

## **INDOOR UNIT**

### **1. WALL MOUNTED TYPE :**

**AS \* B09LDC**

**AS \* B12LDC**

**AS \* B18LDC**

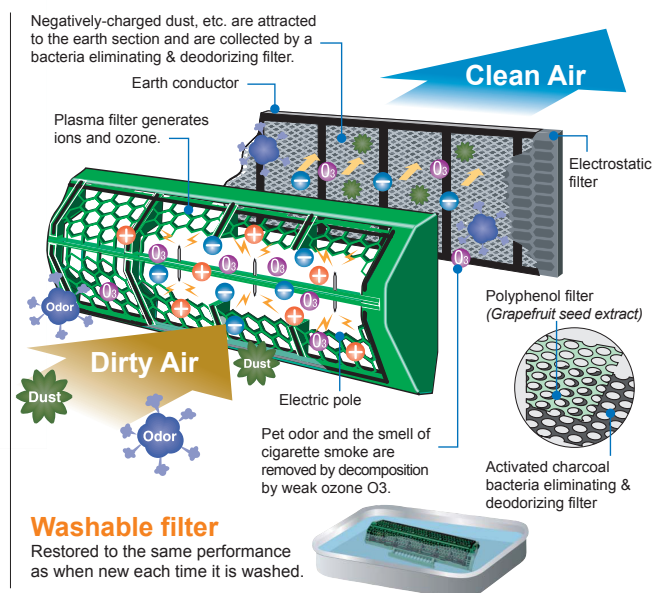
# 1. FEATURE

- MODEL : AS\*B09LDC  
AS\*B12LDC  
AS\*B18LDC

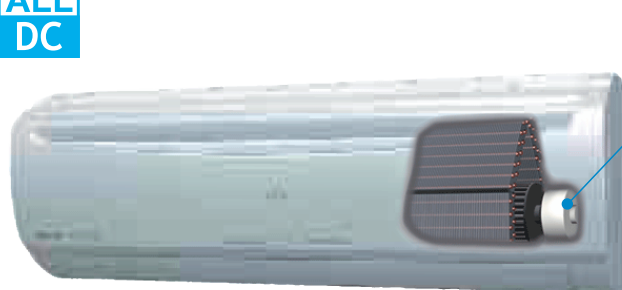


## FEATURES

- Energy saving Rank A (09/12 TYPE) Europe energy saving Rank A achieved
- Original plasma air cleaning unit effectively cleans the air in the room.



## ALL DC



**a DC fan motor**

**b i-PAM control (09TYPE)**

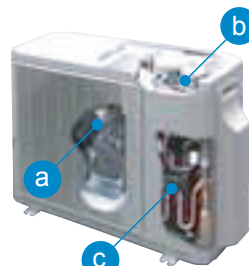
When operation starts, the machine operates at high voltage and high power and when operation stabilizes, the set temperature is maintained at low voltage.

**V-PAM control (12/18TYPE)**

V-PAM technology makes a compressor more powerful.

**c DC rotary compressor**

More compact compared with conventional model



Front view

## Super quiet

Air flow mode can be set in 4 steps and more detailed air flow setting is possible.

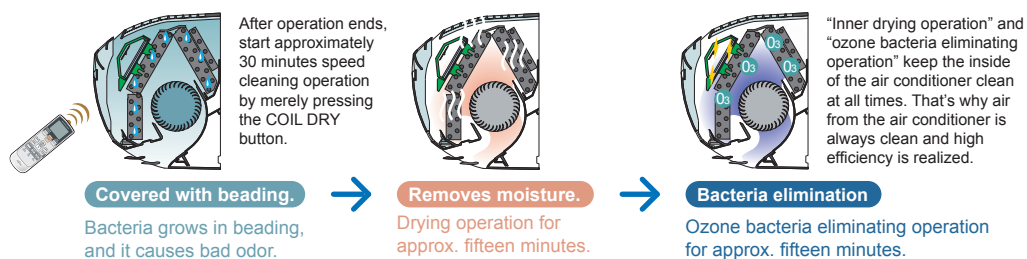
## ● Easy maintenance

Easy maintenance and always clean. Troublesome maintenance has been made easy. Since the front panel is easy to remove, maintenance is also easy.



## ● Inner drying operation and plasma effect

This model is equipped with an inner drying function. After the power is turned off, the dry operation starts inside the air conditioner. The plasma air cleaning unit eliminates bacteria, deodorizes, and keeps the interior of the air conditioner clean by generating ozone and ions.



## ● Low outdoor air temperature cooling correspondence

Corresponds to cooling operation at -10°C outdoor air temperature

## ● Corresponds to maximum 20m long piping

## 2. REMOTE CONTROLLER

### 2-1. WIRELESS REMOTE CONTROLLER

#### ■ FEATURES



- \* Four kinds of timer setup (ON / OFF / PROGRAM / SLEEP) are possible.
- \* Four kinds of timers. Easy operation.

#### ● Built-in timers

Select from four different timer programs (On/Off/Program/Sleep).

#### ● Program timer

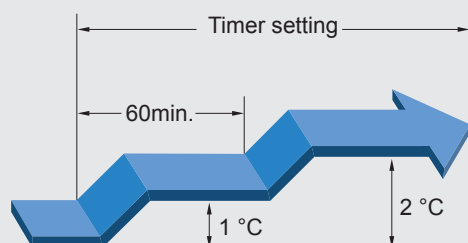
The program timer operates the ON and OFF timer once within a 24 hour period.

#### ● Sleep timer

The sleep timer function automatically corrects the temperature thermostat setting according to the time setting to prevent excessive cooling and heating while sleeping.

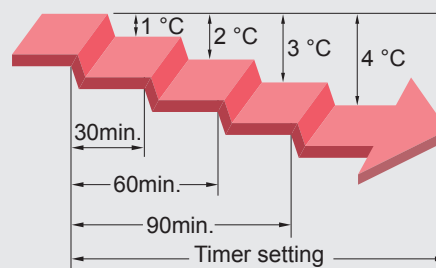
##### Cooling operation/dry operation

When the sleep timer is set, the set temperature automatically rises  $1^{\circ}\text{C}$  every hour. The set temperature can rise up to a maximum of  $2^{\circ}\text{C}$ .

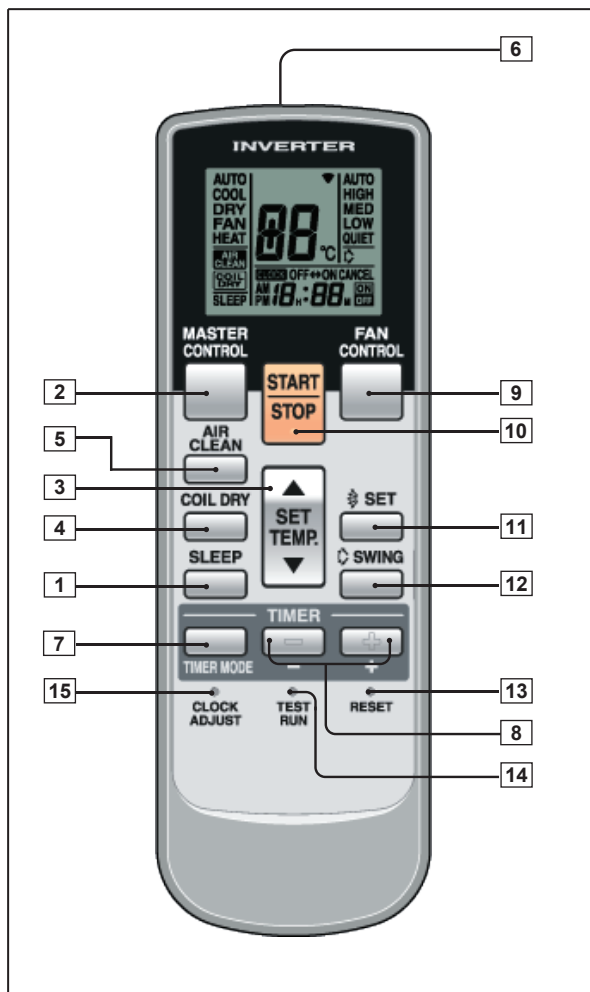


##### Heating operation

When the sleep timer is set, the set temperature automatically drops  $1^{\circ}\text{C}$  every 30 minutes. The set temperature can drop to a maximum of  $4^{\circ}\text{C}$ .

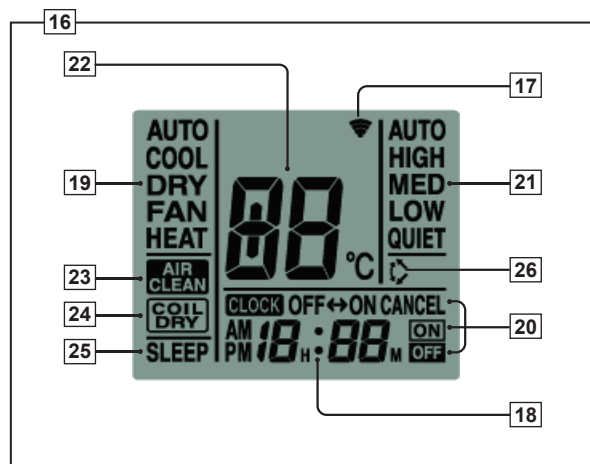


## FUNCTIONS



- 1 SLEEP button
- 2 MASTER CONTROL button
- 3 SET TEMP. button ( ▲ / ▼ )
- 4 COIL DRY button
- 5 AIR CLEAN button
- 6 Signal Transmitter
- 7 TIMER MODE button
- 8 TIMER SET ( + / - ) button
- 9 FAN CONTROL button
- 10 START/STOP button
- 11 SET button
- 12 SWING button
- 13 RESET button
- 14 TEST RUN button
  - This button is used when installing the conditioner, and should not be used under normal conditions, as it will cause the air conditioner's thermostat function to operate incorrectly.
  - If this button is pressed during normal operation, the unit will switch to test operation mode, and the Indoor Unit's OPERATION Indicator Lamp and TIMER Indicator Lamp will begin to flash simultaneously.
  - To stop the test operation mode, press the START/STOP button to stop the air conditioner.

Display panel



- 15 CLOCK ADJUST button
- 16 Remote Control Unit Display
- 17 Transmit Indicator
- 18 Clock Display
- 19 Operating Mode Display
- 20 Timer Mode Display
- 21 Fan Speed Display
- 22 Temperature SET Display
- 23 AIR CLEAN Display
- 24 COIL DRY Display
- 25 SLEEP Display
- 26 SWING Display

## SPECIFICATION

SIZE (H x W x D mm)	176 x 56 x 18
WEIGHT (g)	110
ACCESSORY	Holder

## 3. SPECIFICATIONS

Type				WALL MOUNTED		
				INVERTER HEAT PUMP		
Model name				AS * B09LDC	AS * B12LDC	
Power source				230V~ 50Hz		
Available voltage range				198 - 264V~ 50Hz		
European energy label			Cooling	A	A	
			Heating	A	A	
Capacity	Cooling	Rated	kW	2.60	3.50	
		Min.-Max.	kW	0.5 - 3.7	0.9 - 4.3	
		Min.-Max.	BTU/h	1,700 - 12,600	3,100 - 14,700	
	Heating	Rated	kW	3.60	4.80	
		Min.-Max.	kW	0.5 - 6.1	0.9 - 6.7	
		Min.-Max.	BTU/h	1,700 - 20,800	3,100 - 22,900	
Input power	Cooling	Rated	kW	0.61	0.91	
		Min.-Max.		0.25 - 1.38	0.25 - 1.61	
	Heating	Rated		0.81	1.22	
		Min.-Max.		0.25 - 1.96	0.25 - 2.30	
Current	Cooling	Rated	A	2.9	4.3	
		Max.		6.0	7.0	
	Heating	Rated		3.9	5.5	
		Max.		8.5	10.0	
EER		Cooling	kW/kW	4.26	3.85	
COP		Heating		4.44	3.93	
SENSIBLE CAPACITY		Cooling	kW	1.70	2.30	
POWER FACTOR		Cooling	%	90	93	
		Heating		91	96	
Moisture removal			l/h (pints/h)	1.3 (2.7)	1.8 (3.8)	
Fan	Airflow rate	Cooling	High	m <sup>3</sup> /h	560	595
			Med		470	485
			Low		385	385
			Quiet		260	260
		Heating	High		605	630
			Med		510	510
			Low		410	410
			Quiet		290	290
	Type × Q'ty			Cross flow fan × 1		
	Motor output			W	42	42
Noise level	Cooling	High	dB(A)	39	41	
		Med		34	35	
		Low		29	29	
		Quiet		20	20	
	Heating	High		40	41	
		Med		35	35	
		Low		28	28	
		Quiet		21	21	
Heat exchanger type		Dimensions (H × W × D)	mm	336 × 635 × 26.6		
		Fin pitch		1.2		
		Rows × Stages		2 × 16		
		Pipe type		Copper		
		Fin type		Aluminium		
Enclosure		Material	Polystyrene			
		Colour	White			
Dimensions (H × W × D)	Net	mm	283 × 790 × 230			
	Gross		316 × 835 × 360			
Weight	Net	kg (lb.)	9.5 (21)			
	Gross		12 (17)			
Connection pipe	Size	Liquid	mm	Φ6.35 (Φ1/4 in.)		
		Gas		Φ9.52 (Φ3/8 in.)		
	Method	Flare				
Operation range		Cooling	°C	18 to 32		
			%RH	80 or less		
		Heating	°C	30 or less		
Remote controller type				Wireless		
Drain pipe	Material	PVC				
	Size	mm	Outer diameter : 28 / Inner diameter : 16			

## Note :

Specifications are based on the following conditions.

Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.

Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

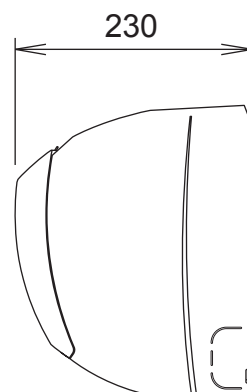
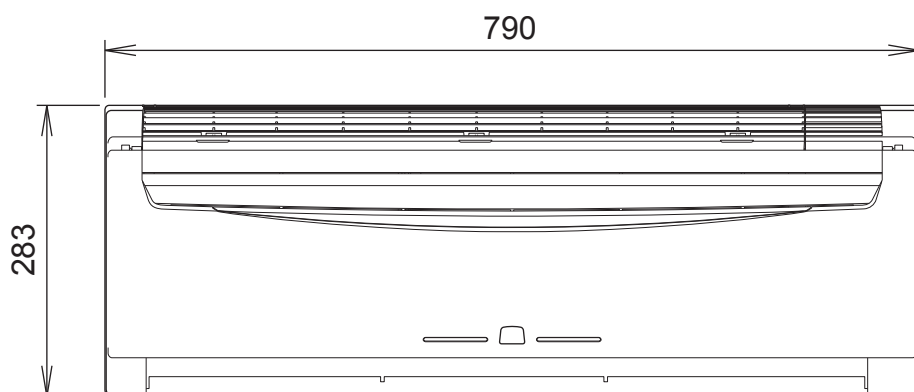
Type			WALL MOUNTED		
			INVERTER HEAT PUMP		
Model name			AS * B18LDC		
Power source			230V~ 50Hz		
Available voltage range			198 - 264V~ 50Hz		
European energy label		Cooling	B		
		Heating	A		
Capacity	Cooling	Rated	kW	5.20	
			BTU/h	17,700	
		Min-Max	kW	0.9 - 5.7	
			BTU/h	3,100 - 19,400	
	Heating	Rated	kW	6.25	
			BTU/h	21,300	
Min-Max		kW	0.9 - 9.1		
		BTU/h	3,100 - 31,000		
Input power	Cooling	Rated	kW	1.72	
		Min-Max		0.09 - 2.00	
	Heating	Rated		1.73	
		Min-Max		0.09 - 2.66	
Current	Cooling	Rated	A	7.6	
		Max		9.0	
	Heating	Rated		7.7	
		Max		13.5	
EER		Cooling	kW/kW		
COP		Heating	3.61		
SENSIBLE CAPACITY		Cooling	kW		
POWER FACTOR		Cooling	%		
		Heating	98		
Moisture removal			l/h (pints/h)	2.8 (5.9)	
Fan	Airflow rate	Cooling	High	m <sup>3</sup> /h	700
			Med		580
			Low		460
			Quiet		370
		Heating	High		700
			Med		600
			Low		500
			Quiet		420
	Type × Q'ty			Cross flow fan × 1	
	Motor output			W	24
Sound pressure level	Cooling	High	dB(A)	45	
		Med		39	
		Low		33	
		Quiet		26	
	Heating	High		42	
		Med		38	
		Low		33	
		Quiet		27	
Heat exchanger type	Dimensions (H × W × D)		mm	MAIN : 336 × 635 × 26.6 SUB : 84 × 635 × 13.3	
	Fin pitch			Main : 1.2 / Sub : 1.4	
	Rows × Stages		Main : 2 × 16, Sub : 1 × 4		
	Pipe type		Copper		
	Fin type		Aluminium		
Enclosure		Material		Polystyrene	
		Colour		White	
Dimensions (H × W × D)	Net		mm	283 × 790 × 230	
	Gross			316 × 835 × 360	
Weight	Net		kg(lb.)	10 (22)	
	Gross			12.5 (28)	
Connection pipe	Size	Liquid	mm	Φ6.35 (Φ 1/4 in.)	
		Gas		Φ 12.7 (Φ 1/2 in.)	
	Method			Flare	
Operation range	Cooling	°C	18 to 32		
		%RH	80 or less		
	Heating	°C	30 or less		
Remote controller type			Wireless		
Drain pipe	Material		PVC		
	Size		mm	Outer diameter : 28 / Inner diameter : 16	

Note :  
 Specifications are based on the following conditions.  
 Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.  
 Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.  
 Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

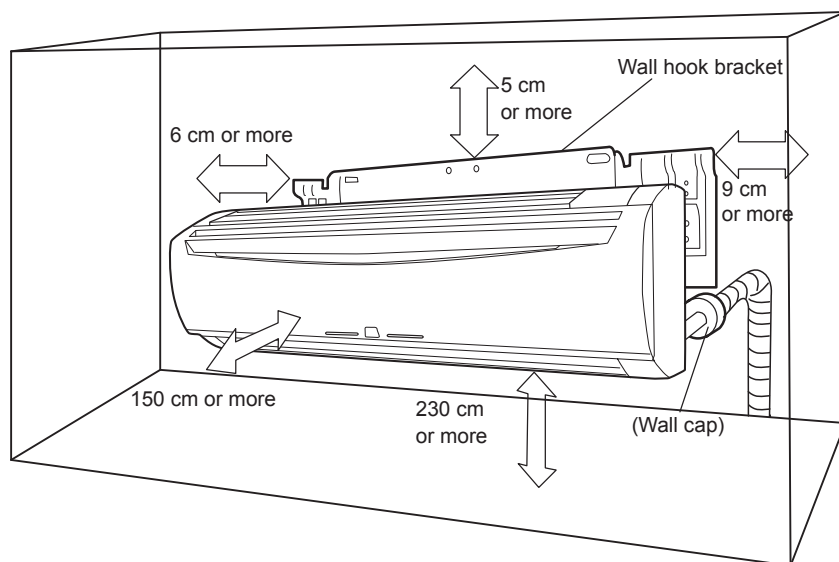
## 4. DIMENSIONS

■ MODEL : AS\*B09LD, AS\*B12LD, AS\*B18LD

(Unit : mm)



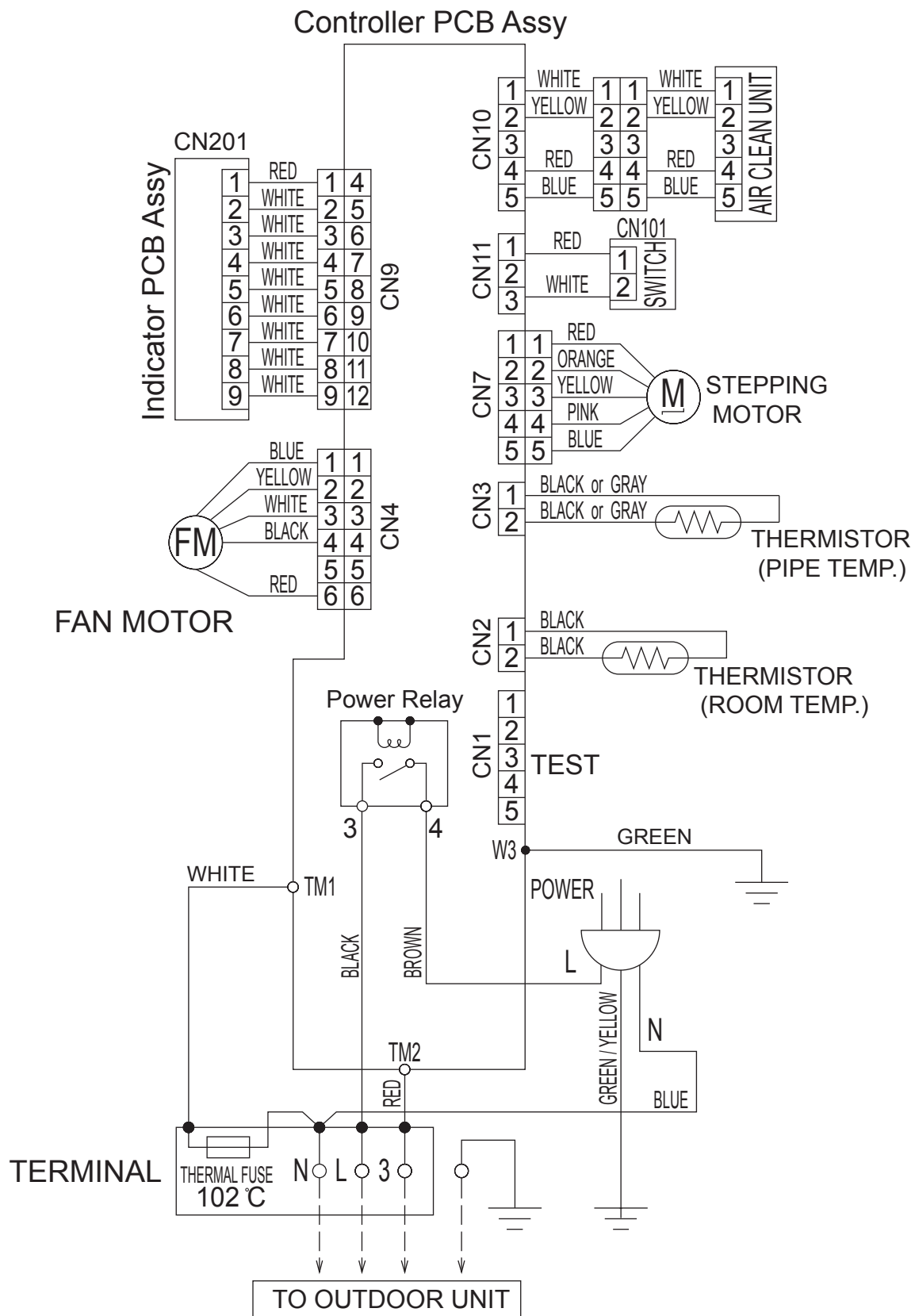
## ■ INSTALLATION PLACE





# 5. WIRING DIAGRAMS

■ MODEL : AS\*B09LD, AS\*B12LD, AS\*B18LD



# 6. CAPACITY TABLE

## 6-1. COOLING CAPACITY

### ■ MODEL : AS \* B09LD

AFR 9.3

		Indoor temperature																							
		18			21			23			25			27			29			32					
		12			15			16			18			19			21			23					
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
	20	1.93	1.34	0.29	2.14	1.35	0.30	2.22	1.47	0.30	2.36	1.48	0.30	2.44	1.59	0.30	2.58	1.59	0.30	2.73	1.69	0.31			
	25	2.29	1.60	0.48	2.56	1.61	0.49	2.64	1.75	0.49	2.82	1.76	0.50	2.90	1.90	0.50	3.08	1.89	0.51	3.25	2.01	0.51			
	30	2.20	1.53	0.54	2.45	1.54	0.54	2.53	1.68	0.55	2.70	1.68	0.55	2.78	1.82	0.55	2.95	1.81	0.56	3.11	1.93	0.57			
	35	2.05	1.43	0.59	2.29	1.44	0.60	2.37	1.57	0.60	2.52	1.57	0.61	2.60	1.70	0.61	2.76	1.69	0.62	2.91	1.80	0.62			
	40	1.85	1.30	0.59	2.07	1.30	0.60	2.14	1.42	0.60	2.28	1.42	0.61	2.35	1.53	0.61	2.49	1.53	0.62	2.63	1.63	0.63			
	43	1.73	1.21	0.60	1.93	1.22	0.61	2.00	1.32	0.61	2.13	1.33	0.62	2.19	1.43	0.62	2.33	1.43	0.63	2.46	1.52	0.63			

### ■ MODEL : AS \* B12LD

AFR 9.9

		Indoor temperature																							
		18			21			23			25			27			29			32					
		12			15			16			18			19			21			23					
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
	20	2.59	1.82	0.43	2.89	1.83	0.44	2.99	1.99	0.44	3.18	2.00	0.45	3.28	2.16	0.45	3.48	2.15	0.45	3.67	2.29	0.46			
	25	3.09	2.17	0.72	3.44	2.18	0.73	3.56	2.37	0.74	3.79	2.38	0.74	3.91	2.57	0.75	4.14	2.56	0.75	4.38	2.73	0.76			
	30	2.96	2.08	0.80	3.29	2.09	0.81	3.41	2.27	0.81	3.63	2.28	0.82	3.74	2.46	0.83	3.97	2.45	0.84	4.19	2.61	0.84			
	35	2.77	1.94	0.88	3.08	1.95	0.89	3.19	2.12	0.90	3.40	2.13	0.91	3.50	2.30	0.91	3.71	2.29	0.92	3.92	2.44	0.93			
	40	2.50	1.75	0.88	2.78	1.76	0.90	2.87	1.92	0.90	3.06	1.92	0.91	3.16	2.08	0.92	3.35	2.07	0.92	3.54	2.20	0.93			
	43	2.33	1.64	0.89	2.60	1.65	0.91	2.69	1.79	0.91	2.86	1.80	0.92	2.95	1.94	0.92	3.13	1.93	0.93	3.31	2.06	0.94			

### ■ MODEL : AS \* B18LD

AFR 11.7

		Indoor temperature																							
		18			21			23			25			27			29			32					
		12			15			16			18			19			21			23					
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
	20	3.85	2.61	0.82	4.29	2.63	0.83	4.44	2.86	0.84	4.73	2.86	0.84	4.87	3.09	0.85	5.17	3.08	0.86	5.46	3.28	0.87			
	25	4.59	3.11	1.36	5.11	3.13	1.38	5.29	3.40	1.39	5.63	3.41	1.40	5.81	3.69	1.41	6.16	3.67	1.43	6.51	3.91	1.44			
	30	4.39	2.98	1.51	4.89	3.00	1.53	5.06	3.26	1.54	5.39	3.27	1.56	5.56	3.53	1.56	5.89	3.51	1.58	6.23	3.74	1.59			
	35	4.11	2.79	1.66	4.58	2.80	1.69	4.73	3.05	1.69	5.04	3.06	1.71	5.20	3.30	1.72	5.51	3.29	1.74	5.82	3.50	1.75			
	40	3.71	2.51	1.67	4.13	2.53	1.70	4.27	2.75	1.70	4.55	2.76	1.72	4.69	2.98	1.73	4.98	2.97	1.75	5.26	3.16	1.77			
	43	3.47	2.35	1.68	3.86	2.36	1.71	3.99	2.57	1.72	4.26	2.58	1.74	4.39	2.78	1.75	4.65	2.77	1.76	4.91	2.95	1.78			

AFR : Air Flow Rate (m<sup>3</sup>/min)  
 TC : Total Capacity (kW)  
 SHC : Sensible Heat Capacity (kW)  
 PI : Power Input (kW)

# 6-2. HEATING CAPACITY

## ■ MODEL : AS \* B09LD

AFR	10.1
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		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.41	1.48	3.33	1.51	3.25	1.54	3.17	1.57	3.09	1.60
	-10	-11	4.05	1.62	3.95	1.65	3.86	1.68	3.76	1.72	3.66	1.75
	-5	-7	4.56	1.70	4.45	1.74	4.34	1.77	4.23	1.81	4.12	1.84
	0	-2	5.27	1.82	5.14	1.85	5.02	1.89	4.89	1.93	4.77	1.97
	5	3	5.99	1.94	5.85	1.98	5.71	2.02	5.56	2.06	5.42	2.10
	7	6	6.41	1.88	6.25	1.92	6.10	1.96	5.95	2.00	5.80	2.04
	10	8	6.63	1.88	6.48	1.92	6.32	1.96	6.16	2.00	6.00	2.04
15	10	6.42	1.64	6.27	1.67	6.12	1.71	5.96	1.74	5.81	1.77	

## ■ MODEL : AS \* B12LD

AFR	10.5
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		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.75	1.73	3.66	1.77	3.57	1.81	3.48	1.84	3.39	1.88
	-10	-11	4.45	1.90	4.34	1.94	4.24	1.98	4.13	2.02	4.02	2.06
	-5	-7	5.01	1.99	4.89	2.04	4.77	2.08	4.65	2.12	4.53	2.16
	0	-2	5.79	2.13	5.65	2.17	5.51	2.22	5.37	2.26	5.23	2.31
	5	3	6.58	2.27	6.42	2.32	6.27	2.37	6.11	2.42	5.95	2.46
	7	6	7.04	2.21	6.87	2.25	6.70	2.30	6.53	2.35	6.37	2.39
	10	8	7.29	2.21	7.11	2.26	6.94	2.30	6.77	2.35	6.59	2.39
15	10	7.06	1.92	6.89	1.96	6.72	2.00	6.55	2.04	6.38	2.08	

## ■ MODEL : AS \* B18LD

AFR	11.7
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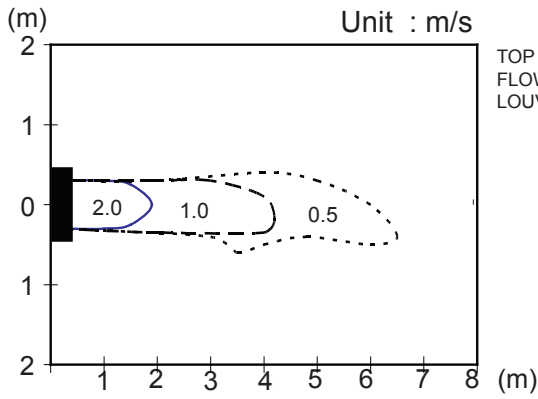
		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	5.09	2.01	4.97	2.05	4.84	2.09	4.72	2.13	4.60	2.17
	-10	-11	6.04	2.19	5.90	2.24	5.75	2.29	5.61	2.33	5.46	2.38
	-5	-7	6.80	2.31	6.64	2.35	6.48	2.40	6.32	2.45	6.15	2.50
	0	-2	7.86	2.46	7.67	2.51	7.48	2.57	7.30	2.62	7.11	2.67
	5	3	8.94	2.63	8.72	2.69	8.51	2.74	8.30	2.80	8.09	2.85
	7	6	9.56	2.55	9.33	2.61	9.10	2.66	8.87	2.71	8.65	2.77
	10	8	9.90	2.56	9.66	2.61	9.43	2.66	9.19	2.72	8.96	2.77
15	10	9.58	2.22	9.35	2.27	9.13	2.31	8.90	2.36	8.67	2.41	

AFR: Air Flow Rate (m<sup>3</sup>/min)  
 TC : Total Capacity (kW)  
 PI : Power Input (kW)

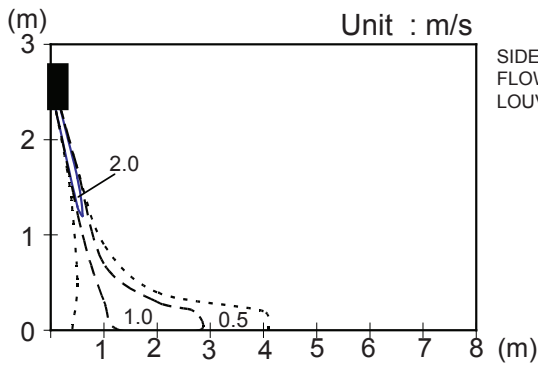
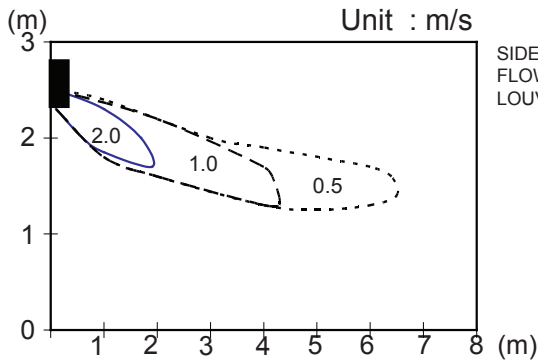
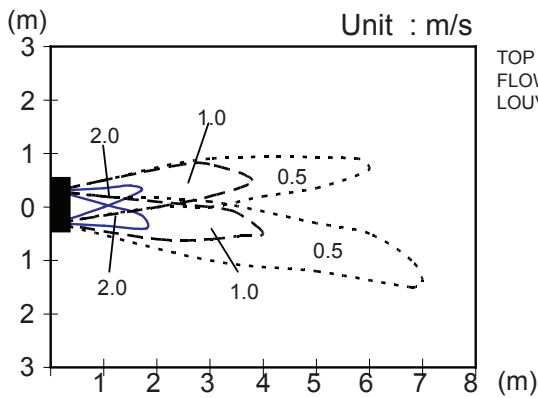
# 7. FAN PERFORMANCE

## 7-1. AIR VELOCITY DISTRIBUTION

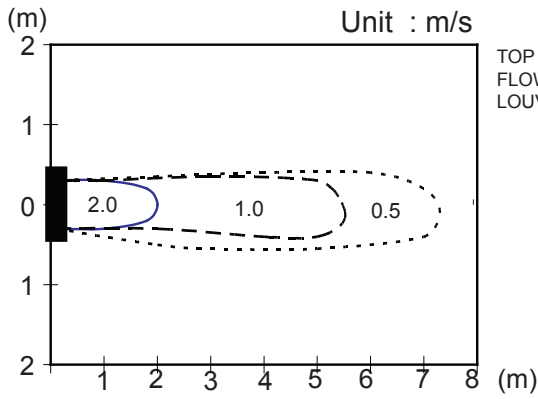
■ MODEL : AS\*B09LD



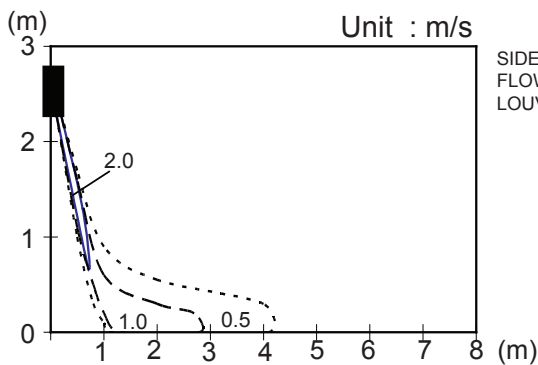
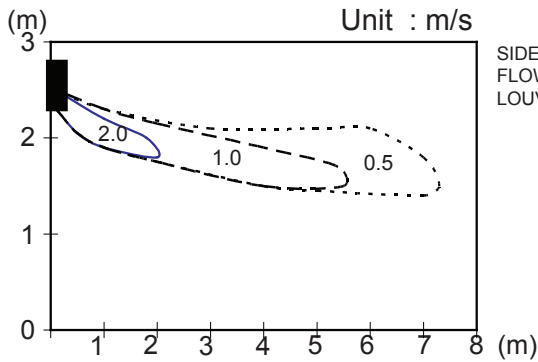
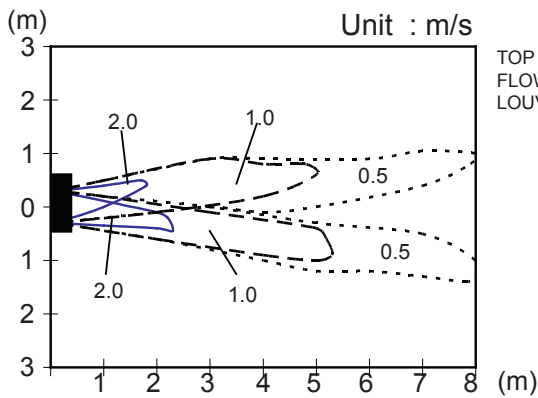
Note :  
Fan speed : High  
Operation mode :FAN  
Voltage : 230V



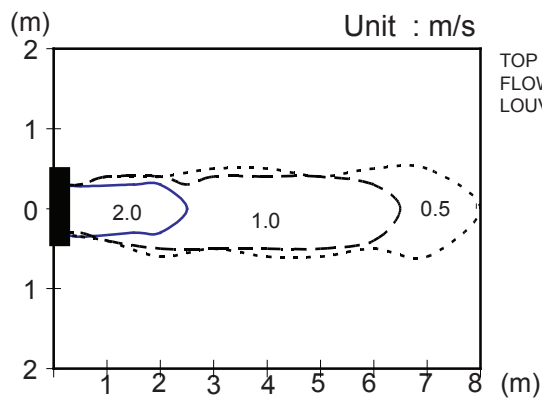
■ MODEL : AS\*B12LD



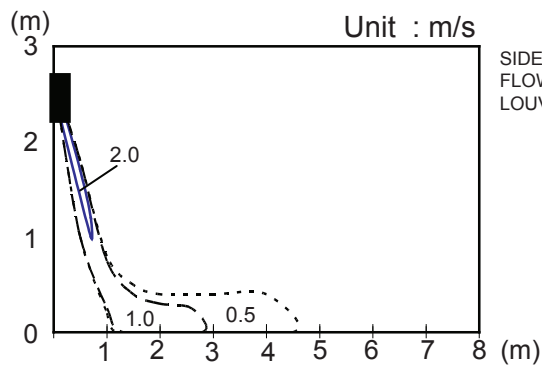
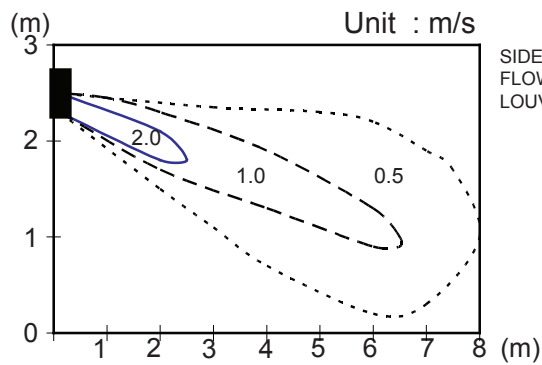
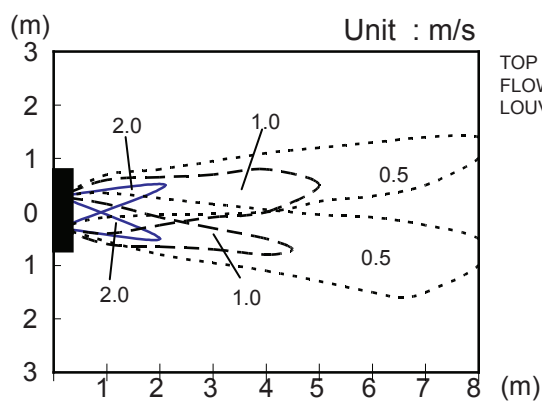
Note :  
Fan speed : High  
Operation mode :FAN  
Voltage : 230V



■ MODEL : AS\*B18LD



Note :  
Fan speed : High  
Operation mode :FAN  
Voltage : 230V



## 7-2. AIR FLOW

### ■ MODEL : AS \* B09LD

#### ● COOLING

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1300	560	m <sup>3</sup> /h
		156	l/s
		330	CFM
MED	1120	470	m <sup>3</sup> /h
		131	l/s
		277	CFM
LOW	950	385	m <sup>3</sup> /h
		107	l/s
		227	CFM
QUIET	700	260	m <sup>3</sup> /h
		72	l/s
		153	CFM

#### ● HEATING

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1390	605	m <sup>3</sup> /h
		168	l/s
		356	CFM
MED	1200	510	m <sup>3</sup> /h
		142	l/s
		300	CFM
LOW	1000	410	m <sup>3</sup> /h
		114	l/s
		241	CFM
QUIET	760	290	m <sup>3</sup> /h
		81	l/s
		171	CFM

## ■ MODEL : AS \*B12LD

### ● COOLING

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1370	595	m <sup>3</sup> /h
		165	l/s
		350	CFM
MED	1150	485	m <sup>3</sup> /h
		135	l/s
		285	CFM
LOW	950	385	m <sup>3</sup> /h
		107	l/s
		227	CFM
QUIET	700	260	m <sup>3</sup> /h
		72	l/s
		153	CFM

### ● HEATING

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1440	630	m <sup>3</sup> /h
		175	l/s
		371	CFM
MED	1200	510	m <sup>3</sup> /h
		142	l/s
		300	CFM
LOW	1000	410	m <sup>3</sup> /h
		114	l/s
		241	CFM
QUIET	760	290	m <sup>3</sup> /h
		81	l/s
		171	CFM



## ■ MODEL : AS \* B18LD

### ● COOLING

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1560	700	m <sup>3</sup> /h
		194	l/s
		412	CFM
MED	1320	580	m <sup>3</sup> /h
		161	l/s
		341	CFM
LOW	1090	460	m <sup>3</sup> /h
		128	l/s
		271	CFM
QUIET	850	370	m <sup>3</sup> /h
		103	l/s
		218	CFM

### ● HEATING

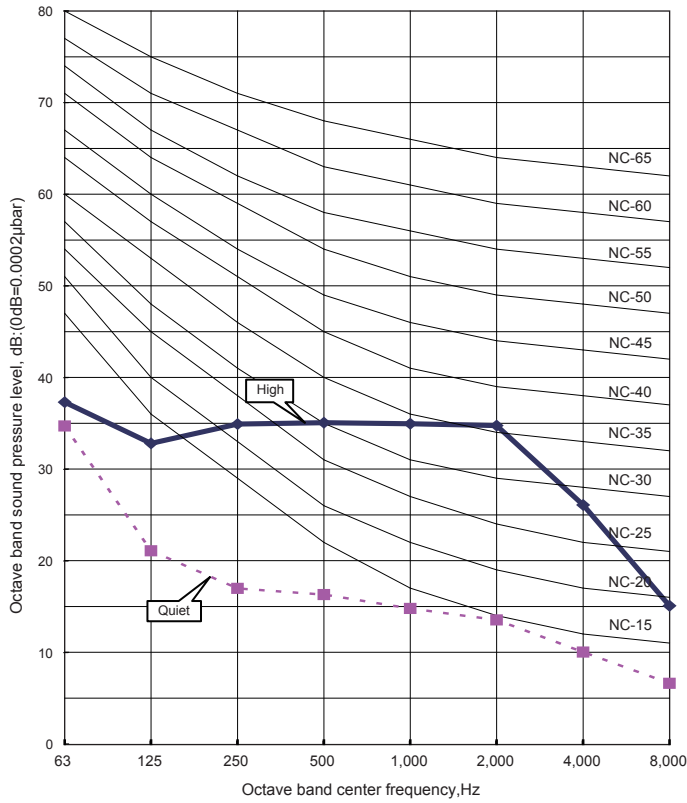
Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	1560	700	m <sup>3</sup> /h
		194	l/s
		412	CFM
MED	1370	600	m <sup>3</sup> /h
		167	l/s
		353	CFM
LOW	1170	500	m <sup>3</sup> /h
		139	l/s
		294	CFM
QUIET	950	420	m <sup>3</sup> /h
		117	l/s
		247	CFM

# 8. OPERATION NOISE

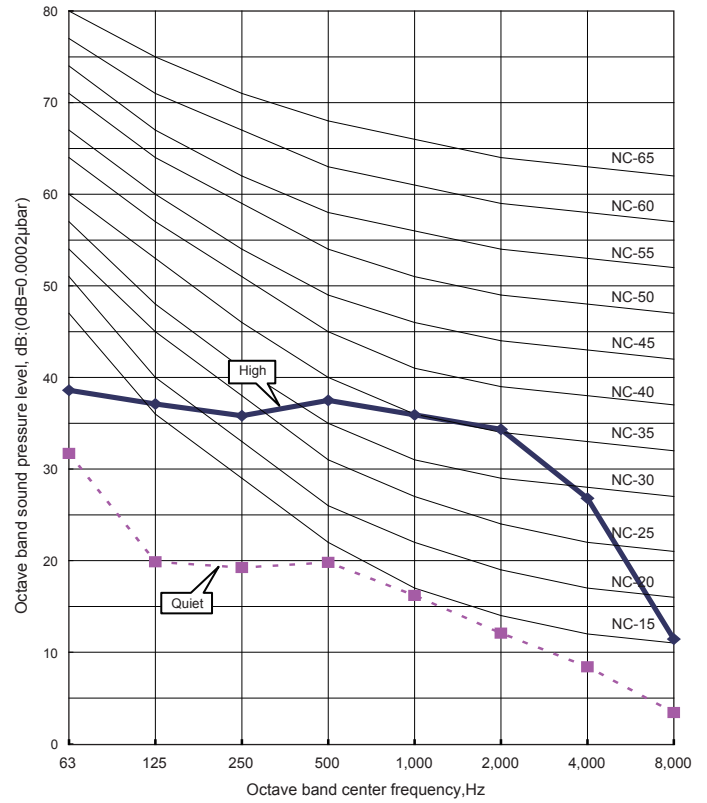
## 8-1. NOISE LEVEL CURVE

### MODEL : AS \* B09LD

#### COOLING

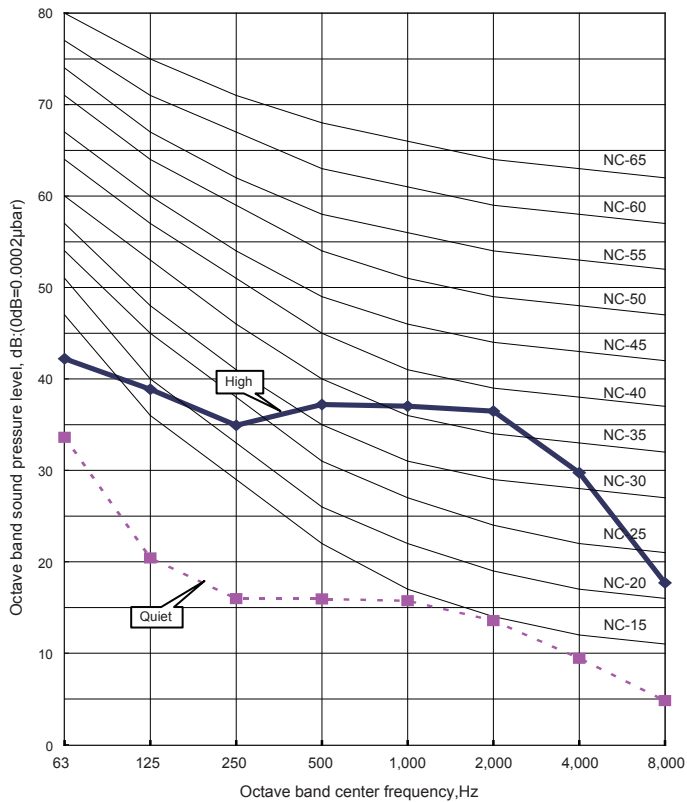


#### HEATING

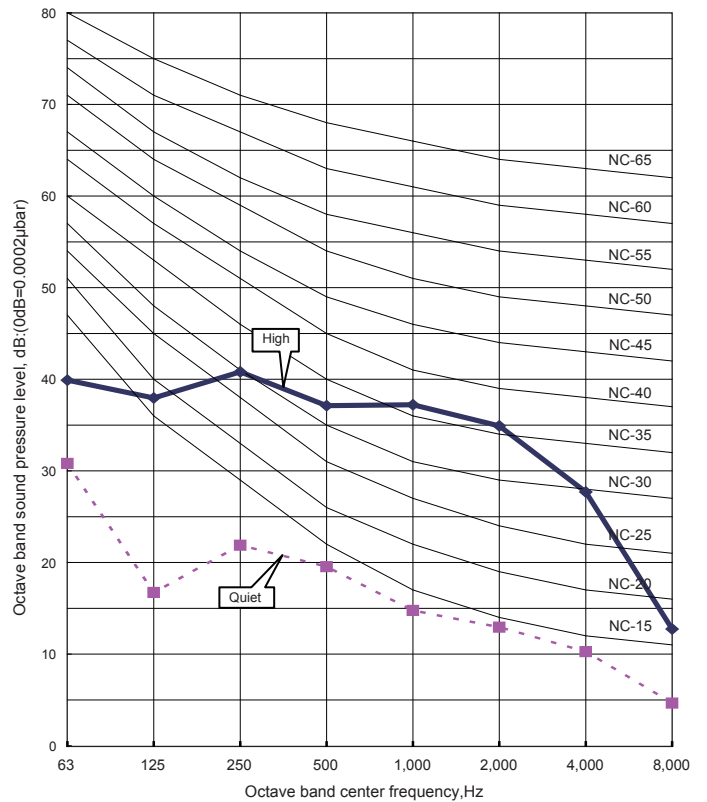


### MODEL : AS \* B12 LD

#### COOLING

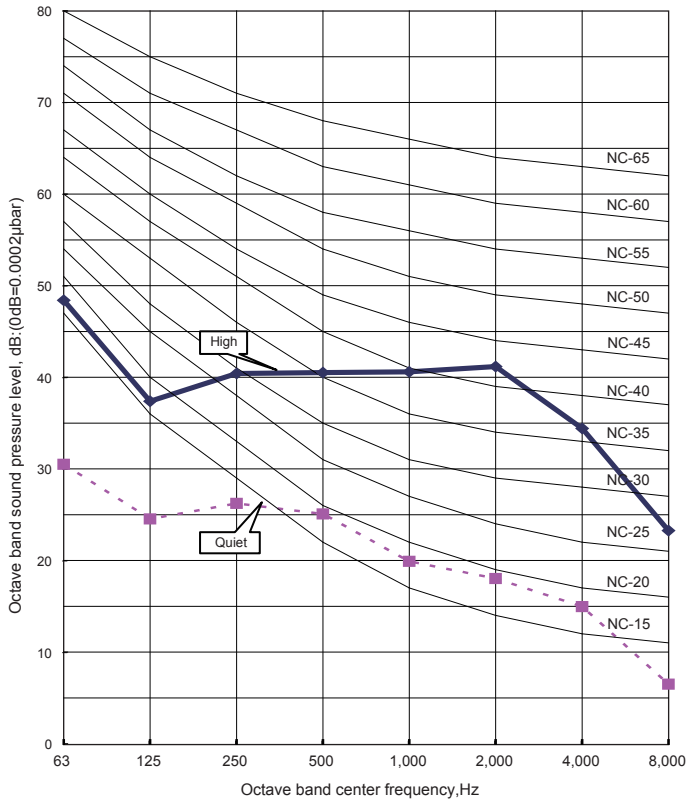


#### HEATING

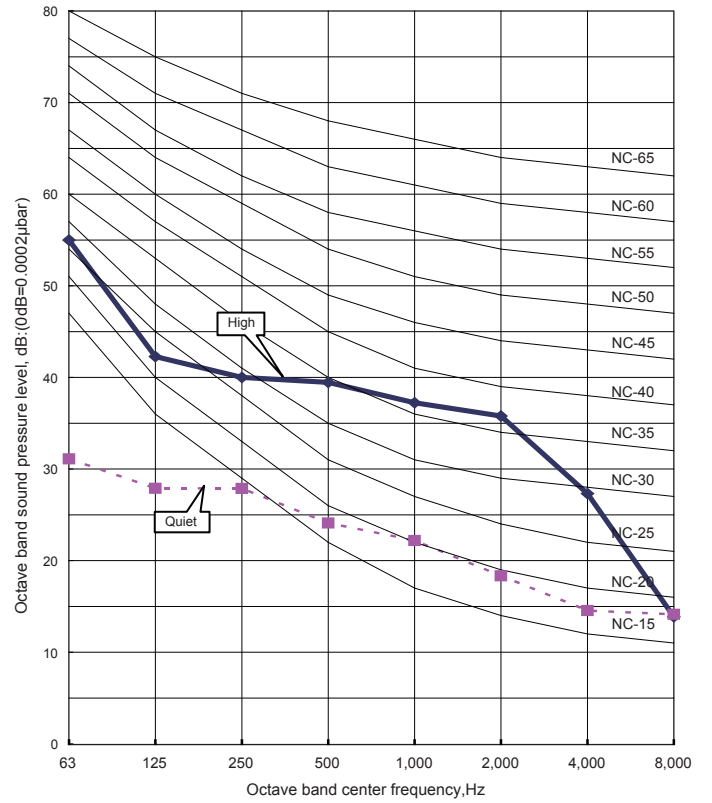


MODEL : AS\*B18LD

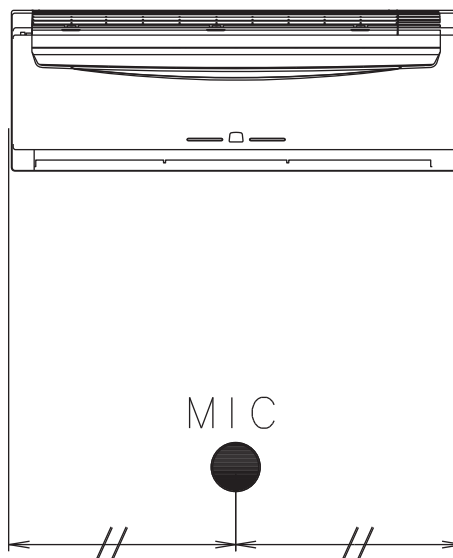
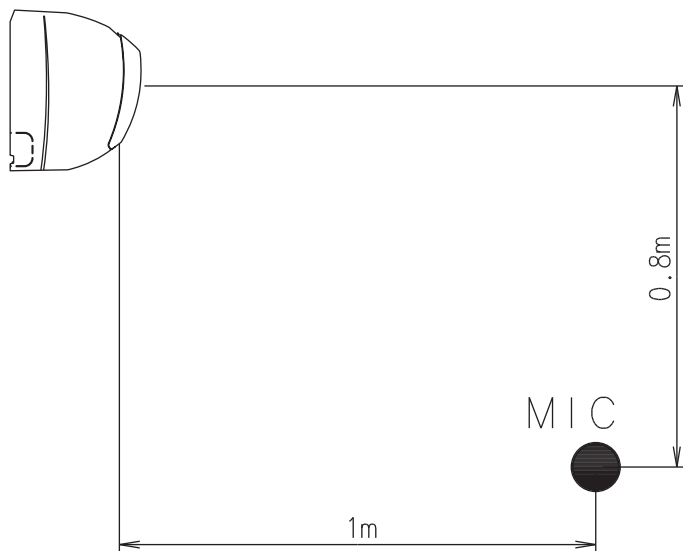
● COOLING



● HEATING



## 8-2. SOUND LEVEL CHECK POINT



## 9. ELECTRIC CHARACTERISTICS

Model Name			AS * B09LD	AS * B12LD	AS * B18LD
Power Supply	Voltage	V	230~		
	Frequency	Hz	50		
Max Operating Current		A	8.5	10.0	13.5
Starting current		A	3.8	5.6	7.7
*1)Wiring Spec.	Circuit breaker	A	15.0	20.0	20.0
	Connection Cable	mm <sup>2</sup>	1.5 - 2.5	1.5 - 2.5	2.0 - 3.5
	Limited wiring length	m	21	21	21

\*1) Wiring Spec.

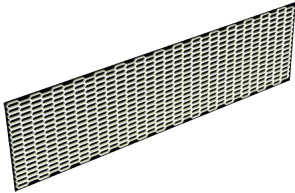
Selected Sample

(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

## 10. SAFETY DEVICES

	Protection form	Model		
		AS * B09LD	AS * B12LD	AS * B18LD
Circuit protection	Current fuse (PCB)	3.15A 250V		
Terminal protection	Current (thermal) fuse	3A 250V 102°C		
Fan motor protection	Thermal protection program	100 <sup>+15</sup> <sub>-10</sub> °C OFF		
		95 <sup>+5</sup> <sub>-10</sub> °C ON		

# 11. OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Air-cleaning and deodorizing filter	UTR-FA14	Negatively-charged dust, etc. are attracted to the earth section and are collected by a bacteria eliminating & deodorizing filter.

## **OUTDOOR UNIT**

### **2. SINGLE TYPE :**

**AO \* S09LDC**

**AO \* S12LDC**

**AO \* S18LDC**



# 1. SPECIFICATIONS

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD

Type			INVERTER HEAT PUMP	
Model name			AO * S09LDC	AO * S12LDC
Power source			230V~ 50Hz	
Available voltage range			198 - 264V~ 50Hz	
Starting current		A	3.8	5.6
Fan	Airflow rate	Cooling	1,970	1,830
		Heating	1,820	1,830
	Type × Q'ty	Propeller fan × 1		
Motor output		W	54	
Sound pressure level	Cooling		47	47
	Heating		48	49
Heat exchanger type	Dimensions (H × W × D)		508 × 852 × 22	504 × 850 × 36.4
	Fin pitch		1.3	1.4
	Rows × Stages		1 × 20	2 × 24
	Pipe type		Copper	
	Fin type		Aluminium	
Compressor	Type × Q'ty		Rotary × 1	
	Motor output		W	750
Refrigerant	Type		R410A	
	Charge		g	950      1,050
Refrigerant oil	Type		POE (VG74)	
Enclosure	Material		Steel	
	Colour		Beige	
Dimensions (H × W × D)	Net		540 × 790 × 290	
	Gross		648 × 910 × 380	
Weight	Net		34 (75)	36 (79)
	Gross		38 (84)	40 (88)
Connection pipe	Size	Liquid	Φ6.35 (Φ 1/4 in.)	
		Gas	Φ9.52 (Φ 3/8 in.)	
	Method		Flare	
	Max. length		20 (chargeless : 15)	
	Max. height difference		15	
Operation range	Cooling		°C      -10 to 43	
	Heating		-15 to 24	

**Note :**

Specifications are based on the following conditions.

Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.

Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

Type			INVERTER HEAT PUMP			
Model name			AO * S18LDC			
Power source			230V~ 50Hz			
Available voltage range			198 - 264V~ 50Hz			
Starting current		A	7.7			
Fan	Airflow rate	Cooling	m <sup>3</sup> /h	2,000		
		Heating		1,910		
	Type × Q'ty		Propeller fan × 1			
	Motor output		W	30		
Sound pressure level		Cooling	dB(A)	50		
		Heating		50		
Heat exchanger type		Dimensions (H × W × D)		mm	546 × 876 × 36.4	
		Fin pitch			1.3	
		Rows × Stages		2 × 26		
		Pipe type		Copper		
		Fin type		Aluminium		
Compressor		Type × Q'ty		Rotary × 1		
		Motor output		W	1,100	
Refrigerant		Type		R410A		
		Charge		g	1,150	
Refrigerant oil		Type		POE(VG74)		
Enclosure		Material		Steel		
		Colour		Beige		
Dimensions (H × W × D)		Net		mm	578 × 790 × 300	
		Gross			648 × 910 × 380	
Weight		Net		kg(lb.)	40 (88)	
		Gross			44 (97)	
Connection pipe		Size	Liquid	mm	Φ6.35 (Φ 1/4 in.)	
			Gas		Φ 12.7 (Φ 1/2 in.)	
		Method		Flare		
		Max. length		m	20(chargeless:15)	
		Max. height difference			15	
Operation range		Cooling		°C	-10 to 43	
		Heating			-15 to 24	

Note :

Specifications are based on the following conditions.

Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.

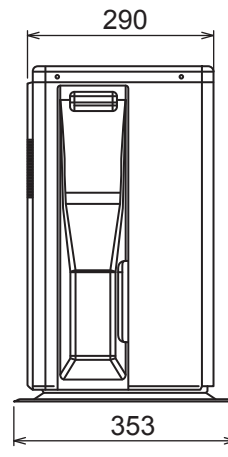
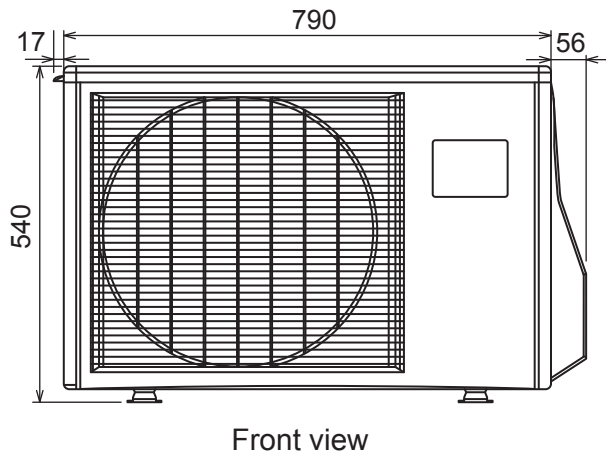
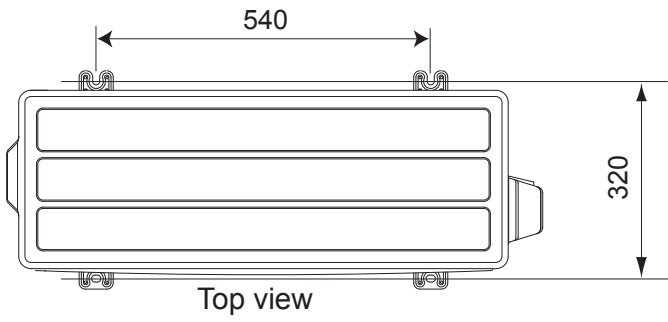
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

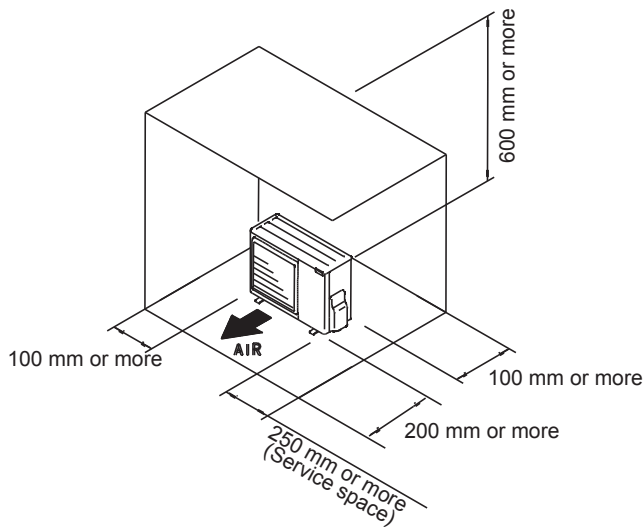
## 2. DIMENSIONS

### ■ MODEL : AO\*S09LD, AO\*S12LD

(Unit : mm)



### ■ INSTALLATION PLACE



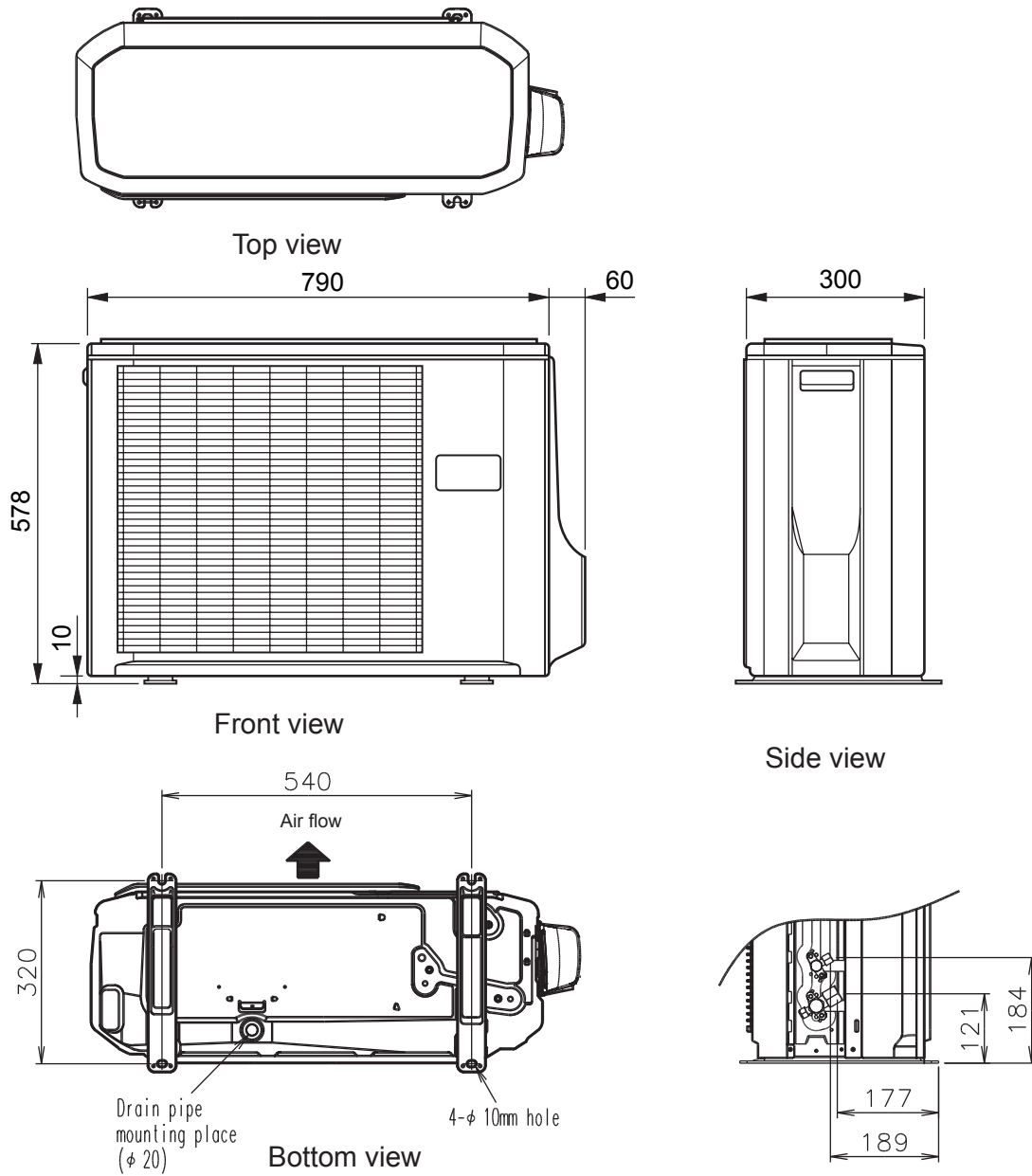
If the space is larger that is stated, the condition will be the same as that are no obstacles.

# MODEL : AO\*S18LD

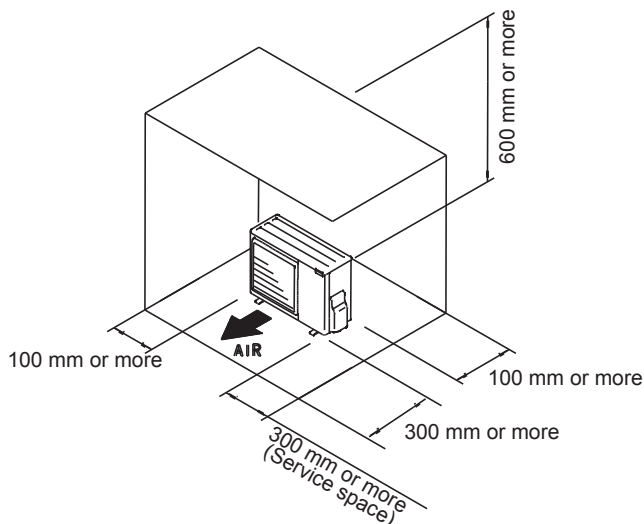
(Unit : mm)

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD



## INSTALLATION PLACE



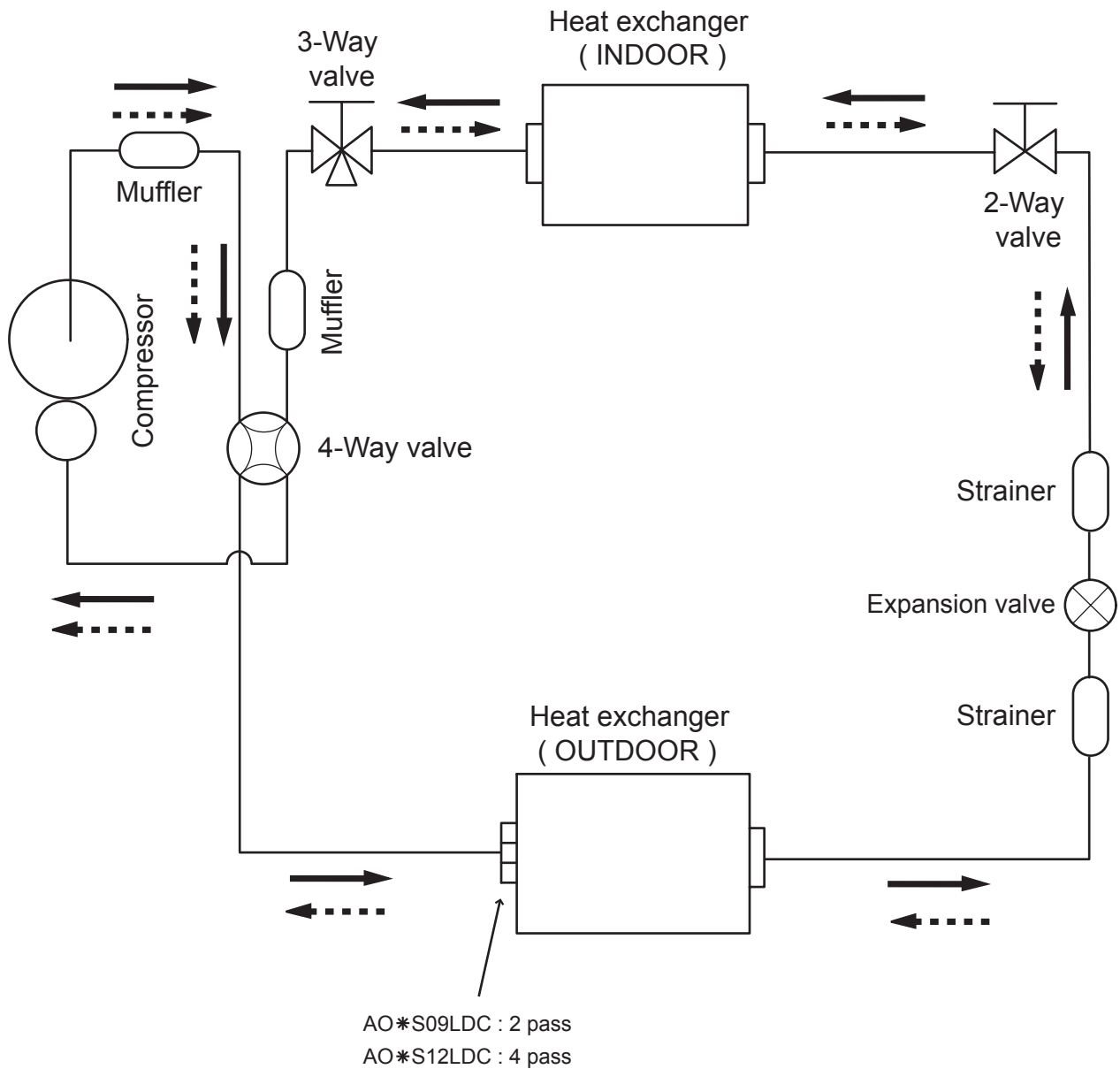
If the space is larger than that is stated, the condition will be the same as that are no obstacles.

### 3. REFRIGERANT CIRCUIT

■ MODEL : AO\*S09LD, AO\*S12LD

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD



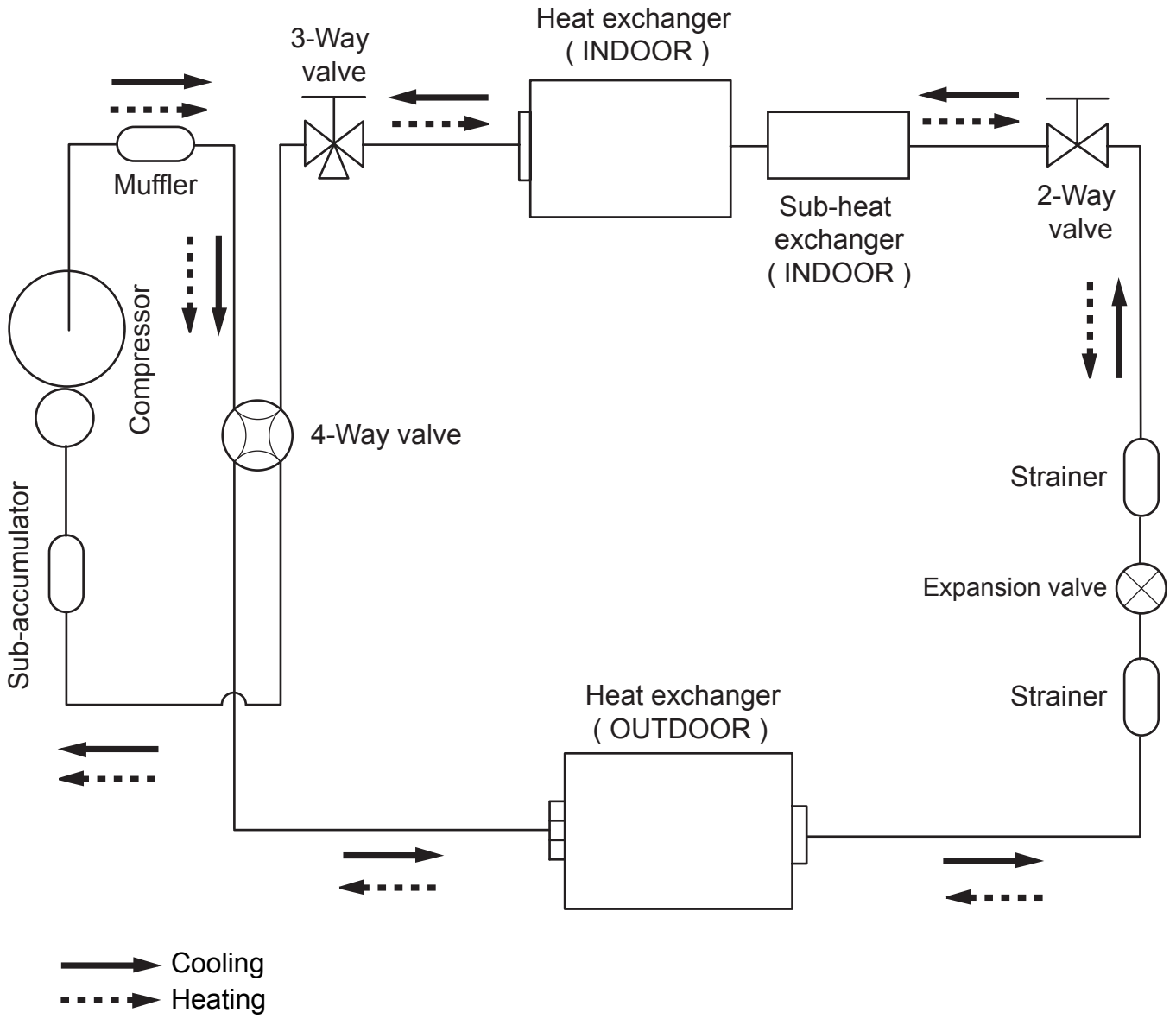
—→ Cooling  
- - -→ Heating

Refrigerant pipe diameter  
Liquid : 1/4" (6.35 mm)  
Gas : 3/8" (9.52 mm)

■ MODEL : AO\*S18LD

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD



 Cooling  
 Heating

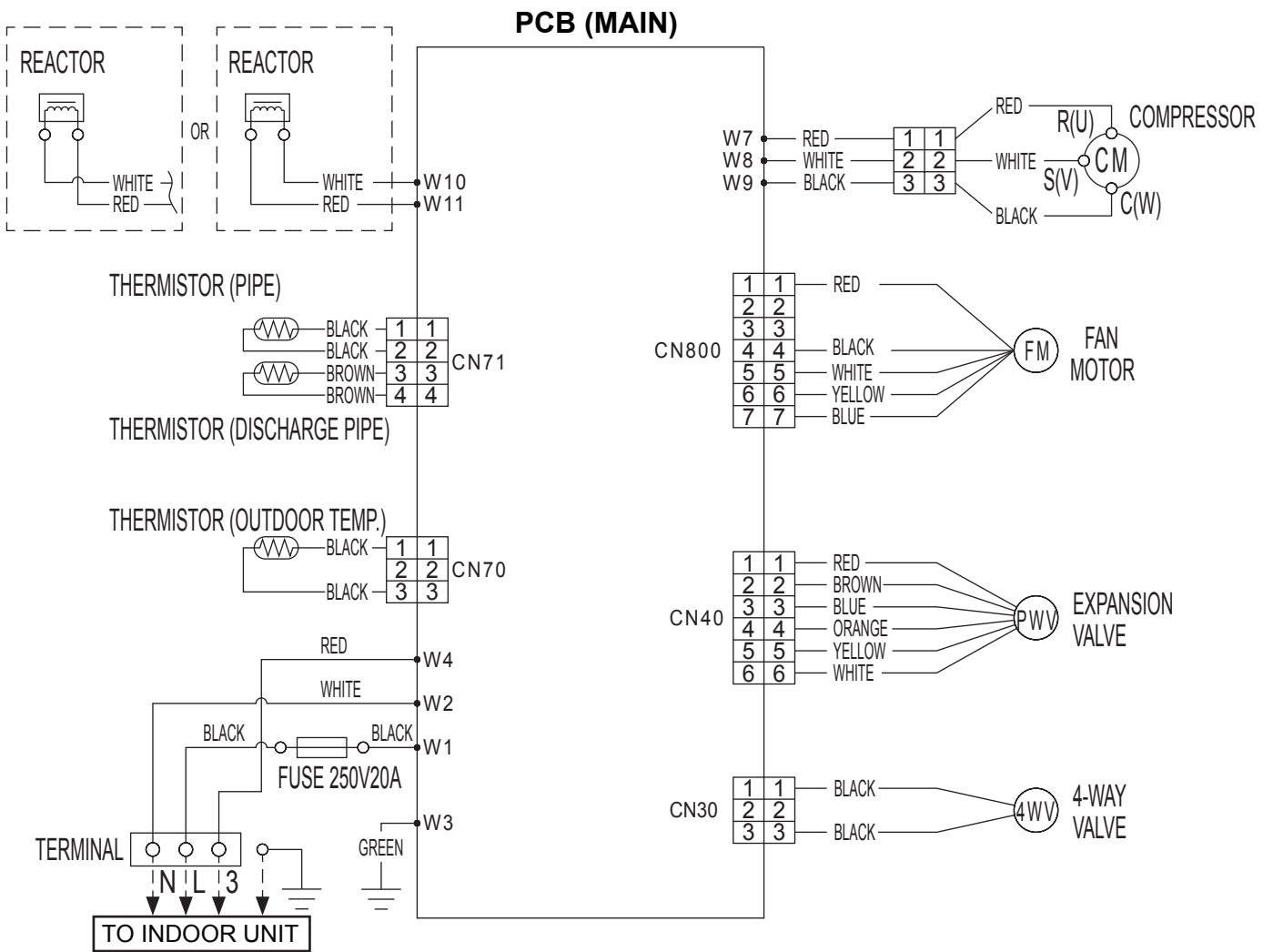
Refrigerant pipe diameter  
 Liquid : 1/4" (6.35 mm)  
 Gas : 1/2" (12.7 mm)

# 4. WIRING DIAGRAMS

■ MODEL : AO\*S09LD, AO\*S12LD

OUTDOOR UNIT  
AO\*S09-18LD

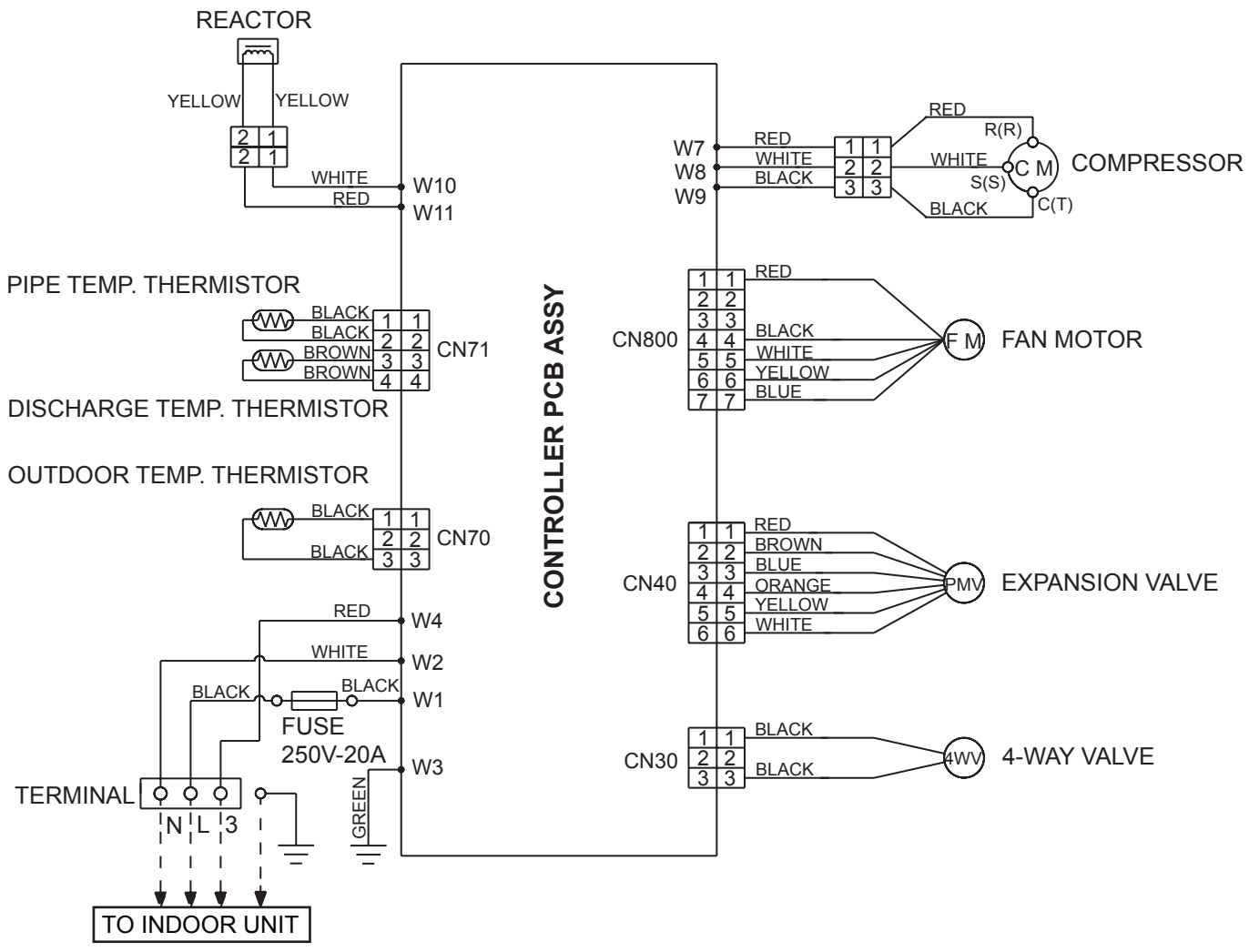
OUTDOOR UNIT  
AO\*S09-18LD



MODEL : AO\*S18LD

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD





# 5. COEFFICIENT OF COMPENSATION FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■ MODEL : AO\*S09LD, AO\*S12LD, AO\*S18LD

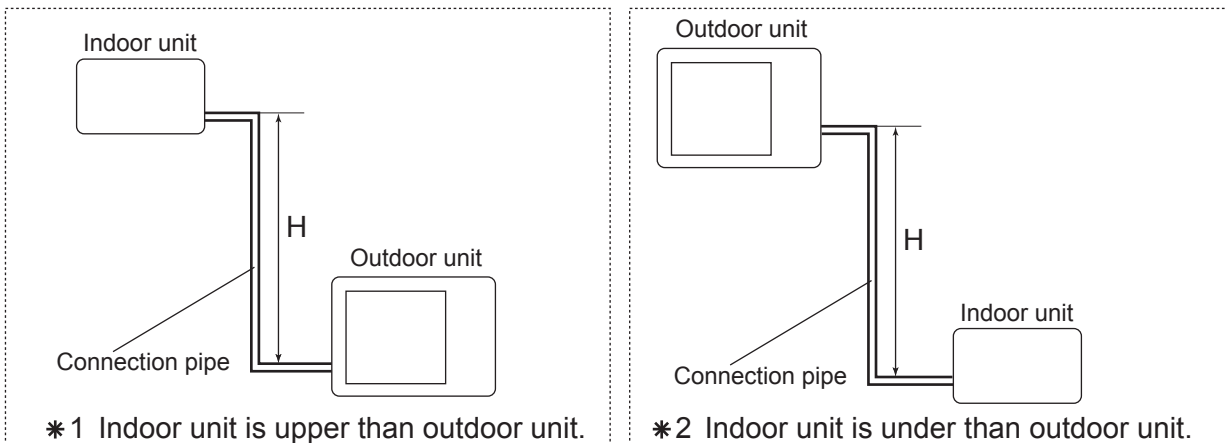
OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950
		10	-	-	0.983	0.968	0.966
		7.5	-	0.988	0.987	0.972	0.970
		5	0.992	0.992	0.991	0.976	0.974
	0	1.000	1.000	0.999	0.984	0.982	
	* 2 Indoor unit is under than outdoor unit	-5	1.000	1.000	0.999	0.984	0.982
		-7.5	-	1.000	0.999	0.984	0.982
		-10	-	-	0.999	0.984	0.982
		-15	-	-	-	0.984	0.982

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.920	0.894
		10	-	-	0.982	0.920	0.894
		7.5	-	1.000	0.982	0.920	0.894
		5	0.993	1.000	0.982	0.920	0.894
	0	0.993	1.000	0.982	0.920	0.894	
	* 2 Indoor unit is under than outdoor unit	-5	0.988	0.995	0.977	0.916	0.889
		-7.5	-	0.993	0.975	0.913	0.887
		-10	-	-	0.972	0.911	0.885
		-15	-	-	-	0.902	0.876

Height difference H



## 6. ADDITIONAL CHARGE CALCULATION

### ■ MODEL : AO\*S09LD

Refrigerant type	R410A	
Refrigerant amount	g	950

#### ● REFRIGERANT CHARGE

Pipe length	m	~ 15	20	20g/m
Additional charge	g	0 (Chargeless)	+100	

### ■ MODEL : AO\*S12LD

Refrigerant type	R410A	
Refrigerant amount	g	1,050

#### ● REFRIGERANT CHARGE

Pipe length	m	~ 15	20	20g/m
Additional charge	g	0 (Chargeless)	+100	

### ■ MODEL : AO\*S18LD

Refrigerant type	R410A	
Refrigerant amount	g	1150

#### ● REFRIGERANT CHARGE

Pipe length	m	~ 15	20	20g/m
Additional charge	g	0 (Chargeless)	+100	

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD

## 7. AIR FLOW

### ■ MODEL : AO\*S09LD

#### ● COOLING

Number of rotations (r.p.m)	Airflow	
	820	1970
547		l/s
1159		CFM

#### ● HEATING

Number of rotations (r.p.m)	Airflow	
	760	1820
506		l/s
1071		CFM

### ■ MODEL : AO\*S12LD

#### ● COOLING

Number of rotations (r.p.m)	Airflow	
	820	1830
508		l/s
1077		CFM

#### ● HEATING

Number of rotations (r.p.m)	Airflow	
	820	1830
508		l/s
1077		CFM

## ■ MODEL : AO\*S18LD

### ● COOLING

Number of rotations (r.p.m)	Airflow	
	860	2000
556		l/s
1177		CFM

### ● HEATING

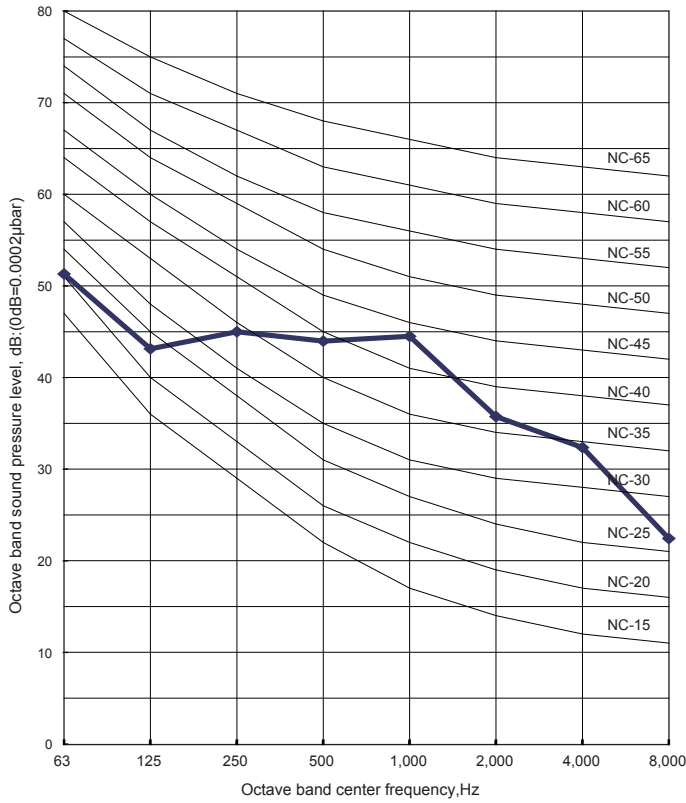
Number of rotations (r.p.m)	Airflow	
	820	1910
531		l/s
1124		CFM

# 8. OPERATION NOISE

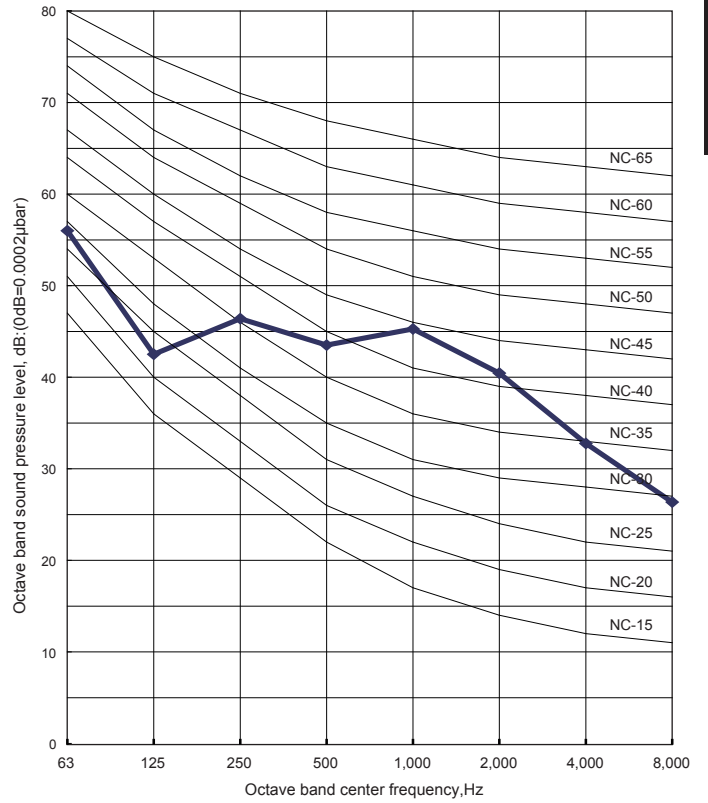
## 8-1. NOISE LEVEL CURVE

### MODEL : AO\*S09LD

#### COOLING

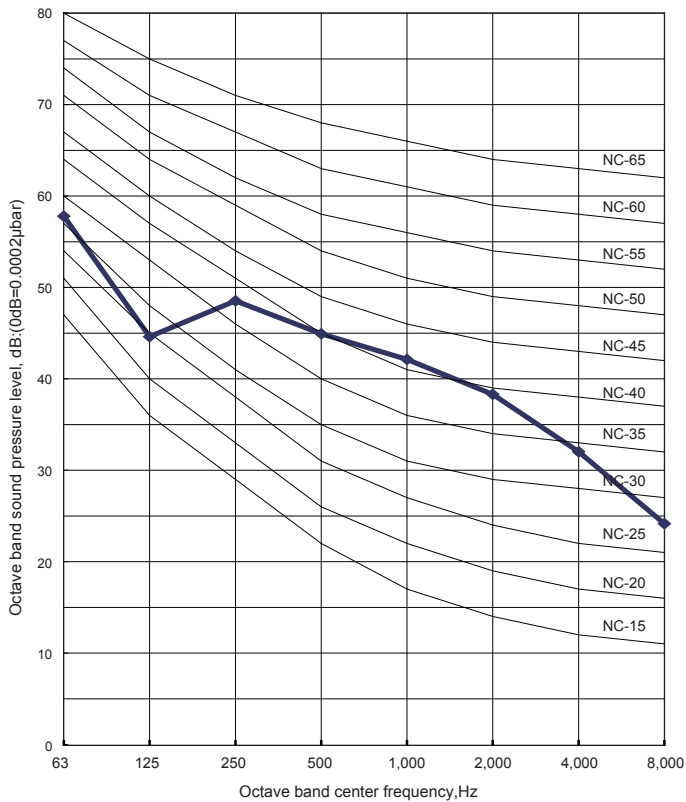


#### HEATING

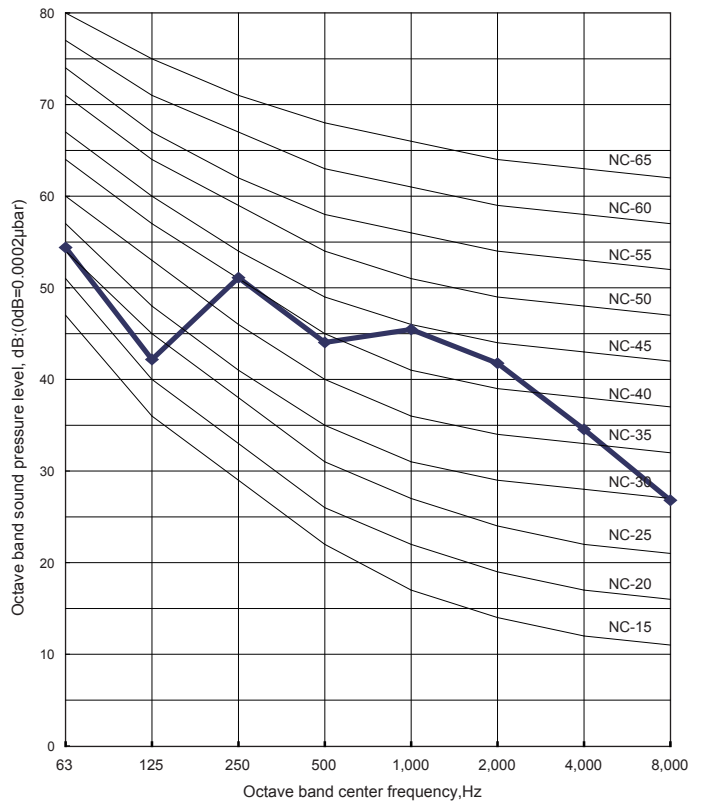


### MODEL : AO\*S12LD

#### COOLING



#### HEATING

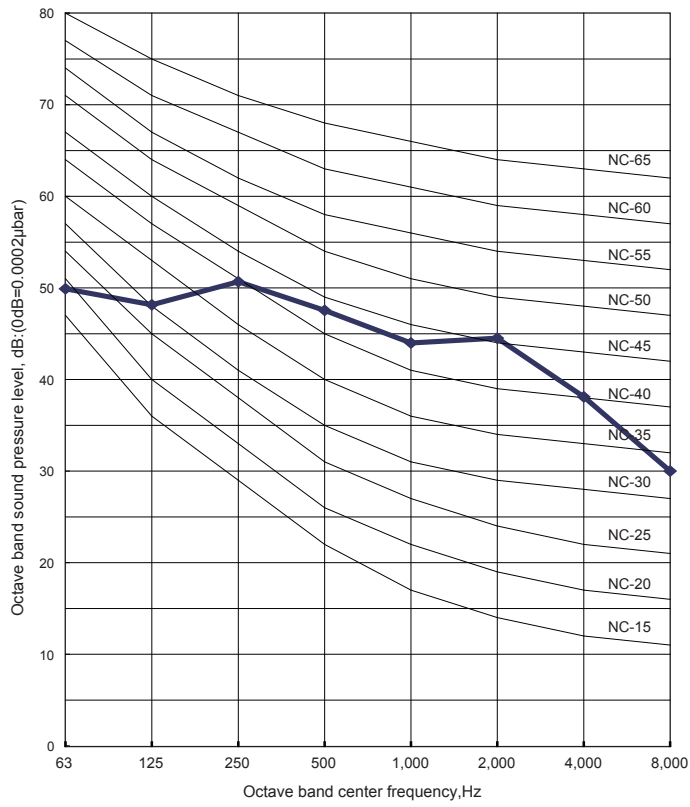


OUTDOOR UNIT  
AO\*S09-18LD

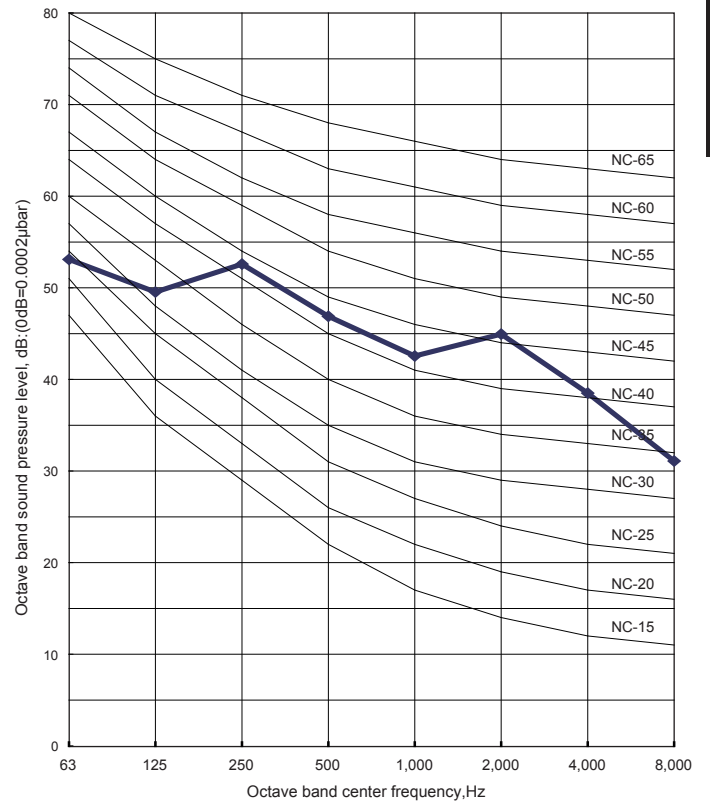
OUTDOOR UNIT  
AO\*S09-18LD

# MODEL : AO\*S18LD

## ● COOLING

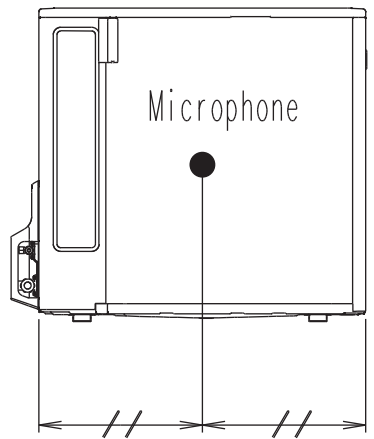
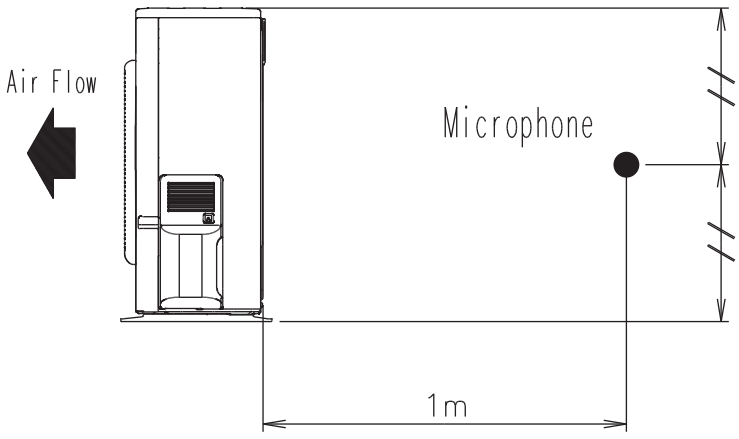


## ● HEATING



# 8-2. SOUND LEVEL CHECK POINT

OUTDOOR UNIT  
AO\*S09-18LD



OUTDOOR UNIT  
AO\*S09-18LD

## 9. ELECTRIC CHARACTERISTICS

Model Name		AO * S09LD	AO * S12LD	AO * S18LD	
Power Supply	Voltage	V	230~		
	Frequency	Hz	50		
Starting Current		A	3.8	5.6	7.7



# 10. SAFETY DEVICES

OUTDOOR UNIT  
AO\*S09-18LD

OUTDOOR UNIT  
AO\*S09-18LD

	Protection form	Model		
		AO * S09LD	AO * S12LD	AO * S18LD
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V		
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V		
		3.15A 250V		
Fan motor protection	Thermal protection program	OFF : $135^{+5}_{-5}$ °C ON : $95^{+15}_{-15}$ °C	OFF : $100^{+15}_{-10}$ °C ON : $95^{+15}_{-10}$ °C	
Compressor protection	Thermal protection program (DISCHARGE TEMP.)	OFF : 110°C ON : After 7 minutes		