

INDOOR UNIT

1. FLOOR TYPE :

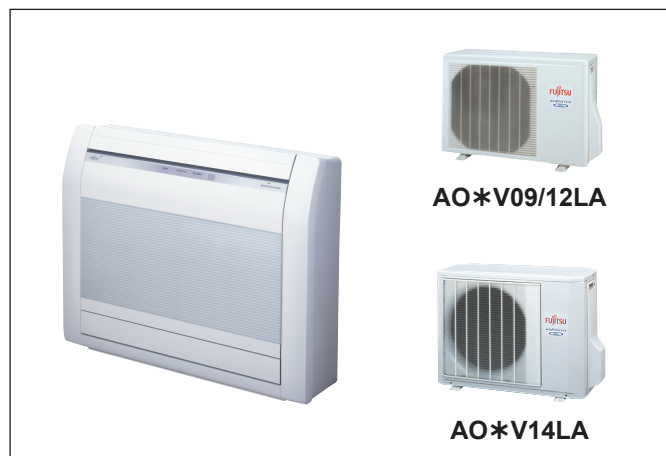
AG*F09LAC

AG*F12LAC

AG*F14LAC

1. FEATURE

■ **MODEL : AG*F09LAC**
AG*F12LAC
AG*F14LAC



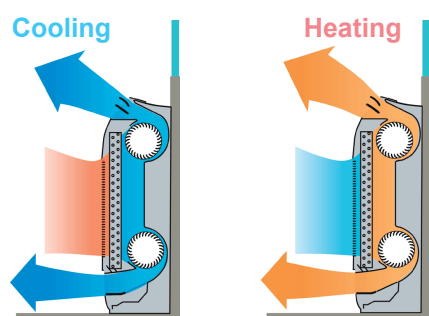
■ FEATURES

● Energy Efficiency Classification A

Europe Energy Efficiency Classification A achieved

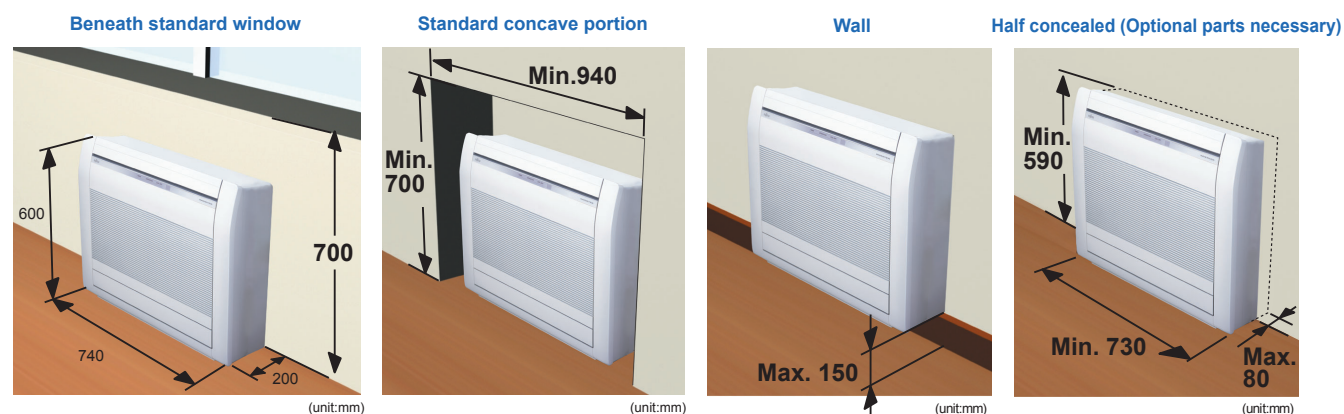
● Up and down twin fan operation

Up to every corner of the room especially around the feet is heated evenly by two-direction up and down discharge.

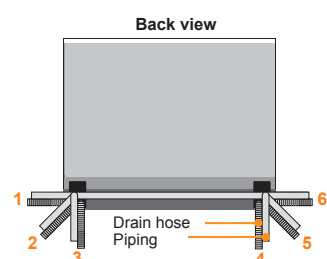


● Flexible & easy installation

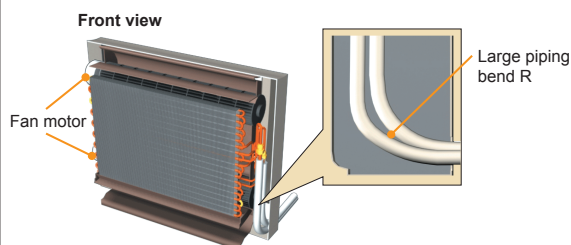
Piping space is wide and connection work is easy.



Choice of 6-direction drain & piping connection

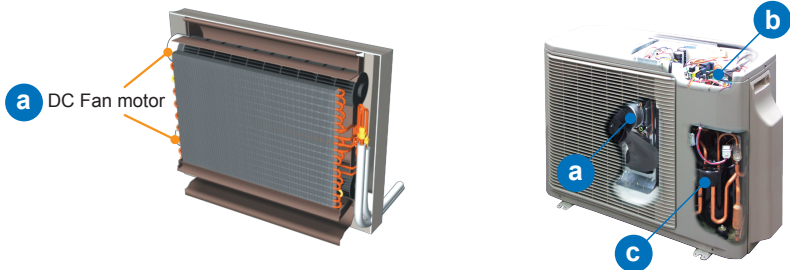


Space is wide and piping work is easy



● ALL DC

- a** DC fan motor
- b** V-PAM control
- c** DC rotary compressor



● Super quiet operation

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

● Inner drying operation

This model is equipped with an inner drying function. After the power is turned off, the dry operation starts inside the air conditioner. This prevents the growth of mold and bacteria inside the air conditioner.

● Economy mode

Limits the maximum operation current, and performs operation with the power consumption suppressed.

● 10°C heating operation

Operates in the 10°C heating mode so that the room does not become too cold even when you are absent during the winter, etc.

● Low ambient outdoor temperature design

Low ambient outdoor temperature design

Cooling	-10 to 43°C
Heating	-15 to 24°C

● Air conditioner filter feature

Apple-catechin filter



Long-life ion deodorization filter



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

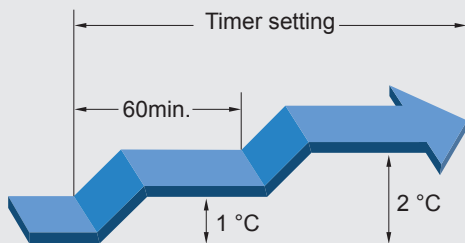
The program timer operates the ON and OFF timer once within a 24 hour period.

● 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.

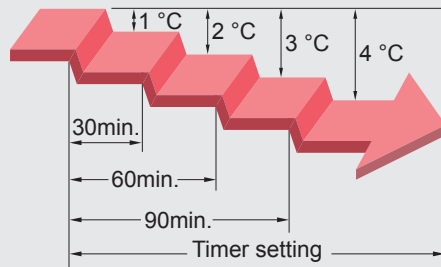
Cooling operation/dry operation

When the sleep timer is set, the set temperature automatically rises 1 °C every hour. The set temperature can rise up to a maximum of 2 °C.

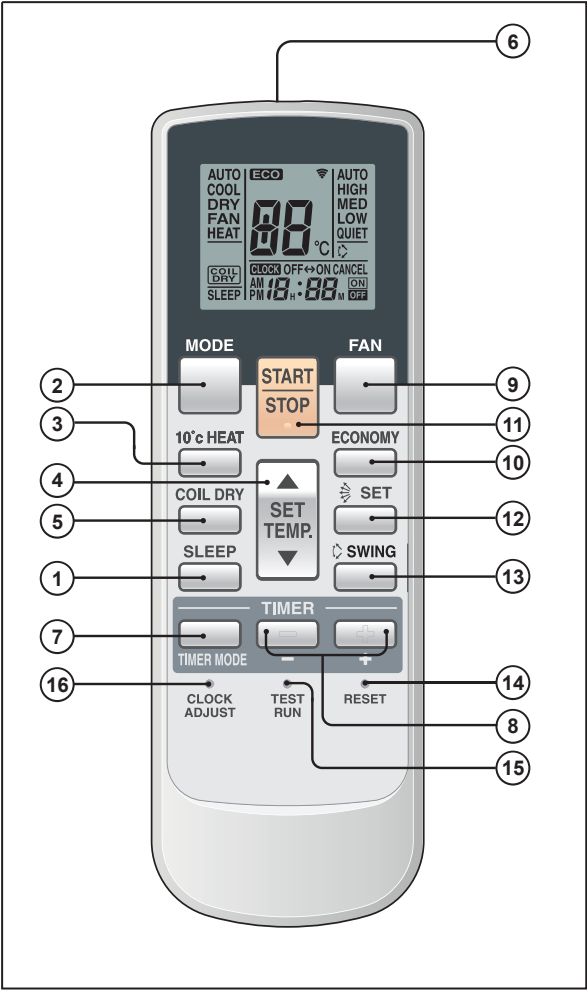


Heating operation

When the sleep timer is set, the set temperature automatically drops 1 °C every 30 minutes. The set temperature can drop to a maximum of 4 °C.



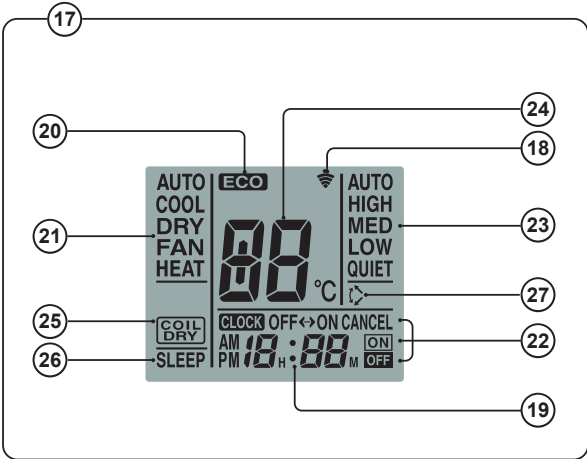
FUNCTIONS



- ① SLEEP button
- ② MODE button
- ③ 10°C HEAT button
- ④ SET TEMP. button (▲ / ▼)
- ⑤ COIL DRY button
- ⑥ Signal Transmitter
- ⑦ TIMER MODE button
- ⑧ TIMER SET (+ / -) button
- ⑨ FAN CONTROL button
- ⑩ ECONOMY button
- ⑪ START/STOP button
- ⑫ SET button
- ⑬ SWING button
- ⑭ RESET button
- ⑮ 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
- ⑰ Remote Control Unit Display
- ⑱ Transmit Indicator
- ⑲ Clock Display
- ⑳ ECONOMY Display
- ㉑ Operating Mode Display
- ㉒ Timer Mode Display
- ㉓ Fan Speed Display
- ㉔ Temperature SET Display
- ㉕ COIL DRY Display
- ㉖ SLEEP Display
- ㉗ SWING Display

SPECIFICATION

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

3. SPECIFICATIONS

Type					FLOOR TYPE				
					INVERTER HEAT PUMP				
Model name					AG*F09LAC	AG*F12LAC	AG*F14LAC		
Power source					230V~ 50Hz				
Available voltage range					198 - 264V~ 50Hz				
European energy label				Cooling	A	A	A		
				Heating	A	A	A		
Capacity	Cooling	Rated	kW	2.60	3.50	4.20			
			BTU/h	8,900	11,900	14,300			
		Min-Max	kW	0.9 - 3.5	0.9 - 4.0	0.9 - 5.0			
			BTU/h	3,100 - 11,900	3,100 - 13,600	3,100 - 17,100			
	Heating	Rated	kW	3.50	4.50	5.20			
			BTU/h	11,900	15,400	17,700			
		Min-Max	kW	0.9 - 5.5	0.9 - 6.6	0.9 - 8.0			
			BTU/h	3,100 - 18,800	3,100 - 22,500	3,100 - 27,300			
Input power	Cooling	Rated	kW	0.53	0.94	1.14			
		Min-Max		0.25 - 1.35	0.25 - 1.40	0.25 - 1.90			
	Heating	Rated		0.79	1.19	1.44			
		Min-Max		0.25 - 2.10	0.25 - 2.15	0.25 - 2.95			
Current	Cooling	Rated	A	2.6	4.4	5.2			
		Max		7.0	7.0	9.0			
	Heating	Rated		3.8	5.5	6.4			
		Max		10	10.0	13.5			
EER		Cooling	kW/kW	4.91	3.72	3.68			
COP		Heating		4.43	3.78	3.61			
SENSIBLE CAPACITY		Cooling	kW	2.33	2.66	3.15			
POWER FACTOR		Cooling	%	90	93	96			
		Heating		90	94	98			
Moisture removal				l/h (pints/h)	1.3 (2.7)	1.8 (3.8)	2.1 (4.4)		
Fan	Airflow rate	Cooling (UPPER : LOWER)	High	m³/h	570	570	650		
			Med		460	460	520		
			Low		360	360	400		
			Quiet		270	270	270		
		Heating (UPPER : LOWER)	High		600	600	650		
			Med		480	480	520		
			Low		370	370	390		
			Quiet		270	270	270		
		Type × Q'ty			Cross flow fan × 2				
		Motor output			W	42	42	42	
	Sound pressure level	Cooling	High	dB(A)	40	40	44		
			Med		35	35	38		
Low			29		29	31			
Quiet			22		22	22			
Heating		High	40		40	43			
		Med	35		35	37			
		Low	29		29	29			
		Quiet	22		22	22			
Heat exchanger type		Dimensions (H × W × D)		mm	378 × 550 × 26.6				
		Fin pitch			1.2				
		Rows × Stages			2 × 18				
		Pipe type			Copper				
		Fin type			Aluminium				
Enclosure		Material			Polystyrene				
		Colour			White				
Dimensions (H × W × D)	Net		mm	600 × 740 × 200					
	Gross			700 × 820 × 310					
Weight	Net		kg(lb.)	14 (31)					
	Gross			17 (37)					
Connection pipe	Size	Liquid	mm	Φ6.35 (Φ 1/4 in.)					
		Gas		Φ9.52 (Φ 3/8 in.)		Φ 12.70 (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				PP+LLDPE				
	Size			mm	Outer diameter : 29 / Inner diameter : 13.6				

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.

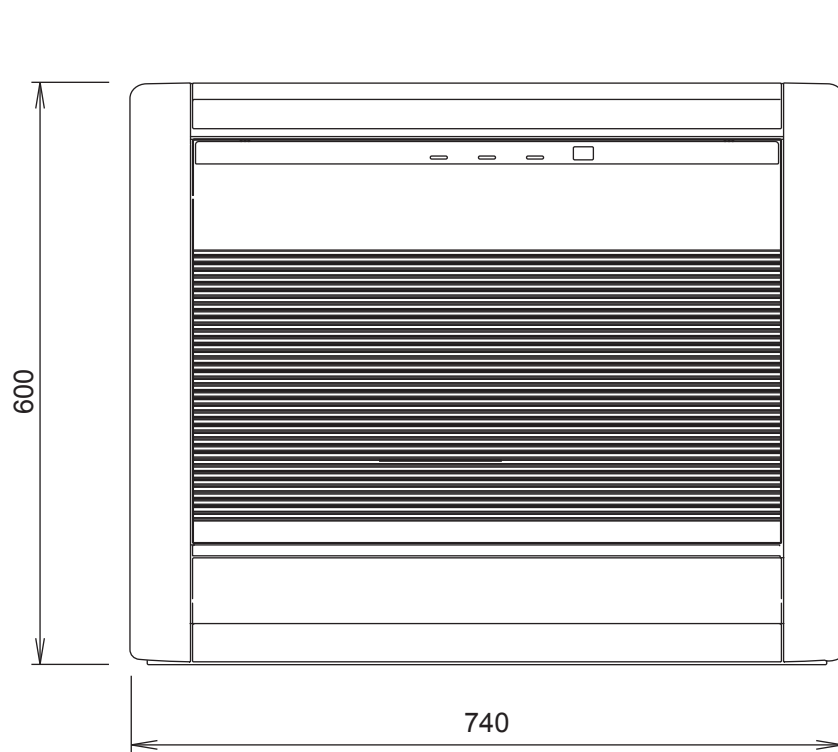
Pipe length : 5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

The maximum current is the maximum value when operated within the operation range (temperature).

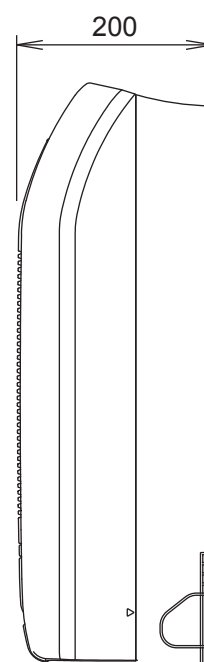
4. DIMENSIONS

■ MODEL : AG*F09LA, AG*F12LA, AG*F14LA

(Unit : mm)

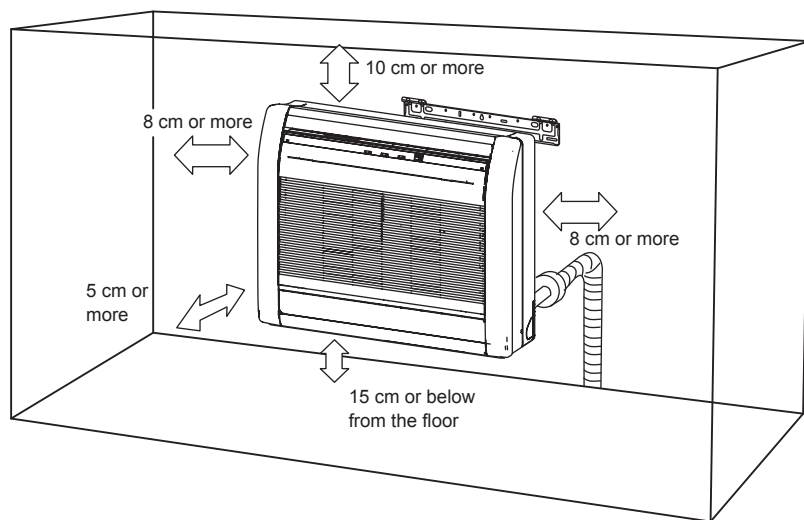


Front view



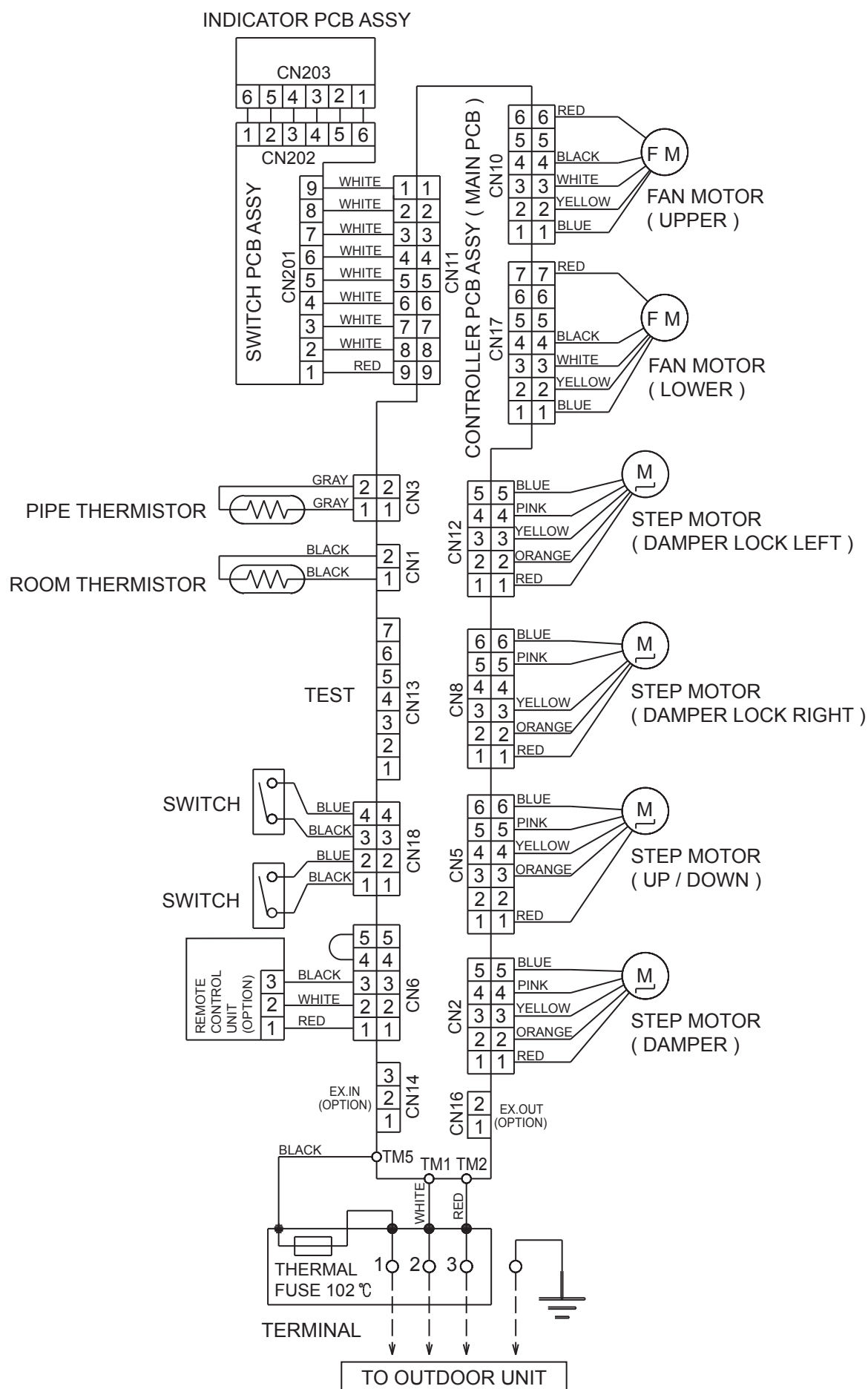
Side view

■ INSTALLATION PLACE



5. WIRING DIAGRAMS

■ MODEL : AG*F09LA, AG*F12LA, AG*F14LA



6. CAPACITY TABLE

6-1. COOLING CAPACITY

MODEL : AG*F09LA

AFR		9.5																					
			Indoor temperature																				
		°CDB	18			21			23			25			27			29			32		
		°CWB	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	1.99	1.88	0.25	2.21	1.89	0.25	2.29	2.05	0.26	2.44	2.06	0.26	2.51	2.23	0.26	2.67	2.22	0.26	2.82	2.36	0.27	
	25	2.27	2.15	0.41	2.53	2.16	0.42	2.61	2.35	0.42	2.79	2.35	0.43	2.87	2.54	0.43	3.04	2.53	0.43	3.22	2.70	0.44	
	30	2.16	2.05	0.46	2.41	2.06	0.47	2.49	2.24	0.47	2.66	2.24	0.48	2.74	2.42	0.48	2.90	2.41	0.48	3.07	2.57	0.49	
	35	2.05	1.94	0.51	2.29	1.95	0.52	2.37	2.12	0.52	2.52	2.13	0.53	2.60	2.30	0.53	2.76	2.29	0.54	2.91	2.44	0.54	
	40	1.90	1.80	0.53	2.12	1.81	0.54	2.19	1.97	0.55	2.34	1.98	0.55	2.41	2.13	0.55	2.56	2.13	0.56	2.70	2.26	0.57	
43	1.87	1.77	0.54	2.08	1.78	0.55	2.15	1.93	0.55	2.30	1.94	0.56	2.37	2.10	0.56	2.51	2.09	0.57	2.65	2.22	0.57		

MODEL : AG*F12LA

AFR		9.5																				
		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	2.67	2.17	0.45	2.98	2.19	0.45	3.08	2.38	0.45	3.28	2.39	0.46	3.38	2.58	0.46	3.59	2.57	0.47	3.79	2.73	0.47
	25	3.05	2.48	0.74	3.40	2.50	0.75	3.52	2.72	0.75	3.75	2.73	0.76	3.87	2.94	0.76	4.10	2.93	0.77	4.33	3.12	0.78
	30	2.91	2.37	0.82	3.24	2.38	0.83	3.36	2.59	0.84	3.58	2.60	0.85	3.69	2.81	0.85	3.91	2.79	0.86	4.13	2.98	0.87
	35	2.76	2.25	0.91	3.08	2.26	0.92	3.18	2.46	0.93	3.39	2.47	0.94	3.50	2.66	0.94	3.71	2.65	0.95	3.92	2.83	0.96
	40	2.56	2.08	0.95	2.86	2.10	0.96	2.95	2.28	0.97	3.15	2.29	0.98	3.25	2.47	0.98	3.44	2.46	0.99	3.63	2.62	1.00
43	2.52	2.05	0.96	2.80	2.06	0.97	2.90	2.24	0.98	3.09	2.25	0.99	3.19	2.43	0.99	3.38	2.42	1.00	3.57	2.57	1.01	

MODEL : AG*F14LA

AFR		10.8																				
		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	3.42	2.61	0.62	3.81	2.63	0.63	3.94	2.86	0.63	4.20	2.87	0.64	4.33	3.10	0.64	4.59	3.08	0.65	4.85	3.28	0.66
	25	3.66	2.80	0.91	4.08	2.81	0.92	4.22	3.06	0.93	4.50	3.07	0.93	4.64	3.31	0.94	4.91	3.30	0.95	5.19	3.51	0.96
	30	3.50	2.67	1.00	3.90	2.69	1.02	4.03	2.92	1.02	4.30	2.93	1.03	4.43	3.16	1.04	4.69	3.15	1.05	4.96	3.36	1.06
	35	3.32	2.53	1.10	3.70	2.55	1.12	3.82	2.77	1.12	4.07	2.78	1.13	4.20	3.00	1.14	4.45	2.99	1.15	4.70	3.18	1.16
	40	2.94	2.25	1.14	3.28	2.26	1.16	3.39	2.46	1.17	3.61	2.47	1.18	3.73	2.66	1.19	3.95	2.65	1.20	4.17	2.82	1.21
43	2.78	2.12	1.16	3.10	2.13	1.17	3.20	2.32	1.18	3.41	2.33	1.19	3.52	2.51	1.20	3.73	2.50	1.21	3.94	2.67	1.22	

AFR : Air Flow Rate (m³/min)
TC : Total Capacity (kW)
SHC : Sensible Heat Capacity (kW)
PI : Power Input (kW)

6-2. HEATING CAPACITY

■ MODEL : AG*F09LA

AFR	10.0
-----	------

		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	2.36	0.64	2.31	0.65	2.25	0.66	2.19	0.68	2.14	0.69
	-10	-11	2.60	0.67	2.54	0.69	2.48	0.70	2.41	0.72	2.35	0.73
	-5	-7	2.94	0.71	2.87	0.72	2.80	0.74	2.73	0.75	2.66	0.77
	0	-2	3.43	0.75	3.34	0.77	3.26	0.79	3.18	0.80	3.10	0.82
	5	3	3.80	0.80	3.71	0.82	3.62	0.84	3.53	0.85	3.44	0.87
	7	6	3.67	0.76	3.59	0.77	3.50	0.79	3.41	0.81	3.32	0.82
	10	8	4.22	0.77	4.12	0.78	4.02	0.80	3.92	0.82	3.82	0.83
15	10	4.22	0.72	4.12	0.74	4.02	0.75	3.92	0.77	3.82	0.79	

■ MODEL : AG*F12LA

AFR	10.0
-----	------

		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.04	0.96	2.97	0.98	2.89	1.00	2.82	1.02	2.75	1.04
	-10	-11	3.34	1.01	3.26	1.04	3.18	1.06	3.10	1.08	3.02	1.10
	-5	-7	3.78	1.06	3.69	1.09	3.60	1.11	3.51	1.13	3.42	1.15
	0	-2	4.40	1.14	4.30	1.16	4.20	1.18	4.09	1.21	3.99	1.23
	5	3	4.89	1.21	4.77	1.24	4.66	1.26	4.54	1.29	4.42	1.31
	7	6	4.72	1.14	4.61	1.17	4.50	1.19	4.39	1.21	4.27	1.24
	10	8	5.43	1.16	5.30	1.18	5.17	1.20	5.04	1.23	4.91	1.25
15	10	5.43	1.09	5.30	1.11	5.17	1.14	5.04	1.16	4.91	1.18	

■ MODEL : AG*F14LA

AFR	10.8
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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	3.53	1.44	3.45	1.47	3.37	1.50	3.28	1.53	3.20	1.56
	-10	-11	3.67	1.54	3.58	1.57	3.50	1.60	3.41	1.63	3.32	1.67
	-5	-7	4.18	1.61	4.08	1.64	3.98	1.68	3.88	1.71	3.78	1.74
	0	-2	4.84	1.72	4.72	1.75	4.61	1.79	4.49	1.82	4.38	1.86
	5	3	5.35	1.72	5.23	1.76	5.10	1.80	4.97	1.83	4.84	1.87
	7	6	5.46	1.38	5.33	1.41	5.20	1.44	5.07	1.47	4.94	1.50
	10	8	5.14	1.39	5.02	1.42	4.89	1.45	4.77	1.48	4.65	1.51
15	10	5.42	1.16	5.29	1.19	5.16	1.21	5.03	1.24	4.90	1.26	

AFR : Air Flow Rate (m³/min)

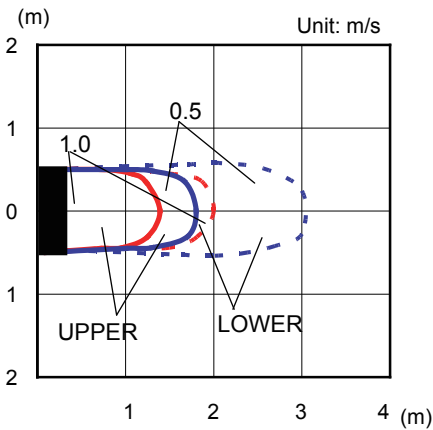
TC : Total Capacity (kW)

PI : Power Input (kW)

7. FAN PERFORMANCE

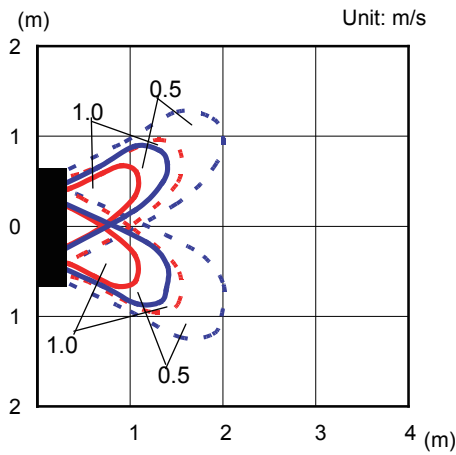
7-1. AIR VELOCITY DISTRIBUTION

■ MODEL : AG*F09LA, AG*F12LA, AG*F14LA

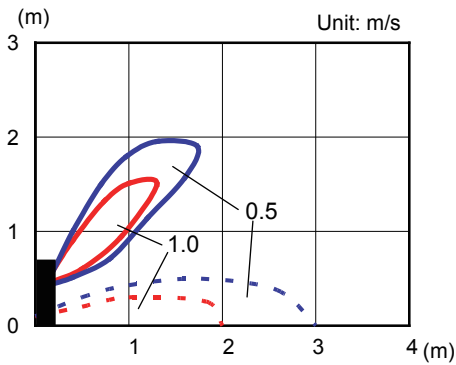


TOP VIEW
FLOW CONTROL PANEL : Horiz.
LOUVER :Center

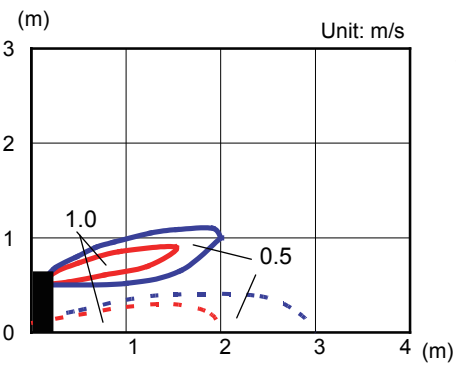
Note :
Fan speed : H i
Operation : FAN
Voltage : 230V
Fan select : UPPER&LOWER
———— : UPPER FAN
----- : LOWER FAN



TOP VIEW
FLOW CONTROL PANEL : Horiz.
LOUVER :Right & Left



SIDE VIEW
FLOW CONTROL PANEL : Vert
LOUVER :Center



SIDE VIEW
FLOW CONTROL PANEL : Horiz.
LOUVER :Center

7-2. AIR FLOW

■ MODEL : AG*F09LA, AG*F12LA

● COOLING

Fan speed	Number of rotations [r.p.m] (UPPER/LOWER)	Air flow	
HIGH	1190/1000	570	m ³ /h
		158	l/s
		335	CFM
MED	1000/850	460	m ³ /h
		128	l/s
		271	CFM
LOW	820/690	360	m ³ /h
		100	l/s
		212	CFM
QUIET	660/560	270	m ³ /h
		75	l/s
		159	CFM

● HEATING

Fan speed	Number of rotations [r.p.m] (UPPER/LOWER)	Air flow	
HIGH	1240/1040	600	m ³ /h
		167	l/s
		353	CFM
MED	1040/880	480	m ³ /h
		133	l/s
		282	CFM
LOW	840/700	370	m ³ /h
		103	l/s
		218	CFM
QUIET	660/560	270	m ³ /h
		75	l/s
		159	CFM

■MODEL : AG*F14LA

●COOLING

Fan speed	Number of rotations [r.p.m] (UPPER/LOWER)	Air flow	
HIGH	1330/1120	650	m ³ /h
		181	l/s
		383	CFM
MED	1100/930	520	m ³ /h
		144	l/s
		306	CFM
LOW	890/750	400	m ³ /h
		111	l/s
		235	CFM
QUIET	660/560	270	m ³ /h
		75	l/s
		159	CFM

●HEATING

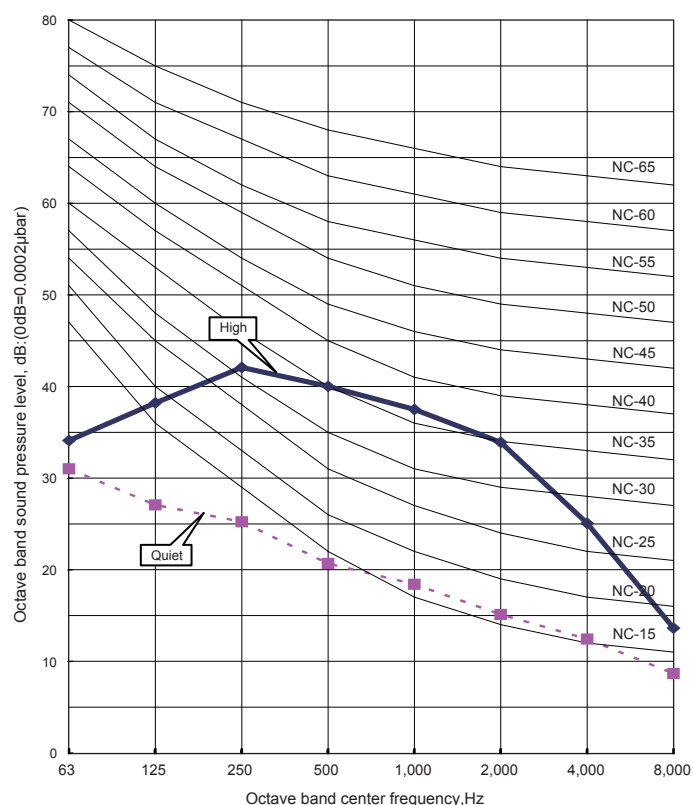
Fan speed	Number of rotations [r.p.m] (UPPER/LOWER)	Air flow	
HIGH	1330/1120	650	m ³ /h
		181	l/s
		383	CFM
MED	1100/930	520	m ³ /h
		144	l/s
		306	CFM
LOW	860/730	390	m ³ /h
		108	l/s
		230	CFM
QUIET	660/560	270	m ³ /h
		75	l/s
		159	CFM

8. OPERATION NOISE

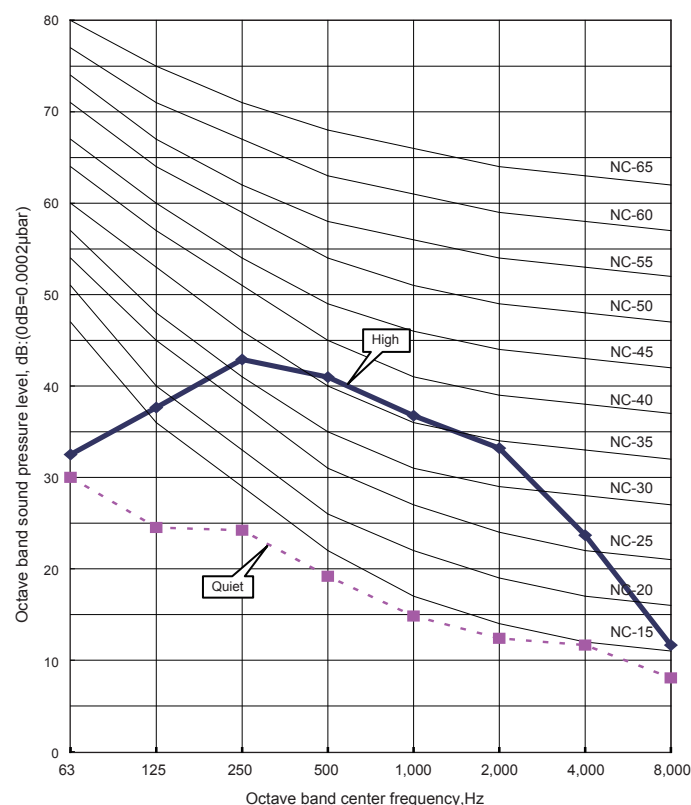
8-1. NOISE LEVEL CURVE

■ MODEL : AG*F09LA

● COOLING

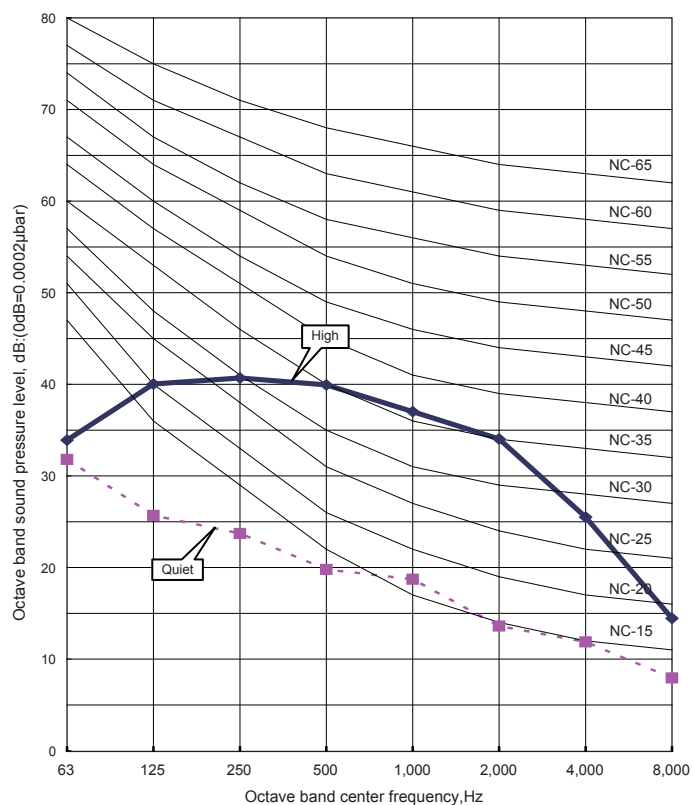


● HEATING

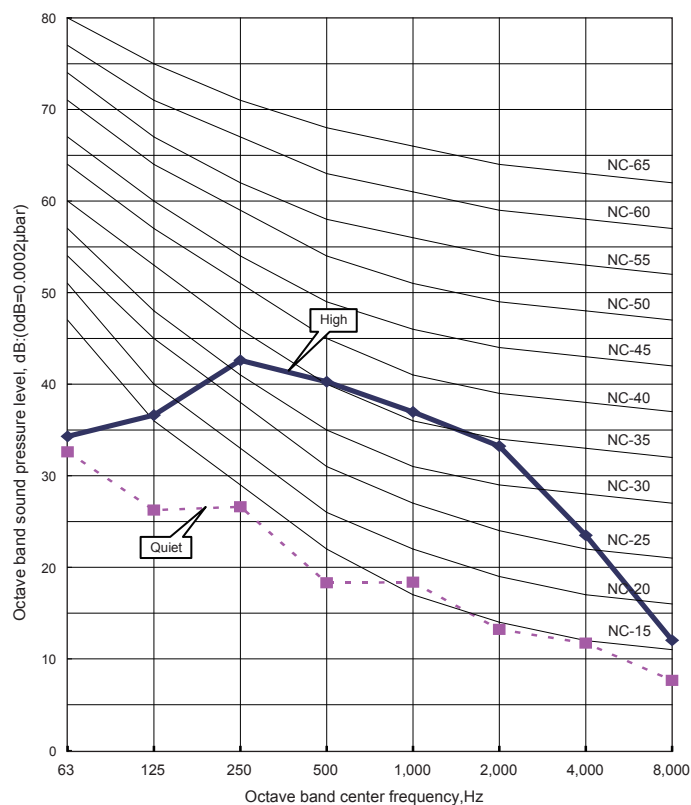


■ MODEL : AG*F12LA

● COOLING

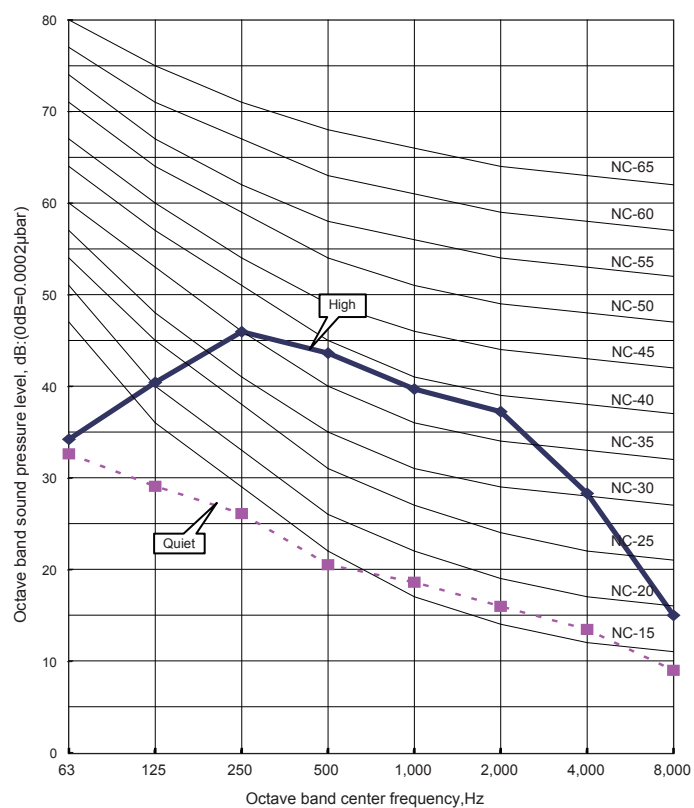


● HEATING

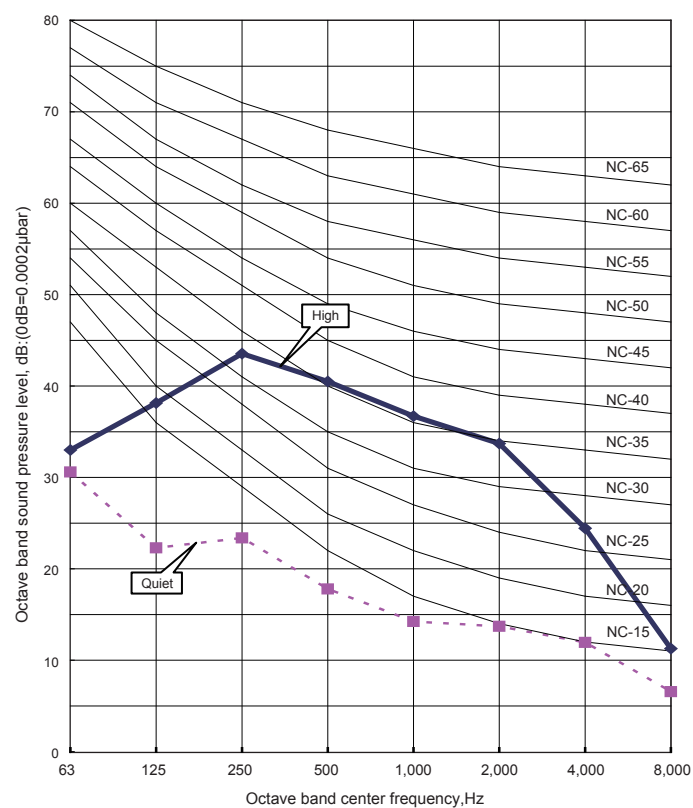


MODEL : AG*F14LA

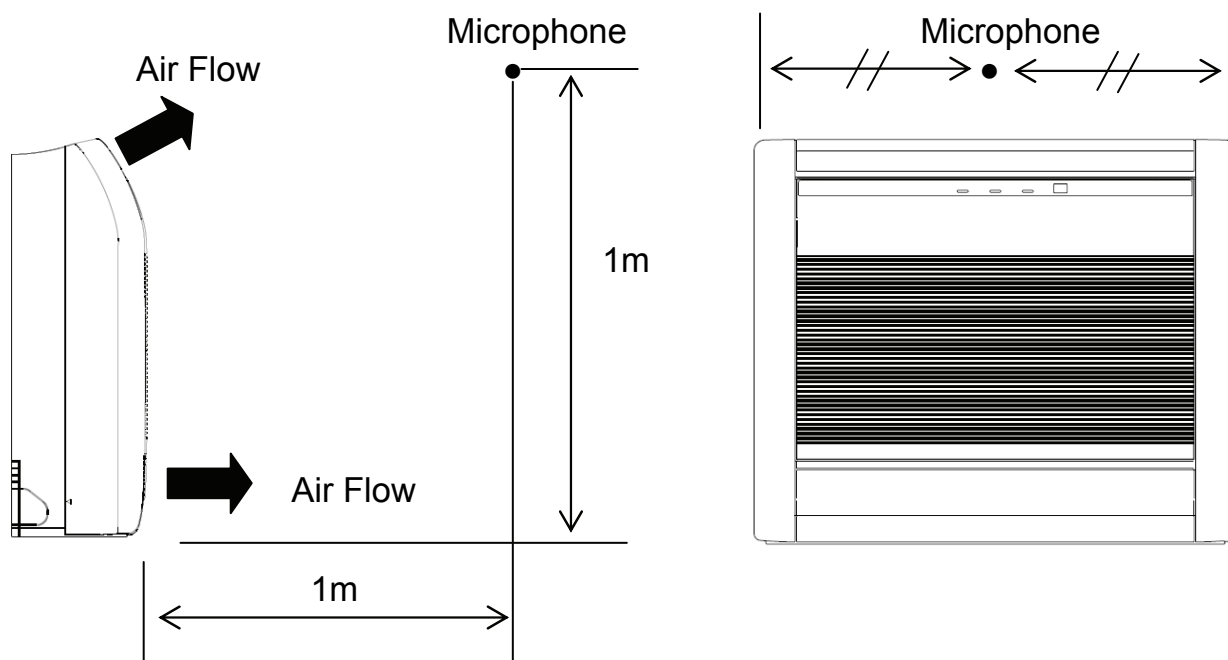
● COOLING



● HEATING



8-2. SOUND LEVEL CHECK POINT



9. ELECTRIC CHARACTERISTICS

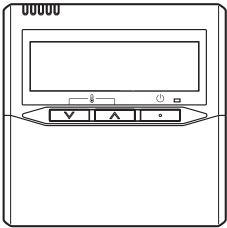
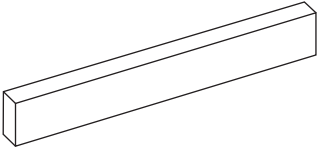
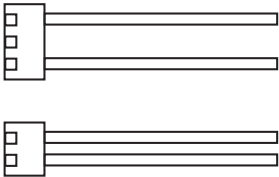
Model Name			AG*F09LA	AG*F12LA	AG*F14LA
Power Supply	Voltage	V	230~		
	Frequency	Hz	50		
Max Operating Current		A	0.6	0.6	0.6
*1)Wiring Spec.	Circuit breaker	A	0.7	0.7	0.7
	Connection Cable	mm ²	1.5 - 2.5	1.5 - 2.5	1.5 - 2.5
	Limited wiring length	m	21	21	21

*1) Wiring Spec.
 Selected Sample
 (Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

10. SAFETY DEVICES

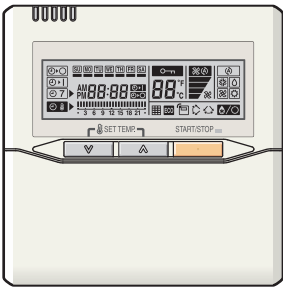
	Protection form	Model		
		AG*F09LA	AG*F12LA	AG*F14LA
Circuit protection	Current fuse (PCB)	3.15A 250V		
Terminal protection	Current fuse	3A 250V		
Fan motor protection	Thermal protection program	100⁺¹⁵₋₁₀°C OFF 95⁺⁵₋₁₀°C ON		

11. OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Wired remote controller	UTB-＊UD	Unit control is performed by wired remote controller .
	Apple-catechin filter	UTR-FC03-2	Fine dust, invisible mold spores, and harmful microorganisms are absorbed onto the filter by static electricity , and further growth is inhibited and deactivated by the polyphenol ingredient extracted from apples.
	Ion deodorisation filter	UTR-FC03-3	The filter deodorizes by powerfully decomposing absorbed odors using the oxidizing and reducing effects of ions generated by the ultra fine-particle ceramic.
	Half concealed kit	UTR-STA	Using the Unit installing of half concealed.
	External connect kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PC board.

11-1. WIRED REMOTE CONTROLLER

■ FEATURES



- * Various timer setup (ON / OFF / WEEKLY) are possible.
- * Equipped with weekly timer as standard function.
(2 times Start / Stop per day for a week)
- * When setting up a timer, operation mode and a temperature setup can be changed.
- * When a failure occurs, the error code is displayed.
- * Error indication.
- * Economy operation are possible.
- * Easy installation with a slim shape with no bulge in the back.

● Simple function setting

Setting of the air conditioner selection function is performed by remote controller.

● High performance and compact size

Three functions are combined in one unit.



● Built-in timers

Weekly timer

Possible to set ON/OFF time to operate twice each day of the week.

Easy-to-understand time bar display

Setup screen example
(Set to Wednesday: 8:00 to 20:00.)

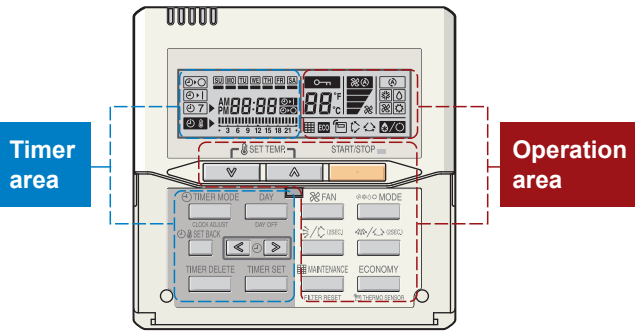
At "Weekly timer" + "Set back timer" setup

Setback timer

Possible to set temperature for two time spans and for each day of the week.

Setup screen example
(Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)

● Easy-to-understand operation



[Variable timer control]
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

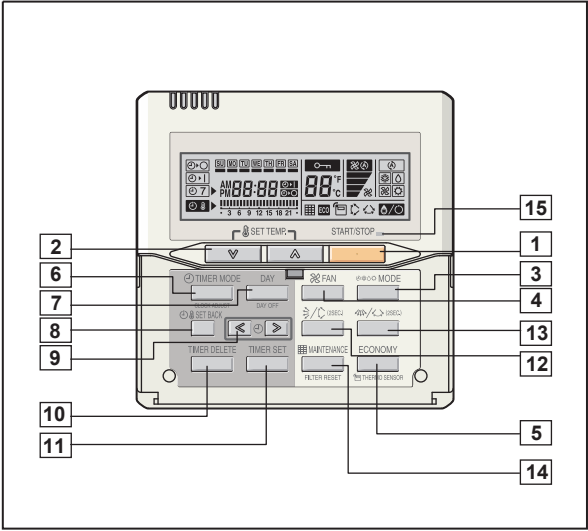
● Simple installation

Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.

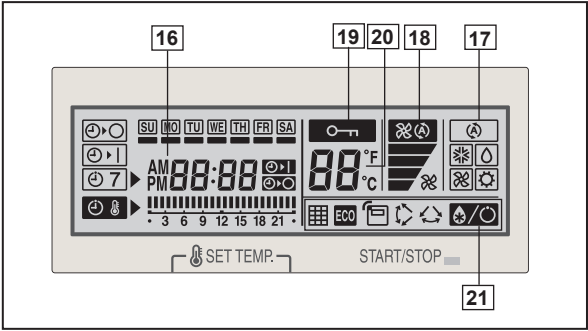
European switch box

JIS box

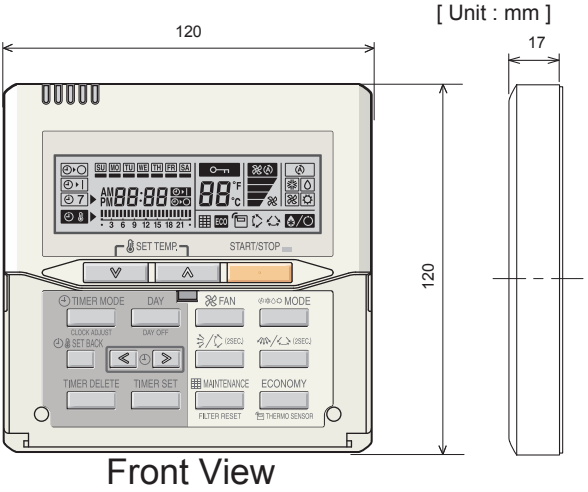
FUNCTIONS



Display panel



DIMENSION



SPECIFICATION

SIZE (H x W x D mm)	120 x 120 x 17
WEIGHT (g)	160
CABLE LENGTH (m)	10
POWER (V)	12

- 1

START/STOP button
Pressed to start and stop operation.
- 2

Set temperature button
Selects the setting temperature.
- 3

Master control button
Selects the operating mode(AUTO, HEAT, FAN, COOL, DRY).
- 4

Fan control button
Selects the fan speed (AUTO, QUIET, LOW, MED, HIGH).
- 5

Economy button
Turns the economy efficient mode on and off.
- 6

Timer mode (CLOCK ADJUST) button
Selects the timer mode (OFF TIMER, ON TIMER, WEEKLY TIMER)
Set the current time.
- 7

Day (DAY OFF) button
Temporarily cancels of one day timer.
- 8

Set back button
Pressed to select the set back timer.
- 9

Set time button
Pressed to set time.
- 10

Delete button
The schedule of a weekly timer is deleted.
- 11

Set button
Sets the date, hour, minute and on-off time.
- 12

Vertical airflow direction and swing button
Push for two seconds to change the swing mode.
- 13

Horizontal airflow direction and swing button*1)
Push for two seconds to change the swing mode.
- 14

Filter button*1)
- 15

Operation lamp
Lights during operation and when the timer is on.
- 16

Timer and clock display
- 17

Operation mode display
- 18

Fan speed display
- 19

Operation lock display
- 20

Temperature display
- 21

Function display
 - Defrost display
 - Thermo sensor display
 - Economy display
 - Vertical swing display
 - Horizontal swing display
 - Filter display

*1) Button number 13 and 14 can not be operated.

11-2. EXTERNAL CONNECT KIT

This kit allows to operate the air conditioner, such as stopping and starting, using an external device, and output the operation status of the air conditioner.

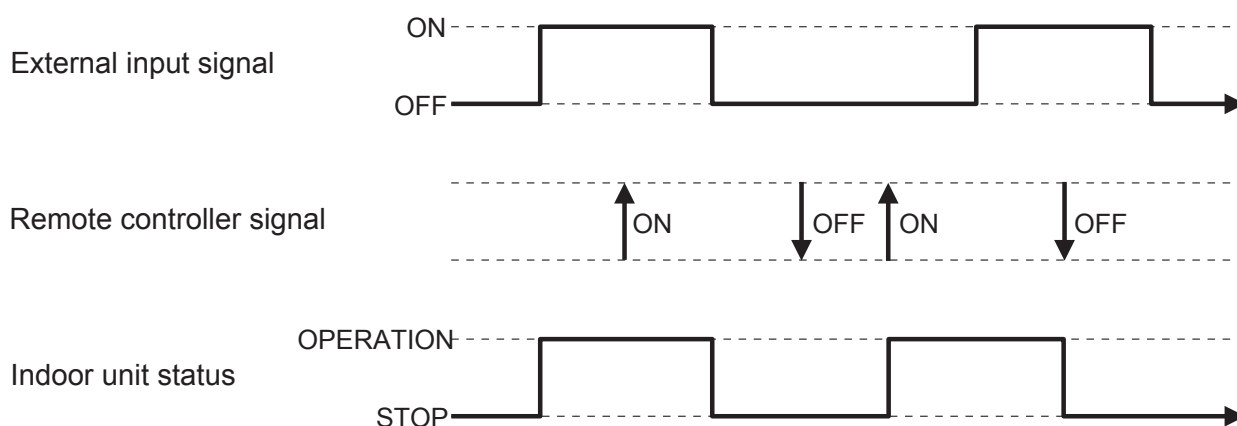
- Only operation and stop signals will be output.
Use the remote control to check the operation mode, temperature, and airflow.
Check the error information on the display area of the main unit.
- Operation mode, temperature, and airflow cannot be set by external input. Use the remote controller to set.
- If the air-conditioner is activated by external input, it will operate in the settings before stop.
To change the settings, use the remote controller.

11-2-1. CONTROL INPUT SETTING

- You can control air conditioner ON / OFF operation by external input.

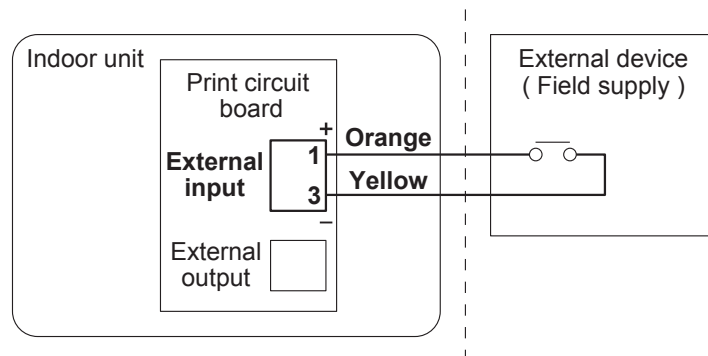
● Signal specification

- No voltage ON/OFF continuous signal.
- Contact capacity : DC12V 10mA

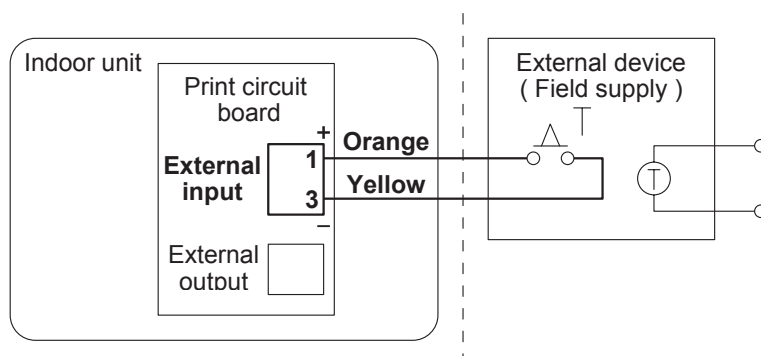


● Installation example

- For remote operation



- For external timer operation

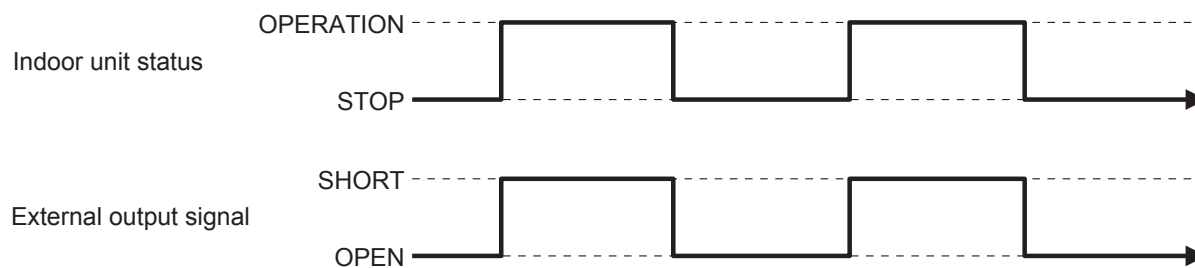


11-2-2. Operating output setting

- You can display air conditioner ON / OFF operation by external output.

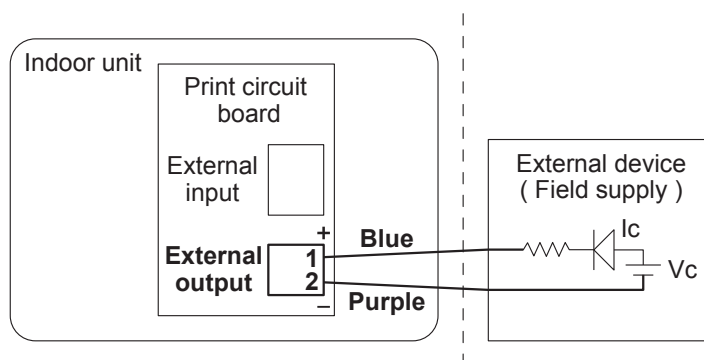
● Signal specification

- No voltage contact.
- Contact capacity : Max. DC24V 10mA to 1A or less



● Installation example

For operation display



OUTDOOR UNIT

2. SINGLE TYPE :

AO * V09LAC

AO * V12LAC

AO * V14LAC

1. SPECIFICATIONS

OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA

Type				INVERTER HEAT PUMP		
Model name				AO * V09LAC	AO * V12LAC	AO * V14LAC
Power source				230V~ 50Hz		
Available voltage range				198 - 264V~ 50Hz		
Starting current			A	3.8	5.5	6.4
Fan	Airflow rate	Cooling	m³/h	1,680	1,680	1,910
		Heating		1,490	1,680	1,750
	Type × Q'ty		Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
	Motor output		W	33	33	56
Sound pressure level		Cooling	dB(A)	47	48	50
		Heating		48	49	50
Heat exchanger type		Dimensions (H × W × D)	mm	504 × 850 × 36.4	504 × 850 × 36.4	546 × 876 × 36.4
		Fin pitch		1.40	1.40	1.30
		Rows × Stages		2 × 24	2 × 24	2 × 26
		Pipe type		Copper	Copper	Copper
		Fin type		Aluminium	Aluminium	Aluminium
Compressor	Type × Q'ty			Rotary × 1	Rotary × 1	Rotary × 1
	Motor output		W	750	750	1,100
Refrigerant		Type		R410A	R410A	R410A
		Charge	g	1,050	1,050	1,150
Refrigerant oil		Type		ESTER OIL	ESTER OIL	ESTER OIL
Enclosure		Material		Steel	Steel	Steel
		Colour		Beige	Beige	Beige
Dimensions (H × W × D)	Net		mm	540 × 790 × 290	540 × 790 × 290	578 × 790 × 300
	Gross			648 × 910 × 380	648 × 910 × 380	648 × 910 × 380
Weight	Net		kg(lb.)	36 (79)	36 (79)	40 (88)
	Gross			40 (88)	40 (88)	44 (97)
Connection pipe	Size	Liquid	mm	Φ6.35 (Φ 1/4 in.)		
		Gas		Φ9.52 (Φ 3/8 in.)		Φ 12.70 (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.

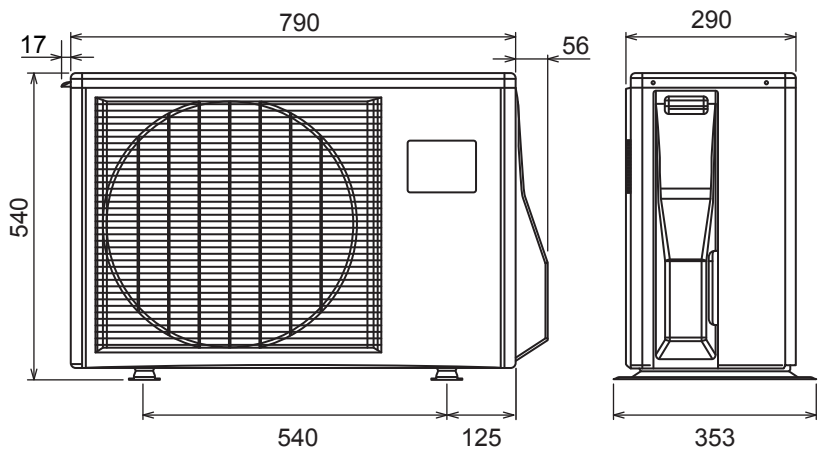
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

Pipe length : 5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

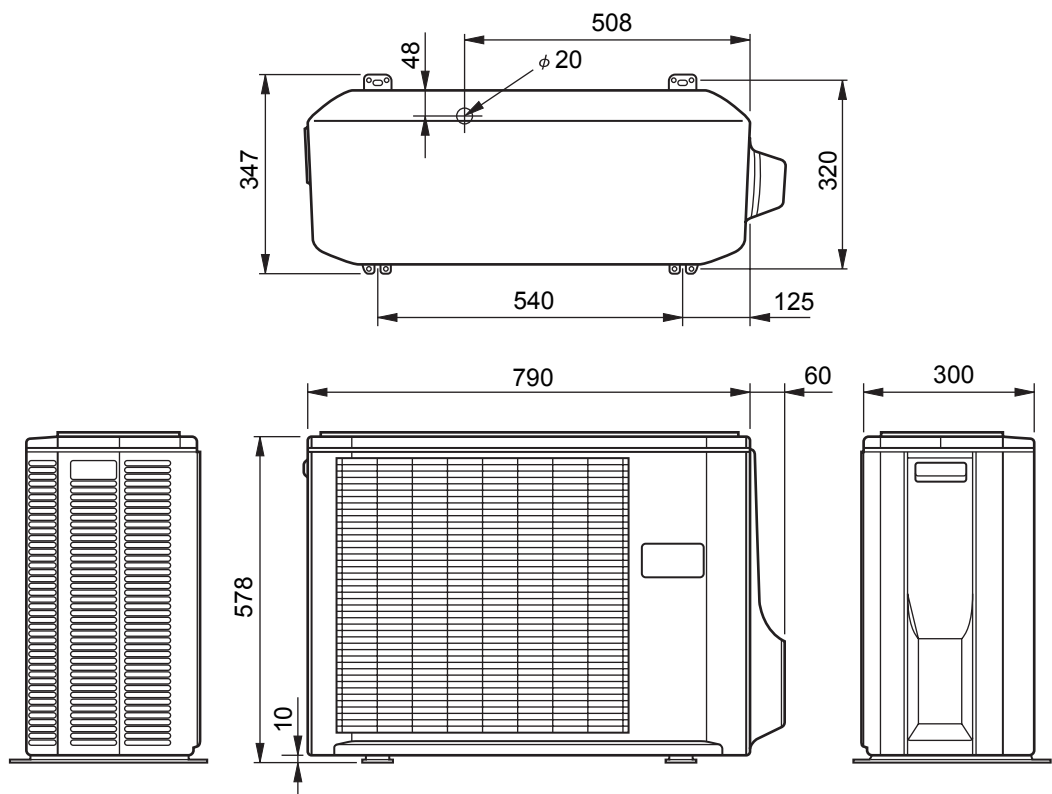
2. DIMENSIONS

■ MODEL : AO*V09LA, AO*V12LA

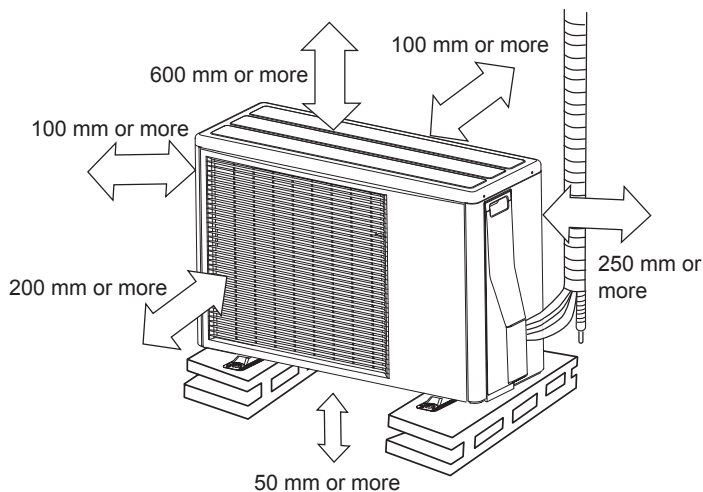
(Unit : mm)



■ MODEL : AO*V14LA



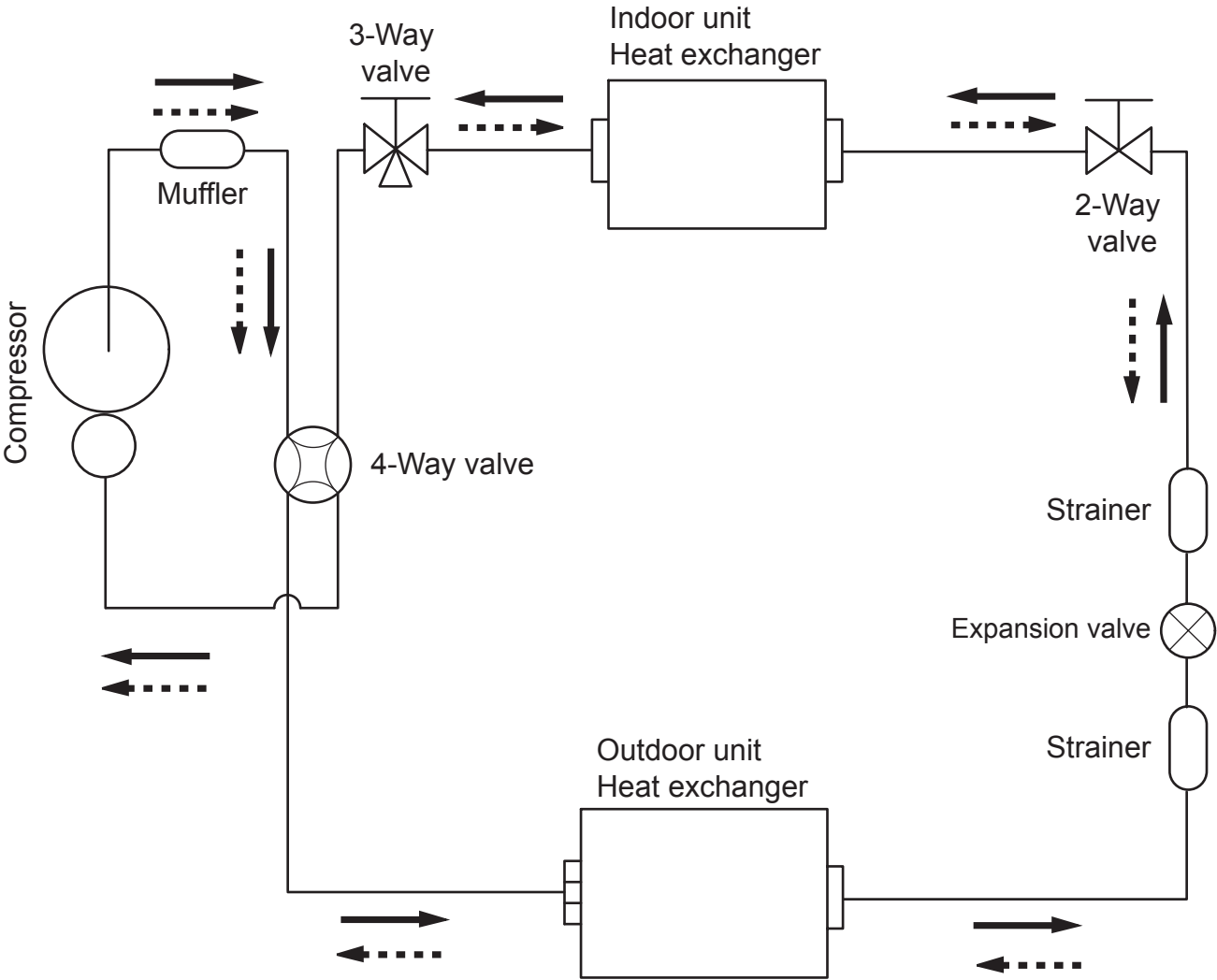
■ INSTALLATION PLACE



3. REFRIGERANT CIRCUIT

■ MODEL : AO*V09LA, AO*V12LA, AO*V14LA

OUTDOOR UNIT
AO*V09-12-14LA



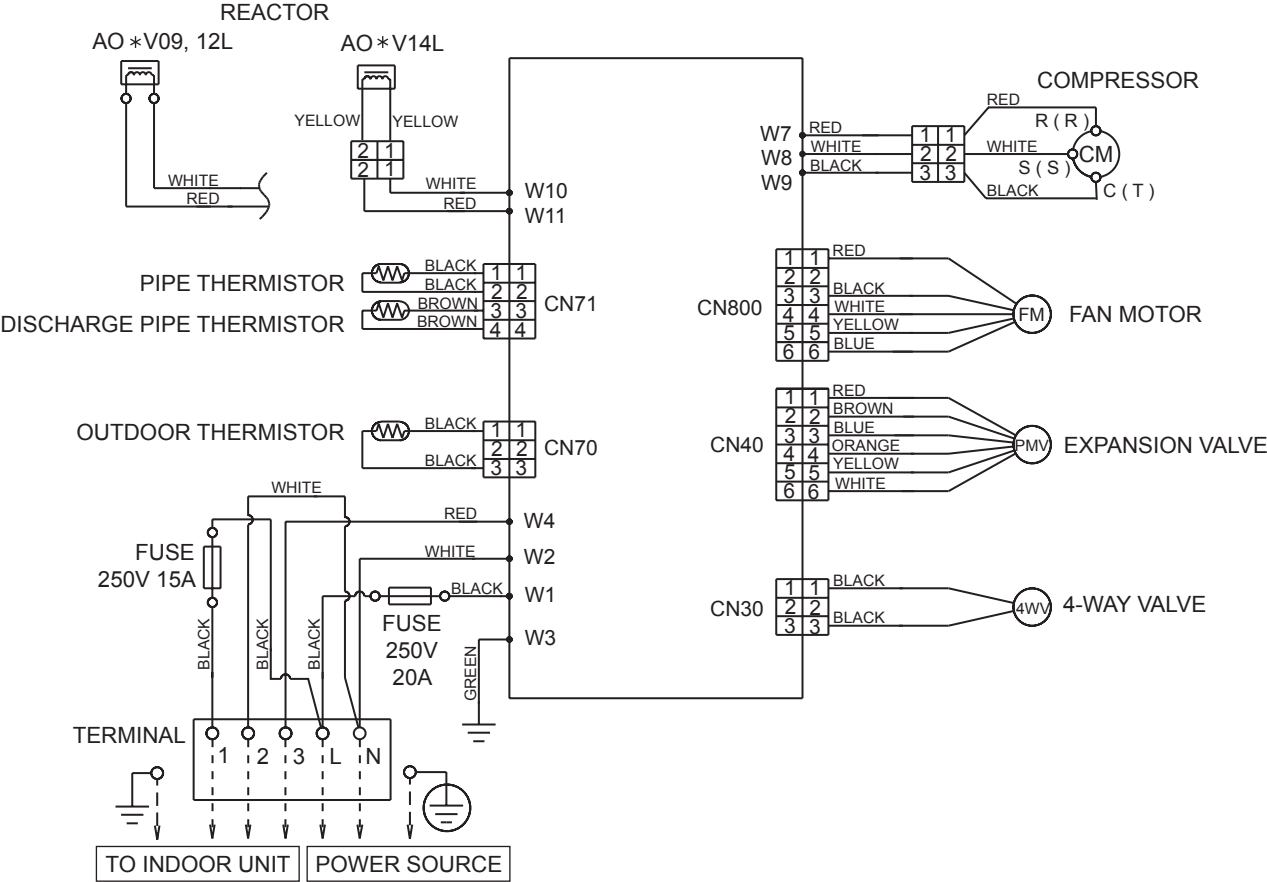
OUTDOOR UNIT
AO*V09-12-14LA

Refrigerant direction
——→ Cooling
- - - -> Heating

4. WIRING DIAGRAMS

■ MODEL : AO*V09LA, AO*V12LA, AO*V14LA

OUTDOOR UNIT
AO*V09-12-14LA



OUTDOOR UNIT
AO*V09-12-14LA

5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■ MODEL : AO *V09LA, AO *V12LA

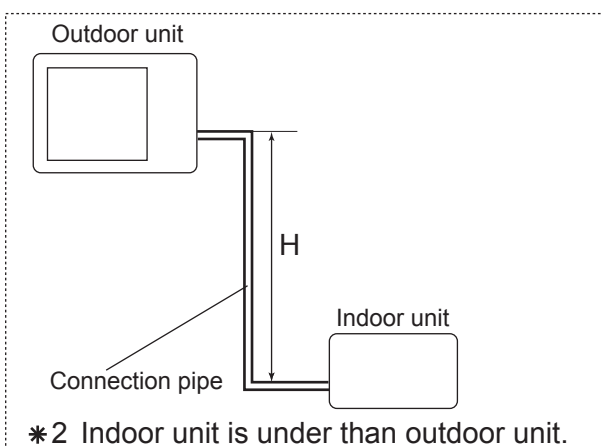
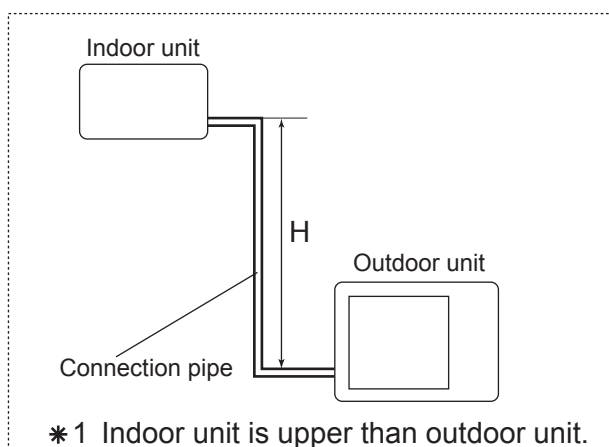
OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.915	0.905
		10	-	-	0.955	0.922	0.912
		7.5	-	0.974	0.959	0.926	0.916
		5	0.992	0.978	0.963	0.930	0.920
		0	1.000	0.986	0.971	0.937	0.927
	* 2 Indoor unit is under than outdoor unit	-5	1.000	0.986	0.971	0.937	0.927
		-7.5	-	0.986	0.971	0.937	0.927
		-10	-	-	0.971	0.937	0.927
		-15	-	-	-	0.937	0.927

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.863	0.846
		10	-	-	0.944	0.863	0.846
		7.5	-	0.978	0.944	0.863	0.846
		5	1.000	0.978	0.944	0.863	0.846
		0	1.000	0.978	0.944	0.863	0.846
	* 2 Indoor unit is under than outdoor unit	-5	0.995	0.973	0.939	0.858	0.842
		-7.5	-	0.971	0.937	0.856	0.840
		-10	-	-	0.934	0.854	0.838
		-15	-	-	-	0.794	0.778

Height difference H

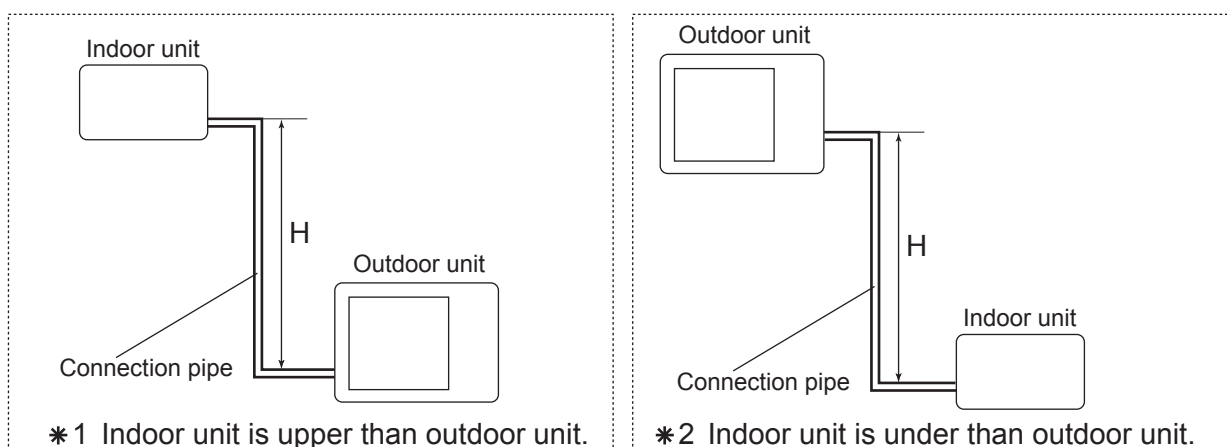


■ MODEL : AO*V14LA

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.950	0.946
		10	-	-	0.976	0.958	0.954
		7.5	-	0.984	0.980	0.962	0.958
		5	0.992	0.988	0.984	0.966	0.962
		0	1.000	0.996	0.992	0.974	0.969
	* 2 Indoor unit is under than outdoor unit	-5	1.000	0.996	0.992	0.974	0.969
		-7.5	-	0.996	0.992	0.974	0.969
		-10	-	-	0.992	0.974	0.969
		-15	-	-	-	0.974	0.969

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	* 1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.853	0.824
		10	-	-	0.943	0.853	0.824
		7.5	-	0.982	0.943	0.853	0.824
		5	1.000	0.982	0.943	0.853	0.824
		0	1.000	0.982	0.943	0.853	0.824
	* 2 Indoor unit is under than outdoor unit	-5	0.995	0.977	0.938	0.848	0.820
		-7.5	-	0.975	0.936	0.846	0.818
		-10	-	-	0.933	0.844	0.816
		-15	-	-	-	0.785	0.758

Height difference H



6. ADDITIONAL CHARGE CALCULATION

■ MODEL : AO*V09LA, AO*V12LA, AO* V14LA

MODEL		AO * V09LA	AO * V12LA	AO * V14LA
Refrigerant type		R410A	R410A	R410A
Refrigerant amount	g	1,050	1,050	1,150

● REFRIGERANT CHARGE

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

OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA

7. AIR FLOW

■ MODEL : AO*V09LA, AO*V12LA, AO*V14LA

● COOLING

MODEL	AO * V09LA		AO * V12LA		AO * V14LA	
Number of rotations	r.p.m.	760	r.p.m.	760	r.p.m.	820
Air flow	m ³ /h	1680	m ³ /h	1680	m ³ /h	1910
	l/s	467	l/s	467	l/s	531
	CFM	989	CFM	989	CFM	1124

● HEATING

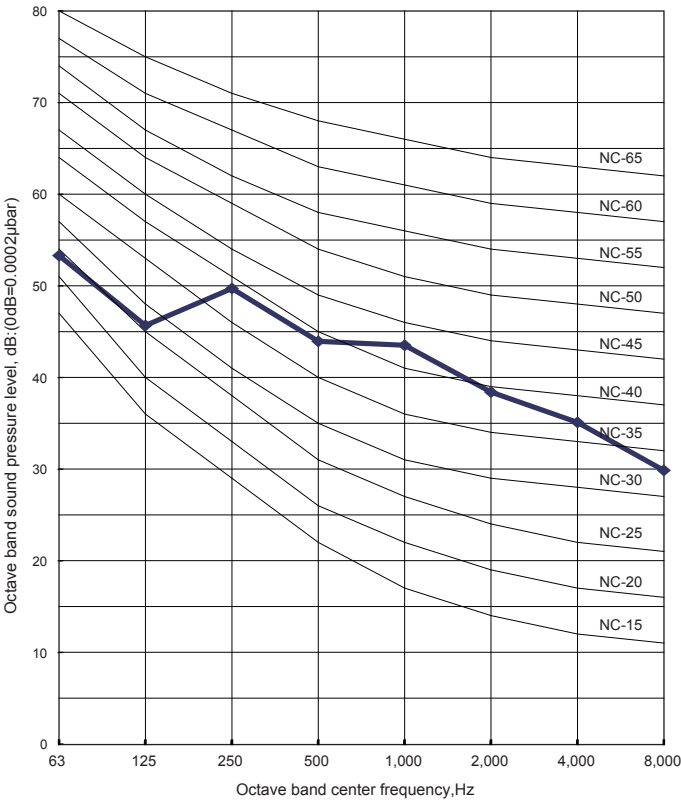
MODEL	AO * V09LA		AO * V12LA		AO * V14LA	
Number of rotations	r.p.m.	680	r.p.m.	760	r.p.m.	750
Air flow	m ³ /h	1490	m ³ /h	1680	m ³ /h	1750
	l/s	414	l/s	467	l/s	486
	CFM	877	CFM	989	CFM	1030

8. OPERATION NOISE

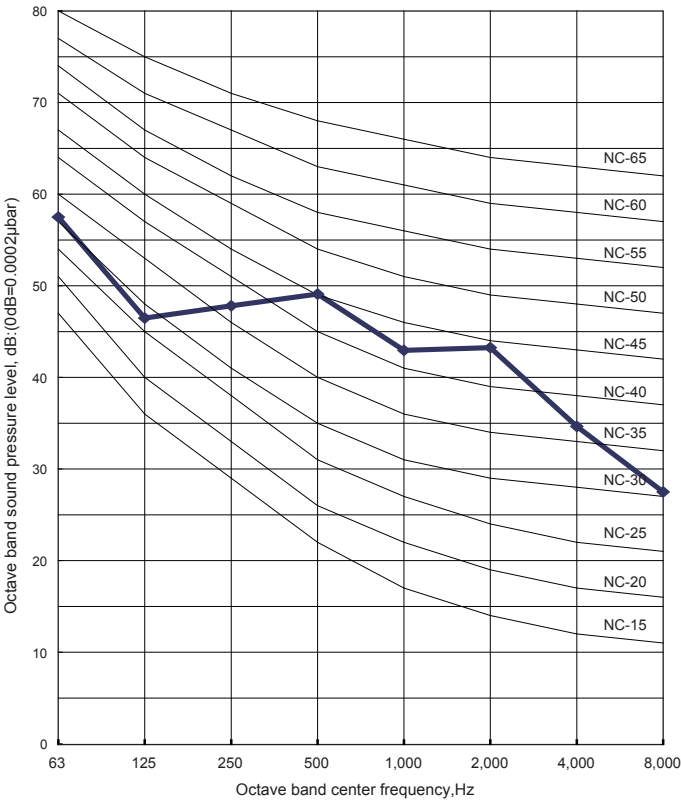
8-1. NOISE LEVEL CURVE

COOLING

MODEL : AO*V09LA

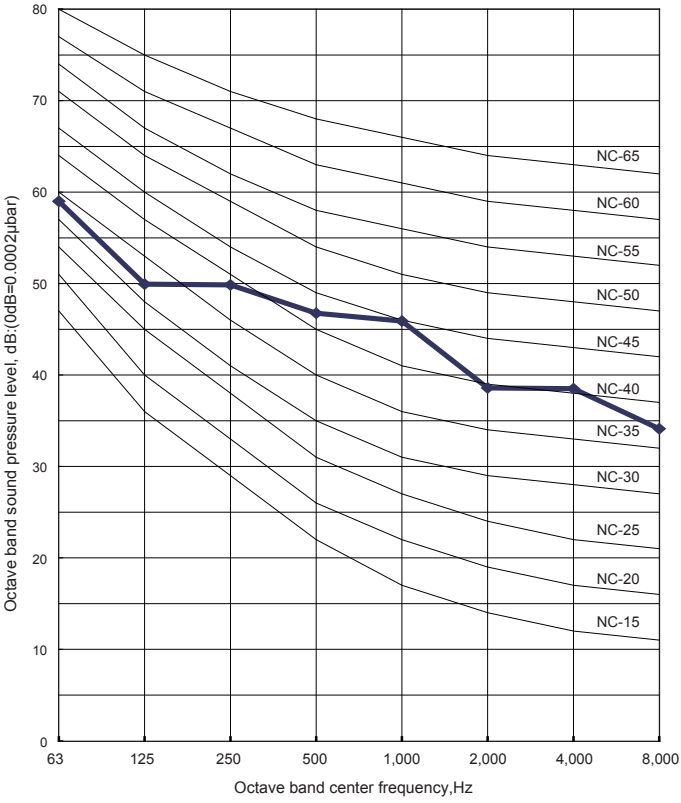


MODEL : AO*V12LA

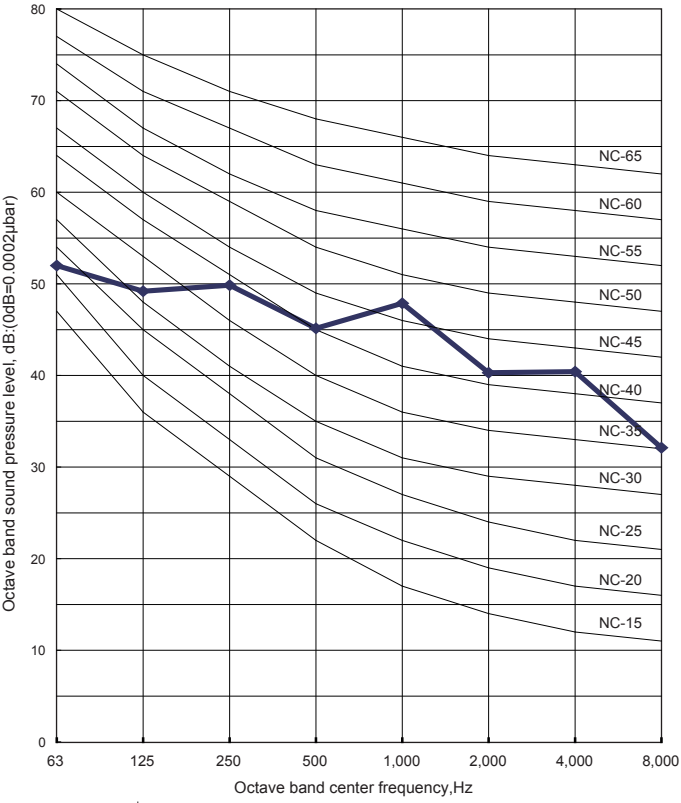


HEATING

MODEL : AO*V09LA

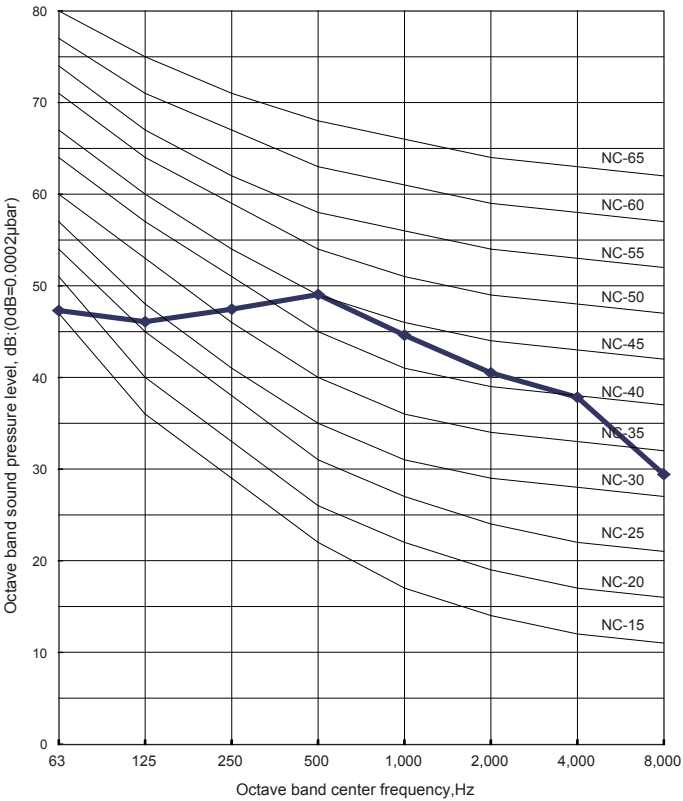


MODEL : AO*V12LA



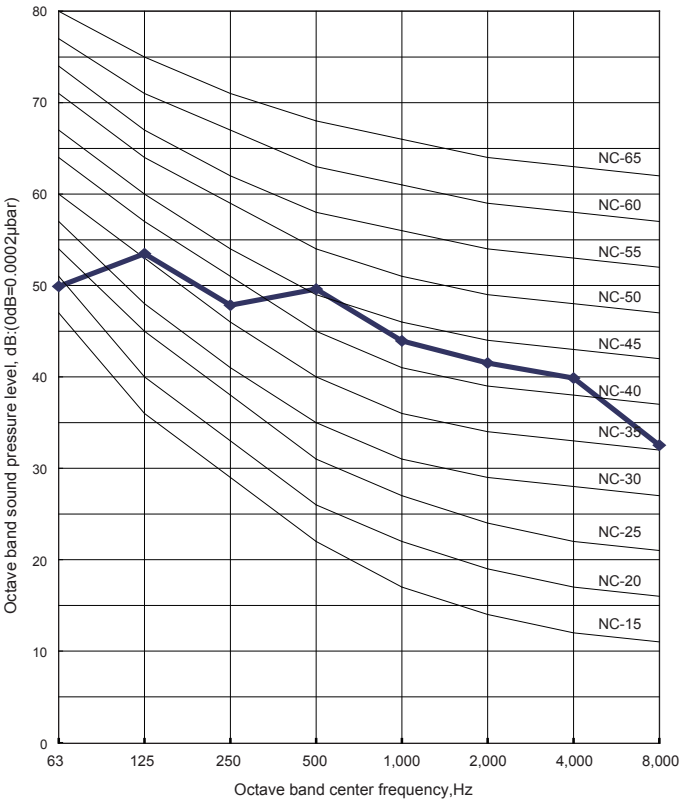
■ COOLING

● MODEL : AO*V14LA



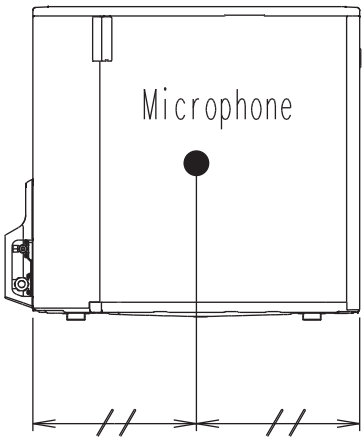
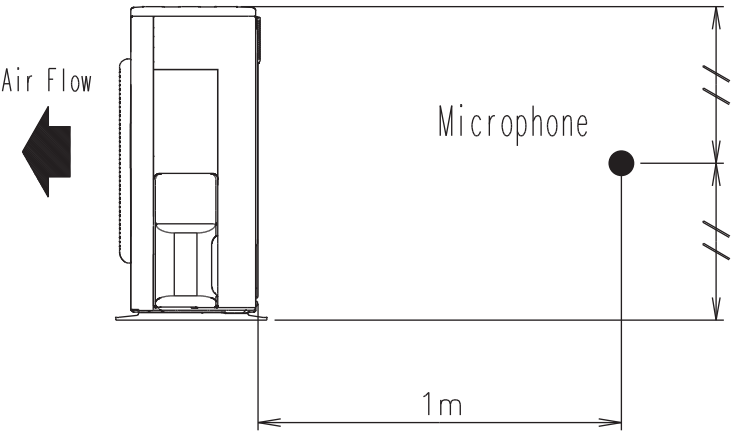
■ HEATING

● MODEL : AO*V14LA



8-2. SOUND LEVEL CHECK POINT

OUTDOOR UNIT
AO*V09-12-14LA



OUTDOOR UNIT
AO*V09-12-14LA

9. ELECTRIC CHARACTERISTICS

Model Name			AO * V09LA	AO * V12LA	AO * V14LA
Power Supply	Voltage	V	230 ~		
	Frequency	Hz	50		
Max Operating Current		A	10.0	10.0	13.5
Starting Current		A	3.8	5.5	6.4
*1) Wiring Spec.	Main Fuse (Circuit breaker) Current	A	20	20	20
	Power Cable	mm ²	1.5 - 2.5	1.5 - 2.5	1.5 - 2.5
	*2)Limited wiring length	m	15	15	11

*1) Wiring Spec.

Selected Sample

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

*2) Limited Wiring length :

This is the wiring length in case voltage descent is less than 2%.

When the wiring length becomes long, please select the wiring of a more larger diameter.

10. SAFETY DEVICES

	Protection form	Model		
		AO * V09LA	AO * V12LA	AO * V14LA
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V	20A 250V	20A 250V
		5A 250V	5A 250V	5A 250V
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V	15A 250V	15A 250V
		3.15A 250V	3.15A 250V	3.15A 250V
Fan motor protection	Thermal protection program	OFF : 100 ⁺¹⁵ ₋₁₀ °C ON : 95 ⁺¹⁵ ₋₁₀ °C	OFF : 100 ⁺¹⁵ ₋₁₀ °C ON : 95 ⁺¹⁵ ₋₁₀ °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	OFF : 110°C ON : After 7 minutes	OFF : 110°C ON : After 7 minutes

OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA