

AIR CONDITIONER

Floor type

DESIGN & TECHNICAL MANUAL

INDOOR



AGHH09KVCCCL
AGHH12KVCCCL
AGHH14KVCCCL

OUTDOOR



AOHH09KVCC
AOHH12KVCC



AOHH14KVCC

GENERAL Inc.

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Part 1. INDOOR UNIT

**FLOOR TYPE:
AGHH09KVCCL
AGHH12KVCCL
AGHH14KVCCL**

1. Specifications

Type				Floor			
				Inverter, Heat pump			
Model name				AGHH09KVCCL	AGHH12KVCCL	AGHH14KVCCL	
Power supply intake				Outdoor unit			
System power supply		Voltage		230			
		Frequency		50			
		Available voltage range		198—264			
Indoor unit power supply (from outdoor unit)				230			
Capacity	Cooling	Rated	kW	2.5	3.5	4.2	
			Btu/h	8,500	11,900	14,300	
		Min.—Max.	kW	0.9—3.5	0.9—4.0	0.9—5.2	
			Btu/h	3,100—11,900	3,100—13,700	3,100—17,700	
	Heating	Rated	kW	3.5	4.5	5.2	
			Btu/h	11,900	15,400	17,700	
		Min.—Max.	kW	0.9—5.1	0.9—5.3	0.9—6.3	
			Btu/h	3,100—17,400	3,100—18,100	3,100—21,500	
Input power	Cooling	Rated	kW	0.53	0.88	1.06	
		Max.		1.29		2.11	
	Heating	Rated		0.81	1.22	1.41	
		Max.		1.64		1.98	
Current	Cooling	Rated	A	2.9	4.3	4.7	
	Heating			4.1	5.7	6.2	
Energy efficiency class	Cooling			A+++		A++	
	Heating (Average)			A+			
Pdesign	Cooling		kW	2.5	3.5	4.2	
	Heating (Average)			2.6	3.5	4.2	
SEER	Cooling		kWh/kWh	8.5	8.2	8.1	
SCOP	Heating (Average)			4.3	4.1	4.0	
Annual energy consumption	QCE		kWh/a	103	149	181	
	QHE (Average)			845	1,192	1,466	
EER	Cooling		kW/kW	4.70	4.00	3.95	
COP	Heating			4.30	3.70		
Power factor	Cooling		%	79.5	88.5	98.1	
	Heating			85.9	93.1	98.9	
Moisture removal			L/h (pints/h)	1.3 (2.3)	1.8 (3.2)	2.1 (3.7)	
Maximum operating current*1		Cooling		A	7.0		11.0
		Heating			8.5		12.0
Fan	Airflow rate	Cooling	HIGH	m³/h	570	650	
			MED		460	520	
			LOW		360	400	
			QUIET		270		
		Heating	HIGH		600	650	
			MED		480	520	
			LOW		370	390	
			QUIET		270		
	Type × Qty		Crossflow fan × 2				
	Motor output		W	16 × 2			
Sound pressure level*2	Cooling	HIGH	dB (A)	40	44		
		MED		35	38		
		LOW		29	31		
		QUIET		22			
	Heating	HIGH		41	43		
		MED		35	37		
		LOW		29			
		QUIET		22			
Sound power level	Cooling	HIGH	dB (A)	53	57		
	Heating			54	56		
Heat exchanger type	Dimensions (H × W × D)		mm	378 × 550 × 26.6			
	Fin pitch			1.2			
	Rows × Stages		2 × 18				
	Pipe type			Copper tube			
	Fin type			Aluminum			
Enclosure	Material			Polystyrene			
	Color			White			
Dimensions (H × W × D)	Net		mm	Approximate color of Munsell 9PB 9.1/0.2			
	Gross			600 × 740 × 200			
Weight	Net		kg	700 × 820 × 310			
	Gross			14.0			
Connection pipe	Size	Liquid	mm (in)	18.5			
		Gas		Ø6.35 (Ø1/4)			
Drain hose	Method		Ø9.52 (Ø3/8)				
	Material			Flare			
	Tip diameter		mm	Polypropylene + Linear low-density polyethylene			
Operation range	Cooling	°C		I.D.: Ø13.8			
		%RH	O.D.: Ø15.8 to Ø16.7				
Remote controller type	Heating	°C	18 to 32				
			80 or less				
				16 to 30			
				Wireless (Option: Wired, Mobile app [AIRSTAGE Mobile]*3)			

Type	Floor		
	Inverter, Heat pump		
Model name	AGHH09KVCCL	AGHH12KVCCL	AGHH14KVCCL
NOTES: - Specifications are based on the following conditions: - Cooling: Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB. - Heating: Indoor temperature of 20°CDB/15°CWB, and outdoor temperature of 7°CDB/6°CWB. - Pipe length: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.) - Protective function might work when using it outside the operation range. *1: Maximum operating current is the total current of the indoor unit and the outdoor unit. *2: Sound pressure level: - Measured values in manufacturer's anechoic chamber. - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. *3: Available on Google Play™ store or on App Store®. - This data is based on EN 14511 standard.			

2. Wireless LAN control

By installing mobile app on a smart device, several functions can be controlled from outside the house.

2-1. System requirement

Before using this function, prepare the following items:

- **Wireless router:**

Wireless LAN standard	IEEE802.11b/g/n
Frequency bands*	• U.S.A., Canada: 2.4 GHz (1ch—11ch) • Other countries: 2.4 GHz (1ch—13ch)
Network security standard	• Open • WEP • WPA (PSK) • WPA2 Personal (PSK) • WPS for same-LAN registration

*: Usable only in the country or region where you purchased the product.

To check whether your wireless router complies with the network security standards listed above, refer to the operation manual.

- **Smartphone:**

App-compliant operating system	iOS	Check the latest version of supported OS at Google Play store or App Store.
	Android™	

- **AIRSTAGE Mobile (mobile application):**

Mobile app is available on Google Play store or on App Store.

After installation of mobile app, user registration is required. For user registration and setup information, refer to Setting Manual attached with the product.

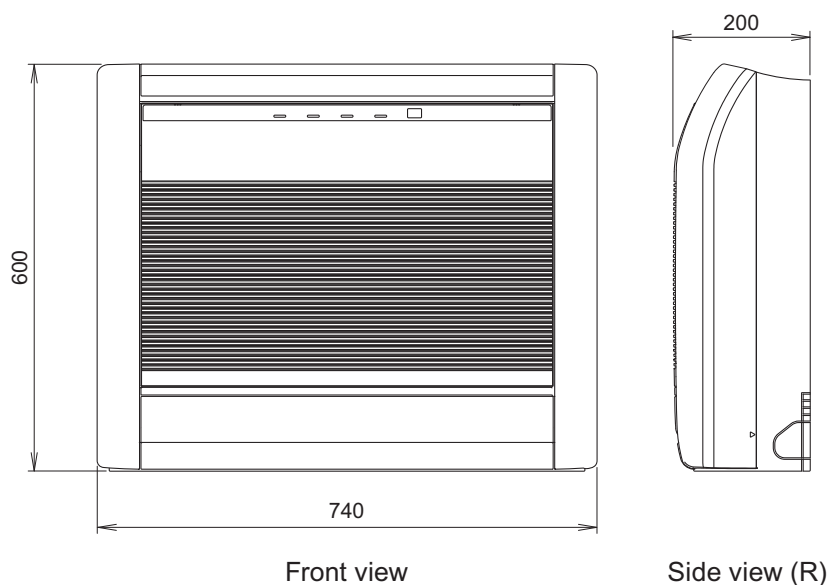
For the latest version of the wireless LAN control manuals, refer to the following web site.

<https://www.generalww.com/global/support/>

3. Dimensions

3-1. Models: AGHH09KVCCL, AGHH12KVCCL, and AGHH14KVCCL

Unit: mm



■ Installation space

⚠ WARNING

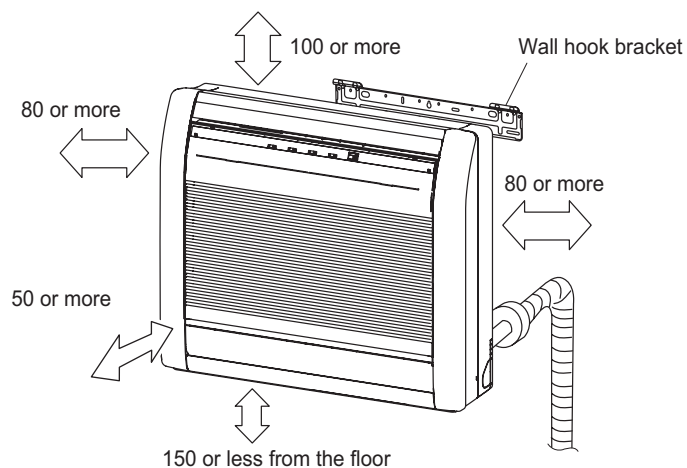
The appliance shall be installed, operated and stored in a room with a floor area larger than X m².

Amount of refrigerant charge M (kg)	Minimum room area X (m ²)
$M \leq 1.22$	—
$1.22 < M \leq 1.23$	12.99
$1.23 < M \leq 1.50$	19.31
$1.50 < M \leq 1.75$	26.28
$1.75 < M \leq 2.0$	34.33
$2.0 < M \leq 2.5$	53.63
$2.5 < M \leq 3.0$	77.23
$3.0 < M \leq 3.5$	105.12
$3.5 < M \leq 4.0$	137.29

(IEC 60335-2-40)

Keep the distance between the wall hook bracket or indoor unit and the surrounding walls as indicated in the following figure.

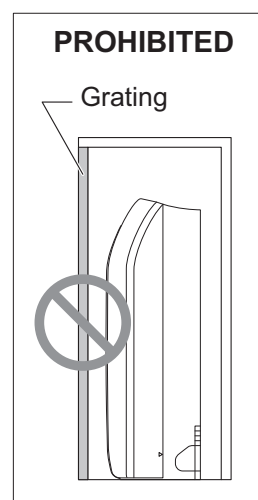
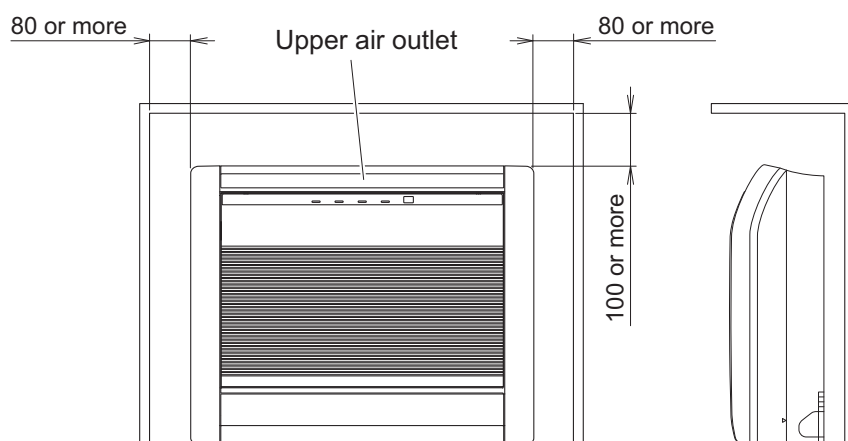
Unit: mm



Notice in a wall-concealed installation:

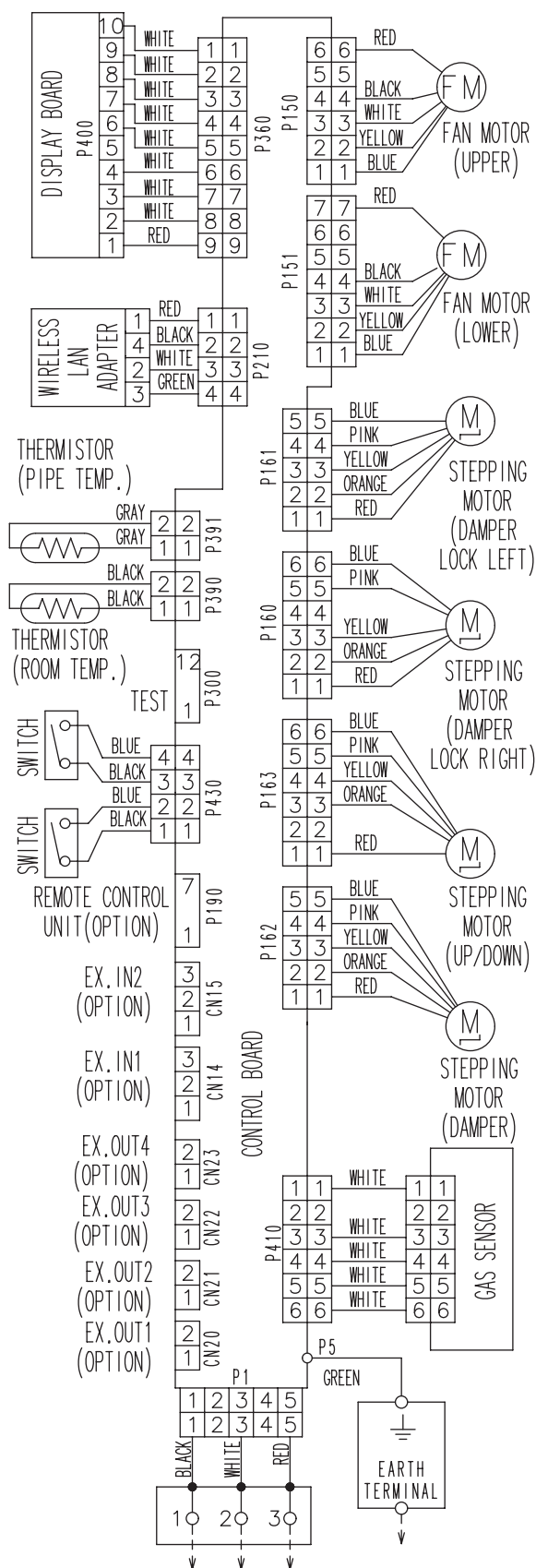
In a wall-concealed installation, change the function setting number 23 to “Fixed” (02) to restrict the movement of the upper air outlet so that the airflow is only towards the horizontal direction.

If the discharged air accumulates in the concealed space, the room will not be properly heated or cooled. Therefore, be sure to change this setting.



4. Wiring diagrams

4-1. Models: AGHH09KVCCL, AGHH12KVCCL, and AGHH14KVCCL



5. Capacity table

Capacity tables show each of following values calculated based on the outdoor temperature and the indoor temperature, under given Airflow Rate (AFR):

For cooling capacity: Total Capacity (TC), Sensible Heat Capacity (SHC), and Input Power (IP)

For heating capacity: Total Capacity (TC) and Input Power (IP)

5-1. Cooling capacity

■ Model: AGHH09KVCCL

AFR				m³/h									570														
				Indoor temperature																							
				°CDB			18			21			23			25			27			29			32		
				°CWB			12			15			16			18			19			21			23		
Outdoor temperature	°CDB			TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP			
				kW			kW			kW			kW			kW			kW			kW			kW		
	-10	1.69	1.65	0.28	1.85	1.81	0.28	1.91	1.86	0.28	2.03	1.98	0.29	2.09	2.04	0.29	2.23	2.17	0.29	2.37	2.32	0.30					
	0	1.76	1.67	0.27	1.92	1.82	0.27	1.98	1.88	0.27	2.11	2.00	0.28	2.17	2.06	0.28	2.31	2.20	0.28	2.47	2.34	0.29					
	5	1.83	1.71	0.24	2.00	1.87	0.24	2.06	1.92	0.25	2.19	2.05	0.25	2.26	2.11	0.25	2.41	2.25	0.25	2.57	2.40	0.26					
	10	1.93	1.76	0.19	2.12	1.93	0.19	2.18	1.99	0.20	2.32	2.11	0.20	2.39	2.18	0.20	2.55	2.32	0.20	2.72	2.48	0.20					
	15	2.12	1.84	0.23	2.32	2.02	0.23	2.39	2.08	0.24	2.54	2.21	0.24	2.62	2.28	0.24	2.79	2.43	0.24	2.98	2.59	0.24					
	20	2.35	1.94	0.34	2.58	2.12	0.34	2.65	2.19	0.34	2.82	2.33	0.35	2.91	2.40	0.35	3.10	2.56	0.35	3.31	2.73	0.36					
	25	2.24	1.90	0.39	2.45	2.08	0.40	2.53	2.15	0.40	2.69	2.28	0.41	2.77	2.35	0.41	2.96	2.51	0.41	3.15	2.67	0.42					
	30	2.13	1.87	0.45	2.33	2.04	0.46	2.41	2.10	0.46	2.56	2.24	0.47	2.64	2.31	0.47	2.81	2.46	0.47	3.00	2.62	0.48					
	35	2.02	1.83	0.51	2.21	2.00	0.51	2.28	2.06	0.52	2.43	2.19	0.52	2.50	2.26	0.53	2.66	2.41	0.54	2.84	2.57	0.54					
40	1.95	1.78	0.54	2.13	1.95	0.54	2.20	2.01	0.55	2.34	2.13	0.55	2.41	2.20	0.56	2.57	2.34	0.57	2.74	2.50	0.57						
45	1.85	1.73	0.59	2.02	1.89	0.60	2.08	1.95	0.61	2.22	2.07	0.61	2.29	2.13	0.62	2.43	2.27	0.62	2.60	2.42	0.63						
50	1.71	1.65	0.67	1.87	1.81	0.68	1.92	1.87	0.69	2.05	1.98	0.69	2.11	2.05	0.70	2.25	2.18	0.71	2.40	2.32	0.72						

■ Model: AGHH12KVCCL

AFR				m³/h									570														
				Indoor temperature																							
				°CDB			18			21			23			25			27			29			32		
				°CWB			12			15			16			18			19			21			23		
Outdoor temperature	°CDB			TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP			
				kW			kW			kW			kW			kW			kW			kW			kW		
	-10	2.37	1.96	0.46	2.59	2.14	0.47	2.67	2.21	0.47	2.84	2.35	0.48	2.93	2.42	0.48	3.12	2.58	0.48	3.33	2.75	0.49					
	0	2.46	1.97	0.45	2.69	2.16	0.46	2.77	2.23	0.46	2.95	2.37	0.47	3.04	2.44	0.47	3.24	2.60	0.47	3.45	2.77	0.48					
	5	2.56	2.02	0.40	2.81	2.21	0.41	2.89	2.28	0.41	3.08	2.43	0.42	3.17	2.50	0.42	3.38	2.66	0.42	3.60	2.84	0.43					
	10	2.70	2.09	0.32	2.96	2.28	0.32	3.05	2.35	0.32	3.24	2.50	0.33	3.34	2.58	0.33	3.56	2.75	0.33	3.79	2.93	0.34					
	15	2.96	2.18	0.39	3.24	2.39	0.40	3.34	2.46	0.40	3.55	2.62	0.41	3.66	2.70	0.41	3.90	2.88	0.41	4.16	3.07	0.42					
	20	3.29	2.30	0.56	3.60	2.51	0.56	3.71	2.59	0.57	3.95	2.76	0.57	4.07	2.84	0.58	4.34	3.03	0.59	4.62	3.23	0.59					
	25	3.14	2.25	0.65	3.43	2.46	0.66	3.54	2.54	0.67	3.76	2.70	0.67	3.88	2.78	0.68	4.13	2.97	0.69	4.41	3.16	0.69					
	30	2.99	2.21	0.75	3.27	2.41	0.76	3.37	2.49	0.76	3.58	2.65	0.77	3.69	2.73	0.78	3.93	2.91	0.79	4.19	3.10	0.80					
	35	2.83	2.16	0.84	3.10	2.36	0.85	3.19	2.44	0.86	3.40	2.59	0.87	3.50	2.67	0.88	3.73	2.85	0.89	3.98	3.03	0.90					
	40	2.73	2.10	0.89	2.98	2.30	0.90	3.07	2.37	0.91	3.27	2.52	0.92	3.37	2.60	0.93	3.59	2.77	0.94	3.83	2.95	0.95					
45	2.59	2.04	0.99	2.84	2.24	1.00	2.92	2.30	1.01	3.11	2.45	1.02	3.20	2.53	1.03	3.41	2.69	1.04	3.64	2.87	1.05						
50	2.07	1.77	0.92	2.25	1.91	0.92	2.29	1.95	0.92	2.41	2.06	0.92	2.46	2.10	0.92	2.62	2.23	0.92	2.80	2.38	0.92						

■ Model: AGHH14KVCCL

AFR				m³/h									650														
				Indoor temperature																							
				°CDB			18			21			23			25			27			29			32		
				°CWB			12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP					
		kW			kW			kW			kW			kW			kW			kW			kW				
	-10	2.83	2.26	0.56	3.10	2.47	0.56	3.19	2.55	0.57	3.40	2.71	0.57	3.50	2.79	0.58	3.73	2.97	0.59	3.98	3.17	0.59					
	0	2.82	2.27	0.56	3.08	2.48	0.56	3.17	2.55	0.57	3.38	2.72	0.57	3.48	2.80	0.58	3.71	2.98	0.59	3.95	3.18	0.59					
	5	2.94	2.31	0.48	3.21	2.53	0.49	3.31	2.61	0.49	3.52	2.77	0.50	3.63	2.86	0.50	3.87	3.05	0.51	4.12	3.25	0.51					
	10	3.13	2.39	0.35	3.43	2.62	0.35	3.53	2.70	0.35	3.75	2.87	0.36	3.87	2.96	0.36	4.12	3.15	0.36	4.40	3.36	0.37					
	15	3.45	2.53	0.43	3.77	2.77	0.44	3.89	2.86	0.44	4.13	3.04	0.45	4.26	3.13	0.45	4.54	3.34	0.45	4.84	3.56	0.46					
	20	3.83	2.70	0.67	4.20	2.96	0.68	4.32	3.05	0.69	4.60	3.24	0.69	4.74	3.34	0.70	5.05	3.56	0.71	5.38	3.79	0.71					
	25	3.69	2.66	0.79	4.04	2.91	0.80	4.16	3.00	0.80	4.42	3.19	0.81	4.56	3.29	0.82	4.86	3.51	0.83	5.18	3.74	0.84					
	30	3.54	2.62	0.90	3.88	2.87	0.91	4.00	2.96	0.92	4.25	3.14	0.93	4.38	3.24	0.94	4.67	3.45	0.95	4.98	3.68	0.96					
35	3.40	2.58	1.02	3.72	2.82	1.03	3.83	2.91	1.04	4.07	3.09	1.05	4.20	3.19	1.06	4.48	3.40	1.07	4.77	3.62	1.08						
40	3.19	2.42	1.09	3.49	2.65	1.11	3.59	2.73	1.12	3.82	2.90	1.13	3.94	2.99	1.14	4.20	3.19	1.15	4.48	3.40	1.16						
45	2.95	2.33	1.21	3.23	2.55	1.23	3.33	2.63	1.24	3.54	2.80	1.25	3.65	2.88	1.27	3.89	3.07	1.28	4.14	3.27	1.29						
50	2.26	1.87	1.08	2.47	2.05	1.08	2.54	2.11	1.08	2.71	2.25	1.08	2.79	2.32	1.08	2.97	2.47	1.08	3.17	2.63	1.08						

5-2. Heating capacity

NOTE: Values mentioned in the table are calculated based on the maximum capacity.

■ Model: AGHH09KVCCL

AFR			m³/h				600					
Indoor temperature												
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
	-15	-16	3.22	1.31	3.12	1.34	3.03	1.36	2.94	1.39	2.85	1.42
	-10	-11	3.86	1.36	3.75	1.39	3.64	1.42	3.54	1.45	3.43	1.48
	-5	-7	4.40	1.41	4.27	1.44	4.15	1.47	4.03	1.50	3.90	1.53
	0	-2	4.77	1.45	4.63	1.48	4.50	1.51	4.36	1.54	4.23	1.57
	5	3	5.21	1.49	5.06	1.52	4.91	1.55	4.77	1.59	4.62	1.62
	7	6	5.41	1.51	5.25	1.54	5.10	1.57	4.95	1.60	4.79	1.64
	10	8	5.57	1.43	5.41	1.46	5.26	1.49	5.10	1.52	4.94	1.55
	15	10	5.39	1.20	5.24	1.22	5.09	1.25	4.93	1.27	4.78	1.30
20	15	5.34	1.08	5.19	1.10	5.04	1.13	4.89	1.15	4.74	1.17	
24	18	5.53	1.09	5.38	1.11	5.22	1.14	5.06	1.16	4.91	1.18	

■ Model: AGHH12KVCCL

AFR			m³/h				600					
Indoor temperature												
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
	-15	-16	3.34	1.36	3.25	1.39	3.15	1.42	3.06	1.44	2.96	1.47
	-10	-11	4.01	1.42	3.90	1.45	3.79	1.48	3.67	1.51	3.56	1.54
	-5	-7	4.57	1.47	4.44	1.50	4.31	1.53	4.18	1.56	4.05	1.59
	0	-2	4.95	1.51	4.81	1.54	4.67	1.57	4.53	1.60	4.39	1.63
	5	3	5.41	1.55	5.26	1.58	5.11	1.62	4.95	1.65	4.80	1.68
	7	6	5.62	1.57	5.46	1.60	5.30	1.64	5.14	1.67	4.98	1.70
	10	8	5.79	1.49	5.63	1.52	5.46	1.55	5.30	1.58	5.14	1.61
	15	10	5.60	1.24	5.44	1.27	5.29	1.30	5.13	1.32	4.97	1.35
20	15	5.55	1.12	5.39	1.15	5.24	1.17	5.08	1.19	4.92	1.22	
24	18	5.75	1.13	5.59	1.16	5.43	1.18	5.26	1.20	5.10	1.23	

■ Model: AGHH14KVCCL

AFR			m³/h				650					
Indoor temperature												
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
	-15	-16	5.55	2.43	5.40	2.48	5.24	2.53	5.08	2.58	4.92	2.63
	-10	-11	6.03	2.49	5.86	2.54	5.69	2.59	5.52	2.64	5.35	2.70
	-5	-7	6.47	2.48	6.28	2.53	6.10	2.58	5.92	2.64	5.73	2.69
	0	-2	6.84	2.37	6.65	2.42	6.46	2.47	6.26	2.52	6.07	2.57
	5	3	6.81	2.03	6.61	2.08	6.42	2.12	6.23	2.16	6.03	2.20
	7	6	6.68	1.84	6.49	1.88	6.30	1.92	6.11	1.95	5.92	1.99
	10	8	6.64	1.67	6.45	1.70	6.26	1.74	6.07	1.77	5.89	1.81
15	10	6.89	1.68	6.69	1.71	6.50	1.75	6.30	1.78	6.11	1.82	
20	15	6.83	1.46	6.64	1.49	6.44	1.52	6.25	1.55	6.06	1.58	
24	18	6.78	1.28	6.59	1.31	6.40	1.33	6.21	1.36	6.01	1.39	

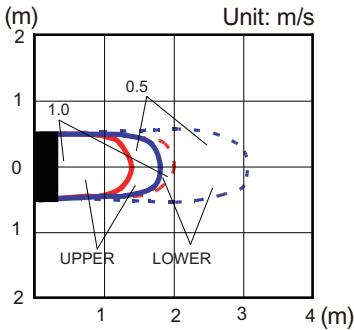
6. Fan performance

6-1. Air velocity distributions

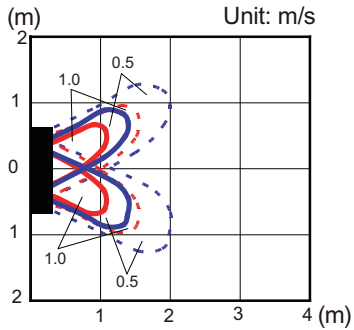
■ Models: AGHH09KVCCL, AGHH12KVCCL, and AGHH14KVCCL

Measuring conditions	Fan speed	Operation mode	Fan select
	HIGH	FAN	Upper and lower

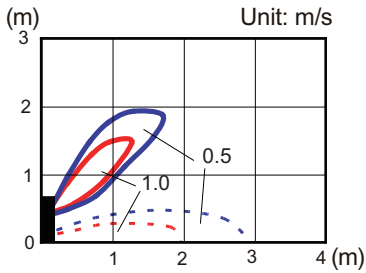
Top view
Horizontal louver: Up
Vertical louver: Center



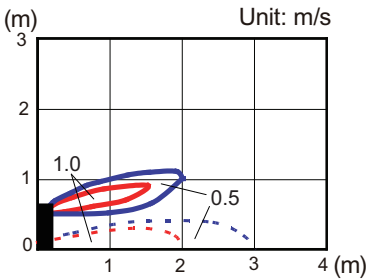
Top view
Horizontal louver: Up
Vertical louver: Left & Right



Side view
Horizontal louver: Up
Vertical louver: Center



Side view
Horizontal louver: Down
Vertical louver: Center



6-2. Airflow

■ Model: AGHH09KVCCL

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	570
	l/s	158
	CFM	336
MED	m ³ /h	460
	l/s	128
	CFM	271
LOW	m ³ /h	360
	l/s	100
	CFM	212
QUIET	m ³ /h	270
	l/s	75
	CFM	159

● Heating

Fan speed	Airflow	
HIGH	m ³ /h	600
	l/s	167
	CFM	353
MED	m ³ /h	480
	l/s	133
	CFM	283
LOW	m ³ /h	370
	l/s	103
	CFM	218
QUIET	m ³ /h	270
	l/s	75
	CFM	159

■ Model: AGHH12KVCCL

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	570
	l/s	158
	CFM	336
MED	m ³ /h	460
	l/s	128
	CFM	271
LOW	m ³ /h	360
	l/s	100
	CFM	212
QUIET	m ³ /h	270
	l/s	75
	CFM	159

● Heating

Fan speed	Airflow	
HIGH	m ³ /h	600
	l/s	167
	CFM	353
MED	m ³ /h	480
	l/s	133
	CFM	283
LOW	m ³ /h	370
	l/s	103
	CFM	218
QUIET	m ³ /h	270
	l/s	75
	CFM	159

■ Model: AGHH14KVCCL

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	650
	l/s	181
	CFM	383
MED	m ³ /h	520
	l/s	144
	CFM	306
LOW	m ³ /h	400
	l/s	111
	CFM	235
QUIET	m ³ /h	270
	l/s	75
	CFM	159

● Heating

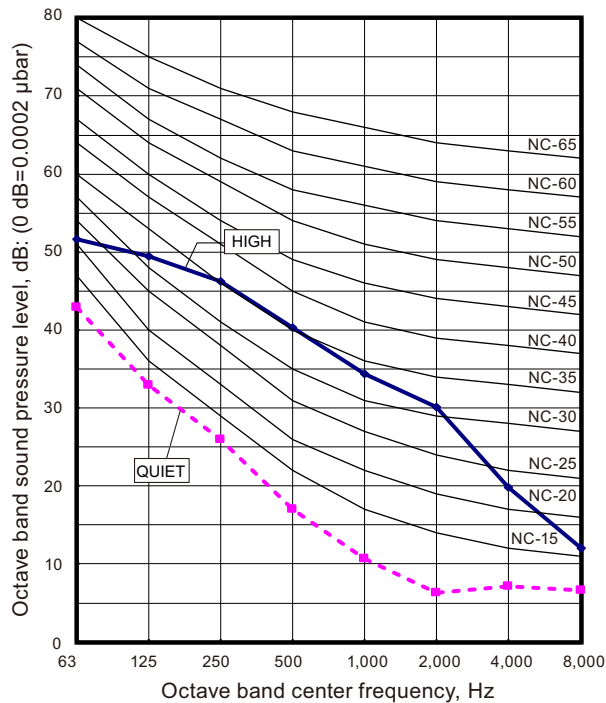
Fan speed	Airflow	
HIGH	m ³ /h	650
	l/s	181
	CFM	383
MED	m ³ /h	520
	l/s	144
	CFM	306
LOW	m ³ /h	390
	l/s	108
	CFM	230
QUIET	m ³ /h	270
	l/s	75
	CFM	159

7. Operation noise (sound pressure)

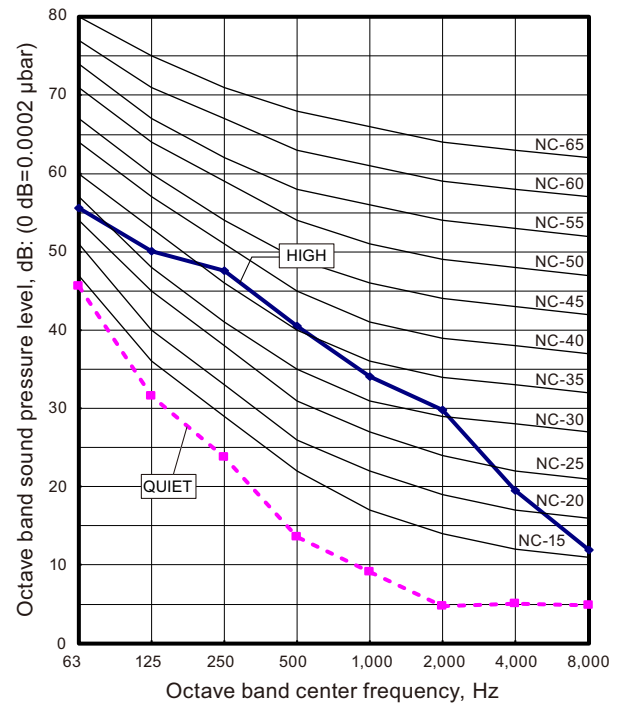
7-1. Noise level curve

■ Model: AGHH09KVCCL

● Cooling

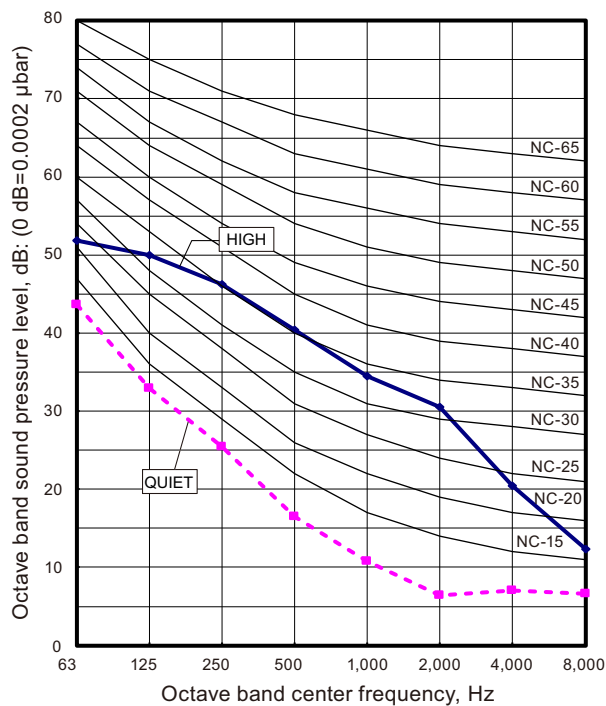


● Heating

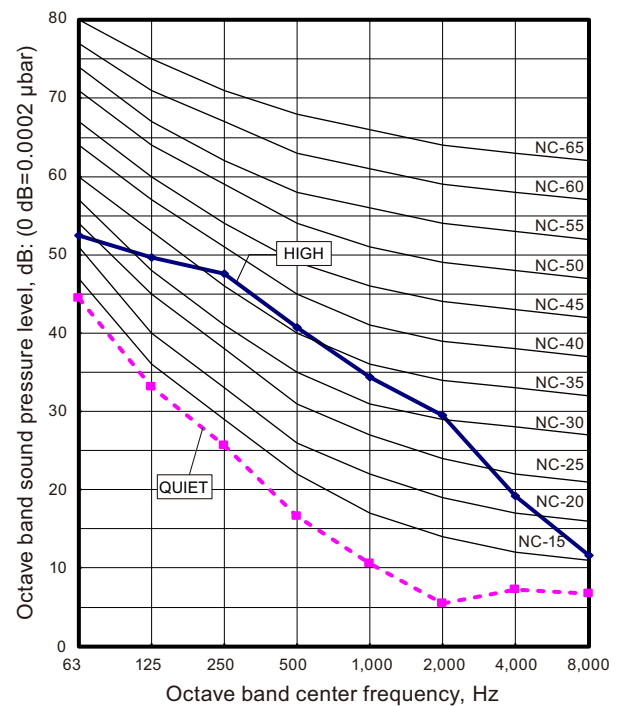


■ Model: AGHH12KVCCL

● Cooling

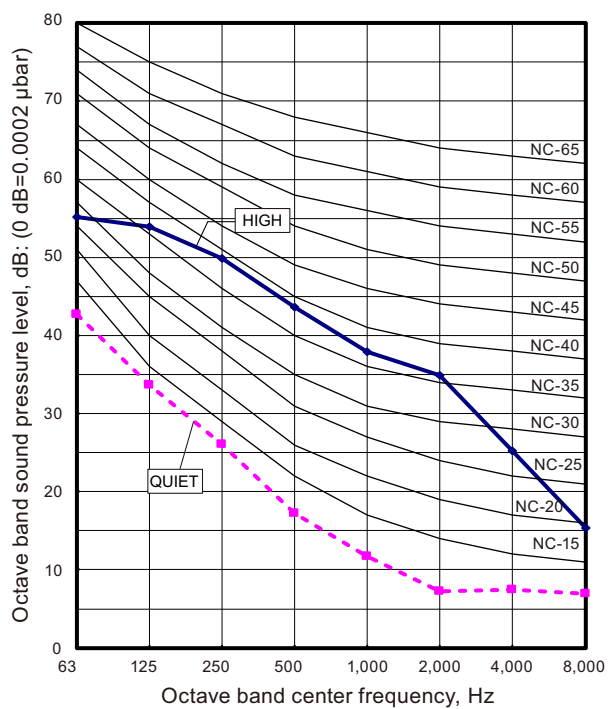


● Heating

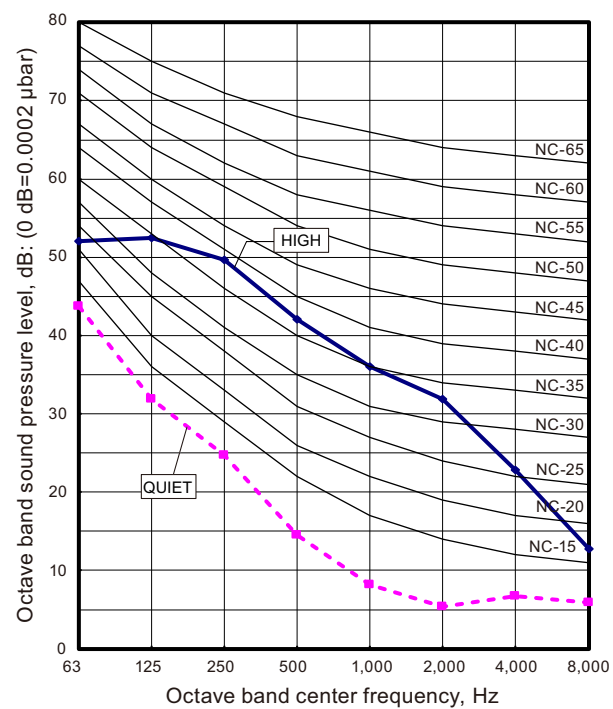


Model: AGHH14KVCCL

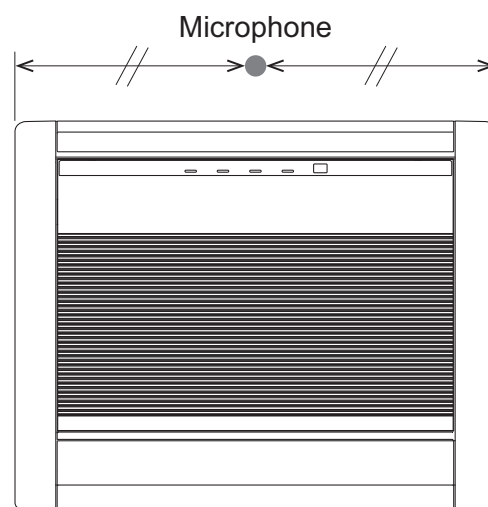
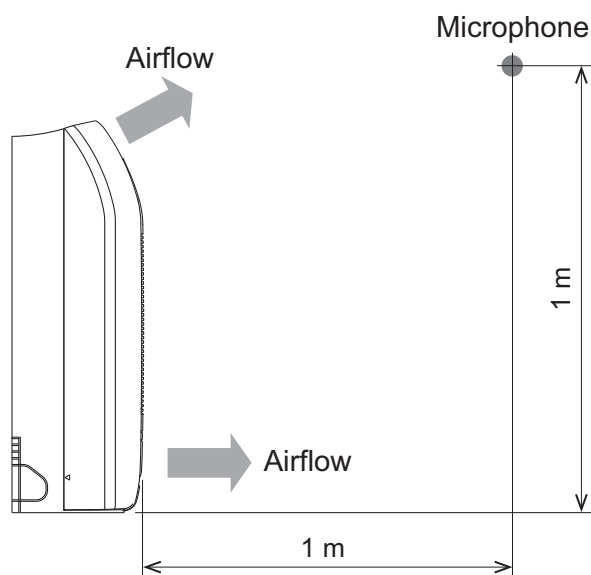
● Cooling



● Heating



7-2. Sound level check point

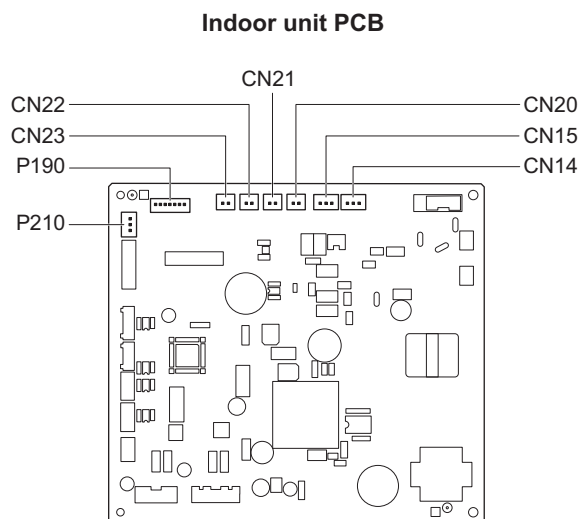


8. Safety devices

Type of protection	Protection form		Model
			AGHH09-14KVCCL
Circuit protection	Current fuse (PCB*)		250 V, 3.15 A
Fan motor protection	Thermal protection program	Activate	More than 125°C Fan motor stop
		Reset	100°C or less Fan motor restart

*PCB: Printed Circuit Board

9. External input and output



Connecting point		Input/Output	Function	Input select	Input signal
Indoor unit PCB	CN14	Input	Operation/Stop	Dry contact	Edge
			Forced stop		
			Ventilation fan status		
			Forced thermostat off		
	CN20/CN21/ CN22/CN23	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		
			External heater output		
			Alarm		
			Ventilation		

NOTE: For details of the switching function, refer to "[Combination of external input and output](#)" on page 20.

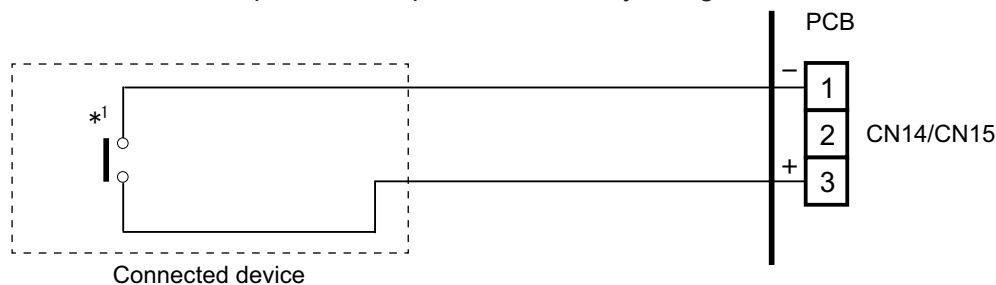
9-1. External input

With using external input function, some functions on this product can be controlled from an external device.

- "Operation/Stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable should be used. Maximum length of cable is 150 m.
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

Indoor unit

Indoor unit functions such as Operation/Stop can be done by using indoor unit connectors.

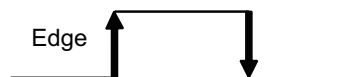


*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

Input signal type

Indoor unit

Input signal type is only "Edge".



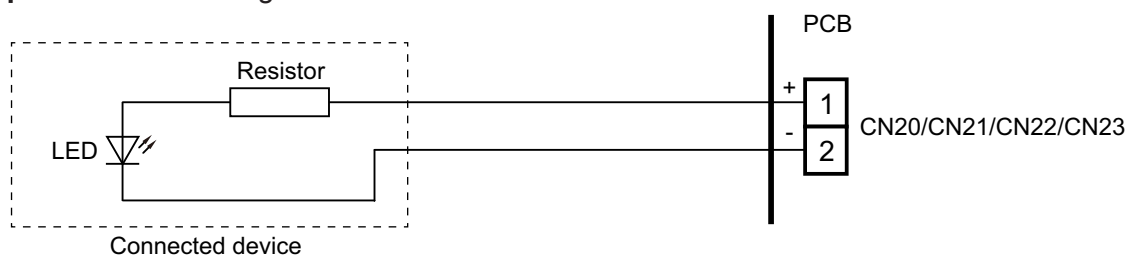
9-2. External output

Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

Indoor unit

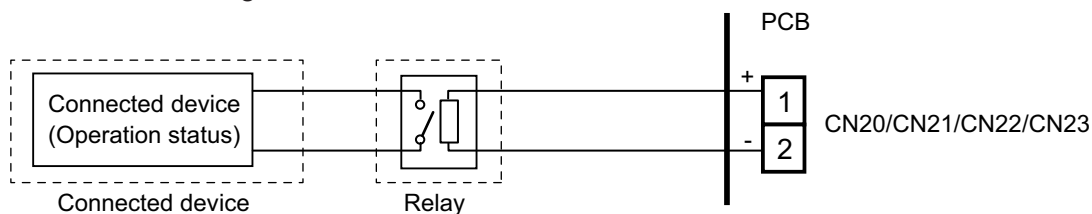
- A twisted pair cable (22AWG) should be used. Maximum length of cable is 25 m .
- Output voltage: High DC 12 V $\pm$ 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to “Combination of external input and output” on page 1.
- **When indicator or other components are connected directly**

Example: Function setting 60 is set to “00”



- **When connecting with a device equipped with a power supply**

Example: Function setting 60 is set to “00”



9-3. Combination of external input and output

By combining the function setting of the indoor unit, you can select various combinations of functions.

Combination examples of external input and output are as follows:

Function setting	Situation	External input		External output				
		CN14	CN15	CN20	CN21	CN22	CN23	
		Input 1	Input 2	Output 1	Output 2	Output 3	Output 4	
60-00	Thermostat off by external input	Operation/Stop mode 1 (R.C. enabled) (46-00) or Forced stop (46-02) or Operation/Stop mode 2 (R.C. disabled) (46-03)	Forced thermostat off	Operation/Stop	Error status	Indoor unit fan operation status	External heater output	
60-09	Thermostat off by external input Error output		Forced thermostat off	Error status	Operation/Stop			Indoor unit fan operation status
60-10	Thermostat off by external input Indoor unit fan operation output			Indoor unit fan operation status		Error status		
60-11	Thermostat off by external input Heater 1 output			External heater output		Indoor unit fan operation status	Error status	
60-13*1	Refrigerant Leak Detection Alarm			Alarm		Indoor unit fan operation status	Error status	
60-14*2	Refrigerant Leak Detection Ventilation	Ventilation fan status	Operation/Stop mode 1 (R.C. enabled) (46-00) or Forced stop (46-02) or Operation/Stop mode 2 (R.C. disabled) (46-03)	Ventilation				Error status
60-15*2	Refrigerant Leak Detection Alarm + Ventilation							

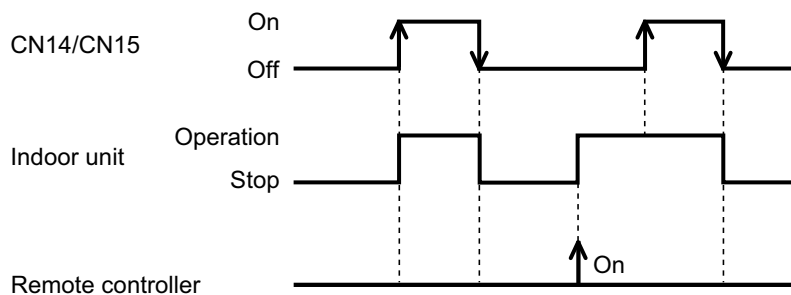
*1: Works only when the function setting number 81 is set at "02" or "04".

*2: Works only when the function setting number 81 is set at "04".

9-4. Details of control input function

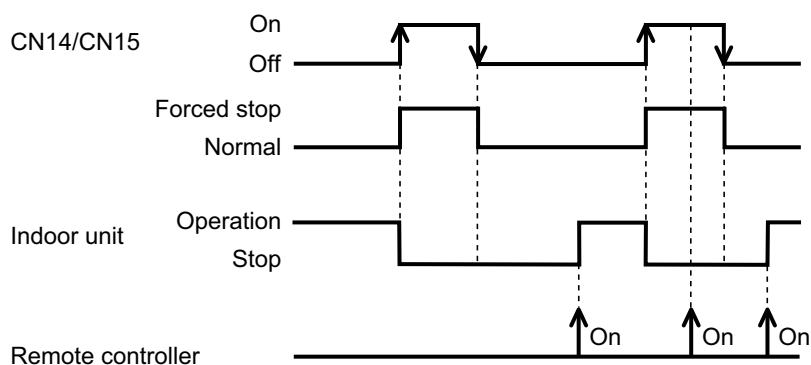
■ Operation/Stop mode 1

Function setting		External input		Input signal	Command
46-00	60-00	Input of indoor unit	CN14	Off → On	Operation
	60-09			On → Off	Stop
	60-10		CN15	Off → On	Operation
	60-11			On → Off	Stop
	60-13		CN15	Off → On	Operation
	60-15			On → Off	Stop



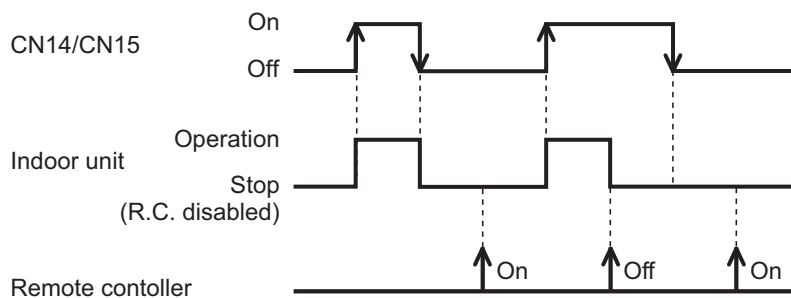
■ Forced stop

Function setting		External input		Input signal	Command
46-02	60-00	Input of indoor unit	CN14	Off → On	Forced stop
	60-09			On → Off	Normal
	60-10		CN15	Off → On	Forced stop
	60-11			On → Off	Normal
	60-13		CN15	Off → On	Forced stop
	60-15			On → Off	Normal



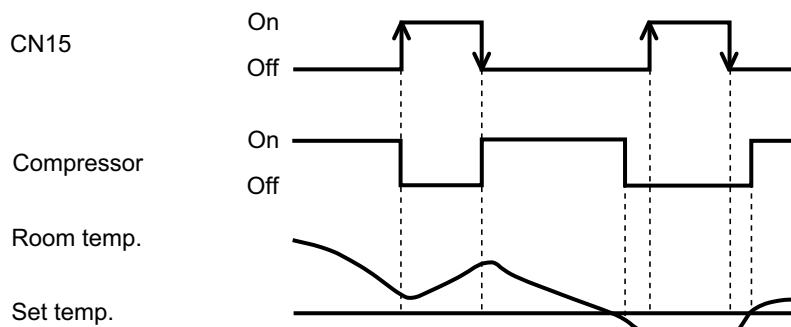
■ Operation/Stop mode 2

Function setting		External input		Input signal	Command
46-03	60-00	Input of indoor unit	CN14	Off → On	Operation
	60-09			On → Off	Stop (R.C. disabled)
	60-10		CN15	Off → On	Operation
	60-11			On → Off	Stop (R.C. disabled)
	60-13			Off → On	Operation
	60-14			On → Off	Stop (R.C. disabled)
	60-15				



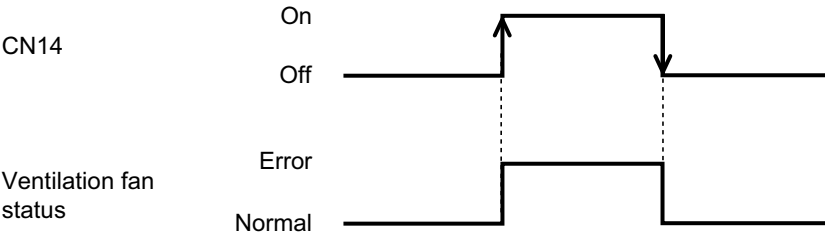
■ Forced thermostat off

Function setting		External input		Input signal	Command
60-00 60-09 60-10 60-11 60-13		Input of indoor unit	CN15	Off → On	Thermostat off
				On → Off	Normal operation



■ Ventilation fan status

Function setting	External input		Input signal	Command
60-14 60-15	Input of indoor unit	CN14	Off → On	Ventilation fan status error detected
			On → Off	Ventilation fan status normal

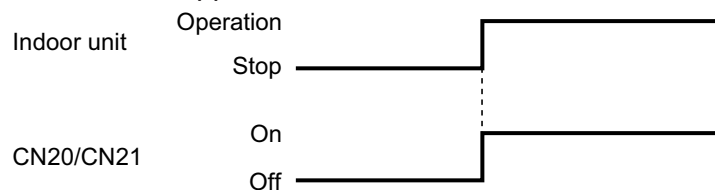


9-5. Details of control output function

■ Operation/Stop status

Function setting	External output		Output signal	Command
60-00	Output of indoor unit	CN20	Off → On	Operation
			On → Off	Stop
60-09		CN21	Off → On	Operation
60-10				
60-11			On → Off	Stop
60-13				
60-14				

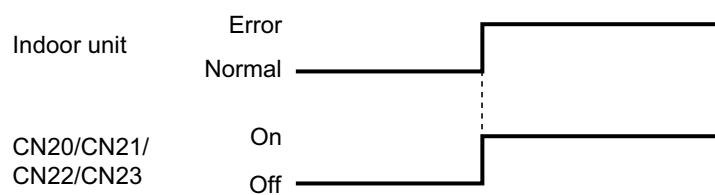
The output is low when the unit is stopped.



■ Error status

Function setting	External output		Output signal	Command
60-09	Output of indoor unit	CN20	Off → On	Error
			On → Off	Normal
60-00		CN21	Off → On	Error
			On → Off	Normal
60-10 60-13 60-14 60-15		CN22	Off → On	Error
			On → Off	Normal
60-11		CN23	Off → On	Error
			On → Off	Normal

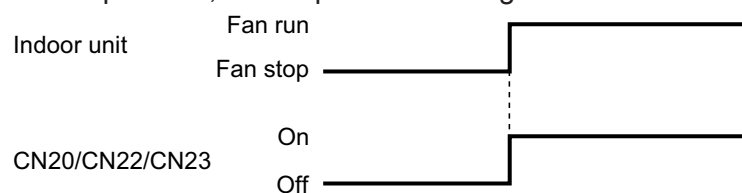
The output is on when an error occurs on the indoor unit.



■ Indoor unit fan operation status

Function setting	External output		Input signal	Command
60-10	Output of indoor unit	CN20	Off → On	Fan run
			On → Off	Fan stop
60-00		CN22	Off → On	Fan run
60-09			On → Off	Fan stop
60-11				
60-13		CN23	Off → On	Fan run
60-14			On → Off	Fan stop
60-15				

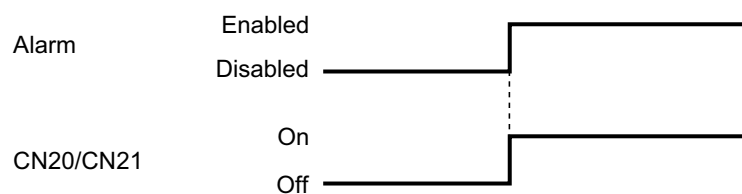
The output is on when the indoor unit fan is in operation, and is off when the fan stops or during cold air prevention. In dry mode operation, the output is off during thermostat off.



■ Alarm

Function setting	External output		Output signal	Command
60-13 ^{*1}	Output of indoor unit	CN20	Off → On	Alarm enabled
			On → Off	Alarm disabled
60-15 ^{*2}		CN21	Off → On	Alarm enabled
			On → Off	Alarm disabled

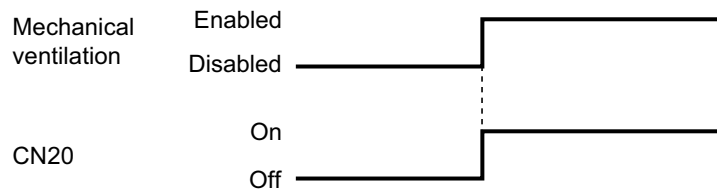
- ^{*1}: Works only when the function setting number 81 is set at "02" or "04".
- ^{*2}: Works only when the function setting number 81 is set at "04".



■ Mechanical ventilation

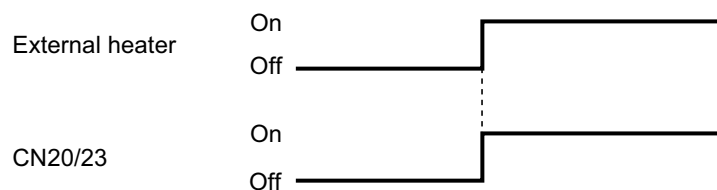
Function setting	External output		Output signal	Command
60-14*	Output of indoor unit	CN20	Off → On	Ventilation enabled
60-15*			On → Off	No ventilation

*: Works only when the function setting number 81 is set at "04".



■ External heater output

Function setting	External output		Output signal	Command
60-11	Output of indoor unit	CN20	Off → On	External heater on
			On → Off	External heater off
60-00		CN23	Off → On	External heater on
60-09 60-10			On → Off	External heater off



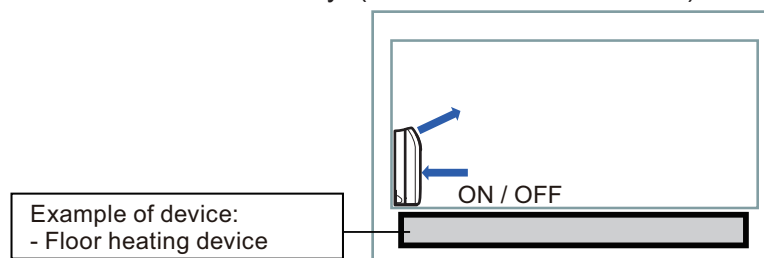
Control	Primary heater	Auxiliary heater	Function setting
			Indoor unit
			Control switching external heaters No. 61
Auxiliary heater control 1	Heat pump	External device*	61-00

NOTES:

- After turning off the heater, 3 minutes of standby time is required by next power-on of the heater.
- *: External device means Hot water, Electrical heater, etc.

● Installation configuration of individual connection

External heating device is installed individually. (No use of indoor unit fan)



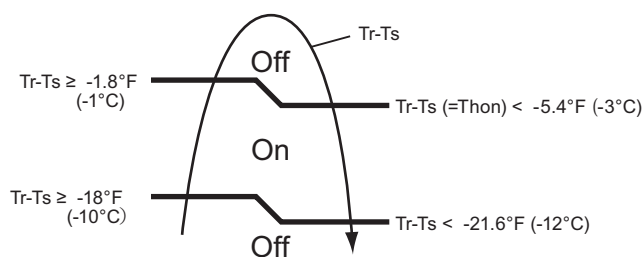
⚠ WARNING

- Design and install an external heater appropriately, with consideration for its protection and local codes.
- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- GENERAL Inc. is not responsible for inappropriate designing or installation of external heating device.

● Auxiliary heater control 1

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

Example: When set temperature (Ts) is 22°C (Factory setting),

- and room temperature (Tr) increases above 12°C, signal output is on.
- and room temperature (Tr) increases above 21°C, signal output is off.
- and room temperature (Tr) decreases below 19°C, signal output is on.
- and room temperature (Tr) decreases below 10°C, signal output is off.

10. Group connection

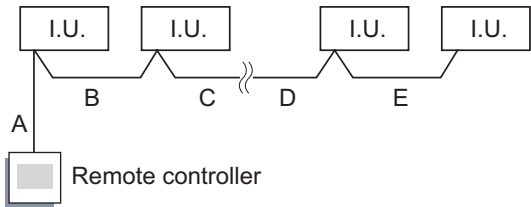
NOTE: Group control cannot be used together with WLAN Adapter.

Installation procedure for group control system:

A number of indoor units can be operated at the same time using a single remote controller.

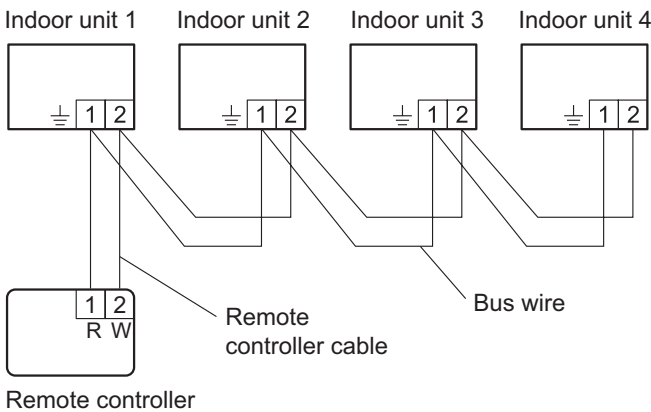
NOTE: When different type of indoor units (such as wall-mounted type and cassette type, cassette type and duct type, or other combinations) are connected using group control system, some functions may no longer be available.

- 1. Connect up to 16 indoor units in a system.



A, B, C, D, E: Remote controller cable		
Wiring length limitation	UTY-RVRG	$A + B + C + D + E \leq 70 \text{ m}$
	Other than UTY-RVRG	$A + B + C + D + E \leq 500 \text{ m}$

Example of wiring method

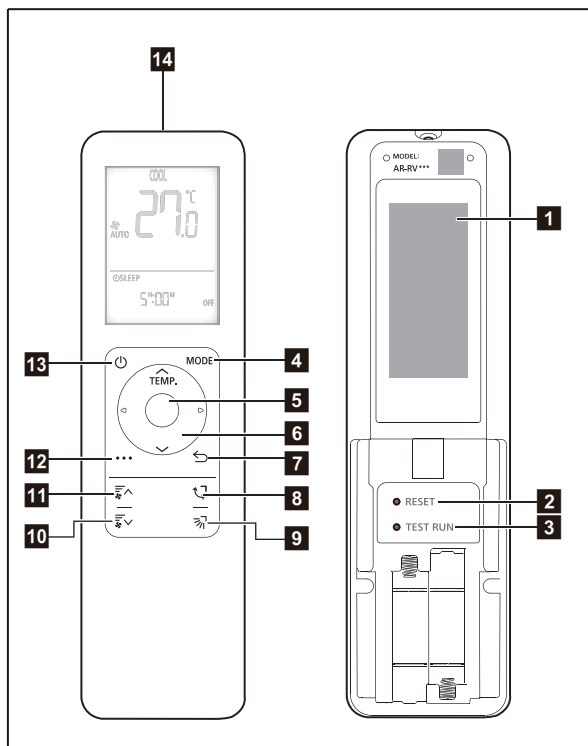


- 2. Automatic address setting
After the remote controller connection in the system, the automatic address setting runs in the initial starting up. Do not change the remote controller address for the indoor unit.

11. Remote controller

11-1. Wireless Remote Controller

Overview



1 Function menu introductions

2 RESET button

3 TEST RUN button

- If this button is pressed during normal operation, the indoor unit will switch to test operation mode, and the operation indicator lamp and the timer indicator lamp on the indoor unit will begin to flash simultaneously.
- To stop the test operation mode, press the START/STOP button. Then, the air conditioner stops the operation.

4 MODE button

5 DETERMINATION button

6 TEMP./SELECT button

- Adjusts the setting temperature.
- Adjusts the value of the timer settings.
- Sets the remote controller code.
- Selects a menu item.

7 RETURN button

8 SWING button (Automatic swing)

9 SET button (Up/down airflow)

10 Fan speed down button

11 Fan speed up button

12 MENU button

13 START/STOP button

14 Signal transmitter

15 Temperature indicator

16 Miscellaneous setting indicators

- Backlight brightness
- Temperature unit
- WEEKLY timer

17 Battery indicator

18 Swing indicator

19 Clock and timer indicator

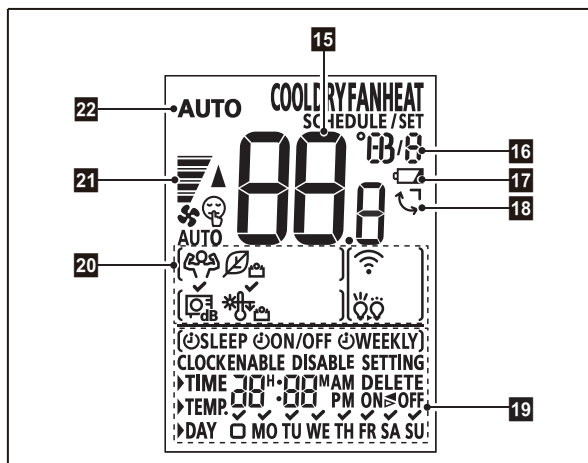
20 Functions menu indicator

Refer to the back of the remote controller for each icon.

21 Fan speed indicator

22 Operating mode indicator

Display panel



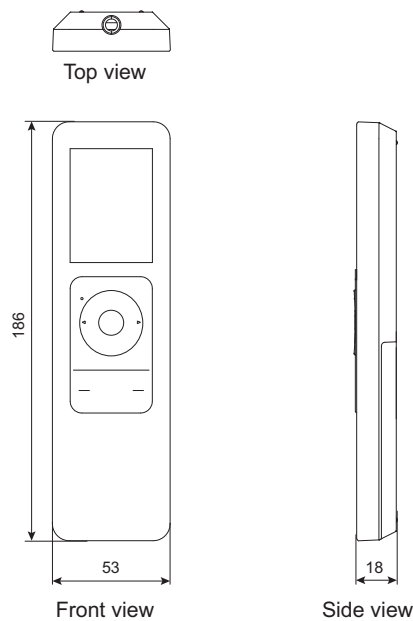
NOTES:

- Functions may differ by type of the indoor unit. For details, refer to the *Operation Manual*.
- In actual operation, the remote controller shows only the indicators that are appropriate for the current process.

■ Specifications

● Controller

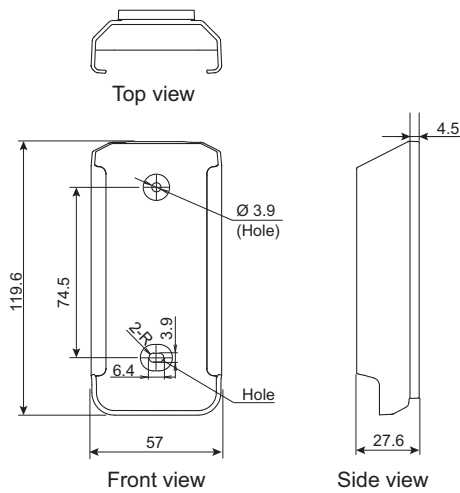
Unit: mm



Size (H × W × D)	mm	186 × 53 × 18
Weight	g	116 (without batteries)

● Holder

Unit: mm



Size (H × W × D)	mm	119.6 × 57 × 27.6
Weight	g	28

12. Function settings

To adjust the functions of this product according to the installation environment, various types of function settings are available.

NOTE: Incorrect settings can cause a product malfunction.

12-1. Function settings by using remote controller

Some function settings can be changed on the remote controller. After confirming the setting procedure and the content of each function setting, select appropriate functions for your installation environment.

■ Setting procedure by using Wireless Remote Controller

The function number and the associated setting value are displayed on the LCD of the remote controller. Follow the instructions written in the local setup procedure supplied with the remote controller, and select appropriate setting according to the installation environment.

Before connecting the power supply of the indoor unit, reconfirm following items:

- Cover for the electrical enclosure on the outdoor unit is in place.
- There is no wiring mistake.
- Piping air tightness test and vacuuming have been performed firmly.
- All the necessary wiring work for outdoor unit has been finished.

After reconfirming the items listed above, connect the power supply of the indoor unit.

NOTES:

- Settings will not be changed if invalid numbers or setting values are selected.
- When optional Wired Remote Controller is used, refer to the installation manual enclosed with the remote controller.

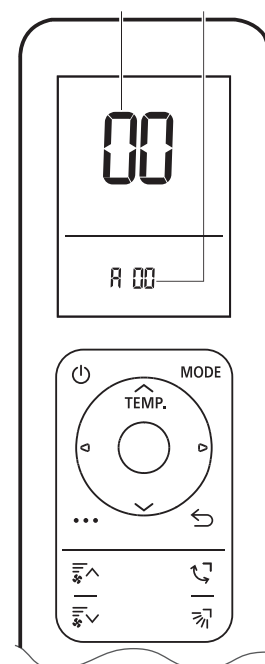
Entering function setting mode:

While pressing the  button and  button simultaneously, press the RESET button to enter the function setting mode.

Selecting the function number and setting value:

1. Press the / or / buttons to select the function number.
2. Press the MODE button to proceed to value setting. To return the function number selection, press the MODE button again.
3. Press the / or / buttons to select the setting value.
4. Press the  button once. Confirm that you hear the beep.
5. Press the START/STOP() button to fix the function setting. Confirm that you hear the beep.
6. Press the RESET button to end the function setting mode.
7. After completing the function setting, be sure to disconnect the power supply and then reconnect it.

Function number
Setting value



⚠ CAUTION

After disconnecting the power supply, wait 30 seconds or more before reconnecting it. The function setting will not become active unless the power supply is disconnected and then reconnected.

■ Contents of function setting

Each function setting listed in this section is adjustable in accordance with the installation environment.

NOTE: Setting will not be changed if invalid numbers or setting values are selected.

● Function setting list

	Function no.	Functions
1)	11	Filter sign
2)	23	Vertical airflow direction range control
3)	30/31	Room temperature control for indoor unit sensor
4)	35/36	Room temperature control for Wired Remote Controller sensor
5)	40	Auto restart
6)	42	Room temperature sensor switching
7)	44	Remote controller custom code
8)	46	External input control
9)	49	Indoor unit fan control for energy saving for cooling
10)	60	Switching functions for external output terminal
11)	81	Safety measures setting for refrigerant leakage
12)	84	Wired Remote Controller function extension setting

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select “No indication” (03).

Function number	Setting value	Setting description	Factory setting
11	00	Standard (400 hours)	
	01	Long interval (1,000 hours)	
	02	Short interval (200 hours)	
	03	No indication	◆

2) Vertical airflow direction range control

In a wall-concealed installation, change the setting to “Fixed” (02) to restrict the movement of the upper air outlet so that the airflow is only towards the horizontal direction.

A concealed installation that covers the unit completely is prohibited. In a wall-concealed installation, do not cover the front side of the unit, especially the upper front.

Function number	Setting value	Setting description	Factory setting
23	00	Standard	◆
	01	(Setting prohibited)	
	02	Fixed (Concealed)	

3) Room temperature control for indoor unit sensor

Depending on the installed environment, correction of the room temperature sensor may be required. Select the appropriate control setting according to the installed environment.

The temperature of the room temperature sensor is corrected as follows:

Corrected temp. = Temp. of the room temp. sensor - Correction temp. value

Example of correction:

When the temperature of the room temp. sensor is 26°C and the setting value is "03" (-1.0°C), corrected temp. will be 27°C (26°C - [-1.0°C]).

The temperature correction values show the difference from the Standard setting "00" (manufacturer's recommended value).

Function number		Setting value	Setting description	Factory setting
30 (For cooling)	31 (For heating)	00	Standard setting	♦
		01	No correction 0.0°C	
		02	-0.5°C	More cooling Less heating
		03	-1.0°C	
		04	-1.5°C	
		05	-2.0°C	
		06	-2.5°C	
		07	-3.0°C	
		08	-3.5°C	
		09	-4.0°C	
		10	+0.5°C	Less cooling More heating
		11	+1.0°C	
		12	+1.5°C	
		13	+2.0°C	
		14	+2.5°C	
		15	+3.0°C	
		16	+3.5°C	
		17	+4.0°C	

4) Room temperature control for Wired Remote Controller sensor

Depending on the installed environment, correction of the wire remote temperature sensor may be required. Select the appropriate control setting according to the installed environment.

To change this setting, set Function 42 to Both "01".

Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

Function number		Setting value	Setting description	Factory setting
35 (For cooling)	36 (For heating)	00	Standard setting	◆
		01	No correction 0.0°C	
		02	-0.5°C	More cooling Less heating
		03	-1.0°C	
		04	-1.5°C	
		05	-2.0°C	
		06	-2.5°C	
		07	-3.0°C	
		08	-3.5°C	
		09	-4.0°C	
		10	+0.5°C	Less cooling More heating
		11	+1.0°C	
		12	+1.5°C	
		13	+2.0°C	
		14	+2.5°C	
		15	+3.0°C	
		16	+3.5°C	
		17	+4.0°C	

5) Auto restart

Enables or disables automatic restart after a power interruption.

Function number	Setting value	Setting description	Factory setting
40	00	Enable	◆
	01	Disable	

NOTE: Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

6) Room temperature sensor switching

(Only for Wired Remote Controller)

When using the Wired Remote Controller temperature sensor, change the setting to "Both" (01).

Function number	Setting value	Setting description	Factory setting
42	00	Indoor unit	◆
	01	Both	

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and Wired Remote Controller are active.

NOTE: Remote controller sensor must be turned on by using the remote controller.

7) Remote controller custom code

(Only for Wireless Remote Controller)

The indoor unit custom code can be changed. Select the appropriate custom code.

Function number	Setting value	Setting description	Factory setting
44	00	A	◆
	01	B	
	02	C	
	03	D	

8) External input control

“Operation/Stop” mode or “Forced stop” mode can be selected.

Function number	Setting value	Setting description	Factory setting
46	00	Operation/Stop mode 1 (Remote controller enabled)	◆
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2 (Remote controller disabled)	

9) Indoor unit fan control for energy saving for cooling

Enables or disables the power-saving function by controlling the indoor unit fan rotation when the outdoor unit is stopped during cooling operation.

Function number	Setting value	Setting description	Factory setting
49	00	Disable	
	01	Enable	
	02	Remote controller	◆

00: When the outdoor unit is stopped, the indoor unit fan operates continuously following the setting on the remote controller.

01: When the outdoor unit is stopped, the indoor unit fan operates intermittently at a very low speed.

02: Enable or disable this function by remote controller setting.

NOTE: Set to “00” or “01” when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter. To confirm if the remote controller has this setting, refer to the operating manual of each remote controller.

10) Switching functions for external output terminal

Functions of the external output terminal can be switched. For details, refer to “External input and output”.

Function number	Setting value	External input		External output			
		CN14	CN15	CN20	CN21	CN22	CN23
60	00	Operation/ Stop mode 1 (R.C. enabled) (46-00) or Forced stop (46-02) or Operation/ Stop mode 2 (R.C. disabled) (46-03)	Forced thermostat off	Operation/ Stop	Error status	Indoor unit fan operation status	External heater output
	09			Error status	Operation/ Stop		
	10			Indoor unit fan operation status		Indoor unit fan operation status	
	11	External heater output		Indoor unit fan operation status			Error status
	13*1	Alarm		Error status		Indoor unit fan operation status	
	14*2	Ventilation fan status	Operation/ Stop mode 1 (R.C. enabled) (46-00) or Forced stop (46-02) or Operation/ Stop mode 2 (R.C. disabled) (46-03)		Ventilation		Alarm
	15*2						

*1: Works only when the function setting number 81 is set at “02” or “04”.

*2: Works only when the function setting number 81 is set at “04”.

11) Safety measures setting for refrigerant leakage

Sets the safety measures operation in case of refrigerant leakage.

Function number	Setting value	Setting description	Factory setting
81	00	No safety measure	
	01	Air circulation	◆
	02	Air circulation, Alarm	
	03	(Setting prohibited)	
	04	Air circulation, Alarm, Mechanical ventilation	

To activate the safety measures operation for the indoor unit in case of refrigerant leakage, set the setting value to "01", "02", or "04" (Air circulation).

When the indoor unit detects refrigerant leakage or the refrigerant leakage sensor failure, the indoor unit operates as follows.

- The indoor unit operates the fan at high speed to diffuse the refrigerant, according to *IEC60335-2-40*.

NOTE: Remote controller cannot stop this fan operation for safety reasons.

- The indoor unit stops cooling or heating operation. Also, Forced cooling operation is not allowed.
- The indoor unit or the optional Wired Remote Controller indicates error code 45 or A8.

12) Wired Remote Controller function extension setting

Enables the Powerful, 10°C Heat, or Outdoor Unit Low Noise operation when connecting the Wired Remote Controller (UTY-RVRG).

Function number	Setting value	Setting description	Factory setting
84	00	Disable	◆
	01	Enable	

- Refer to the operation manual of the air conditioner to check whether it supports each function.
- All indoor units must have the same setting value in a Group Control system.

12-2. Remote controller custom code setting

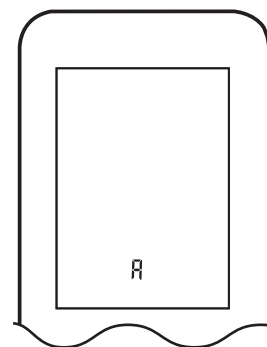
To interconnect the air conditioner and the Wireless Remote Controller, assignment of the custom code for the Wireless Remote Controller is required.

NOTE: Air conditioner cannot receive a signal if the air conditioner has not been set for the custom code.

When 2 or more air conditioners are installed in a room, and the remote controller is operating an air conditioner other than the one you wish to set, change the custom code of the remote controller to operate only the air conditioner you wish to set. (4 selections possible.)

Confirm the setting of the remote controller custom code and the function setting. If these do not match, the remote controller cannot be used to operate for the air conditioner.

1. Press the  button until the indicators on the remote controller turn off.
2. Press the MODE button for at least 5 seconds to display the current custom code. (Initially set to $\overline{A}$.)
3. Press the $\wedge/\vee$ or $\triangleleft/\triangleright$ buttons to change the custom code between $\overline{A} \rightarrow \overline{b} \rightarrow \overline{c} \rightarrow \overline{d}$. Match the code on the display to the air conditioner custom code. (Initially set to $\overline{A}$.)
4. Press the MODE button again to return to the clock display. The custom code will be changed.

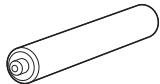
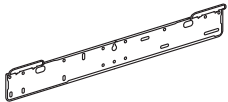
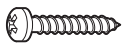
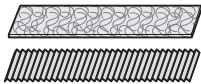


NOTES:

- If no button is pressed within 30 seconds after the custom code is displayed, the displayed custom code will be set.
- The air conditioner custom code is set to $\overline{A}$ prior to shipment. To change the custom code, contact your retailer.
- Depending on the remote controller, the custom code may return to $\overline{A}$ when replacing the batteries. In this case, reset the custom code as necessary.
- If you do not know the assigned code for the air conditioner, try each of the custom code ($\overline{A} \rightarrow \overline{b} \rightarrow \overline{c} \rightarrow \overline{d}$) until you find the code which operates the air conditioner.

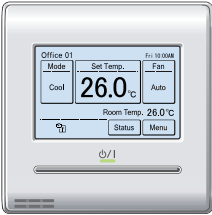
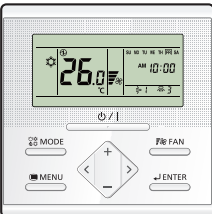
13. Accessories

13-1. Models: AGHH09KVCCL, AGHH12KVCCL, and AGHH14KVCCL

Part name	Exterior	Qty	Part name	Exterior	Qty
Operation manual		1	Battery		2
Installation manual		1	Remote controller holder		1
Wall hook bracket		1	Self-tapping screw (small)		2
Self-tapping screw (large)		9	Cloth tape		1
Remote controller		1	Air cleaning filters		1

14. Optional parts

14-1. Controllers

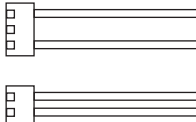
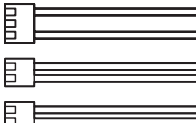
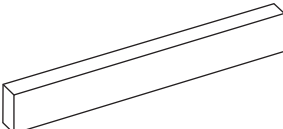
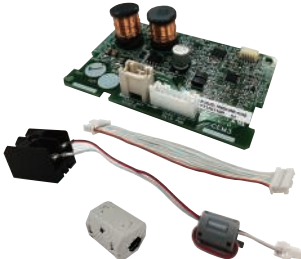
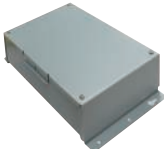
Exterior	Part name	Model name	Summary
	Wired Remote Controller (Touch Panel)	UTY-RVRG	Remote controller that provides the functions you need in a sleek design that uniquely transforms itself to blend with any interior. Optional Communication Kit is necessary for installation.
	Wired Remote Controller (Touch Panel)	UTY-RNRGZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Optional Communication Kit is necessary for installation.
	Wired Remote Controller	UTY-RLRG	High visibility and easy operation. Room temperature can be accurately controlled using the thermo sensor. Optional Communication Kit is necessary for installation.
	Compact Wired Remote Controller	UTY-RCRGZ1	Compact body and easy operation. Room temperature can be accurately controlled using the thermo sensor. Optional Communication Kit is necessary for installation.
	Simple Remote Controller	UTY-RSRG UTY-RSRGZ*	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Optional Communication Kit is necessary for installation.
	Simple Remote Controller	UTY-RHRG UTY-RHRGZ*	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Optional Communication Kit is necessary for installation.

Exterior	Part name	Model name	Summary
	Wireless Remote Controller	UTY-LNWX	Unit control is performed by Wireless Remote Controller.

NOTES:

- Available functions may differ by the remote controller. For details, refer to the operation manual.
- When using the group controlling system of the Wired Remote Controller, using WLAN Adapter is prohibited.

14-2. Others

Exterior	Part name	Model name	Summary
	External Connect Kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PCB. Connecting point: CN14/15 or CN20/21/22/23 on Main PCB
	External Connect Kit	UTY-XWZXZ5	Required when external device is connected. Connecting point: CN14/15 or CN20/21/22/23 on Main PCB
	Half Concealed Kit	UTR-STA	Used for the indoor unit installing of half concealed.
	Communication Kit	UTY-TWRXZ3	Use to connect non-polar 2-core Wired Remote Controller. Connecting point: P190 on Main PCB
	Modbus Converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network. Connecting point: P210 on Main PCB
	KNX Converter	UTY-VKSX	For connection between indoor unit with UART interface and a KNX open network.
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system. Optional Communication Kit is necessary for installation.
	Network Converter (AC power supply)	UTY-VTGXV	This converter is required when connecting single split system to VRF network system. Optional Communication Kit is necessary for installation.
	External Switch Controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches. Optional Communication Kit is necessary for installation.

Part 2. OUTDOOR UNIT

SINGLE TYPE:

AOHH09KVCC

AOHH12KVCC

AOHH14KVCC

1. Specifications

1-1. Models: AOHH09KVCC and AOHH12KVCC

Type				Inverter, Heat pump	
Model name				AOHH09KVCC	AOHH12KVCC
Power supply				230 V ~ 50 Hz	
Power supply intake				Outdoor unit	
Available voltage range				198—264 V	
Starting current			A	4.1	5.7
Fan	Airflow rate	Cooling	m³/h	1,530	
		Heating		1,510	
	Type × Qty			Propeller fan × 1	
	Motor output		W	23	
Sound pressure level*1		Cooling	dB (A)	43	45
		Heating		47	51
Sound power level		Cooling	dB (A)	58	61
		Heating		61	64
Heat exchanger type	Dimensions (H × W × D)		mm	Main 1: 504 × 881 × 18.19 Main 2: 504 × 851 × 18.19	
	Fin pitch			Main 1: 1.3 Main 2: 1.3	
	Rows × Stages			Main 1: 1 × 24 Main 2: 1 × 24	
	Pipe type			Copper tube	
	Fin type	Type (Material)		Aluminum	
		Surface treatment		PC fin	
	Compressor		Type	DC rotary	
		Motor output	W	900	
Refrigerant		Type (Global warming potential)		R32 (675)	
		Charge	g	850	
Refrigerant oil		Type		RB68A	
		Amount	cm³	340	
Enclosure		Material		Steel sheet	
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)		Net	mm	542 × 799 × 290	
		Gross		602 × 940 × 375	
Weight		Net	kg	31	
		Gross		35	
Connection pipe	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)	
		Gas		Ø9.52 (Ø3/8)	
	Method		Flare		
	Pre-charge length		m	15	
	Min. length			3	
	Max. length			20	
	Max. height difference			15	
Operation range		Cooling	°C	-10 to 50*2	
		Heating		-15 to 24	
Drain hose		Material		Polypropylene	
		Tip diameter	mm	I.D.: Ø13.0 O.D.: Ø16.0 to Ø16.8	

NOTES:

- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
 - Heating: Indoor temperature of 20°CDB/15°CWB, and outdoor temperature of 7°CDB/6°CWB.
 - Pipe length: 5 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- ^{*1}: Sound pressure level
 - Measured values in manufacturer's semi-anechoic chamber.
 - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.
- ^{*2}: Suction temperature of the outdoor unit

1-2. Model: AOHH14KVCC

Type				Inverter, Heat pump		
Model name				AOHH14KVCC		
Power supply				230 V~ 50 Hz		
Power supply intake				Outdoor unit		
Available voltage range				198—264 V		
Starting current			A	6.2		
Fan	Airflow rate	Cooling	m³/h	2,210		
		Heating		2,100		
	Type × Qty			Propeller fan × 1		
	Motor output		W	45		
Sound pressure level*1		Cooling	dB (A)	51		
		Heating		50		
Sound power level		Cooling	dB (A)	63		
		Heating		63		
Heat exchanger type		Dimensions (H × W × D)	mm	Main 1: 588 × 881 × 18.19		
				Main 2: 588 × 851 × 18.19		
		Fin pitch		Main 1: 1.3		
				Main 2: 1.3		
		Rows × Stages			Main 1: 1 × 28	
					Main 2: 1 × 28	
		Pipe type			Copper tube	
		Fin type		Type (Material)		Aluminum
				PC fin		
Compressor		Type		DC twin rotary		
		Motor output	W	925		
Refrigerant		Type (Global warming potential)		R32 (675)		
		Charge	g	940		
Refrigerant oil		Type		RmM68AF		
		Amount	cm³	400		
Enclosure		Material		Steel sheet		
		Color		Beige		
		Approximate color of Munsell 10YR 7.5/1.0				
Dimensions (H × W × D)		Net	mm	632 × 799 × 290		
		Gross		692 × 940 × 375		
Weight		Net	kg	37		
		Gross		42		
	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)		
		Gas		Ø9.52 (Ø3/8)		
	Method			Flare		
	Connection pipe	Pre-charge length		m	15	
Min. length		3				
Max. length		20				
Max. height difference		15				
Operation range		Cooling	°C	-10 to 50*2		
		Heating		-15 to 24		
Drain hose		Material		Polypropylene		
		Tip diameter	mm	I.D.: Ø13.0 O.D.: Ø16.0 to Ø16.8		

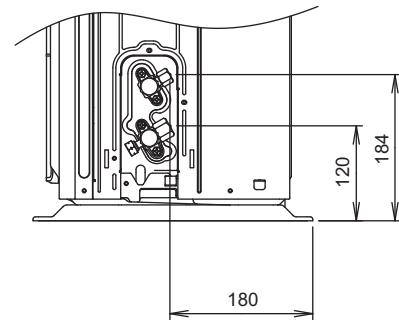
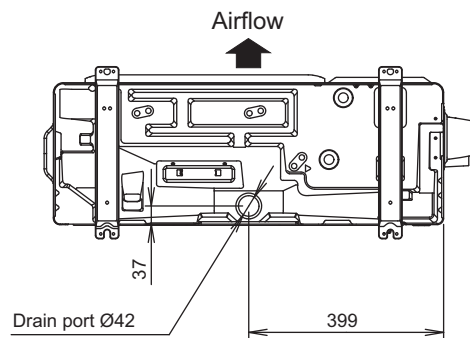
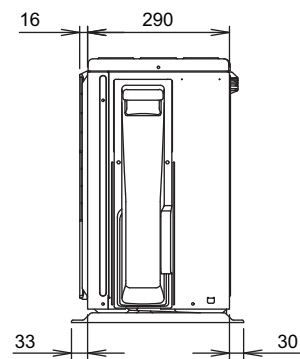
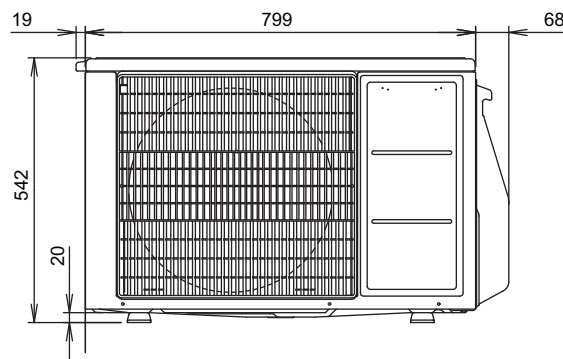
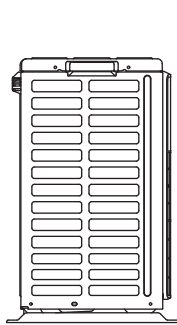
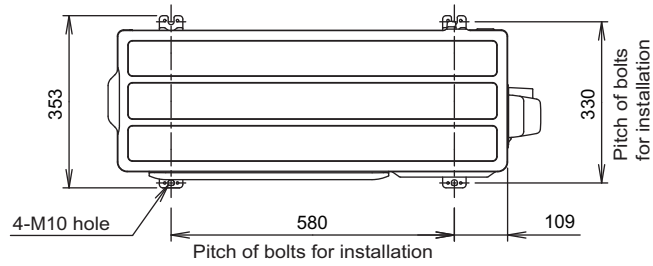
NOTES:

- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
 - Heating: Indoor temperature of 20°CDB/15°CWB, and outdoor temperature of 7°CDB/6°CWB.
 - Pipe length: 5 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *1: Sound pressure level
 - Measured values in manufacturer's semi-anechoic chamber.
 - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.
- *2: Suction temperature of the outdoor unit

2. Dimensions

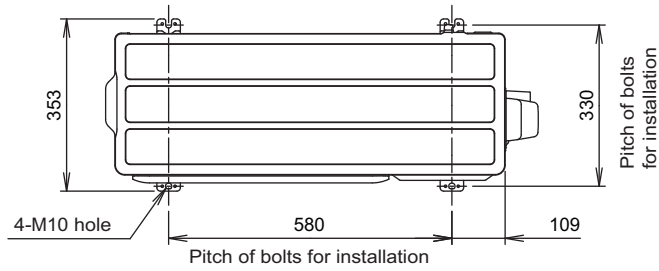
2-1. Models: AOHH09KVCC and AOHH12KVCC

Unit: mm

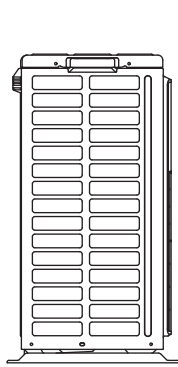


2-2. Model: AOHH14KVCC

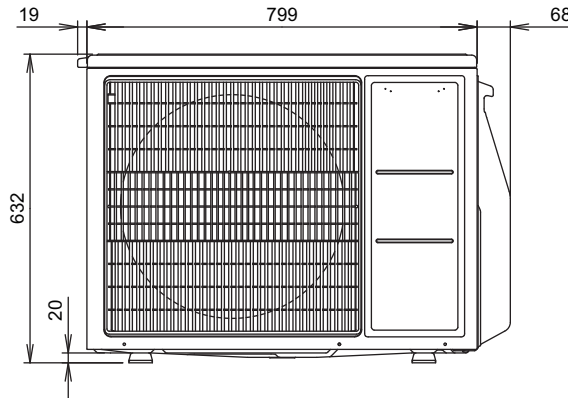
Unit: mm

OUTDOOR UNIT
AOHH09-14KVCCOUTDOOR UNIT
AOHH09-14KVCC

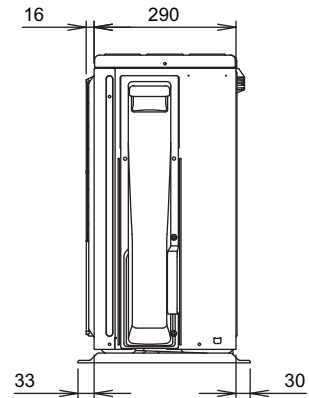
Top view



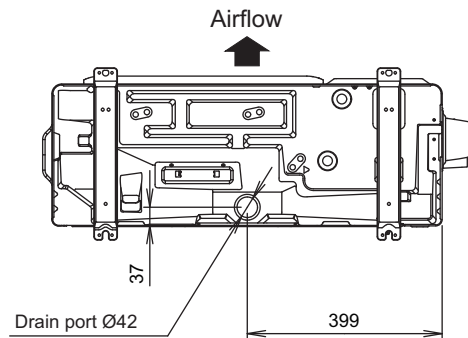
Side view



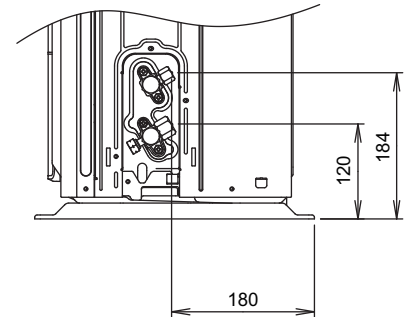
Front view



Side view



Bottom view



Side view (Valve part)

3. Installation space

3-1. Models: AOHH09KVCC, AOHH12KVCC, and AOHH14KVCC

■ Space requirement

Provide sufficient installation space for product safety.

⚠ CAUTION

Keep the space shown in the installation examples.

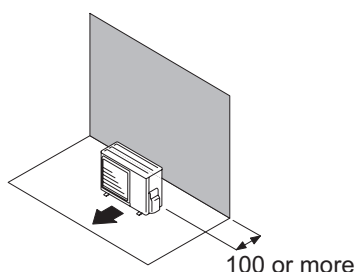
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.

● Single outdoor unit installation

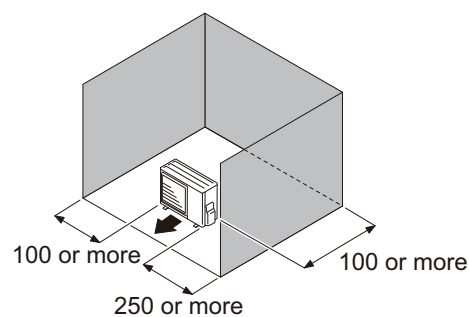
- When the upper space is open:

Unit: mm

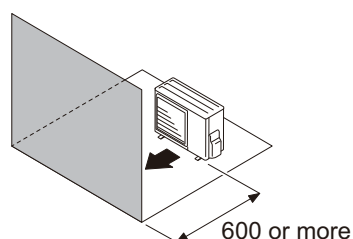
Obstacles at rear only



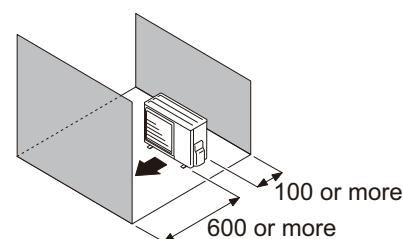
Obstacles at rear and sides



Obstacles at front



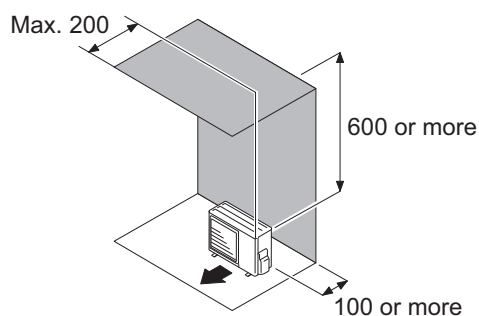
Obstacles at front and rear



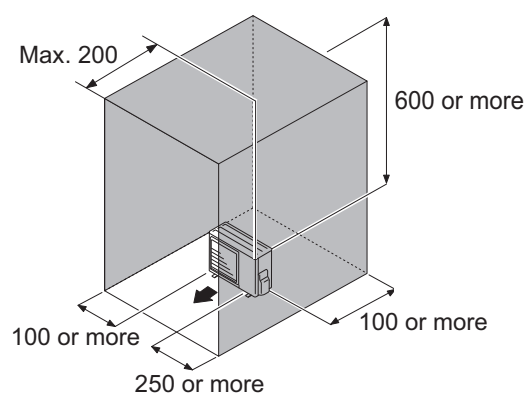
- When an obstruction in the upper space:

Unit: mm

Obstacles at rear and above



Obstacles at rear, sides, and above



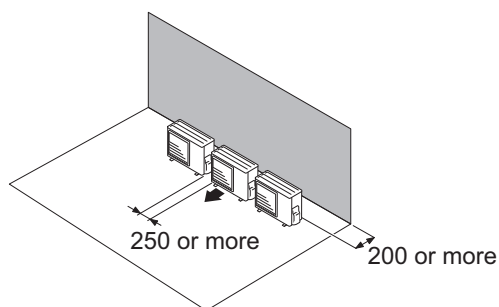
● Multiple outdoor unit installation

- Provide at least 250 mm of space between the outdoor units if multiple units are installed.
- When routing the piping from the side of an outdoor unit, provide space for piping.
- No more than 3 units must be installed side by side.
When 4 units or more are arranged in a line, provide the space as shown in the following example **“When an obstruction in the upper space:”**.

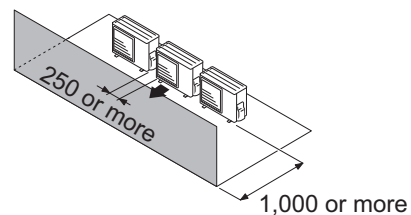
- **When the upper space is open:**

Unit: mm

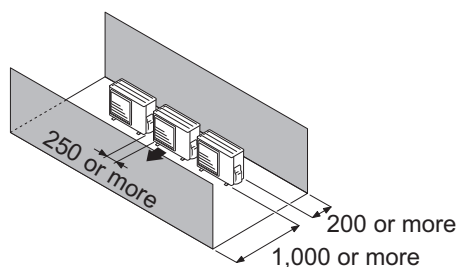
Obstacles at rear only



Obstacles at front only



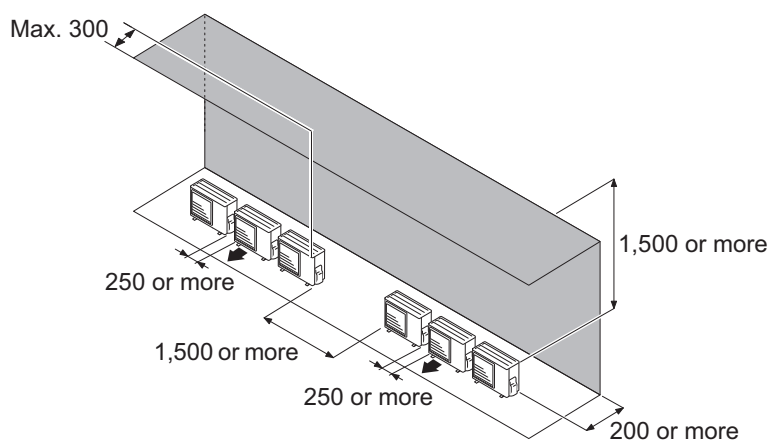
Obstacles at front and rear



- **When an obstruction in the upper space:**

Unit: mm

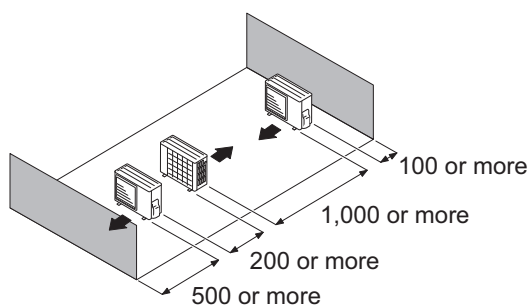
Obstacles at rear and above.



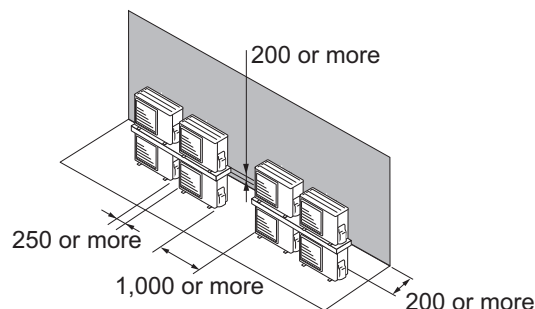
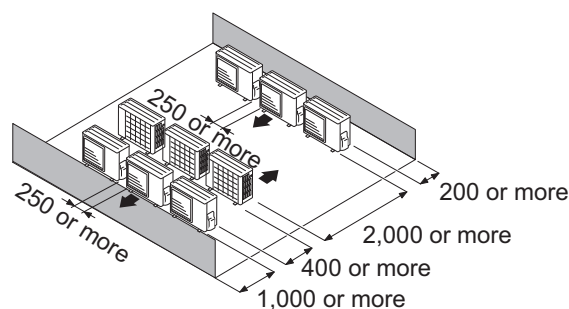
● Outdoor units installation in multi-row

Unit: mm

Single parallel unit arrangement



Multiple parallel unit arrangement

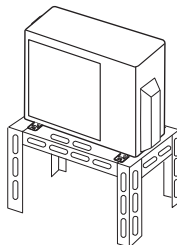


NOTES:

- If the space is larger than stated above, the condition will be the same as when there is no obstacle.
- When installing the outdoor unit, be sure to open the front and left side to obtain better operation efficiency.

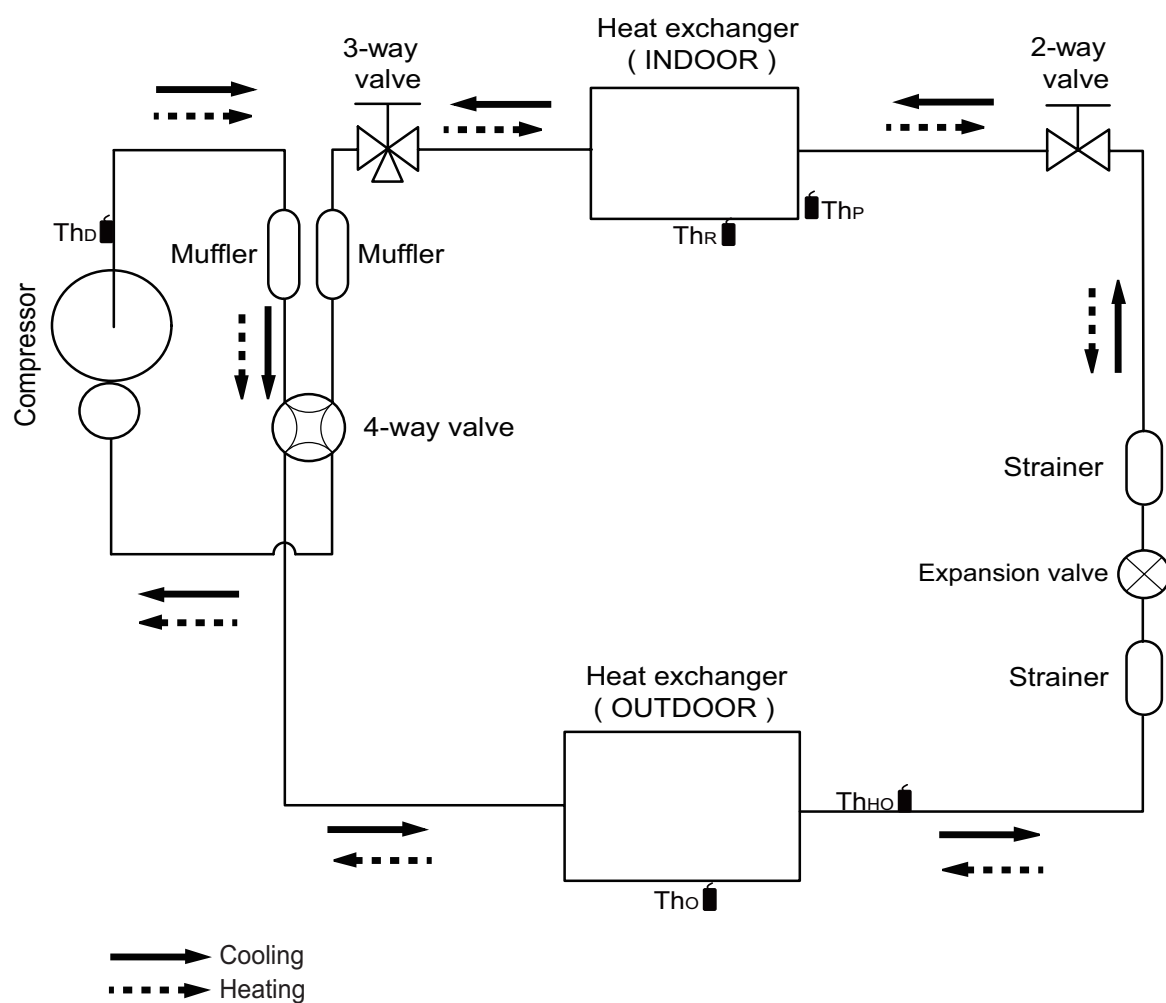
⚠ CAUTION

- Do not install the outdoor unit in two-stage where the drain water could freeze. Otherwise the drainage from the upper unit may form ice and cause a malfunction of the lower unit.
- When the outdoor temperature is 0 °C or less, do not use the accessory drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold climate. (For reverse cycle model only.)
- In area with heavy snowfall, if the inlet and outlet of the outdoor unit is blocked with snow, it might become difficult to get warm, and it is likely to cause product malfunction. Construct a canopy and a pedestal, or place the unit on a high stand that is locally installed.

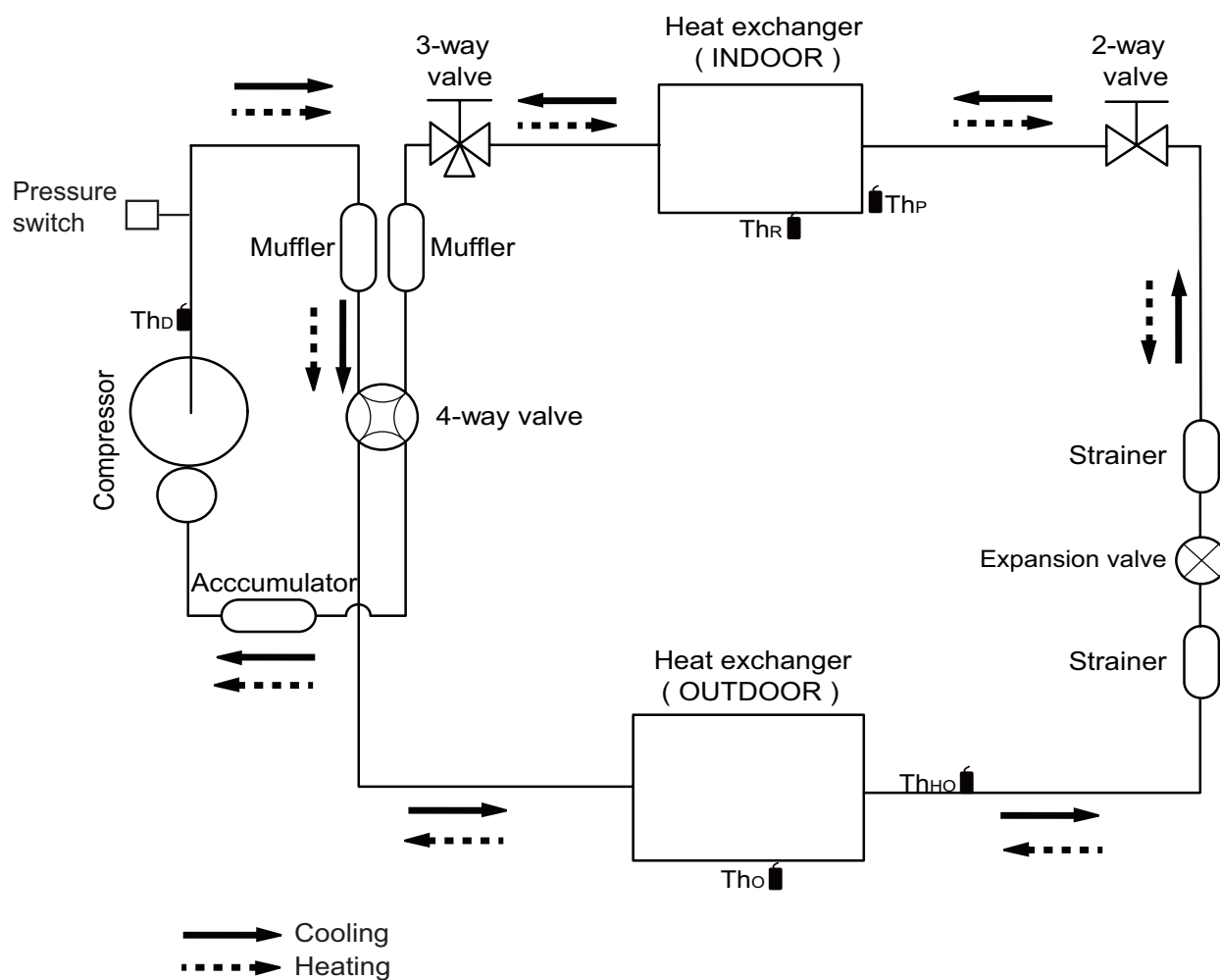


4. Refrigerant circuit

4-1. Models: AOHH09KVCC and AOHH12KVCC



4-2. Model: AOHH14KVCC



Th_D : Thermistor (Discharge temperature)

Tho : Thermistor (Outdoor temperature)

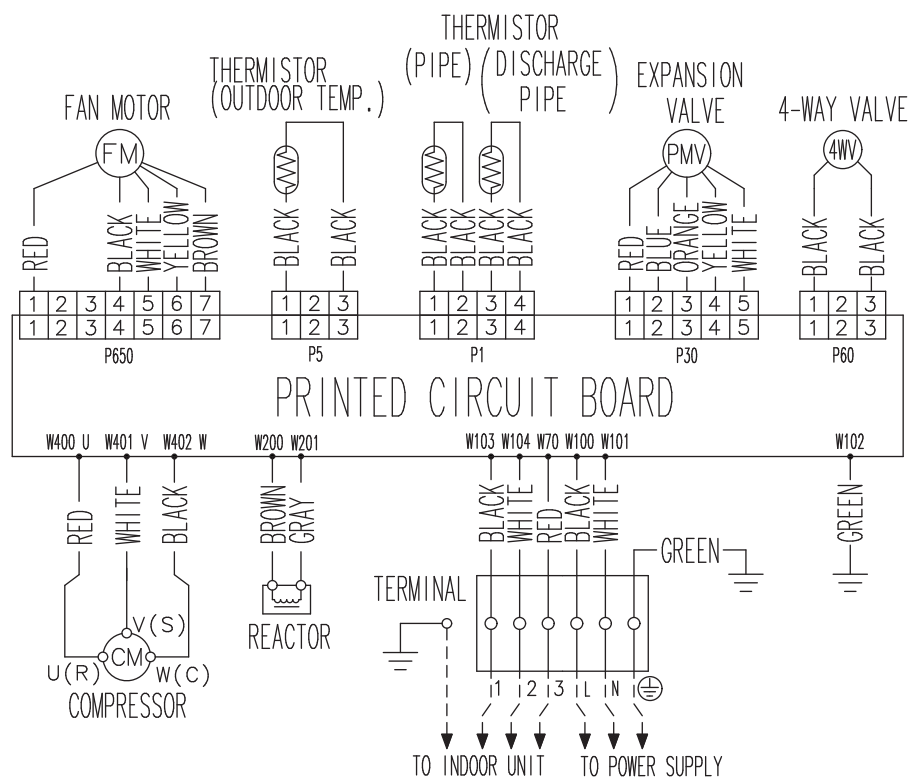
Th_{HO} : Thermistor (Heat exchanger out temperature)

Th_P : Thermistor (Pipe temperature)

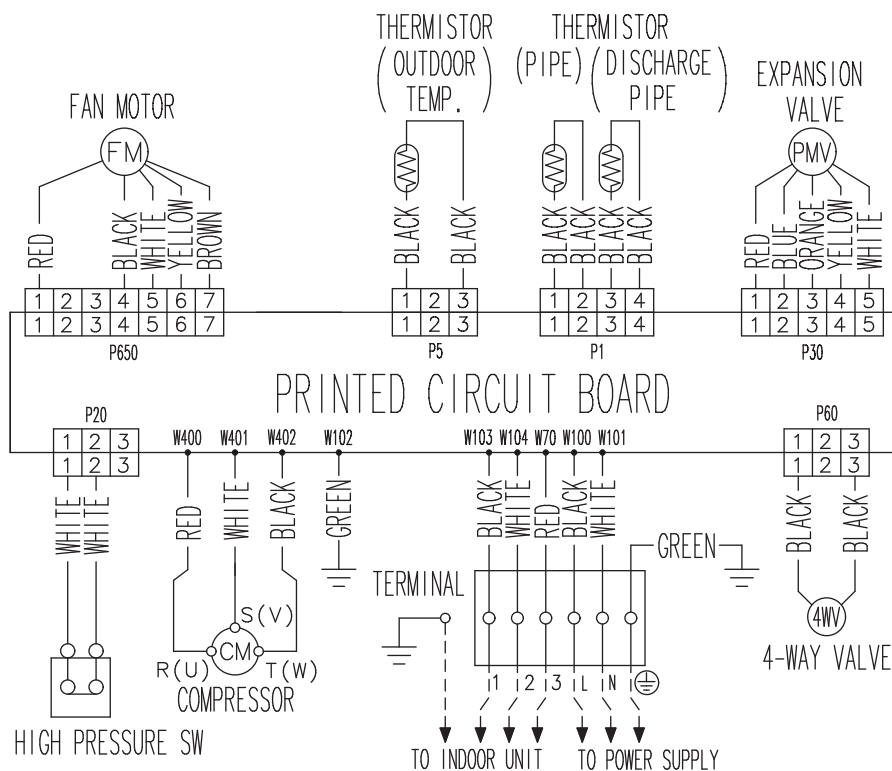
Th_R : Thermistor (Room temperature)

5. Wiring diagrams

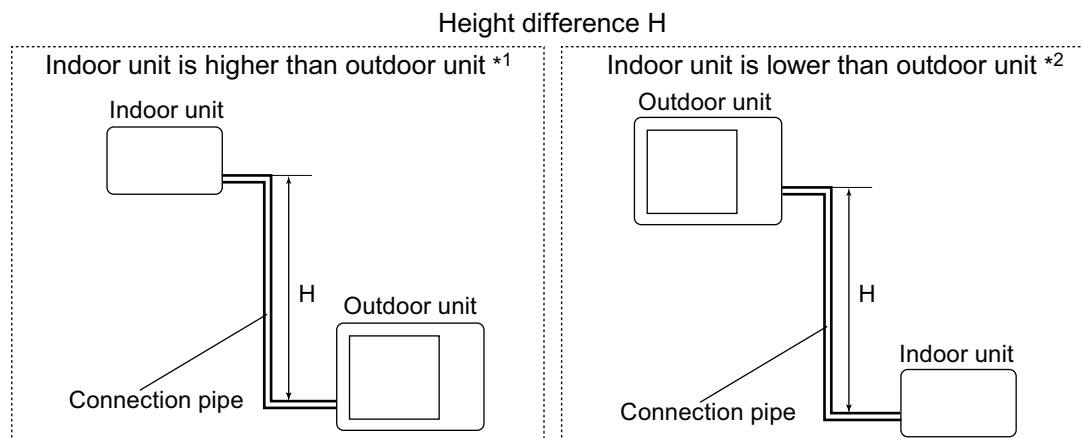
5-1. Models: AOHH09KVCC and AOHH12KVCC



5-2. Model: AOHH14KVCC



6. Capacity compensation rate for pipe length and height difference



6-1. Models: AOHH09KVCC and AOHH12KVCC

NOTE: Values mentioned in the table are calculated based on the maximum capacity.

COOLING			Pipe length (m)					
			3	5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	—	0.858	0.868
		10	—	—	—	0.929	0.872	0.882
		7.5	—	—	0.960	0.933	0.876	0.885
		5	—	0.992	0.964	0.937	0.879	0.889
		3	1.039	0.996	0.968	0.940	0.884	0.892
	0		1.043	1.000	0.972	0.944	0.887	0.896
	Indoor unit is lower than outdoor unit *2	-3	1.043	1.000	0.972	0.944	0.887	0.896
		-5	—	1.000	0.972	0.944	0.887	0.896
		-7.5	—	—	0.972	0.944	0.887	0.896
		-10	—	—	—	0.944	0.887	0.896
		-15	—	—	—	—	0.887	0.896

HEATING			Pipe length (m)					
			3	5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	—	0.896	0.879
		10	—	—	—	0.968	0.896	0.879
		7.5	—	—	0.994	0.968	0.896	0.879
		5	—	1.000	0.994	0.968	0.896	0.879
		3	1.032	1.000	0.994	0.968	0.896	0.879
	0		1.032	1.000	0.994	0.968	0.896	0.879
	Indoor unit is lower than outdoor unit *2	-3	1.030	0.998	0.992	0.966	0.894	0.877
		-5	—	0.995	0.989	0.963	0.891	0.875
		-7.5	—	—	0.987	0.961	0.889	0.873
		-10	—	—	—	0.959	0.887	0.871
		-15	—	—	—	—	0.878	0.862

6-2. Model: AOHH14KVCC

NOTE: Values mentioned in the table are calculated based on the maximum capacity.

COOLING			Pipe length (m)					
			3	5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	—	0.939	0.925
		10	—	—	—	0.966	0.947	0.932
		7.5	—	—	0.979	0.970	0.951	0.936
		5	—	0.992	0.983	0.974	0.955	0.939
		3	1.003	0.995	0.986	0.977	0.958	0.942
		0	1.008	1.000	0.991	0.981	0.963	0.946
	Indoor unit is lower than outdoor unit *2	-3	1.008	1.000	0.991	0.981	0.963	0.946
		-5	—	1.000	0.991	0.981	0.963	0.946
		-7.5	—	—	0.991	0.981	0.963	0.946
		-10	—	—	—	0.981	0.963	0.946
		-15	—	—	—	—	0.963	0.946

HEATING			Pipe length (m)					
			3	5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	—	0.903	0.887
		10	—	—	—	0.952	0.903	0.887
		7.5	—	—	0.976	0.952	0.903	0.887
		5	—	1.000	0.976	0.952	0.903	0.887
		3	1.024	1.000	0.976	0.952	0.903	0.887
		0	1.024	1.000	0.976	0.952	0.903	0.887
	Indoor unit is lower than outdoor unit *2	-3	1.021	0.997	0.973	0.949	0.901	0.885
		-5	—	0.995	0.971	0.947	0.899	0.883
		-7.5	—	—	0.969	0.945	0.897	0.881
		-10	—	—	—	0.942	0.894	0.879
		-15	—	—	—	—	0.889	0.874

7. Additional charge calculation

7-1. Models: AOHH09KVCC and AOHH12KVCC

Refrigerant type		R32
Factory charge amount	g	850

■ Refrigerant charge

Total pipe length	m	15 or less	20 (Max.)	20 g/m
Additional charge amount	g	0	100	

7-2. Model: AOHH14KVCC

Refrigerant type		R32
Factory charge amount	g	940

■ Refrigerant charge

Total pipe length	m	15 or less	20 (Max.)	20 g/m
Additional charge amount	g	0	100	

8. Airflow

8-1. Model: AOHH09KVCC

● Cooling

m ³ /h	1,530
l/s	425
CFM	901

● Heating

m ³ /h	1,510
l/s	419
CFM	889

8-2. Model: AOHH12KVCC

● Cooling

m ³ /h	1,530
l/s	425
CFM	901

● Heating

m ³ /h	1,510
l/s	419
CFM	889

8-3. Model: AOHH14KVCC

● Cooling

m ³ /h	2,210
l/s	614
CFM	1,301

● Heating

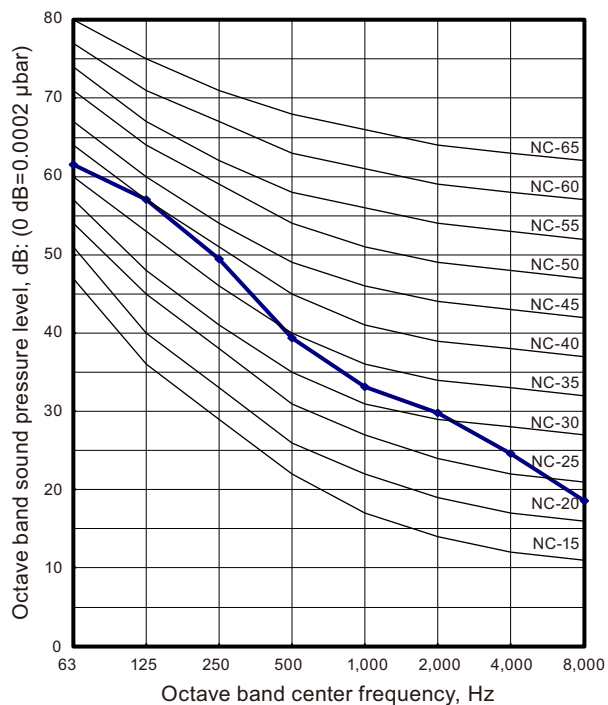
m ³ /h	2,100
l/s	583
CFM	1,236

9. Operation noise (sound pressure)

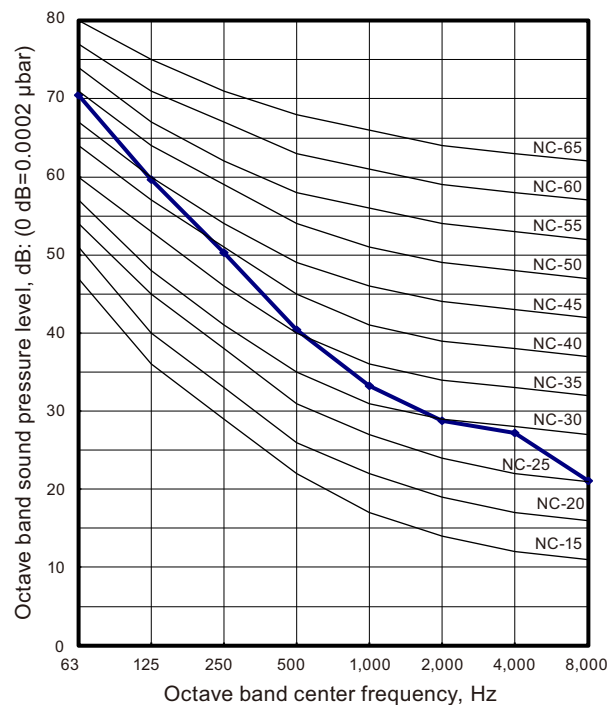
9-1. Noise level curve

Model: AOHH09KVCC

● Cooling

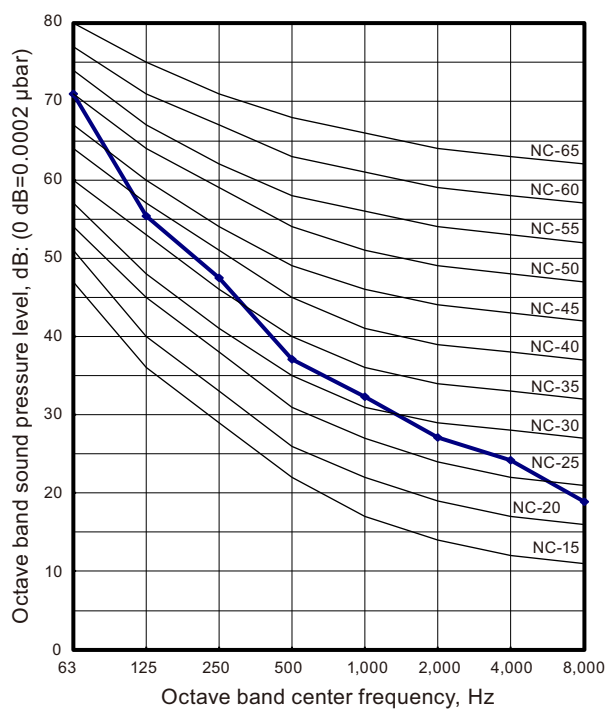


● Heating

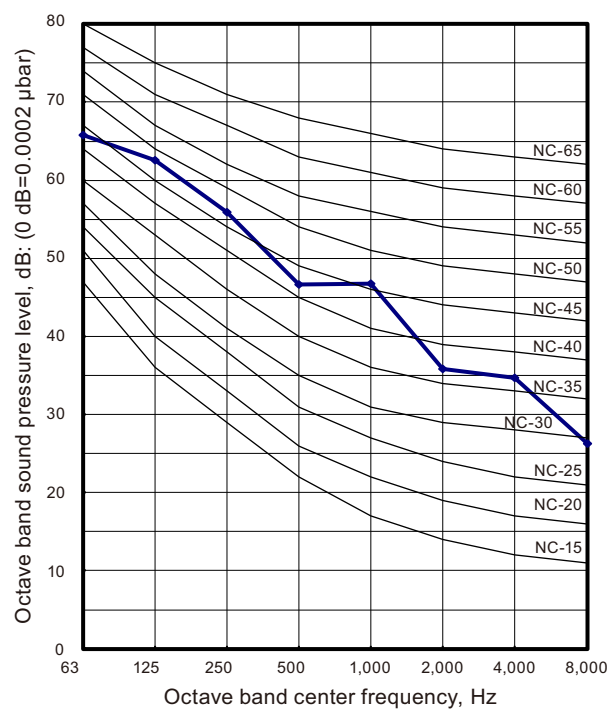


Model: AOHH12KVCC

● Cooling

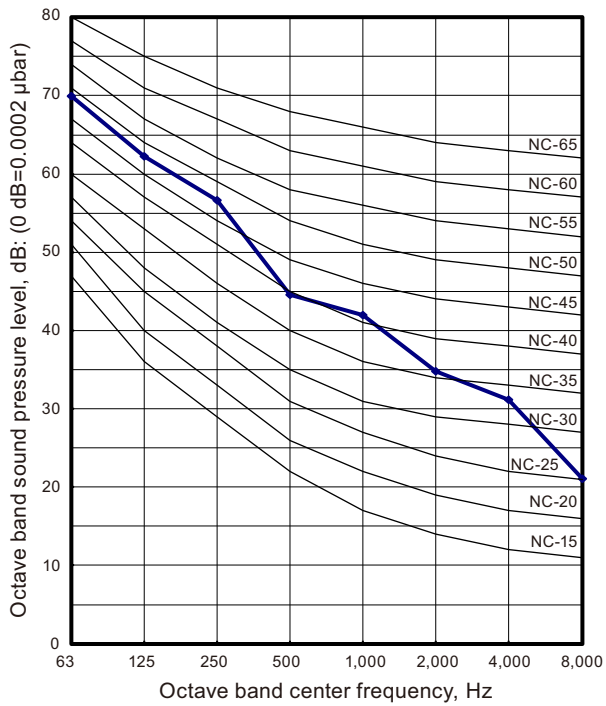


● Heating

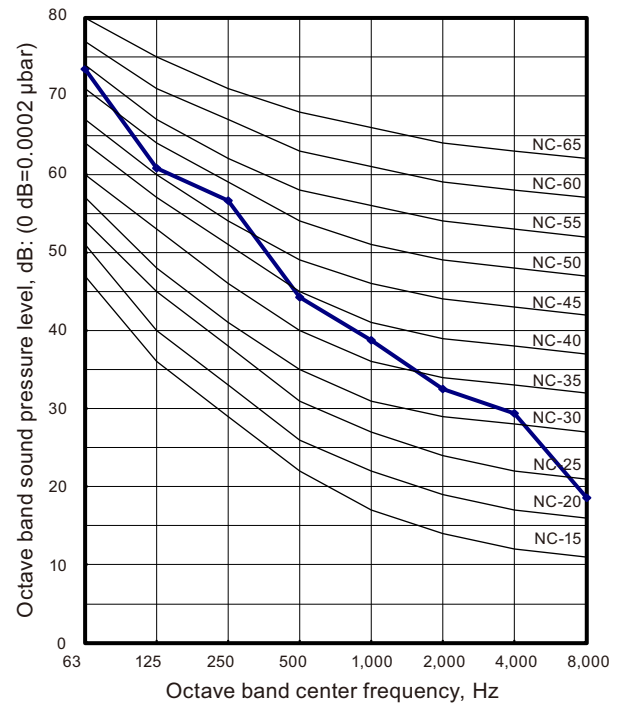


Model: AOHH14KVCC

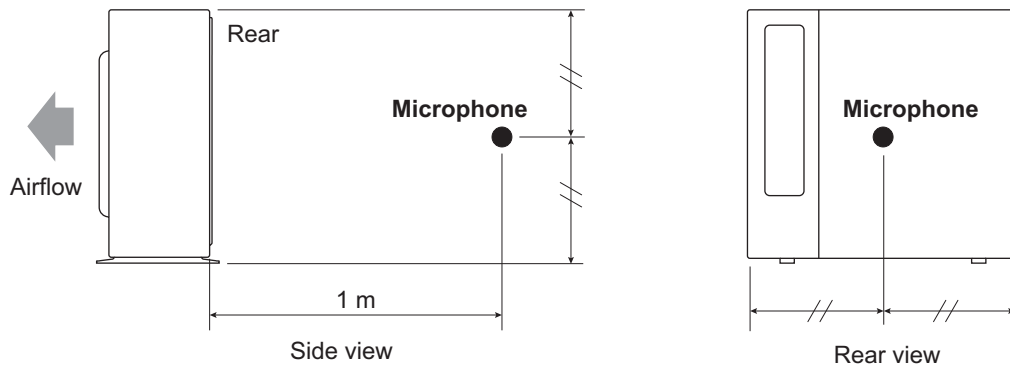
● Cooling



● Heating



9-2. Sound level check point



NOTE: Detailed shape of the actual outdoor unit might be slightly different from the one illustrated above.

10. Electrical characteristics

Model name				AOHH09KVCC	AOHH12KVCC	AOHH14KVCC
Power supply	Voltage		V	230		
	Frequency		Hz	50		
Max. operating current* ¹			A	8.5		12.0
Starting current			A	4.1	5.7	6.2
Wiring spec.* ²	Circuit breaker current* ³		A	10		13
	Power cable		mm ²	1.0		1.5
	Connection cable* ³	Cross-sectional area	mm ²	1.5		
		Limited wiring length		m	21	

NOTES:

- *¹: Maximum operating current is the total current of the indoor unit and the outdoor unit.
- *²: Selected sample based on Japan Electrotechnical Standards and Codes Committee E0005. As the regulations of wire size and circuit breaker differ in each country or region, select appropriate devices complied to the regional standard.
- *³: Limit voltage drop to less than 2%. If voltage drop is 2% or more, increase cable conductor size.

11. Safety devices

Type of protection	Protection form		Model		
			AOHH09KVCC	AOHH12KVCC	AOHH14KVCC
Circuit protection	Current fuse (PCB*)		250 V, 20 A		250 V, 25 A
			250 V, 5 A		
Fan motor protection	Thermal protection program	Activate	105±5°C Fan motor stop		125±5°C Fan motor stop
		Reset	105±5°C Fan motor restart		115±5°C Fan motor restart
Compressor protection	Thermal protection program (Discharge temp.)	Activate	110°C Compressor stop		
		Reset	After 7 minutes Compressor restart		
	Thermal protection program (Outdoor temp.) (Only in COOL and DRY mode)	Activate	-15°C Compressor stop		
		Reset	-10°C Compressor restart		
High pressure protection	Pressure switch	Activate	—		4.2 ⁺⁰ _{-0.15} MPa Compressor stop
		Reset	—		3.2±0.15 MPa Compressor restart

*PCB: Printed Circuit Board

12. Accessories

12-1. Models: AOHH09KVCC, AOHH12KVCC, and AOHH14KVCC

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1	Drain pipe		1