Refrigerant
R410A

INDOOR UNIT

1. DUCT TYPE :

AR＊A18LALU
AR＊F18LALU
AR＊F18LBLU

D2D_AR029E/05
2009.04.16

DUCT TYPE
AR∗A18L

1. FEATURE

■MODEL :

INDOOR UNIT	OUTDOOR UNIT	
AR∗A18LALU AR∗F18LALU AR∗F18LBLU	AO∗A18LACL AO∗A18LALL	AO∗B18LACL AO∗B18LALL

■FEATURES

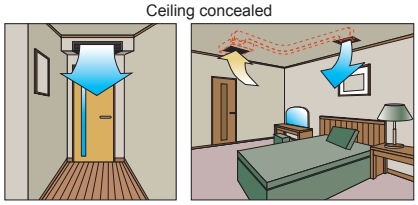
●Energy saving (AO∗A18LACL, AO∗A18LALL connection model)

High energy saving was realized by making the indoor unit and outdoor unit fan motor and compressor all DC and optimal design of the refrigerant cycle. Rank A was achieved in European energy rank.

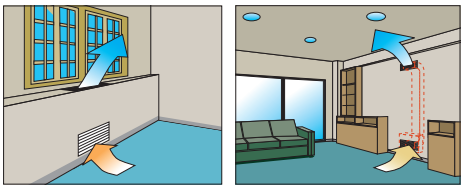
●Universal design indoor unit

Since vertical and horizontal installation is possible, and the intake direction can also be selected from two directions, flexible installation is possible.

Ceiling concealed



Floor concealed



●Thin and compact indoor unit

●Quiet mode

Operation at *27dB(A) possible by Quiet Mode.

* See our measurement conditions page (01-16).

■FUNCTION SETTING

●Static pressure mode setting

Air flow, noise, etc. can be used under the optimum conditions by selecting the static pressure mode matched to the installation conditions.

●Room temperature adjustment correction

Suitable room temperature control is performed by changing the room temperature correction value by simple remote control operation to match the conditions under which the air conditioner is installed.

●Auto restart

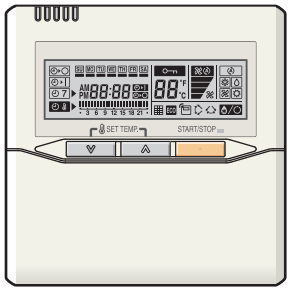
The units restart automatically when the current was returned even when there was a power interruption during operation.

DUCT TYPE
AR✳A18L

2. REMOTE CONTROLLER

WIRED REMOTE CONTROLLER

■FEATURES



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

●Simple function setting

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

●High performance and compact size

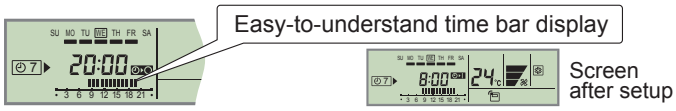
Three functions are combined in one unit.

Wired remote controller + Weekly timer + Setback timer

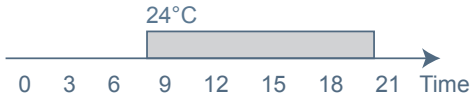
●Built-in timers

Weekly timer

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

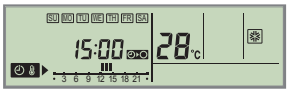


Setup screen example
(Set to Wednesday: 8:00 to 20:00.)

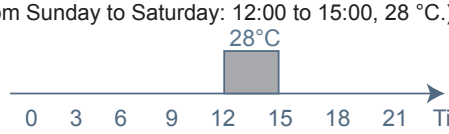


Setback timer

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

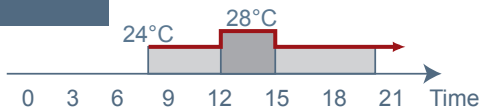


Setup screen example
(Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)

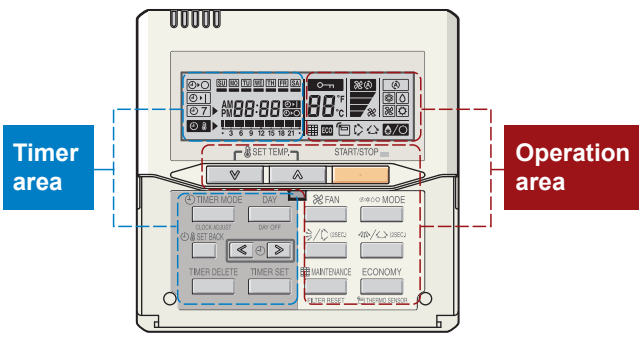


At "Weekly timer" + "Set back timer" setup

24°C→28°C→24°C



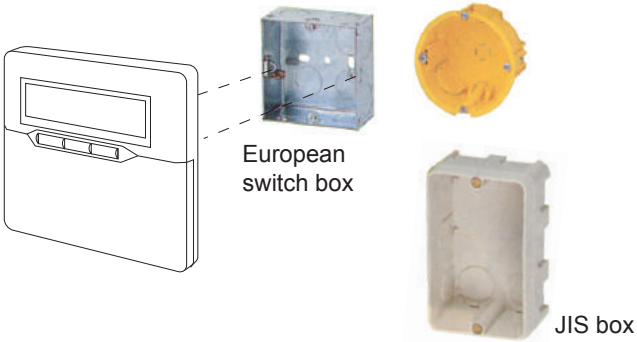
●Easy-to-understand operation



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

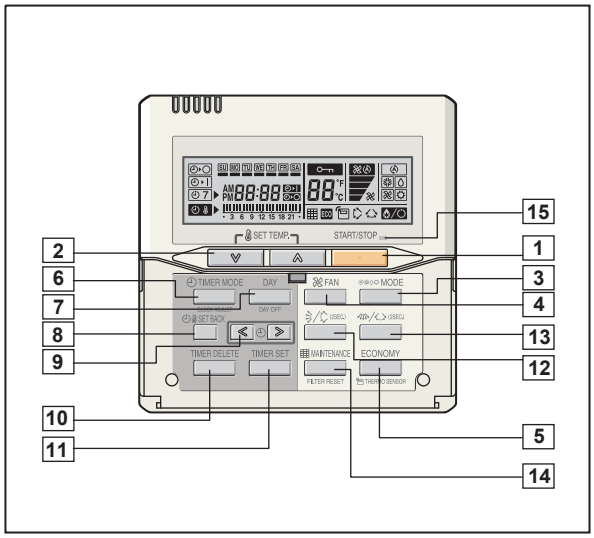
●Simple installation

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

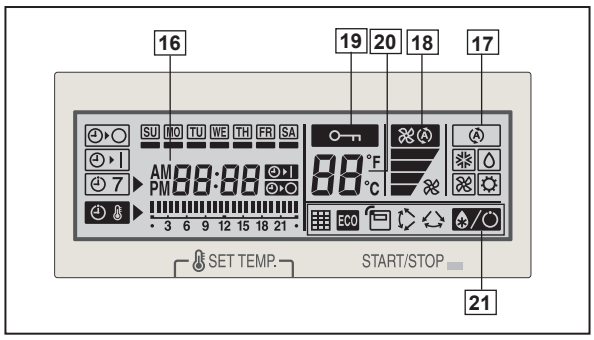


DUCT TYPE
AR✳A18L

■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

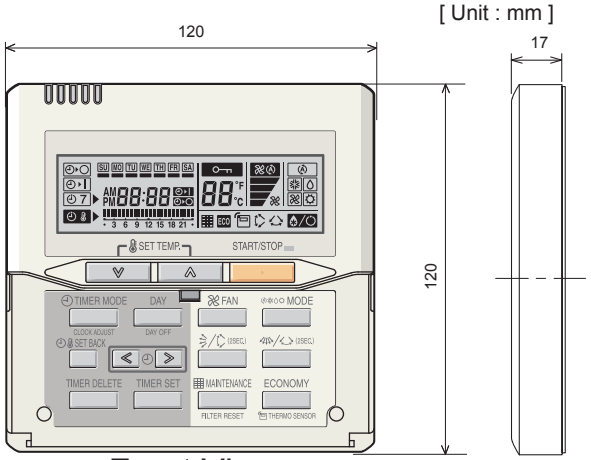
21 Function display

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

*These functions are not available.

■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

3. SPECIFICATIONS

Type					DUCTED MODEL
					INVERTER HEATPUMP
Model name					AR＊A18LALU, AR＊F18LALU, AR＊F18LBLU
					AO＊A18LACL, AO＊A18LALL
Power source					230V～ 50Hz
Available voltage range					198-264V ～ 50Hz
European energy label				Cooling	A
				Heating	A
Capacity	Cooling	Rated		kW	5.20
				BTU/h	17700
		Min.-Max.		kW	0.90 - 5.90
				BTU/h	3100 - 20100
	Heating	Rated		kW	6.00
				BTU/h	20500
		Min.-Max.		kW	0.90 - 7.50
				BTU/h	3100 - 25600
Input power	Cooling	Rated		kW	1.62
		*Max.			2.16
	Heating	Rated			1.66
		*Max.			2.96
Current	Cooling	Rated		A	7.1
		*Max.			9.0
	Heating	Rated			7.3
		*Max.			12.5
EER		Cooling		kW/kW	3.21
COP		Heating			3.61
Moisture removal				l/h (pints/h)	2.0 (3.5)
Fan	Airflow rate	Cooling	High	m^3/h	820
			Med		720
			Low		610
			Quiet		550
		Heating	High		820
			Med		720
			Low		610
			Quiet		550
	Type × Q'ty				Sirocco × 2
	Motor output			W	60
Recommended static pressure				Pa	0 to 90
Sound pressure level		Cooling	High	dB(A)	33
			Med		31
			Low		29
			Quiet		27
		Heating	High		33
			Med		31
			Low		29
			Quiet		27
Heat exchanger type		Dimensions (H × W × D)		mm	294 × 700 × 39.9
		Fin pitch			1.30
		Rows x Stages			3 × 14
		Pipe type			Copper
		Fin type			Aluminium
Enclosure		Material			Steel
		Colour			—
Dimensions (H×W ×D)	Net			mm	217 × 953 × 595
	Gross				324 × 1075 × 686
Weight	Net			kg(lb.)	23 (51)
	Gross				27 (60)
Connection pipe	Size	Liquid		mm	Φ6.35 (Φ1 / 4 in.)
		Gas			Φ12.70 (Φ1 / 2 in.)
	Method				Flare
Operation range		Cooling		°C	18 to 32
				%RH	80 or less
		Heating		°C	30 or less
Remote controller type					Wired
Drain pipe	Material				PS
	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.
Standard static pressure : 0 Pa
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
Sound pressure level : Install a 2m duct to the outlet port and a 1m duct to the suction poit and measure.
＊ The maximum current and the maximum input value are the maximum values when operated within the operation range (temperature).

DUCT TYPE
AR✱A18L

Type					DUCTED MODEL
					INVERTER HEATPUMP
Model name					AR＊A18LALU, AR＊F18LALU, AR＊F18LBLU
					AO＊B18LACL, AO＊B18LALL
Power source					230V～ 50Hz
Available voltage range					198-264V ～ 50Hz
European energy label				Cooling	B
				Heating	B
Capacity	Cooling	Rated		kW	5.20
				BTU/h	17700
		Min.-Max.		kW	0.90 - 5.70
				BTU/h	3100 - 19500
	Heating	Rated		kW	6.00
				BTU/h	20500
		Min.-Max.		kW	0.90 - 7.20
				BTU/h	3100 - 24600
Input power	Cooling	Rated		kW	1.70
		*Max.			2.16
	Heating	Rated			1.75
		*Max.			2.96
Current	Cooling	Rated		A	7.4
		*Max.			9.0
	Heating	Rated			7.7
		*Max.			12.5
EER		Cooling		kW/kW	3.06
COP		Heating			3.43
Moisture removal				l/h (pints/h)	2.0 (3.5)
Fan	Airflow rate	Cooling	High	m^3/h	820
			Med		720
			Low		610
			Quiet		550
		Heating	High		820
			Med		720
			Low		610
			Quiet		550
	Type × Q'ty				Sirocco × 2
	Motor output			W	60
Recommended static pressure				Pa	0 to 90
Sound pressure level		Cooling	High	dB(A)	33
			Med		31
			Low		29
			Quiet		27
		Heating	High		33
			Med		31
			Low		29
			Quiet		27
Heat exchanger type		Dimensions (H × W × D)		mm	294 × 700 × 39.9
		Fin pitch			1.30
		Rows x Stages			3 × 14
		Pipe type			Copper
		Fin type			Aluminium
Enclosure		Material			Steel
		Colour			—
Dimensions (H×W ×D)	Net			mm	217 × 953 × 595
	Gross				324 × 1075 × 686
Weight	Net			kg(lb.)	23 (51)
	Gross				27 (60)
Connection pipe	Size	Liquid		mm	Φ6.35 (Φ1 / 4 in.)
		Gas			Φ12.70 (Φ1 / 2 in.)
	Method				Flare
Operation range		Cooling		°C	18 to 32
				%RH	80 or less
		Heating		°C	30 or less
Remote controller type					Wired
Drain pipe	Material				PS
	Size			mm	Outer diameter：26.0 / Inner diameter：21.5

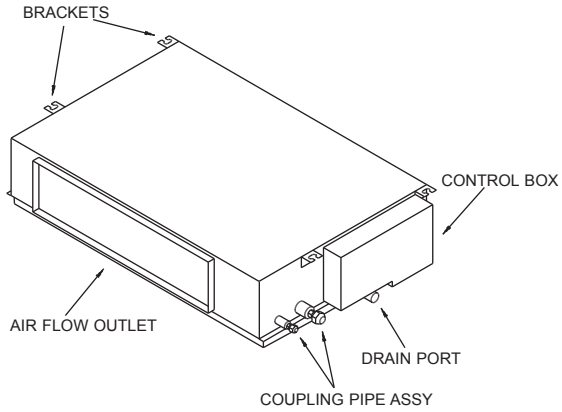
Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24°CWB.
Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB.
Standard static pressure : 0 Pa
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
Sound pressure level : Install a 2m duct to the outlet port and a 1m duct to the suction poit and measure.
＊ The maximum current and the maximum input value are the maximum values when operated within the operation range (temperature).

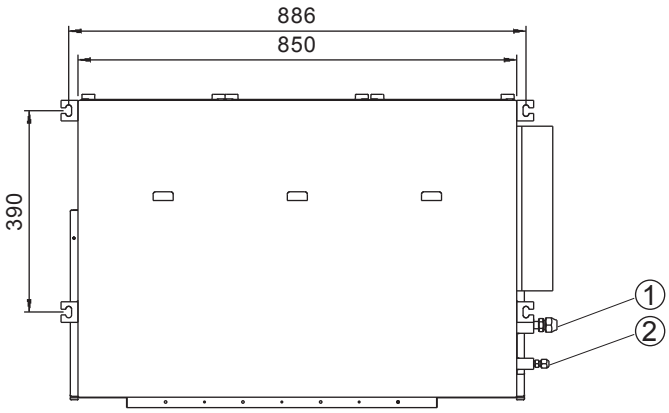
DUCT TYPE
AR∗A18L

4. DIMENSIONS

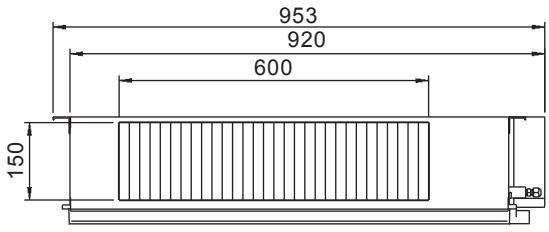
■MODEL : AR∗A18L, AR∗F18L

(Unit : mm)

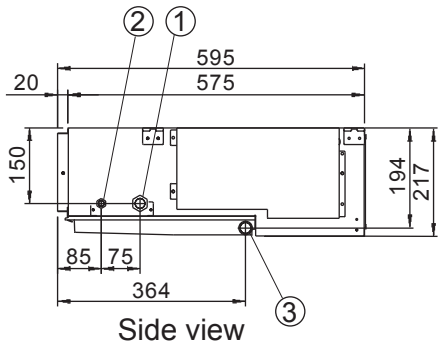




Top view



Front view



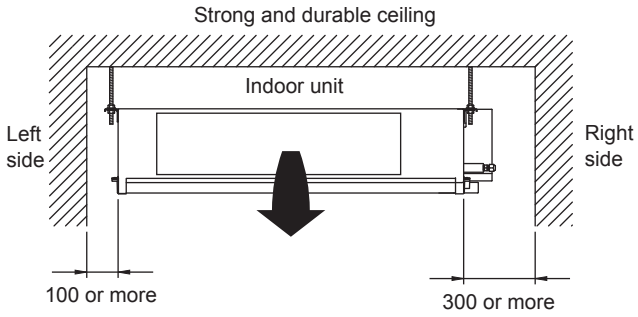
Side view

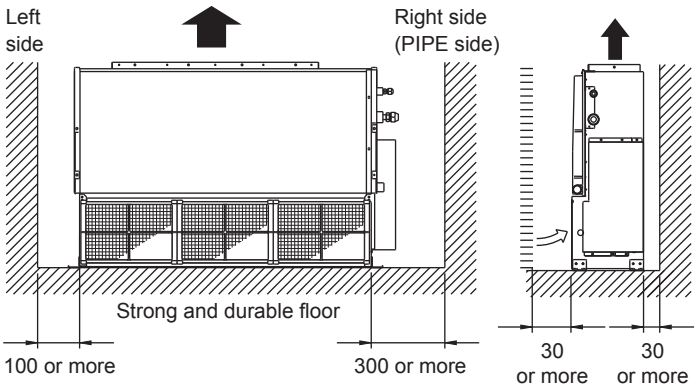
① Refrigerant piping flare connection (Gas)
② Refrigerant piping flare connection (Liquid)
③ Drain piping connection

DUCT TYPE
AR✳A18L

■MOUNTING POSITION

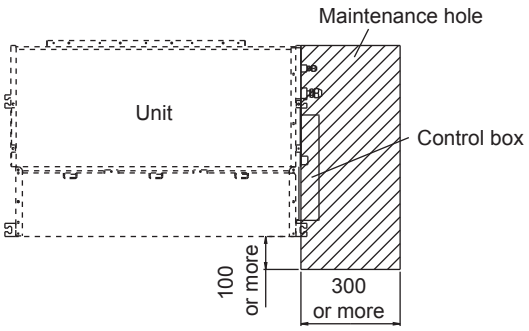
(Unit : mm)





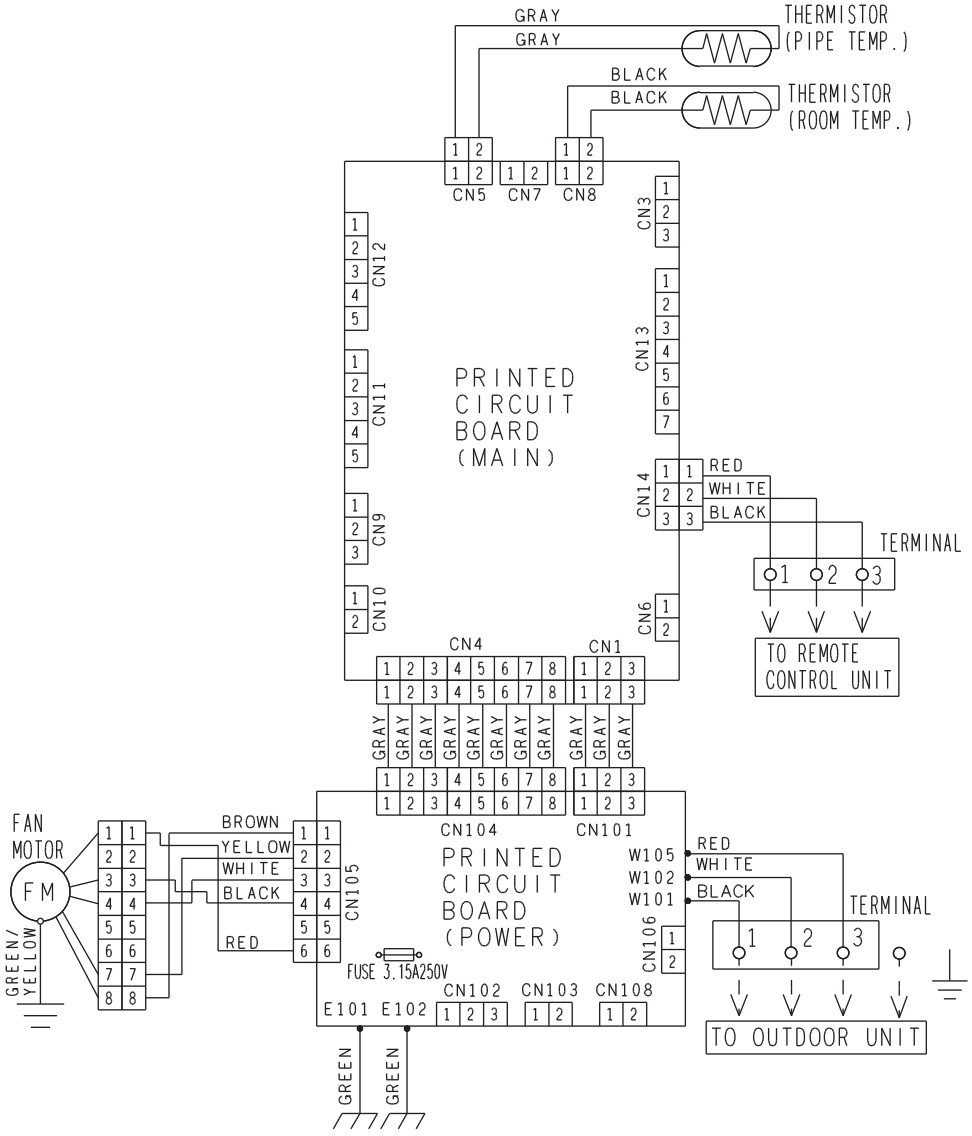
■MAINTENANCE HOLE

(Unit : mm)



5. WIRING DIAGRAMS

■MODEL : AR∗A18L, AR∗F18L



DUCT TYPE
AR✳A18L

6. CAPACITY TABLE

6-1. COOLING CAPACITY

This table is created using the maximum capacity.

■MODEL : AR✳A18L, AR✳F18L / AO✳A18L

AFR	13.7

		Indoor temperature																					
	°CDB	18			21			23			25			27			29			32			
	°CWB	12			15			16			18			19			21			23			
	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
Outdoor temperature	-10	4.44	3.44	0.35	4.94	3.46	0.35	5.11	3.77	0.35	5.45	3.78	0.36	5.62	4.08	0.36	5.96	4.06	0.36	6.29	4.33	0.37	
	0	4.34	3.40	0.41	4.83	3.42	0.42	5.00	3.71	0.42	5.33	3.72	0.42	5.49	4.02	0.42	5.82	4.01	0.43	6.15	4.27	0.43	
	5	4.20	3.33	0.51	4.68	3.35	0.52	4.84	3.64	0.52	5.16	3.65	0.53	5.32	3.94	0.53	5.64	3.93	0.54	5.96	4.19	0.54	
	10	4.04	3.25	0.62	4.50	3.27	0.63	4.66	3.56	0.63	4.96	3.57	0.63	5.12	3.86	0.64	5.42	3.84	0.64	5.73	4.09	0.65	
	15	4.10	3.28	0.54	4.56	3.30	0.54	4.72	3.59	0.55	5.03	3.60	0.55	5.19	3.89	0.56	5.50	3.87	0.56	5.81	4.12	0.57	
	20	5.22	3.83	1.17	5.82	3.85	1.19	6.02	4.19	1.19	6.41	4.20	1.21	6.61	4.54	1.21	7.01	4.52	1.22	7.40	4.81	1.24	
	25	4.98	3.71	1.31	5.55	3.73	1.33	5.74	4.06	1.34	6.12	4.07	1.35	6.31	4.40	1.36	6.69	4.38	1.38	7.06	4.66	1.39	
	30	4.73	3.58	1.46	5.27	3.60	1.48	5.45	3.92	1.49	5.81	3.93	1.51	5.98	4.25	1.51	6.34	4.23	1.53	6.70	4.50	1.55	
	35	4.66	3.55	1.74	5.19	3.57	1.76	5.37	3.88	1.77	5.72	3.90	1.79	5.90	4.21	1.80	6.25	4.19	1.82	6.61	4.46	1.84	
	40	3.41	2.96	1.24	3.80	2.98	1.25	3.92	3.24	1.26	4.18	3.25	1.27	4.31	3.51	1.28	4.57	3.50	1.29	4.83	3.72	1.31	
	46	2.43	2.53	0.94	2.70	2.54	0.95	2.79	2.76	0.96	2.98	2.77	0.97	3.07	2.99	0.97	3.25	2.98	0.98	3.44	3.18	0.99	

■MODEL : AR✳A18L, AR✳F18L / AO✳B18L

AFR	13.7

		Indoor temperature																					
	°CDB	18			21			23			25			27			29			32			
	°CWB	12			15			16			18			19			21			23			
	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
Outdoor temperature	-10	4.44	3.44	0.35	4.94	3.46	0.35	5.11	3.77	0.35	5.45	3.78	0.36	5.62	4.08	0.36	5.96	4.06	0.36	6.29	4.33	0.37	
	0	4.34	3.40	0.41	4.83	3.42	0.42	5.00	3.71	0.42	5.33	3.72	0.42	5.49	4.02	0.42	5.82	4.01	0.43	6.15	4.27	0.43	
	5	4.20	3.33	0.51	4.68	3.35	0.52	4.84	3.64	0.52	5.16	3.65	0.53	5.32	3.94	0.53	5.64	3.93	0.54	5.96	4.19	0.54	
	10	4.04	3.25	0.62	4.50	3.27	0.63	4.66	3.56	0.63	4.96	3.57	0.63	5.12	3.86	0.64	5.42	3.84	0.64	5.73	4.09	0.65	
	15	4.10	3.28	0.54	4.56	3.30	0.54	4.72	3.59	0.55	5.03	3.60	0.55	5.19	3.89	0.56	5.50	3.87	0.56	5.81	4.12	0.57	
	20	5.22	3.83	1.17	5.82	3.85	1.19	6.02	4.19	1.19	6.41	4.20	1.21	6.61	4.54	1.21	7.01	4.52	1.22	7.40	4.81	1.24	
	25	4.98	3.71	1.31	5.55	3.73	1.33	5.74	4.06	1.34	6.12	4.07	1.35	6.31	4.40	1.36	6.69	4.38	1.38	7.06	4.66	1.39	
	30	4.73	3.58	1.46	5.27	3.60	1.48	5.45	3.92	1.49	5.81	3.93	1.51	5.98	4.25	1.51	6.34	4.23	1.53	6.70	4.50	1.55	
	35	4.50	3.38	1.74	5.02	3.40	1.76	5.19	3.70	1.77	5.53	3.71	1.79	5.70	4.01	1.80	6.04	3.99	1.82	6.38	4.25	1.84	
	40	3.29	2.84	1.24	3.67	2.86	1.25	3.79	3.10	1.26	4.04	3.11	1.27	4.17	3.36	1.28	4.42	3.35	1.29	4.67	3.57	1.31	
	46	2.34	2.44	0.94	2.61	2.45	0.95	2.70	2.67	0.96	2.88	2.68	0.97	2.97	2.89	0.97	3.14	2.88	0.98	3.32	3.07	0.99	

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

DUCT TYPE
AR✳A18L

6-2. HEATING CAPACITY

This table is created using the maximum capacity.

■MODEL : AR✳A18L, AR✳F18L / AO✳A18L

AFR	13.7

		Indoor temperature										
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
Outdoor temperature	-15	-16	5.06	2.18	4.94	2.22	4.81	2.27	4.69	2.31	4.57	2.36
	-10	-11	5.71	2.29	5.58	2.33	5.44	2.38	5.30	2.43	5.17	2.48
	-5	-7	6.37	2.41	6.22	2.46	6.06	2.51	5.91	2.56	5.76	2.61
	0	-2	7.25	2.58	7.08	2.63	6.91	2.68	6.73	2.74	6.56	2.79
	5	3	8.13	2.75	7.93	2.81	7.74	2.87	7.55	2.93	7.35	2.98
	7	6	7.87	2.36	7.69	2.41	7.50	2.46	7.31	2.51	7.12	2.56
	10	8	8.16	2.41	7.97	2.46	7.77	2.51	7.58	2.57	7.39	2.62
	15	10	7.75	2.07	7.56	2.11	7.38	2.16	7.19	2.20	7.01	2.24
	20	15	7.24	1.65	7.07	1.68	6.90	1.72	6.73	1.75	6.55	1.79
	24	18	7.46	1.65	7.29	1.69	7.11	1.72	6.93	1.76	6.75	1.79

■MODEL : AR✳A18L, AR✳F18L / AO✳B18L

AFR	13.7

		Indoor temperature										
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
Outdoor temperature	-15	-16	5.06	2.18	4.94	2.22	4.81	2.27	4.69	2.31	4.57	2.36
	-10	-11	5.71	2.29	5.58	2.33	5.44	2.38	5.30	2.43	5.17	2.48
	-5	-7	6.37	2.41	6.22	2.46	6.06	2.51	5.91	2.56	5.76	2.61
	0	-2	7.25	2.58	7.08	2.63	6.91	2.68	6.73	2.74	6.56	2.79
	5	3	7.80	2.75	7.62	2.81	7.43	2.87	7.24	2.93	7.06	2.98
	7	6	7.56	2.36	7.38	2.41	7.20	2.46	7.02	2.51	6.84	2.56
	10	8	7.84	2.41	7.65	2.46	7.46	2.51	7.28	2.57	7.09	2.62
	15	10	7.44	2.07	7.26	2.11	7.08	2.16	6.90	2.20	6.73	2.24
	20	15	6.95	1.65	6.79	1.68	6.62	1.72	6.46	1.75	6.29	1.79
	24	18	7.17	1.65	7.00	1.69	6.82	1.72	6.65	1.76	6.48	1.79

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

DUCT TYPE
AR*A18L

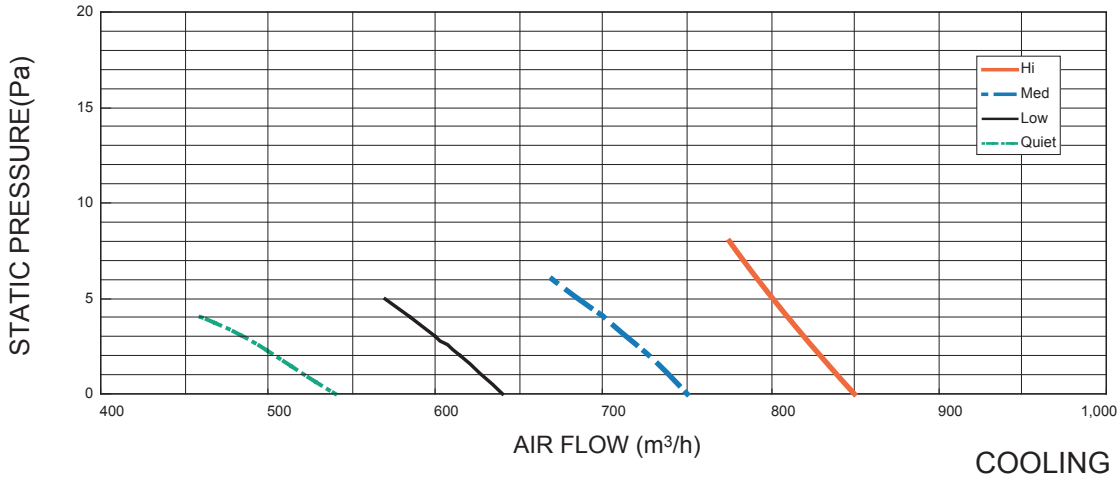
7. FAN PERFORMANCE AND CAPACITY

7-1. NORMAL MODE

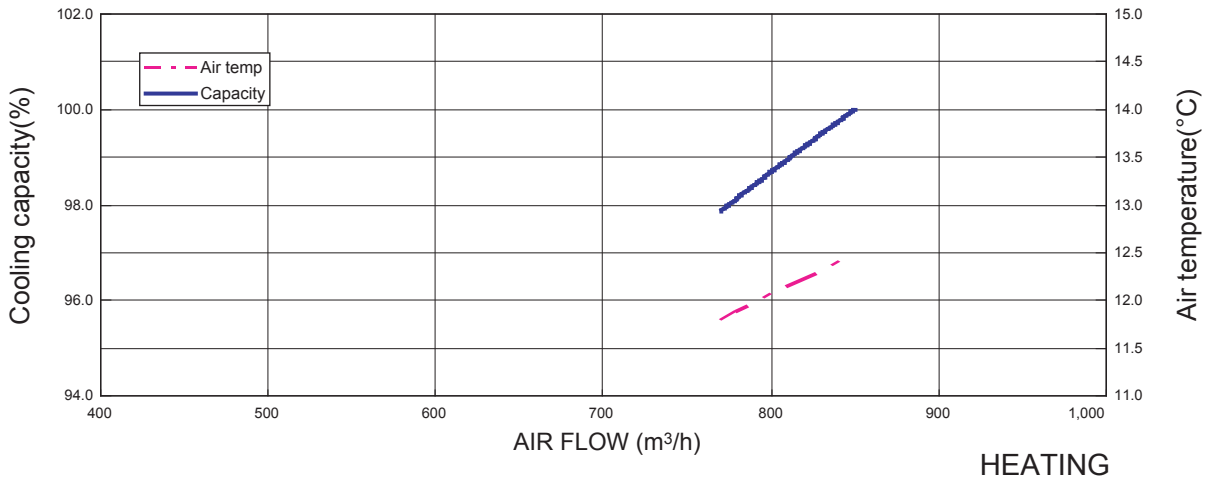
■MODEL : AR*A18L, AR*F18L

			Static pressure (Pa)							
			0	2	3	4	5	6	7	8
FAN SPEED	Hi	m^3/h	850	830	820	810	801	793	784	775
		l/s	236	231	228	225	223	220	218	215
		CFM	500	489	483	477	471	467	461	456
	Med	m^3/h	750	727	713	700	685	670	-	-
		l/s	208	202	198	194	190	186	-	-
		CFM	441	428	420	412	403	394	-	-
	Low	m^3/h	640	614	600	585	570	-	-	-
		l/s	178	171	167	163	158	-	-	-
		CFM	377	361	353	344	335	-	-	-
	Quiet	m^3/h	540	504	483	460	-	-	-	-
		l/s	150	140	134	128	-	-	-	-
		CFM	318	297	284	271	-	-	-	-

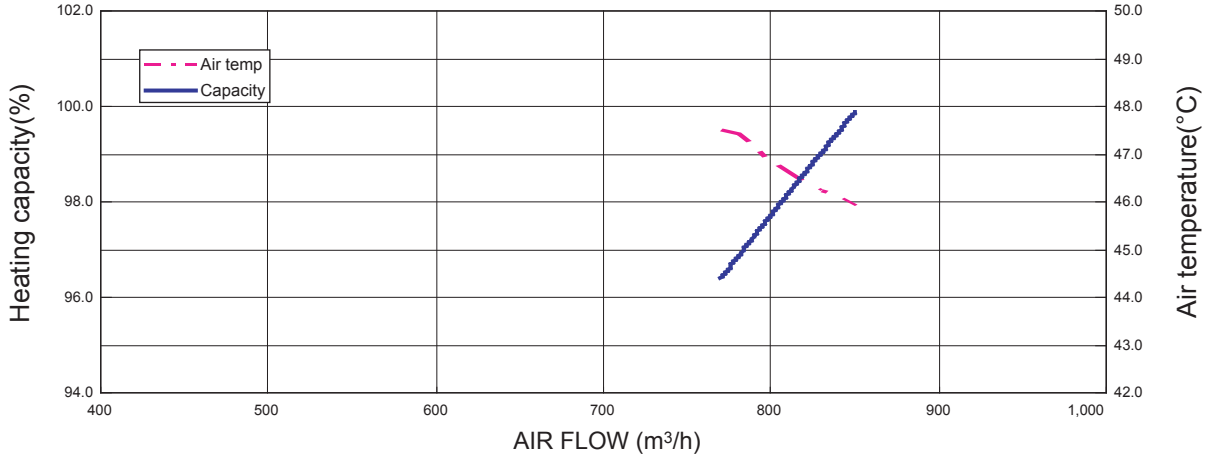
Q-h Characteristic curve



COOLING



HEATING



DUCT TYPE
AR✻A18L

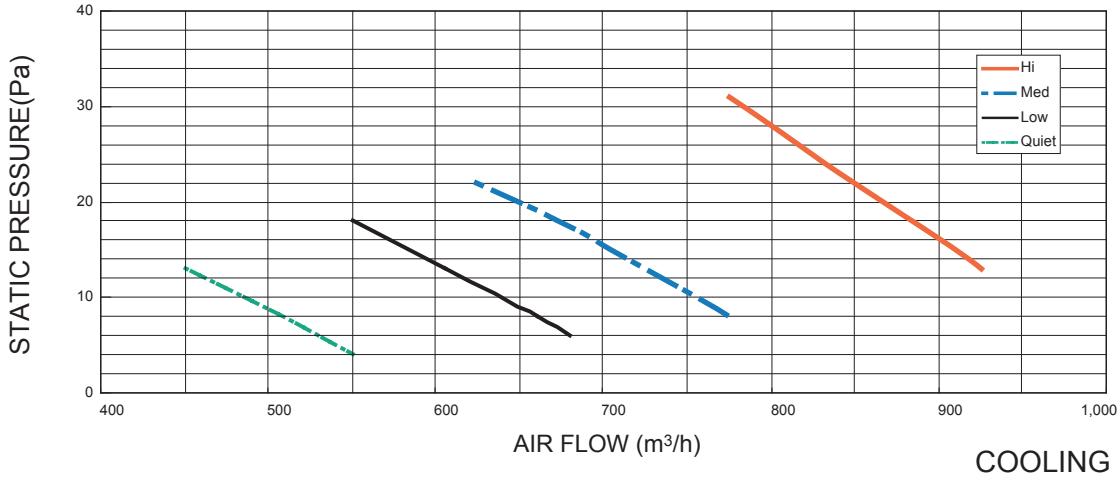
7-2. HIGH STATIC MODE

7-2-1. MODE 1

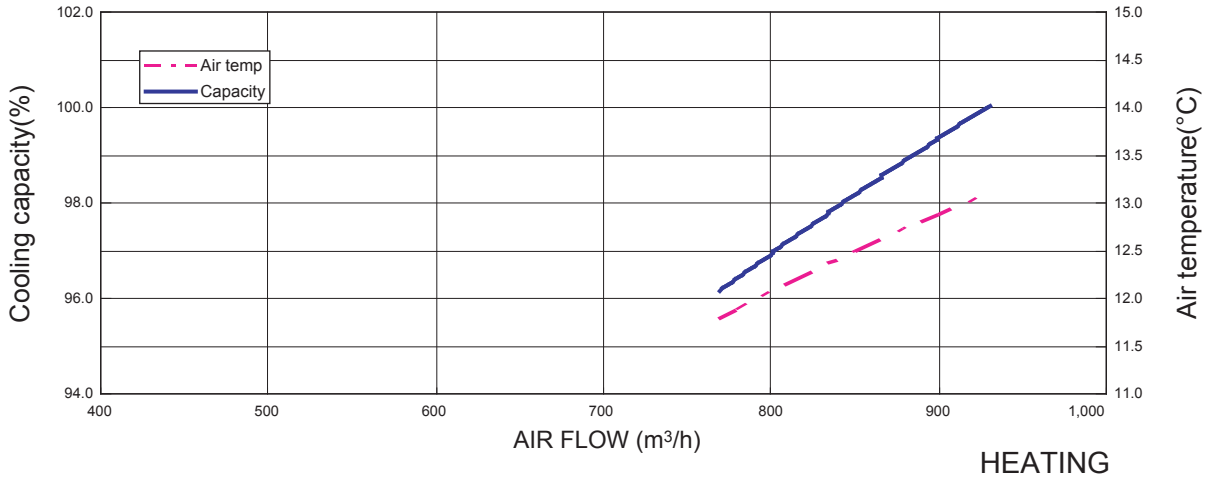
■MODEL : AR✻A18L, AR✻F18L

			Static pressure (Pa)							
			4	6	8	13	18	22	25	31
FAN SPEED	Hi	m^3/h	-	-	-	925	884	850	825	775
		l/s	-	-	-	257	246	236	229	215
		CFM	-	-	-	544	520	500	486	456
	Med	m^3/h	-	-	775	725	672	625	-	-
		l/s	-	-	215	201	187	174	-	-
		CFM	-	-	456	427	396	368	-	-
	Low	m^3/h	-	680	660	605	550	-	-	-
		l/s	-	189	183	168	153	-	-	-
		CFM	-	400	388	356	324	-	-	-
	Quiet	m^3/h	550	530	508	450	-	-	-	-
		l/s	153	147	141	125	-	-	-	-
		CFM	324	312	299	265	-	-	-	-

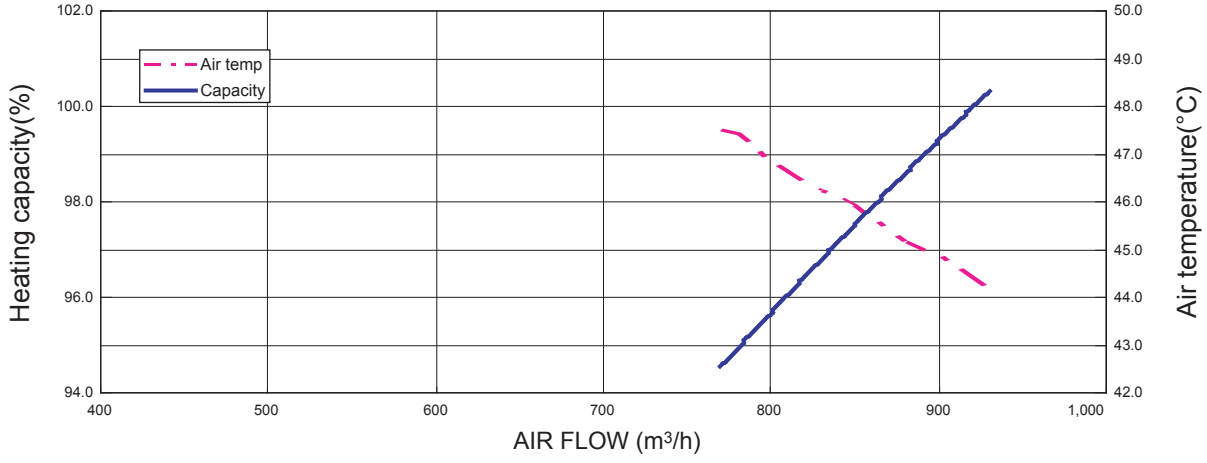
Q-h Characteristic curve



COOLING



HEATING



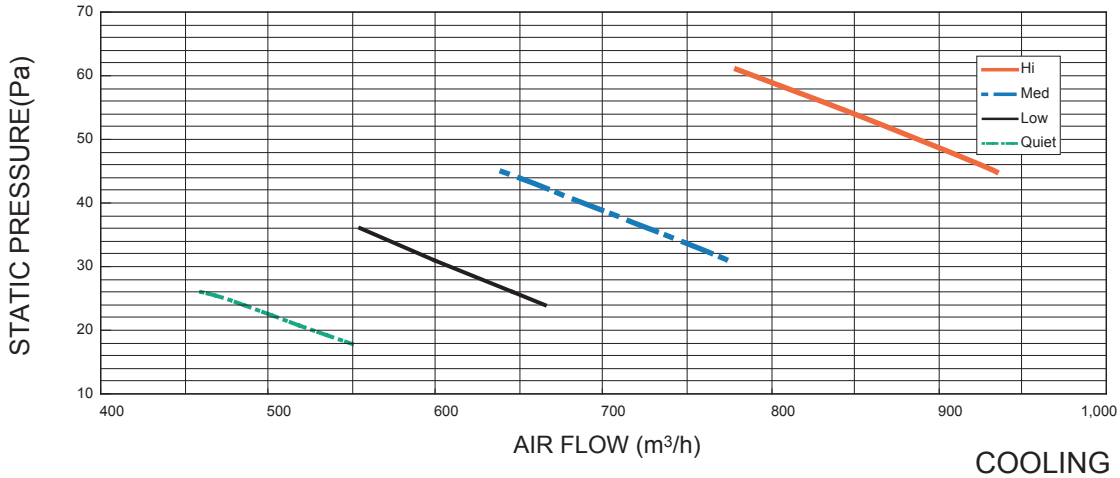
DUCT TYPE
AR*A18L

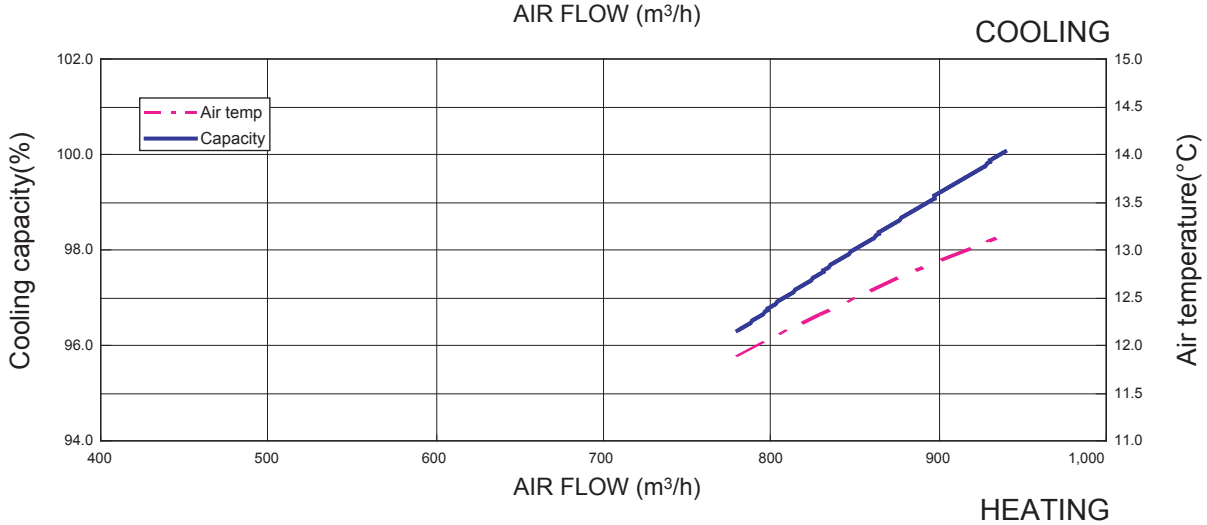
7-2-2. MODE 2

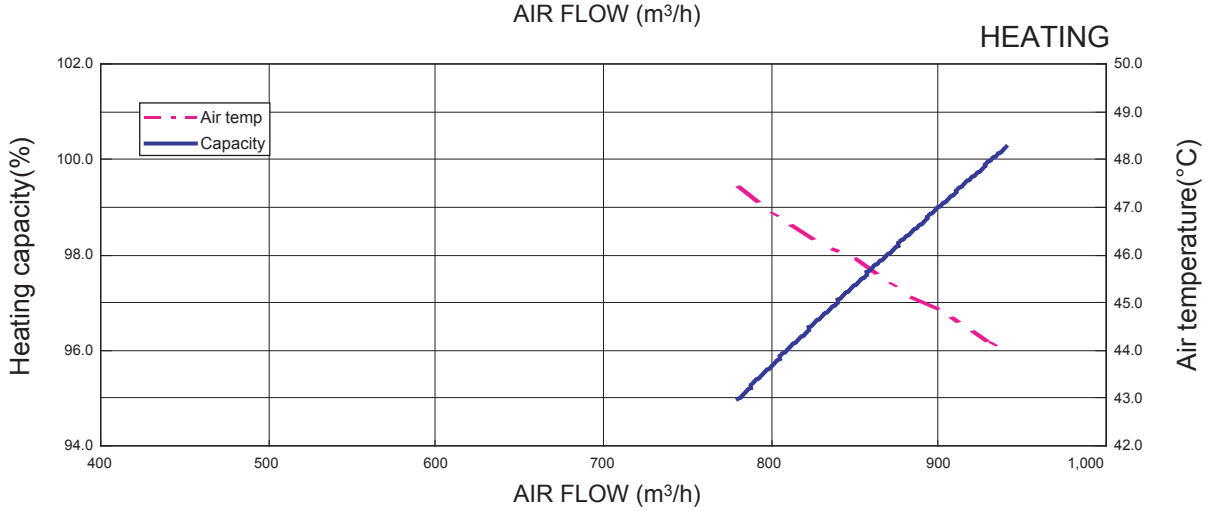
■MODEL : AR*A18L, AR*F18L

			Static pressure (Pa)							
			18	24	26	31	36	45	53	61
FAN SPEED	Hi	m^3/h	-	-	-	-	-	935	860	780
		l/s	-	-	-	-	-	260	239	217
		CFM	-	-	-	-	-	550	506	459
	Med	m^3/h	-	-	-	775	727	640	-	-
		l/s	-	-	-	215	202	178	-	-
		CFM	-	-	-	456	428	377	-	-
	Low	m^3/h	-	665	645	600	555	-	-	-
		l/s	-	185	179	167	154	-	-	-
		CFM	-	391	380	353	327	-	-	-
	Quiet	m^3/h	550	485	460	-	-	-	-	-
		l/s	153	135	128	-	-	-	-	-
		CFM	324	285	271	-	-	-	-	-

Q-h Characteristic curve







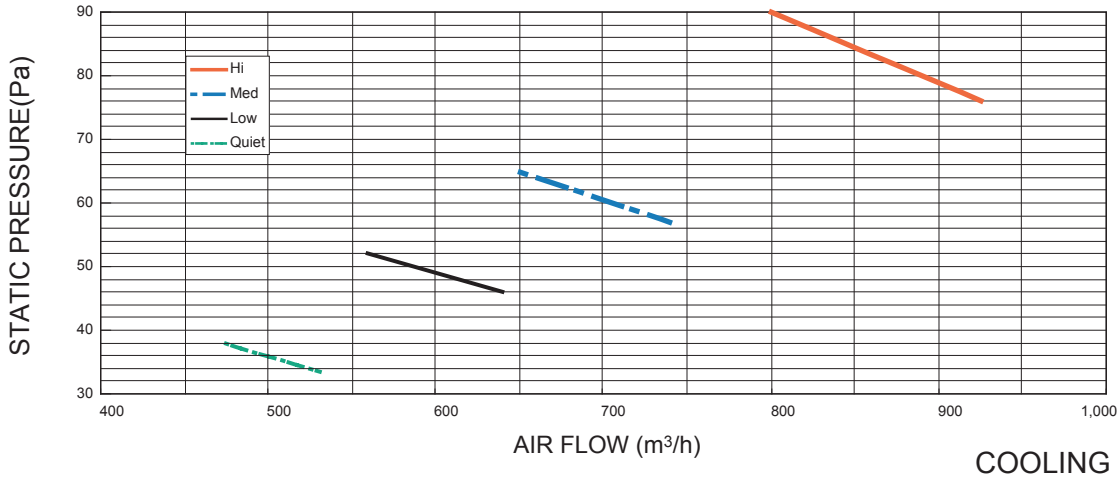
DUCT TYPE
AR✳A18L

7-2-3. MODE 3

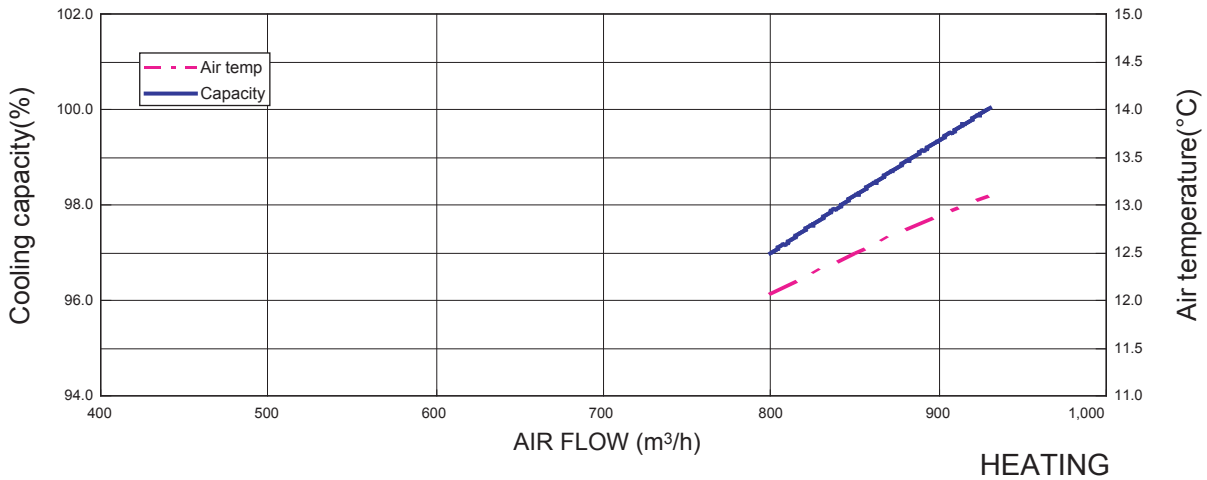
■MODEL : AR∗A18L, AR∗F18L

			Static pressure (Pa)							
			34	38	46	52	57	65	76	90
FAN SPEED	Hi	m^3/h	-	-	-	-	-	-	925	800
		l/s	-	-	-	-	-	-	257	222
		CFM	-	-	-	-	-	-	544	471
	Med	m^3/h	-	-	-	-	740	650	-	-
		l/s	-	-	-	-	206	181	-	-
		CFM	-	-	-	-	436	383	-	-
	Low	m^3/h	-	-	640	560	-	-	-	-
		l/s	-	-	178	156	-	-	-	-
		CFM	-	-	377	330	-	-	-	-
	Quiet	m^3/h	525	475	-	-	-	-	-	-
		l/s	146	132	-	-	-	-	-	-
		CFM	309	280	-	-	-	-	-	-

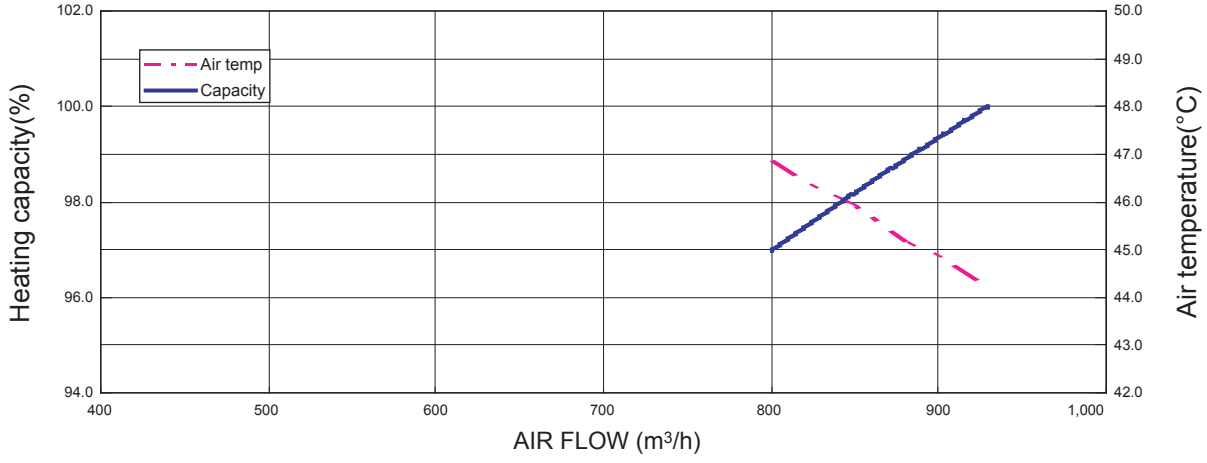
Q-h Characteristic curve



COOLING



HEATING



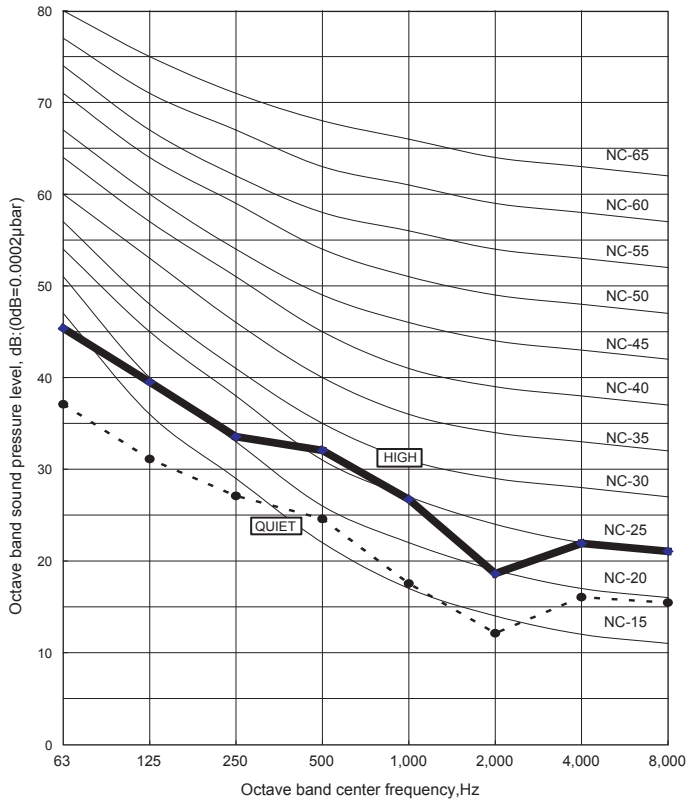
8. OPERATION NOISE

8-1. NOISE LEVEL CURVE

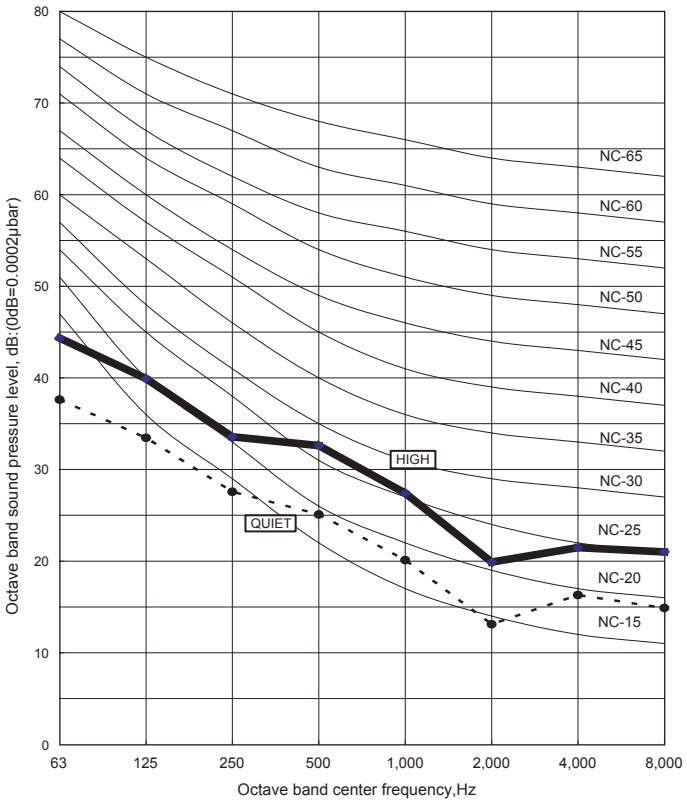
Condition
Static pressure : 0Pa
Static mode : Normal

■MODEL : AR＊A18L, AR＊F18L

●COOLING

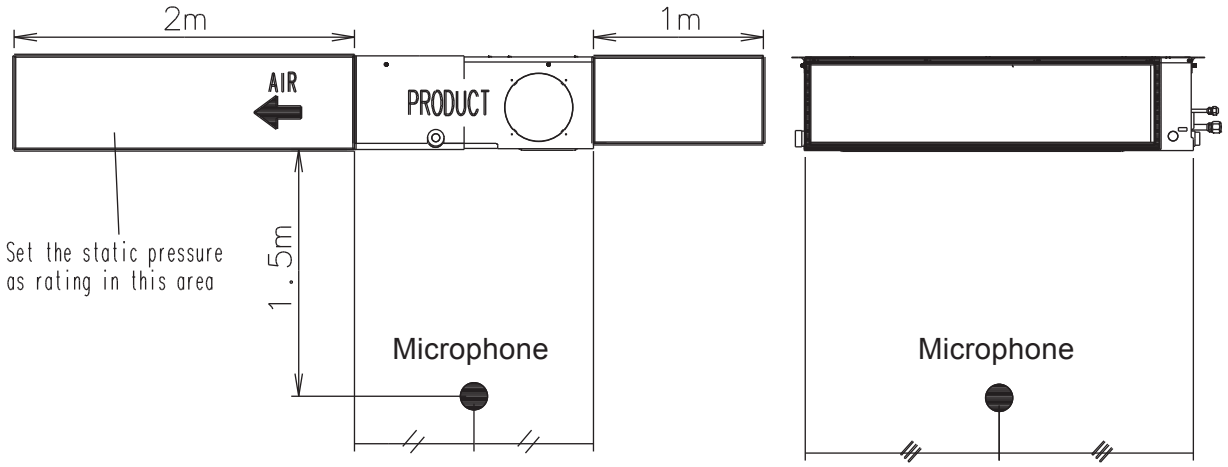


●HEATING



DUCT TYPE
AR✳A18L

8-2. SOUND LEVEL CHECK POINT



9. ELECTRIC CHARACTERISTICS

DUCT TYPE
AR✳A18L

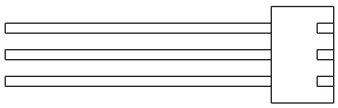
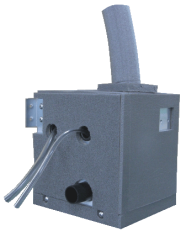
Model Name			AR＊A18L, AR＊F18L
Power Supply	Voltage	V	230～
	Frequency	Hz	50
Max Operating Current		A	0.5
*1)Wiring Spec.	Connection Cable	mm^2	1.5 - 2.5
	Limited wiring length	m	26

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

10. SAFETY DEVICES

	Protection form	Model
		AR＊A18L, AR＊F18L
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
	Remote Sensor	UTD-RS100	New amenity space can be offered by installing the **Remote sensor** in the remote controller.
	External control set	UTD-ECS5A	Use to connect with various peripheral devices and air conditioner PC board.
	IR Receiver unit	UTY-LRH✱1	Unit control is performed by wireless remote controller.
	Drain pump unit	UTZ-PX1BBA	Optional drain lift up mechanism allows more flexible installation.

Refrigerant
R410A

OUTDOOR UNIT

2. SINGLE TYPE :

AO＊A18LACL

AO＊A18LALL

AO＊A24LACL

AO＊A24LALL

D2D_AO004E/04
2008.04.08

1. SPECIFICATIONS

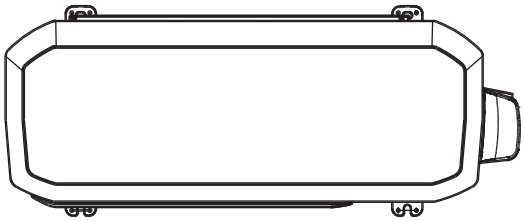
Type					INVERTER HEATPUMP	
Model name					AO ∗ A18LACL AO ∗ A18LALL	AO ∗ A24LACL AO ∗ A24LALL
Power source					230V～ 50Hz	
Available voltage range					198-264V～ 50Hz	
Starting current				A	7.7	10.0
Fan	Airflow rate	Cooling		m^3/h	2000	2470
		Heating			1910	2470
	Type × Q'ty				Propeller × 1	
	Motor 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)

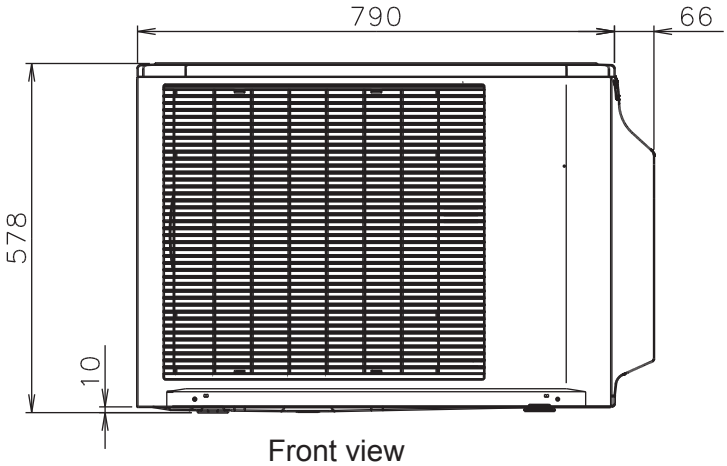
2. DIMENSIONS

■MODELS : AO∗A18L, AO∗A24L

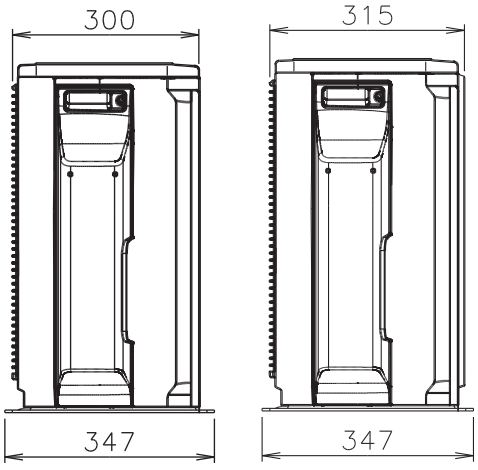
(Unit : mm)



Top view

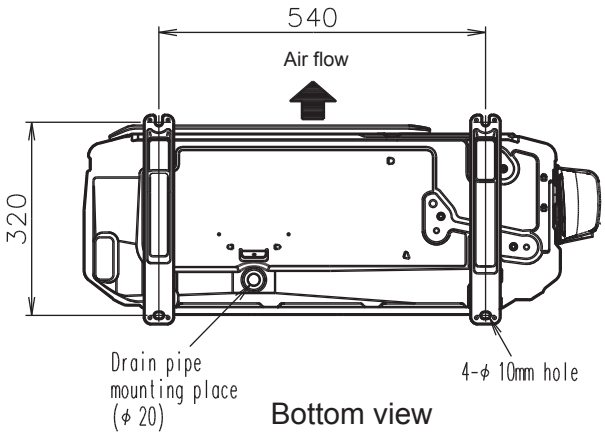


Front view

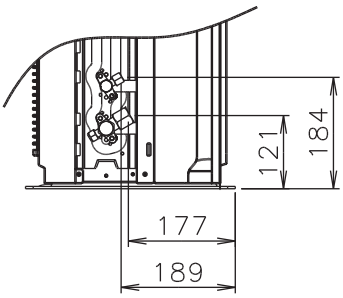


AO∗A18L AO∗A24L

Side view

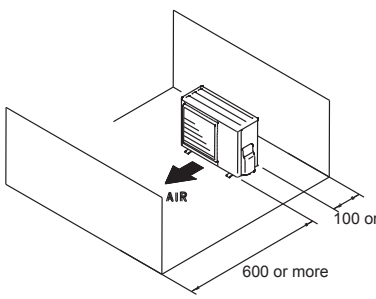


Bottom view

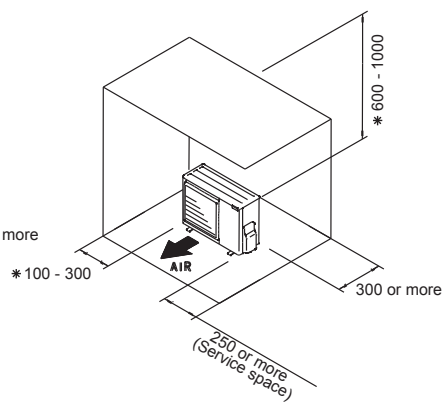


■MOUNTING POSITION

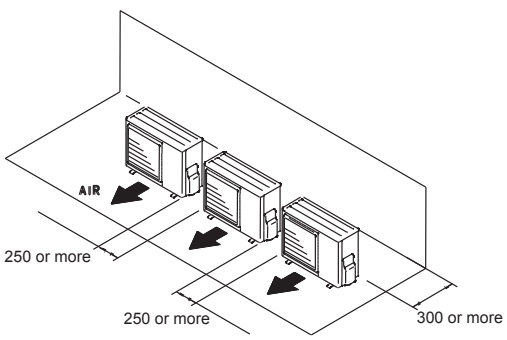
When there are obstacles at the back or front sides.



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

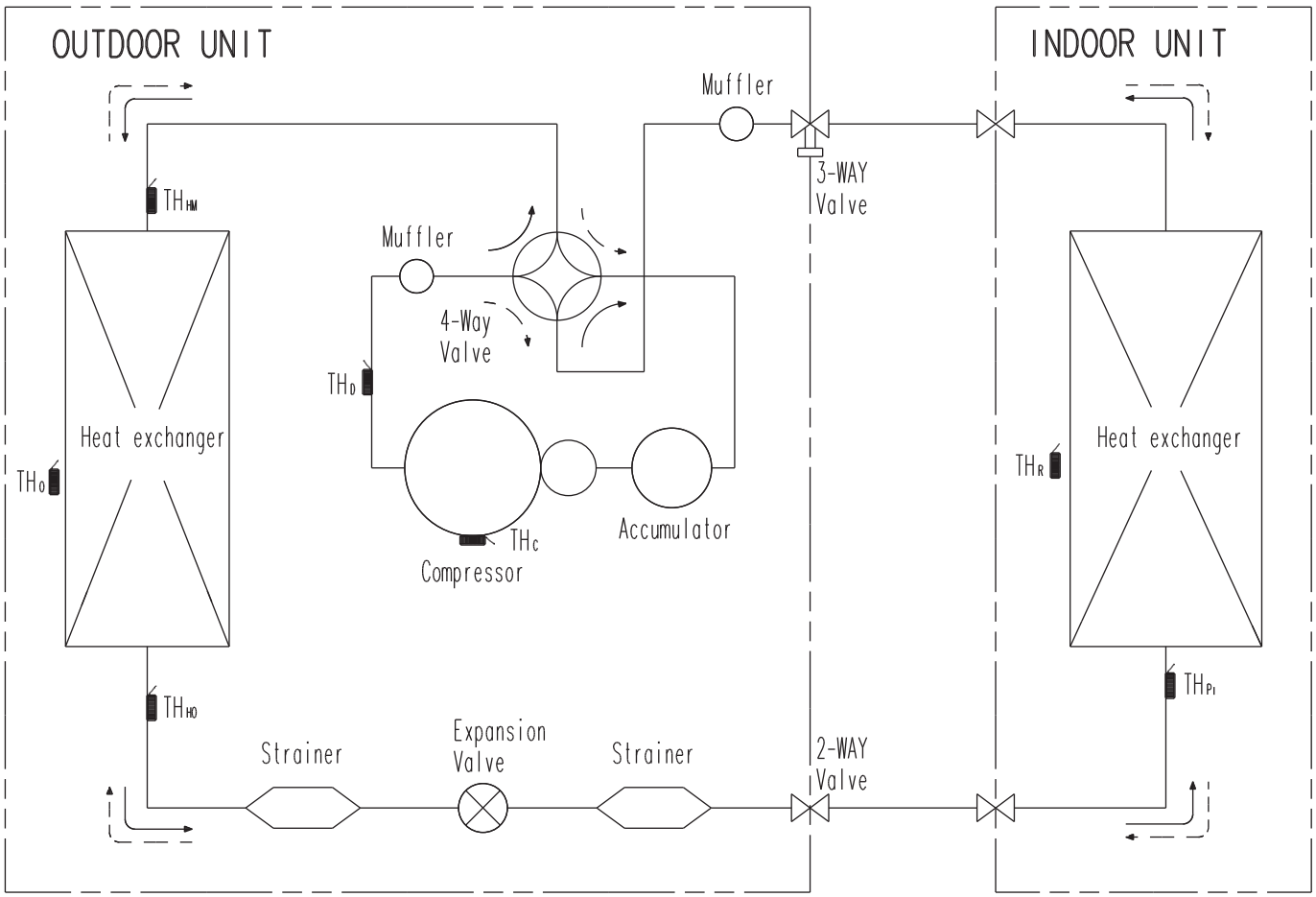


When there are obstacles at the back, side with the installation of more than one unit.



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

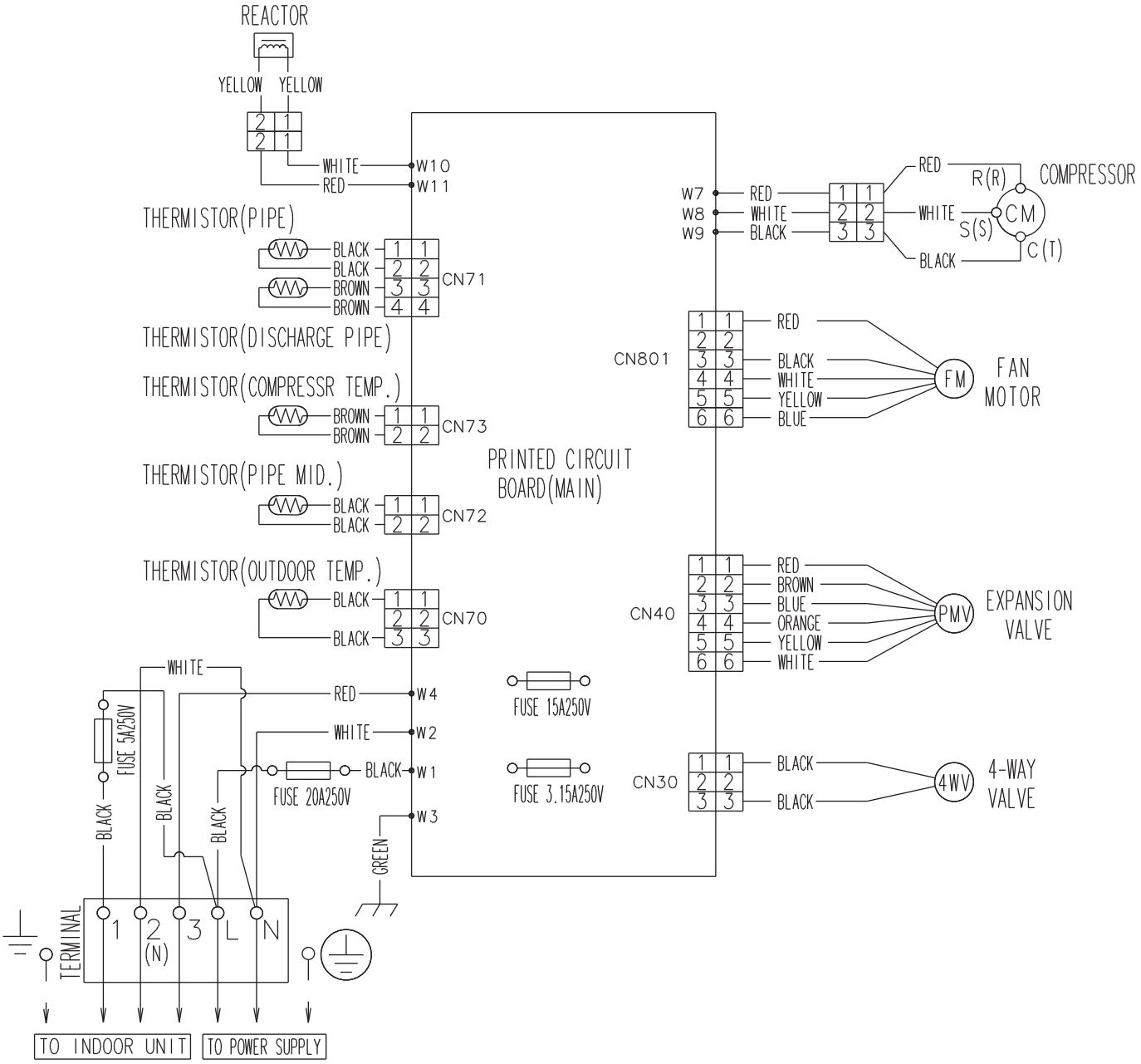
3. REFRIGERANT CIRCUIT



OUTDOOR UNIT
AO*A18-24L

4. WIRING DIAGRAMS

■MODELS : AO*A18L, AO*A24L



OUTDOOR UNIT
AO*A18-24L

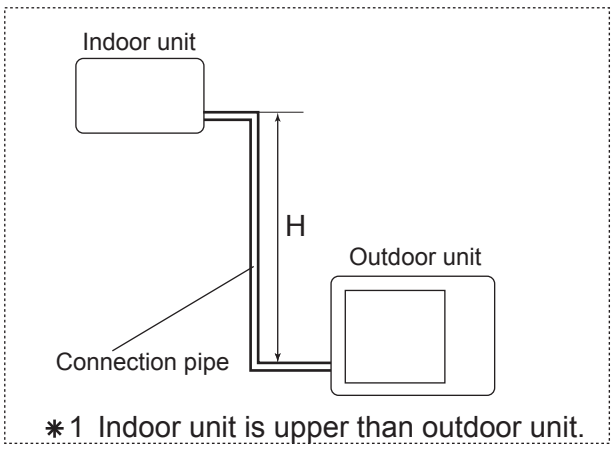
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL : AO∗A18L

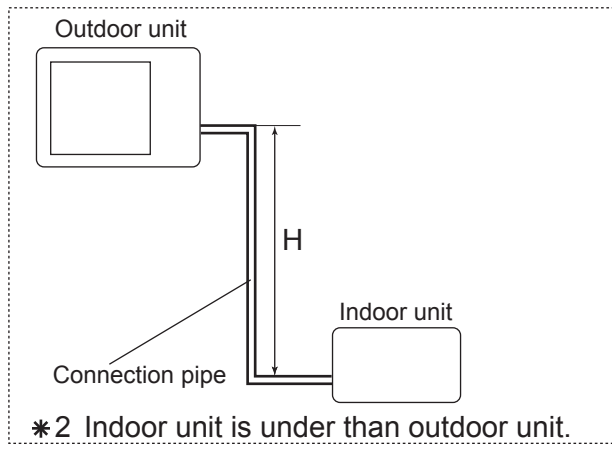
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2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

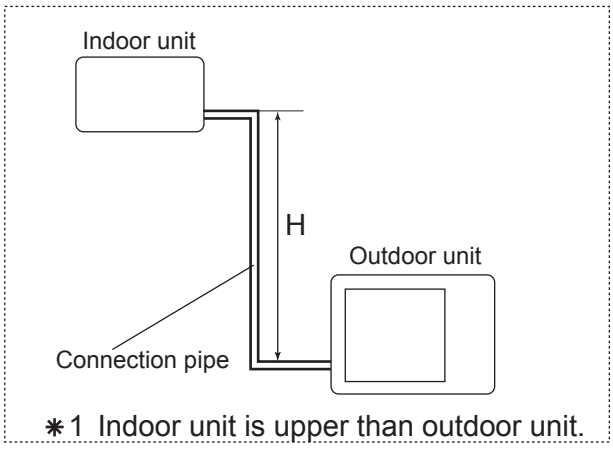
OUTDOOR UNIT
AO∗A18-24L

■MODEL : AO∗A24L

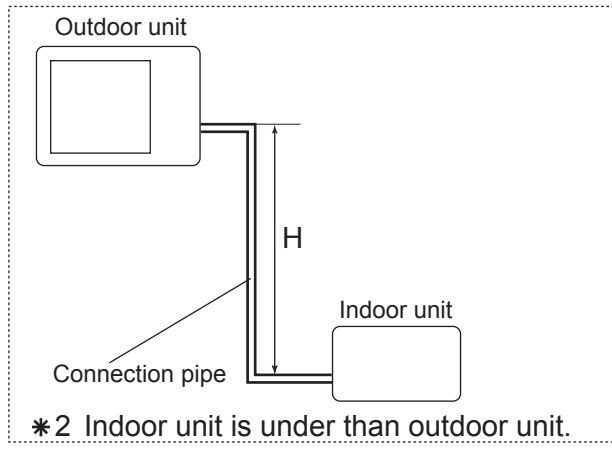
COOLING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.963	0.961	0.959
		10	-	-	0.984	0.981	0.979	0.977	0.975
		7.5	-	0.988	0.988	0.985	0.983	0.981	0.979
		5	0.992	0.992	0.992	0.989	0.987	0.985	0.983
		0	1.000	1.000	1.000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

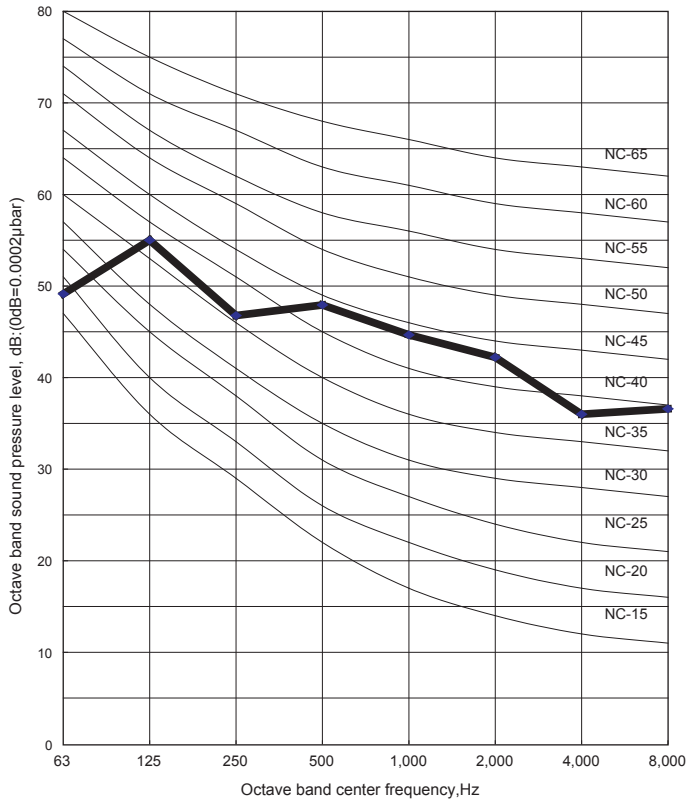
OUTDOOR UNIT
AO*A18-24L

8. OPERATION NOISE

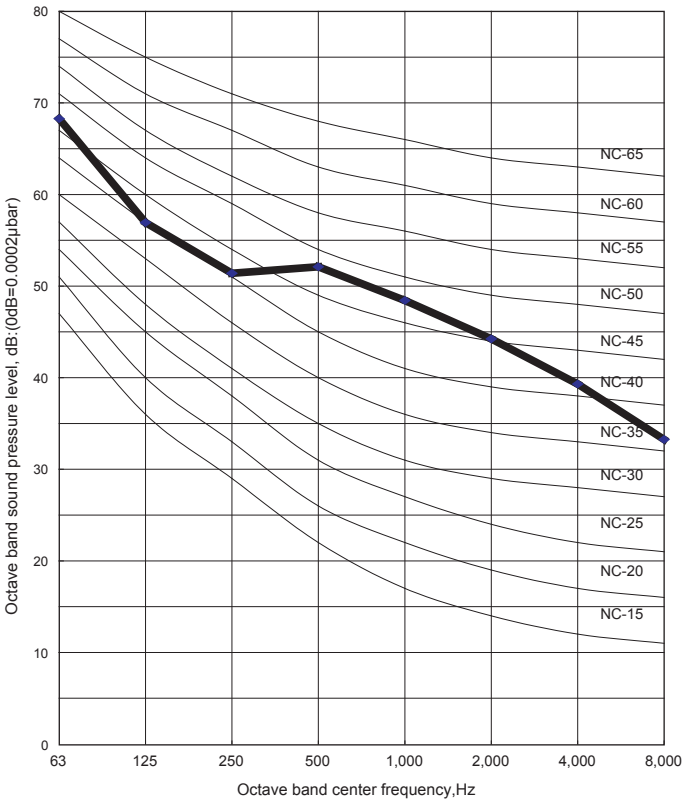
8-1. NOISE LEVEL CURVE

■COOLING

●MODEL : AO∗A18L

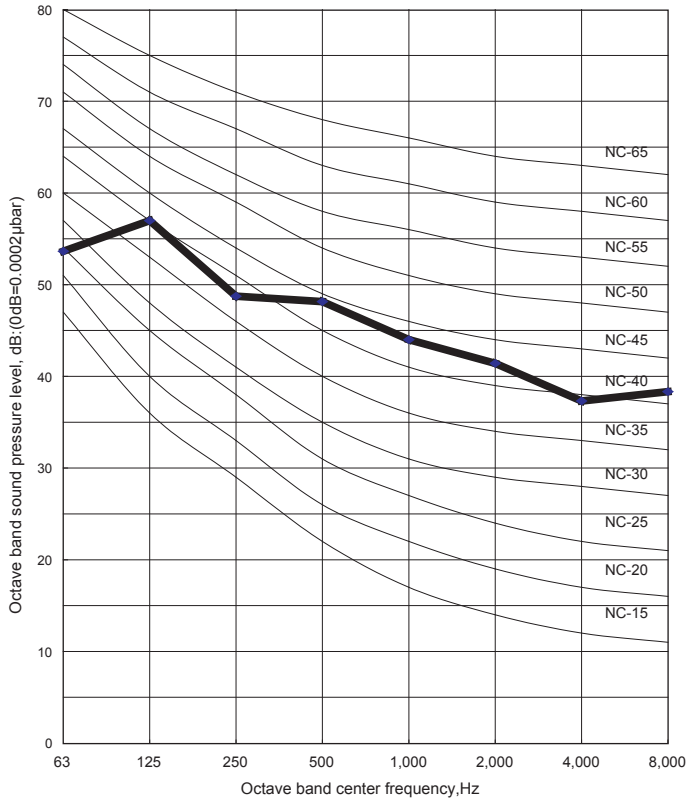


●MODEL : AO∗A24L

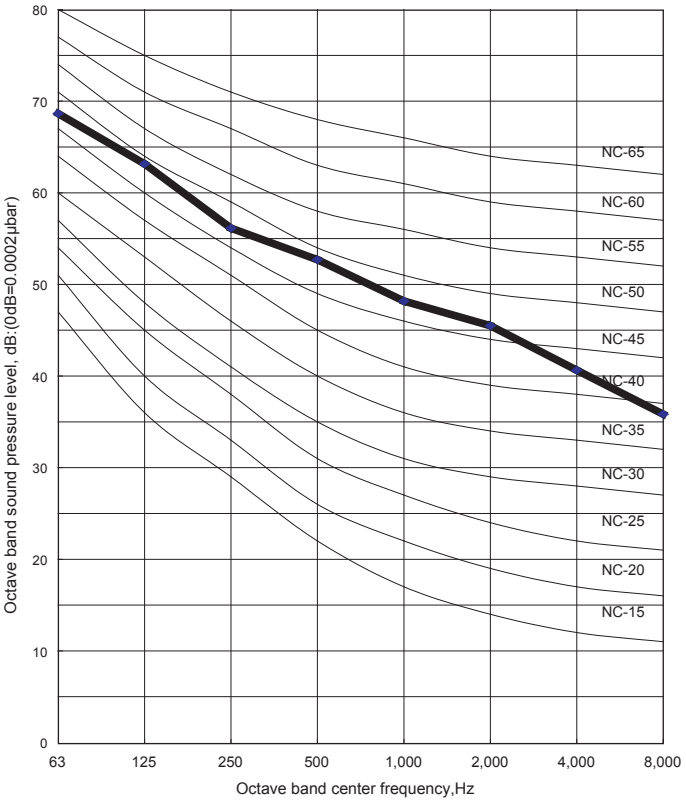


■HEATING

●MODEL : AO∗A18L

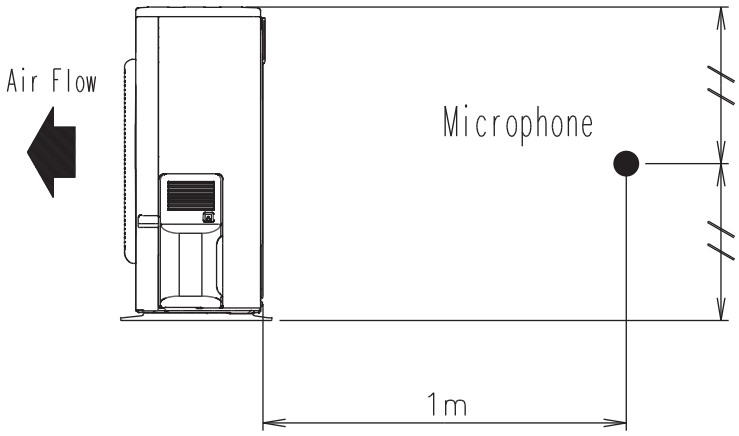


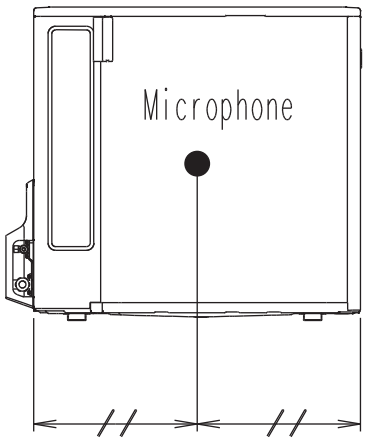
●MODEL : AO∗A24L



OUTDOOR UNIT
AO∗A18-24L

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

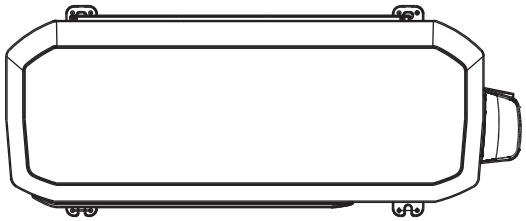
Type				INVERTER HEATPUMP	
Model name				AO*B18LACL AO*B18LALL	AO*B24LACL AO*B24LALL
Power source				230V ～ 50Hz	
Available voltage range				198-264V ～ 50Hz	
Starting current			A	7.7	10.0
Fan	Airflow rate	Cooling	m^3/h	2000	2470
		Heating		1910	2470
	Type × Q'ty			Propeller × 1	
	Motor output		W	54	65
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)

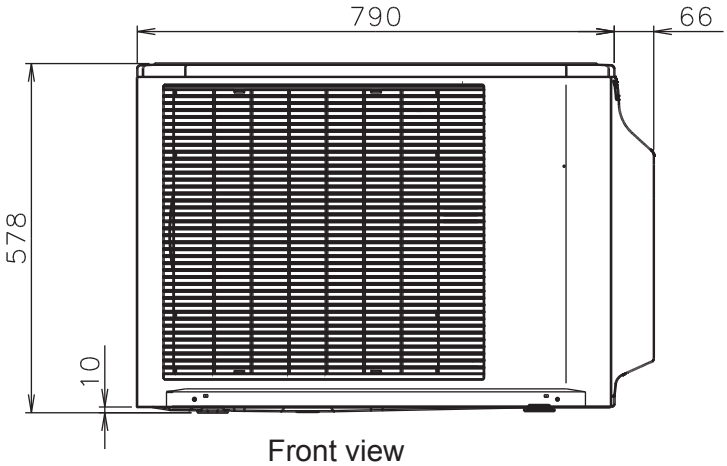
2. DIMENSIONS

■MODEL : AO∗B18L, AO∗B24L

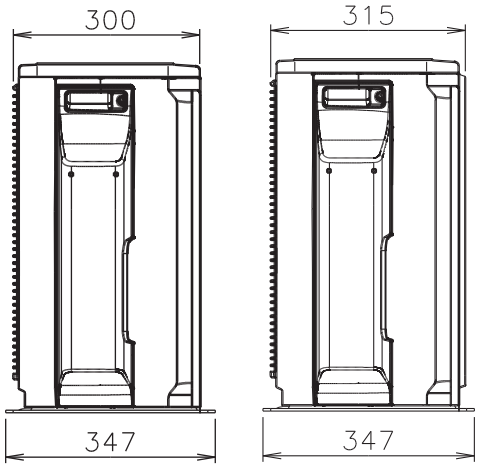
(Unit : mm)



Top view

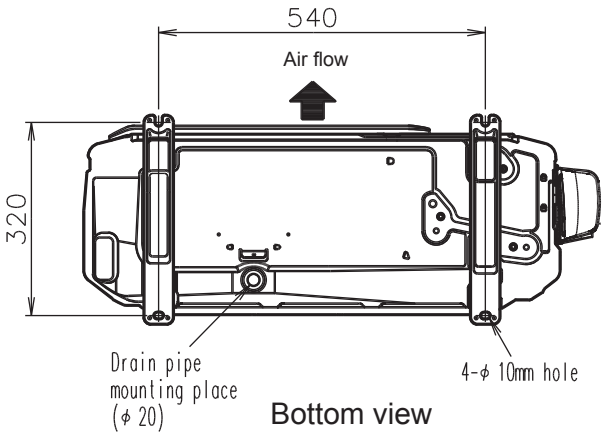


Front view

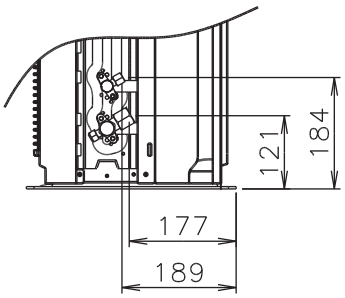


AO∗B18L AO∗B24L

Side view



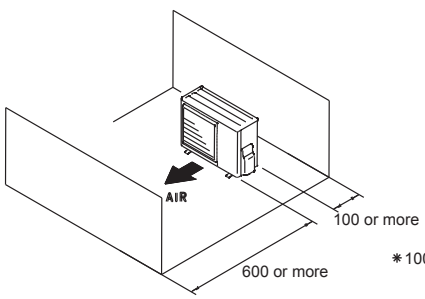
Bottom view



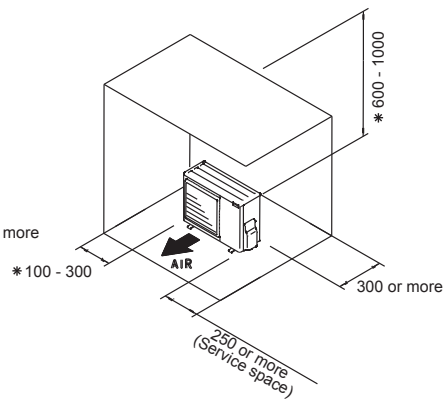
■MOUNTING POSITION

(Unit : mm)

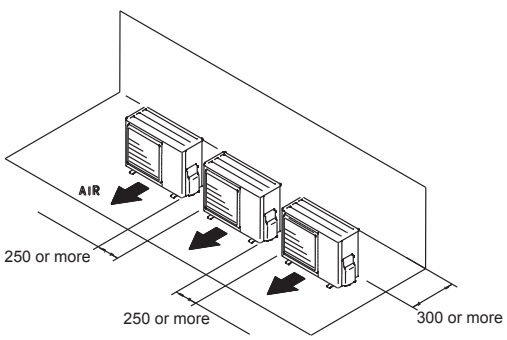
When there are obstacles at the back or front sides.



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

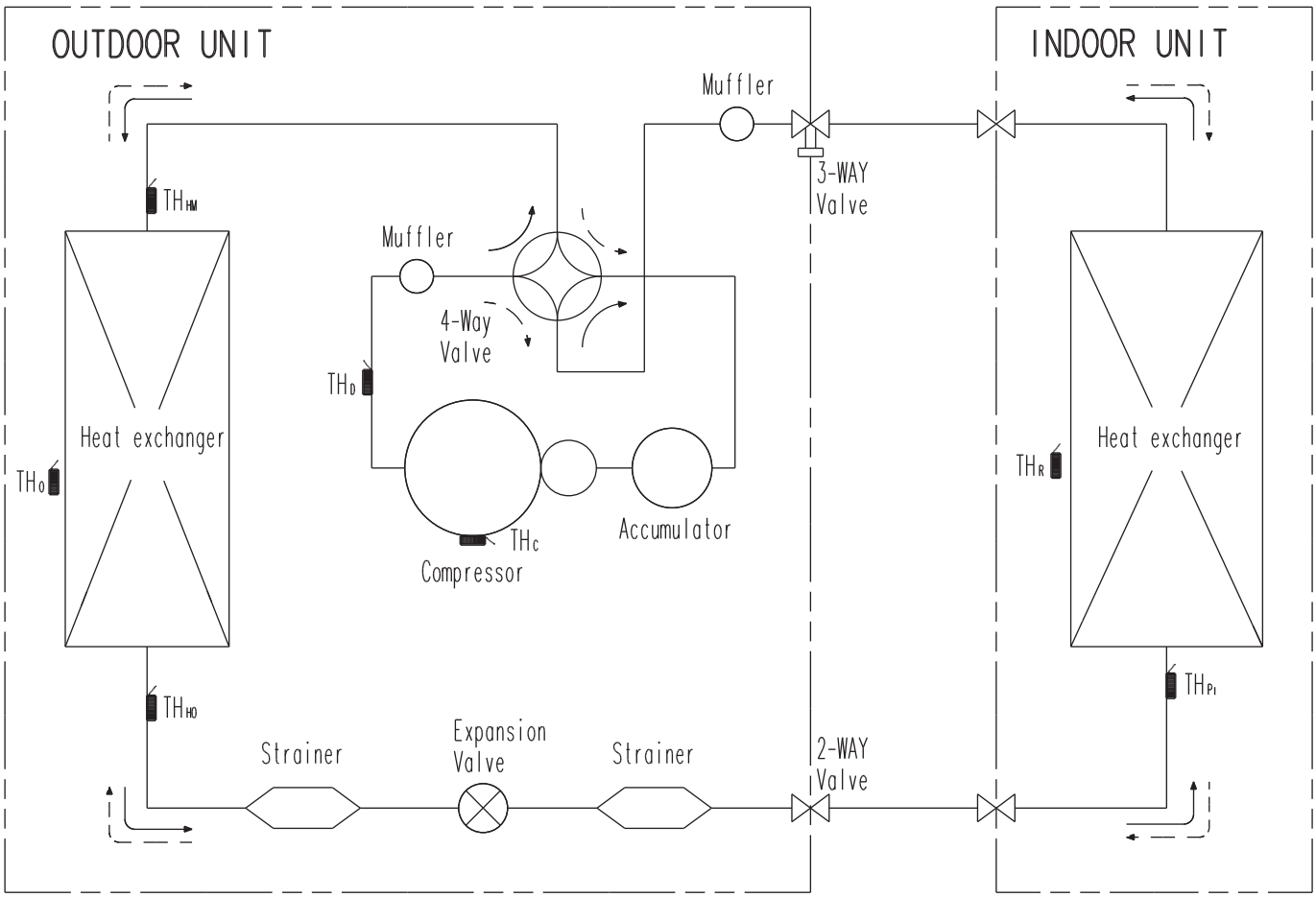


When there are obstacles at the back, side with the installation of more than one unit.



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

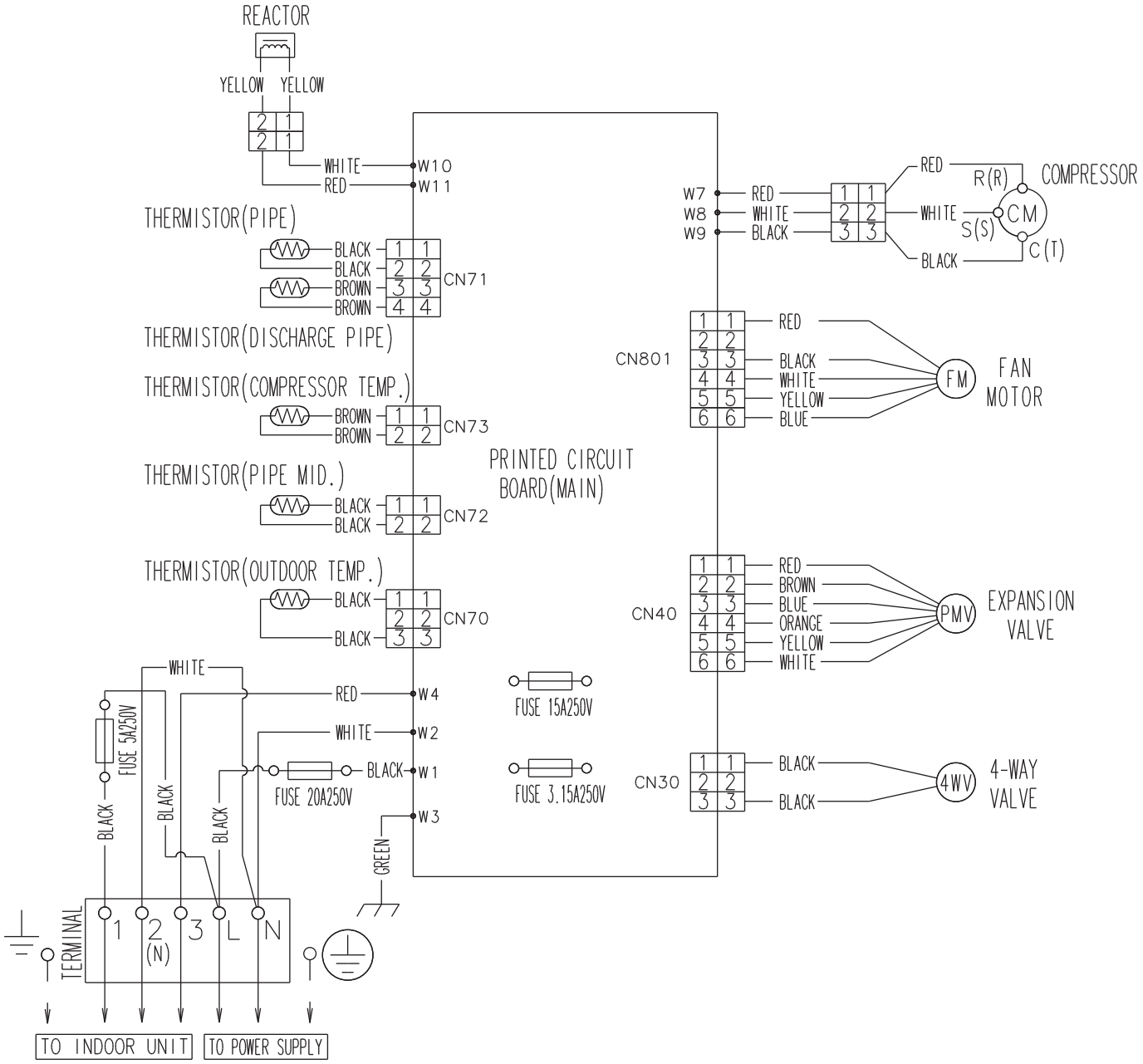
3. REFRIGERANT CIRCUIT



OUTDOOR UNIT
AO*B18-24L

4. WIRING DIAGRAMS

■MODEL : AO*B18L, AO*B24L



OUTDOOR UNIT
AO*B18-24L

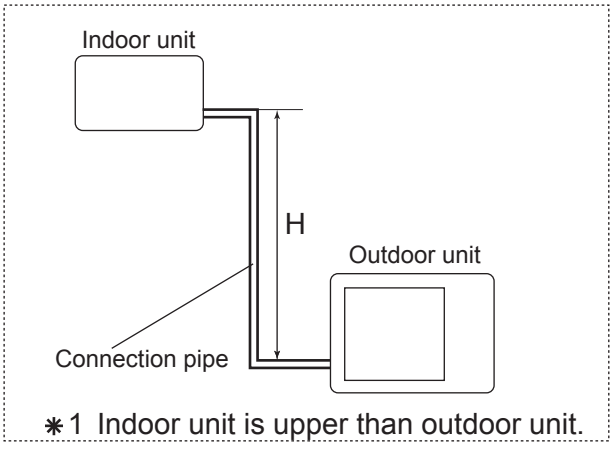
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL : AO∗B18L

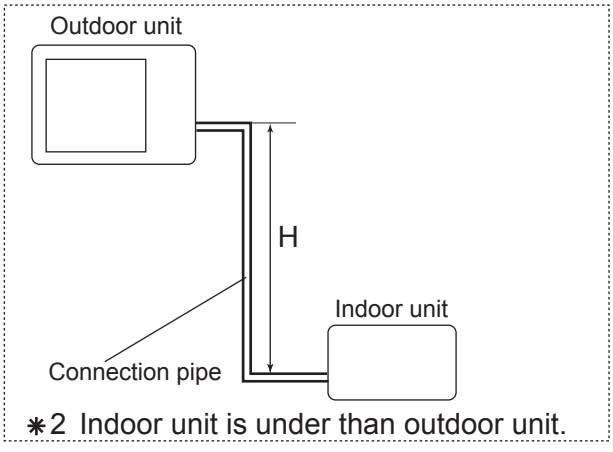
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2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

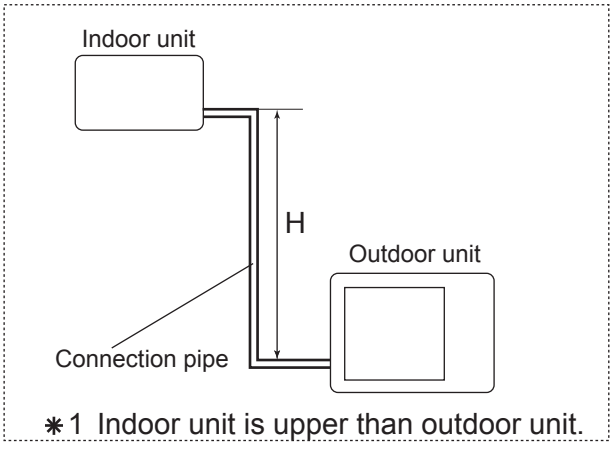
OUTDOOR UNIT
AO∗B18-24L

■MODEL : AO∗B24L

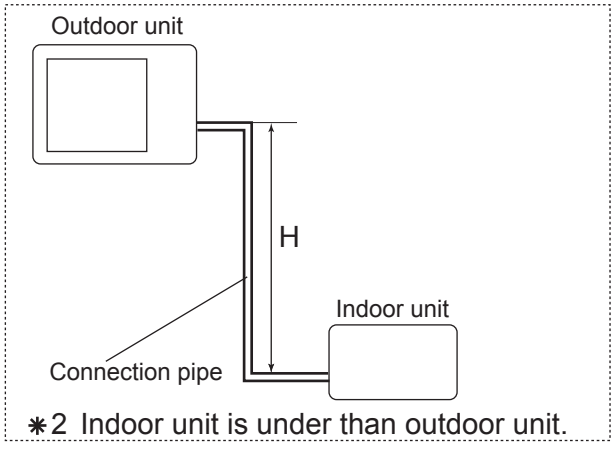
COOLING			Pipe length (m)						
			5	7.5	10	15	20	25	30
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	20	-	-	-	-	0.963	0.961	0.959
		10	-	-	0.984	0.981	0.979	0.977	0.975
		7.5	-	0.988	0.988	0.985	0.983	0.981	0.979
		5	0.992	0.992	0.992	0.989	0.987	0.985	0.983
		0	1.000	1.000	1.000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

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

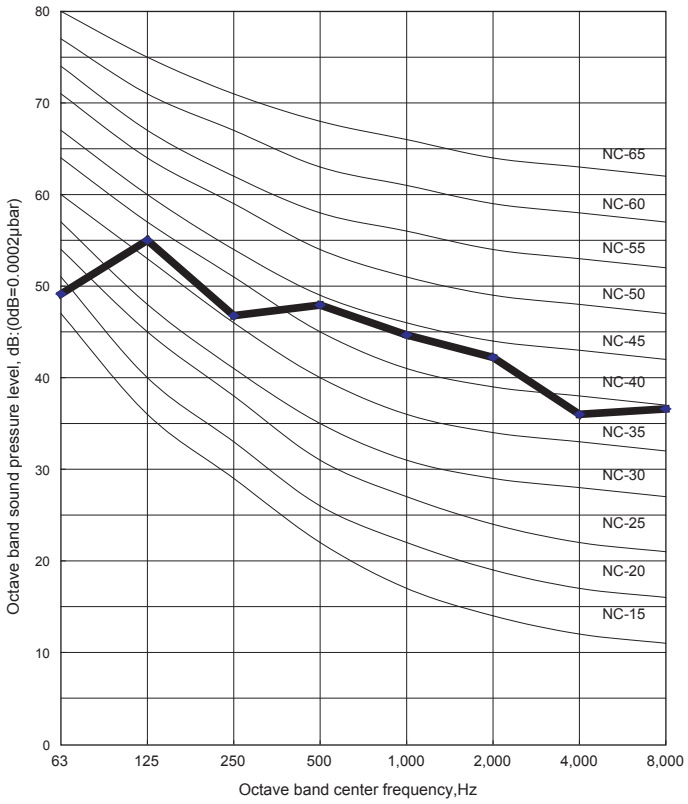
NUMBER OF ROTATIONS (r.p.m)	Airflow	
1050	m^3/h	2470
	l/s	686
	CFM	1454

8. OPERATION NOISE

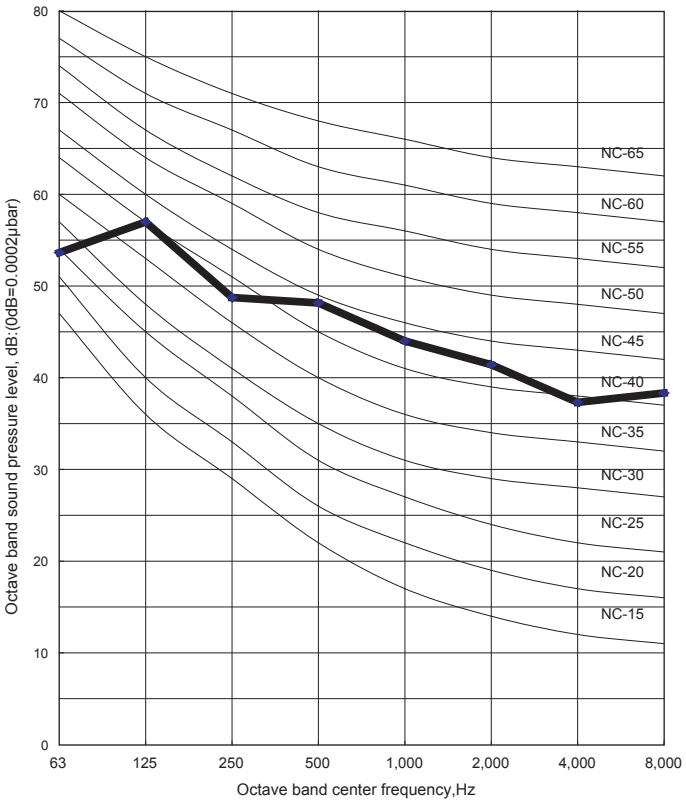
8-1. NOISE LEVEL CURVE

■MODEL : AO∗B18L

●COOLING

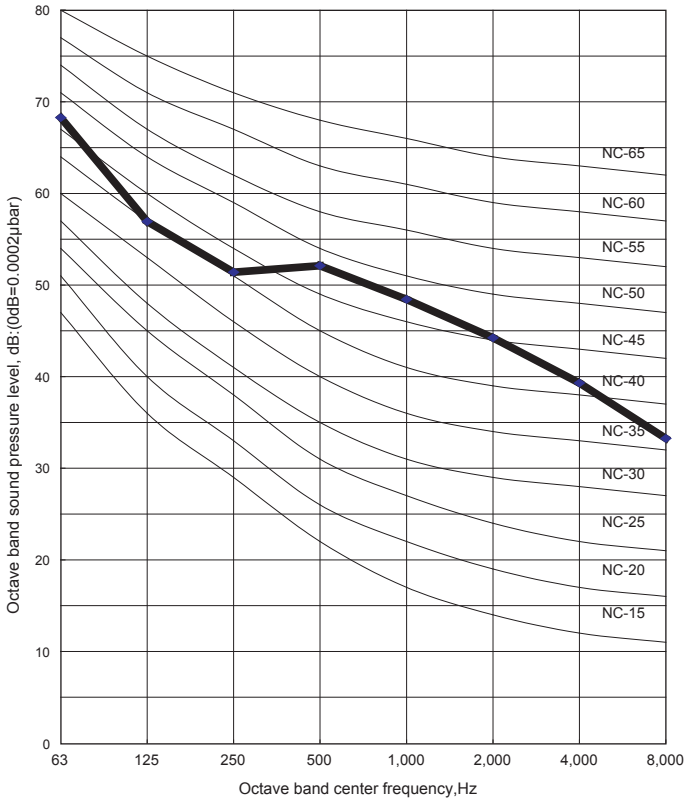


●HEATING

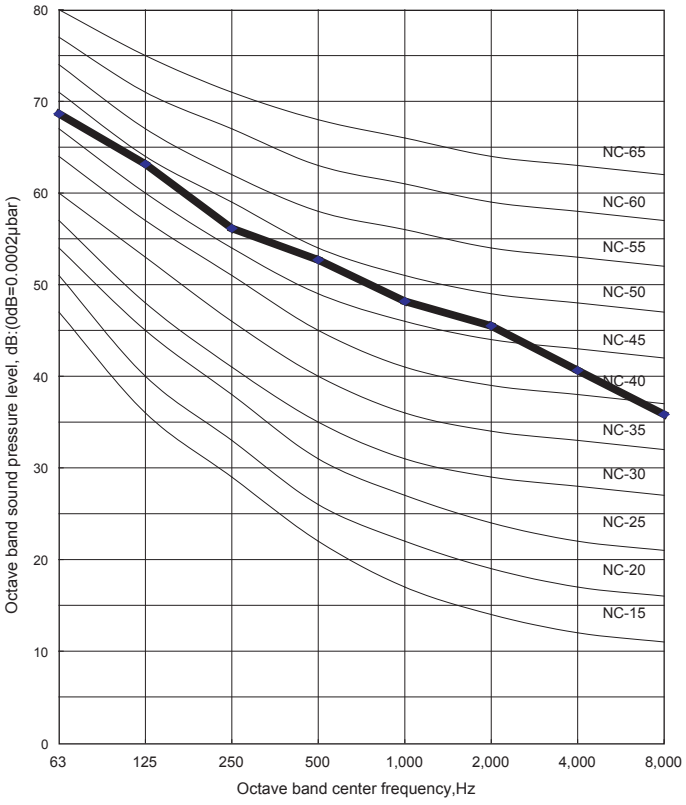


■MODEL : AO∗B24L

●COOLING

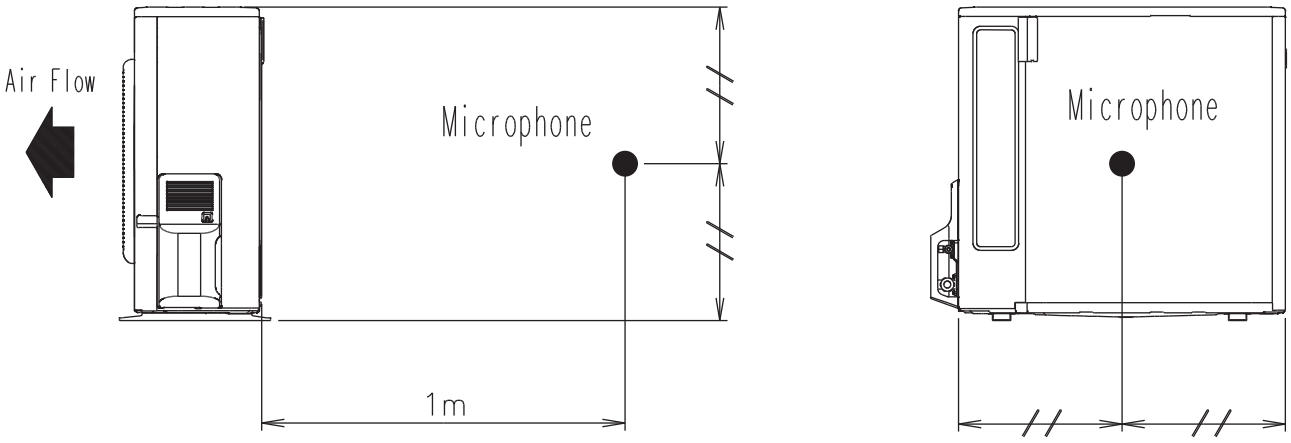


●HEATING



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