY operation.

2-3 HEAT operation





<How to operate>

① Press POWER ON/OFF button.

② Press the MODE button to display "☼".

③ Press the TEMP button to set the desired temperature.

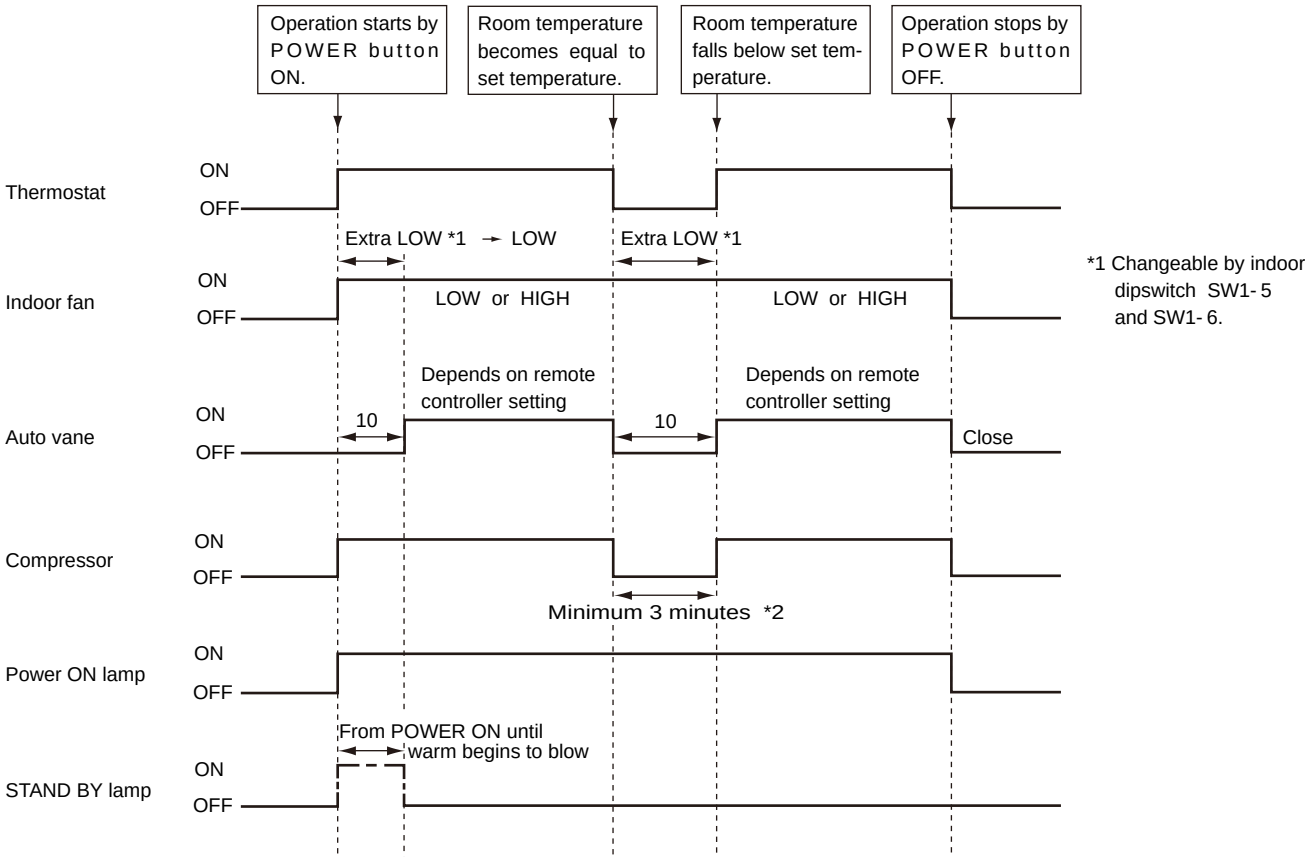
NOTE: The set temperature changes 1°C when the ▲ or ▼ button is press one time Heating 17 to 28°C.

<Display in HEAT operation>

[STANDBY]

The [STANDBY] symbol is displayed from heating operation start until the heated air begins to blow and during the defrost operation.

<HEAT operation time chart>



*2 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this periodhas ended.

(1) Compressor control

①3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

②The compressor runs when the room temperature is lower than the set temperature.

The compressor stops when the room temperature is equal to or higher than the set temperature.

③The compressor stops in check mode or during protective functions.

④Overheat protection

<Start condition>

When the pipe thermistor reads 70°C or above, the overheat protection will start.

<Overheat protection>

The compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again within 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of "P6" on the remote controller.

<Termination conditions>

Overheat protection is terminated when the start condition is not satisfied again during the allowance (10-minute compressor operation), when operation mode changes to other mode, or when thermostat turns OFF.

(2) Indoor fan control

(a) Normal control

(i)The indoor fan runs on EXTRA-LOW speed during the thermostat OFF.
EXTRA-LOW speed can be changed to LOW or HIGH speed by setting the dipswitch SW1-5 and SW1-6, If the pipe temperature becomes more than 5 degrees below the room temperature during the thermostat OFF, the indoor fan will stop. After, when the pipe temperature becomes within 5 degrees of room temperature, the indoor fan will run on EXTRA-LOW speed.

(ii)Hot adjustment
Hot adjustment is a warm-up for HEAT operation
<Start conditions>
The hot adjustment works under any of the following conditions.
- HEAT operation starts.
- Defrosting ends.
- Thermostat turns ON.

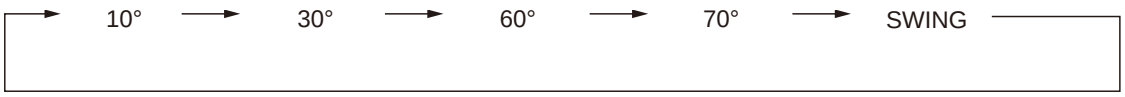
[Hot adjustment]
Initially, the indoor fan runs on EXTRA-LOW speed. When 5 minutes have passed or the pipe temperature exceeds 35°C, the fan speed changes to LOW. Two minutes later, the hot adjustment ends. Then, the fan speed depends on the remote controller setting.

(iii)The indoor fan stops when the pipe temperature is within 5 degrees either way of room temperature.

(iv)To eliminate the remaining heat, the indoor fan runs for the first 1 minute after the booster heater is turned OFF.

(3) Auto vane control

Auto vane position is set to 70 degrees airflow at the start-up of Heat operation.
The airflow direction can be changed by the remote controller setting.



In the following cases, airflow direction becomes 10° regardless of the remote controller setting.

① During the hot adjustment with fan speed at EXTRA-LOW
② During defrosting with indoor fan OFF
③ During the thermostat OFF

(4) Detecting abnormalities in the outdoor unit

When the outdoor unit is determined to be abnormal by the following causes, the compressor will stop and the check code " P8 " will appear on the remote controller display.

(i) During compressor ON while hot adjustment is set.

① If the difference between the pipe temperature and room temperature is in the RANGE B[*1], the indoor fan will stop.

② Within 20 minutes after entering RANGE B (except for the first 10 seconds),

a) If the temperature difference enters RANGE A[*1], the hot adjustment starts,

b) If the temperature difference is still in RANGE B, the outdoor unit is deemed abnormal.

c) If the temperature difference enters RANGE C[*1], defrosting starts.

③ Within 20 minutes after entering RANGE C, if the temperature difference does not return to RANGE B, the outdoor unit is deemed abnormal.

④ If the temperature difference returns to RANGE B, the next 20 minutes is an allowance period. If the difference enter RANGE A during the allowance, defrosting ends and the hot adjustment starts. If the difference does not enter RANGE A during the allowance, the outdoor unit is deemed abnormal.

(ii) During compressor ON in defrosting

After 30 minutes of defrosting in hot adjustment, if the temperature difference is still in RANGE C, the outdoor unit is determined to be abnormal.

When RANGE B does not change to RANGE A after 20 minutes have passed since RANGE C had outdoor unit is determined to be abnormal.

(iii) During compressor OFF

Not detecting abnormalities.

(5) Pipe thermistor abnormality detection

An abnormality can be detected during compressor ON, except for the following.

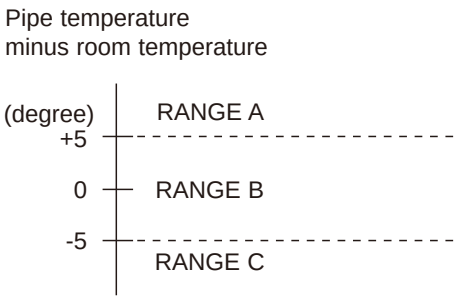
●For the first 30 minutes after the temperature difference between the pipe temperature and room temperature enters the RANGE C.

●When the temperature difference enters the RANGE C until it moves to the RANGE B.

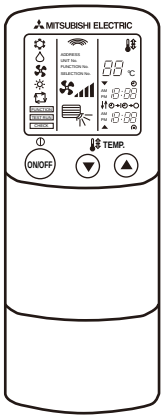
(6) Defrosting operation

After the outdoor unit starts the defrosting operation, when the temperature difference between the pipe temperature and room temperature gets out of RANGE A and into RANGE B, the indoor unit starts the defrosting mode. After the outdoor unit stops the defrosting operation, when the temperature difference returns to the RANGE A, the indoor unit stops the defrosting mode. While the indoor unit is in the defrosting mode, the indoor fan and the booster heater stop.

[*]1 RANGE A : Pipe temperature is more than 5 degrees above room temperature.
RANGE B : Pipe temperature is within 5 degrees either way of room temperature.
RANGE C : Pipe temperature is more than 5 below room temperature.



2-4 AUTO operation (Automatic COOL/HEAT change over operation)



<How to operate>

① Press POWER ON/OFF button.

② Press the MODE button to display " ".

③ Press the TEMP button to set the desired temperature.

NOTE: The set temperature changes 1°C when the ▲ or ▼ button is press one time Auto 19 to 28°C.

- "AUTOMATIC" works to change by itself the operation mode either to cooling or heating according to the room temperature.

(1) Initial mode

① When AUTO operation starts after unit OFF.

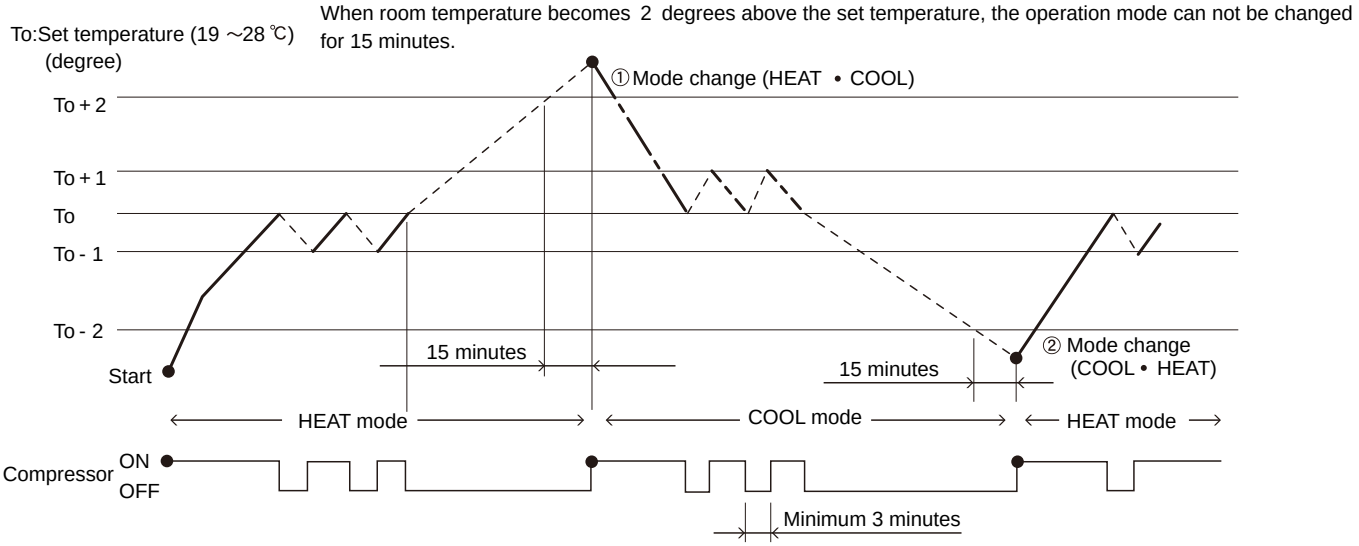
- If the room temperature is higher than the set temperature, operation starts in COOL mode.
- If the room temperature is equal to or lower than the set temperature, operation starts HEAT mode.

② When AUTO operation starts after COOL or HEAT operation, the previous mode continues.

(2) Mode change

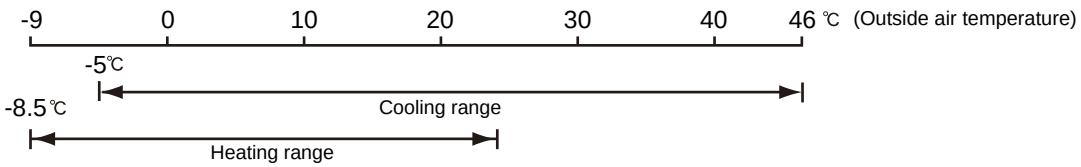
① HEAT mode changes to cool mode when 15 minutes have passed since the room temperature became 2 degrees above the set temperature.

② COOL mode changes to HEAT mode when 15 minutes have passed since the room temperature became 2 degrees below the set temperature.

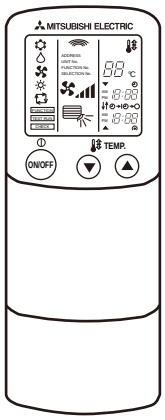


(3) Temperature range

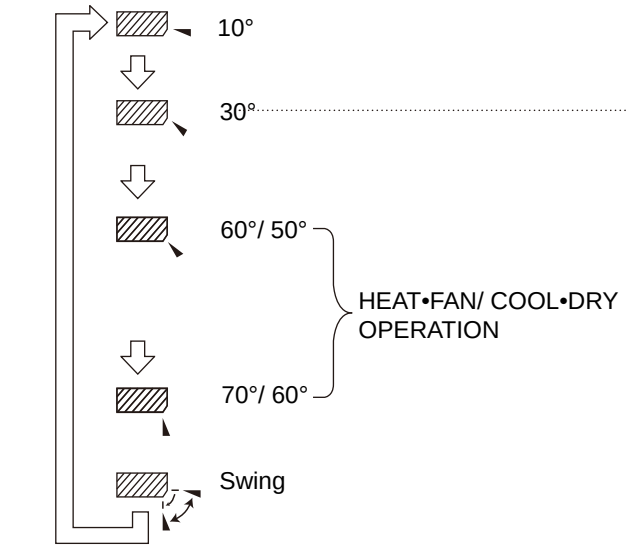
AUTO operation is available under the outside air temperatures as follows.



2-5 Auto vane control



<How to operate>
To change the airflow direction, press (VANE) button.



Available in COOL operation with fan speed on HIGH or in HEAT operation.
Unavailable in DRY operation.
If fan speed changes from HIGH to LOW during 30° downward airflow in COOL mode, the direction automatically changes to 10°.

Changes by pressing the (VANE) button.

(1) COOL/DRY operation

At the start-up of COOL or DRY operation, the airflow direction in automatically set to 10°. After, it can be changed to another direction with (VANE) button on the remote controller.

<Auto return>

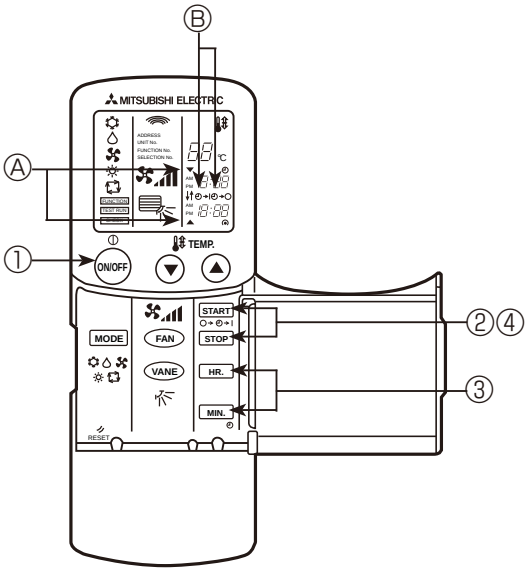
When 50° or 60° airflow is set with fan speed on LOW, “1 Hr” appears below the room temperature display. One hour later the direction changes to 10° degrees, automatically and “1 Hr” disappears.

(2) HEAT operation

At the start-up of HEAT operation, discharge direction depends on the setting of the last operation.
After, it can be changed to another direction with (VANE) button. The discharge direction shifts to 10° regardless of the remote controller settings under any of the following conditions.

- Thermostat OFF
- Defrosting
- Indoor fan speed EXTRA-LOW in hot adjustment

2-6 TIMER operation



<How to operate>

① Press the ON/OFF button to turn it ON.

② Press the STOP or START button (TIMER SET).

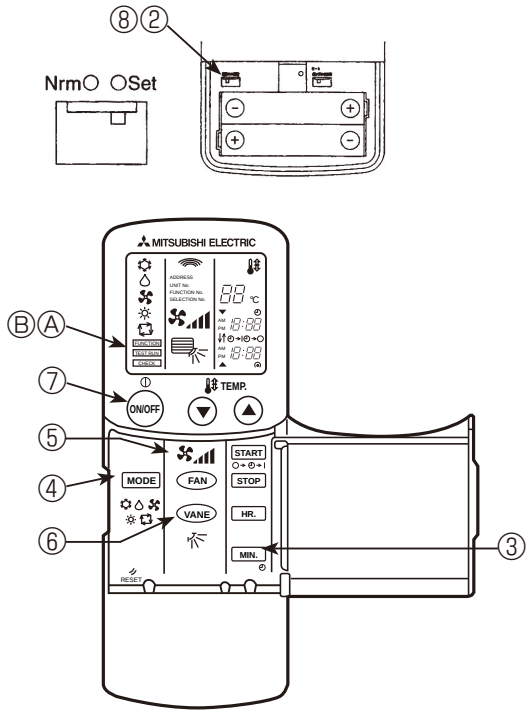
- Time can be set while the following symbol is displayed.
  OFF timer : Ⓐ ▼ , Ⓑ ◴-○ is displayed.
  ON timer : Ⓐ ▲ , Ⓑ ◴-| is displayed.

③ Use the HR. and MIN. buttons to set the desired time.

④ Cancelling the timer.
  To cancel the OFF timer, press the STOP button.
  To cancel the ON timer, press the START button.

- It is possible to combine both OFF and ON timers.
- Pressing the ① ON/OFF button of the remote controller during timer mode to stop the unit will cancel the timers.

2-7 Test run



<Before test run>

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

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 in blown out from the unit.

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

⑤ Press the VANE button and check whether the auto vane operates properly.

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

⑧ 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 steps ③ though ⑦ .**
- **It is not possible to run the unit in FAN or DRY mode.**

(1) Pipe temperature code
During the test run, the pipe temperature code from 1 to 15 is displayed on the remote controller instead of room temperature. The code should fall with the lapse of time in normal COOL operation, and should rise in normal HEAT operation.

Code	1	2	3	4	5	6	7	8
Pipe temperature	-40~2(1)°C	3(2)~10°C	~15°C	~20°C	~25°C	~30°C	~35°C	~40°C
Code	9	10	11	12	13	14	15	
Pipe temperature	~45°C	~50°C	~55°C	~60°C	~70°C	~90°C	Thermistor abnormality	

(2) Trouble during test run
- If the unit malfunctions during the test run, refer to section 10 in this manual entitled “TROUBLESHOOTING.”
- When the optional program timer is connected to the conditioner, refer to its operating instructions.

2-8 Emergency operation

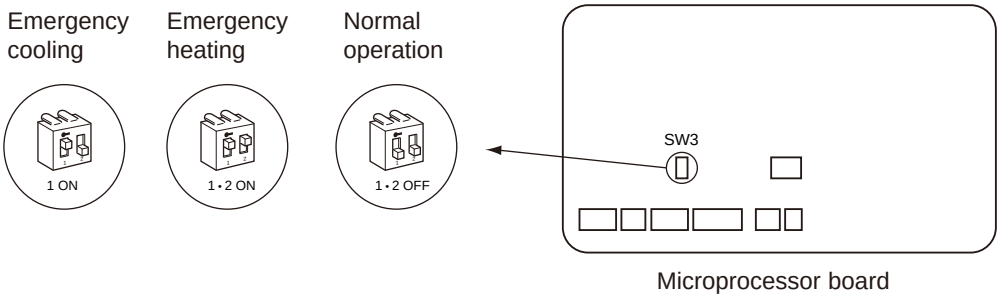
When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is started by setting the dipswitch SW3 on the indoor controller board.

<Before emergency operation>

1. Make sure the compressor and the indoor fan are operating normally.
2. Locate the defect with the self-diagnostic function. When the self-diagnostic function indicates “protective function is working”, release the protective function before starting the emergency operation.
   CAUTION: When the self-diagnostic function indicates a check code of “P5” (drain pump malfunction), DO NOT start the emergency operation because the drain may overflow.

<How to operate>

1. For emergency cooling, set the dipswitch SW3-1 to ON and SW3-2 to OFF.
   For emergency heating, set the dipswitch SW3-1,2 to ON.



Microprocessor board

2. Turn ON the outdoor unit breaker and then ON the indoor unit breaker.
   Emergency operation will now start.
3. During emergency operation, the indoor fan operates on high speed, the auto vanes do not operate.
4. To stop emergency operation, turn OFF the indoor unit breaker.

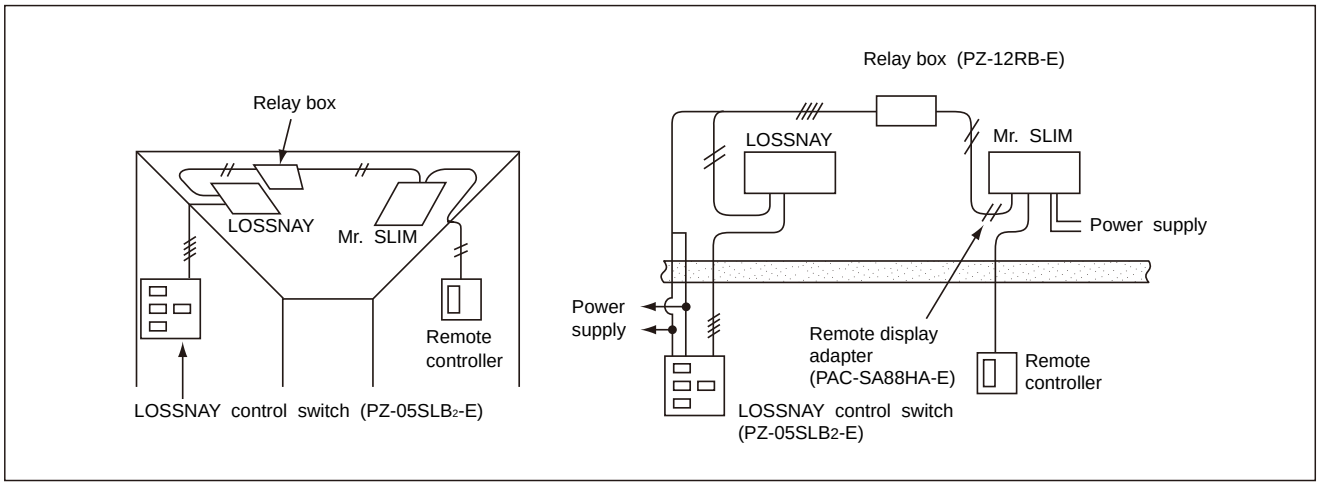
NOTE: The remote controller POWER ON/OFF button can not start/stop emergency operations.

CAUTION: Do not use emergency cooling for more than 10 hours, as the indoor coil may freeze.

2-9 Interlock with ventilation system (LOSSNAY)

Mr. SLIM/LOSSNAY interlock operation is available by using the optional parts listed below.

(1) System organization



(2) LOSSNAY models connectable to Mr. SLIM are: LGH-15RS-E, LGH-50RS-E
LGH-25RS-E, LGH-80RS-E
LGH-35RS-E, LGH-100RS-E

(3) Required parts are:

- Relay box (PZ-12RB-E)···Contact capacity 10A
- Remote display adapter (PAC-SA88HA-E)···An optional part for Mr. SLIM
- LOSSNAY control switch (PZ-05SLB-2-E)···For LOSSNAY individual operation

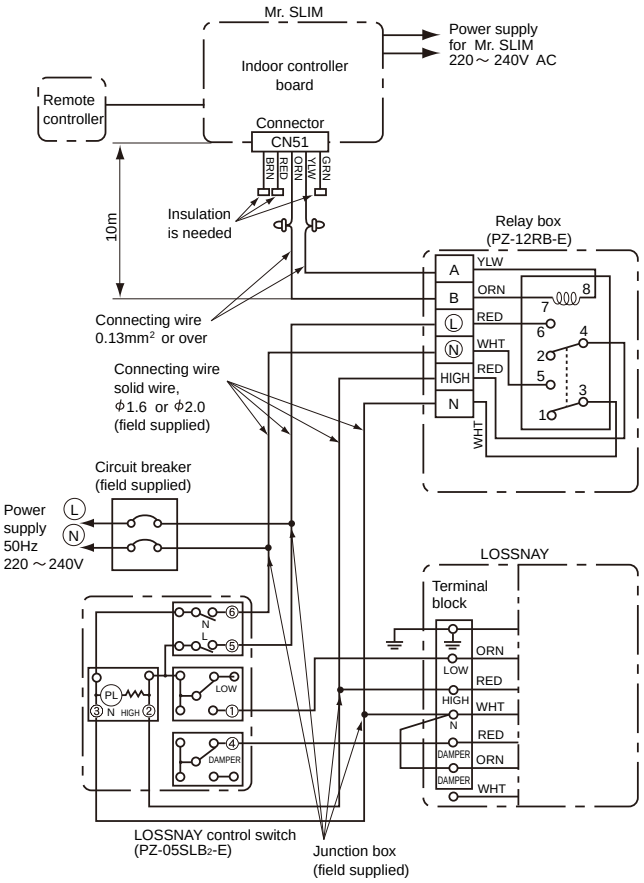
(4) Operation

① LOSSNAY turns ON/OFF according to Mr. SLIM ON/OFF

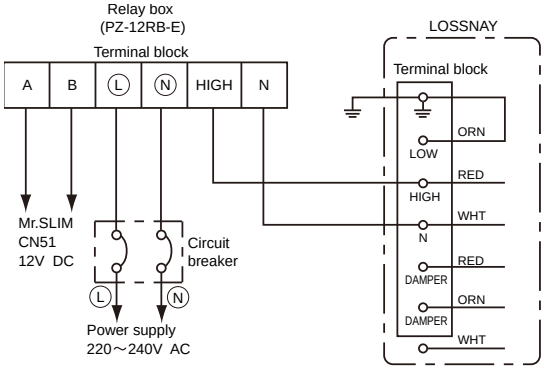
② While Mr. SLIM is OFF, LOSSNAY individual operation is available by using the LOSSNAY control switch. When Mr. SLIM turns OFF with the LOSSNAY control switch at ON, LOSSNAY will continue to operate.

(5) Wiring

①When the LOSSNAY control switch is used:



②When the LOSSNAY control switch is not used:



NOTE: For further information, refer to the LOSSNAY technical & service manual.

2-10 Dip switch functions

The black square (■) indicates a switch position.

Each figure shows the initial factory setting.

1. On remote controller board (Option: Wired remote controller)

(1) SW17 (Address selector)

SW17-1~6) For address setting

SW17-7) When two remote controllers are used, this switch sets the controller function.
OFF: The remote controller is set as a main controller.
ON : The remote controller is set as a sub controller.

SW17-8) Switch for system back-up
OFF: Without back-up
ON : With back-up

(2) SW18 (Function selector)

SW18-1) Switch for timer
OFF: Single day ON: Timer every day

SW18-2) Switch for filter sign
OFF: Filter sign absent
ON : Filter sign present

SW18-3) Switch for filter sign time setting
OFF: 100Hr ON: 2500Hr

SW18-4) Not for use.

SW18-5) OFF: For models with heat pump
ON : For models with cooling only

SW18-6~8) Not for use.

2. On indoor controller board

(1) SW1 (Mode selector)

SW1-1) Switch that changes between FAN mode and AUTO mode
OFF: AUTO mode for models with heat pump
ON : Fan mode for models without heat pump

SW1-2) Not for use.

SW1-3) Switch to change the temperature to start coil frost prevention
OFF: 1°C
ON : -3°C

SW1-4) Switch for set temperature adjustment in HEAT mode
During HEAT operation, warm air collects near the ceiling. When the indoor unit is installed near the ceiling, the temperature read by room temperature thermistor differs from the actual living-space temperature by about 4 degrees. Therefore, the room temperature read by room temperature thermistor must be lowered by 4 degrees.
OFF: 4-degree adjustment
ON : NO adjustment

SW1-5) Switch for fan speed during thermostat OFF in HEAT operation
OFF: EXTRA LOW
ON : LOW

SW1-6) Switch for fan speed during thermostat OFF in HEAT operation
OFF: EXTRA LOW or LOW (set with SW1-5)
ON : LOW or HIGH (set with remote controller)

SW1-7) Switch for detecting abnormalities in the outdoor unit abnormality detection
OFF: When an abnormality occurs, it is detected.
ON : Even if an abnormality occurs, it can not be detected.

SW1-8) Switch for auto restart function
OFF: This function does not work.
ON : This function works.

SW1-9, 10) Not for use.

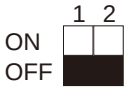
(2) SW2 (Address selector)

The black square (■) indicates a switch position.

Used in setting the unit-address for group control.
For further information, refer to page 56.

(3) SW3 (Emergency operation switch)

Normal operation



For emergency cooling

For emergency heating

(4) SW5 (Model selector)

SW5-1) Not for use.
SW5-2) OFF: For models with heat pump
ON : For models with cooling only
SW5-3) Not for use.
SW5-4) Keep this switch at OFF.

(5) SW6 (Address selector)

	Single control	Twin control	Triple control
SW6-1	OFF	ON(Twin NO.1)	ON(Triple NO.1)
SW6-2	OFF	ON(Twin NO.2)	ON(Triple NO.2)
SW6-3	OFF	OFF	ON(Triple NO.3)
SW6-4	OFF	OFF	ON

(6) SW7 (Model selector)

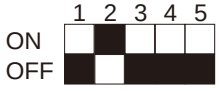
Switch to set the output of phase-controlled indoor fan motor.
Address setting is available at any time.
The initial factory setting by is based on each capacity.

Service Ref.	PKH-2GKLA
SW7	

(7) SW8

SW8-1~5) Not for use.
SW8-6) OFF: For 240, 230V power supply
ON : For 220V power supply

(8) SW9



SW9-1~5) Keep this switch.

3. OUTDOOR UNIT CONTROL

3-1 Outdoor fan control

The rotational frequency of outdoor fan is phase-controlled according to the outdoor coil temperature. This control allows the cooling operation even with the low outside-air temperature and the heating operation even with the high outside-air temperature.

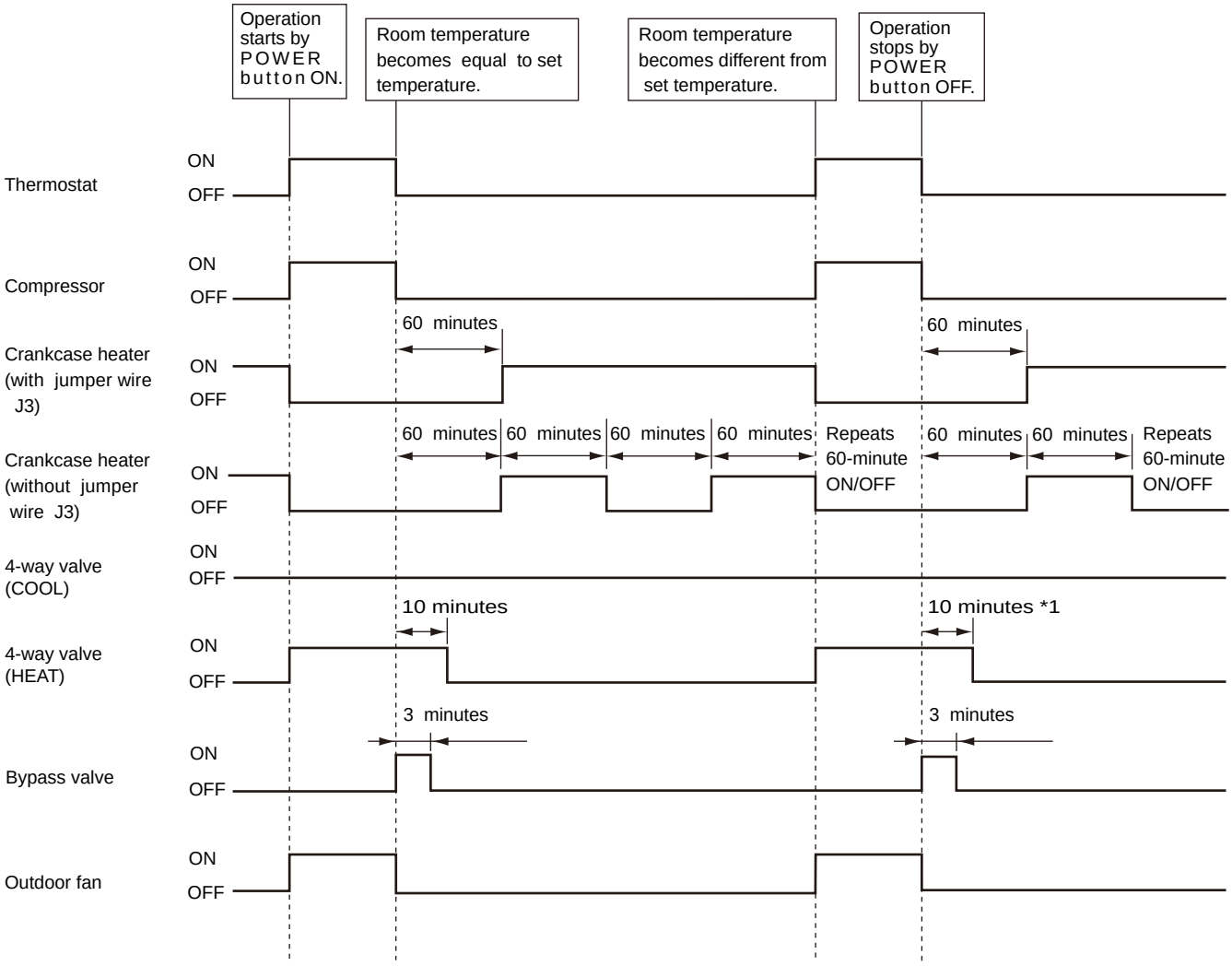
3-2 Outdoor unit control

The outdoor unit turns ON/OFF the cooling/heating operation according to orders given from the indoor unit.

3-3 Protective functions

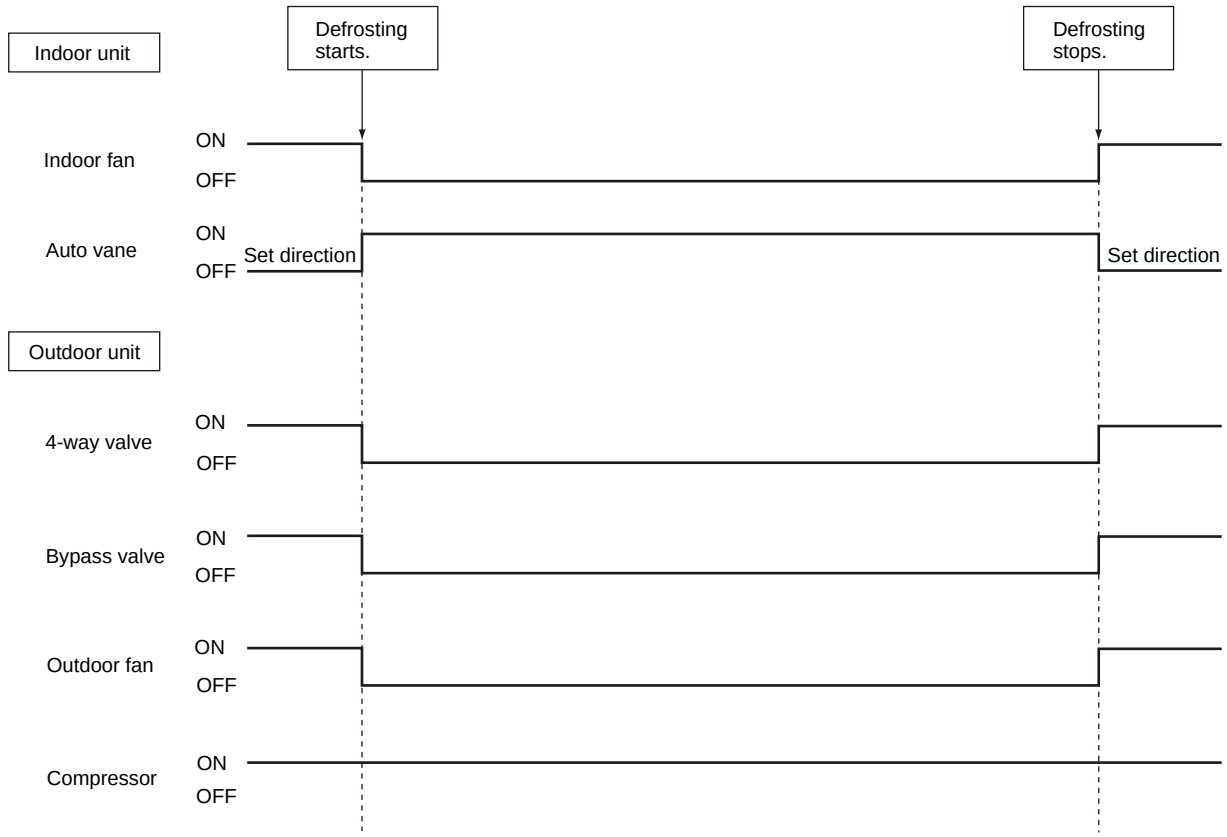
① If an reversed-phase, an open phase, or an indoor controller abnormality is detected, the outdoor unit will stop operation and the check mode will start. (For the check mode details, see page 45,46.)
② If a protective function works, the compressor will stop running. Three minutes later, the compressor will restart. If the protective function works again, the compressor will stop running and the check mode will start.
③ The protective function is memorized.
④ The memory is cleared when the POWER ON/OFF button on the remote controller is turned OFF. However, the check mode display continues until the outdoor unit receives the “operation ON” command from the indoor unit.

3-4 COOL/HEAT operation time chart



*1 If compressor restarts within 10 minutes, 4-way valve remains ON.

3-5 Defrosting in HEAT mode
<Defrosting time chart>



(1) Start conditions

A. When all of the following conditions are satisfied, defrosting will start. However, when the bypass valve turns OFF, defrosting starts 10 minutes later.
(a) More than seven minutes have passed since the compressor start-up.
(b) The outdoor coil thermistor reads -5°C or below.
(c) The outdoor fan motor output step is 100%
(d) Total time of compressor operation exceeds 30 minutes, and the outdoor coil temperature has fallen by 8 degrees or more in comparison with that of 10 minutes after the compressor start-up.
NOTE: The outdoor coil temperature of 10 minutes after the compressor start-up is memorized until the defrosting operation has ended.

B. When all of the following conditions are satisfied, defrosting will start.
(a) ~ (c) The same as above (a) ~ (c) in item A
(d) Total time of compressor operation exceeds “defrost interval”.
Further information on the defrost interval is described in (3).

C. After the total time of compressor operation exceeds the defrost interval, the thermostat repeats ON/OFF three times. Two minutes after the fourth “ON” of the thermostat, if the outdoor coil thermistor reads -5°C or below and the fan output is 100%, defrosting will start.
NOTE: The count of the thermostat ON/OFF is cleared by the compressor-OFF command or defrosting start-up.

(2) During defrosting

- Even if the thermostat turns OFF, defrosting continues.
- The 4-way valve, bypass valve, outdoor fan, and indoor fan are OFF.

(3) Defrost interval

The defrost interval time is determined as follows.

- Initial defrost interval is 50 minutes.
- The defrost interval after defrosting depends on the preceding defrosting time as shown below.

Defrosting operation time	Next defrost interval
3 minutes or below	120 minutes
3 to 7 minutes	80 minutes
7 to 10 minutes	60 minutes
10 to 15 minutes	40 minutes
15 minutes (Maximum)	30 minutes

NOTE1: If the unit stops during defrosting, the next defrost interval will be 50 minutes.
NOTE2: If a protection function works for the first time during defrosting, the compressor will stop.
After a 3-minute time delay, defrosting will restart. In this case, a 3-minute time delay is included with the defrosting time.
If the protection function works for the second time, the unit stops operation and displays the check code.
The next defrost interval will be 30 minutes.
NOTE3: When the defrosting has ended, the total time of the compressor operation is cleared.

(4) Termination conditions

Defrosting finishes when any of the following conditions are satisfied.

① Defrosting has continued for 15 minutes.
② Outdoor coil thermistor reads 22°C or above for the first 75 seconds after defrosting start-up.
③ Outdoor coil thermistor reads 8°C or above after the 75-second defrosting.
④ Power ON/OFF button is turned OFF during defrosting.

3-6 Actuators

(1) Bypass valve control

<Cooling mode>

① When the unit stops due to the coil frost prevention, the bypass valve turns ON. When one hour has passed since the compressor stopped, the bypass valve returns to OFF.
② When the compressor operates with the bypass valve at ON for more than 30 minutes, the bypass valve turns OFF.
③ When the compressor stops with the bypass valve at OFF, the bypass valve turns ON and remains ON for three minutes.

<Heating mode>

① When the unit starts for the first time after the circuit breaker has been turned ON, or when it starts after the compressor OFF of 30 minutes or more, if the outdoor coil thermistor reads 12°C or more, the bypass valve turns ON.
② When the high pressure switch (63H1) works, the bypass valve turns ON.
③ When the bypass has been ON for 30 minutes:
- If the high pressure switch has already returned, the bypass valve turns to OFF.
- If not, the fan output step keeps 70 for three minutes. Meanwhile, if the high pressure switch returns, the bypass valve turns OFF. Otherwise the normal fan control starts.

④ When the operation mode changes or stops, the bypass valve turns ON and remains ON for three minutes.

<Defrosting operation>

① The bypass valve is OFF.

(2) Crankcase heater control

① With jumper wire J3
The crankcase heater is ON from when the power is turned ON until the compressor starts, and then turns ON one hour after the compressor stops.
② Without jumper wire J3
The crankcase heater is ON from when the power is turned ON until the compressor starts, and repeats 1-hour ON and 1-hour OFF, after the compressor stops.

3-7 Service functions

(1) Compulsory defrosting

① When all of the following conditions are satisfied, pressing SW2 starts the compulsory defrosting.
- During HEAT mode
- The compressor is ON.
- The outdoor coil temperature is being displayed by LED. (Outdoor controller board dip switch SW3-1 : OFF, SW3-2 : ON)
- The outdoor coil thermistor reads 8°C or below.

② The operation state and the termination conditions of the compulsory defrosting are the same as those of the normal defrosting. As an exception, the defrost interval after the defrosting completion is 50 minutes.

(2) Fixed fan-output

While the compressor is operating (except during defrosting) and the fan output step is indicated by LED, pressing SW2 fixes the fan output. The fixed fan-output can be released when any of the following conditions are satisfied.

① SW2 is pressed again.
② SW3 setting is changed.
③ The compressor stops.
④ Defrosting operation starts.

(3) Function of switches on the outdoor controller board

SW1: Clears the check code memory (push-button switch).
SW2: Switches the output state indication and the check code display (push-button switch).
SW3-1,2: Switches the output state indication items (dip switch).
For further information, refer to page 48.

(4) 100% fan output

Fan output is fixed to 100% by shorting the connector CN22. However, the fan stops during compressor OFF or defrosting. Open-circuit of CN22 restarts the normal fan control.

(5) Time shortening

Short circuit of the connector CN21 shortens the time as follows.

① Fan control period: 30 seconds → 3 seconds
② Three-minutes time delay function : 3 minutes → 3 seconds
③ Max. time of defrosting : 15 minutes → 15 seconds
④ Defrost interval : 30 ~ 120 minutes → 3 ~ 12 seconds
⑤ Compressor ON/OFF time for bypass valve ON/OFF : 30 minutes → 3 seconds
⑥ Compressor ON time to start other functions : 1 minutes → 1 seconds
⑦ Crankcase heater operation : 1 hour → 6 seconds

9 TROUBLESHOOTING

1. TROUBLE IN TEST RUN

<table>
<tr><th>Symptom</th><th>Cause</th><th>Check points</th></tr>
<tr><td>The display “CENTRALLY CONTROLLED” on remote controller dose not disappear.</td><td>1) Wrong address setting of remote controller/indoor controller board
2) Timer adapter is connected to the remote controller.
3) Signal transmission error between indoor unit and remote controller</td><td>1) Check the address setting of remote controller and indoor controller.
2) Make sure the timer adapter is used correctly.
3) ① Turn another remote controller’s DIP SW17-7 ON to make it sub controller.
② Connect the sub controller to the unit, and turn circuit breaker ON.
● If the display “centrally controlled” disappears, replace the original remote controller.
● If the display remains the same, replace the indoor controller board.</td></tr>
<tr><td>When remote controller POWER button is turned ON, the check code “EO” appears.</td><td>1) Signal transmission error between indoor unit and remote controller</td><td>1) ① Connect a sub remote controller.
② Turn circuit breaker ON.
If the display “centrally controlled” remains, replace the indoor controller board.
③ If the display disappears, turn the remote controller POWER button ON and check as follows.
<table>
<tr><th></th><th>Remote controller</th><th>Sub remote controller</th><th>Malfunction</th></tr>
<tr><td>1</td><td>Operating Display</td><td>EO Display</td><td>Malfunction of indoor Unit</td></tr>
<tr><td>2</td><td>Operating Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
<tr><td>3</td><td>No Display</td><td>EO Display</td><td>Malfunction of indoor Unit and Remote Controller</td></tr>
<tr><td>4</td><td>No Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
</table></td></tr>
<tr><td>When remote controller POWER button is turned ON, operating display appears, but disappears soon.</td><td>1) Short circuit of indoor/outdoor connecting wire
2) Short circuit of transmission wire
3) Wrong operation of remote controller due to noise wave emitted by other appliances</td><td>1), 2) Check the wire.
3) Turn the circuit breaker OFF, and then turn ON.
If the remote controller remains abnormal, despite the above measures, replace the indoor controller board.</td></tr>
<tr><td>Despite turning POWER button ON, the remote controller display does not appear.</td><td>1) Damaged remote controller
2) Short circuit of transmission wire
3) Bad contact of indoor CN40
4) CN40 is attached to a sub unit.
5) Damaged transformer
6) Bad contact of CN2D
7) Blown fuse
8) Circuit breaker OFF</td><td>1) Measure the voltage between terminals of remote controller. If no voltage, remove the terminals and measure the voltage between wires. If the voltage is between 6VDC and 12V, replace the remote controller.
2) ~ 8) Check each point.
If it is not defective, replace the indoor controller board.</td></tr>
</table>

(WIRELESS REMOTE CONTROLLER)

(1) Turn on the main power of the unit.
(2) Set the adjusting switch on the back of the wireless remote controller to “Set” , then FUNCTION , TEST RUN and CHECK will start lighting.
*(3) Press the HR. button , then CHECK will start blinking.
*(4) Send the signal from the remote controller to the unit with pressing HR. button.
If the buzzer sound is heard and the ON/OFF lamp (Unit display) blinks, refer to the following table.

Buzzer sound	The number of ON/OFF lamp(Unit display)blinking
1 second (0.5 second interval) Beep	This corresponds to the number of buzzer sound

The number of ON/OFF lamp (Unit display) blinking and buzzer sound	Irregular point
1(P1)	Irregular intake sensor
2(P2)	Irregular piping sensor
3(P3)	Signal transmission error
4(P4)	Irregular drain sensor
5(P5)	Irregular drain pump
6(P6)	Freezing protection/ overheating protection is working.
7(P7)	System error
8(P8)	Irregular outdoor unit

(Refer to page 47 in detail.)
When there is any error, receiving sound beeps.

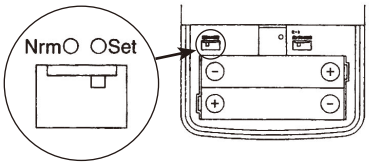
*(5) Push the POWER ON/OFF button and cancel the test run.
(6) After completing a test run, be sure to turn the adjusting switch back to “Nrm”.

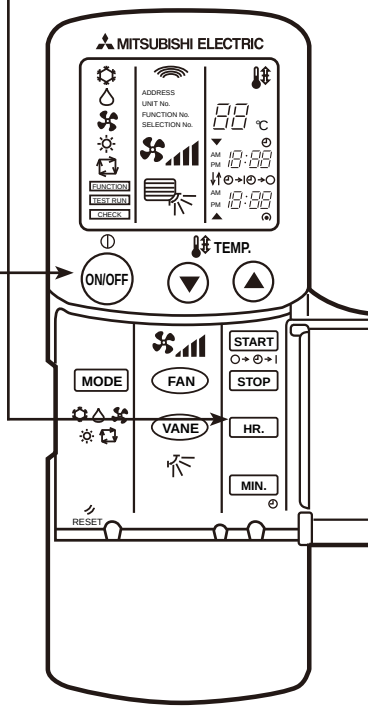
For operations marked “ *”, point the transmitter to the wireless receiver, and make sure that you will hear a short beep from the receiver.

When the other than main unit is operated by the wireless remote controller, the receiver beeps an ineffectual beep 3-times.

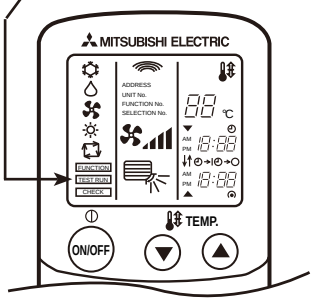
Remove the battery cover on the back side of the wireless remote controller, display will start flashing when the “Set” switch is turned on.
For operations marked “ *”, point the transmitter to the wireless receiver, and make sure that you will hear a short beep from the receiver.

Turn the adjusting switch to “Set”





Display will start blinking



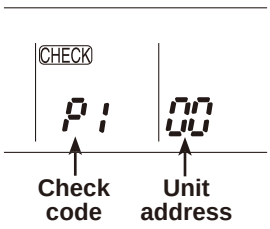
(WIRED REMOTE CONTROLLER) : Optional part

2-1 When malfunction occurs during operation

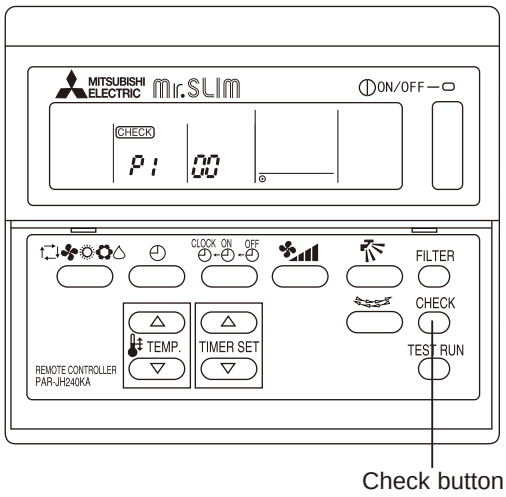
When a malfunction occurs, the indoor and outdoor units stop and the malfunction is displayed on the LCD of the remote controller.

(1) ON the set temperature display part, “CHECK” appears, and the unit address and the check code are displayed alternately at one-second intervals. (Check mode)

Example



CHECK mode



(2) When one remote controller controls several units in the group control, the LCD shows the unit address and check code of the first malfunctioning unit.

(3) To cancel the check mode, press the ⏀ ON/OFF button. In remote ON/OFF control, press the remote ⏀ ON/OFF switch. In centralized control, turn OFF the ⏀ ON/OFF button of centralized controller.

NOTE: The latest check code is memorized, even if the check mode is cancelled by the way mentioned above. It takes 60 seconds maximum to display the memorized check code.

2-2 How to use the self diagnostic function for service

A. For normal control with one unit and one remote controller

(1) Pressing the ⬭ CHECK button on the remote controller twice starts the self diagnostic function.

(2) During the self diagnostic function, “CHECK MODE” appears at two positions on the remote controller display. Then, at least 10 seconds later, the unit address and the check code is alternately displayed at one-second intervals.

(3) Check and repair the unit according to the check code. (Refer to the next page.)

B. For group control using one remote controller

(1) Pressing the ⬭ CHECK button on the remote controller twice starts the self diagnostic function.

(2) Press the ▲ TEMP. button or ▼ TEMP. button on the remote controller to advance or go back to the unit address. Each time ▲ TEMP. button is pressed, the unit address advances by one. Each time ▼ TEMP. button is pressed, the unit address goes back by one.
The check code and the unit address, appear alternately.

(3) The check code “U8” means no malfunction has occurred since installation.
The check code “EO” means the following conditions:
- The unit address displayed on the remote controller does not apply to any unit.
- power is not supplied to the unit.
- Signal transmitting/receiving circuit is abnormal.

(4) Check and repair the unit according to the check code. (Refer to the next page.)

Check code	Diagnosis of malfunction	Cause	Check points
EO	Signal transmitting/receiving error (Indoor controller does not respond to remote controller signal.)	During individual unit control 1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal.	1) Check the transmission wire. 2) Check with another remote controller. If “EO” is still indicated, replace the indoor controller board. If other check code appears, replace the original remote controller.
P1	Abnormality of room temperature thermistor (RT1)	1) Bad contact of thermistor 2) Damaged thermistor	1) Check the thermistor. 2) Measure the resistance of the thermistor. Normal resistance should be as follows. 0℃ 15kΩ 30℃ 4.3kΩ 10℃ 9.6kΩ 40℃ 3.0kΩ 20℃ 6.3kΩ If the resistance is normal, replace the indoor controller board.
P2	Abnormality of pipe temperature thermistor (RT2)		
P3	Signal transmission error (Remote controller does not respond to indoor controller signal.)	1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal. 3) Wrong operation due to noise wave emitted by other appliances	1) Check the transmission wire. 2) Check with another remote controller. If “P3” is still indicated, replace the indoor board. If other check code appears, replace the original remote controller. 3) Short-circuit between 1 and 2 of CN40 and attach CN40 to the following units. ● Second unit in twin control ● Second and third units in triple control ● Sub units in group control
P4	Abnormality of drain sensor	1) Bad contact of transmission wire 2) Damaged thermistor	
P5	Malfunction of drain pump	1) Malfunction of drain pump 2) Damaged drain sensor	
P6	Freezing protection/ overheating protection is working.	1) Short cycle of air cycle 2) Dirty air filter 3) Damaged fan 4) Abnormal refrigerant	1) Clear obstructions from the air cycle. 2) Clean the air filter 3) Check the fan. 4) Check the refrigerant temperature.
P7	System error	1) Wrong address-setting 2) Signal transmitting/receiving circuit of remote controller is abnormal. 3) Wrong SW6-setting	1) Check the address-setting. 2) Check with another remote controller. If check code other than “P7” appears, replace the original remote controller. 3) Check SW6 setting.
P8	Abnormality in outdoor unit	1) Wrong wiring of indoor/outdoor connecting wire 2) Reversed phase 3) Protection device is working 4) Damaged outdoor coil thermistor	1) Check the indoor/outdoor connecting wire. 2) Change the connection of electric wiring. 3) Check the protection device. 4) Measure the resistance of the outdoor coil thermistor. If the resistance is normal, replace the outdoor controller board.

3. SERVICE DATA INDICATION BY SWITCHES ON OUTDOOR CONTROLLER BOARD

Setting dip switches SW2 and SW3 on the outdoor controller board enables LED to show the output state and check code. Output state is shown by LED lighting, and check code by blinking.

SW1 : Turning SW1 ON clears the check code. If SW1 is turned ON while the check code is blinking , the indication changes to output state indication.

NOTE : SW1 is usually available independent of SW3 setting. As an exception, when the check code shows a reversed phase or an open phase during the power-on-reset state, SW1 is not available.

SW2 : SW2 is turned ON by pressing, and OFF by releasing.

When SW3-1 and SW3-2 are OFF, pressing SW2 changes indication between output state and check code alternately.

When SW2 is turned On with SW3-1 OFF and SW3-2 ON, the compulsory defrosting starts.

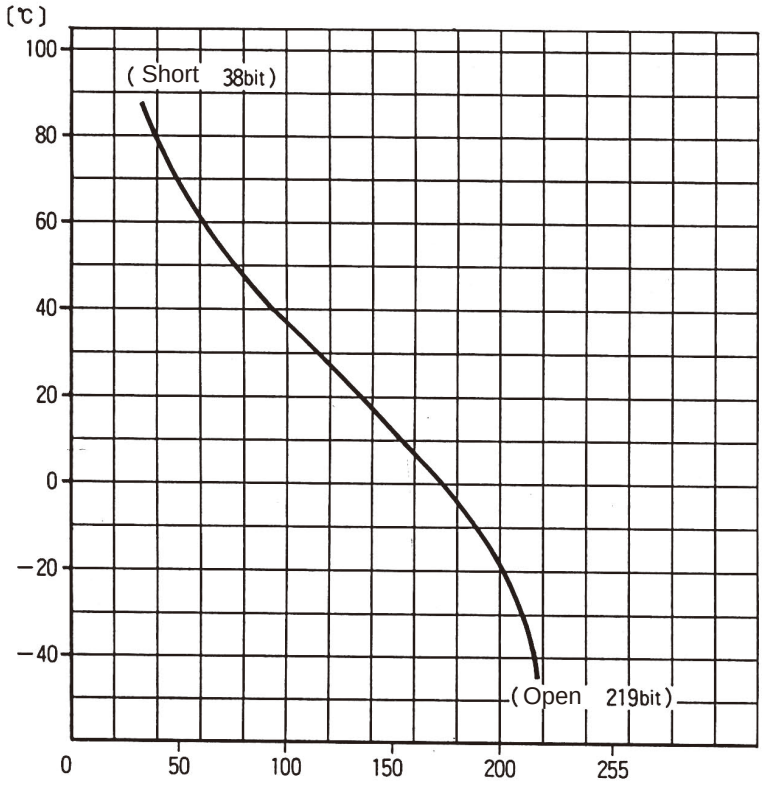
SW3 : Output state indication items depend on the combination of SW3-1 ON/OFF and SW3-2 ON/OFF.

Changed alternately by pressing SW2.

	Check code	Output state	Outdoor coil temperature (bit)	Fan output step (bit)	Total time of compressor operation(Hr)
SW3-1	OFF	OFF	OFF	ON	ON
SW3-2	OFF	OFF	ON	OFF	ON
LED	Blinking	Lighting			
LD1	Reversed phase	Compressor ON command from indoor controller	1	1	256
LD2	Open phase	Heating operation command from indoor controller	2	2	512
LD3	Outdoor coil thermistor is abnormal	During 63H1 function	4	4	1024
LD4	63H2 function	Compressor ON	8	8	2048
LD5	51C function	Outdoor fan ON	16	16	4096
LD6	26C function	4-way valve ON	32	32	8192
LD7	Overheat protection	Bypass valve ON	64	64	16384
LD8	Input circuit on controller board is abnormal	Crankcase heater ON	128	128	32768

3-1 Outdoor coil temperature

To obtain data on the outdoor coil temperature, add the number of bits of lighting LEDs, and see the graph below to find the temperature.

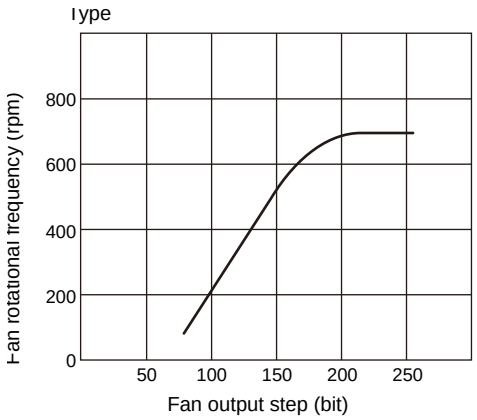


3-2 Fan output step

To obtain data on the fan output step, add the number of bits of lighting LEDs, and see the graph below to find the fan rotational frequency.

①PUH-2KA

<50HZ> <60HZ>



3-3 Total time of compressor operation

Compressor operation time is indicated in 256 hour units. To obtain the compressor operation time, add the hours of lighting LEDs. During the compressor operation time indication, SW2 is not available.

3-4 Check code indication

- When a protection function works for the first time during operation, the operation stops and restarts after the 3-minutes time delay mode. When the protection function works again, the operation stops. (Check mode) When both SW3-1 and SW3-2 are OFF, the check code is indicated.
- If the outdoor controller board receives the compressor ON command from the indoor controller board during check mode the indication changes to output state indication.
- By pressing SW2 duirng normal operation, operation will continue.
- The latest check code is indicated.

4. TROUBLESHOOTING ACCORDING TO CHECK CODE

Blinking LED	Diagnosis of malfunction	Cause	Check point
LD1	Reversed phase	Phases L_1, L_2, and L_3 are connected improperly.	Check the power supply connection.
LD2	Open phase	● Phase L_2 is open. ● Contact of protector, such as thermal switch, opened when power was turned on.	● Check the power supply. ● Check each protector.
LD3	Outdoor coil thermistor is abnormal. (Open circuit or short circuit)	● Outdoor coil thermistor is broken. ● Thermistor was connected incorrectly.	● Measure the resistance of the thermistor. ● Check the thermistor. If normal, replace the outdoor controller board.
LD4	High pressure switch (63H2) function	● 62H2 was badly connected. ● 63H2 was working.	● Check 63H2 and the outdoor fan motor. ● Check if refrigerant supply is low. ● Check if air cycle is short-cycled.
LD5	Thermal relay (51C) function	● 51C was connected incorrectly. ● 51C was working.	● Check 51C, the compressor, and power supply.
LD6	Thermal switch (26C) function.	● 26C was connected incorrectly. ● 26C is working.	● Check 26C. ● Check if refrigerant supply is low. ● Check if the capillary tube is clogged.
LD7	Over heat protection	● The thermistor is broken. ● Coil temperature is over 67°C.	● Measure the resistance of the thermistor. ● Check the outdoor fan motor. ● Check if air cycle is short-cycled.
LD8	Input circuit of outdoor controller board is abnormal.	● Pulse input is abnormal.	● Replace the outdoor controller board.

5. WHEN OUTDOOR UNIT DOES NOT WORK

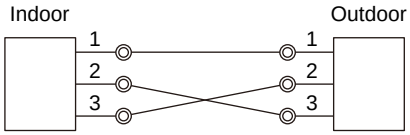
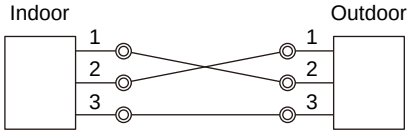
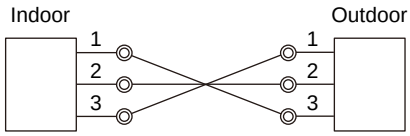
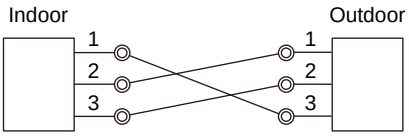
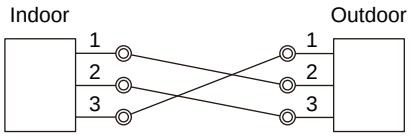
Cause	Check points
1) Indoor/outdoor connecting wires are poorly connected. (Refer to next page.) 2) Power supply is poorly connected. 3) Connector or transformer is broken. 4) Fuse (6.3A) in the outdoor controller board is blown.	1) Check the connecting wires. 2) Check the power supply. 3) Check connectors and transformers. 4) Check the fuse.

6. WRONG WIRING ON SITE

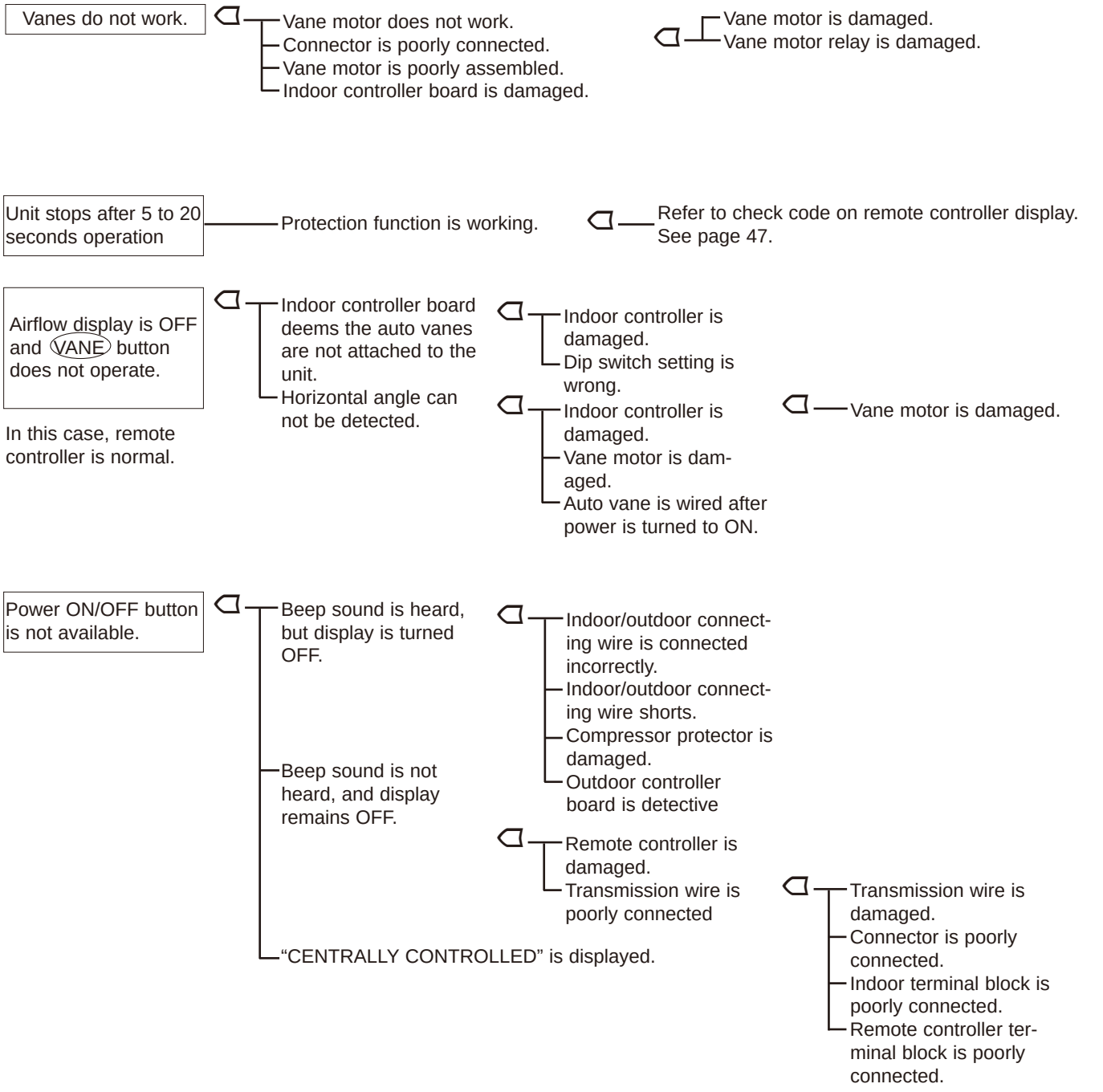
6-1 Between remote controller and indoor unit

If the wire is disconnected between the remote controller and the indoor unit, nothing is displayed on the remote controller when the POWER button is pressed. The beep sound will also not be heard.

6-2 Phenomenon due to wrong wiring between indoor and outdoor units

Wrong wiring	Mode	Thermostat	Phenomenon
	COOL	OFF	Operation stops.
		ON	4-Way valve turns ON. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Cooling operation. Several minutes later, check code “P8” appears on remote controller display.
		ON	Normal operation.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops, 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
Disconnection between 1 and 1 or 2 and 2.	COOL	OFF	Operation stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops. 4-way valve turns OFF.
		ON	27 minutes later, check code “P8” appears on remote controller display.
Disconnection between 3 and 3.	COOL	—	Normal operation.
	HEAT	OFF	Operation stops. 4-way valve turns ON.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.

7. OTHER TROUBLES AND CAUSES



8. MR. SLIM/LOSSNAY INTERLOCK OPERATION

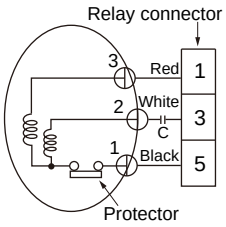
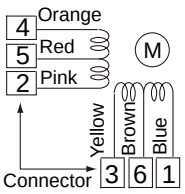
<Symptoms that are not malfunctions>

If any of the following symptoms occur, they are not malfunctions.

Symptom	Cause
LOSSNAY control switch does not work.	LOSSNAY control switch can not work during interlock operation. LOSSNAY control switch is effective only while Mr. SLIM is not operating.
LOSSNAY air speed can not be controlled in interlock operation.	LOSSNAY fan speed is fixed to HIGH during interlock operation. LOSSNAY fan speed LOW/HIGH can be switched only during LOSSNAY individual operation with the LOSSNAY control switch.

For troubleshooting of LOSSNAY , refer to the LOSSNAY technical & service manual.

9. How to check the parts PKH-2GKLA

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (RT1)
Pipe temperature thermistor (RT2)</td><td>Disconnect the connector, then measure the resistance with a tester.
(Surrounding temperature 10°C~30°C)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>(Refer to the thermistor)</td></tr>
<tr><td>Fan motor (MF)
 
</td><td>Measure the resistance between the terminals with a tester.
<table><tr><td rowspan="2">Motor terminal
or
Relay connector</td><td>Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>PKH-2GKLA</td></tr><tr><td>Red-Black</td><td>141.2Ω</td><td rowspan="2">Open or short</td></tr><tr><td>White-Black</td><td>131.5Ω</td></tr></table></td></tr>
<tr><td>Vane motor (MV)
 
</td><td>Measure the resistance between the terminals with a tester.
(Surrounding temperature 20°C~30°C)
<table><tr><th></th><th>Normal</th><th>Abnormal</th></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>
</table>

<Thermistor Characteristic graph>

Thermistor for lower temperature

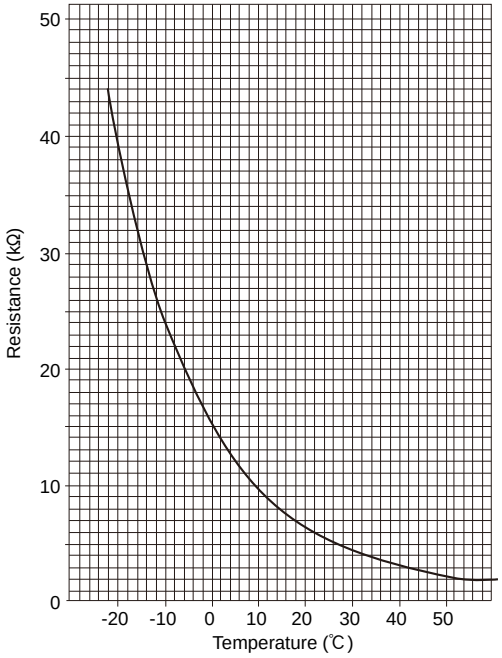
Room temperature thermistor(RT1)
Pipe temperature thermistor(RT2)

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

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

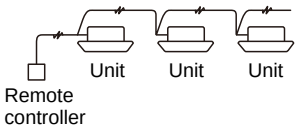
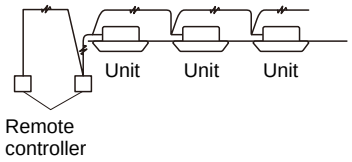
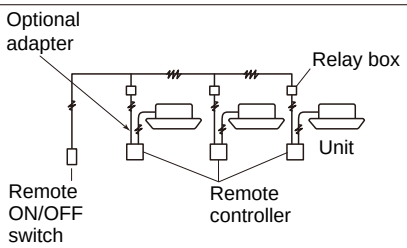
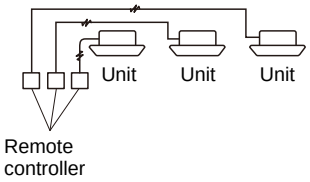
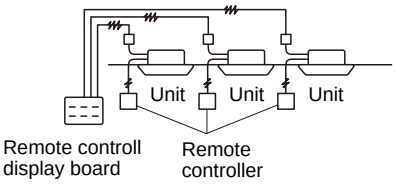
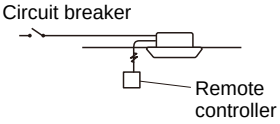
0℃ 15kΩ
10℃ 9.6kΩ
20℃ 6.3kΩ
25℃ 5.2kΩ
30℃ 4.3kΩ
40℃ 3.0kΩ

< Thermistor for lower temperature >



10 SYSTEM CONTROL

1. VARIETY OF SYSTEM CONTROL FUNCTIONS
[Only optional wired remote controller is available the following system.]

1 Group control with a single remote controller (See page 56.)		Many units, installed at different locations, can be started and controlled with a single remote controller. The remote controller can be mounted in a different location using a non-polar two-wire cable, which can be extended up to 500m. A maximum of 50 units can be controlled with a single remote controller. All units operate in the same mode.
2 Control using two remote controllers (See page 57.)		Two remote controllers can be used to control either one unit or a group of units. Units can then be controlled from a distance or at close range. Units operate according to the latest command from either remote controller.
3 Both remote ON/OFF and individual controls (See page 57.) * Timer adapter (PAC-SA89TA-E) is needed.		All units can be turned on or off simultaneously using a remote ON-OFF switch. Also, each unit can be controlled individually by each remote controller. Dunning remote ON-OFF control, a message of “CENTRALLY CONTROLLED” is displayed on the LCD of the remote controller. This is available for both one unit control and several units control.
4 Individual control by grouping remote controllers (See page 58.)		By grouping the remote controllers in one place, several units installed at different locations can be controlled individually, and operation conditions of all units are visible without a special control board. The control method is the same as that of the single unit with a single remote controller.
5 Multiple remote control display (See page 59.) * Multiple remote controller adapter (PAC-SA88HA-E) is needed.		Several units can be controlled with a remote control display board. Operation conditions of all the units are visible with the remote control display board. Individual control by each remote controller is also possible.
6 Auto restart function (See page 59.)		A unit can be started or stopped with the circuit breaker on or off. Remote controller is also available. With this function, when the power is restored after power failure, the unit will restart automatically. (However, when the remote controller POWER ON/OFF button is OFF, the unit will not start.)

2. GROUP CONTROL WITH A SINGLE REMOTE CONTROLLER

A maximum of 50 units can be started in order according to the dip switch settings.

2-1 How to wire

(1) Connect the remote controller to the double terminal block on the indoor controller board of the master unit (No.0 unit). (See Figure 1.)
(2) Connect the double terminal block of the master unit to the double terminal block of No.1 unit.
(3) Connect the double terminal block of No.1 unit to the double terminal block of No.2 unit.
(4) Continue the process until all the units are connected with two-wire cables. (See Figure 2.)
(5) Remove the connector CN40 from the indoor controller board of each unit except the master unit. (See Figure 3.)
(6) Set the unit-address of each unit with SW2 on the indoor controller board following the instructions below.

Figure 1

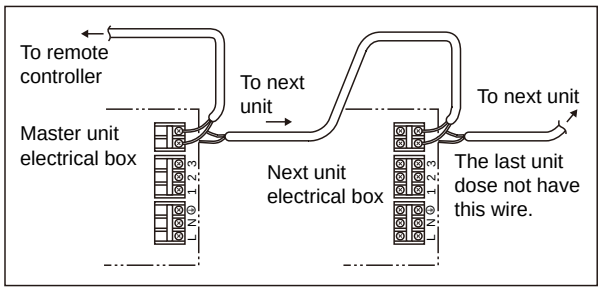
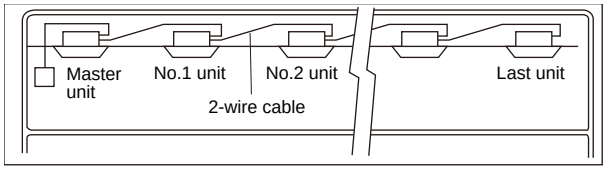


Figure 2



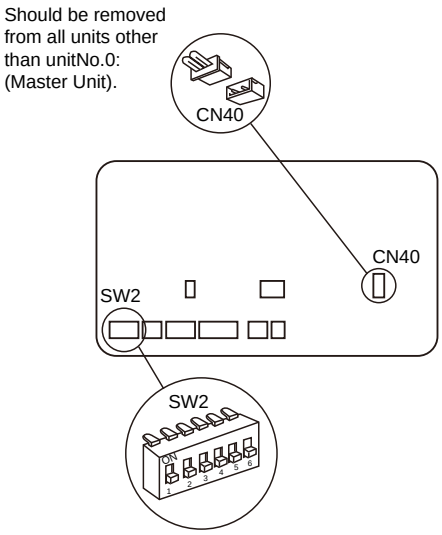
2-2 How to set unit-address

The unit-address also serves as a successive-start timer which starts each unit at intervals of 1 second. If two or more units have the same unit-address in a group control, operation stops due to system error. Be sure to set SW2 correctly following the instructions below.

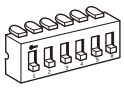
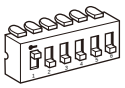
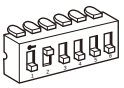
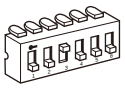
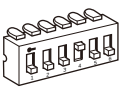
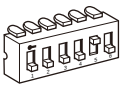
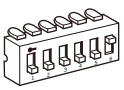
(1) Each lever of SW2 shows the number as follows.
SW2-1 : 1 SW2-4 : 8
SW2-2 : 2 SW2-5 : 16
SW2-3 : 4 SW2-6 : 32
(2) Total number of levers turned to ON shows the address of the unit.
For example, to set No.3 unit, turn ON SW2-1 and SW2-2.
(3) In this way, set from the master unit to the last unit.
Do not forget to set the master (No. 0) unit.

Figure 3

Indoor controller board ▼



Setting examples

	Master (No. 0) unit	No. 1 unit	No. 2 unit	No. 4 unit	No. 8 unit	No. 16 unit	No. 32 unit
SW2	ALL OFF 	1 ON 	2 ON 	3 ON 	4 ON 	5 ON 	6 ON 
Unit address & start delay in seconds.	0	1	2	4	8	16	32

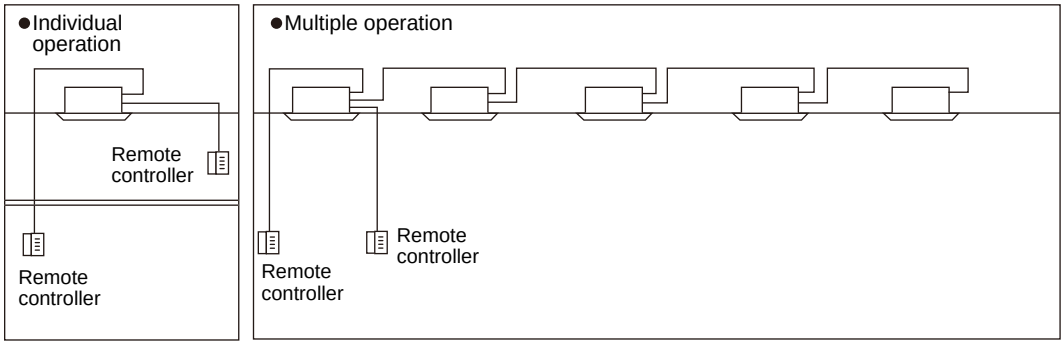
2-3 Unit control

The remote controller can control all units ON/OFF, temperature, air flow, and swing louver. However, the thermostat in each unit turns ON or OFF individually to adjust to the room temperature.

3. CONTROL USING TWO REMOTE CONTROLLERS : OPTIONAL REMOTE CONTROLLER (PAR-JA240KAT-E)

Two remote controllers can be used to control either one unit or a group of units. Units operate according to the latest command from either of the two remote controllers.
Before operation, be sure to set one remote controller as the “main controller” and the other as the “sub controller”, using dip switch SW17-7 of the remote controller.

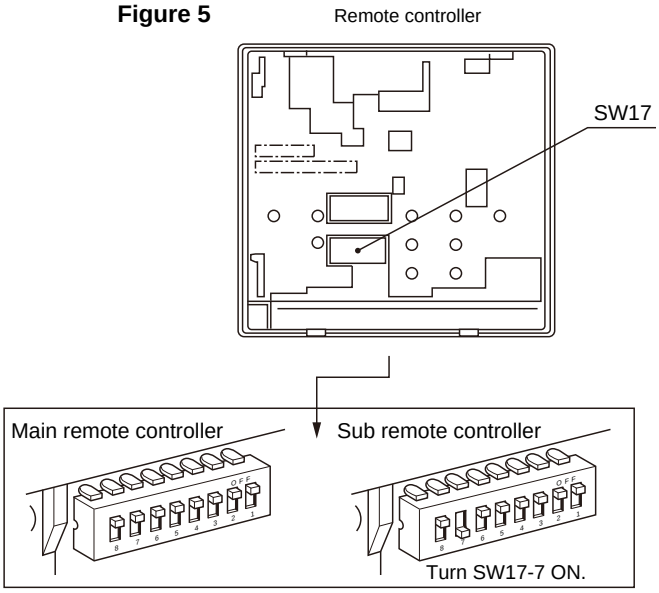
Figure 4



3-1 How to set SW17-7 (See Figure 5.)
(1) For the main remote controller, turn SW17-7 OFF.
(2) For the sub remote controller, turn SW17-7 ON.

3-2 Remote controller LCD indication
(1) The same indications always appear on both the main and sub remote controllers, except during the timer operations.
(2) Timer operations can be set with either of the two remote controllers. However, LCD indication appears only on the remote controller used for timer-settings.
(3) If both remote controllers are set for timer operation with different time-settings, the timer operation with the shorter remaining-time is effective.
(4) Self-diagnostic function is available with either of the two remote controllers. If one of the remote controllers is used for the self-diagnostic function, the other remote controller displays the check mode.
If the self-diagnostic function is reset by either of the two remote controllers, both remote controllers are reset.

Figure 5



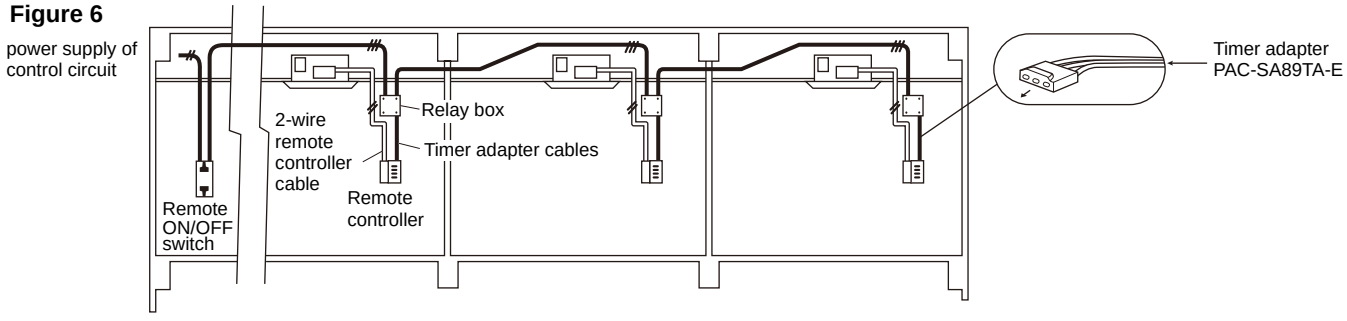
4. REMOTE ON-OFF AND INDIVIDUAL REMOTE CONTROLS

This method is available to control one unit or any number of units.
The following operations are available by connecting a relay, a timer adapter (PAC-SA89TA-E), and a remote ON/OFF switch to the system. Timer adapter is an optional part. Other parts are available on the market.
(A) To start all units in order by remote ON-OFF switch
(B) To stop all units simultaneously by remote ON-OFF switch
(C) To switch between the remote ON-OFF control and the individual remote control

4-1 System

Figure 6 shows the case of three units. The same is the case with any number of units.

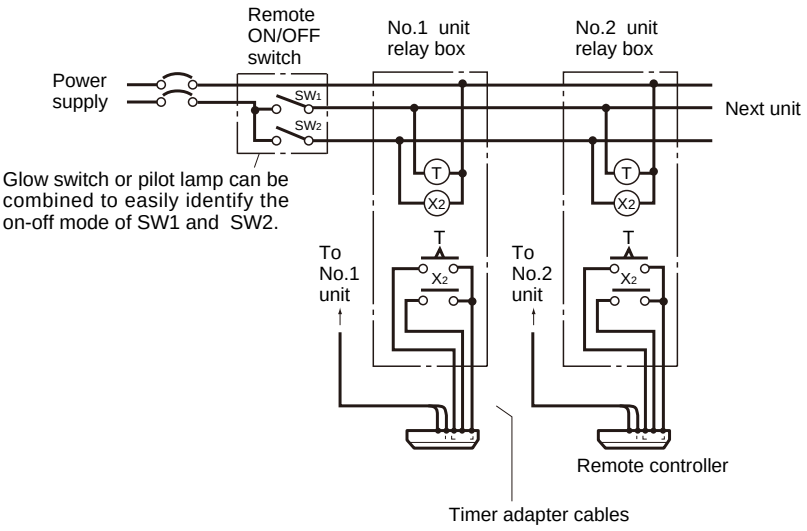
Figure 6



NOTE1 : Install the relay box where you can be serviced it easily.
NOTE2 : For control circuit wiring, use a wire of No. 14 AWG or a control cable according to the power supply of control circuit.
NOTE3 : When the power supply of the control circuit is 220/240V AC,
- Do not connect the control circuit wire to the remote controller cable directly.
- Do not place the control circuit wire and the remote controller cable into the same conduit tube.

4-2 Basic wiring

Caution : Before starting all units simultaneously by the remote ON-OFF switch, be sure to connect a sequence-start timer into the remote ON-OFF circuit. Otherwise, a rush of starting current may damage the power supply.



4-3 Switch function of remote ON-OFF switch

		SW2 (Switches between remote ON-OFF and individual control)	
		ON (Remote ON-OFF control)	OFF (Individual control)
SW1 (Switches between remote ON and OFF.)	ON (Start)	All units start together. *1 Individual control is not available.	Each unit can be controlled by each remote controller. Remote ON-OFF switch is not available.
	OFF (Stop)	All units stop together. *2 Individual control is not available.	

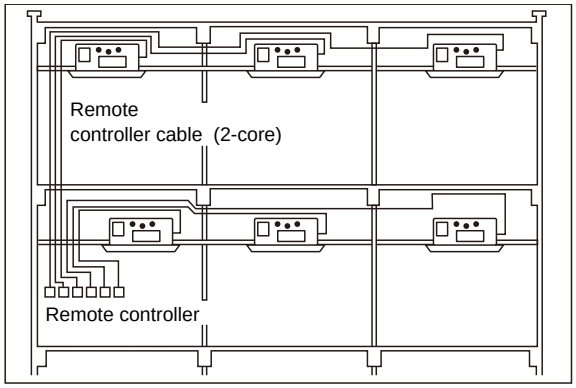
*1 After all units start together, if SW2 is turned OFF, each unit can be individually stopped by each remote controller.
*2 After all units stop together, if SW2 is turned OFF, each unit can be individually started by each remote controller.

5. INDIVIDUAL CONTROL BY GROUPING THE REMOTE CONTROLLERS

Grouping the remote controllers allows individual control and centralized monitoring of units installed in different places without a special control board.

Remote control cables are extendable up to 500m. When the cable length exceeds 12m, use the double-insulated two-care cable such as Belden 9407. Also, the cable thickness must be No. 22 AWG or above.

When gathering the power ON/OFF switches of air conditioners near the remote controllers, you should also install the power ON/OFF switch near each unit to prevent electric trouble during servicing.



6. MULTIPLE REMOTE CONTROL DISPLAY

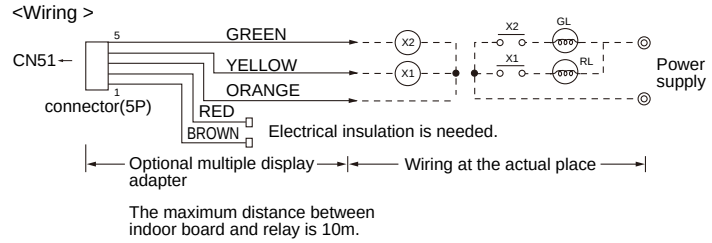
You can control several units with a multiple remote control display, by wiring an optional multiple remote controller adapter (PAC-SA88HA-E) with relays and lamps on the market.

6-1 How to wire

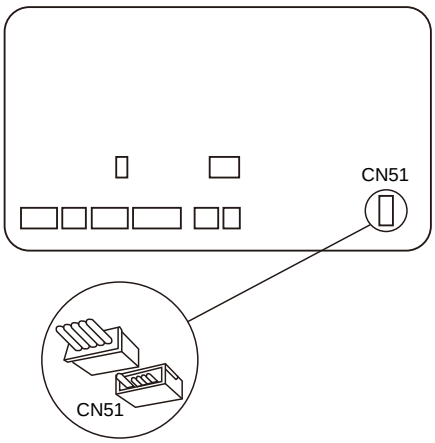
(1) Connect the multiple display adapter to the connector CN51 on the indoor controller board.

(2) Wire three of the five wires from the multiple display adapter as shown in the figure below.

<Wiring >

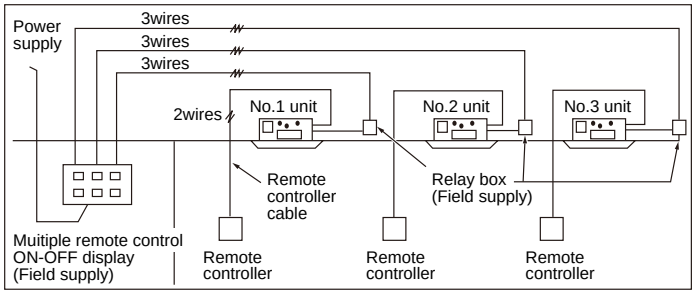


Indoor controller board



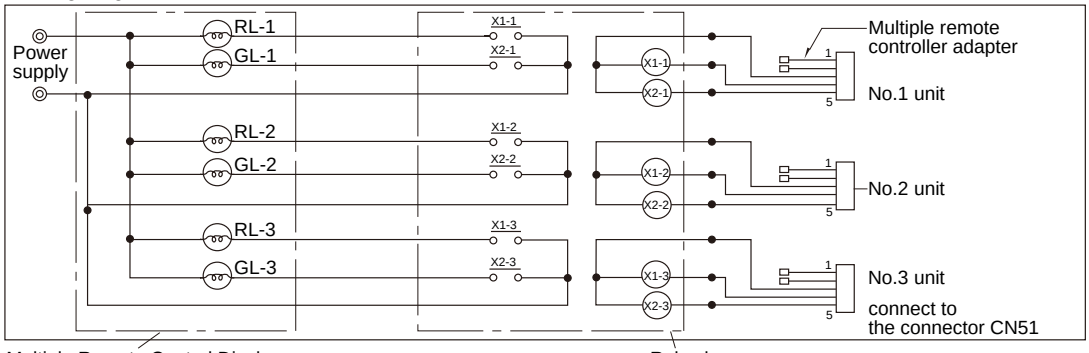
[Notes on Signs]
X1: Relay (for operation lamp)
X2: Relay (for check lamp)
RL: Operation Lamp
GL: Check Lamp
[Field supplied parts]
Relays: 12V DC with rated coil power consumption below 0.9W.
Lamps: Matching to power supply voltage.

<System>



(Operation check)

<Wiring diagram>



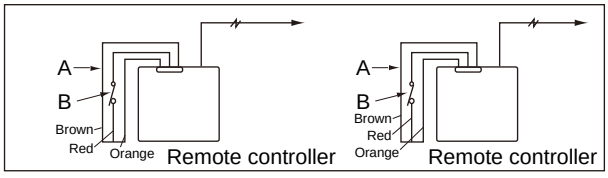
7. AUTO RESTART FUNCTION

By setting the dip switch SW1-8 to ON, the air conditioner can be started/stopped by power supply ON/OFF.
If the air conditioner is OFF before the power failure, it will not start operation by power restore.

•This function is mainly to emergency performance when the power supply stops temporarily. Therefore, since the protection function (for example, clank case heater and prevention from restarting in 3 minutes, etc.) of the device is not operated, this function should not be used mostly.

8. REMOTE CONTROL FUNCTION

<Wiring>

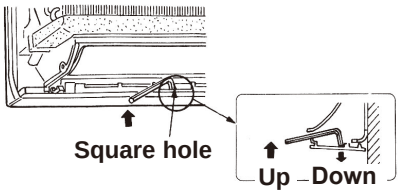
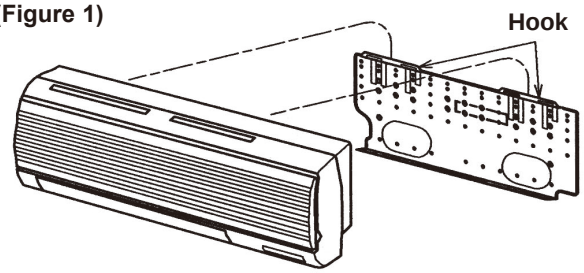
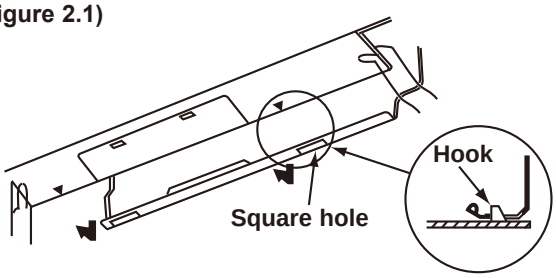
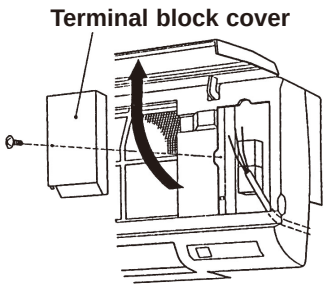
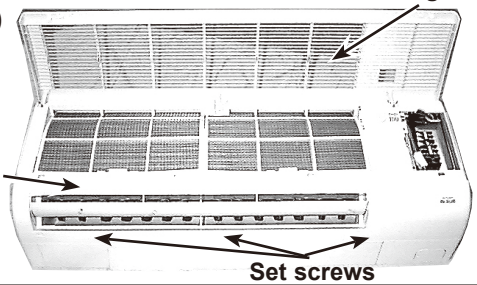
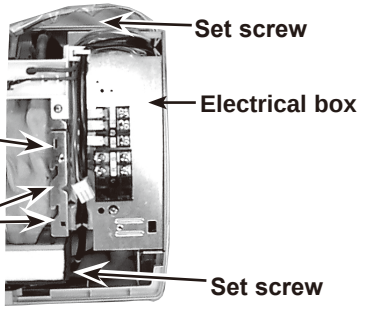
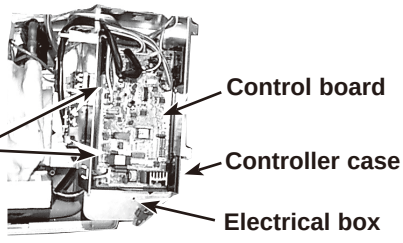


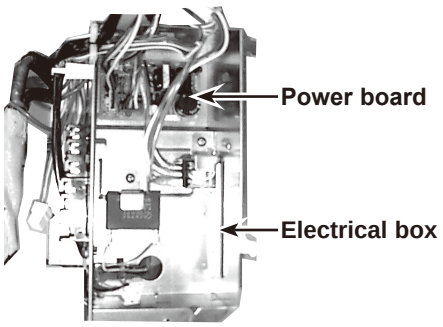
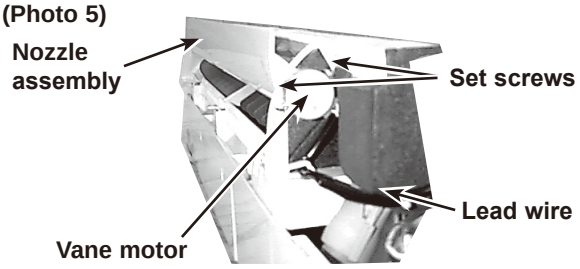
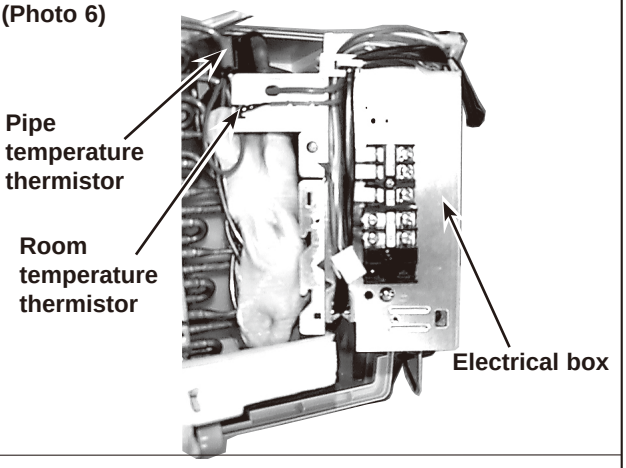
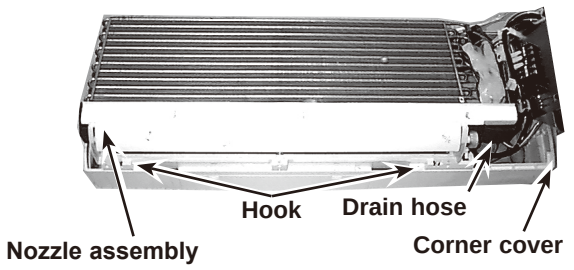
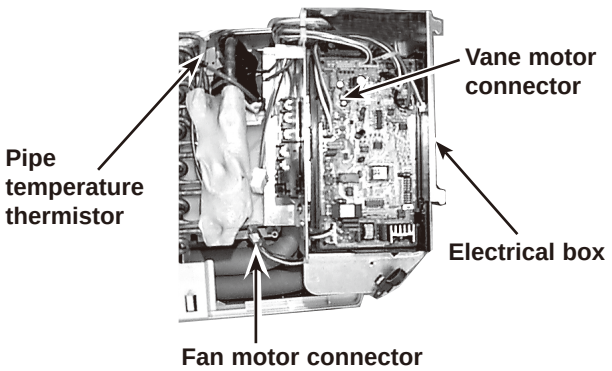
A : an optional timer adapter
B : a single-throw switch

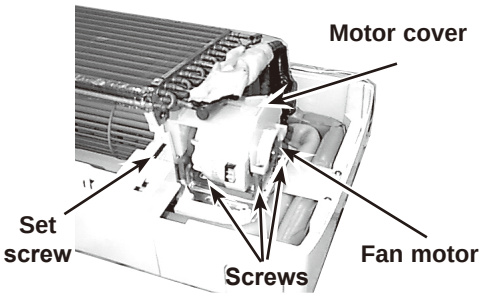
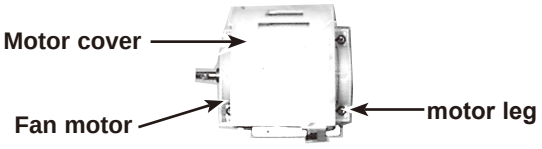
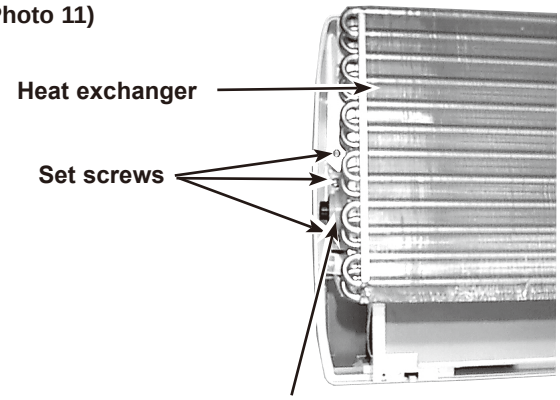
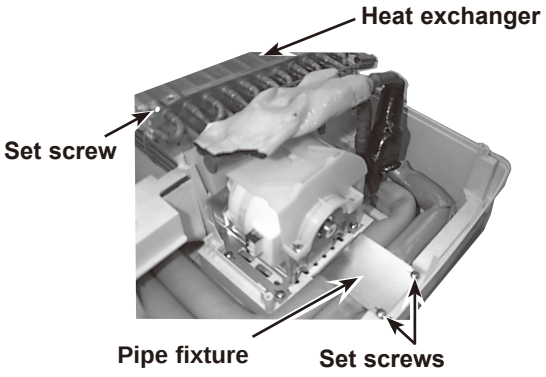
For remote control, connect the optional timer adapter (PAC-SA89TA-E)

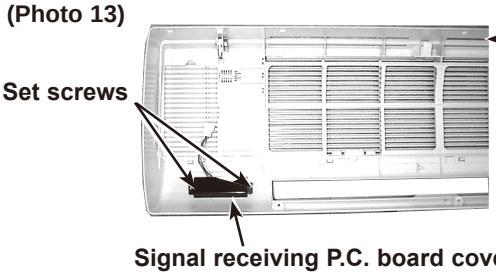
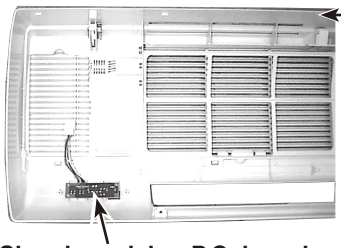
11 DISASSEMBLY PROCEDURE

PKH-2GKLA

OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
1. REMOVING THE LOWER SIDE OF THE INDOOR UNIT FROM THE INSTALLATION PLATE (1) Remove the left / right corner box of the indoor unit. (2) Hold and pull down the lower and both ends of the indoor unit, and remove the ▼ section from the square hole. (Refer to Figure 2.1) Or remove the front panel and push the ▼ section down by using hexagonal wrench, etc. from the front side. (Refer to Figure 2.2). (3) Unhook the top of the indoor unit from the back plate catch. **(Figure 2.2)** 	**(Figure 1)**  **(Figure 2.1)** 
2. REMOVING THE FRONT PANEL (1) Open the front grille. (2) Remove the terminal block cover with a screw. (3) Remove the screw 3 caps then remove the set 3 screws. (4) After removing the lower side of the front panel a little, remove it as pulling toward upper.	**(Figure 3)**  **(Photo 1)** 
3. REMOVING THE INDOOR CONTROLLER BOARD (1) Remove the terminal block cover. (2) Remove the front panel. (See Photo 1) (3) Remove the electrical box (2 screws). (4) Remove the electrical box cover (1 screw). (5) Disconnect the connector on the controller board and remove the controller board by pulling up the hook of the controller case. * For a smooth work, hang the side hooks of the electrical parts box on the hook of the motor cover. (See Photo 3)	**(Photo 2)**  **(Photo 3)** 

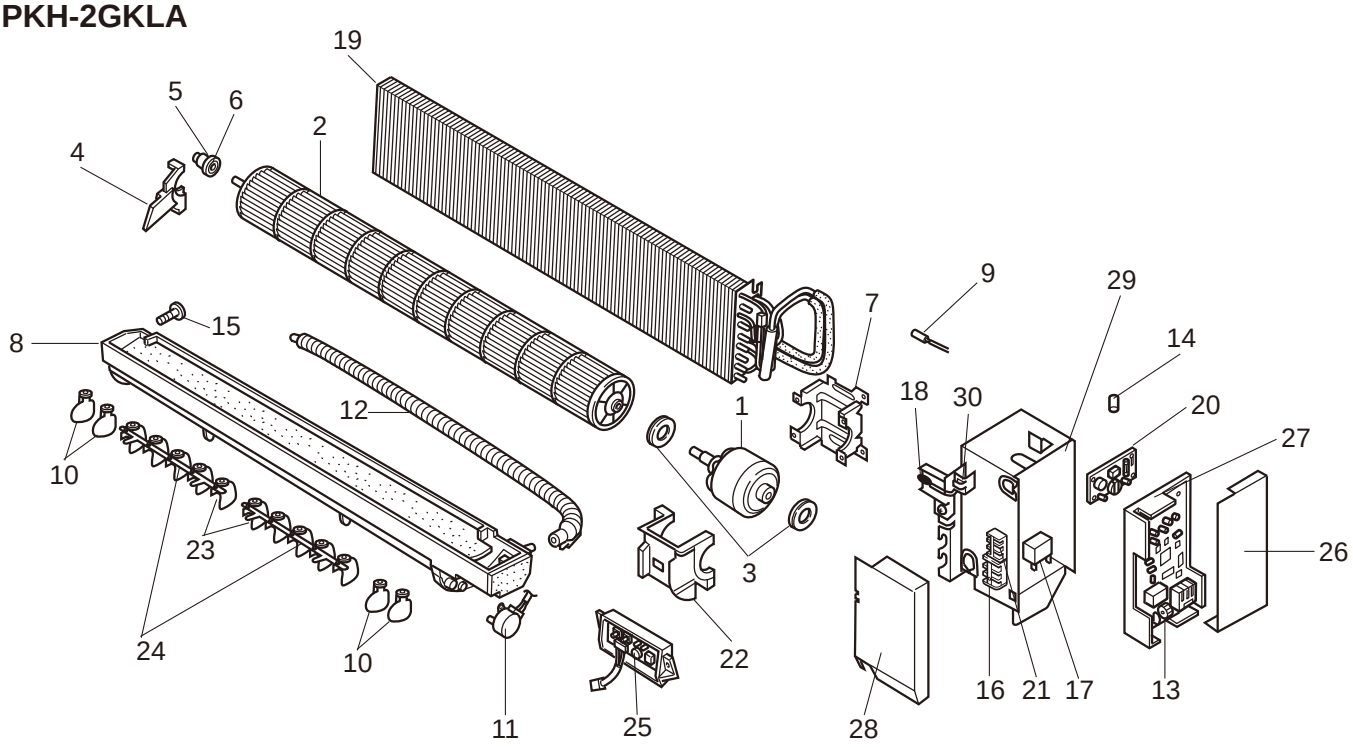
OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
4. REMOVING THE POWER BOARD (1) Remove the front panel. (See Photo 1) (2) Remove the electrical parts box (2 screws). (See Photo 2) (3) Disconnect the whole connector in the control board. (4) After lifting the controller case with pressing it's convex section, remove the controller case and the control board simultaneously. (See Photo 3) (5) Disconnect the connector in the power board. (6) Remove the power board.	**(Photo 4)** 
5. REMOVING THE VANE MOTOR (1) Disconnect the connector CN6V on the indoor controller board. (2) Remove the 2 screws of the vane motor, disconnect the lead wire and remove the vane motor from the shaft.	**(Photo 5)** 
6. REMOVING THE THERMISTOR (1) Removing the room temperature thermistor RT1. ①Disconnect the connector CN20<red> on the indoor controller board. ②Remove the room temperature thermistor from the holder. (2) Removing the pipe temperature thermistor RT2. ①Disconnect the connector CN21<white> on the controller board. ②Remove the pipe temperature thermistor with set to the pipe.	**(Photo 6)** 
7. REMOVING THE NOZZLE ASSEMBLY (1) Disconnect the connector CN6V on the controller board. (2) Disconnect the lead wire of the vane motor. (3) Remove the corner cover. (4) Pull the drain hose out from the nozzle assembly. (5) Unhook the hook of the lower nozzle assembly and pull the nozzle assembly toward you, then remove the nozzle assembly by sliding it down.	**(Photo 7)** 
8. REMOVING THE ELECTRICAL BOX (1) Remove the terminal block cover. (2) Remove the front panel. (See Photo 1) (3) Disconnect the vane motor connector. (4) Disconnect the fan motor connector from the fan motor. (5) Remove the pipe temperature thermistor. (See Photo 6) (6) Remove the electrical parts box (2 screws).	**(Photo 8)** 

OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
9. REMOVING THE FAN MOTOR (1) Remove the terminal block cover. (2) Remove the front panel. (See Photo 1) (3) Remove the electrical box. (See Photo 8) (4) Remove the nozzle assembly. (See Photo 7) (5) Remove the fan motor leg fixing 3 screws. (6) Unscrew the set screws using by alankey and remove it by sliding the fan motor to right. (7) Remove the 4 screws and remove the motor cover from the fan motor leg.	**(Photo 9)**  **(Photo 10)** 
10. REMOVING THE LINE FLOW FAN (1) Remove the terminal block cover. (2) Remove the front panel. (See Photo 1) (3) Remove the electrical box. (See Photo 8) (4) Remove the nozzle assembly. (See Photo 7) (5) Remove the fan motor. (See Photo 9) (6) Remove the pipe fixture with 2 screws. (See Photo 12) (7) Remove the left / right screws of the heat exchanger and pull the left-hand side up. (8) Remove the 2 screws by sliding it toward you remove the fixture (fixing bearing). * When the fan is hard to remove, remove the fan motor first. * When resetting the fan to the fan motor, locate and fix the shaft after installing the fan.	**(Photo 11)** 
11. REMOVING THE HEAT EXCHANGER (1) Remove the terminal block cover. (2) Remove the front panel. (See Photo 1) (3) Remove the electrical box. (See Photo 8) (4) Remove the corner box. (5) Remove the nozzle assembly. (See Photo 7) (6) Remove the 2 screws and the pipe fixture. (7) Remove the 2 screws and heat exchanger.	**(Photo 12)** 

OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
12. REMOVING THE SIGNAL RECEIVING P.C. BOARD (1) Remove the terminal block cover. (2) Disconnect the connector <yellow> for the wireless remote controller. (3) Remove the front panel. (See Photo 1) (4) Remove the 2 screws and signal receiving P.C. board cover. (5) Remove the signal receiving P.C. board.	**(Photo 13)**  **(Photo 15)** 

12 PARTS LIST (non-RoHS compliant)

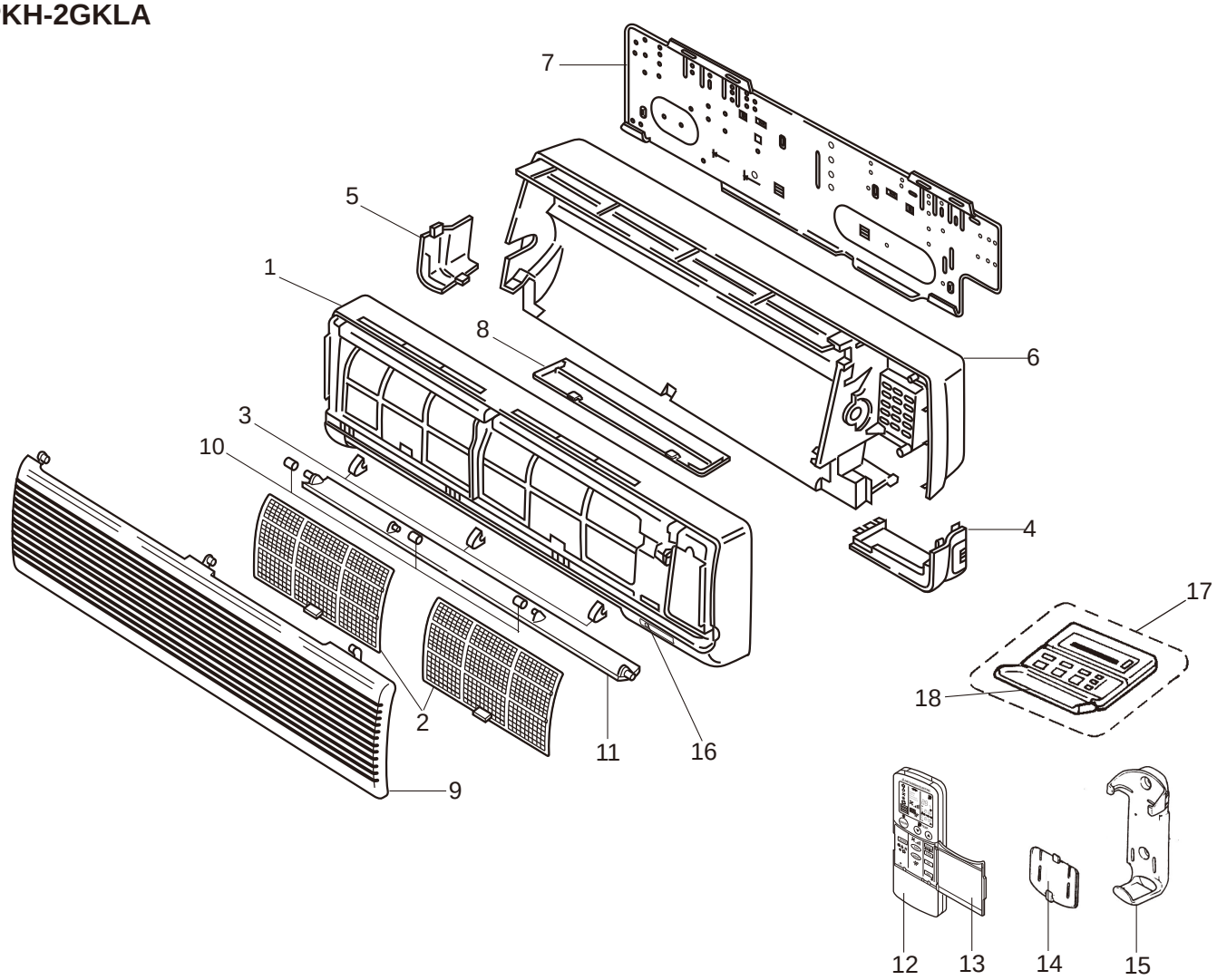
ELECTRICAL PARTS
PKH-2GKLA



No.	Parts No.	Parts Name	Specifications	PKH-2GKLA	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
1	T7W A01 762	FAN MOTOR	PM4V30-K	1		MF	
2	R01 07Y 114	LINE FLOW FAN		1			
3	R01 07Y 105	RUBBER MOUNT		2			
4	R01 07Y 106	BEARING SUPPORT		1			
5	R01 005 103	SLEEVE BEARING		1			
6	R01 07Y 102	BEARING MOUNT		1			
7	R01 07Y 130	MOTOR SUPPORT		1			
8	T7W 07Y 530	NOZZLE ASSEMBLY		1			
9	T7W E06 202	PIPE TEMPERATURE THERMISTOR		1		RT2	
10	R01 09Y 038	GUIDE VANE		4			
11	T7W E13 223	VANE MOTOR		1		MV	
12	R01 07Y 527	DRAIN HOSE		1			
13	T7W E12 310	INDOOR CONTROLLER BOARD		1		I.B	
14	T7W 520 239	FUSE	250V 6.3A	2		F1,F2	
15	R01 07Y 524	DRAIN PLUG		1			
16	T7W 521 716	TERMINAL BLOCK	3P(L, N, ⏚)	1		TB2	
17	R01 588 255	CAPACITOR	2.0μF ×440V	1		C	
18	T7W E05 202	ROOM TEMPERATURE THERMISTOR		1		RT1	
19	R01 16Y 480	HEAT EXCHANGER		1			
20	T7W E02 313	POWER BOARD		1		P.B	
21	T7W 517 716	TERMINAL BLOCK	3P(1, 2, 3)	1		TB4	
22	R01 07Y 135	MOTOR COVER		1			
23	R01 07Y 038	GUIDE VANE		10			
24	R01 07Y 059	ARM		2			
25	R01 50J 317	WIRERLESS ADAPTER CONTROLLER BOARD		1		W.B	
26	—	CONTROLLER COVER		1	(BG02V194H05)		
27	—	CONTROLLER CASE		1	(BG25B573H05)		
28	—	TERMINAL COVER		1	(BG02V195H10)		
29	—	ELECTRICAL PARTS COVER		1	(BG00V196G35)		
30	—	SENSOR HOLDER		1	(RG25C546H06)		

PARTS LIST (non-RoHS compliant)

STRUCTURAL PARTS
PKH-2GKLA



No.	Parts No.	Parts Name	Specifications	PKH-2GKLA	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
1	R01 89Y 651	FRONT PANEL		1			
2	R01 A16 500	AIR FILTER		2			
3	R01 07Y 096	SCREW CAP		3			
4	R01 10Y 658	CORNER COVER (R)		1			
5	R01 08Y 658	CORNER COVER (L)		1			
6	R01 07Y 635	BOX ASSEMBLY		1			
7	R01 07Y 808	BACK PLATE		1			
8	R01 07Y 623	UNDER COVER		1			
9	R01 07Y 691	FRONT GRILLE		1			
10	R01 07Y 092	VANE SLEEVE		1			
11	R01 07Y 002	AUTO VANE		1			
12	T7W E04 714	WIRELESS REMOTE CONTROLLER		1			
13	T7W E01 049	WIRELESS REMOTE CONTROLLER DOOR		1			
14	R01 07Y 050	BATTERY COVER		1			
15	R01 07Y 075	WIRELESS REMOTE CONTROLLER HOLDER		1			
16	R01 24K 658	RECEIVING UNIT		1		RU	
17	T7W E04 713	REMOTE CONTROLLER		1		R.B	
18	T7W E03 049	REMOTE CONTROLLER COVER		1			

13 OPTIONAL PARTS

1. REFRIGERANT PIPES

Service Ref. : PKH-2GKLA

Part No	PAC-05FFS-E	PAC-07FFS-E	PAC-10FFS-E	PAC-15FFS-E
Pipe length	5m	7m	10m	15m
Pipe size O.D.	Liquid:ϕ9.52 Gas:ϕ15.88			
Connection method	Indoor unit:Flared Outdoor unit:Flared			

Note 1. How to connect refrigerant pipes.
Factory supplied optional refrigerant pipings contain refrigerant at the above atmospheric pressures. As long as the connection takes no more than 5 minutes, no air will enter, and there will be no need for air purging. Remove the blind caps and make the connections within 5 minutes. After the connections for the indoor and outdoor units are made, open the stop valve on the outdoor unit to allow refrigerant gas to flow.
If piping length exceeds 30m, an additional charge of refrigerant is needed.

Note 2. The following main parts are contained in the optional refrigerant piping kit.
Heat insulating cover, vinyl tapes, nipples, sleeve and flange (for wall hole).

2. TIMER

When using a program timer, PAC-SC32PTA, a program timer adapter (PAC-825AD) is also needed. (See page 70)

Service Ref.	PKH-2GKLA
Part No	PAC-SC32PTA(with set back function)
Model Name	Program timer

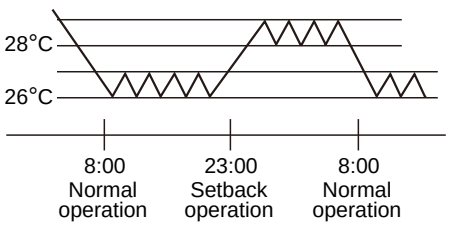
2-1 Program timer specifications

Service Ref.	PKH-2GKLA
Part name	Program timer
Part No.	PAC-SC32PTA
Exterior dimensions (inch)	5-4/32 × 4-23/32 × 23/32(130×120×18㎜)
Installation	Wall mount
Type of clock	Quartz
Clock accuracy	50seconds/month at 25℃
Display-Time	Liquid crystal display
-Week	Liquid crystal display
-Timer setting unit	Liquid crystal display
Program cycle	24 hours
Timer setting unit	30minutes
No.of set points	48/day
Power rating	5V DC 5%(Supplyed by Remote Controller)
Set back function	Provided

2-2 Feature of program timer

(1) Daily timer function
Daily timer can be set in 30 minutes units for up to 24 hours.
Each unit can be set for unit ON, unit OFF, or setback operation.

(2) Setback operation (PAC-SC32PTA)
Set back operation is useful for reducing running costs
e.g. At a hotel with a 24-hour system
8:00~23:00 Cooling operation with set temperature at 26°C
23:00~8:00 Setback operation with 2 degrees of setback
As shown in the chart on the right, the set temperature rises 2 degrees automatically during the setback operation. When the setback operation ends, normal operation will begin.

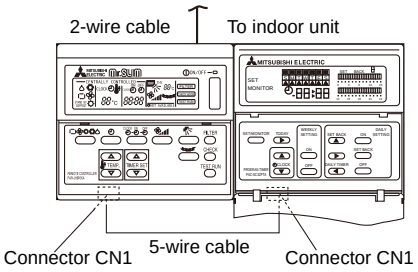


(3) Weekly timer function
Daily timer function can apply to each day of the week.

2-3. How to connect program timer

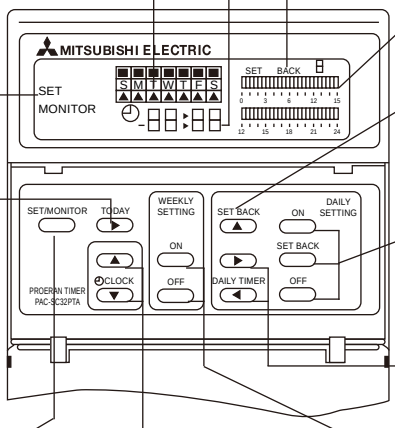
(1) Install the program timer next to the remote controller the same way as the remote controller is installed.

(2) Connect the program timer and the remote controller with a 6-wire cable as shown in the figure below.



NOTE: While the program timer is connected to the remote controller, the 24hour ON/OFF timer on the remote controller will not operate.

2-4 Names and functions
<PAC-SC32PTA>



WEEKLY TIMER SETTING DISPLAY

Used for selection of if or not the day operation pattern set by PATTERN SETTING is to be applied in weekly day unit, setting.

CURRENT TIME DISPLAY

During MONITOR status, current time is display.
During Daily timer setting, a time desire for timer setting is displayed.

SET BACK DISPLAY

Indicates the setting set back range.

DAILY TIMER SETTING DISPLAY

24 hours is divided into 48 blocks and each block express 30 minutes.
The block display consists of 3 pattern.

Set back can be done in the range of 1,2,4,6 and 8°C.

SET BACK SETTING SW

Used for set back setting.

SET/MONITOR DISPLAY

During SET is display, clock adjustment, change of weekly day, daily and weekly timer setting can be performed.
During MONITOR is display, all switches except SET/MONITOR SW are invalidated. This is normal status.

ON/SET BACK/OFF SW

Used to specify the time setting pattern.

WEEK DAY SETTING SW

Used for week day setting.

DAILY TIMER SW

Used for timer setting in 30 minutes unit.

MODE SELECTOR SW

Using this switch select "MONITOR" or "SET" Mode.

"MONITOR" : Indicates the current timer setting. All switch expect MODE SELECTOR SW are invalidated then. This is the normal status.

"SET": Set to "SET" mode for clock adjustment, charge of week day, daily and weekly timer setting.

CLOCK ADJUSTMENT SW

Used for adjustment of the current time.

Push ▲ SW to advance the time. Each time the button is pushed the time advance by 1 minute, pushing continuously advances by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication advances in 10 minutes unit.

▼ SW is used for reversing the time. Each time the button is pushed the time reverses by 1 minute, pushing continuously reverses the time by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication reverses in 10 minutes unit.

WEEKLY TIMER SW

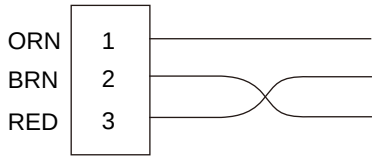
Used for setting timer in day of week unit.

Pushing ▶ SW moves the week day light display in order of
S → M → T → W ···
enabling to set the week day.

3. TIMER ADAPTER

This adapter is needed for system control and for operation via external contacts. Adapter connection is described on page 57.

Part No.	PAC-SA89TA-E



4. MULTIPLE REMOTE CONTROLLER ADAPTER

This adapter is needed for remote indication (operation/check). Adapter connection is described on page 59.

Part No.	PAC-SA88HA-E

1	BRN
2	RED
3	ORN
4	YLW
5	GRN

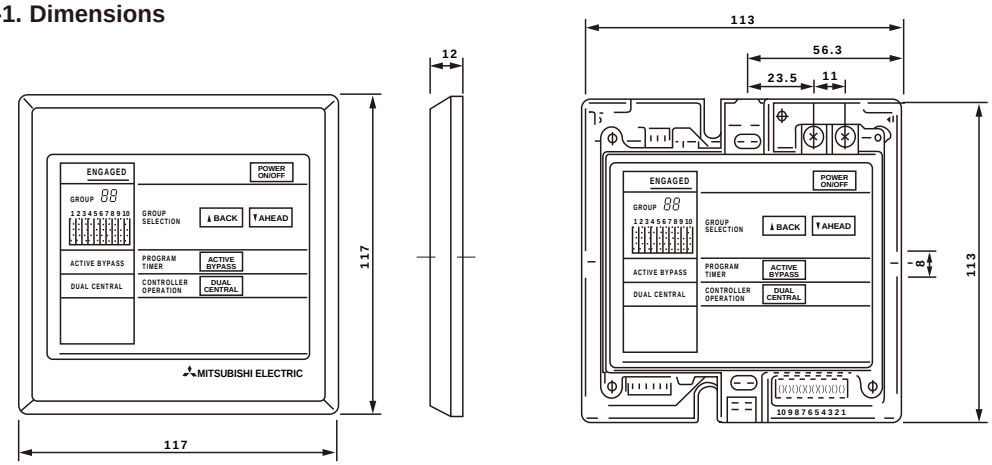
5. CENTRALIZED REMOTE CONTROLLER

Allows individual or combined control of up to 16 units. When using the PAC-805RC, the program timer adapter (PAC-825AD) is also needed.

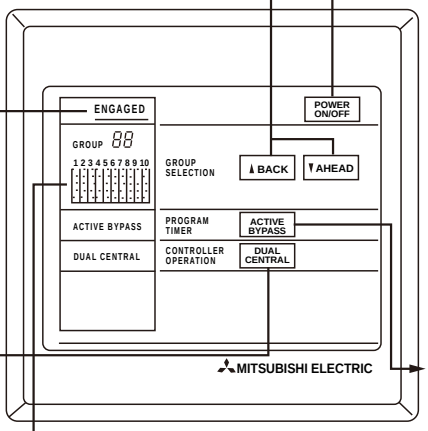
Part No.	PAC-805RC

5-1. Dimensions

Unit : mm



5-2. Functions



"ENGAGED" indicator
When this indicator is lit, transmission is in progress and all switches are inoperative.

DUAL/CENTRAL switch
This change-over switch governing the operation of the accessory remote controller.

"DUAL"
Instructions from both the accessory remote controller and the centralized remote controller are valid. (Priority given to the last instruction received.)

"CENTRAL"
ON/OFF switching by the accessory remote controller is invalidated. Control is by the centralized remote controller only.
Initial setting is "DUAL".

LCD Matrix Display
This display indicates the operational status of all connected units either by steady lighting or by flashing.

POWER ON/OFF switch
Operation ON/OFF switch.

▲BACK ▼AHEAD buttons
These buttons are used to designate the attached unit(s). (They designate the unit that is centrally controlled.)

- When group “00” is designated; collective ON/OFF instruction is sent to all units.
- When group “01”-“16” is designated; ON/OFF instruction is sent to the designated units only.

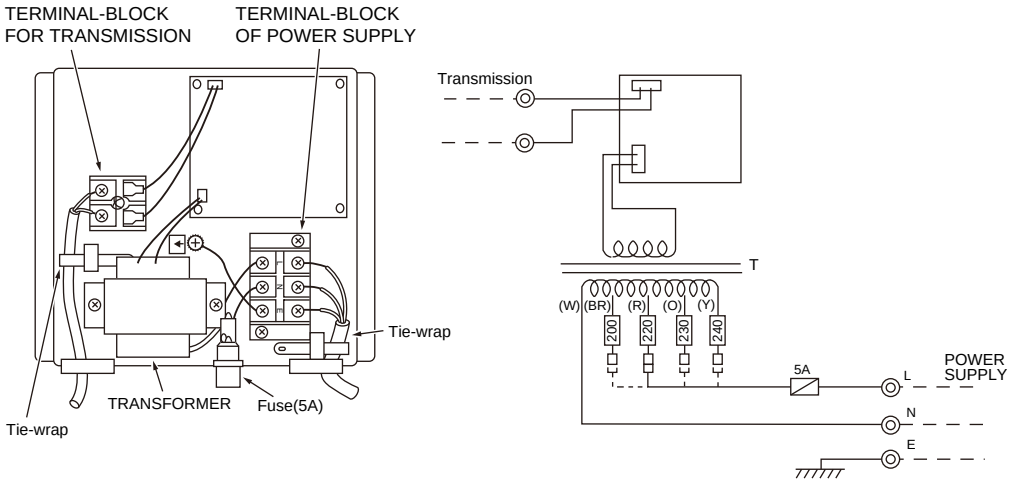
ACTIVE/BYPASS switch
This is a change-over switch for the program timer.
(It selects timer operation on the program timer.)
Use “BYPASS” when a program timer is not connected.
“ACTIVE”
The switch turns ON/OFF operational instructions from the program timer automatically.
“BYPASS”
ON/OFF Operation is by the centralized remote controller only.
Initial setting is “BYPASS”.

Independent “DUAL / CENTRAL” and “ACTIVE / BYPASS” setting of all the groups is possible. When the power supply to the centralized remote controller is cut due to power failure, all settings will return to original “DUAL” and “BYPASS”.

5-3 Connection method

(1) Connections in the power supply cord

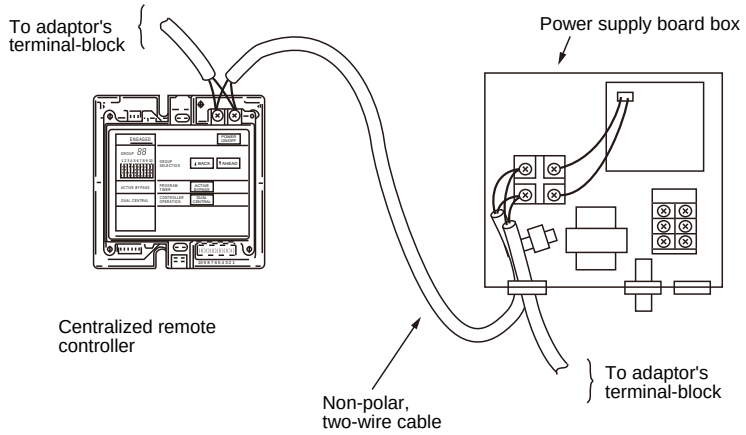
1. Connect the power supply cord to the power supply terminal-block and fix it in-place with a tie-wrap.
   Connect a single phase 200V AC (220, 230, 240V) to Ⓐ Ⓝ.
   As Ⓔ is the GND terminal, be sure to ground the earth wire.
2. Connect the transmission line to the transmission terminal-block and fix it in-place with a tie-wrap. Use a Ø1.6 (AWG 14) or above two-wire cable for the transmission line.
   CAUTION : Never connect the power supply cord to the transmission terminal-block.



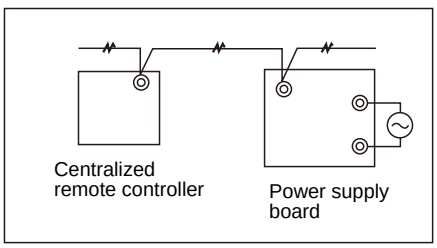
Wiring has to be changed when
a 200,230 or 240V power is supplied.

(2) Connection method of centralized remote controller and power supply board.

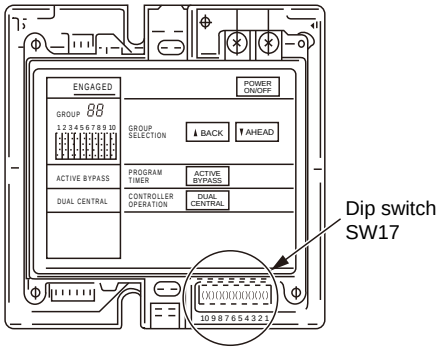
1. Connect the centralized remote controller and power supply board with a non-polar, two-wire cable.



2. Wiring diagram



3. Be sure to set the maximum address number with the dipswitch SW17 on the centralized remote controller.

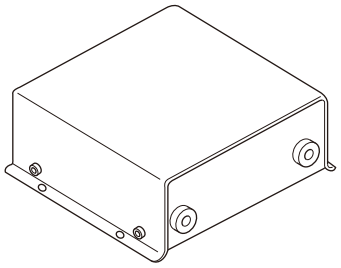
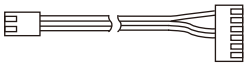


6. PROGRAM TIMER ADAPTER

This adapter is needed when a program timer (PAC-SC32PTA) or a centralized remote controller (PAC-805RC) is used.

Part No.	PAC-825AD

6-1 Parts included

① ADAPTER 1P	② 3-core cable 1P	③ 3-core cable 1P
	 Length : 2m (6' 7")	 Length : 2m (6' 7")
	④ 4-core cable 1P	⑤ 5-core cable 1P
	 Length : 2m (6' 7")	 Length : 2m (6' 7")

6-2 Connection method

Connection and wiring methods differ with the type of the indoor unit used. Confirm the type before carrying out the work.

(1) Connections in the adapter box

1. Connect the power supply cord to the terminal-block and fix it in-place with a tie-wrap.
   Connect a single phase 200V AC(220, 230, 240V) to Ⓛ Ⓝ.
   As Ⓔ is the GND terminal, be sure to ground the earth wire.
2. Connect the transmission line to the transmission terminal-block and fix it in-place with a tie-wrap (when a centralized remote controller is being used).
   CAUTION : Never connect the power supply cord to the trensmission terminal-block

Fig-1

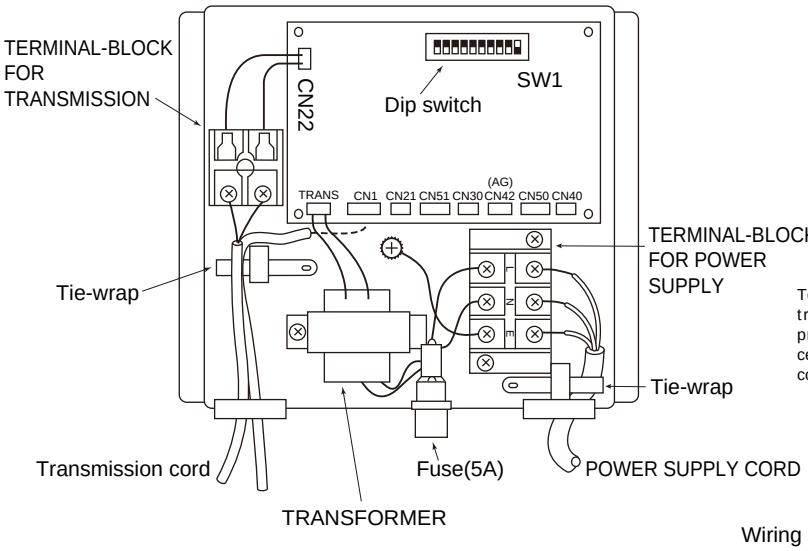
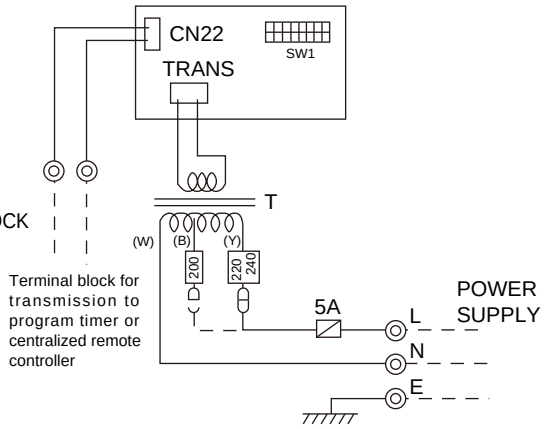


Fig-2



Wiring has to be changed when 200V power supply is used.

(2) When the centralized remote controller is used, set the address number with the dipswitch SW1 of the program timer adapter.

7. Wired Remote Controller (with terminal block)

Part No.	PAR-JA240KAT-E

Mr.SLIM™

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU TOKYO 100-8310, JAPAN

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