

INDOOR UNIT

1. FLOOR TYPE :

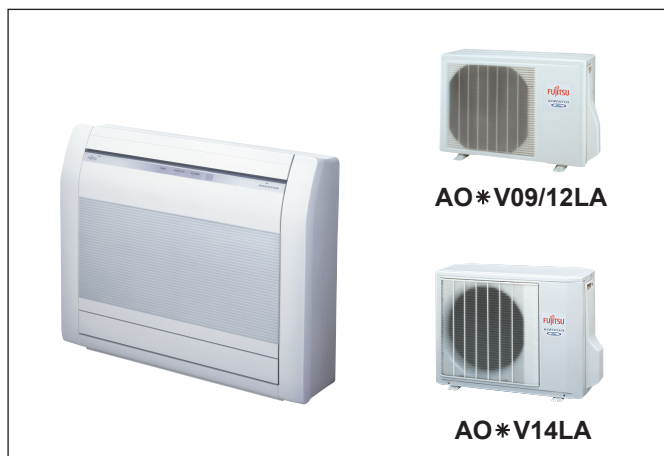
AG* V09LAC

AG* V12LAC

AG* V14LAC

1. FEATURE

- MODEL : AG*V09LAC
AG*V12LAC
AG*V14LAC



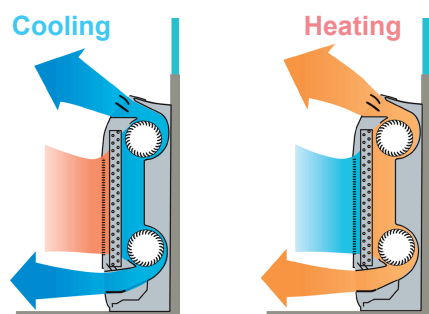
FEATURES

Energy saving Rank A

Europe energy saving Rank 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.

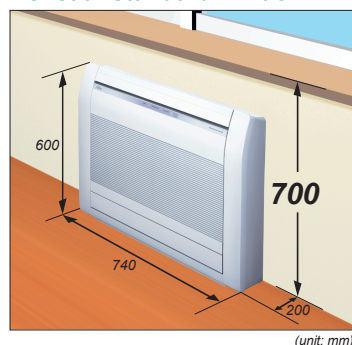


Flexible & easy installation

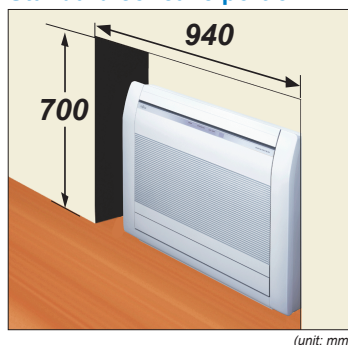
Piping space is wide and connection work is easy.

Flexible & easy installation

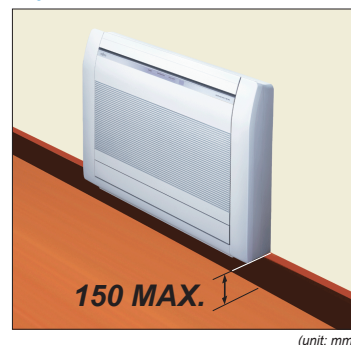
Beneath standard window



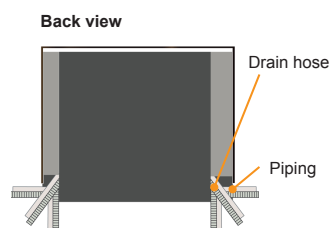
Standard concave portion



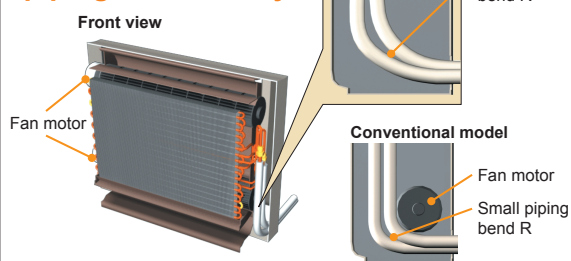
Wall



Choice of 6-direction drain and piping connection

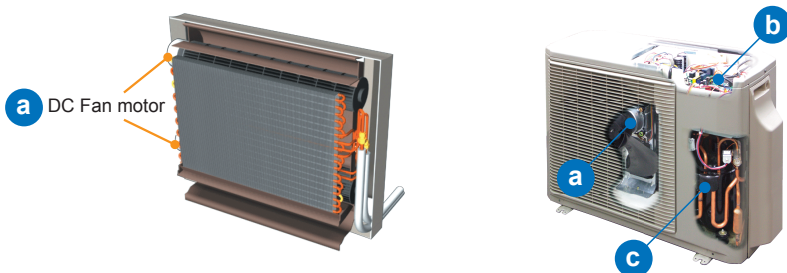


Space is wide and piping work is easy



● **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

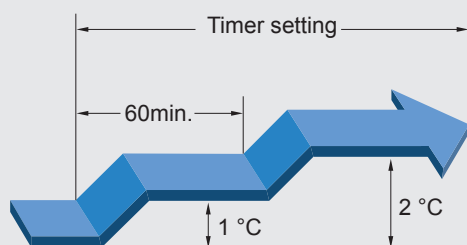
The program timer operates the ON and OFF timer once within a 24 hour period.

● 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.

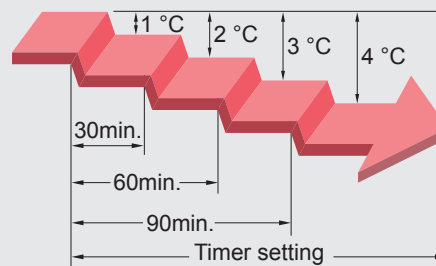
Cooling operation/dry operation

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 .

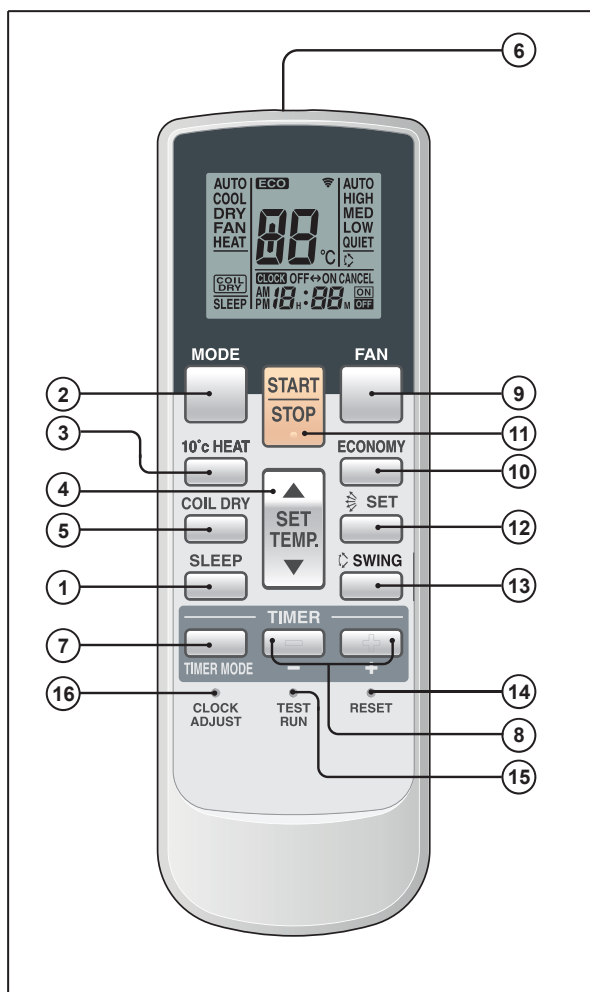


Heating operation

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 .

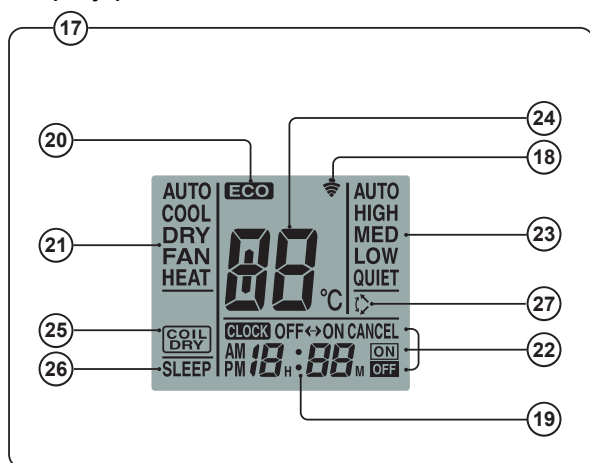


FUNCTIONS



- 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



- 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

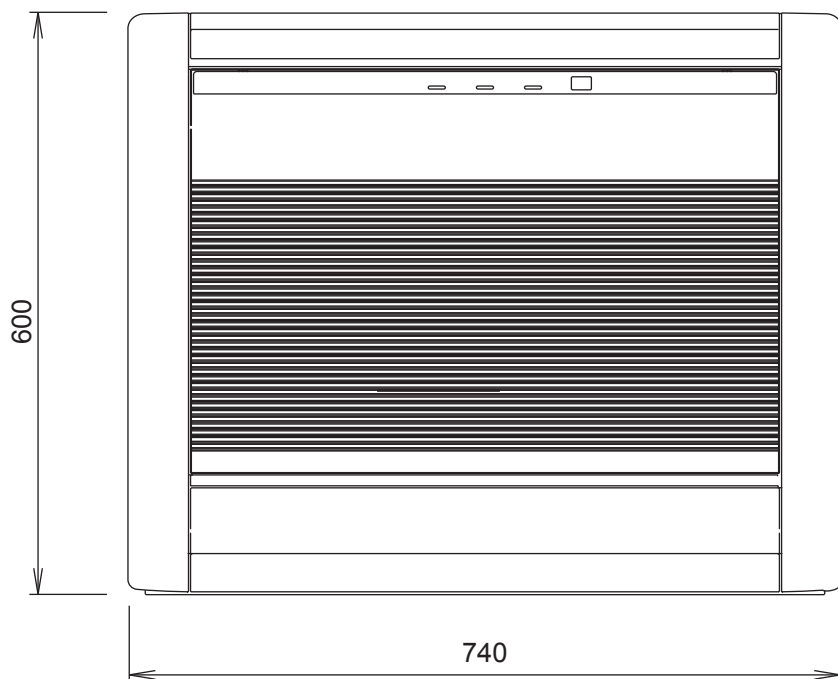
Type			FLOOR TYPE				
			INVERTER HEAT PUMP				
Model name			AG*V09LAC	AG*V12LAC	AG*V14LAC		
Power source			230V~ 50Hz				
Available voltage range			198 - 264V~ 50Hz				
European energy label			Cooling	A	A	A	
			Heating	A	A	A	
Capacity	Cooling	Rated	kW	2.60	3.50	4.20	
			BTU/h	8,900	11,900	14,300	
		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	m ³ /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		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 : 5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

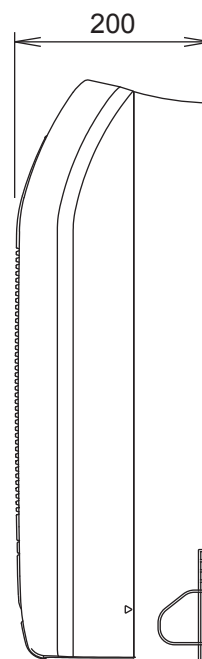
4. DIMENSIONS

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

(Unit : mm)

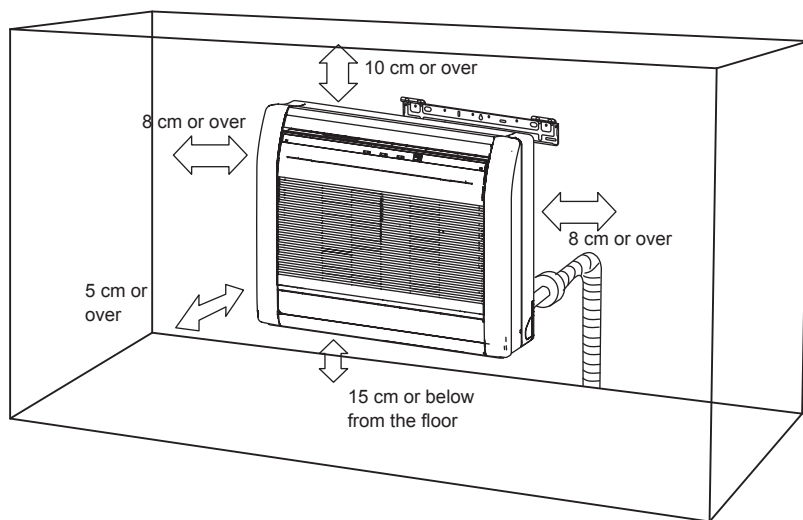


Front view



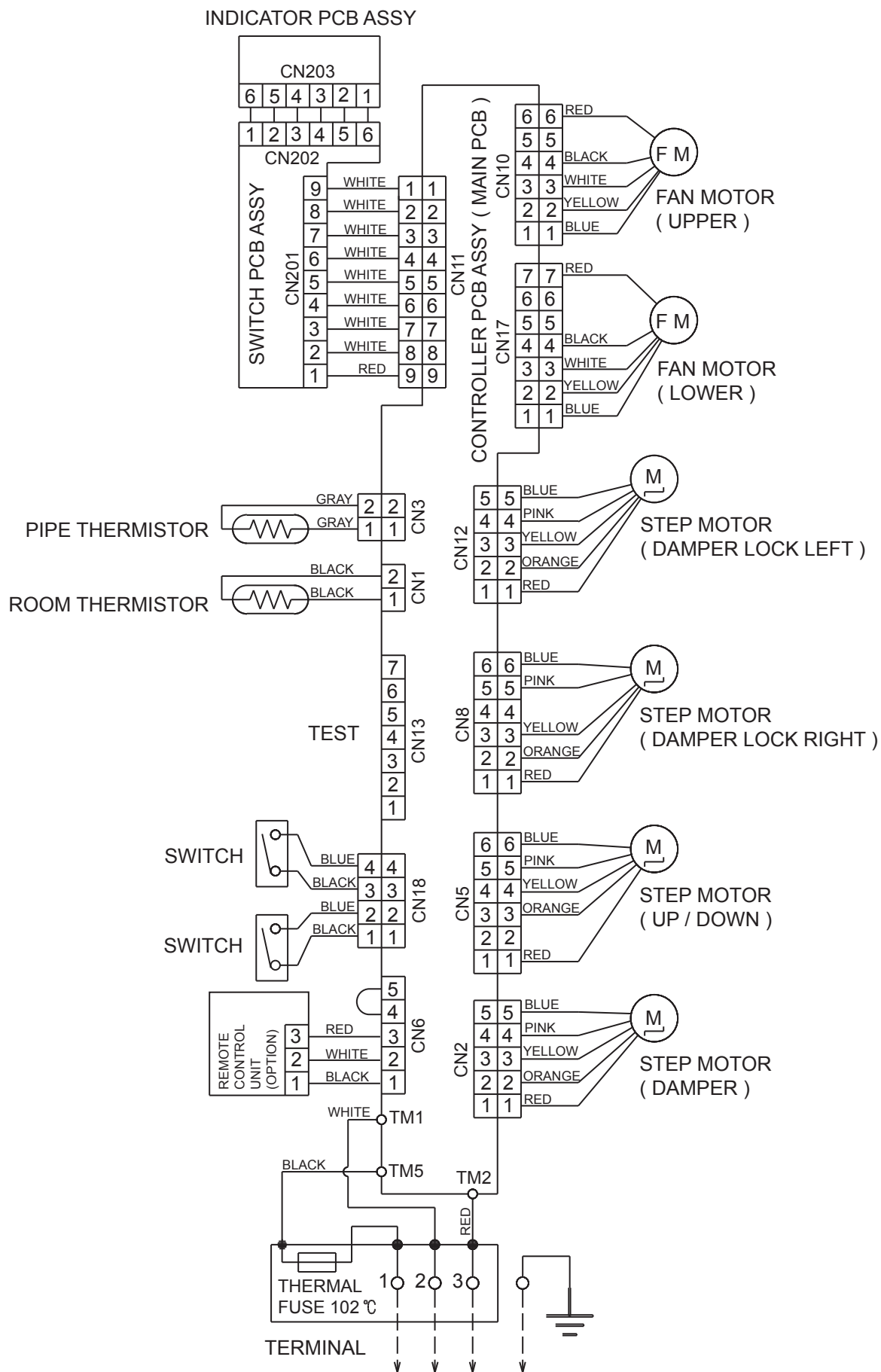
Side view

■ MOUNTING POSITION



5. WIRING DIAGRAMS

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



6. CAPACITY TABLE

6-1. COOLING CAPACITY

■ MODEL : AG * V09LA

AFR	9.5
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		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	1.99	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 * V12LA

AFR	9.5
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		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 * V14LA

AFR	10.8
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		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 * V09LA

AFR	10.0
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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	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 * V12LA

AFR	10.0
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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	3.04	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 * V14LA

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)

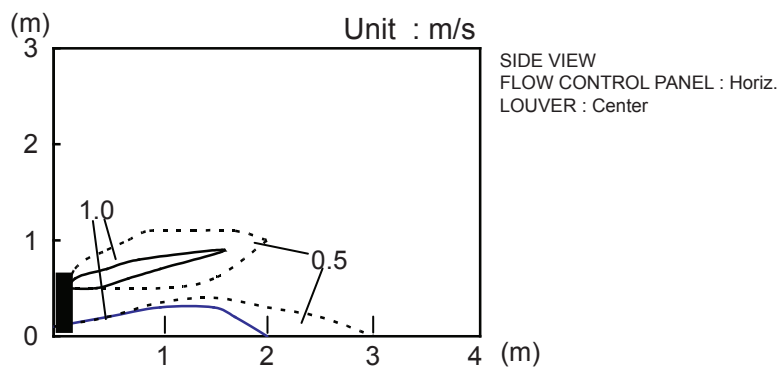
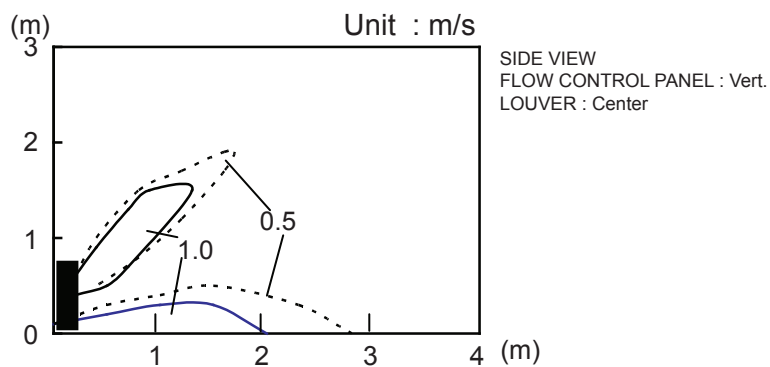
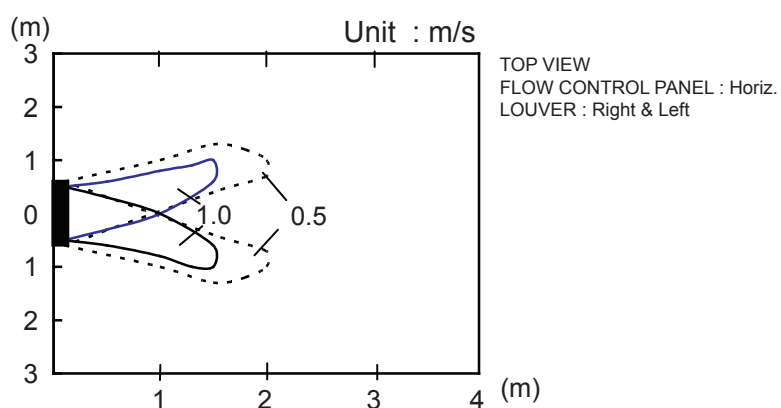
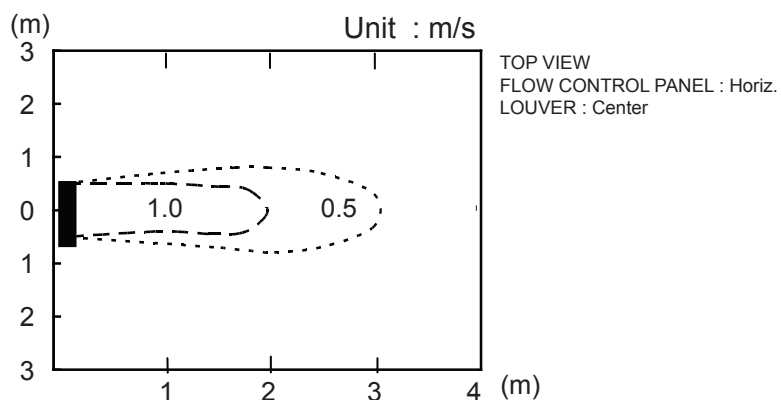
PI : Power Input (kW)

7. FAN PERFORMANCE

7-1. AIR VELOCITY DISTRIBUTION

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

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



7-2. AIR FLOW

■ MODEL : AG * V09LA, AG * V12LA

● 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 *V14LA**

● **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**

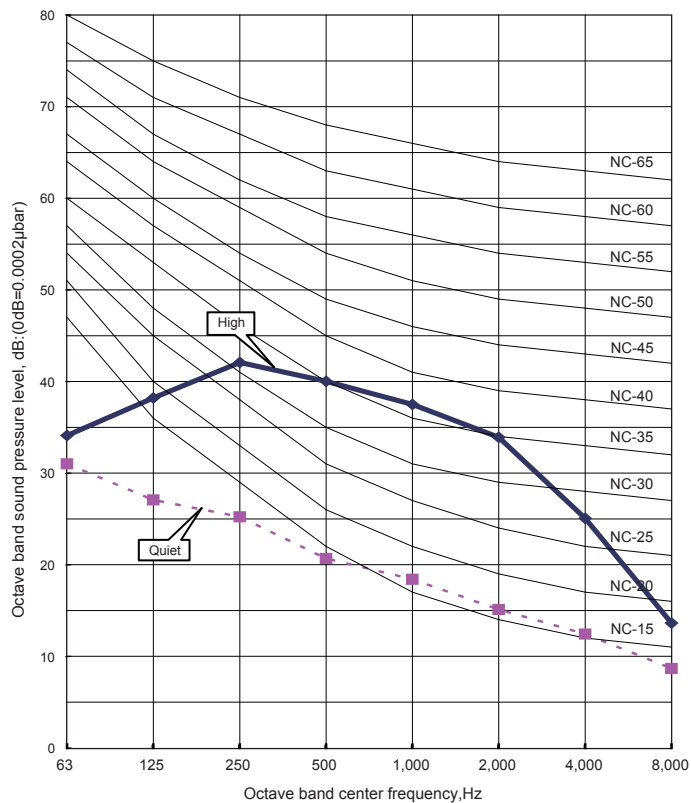
Fan speed	Number of rotations [r.p.m] (UPPER/LOWER)	Air flow	
HIGH	1330/1120	650	m ³ /h
		181	l/s
		383	CFM
MED	1100/930	520	m ³ /h
		144	l/s
		306	CFM
LOW	860/730	390	m ³ /h
		108	l/s
		230	CFM
QUIET	660/560	270	m ³ /h
		75	l/s
		159	CFM

8. OPERATION NOISE

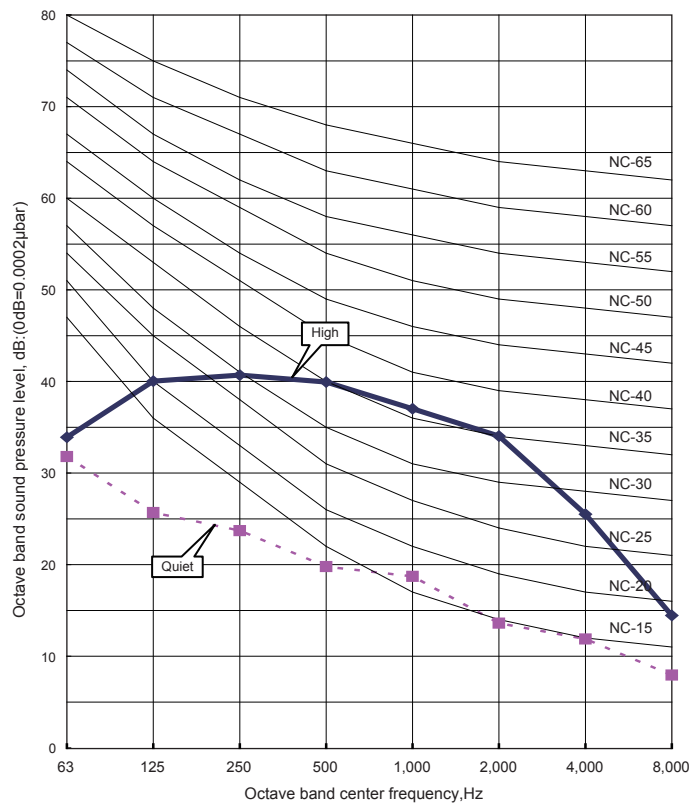
8-1. NOISE LEVEL CURVE

COOLING

MODEL : AG*V09LA

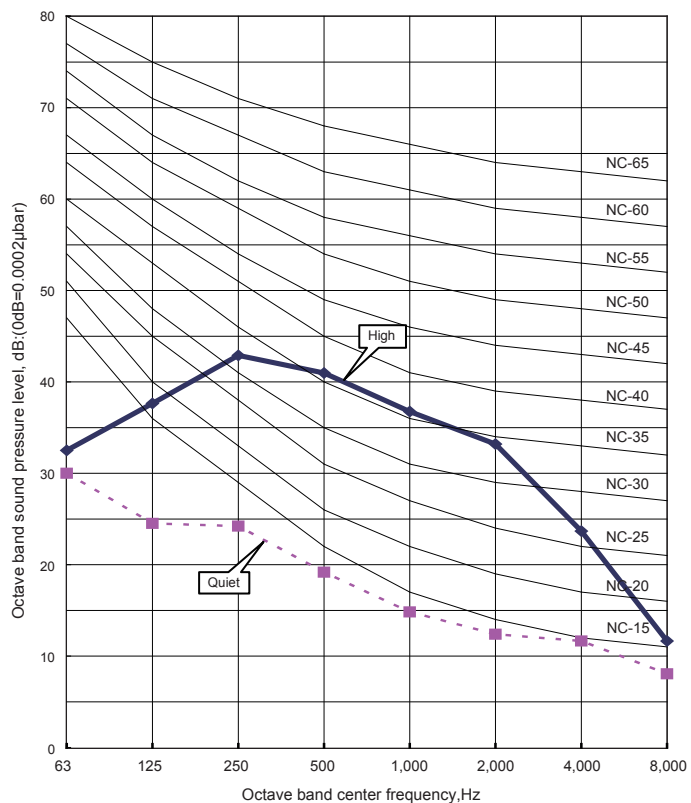


MODEL : AG*V12LA

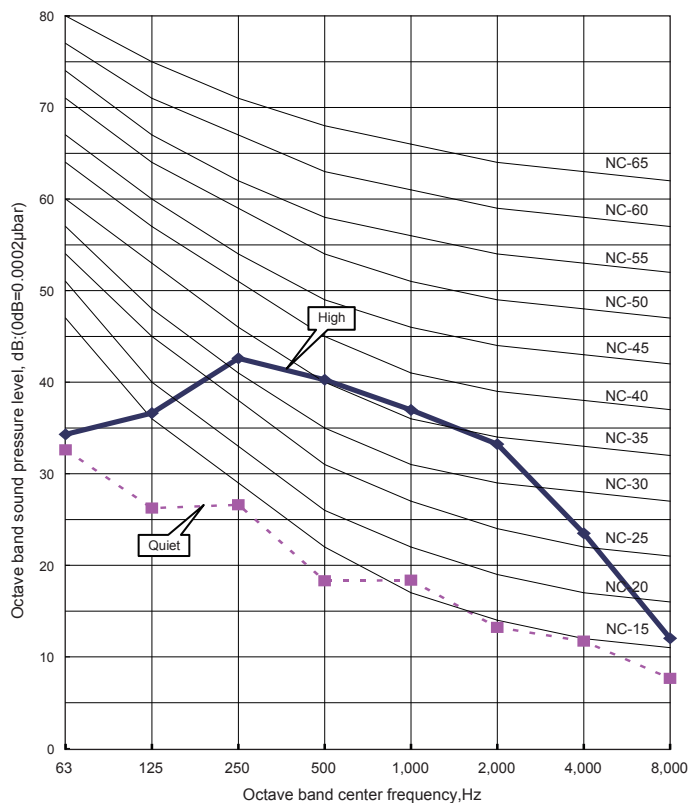


HEATING

MODEL : AG*V09LA

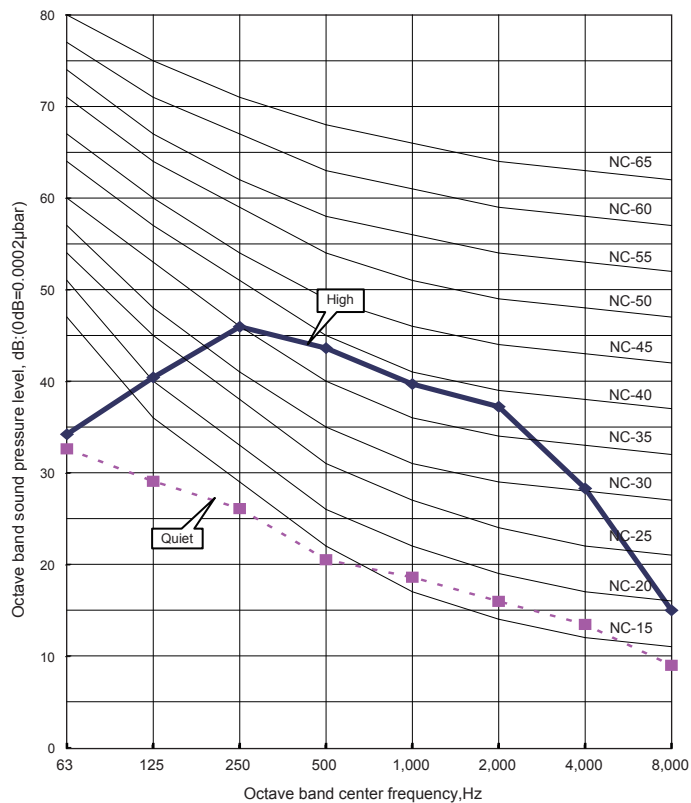


MODEL : AG*V12LA



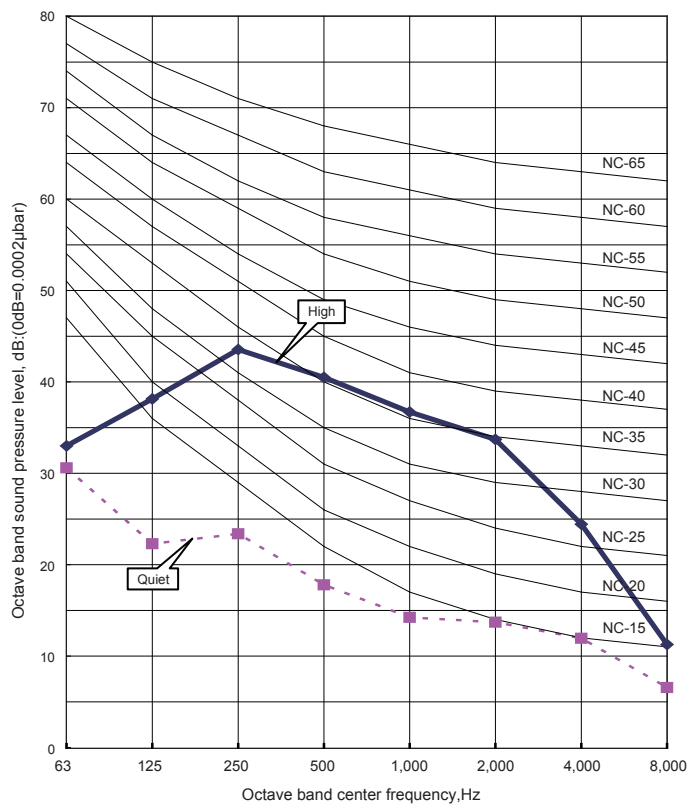
COOLING

MODEL : AG*V14LA

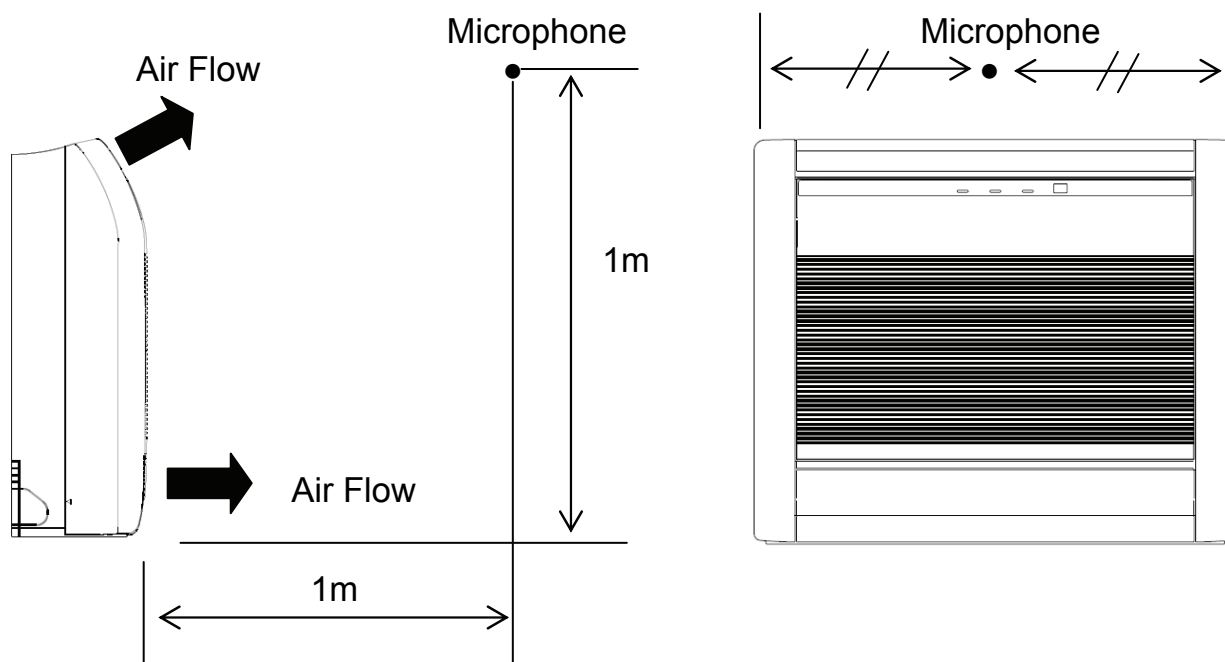


HEATING

MODEL : AG*V14LA



8-2. SOUND LEVEL CHECK POINT



9. ELECTRIC CHARACTERISTICS

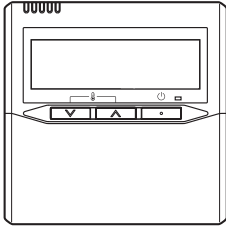


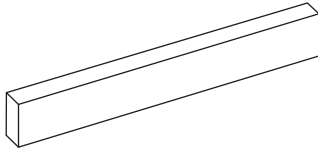
Model Name			AG * V09LA	AG * V12LA	AG * V14LA
Power Supply	Voltage	V	230~		
	Frequency	Hz	50		
Max Operating Current		A	0.6	0.6	0.6
*1)Wiring Spec.	Circuit breaker	A	0.7	0.7	0.7
	Connection Cable	mm ²	1.5 - 2.5	1.5 - 2.5	1.5 - 2.5
	Limited wiring length	m	21	21	21

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

10. SAFETY DEVICES

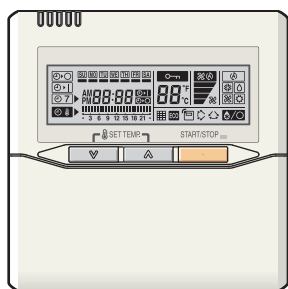
	Protection form	Model		
		AG * V09LA	AG * V12LA	AG * V14LA
Circuit protection	Current fuse (PCB)	3.15A 250V		
Terminal protection	Current fuse	3A 250V		
Fan motor protection	Thermal protection program	100^{+15}_{-10} °C OFF 95^{+5}_{-10} °C ON		

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.

11-1. WIRED REMOTE CONTROLLER

FEATURES



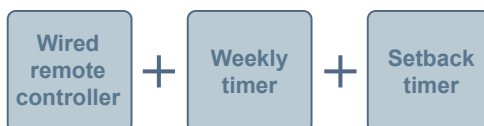
- * Various timer setup (ON / OFF / WEEKLY) are possible.
- * Equipped with weekly timer as standard function. (2 times Start / Stop per day for a week)
- * When setting up a timer, operation mode and a temperature setup can be changed.
- * When a failure occurs, the error code is displayed. (Maximum of 16)
- * Error indication. (A maximum of 16 error histories are memorizable.)
- * Up to 16 indoor units can be simultaneously controlled.
- * Economy operation are possible.
- * Easy installation with a slim shape with no bulge in the back.
- * The room temperature can be controlled by being detected the temperature accurately with built-in thermo sensor.

Simple function setting

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

High performance and compact size

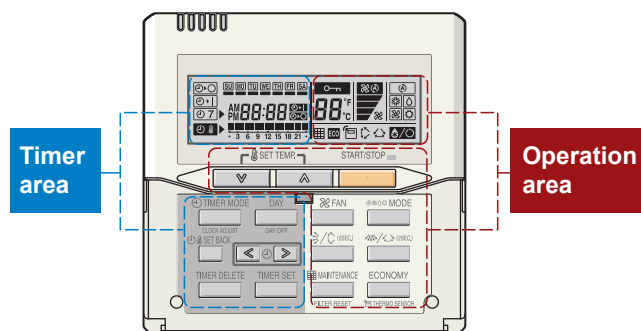
Three functions are combined in one unit.



Built-in timers

Weekly timer	Setback timer
<p>Possible to set ON/OFF time to operate twice each day of the week.</p> <p>Easy-to-understand time bar display</p> <p>Screen after setup</p> <p>Setup screen example (Set to Wednesday: 8:00 to 20:00.)</p>	<p>Possible to set temperature for two time spans and for each day of the week.</p> <p>Setup screen example (Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)</p>
At "Weekly timer" + "Set back timer" setup	

Easy-to-understand operation

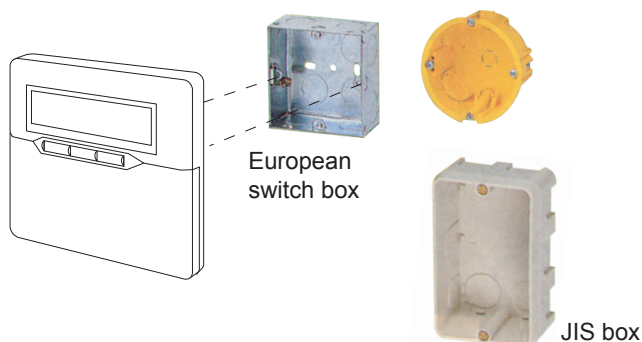


[Variable timer control]

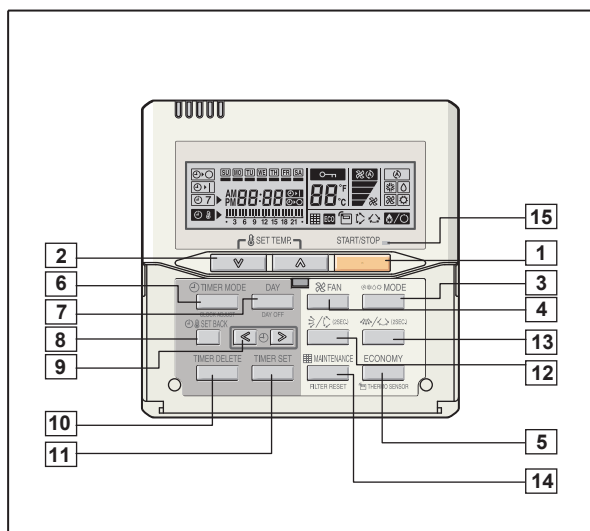
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

Simple installation

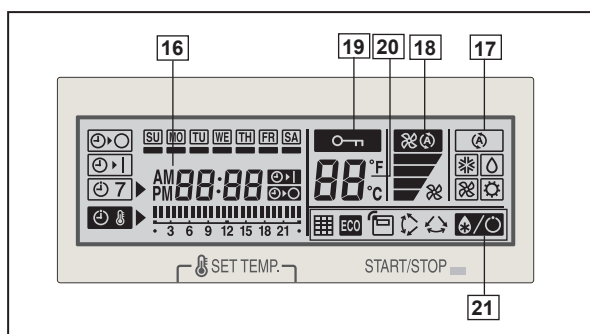
Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.



FUNCTIONS

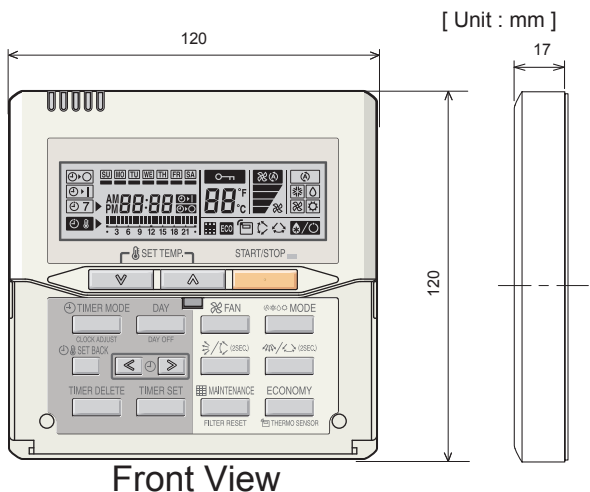


Display panel



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

DIMENSION



Front View

- 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 *1)
 - Filter display

SPECIFICATION

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

*1) Button number 13 cannot be operated.

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	m ³ /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.

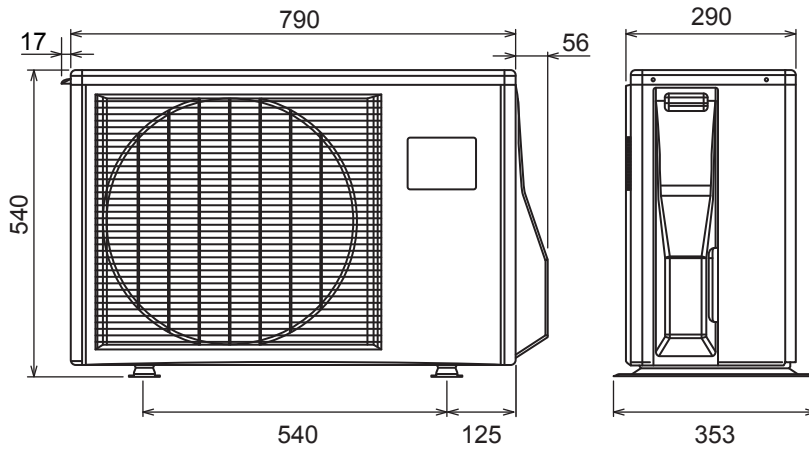
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

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

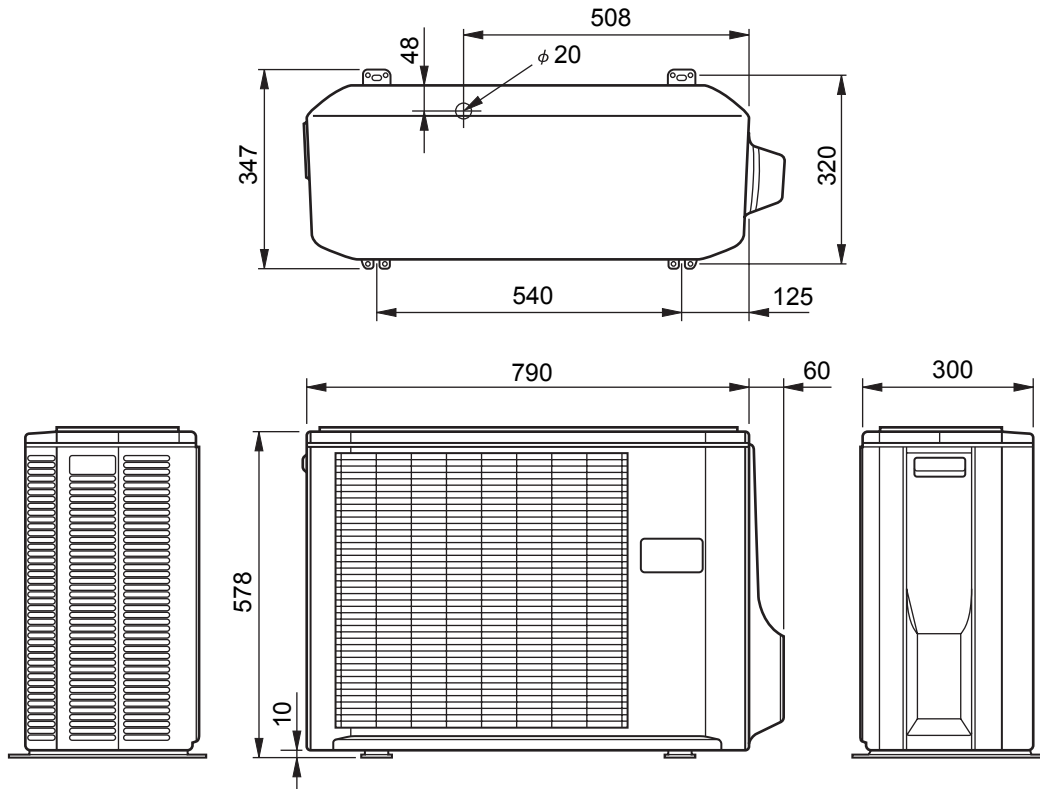
2. DIMENSIONS

■ MODEL : AO*V09LA, AO*V12LA

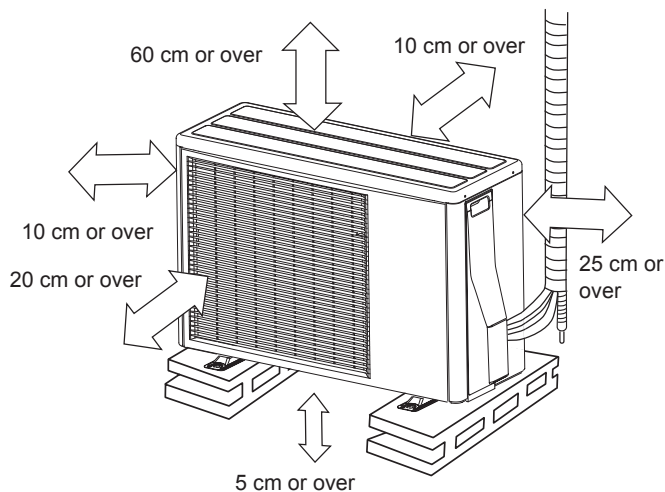
(Unit : mm)



■ MODEL : AO*V14LA

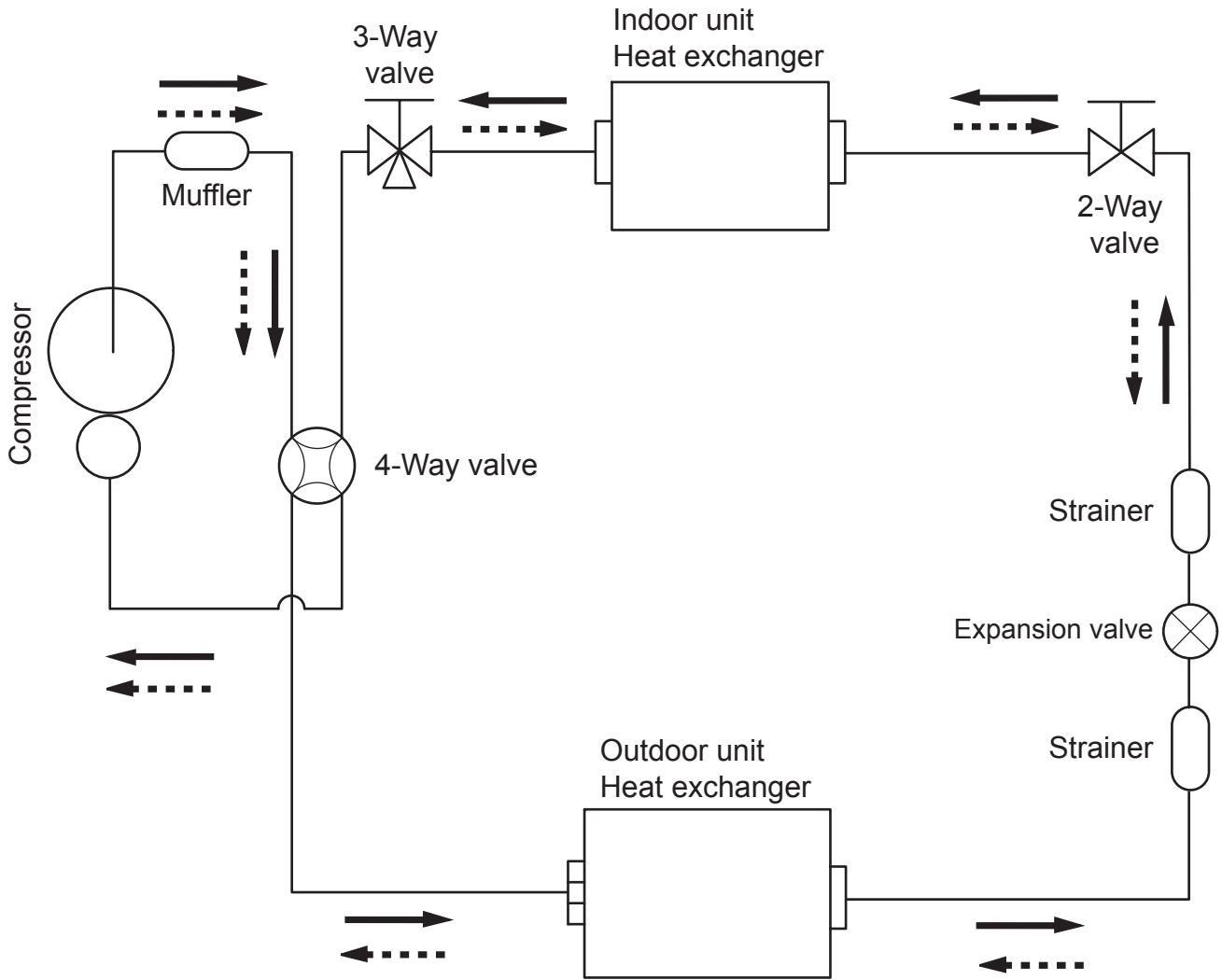


■ MOUNTING POSITION



3. REFRIGERANT CIRCUIT

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



Refrigerant direction

————> Cooling

.....> Heating

Refrigerant pipe diameter

AG*V09LA / AO*V09LA

AG*V12LA / AO*V12LA

Liquid : 1/4" (6.35 mm)

Gas : 3/8" (9.52 mm)

AG*V14LA / AO*V14LA

Liquid : 1/4" (6.35 mm)

Gas : 1/2" (12.7 mm)

OUTDOOR UNIT
AO*V09-12-14LA

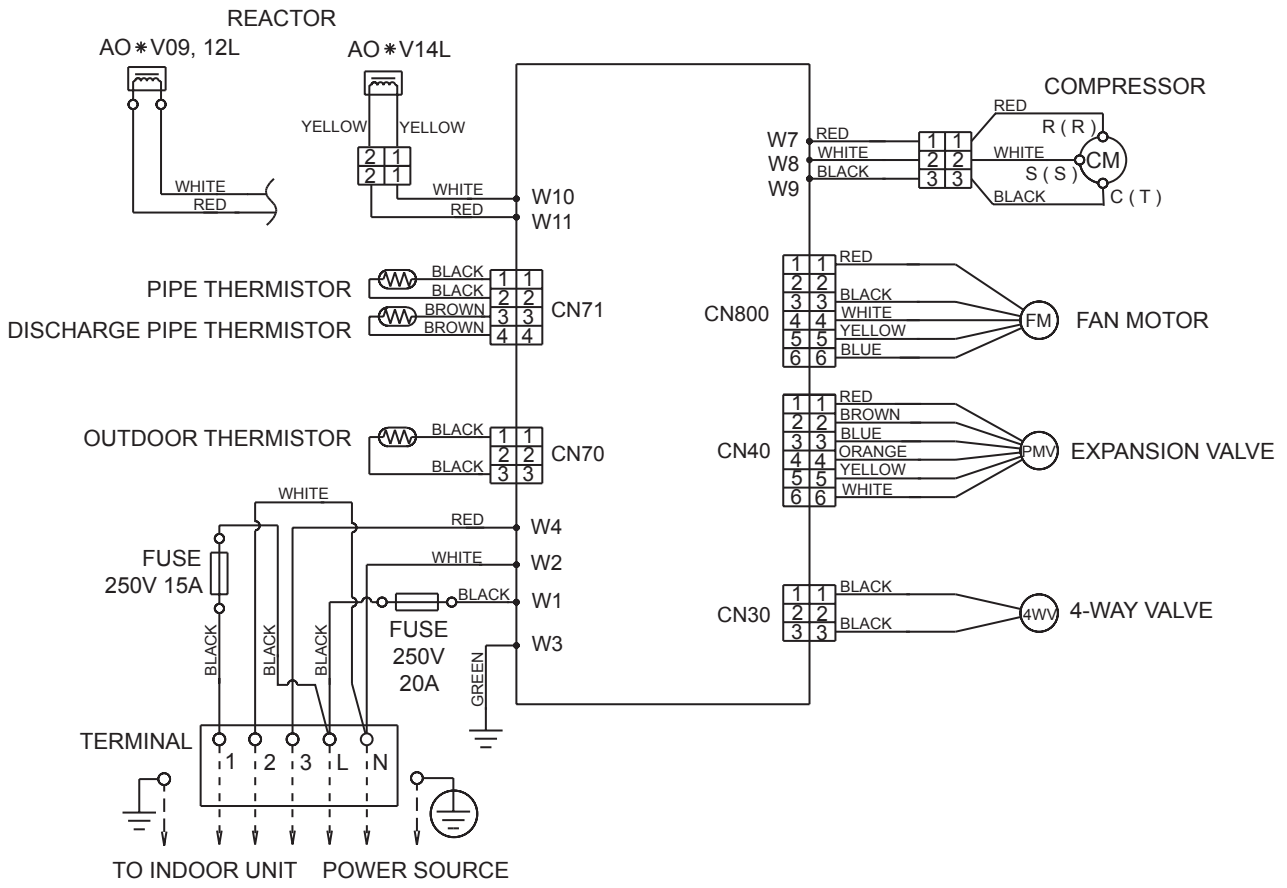
OUTDOOR UNIT
AO*V09-12-14LA

4. WIRING DIAGRAMS

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

OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA



5. COEFFICIENT OF COMPENSATION FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■ MODEL : AO*V09LA, AO*V12LA

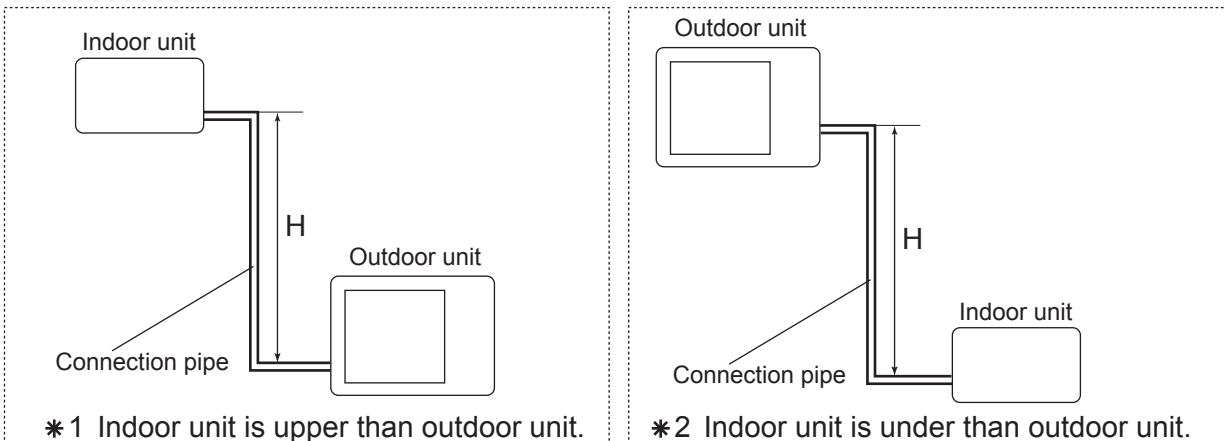
OUTDOOR UNIT
AO*V09-12-14LA

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

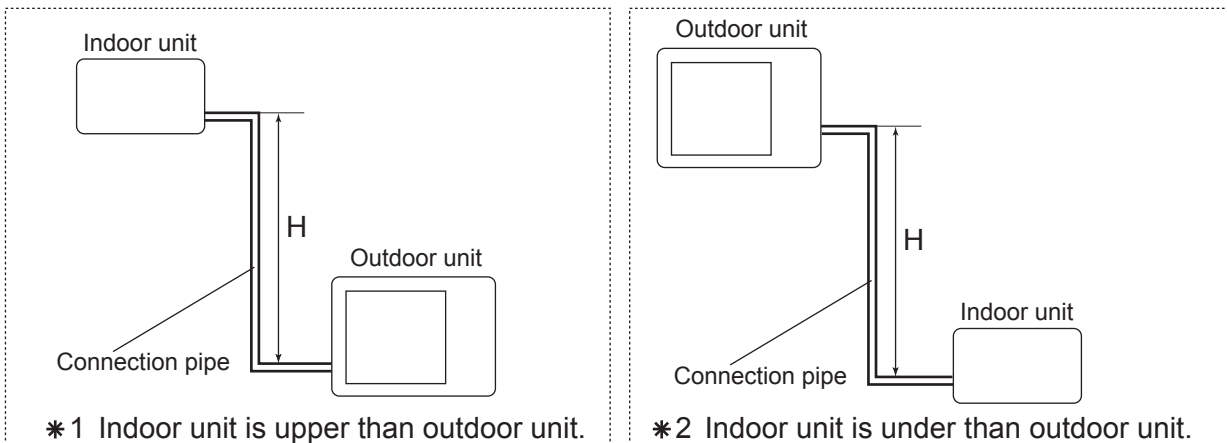


■ MODEL : AO*V14LA

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	

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

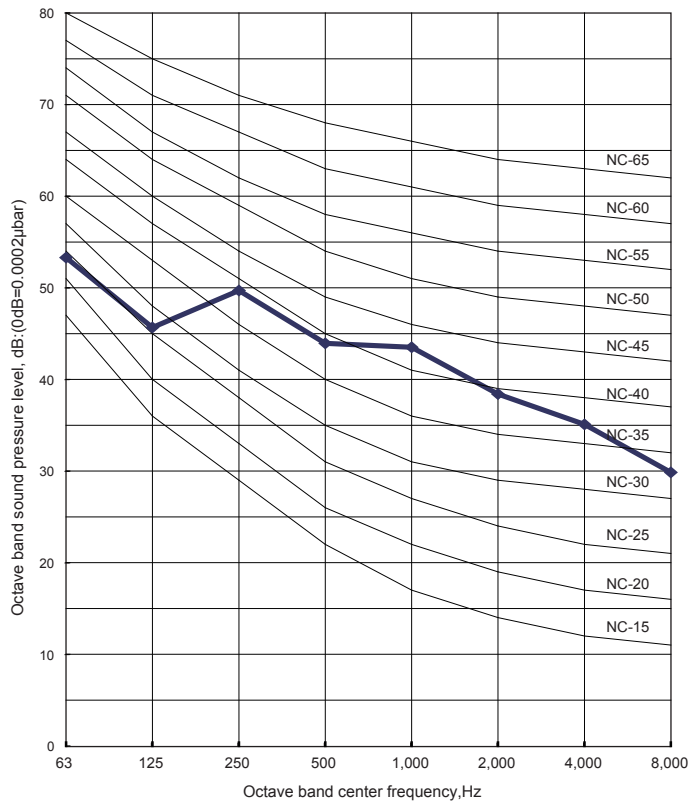
8. OPERATION NOISE

8-1. NOISE LEVEL CURVE

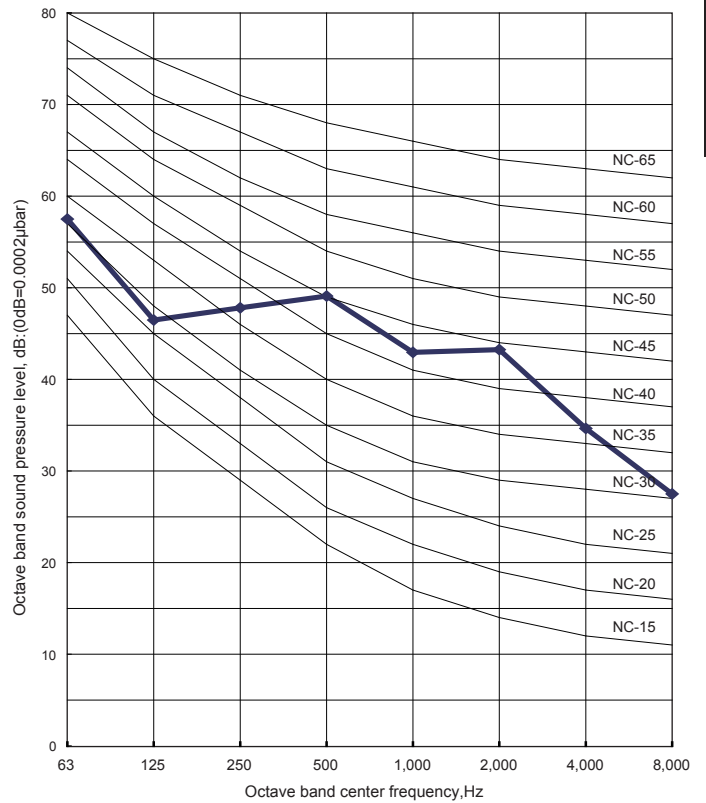
COOLING

OUTDOOR UNIT
AO*V09-12-14LA

● MODEL : AO*V09LA



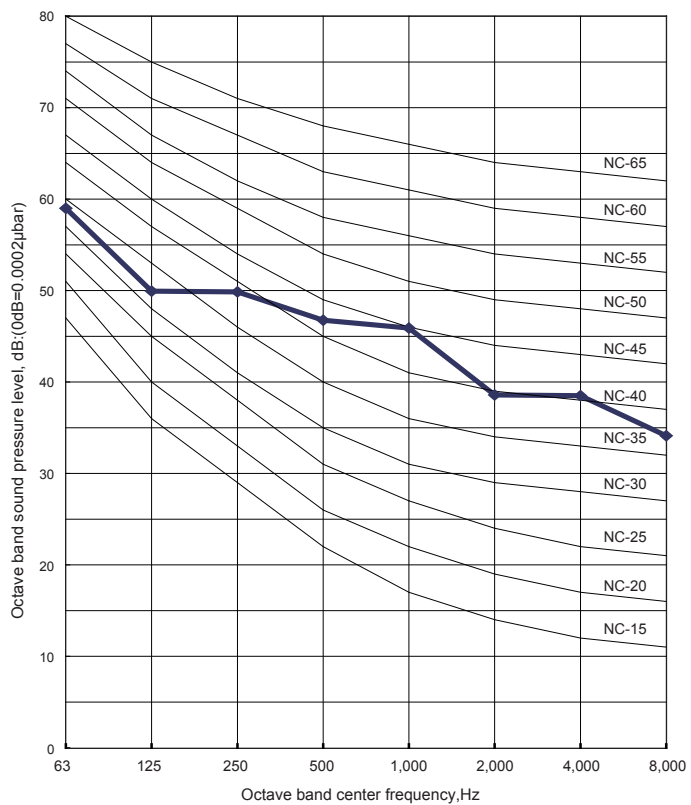
● MODEL : AO*V12LA



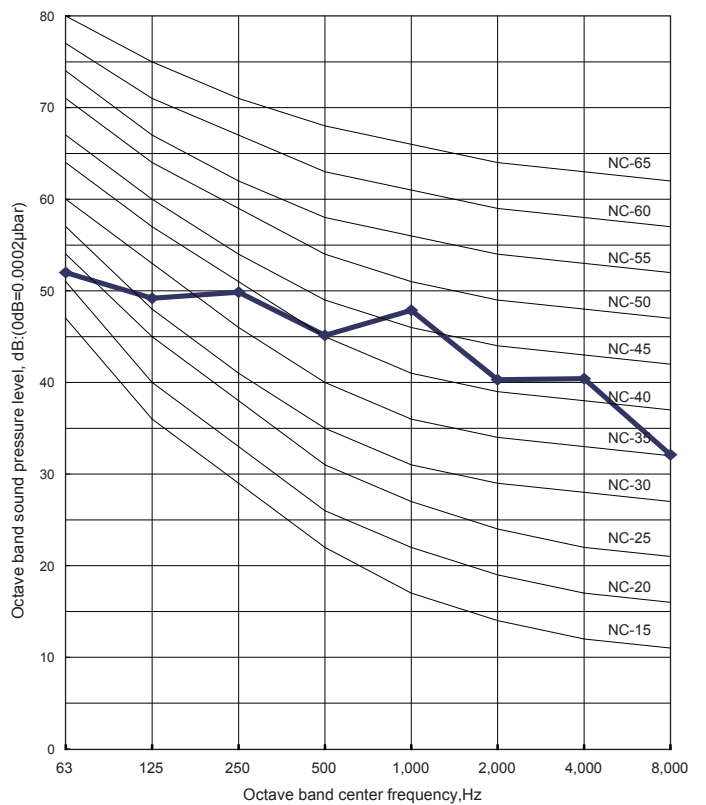
OUTDOOR UNIT
AO*V09-12-14LA

HEATING

● MODEL : AO*V09LA

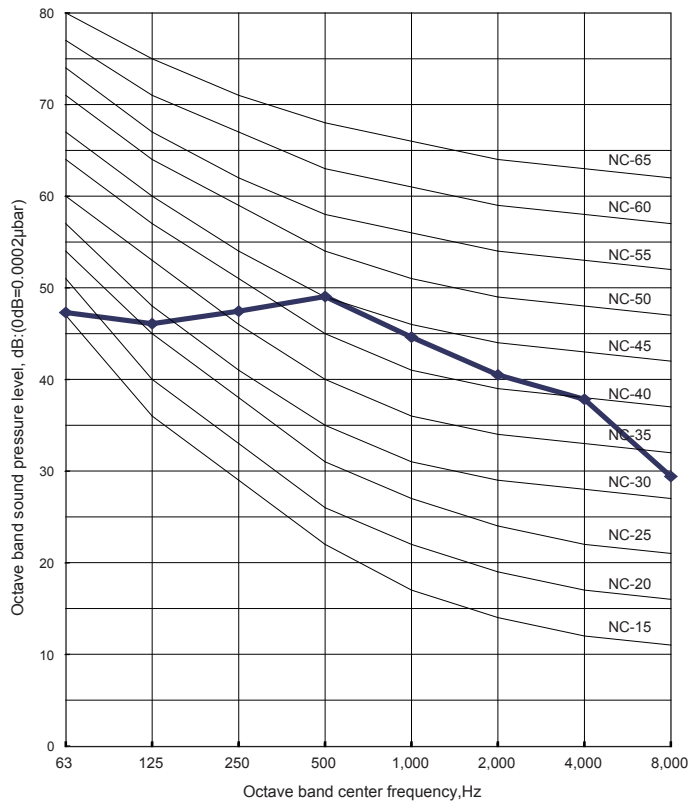


● MODEL : AO*V12LA



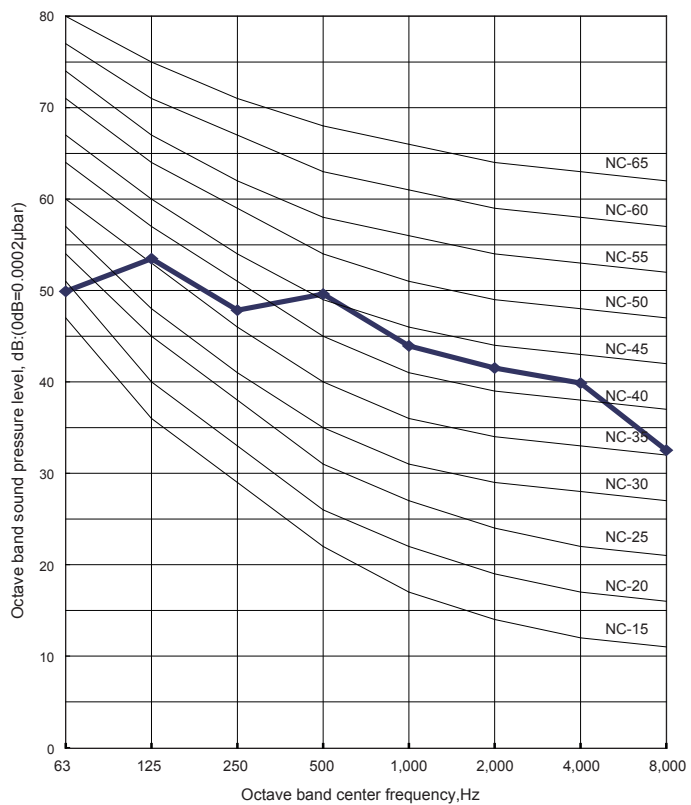
■ COOLING

● MODEL : AO*V14LA



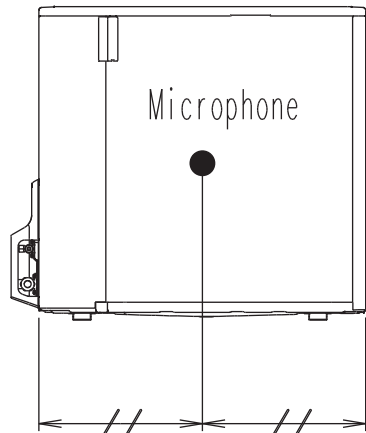
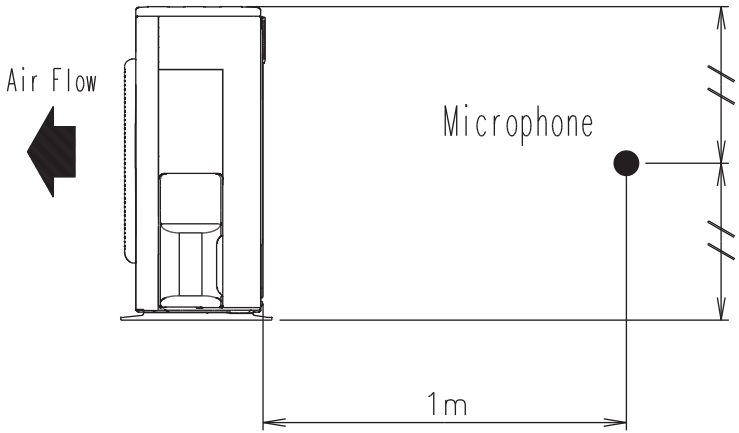
■ HEATING

● 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

OUTDOOR UNIT
AO*V09-12-14LA

OUTDOOR UNIT
AO*V09-12-14LA

	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