AIRSTAGE

AIR CONDITIONER

Wall mounted type

FUJITSU

REFRIGERANT R32

INVERTER

DESIGN & TECHNICAL MANUAL

INDOOR		ASUH09KMAS ASUH12KMAS
OUTDOOR		AOUH09KMAS1 AOUH12KMAS1

FUJITSU GENERAL LIMITED

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Part 1. INDOOR UNIT

WALL MOUNTED TYPE:

ASUH09KMAS
ASUH12KMAS

WALL MOUNTED
ASUH09-12KMAS

1. Specifications

Type					Wall mounted	
					Inverter, Heat pump	
Model name					ASUH09KMAS	ASUH12KMAS
Power supply intake					Outdoor unit	
System power supply		Voltage		V	208/230	
		Frequency		Hz	60	
		Available voltage range		V	187—253	
Indoor unit power supply (from outdoor unit)				V	208/230	
Capacity	Cooling		Rated	kW	2.64	3.52
				Btu/h	9,000	12,000
			Min.—Max.	kW	0.90—3.55	0.90—4.05
				Btu/h	3,100—12,100	3,100—13,800
	Heating	47°FDB (Outdoor temp.)	Rated	kW	3.52	4.10
				Btu/h	12,000	14,000
			Min.—Max.	kW	0.82—4.25	0.82—4.40
				Btu/h	2,800—14,500	2,800—15,000
		17°FDB (Outdoor temp.)*1	Rated	kW	2.16	2.55
				Btu/h	7,400	8,700
			Max.	kW	3.68	3.88
				Btu/h	12,600	13,200
		5°FDB (Outdoor temp.)*2	Rated	kW	3.02	3.10
				Btu/h	10,300	10,600
			Max.	kW	3.02	3.10
				Btu/h	10,300	10,600
Input power	Cooling		Rated	kW	0.55	0.89
			Min.—Max.		0.13—0.94	0.13—1.24
	Heating	47°FDB (Outdoor temp.)	Rated		0.76	0.95
			Min.—Max.		0.14—1.61	0.14—1.76
		17°FDB (Outdoor temp.)*1	Rated		0.67	0.82
			Max.		1.41	1.46
		5°FDB (Outdoor temp.)*2	Rated		1.30	1.30
			Max.		1.30	1.30
	Fan		HIGH	W	22.9	
			MED		14.1	
			LOW		8.8	
			QUIET		4.0	
Current		Cooling	Rated	A	2.9	4.3
		Heating			3.8	4.6
EER2		Cooling		Btu/hW	16.4	13.5
COP2		Heating		kW/kW	4.64	4.32
SEER2		Cooling		Btu/hW	30.0	27.5
HSPF2		Heating			12.6	11.2
Power factor		Cooling		%	82.5	90.0
		Heating			87.0	89.8
Moisture removal				pints/h (L/h)	2.9 (1.38)	3.7 (1.73)
Maximum operating current*3		Cooling		A	6.4	6.9
		Heating			9.4	
Fan	Airflow rate	Cooling	HIGH	CFM (m^3/h)	400 (680)	
			MED		324 (550)	
			LOW		253 (430)	
			QUIET		153 (260)	
		Heating	HIGH		441 (750)	
			MED		371 (630)	
			LOW		300 (510)	
			QUIET		188 (320)	
	Type × Qty				Crossflow fan × 1	
	Motor output			W	49	
Sound pressure level*4		Cooling	HIGH	dB (A)	40	
			MED		35	
			LOW		30	
			QUIET		19	
		Heating	HIGH		42	
			MED		38	
			LOW		33	
			QUIET		21	
Heat exchanger type		Dimensions (H × W × D)		in (mm)	Main 1: 8-1/4 × 26-5/16 × 1-1/16 (210 × 668 × 26.6) Main 2: 4-7/16 × 26-5/16 × 13/16 (112 × 668 × 20.0) Sub: 3-5/16 × 26-5/16 × 1/2 (84 × 668 × 13.3)	
		Fin pitch		FPI	Main1: 21 Main2: 23 Sub: 18	
		Rows × Stages			Main1: 2 × 10 Main2: 2 × 7 Sub: 1 × 4	
		Pipe type			Copper tube	
		Fin type			Aluminum	
Enclosure		Material			Polystyrene	
		Color			White Approximate color of Munsell N9.25/	
Dimensions (H × W × D)	Net			in (mm)	10-5/8 × 32-13/16 × 8-3/4 (270 × 834 × 222)	
	Gross				10-7/8 × 36 × 13-1/16 (277 × 914 × 332)	
Weight	Net			lb (kg)	22 (10)	
	Gross				28 (12.5)	
Connection pipe	Size	Liquid		in (mm)	Ø1/4 (Ø6.35)	
		Gas			Ø3/8 (Ø9.52)	
	Method				Flare	
Drain hose	Material				Polyvinyl chloride	
	Tip diameter			in (mm)	Ø17/32 (Ø13.8) (I.D.), Ø19/32 to 21/32 (Ø15 to 16.8) (O.D.)	

WALL MOUNTED
ASUH09-12KMAS

Type			Wall mounted	
			Inverter, Heat pump	
Model name			ASUH09KMAS	ASUH12KMAS
Operation range	Cooling	°F (°C)	64 to 90 (18 to 32)	
		%RH	80 or less	
	Heating	°F (°C)	60 to 86 (16 to 30)	
Remote controller type			Wireless (Option: Wired, Mobile app*5 [AIRSTAGE Mobile])	

NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB).
  - Heating: Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/6.11°CWB).
  - *1: Heating (17°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 17°FDB/15°FWB (-8.33°CDB/-9.44°CWB).
  - *2: Heating (5°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 5°FDB/4°FWB (-15.0°CDB/-15.56°CWB).
  - Test conditions are based on AHRI 210/240 2023.
  - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *3: Maximum current:
  - The maximum value when operated within the operation range.
  - The total current of indoor unit and outdoor unit.
- *4: 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.
- *5: Available on Google Play™ store or on App Store®.

WALL MOUNTED
ASUH09-12KMAS

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/

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2-2. Wireless LAN function list

NOTE: To use the wireless LAN control, user registration in advance and access to the wireless home network are required.

Item			Mobile app	Attached Wireless Remote Controller
Air conditioning control function	Operation on/off		○	○
	Operation mode setting		○	○
	Set temperature setting		○	○
	Fan speed setting		○	○
	Airflow direction setting	Louver position adjustment • Up/down	○	○
		Swing • Up/down	○	○
	Timer operation	Off timer	—	○
		On timer	—	○
		Sleep timer	—	○
		On/off program timer	—	○
		Weekly timer*2	○	○
Additional function	POWERFUL operation setting		○*1	○*1
	ECONOMY operation setting		○	○
	MIN. HEAT operation setting		○*1	○*1
	Room temperature indication		○	—
	Fan control for energy saving		○	○
	Outdoor unit low noise operation setting		○*1	○*1

*1: Not operable when Wired Remote Controller is connected.

*2: Configurable functions of the weekly timer differs on Wireless Remote Controller and on mobile application. If timer settings are done from mobile application and from Wireless Remote Controller, both timer settings will be active.

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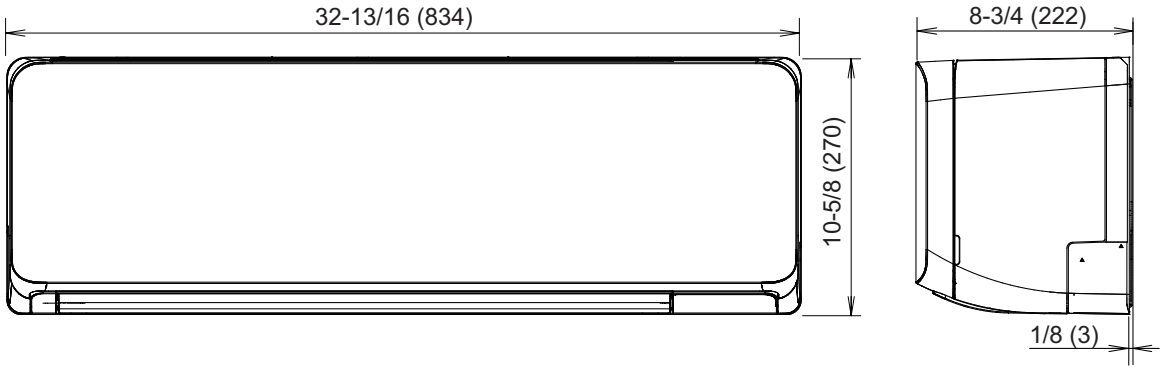
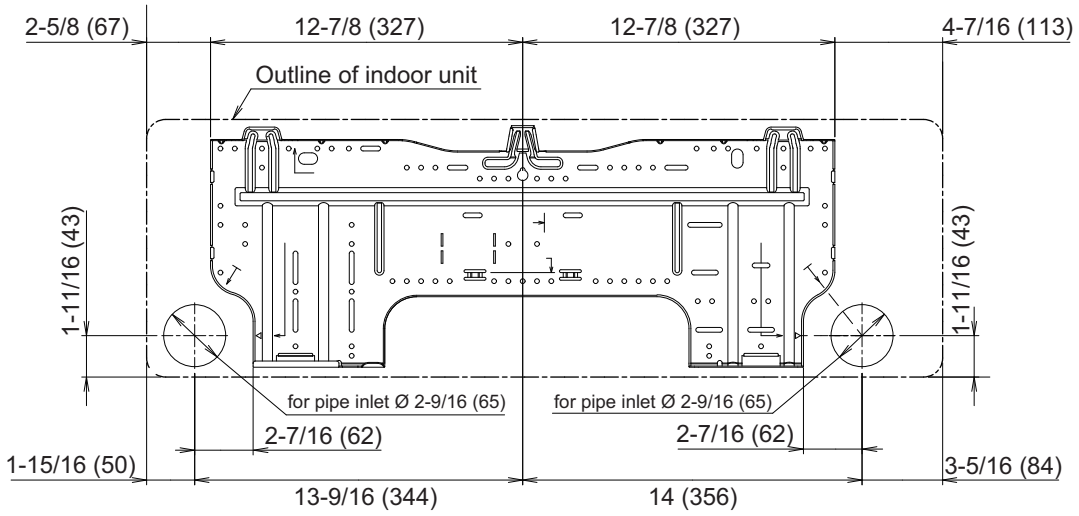
3. Dimensions

3-1. Models: ASUH09KMAS and ASUH12KMAS

Unit: in (mm)





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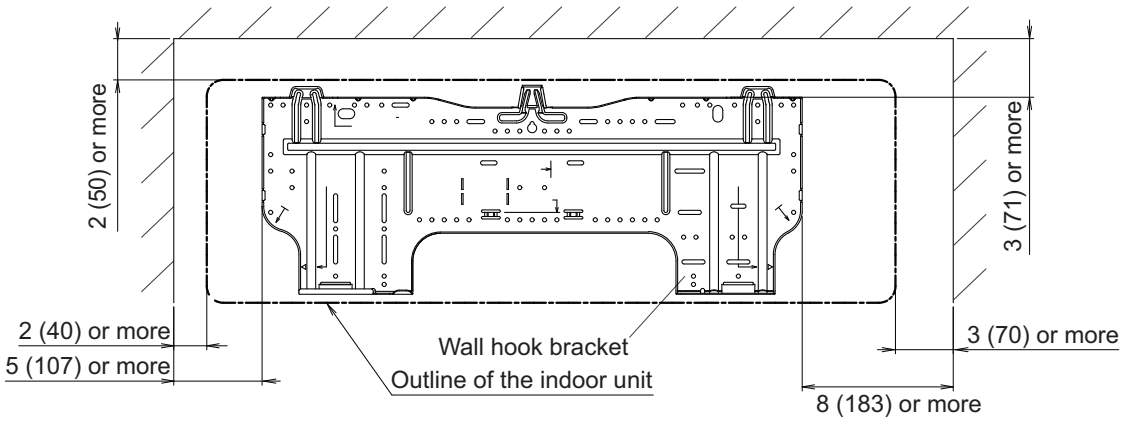
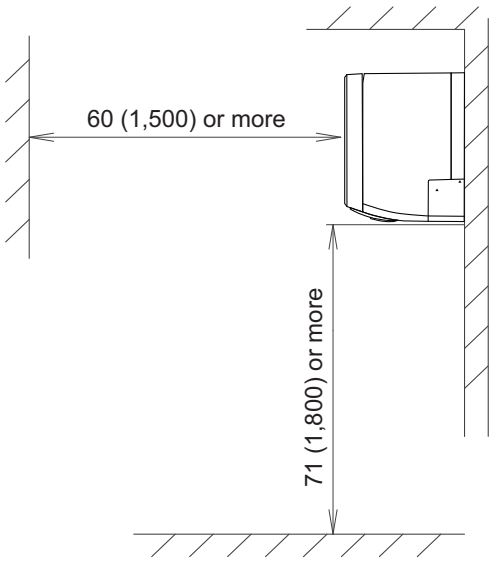
■ Installation space requirement

Provide sufficient installation space for product safety.

Unit: in (mm)





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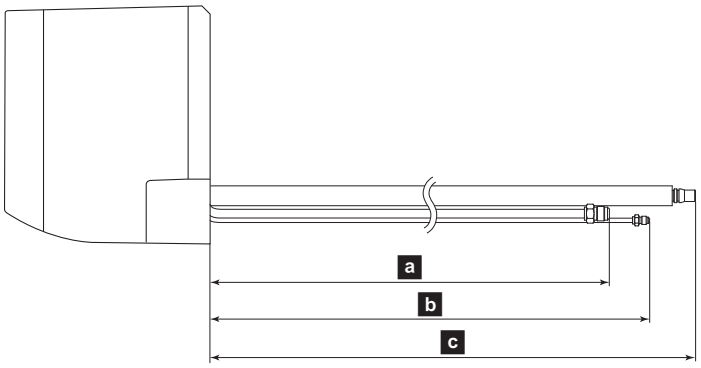
3-2. Pipe exit length from the rear

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: in (mm)



Model name	Approximate length		
	a Gas pipe	b Liquid pipe	c Drain hose
ASUH09-12KMAS	14-15/16 (380)	16-15/16 (430)	19-1/8 (485)

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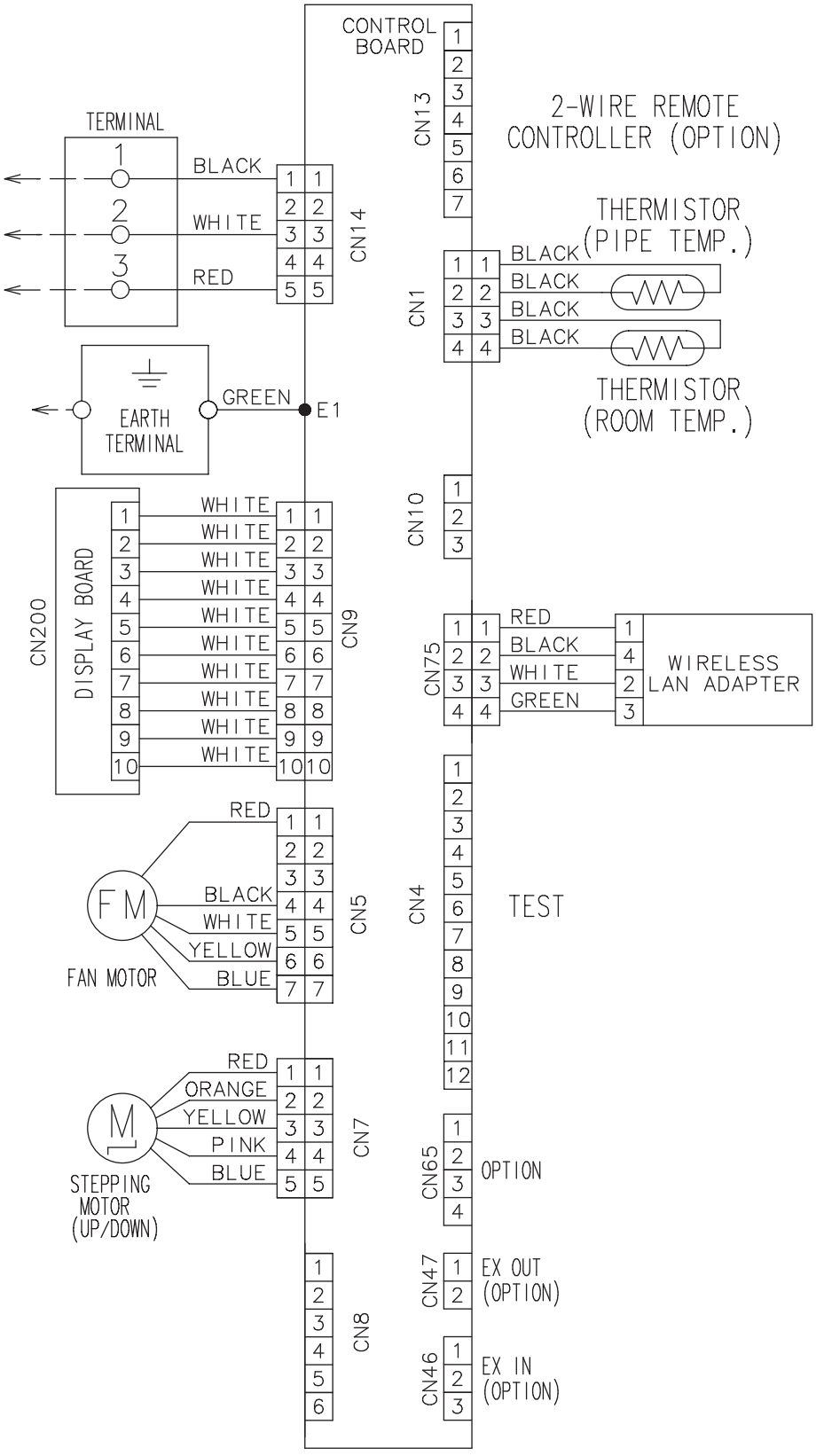
4. Wiring diagrams

4-1. Models: ASUH09KMAS and ASUH12KMAS



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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: ASUH09KMAS

AFR	CFM	400

		Indoor temperature																	
	°FDB	64			70			75			80			85			90		
	°FWB	54			60			63			67			71			73		
Outdoor temperature	°FDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW
	14	8.80	7.37	0.31	9.63	8.06	0.31	10.55	8.84	0.32	10.88	9.11	0.32	11.59	9.71	0.32	12.36	10.35	0.33
	23	8.70	7.33	0.33	9.52	8.02	0.33	10.43	8.78	0.34	10.76	9.06	0.35	11.46	9.65	0.35	12.22	10.29	0.35
	32	8.60	7.28	0.36	9.41	7.97	0.36	10.31	8.73	0.37	10.63	9.00	0.37	11.33	9.59	0.37	12.08	10.22	0.38
	41	8.51	7.22	0.21	9.31	7.90	0.21	10.21	8.66	0.22	10.52	8.93	0.22	11.21	9.52	0.22	11.95	10.14	0.22
	50	8.42	7.20	0.27	9.21	7.88	0.27	10.10	8.63	0.28	10.41	8.90	0.28	11.09	9.48	0.28	11.83	10.11	0.29
	59	8.28	7.11	0.32	9.06	7.78	0.32	9.92	8.53	0.33	10.23	8.79	0.33	10.90	9.37	0.33	11.62	9.99	0.34
	67	8.07	7.00	0.38	8.83	7.66	0.39	9.68	8.39	0.40	9.98	8.65	0.40	10.63	9.22	0.40	11.34	9.83	0.41
	77	7.81	6.85	0.43	8.55	7.49	0.44	9.36	8.21	0.45	9.65	8.47	0.45	10.29	9.02	0.45	10.97	9.62	0.46
	87	7.55	6.70	0.48	8.26	7.33	0.49	9.05	8.04	0.50	9.33	8.28	0.50	9.94	8.83	0.51	10.60	9.41	0.51
	95	7.28	6.55	0.53	7.97	7.17	0.53	8.73	7.86	0.54	9.00	8.10	0.55	9.59	8.63	0.56	10.22	9.20	0.56
	104	6.94	6.34	0.58	7.60	6.94	0.58	8.32	7.61	0.59	8.58	7.84	0.60	9.14	8.35	0.61	9.75	8.91	0.61
	115	6.18	6.06	0.61	6.76	6.63	0.62	7.41	7.27	0.63	7.64	7.49	0.64	8.14	7.98	0.65	8.68	8.51	0.65
	122	5.69	5.69	0.66	6.22	6.22	0.67	6.41	6.41	0.68	7.03	7.03	0.69	7.49	7.49	0.70	7.99	7.99	0.69

AFR	m^3/h	680

		Indoor temperature																	
	°CDB	17.8			21.1			23.9			26.7			29.4			32.2		
	°CWB	12.2			15.6			17.2			19.4			21.7			22.8		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kW			kW			kW			kW			kW			kW		
	-10.0	2.58	2.16	0.31	2.82	2.36	0.31	3.09	2.59	0.32	3.19	2.67	0.32	3.40	2.85	0.32	3.62	3.03	0.33
	-5.0	2.55	2.15	0.33	2.79	2.35	0.33	3.06	2.57	0.34	3.15	2.65	0.35	3.36	2.83	0.35	3.58	3.01	0.35
	0.0	2.52	2.13	0.36	2.76	2.33	0.36	3.02	2.56	0.37	3.12	2.64	0.37	3.32	2.81	0.37	3.54	3.00	0.38
	5.0	2.49	2.12	0.21	2.73	2.32	0.21	2.99	2.54	0.22	3.08	2.62	0.22	3.29	2.79	0.22	3.50	2.97	0.22
	10.0	2.47	2.11	0.27	2.70	2.31	0.27	2.96	2.53	0.28	3.05	2.61	0.28	3.25	2.78	0.28	3.47	2.96	0.29
	15.0	2.43	2.08	0.32	2.65	2.28	0.32	2.91	2.50	0.33	3.00	2.58	0.33	3.19	2.75	0.33	3.41	2.93	0.34
	19.4	2.37	2.05	0.38	2.59	2.24	0.39	2.84	2.46	0.40	2.92	2.54	0.40	3.12	2.70	0.40	3.32	2.88	0.41
	25.0	2.29	2.01	0.43	2.50	2.20	0.44	2.74	2.41	0.45	2.83	2.48	0.45	3.01	2.64	0.45	3.21	2.82	0.46
	30.6	2.21	1.96	0.48	2.42	2.15	0.49	2.65	2.36	0.50	2.73	2.43	0.50	2.91	2.59	0.51	3.11	2.76	0.51
	35.0	2.13	1.92	0.53	2.33	2.10	0.53	2.56	2.30	0.54	2.64	2.37	0.55	2.81	2.53	0.56	3.00	2.70	0.56
	40.0	2.03	1.86	0.58	2.23	2.03	0.58	2.44	2.23	0.59	2.51	2.30	0.60	2.68	2.45	0.61	2.86	2.61	0.61
	46.0	1.81	1.78	0.61	1.98	1.94	0.62	2.17	2.13	0.63	2.24	2.20	0.64	2.39	2.34	0.65	2.54	2.49	0.65
	50.0	1.67	1.67	0.66	1.82	1.82	0.67	1.88	1.88	0.68	2.06	2.06	0.69	2.20	2.20	0.70	2.34	2.34	0.69

WALL MOUNTED
ASUH09-12KMAS

■ Model: ASUH12KMAS

AFR	CFM	400

		Indoor temperature																	
	°FDB	64			70			75			80			85			90		
	°FWB	54			60			63			67			71			73		
Outdoor temperature	°FDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW	kBtu		kW
	14	11.75	8.36	0.44	12.85	9.15	0.45	14.09	10.03	0.46	14.52	10.34	0.46	15.47	11.02	0.46	16.50	11.75	0.47
	23	11.60	8.31	0.51	12.70	9.10	0.52	13.92	9.97	0.53	14.35	10.28	0.54	15.29	10.95	0.54	16.30	11.67	0.55
	32	11.46	8.26	0.59	12.54	9.04	0.59	13.75	9.90	0.60	14.17	10.21	0.61	15.10	10.88	0.62	16.10	11.60	0.62
	41	11.35	8.21	0.34	12.42	8.98	0.34	13.61	9.85	0.35	14.03	10.15	0.35	14.95	10.82	0.35	15.94	11.53	0.36
	50	11.21	8.16	0.43	12.27	8.93	0.44	13.45	9.79	0.45	13.86	10.09	0.45	14.77	10.75	0.45	15.75	11.46	0.46
	59	11.02	8.08	0.52	12.06	8.84	0.52	13.22	9.69	0.53	13.63	9.99	0.54	14.52	10.65	0.55	15.48	11.35	0.55
	67	10.77	7.95	0.62	11.78	8.70	0.63	12.91	9.54	0.64	13.31	9.83	0.65	14.18	10.47	0.66	15.12	11.17	0.66
	77	10.41	7.78	0.70	11.40	8.52	0.71	12.49	9.33	0.72	12.87	9.62	0.73	13.72	10.25	0.74	14.62	10.93	0.74
	87	10.06	7.61	0.78	11.01	8.33	0.79	12.06	9.13	0.80	12.44	9.41	0.81	13.25	10.03	0.82	14.13	10.69	0.83
	95	9.71	7.44	0.85	10.62	8.14	0.86	11.64	8.92	0.88	12.00	9.20	0.89	12.79	9.80	0.90	13.63	10.45	0.91
	104	9.25	7.22	0.93	10.12	7.90	0.94	11.09	8.65	0.96	11.43	8.92	0.97	12.18	9.51	0.98	12.98	10.13	0.99
	115	7.66	6.52	0.93	8.31	7.06	0.93	8.93	7.58	0.93	9.11	7.74	0.93	9.62	8.18	0.93	10.16	8.63	0.93
	122	6.60	5.91	0.93	7.15	6.41	0.93	7.30	6.54	0.93	7.86	7.04	0.93	8.30	7.43	0.93	8.93	7.99	0.93

AFR	m^3/h	680

		Indoor temperature																	
	°CDB	17.8			21.1			23.9			26.7			29.4			32.2		
	°CWB	12.2			15.6			17.2			19.4			21.7			22.8		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kW			kW			kW			kW			kW			kW		
	-10.0	3.44	2.45	0.44	3.77	2.68	0.45	4.13	2.94	0.46	4.26	3.03	0.46	4.53	3.23	0.46	4.83	3.44	0.47
	-5.0	3.40	2.44	0.51	3.72	2.67	0.52	4.08	2.92	0.53	4.20	3.01	0.54	4.48	3.21	0.54	4.78	3.42	0.55
	0.0	3.36	2.42	0.59	3.68	2.65	0.59	4.03	2.90	0.60	4.15	2.99	0.61	4.43	3.19	0.62	4.72	3.40	0.62
	5.0	3.33	2.41	0.34	3.64	2.63	0.34	3.99	2.89	0.35	4.11	2.97	0.35	4.38	3.17	0.35	4.67	3.38	0.36
	10.0	3.29	2.39	0.43	3.60	2.62	0.44	3.94	2.87	0.45	4.06	2.96	0.45	4.33	3.15	0.45	4.61	3.36	0.46
	15.0	3.23	2.37	0.52	3.54	2.59	0.52	3.87	2.84	0.53	3.99	2.93	0.54	4.26	3.12	0.55	4.54	3.33	0.55
	19.4	3.16	2.33	0.62	3.45	2.55	0.63	3.78	2.79	0.64	3.90	2.88	0.65	4.16	3.07	0.66	4.43	3.27	0.66
	25.0	3.05	2.28	0.70	3.34	2.50	0.71	3.66	2.74	0.72	3.77	2.82	0.73	4.02	3.00	0.74	4.29	3.20	0.74
	30.6	2.95	2.23	0.78	3.23	2.44	0.79	3.54	2.68	0.80	3.64	2.76	0.81	3.88	2.94	0.82	4.14	3.13	0.83
	35.0	2.85	2.18	0.85	3.11	2.39	0.86	3.41	2.62	0.88	3.52	2.70	0.89	3.75	2.87	0.90	4.00	3.06	0.91
	40.0	2.71	2.11	0.93	2.97	2.31	0.94	3.25	2.54	0.96	3.35	2.61	0.97	3.57	2.79	0.98	3.81	2.97	0.99
	46.0	2.25	1.91	0.93	2.43	2.07	0.93	2.62	2.22	0.93	2.67	2.27	0.93	2.82	2.39	0.93	2.97	2.53	0.93
	50.0	1.93	1.73	0.93	2.09	1.88	0.93	2.14	1.92	0.93	2.30	2.06	0.93	2.43	2.18	0.93	2.61	2.35	0.93

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ASUH09-12KMAS

5-2. Heating capacity

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

■ Model: ASUH09KMAS

AFR	CFM	441

		Indoor temperature									
	°FDB	60		65		70		72		75	
Outdoor temperature	°FDB	°FWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kBtu	kW	kBtu	kW	kBtu	kW	kBtu	kW	kBtu	kW
	5	3	10.87	1.25	10.58	1.27	10.30	1.30	10.02	1.32	9.73	1.35
	14	12	12.63	1.33	12.30	1.36	11.97	1.39	11.64	1.42	11.31	1.44
	23	19	14.39	1.40	14.02	1.43	13.64	1.46	13.26	1.49	12.89	1.52
	32	28	16.16	1.46	15.73	1.49	15.31	1.52	14.89	1.55	14.46	1.58
	41	37	17.92	1.52	17.45	1.55	16.98	1.58	16.51	1.61	16.04	1.64
	47	43	15.30	1.55	14.90	1.58	14.50	1.61	14.10	1.64	13.70	1.67
	50	47	15.85	1.61	15.43	1.64	15.02	1.68	14.60	1.71	14.19	1.74
	59	50	17.46	1.33	16.99	1.36	16.54	1.39	16.09	1.42	15.62	1.44
	68	59	19.06	1.17	18.57	1.19	18.06	1.22	17.56	1.24	17.07	1.27
	75	64	20.35	1.12	19.81	1.15	19.28	1.17	18.75	1.19	18.21	1.21

AFR	m^3/h	750

		Indoor temperature									
	°CDB	15.6		18.3		21.1		22.0		23.9	
Outdoor temperature	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
	-15.0	-16.1	3.19	1.25	3.10	1.27	3.02	1.30	2.94	1.32	2.85	1.35
	-10.0	-11.1	3.70	1.33	3.60	1.36	3.51	1.39	3.41	1.42	3.31	1.44
	-5.0	-7.2	4.22	1.40	4.11	1.43	4.00	1.46	3.89	1.49	3.78	1.52
	0.0	-2.2	4.74	1.46	4.61	1.49	4.49	1.52	4.36	1.55	4.24	1.58
	5.0	2.8	5.25	1.52	5.11	1.55	4.98	1.58	4.84	1.61	4.70	1.64
	8.3	6.1	4.48	1.55	4.37	1.58	4.25	1.61	4.13	1.64	4.01	1.67
	10.0	8.3	4.64	1.61	4.52	1.64	4.40	1.68	4.28	1.71	4.16	1.74
	15.0	10.0	5.12	1.33	4.98	1.36	4.85	1.39	4.71	1.42	4.58	1.44
	20.0	15.0	5.59	1.17	5.44	1.19	5.29	1.22	5.15	1.24	5.00	1.27
	24.0	18.0	5.96	1.12	5.81	1.15	5.65	1.17	5.50	1.19	5.34	1.21

■ Model: ASUH12KMAS

AFR	CFM	441

		Indoor temperature									
	°FDB	60		65		70		72		75	
Outdoor temperature	°FDB	°FWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kBtu	kW	kBtu	kW	kBtu	kW	kBtu	kW	kBtu	kW
	5	3	11.19	1.25	10.89	1.27	10.60	1.30	10.31	1.32	10.01	1.35
	14	12	13.24	1.33	12.90	1.36	12.55	1.39	12.20	1.42	11.86	1.44
	23	19	15.33	1.47	14.93	1.50	14.53	1.53	14.13	1.56	13.73	1.59
	32	28	17.42	1.56	16.97	1.60	16.51	1.63	16.05	1.66	15.60	1.69
	41	37	19.50	1.64	18.99	1.67	18.48	1.71	17.97	1.74	17.46	1.78
	47	43	15.83	1.69	15.42	1.72	15.00	1.76	14.48	1.78	13.80	1.78
	50	47	17.08	1.77	16.44	1.78	15.66	1.78	14.94	1.78	14.25	1.78
	59	50	18.57	1.46	18.08	1.49	17.60	1.52	17.11	1.55	16.63	1.58
	68	59	20.62	1.28	20.07	1.30	19.54	1.33	19.00	1.36	18.46	1.38
	75	64	22.26	1.23	21.67	1.25	21.09	1.28	20.51	1.30	19.92	1.33

AFR	m^3/h	750

		Indoor temperature									
	°CDB	15.6		18.3		21.1		22.0		23.9	
Outdoor temperature	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
	-15.0	-16.1	3.28	1.25	3.19	1.27	3.11	1.30	3.02	1.32	2.93	1.35
	-10.0	-11.1	3.88	1.33	3.78	1.36	3.68	1.39	3.58	1.42	3.48	1.44
	-5.0	-7.2	4.49	1.47	4.38	1.50	4.26	1.53	4.14	1.56	4.02	1.59
	0.0	-2.2	5.11	1.56	4.97	1.60	4.84	1.63	4.70	1.66	4.57	1.69
	5.0	2.8	5.71	1.64	5.57	1.67	5.42	1.71	5.27	1.74	5.12	1.78
	8.3	6.1	4.64	1.69	4.52	1.72	4.40	1.76	4.24	1.78	4.05	1.78
	10.0	8.3	5.01	1.77	4.82	1.78	4.59	1.78	4.38	1.78	4.18	1.78
	15.0	10.0	5.44	1.46	5.30	1.49	5.16	1.52	5.02	1.55	4.87	1.58
	20.0	15.0	6.04	1.28	5.88	1.30	5.73	1.33	5.57	1.36	5.41	1.38
	24.0	18.0	6.52	1.23	6.35	1.25	6.18	1.28	6.01	1.30	5.84	1.33

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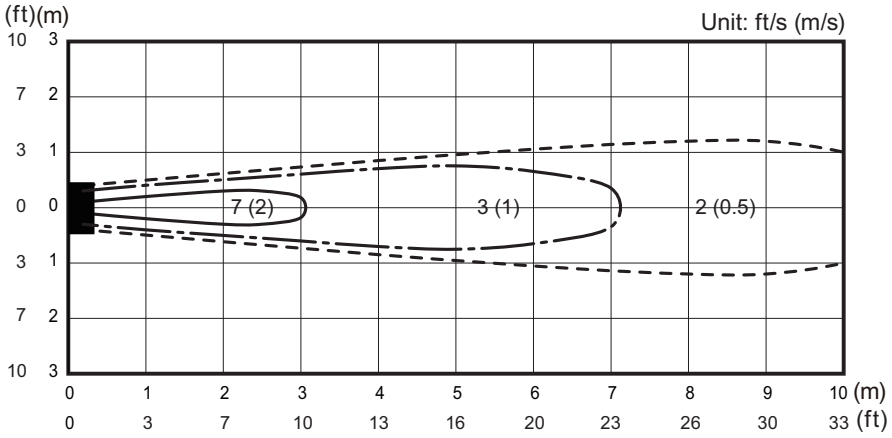
6. Fan performance

6-1. Air velocity distributions

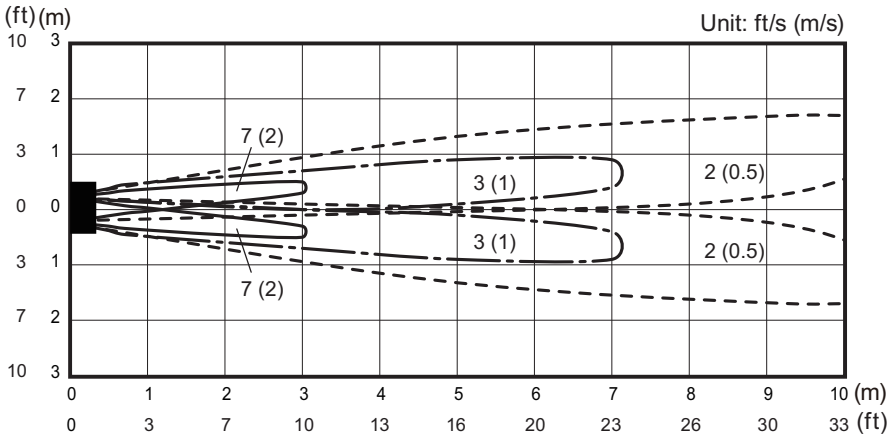
■ Models: ASUH09KMAS and ASUH12KMAS

Measuring conditions	Fan speed	Operation mode
	HIGH	FAN

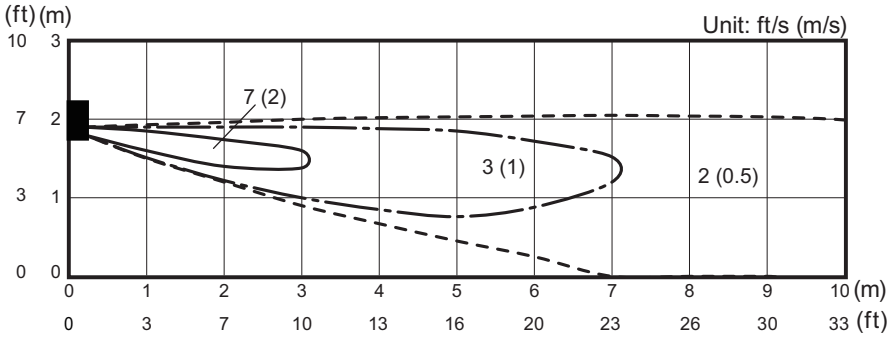
Top view
Horizontal louver: Up
Vertical louver: Center



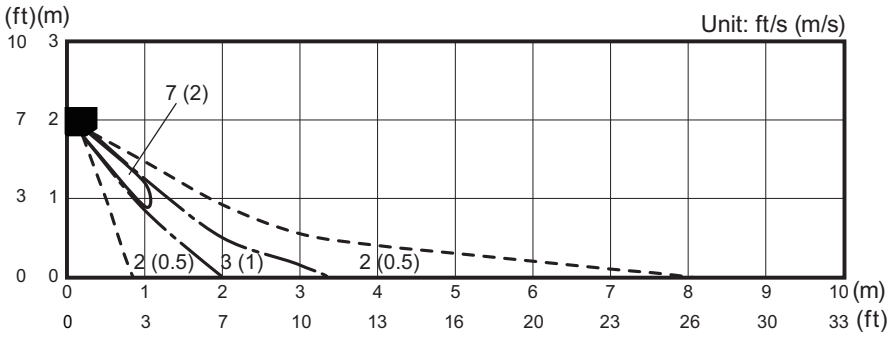
Top view
Horizontal louver: Up
Vertical louver: Left & Right



Side view
Horizontal louver: Up
Vertical louver: Center



Side view
Horizontal louver: Down
Vertical louver: Center



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6-2. Airflow

■ Models: ASUH09KMAS and ASUH12KMAS

● Cooling

Fan speed	Airflow	
HIGH	m^3/h	680
	l/s	189
	CFM	400
MED	m^3/h	550
	l/s	153
	CFM	324
LOW	m^3/h	430
	l/s	119
	CFM	253
QUIET	m^3/h	260
	l/s	72
	CFM	153

● Heating

Fan speed	Airflow	
HIGH	m^3/h	750
	l/s	208
	CFM	441
MED	m^3/h	630
	l/s	175
	CFM	371
LOW	m^3/h	510
	l/s	142
	CFM	300
QUIET	m^3/h	320
	l/s	89
	CFM	188

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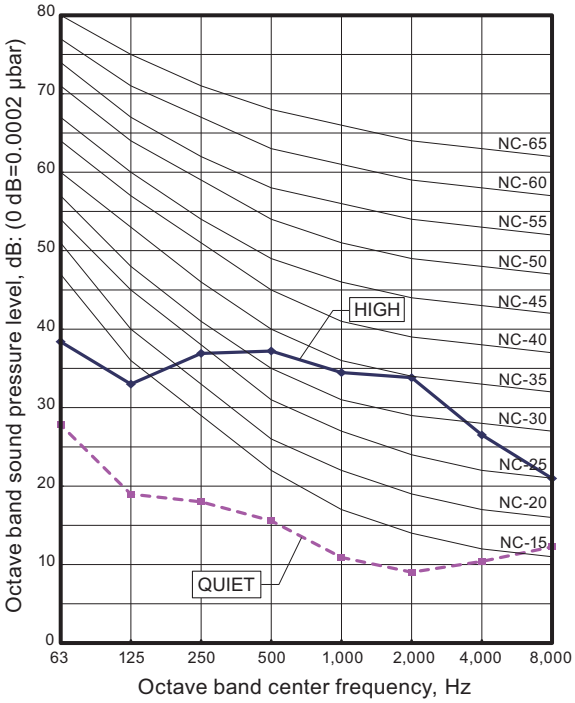
7. Operation noise (sound pressure)

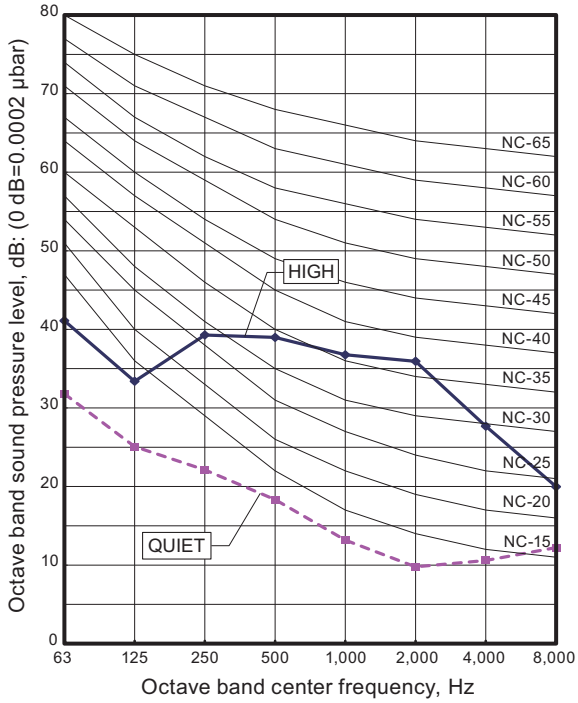
7-1. Noise level curve

■ Model: ASUH09KMAS

● Cooling

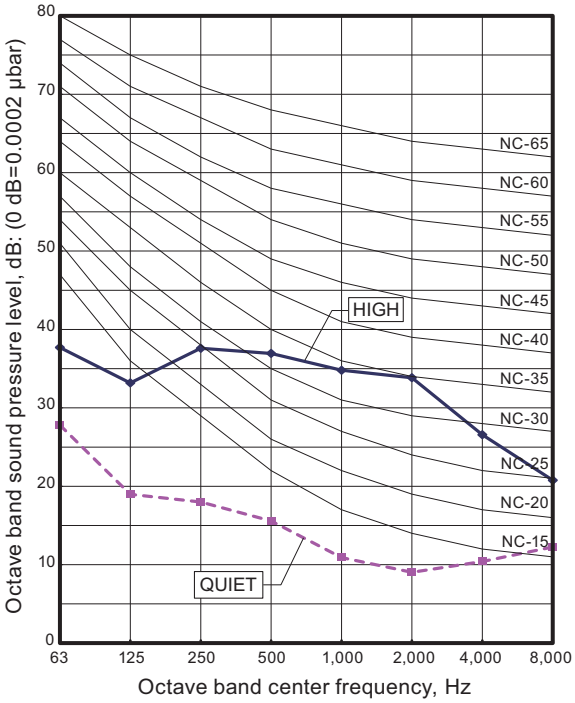


● Heating

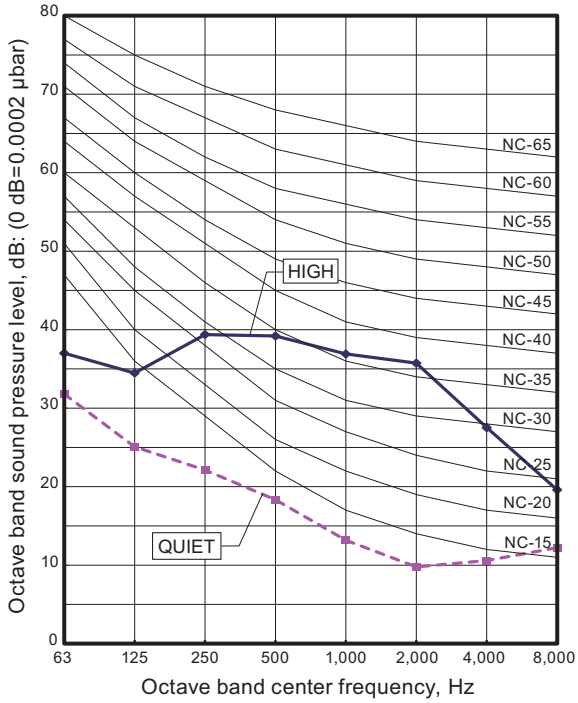


■ Model: ASUH12KMAS

● Cooling



● Heating



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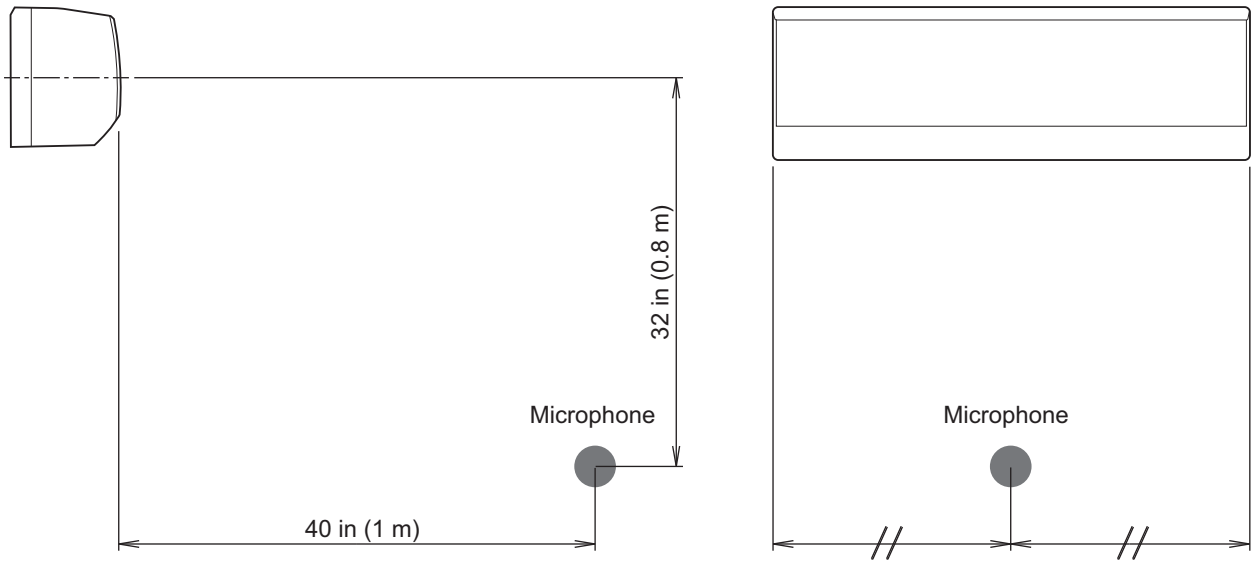
7-2. Sound level check point



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

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8. Safety devices

Type of protection	Protection form		Model
			ASUH09-12KMAS
Circuit protection	Current fuse (PCB*)		250 V, 3.15 A
Fan motor protection	Power IC thermal shutdown protection	Activate	257 ±18°F (125 ±10°C) Fan motor stop
		Reset	212 ±18°F (100 ±10°C) Fan motor restart

*PCB: Printed Circuit Board

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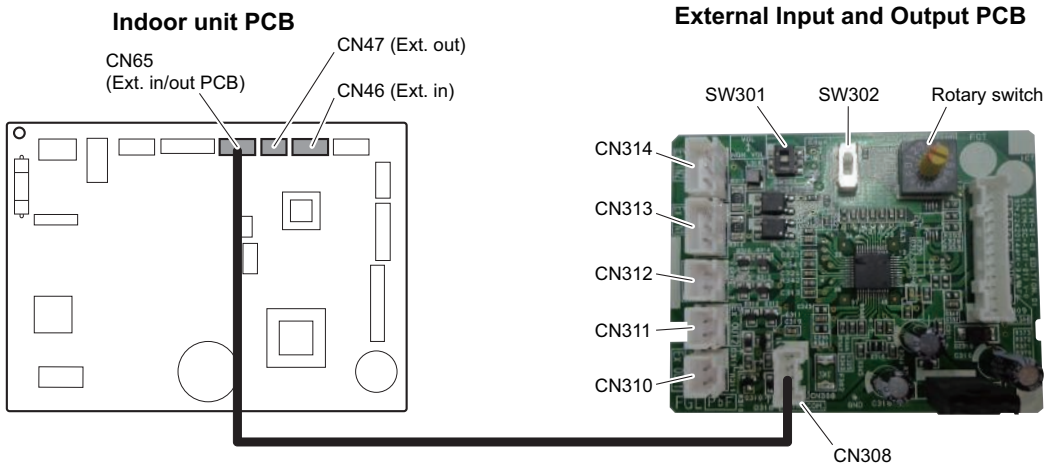
ASUH09-12KMAS

9. External input and output



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		
			Cooling thermostat On		
			Heating thermostat On		
			External heater output		
External Input and Output PCB (UTY-XCSXZ2)	CN313/CN314	Input	Operation/Stop	Dry contact/Apply voltage	Edge/Pulse
			Forced stop		
	CN313		Forced thermostat off		Edge
	CN310 CN311 CN312	Output	Operation status	—	—
			Error status		
			Indoor unit fan operation status		
			External heater output		
			Remote controller output		
			Cooling high/low output		
			Heating thermostat On		

NOTE: For details of the switching function, refer to "Setting of external input and output" on page 24.

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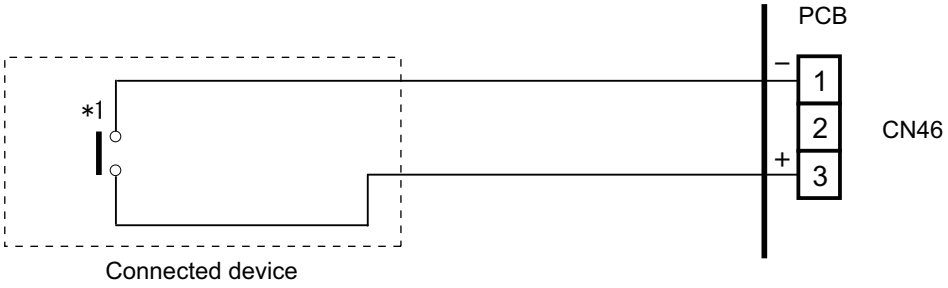
9-1. External input

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 (22 AWG) should be used. Maximum length of cable is 492 ft (150 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

■ Indoor unit

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



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

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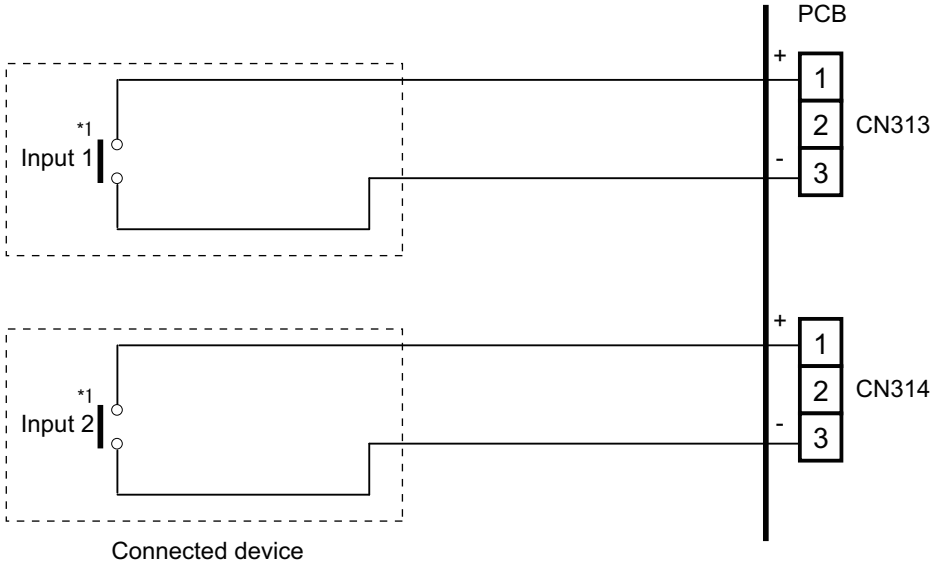
■ External Input and Output PCB

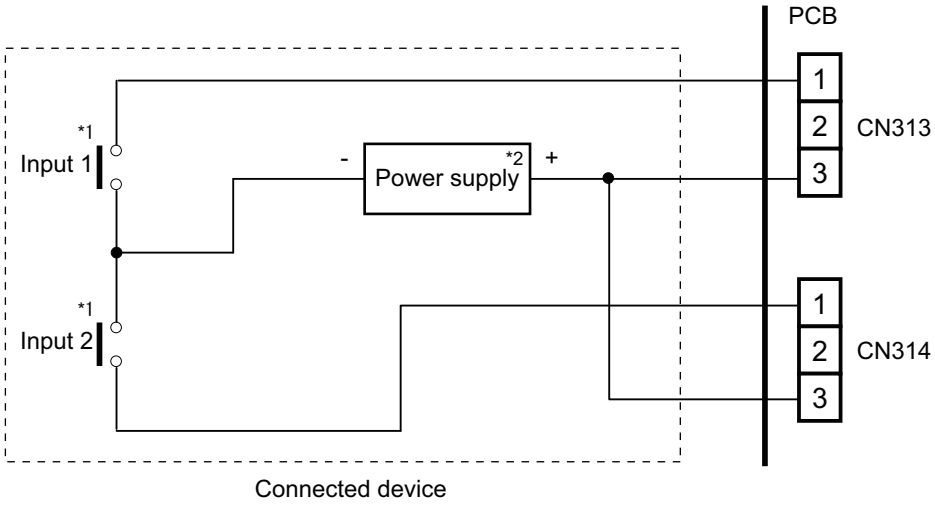
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

- **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.



*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.



*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.

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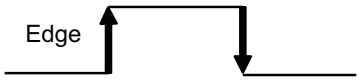
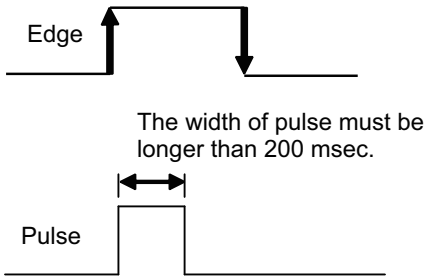
■ Input signal type

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



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

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9-2. External output

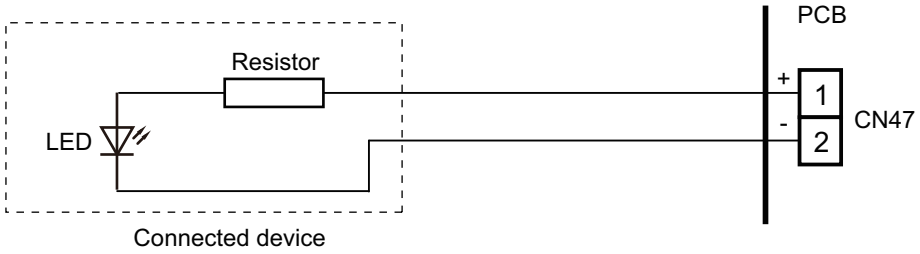
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ Indoor unit

- A twisted pair cable (22 AWG)should be used. Maximum length of cable is 82 ft (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 24.

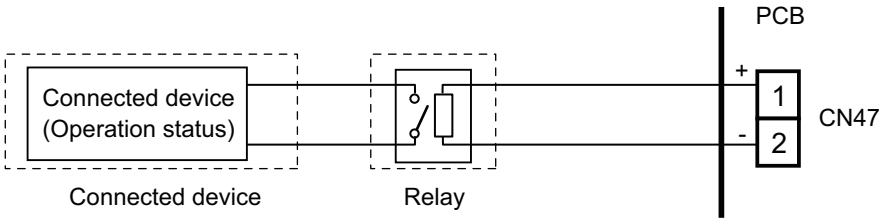
- **When indicator, etc. are connected directly**

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"



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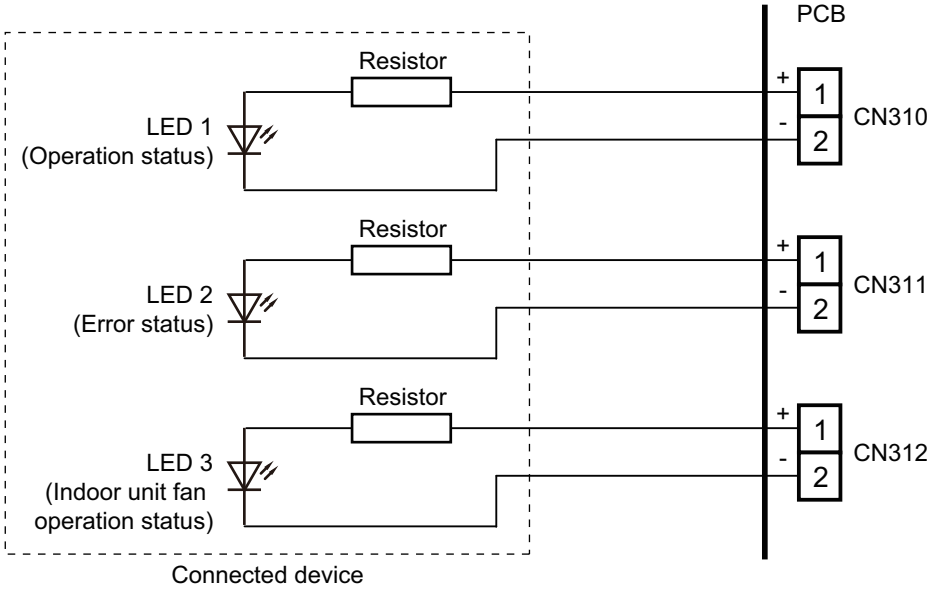
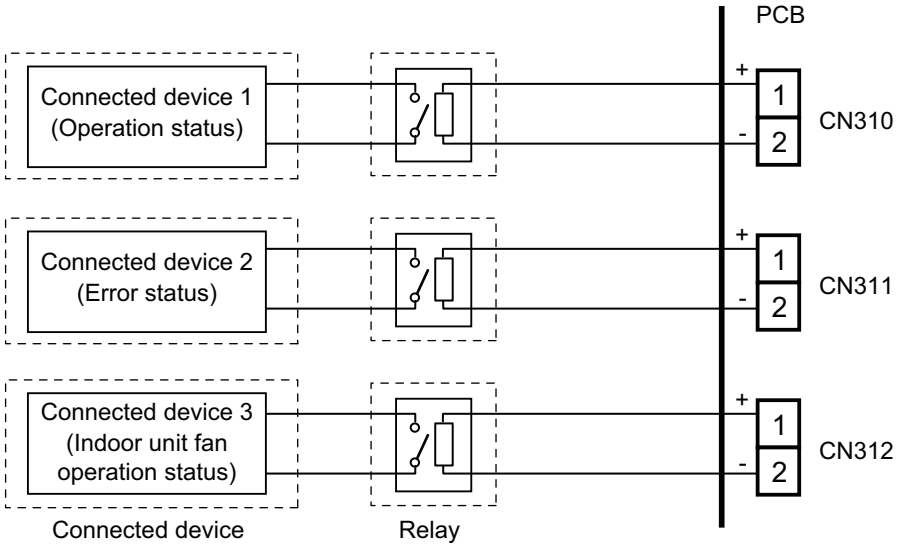
■ External Input and Output PCB

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft (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 24.

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



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



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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 04	Cooling thermostat On
	05	Heating thermostat On
	06	Operation/Stop
	07 to 08	Cooling thermostat On
	09	Error status
	10	Indoor unit fan operation status
	11	External heater output

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- **External Input and Output PCB**

Switch setting		Ex IN		Ex OUT		
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	Edge*1	Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
3		Mechanical cooling off	Not available	Error status	Indoor unit fan operation status	External heater output
4		Forced thermostat off	Not available	Error status	Remote controller output	External heater output
5		Mechanical cooling on*2	Not available	Cooling high/low output	Remote controller output	External heater output
6		Mechanical cooling on*2	Not available	Error status	Remote controller output	Cooling high/low output
7		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
8		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	Heating thermostat on
9		Mechanical cooling off	Not available	Error status	Heating thermostat on	External heater output
A		Forced thermostat off	Not available	Heating thermostat on	Remote controller output	External heater output
B		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	External heater output
C		Forced thermostat off	Not available	Operation/Stop	Error status	External heater output
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.
- *1: The external input other than “Operation/Stop” is available only when the SW302 is set to “Edge”.
- *2: The external input of “Mechanical cooling on” is available only when the function setting number 60 is set to “03” or “04”.

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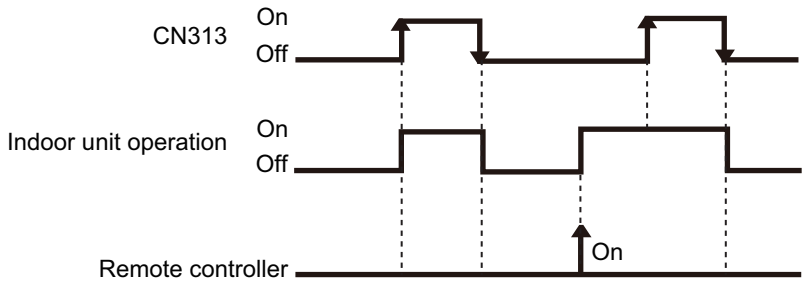
9-4. Details of control input function

■ Operation/Stop mode 1

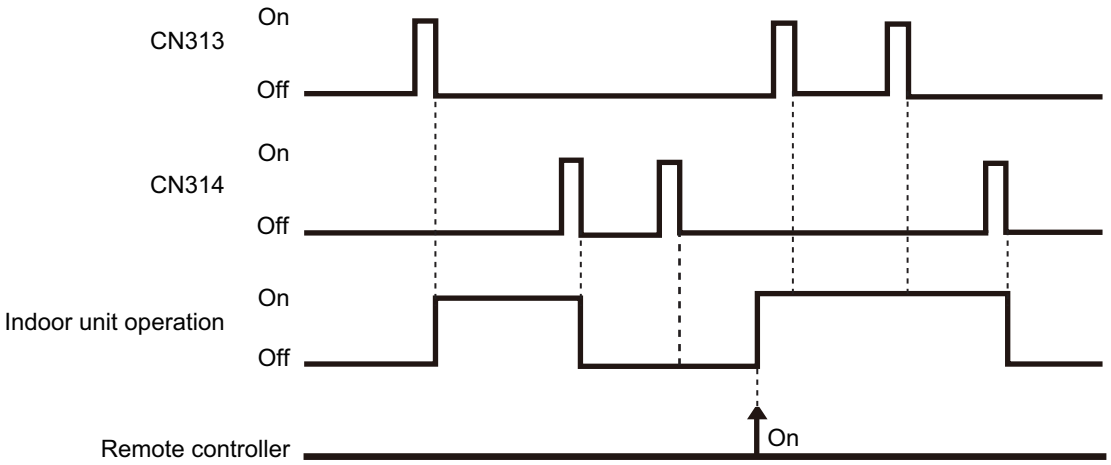
- **In the case of "Edge" input**

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.

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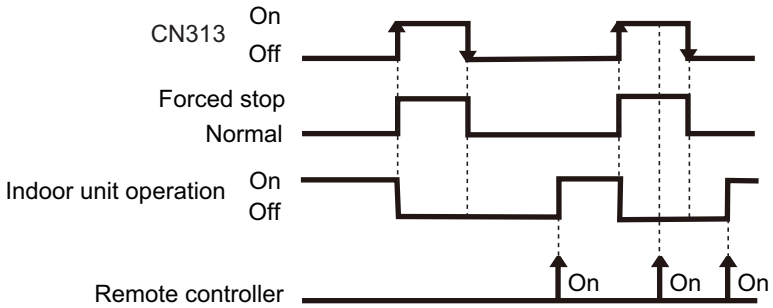
■ Forced stop

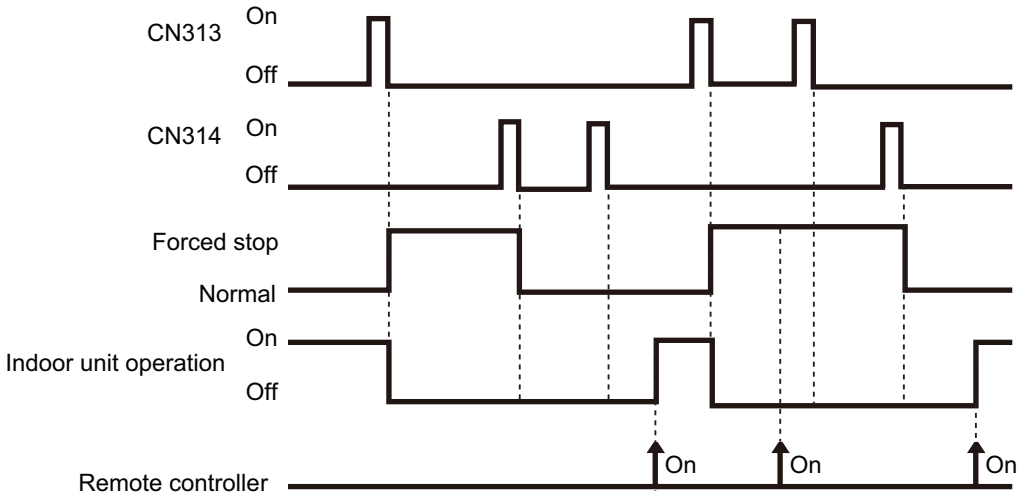
- **In the case of "Edge" input**

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.

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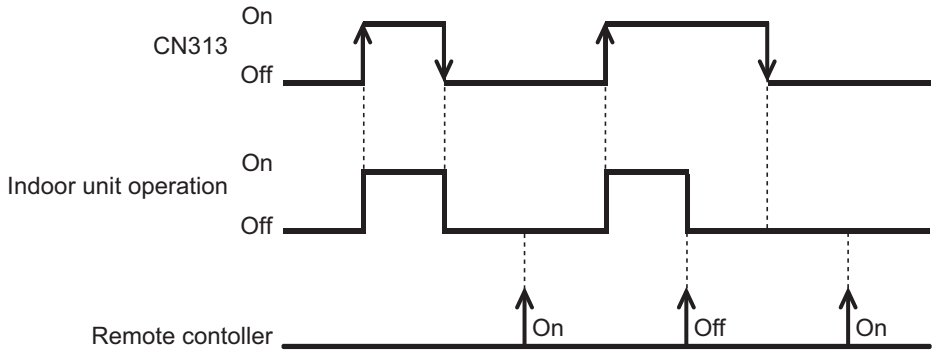
■ Operation/Stop mode 2

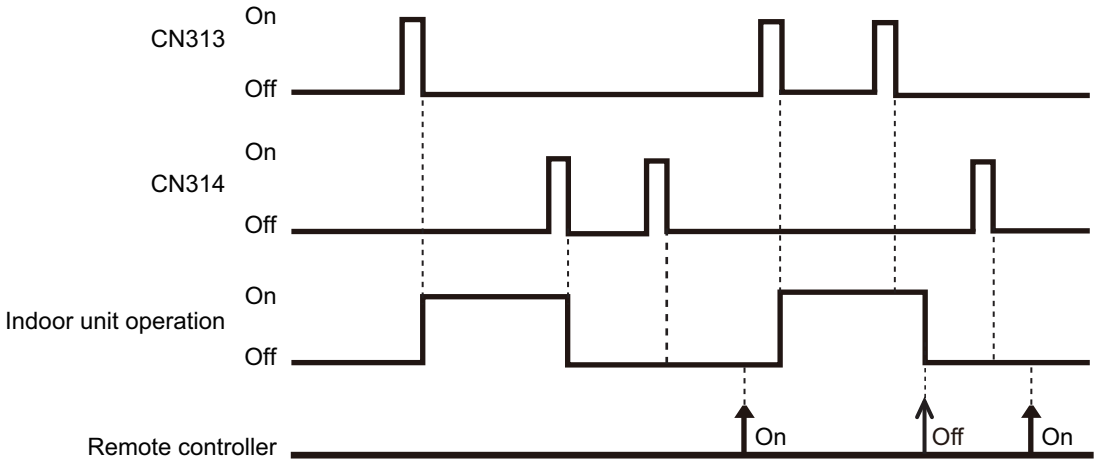
- **In the case of "Edge" input**

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.

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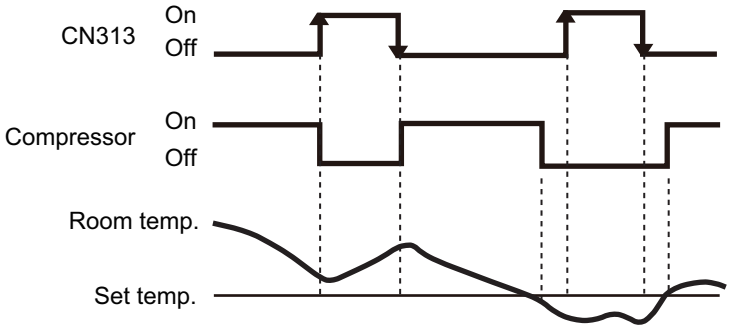
■ Forced thermostat off

External Input and Output PCB Rotary switch	External input		Input signal	Command
2, B, C, D	External Input and Output PCB	CN313	Off → On	Thermostat off
			On → Off	Normal operation
4, 7, 8, A	External Input and Output PCB	CN313	Off → On	Thermostat off
			On → Off	Normal operation



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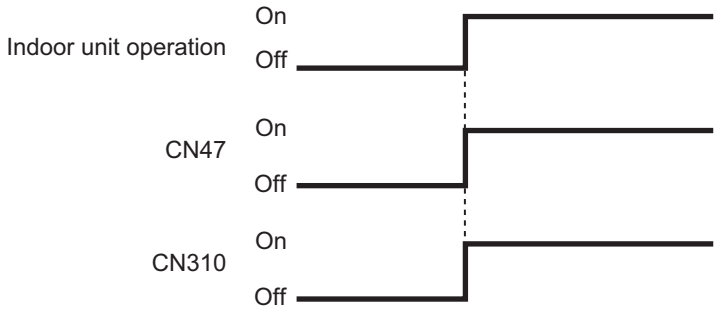
9-5. Details of control output function

■ Operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-00 60-06	1, 2, 8	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

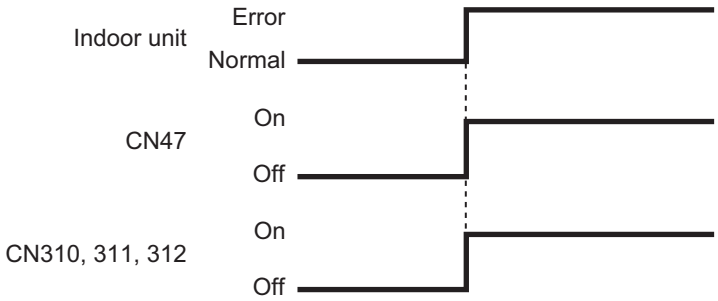
The output is low when the unit is stopped.



■ Error status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-09	—	Output of indoor unit	CN47	Off → On	Error
				On → Off	Normal
—	2, 3, 4, 6, 7, 8, 9	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.



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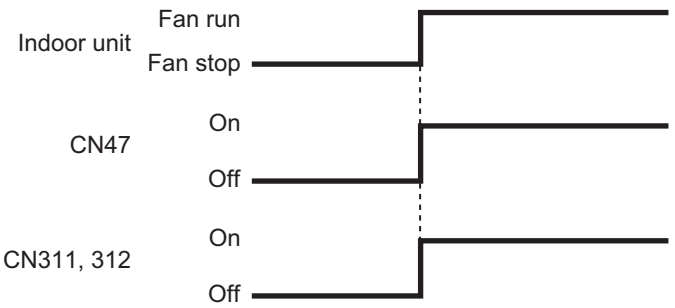
■ Indoor unit fan operation status

Function setting	External Input and Output PCB Rotary switch	External output		Output signal	Status
60-10	C	Output of indoor unit	CN47	Off → On	Fan run
				On → Off	Fan stop
—	2, 3, 7, 8, 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.



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■ External heater output

Control	Primary heater	Auxiliary heater	Function setting
			Indoor unit
			Control switching external heaters No. 61
Auxiliary heater control 1	Heat pump	External device*	61-00
Auxiliary heater control 2	Heat pump	External device	61-01
Heat pump prohibition control	External device	None	61-02
Auxiliary heater control by outdoor temperature 1	Heat pump	External device	61-03
Auxiliary heater control by outdoor temperature 2	Heat Pump	External device	61-04
Auxiliary heater control by outdoor temperature 3	Heat Pump	External device	61-05
Auxiliary heat pump control	External device	Heat pump	61-06
Auxiliary heat pump control by outdoor temperature 1	External device	Heat pump	61-07
Auxiliary heat pump control by outdoor temperature 2	External device	Heat pump	61-08
Auxiliary heat pump control by outdoor temperature 3	External device	Heat pump	61-09

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.
- *: External device means Hot water, Electrical heater, etc.

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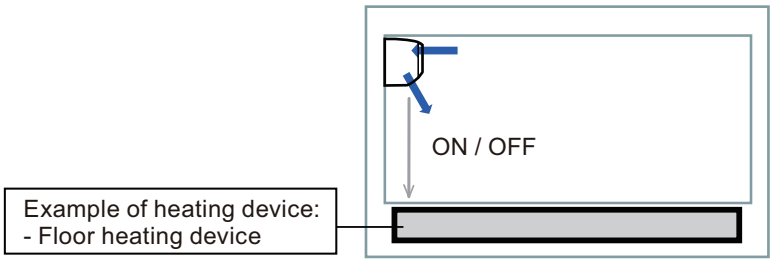
● Installation configuration of individual connection

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



⚠ WARNING

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

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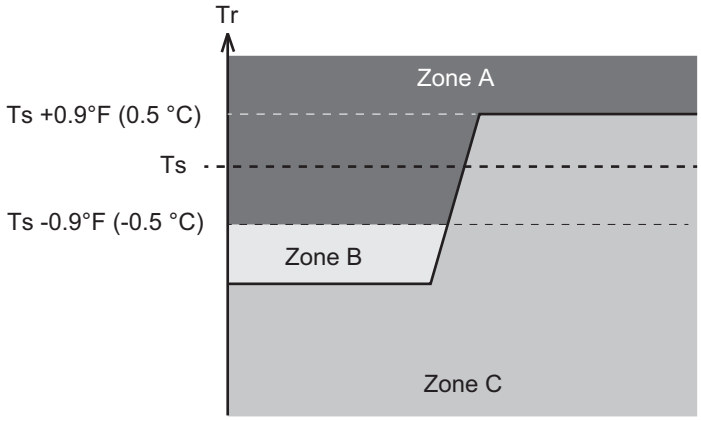
● Auxiliary equipment control by room temperature

Auxiliary equipment control is switchable by room temperature. Auxiliary equipment switching is performed for each room temperature divided to following 3 zones.



Ts: Setting temperature
Tr: Room temperature

Zone	Application	When temperature dropping		When temperature rising	
		Primary	Auxiliary	Primary	Auxiliary
A	Both of primary and auxiliary equipment is unnecessary.	Off	Off	Off	Off
B	Primary heater only.When room temperature stays in zone B for a long time, auxiliary equipment also operates.	On	Off*1	—	—
C	Auxiliary equipment also operates.	On	On*2	On	On*2

*1: For standby time for auxiliary equipment operation, refer to indoor unit function number 71 "Contents of function setting" on page 56.

*2: When indoor unit function number 61 is set to "00", auxiliary equipment operates according to the following conditions.

- Ts - Tr > 21.6 °F (-12.0 °C): Auxiliary equipment turn off.
- Ts - Tr > 18.0 °F (-10.0 °C): Auxiliary equipment turn on.

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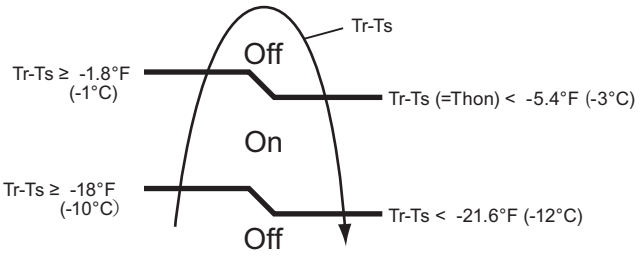
● Auxiliary heater control 1

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

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



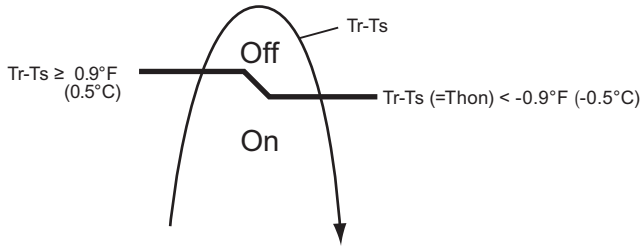
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),
- and room temperature (Tr) increases above 53.6°F (12°C), signal output is on.
- and room temperature (Tr) increases above 69.8°F (21°C), signal output is off.
- and room temperature (Tr) decreases below 66.2°F (19°C), signal output is on.
- and room temperature (Tr) decreases below 50°F (10°C), signal output is off.

● Auxiliary heater control 2

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

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



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

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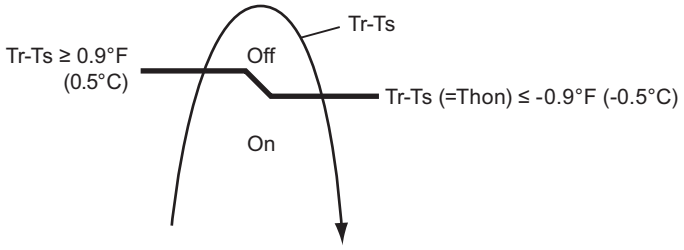
● Heat pump prohibition control

Perform heating by external heater only. Indoor unit is continuous thermostat off.

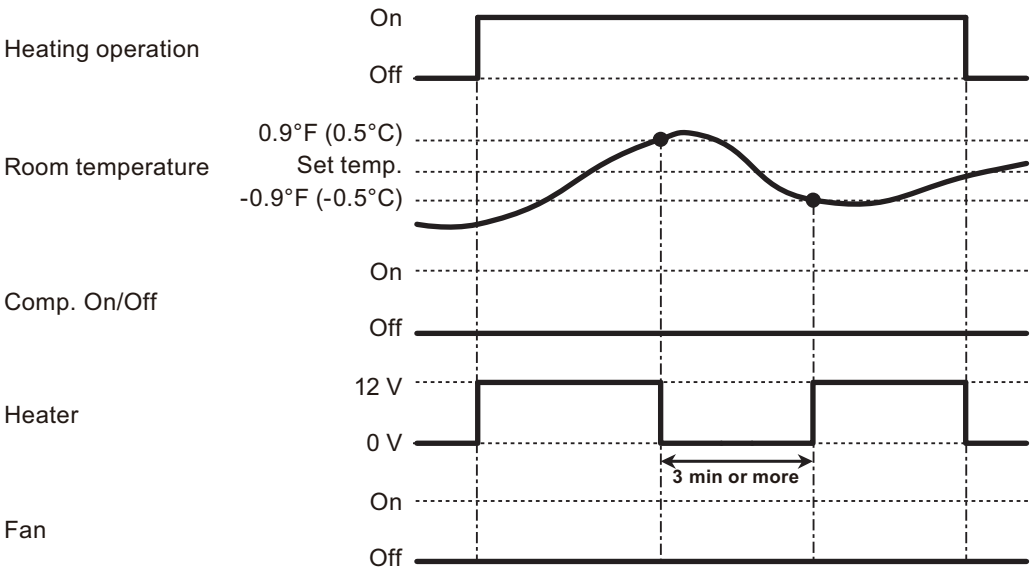
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

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



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

- **Operation status**



NOTE: In following operations, compressor will be on.
- Other than heating
- Test run

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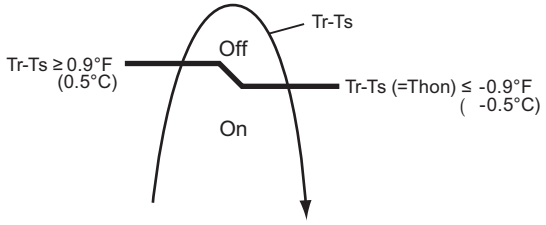
● Auxiliary heater control by outdoor temperature 1

This control selects heat pump or external heater according to the outdoor temperature. When outdoor temperature is high, the heating is performed by using heat pump only.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Heat pump only zone

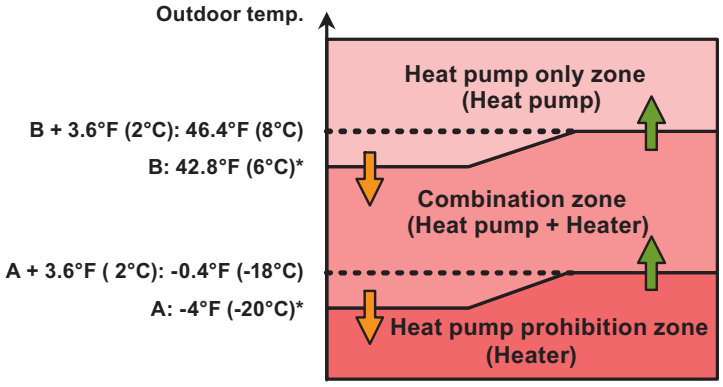
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A and B: Adjustable individually by function setting number 66 and 67.

- **External heater output**



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

- **Outdoor temperature zone**



*: Adjustable by function setting 66 and 67

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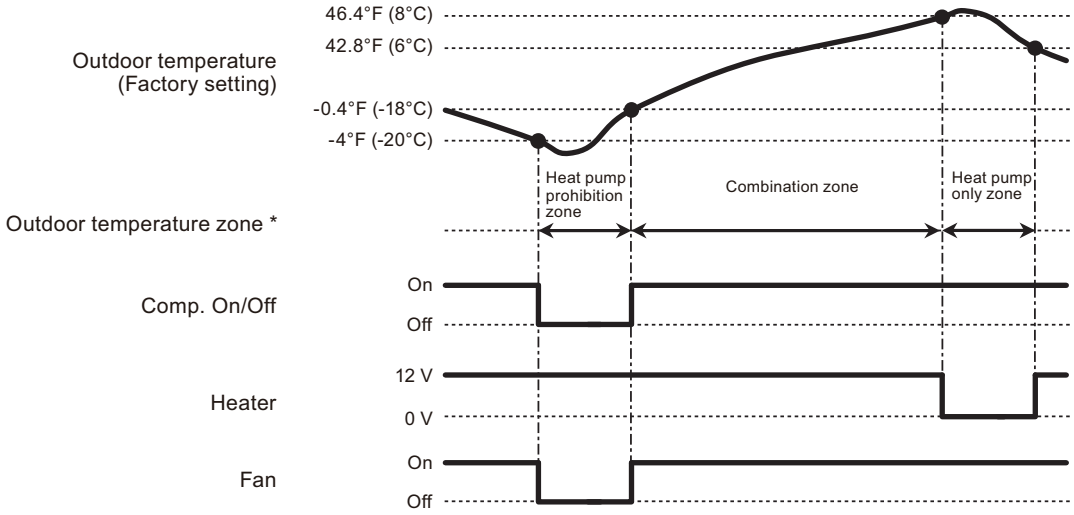
- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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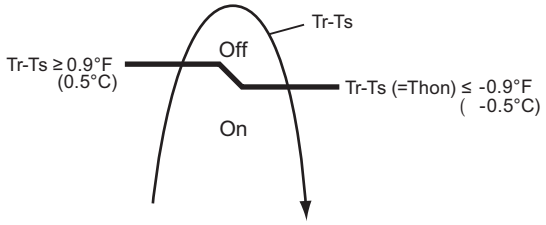
● Auxiliary heater control by outdoor temperature 2

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

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

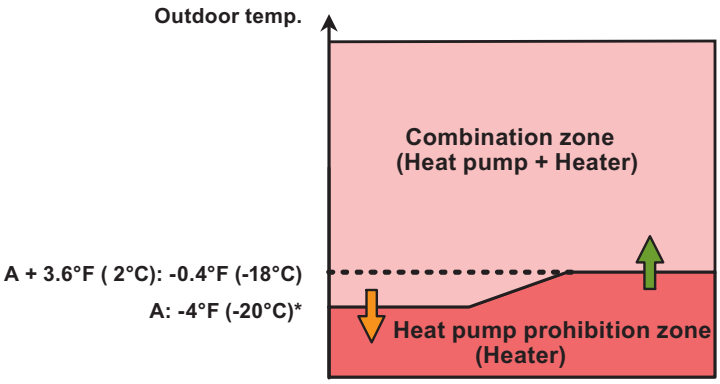
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A: Adjustable by function setting number 66.

- **External heater output**



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

- **Outdoor temperature zone**



*: Adjustable by function setting 66

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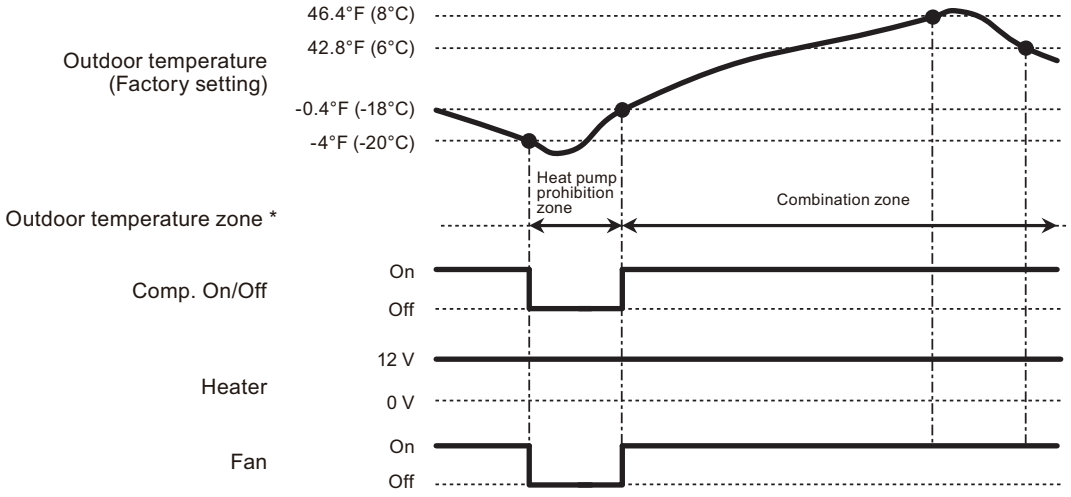
- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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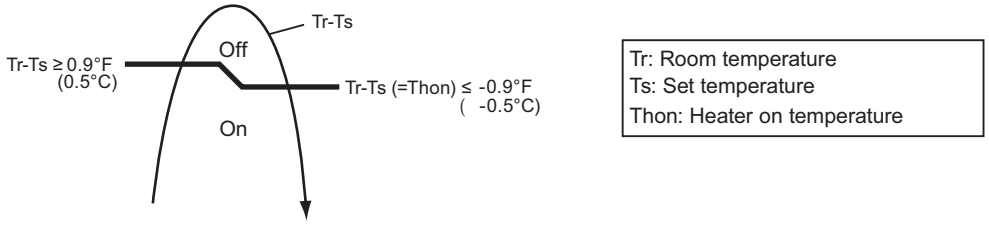
● Auxiliary heater control by outdoor temperature 3

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

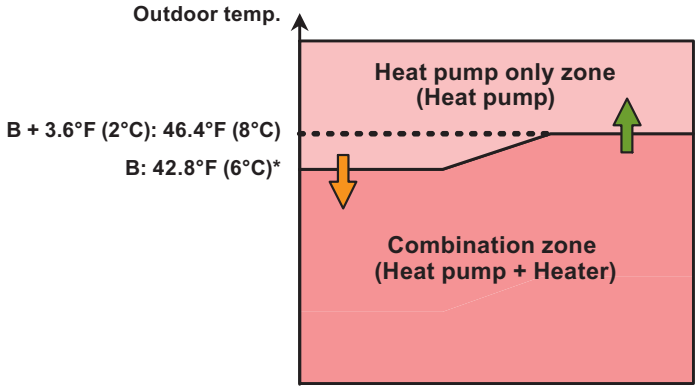
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary B: Adjustable by function setting number 37.

- **External heater output**

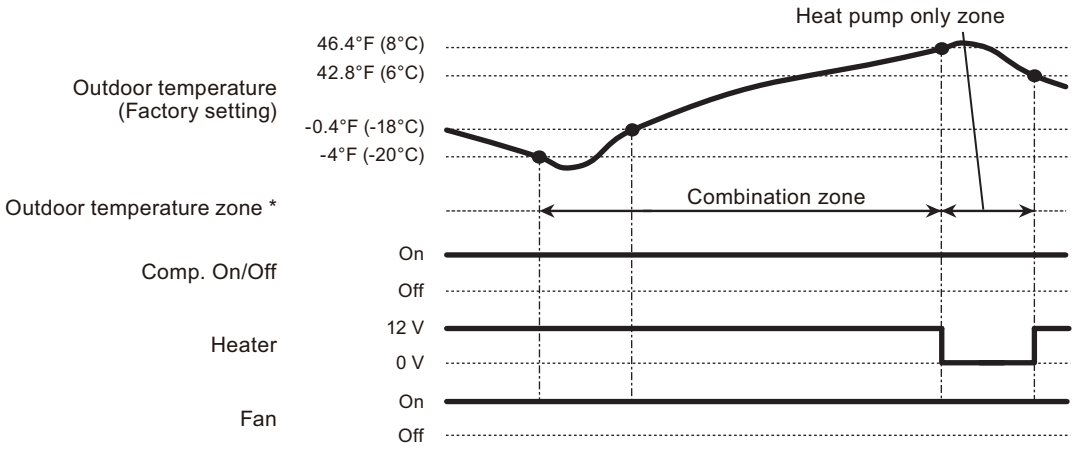


- **Outdoor temperature zone**



*: Adjustable by function setting 67

- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

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NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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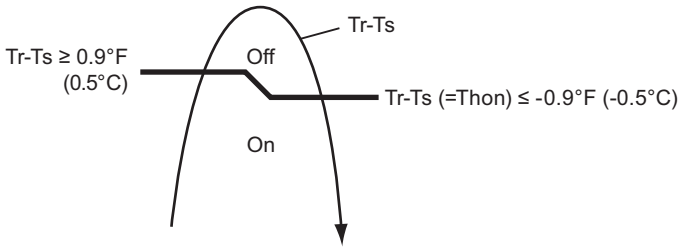
● Auxiliary heat pump control

- **External heater output**

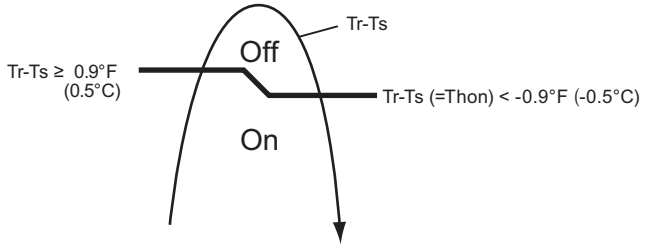
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

  – Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
  – Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



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

- **Auxiliary heat pump On/Off**
  – Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

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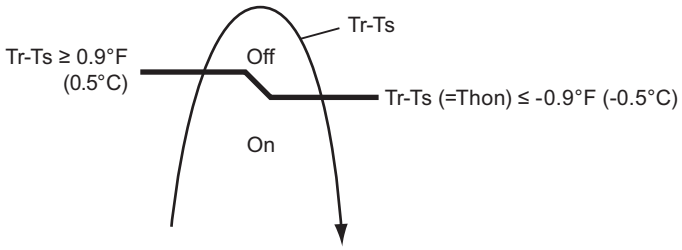
● Auxiliary heat pump control by outdoor temperature 1

- **External heater output**

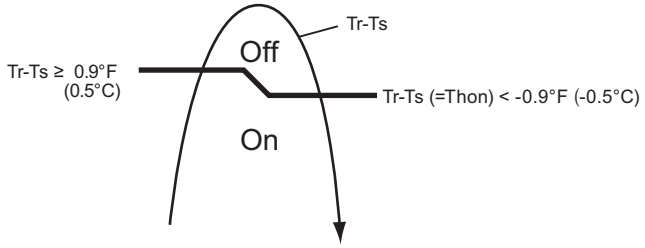
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
– Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



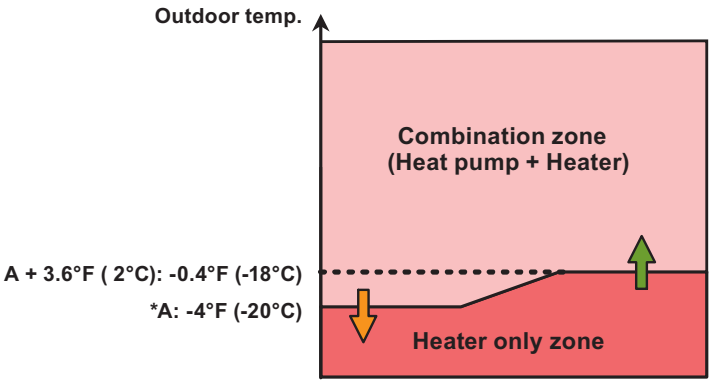
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

- **Outdoor temperature zone**



*: Adjustable by function setting 66

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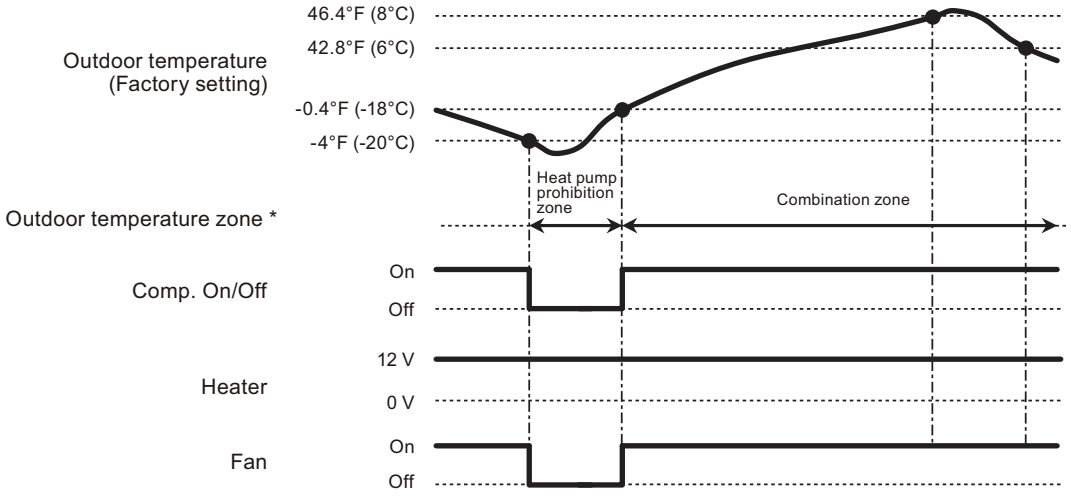
- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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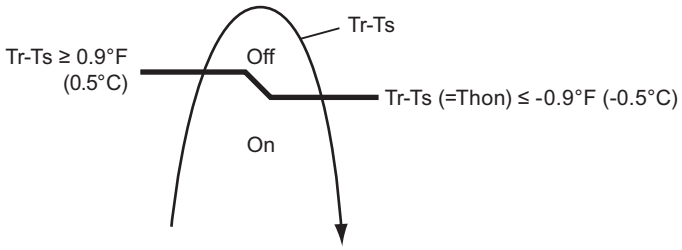
● Auxiliary heat pump control by outdoor temperature 2

- **External heater output**

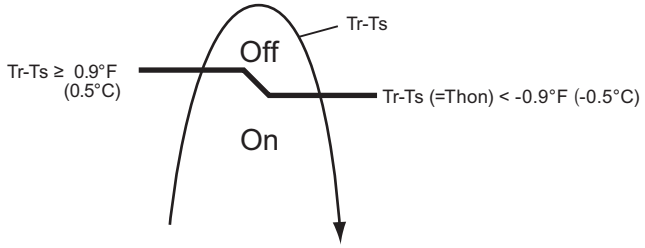
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
– Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



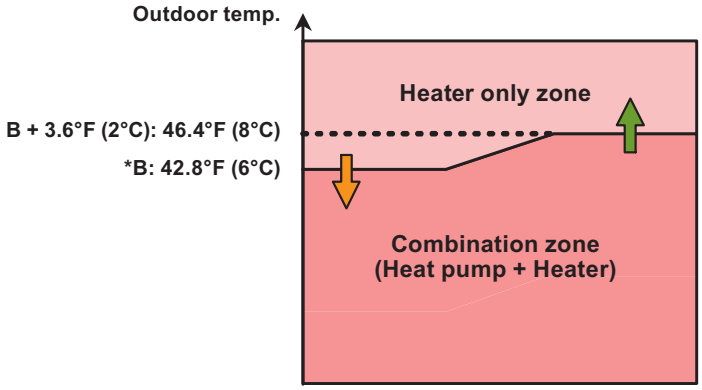
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

- **Auxiliary heat pump On/Off**
  – Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



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

- **Outdoor temperature zone**



*: Adjustable by function setting 67

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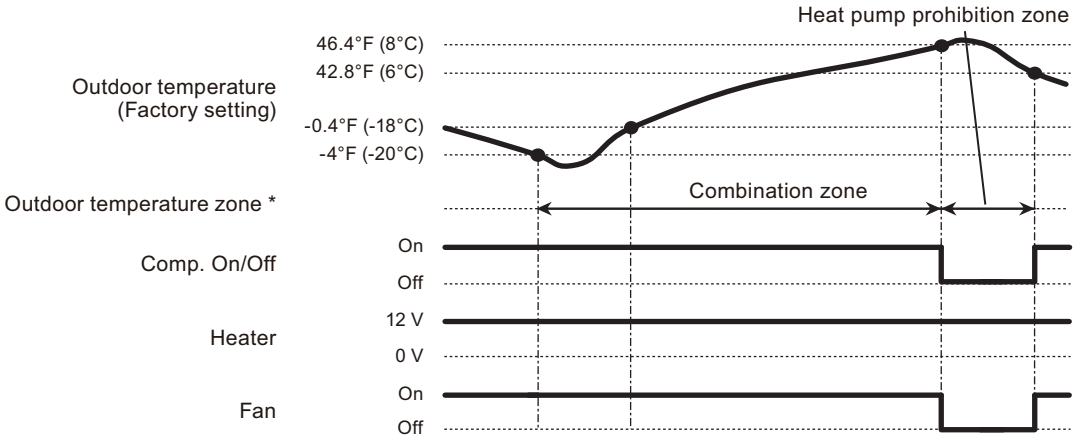
- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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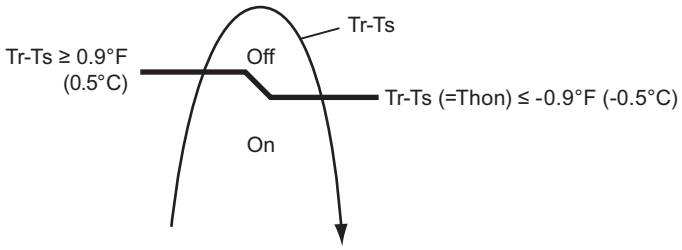
● Auxiliary heat pump control by outdoor temperature 3

- **External heater output**

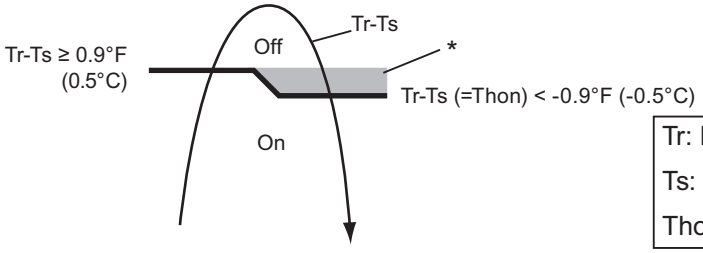
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	• Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

– Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
– Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



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

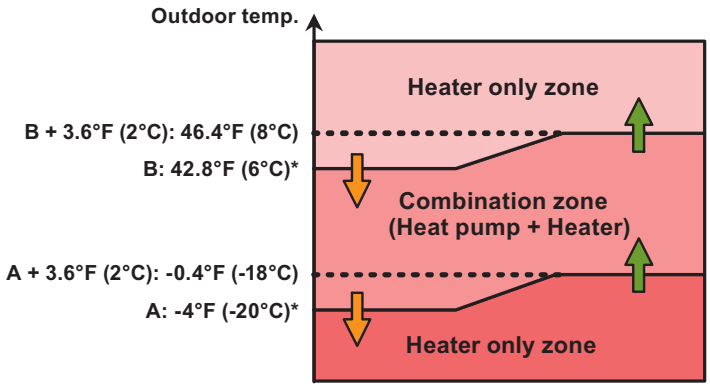
- **Auxiliary heat pump On/Off**
  – Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
  – All control temperatures will shift by adjusting “Thon”.



Tr: Room temperature
Ts: Set temperature
Thon: Heat pump on temperature

*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

- **Outdoor temperature zone**



*: Adjustable by function setting 66 and 67

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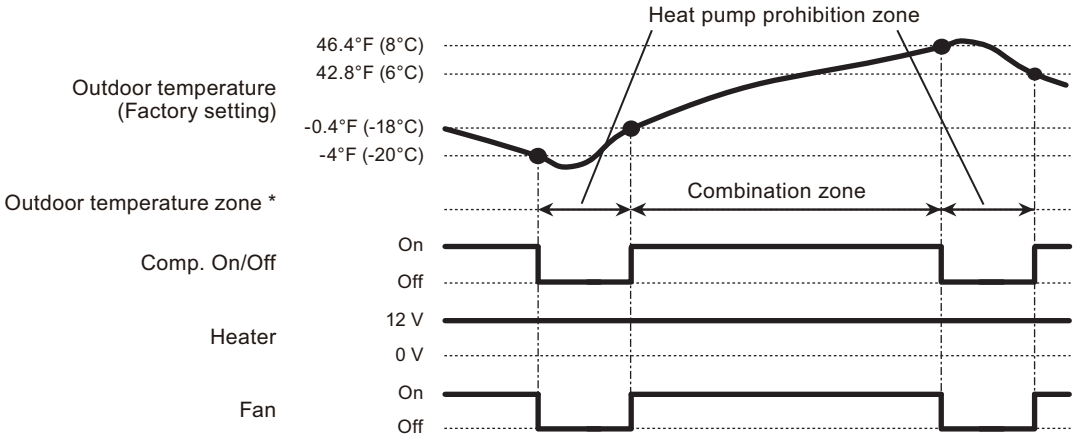
- **Operation status**



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

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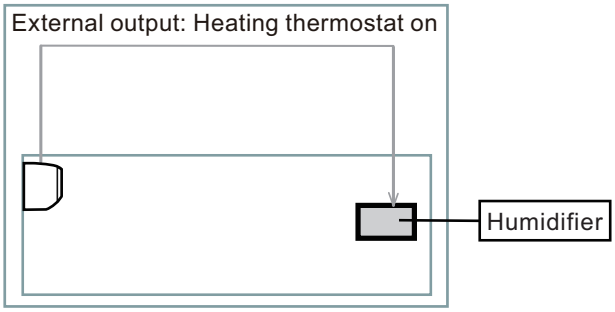
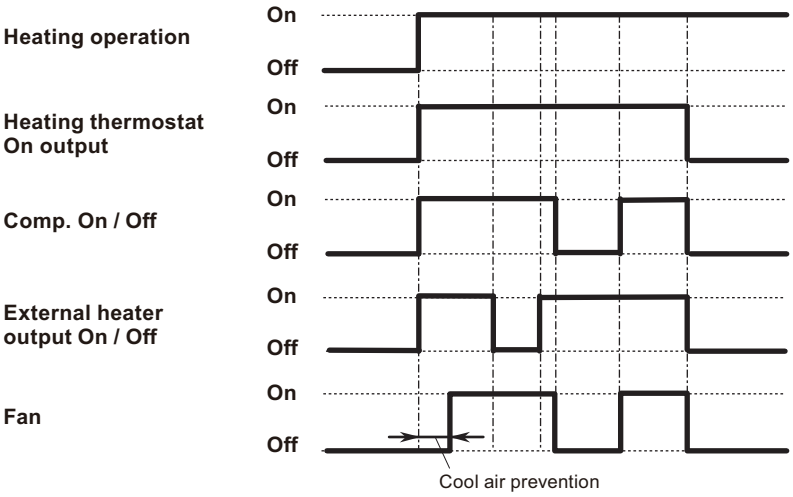
■ Heating thermostat on for humidifier

Situation	Indoor unit				
	Mode	Function setting	Rotary SW	External output	
		Heating thermostat on no. 60		Heating thermostat on	Indoor unit fan operation status
Example of individual connection	5	60-05	7	CN47	Not used
	6	60-06	8	CN312	
	7	60-07	9	CN311	
	8	60-08	A	CN310	

- **Example of individual connection**



- **Operation status**
  The heating thermostat output for CNB01 (1-2 or 1-3 or 1- or 1-5) will be on when comp on or external heater on.
  The heating thermostat output will be off when comp off and external heater off.



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10. Group connection

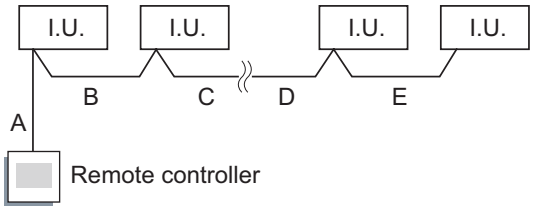
NOTE: Group control cannot be used together with WLAN Adapter.

Installation procedure for group control system:

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

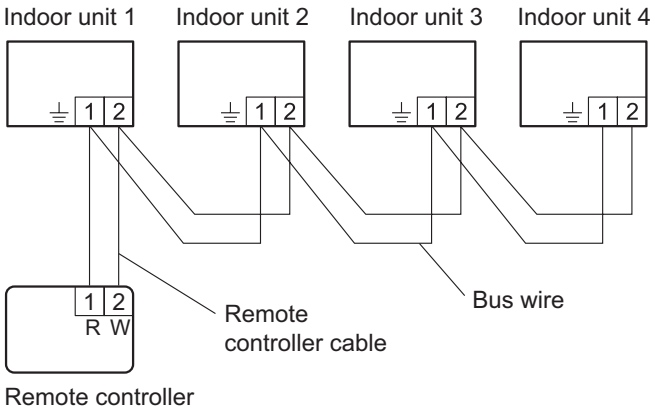
NOTE: When different type of indoor units (such as wall-mounted type and cassette type, cassette type and duct type, or other combinations) are connected using group control system, some functions may no longer be available.

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



A, B, C, D, E: Remote controller cable		
Wiring length limitation	UTY-RVRU	A + B + C + D + E ≤ 76.5 yd (70 m)
	Other than UTY-RVRU	A + B + C + D + E ≤ 546.8 yd (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.

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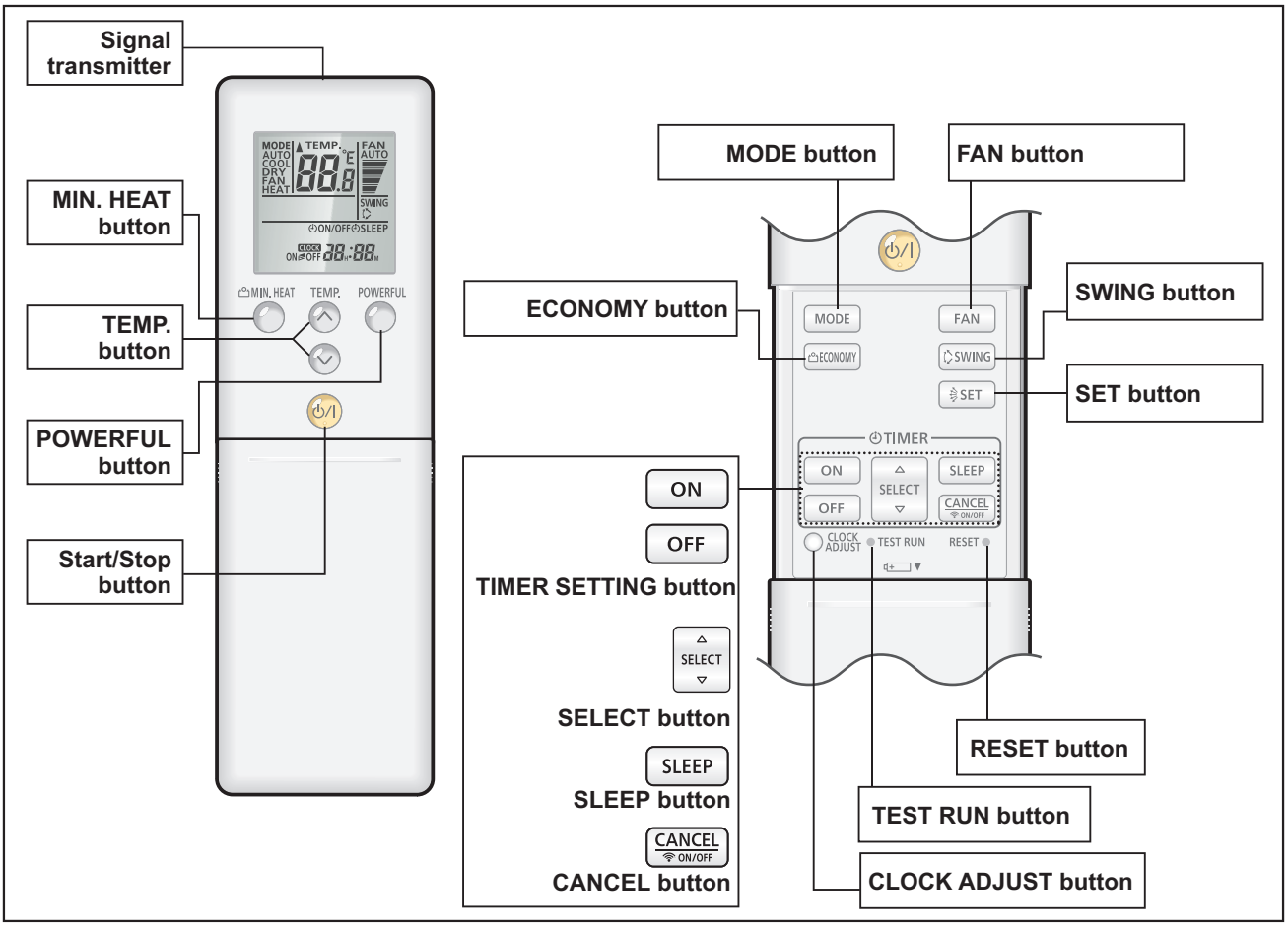
11. Remote controller

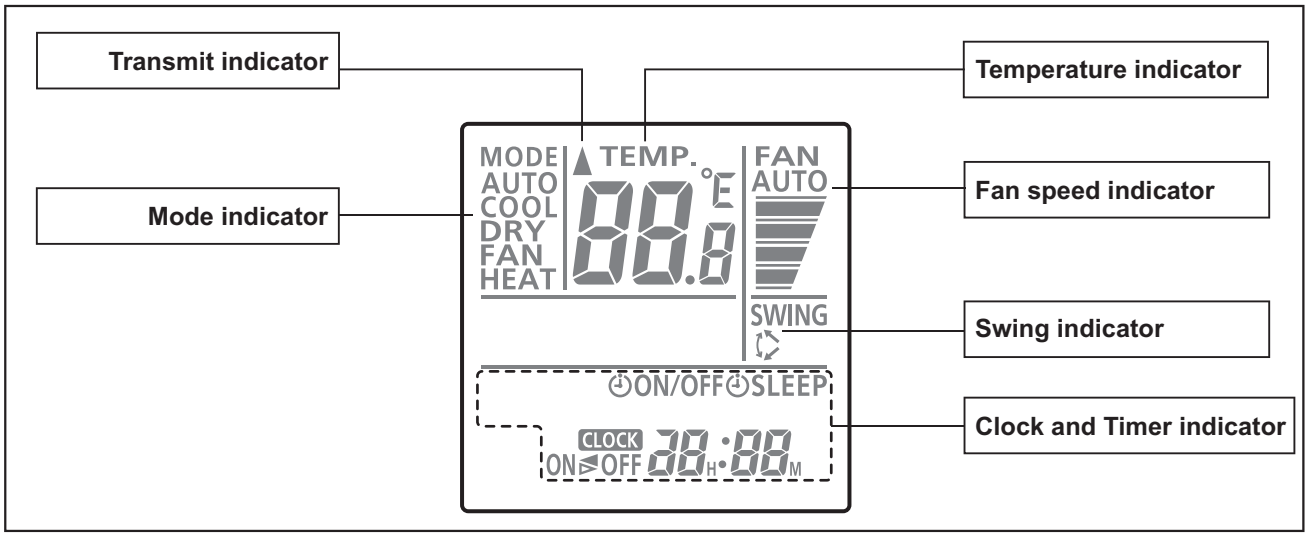
11-1. Wireless remote controller

■ 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.

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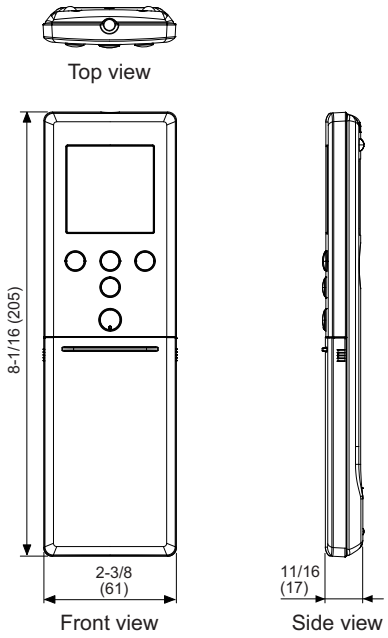
■ Specifications

● Controller

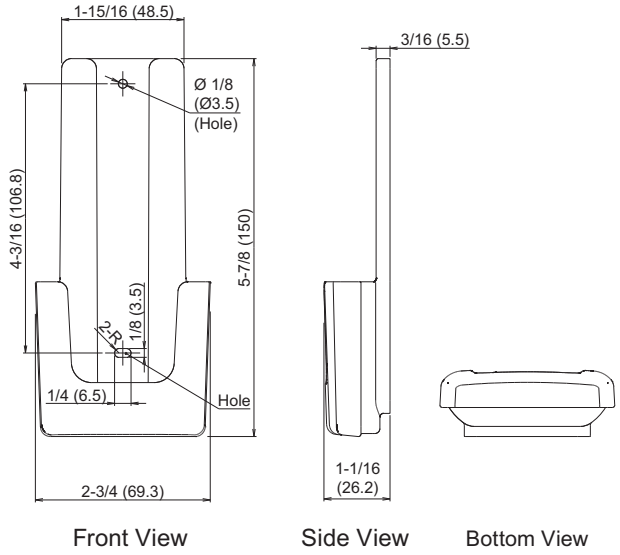
Unit: in (mm)



Size (H × W × D)	in (mm)	8-1/16 × 2-3/8 × 11/16 (205 × 61 × 17)
Weight	oz (g)	4.4 (124) (without batteries)

● Holder

Unit: in (mm)



Size (H × W × D)	in (mm)	5-7/8 × 2-3/4 × 1-1/16 (150 × 69.3 × 26.2)
Weight	oz (g)	1 (27)

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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.

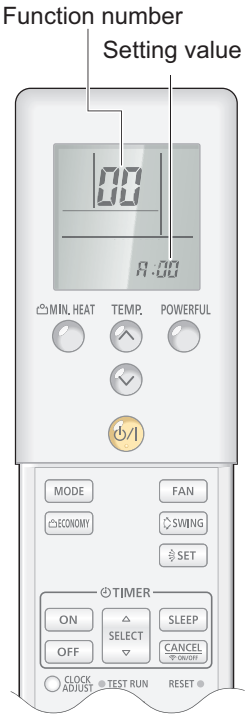
After reconfirming the items listed above, connect the power supply of the indoor unit.

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 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 MIN. HEAT button. TEMP. (∧) (∨) buttons to select the function number. Press theMIN. HEAT button to switch between the left and right digits.
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. (∧) (∨) buttons to select the setting value. To switch between the left and right digits, press the MIN. HEAT button.
4. Press the MODE button once. Confirm that you hear the beep.
5. Press the START/STOP button to fix the function setting. Confirm that you hear the beep.
6. Press the RESET button to end the function setting mode.
7. After completing the function setting, be sure to disconnect the power supply and then reconnect it.

⚠ 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.

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NOTES:

- The air conditioner custom code is set to A prior to shipment.
- If you do not know the air conditioner custom code setting, try each of the custom codes (A →b →c →d) until you find the code that operates the air conditioner.

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■ 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
11)	61	Control switching of external heaters
12)	62	Operating temperature switching of external heaters
13)	66	Outdoor temperature zone boundary temperature A
14)	67	Outdoor temperature zone boundary temperature B
15)	71	Standby time for auxiliary equipment operation
16)	72	Heat pump backup setting
17)	73	Emergency heat for external output terminal
18)	94	Fixed operation mode switching
19)	95	Heat insulation condition (building insulation)

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	♦

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2) Room temperature control for indoor unit sensor

NOTE: Before performing this setting, refer to Function 95.
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 78°F and the setting value is “03” (-2°F), the corrected temp. will be 80°F (78°F - [-2°F]).

The temperature correction values show the difference from the Standard setting “00” (manufacturer’s recommended value).
*When Function 95-01 (High insulation) is set, the Standard setting “00” will be the same as “No correction 0.0°F (0.0°C)” (01).

Function number		Setting value	Setting description		Factory setting
30 (For cooling)	31 (For heating)	00	Standard setting*		♦
		01	No correction 0.0°F (0.0°C)		
		02	-1°F (-0.5°C)	More cooling Less heating	
		03	-2°F (-1.0°C)		
		04	-3°F (-1.5°C)		
		05	-4°F (-2.0°C)		
		06	-5°F (-2.5°C)		
		07	-6°F (-3.0°C)		
		08	-7°F (-3.5°C)		
		09	-8°F (-4.0°C)		
		10	+1°F (+0.5°C)	Less cooling More heating	
		11	+2°F (+1.0°C)		
		12	+3°F (+1.5°C)		
		13	+4°F (+2.0°C)		
		14	+5°F (+2.5°C)		
		15	+6°F (+3.0°C)		
		16	+7°F (+3.5°C)		
		17	+8°F (+4.0°C)		

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3) Room temperature control for wired remote controller sensor

NOTE: Before performing this setting, refer to Function 95.
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.

*When Function 95-01 (High insulation) is set, the Standard setting “00” will be the same as “No correction 0.0°C” (01).

Function number		Setting value	Setting description		Factory setting
35 (For cooling)	36 (For heating)	00	Standard setting*		♦
		01	No correction 0.0°F (0.0°C)		
		02	-1°F (-0.5°C)	More cooling Less heating	
		03	-2°F (-1.0°C)		
		04	-3°F (-1.5°C)		
		05	-4°F (-2.0°C)		
		06	-5°F (-2.5°C)		
		07	-6°F (-3.0°C)		
		08	-7°F (-3.5°C)		
		09	-8°F (-4.0°C)		
		10	+1°F (+0.5°C)	Less cooling More heating	
		11	+2°F (+1.0°C)		
		12	+3°F (+1.5°C)		
		13	+4°F (+2.0°C)		
		14	+5°F (+2.5°C)		
		15	+6°F (+3.0°C)		
		16	+7°F (+3.5°C)		
		17	+8°F (+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.

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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.

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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—04	Cooling thermostat On	
	05	Heating operation	
	06	Operation/Stop	
	07—08	Cooling thermostat On	
	09	Error status	
	10	Indoor unit fan operation status	
	11	External heater	

11) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to “External heater output” in "Details of control output function" on page 30.

Function number	Setting value	Setting description	Factory setting
61	00	Auxiliary heater control 1	♦
	01	Auxiliary heater control 2	
	02	Heat pump prohibition control	
	03	Auxiliary heater control by outdoor temperature 1	
	04	Auxiliary heater control by outdoor temperature 2	
	05	Auxiliary heater control by outdoor temperature 3	
	06	Auxiliary heat pump control	
	07	Auxiliary heat pump control by outdoor temperature 1	
	08	Auxiliary heat pump control by outdoor temperature 2	
	09	Auxiliary heat pump control by outdoor temperature 3	

12) Operating temperature switching of external heaters

Sets the temperature conditions when the external heater is ON.

For details, refer to “External heater output” in "Details of control output function" on page 30.

Function number	Setting value	Setting description		Factory setting
		Heater: On	Heater: Off	
62	00	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	♦
	01	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	
	02	-3.6 °F (-2 °C)	-1.8 °F (-1 °C)	
	03	-5.4 °F (-3 °C)	-1.8 °F (-1 °C)	
	04	-7.2 °F (-4 °C)	-1.8 °F (-1 °C)	
	05	-9.0 °F (-5 °C)	-1.8 °F (-1 °C)	

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13) Outdoor temperature zone boundary temperature A

Setting required if changing of the outdoor temperature setting for heat pump prohibition zone is required when auxiliary heater control by outdoor temperature 1 and 2 are performed on the indoor unit.

For details, refer to “External heater output” in "Details of control output function" on page 30.

Function number	Setting value	Setting description	Factory setting
66	00	-4.0°F (-20°C)	♦
	01	-0.4°F (-18°C)	
	02	3.2°F (-16°C)	
	03	6.8°F (-14°C)	
	04	10.4°F (-12°C)	
	05	14.0°F (-10°C)	
	06	17.6°F (-8°C)	
	07	21.2°F (-6°C)	
	08	24.8°F (-4°C)	

14) Outdoor temperature zone boundary temperature B

Setting required if changing of the outdoor temperature setting for heat pump only zone is required when auxiliary heater control by outdoor temperature 1 and 3 is performed on the indoor unit.

For details, refer to “External heater output” in "Details of control output function" on page 30.

Function number	Setting value	Setting description	Factory setting
67	00	42.8°F (6°C)	♦
	01	14.0°F (-10°C)	
	02	17.6°F (-8°C)	
	03	21.2°F (-6°C)	
	04	24.8°F (-4°C)	
	05	28.4°F (-2°C)	
	06	32.0°F (0°C)	
	07	35.6°F (2°C)	
	08	39.2°F (4°C)	
	09	42.8°F (6°C)	
	10	46.4°F (8°C)	
	11	50.0°F (10°C)	
	12	53.6°F (12°C)	
	13	57.2°F (14°C)	
	14	60.8°F (16°C)	
	15	64.4°F (18°C)	

15) Standby time for auxiliary equipment operation

Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.

For details, refer to "Details of control output function" on page 30.

Function number	Setting value	Setting description	Factory setting
71	00	Disable	♦
	01	1 minute	
	02	2 minutes	
	•	•	
	•	•	
	•	•	
	98	98 minutes	
	99	99 minutes	

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16) Heat pump backup setting

Enables or disables the heat pump backup operation.

Function number	Setting value	Setting description	Factory setting
72	00	Disable	♦
	01	Enable	

17) Emergency heat for external output terminal

Enables or disables emergency heat input.

Function number	Setting value	Setting description	Factory setting
73	00	Disable	♦
	01	Enable	

NOTE: When this function is used, IR Receiver Unit or Wired Remote Controller is necessary.

18) Fixed operation mode switching

Sets the operation mode to heat pump, heating only, or cooling only.

Function number	Setting value	Setting description	Factory setting
94	00	Heat pump	♦
	01	Heating only	
	02	Cooling only	

19) Heat insulation condition (building insulation)

Heat insulation conditions differ according to the installed environment.

“Standard insulation” (00) allows system to rapidly respond to the cooling or heating load changes.

“High insulation” (01) is when the heat insulation structure of the building is high and does not require system to rapidly respond to cooling or heating load changes.

When “High insulation” (01) is selected:

- Overheating (overcooling) is prevented at the start-up.
- All room-temperature control settings (Function 30, 31, 35, and 36) will reset to “No correction 0.0°F (0.0°C)”.

Function number	Setting value	Setting description	Factory setting
95	00	Standard insulation	♦
	01	High insulation	

NOTE: When changing Function 95, perform this setting before other room-temperature control settings (Function 30, 31, 35, and 36). If Function 95 is not set first, room-temperature control settings (Function 30, 31, 35, and 36) will be reset and you must re-do them again.

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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 A.)
3. Press the TEMP. (∧) (∨) 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.

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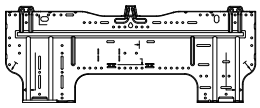
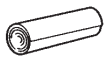
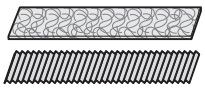
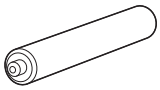
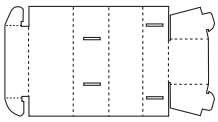
13. Accessories

13-1. Models: ASUH09KMAS and ASUH12KMAS

Part name	Exterior	Qty	Part name	Exterior	Qty
Operation manual		1	Tapping screw (large)		5
Installation manual		1	Tapping screw (small)		2
Wall hook bracket		1	Cloth tape		1
Remote controller		1	Filter holder		2
Remote controller holder		1	Air cleaning filters		1
Battery		2	Installation spacer		1

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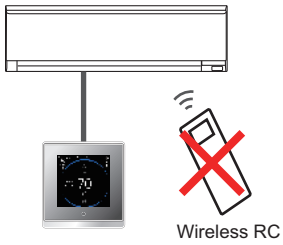
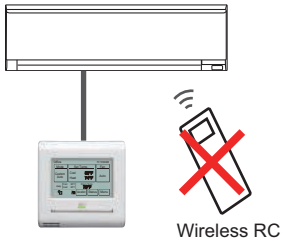
14. Optional parts

14-1. Controllers

Exterior	Part name	Model name	Summary
	Wired Remote Controller (Touch Panel)	UTY-RVRU	Remote controller that provides the functions you need in a sleek design that uniquely transforms itself to blend with any interior. Optional Communication Kit is necessary for installation. **NOTE:** When this remote controller is connected, wireless remote controller cannot be used. 
	Wired Remote Controller (Touch Panel)	UTY-RNRUZ∗	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Optional Communication Kit is necessary for installation. **NOTE:** When this remote controller is connected, wireless remote controller cannot be used. 
	Simple Remote Controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Optional Communication Kit is necessary for installation.
	Simple Remote Controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Optional Communication Kit is necessary for installation.

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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.

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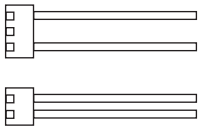
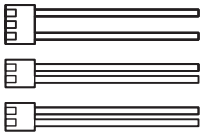
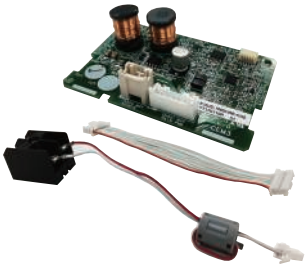
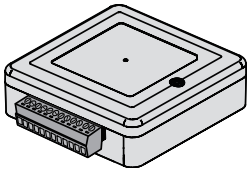
14-2. Others

Exterior	Part name	Model name	Summary
	External Connect Kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PCB. Connecting point: 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-XCSXZ2	Use to connect with external devices and air conditioner PCB. Optional External Connect Kit might be required to connect locally purchased devices via this PCB. Connecting point: CN65 on Main PCB
	Communication Kit	UTY-TWRXZ2	Use to connect Non-polar 2-core wired remote controller. Connecting point: CN13
	Modbus Converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network. Connecting point: CN65 on Main PCB
	Thermostat Converter	UTY-TTRXZ∗	This converter can control Fujitsu General products using a third-party thermostat controller. Optional Communication Kit is necessary for installation.
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system. Optional Communication Kit is necessary for installation.
	External Switch Controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches. Optional Communication Kit is necessary for installation.

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ASUH09-12KMAS

Part 2. OUTDOOR UNIT

SINGLE TYPE:

AOUH09KMAS1
AOUH12KMAS1

OUTDOOR UNIT
AOUH09-12KMAS1

1. Specifications

Type				Inverter, Heat pump	
Model name				AOUH09KMAS1	AOUH12KMAS1
Power supply				208/230 V~ 60 Hz	
Power supply intake				Outdoor unit	
Available voltage range				187—253 V	
Starting current			A	3.8	4.6
Fan	Airflow rate	Cooling	CFM (m^3/h)	901 (1,530)	1,042 (1,770)
		Heating		889 (1,510)	1,065 (1,810)
	Type × Qty			Propeller fan × 1	
	Motor output		W	23	
Sound pressure level*		Cooling	dB (A)	44	48
		Heating		47	50
Heat exchanger type		Dimensions (H × W × D)	in (mm)	Main 1: 19-13/16 × 34-11/16 × 11/16 (504 × 881 × 18.19) Main 2: 19-13/16 × 33-1/2 × 11/16 (504 × 851 × 18.19)	
		Fin pitch	FPI	Main 1: 20 Main 2: 20	
		Rows × Stages		Main 1: 1 × 24 Main 2: 1 × 24	
		Pipe type		Copper tube	
		Fin type	Type (Material)	Aluminum	
			Surface treatment	PC fin	
Compressor		Type		DC rotary	
		Motor output	W	900	
Refrigerant		Type		R32	
		Charge	lb oz	1 lb 14 oz	
			g	850	
Refrigerant oil		Type		RB68A	
		Amount	in^3 (cm^3)	20.7 (340)	
Enclosure		Material		Steel sheet	
		Color		Beige Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)		Net	in (mm)	21-5/16 × 31-7/16 × 11-7/16 (542 × 799 × 290)	
		Gross		23-11/16 × 37 × 14-3/4 (602 × 940 × 375)	
Weight		Net	lb (kg)	71 (32)	
		Gross		77 (35)	
Connection pipe	Size	Liquid	in (mm)	Ø1/4 (Ø6.35)	
		Gas		Ø3/8 (Ø9.52)	
	Method			Flare	
	Pre-charge length		ft (m)	49 (15)	
	Min. length			10 (3)	
	Max. length			66 (20)	
	Max. height difference			49 (15)	
Operation range		Cooling	°F (°C)	14 to 122 (-10 to 50)	
		Heating		5 to 75 (-15 to 24)	
Drain hose		Material		Polypropylene	
		Tip diameter	in (mm)	Ø1/2 (Ø13.0) (I.D.) Ø5/8 to Ø11/16 (Ø16.0 to Ø16.8) (O.D.)	

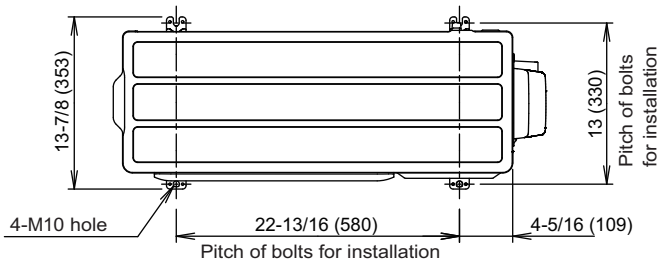
NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 80°FDB (26.67°CDB)/67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB)/75°FWB (23.9°CWB).
  - Heating: Indoor temperature of 70°FDB (21.11°CDB)/59°FWB (15°CWB), and outdoor temperature of 47°FDB (8.33°CDB)/43°FWB (6.11°CWB).
  - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (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.

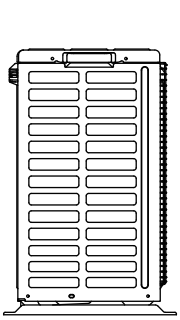
2. Dimensions

2-1. Models: AOUH09KMAS1 and AOUH12KMAS1

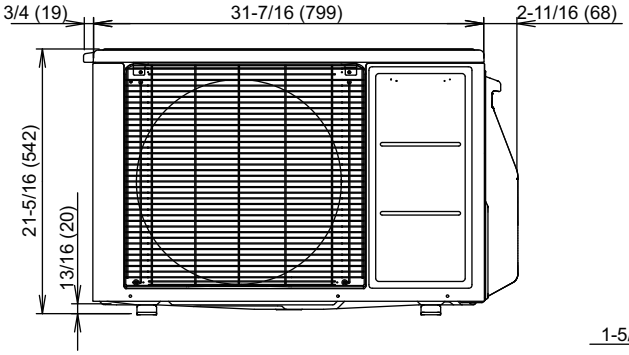
Unit: in (mm)



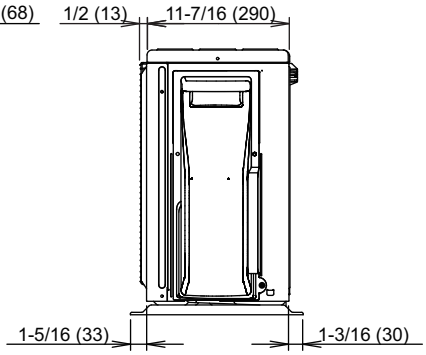
Top view



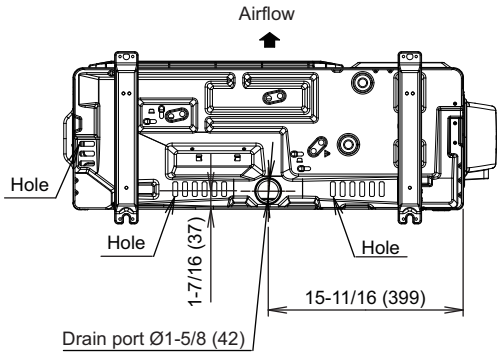
Side view



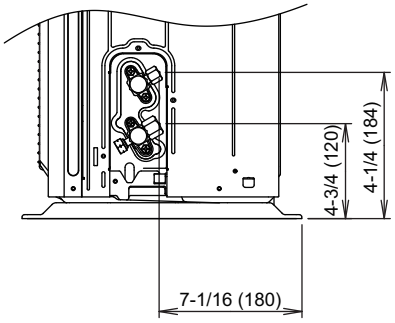
Front view



Side view



Bottom view



Side view (Valve part)

3. Installation space

3-1. Models: AOUH09KMAS1 and AOUH12KMAS1

OUTDOOR UNIT
AOUH09-12KMAS1

■ Space requirement

Provide sufficient installation space for product safety.

⚠ CAUTION

Keep the space shown in the installation examples.

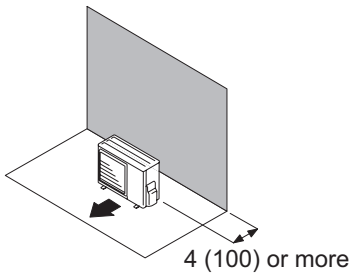
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.

● Single outdoor unit installation

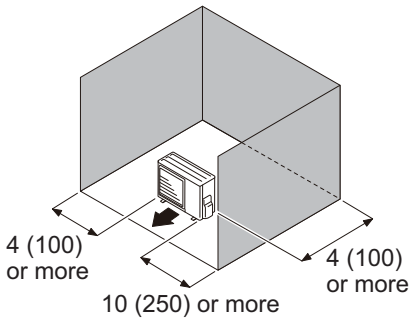
- **When the upper space is open:**

Unit: in (mm)

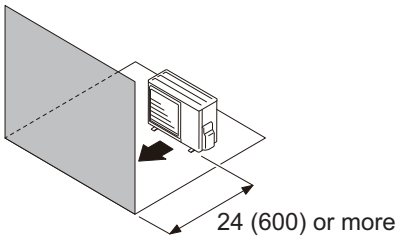
Obstacles at rear only



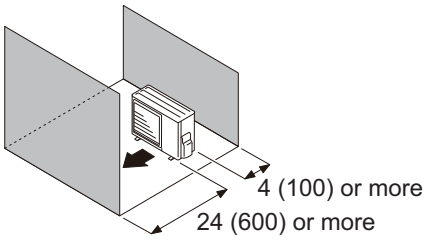
Obstacles at rear and sides



Obstacles at front



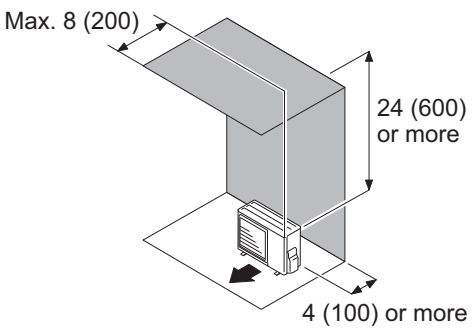
Obstacles at front and rear



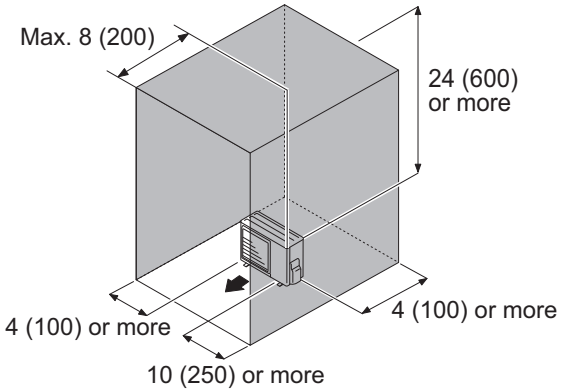
- **When an obstruction in the upper space:**

Unit: in (mm)

Obstacles at rear and above



Obstacles at rear, sides, and above



OUTDOOR UNIT
AOUH09-12KMAS1

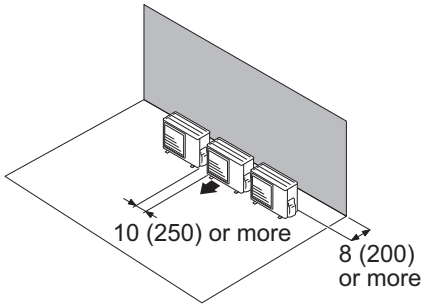
● Multiple outdoor unit installation

- Provide at least 10 in (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:**".

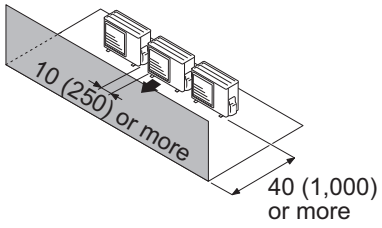
- **When the upper space is open:**

Unit: in (mm)

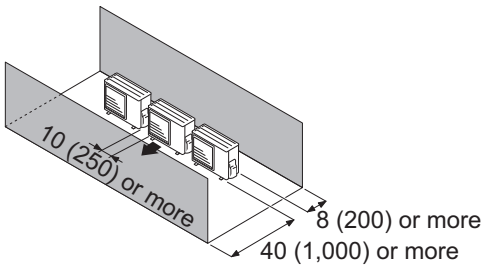
Obstacles at rear only



Obstacles at front only



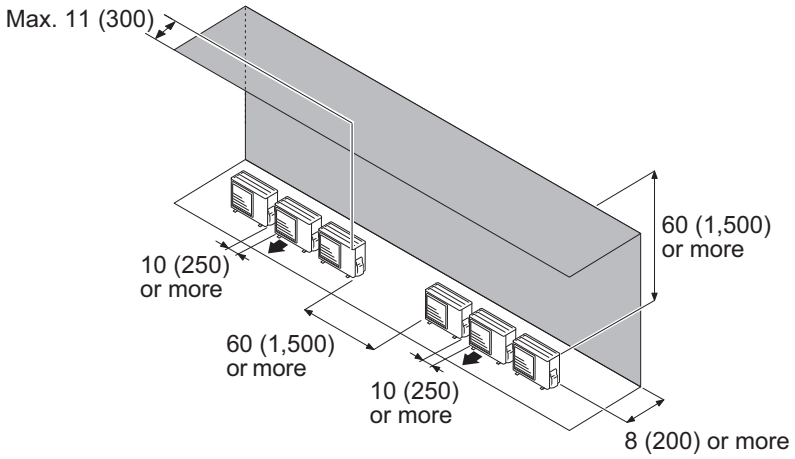
Obstacles at front and rear



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

Unit: in (mm)

Obstacles at rear and above.

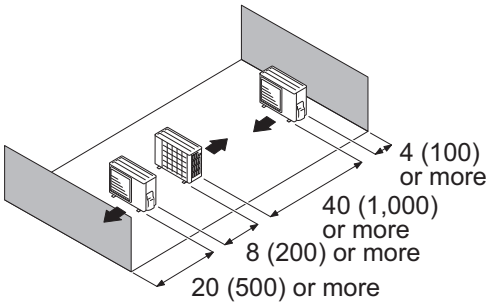


OUTDOOR UNIT
AOUH09-12KMAS1

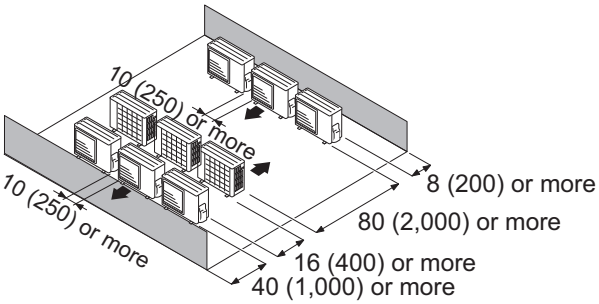
● Outdoor units installation in multi-row

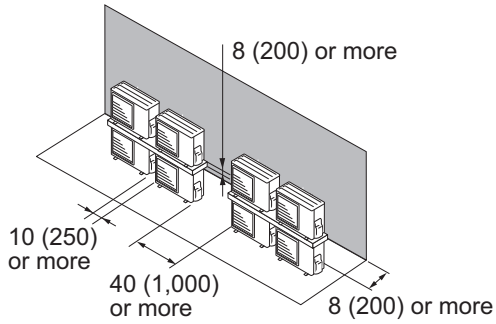
Unit: in (mm)

Single parallel unit arrangement



Multiple parallel unit arrangement



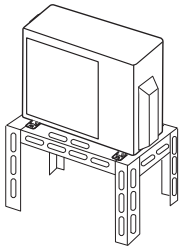


NOTES:

- 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

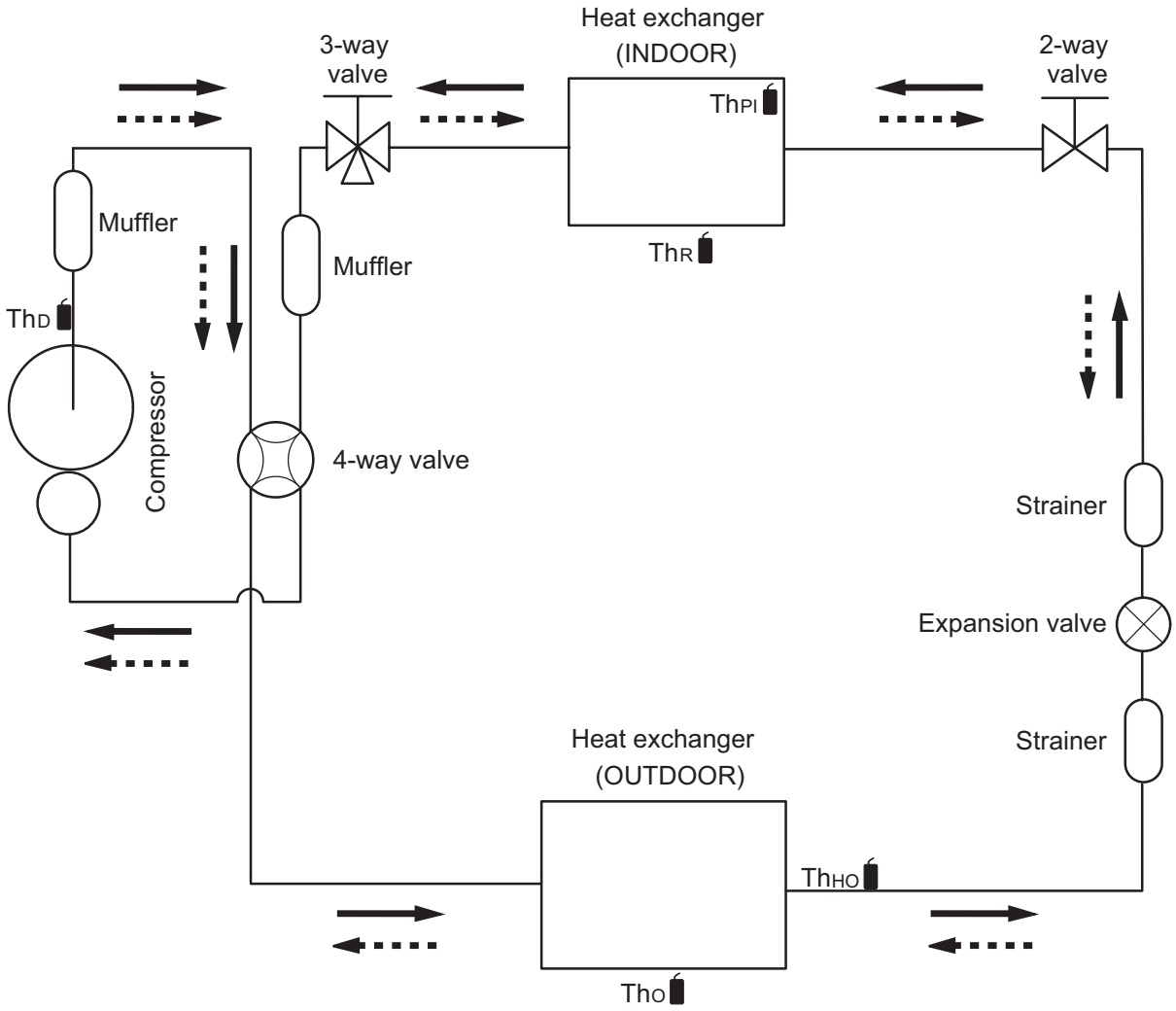
- Do not install the outdoor unit in two-stage where the drain water could freeze. Otherwise the drainage from the upper unit may form ice and cause a malfunction of the lower unit.
- When the outdoor temperature is 32 °F (0 °C) or less, do not use the accessory drain pipe and drain cap. If the drain 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.



OUTDOOR UNIT
AOUH09-12KMAS1

4. Refrigerant circuit

4-1. Models: AOUH09KMAS1 and AOUH12KMAS1



ThD : Thermistor (Discharge temperature)

ThO : Thermistor (Outdoor temperature)

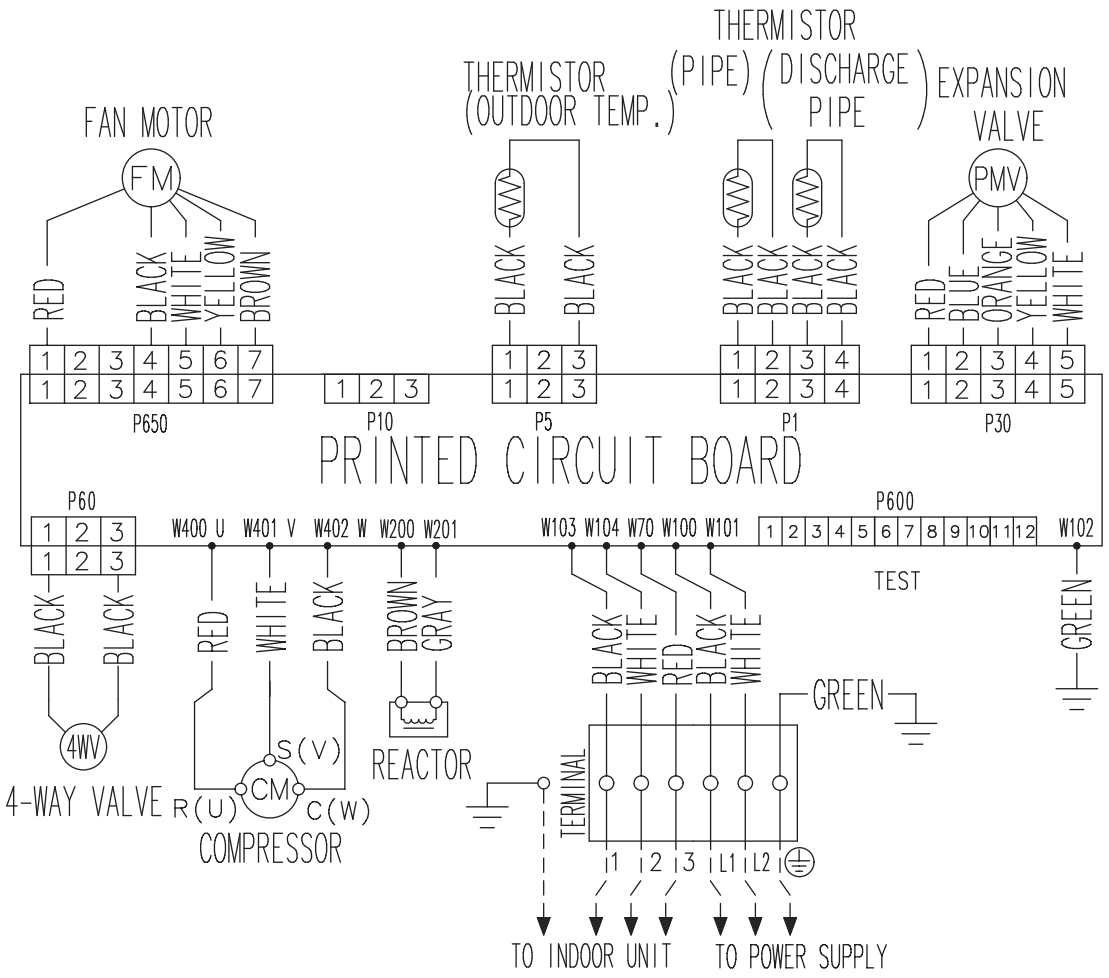
ThHO: Thermistor (Heat exchanger out temperature)

ThPI : Thermistor (Pipe temperature)

ThR : Thermistor (Room temperature)

5. Wiring diagrams

5-1. Models: AOUH09KMAS1 and AOUH12KMAS1



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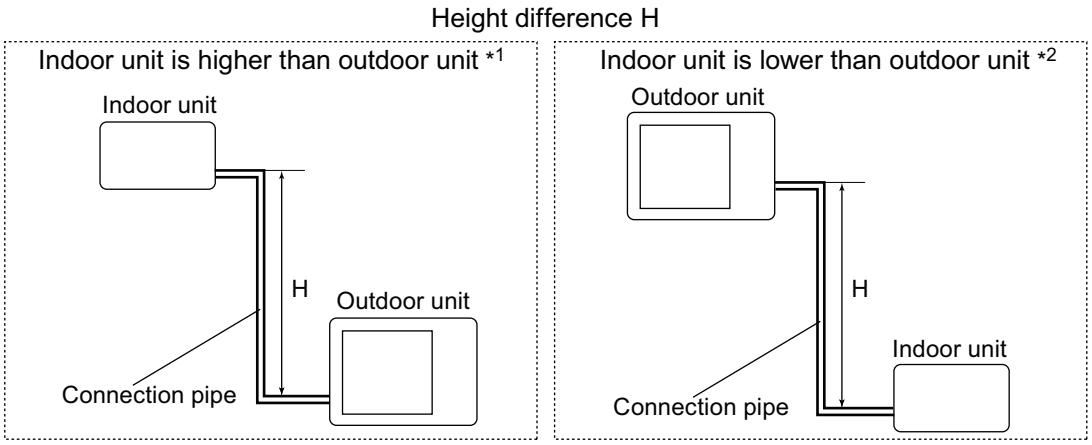
6. Capacity compensation rate for pipe length and height difference



6-1. Models: AOUH09KMAS1 and AOUH12KMAS1

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

COOLING		Pipe length							
		m		3	5	7.5	10	15	20
			ft	10	16	25	33	49	66
Height difference H	Indoor unit is higher than outdoor unit *1	15	49	—	—	—	—	0.883	0.893
		10	33	—	—	—	0.956	0.897	0.907
		7.5	25	—	—	0.988	0.960	0.901	0.910
		5	16	—	1.021	0.992	0.964	0.904	0.915
		3	10	1.032	1.024	0.995	0.967	0.908	0.918
		0	0	1.037	1.029	1.000	0.971	0.913	0.922
	Indoor unit is lower than outdoor unit *2	-3	-10	1.037	1.029	1.000	0.971	0.913	0.922
		-5	-16	—	1.029	1.000	0.971	0.913	0.922
		-7.5	-25	—	—	1.000	0.971	0.913	0.922
		-10	-33	—	—	—	0.971	0.913	0.922
		-15	-49	—	—	—	—	0.913	0.922

HEATING		Pipe length							
		m		3	5	7.5	10	15	20
			ft	10	16	25	33	49	66
Height difference H	Indoor unit is higher than outdoor unit *1	15	49	—	—	—	—	0.901	0.884
		10	33	—	—	—	0.974	0.901	0.884
		7.5	25	—	—	1.000	0.974	0.901	0.884
		5	16	—	1.006	1.000	0.974	0.901	0.884
		3	10	1.030	1.006	1.000	0.974	0.901	0.884
		0	0	1.030	1.006	1.000	0.974	0.901	0.884
	Indoor unit is lower than outdoor unit *2	-3	-10	1.027	1.003	0.997	0.971	0.899	0.882
		-5	-16	—	1.001	0.995	0.969	0.896	0.880
		-7.5	-25	—	—	0.993	0.967	0.894	0.878
		-10	-33	—	—	—	0.965	0.892	0.876
		-15	-49	—	—	—	—	0.883	0.867

7. Additional charge calculation

7-1. Models: AOUH09KMAS1 and AOUH12KMAS1

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Refrigerant type		R32
Factory charge amount	lb oz	1 lb 14 oz
	g	850

■ Refrigerant charge

Total pipe length	ft	49 or less	66 (Max.)	0.22 oz/ft (20 g/m)
	m	15 or less	20 (Max.)	
Additional charge amount	oz	0	3.5	
	g	0	100	

OUTDOOR UNIT
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8. Airflow

8-1. Model: AOUH09KMAS1

● Cooling

m^3/h	1,530
l/s	425
CFM	901

● Heating

m^3/h	1,510
l/s	419
CFM	889

8-2. Model: AOUH12KMAS1

● Cooling

m^3/h	1,770
l/s	492
CFM	1,042

● Heating

m^3/h	1,810
l/s	503
CFM	1,065

OUTDOOR UNIT
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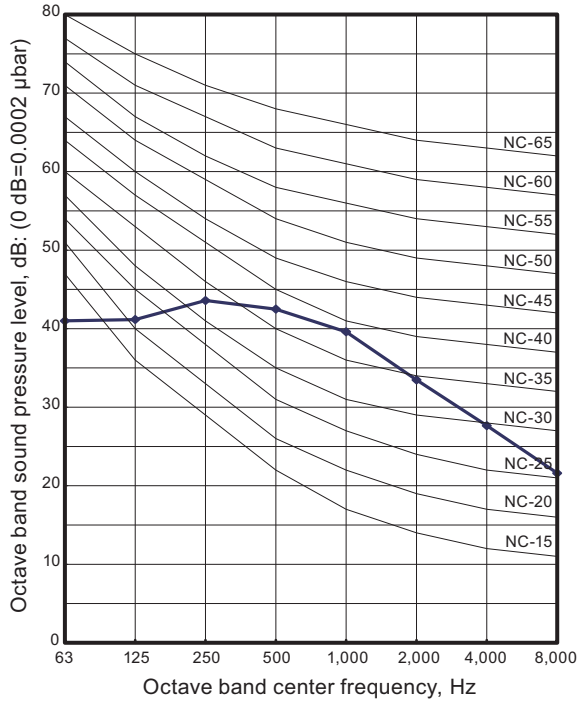
9. Operation noise (sound pressure)

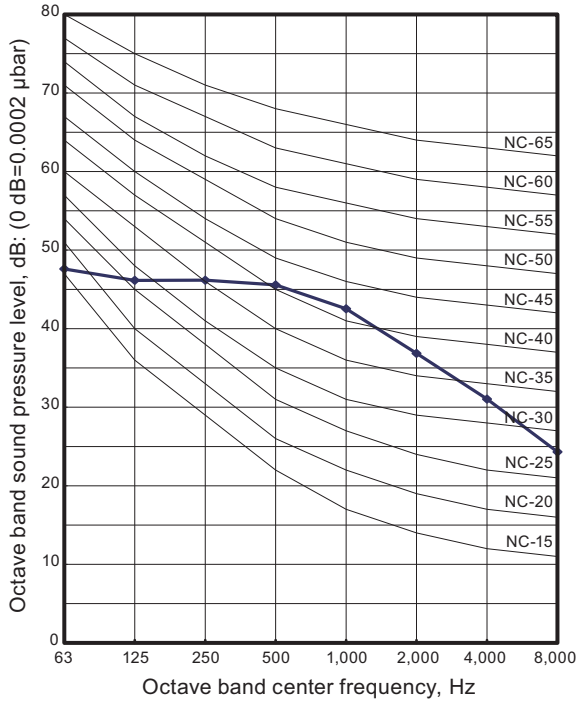
9-1. Noise level curve

■ AOUH09KMAS1

● Cooling

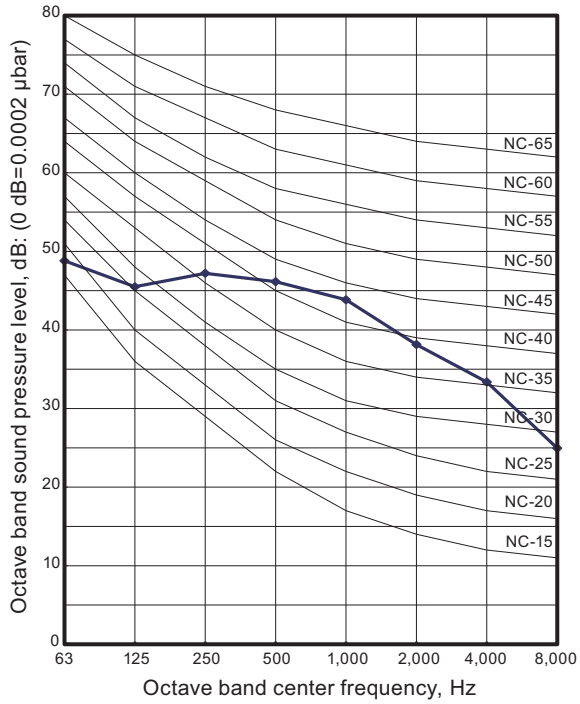


● Heating

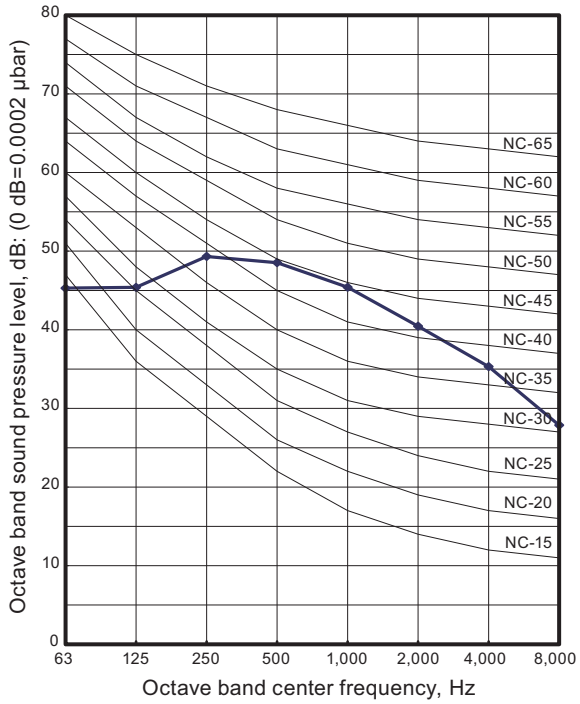


■ AOUH12KMAS1

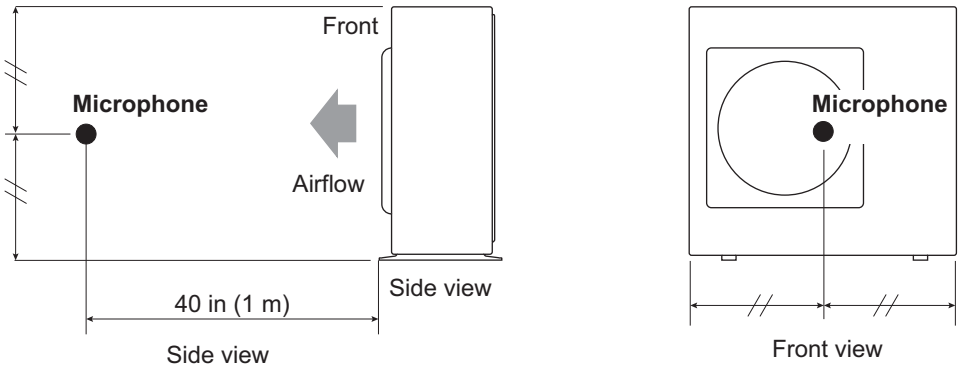
● Cooling



● Heating



9-2. Sound level check point



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

10. Electrical characteristics

Model name				AOUH09KMAS1	AOUH12KMAS1
Power supply	Voltage		V	208/230	
	Frequency		Hz	60	
MCA*1			A	11.5	
Starting current			A	3.8	4.6
Wiring spec.*2	MAX. CKT. BKR*3		A	15	
	Power cable		AWG	14	
	Connection cable*3	Size	AWG	14	
		Limited wiring length	ft (m)	69 (21)	

NOTES:

- *1: Minimum Circuit Ampacity (Calculation based on UL60335-2-40)
- *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: Maximum Circuit Breaker
- *4: Limit voltage drop to less than 2%. If voltage drop is 2% or more, increase cable conductor size.

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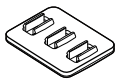
11. Safety devices

Type of protection	Protection form		Model	
			AOUH09KMAS1	AOUH12KMAS1
Circuit protection	Current fuse (Main PCB)		250 V, 20 A	
			250 V, 5 A	
Fan motor protection	Thermal protection program	Activate	185—252°F (85—122°C) Fan motor stop	
		Reset	171—237°F (77—114°C) Fan motor restart	
Compressor protection	Thermal protection program (Discharge temp.)	Activate	230°F (110°C) Compressor stop	
		Reset	After 7 minutes Compressor restart	
	Thermal protection program (Outdoor temp.) (Only in COOL or DRY mode)	Activate	5°F (-15°C) Compressor stop	
		Reset	14°F (-10°C) Compressor restart	

*PCB: Printed Circuit Board

12. Accessories

12-1. Models: AOUH09KMAS1 and AOUH12KMAS1

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1	Cable tie		2
Drain pipe		1	Protection label		1
Drain cap		5			

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