



SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

No. OC153

# TECHNICAL & SERVICE MANUAL

## Series PEH Ceiling Concealed

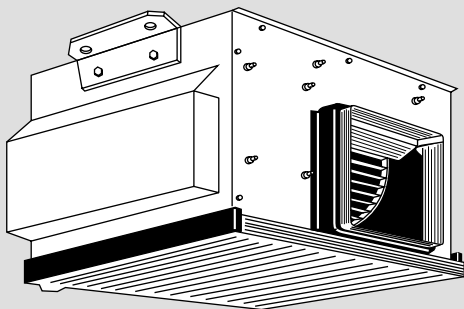
Indoor unit

- [Models] **PEH-2.5EKHA**  
**PEH-3EKHA**  
**PEH-4EKHSA**  
**PEH-5EKHSA**

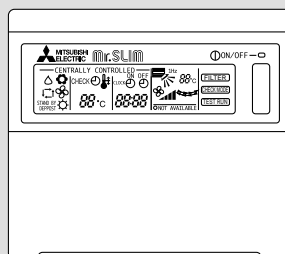
- [Service Ref.] **PEH-2.5EKHA<sub>2</sub>.TH**  
**PEH-3EKHA<sub>2</sub>.TH**  
**PEH-4EKHSA<sub>2</sub>.TH**  
**PEH-5EKHSA<sub>2</sub>.TH**

This manual does not cover the following outdoor units. When servicing them, please refer to the service manual No.OC128,150 and this manual in a set.

- [Service Ref.]  
 PUH-2.5VKA<sub>2</sub>  
 PUH-3VKA<sub>2</sub>,3YKA<sub>2</sub>  
 PUH-4YKSA<sub>3</sub>  
 PUH-5YKSA<sub>3</sub>  
 PUH-2.5VKA<sub>2</sub>.UK  
 PUH-3VKA<sub>2</sub>.UK  
 PUH-3YKA<sub>2</sub>.UK  
 PUH-4YKSA<sub>2</sub>.UK  
 PUH-5YKSA<sub>2</sub>.UK



Indoor unit



Remote controller

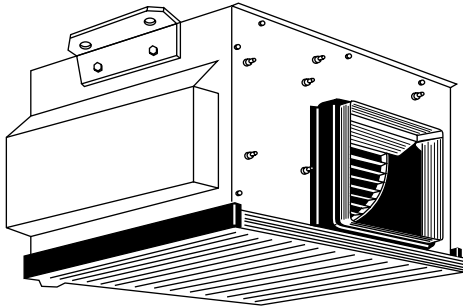
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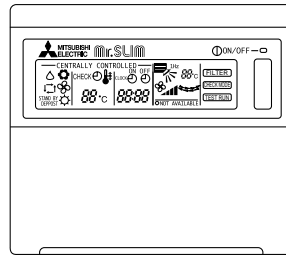
The Slim Line.  
 From Mitsubishi Electric.



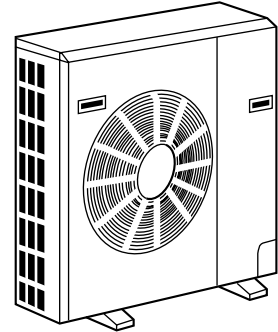
## Series PEH Ceiling Concealed



Indoor unit



Remote controller



Outdoor unit

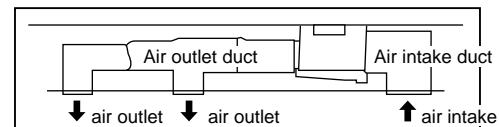
Service Ref.	Cooling capacity / Heating capacity (with Heater)	
	W	Btu / h
PEH-2.5EKHA <sub>2</sub> .TH	6,400/6,700 (8,800)	21,800/22,900 (30,000)
PEH-3EKHA <sub>2</sub> .TH	7,700/8,300 (10,400)	26,300/28,300 (35,500)
PEH-4EKHSA <sub>2</sub> .TH	9,700/10,400(12,800)	33,100/35,500 (43,700)
PEH-5EKHSA <sub>2</sub> .TH	12,400/13,000(16,000)	42,300/44,400 (54,600)

### 1. TOTALLY INVISIBLE INDOOR UNIT BEHIND THE CEILING

The totally hidden indoor unit that lies above the ceiling surface enables you to utilize full floor space while allowing for flexible interior design. This new feature is recommended for stores and offices where the user's own image is allowed to be incorporated.

### 2. MOST SUITABLE FOR SIMULTANEOUS TWO ROOMS AIR CONDITIONING

Using air ducts for cooling / heating airflow that matches with the structure and purpose of the room enables you to provide two air outlets for simultaneous cooling / heating of two rooms.



### 3. HIGH EXTERNAL STATIC PRESSURE

The acceptable external static pressure of 127Pa (12.7mmAq) allows long ducts to be used more extensively to achieve convenient location of indoor units.

### 4. ADVANCED MICROPROCESSOR

- (1) Easy to use microprocessor
  - 1) Ultra-thin remote controller  
The streamlined, square controller is designed to blend well with any interior. Also, the sophisticated microprocessor allows you to easily carry out a wide range of operations.
  - 2) Attractive liquid crystal display (LCD)  
The unit's operation mode, set temperature, room temperature, timer setting, and fan speed are displayed on the remote controller's easy-to-read Liquid Crystal Display (LCD).
  - 3) Convenient 24-hour ON-OFF timer  
The timer switches Mr. SLIM on and off automatically at the time you set. Once the timer is set, the remaining time is shown on the LCD.
  - 4) Self-diagnostic feature indicates faults instantly  
If a problem occurs, the unit will stop operating and the set temperature indicator will change to a self-diagnostic indicator, which shows the location of the trouble.  
If the check switch is pressed twice, the unit stops operating and the check mode is initiated. The location of the most recent problem that was stored in the memory is displayed on the LCD. This is extremely useful for maintenance purposes.
  - 5) Useful memory feature for storing instructions  
The previous set value is memorized so that constant temperature control can be achieved. For example, if a power failure occurs, the temperature will not have to be readjusted afterwards.

(2) Non- polar two-wire remote controller cable

The slim, non-polar, two-wire remote controller cable makes installation simple and troublefree. Also, the remote controller wire can be extended up to 500m.

(3)Automatic cooling / heating changeover operation

An automatic cooling and heating changeover operation system allows you to easily control comfortable year-round air conditioning.

Once the desired temperature is set, unit operation switches automatically between cooling and heating, in accordance with the room temperature. In addition, the use of an outdoor unit fan speed controller allows cooling even when outdoor temperatures are as low as -5 °C.

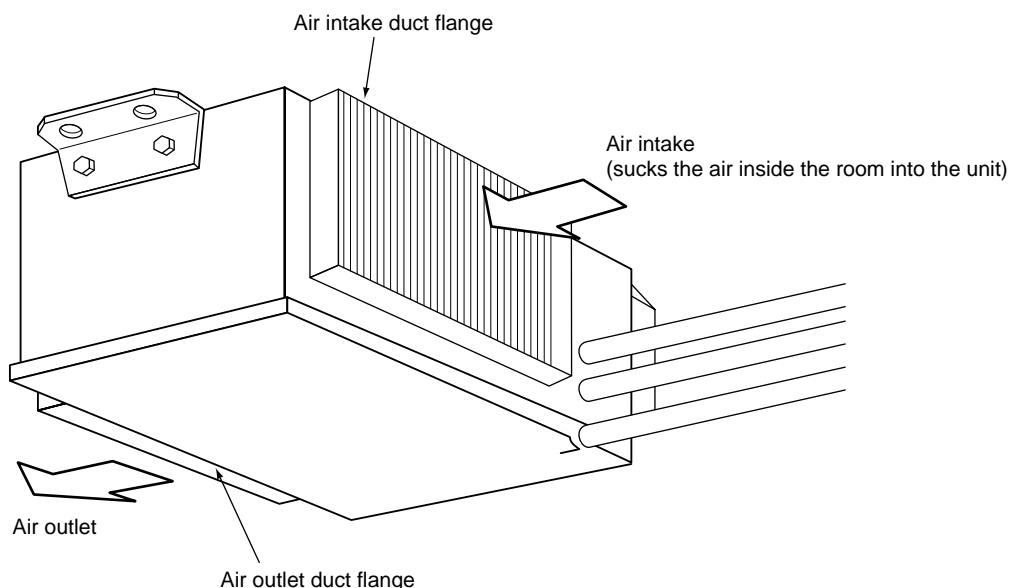
## 5. INNOVATIVE MICROPROCESSOR CONTROL SYSTEM

The most significant feature of PEH-EKH(S)A series is the advanced microprocessor control. The development of this system is due to the recent world-wide trend in the air conditioning of larger buildings. They are moving away from centralized duct systems to using individual split type units instead. There are a number of reasons for this change. First of all, the duct's costly and troublesome installation is eliminated. Second, the overall air conditioning balance is excellent in split type units. Lastly, the operation costs are low due to the flexible control of each unit. This system was developed exclusively by Mitsubishi Electric because of high demand. The microprocessor control makes individual control, group control, control using two remote controllers, remote on / off control and individual control possible without troublesome equipment modifications.

## 2

## PART NAMES AND FUNCTIONS

### ● Indoor (Main) Unit



● Remote controller

- Once the operation of the unit is set, subsequent operations can only be performed by pressing the ON/OFF button repeatedly.

● Operation buttons

**⏸ button**  
This switches between continuous operation and the timer operation.

**🕒 button**  
This sets of switches the current time, start time and stop time.

**🌀 button**  
This sets the ventilation fan speed.

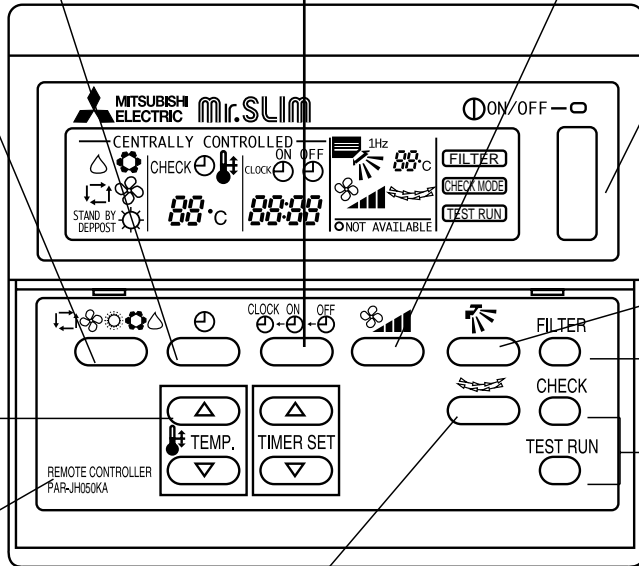
**🌀 button**  
Press this button to switch the cooler electronic dry (dehumidify) automatic and heater modes.

**ON/OFF button**  
This switches between the operation and stop modes each time it is pressed. The lamp on this button lights during operation.

**🌡 TEMP button**  
This sets the room temperature. The temperature setting can be performed in 1°C units  
Setting range  
Cooler 19°C to 30°C  
Heater 17°C to 28°C

**🌀 button**  
This adjusts the vertical angle of the ventilation.  
(This button does not operate in this model)

This model name of the remote controller is indicated.

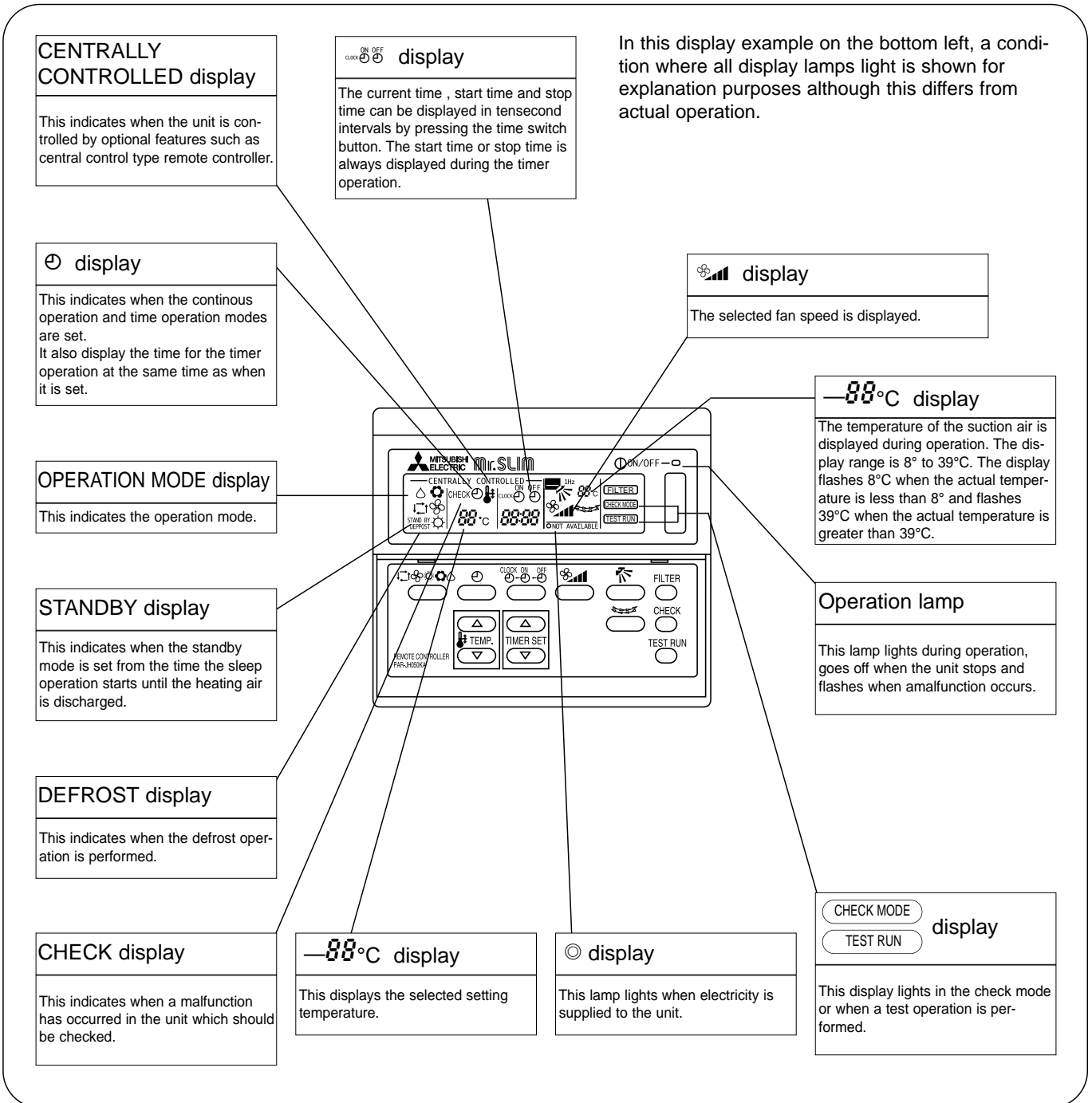


**🌀 button**  
This switches the horizontal fan motion ON and OFF.  
(This button does not operate in this model)

**CHECK-TEST RUN button**  
Only press this button to perform an inspection check or test operation. Do not use it for normal operation.

**FILTER button**  
This resets the filter service indication display.  
(This button does not operate in this model)

## ● Display



### Caution

- Only the ⊙ display lights when the unit is stopped and power supplied to the unit.
- When power is turned ON for the first time the (CENTRAL CTRL) display appears to go off momentarily but this is not a malfunction.
- When the central control remote control unit, which is sold separately, is used the ON-OFF button, button and button do not operate.
- “NOT AVAILABLE” is displayed when the button and button are pressed. This indicates that this room unit is not equipped with the fan direction adjustment function and the louver function.

Item		Service Ref.	PEH-2.5EKHA <sub>2</sub> .TH		PEH-3EKHA <sub>2</sub> .TH				
Function			Cooling	Heating	Cooling	Heating	Cooling	Heating	
Capacity	*1	Btu/h	21,800	22,900 (30,000)	26,300	28,300 (35,500)	26,300	28,300 (35,500)	
		W	6,400	6,700 (8,800)	7,700	8,300 (10,400)	7,700	8,300 (10,400)	
Total input		kW	2.85	2.62 (4.72)	3.54	3.33 (6.43)	3.54	3.33 (6.43)	
INDOOR UNIT	<b>Service Ref.</b>		<b>PEH-2.5EKHA<sub>2</sub>.TH</b>		<b>PEH-3EKHA<sub>2</sub>.TH</b>				
	Power supply(phase, cycle,voltage)		Single, 50Hz, 220-240V		Single, 50Hz, 220-240V				
	Input	kW	0.39	0.39(2.49)	0.39	0.39(2.49)	0.39	0.39(2.49)	
	Running current	A	1.66	1.66(10.41)	1.66	1.66(10.41)	1.66	1.66(10.41)	
	Starting current	A	2.30	2.30(11.1)	2.30	2.30(11.1)	2.30	2.30(11.0)	
	External finish		Galvanized sheets						
	Heat exchanger		Plate fin coil						
	Fan(drive) × No.		Centrifugal (direct)						
	Fan motor output	kW	0.23						
	Airflow(Low-High)	m <sup>3</sup> /min,<CFM>	22-27<780-950>						
	External static pressure	Pa(mmAq)	127 (12.7) at Hi-notch						
	Booster heater	kW	2.1						
	Operation control & Thermostat		Remote control & built-in						
	Noise level(Low-High) *2	dB(A)	52 - 55						
	Cond. drain connection O.D.		32 <1-1/4>						
	Dimensions	W	mm,(in)	785 <31>					
		D	mm,(in)	690 <27-1/6>					
		H	mm,(in)	428 <16-7/8>					
	Weight	kg,(lbs)	47<104>			48<106>			
	OUTDOOR UNIT	<b>Service Ref.</b>		<b>PUH-2.5VKA<sub>2</sub>(.UK)</b>		<b>PUH-3VKA<sub>2</sub>(.UK)</b>		<b>PUH-3YKA<sub>2</sub>(.UK)</b>	
Power supply (phase, cycle, voltage)		Single, 50Hz, 220-240V		Single, 50Hz, 220-240V		3,50Hz, 380-415V (4wires)			
Input		kW	2.46	2.23	3.15	2.94	3.15	2.94	
Running current		A	10.68	9.78	13.82	12.89	5.16	4.81	
Starting current		A	52	52	58	58	37	37	
External finish		Munsell 5Y 7/1							
Refrigerant control		Capillary tube							
Compressor		Hermetic							
Model			NH41VMD		NH52VND		NH52YDA		
Motor output		kW	2.0		2.2		2.4		
Starter type		Line start							
Protection devices		Internal thermostat,HP switch		Internal thermostat,HP switch		Thermal relay, Thermal switch, HP switch, Anti-phase protector.			
Heat exchanger		Plate fin coil							
Fan(drive) × No.		Propeller (direct)×1							
Fan motor output		kW	0.085		0.085				
Airflow		m <sup>3</sup> /min,<CFM>	50<1.764>						
Defrost method		Reverse cycle							
Noise level *2		dB(A)	52						
Dimensions		W	mm,(in)	870 <32-1/4>					
		D	mm,(in)	295+24 <11-5/8 add 1>					
	H	mm,(in)	850 <33-7/16>						
Weight	kg,(lbs)	68 <150>			75 <165>				
REFRIGERANT PIPING	Refrigerant		R-22						
	Charge		2.8 <6.2>		3.2 <7.1>				
	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. 50m					
Piping length		Max. 50m							

\*1 Rating condition <JIS B 8616>  
 (INDOOR) Cooling : 27°C D.B.,19°C W.B. Heating : 20°C D.B.  
 (OUTDOOR) Cooling : 35°C D.B. Heating : 7°C D.B.,6°C W.B.

\*2 Noise level : Sound pressure level



Item		Service Ref.	PEH-4EKHSA <sub>2</sub> .TH		PEH-5EKHSA <sub>2</sub> .TH		
Function			Cooling	Heating	Cooling	Heating	
Capacity	※1	Btu/h	33,100	35,500 (43,700)	42,300	44,400 (54,600)	
		W	9,700	10,400 (12,800)	12,400	13,000 (16,000)	
Total input		kW	3.64	3.63 (6.03)	4.86	4.81 (7.81)	
INDOOR UNIT	<b>Service Ref.</b>		<b>PEH-4EKHSA<sub>2</sub>.TH</b>		<b>PEH-5EKHSA<sub>2</sub>.TH</b>		
	Power supply(phase, cycle,voltage)		Single, 50Hz, 220-240V				
	Input	kW	0.44	0.44(2.84)	0.65	0.65(3.65)	
	Running current	A	1.87	1.87(11.87)	2.76	2.76(15.20)	
	Starting current	A	2.60	2.60(12.6)	3.20	3.20(15.7)	
	External finish		Galvanized sheets				
	Heat exchanger		Plate fin coil				
	Fan(drive) × No.		Centrifugal (direct) ×2				
	Fan motor output	kW	0.24		0.28		
	Airflow(Low-High)	m <sup>3</sup> /min,<CFM>	27-34(950-1200)		34-42(1200-1480)		
	External static pressure		127 (12.7) at Hi-notch				
	Booster heater	kW	(2.4)		(3.0)		
	Operation control & Thermostat		Remote control & built-in				
	Noise level(Low-High) ※2		dB(A) 54 - 58				
	Cond. drain connection O.D.		mm,(in) 32 <1-1/4>				
	Dimensions	W	mm,(in)	1055<41-1/2>		1255<49-7/16>	
		D	mm,(in)	690 <27-1/6>			
		H	mm,(in)	428 <16-7/8>			
Weight		kg,(lbs)	61<134>		75<165>		
OUTDOOR UNIT	<b>Service Ref.</b>		<b>PUH-4YKSA<sub>3</sub> (2.UK)</b>		<b>PUH-5YKSA<sub>3</sub>(2.UK)</b>		
	Power supply (phase, cycle, voltage)		3,50Hz,380-415V(4wires)				
	Input	kW	3.20	3.19	4.21	4.16	
	Running current	A	5.24	5.22	6.89	6.81	
	Starting current	A	40	40	53	53	
	External finish		Musell 5Y 7/1				
	Refrigerant control		Capillary tube				
	Compressor		Hermetic				
	Model		NH56YDA		ZR61K3-TFD		
	Motor output	kW	2.7		3.5		
	Starter type		Line start				
	Protection devices		Thermal relay, Thermal switch,HP switch, Anti-phase protector   Internal thermostat,Thermal switch,HP switch, Anti-phase protector				
	Heat exchanger		Plate fin coil				
	Fan(drive) × No.		Propeller(direct)×2				
	Fan motor output	kW	0.065+0.065		0.085+0.085		
	Airflow	m <sup>3</sup> /min,<CFM>	95<3.350>				
	Defrost method		Reverse cycle				
	Noise level ※2		dB(A) 54		55		
Dimensions	W	mm,(in)	870<34-1/4>		970<38-3/16>		
	D	mm,(in)	295+24<11-5/8 add 1>		345+24<13-9/16 add 1>		
	H	mm,(in)	1,258 <49-1/2>				
Weight		kg,(lbs)	94<207>		114<251>		
REFRIGERANT PIPING	Refrigerant		R-22				
	Charge		kg,(lbs) 4.2<9.27>		5.4<11.9>		
	Pipe size O.D.	Liquid	mm,(in) 9.52 <3/8>				
		Gas	mm,(in) 19.5 <3/4>				
	Connection method	Indoor side		Flared			
		Outdoor side		Flared			
Between the indoor & outdoor unit	Height difference		Max. 50m				
	Piping length		Max. 50m				

※1 Rating condition <JIS B 8616>  
 (INDOOR) Cooling : 27°C D.B.,19°C W.B. Heating : 21°C D.B.  
 (OUTDOOR) Cooling : 35°C D.B. Heating : 7°C D.B.,6°C W.B.

※2 Noise level : Sound pressure level

## 1 PERFORMANCE DATA

## 1) COOLING CAPACITY

Service Ref.	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.
PEH-2.5EKHA <sub>2</sub> .TH	16	6,457	2.28	6,280	2.38	6,049	2.56	5,804	2.75	5,545	2.93	5,271	3.12
	18	6,875	2.33	6,694	2.43	6,450	2.62	6,194	2.82	5,926	3.01	5,646	3.20
	20	7,297	2.37	7,126	2.48	6,871	2.68	6,606	2.88	6,330	3.09	6,043	3.30
	22	7,724	2.42	7,576	2.53	7,314	2.74	7,040	2.95	6,756	3.18	6,461	3.41
PEH-3EKHA <sub>2</sub> .TH	16	7,768	2.84	7,555	2.96	7,278	3.19	6,983	3.41	6,671	3.64	6,342	3.88
	18	8,271	2.89	8,053	3.02	7,760	3.26	7,452	3.50	7,130	3.74	6,793	3.98
	20	8,779	2.95	8,573	3.08	8,267	3.33	7,948	3.58	7,616	3.84	7,270	4.10
	22	9,293	3.00	9,115	3.14	8,799	3.40	8,470	3.67	8,128	3.95	7,773	4.23
PEH-4EKHSA <sub>2</sub> .TH	16	9,786	2.92	9,518	3.04	9,168	3.28	8,797	3.51	8,426	3.75	8,018	3.98
	18	10,419	2.98	10,145	3.10	9,775	3.35	9,388	3.60	8,994	3.84	8,577	4.09
	20	11,060	3.03	10,800	3.17	10,414	3.42	10,012	3.68	9,596	3.94	9,168	4.21
	22	11,707	3.09	11,482	3.23	11,085	3.50	10,670	3.77	10,230	4.06	9,791	4.35
PEH-5EKHSA <sub>2</sub> .TH	16	12,510	3.90	12,167	4.06	11,720	4.37	11,245	4.69	10,771	5.00	10,249	5.32
	18	13,319	3.97	12,969	4.14	12,496	4.47	12,001	4.80	11,497	5.13	10,964	5.46
	20	14,138	4.05	13,806	4.23	13,313	4.57	12,799	4.92	12,266	5.27	11,720	5.62
	22	14,965	4.12	14,679	4.31	14,170	4.67	13,640	5.04	13,078	5.41	12,516	5.81

Note 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
PEH-2.5EKHA <sub>2</sub> .TH	1.00	0.989	0.980	0.970	0.960	0.950	0.940	0.930	0.920	0.910
PEH-3EKHA <sub>2</sub> .TH	1.00	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PEH-4EKHSA <sub>2</sub> .TH	1.00	0.989	0.980	0.970	0.960	0.950	0.940	0.930	0.920	0.910
PEH-5EKHSA <sub>2</sub> .TH	1.00	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874



## 2) HEATING CAPACITY

Service Ref.	Indoor Intake air W.B.°C	Outdoor intake air D.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.
<b>PEH-2.5EKHA<sub>2</sub>.TH</b>	15	4,588	1.79	5,259	1.98	5,994	2.18	6,792	2.39	7,653	2.61	8,576	2.85
	20	4,393	1.93	5,052	2.13	5,768	2.34	6,539	2.57	7,366	2.81	8,247	3.07
	25	4,222	2.04	4,847	2.27	5,539	2.51	6,297	2.75	7,121	3.02	8,011	3.29
<b>PEH-3EKHA<sub>2</sub>.TH</b>	15	5,684	2.27	6,514	2.51	7,425	2.76	8,414	3.03	9,481	3.32	10,624	3.62
	20	5,443	2.45	6,259	2.71	7,145	2.98	8,101	3.27	9,125	3.58	10,217	3.90
	25	5,230	2.60	6,004	2.88	6,861	3.19	7,801	3.50	8,822	3.83	9,924	4.18
<b>PEH-4EKHSA<sub>2</sub>.TH</b>	15	7,122	2.48	8,163	2.74	9,303	3.01	10,543	3.31	11,880	3.62	13,312	3.95
	20	6,820	2.67	7,842	2.95	8,953	3.25	10,150	3.56	11,434	3.90	12,802	4.25
	25	6,554	2.83	7,524	3.14	8,597	3.47	9,774	3.82	11,054	4.18	12,435	4.56
<b>PEH-5EKHSA<sub>2</sub>.TH</b>	15	8,903	3.28	10,203	3.63	11,629	3.99	13,179	4.38	14,850	4.80	16,640	5.23
	20	8,524	3.54	9,803	3.91	11,191	4.30	12,688	4.72	14,292	5.16	16,002	5.63
	25	8,192	3.75	9,404	4.17	10,747	4.60	12,218	5.06	13,817	5.54	15,544	6.04

Note CA :Capacity (W)

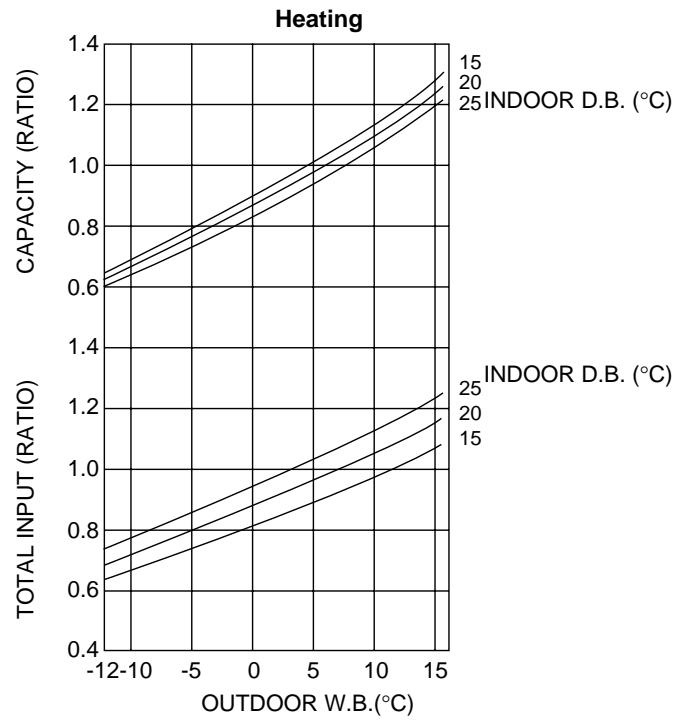
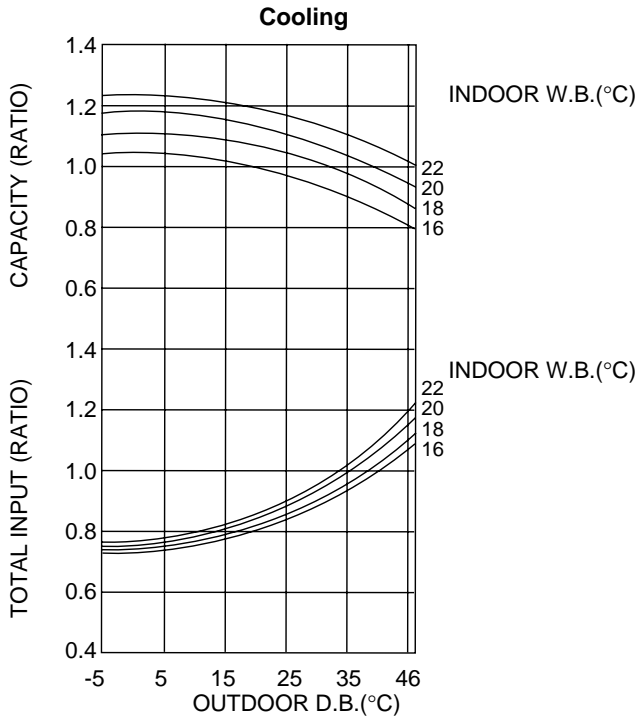
P.C. :Power consumption (kW)

Heating capacity correction factors

Service Ref.	Refrigerant piping length (one way)									
	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
<b>PEH-2.5EKHA<sub>2</sub>.TH</b>	1.00	1.00	1.00	1.00	1.00	1.00	0.998	0.995	0.993	0.990
<b>PEH-3EKHA<sub>2</sub>.TH</b>	1.00	1.00	1.00	1.00	1.00	1.00	0.998	0.995	0.993	0.990
<b>PEH-4EKHSA<sub>2</sub>.TH</b>	1.00	1.00	1.00	1.00	1.00	1.00	0.998	0.995	0.993	0.990
<b>PEH-5EKHSA<sub>2</sub>.TH</b>	1.00	1.00	1.00	1.00	1.00	1.00	0.998	0.995	0.993	0.990

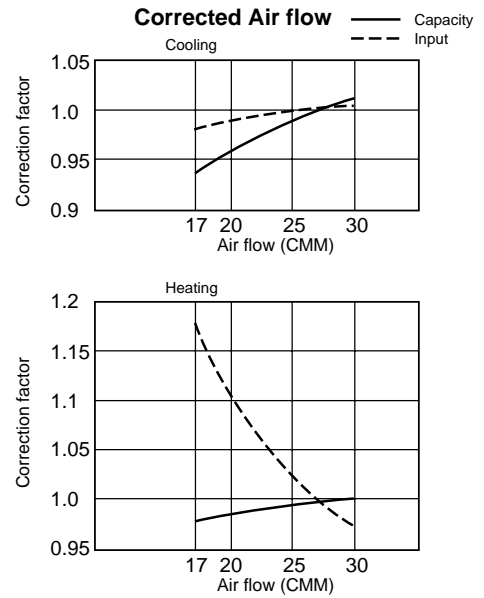
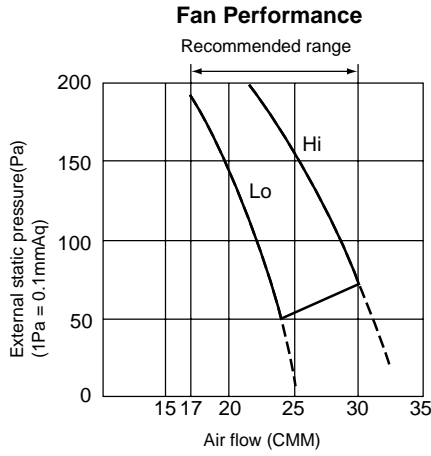


## 2. PERFORMANCE CURVE

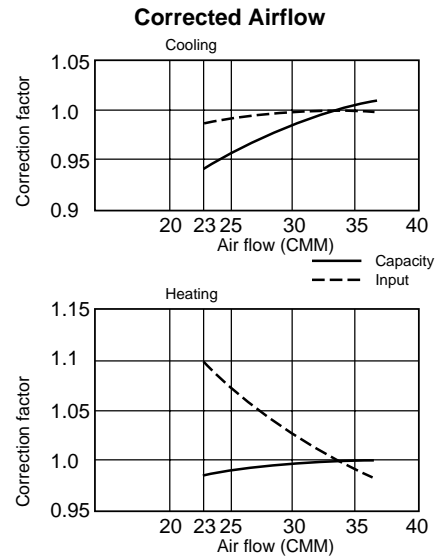
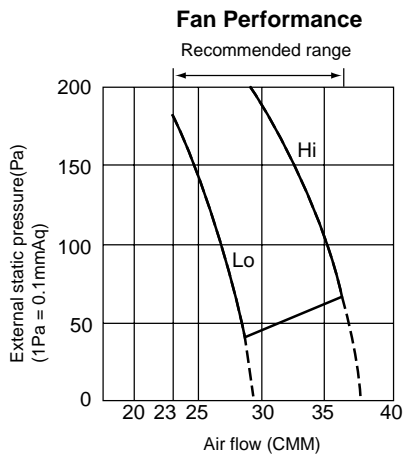


### 3. FAN PERFORMANCE AND CORRECTED AIR FLOW

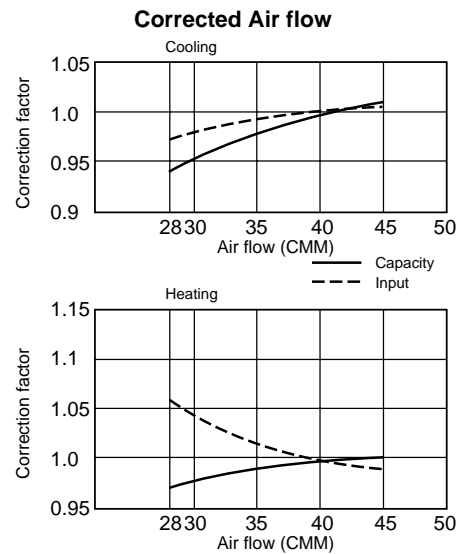
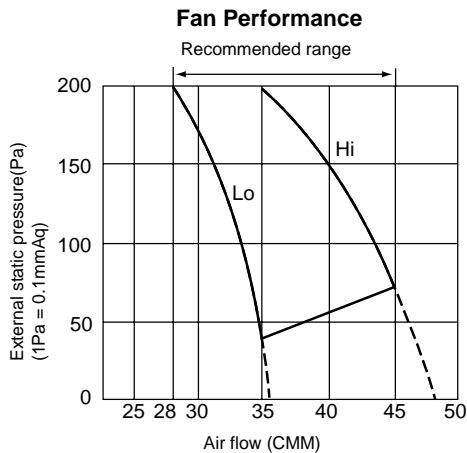
#### (1) PEH-2.5EKHA<sub>2</sub>.TH PEH-3EKHA<sub>2</sub>.TH



#### (2) PEH-4EKHSA<sub>2</sub>.TH



#### (3) PEH-5EKHSA<sub>2</sub>.TH



## 4. ELECTRICAL DATA

Indoor unit .....220V 50Hz 1phase

Outdoor unit .....220V 50Hz 1phase / 380V 50Hz 3phase

Service Ref.	Indoor unit	PEH-2.5EKHA <sub>2</sub> .TH		PEH-3EKHA <sub>2</sub> .TH				PEH-4EKHSA <sub>2</sub> .TH		PEH-5EKHSA <sub>2</sub> .TH	
	Outdoor unit	PUH-2.5VKA <sub>2</sub> (.UK)		PUH-3VKA <sub>2</sub> (.UK)		PUH-3YKA <sub>2</sub> (.UK)		PUH-4YKSA <sub>3</sub> (2.UK)		PUH-5YKSA <sub>3</sub> (2.UK)	
Mode		Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat
Capacity (W)		6,300	6,600 (8,400)	7,500	8,100 (9,860)	7,500	8,100 (9,860)	9,500	10,200 (12,200)	12,200	12,800 (15,300)
Total Input (kW)		2.76	2.51 (4.31)	3.48	3.27 (5.03)	3.48	3.27 (5.03)	3.57	3.56 (5.56)	4.71	4.65 (7.15)
Indoor unit	Input (kW)	0.35	0.35 (2.15)	0.35	0.35 (2.11)	0.35	0.35 (2.11)	0.40	0.40 (2.40)	0.52	0.52 (3.02)
	Current (A)	1.62	1.62 (9.80)	1.62	1.62 (9.58)	1.62	1.62 (9.58)	1.86	1.86 (10.95)	2.47	2.47 (13.7)
	Starting current (A)	2.1	2.1 (10.3)	2.1	2.1 (10.1)	2.1	2.1 (10.1)	2.4	2.4 (11.6)	3.0	3.0 (14.4)
Outdoor unit	Input (kW)	2.41	2.16	3.13	2.92	3.13	2.92	3.17	3.16	4.19	4.13
	Current (A)	11.18	10.02	14.67	13.69	5.23	4.88	5.29	5.28	7.32	7.21
	Starting current (A)	52	52	54	54	34	34	37	37	49	49

Indoor unit .....230V 50Hz 1phase

Outdoor unit .....230V 50Hz 1phase / 400V 50Hz 3phase

Service Ref.	Indoor unit	PEH-2.5EKHA <sub>2</sub> .TH		PEH-3EKHA <sub>2</sub> .TH				PEH-4EKHSA <sub>2</sub> .TH		PEH-5EKHSA <sub>2</sub> .TH	
	Outdoor unit	PUH-2.5VKA <sub>2</sub> (.UK)		PUH-3VKA <sub>2</sub> (.UK)		PUH-3YKA <sub>2</sub> (.UK)		PUH-4YKSA <sub>3</sub> (2.UK)		PUH-5YKSA <sub>3</sub> (2.UK)	
Mode		Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat
Capacity (W)		6,350	6,650 (8,550)	7,600	8,200 (10,130)	7,600	8,200 (10,130)	9,600	10,300 (12,500)	12,300	12,900 (15,600)
Total Input (kW)		2.81	2.57 (4.47)	3.51	3.30 (5.23)	3.51	3.30 (5.23)	3.61	3.60 (5.80)	4.78	4.73 (7.43)
Indoor unit	Input (kW)	0.37	0.37 (2.27)	0.37	0.37 (2.30)	0.37	0.37 (2.30)	0.42	0.42 (2.62)	0.58	0.58 (3.28)
	Current (A)	1.64	1.64 (9.90)	1.64	1.64 (9.90)	1.64	1.64 (9.90)	1.86	1.86 (11.43)	2.60	2.60 (14.30)
	Starting current (A)	2.2	2.2 (10.5)	2.2	2.2 (10.6)	2.2	2.2 (10.6)	2.5	2.5 (12.1)	3.1	3.1 (14.8)
Outdoor unit	Input (kW)	2.44	2.20	3.14	2.93	3.14	2.93	3.19	3.18	4.20	4.15
	Current (A)	10.94	9.86	14.22	13.27	5.21	4.86	5.23	5.22	7.05	6.97
	Starting current (A)	52	52	56	56	36	36	39	39	51	51

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

Outdoor unit .....240V 50Hz 1phase / 415V 50Hz 3phase

Service Ref.	Indoor unit	PEH-2.5EKHA <sub>2</sub> .TH		PEH-3EKHA <sub>2</sub> .TH				PEH-4EKHSA <sub>2</sub> .TH		PEH-5EKHSA <sub>2</sub> .TH	
	Outdoor unit	PUH-2.5VKA <sub>2</sub> (.UK)		PUH-3VKA <sub>2</sub> (.UK)		PUH-3YKA <sub>2</sub> (.UK)		PUH-4YKSA <sub>3</sub> (2.UK)		PUH-5YKSA <sub>3</sub> (2.UK)	
Mode		Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat
Capacity (W)		6,400	6,700 (8,800)	7,700	8,300 (10,400)	7,700	8,300 (10,400)	9,700	10,400 (12,800)	12,400	13,000 (16,000)
Total Input (kW)		2.85	2.62 (4.72)	3.54	3.33 (5.43)	3.54	3.33 (5.43)	3.64	3.63 (6.03)	4.86	4.81 (7.81)
Indoor unit	Input (kW)	0.39	0.39 (2.49)	0.39	0.39 (2.49)	0.39	0.39 (2.49)	0.44	0.44 (2.84)	0.65	0.65 (3.65)
	Current (A)	1.66	1.66 (10.41)	1.66	1.66 (10.41)	1.66	1.66 (10.41)	1.87	1.87 (11.87)	2.76	2.76 (15.20)
	Starting current (A)	2.3	2.3 (11.1)	2.3	2.3 (11.1)	2.3	2.3 (11.1)	2.6	2.6 (12.6)	3.2	3.2 (15.7)
Outdoor unit	Input (kW)	2.46	2.23	3.15	2.94	3.15	2.94	3.20	3.19	4.21	4.16
	Current (A)	10.68	9.78	13.82	12.89	5.16	4.81	5.24	5.22	6.89	6.81
	Starting current (A)	52	52	58	58	37	37	40	40	53	53

## 5. STANDARD OPERATION DATA

Service Ref.			PEH-2.5EKHA2.TH		PEH-3EKHA2.TH				PEH-4EKHSA2.TH		PEH-5EKHSA2.TH	
Mode			Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
Total	Capacity	W	6,400	6,700 (8,800)	7,700	8,300 (10,400)	7,700	8,300 (10,400)	9,700	10,400 (12,800)	12,400	13,000 (16,000)
	Input	kW	2.85	2.62 (4.72)	3.54	3.33 (5.43)	3.54	3.33 (5.43)	3.64	3.63 (6.03)	4.86	4.81 (7.81)
Electrical circuit	Indoor unit Service Ref.		PEH-2.5EKHA2.TH		PEH-3EKHA2.TH				PEH-4EKHSA2.TH		PEH-5EKHSA2.TH	
	Phase, Hz		1.50		1.50				1.50		1.50	
	Volts	V	240		240				240		240	
	Amperes	A	1.66	1.66 (10.41)	1.66	1.66 (10.41)	1.66	1.66 (10.41)	1.87	1.87 (11.87)	2.76	2.76 (15.20)
	Outdoor unit Service Ref.		PUH-2.5VKA2(UK)		PUH-3VKA2 (.UK)		PUH-3YKA2 (.UK)		PUH-4YKSA3 (2.UK)		PUH-5YKSA3 (2.UK)	
	Phase, Hz		1.50		1.50		3.50		3.50		3.50	
	Volts	V	240		240		415		415		415	
	Amperes	A	10.68	9.78	13.82	12.89	5.16	4.81	5.24	5.22	6.89	6.81
Electrical circuit	Discharge Pressure	MPa·G (kgf/cm <sup>2</sup> ·G)	2.00 (20.4)	1.57 (16.0)	2.05 (20.9)	1.74 (17.8)	2.05 (20.9)	1.75 (17.9)	1.80 (18.4)	1.53 (15.6)	1.97 (20.1)	1.59 (16.2)
	Suction Pressure	MPa·G (kgf/cm <sup>2</sup> ·G)	0.55 (5.6)	0.36 (3.7)	0.49 (5.0)	0.35 (3.6)	0.05 (5.1)	0.36 (3.7)	0.54 (5.5)	0.38 (3.9)	0.48 (4.9)	0.36 (3.7)
	Discharge Temperature	°C	79.6	68.5	85.1	76.4	83.7	75.9	76.7	67.5	78.9	69.9
	Condensing Temperature	°C	52.9	—	53.7	—	54.0	—	48.3	—	52.0	—
	Suction Temperature	°C	8.0	-1.9	6.2	-2.2	6.2	-2.1	7.1	-0.6	4.6	-1.4
	Ref. pipe length	m	5	5	5	5	5	5	5	5	5	5
Indoor side	Intake air temperature	DB.°C	27	20	27	20	27	20	27	20	27	20
		WB.°C	19	15	19	15	19	15	19	15	19	15
	Discharge air temperature	DB.°C	17.3	33.0	16.0	36.9	16.0	36.9	14.6	37.2	14.6	37.1
Outdoor side	Intake air temperature	DB.°C	35	7	35	7	35	7	35	7	35	7
		WB.°C	24	6	24	6	24	6	24	6	24	6
SHF			0.79	—	0.78	—	0.78	—	0.80	—	0.74	—
BF			0.31	—	0.25	—	0.25	—	0.12	—	0.21	—

The unit of pressure has been changed to Mpa based on SI (International System of Units) in accordance with I.S.O. (International Organization for Standardization).

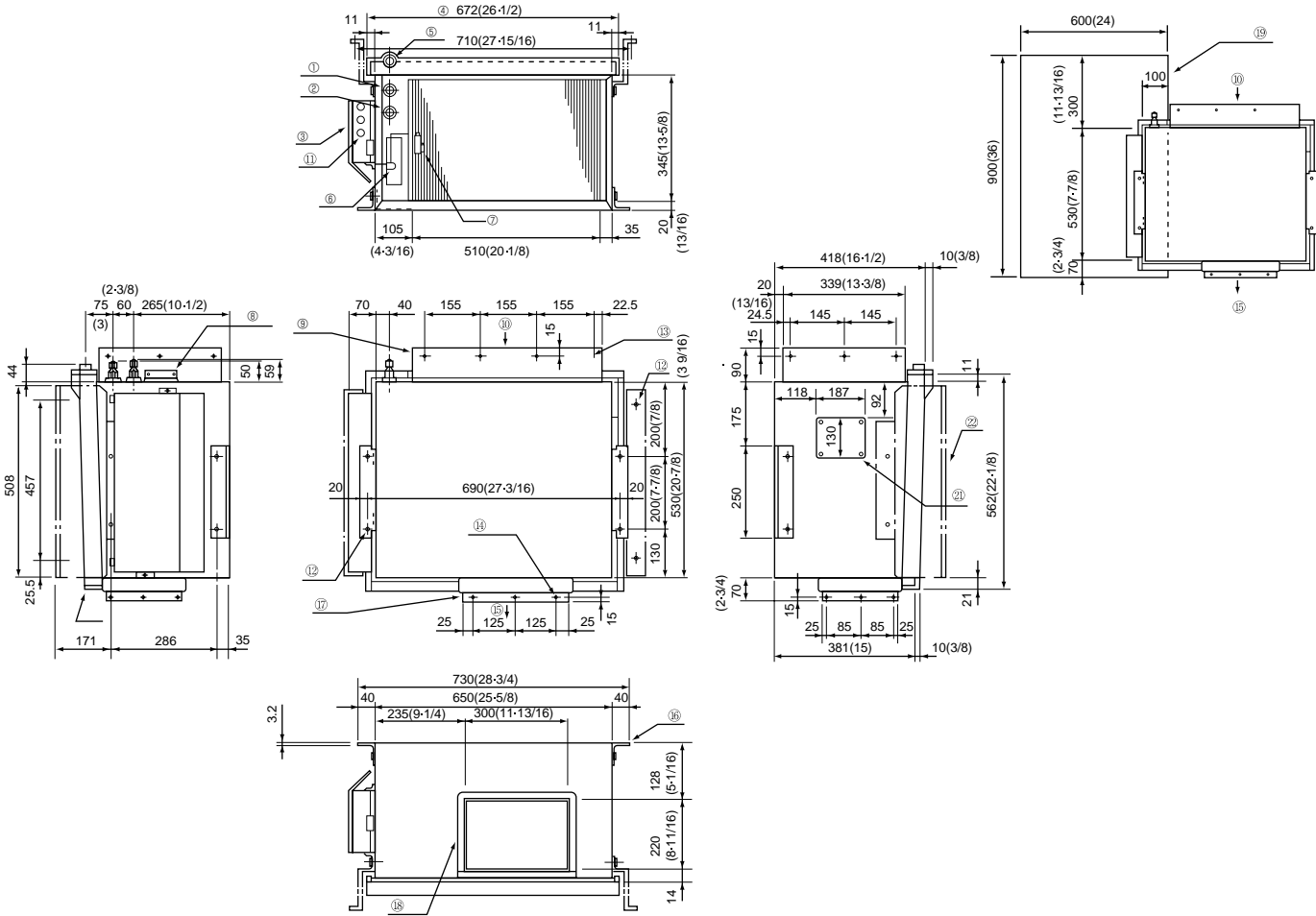
The conversion factor is : 1(Mpa • G) =10.2 (kgf/cm<sup>2</sup>•G)

# 5

# OUTLINES AND DIMENSIONS

## 1. INDOOR UNITS PEH-2.5EKHA<sub>2</sub>.TH PEH-3EKHA<sub>2</sub>.TH

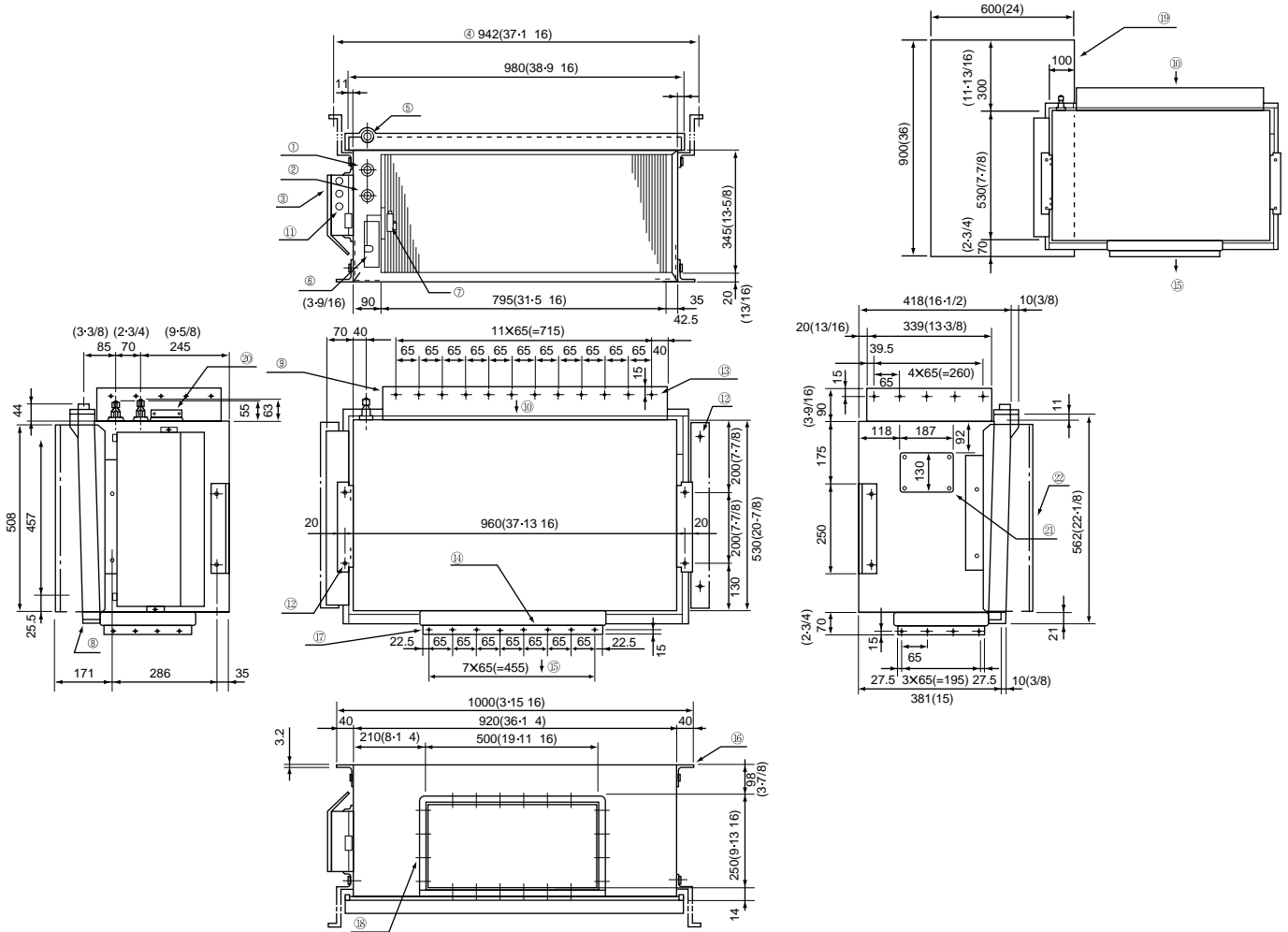
Unit : mm (inch)



①	Refrigerant-pipe flared connection $\phi 9.52$ (3/8)	⑫	Suspension bolt holes (4- $\phi 12$ (1/2))
②	Refrigerant-pipe flared connection $\phi 15.88$ (5/8)	⑬	14- $\phi 3$ (1/8) holes
③	Electrical parts box	⑭	For air outlet duct connection (12- $\phi 3$ (1/8) holes)
④	Drainage pan	⑮	Air outlet
⑤	Drainage pipe connection 1BSP (male)	⑯	Mounting plate
⑥	Service panel (Indoor coil thermistor)	⑰	Air outlet duct flange
⑦	Room temperature thermistor	⑱	Heat insulator t10 (3/8)
⑧	Heat insulator t10 (3/8)	⑲	Service space (opening) in the ceiling
⑨	Air intake duct flange	⑳	Service panel (Room temperature thermistor)
⑩	Air intake	㉑	Service panel (booster heater)
⑪	Wiring entry (3- $\phi 22$ (7/8) holes)	㉒	Mounting plate (option)

PEH-4EKHSA2.TH

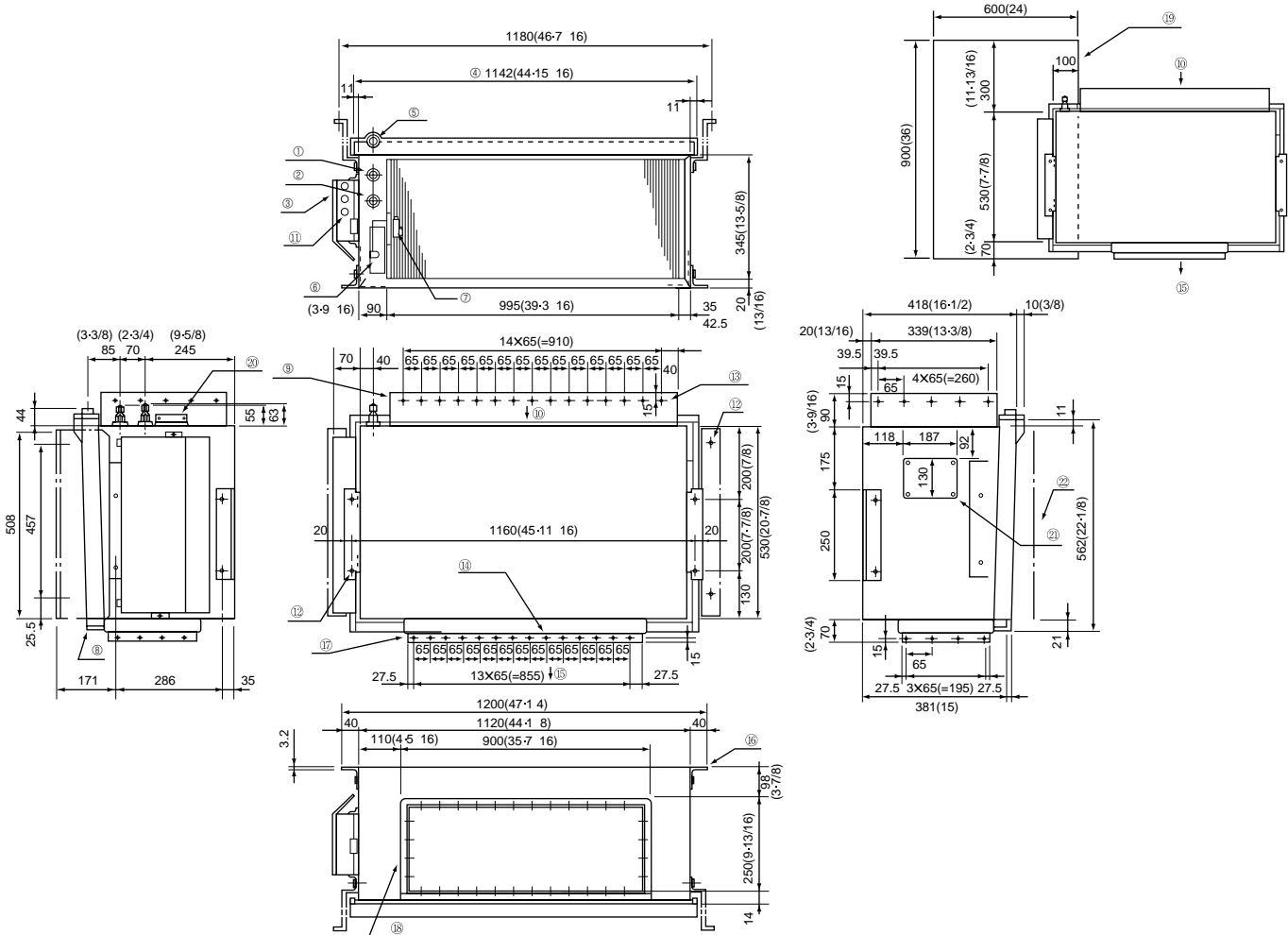
Unit : mm (inch)



①	Refrigerant-pipe flared connection $\phi 9.52$ (3/8)	⑫	Suspension bolt holes (4- $\phi 12$ (1/2))
②	Refrigerant-pipe flared connection $\phi 19.05$ (3/4)	⑬	34- $\phi 3$ (1/8) holes
③	Electrical parts box	⑭	For air outlet duct connection (24- $\phi 3$ (1/8) holes)
④	Drainage pan	⑮	Air outlet
⑤	Drainage pipe connection 1BSP (male)	⑯	Mounting plate
⑥	Service panel (Indoor coil thermistor)	⑰	Air outlet duct flange
⑦	Room temperature thermistor	⑱	Heat insulator t10 (3/8)
⑧	Heat insulator t10 (3/8)	⑳	Service panel (opening) in the ceiling
⑨	Air intake duct flange	㉑	Service panel (Room temperature thermistor)
⑩	Air intake	㉒	Service panel (booster heater)
⑪	Wiring entry (3- $\phi 22$ (7/8) holes)	㉓	Mounting plate (option)

# PEH-5EKHSA<sub>2</sub>.TH

Unit : mm (inch)

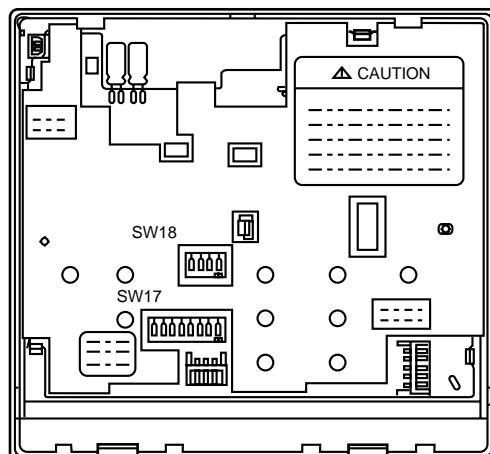
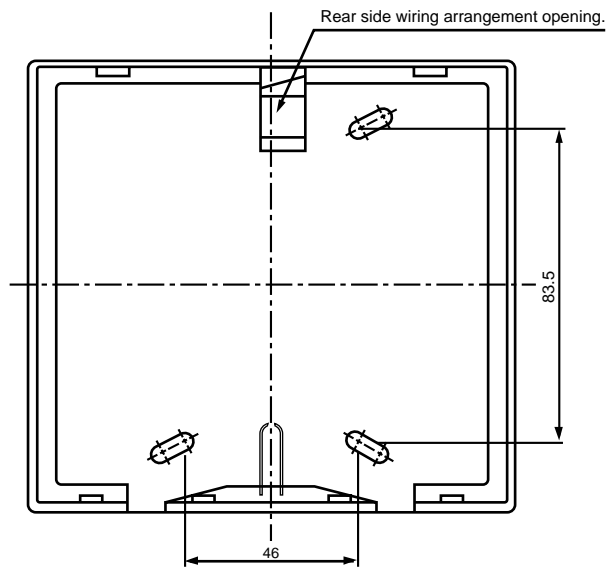
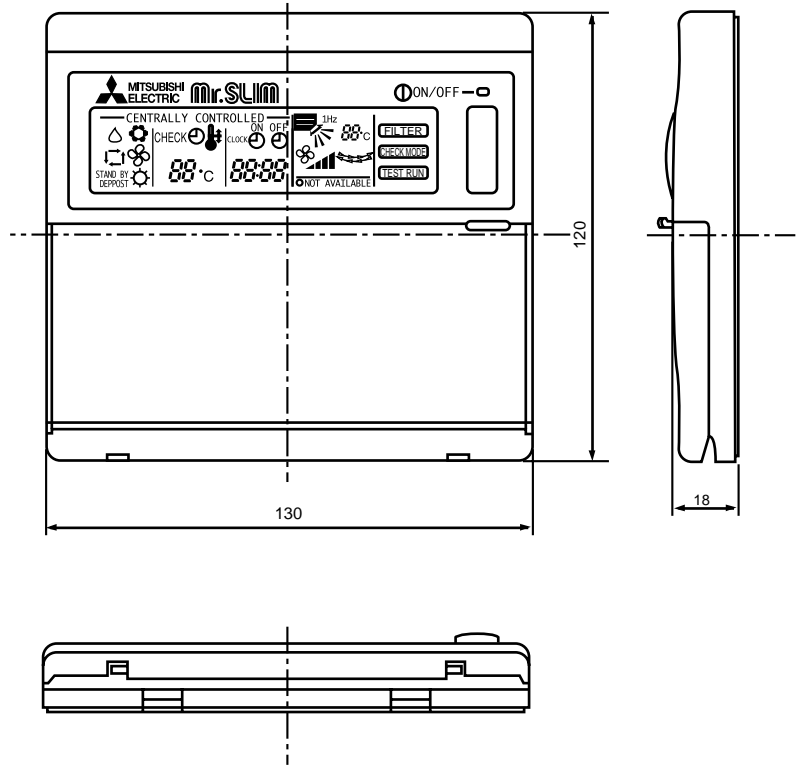
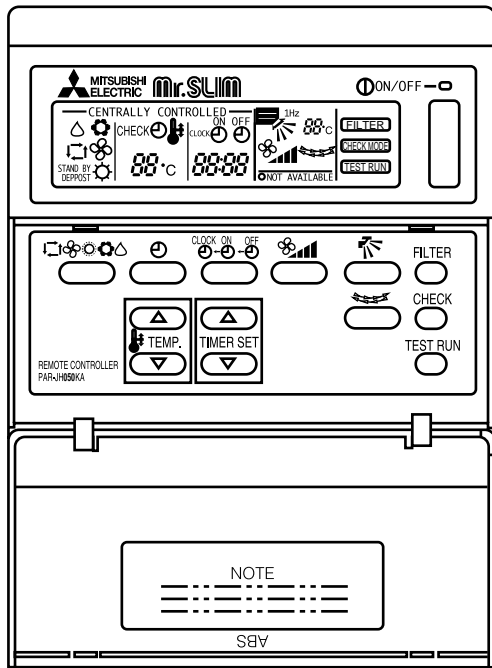


①	Refrigerant-pipe flared connection $\phi 9.52$ (3/8)	⑫	Suspension bolt holes (4- $\phi 12$ (1/2))
②	Refrigerant-pipe flared connection $\phi 19.05$ (3/4)	⑬	40- $\phi 3$ (1/8) holes
③	Electrical parts box	⑭	For air outlet duct connection (36- $\phi 3$ (1/8) holes)
④	Drainage pan	⑮	Air outlet
⑤	Drainage pipe connection 1BSP (male)	⑯	Mounting plate
⑥	Service panel (Indoor coil thermistor)	⑰	Air outlet duct flange
⑦	Room temperature thermistor	⑱	Heat insulator t10 (3/8)
⑧	Heat insulator t10 (3/8)	⑲	Service space (opening) in the ceiling
⑨	Air intake duct flange	⑳	Service panel (Room temperature thermistor)
⑩	Air intake	㉑	Service panel (booster heater)
⑪	Wiring entry (3- $\phi 22$ (7/8) holes)	㉒	Mounting plate (option)



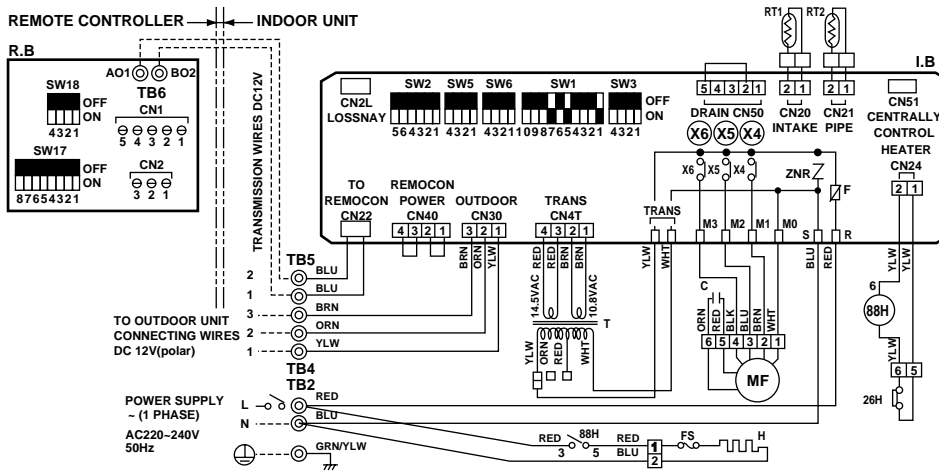
## 2. REMOTE CONTROLLER

Unit : mm (inch)



PEH-2.5/3/4/5EKH(S)A<sub>2</sub>.TH

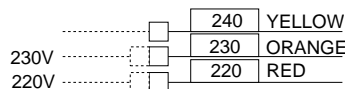
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	FAN MOTOR CAPACITOR	SW17<R.B>	ADDRESS SELECTOR	26H	OVER HEAT PREVENTION THERMAL SWITCH
CN1<R.B>	PROGRAM TIMER CONNECTOR	SW18<R.B>	FUNCTION SELECTOR		
CN2<R.B>	REMOTE SWITCH CONNECTOR	T	TRANSFORMER		
CN2L<I.B>	LOSSNAY CONNECTOR	TB2	POWER SUPPLY TERMINAL BLOCK		
CN51<I.B>	CENTRALLY CONTROL CONNECTOR	TB4	INDOOR/OUTDOOR CONNECTING WIRE TERMINAL BLOCK		
F<I.B>	FUSE 16.3A 250V	TB5.6	REMOTE CONTROLLER TRANSMISSION LINE TERMINAL BLOCK		
FS	THERMAL FUSE	RT1	ROOM TEMPERATURE THERMISTOR (0°C/15k . 25 °C/5.4k)		
H	ELECTRIC HEATER	RT2	INDOOR COIL THERMISTOR (0°C/15k . 25 °C/5.4k)		
I.B	INDOOR CONTROLLER BOARD	X4<I.B>	FAN MOTOR AUXILIARY RELAY		
LCD	LIQUID CRYSTAL DISPLAY	X5<I.B>	FAN MOTOR AUXILIARY RELAY		
MF	INDOOR FAN MOTOR	X6<I.B>	FAN MOTOR AUXILIARY RELAY		
R.B	REMOTE CONTROLLER BOARD	ZNR<I.B>	VARISTOR		
SW1<I.B>	MODE SELECTOR	88H	ELECTRIC HEATER CONTACTOR		
SW2<I.B>	ADDRESS SELECTOR				
SW3<I.B>	EMERGENCY OPERATION SWITCH				
SW5<I.B>	MODEL SELECTOR				
SW6<I.B>	MODEL SELECTOR				



1. Since the indoor transformer (T) is connected with 240V power, if 220, 230V power is used.

Change the wiring connection showing fig : \*1.

when power supply is fig : \*1



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 (1 and 2).

4. Symbols used in wiring diagram above are. ○:Terminal block. □□□:Connector, □:PC board insertion tab.

5. Emergency operation

If a trouble occurs with either the remote controller or the indoor microcomputer and no other trouble exists, emergency operation for cooling or heating can be performed by changing the setting of dip switch (SW3<I.B>) on the indoor controller board. (emergency dry operation is not possible.)

[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, ②, ③ on and ④ off for cooling, and ②, ③, ④ on and ① off for heating.

(2) Turn on the outdoor unit side circuit breaker.

(3) During emergency operation indoor fan runs at High speed.

(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).

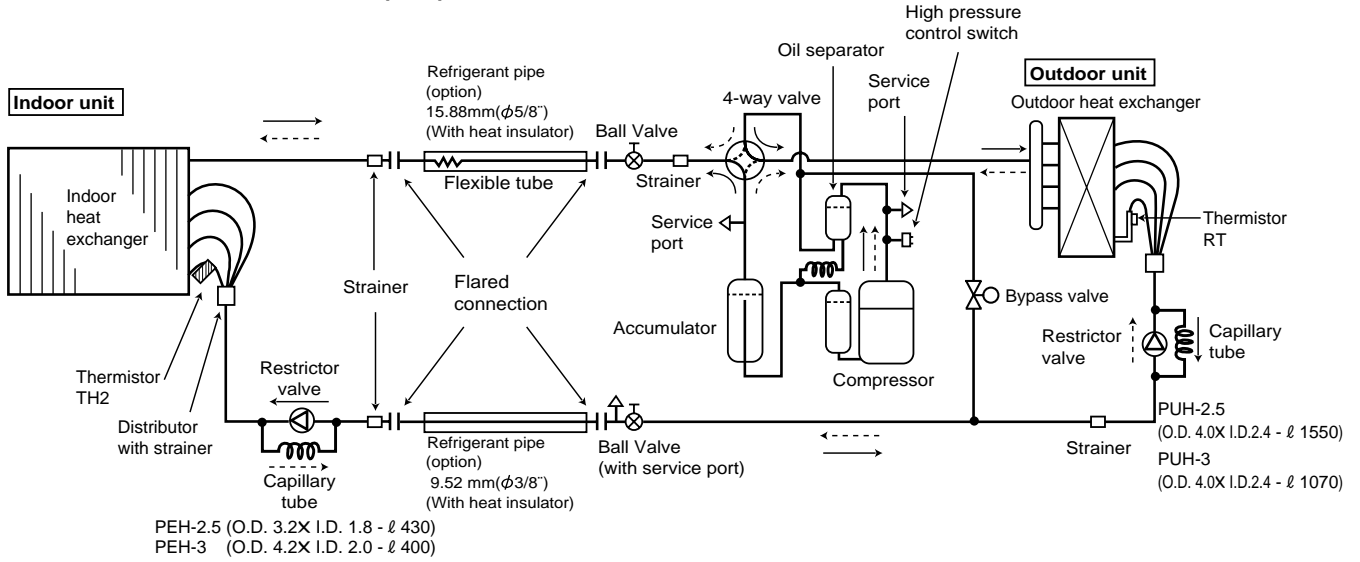
# 7

# REFRIGERANT SYSTEM DIAGRAM

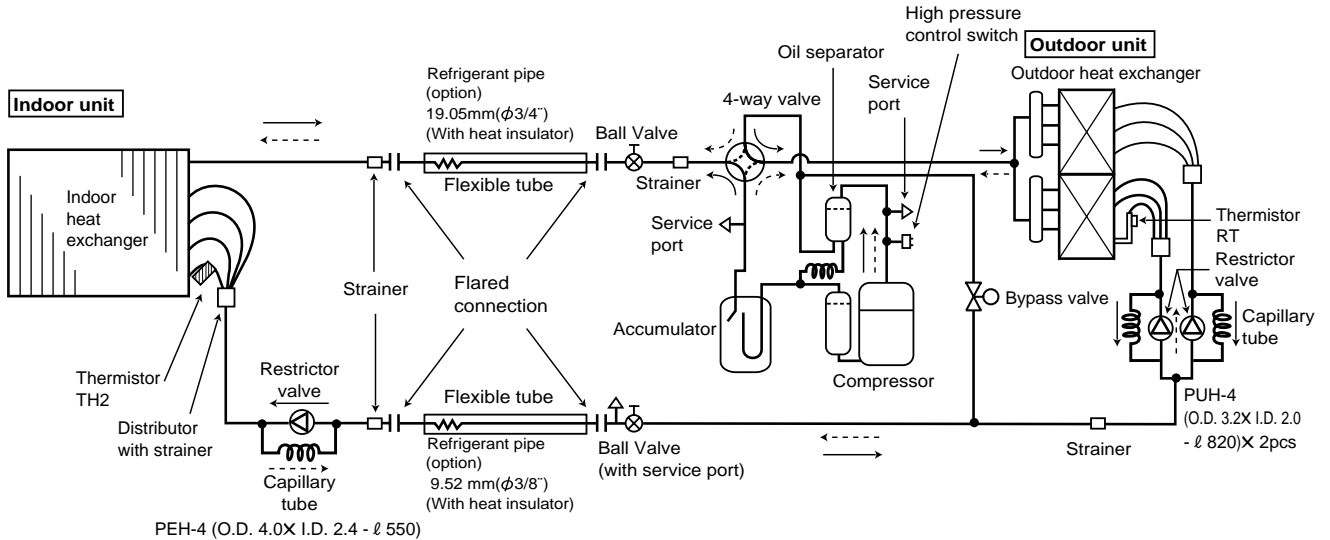
Unit : mm

**PEH-2.5EKHA<sub>2</sub>.TH/PUH-2.5 VKA<sub>2</sub>(.UK)**  
**PEH-3EKHA<sub>2</sub>.TH/PUH-3 VKA<sub>2</sub>(.UK)**  
**PUH-3 YKA<sub>2</sub>(.UK)**

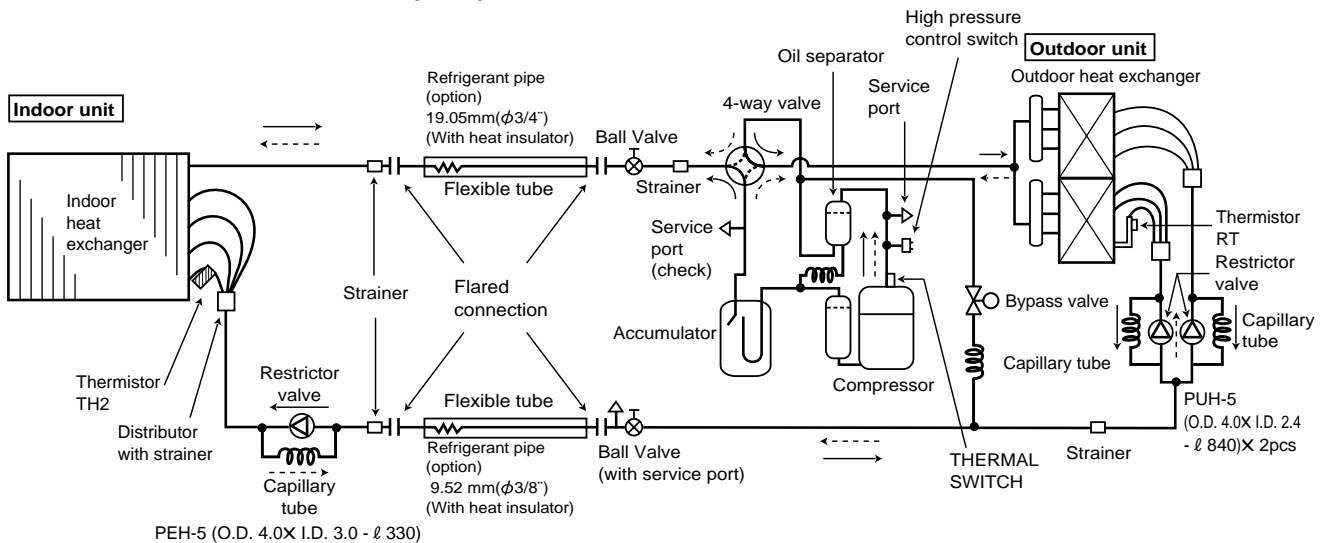
————→ Refrigerant flow in cooling  
 - - - - - Refrigerant flow in heating  
 R.V.coil  
 Heating:ON  
 Cooling:OFF



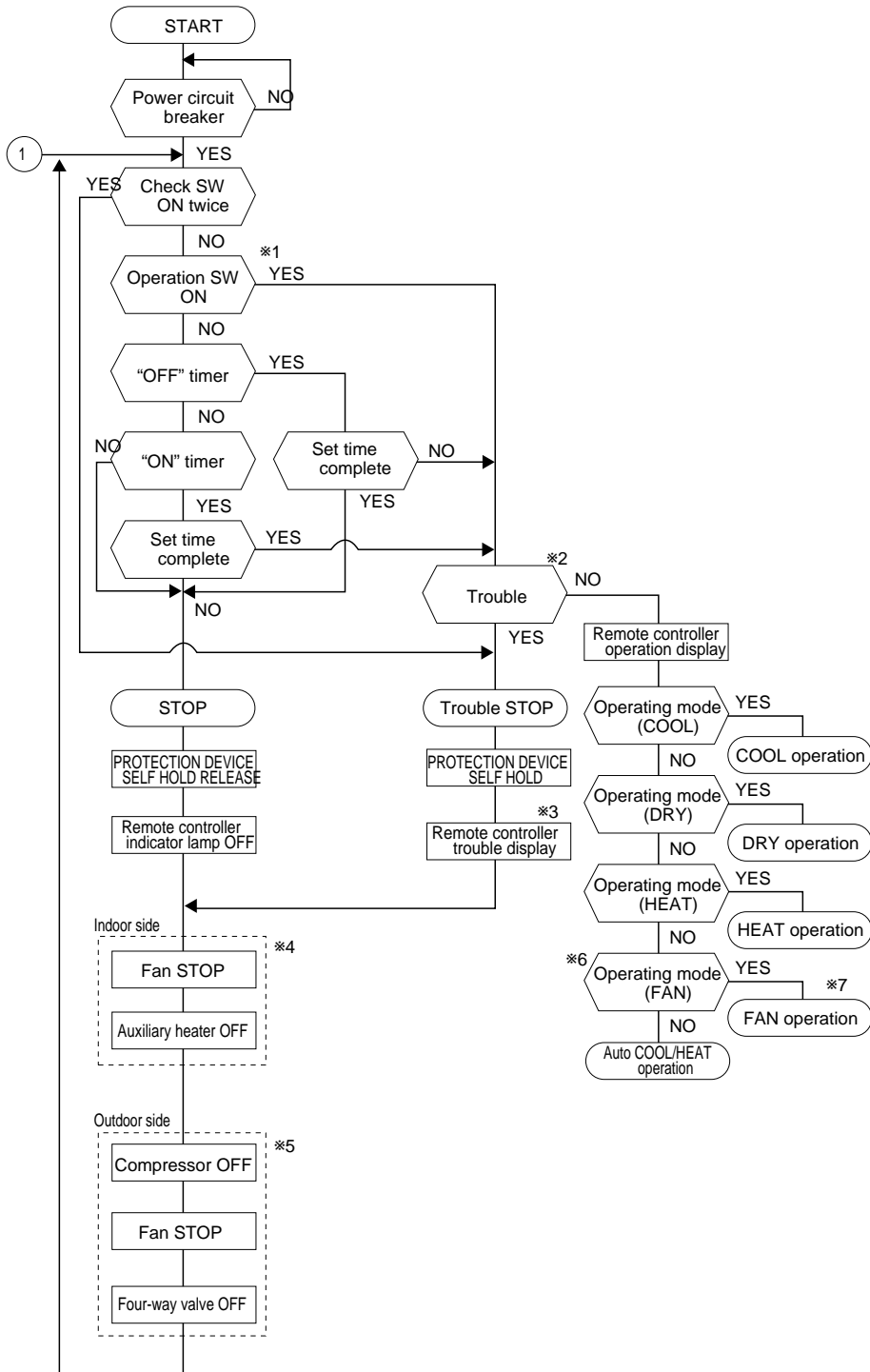
**PEH-4EKHSA<sub>2</sub>.TH/PUH-4YKSA<sub>3</sub>(2.UK)**



**PEH-5EKHSA<sub>2</sub>.TH/PUH-5YKSA<sub>3</sub>(2.UK)**



## 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-Indoor coil thermistor malfunction
- P4-Drain sensor malfunction
- P5-Drain overflow
- 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.

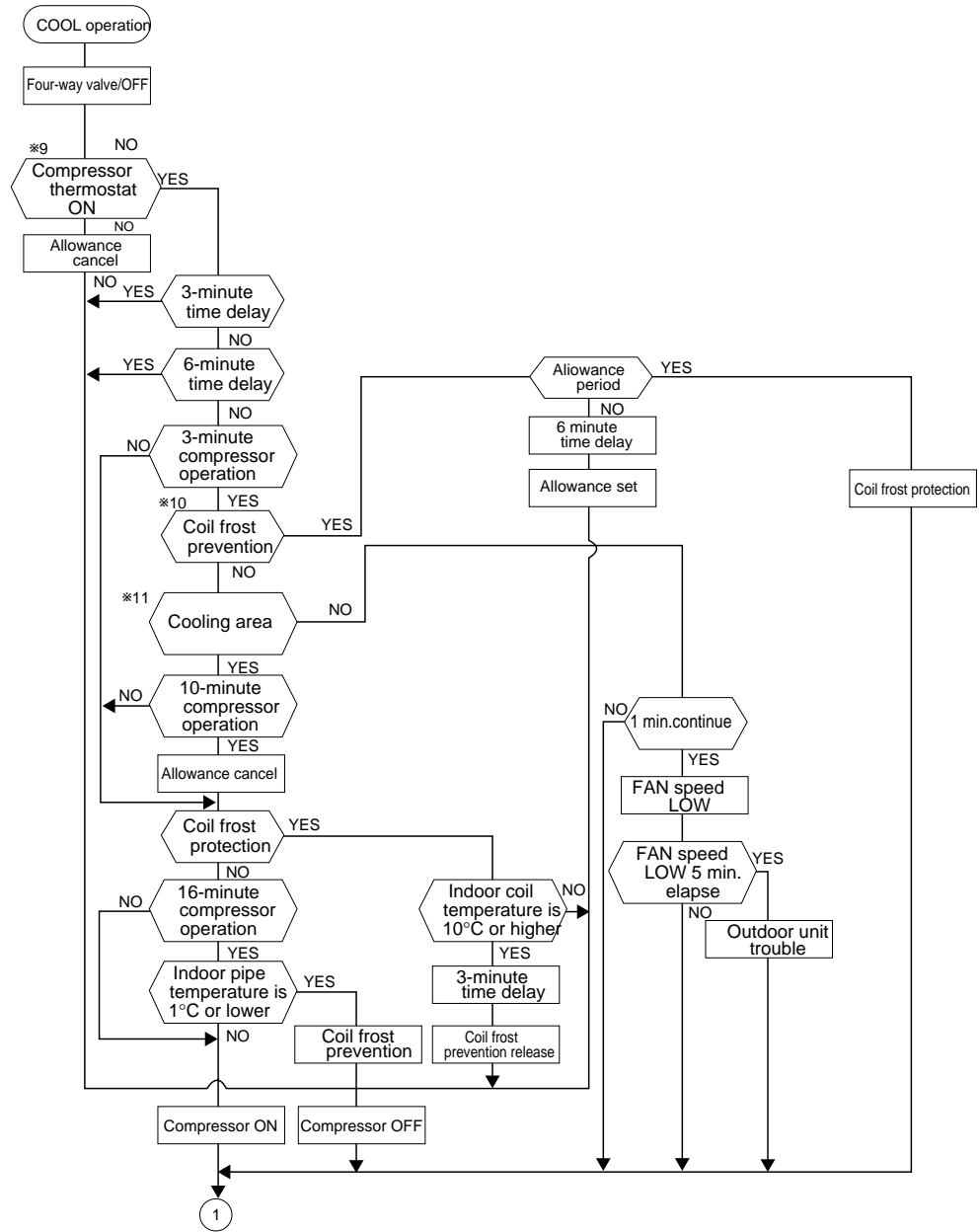
\*4 Fan runs on low speed for 1 minute in order to remove overheat air.

\*5 The 3-minute (6 minutes ... heating mode) time-delay functions after compressor stops.

\*6 FAN or AUTO mode is selected by the indoor dipswitch setting.

\*7 In FAN mode, fan speed depend 3 on the remote controller setting. (Compressor is OFF.)

## COOLING OPERATION

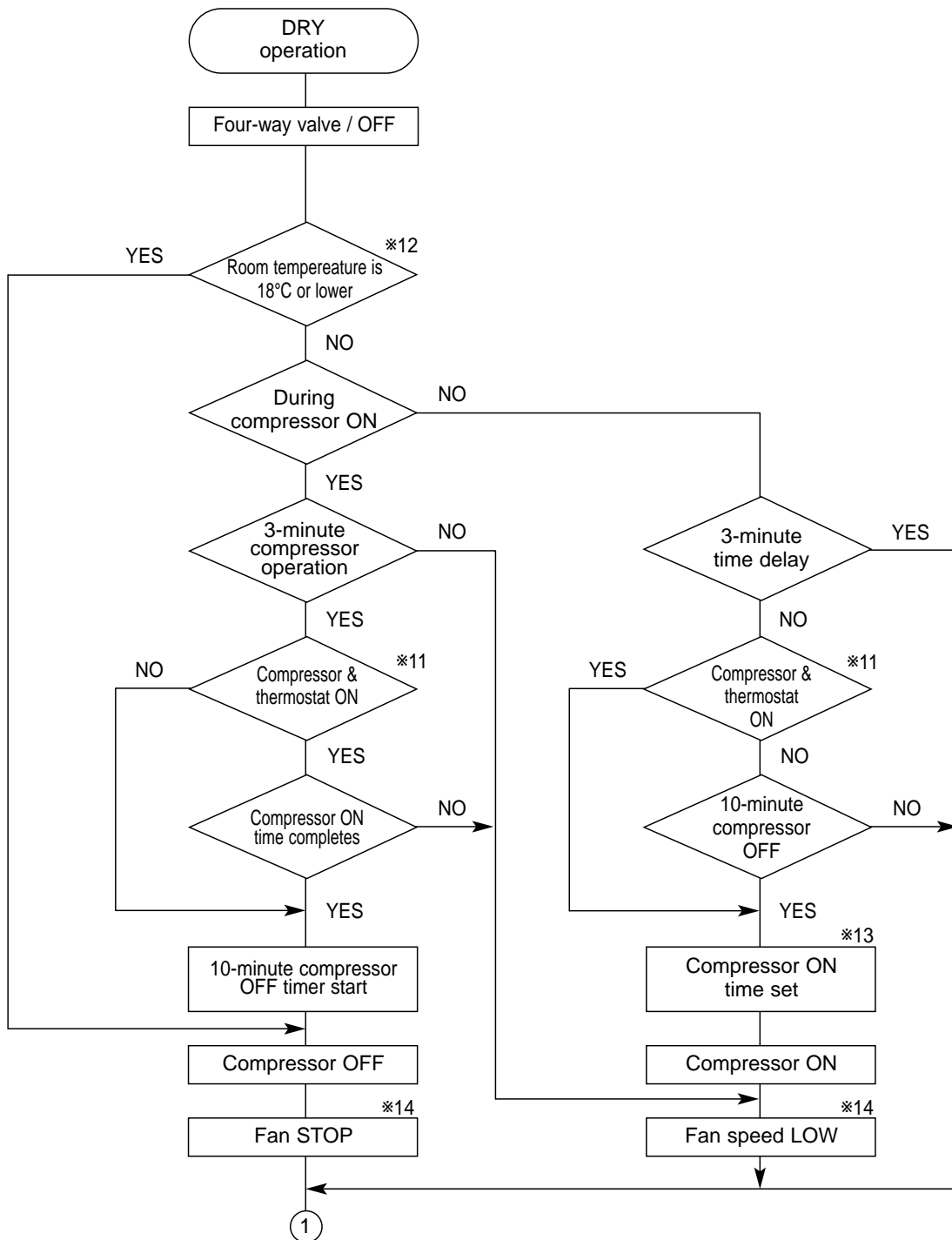


\*8 When operating TEST RUN, the thermostat will be continuously ON.

\*9 After 3 minute compressor operation, if the indoor coil thermistor reads -15°C or below for 3 minutes, the compressor will stop for 6 minutes.

\*10 Cooling area : Indoor coil temperature is more than 5 degrees above the room temperature.  
 Heating area : Indoor coil temperature is more than 5 degrees below the room temperature.  
 FAN area : Indoor coil temperature is within 5 degrees either way of the room temperature.

## DRY OPERATION



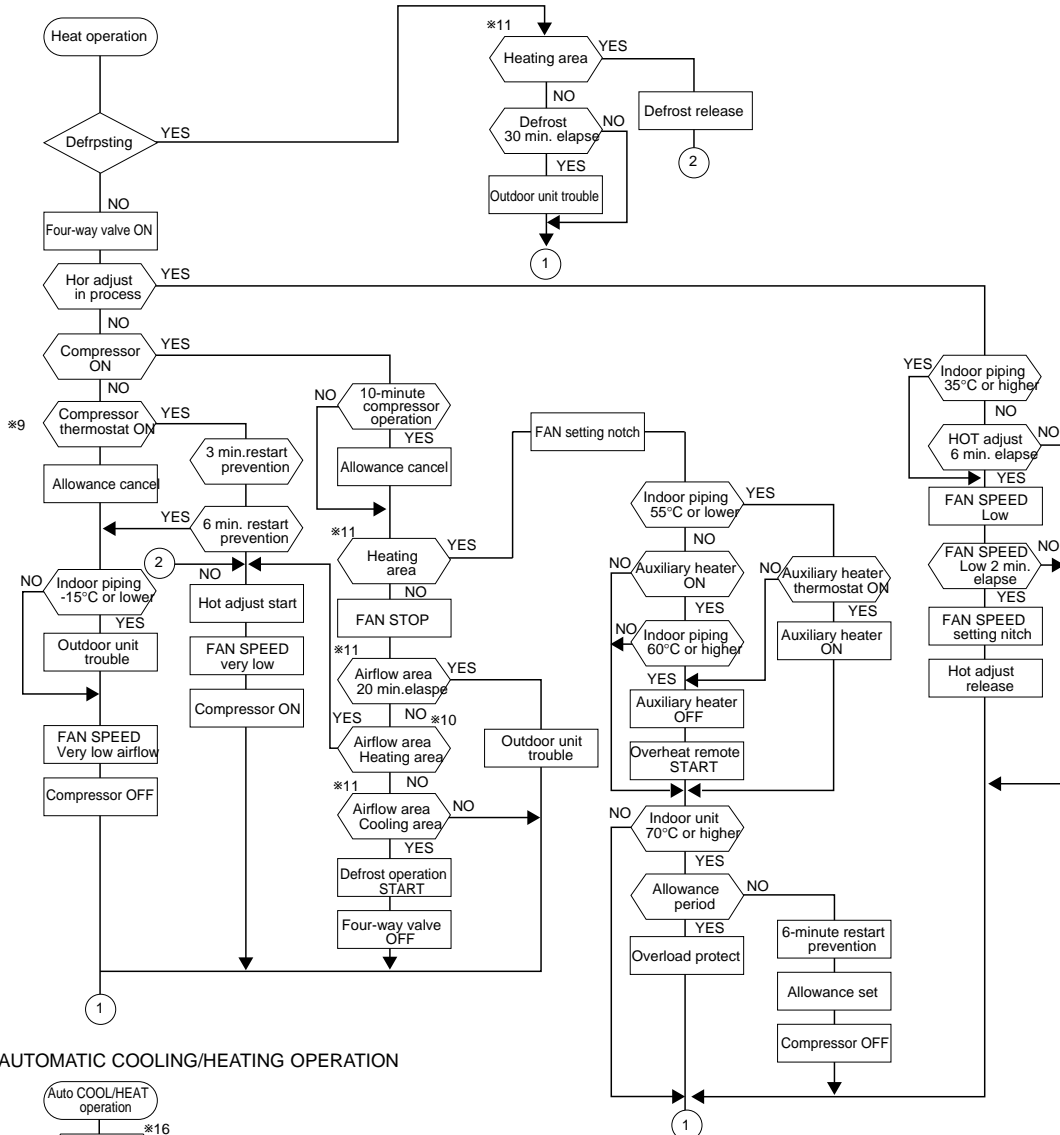
\*11 Refer to page 26~27.

\*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.

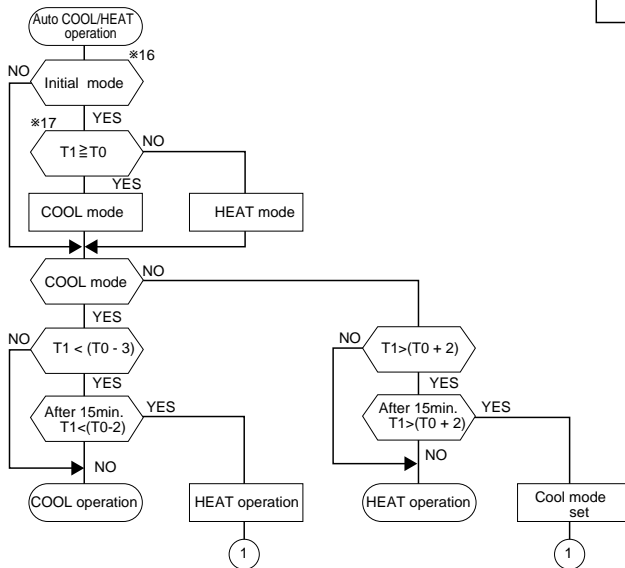
\*13 Compressor ON time is decided by room temperature. Refer to page 26~27.

\*14 In dry operation, compressor ON makes the fan speed LOW and compressor OFF stops the fan.  
It is not possible to set the fan speed with the remote controller

## 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

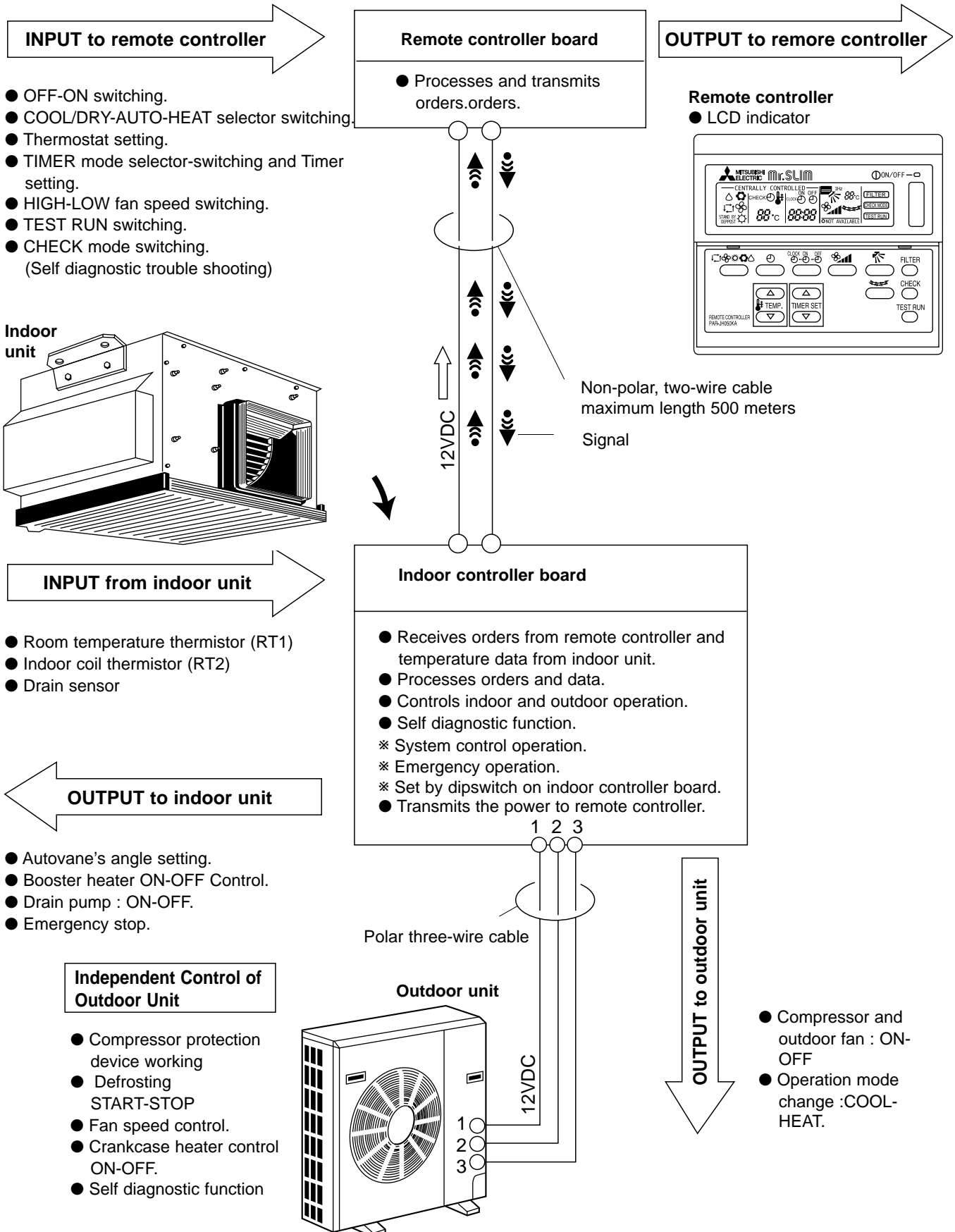
In the case of (i), (ii) and (iii) above, airflow is horizontal regardless the VANE setting.

※16 When AUTO operation is started, COOL or HEAT mode is selected automatically.

※17 T1 : Room temperature.

To : Set temperature

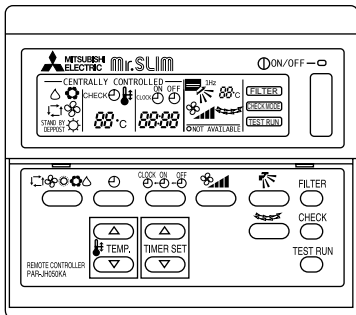
## 1. OUTLINE OF MICROPROCESSOR CONTROL





## 2. INDOOR UNIT CONTROL

### 2-1COOL operation

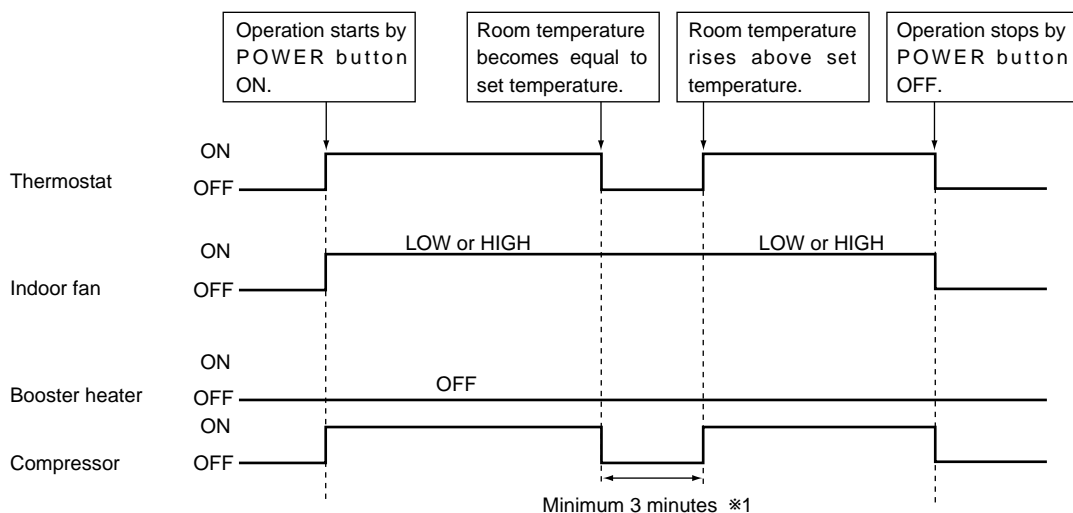


#### <How to operate>

- ① Press POWER ON/OFF button.
- ② Press the button to display “.”
- ③ Press the TEMP button to set the desired temperature.

**NOTE:** Set temperature changes 1°C when the or button is pressed 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.

##### 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 indoor coil thermistor (RT2) reads 1°C or below after the compressor has been continuously operated for at least 16 minutes or more. When the indoor coil temperature rises to 10°C or above, the compressor will start after a 3-minute time delay.

**NOTE :** By turning OFF the dipswitch SW1-5 on indoor controller board, the start temperature of coil frost prevention changes from 1°C to -3°C.

##### ⑤ Coil frost protection

When indoor coil temperature becomes -15°C or below, coil frost protection will proceed as follows.

##### <Start condition>

After the compressor has been continuously operated for 3 minutes or more, and the indoor coil temperature has been -15°C or below for 3 minutes, the coil frost protection will start.

##### <Coil frost protection>

Compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again during the first 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of “P8” on the remote controller.

##### <Termination conditions>

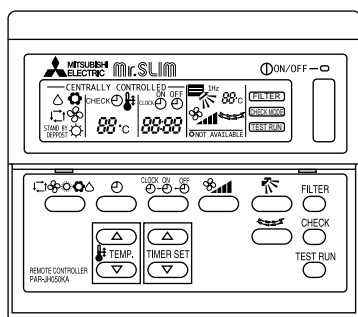
Coil frost protection is released when the start condition is not satisfied again during the allowance, or when the COOL mode stops or changes to another mode.

#### (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.

## 2-2 DRY operation

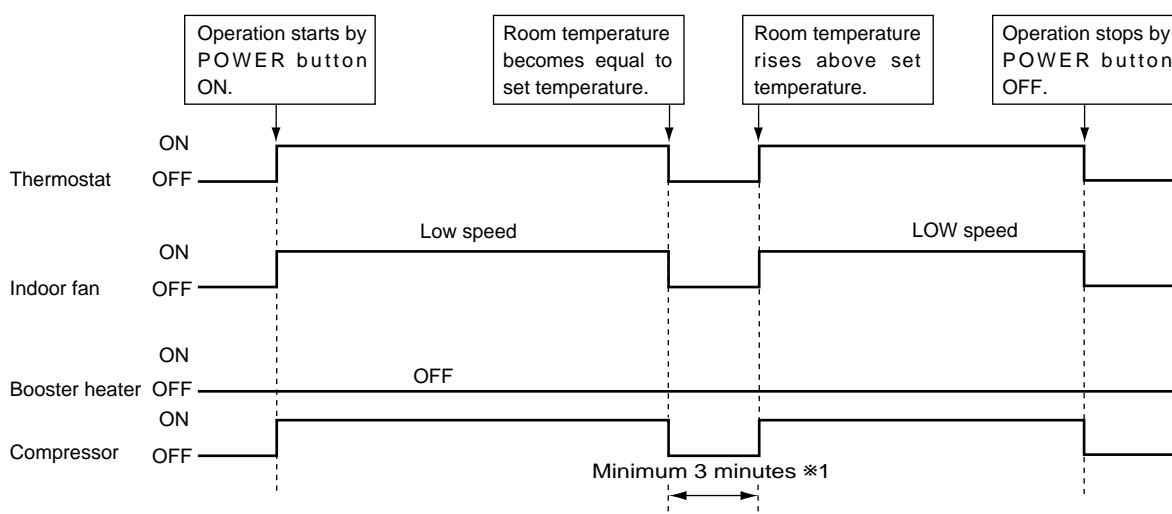


### <How to operate>

- ① Press POWER ON/OFF button.
- ② Press the 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 pressed one time.  
Dry 19 to 30°C

### <DRY operation time chart>



\*1 Even if the room temperature rises 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 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.

#### ③ The 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 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.

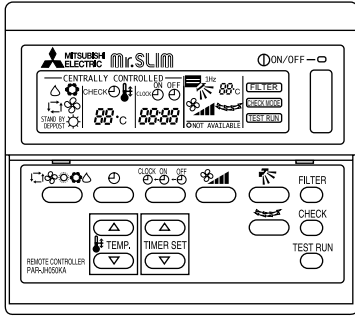
## **(2) Indoor fan control**

The indoor fan runs on LOW speed during compressor operation. The fan speed can not be changed with the remote controller. Also, the indoor fan does not run during compressor OFF.

## **(3) 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 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 pressed one time.  
Heating 17°C to 28°C

### <Display in HEAT operation>

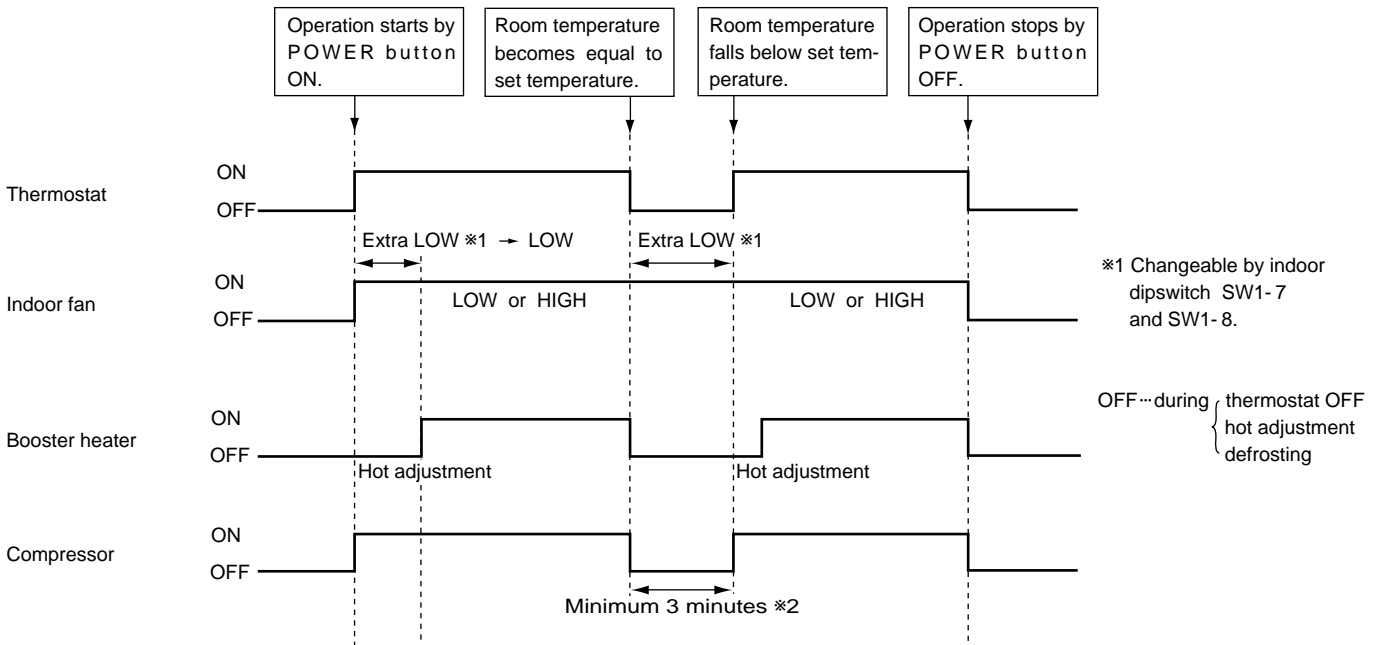
#### [DEFROST]

The [DEFROST] symbol is only displayed during the defrost operation.

#### [STANDBY]

The [STANDBY] symbol is only displayed from the time the heating operation starts until the heated air begins to blow.

### <HEAT operation time chart>



\*2 Even if the room temperature falls below 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 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.

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

### ④ Overheat protection

#### <Start condition>

When the indoor coil 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 SW1-7 and SW1-8.

If the indoor coil temperature becomes more than 5 degrees below the room temperature during the thermostat OFF, the indoor fan will stop. After, when the indoor coil 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 indoor coil 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 indoor coil 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) Booster heater control

When the room temperature is 3 degrees below the set temperature, the booster heater will turn ON.

When the room temperature is equal to the set temperature, booster heater will turn OFF.

During the hot adjustment, the booster heater will not work.

#### <Overheat prevention>

When the indoor coil thermistor rises to 60°C or above, the booster heater cannot work.

When the indoor coil thermistor falls to 55°C or below, the booster heater can work.

## (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.

### ① During compressor ON after hot adjustment

① If the difference between the indoor coil temperature and room temperature is in the RANGE B, 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, the hot adjustment starts,

\*1(See the next page.)

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

c) If the temperature difference enters RANGE C, defrosting starts.

Within 20 minutes after entering RANGE C,

● If the temperature difference does not return to RANGE B, the outdoor unit is deemed abnormal.

● If the temperature difference returns to RANGE B, the next 20 minutes is an allowance period. If the difference enters 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.

### ② During compressor ON in hot adjustment

After 20 minutes of defrosting in hot adjustment, if the temperature difference is still in RANGE C, the outdoor unit is determined to be abnormal.

### ③ During compressor OFF

After 20 minutes of thermostat OFF, if the indoor coil thermistor reads -25°C or below, the outdoor unit is determined to be abnormal.



**(5) Indoor coil thermistor abnormality detection**

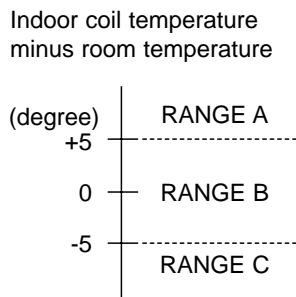
An abnormality can be detected during compressor ON, except for the following.

- For the first 20 minutes after the temperature difference between the indoor coil temperature and room temperature enters the RANGE C.
- When the temperature difference enters the RANGE C until it moves to the RANGE B.

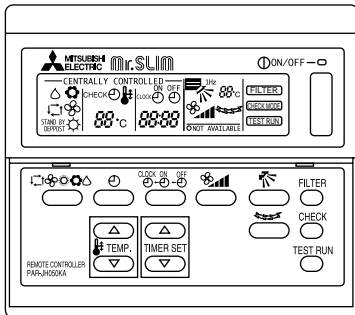
**(6) Defrosting operation**

After the outdoor unit starts the defrosting operation, when the temperature difference between the indoor coil 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 : Indoor coil temperature is more than 5 degrees above room temperature.
- RANGE B : Indoor coil temperature is within 5 degrees either way of room temperature.
- RANGE C : Indoor coil temperature is more than 5 degrees 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 button to display "MODE".
- ③ Press the TEMP button to set the desired temperature.

**NOTE:** The set temperature changes 1°C when the or button is pressed one time.  
Automatic 19 to 28°C

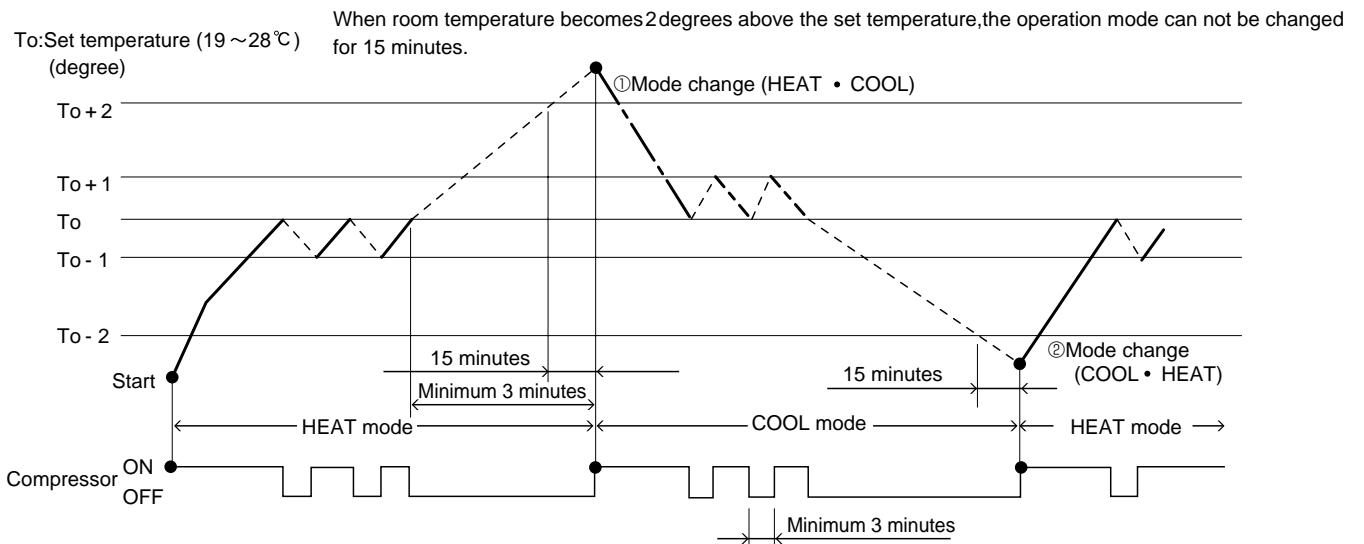
● "AUTOMATIC" works to change by itself the operation mode either to cooling or heating according to the room temperature.

### (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.

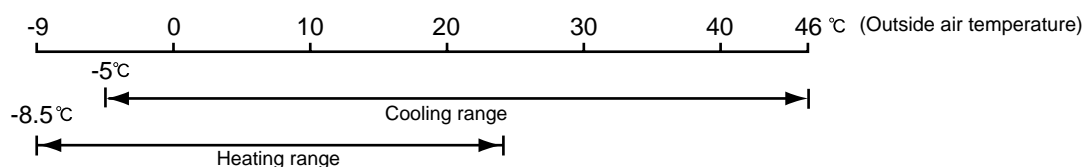
### (2) Mode change

- 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.

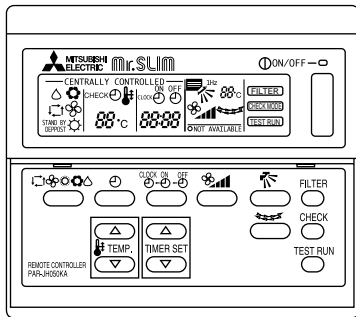


### (3) Temperature range

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



## 2-6 TIMER operation



### <Timer function>

AUTO STOP .....The air conditioner stops after the set time lapses.

AUTO START .....The air conditioner starts after the set time lapses.

AUTO OFF .....Timer is not active.

### <How to operate>

1. Press POWER ON/OFF button.

2. Press "⌚" button to select AUTO STOP or AUTO START.

3. Press "⌚-⌚-⌚" button to set desired time.

Time setting is in 1 hour units for up to 24 hours.

Each time HOURS button is pressed, set time increases by 1 hour.

When HOURS button is pressed and held, the set time increases by 1 hour every 0.5 seconds.

4. To cancel the timer operation, press POWER ON/OFF button.

### <Timer setting example>



This setting will stop the air conditioner in 8 hours.

With the lapse of time, time display changes in 1 hour units, showing remaining time.

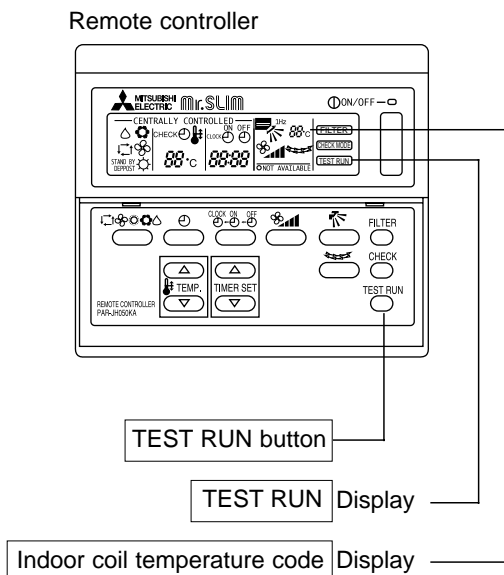
## 2-7 Test run

### <Before test run>

- After installing, wiring, and piping the indoor and outdoor units, check for refrigerant leakage, looseness in power supply or control wiring, and mistaken polarity.
- Use a 500-volt megger to check the resistance between the power supply terminal block and ground to make sure that it is at least 1.0M .

### Attention:

**Do not use the air conditioner if resistance is less than 1.0M .**



1	Turn on main switch.12 hours before proceeding to step 2 to allow for crankcase heater operation.
2	Push the TEST RUN button twice and indication of TEST RUN will be shown on the liquid crystal display.
3	Press the  button to display , COOL/DRY(or HEAT)to confirm that cool (or warm) air is blown out. (At heating operation, there may be a short delay before warm air begins to blow out.)
4	Push  button LOW/HIGH to check that the fan speed changes properly.
5	Check the operation of outdoor unit fans.This unit controls the rotation speed and performance capacity of fans.In some cases,it may rotate at low speed as the condition of outside air requires and the speed will be kept unless the performance has become deficient. Therefore,when the condition of outside air demands,there may be such cases as the fan stops or rotates reversely. Please note that these symptoms are not malfunction.
6	After the check is finished leave the test run mode, push the power ON/OFF button. It can also be stopped by pushing the timer MODE button.

\*The above figure shows the state of TEST RUN at cooling operation.

- When a TEST RUN is started,the timer shall be set to 2 hours. The unit will automatically turn off after 2 hours.



(1) Indoor coil temperature code

During the test run, the indoor coil 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
Indoor coil temperature	-40~1°C	-10°C	~15°C	~20°C	~25°C	~30°C	~35°C	~40°C
Code	9	10	11	12	13	14	15	
Indoor coil 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**

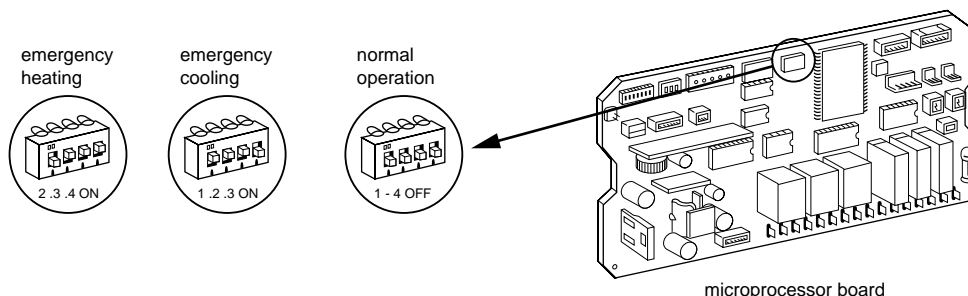
When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is available by setting dipswitch SW3 on indoor controller board.

**<Before emergency operation>**

1. Make sure compressor and indoor fan operate normally.
2. Locate defect point with self-diagnostic function. When the self-diagnostic function indicates “protective function is working”, release the protective function before starting emergency operation.

**<How to operate>**

1. For emergency cooling, set dipswitch SW3-1,2,3 to ON.  
For emergency heating, set dipswitch SW3-2,3,4 to ON.



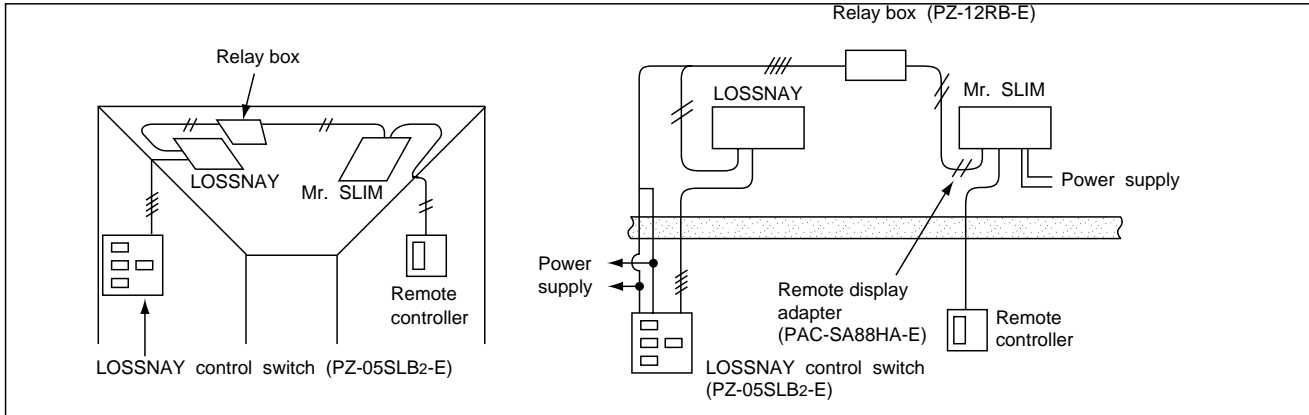
2. Turn ON the outdoor unit breaker and then turn ON the indoor unit breaker.  
Now, emergency operation starts.
3. During emergency operation the indoor fan operates at high speed, but the swing louver does not work.
4. To stop emergency operation turn OFF the indoor unit breaker.

NOTE: The remote controller POWER ON/OFF button is not available to start/stop emergency operation.

## 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:

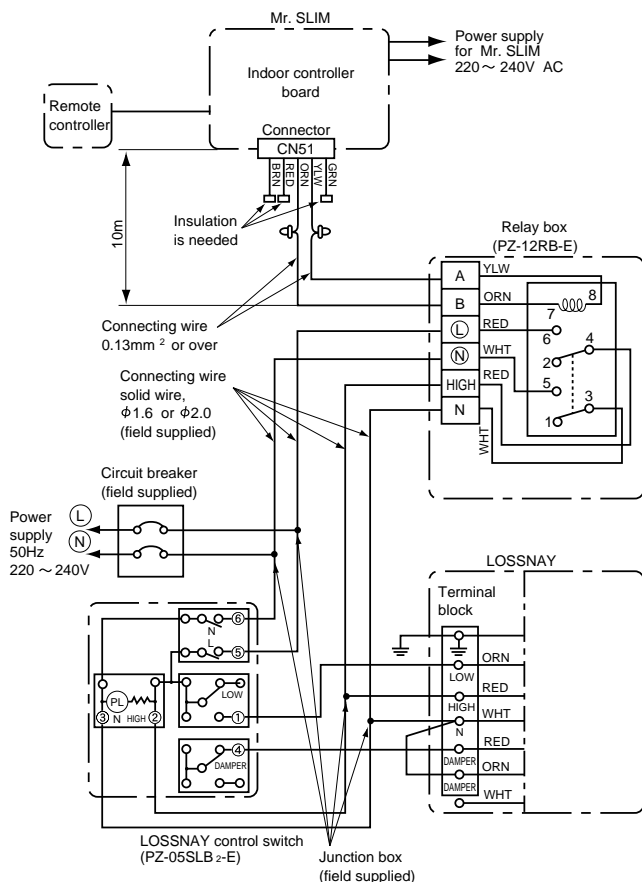
- Relay box (PZ-12RB-E)···Contact capacity 10A
- Remote display adapter (PAC-SA88HA-E)···An optional part for Mr. SLIM
- LOSSNAY control switch (PZ-05SLB2-E)···For LOSSNAY individual operation

### (4) Operation

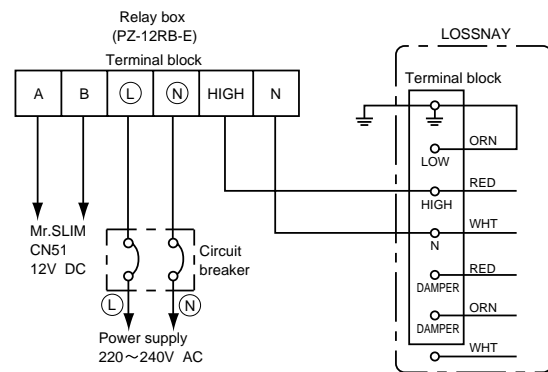
- ① LOSSNAY turns ON/OFF according to Mr. SLIM ON/OFF
- ② While Mr. SLIM is OFF, LOSSNAY individual operation is available by using the LOSSNAY control switch. When Mr. SLIM turns OFF with the LOSSNAY control switch at ON, LOSSNAY will continue to operate.

### (5) Wiring.

#### ① When the LOSSNAY control switch is used



#### ② When the LOSSNAY control switch is not used:



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

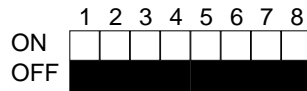


## 2-10 Dip switch functions

Each figure shows the initial factory setting.

### 1 On remote controller board

(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.

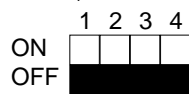
ON : The remote controller is set as a sub controller.

SW17-8) Switch for system back-up (This switch is unavailable for PEH-EKHA. Keep this switch at OFF.)

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 yet used.

### 2 On indoor controller board

(1) SW1 (Mode selector)





SW1-1) Switch that changes between FAN mode and AUTO mode

OFF : Fan mode for models without heat pump

ON : AUTO mode for models with heat pump

SW1-2) Switch for indication on LCD of remote controller.

OFF : The sign to indicate Right/Left is displayed at  button.

ON : The sign to indicate Rotate is displayed at  button.

SW1-3) Switch for auto vanes

OFF : Unit without auto vanes

ON : Unit with auto vanes

SW1-4) Switch for drain pump

OFF : The drain pump works in only COOL operation.

ON : The drain pump works in both COOL and HEAT operation.

SW1-5) Switch to change the temperature to start coil frost prevention

OFF : -3° (For previous special models)

ON : 1° (For all current models)

SW1-6) 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

SW1-7) Switch for fan speed during thermostat OFF in HEAT operation

OFF : EXTRA LOW

ON : LOW

SW1-8) Switch for fan speed during thermostat OFF in HEAT operation

OFF : EXTRA LOW or LOW (set with SW1-7)

ON : LOW or HIGH (set with remote controller)

SW1-9) 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.

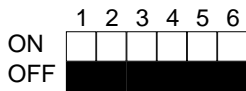
SW1-10) Switch for auto restart function

OFF : This function does not work

ON : This function works.



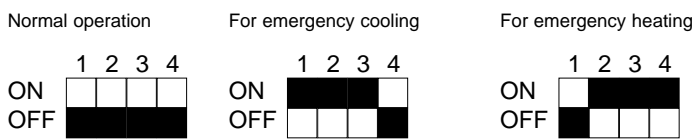
(2) SW2 (Address selector)



Used in setting the unit-address for group control.

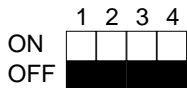
	OFF	ON
SW2-1	0	2 <sup>0</sup> (1)
SW2-2	0	2 <sup>1</sup> (2)
SW2-3	0	2 <sup>2</sup> (4)
SW2-4	0	2 <sup>3</sup> (8)
SW2-5	0	2 <sup>4</sup> (16)
SW2-6	0	2 <sup>5</sup> (32)

(3) SW3 (Emergency operation switch)



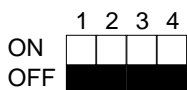
- SW3-1) Drain pump
- SW3-2) Fan(extra high)
- SW3-3) Compressor
- SW3-4) 4-way

(4) SW5 (Model selector)



- SW5-1) OFF :For models without Auto swing function.  
ON :For models with Auto swing function.
- SW5-2) OFF :For models with heat pump  
ON :For models without heat pump
- SW5-3) OFF :Auto vane angle 35°→45°→55°→65°  
ON :Auto vane angle 20°→35°→45°→65°
- SW5-4) This switch is unavailable for PEH-EKHA.Keep this switch at OFF.

(5) SW6 (Model 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

### 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.

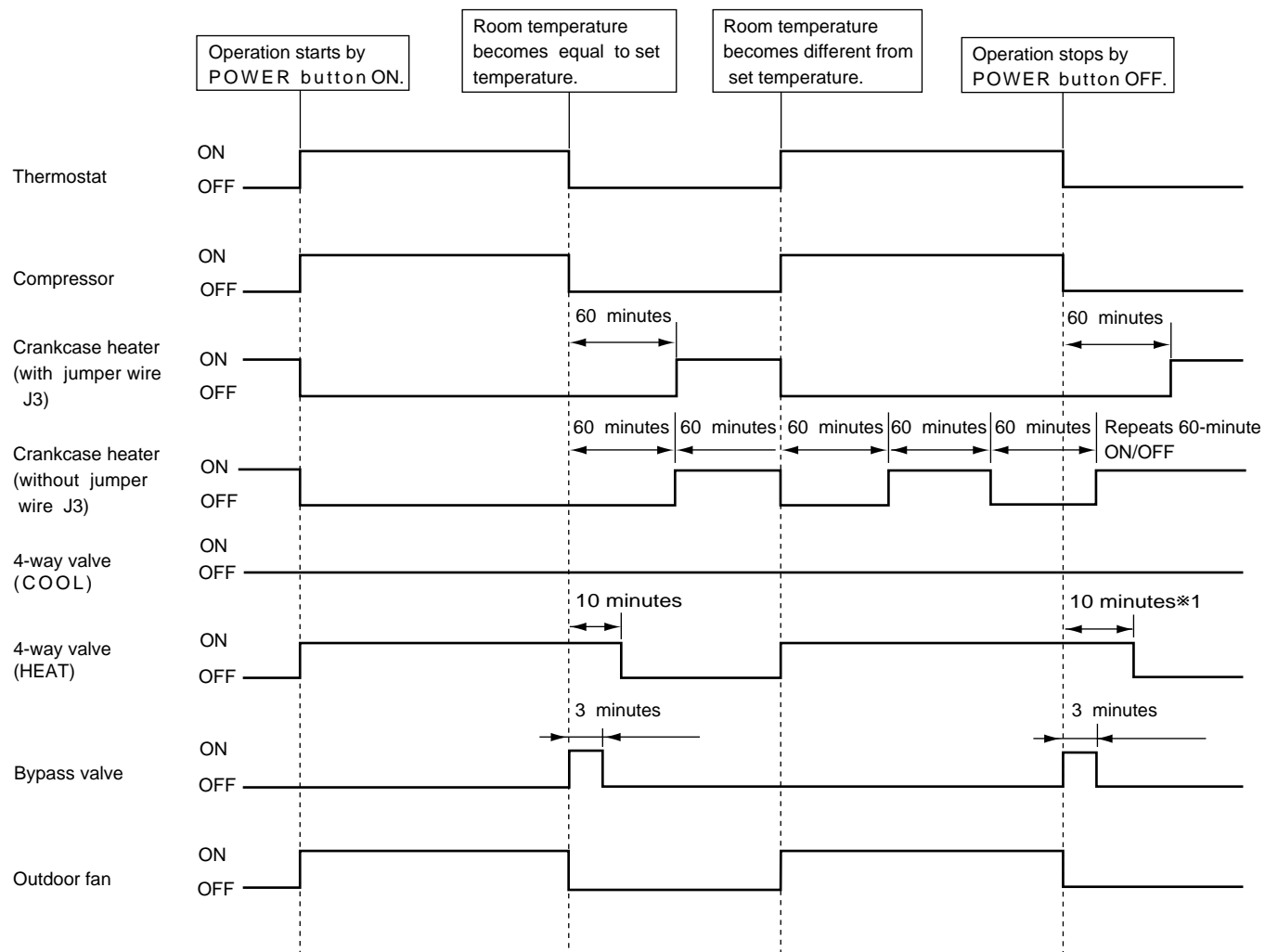
#### 3-2 Outdoor unit control

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

#### 3-3 Protective functions

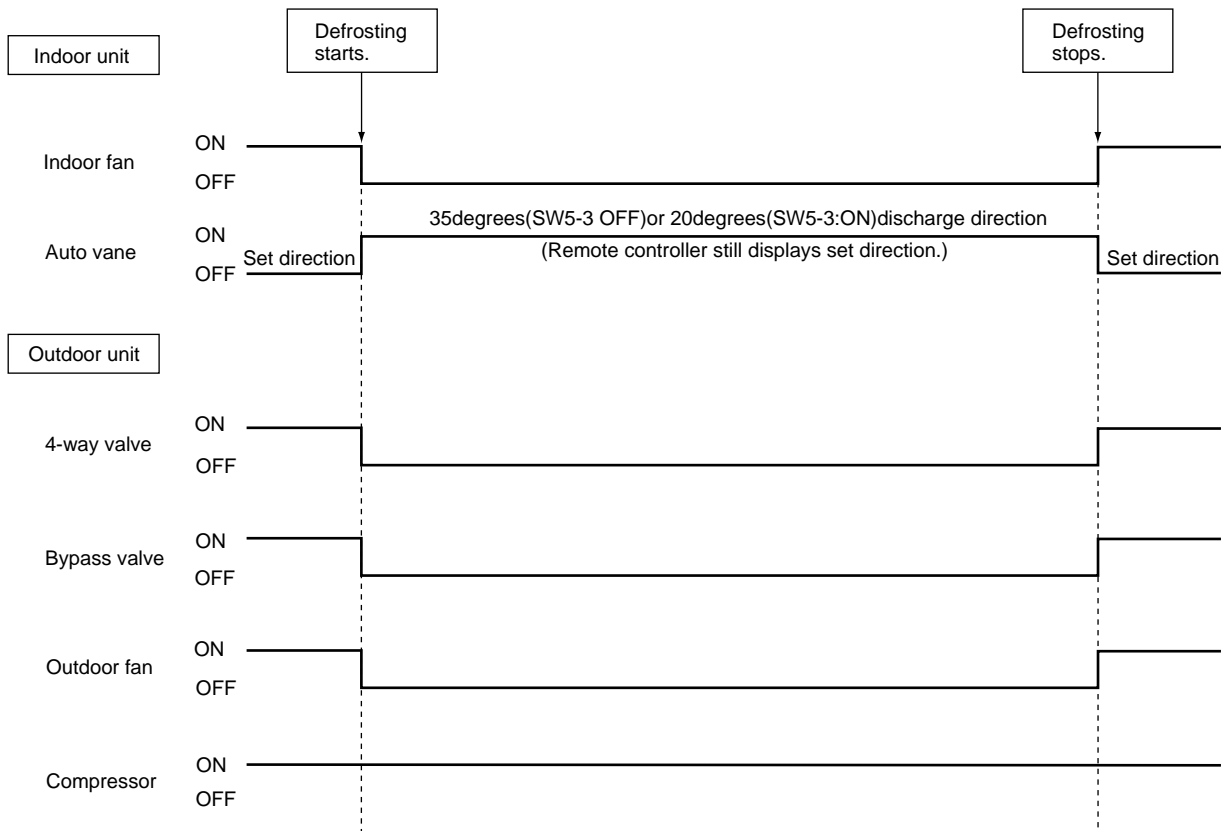
- ① If an reversed-phase, an open phase, or an indoor controller abnormality is detected, the outdoor unit will stop operation and the check mode will start. (For the check mode details, see page 59.)
- ② If a protective function works, the compressor will stop running. Three minutes later, the compressor 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.
- More than seven minutes have passed since the compressor start-up.
  - The outdoor coil thermistor reads  $-5^{\circ}\text{C}$  or below.
  - The outdoor fan motor output step is 100%
  - 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.

- ~ (c) The same as above (a) ~ (c) in item A
  - 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  $-5^{\circ}\text{C}$  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.

※ PUH-6YKSA's bypass valve cannot open or close during cooling mode, therefore, the paragraph ① ~ ③ cannot be applied to the PUH-6YKSA.

<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.

### 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 47.

#### (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    | : x minutes → x seconds             |
| ⑦ Crankcase heater operation                     | : 1 hour → 6 seconds                |



**1.TROUBLES IN TEST RUN**

Symptom	Cause	Check points																				
The display "CENTRALLY CONTROLLED" on remote controller dose not disappear.	1) Wrong address setting of remote controller/indoor controller board. 2) Timer adapter is connected to the remote controller. 3) Singnal transmission error between indoor unit and remote controller.	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.																				
When remote controller POWER button is turned ON, the check code "EO"appears.	1) Signal transmission error between indoor unit and remote controller	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 border="1" data-bbox="1018 891 1497 1126"> <thead> <tr> <th></th> <th>Remote controller</th> <th>Sub remote controller</th> <th>Malfunction</th> </tr> </thead> <tbody> <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> </tbody> </table>		Remote controller	Sub remote controller	Malfunction	1	Operating Display	EO Display	Malfunction of indoor Unit	2	Operating Display	Operating Display	Malfunction of Remote controller	3	NO Display	EO Display	Malfunction of indoor Unit and Remote Controller	4	NO Display	Operating Display	Malfunction of Remote controller
	Remote controller	Sub remote controller	Malfunction																			
1	Operating Display	EO Display	Malfunction of indoor Unit																			
2	Operating Display	Operating Display	Malfunction of Remote controller																			
3	NO Display	EO Display	Malfunction of indoor Unit and Remote Controller																			
4	NO Display	Operating Display	Malfunction of Remote controller																			
When remote controller POWER button is turned ON, operating display appears, but disappears soon.	1) Short circuit of indoor/outdoor connecting wire 2) Short circuit of transmission wire. 3) Short circuit of drain sensor heater circuit. 4) Wrong operation of remote controller due to noise wave emitted by other appliances.	1), 2) Check the wire 3) Measure the resistance of the drain sensor connector CN50 ① ~ ③. Normal resistance should be 82 . 4) Turn the circuit breaker OFF, and then turn ON. If the remote controller remains abnormal, despite the above measures, replace the indoor controller board.																				
Despite turning POWER button ON, the remote controller display does not appear.	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 CN4T. 7) Blown fuse. 8) Circuit breaker OFF.	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.																				

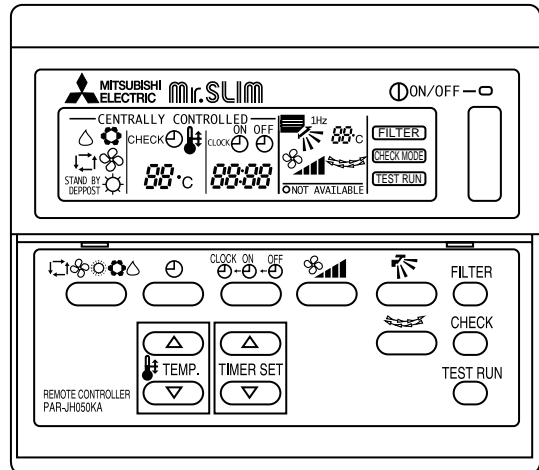
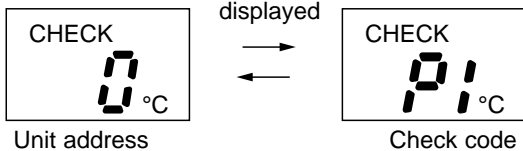
## 2. SELF DIAGNOSTIC FUNCTION WITH REMOTE CONTROLLER

### 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



- (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  $\odot$  ON/OFF button. In remote ON/OFF control, press the remote  $\odot$  ON/OFF switch. In centralized control, turn OFF the  $\odot$  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  $\square$  CHECK button on the remote controller twice starts the self diagnostic function.
- (2) During the self diagnostic function, "CHECK" 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.)

#### 2-3 For group control using one remote controller

- (1) Press the  $\triangle$  TEMP. or  $\nabla$  TEMP. button on the remote controller to advance or go back to the unit address. Each time  $\triangle$  TEMP. button is pressed, the unit address advances by one. Each time  $\nabla$  TEMP. button is pressed, the unit address goes back by one.  
The check code and the unit address, appear alternately.
- (2) 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.
- (3) 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 C ...15k    30 C .....4.3k 10 C .....9.6k    40 C .....3.0k 20 C .....6.3k If the resistance is normal, replace the indoor controller board.
P2	Abnormality of indoor coil 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	1) Check the connector. 2) Measure the resistance of the thermistor ④ ~ ⑤. As for the normal resistance, refer to the case of P1. If the resistance is normal, replace the indoor controller board.
P5	Malfunction of drain pump	1) Malfunction of drain pump 2) Damaged drain sensor	1) Check the drain pump. 2) ● Check the drain sensor. ● Check the drain sensor heater. Normal resistance should be 82 . If the resistance is normal, replace the indoor controller board.
P6	Coil frost 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.

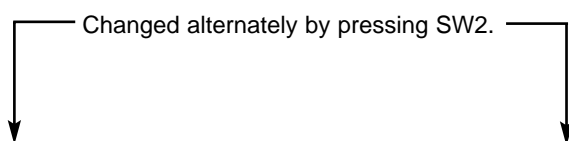
**NOTE** : SW1 is usually available independant of SW3 setting. As an exception, when the check code shows a reversed phase or an open phase during the power-on-reset state, SW1 is not available.

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.

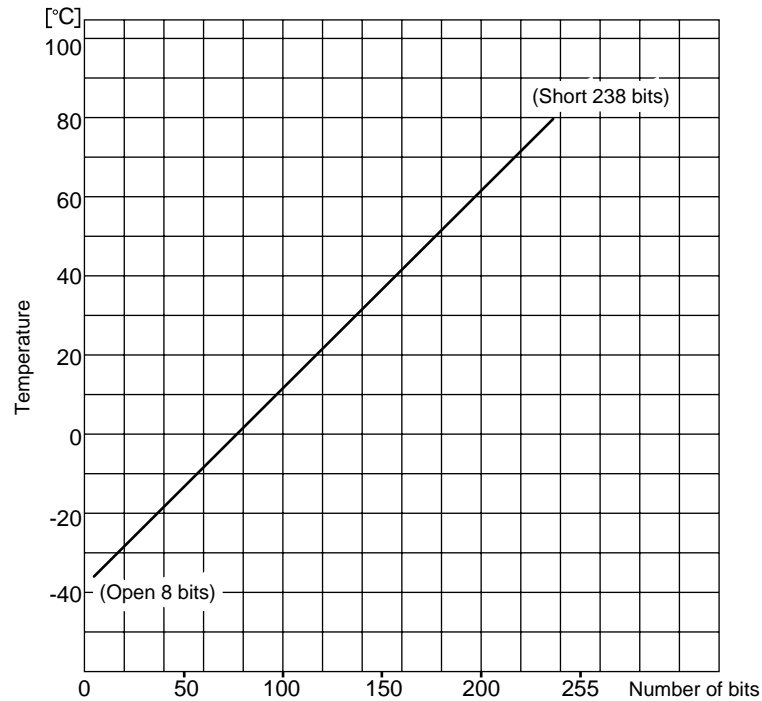


	Check code	Output state	Outdoor coil temperature (bit)	Fan Output step (bit)	Total time of compressor operation(Hr)
SW3-1	OFF	OFF	OFF	ON	ON
SW3-2	OFF	OFF	ON	OFF	ON
LED	Blinking	Lighting			
LD1	Reversed phase	Compressor ON command from indoor controller	1	1	256
LD2	Open phase	Heating operation command 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 abnormal	Crankcase heater ON	128	128	32768

\*Regarding PUH-6YKSA, eventhough the LD7 is blinking during the cooler operation, the bypass valve cannot open

### 3-1 Outdoor coil temperature

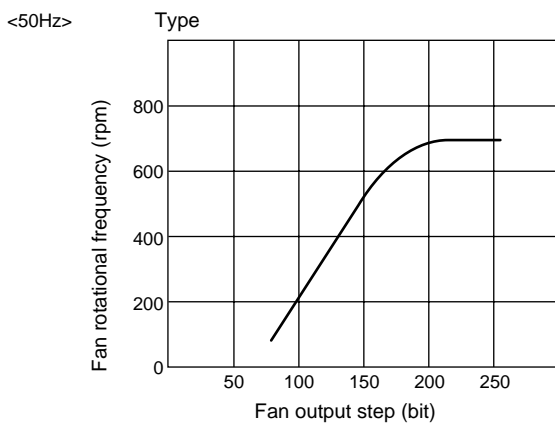
To obtain data on the outdoor coil temperature, add the number of bits of lighting LEDs, and see the graph below to find the temperature.



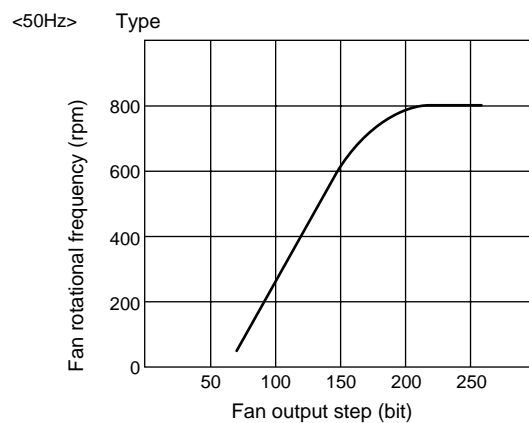
### 3-2 Fan output step

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-4K type



#### ②PUH-3/5K type



### 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 during 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 A <sub>1</sub> , A <sub>2</sub> , and A <sub>3</sub> are connected improperly.	Check the power supply connection.
LD2	Open phase	<ul style="list-style-type: none"> <li>● Phase A<sub>2</sub> is open.</li> <li>● Contact of protector, such as thermal switch, opened when power was turned on.</li> </ul>	<ul style="list-style-type: none"> <li>● Check the power supply.</li> <li>● Check each protector.</li> </ul>
LD3	Outdoor coil thermistor is abnormal. (Open circuit or short circuit)	<ul style="list-style-type: none"> <li>● Outdoor coil thermistor is broken.</li> <li>● Thermistor was connected incorrectly.</li> </ul>	<ul style="list-style-type: none"> <li>● Measure the resistance of the thermistor.</li> <li>● Check the thermistor. If normal, replace the outdoor controller board.</li> </ul>
LD4	High pressure switch (63H2) function	<ul style="list-style-type: none"> <li>● 62H2 was badly connected.</li> <li>● 63H2 was working.</li> </ul>	<ul style="list-style-type: none"> <li>● Check 63H2 and the outdoor fan motor.</li> <li>● Check if refrigerant supply is low.</li> <li>● Check if air cycle is short-cycled.</li> </ul>
LD5	Thermal relay (51C) function	<ul style="list-style-type: none"> <li>● 51C was connected incorrectly.</li> <li>● 51C was working.</li> </ul>	<ul style="list-style-type: none"> <li>● Check 51C, the compressor, and power supply.</li> </ul>
LD6	Thermal switch (26C) function.	<ul style="list-style-type: none"> <li>● 26C was connected incorrectly.</li> <li>● 26C is working.</li> </ul>	<ul style="list-style-type: none"> <li>● Check 26C.</li> <li>● Check if refrigerant supply is low.</li> <li>● Check if the capillary tube is clogged.</li> </ul>
LD7	Over heat protection	<ul style="list-style-type: none"> <li>● The thermistor is broken.</li> <li>● Coil temperature is over 67°C.</li> </ul>	<ul style="list-style-type: none"> <li>● Measure the resistance of the thermistor.</li> <li>● Check the outdoor fan motor.</li> <li>● Check if air cycle is short-cycled.</li> </ul>
LD8	Input circuit of outdoor controller board is abnormal.	<ul style="list-style-type: none"> <li>● Pulse input is abnormal.</li> </ul>	<ul style="list-style-type: none"> <li>● Replace the outdoor controller board.</li> </ul>

#### 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.

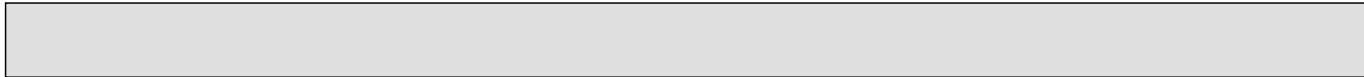
## 6. WRONG WIRING ON SITE

### 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.

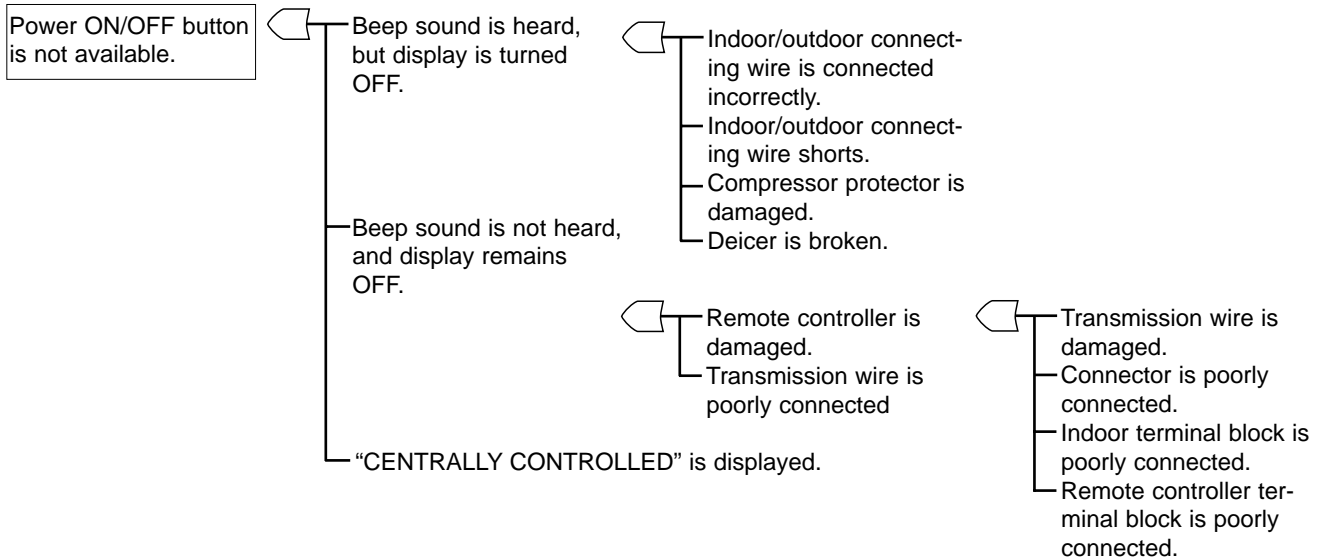
### 6-2 Phenomenon due to wrong wiring between indoor and outdoor units

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 "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

Unit stops after 5 to 20 seconds operation — Protection function is working.      ← Refer to check code on remote controller display. See page 43.



## 8. MR. SLIM/LOSSNAY INTERLOCK OPERATION

### <Symptoms that are not malfunctions>

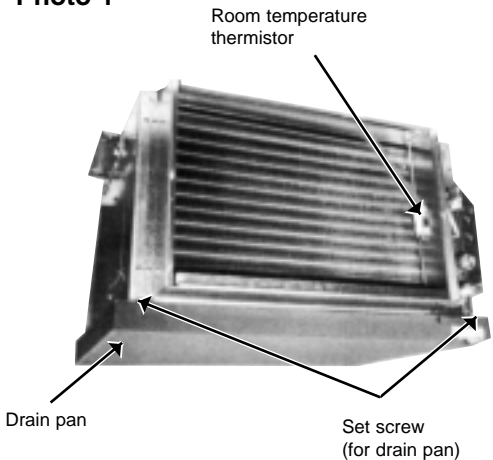
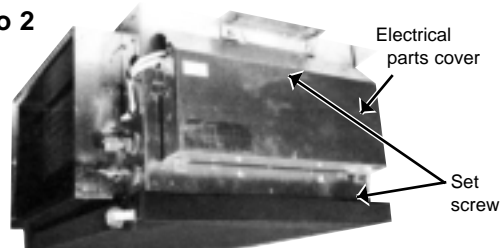
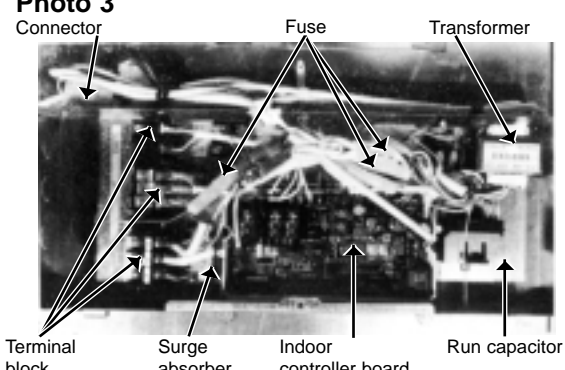
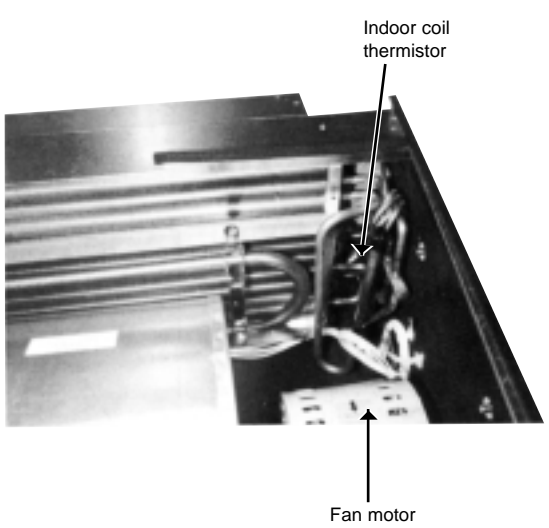
If any of the following symptoms occur, they are not malfunctions.

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



1. INDOOR UNIT (PEH-3EKHA<sub>2</sub>.TH)

OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the drain pan</b></p> <p>(1) Unscrew each set screw on the right and left, and remove the drain pan pushing it toward the back. (See Photo 1.)</p>	<p><b>Photo 1</b></p>  <p>Room temperature thermistor</p> <p>Drain pan</p> <p>Set screw (for drain pan)</p>
<p><b>2. Removing the electrical parts</b></p> <p>(1) Remove the 2 screws and the electrical parts cover. (See Photo 2.)</p> <ul style="list-style-type: none"> <li>● Indoor controller board</li> <li>● Transformer</li> <li>● Run capacitor</li> <li>● Fuse (1A, 2A, 5A)</li> <li>● Surge absorber</li> <li>● Terminal block</li> <li>● Thermistor (for indoor temperature)</li> </ul> <p>(See Photo 3.)</p>	<p><b>Photo 2</b></p>  <p>Electrical parts cover</p> <p>Set screw</p> <p><b>Photo 3</b></p>  <p>Connector</p> <p>Fuse</p> <p>Transformer</p> <p>Terminal block</p> <p>Surge absorber</p> <p>Indoor controller board</p> <p>Run capacitor</p>
<p><b>3. Removing the indoor coil thermistor</b></p> <p>(1) Remove the drain pan. (See Photo 1.)</p> <p>(2) Remove the electrical parts cover. (See Photo 2.)</p> <p>(3) Remove the set wire of thermistor. (See Photo 4.)</p>	<p><b>Photo 4</b></p>  <p>Indoor coil thermistor</p> <p>Fan motor</p>

## OPERATING PROCEDURE

## PHOTOS

### 4. Removing the fan

Note : Perform the following with the indoor unit lowered down to the floor.

- (1) Remove the drain pan. (See Photo 1.)
- (2) Disconnect the connector for the fan motor. (See Photo 3.)
- (3) Take out the fan assembly after removing the 7 set screws of the fan plate. (See Photo 5 or 6.)
- (4) Unscrew four set screws of the bell mouth and remove it. (See Photo 7.)
- (5) Loosen the set screw of the fan to pull out the sirocco fan. (See Photo 7.)
- (6) Unscrew the four set screws of the motor fittings, and remove the fan motor. (See Photo 8.)

Photo 5

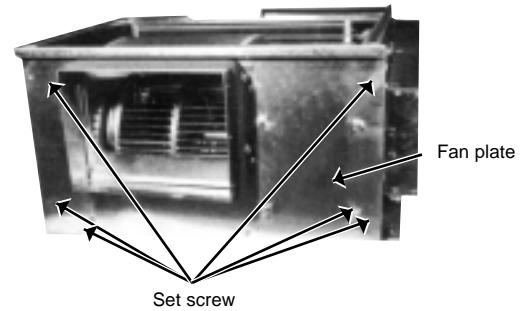


Photo 7

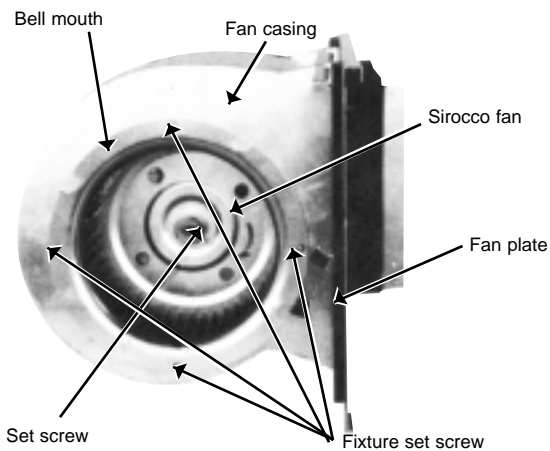
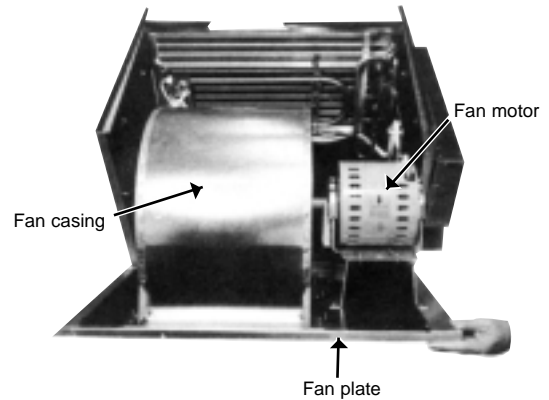


Photo 6



### 5. Removing the heater

- (1) Remove the drain pan. (See Photo 1.)
- (2) Disconnect the connector of the heater. (See Photo 9.)
- (3) Unscrew the set screw of the heater. (See Photo 9.)
- (4) Pull out the heater.

Photo 8

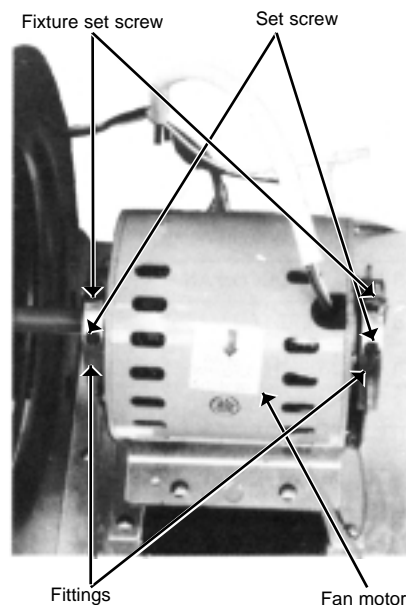
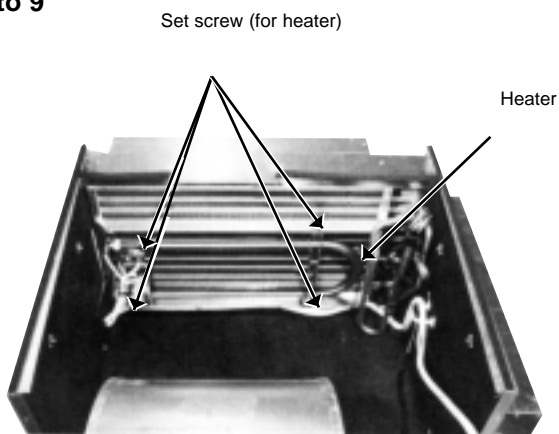


Photo 9



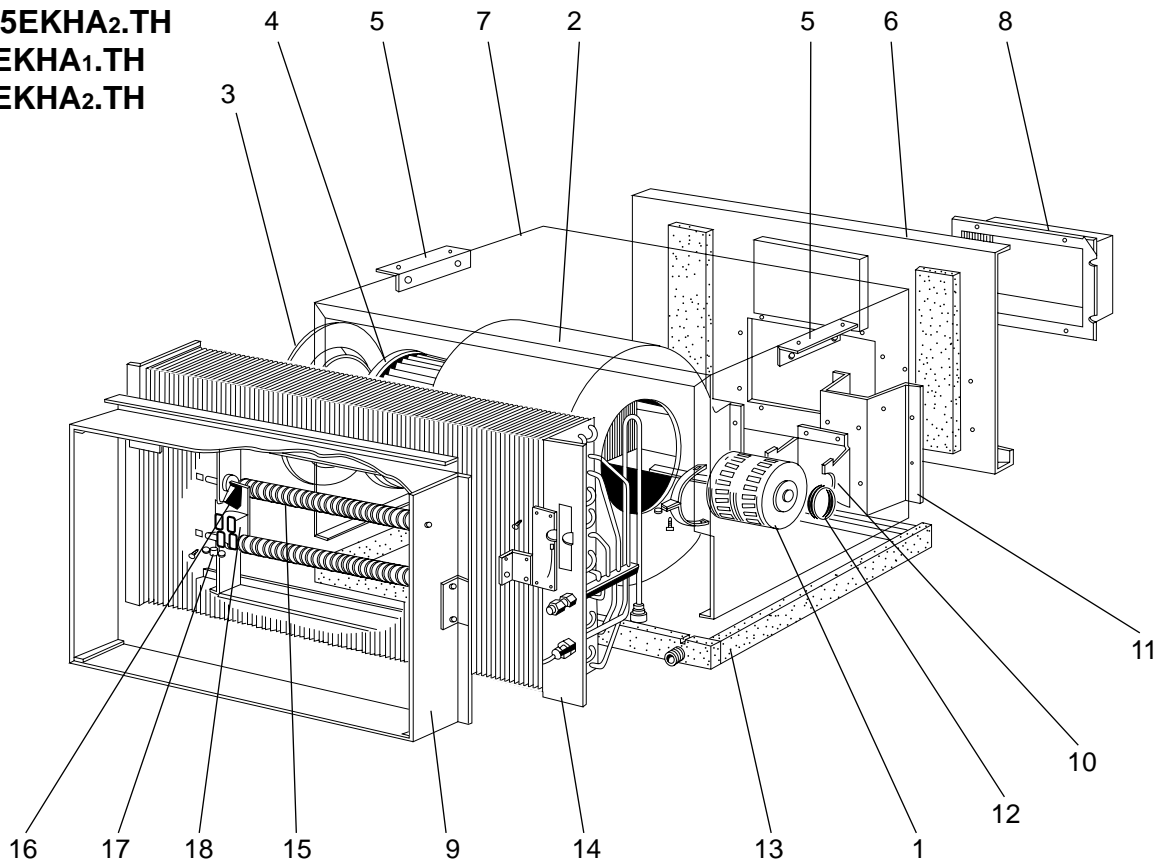
## STRUCTURAL PARTS

PEH-2.5EKHA1.TH

PEH-2.5EKHA2.TH

PEH-3EKHA1.TH

PEH-3EKHA2.TH

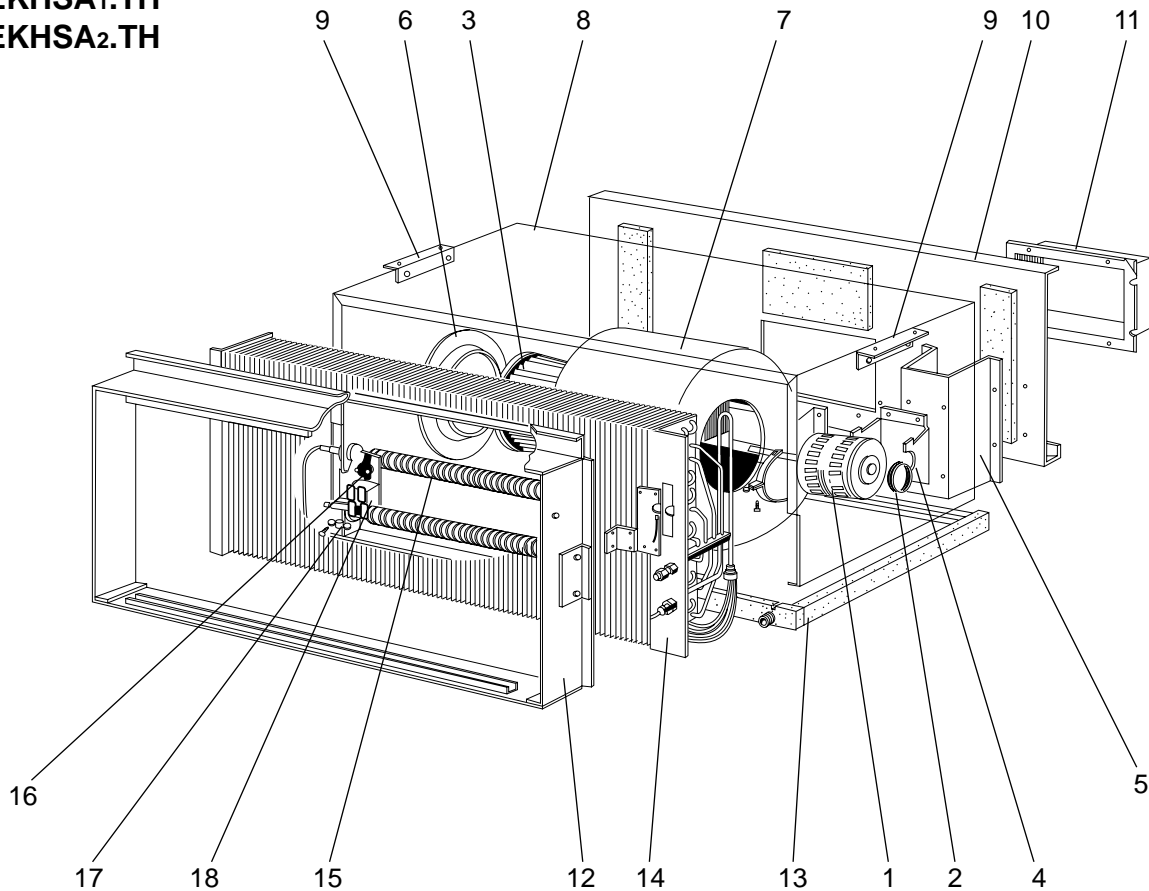


No.	Part No.	Part name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PEH-2.5	PEH-3				Unit	Amount
				EKHA1.TH , EKHA2.TH						
1	E07 035 300	INDOOR FAN MOTOR	PA4V200-EB	1	1		MF			
2	—	CASING		1	1	(R300B098F04)				
3	—	BELL MOUTH		1	1	(R302D730H01)				
4	E07 018 500	SIROCCO FAN		1	1					
5	E07 018 808	LEG		2	2					
6	—	FAN PLATE		1	1	(BA02G745G10)				
7	—	CABINET ASSY		1	1	(BG00T021B02)				
8	—	AIR OUTLET DUCT FLANGE		1	1	(BA00H896G08)				
9	—	AIR INTAKE DUCT FLANGE		1	1	(BB02R503G04)				
10	—	MOTOR LEG		1	1	(BB02R403G01)				
11	—	MOTOR BEAM		1	1	(BA02L499G04)				
12	E07 018 505	RUBBER MOUNT		2	2	2PCS/SET				
13	E07 018 700	DRAIN PAN		1	1					
14	E07 018 620	INDOOR HEAT EXCHANGER		1						
	E07 020 620	INDOOR HEAT EXCHANGER			1					
15	E07 018 526	HEATER ELEMENT	240V 2.1kW	1	1		H			
16	E07 018 305	THERMAL SWITCH	OFF ON 50°C 35°C	1	1		26H			
17	E07 018 306	THERMAL FUSE	250V 96°C 15A	1	1		FS			
18	—	INSULATOR		1	1	(BA84D384H01)				

## STRUCTURAL PARTS

PEH-4EKHSA1.TH

PEH-4EKHSA2.TH

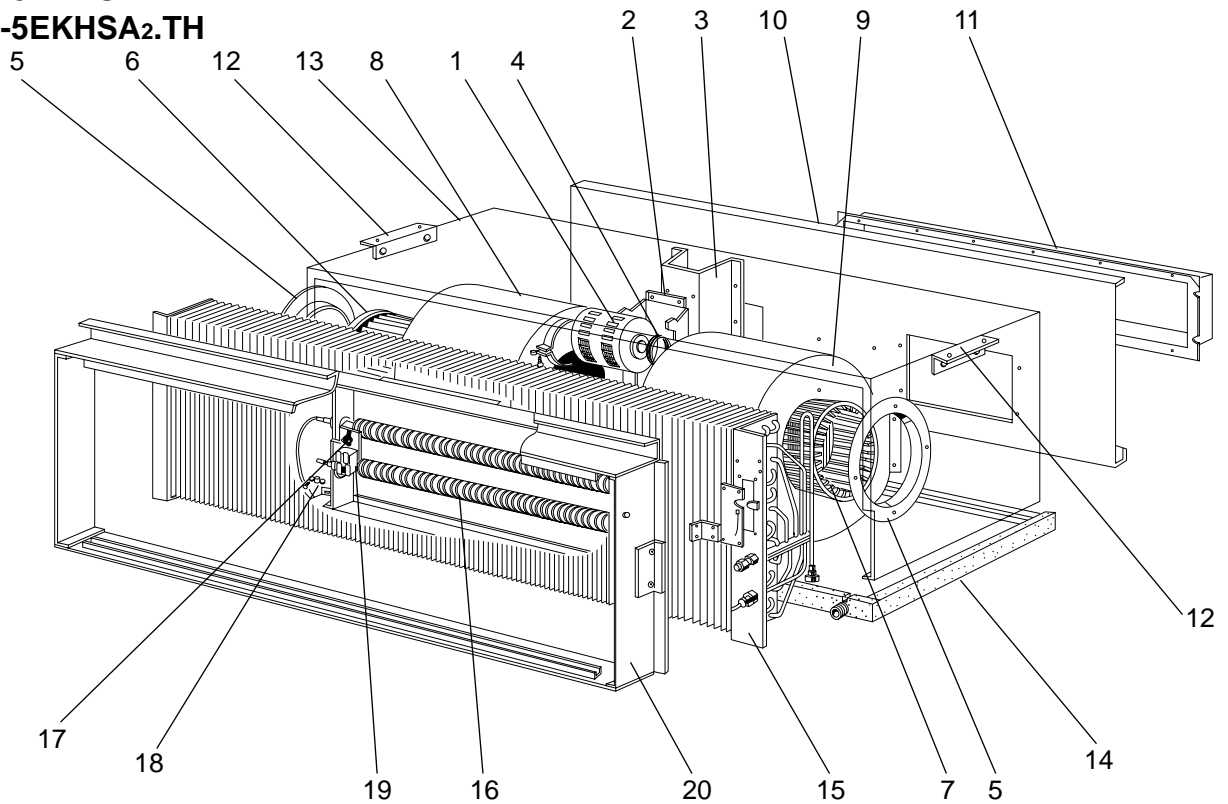


No.	Part No.	Part name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PEH-4					Unit	Amount
				EKHSA1.TH , EKHSA2.TH						
1	E07 037 300	INDOOR FAN MOTOR	PA4V310-EB	1			MF			
2	E07 018 505	RUBBER MOUNT		2						
3	E07 022 500	SIROCCO FAN		1	2PCS/SET					
4	—	MOTOR LEG		1	(BB00L212G04)					
5	—	MOTOR BEAM		1	(BB02T248G02)					
6	—	BELL MOUTH		1	(R302D730H01)					
7	—	CASING		1	(BA00N328G08)					
8	—	CABINET ASSY		1	(BG00T022B03)					
9	E07 018 808	LEG		2						
10	—	FAN PLATE		1	(BA02G686G05)					
11	—	AIR OUTLET DUCT FLANGE		1	(BA00H896G09)					
12	—	AIR INTAKE DUCT FLANGE		1	(BB02G810G05)					
13	E07 022 700	DRAIN PAN		1						
14	E07 022 620	INDOOR HEAT EXCHANGER		1						
15	E07 022 526	HEATER ELEMENT	240V 2.4kW	1			H			
16	E07 022 305	THERMAL SWITCH	OFF ON 60°C 45°C	1			26H			
17	E07 022 306	THERMAL FUSE	250V 109°C15A	1			FS			
18	—	INSULATOR		1	(BA84D384H01)					

## STRUCTURAL PARTS

PEH-5EKHSA1.TH

PEH-5EKHSA2.TH



No.	Part No.	Part name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PEH-5					Unit	Amount
				EKHSA1.TH , EKHSA2.TH						
1	E07 038 300	INDOOR FAN MOTOR	PA4V400-EC	1			MF			
2	—	MOTOR LEG		1	(BB00L212G04)					
3	—	MOTOR BEAM		1	(BB02L182G04)					
4	E07 018 505	RUBBER MOUNT		2	2PCS/SET					
5	—	BELL MOUTH		2	(R302D730H01)					
6	E07 018 500	SIROCCO FAN		1						
7	E07 023 500	SIROCCO FAN		1						
8	—	CASING		1	(R300B098F04)					
9	—	CASING		1	(R300B098F05)					
10	—	FAN PLATE		1	(BA02N472G05)					
11	—	AIR OUTLET DUCT FLANGE		1	(BA00H896G10)					
12	E07 018 808	LEG		2						
13	—	CABINET ASSY		1	(BG00T022B06)					
14	E07 023 700	DRAIN PAN		1						
15	E07 023 620	HEAT EXCHANGER		1						
16	E07 023 526	HEATER ELEMENT	240V 3kW	1			H			
17	E07 022 305	THERMAL SWITCH	OFF ON 60°C 45°C	1			26H			
18	E07 022 306	THERMAL FUSE	250V 109°C 15A	1			FS			
19	—	INSULATOR		1	(BA84D384H01)					
20	—	AIR INTAKE DUCT FLANGE		1	(BB02L116G07)					

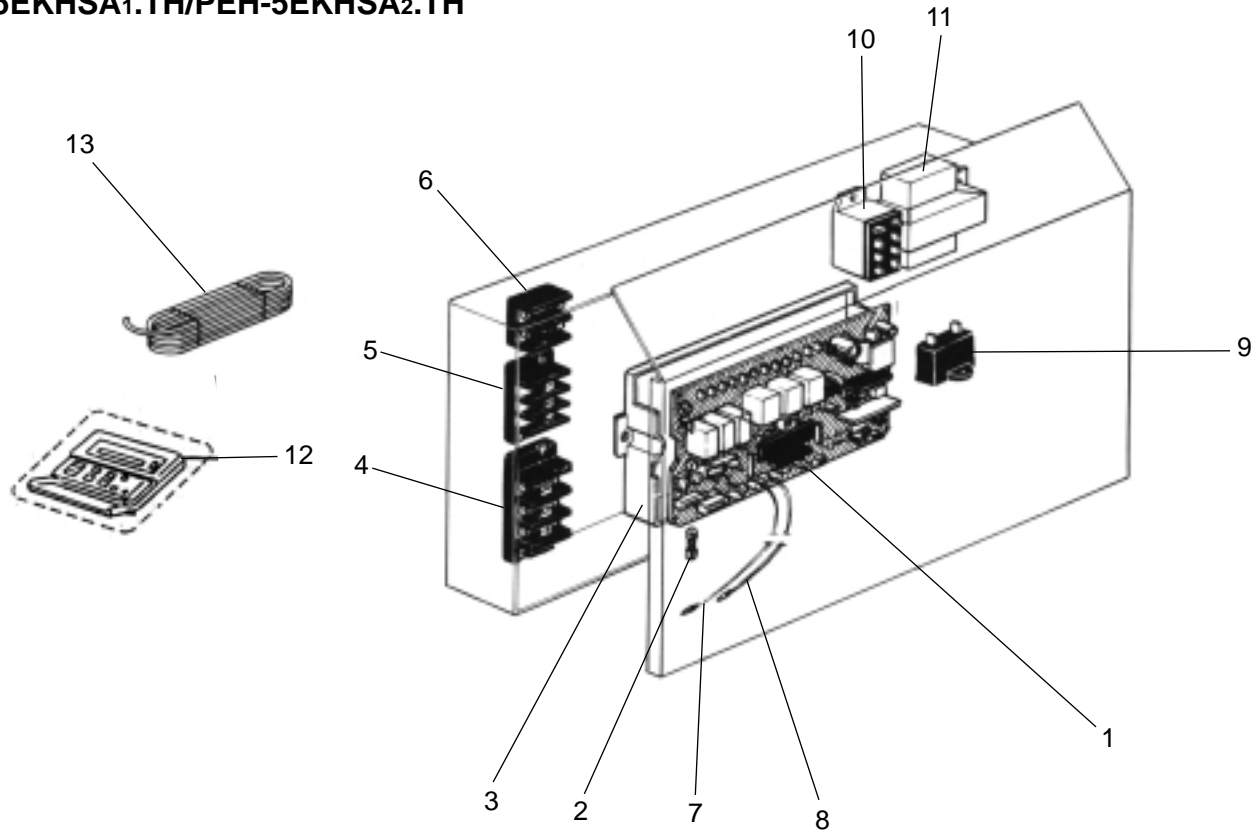
## ELECTRICAL PARTS

PEH-2.5EKHA1.TH/PEH-2.5EKHA2.TH

PEH-3EKHA1.TH/PEH-3EKHA2.TH

PEH-4EKHSA1.TH/PEH-4EKHSA2.TH

PEH-5EKHSA1.TH/PEH-5EKHSA2.TH



No.	Part No.	Part name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PEH-2.5,3,4,5 EKH(S)A1.TH , EKH(S)A2.TH				Unit	Amount
1	E07 018 447	INDOOR CONTROLLER BOARD		1		I.B			
2	E07 006 382	FUSE	250V 6.3A	1		F<l.B>			
3	—	CONTROLLER CASE		1	(BA25V886H03)				
4	E07 006 375	TERMINAL BLOCK	3P (L,N,⊕)	1		TB2			
5	E07 018 375	TERMINAL BLOCK	3P (1,2,3)	1		TB4			
6	E07 007 375	TERMINAL BLOCK	2P (1,2)	1		TB5			
7	E07 018 308	ROOM TEMPERATURE THERMISTOR		1		RT1			
8	E07 018 307	INDOOR COIL THERMISTOR		1		RT2			
9	E07 018 351	FAN MOTOR CAPACITOR	8μF 440V	1		C			
10	E07 018 340	RELAY	JC-1A DC12V	1		88H			
11	E07 018 339	TRANSFORMER		1		T			
12	E07 018 426	REMOTE CONTROLLER		1		R.B			
13	E07 018 089	REMOTE CONTROLLER CABLE	12m	1					

## 1. REFRIGERANT PIPES

Service Ref. : PEH-2.5EKHA<sub>2</sub>.TH, PEH-3EKHA<sub>2</sub>.TH

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 : $\phi$ 9.52 Gas : $\phi$ 15.88			
Connection method	Indoor unit : Flared Outdoor unit : Flared			

Service Ref. : PEH-4EKHSA<sub>2</sub>.TH, PEH-5EKHSA<sub>2</sub>.TH

Part No.	PAC-SC51PI-E	PAC-SC52PI-E	PAC-SC53PI-E	PAC-SC54PI-E
Pipe length	5m	7m	10m	15m
Pipe size O.D.	Liquid : $\phi$ 9.52 Gas : $\phi$ 19.05			
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 5m, 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), connecting cables.

## 2. TIMER

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

Part No.	PAC-SC32PTA
Model Name	Program timer

### 2-1 Program timer specifications

Parts name	Program timer
Parts No.	PAC-SC32PTA
Exterior dimensions(inch)	5-4/32×4-23/32×23/32(130×120×18mm)
Installation	Wall mount
Type of clock	Quartz
Clock accuracy	±50 second / month at 25°C
Display -Time	Liquid crystal display
-Week	Liquid crystal display
-Timer setting	Liquid crystal display
Program cycle	24 hours
Timer setting unit	30 minutes
No. of set points	48 /day
Power rating	5V DC ±5%(Supplied by Remote Controller)

### 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

Set back operation is useful for reducing running costs.

e.g. At a hotel with a 24-hour system

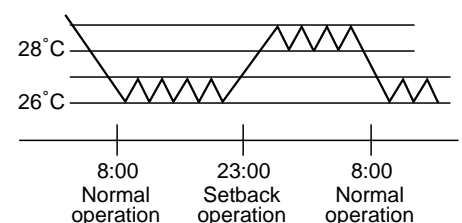
8:00~23:00 Cooling operation with set temperature at 26°C

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

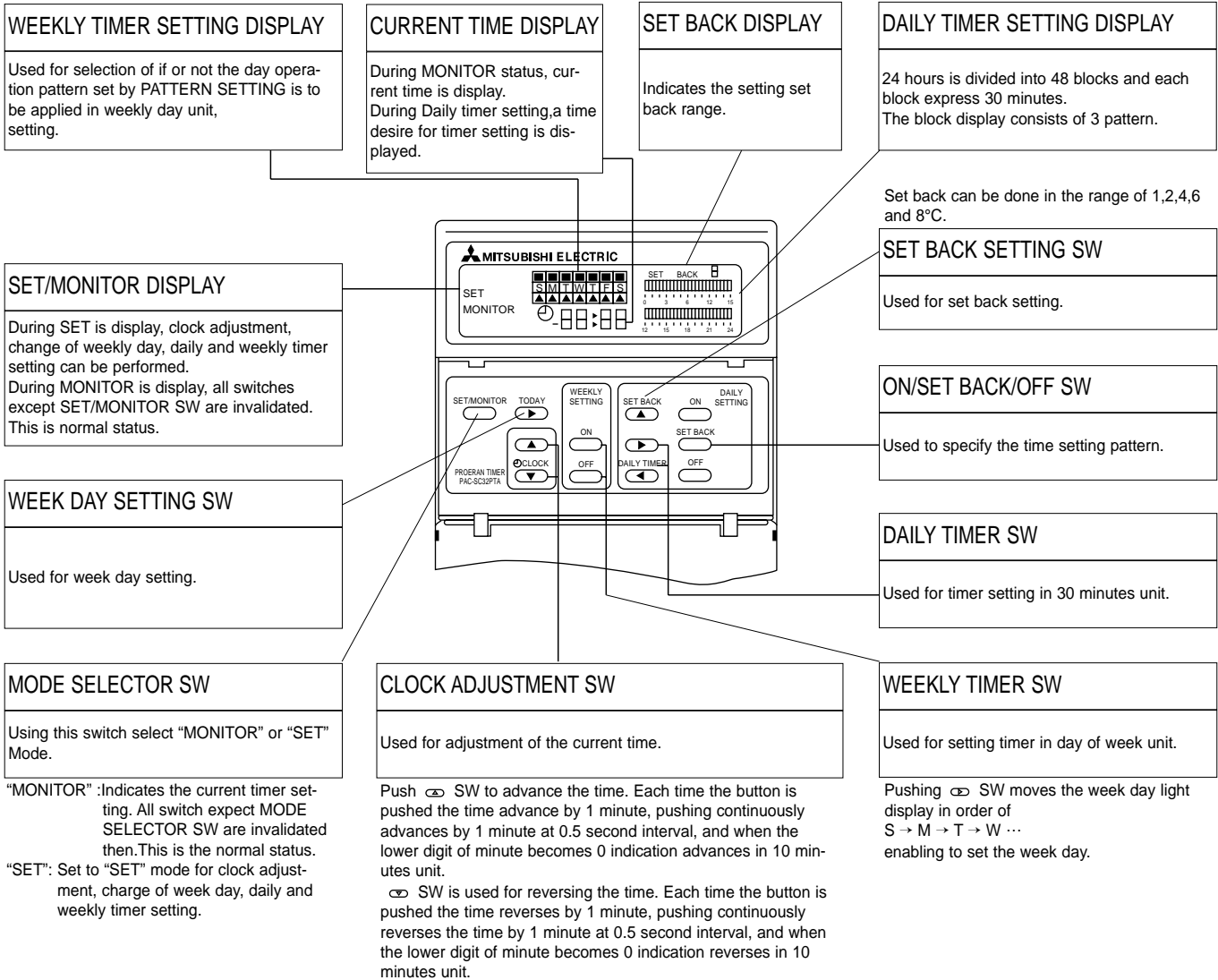
Daily timer function can apply to each day of the week.



### 2-3. How to connect program timer

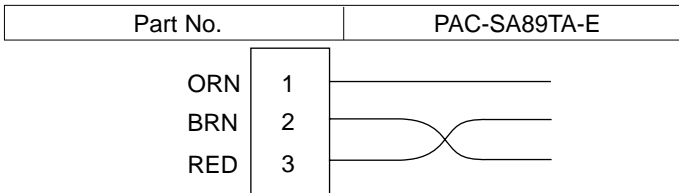
### 2-4. Names and functions

<PAC-SC32PT>



### 3. TIMER ADAPTER

This adapter is needed for system control and for operation via external contacts. Adapter connection is described on page 59.





#### 4. MULTIPLE REMOTE CONTROLLER ADAPTER

This adapter is needed for remote indication (operation/check). Adapter connection is described on No. OCT01.

Part No.	PAC-SA88HA-E
<input type="checkbox"/> 1	BRN
<input type="checkbox"/> 2	RED
<input type="checkbox"/> 3	ORN
<input type="checkbox"/> 4	YLW
<input type="checkbox"/> 5	GRN

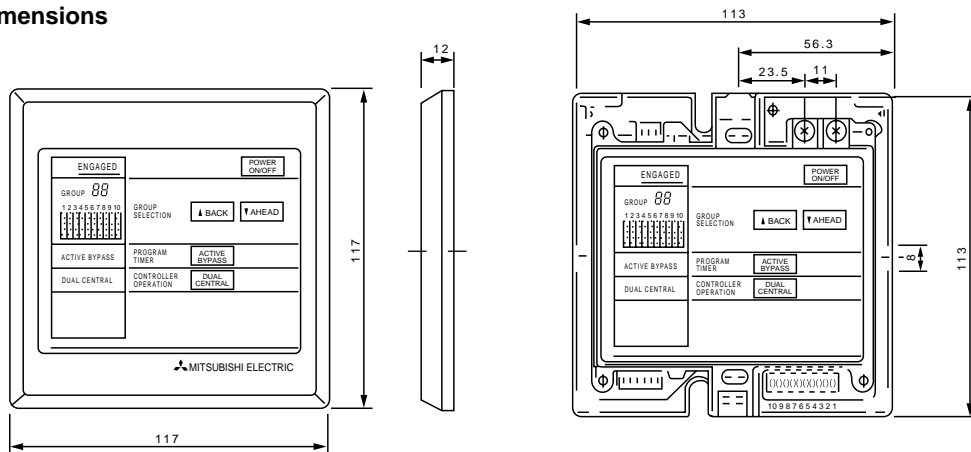
#### 5. CENTRALIZED REMOTE CONTROLLER

Allows individual or combined control of up to 16 units. When using the PAC-805RC, the program timer adapter (PAC-825AD) is also needed. See page 59.

Part No.	PAC-805RC
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##### 5-1. Dimensions

Unit : mm



##### 5-2. Functions

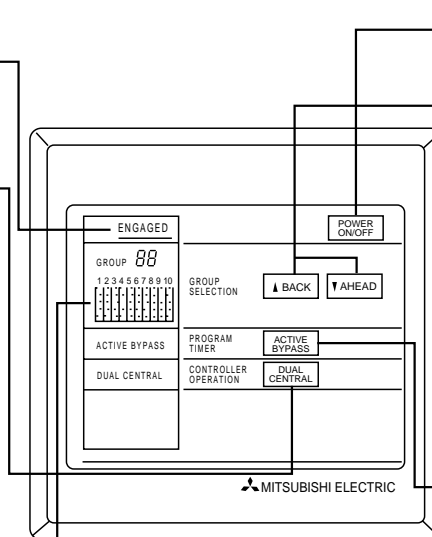
**"ENGAGED" indicator**  
When this indicator is lit, transmission is in progress and all switches are inoperative.

**DUAL/CENTRAL switch**  
This change-over switch governs 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. Operation is controlled 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 to be 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.

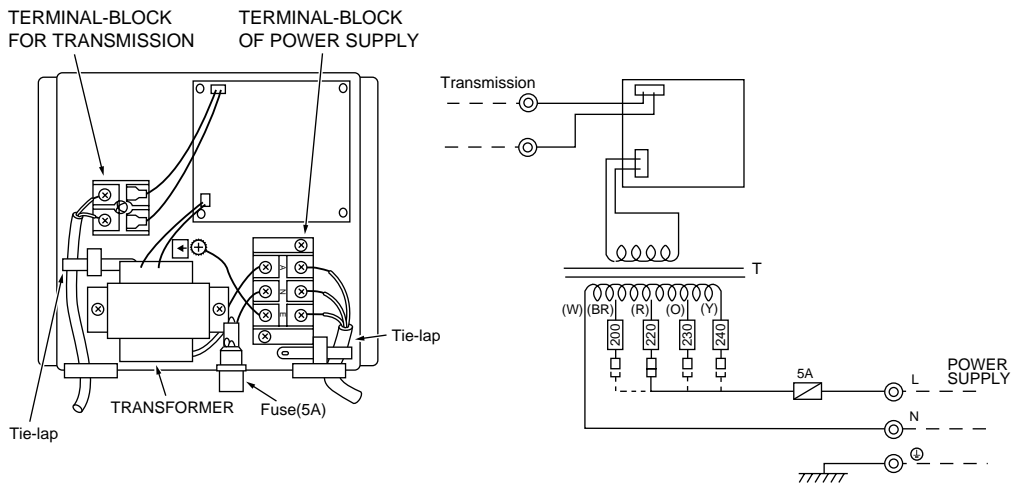
**"ACTIVE"**  
The switch turns ON/OFF operational instructions from the program timer automatically.  
**"BYPASS"**  
ON/OFF Operation is by the centralized remote controller only.  
Initial setting is "BYPASS".

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 the original "DUAL" and "BYPASS".

### 5-3 Connection method

#### (1) Connections in the power supply cord.

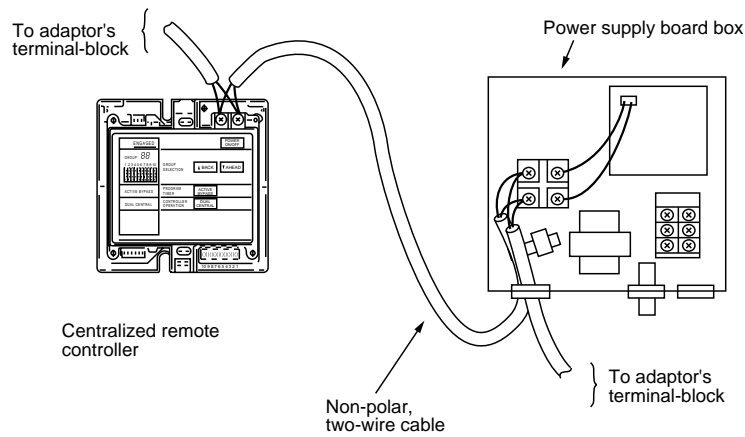
1. Connect the power supply cord to the power supply terminal-block and fix it in-place with a tie-lap. Connect a single phase 200V AC (220, 230, 240V) to ⒶⓃ. As Ⓔ is the GND terminal, be sure to ground the earth wire.
  2. Connect the transmission line to the transmission terminal-block and fix it in-place with a tie-lap. Use a  $\phi 1.6$  (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 used.

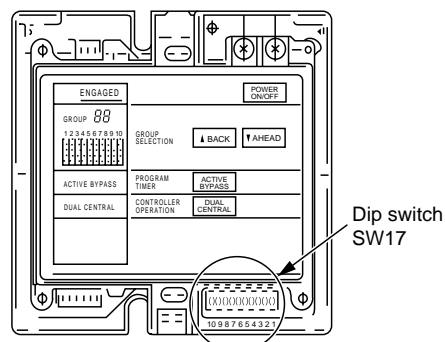
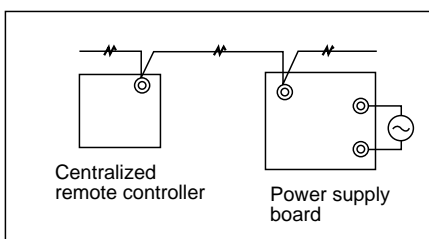
#### (2) Connection method of centralized remote controller and power supply board.

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



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

#### 2. Wiring diagram

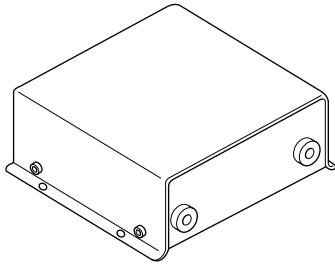
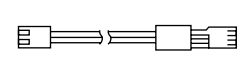
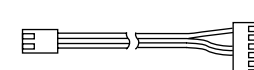
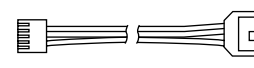
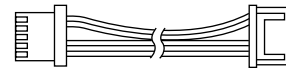


## 6. PROGRAM TIMER ADAPTER

This adapter is needed when a program timer(PAC-SK65PT)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-lap.  
Connect a single phase 200V (220, 230, 240V) AC 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-lap (when a centralized remote controller is being used).  
**CAUTION** : Never connect the power supply cord to the transmission terminal-block

Fig-1

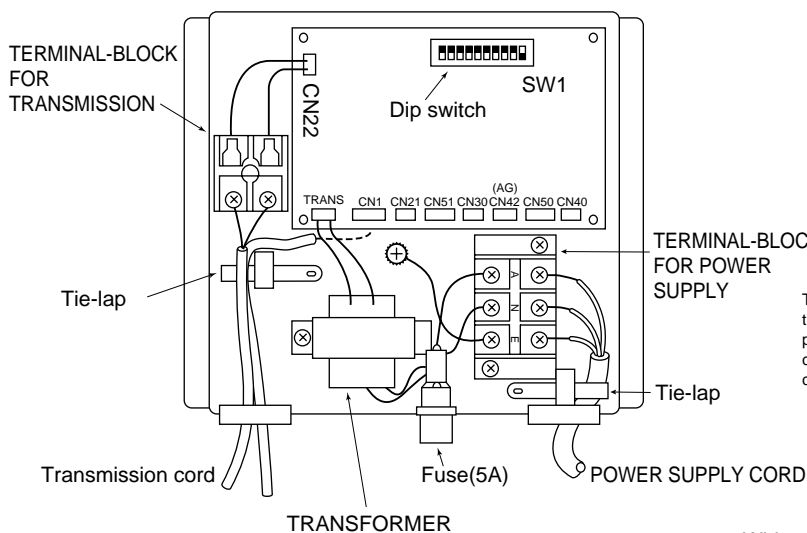
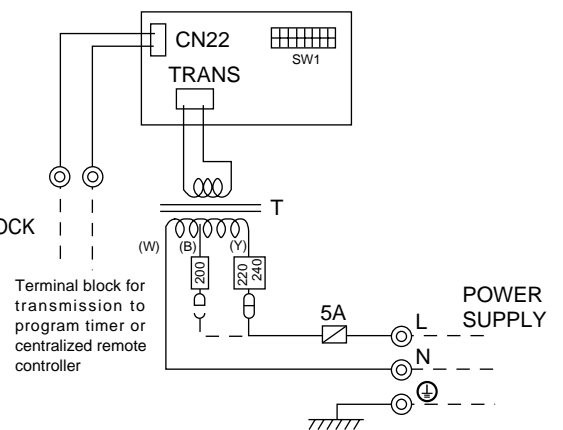


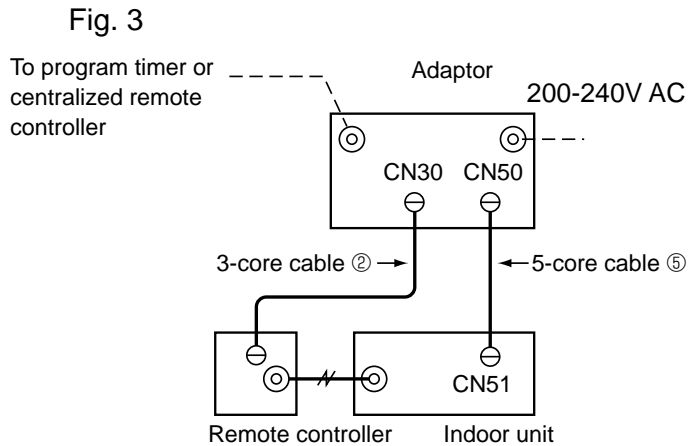
Fig-2



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.

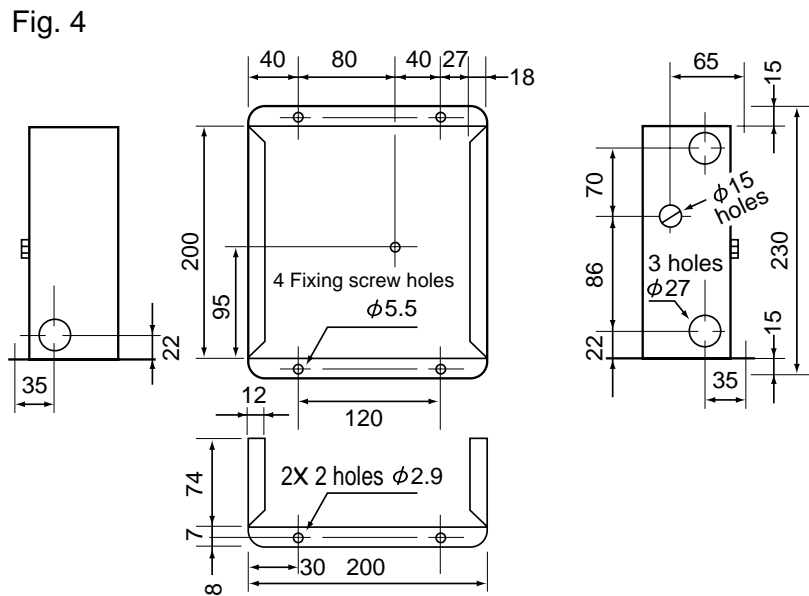
(3) Connections from adaptor



Maximum length of each cable is 10m.

**6-3 Dimensions**

(Unit : mm)



**7. OPTIONAL REMOTE CONTROLLER**

This is for the control using two remote controllers.

Part No.	PAR-JH050KA
Applicable Service Ref.	PEH-2.5~5EKH(S)A <sub>2</sub> .TH

**MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE MITSUBISHI DENKI BLDG. MARUNOUCHI TOKYO100 TELEX J24532 CABLE MELCO TOKYO