AIRSTAGE

AIR CONDITIONER

Wall mounted type

FUJITSU

REFRIGERANT **R32**
INVERTER

DESIGN & TECHNICAL MANUAL

INDOOR

ASEH09KHCBN
ASEH12KHCBN
ASEH14KHCBN

OUTDOOR

AOEH09KHCBN

AOEH12KHCBN
AOEH14KHCBN

FUJITSU GENERAL LIMITED

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Part 1. INDOOR UNIT

WALL MOUNTED TYPE:
ASEH09KHCBN
ASEH12KHCBN
ASEH14KHCBN

1. Specifications

Type				Wall mounted		
				Inverter, Heat pump		
Model name				ASEH09KHCBN	ASEH12KHCBN	ASEH14KHCBN
Power supply intake				Outdoor unit		
System power supply	Voltage		V	230		
	Frequency		Hz	50		
	Available voltage range		V	207—253		
Indoor unit power supply (from outdoor unit)			V	230		
Capacity	Cooling	Rated	kW	2.5	3.5	4.2
			Btu/h	8,500	11,900	14,300
		Min.—Max.	kW	0.7—4.7	0.7—5.1	0.8—5.9
			Btu/h	2,400—16,000	2,400—17,400	2,700—20,100
	Heating	Rated	kW	3.2	4.0	5.4
			Btu/h	10,900	13,600	18,400
		Min.—Max.	kW	0.7—7.7	0.7—8.4	0.8—9.0
			Btu/h	2,400—26,300	2,400—28,700	2,700—30,700
Input power	Cooling	Rated	kW	0.42	0.68	0.88
		Min.—Max.		0.12—1.11	0.12—1.30	0.12—1.65
	Heating	Rated		0.54	0.74	1.11
		Min.—Max.		0.11—2.15	0.12—2.40	0.13—2.58
	Fan	HIGH	W	25.0	27.8	33.2
		MED—HIGH		21.1	22.3	28.6
		MED		17.5		24.3
		MED—LOW		14.3		19.2
		LOW		11.1		14.3
		QUIET		3.8		5.7
Current	Cooling	Rated	A	2.0	3.1	3.9
	Heating			2.5	3.4	5.0
Energy efficiency class	Cooling			A+++		
	Heating (Average)			A+++		
Pdesign	Cooling		kW	2.5	3.5	4.2
	Heating (Average)			2.5	3.6	4.2
SEER	Cooling		kWh/kWh	10.9	10.6	9.9
SCOP	Heating (Average)			5.3		
Annual energy consumption	QCE		kWh/a	80	115	148
	QHE (Average)			658	939	1,109
EER	Cooling		kW/kW	5.95	5.15	4.77
COP	Heating			5.93	5.41	4.86
Sensible capacity	Cooling		kW	2.50	3.23	3.70
Power factor	Cooling		%	93.6	95.7	97.3
	Heating			95.0	96.0	97.6
Moisture removal			L/h (pints/h)	1.50 (2.6)	1.95 (3.4)	2.20 (3.9)
Maximum operating current*1	Cooling		A	6.5	7.5	9.0
	Heating			9.5	12.5	15.5
Fan	Airflow rate	Cooling	HIGH	m³/h	800	830	890
			MED—HIGH		740	760	840
			MED		690		790
			MED—LOW		640		720
			LOW		580		640
			QUIET		350		440
		Heating	HIGH		900		940
			MED—HIGH		800		860
			MED		690		780
			MED—LOW		640		710
			LOW		580		640
			QUIET		290		390
	Type × Qty			Crossflow fan × 1		
	Motor output		W	61		
Sound pressure level*2	Cooling	HIGH	dB (A)	42	43	45
		MED—HIGH		40		42
		MED		37		40
		MED—LOW		35		38
		LOW		33		35
		QUIET		23		26
	Heating	HIGH		44		46
		MED—HIGH		40		42
		MED		36		39
		MED—LOW		34		36
		LOW		32		34
		QUIET		19		23
Sound power level	Cooling	HIGH	dB (A)	57	58	60
	Heating			59	60	

(Note: the following section spans all three columns)

Heat exchanger	Dimensions (H × W × D)	mm	Main: 384 × 720 × 30.0 Sub 1: 84 × 720 × 13.3 Sub 2: 126 × 720 × 13.3
	Fin pitch		Main: 1.2 Sub 1: 1.4 Sub 2: 1.4
	Rows × Stages		Main: 3 × 24 Sub 1: 1 × 4 Sub 2: 1 × 6
	Pipe type		Copper tube
	Fin type		Aluminum
Enclosure	Material		Polystyrene
	Color		White Approximate color of Munsell N9.25/
Dimensions (H × W × D)	Net	mm	295 × 894 × 280
	Gross		360 × 990 × 370

Type				Wall mounted		
				Inverter, Heat pump		
Model name				ASEH09KHCBN	ASEH12KHCBN	ASEH14KHCBN
Weight	Net		kg	14.5		
	Gross			18.0		
Connection pipe	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)		
		Gas		Ø9.52 (Ø3/8)		
	Method			Flare		
Drain hose	Material			Polypropylene + Linear low-density polyethylene		
	Tip diameter		mm	Ø13.8 (I.D.), Ø15.8 to Ø16.7 (O.D.)		
Operation range	Cooling		°C	18 to 32		
			%RH	80 or less		
	Heating		°C	16 to 30		
Remote controller type				Wireless (Option: Wired, Mobile app*3 [AIRSTAGE Mobile])		

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.fujitsu-general.com/global/support/

3. Dimensions

3-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

Unit: mm

894

280

295

448

446

54

394

388

58

Outline of unit

33

50

50

61

for pipe inlet Ø65

for pipe inlet Ø65

71

62

62

387

375
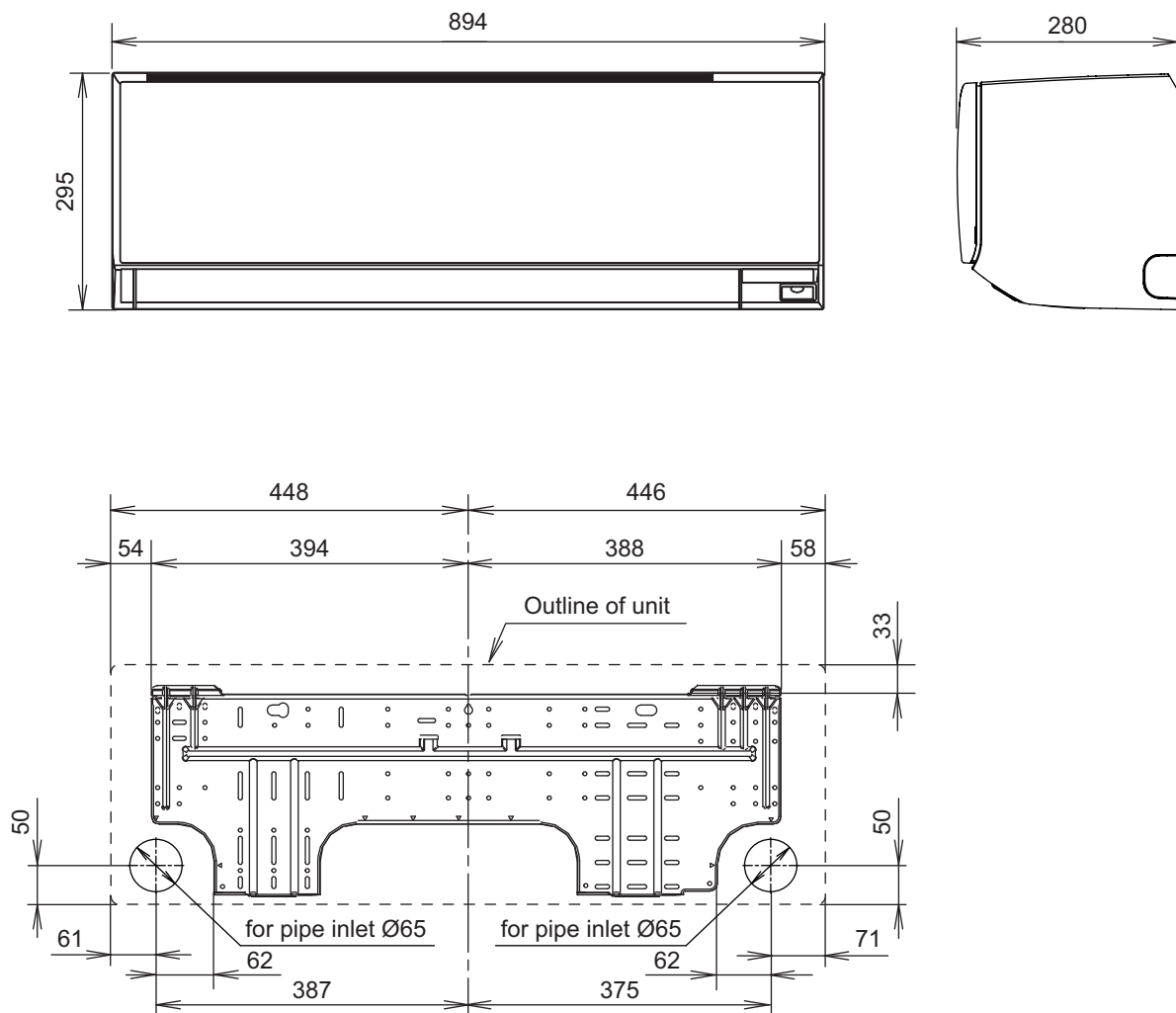
■ Installation space requirement

Provide sufficient installation space for product safety.

Unit: mm

Outline of unit

75 or more

127 or more

50 or more

84 or more

70 or more

133 or more

1,500 or more

1,800 or more

3-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

3. Dimensions
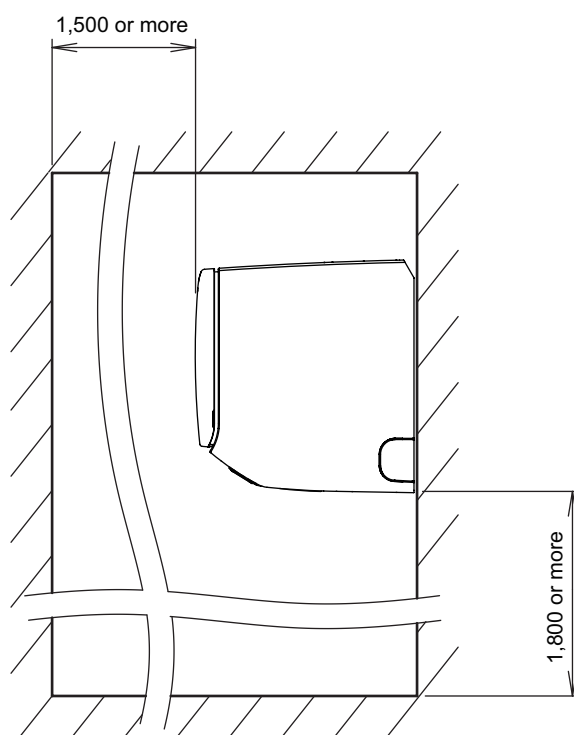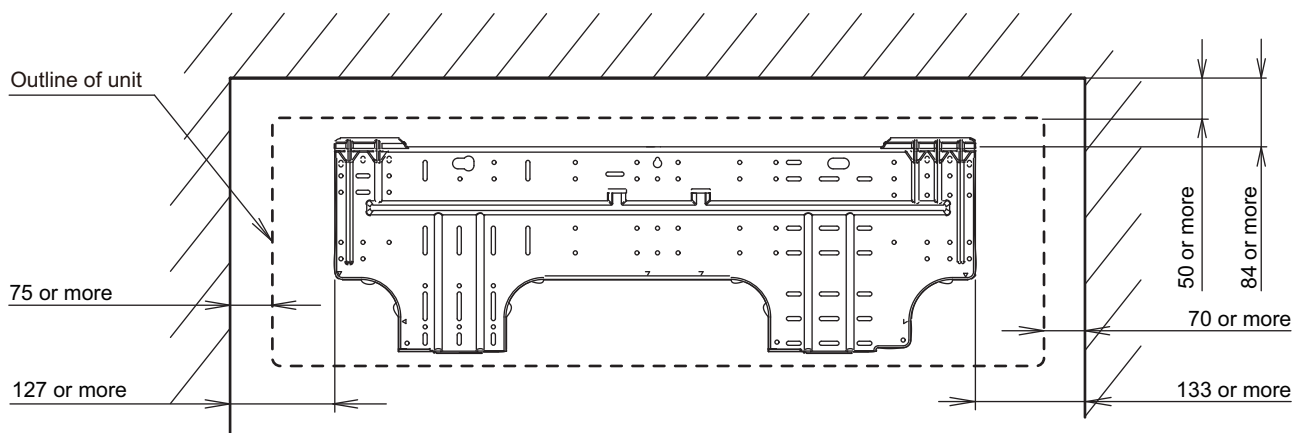
3-2. Pipe exit length from the rear

Design the system considering the length of the pipes or hose exiting from the rear of the indoor unit.

NOTE: Detailed shapes of the indoor unit and the tip of each pipe or hose may vary depending on the model.

Unit: mm
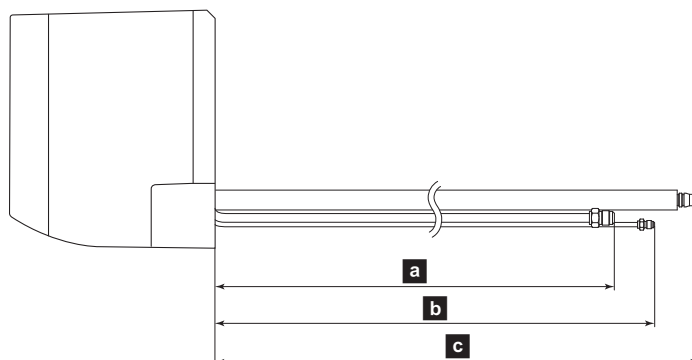
Model name	Approximate length		
	a **Gas pipe**	b **Liquid pipe**	c **Drain hose**
ASEH09–14KHCBN	615	660	420

4. Wiring diagrams

4-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

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: ASEH09KHCBN

AFR		m³/h		800

		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		
-10	2.60	2.36	0.45	2.84	2.58	0.46	2.93	2.66	0.46	3.11	2.83	0.47	3.21	2.92	0.47	3.42	3.11	0.47	3.65	3.32	0.48
-5	2.66	2.34	0.38	2.91	2.56	0.38	3.00	2.64	0.39	3.19	2.81	0.39	3.29	2.90	0.40	3.50	3.08	0.40	3.73	3.29	0.40
0	2.72	2.32	0.31	2.97	2.54	0.31	3.07	2.62	0.31	3.26	2.78	0.32	3.36	2.87	0.32	3.58	3.06	0.32	3.82	3.26	0.33
5	2.84	2.39	0.25	3.10	2.62	0.26	3.20	2.70	0.26	3.40	2.87	0.26	3.51	2.96	0.27	3.73	3.15	0.27	3.98	3.36	0.27
10	2.95	2.47	0.20	3.23	2.70	0.20	3.33	2.78	0.21	3.54	2.96	0.21	3.65	3.05	0.21	3.89	3.25	0.21	4.15	3.46	0.21
15	2.69	2.24	0.25	2.94	2.45	0.25	3.03	2.52	0.25	3.23	2.68	0.26	3.33	2.77	0.26	3.54	2.95	0.26	3.78	3.14	0.27
20	2.43	2.01	0.30	2.66	2.20	0.30	2.74	2.26	0.30	2.91	2.41	0.31	3.00	2.48	0.31	3.20	2.64	0.31	3.41	2.82	0.32
25	2.29	2.01	0.33	2.51	2.20	0.34	2.58	2.27	0.34	2.75	2.41	0.34	2.83	2.49	0.35	3.02	2.65	0.35	3.22	2.82	0.35
30	2.16	2.02	0.37	2.36	2.21	0.37	2.43	2.27	0.38	2.59	2.42	0.38	2.67	2.49	0.38	2.84	2.66	0.39	3.03	2.83	0.39
35	2.02	2.02	0.40	2.21	2.21	0.41	2.28	2.28	0.41	2.43	2.43	0.42	2.50	2.50	0.42	2.66	2.66	0.42	2.84	2.84	0.43
40	1.98	1.98	0.55	2.17	2.17	0.55	2.23	2.23	0.56	2.38	2.38	0.56	2.45	2.45	0.57	2.61	2.61	0.58	2.78	2.78	0.58
46	1.88	1.88	0.61	2.06	2.06	0.62	2.13	2.13	0.63	2.26	2.26	0.63	2.33	2.33	0.64	2.48	2.48	0.65	2.65	2.65	0.65
50	1.72	1.69	0.70	1.88	1.84	0.71	1.93	1.90	0.72	2.06	2.02	0.72	2.12	2.08	0.73	2.26	2.22	0.74	2.41	2.37	0.74

(Outdoor temperature indicated in leftmost °CDB column.)

■ Model: ASEH12KHCBN

AFR		m³/h		830

		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		
-10	2.68	2.33	0.32	2.93	2.55	0.32	3.02	2.63	0.32	3.21	2.79	0.33	3.31	2.88	0.33	3.53	3.07	0.33	3.76	3.27	0.34
-5	2.71	2.35	0.30	2.97	2.57	0.31	3.06	2.65	0.31	3.25	2.81	0.31	3.35	2.90	0.32	3.57	3.09	0.32	3.81	3.29	0.32
0	2.74	2.36	0.29	3.00	2.58	0.29	3.09	2.66	0.29	3.29	2.83	0.30	3.39	2.92	0.30	3.61	3.11	0.30	3.85	3.32	0.31
5	2.86	2.45	0.28	3.13	2.68	0.28	3.23	2.76	0.28	3.43	2.94	0.29	3.54	3.03	0.29	3.77	3.23	0.29	4.02	3.44	0.30
10	2.99	2.54	0.27	3.27	2.78	0.27	3.37	2.86	0.27	3.58	3.05	0.28	3.69	3.14	0.28	3.93	3.35	0.28	4.19	3.57	0.29
15	3.00	2.51	0.33	3.28	2.75	0.33	3.38	2.83	0.34	3.59	3.01	0.34	3.71	3.11	0.35	3.95	3.31	0.35	4.21	3.53	0.35
20	3.01	2.48	0.39	3.29	2.72	0.40	3.39	2.80	0.40	3.61	2.98	0.41	3.72	3.07	0.41	3.96	3.27	0.41	4.23	3.49	0.42
25	2.95	2.53	0.48	3.23	2.76	0.49	3.33	2.85	0.49	3.54	3.03	0.50	3.65	3.12	0.50	3.89	3.33	0.51	4.14	3.55	0.51
30	2.89	2.57	0.57	3.16	2.81	0.57	3.26	2.90	0.58	3.47	3.08	0.58	3.57	3.18	0.59	3.81	3.39	0.60	4.06	3.61	0.60
35	2.83	2.61	0.65	3.10	2.86	0.66	3.19	2.95	0.67	3.40	3.13	0.67	3.50	3.23	0.68	3.73	3.44	0.69	3.98	3.67	0.69
40	2.68	2.47	0.76	2.93	2.70	0.77	3.02	2.78	0.78	3.21	2.96	0.79	3.31	3.05	0.80	3.53	3.25	0.80	3.76	3.46	0.81
46	2.49	2.36	0.87	2.73	2.58	0.88	2.81	2.66	0.89	2.99	2.83	0.90	3.08	2.92	0.91	3.28	3.11	0.92	3.50	3.31	0.93
50	2.31	2.29	0.92	2.53	2.51	0.93	2.60	2.58	0.94	2.77	2.75	0.95	2.86	2.83	0.96	3.04	3.02	0.97	3.24	3.22	0.98

(Outdoor temperature indicated in leftmost °CDB column.)

■ Model: ASEH14KHCBN

AFR		m³/h		890

		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		
-10	2.73	2.63	0.62	2.98	2.88	0.63	3.08	2.97	0.63	3.27	3.16	0.64	3.37	3.26	0.65	3.59	3.47	0.65	3.83	3.70	0.66
-5	2.74	2.60	0.61	3.00	2.84	0.61	3.09	2.93	0.62	3.29	3.11	0.62	3.39	3.21	0.63	3.61	3.42	0.64	3.85	3.64	0.64
0	2.75	2.56	0.59	3.01	2.80	0.60	3.10	2.88	0.60	3.30	3.07	0.61	3.40	3.16	0.62	3.62	3.37	0.62	3.86	3.59	0.63
5	2.97	2.58	0.48	3.24	2.83	0.48	3.34	2.91	0.49	3.56	3.10	0.49	3.67	3.19	0.50	3.91	3.40	0.50	4.16	3.63	0.51
10	3.18	2.61	0.37	3.48	2.86	0.37	3.59	2.94	0.37	3.81	3.13	0.38	3.93	3.23	0.38	4.19	3.44	0.39	4.46	3.66	0.39
15	3.17	2.61	0.37	3.47	2.86	0.38	3.58	2.94	0.38	3.81	3.13	0.38	3.92	3.23	0.39	4.18	3.44	0.39	4.46	3.67	0.40
20	3.17	2.61	0.38	3.47	2.86	0.38	3.57	2.95	0.39	3.80	3.13	0.39	3.92	3.23	0.40	4.17	3.44	0.40	4.45	3.67	0.40
25	3.25	2.74	0.53	3.55	3.00	0.54	3.66	3.09	0.55	3.89	3.28	0.55	4.01	3.39	0.56	4.27	3.61	0.56	4.56	3.85	0.57
30	3.32	2.87	0.69	3.63	3.14	0.70	3.75	3.23	0.70	3.98	3.44	0.71	4.11	3.54	0.72	4.37	3.78	0.73	4.66	4.02	0.73
35	3.40	2.99	0.84	3.72	3.28	0.85	3.83	3.38	0.86	4.06	3.59	0.87	4.20	3.70	0.88	4.48	3.94	0.89	4.77	4.20	0.90
40	3.27	2.68	1.01	3.58	2.93	1.02	3.69	3.02	1.03	3.93	3.21	1.03	4.05	3.31	1.06	4.31	3.52	1.07	4.60	3.76	1.08
46	2.98	2.59	1.15	3.26	2.84	1.16	3.36	2.92	1.17	3.58	3.11	1.18	3.69	3.20	1.20	3.93	3.41	1.21	4.19	3.64	1.22
50	2.77	2.53	1.24	3.03	2.76	1.26	3.12	2.85	1.27	3.32	3.03	1.28	3.42	3.12	1.29	3.64	3.33	1.31	3.89	3.55	1.32

(Outdoor temperature indicated in leftmost °CDB column.)

5-2. Heating capacity

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

■ Model: ASEH09KHCBN

AFR		m³/h				900					

		Indoor temperature									
	°CDB	16		18		20		22		24	
°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
		kW		kW		kW		kW		kW	
-30	–	3.42	2.02	3.33	2.06	3.24	2.10	3.15	2.14	3.06	2.18
-25	-26	4.22	2.02	4.11	2.06	4.00	2.10	3.89	2.14	3.78	2.18
-20	-21	4.57	2.02	4.45	2.06	4.33	2.10	4.21	2.14	4.09	2.18
-15	-16	5.17	2.06	5.04	2.10	4.90	2.15	4.76	2.19	4.63	2.23
-10	-11	5.76	1.98	5.61	2.02	5.46	2.06	5.31	2.10	5.15	2.14
-5	-7	6.37	1.95	6.21	1.99	6.04	2.03	5.87	2.07	5.70	2.11
0	-2	7.03	2.01	6.84	2.05	6.66	2.09	6.48	2.13	6.29	2.17
5	3	7.68	2.06	7.48	2.10	7.28	2.15	7.08	2.19	6.88	2.23
7	6	8.13	2.06	7.91	2.10	7.70	2.15	7.49	2.19	7.27	2.23
10	8	8.28	2.06	8.07	2.10	7.85	2.15	7.63	2.19	7.42	2.23
15	10	8.59	2.04	8.36	2.09	8.14	2.13	7.92	2.17	7.69	2.21
20	15	8.07	1.62	7.86	1.65	7.65	1.69	7.44	1.72	7.23	1.75
24	18	8.37	1.62	8.15	1.65	7.93	1.69	7.71	1.72	7.49	1.75

(Outdoor temperature)

■ Model: ASEH12KHCBN

AFR		m³/h				900					

		Indoor temperature									
	°CDB	16		18		20		22		24	
°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
		kW		kW		kW		kW		kW	
-30	–	4.04	2.40	3.94	2.45	3.83	2.50	3.72	2.55	3.62	2.60
-25	-26	4.85	2.54	4.73	2.59	4.60	2.65	4.47	2.70	4.35	2.75
-20	-21	5.74	2.69	5.59	2.74	5.44	2.80	5.29	2.85	5.14	2.91
-15	-16	6.44	2.69	6.27	2.74	6.10	2.80	5.93	2.85	5.76	2.91
-10	-11	7.19	2.68	7.00	2.73	6.81	2.79	6.62	2.84	6.44	2.89
-5	-7	7.85	2.61	7.64	2.66	7.44	2.72	7.23	2.77	7.03	2.82
0	-2	8.37	2.46	8.15	2.50	7.93	2.56	7.71	2.61	7.49	2.66
5	3	8.89	2.30	8.65	2.35	8.42	2.40	8.19	2.45	7.95	2.49
7	6	8.86	2.30	8.63	2.35	8.40	2.40	8.17	2.45	7.94	2.49
10	8	8.95	2.26	8.71	2.30	8.48	2.35	8.03	2.39	8.01	2.44
15	10	8.80	2.02	8.57	2.06	8.34	2.10	8.03	2.14	7.88	2.18
20	15	8.22	1.56	8.01	1.60	7.79	1.63	7.57	1.66	7.36	1.69
24	18	8.47	1.57	8.25	1.61	8.03	1.64	7.81	1.67	7.59	1.70

(Outdoor temperature)

■ Model: ASEH14KHCBN

AFR		m³/h				940					

		Indoor temperature									
	°CDB	16		18		20		22		24	
°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
		kW		kW		kW		kW		kW	
-30	–	4.67	2.74	4.55	2.79	4.43	2.85	4.31	2.90	4.19	2.96
-25	-26	5.70	2.88	5.55	2.94	5.40	3.00	5.25	3.06	5.10	3.11
-20	-21	6.57	3.12	6.40	3.18	6.23	3.25	6.06	3.31	5.89	3.37
-15	-16	7.49	3.36	7.30	3.43	7.10	3.50	6.90	3.57	6.71	3.63
-10	-11	8.18	3.41	7.96	3.48	7.75	3.56	7.54	3.62	7.32	3.69
-5	-7	8.63	3.29	8.41	3.36	8.18	3.43	7.96	3.49	7.73	3.56
0	-2	8.74	2.90	8.51	2.96	8.29	3.02	8.06	3.08	7.83	3.14
5	3	8.85	2.51	8.62	2.56	8.39	2.62	8.16	2.67	7.93	2.72
7	6	9.50	2.48	9.25	2.53	9.00	2.58	8.75	2.63	8.50	2.68
10	8	9.11	2.27	8.87	2.32	8.63	2.37	8.32	2.42	8.15	2.46
15	10	8.97	2.00	8.73	2.04	8.50	2.08	8.27	2.12	8.03	2.16
20	15	8.85	1.74	8.62	1.77	8.39	1.81	8.16	1.84	7.93	1.88
24	18	8.78	1.57	8.55	1.61	8.32	1.64	8.09	1.67	7.86	1.70

(Outdoor temperature)

6. Fan performance

6-1. Air velocity distributions

■ Model: ASEH09KHCBN
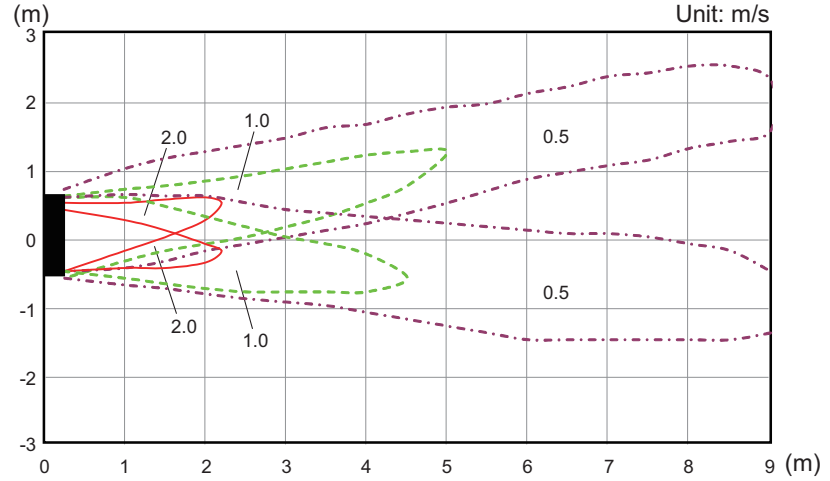
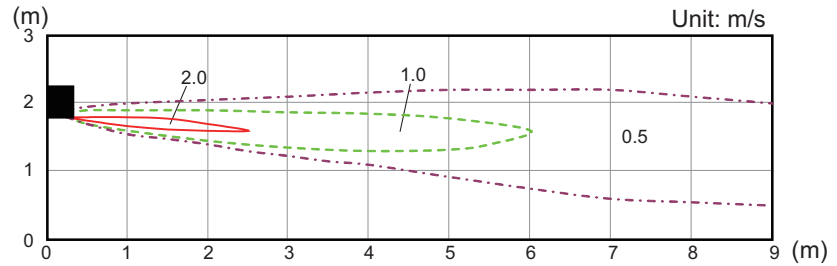| Measuring conditions	Fan speed	Operation mode
	HIGH	FAN

(m) Unit: m/s

Top view
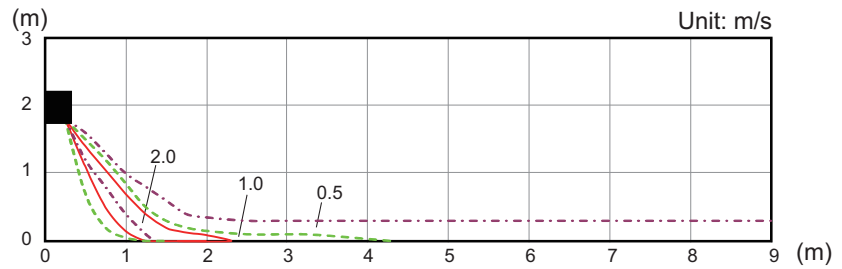Horizontal louver: Up
Vertical louver: Center

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

Side view
Horizontal louver: Up
Vertical louver: Center

Side view
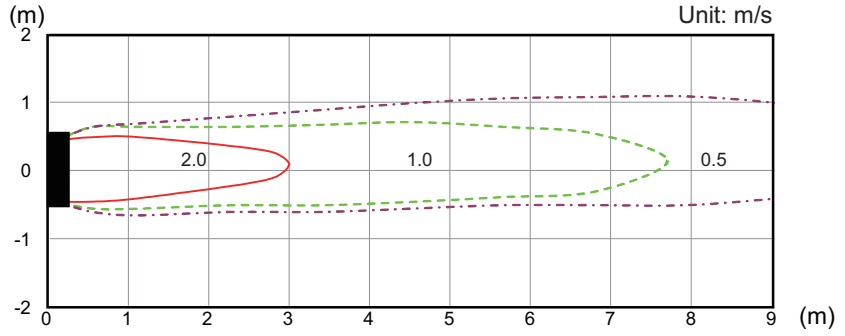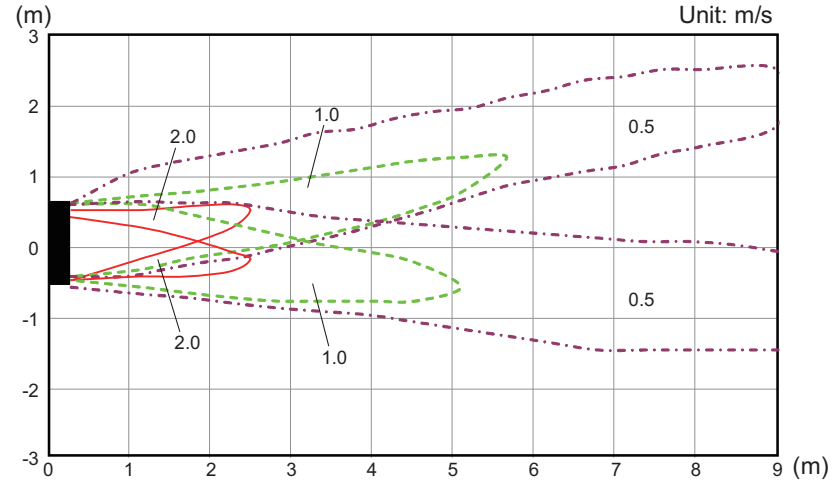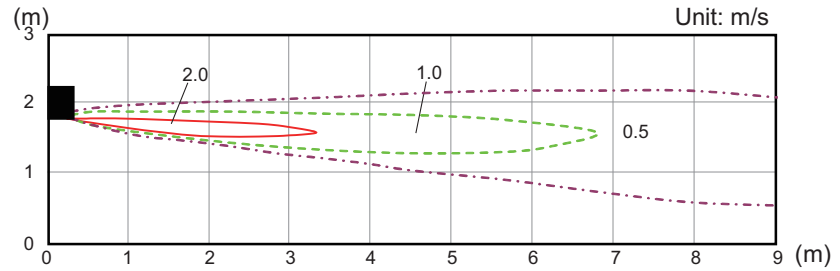Horizontal louver: Down
Vertical louver: Center
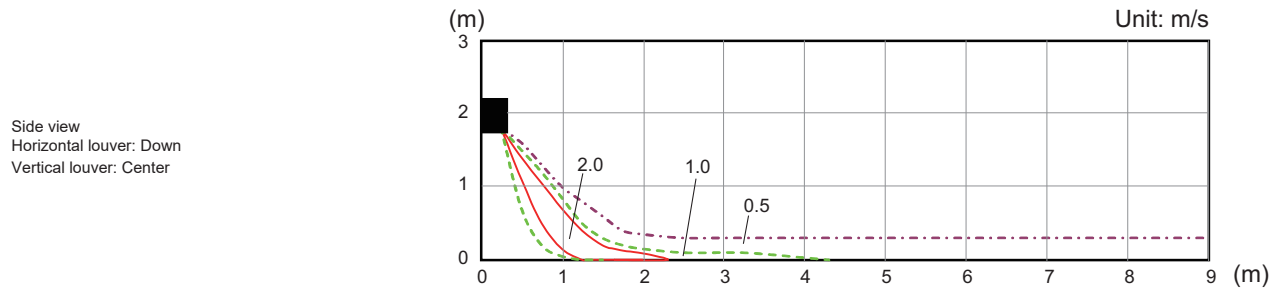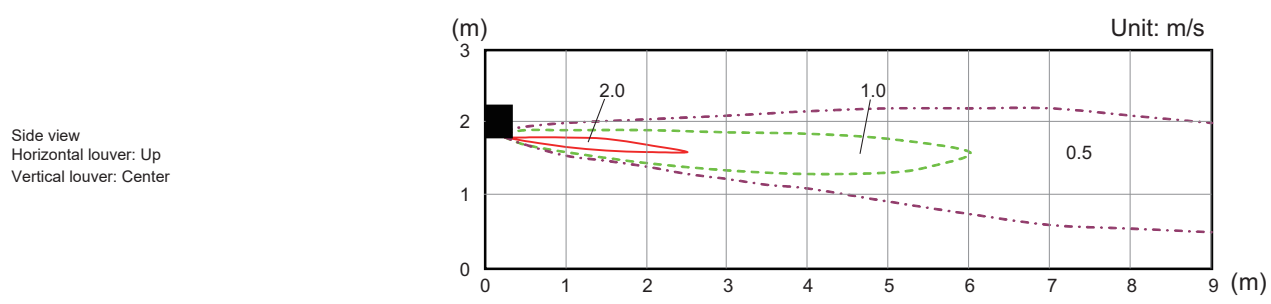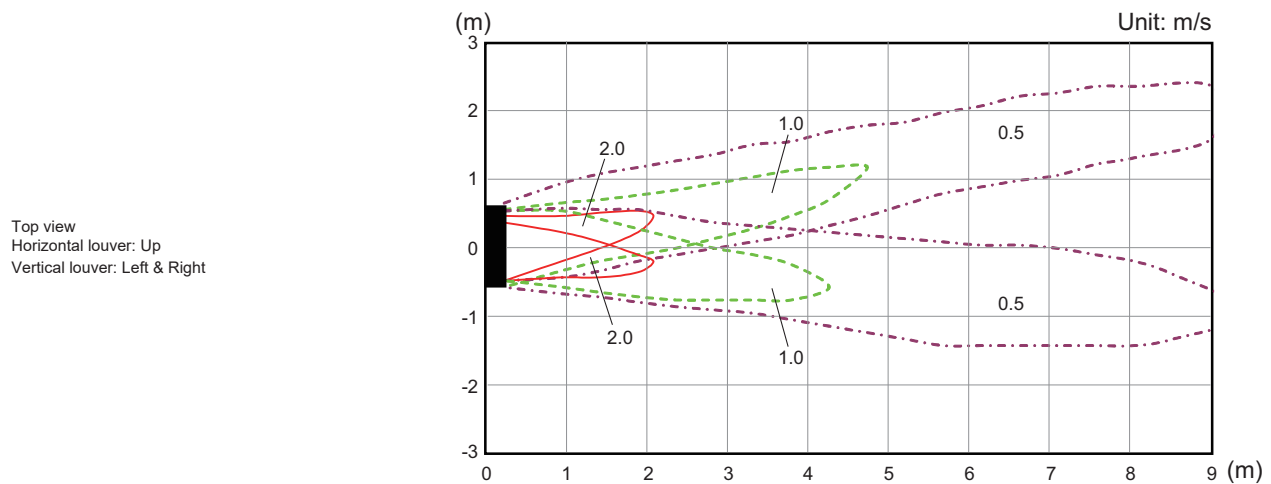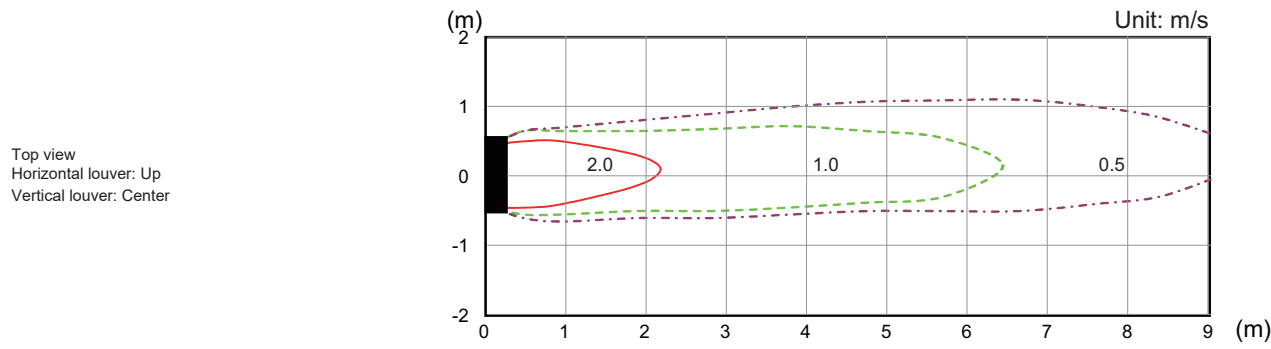
■ Model: ASEH12KHCBN

Measuring conditions	Fan speed	Operation mode
	HIGH	FAN

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

6-1. Air velocity distributions

6. Fan performance

FUJITSU GENERAL LIMITED

■ Model: ASEH14KHCBN

Measuring conditions	Fan speed	Operation mode
	HIGH	FAN

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

6-1. Air velocity distributions

6. Fan performance
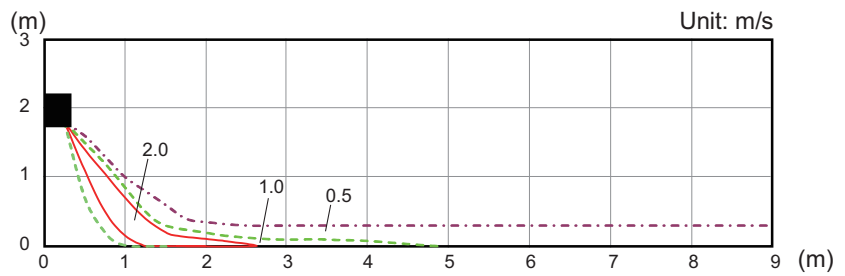
6-2. Airflow

■ Model: ASEH09KHCBN

● Cooling

Fan speed	Airflow	
HIGH	m^3/h	800
	l/s	222
	CFM	471
MED—HIGH	m^3/h	740
	l/s	206
	CFM	436
MED	m^3/h	690
	l/s	192
	CFM	406
MED—LOW	m^3/h	640
	l/s	178
	CFM	377
LOW	m^3/h	580
	l/s	161
	CFM	341
QUIET	m^3/h	350
	l/s	97
	CFM	206

● Heating

Fan speed	Airflow	
HIGH	m^3/h	900
	l/s	250
	CFM	530
MED—HIGH	m^3/h	800
	l/s	222
	CFM	471
MED	m^3/h	690
	l/s	192
	CFM	406
MED—LOW	m^3/h	640
	l/s	178
	CFM	377
LOW	m^3/h	580
	l/s	161
	CFM	341
QUIET	m^3/h	290
	l/s	81
	CFM	171

■ Model: ASEH12KHCBN

● Cooling

Fan speed	Airflow	
HIGH	m³/h	830
	l/s	231
	CFM	489
MED—HIGH	m³/h	760
	l/s	211
	CFM	447
MED	m³/h	690
	l/s	192
	CFM	406
MED—LOW	m³/h	640
	l/s	178
	CFM	377
LOW	m³/h	580
	l/s	161
	CFM	341
QUIET	m³/h	350
	l/s	97
	CFM	206

● Heating

Fan speed	Airflow	
HIGH	m³/h	900
	l/s	250
	CFM	530
MED—HIGH	m³/h	800
	l/s	222
	CFM	471
MED	m³/h	690
	l/s	192
	CFM	406
MED—LOW	m³/h	640
	l/s	178
	CFM	377
LOW	m³/h	580
	l/s	161
	CFM	341
QUIET	m³/h	290
	l/s	81
	CFM	171

■ Model: ASEH14KHCBN

● Cooling

Fan speed	Airflow	
HIGH	m^3/h	890
	l/s	247
	CFM	524
MED—HIGH	m^3/h	840
	l/s	233
	CFM	494
MED	m^3/h	790
	l/s	219
	CFM	465
MED—LOW	m^3/h	720
	l/s	200
	CFM	424
LOW	m^3/h	640
	l/s	178
	CFM	377
QUIET	m^3/h	440
	l/s	122
	CFM	259

● Heating

Fan speed	Airflow	
HIGH	m^3/h	940
	l/s	261
	CFM	553
MED—HIGH	m^3/h	860
	l/s	239
	CFM	506
MED	m^3/h	780
	l/s	217
	CFM	459
MED—LOW	m^3/h	710
	l/s	197
	CFM	418
LOW	m^3/h	640
	l/s	178
	CFM	377
QUIET	m^3/h	390
	l/s	108
	CFM	230

7. Operation noise (sound pressure)

7-1. Noise level curve

■ Model: ASEH09KHCBN
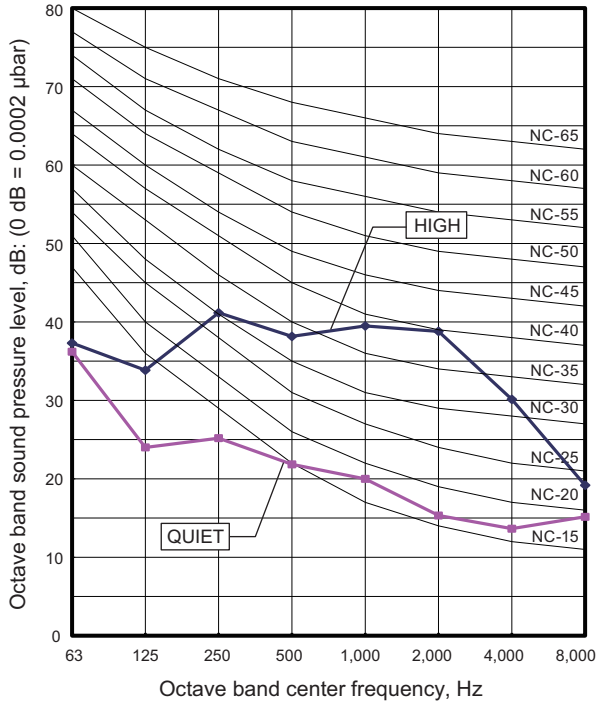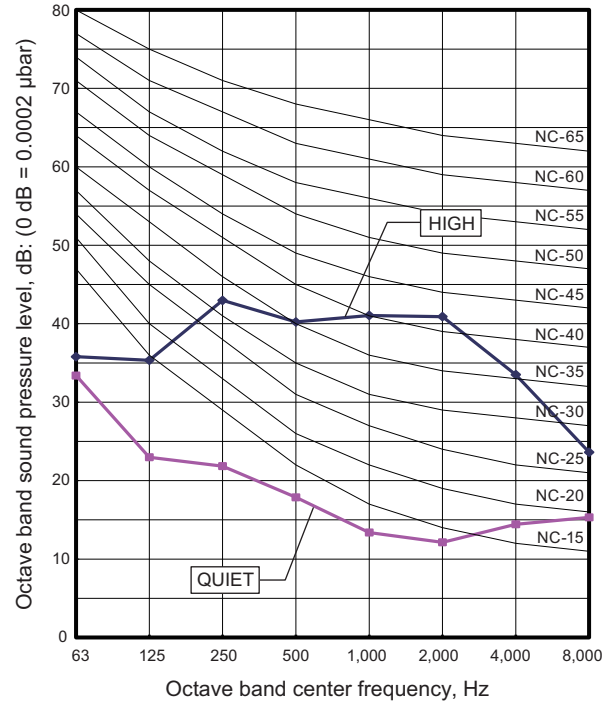
● Cooling

● Heating

■ Model: ASEH12KHCBN
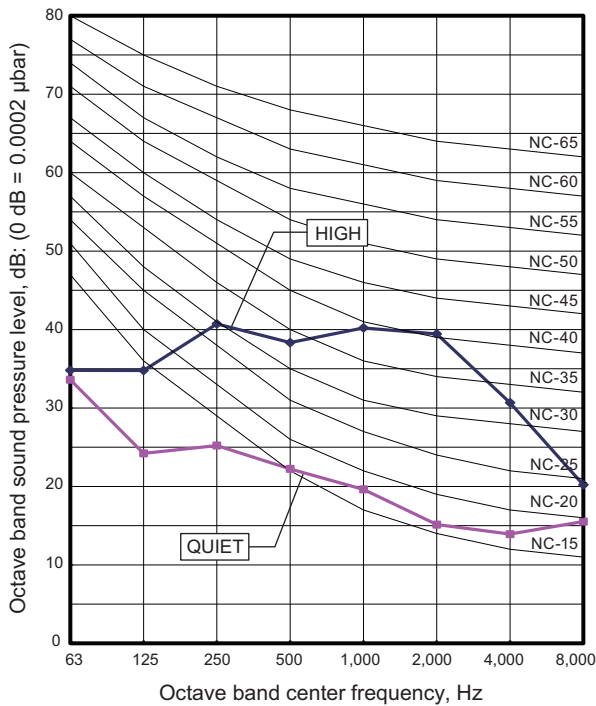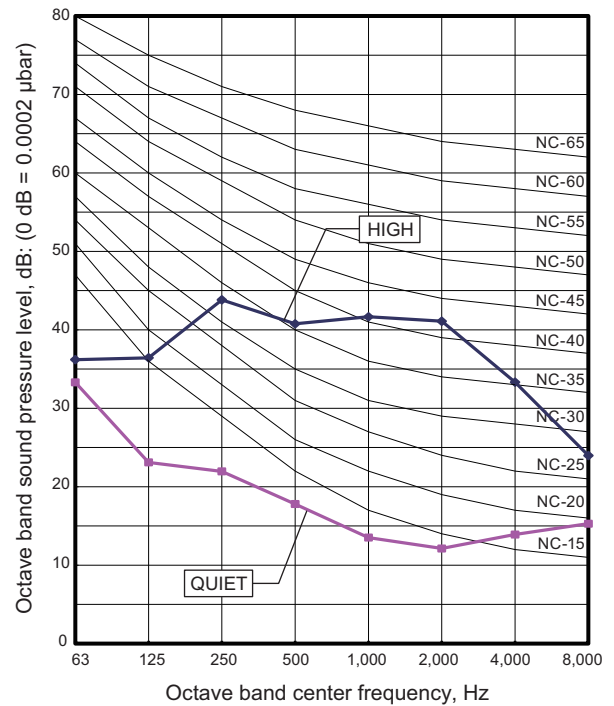
● Cooling

● Heating

■ Model: ASEH14KHCBN

● Cooling

Octave band sound pressure level, dB: (0 dB = 0.0002 μbar)

Octave band center frequency, Hz

● Heating

Octave band sound pressure level, dB: (0 dB = 0.0002 μbar)

Octave band center frequency, Hz

7-2. Sound level check point

0.8 m

Microphone

Microphone

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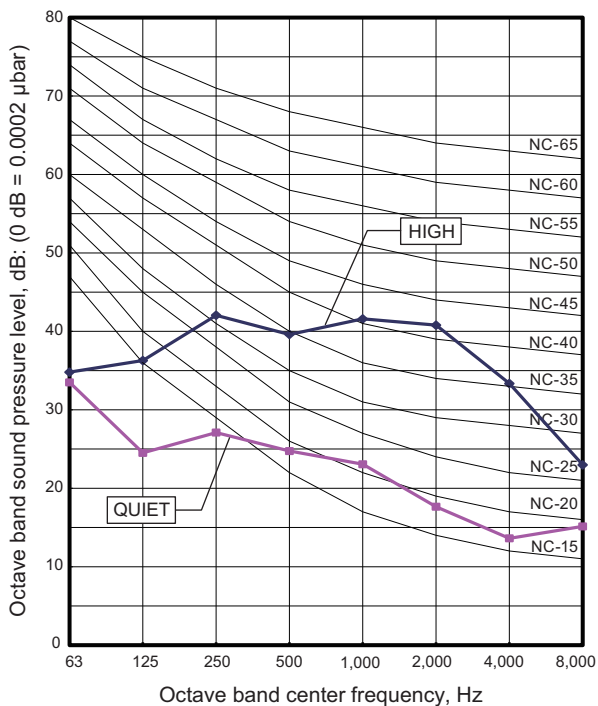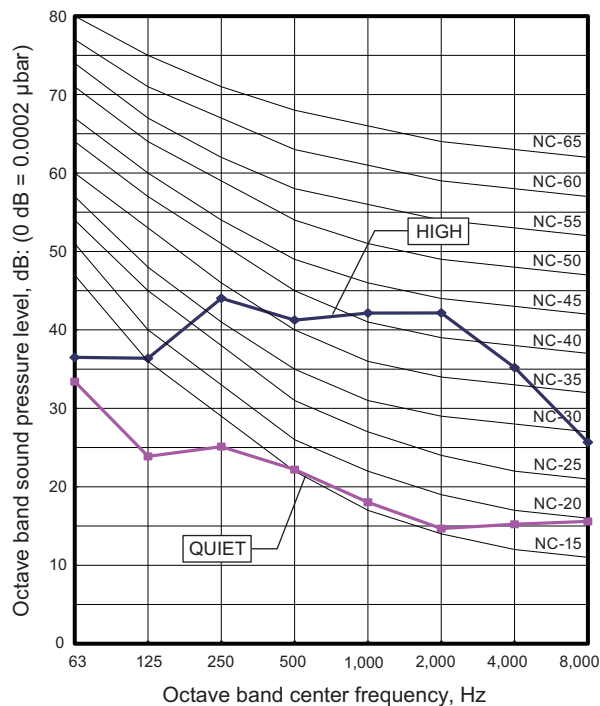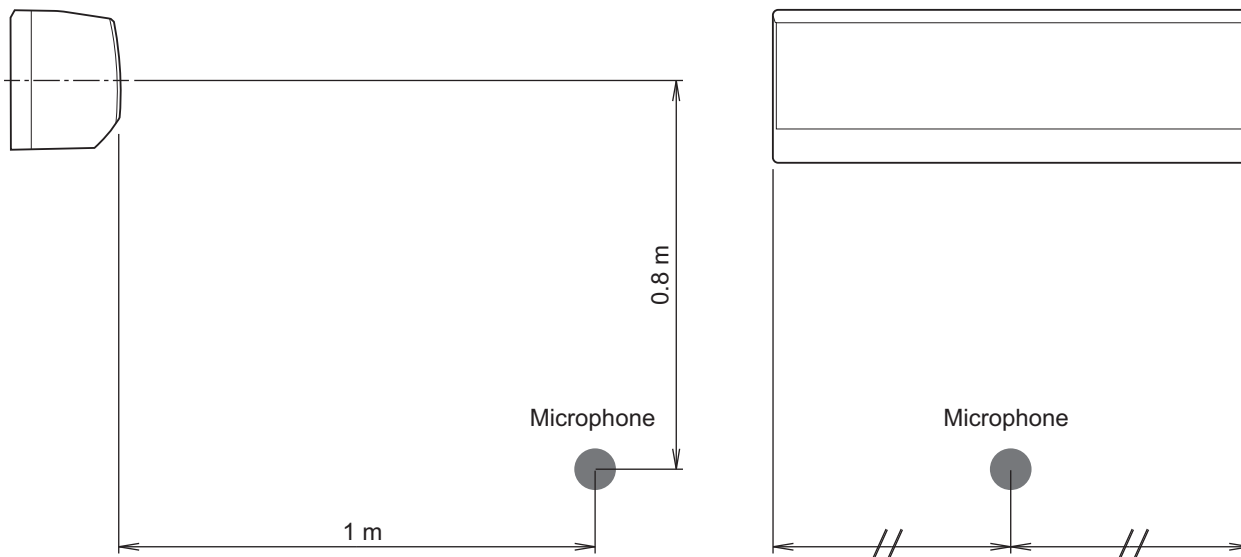
NOTE: Detailed shape of the actual indoor unit might be slightly different from the one illustrated above.

8. Safety devices

Type of protection	Protection form		Model
			ASEH09KHCBN ASEH12KHCBN ASEH14KHCBN
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

9. External input and output

Indoor unit PCB

CN65
(Ext. in/out PCB)

CN47 (Ext. out)

CN46 (Ext. in)

External Input and Output PCB

SW301　　SW302　　Rotary switch

CN314

CN313

CN312

CN311

CN310

CN308
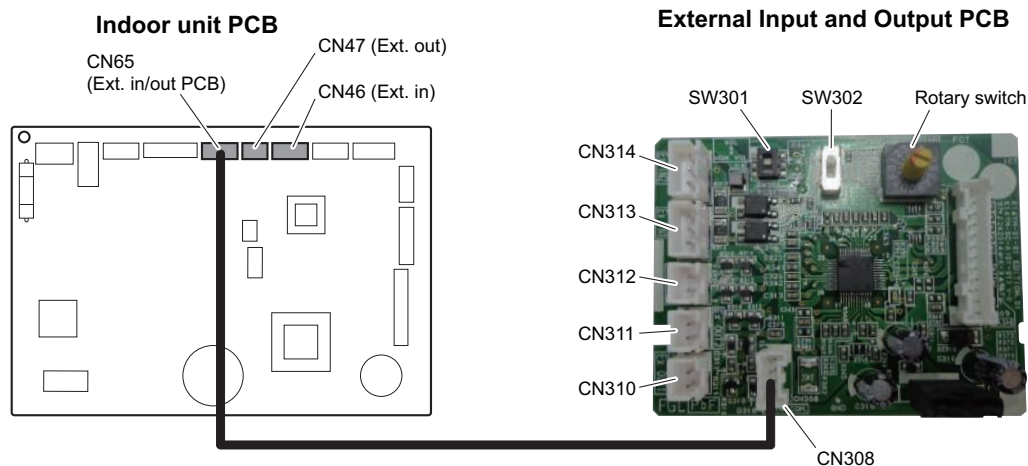
Connecting point		Input/Output	Function	Input select	Input signal
Indoor unit	CN46	Input	Operation/Stop	Dry contact	Edge
			Forced stop		
	CN47	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		
External Input and Output PCB (UTY-XCSXZ3)	CN313 CN314	Input	Operation/Stop	Dry contact/Apply voltage	Edge/Pulse
			Forced stop		
	CN313		Forced thermostat off		Edge
	CN310 CN311 CN312	Output	Operation/Stop	—	—
			Error status		
			Indoor unit fan operation status		

NOTE: For details of the switching function, refer to "Setting of external input and output" on page 26.

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.
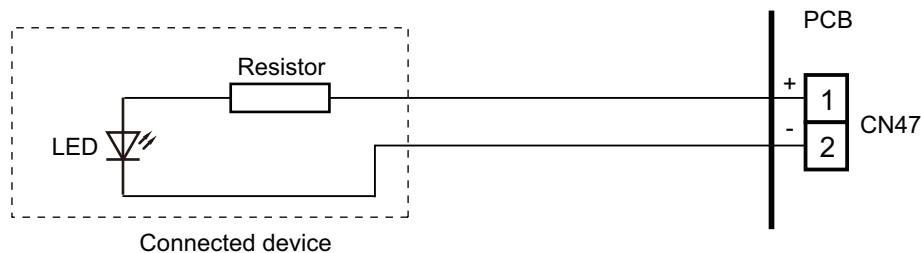- A twisted pair cable should be used. Maximum length of cable is 150 m.
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

■ Indoor unit

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

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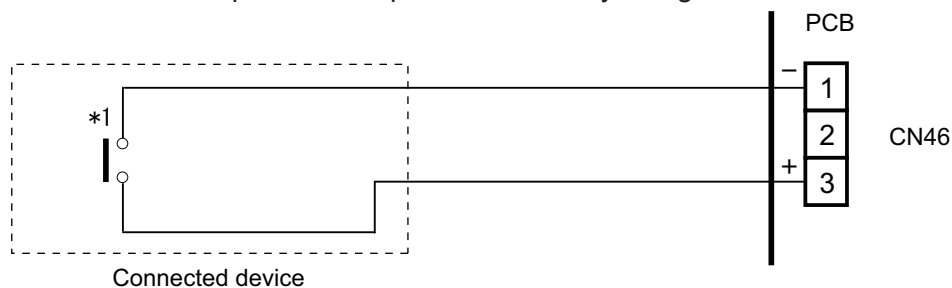
*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

■ External Input and Output PCB

The indoor unit Operation/Stop can be set by using the input connector on the PCB.

- **Input select**
  Use either one of these types of connectors according to the application. (Both types of connectors cannot be used simultaneously.)
  – **Dry contact**
    In case of internal power supply, set the slide switch of SW301 to "NON VOL" side.

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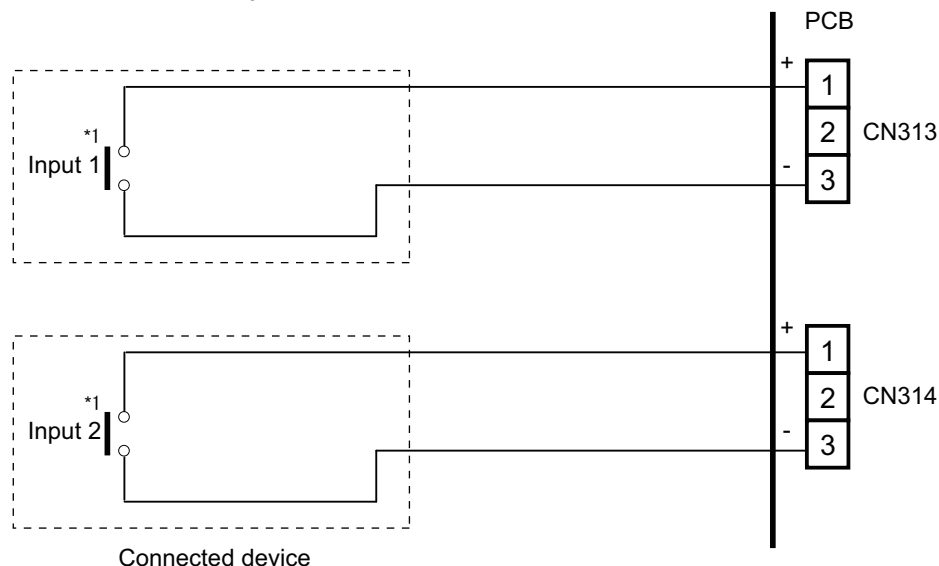
*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

  – **Apply voltage**
    In case of external power supply, set the slide switch of SW301 to "VOL" side.

Connected device
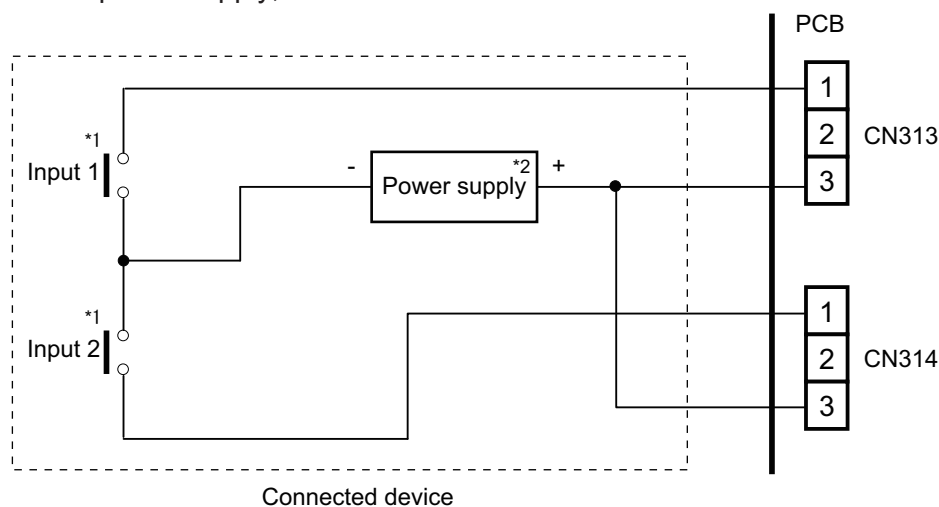
*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.
*2: Make the power supply DC 12 V to 24 V, 10 mA or more.

■ Input signal type

- **Indoor unit**
  Input signal type is only "Edge".
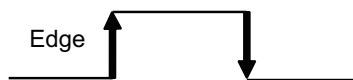
  Edge

- **External Input and Output PCB**
  The input signal type can be selected.

  Signal type (edge or pulse) can be switched by the DIP switch 2 (SW302) on the External Input and Output PCB.

  Edge

  The width of pulse must be longer than 200 msec.
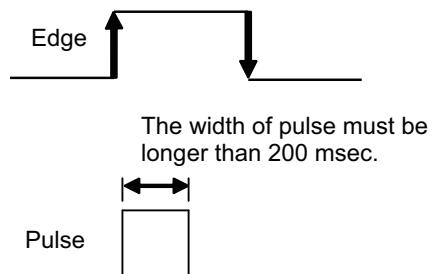
  Pulse

NOTE: The input signal supports the following switch type:
- Edge: Alternate type switch
- Pulse: Momentary type switch

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 should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V ±2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Setting of external input and output" on page 26.

- **When indicator, etc. are connected directly**

Example: Function setting number 60 is set to "00"

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

Example: Function setting number 60 is set to "00"
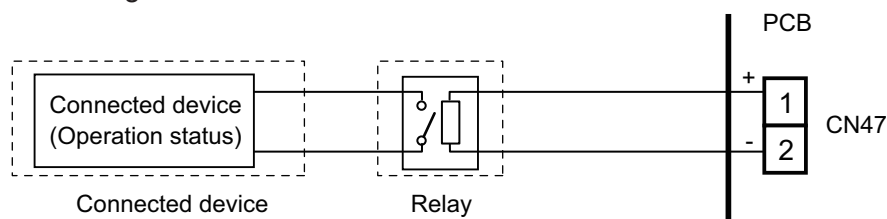
■ External Input and Output PCB

- A twisted pair cable should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V ±2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "Setting of external input and output" on page 26.

- **When indicator or other components are connected directly:**
  Example: Rotary SW on External Input and Output PCB is set to "1".

Connected device
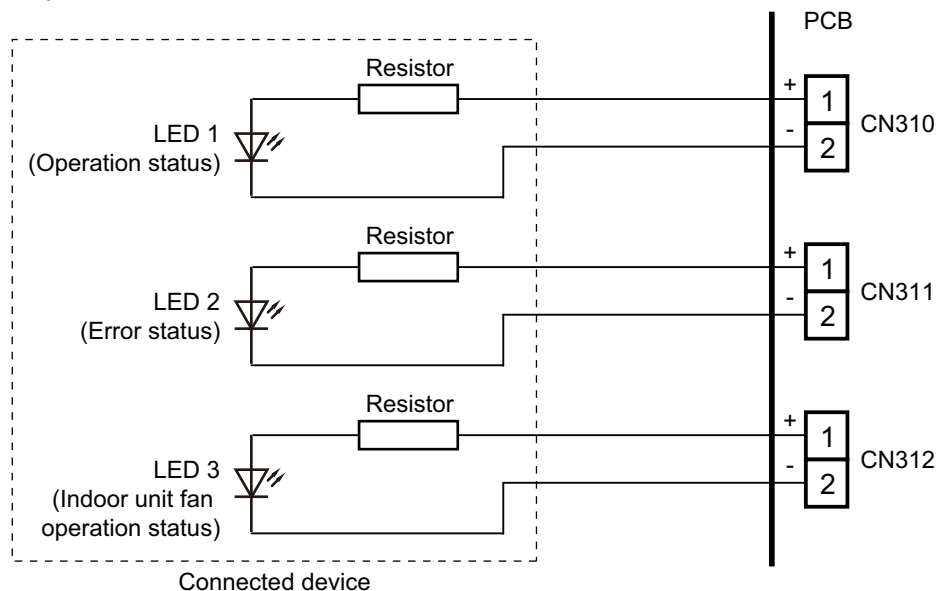
- **When connecting with a device equipped with a power supply:**
  Example: Rotary SW on External Input and Output PCB is set to "1".

Connected device   Relay
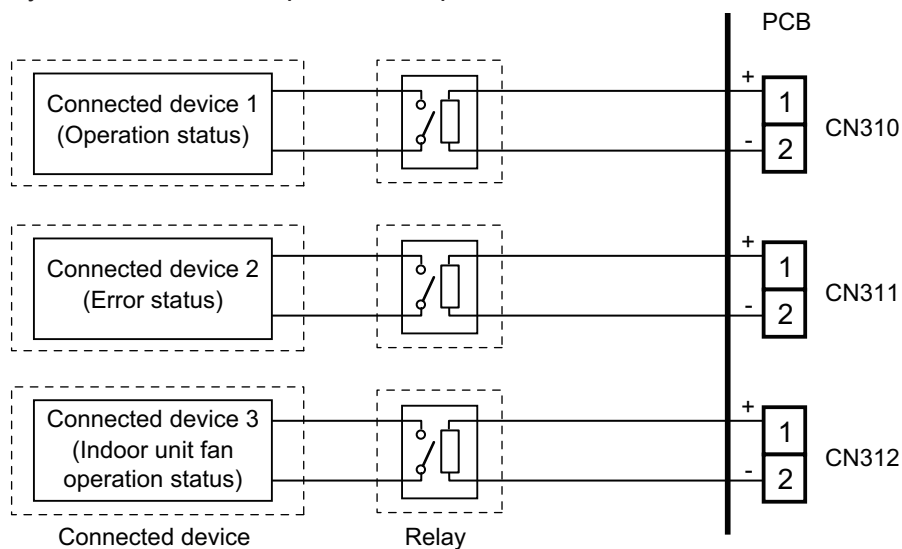
9-3. Setting of external input and output

- **Indoor unit**

Input		
Connection point	**Function setting number 46**	**Function**
CN46	00	Operation/Stop mode 1 (R.C. enabled)
	01	(Setting prohibited)
	02	Forced stop mode
	03	Operation/Stop mode 2 (R.C. disabled)

Output		
Connection point	**Function setting number 60**	**Function**
CN47	00	Operation/Stop
	01 to 08	(Setting prohibited)
	09	Error status
	10	Indoor unit fan operation status
	11	(Setting prohibited)

- **External Input and Output PCB**

Switch setting		Input		Output		
Rotary switch	**SW302**	**CN313**	**CN314**	**CN310**	**CN311**	**CN312**
1	Edge	Operation/Stop	Not available	Operation/Stop	Error status	Indoor unit fan operation status
	Pulse	Operation	Stop			
2		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	Not available
3 to 9, A		(Setting prohibited)				
B	Edge*	Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Not available
C		Forced thermostat off	Not available	Operation/Stop	Error status	Not available
D		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Error status

NOTES:
- When the rotary switch is selected to "1", the operation of the connector input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- *: The external input other than "Operation/Stop" is available only when the SW302 is set to "Edge".

9-4. Details of control input function

■ Operation/Stop mode 1

- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-00	—		Input of indoor unit	CN46	Off → On	Operation
					On → Off	Stop
	1	Edge	External Input and Output PCB	CN313	Off → On	Operation
					On → Off	Stop
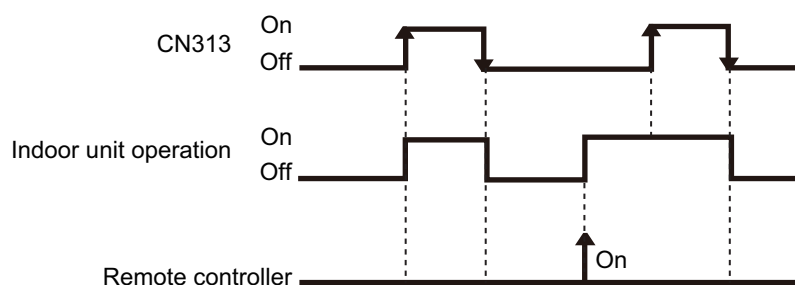
- **In the case of "Pulse" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-00	1	Pulse	External Input and Output PCB	CN313	Pulse	Operation
				CN314		Stop
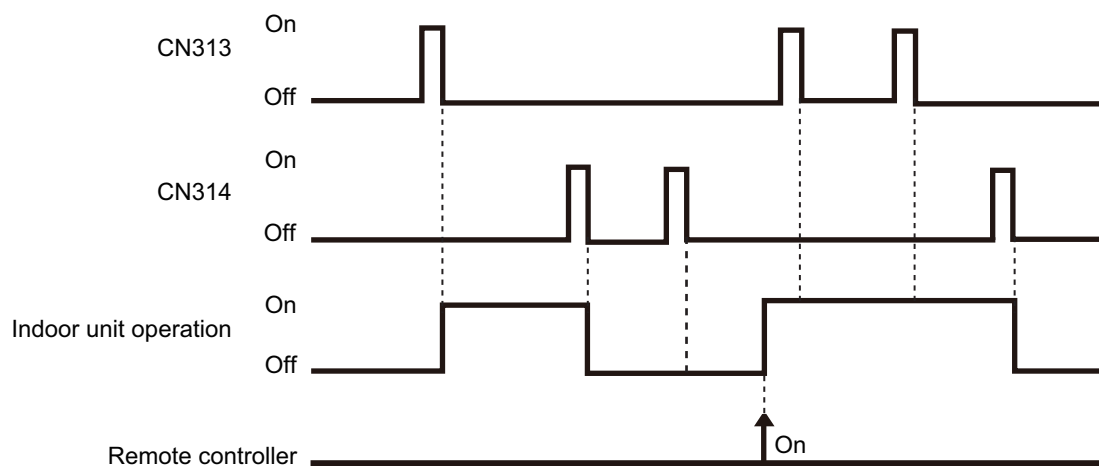
NOTES:

- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

■ Forced stop

- **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-02	—		Input of indoor unit	CN46	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)
	1	Edge	External Input and Output PCB	CN313	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)
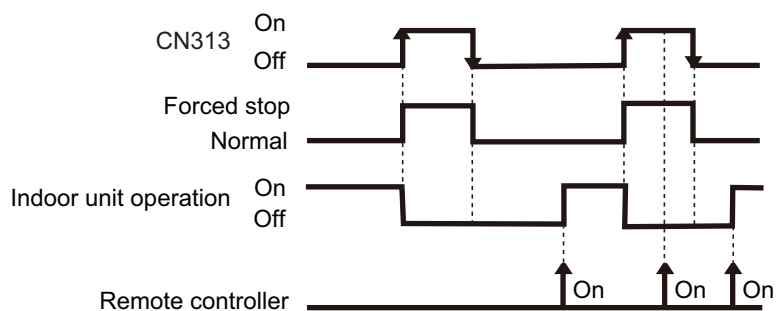
- **In the case of "Pulse" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-02	1	Pulse	External Input and Output PCB	CN313	Pulse	Forced stop (R.C. disabled)
				CN314		Normal (R.C. enabled)
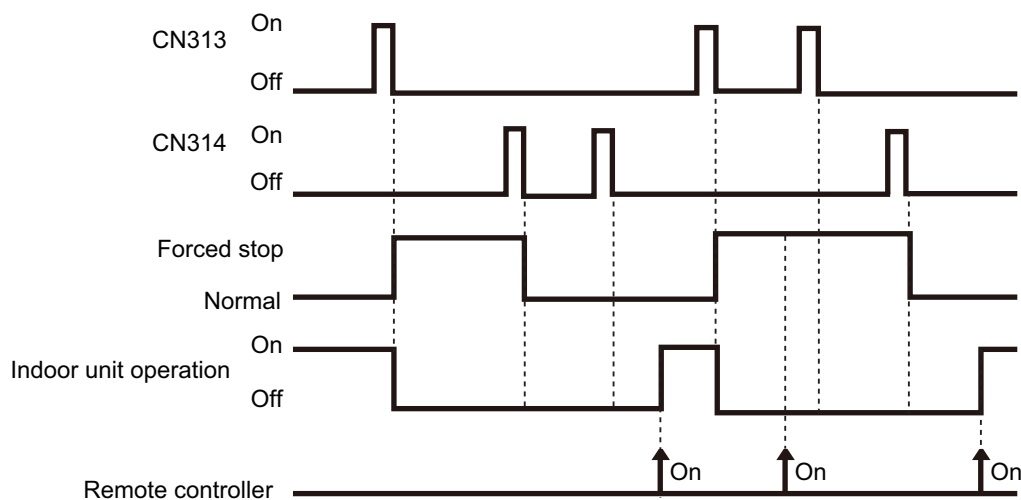
NOTES:

- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Operation/Stop mode 2

• **In the case of "Edge" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-03	—		Input of indoor unit	CN46	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)
	1	Edge	External Input and Output PCB	CN313	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)
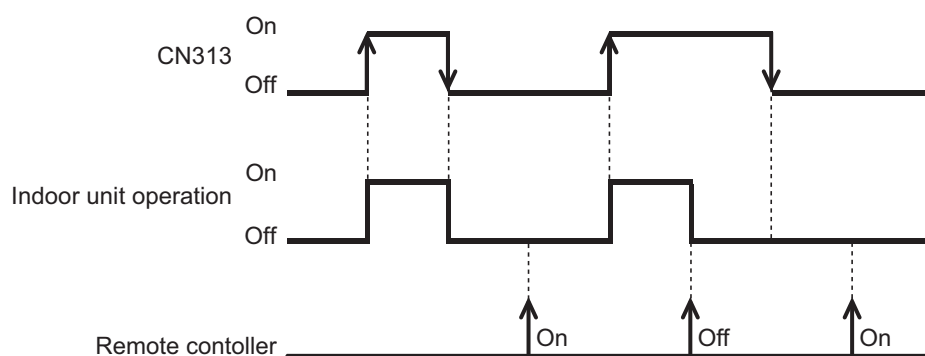
• **In the case of "Pulse" input**

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW302				
46-03	1	Pulse	External Input and Output PCB	CN313	Pulse	Operation (R.C. enabled)
				CN314		Stop (R.C. disabled)
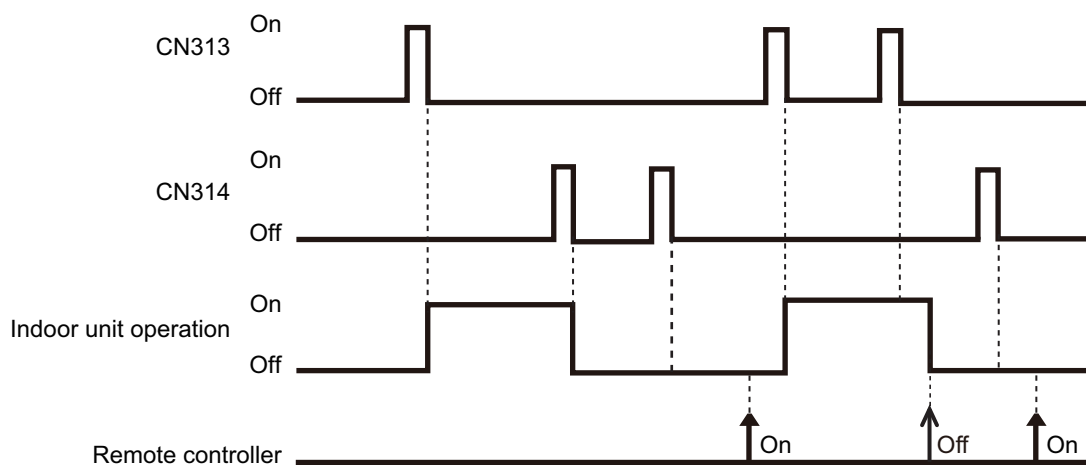
NOTE: When "Operation/Stop" mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Forced thermostat off

External Input and Output PCB	External input		Input signal	Command
Rotary switch				
2, B, C, D	External Input and Output PCB	CN313	Off → On	Thermostat off
			On → Off	Normal operation
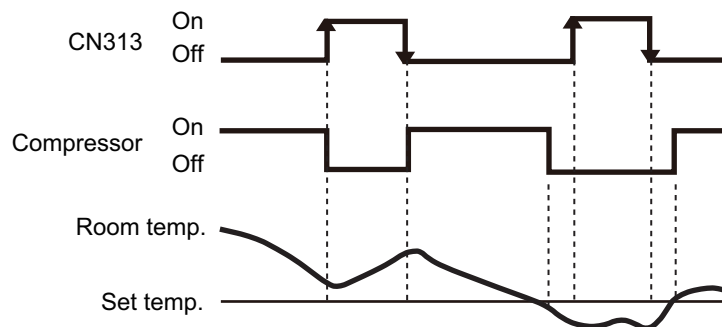
9-5. Details of control output function

■ Operation status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-00	1, 2	Output of indoor unit	CN47	Off → On	Operation
				On → Off	Stop
—	1, B, C, D	External Input and Output PCB	CN310	Off → On	Operation
				On → Off	Stop

The output is low when the unit is stopped.

```
                              On
Indoor unit operation         Off _____|‾‾‾‾‾‾‾‾‾

                              On
            CN47              Off _____|‾‾‾‾‾‾‾‾‾

                              On
            CN310            Off _____|‾‾‾‾‾‾‾‾‾
```
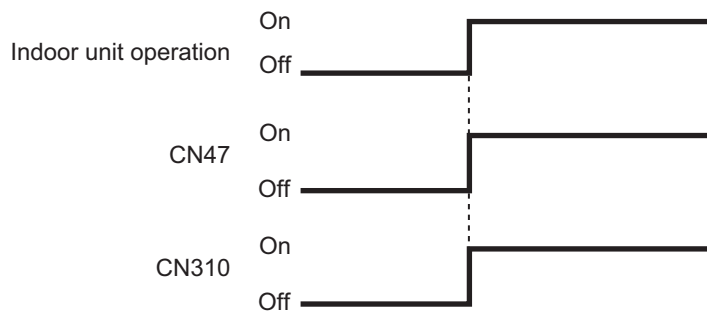
■ Error status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-09	—	Output of indoor unit	CN47	Off → On	Error
				On → Off	Normal
—	2	External Input and Output PCB	CN310	Off → On	Error
				On → Off	Normal
—	1, C	External Input and Output PCB	CN311	Off → On	Error
				On → Off	Normal
—	D	External Input and Output PCB	CN312	Off → On	Error
				On → Off	Normal

The output is on when an error is generated for the indoor unit.
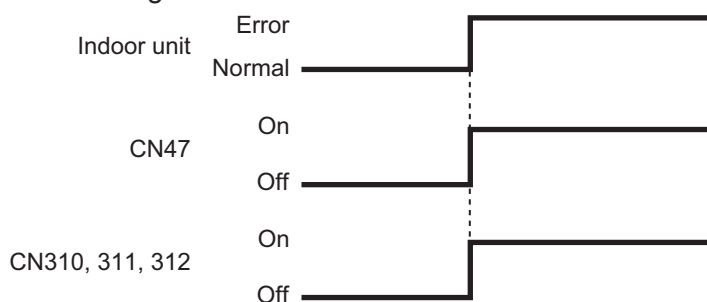
```
                              Error
Indoor unit                   Normal _____|‾‾‾‾‾‾‾‾‾

                              On
            CN47              Off _____|‾‾‾‾‾‾‾‾‾

                              On
      CN310, 311, 312        Off _____|‾‾‾‾‾‾‾‾‾
```

■ Indoor unit fan operation status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-10	C	Output of indoor unit	CN47	Off → On	Fan run
				On → Off	Fan stop
—	2, B, D	External Input and Output PCB	CN311	Off → On	Fan run
				On → Off	Fan stop
—	1	External Input and Output PCB	CN312	Off → On	Fan run
				On → Off	Fan stop

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

Indoor unit — Fan run / Fan stop

CN47 — On / Off

CN311, 312 — On / Off
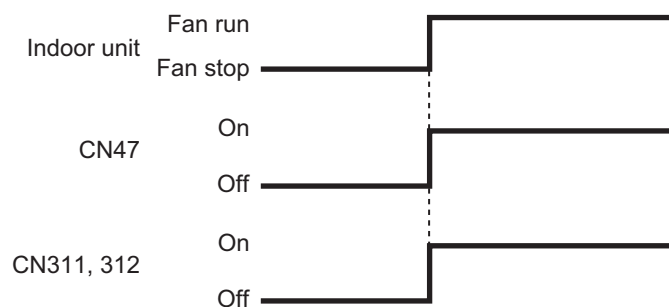
10. Group connection

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.
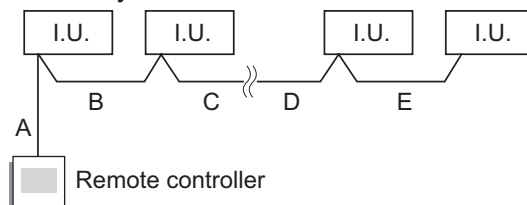
A, B, C, D, E: Remote controller cable	
Wiring length limitation	A + B + C + D + E ≤ 500 m

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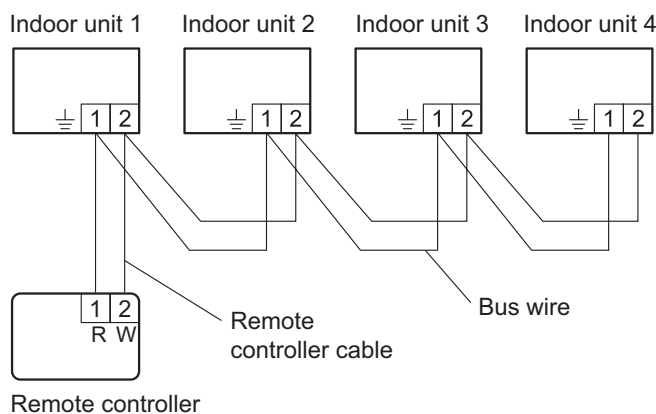
2. Automatic address setting
    After the remote controller connection in the system, the automatic address setting runs in the initial starting up. Do not change the remote controller address for the indoor unit.

11. Remote controller

11-1. Wireless remote controller

■ Overview
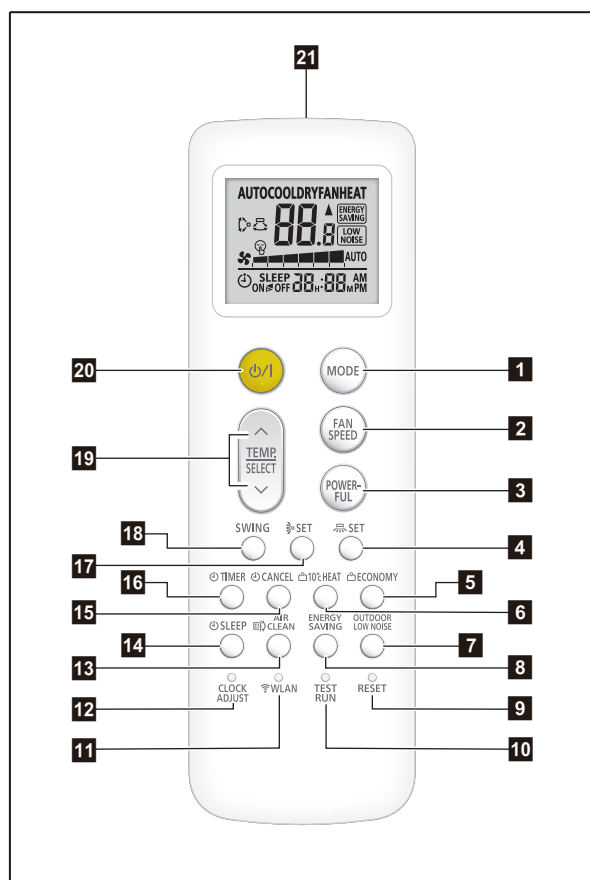
1 MODE button
2 FAN SPEED button
3 POWERFUL button
4 SET button (Left/right airflow)
5 ECONOMY button
6 10 °C HEAT button
7 OUTDOOR LOW NOISE button
8 ENERGY SAVING button
9 RESET button
10 TEST RUN button
11 WLAN button
12 CLOCK ADJUST button
13 AIR CLEAN button
14 SLEEP button
15 CANCEL button
16 TIMER button
17 SET button (Up/down airflow)
18 SWING button
19 TEMP. (Up/down) button
20 START/STOP button
21 Signal transmitter

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

Display panel
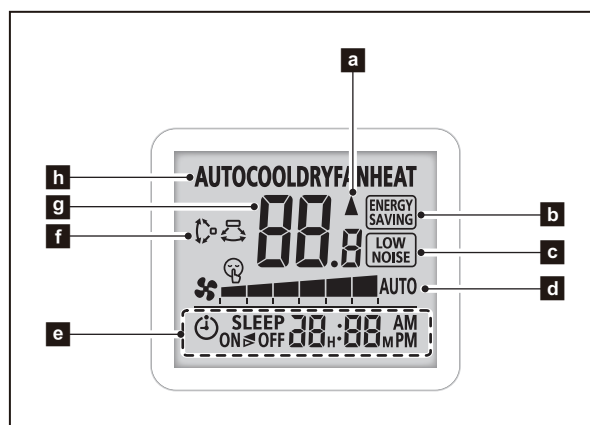
a Signal transmit indicator
b ENERGY SAVING mode indicator
c LOW NOISE mode indicator
d Fan speed indicator
e Clock and Timer indicator
f Swing indicator
g Temperature indicator
h Operating mode indicator

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.

■ Specifications

● Controller

Unit: mm

Top view

181

58

Front view

17

Side view
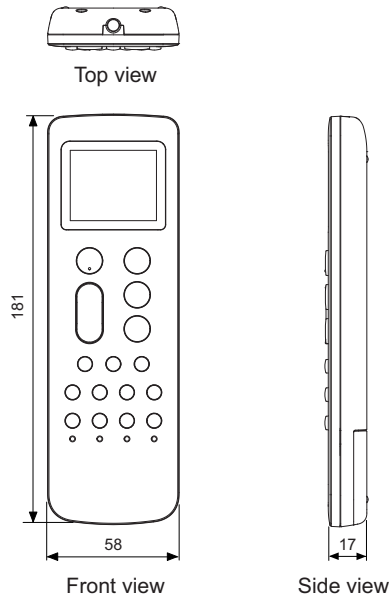
Size (H × W × D)	mm	181 × 58 × 17
Weight	g	116 (without batteries)

● Holder

Unit: mm

Top view

52

80

126.3

Ø 3.9
(Hole)

2-R

3.9

6.4

Hole

62.8

Front view

4.5

26.3

Side view
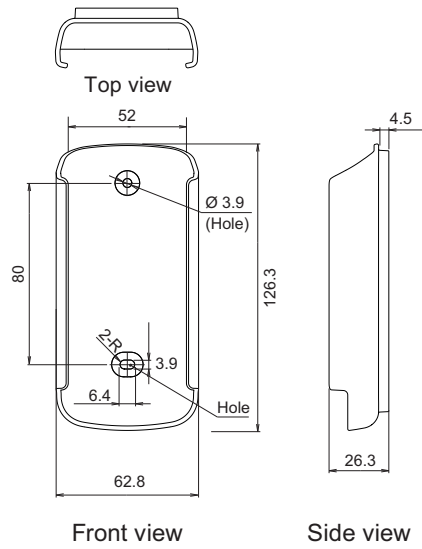
Size (H × W × D)	mm	126.3 × 62.8 × 26.3
Weight	g	28

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 FAN SPEED button and TEMP./SELECT (∧) button simultaneously, press the RESET button to enter the function setting mode.

Function number

Setting value

Selecting the function number and setting value:
1. Press MODE button.
2. Press the TEMP./SELECT (∧) (∨) buttons to select the function number. (Press MODE button to switch between the left and right digits.)
3. Press the FAN SPEED button to proceed to value setting. (Press FAN SPEED button again to return to the function number selection.)
4. Press the TEMP./SELECT (∧) (∨) buttons to select the setting value. (Press MODE button to switch between the left and right digits.)
5. Press the POWERFUL button once. Please confirm the beeping sound.
6. Press the START/STOP button once to fix the Function setting. Please confirm the beeping sound.
7. Press the RESET button to cancel the function setting mode.
8. After completing the function setting, be sure to disconnect the power supply and then reconnect it.
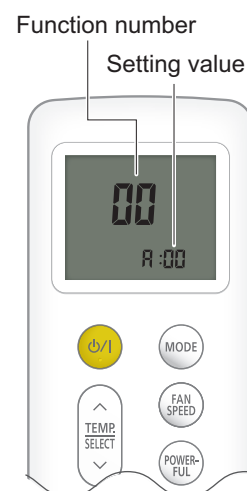
⚠ CAUTION

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)	11	Filter sign
2)	30/31	Room temperature control for indoor unit sensor
3)	35/36	Room temperature control for wired remote controller sensor
4)	40	Auto restart
5)	42	Room temperature sensor switching
6)	44	Remote controller custom code
7)	46	External input control
8)	48	Room temperature sensor switching (Aux.)
9)	49	Indoor unit fan control for energy saving for cooling
10)	60	Switching functions for external output terminal

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) 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		

3) 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		

4) 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.

5) 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.

6) 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	

7) 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)	

8) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01).

This function will only work if the function setting 42 is set at "Both" (01).

When the setting value is set to "Both" (00), more suitable control of the room temperature is possible by setting function setting 30 and 31 too.

Function number	Setting value	Setting description	Factory setting
48	00	Both	♦
	01	Wired remote controller	

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

12-2. 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 �.)

3. Press the TEMP./SELECT (∧) (∨) buttons to change the custom code between 𝐴 →𝑏 →𝑐 →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.
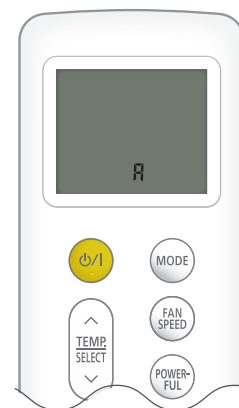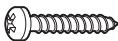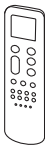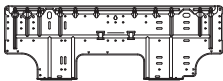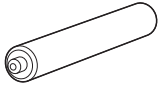
NOTES:
*   If no button is pressed within 30 seconds after the custom code is displayed, the system returns to the original clock indicator. In this case, start again from step 1.
*   The air conditioner custom code is set to 𝐴 prior to shipment. To change the custom code, contact your retailer.
*   If you do not know the assigned code for the air conditioner, try each of the custom code (𝐴 →𝑏 →𝑐 →𝑑) until you find the code which operates the air conditioner.
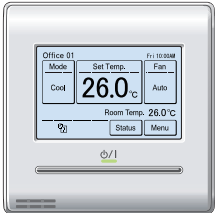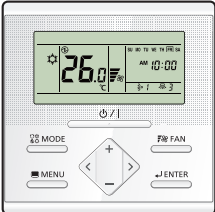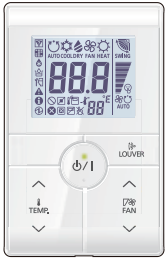
13. Accessories

13-1. Models: ASEH09KHCBN, ASEH12KHCBN, and ASEH14KHCBN

Part name	Exterior	Qty	Part name	Exterior	Qty
Operation manual		1	Self-tapping screw (Large)		5
Installation manual		1	Self-tapping screw (Small)		2
Remote controller		1	Wall hook bracket		1
Remote controller holder		1	Cloth tape		1
Air cleaning filter		2	Battery		2
Filter holder		2			

14. Optional parts

14-1. Controllers
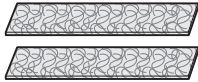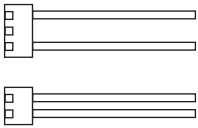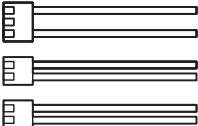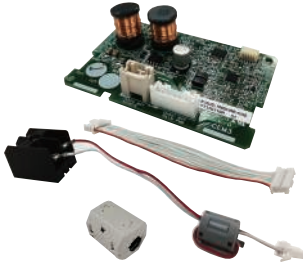
Exterior	Part name	Model name	Summary
	Wired Remote Controller	UTY-RNRYZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Wired Remote Controller	UTY-RLRY	High visibility and easy operation. Room temperature can be accurately controlled using the 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 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

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
	Air Cleaning Filter	UTR-FA16-5	Air Cleaning Filter can be mounted to the indoor unit.
	External Connect Kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PCB. Connecting point: CN46 and CN47 on Main PCB
	External Connect Kit	UTY-XWZXZ5	Required when external device is connected. Connecting point: CN46 and CN47 on Main PCB
	External Input and Output PCB	UTY-XCSXZ3	Use to connect with external devices and air conditioner PCB. Optional External Connect Kit is necessary for installation. Connecting point: CN65 on Main PCB
	Communication Kit	UTY-TWRXZ4	Use to connect Non-polar 2-core wired remote controller.
	Modbus Converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network. Connecting point: CN65 on Main PCB
	KNX Convertor	UTY-VKSX	For connection between indoor unit with UART interface and a KNX open network. Connecting point: CN65 on Main PCB
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system. Connecting point: CN13 via Communication Kit
	Network Converter (AC power supply)	UTY-VTGXV	This converter is required when connecting single split system to VRF network system. Connecting point: CN13 via Communication Kit
	External Switch Controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches. Connecting point: CN13 via Communication Kit

14-2. Others

14. Optional parts

Part 2. OUTDOOR UNIT

SINGLE TYPE:

AOEH09KHCBN

AOEH12KHCBN

AOEH14KHCBN

1. Specifications

Type				Inverter, Heat pump		
Model name				AOEH09KHCBN	AOEH12KHCBN	AOEH14KHCBN
Power supply				230 V~ 50 Hz		
Power supply intake				Outdoor unit		
Available voltage range				207—253 V		
Starting current			A	2.5	3.4	5.0
Fan	Airflow rate	Cooling	m³/h	1,850	2,630	2,530
		Heating		1,690	2,140	2,070
	Type × Qty			Propeller fan × 1		
	Motor output		W	49		
Sound pressure level*		Cooling	dB (A)	44	48	51
		Heating		44	49	
Sound power level		Cooling	dB (A)	57	61	64
		Heating		55	59	60
Heat exchanger type	Dimensions (H × W × D)		mm	Main 1: 588 × 881 × 18.19 Main 2: 588 × 851 × 18.19	Main 1: 672 × 881 × 18.19 Main 2: 672 × 851 × 18.19	Main 1: 672 × 873 × 18.19 Main 2: 672 × 845 × 18.19 Main 3: 672 × 784 × 18.19
	Fin pitch			Main 1: 1.30 Main 2: 1.30	Main 1: 1.30 Main 2: 1.30	Main 1: 1.45 Main 2: 1.45 Main 3: 1.45
	Rows × Stages			Main 1: 1 × 28 Main 2: 1 × 28	Main 1: 1 × 32 Main 2: 1 × 32	Main 1: 1 × 32 Main 2: 1 × 32 Main 3: 1 × 32
	Pipe type			Copper tube		
	Fin type	Type (Material)		Aluminum		
		Surface treatment		PC fin		
Compressor	Type			DC rotary		
	Motor output		W	925		1,060
Refrigerant	Type			R32 (675)		
	Charge		g	1,220	1,320	1,390
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	716 × 820 × 315	
	Gross			692 × 940 × 375	776 × 961 × 450	
Weight	Net		kg	39	42	45
	Gross			43	47	50
Connection pipe	Size	Liquid	mm (in)	Ø6.35 (Ø1/4)		
		Gas		Ø9.52 (Ø3/8)		
	Method			Flare		
	Pre-charge length			15		
	Max. length		m	20		
	Max. height difference			15		
	Max. height difference		g/m	20		
Operation range	Cooling		°C	-10 to 50		
	Heating			-30 to 24		

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.
- *: 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.
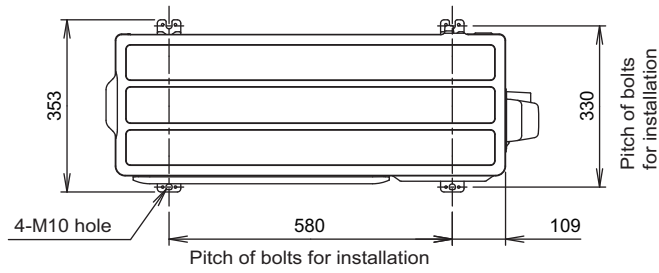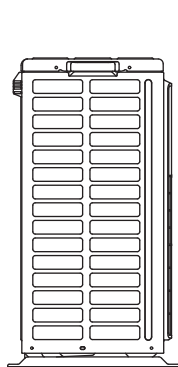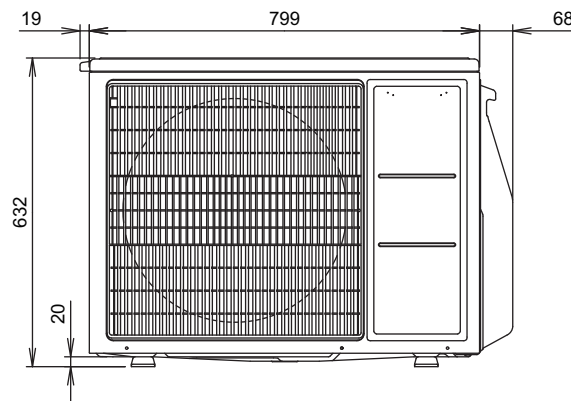
2. Dimensions

2-1. Model: AOEH09KHCBN

Unit: mm

353 | 330

Pitch of bolts for installation

4-M10 hole | 580 | 109

Pitch of bolts for installation

Top view

19 | 799 | 68 | 16 | 290

632

20

33 | 30

Side view | Front view | Side view

Airflow

37

Drain port Ø42 | 399

120 | 184

180
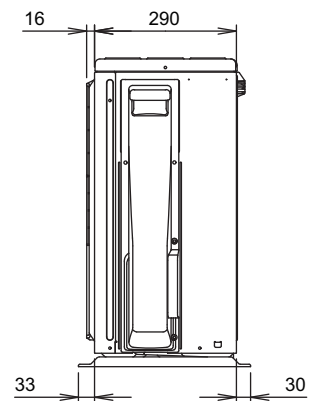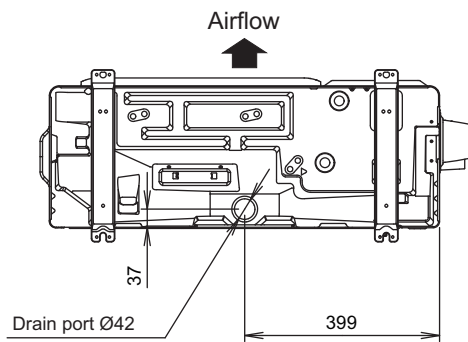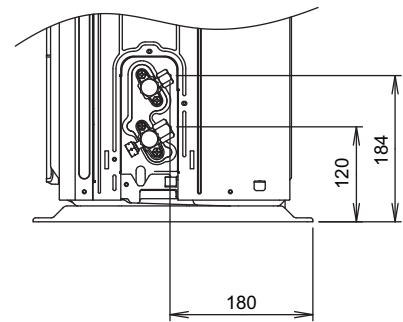
Bottom view | Side view (Valve part)

2-2. Models: AOEH12KHCBN and AOEH14KHCBN

Unit: mm

353

330

Pitch of bolts
for installation

4-M10 hole

600

109

Pitch of bolts for installation

19

820

68

13

315

716

20

Side view

Front view

20

18

Side view

Airflow

37

Drain port Ø42

410

119

184

194

Bottom view

Side view (Valve part)
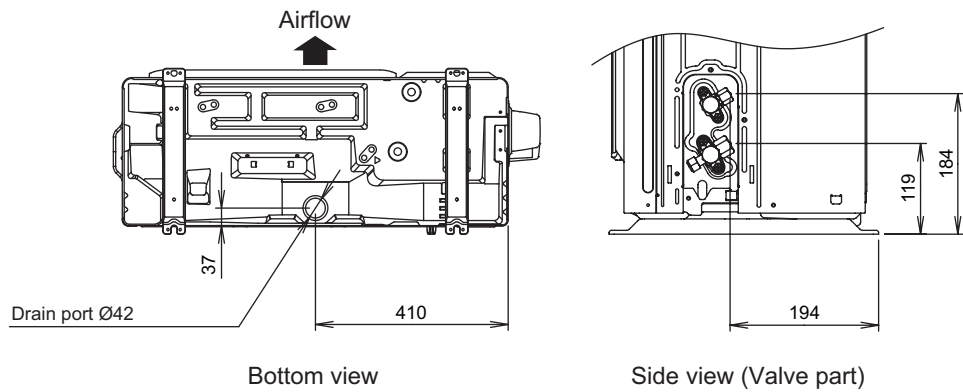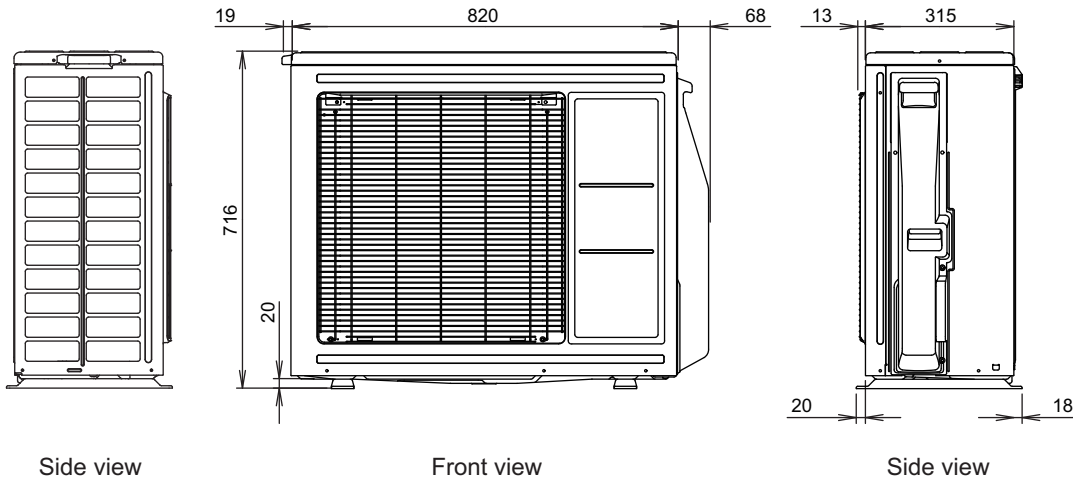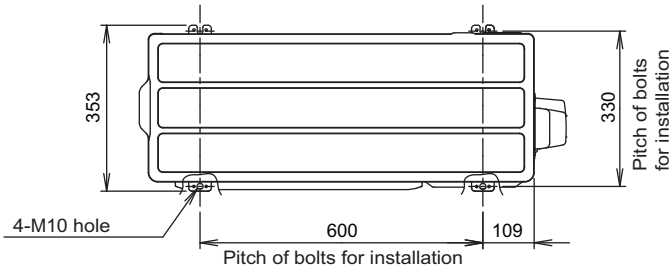
3. Installation space

3-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

■ 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.
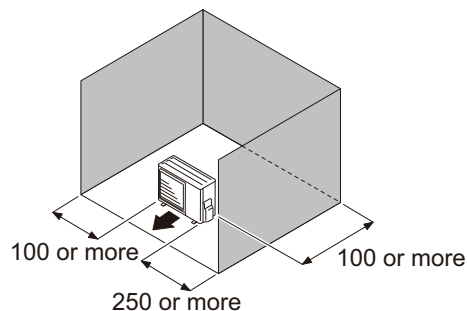
● Single outdoor unit installation
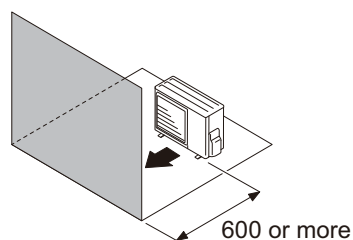
- **When the upper space is open:**
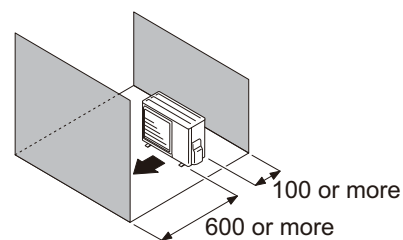
Unit: mm

Obstacles at rear only
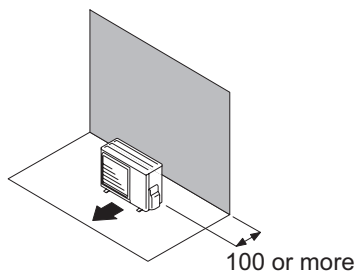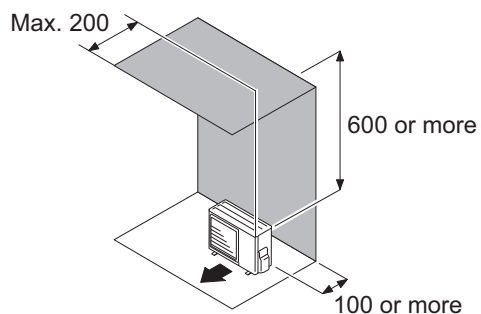
Obstacles at rear and sides

Obstacles at front

Obstacles at front and rear
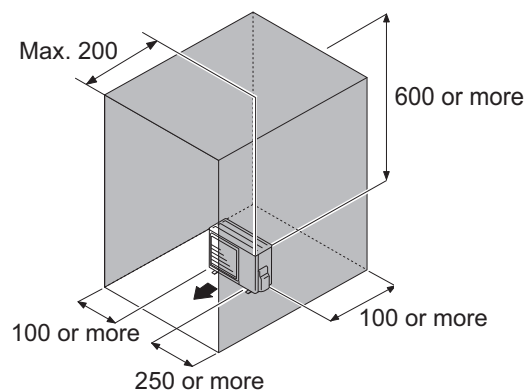
- **When an obstruction in the upper space:**

Unit: mm

Obstacles at rear and above

Obstacles at rear, sides, and above

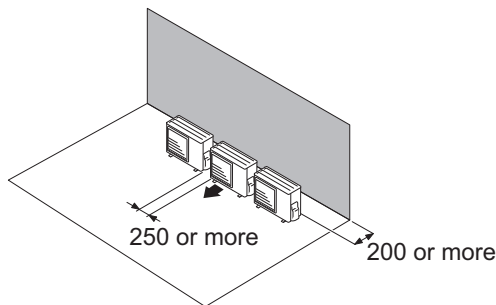3-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

3. Installation space
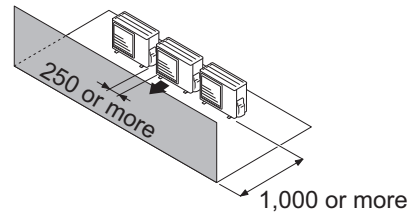
● Multiple outdoor unit installation

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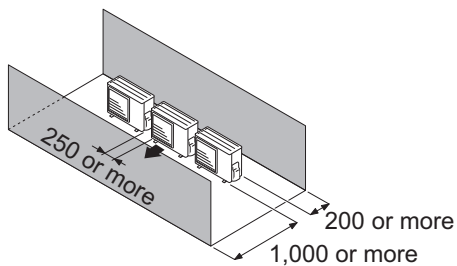
- **When the upper space is open:**

Unit: mm

Obstacles at rear only

Obstacles at front only

250 or more
200 or more

1,000 or more

Obstacles at front and rear

250 or more
200 or more
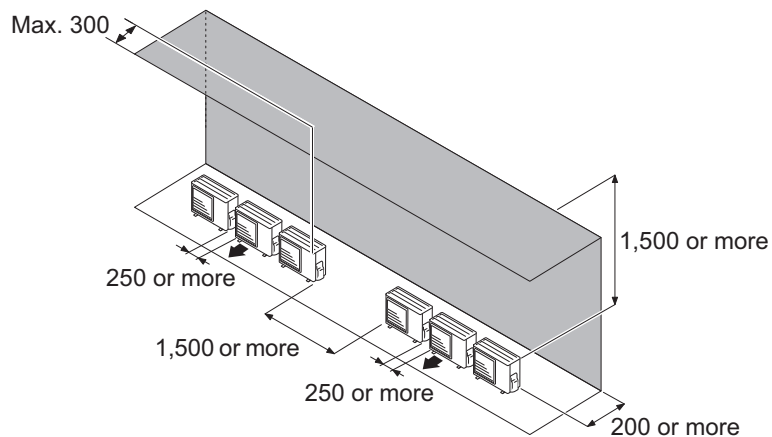1,000 or more

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

Unit: mm

Obstacles at rear and above.

Max. 300

250 or more

1,500 or more

250 or more

1,500 or more

200 or more

3-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN
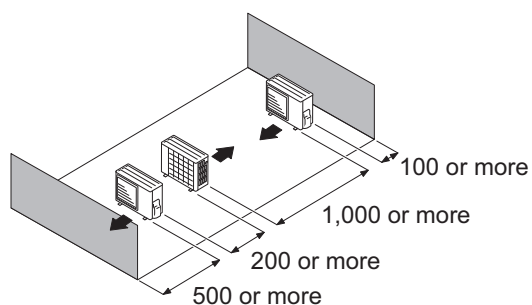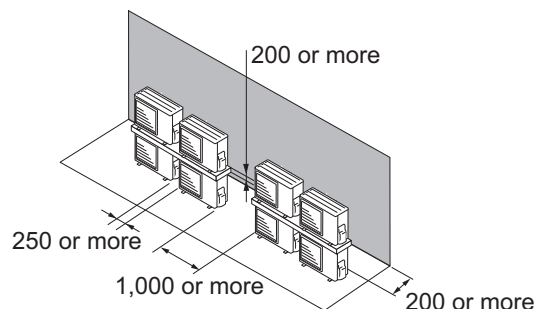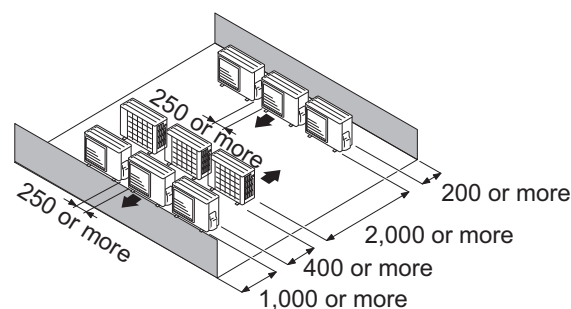
3. Installation space

● Outdoor units installation in multi-row

Unit: mm

Single parallel unit arrangement

Multiple parallel unit arrangement

100 or more
1,000 or more
200 or more
500 or more

250 or more
250 or more
200 or more
2,000 or more
400 or more
1,000 or more
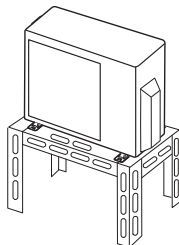
200 or more
250 or more
1,000 or more
200 or more

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.
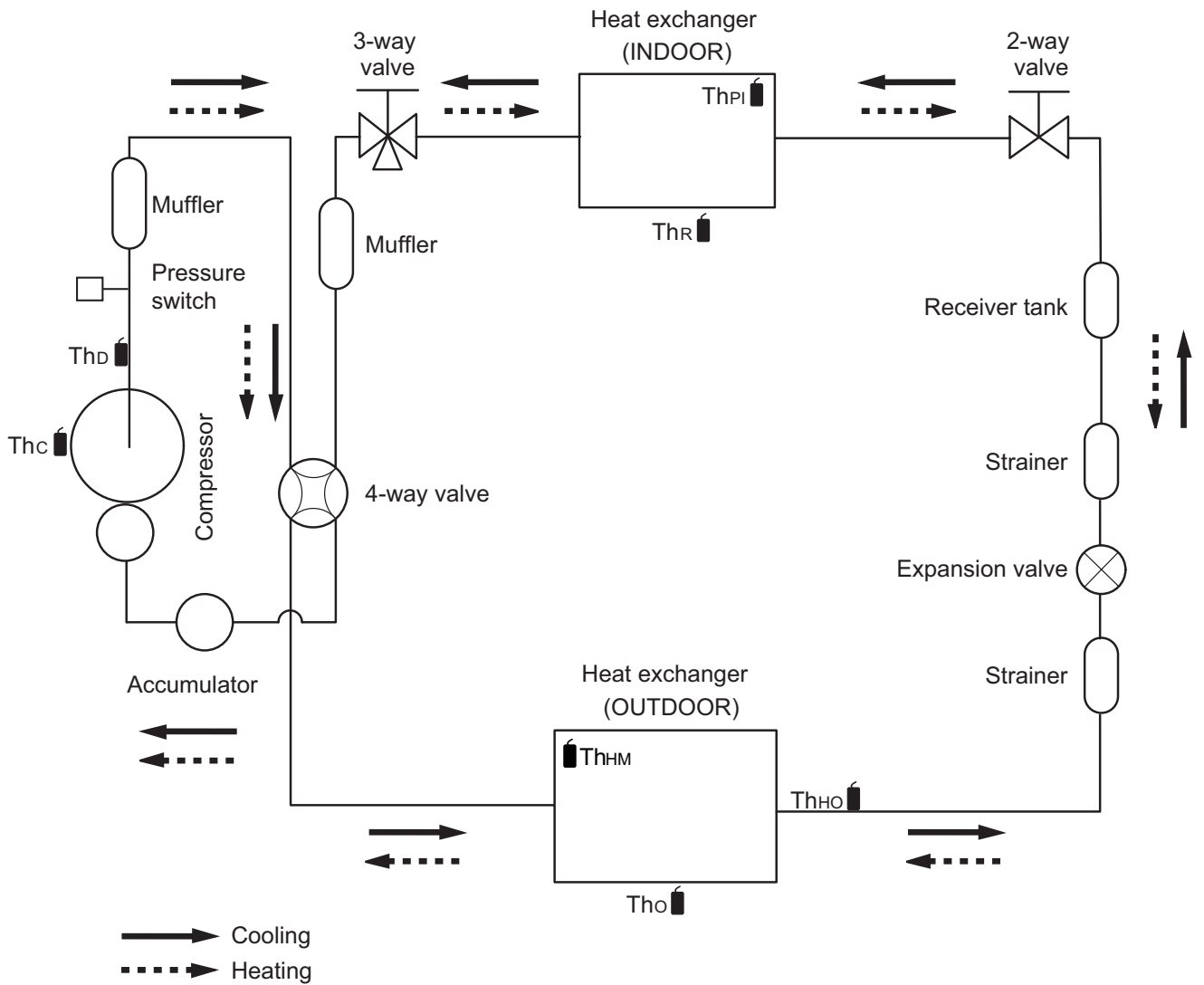
3-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

3. Installation space

4. Refrigerant circuit

4-1. Models: AOEH09KHCBN and AOEH12KHCBN

Heat exchanger (INDOOR)

3-way valve

2-way valve

Th_{PI}

Th_R

Muffler

Muffler

Pressure switch

Receiver tank

Th_D

Th_C

Compressor

4-way valve

Strainer

Expansion valve

Strainer

Accumulator

Heat exchanger (OUTDOOR)

Th_{HM}

Th_{HO}

Th_O

→ Cooling

▪▪▪▪▶ Heating

Th_C : Thermistor (Compressor temperature)

Th_D : Thermistor (Discharge temperature)

Th_{HM} : Thermistor (Heat exchanger middle temperature)

Th_O : Thermistor (Outdoor temperature)

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

Th_{PI} : Thermistor (Pipe temperature)

Th_R : Thermistor (Room temperature)

4-2. Model: AOEH14KHCBN

Heat exchanger
(INDOOR)

3-way valve

2-way valve

Th$_{PI}$

Th$_{R}$

Muffler

Muffler

Pressure switch

Th$_{D}$

Th$_{C}$

Compressor

4-way valve

Strainer

Expansion valve

Strainer

Accumulator

Heat exchanger
(OUTDOOR)

Th$_{HM}$

Th$_{HO}$

Th$_{O}$

→ Cooling

┅┅► Heating

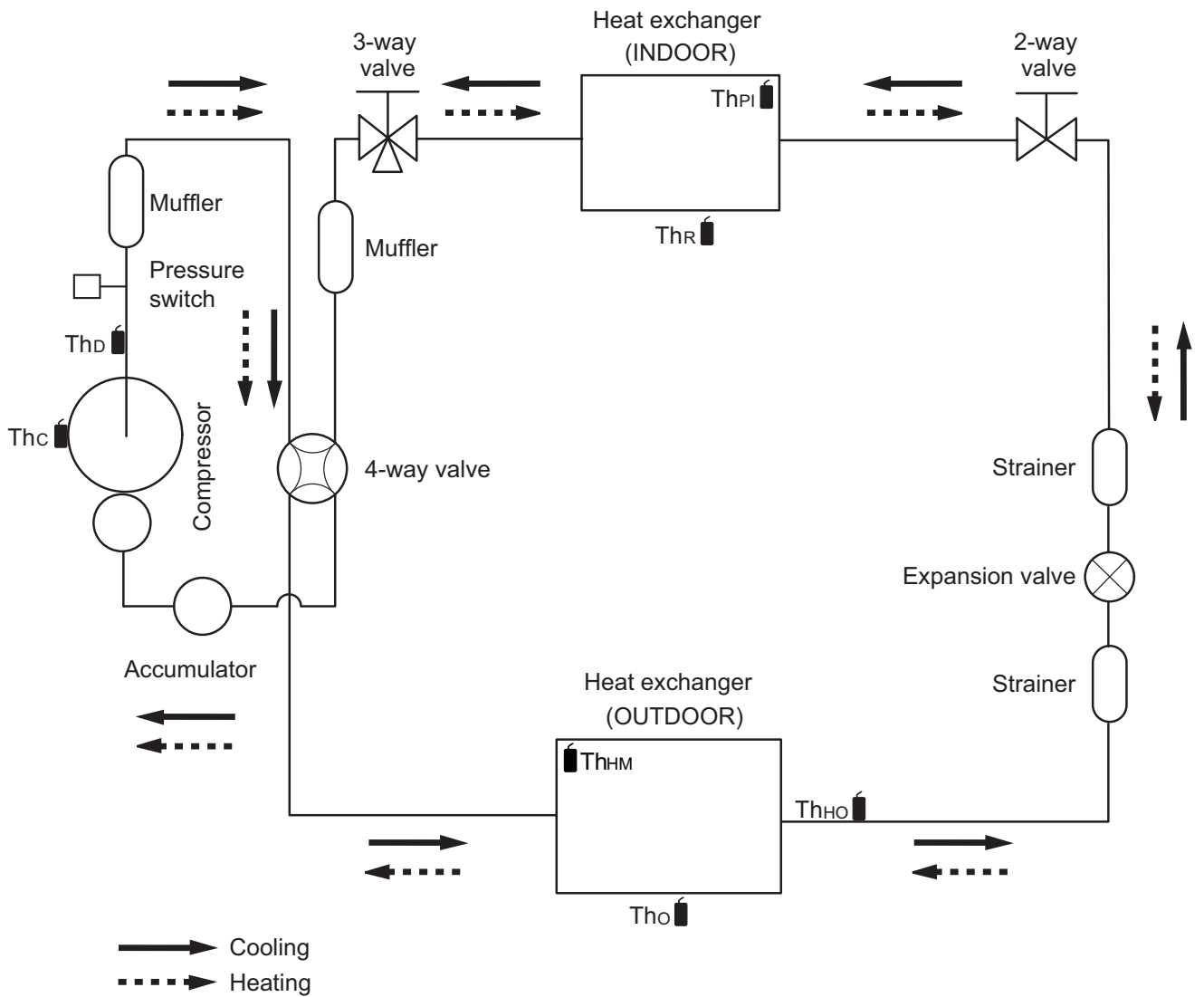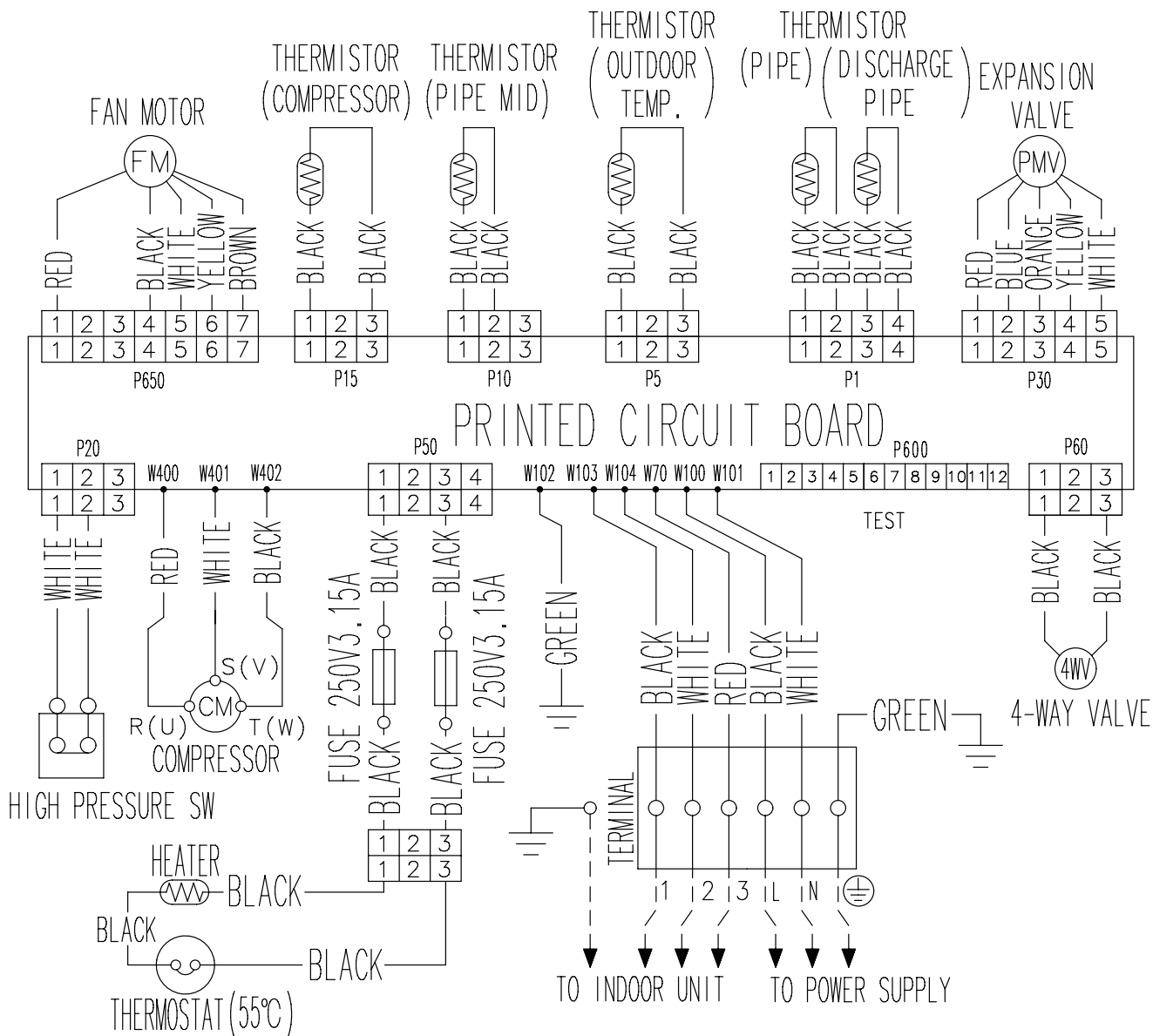Th$_{C}$: Thermistor (Compressor temperature)

Th$_{D}$: Thermistor (Discharge temperature)

Th$_{HM}$: Thermistor (Heat exchanger middle temperature)

Th$_{O}$: Thermistor (Outdoor temperature)

Th$_{HO}$: Thermistor (Heat exchanger out temperature)

Th$_{PI}$: Thermistor (Pipe temperature)

Th$_{R}$: Thermistor (Room temperature)
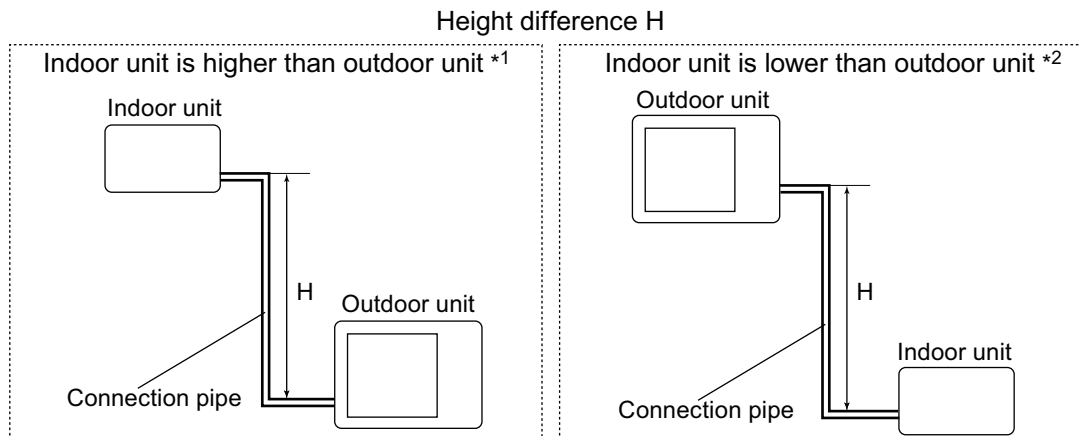
5. Wiring diagrams

5-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

6. Capacity compensation rate for pipe length and height difference

Height difference H

Indoor unit is higher than outdoor unit *1

Indoor unit

H

Connection pipe

Outdoor unit

Indoor unit is lower than outdoor unit *2

Outdoor unit

H

Connection pipe

Indoor unit

6-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

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	—	—	—	0.939	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
		0	1.000	0.991	0.981	0.963	0.946
	Indoor unit is lower than outdoor unit *2	-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)				
			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
		0	1.000	0.976	0.952	0.903	0.887
	Indoor unit is lower than outdoor unit *2	-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	—	—	—	0.890	0.875

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6-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN   6. Capacity compensation rate for pipe length and height difference

OUTDOOR UNIT
AOEH09–14KHCBN

7. Additional charge calculation

7-1. Model: AOEH09KHCBN

Refrigerant type		R32
Factory charge amount	g	1,220

■ Refrigerant charge

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

7-2. Model: AOEH12KHCBN

Refrigerant type		R32
Factory charge amount	g	1,320

■ Refrigerant charge

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

7-3. Model: AOEH14KHCBN

Refrigerant type		R32
Factory charge amount	g	1,390

■ 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: AOEH09KHCBN

● Cooling

m³/h	1,850
l/s	514
CFM	1,089

● Heating

m³/h	1,690
l/s	469
CFM	995

8-2. Model: AOEH12KHCBN

● Cooling

m³/h	2,630
l/s	731
CFM	1,548

● Heating

m³/h	2,140
l/s	594
CFM	1,260

8-3. Model: AOEH14KHCBN

● Cooling

m³/h	2,530
l/s	703
CFM	1,489

● Heating

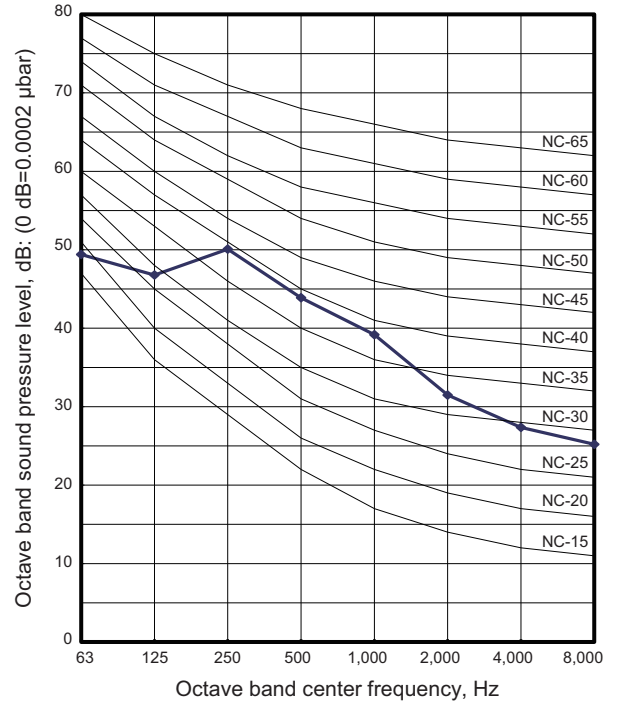| m³/h	2,070
l/s	575
CFM	1,218

9. Operation noise (sound pressure)

9-1. Noise level curve

■ AOEH09KHCBN

● Cooling
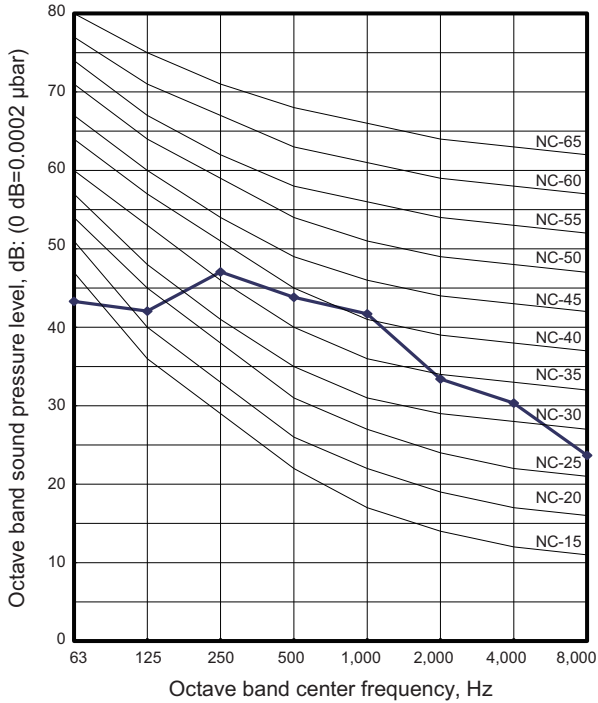
● Heating
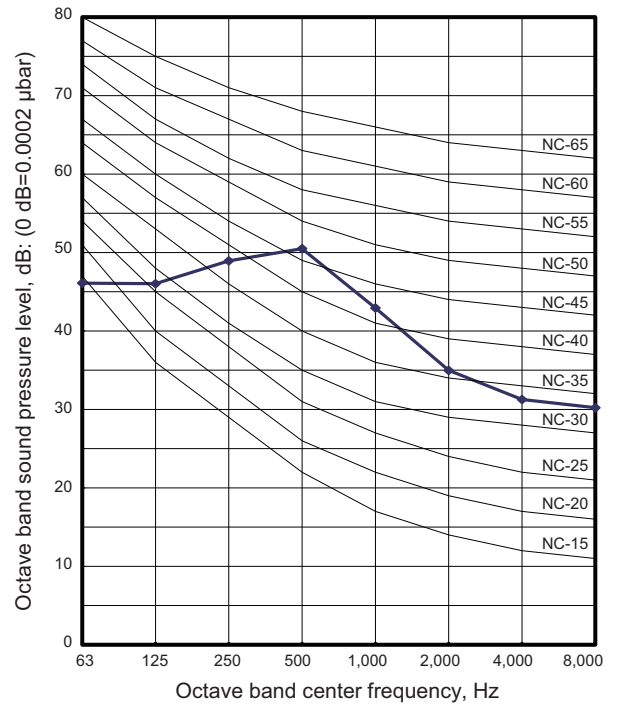

■ AOEH12KHCBN

● Cooling
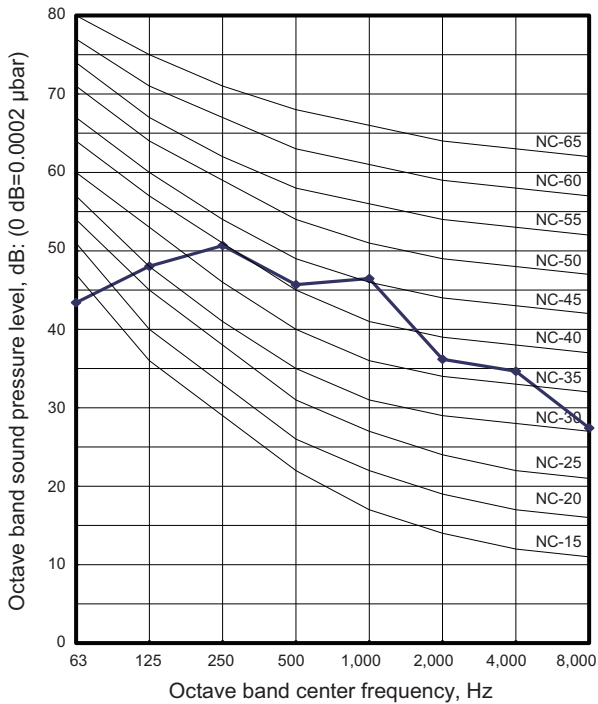
● Heating
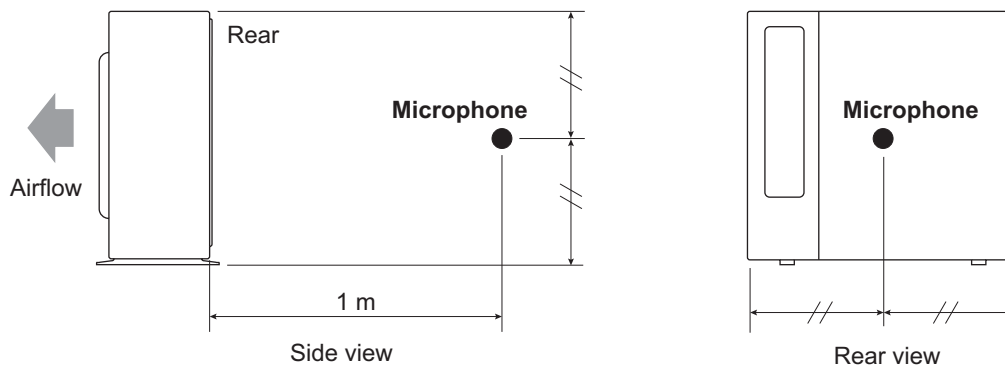
■ AOEH14KHCBN

● Cooling
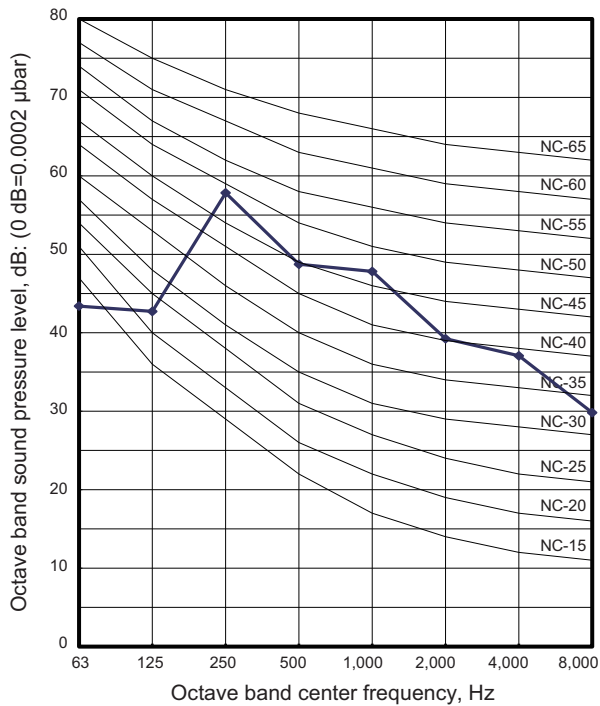
● Heating
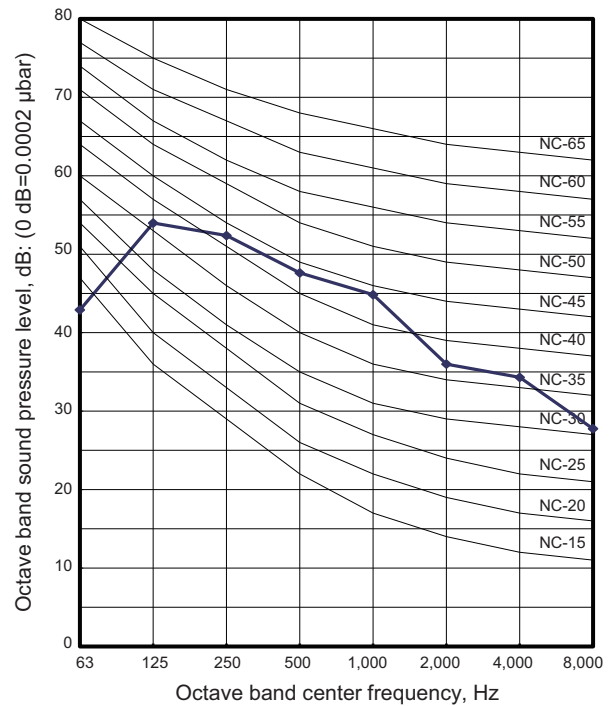
9-2. Sound level check point

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

9-1. Noise level curve

9. Operation noise (sound pressure)

10. Electrical characteristics

Model name			AOEH09KHCBN	AOEH12KHCBN	AOEH14KHCBN
Power supply	Voltage	V	230		
	Frequency	Hz	50		
Max operating current*1		A	9.5	12.5	15.5
Starting current		A	2.5	3.4	5.0
Wiring spec.*2	Circuit breaker current	A	13	15	20
	Power cable	mm²	1.5	2.5	
	Connection cable*3 — Cross-sectional area	mm²	1.5		
	Connection cable*3 — 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		
			AOEH09KHCBN	AOEH12KHCBN	AOEH14KHCBN
Circuit protection	Current fuse (PCB*)		250 V, 25 A		
			250 V, 5 A		
	Current fuse (Base pan heater)		250 V, 3.15 A		
Fan motor protection	Thermal protection program	Activate	125 ±10°C Fan motor stop		
		Reset	120 ±10°C Fan motor restart		
Compressor protection	Thermal protection program (Compressor temp.)	Activate	108°C Compressor stop		
		Reset	After 3 minutes, and 80°C or less Compressor restart		
	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		

*PCB: Printed Circuit Board

OUTDOOR UNIT
AOEH09–14KHCBN

12. Accessories

12-1. Models: AOEH09KHCBN, AOEH12KHCBN, and AOEH14KHCBN

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1			