

AIR CONDITIONER

Floor type

DESIGN & TECHNICAL MANUAL

For Extra Cold Climate Area

INDOOR



AGYG09KVCB
AGYG12KVCB
AGYG14KVCB

OUTDOOR



AOYG09KVCBN
AOYG12KVCBN
AOYG14KVCBN

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Part 1. INDOOR UNIT

FLOOR TYPE:

AGYG09KVCB

AGYG12KVCB

AGYG14KVCB

1. Specifications

Type				Floor type			
				Inverter heat pump			
Model name				AGYG09KVCB	AGYG12KVCB	AGYG14KVCB	
Power supply				230 V ~ 50 Hz			
Available voltage range				198—264 V			
Capacity	Cooling	Rated	kW	2.50	3.50	4.20	
			Btu/h	8,500	11,900	14,300	
		Min.—Max.	kW	0.9—4.3	0.9—4.3	0.9—5.2	
			Btu/h	3,100—14,700	3,100—14,700	3,100—17,700	
	Heating	Rated	kW	3.50	4.50	5.20	
			Btu/h	11,900	15,400	17,700	
		Min.—Max.	kW	0.9—5.5	0.9—6.2	0.9—6.3	
			Btu/h	3,100—18,800	3,100—21,200	3,100—21,500	
	Outdoor temp -15°C	kW	3.7	4.5	5.2		
Input power	Cooling	Rated	kW	0.51	0.83	1.06	
		Max.		1.65	2.11	2.11	
	Heating	Rated		0.81	1.1	1.41	
		Max.		1.65	1.98	1.98	
		Outdoor temp -15°C		1.92	2.65	2.65	
Current	Cooling	Rated	A	2.3	3.7	4.7	
	Heating			3.6	4.9	6.2	
EER	Cooling		kW/kW	4.95	4.20	3.95	
COP	Heating			4.32	4.10	3.70	
Power factor	Cooling		%	96.4	97.5	98.1	
	Heating			97.8	97.6	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	9	11	11	
	Heating			10	12.5	12.5	
Fan	Airflow rate	Cooling	HIGH	m ³ /h	570	570	650
			MED		460	460	520
			LOW		360	360	400
			QUIET		270	270	270
		Heating	HIGH		600	650	650
			MED		480	480	520
			LOW		370	370	390
			QUIET		270	270	270
	Type × Q'ty				Cross flow fan × 2		
	Motor output			W	16 × 2		
Sound pressure level *2	Cooling	HIGH	dB (A)	40	40	44	
		MED		35	35	38	
		LOW		29	29	31	
		QUIET		22	22	22	
	Heating	HIGH		41	43	43	
		MED		35	35	37	
		LOW		29	29	29	
		QUIET		22	22	22	
Heat exchanger type	Dimensions (H × W × D)		mm	378 × 550 × 26.6			
	Fin pitch			1.2			
	Rows × Stages			2 × 18			
	Pipe type			Copper tube			
	Fin type			Aluminium			
Enclosure	Material			Polystyrene			
	Color			White			
Dimensions (H × W × D)	Net		mm	600 × 740 × 200			
	Gross			700 × 820 × 310			
Weight	Net		kg	14			
	Gross			18			
Connection pipe	Size	Liquid	mm (in)	Ø 6.35 (Ø 1/4)			
		Gas		Ø 9.52 (Ø 3/8)			
	Method			Flare			
Drain hose	Material			PP + LLDPE			
	Size		mm	Ø 13.8 (I.D.), Ø 15.8 to Ø 16.7 (O.D.)			
Operation range	Cooling		°C	18 to 32			
			%RH	80 or less			
	Heating		°C	30 or less			
Remote controller type				Wireless (Wired, Mobile app*3 [FGLair™] [option])			

NOTES:

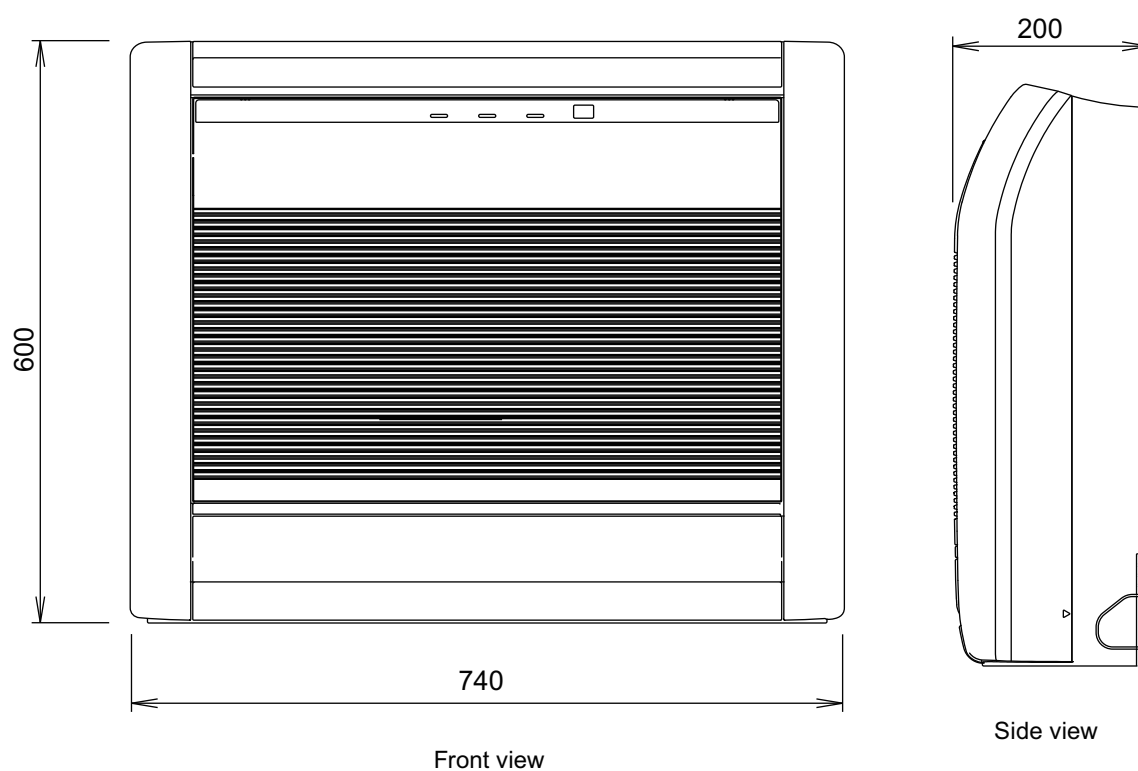
- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.
 - Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.
 - Pipe length: 5 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *1: Maximum current is maximum value when operated within the operation range.
- *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®. Optional WLAN adapter is also required. For details, refer to the setting manual.

Model name			AGYG09KVCB	AGYG12KVCB	AGYG14KVCB
Energy efficiency class	Cooling		A+++	A+++	A++
	Heating (Average)		A+	A+	A+
Pdesign	Cooling	kW	2.5 (35 °C)	3.5 (35 °C)	4.2 (35 °C)
	Heating (Average)		3.0 (-10 °C)	3.6 (-10 °C)	4.2 (-10 °C)
SEER	Cooling	kWh/kWh	8.60	8.50	8.10
SCOP	Heating (Average)		4.40	4.20	4.00
Annual energy consumption	QCE	kWh/a	102	144	181
	QHE (Average)		953	1,198	1,467
Sound power level	Cooling	High	dB (A)	53	57
	Heating			53	55

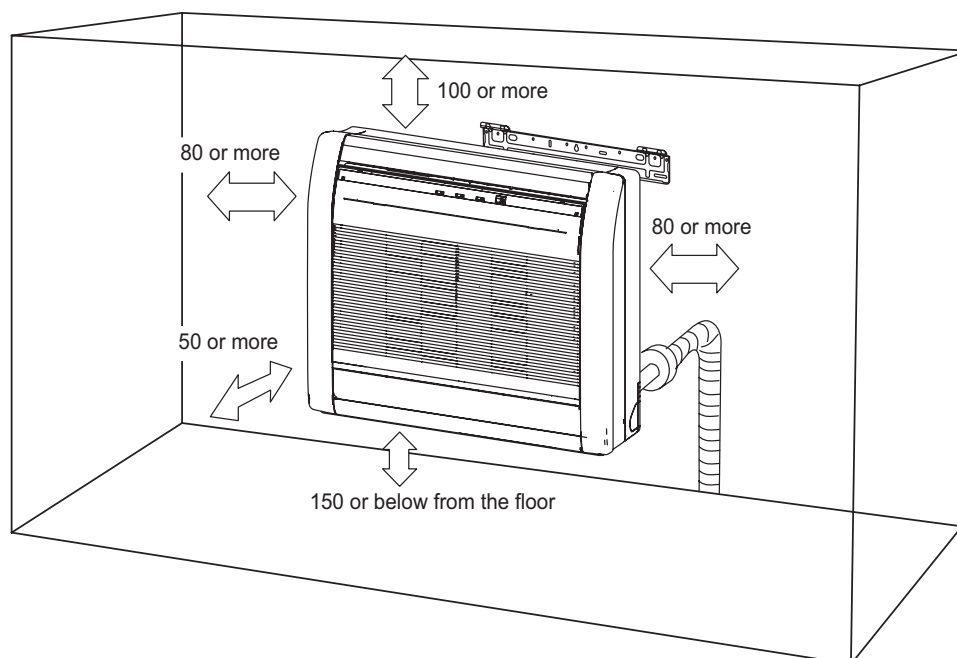
2. Dimensions

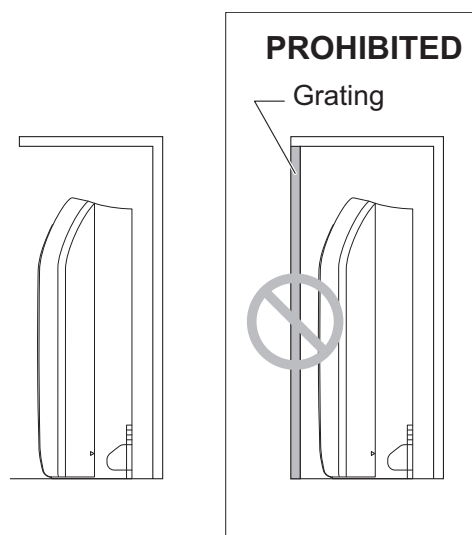
2-1. Models: AGYG09KVCB, AGYG12KVCB, and AGYG14KVCB

Unit: mm



■ Installation space





⚠ WARNING

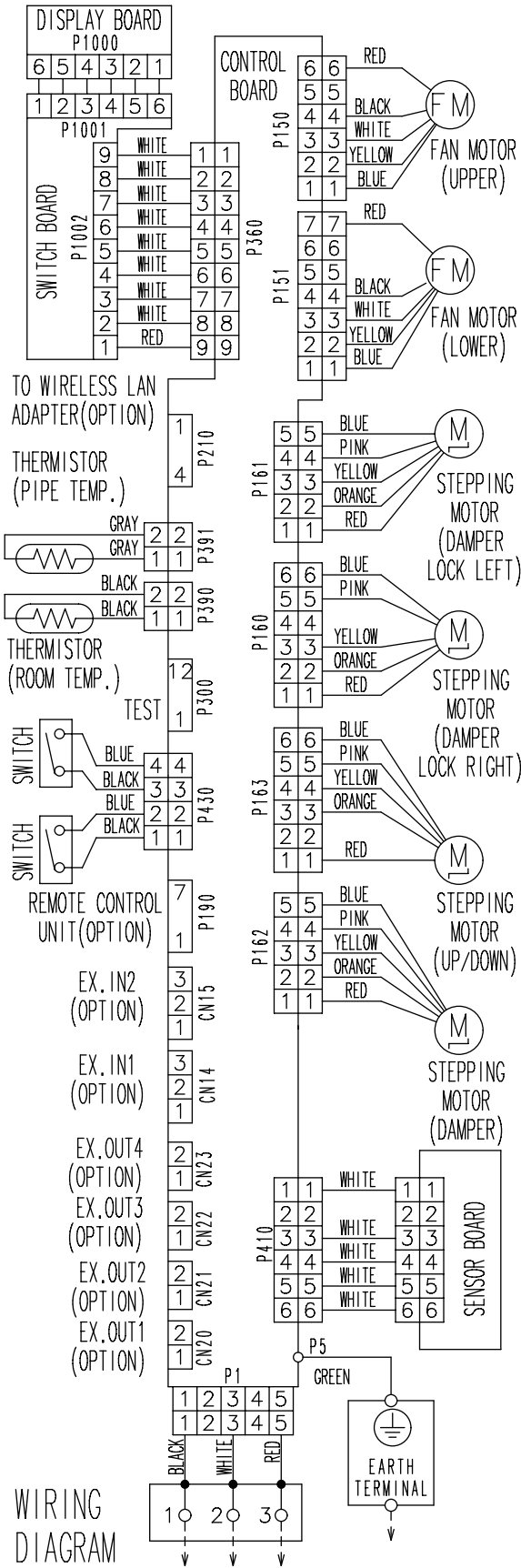
- The appliance shall be installed, operated and stored in a room with a floor area larger than X m².

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)

3. Wiring diagrams

3-1. Models: AGYG09KVCB, AGYG12KVCB, and AGYG14KVCB



4. 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)

4-1. Cooling capacity

■ Model: AGYG09KVCB

AFR		m ³ /h																		570				
Outdoor temperature	Indoor temperature																							
	°CDB			18			21			23			25			27			29			32		
	°CWB			12			15			16			18			19			21			23		
	°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	2.45	2.51	0.33	2.69	2.49	0.33	2.75	2.49	0.33	2.93	2.46	0.34	3.03	2.46	0.34	3.24	2.46	0.34	3.45	2.44	0.35			
0	2.17	2.36	0.41	2.39	2.34	0.41	2.44	2.34	0.42	2.60	2.32	0.42	2.68	2.32	0.43	2.87	2.32	0.43	3.06	2.30	0.43			
5	2.27	2.42	0.36	2.50	2.40	0.37	2.55	2.40	0.37	2.72	2.37	0.37	2.81	2.37	0.38	3.00	2.37	0.38	3.20	2.35	0.38			
10	2.53	2.56	0.26	2.78	2.54	0.26	2.84	2.54	0.26	3.03	2.51	0.26	3.12	2.51	0.27	3.34	2.51	0.27	3.56	2.48	0.27			
15	2.55	2.57	0.24	2.80	2.54	0.24	2.87	2.54	0.25	3.06	2.52	0.25	3.15	2.52	0.25	3.37	2.52	0.25	3.59	2.49	0.26			
20	2.42	2.49	0.29	2.66	2.46	0.29	2.72	2.46	0.30	2.90	2.44	0.30	2.99	2.44	0.30	3.20	2.44	0.31	3.41	2.42	0.31			
25	2.29	2.43	0.36	2.52	2.41	0.36	2.57	2.41	0.36	2.74	2.39	0.37	2.83	2.39	0.37	3.02	2.39	0.38	3.22	2.36	0.38			
30	2.16	2.38	0.42	2.37	2.35	0.43	2.42	2.35	0.43	2.58	2.33	0.44	2.66	2.33	0.44	2.85	2.33	0.45	3.04	2.31	0.45			
35	2.03	2.32	0.49	2.23	2.30	0.49	2.28	2.30	0.50	2.43	2.28	0.50	2.50	2.28	0.51	2.68	2.28	0.52	2.85	2.25	0.52			
40	2.01	2.30	0.55	2.21	2.27	0.56	2.26	2.27	0.57	2.41	2.25	0.57	2.49	2.25	0.58	2.66	2.25	0.58	2.83	2.23	0.59			
46	1.81	2.18	0.64	1.99	2.16	0.65	2.04	2.16	0.65	2.17	2.14	0.66	2.24	2.14	0.67	2.40	2.14	0.67	2.55	2.12	0.68			

■ Model: AGYG12KVCB

AFR		m ³ /h																		570				
Outdoor temperature	Indoor temperature																							
	°CDB			18			21			23			25			27			29			32		
	°CWB			12			15			16			18			19			21			23		
	°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	2.31	2.25	0.44	2.54	2.23	0.44	2.60	2.23	0.45	2.77	2.21	0.45	2.85	2.21	0.46	3.05	2.21	0.46	3.25	2.18	0.46			
0	2.30	2.25	0.44	2.53	2.23	0.44	2.58	2.23	0.44	2.76	2.21	0.45	2.84	2.21	0.45	3.04	2.21	0.46	3.24	2.19	0.46			
5	2.30	2.25	0.43	2.52	2.23	0.44	2.58	2.23	0.44	2.75	2.21	0.45	2.83	2.21	0.45	3.03	2.21	0.46	3.23	2.19	0.46			
10	2.53	2.37	0.29	2.78	2.35	0.29	2.84	2.35	0.29	3.03	2.32	0.30	3.12	2.32	0.30	3.34	2.32	0.30	3.56	2.30	0.30			
15	2.81	2.52	0.34	3.09	2.49	0.34	3.16	2.49	0.34	3.37	2.47	0.35	3.47	2.47	0.35	3.72	2.47	0.36	3.96	2.45	0.36			
20	3.20	2.87	0.52	3.52	2.85	0.53	3.60	2.85	0.53	3.83	2.82	0.54	3.95	2.82	0.54	4.23	2.82	0.55	4.51	2.79	0.56			
25	3.12	2.83	0.61	3.43	2.81	0.62	3.51	2.81	0.62	3.74	2.78	0.63	3.85	2.78	0.64	4.12	2.78	0.64	4.39	2.75	0.65			
30	3.04	2.79	0.70	3.34	2.76	0.70	3.42	2.76	0.71	3.64	2.74	0.72	3.76	2.74	0.73	4.02	2.74	0.73	4.28	2.71	0.74			
35	2.84	2.75	0.80	3.12	2.72	0.81	3.19	2.72	0.81	3.40	2.69	0.82	3.50	2.69	0.83	3.75	2.69	0.84	3.99	2.67	0.85			
40	2.66	2.57	0.86	2.92	2.55	0.87	2.99	2.55	0.88	3.19	2.52	0.89	3.28	2.52	0.90	3.51	2.52	0.90	3.74	2.50	0.91			
46	2.42	2.47	0.97	2.66	2.44	0.98	2.72	2.44	0.99	2.90	2.42	1.00	2.99	2.42	1.01	3.20	2.42	1.02	3.41	2.39	1.03			

■ Model: AGYG14KVCB

AFR		m ³ /h																		650				
Outdoor temperature	Indoor temperature																							
	°CDB			18			21			23			25			27			29			32		
	°CWB			12			15			16			18			19			21			23		
	°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	2.85	0.56	3.11	2.82	0.57	3.18	2.82	0.57	3.39	2.79	0.58	3.50	2.79	0.58	3.74	2.79	0.59	3.99	2.77	0.60			
0	2.82	2.85	0.56	3.10	2.82	0.56	3.17	2.82	0.57	3.38	2.80	0.58	3.48	2.80	0.58	3.73	2.80	0.59	3.97	2.77	0.59			
5	2.82	2.85	0.56	3.09	2.83	0.56	3.16	2.83	0.57	3.37	2.80	0.57	3.48	2.80	0.58	3.72	2.80	0.59	3.96	2.77	0.59			
10	3.10	3.00	0.37	3.41	2.97	0.37	3.48	2.97	0.38	3.71	2.95	0.38	3.83	2.95	0.38	4.10	2.95	0.39	4.36	2.92	0.39			
15	3.45	3.19	0.43	3.79	3.16	0.44	3.88	3.16	0.44	4.13	3.13	0.45	4.26	3.13	0.45	4.56	3.13	0.46	4.86	3.10	0.46			
20	3.84	3.40	0.67	4.22	3.37	0.68	4.32	3.37	0.68	4.60	3.34	0.69	4.74	3.34	0.70	5.08	3.34	0.70	5.41	3.30	0.71			
25	3.74	3.36	0.78	4.11	3.32	0.79	4.21	3.32	0.80	4.48	3.29	0.80	4.62	3.29	0.81	4.95	3.29	0.82	5.27	3.26	0.83			
30	3.65	3.30	0.89	4.01	3.27	0.90	4.10	3.27	0.91	4.37	3.24	0.92	4.51	3.24	0.93	4.82	3.24	0.94	5.14	3.21	0.95			
35	3.40	3.25	1.02	3.74	3.22	1.03	3.82	3.22	1.04	4.07	3.19	1.05	4.20	3.19	1.06	4.49	3.19	1.07	4.79	3.16	1.08			
40	3.19	3.04	1.10	3.51	3.01	1.11	3.59	3.01	1.12	3.82	2.99	1.13	3.94	2.99	1.14	4.22	2.99	1.16	4.49	2.96	1.17			
46	2.91	2.92	1.24	3.19	2.89	1.25	3.27	2.89	1.27	3.48	2.86	1.28	3.59	2.86	1.29	3.84	2.86	1.31	4.09	2.84	1.32			

4-2. Heating capacity

■ Model: AGYG09KVCB

AFR		m ³ /h		600											
Outdoor temperature		Indoor temperature													
		16		18		20		22		24					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
°CDB	°CWB	kW		kW		kW		kW		kW					
-25	-26	2.78	1.92	2.70	1.96	2.62	2.00	2.55	2.04	2.47	2.08				
-20	-21	3.35	1.88	3.26	1.92	3.16	1.96	3.07	2.00	2.97	2.04				
-15	-16	3.92	1.85	3.81	1.89	3.70	1.92	3.59	1.96	3.48	2.00				
-10	-11	4.49	1.81	4.37	1.85	4.24	1.89	4.11	1.93	3.98	1.96				
-5	-7	5.13	1.90	4.98	1.94	4.84	1.98	4.69	2.02	4.55	2.06				
0	-2	5.52	1.91	5.37	1.95	5.21	1.99	5.05	2.03	4.90	2.07				
5	3	5.77	1.80	5.61	1.84	5.44	1.87	5.28	1.91	5.12	1.95				
7	6	5.83	1.73	5.67	1.76	5.50	1.80	5.34	1.83	5.17	1.87				
10	8	5.97	1.57	5.80	1.61	5.63	1.64	5.46	1.67	5.29	1.71				
15	10	6.19	1.42	6.02	1.45	5.84	1.48	5.67	1.51	5.49	1.53				
20	15	6.31	1.31	6.13	1.34	5.95	1.36	5.77	1.39	5.59	1.42				
24	18	6.33	1.22	6.15	1.24	5.97	1.27	5.79	1.29	5.61	1.32				

■ Model: AGYG12KVCB

AFR		m ³ /h		650											
Outdoor temperature		Indoor temperature													
		16		18		20		22		24					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
°CDB	°CWB	kW		kW		kW		kW		kW					
-25	-26	3.87	2.41	3.76	2.46	3.65	2.51	3.54	2.56	3.43	2.61				
-20	-21	4.32	2.51	4.20	2.56	4.08	2.62	3.95	2.67	3.83	2.72				
-15	-16	4.77	2.61	4.64	2.67	4.50	2.72	4.37	2.78	4.23	2.83				
-10	-11	5.79	2.58	5.63	2.63	5.46	2.69	5.30	2.74	5.13	2.79				
-5	-7	6.05	2.56	5.88	2.61	5.71	2.67	5.54	2.72	5.37	2.77				
0	-2	6.17	2.56	5.99	2.62	5.82	2.67	5.64	2.72	5.47	2.78				
5	3	6.43	2.15	6.25	2.19	6.06	2.24	5.88	2.28	5.70	2.33				
7	6	6.57	1.87	6.39	1.91	6.20	1.95	6.01	1.99	5.83	2.02				
10	8	6.53	1.69	6.35	1.73	6.16	1.76	5.98	1.80	5.79	1.84				
15	10	6.78	1.70	6.59	1.74	6.39	1.77	6.20	1.81	6.01	1.85				
20	15	6.72	1.48	6.53	1.51	6.34	1.54	6.15	1.57	5.96	1.60				
24	18	6.67	1.30	6.48	1.33	6.30	1.35	6.11	1.38	5.92	1.41				

■ Model: AGYG14KVCB

AFR		m ³ /h		650											
Outdoor temperature		Indoor temperature													
		16		18		20		22		24					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
°CDB	°CWB	kW		kW		kW		kW		kW					
-25	-26	4.43	2.37	4.31	2.42	4.22	2.47	4.06	2.52	3.93	2.57				
-20	-21	4.99	2.47	4.85	2.52	4.71	2.58	4.57	2.63	4.43	2.68				
-15	-16	5.55	2.57	5.40	2.63	5.20	2.68	5.08	2.73	4.92	2.79				
-10	-11	5.90	2.54	5.73	2.59	5.55	2.64	5.40	2.70	5.23	2.75				
-5	-7	6.15	2.52	5.98	2.57	5.80	2.62	5.63	2.68	5.46	2.73				
0	-2	6.27	2.52	6.09	2.58	5.91	2.63	5.74	2.68	5.56	2.73				
5	3	6.53	2.11	6.35	2.16	6.16	2.20	5.98	2.25	5.79	2.29				
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				

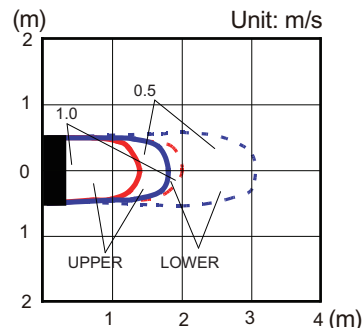
5. Fan performance

5-1. Air velocity distributions

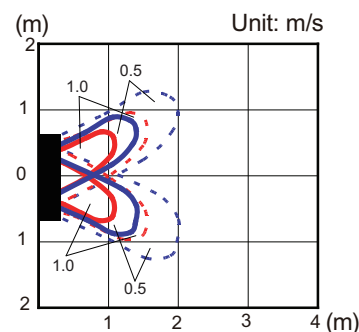
■ Models: AGYG09KVCB, AGYG12KVCB, and AGYG14KVCB

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

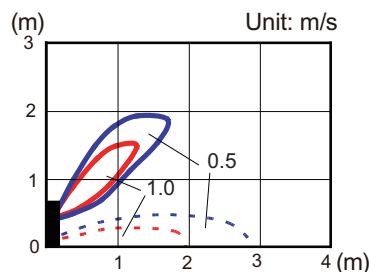
Top view
Vertical airflow direction louver: Up
Horizontal airflow direction louver: Center



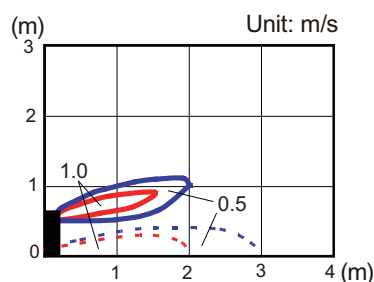
Top view
Vertical airflow direction louver: Up
Horizontal airflow direction louver: Left & Right



Side view
Vertical airflow direction louver: Up
Horizontal airflow direction louver: Center



Side view
Vertical airflow direction louver: Down
Horizontal airflow direction louver: Center



5-2. Airflow

■ Model: AGYG09KVCB

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	570
	l/s	158
	CFM	335
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	282
LOW	m ³ /h	370
	l/s	103
	CFM	218
QUIET	m ³ /h	270
	l/s	75
	CFM	159

■ Model: AGYG12KVCB

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	570
	l/s	158
	CFM	335
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	650
	l/s	181
	CFM	383
MED	m ³ /h	480
	l/s	133
	CFM	282
LOW	m ³ /h	370
	l/s	103
	CFM	218
QUIET	m ³ /h	270
	l/s	75
	CFM	159

■ Model: AGYG14KVCB

● 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

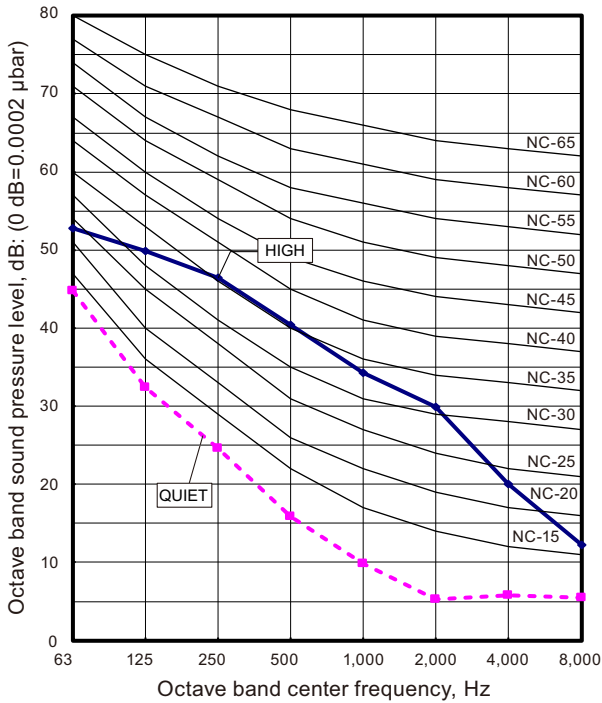
Fan speed	Airflow	
HIGH	m ³ /h	650
	l/s	181
	CFM	383
MED	m ³ /h	520
	l/s	144
	CFM	306
LOW	m ³ /h	390
	l/s	108
	CFM	230
QUIET	m ³ /h	270
	l/s	75
	CFM	159

6. Operation noise (sound pressure)

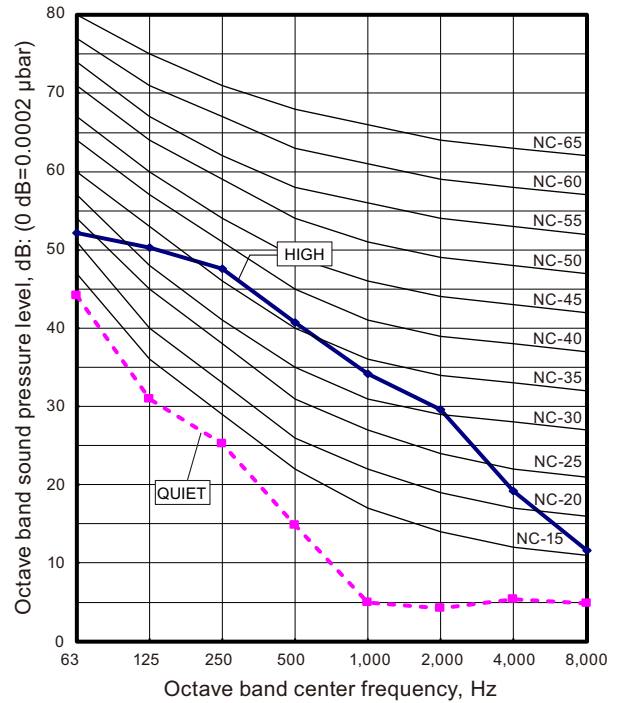
6-1. Noise level curve

Model: AGYG09KVCB

● Cooling

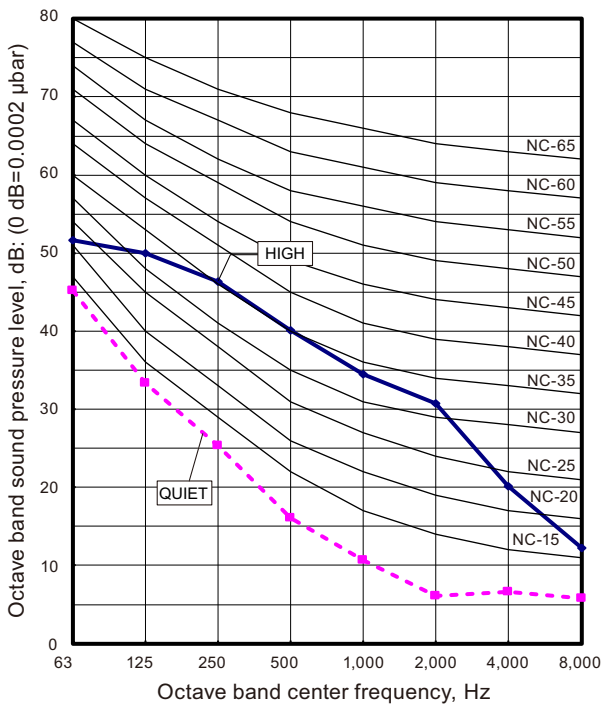


● Heating

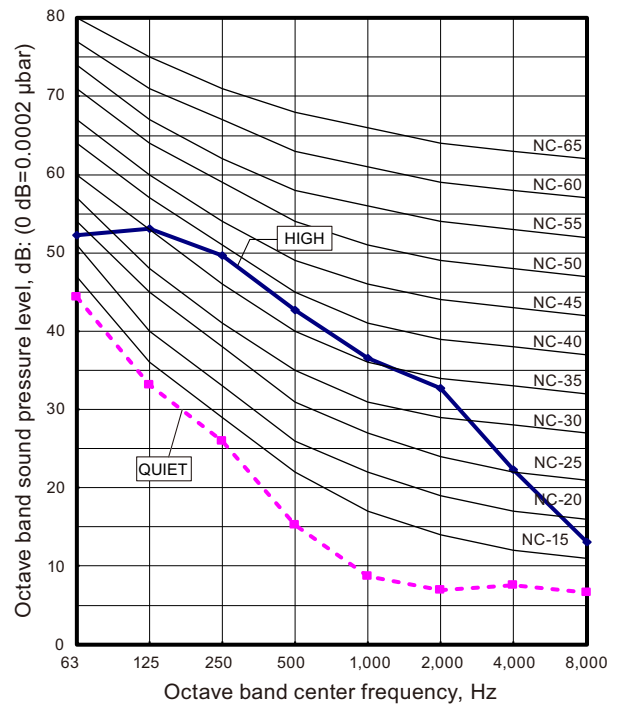


Model: AGYG12KVCB

● Cooling

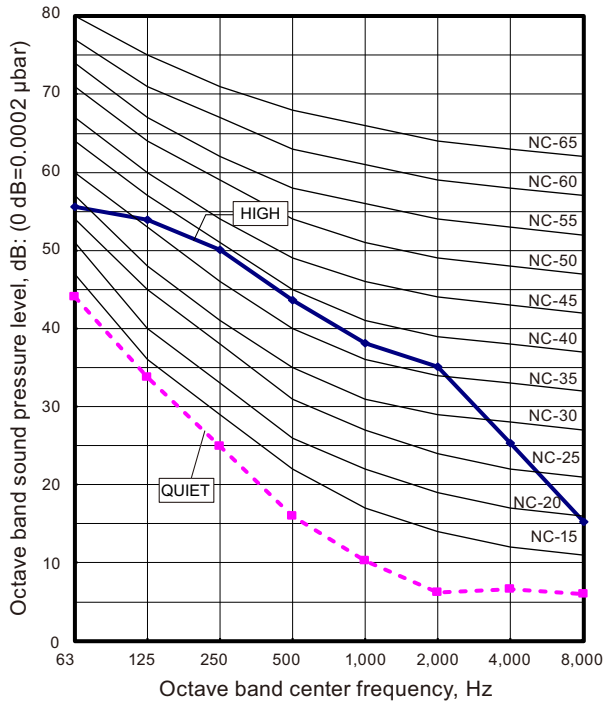


● Heating

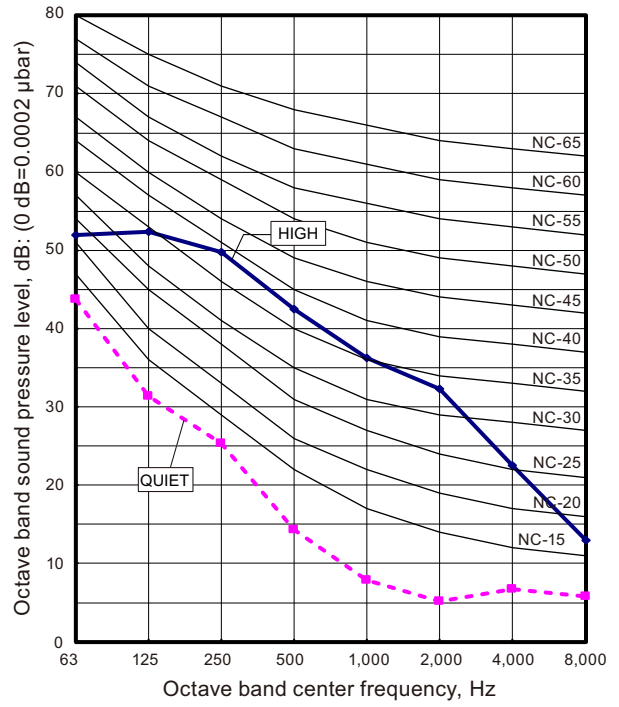


Model: AGYG14KVCB

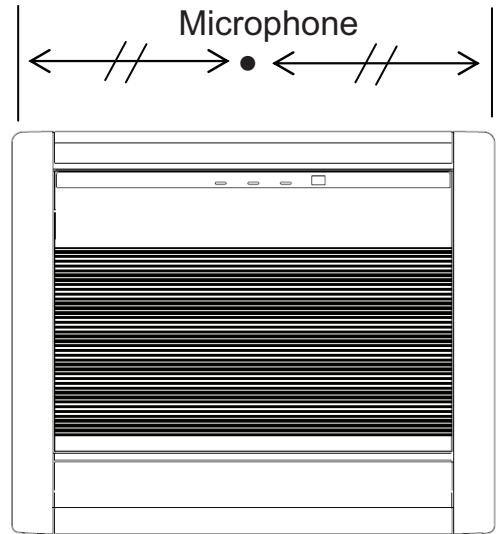
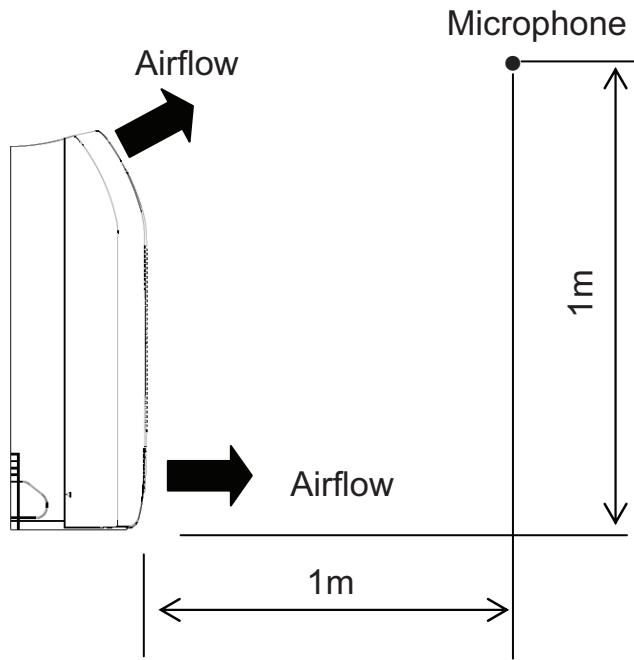
● Cooling



● Heating



6-2. Sound level check point

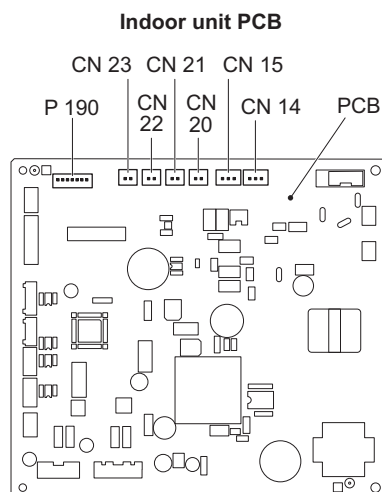


7. Safety devices

Type of protection	Protection form		Model		
			AGYG09KVCB	AGYG12KVCB	AGYG14KVCB
Circuit protection	Current fuse (PCB*)		250 V, 3.15 A		
Fan motor protection	Thermal protector program	Activate	150±15 °C Fan motor stop		
		Reset	120±15 °C Fan motor restart		

*PCB: Printed Circuit Board

8. External input and output



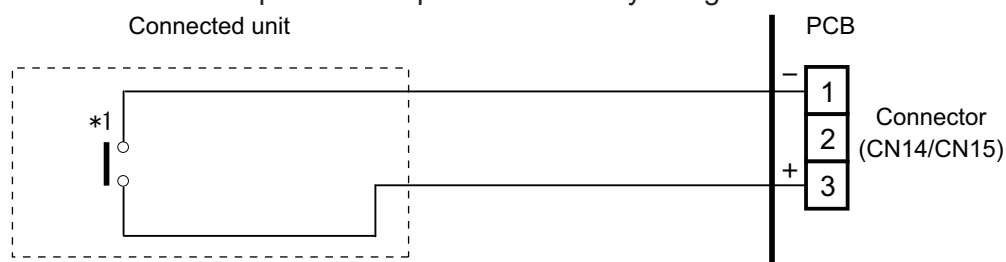
PCB	External input	External output	Connector	Input signal
Indoor unit	Operation/Stop	—	CN14	Edge
	Forced stop		CN15	
	Forced thermostat off			
	—	Operation status	CN20/CN21/ CN22/CN23	—
		Error status		
		Indoor unit fan operation status		
		External heater output		

8-1. External input

- “Operation/Stop” mode or “Forced stop” mode can be selected with function setting of indoor unit.
- A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.
- 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.

8-2. External output

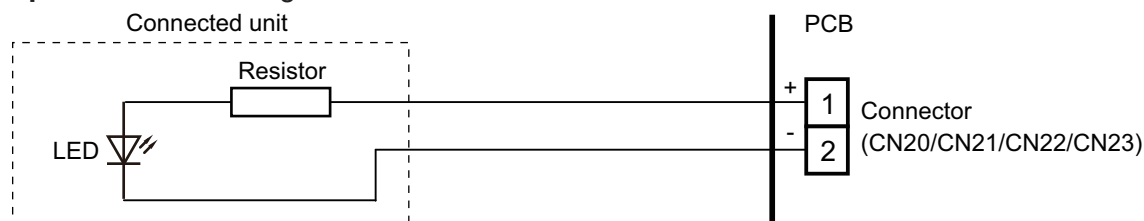
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ 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 Chapter 8-3. "[Combination of external input and output](#)" on page 18.

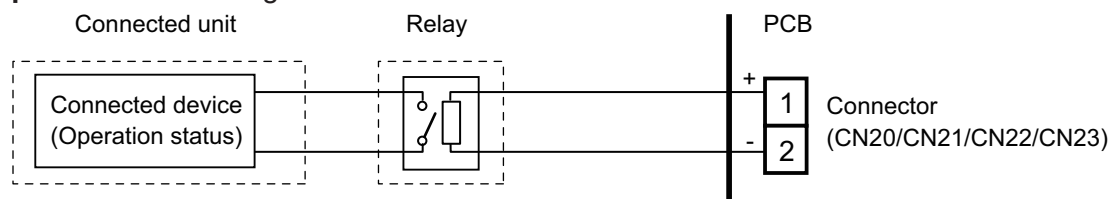
● When indicator or other components are connected directly

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"



8-3. 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:

Mode	Function setting	External input	
		Indoor unit	
		CN14	CN15
0	60-00	Operation/Stop (Function setting 46-00) or Forced stop (Function setting 46-02)	Forced thermostat Off
9	60-09		Forced thermostat Off
10	60-10		Forced thermostat Off
11	60-11		Forced thermostat Off
12	60-12		Forced thermostat Off

Mode	Function setting	External output			
		Indoor unit			
		CN20	CN21	CN22	CN23
0	60-00	Operation/Stop	Error status	Indoor unit fan operation status	External heater output
9	60-09	Error status	Operation/Stop	Indoor unit fan operation status	External heater output
10	60-10	Indoor unit fan operation status	Operation/Stop	Error status	External heater output
11	60-11	External heater output	Operation/Stop	Indoor unit fan operation status	Error status

NOTE: Input of Operation/Stop depends on the setting of function setting 46.

00: Operation/Stop mode 1 (R.C. enabled)

01: (Setting prohibited)

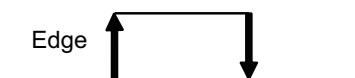
02: Forced stop

03: Operation/Stop mode 2 (R.C. disabled)

Input signal type

Indoor unit

Input signal type is only "Edge".



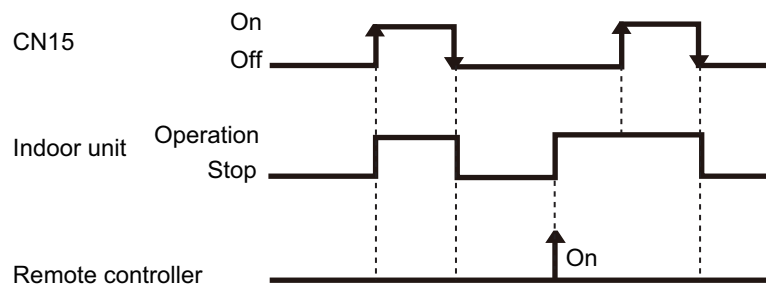
8-4. Details of function

■ Control input function

● When function setting is "Operation/Stop" mode 1

- In the case of "Edge" input

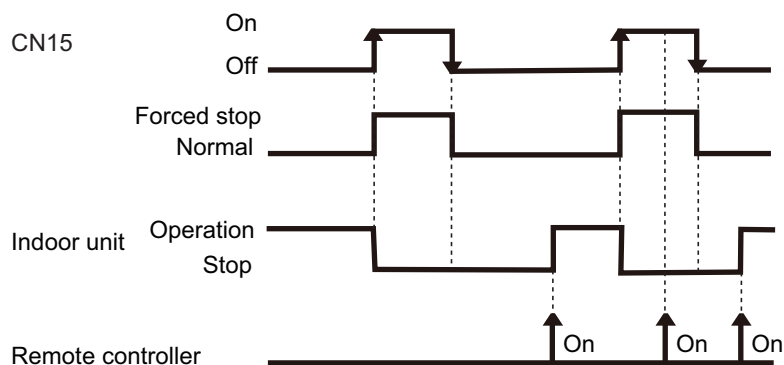
Mode	Function setting		External input	Input signal	Command	
0	46-00	—	Input of indoor unit	CN14	Off → On	Operation
					On → Off	Stop
	60-00	—		CN15	Off → On	Operation
					On → Off	Stop



● When function setting is "Forced stop" mode

- In the case of "Edge" input

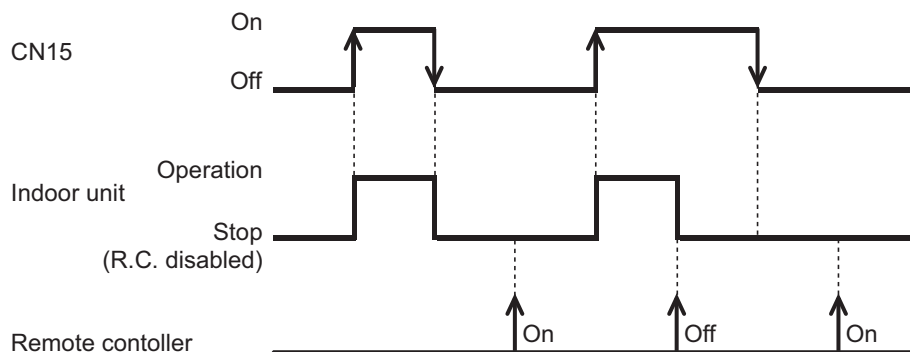
Mode	Function setting		External input	Input signal	Command	
0	46-02	—	Input of indoor unit	CN14	Off → On	Forced stop
					On → Off	Normal
	60-00	—		CN15	Off → On	Forced stop
					On → Off	Normal



● When function setting is "Operation/Stop" mode 2

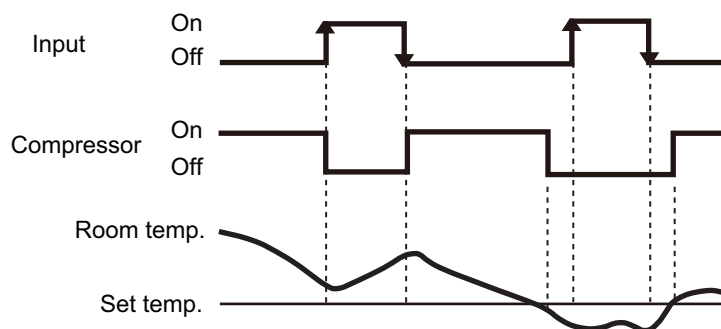
- In the case of "Edge" input

Mode	Function setting		External input		Input signal	Command
0	46-03	—	Input of indoor unit	CN14	Off → On	Operation
					On → Off	Stop (R.C. disabled)
	60-00	CN15		Off → On	Operation	
				On → Off	Stop (R.C. disabled)	



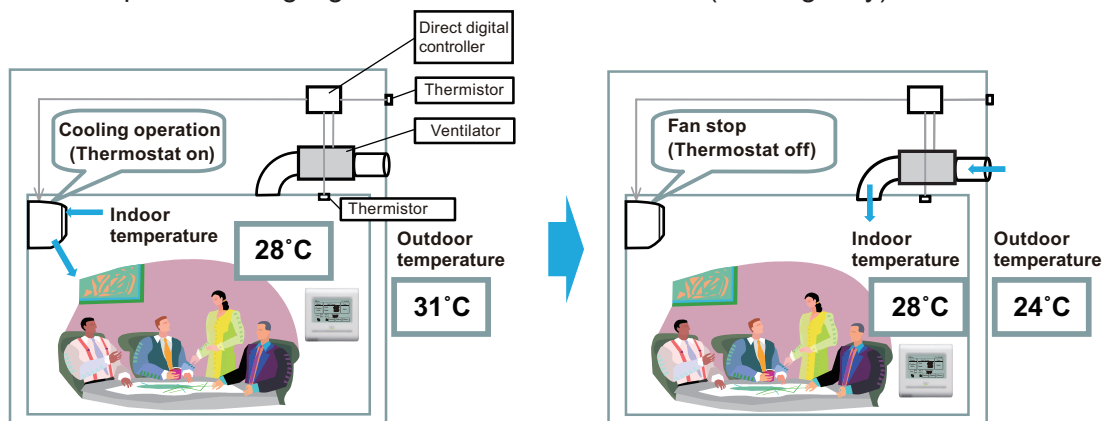
● Forced thermostat off function

Mode	Function setting	External input		Input signal	Command
0	60-00	Input of indoor unit	CN15	Off → On	Thermostat off
9	60-09			On → Off	Normal operation
10	60-10				

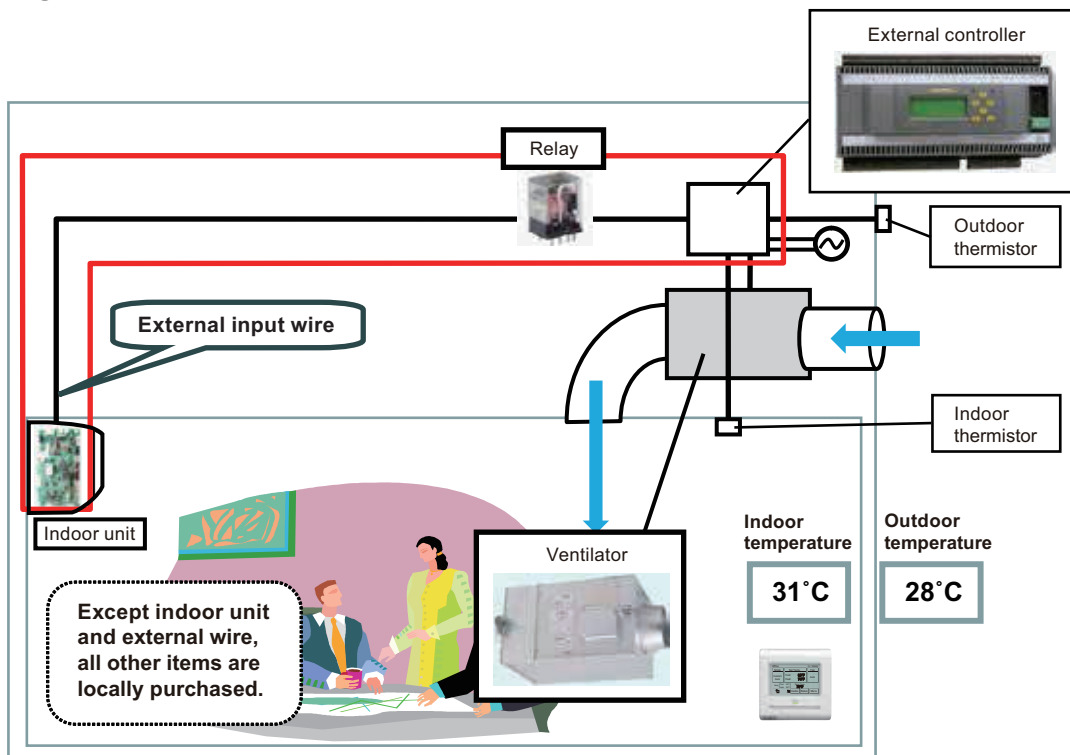


● Example of individual connection

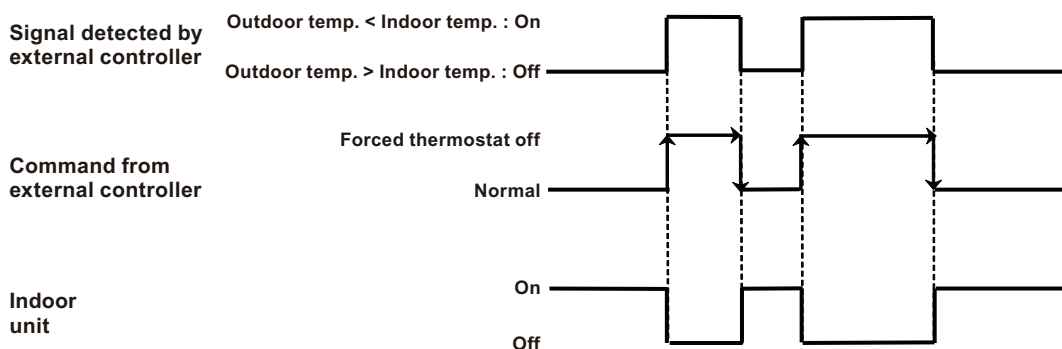
Forced thermostat off is one of the function to save energy. For example, case of using ventilator at condition with outdoor temperature is lower than indoor temperature, indoor unit of air conditioner stop based upon receiving signal from external controller. (Cooling only)



• System figure example



• Operation status



Normal means that indoor unit continues to operate until “Forced thermostat Off” signal received, at condition which are set by central and individual controller or detected by thermo sensors of indoor unit.

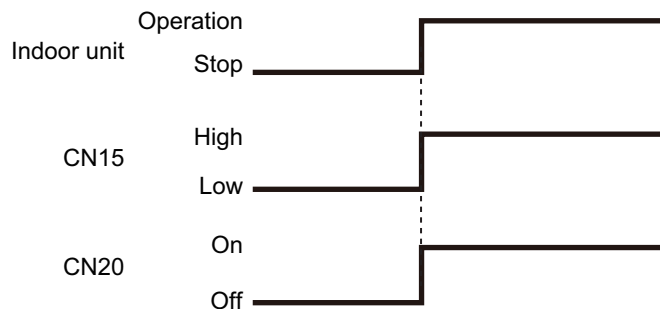
Indoor unit continues to operate until “Forced thermostat Off” signal received, at condition which are set by central and individual controller or detected by thermo sensors of indoor unit. Once “Forced thermostat Off” signal received, indoor unit stop operation.

■ Control output function

● Operation/Stop status

Mode	Function setting	External output		Output signal	Command
0	60-00	Output of indoor unit	CN15	Low → High	Operation
				High → Low	Stop
0	60-00		CN20	Off → On	Operation
				On → Off	Stop

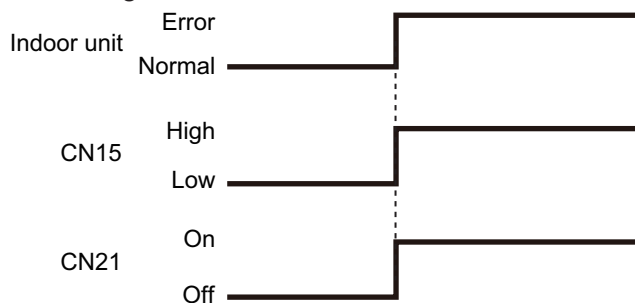
The output is low when the unit is stopped.



● Error status

Mode	Function setting	External output		Output signal	Command
9	60-09	Output of indoor unit	CN15	Low → High	Error
				High → Low	Normal
0	60-00		CN21	Off → On	Error
				On → Off	Normal

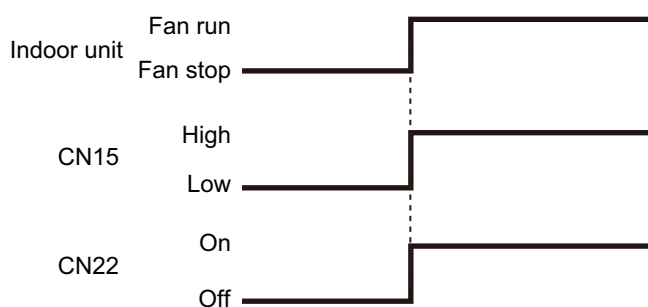
The output is ON when an error is generated for the indoor unit.



● Indoor unit fan operation status

Mode	Function setting	External output		Output signal	Command
10	60-10	Output of indoor unit	CN15	Low → High	Fan run
				High → Low	Fan stop
0	60-00	Output of indoor unit	CN22	Off → On	Fan run
				On → Off	Fan stop

Output signal	Condition
On Low → High	The indoor unit fan is operating.
Off High → Low	The fan is stopped or during cold air prevention. During thermostat off when in dry mode operation.



■ External heater output

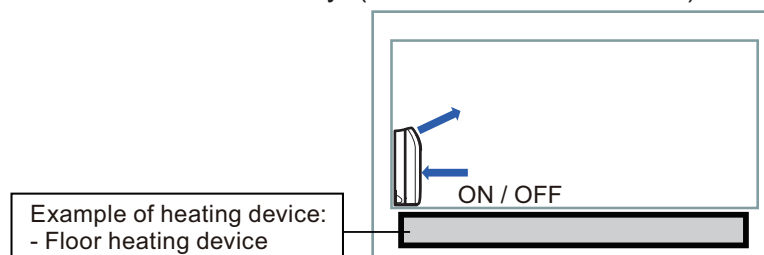
Control	Primary heater	Auxiliary heater	Function setting
			Indoor unit
			Control switching external heaters No. 61
Auxiliary heater control 1	RAC heat pump	External device (Hot water electrical heater, etc.)	61-00

NOTES:

- After turning off the heater, 3 minutes of standby time is required by next power-on of the heater.
- For items marked “—” in the table, any of validate or invalidate of the setting are acceptable.

● Installation configuration of individual connection

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



⚠ WARNING

- Design and install external heater appropriately with considering its protection.
- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- Fujitsu General Ltd. 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	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

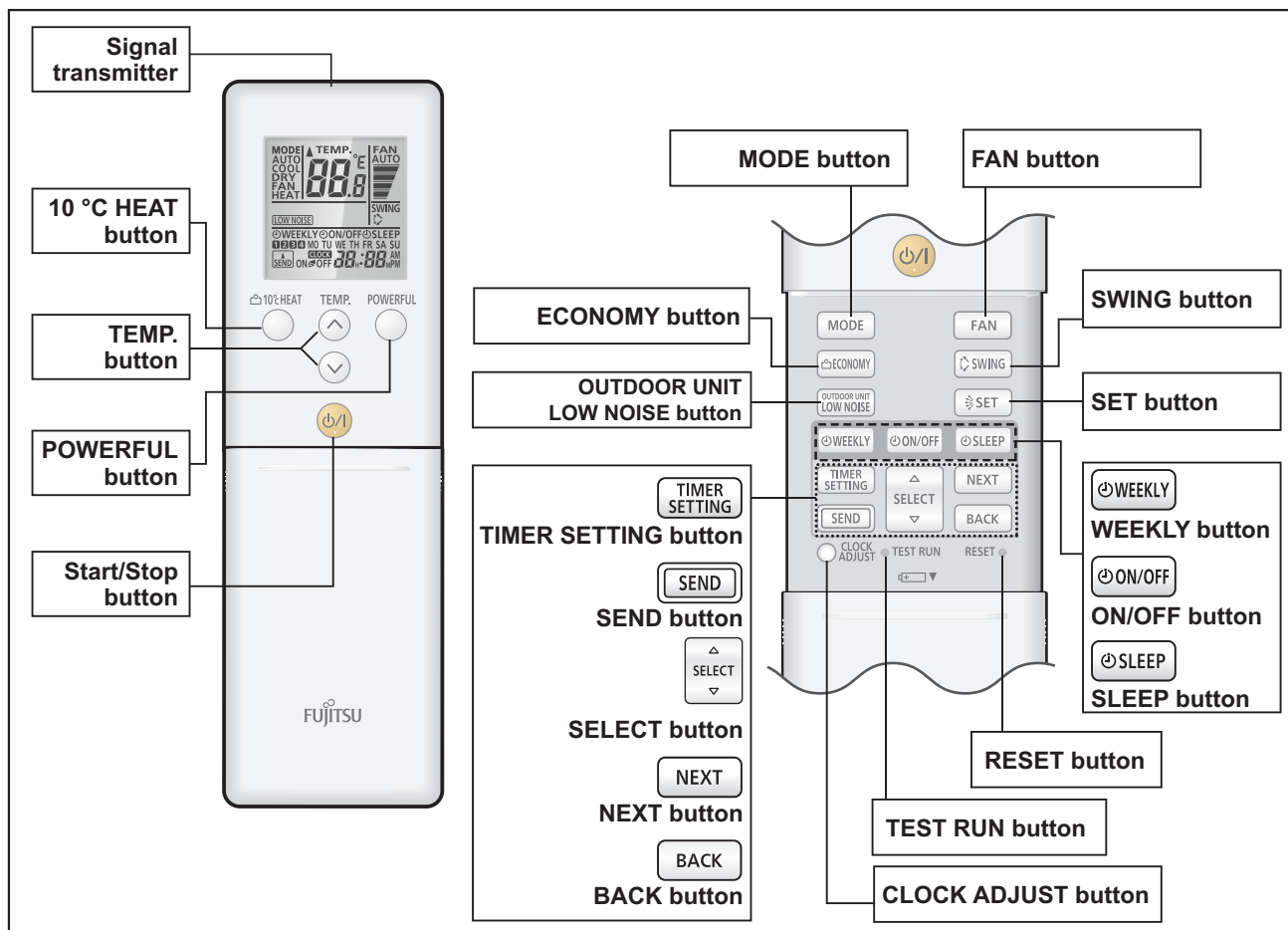
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".

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.

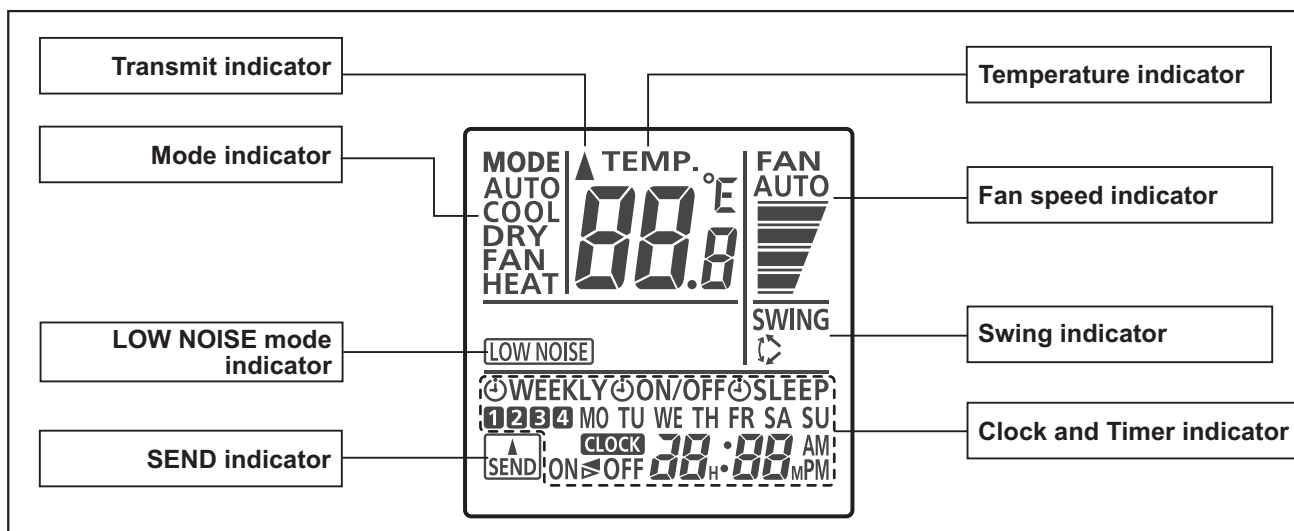
9. Remote controller

9-1. Overview



NOTE: Functions may differ by type of the indoor unit. For details, refer to the operation manual.

Display panel

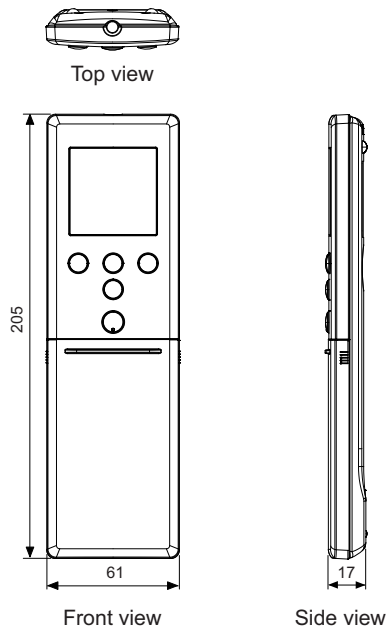


To facilitate explanation, the accompanying illustration has been drawn to show all possible indicators; in actual operation, however, the display will only show those indicators appropriate to the current operation.

9-2. Specifications

● Controller

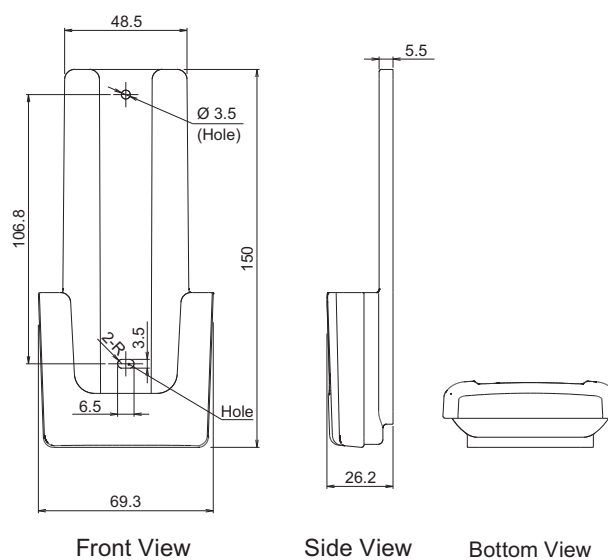
Unit: mm



Size (H × W × D)	mm	205 × 61 × 17
Weight	g	124 (without batteries)

● Holder

Unit: mm



Size (H × W × D)	mm	150 × 69.3 × 26.2
Weight	g	27

10. 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.

10-1. 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 tight 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 POWERFUL button and TEMP. (^) button simultaneously, press the RESET button to enter the function setting mode.

Selecting the function number and setting value:

1. Press the TEMP. (^) (v) buttons to select the function number. To switch between the left and right digits, press the 10 °C HEAT button.
2. Press the POWERFUL button to proceed to value setting. To return the function number selection, press the POWERFUL button again.
3. Press the TEMP. (^) (v) buttons to select the setting value. To switch between the left and right digits, press the 10 °C HEAT button.
4. Press the MODE button once. Confirm that you hear the beep sound.
5. Press the START/STOP button to fix the function setting. Confirm that you hear the beep sound.
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.



⚠ 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)	00	Remote controller address setting
2)	11	Filter sign
3)	23	Vertical airflow direction range control
4)	30/31	Room temperature control for indoor unit sensor
5)	35/36	Room temperature control for wired remote controller sensor
6)	40	Auto restart
7)	42	Room temperature sensor switching
8)	43	Cold air prevention
9)	44	Remote controller custom code
10)	46	External input control
11)	49	Indoor unit fan control for energy saving for cooling
12)	60	Switching functions for external output terminal

1) Remote controller address setting

Multiple indoor units can be operated by using one wired remote controller.

Set the unit number of each indoor unit.

Function number	Setting value	Setting description	Factory setting
00	00	Unit no. 0	◆
	01	Unit no. 1	
	02	Unit no. 2	
	03	Unit no. 3	
	04	Unit no. 4	
	05	Unit no. 5	
	06	Unit no. 6	
	07	Unit no. 7	
	08	Unit no. 8	
	09	Unit no. 9	
	10	Unit no. 10	
	11	Unit no. 11	
	12	Unit no. 12	
	13	Unit no. 13	
	14	Unit no. 14	
15	Unit no. 15		

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.

2) 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	◆

3) Vertical airflow direction range control

In a 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.

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

4) 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				

5) 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				

6) 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.

7) 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.

8) Cold air prevention

This setting is to disable the cold air prevention function during heating operation. When disabled, the fan setting will always follow the setting on the remote controller. (Excluding defrost mode)

Function number	Setting value	Setting description	Factory setting
43	00	Enable	◆
	01	Disable	

9) 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	

10) 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	◆
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2	

11) 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.

NOTES:

- As the factory setting, this setting is initially invalidated.
- 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.

12) 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	Setting description	Factory setting
60	00	Operation status	◆
	01—08	(Setting prohibited)	
	09	Error status	
	10	Indoor unit fan operation status	
	11	External heater	

10-2. Custom code setting for wireless remote controller

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 START/STOP button until only the clock is displayed on the remote controller display.
2. Press the MODE button for at least 5 seconds to display the current custom code. (Initially set to A .)
3. Press the TEMP. (\wedge) (\vee) buttons to change the custom code between $\text{A} \rightarrow \text{B} \rightarrow \text{C} \rightarrow \text{D}$. Match the code on the display to the air conditioner custom code. (Initially set to A .)
4. Press the MODE button again to return to the clock display. The custom code will be changed.


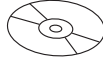


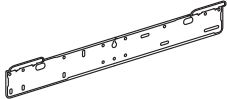




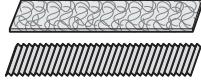



NOTES:

- If no button is pressed within 30 seconds after the custom code is displayed, the system returns to the original clock indicator. In this case, start again from step 1.
- The air conditioner custom code is set to A prior to shipment. To change the custom code, contact your retailer.
- If you do not know the assigned code for the air conditioner, try each of the custom code ($\text{A} \rightarrow \text{B} \rightarrow \text{C} \rightarrow \text{D}$) until you find the code which operates the air conditioner.

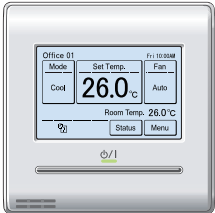
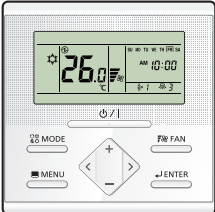


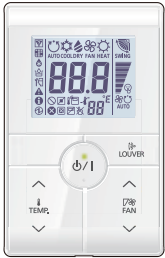
11. Accessories

11-1. Models: AGYG09KVCB, AGYG12KVCB, and AGYG14KVCB

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating manual		1	Operating manual (CD-ROM)		1
Installation manual		1	Cloth tape		1
Wall hook bracket		1	Tapping screws (large)		9
Remote controller		1	Tapping screws (small)		2
Battery		2	Air cleaning filters		1
Remote controller holder		1			

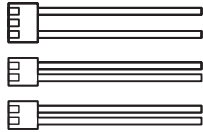
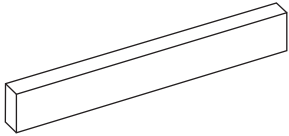
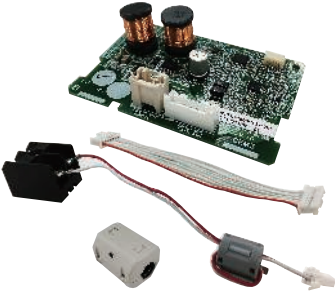



12. Optional parts

12-1. Controllers

Exterior	Part name	Model name	Summary
	Wired remote controller	UTY-RNRYZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Wired remote controller	UTY-RLRY	High visibility and easy operation. Room temperature can be accurately controlled using the built-in thermo sensor. Wire type: Non-polar 2-wire
	Compact wired remote controller	UTY-RCRYZ1	Compact body and easy operation. Room temperature can be accurately controlled using the built-in thermo sensor. Wire type: Non-polar 2-wire
	Simple remote controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire
	Simple remote controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire

NOTE: Available functions may differ by the remote controller. For details, refer to the operation manual.

12-2. Others

Exterior	Part name	Model name	Summary
	External connect kit	UTY-XWZXZ5	Required when external device is connected.
	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.
	Wireless LAN adapter	UTY-TFSXZ1	Remotely manage an air conditioning system using mobile devices such as smartphones and tablets. For connection indoor unit with UART interface.
	Modbus converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network.
	KNX converter	UTY-VKSX	For connection between indoor unit with UART interface and a KNX open network.

NOTE: Combined use of following optional parts and Wireless LAN adapter (UTY-TFSXZ1) is not allowed.

- Modbus converter
- KNX converter

Part 2. OUTDOOR UNIT

SINGLE TYPE:

AOYG09KVCBN

AOYG12KVCBN

AOYG14KVCBN

1. Specifications

Type				Inverter heat pump				
Model name				AOYG09KVCBN	AOYG12KVCBN	AOYG14KVCBN		
Power supply				230 V ~ 50 Hz				
Available voltage range				198—264 V				
Starting current				A	3.6	4.9	6.2	
Fan	Airflow rate	Cooling	m ³ /h	1,550	1,830	2,210		
		Heating		1,690	2,100	2,100		
	Type × Q'ty	Propeller × 1						
Motor output				W	49			
Sound pressure level *1		Cooling	dB (A)	40	44	51		
		Heating		46	52	50		
Sound power level		Cooling	dB (A)	54	58	63		
		Heating		58	62	63		
Heat exchanger type		Dimensions (H × W × D)	mm	Main1: 588 × 881 × 18.19				
		Fin pitch		Main2: 588 × 851 × 18.19				
		Rows × Stages	1.3					
		Pipe type	2 × 28					
		Fin type		Type (Material)	Copper			
				Surface treatment	Aluminium PC Fin			
Compressor		Type × Q'ty	W	DC TWIN ROTARY				
		Motor output		810	925			
Refrigerant		Type (Global warming potential)	R32 (675)					
		Charge	g	940				
Refrigerant oil		Type	FW68S		RmM68AF			
		Amount	cm ³	350	400			
Enclosure		Material	Steel sheet					
		Color	BEIGE					
Dimensions (H × W × D)		Net	mm	632 × 799 × 290				
		Gross		692 × 940 × 375				
Weight		Net	kg	36	38			
		Gross		40	42			
Connection pipe		Size	Liquid	Ø 6.35 (Ø 1/4)				
				Gas	Ø 9.52 (Ø 3/8)			
		Method			Flare			
		Pre-charge length		m	15			
		Max. length			20			
		Max. height difference			15			
Operation range		Cooling	°C	-10 to 46				
		Heating		-25 to 24				
NOTES:								
<ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – 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. • Protective function might work when using it outside the operation range. • *1: Sound pressure level <ul style="list-style-type: none"> – 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. 								

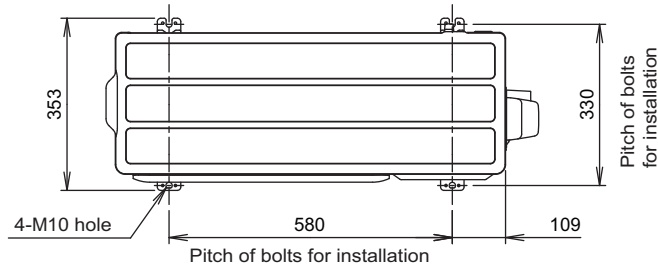
2. Dimensions

2-1. Models: AOYG09KVCBN, AOYG12KVCBN, and AOYG14KVCBN

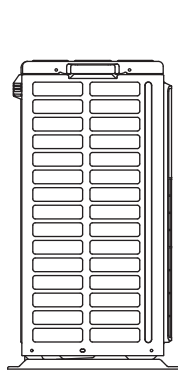
Unit: mm

OUTDOOR UNIT
AOYG09-14KVCBN

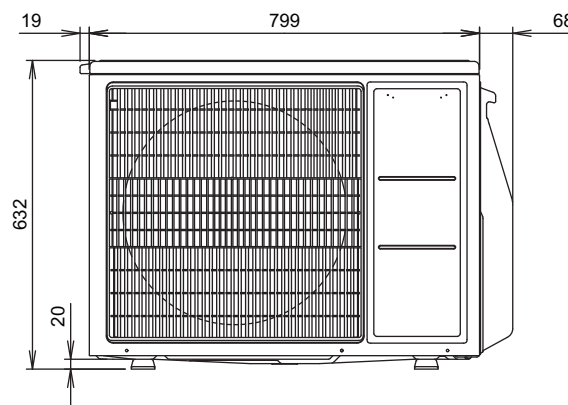
OUTDOOR UNIT
AOYG09-14KVCBN



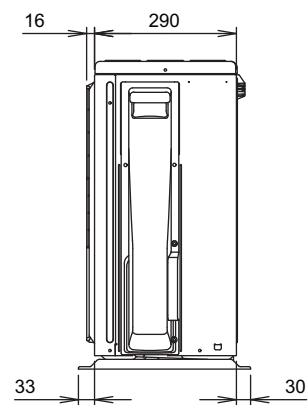
Top view



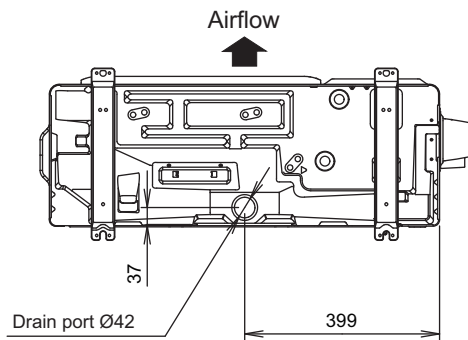
Side view



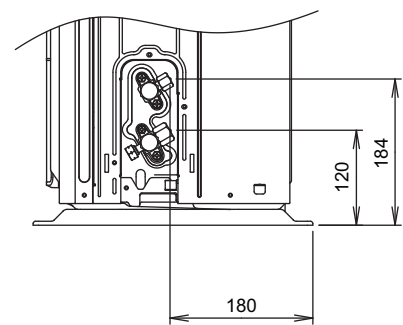
Front view



Side view



Bottom view



Side view (Valve part)

3. Installation space

3-1. Models: AOYG09KVCBN, AOYG12KVCBN, and AOYG14KVCBN

■ Space requirement

Provide sufficient installation space for product safety.

⚠ CAUTION

Keep the space shown in the installation examples.

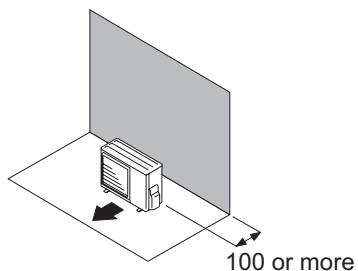
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.

● Single outdoor unit installation

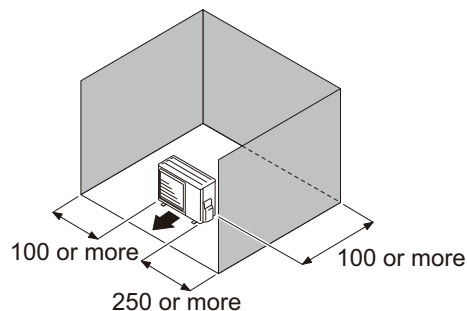
- When the upper space is open:

Unit: mm

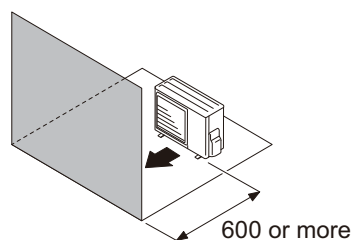
Obstacles at rear only



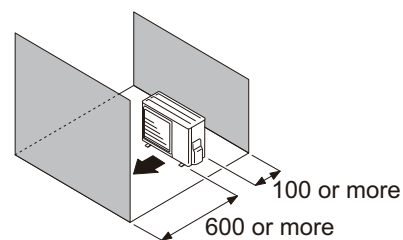
Obstacles at rear and sides



Obstacles at front



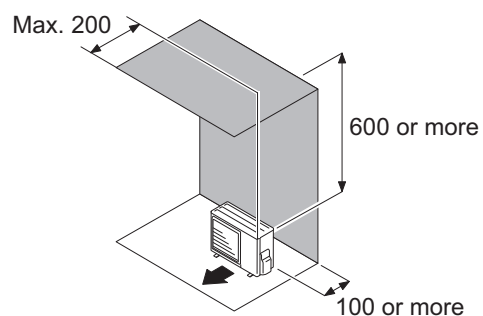
Obstacles at front and rear



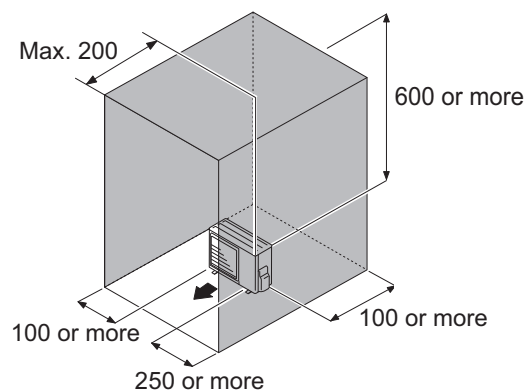
- When an obstruction in the upper space:

Unit: mm

Obstacles at rear and above



Obstacles at rear, sides, and above



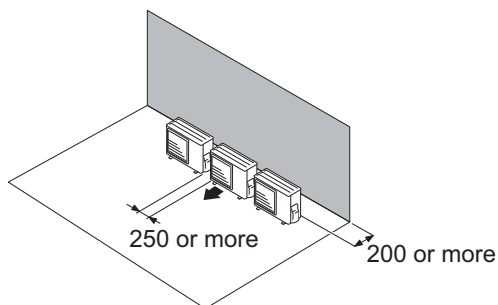
● Multiple outdoor unit installation

- 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:”**.

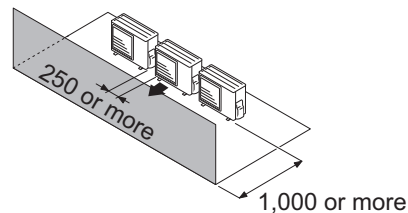
- **When the upper space is open:**

Unit: mm

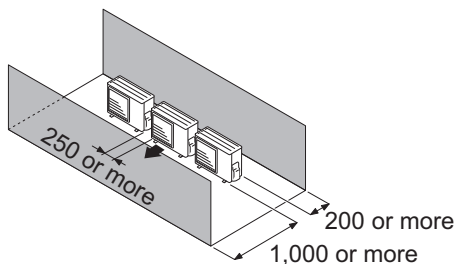
Obstacles at rear only



Obstacles at front only



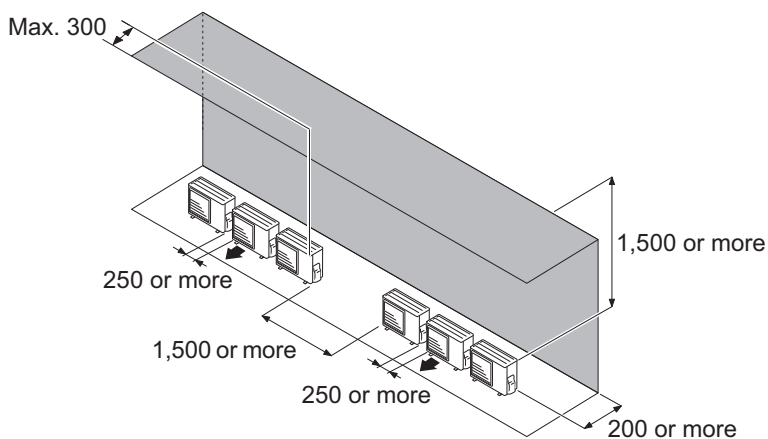
Obstacles at front and rear



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

Unit: mm

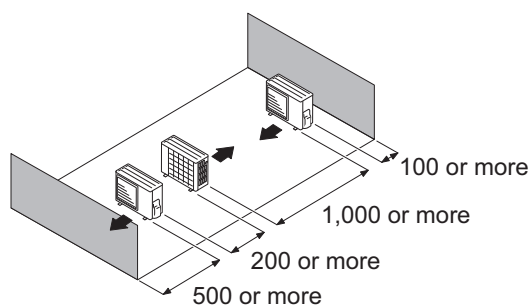
Obstacles at rear and above.



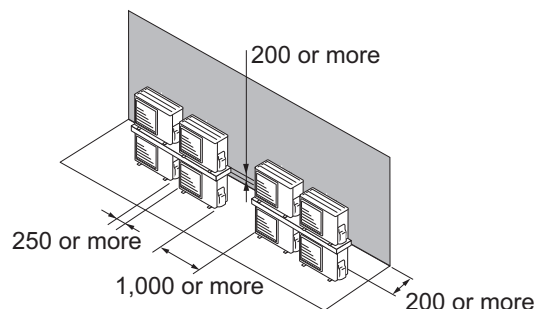
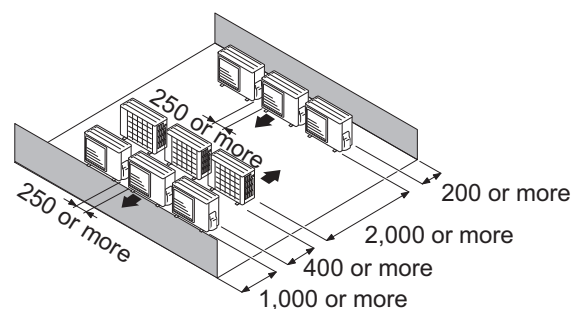
● Outdoor units installation in multi-row

Unit: mm

Single parallel unit arrangement



Multiple parallel unit arrangement

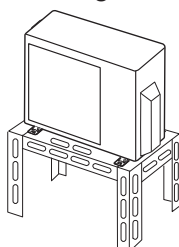


NOTES:

- 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.

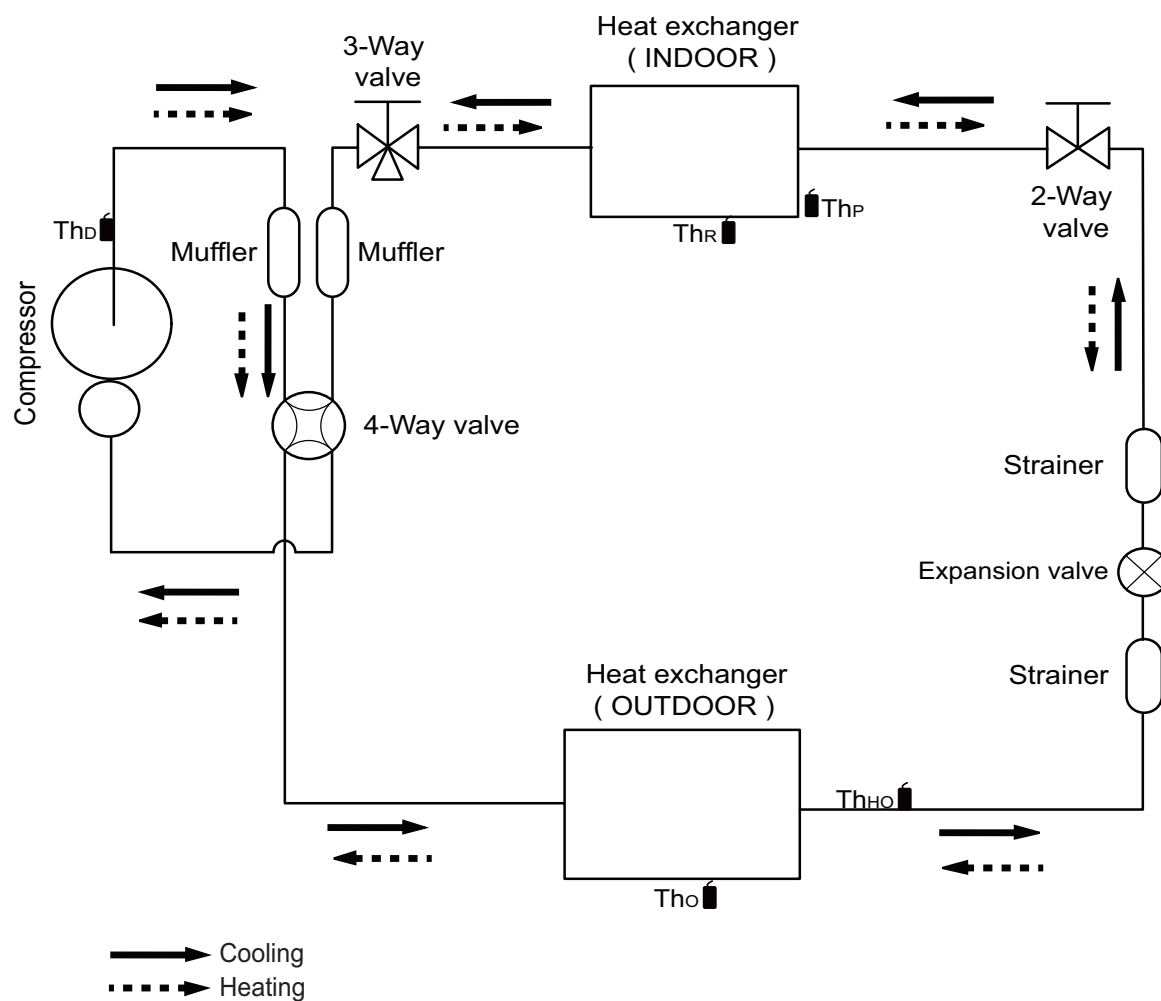


4. Refrigerant circuit

4-1. Model: AOYG09KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN

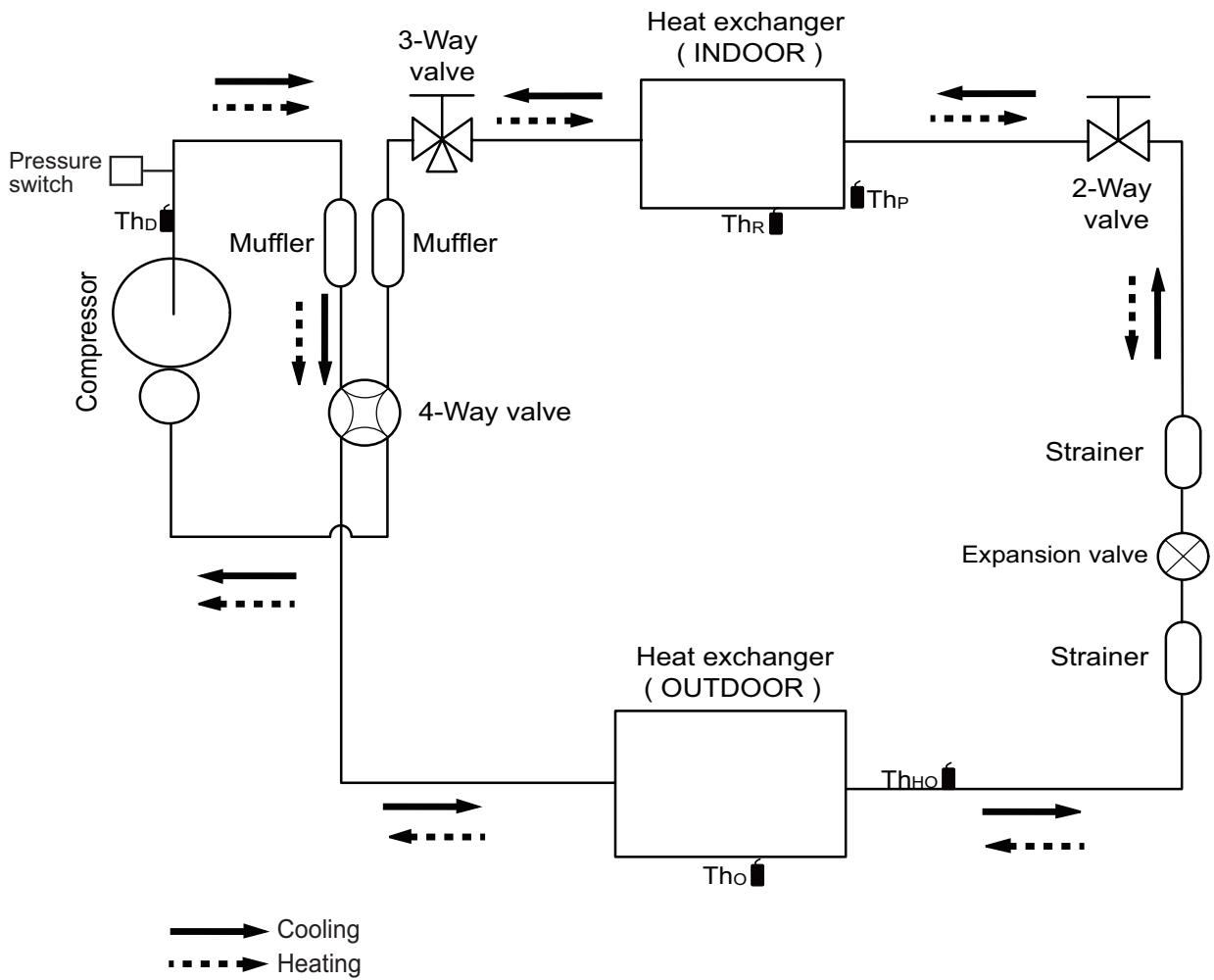


- Th_D : Thermistor (Discharge Temp.)
- Th_O : Thermistor (Outdoor Temp.)
- Th_{HO} : Thermistor (Heat Exchanger Out Temp.)
- Th_R : Thermistor (Room Temp.)
- Th_P : Thermistor (Pipe Temp.)

4-2. Models: AOYG12KVCBN and AOYG14KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN

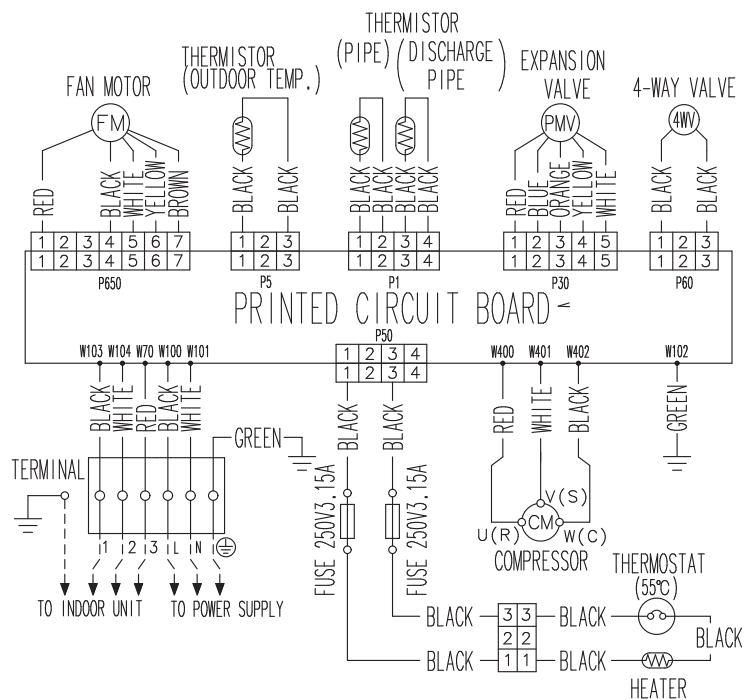
OUTDOOR UNIT
AOYG09-14KVCBN



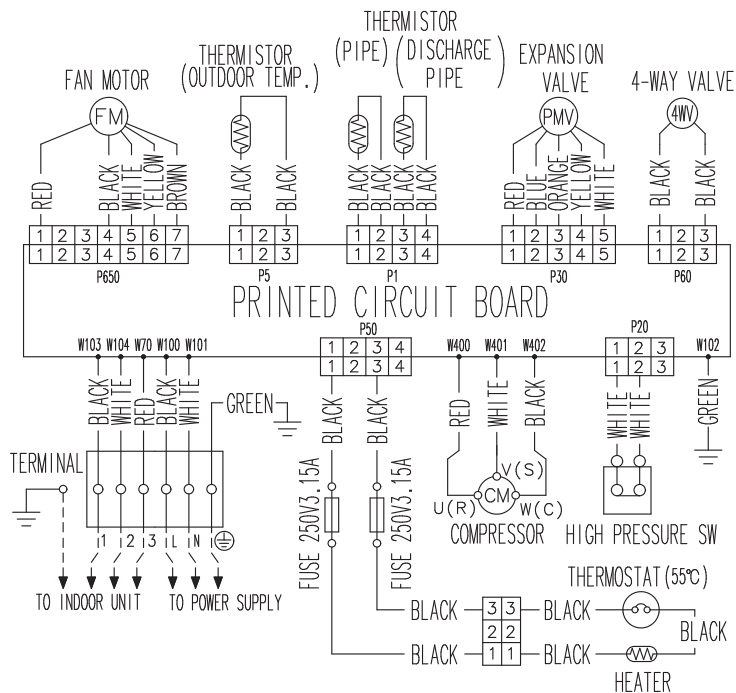
- Th_d : Thermistor (Discharge Temp.)
- Th_o : Thermistor (Outdoor Temp.)
- Th_o : Thermistor (Heat Exchanger Out Temp.)
- Th_R : Thermistor (Room Temp.)
- Th_P : Thermistor (Pipe Temp.)

5. Wiring diagrams

5-1. Model: AOYG09KVCBN



5-2. Models: AOYG12KVCBN and AOYG14KVCBN



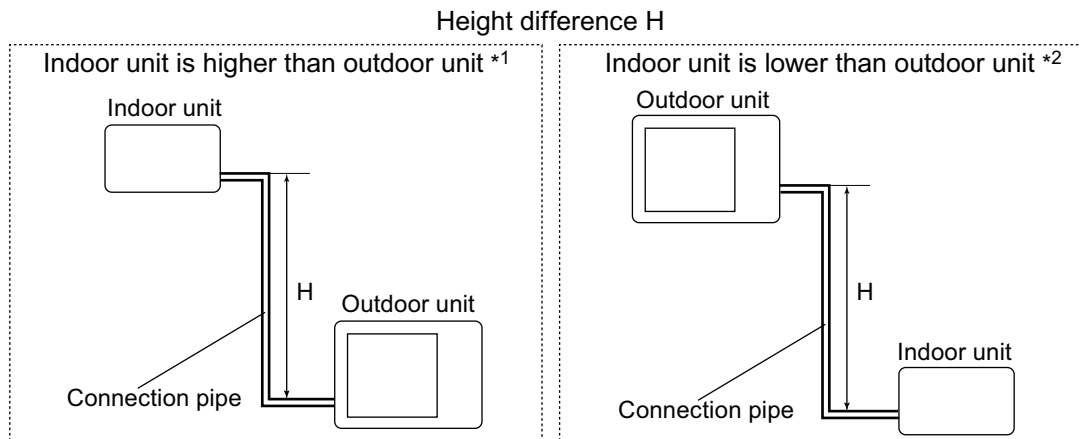
OUTDOOR UNIT
AOYG09-14KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN

6. Capacity compensation rate for pipe length and height difference

OUTDOOR UNIT
AOYG09-14KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN



6-1. Model: AOYG09KVCBN

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

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	0.893	0.909
		10	—	—	0.955	0.908	0.924
		7.5	—	0.975	0.959	0.912	0.928
		5	0.992	0.979	0.963	0.916	0.931
	Indoor unit is lower than outdoor unit *2	0	1.000	0.987	0.970	0.923	0.939
		-5	1.000	0.987	0.970	0.923	0.939
		-7.5	—	0.987	0.970	0.923	0.939
		-10	—	—	0.970	0.923	0.939
		-15	—	—	—	0.923	0.939

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	0.956	0.938
		10	—	—	1.004	0.956	0.938
		7.5	—	1.013	1.004	0.956	0.938
		5	1.000	1.013	1.004	0.956	0.938
	Indoor unit is lower than outdoor unit *2	0	1.000	1.013	1.004	0.956	0.938
		-5	0.995	1.008	0.999	0.951	0.933
		-7.5	—	1.005	0.997	0.948	0.931
		-10	—	—	0.994	0.946	0.929
		-15	—	—	—	0.937	0.919

6-2. Models: AOYG12KVCBN and AOYG14KVCBN

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

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	0.951	0.950
		10	—	—	0.979	0.967	0.966
		7.5	—	0.988	0.983	0.971	0.970
		5	0.994	0.992	0.987	0.975	0.974
	Indoor unit is lower than outdoor unit *2	0	1.002	1.000	0.995	0.983	0.982
		-5	1.002	1.000	0.995	0.983	0.982
		-7.5	—	1.000	0.995	0.983	0.982
		-10	—	—	0.995	0.983	0.982
		-15	—	—	—	0.983	0.982

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	Indoor unit is higher than outdoor unit *1	15	—	—	—	0.994	0.979
		10	—	—	1.012	0.994	0.979
		7.5	—	1.000	1.012	0.994	0.979
		5	0.969	1.000	1.012	0.994	0.979
	Indoor unit is lower than outdoor unit *2	0	0.969	1.000	1.012	0.994	0.979
		-5	0.964	0.995	1.007	0.989	0.974
		-7.5	—	0.993	1.004	0.986	0.972
		-10	—	—	1.002	0.984	0.969
		-15	—	—	—	0.974	0.959

7. Additional charge calculation

7-1. Models: AOYG09KVCBN, AOYG12KVCBN, and AOYG14KVCBN

Refrigerant type		R32
Refrigerant amount	g	940

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

8. Airflow

8-1. Model: AOYG09KVCBN

● Cooling

m ³ /h	1,550
l/s	431
CFM	912

● Heating

m ³ /h	1,690
l/s	469
CFM	995

8-2. Model: AOYG12KVCBN

● Cooling

m ³ /h	1,830
l/s	508
CFM	1,077

● Heating

m ³ /h	2,100
l/s	583
CFM	1,236

8-3. Model: AOYG14KVCBN

● Cooling

m ³ /h	2,210
l/s	614
CFM	1,301

● Heating

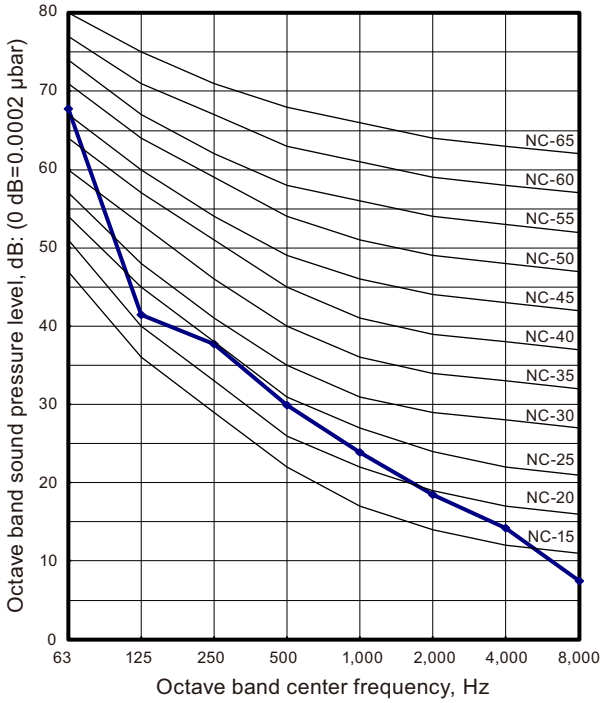
m ³ /h	2,100
l/s	583
CFM	1,236

9. Operation noise (sound pressure)

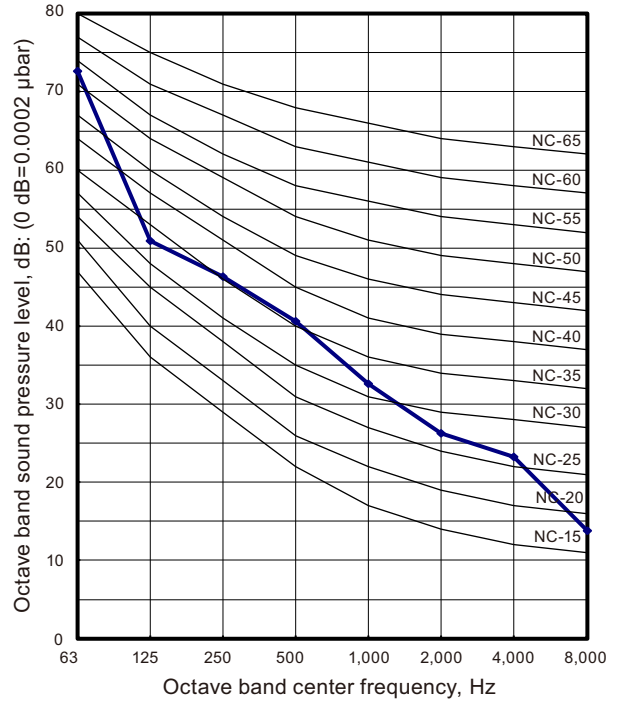
9-1. Noise level curve

Model: AOYG09KVCBN

Cooling

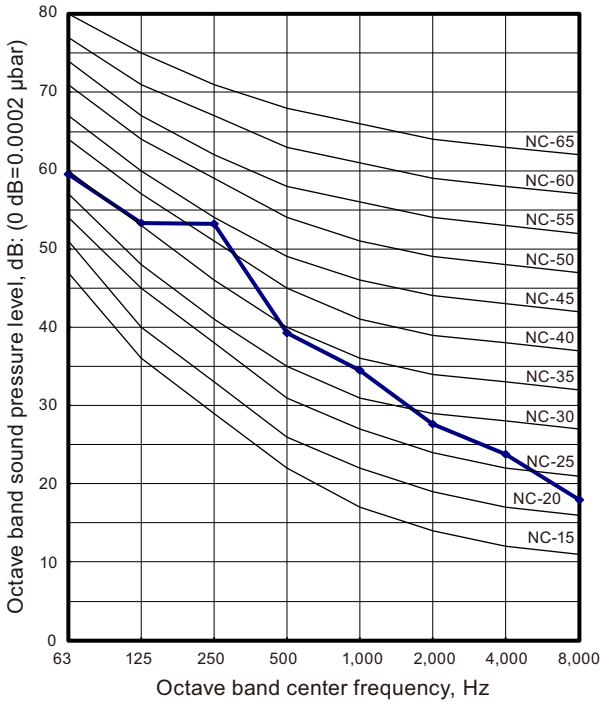


Heating

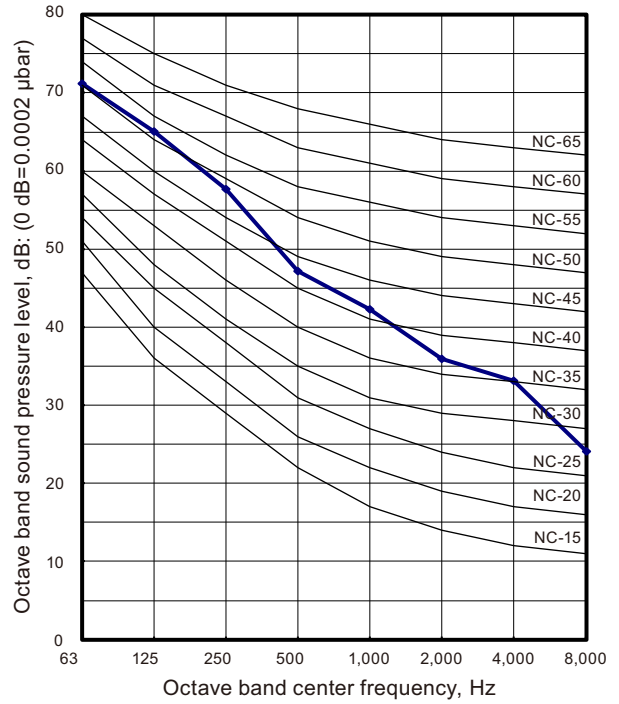


Model: AOYG12KVCBN

Cooling



Heating

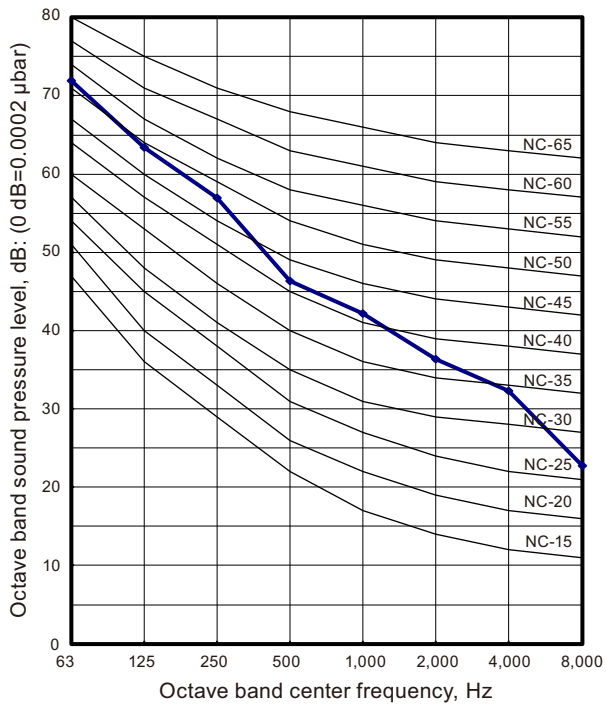


OUTDOOR UNIT
AOYG09-14KVCBN

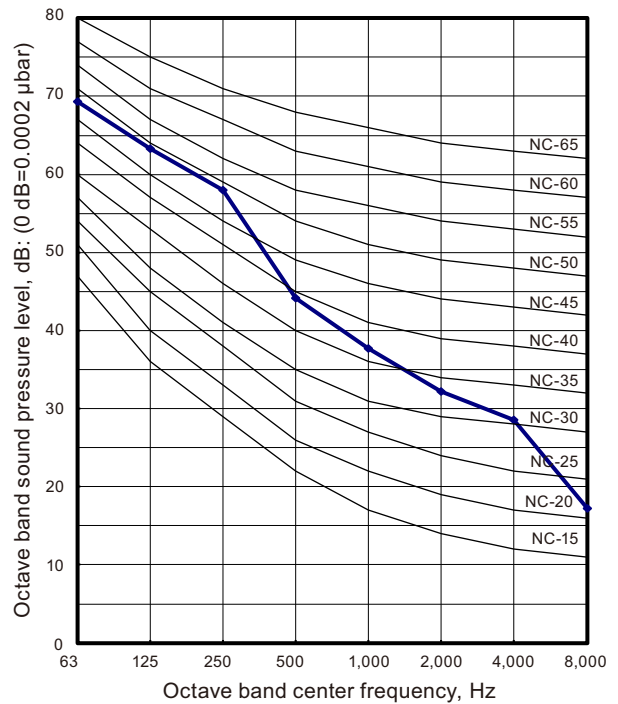
OUTDOOR UNIT
AOYG09-14KVCBN

Model: AOYG14KVCBN

● Cooling



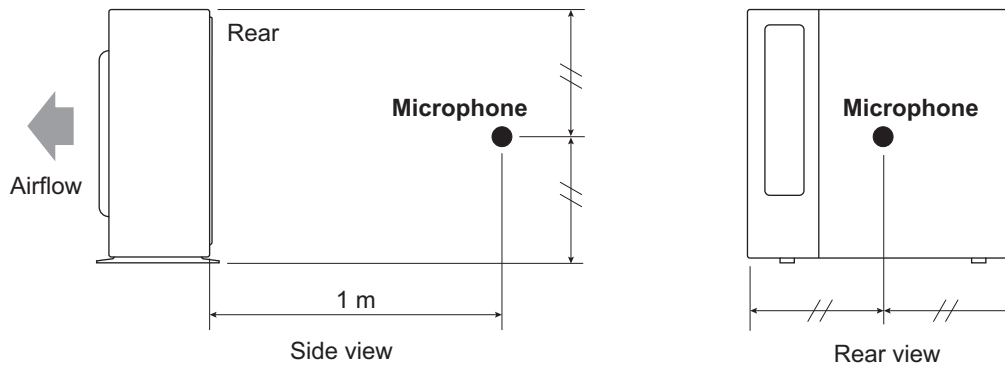
● Heating



OUTDOOR UNIT
AOYG09-14KVCBN

OUTDOOR UNIT
AOYG09-14KVCBN

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			AOYG09KVCBN	AOYG12KVCBN	AOYG14KVCBN
Power supply	Voltage	V	230		
	Frequency	Hz	50		
Max operating current *1		A	10.0	12.5	12.5
Starting current		A	3.6	4.9	6.2
Wiring spec. *2	Circuit breaker current		A	16	
	Power cable		mm ²	1.5	
	Connection cable *3	Cross-sectional area	mm ²	1.5	
		Limited wiring length	m	21	

*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		
			AOYG09KVCBN	AOYG12KVCBN	AOYG14KVCBN
Circuit protection	Current fuse (PCB*)		250 V, 25 A		
			250 V, 5 A		
			250 V, 3.15 A		
	Current fuse (Base Heater)		250 V, 3.15 A		
Fan motor protection	Thermal protection program	Activate	100±15 °C Fan motor stop	125±10 °C Fan motor stop	
		Reset	95±10 °C Fan motor restart	120±10 °C Fan motor restart	
Compressor protection	Thermal protection program (Discharge temp.)	Activate	110 °C Compressor stop		
		Reset	After 7 minutes Compressor restart		

*PCB: Printed Circuit Board

12. Accessories

12-1. Models: AOYG09KVCBN, AOYG12KVCBN, and AOYG14KVCBN

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Installation manual		1			