

**10. CEILING MOUNTED DUCT TYPE  
PACKAGED AIR-CONDITIONER  
( Split system, Air cooled )  
Cooling only type**

**FDUR308CEN-A  
308CES-A  
408CES-A  
508CES-A**

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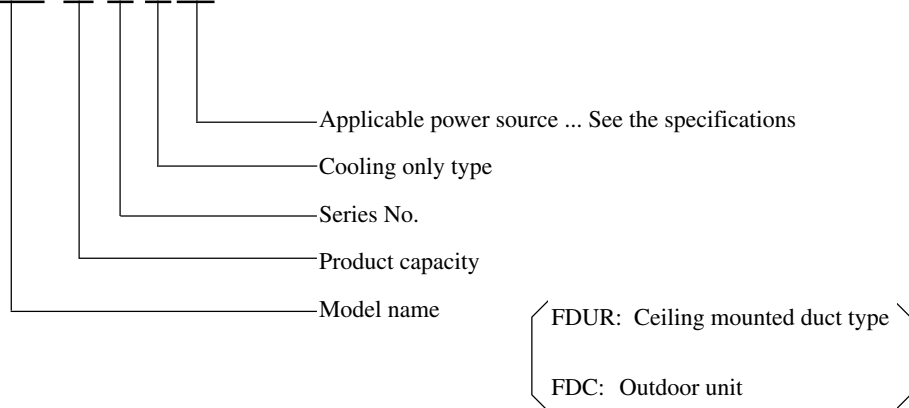
# 10.1 GENERAL INFORMATION

## 10.1.1 Specific features

- (1) Less refrigerant charge amount due to use of double phase refrigerant flow system. The total refrigerant charge amount has been reduced by more than 50%.
- (2) The indoor outdoor interconnection signal wiring has been done away with. The microcomputer chip is installed in the indoor unit. There is no need for the unit to communicate between the outdoor and indoor units so the unit is more resistant to electromagnetic noise thus the incidence of microcomputer malfunction has been reduced. The compressor in the outdoor unit has its own self protection function, that reacts according to abnormal high pressure and excessive high temperature.
- (3) There are only five power lines between the outdoor and indoor unit, As no signal wire is used there is no need to separate the power line from the signal line. One cabtyre cable with 4 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.
- (4) All models have service valves protruding from the outdoor unit for faster flare connection work in the field.
- (5) The position of the suction port can be changed.  
The suction from the lower inlet is available by replacing the duct connecting section (at the side face) and the lower plate. (They are changed on site.)

## 10.1.2 How to read the model name

Example: **FDUR 30 8 C EN- A**



## 10.2 SELECTION DATA

### 10.2.1 Specifications

#### Model FDUR308CEN-A

Item		Model		FDUR308CEN-A	
				FDUR308-A	FDC306CEN3
Nominal cooling capacity <sup>(1)</sup>	ISO-T1	W	7100		
	ISO-T3		5700		
Power source		1 Phase, 220/240V 50Hz			
Operation data <sup>(2)</sup>	ISO-T1	Cooling input	kW	3.40/3.55	
		Running current (Cooling)	A	17.5/18.3	
		Power factor (Cooling)	%	88/81	
	ISO-T3	Cooling input	kW	3.60/3.80	
		Running current (Cooling)	A	19.0/19.8	
		Power factor (Cooling)	%	86/80	
		Inrush current (L.R.A)	A	89	
		Noise level	dB(A)	Hi:41 Lo:37	56
	Exterior dimensions				
Height × Width × Depth		mm	295 × 850 × 650	844 × 950 × 340	
Net weight		kg	40	67	
Refrigerant equipment					
Compressor type & Q'ty			–	RC5532ENE1 × 1	
Motor		kW	–	2.24	
Starting method			–	Line starting	
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing	
Refrigerant control			–	Capillary tube	
Refrigerant			R22		
Quantity		kg	–	1.3 [Pre-charged up to the piping length of 5m]	
Refrigerant oil		ℓ	–	1.63 (SUNISO 3GS)	
High pressure control			High pressure regulator valve		
Air handling equipment					
Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1	
Motor		W	230 × 1	60 × 1	
Starting method			Line starting	Line starting	
Air flow (Standard)		CMM	Hi:25 Lo:20	54	
Available static pressure		Pa	Standard: 50, Max 130	–	
Fresh air intake			–	–	
Air filter, Q'ty			Polypropylene net ×1 (washable)	–	
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)	
Electric heater		W	–	–	
Operation control			Wired remote control switch		
Operation switch			(Optional: RCD-C-E)	– (Indoor unit side)	
Room temperature control			Thermostat by electronics	–	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.	
Installation data		mm			
Refrigerant piping size		(in)	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)	–	
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit. Drain hose		
Optional parts			Suction grille	–	

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Cooling		29°C	19°C	46°C	24°C	ISO-T3, SASO

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 220 / 240V 50Hz.

## Model FDUR308CES-A

Item		Model		FDUR308CES-A	
		FDUR308-A		FDC306CES3	
Nominal cooling capacity <sup>(1)</sup>	ISO-T1	W	7100/7700		
	ISO-T3		5700/6000		
Power source		3 Phase, 380-415V 50Hz, 380V 60Hz			
Operation data <sup>(2)</sup>	ISO-T1	Cooling input	kW	3.20/3.30/3.80	
		Running current (Cooling)	A	6.6/6.7/7.8	
		Power factor (Cooling)	%	74/69/74	
	ISO-T3	Cooling input	kW	3.40/3.50/4.05	
		Running current (Cooling)	A	7.1/7.2/8.3	
		Power factor (Cooling)	%	73/68/74	
		Inrush current (L.R.A)	A	43	
		Noise level	dB(A)	Hi:41 Lo:37	56
Exterior dimensions					
Height × Width × Depth		mm	295 × 850 × 650	844 × 950 × 340	
Net weight		kg	40	67	
Refrigerant equipment					
Compressor type & Q'ty			-	RC5538ESE1 × 1	
Motor		kW	-	2.24	
Starting method			-	Line starting	
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing	
Refrigerant control			-	Capillary tube	
Refrigerant			R22		
Quantity		kg	-	1.3 [Pre-charged up to the piping length of 5m]	
Refrigerant oil		ℓ	-	1.63 (SUNISO 3GS)	
High pressure control			High pressure regulator valve		
Air handling equipment					
Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1	
Motor		W	230 × 1	60 × 1	
Starting method			Line starting	Line starting	
Air flow (Standard)		CMM	Hi:25 Lo:20	54/56	
Available static pressure		Pa	Standard: 50, Max 130	-	
Fresh air intake			-	-	
Air filter, Q'ty			Polypropylene net ×1(washable)	-	
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)	
Electric heater		W	-	-	
Operation control			Wired remote control switch		
Operation switch			(Optional: RCD-C-E)	- (Indoor unit side)	
Room temperature control			Thermostat by electronics	-	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.	
Installation data		mm			
Refrigerant piping size		(in)	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)	-	
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Suction grille	-	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Cooling	29°C	19°C	46°C	24°C	ISO-T3, SASO

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380V 50Hz/415V 50Hz/380V 60Hz.

**Model FDUR408CES-A**

Item		Model		FDUR408CES-A	
				FDUR408-A	FDC406CES3
<b>Nominal cooling capacity<sup>(1)</sup></b>		ISO-T1	W	<b>10200/11300</b>	
		ISO-T3		<b>8900/9900</b>	
<b>Power source</b>		<b>3 Phase, 380-415V 50Hz, 380V 60Hz</b>			
<b>Operation data<sup>(2)</sup></b>	<b>ISO-T1</b>	Cooling input	kW	3.96/4.00/4.88	
		Running current (Cooling)	A	8.3/8.5/9.5	
		Power factor (Cooling)	%	72/65/78	
	<b>ISO-T3</b>	Cooling input	kW	4.52/4.60/5.48	
		Running current (Cooling)	A	9.0/9.2/10.3	
		Power factor (Cooling)	%	76/70/81	
		Inrush current (L.R.A)	A	45	
		Noise level	dB(A)	Hi:44 Lo:40	57
<b>Exterior dimensions</b>					
<b>Height × Width × Depth</b>		mm	<b>350 × 1370 × 650</b>		<b>1250 × 950 × 340</b>
<b>Net weight</b>		kg	<b>63</b>		<b>80</b>
<b>Refrigerant equipment</b>					
<b>Compressor type &amp; Q'ty</b>				<b>RC5547ESE1 × 1</b>	
Motor		kW	-		<b>2.61</b>
Starting method				Line starting	
<b>Heat exchanger</b>		Louver fins & inner grooved tubing		Slitted fins & bare tubing	
Refrigerant control		-		Capillary tube	
<b>Refrigerant</b>		<b>R22</b>			
<b>Quantity</b>		kg	-		<b>1.55 (Pre-charged up to the piping length of 5m)</b>
<b>Refrigerant oil</b>		ℓ	-		<b>1.63 (SUNISO 3GS)</b>
High pressure control		High pressure regulator valve			
<b>Air handling equipment</b>					
Fan type & Q'ty		Multiblade centrifugal fan × 2		Propeller fan × 2	
Motor		W	<b>280 × 1</b>		<b>60 × 2</b>
Starting method		Line starting		Line starting	
<b>Air flow (Standard)</b>		CMM	<b>Hi:34 Lo:27</b>		<b>100/110</b>
Available static pressure		Pa	<b>Standard: 50, Max130</b>		-
Fresh air intake		-		-	
Air filter, Q'ty		Polypropylene net ×1(washable)		-	
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)	
Electric heater		W	-		-
<b>Operation control</b>		Wired remote control switch			
Operation switch		(Optional: RCD-C-E)		- (Indoor unit side)	
Room temperature control		Thermostat by electronics		-	
<b>Safety equipment</b>		Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.	
<b>Installation data</b>					
<b>Refrigerant piping size</b>		mm (in)	<b>Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")</b>		
<b>Connecting method</b>		<b>Flare piping</b>			
<b>Drain hose</b>		(Connectable with VP25)		-	
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit, Drain hose			
Optional parts		Suction grille		-	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Cooling	29°C	19°C	46°C	24°C	ISO-T3, SASO

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380V 50Hz/415V 50Hz/380V 60Hz.

## Model FDUR508CES-A

Item		Model		FDUR508CES-A	
				FDUR508-A	FDC506CES3
<b>Nominal cooling capacity<sup>(1)</sup></b>		ISO-T1	W	<b>12500/14000</b>	
		ISO-T3		<b>10600/11900</b>	
<b>Power source</b>		<b>3 Phase, 380-415V 50Hz, 380V 60Hz</b>			
<b>Operation data<sup>(2)</sup></b>	ISO-T1	Cooling input	kW	5.58/5.80/6.70	
		Running current (Cooling)	A	11.5/12.2/12.8	
		Power factor (Cooling)	%	74/66/80	
	ISO-T3	Cooling input	kW	6.18/6.40/7.40	
		Running current (Cooling)	A	12.8/13.5/13.8	
		Power factor (Cooling)	%	73/66/81	
	Inrush current (L.R.A)		A	68	
	Noise level		dB(A)	Hi:45 Lo:41	59
<b>Exterior dimensions</b>					
<b>Height × Width × Depth</b>		mm	<b>350 × 1370 × 650</b>		<b>1250 × 950 × 340</b>
<b>Net weight</b>		kg	<b>65</b>		<b>85</b>
<b>Refrigerant equipment</b>					
<b>Compressor type &amp; Q'ty</b>		-		<b>RC5563ESE2 × 1</b>	
Motor		kW	-		<b>3.73</b>
Starting method		-		Line starting	
<b>Heat exchanger</b>		Louver fins & inner grooved tubing		Slitted fins & bare tubing	
Refrigerant control		-		Capillary tube	
<b>Refrigerant</b>		<b>R22</b>			
<b>Quantity</b>		kg	-		<b>1.85 [Pre-charged up to the piping length of 5m]</b>
<b>Refrigerant oil</b>		ℓ	-		<b>2.07 (SUNISO 3GS)</b>
High pressure control		High pressure regulator valve			
<b>Air handling equipment</b>					
Fan type & Q'ty		Multiblade centrifugal fan × 2		Propeller fan × 2	
Motor		W	<b>460 × 1</b>		<b>60 × 2</b>
Starting method		Line starting		Line starting	
<b>Air flow (Standard)</b>		CMM	<b>Hi:42 Lo:33.5</b>		<b>100/110</b>
Available static pressure		Pa	<b>Standard: 50, Max 130</b>		-
Fresh air intake		-		-	
Air filter, Q'ty		Polypropylene net ×1(washable)		-	
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)	
Electric heater		W	-		40 (Crank case heater)
<b>Operation control</b>		Wired remote control switch			
Operation switch		(Optional: RCD-C-E)		- (Indoor unit side)	
Room temperature control		Thermostat by electronics		-	
<b>Safety equipment</b>		Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.	
<b>Installation data</b>					
<b>Refrigerant piping size</b>		mm (in)	<b>Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")</b>		
<b>Connecting method</b>		<b>Flare piping</b>			
<b>Drain hose</b>		(Connectable with VP25)		-	
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit, Drain hose			
Optional parts		Suction grille		-	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Cooling	29°C	19°C	46°C	24°C	ISO-T3, SASO

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380V 50Hz/415V 50Hz/380V 60Hz.

## 10.2.2 Range of usage & limitations

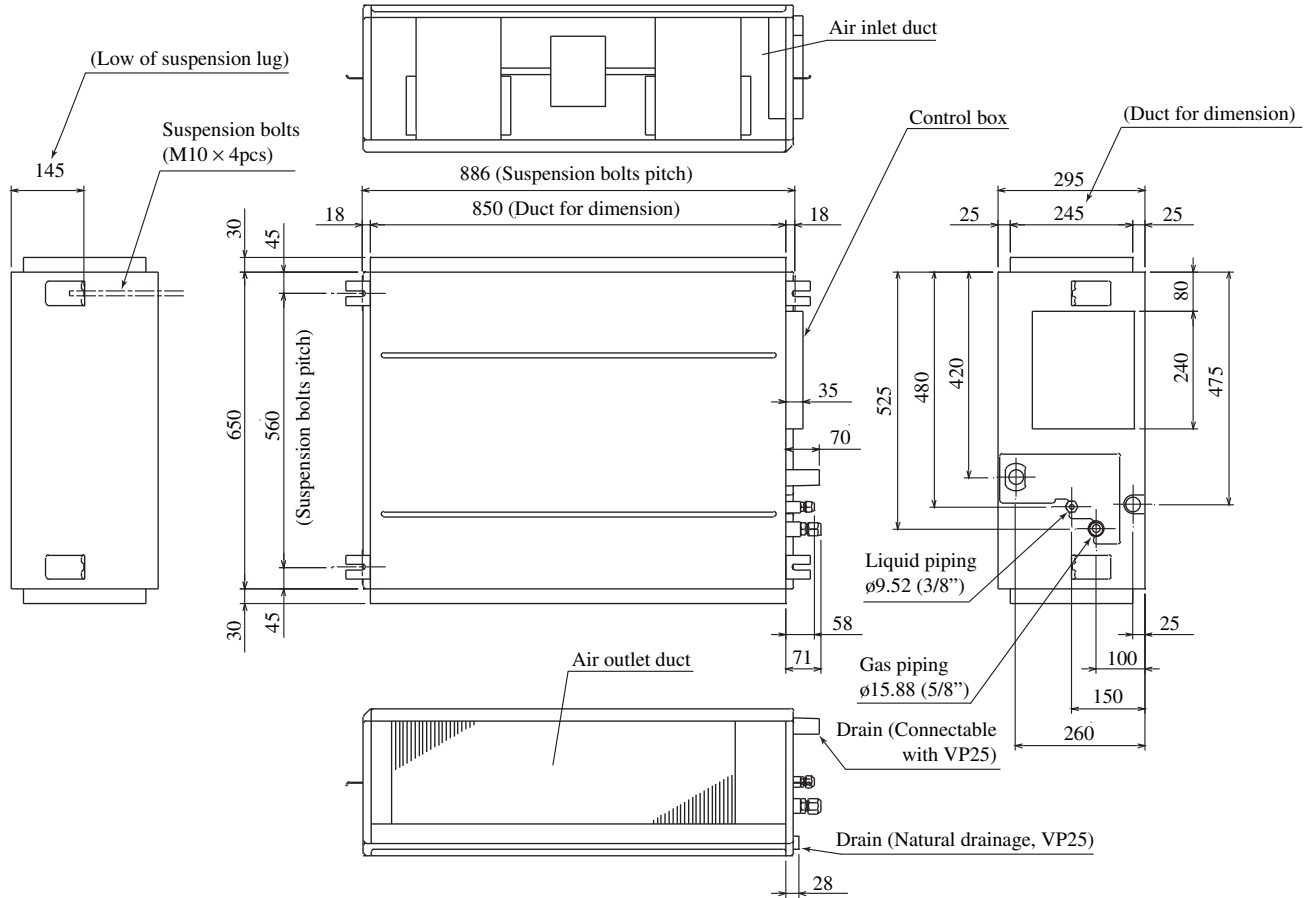
Item	Models	All models
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart
Outdoor return air temperature (Upper, lower limits)		
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature: 28°C or less, relative humidity: 80% or less
Refrigerant line (one way) length		<b>Max. 30m</b>
Vertical height difference between outdoor unit and indoor unit		<b>Max. 15m</b>
Power source voltage		Rating $\pm$ 10%
Voltage at starting		Min. 85% of rating
Frequency of ON-OFF cycle		Max. 10 times/h
ON and OFF interval		Max. 3 minutes



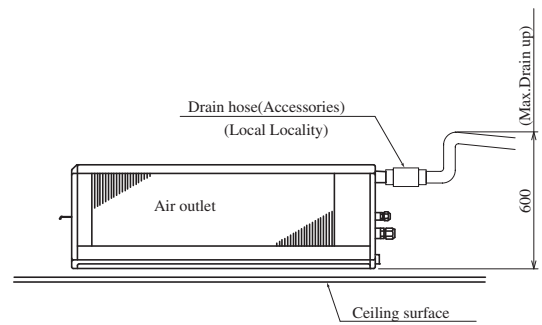
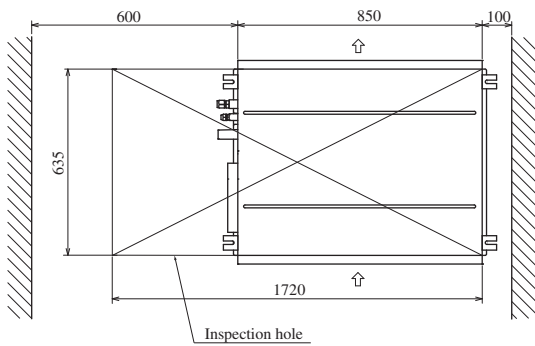
### 10.2.3 Exterior dimensions

(1) Indoor unit  
Model FDUR308-A

Unit : mm

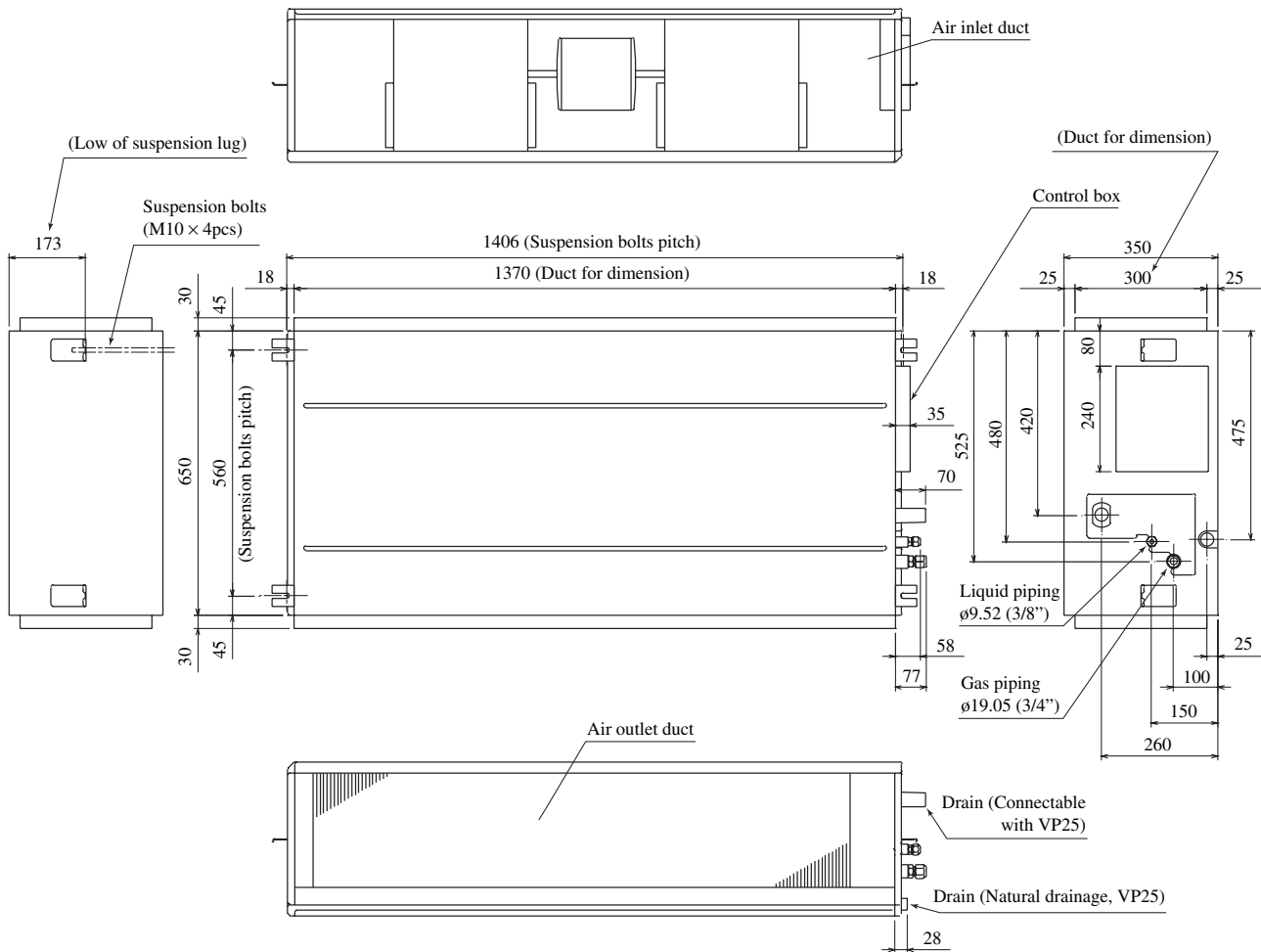


**Space for installation and service**

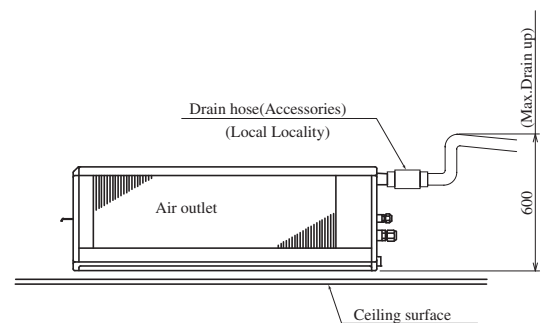
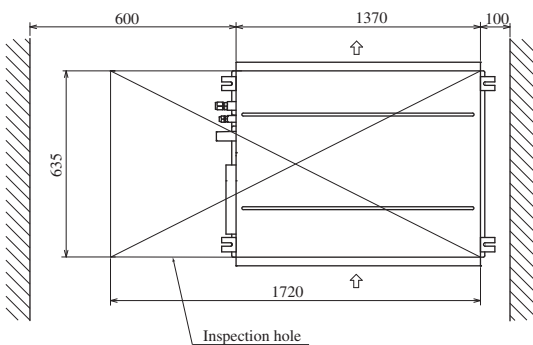


**Models FDUR408-A, 508-A**

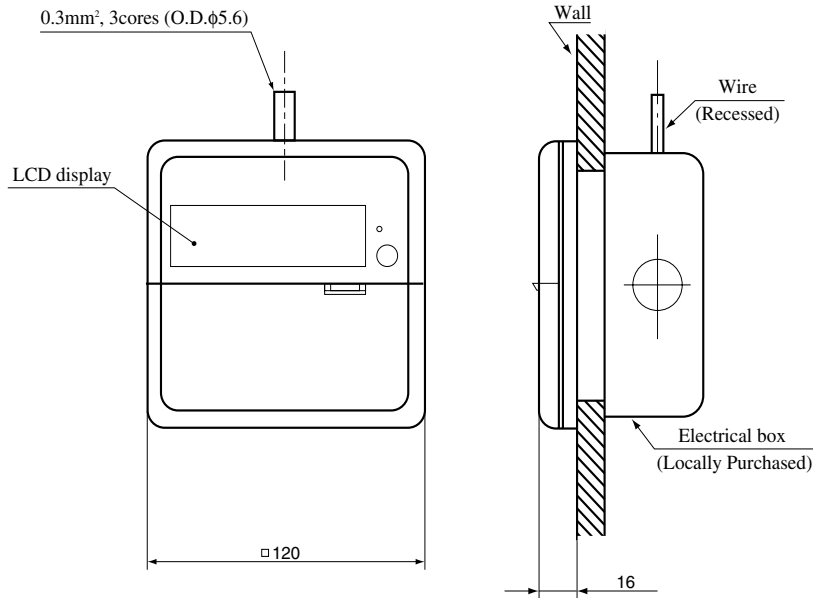
Unit : mm



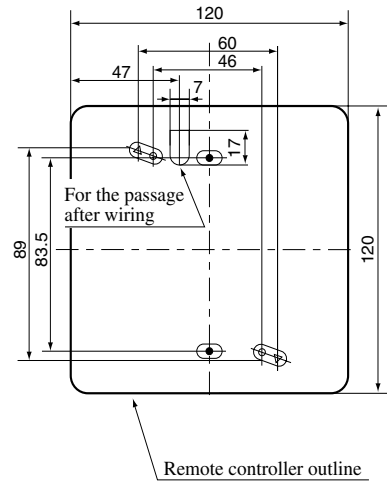
**Space for installation and service**



**(2) Remote controller**



Remote controller mounting dimensions



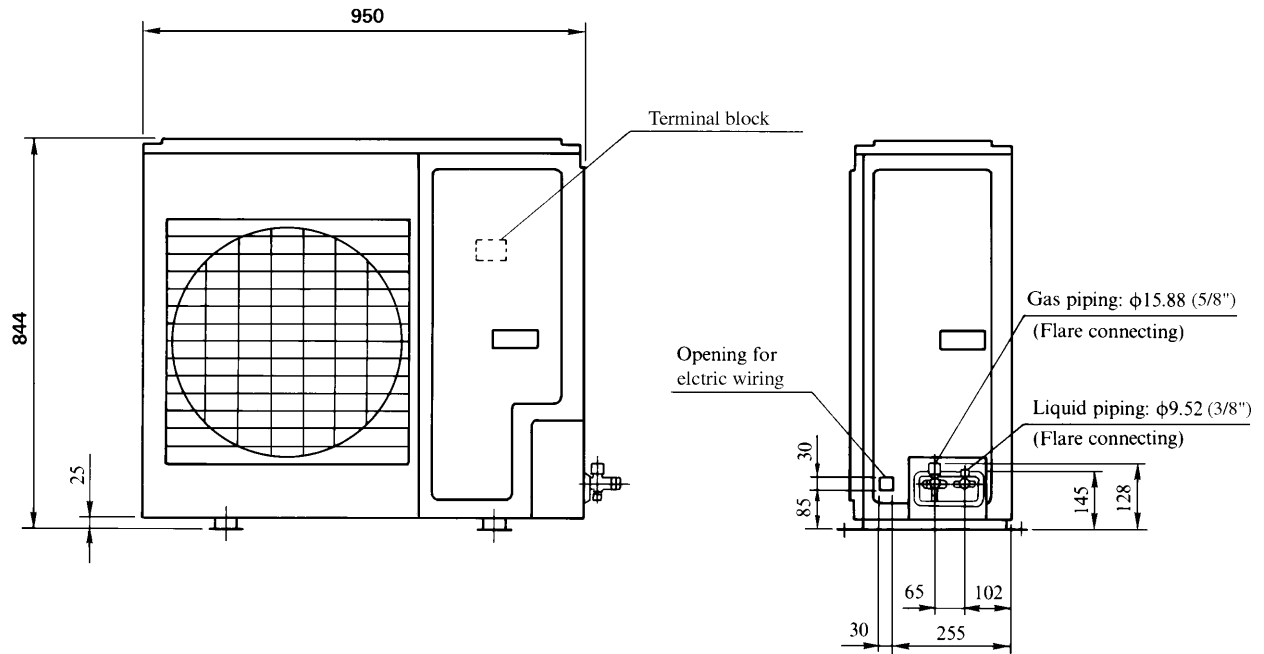
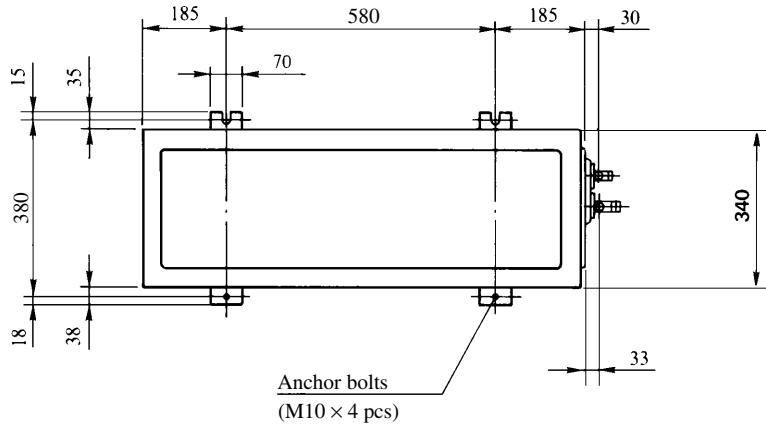
**Allowable rang of wire thickness and length**

Standard Within	0.3 mm <sup>2</sup>	× Within 100 m
	0.5 mm <sup>2</sup>	× Within 200 m
	0.75 mm <sup>2</sup>	× Within 300 m
	1.25 mm <sup>2</sup>	× Within 400 m
	2 mm <sup>2</sup>	× Within 600 m

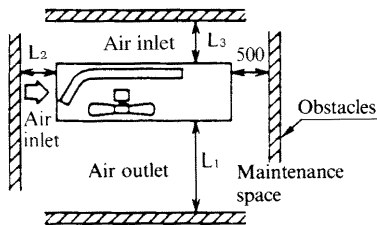
**(3) Outdoor unit**

**Models FDC306CEN3, 306CES3**

Unit: mm



**Required space for maintenance and air flow**



**Minimum allowable space to the obstacles**

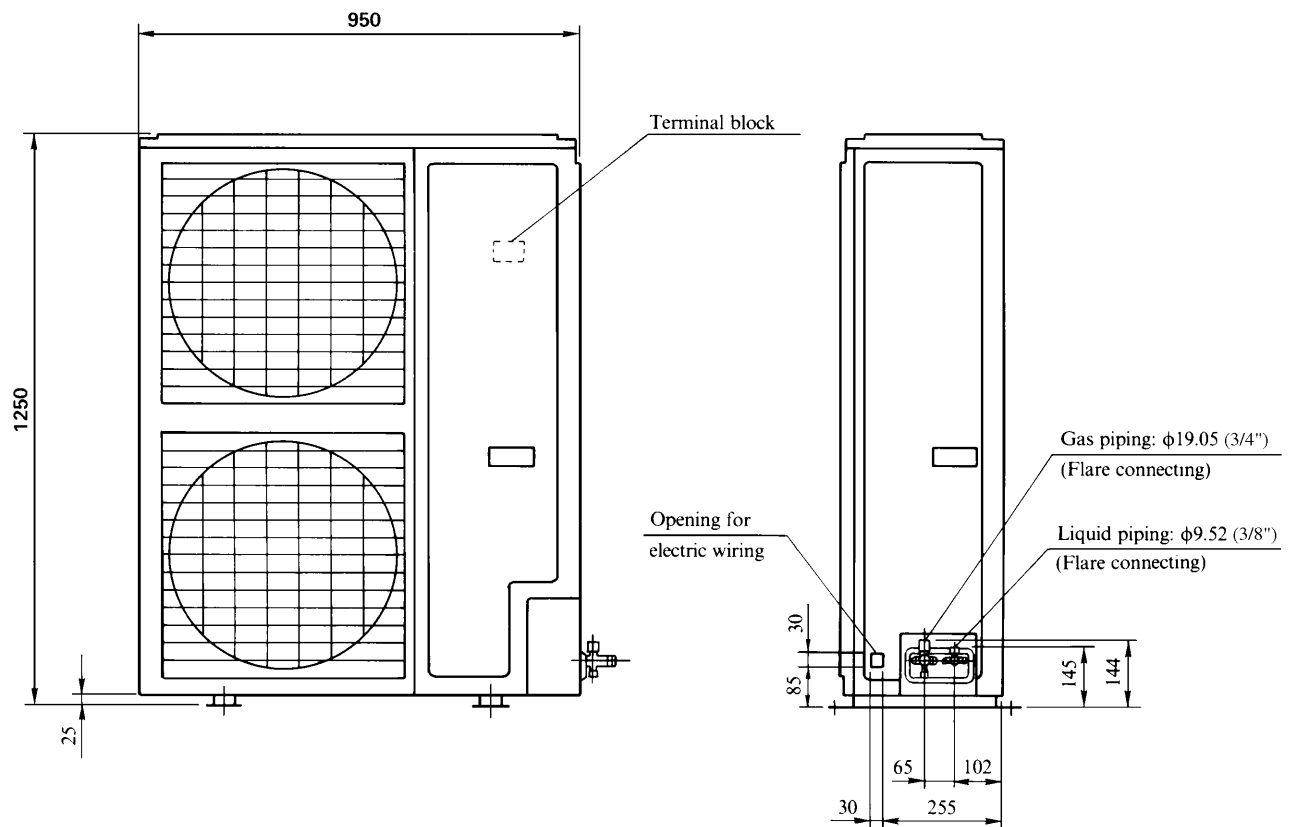
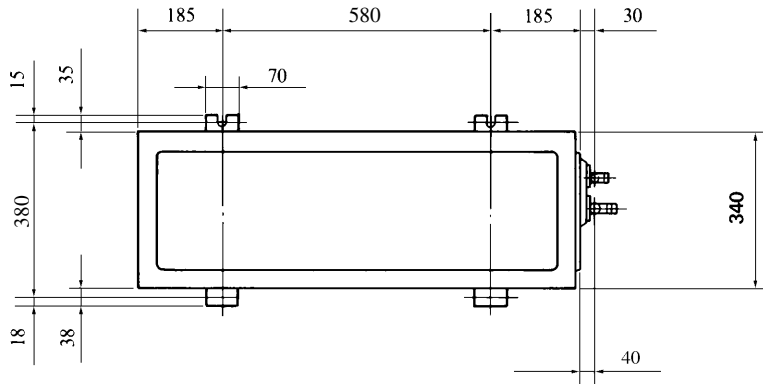
		Unit:mm		
		Installation type		
		I	II	III
Mark	Installation type	I	II	III
	L <sub>1</sub>	Open	Open	500
	L <sub>2</sub>	300	0	Open
L <sub>3</sub>	100	150	100	

**Notes**

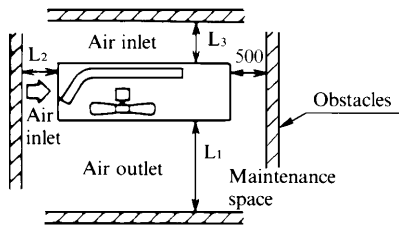
- (1) Fix the unit with anchor bolts.
- (2) Strong wind must not be directed to the air outlet.
- (3) Free space over the unit must be larger than 1 m.
- (4) The unit should not be surrounded by obstructions in all direction.  
At least one direction around the unit must be free.

**Models FDC406CES3, 506CES3**

Unit: mm



**Required space for maintenance and air flow**



**Minimum allowable space to the obstacles**

Unit:mm

Mark	Installation type		
	I	II	III
L <sub>1</sub>	Open	Open	500
L <sub>2</sub>	300	0	Open
L <sub>3</sub>	150	300	150

**Notes**

- (1) Fix the unit with anchor bolts.
- (2) Strong wind must not be directed to the air outlet.
- (3) Free space over the unit must be larger than 1 m.
- (4) The unit should not be surrounded by obstructions in all direction.  
At least one direction around the unit must be free.

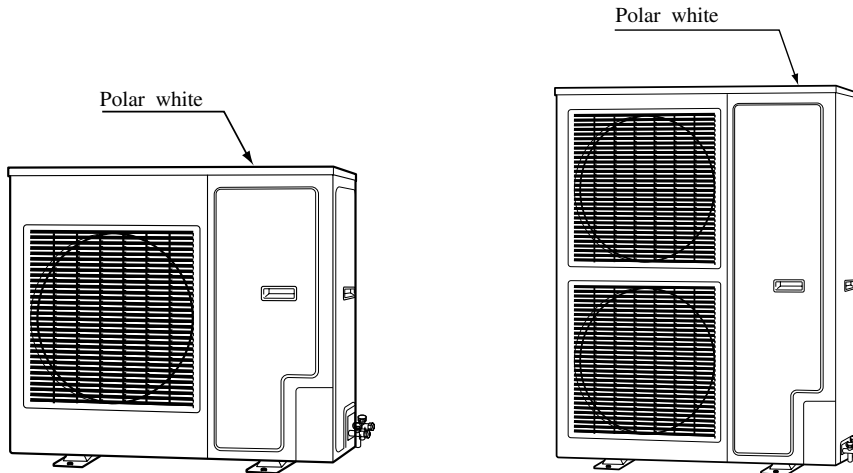
## 10.2.4 Exterior appearance

(1) Indoor unit.....Zinc steel plate

(2) Outdoor unit

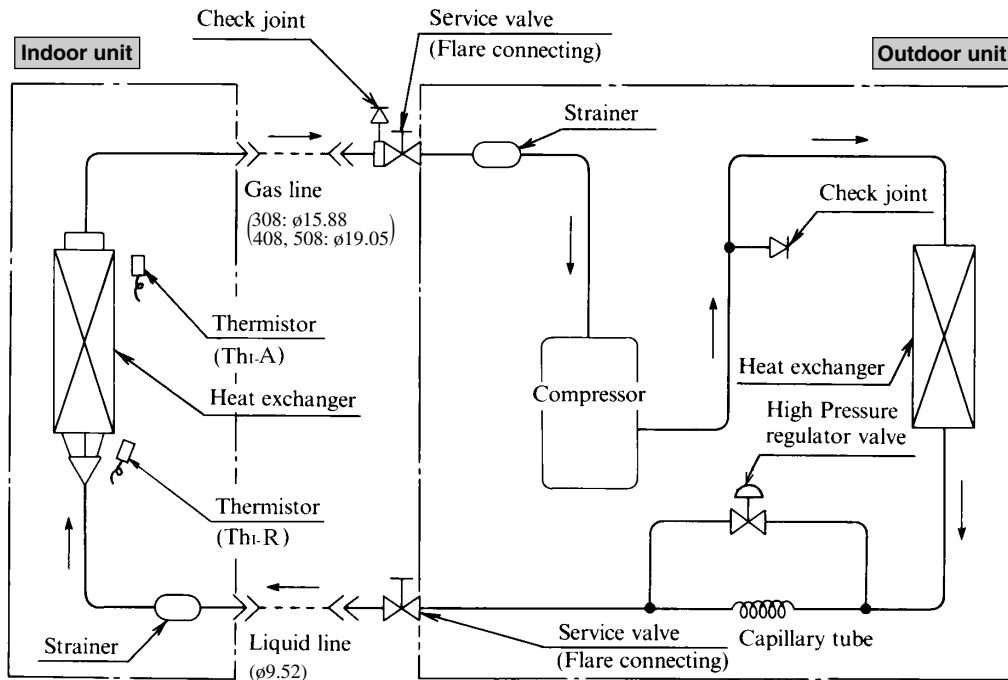
Models FDC306CEN3, 306CES3

Models FDC406CES3, 506CES3



## 10.2.5 Piping system

Models FDUR308CEN-A, 308CES-A, 408CES-A, 508CES-A



## Preset point of the protective devices

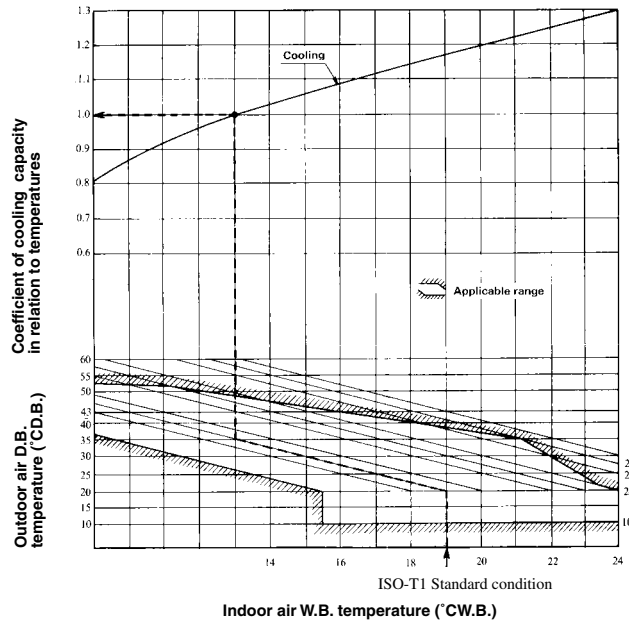
Parts name	Mark	Equipped unit	FDUR308~508
Thermistor (for frost prevention)	Thi-R	Indoor unit	OFF 2.5°C ON 10°C

## 10.2.6 Selection chart

Correct the cooling capacity in accordance with the conditions as follows. The net cooling capacity can be obtained in the following way.

**Net capacity = Capacity shown on specification × Correction factors as follows.**

### (1) Coefficient of cooling capacity in relation to temperatures



**Table of bypass factor**

Model		FDUR 308	FDUR 408	FDUR 508
Air flow	Hi	0.069	0.106	0.050
	Lo	0.049	0.079	0.034

### (2) Correction of cooling capacity in relation to air flow rate control (fan speed)

**Coefficient: 1.00 at High, 0.95 at Low**

### (3) Correction of cooling capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

50/60Hz

Equivalent piping length <sup>(1)</sup> m		7.5	10	15	20	25	30	35
Cooling	FDUR308	1.0	0.995	0.985/0.98	0.975/0.97	0.965/0.955	0.955/0.945	0.945/0.93
	FDUR408	1.0	0.998/0.995	0.99/0.985	0.985/0.975	0.975/0.965	0.97/0.955	0.96/0.945
	FDUR508	1.0	0.995/0.99	0.98/0.975	0.97/0.96	0.955/0.945	0.945/0.93	0.93/0.915

Note (1) Equivalent piping length can be obtained by calculating as follows.

308 :[φ15.88(5/8")]: Equivalent piping length = Real piping length + (0.10 × Number of bends in piping)

408, 508 :[φ19.05(3/4")]: Equivalent piping length = Real piping length + (0.15 × Number of bends in piping)

[Equivalent piping length < Limitation length of piping + 5m]

- (4) When the outdoor unit is located at a lower height than the indoor unit in cooling operation the following values should be subtracted from the values in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	5m	10m	15m
Adjustment coefficient	0.01	0.02	0.03

### Piping length limitations

Item	Model
	FDUR308-508
Max. one way piping length	30m
Max. vertical height difference	15m

Note (1) Values in the table indicate the one way piping length between the indoor and outdoor units.

### How to obtain the cooling capacity

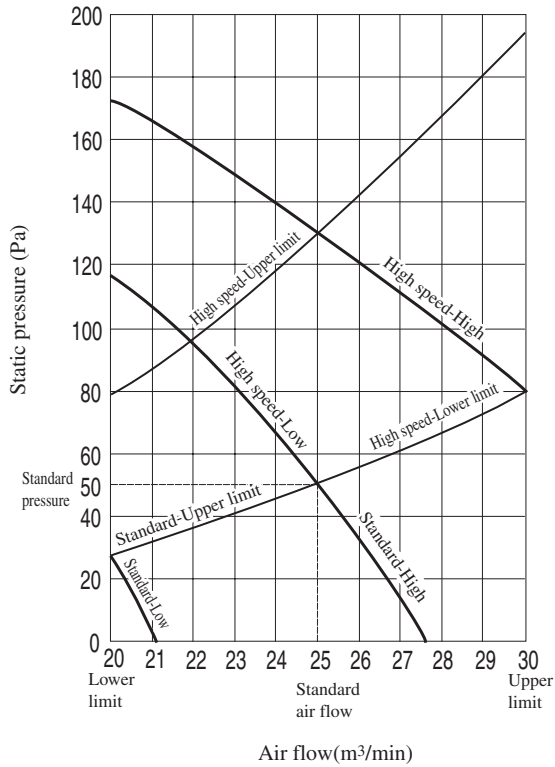
Example : The net cooling capacity of the model FDUR308CEN-A with the air flow "High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0 °C and outdoor dry-bulb temperature 35 °C is

$$\text{Net cooling capacity} = \frac{7100}{\text{FDUR308CEN-A}} \times \frac{1.00}{\text{Air flow "High"}} \times \frac{(0.985 - 0.01)}{\text{Length 15m. Height difference 5 m}} \times \frac{1.0}{\text{Factor by air temperatures}} = 6923 \text{ w}$$

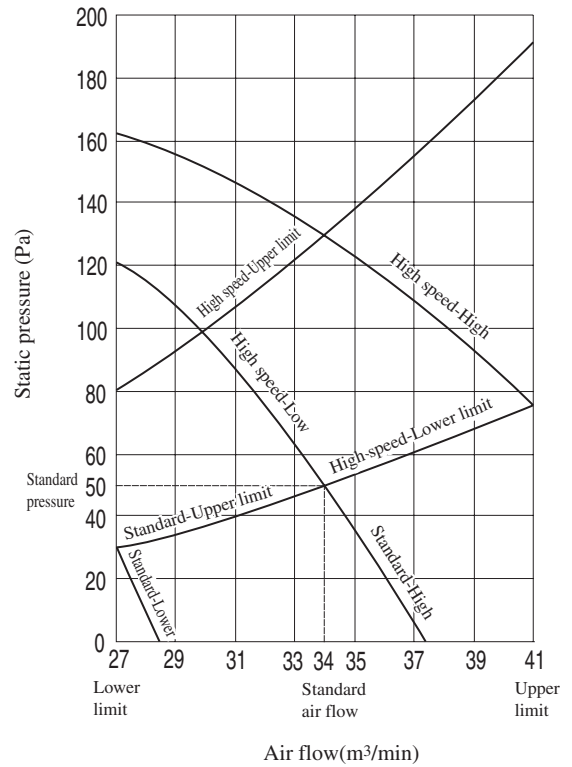


## 10.2.7 Characteristics of fan

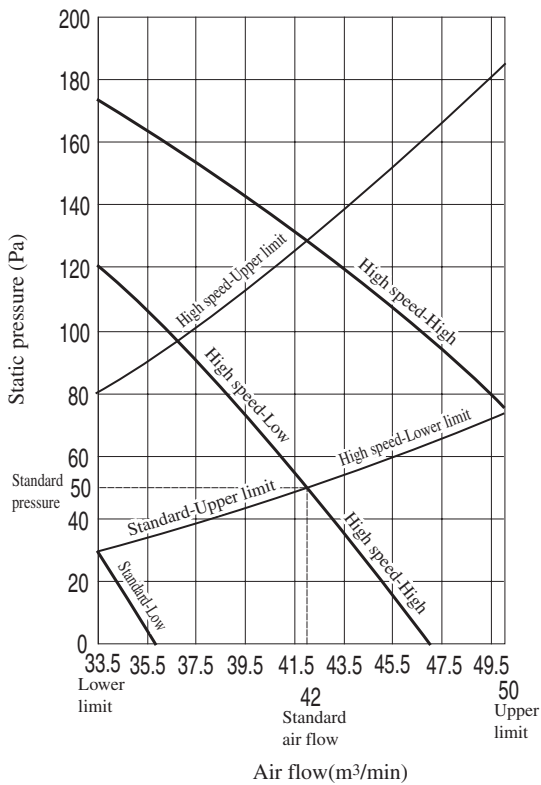
**Model FDUR308-A**



**Model FDUR408-A**



**Model FDUR508-A**



## 10.2.8 Noise level

Notes (1) The data are based on the following conditions.

Ambient air temperature:

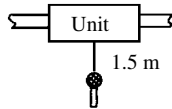
Indoor unit 27°C DB, 19°C WB.

Outdoor unit 35°C DB.

### Indoor unit

Measured based on JIS B 8616

Mike position as below



Mike (center & low points)

### Outdoor unit

Measured based on JIS B 8616

Mike position: at highest noise level  
in position as below

Distance from front side 1 m

Height 1 m

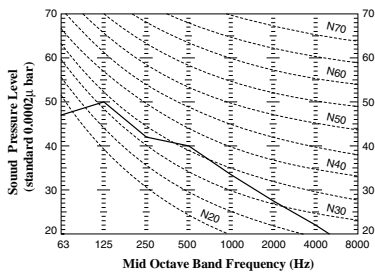
(2) The data in the chart are measured in an unechoic room.

(3) The noise levels measured in the field are usually higher than the data because of reflection.

### (1) Indoor unit

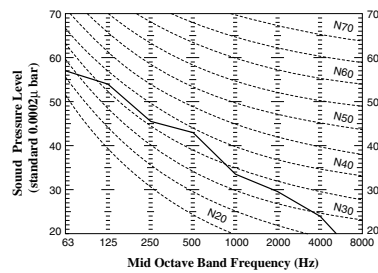
#### Models FDUR308-A

Noise level 41 dB (A) at HIGH  
37 dB (A) at LOW



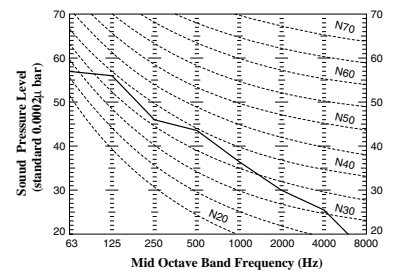
#### Models FDUR408-A

Noise level 44 dB (A) at HIGH  
40 dB (A) at LOW



#### Models FDUR508-A

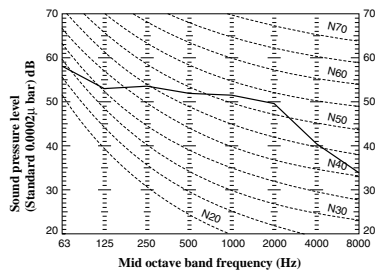
Noise level 45 dB (A) at HIGH  
41 dB (A) at LOW



### (2) Outdoor unit

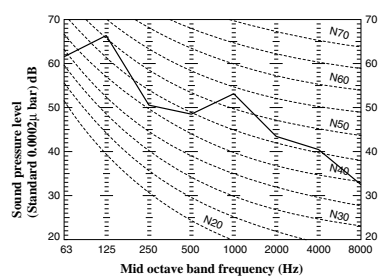
#### Model FDC306CEN3

Noise level 56 dB (A)



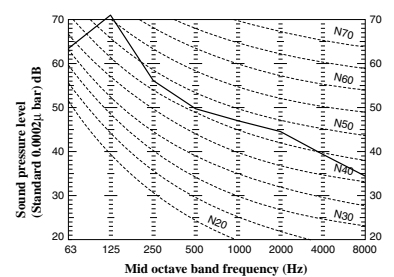
#### Model FDC306CES3

Noise level 56 dB (A)



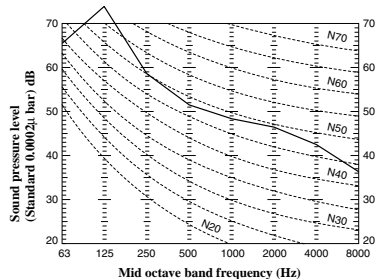
#### Model FDC406CES3

Noise level 57dB (A)



#### Model FDC506CES3

Noise level 59 dB (A)

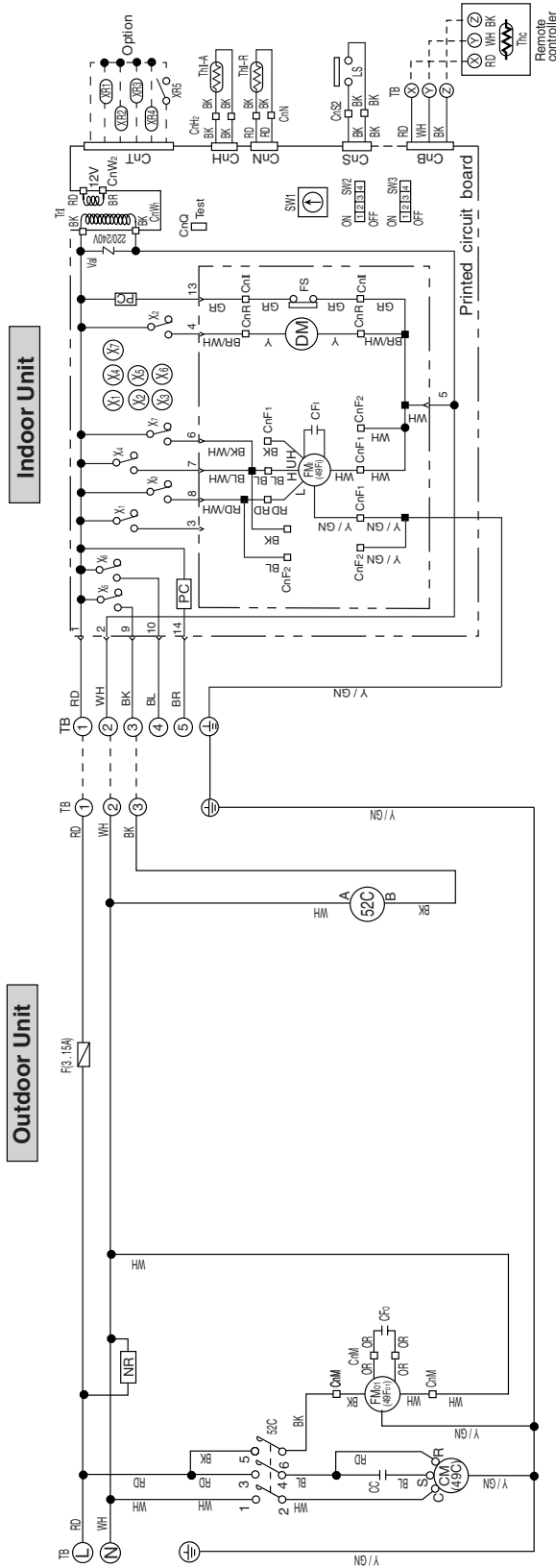


# 10.3 ELECTRICAL DATA

## 10.3.1 Electrical wiring

Model FDUR308CEN-A

Power source  
1 Phase 220/240V 50Hz



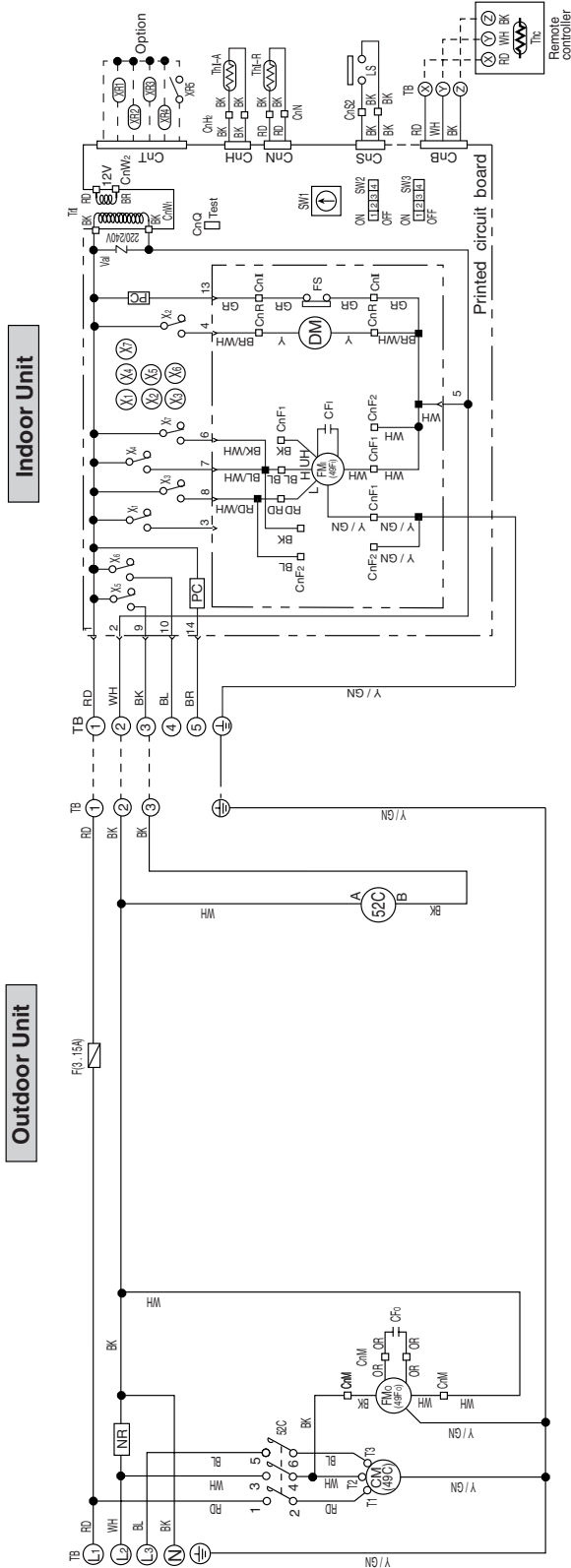
### Meaning of marks

Mark	Parts name	Mark	Parts name
Cc	Capacitor for CM	TB	Terminal block (O mark)
Cf1	Capacitor for FMi	Thc	Thermistor
Cf2	Capacitor for FMo	Th-A	Thermistor
CM	Compressor motor	Th-R	Thermistor
CM ~ W	Connector	Th	Thermistor
DM	Drain motor	Val	Valve
F	Fuse	49C	Internal thermostat for CM
FMi	Fan motor (Indoor unit)	49Fo	Internal thermostat for FMi
FMo	Fan motor (Outdoor unit)	49Fi	Internal thermostat for FMi
FS	Float switch	52C	Magnetic contactor for CM
NR	Surge suppressor	X1-7	Auxiliary relay
PC	Photo coupler	▽	Terminal (F)
SW1	Switch (Address set)	■	Connector
SW2, 3	Changeover switch		

### Color mark

Mark	Color	Mark	Color
BK	Black	Y	Yellow
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

**Power Source**  
3 Phase 380/415V 50Hz-380V 60Hz



**Meaning of marks**

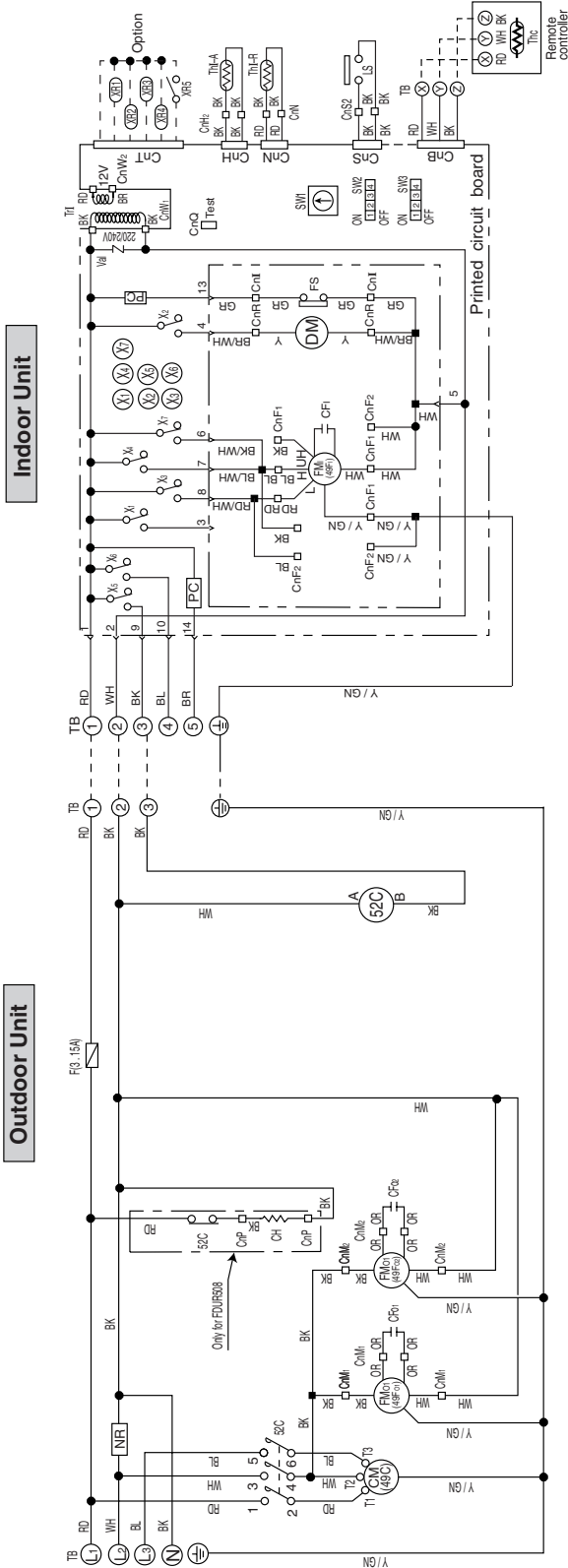
Mark	Parts name	Mark	Parts name
CF1	Capacitor for FM1	SW2, 3	Changeover switch
CFo	Capacitor for FMo	Thc	Thermistor
CM	Compressor motor	Thi-A	Thermistor
CnA ~ W	Connector	Thi-R	Thermistor
DM	Drain motor	Tr1	Transformer
F	Fuse	Val	Valve
FM1	Fan motor (Indoor unit)	49C	Internal thermostat for CM
FMo	Fan motor (Outdoor unit)	49Fo	Internal thermostat for FMo
FS	Float switch	49Fi	Internal thermostat for FMI
NR	Surge suppressor	52C	Magnetic contactor for CM
PC	Photo coupler	X1~7	Auxiliary relay
TB	Terminal block (O mark)	◁	Terminal (F)
SW1	Switch (Address set)	■	Connector

**Color mark**

Mark	Color	Mark	Color
BK	Black	Y	Yellow
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

Models **FDUR408CES-A, 508CES-A**

**Power Source**  
3 Phase 380/415V 50Hz-380V 60Hz



**Meaning of marks**

Mark	Parts name	Mark	Parts name
CFi	Capacitor for FMi	SW2, 3	Changeover switch
CFo1,2	Capacitor for FMo	Thc	Thermostat
CH	Crankcase heater	Thi-A	Thermostat
CM	Compressor motor	Thi-R	Thermostat
CnA ~W	Connector	Trl	Transformer
DM	Drain motor	Val	Valve
F	Fuse	49C	Internal thermostat for CM
FMi	Fan motor (Indoor unit)	49Fo1,2	Internal thermostat for FMo
FMo1,2	Fan motor (Outdoor unit)	49Fi	Internal thermostat for FMi
FS	Float switch	52C	Magnetic contactor for CM
NR	Surge suppressor	X1 ~7	Auxiliary relay
PC	Photo coupler	▽	Terminal (F)
TB	Terminal block (Omark)	■	Connector
SW1	Switch (Address set)		

**Color mark**

Mark	Color	Mark	Color
BK	Black	Y	Yellow
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

## **10.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER**

Except for function relating to heating, same at the unit for FDUR heat pump type. See page 306.

## **10.5 APPLICATION DATA**

The application data for the cooling only models are similar to those for the heat pump models. (See page 322.)

## **10.6 MAINTENANCE DATA**

This is same as FDUR heat pump series. Refer to page 340.