Refrigerant
R410A

INDOOR UNIT

1. FLOOR / CEILING TYPE :

AB＊A18LAT
AB＊F18LAT
AB＊F18LBT
AB＊A24LAT
AB＊F24LAT
AB＊F24LBT

D2D_AB021E/05
2009.04.15

FLOOR / CEILING TYPE
AB∗A18-24L

1. FEATURE

■MODEL :

INDOOR UNIT	OUTDOOR UNIT	
AB∗A18LAT AB∗F18LAT AB∗F18LBT	AO∗A18LACL AO∗A18LALL	AO∗B18LACL AO∗B18LALL
AB∗A24LAT AB∗F24LAT AB∗F24LBT	AO∗A24LACL AO∗A24LALL	AO∗B24LACL AO∗B24LALL

■FEATURES

●Energy saving rank A (AO∗A18LACL, AO∗A18LALL, AO∗A24LACL, AO∗A24LALL connection model)

European energy ranking rank A achieved by all DCization and optimization of the refrigerant cycle

●Quiet operation

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

●Filter sign

Dirtying of filter is detected by air conditioner operating time and the user is informed

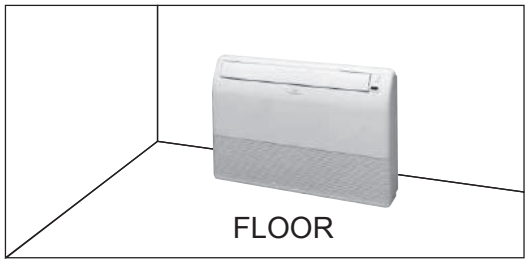
●ECONOMY operation

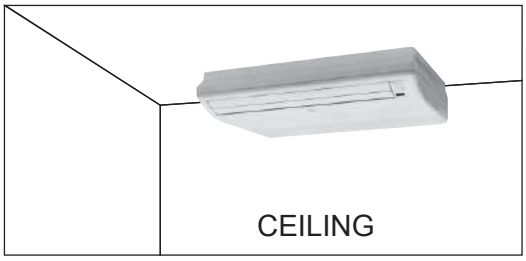
Operation that suppresses maximum power consumption is performed

●Wired/wireless simultaneous use possible

Wired remote controller and wireless remote controller can be simultaneously used.

●Flexible installation

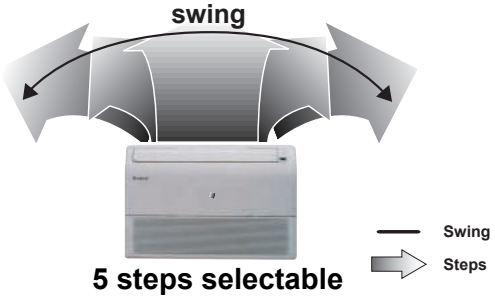




●Double auto swing

Combination of up/down and right/left air direction swing allows three-dimensional air direction control.
Since up/down air direction flaps operate automatically, according to the operating mode of the unit, it is possible to set the air direction based on the operating mode.

RIGHT and LEFT



5 steps selectable

UP and DOWN

7 steps selectable

FLOOR / CEILING TYPE
AB※A18-24L

■FUNCTION SETTING

●Filter sign operating time (Standard/long/short/no display)

Filter sign display time interval and filter sign no display can be selected.

●Ceiling height (standard/high ceiling)

Air conditioner operation capacity (air flow) switching is possible as response to height of installation ceiling.

●Cooling room temperature correction (Standard/low control)

Air conditioner control temperature can be switched to a little low as response to installation conditions.

●Heating room temperature correction (Standard/low/slightly high/high control)

Air conditioning control temperature can be slightly adjusted as response to installation conditions.

●Auto restart (ON/OFF)

ON/OFF of the function which automatically resets operation to the operation state before the power interruption at power recovery when there was a power interruption during operation can be selected.

●Room temperature sensing function (ON/OFF) ←only at wired remote controller connection

Sensor which controls the room temperature can be selected in two types: "Indoor sensor only" or "Indoor sensor or wired remote controller sensor can be switched by remote controller operation".

FLOOR / CEILING TYPE
AB*A18-24L

2. REMOTE CONTROLLER

WIRELESS REMOTE CONTROLLER

■FEATURES

* Four kinds of timer setup (ON / OFF / PROGRAM / SLEEP) are possible.
* Four kinds of timers. Easy operation.
* Easy to change transmission code (4 patterns) by button operation.

●Simple function setting

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

●Built-in timers

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

●Program timer

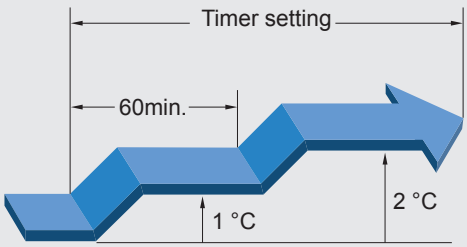
The program timer operates the ON and OFF timer once within a 24 hour period.

●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.

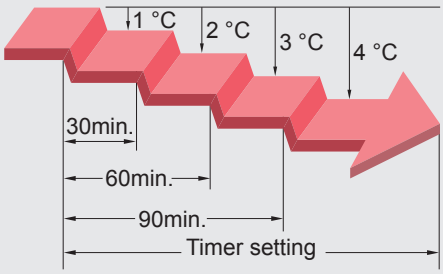
Cooling operation/dry operation

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.

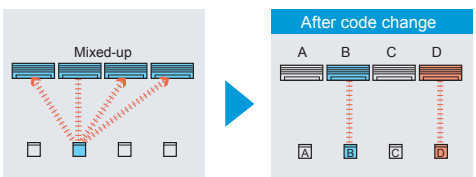


Heating operation

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.



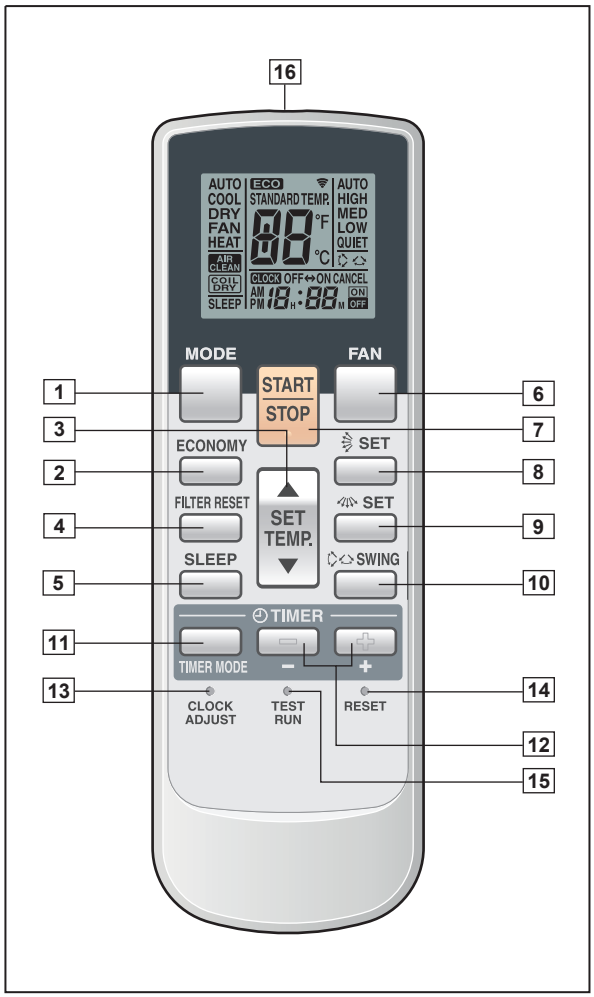
●Switching remote control unit signal code



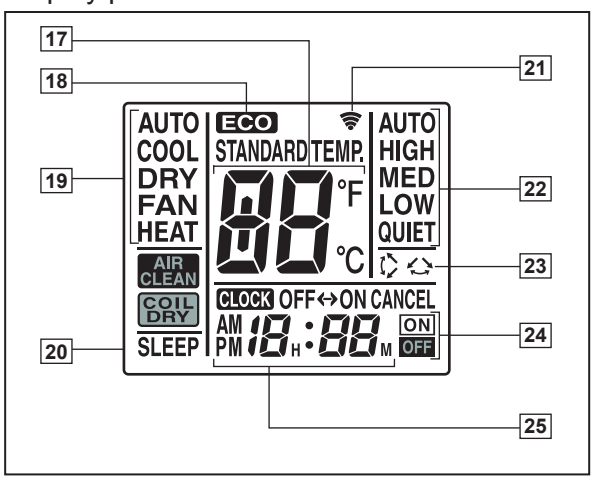
• Code selector switch eliminates unit being wrongly switched.
(Up to 4 codes can be set.)

FLOOR / CEILING TYPE
AB*A18-24L

■FUNCTIONS



Display panel



1 MODE button
Selects the operating mode (AUTO, HEAT, FAN, COOL, DRY).
/Start / end R.C. custom code change. (Max 4 types)

2 Economy button

3 Set temp. button (▲/▼)
Set remote controller custom code buttons
Sets the indoor temp./ Sets R.C. custom code.

4 Filter reset button

5 Sleep button
Pressed to select sleep timer.

6 Fan button
Selects the fan speed (AUTO, QUIET, LOW, MED, HIGH).

7 START/STOP button
Pressed to start and stop operation.

8 Set button (Vertical)
Air flow direction vertical set button.

9 Set button (Horizontal)
Air flow direction horizontal set button.

10 Swing button
Air flow direction swing button.

11 Timer mode button
Pressed to select the timer mode. (OFF TIMER, ON TIMER, PROGRAM TIMER, TIMER RESET)

12 Timer set (⊕ / ⊖) button
Sets the current time and on-off time.

13 Clock adjust button
Sets the current time.

14 Reset button
Used when replacing batteries.

15 Test run button
Used when testing the air conditioner after installation.

16 Signal transmitter

17 Temperature set display

18 Economy display

19 Operating mode display

20 Sleep display

21 Transmit indicator

22 Fan speed display

23 Swing display

24 Timer mode display

25 Clock display

■SPECIFICATION

SIZE (H x W x D mm)	170 x 56 x 19
WEIGHT (g)	85 (w/o batteries)
ACCESSORY	Holder

FLOOR / CEILING TYPE
AB∗A18-24L

3. SPECIFICATIONS

Type					FLOOR CEILING MODEL	
					INVERTER HEATPUMP	
Model name					AB∗A18LAT, AB∗F18LAT AB∗F18LBT	AB∗A24LAT, AB∗F24LAT AB∗F24LBT
					AO∗A18LACL, AO∗A18LALL	AO∗A24LACL, AO∗A24LALL
Power source					230V～ 50Hz	
Available voltage range					198-264V ～ 50Hz	
European energy label				Cooling	A	A
				Heating	A	A
Capacity	Cooling	Rated		kW	5.20	7.10
				BTU/h	17700	24200
		Min. - Max.		kW	0.90-5.90	0.90-8.00
				BTU/h	3100-20100	3100-27300
	Heating	Rated		kW	6.00	8.00
				BTU/h	20500	27300
		Min. - Max.		kW	0.90-7.50	0.90-9.10
				BTU/h	3100-25600	3100-31000
Input power	Cooling	Rated		kW	1.62	2.21
		*Max.			2.16	2.85
	Heating	Rated			1.66	2.21
		*Max.			2.96	3.19
Current	Cooling	Rated		A	7.1	9.7
		*Max.			9.0	12.0
	Heating	Rated			7.3	9.7
		*Max.			12.5	13.5
EER		Cooling		kW/kW	3.21	3.21
COP		Heating			3.61	3.61
Moisture removal				l/h (pints/h)	2.0 (3.5)	2.7 (4.8)
Fan	Airflow rate	Cooling	High	m^3/h	780	980
			Med		700	820
			Low		560	680
			Quiet		500	540
		Heating	High		780	980
			Med		700	820
			Low		560	680
			Quiet		500	540
	Type × Q'ty				Sirocco × 2	
	Motor output			W	80	80
Sound pressure level		Cooling	High	dB(A)	44(Floor console) , 43(Under ceiling)	49(Floor console) , 48(Under ceiling)
			Med		41(Floor console) , 40(Under ceiling)	45(Floor console) , 44(Under ceiling)
			Low		35(Floor console) , 34(Under ceiling)	41(Floor console) , 40(Under ceiling)
			Quiet		32(Floor console) , 31(Under ceiling)	36(Floor console) , 35(Under ceiling)
		Heating	High		44(Floor console) , 43(Under ceiling)	49(Floor console) , 48(Under ceiling)
			Med		41(Floor console) , 40(Under ceiling)	45(Floor console) , 44(Under ceiling)
			Low		35(Floor console) , 34(Under ceiling)	41(Floor console) , 40(Under ceiling)
			Quiet		32(Floor console) , 31(Under ceiling)	36(Floor console) , 35(Under ceiling)
Heat exchanger type		Dimensions (H × W × D)		mm	252 × 800 × 39.9	252 × 800 × 53.2
		Fin pitch			1.30	1.45
		Rows x Stages			3 × 12	4 × 12
		Pipe type			Copper	
		Fin type			Aluminium	
Enclosure		Material			ABS	
		Colour			18-24LAT : WHITE Approximate colour of MUNSELL 5Y 9/0.5 18-24LBT : WHITE Approximate colour of MUNSELL N 9.25/	
Dimentions (H× W ×D)	Net			mm	199 × 990 × 655	
	Gross				324 × 1075 × 686	
Weight	Net			kg(lb.)	27 (60)	27 (60)
	Gross				36 (79)	36 (79)
Connection pipe	Size	Liquid		mm	Φ6.35 (Φ 1/4 in.)	Φ6.35 (Φ 1/4 in.)
		Gas			Φ 12.70 (Φ 1/2 in.)	Φ 15.88 (Φ 5/8 in.)
	Method				Flare	Flare
Operation range		Cooling		°C	18 to 32	18 to 32
				%RH	80 or less	80 or less
		Heating		°C	30 or less	30 or less
Remote controller type					Wireless	
Drain pipe	Material				ABS	
	Size			mm	Outer diameter : 26.0 / Inner diameter : 21.5	

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)
∗ The maximum current and the maximum input value are the maximum value when operated within the operation range(temperature).

FLOOR / CEILING TYPE
AB∗A18-24L

Type					FLOOR CEILING MODEL	
					INVERTER HEATPUMP	
Model name					AB∗A18LAT, AB∗F18LAT AB∗F18LBT	AB∗A24LAT, AB∗F24LAT AB∗F24LBT
					AO∗B18LACL, AO∗B18LALL	AO∗B24LACL, AO∗B24LALL
Power source					230V～ 50Hz	
Available voltage range					198-264V ～ 50Hz	
European energy label				Cooling	B	B
				Heating	B	B
Capacity	Cooling	Rated		kW	5.20	7.10
				BTU/h	17700	24200
		Min. - Max.		kW	0.90-5.70	0.90-7.80
				BTU/h	3100-19500	3100-26600
	Heating	Rated		kW	6.00	8.00
				BTU/h	20500	27300
		Min. - Max.		kW	0.90-7.20	0.90-8.80
				BTU/h	3100-24600	3100-30000
Input power	Cooling	Rated		kW	1.70	2.32
		*Max.			2.16	2.85
	Heating	Rated			1.75	2.33
		*Max.			2.96	3.19
Current	Cooling	Rated		A	7.4	10.1
		*Max.			9.0	12.0
	Heating	Rated			7.7	10.2
		*Max.			12.5	13.5
EER		Cooling		kW/kW	3.06	3.06
COP		Heating			3.43	3.43
Moisture removal				l/h (pints/h)	2.0 (3.5)	2.7 (4.8)
Fan	Airflow rate	Cooling	High	m^3/h	780	980
			Med		700	820
			Low		560	680
			Quiet		500	540
		Heating	High		780	980
			Med		700	820
			Low		560	680
			Quiet		500	540
	Type × Q'ty				Sirocco × 2	
	Motor output			W	80	80
Sound pressure level		Cooling	High	dB(A)	44(Floor console) , 43(Under ceiling)	49(Floor console) , 48(Under ceiling)
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			Low		35(Floor console) , 34(Under ceiling)	41(Floor console) , 40(Under ceiling)
			Quiet		32(Floor console) , 31(Under ceiling)	36(Floor console) , 35(Under ceiling)
		Heating	High		44(Floor console) , 43(Under ceiling)	49(Floor console) , 48(Under ceiling)
			Med		41(Floor console) , 40(Under ceiling)	45(Floor console) , 44(Under ceiling)
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			Quiet		32(Floor console) , 31(Under ceiling)	36(Floor console) , 35(Under ceiling)
Heat exchanger type		Dimensions (H × W × D)		mm	252 × 800 × 39.9	252 × 800 × 53.2
		Fin pitch			1.30	1.45
		Rows x Stages			3 × 12	4 × 12
		Pipe type			Copper	
		Fin type			Aluminium	
Enclosure		Material			ABS	
		Colour			18-24LAT : WHITE Approximate colour of MUNSELL 5Y 9/0.5 18-24LBT : WHITE Approximate colour of MUNSELL N 9.25/	
Dimentions (H× W ×D)	Net			mm	199 × 990 × 655	
	Gross				324 × 1075 × 686	
Weight	Net			kg(lb.)	27 (60)	27 (60)
	Gross				36 (79)	36 (79)
Connection pipe	Size	Liquid		mm	Φ6.35 (Φ 1/4 in.)	Φ6.35 (Φ 1/4 in.)
		Gas			Φ 12.70 (Φ 1/2 in.)	Φ 15.88 (Φ 5/8 in.)
	Method				Flare	Flare
Operation range		Cooling		°C	18 to 32	18 to 32
				%RH	80 or less	80 or less
		Heating		°C	30 or less	30 or less
Remote controller type					Wireless	
Drain pipe	Material				ABS	
	Size			mm	Outer diameter : 26.0 / Inner diameter : 21.5	

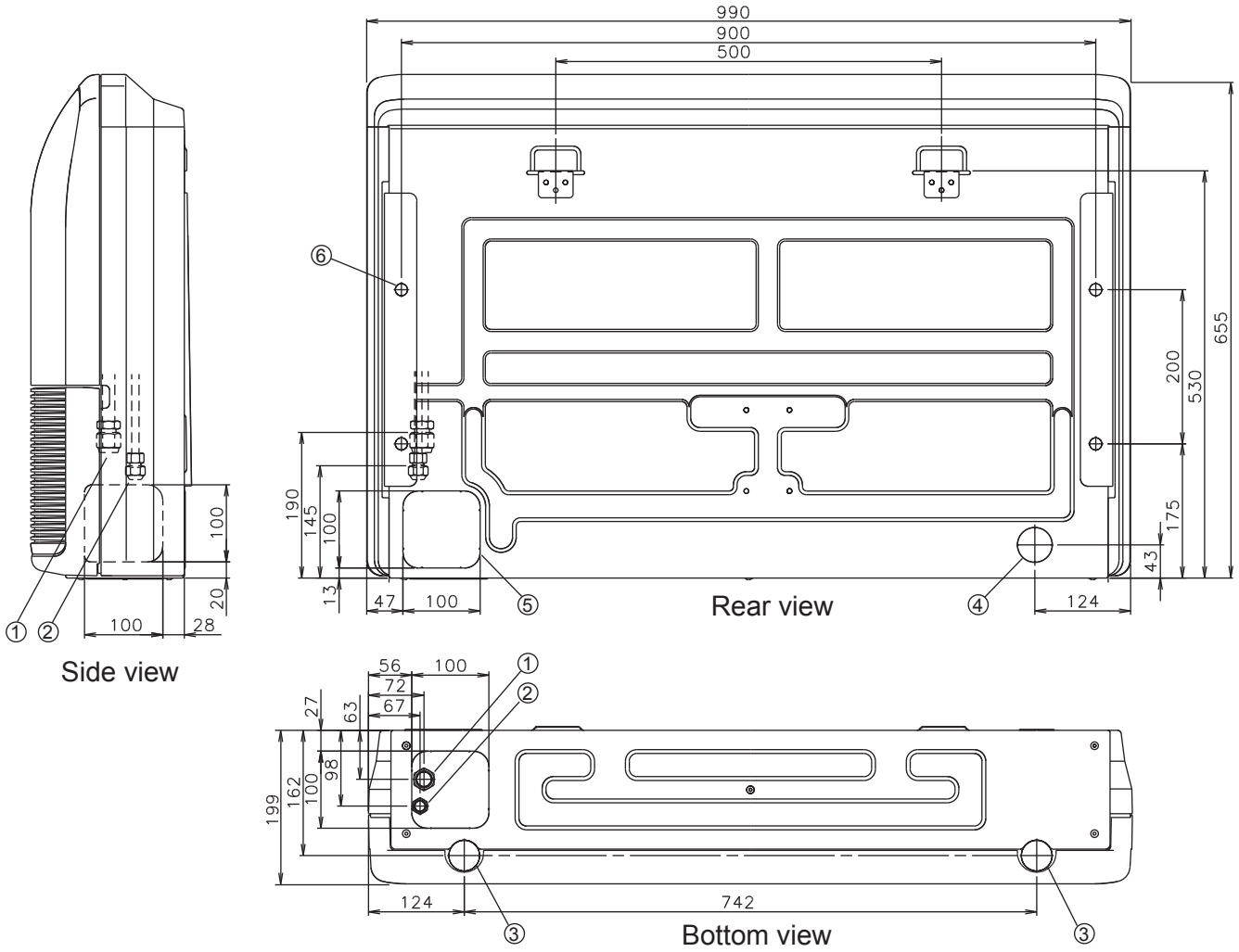
Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24°CWB.
Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB.
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
*The maximum current and the maximum input value are the maximum value when operated within the operation range(temperature)

FLOOR / CEILING TYPE
AB∗A18-24L

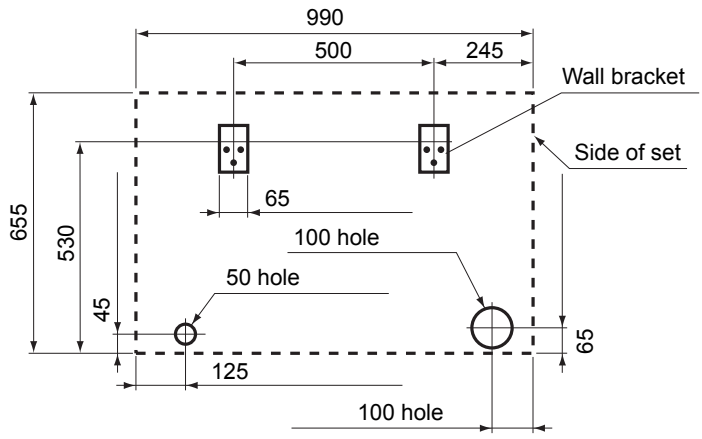
4. DIMENSIONS

■MODEL : AB∗A18L, AB∗F18L, AB∗A24L, AB∗F24L

(Unit : mm)



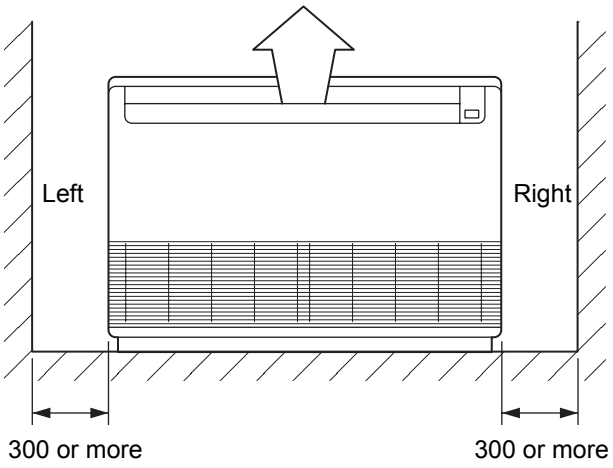
① Refrigerant piping flare connection (Gas)
② Refrigerant piping flare connection (Liquid)
③ Drain piping connection
④ Knock out hole for drain piping
⑤ Knock out hole for refrigerant piping
⑥ Hole for lifting bolt (Use M10 screw bolt)

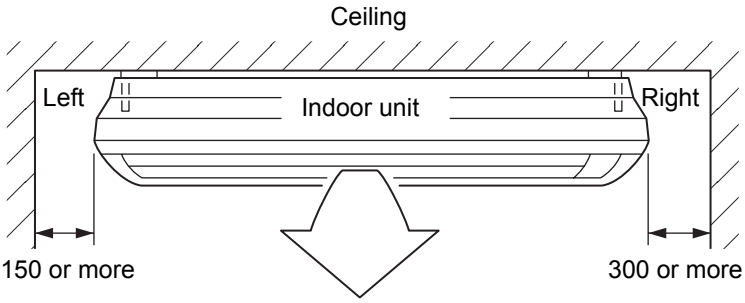


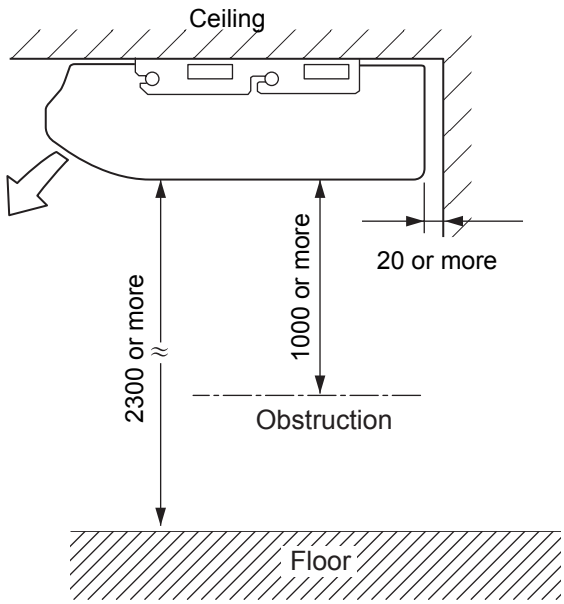
FLOOR / CEILING TYPE
AB*A18-24L

■MOUNTING POSITION

(Unit : mm)

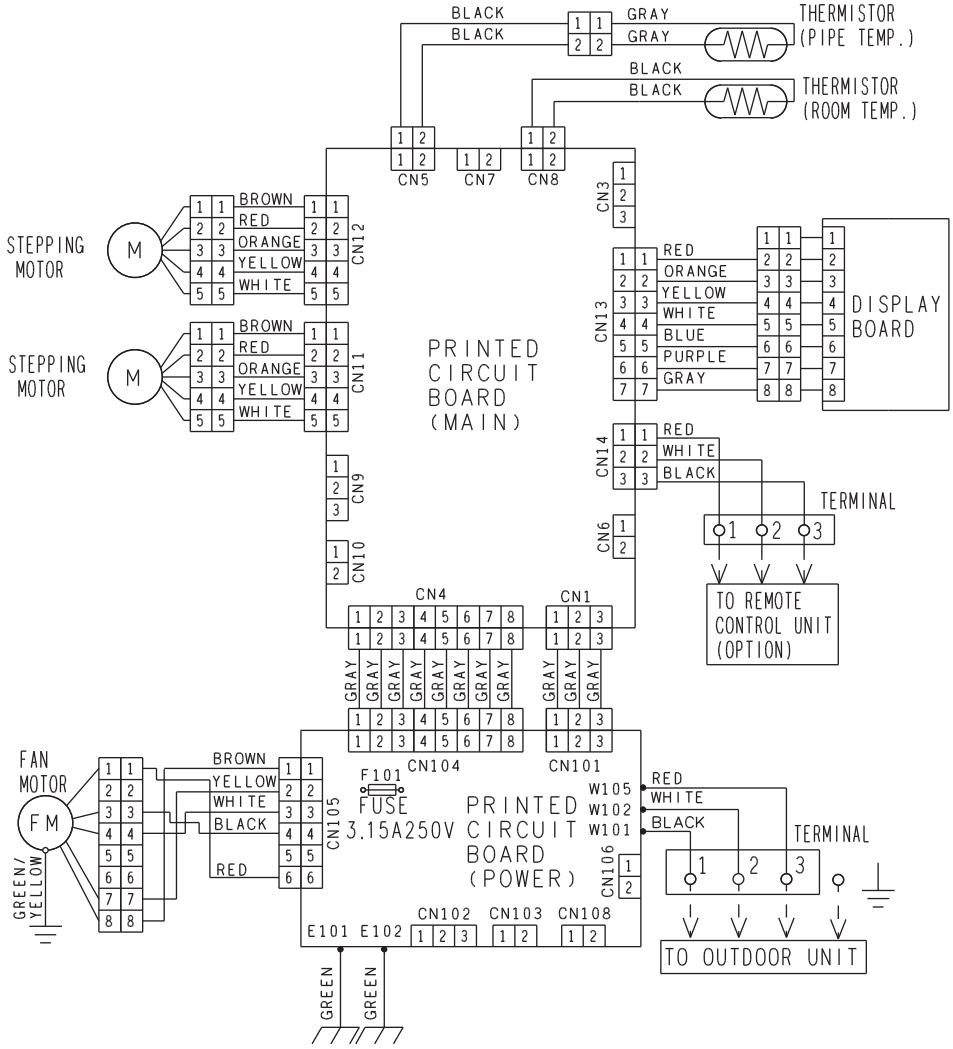






5. WIRING DIAGRAMS

■MODEL : AB∗A18L, AB∗F18L, AB∗A24L, AB∗F24L



FLOOR / CEILING TYPE
AB∗A18-24L

6. CAPACITY TABLE

6-1. COOLING CAPACITY

This table is created using the maximum capacity.

■MODEL : AB∗A18L, AB∗F18L / AO∗A18L

AFR	13.3

		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
	-10	4.35	3.28	0.39	4.84	3.30	0.40	5.01	3.59	0.40	5.34	3.60	0.40	5.50	3.89	0.40	5.83	3.88	0.41	6.17	4.13	0.41
	0	4.26	3.24	0.46	4.74	3.26	0.46	4.90	3.54	0.47	5.23	3.56	0.47	5.39	3.84	0.47	5.71	3.83	0.48	6.04	4.07	0.48
	5	4.14	3.18	0.57	4.61	3.20	0.58	4.77	3.48	0.58	5.08	3.49	0.59	5.24	3.77	0.59	5.55	3.76	0.60	5.86	4.00	0.60
	10	4.00	3.12	0.68	4.45	3.14	0.69	4.61	3.41	0.70	4.91	3.42	0.70	5.06	3.70	0.71	5.37	3.68	0.71	5.67	3.92	0.72
	15	4.04	3.14	0.59	4.50	3.16	0.60	4.65	3.43	0.61	4.95	3.44	0.61	5.11	3.72	0.62	5.41	3.70	0.62	5.72	3.94	0.63
	20	5.16	3.68	1.28	5.75	3.70	1.30	5.95	4.03	1.31	6.34	4.04	1.32	6.54	4.36	1.33	6.93	4.34	1.34	7.32	4.63	1.35
	25	4.94	3.57	1.43	5.51	3.59	1.46	5.70	3.91	1.46	6.07	3.92	1.48	6.26	4.23	1.49	6.63	4.22	1.50	7.01	4.49	1.52
	30	4.71	3.46	1.59	5.25	3.48	1.61	5.43	3.78	1.62	5.78	3.79	1.64	5.96	4.10	1.65	6.32	4.08	1.66	6.68	4.35	1.68
	35	4.66	3.43	1.88	5.19	3.46	1.91	5.37	3.76	1.92	5.72	3.77	1.94	5.90	4.07	1.95	6.25	4.05	1.97	6.61	4.32	1.99
	40	3.53	2.90	1.34	3.93	2.92	1.36	4.06	3.18	1.36	4.33	3.19	1.38	4.46	3.44	1.38	4.73	3.43	1.40	5.00	3.65	1.41
	46	2.50	2.46	1.01	2.79	2.47	1.02	2.88	2.69	1.03	3.07	2.69	1.04	3.17	2.91	1.05	3.36	2.90	1.06	3.55	3.09	1.07

■MODEL : AB∗A18L, AB∗F18L / AO∗B18L

AFR	13.3

		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
	-10	4.35	3.28	0.39	4.84	3.30	0.40	5.01	3.59	0.40	5.34	3.60	0.40	5.50	3.89	0.40	5.83	3.88	0.41	6.17	4.13	0.41
	0	4.26	3.24	0.46	4.74	3.26	0.46	4.90	3.54	0.47	5.23	3.56	0.47	5.39	3.84	0.47	5.71	3.83	0.48	6.04	4.07	0.48
	5	4.14	3.18	0.57	4.61	3.20	0.58	4.77	3.48	0.58	5.08	3.49	0.59	5.24	3.77	0.59	5.55	3.76	0.60	5.86	4.00	0.60
	10	4.00	3.12	0.68	4.45	3.14	0.69	4.61	3.41	0.70	4.91	3.42	0.70	5.06	3.70	0.71	5.37	3.68	0.71	5.67	3.92	0.72
	15	4.04	3.14	0.59	4.50	3.16	0.60	4.65	3.43	0.61	4.95	3.44	0.61	5.11	3.72	0.62	5.41	3.70	0.62	5.72	3.94	0.63
	20	5.16	3.68	1.28	5.75	3.70	1.30	5.95	4.03	1.31	6.34	4.04	1.32	6.54	4.36	1.33	6.93	4.34	1.34	7.32	4.63	1.35
	25	4.94	3.57	1.43	5.51	3.59	1.46	5.70	3.91	1.46	6.07	3.92	1.48	6.26	4.23	1.49	6.63	4.22	1.50	7.01	4.49	1.52
	30	4.71	3.46	1.59	5.25	3.48	1.61	5.43	3.78	1.62	5.78	3.79	1.64	5.96	4.10	1.65	6.32	4.08	1.66	6.68	4.35	1.68
	35	4.50	3.27	1.88	5.02	3.28	1.91	5.19	3.57	1.92	5.53	3.58	1.94	5.70	3.87	1.95	6.04	3.85	1.97	6.38	4.10	1.99
	40	3.41	2.78	1.34	3.80	2.79	1.36	3.92	3.04	1.36	4.18	3.05	1.38	4.31	3.29	1.38	4.57	3.28	1.40	4.83	3.49	1.41
	46	2.42	2.36	1.01	2.69	2.38	1.02	2.79	2.59	1.03	2.97	2.59	1.04	3.06	2.80	1.05	3.24	2.79	1.06	3.43	2.97	1.07

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

FLOOR / CEILING TYPE
AB∗A18-24L

■MODEL : AB∗A24L, AB∗F24L / AO∗A24L

AFR	15.3

		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
	-10	5.79	4.65	0.60	6.46	4.67	0.61	6.68	5.08	0.61	7.12	5.10	0.62	7.34	5.51	0.62	7.78	5.48	0.63	8.22	5.84	0.63
	0	5.69	4.59	0.64	6.34	4.62	0.65	6.55	5.02	0.65	6.98	5.04	0.66	7.20	5.44	0.66	7.63	5.42	0.67	8.06	5.77	0.68
	5	5.49	4.49	0.78	6.12	4.52	0.79	6.33	4.91	0.79	6.74	4.93	0.80	6.95	5.32	0.81	7.37	5.30	0.81	7.79	5.64	0.82
	10	5.28	4.38	0.91	5.88	4.40	0.92	6.08	4.79	0.93	6.48	4.80	0.94	6.68	5.19	0.94	7.08	5.17	0.95	7.48	5.50	0.96
	15	5.39	4.44	0.76	6.01	4.47	0.77	6.21	4.85	0.77	6.62	4.87	0.78	6.83	5.26	0.79	7.24	5.24	0.79	7.65	5.58	0.80
	20	6.85	5.22	1.61	7.63	5.25	1.64	7.89	5.71	1.64	8.41	5.73	1.66	8.67	6.18	1.67	9.19	6.16	1.69	9.71	6.56	1.70
	25	6.53	5.04	1.80	7.27	5.07	1.82	7.52	5.51	1.83	8.01	5.52	1.85	8.26	5.97	1.86	8.76	5.94	1.88	9.25	6.33	1.90
	30	6.18	4.86	2.00	6.89	4.88	2.03	7.12	5.31	2.04	7.59	5.33	2.06	7.83	5.75	2.07	8.30	5.73	2.09	8.77	6.10	2.11
	35	6.32	4.93	2.47	7.04	4.96	2.51	7.28	5.39	2.52	7.76	5.41	2.55	8.00	5.84	2.56	8.48	5.82	2.59	8.96	6.20	2.61
	40	5.21	4.34	2.05	5.81	4.37	2.08	6.01	4.75	2.09	6.40	4.77	2.11	6.60	5.15	2.12	7.00	5.13	2.14	7.39	5.46	2.16
	46	3.77	3.62	1.55	4.20	3.64	1.57	4.35	3.96	1.58	4.63	3.97	1.60	4.78	4.29	1.61	5.06	4.27	1.62	5.35	4.55	1.64

■MODEL : AB∗A24L, AB∗F24L / AO∗B24L

AFR	15.3

		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
	-10	5.79	4.65	0.60	6.46	4.67	0.61	6.68	5.08	0.61	7.12	5.10	0.62	7.34	5.51	0.62	7.78	5.48	0.63	8.22	5.84	0.63
	0	5.69	4.59	0.64	6.34	4.62	0.65	6.55	5.02	0.65	6.98	5.04	0.66	7.20	5.44	0.66	7.63	5.42	0.67	8.06	5.77	0.68
	5	5.49	4.49	0.78	6.12	4.52	0.79	6.33	4.91	0.79	6.74	4.93	0.80	6.95	5.32	0.81	7.37	5.30	0.81	7.79	5.64	0.82
	10	5.28	4.38	0.91	5.88	4.40	0.92	6.08	4.79	0.93	6.48	4.80	0.94	6.68	5.19	0.94	7.08	5.17	0.95	7.48	5.50	0.96
	15	5.39	4.44	0.76	6.01	4.47	0.77	6.21	4.85	0.77	6.62	4.87	0.78	6.83	5.26	0.79	7.24	5.24	0.79	7.65	5.58	0.80
	20	6.85	5.22	1.61	7.63	5.25	1.64	7.89	5.71	1.64	8.41	5.73	1.66	8.67	6.18	1.67	9.19	6.16	1.69	9.71	6.56	1.70
	25	6.53	5.04	1.80	7.27	5.07	1.82	7.52	5.51	1.83	8.01	5.52	1.85	8.26	5.97	1.86	8.76	5.94	1.88	9.25	6.33	1.90
	30	6.18	4.86	2.00	6.89	4.88	2.03	7.12	5.31	2.04	7.59	5.33	2.06	7.83	5.75	2.07	8.30	5.73	2.09	8.77	6.10	2.11
	35	6.16	4.76	2.47	6.86	4.79	2.51	7.10	5.21	2.52	7.57	5.23	2.55	7.80	5.64	2.56	8.27	5.62	2.59	8.74	5.99	2.61
	40	5.08	4.21	2.05	5.66	4.23	2.08	5.86	4.60	2.09	6.24	4.61	2.11	6.43	4.98	2.12	6.82	4.96	2.14	7.21	5.29	2.16
	46	3.68	3.52	1.55	4.10	3.54	1.57	4.24	3.85	1.58	4.52	3.86	1.60	4.66	4.17	1.61	4.94	4.15	1.62	5.22	4.42	1.64

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

FLOOR / CEILING TYPE
AB*A18-24L

6-2. HEATING CAPACITY

This table is created using the maximum capacity.

■MODEL : AB*A18L, AB*F18L / AO*A18L

AFR	13.3

		Indoor temperature											
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
Outdoor temperature	-15	-16	5.25	2.15	5.13	2.20	5.00	2.24	4.88	2.29	4.75	2.33
	-10	-11	5.90	2.27	5.76	2.32	5.62	2.37	5.48	2.42	5.34	2.46
	-5	-7	6.57	2.40	6.41	2.45	6.26	2.50	6.10	2.55	5.94	2.60
	0	-2	7.46	2.57	7.28	2.62	7.10	2.68	6.93	2.73	6.75	2.78
	5	3	8.18	2.65	7.98	2.70	7.79	2.76	7.59	2.81	7.40	2.87
	7	6	7.88	2.26	7.69	2.30	7.50	2.35	7.31	2.40	7.13	2.44
	10	8	8.15	2.31	7.96	2.35	7.77	2.40	7.57	2.45	7.38	2.50
	15	10	7.70	1.97	7.52	2.01	7.33	2.05	7.15	2.09	6.97	2.13
	20	15	7.23	1.58	7.06	1.62	6.88	1.65	6.71	1.68	6.54	1.72
	24	18	7.43	1.59	7.25	1.62	7.07	1.65	6.90	1.68	6.72	1.72

■MODEL : AB*A18L, AB*F18L / AO*B18L

AFR	13.3

		Indoor temperature											
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
Outdoor temperature	-15	-16	5.25	2.15	5.13	2.20	5.00	2.24	4.88	2.29	4.75	2.33
	-10	-11	5.90	2.27	5.76	2.32	5.62	2.37	5.48	2.42	5.34	2.46
	-5	-7	6.57	2.40	6.41	2.45	6.26	2.50	6.10	2.55	5.94	2.60
	0	-2	7.46	2.57	7.28	2.62	7.10	2.68	6.93	2.73	6.75	2.78
	5	3	7.85	2.65	7.66	2.70	7.48	2.76	7.29	2.81	7.10	2.87
	7	6	7.56	2.26	7.38	2.30	7.20	2.35	7.02	2.40	6.84	2.44
	10	8	7.83	2.31	7.64	2.35	7.45	2.40	7.27	2.45	7.08	2.50
	15	10	7.39	1.97	7.22	2.01	7.04	2.05	6.87	2.09	6.69	2.13
	20	15	6.94	1.58	6.77	1.62	6.61	1.65	6.44	1.68	6.28	1.72
	24	18	7.13	1.59	6.96	1.62	6.79	1.65	6.62	1.68	6.45	1.72

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

FLOOR / CEILING TYPE
AB＊A18-24L

■MODEL : AB＊A24L, AB＊F24L / AO＊A24L

AFR	15.3

		Indoor temperature											
		°CDB	16		18		20		22		24		
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	
Outdoor temperature	-15	-16	6.15	2.70	6.00	2.76	5.86	2.82	5.71	2.87	5.57	2.93	
	-10	-11	6.93	2.87	6.76	2.93	6.60	2.99	6.43	3.05	6.27	3.11	
	-5	-7	7.64	2.86	7.46	2.91	7.28	2.97	7.10	3.03	6.92	3.09	
	0	-2	8.59	2.84	8.39	2.90	8.18	2.96	7.98	3.01	7.77	3.07	
	5	3	9.55	2.86	9.32	2.91	9.09	2.97	8.86	3.03	8.64	3.09	
	7	6	9.56	2.54	9.33	2.60	9.10	2.65	8.87	2.70	8.65	2.76	
	10	8	9.86	2.55	9.63	2.60	9.39	2.65	9.16	2.71	8.92	2.76	
	15	10	8.97	1.99	8.75	2.03	8.54	2.07	8.33	2.12	8.11	2.16	
	20	15	8.22	1.54	8.03	1.57	7.83	1.60	7.64	1.63	7.44	1.66	
	24	18	8.52	1.54	8.32	1.57	8.12	1.60	7.91	1.63	7.71	1.66	

■MODEL : AB＊A24L, AB＊F24L / AO＊B24L

AFR	15.3

		Indoor temperature											
		°CDB	16		18		20		22		24		
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	
Outdoor temperature	-15	-16	6.15	2.70	6.00	2.76	5.86	2.82	5.71	2.87	5.57	2.93	
	-10	-11	6.70	2.87	6.54	2.93	6.38	2.99	6.22	3.05	6.06	3.11	
	-5	-7	7.39	2.86	7.22	2.91	7.04	2.97	6.86	3.03	6.69	3.09	
	0	-2	8.31	2.84	8.11	2.90	7.91	2.96	7.71	3.01	7.52	3.07	
	5	3	9.23	2.86	9.01	2.91	8.79	2.97	8.57	3.03	8.35	3.09	
	7	6	9.24	2.54	9.02	2.60	8.80	2.65	8.58	2.70	8.36	2.76	
	10	8	9.54	2.55	9.31	2.60	9.08	2.65	8.86	2.71	8.63	2.76	
	15	10	8.67	1.99	8.46	2.03	8.26	2.07	8.05	2.12	7.84	2.16	
	20	15	7.95	1.54	7.76	1.57	7.57	1.60	7.38	1.63	7.19	1.66	
	24	18	8.24	1.54	8.04	1.57	7.85	1.60	7.65	1.63	7.46	1.66	

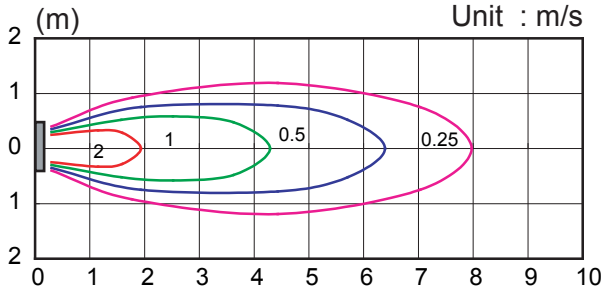
AFR: Air Flow Rate (m^3/min)
TC : Total Capacity (kW)
PI : Power Input (kW)

FLOOR / CEILING TYPE
AB∗A18-24L

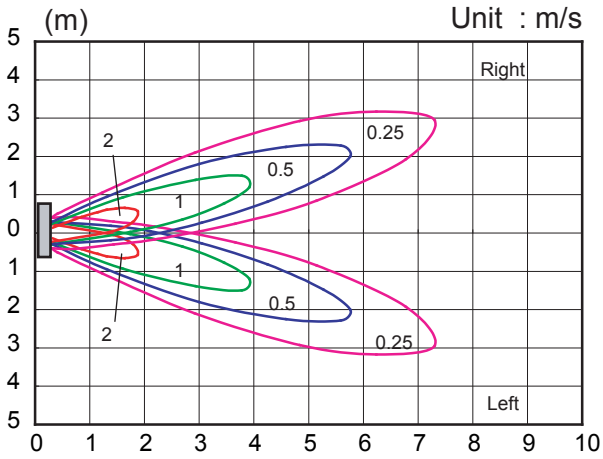
7. FAN PERFORMANCE

7-1. AIR VELOCITY DISTRIBUTION

■MODEL : AB∗A18L, AB∗F18L (FLOOR CONSOLE)

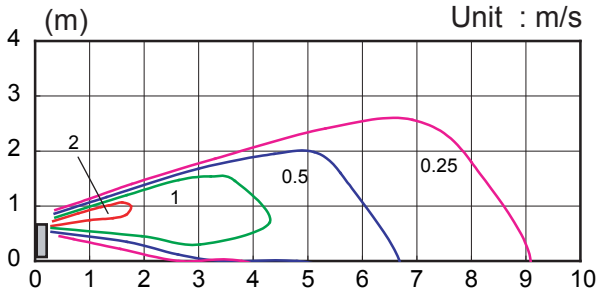


TOP VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center
(m)

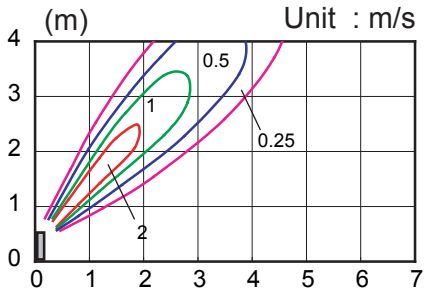


TOP VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Right & Left
(m)

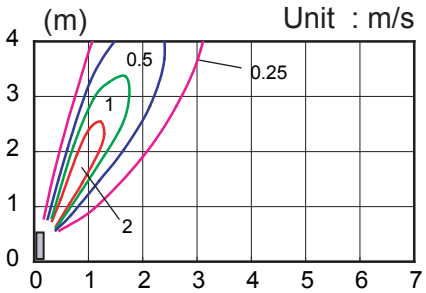
0



SIDE VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center
(m)



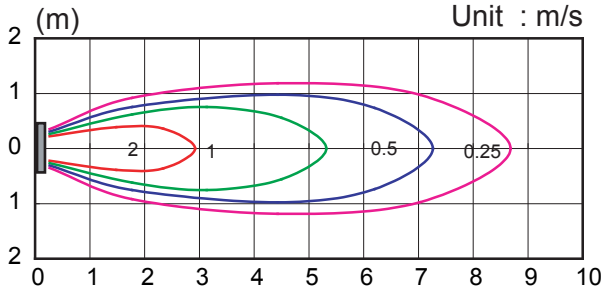
SIDE VIEW
VERTICAL FLAP : Center
HORIZONTAL FLAP : Center
(m)



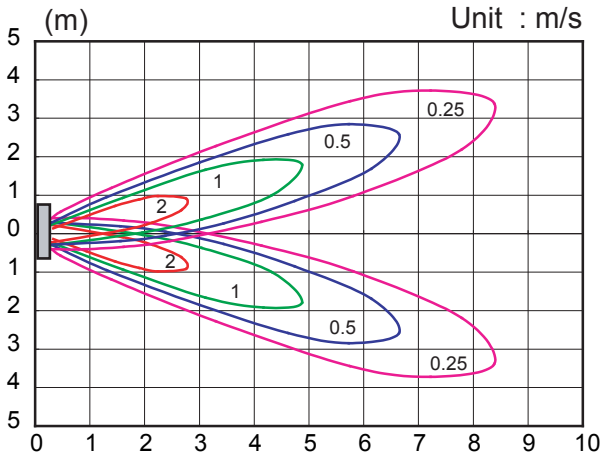
SIDE VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center
(m)

FLOOR / CEILING TYPE
AB*A18-24L

■MODEL : AB*A18L, AB*F18L (UNDER CEILING)

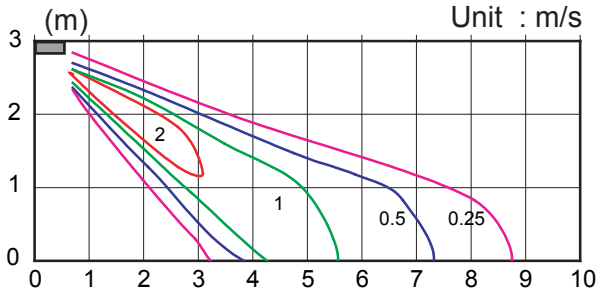


TOP VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center
(m)

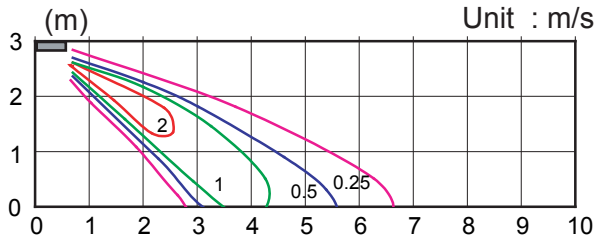


TOP VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Right & Left
(m)

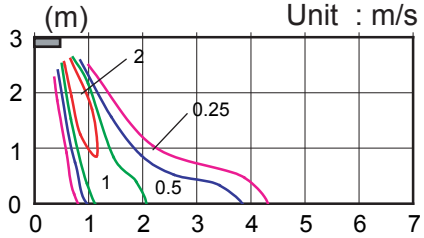
0



SIDE VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center
(m)



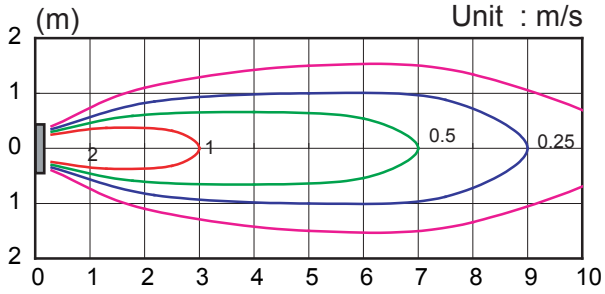
SIDE VIEW
VERTICAL FLAP : Center
HORIZONTAL FLAP : Center
(m)



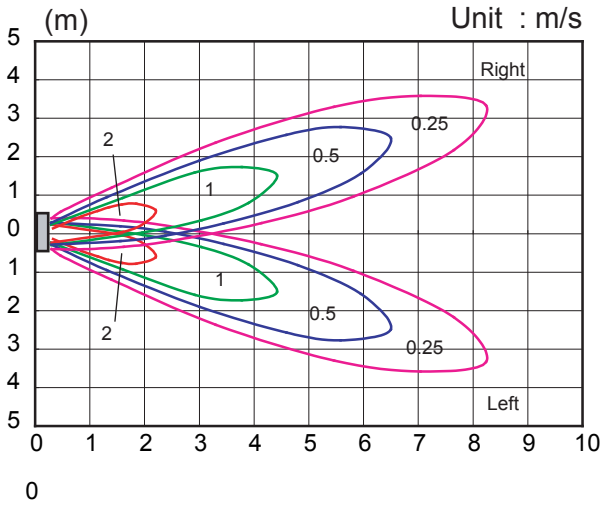
SIDE VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center
(m)

FLOOR / CEILING TYPE
AB∗A18-24L

■MODEL : AB∗A24L, AB∗F24L (FLOOR CONSOLE)

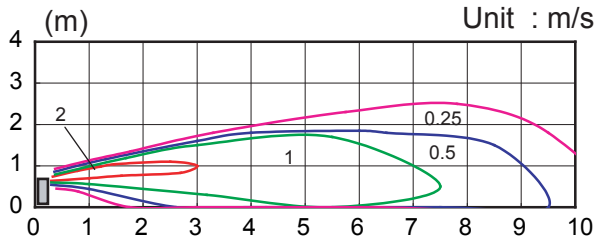


TOP VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center
(m)

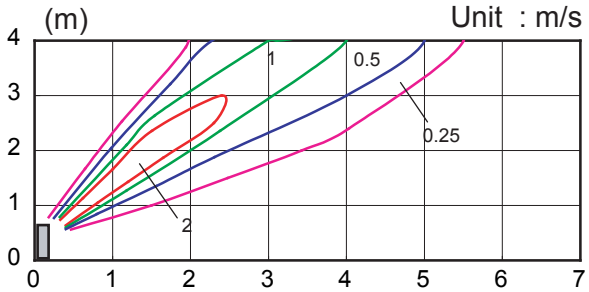


TOP VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Right & Left
(m)

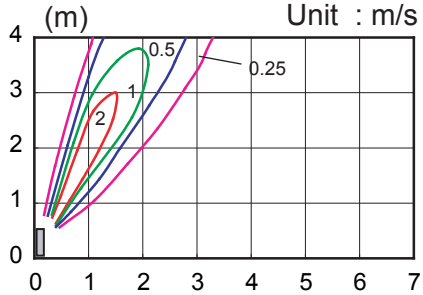
0



SIDE VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center
(m)



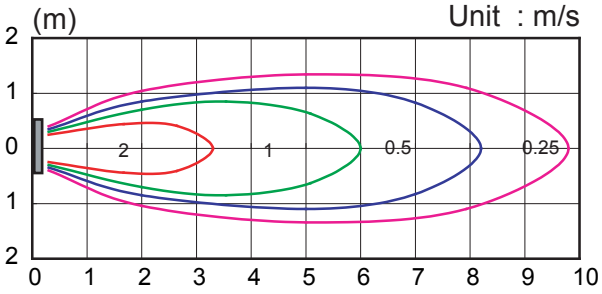
SIDE VIEW
VERTICAL FLAP : Center
HORIZONTAL FLAP : Center
(m)



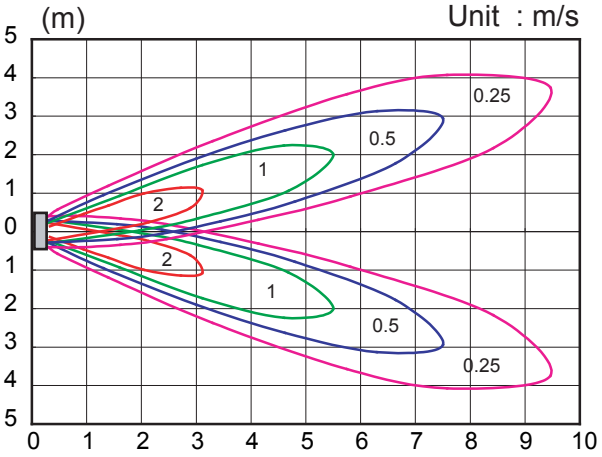
SIDE VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center
(m)

FLOOR / CEILING TYPE
AB∗A18-24L

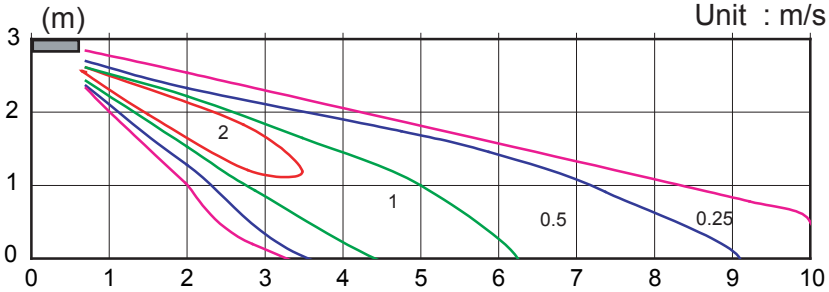
■MODEL : AB∗A24L, AB∗F24L (UNDER CEILING)



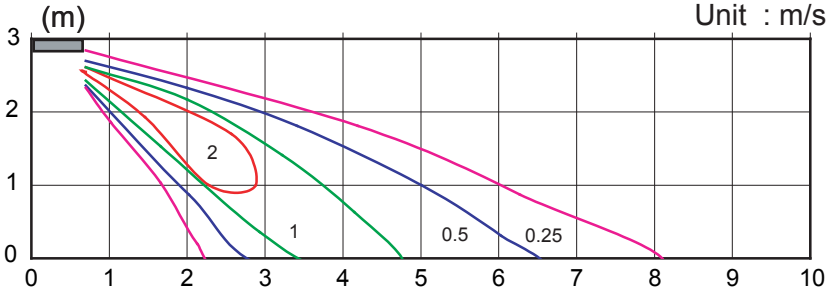
TOP VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center



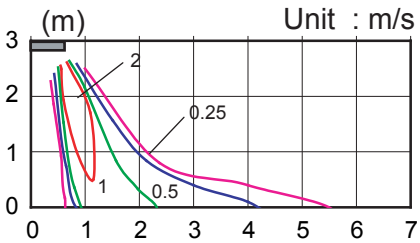
TOP VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Right & Left



SIDE VIEW
VERTICAL FLAP : Upward
HORIZONTAL FLAP : Center



SIDE VIEW
VERTICAL FLAP : Center
HORIZONTAL FLAP : Center



SIDE VIEW
VERTICAL FLAP : Downward
HORIZONTAL FLAP : Center

FLOOR / CEILING TYPE
AB*A18-24L

7-2. AIR FLOW

■MODEL : AB*A18L, AB*F18L

●COOLING

FAN SPEED	NUMBER OF ROTATIONS (r.p.m)	AIR FLOW	
HIGH	1040	m^3/h	780
		l/s	217
		CFM	459
MED	950	m^3/h	700
		l/s	194
		CFM	412
LOW	800	m^3/h	560
		l/s	156
		CFM	330
QUIET	740	m^3/h	500
		l/s	139
		CFM	294

●HEATING

FAN SPEED	NUMBER OF ROTATIONS (r.p.m)	AIR FLOW	
HIGH	1040	m^3/h	780
		l/s	217
		CFM	459
MED	950	m^3/h	700
		l/s	194
		CFM	412
LOW	800	m^3/h	560
		l/s	156
		CFM	330
QUIET	740	m^3/h	500
		l/s	139
		CFM	294

FLOOR / CEILING TYPE
AB*A18-24L

■MODEL : AB*A24L, AB*F24L

●COOLING

FAN SPEED	NUMBER OF ROTATIONS (r.p.m)	AIR FLOW	
HIGH	1330	m^3/h	980
		l/s	272
		CFM	577
MED	1150	m^3/h	820
		l/s	228
		CFM	483
LOW	1000	m^3/h	680
		l/s	189
		CFM	400
QUIET	780	m^3/h	540
		l/s	150
		CFM	318

●HEATING

FAN SPEED	NUMBER OF ROTATIONS (r.p.m)	AIR FLOW	
HIGH	1300	m^3/h	980
		l/s	272
		CFM	577
MED	1150	m^3/h	820
		l/s	228
		CFM	483
LOW	1000	m^3/h	680
		l/s	189
		CFM	400
QUIET	780	m^3/h	540
		l/s	150
		CFM	318

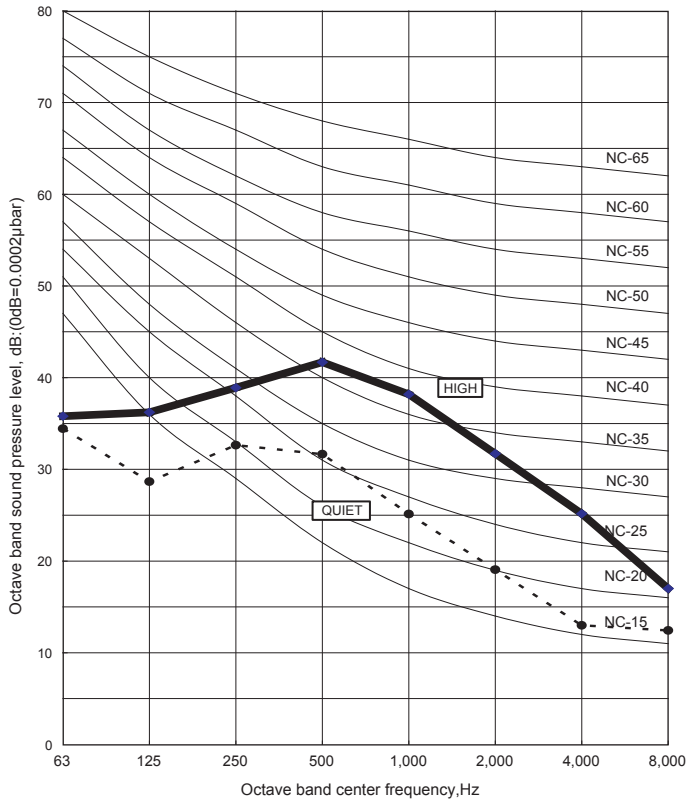
FLOOR / CEILING TYPE
AB∗A18-24L

8. OPERATION NOISE

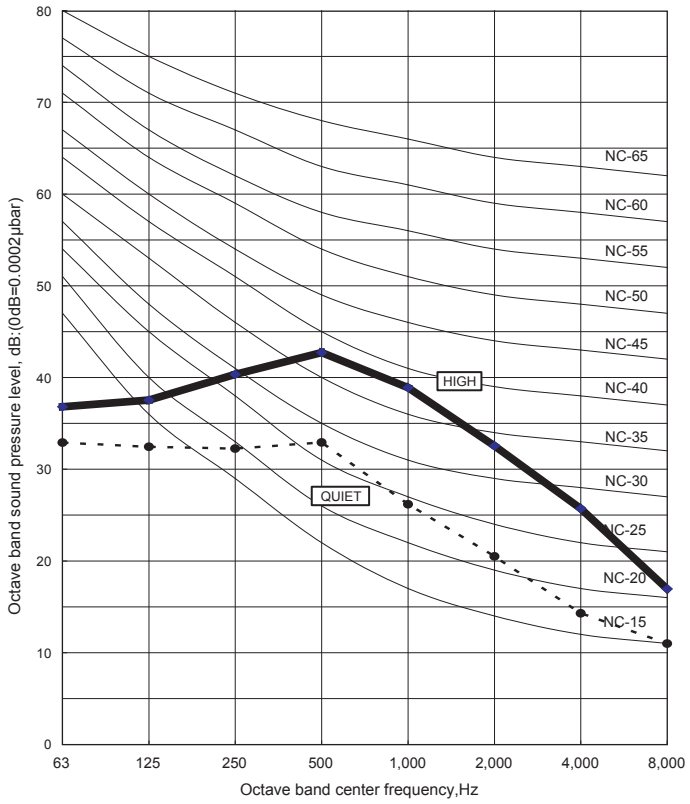
8-1. NOISE LEVEL CURVE

■MODEL : AB∗A18L, AB∗F18L

●COOLING

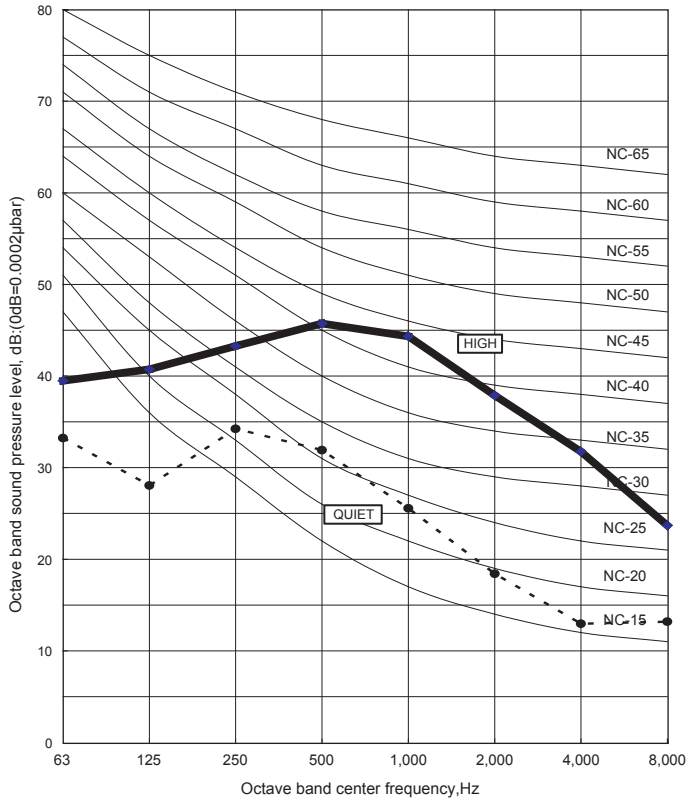


●HEATING

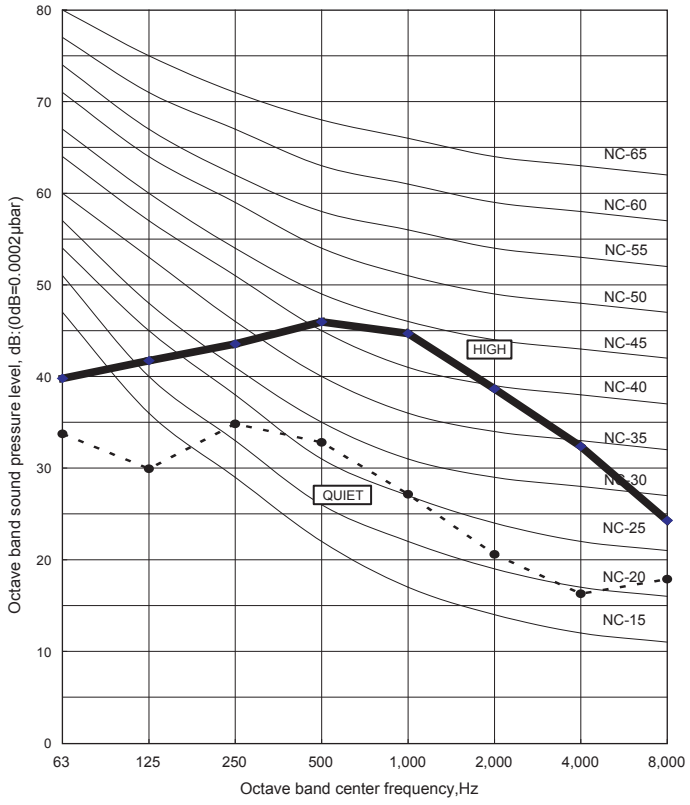


■MODEL : AB∗A24L, AB∗F24L

●COOLING



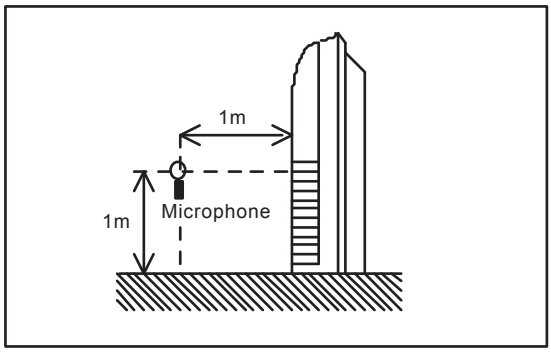
●HEATING

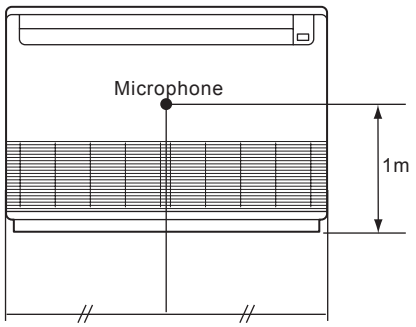


FLOOR / CEILING TYPE
AB※A18-24L

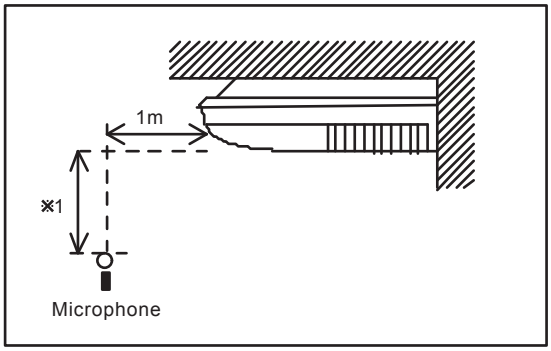
8-2. SOUND LEVEL CHECK POINT

●FLOOR CONSOLE

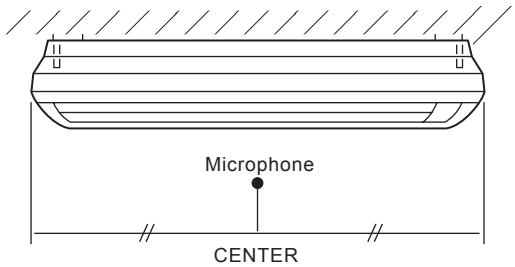




●UNDER CEILING



※1 0.8m (For AB12 ～AB24)
1m (For AB30 ～AB54)



9. ELECTRIC CHARACTERISTICS

Model Name			AB ∗ A18L AB ∗ F18L	AB ∗ A24L AB ∗ F24L
Power Supply	Voltage	V	230	
	Frequency	Hz	50	
Max Operating Current		A	0.5	0.7
*1)Wiring Spec.	Circuit breaker	A	0.6	0.9
	Connection Cable	mm^2	1.5 - 2.5	1.5 - 2.5
	Limited wiring length	m	26	31

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

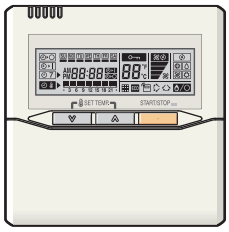
FLOOR / CEILING TYPE
AB∗A18-24L

10. SAFETY DEVICE

	Protection form	Model	
		AB∗A18L AB∗F18L	AB∗A24L AB∗F24L
Circuit protection	Current fuse (PCB)	3.15A 250V	
Fan motor protection	Thermal protection program	140±20°C OFF 110±20°C ON	

FLOOR / CEILING TYPE
AB∗A18-24L

11. OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Wired remote controller	UTB-✻UD	Unit control is performed by **wired remote controller**

Refrigerant
R410A

OUTDOOR UNIT

2. SINGLE TYPE :

AO＊A18LACL

AO＊A18LALL

AO＊A24LACL

AO＊A24LALL

D2D_AO004E/04
2008.04.08

1. SPECIFICATIONS

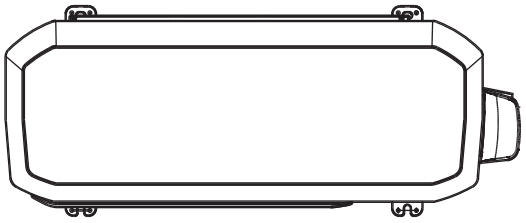
Type				INVERTER HEATPUMP	
Model name				AO ∗ A18LACL AO ∗ A18LALL	AO ∗ A24LACL AO ∗ A24LALL
Power source				230V～ 50Hz	
Available voltage range				198-264V～ 50Hz	
Starting current			A	7.7	10.0
Fan	Airflow rate	Cooling	m^3/h	2000	2470
		Heating		1910	2470
	Type × Q'ty			Propeller × 1	
	Motor output		W	54	65
Sound pressure level		Cooling	dB(A)	50	52
		Heating		50	53
Heat exchanger type		Dimensions (H × W × D)	mm	546 × 876 × 18.2 546 × 842 × 18.2	546 × 866 × 18.2 546 × 832 × 18.2 504 × 589 × 18.2
		Fin pitch		1.30	1.40
		Rows x Stages		2 × 26	2 × 26 1 × 24
		Pipe type		Copper	
		Fin type		Aluminium	
Compressor	Type × Q'ty			Twin Rotary × 1	
	Motor output		W	1100	
Refrigerant		Type		R410A	
		Charge	g	1250	1700
Refrigerant oil		Type		POE	
Enclosure		Material		Steel sheet	
		Colour		Beige (10YR7.5/1.0NN)	
Dimensions (H × W × D)	Net		mm	578 × 790 × 300	578 × 790 × 315
	Gross			648 × 910 × 380	
Weight	Net		kg(lb.)	40 (88)	44 (97)
	Gross			44 (97)	48 (106)
Connection pipe	Size	Liquid	mm	Φ 6.35 (Φ 1/4 in.)	
		Gas		Φ 12.70 (Φ 1/2 in.)	Φ 15.88(Φ 5/8 in.)
	Method			Flare	
	Max. length		m	25(chargeless : 15)	30(chargeless : 15)
	Max. height difference			15	20
Operation range		Cooling	°C	-10 to 46	
		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)

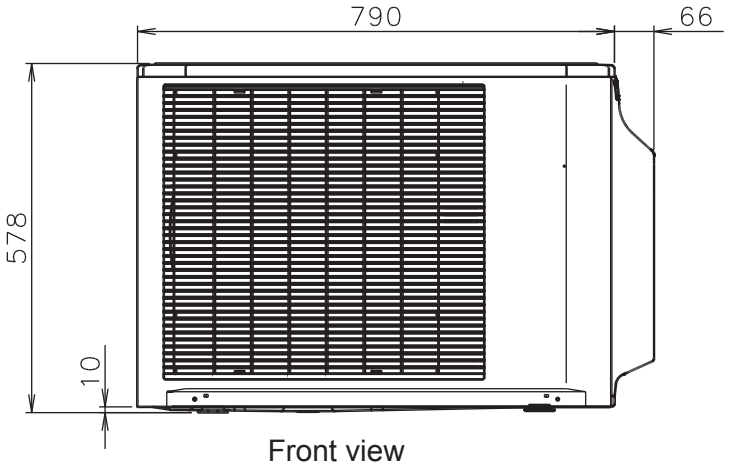
2. DIMENSIONS

■MODELS : AO∗A18L, AO∗A24L

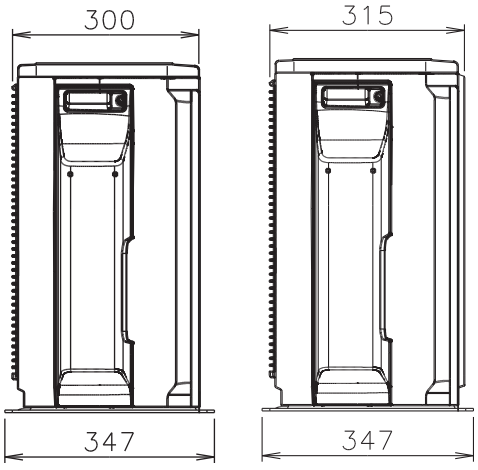
(Unit : mm)



Top view

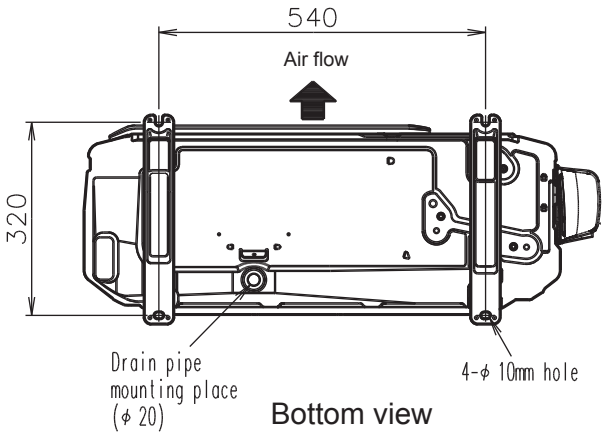


Front view

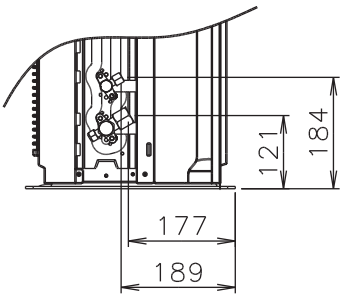


AO∗A18L AO∗A24L

Side view

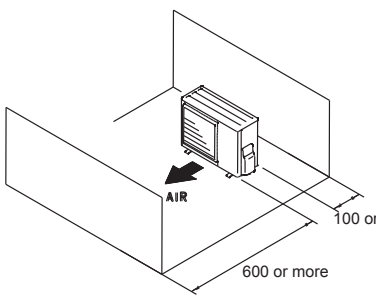


Bottom view

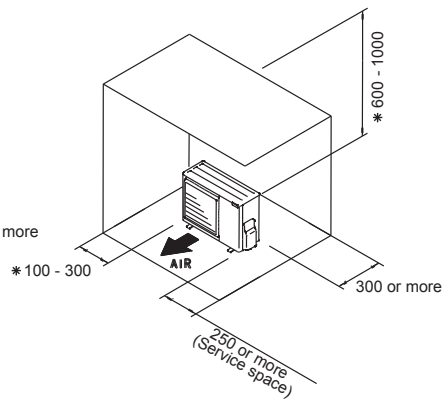


■MOUNTING POSITION

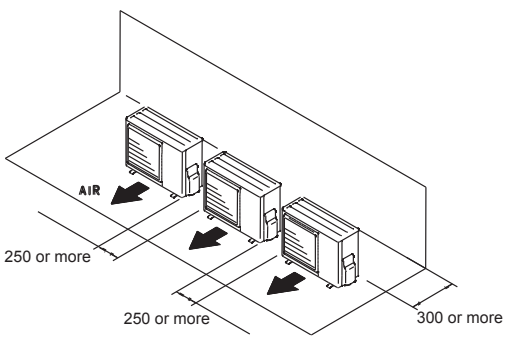
When there are obstacles at the back or front sides.



When there are obstacles at the back, side(s), and top.

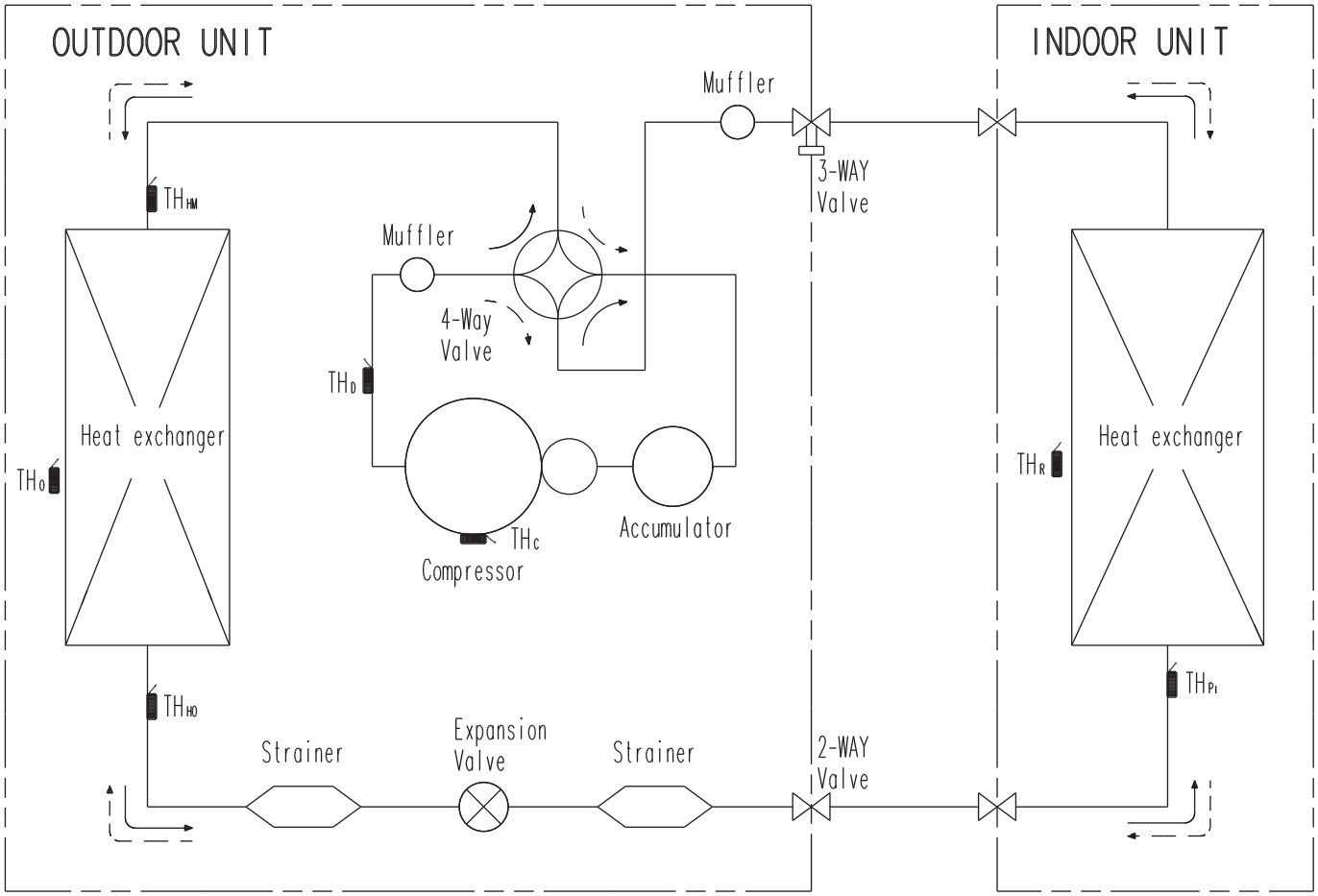


When there are obstacles at the back, side with the installation of more than one unit.



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

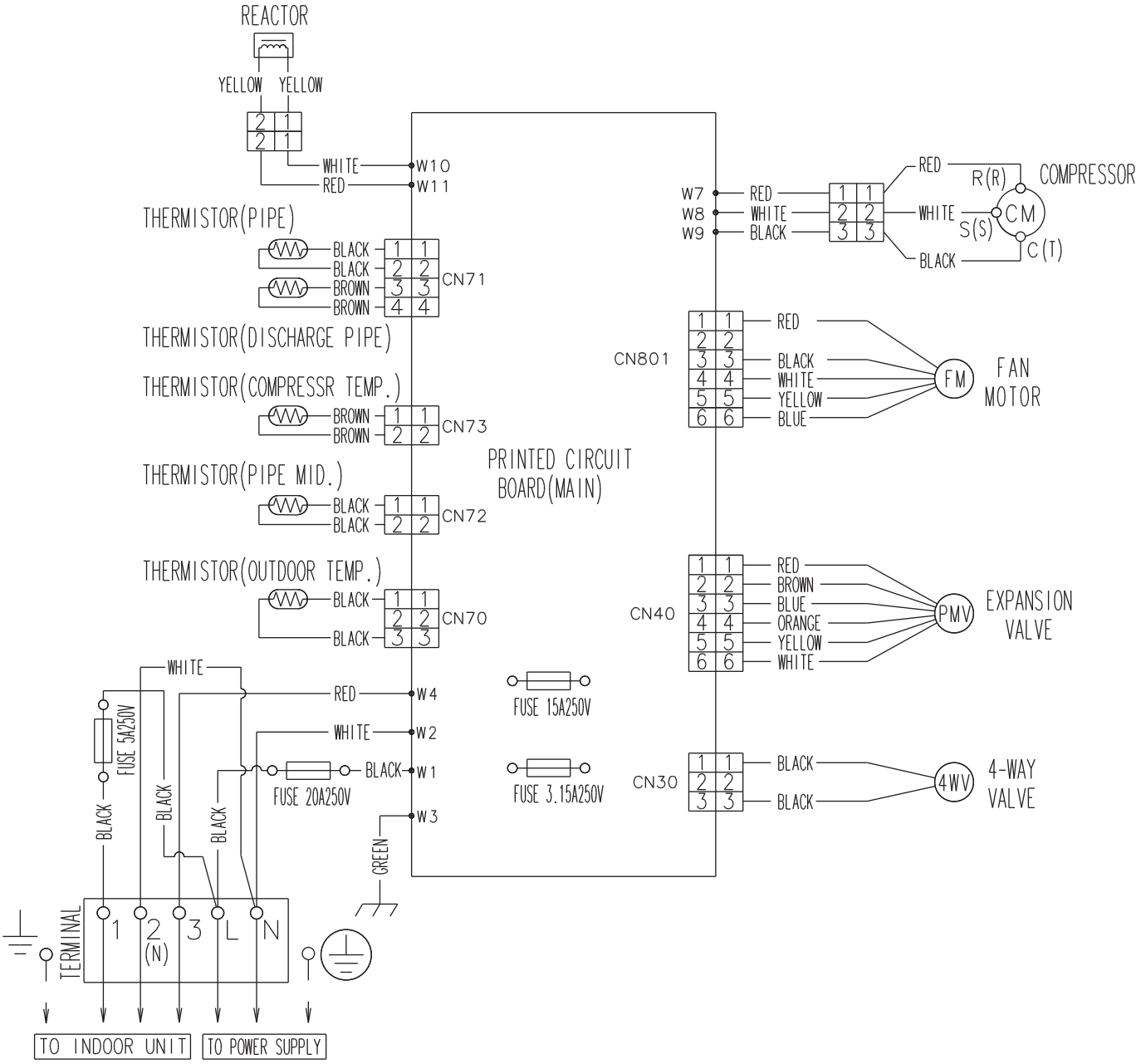
3. REFRIGERANT CIRCUIT



OUTDOOR UNIT
AO*A18-24L

4. WIRING DIAGRAMS

■MODELS : AO*A18L, AO*A24L



OUTDOOR UNIT
AO*A18-24L

OUTDOOR UNIT
AO∗A18-24L

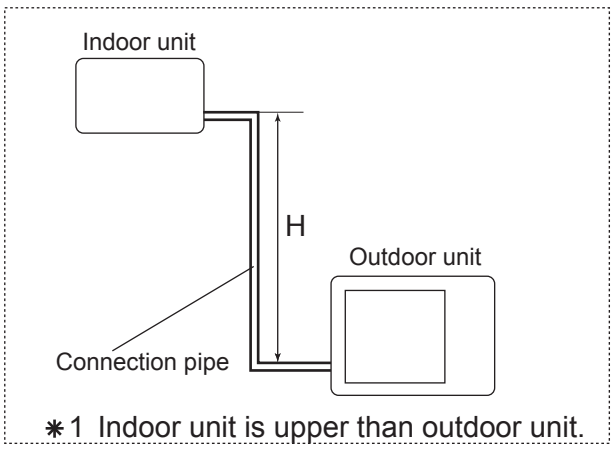
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL : AO∗A18L

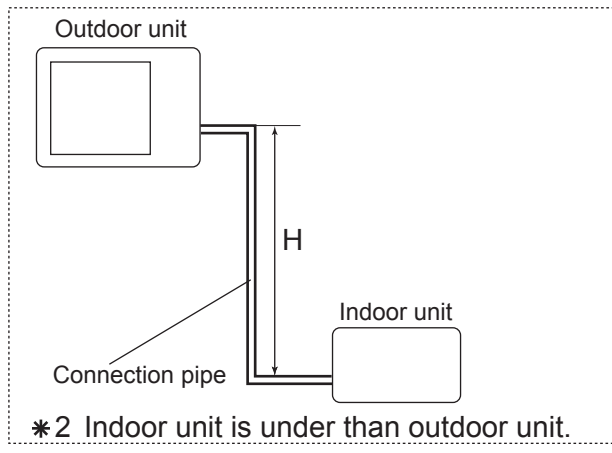
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	0.999	0.984	0.982	0.978
		-7.5	-	1.000	0.999	0.984	0.982	0.978
		-10	-	-	0.999	0.984	0.982	0.978
		-15	-	-	-	0.984	0.982	0.978

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.920	0.894	0.867
		10	-	-	0.982	0.920	0.894	0.867
		7.5	-	1.000	0.982	0.920	0.894	0.867
		5	0.993	1.000	0.982	0.920	0.894	0.867
		0	0.993	1.000	0.982	0.920	0.894	0.867
	∗2 Indoor unit is under than outdoor unit	-5	0.988	0.995	0.977	0.916	0.889	0.862
		-7.5	-	0.993	0.975	0.913	0.887	0.860
		-10	-	-	0.972	0.911	0.885	0.858
		-15	-	-	-	0.902	0.876	0.849

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

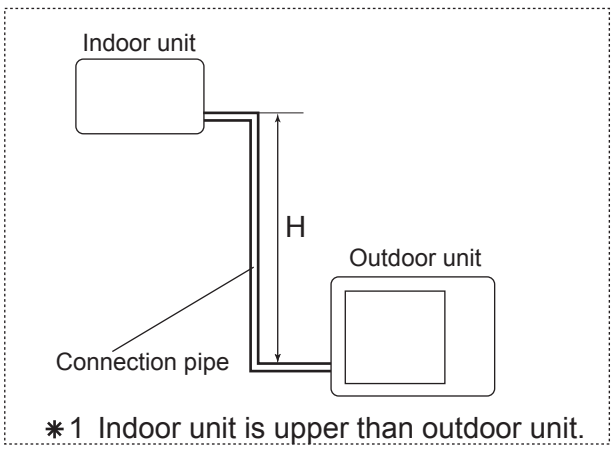
OUTDOOR UNIT
AO∗A18-24L

■MODEL : AO∗A24L

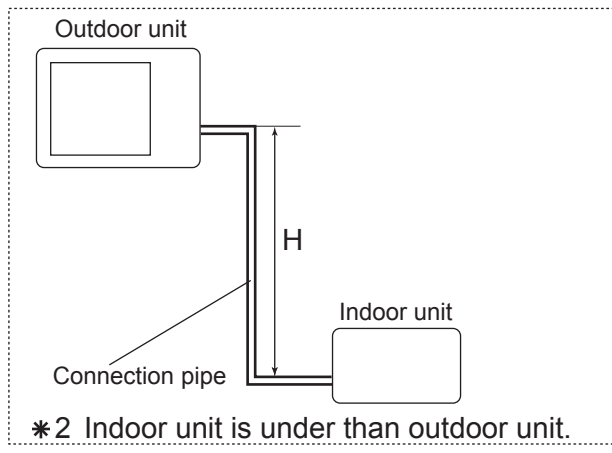
COOLING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.963	0.961	0.959
		10	-	-	0.984	0.981	0.979	0.977	0.975
		7.5	-	0.988	0.988	0.985	0.983	0.981	0.979
		5	0.992	0.992	0.992	0.989	0.987	0.985	0.983
		0	1.000	1.000	1.000	0.997	0.995	0.993	0.991
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	1.000	0.997	0.995	0.993	0.991
		-7.5	-	1.000	1.000	0.997	0.995	0.993	0.991
		-10	-	-	1.000	0.997	0.995	0.993	0.991
		-20	-	-	-	-	0.995	0.993	0.991

HEATING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.927	0.893	0.863
		10	-	-	0.992	0.952	0.927	0.893	0.863
		7.5	-	1.000	0.992	0.952	0.927	0.893	0.863
		5	1.001	1.000	0.992	0.952	0.927	0.893	0.863
		0	1.001	1.000	0.992	0.952	0.927	0.893	0.863
	∗2 Indoor unit is under than outdoor unit	-5	0.996	0.995	0.987	0.947	0.922	0.888	0.859
		-7.5	-	0.993	0.984	0.945	0.920	0.886	0.857
		-10	-	-	0.982	0.943	0.917	0.884	0.855
		-20	-	-	-	-	0.908	0.875	0.846

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

6. ADDITIONAL CHARGE CALCULATION

■MODEL : AO*A18L

Refrigerant type		R410A
Refrigerant amount	g	1250

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

■MODEL : AO*A24L

Refrigerant type		R410A
Refrigerant amount	g	1700

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	30	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	+300	

OUTDOOR UNIT
AO*A18-24L

7. AIR FLOW

■MODEL : AO*A18L

●COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
860	m^3/h	2000
	l/s	556
	CFM	1177

●HEATING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
820	m^3/h	1910
	l/s	531
	CFM	1124

■MODEL : AO*A24L

●COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
1050	m^3/h	2470
	l/s	686
	CFM	1454

●HEATING

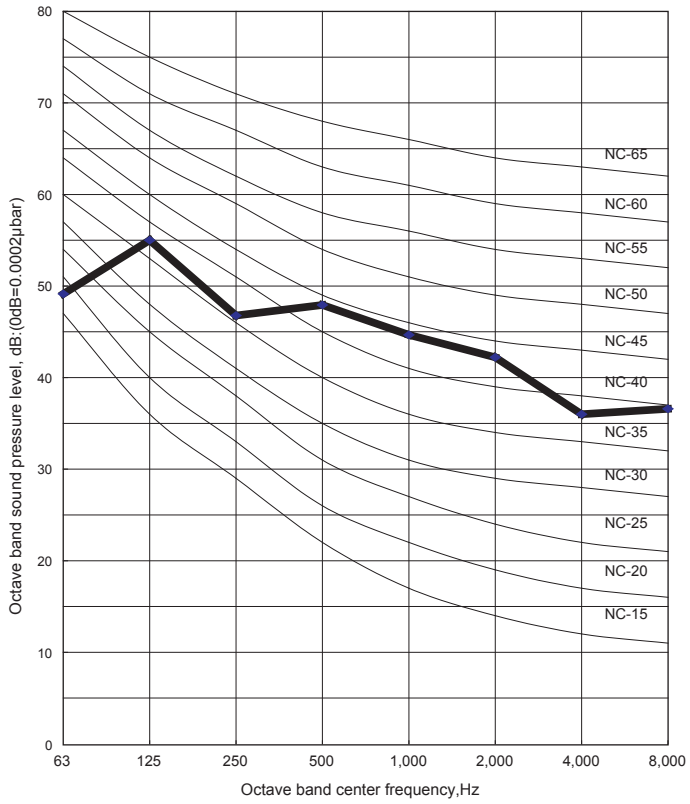
NUMBER OF ROTATIONS (r.p.m)	Airflow	
1050	m^3/h	2470
	l/s	686
	CFM	1454

8. OPERATION NOISE

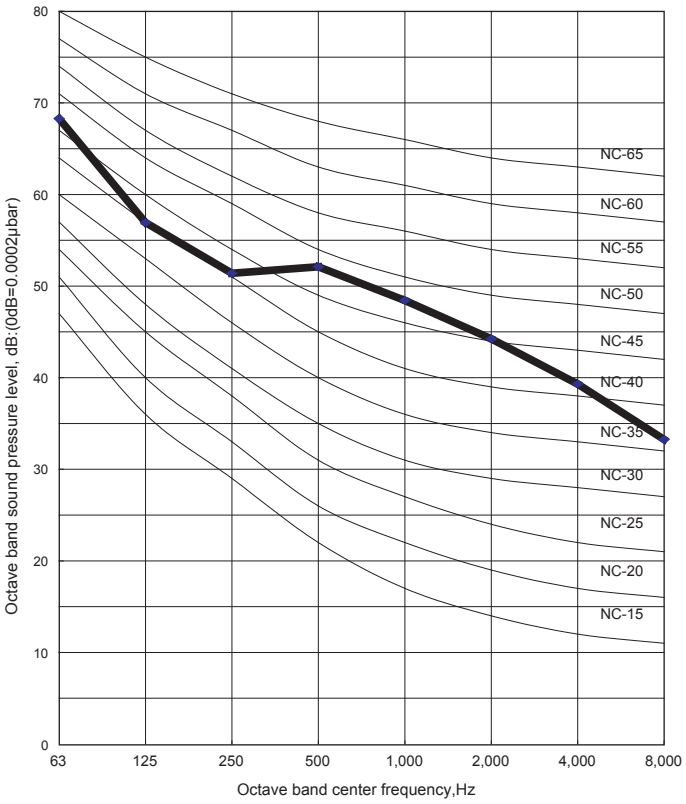
8-1. NOISE LEVEL CURVE

■COOLING

●MODEL : AO∗A18L

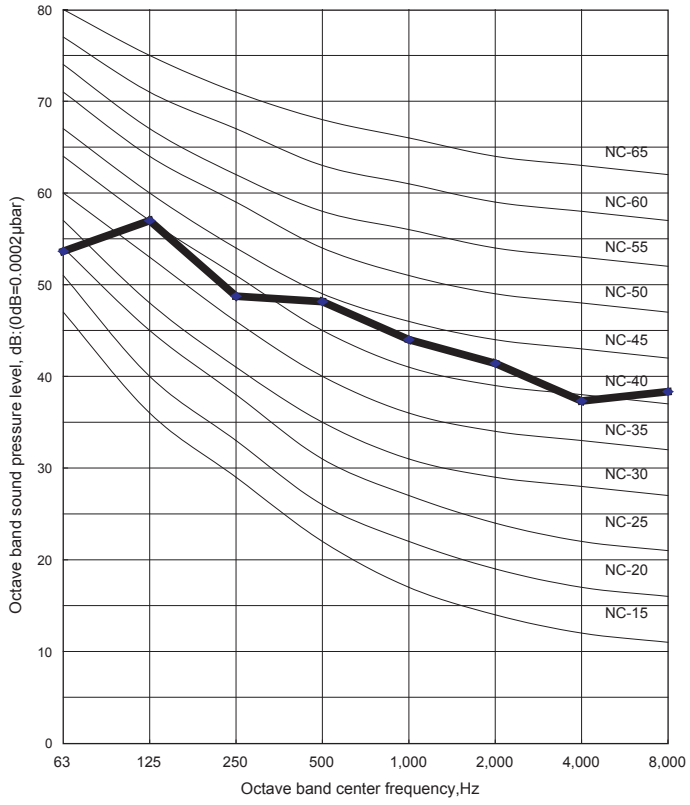


●MODEL : AO∗A24L

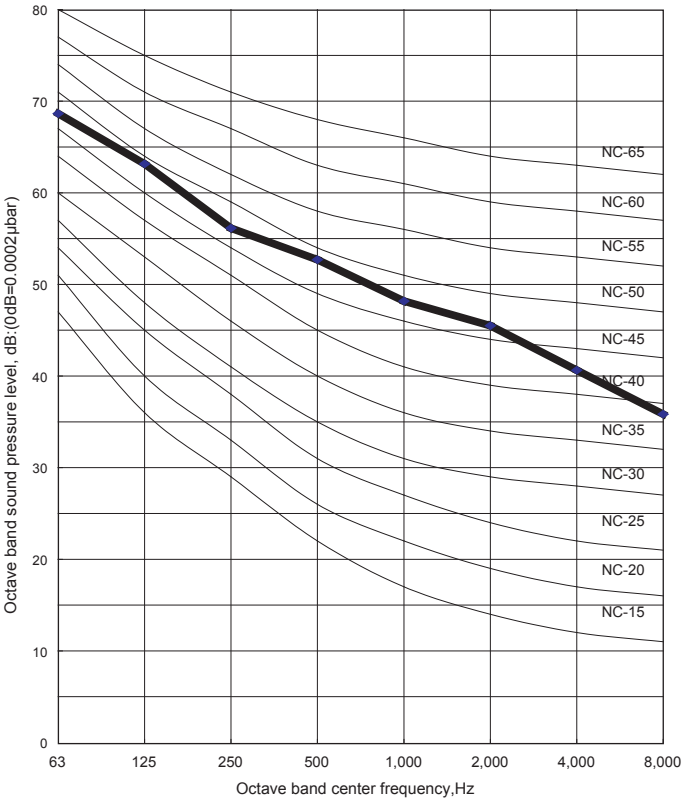


■HEATING

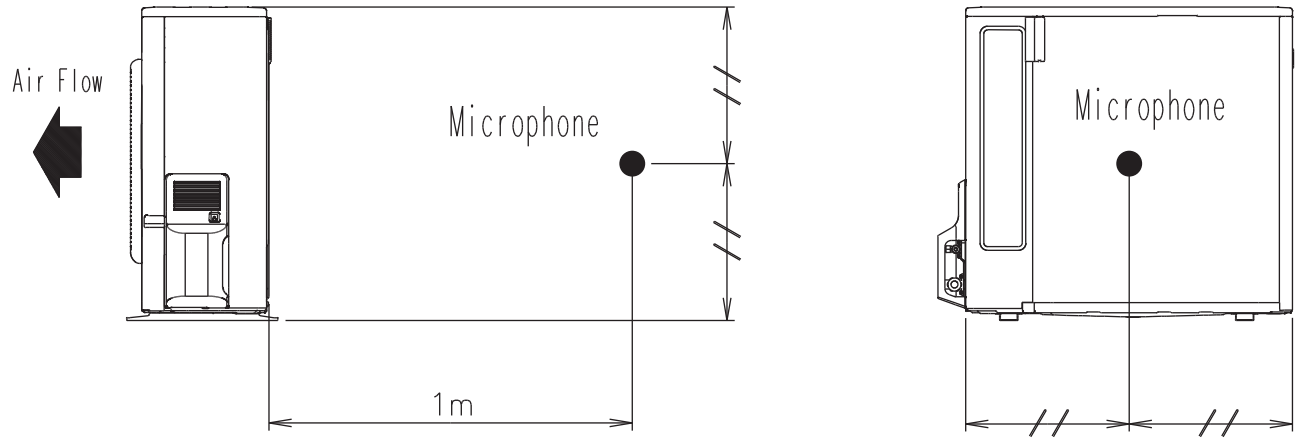
●MODEL : AO∗A18L



●MODEL : AO∗A24L



8-2. SOUND LEVEL CHECK POINT



OUTDOOR UNIT
AO*A18-24L

9. ELECTRIC CHARACTERISTICS

Model Name			AO ∗ A18L	AO ∗ A24L
Power Supply	Voltage	V	230～	
	Frequency	Hz	50	
Max Operating Current		A	15.0	16.2
Starting Current		A	7.7	10.0
*1) Wiring Spec.	Main Fuse (Circuit breaker) Current	A	20	20
	Power Cable	mm^2	3.5 - 4.5	
	*2)Limited wiring length	m	24	22

*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 ∗ A18L	AO ∗ A24L
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V	
		5A 250V	
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V	
		3.15A 250V	
Fan motor protection	Thermal protection program	OFF:100^{+15}_{-10}°C ON:95^{+15}_{-10}°C	OFF:110^{+15}_{-10}°C ON:105^{+15}_{-10}°C
Compressor protection	Thermal protection program (COMPRESSOR TEMP.)	OFF:110°C ON: After 40 minutes	
	Thermal protection program (DISCHARGE TEMP.)	OFF:110°C ON: After 7 minutes	

OUTDOOR UNIT
AO∗A18-24L

Refrigerant
R410A

OUTDOOR UNIT

2. SINGLE TYPE :

AO＊B18LACL

AO＊B18LALL

AO＊B24LACL

AO＊B24LALL

D2D_AO021E/02
2008.04.08

1. SPECIFICATIONS

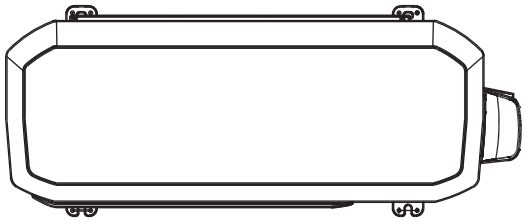
Type				INVERTER HEATPUMP	
Model name				AO*B18LACL AO*B18LALL	AO*B24LACL AO*B24LALL
Power source				230V ～ 50Hz	
Available voltage range				198-264V ～ 50Hz	
Starting current			A	7.7	10.0
Fan	Airflow rate	Cooling	m^3/h	2000	2470
		Heating		1910	2470
	Type × Q'ty			Propeller × 1	
	Motor output		W	54	65
Sound pressure level		Cooling	dB(A)	50	52
		Heating		50	53
Heat exchanger type		Dimensions (H × W × D)	mm	546 × 876 × 18.2 546 × 842 × 18.2	546 × 866 × 18.2 546 × 832 × 18.2 504 × 589 × 18.2
		Fin pitch		1.30	1.40
		Rows x Stages		2 × 26	2 × 26 1 × 24
		Pipe type		Copper	
		Fin type		Aluminium	
Compressor	Type × Q'ty			Twin Rotary × 1	
	Motor output		W	1100	
Refrigerant		Type		R410A	
		Charge	g	1250	1700
Refrigerant oil		Type		POE	
Enclosure		Material		Steel sheet	
		Colour		Beige (10YR7.5/1.0NN)	
Dimensions (H×W×D)	Net		mm	578 × 790 × 300	578 × 790 × 315
	Gross			648 × 910 × 380	
Weight	Net		kg(lb.)	40 (88)	44 (97)
	Gross			44 (97)	48 (106)
Connection pipe	Size	Liquid	mm	Φ 6.35 (Φ 1/4 in.)	
		Gas		Φ 12.70 (Φ 1/2 in.)	Φ 15.88 (Φ 5/8 in.)
	Method			Flare	
	Max. length		m	25(chargeless:15)	30(chargeless:15)
	Max. height difference			15	20
Operation range		Cooling	°C	-10 to 46	
		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)

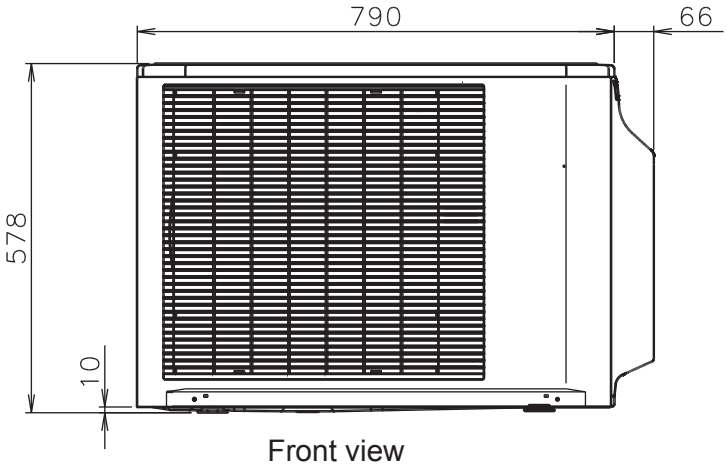
2. DIMENSIONS

■MODEL : AO∗B18L, AO∗B24L

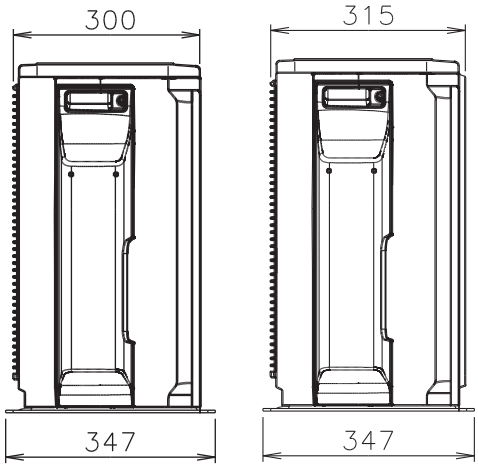
(Unit : mm)



Top view

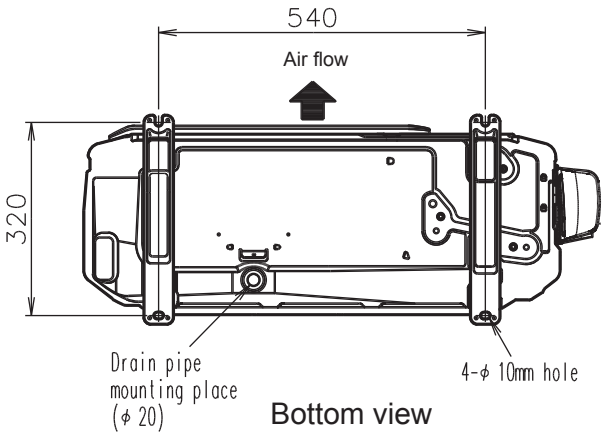


Front view

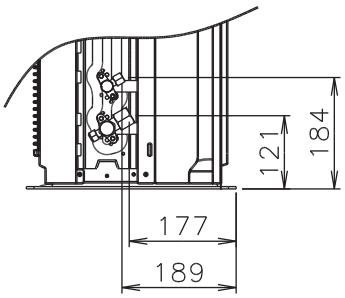


AO∗B18L AO∗B24L

Side view



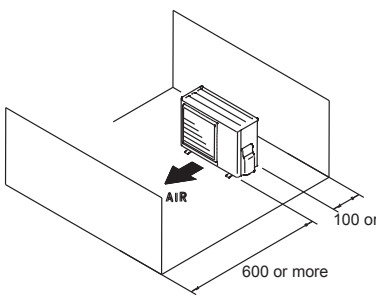
Bottom view



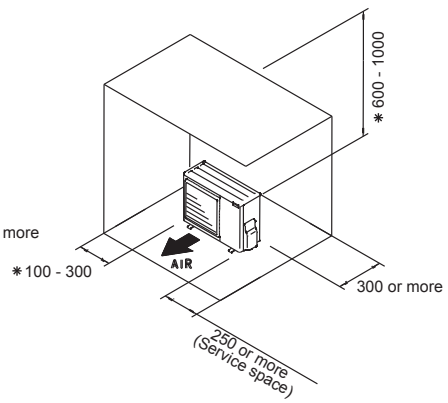
■MOUNTING POSITION

(Unit : mm)

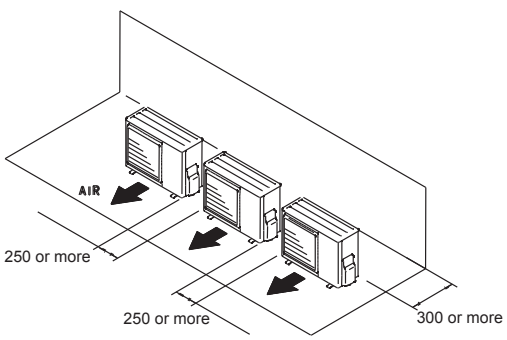
When there are obstacles at the back or front sides.



When there are obstacles at the back, side(s), and top.

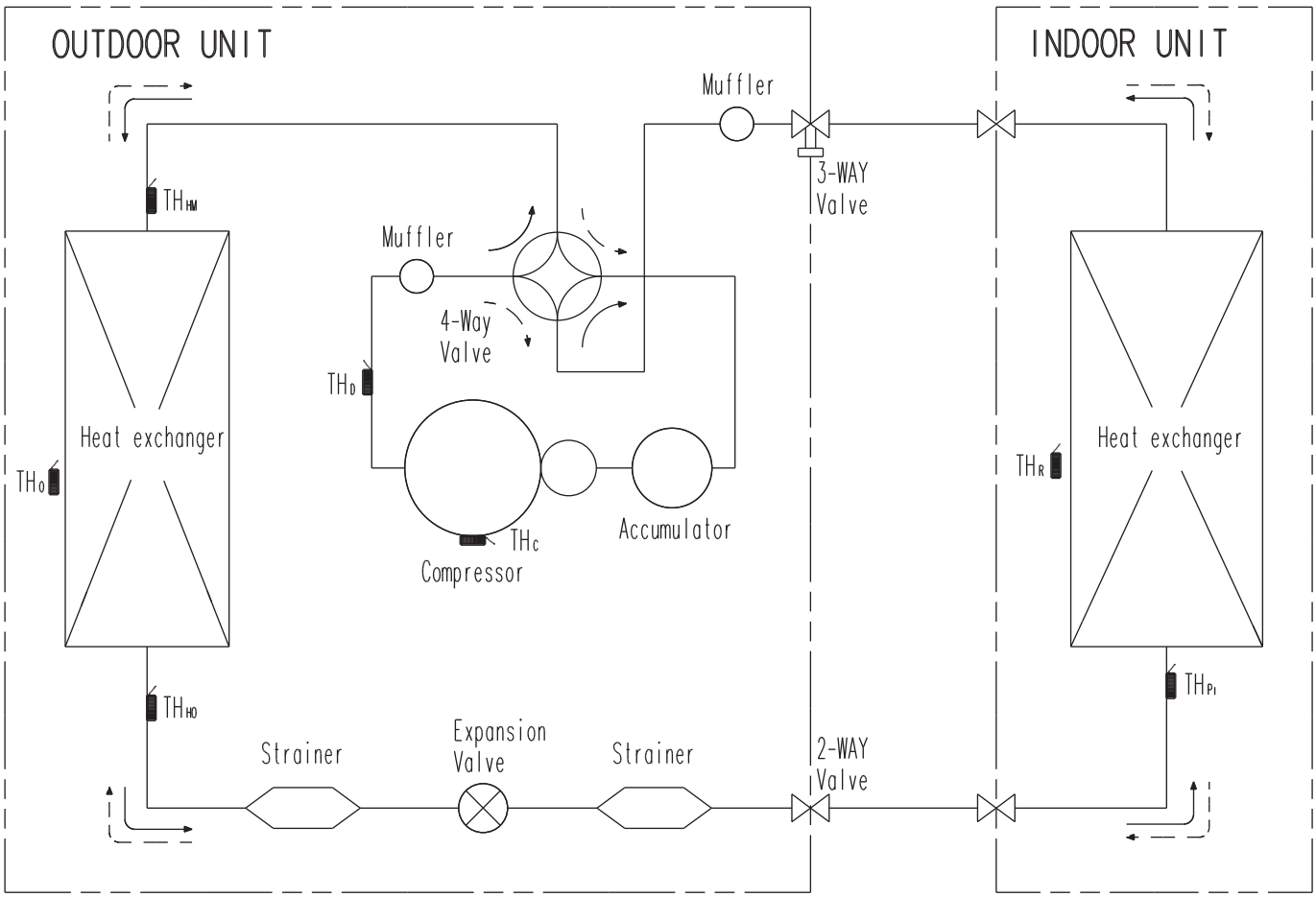


When there are obstacles at the back, side with the installation of more than one unit.



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

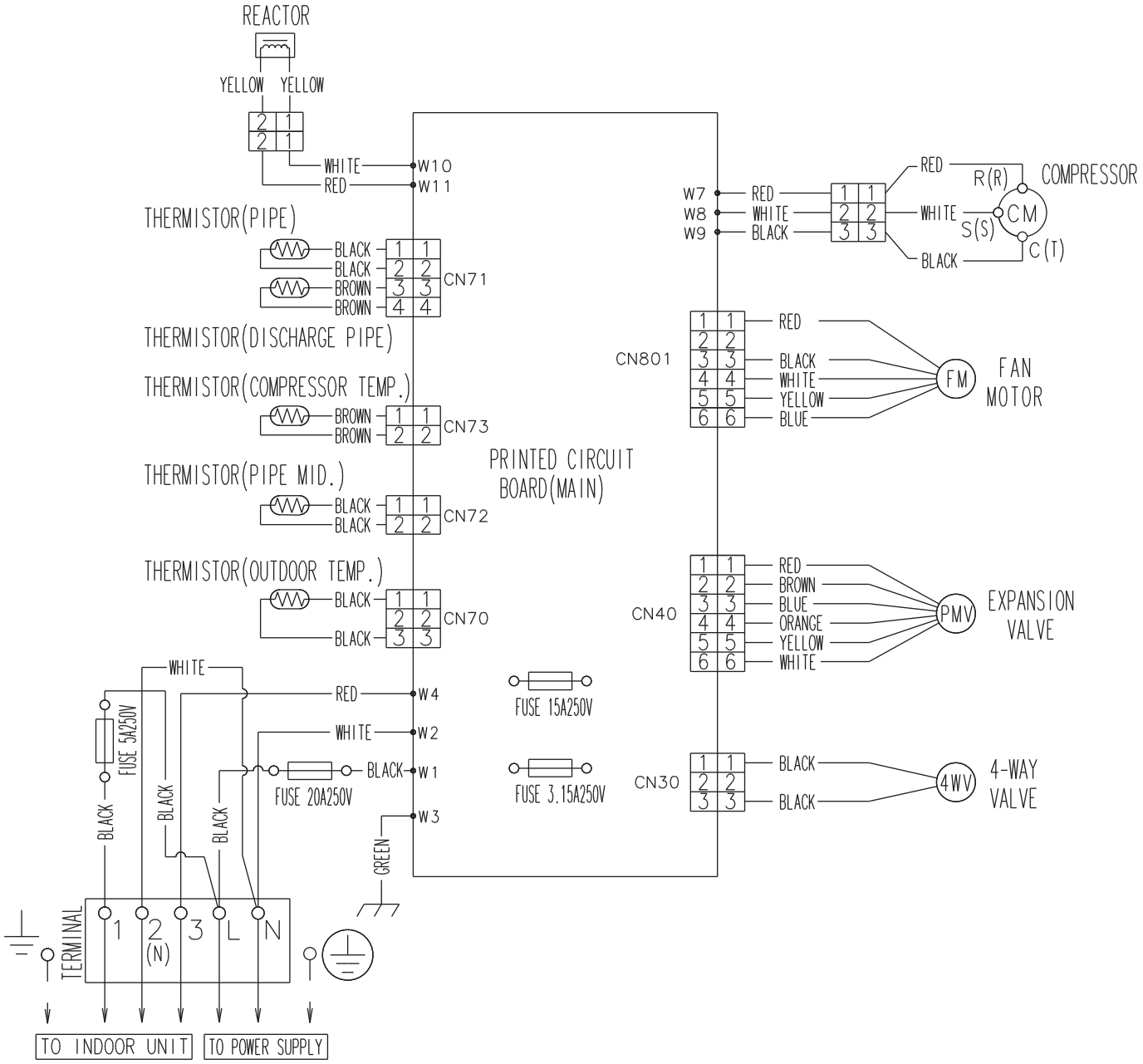
3. REFRIGERANT CIRCUIT



OUTDOOR UNIT
AO*B18-24L

4. WIRING DIAGRAMS

■MODEL : AO*B18L, AO*B24L



OUTDOOR UNIT
AO*B18-24L

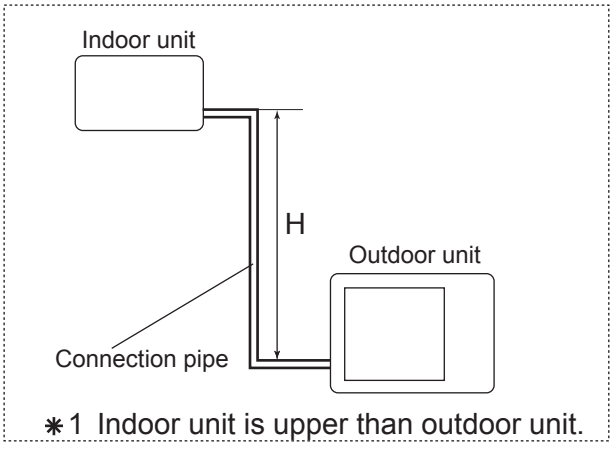
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL : AO∗B18L

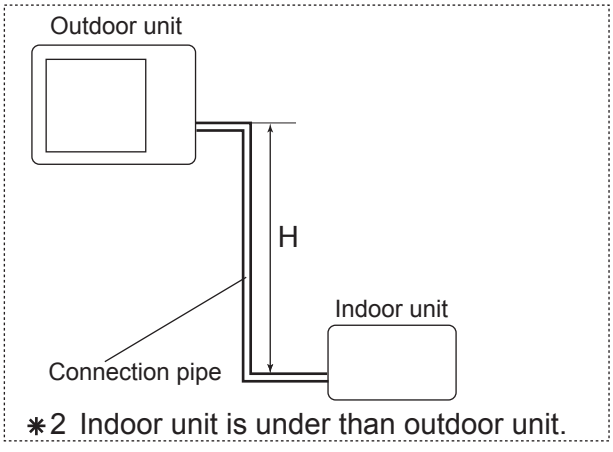
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	0.999	0.984	0.982	0.978
		-7.5	-	1.000	0.999	0.984	0.982	0.978
		-10	-	-	0.999	0.984	0.982	0.978
		-15	-	-	-	0.984	0.982	0.978

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.920	0.894	0.867
		10	-	-	0.982	0.920	0.894	0.867
		7.5	-	1.000	0.982	0.920	0.894	0.867
		5	0.993	1.000	0.982	0.920	0.894	0.867
		0	0.993	1.000	0.982	0.920	0.894	0.867
	∗2 Indoor unit is under than outdoor unit	-5	0.988	0.995	0.977	0.916	0.889	0.862
		-7.5	-	0.993	0.975	0.913	0.887	0.860
		-10	-	-	0.972	0.911	0.885	0.858
		-15	-	-	-	0.902	0.876	0.849

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

OUTDOOR UNIT
AO∗B18-24L

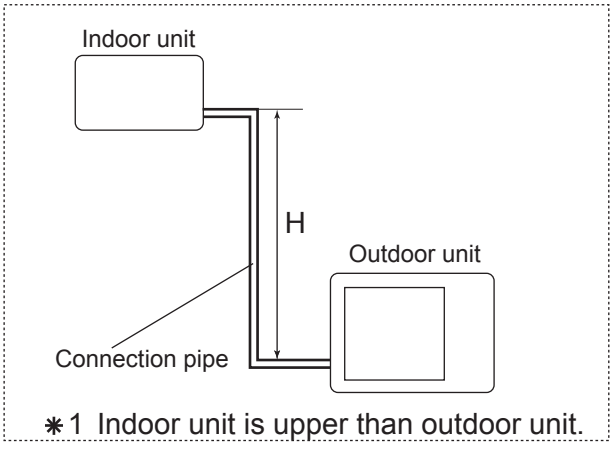
OUTDOOR UNIT
AO∗B18-24L

■MODEL : AO∗B24L

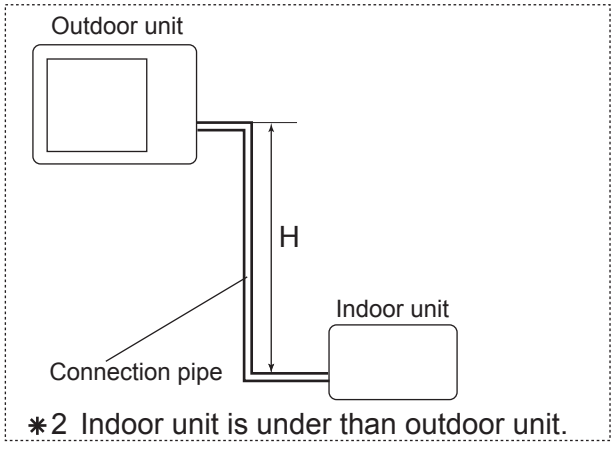
COOLING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.963	0.961	0.959
		10	-	-	0.984	0.981	0.979	0.977	0.975
		7.5	-	0.988	0.988	0.985	0.983	0.981	0.979
		5	0.992	0.992	0.992	0.989	0.987	0.985	0.983
		0	1.000	1.000	1.000	0.997	0.995	0.993	0.991
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	1.000	0.997	0.995	0.993	0.991
		-7.5	-	1.000	1.000	0.997	0.995	0.993	0.991
		-10	-	-	1.000	0.997	0.995	0.993	0.991
		-20	-	-	-	-	0.995	0.993	0.991

HEATING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.927	0.893	0.863
		10	-	-	0.992	0.952	0.927	0.893	0.863
		7.5	-	1.000	0.992	0.952	0.927	0.893	0.863
		5	1.001	1.000	0.992	0.952	0.927	0.893	0.863
		0	1.001	1.000	0.992	0.952	0.927	0.893	0.863
	∗2 Indoor unit is under than outdoor unit	-5	0.996	0.995	0.987	0.947	0.922	0.888	0.859
		-7.5	-	0.993	0.984	0.945	0.920	0.886	0.857
		-10	-	-	0.982	0.943	0.917	0.884	0.855
		-20	-	-	-	-	0.908	0.875	0.846

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

6. ADDITIONAL CHARGE CALCULATION

■MODEL : AO∗B18L

Refrigerant type		R410A
Refrigerant amount	g	1250

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

■MODEL : AO∗B24L

Refrigerant type		R410A
Refrigerant amount	g	1700

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	30	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	+300	

OUTDOOR UNIT
AO∗B18-24L

OUTDOOR UNIT
AO∗B18-24L

7. AIR FLOW

■MODEL : AO∗B18L

●COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
860	m^3/h	2000
	l/s	556
	CFM	1177

●HEATING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
820	m^3/h	1910
	l/s	531
	CFM	1124

■MODEL : AO∗B24L

●COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
1050	m^3/h	2470
	l/s	686
	CFM	1454

●HEATING

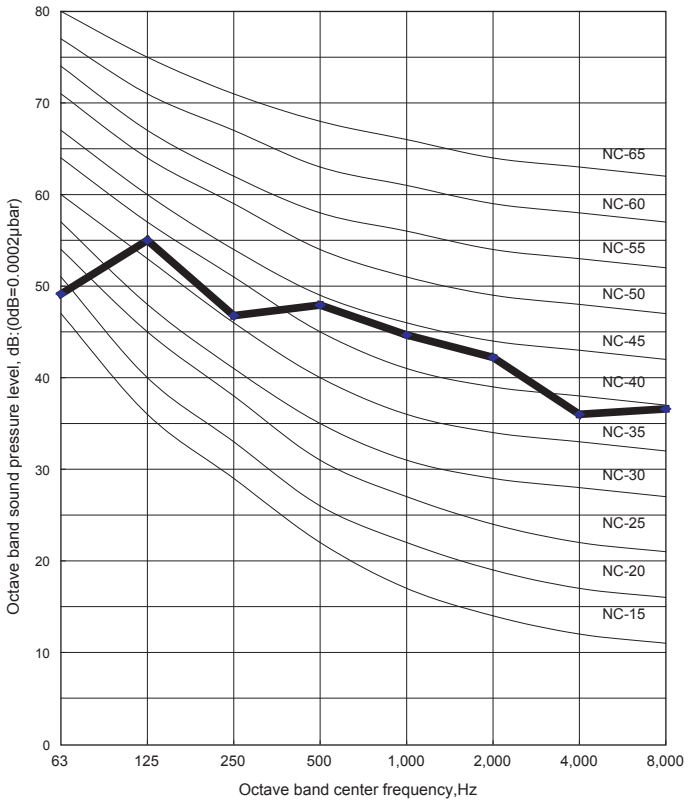
NUMBER OF ROTATIONS (r.p.m)	Airflow	
1050	m^3/h	2470
	l/s	686
	CFM	1454

8. OPERATION NOISE

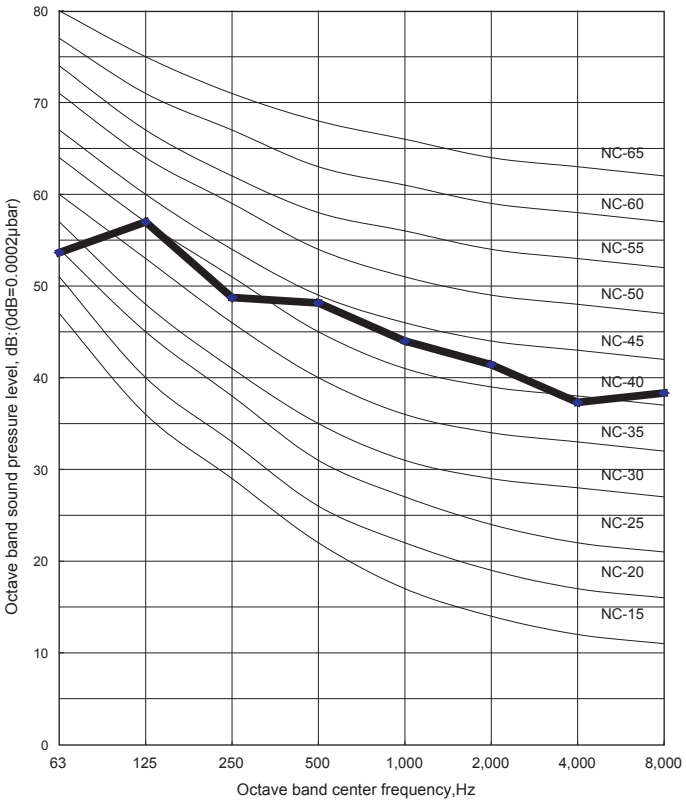
8-1. NOISE LEVEL CURVE

■MODEL : AO∗B18L

●COOLING

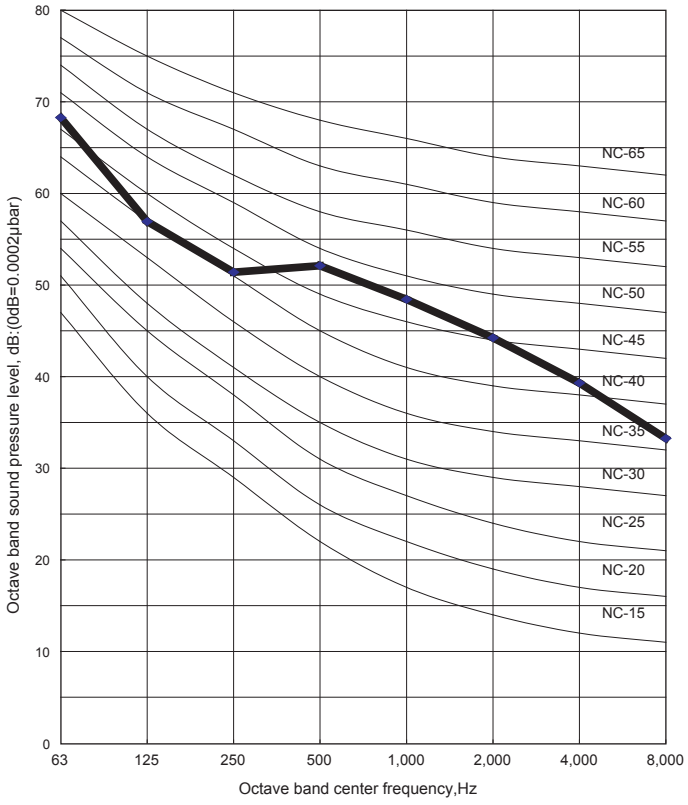


●HEATING

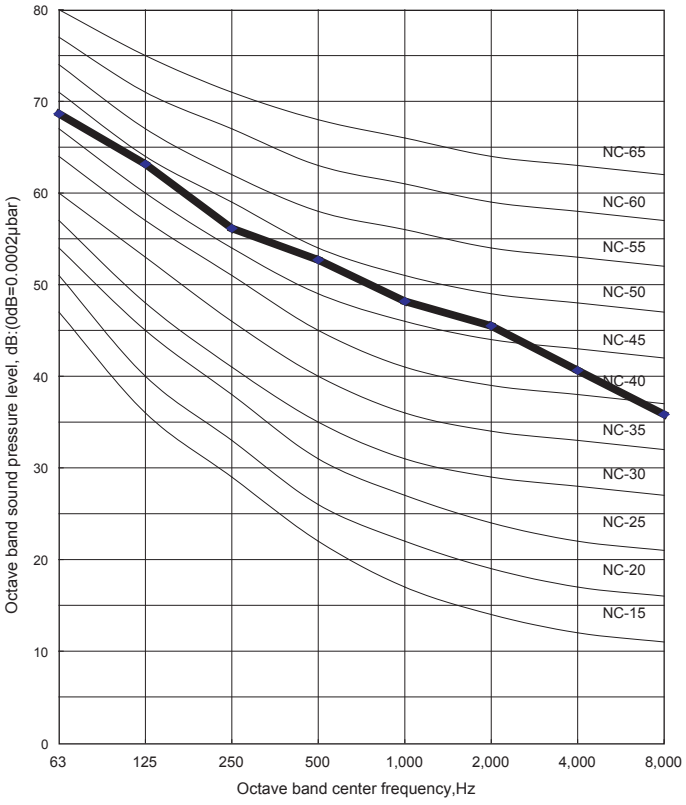


■MODEL : AO∗B24L

●COOLING

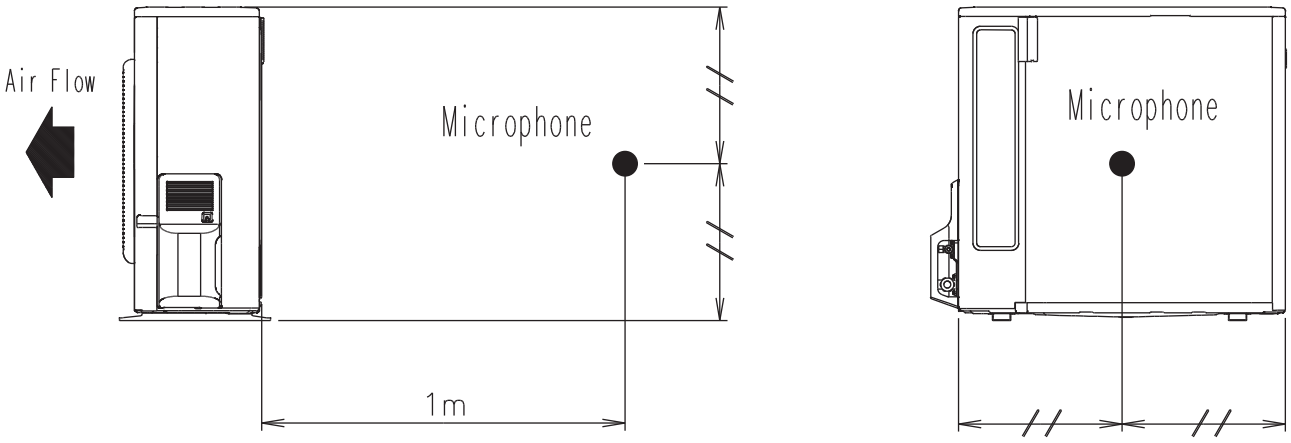


●HEATING



OUTDOOR UNIT
AO∗B18-24L

8-2. SOUND LEVEL CHECK POINT



OUTDOOR UNIT
AO*B18-24L

9. ELECTRIC CHARACTERISTICS

OUTDOOR UNIT
AO＊B18-24L

Model name			AO＊B18L	AO＊B24L
Power supply	Voltage	V	230 ～	
	Frequency	Hz	50	
Max. operating current		A	15.0	16.2
Starting current		A	7.7	10.0
*1) Wiring spec.	Main fuse (Circuit breaker) current	A	20	20
	Power cable	mm^2	4.0	
	*2)Limited wiring length	m	24	22

*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∗B18L	AO∗B24L
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V	
		5A 250V	
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V	
		3.15A 250V	
Fan motor protection	Thermal protection program	OFF:100^{+15}_{-10}°C ON:95^{+15}_{-10}°C	OFF:110^{+15}_{-10}°C ON:105^{+15}_{-10}°C
Compressor protection	Thermal protection program (COMPRESSOR TEMP.)	OFF:110°C ON: After 40 minutes	
	Thermal protection program (DISCHARGE TEMP.)	OFF:110°C ON: After 7 minutes	

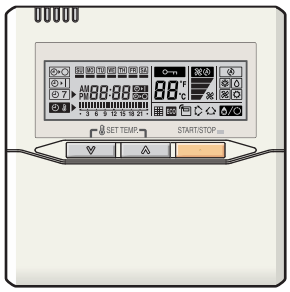
OUTDOOR UNIT
AO∗B18-24L

REMOTE CONTROLLER

3. WIRED REMOTE CONTROLLER :
UTB - *UD

REMOTE CONTROLLER
UTB-*UD

■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

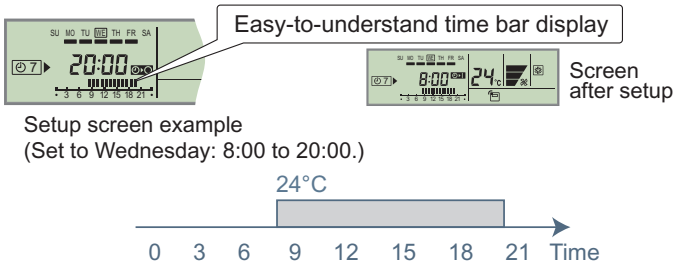
Three functions are combined in one unit.

Wired remote controller + Weekly timer + Setback timer

●Built-in timers

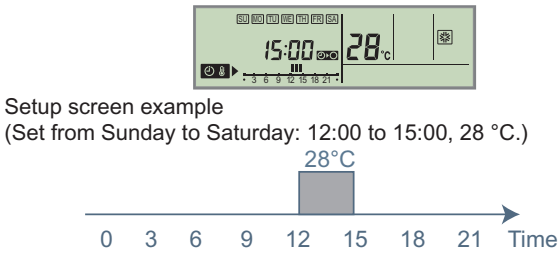
Weekly timer

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



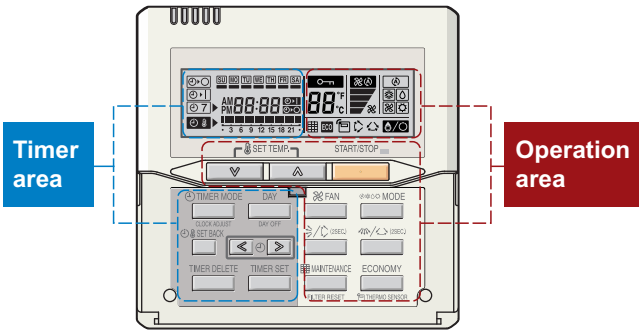
Setback timer

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



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

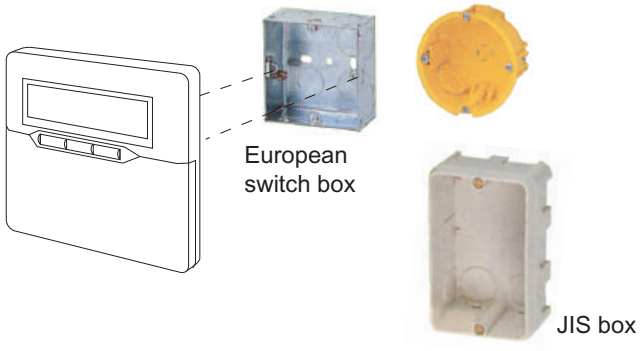
●Easy-to-understand operation



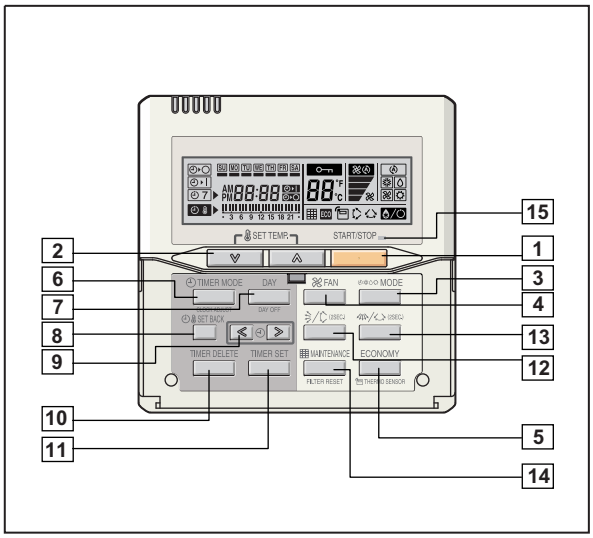
[Variable timer control]
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

●Simple installation

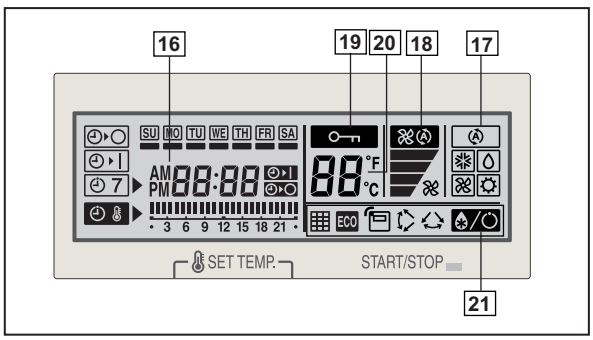
Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.



■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 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
Push for two seconds to change the swing mode.

14 Filter button

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

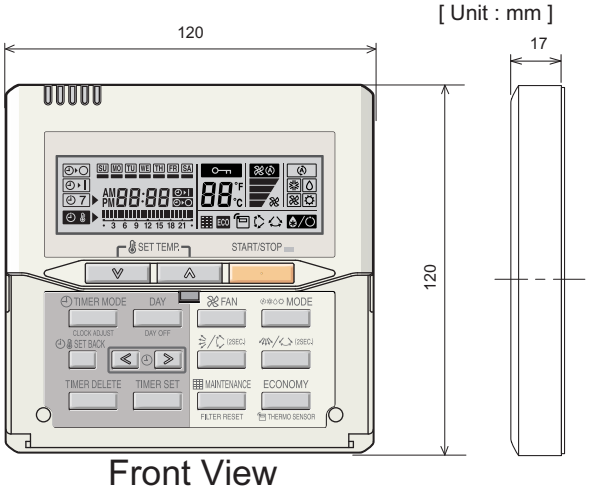
20 Temperature display

21 Function display

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

■DIMENSION

[Unit : mm]



Front View

■SPECIFICATION

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

REMOTE CONTROLLER
UTB-∗UD