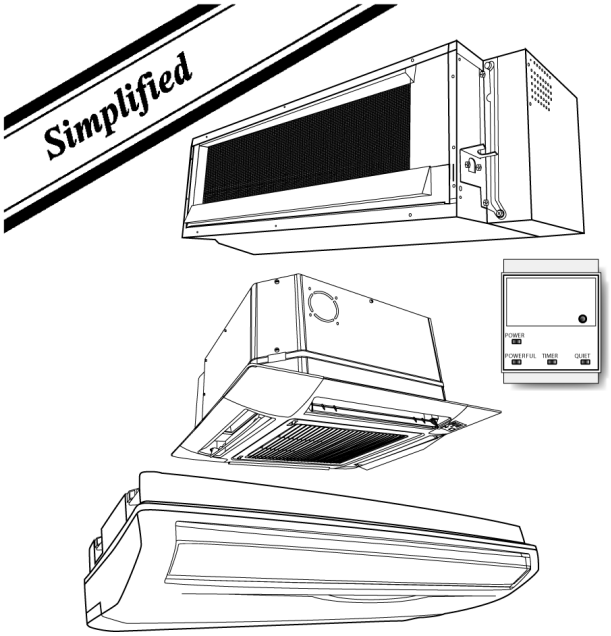
Order No. RAC0503011C2

Service Manual

Multi Air Conditioner



CS-ME7DKEG CS-ME10DD3EG
CS-ME10DTEG CS-E15DB4EW
CS-ME7DKRG CS-ME7DKDG
CS-E9DKEW CS-E9DKRW
CS-E9DKDW CS-E12DKEW
CS-E12DKRW CS-E12DKDW
CS-E15DKEW CS-E15DKRW
CS-E15DKDW CS-E18DKEW
CS-E18DKRW CS-E18DKDW
CS-E15DD3EW CS-E18DD3EW
CS-E15DTEW CS-E18DTEW
CS-E18DB4EW

Please file and use this manual together with the Service Manuals for the following models: Indoor unit models: CS-ME7CKPG, CS-ME10CKPG, CS-ME12CKPG, CS-ME14CKPG and CS-ME18CKPG; Outdoor unit models: CU-2E15CBPG, CU-2E18CBPG, CU-3E23CBPG and CU-4E27CBPG (Order No. RAC0209005C2); Indoor unit models: CS-ME7CB1P, CS-ME10CB1P, CS-ME12CB1P, CS-ME14CB1P, CS-ME10CD3P and CS-ME14CD3P; Outdoor unit models: CU-3E23CBPG and CU-4E27CBPG (Order No. RAC0312001A8)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

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1 Features

- **Product**
  - A single OUTDOOR unit enable air conditioning of up to two separate rooms for CU-2E15CBPG and CU-2E18CBPG.
  - A single OUTDOOR unit enable air conditioning of up to three separate rooms for CU-3E23CBPG.
  - A single OUTDOOR unit enable air conditioning of up to four separate rooms for CU-4E27CBPG.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT										
			CU-2E 15CBPG		CU-2E 18CBPG		CU-3E23CBPG			CU-4E27CBPG			
Type \ ROOM			A	B	A	B	A	B	C	A	B	C	D
Wall	2.2kW	CS-ME7DKEG	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-ME7DKRG	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-ME7DKDG	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	2.8kW	CS-E9DKEW	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-E9DKRW	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-E9DKDW	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	3.2kW	CS-E12DKEW	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-E12DKRW	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎
		CS-E12DKDW	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4.0kW	CS-E15DKEW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
		CS-E15DKRW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
		CS-E15DKDW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
	5.0kW	CS-E18DKEW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
		CS-E18DKRW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
		CS-E18DKDW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
Duct	2.8kW	CS-ME10DD3EG	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4.0kW	CS-E15DD3EW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
	5.0kW	CS-E18DD3EW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
Ceiling Floor	2.8kW	CS-ME10DTEG	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4.0kW	CS-E15DTEW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
	5.0kW	CS-E18DTEW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
Mini-Cassette	4.0kW	CS-E15DB4EW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
	5.0kW	CS-E18DB4EW	—	—	—	—	◎	◎	◎	◎	◎	◎	◎
Capacity range of connectable indoor units			From 4.4 to 5.0 kW		From 4.4 to 6.4 kW		From 5.0 to 10 kW			From 5.0 to 13.6 kW			
Pipe length	1-room maximum pipe length (m)		20		20		25			25			
	Allowable elevation (m)		10		10		15			15			
	Total allowable pipe length (m)		30		30		50			70			
	Total pipe length for maximum chargeless length (m)		20		20		30			40			
	Additional gas amount over chargeless length (g/m)		20		20		20			20			

Note: " ◎ " : Available, " — " : Not available

Remarks for CU-2E15CBPG / CU-2E18CBPG:

1. At least two indoor units must be connected.
2. The total nominal cooling capacity of indoor units that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (shown in the above table.)

   Example: The below indoor units combination is possible to connect CU-2E15CBPG. (Total nominal capacity of indoor units is between 4.4 kW and 5.0 kW)

   1) Two CS-ME7DKEG only. (Total nominal cooling capacity is 4.4 kW.)

   2) One CS-ME7DKEG and one CS-E9DKEW. (Total nominal cooling capacity is 5.0 kW.)

Remarks for CU-3E23CBPG / CU-4E27CBPG:

1. At least two indoor units must be connected.
2. The total nominal cooling capacity of indoor units that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (shown in the above table.)

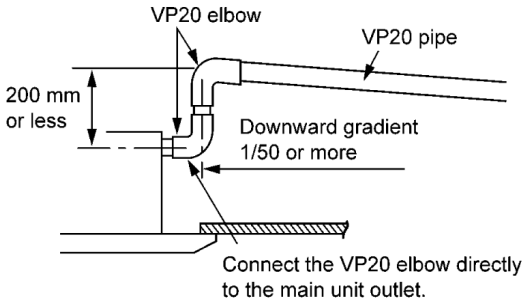
   Example: The below indoor units combination is possible to connect CU-3E23CBPG. (Total nominal capacity of indoor units is between 5.0 kW and 10.0 kW)

   1) Two CS-ME7DKEG only. (Total nominal cooling capacity is 4.4 kW.)

   2) One CS-ME12DKEG. (Total nominal cooling capacity is 9.6 kW.)

- **Serviceability**
  - Self diagnosis
  - Test Run at both Cooling and Heating rated frequency
- **Built-in drain pump (Cassette and Duct type)**
  - A drain pump is built in.

    The pipe can rise to 200m above the drain outlet.



2 About Lead Solder (PbF)

2.1. DISTINCTION OF PbF P.C. BOARD

P.C. Boards (manufactured) using lead free solder will have a PbF stamp on the P.C. Board.

2.2. CAUTION

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70 °F (30 - 40 °C) higher. Please use a high temperature solder iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to slash when heated too high (about 1100 °F/ 600°C).
  If you must use Pb solder, please completely all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

3 Functions

3.1. Wall Type

3.1.1. Remote Control





OFF/ON

Operation OFF / ON

MODE

Operation Mode Selection

- AUTO Automatic Operation
- HEAT Heating Operation
- COOL Cooling Operation
- DRY Soft Dry Operation

POWERFUL

Powerful Mode Operation

QUIET

Quiet Mode Operation OFF / ON

ion

Ion Mode Operation OFF / ON

AIR SWING

Airflow Direction Control

- Vertical Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).
- Horizontal Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).

FAN SPEED

Indoor Fan Speed Selection

- ▪ Low
- ▪▪ Medium-
- ▪▪▪ Medium
- ▪▪▪▪ Medium+
- ▪▪▪▪▪ High
- AUTO FAN Automatic Fan Speed

TEMP

Room Temperature Setting

- Increase or decrease set temperature (16°C to 30°C)

TIMER ON OFF

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

Time / Timer Setting

- Hours and minutes setting.

SET CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK

Clock Setting

- Current time setting.

CHECK

Check Point

- Breakdown self diagnosis function.

RESET

Reset Point

- Clear memory data.

3.1.2. Indoor Unit



Simultaneous Operation Control

Automatic Operation Switch

- Press for < 5s to run Automatic Operation. (Used when the remote control cannot be used.)
- Press continuously for 5s and < 8s to run Forced Cooling Operation.
- Press continuously for 8s and < 11s to run Forced Heating Operation.
- Press continuously for 11s and < 16s to change different remote controlling setting (A↔B Mode).
- Press continuously for 16s or < 21s to switch OFF / ON Remote Control Receiving Sound or H14 Abnormality Detection Mode.

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation Mode judging and Hot Start operation.
- TIMER (Orange) ..... Lights up in Timer Setting. Blinks in Self Diagnosis Control.
- QUIET (Orange) ..... Lights up in Quiet Mode Operation.
- POWERFUL (Orange) ..... Lights up when Powerful Mode is selected.
- ion (Green) ..... Lights up in Ionizer Mode Operation.
- SUPER ALLERU-BUSTER (Blue) ... Lights up in operation.

Four Operation Modes

- Automatic, Heating, Cooling and Soft Dry Operation.

Automatic and 5 Manual Indoor Fan Speeds

Automatic and 5 Manual Vertical Airflow Directions

Automatic and 5 Manual Horizontal Airflow Directions

Powerful Mode

- For quick cooling or heating.

Quiet Mode

- To provide quiet operation.

Ionizer Control

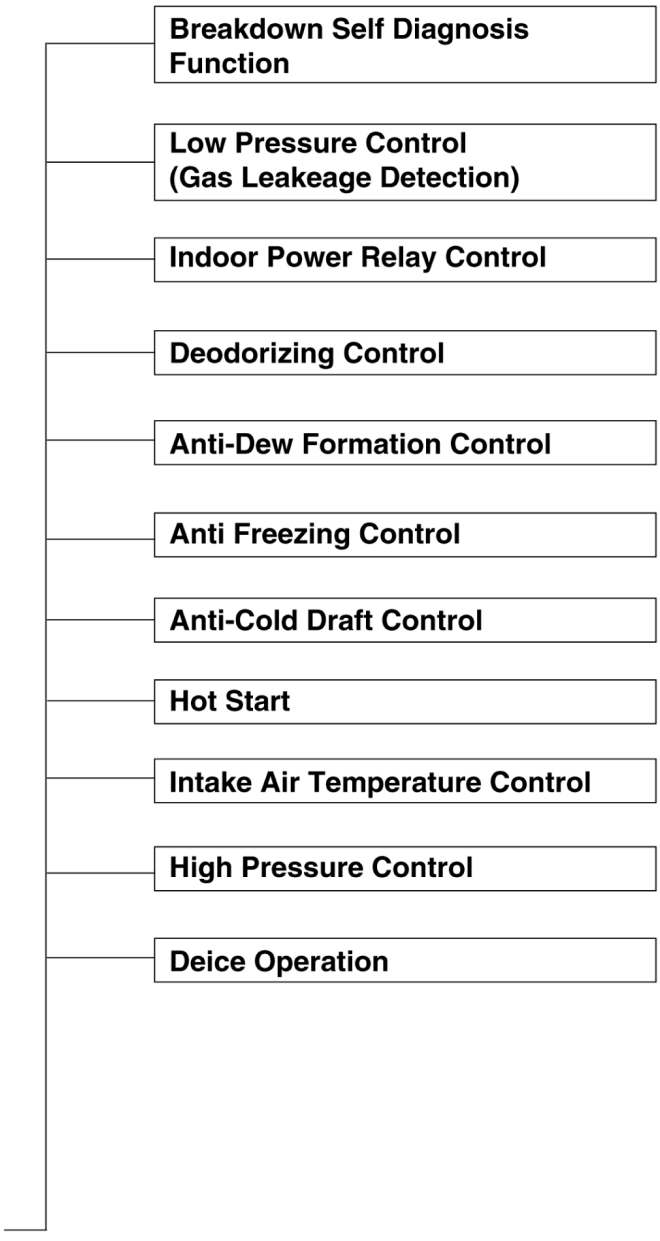
- Ionizer control for generate negative ion in discharge air.

Delay ON Timer and OFF Timer

Automatic Restart Control

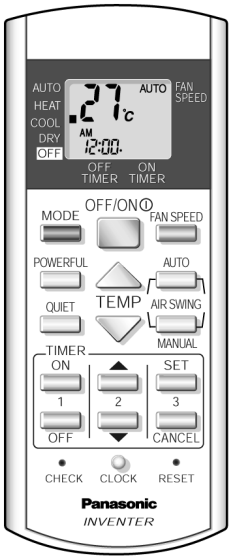
- Operation is restarted after power failure at previous setting mode.

Microcomputer-controlled Room Temperature Control


Breakdown Self Diagnosis Function
Low Pressure Control (Gas Leakeage Detection)
Indoor Power Relay Control
Deodorizing Control
Anti-Dew Formation Control
Anti Freezing Control
Anti-Cold Draft Control
Hot Start
Intake Air Temperature Control
High Pressure Control
Deice Operation

3.2. Duct Type

3.2.1. Remote Control



OFF / ON ⏻ — **Operation OFF / ON**

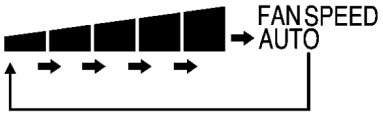
MODE — **Operation Mode Selection**

- **AUTO** Automatic Operation Mode
- HEAT Heating Operation Mode
- COOL Cooling Operation Mode
- DRY Soft Dry Operation Mode
- FAN Fan Operation Mode

POWERFUL — **Powerful Mode Operation**

QUIET — **Quiet Mode Operation**

FAN SPEED — **Indoor Fan Speed Selection**



The indication will change accordingly
The increase in size of indication indicates higher fan speed.



AIR SWING — **Airflow Direction Control (Vertical)**

- AIR SWING **AUTO** Automatic Airflow Direction Control
- AIR SWING – Airflow Direction Manual Control

TEMP. — **Room Temperature Setting**

- Temperature Setting (16˚C to 30˚C)

ON-TIMER OFF-TIMER — **Timer Operation Selection**

- 24-hour, OFF / ON Real Timer setting.

∨ ∧ — **Time / Timer setting**

- Hours and minutes setting.

SET CANCEL — **Timer Operation Set / Cancel**

- ON Timer and OFF Timer setting or cancellation.

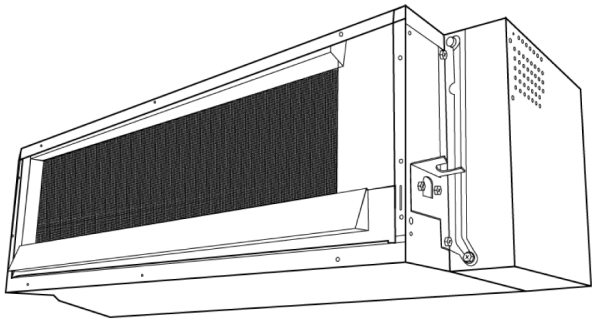
CLOCK — **Clock Setting**

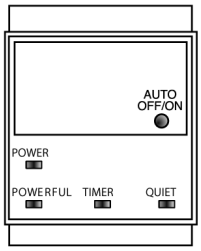
- Current time setting.

SLEEP — **Sleep Timer (OFF)**

ODOUR WASH — **ODOUR WASH OPERATION**

3.2.2. Indoor Unit





FOR ALL OPERATIONS

Simultaneous Operation Control

Operation Indication Lamps

- POWER (GREEN) - Lights up in operation, blinks in Automatic Operation judging and Hot Start Control.
- TIMER (ORANGE) - Lights up in timer setting. Blinks in Self Diagnosis Control.
- ODOUR WASH (GREEN) - Lights up ODOUR WASH Setting.

Automatic Operation Switch

- - 5s: TEST RUN
- 5s - 8s: COOLING FORCED OPERATION
- 8s - 11s: HEATING FORCED OPERATION
- 11s - 16s: VARIOUS SETTING 1
  - REMOTE CONTROL A, B, C, D SETTING
- 16s - 21s: ODOUR WASHING
- 21s - 26s: VARIOUS SETTING 2
  - BEEP SOUND OFF

Operation Mode

- Automatic, Heating, Cooling, Dry and Fan Operation.

Automatic Restart Control

- Operation is restarted after power failure at previous setting mode.

Sleep timer / Sleep Operation Mode

QUIET Mode

Timer Operation

Odour Operation

Powerful Mode

- For quick cooling or heating

Indoor Fan Speed Control

Airflow Direction Control

Room Temperature Control

Temperature Shift

Self Diagnosis

HEATING OPERATION

- Anti-Cold Draft Control
- Hot Start
- Intake Air Temperature Control

COOLING / SOFT DRY OPERATION

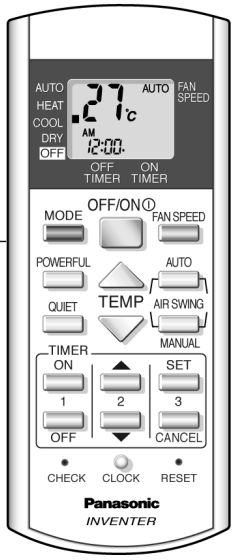
- Deodorizing Control
- Anti-Fog Dischange Control
- Anti-Dew Formation Control
- Anti-Freezing Control
- Drain Pump Control

AUTOMATIC OPERATION

FAN OPERATION

3.3. Ceiling Floor Type

3.3.1. Remote Control



OFF / ON — **Operation OFF / ON**

MODE — **Operation Mode Selection**

- AUTO — Automatic Operation
- HEAT — Heating Operation
- COOL — Cooling Operation
- DRY — Soft Dry Operation

POWERFUL — **Powerful Mode Operation**

QUIET — **Quiet Mode Operation**

AIR SWING — **Airflow Direction Control**

- AUTO — Vertical Automatic Airflow Direction Control.
- MANUAL — Vertical Manual Airflow Direction Control.

FAN SPEED — **Indoor Fan Speed Selection**

- ■ — Low
- ■■ — Medium-
- ■■■ — Medium
- ■■■■ — Medium+
- ■■■■■ — High
- AUTO — Automatic Fan Speed

TEMP — **Room Temperature Setting**

- Increase or decrease set temperature. (16°C to 30°C)

TIMER-ON
TIMER-OFF — **Timer Setting**

- 24-hour, OFF / ON Real Timer Setting.

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL — **Timer Operation Set / Cancel**

- ON Timer and OFF Timer setting and cancellation.

CLOCK — **Clock Setting**

- Current time setting.

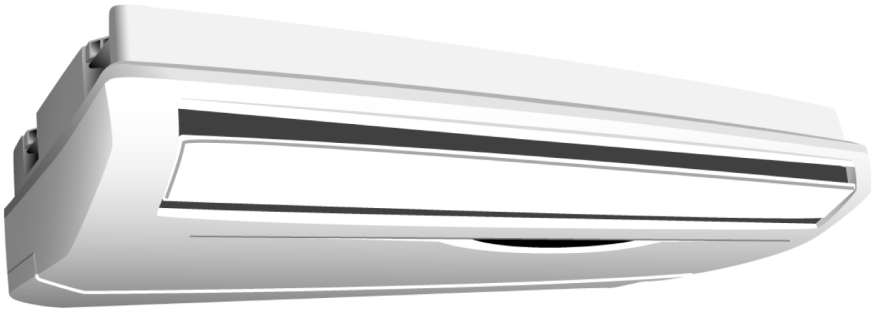
CHECK — **Check Point**

- Breakdown self diagnosis function.

RESET — **Reset Point**

- Clear memory data.

3.3.2. Indoor Unit



Simultaneous Operation Control

Automatic Operation Switch

- Press for < 5s to run Automatic Operation. (Used when the remote control cannot be used.)
- Press continuously for 5s and < 8s to run Forced Cooling Operation.
- Press continuously for 8s and < 11s to run Forced Heating Operation.
- Press continuously for 11s and < 16s to change different remote controlling setting (4 type of transmission code).
- Press continuously for 16s or < 21s to switch OFF / ON Remote Control Receiving Sound or H14 Abnormality Detection Mode.

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation Mode judging, deice, On Timer sampling and Hot Start operation.
- TIMER (Orange) ..... Lights up in Timer Setting. Blinks in Self Diagnosis Control.
- QUIET (Orange) ..... Lights up in Quiet Mode Operation.
- POWERFUL (Orange) ... Lights up when Powerful Mode is selected.
- AIR SWING (Orange) .... Lights up in Auto Air Swing.

Four Operation Modes

- Automatic, Heating, Cooling and Soft Dry Operation.

Automatic and 5 Manual Indoor Fan Speeds

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Powerful Mode

- For quick cooling or heating.

Quiet Mode

- To provide quiet operation.

Delay ON Timer and OFF Timer

Automatic Restart Control

- Operation is restarted after power failure at previous setting mode.

Microcomputer-controlled Room Temperature Control

Breakdown Self Diagnosis Function

Low Pressure Control (Gas Leakeage Detection)

Indoor Power Relay Control

Anti-Dew Formation Control

Anti Freezing Control

Anti-Cold Draft Control

Hot Start

Intake Air Temperature Control

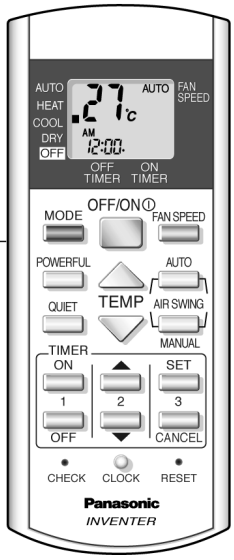
High Pressure Control

Deodorizing Control

Deice Operation

3.4. Mini-Cassette Type

3.4.1. Remote Control



OFF / ON — **Operation OFF / ON**

MODE — **Operation Mode Selection**

- AUTO — Automatic Operation
- HEAT — Heating Operation
- COOL — Cooling Operation
- DRY — Soft Dry Operation

POWERFUL — **Powerful Mode Operation**

QUIET — **Quiet Mode Operation**

AIR SWING — **Airflow Direction Control**

- AUTO — Vertical Automatic Airflow Direction Control.
- MANUAL — Vertical Manual Airflow Direction Control.

FAN SPEED — **Indoor Fan Speed Selection**

- ■ — Low
- ■■ — Medium-
- ■■■ — Medium
- ■■■■ — Medium+
- ■■■■■ — High
- AUTO — Automatic Fan Speed

TEMP — **Room Temperature Setting**

- Increase or decrease set temperature. (16°C to 30°C)

TIMER-ON TIMER-OFF — **Timer Setting**

- 24-hour, OFF / ON Real Timer Setting.

▲▼ — **Time / Timer Setting**

- Hours and minutes setting.

SET CANCEL — **Timer Operation Set / Cancel**

- ON Timer and OFF Timer setting and cancellation.

○ CLOCK — **Clock Setting**

- Current time setting.

○ CHECK — **Check Point**

- Breakdown self diagnosis function.

○ RESET — **Reset Point**

- Clear memory data.

3.4.2. Indoor Unit



Simultaneous Operation Control

Automatic Operation Switch

- Press for < 5s to run Automatic Operation. (Used when the remote control cannot be used.)
- Press continuously for 5s and < 8s to run Forced Cooling Operation.
- Press continuously for 8s and < 11s to run Forced Heating Operation.
- Press continuously for 11s and < 16s to change different remote controlling setting (4 type of transmission code).
- Press continuously for 16s or < 21s to switch OFF / ON Remote Control Receiving Sound or H14 Abnormality Detection Mode.

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation Mode judging, deice, On Timer sampling and Hot Start operation.
- TIMER (Orange) ..... Lights up in Timer Setting. Blinks in Self Diagnosis Control.
- QUIET (Orange) ..... Lights up in Quiet Mode Operation.
- POWERFUL (Orange) ... Lights up when Powerful Mode is selected.
- AIR SWING (Orange) .... Lights up in Auto Air Swing.

Four Operation Modes

- Automatic, Heating, Cooling and Soft Dry Operation.

Automatic and 5 Manual Indoor Fan Speeds

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Powerful Mode

- For quick cooling or heating.

Quiet Mode

- To provide quiet operation.

Delay ON Timer and OFF Timer

Automatic Restart Control

- Operation is restarted after power failure at previous setting mode.

Microcomputer-controlled Room Temperature Control

Breakdown Self Diagnosis Function

Low Pressure Control (Gas Leakeage Detection)

Indoor Power Relay Control

Anti-Dew Formation Control

Anti Freezing Control

Anti-Cold Draft Control

Hot Start

Intake Air Temperature Control

High Pressure Control

Deodorizing Control

Deice Operation

4 Product Specifications

4.1. Wall Type

Model			Unit	CS-ME7DKEG CS-ME7DKRG CS-ME7DKDG	CS-E9DKEW CS-E9DKRW CS-E9DKDW	CS-E12DKEW CS-E12DKRW CS-E12DKDW	CS-E15DKEW CS-E15DKRW CS-E15DKDW	CS-E18DKEW CS-E18DKRW CS-E18DKDW
Item				Wall Type				
Power Source	Outdoor power			Single 230V 50Hz				
Air Volume		Cooling	m^3/min (cfm)	High: 9.6 (340)		High: 10.7 (380)	High: 11.0 (390)	High: 13.9 (490)
		Heating	m^3/min (cfm)	High: 10.0 (350)		High: 11.2 (400)	High: 11.8 (420)	High: 15.2 (540)
Noise Level		Cooling (Power)	dB(A) (dB)	High: 40 (53) Low: 29		High: 44 (57) Low: 32	High: 44 (57) Low: 32	High: 46 (59) Low: 33
		Heating (Power)	dB(A) (dB)	High: 40 (53) Low: 29		High: 44 (57) Low: 32	High: 44 (57) Low: 33	High: 46 (59) Low: 35
Moisture Removal			L/h (Pint/h)	1.3 (2.8)	1.6 (3.4)	1.8 (3.8)	2.3 (4.8)	2.8 (5.9)
Refrigeration Piping	Connection	Liquid	mm (inch)	6.35 (1/4")				
		Gas	mm (inch)	9.52 (3/8")		12.7 (1/2")		
Type of Indoor / Outdoor connecting cable			mm	4 × 1.5 mm^2 flexible cord, type designation 245 IEC 57 (H05RN-F)				
Drain Hose	Inner diameter		mm	16				
	Length		m	0.65				
Dimensions	Height		mm (inch)	280 (11 - 1/32)				275 (10 - 13/16)
	Width		mm (inch)	799 (31 - 15/32)				998 (39 - 9/32)
	Depth		mm (inch)	183 (7 - 7/32)				230 (9 - 1/16)
Net Weight			lb (kg)	20 (9.0)				24 (11.0)
Air Circulation	Type			Cross-flow Fan				
	Motor	Type		Transistor (8-poles)				
		Output	W	30				
Heat Exchanger				Plate fin configuration, forced draft				
		Row / Stage		2/15				
Thermostat				Electronic Control				
Protection Device				Electronic Control				
Air Filter				P.P. Honeycomb				

- Specifications are subject to change without notice for further improvement.

4.2. Duct Type

Model			Unit	CS-ME10DD3EG	CS-E15DD3EW	CS-E18DD3EW
Item				Duct Type		
Power Source	Outdoor power			Single 230V 50Hz		
Air Volume		Cooling	m^3/min (cfm)	High: 7.0 (250)	High: 7.8 (280)	High: 10.3 (360)
		Heating	m^3/min (cfm)	High: 8.9 (310)		High: 12.6 (440)
Noise Level		Cooling (Power)	dB(A) (dB)	High: 31 (47) Low: 27	High: 33 (49) Low: 27	High: 41 (57) Low: 30
		Heating (Power)	dB(A) (dB)	High: 35 (51) Low: 27	High: 35 (51) Low: 28	High: 41 (57) Low: 32
Moisture Removal			L/h (Pint/h)	1.6 (3.4)	2.3 (4.9)	2.8 (5.9)
Refrigeration Piping	Connection	Liquid	mm (inch)	6.35 (1/4")		
		Gas	mm (inch)	9.52 (3/8")	12.7 (1/2")	
Type of Indoor / Outdoor connecting cable			mm	4 × 1.5 mm^2 flexible cord, type designation 245 IEC 57 (H05RN-F)		
Drain Hose	Inner diameter		mm	VP20		
	Length		m	0.255		
Dimensions	Height		mm (inch)	235 (9 - 1/4)		285 (11 - 7/32)
	Width		mm (inch)	750 (29 - 17/32)		
	Depth		mm (inch)	370 (14 - 9/16)		
Net Weight			lb (kg)	17 (37)		18 (40)
Air Circulation	Type			Sirocco Fan		
	Motor	Type		Transistor 8-poles		
		Output	W	30		
Heat Exchanger				Plate fin configuration, forced draft		
		Row / Stage		2/8		3/12
Thermostat				Electronic Control		
Protection Device				Electronic Control		
Air Filter				—		

- Specifications are subject to change without notice for further improvement.

4.3. Ceiling Floor Type

Model			Unit	CS-ME10DTEG	CS-E15DTEW	CS-E18DTEW
Item				Ceiling Floor Type		
Power Source	Outdoor power			Single 230V 50Hz		
Air Volume		Cooling	m^3/min (cfm)	High: 9.3 (330)	High: 11.7 (410)	High: 12.1 (430)
		Heating	m^3/min (cfm)	High: 9.3 (330)	High: 12.0 (420)	High: 12.5 (440)
Noise Level		Cooling (Power)	dB(A) (dB)	High: 39 (52) Low: 31	High: 45 (58) Low: 37	High: 46 (59) Low: 39
		Heating (Power)	dB(A) (dB)	High: 40 (53) Low: 31	High: 45 (58) Low: 33	High: 47 (60) Low: 35
Moisture Removal			L/h (Pint/h)	1.6 (3.3)	2.3 (4.9)	2.8 (5.9)
Refrigeration Piping	Connection	Liquid	mm (inch)	6.35 (1/4")		
		Gas	mm (inch)	9.52 (3/8")	12.7 (1/2")	
Type of Indoor / Outdoor connecting cable			mm	4 × 1.5 mm^2 flexible cord, type designation 245 IEC 57 (H05RN-F)		
Drain Hose	Inner diameter		mm	16		
	Length		m	0.65		
Dimensions	Height		mm (inch)	540 (21 - 9/32)		
	Width		mm (inch)	1028 (40 - 1/2)		
	Depth		mm (inch)	200 (7 - 7/8)		
Net Weight			lb (kg)	17 (37)		18 (40)
Air Circulation	Type			Backward Fan		
	Motor	Type		Transistor 8-poles		
		Rate Output	W	51		
Heat Exchanger				Plate fin configuration, forced draft		
		Row / Stage		2/12		
Thermostat				Electronic Control		
Protection Device				Electronic Control		
Air Filter				P.P. Honeycomb		

- Specifications are subject to change without notice for further improvement.

4.4. Mini-Cassette Type

Model			Unit	CS-E15DB4EW	CS-E18DB4EW
Item				Mini-Cassette Type	
Power Source	Outdoor power			Single 230V / 240V, 50Hz	
Air Volume		Cooling	m^3/min (cfm)	High: 10.5 (370)	High: 11.0 (390)
		Heating	m^3/min (cfm)	High: 10.8 (380)	High: 11.5 (405)
Noise Level		Cooling (Power)	dB(A) (dB)	High: 34 (47) Low: 26	High: 36 (49) Low: 28
		Heating (Power)	dB(A) (dB)	High: 35 (48) Low: 28	High: 37 (50) Low: 29
Moisture Removal			L/h (Pint/h)	2.3 (4.9)	2.8 (5.9)
Refrigeration Piping	Connection	Liquid	mm (inch)	6.35 (1/4")	
		Gas	mm (inch)	12.7 (1/2")	
Type of Indoor / Outdoor connecting cable			mm	4 × 1.5 mm^2 flexible cord, type designation 245 IEC 57 (H05RN-F)	
Drain Hose	Inner diameter		mm	30	
	Length		m	0.193	
Dimensions	Height		mm (inch)	260 (10 - 1/4)	
	Width		mm (inch)	575 (22 - 5/8)	
	Depth		mm (inch)	575 (22 - 5/8)	
Net Weight			lb (kg)	18 (40)	
Air Circulation	Type			Backward Fan	
	Motor	Type		Transistor (8-poles)	
		Rate Output	W	40	
Heat Exchanger				Plate fin configuration, forced draft	
		Row / Stage		2/10	
Thermostat				Electronic Control	
Protection Device				Electronic Control	
Air Filter				P.P. Honeycomb	

- Specifications are subject to change without notice for further improvement.

4.5. Outdoor units: CU-2E15CBPG / CU-2E18CBPG

Outdoor Unit	Indoor unit combination		Operation mode	Capacity (kW)		Power input (kW)		Current (A)
	Operation	Class (kW)		Rating	mini - max	Rating	mini - max	
CU-2E15CBPG	One-room Operation	2.2	Cooling	2.20	1.1 - 2.9	0.52	0.22 - 0.75	2.45
			Heating	3.20	0.7 - 4.8	0.85	0.17 - 1.41	3.75
		2.8	Cooling	2.80	1.1 - 3.5	0.75	0.22 - 1.00	3.50
			Heating	4.00	0.7 - 5.5	1.15	0.17 -1.70	5.10
	Two-room Operation	2.2 + 2.2	Cooling	4.50	1.5 - 5.0	1.23	0.25 - 1.35	5.75
			Heating	5.40	1.1 - 7.0	1.17	0.21 - 1.67	5.20
		2.2 + 2.8*	Cooling	4.50	1.5 - 5.2	1.23	0.25 - 1.52	5.75
			Heating	5.40	1.1 - 7.0	1.17	0.21 - 1.67	5.20
CU-2E18CBPG	One-room Operation	2.2	Cooling	2.20	1.1 - 2.9	0.52	0.22 - 0.75	2.45
			Heating	3.20	0.7 - 4.8	0.85	0.17 - 1.41	3.75
		2.8	Cooling	2.80	1.1 - 3.5	0.75	0.22 - 1.00	3.50
			Heating	4.00	0.7 - 5.5	1.15	0.17 -1.70	5.10
		3.2	Cooling	3.20	1.1 - 4.0	0.92	0.22 - 1.22	4.30
			Heating	4.50	0.7 - 6.2	1.25	0.17 - 1.81	5.55
	Two-room Operation	2.2 + 2.2	Cooling	4.50	1.5 - 5.0	1.23	0.25 - 1.35	5.75
			Heating	5.40	1.1 - 7.0	1.17	0.21 - 1.67	5.20
		2.2 + 2.8*	Cooling	4.50	1.5 - 5.2	1.23	0.25 - 1.52	5.75
			Heating	5.40	1.1 - 7.0	1.17	0.21 - 1.67	5.20
		2.2 + 3.2	Cooling	4.80	1.5 - 5.3	1.31	0.25 - 1.54	6.10
			Heating	5.60	1.1 - 7.2	1.23	0.21 - 1.72	5.45
		2.8* + 2.8*	Cooling	4.80	1.5 - 5.2	1.31	0.25 - 1.52	6.10
			Heating	5.60	1.1 - 7.2	1.25	0.21 - 1.74	5.55
		2.8* + 3.2	Cooling	5.00	1.5 - 5.3	1.49	0.25 - 1.54	6.95
			Heating	5.60	1.1 - 7.2	1.23	0.21 - 1.72	5.45
		3.2 + 3.2	Cooling	5.20	1.5 - 5.4	1.52	0.25 - 1.58	7.10
			Heating	5.60	1.1 - 7.2	1.21	0.21 - 1.70	5.35

Note:

1. "2.8 kW" Class model indicates CS-ME10DD3EG (Duct) and CS-ME10DTEG (Ceiling Floor)."
2. A combination of "2.8 kW + 2.8 kW" includes the following:
   - "CS-ME10DD3EG (Duct)" + "CS-ME10DD3EG (Duct)"
   - "CS-ME10DD3EG (Duct)" + "CS-E9DKEW (Wall)"
   - "CS-ME10DD3EG (Duct)" + "CS-E9DKRW (Wall)"
   - "CS-ME10DDTEG (Ceiling Floor)" + "CS-ME10DTEG (Ceiling Floor)"
   - "CS-ME10DTEG (Ceiling Floor)" + "CS-E9DKEW (Wall)"
   - "CS-ME10DTEG (Ceiling Floor)" + "CS-E9DKRW (Wall)"
   - "CS-ME10DTEG (Ceiling Floor)" + "CS-ME10DD3EG (Duct)"

4.6. Outdoor units: CU-3E23CBPG / CU-4E27CBPG

Outdoor Unit	Indoor unit combination		Operation mode	Capacity (kW)		Power input (kW)		Current (A)
	Operation	Class (kW)		Rating	mini - max	Rating	mini - max	
CU-3E23CBPG	One-room Operation	2.2	Cooling	2.20	1.9 - 2.7	0.45	0.38 - 0.62	2.25
			Heating	3.20	1.7 - 4.1	0.84	0.37 - 1.31	3.85
		2.8	Cooling	2.80	2.0 - 3.4	0.62	0.38 - 0.90	2.95
			Heating	4.00	1.7 - 4.3	1.21	0.37 - 1.40	5.40
		3.2	Cooling	3.20	2.0 - 3.9	0.72	0.38 - 1.09	3.40
			Heating	4.50	1.7 - 5.7	1.31	0.37 - 1.91	5.85
		4.0	Cooling	4.00	2.0 - 4.4	1.03	0.38 - 1.39	4.60
			Heating	5.60	1.8 - 7.2	1.90	0.37 - 2.92	8.35
		5.0	Cooling	5.00	2.1 - 5.2	1.61	0.40 - 1.80	7.15
			Heating	7.10	2.1 - 7.3	2.84	0.43 - 2.89	12.40
	Two-room Operation	2.2 + 2.2	Cooling	4.40	2.1 - 5.0	0.98	0.40 - 1.26	4.45
			Heating	6.30	1.8 - 8.6	1.41	0.40 - 2.57	6.25
		2.2 + 2.8	Cooling	5.00	2.1 - 6.1	1.23	0.40 - 1.88	5.50
			Heating	7.10	2.1 - 8.6	1.70	0.42 - 2.57	7.55
		2.2 + 3.2	Cooling	5.40	2.2 - 7.0	1.37	0.40 - 2.79	6.10
			Heating	7.50	2.2 - 8.7	1.74	0.42 - 2.97	7.75
		2.2 + 4.0	Cooling	6.20	2.2 - 7.1	1.82	0.40 - 2.79	8.00
			Heating	8.20	2.4 - 8.7	2.01	0.44 - 2.97	8.85
		2.2 + 5.0	Cooling	6.80	2.5 - 7.1	2.24	0.46 - 2.80	9.85
			Heating	8.60	3.2 - 9.0	2.16	0.53 - 2.96	9.50
		2.8 + 2.8	Cooling	5.60	2.2 - 6.9	1.55	0.40 - 2.78	6.85
			Heating	7.70	2.3 - 8.7	1.93	0.44 - 3.04	8.45
		2.8 + 3.2	Cooling	6.00	2.2 - 7.0	1.70	0.40 - 2.79	7.55
			Heating	8.00	2.4 - 8.8	1.97	0.44 - 3.02	8.60
		2.8 + 4.0	Cooling	6.80	2.2 - 7.1	2.39	0.46 - 2.79	10.50
			Heating	8.60	2.1 - 9.0	2.175	0.53 - 3.03	9.55
		2.8 + 5.0	Cooling	6.80	2.5 - 7.2	2.23	0.46 - 2.80	9.85
			Heating	8.60	3.2 - 9.0	2.15	0.53 - 3.01	9.50
		3.2 + 3.2	Cooling	6.40	2.2 - 7.3	1.86	0.40 - 2.81	8.15
			Heating	8.40	2.5 - 9.0	2.05	0.47 - 2.97	9.05
		3.2 + 4.0	Cooling	6.80	2.5 - 7.3	2.22	0.46 - 2.81	9.65
			Heating	8.60	3.2 - 9.0	2.09	0.53 - 2.97	9.20
		3.2 + 5.0	Cooling	6.80	2.6 - 7.4	2.12	0.46 - 2.82	9.30
			Heating	8.60	3.2 - 9.0	2.08	0.53 - 2.95	9.15
		4.0 + 4.0	Cooling	6.80	2.5 - 7.3	2.19	0.46 - 2.81	9.65
			Heating	8.60	3.2 - 9.0	2.08	0.53 - 2.97	9.15
		4.0 + 5.0	Cooling	6.80	2.7 - 7.4	2.11	0.48 - 2.82	9.30
			Heating	8.60	3.2 - 9.1	2.07	053 - 2.95	9.15
		5.0 + 5.0	Cooling	6.80	2.8 - 7.4	2.07	0.48 - 2.82	9.15
			Heating	8.60	3.5 - 9.1	2.07	0.59 - 2.94	9.15
	Three-room Operation	2.2 + 2.2 + 2.2	Cooling	6.60	2.2 - 7.7	1.85	0.41 - 2.45	8.10
			Heating	8.53	3.1 - 8.9	1.94	0.50 - 2.80	8.50
		2.2 + 2.2 + 2.8	Cooling	6.80	2.5 - 8.1	1.98	0.46 - 2.82	8.70
			Heating	8.60	3.2 - 8.9	1.98	0.51 - 2.80	8.70
		2.2 + 2.2 + 3.2	Cooling	6.80	2.5 - 8.1	1.99	0.46 - 2.79	8.80
			Heating	8.60	3.2 - 9.0	1.96	0.51 - 2.78	8.60
		2.2 + 2.2 + 4.0	Cooling	6.80	2.6 - 8.2	1.97	0.46 - 2.79	8.60
			Heating	8.60	3.2 - 8.8	1.94	0.51 - 2.76	8.50
		2.2 + 2.2 + 5.0	Cooling	6.80	2.8 - 8.3	1.96	0.49 - 2.79	8.60
			Heating	8.60	3.2 - 8.8	1.92	0.51 - 2.76	8.45
		2.2 + 2.8 + 2.8	Cooling	6.80	2.5 - 8.1	1.95	0.46 - 2.78	8.50
			Heating	8.60	3.2 - 9.0	1.93	0.51 - 2.73	8.45
		2.2 + 2.8 + 3.2	Cooling	6.80	2.6 - 8.1	1.98	0.46 - 2.79	8.70
			Heating	8.60	3.2 - 8.8	1.93	0.51 - 2.76	8.45
		2.2 + 2.8 + 4.0	Cooling	6.80	2.7 - 8.2	1.96	0.49 - 2.79	8.60
			Heating	8.60	3.2 - 9.0	1.91	0.51 - 2.76	8.35
		2.2 + 2.8 + 5.0	Cooling	6.80	2.8 - 8.3	1.95	0.49 - 2.79	8.50
			Heating	8.60	3.5 - 9.0	1.92	0.56 - 2.73	8.45
		2.2 + 3.2 + 3.2	Cooling	6.80	2.7 - 8.3	1.97	0.46 - 2.80	8.60
			Heating	8.60	3.2 - 9.1	1.91	0.50 - 2.71	8.35
		2.2 + 3.2 + 4.0	Cooling	6.80	2.8 - 8.3	1.95	0.49 -2.80	8.50
			Heating	8.60	3.2 - 9.0	1.89	0.50 - 2.71	8.25
		2.8 + 2.8 + 2.8	Cooling	6.78	2.6 - 8.1	1.94	0.46 - 2.82	8.50
			Heating	8.58	3.2 - 9.0	1.91	0.51 - 2.76	8.35

Outdoor Unit	Indoor unit combination		Operation mode	Capacity (kW)		Power input (kW)		Current (A)
	Operation	Class (kW)		Rating	mini - max	Rating	mini - max	
CU-3E23CBPG	Three-room Operation	2.8 + 2.8 + 3.2	Cooling	6.80	2.7 - 8.2	1.96	0.49 - 2.79	8.60
			Heating	8.60	3.2 - 9.0	1.92	0.51 - 2.76	8.45
		2.8 + 2.8 + 4.0	Cooling	6.80	2.8 - 8.2	1.95	0.49 - 2.79	8.50
			Heating	8.60	3.3 - 9.0	1.90	0.53 - 2.76	8.35
		2.8 + 3.2 + 3.2	Cooling	6.80	2.7 - 8.3	1.96	0.49 - 2.80	8.60
			Heating	8.60	3.2 - 9.0	1.90	0.50 - 2.71	8.35
		2.8 + 3.2 + 4.0	Cooling	6.80	2.8 - 8.4	1.95	0.49 - 2.80	8.50
			Heating	8.60	3.5 - 9.1	1.88	0.56 - 2.71	8.30
		3.2 + 3.2 + 3.2	Cooling	6.78	2.8 - 8.5	1.96	0.49 - 2.80	8.60
			Heating	8.58	3.3 - 9.1	1.85	0.52 - 2.67	8.10
CU-4E27CBPG	One-room Operation	2.2	Cooling	2.20	1.9 - 2.7	0.45	0.38 - 0.62	2.25
			Heating	3.20	1.7 - 4.7	0.84	0.37 - 1.83	3.85
		2.8	Cooling	2.80	2.0 - 3.4	0.62	0.38 - 0.90	2.95
			Heating	4.00	1.7 - 4.8	1.21	0.37 - 1.90	5.40
		3.2	Cooling	3.20	2.0 - 3.9	0.72	0.38 - 1.09	3.40
			Heating	4.50	1.7 - 5.8	1.31	0.37 - 2.29	5.85
		4.0	Cooling	4.00	2.0 - 4.4	1.03	0.38 - 1.39	4.60
			Heating	5.60	1.8 - 7.2	1.90	0.37 - 3.56	8.35
		5.0	Cooling	5.00	2.1 - 5.2	1.61	0.40 - 1.80	7.15
			Heating	7.10	2.1 - 7.3	2.84	0.43 - 3.56	12.40
	Two-room Operation	2.2 + 2.2	Cooling	4.40	2.1 - 5.0	0.98	0.40 - 1.26	4.45
			Heating	6.40	1.8 - 9.4	1.48	0.40 - 3.55	6.50
		2.2 + 2.8	Cooling	5.00	2.1 - 6.1	1.23	0.40 - 1.88	5.50
			Heating	7.10	2.1 - 9.4	1.70	0.42 - 3.51	7.55
		2.2 + 3.2	Cooling	5.40	2.2 - 7.0	1.37	0.40 - 2.79	6.10
			Heating	7.50	2.2 - 9.8	1.74	0.42 - 3.49	7.65
		2.2 + 4.0	Cooling	6.20	2.2 - 7.1	1.82	0.40 - 2.79	8.00
			Heating	8.30	2.4 - 9.8	2.06	0.44 - 3.44	9.05
		2.2 + 5.0	Cooling	7.00	2.5 - 7.2	2.50	0.46 - 2.80	11.00
			Heating	8.80	3.2 - 9.9	2.26	0.53 - 3.40	9.90
		2.8 + 2.8	Cooling	5.60	2.2 - 6.9	1.55	0.40 - 2.78	6.85
			Heating	7.70	2.3 - 9.4	2.02	0.44 - 3.48	8.85
		2.8 + 3.2	Cooling	6.00	2.2 - 7.0	1.70	0.40 - 2.79	7.55
			Heating	8.10	2.4 - 9.8	1.98	0.44 - 3.46	8.70
		2.8 + 4.0	Cooling	6.80	2.2 - 7.1	2.28	0.40 - 2.79	10.00
			Heating	8.60	2.1 - 9.8	2.175	0.53 - 3.39	9.65
		2.8 + 5.0	Cooling	7.10	2.5 - 7.2	2.61	0.46 - 2.80	11.50
			Heating	9.00	3.2 - 9.9	2.39	0.53 - 3.37	10.50
		3.2 + 3.2	Cooling	6.40	2.2 - 7.3	1.86	0.40 - 2.81	8.15
			Heating	8.50	2.5 - 10.1	2.11	0.47 - 3.39	9.30
		3.2 + 4.0	Cooling	7.00	2.5 - 7.3	2.41	0.46 - 2.81	10.60
			Heating	8.80	3.2 - 10.1	2.23	0.53 - 3.34	9.85
		3.2 + 5.0	Cooling	7.40	2.6 - 7.4	2.82	0.46 - 2.88	12.30
			Heating	9.20	3.2 - 10.1	2.39	0.53 - 3.30	10.50
		4.0 + 4.0	Cooling	7.20	2.5 - 7.3	2.62	0.46 - 2.81	11.50
			Heating	9.10	3.2 - 10.1	2.36	0.53 - 3.32	10.30
		4.0 + 5.0	Cooling	7.30	2.7 - 7.4	2.67	0.48 - 2.82	11.70
			Heating	9.40	3.2 - 10.2	2.48	0.53 - 3.30	10.90
		5.0 + 5.0	Cooling	7.50	2.8 - 7.6	2.86	0.48 - 2.87	12.50
			Heating	9.40	3.5 - 10.2	2.47	0.59 - 3.29	10.90
	Three-room Operation	2.2 + 2.2 + 2.2	Cooling	6.60	2.2 - 7.8	1.66	0.41 - 2.49	7.40
			Heating	8.61	3.1 - 10.4	1.99	0.50 - 3.25	8.80
		2.2 + 2.2 + 2.8	Cooling	7.00	2.5 - 8.1	1.89	0.46 - 2.85	8.25
			Heating	8.80	3.2 - 10.4	2.01	0.51 - 3.22	8.85
		2.2 + 2.2 + 3.2	Cooling	7.30	2.5 - 8.2	1.98	0.46 - 2.79	8.70
			Heating	8.90	3.2 - 10.4	2.03	0.51 - 3.22	8.95
		2.2 + 2.2 + 4.0	Cooling	7.80	2.6 - 8.2	2.33	0.46 - 2.83	10.30
			Heating	9.20	3.2 - 10.4	2.15	0.51 - 3.18	9.50
		2.2 + 2.2 + 5.0	Cooling	8.00	2.8 - 8.3	2.46	0.49 - 2.82	10.80
			Heating	9.40	3.2 - 10.4	2.12	0.51 - 3.18	9.30
		2.2 + 2.8 + 2.8	Cooling	7.40	2.5 - 8.1	2.14	0.46 - 2.79	9.40
			Heating	9.00	3.2 - 10.4	2.09	0.51 - 3.19	9.20
		2.2 + 2.8 + 3.2	Cooling	7.60	2.6 - 8.2	2.24	0.46 - 2.84	9.85
			Heating	9.20	3.2 - 10.4	2.11	0.51 - 3.18	9.30
		2.2 + 2.8 + 4.0	Cooling	8.00	2.7 - 8.2	2.51	0.49 - 2.80	11.00
			Heating	9.40	3.2 - 10.4	2.16	0.51 - 3.14	9.50

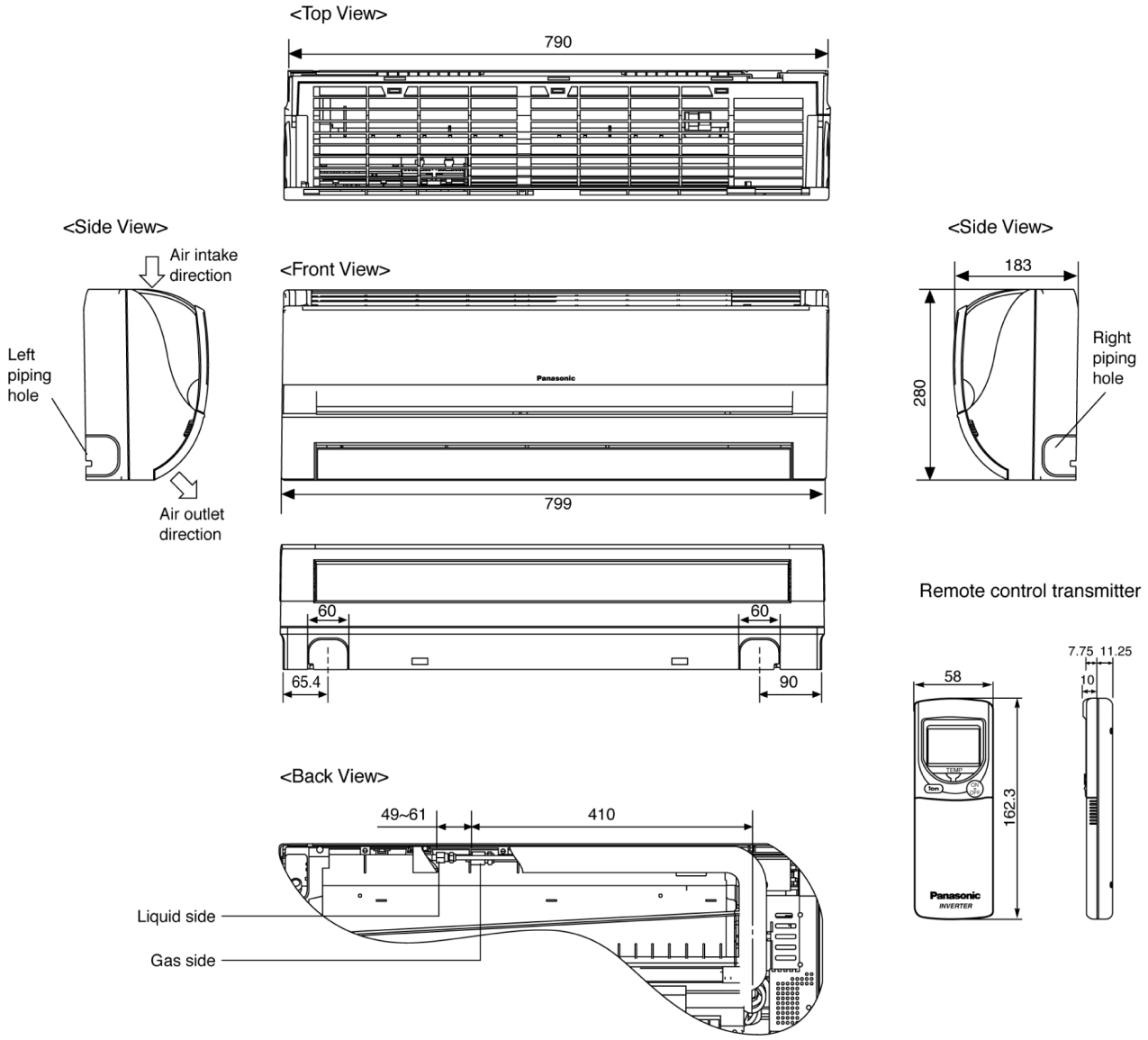
Outdoor Unit	Indoor unit combination		Operation mode	Capacity (kW)		Power input (kW)		Current (A)
	Operation	Class (kW)		Rating	mini - max	Rating	mini - max	
CU-4E27CBPG	Three-room Operation	2.2 + 2.8 + 5.0	Cooling	8.00	2.8 - 8.3	2.46	0.49 - 2.80	10.80
			Heating	9.40	3.5 - 10.4	2.08	0.56 - 3.15	9.15
		2.2 + 3.2 + 3.2	Cooling	7.90	2.7 - 8.3	2.29	0.46 - 2.81	10.10
			Heating	9.30	3.2 - 10.5	2.13	0.50 - 3.18	9.40
		2.2 + 3.2 + 4.0	Cooling	8.00	2.8 - 8.4	2.38	0.49 - 2.84	10.40
			Heating	9.40	3.2 - 10.5	2.15	0.50 - 3.14	9.50
		2.2 + 3.2 + 5.0	Cooling	8.00	2.8 - 8.3	2.47	0.49 - 2.84	10.90
			Heating	9.40	3.7 - 10.5	2.17	0.62 - 3.14	9.55
		2.2 + 4.0 + 4.0	Cooling	8.00	2.8 - 8.4	2.38	0.49 - 2.81	10.40
			Heating	9.40	3.6 - 10.5	2.11	0.62 - 3.11	9.30
		2.2 + 4.0 + 5.0	Cooling	8.00	2.8 - 8.3	2.47	0.49 - 2.81	10.90
			Heating	9.40	3.9 - 10.5	2.12	0.66 - 3.11	9.30
		2.2 + 5.0 + 5.0	Cooling	8.00	2.9 - 8.4	2.43	0.49 - 2.83	10.70
			Heating	9.40	4.1 - 10.5	2.17	0.70 - 3.12	9.55
		2.8 + 2.8 + 2.8	Cooling	7.80	2.6 - 8.1	2.45	0.46 - 2.82	10.80
			Heating	9.24	3.2 - 10.4	2.17	0.51 - 3.16	9.55
		2.8 + 2.8 + 3.2	Cooling	8.00	2.7 - 8.2	2.51	0.49 - 2.81	11.00
			Heating	9.40	3.2 - 10.4	2.19	0.51 - 3.15	9.65
		2.8 + 2.8 + 4.0	Cooling	8.00	2.8 - 8.2	2.51	0.49 - 2.79	11.00
			Heating	9.40	3.3 - 10.4	2.14	0.53 - 3.13	9.40
		2.8 + 2.8 + 5.0	Cooling	8.00	2.8 - 8.3	2.46	0.49 - 2.79	10.80
			Heating	9.40	3.8 - 10.4	2.10	0.64 - 3.12	9.20
		2.8 + 3.2 + 3.2	Cooling	8.00	2.7 - 8.4	2.38	0.49 - 2.85	10.40
			Heating	9.40	3.2 - 10.5	2.17	0.50 - 3.15	9.55
		2.8 + 3.2 + 4.0	Cooling	8.00	2.8 - 8.4	2.38	0.49 - 2.82	10.40
			Heating	9.40	3.5 - 10.5	2.13	0.56 - 3.12	9.40
		2.8 + 3.2 + 5.0	Cooling	8.00	2.8 - 8.4	2.34	0.49 - 2.83	10.30
			Heating	9.40	3.9 - 10.5	2.15	0.66 - 3.12	9.50
		2.8 + 4.0 + 4.0	Cooling	8.00	2.8 - 8.4	2.38	0.49 - 2.80	10.40
			Heating	9.40	3.8 - 10.5	2.06	0.64 - 3.08	9.05
		2.8 + 4.0 + 5.0	Cooling	8.00	2.8 - 8.4	2.34	0.49 - 2.80	10.30
			Heating	9.40	4.0 - 10.5	2.10	0.68 - 3.08	9.20
		2.8 + 5.0 + 5.0	Cooling	8.00	2.9 - 8.5	2.34	0.52 - 2.80	10.30
			Heating	9.40	4.2 - 10.5	2.14	0.70 - 3.08	9.40
		3.2 + 3.2 + 3.2	Cooling	7.98	2.8 - 8.5	2.30	0.49 - 2.83	10.10
			Heating	9.39	3.3 - 10.5	2.16	0.52 - 3.18	9.50
		3.2 + 3.2 + 4.0	Cooling	8.00	2.8 - 8.4	2.39	0.49 - 2.80	10.50
			Heating	9.40	3.7 - 10.5	2.14	0.62 - 3.15	9.40
		3.2 + 3.2 + 5.0	Cooling	8.00	2.8 - 8.4	2.39	0.49 - 2.83	10.50
			Heating	9.40	4.0 - 10.5	2.13	0.68 - 3.12	9.40
		3.2 + 4.0 + 4.0	Cooling	8.00	2.8 - 8.4	2.39	0.49 - 2.82	10.50
			Heating	9.40	3.9 - 10.5	2.12	0.66 - 3.12	9.30
		3.2 + 4.0 + 5.0	Cooling	8.00	2.9 - 8.4	2.35	0.49 - 2.82	10.30
			Heating	9.40	4.1 - 10.5	2.10	0.70 - 3.10	9.20
		3.2 + 5.0 + 5.0	Cooling	8.00	2.9 - 8.5	2.35	0.52 - 2.81	10.30
			Heating	9.40	4.2 - 10.5	2.06	0.70 - 3.08	9.05
		4.0 + 4.0 + 4.0	Cooling	7.98	2.9 - 8.4	2.39	0.49 - 2.84	10.50
			Heating	9.39	4.0 - 10.5	2.10	0.68 - 3.08	9.20
		4.0 + 4.0 + 5.0	Cooling	8.00	2.9 - 8.4	2.39	0.52 - 2.81	10.50
			Heating	9.40	4.2 - 10.5	2.08	0.70 - 3.08	9.15
	Four-room Operation	2.2 + 2.2 + 2.2 + 2.2	Cooling	8.00	2.7 - 8.8	2.15	0.49 - 2.84	9.50
			Heating	9.40	3.2 - 10.5	2.08	0.55 - 3.14	9.15
		2.2 + 2.2 + 2.2 + 2.8	Cooling	8.00	2.8 - 8.8	2.14	0.49 - 2.88	9.40
			Heating	9.40	3.2 - 10.5	2.06	0.55 - 3.12	9.05
		2.2 + 2.2 + 2.2 + 3.2	Cooling	8.00	2.8 - 8.9	2.13	0.49 - 2.88	9.40
			Heating	9.40	3.4 - 10.5	2.12	0.59 - 3.18	9.30
		2.2 + 2.2 + 2.2 + 4.0	Cooling	8.00	2.8 - 8.9	2.11	0.49 - 2.87	9.30
			Heating	9.40	3.8 - 10.5	2.09	0.64 - 3.14	9.20
		2.2 + 2.2 + 2.2 + 5.0	Cooling	8.00	2.8 - 8.9	2.11	0.49 - 2.84	9.30
			Heating	9.40	4.0 - 10.5	2.12	0.68 - 3.11	9.30
		2.2 + 2.2 + 2.8 + 2.8	Cooling	8.00	2.8 - 8.8	2.13	0.49 - 2.87	9.40
			Heating	9.40	3.5 - 10.5	2.05	0.61 - 3.11	9.05
		2.2 + 2.2 + 2.8 + 3.2	Cooling	8.00	2.8 - 8.9	2.12	0.49 - 2.87	9.30
			Heating	9.40	3.7 - 10.5	2.10	0.62 - 3.16	9.20
		2.2 + 2.2 + 2.8 + 4.0	Cooling	8.00	2.8 - 8.9	2.09	0.49 - 2.84	9.20
			Heating	9.40	3.9 - 10.5	2.07	0.66 - 3.11	9.10

Outdoor Unit	Indoor unit combination		Operation mode	Capacity (kW)		Power input (kW)		Current (A)
	Operation	Class (kW)		Rating	mini - max	Rating	mini - max	
CU-4E27CBPG	Four-room Operation	2.2 + 2.2 + 2.8 + 5.0	Cooling	8.00	2.9 - 8.9	2.11	0.52 - 2.88	9.30
			Heating	9.40	4.1 - 10.5	2.09	0.70 - 3.10	9.20
		2.2 + 2.2 + 3.2 + 3.2	Cooling	8.00	2.8 - 8.9	2.09	0.50 - 2.87	9.20
			Heating	9.40	3.8 - 10.5	2.11	0.64 - 3.19	9.30
		2.2 + 2.2 + 3.2 + 4.0	Cooling	8.00	2.8 - 8.9	2.08	0.50 - 2.84	9.15
			Heating	9.40	4.0 - 10.5	2.08	0.68 - 3.15	9.15
		2.2 + 2.2 + 3.2 + 5.0	Cooling	8.00	2.9 - 9.0	2.04	0.52 - 2.86	8.95
			Heating	9.40	4.1 - 10.5	2.11	0.70 - 3.08	9.30
		2.2 + 2.2 + 4.0 + 4.0	Cooling	8.00	2.9 - 9.0	2.06	0.52 - 2.85	9.05
			Heating	9.40	4.1 - 10.5	2.05	0.70 - 3.11	9.05
		2.2 + 2.2 + 4.0 + 5.0	Cooling	8.00	2.9 - 9.0	2.02	0.52 - 2.88	8.85
			Heating	9.40	4.2 - 10.5	2.08	0.70 - 3.06	9.15
		2.2 + 2.8 + 2.8 + 2.8	Cooling	8.00	2.8 - 8.8	2.12	0.49 - 2.85	9.30
			Heating	9.40	3.8 - 10.5	2.04	0.64 - 3.08	8.95
		2.2 + 2.8 + 2.8 + 3.2	Cooling	8.00	2.8 - 8.9	2.10	0.49 - 2.85	9.20
			Heating	9.40	3.9 - 10.5	2.08	0.66 - 3.13	9.15
		2.2 + 2.8 + 2.8 + 4.0	Cooling	8.00	2.8 - 8.9	2.13	0.49 - 2.86	9.40
			Heating	9.40	4.0 - 10.5	2.05	0.68 - 3.08	9.05
		2.2 + 2.8 + 2.8 + 5.0	Cooling	8.00	2.9 - 8.9	2.11	0.52 - 2.86	9.30
			Heating	9.40	4.2 - 10.5	2.08	0.70 - 3.08	9.15
		2.2 + 2.8 + 3.2 + 3.2	Cooling	8.00	2.8 - 8.9	2.13	0.50 - 2.85	9.40
			Heating	9.40	4.0 - 10.5	2.09	0.68 - 3.18	9.20
		2.2 + 2.8 + 3.2 + 4.0	Cooling	8.00	2.9 - 9.0	2.07	0.52 - 2.86	9.15
			Heating	9.40	4.1 - 10.5	2.06	0.70 - 3.12	9.05
		2.2 + 2.8 + 3.2 + 5.0	Cooling	8.00	2.9 - 9.0	2.03	0.52 - 2.84	8.95
			Heating	9.40	4.2 - 10.5	2.09	0.70 - 3.08	9.20
		2.2 + 2.8 + 4.0 + 4.0	Cooling	8.00	2.9 - 9.0	2.04	0.52 - 2.87	8.95
			Heating	9.40	4.2 - 10.5	2.03	0.70 - 3.08	8.95
		2.2 + 3.2 + 3.2 + 3.2	Cooling	8.00	2.8 - 9.1	2.04	0.50 - 2.87	8.95
			Heating	9.40	4.0 - 10.6	2.11	0.68 - 3.12	9.30
		2.2 + 3.2 + 3.2 + 4.0	Cooling	8.00	2.9 - 9.1	2.02	0.52 - 2.84	8.85
			Heating	9.40	4.1 - 10.6	2.08	0.70 - 3.08	9.15
		2.2 + 3.2 + 3.2 + 5.0	Cooling	8.00	3.0 - 9.2	2.00	0.53 - 2.87	8.80
			Heating	9.40	4.2 - 10.6	2.11	0.70 - 3.06	9.30
		2.2 + 3.2 + 4.0 + 4.0	Cooling	8.00	2.9 - 9.1	2.09	0.52 - 2.86	9.20
			Heating	9.40	4.2 - 10.6	2.06	0.70 - 3.06	9.05
		2.8 + 2.8 + 2.8 + 2.8	Cooling	8.00	2.8 - 8.8	2.11	0.49 - 2.84	9.30
			Heating	9.40	3.9 - 10.5	2.03	0.66 - 3.08	8.95
		2.8 + 2.8 + 2.8 + 3.2	Cooling	8.00	2.8 - 8.9	2.09	0.49 - 2.87	9.20
			Heating	9.40	4.0 - 10.5	2.06	0.68 - 3.10	9.05
		2.8 + 2.8 + 2.8 + 4.0	Cooling	8.00	2.9 - 8.9	2.12	0.52 - 2.85	9.30
			Heating	9.40	4.1 - 10.5	2.04	0.70 - 3.07	8.95
		2.8 + 2.8 + 2.8 + 5.0	Cooling	8.00	2.9 - 8.9	2.11	0.52 - 2.85	9.30
			Heating	9.40	4.2 - 10.5	2.07	0.70 - 3.07	9.15
		2.8 + 2.8 + 3.2 + 3.2	Cooling	8.00	2.9 - 9.0	2.08	0.50 - 2.87	9.15
			Heating	9.40	4.0 - 10.5	2.07	0.68 - 3.14	9.15
		2.8 + 2.8 + 3.2 + 4.0	Cooling	8.00	2.9 - 9.0	2.05	0.52 - 2.88	9.05
			Heating	9.40	4.2 - 10.5	2.04	0.70 - 3.08	8.95
		2.8 + 2.8 + 4.0 + 4.0	Cooling	8.00	3.0 - 9.0	2.04	0.52 - 2.86	8.95
			Heating	9.40	4.2 - 10.5	2.02	0.70 - 3.07	8.85
		2.8 + 3.2 + 3.2 + 3.2	Cooling	8.00	2.9 - 9.1	2.03	0.52 - 2.86	8.95
			Heating	9.40	4.1 - 10.6	2.09	0.70 - 3.10	9.20
		2.8 + 3.2 + 3.2 + 4.0	Cooling	8.00	2.9 - 9.1	2.01	0.52 - 2.88	8.85
			Heating	9.40	4.2 - 10.6	2.07	0.70 - 3.08	9.15
		3.2 + 3.2 +3.2 + 3.2	Cooling	8.00	2.9 - 9.2	2.00	0.53 - 2.85	8.80
			Heating	9.40	4.2 - 10.6	2.11	0.70 - 3.08	9.30
		3.2 + 3.2 + 3.2 + 4.0	Cooling	8.00	3.0 - 9.2	1.98	0.53 - 2.87	8.70
			Heating	9.40	4.2 - 10.6	2.08	0.70 - 3.06	9.10

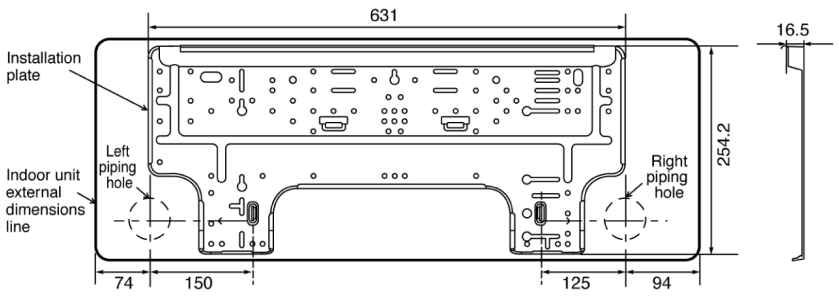
5 Dimensions

5.1. Wall Type

Models: CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG /
CS-E9DKEW / CS-E9DKRW / CS-E9DKDW /
CS-E12DKEW / CS-E12DKRW / CS-E12DKDW
CS-E15DKEW / CS-E15DKRW / CS-E15DKDW



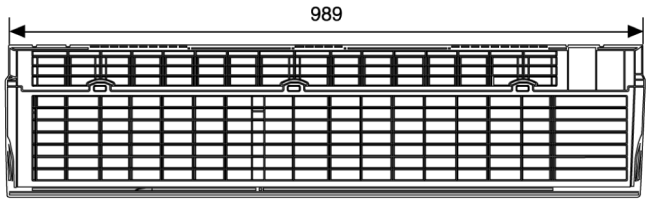
Relative position between the indoor unit and the installation plate <Front View>



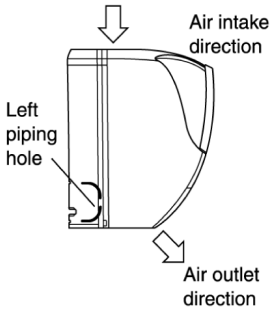
Unit : mm

Models: CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

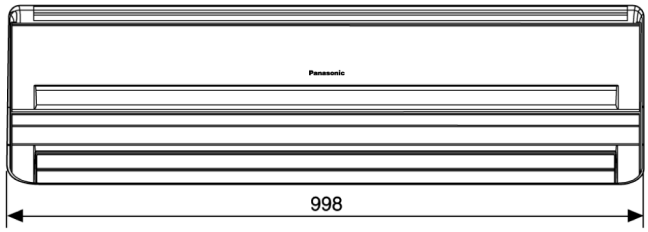
<Top View>



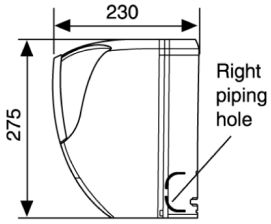
<Side View>



<Front View>

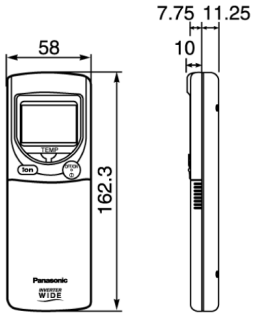


<Side View>

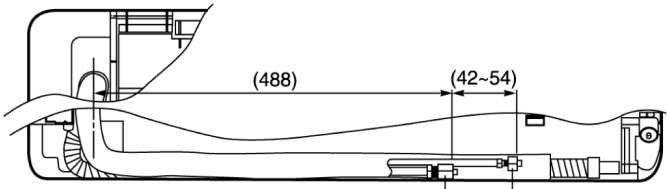




Remote control transmitter

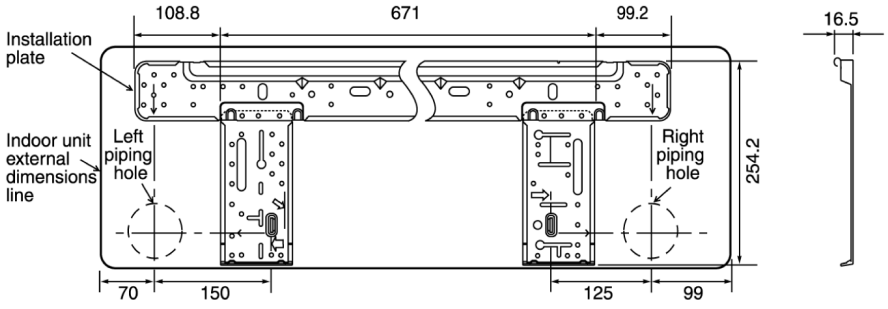


<Back View>



Unit: mm

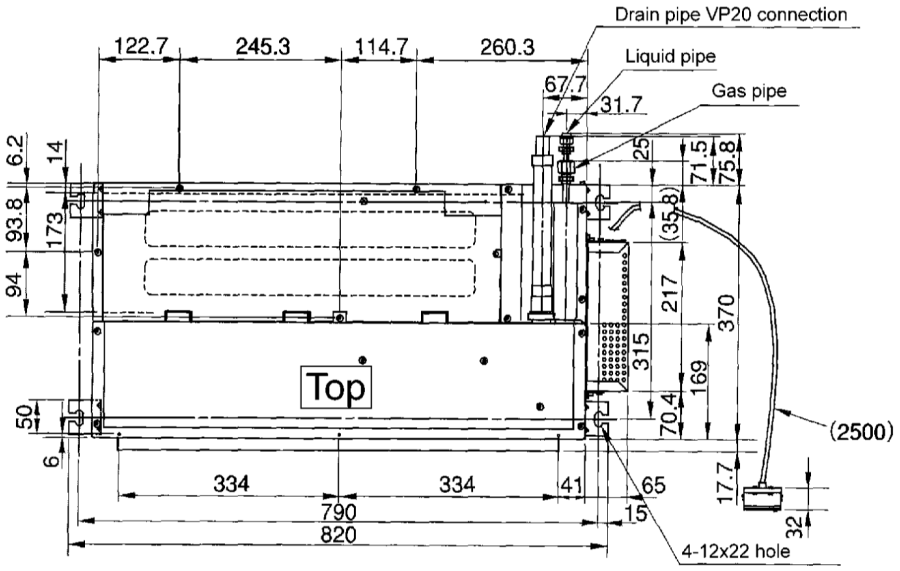
Relative position between the indoor unit and the installation plate <Front View>



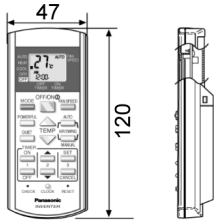
5.2. Duct Type

Models: CS-ME10DD3EG / CS-E15DD3EW

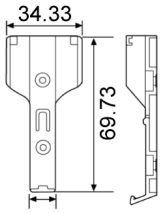
<Top View>



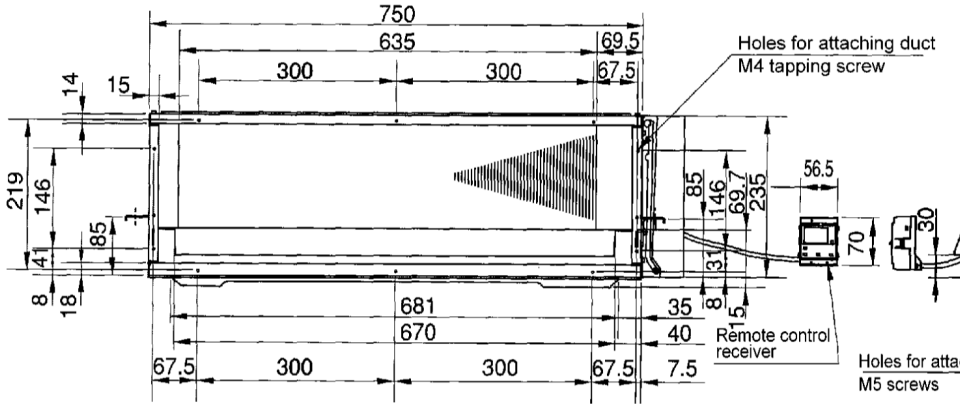
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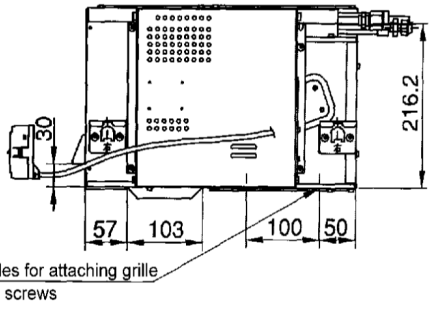
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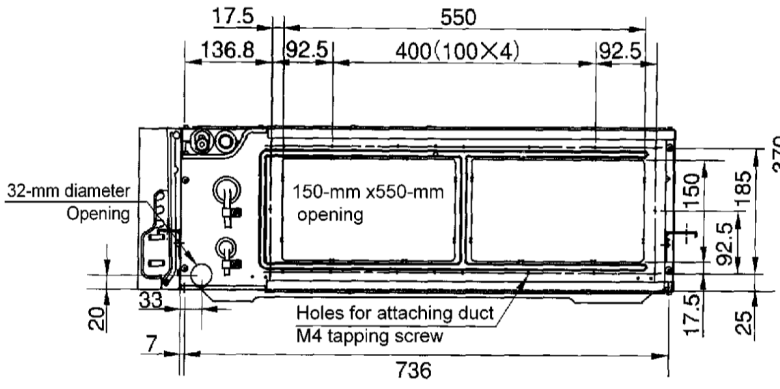
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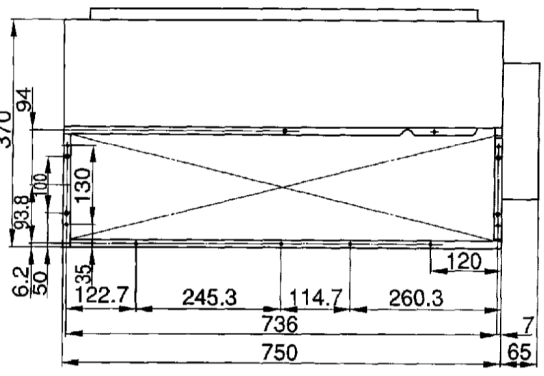
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<Back View>



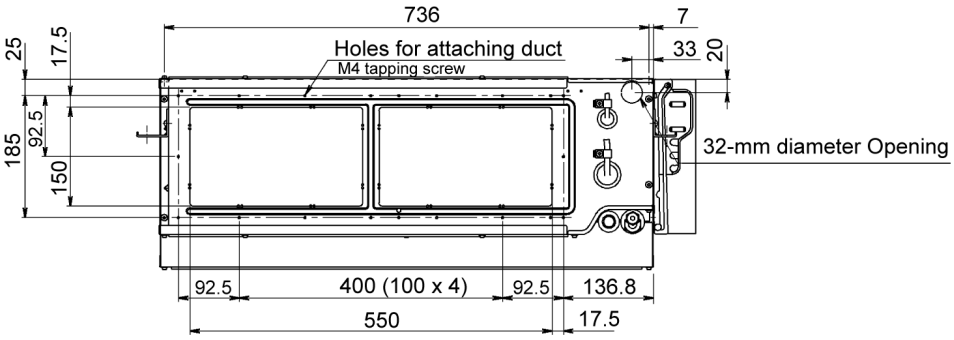
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Unit: mm

Model: CS-E18DD3EW

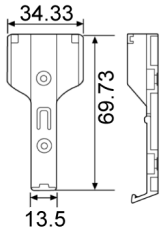
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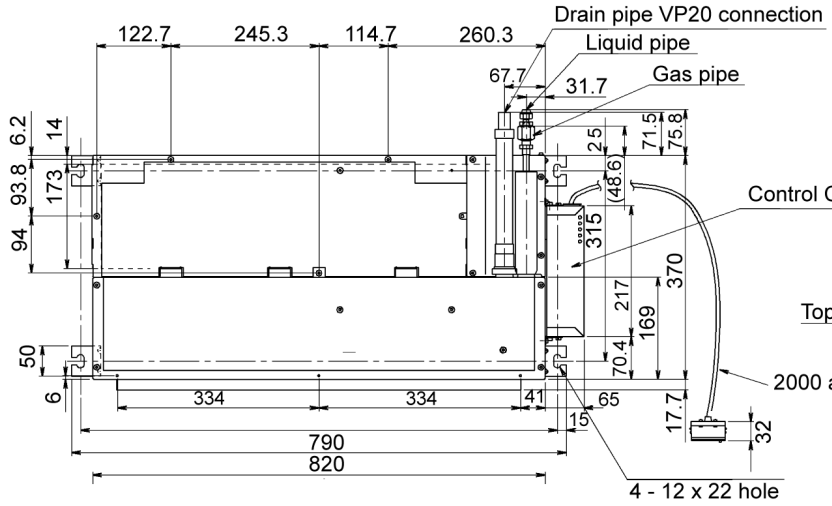
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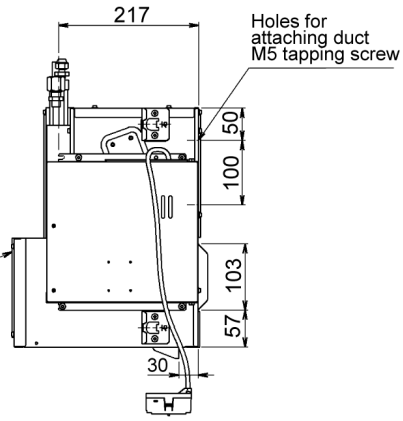
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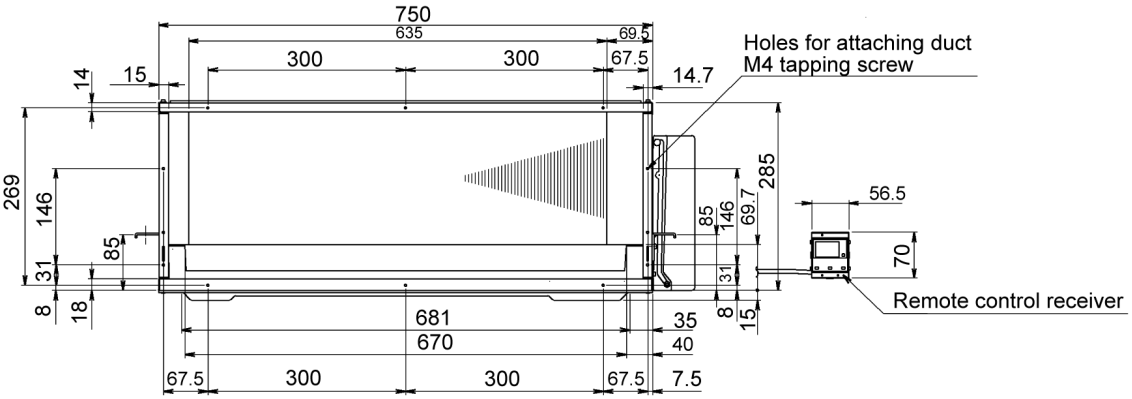
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<Side View>



<Front View>

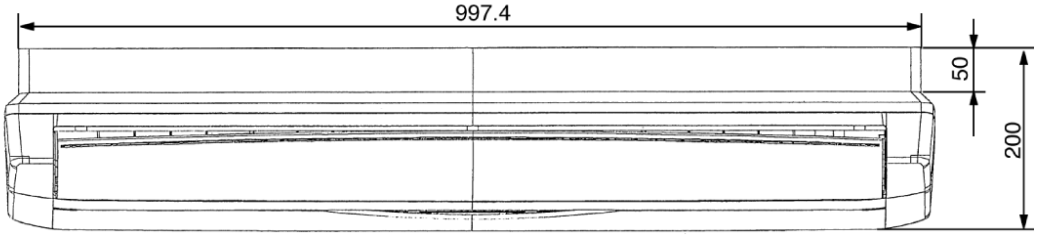


Unit: mm

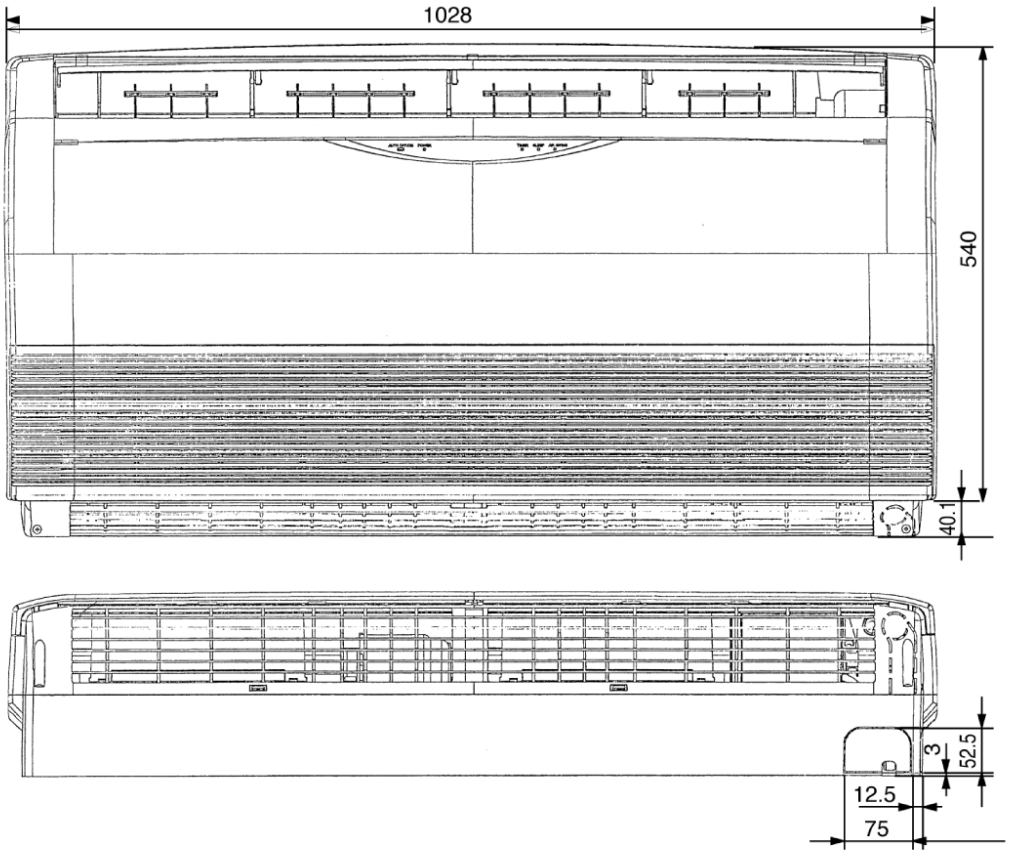
5.3. Ceiling Floor Type

Models: CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW

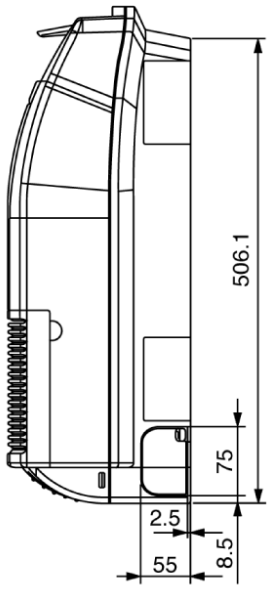
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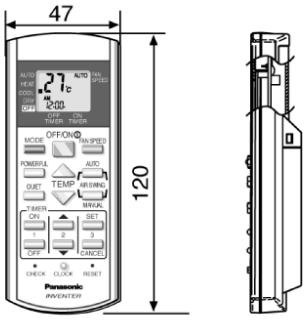
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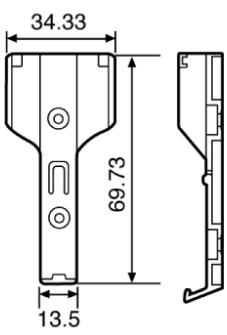
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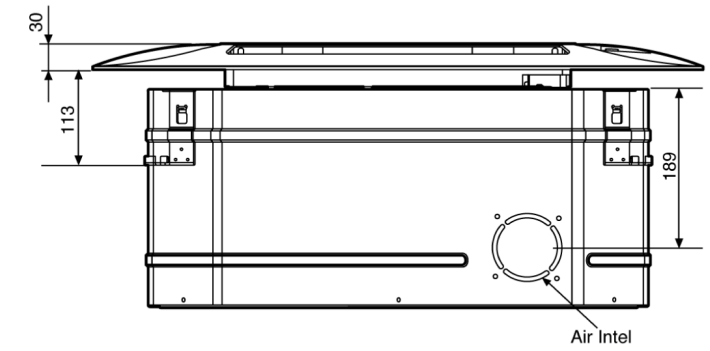
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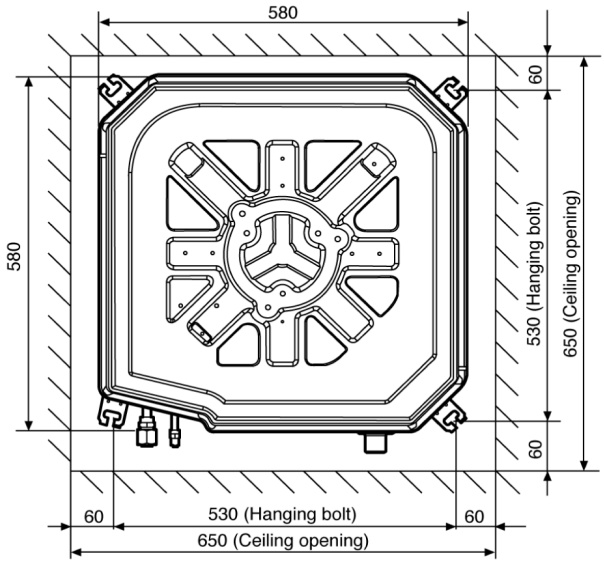


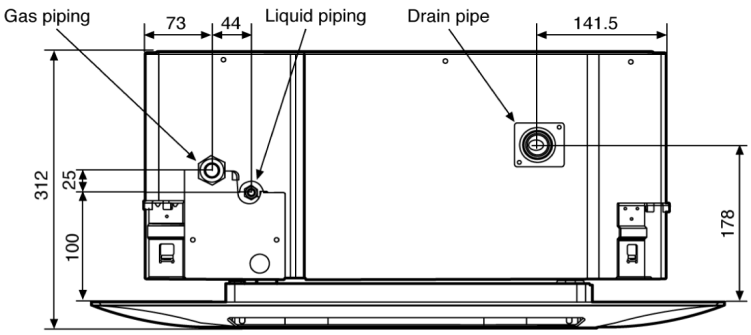
Unit : mm

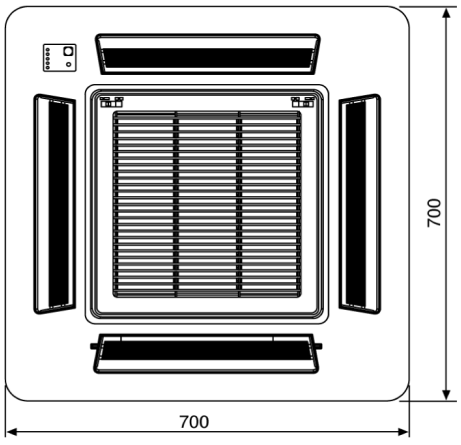
5.4. Mini-Cassette Type

Models: CS-E15DB4EW / CS-E18DB4EW

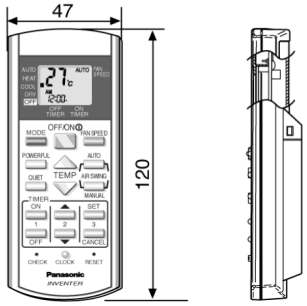




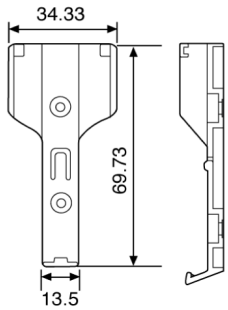




Remote control transmitter



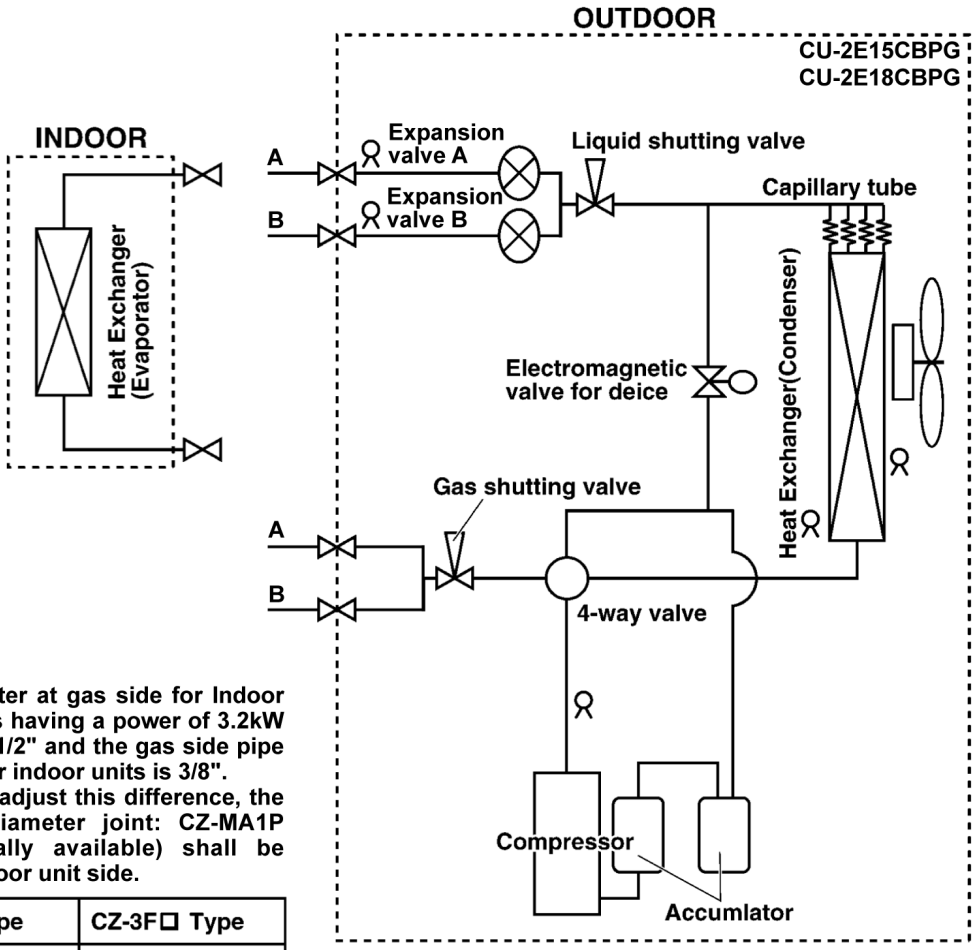
Remote control holder



Unit : mm

6 Refrigeration Cycle Diagram

6.1. CU-2E15CBPG / CU-2E18CBPG



Pipe diameter at gas side for Indoor unit models having a power of 3.2kW or more is 1/2" and the gas side pipe diameter for indoor units is 3/8".
In order to adjust this difference, the different diameter joint: CZ-MA1P (commercially available) shall be used at indoor unit side.

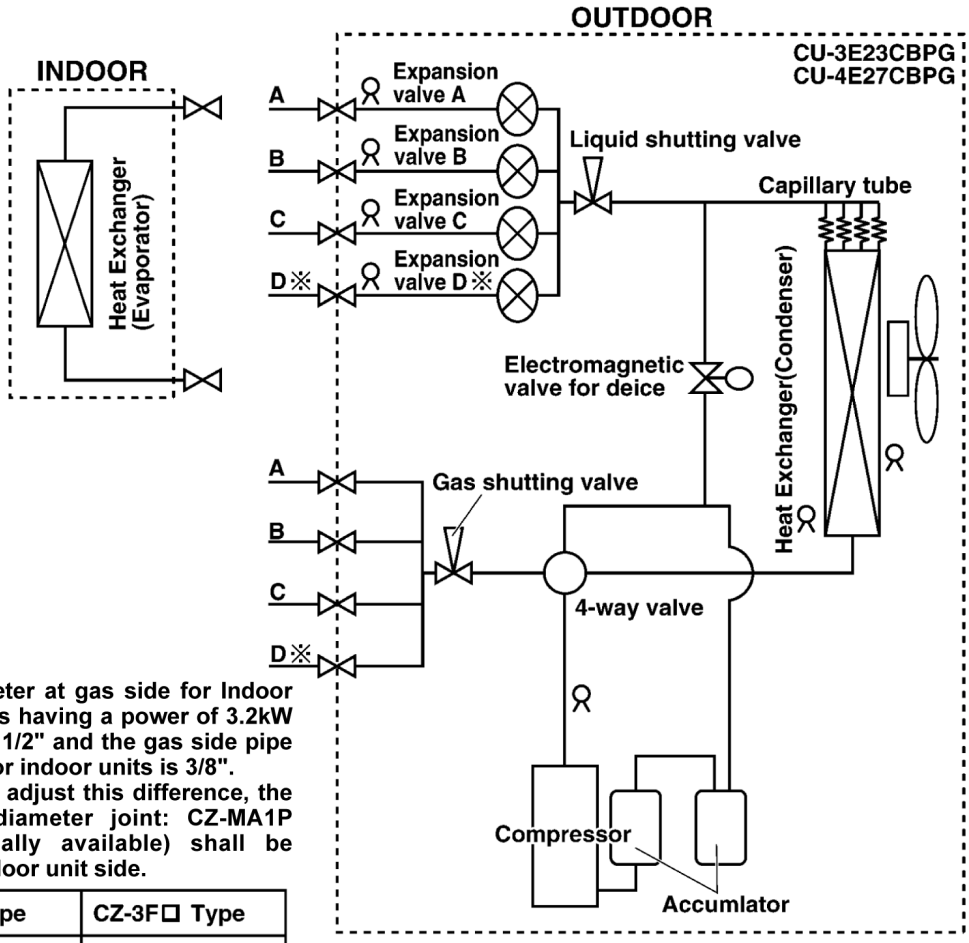
Type of pipe	CZ-3F□ Type
Liquid side pipe	ϕ6.35mm (1/4″)
Gas side pipe	ϕ9.52mm (3/8″)

= Sensor

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT			
			CU-2E15CBPG		CU-2E18CBPG	
Type \ ROOM			A	B	A	B
Wall	2.2kW	CS-ME7DKEG	◎	◎	◎	◎
		CS-ME7DKRG	◎	◎	◎	◎
		CS-ME7DKDG	◎	◎	◎	◎
	2.8kW	CS-E9DKEW	◎	◎	◎	◎
		CS-E9DKRW	◎	◎	◎	◎
		CS-E9DKDW	◎	◎	◎	◎
	3.2kW	CS-E12DKEW	—	—	◎	◎
		CS-E12DKRW	—	—	◎	◎
		CS-E12DKDW	—	—	◎	◎
Duct	2.8kW	CS-ME10DD3EG	◎	◎	◎	◎
Ceiling Floor	2.8kW	CS-ME10DTEG	◎	◎	◎	◎
Capacity range of connectable indoor units			From 4.4 to 5.0 kW		From 4.4 to 6.4 kW	
Pipe length	1-room maximum pipe length (m)		20		20	
	Allowable elevation (m)		10		10	
	Total allowable pipe length (m)		30		30	
	Total pipe length for maximum chargeless length (m)		20		20	
	Additional gas amount over chargeless length (g/m)		20		20	

Note:
" ◎ " : Available
" — " : Not available

6.2. CU-3E23CBPG / CU-4E27CBPG



Pipe diameter at gas side for Indoor unit models having a power of 3.2kW or more is 1/2" and the gas side pipe diameter for indoor units is 3/8".
In order to adjust this difference, the different diameter joint: CZ-MA1P (commercially available) shall be used at indoor unit side.

Type of pipe	CZ-3F□ Type
Liquid side pipe	ϕ6.35mm (1/4″)
Gas side pipe	ϕ9.52mm (3/8″)

※ Connecting ports 2 way valve and expansion valve "D" are not exsisting for CU-3E23CBPG.

= Sensor

CONNECTABLE INDOOR UNIT		OUTDOOR UNIT						
		CU-3E23CBPG			CU-4E27CBPG			
Wall Type \ ROOM		A	B	C	A	B	C	D
2.2kW	CS-ME7DKEG	◎	◎	◎	◎	◎	◎	◎
	CS-ME7DKRG	◎	◎	◎	◎	◎	◎	◎
	CS-ME7DKDG	◎	◎	◎	◎	◎	◎	◎
2.8kW	CS-E9DKEW	◎	◎	◎	◎	◎	◎	◎
	CS-E9DKRW	◎	◎	◎	◎	◎	◎	◎
	CS-E9DKDW	◎	◎	◎	◎	◎	◎	◎
3.2kW	CS-E12DKEW	◎	◎	◎	◎	◎	◎	◎
	CS-E12DKRW	◎	◎	◎	◎	◎	◎	◎
	CS-E12DKDW	◎	◎	◎	◎	◎	◎	◎
4.0kW	CS-E15DKEW	◎	◎	◎	◎	◎	◎	◎
	CS-E15DKRW	◎	◎	◎	◎	◎	◎	◎
	CS-E15DKDW	◎	◎	◎	◎	◎	◎	◎
	CS-E18DKEW	◎	◎	◎	◎	◎	◎	◎
5.0kW	CS-E18DKRW	◎	◎	◎	◎	◎	◎	◎
	CS-E18DKDW	◎	◎	◎	◎	◎	◎	◎

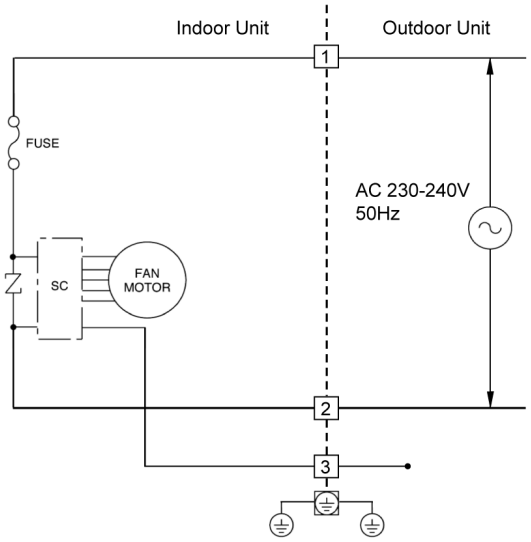
Note:
" ◎ " : Available
" — " : Not available

CONNECTABLE INDOOR UNIT		OUTDOOR UNIT						
		CU-3E23CBPG			CU-4E27CBPG			
Duct Type \ ROOM		A	B	C	A	B	C	D
2.8kW	CS-ME10DD3EG	◎	◎	◎	◎	◎	◎	◎
4.0kW	CS-E15DD3EW	◎	◎	◎	◎	◎	◎	◎
5.0kW	CS-E18DD3EW	◎	◎	◎	◎	◎	◎	◎
Ceiling Floor Type \ ROOM		A	B	C	A	B	C	D
2.8kW	CS-ME10DTEG	◎	◎	◎	◎	◎	◎	◎
4.0kW	CS-E15DTEW	◎	◎	◎	◎	◎	◎	◎
5.0kW	CS-E18DTEW	◎	◎	◎	◎	◎	◎	◎
Mini-Cassette Type \ ROOM		A	B	C	A	B	C	D
4.0kW	CS-E15DB4EW	◎	◎	◎	◎	◎	◎	◎
5.0kW	CS-E18DB4EW	◎	◎	◎	◎	◎	◎	◎
Capacity range of connectable indoor units		From 5.0 to 10 kW			From 5.0 to 13.6 kW			
Pipe length								
1-room maximum pipe length (m)		25			25			
Allowable elevation (m)		15			15			
Total allowable pipe length (m)		50			70			
Total pipe length for maximum chargeless length (m)		30			40			
Additional gas amount over chargeless length (g/m)		20			20			

7 Block Diagram

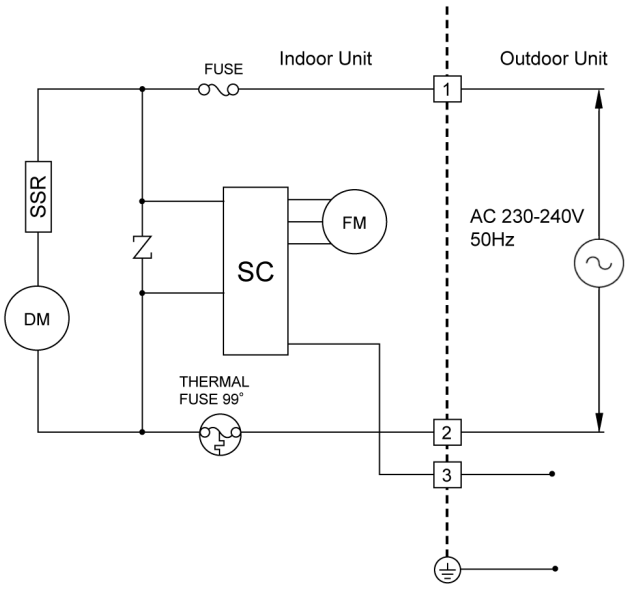
Wall Type

CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG
CS-E9DKEW / CS-E9DKRW / CS-E9DKDW
CS-E12DKEW / CS-E12DKRW / CS-E12DKDW
CS-E15DKEW / CS-E15DKRW / CS-E15DKDW
CS-E18DKEW / CS-E18DKRW / CS-E18DKDW



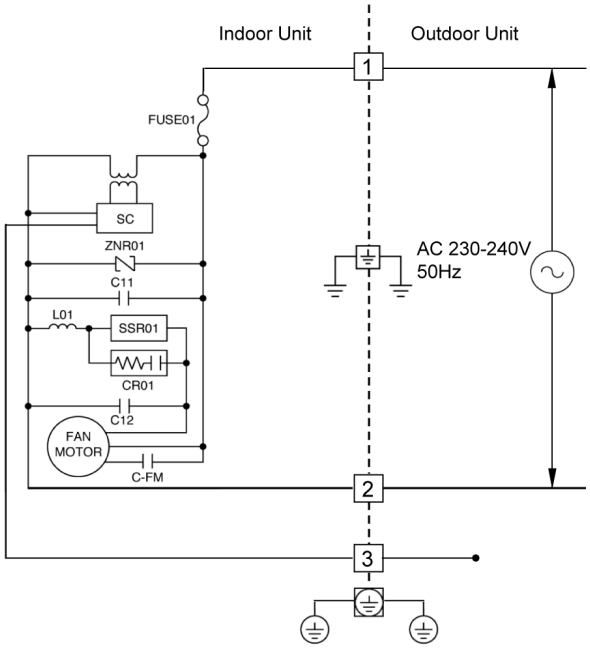
Duct Type

CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW



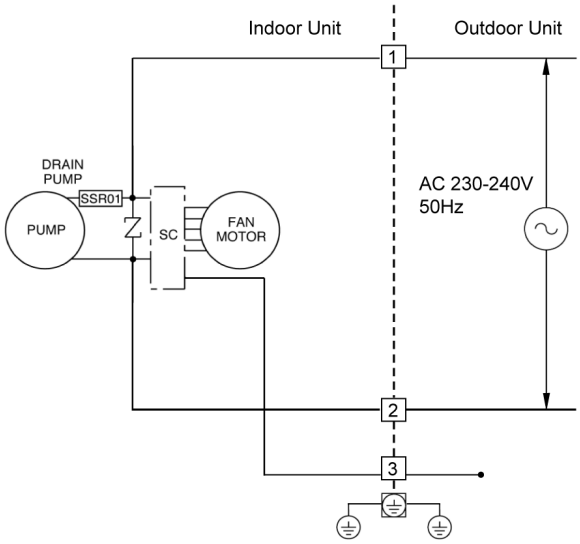
Ceiling Floor Type

CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW



Mini-Cassette Type

CS-E15DB4EW / CS-E18DB4EW

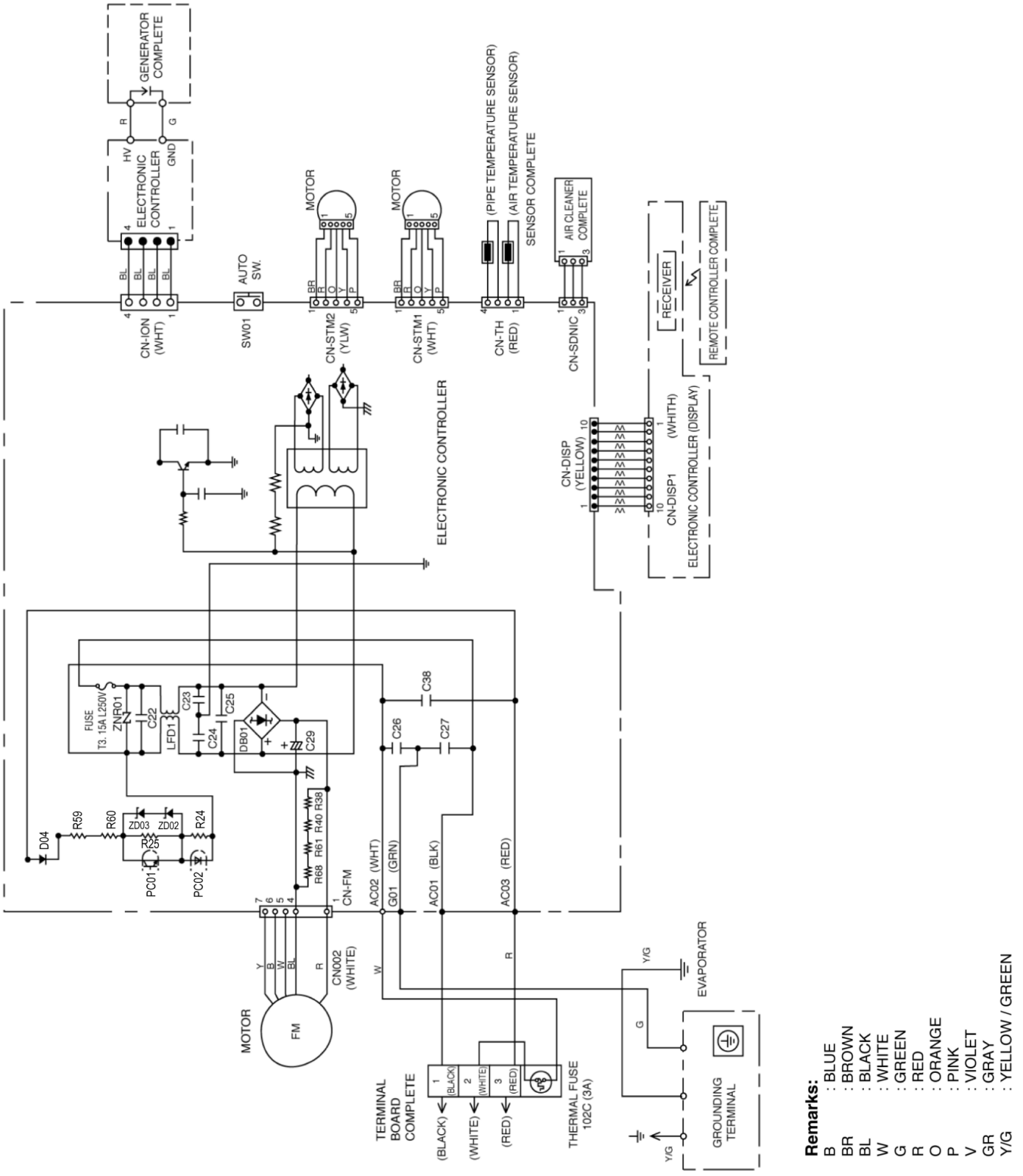


※ [ ] Indicates the electronic control unit.

8 Wiring Diagram

8.1. Wall Type

Models: CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG / CS-E9DKEW / CS-E9DKRW / CS-E9DKDW / CS-E12DKEW / CS-E12DKRW / CS-E12DKDW / CS-E15DKEW / CS-E15DKRW / CS-E15DKDW / CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

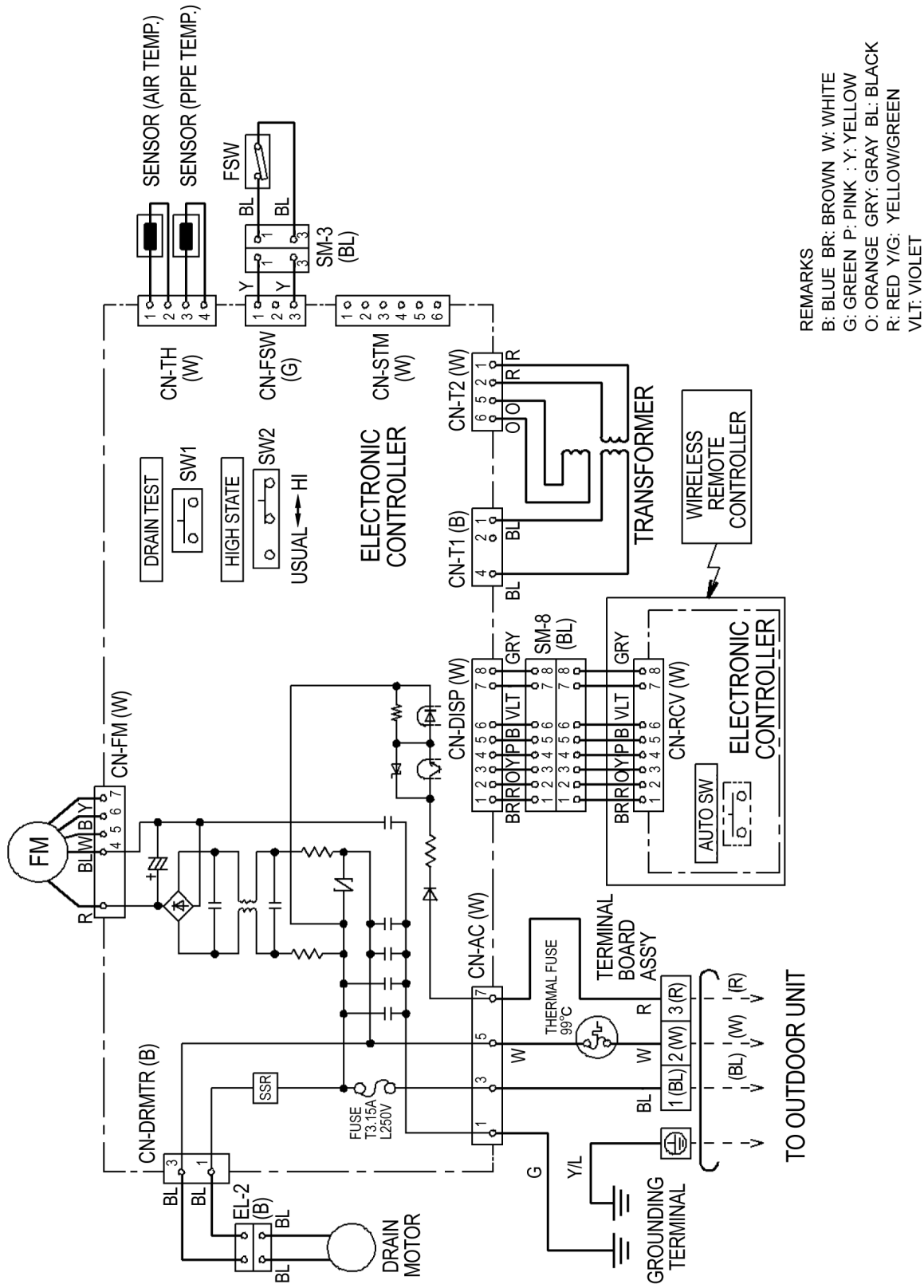


Remarks:

B	: BLUE
BR	: BROWN
BL	: BLACK
W	: WHITE
G	: GREEN
R	: RED
O	: ORANGE
P	: PINK
V	: VIOLET
GR	: GRAY
Y/G	: YELLOW / GREEN

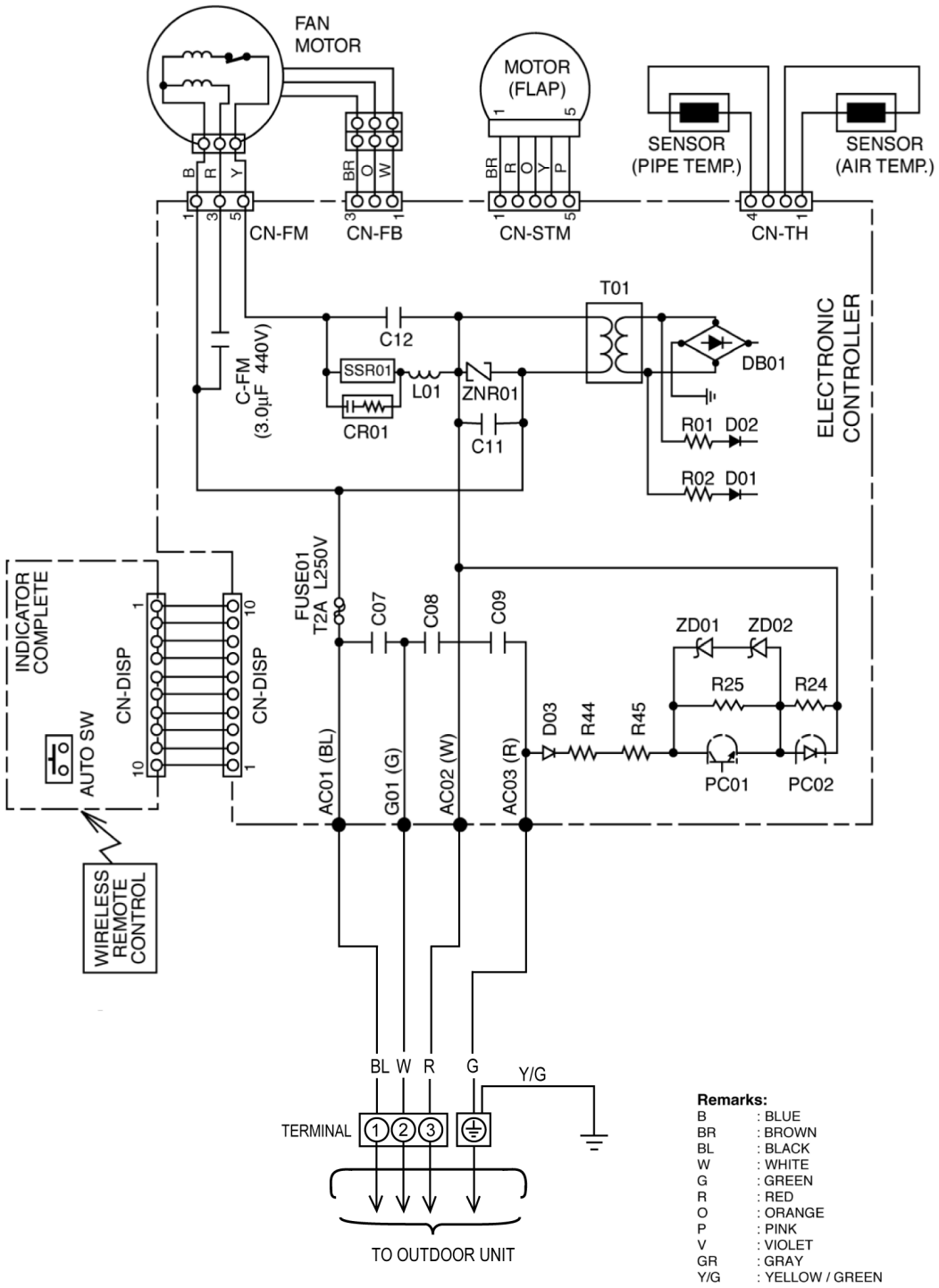
8.2. Duct Type

Models: CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW



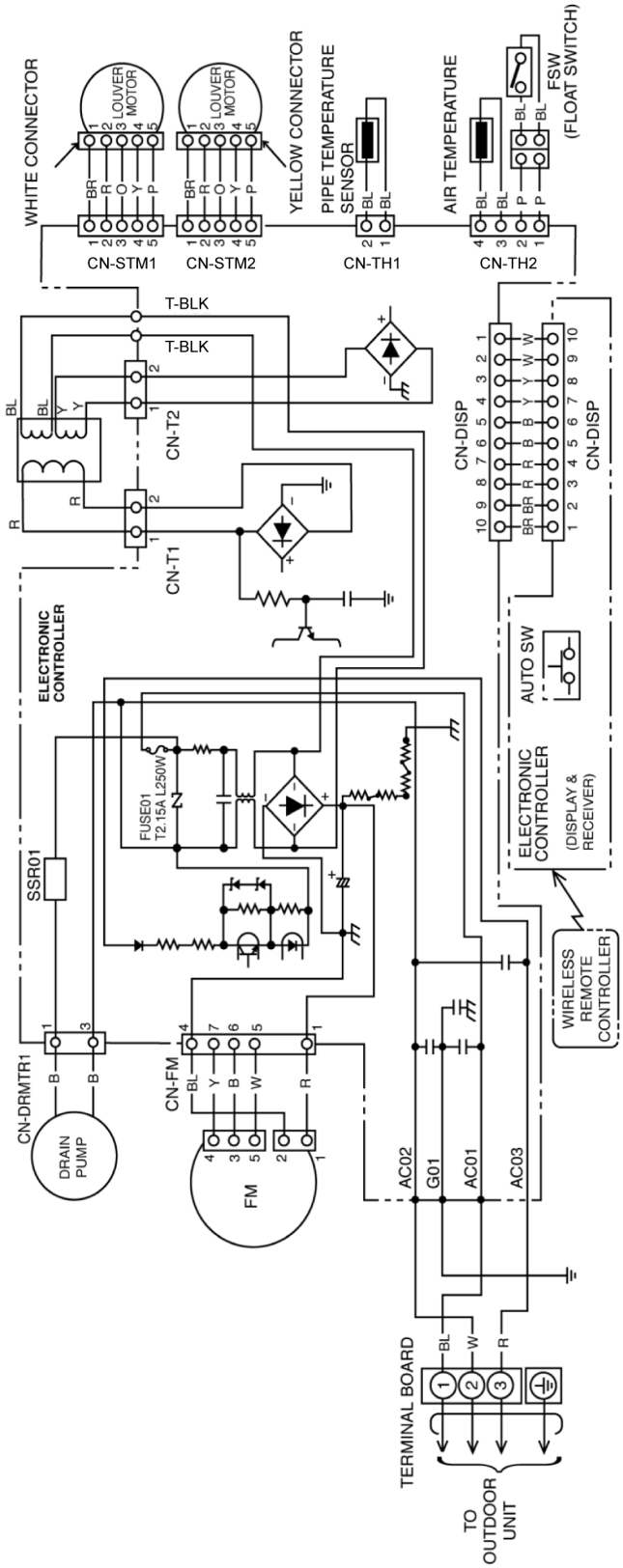
8.3. Ceiling Floor Type

Models: CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW



8.4. Mini-Cassette Type

Models: CS-E15DB4EW / CS-E18DB4EW



Remarks:

B	: BLUE
BR	: BROWN
BL	: BLACK
W	: WHITE
G	: GREEN
R	: RED
O	: ORANGE
P	: PINK
V	: VIOLET
GR	: GRAY
Y/G	: YELLOW / GREEN

9 Operation Details

9.1. Wall Type

9.1.1. Basic Function

Inverter control, which equipped with a microcomputer in determining the most suitable operating mode as time passes, automatically adjusts output power for maximum comfort always. In order to achieve the suitable operating mode, the microcomputer maintains the set temperature by measuring the temperature of the environment and performing temperature shifting. The compressor at outdoor unit is operating following the frequency instructed by the microcomputer at indoor unit that judging the condition according to internal setting temperature and intake air temperature.

9.1.1.1. Internal Setting Temperature

Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.

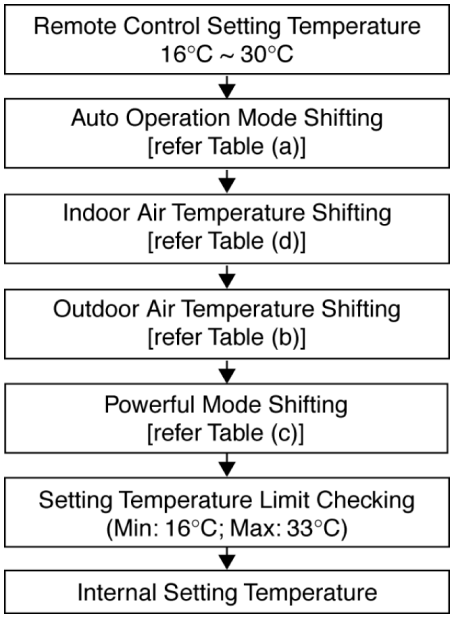


Table (a): Auto Operation Mode Setting

Mode Shift:	Temperature Shift (°C)
Cooling/Soft Dry → Heating	-2.0
Heating → Cooling/Soft Dry	+2.0

Table (b): Outdoor Air Temperature Shifting

Mode:	Outdoor Temperature, X (°C):	Temperature Shift (°C)
Cooling/Soft Dry	$30 \leq X$	+0.5
	$X < 30$	+1.0
Heating	$9 \leq X$	-1.0
	$5 \leq X < 9$	-0.5
	$1 \leq X < 5$	0.0
	$X \leq 1$	+1.0

Table (c): Power Mode Shifting

Mode	Temperature Shift (°C)
Cooling	-4.0
Soft Dry	-2.0
Heating	+6.0

Table (d): Indoor Air Temperature Shifting

1. Target room temperature shift value (dGetaDst)

- To offset the absolute gap between detection temperature with actual room temperature.
- The heat exchanger unit's temperature is different based on operation mode, it becomes the action operation mode value.

Actual operation mode	Target room temperature offset value (dGetaDst)
Cooling	(1)
Heating	(2)
Dry	(0)

2. Room temperature shift value (dGeta)

- When compressor ON/OFF, correction of detected room temperature by shift value during defrost etc.

i) Initial value when operation starts, or changing the actual operation mode.

Set the offset value at each operation mode. However, in order to improve the heating startup efficiency, the offset value will be changed based on the gap between setting temperature and room temperature.

Actual operation mode	Gap between setting temperature and room temperature	Room temperature offset value (dGeta)
Cool	—	(0)
Heat	(Operation start set temp. - room temp.) $<$ 4°C	(4)
	(Operation start set temp.) $\geq$ 4°C	(4)
Dry	—	(0)

ii) Updating during operation

During operation, it will compare with the target room temperature offset value at specific period, then the room temperature will be updated.

Actual operation mode	Room temperature zone	Updating period (sec.)
Cool	—	(180)
Heat	A, B, C, D zone	(15)
Dry	—	(180)

Update the room temperature offset value (dGeta)

Temperature condition	Room temp. offset value after modified (dGeta)
Target room temp. offset value $>$ Room temp. offset value (dGetaDst $>$ dGeta)	dGeta + (0.5)
Target room temp. offset value $<$ Room temp. offset value (dGetaDst $<$ dGeta)	dGeta - (0.5)
Target room temp. offset value = Room temp. offset value (dGetaDst = dGeta)	Do not change.

However, if the following condition is occurred, temperature cannot detect correctly and therefore no updating will be done.

- Heating zone E and above (Temperature gap is big and great capacity increased.)
- During deice
- After deice complete *within 600 sec.
- Comp. stop

Comp. starting *within 600 sec.

9.1.1.2. Simultaneous Operation Control

1. **Operation modes which can be selected using the remote control unit:**
   Automatic, Cooling, Dry, Heating, Fan operation mode.
2. **Types of operations modes which can be performed simultaneously**
   - Cooling operation and cooling, Dry or fan operation
   - Heating operation and heating operation
3. **Types of operation modes which cannot be performed simultaneously**
   - While a cooling operation is in progress, a heating operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for cooling was pressed first, the operation is continued. In the room where the operation button for heating was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the heating operation. Its fan is stopped, and the air does not discharged.
   - While a heating operation is in progress, a cooling operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for heating was pressed first, the operation is continued. In the room where the operation button for cooling was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the cooling operation. Its fan is stopped, and the air does not discharged.
4. **Operation mode priority control**
   - The operation mode designated first by the indoor unit has priority.
   - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

"Waiting" denotes the standby status in which the operation lamp LED blinks (ON for 2.5 sec. and OFF for 0.5 sec.), and the fan is stopped.

	B ROOM	Non Priority Unit (2nd. ON)			
A ROOM		Cooling	Dry	Heating	Fan
Priority Unit (1st. ON)	Cooling	C / C	D / C	Waiting / C	F / C
	Dry	C / D	D / D	Waiting / D	F / D
	Heating	Waiting / H	Waiting / H	H / H	Stop / H
	Fan *	C / F	D / F	H / Stop	F / F

* In the fan mode, priority is transferred to a non-priority unit.

Note

C: Cooling operation mode

D: Dry operation mode

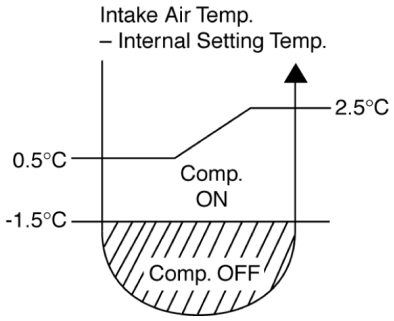
H: Heating operation mode

F: Fan operation mode

9.1.1.3. Cooling Operation

9.1.1.3.1. Thermostat control

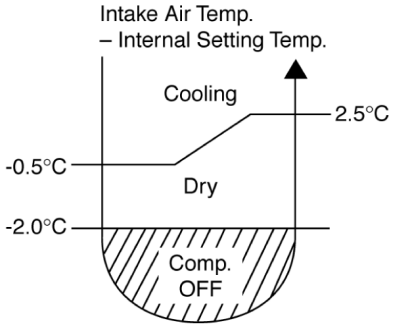
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -1.5°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.1.1.4. Soft Dry Operation

9.1.1.4.1. Thermostat control

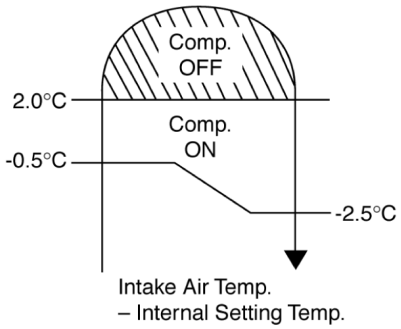
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.1.1.5. Heating Operation

9.1.1.5.1. Thermostat control

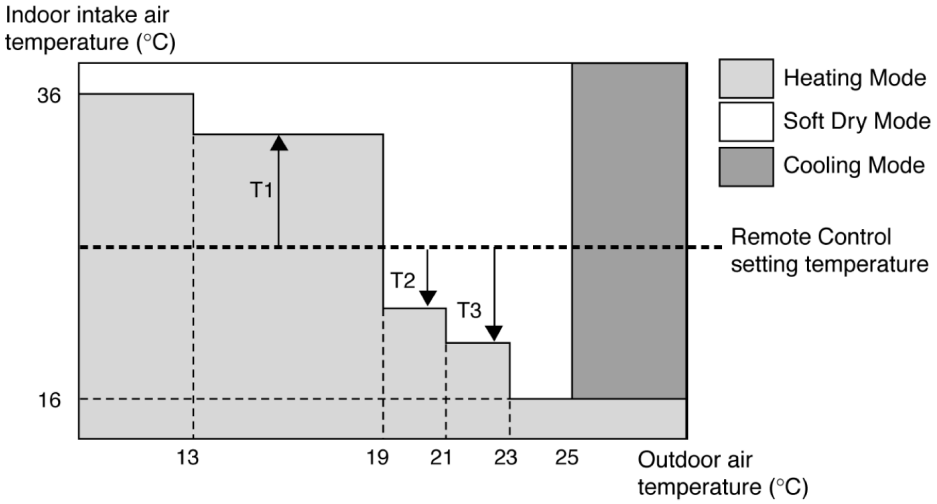
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < +2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.1.1.6. Automatic Operation

This mode can be set using remote control and the operation is decided by remote control setting temperature, indoor intake air temperature and outdoor air temperature.

During operation mode judgment, indoor fan motor (with speed of Lo-) and outdoor fan motor are running for 30 seconds to detect the indoor intake and outdoor air temperature. The operation mode is decided based on below chart.



Values of T1, T2, and T3 depend on remote control setting temperature, as shown in below table. After the adjustment of T1, T2 and T3 values, the operation mode for that particular environment and remote control setting is judged and performed, based on the above operation mode chart, every 3 hours.

Remote Control Setting Temperature (°C)	T1	T2	T3
16 ~ 18	+10	-3	-5
19 ~ 22	+8	-3	-7
23 ~ 26	+7	-3	-7
27 ~ 30	+6	-3	-8

There is a temperature shifting on T1, T2, and T3 if the operation mode judged is changed from Cooling/Soft Dry to Heating or vice verse.

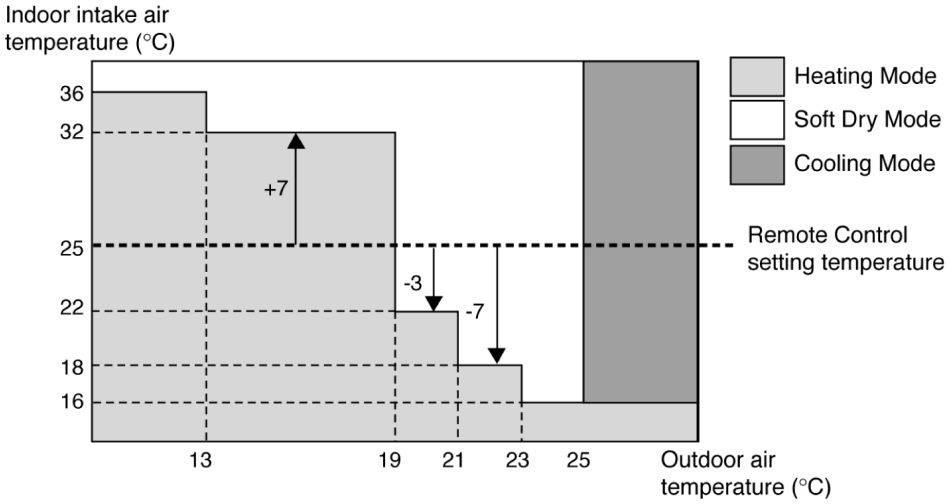
Operation Mode change from	Temperature shifts (°C)
Cooling/Soft Dry → Heating	-2
Heating → Cooling/Soft Dry	+2

Example of operation mode chart adjustment:

From the above table, if remote control setting temperature = 25,

T1 = 25 + 7 = 32; T2 = 25 - 3 = 22; T3 = 25 - 7 = 18

The operation mode chart for this example is as shown in below figure and the operation mode to be performed will depend on indoor intake air temperature and outdoor air temperature at the time when the judgment is made.



9.1.1.7. Indoor Fan Motor Operation

A. Basic Rotation Speed (rpm)

- Required rotation speed for fan is set to respond to the remote control setting (10 rpm unit)

[Cooling, Dry, Fan]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SHi	Hi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-ME7DKEG	1320	1320	1280	1210	1040	970	920	860	720	710
CS-E9DKEW	1320	1320	1280	1210	1040	970	920	860	720	710
CS-E12DKEW	1460	1460	1420	1320	1220	1120	1020	950	720	710
CS-E15DKEW	1500	1500	1460	1350	1240	1130	1020	950	720	710
CS-E18DKEW	1540	1540	1450	1340	1240	1140	1040	980	770	640

[Heating]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SSHi	SHi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-ME7DKEG	1440	1440	1400	1290	1170	1060	950	870	720	710
CS-E9DKEW	1440	1440	1400	1290	1170	1060	950	870	720	710
CS-E12DKEW	1540	1540	1500	1400	1290	1180	1070	990	720	710
CS-E15DKEW	1570	1570	1560	1430	1310	1190	1070	990	720	710
CS-E18DKEW	1640	1640	1580	1470	1350	1230	1110	1040	400	300

Notes:

1. Refer to the CS-ME7DKEG column for CS-ME7DKRG and CS-ME7DKDG.
2. Refer to the CS-E9DKEW column for CS-E9DKRW and CS-E9DKDW.
3. Refer to the CS-E12DKEW column for CS-E12DKRW and CS-E12DKDW.
4. Refer to the CS-E15DKEW column for CS-E15DKRW and CS-E15DKDW.
5. Refer to the CS-E18DKEW column for CS-E18DKRW and CS-E18DKDW.

B. Indoor Fan Control

i. Indoor fan control operation outline

1. Cooling / Dry

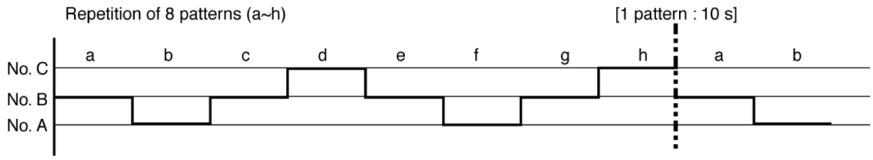
<table>
<tr><td colspan="6"></td><td>Cooling</td><td>Dry</td><td>Ionizer</td></tr>
<tr><td colspan="6">Under different mode standby</td><td colspan="3">Stop</td></tr>
<tr><td colspan="6">Forced Operation</td><td>Hi</td><td>—</td><td>—</td></tr>
<tr><td rowspan="15">Other than the above</td><td colspan="2">Min. control</td><td colspan="3">Automatic operation mode judgment</td><td colspan="3">Lo-</td></tr>
<tr><td rowspan="14">Other than the above</td><td colspan="3">Freeze proofing</td><td>Designated air flow shift</td><td>Designated air flow shift</td><td>—</td></tr>
<tr><td colspan="3">With dew</td><td>Designated air flow shift</td><td>Designated air flow shift</td><td>—</td></tr>
<tr><td rowspan="13">Other than the above</td><td rowspan="4">Other than the above</td><td colspan="2">Automatic operation</td><td>Lo</td><td rowspan="4">SLo</td><td>Usually, automatic</td></tr>
<tr><td rowspan="3">Manual Operation</td><td>Powerful</td><td>Setting +2(up)</td><td>—</td></tr>
<tr><td>Quiet</td><td>Setting -1(down)</td><td>—</td></tr>
<tr><td>Other than the above</td><td>Remote control setup</td><td>Remote control setup</td></tr>
<tr><td rowspan="6">Other than the above</td><td rowspan="3">Automatic Operation</td><td>Powerful</td><td>Powerful automatic</td><td rowspan="2">SLo</td><td>—</td></tr>
<tr><td>Quiet</td><td>Quiet automatic</td><td>—</td></tr>
<tr><td>Other than the above</td><td>Usually, automatic</td><td>SLo</td><td>Usually, automatic</td></tr>
<tr><td rowspan="3">Manual Operation</td><td>Powerful</td><td>Setting +2(up)</td><td>SLo</td><td>—</td></tr>
<tr><td>Quiet</td><td>Setting -1(down)</td><td>SLo</td><td>—</td></tr>
<tr><td>Other than the above</td><td>Remote control setup</td><td>SLo</td><td>Remote control setup</td></tr>
<tr><td colspan="2">Max. capability</td><td></td><td>SHi</td><td>—</td><td>—</td></tr>
</table>

2. Heating

					Heating
Waiting for other mode					Stop
Forced Operation					SHi
Min. control		Automatic operation mode judging			Lo-
Other than the above	During hot start				Stop
	Under defrosting operation				Stop
	Ability supply stop				Stop
	Low-temperature capability measurement				SSHi
	MAX control	Heating starting force operation			A stop, SLo
		Ability supply stop			Lo-
		Thermostat-off sampling			Specification
		Piping temperature control			Min. Restrictions of fan speed by Indoor pipe temperature
	Min. control	Fan speed minimum restrictions by Indoor piping temperature			Me
		Fan Speed automatic minimum			Min. Automatic Fan Speed Control
	Other than the above	Preparation operation start timer	Automatic Fan Speed		Lo
			Manual Operation	Powerful	Setting +2 (up)
				Quiet	Setting -1 (down)
				Other than the above	Remote control setup
		Other than the above	Fan speed shift control		Heating Fan Speed Control
			Fan speed automatic	Powerful	Pipe temperature control +2 (up)
				Quiet	Pipe temperature control -1 (down)
				Other than the above	Pipe temperature control
			Fan speed automatic	Powerful	Setting +2 (up)
				Quiet	Setting -1 (down)
				Other than the above	Remote control setup

ii. Auto Fan Speed

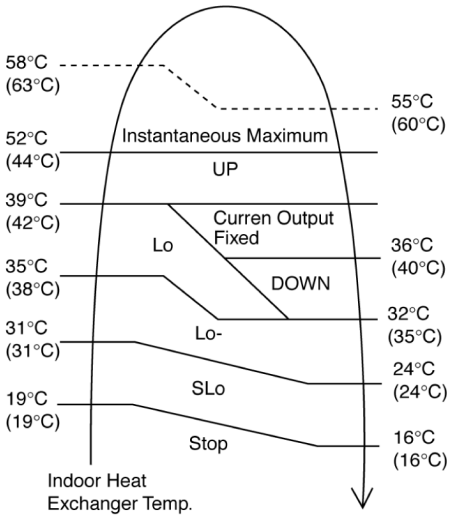
1. Cooling



	Model	No. A	No. B	No. C
Powerful Program	CS-ME7DKEG, CS-E9DKEW	1110	1130	1150
	CS-E12DKEW	1230	1250	1270
	CS-E15DKEW	1300	1320	1340
	CS-E18DKEW	1390	1410	1430
Normal Program	CS-ME7DKEG, CS-E9DKEW	1050	1070	1090
	CS-E12DKEW	1170	1190	1210
	CS-E15DKEW	1240	1260	1280
	CS-E18DKEW	1330	1350	1370
Quiet Program	CS-ME7DKEG, CS-E9DKEW	1030	1050	1070
	CS-E12DKEW	1150	1170	1190
	CS-E15DKEW	1220	1240	1260
	CS-E18DKEW	1310	1330	1350

- Refer to the CS-ME7DKEG column for CS-ME7DKRG and CS-ME7DKDG.
- Refer to the CS-E9DKEW column for CS-E9DKRW and CS-E9DKDW.
- Refer to the CS-E12DKEW column for CS-E12DKRW and CS-E12DKDW.
- Refer to the CS-E15DKEW column for CS-E15DKRW and CS-E15DKDW.
- Refer to the CS-E18DKEW column for CS-E18DKRW and CS-E18DKDW.

2. Heating



Note:

a. UP:

- If move from Lo, the fan speed will be shifted to Maximum 1,520 rpm.
- If move from Maximum, the fan speed no change.
- In up zone, 10 rpm is added for every 10 seconds until Maximum 1,520 rpm.

b. DOWN:

- The fan speed will be decreased one step every 10 seconds until Minimum 1,270 rpm.

c. Current Output Fixed:

- Maintain at present fan speed.

d. Instantaneous Maximum:

- Fan speed will be increased to maximum auto fan speed.

e. Temperature in ( ) is for Powerful Mode operation.

C. Fan Motor Control

1. Motor specification

   High voltage PWM Motor

2. Feedback Control

   a. Number-of -rotations feedback

      Immediately after the fan started, rpm is checked and duty is added, and feedback control is performed. For high voltage PWM motor. It is done once every 0.5 seconds.

   b. Offset duty T max/min limit

      High voltage PWM motor has maximum offset duty.

      (Refer to indoor fan motor control basic rotation speed.)

3. Abnormal detection Control

   Conditions:

   a. Out of rhythm signal input

   b. If feedback number of rotations exceeded 2,550 rpm or when less than 50 rpm.

   Control: Fans stop.

   Return: Restart after 5 seconds.

   * It will not detect out of rhythm condition within 5 seconds for phase control motor (PWM motor is when duty = 0) after start.

   A fan stops when condition (1) and (2) happen within 25.0 seconds after fan starting, and if this happens for continuously 7 times, it will not retry.

   → FM lock processing

4. Restart Prohibition Control

   Restart is prohibited within 5 seconds for phase control motor (PWM motor is when duty = 0) after dan stop (except re-ON the power supply)

D. Deodorizing Control

i. Control condition

Control at cooling/dry operation and auto fan speed.

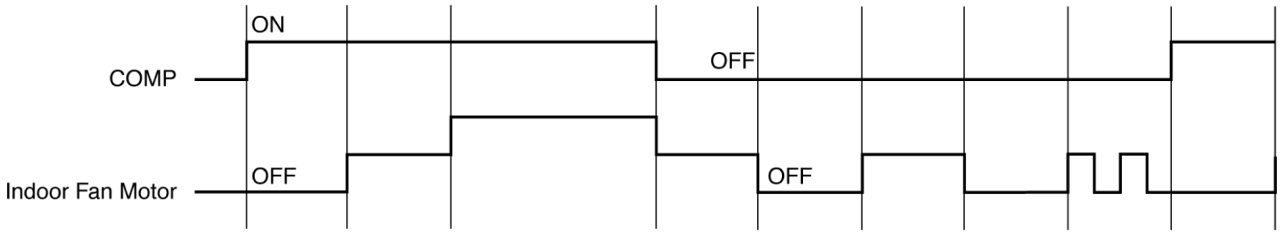
No Deodorizing Control is performed during ON timer standby operation and during Anti-freezing control prevention.

ii. Operation

The odor status is arranged as below and it is shifted as follows.

* When COMP is ON $1 \rightarrow 2 \rightarrow 3$
  (Shift to 4 when COMP is OFF)
* When COMP is OFF $4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 6 \longleftrightarrow 7$
  (Shift to 1 when COMP is ON)
* Start from 4 if the Thermostat is OFF during the start operation.

Odor Status		1	2	3	4	5	6	7	6.7.6...	1
Status Shift according to COMP		ON			OFF					ON
Status Shift according to time (s)	Cooling zone	40	50	—	30	90	20	90	20.90.20...	ON
	Dry zone									
Fan Speed	Cooling zone	OFF	SSLo	Auto Fan Speed	SSLo	OFF	SSLo	OFF	SSLo.OFF...	
	Dry zone			SLo						



※ During FM OFF state, auto judgement will cause the FM to ON.

9.1.1.8. Airflow Direction

1. There are two types of airflow, vertical airflow (directed by horizontal vane) and horizontal airflow (directed by vertical vanes).
2. Control of airflow direction can be automatic (angles of direction is determined by operation mode, heat exchanger temperature and intake air temperature) and manual (angles of direction can be adjusted using remote control).

Vertical Airflow

Operation Mode	Airflow Direction			Vane Angle (°)				
				1	2	3	4	5
Heating	Auto with Heat Exchanger Temperature	A	Upward fix	3				
		B	Downward fix	64				
		C	Downward fix	3				
		D	Downward fix	3				
	Manual			3	17	33	49	63
Cooling, Soft Dry and Ion	Auto			8 ~ 36				
	Manual			8	15	22	30	36
Mode judgment in Auto	Auto			8				
	Manual			8	15	22	30	36

1. Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the angles as stated above. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

2. Manual vertical airflow direction can be set using remote control; the angles of the vane are as stated above and the positions of the vane are as Figure 2 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

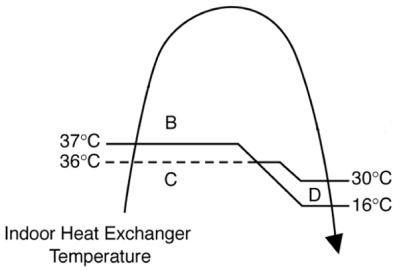


Figure 1

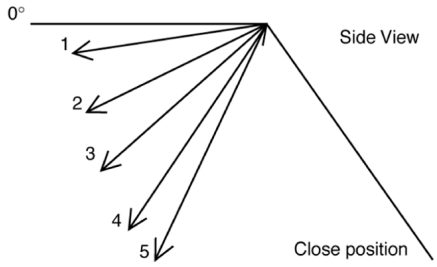


Figure 2

Horizontal Airflow

1. Automatic horizontal airflow direction can be set using remote control; the vane swings left and right within the angles as stated below. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below.

Operation Mode		Vane Angle (°)
Heating, with heat exchanger temperature	A	65 ~ 115
	B	90
Cooling, Soft Dry and Ion		65 ~ 115

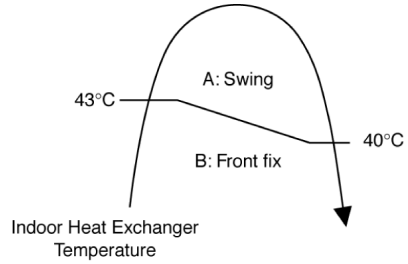


Figure 1

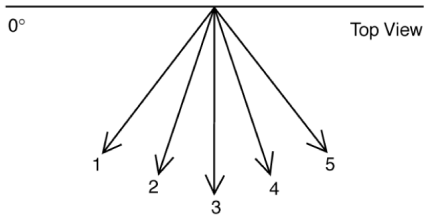


Figure 2

2. Manual horizontal airflow direction can be set using remote control; the angles of the vane are as stated below and the positions of the vane are as Figure 2 above.

Pattern	1	2	3	4	5
Airflow Direction Patterns at Remote Control					
Vane Angle (°)	90	65	78	102	115

9.1.1.9. Quiet operation (Cooling Mode/Cooling area of Dry Mode)

A. Purpose

To provide quiet cooling operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button is pressed again.

2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.

9.1.1.10. Quiet operation (Heating)

A. Purpose

To provide quiet heating operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button is pressed again.
2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode, except fan only mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

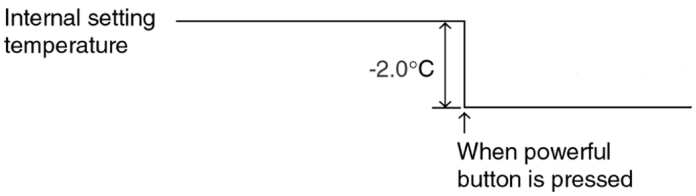
a. Fan Speed manual

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.
3. Fan Speed Auto
   Indoor FM RPM depends on pipe temp sensor of indoor heat exchanger.

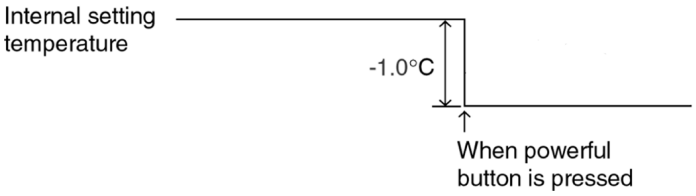
9.1.1.11. Powerful Mode Operation

When the powerful mode is selected, the internal setting temperature will shift to achieve the setting temperature quickly.

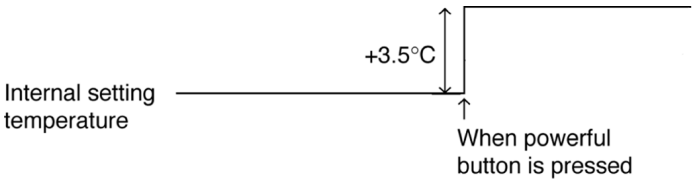
(a) Cooling Operation



(b) Soft Dry Operation



(c) Heating Operation

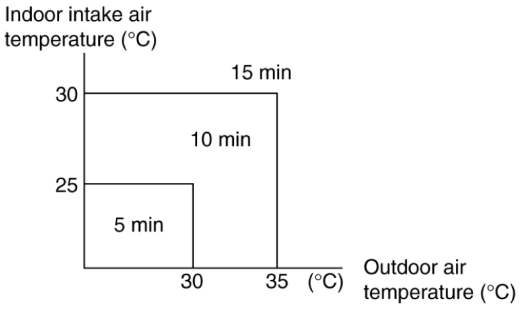


9.1.1.12. Delay ON Timer Control

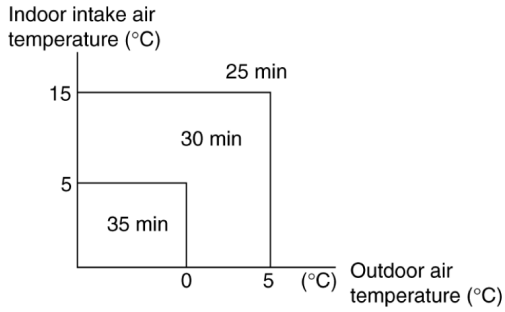
Delay ON timer can be set using remote control, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time.

60 minutes before the set time, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation starting time.

From the above judgment, the decided operation will start operate earlier than the set time as shown below.



Cooling/Soft Dry



Heating

9.1.1.13. Delay OFF Timer Control

Delay OFF timer can be set using remote control, the unit with timer set will stop operate at set time.

9.1.1.14. Auto Restart Control

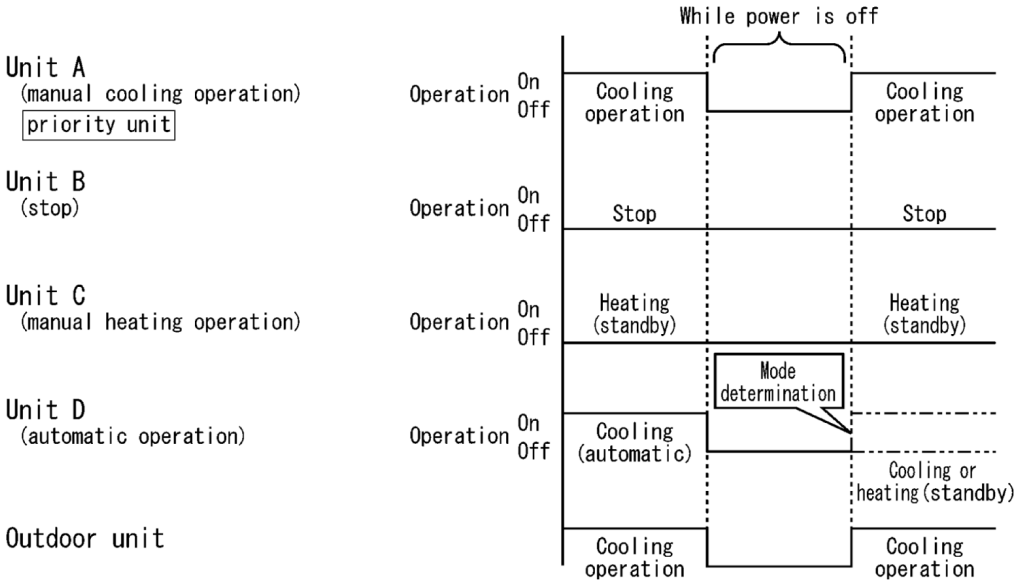
- If there is a power failure, operation will automatically be restarted when the power is resumed. It will start with the previous operation mode and airflow direction. (Timer Delay Safety Control is valid.)

1. Control start conditions
   - The 24-hour timer must not be set.
   - The sleep timer must not be set.

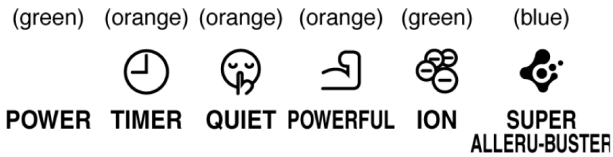
   Auto start control is not available when timer or sleep mode is set.

2. Description of control
   - In the case of manual operation, the operation mode, temperature setting, fan speed and airflow direction before the power is turned off are restored.
   - In the case of automatic operation, after the power is restored operation starts with the determination of the mode.
   - While the air conditioner odour clear timer has been set, the setting is cancelled, and operation is transferred to the mode before the power is turned off.
   - While the air conditioner odour clear operation (with timer / without timer setting) are being performed, both of these operations are completed, and operation is transferred to the operation mode prior to these operations.

Example: When the power is turned off during an outdoor unit cooling operation.



9.1.1.15. Indication Panel

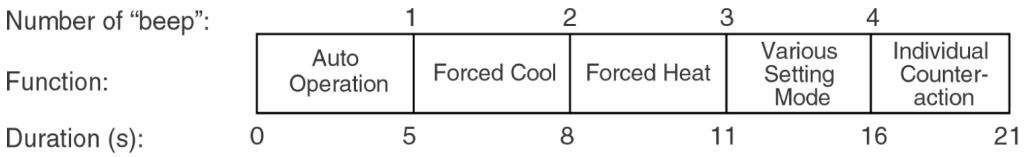


LED	POWER	TIMER	QUIET	POWERFUL	ION	ALLERGEN BUSTER
Color	Green	Orange	Orange	Orange	Green	Blue
Light ON	Operation ON	Timer Setting ON	Quiet Mode ON	Powerful Mode ON	Ion Mode ON	Operation ON
Light OFF	Operation OFF	Timer Setting OFF	Quiet Mode OFF	Powerful Mode OFF	Ion Mode OFF	Operation OFF

Note:

- If POWER LED is blinking, the possible operations of the unit are Hot Start, during Deice operation, operation mode judgment, or delay ON timer sampling.
- If timer LED is blinking, there is an abnormality operation occurs.
- If ionizer LED is blinking, there is an abnormality of ionizer occurs.

9.1.1.16. Auto Operation Switch



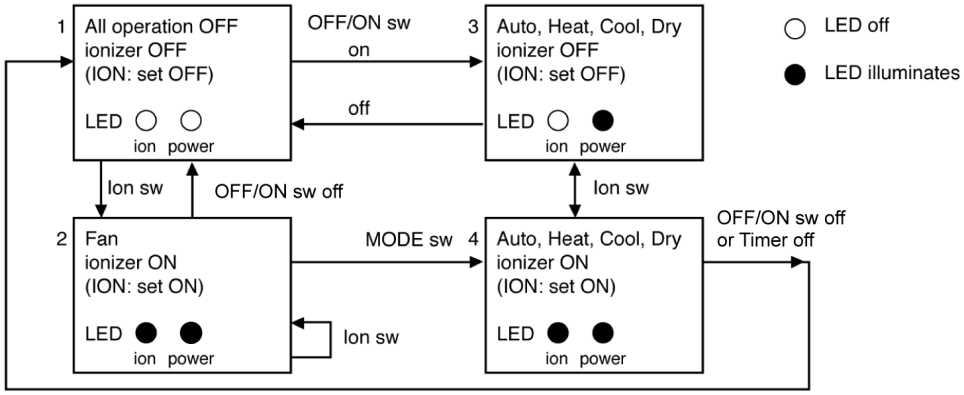
1. When the switch is pressed between 0 to 5 seconds, Auto Mode operation starts to function.
2. When the switch is pressed between 5 to 8 seconds, the unit is forced to operate in Cooling Mode.
3. When the switch is pressed between 8 to 11 seconds, the unit will enter forced Heating Mode standby. Press timer decrement button for 5s for the unit to operate in Heating Mode.
4. When the switch is pressed between 11 to 16 seconds and together with the signal from remote control (timer decrement button for 5s), the unit can be changed to different controlling setting (4 type of transmission codes).
5. When the switch is pressed between 16 to 21 seconds, either "H14" error detection selection mode or the remote control signal receiving sound can be cancelled or turned on.

9.1.1.17. Ionizer Operation

Purpose

To provide fresh air effect to users by discharging minus ion to air.

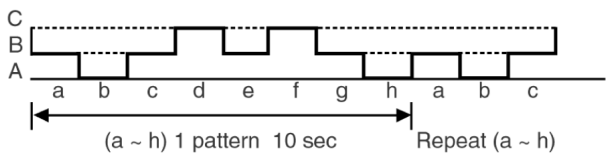
Control Condition



a. Ionizer Only Operation.

1. When air-conditioner unit is at "OFF" condition (standby) and ION operation button at remote control is pressed.
   Fan & ionizer on, ION LED illuminates, ION and power LEDs illuminate. (1 → 2)
   However, fan speed can be adjusted later by customer during this operation.

Fan speed	
manual	Remote Control set fan speed
Auto	Repetition of 8 patterns as shown below



Airflow direction (Horizontal Vane) control:

Follow vane direction control at cooling mode.

Horizontal vane can be changed by customer during ion only operation.

b. Operation Mode + Ionizer Operation.

1. Ionising Operation Start Condition

When air conditioner unit is in “ON” condition (Heat, Cool, Dry, Fan, Auto mode) and an ION operation button at remote control is pressed. Ionizer on & ION LED illuminates. (3 → 4)

Power LED also illuminates.

2. Ionising Operation Stop Condition

When one of the following conditions is satisfied, ION operation stops.

a. Stopped by ON/OFF switch.

b. Timer OFF activates.

c. ION feedback signal shows error.

3. When "ION" is displayed on the remote controller, Ionizer operates.

c. Timer during ionizer operation

Refer to case study in next page for details.

9.1.1.17.1. Ionizer Problem Detection Control

i. Purpose

To inform user of ionizer problems and detection.

ii. Two types of problem detection control:

Control	Detection Method	Protection	Recovery
ERROR PROTECTION (i) Actual ion: ON (ii) ion feedback signal: 0V	(i) Actual ion ON for 10s & OFF for 30 min. continuously for 24 times (approx. 11 hr. 30 min.) (ii) Within 24 counts, if anytime CONDITION becomes false then count is cleared.	(i) Actual ion is permanently OFF & ion LED is blinking. (ii) Press remote control ion button for a) ON: Ion LED blink & buzzer = beep b) OFF: Ion LED OFF & buzzer = beep	(i) Press ON/OFF button to OFF (ii) Reset power (iii) Off by force operation
BREAKDOWN PROTECTION (i) Actual ion: OFF (ii) ion feedback signal: 5V	(i) Actual ion OFF ≥ 2s	Case 1: During Air-Con. ON. (i) Air-Cond OFF with abnormal no. H26 is activated with timer LED is blinking permanently. Case 2: During Air-Con. OFF. (i) Abnormal no. H26 is activated with timer LED is blinking permanently for both cases 1 & 2. (ii) Press remote control ion button for a) ON: Ion LED blink b) OFF: Ion LED OFF (iii) Press any remote control button to a) ON: Buzzer = beep beep beep beep b) OFF: Buzzer = beep beep beep beep	(i) When anytime CONDITION becomes false. (ii) Once recovered, ion & Timer LED stops blinking permanently. (iii) Main power reset.

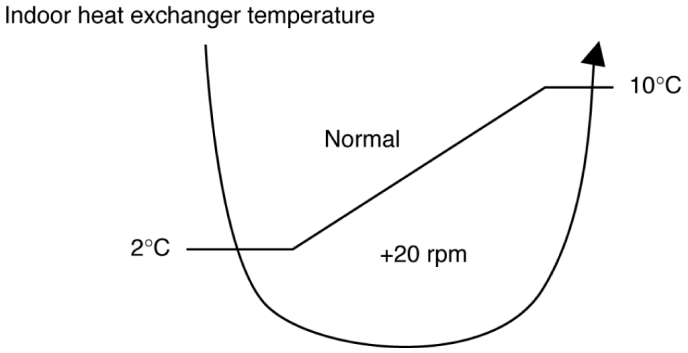
9.1.1.17.2. Ionizer Operation case study

Case 1

Current Operation \ Timer		24 hours Timer	
		Set to ON	Set to OFF
ION	ON	Continue ON	Stop
	OFF	Not Applicable (*2)	Continue OFF
Operation Any Mode (*1)	ON	Continue ON	Stop
	OFF	Start	Stop

9.1.2. Anti-Freezing Control

1. When indoor heat exchanger temperature is lower than 2°C continuously for six minutes, compressor will stop operating.
2. Compressor will resume its operation three minutes after the indoor heat exchanger is higher than 10°C.
3. At the same time, indoor fan speed increase +20 rpm compared to its normal operation.
4. If indoor heat exchanger temperature is higher than 10°C for five minutes, the fan speed will return to its normal operation.



9.2. Duct Type

9.2.1. Simultaneous Operation Control

1. **Operation modes which can be selected using the remote control unit:**
   Automatic, Cooling, Dry, Heating, Fan operation mode.
2. **Types of operations modes which can be performed simultaneously**
   - Cooling operation and cooling, Dry or fan operation
   - Heating operation and heating operation
3. **Types of operation modes which cannot be performed simultaneously**
   - While a cooling operation is in progress, a heating operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for cooling was pressed first, the operation is continued. In the room where the operation button for heating was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the heating operation. Its fan is stopped, and the air does not discharged.
   - While a heating operation is in progress, a cooling operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for heating was pressed first, the operation is continued. In the room where the operation button for cooling was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the cooling operation. Its fan is stopped, and the air does not discharged.
4. **Operation mode priority control**
   - The operation mode designated first by the indoor unit has priority.
   - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

"Waiting" denotes the standby status in which the operation lamp LED blinks (ON for 2.5 sec. and OFF for 0.5 sec.), and the fan is stopped.

	B ROOM	Non Priority Unit (2nd. ON)			
A ROOM		Cooling	Dry	Heating	Fan
Priority Unit (1st. ON)	Cooling	C / C	D / C	Waiting / C	F / C
	Dry	C / D	D / D	Waiting / D	F / D
	Heating	Waiting / H	Waiting / H	H / H	Stop / H
	Fan *	C / F	D / F	H / Stop	F / F

* In the fan mode, priority is transferred to a non-priority unit.

Note

C: Cooling operation mode

D: Dry operation mode

H: Heating operation mode

F: Fan operation mode

9.2.2. Indoor Fan Control

- The following shows how fan speed changes depending on the setting made with the FAN SPEED button and other operating conditions.
- Actual fan speed may differ from that you set with remote control.

《CS-ME10DD3EG》

Rotation Speed		Stop ～ ～ ～ 750 ～ 750 ～ 800 ～ 900 ～ 980 ～ 1060 ～ 1140 ～ 1230 ～ 1260 ～ 1350																
Cooling	Manual				SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○			○			◎※1	◎※2	⋰◎⋱～⋰◎⋱								
	Powerful	○							◎※1	◎※2	⋰◎⋱～⋰◎⋱							
	Quiet	○					◎※1	◎※2	◎	～	◎							
Dry	Manual	◎			SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○				○		◎※1	◎※2	⋰◎⋱～⋰◎⋱								
Rotation Speed(rpm)		Stop ～ 750 ～ 750 ～ 800 ～ ～ 900 ～ ～ 1010 ～ 1130 ～ 1250 ～ 1370 ～ 1430 ～ 1450																
Heating	Manual		SSLo	SLo			Low		●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○	○	○	○		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	Powerful	○						◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Quiet	○				◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			

"◎" fan speed is set automatically. "○" in Cooling indicates that fan speed and deodorizing are controlled together.
"○" in Heating indicates that fan speed, hot start and anti-cold draft are controlled together.

Remarks: Remote control settings.
※1 When difference between intake air temperature and internal set temperature is +0.5˚C and below.
※2 When difference between intake air temperature and internal set temperature is +1.5˚C and below.
⋰◎⋱～⋰◎⋱ When difference between intake air temperature and internal set temperature is +1.5˚C and above.

《CS-E15DD3EW》

Rotation Speed(rpm)		Stop ～ ～ ～ 750 ～ 750 ～ 800 ～ 900 ～ 1000 ～ 1100 ～ 1200 ～ 1300 ～ 1330 ～ 1350																
Cooling	Manual				SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○			○			◎※1	◎※2	⋰◎⋱～⋰◎⋱								
	Powerful	○							◎※1	◎※2	⋰◎⋱～⋰◎⋱							
	Quiet	○					◎※1	◎※2	◎	～	◎							
Dry	Manual	◎			SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○				○		◎※1	◎※2	⋰◎⋱～⋰◎⋱								
Rotation Speed		Stop ～ 750 ～ 750 ～ 900 ～ ～ 980 ～ ～ 1070 ～ 1170 ～ 1270 ～ 1370 ～ 1430 ～ 1450																
Heating	Manual		SSLo	SLo			Low		●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○	○	○	○		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	Powerful	○						◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Quiet	○				◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			

"◎" fan speed is set automatically. "○" in Cooling indicates that fan speed and deodorizing are controlled together.
"○" in Heating indicates that fan speed, hot start and anti-cold draft are controlled together.

Remarks: Remote control settings.
※1 When difference between intake air temperature and internal set temperature is +0.5˚C and below.
※2 When difference between intake air temperature and internal set temperature is +1.5˚C and below.
⋰◎⋱～⋰◎⋱ When difference between intake air temperature and internal set temperature is +1.5˚C and above.

《CS-E18DD3EW》

Rotation Speed(rpm)		Stop ～ ～ ～ 800 ～ 800 ～ 900 ～ 1020 ～ 1140 ～ 1260 ～ 1380 ～ 1500 ～ 1550 ～ 1600																
Cooling	Manual				SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○			○			◎※1	◎※2	⋰◎⋱～⋰◎⋱								
	Powerful	○							◎※1	◎※2	⋰◎⋱～⋰◎⋱							
	Quiet	○					◎※1	◎※2	◎	～	◎							
Dry	Manual	◎			SSLo	SLo	Lo-	Low	●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○				○		◎※1	◎※2	⋰◎⋱～⋰◎⋱								
Rotation Speed		Stop ～ 800 ～ 800 ～ 1080 ～ ～ 1200 ～ ～ 1300 ～ 1400 ～ 1500 ～ 1600 ～ 1650 ～ 1700																
Heating	Manual		SSLo	SLo			Low		●Me-	Me	●Me+	Hi	SHi	PSHi				
	Auto	○	○	○	○		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
	Powerful	○						◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Quiet	○				◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			

"◎" fan speed is set automatically. "○" in Cooling indicates that fan speed and deodorizing are controlled together.
"○" in Heating indicates that fan speed, hot start and anti-cold draft are controlled together.

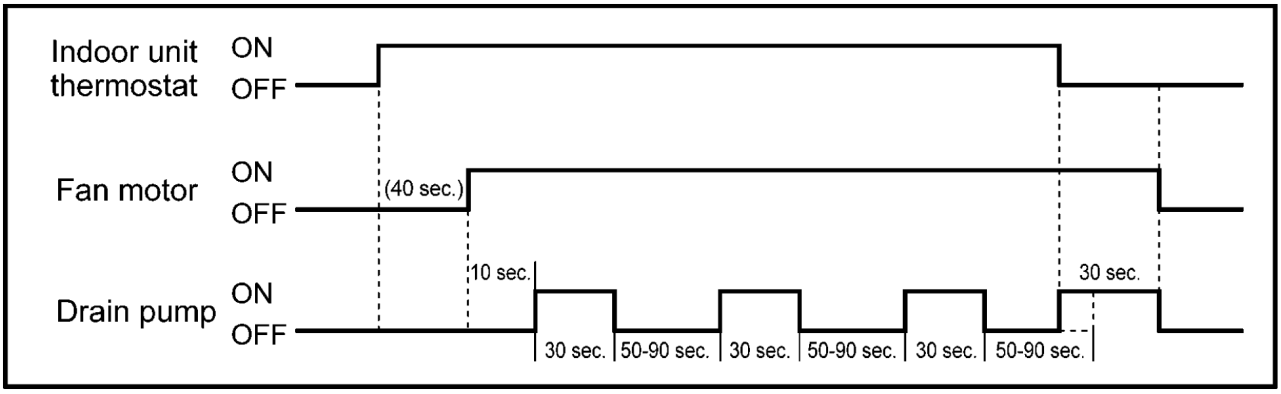
Remarks: Remote control settings.
※1 When difference between intake air temperature and internal set temperature is +0.5˚C and below.
※2 When difference between intake air temperature and internal set temperature is +1.5˚C and below.
⋰◎⋱～⋰◎⋱ When difference between intake air temperature and internal set temperature is +1.5˚C and above.

9.2.3. Drain Pump Control

Basic operation

- The drain pump starts 50 seconds after the indoor unit starts or the thermostat comes on (i.e., 10 seconds after the fan motor starts).

  The drain pump stops 30 seconds after the indoor unit stops or the thermostat turns off.
- The drain pump repeats a cycle of on for 30 seconds then off for between 50 and 90 seconds as long as the unit is operating. Operation while the unit is off is determined by the difference between the temperature setting and the room temperature.



Float switch operation

- When the float switch turns on for 10 seconds continuously, the thermostat of the indoor unit turns off and the drain pump operates continuously.
- When the float switch stays on for 150 seconds continuously, the drain pump and indoor unit stop and the timer lamp flashed indicating an H21 error.

9.2.4. Auto Restart Control

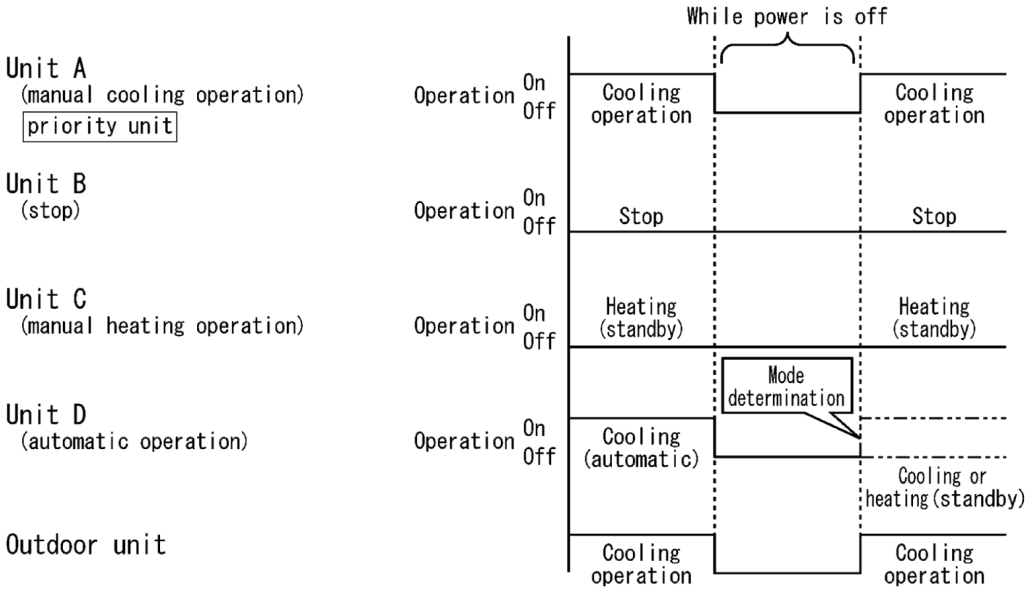
- If there is a power failure, operation will automatically be restarted when the power is resumed. It will start with the previous operation mode and airflow direction. (Timer Delay Safety Control is valid.)

1. Control start conditions
   - The 24-hour timer must not be set.
   - The sleep timer must not be set.

   Auto start control is not available when timer or sleep mode is set.

2. Description of control
   - In the case of manual operation, the operation mode, temperature setting, fan speed and airflow direction before the power is turned off are restored.
   - In the case of automatic operation, after the power is restored operation starts with the determination of the mode.
   - While the air conditioner odour clear timer has been set, the setting is cancelled, and operation is transferred to the mode before the power is turned off.
   - While the air conditioner odour clear operation (with timer / without timer setting) are being performed, both of these operations are completed., and operation is transferred to the operation mode prior to these operations.

Example: When the power is turned off during an outdoor unit cooling operation.

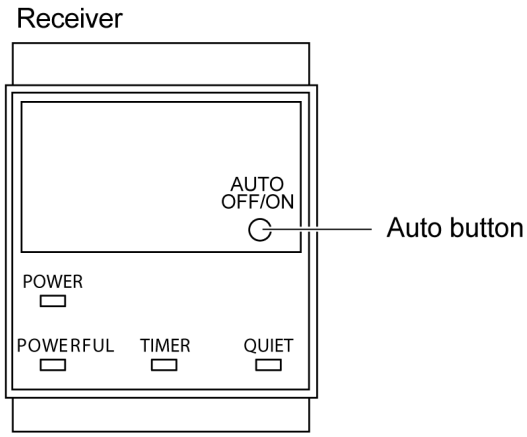


9.2.5. Other Indoor Unit Operation Functions

9.2.5.1. Auto button

Proceed with operation when the air conditioner is stopped.

(When the auto button is pressed during operation, the air conditioner is stopped.)



1. **Emergency operation**

   Press the auto button and release it within 5 seconds to perform emergency operation.

   Under normal condition (failure is not occurred) automatic operation is performed. In the event of a failure that still enables operation to be performed, emergency operation is performed.

2. **Forced cooling operation**

   press the auto button about 5-8 seconds (1 beep sound) to perform the forced cooling operation.

   The air conditioner does not operate for 2 minutes if the room temperature is low (intake temperature below 16°C) so just wait. The forced operation is performed after 2 minutes have elapsed.

3. **Forced heating operation**

   Press the auto button about 8-11 seconds (2 beeps sound) to perform the forced heating operation.

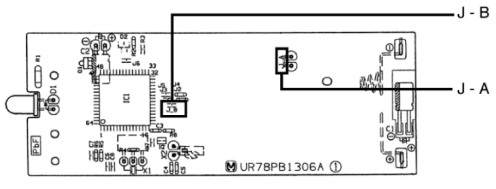
4. **Setting modes (Remote control transmission code, current switching mode)**

   The remote control transmission code selection mode is established by pressing the AUTO button about 11-16 seconds (3 beeps sound).

   Remote control transmission code selection ... remote control unit no.A (beep) ⟺ remote control unit no.B (extended beep)
   (Auto button operation)

   Select Remote Control Transmission Code

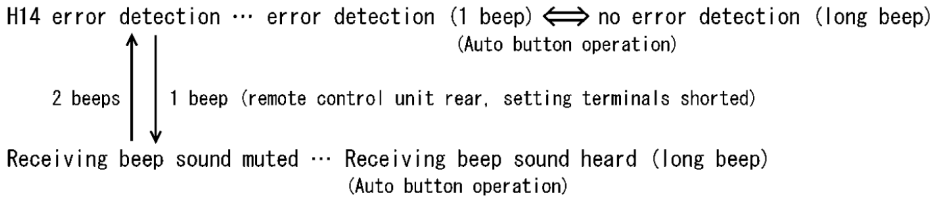
   - There are 4 types of remote control transmission code could be selected and stored in EEPROM of indoor unit. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal interference when there are 2 more indoor unit installed nearby together.
   - To change remote control transmission code, short or open jumpers at the remote control printed circuit board.

Remote Control Printed Circuit Board	Transmission Code Combination		
	J - A	J - B	Remote Control No.
	Short	Open	A (Default)
	Open	Open	B
	Short	Short	C
	Open	Short	D

- Under various setting mode, after select the transmission code combination of remote control, press any button of remote control to transmit a signal to indoor unit. The transmission code will be stored in EEPROM.
- After signal is received, the various setting mode is cancelled and return to normal operation.

5. **Individual setting mode**

The H14 error detection selection mode is established by pressing the auto button about 21 seconds (5 beeps sound). Now remove the remote control unit's battery cover, and short the "SET" terminals to established the beep sound mode.

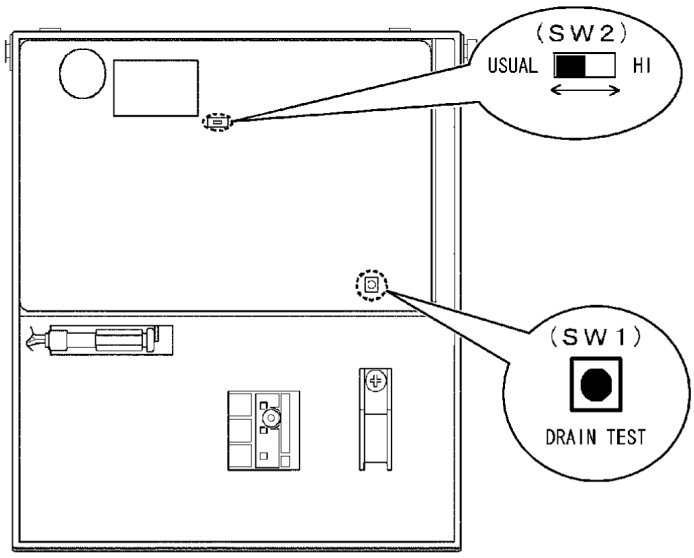


***If the auto button is pressed and 26 seconds or so are allowed to elapse, the auto button operation mode is restored.**

When nothing happens for 60 seconds in the "Setting mode", "Odour clear setting mode" or "Individual setting mode" or if a remote control code is received, the mode concerned is canceled.

9.2.5.2. Drain Test (SW1)

When installing the unit and you want the Drain pump to operate independently, press the DRAIN TEST switch to operate it for about 5 minutes.



9.2.5.3. High Static Pressure Switch (High state switch SW2)

To increase the fan speed, open the control box and the control board switch the HIGH STATE switch (SW2) to "HI".

9.3. Ceiling Floor Type

9.3.1. Basic Function

Inverter control, which equipped with a microcomputer in determining the most suitable operating mode as time passes, automatically adjusts output power for maximum comfort always. In order to achieve the suitable operating mode, the microcomputer maintains the set temperature by measuring the temperature of the environment and performing temperature shifting. The compressor at outdoor unit is operating following the frequency instructed by the microcomputer at indoor unit that judging the condition according to internal setting temperature and intake air temperature.

9.3.1.1. Internal Setting Temperature

Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.

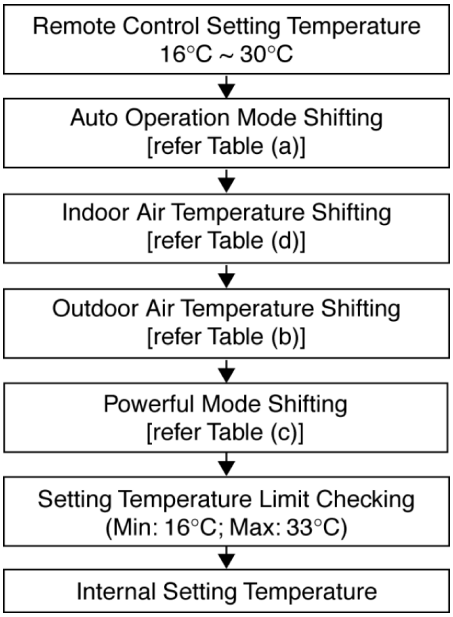


Table (a): Auto Operation Mode Setting

Mode Shift:	Temperature Shift (°C)
Cooling/Soft Dry → Heating	-2.0
Heating → Cooling/Soft Dry	+2.0

Table (b): Outdoor Air Temperature Shifting

Mode:	Outdoor Temperature, X (°C):	Temperature Shift (°C)
Cooling/Soft Dry	$30 \leq X$	+0.5
	$X < 30$	+1.0
Heating	$9 \leq X$	-1.0
	$5 \leq X < 9$	-0.5
	$1 \leq X < 5$	0.0
	$X \leq 1$	+1.0

Table (c): Power Mode Shifting

Mode:	Temperature Shift (°C)
Cooling	-4.0
Soft Dry	-2.0
Heating	+6.0

Table (d): Indoor Air Temperature Shifting

1. Target room temperature shift value (dGetaDst)

- To offset the absolute gap between detection temperature with actual room temperature.
- The heat exchanger unit's temperature is different based on operation mode, it becomes the action operation mode value.

Actual operation mode	Target room temperature offset value (dGetaDst)
Cooling	(1)
Heating	(2)
Dry	(0)

2. Room temperature shift value (dGeta)

- When compressor ON/OFF, correction of detected room temperature by shift value during defrost etc.

i) Initial value when operation starts, or changing the actual operation mode.

Set the offset value at each operation mode. However, in order to improve the heating startup efficiency, the offset value will be changed based on the gap between setting temperature and room temperature.

Actual operation mode	Gap between setting temperature and room temperature	Room temperature offset value (dGeta)
Cool	—	(0)
Heat	(Operation start set temp. - room temp.) $<$ 4°C	(4)
	(Operation start set temp.) $\geq$ 4°C	(4)
Dry	—	(0)

ii) Updating during operation

During operation, it will compare with the target room temperature offset value at specific period, then the room temperature will be updated.

Actual operation mode	Room temperature zone	Updating period (sec.)
Cool	—	(180)
Heat	A, B, C, D zone	(15)
Dry	—	(180)

Update the room temperature offset value (dGeta)

Temperature condition	Room temp. offset value after modified (dGeta)
Target room temp. offset value $>$ Room temp. offset value (dGetaDst $>$ dGeta)	dGeta + (0.5)
Target room temp. offset value $<$ Room temp. offset value (dGetaDst $<$ dGeta)	dGeta - (0.5)
Target room temp. offset value = Room temp. offset value (dGetaDst = dGeta)	Do not change.

However, if the following condition is occurred, temperature cannot detect correctly and therefore no updating will be done.

- Heating zone E and above (Temperature gap is big and great capacity increased.)
- During deice
- After deice complete *within 600 sec.
- Comp. stop

Comp. starting *within 600 sec.

Table (e)

Installation position change heating shift	-4°C

9.3.1.2. Simultaneous Operation Control

1. **Operation modes which can be selected using the remote control unit:**
   Automatic, Cooling, Dry, Heating, Fan operation mode.
2. **Types of operations modes which can be performed simultaneously**
   - Cooling operation and cooling, Dry or fan operation
   - Heating operation and heating operation
3. **Types of operation modes which cannot be performed simultaneously**
   - While a cooling operation is in progress, a heating operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for cooling was pressed first, the operation is continued. In the room where the operation button for heating was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the heating operation. Its fan is stopped, and the air does not discharged.
   - While a heating operation is in progress, a cooling operation cannot be performed by an indoor unit in another room.

     In the room where the operation button for heating was pressed first, the operation is continued. In the room where the operation button for cooling was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the cooling operation. Its fan is stopped, and the air does not discharged.
4. **Operation mode priority control**
   - The operation mode designated first by the indoor unit has priority.
   - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

"Waiting" denotes the standby status in which the operation lamp LED blinks (ON for 2.5 sec. and OFF for 0.5 sec.), and the fan is stopped.

	A ROOM \ B ROOM	Non Priority Unit (2nd. ON)			
		Cooling	Dry	Heating	Fan
Priority Unit (1st. ON)	Cooling	C / C	D / C	Waiting / C	F / C
	Dry	C / D	D / D	Waiting / D	F / D
	Heating	Waiting / H	Waiting / H	H / H	Stop / H
	Fan *	C / F	D / F	H / Stop	F / F

* In the fan mode, priority is transferred to a non-priority unit.

Note

C: Cooling operation mode

D: Dry operation mode

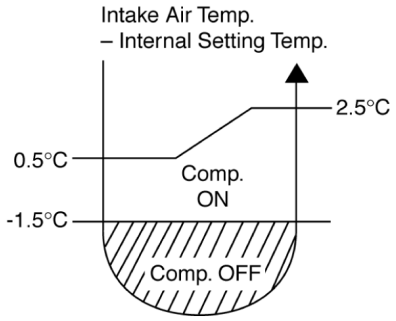
H: Heating operation mode

F: Fan operation mode

9.3.1.3. Cooling Operation

9.3.1.3.1. Thermostat control

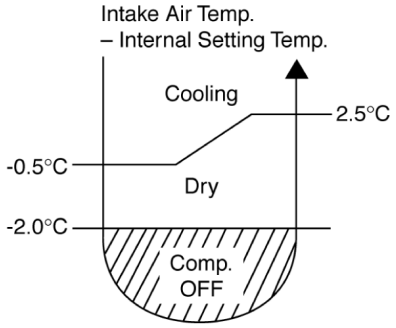
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -1.5°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.3.1.4. Soft Dry Operation

9.3.1.4.1. Thermostat control

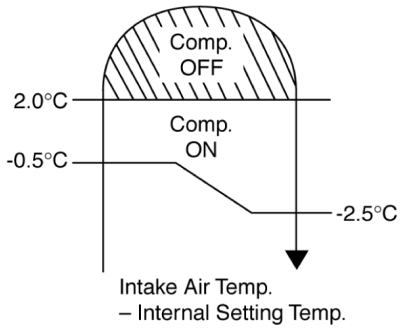
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.3.1.5. Heating Operation

9.3.1.5.1. Thermostat control

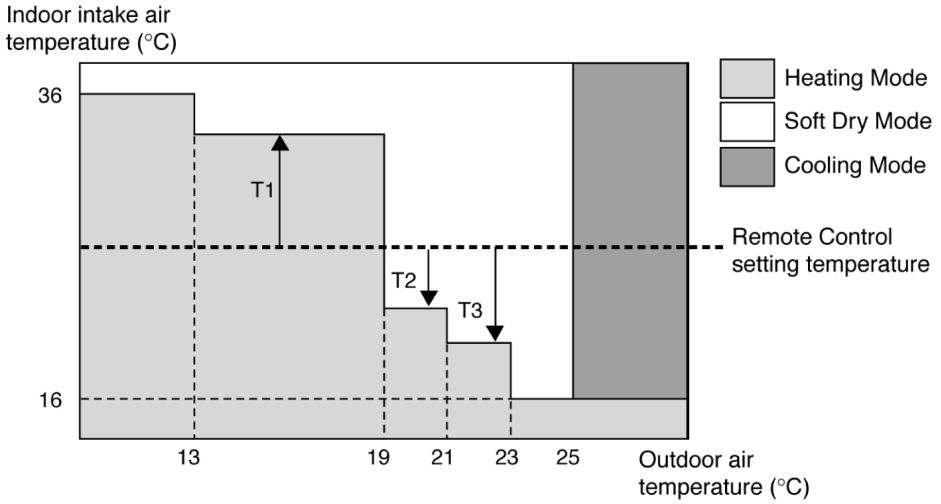
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < +2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.3.1.6. Automatic Operation

This mode can be set using remote control and the operation is decided by remote control setting temperature, indoor intake air temperature and outdoor air temperature.

During operation mode judgment, indoor fan motor (with speed of Lo-) and outdoor fan motor are running for 30 seconds to detect the indoor intake and outdoor air temperature. The operation mode is decided based on below chart.



Values of T1, T2, and T3 depend on remote control setting temperature, as shown in below table. After the adjustment of T1, T2 and T3 values, the operation mode for that particular environment and remote control setting is judged and performed, based on the above operation mode chart, every 30 minutes.

Remote Control Setting Temperature (°C)	T1	T2	T3
16 ~ 18	+10	-3	-5
19 ~ 22	+8	-3	-7
23 ~ 26	+7	-3	-7
27 ~ 30	+6	-3	-8

There is a temperature shifting on T1, T2, and T3 if the operation mode judged is changed from Cooling/Soft Dry to Heating or vice verse.

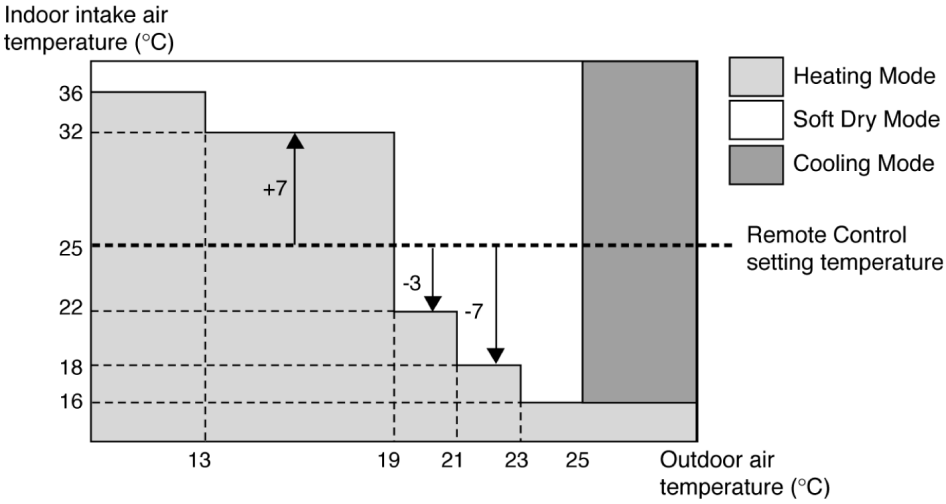
Operation Mode change from	Temperature shifts (°C)
Cooling/Soft Dry → Heating	-2
Heating → Cooling/Soft Dry	+2

Example of operation mode chart adjustment:

From the above table, if remote control setting temperature = 25,

T1 = 25 + 7 = 32; T2 = 25 - 3 = 22; T3 = 25 - 7 = 18

The operation mode chart for this example is as shown in below figure and the operation mode to be performed will depend on indoor intake air temperature and outdoor air temperature at the time when the judgment is made.



9.3.1.7. Indoor Fan Motor Operation

A. Basic Rotation Speed (rpm)

- Required rotation speed for fan is set to respond to the remote control setting (10 rpm unit)

[Cooling, Dry, Fan]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SHi	Hi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-ME10DTEG	900	900	830	790	740	690	640	590	530	370
CS-E15DTEW	1070	1070	1000	940	870	800	730	680	630	370
CS-E18DTEW	1110	1110	1040	970	920	850	790	740	630	370

[Heating]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SHi	Hi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-ME10DTEG	900	900	830	780	730	680	630	590	530	370
CS-E15DTEW	1080	1080	1010	920	830	730	630	590	530	300
CS-E18DTEW	1110	1110	1050	950	860	770	680	630	540	370

B. Indoor Fan Control

i. Indoor fan control operation outline

1. Cooling / Dry

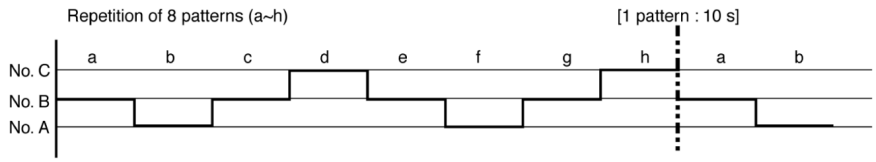
						Cooling	Dry	Ionizer
Under different mode standby						Stop		
Forced Operation						Hi	—	—
SEER Measurement mode					The minimum capability	Lo	—	—
					Middle capability	Hi	—	—
					Standard rating capacity (rated capability)	Hi	—	—
Other than above	Min. control				Automatic operation mode judgement	Lo-		
	Other than above				Freeze proofing	Designated air flow shift	Designated air flow shift	—
					With dew	Designated air flow shift	Designated air flow shift	—
		Other than above	—			—	SLo	—
			Other than the above	Operation	Automatic operation	Lo		Usually, automatic
					Manual Operation — Powerful	Setting +2UP		—
					Manual Operation — Quiet	Setting -1down		—
					Manual Operation — Other than the above	Remote control setup		Remote control setup
				Other than the above	Automatic Operation — Powerful	Powerful automatic	SLo	—
					Automatic Operation — Quiet	Quiet automatic		—
					Automatic Operation — Other than the above	Usually, automatic	SLo	Usually, automatic
					Manual Operation — Powerful	Setting +2UP	SLo	—
					Manual Operation — Quiet	Setting -1down	SLo	—
					Manual Operation — Other than the above	Remote control setup	SLo	Remote control setup
			MAX capability			SHi	—	—

2. Heating

					Heating
Waiting for other mode					Stop
Forced Operation					SHi
SEER Measurement mode			The minimum capability		Lo
			Middle capability		SHi
			Rated capability		SHi
Min. control		Automatic operation mode judging			Lo-
Other than above	During hot start				Stop
	Under defrosting operation				Stop
	Ability supply stop				Stop
	Low-temperature capability measurement				SSHi
	MAX control	Heating starting force operation			A stop, SLo
		Ability supply stop			Lo-
		Thermostat-off sampling			Specification
		Piping temperature control			min Rectrictions of fan speed by indoor pipe temperature
	Min control	Fan speed minimum restrictions by indoor piping temperature			Me
		Fan speed automatic minimum			Auto Fan Speed min Control
	Other than above	Prepartion operation start timer.	Fan speed automatic		Lo
			Manual Operation	Powerful	Setting +2UP
				Quiet	Setting -1down
				Other than the above	Remote control setup
		Other than above	Fan speed shift control		Heating Fan Speed Control
			Fan speed automatic	Powerful	Pipe temperature control +2UP
				Quiet	Pipe temperature control -1down
				Other than the above	Piping temperature control
			Fan speed manual	Powerful	Setting +2UP
				Quiet	Setting -1down
				Other than the above	Remote control setup

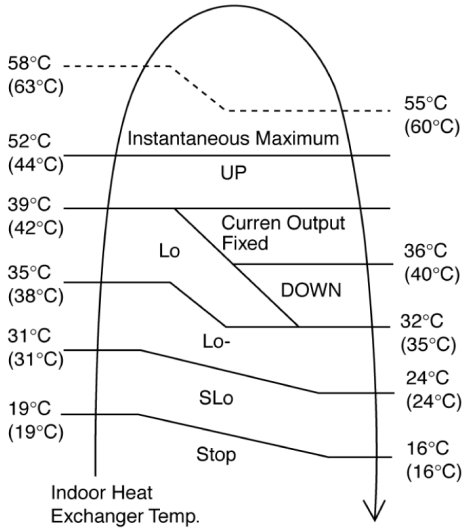
ii. Auto Fan Speed

1. Cooling



	Model	No. A	No. B	No. C
Powerful Program	CS-ME10DTEG	790	810	830
	CS-E15DTEW	940	960	980
	CS-E18DTEW	990	1010	1030
Normal Program	CS-ME10DTEG	730	750	770
	CS-E15DTEW	880	900	920
	CS-E18DTEW	930	950	970
Quiet Program	CS-ME10DTEG	710	730	750
	CS-E15DTEW	860	880	900
	CS-E18DTEW	910	930	950

2. Heating



Note:

a. UP:

- If move from Lo, the fan speed will be shifted to Maximum 1,520 rpm.
- If move from Maximum, the fan speed no change.
- In up zone, 10 rpm is added for every 10s until Maximum 1,520 rpm.

b. DOWN:

- The fan speed will be decreased one step every 10 sec. until Minimum 1,270 rpm.

c. Current Output Fixed:

- Maintain at present fan speed.

d. Instantaneous Maximum:

- Fan speed will be increased to maximum auto fan speed.

e. Temperature in ( ) is for Powerful Mode operation.

C. Fan Motor Control

1. Motor specification

Phase control motor

D. Deodorizing Control

i. Control condition

Control at cooling/dry operation and auto fan speed setting.

No Deodorizing Control is performed during ON timer standby operation and during Anti-freezing control prevention.

ii. Operation

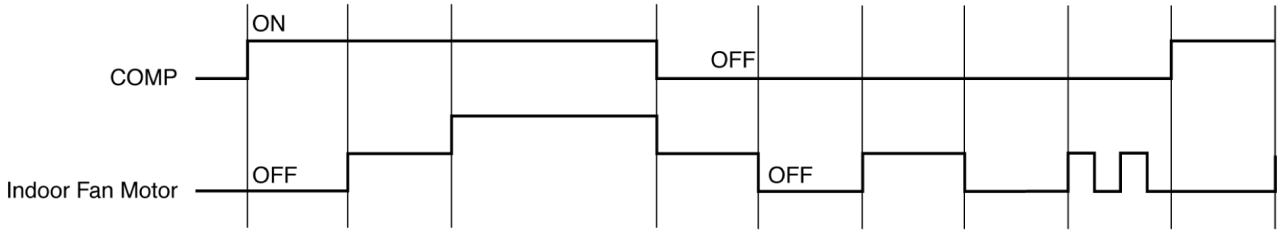
The odor status is arranged as below and it is shifted as follows.

* When COMP is ON $1 \rightarrow 2 \rightarrow 3$
(Shift to 4 when COMP is OFF)

* When COMP is OFF $4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 6 \longleftrightarrow 7$
(Shift to 1 when COMP is ON)

* Start from 4 if the Thermostat is OFF during the start operation.

Odor Status		1	2	3	4	5	6	7	6.7.6...	1
Status Shift according to COMP		ON			OFF					ON
Status Shift according to time (s)	Cooling zone	40	50	—	30	90	20	90	20.90.20...	ON
	Dry zone									
Fan Speed	Cooling zone	OFF	SSLo	Auto Fan Speed	SSLo	OFF	SSLo	OFF	SSLo.OFF...	
	Dry zone			SLo						



※ During FM OFF state, auto judgement will cause the FM to ON.

9.3.1.8. Airflow Direction

1. There is one type of airflow, vertical airflow (directed by horizontal vane).
2. Control of airflow direction can be automatic (angles of direction is determined by operation mode, heat exchanger temperature and intake air temperature) and manual (angles of direction can be adjusted using remote control).

Vertical Airflow

Operation Mode	Airflow Direction			Vane Angle (°)				
				1	2	3	4	5
Heating	Auto with Heat Exchanger Temperature	A	Upward fix	161				
		B	Downward fix	161				
		C	Downward fix	197				
		D	Downward fix	197				
	Manual			197	—	—	—	161
Cooling, Soft Dry and Ion	Auto			26 ~ 49				
	Manual			49	—	—	—	26

1. Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the angles as stated above. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below. When the air conditioner is stopped using remote control, the vane will shift to close position.
2. Manual vertical airflow direction can be set using remote control; the angles of the vane are as stated above and the positions of the vane are as Figure 2 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

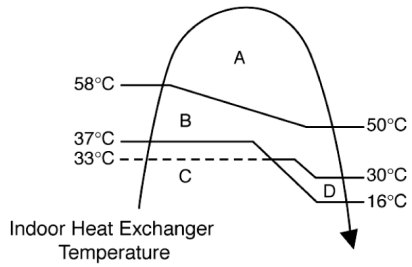


Figure 1

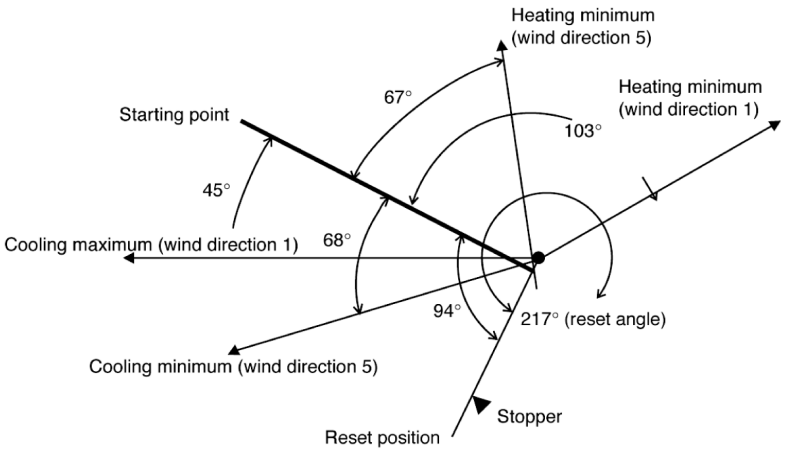


Figure 2

9.3.1.9. Quiet operation (Cooling Mode/Cooling area of Dry Mode)

A. Purpose

To provide quiet cooling operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button pressed again.
2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.

9.3.1.10. Quiet operation (Heating)

A. Purpose

To provide quiet heating operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button is pressed again.
2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode, except fan only mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

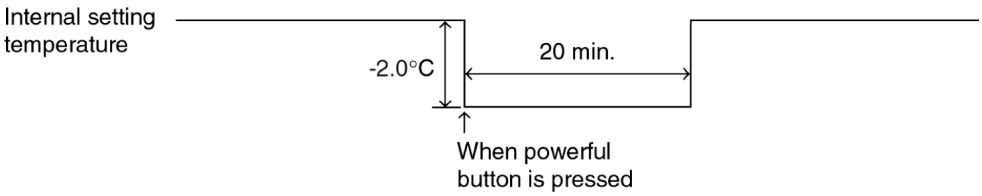
a. Fan Speed manual

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.
3. Fan Speed Auto
   Indoor FM RPM depends on pipe temp sensor of indoor heat exchanger.

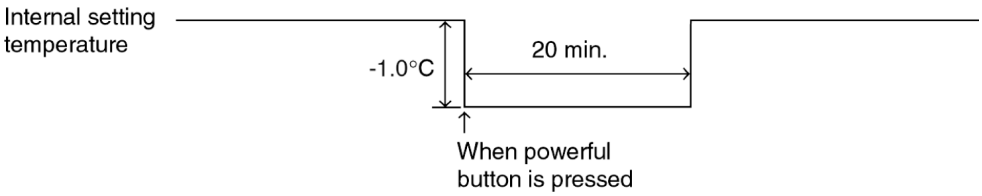
9.3.1.11. Powerful Mode Operation

When the powerful mode is selected, the internal setting temperature will shift to achieve the setting temperature quickly.

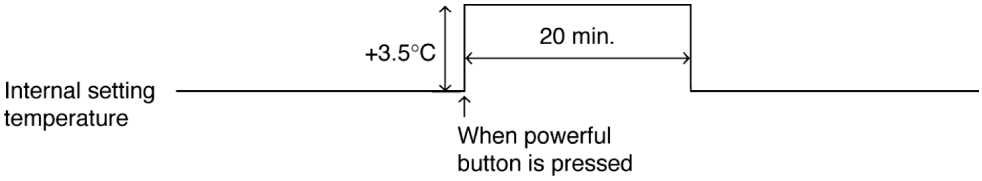
(a) Cooling Operation



(b) Soft Dry Operation



(c) Heating Operation

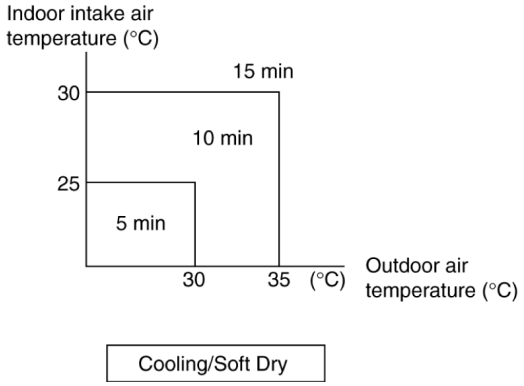


9.3.1.12. Delay ON Timer Control

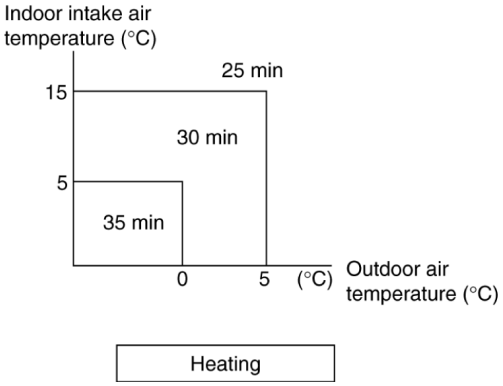
Delay ON timer can be set using remote control, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time.

60 minutes before the set time, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation starting time.

From the above judgment, the decided operation will start operate earlier than the set time as shown below.



Cooling/Soft Dry



Heating

9.3.1.13. Delay OFF Timer Control

Delay OFF timer can be set using remote control, the unit with timer set will stop operate at set time.

9.3.1.14. Auto Restart Control

1. When the power supply is cut off during the operation of air conditioner, the compressor will re-operate within three to four minutes (there are 10 patterns between 2 minutes 58 seconds and 3 minutes 52 seconds to be selected randomly) after power supply resumes.

2. This type of control is not applicable during ON/OFF Timer setting.

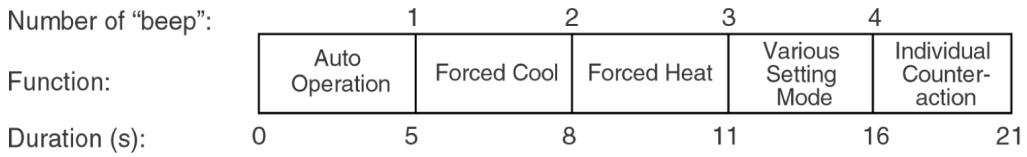
9.3.1.15. Indication Panel

LED	POWER	TIMER	QUIET	POWERFUL	AIR SWING
Color	Green	Orange	Orange	Orange	Orange
Light ON	Operation ON	Timer Setting ON	Quiet Mode ON	Powerful Mode ON	Auto Air Swing ON
Light OFF	Operation OFF	Timer Setting OFF	Quiet Mode OFF	Powerful Mode OFF	Auto Air Swing OFF

Note:

- If POWER LED is blinking, the possible operations of the unit are Hot Start, during Deice operation, operation mode judgment, or delay ON timer sampling.
- If timer LED is blinking, there is an abnormality operation occurs.

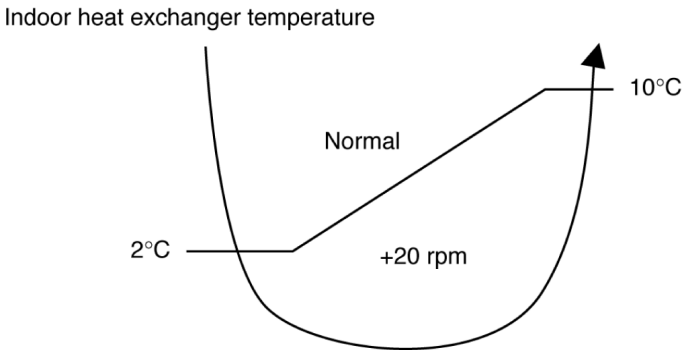
9.3.1.16. Auto Operation Switch



1. When the switch is pressed between 0 to 5 seconds, Auto Mode operation starts to function.
2. When the switch is pressed between 5 to 8 seconds, the unit is forced to operate in Cooling Mode.
3. When the switch is pressed between 8 to 11 seconds, the unit will enter forced Heating Mode standby. Press timer decrement button for 5s for the unit to operate in Heating Mode.
4. When the switch is pressed between 11 to 16 seconds and together with the signal from remote control (timer decrement button for 5s), the unit can be changed to different controlling setting (4 type of transmission codes).
5. When the switch is pressed between 16 to 21 seconds, either "H14" error detection selection mode or the remote control signal receiving sound can be cancelled or turned on.

9.3.1.17. Anti-Freezing Control

1. When indoor heat exchanger temperature is lower than 2°C continuously for six minutes, compressor will stop operating.
2. Compressor will resume its operation three minutes after the indoor heat exchanger is higher than 10°C.
3. At the same time, indoor fan speed increase +20 rpm compared to its normal operation.
4. If indoor heat exchanger temperature is higher than 10°C for five minutes, the fan speed will return to its normal operation.



9.3.1.18. Anti-Dew Formation Control

Spray protection Control

- In the case of indoor form ceiling floor, duct and mini-cassette.

a. Purpose

To prevent dew.

b. Control start conditions

When indoor units are ceiling floor, duct and mini-cassette.

c. Control contents

Hz control is carried out according to the spray prevention status transmitted from indoor.

Spray prevention status (transmitted indoor)	Control contents	
	Relative control domain	MAX domain
0 (it usually controls)	Usually, control	Usually, control
1 (rise)	Relative change control priority	On tap up/10 seconds
2 (changeless)	Changeless	Changeless
3 (down)	-2 Hz/10 seconds	-2 Hz/10 seconds

Change is once to 10 seconds.

* Once the stand-up went into the down domain by Fcmax as for the Fcmax domain, it shifts to relative changes control domain.

When the higher rank of relative control has this control and the status signal od 2-3 has come out.

Relative change control is stopped and follows directions of spray control.

Priority is given to the which is larger when freeze prevention down status and spray prevention down status are transmitted simultaneously.

In the case of spray status $\neq$ 0, it is referred to as maxFc.

9.4. Mini-Cassette Type

9.4.1. Basic Function

Inverter control, which equipped with a microcomputer in determining the most suitable operating mode as time passes, automatically adjusts output power for maximum comfort always. In order to achieve the suitable operating mode, the microcomputer maintains the set temperature by measuring the temperature of the environment and performing temperature shifting. The compressor at outdoor unit is operating following the frequency instructed by the microcomputer at indoor unit that judging the condition according to internal setting temperature and intake air temperature.

9.4.1.1. Internal Setting Temperature

Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.

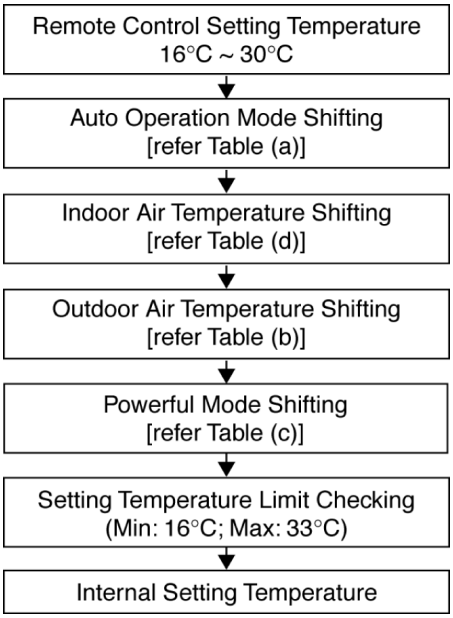


Table (a): Auto Operation Mode Setting

Mode Shift:	Temperature Shift (°C)
Cooling/Soft Dry → Heating	-2.0
Heating → Cooling/Soft Dry	+2.0

Table (b): Outdoor Air Temperature Shifting

Mode:	Outdoor Temperature, X (°C):	Temperature Shift (°C)
Cooling/Soft Dry	$30 \leq X$	+0.5
	$X < 30$	+1.0
Heating	$9 \leq X$	-1.0
	$5 \leq X < 9$	-0.5
	$1 \leq X < 5$	0.0
	$X \leq 1$	+1.0

Table (c): Power Mode Shifting

Mode:	Temperature Shift (°C)
Cooling	-4.0
Soft Dry	-2.0
Heating	+6.0

Table (d): Indoor Air Temperature Shifting

1. Target room temperature shift value (dGetaDst)
   - To offset the absolute gap between detection temperature with actual room temperature.
   - The heat exchanger unit's temperature is different based on operation mode, it becomes the action operation mode value.

Actual operation mode	Target room temperature offset value (dGetaDst)
Cooling	(1)
Heating	(2)
Dry	(0)

2. Room temperature shift value (dGeta)
   - When compressor ON/OFF, correction of detected room temperature by shift value during defrost etc.

   i) Initial value when operation starts, or changing the actual operation mode.

   Set the offset value at each operation mode. However, in order to improve the heating startup efficiency, the offset value will be changed based on the gap between setting temperature and room temperature.

Actual operation mode	Gap between setting temperature and room temperature	Room temperature offset value (dGeta)
Cool	—	(0)
Heat	(Operation start set temp. - room temp.) $<$ 4°C	(4)
	(Operation start set temp.) $\geq$ 4°C	(4)
Dry	—	(0)

   ii) Updating during operation

   During operation, it will compare with the target room temperature offset value at specific period, then the room temperature will be updated.

Actual operation mode	Room temperature zone	Updating period (sec.)
Cool	—	(180)
Heat	A, B, C, D zone	(15)
Dry	—	(180)

   Update the room temperature offset value (dGeta)

Temperature condition	Room temp. offset value after modified (dGeta)
Target room temp. offset value $>$ Room temp. offset value (dGetaDst $>$ dGeta)	dGeta + (0.5)
Target room temp. offset value $<$ Room temp. offset value (dGetaDst $<$ dGeta)	dGeta - (0.5)
Target room temp. offset value = Room temp. offset value (dGetaDst = dGeta)	Do not change.

   However, if the following condition is occurred, temperature cannot detect correctly and therefore no updating will be done.

   - Heating zone E and above (Temperature gap is big and great capacity increased.)
   - During deice
   - After deice complete *within 600 sec.
   - Comp. stop

     Comp. starting *within 600 sec.

9.4.1.2. Simultaneous Operation Control

1. **Operation modes which can be selected using the remote control unit:**
   Automatic, Cooling, Dry, Heating, Fan operation mode.
2. **Types of operations mode which can be performed simultaneously**
   - Cooling operation and cooling, Dry or fan operation
   - Heating operation and heating operation
3. **Types of operation modes which cannot be performed simultaneously**
   - While a cooling operation is in progress, a heating operation cannot be performed by an indoor unit in another room.

     In the room where the operation is in progress, a cooling was pressed first, operation is continued. In the room where the operation button for heating was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the heating operation. Its fan is stopped, and the air does not discharged.
   - While a cooling operation is in progress, a heating operation cannot be performed by an indoor unit in another room.

     In the room where the operation is in progress, a cooling was pressed first, operation is continued. In the room where the operation button for cooling was pressed afterward, the operation lamp of the indoor unit blinks, where the attempt is made to establish the cooling operation. Its fan is stopped, and the air does not discharged.
4. **Operation mode priority control**
   - The operation mode designated first by the indoor unit has priority.
   - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

"Waiting" denotes the standby status in which the operation lamp LED blinks (ON for 2.5 sec. and OFF for 0.5 sec.), and the fan is stopped.

	B ROOM	Non Priority Unit (2nd. ON)			
A ROOM		Cooling	Dry	Heating	Fan
Priority Unit (1st. ON)	Cooling	C / C	D / C	Waiting / C	F / C
	Dry	C / D	D / D	Waiting / D	F / D
	Heating	Waiting / H	Waiting / H	H / H	Stop / H
	Fan *	C / F	D / F	H / Stop	F / F

* In the fan mode, priority is transferred to a non-priority unit.

Note

C: Cooling operation mode

D: Dry operation mode

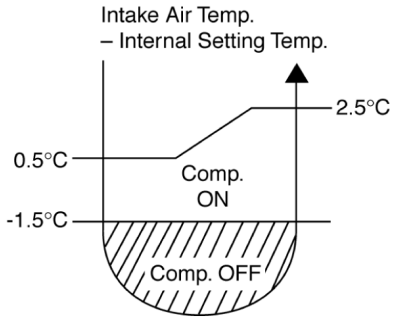
H: Heating operation mode

F: Fan operation mode

9.4.1.3. Cooling Operation

9.4.1.3.1. Thermostat control

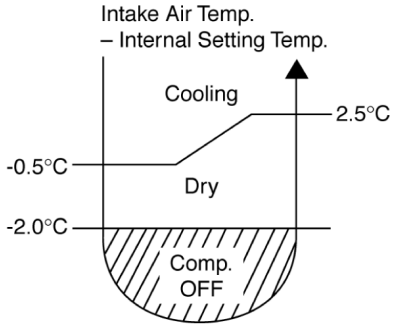
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -1.5°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.4.1.4. Soft Dry Operation

9.4.1.4.1. Thermostat control

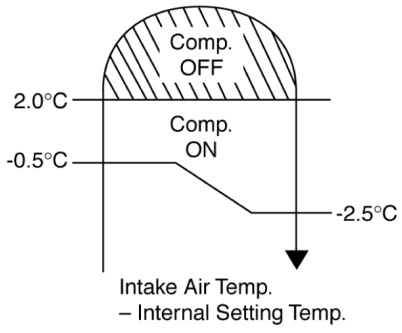
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.4.1.5. Heating Operation

9.4.1.5.1. Thermostat control

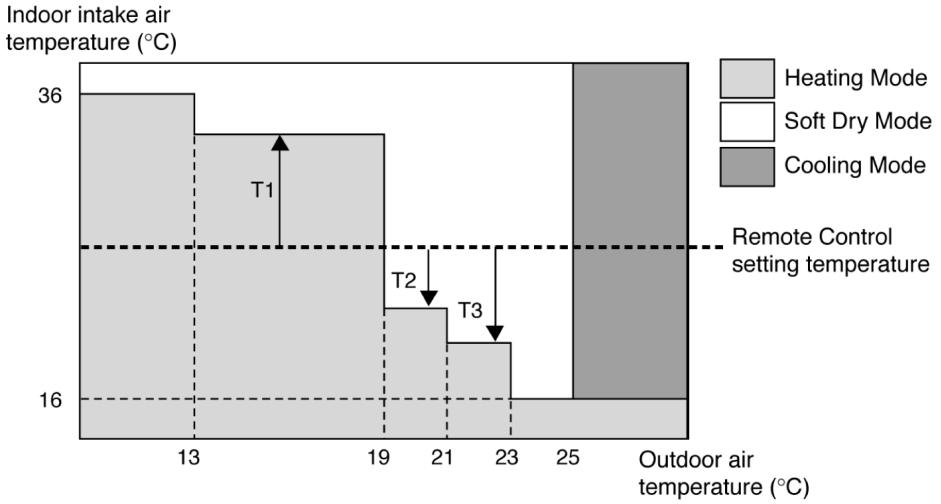
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < +2.0°C.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.



9.4.1.6. Automatic Operation

This mode can be set using remote control and the operation is decided by remote control setting temperature, indoor intake air temperature and outdoor air temperature.

During operation mode judgment, indoor fan motor (with speed of Lo-) and outdoor fan motor are running for 30 seconds to detect the indoor intake and outdoor air temperature. The operation mode is decided based on below chart.



Values of T1, T2, and T3 depend on remote control setting temperature, as shown in below table. After the adjustment of T1, T2 and T3 values, the operation mode for that particular environment and remote control setting is judged and performed, based on the above operation mode chart, every 30 minutes.

Remote Control Setting Temperature (°C)	T1	T2	T3
16 ~ 18	+10	-3	-5
19 ~ 22	+8	-3	-7
23 ~ 26	+7	-3	-7
27 ~ 30	+6	-3	-8

There is a temperature shifting on T1, T2, and T3 if the operation mode judged is changed from Cooling/Soft Dry to Heating or vice verse.

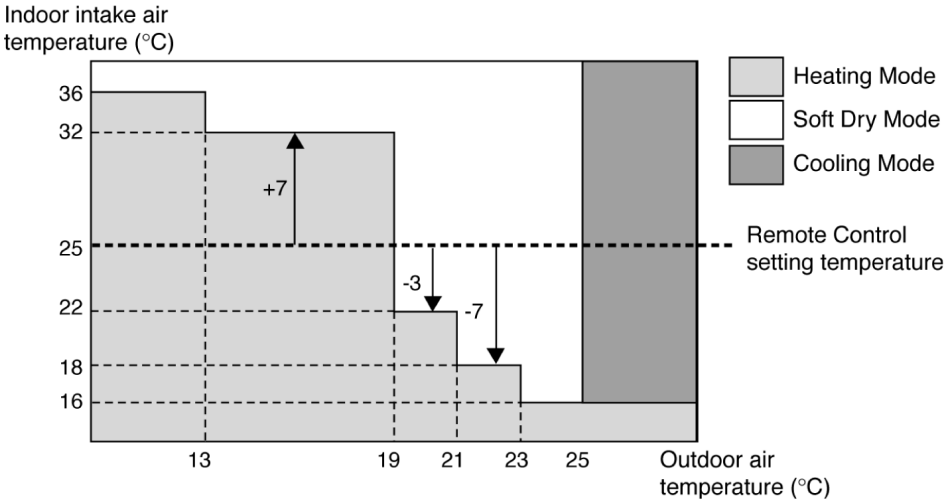
Operation Mode change from	Temperature shifts (°C)
Cooling/Soft Dry → Heating	-2
Heating → Cooling/Soft Dry	+2

Example of operation mode chart adjustment:

From the above table, if remote control setting temperature = 25,

T1 = 25 + 7 = 32; T2 = 25 - 3 = 22; T3 = 25 - 7 = 18

The operation mode chart for this example is as shown in below figure and the operation mode to be performed will depend on indoor intake air temperature and outdoor air temperature at the time when the judgment is made.



9.4.1.7. Indoor Fan Motor Operation

A. Basic Rotation Speed (rpm)

- Required rotation speed for fan is set to respond to the remote control setting (10 rpm unit)

[Cooling, Dry, Fan]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SHi	Hi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-E15DB4EW	600	600	560	520	480	440	400	350	310	200
CS-E18DB4EW	640	640	590	550	510	470	430	390	350	200

[Heating]

Remote Control	—	—	O	O	O	O	O	—	—	—
Tab (rpm)	PSHi	SHI	Hi	Me+	Me	Me-	Lo	Lo-	SLo	SSLo
CS-E15DB4EW	650	650	600	570	540	510	480	460	300	300
CS-E18DB4EW	690	690	640	600	570	530	490	470	320	300

B. Indoor Fan Control

i. Indoor fan control operation outline

1. Cooling / Dry

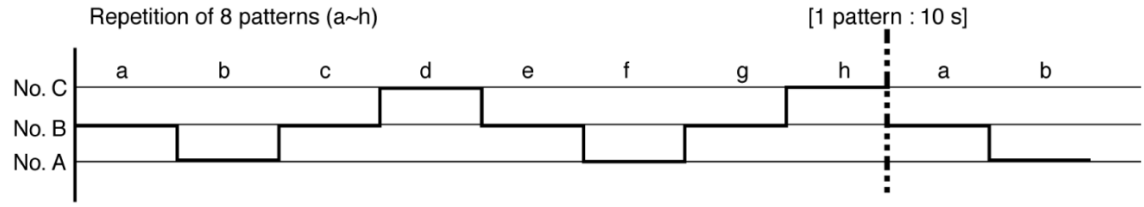
						Cooling	Dry	Ionizer
Under different mode standby						Stop		
Forced Operation						Hi	—	—
SEER Measurement mode					The minimum capability	Lo	—	—
					Middle capability	Hi	—	—
					Standard rating capacity (rated capability)	Hi	—	—
Other than above	Min. control				Automatic operation mode judgement	Lo-		
	Other than above	Freeze proofing				Designated air flow shift	Designated air flow shift	—
		With dew				Designated air flow shift	Designated air flow shift	—
		Other than above	—			—	SLo	—
			Operation	Automatic operation		Lo		Usually, automatic
				Manual Operation	Powerful	Setting +2UP		—
					Quiet	Setting -1down		—
					Other than the above	Remote control setup		Remote control setup
			Other than the above	Automatic Operation	Powerful	Powerful automatic	SLo	—
					Quiet	Quiet automatic		—
					Other than the above	Usually, automatic	SLo	Usually, automatic
				Manual Operation	Powerful	Setting +2UP	SLo	—
					Quiet	Setting -1down	SLo	—
					Other than the above	Remote control setup	SLo	Remote control setup
			MAX capability			SHi	—	—

2. Heating

					Heating
Waiting for other mode					Stop
Forced Operation					SHi
SEER Measurement mode			The minimum capability		Lo
			Middle capability		SHi
			Rated capability		SHi
Min. control		Automatic operation mode judging			Lo-
Other than above	During hot start				Stop
	Under defrosting operation				Stop
	Ability supply stop				Stop
	Low-temperature capability measurement				SSHi
	MAX control	Heating starting force operation			A stop, SLo
		Ability supply stop			Lo-
		Thermostat-off sampling			Specification
		Piping temperature control			min Rectrictions of fan speed by indoor pipe temperature
	Min control	Fan speed minimum restrictions by indoor piping temperature			Me
		Fan speed automatic minimum			Auto Fan Speed min Control
	Other than above	Prepartion operation start timer.	Fan speed automatic		Lo
			Manual Operation	Powerful	Setting +2UP
				Quiet	Setting -1down
				Other than the above	Remote control setup
		Other than above	Fan speed shift control		Heating Fan Speed Control
			Fan speed automatic	Powerful	Pipe temperature control +2UP
				Quiet	Pipe temperature control -1down
				Other than the above	Piping temperature control
			Fan speed manual	Powerful	Setting +2UP
				Quiet	Setting -1down
				Other than the above	Remote control setup

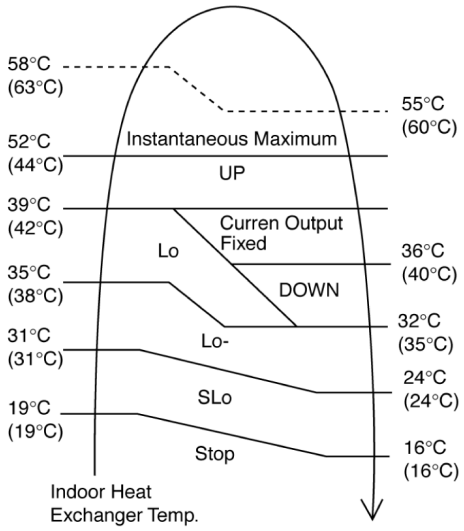
ii. Auto Fan Speed

1. Cooling



	Model	No. A	No. B	No. C
Powerful Program	CS-E15DB4EW	540	560	580
	CS-E18DB4EW	605	625	645
Normal Program	CS-E15DB4EW	480	500	520
	CS-E18DB4EW	545	565	585
Quiet Program	CS-E15DB4EW	460	480	500
	CS-E18DB4EW	525	545	565

2. Heating



Note:

a. UP:

- If move from Lo, the fan speed will be shifted to Maximum 1,520 rpm.
- If move from Maximum, the fan speed no change.
- In up zone, 10 rpm is added for every 10s until Maximum 1,520 rpm.

b. DOWN:

- The fan speed will be decreased one step every 10 sec. until Minimum 1,270 rpm.

c. Current Output Fixed:

- Maintain at present fan speed.

d. Instantaneous Maximum:

- Fan speed will be increased to maximum auto fan speed.

e. Temperature in ( ) is for Powerful Mode operation.

C. Fan Motor Control

1. Motor specification

High voltage PWM Motor

2. Feedback Control

a. Number-of -rotations feedback

Immediately after the fan started, rpm is checked and duty is added, and feedback control is performed. For high voltage PWM motor. It is done once every 0.5 seconds.

b. Offset duty T max/min limit

High voltage PWM motor has maximum offset duty.

(Refer to indoor fan motor control basic rotation speed.)

3. Abnormal detection Control

Conditions:

a. Out of rhythm signal input

b. If feedback number of rotations exceeded #2550 r/min or when less than #50 r/min.

Control: Fans stop.

Return: Restart after 5 seconds.

* It will not detect out of rhythm condition within 5s for phase control motor (PWM motor is when duty = 0) after start.

A fan stops when condition (1) and (2) happen within 25.0 seconds after fan starting, and if this happens for continuously 7 times, it will not retry.

→ FM lock processing

4. Restart Prohibition Control

Restart is prohibited within 5s for phase control motor (PWM motor is when duty = 0) after dan stop (except re-ON the power supply)

D. Deodorizing Control

i. Control condition

Control at cooling/dry operation and auto fan speed setting.

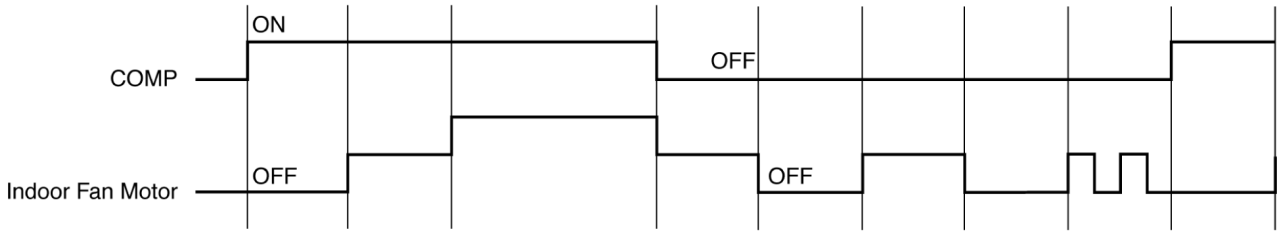
No Deodorizing Control is performed during ON timer standby operation and during Anti-freezing control prevention.

ii. Operation

The odor status is arranged as below and it is shifted as follows.

* When COMP is ON 1 → 2 → 3
  (Shift to 4 when COMP is OFF)
* When COMP is OFF 4 → 5 → 6 → 7 → 6 ←→ 7
  (Shift to 1 when COMP is ON)
* Start from 4 if the Thermostat is OFF during the start operation.

Odor Status		1	2	3	4	5	6	7	6.7.6...	1
Status Shift according to COMP		ON			OFF					ON
Status Shift according to time (s)	Cooling zone	40	50	—	30	90	20	90	20.90.20...	ON
	Dry zone									
Fan Speed	Cooling zone	OFF	SSLo	Auto Fan Speed	SSLo	OFF	SSLo	OFF	SSLo.OFF...	
	Dry zone			SLo						



※ During FM OFF state, auto judgement will cause the FM to ON.

9.4.1.8. Airflow Direction

1. There is one type of airflow, vertical airflow (directed by horizontal vane).
2. Control of airflow direction can be automatic (angles of direction is determined by operation mode, heat exchanger temperature and intake air temperature) and manual (angles of direction can be adjusted using remote control).

Vertical Airflow

Operation Mode	Airflow Direction			Vane Angle (°)				
				1	2	3	4	5
Heating	Auto with Heat Exchanger Temperature	A	Upward fix	70				
		B	Downward fix	70				
		C	Downward fix	20				
		D	Downward fix	20				
	Manual			20	—	—	—	70
Cooling, Soft Dry and Ion	Auto			20 ~ 70				
	Manual			20	—	—	—	70

1. Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the angles as stated above. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

2. Manual vertical airflow direction can be set using remote control; the angles of the vane are as stated above and the positions of the vane are as Figure 2 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

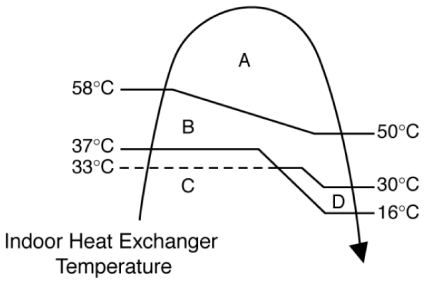


Figure 1

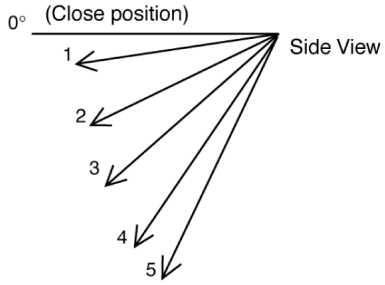


Figure 2

9.4.1.9. Quiet operation (Cooling Mode/Cooling area of Dry Mode)

A. Purpose

To provide quiet cooling operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button is pressed again.
2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.

9.4.1.10. Quiet operation (Heating)

A. Purpose

To provide quiet heating operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “quiet” button at remote control is pressed.
  Quiet LED illuminates.

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. Powerful button is pressed.
   b. Stop by OFF/ON switch.
   c. Timer “off” activates.
   d. Quiet button is pressed again.
2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode, except fan only mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

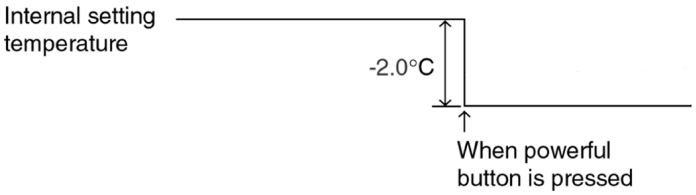
a. Fan Speed manual

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB.
2. Fan speed for quiet operation is -1 step from setting fan speed.
3. Fan Speed Auto
   Indoor FM RPM depends on pipe temp sensor of indoor heat exchanger.

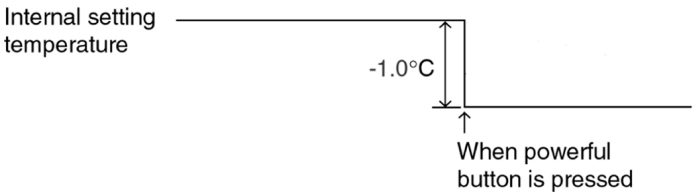
9.4.1.11. Powerful Mode Operation

When the powerful mode is selected, the internal setting temperature will shift to achieve the setting temperature quickly.

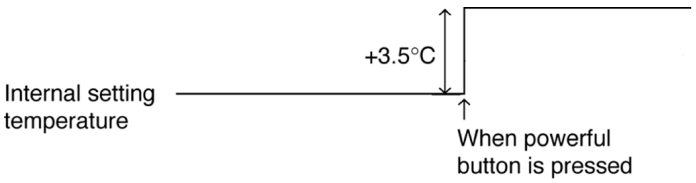
(a) Cooling Operation



(b) Soft Dry Operation



(c) Heating Operation

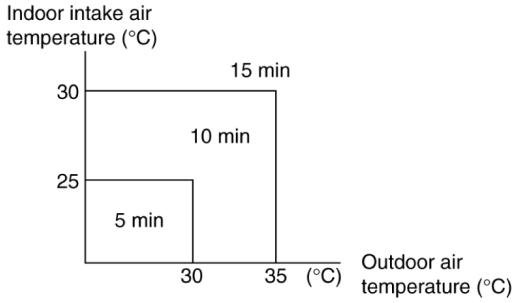


9.4.1.12. Delay ON Timer Control

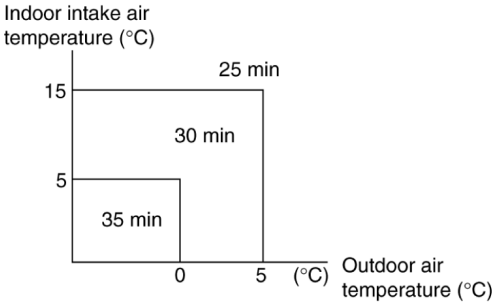
Delay ON timer can be set using remote control, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time.

60 minutes before the set time, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation starting time.

From the above judgment, the decided operation will start operate earlier than the set time as shown below.



Cooling/Soft Dry



Heating

9.4.1.13. Delay OFF Timer Control

Delay OFF timer can be set using remote control, the unit with timer set will stop operate at set time.

9.4.1.14. Auto Restart Control

1. When the power supply is cut off during the operation of air conditioner, the compressor will re-operate within three to four minutes (there are 10 patterns between 2 minutes 58 seconds and 3 minutes 52 seconds to be selected randomly) after power supply resumes.

2. This type of control is not applicable during ON/OFF Timer setting.

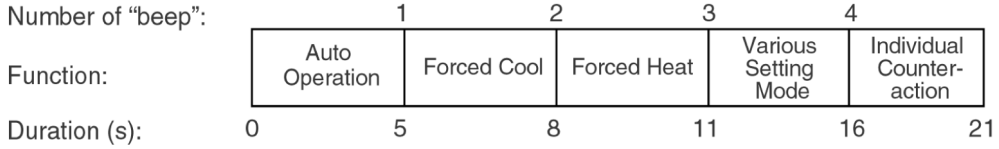
9.4.1.15. Indication Panel

LED	POWER	TIMER	QUIET	POWERFUL	AIR SWING
Color	Green	Orange	Orange	Orange	Orange
Light ON	Operation ON	Timer Setting ON	Quiet Mode ON	Powerful Mode ON	Auto Air Swing ON
Light OFF	Operation OFF	Timer Setting OFF	Quiet Mode OFF	Powerful Mode OFF	Auto Air Swing OFF

Note:

- If POWER LED is blinking, the possible operations of the unit are Hot Start, during Deice operation, operation mode judgment, or delay ON timer sampling.
- If timer LED is blinking, there is an abnormality operation occurs.

9.4.1.16. Auto Operation Switch

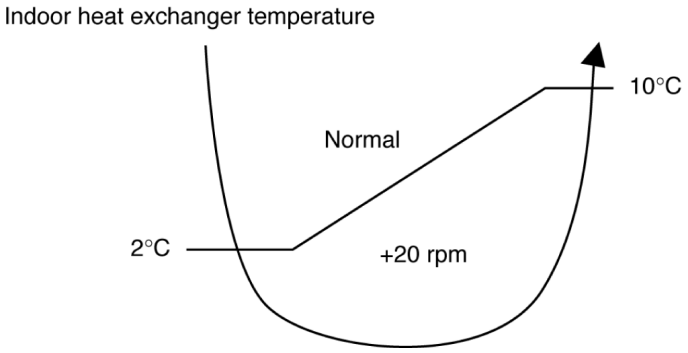


1. When the switch is pressed between 0 to 5 seconds, Auto Mode operation starts to function.
2. When the switch is pressed between 5 to 8 seconds, the unit is forced to operate in Cooling Mode.
3. When the switch is pressed between 8 to 11 seconds, the unit will enter forced Heating Mode standby. Press timer decrement button for 5s for the unit to operate in Heating Mode.

4. When the switch is pressed between 11 to 16 seconds and together with the signal from remote control (timer decrement button for 5s), the unit can be changed to different controlling setting (4 type of transmission codes).
5. When the switch is pressed between 16 to 21 seconds, either “H14” error detection selection mode or the remote control signal receiving sound can be cancelled or turned on.

9.4.1.17. Anti-Freezing Control

1. When indoor heat exchanger temperature is lower than 2°C continuously for six minutes, compressor will stop operating.
2. Compressor will resume its operation three minutes after the indoor heat exchanger is higher than 10°C.
3. At the same time, indoor fan speed increase +20 rpm compared to its normal operation.
4. If indoor heat exchanger temperature is higher than 10°C for five minutes, the fan speed will return to its normal operation.



9.4.1.18. Anti-Dew Formation Control

Spray protection Control

- In the case of indoor form ceiling floor, duct and mini-cassette.

a. Purpose

To prevent dew.

b. Control start conditions

When indoor units are ceiling floor, duct and mini-cassette.

c. Control contents

Hz control is carried out according to the spray prevention status transmitted from indoor.

Spray prevention status (transmitted indoor)	Control contents	
	Relative control domain	MAX domain
0 (it usually controls)	Usually, control	Usually, control
1 (rise)	Relative change control priority	On tap up/10 seconds
2 (changeless)	Changeless	Changeless
3 (down)	-2 Hz/10 seconds	-2 Hz/10 seconds

Change is once to 10 seconds.

* Once the stand-up went into the down domain by Fcmax as for the Fcmax domain, it shifts to relative changes control domain.

When the higher rank of relative control has this control and the status signal od 2-3 has come out.

Relative change control is stopped and follows directions of spray control.

Priority is given to the which is larger when freeze prevention down status and spray prevention down status are transmitted simultaneously.

In the case of spray status $\neq 0$, it is referred to as maxFc.

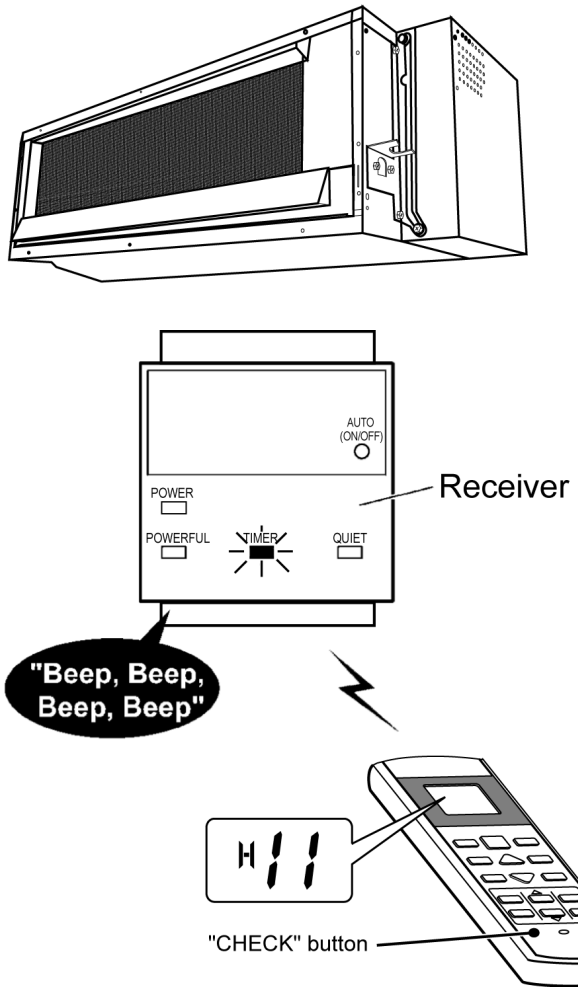
10 Self Diagnosis Display

10.1. Breakdown Self Diagnosis Function (Three Digits Alphanumeric Code)

- Once abnormality has been detected during operation, the unit will immediately stop its operation. (Timer LED blinks.)
- Although timer LED goes off when power supply is turned off, if the unit is operated under a breakdown condition, the LED will light up again.
- In operation after breakdown repair, error code is not displayed. The last error code (abnormality) will be saved in IC memory.
- **Timer LED Blinking in Abnormal Operation**:
  1. Automatically stops the operation.
  2. Timer LED on display of the indoor unit blinks.
  3. The LED will be off if the unit is turned off or the Error RESET button on the remote controller is pressed.
- **To display memorized error (Protective operation) status:**
  1. Turn the unit on.
  2. Press the CHECK button on the remote controller for continuously 5 seconds or more with a pointed object to appear "--" on the display.
  3. Press the "TIMER" ▲ or ▼ button on the remote controller to appear "H00" on the display. Signal is transmitted to the main unit.
  4. Press the "TIMER" ▲ button (When the ▼ button is pressed, the display goes back.) repeatedly and slowly until Beeps sound (about 5 seconds intermittently) is heard from main unit.
  5. Then, displayed error code matches to the error code saved in unit memory. The power LED on the main unit also lights up.

  Mote: When the CHECK button is pressed continuously for 5 seconds again, or when no operation continues for 30 seconds, or when the RESET button on remote controller is pressed with a pointed object, the display is cancelled.
- **To clear memorized error (Protective operation) status after repair:**
  1. Press the AUTO button in main unit continuously for 5 seconds or more and release it. (Test run / Pump down operation: Beep sound)
  2. Press the CHECK button on remote controller for about 1 second with a pointed object to transmit signal to main unit. A beep sound is heard from main unit and the data is cleared.
- **Temporary Operation (Depending on breakdown status)**
  1. Press the ON/OFF button after selecting Cooling or Heating operation. (Receiving Beep sound is heard and the TIMER LED blinks.)
  2. The unit can temporarily be used until repaired.

Duct Type



Error Code	Operation	Temporary items
H23	Cooling	Emergency Operation with limited power
H27, H28	Cooling, Heating	

10.2. Error Code

Symbol	Diagnosis	Diagnosis method
H11	Indoor / Outdoor abnormal communication	This trouble display appears when indoor/outdoor unit communication fails to be established after 30 seconds or more. **<Diagnosis checkpoint>** 1. Measure the voltage of the indoor/outdoor unit communication cables, and check whether the voltage is being supplied properly to the outdoor unit or whether it is being returned from the outdoor unit to the indoor units.
H12	Indoor unit capacity unmatched	This trouble display appears when wrong in the total connection capacity and wrong connection in each capacity. The trouble is determined within 2 minutes after the power is turned on. **<Diagnosis checkpoint>** 1. Check the total capacity of the units connected and check that the models are compatible for connection.
H14	Intake air temp. sensor	This trouble display appears when the intake air temperature has exceeded above 46°C continuously for 2 minutes or dropped below -54°C continuously for 5 seconds during operation. **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circulating (more than 500k ohms) or short-circulating (less than 6.5k ohms) is not found, defective contact of the connector is to blame.
H16	Outdoor Current Transformer	When the total current has dropped below the set current level continuously for 20 seconds during operation beyond the set capacity, operation is stopped. Three minutes later, operation is started up again, and when the trouble occurs on 4 successive occasions, the trouble display appears (the timer lamp blinks). **<Diagnosis checkpoint>** 1. Check the refrigerating cycle: Gas may be leaking (the amount of refrigerant is extremely low). 2. Check the control P.C. Board: Check for a broken wire (open-circuited) in the current transformer. (If the open-circuited is found, replace the control P.C. Board.) In the case of a scroll compressor (DC motor), H16 is detected only when the regular compressor is operating.
H19	Indoor fan motor mechanism lock	• High-voltage PWM: When a state in which the fan motor speed is not synchronized with the control signal has been detected on 7 successive occasions: • Low-voltage PAM: When the fan lock detection signal has been detected on 7 successive occasions or it has been detected continuously for 25 seconds or when a state in which the fan motor speed is not synchronized with the control signal has been detected on 7 successive occasions: The trouble display appears (the timer lamp blinks). **<Diagnosis checkpoint>** 1. Check the nature of the fan lockup trouble. 2. Check for disconnections of the fan motor connectors and for defects in contact, in the fan motor and in the control P.C. Board.
H21	Indoor float switch abnormality	Error appears when the float switch is open for 150 seconds. **<Diagnosis checkpoint>** 1. Drain blockage 2. Check the conductivity of float switch. 3. Check that the resistance of the drain motor is about 200 ohms.
H23	Indoor heat exchanger temp. sensor	This trouble display appears when a temperature of under approximately -40°C or above approximately 80°C has been detected by the heat exchanger temperature sensor continuously for 5 seconds. (This trouble is not detected during de-icing.) **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 2.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H27	Outdoor air temp. sensor	This trouble display appears when a temperature of under approximately -40°C or above approximately 150°C has been detected by the outdoor air temperature sensor for 2 to 5 seconds. (This trouble is not detected during de-icing.) **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H28	Outdoor heat exchanger temp. sensor 1	This trouble display appears when a temperature of under approximately -60°C or above approximately 110°C has been detected by the heat exchanger temperature sensor for 2 to 5 seconds. (This trouble is not detected during de-icing.) **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.

Symbol	Diagnosis	Diagnosis method
H30	Outdoor discharge pipe temp. sensor	Disconnected discharge sensor ● When the condition temperature is higher than the discharge temperature + (plus) 6°C, a sensor disconnection is detected, operation stops, and the trouble display appears (the timer lamp blinks). **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H32	Outdoor heat exchanger temp. sensor 2 (discharge pipe temp.)	This trouble display appears when a temperature of under approximately -60°C or over approximately 110°C has been detected continuously for 2 to 5 seconds by the outlet temperature sensor of the heat exchanger. **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H34	Outdoor heatsink temp. sensor	This trouble display appears when a temperature of under -43°C or above 80°C has been detected by the outdoor unit radiator fin sensor continuously for 2 seconds. **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H35	Drainage or drain pump abnormality	This error appears if the float switch is open three rimes for 10 seconds or more during a twenty-minute period. **<Diagnosis checkpoint>** 1. Drain blockage 2. Check the conductivity of float switch. 3. Check that the resistance of the drain motor is about 200 ohms.
H36	Outdoor gas pipe temp. sensor	This trouble display appears when a temperature of under -45°C or above approximately 149°C has been detected by the outdoor unit gas side pipe temperature sensor continuously for 2 to 5 seconds. **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H37	Outdoor liquid pipe temp. sensor	This trouble display appears when a temperature of under -45°C or above 149°C has been detected by the outdoor unit liquid side pipe temperature sensor continuously for 2 seconds. **<Diagnosis checkpoint>** 1. This trouble display appears when a temperature which is impossibly high or low from a normal standpoint has been detected. Check the sensor, and if open-circuiting (more than 500k ohms) or short-circuiting (less than 0.5k ohms) is not found, defective contact of the connector or a defective control P.C. Board is to blame.
H39	Abnormal indoor operating unit or standby units	This display appears in rooms other than one in which indoor freezing trouble has occurred when the pipes have been connected incorrectly, when an outdoor expansion valve is defective or when an expansion valve connector has become disconnected.
H41	Abnormal wiring or piping connection	CU-2E only This display appears when this kind of trouble is detected 3 minutes after a forced cooing operation was conducted for one room during the initial operation after the power was turned on. It appears when: ● The indoor unit pipe temperature in a room without the capacity supply available at an outside air temperature above 5°C has dropped by more than 20°C to 5°C or lower 3 minutes after the compressor started up. ● The outdoor unit gas pipe temperature in a room without the capacity supply available has dropped by more than 5°C to 5°C or lower 3 minutes after the compressor started up.
H97	Outdoor fan motor mechanism lock	When the fan motor speed detected when its maximum output is demanded is below 30 rpm. continuously for 15 seconds, the fan motor stops for 3 minutes and then restarted. When this happens on 16 occasions (the trouble display is cleared when the value is normal for 5 minutes), the H97 diagnostic symbol is stored in the memory, and the fan motor stops. **<Diagnosis checkpoint>** 1. Check the nature of the fan lockup trouble. 2. Check for disconnections of the fan motor connectors and for defects in contact, in the fan motor and in the control P.C. Board.
H98	Indoor high pressure protection	The restriction on the compressor frequency is started when the temperature of the indoor unit heat exchanger source is between 50°C and 52°C, the compressor stops at a temperature from 62°C to 65°C, it is restarted 3 minutes later at below 62°C to 65°C, and the restriction on the compressor frequency is released at a temperature between 48°C and 50°C. (No trouble display appears.) **<Diagnosis checkpoint>** 1. Check the indoor unit heat exchanger temperature sensor (check for changes in its characteristics and check its resistance): Symptoms include no hot start when operation is started, a failure of the thermostat to turn on (no outdoor unit operation). And, frequent repetition of stopping and startup. 2. Check also for short-circuits indoors and clogging of the air filters.

Symbol	Diagnosis	Diagnosis method
H99	Indoor operating unit freezing	The restriction on the compressor frequency is started when the indoor unit heat exchanger temperature is between 8°C and 12°C. Operation stops if a temperature below 0°C continues for 6 minutes. Three minutes later, operation is started up at a temperature from 3°C to 8°C. The restriction on the compressor frequency is released at a temperature between 13°C and 14°C. **<Diagnosis checkpoint>** 1. **A cooling or dry mode operation conducted at a low outside air temperature is mainly to blame: this is not indicative of any malfunctioning**. **If the outdoor air temperature rises during automatic operation in the winter months, the dry mode operation is selected. The H99 diagnostic display also appears at such a time.** 2. Check the refrigerating cycle: Gas may be leaking (the amount of refrigerant is low) or a pipe may be broken, etc. 3. Check also for short-circuits indoors and clogging of the air filters.
F11	4-way valve switching failure	When a difference of 0°C to 5°C has been detected between the outdoor unit heat exchanger temperature and liquid side pipe temperature on 5 occasions, the trouble display appears. **<Diagnosis checkpoint>** 1. Check the 4-way valve coil: Check that no power is supplied to the coil during cooling and dry mode operations, and that power is supplied during heating operation. Inspect the coil for broken wires (open-circuiting). 2. If the coil trouble-free, the switching action of the 4-way valve may be defective.
F17	Indoor standby units freezing	When the difference of an intake temperature (room temperature sensor) and the indoor unit heat exchanger temperature (piping sensor) is higher than 10°C or an indoor unit heat exchanger temperature of below -1°C has been detected continuously for 5 minutes, operation stops. Three minutes later, it is started up, and the trouble display appears when this has occurred on 3 consecutive occasions. **<Diagnosis checkpoint>** 1. Check the refrigerating cycle: Expansion valve leakage 2. Check the indoor unit pipe temperature sensor. (Check for changes in its characteristics and check its resiastance.)
F90	PFC circuit protection	When a DC voltage over 393V to 424V has been detected on 16 occasions, this trouble display appears. **<Diagnosis checkpoint>** 1. To check whether the shutting valve has been left close by mistake, operation is performed for one to several minutes after the compressor has started up, F93 is stored in the memory as the symptom, and operation stops. 2. Check the inverter circuit (for open-circuiting) in the control P.C. Board: Check the IPM base current (6 locations) within 3 minutes after the power has been turned back on. As the symptom, F93 is stored in the memory 30 seconds after the compressor has started up, and operation stops. The trouble display appears after 4 restarts. 3. Check for broken wires (for open-circuiting) in the compressor winding: Approximately 1 ohm under normal conditions for each phase (same symptom as in 2.) 4. Check the power supply voltage has been fluctuating or not.
F91	Refrigeration cycle abnormality	When the compressor frequency is above 55 Hz and the current drops below the prescribed level continuously for 7 minutes, operation stops, and it is restarted 3 minutes later. When the compressor discharge temperature has exceeded the setting and the expansion valve has remained fully open for 80 seconds, operation stops, and it is restarted 3 minutes later. When the stopping described above has occurred on 4 occasions, operation stops, and the trouble display appears. **<Diagnosis checkpoint>** 1. Check the refrigerating cycle: Gas may be leaking (more than one-half of the volume of the gas has gone). The diagnosis displays resulting from a gas leak generally change in the following sequence depending on the extent of the gas leak: H99 → F97 → F91 → H16. The range of this trouble (F91) is limited. (Compressor protection at the start of the season)
F93	Compressor abnormal revolution	When a state in which the rotation of the compressor is not synchronized with the control signal has been detected on 8 successive occasions, operation stops, and the trouble display appears. **<Diagnosis checkpoint>** 1. To check whether the shutting valve has been left close by mistake, operation is performed for one to several minutes after the compressor has started up, F93 is stored in the memory as the symptom, and operation stops. 2. Check the inverter circuit (for open-circuiting) in the control P.C. Board: Check the IPM base current (6 locations) within 3 minutes after the power has been turned back on. As the symptom, F93 is stored in the memory 30 seconds after the compressor has started up, and operation stops. The trouble display appears after 4 restarts. 3. Check for broken wires (open-circuiting) in the compressor winding: Approximately 1 ohm under normal conditions for each phase (same symptom as in 2.)
F95	Outdoor high pressure protection	CU-2E only When the temperature of the outdoor unit heat exchanger temperature sensor exceeds 62°C, the F95 diagnostic symbol is stored in the memory, and operation stops. Thirteen minutes later, operation is restarted at a temperature below 48°C. This trouble display appears when this happens on 4 occasions in a 20-minute period. **<Diagnosis checkpoint>** 1. Check the indoor unit pipe temperature sensor. (Check for changes in its characteristics and check its resiastance.) 2. Check whether something is interfering with the dissipation of the heat outdoors.

Symbol	Diagnosis	Diagnosis method
F96	IPM (Power transistor module) or compressor overheating	When this trouble is detected from the electrical parts radiation fin temperature sensor and OLP output during operation, operation stops, and it is restarted 3 minutes later. If the trouble occurs on 4 occasions, operation stops, and the trouble display appears. **<Diagnosis checkpoint>** 1. Something may be interfering with the dissipation of the heat outdoors or the outdoor unit fan may be defective. (The outdoor unit fan is not running.) 2. Defective IPM (Outdoor unit control P.C. Board) 3. Gas leaks. Shutting valve is not opened.
F97	Compressor high discharge temperature	This trouble display appears and operation stops when this happens on 6 occasions (it is cleared when the operation is normal for 20 minutes). **<Diagnosis checkpoint>** 1. Check the refrigerating cycle: Gas may be leaking (The amount of refrigerant is low). The stopping of the outdoor unit from time to time is a symptom of this trouble. 2. When operation steps with this trouble display appearing, check the compressor temperature sensor. (Check for changes in its characteristics and check its resistance.) 3. Something may be interfering with the dissipation of the heat outdoors or the outdoor unit fan may be defective. (The fan will not run because of open-circuiting.) (The protection may be activated by an overload, and the F97 trouble display will remain stored in the memory.)
F98	Total running current protection	When the total current exceeds the setting (17A to 20A), frequency control is started, and if it then exceeds the setting, operation stops, and the trouble display appears. **<Diagnosis checkpoint>** 1. Check the AC voltage at the outdoor unit terminal board during operation: The voltage drop must be within 5% of the voltage when operation has stopped (±110% of rated voltage even during operation). If the voltage drop exceeds 5% of if the voltage changes suddenly, inspect whether the power supply cord and indoor/outdoor unit connection cables are too long or too small in diameter, etc. 2. Check whether something is interfering with the dissipation of the heat exchanger outdoors (during cooling operation): Normally, the capacity is limited by the current so that outdoor unit doesn't stop, and the diagnostic display does not appear.
F99	DC peak detection	When "Output current trouble", which occurs when the prescribed current level is exceeded, has occurred on 16 consecutive occasions, operation stops, and the trouble display appears. **<Diagnosis checkpoint>** 1. Check whether the compressor is defective (locked up or shorted winding). Check the outdoor unit control P.C. Board.

11 Installation Instructions

11.1. Wall Type

CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG / CS-E9DKEW / CS-E9DKRW / CS-E9DKDW / CS-E12DKEW / CS-E12DKRW / CS-12DKDW / CS-E15DKEW / CS-E15DKRW / CS-E15DKDW / CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

Required tools for Installation Works

1	Philips screw driver	6	Pipe cutter	12	Megameter	15	Vacuum pump
2	Level gauge	7	Reamer	13	Multimeter	16	Gauge manifold
3	Electric drill, hole core drill (ø70 mm)	8	Knife	14	Torque wrench 18 N•m (1.8 kgf.m)		
4	Hexagonal wrench (4 mm)	9	Gas leak detector		42 N•m (4.2 kgf.m)		
5	Spanner	10	Measuring tape		55 N•m (5.5 kgf.m)		
		11	Thermometer				

SAFETY PRECAUTIONS

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.
⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1) Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
2) Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
3) Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
4) Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
5) For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
6) Use the specified cable (1.5 mm^2) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
7) Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
8) When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
9) When connecting the piping, do not allow air or any substances other than the specified refrigerant (R410A) to enter the refrigeration cycle. Otherwise, this may lower the capacity, cause abnormally high pressure in the refrigeration cycle, and possibly result in explosion and injury.
10) • When connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials.
    • Thickness of copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm.
    • It is desirable that the amount of residual oil is less than 40 mg/10 m.
11) Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.

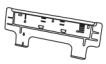
⚠ CAUTION

1) This equipment must be earthed and installed with earth leakage current breaker. It may cause electrical shock if grounding is not perfect.
2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

1) Selection of the installation location.
   Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2) Power supply connection to the air conditioner.
   Connect the power supply cord of the air conditioner to the mains using one of the following method.
   Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency.
   In some countries, permanent connection of this air conditioner to the power supply is prohibited.
   1) Power supply connection to the receptacle using a power plug.
      Use an approved 15/16A power plug with earth pin for the connection to the socket.
   2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
3) Do not release refrigerant.
   Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4) Installation work.
   It may need two people to carry out the installation work.
5) Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	5	Remote control holder 	1
2	Installation plate fixing screw 	6	6	Remote control holder fixing screw 	2
3	Remote Control 	1	7	Super alleru-buster filter 	1
4	Battery 	2	8	Drain elbow 	1

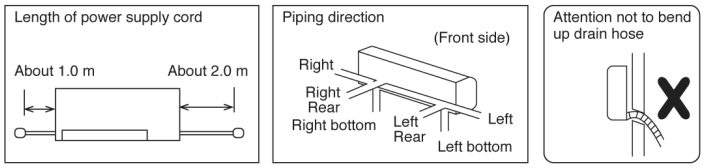
Applicable piping kit
CZ-3F5, 7BP (ME7D, E9D)
CZ-4F5, 7, 10BP (E12D)

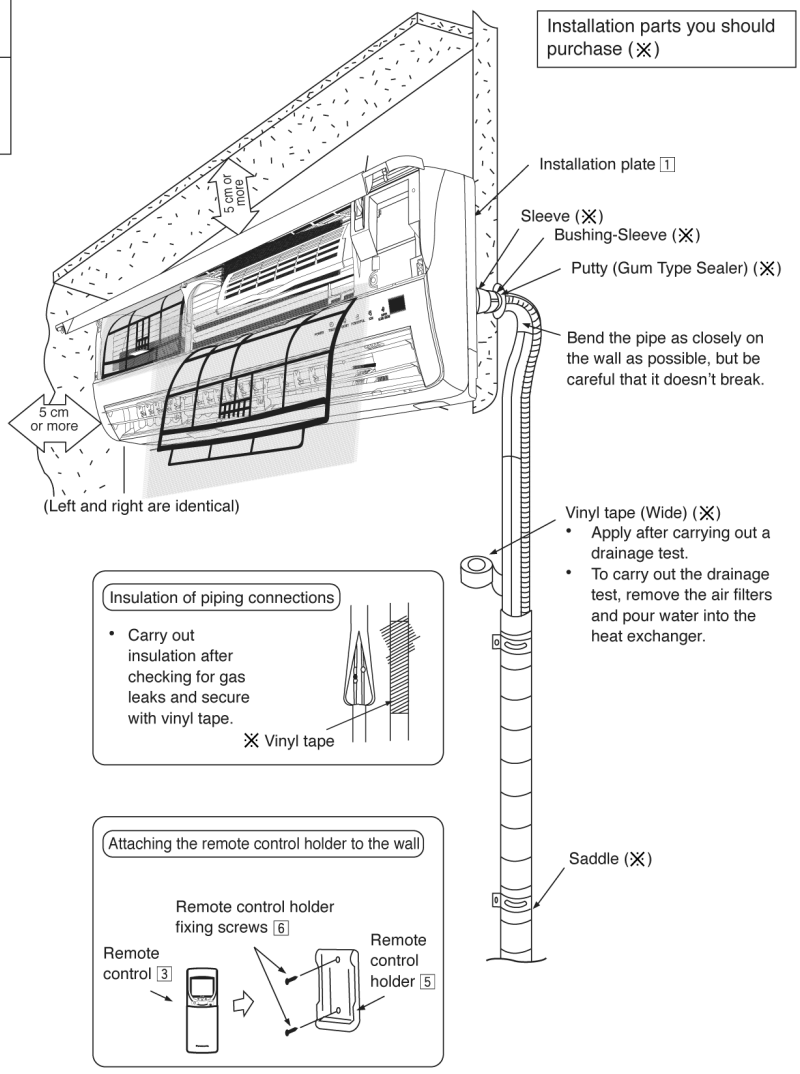
SELECT THE BEST LOCATION

INDOOR UNIT

There should not be any heat source or steam near the unit.
There should not be any obstacles blocking the air circulation.
A place where air circulation in the room is good.
A place where drainage can be easily done.
A place where noise prevention is taken into consideration.
Do not install the unit near the door way.
Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
Recommended installation height for indoor unit shall be at least 2.3 m.

Indoor/Outdoor Unit Installation Diagram





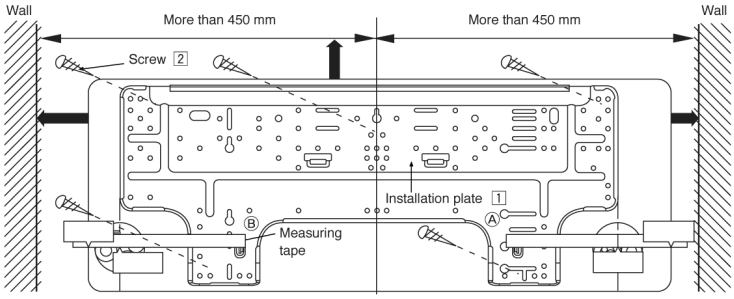
INDOOR UNIT

1 SELECT THE BEST LOCATION

(Refer to "Select the best location" section.)

2 HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



The centre of installation plate should be at more than 450 mm at right and left of the wall.
The distance from installation plate edge to ceiling should more than 67 mm.
From installation plate left edge to unit's left side is 74 mm.
From installation plate right edge to unit's right is 94 mm.
Ⓑ : For left side piping, piping connection for liquid should be about 15 mm from this line.
: For left side piping, piping connection for gas should be about 45 mm from this line.
: For left side piping, piping connection cable should be about 800 mm from this line.

1. Mount the installation plate on the wall with 5 screws or more.
   (If mounting the unit on the concrete wall, consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

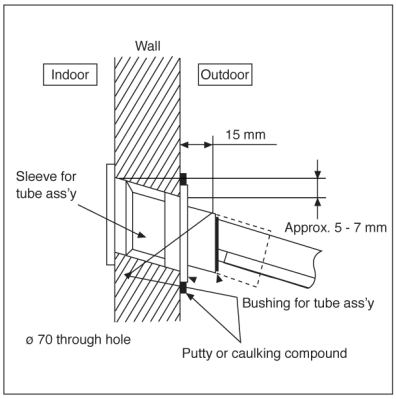
3 TO DRLL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPNING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



4 INDOOR UNIT INSTALLATION

1. FOR THE RIGHT REAR PIPING

Pull out the Indoor piping

↓

Install the Indoor Unit

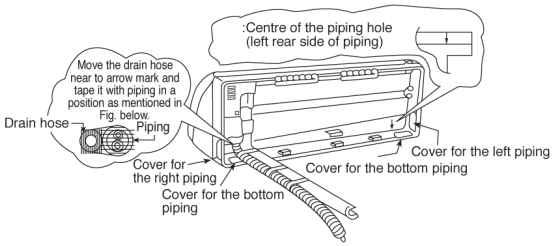
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Secure the Indoor Unit

↓

Insert the connecting cable

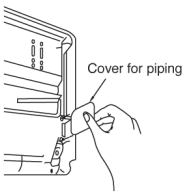
Pull out the piping and drain hose



How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping.)



2. FOR THE RIGHT AND RIGHT BOTTOM PIPING

Pull out the Indoor piping

↓

Install the Indoor Unit

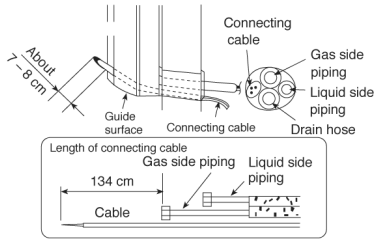
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Insert the connecting cable

↓

Secure the Indoor Unit

Insert the connecting cable



(This can be used for left rear piping and left bottom piping also.)

3. FOR THE EMBEDDED PIPING

Replace the drain hose

↓

Bend the embedded piping

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

↓

Install the Indoor Unit

↓

Cut and flare the embedded piping

- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
- Refer to the section “Cutting and flaring the piping”

↓

Pull the connecting cable into indoor unit

- The inside and outside connecting cable can be connected without removing the front grille.

↓

Connect the piping

- Please refer to “Connecting the piping” column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

↓

Insulate and finish the piping

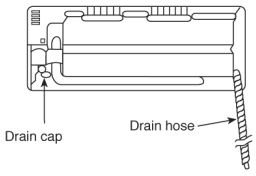
- Please refer to “Piping and finishing” column of outdoor section and “Insulation of piping connections” column as mentioned in Indoor/Outdoor unit installation.

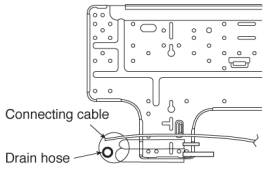
↓

Secure the Indoor Unit

Exchange the drain hose and the cap

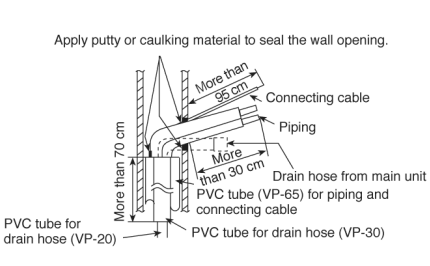
Rear view for left piping installation

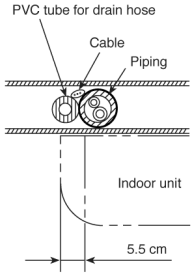




Adjust the piping slightly downwards.

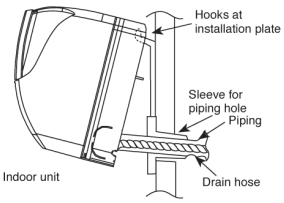
- How to pull the piping and drain hose out, in case of the embedded piping.





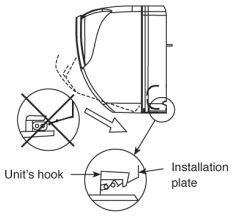
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate. (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

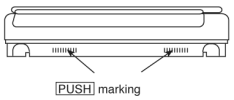


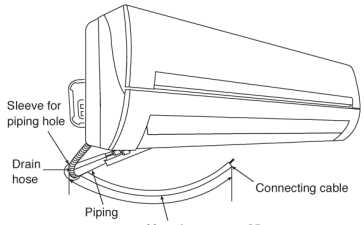
Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   • Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).

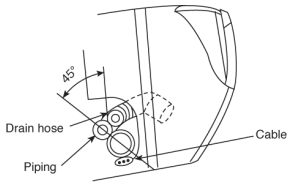


To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.





• In case of left piping how to insert the connecting cable and drain hose.



(For the right piping, follow the same procedure)

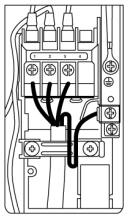
5 CONNECTING THE CABLE TO THE INDOOR UNIT

1 The inside and outside connecting cable can be connected without removing the front grille.

2 Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.

• Ensure the colour of wires of outdoor unit and terminal Nos. are the same to the indoor's respectively.

• Ensure lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the shipping out of the cord from the anchorage.



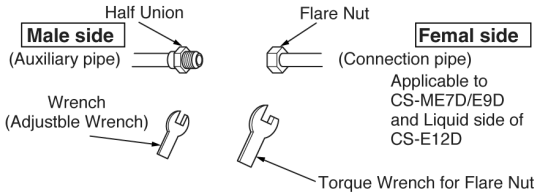
Terminals on the indoor unit	1	2	3
Colour of wires			
Terminals on the outdoor unit	1	2	3

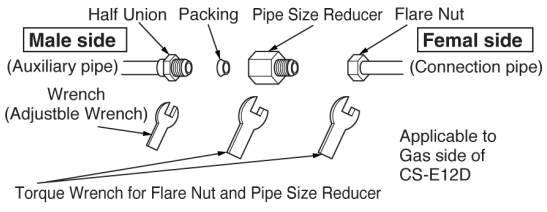
• Secure the cable onto the control board with the holder (clamper).

6 CONNECTING THE REFRIGERANT PIPING

• Align the center of the half-union and the connection pipe and tighten the flare nut by hand, then tighten with a torque wrench.

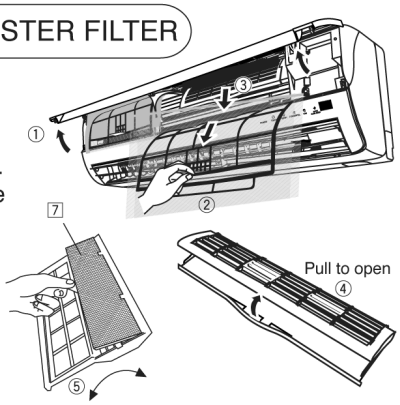
Pipe diameater	Tightening torque	Applicable Model
Liqued side ø6.35 (1/4")	18N • m (1.8 kgf • m)	Common
Gas side ø9.52 (3/8")	42N • m (4.2 kgf • m)	Common
Pipe Size Reducer (CZ-MA1P)	55N • m (5.5 kgf • m)	CS-E12D





INSTALLATION OF SUPER ALLERU-BUSTER FILTER

1. Open the front panel.
2. Remove the air filter.
3. Remove Supersonic air purifying device.
4. Open the Supersonic air purifying device frame.
5. Insert the super alleru-buster filter and close the Supersonic air purifying device frame as shown in illustration at right.

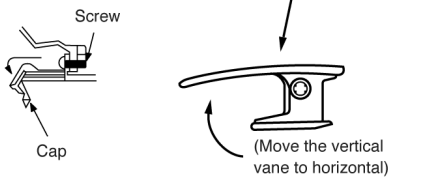


HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. Open the intake grille and remove the screw at the front of the front grille.
2. Set the vertical airflow direction louvers to the horizontal position.
3. Slide down the 2 caps on the front grille as shown in the illustration at right, and then remove the 2 mounting screws.
4. Pull the lower section of the front grille towards you to remove the front grille.

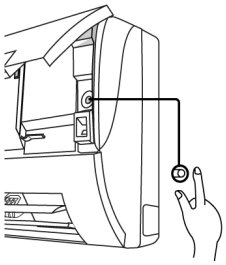
When reinstalling the front grille, first set the vertical airflow direction louvers to the horizontal position and then carry out above steps 2 - 3 in the reverse order.



AUTO SWITCH OPERATION

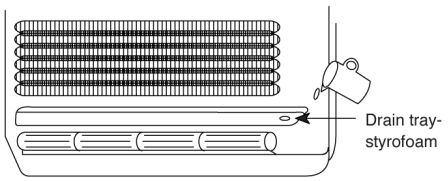
The below operations will be performed by pressing the “AUTO” switch.

1. AUTO OPERATION MODE
   The Auto operation will be activated immediately once the Auto Switch is pressed.
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec.. A “beep” sound will occur at the fifth sec., in order to identify the starting of Test Run operation.
3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF
   The ON/OFF of Remote Controller receiving sound can be change over by the following steps:
   a) Release the Auto Switch after Test Run operation is activated.
   b) Then, within 20 sec after (a), press Auto Switch for more than 5 sec.
      A “beep” “beep” sound will occur at the fifth sec., then release the Auto switch.
   c) Within 20 sec after (b), press Auto switch again. Everytime Auto switch is pressed (within 20 sec interval), remote controller receiving sound status will be reversed between ON and OFF.
      Long “beep” sound indicates that remote controller receiving sound is OFF.
      Short “beep” sound indicates that remote controller receiving sound is ON.



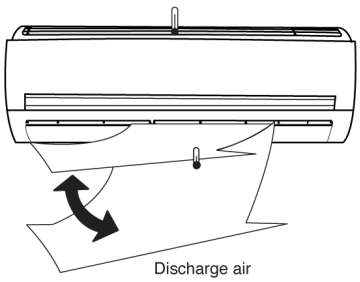
CHECK THE DRAINAGE

- Open front panel and remove air filters. (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.



EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable being fixed to terminal board firmly?
- ☐ Is the connecting cable being clamped firmly?
- ☐ Is the drainage ok? (Refer to “Check the drainage” section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?
- ☐ Is the super alleru-buster filter is installed?

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11.2. Duct Type

CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW

Required tools for Installation Works

1. Philips screw driver
2. Level gauge
3. Electric drill, hole core drill (ø70 mm)
4. Hexagonal wrench (4 mm)
5. Spanner
6. Pipe cutter
7. Reamer
8. Knife
9. Gas leak detector
10. Measuring tape
11. Thermometer
12. Megameter
13. Multimeter
14. Torque wrench
    18 N • m (1.8 kgf.m)
    42 N • m (4.2 kgf.m)
    55 N • m (5.5 kgf.m)
15. Vacuum pump
16. Gauge manifold

SAFETY PRECAUTIONS

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.
⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1) Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
2) Install according to this installation instruction strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
3) Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
4) Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
5) For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
6) Use the specified cable (1.5 mm^2) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
7) Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
8) When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury. ⃠
9) When connecting the piping, do not allow air or any substances other than the specified refrigerant (R410A) to enter the refrigeration cycle. Otherwise, this may lower the capacity, cause abnormally high pressure in the refrigeration cycle, and possibly result in explosion and injury. ⃠
10) Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock. ⃠

⚠ CAUTION

1) This equipment must be earthed. It may cause electrical shock if grounding is not perfect.

2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.

3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

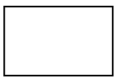
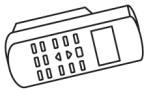
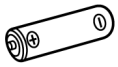
1) Selection of the installation location.
Select a installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

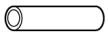
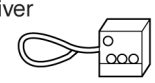
2) Do not release refrigerant.
Do not release refrigerant during piping work for installation, reinstallation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.

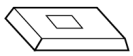
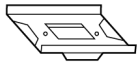
3) Installation work.
It may need two people to carry out the installation work.

4) Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

Indoor Unit Accessory Parts

No.	Accessory part	Qty.
1	Piping insulation 	1
2	Band 	2
3	Remote controller 	1
4	Battery 	2

No.	Accessory part	Qty.
5	Remote control holder 	1
6	Remote control holder fixing screw 	2
7	Drain hose insulation 	1
8	Receiver 	1

No.	Accessory part	Qty.
9	Receiver cover 	1
10	Receiver mount 	1
11	Clamp 	2
12	Clamp mounting screw 	2

■ Required Materials

- Read the catalog and other technical materials and prepare the required materials.
- Pipe Size Reducer (CZ-MA1P) for CS-E15DD3EW and CS-E18DD3EW

■ Other Items to be Prepared (Locally Purchased)

Product name	Remarks
Rigid PVC pipe	VP20 (outer diameter ø26); also sockets, elbows and other parts as necessary
Adhesive	PVC adhesive
Insulation	For refrigerant piping insulation (foamed polyethylene with a thickness of 8 mm or more) For drain piping insulation (foamed polyethylene with a thickness of 10 mm or more)
Indoor/outdoor connecting cable	4 · 1.5 mm^2 flexible cord, type designation 245 IEC 57 (H05RN-F)
Hanging bolt related parts	Hanging bolts (M10) (4) and nuts (12), Flat washers (8) (when hanging the indoor unit)

1 Selecting the Installation Location

Take into consideration the following contents when creating the blueprint.

■ Indoor unit installation location

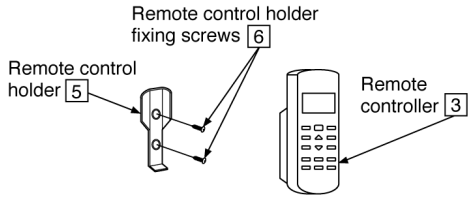
- ☐ The location should be strong enough to support the main unit without vibration.
- ☐ There should not be any heat or steam sources nearby.
- ☐ Drainage should be easy. Avoid locating the drain port close to ditches (domestic wastewater).
- ☐ Avoid locations above entrances and exits.
- ☐ Do not block the intake and discharge.
- ☐ Select the location so that the cool and warm air spreads throughout the entire room.
- ☐ Locate the indoor unit at least 1 m or more away from a TV, radio, wireless equipment, antenna cables and fluorescent lights, and 2 m or more away from a telephone.

Note that if the air conditioning unit is installed near an electronically lit fluorescent light (inverter, rapid start type, etc.), it may not receive the remote control signals.

■ Remote controller mounting location

- ☐ Signals may not be transmitted and received correctly when the remote controller is operated while in the holder. Take the remote controller in your hand to operate the unit.
- ☐ Mount the holder in a location that is not subject to the effects of heat (direct sunlight and stoves, etc.).

Attaching the remote control holder to the wall



2 Selecting the Piping

- Prepare the piping set shown in the table below or equivalent products for the refrigerant piping.

Liquid side	ø 6.35 (1/4") t 0.8
Gas side	ø 9.52 (3/8") t 0.8

* See the Outdoor Unit Installation Instructions.

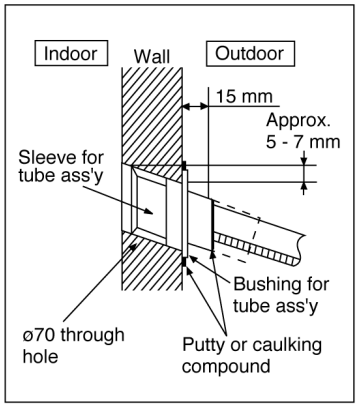
3 To Drill a Hole in the Wall and Install a Sleeve of Piping

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



4 Installing the Indoor Unit (Installation embedded in the ceiling)

- Always provide sufficient entry and exit space to allow installation work, inspection and unit replacement.
- Waterproof the rear surface of the ceiling below the unit in consideration of water droplets forming and dropping.

CAUTION

When cooling operation is performed for an extended period under the following conditions, water droplets may form and drop. Attach locally purchased insulation (foamed polyethylene with a thickness of 5 mm or more) to the outside of the indoor unit before installation within the ceiling for improving the heat insulation.
- Locations with a dew point inside the ceiling of 23°C or more
- Kitchens and other locations that produce large amounts of heat and steam
- Locations where the inside of the ceiling serves as an outside air intake passage

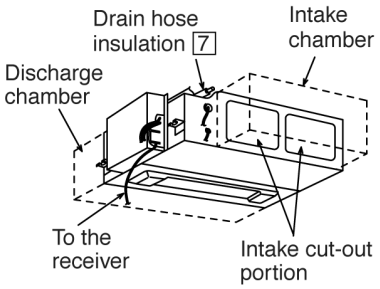
- **When installing within a ceiling, select the unit position and the airflow direction so that the cool air and warm air spread throughout the whole room.**
- Do not place objects that might obstruct the air flow within 1 m below the intake grille.

Ceiling Opening and Hanging Bolt Locations

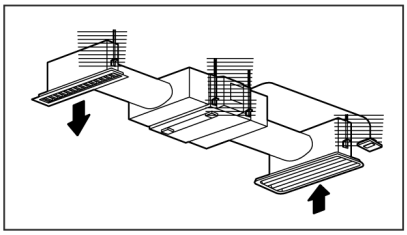
The relative positions of the ceiling opening and the hanging bolts are shown in the illustration to the right. When making an inspection opening below the unit, make a 960 mm · 480 mm opening in the ceiling surface. Also, lead the drain piping, refrigerant piping and indoor/outdoor connecting cable up to the respective piping and cable connection positions.
- Secure the hanging bolts (M10, Locally Purchased) firmly in a manners capable of supporting the unit weight.
- Consult your construction or interior contractor for details on finishing the ceiling opening.

Preparing to Install the Indoor Unit

- Fit the drain hose insulation [7] around the drain hose as shown in the right figure.
- Attach the discharge chamber. (※) (10 screws)
- Cut out the intake cut-out portions in the unit rear panel using cutter or other tools to make openings.
- Remove the two screws at the rear edge of the unit top panel, and attach the intake chamber. (※) (8 screws)



(View from below and behind the unit)



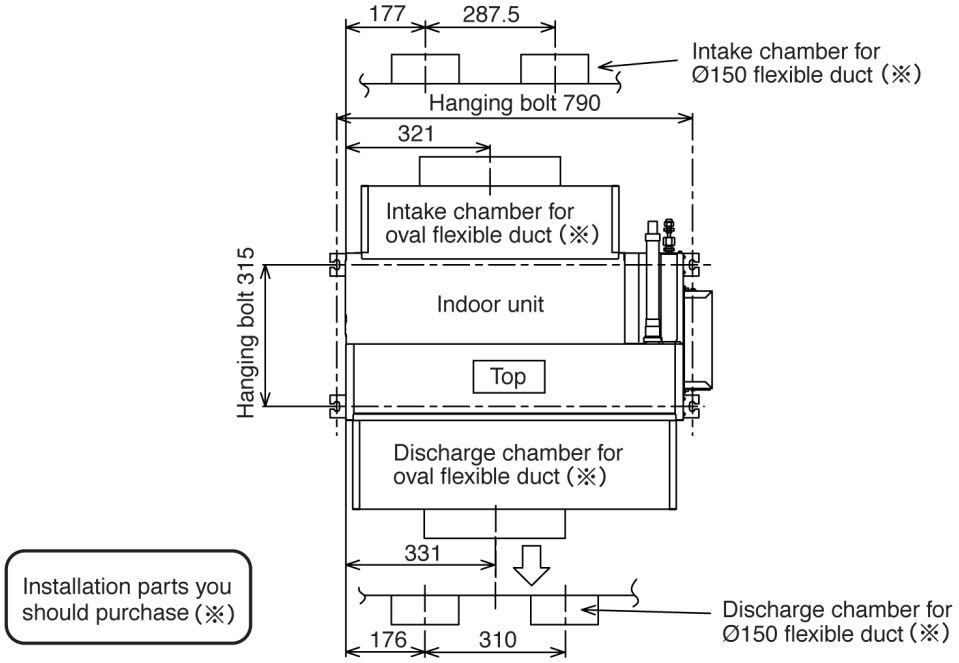
Installing an Intake and Discharge Duct Type

	Allowable duct length	Duct bends
Discharge side duct	5 m or less including the intake side	90° or less in one location
Intake side duct	1 m or less	45° or less in one location

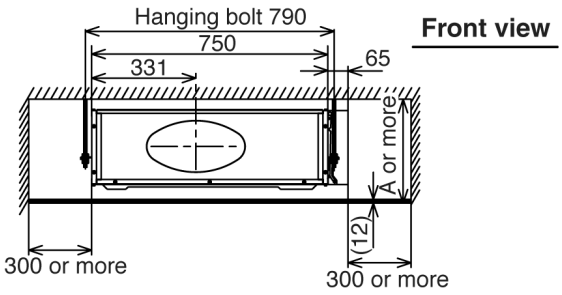
Installation Diagram

This diagram shows the unit together with the purchased components.

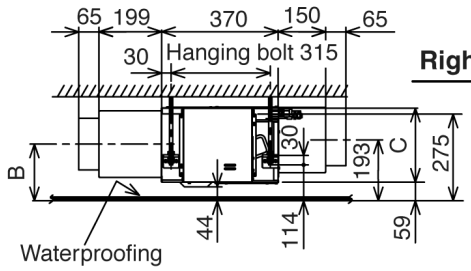
(This shows an installation example.)



Top view (from above the ceiling)



Front view



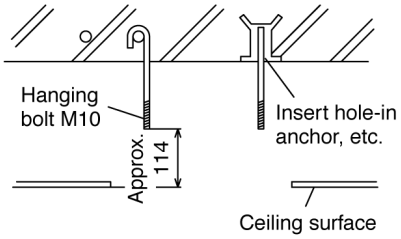
Right view

	CS-ME10DD3EG CS-E15DD3EW	CS-E18DD3EW
A	330	350
B	180	205
C	235	285

Securing the Hanging Bolts

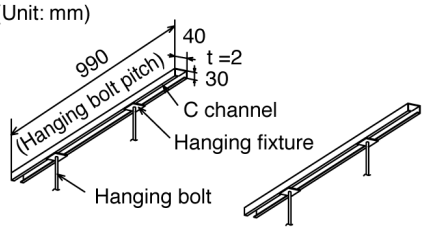
Reinforced concrete

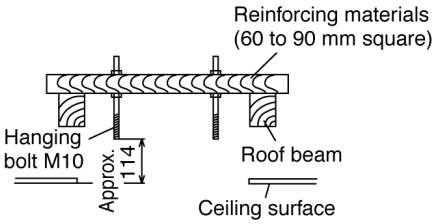
(Unit: mm)



Wooden or other structure

(Unit: mm)



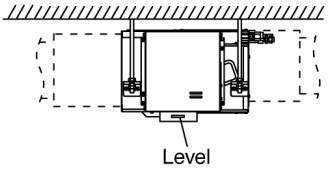


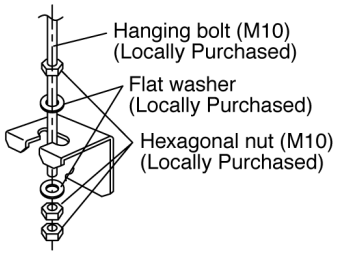
Switching the high state switch (SW2)

- To increase the air volume, open the control box and on the control board switch the high state switch (SW2) to "HI".
- See the diagram for "Connecting the Indoor/ Outdoor Connecting Cable".

Installation in the Ceiling

- Attach the nuts and washers to the hanging bolts, then lift up and hook the main unit onto the hanging fixtures.
- Check that the unit is level using a level or a vinyl hose filled partially with water.

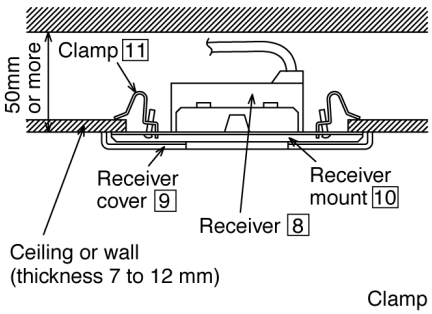


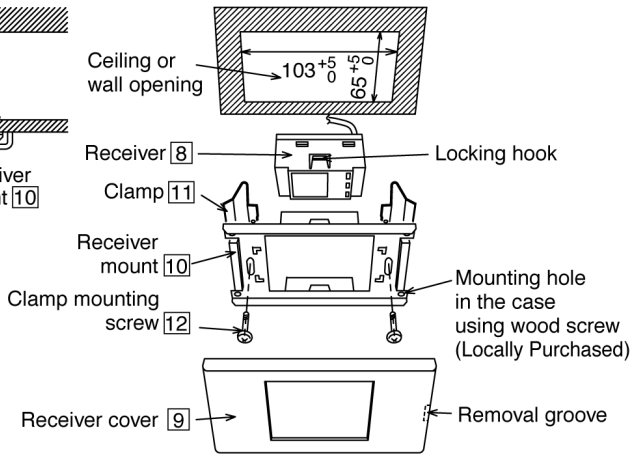


Mounting the Receiver

- Select a ceiling or wall position that does not block reception for the mounting location. Note that the receiver cord is 2.0 m.
- First hook the clamps [11] onto the receiver mount [10] as shown in the figure below, then partially tighten the mounting screws [12].
- Fit the receiver [8] into the receiver mount [10] so that the locking hooks are firmly engaged.
- Fit the above mounts into the ceiling or wall opening, and tighten the screws [12] until the clamps [11] firmly clasp the ceiling or wall materials.
- Attach the receiver cover [9] so that the hooks on the inside are firmly hooked onto the receiver mount [10].
- Lead the receiver cord and connect it to the control box.

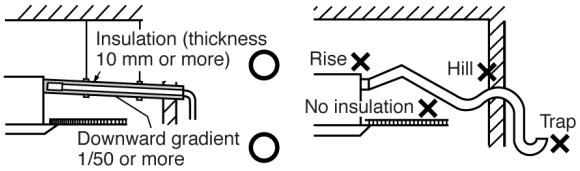
Mounting Section View





5 Connecting the Drain Piping

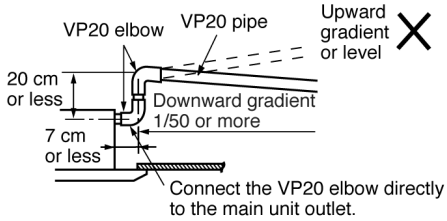
- Lay the drain piping so as to ensure drainage.
- Use a locally purchased VP20 general rigid PVC pipe (outer diameter ø26) for the drain piping, **and firmly connect the indoor unit and the drain piping using PVC adhesive to ensure that there is no leakage.**
- Drain piping located indoors should always be insulated by wrapping with locally purchased insulation (foamed polyethylene with a thickness of 10 mm or more).
- The drain piping should have a downward gradient (1/50 or more), and should be secured using pipe hanging equipment to avoid creating hills or traps partway.



- Should some obstacle prevent the drain piping from being extended smoothly, the drain piping can be raised outside the main unit as shown in the illustration below.

CAUTION

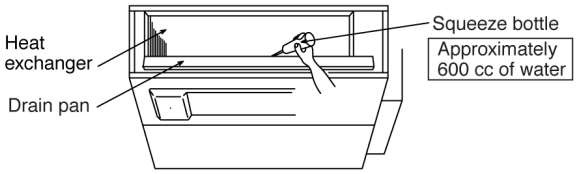
Absolutely do not install and extend the drain piping from the main unit drain water outlet horizontally or upward or raise it 20cm or more. Doing so may result in poor drainage or cause of drain motor failure.



Check the Drainage

Check after connecting the power supply.

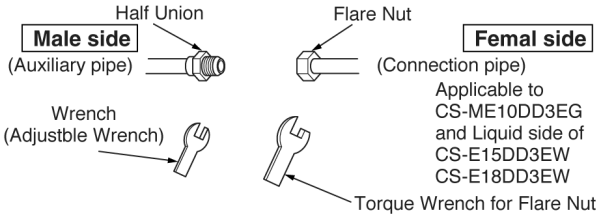
- Pour approximately 600 cc of water into the drain pan of the main unit using a squeeze bottle, etc.
- Press the drain test run switch located on the control board of the control box to start the drain motor, and check that the water drains normally. (The drain motor operates for approximately 5 minutes and then stops automatically.) (See the diagram for “Connecting the Indoor/Outdoor Connecting Cable”.)

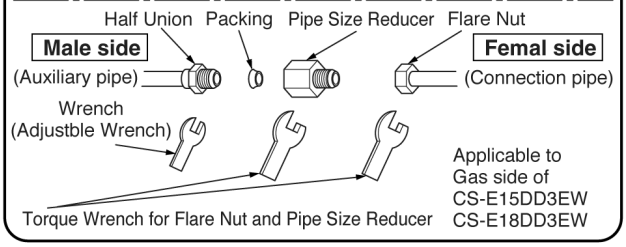


6 Connecting the Refrigerant Piping

- Align the center of the half-union and the connection pipe and tighten the flare nut by hand, then tighten with a torque wrench.

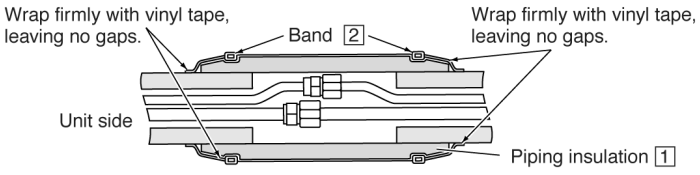
Pipe diameater	Tightening torque	Applicable Model
Liqued side ø6.35 (1/4")	18N • m (1.8 kgf • m)	Common
Gas side ø9.52 (3/8")	42N • m (4.2 kgf • m)	Common
Pipe Size Reducer (CZ-MA1P)	55N • m (5.5 kgf • m)	CS-E15DD/E18DD





7 Insulating the Refrigerant Piping

- After the piping is connected, insulate as shown in the illustration below.

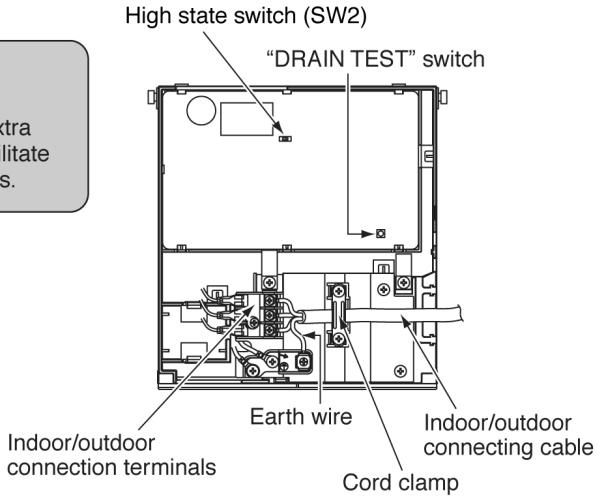


8 Connecting the Indoor/Outdoor Connecting Cable

- Remove the control box cover and lead the connecting cable into the control box.
- Check the colors of the wires on the terminal board, and secure them with screws.
- Secure the outer sheath of the connecting cable with the cord clamp.
- Reattach the control box cover in its original position.

CAUTION

When connecting the connecting cable, provide approximately 40 cm of extra length near the unit to facilitate servicing of electrical parts.



- Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm^2 flexible cord, type designation 245 IEC 57(H05RN-F) or heavier cord.
  - Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
  - Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.

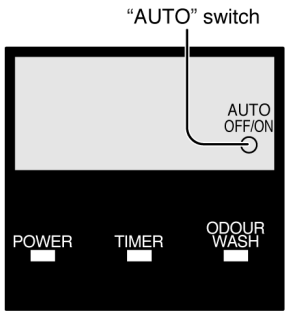
Terminals on the indoor unit	1	2	3	⏚
Color of wires				
Terminals on the outdoor unit	1	2	3	⏚

- Secure the cable onto the control board with the holder (clamper).

AUTO SWITCH OPERATION

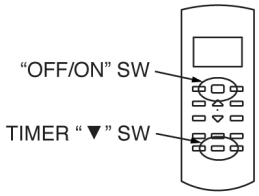
The below operations will be performed by pressing the “AUTO” switch.

1. AUTO OPERATION MODE
   The Auto operation will be activated immediately once the “AUTO” switch is pressed.
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
   The Test Run operation will be activated if the “AUTO” switch is pressed continuously for more than 5 sec. to below 8 sec..
   A short beep sound will occur at the fifth sec., in order to identify the starting of Test Run operation.



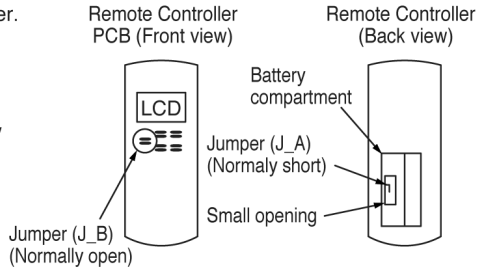
Changing the remote control transmission code

1. Press AUTO SW continously for 11 seconds (Buzzer sound = pep pep pep)
2. After 11 seconds release AUTO SW, then press Remo-Con TIMER “▼” SW continouly for 5 seconds. Reset code will be transmitted.
   After transmitted reset code, release TIMER “▼” SW
3. Press Remo-Con “OFF/ON” switch. The new Remo-Con No. will be accepted and memorized, after which the new Remo-Con No. can be used.



Remo-Con No. change in Remote Controller

1. Remove battery from the battery compartment in the Remorte controller.
2. At left side of battery compartment, ther is a small opening at the centre in which a jumper (J_A) can be seen. Also in Remo-Con PCB shown below Jumper (J_B) can be seen



J_A	J_B	Remo-Con No.
Short	Open	A (Default)
Open	Open	B
Short	Short	C
Open	Short	D

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable being fixed to terminal board firmly?
- ☐ Is the connecting cable being clamped firmly?
- ☐ Is the drainage ok? (Refer to “Check the drainage” section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling / heating operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?

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ENGLISH

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11.3. Ceiling Floor Type

CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW

Required tools for Installation Works

1 Philips screw driver
2 Level gauge
3 Electric drill, hole core drill (ø70 mm)
4 Hexagonal wrench (4 mm)
5 Spanner
6 Pipe cutter
7 Reamer
8 Knife
9 Gas leak detector
10 Measuring tape
11 Thermometer
12 Megameter
13 Multimeter
14 Torque wrench
18 N•m (1.8 kgf.m)
55 N•m (5.5 kgf.m)
15 Vacuum pump
16 Gauge manifold set

SAFETY PRECAUTIONS

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.
⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1)	Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.	
2)	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
3)	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
4)	Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, unit will drop and cause injury.	
5)	For electrical work, please follow the local national wiring standard & regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
6)	Use the specified cable and connect tightly for indoor/outdoor connection. Please clamp the cable firmly so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.	
7)	Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.	
8)	When carrying out piping connection, please take care not to let air or other substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9)	When connecting the piping, do not allow air or any substances other than the specified refrigerant (R410A) to enter the refrigeration cycle. Otherwise, this may lower the capacity, cause abnormally high pressure in the refrigeration cycle, and possibly result in explosion and injury.	⃠
10)	• When connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials. • Thickness of copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm. • It is desirable that the amount of residual oil is less than 40 mg/10 m.	⃠
11)	Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.	⃠

⚠ CAUTION

1) This equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

1) Selection of the installation location and installation.
   Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2) Power supply connection to the room air conditioner.
   Connect the power supply cord of the room air conditioner to the mains using one of the following method.
   Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency.
   In some countries, permanent connection of this room air conditioner to the power supply is prohibited.
   1) Power supply connection to the socket using a power plug.
      Use an approved 15A power plug with earth pin for the connection to the socket.
   2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
3) Do not release refrigerant.
   Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4) Installation work.
   It may need two people to carry out the installation work.
5) Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	7	Remote control holder	1
2	Installation plate fixing screw	6	8	Remote control holder fixing screw	2
3	Remote Control	1	9	Drain elbow	1
4	Battery	2	10	Drain hose	1
5	Pre-bent tube 1	1	11	Side cover	4
6	Pre-bent tube 2	1	12	Band	4
			13	Insulation material	2

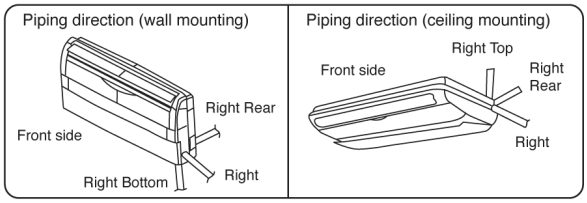
Applicable piping kit
CZ-4F5, 7, 10BP

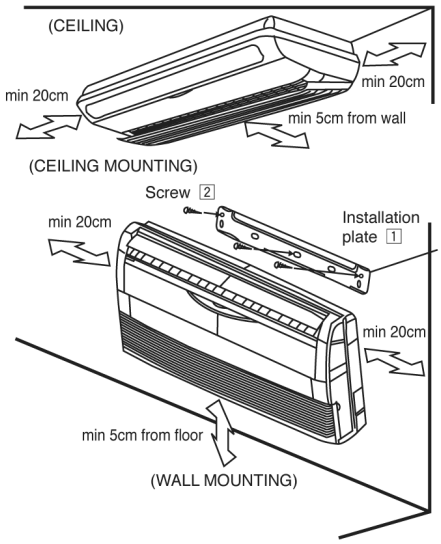
SELECT THE BEST LOCATION

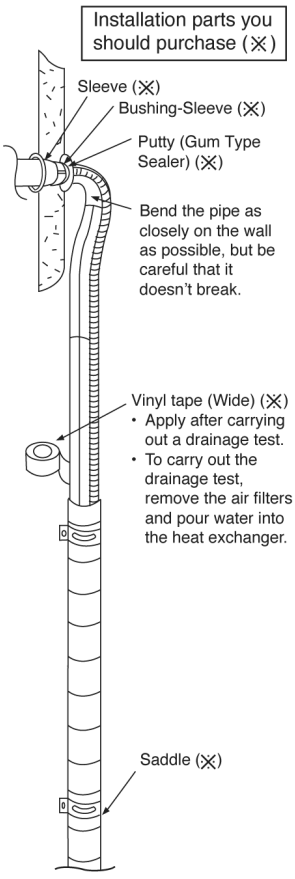
INDOOR UNIT

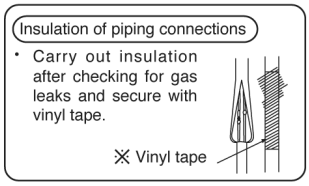
There should not be any heat source or steam near the unit.
There should not be any obstacles blocking the air circulation.
A place where air circulation in the room is good.
A place where drainage can be easily done.
A place where noise prevention is taken into consideration.
Do not install the unit near the door way.
Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.

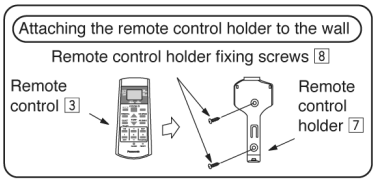
Indoor/Outdoor Unit Installation Diagram











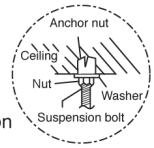
INDOOR UNIT

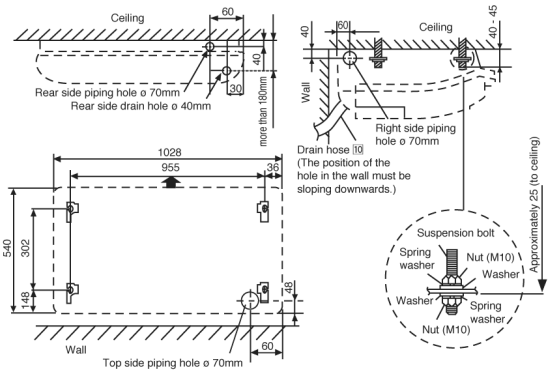
1 SELECT THE BEST LOCATION
(Refer to "Select the best location" section.)

2 HOW TO FIX INSTALLATION PLATE

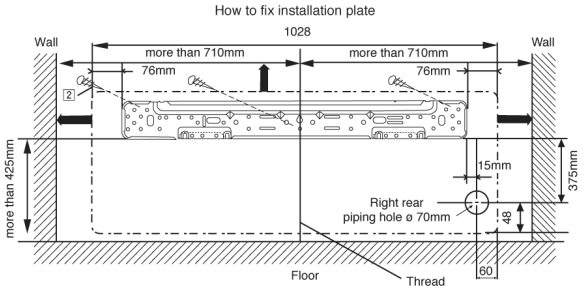
Installation on the ceiling

- Measure and mark the position for the Suspension bolts and the piping hole.
- Drill the hole for anchor nut on the ceiling.
- Drill the piping hole slightly tilted to the outdoor side with a ø 70 hole-core drill.
- Insert the nuts and washers onto the suspension bolts for locking the Suspension bolts on the ceiling.
- Mount the suspension bolts to the anchor-nuts firmly as shown in the diagram.





Installation on the wall



The centre of installation plate should be at more than 710 mm at right and left of the wall.
The distance from installation plate edge to floor should more than 425 mm.
From installation plate left edge to unit's left side is 76 mm.
From installation plate right edge to unit's right is 76 mm.

1. Mount the installation plate on the wall with 3 screws or more. (If mounting the unit on the concrete wall consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
2. Drill the piping plate hole with ø 70 mm hole-core drill.
   - Drill the piping hole slightly slanted to the outdoor side.

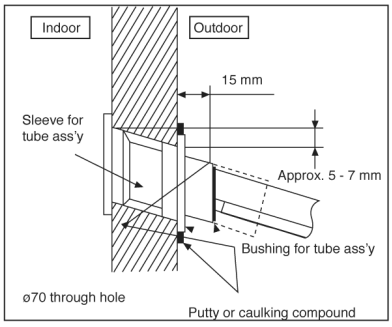
3 TO DRLL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPNING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



4 INDOOR UNIT INSTALLATION

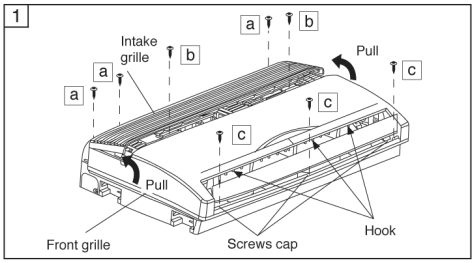
Indoor unit installation

1. Remove the Front Grille

- Remove 3 screws [a] from the left and right corners.
- Pull the upper left and right side of the intake grille toward you, and it will stop at slightly tilted position.
- Remove 2 screws [b].
- Remove 3 screws cap, then remove 3 screws [c].
- Release 3 hooks as shown in the diagram.
- Lift up the front grille.

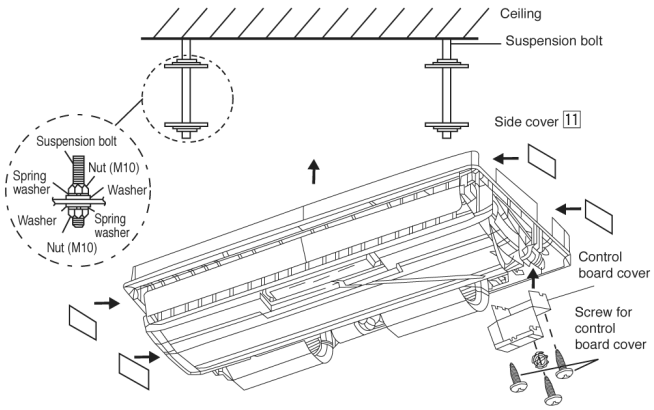
It is advisable to place whole unit horizontally flat on the floor before starting the installation. (to prevent unit from falling down easily.)

1

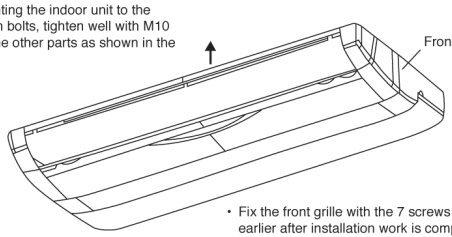


2a. For installation on the ceiling.

i) * Installation on the ceiling.
Adjust gap to ceiling before installation.



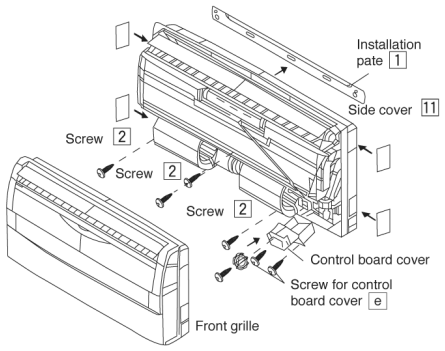
- After mounting the indoor unit to the suspension bolts, tighten well with M10 nuts. Fix the other parts as shown in the diagram.



- Fix the front grille with the 7 screws removed earlier after installation work is completed.

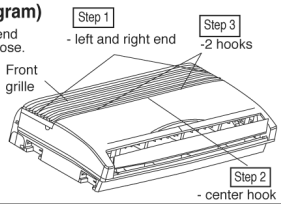
2b. For installation on the wall.

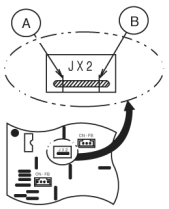
i) Install the Indoor unit on the installation plate.
- Cut out the portion for piping with a nipper.
- Engage the slot at the back center of the unit with the installation plate.
- After mounting the indoor unit to installation plate, fix 3 screws [2] (provided inside accessory) from chassis to the wall for firmly mounting the unit and 2 screws [e] which are removed earlier. (as shown in the diagram)
- Fix the front grille with the 8 screws removed earlier after installation work is completed.



Please follow the steps below to close the intake grille. (as shown in the diagram)

1. Push down left and right end of intake grille until fully close.
2. Push down a center hook until fully close.
3. Finally push down 2 hooks to close tight.





The modification should be done by a qualified installer or by service person only.

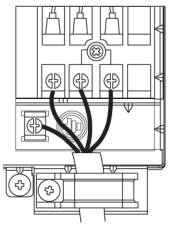
- THE UNIT WHICH IS INSTALLED ON THE FLOOR (WALL MOUNTING)
  Carry out the operation by following procedure.

Remove the front grille (Remove 3 caps & 8 screws) ➡ Remove the control board cover. (Remove 3 screws) ➡ Cut the jumper wire "JX2" at A & B ponion on the printed circuit board with a tool such as nipper. (Refer to diagram above) ➡ Put back the control board cover to its original position.

- THE UNIT WHICH IS INSTALLED ON THE CEILING (CEILING MOUNTING)
  Remain as initial condition.

5 CONNECT THE CABE TO THE INDOOR UNIT

Open the control box at the bottom end of the chassis and connect the cable through the hole.



- Connect the wires to the terminal on the control board individually according to the outdoor unit connection.
- Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.

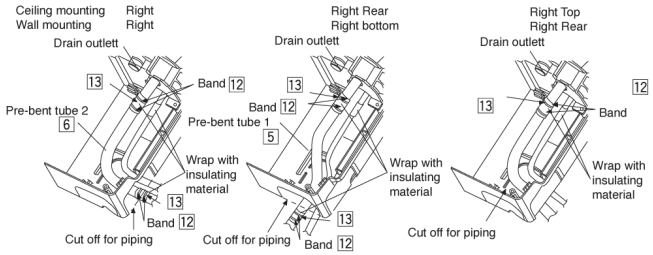
Terminals on the indoor unit	1	2	3	⏚
Colour of wires				
Terminals on the outdoor unit	1	2	3	

- Secure the cable onto the control board with the holder (clamper).
- Insert two tabs on the Side panel into two slots on the chassis, and secure it to the chassis with screw.

6 PIPING AND DRAINAGE

Piping and Drainage

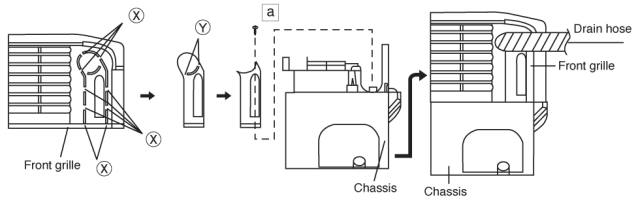
- Cut off the Chassis with a nipper according to the indoor surface for the pipings.
- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally tighten the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.
- Wrap the tube joining areas with insulating material so that there are no gaps (if it overlaps, cut the excess material) refer diagram in "Pipe formings, insulating and finishing".



- Connect the drain hose (insulated) to the drain outlet.

How to position drain hose (For installation on the ceiling)

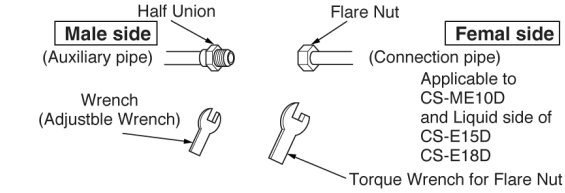
- Cut off Ⓧ area with nipper.
- Cut off Ⓨ area.
- Fix the remained part with screw a (which removed earlier) to chassis.
- Finally, after fixing the position of drain hose (as shown in diagram), fix the front grille to chassis at the hooks.

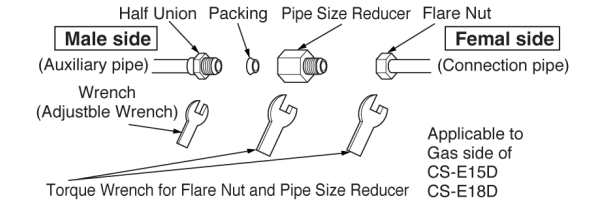


7 CONNECTING THE REFRIGERANT PIPING

- Align the center of the half-union and the connection pipe and tighten the flare nut by hand, then tighten with a torque wrench.

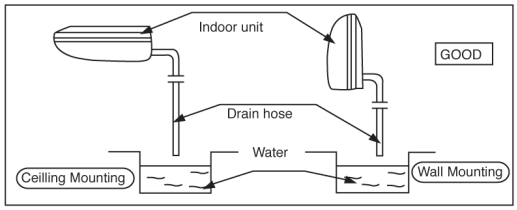
Pipe diameater	Tightening torque	Applicable Model
Liqued side ø6.35 (1/4")	18N • m (1.8 kgf • m)	Common
Gas side ø9.52 (3/8")	42N • m (4.2 kgf • m)	Common
Pipe Size Reducer (CZ-MA1P)	55N • m (5.5 kgf • m)	CS-E15D/E18D



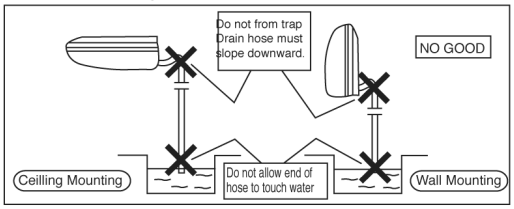


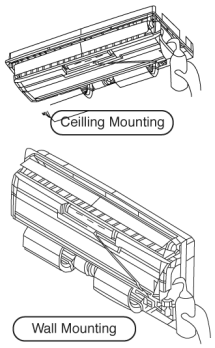
CHECK THE DRAINAGE

- Connect the drain hose, as describe below.

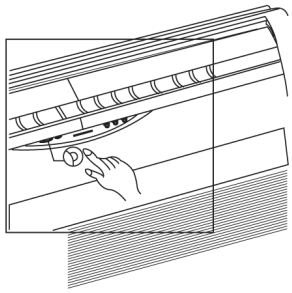


- Pour water into the drain pan to ensure that water is drained smoothly through the drain hose.





AUTO SWITCH OPERATION

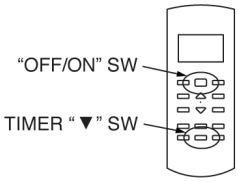


The following operations can be performed by pressing the “AUTO” switch.

1. AUTO OPERATION MODE
   The Auto operation will be activated immediately once the Auto Switch is pressed.
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 8 sec. A “pep” sound will occur at the fifth sec., in order to identify the starting of Test Run operation.

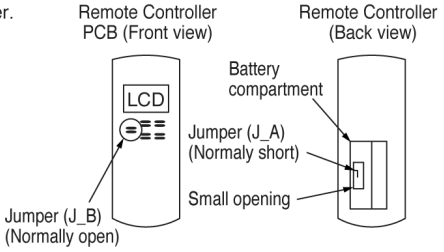
CHANGING THE REMOTE CONTROL TRANSMISSION CODE

1. Press AUTO SW continously for 11 seconds (Buzzer sound = pep pep pep)
2. After 11 seconds release AUTO SW, then press Remo-Con TIMER “▼” SW continouly for 5 seconds. Reset code will be transmitted.
   After transmitted reset code, release TIMER “▼” SW
3. Press Remo-Con “OFF/ON” switch. The new Remo-Con No. will be accepted and memorized, after which the new Remo-Con No. can be used.



Remo-Con No. change in Remote Controller

1. Remove battery from the battery compartment in the Remorte controller.
2. At left side of battery compartment, ther is a small opening at the centre in which a jumper (J_A) can be seen. Also in Remo-Con PCB shown below Jumper (J_B) can be seen



J_A	J_B	Remo-Con No.
Short	Open	A (Default)
Open	Open	B
Short	Short	C
Open	Short	D

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable being fixed to terminal board firmly?
- ☐ Is the connecting cable ends being clamped firmly?
- ☐ Is the drainage ok?
- ☐ Is the earth wire connection properly done?
- ☐ Is the cooling operation normal?
- ☐ Is the indoor unit properly secured to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
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ENGLISH
F612822
PRINTED IN JAPAN

11.4. Mini-Cassette Type

CS-E15DB4EW / CS-E18DB4EW

FOUR WAY CASSETTE TYPE AIR CONDITIONERS INSTALLATION INSTRUCTIONS

REFRIGERANT
R 410A

SAFETY PRECAUTIONS

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.
⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1)	Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.	
2)	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
3)	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
4)	Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, unit will drop and cause injury.	
5)	For electrical work, please follow the local national wiring standard & regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
6)	Use the specified cable and connect tightly for indoor/outdoor connection. Please clamp the cable firmly so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.	
7)	Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.	
8)	When carrying out piping connection, please take care not to let air or other substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9)	When connecting the piping, do not allow air or any substances other than the specified refrigerant (R410A) to enter the refrigeration cycle. Otherwise, this may lower the capacity, cause abnormally high pressure in the refrigeration cycle, and possibly result in explosion and injury.	⃠
10)	• When connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials. • Thickness of copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm. • It is desirable that the amount of residual oil is less than 40 mg/10 m.	⃠
11)	Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.	⃠

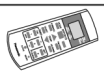
⚠ CAUTION

1) This equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

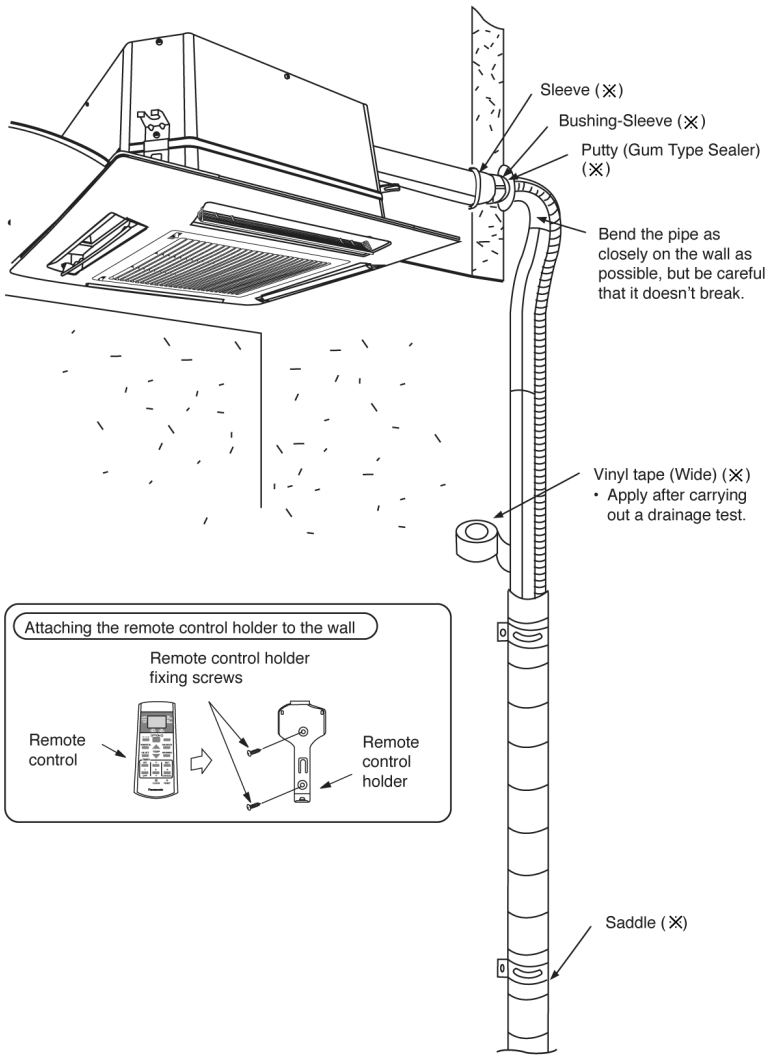
1) Selection of the installation location and installation.
   Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2) Power supply connection to the room air conditioner.
   Connect the power supply cord of the room air conditioner to the mains using one of the following method.
   Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency.
   In some countries, permanent connection of this room air conditioner to the power supply is prohibited.
   1) Power supply connection to the socket using a power plug.
      Use an approved 15A power plug with earth pin for the connection to the socket.
   2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
3) Do not release refrigerant.
   Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4) Installation work.
   It may need two people to carry out the installation work.
5) Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

ATTACHED ACCESSORIES

Name	Q'ty
Drain hose wih a clip	1
Heat Insulator	2
Band	4
Flat waster for M10	8
Screw M5	4
Remote Control 	1
Remote control holder 	1
Remote control holder fixing screw 	2
Battery 	2
Drain elbow 	1

Applicable piping kit
CZ-4F5, 7, 10BP

Installation parts you should purchase (※)



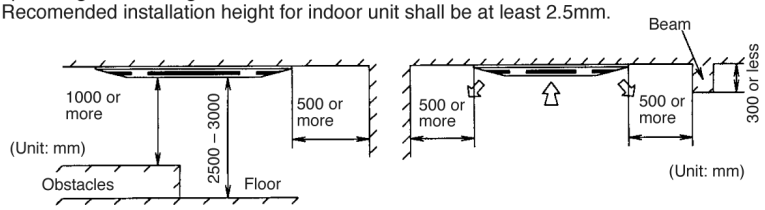
Attaching the remote control holder to the wall

1 SELECTING THE LOCATION FOR THE INDOOR UNIT

Provide a check port on the piping side ceiling for repair and maintenance.

- Install the indoor unit once the following conditions are satisfied and after receiving the customer approval.

1. The indoor unit must be within a maintenance space.
2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.
3. Recomended installation height for indoor unit shall be at least 2.5mm.



* If the height from the floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

⚠ Warning

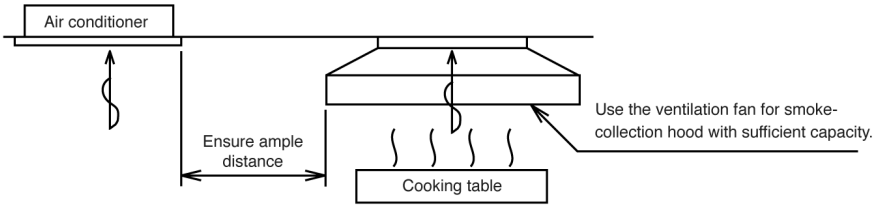
4. The installation position must be able to support a load four times the indoor unit weight.

5. The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
6. The indoor unit must allow easy draining.
7. The indoor unit must allow easy connection to the outdoor unit.
8. Place the indoor unit according to the height from the ceiling shown in the illustration below.
9. The indoor unit must be from at least 3m away from any noise-generating equipment. The electrical wiring must be shielded with a steel conduit.
10. If the power supply is subject to noise generation, add a suppressor.
11. Do not install the indoor unit in a laundry. Electric shocks may result.

Note • Thoroughly study the following installation locations

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the turbo fan, the fin of the heat exchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.
   In these cases, take the following actions:

- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
- Make enough distance from the cooking room to install the air conditioner in such place where it may not suck in oily steam.



2. Avoid installing the air conditioner in such circumstances where cutting oil mist or iron powder exist especially in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulphurous acid gas or corrosive gas can be generated.
5. Avoid places near high frequency generators.

Model Name	Height in the ceiling
CS-E15D CS-E18D	280 mm or more

INDOOR UNIT

2 INSTALLATION OF INDOOR UNIT

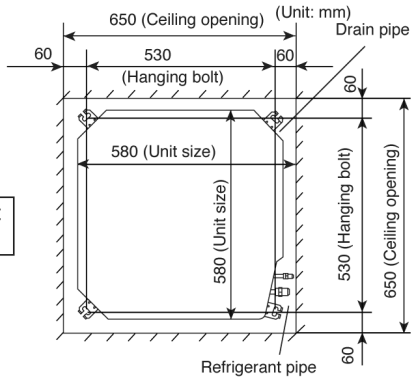
This air conditioner uses a drain up motor. Horizontally install the unit using a level gauge.

CEILING OPENING DIMENSIONS AND HANGING BOLT LOCATION

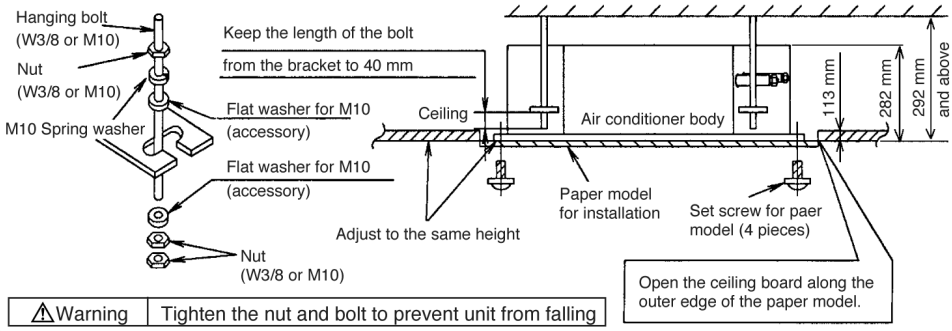
The paper model for installation expand or shrink according to temperature and humidity.
Check on dimensions before using it.

Caution	During the installation, care must be taken not to damage electric wires.

- The dimensions of the paper model for installation are the same as those of the ceiling opening dimensions.
- Be sure to discuss the ceiling drilling work with the workers concerned.



POSITIONS OF AIR CONDITIONER BODY AND CEILING SURFACE

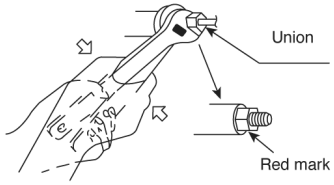


⚠Warning	Tighten the nut and bolt to prevent unit from falling

3 REFRIGERANT PIPING

Refrigerant is charged to the outdoor unit. For details, see the manual for installation work of outdoor unit. (Additional charging, etc.)

1. Brazing for piping.
   a. Execute brazing before tightening the flare nut.
   b. Brazing must be executed while blowing nitrogen gas. (This prevents generation of oxidized scale in copper pipe.)
2. When there is a lot of brazings for long piping, install a strainer midway of the piping. (The strainer is locally supplied.)
3. Use clean copper pipe with inner wall surface free from mist and dust. Blow nitrogen gas or air to blow off dust in the pipe before connection.
4. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times. (This will result in hardening of the pipe).
5. After deforming the pipe, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
6. Connect pipe to the service valve or ball valve which is located below the outdoor unit.
7. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



- Confirm the red mark of the union (thin side) is always at lower direction after connecting piping.

Vacuum drying

After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The vacuum drying must be carried out by using the service ports of both the liquid and gas side valves.

CAUTION Use two wrenches and tighten with regular torque.

Flare nut fastening torque N•m (kgf•cm)					
ø6.35 mm	18 (180)	ø12.7 mm	55 (560)	ø19.05 mm	100 (1020)
ø9.52 mm	42 (430)	ø15.88 mm	65 (660)		

Liquid side piping	Gas side piping
ø6.35 mm (1/4")	ø12.7 mm (1/2")

4 INDOOR UNIT DRAIN PIPING

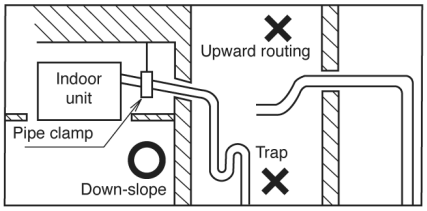
- During drain piping connection, be careful not to exert extra force on the drain port at the indoor unit.
- The outside diameter of the drain connection at the indoor unit is 32 mm.

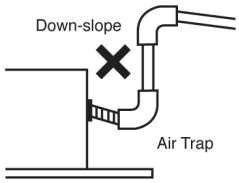
Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings.

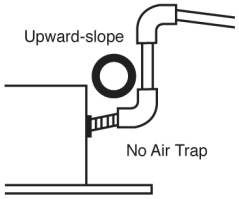
- Be sure to perform heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm (local supply).

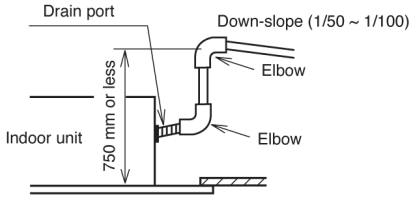
- Drain piping must have down-slope (1/50 to 1/100); be sure not to provide up-and-down slope to prevent reversal flow.
- Be sure to check no air trap on drain hose and to ensure smooth water flow and no abnormal sound.



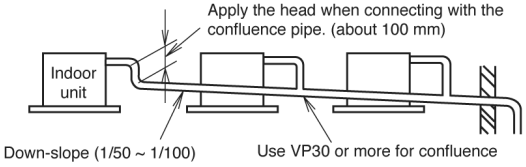




- The height of drain may be possible up to 750 mm.



- When drain set piping, install as shown in the figure below.

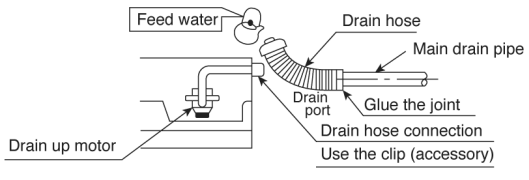


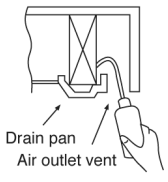
Drain Test

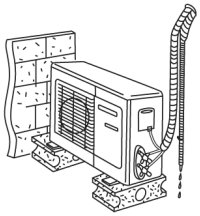
The air conditioner uses a drain up motor to drain water. Use the following procedure to test the drain up motor operation.

- Connect the main drain pipe to exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain up motor for normal operating and noise when electric wiring is complete.
- When the test is complete, connect the flexible drain hose to the drain port.

- Pour about 600-700cc of water in the drain pan of the indoor unit. (Pour from the position specified in the drawing by using a water supply bottle or other suitable tool.)
- Press the drain pump test run on pcb to start the drain motor, and verity water drainage. (The drain motor will automatically stop after operating for about five minures.)



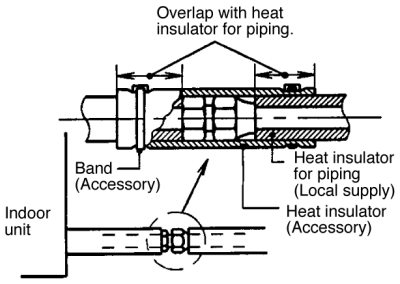


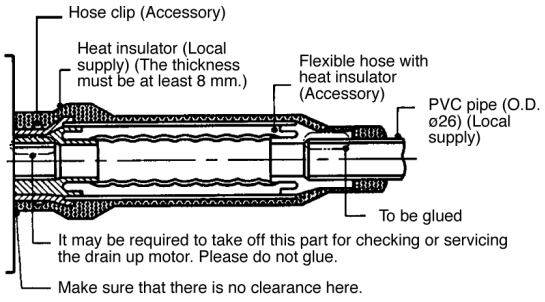


5 HEAT INSULATION

⚠ Caution	Be sure to perform heat insulation on the drain, liquid and gas piping. Imperfection in heat insulation work leads to waterleakage.

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance (over 120°C).

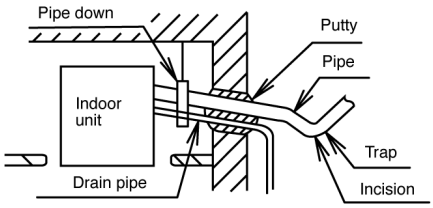




2. Precautions in high humidity circumstance.
   This air conditioner has been tested according to the “JIS Standard Conditions with Mist” and have been confirmed that there are no faults. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23°C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
   - Heat insulation material to be prepared...Adiabatic glass wool with thickness 10 to 20 mm.
   - Stick glass wool on all air conditioners that are located in ceiling atmosphere.
   - In addition to the normal heat insulation (thickness: more than 8 mm) for refrigerant piping (gas piping: thick piping) and drain piping, add a further of 10 mm to 30 mm thickness material.

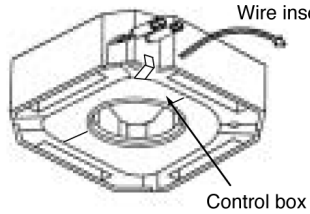
Wall seal

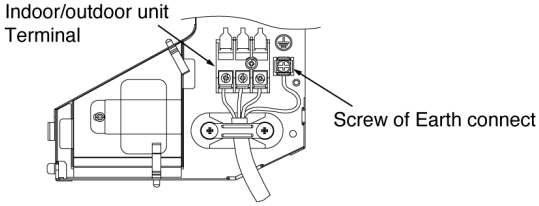
- When the outdoor unit is installed on a higher position than the indoor unit, install the trap so as not to instill rain water into the wall by transmitting in piping.
- Stuff the space among piping, the electric wire, and- the drain hose with “Putty” and seal the penetration wall hole. Make sure that rain water do not instill into the wall.



6 CONNECTING THE CABLE TO THE INDOOR

- Remove the mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.





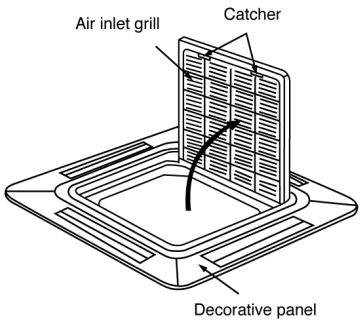
Earth lead wire shall be longer than other wires as shown in the figure for the electrical safety in case of the slipping out of the cord from anchorage.

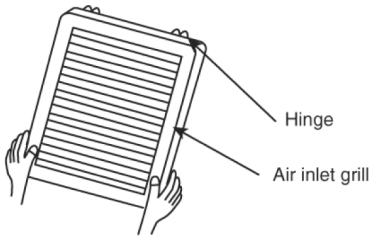
Terminals on the indoor unit	1	2	3	⏚
Colour of wires				
Terminals on the outdoor unit	1	2	3	⏚

7 INSTALLATION OF DECORATIVE PANEL

The decorative panel has its installation direction. Confirm the direction by displaying the piping side.

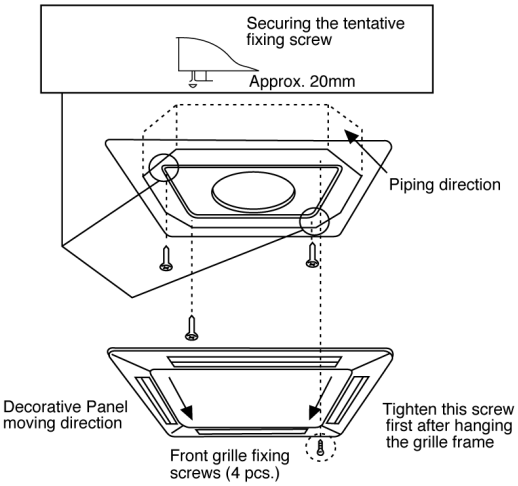
1. Remove the air inlet grille by moving the catchers to center.





* Hang the hinge on the hole of decorative panel.
(The direction of the installation is free.)

2. Fitting the decorative panel.
   - Temporarily secure the fixing screws (3 pcs.) before fitting the decorative panel. (For temporarily securing the front grille.)
   - Place decorative panel on the screws (3 pcs.) before fitting, move decorative panel as illustrated and tighten all the screws (4 pcs.)

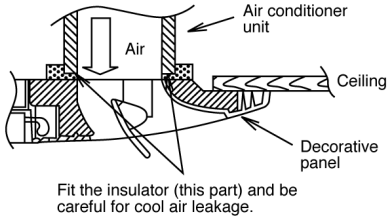


CAUTION

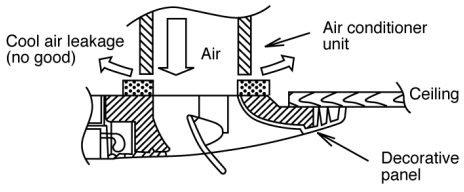
- Check before hand the height from the ceiling to the unit.
- The front grille fitting direction is determined by the unit direction.
- Only use the screws with the length of 35mm which is provided, to fix the decorative panel.
- Do not use other screw which is longer it may cause damage to the drain-pan and other components.

3. Fit the decorative panel and ceiling wall together and confirm no gap in between. Readjust indoor unit height, if there is a gap between ceiling wall and decorative panel.

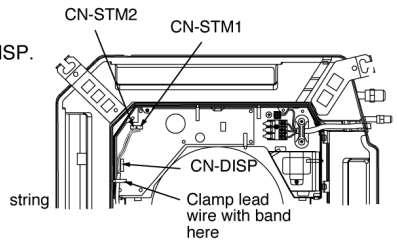
Good example



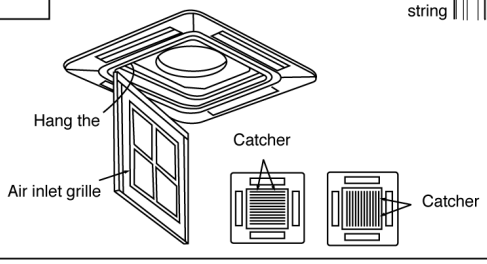
Bad example



4. Open the indoor control box cover. (2 pcs.)
5. Insert firmly the connector of cosmetic louver to indoor pcb CN-STM1, CN-STM2 and CN-DISP. Be caution not to clamp the cord in between control board and control board cover.
6. After complete, install back removed part follow opposite procedure.



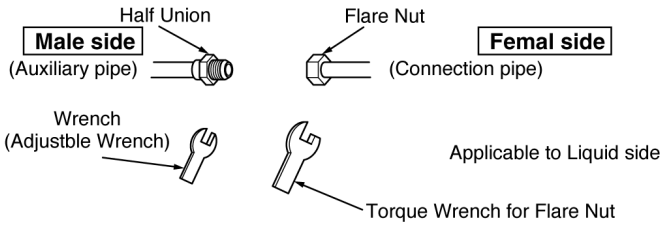
⚠ Warning	Be sure to hook the air inlet grill string, to prevent grill from falling and causing injury from it.

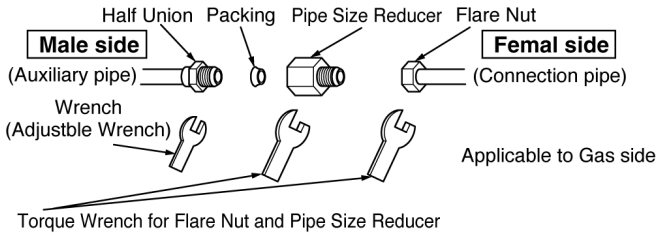


8 CONNECTING THE REFRIGERANT PIPING

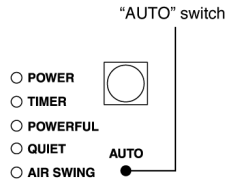
• Align the center of the half-union and the connection pipe and tighten the flare nut by hand, then tighten with a torque wrench.

Pipe diameater	Tightening torque
Liqued side ø6.35 (1/4")	18N • m (1.8 kgf • m)
Gas side ø9.52 (3/8")	42N • m (4.2 kgf • m)
Pipe Size Reducer (CZ-MA1P)	55N • m (5.5 kgf • m)





AUTO SWITCH OPERATION

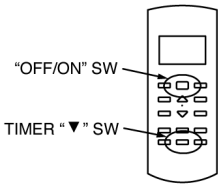


The following operations can be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE
   The Auto operation will be activated immediately once the Auto Switch is pressed.
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 8 sec. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation.

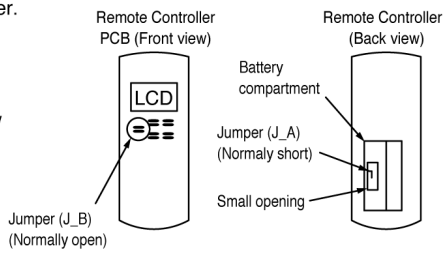
CHANGING THE REMOTE CONTROL TRANSMISSION CODE

1. Press AUTO SW continously for 11 seconds (Buzzer sound = pep pep pep)
2. After 11 seconds release AUTO SW, then press Remo-Con TIMER "▼" SW continouly for 5 seconds. Reset code will be transmitted. After transmitted reset code, release TIMER "▼" SW
3. Press Remo-Con "OFF/ON" switch. The new Remo-Con No. will be accepted and memorized, after which the new Remo-Con No. can be used.



Remo-Con No. change in Remote Controller

1. Remove battery from the battery compartment in the Remorte controller.
2. At left side of battery compartment, ther is a small opening at the centre in which a jumper (J_A) can be seen. Also in Remo-Con PCB shown below Jumper (J_B) can be seen



J_A	J_B	Remo-Con No.
Short	Open	A (Default)
Open	Open	B
Short	Short	C
Open	Short	D

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connections?
- ☐ Is the connecting cable being fixed to the terminal board firmly?
- ☐ Is the connecting cable being clamped firmly?
- ☐ Is the drainage ok?
- ☐ Is the Earth wire connection properly done?
- ☐ Is the cooling operation normal?
- ☐ Is the indoor unit property secured to the installation plate?
- ☐ Is the power supply voltage complled with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control's LCD operation normal?

HAND OVER

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.)

As to parts to be sold separately

- With regards to installation of the parts sold separately, follow the installation manual which is provided with the parts sold separately.

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
Web Site : http://www.panasonic.co.jp/global/

ENGLISH
F612825
PRINTED IN JAPAN

12 Operating Instructions

■ Definition

To prevent personal injury, injury to others and property damage, the following instructions must be followed.

Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as below:

Warning
This sign warns of death or serious injury.

Caution
This sign warns of injury or damage to property.

The instructions to be followed are classified by the following symbols:


This symbol denotes an action that is PROHIBITED.


These symbols denote actions that are COMPULSORY.

Thank you for purchasing Panasonic Air Conditioner

SAFETY PRECAUTIONS

Installation Precautions

Warning

Do not install, remove and reinstall the unit by yourself.
- Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.

Caution

- This air conditioner must be earthed. Improper grounding will cause electric shock.
- Ensure that the drainage piping is connected properly. Otherwise, water will leak.
- Current leakage protection equipment must be installed. Otherwise, electric shock or fire may occur.
- Do not install the unit in a potentially explosive atmosphere.

Operation Precautions

Warning

- Do not share power outlet.
- Do not modify power cord.
- Do not use an extension cord.
- Do not operate with wet hands.
- Do not insert finger or other objects into the indoor or outdoor unit.
- Do not attempt to repair the unit by yourself.
- Do not use rechargeable (Ni-Cd) batteries.
- Keep the remote control away from infants and small children to prevent them from accidentally swallowing the batteries.
- Use specified supply cord.
- If the supply cord is damaged or needed to be replaced, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- Remove the batteries if the unit is not going to be use for a long period of time.
- New batteries of the same type must be inserted following the polarity stated to prevent malfunction of the remote control.
- In case of emergency or abnormal condition (burnt smell, etc) occurs, turn off the power supply.

Caution

- Do not wash the unit with water, benzene, thinner or scouring powder.
- Do not use for other purposes such as preservation of food.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the indoor or outdoor unit.
- Do not expose directly to cold air for a long period.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after long period of usage.
- Switch off the power supply before cleaning or servicing.
- Turn off the power supply if the unit is not used for a long period of time.

Safety Regulation

The appliance is not intended for use by young children or infirm person without supervision. Young children should be supervised to ensure that they do not play with the appliance.

Operation Condition (°C)

Use this air conditioner under the following temperature range.

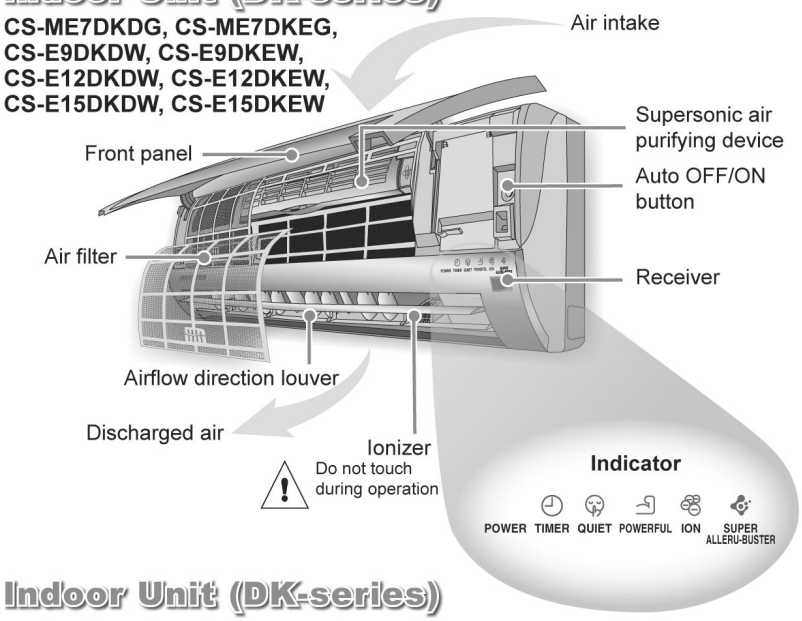
DBT: Dry Bulb Temperature WBT: Wet Bulb Temperature	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature (COOL)	32	23	43	26
Maximum Temperature (HEAT)	30	–	24	18
Minimum Temperature (COOL)	16	11	16	11
Minimum Temperature (HEAT)	16	–	-10	-11

Note: The illustrations in this manual are for explanation purposes only and may differ from the actual unit. It is subjected to change without notice for future improvement.

PRODUCT OVERVIEW

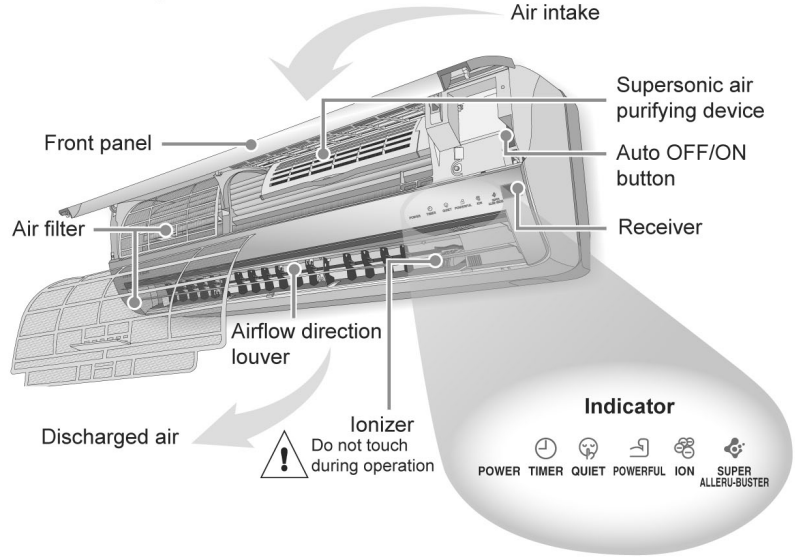
Indoor Unit (DK-series)

CS-ME7DKDG, CS-ME7DKEG,
CS-E9DKDW, CS-E9DKEW,
CS-E12DKDW, CS-E12DKEW,
CS-E15DKDW, CS-E15DKEW



Indoor Unit (DK-series)

CS-E18DKDW, CS-E18DKEW



About

Auto OFF/ON Button

- To operate the unit if the remote control is misplaced or malfunctioning.

Action	Operation mode
Press once.	Automatic Operation
Press until "beep" sound and release.	Cooling Operation
Press until "beep" sound and release. Press again until "beep-beep" sound and release.	Heating Operation

- To OFF, press again the Auto OFF/ON button.
- The usage of this button is not recommended.

Multi Air Conditioner Function

- It is possible to operate the indoor units individually or simultaneously.
- During operation, heating and cooling modes could not be activated at the same time for different indoor unit.
- The power indicator blinks to indicate the indoor unit is standing by for different operating mode.
- Ionizer only operation is impossible if either 1 of the indoor unit is activating heating operation.

■ About

Indoor unit

CS-ME10DTEG, CS-E15DTEW, CS-E18DTEW

- Auto Air Swing function optimise room comfort by giving finer control over the airflow direction.





CS-ME10DD3EG, CS-E15DD3EW, CS-E18DD3EW

- These units are mounted inside the ceiling. It uses external air intake vent and air outlet vent to operate.

Auto OFF/ON Button

- To operate the unit if the remote control is misplaced or malfunctioning.

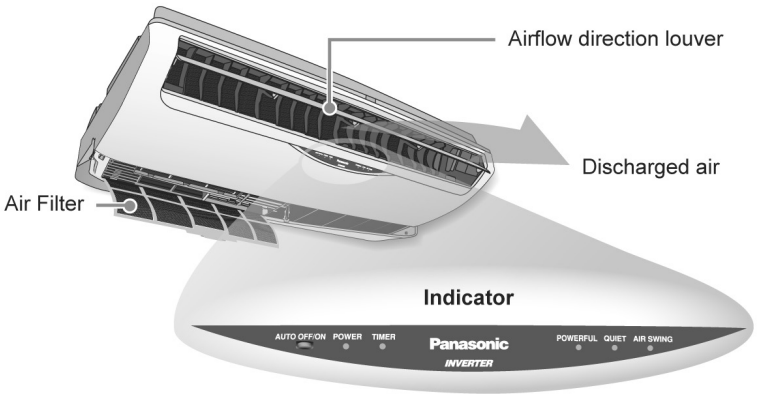
Action	Operation mode
Press once.	Automatic Operation
Press until "beep" sound and release.	Cooling Operation
Press until "beep" sound and release. Press again until "beep-beep" sound and release.	Heating Operation

- To OFF, press again the Auto OFF/ON button.
- The usage of this button is not recommended.

PRODUCT OVERVIEW

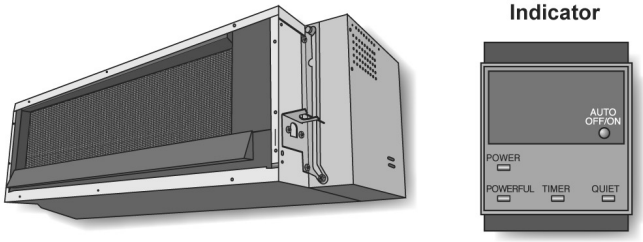
Indoor Unit (DT-Series)

CS-ME10DTEG, CS-E15DTEW, CS-E18DTEW



Indoor Unit (DD-Series)

CS-ME10DD3EG, CS-E15DD3EW, CS-E18DD3EW



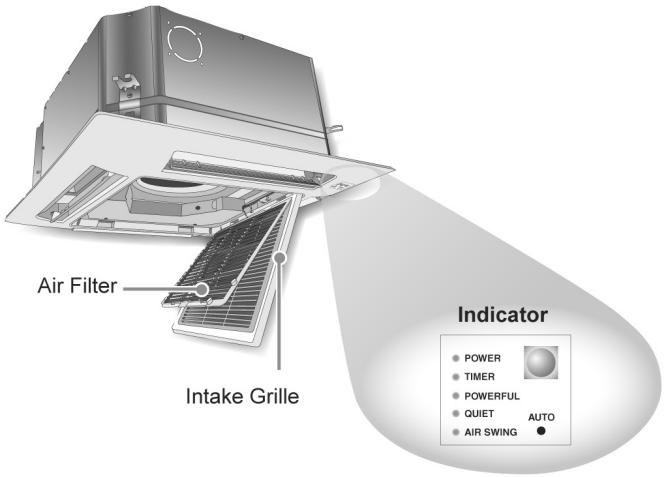
Multi Air Conditioner Function

- It is possible to operate the indoor units individually or simultaneously.
- During operation, heating and cooling modes could not be activated at the same time for different indoor unit.
- The power indicator blinks to indicate the indoor unit is standing by for different operating mode.

PRODUCT OVERVIEW

Indoor Unit (DB-Series)

CS-E15DB4EW, CS-E18DB4EW



Outdoor Unit

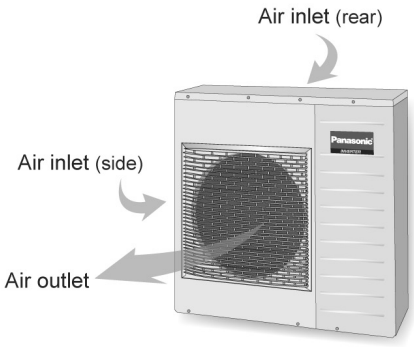


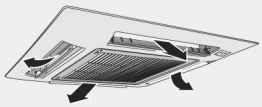
Figure shows CU-4E27CBPG Outdoor Unit.

■ About

Indoor unit

CS-E15DB4EW, CS-E18DB4EW

- The air is discharged evenly through 4 output vents.



Auto OFF/ON Button

- To operate the unit if the remote control is misplaced or malfunctioning.

Action	Operation mode
Press once.	Automatic Operation
Press until “beep” sound and release.	Cooling Operation
Press until “beep” sound and release. Press again until “beep-beep” sound and release.	Heating Operation

- To OFF, press again the Auto OFF/ON button.
- The usage of this button is not recommended.

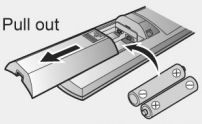
Multi Air Conditioner Function

- It is possible to operate the indoor units individually or simultaneously.
- During operation, heating and cooling modes could not be activated at the same time for different indoor unit.
- The power indicator blinks to indicate the indoor unit is standing by for different operating mode.

■ About

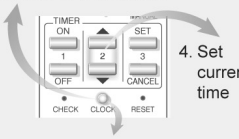
Remote Control Preparation

1. Pull out



2. Insert batteries (AAA or R03)

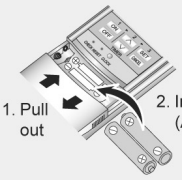
3. Press CLOCK button



4. Set current time

5. Press again to confirm

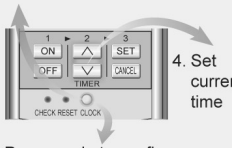
OR



1. Pull out

2. Insert batteries (AAA or R03)

3. Press CLOCK button



4. Set current time

5. Press again to confirm

- Timer operation will be based on current time set.
- The batteries can be used for approximately 1 year.
- The batteries must be recycled or disposed of properly.

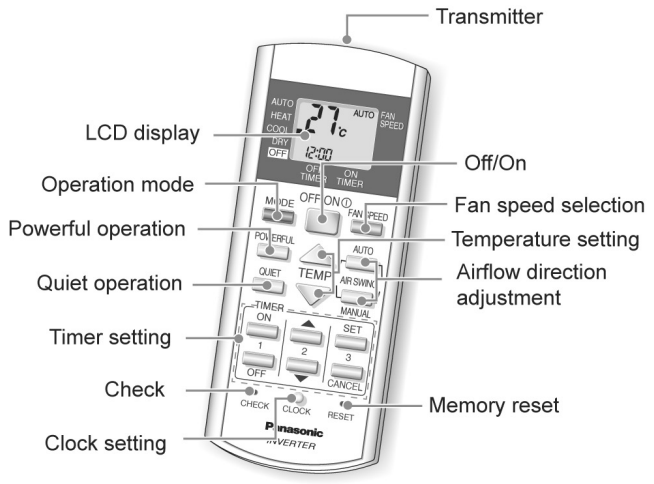
Remote Control Signal

- Make sure it is not obstructed.
- Maximum distances : 8m.
- Certain fluorescent lights may interfere with signal transmission. Consult your dealer.

PRODUCT OVERVIEW

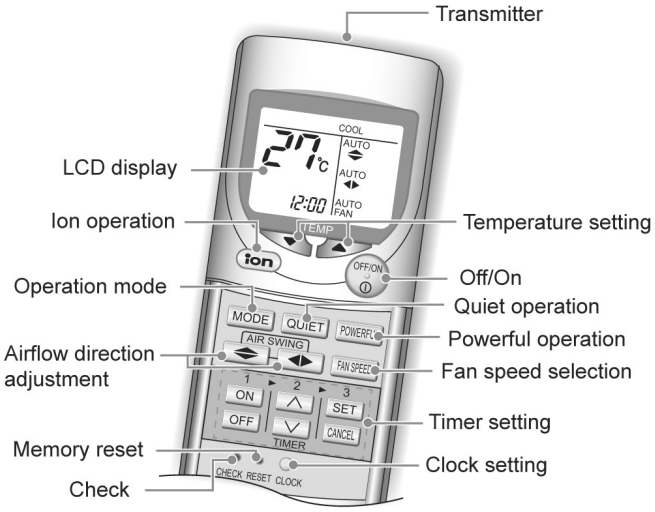
Remote Control

For use with DT, DD, DB-series indoor unit



Remote Control

For use with DK-series indoor unit

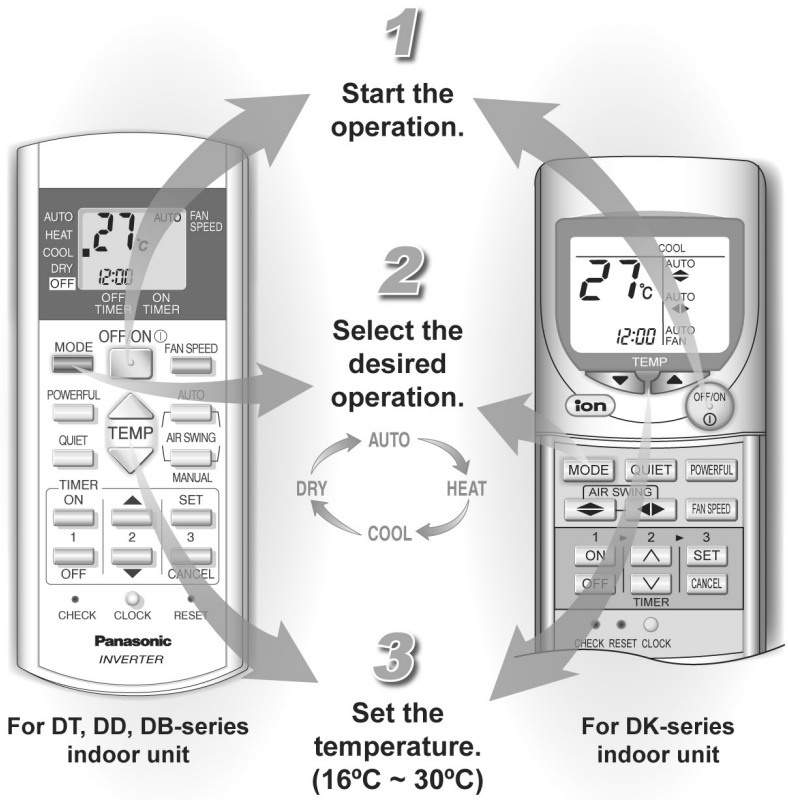


Troubleshooting

● Remote control/display does not work.	➤ Check whether batteries are correctly inserted or need replacement.
● The unit cannot operate.	➤ Check either circuit breaker is tripped or timer is used correctly. ➤ Ensure “OFF” indicator does not shown on remote control.
● Outdoor unit emits water/steam.	➤ Condensation or evaporation happens at piping surface.

HOW TO OPERATE

Auto, Heat, Cool, Dry



- For DK-series indoor unit, supersonic air purifying device (super alleru-buster) operates automatically while the air conditioner is switched on.
- Powerful and Quiet operations could be activated in all operation modes.
- Press OFF/ON / OFF/ON button again to stop the operation.

■ Operation Details

AUTO - Automatic Operation

- The unit will automatically select the operation mode according to the setting, outdoor and room temperature. During operation mode selection, power indicator blinks. For every 3 hours, the operation mode is reselected.

HEAT - Heating Operation

- Enables you to enjoy the warming effect at your preferred setting temperature.
- For cold air prevention, air might not blow out immediately and power indicator blinks when operation starts.
- Also operates in defrost mode (maximum 12 minutes) where by the power indicator blinks. The melted frost is drained at outdoor unit and indoor fan is stopped.

COOL - Cooling Operation

- Enables you to enjoy the cooling effect at your preferred setting temperature.

DRY - Soft Dry Operation

- Enables you to set the desired temperature at low fan speed which provides you with the dehumidifying surroundings.

Hint

- Heat is obtained from outdoor air to warm up the room. Use additional heater when outdoor ambient temperature is low.

Troubleshooting

● Power indicator blinks.	➤ The operating mode is different from other indoor unit.
● Operation delayed for few minutes after restart.	➤ This is a normal self protection control.
● Sounds like water flowing during operation.	➤ Caused by refrigerant flow inside.
● Cracking sound can be heard during operations.	➤ Panel expanding/contracting due to change in temperature.
● Occasionally knocking sound is heard.	➤ Switching over of refrigerant gas in the system during defrosting and at the end of operations.

■ Operation Details

FAN SPEED

- To provide you with the various fan speed selections.
- There are 5 levels of fan speed in addition to automatic fan speed.
- Automatic fan speed:
  The speed of the indoor fan is automatically adjusted according to the operation.

AIR SWING - AUTO

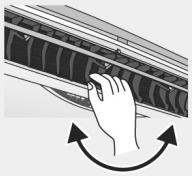
- To ventilate air in the room.
- The vertical airflow direction louver swings up and down automatically.

AIR SWING - MANUAL

- The airflow direction can be adjusted as desired by using remote control.
- Please do not adjust the vertical airflow direction louver by hand.

For DT-series indoor unit only

- Horizontal airflow direction louver could be adjusted manually.

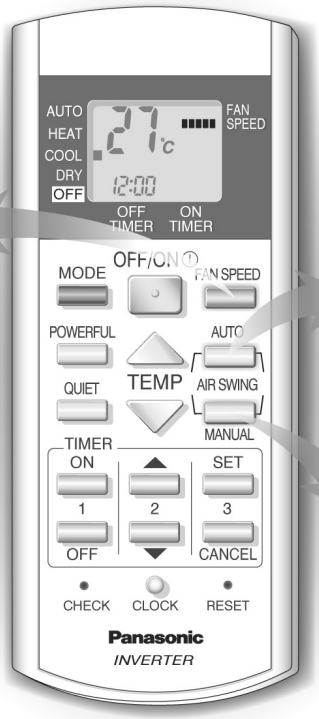


HOW TO OPERATE

Fan Speed, Air Swing

FAN SPEED
Select fan speed.





AUTO AIR SWING
Enables auto air swing.

MANUAL AIR SWING
Adjust the vertical airflow direction louver.

For DT, DD, DB-series indoor unit

● Air Swing is not applicable for DD-series indoor unit.

Hint

- To save electricity, close the curtains when using air conditioner to prevent sunlight and heat from coming in.

Troubleshooting

● Indoor fan stops occasionally during Automatic Fan Speed setting.	➤ This is an advanced feature that helps to remove smell from the surrounding area during operation.
● Indoor fan stops occasionally during heating operation.	➤ To avoid unintended cooling effect.
● Air flow continues even after operation has stopped.	➤ Extraction of remaining heat from the indoor unit (maximum 30 seconds).

HOW TO OPERATE

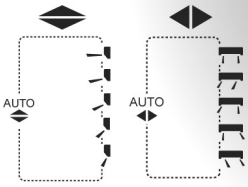
Fan Speed, Air Swing, Ion

ION

Enables ion operation.

AIR SWING

Adjust the vertical or horizontal airflow direction louver.





FAN SPEED

Select fan speed.



For DK-series indoor unit

■ Operation Details

ION

- To provide fresh air effect by producing negative ions.
- Ion operation could be activated independently.
- Ion operation could not be activated if other indoor unit is activating heating operation.
- Press OFF/ON button to stop the operation. During Ionizer only operation, Quiet and Powerful could not be activated.

FAN SPEED

- To provide you with the various fan speed selections.
- There are 5 levels of fan speed in addition to automatic fan speed.
- Automatic fan speed:
  The speed of the indoor fan is automatically adjusted according to the operation.

AIR SWING

- To ventilate air in the room.
- There are 5 selections in addition to automatic vertical airflow direction.
- If automatic vertical airflow direction has been set, the louver swings up and down automatically.

- To ventilate air in the room.
- There are 5 selections in addition to automatic horizontal airflow direction.
- If automatic horizontal airflow direction has been set, the louver swings left and right automatically.

- Please do not adjust the vertical and horizontal airflow direction louver manually.

Hint

- Approximately 10% of electricity can be saved if you set the temperature 1°C higher in cooling operation or 2°C lower in heating operation than the desired temperature.

Troubleshooting

● Mist emerges from indoor unit.	➤ Condensation effect due to cooling process.
● The room has a peculiar odour.	➤ This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.

■ Operation Details

POWERFUL

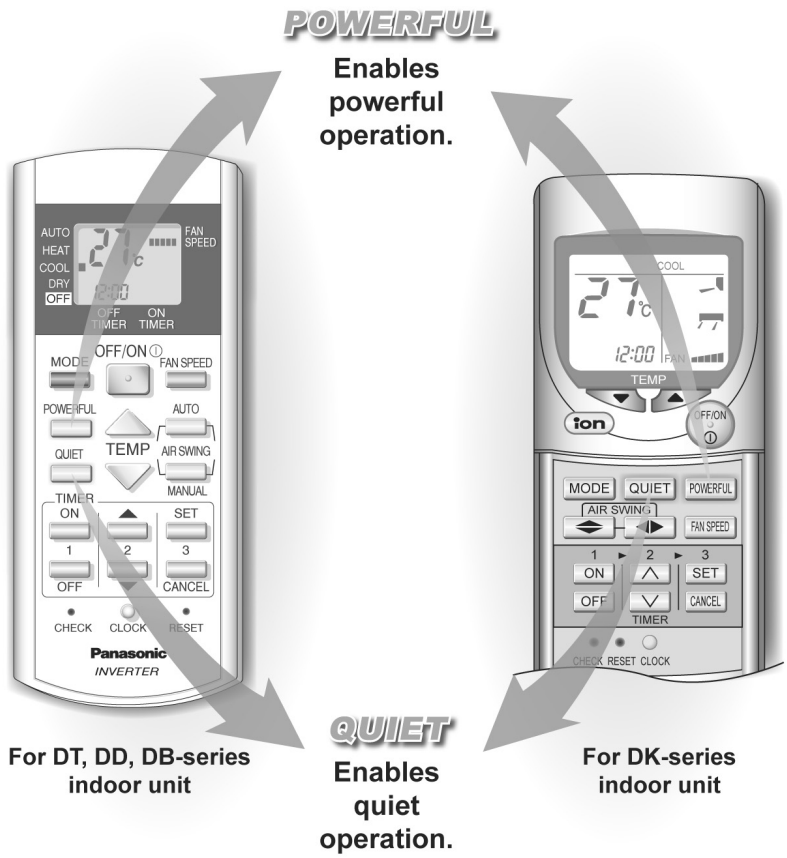
- To achieve setting temperature quickly.

QUIET

- To provide a quiet environment.

HOW TO OPERATE

Powerful, Quiet



- Powerful and Quiet operations could not be activated at the same time.
- Powerful and Quiet operations could be cancelled by pressing the respective button again.

Hint

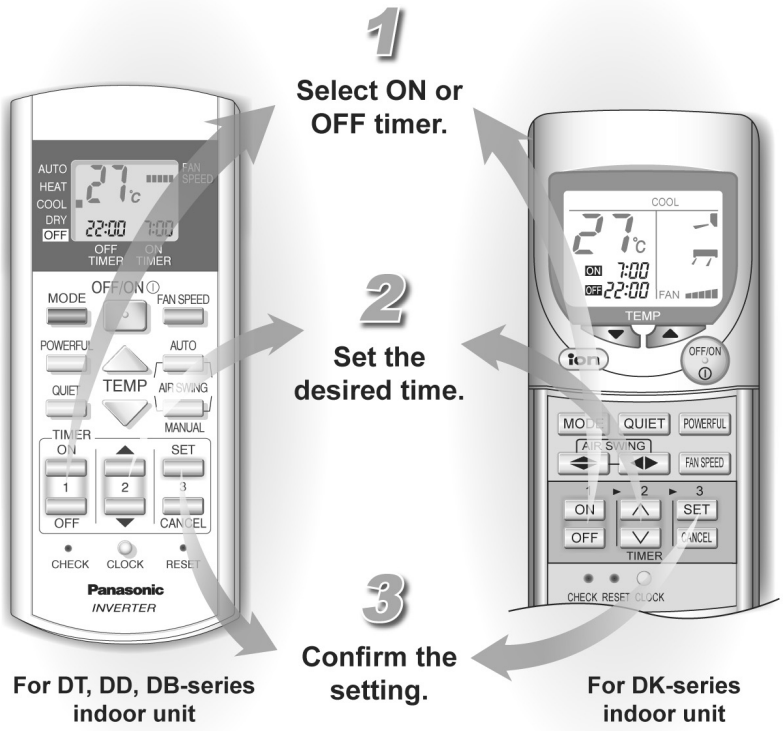
- If you wish to have the cool air blowing directly on you, set the airflow direction downward but not for an excessive length of time, as it may harm your health.

Troubleshooting

● Air conditioner does not cool or heat efficiently.	➤ Ensure the temperature has been set correctly. ➤ Ensure windows and doors have been closed properly. ➤ Ensure filters are cleaned or replaced when necessary. ➤ Ensure inlet and outlet vents of the units have not been obstructed.
● The unit cannot operate.	➤ Check either circuit breaker is tripped or timer is used correctly. ➤ Ensure “OFF” indicator does not shown on remote control.

HOW TO OPERATE

Timer



- Ensure the clock on the remote control has been set correctly.
- You could use the ON and OFF timers at the same time.
- To cancel either the ON or OFF timer, press ON / ON or OFF / OFF, then press CANCEL / CANCEL.

■ Operation Details

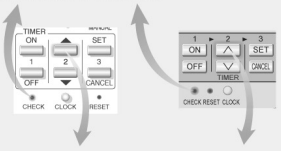
TIMER

- Use the ON timer to turn on the air conditioner at the desired time. This will give you a cooling or warming environment, e.g. when you return from work or wake up.
- When ON timer is set, operation will start up to 35 minutes before the actual set time.
- Use the OFF timer to stop the air conditioner operation at the desired time. This can save electricity while you are going out or sleeping.
- The set timer will repeat daily once it is set.
- If there is a power failure, you can press SET button to restore the previous setting once the power is resumed.
- If the timer is cancelled, you can restore the previous setting by pressing SET button.

CHECK

- Where there is error, the unit stops its operation and timer indicator blinks.

1. Press for 5 seconds.



2. Browse for respective error code, where “beep” sounds are heard.
3. Turn off the power supply and call authorized distributor.

Note:
Press the “RESET” button to quit checking.
Unit might be operated with limited function depending on error found.
(Operation starts, 4 “beep” sounds are heard.)

Hints

- Press CLOCK button more than 10 seconds to change the time format from 24 hours to AM/PM format.
- For your convenience, you could set the air conditioner to operate automatically by using both ON and OFF timer.

Troubleshooting

● TIMER indicator always on.	➤ Timer is activated and the setting will repeat itself daily.
● POWER indicator is blinking 60 minutes before ON timer is activated.	➤ The unit is determining the operation mode by sensing the room temperature. This happens when it has been set to AUTO operation mode.

■ Cleaning Instructions

- Do not use benzene, thinner or scouring powder.
- Use soaps or neutral household detergent (≃pH7) only.
- Do not use water with temperature higher than 40°C.

INDOOR UNIT

- Wipe the unit gently with a soft, dry cloth.

AIR FILTER

- It is recommended to clean the air filters once every 2 weeks.
- Purchase the replacement filter if it is damaged.
  Part no.: CWD001144

SUPER ALLERU-BUSTER

- It is recommended to clean the filter every 6 months.
- Replace the filter every 3 years or purchase the replacement filter if it is damaged.
  Part no.: CZ-SA13P

IONIZER

- It is recommended to clean the ionizer every 6 months.

■ Preparation for extended Non-operation

- Operate the unit for 2~3 hours using heating operation to dry the internal parts.
- Turn off the power supply.
- Remove the remote control batteries.

■ Pre-season Inspection

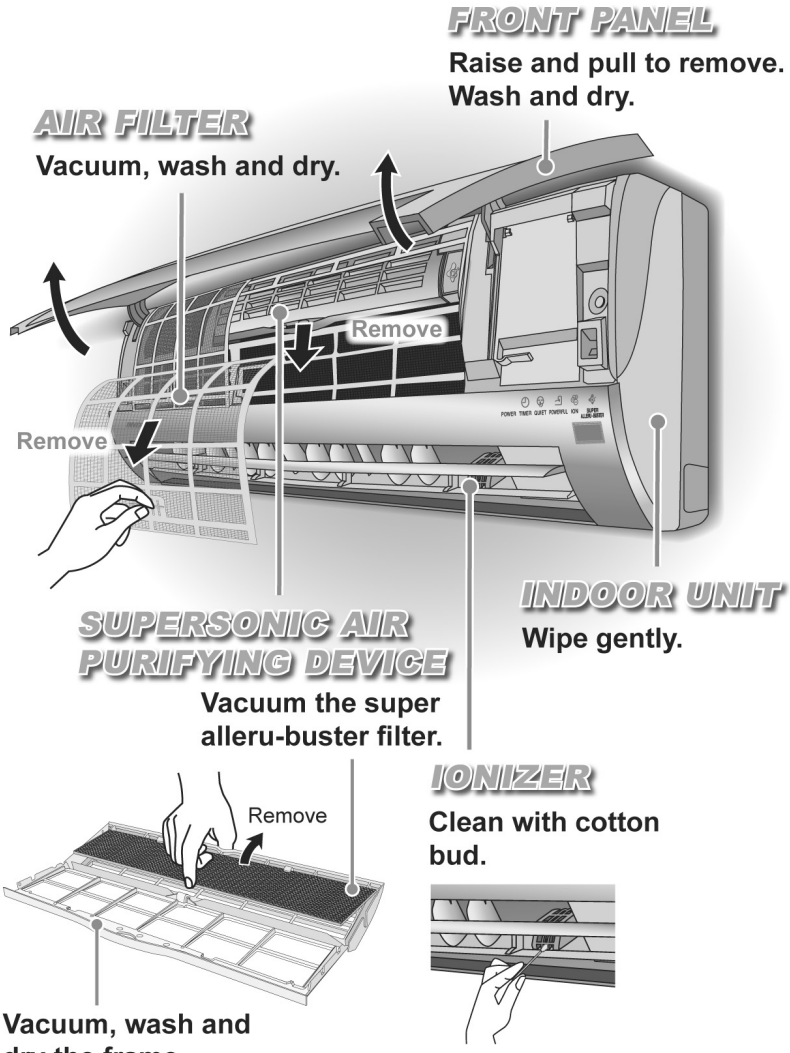
- This inspection is recommended before operating the air conditioner at every season.
- Check if the remote control batteries needed to be replaced.
- Ensure there is no obstruction at all air intake and outlet vents.
- After the start of operation for 15 minutes, it is normal if the temperature differences between air intake and outlet vents at indoor unit is:-

Operation	Temperature
Cooling	⩾ 8°C
Heating	⩾ 14°C

CARE & CLEANING

Switch off the power supply before cleaning

DK-series indoor unit



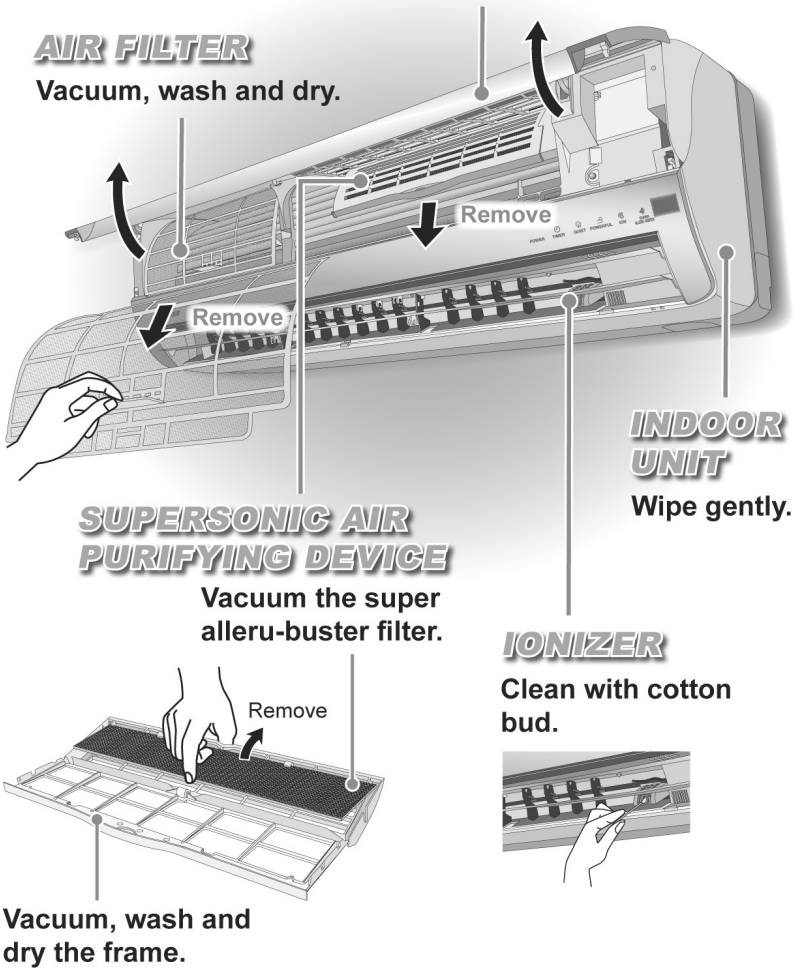
Hints

- Clean the filter regularly as dirty filters will cause unpurified air, low cooling or heating capacity, unpleasant smells and higher energy consumption.
- The unit will become dirty and the performance of the unit will decrease after used for several seasons. Please consult an authorized dealer to perform seasonal inspections in addition to regular cleaning.
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the power supply.

CARE & CLEANING

Switch off the power supply before cleaning

DK-series indoor unit



■ Cleaning Instructions

- Do not use benzene, thinner or scouring powder.
- Use soaps or neutral household detergent (≃pH7) only.
- Do not use water with temperature higher than 40°C.

INDOOR UNIT

- Wipe the unit gently with a soft, dry cloth.

AIR FILTER

- It is recommended to clean the air filters once every 2 weeks.
- Purchase the replacement filter if it is damaged.
  Part no.: CWD001137 (Left)
  CWD001138 (Right)

SUPER ALLERU-BUSTER

- It is recommended to clean the filter every 6 months.
- Replace the filter every 3 years or purchase the replacement filter if it is damaged.
  Part no.: CZ-SA13P

IONIZER

- It is recommended to clean the ionizer every 6 months.

■ Preparation for extended Non-operation

- Operate the unit for 2~3 hours using heating operation to dry the internal parts.
- Turn off the power supply.
- Remove the remote control batteries.

■ Pre-season Inspection

- This inspection is recommended before operating the air conditioner at every season.
- Check if the remote control batteries needed to be replaced.
- Ensure there is no obstruction at all air intake and outlet vents.
- After the start of operation for 15 minutes, it is normal if the temperature differences between air intake and outlet vents at indoor unit is:-

Operation	Temperature
Cooling	⩾ 8°C
Heating	⩾ 14°C

Hints

- Clean the filter regularly as dirty filters will cause unpurified air, low cooling or heating capacity, unpleasant smells and higher energy consumption.
- The unit will become dirty and the performance of the unit will decrease after used for several seasons. Please consult an authorized dealer to perform seasonal inspections in addition to regular cleaning.
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the power supply.

CARE & CLEANING

Switch off the power supply before cleaning

DT-series indoor unit



■ Cleaning Instructions

- Do not use benzene, thinner or scouring powder.
- Use soaps or neutral household detergent (≃pH7) only.
- Do not use water with temperature higher than 40°C.

INDOOR UNIT

- Wipe the unit gently with a soft, dry cloth.

AIR FILTER

- It is recommended to clean the air filters once every 6 weeks.
- Purchase the replacement filter if it is damaged.
  Part no.: CWD001088

■ Preparation for extended Non-operation

- Operate the unit for 2~3 hours using heating operation to dry the internal parts.
- Turn off the power supply.
- Remove the remote control batteries.

■ Pre-season Inspection

- This inspection is recommended before operating the air conditioner at every season.
- Check if the remote control batteries needed to be replaced.
- Ensure there is no obstruction at all air intake and outlet vents.
- After the start of operation for 15 minutes, it is normal if the temperature differences between air intake and outlet vents at indoor unit is:-

Operation	Temperature
Cooling	⩾ 8°C
Heating	⩾ 14°C

Hints

- Clean the filter regularly as dirty filters will cause unpurified air, low cooling or heating capacity, unpleasant smells and higher energy consumption.
- The unit will become dirty and the performance of the unit will decrease after used for several seasons. Please consult an authorized dealer to perform seasonal inspections in addition to regular cleaning.
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the power supply.

CARE & CLEANING

Switch off the power supply before cleaning

DB-series indoor unit



■ Cleaning Instructions

INDOOR UNIT

- Wipe the unit gently with a soft, dry cloth.

AIR FILTER

- It is recommended to clean the air filters once every 6 weeks.
- Purchase the replacement filter if it is damaged.
  Part no.: CWD001142

■ Preparation for extended Non-operation

- Operate the unit for 2~3 hours using heating operation to dry the internal parts.
- Turn off the power supply.
- Remove the remote control batteries.

■ Pre-season Inspection

- This inspection is recommended before operating the air conditioner at every season.
- Check if the remote control batteries needed to be replaced.
- Ensure there is no obstruction at all air intake and outlet vents.
- After the start of operation for 15 minutes, it is normal if the temperature differences between air intake and outlet vents at indoor unit is:-

Operation	Temperature
Cooling	⩾ 8°C
Heating	⩾ 14°C

Hints

- Clean the filter regularly as dirty filters will cause unpurified air, low cooling or heating capacity, unpleasant smells and higher energy consumption.
- The unit will become dirty and the performance of the unit will decrease after used for several seasons. Please consult an authorized dealer to perform seasonal inspections in addition to regular cleaning.
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the power supply.

13 Installation and Servicing Air Conditioner Using R410A

13.1. OUTLINE

13.1.1. About R410A Refrigerant

1. Converting air conditioners to R410A

Since it was declared in1974 that chlorofluorocarbons (CFC), hydro chlorofluorocarbons (HCFC) and other substances pose a destructive danger to the ozone layer in the earth's upper stratosphere (20 to 40 km above the earth), measures have been taken around the world to prevent this destruction.

The R22 refrigerant which has conventionally been used in ACs is an HCFC refrigerant and, therefore, possesses this ozone-destroying potential. International regulations (the Montreal Protocol on Ozone-Damaging Substances) and the domestic laws of various countries call for the early substitution of R22 by a refrigerant which will not harm the ozone layer.

- In ACs, the HFC refrigerant which has become the mainstream alternative is called R410A. Compared with R22, the pressure of R410A is approximately 1.6 times as high at the same refrigerant temperature, but the energy efficiency is about the same. Consisting of hydrogen (H), fluorine (F) and carbon (C), R410A is an HFC refrigerant. Another typical HFC refrigerant is R407C. While the energy efficiency of R407C is somewhat inferior to that of R410A, it offers the advantage of having pressure characteristics which are about the same as those of R22, and is used mainly in packaged ACs.

2. The characteristics of HFC (R410A) refrigerants

a. Chemical characteristics

The chemical characteristics of R410A are similar to those of R22 in that both are chemically stable, non-flammable refrigerants with low toxicity.

However, just like R22, the specific gravity of R410A gas is heavier than that of air. Because of this, it can cause an oxygen deficiency if it leaks into a closed room since it collects in the lower area of the room. It also generates toxic gas when it is directly exposed to a flame, so it must be used in a well ventilated environment where it will not collect.

Table 1 Physical comparison of R410A and R22

	R410A	R22
Composition (wt%)	R32/R125 (50/50)	R22 (100)
Boiling point (°C)	-51.4	-40.8
Vaporizing pressure (25°C)	1.56 Mpa (15.9 kgf/cm^2)	0.94 Mpa (9.6 kgf/cm^2)
Saturated vapor density	64.0 kg/m^3	44.4 kg/m^3
Flammability	Non-flammable	Non-flammable
Ozone-destroying point (ODP)	0	0.055
Global-warming point (GWP)	1730	1700

b. Compositional change (pseudo-azeotropic characteristics)

R410A is a pseudo-azeotropic mixture comprising the two components R32 and R125. Multi-component refrigerants with these chemical characteristics exhibit little compositional change even from phase changes due to vaporization (or condensation), which means that there is little change in the circulating refrigerant composition even when the refrigerant leaks from the gaseous section of the piping.

Accordingly, R410A can be handled in almost the same manner as the single-component refrigerant R22. However, when charging, because there is a slight change in composition between the gas phase and the liquid phase inside a cylinder or other container, charging should basically begin with the liquid side.

c. Pressure characteristics

As seen in Table 2, the gas pressure of R410A is approximately 1.6 times as high as that of R22 at the same refrigerant temperature, which means that special R410A tools and materials with high-pressure specifications must be used for all refrigerant piping work and servicing.

Table 2 Comparison of R410A and R22 saturated vapor density

Unit: MPa

Refrigerant Temperature (°C)	R410A	R22
-20	0.30	0.14
0	0.70	0.40
20	1.35	0.81
40	2.32	1.43
60	3.73	2.33
65	4.15	2.60

d. R410A refrigerating machine oil

Conventionally, mineral oil or a synthetic oil such as alkylbenzene has been used for R22 refrigerating machine oil. Because of the poor compatibility between R410A and conventional oils like mineral oil, however, there is a tendency for the refrigerating machine oil to collect in the refrigerating cycle. For this reason, polyester and other synthetic oils which have a high compatibility with R410A are used as refrigerating machine oil.

Because of the high hygroscopic property of synthetic oil, more care must be taken in its handling than was necessary with conventional refrigerating machine oils. Also, these synthetic oils will degrade if mixed with mineral oil or alkylbenzene, causing clogging in capillary tubes or compressor malfunction. Do not mix them under any circumstances.

13.1.2. Safety Measures When Installing/Servicing Refrigerant Piping

Cause the gas pressure of R410A is approximately 1.6 times as high as that of R22, a mistake in installation or servicing could result in a major accident. It is essential that you use R410A tools and materials, and that you observe the following precautions to ensure safety.

1. Do not use any refrigerant other than R410A in ACs that have been used with R410A.
2. If any refrigerant gas leaks while you are working, ventilate the room. Toxic gas may be generated if refrigerant gas is exposed to a direct flame.
3. When installing or transferring an AC, do not allow any air or substance other than R410A to mix into the refrigeration cycle. If it does, the pressure in the refrigeration cycle can become abnormally high, possibly causing an explosion and/or injury.
4. After finishing the installation, check to make sure there is no refrigerant gas leaking.
5. When installing or transferring an AC, follow the instructions in the installation instructions carefully. Incorrect installation can result in an abnormal refrigeration cycle or water leakage, electric shock, fire, etc.
6. Do not perform any alterations on the AC unit under any circumstances. Have all repair work done by a specialist. Incorrect repairs can result in a water leakage, electric shock, fire, etc.

13.2. TOOLS FOR INSTALLING/SERVICING REFRIGERANT PIPING

13.2.1. Necessary Tools

In order to prevent an R410A AC from mistakenly being charged with any other refrigerant, the diameter of the 3-way valve service port on the outdoor unit has been changed. Also, to increase its ability to withstand pressure, the opposing dimensions have been changed for the refrigerant pipe flaring size and flare nut. Accordingly, when installing or servicing refrigerant piping, you must have both the R410A and ordinary tools listed below.

Table 3 Tools for installation, transferring or replacement

Type of work	Ordinary tools	R410A tools
Flaring	Flaring tool (clutch type), pipe cutter, reamer	Copper pipe gauge for clearance Adjustment, flaring tool (clutch type)*1)
Bending, connecting pipes	Torque wrench (nominal diameter 1/4, 3/8,1/2). Fixed spanner (opposing sides 12 mm, 17 mm, 19 mm). Adjustable wrench, Spring bender	
Air purging	Vacuum pump. Hexagonal wrench (opposing sides 4 mm)	Manifold gauge, charging hose, vacuum pump adaptor
Gas leak inspection	Gas leak inspection fluid or soapy water	Electric gas leak detector for HFC refrigerant*2)

*1) You can use the conventional (R22) flaring tool. If you need to buy a new tool, buy the R410A type.

*2) Use when it is necessary to detect small gas leaks.

For other installation work, you should have the usual tools, such as screwdrivers (+,-), a metal-cutting saw, an electrical drill, a hole core drill (65 or 70 dia.), a tape measure, a level, a thermometer, a clamp meter, an insulation tester, a voltmeter, etc.

Table 4 Tools for serving

Type of work	Ordinary tools	R410A tools
Refrigerant charging		Electronic scale for refrigerant charging. Refrigerant cylinder. Charging orifice and packing for refrigerant cylinder
Brazing (Replacing refrigerating cycle part*1)	Nitrogen blow set (be sure to use nitrogen blowing for all brazing), and brazing machine	

*1) Always replace the dryer of the outdoor unit at the same time. The replacement dryer is wrapped in a vacuum pack. Replace it last among the refrigerating cycle parts. Start brazing as soon as you have opened the vacuum pack, and begin the vacuuming operation within 2 hours.

13.2.2. R410A Tools

1. Copper tube gauge for clearance adjustment
   (used when flaring with the conventional flaring tool (clutch type))
   - This gauge makes it easy to set the clearance for the copper tube to 1.0-1.5 mm from the clamp bar of the flaring tool.

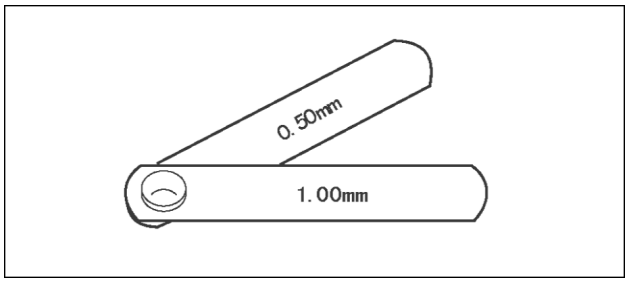


Fig. 1 Copper tube gauge for clearance adjustment

2. Flaring tool (clutch type)
   - In the R410A flaring tool, the receiving hole for the clamp bar is enlarged so the clearance from the clamp bar can be set to 0-0.5 mm, and the spring inside the tool is strengthened to increase the strength of the pipe-expanding torque. This flaring tools can also be used with R22 piping, so we recommend that you select it if you are buying a new flaring tool.

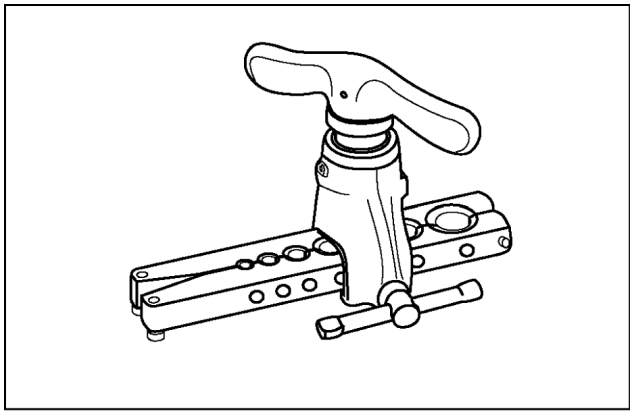


Fig. 2 Flaring tool (clutch type)

3. Torque wrenches

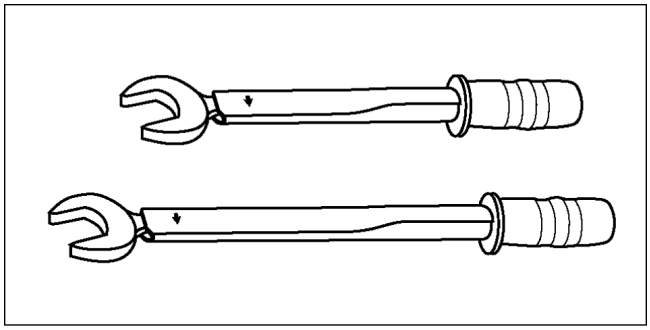


Fig. 3 Torque wrenches

Table 5

	Conventional wrenches	R410A wrenches
For 1/4 (opposite side x torque)	17 mm x 18 N.m (180 kgf.cm)	17 mm x 18 N.m (180 kgf.cm)
For 3/8 (opposite side x torque)	22 mm x 42 N.m (420 kgf.cm)	22 mm x 42 N.m (420 kgf.cm)
For 1/2 (opposite side x torque)	24 mm x 55 N.m (550 kgf.cm)	26 mm x 55 N.m (550 kgf.cm)

4. Manifold gauge
   - Because the pressure is higher for the R410A type, the conventional type cannot be used.

Table 6 Difference between R410A and conventional high/low-pressure gauges

	Conventional gauges	R410A gauges
High-pressure gauge (red)	-76 cmHg - 35 kgf/cm^3	-0.1 - 5.3 Mpa -76 cmHg - 53 kgf/cm^3
Low-pressure gauge (blue)	-76 cmHg - 17 kgf/cm^3	-0.1 - 3.8 Mpa -76 cmHg - 38 kgf/cm^3

   - The shape of the manifold ports has been changed to prevent the possibility of mistakenly charging with another type of refrigerant.

Table 7 Difference between R410A and conventional manifold port size

	Conventional gauges	R410A gauges
Port size	7/16 UNF 20 threads	1/2 UNF 20 threads

5. Charging hose

- The pressure resistance of the charging hose has been raised to match the higher pressure of R410A. The hose material has also been changed to suit HFC use, and the size of the fitting has been changed to match the manifold ports.

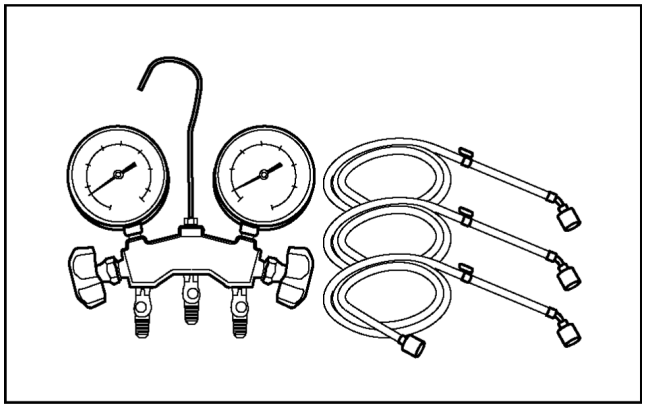


Fig. 4 Manifold gauge charging hose

Table 8 Difference between R410A and conventional charging hoses

		Conventional hoses	R410A hoses
Pressure resistance	Working pressure	3.4 MPa (35 kgf/cm^3)	5.1 MPa (52 kgf/cm^3)
	Bursting pressure	17.2 MPa (175 kgf/cm^3)	27.4 MPa (280 kgf/cm^3)
Material		NBR rubber	HNBR rubber Nylon coating inside

6. Vacuum pump adaptor

- When using a vacuum pump for R410A, it is necessary to install an electromagnetic valve to prevent the vacuum pump oil from flowing back into the charging hose. The vacuum pump adaptor is installed for that purpose. If the vacuum pump oil (mineral oil) becomes mixed with R410A, it will damage the unit.

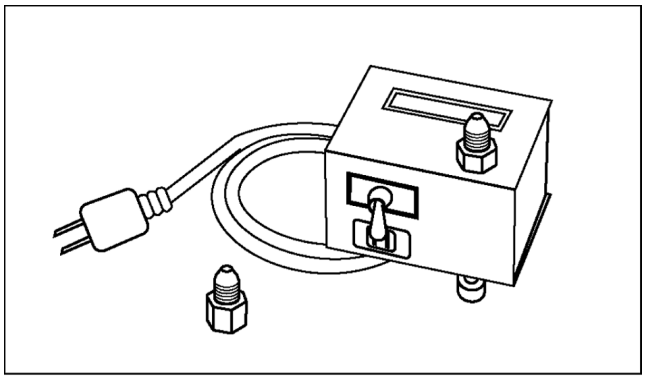


Fig. 5 Vacuum pump adaptor

7. Electric gas leak detector for HFC refrigerant

- The leak detector and halide torch that were used with CFC and HCFC cannot be used with R410A (because there is no chlorine in the refrigerant).
- The present R134a leak detector can be used, but the detection sensitivity will be lower (setting the sensitivity for R134a at 1, the level for R410A will drop to 0.6).
- For detecting small amounts of gas leakage, use the electric gas leak detector for HFC refrigerant. (Detection sensitivity with R410A is about 23 g/year).

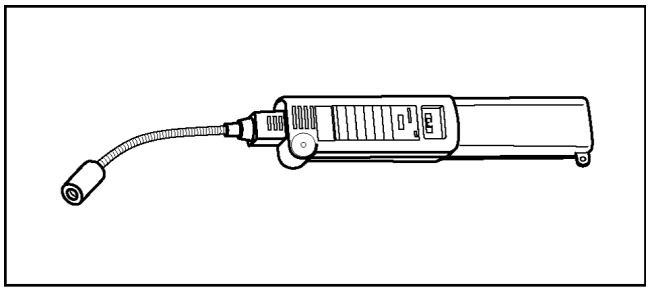


Fig. 6 Electric gas leak detector for HFC refrigerant

8. Electronic scale for refrigerant charging
   - Because of the high pressure and fast vaporizing speed of R410A, the refrigerant cannot be held in a liquid phase inside the charging cylinder when charging is done using the charging cylinder method, causing bubbles to form in the measurement scale glass and making it difficult to see the reading. (Naturally, the conventional R22 charging cylinder cannot be used because of the differences in the pressure resistance, scale gradation, connecting port size, etc.)
   - The electronic scale has been strengthened by using a structure in which the weight detector for the refrigerant cylinder is held by four supports. It is also equipped with two connection ports, one for R22 (7/16 UNF, 20 threads) and one for R410A (1/2 UNF, 20 threads), so it can also be used for conventional refrigerant charging.
   - There are two types of electronic scales, one for 10-kg cylinders and one for 20-kg cylinders. (The 10-kg cylinder is recommended.)

     Refrigerant charging is done manually by opening and closing the valve.

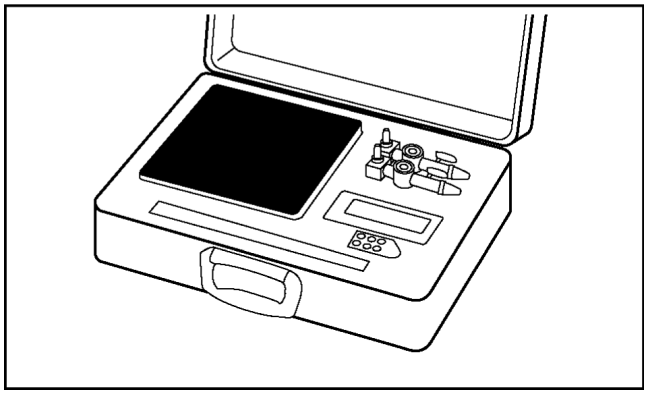


Fig. 7 Electronic scale for refrigerant charging

9. Refrigerant cylinders
   - The R410A cylinders are labeled with the refrigerant name, and the coating color of the cylinder protector is pink, which is the color stipulated by ARI of the U.S.
   - Cylinders equipped with a siphon tube are available to allow the cylinder to stand upright for liquid refrigerant charging.

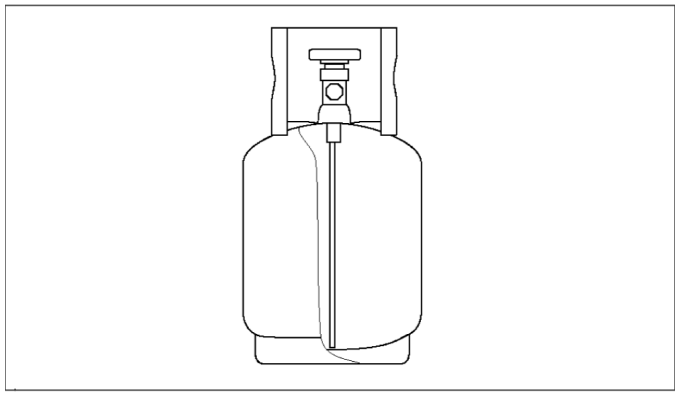


Fig. 8 Refrigerant cylinders

10. Charging orifice and packing for refrigerant cylinders
    - The charging orifice must match the size of the charging hose fitting (1/2 UNF, 20 threads).
    - The packing must also be made of an HFC-resistant material.

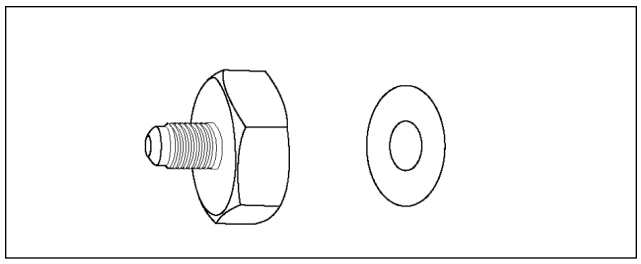


Fig. 9 Charging orifice and packing

13.2.3. R410A Tools Which Are Usable for R22 Models

Table 9 R410A tools which are usable for R22 models

	R410A tools	Usable for R22 models
(1)	Copper tube gauge for clearance adjustment	OK
(2)	Flaring tool (clutch type)	OK
(3)	Manifold gauge	NG
(4)	Charging hose	NG
(5)	Vacuum pump adaptor	OK
(6)	Electric gas leak detector for HFC refrigerant	NG
(7)	Electronic scale for refrigerant charging	OK
(8)	Refrigerant cylinder	NG
(9)	Charging orifice and packing for refrigerant cylinder	NG

13.3. REFRIGERANT PIPING WORK

13.3.1. Piping Materials

It is recommended that you use copper and copper alloy jointless pipes with a maximum oil adherence of 40 mg/10m. Do not use pipes that are crushed, deformed, or discolored (especially the inside surface). If these inferior pipes are used, impurities may clog the expansion valves or capillaries.
Because the pressure of ACs using R410A is higher than those using R22, it is essential that you select materials that are appropriate for these standards.
The thickness of the copper tubing used for R410A is shown in Table 10. Please be aware that tubing with a thickness of only 0.7 mm is also available on the market, but this should never be used.

Table 10 Copper tube thickness (mm)

Soft pipe		Thickness (mm)	
Nominal diameter	Outside diameter (mm)	R410A	(Reference) R22
1/4	6.35	0.80	0.80
3/8	9.52	0.80	0.80
1/2	12.7	0.80	0.80

13.3.2. Processing and Connecting Piping Materials

When working with refrigerant piping, the following points must be carefully observed: no moisture od dust must be allowed to enter the piping, and there must be no refrigerant leaks.

1. Procedure and precautions for flaring work
   a. Cut the pipe
      Use a pipe cutter, and cut slowly so the pipe will not be deformed.
   b. Remove burrs and clean shavings from the cut surface
      If the shape of the pipe end is poor after removing burrs, or if shavings adhere to the flared area, it may lead to refrigerant leaks.
      To prevent this, turn the cut surface downward and remove burrs, then clean the surface, carefully.
   c. Insert the flare nut (be sure to use the same nut that is used on the AC unit)
   d. Flaring
      Check the clamp bar and the cleanliness of the copper pipe.
      Be sure to use the clamp bar to do the flaring with accuracy. Use either an R410A flaring tool, or a conventional flaring tool. Flaring tools come in different sizes, so be sure to check the size before using. When using a conventional flaring tool, use the copper pipe gauge for clearance adjustment, etc., to ensure the correct A dimension (see Fig. 10)

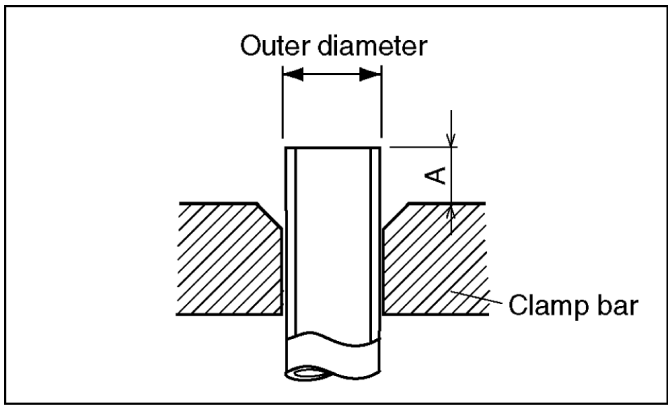


Fig. 10 Flaring dimensions

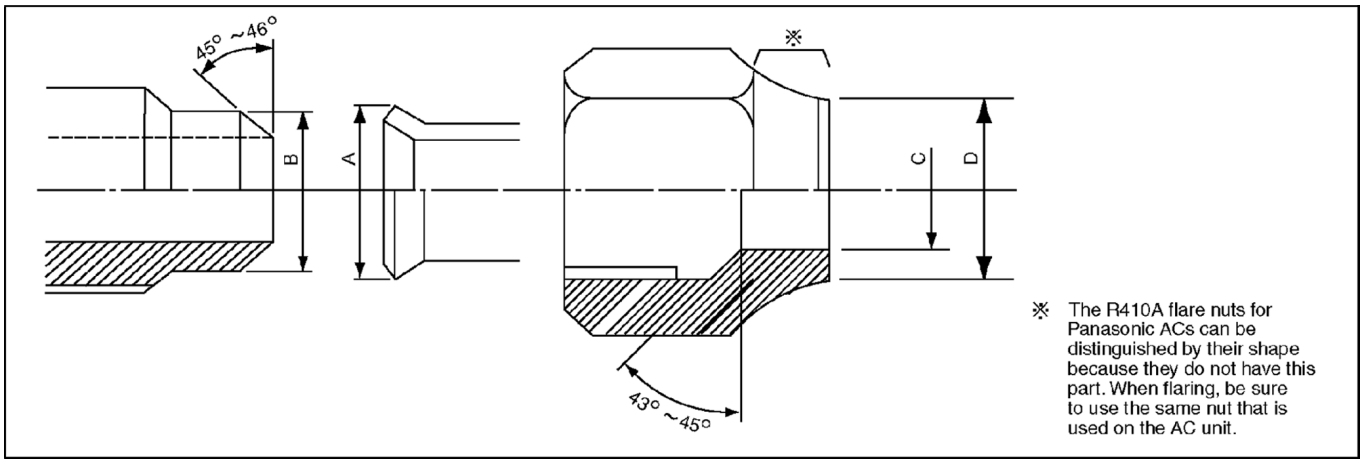


Fig. 11 Relation between the flare nut structure and flaring tool end

Table 11 R410A flaring dimensions

Nominal diameter	Outside diameter (mm)	Wall thickness (mm)	A (mm)		
			R410A flaring tool, clutch type	Conventional flaring tool	
				Clutch type	Wing-nut type
1/4	6.35	0.8	0 - 0.5	1.0 - 1.5	1.5 - 2.0
3/8	9.52	0.8	0 - 0.5	1.0 - 1.5	1.5 - 2.0
1/2	12.70	0.8	0 - 0.5	1.0 - 1.5	2.0 - 2.5

Table 12 R22 flaring dimensions

Nominal diameter	Outside diameter (mm)	Wall thickness (mm)	A (mm)		
			R410A flaring tool, clutch type	Conventional flaring tool	
				Clutch type	Wing-nut type
1/4	6.35	0.8	0 - 0.5	0.5 - 1.0	1.0 - 1.5
3/8	9.52	0.8	0 - 0.5	0.5 - 1.0	1.0 - 1.5
1/2	12.70	0.8	0 - 0.5	0.5 - 1.0	1.5 - 2.0

Table 13 R410A flare and flare nut dimensions Unit: mm

Nominal diameter	Outside diameter (mm)	Wall thickness (mm)	A +0, -0.4	B dimension	C dimension	D dimension	Flare nut width
1/4	6.35	0.8	9.1	9.2	6.5	13	17
3/8	9.52	0.8	13.2	13.5	9.7	20	22
1/2	12.70	0.8	16.6	16.0	12.9	23	26

Table 14 R22 flare and flare nut dimensions Unit: mm

Nominal diameter	Outside diameter (mm)	Wall thickness (mm)	A +0, -0.4	B dimension	C dimension	D dimension	Flare nut width
1/4	6.35	0.8	9.0	9.2	6.5	13	17
3/8	9.52	0.8	13.0	13.5	9.7	20	22
1/2	12.70	0.8	16.2	16.0	12.9	20	24

2. Procedure and precautions for flare connection

a. Check to make sure there is no scratches, dust, etc., on the flare and union.

b. Align the flared surface with the axial center of the union.

c. Use a torque wrench, and tighten to the specified torque. The tightening torque for R410A is the same as the conventional torque value for R22. Be careful, because if the torque is too weak, it may lead to a gas leak. If it is too strong, it may split the flare nut or make it impossible to remove the flare nut.

Table 15 R410A tightening torque

Nominal diameter	Outside diameter (mm)	Tightening torque N.m (kgf.cm)	Torque wrench tightening torque N.m (kgf.cm)
1/4	6.35	14 - 18 (140 - 180)	18 (180)
3/8	9.52	33 - 42 (330 -420)	42 (420)
1/2	12.70	55 (550)	55 (550)

13.3.3. Storing and Managing Piping Materials

1. Types of piping and their storage
   The following is a general classification of the refrigerant pipe materials used for ACs.

Refrigerant pipe materials		Common names
	Pipes with heat insulating covers	Unflared: Sheathed copper pipes
	Pipes without heat insulating cover (copper pipes)	Unflared: Copper pipes

   Because the gas pressure of R410A is approximately 1.6 times as high as that of R22, copper pipes with the thickness shown in Table 10, and with minimal impurities must be used. Care must also be taken during storage to ensure that pipes are not crushed, deformed, or scratched, and that no dust, moisture or other substance enters the pipe interior. When storing sheathed copper pipes or plain copper pipes, seal the openings by pinching or taping them securely.

2. Makings and management
   a. Sheathed copper pipes and copper-element pipes
      When using these pipes, check to make sure that they are the stipulated thickness. For flare nuts, be sure to used the same nut that is used on the AC unit.

   b. Copper pipes
      Use only copper pipes with the thickness given in table 10, and with minimal impurities. Because the surface of the pipe is exposed, you should take special care, and also take measures such as marking the pipes to make sure they are easily distinguished from other piping materials, to prevent mistaken use.

3. Precautions during refrigerant piping work
   Take the following precautions on-site when connecting pipes. (Keep in mind that the need to control the entry of moisture and dust is even more important that in conventional piping).
   a. Keep the open ends of all pipes sealed until connection with AC equipment is complete.
   b. Take special care when doing piping work on rainy days. The entering of moisture will degrade the refrigerating machine oil, and lead to malfunctions in the equipment.
   c. Complete all pipe connections in as short a time as possible. If the pipe must be left standing for a long time after removing the seal, it must be thoroughly purged with nitrogen, or dried with a vacuum pump.

13.4. INSTALLATION, TRANSFERRING, SERVICING

13.4.1. Inspecting Gas Leaks with a Vacuum Pump for New Installations (Using New Refrigerant Piping)

1. From the viewpoint of protecting the global environment, please do not release refrigerant into the atmosphere.
   a. Connect the projecting side (pin-pushing side) of the charging hose for the manifold gauge to the service port of the 3-way valve. (1)
   b. Fully open the handle Lo of the manifold gauge and run the vacuum pump. (2) (If the needle of the low-pressure gauge instantly reaches vacuum, re-check step a).)
   c. Continue the vacuum process for at least 15 minutes, then check to make sure the low-pressure gauge has reached -0.1 MPa (-76 cmHg). Once the vacuum process has finished, fully close the handle Lo of the manifold gauge and stop the vacuum pump operation, then remove the charging hose that is connected to the vacuum pump adaptor. (Leave the unit in that condition for 1-2 minutes, and make sure that the needle of the manifold gauge does not return.) (2) and (3)
   d. Turn the valve stem of the 2-way valve 90° counter-clockwise to open it, then, after 10 seconds, close it and inspect for a gas leak (4)
   e. Remove the charging hose from the 3-way valve service port, then open both the 2-way valve and 3-way valve. (1) (4) (Turn the valve stem in the counter-clockwise direction until it gently makes contact. Do not turn it forcefully).
   f. Tighten the service port cap with a torque wrench (18 N.m (1.8 kgf.m)). (5) Then tighten the 2-way valve and 3-way valve caps with a torque wrench (42 N.m (4.2 kgf.m)) or (55 N.m (5.5 kgf.m)). (6)
   g. After attaching each of the caps, inspect for a gas leak around the cap area. (5) (6)

Precautions

- Be sure to read the instructions for the vacuum pump, vacuum pump adaptor and manifold gauge prior to use, and follow the instructions carefully.
- Make sure that the vacuum pump is filled with oil up to the designated line on the oil gauge.
- The gas pressure back flow prevention valve on the charging hose is generally open during use. When you are removing the charging hose from the service port, it will come off more easily if you close this valve.

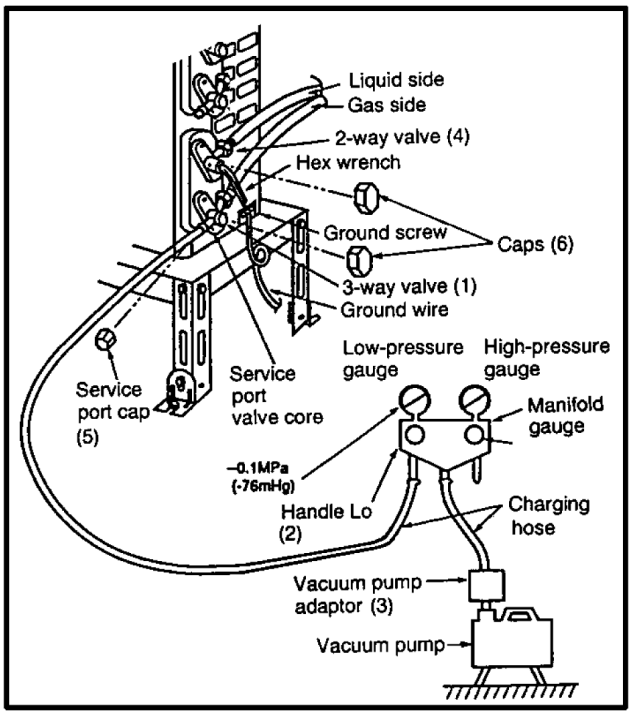


Fig. 12 Vacuum pump air purging configuration

13.4.2. Transferring (Using New Refrigerant Piping)

1. Removing the unit
   a. Collecting the refrigerant into the outdoor unit by pumping down
      The refrigerant can be collected into the outdoor unit (pumping down) by pressing the TEST RUN button, even when the temperature of the room is low.
      - Check to make sure that the valve stems of the 2-way valve and 3-way valve have been opened by turning them counter-clockwise. (Remove the valve stem caps and check to see that the valve stems are fully opened position. Always use a hex wrench (with 4-mm opposing sides) to operate the valve stems.)
      - Press the TEST RUN button on the indoor unit, and allow preliminary operation for 5-6 minutes. (TEST RUN mode)
      - After stopping the operation, let the unit sit for about 3 minutes, then close the 2-way valve by turning the valve stem in the clockwise direction.
      - Press the TEST RUN button on the indoor unit again, and after 2-3 minutes of operation, turn the valve stem of the 3-way valve quickly in the clockwise direction to close it, then stop the operation.
      - Tighten the caps of the 2-way valve and 3-way valve to the stipulated torque.
      - Remove the connection pipes (liquid side and gas side).
   b. Removing the indoor and outdoor units
      - Disconnect the pipes and connecting electric cables from between the indoor and outdoor units.
      - Put capped flare nuts onto all of the pipe connections of the indoor and outdoor units, to make sure no dust or other foreign matter enters.
      - Remove the indoor and outdoor units.
2. Installing the unit
   Install the unit using new refrigerant piping. Follow the instructions in section 4.1 to evacuate the pipes connecting the indoor and outdoor units, and the pipes of the indoor unit, and check for gas leaks.

13.4.3. AC Units Replacement (Using Existing Refrigerant Piping)

When replacing an R410A AC unit with another R410A AC unit, you should re-flare the refrigerant piping. Even though the replacement AC unit uses the R410A, problems occur when, for example, either the AC unit maker or the refrigerating machine oil is different.
When replacing an R22 AC unit with an R410A AC unit, the following checks and cleaning procedures are necessary but are difficult to do because of the chemical characteristics of the refrigerating machine oil (as described in items c) and d) of section **About R410A Refrigerant**). In this case, you should use new refrigerant piping rather than the existing piping.

1. Piping check
   Because of the different pressure characteristics of R22 and R410A, the design pressure for the equipment is 1.6 times different. The wall thickness of the piping must comply with that shown in Table 10, but this is not easy to check. Also, even if the thickness is correct, there may be flattened or bent portions midway through the piping due to sharp curves. Buried sections of the piping also cannot be checked.
2. Pipe cleaning
   A large quantity of refrigerating machine oil (mineral oil) adheres to existing pipes due to the refrigeration cycle circulation. If the pipes are used just as they are for the R410A cycle, the capacity will be lowered due to the incompatibility of this oil with the R410A, or irregularities may occur in the refrigeration cycle. For this reason, the piping must be thoroughly cleaned, but this is difficult with the present technology.

13.4.4. Refrigerant Compatibility (Using R410A Refrigerant in R22 ACs and Vice Versa)

Do not operate an existing R22 AC with the new R410A refrigerant. Doing so would result in improper functioning of the equipment or malfunction, and might lead to a major accident such as an explosion in the refrigeration cycle. Similarly, do not operate an R410A AC with R22 refrigerant. The chemical reaction between the refrigerating machine oil used in R410A ACs and the chlorine that is contained in R22 would cause the refrigerating machine oil to degrade and lead to malfunction.

13.4.5. Recharging Refrigerant During Servicing

When recharging is necessary, insert the specified amount of new refrigerant in accordance with the following procedure.

1. Connect the charging hose to the service port of the outdoor unit.
2. Connect the charging hose to the vacuum pump adaptor. At this time, fully open the 2-way valve and 3-way valve.
3. Fully open the handle Lo of the manifold gauge, turn on the power of the vacuum pump and continue the vacuum process for at least one hour.
4. Confirm that the low pressure gauge shows a reading of -0.1 Mpa (-76 cmHg), then fully close the handle Lo, and turn off the

vacuum pump. Wait for 1-2 minutes, then check to make sure that the needle of the Low pressure gauge has not returned. See Fig. 13 for the remaining steps of this procedure.

5. Set the refrigerant cylinder onto the electronic scale, then connect the hose the cylinder and to the connection port for the electronic scale. (1)(2)

   Precaution:

   Be sure to set up the cylinder for liquid charging. If you use a cylinder equipped with a siphon tube, you can charge the liquid without having to turn the cylinder around

6. Remove the charging hose of the manifold gauge from the vacuum pump adaptor, and connect it to the connection port of the electronic scale. (2)(3)
7. Open the valve of the refrigerant cylinder, then open the charging valve slightly and close it. Next, press the check valve of the manifold gauge and purge the air. (2)(4) (Watch the liquid refrigerant closely at this point.)
8. After adjusting the electronic scale to zero, open the charging valve, then open the valve Lo of the manifold gauge and charge with the liquid refrigerant. (2)(5) (Be sure to read the operating instructions for the electronic scale.)
9. If you cannot charge the stipulated amount, operate the unit in the cooling mode while charging a little of the liquid at a time (about 150 g/time as a guideline). If the charging amount is insufficient from one operation, wait about one minute, then use the same procedure to do the liquid charging again.

   Precaution:

   Never use the gas side to allow a larger amount of liquid refrigerant to be charged while operating the unit.

10. Close the charging valve, and after charging the liquid refrigerant inside the charging hose, fully close the valve Lo of the manifold gauge, and stop the operation of the unit. (2)(5)
11. Quickly remove the charging hose from the service port. (6) If you stop midway through, the refrigerant that is in the cycle will be discharged.
12. After putting on the caps for the service port and operating valve, inspect around the caps for a gas leak. (6)(7)

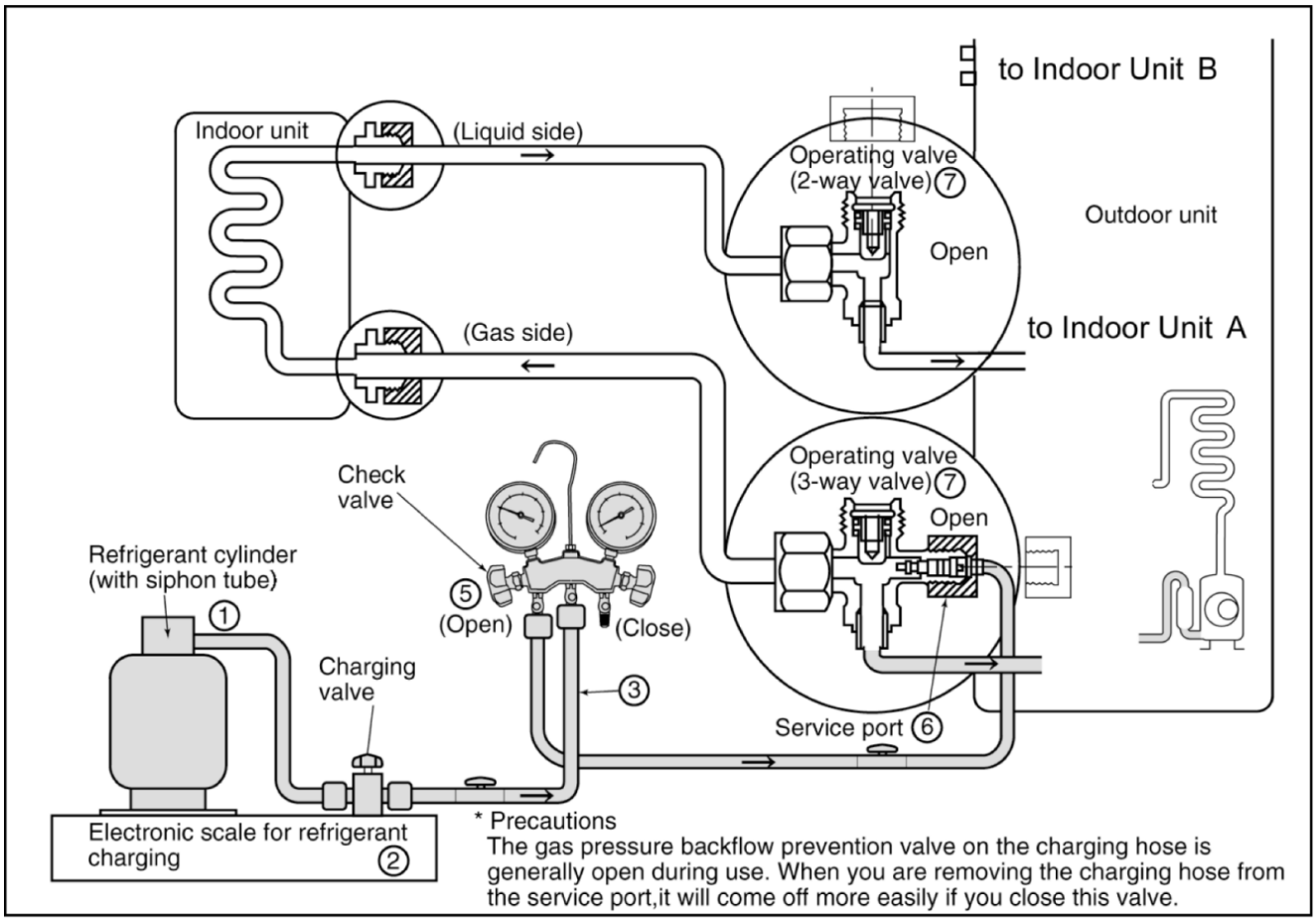


Fig. 13 Re-charging refrigerant

13.4.6. Brazing

As brazing requires sophisticated techniques and experiences, it must be performed by a qualified person.
In order to prevent the oxide film from occurring in the pipe interior during brazing, it is effective to proceed with brazing while letting dry nitrogen gas (N_2) flow.

<Brazing Method for Preventing Oxidation>

1. Attach a reducing valve to the nitrogen gas cylinder.
2. Apply a seal onto the clearance between the piping and inserted pipe for the nitrogen gas in order to prevent the nitrogen gas from flowing backward.
3. When the nitrogen gas is flowing, be sure to keep the piping end open.
4. Adjust the flow rate of nitrogen gas so that it is lower than 0.05 m^3/h, or 0.02 MPa (0.2 kgf/cm^2) by means of the reducing valve.
5. After taking the steps above, keep the nitrogen gas flowing until the piping cools down to a certain extent (i.e. temperature at which pipes are touchable with finger).
6. Completely remove the flux after brazing.

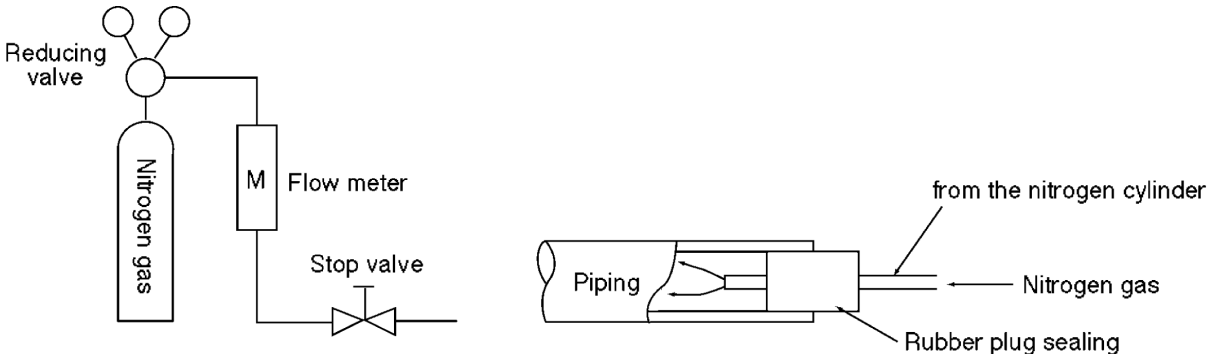


Fig. 14 Prevention of Oxidation during Brazing

Cautions during brazing

1. General Cautions
   a. The brazing strength should be high as required.
   b. After operation, airtightness should be kept under pressurized condition.
   c. During brazing do not allow component materials to become damaged due to overheating.
   d. The refrigerant pipe work should not become blocked with scale or flux.
   e. The brazed part should not restrict the flow in the refrigerant circuit.
   f. No corrosion should occur from the brazed part.
2. Prevention of Overheating

   Due to heating, the interior and exterior surfaces of treated metal may oxidize. Especially, when the interior of the refrigerant circuit oxidizes due to overheating, scale occurs and stays in the circuit as dust, thus exerting a fatally adverse effect. So, make brazing at adequate brazing temperature and with minimum of heating area.
3. Overheating Protection

   In order to prevent components near the brazed part from overheating damage or quality deterioration due to flame or heat, take adequate steps for protection such as (1) by shielding with a metal plate, (2) by using a wet cloth, and (3) by means of heat absorbent.
4. Movement during Brazing

   Eliminate all vibration during brazing to protect brazed joints from cracking and breakage.
5. Oxidation Preventative

   In order to improve the brazing efficiency, various types of antioxidant are available on the market. However, the constituents of these are widely varied, and some are anticipated to corrode the piping materials, or adversely affect HFC refrigerant, lubricating oil, etc. Exercise care when using an oxidation preventive.

13.4.7. Servicing Tips

The drier must also be replaced whenever replacing the refrigerant cycle parts. Replacing the refrigerant cycle parts first before replacing the drier. The drier is supplied in a vacuum pack. Perform brazing immediately after opening the vacuum pack, and then start the vacuum within two hours. In addition, the drier also needs to be replaced when the refrigerant has leaked completely. (Applicable for drier model only.)

14 Disassembly of Parts

14.1. Wall Type

14.1.1. Indoor Control Board Removal Procedures

1. Remove the Front Grille.

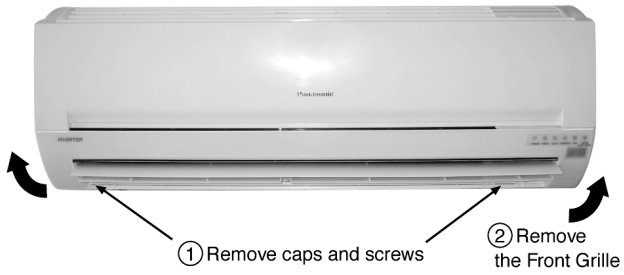


Fig. 1

2. Remove the Indoor Control Board.

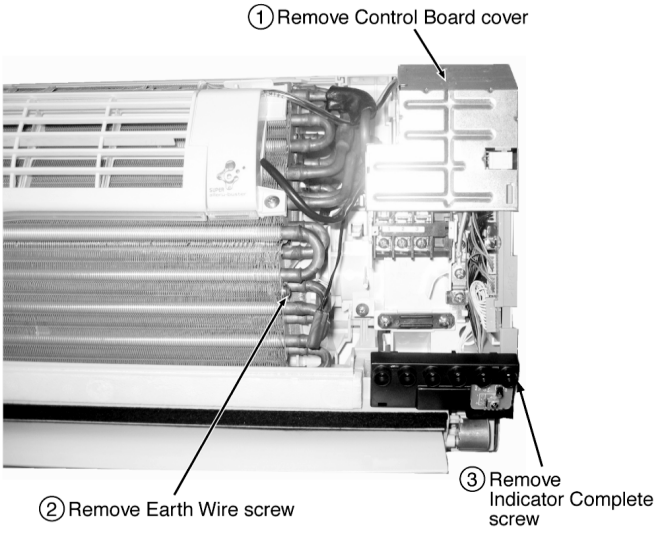


Fig. 2

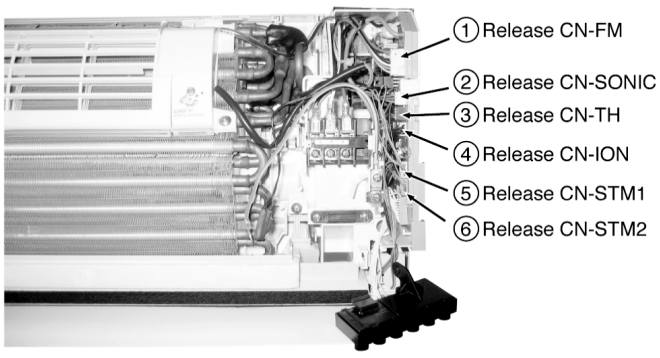


Fig. 3



Fig. 4

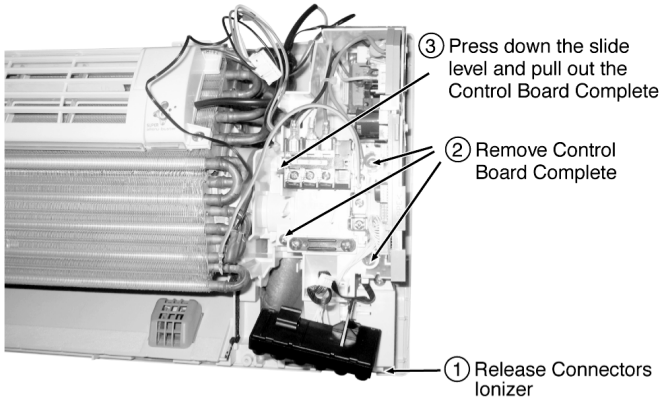


Fig. 5

14.1.2. Electronic Controller Removal Procedures

1. Remove Main Electronic Controller

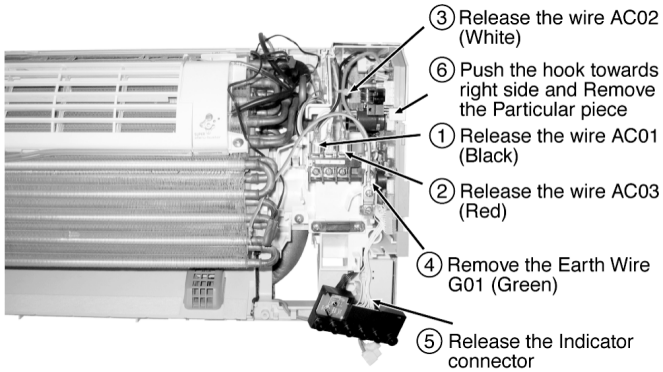


Fig. 6

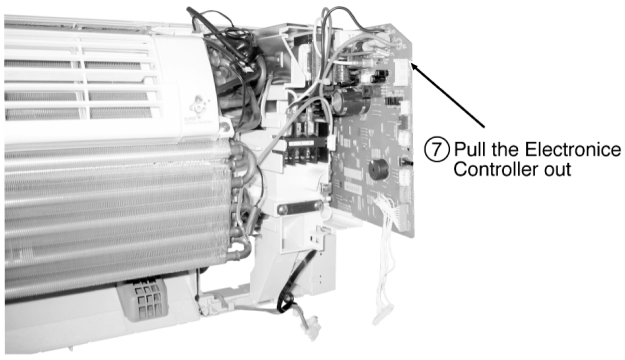


Fig. 7

14.1.3. Cross Flow Fan and Fan Motor Removal Procedures

1. Remove Cross Flow Fan and Fan Motor.

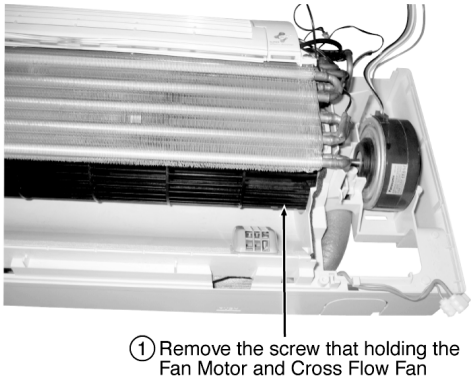


Fig. 8

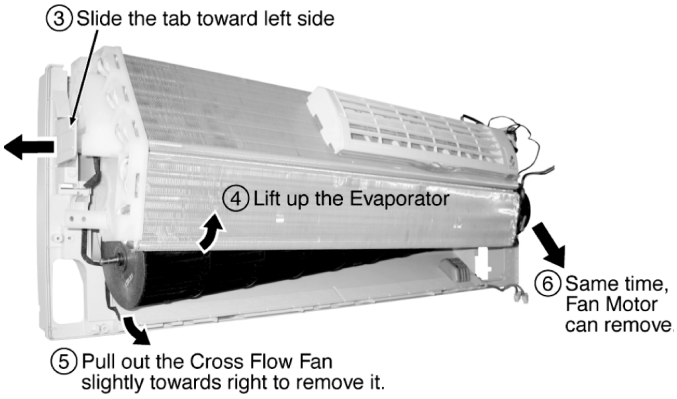


Fig. 10

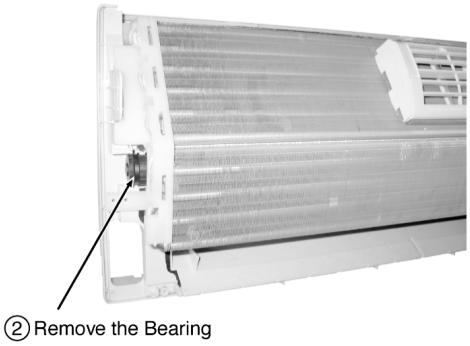
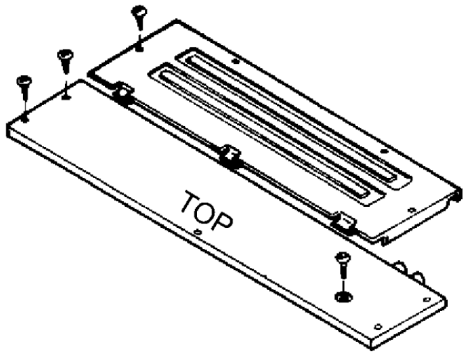


Fig. 9

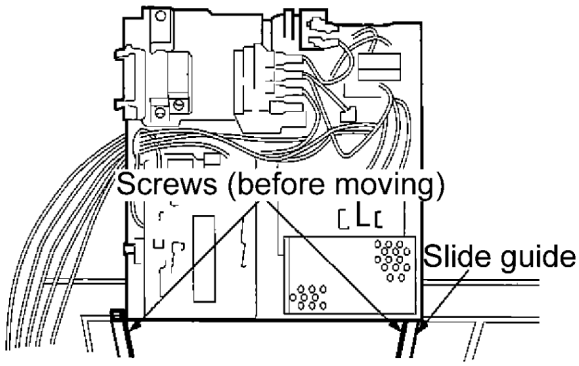
14.2. Duct Type

14.2.1. Detaching the Upper and Inner Casing



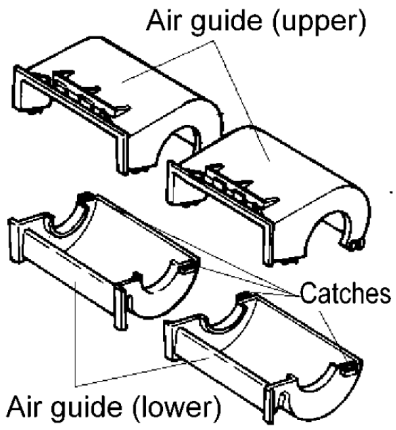
1) Unscrew the 4 screws on the Upper and Inner Casing and detach them.

14.2.2. Detaching the Control Board



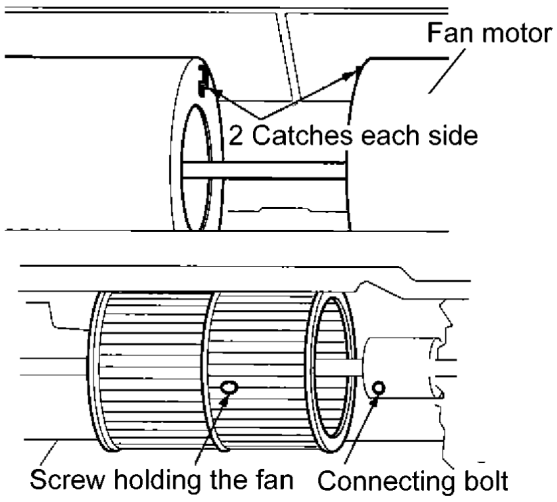
1) First detach the Upper and Inner Casing (14.2.1).
2) Unscrew the 2 screws on the Slide Guide.
3) Pull the board down following the Slide Guide.
4) Lift the Board up from the bottom, disengage the Catch holding the Board and open it.

14.2.3. Detaching the Fan



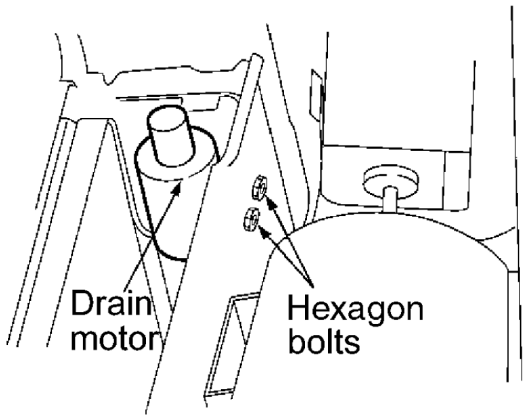
1) First detach the Upper and Inner Casing (14.2.1).

2) Disengage the 4 screws (2 each on the left and right) on the Air Guide.



3) Use a 2.5 mm hexagonal wrench to loosen the bolt connecting the Fan Motor and Fan, detach the shaft connecting the Fan Motor and Fan, loosen the screw holding the Fan and detach the Fan.

14.2.4. Detaching the Fan Motor and Drain Motor



Fan Motor

1) First detach the upper and inner casing (14.2.1) and the Fan (14.2.3).

2) Unscrew the 4 screws holding the Fan Motor and detach it.

Drain Motor

1) First detach the Upper and Inner Casing (14.2.1) and the Fan (14.2.3).

2) From the Fan Motor side, undo the 2 hexagon bolts and detach the Drain Motor.

14.3. Ceiling Floor Type

14.3.1. Front Grille Removal Procedure

1. Remove the Intake Grille and Air Filter from the Front Grille (Fig. 1).

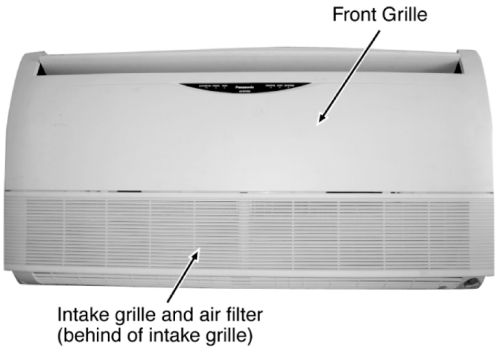


Fig. 1

2. Remove the Front Grille by removing the screws (Fig. 2).

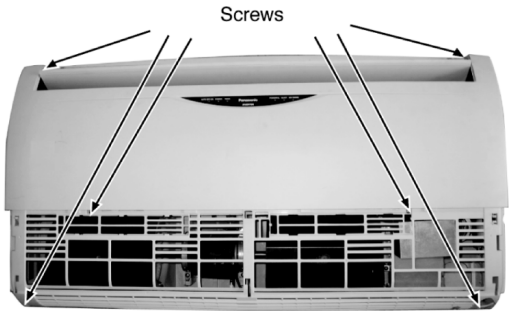


Fig. 2

3. Fan Motor and Control Board (Fig. 3).

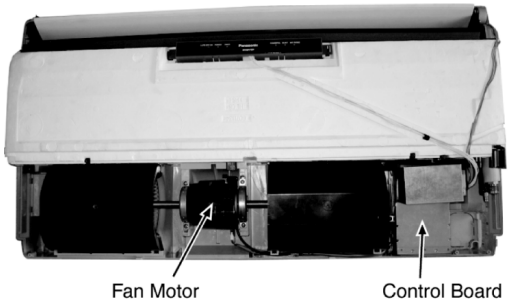


Fig. 3

14.3.2. Fan Motor Removal Procedure

1. Remove two Air Guider Blower Wheels (Fig. 4).

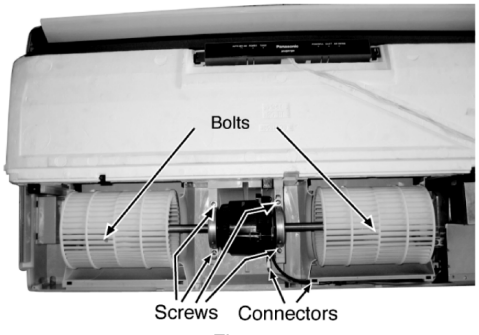


Fig. 4

2. Remove Fan Motor by:
   - Releasing the connector Fan Motor (Fig. 5).
   - Removing the Fan Motor supporter screws (Fig. 5).
   - Removing the Blower Wheel bolts (Fig. 5).

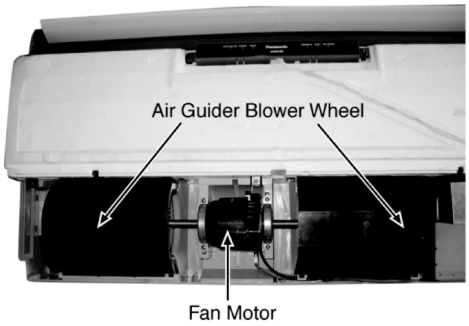


Fig. 5

14.3.3. Electronic Controller Removal procedure

1. Remove the Control Board Cover by removing the screws (Fig. 6).

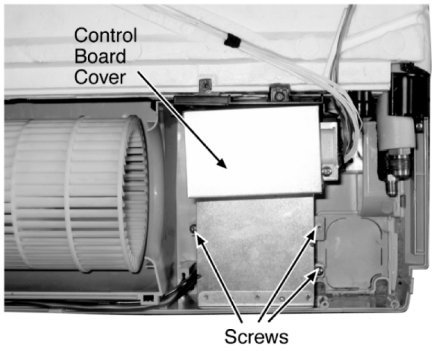


Fig. 6

2. Electronic Controller (Fig. 7).

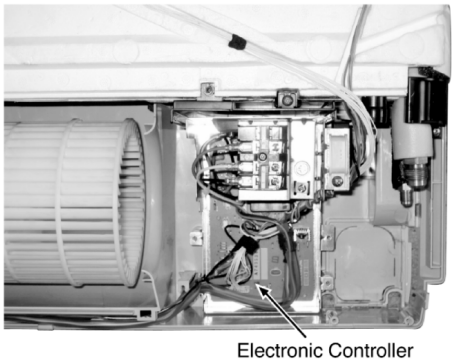


Fig. 7

14.4. Mini-Cassette Type

14.4.1. Disassembly of Parts

1. Open the Intake Grille from the Front Grille by moving the catchers to center (Fig. 1).



Fig. 1

2. Remove the Control Board Cover by removing the screws (Fig. 2).

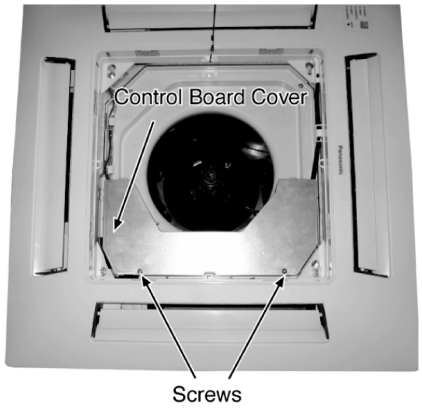


Fig. 2

3. Release the following parts (Fig. 3):
   - CN-STM1(WHT) connector
   - CN-STM1(WHT) connector
   - CN-STM2(YLM) connector
   - CN-DISP(WHT) connector
   - CN-FM(WHT) connector
   - CN-TH1(WHT) connector
   - CN-TH2(BLU) connector
   - CN-DRMTR1(BLU) connector
   - AC01(BLK), AC02(WHT) and CN-DRMTR2(RED) from Terminal Board
   - GR01(GRN) screw
   - Two T-BLK connectors
   - CN-T1(WHT)
   - CN-T2(YLW)

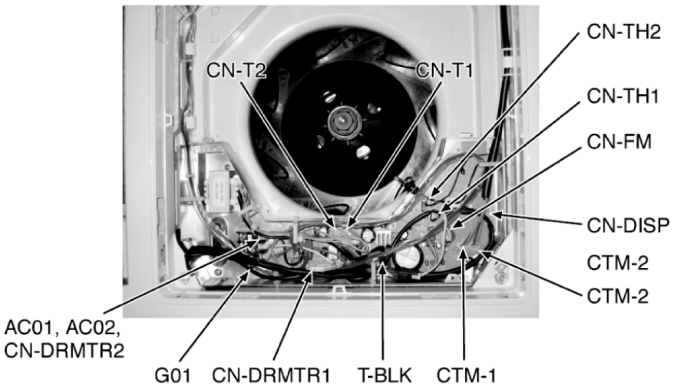


Fig. 3

4. To remove the Electronic Controller, release the 6 hooks holding the Control Board (Fig. 4).

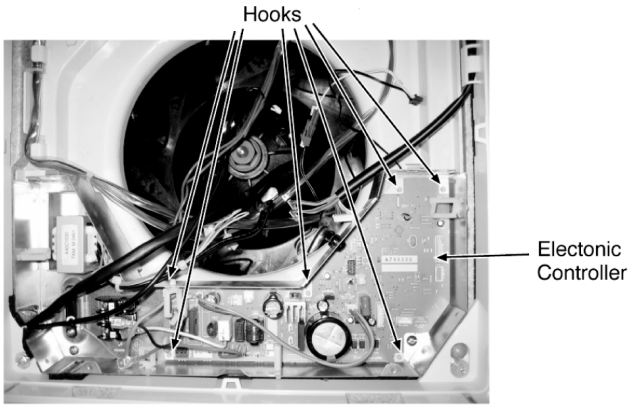


Fig. 4

5. Remove the Front Grille by removing the screw A and screw B, C & D half way open (Fig. 5).

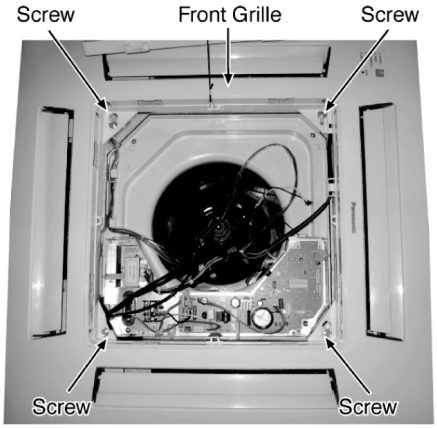


Fig. 5

6. Remove the Air Guider and Drain Pan complete by removing the screws (Fig. 6).

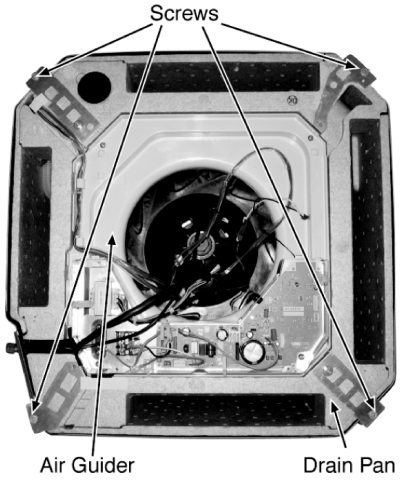


Fig. 6

7. Remove the Turbo Fan by removing the bolt (Fig. 7).

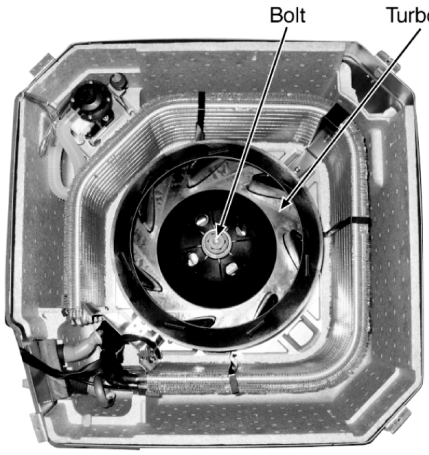


Fig. 7

8. Remove the Fan Motor by releasing the Fan Motor lead wire connectors and Fan Motor screws (Fig. 8).

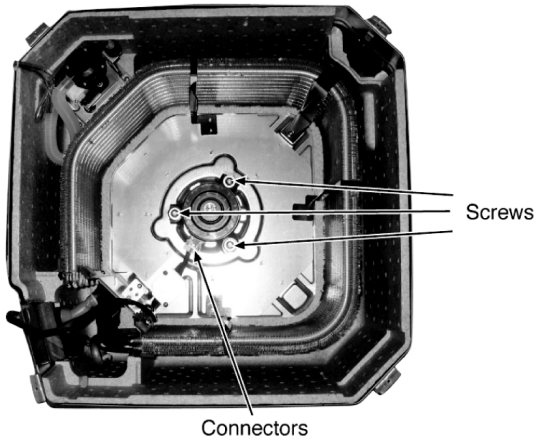


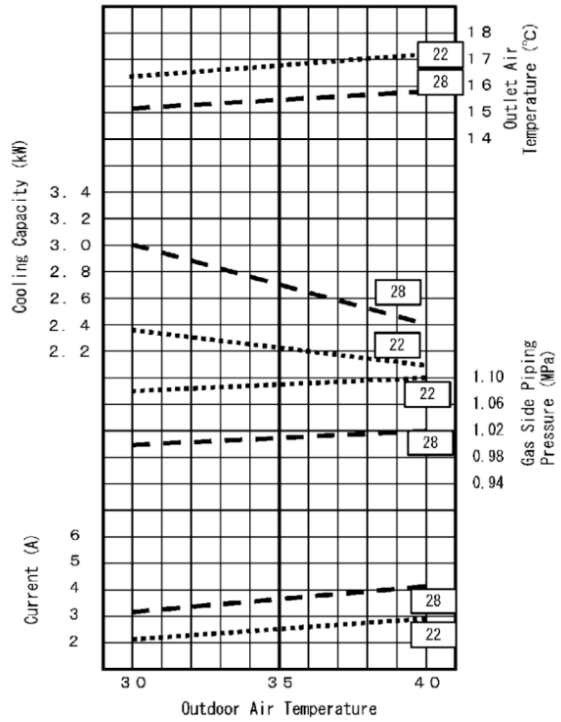
Fig. 8

15 Technical Data

15.1. Operation Characteristics

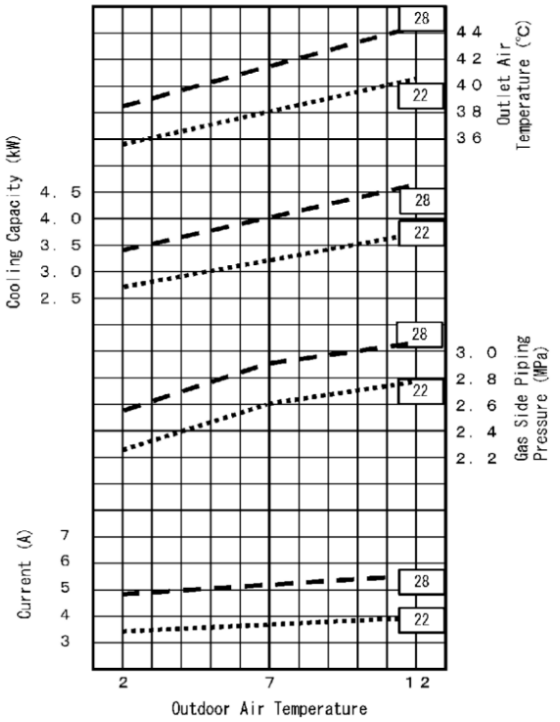
CU-2E15CBPG (One Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

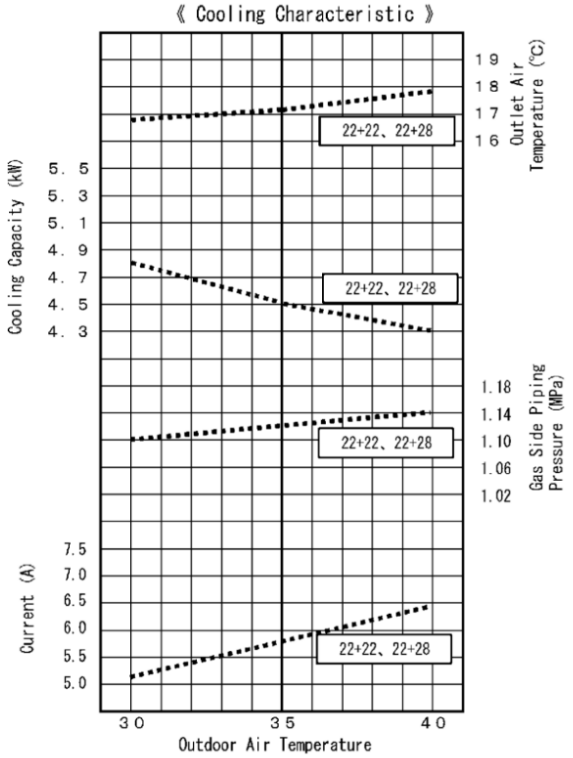
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

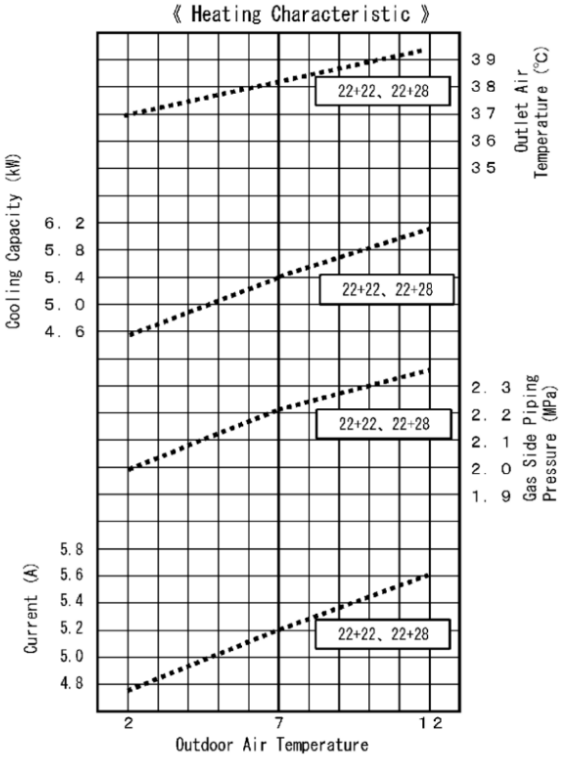
CU-2E15CBPG (Two Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

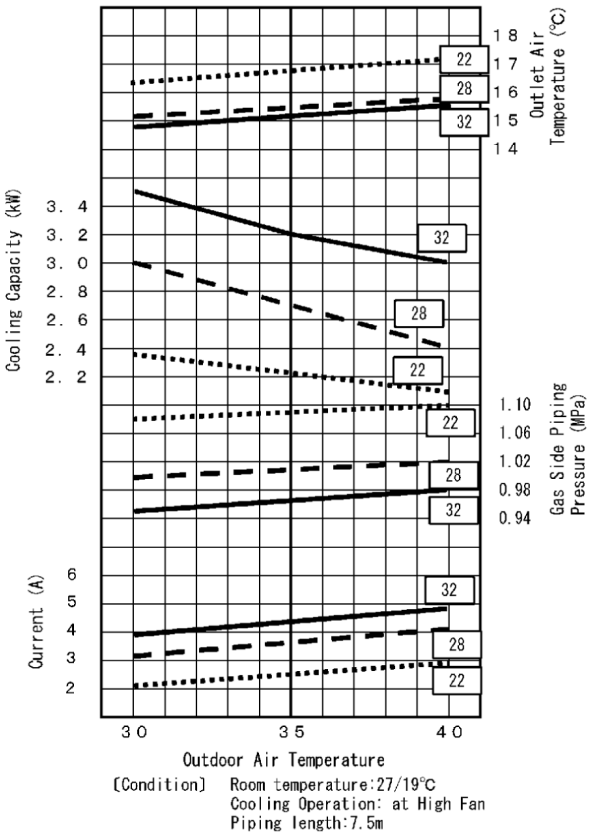
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

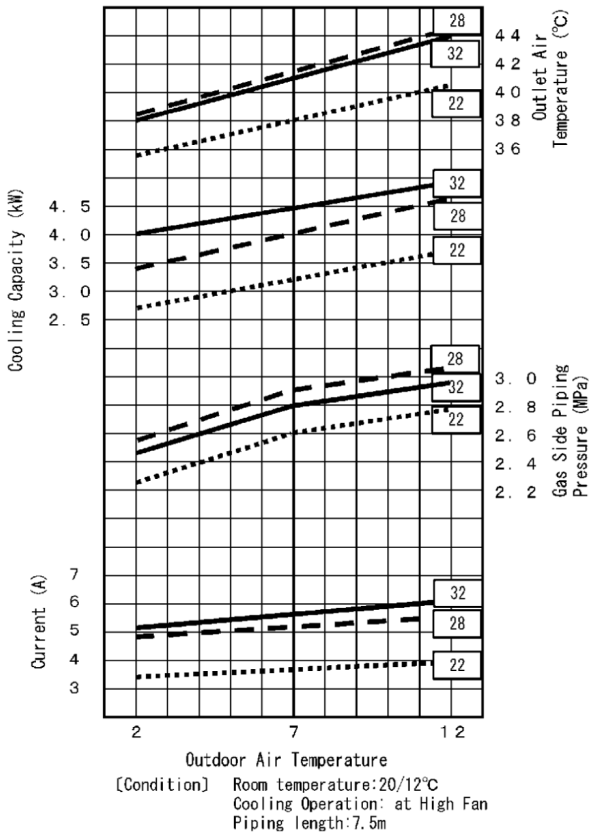
CU-2E18CBPG (One Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

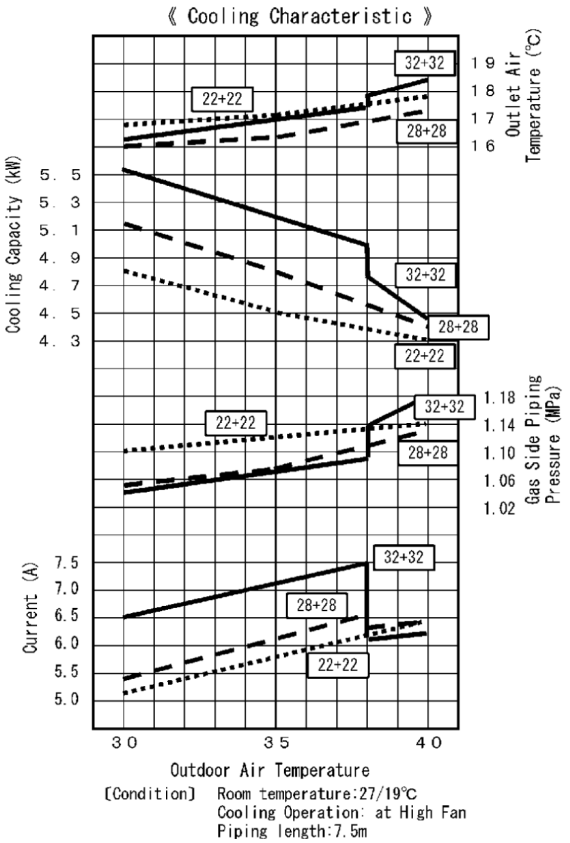
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

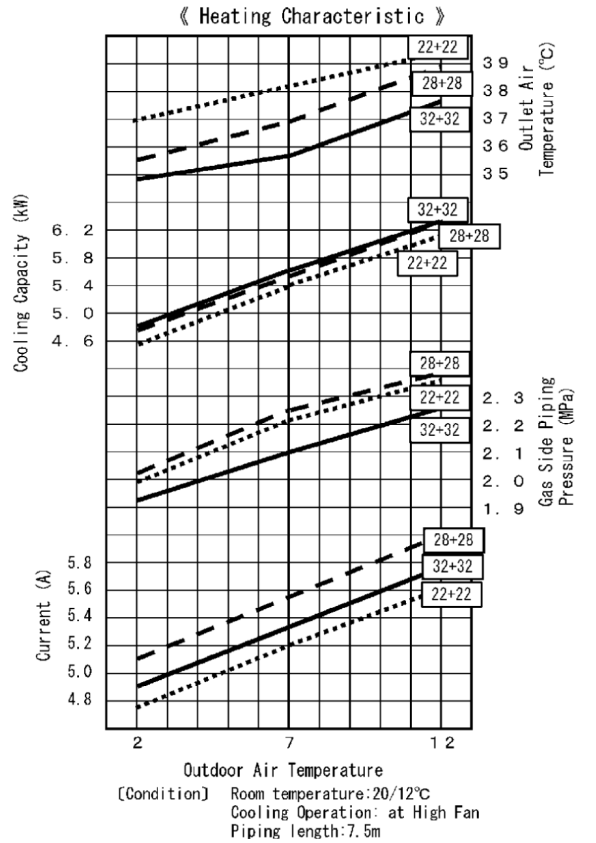
CU-2E18CBPG (Two Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

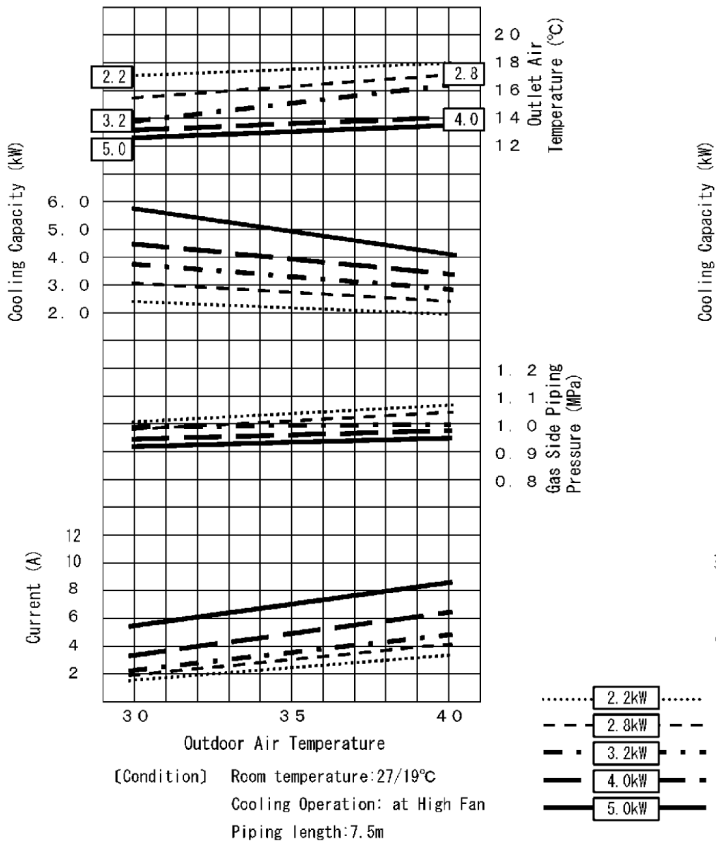
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

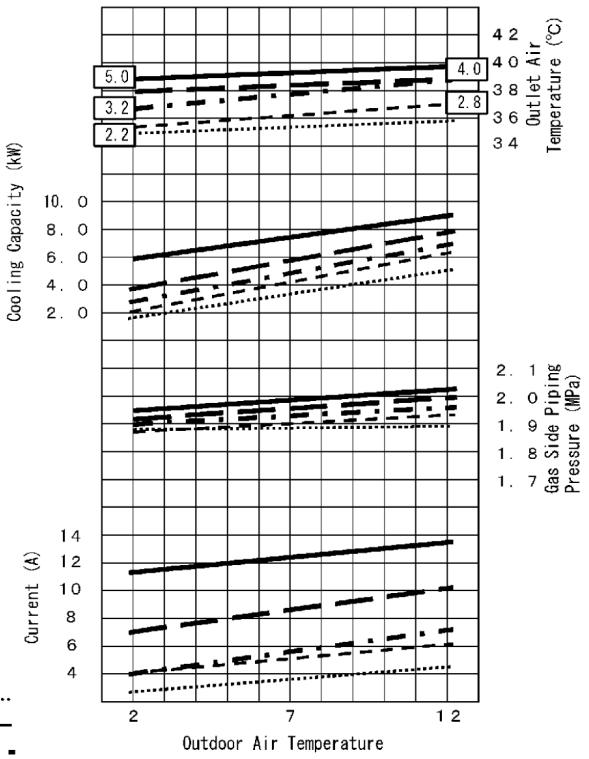
CU-3E23CBPG (One Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

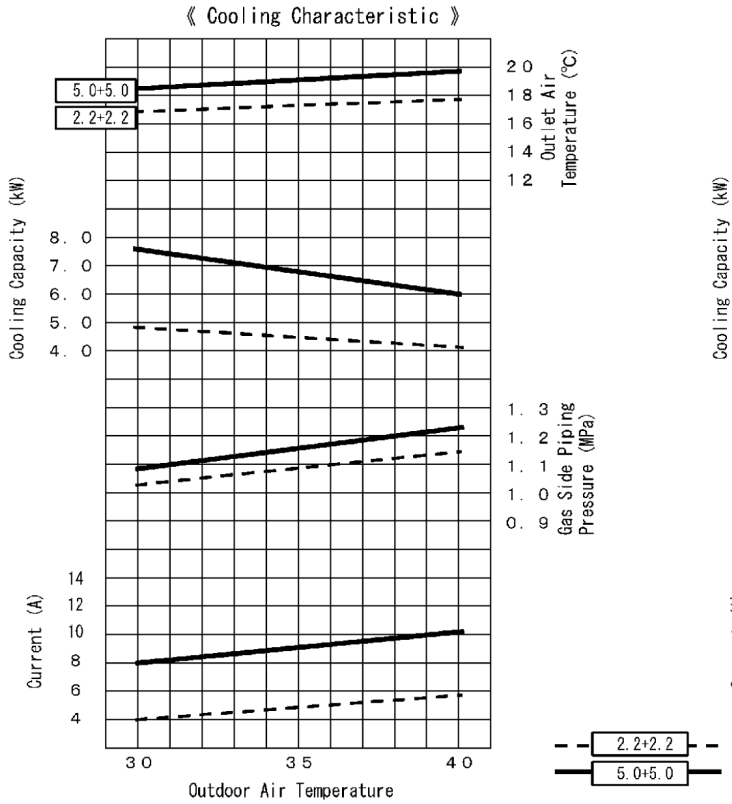
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

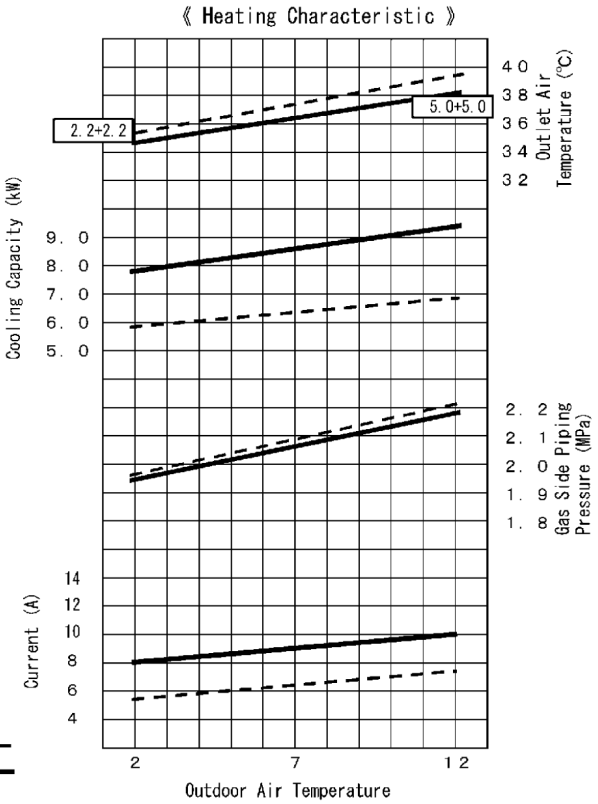
CU-3E23CBPG (Two Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

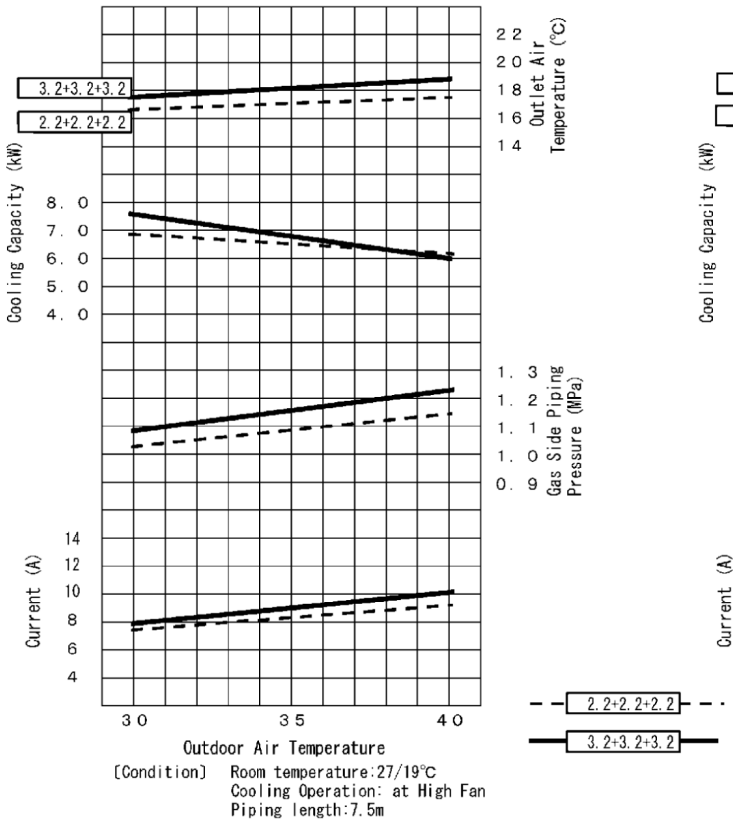
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

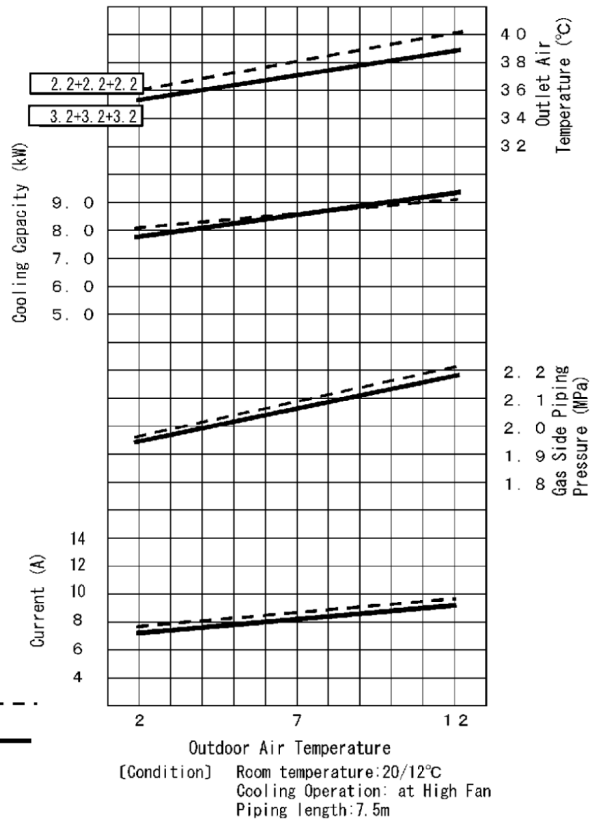
CU-3E23CBPG (Three Indoor Units Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

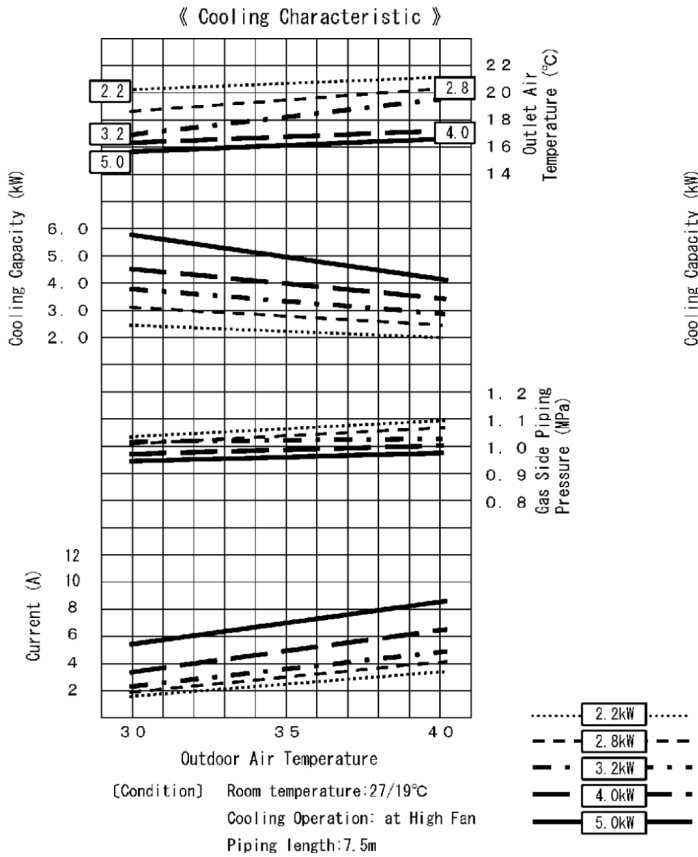
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

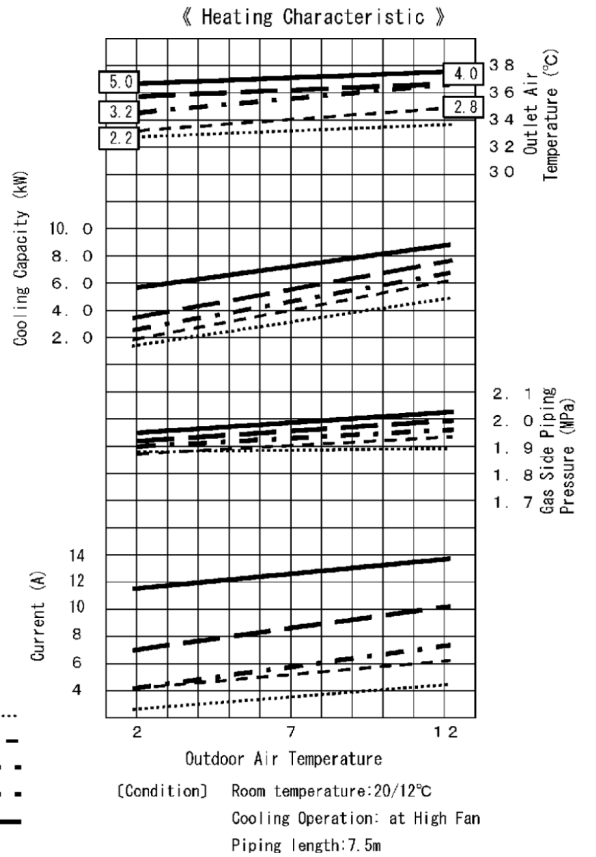
CU-4E27CBPG (One Indoor Unit Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

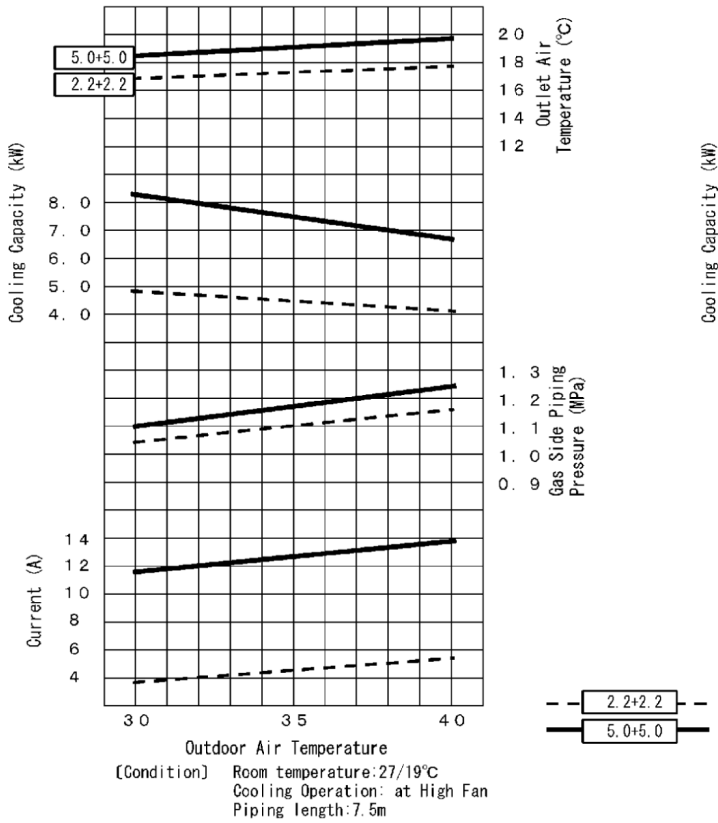
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

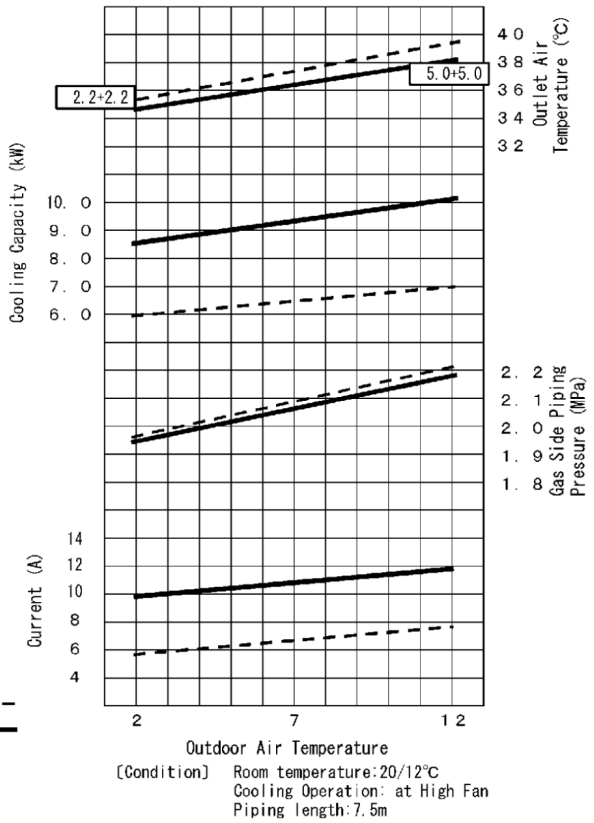
CU-4E27CBPG (Two Indoor Units Opertion)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

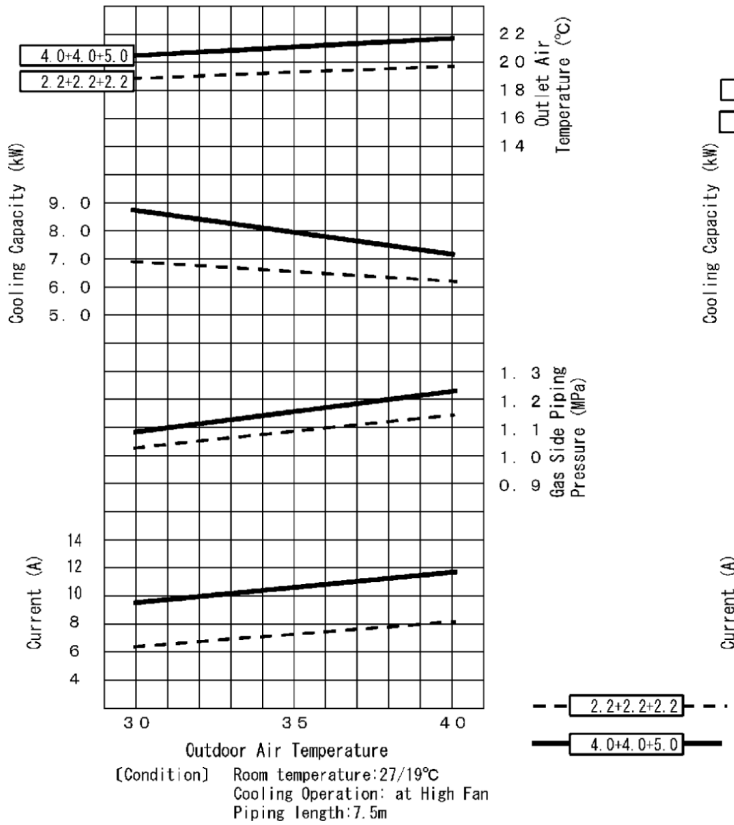
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

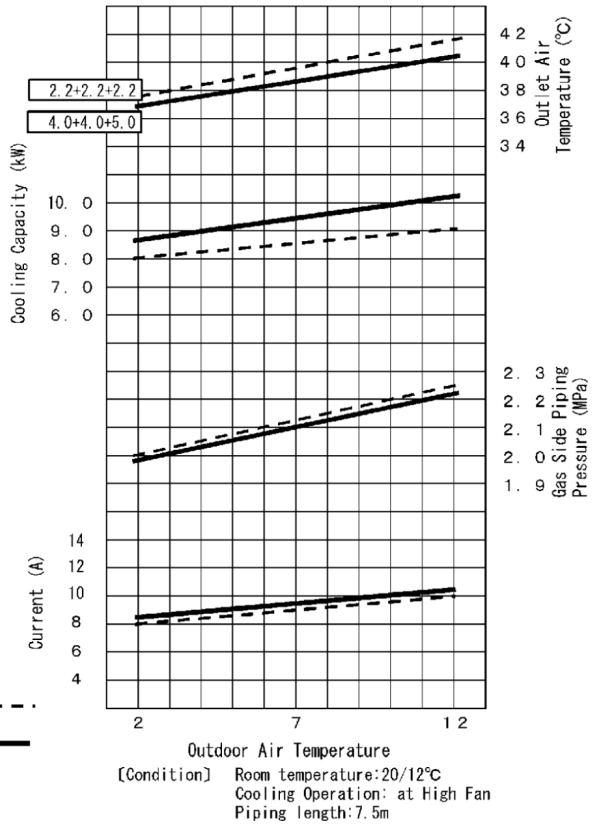
CU-4E27CBPG (Three Indoor Units Operation)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

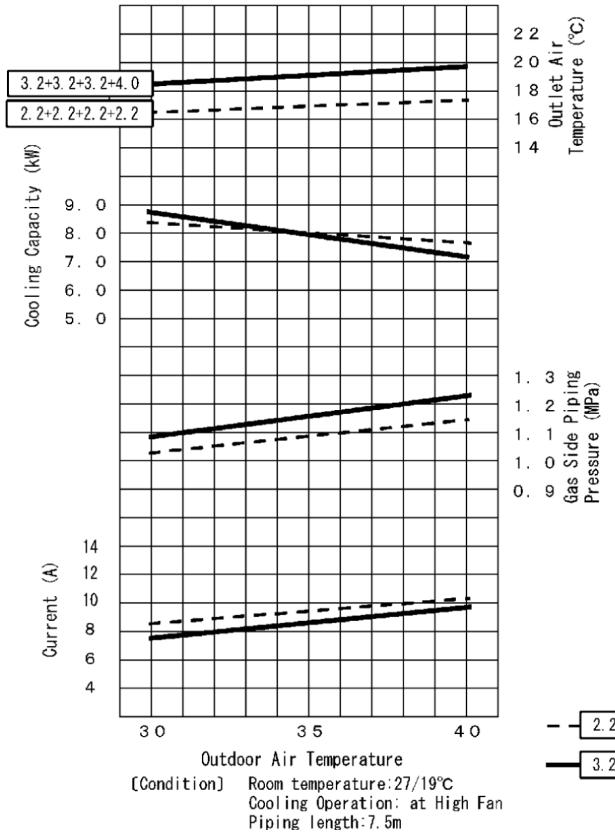
《 Heating Characteristic 》



〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

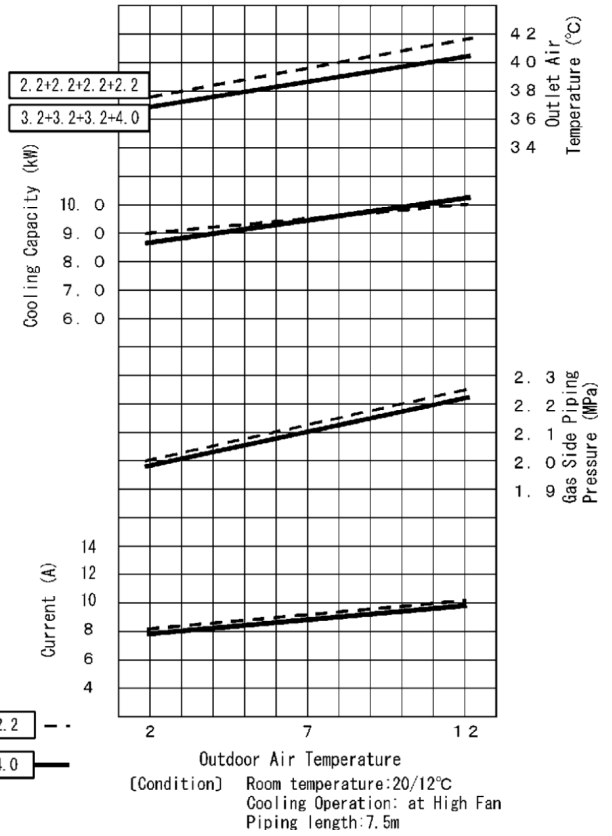
CU-4E27CBPG (Four Indoor Units Opertion)

《 Cooling Characteristic 》



〔Condition〕 Room temperature:27/19℃
Cooling Operation: at High Fan
Piping length:7.5m

《 Heating Characteristic 》



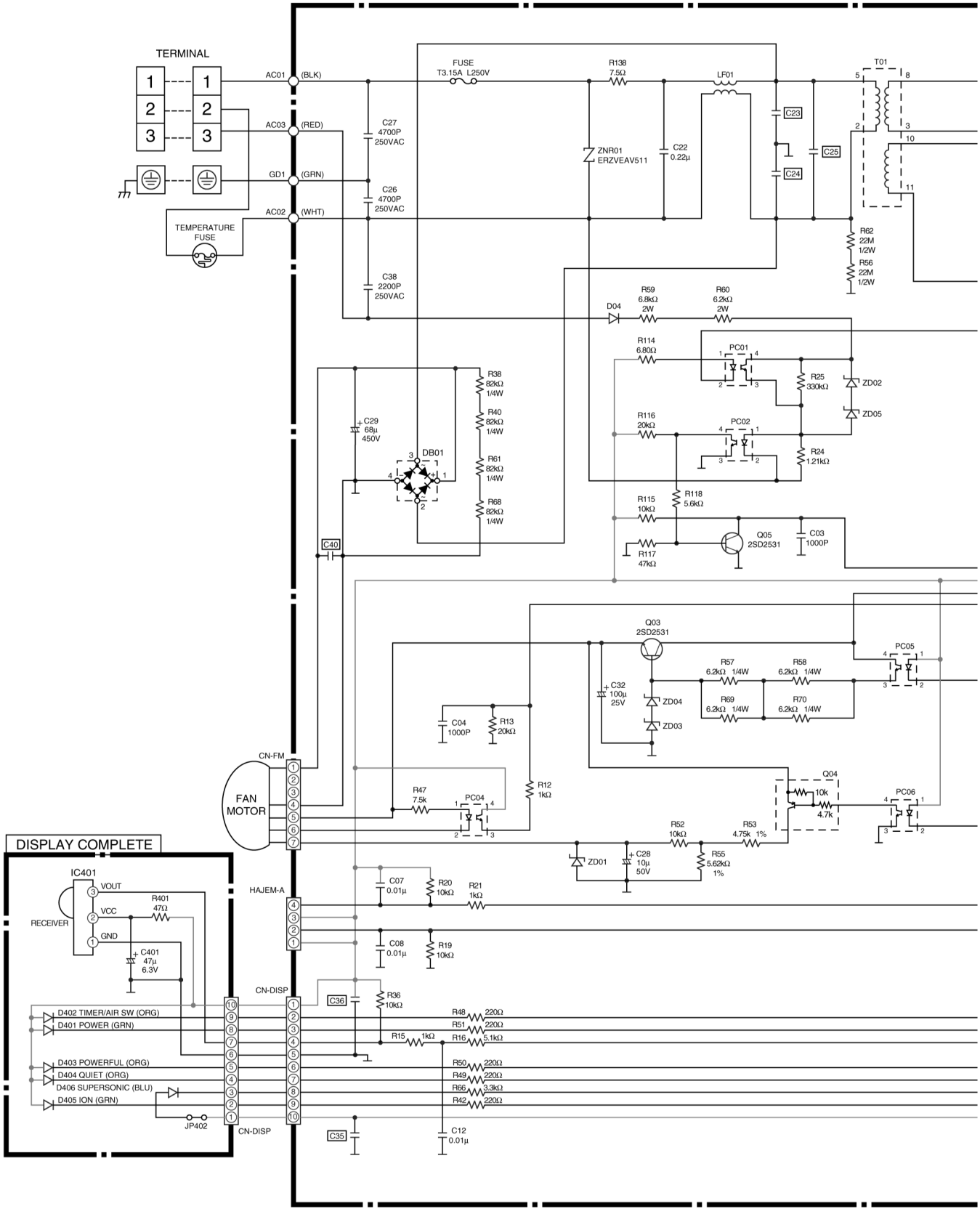
〔Condition〕 Room temperature:20/12℃
Cooling Operation: at High Fan
Piping length:7.5m

16 Electronic Circuit Diagram

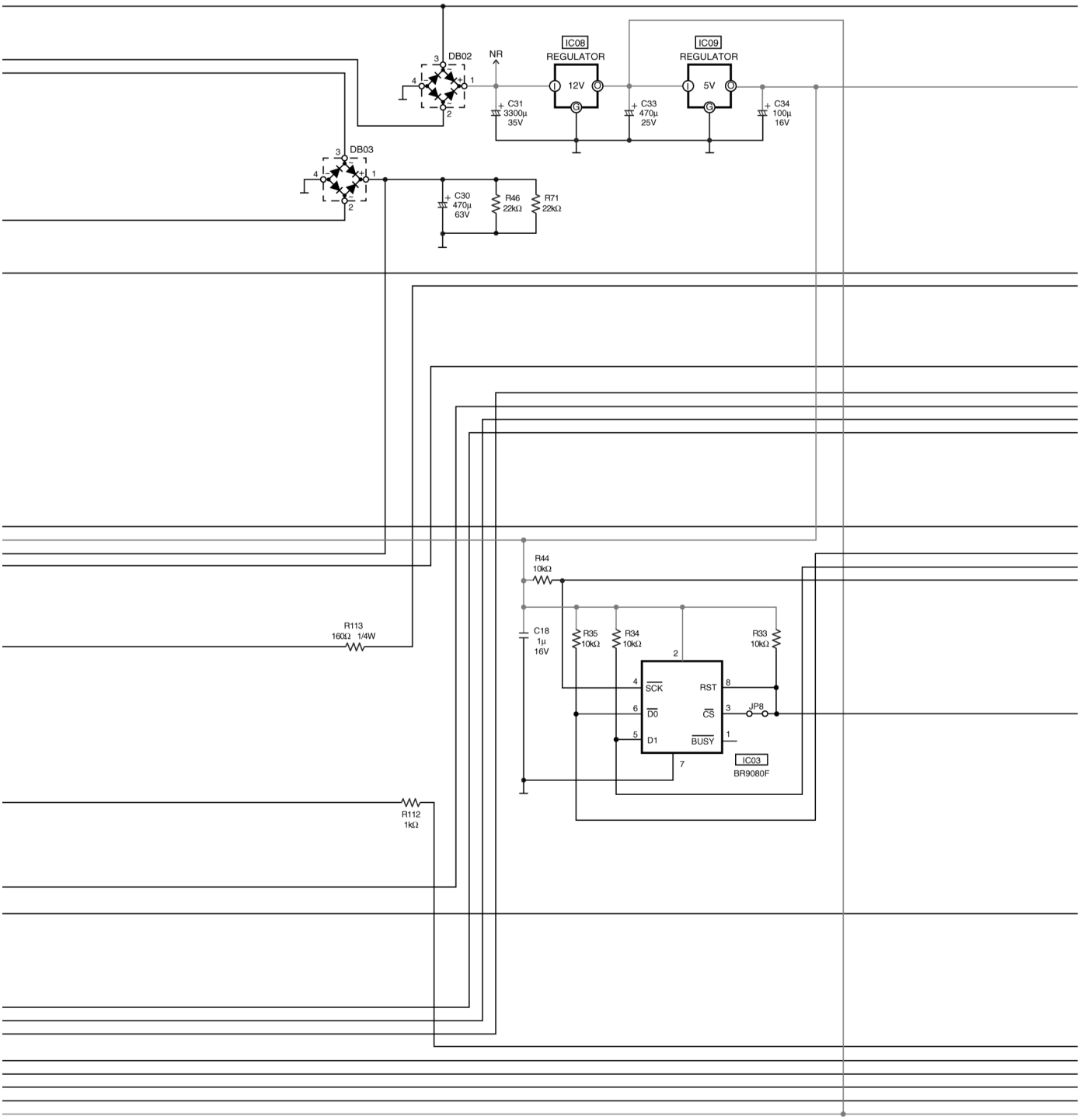
16.1. Wall Type

CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG / CS-E9DKEW / CS-E9DKRW / CS-E9DKDW / CS-E12DKEW / CS-E12DKRW / CS-12DKDW / CS-E15DKEW / CS-E15DKRW / CS-E15DKDW / CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

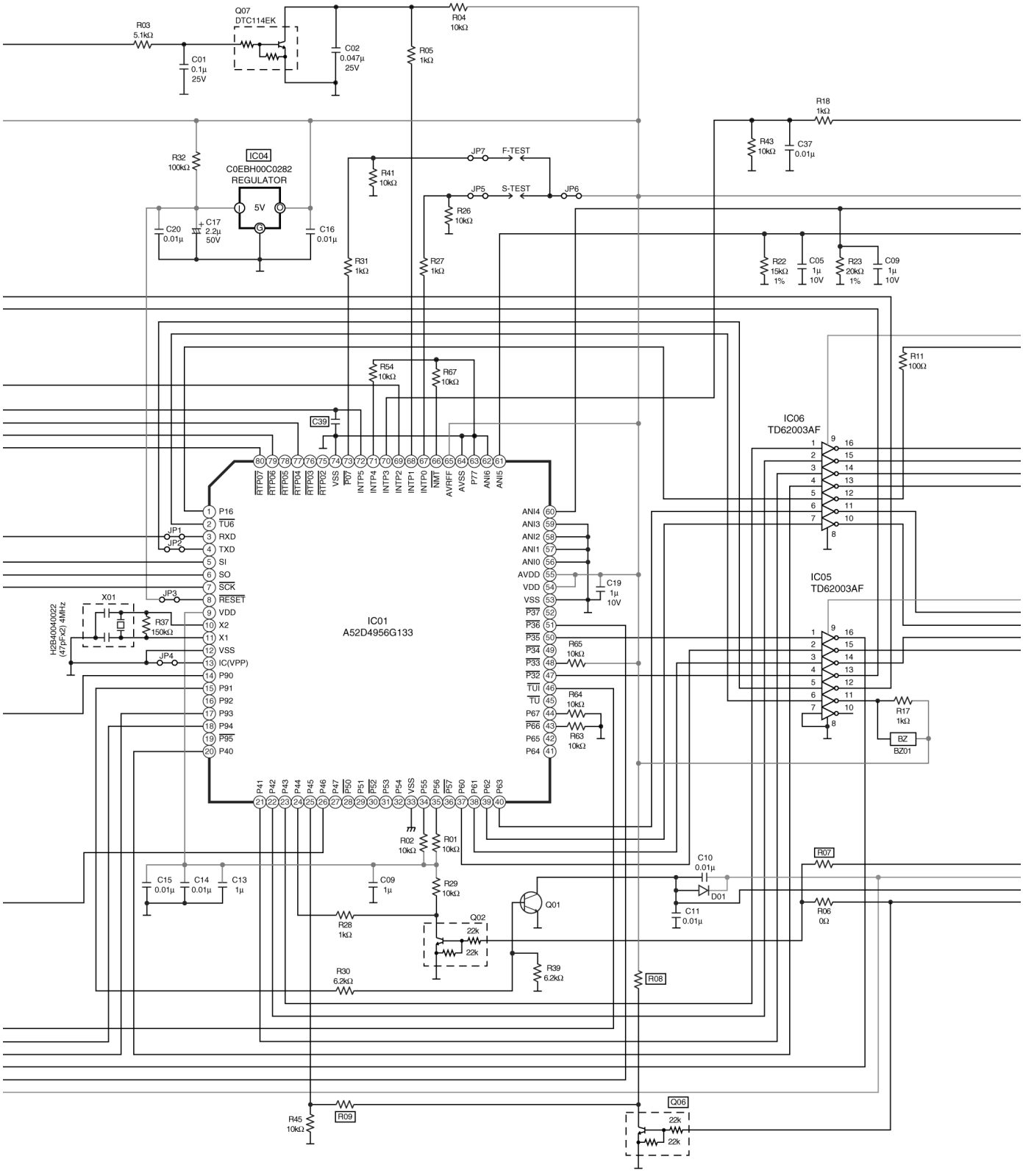
SCHEMATIC DIAGRAM 1/4



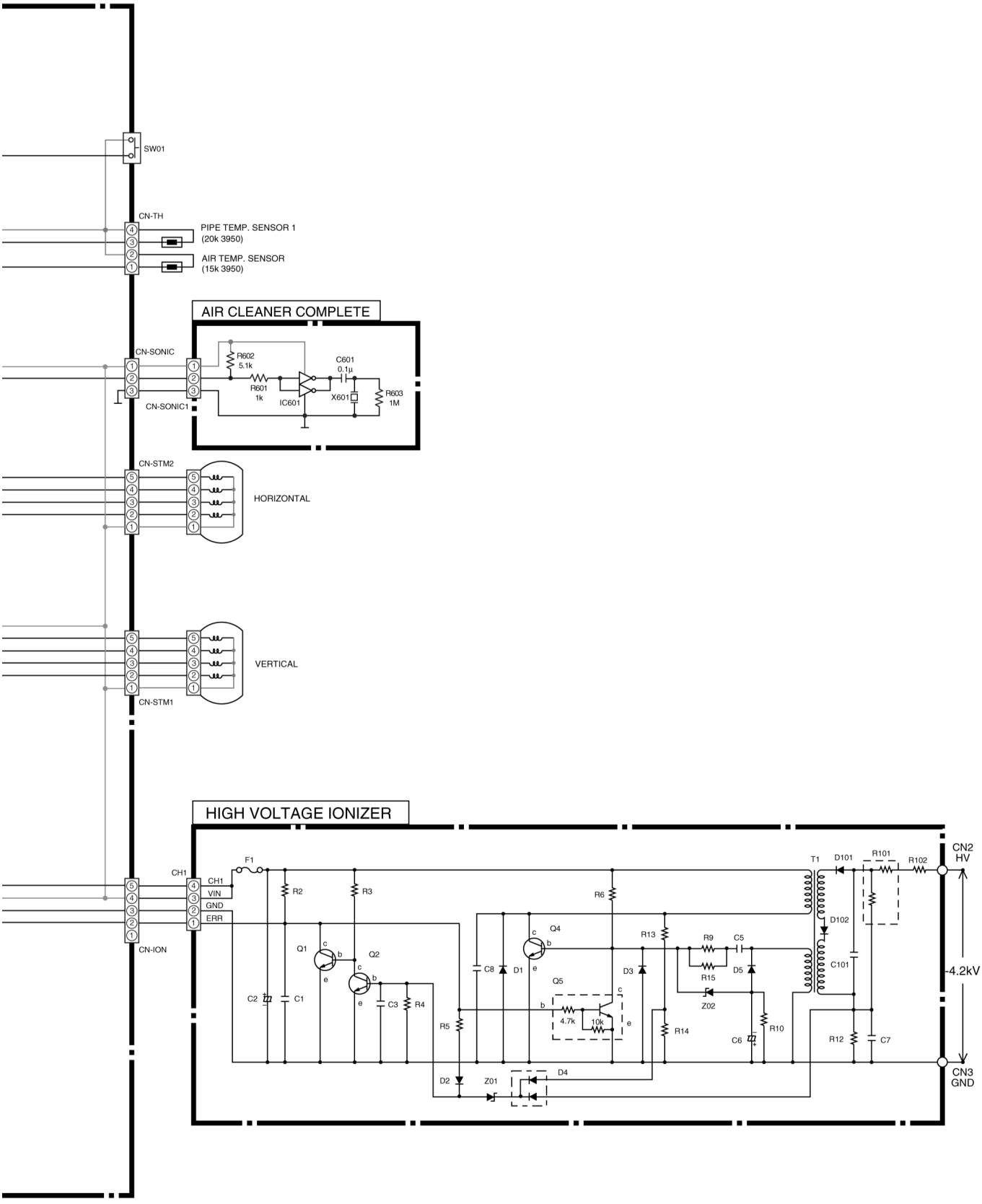
SCHEMATIC DIAGRAM 2/4



SCHEMATIC DIAGRAM 3/4



SCHEMATIC DIAGRAM 4/4



CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG / CS-E9DKEW / CS-E9DKRW / CS-E9DKDW /
CS-E12DKEW / CS-E12DKRW / CS-E12DKDW / CS-E15DKEW / CS-E15DKRW / CS-E15DKDW /
CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

Fig. 1

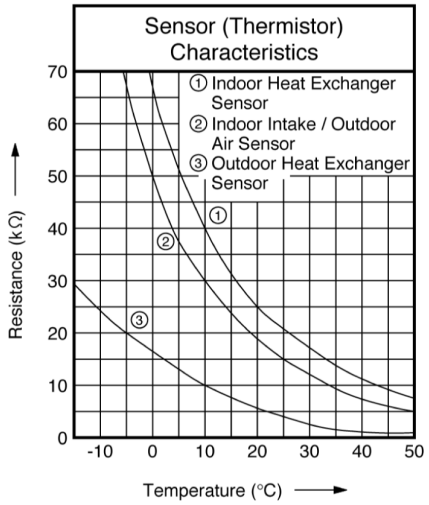
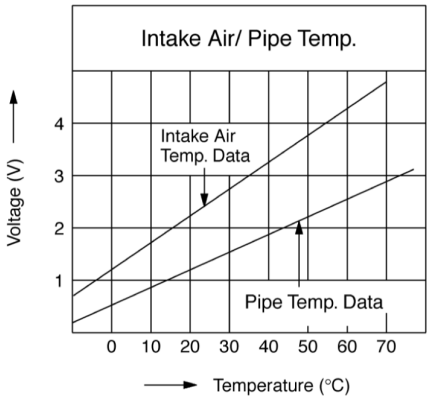


Fig. 2



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

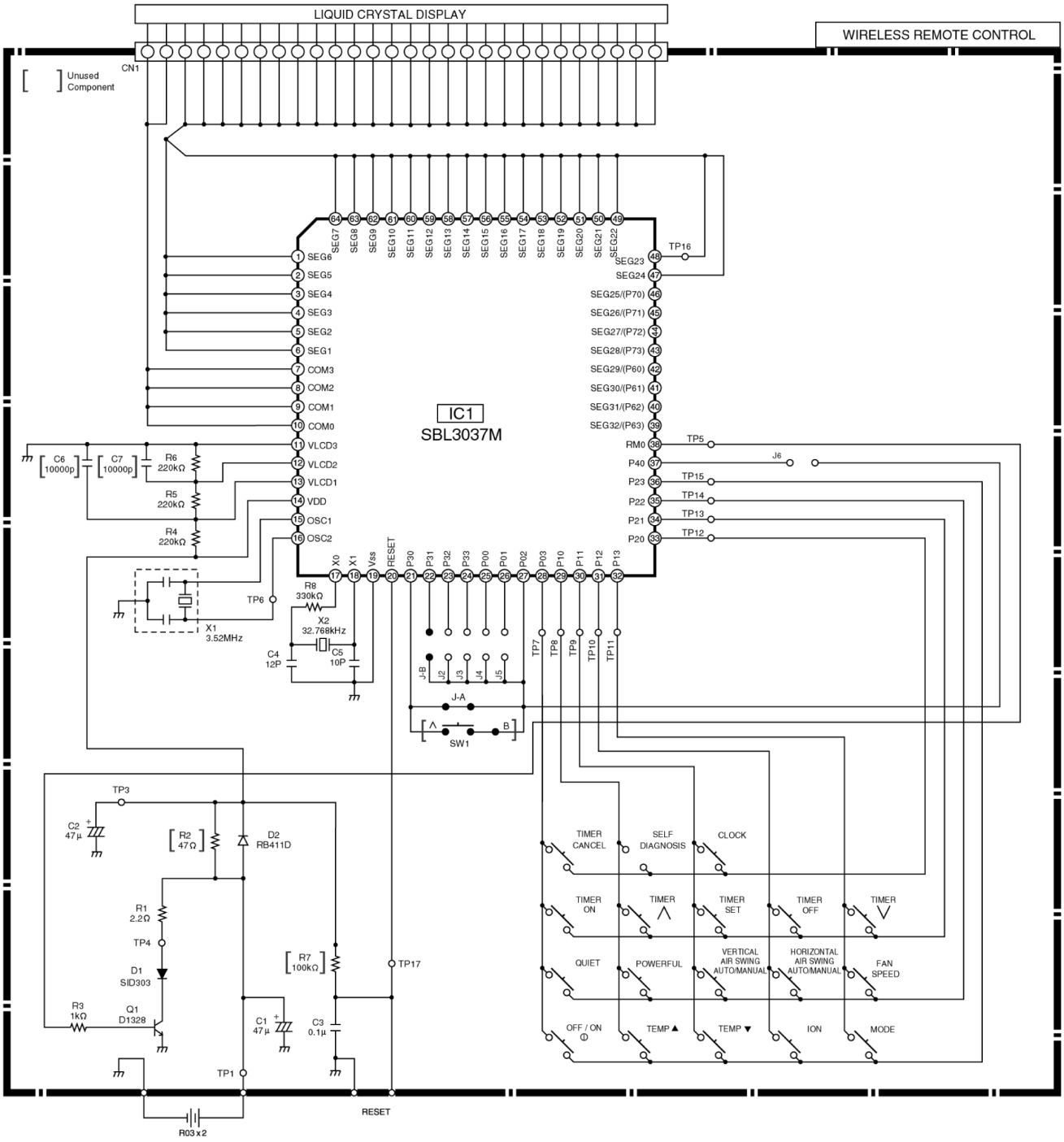
* Voltage measurement
Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
Use them for servicing.
Voltage indication is in Red at all operations.

* Indications for resistance
a. K....kΩ M....MΩ
W...watt Not indicated....1/4W
b. Type
Not indicated.....carbon resister
Tolerance±5%
.....metal oxide resister
Tolerance±1%

* Indications for capacitor
a. Unit μ....μF P....pF
b. Type Not indicated....ceramic capacitor
(S).....S series aluminium electrolytic capacitor
(Z).....Z series aluminium electrolytic capacitor
(SU).....SU series aluminium electrolytic capacitor
(P).....P series polyester system
(SXE).....SXE series aluminium electrolytic capacitor
(SRA).....SRA series aluminium electrolytic capacitor
(KME).....KME series aluminium electrolytic capacitor

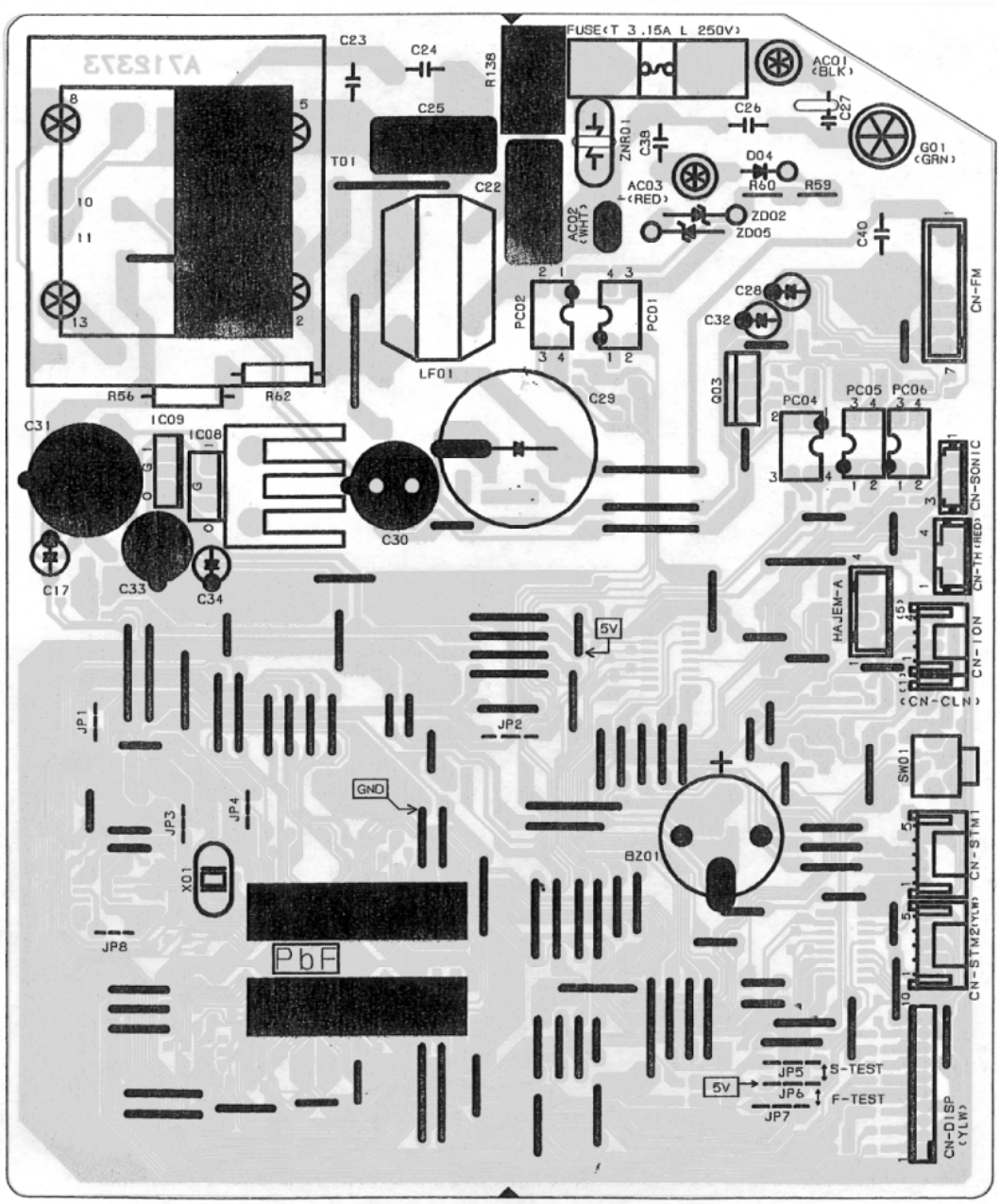
* Diode without indication.....MA165
※ Circuit Diagram is subject to change without notice for further development.

16.1.1. Circuit Diagram (Remote Control)

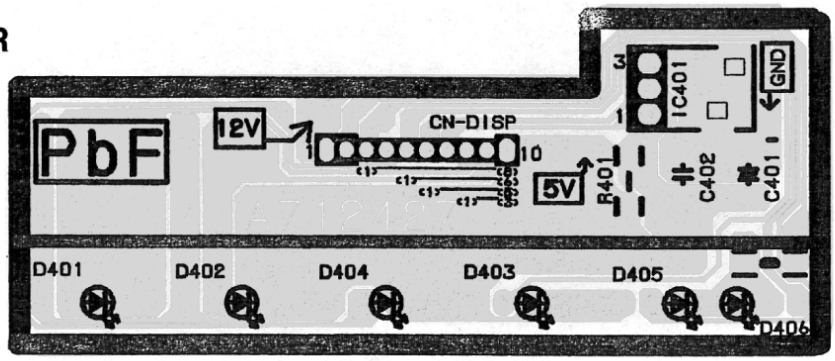


16.1.2. Printed Circuit Board (Indoor Unit)

● **MAIN**

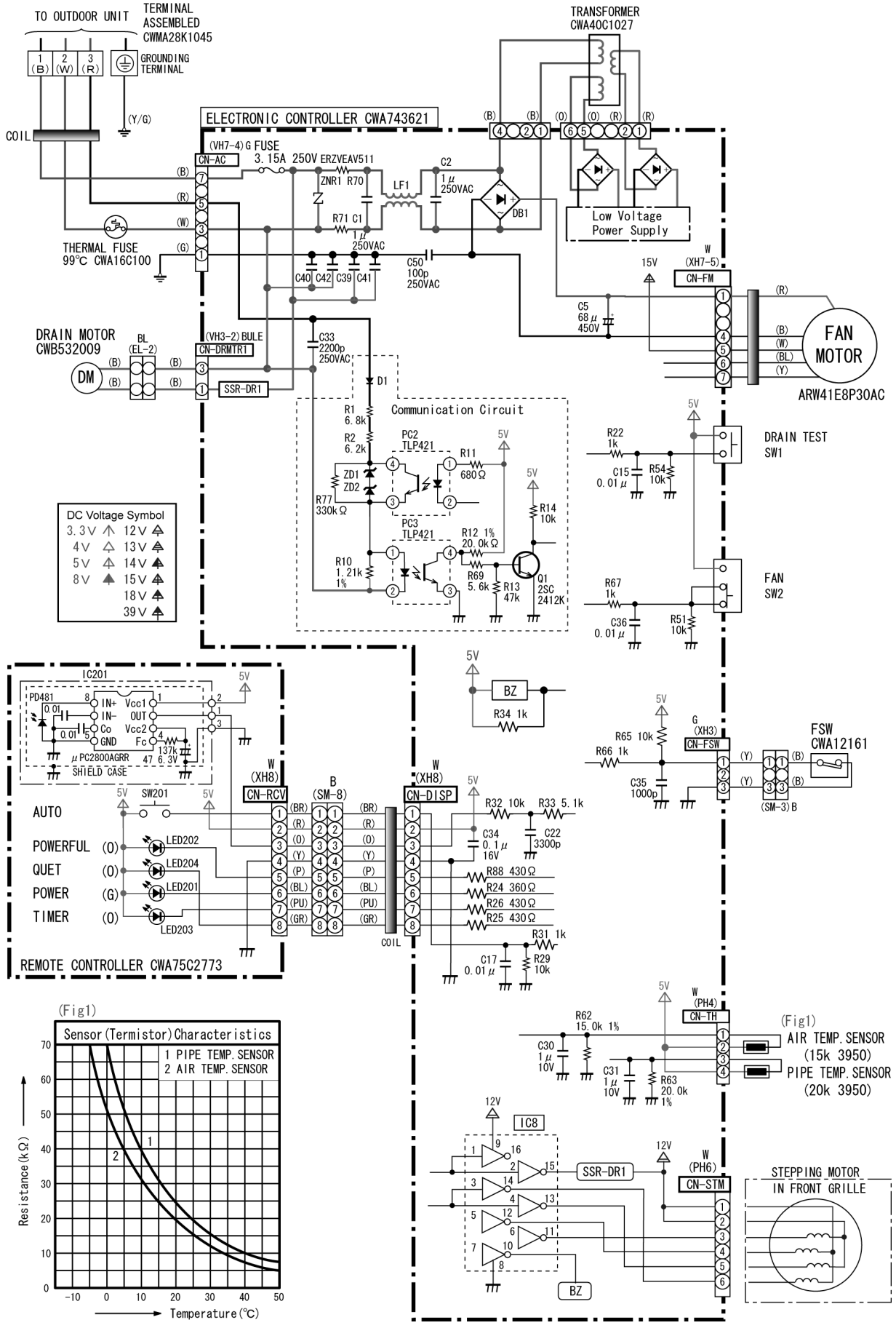


● **INDICATOR**

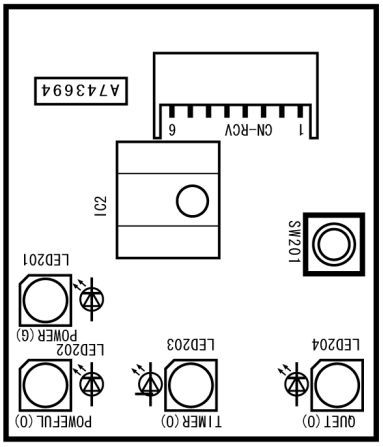


16.2. Duct Type

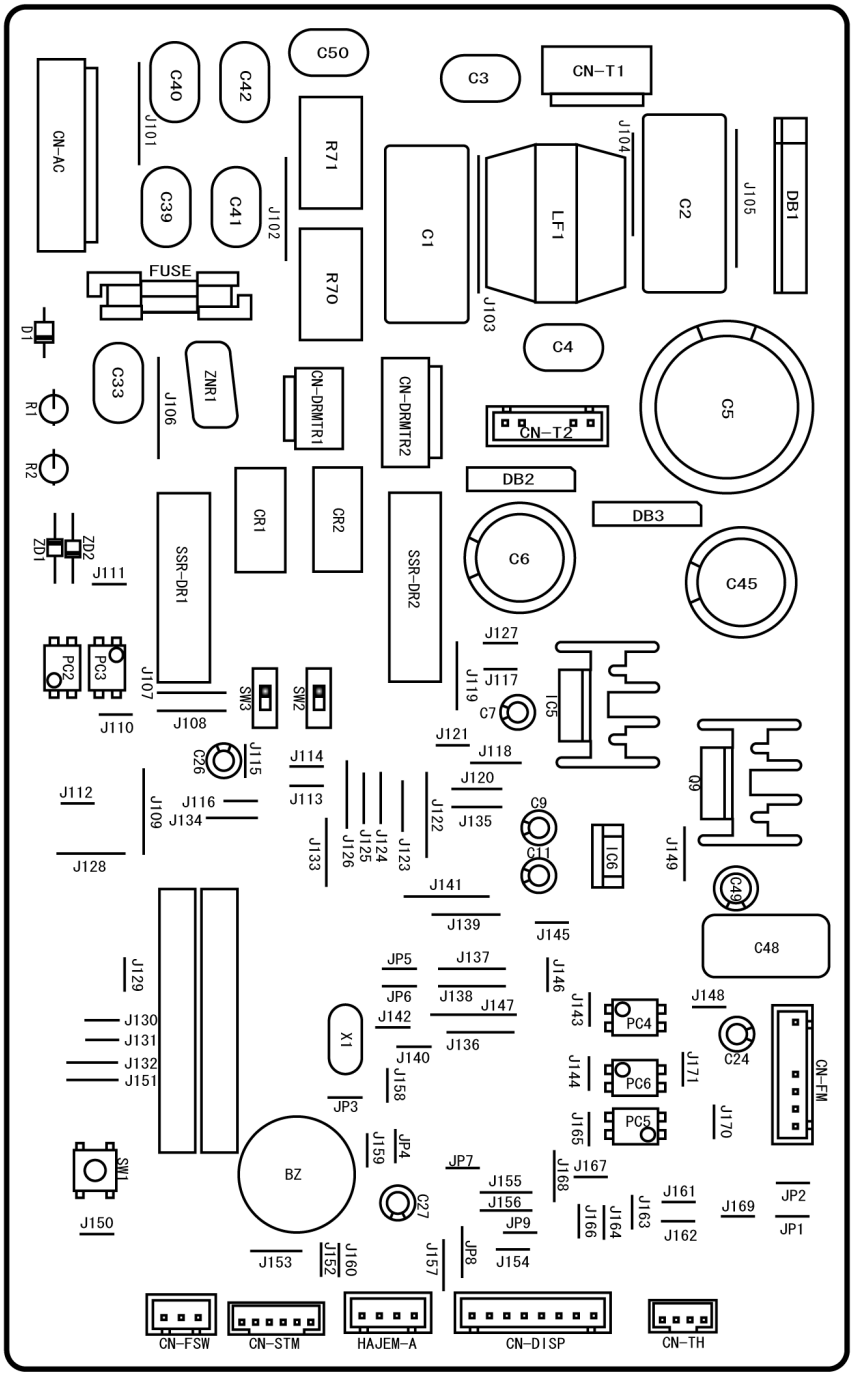
16.2.1. Circuit Diagram (Indoor Units: CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW)



16.2.2. Printed Circuit Board (Indoor Unit)



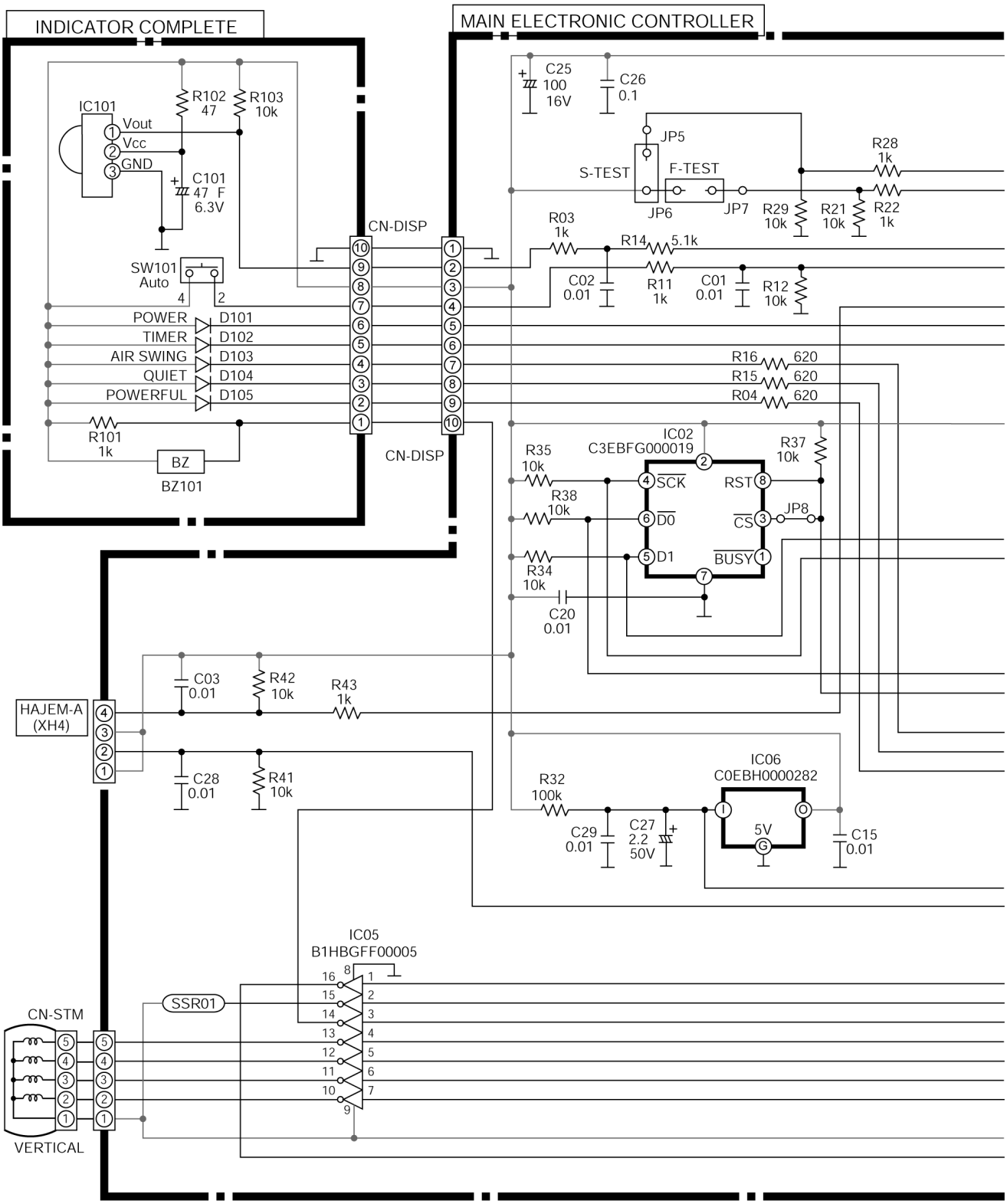
MAIN BOARD



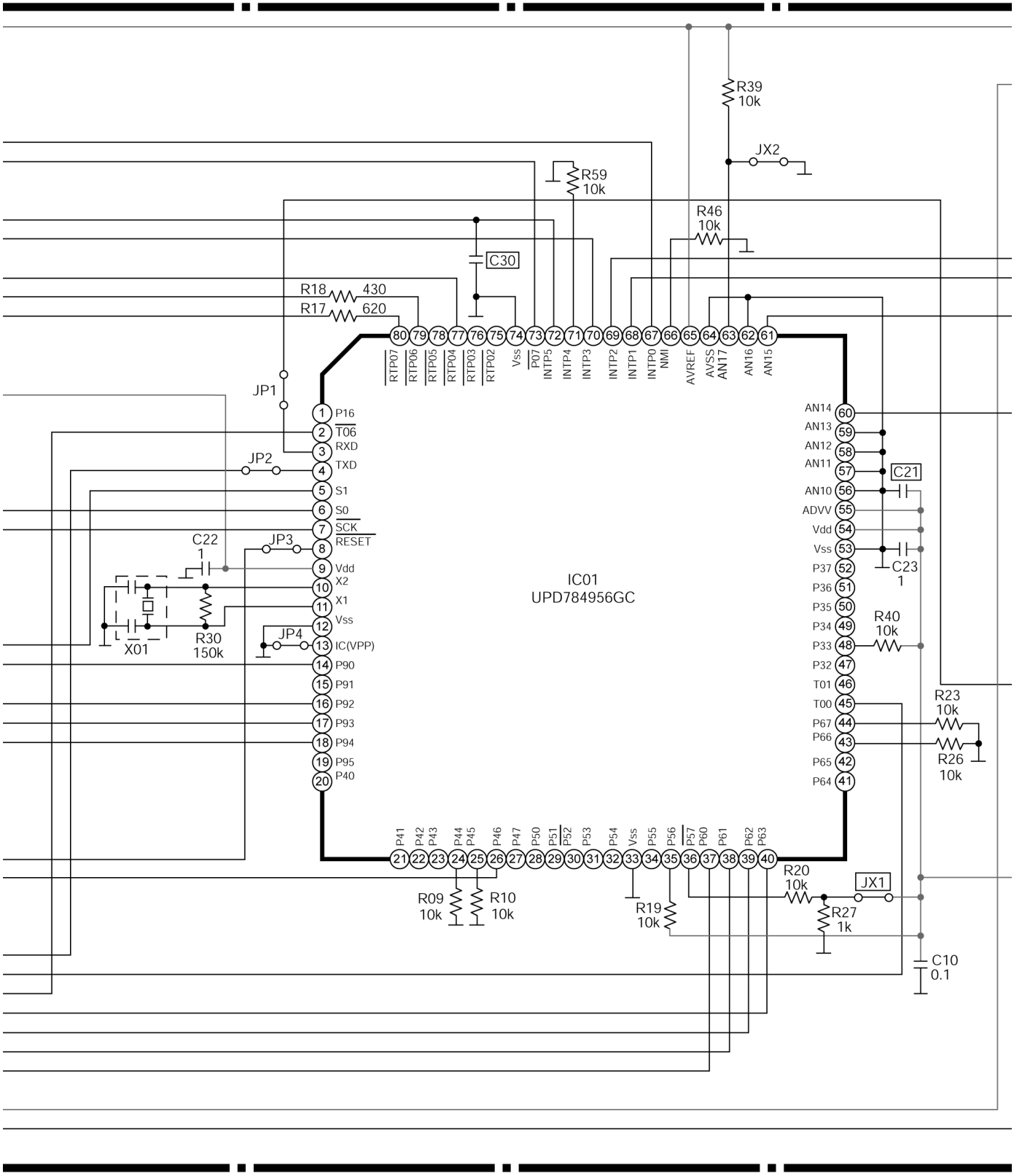
16.3. Ceiling Floor Type

16.3.1. Circuit Diagram (Indoor Units: CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW)

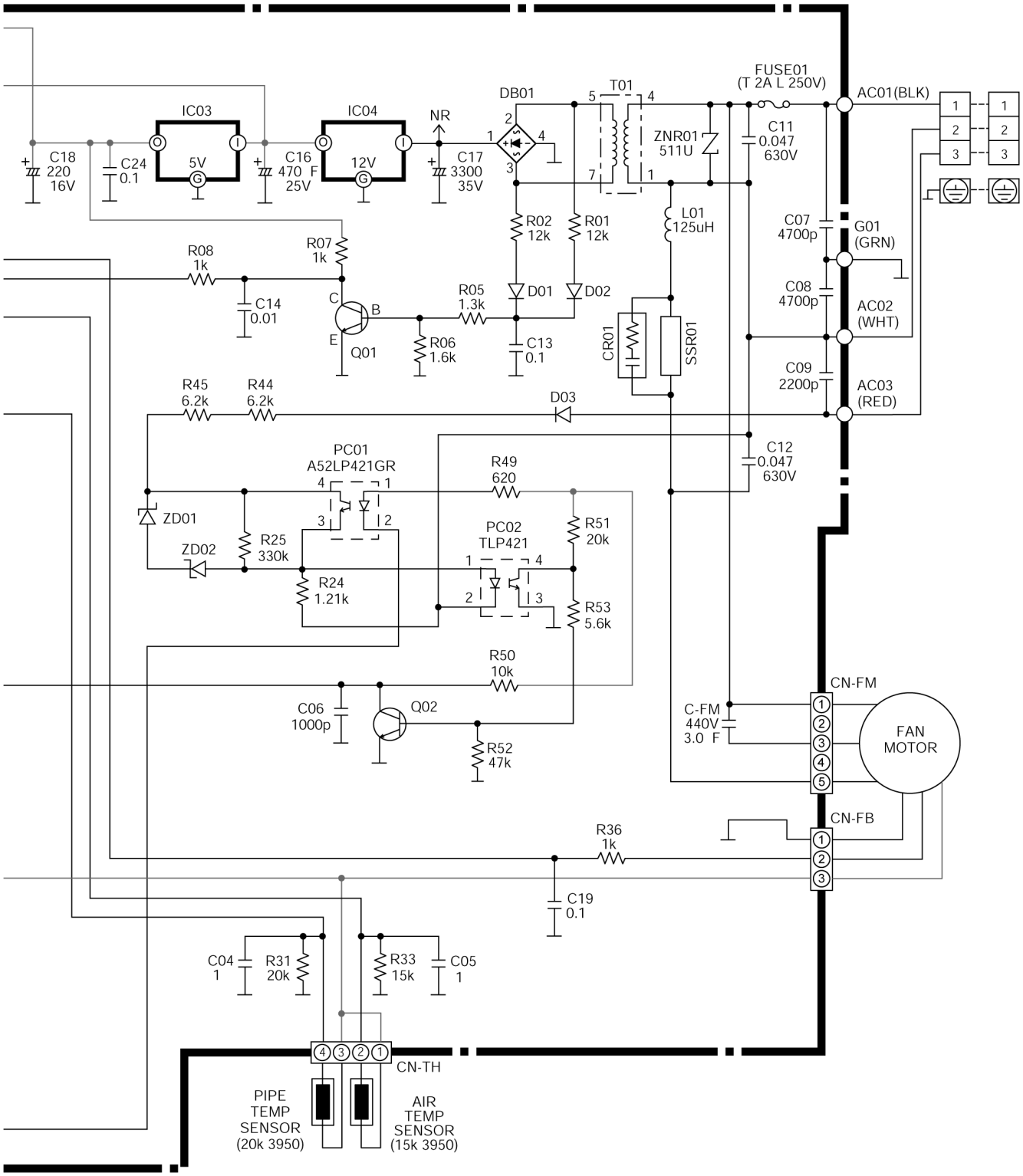
SCHEMATIC DIAGRAM 1/3



SCHEMATIC DIAGRAM 2/3



SCHEMATIC DIAGRAM 3/3



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
  Use them for servicing.
  Voltage indication is in Red at all operations.

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
   .....metal oxide resister
  Tolerance±1%

* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor

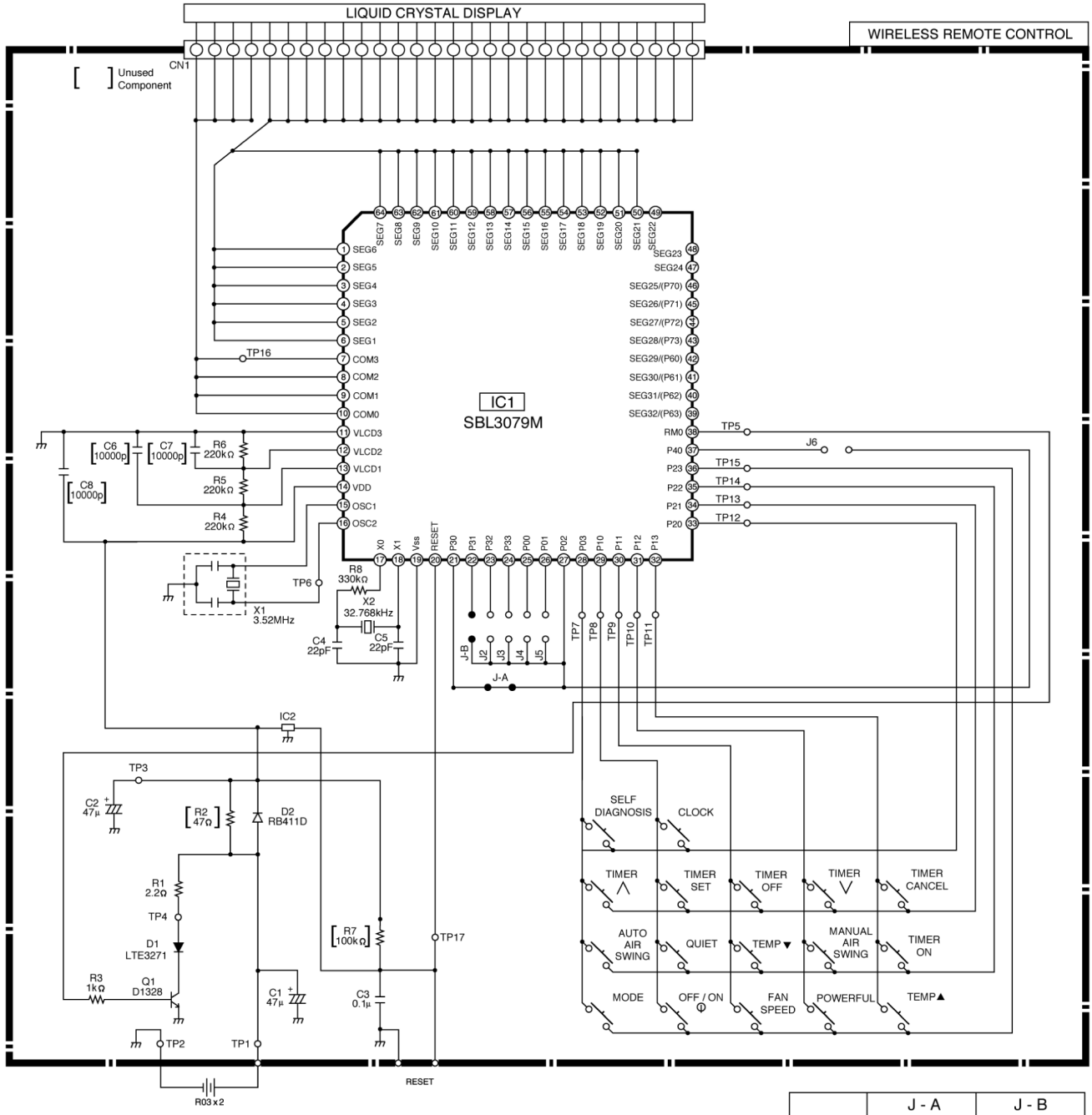
* Diode without indication.....MA165

※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE <INDOOR>

Name	Time	Test mode (When test point Short-circuited)
4 way valve abnormality	4 min.	24 sec.
Outdoor air temp. for Hz No. decision	30 min.	0 sec.
Anti-dew formation control	20 min.	0 sec.
Anti-freezing control	6 min.	0 sec.
Thermo OFF delay	3 min.	0 sec.
Low pressure control (gas leakage) compressor OFF time	3 min.	0 sec.
Time delay safety control	2 min. 58 sec.	0 sec.
Odour timer status shift time	20 sec.	0 sec.
	90 sec.	
	20 sec.	
	120 sec.	
Intake air temp. sampling time	2 min.	0 sec.
Self diagnosis display time	10 sec.	0 sec.
Auto mode judgement sampling time	20 sec.	0 sec.
24 hours Real Timer	1 hour	1 min.
Heating SSHi fan speed shift	120 min.	12 sec.
Cooling SHi fan speed shift	30 min.	3 sec.
Hot start forced completion	4 min.	0.4 sec.
Auto mode judgement interval	30 min.	3 sec.
After Hot start / Deice	2 min.	12 sec.

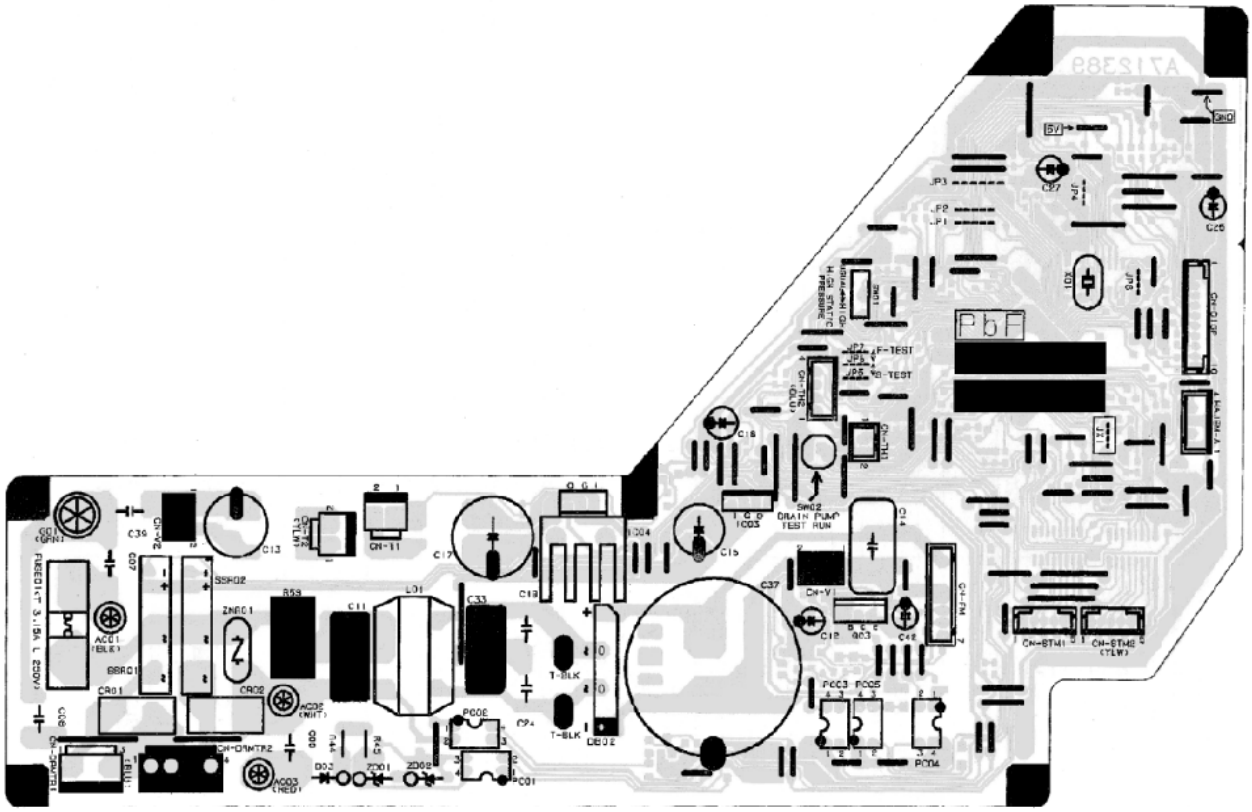
16.3.2. Circuit Diagram (Remote Control)



	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

16.3.3. Printed Circuit Board (Indoor Unit)

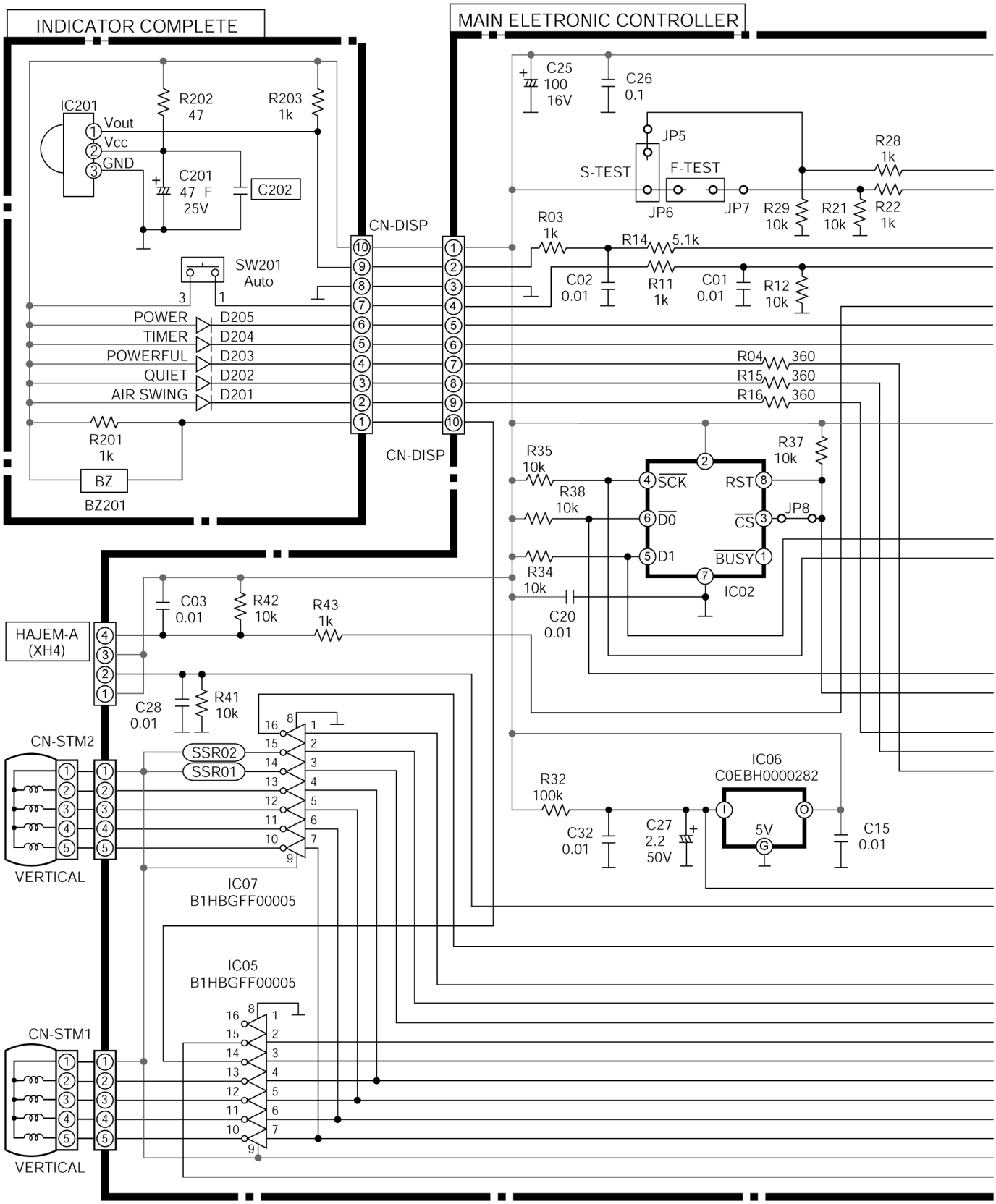
● **MAIN**



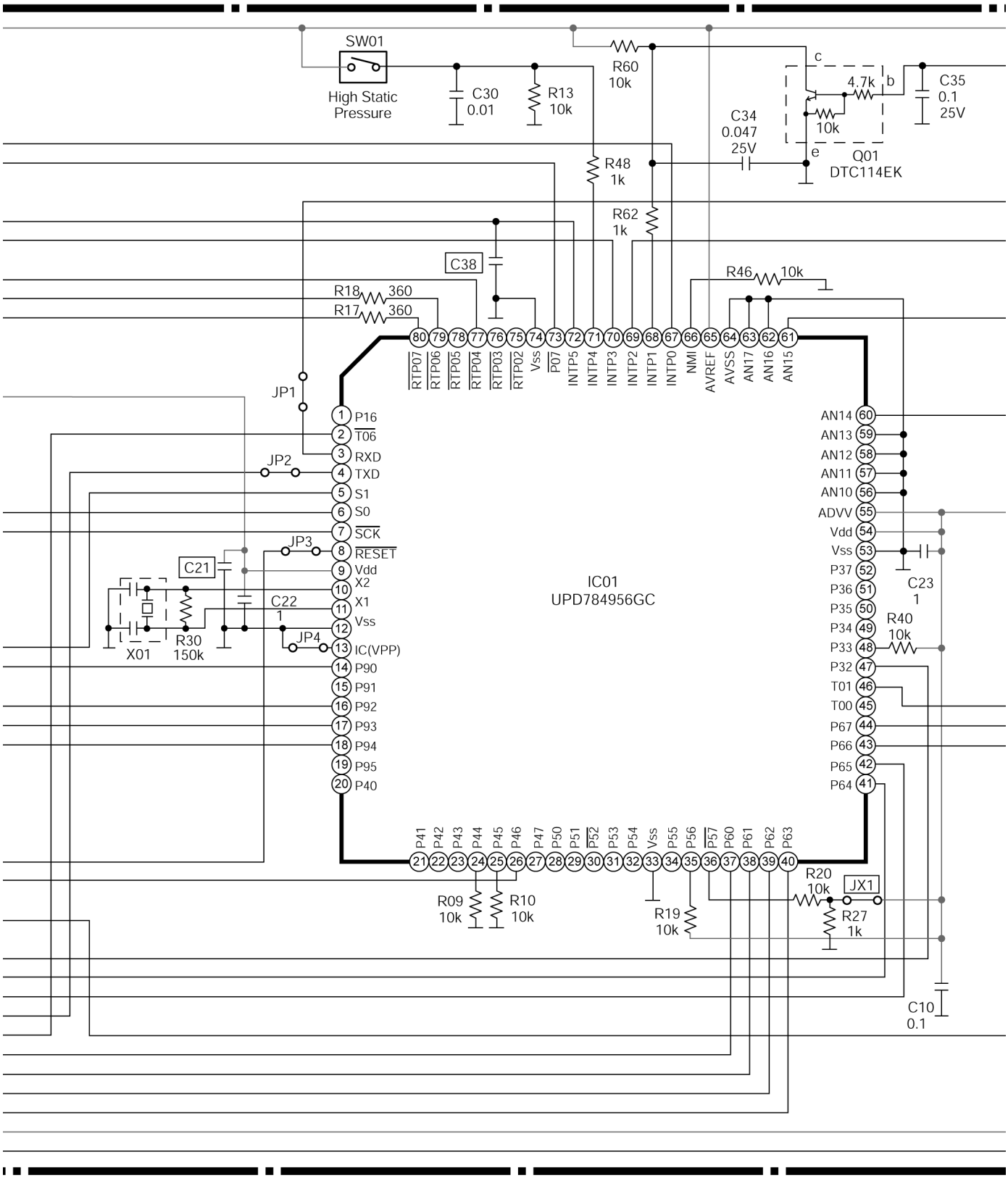
16.4. Mini-Cassette Type

16.4.1. Circuit Diagram (Indoor Units: CS-E15DB4EW / CS-E18DB4EW)

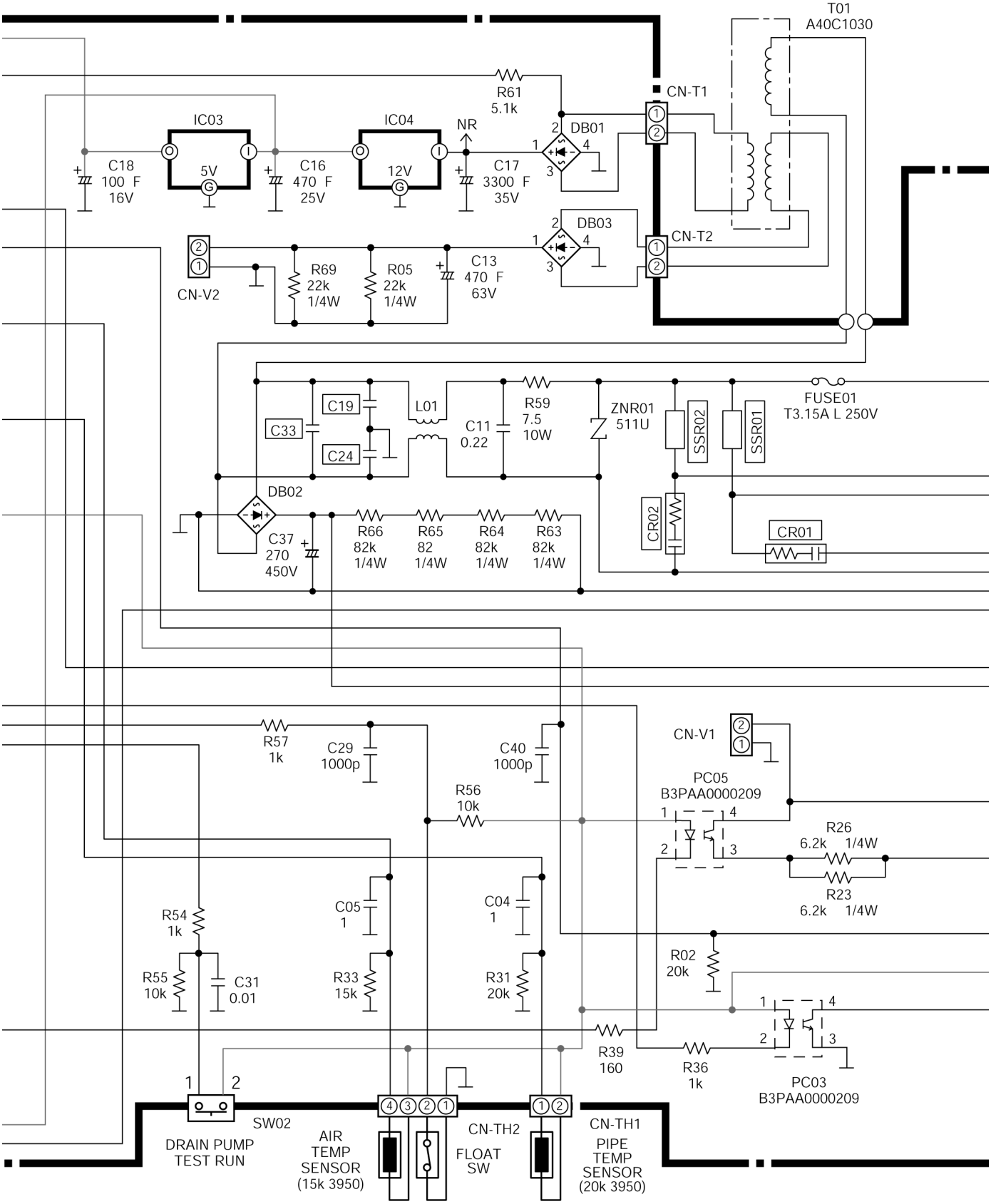
SCHEMATIC DIAGRAM 1/4



SCHEMATIC DIAGRAM 2/4



SCHEMATIC DIAGRAM 3/4



SCHEMATIC DIAGRAM 4/4

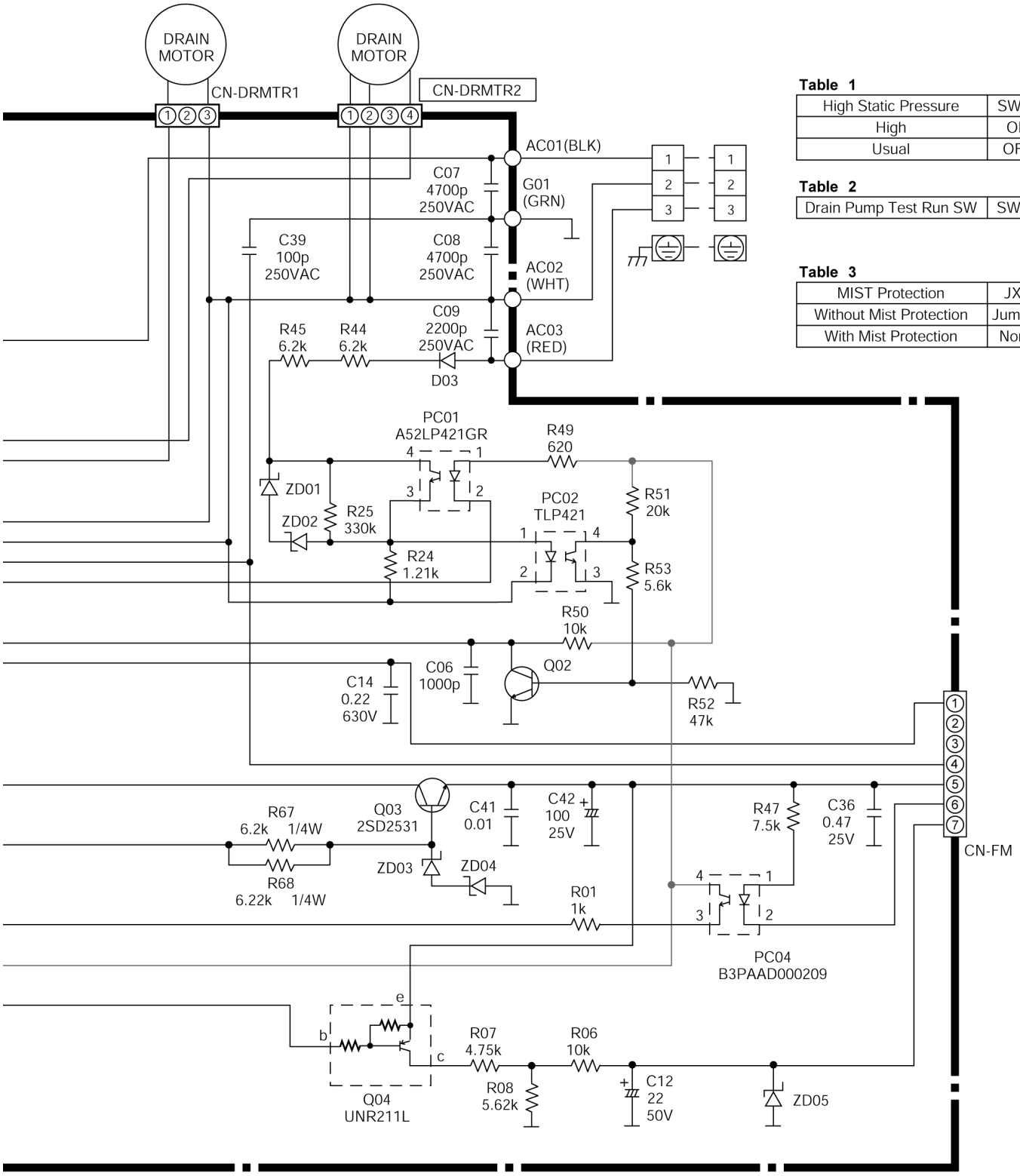


Table 1

High Static Pressure	SW01
High	ON
Usual	OFF

Table 2

Drain Pump Test Run SW	SW02

Table 3

MIST Protection	JX1
Without Mist Protection	Jumper
With Mist Protection	None

How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
  Use them for servicing.
  Voltage indication is in Red at all operations.

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
   .....metal oxide resister
  Tolerance±1%

* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor

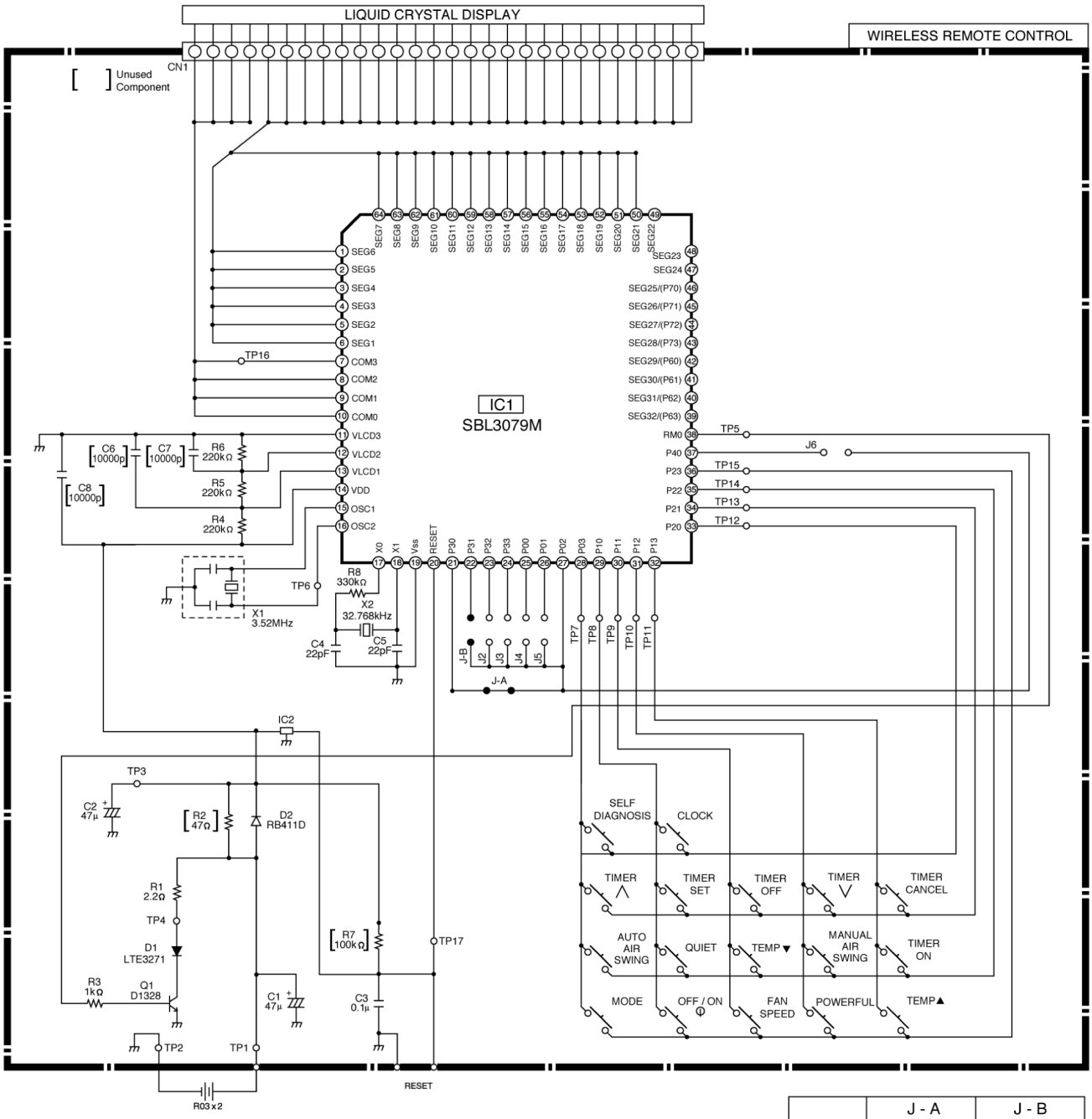
* Diode without indication.....MA165

※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE <INDOOR>

Name	Time	Test mode (When test point Short-circuited)
4 way valve abnormality	4 min.	24 sec.
Outdoor air temp. for Hz No. decision	30 min.	0 sec.
Anti-dew formation control	20 min.	0 sec.
Anti-freezing control	6 min.	0 sec.
Thermo OFF delay	3 min.	0 sec.
Low pressure control (gas leakage) compressor OFF time	3 min.	0 sec.
Time delay safety control	2 min. 58 sec.	0 sec.
Odour timer status shift time	20 sec.	0 sec.
	90 sec.	
	20 sec.	
	120 sec.	
Intake air temp. sampling time	2 min.	0 sec.
Self diagnosis display time	10 sec.	0 sec.
Auto mode judgement sampling time	20 sec.	0 sec.
24 hours Real Timer	1 hour	1 min.
Heating SSHi fan speed shift	120 min.	12 sec.
Cooling SHi fan speed shift	30 min.	3 sec.
Hot start forced completion	4 min.	0.4 sec.
Auto mode judgement interval	30 min.	3 sec.
After Hot start / Deice	2 min.	12 sec.

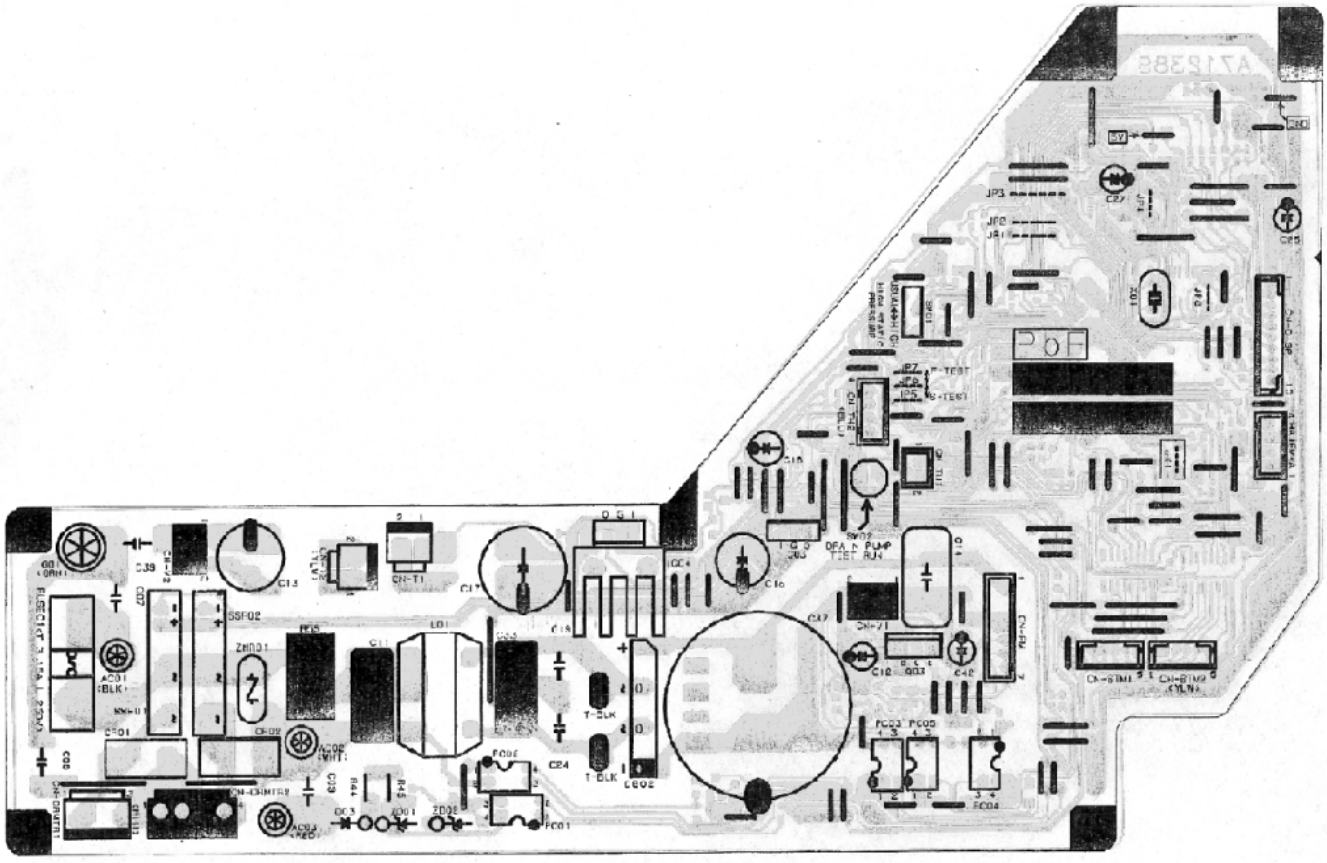
16.4.2. Circuit Diagram (Remote Control)



	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

16.4.3. Printed Circuit Board (Indoor Unit)

● **MAIN**

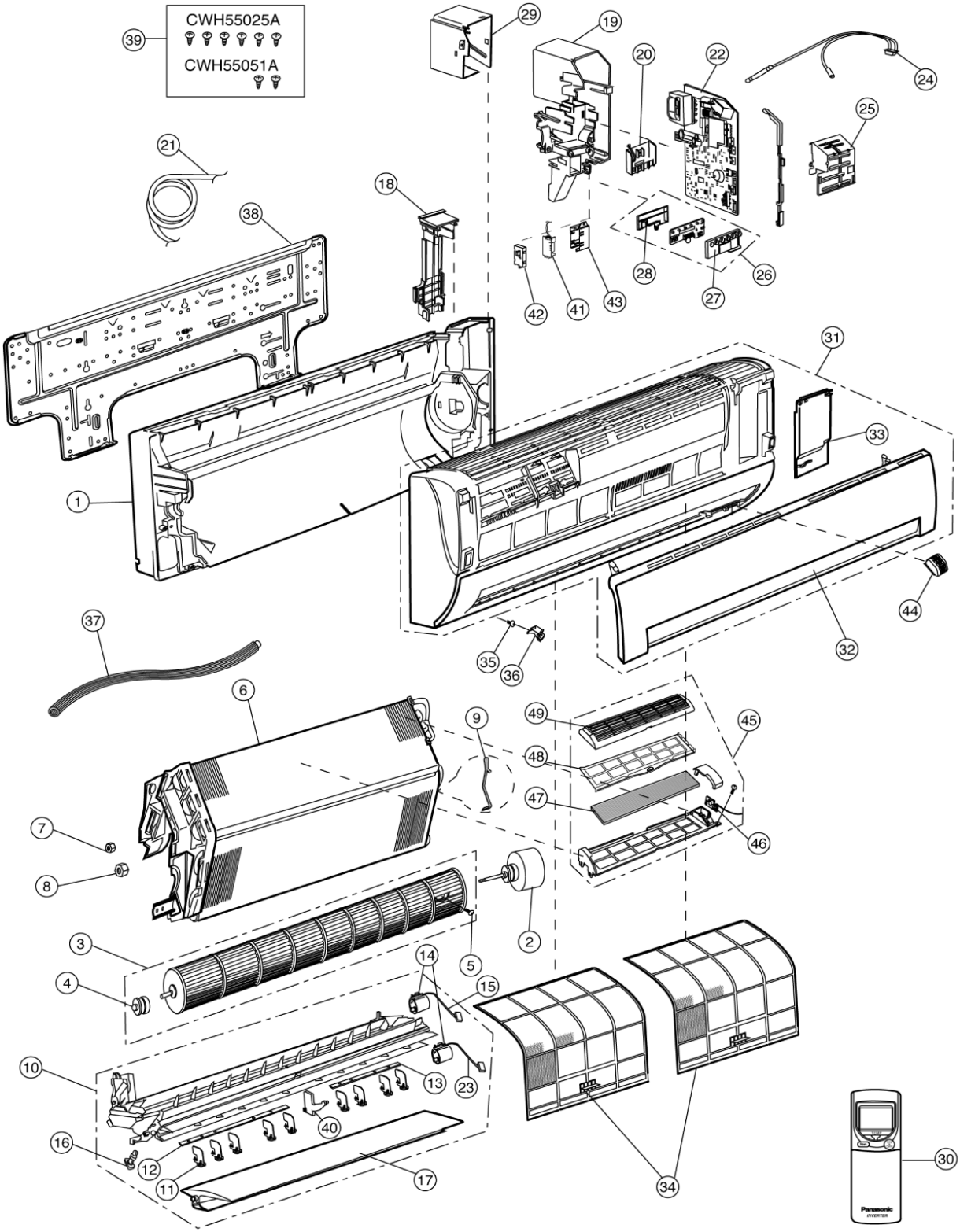


17 Exploded View and Replacement Parts List

17.1. Wall Type

17.1.1. Exploded View (Indoor Unit)

CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG / CS-E9DKEW / CS-E9DKRW / CS-E9DKDW / CS-E12DKEW / CS-E12DKRW / CS-E12DKDW



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.1.2. Replacement Parts List (Indoor Unit)

Models:
CS-ME7DKEG / CS-ME7DKRG / CS-ME7DKDG /
CS-E9DKEW / CS-ME9DKRW / CS-E9DKDW /
CS-E12DKEW /CS-E12DKRW / CS-E12DKDW

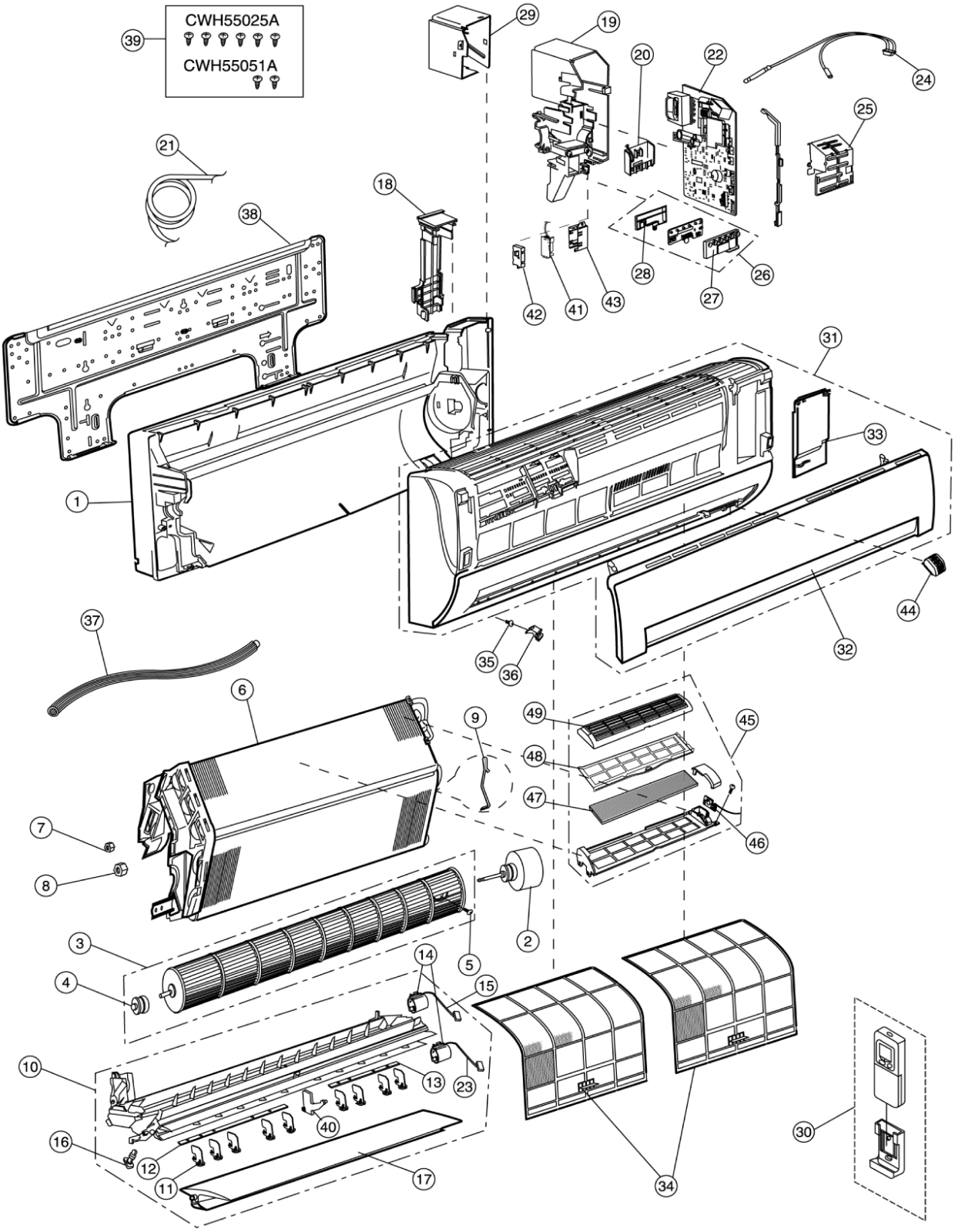
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-ME7DKEG CS-ME7DKRG CS-ME7DKDG	CS-E9DKEW CS-E9DKRW CS-E9DKDW	CS-E12DKEW CS-E12DKRW CS-E12DKDW	REMARKS
1	CHASSY COMPLETE	1	CWD50C1431	←	←	
2	FAN MOTOR	1	CWA981149	←	←	●
3	CROSS FLOW FAN COMPLETE	1	CWH02C1031	←	←	
4	BEARING ASS'Y	1	CWH64K007	←	←	
5	SCREW - CROSS FLOW FAN	1	CWH4580304	←	←	
6	EVAPORATOR	1	CWB30C1597	←	CWB30C1726	
7	FLARE NUT	1	CWT25086 (1/4")	←	←	
8	FLARE NUT	1	CWT25087 (3/8")	←	CWT25096 (1/2")	
9	HOLDER SENSOR	1	CWH32143	←	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2343	←	←	
11	VERTICAL VANE	9	CWE241150	←	←	
12	CONNECTING BAR	1	CWE261072	←	←	
13	CONNECTING BAR	1	CWE261065	←	←	
14	AIR SWING MOTOR	1	CWA98260	←	←	●
15	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3849	←	←	
16	CAP - DRAIN TRAY	1	CWH521096	←	←	
17	HORIZONTAL VANE	1	CWE241173	←	←	
18	BACK COVER CHASSIS	1	CWD932454	←	←	
19	CONTROL BOARD CASING	1	CWH102259	←	←	
20	TERMINAL BOARD COMPLETE	1	CWA28C2082	←	←	●
21	POWER SUPPLY CORD	1	–	←	–	
22	ELECTRONIC CONTROLLER - MAIN	1	CWA73C1679	CWA73C1667	CWA73C1668	●
23	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3977	←	←	●
24	SENSOR COMPLETE	1	CWA50C2122	←	←	●
25	CONTROL BOARD FRONT COVER	1	CWH13C1120	←	←	
26	INDICATOR COMPLETE	1	CWE39C1126	←	←	●
27	INDICATOR HOLDER	1	CWD932429	←	←	
28	INDICATOR HOLDER	1	CWD932430	←	←	
29	CONTOL BOARD TOP COVER	1	CWH131207	←	←	
30	REMOTE CONTROL COMPLETE	1	CWA75C2616	←	←	●
31	FRONT GRILLE COMPLETE	1	CWE11C3138	←	←	●
32	INTAKE GRILLE	1	CWE22C1154	←	←	
33	GRILLE DOOR	1	CWE141073	←	←	
34	AIR FILTER	2	CWD001144	←	←	
35	SCREW - FRONT GRILLE	2	XTT4+16C	←	←	
36	CAP - FRONT GRILLE	2	CWH521109	←	←	
37	DRAIN HOSE	1	CWH851063	←	←	
38	INSTALLATION PLATE	1	CWH361067	←	←	
39	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	←	
40	FULCRUM	1	CWH621046	←	←	
41	ELECTRONIC CONTROLLER - IONIZER	1	CWA743675	←	←	●
42	CASING - IONIZER	1	CWD932464	←	←	
43	CASING - IONIZER	1	CWD932431	←	←	
44	ION GENERATOR	1	CWH94C0001	←	←	
45	SUPERSOINC AIR PURIFYING DEVICE	1	CWH91C1013	←	←	
46	ELECTRONIC CONTROLLER SUPERSONIC	1	CWA743874	←	←	●
47	SUPERSONIC ALLERU BUSTER FILTER	1	CWD00C1133	←	←	
48	FRAME FR AIR FILTER SUPERSONIC	1	CWD011026	←	←	
49	FRAME FR AIR FILTER SUPERSONIC	1	CWD011027	←	←	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.

17.1.3. Exploded View (Indoor Unit)

CS-E15DKEW / CS-E15DKRW / CS-E15DKDW



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.1.4. Replacement Parts List (Indoor Unit)

Models:

CS-E15DKEW / CS-E15DKRW / CS-E15DKDW

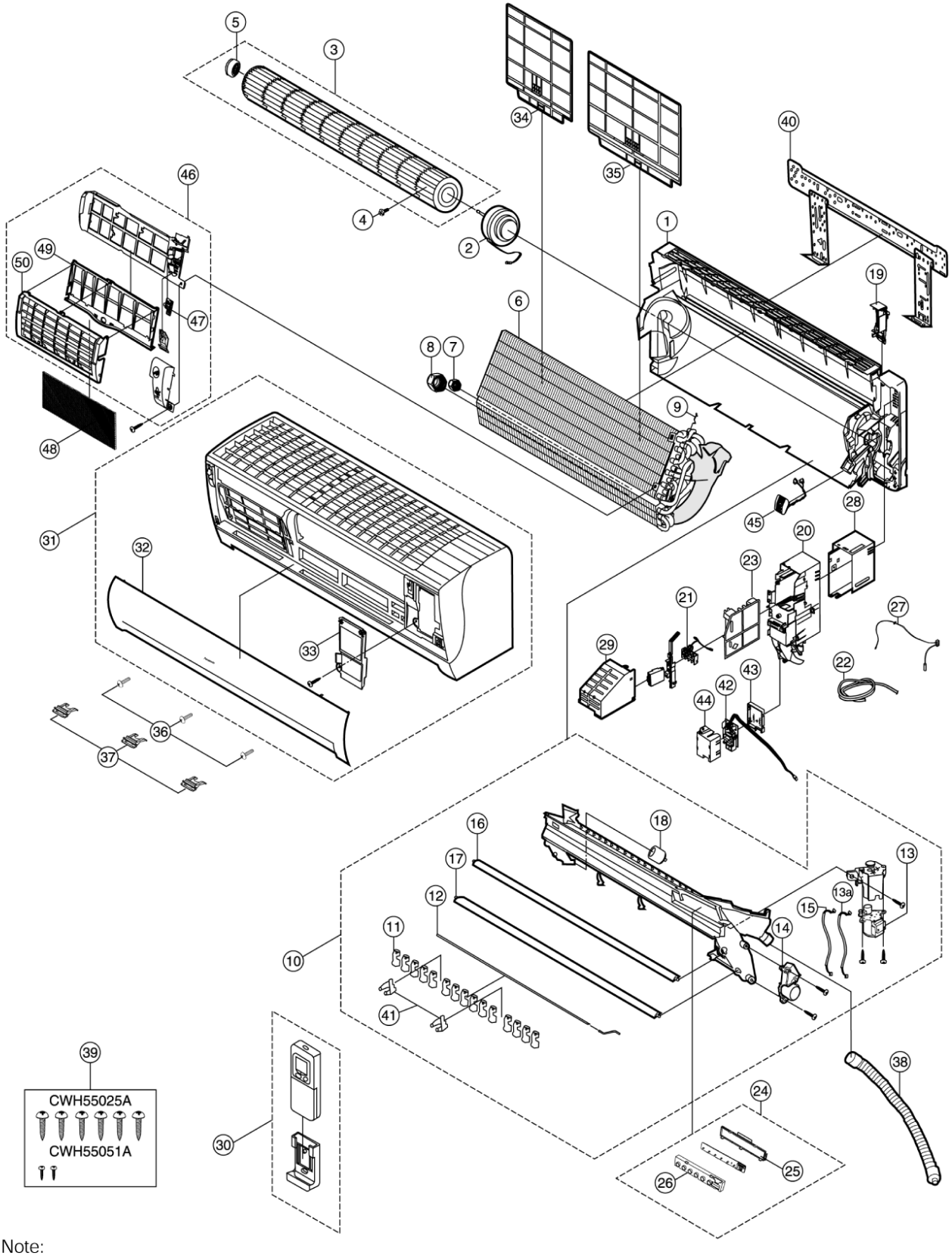
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-E15DKEW	CS-E15DKRW	CS-E15DKDW	REMARKS
1	CHASSY COMPLETE	1	CWD50C1431	←	←	
2	FAN MOTOR	1	CWA981149	←	←	●
3	CROSS FOLW FAN COMPLETE	1	CWH02C1031	←	←	
4	BEARING ASS'Y	1	CWH64K007	←	←	
5	SCREW - CROSS FLOW FAN	1	CWH4580304	←	←	
6	EVAPORATOR	1	CWB30C1726	←	←	
7	FLARE NUT	1	CWT25086 (1/4")	←	←	
8	FLARE NUT	1	CWT25096 (1/2")	←	←	
9	HOLDER SENSOR	1	CWH32143	←	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2343	←	←	
11	VERTICAL VANE	9	CWE241150	←	←	
12	CONNECTING BAR	1	CWE261072	←	←	
13	CONNECTING BAR	1	CWE261065	←	←	
14	AIR SWING MOTOR	2	CWA98260	←	←	●
15	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3849	←	←	
16	CAP - DRAIN TRAY	1	CWH521096	←	←	
17	HORIZONTAL VANE	1	CWE241173	←	←	
18	BACK COVER CHASSIS	1	CWD932454	←	←	
19	CONTROL BOARD CASING	1	CWH102259	←	←	
20	TERMINAL BOARD COMPLETE	1	CWA28C2082	←	←	●
21	POWER SUPPLY CORD	1	–	←	←	
22	ELECTRONIC CONTROLLER - MAIN	1	CWA73C1669	←	←	●
23	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3977	←	←	●
24	SENSOR COMPLETE	1	CWA50C2122	←	←	●
25	CONTROL BOARD FRONT COVER	1	CWH13C1120	←	←	
26	INDICATOR COMPLETE	1	CWE39C1126	←	←	●
27	INDICATOR HOLDER	1	CWD932429	←	←	
28	INDICATOR HOLDER	1	CWD932430	←	←	
29	CONTROL BOARD TOP COVER	1	CWH131207	←	←	
30	REMOTE CONTROL COMPLETE	1	CWA75C2616	←	←	●
31	FRONT GRILLE COMPLETE	1	CWE11C3138	←	←	●
32	INTAKE GRILLE	1	CWE22C1154	←	←	
33	GRILLE DOOR	1	CWE141073	←	←	
34	AIR FILTER	2	CWD001144	←	←	
35	SCREW - FRONT GRILLE	2	XTT4+16C	←	←	
36	CAP - FRONT GRILLE	2	CWH521109	←	←	
37	DRAIN HOSE	1	CWH851063	←	←	
38	INSTALLATION PLATE	1	CWH361067	←	←	
39	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	←	
40	FULCRUM	1	CWH621046	←	←	
41	ELECTRONIC CONTROLLER - IONIZER	1	CWA743675	←	←	●
42	CASING - IONIZER	1	CWD932464	←	←	
43	CASING - IONIZER	1	CWD932431	←	←	
44	ION GENERATOR	1	CWH94C0001	←	←	
45	SUPERSONIC AIR PURIFYING DEVICE	1	CWH91C1013	←	←	
46	ELECTRONIC CONTROLLER SUPERSONIC	1	CWA743874	←	←	●
47	SUPER ALLERU BUSTER FILTER	1	CWD00C1133	←	←	
48	FRAME FR AIR FILTER SUPERSONIC	1	CWD011026	←	←	
49	RRAME FR AIR FILTER SUPERSONIC	1	CWD011027	←	←	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.

17.1.5. Exploded View (Indoor Unit)

CS-E18DKEW / CS-E18DKRW / CS-E18DKDW



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.1.6. Replacement Parts List (Indoor Unit)

Models:

CS-E18DKEW / CS-E18DKRW / CS-E18DKDW

REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-E18DKEW	CS-E18DKRW	CS-E18DKDW	REMARKS
1	CHASSY COMPLETE	1	CWD50C1382	←	←	
2	FAN MOTOR	1	CWA981149	←	←	●
3	CROSS FOLW FAN COMPLETE	1	CWH02C1010	←	←	
4	SCREW - CROSS FLOW FAN	1	CWH4580304	←	←	
5	BEARING ASS'Y	1	CWH64K007	←	←	
6	EVAPORATOR	1	CWB30C1533	←	←	
7	FLARE NUT	1	CWT25086 (1/4")	←	←	
8	FLARE NUT	1	CWT25096 (1/2")	←	←	
9	HOLDER SENSOR	1	CWH32143	←	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2441	←	←	
11	VERTICAL VANE	15	CWE241088	←	←	
12	CONNECTING BAR	1	CWE261025	←	←	
13	AIR SWING MOTOR	1	CWA98260	←	←	●
13a	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3849	←	←	
14	AIR SWING MOTOR	1	CWA98K1008	←	←	●
15	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3731	←	←	
16	HORIZONTAL VANE	1	CWE241152A	←	←	
17	HORIZONTAL VANE	1	CWE241153A	←	←	
18	CAP - DRAIN TRAY	1	CWH52C1001	←	←	
19	BACK COVER CHASSIS	1	CWD932162B	←	←	
20	CONTROL BOARD CASING	1	CWH102250	←	←	
21	TERMINAL BOARD COMPLETE	1	CWA28C2082	←	←	●
22	POWER SUPPLY CORD	1	–	←	←	●
23	ELECTRONIC CONTROLLER - MAIN	1	CWA73C1670	←	←	●
24	INDICATOR COMPLETE	1	CWE39C1116	←	←	●
25	INDICATOR HOLDER	1	CWD932435	←	←	
26	INDICATOR HOLDER	1	CWD932436	←	←	
27	SENSOR COMPLETE	1	CWA50C2122	←	←	●
28	CONTROL BOARD TOP COVER	1	CWH131209	←	←	
29	CONTROL BOARD FRONT COVER	1	CWH131210	←	←	
30	REMOTE CONTROL COMPLETE	1	CWA75C2616	←	←	●
31	FRONT GRILLE COMPLETE	1	CWE11C3160	←	←	●
32	INTAKE GRILLE COMPLETE	1	CWE22C1159	←	←	●
33	GRILLE DOOR	1	CWE141076	←	←	
34	AIR FILTER (L)	1	CWD001137	←	←	
35	AIR FILTER (R)	1	CWD001138	←	←	
36	SCREW - FRONT GRILLE	3	XTT4+16C	←	←	
37	CAP - FRONT GRILLE	3	CWH521062A	←	←	
38	DRAIN HOSE	1	CWH851063	←	←	
39	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	←	
40	INSTALLATION PLATE	1	CWH36K1007	←	←	
41	FULCRUM	2	CWH621047	←	←	
42	ELECTRONIC CONTROLLER - IONIZER	1	CWA743675	←	←	●
43	CASING - IONIZER	1	CWD932464	←	←	
44	CASING - IONIZER	1	CWD932527	←	←	
45	ION GENERATOR	1	CWH94C0001	←	←	
46	SUPERSONIC AIR PURIFYING DEVICE	1	CWH91C1013	←	←	
47	ELECTRONIC CONTROLLER SUPERSONIC	1	CWA743874	←	←	●
48	SUPER ALLERU BUSTER FILTER	1	CWD00C1133	←	←	
49	FRAME FR AIR FILTER SUPERSONIC	1	CWD011026	←	←	
50	RRAME FR AIR FILTER SUPERSONIC	1	CWD011027	←	←	

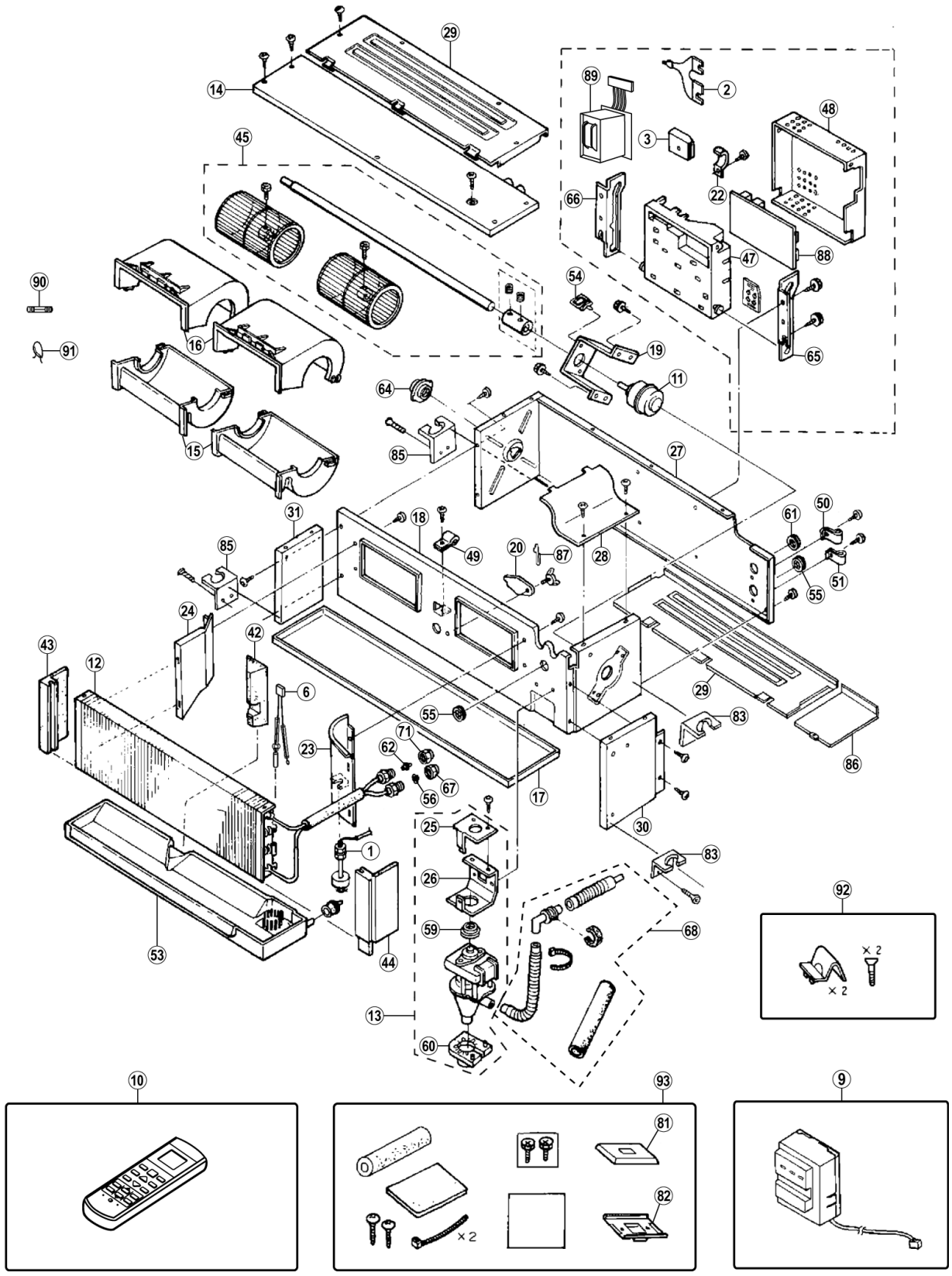
(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.

17.2. Duct Type

17.2.1. Exploded View (Indoor Unit)

CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.2.2. Replacement Parts List (Indoor Unit)

Models:
CS-ME10DD3EG / CS-E15DD3EW / CS-E18DD3EW

REF NO.	PART NAME & DESCRIPTION	QTY.	CS-ME10DD3EG	CS-E15DD3EW	CS-E18DD3EW	REMARKS
1	FLOAT SWITCH	1	CWA12161	←	←	●
2	THERMAL FUSE	1	CWA16C1038	←	←	●
3	TERMINAL BOARD COMPLETE	1	CWA28K1045J	←	←	●
6	SENSOR COMPLETE	1	CWA50C2270	←	←	●
9	REMOTE CONTROL (RECEIVER)	1	CWA75C2773	←	←	●
10	REMOTE CONTROL	1	CWA75C2610X	←	←	●
11	FAN MOTOR	1	ARW41G8P30AC	←	←	●
12	EVAPORATOR	1	CWB302123XA	CWB302123XB	CWB302356X	
13	DRAIN PUMP COMPLETE	1	CWB53C1010	←	←	●
14	PARTICULAR PLATE-1	1	CWD11024XA	←	CWD11026XA	
15	AIR GUIDER-1	2	CWD32091	←	←	
16	AIR GUIDER-2	2	CWD32092	←	←	
17	BOTTOM PLATE	1	CWD52259X	←	←	
18	BULKHEAD	1	CWD531019	←	←	
19	BRACKET FAN MOTOR	1	CWD541036	←	←	
20	PARTICULER PLATE-2	1	CWD74100	←	←	
22	HOLDER LEAD WIRE-1	1	CWH31103	←	←	
23	PARTICULER PLATE-3	1	CWD90K080	←	CWD90K086	
24	PARTICULER PLATE-4	1	CWD90616	←	CWD90635	
25	PARTICULER PLATE-5	1	CWD90618	←	←	
26	PARTICULER PLATE-6	1	CWD90766	←	←	
27	CABINET BACK PLATE	1	CWE02079	←	←	
28	CABINET TOP PLATE-1	1	CWE03034	←	←	
29	CABINET TOP PLATE-2	2	CWE03035X	←	←	
30	CABINET SIDE PLATE-1	1	CWE04071	←	CWE04079	
31	CABINET SIDE PLATE-2	1	CWE04072X	←	CWE04080X	
42	INSULATION SHEET-1	1	CWG07165	←	CWG07174	
43	INSULATION SHEET-2	1	CWG07166	←	CWG07175	
44	INSULATION SHEET-3	1	CWG07167	←	CWG07176	
45	CROSS-FLOW FAN COMPLETE	1	CWH01C005	←	←	
47	CONTROL BOARD BOX	1	CWH10527	←	←	
48	CONTROL COVER	1	CWH131144X	←	←	
49	HOLDER LEAD WIRE-2	1	CWH31044	←	←	
50	HOLDER LEAD WIRE-3	1	CWH31030	←	←	
51	HOLDER LEAD WIRE-4	1	CWD77013	←	←	
53	DRAIN TRAY	1	CWH40C061	←	←	
54	BELT	1	CWH4605008	←	←	
55	BUSHING-1	2	CWH4610440	←	←	
56	CAP-1 (1/4" LIQUID SIDE)	1	CWH52061	←	←	
59	BUSHING-2	1	CWH50147	←	←	
60	BUSHING-3	1	CWH50146	←	←	
61	BUSHING-4	1	CWH51134	←	←	
62	CAP-2 (GAS SIDE)	1	CWH52062 (3/8")	CWH52063 (1/2")	←	
64	FULCRUM	1	CWH64C015	←	←	
65	GUIDER-1	1	CWH691004	←	←	
66	GUIDER-2	1	CWH69025	←	←	
67	FLARE NUT (1/4")	1	CWT25086	←	←	
68	DRAIN HOSE COMPLETE	1	CWH85C008	←	←	
71	FLARE NUT (GAS SIDE)	1	CWT25087 (3/8")	CWT25096 (1/2")	←	
81	COVER FOR RECEIVER	1	CWD66132B	←	←	
82	RECEIVER PIECE-1	1	CWD90650	←	←	
83	PARTICULER PIECE-1	2	CWD93435	←	←	
85	PARTICULER PIECE-2	2	CWD93436	←	←	
86	CABINET BOTTOM PLATE	1	CWE05012X	←	←	
87	HOLDER SENSOR-2	1	CWH32137	←	←	
88	PC BOARD (MAIN)	1	CWA73C1840	CWA73C1841	CWA73C1842	●
89	TRASFORMER (ON-BOARD)	1	CWA40C1027	←	←	
90	FUSE (250V 3.15A)	1	XBA2C31TRO	←	←	
91	ZNR	1	ERZVEAV511	←	←	
92	BAG COMPLETE-1 (SCREWS, HOLDER)	1	CWG86C994	←	←	
93	BAG COMPLETE-2 (SCREWS, BELT, ETC.)	1	CWH82C1277	←	←	

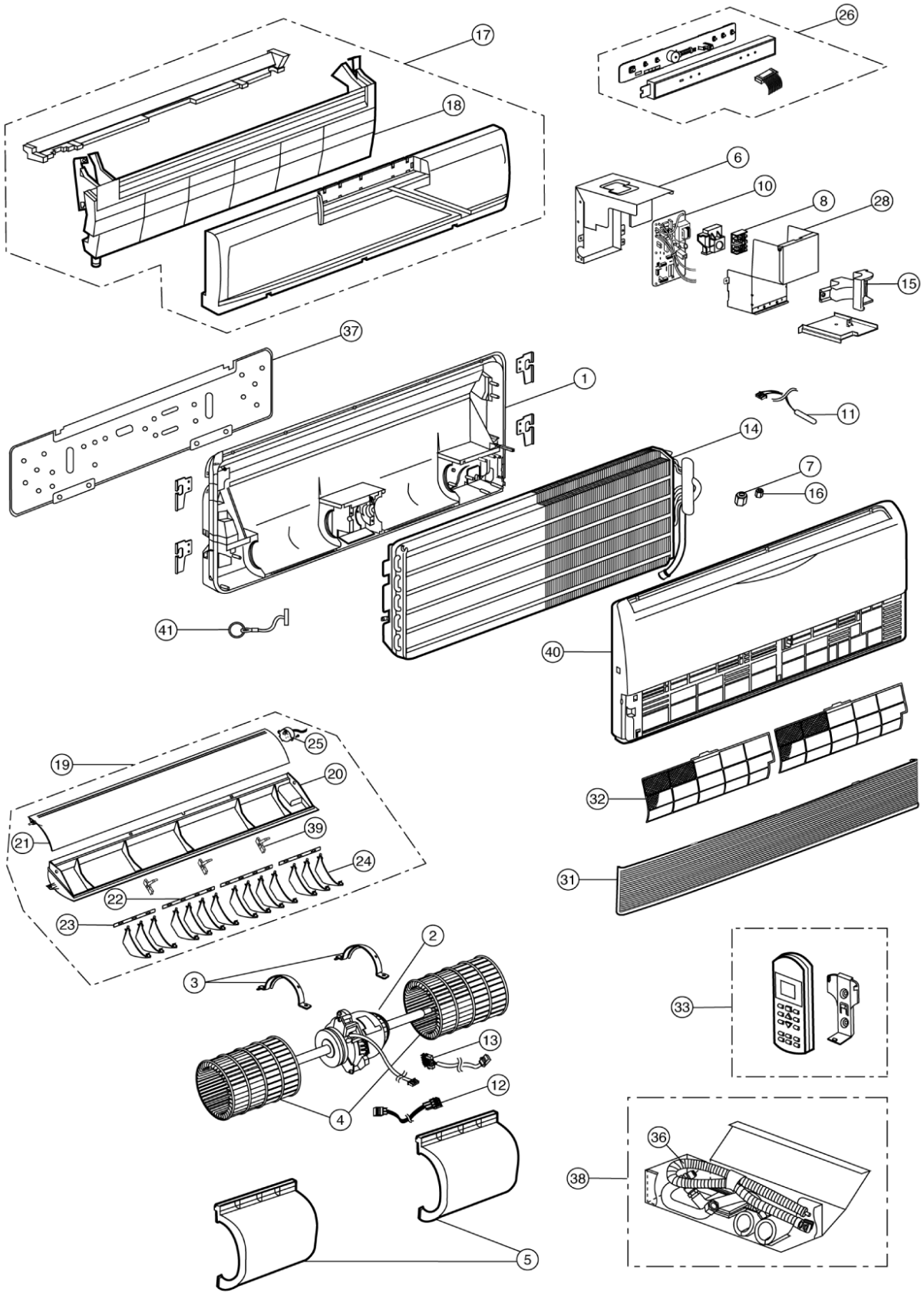
(Note)

- All parts are supplied from ACD in Japan.
- " ● " marked parts are recommended to be kept in stock.

17.3. Ceiling Floor Type

17.3.1. Exploded View (Indoor Unit)

CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.3.2. Replacement Parts List (Indoor Unit)

Models:

CS-ME10DTEG / CS-E15DTEW / CS-E18DTEW

REF NO.	PART NAME & DESCRIPTION	QTY.	CS-ME10DTEG	CS-E15DTEW	CS-E18DTEW	REMARKS
1	CHASSY COMPLETE	1	CWD50C1419	←	←	
2	FAN MOTOR	1	CWA921158	←	←	●
3	SUPPORTER FAN MOTOR	2	CWD932270	←	←	
4	BLOWER WHEEL ASS'Y	2	CWH01K1014	←	←	
5	AIR GUIDER B.W.	2	CWD321046	←	←	
6	CONTROL BOARD ASS'Y	1	CWH10K1055	←	←	
7	FLARE NUT (1/2")	1	CWT251032	←	←	
8	TERMINAL BOARD ASS'Y	1	CWA28K1036	←	←	●
10	ELECTRONIC CONTROLLER	1	CWA73C1774	CWA73C1771	CWA73C1772	●
11	SENSOR ASS'Y COMP.	1	CWA50C2157	←	←	●
12	LEAD WIRE FAN MOTOR	1	CWA67C4431	←	←	
13	LEAD WIRE FAN MOTOR	1	CWA67C4474	←	←	
14	EVAPORATOR	1	CWB30C1663	←	CWB30C1661	
15	SUPPORTER TUBE ASS'Y	1	CWD932259	←	←	
16	FLARE NUT (1/4")	1	CWT25086	←	←	
17	DRAIN PAN COMPLETE	1	CWH40C1023	←	←	
18	TAP DRAIN TRAY	1	CWH401031	←	←	
19	DISCHARGE GRILLE COMPLETE	1	CWE20C2223	←	←	
20	DISCHARGE GRILLE	1	CWE201046	←	←	
21	VANE - AIR SWING	1	CWE241124	←	←	
22	CONNECTING BAR	2	CWE261052	←	←	
23	CONNECTING BAR	2	CWE261053	←	←	
24	VANE	14	CWE241126	←	←	●
25	AIR SWING MOTOR	1	CWA981085	←	←	●
26	INDICATOR COMP.	1	CWE39C1128	←	←	
28	CONTROL BOARD CASING ASS'Y	1	CWH13K1015	←	←	
31	INTAKE GRILLE COMPLETE	1	CWE22C1185	←	←	
32	AIR FILTER	2	CWD001088	←	←	
33	REMOTE CONTROL COMPLETE	1	CWA75C2610	←	←	●
36	DRAIN HOSE	1	CWH85284	←	←	
37	INSTALLATION HOLDER	1	CWH361018	←	←	
38	ACCESSORY COMPLETE	1	CWH82C1286	←	←	
39	FULCRUM	3	CWH621030	←	←	
40	FRONT GRILLE COMPLETE	1	CWE11C3209	←	←	
41	STRING COMPLETE	1	CWH84C1006	←	←	

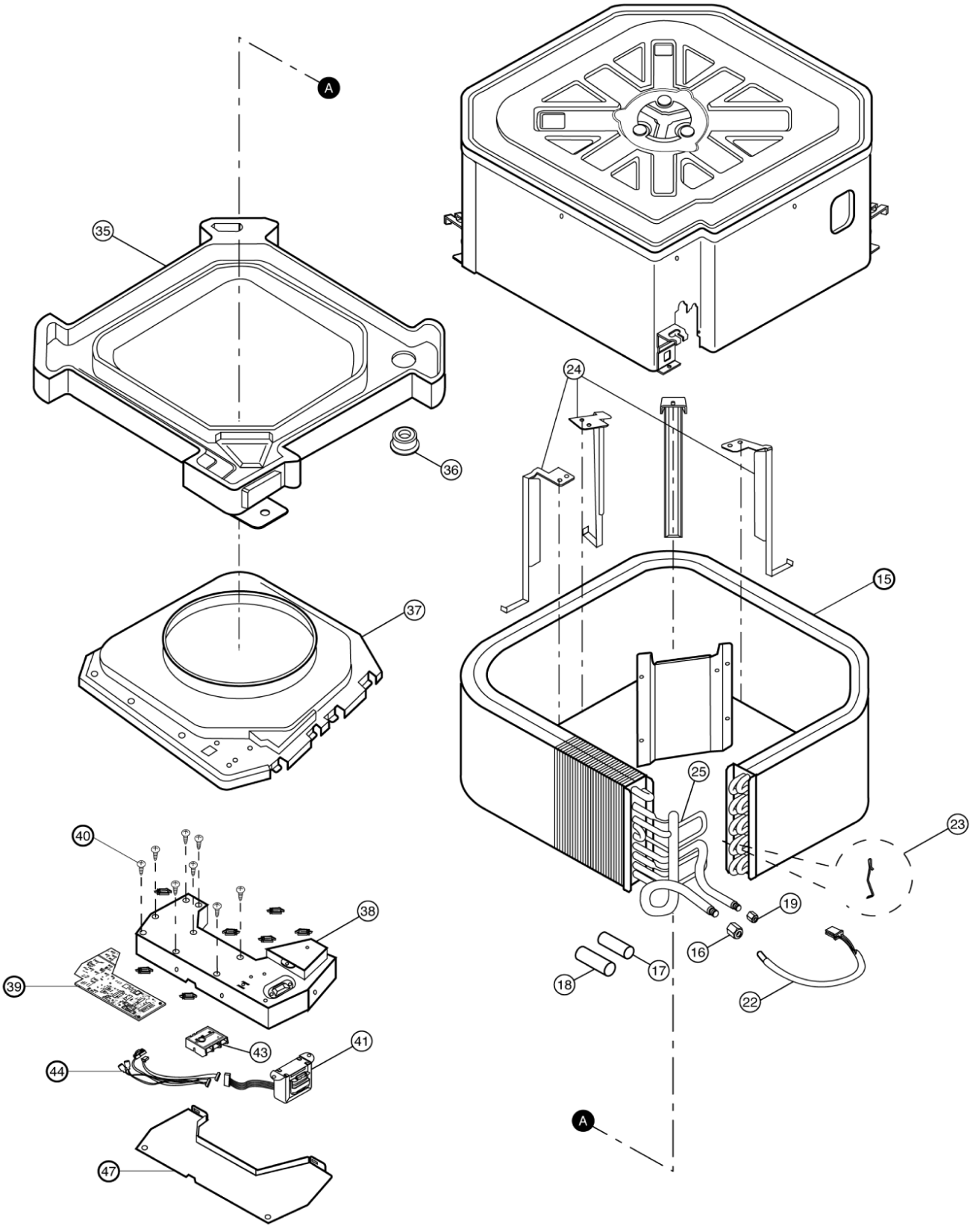
(Note)

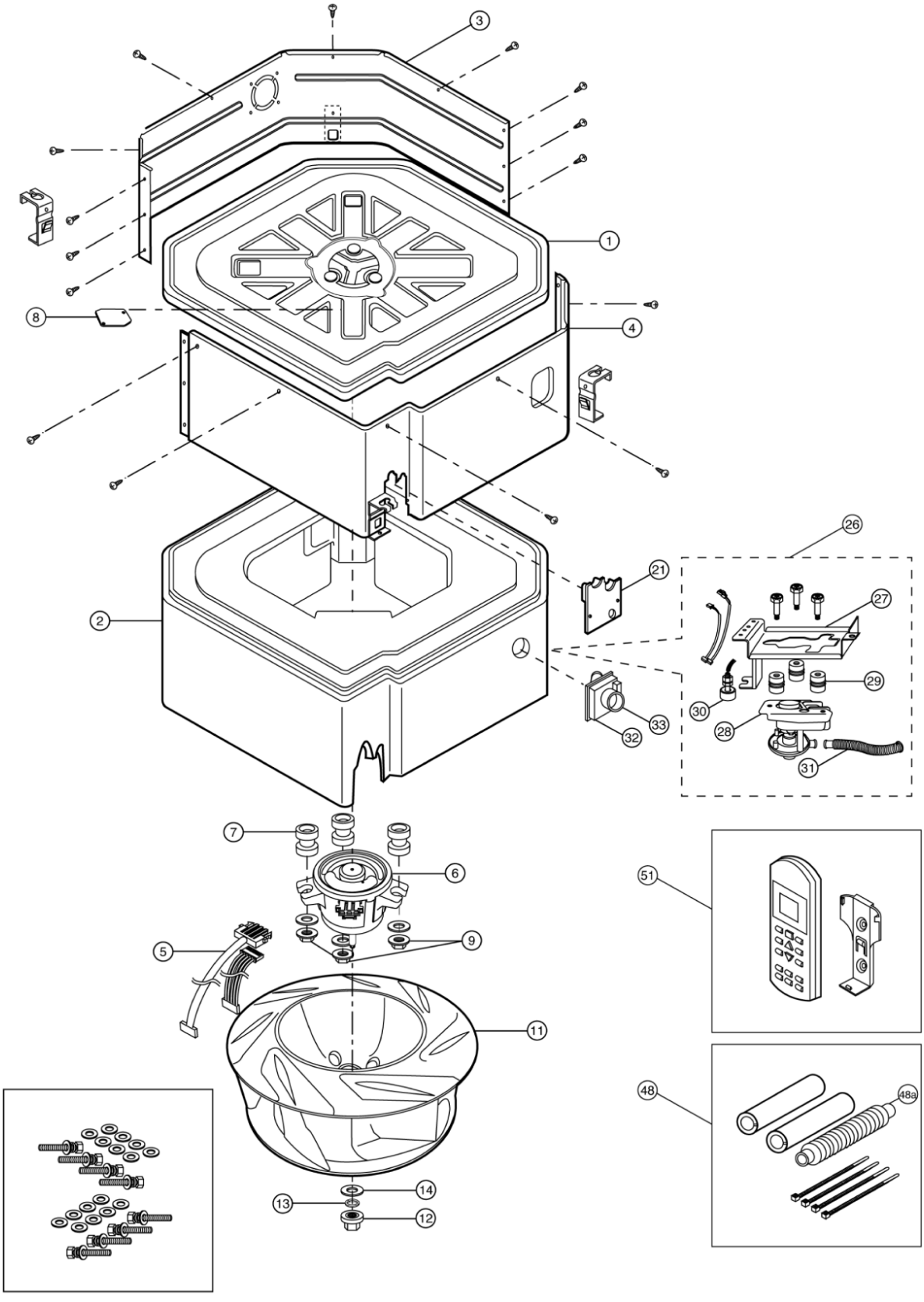
- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.

17.4. Mini-Cassette Type

17.4.1. Exploded View (Indoor Unit)

CS-E15DB4EW / CS-E18DB4EW





Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.4.2. Replacement Parts List (Indoor Unit)

Models:

CS-E15DB4EW / CS-E18DB4EW

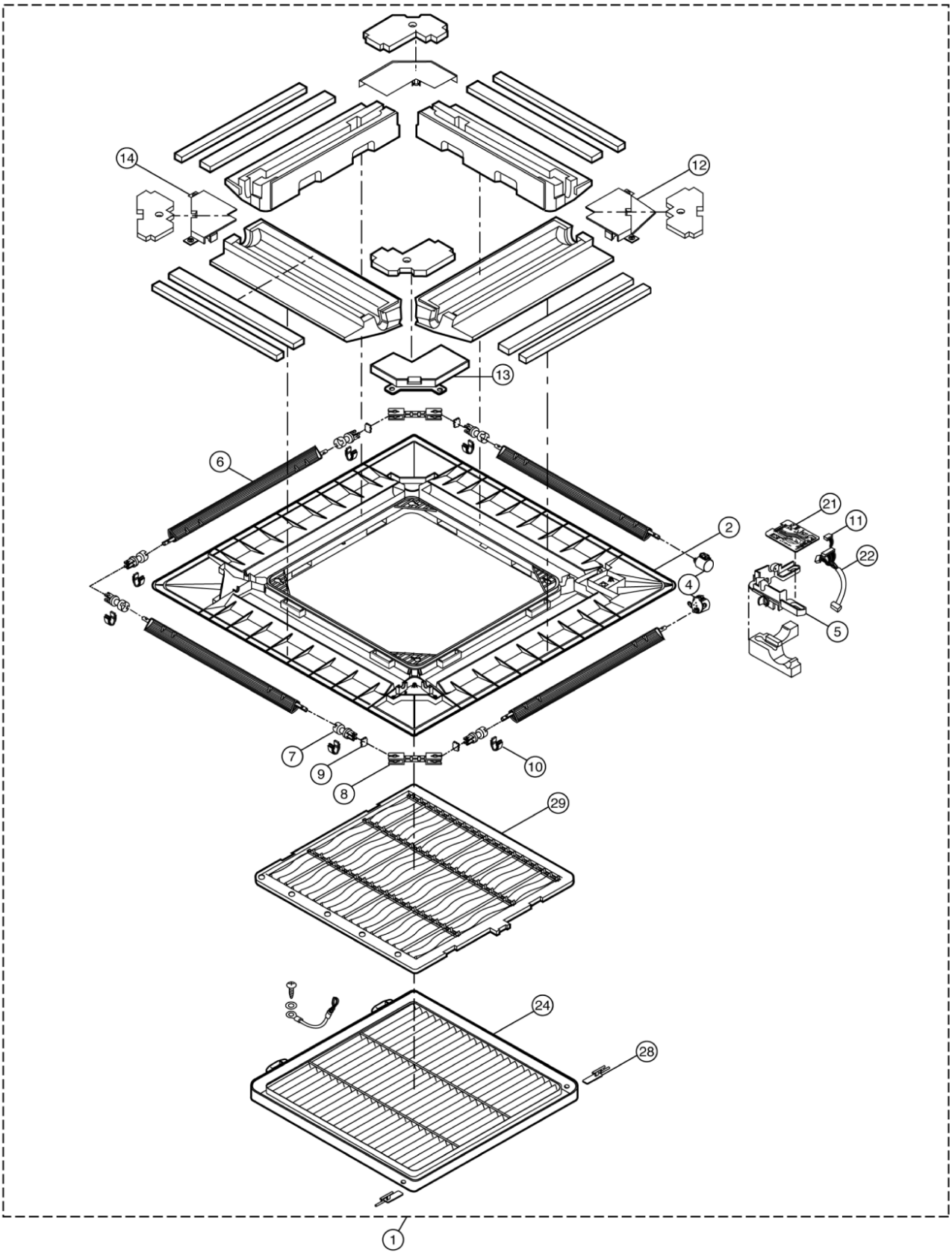
REF NO.	PART NAME & DESCRIPTION	QTY.	CS-E15DB4EW	CS-E18DB4EW	REMARKS
1	BASE PAN ASS'Y	1	CWD52K1100	←	
2	INNER POLYSTYRENE COMPLETE	1	CWG07C1047	←	
3	CABINET SIDE PLATE ASS'Y	1	CWE041121	←	
4	CABINET SIDE PLATE ASS'Y	1	CWE041122	←	
5	LEAD WIRE - FAN MOTOR	1	CWA67C5136	←	
6	FAN MOTOR	1	EHDS50A40AC	←	●
7	ANTI-VIBRATION BUSHING	3	CWH501065	←	
8	CORD HOLDER	1	CWD741024	←	
9	SCREW - FAN MOTOR	3	CWH7080300	←	
11	TURBO FAN	1	CWH03K1022	←	
12	NUT FOR TURBO FAN	1	CWH561042	←	
13	SP WASHER	1	XWA8	←	
14	WASHER	1	XWG8H22	←	
15	EVAPORATOR COMPLETE	1	CWB30C1688	←	
16	FLARE NUT (1/2")	1	CWT251032	←	
17	HEATPROOF TUBE	1	CWG021024	←	
18	HEADPROOF TUBE	1	CWG021064	←	
19	FLARE NUT (1/4")	1	CWT251030	←	
21	PIPE COVER	1	CWD93C1050	←	
22	SENSOR - EVAPORATOR	1	CWA50C2274	←	
23	HOLD SENSOR	1	CWH32143	←	
24	EVAPORATOR SURPORTER	3	CWD911529A	←	
25	TUBE ASS'Y (CAPIL. TUBE)	1	CWT07K1188	←	
26	DRAIN PUMP COMPLETE	1	CWB53C1015	←	
27	PANEL DRAIN PUMP ASS'Y	1	CWD93K1008	←	
28	DRAIN PUMP	1	CWB532043	←	
29	ANTI - VIBRATION BUSHING	3	CWH501080	←	
30	FLOAT SWITCH - DRAIN PUMP	1	CWA121215	←	
31	FLEXIBLE PIPE	1	CWH85C1033	←	
32	DRAIN NOZZLE	1	CWH411011	←	
33	DRAIN HOSE HEAT INSULATION	1	CWG321050	←	
35	DRAIN PAN - COMPLETE	1	CWH40C1034	←	
36	DRAIN PLUG	1	CWB821008	←	
37	AIR GUIDER BLOWER WHEEL	1	CWD321058	←	
38	CONTROL BOARD CASING	1	CWH10K1048	←	
39	ELECTRONIC CONTROLLER (MAIN)	1	CWA73C1778	CWA73C1779	●
40	SPACER	6	CWH541026	←	
41	TRANSFORMER	1	CWA40C1030	←	
43	TERMINAL BOARD - (3 PIN)	1	CWA28K1076	←	●
44	LEAD WIRE - AIR TEMP. SENSOR	1	CWA67C5139	←	●
47	CONTROL BOARD COVER	1	CWH13C1100	←	
48	ACCESSORY COMPLETE	1	CWH82C127	←	
48A	HEATPROOF TUBE	1	CWG021025	←	
51	WIRELESS REMOTE CONTROL COMPLETE	1	CWA75C2610	←	●

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.

17.4.3. Exploded View (Indoor Unit Front Grille)

CZ-BT12DE (Front Grille Complete)



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

17.4.4. Replacement Parts List (Indoor Unit Front Grille)

Model:

CZ-BT12DE (Front Grille Complete)

REF NO.	PART NAME & DESCRIPTION	QTY.	PART NO.	REMARKS
1	FRONT GRILLE - COMPLETE	1	CWE11C3105	
2	FRONE - FRONT GRILLE CO.	1	CWE11C3353	
4	A.S. MOTOR DC SINGLE 12V 250 OHM	2	CWA981105	
5	BRACKET - A.S. MOTOR	1	CWD932522	
6	VANE	4	CWE241159	
7	SHAFT	6	CWH631038	
8	SHAFT	2	CWH631045	
9	CONNECTOR - SHAFT	4	CWH081007	
10	BEARING	6	CWH641008	
11	LEAD WIRE - A.S. MOTOR	1	CWA67C5117	
12	PLATE COVER FOR A.S. MOTOR	1	CWD911459	
13	PLATE COVER FOR CONNECTING SHAFT	2	CWD911460	
14	PLATE COVER FOR END SHAFT	1	CWD911461	
21	ELECTRONIC CONT. (RECEIVER & INDICATOR)	1	CWA743610	
22	LEAD WIRE - COMPLETE	1	CWA67C5576	
24	INTAKE GRILLE	1	CWE221131	
28	LEVER ARM	2	CWH651029	
29	AIR FILTER	1	CWD001142	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- " ● " marked parts are recommended to be kept in stock.