

## **INDOOR UNIT**

### **1. FLOOR / CEILING TYPE :**

**AB \* A18LAT**

**AB \* F18LAT**

**AB \* F18LBT**

**AB \* A24LAT**

**AB \* F24LAT**

**AB \* F24LBT**

# 1. FEATURE

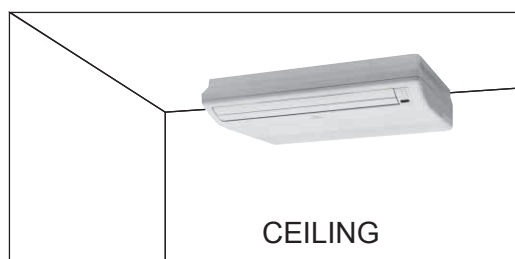
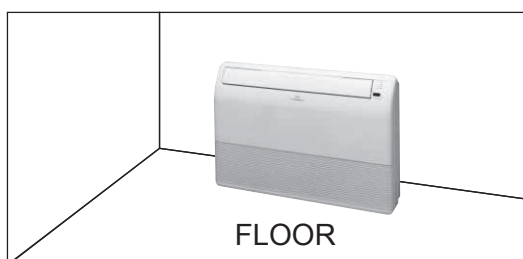
## MODEL :

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

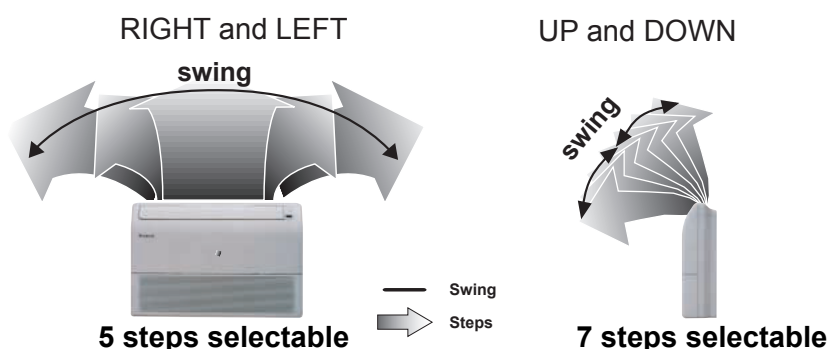
- **Energy saving rank A** (AO\*A18LACL, AO\*A18LALL, AO\*A24LACL, AO\*A24LALL connection model)  
European energy ranking rank A achieved by all DCization and optimization of the refrigerant cycle
- **Quiet operation**  
Air flow mode can be set in 4 steps and more detailed air flow setting is possible
- **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.



## ■ 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".

## 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

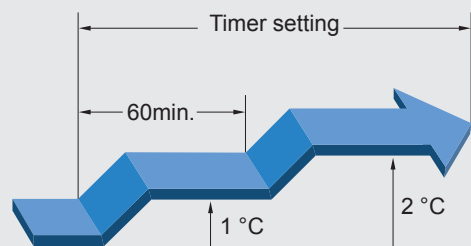
The program timer operates the ON and OFF timer once within a 24 hour period.

#### ● 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.

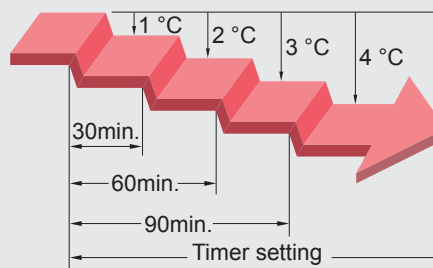
##### Cooling operation/dry operation

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.

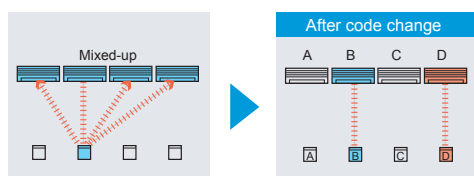


##### Heating operation

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.

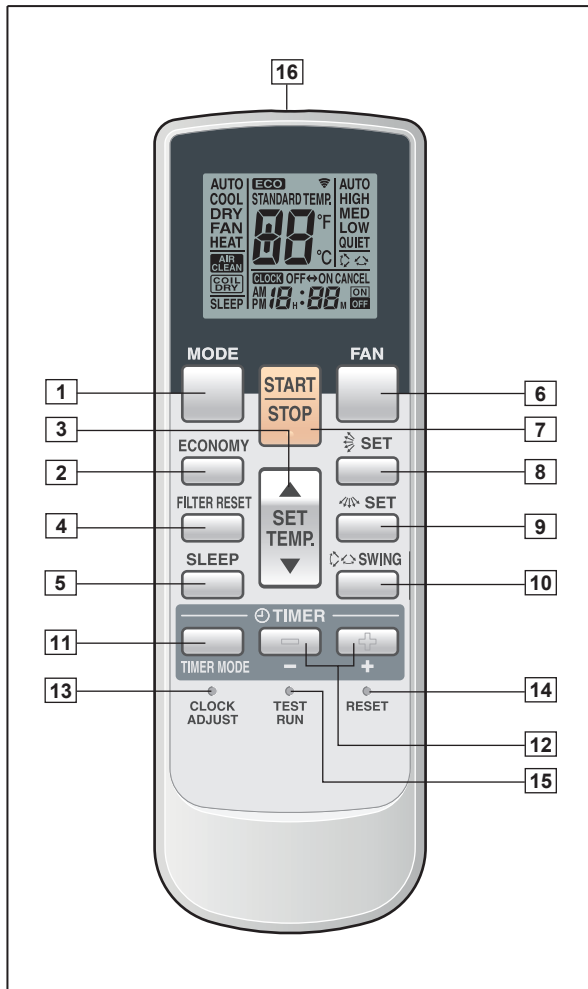


#### ● Switching remote control unit signal code



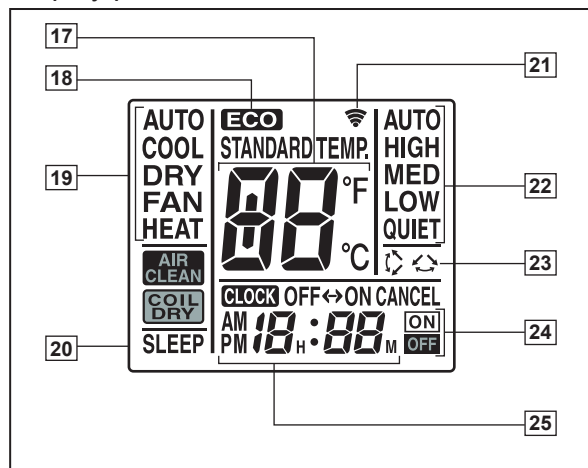
- Code selector switch eliminates unit being wrongly switched. (Up to 4 codes can be set.)

## FUNCTIONS



- 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.

Display panel



- 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

## 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	
	Heating	Rated	BTU/h	3100-20100	3100-27300	
			kW	6.00	8.00	
		Min. - Max.	BTU/h	20500	27300	
				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	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 <sup>3</sup> /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
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/		
Dimensions (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).

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	
				Heating		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	1.70		2.32		
		*Max.	2.16		2.85		
	Heating	Rated	1.75		2.33		
		*Max.	2.96		3.19		
Current	Cooling	Rated	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		
COP		Heating	kW/kW		3.43		
Moisture removal			l/h (pints/h)	2.0 ( 3.5 )		2.7 ( 4.8 )	
Fan	Airflow rate	Cooling	High	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	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/				
Dimensions (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.

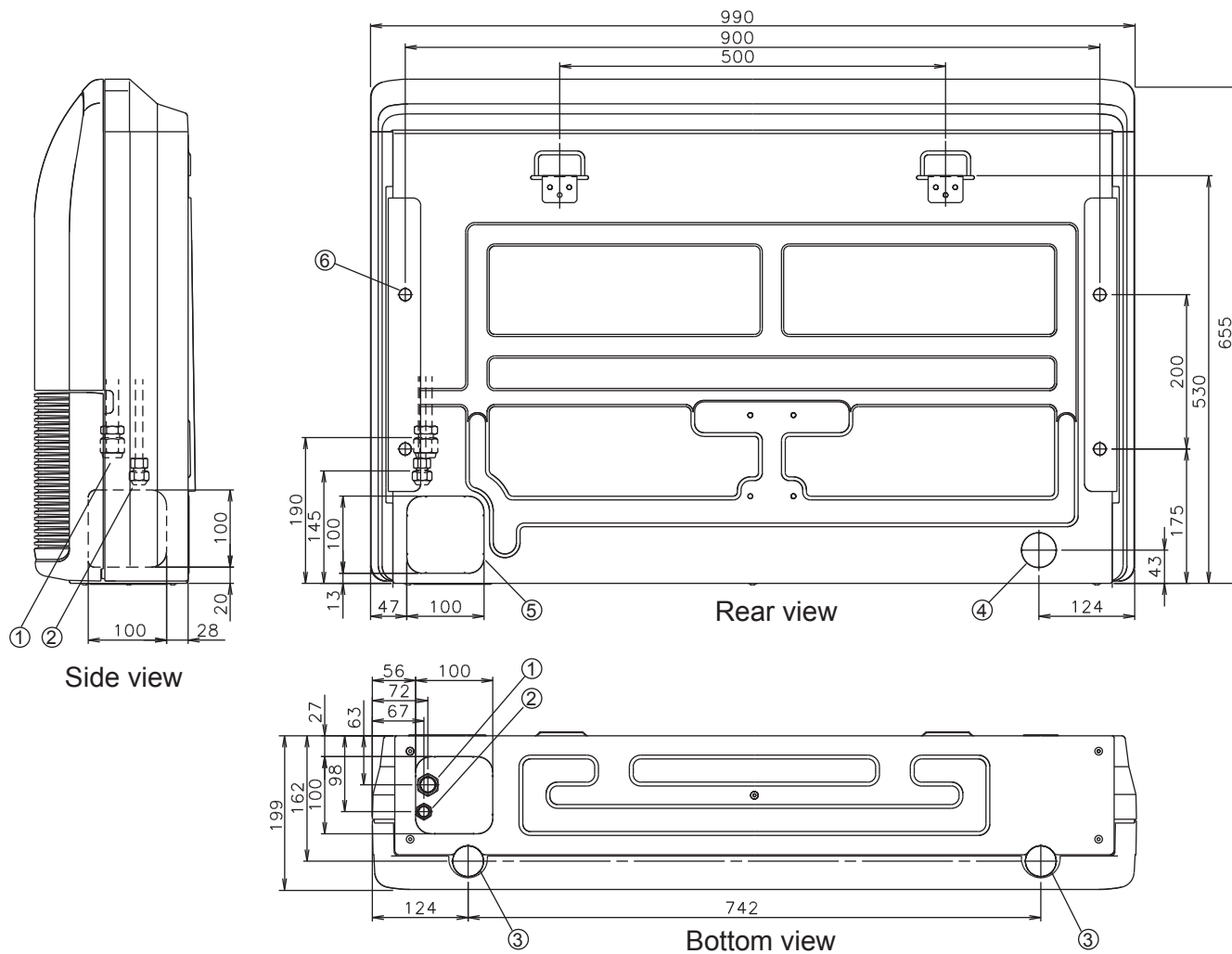
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)

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

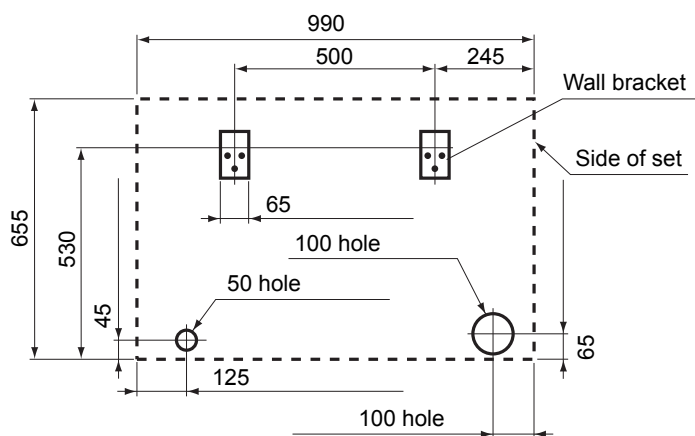
# 4. DIMENSIONS

■ MODEL : AB\*A18L, AB\*F18L, AB\*A24L, AB\*F24L

(Unit : mm)



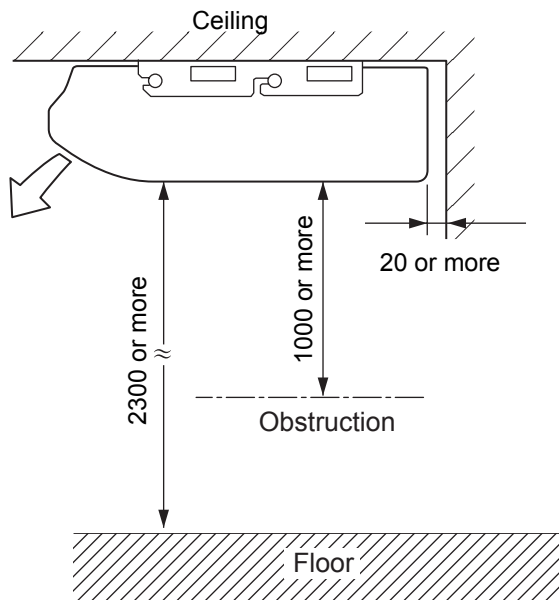
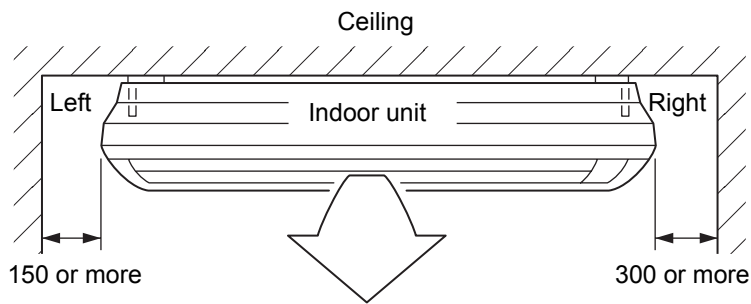
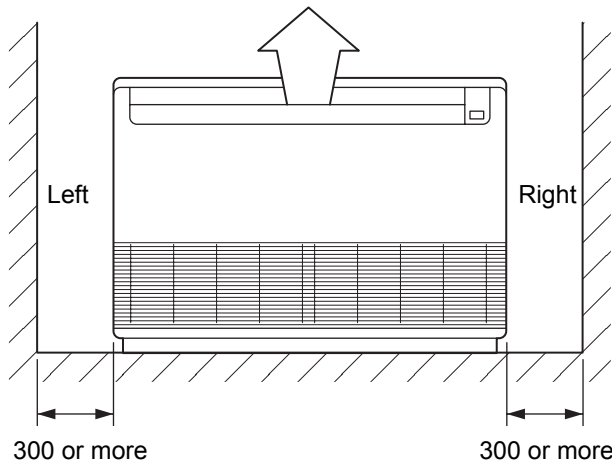
- ① Refrigerant piping flare connection (Gas)
- ② Refrigerant piping flare connection (Liquid)
- ③ Drain piping connection
- ④ Knock out hole for drain piping
- ⑤ Knock out hole for refrigerant piping
- ⑥ Hole for lifting bolt (Use M10 screw bolt)





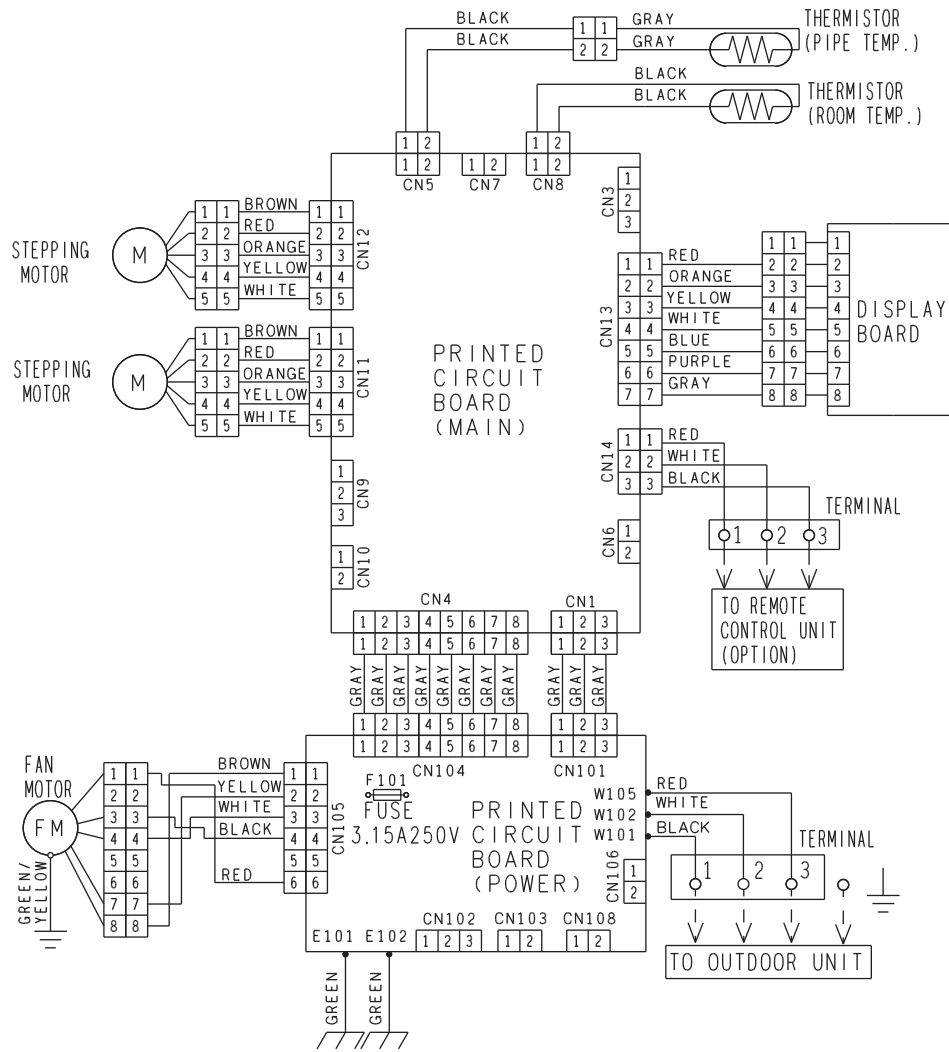
# ■ MOUNTING POSITION

(Unit : mm)



# 5. WIRING DIAGRAMS

■ MODEL : AB\*A18L, AB\*F18L, AB\*A24L, AB\*F24L



# 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
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		Indoor temperature																					
		18			21			23			25			27			29			32			
		°CDB			°CWB			°CDB			°CWB			°CDB			°CWB			°CDB			°CWB
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
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		Indoor temperature																					
		18			21			23			25			27			29			32			
		°CDB			°CWB			°CDB			°CWB			°CDB			°CWB			°CDB			°CWB
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)

**MODEL : AB\*A24L, AB\*F24L / AO\*A24L**

AFR	15.3
-----	------

		Indoor temperature																								
		18			21			23			25			27			29			32						
		12			15			16			18			19			21			23						
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI				
	-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																								
		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				
	-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)

## 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	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-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	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-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<sup>3</sup>/min)  
 TC : Total Capacity (kW)  
 PI : Power Input (kW)

**MODEL : AB\*A24L, AB\*F24L / AO\*A24L**

AFR	15.3
-----	------

		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-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
-----	------

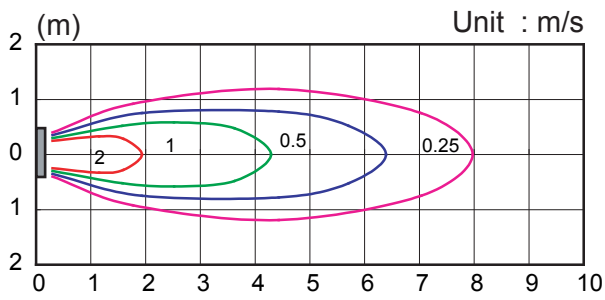
		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	6.15	2.70	6.00	2.76	5.86	2.82	5.71	2.87	5.57	2.93
	-10	-11	6.70	2.87	6.54	2.93	6.38	2.99	6.22	3.05	6.06	3.11
	-5	-7	7.39	2.86	7.22	2.91	7.04	2.97	6.86	3.03	6.69	3.09
	0	-2	8.31	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<sup>3</sup>/min)  
 TC : Total Capacity (kW)  
 PI : Power Input (kW)

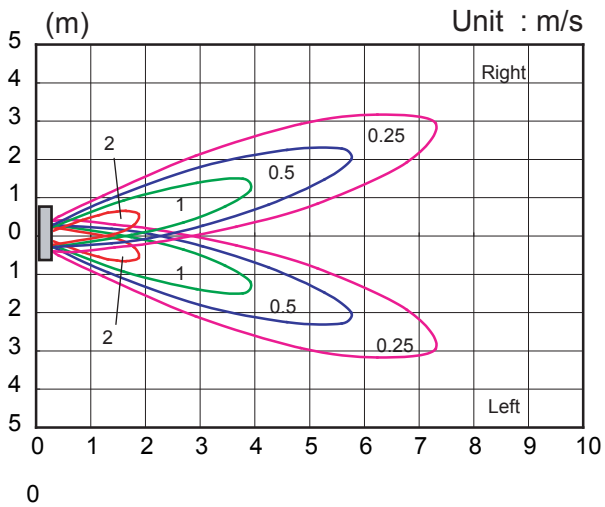
# 7. FAN PERFORMANCE

## 7-1. AIR VELOCITY DISTRIBUTION

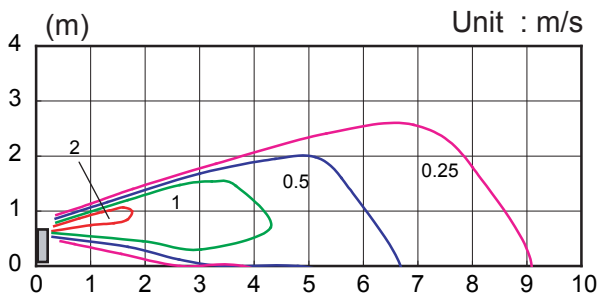
### ■ MODEL : AB\*A18L, AB\*F18L (FLOOR CONSOLE)



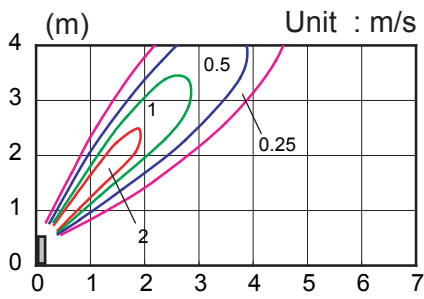
TOP VIEW  
VERTICAL FLAP : Downward  
HORIZONTAL FLAP : Center  
(m)



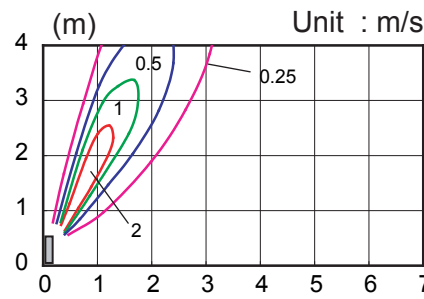
TOP VIEW  
VERTICAL FLAP : Downward  
HORIZONTAL FLAP : Right & Left  
(m)



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

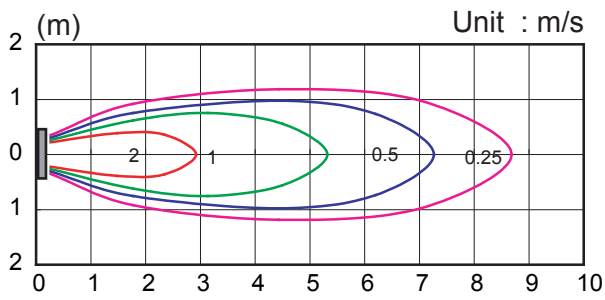


SIDE VIEW  
VERTICAL FLAP : Center  
HORIZONTAL FLAP : Center  
(m)

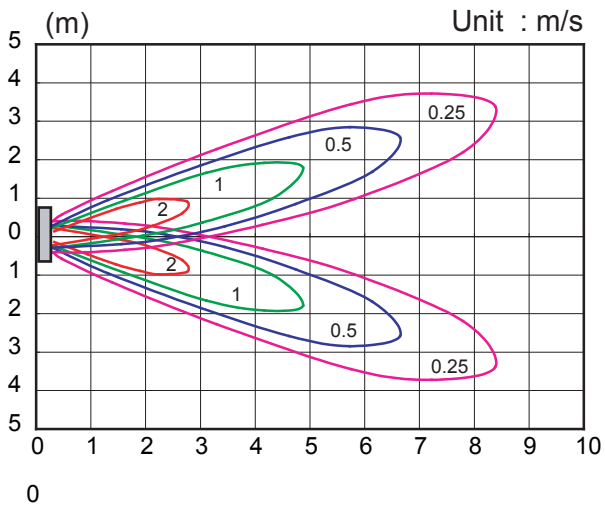


SIDE VIEW  
VERTICAL FLAP : Upward  
HORIZONTAL FLAP : Center  
(m)

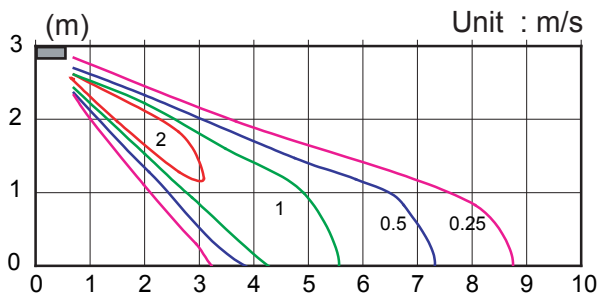
■ MODEL : AB\*A18L, AB\*F18L (UNDER CEILING)



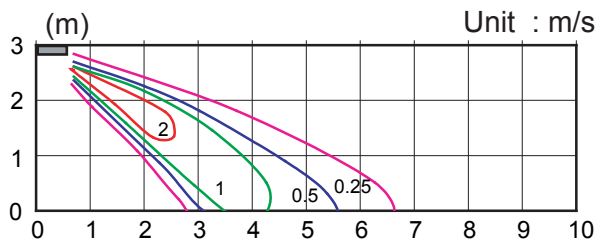
TOP VIEW  
VERTICAL FLAP : Upward  
HORIZONTAL FLAP : Center  
(m)



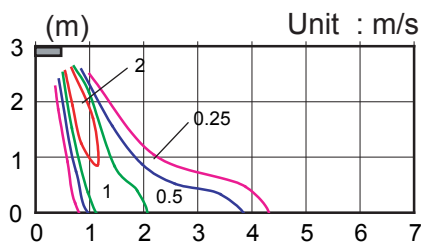
TOP VIEW  
VERTICAL FLAP : Upward  
HORIZONTAL FLAP : Right & Left  
(m)



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



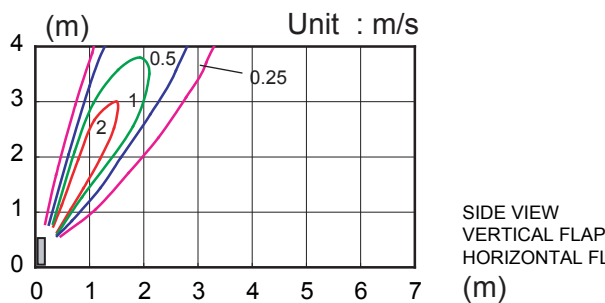
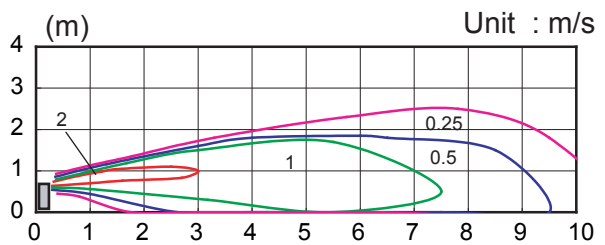
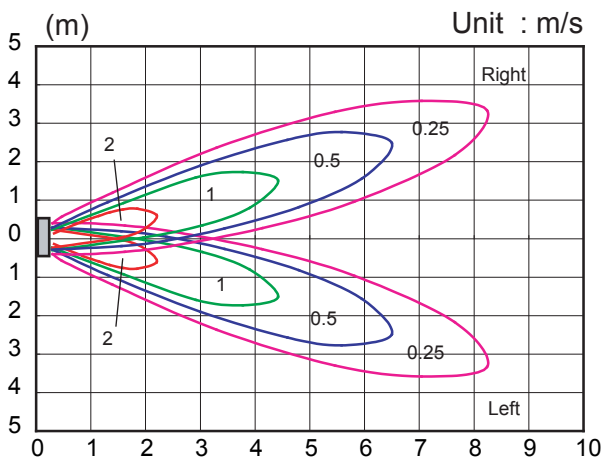
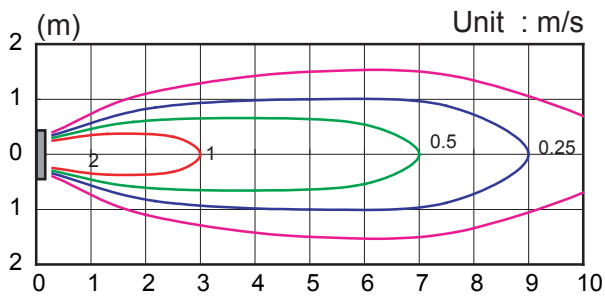
SIDE VIEW  
VERTICAL FLAP : Center  
HORIZONTAL FLAP : Center  
(m)



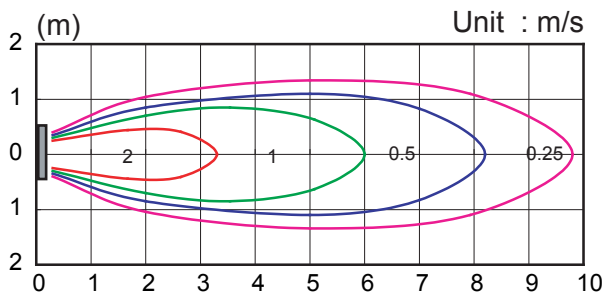
SIDE VIEW  
VERTICAL FLAP : Downward  
HORIZONTAL FLAP : Center  
(m)



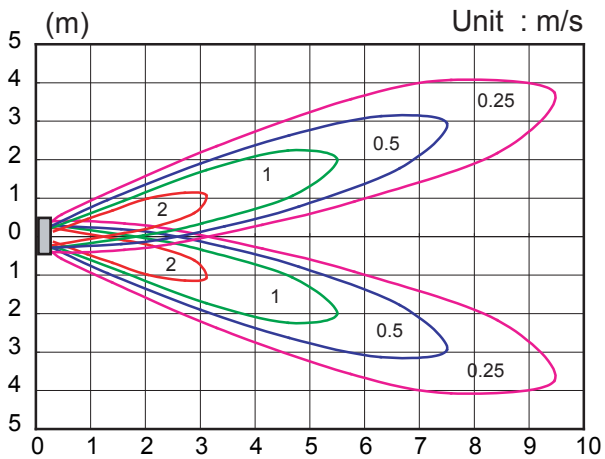
■ MODEL : AB\*A24L, AB\*F24L (FLOOR CONSOLE)



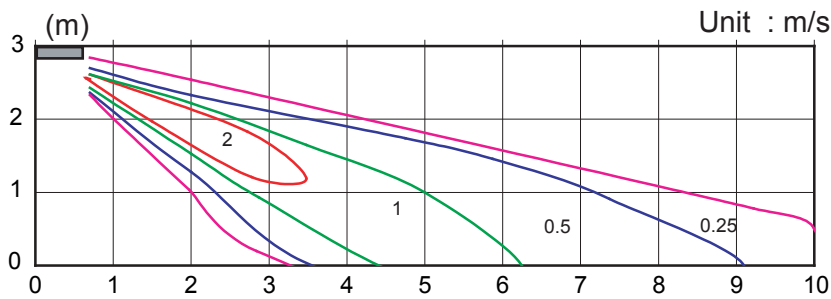
■ MODEL : AB\*A24L, AB\*F24L (UNDER CEILING)



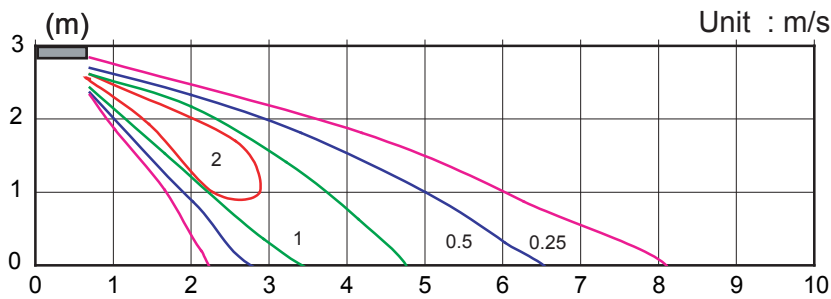
TOP VIEW  
VERTICAL FLAP : Upward  
HORIZONTAL FLAP : Center  
(m)



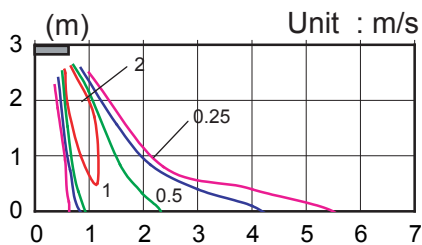
TOP VIEW  
VERTICAL FLAP : Upward  
HORIZONTAL FLAP : Right & Left  
(m)



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)

## 7-2. AIR FLOW

■ MODEL : AB\*A18L, AB\*F18L

### ● COOLING

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

### ● HEATING

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

■ **MODEL : AB\*A24L, AB\*F24L**

● **COOLING**

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

● **HEATING**

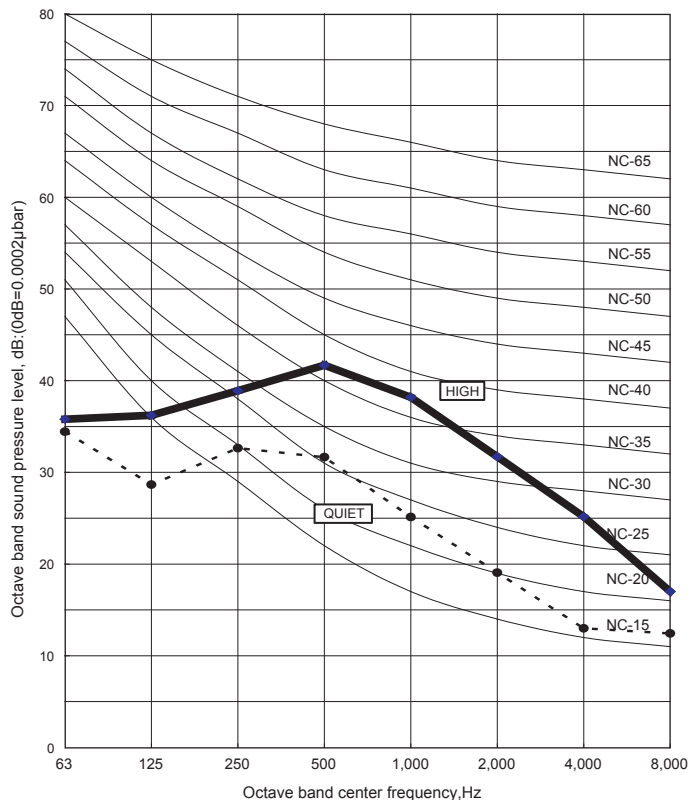
FAN SPEED	NUMBER OF ROTATIONS (r.p.m)	AIR FLOW	
HIGH	1300	m <sup>3</sup> /h	980
		l/s	272
		CFM	577
MED	1150	m <sup>3</sup> /h	820
		l/s	228
		CFM	483
LOW	1000	m <sup>3</sup> /h	680
		l/s	189
		CFM	400
QUIET	780	m <sup>3</sup> /h	540
		l/s	150
		CFM	318

# 8. OPERATION NOISE

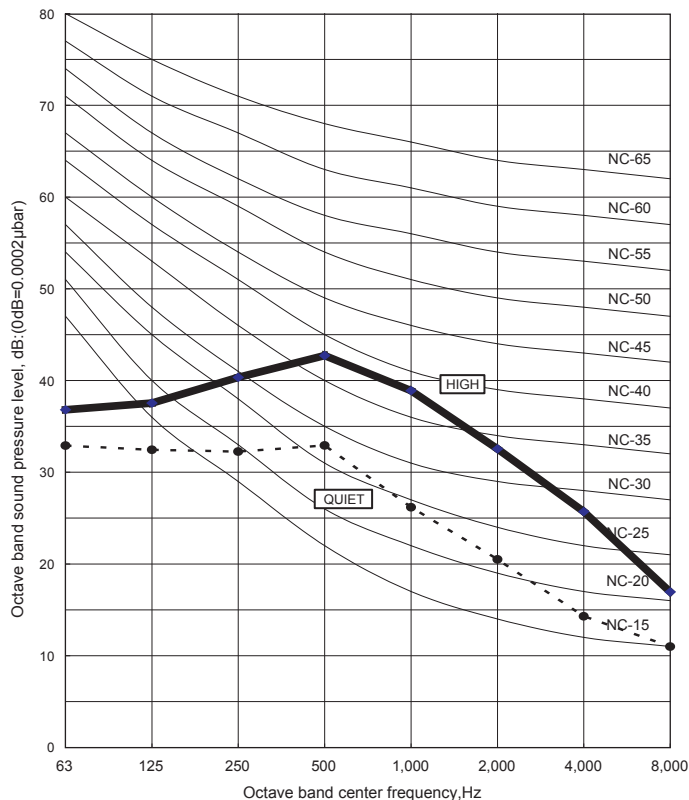
## 8-1. NOISE LEVEL CURVE

■ MODEL : AB\*A18L, AB\*F18L

### ● COOLING

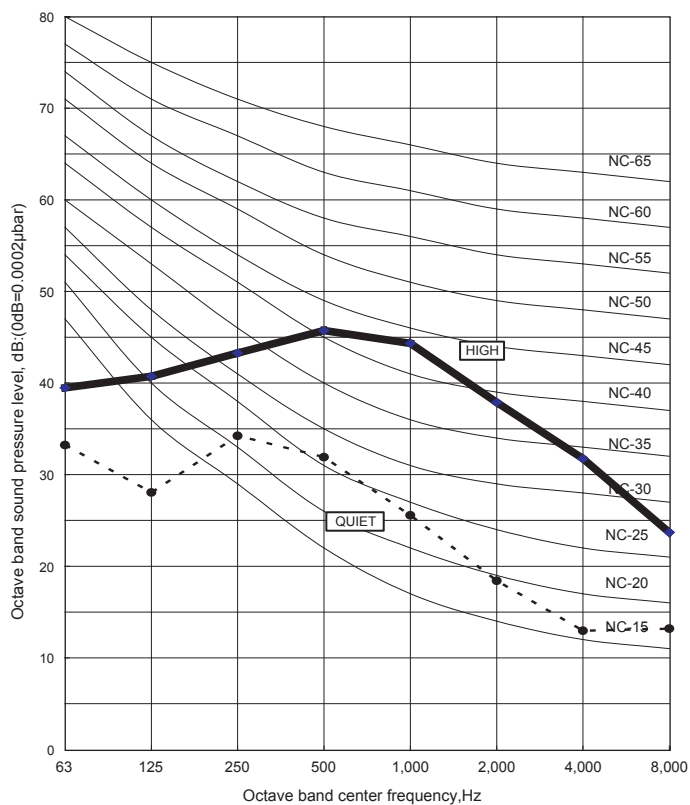


### ● HEATING

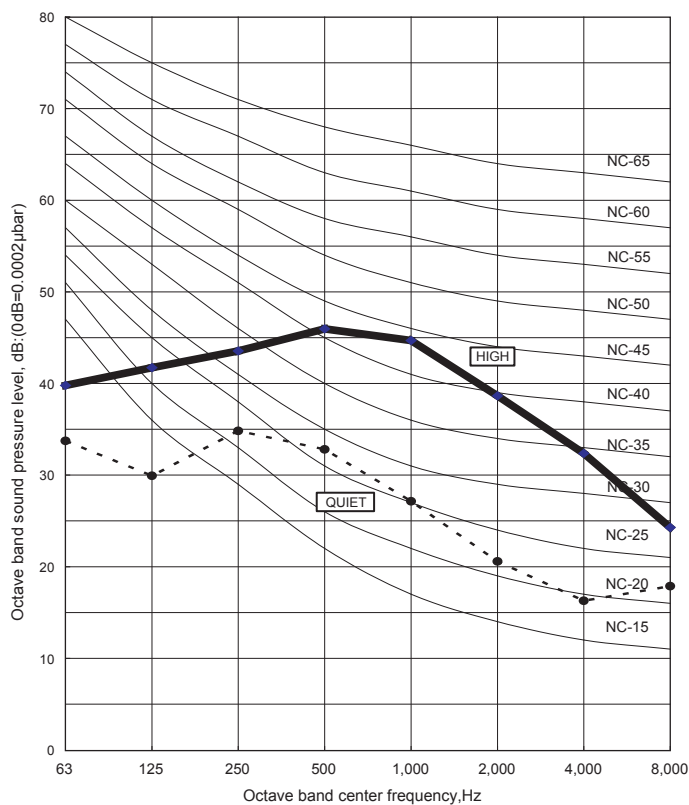


■ MODEL : AB\*A24L, AB\*F24L

### ● COOLING

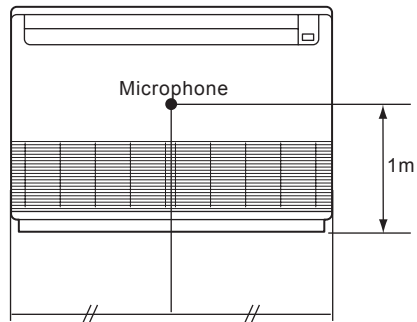
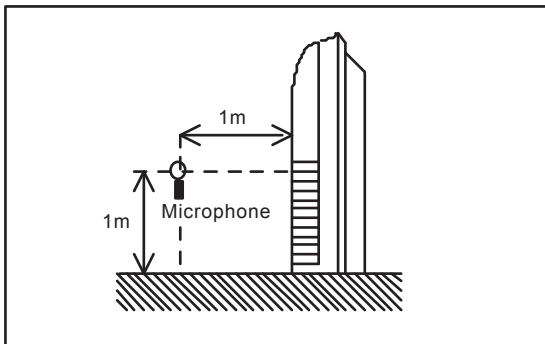


### ● HEATING

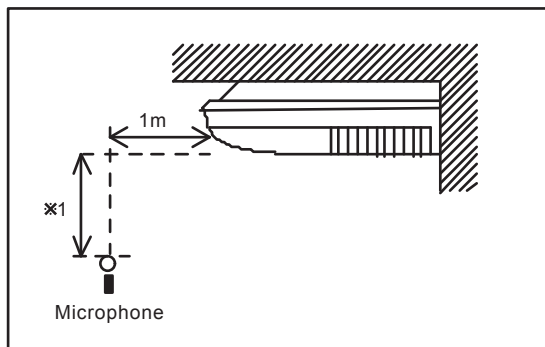


## 8-2. SOUND LEVEL CHECK POINT

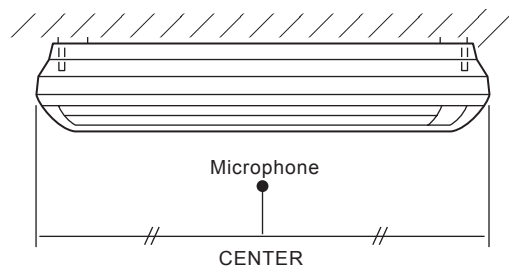
### ● FLOOR CONSOLE



### ● 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 <sup>2</sup>	1.5 - 2.5	1.5 - 2.5
	Limited wiring length	m	26	31

\*1) Wiring Spec.

Selected Sample

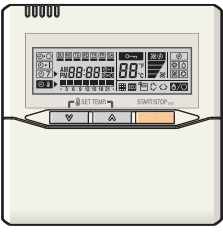
(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

# 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	



# 11. OPTIONAL PARTS

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

## **OUTDOOR UNIT**

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

**AO \* A18LACL**

**AO \* A18LALL**

**AO \* A24LACL**

**AO \* A24LALL**

# 1. SPECIFICATIONS

OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

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	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.

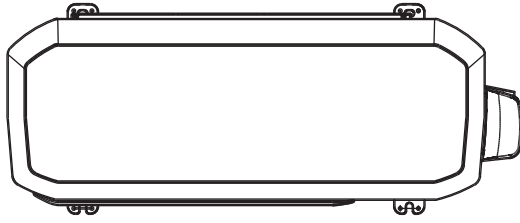
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.

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

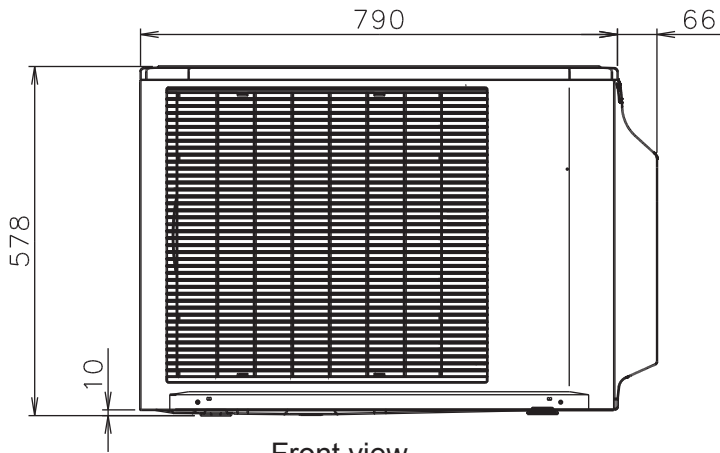
## 2. DIMENSIONS

### MODELS : AO\*A18L, AO\*A24L

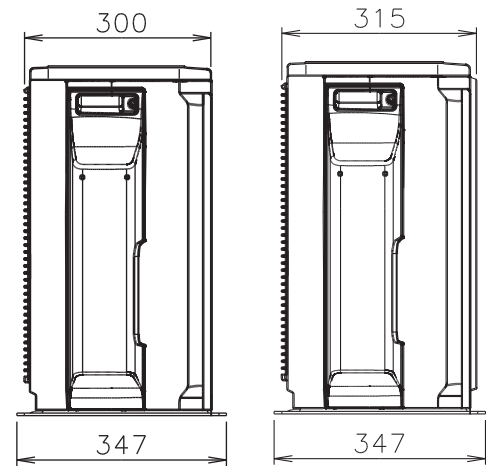
(Unit : mm)



Top view



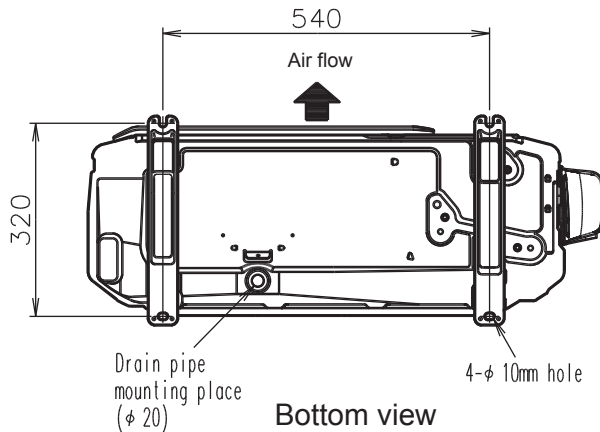
Front view



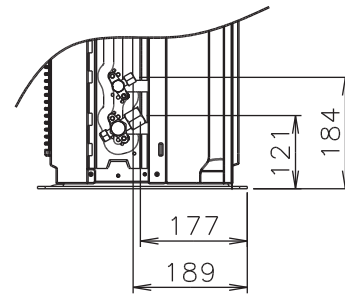
AO\*A18L

AO\*A24L

Side view



Bottom view

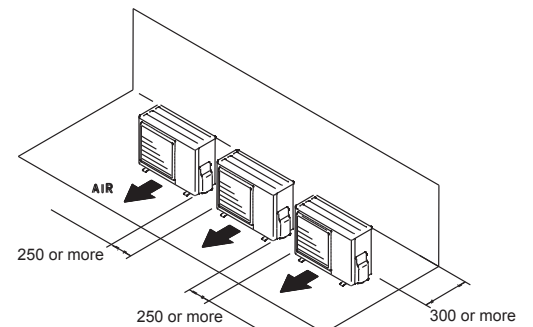
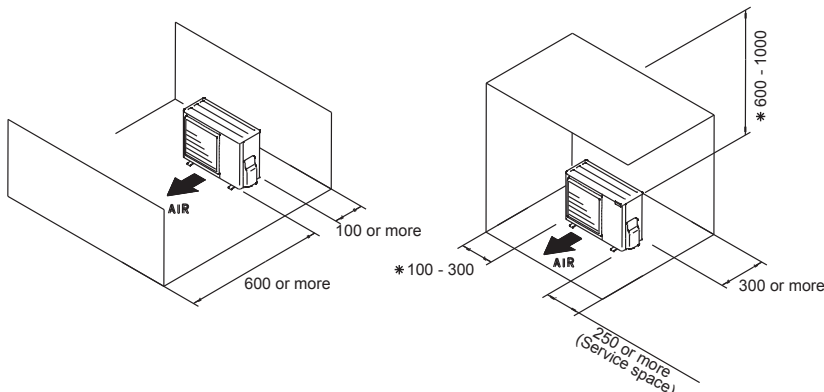


### MOUNTING POSITION

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.

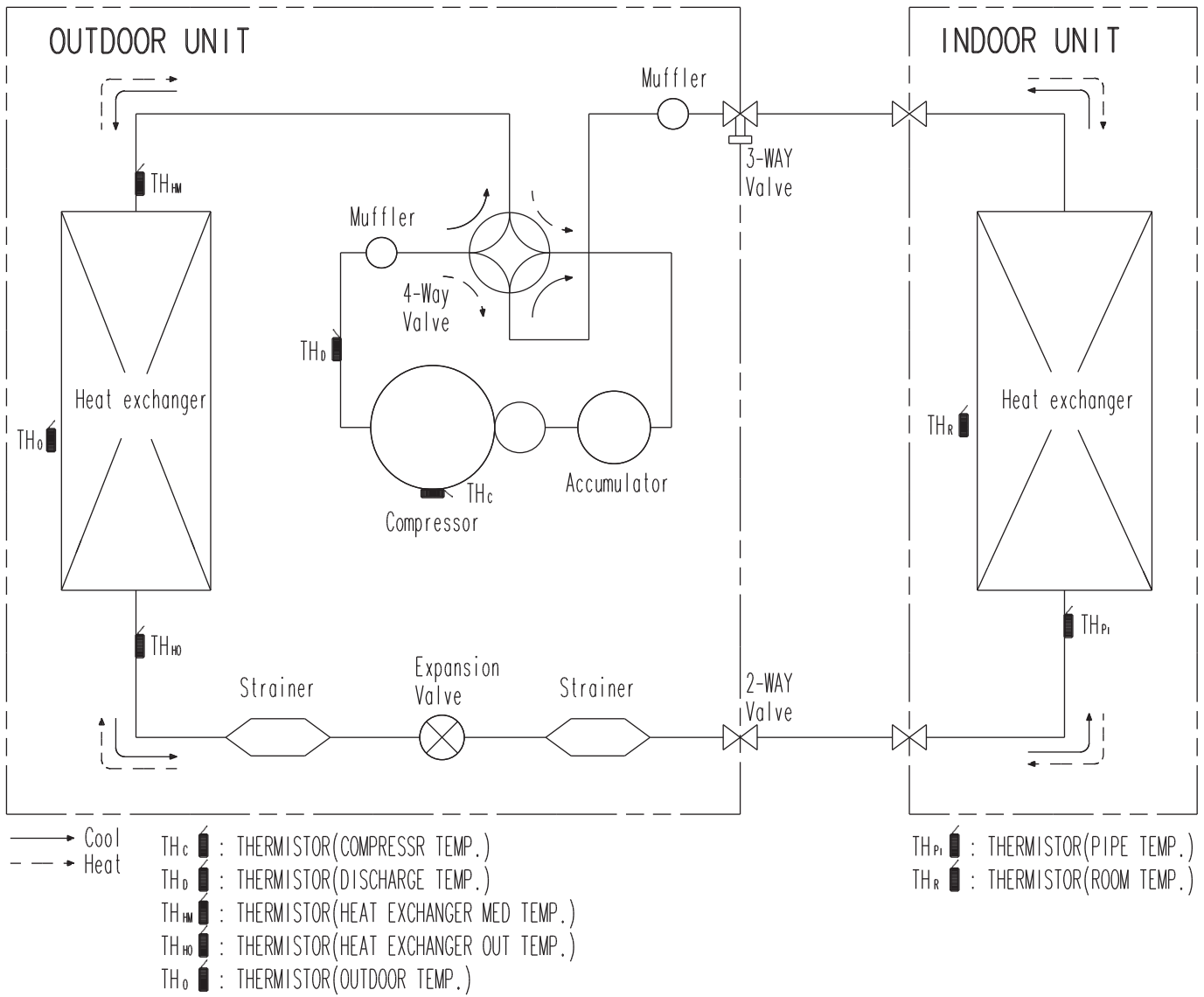


\* If the space is larger than that is stated, the condition will be the same as that are no obstacles.

### 3. REFRIGERANT CIRCUIT

OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

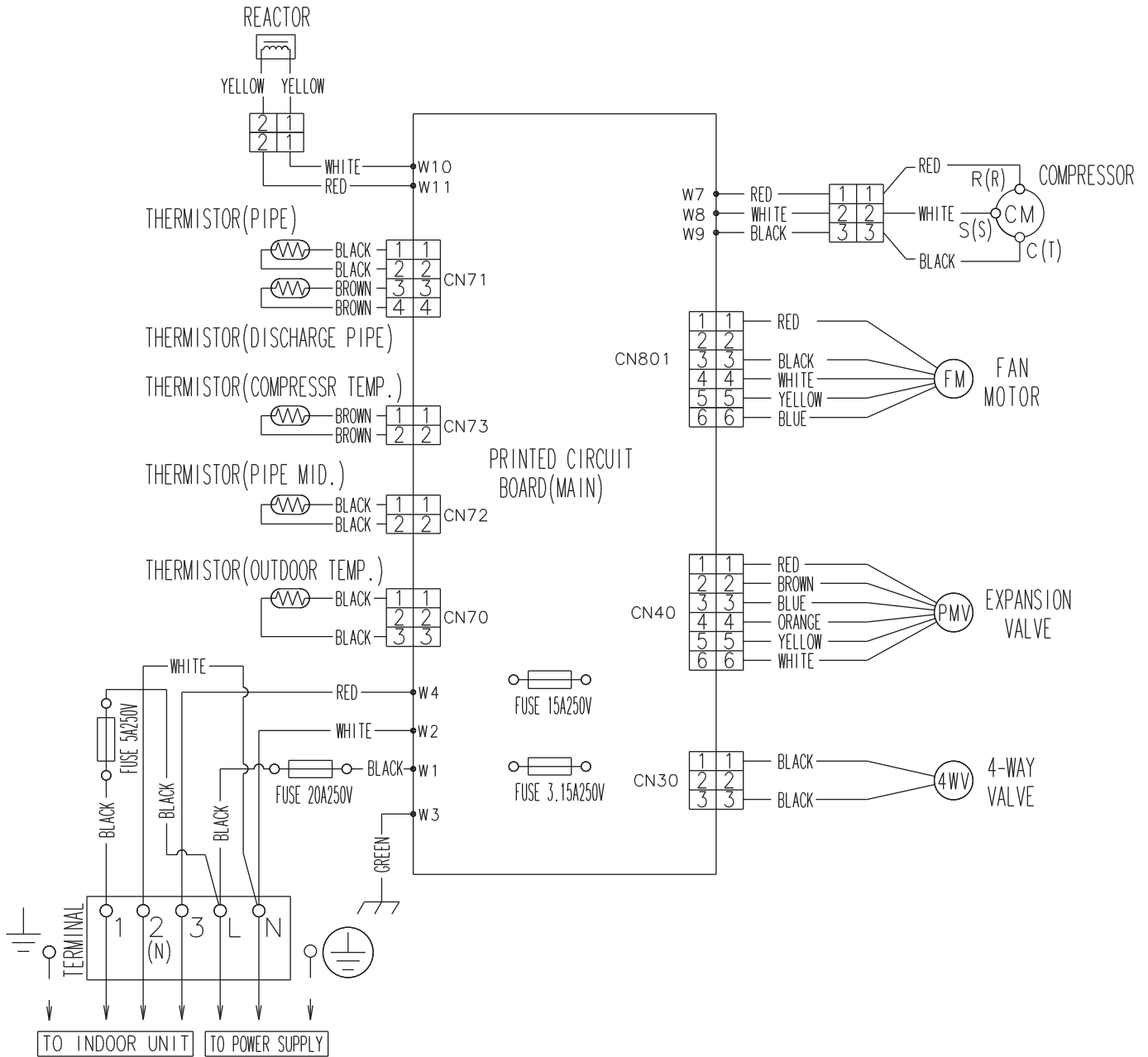


# 4. WIRING DIAGRAMS

■ 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

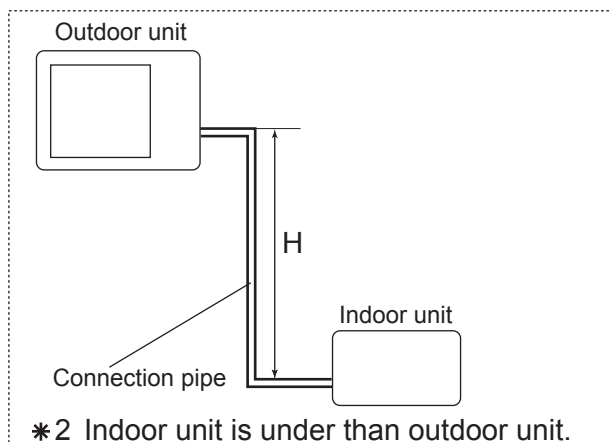
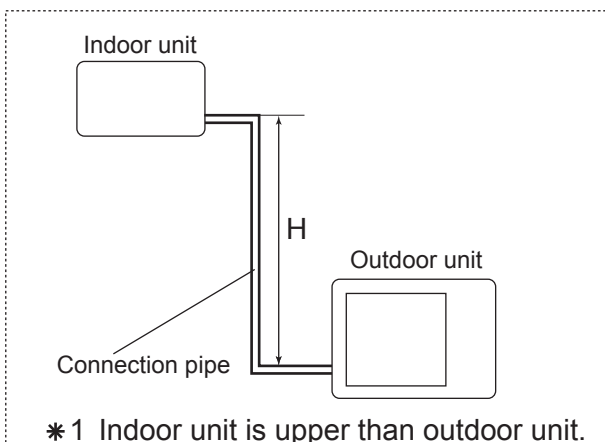
OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

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
	* 2 Indoor unit is under than outdoor unit	0	1.000	1.000	0.999	0.984	0.982	0.978
		-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
	* 2 Indoor unit is under than outdoor unit	0	0.993	1.000	0.982	0.920	0.894	0.867
		-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



# MODEL : AO\*A24L

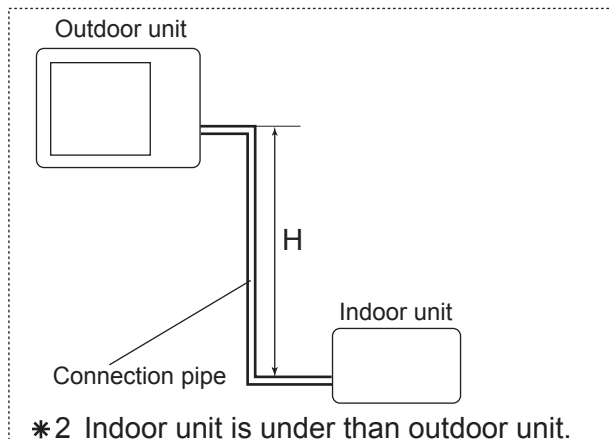
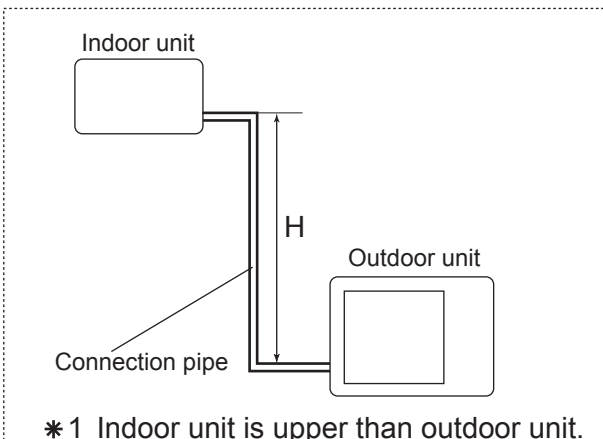
OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

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





## 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	

## 7. AIR FLOW

### ■ MODEL : AO\*A18L

#### ● COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	860	m <sup>3</sup> /h
l/s		556
CFM		1177

#### ● HEATING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	820	m <sup>3</sup> /h
l/s		531
CFM		1124

### ■ MODEL : AO\*A24L

#### ● COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	1050	m <sup>3</sup> /h
l/s		686
CFM		1454

#### ● HEATING

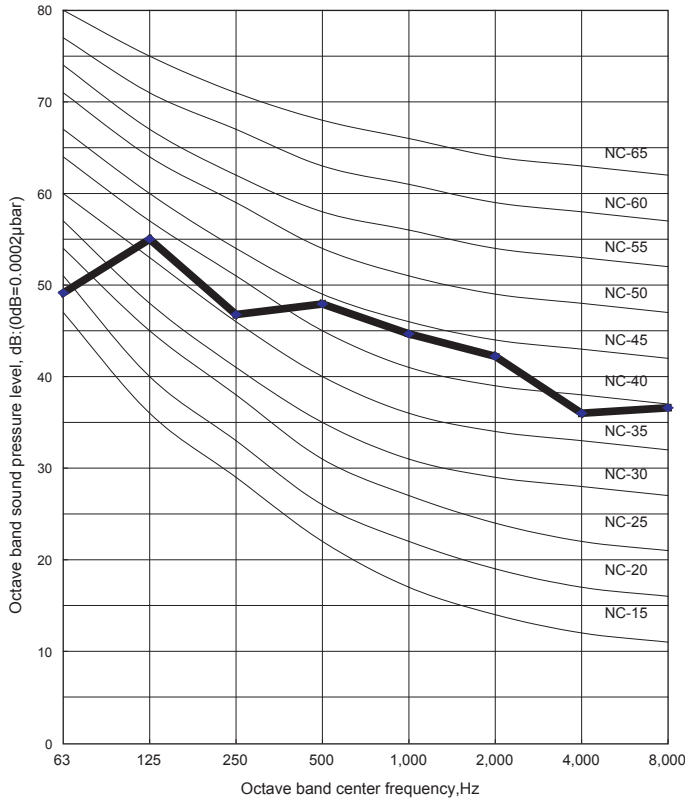
NUMBER OF ROTATIONS (r.p.m)	Airflow	
	1050	m <sup>3</sup> /h
l/s		686
CFM		1454

# 8. OPERATION NOISE

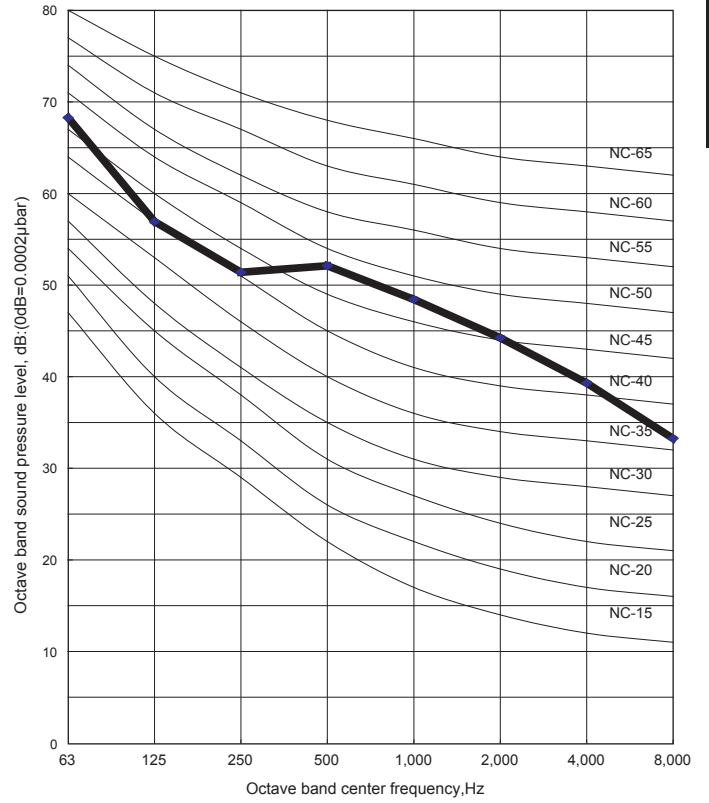
## 8-1. NOISE LEVEL CURVE

### ■ COOLING

● MODEL : AO\*A18L

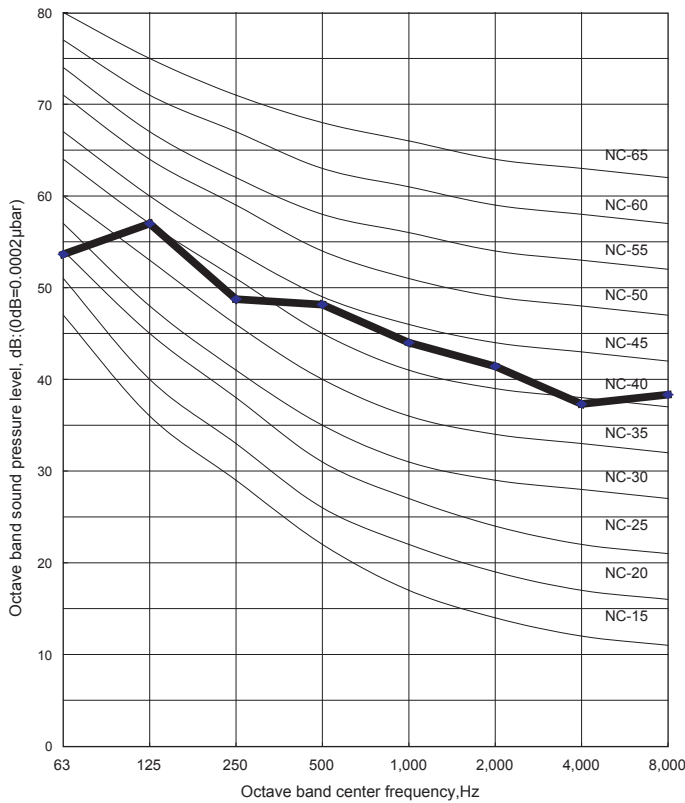


● MODEL : AO\*A24L

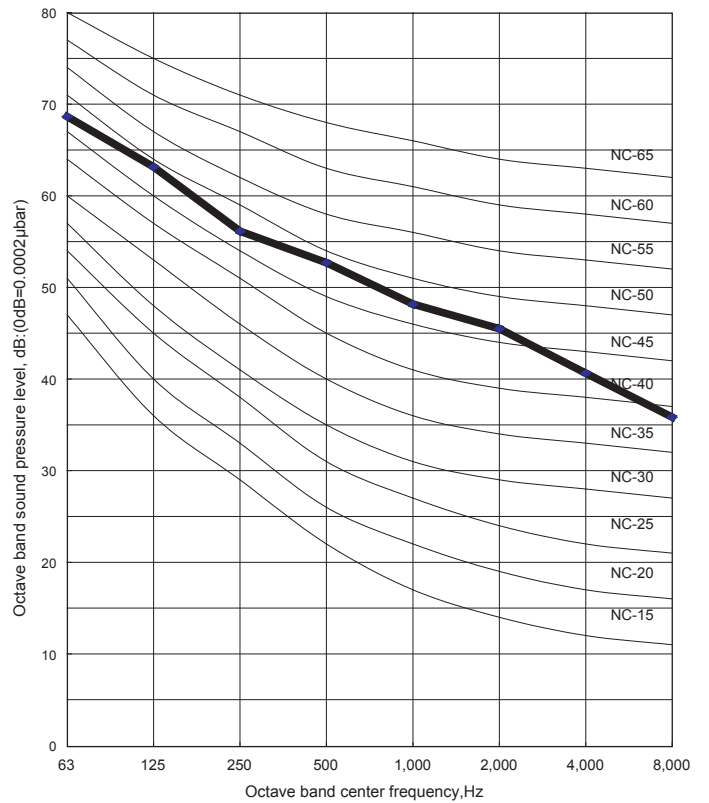


### ■ HEATING

● MODEL : AO\*A18L



● MODEL : AO\*A24L

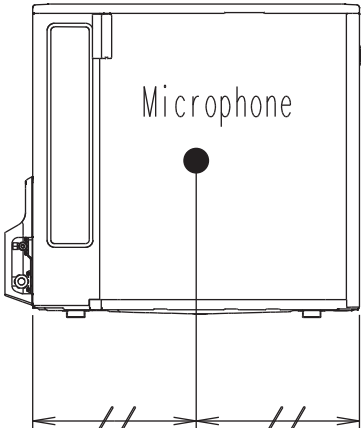
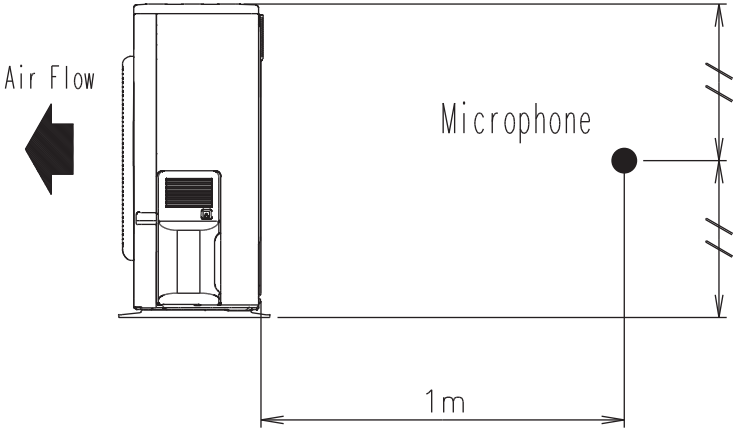


OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

# 8-2. SOUND LEVEL CHECK POINT

OUTDOOR UNIT  
AO\*A18-24L



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 <sup>2</sup>	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

OUTDOOR UNIT  
AO\*A18-24L

OUTDOOR UNIT  
AO\*A18-24L

	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 <sup>+15</sup> <sub>-10</sub> °C ON:95 <sup>+15</sup> <sub>-10</sub> °C	OFF:110 <sup>+15</sup> <sub>-10</sub> °C ON:105 <sup>+15</sup> <sub>-10</sub> °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**

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

**AO \* B18LACL**

**AO \* B18LALL**

**AO \* B24LACL**

**AO \* B24LALL**

# 1. SPECIFICATIONS

OUTDOOR UNIT  
AO\*B18-24L

OUTDOOR UNIT  
AO\*B18-24L

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	2000	2470		
		Heating	1910	2470		
	Type × Q'ty		Propeller × 1			
	Motor output		W	54	65	
Sound pressure level		Cooling	50	52		
		Heating	50	53		
Heat exchanger type		Dimensions (H × W × D)	mm	546 × 876 × 18.2	546 × 866 × 18.2	
				546 × 842 × 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		578 × 790 × 300	578 × 790 × 315	
		Gross		648 × 910 × 380		
Weight		Net		40 ( 88 )	44 ( 97 )	
		Gross		44 ( 97 )	48 ( 106 )	
Connection pipe		Size	Liquid	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	-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)



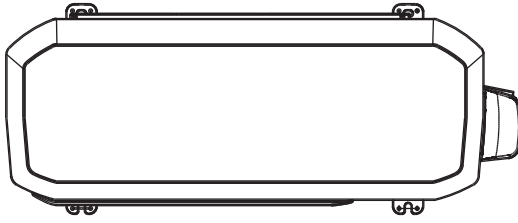
## 2. DIMENSIONS

### ■ MODEL : AO\*B18L, AO\*B24L

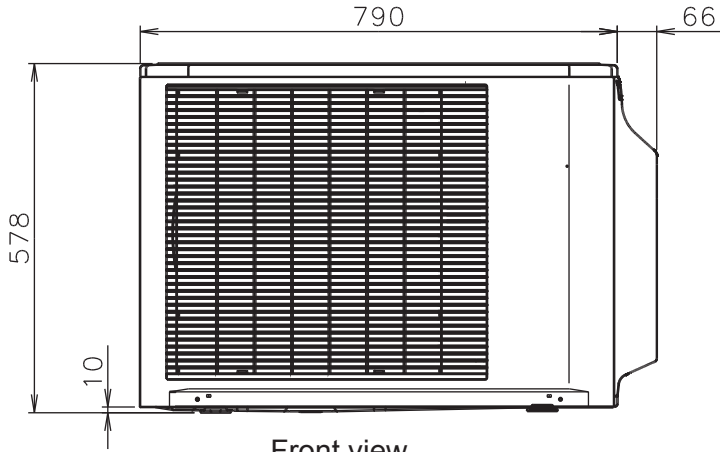
(Unit : mm)

OUTDOOR UNIT  
AO\*B18-24L

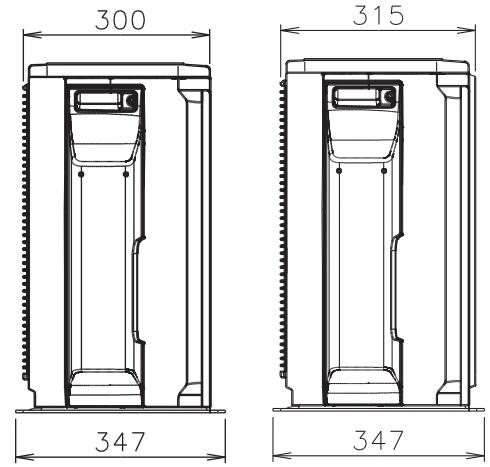
OUTDOOR UNIT  
AO\*B18-24L



Top view



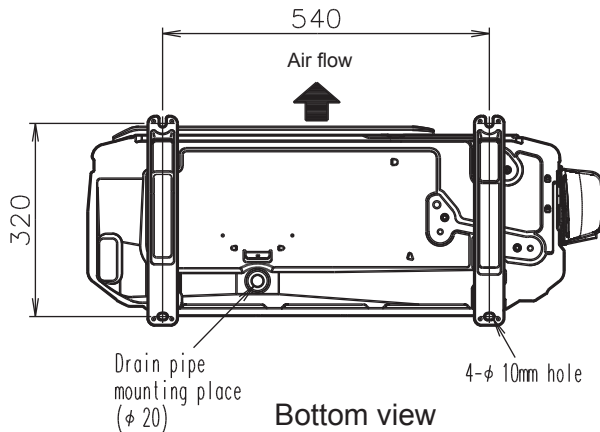
Front view



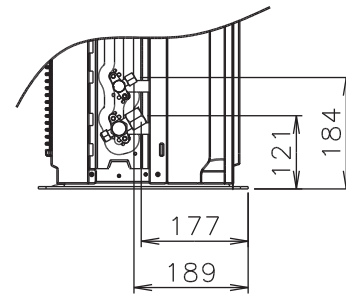
AO\*B18L

AO\*B24L

Side view



Bottom view



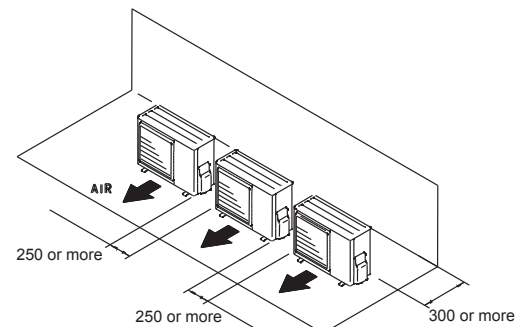
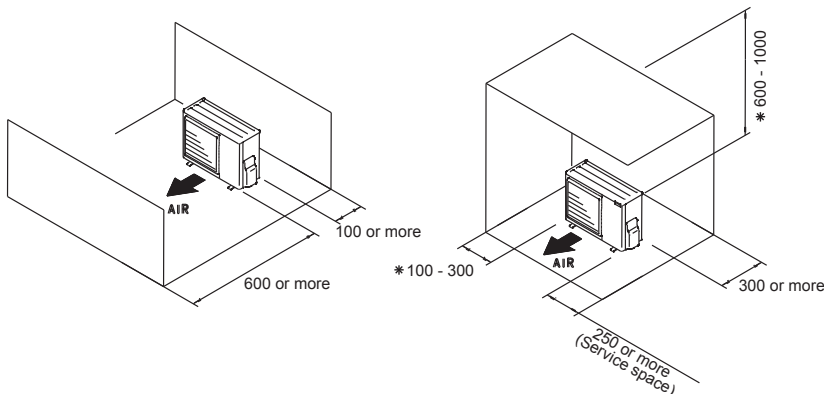
### ■ MOUNTING POSITION

(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.

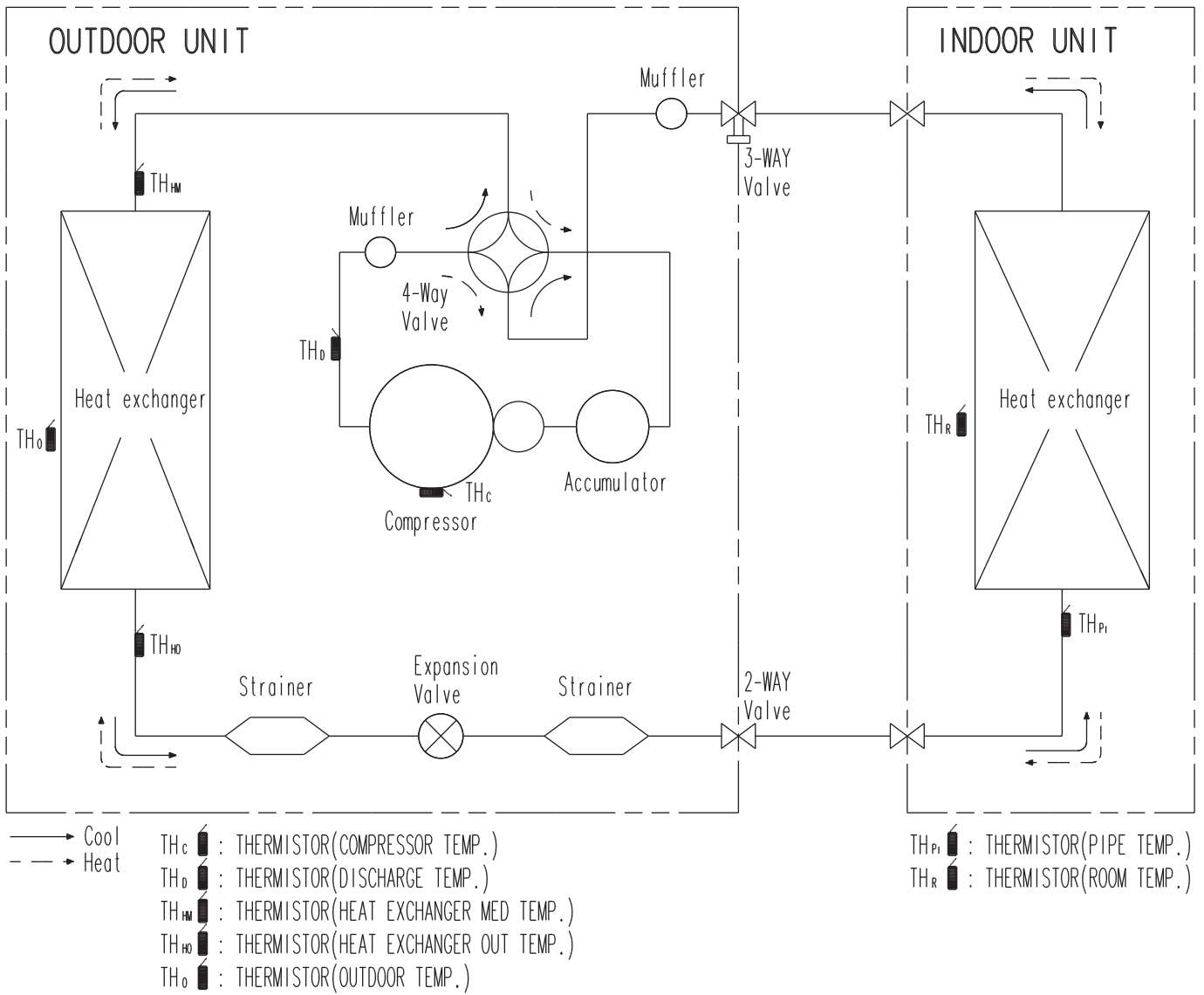


\* If the space is larger than that is stated, the condition will be the same as that are no obstacles.

### 3. REFRIGERANT CIRCUIT

OUTDOOR UNIT  
AO\*B18-24L

OUTDOOR UNIT  
AO\*B18-24L

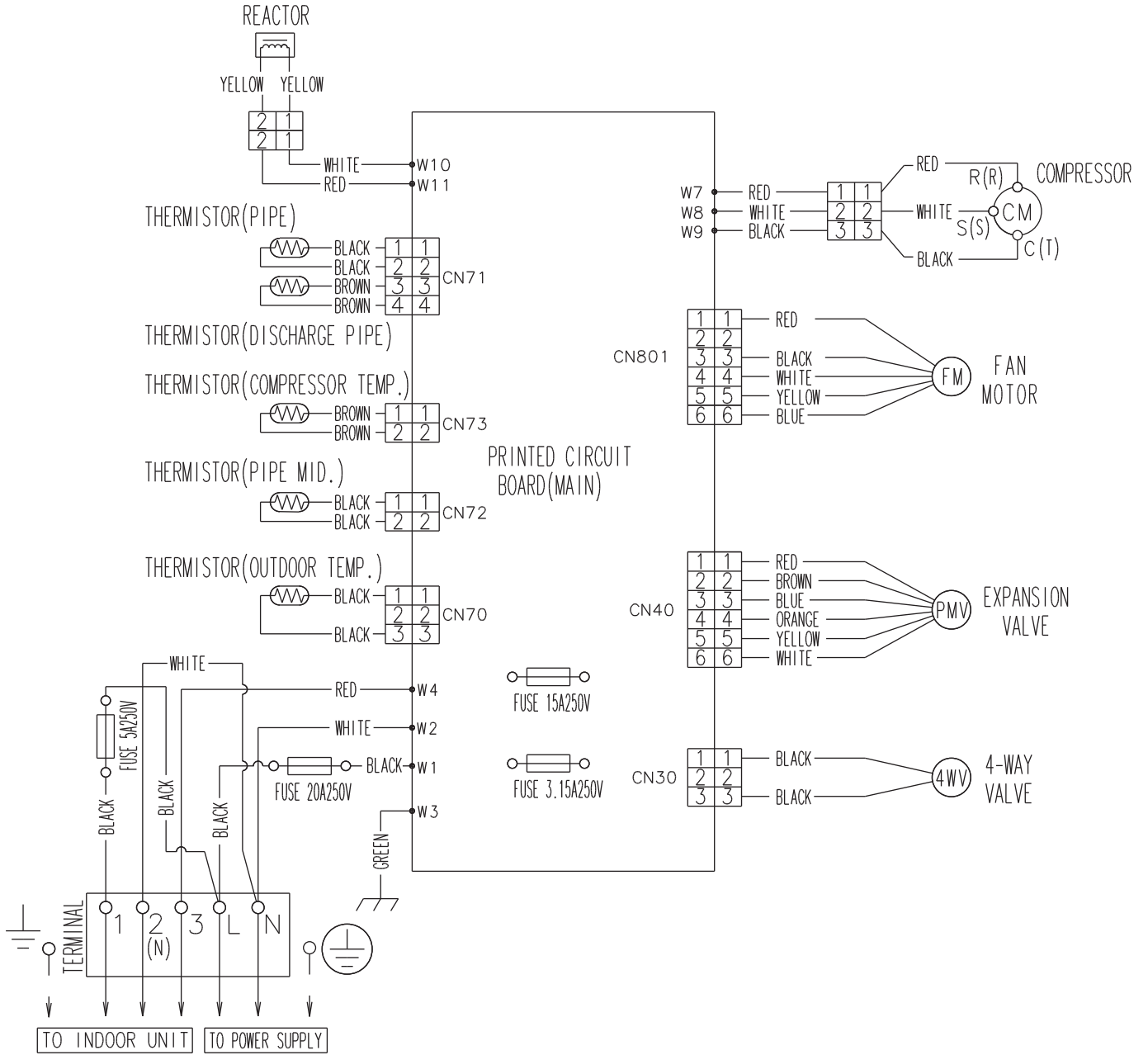


# 4. WIRING DIAGRAMS

■ MODEL : AO\*B18L, AO\*B24L

OUTDOOR UNIT  
AO\*B18-24L

OUTDOOR UNIT  
AO\*B18-24L



# 5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

## MODEL : AO\*B18L

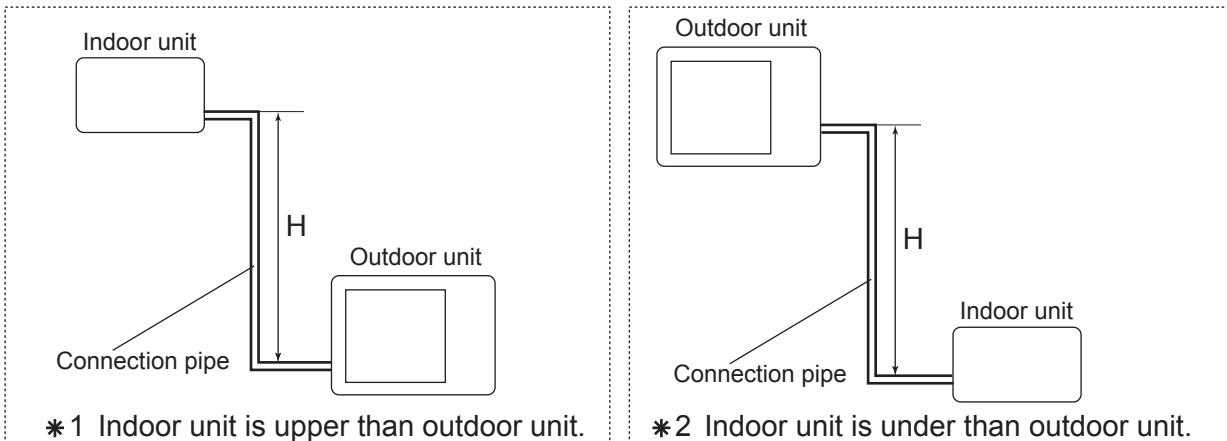
OUTDOOR UNIT  
AO\*B18-24L

OUTDOOR UNIT  
AO\*B18-24L

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
	* 2 Indoor unit is under than outdoor unit	0	1.000	1.000	0.999	0.984	0.982	0.978
		-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
	* 2 Indoor unit is under than outdoor unit	0	0.993	1.000	0.982	0.920	0.894	0.867
		-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



■ MODEL : AO\*B24L

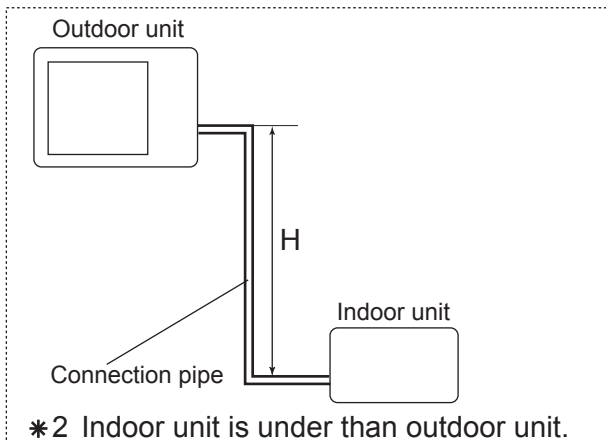
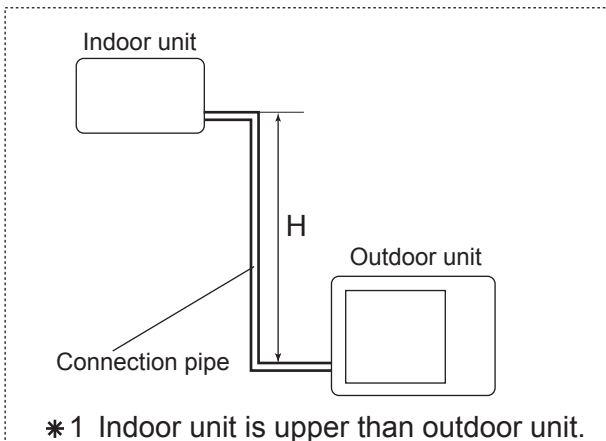
OUTDOOR UNIT  
AO\*B18-24L

OUTDOOR UNIT  
AO\*B18-24L

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



## 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	

## 7. AIR FLOW

### ■ MODEL : AO\*B18L

#### ● COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	860	m <sup>3</sup> /h
l/s		556
CFM		1177

#### ● HEATING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	820	m <sup>3</sup> /h
l/s		531
CFM		1124

### ■ MODEL : AO\*B24L

#### ● COOLING

NUMBER OF ROTATIONS (r.p.m)	Airflow	
	1050	m <sup>3</sup> /h
l/s		686
CFM		1454

#### ● HEATING

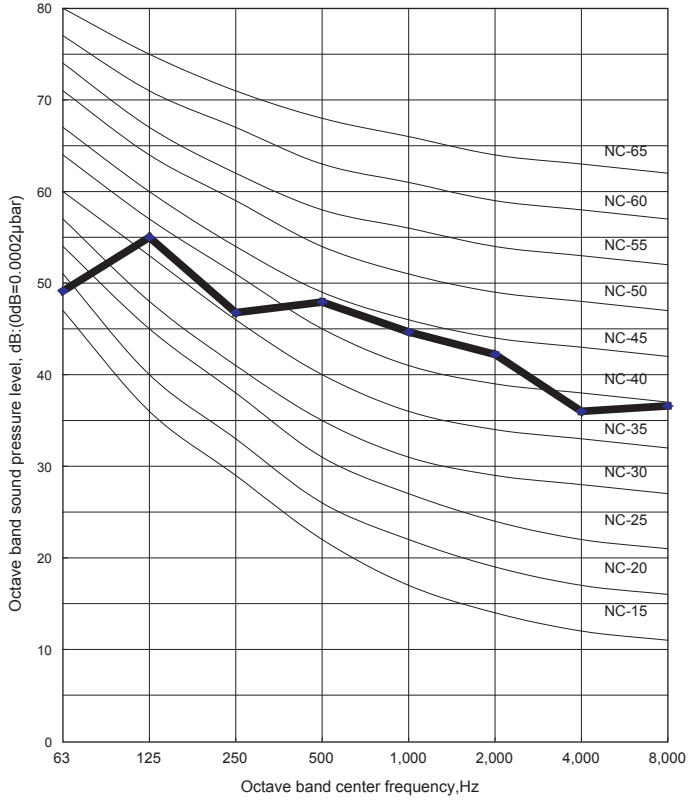
NUMBER OF ROTATIONS (r.p.m)	Airflow	
	1050	m <sup>3</sup> /h
l/s		686
CFM		1454

# 8. OPERATION NOISE

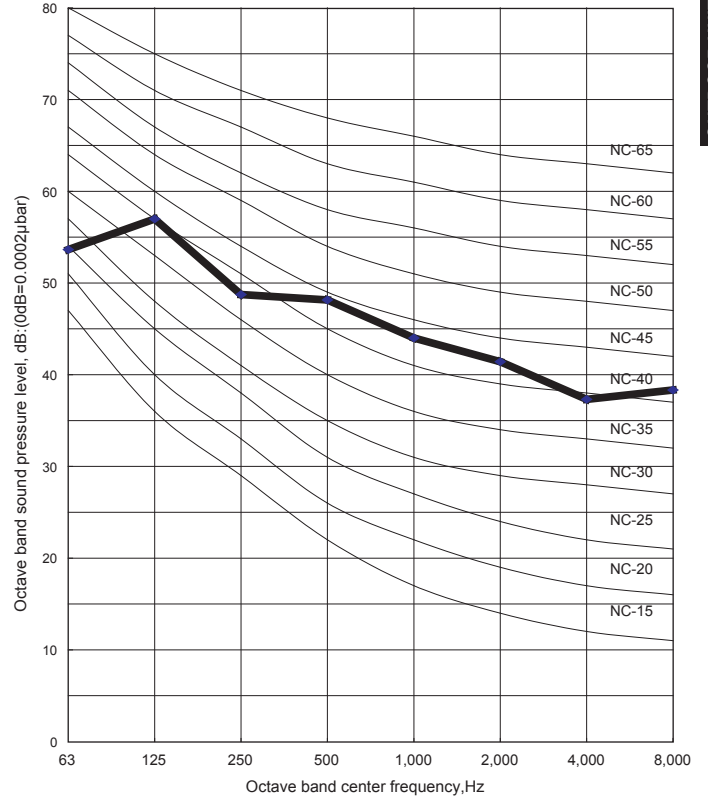
## 8-1. NOISE LEVEL CURVE

### MODEL : AO\*B18L

#### COOLING

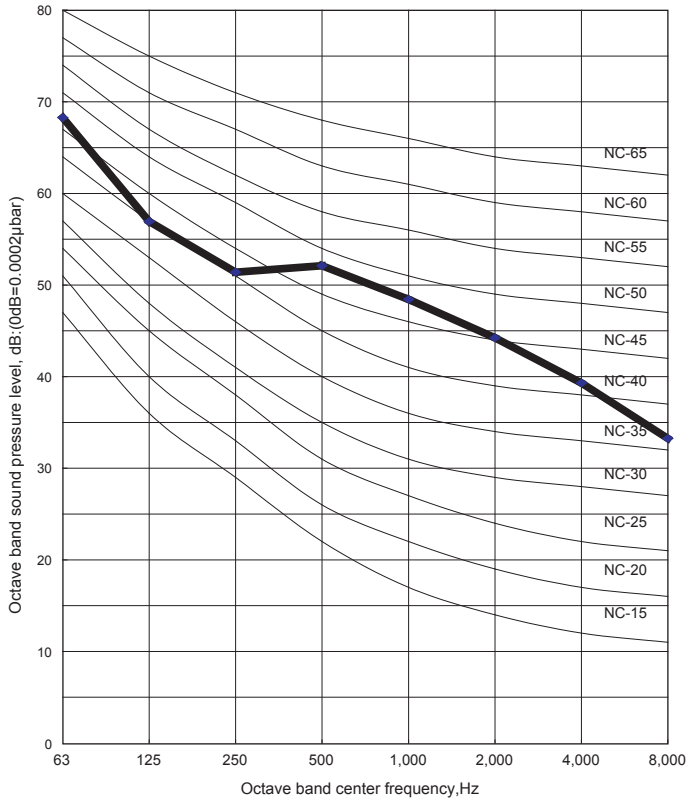


#### HEATING

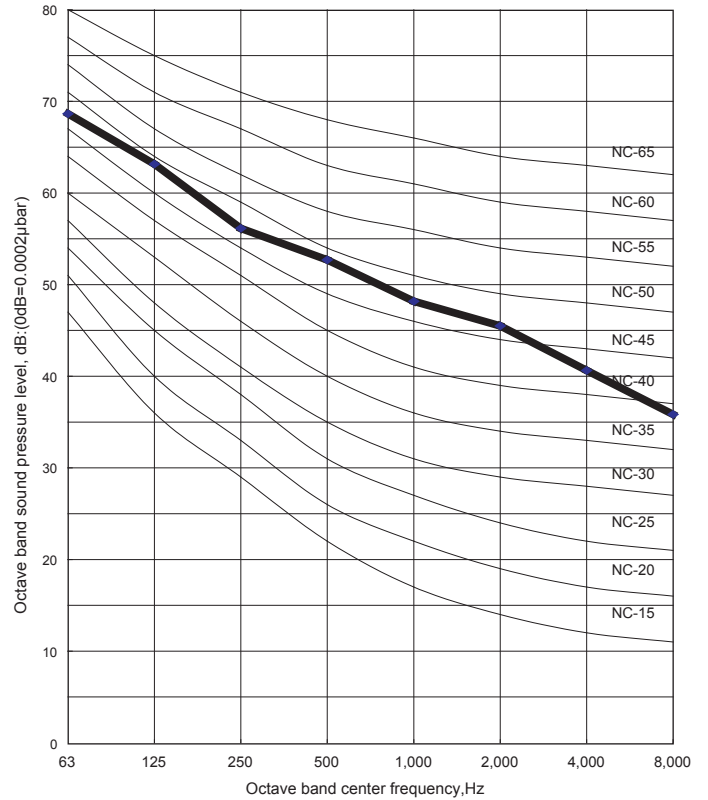


### MODEL : AO\*B24L

#### COOLING



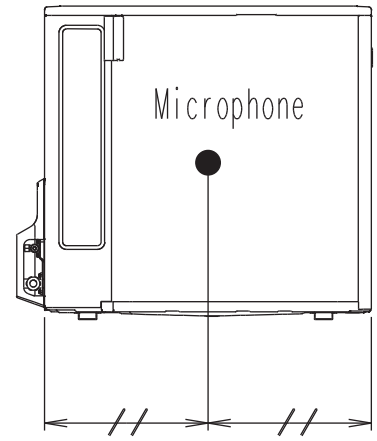
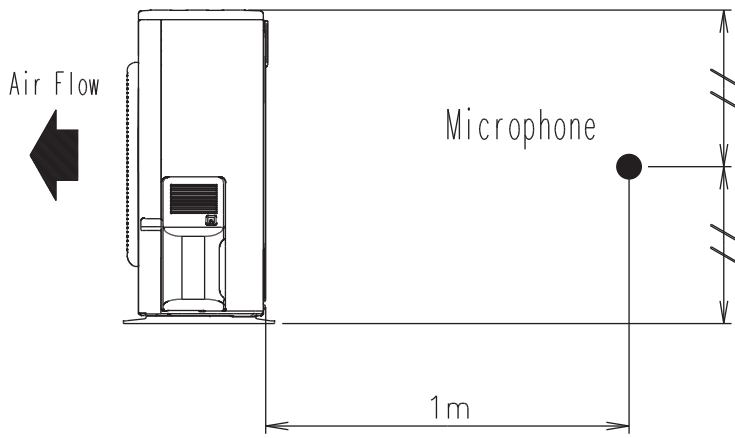
#### HEATING





## 8-2. SOUND LEVEL CHECK POINT

OUTDOOR UNIT  
AO\*B18-24L



OUTDOOR UNIT  
AO\*B18-24L

## 9. ELECTRIC CHARACTERISTICS

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 <sup>2</sup>	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

OUTDOOR UNIT  
AO\*B18-24L

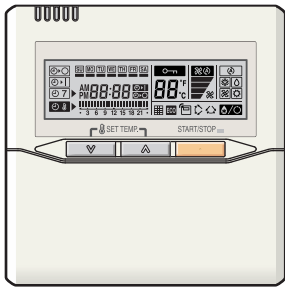
OUTDOOR UNIT  
AO\*B18-24L

	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 <sup>+15</sup> <sub>-10</sub> °C ON:95 <sup>+15</sup> <sub>-10</sub> °C	OFF:110 <sup>+15</sup> <sub>-10</sub> °C ON:105 <sup>+15</sup> <sub>-10</sub> °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	

## **REMOTE CONTROLLER**

### **3. WIRED 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.

REMOTE CONTROLLER  
UTB-\*/UD

REMOTE CONTROLLER  
UTB-\*/UD

## Simple function setting

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

## High performance and compact size

Three functions are combined in one unit.



## Built-in timers

### Weekly timer

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

Easy-to-understand time bar display

Screen after setup

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

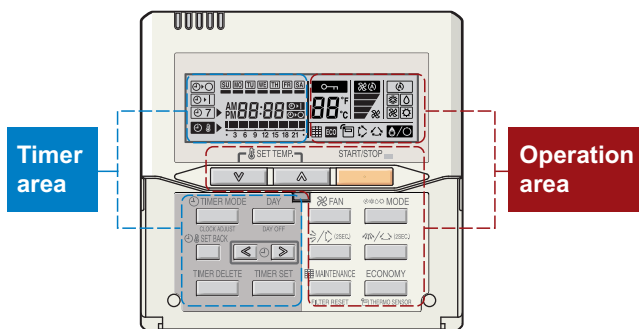
### Setback timer

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

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

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

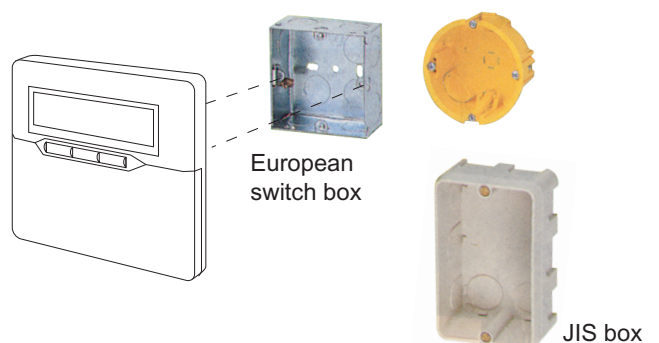
## Easy-to-understand operation



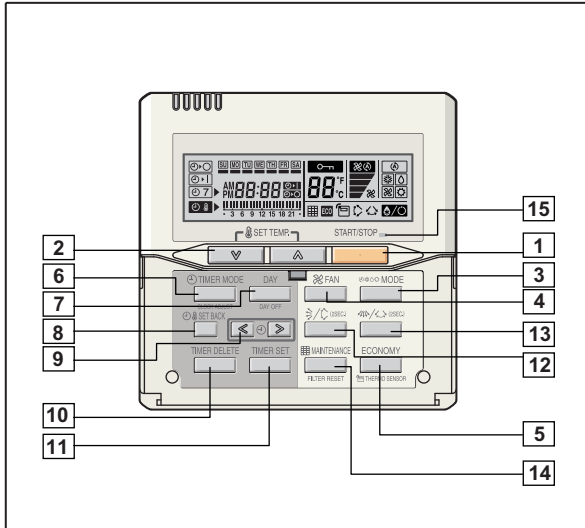
[ Variable timer control ]  
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

## Simple installation

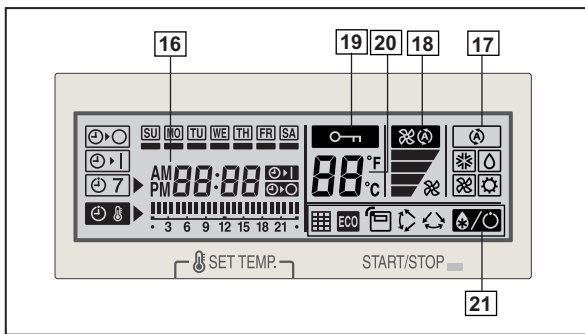
Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.



## FUNCTIONS

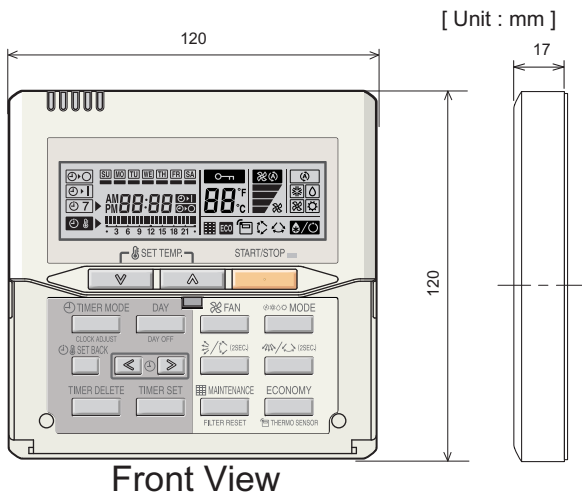


Display panel



- 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



## SPECIFICATION

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