

AIR CONDITIONER

Wall mounted type

DESIGN & TECHNICAL MANUAL

INDOOR



ASUG09LMAS
ASUG12LMAS

OUTDOOR



AOUG09LMAS1
AOUG12LMAS1

FUJITSU GENERAL LIMITED

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Part 1. INDOOR UNIT

WALL MOUNTED TYPE:

ASUG09LMAS

ASUG12LMAS

1. Specifications

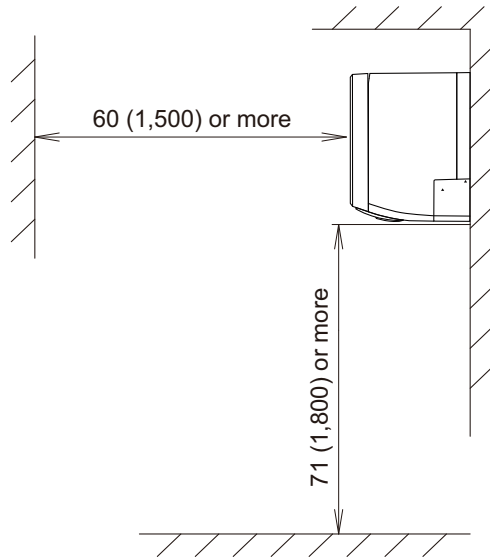
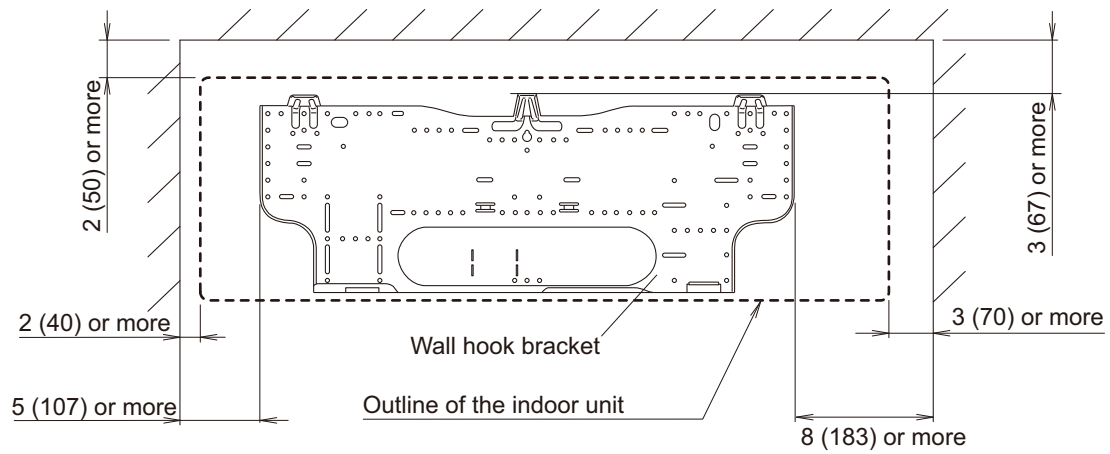
Type				Wall mounted					
				Inverter heat pump					
Model name				ASUG09LMAS	ASUG12LMAS				
Power supply				208/230 V ~ 60 Hz					
Power supply intake				Outdoor unit					
Available voltage range				187—253 V					
Capacity	Cooling	Rated	kW	2.64	3.52				
			Btu/h	9,000	12,000				
		Min.—Max.	kW	1.0—3.2	1.0—3.9				
			Btu/h	3,400—10,900	3,400—13,300				
	Heating	Rated	kW	3.52	4.69				
			Btu/h	12,000	16,000				
		Min.—Max.	kW	0.82—4.4	0.82—5.6				
			Btu/h	2,800—15,000	2,800—19,100				
	Heating (17 °F) ⁻¹	Rated	kW	2.17	3.02				
			Btu/h	7,400	10,300				
Max.		kW	2.96	3.72					
		Btu/h	10,100	12,700					
Input power	Cooling	Rated	kW	0.63	0.96				
				Min.—Max.	0.14—0.92	0.14—1.27			
	Heating	Rated		0.84	1.28				
				Min.—Max.	0.14—1.61	0.14—1.67			
	Heating (17 °F) ⁻¹	Rated		0.68	1.04				
				Max.	1.34	1.39			
Current	Cooling	Rated	A	3.1	4.7				
			Heating	4.0	6.0				
EER	Cooling		kW/kW	4.19	3.66				
			Btu/hW	14.3	12.5				
COP	Heating		kW/kW	4.19	3.66				
			Btu/hW	14.3	12.5				
SEER	Cooling		Btu/hW	26.5	23.0				
HSPF	Heating		Btu/hW	13.0	12.5				
Power factor	Cooling		%	88.4	88.8				
	Heating		%	91.3	92.8				
Moisture removal			pints/h (L/h)	2.7 (1.3)	3.8 (1.8)				
Maximum operating current*2			A	Cooling	6.4				
				Heating	7.9				
Fan	Airflow rate	Cooling	CFM (m ³ /h)	HIGH	453 (770)				
				MED	353 (600)				
				LOW	265 (450)				
				QUIET	147 (250)				
		Heating		HIGH	453 (770)				
				MED	377 (640)				
				LOW	306 (520)				
				QUIET	182 (310)				
	Type × Q'ty			Crossflow fan × 1					
	Motor output			W					
			49						
Sound pressure level*3	Cooling		dB (A)	HIGH	43				
				MED	36				
				LOW	30				
				QUIET	19				
	Heating			HIGH	43				
				MED	38				
				LOW	33				
				QUIET	21				
				Dimensions (H × W × D)			in (mm)		
				Fin pitch			FPI		
Rows × Stages			Man1: 21 Main2: 23 Sub: 18						
Pipe type			Main1: 2 × 10 Main2: 2 × 7 Sub: 1 × 4						
Fin type			Copper						
Material			Aluminum						
Enclosure			Polystyrene						
Color			White Approximate color of Munsell N 9.25/						
Dimensions (H × W × D)	Net		in (mm)						
	Gross		10-5/8 × 32-13/16 × 8-3/4 (270 × 834 × 222)						
Weight	Net		lb (kg)						
	Gross		10-7/8 × 36 × 13-1/16 (277 × 914 × 332)						
Connection pipe	Size	Liquid	in (mm)						
		Gas	Ø 1/4 (6.35)						
	Method	Ø 3/8 (Ø 9.52)							
Material			Flare						
Tip diameter			PP+HDPE						
Operation range	Cooling	°F (°C)		Ø15/32 (Ø 11.8) (I.D.), Ø19/32 to 21/32 (Ø 15.0 to 16.8) (O.D.)					
		%RH		64 to 90 (18 to 32)					
Remote controller type	Heating	°F (°C)		80 or less					
		°F (°C)		60 to 86 (16 to 30)					
				Wireless (Wired, Mobile app*4 [FGLair™] [option])					

Type	Wall mounted	
	Inverter heat pump	
Model name	ASUG09LMAS	ASUG12LMAS
<p>NOTES:</p> <ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – Cooling: Indoor temperature of 80 °F (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) /60 °FWB (15.56 °CWB), and outdoor temperature of 47 °FDB (8.33 °CDB) /43 °FWB (6.11 °CWB). – *1: Heating (17 °F): Indoor temperature of 70 °FDB (21.11 °CDB) /60 °FWB (15.56 °CWB), and outdoor temperature of 17 °FDB (-8.33 °CDB) /15 °FWB (-9.44 °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. • *2: Maximum current is maximum value when operated within the operation range. • *3: Sound pressure level: <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. • *4: Available on Google Play™ store or on App Store®. Optional WLAN adapter is also required. For details, refer to the setting manual. 		

2-2. Installation space requirement

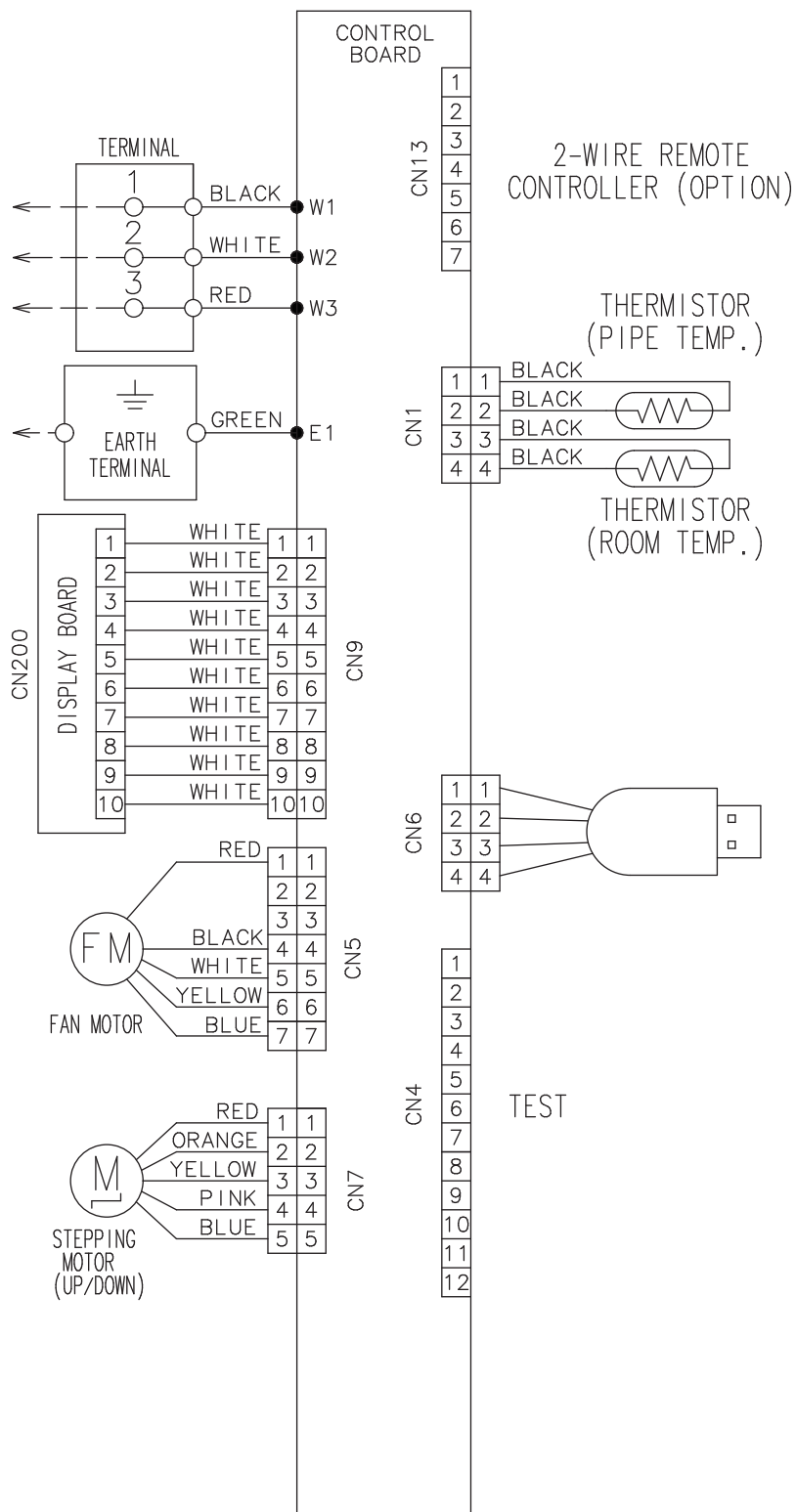
Provide sufficient installation space for product safety.

Unit: in (mm)



3. Wiring diagrams

3-1. Models: ASUG09LMAS and ASUG12LMAS



4. Capacity table

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

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

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

4-1. Cooling capacity

■ Model: ASUG09LMAS

AFR	CFM	453
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		Indoor temperature																	
		64			70			75			80			85			90		
		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
	°FWB	kBTu			kW			kBTu			kW			kBTu			kW		
	14	8.34	5.55	0.21	9.30	6.19	0.21	10.26	6.82	0.22	10.57	7.04	0.21	11.21	7.46	0.21	11.85	7.89	0.22
	23	7.95	5.29	0.23	8.86	5.90	0.23	9.78	6.51	0.24	10.08	6.71	0.23	10.69	7.11	0.24	11.30	7.52	0.24
	32	7.57	5.04	0.23	8.43	5.61	0.23	9.31	6.19	0.24	9.59	6.38	0.24	10.17	6.77	0.24	10.74	7.15	0.24
	41	7.18	4.78	0.23	8.00	5.32	0.23	8.83	5.88	0.25	9.10	6.06	0.24	9.64	6.42	0.24	10.19	6.78	0.25
	50	6.80	4.52	0.21	7.56	5.03	0.21	8.36	5.56	0.22	8.61	5.73	0.22	9.12	6.07	0.22	9.63	6.41	0.23
	59	6.41	4.85	0.21	7.13	4.85	0.22	7.88	5.29	0.22	8.12	5.73	0.22	8.60	5.70	0.22	9.08	6.07	0.23
	67	8.53	5.29	0.43	9.52	5.32	0.44	10.47	5.80	0.45	10.82	6.28	0.45	11.46	6.24	0.45	12.11	6.65	0.46
	77	8.02	5.29	0.49	8.94	5.32	0.50	9.86	5.83	0.50	10.17	6.28	0.51	10.78	6.24	0.51	11.40	6.65	0.52
	87	7.54	5.12	0.55	8.39	5.15	0.56	9.25	5.60	0.57	9.52	6.04	0.57	10.10	6.04	0.58	10.68	6.41	0.59
	95	7.10	4.98	0.61	7.92	5.02	0.62	8.73	5.46	0.63	9.00	5.90	0.63	9.55	5.87	0.64	10.07	6.24	0.64
104	5.90	4.64	0.49	6.59	4.67	0.50	7.27	5.08	0.51	7.47	5.49	0.51	7.95	5.46	0.52	8.39	5.83	0.52	
115	4.20	3.28	0.38	4.67	3.31	0.38	5.12	3.62	0.39	5.29	3.89	0.39	5.60	3.86	0.40	5.94	4.13	0.40	

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		Indoor temperature																	
		17.8			21.1			23.9			26.7			29.4			32.2		
		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
	°CWB	kW			kW			kW			kW			kW			kW		
	-10.0	2.44	1.63	0.21	2.72	1.81	0.21	3.01	2.00	0.22	3.10	2.06	0.21	3.29	2.19	0.21	3.47	2.31	0.22
	-5.0	2.33	1.55	0.23	2.60	1.73	0.23	2.87	1.91	0.24	2.96	1.97	0.23	3.13	2.09	0.24	3.31	2.20	0.24
	0.0	2.22	1.48	0.23	2.47	1.64	0.23	2.73	1.82	0.24	2.81	1.87	0.24	2.98	1.98	0.24	3.15	2.10	0.24
	5.0	2.10	1.40	0.23	2.34	1.56	0.23	2.59	1.72	0.25	2.67	1.78	0.24	2.83	1.88	0.24	2.99	1.99	0.25
	10.0	1.99	1.33	0.21	2.22	1.48	0.21	2.45	1.63	0.22	2.52	1.68	0.22	2.67	1.78	0.22	2.82	1.88	0.23
	15.0	1.88	1.42	0.21	2.09	1.42	0.22	2.31	1.55	0.22	2.38	1.68	0.22	2.52	1.67	0.22	2.66	1.78	0.23
	19.4	2.50	1.55	0.43	2.79	1.56	0.44	3.07	1.70	0.45	3.17	1.84	0.45	3.36	1.83	0.45	3.55	1.95	0.46
	25.0	2.35	1.55	0.49	2.62	1.56	0.50	2.89	1.71	0.50	2.98	1.84	0.51	3.16	1.83	0.51	3.34	1.95	0.52
	30.6	2.21	1.50	0.55	2.46	1.51	0.56	2.71	1.64	0.57	2.79	1.77	0.57	2.96	1.77	0.58	3.13	1.88	0.59
	35.0	2.08	1.46	0.61	2.32	1.47	0.62	2.56	1.60	0.63	2.64	1.73	0.63	2.80	1.72	0.64	2.95	1.83	0.64
40.0	1.73	1.36	0.49	1.93	1.37	0.50	2.13	1.49	0.51	2.19	1.61	0.51	2.33	1.60	0.52	2.46	1.71	0.52	
46.1	1.23	0.96	0.38	1.37	0.97	0.38	1.50	1.06	0.39	1.55	1.14	0.39	1.64	1.13	0.40	1.74	1.21	0.40	

Model: ASUG12LMAS

AFR	CFM	453
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		Indoor temperature																	
		64			70			75			80			85			90		
		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
	°FWB	kBTu			kBTu			kBTu			kBTu			kBTu			kBTu		
		kW			kW			kW			kW			kW			kW		
	14	11.25	7.76	0.33	12.53	8.65	0.33	13.80	9.53	0.35	14.23	9.82	0.34	15.08	10.41	0.34	15.93	11.00	0.35
	23	10.66	7.36	0.37	11.87	8.19	0.38	13.08	9.03	0.40	13.49	9.31	0.39	14.30	9.87	0.39	15.10	10.42	0.40
	32	10.07	6.95	0.40	11.21	7.74	0.40	12.36	8.53	0.42	12.74	8.79	0.41	13.51	9.33	0.41	14.27	9.85	0.42
	41	9.47	6.54	0.40	10.56	7.29	0.40	11.64	8.04	0.42	12.00	8.28	0.41	12.73	8.78	0.41	13.44	9.27	0.43
	50	8.88	6.13	0.39	9.90	6.84	0.39	10.92	7.54	0.41	11.25	7.77	0.40	11.94	8.24	0.40	12.60	8.70	0.41
	59	8.29	6.35	0.40	9.25	6.38	0.41	10.20	6.96	0.42	10.51	7.51	0.42	11.16	7.47	0.42	11.77	7.98	0.43
	67	11.43	7.47	0.65	12.73	7.51	0.66	14.06	8.19	0.67	14.47	8.84	0.68	15.35	8.80	0.68	16.21	9.38	0.69
77	10.82	7.13	0.75	12.04	7.17	0.76	13.27	7.85	0.77	13.68	8.46	0.77	14.50	8.43	0.78	15.32	8.97	0.79	
87	10.10	6.99	0.85	11.26	7.03	0.86	12.39	7.68	0.87	12.80	8.29	0.88	13.55	8.26	0.88	14.30	8.77	0.89	
95	9.49	6.69	0.93	10.58	6.72	0.94	11.63	7.34	0.96	12.00	7.92	0.96	12.73	7.88	0.97	13.44	8.39	0.98	
104	8.05	6.35	0.87	8.97	6.38	0.89	9.89	6.96	0.90	10.20	7.51	0.91	10.78	7.51	0.92	11.40	7.98	0.92	
115	5.66	5.15	0.69	6.28	5.19	0.70	6.93	5.63	0.71	7.17	6.11	0.71	7.57	6.07	0.72	8.02	6.48	0.73	

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		Indoor temperature																	
		17.8			21.1			23.9			26.7			29.4			32.2		
		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
	°CWB	kW			kW			kW			kW			kW			kW		
	-10.0	3.30	2.28	0.33	3.67	2.53	0.33	4.05	2.79	0.35	4.17	2.88	0.34	4.42	3.05	0.34	4.67	3.22	0.35
	-5.0	3.12	2.16	0.37	3.48	2.40	0.38	3.83	2.65	0.40	3.95	2.73	0.39	4.19	2.89	0.39	4.43	3.05	0.40
	0.0	2.95	2.04	0.40	3.29	2.27	0.40	3.62	2.50	0.42	3.73	2.58	0.41	3.96	2.73	0.41	4.18	2.89	0.42
	5.0	2.78	1.92	0.40	3.09	2.14	0.40	3.41	2.36	0.42	3.52	2.43	0.41	3.73	2.57	0.41	3.94	2.72	0.43
	10.0	2.60	1.80	0.39	2.90	2.00	0.39	3.20	2.21	0.41	3.30	2.28	0.40	3.50	2.42	0.40	3.69	2.55	0.41
	15.0	2.43	1.86	0.40	2.71	1.87	0.41	2.99	2.04	0.42	3.08	2.20	0.42	3.27	2.19	0.42	3.45	2.34	0.43
	19.4	3.35	2.19	0.65	3.73	2.20	0.66	4.12	2.40	0.67	4.24	2.59	0.68	4.50	2.58	0.68	4.75	2.75	0.69
	25.0	3.17	2.09	0.75	3.53	2.10	0.76	3.89	2.30	0.77	4.01	2.48	0.77	4.25	2.47	0.78	4.49	2.63	0.79
30.6	2.96	2.05	0.85	3.30	2.06	0.86	3.63	2.25	0.87	3.75	2.43	0.88	3.97	2.42	0.88	4.19	2.57	0.89	
35.0	2.78	1.96	0.93	3.10	1.97	0.94	3.41	2.15	0.96	3.52	2.32	0.96	3.73	2.31	0.97	3.94	2.46	0.98	
40.0	2.36	1.86	0.87	2.63	1.87	0.89	2.90	2.04	0.90	2.99	2.20	0.91	3.16	2.20	0.92	3.34	2.34	0.92	
46.1	1.66	1.51	0.69	1.84	1.52	0.70	2.03	1.65	0.71	2.10	1.79	0.71	2.22	1.78	0.72	2.35	1.90	0.73	

4-2. Heating capacity

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

Model: ASUG09LMAS

AFR	CFM	453
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Outdoor temperature		Indoor temperature											
		°FDB	°FWB	60		65		70		72		75	
				TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW
5	3	8.87	1.18	8.64	1.20	8.50	1.23	8.18	1.25	7.95	1.28		
14	12	9.87	1.25	9.61	1.28	9.35	1.31	9.10	1.33	8.84	1.36		
23	19	11.61	1.33	11.31	1.35	11.00	1.38	10.70	1.41	10.40	1.44		
32	28	13.19	1.43	12.84	1.46	12.50	1.49	12.15	1.52	11.81	1.54		
41	37	14.60	1.52	14.22	1.55	13.83	1.58	13.45	1.61	13.07	1.64		
47	43	15.84	1.54	15.43	1.57	15.00	1.61	14.60	1.63	14.18	1.66		
50	47	15.92	1.56	15.51	1.59	15.09	1.62	14.67	1.65	14.26	1.68		
59	50	16.09	1.47	15.67	1.49	15.25	1.53	14.83	1.56	14.41	1.58		
68	59	15.18	1.14	14.78	1.17	14.38	1.19	13.99	1.21	13.59	1.24		
75	64	15.68	1.20	15.27	1.22	14.86	1.25	14.45	1.27	14.03	1.30		

AFR	m ³ /h	770
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Outdoor temperature		Indoor temperature											
		°CDB	°CWB	15.6		18.3		21.1		22.2		23.9	
				TC kW	IP kW	TC kW	IP kW	TC kW	IP kW	TC kW	IP kW	TC kW	IP kW
-15.0	-16.1	2.60	1.18	2.53	1.20	2.49	1.23	2.40	1.25	2.33	1.28		
-10.0	-11.1	2.89	1.25	2.82	1.28	2.74	1.31	2.67	1.33	2.59	1.36		
-5.0	-7.2	3.40	1.33	3.31	1.35	3.23	1.38	3.14	1.41	3.05	1.44		
0.0	-2.2	3.87	1.43	3.76	1.46	3.66	1.49	3.56	1.52	3.46	1.54		
5.0	2.8	4.28	1.52	4.17	1.55	4.05	1.58	3.94	1.61	3.83	1.64		
8.3	6.1	4.64	1.54	4.52	1.57	4.40	1.61	4.28	1.63	4.16	1.66		
10.0	8.3	4.67	1.56	4.55	1.59	4.42	1.62	4.30	1.65	4.18	1.68		
15.0	10.0	4.72	1.47	4.59	1.49	4.47	1.53	4.35	1.56	4.22	1.58		
20.0	15.0	4.45	1.14	4.33	1.17	4.22	1.19	4.10	1.21	3.98	1.24		
24.0	18.0	4.59	1.20	4.47	1.22	4.35	1.25	4.23	1.27	4.11	1.30		

Model: ASUG12LMAS

AFR	CFM	453
-----	-----	-----

Outdoor temperature		Indoor temperature											
		°FDB	°FWB	60		65		70		72		75	
				TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW	TC kBtu	IP kW
5	3	11.29	1.23	11.00	1.25	10.70	1.28	10.40	1.30	10.11	1.33		
14	12	12.56	1.31	12.23	1.33	11.90	1.36	11.57	1.39	11.24	1.41		
23	19	14.77	1.38	14.39	1.41	14.00	1.44	13.61	1.47	13.23	1.50		
32	28	16.78	1.49	16.34	1.52	15.90	1.55	15.46	1.58	15.02	1.61		
41	37	18.57	1.58	18.09	1.62	17.60	1.65	17.11	1.68	16.63	1.71		
47	43	20.16	1.60	19.63	1.63	19.10	1.67	18.57	1.70	18.04	1.73		
50	47	20.26	1.62	19.73	1.65	19.20	1.69	18.67	1.72	18.14	1.75		
59	50	20.47	1.53	19.94	1.56	19.40	1.59	18.86	1.62	18.33	1.65		
68	59	19.31	1.19	18.81	1.21	18.30	1.24	17.79	1.26	17.29	1.29		
75	64	19.94	1.25	19.42	1.27	18.90	1.30	18.38	1.32	17.86	1.35		

AFR	m ³ /h	770
-----	-------------------	-----

Outdoor temperature		Indoor temperature											
		°CDB	°CWB	15.6		18.3		21.1		22.2		23.9	
				TC kW	IP kW	TC kW	IP kW	TC kW	IP kW	TC kW	IP kW	TC kW	IP kW
-15.0	-16.1	3.31	1.23	3.22	1.25	3.14	1.28	3.05	1.30	2.96	1.33		
-10.0	-11.1	3.68	1.31	3.58	1.33	3.49	1.36	3.39	1.39	3.30	1.41		
-5.0	-7.2	4.33	1.38	4.22	1.41	4.10	1.44	3.99	1.47	3.88	1.50		
0.0	-2.2	4.92	1.49	4.79	1.52	4.66	1.55	4.53	1.58	4.40	1.61		
5.0	2.8	5.44	1.58	5.30	1.62	5.16	1.65	5.02	1.68	4.87	1.71		
8.3	6.1	5.91	1.60	5.75	1.63	5.60	1.67	5.44	1.70	5.29	1.73		
10.0	8.3	5.94	1.62	5.78	1.65	5.63	1.69	5.47	1.72	5.32	1.75		
15.0	10.0	6.00	1.53	5.84	1.56	5.69	1.59	5.53	1.62	5.37	1.65		
20.0	15.0	5.66	1.19	5.51	1.21	5.36	1.24	5.22	1.26	5.07	1.29		
24.0	18.0	5.85	1.25	5.69	1.27	5.54	1.30	5.39	1.32	5.23	1.35		

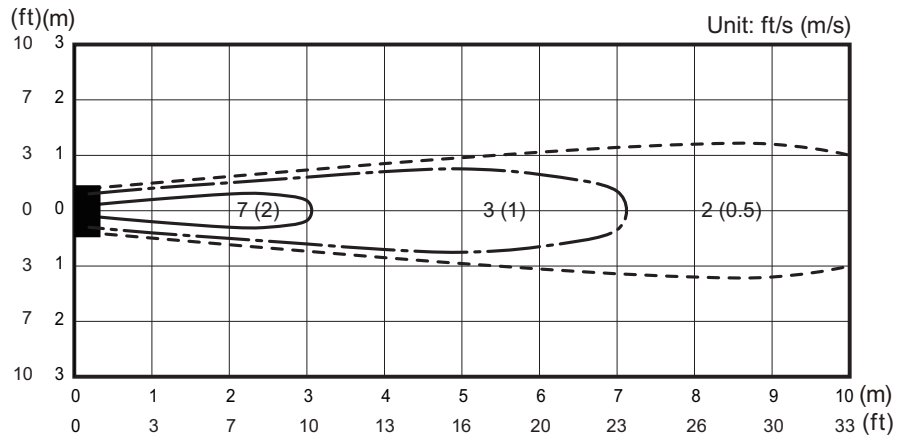
5. Fan performance

5-1. Air velocity distributions

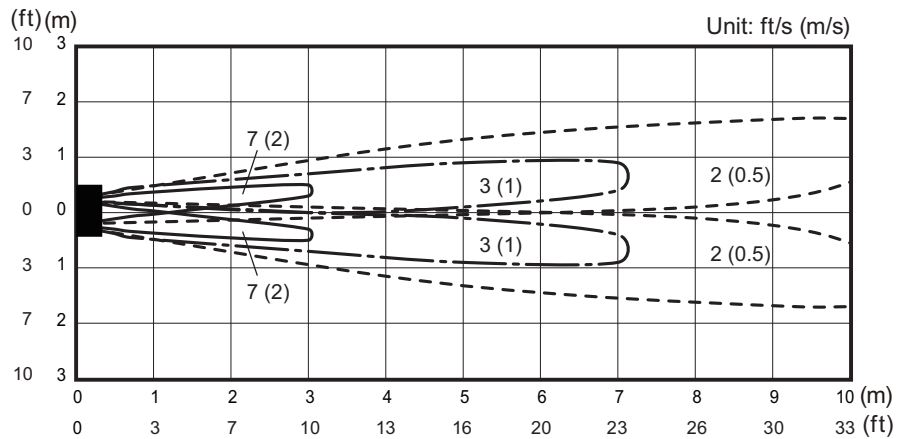
■ Models: ASUG09LMAS and ASUG12LMAS

Measuring conditions	Fan speed	Operation mode
	HIGH	FAN

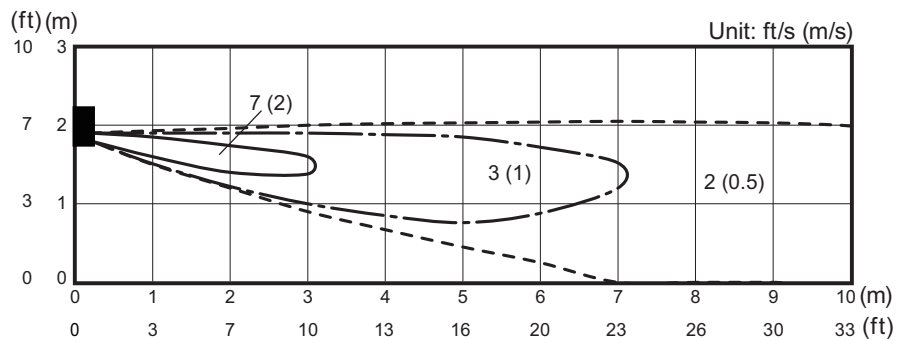
Top view
Vertical airflow direction louver: Up
Horizontal airflow direction louver: Center



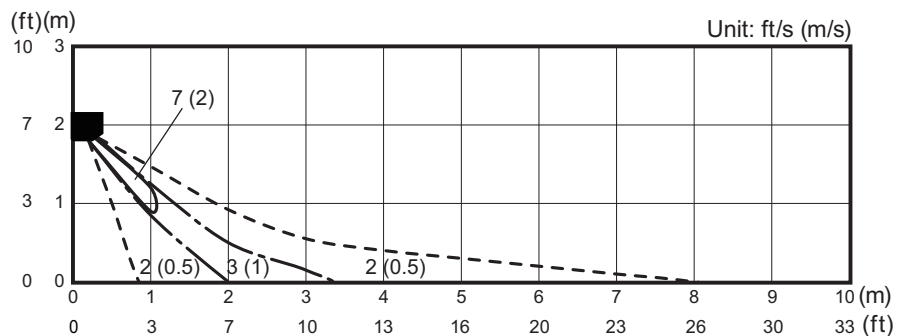
Top view
Vertical airflow direction louver: Up
Horizontal airflow direction louver: Left & Right



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



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



5-2. Airflow

■ Model: ASUG09LMAS

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	770
	l/s	214
	CFM	453
MED	m ³ /h	600
	l/s	167
	CFM	353
LOW	m ³ /h	450
	l/s	125
	CFM	265
QUIET	m ³ /h	250
	l/s	69
	CFM	147

● Heating

Fan speed	Airflow	
HIGH	m ³ /h	770
	l/s	214
	CFM	453
MED	m ³ /h	640
	l/s	178
	CFM	377
LOW	m ³ /h	520
	l/s	144
	CFM	306
QUIET	m ³ /h	310
	l/s	86
	CFM	182

■ Model: ASUG12LMAS

● Cooling

Fan speed	Airflow	
HIGH	m ³ /h	770
	l/s	214
	CFM	453
MED	m ³ /h	600
	l/s	167
	CFM	353
LOW	m ³ /h	450
	l/s	125
	CFM	265
QUIET	m ³ /h	250
	l/s	69
	CFM	147

● Heating

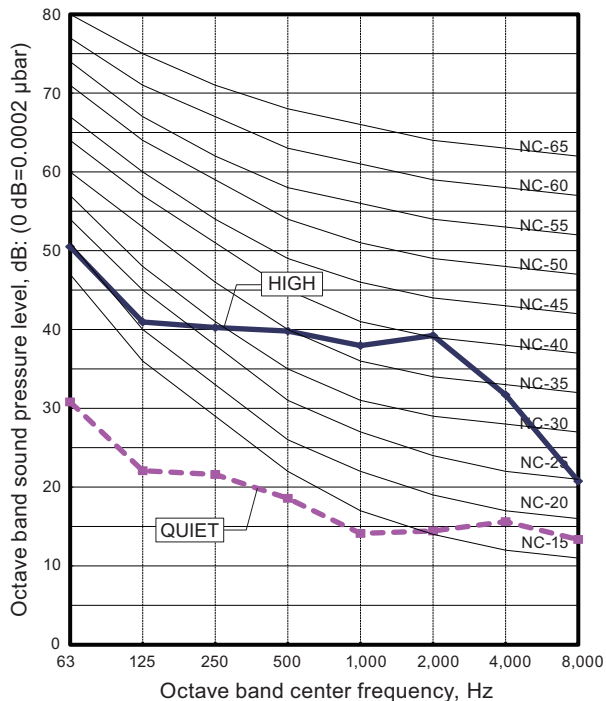
Fan speed	Airflow	
HIGH	m ³ /h	770
	l/s	214
	CFM	453
MED	m ³ /h	640
	l/s	178
	CFM	377
LOW	m ³ /h	520
	l/s	144
	CFM	306
QUIET	m ³ /h	310
	l/s	86
	CFM	182

6. Operation noise (sound pressure)

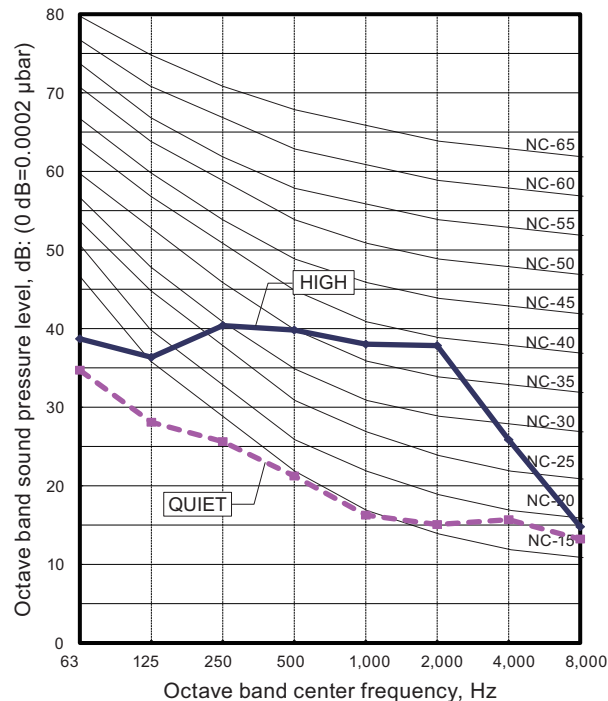
6-1. Noise level curve

■ Models: ASUG09LMAS and ASUG12LMAS

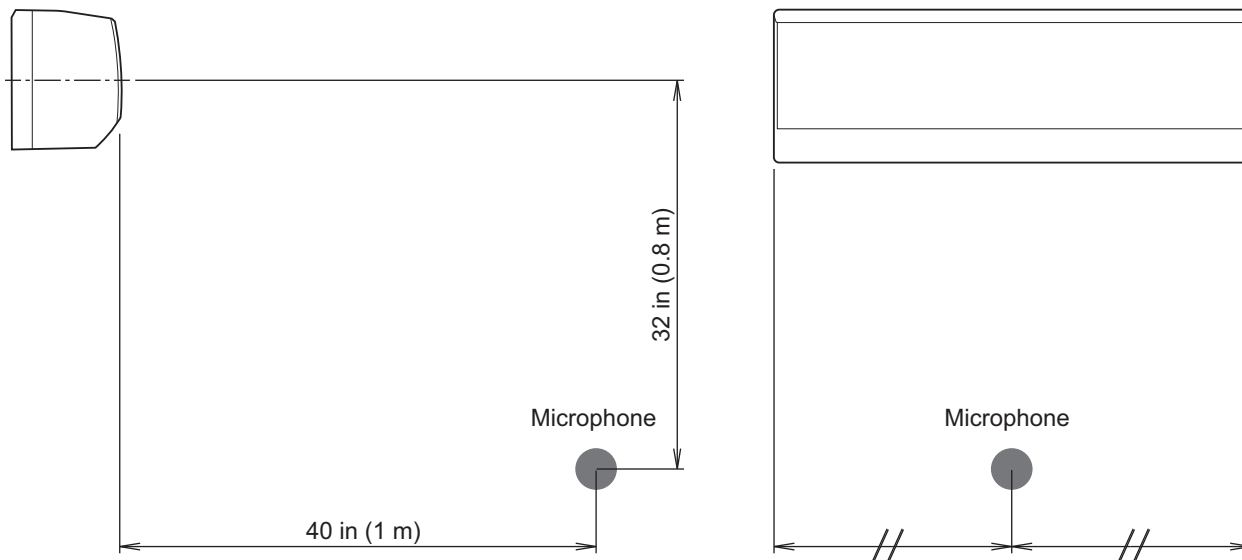
● Cooling



● Heating



6-2. Sound level check point



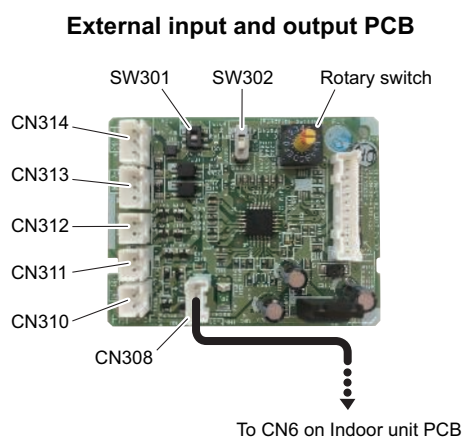
NOTE: Detailed shape of the actual indoor unit might be slightly different from the one illustrated above.

7. Safety devices

Type of protection	Protection form		Model
			ASUG09LMAS and ASUG12LMAS
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

8. External input and output



PCB	External input	External output	Connector	Input select	Input signal
External input and output (UTY-XCSXZ2)	Operation/Stop	—	CN313/ CN314	Dry contact/ Apply voltage	Edge/Pulse
	Forced stop		CN313		Edge
	Forced thermostat off			—	—
	—	Operation status	CN310		
	—	Error status	CN311		
	—	Indoor unit fan operation status	CN312		
	—	External heater output	—		

NOTE: External input and output PCB cannot be used with Wireless LAN adapter simultaneously.

8-1. 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 (22AWG) should be used. Maximum length of cable is 492 ft (150 m).
- The wire connection should be separate from the power cable line.

External input and output PCB

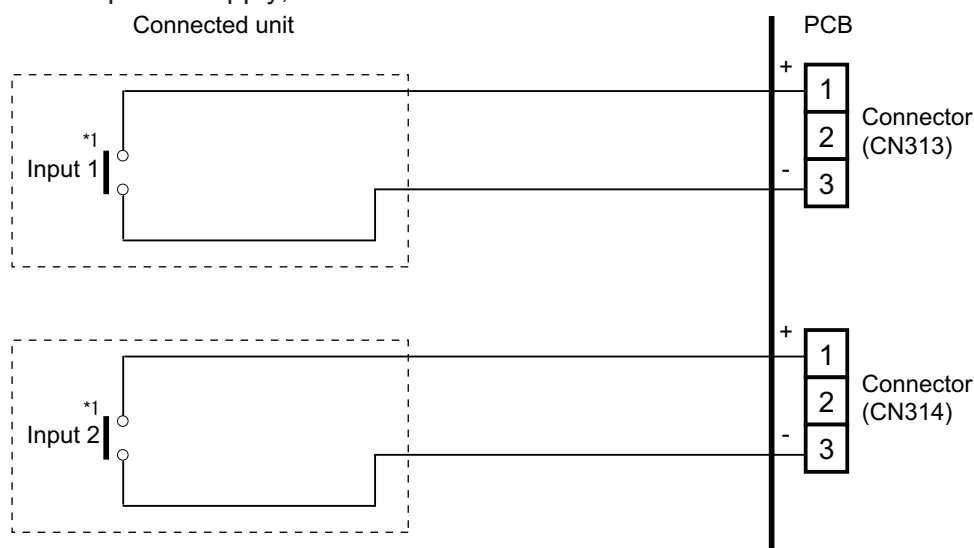
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

Input select:

Use either one of these types of connectors according to the application. (Both types of connectors cannot be used simultaneously.)

– Dry contact

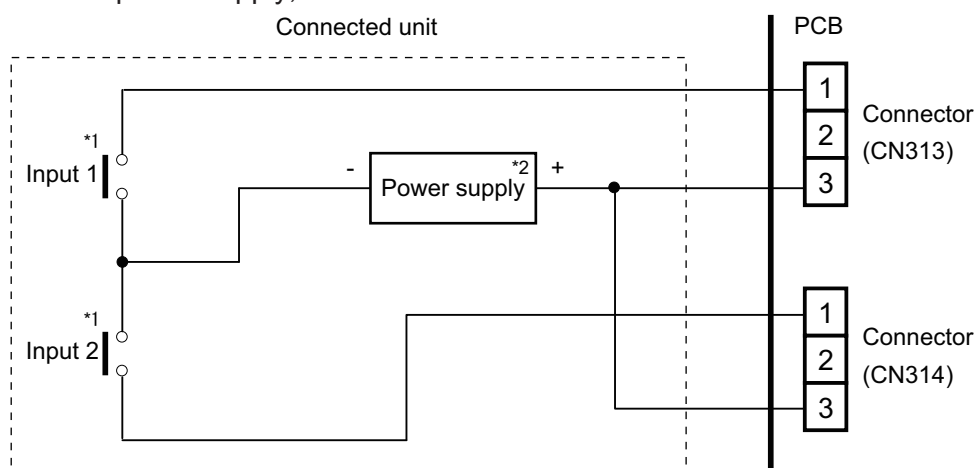
In case of internal power supply, set the slide switch of SW301 to "NON VOL" side.



*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.

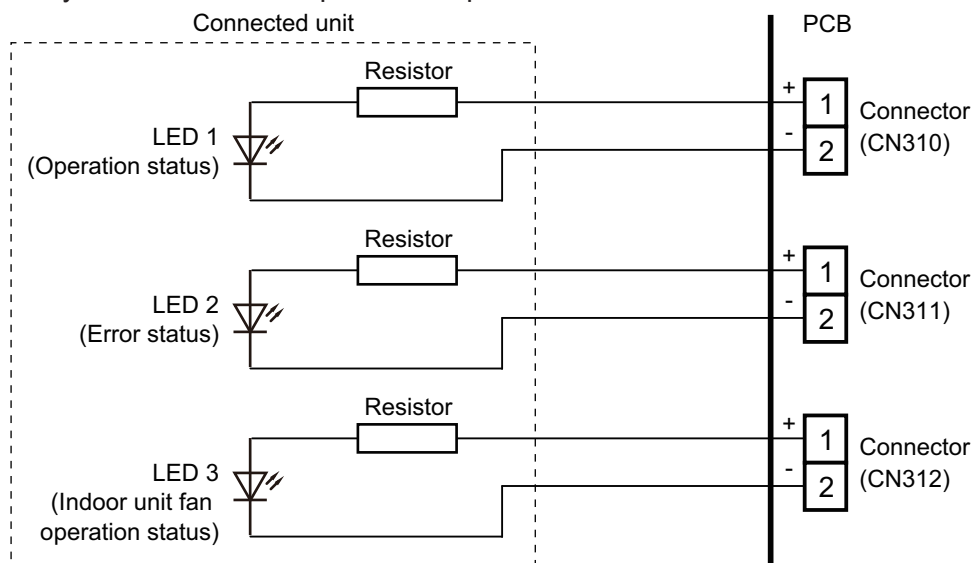
*2: Make the power supply DC 12 to 24 V, 10 mA or more.

8-2. External output

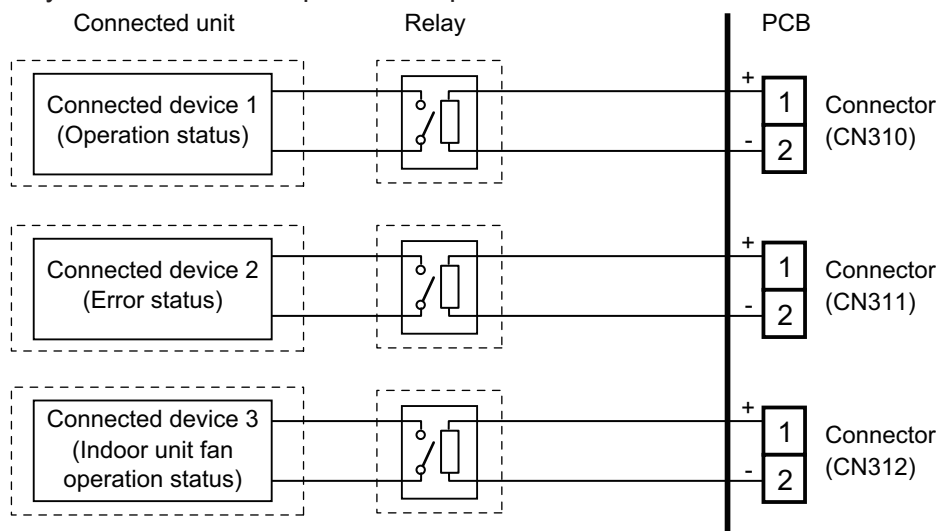
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

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 \pm 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to ["Combination of external input and output"](#) on page 18.
- **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".



8-3. Combination of external input and output

By combining the function setting of the rotary switch setting of the External input and output PCB, you can select various combinations of functions.

Combination examples of external input and output are as follows:

External input and output PCB (Rotary SW)	External input		
	External input and output PCB		
	CN313	CN314	Signal type
1	Operation/Stop	Not available	Edge
	Operation	Stop	Pulse
2	Forced Thermostat OFF	Not available	Edge
3 - 9, A	(Setting prohibited)		
B	Forced Thermostat OFF	Not available	Edge
C	Forced Thermostat OFF	Not available	Edge
D	Forced Thermostat OFF	Not available	Edge

External input and output PCB (Rotary SW)	External output		
	External input and output PCB		
	CN310	CN311	CN312
1	Operation/Stop	Error status	Indoor unit fan operation status
2	Error status	Indoor unit fan operation status	External heater output
3 - 9, A	(Setting prohibited)		
B	Operation/Stop	Indoor unit fan operation status	External heater output
C	Operation/Stop	Error status	External heater output
D	Operation/Stop	Indoor unit fan operation status	Error status

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

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

01: (Setting prohibited)

02: Forced stop

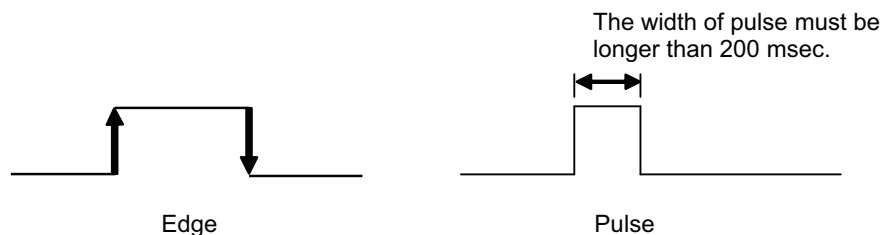
03: Operation/Stop mode 2 (R.C. disabled)

Input signal type

External input and output PCB:

The input signal type can be selected.

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

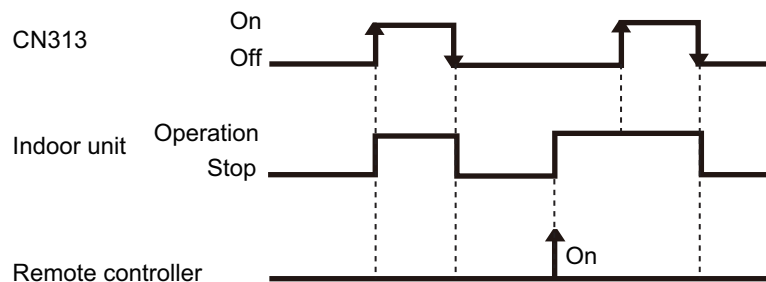


8-4. Details of function

■ Control input function

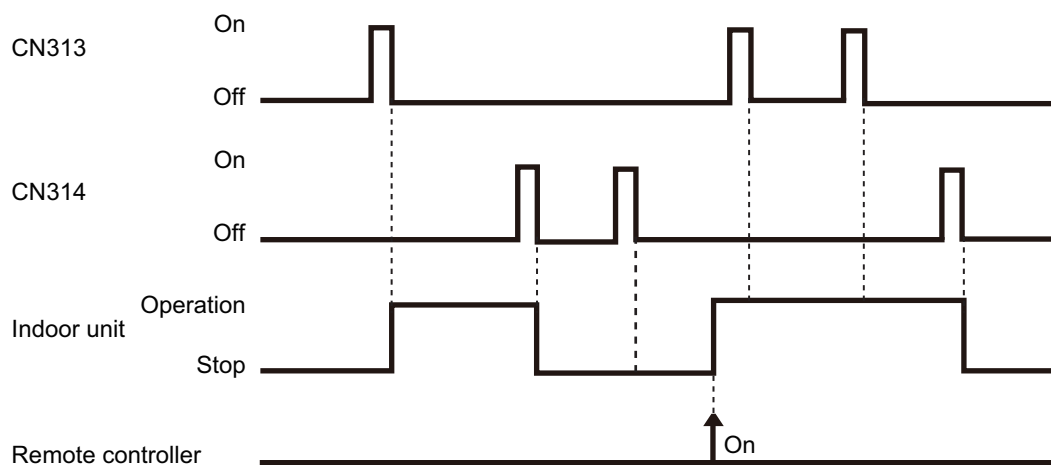
- When function setting is “Operation/Stop” mode 1
 - In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
		External input and output PCB	CN313		
46-00	1			Off → On	Operation
				On → Off	Stop



- In the case of “Pulse” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
		External input and output PCB	CN313		
46-00	1		CN313	Pulse	Operation
			CN314	Pulse	Stop



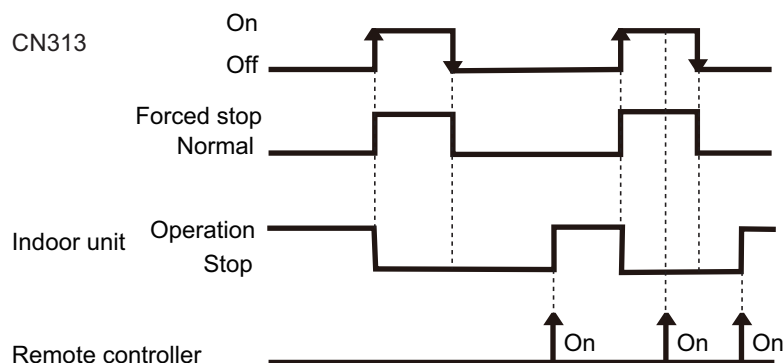
NOTES:

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

• When function setting is “Forced stop” mode

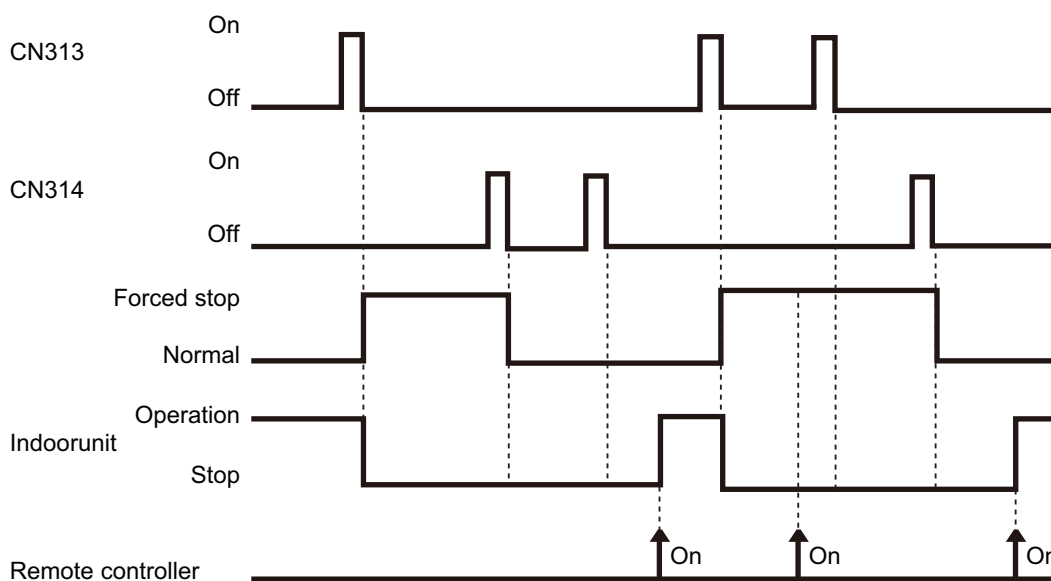
– In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
		External input and output PCB	CN313		
46-02	1			Off → On	Forced stop
				On → Off	Normal



– In the case of “Pulse” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
		External input and output PCB	CN313 CN314		
46-02	1		CN313	Pulse	Forced stop
			CN314	Pulse	Normal



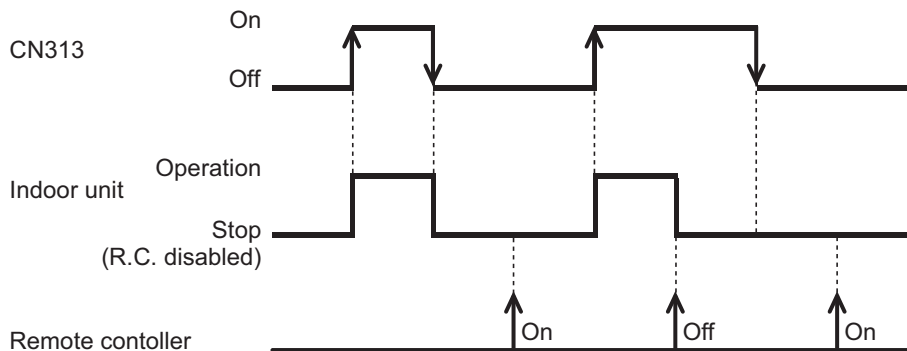
NOTES:

- 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.

• When function setting is “Operation/Stop” mode 2

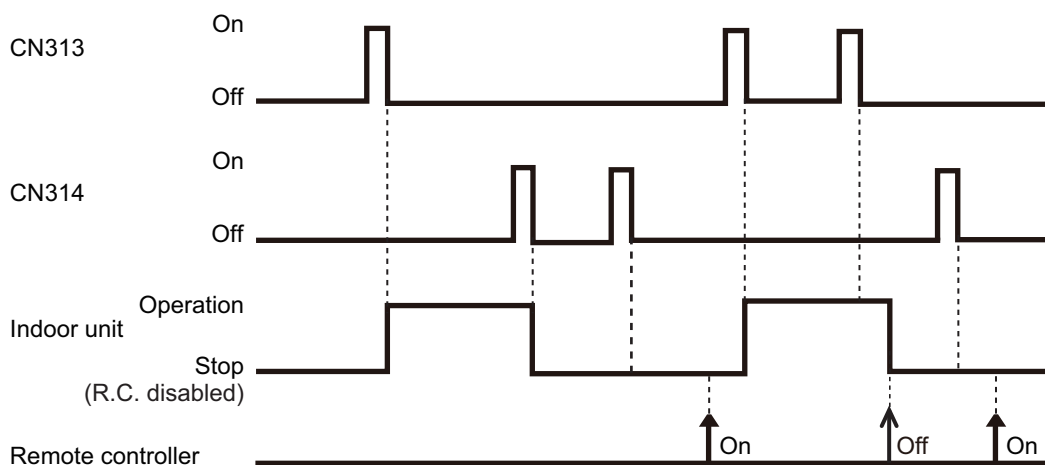
– In the case of “Edge” input:

Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-03	1	External input and output PCB	CN313	Off → On	Operation
				On → Off	Stop (R.C. disabled)



– In the case of “Pulse” input:

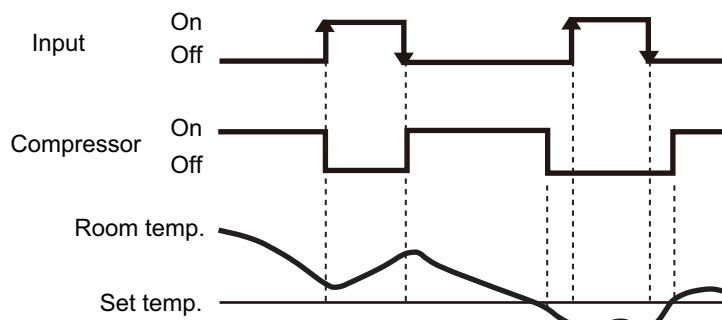
Function setting	Rotary SW on External input and output PCB	External input		Input signal	Command
46-03	1	External input and output PCB	CN313	Pulse	Operation
			CN314	Pulse	Stop (R.C. disabled)



NOTE: When “Operation/Stop” mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

• Forced thermostat off function

Rotary SW on External input and output PCB	External input		Input signal	Command
2	External input and output PCB	CN313	Off → On	Thermostat off
B			On → Off	Normal operation
C				

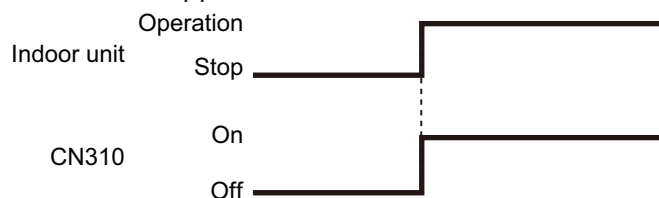


Control output function

• Operation/Stop status

Rotary SW on External input and output PCB	External output		Output signal	Command
1 B C D	External input and output PCB	CN310	Off → On	Operation
On → Off			Stop	

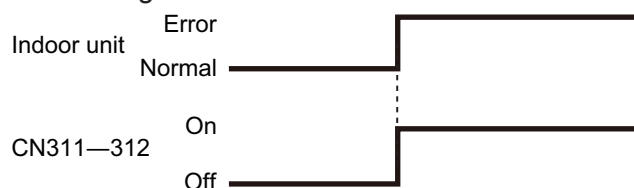
The output is low when the unit is stopped.



• Error status

Rotary SW on External input and output PCB	External output		Output signal	Command
1 C	External input and output PCB	CN311	Off → On	Error
			On → Off	Normal
D		CN312	Off → On	Error
			On → Off	Normal

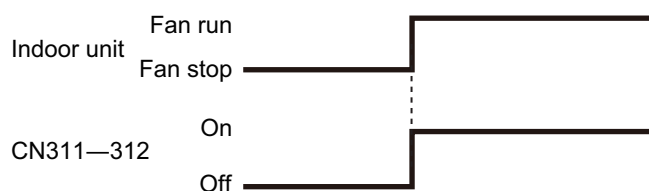
The output is ON when an error is generated for the indoor unit.



• Indoor unit fan operation status

Rotary SW on External input and output PCB	External output		Output signal	Command
1	External input and output PCB	CN312	Off → On	Fan run
			On → Off	Fan stop
2 B D		CN311	Off → On	Fan run
			On → Off	Fan stop

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



- External heater output

Rotary SW on External input and output PCB	External output		Output signal	Command
2	External input and output PCB	CN312	Off → On	Heater on
B			On → Off	Heater off
C				

External heater output

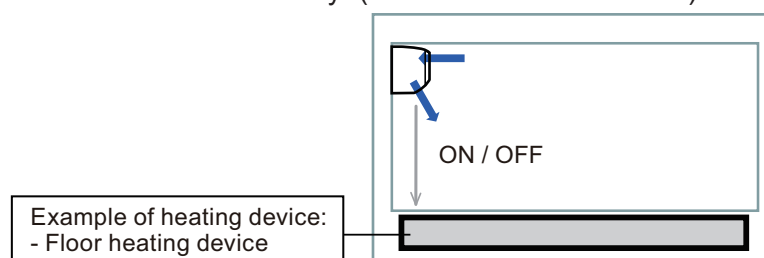
Control	Primary heater	Auxiliary heater	Function setting	
			Indoor unit	Wired R. C.
			Control switching external heaters No. 61	Sensor activation*2
Auxiliary heater control 1	Heat pump	External device*1	61-00	—
Auxiliary heater control 2	Heat pump	External device	61-01	—
Heat pump prohibition control	External device	None	61-02	On (Enabled)
Auxiliary heater control by outdoor temperature 1	Heat pump	External device	61-03	On (Enabled)
Auxiliary heater control by outdoor temperature 2	Heat Pump	External device	61-04	On (Enabled)

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.
- *1: External device means Hot water, Electrical heater, etc.
- *2: Sensor activation:
 - Setting change from the factory setting is required.
 - Indoor unit fan setting will be on for safety reason without sensor activation of wired remote controller.

Installation configuration of individual connection

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



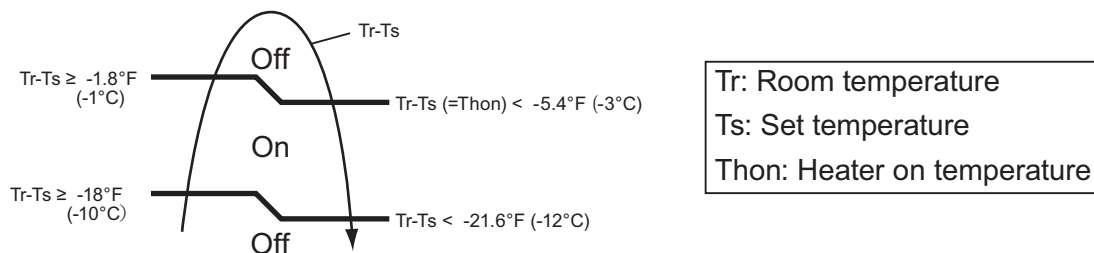
⚠ WARNING

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

● Auxiliary heater control 1

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

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



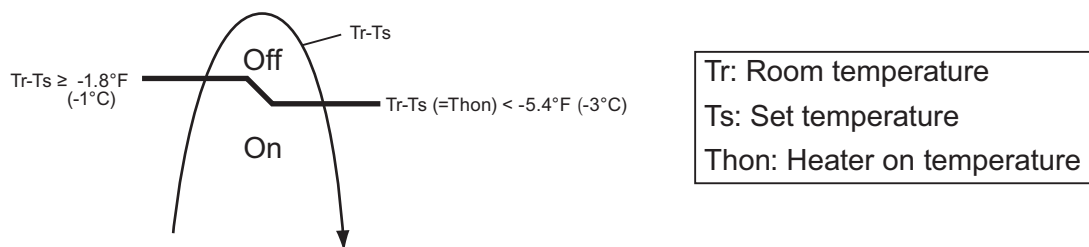
Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),

- 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	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

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

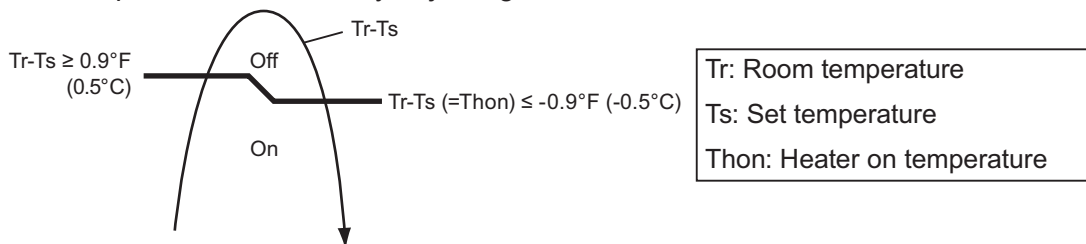


● Heat pump prohibition control

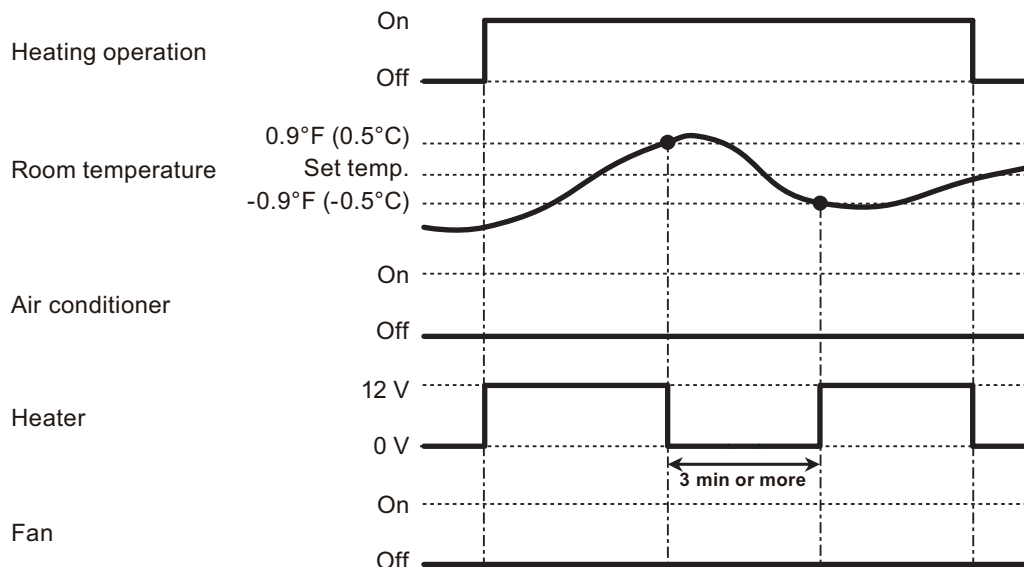
Perform heating by external heater only. Indoor unit is continuous thermostat off.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

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



• Operation status



NOTE: In following operations, compressor will be on.

- Other than heating
- Test run

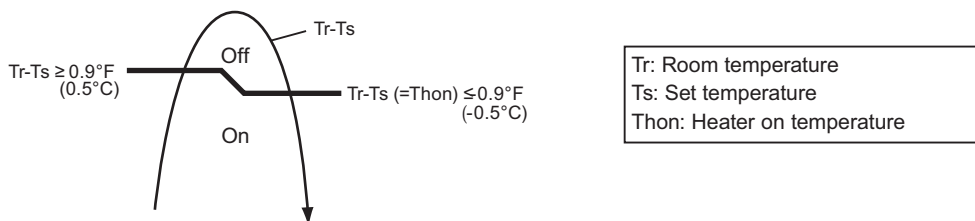
● Auxiliary heater control by outdoor temperature 1

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.

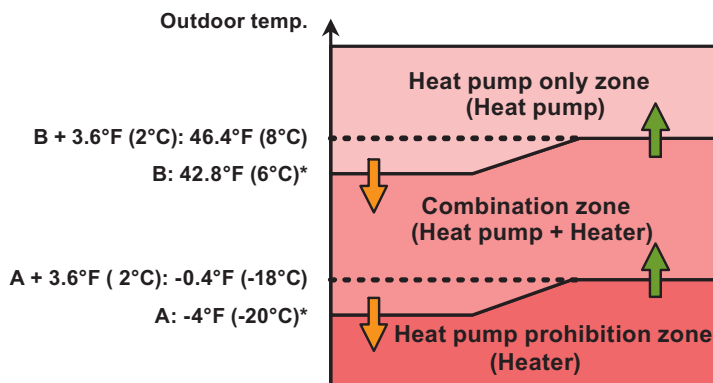
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off Heat pump only zone

- 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

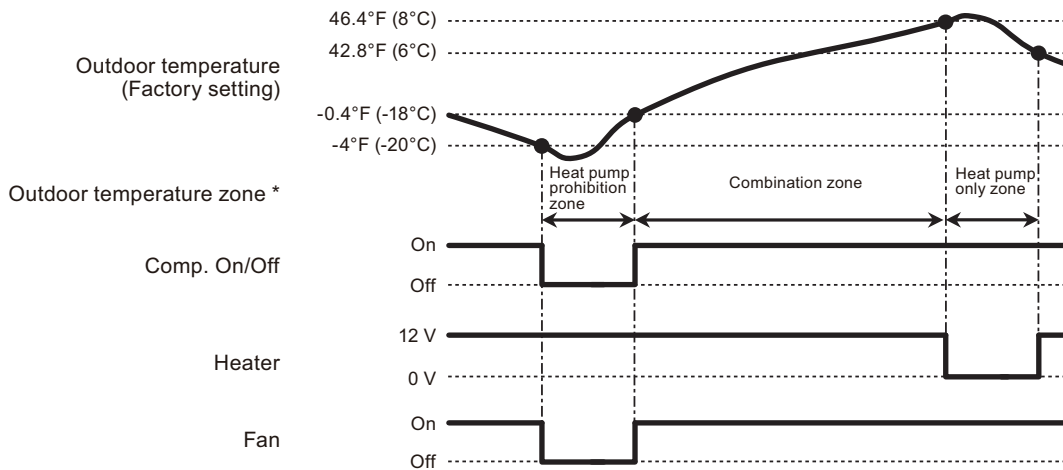


• Outdoor temperature zone



*: Adjustable by function setting 66 and 67

• 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

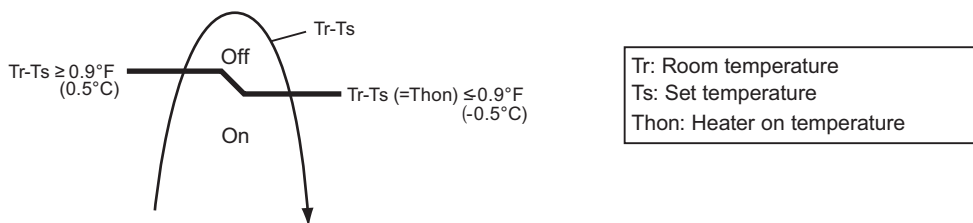
● Auxiliary heater control by outdoor temperature 2

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.

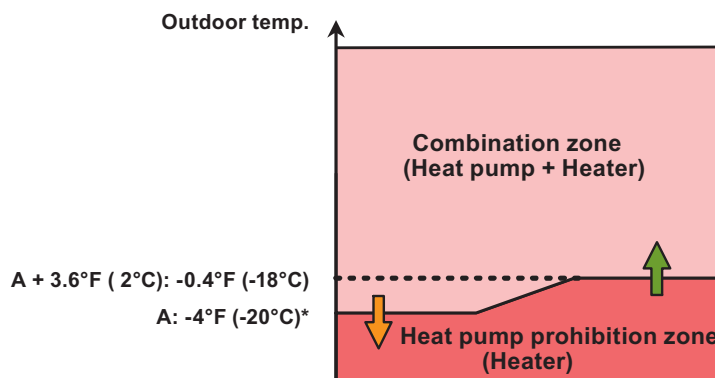
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- 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

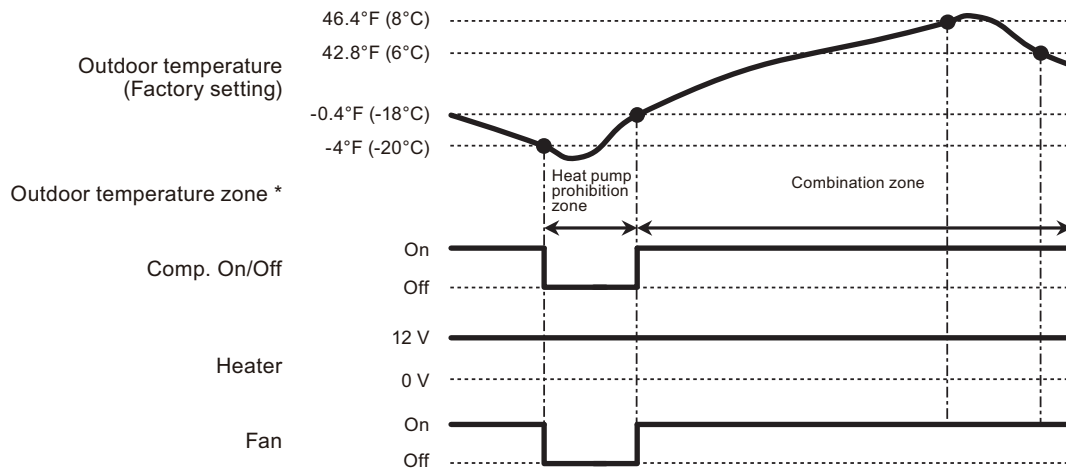


• Outdoor temperature zone



*: Adjustable by function setting 66

• **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

9. Group connection

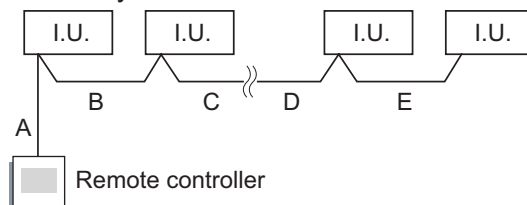
NOTE: Group control cannot be used together with Wireless LAN adapter.

Installation procedure for group control system:

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

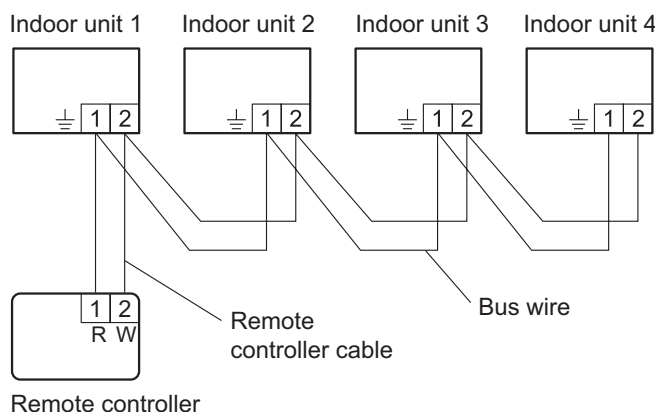
NOTE: When different type of indoor units (such as wall mounted type and cassette type, cassette type and duct type, or other combinations) are connected using group control system, some functions may no longer be available.

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



A, B, C, D, E: Remote controller cable	
Wiring length limitation	$A + B + C + D + E \leq 546.8 \text{ yd (500 m)}$

Example of wiring method



2. Set the R.C. address. (Function setting)

- Addresses will be automatically set when initially starting up this unit. In such a case, do not change the remote controller address for the indoor unit, and keep it at the initial setting of "00".
- Only set addresses manually when using different numbers for addresses. Set the R.C. address of each indoor unit using the function setting. (Refer to "Remote controller address setting" in ["Contents of function setting"](#) on page 37.)

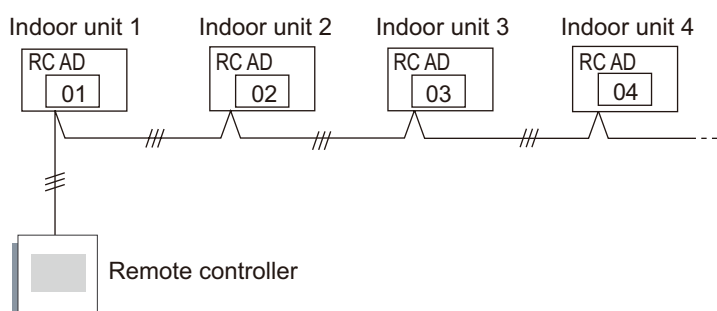
NOTES:

- Do not use the same setting value.
- Setting is reflected after the power is turned on again.

Also set the R.C. address for the remote controller. For details, refer to the remote controller installation manual.

NOTE: In manual setting, connect up to 15 indoor units in a system.

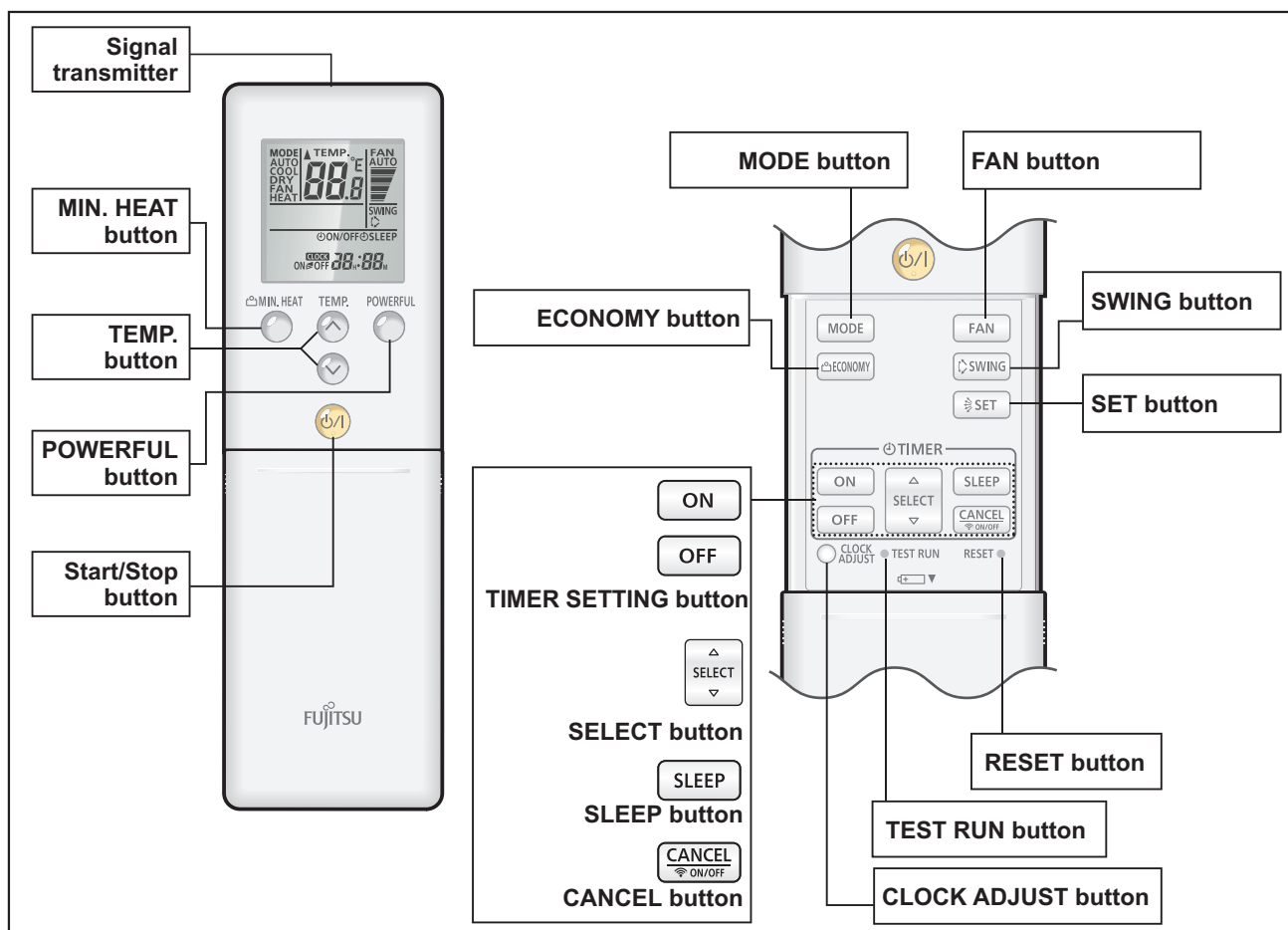
Example of wiring method



10. Remote controller

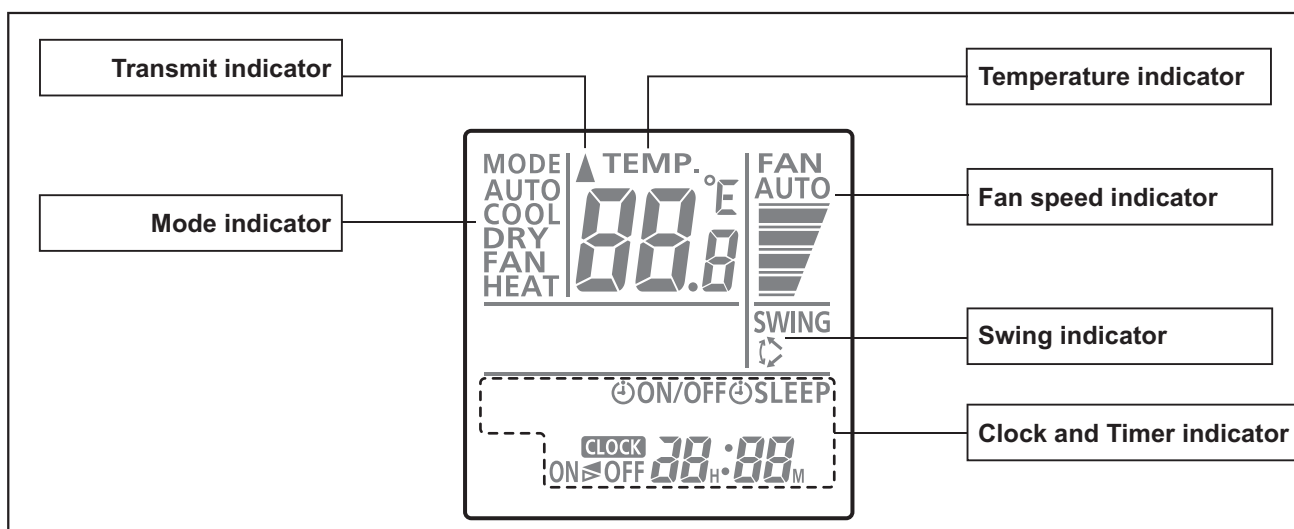
10-1. Wireless remote controller

Overview



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

Display panel

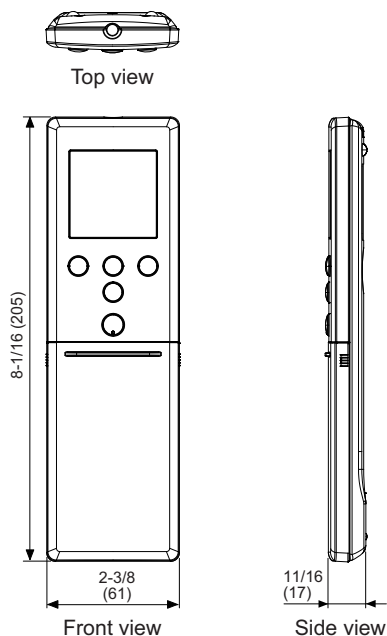


To facilitate explanation, the accompanying illustration has been drawn to show all possible indicators; in actual operation, however, the display will only show those indicators appropriate to the current operation.

Specifications

Controller

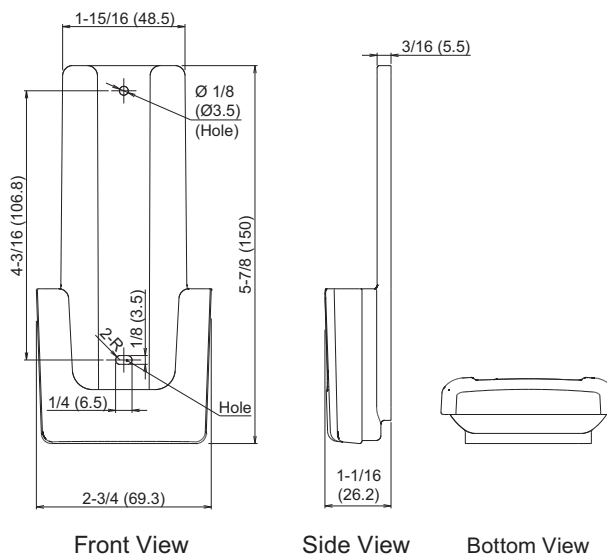
Unit: in (mm)



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)

11. 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.

11-1. Function settings by using remote controller

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

■ Setting procedure by using wireless remote controller

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

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

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

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

NOTES:

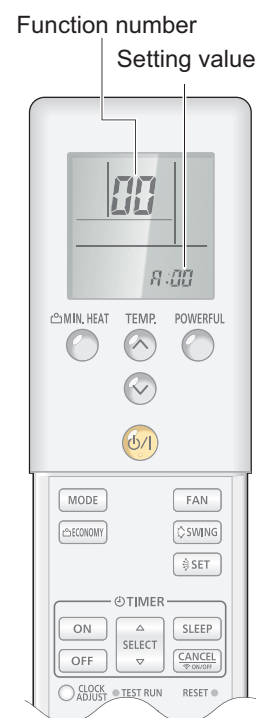
- Settings will not be changed if invalid numbers or setting values are selected.
- When optional wired remote controller is used, refer to the installation manual enclosed with the remote controller.

Entering function setting mode:

While pressing the POWERFUL button and TEMP. (^) button simultaneously, press the RESET button to enter the function setting mode.

Selecting the function number and setting value:






1. Press the MIN. HEAT button. TEMP. (^) (v) buttons to select the function number. Press the MIN. 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. (^) (v) 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 sound.
5. Press the START/STOP button to fix the function setting. Confirm that you hear the beep sound.
6. Press the RESET button to end the function setting mode.
7. After completing the function setting, be sure to disconnect the power supply and then reconnect it.



⚠ CAUTION

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

NOTES:

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

■ Contents of function setting

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

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

● Function setting list

	Function no.	Functions
1)	00	Remote controller address setting
2)	11	Filter sign
3)	30/31	Room temperature control for indoor unit sensor
4)	35/36	Room temperature control for wired remote controller sensor
5)	40	Auto restart
6)	42	Room temperature sensor switching
7)	44	Remote controller custom code
8)	46	External input control
9)	48	Room temperature sensor switching (Aux.)
10)	49	Indoor unit fan control for energy saving for cooling
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)	95	Heat insulation condition (building insulation)

1) Remote controller address setting

NOTE: Because this setting is normally done automatically when 2-wire-type wired remote controller is installed, setting is unnecessary.

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

Set the unit number of each indoor unit.

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

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

2) Filter sign

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

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

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

3) 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)				

4) 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)				

5) Auto restart

Enables or disables automatic restart after a power interruption.

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

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

6) Room temperature sensor switching

(Only for wired remote controller)

When using the wired remote controller temperature sensor, change the setting to "Both" (01).

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

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

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

7) Remote controller custom code

(Only for wireless remote controller)

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

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

8) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

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

9) 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	

10) Indoor unit fan control for energy saving for cooling

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

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

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

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

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

NOTES:

- As the factory setting, this setting is initially invalidated.
- Set to "00" or "01" when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter.
To confirm if the remote controller has this setting, refer to the operating manual of each remote controller.

11) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to ["External heater output"](#) on page 24.

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	

12) Operating temperature switching of external heaters

Sets the temperature conditions when the external heater is ON.

For details, refer to ["External heater output"](#) on page 24.

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)	

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"](#) on page 24.

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 is performed on the indoor unit. For details, refer to "External heater output" on page 24.

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) 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.

11-2. 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.


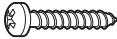


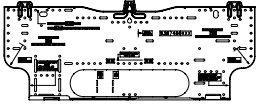




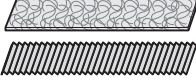

1. Press the START/STOP button until only the clock is displayed on the remote controller display.
2. Press the MODE button for at least 5 seconds to display the current custom code. (Initially set to H .)
3. Press the TEMP. (\wedge) (\vee) buttons to change the custom code between $\text{H} \rightarrow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



NOTES:


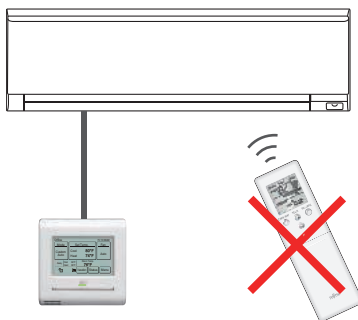
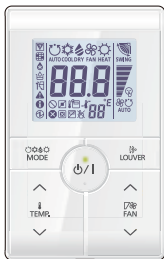
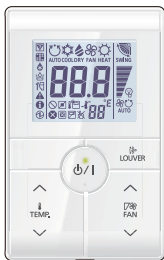
- If no button is pressed within 30 seconds after the custom code is displayed, the system returns to the original clock indicator. In this case, start again from step 1.
- The air conditioner custom code is set to H prior to shipment. To change the custom code, contact your retailer.
- If you do not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

12. Accessories

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating 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			

13. Optional parts



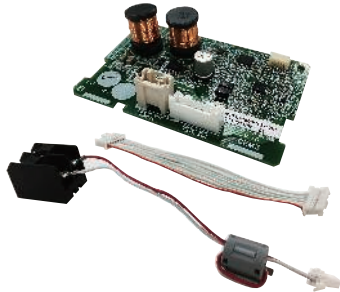

13-1. Controllers

Exterior	Part name	Model name	Summary
	Wired remote controller	UTY-RNRUZ*	<p>Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire Optional communication kit is necessary for installation.</p> <p>NOTE: When this remote controller is connected, wireless remote controller cannot be used.</p> 
	Simple remote controller	UTY-RSRY	<p>Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire Optional communication kit is necessary for installation.</p>
	Simple remote controller	UTY-RHRY	<p>Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire Optional communication kit is necessary for installation.</p>

NOTES:

- Available functions may differ by the remote controller. For details, refer to the operation manual.
- When using a Wireless LAN adapter, group controlling system of the wired remote controller is prohibited.

13-2. Others

Exterior	Part name	Model name	Summary
	External connect kit	UTY-XWZXZ5	Required when external device is connected.
	External input and output PCB	UTY-XCSXZ2	Use to connect with external devices and air conditioner PCB. Optional External connect kit is necessary for installation.
	Communication kit	UTY-TWRXZ2	Use to connect Non-polar 2-core wired remote controller.
	Wireless LAN adapter	UTY-TFSXF1	Remotely manage an air conditioning system using mobile devices such as smartphones and tablets.

Part 2. OUTDOOR UNIT

SINGLE TYPE:

AOUG09LMAS1

AOUG12LMAS1

1. Specifications

OUTDOOR UNIT
AOUG09-12LMA51

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Type			Inverter heat pump		
Model name			AOUG09LMA51	AOUG12LMA51	
Power supply			208/230 V ~ 60 Hz		
Power supply intake			Outdoor unit		
Available voltage range			187—253 V		
Starting current			A	4.0	6.0
Fan	Airflow rate	Cooling	CFM (m ³ /h)	954 (1,620)	
		Heating		954 (1,620)	
	Type × Q'ty	Motor output		Propeller fan × 1	
			W	23	
Sound pressure level *1			Cooling	46	49
			Heating	48	51
Heat exchanger type			Dimensions (H × W × D)	in (mm)	Main1: 19-13/16 × 34-15/16 × 11/16 (504 × 888 × 18.19) Main2: 19-13/16 × 20-1/16 × 11/16 (504 × 510 × 18.19)
			Fin pitch	FPI	20
			Rows × Stages	Main1: 1 × 24 Main2: 1 × 24	
			Pipe type	Copper	
			Fin type	Type (Material)	Aluminum
				Surface treatment	PC fin
Compressor			Type	DC rotary	
			Motor output	W	900
Refrigerant			Type	R410A	
			Charge	lb oz	2 lb 2 oz
				g	950
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)	
			Gross	21-5/16 × 31-7/16 × 11-7/16 (542 × 799 × 290)	
			23-11/16 × 37 × 14-3/4 (602 × 940 × 375)		
Weight			Net	lb (kg)	68 (31)
			Gross		75 (34)
					71 (32)
					77 (35)
Connection pipe			Size	Liquid	in (mm)
				Gas	
			Method	Flare	
			Pre-charge length	49 (15)	
			Max. length	66 (20)	
			Max. height difference	49 (15)	
Operation range			Cooling	°F (°C)	
			Heating	14 to 115 (-10 to 46)	
				5 to 75 (-15 to 24)	
Drain hose			Material	PP	
			Tip diameter	in (mm)	
			Ø 1/2 (Ø 13.0) (I. D.), Ø 5/8 to 11/16 (Ø 16.0 to 16.8) (O. D.)		
NOTES:					
<ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – 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) / 60 °FWB (15.56 °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. • *1: Sound pressure level <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. 					

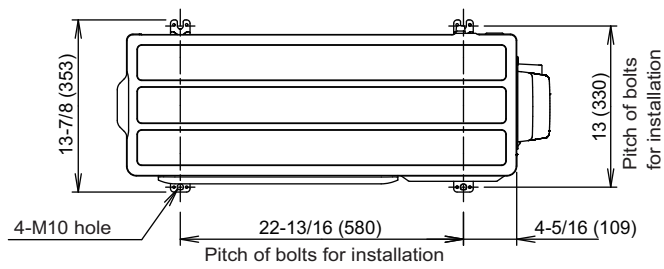
2. Dimensions

2-1. Models: AOUG09LMAS1 and AOUG12LMAS1

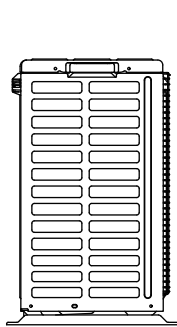
Unit: in (mm)

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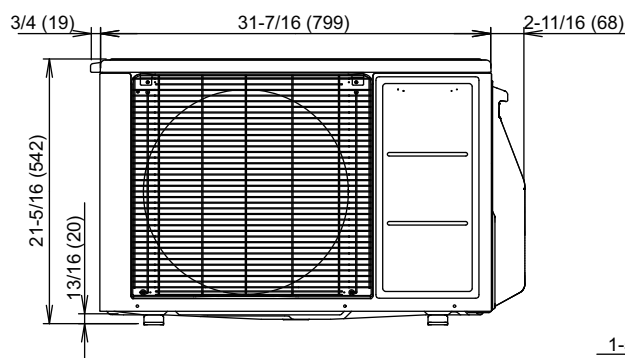
OUTDOOR UNIT
AOUG09-12LMAS1



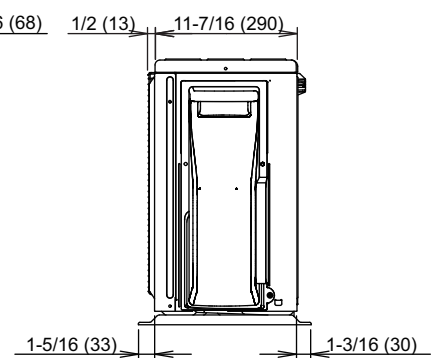
Top view



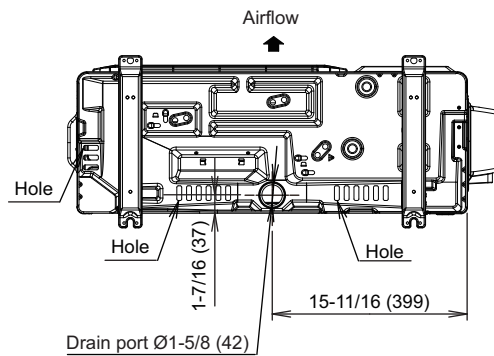
Side view



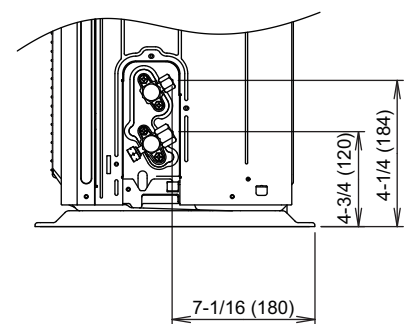
Front view



Side view



Bottom view



Side view (Valve part)

3. Installation space

3-1. Models: AOUG09LMAS1 and AOUG12LMAS1

■ Space requirement

Provide sufficient installation space for product safety.

⚠ CAUTION

Keep the space shown in the installation examples.

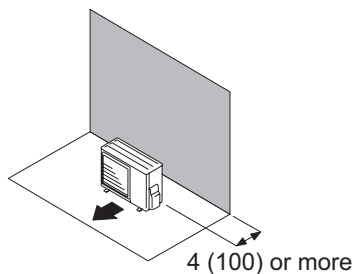
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.

● Single outdoor unit installation

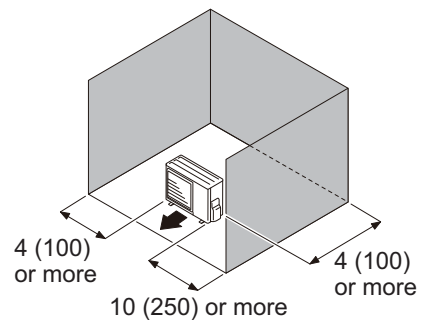
- When the upper space is open:

Unit: in (mm)

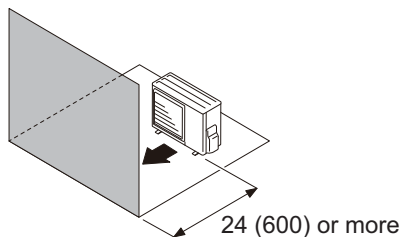
Obstacles at rear only



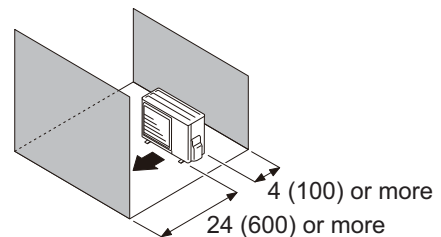
Obstacles at rear and sides



Obstacles at front



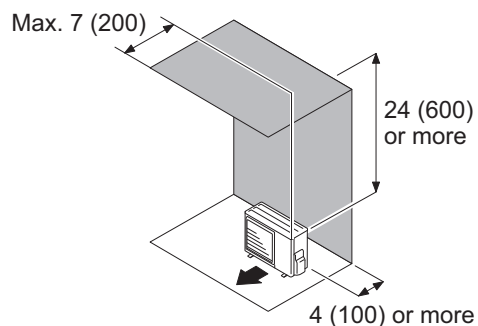
Obstacles at front and rear



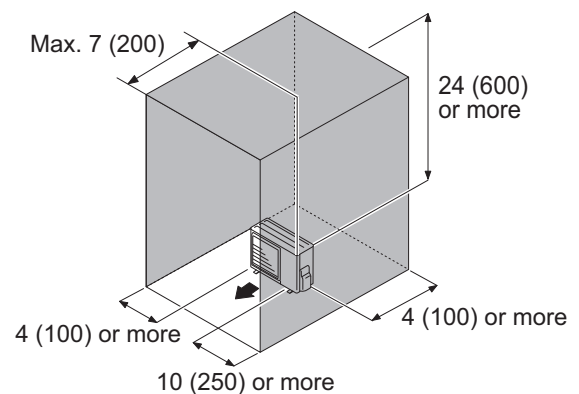
- When an obstruction in the upper space:

Unit: in (mm)

Obstacles at rear and above



Obstacles at rear, sides, and above



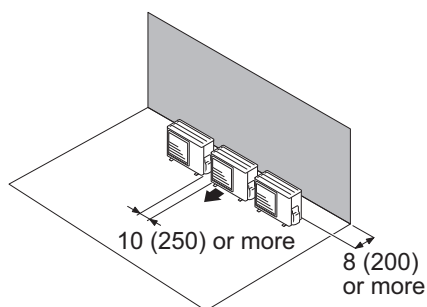
● Multiple outdoor unit installation

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

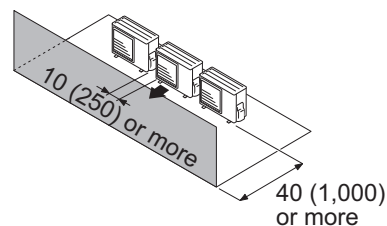
- **When the upper space is open:**

Unit: in (mm)

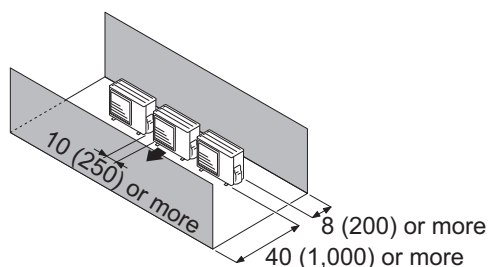
Obstacles at rear only



Obstacles at front only



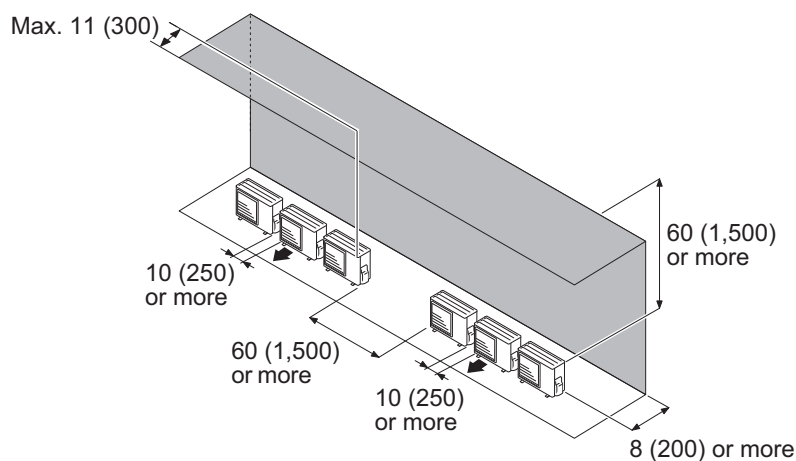
Obstacles at front and rear



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

Unit: in (mm)

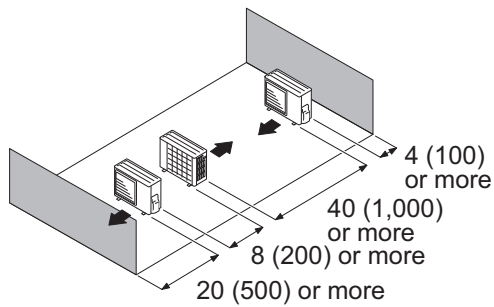
Obstacles at rear and above.



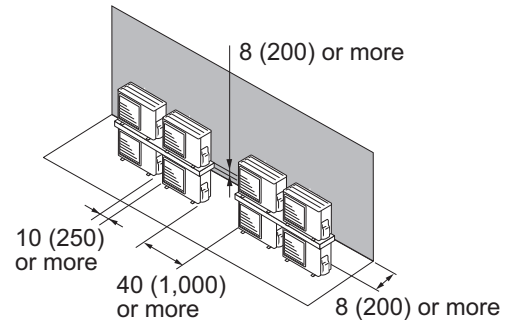
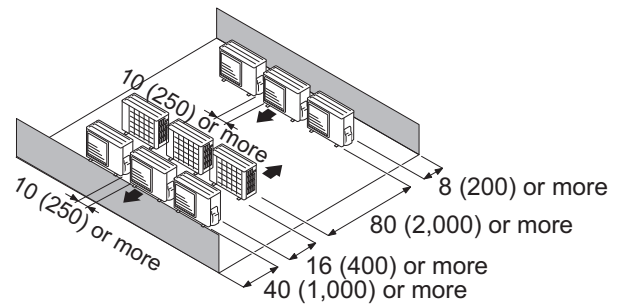
● Outdoor units installation in multi-row

Unit: in (mm)

Single parallel unit arrangement



Multiple parallel unit arrangement

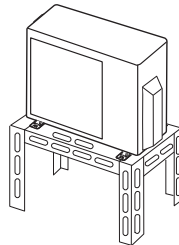


NOTES:

- 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.

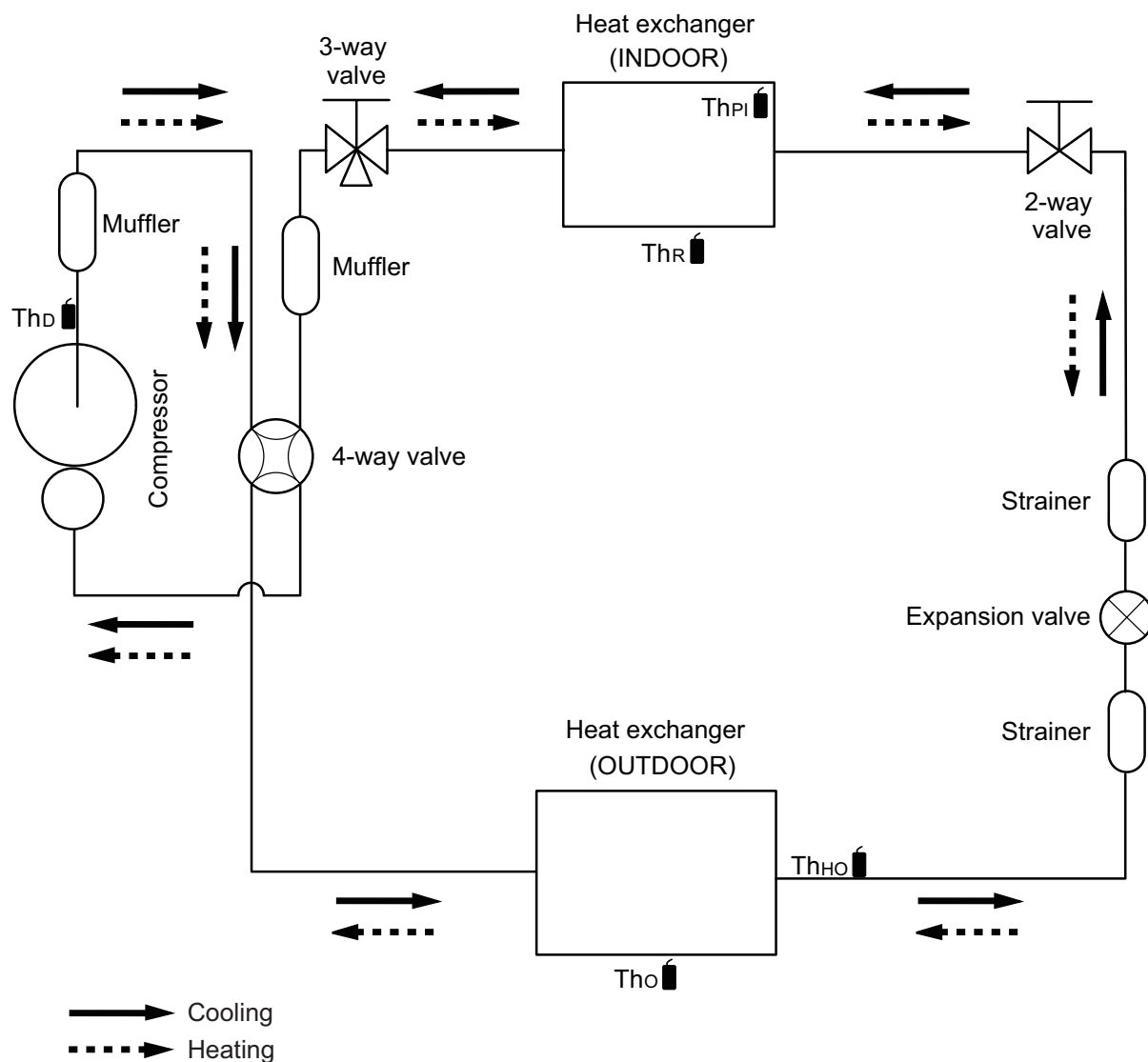
⚠ CAUTION

- 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.



4. Refrigerant circuit

4-1. Models: AOUG09LMAS1 and AOUG12LMAS1



Th_D : Thermistor (Discharge temperature)

Th_O : Thermistor (Outdoor temperature)

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

Th_R : Thermistor (Room temperature)

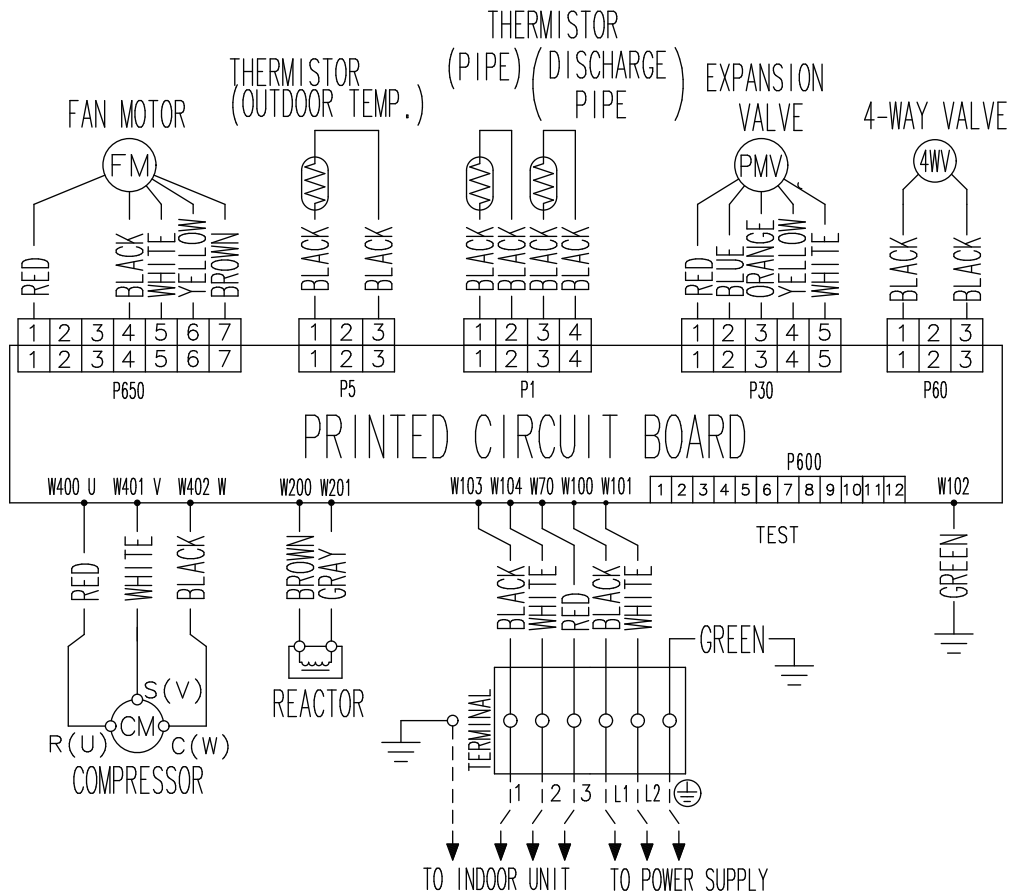
Th_{PI} : Thermistor (Pipe temperature)

5. Wiring diagrams

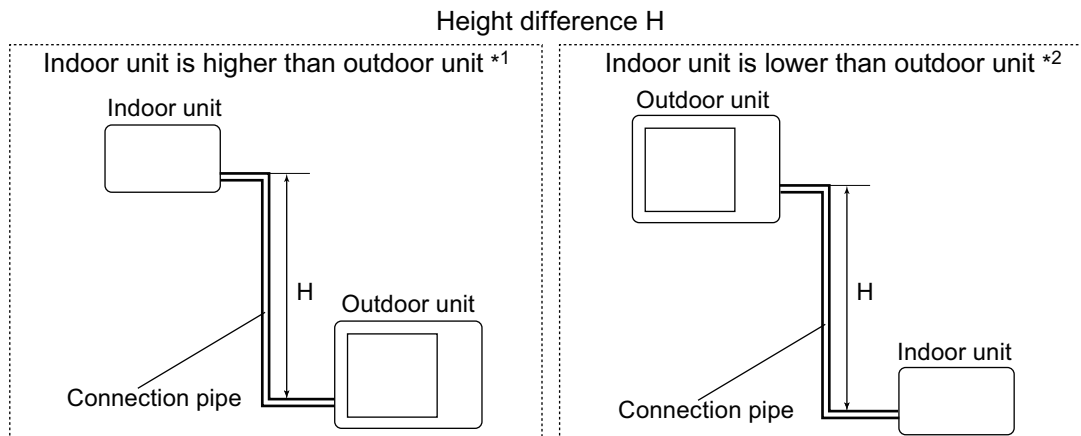
5-1. Models: AOUG09LMAS1 and AOUG12LMAS1

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AOUG09-12LMAS1



6. Capacity compensation rate for pipe length and height difference



6-1. Models: AOUG09LMAS1 and AOUG12LMAS1

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

COOLING		Pipe length						
		m						
			ft	5 16	7.5 25	10 33	15 49	20 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
	0	0	1.029	1.000	0.971	0.913	0.922	
Indoor unit is lower than outdoor unit *2	-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						
			ft	5 16	7.5 25	10 33	15 49	20 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
	0	0	1.006	1.000	0.974	0.901	0.884	
Indoor unit is lower than outdoor unit *2	-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. Model: AOUG09LMAS1

Refrigerant type		R410A
Refrigerant amount	lb oz	2 lb 2 oz
	g	950

■ 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	oz	0	3.5	
	g	0	100	

7-2. Model: AOUG12LMAS1

Refrigerant type		R410A
Refrigerant amount	lb oz	2 lb 3 oz
	g	1,000

■ 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	oz	0	3.5	
	g	0	100	

8. Airflow

8-1. Model: AOUG09LMAS1

● Cooling

Airflow	
m ³ /h	1,620
l/s	450
CFM	954

● Heating

Airflow	
m ³ /h	1,620
l/s	450
CFM	954

8-2. Model: AOUG12LMAS1

● Cooling

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

● Heating

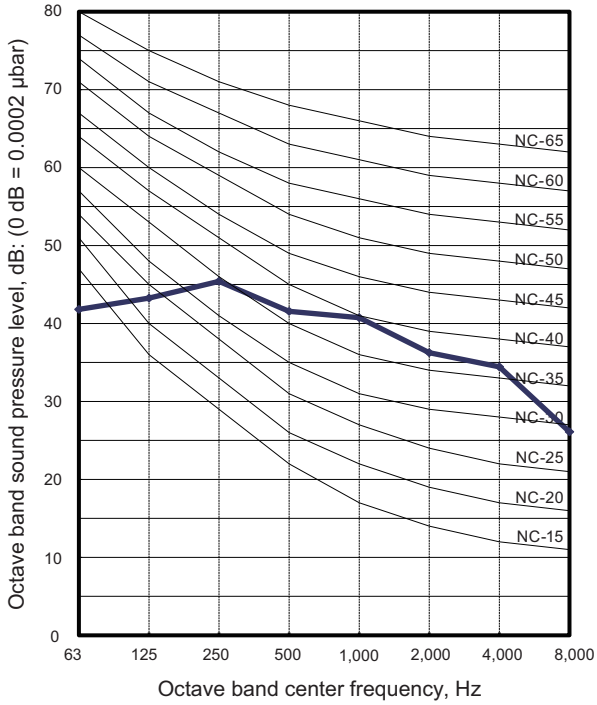
Airflow	
m ³ /h	1,810
l/s	503
CFM	1,065

9. Operation noise (sound pressure)

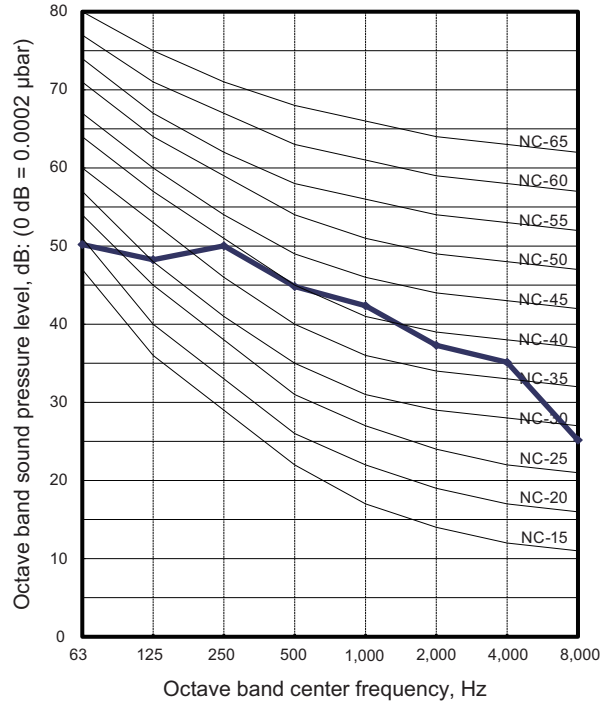
9-1. Noise level curve

Model: AOUG09LMAS1

Cooling

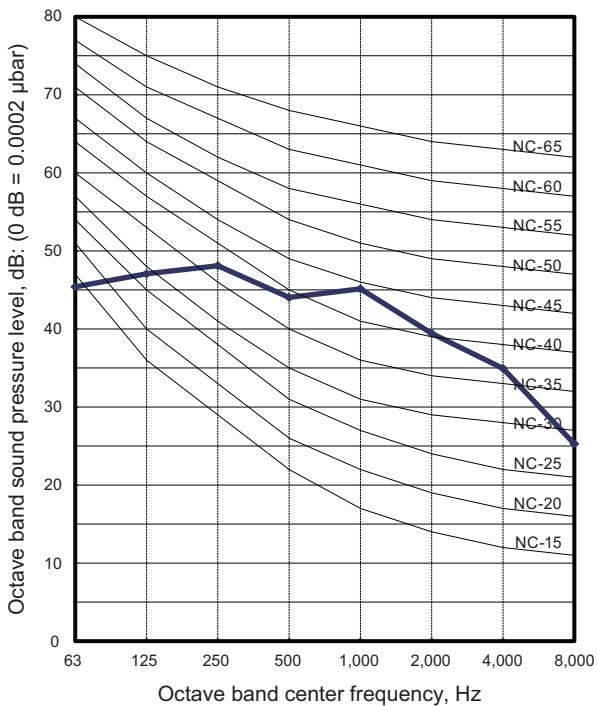


Heating

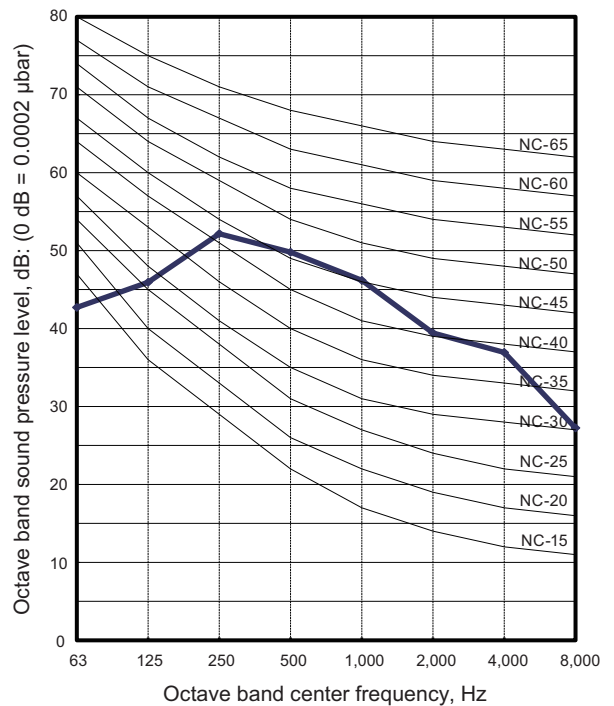


Model: AOUG12LMAS1

Cooling



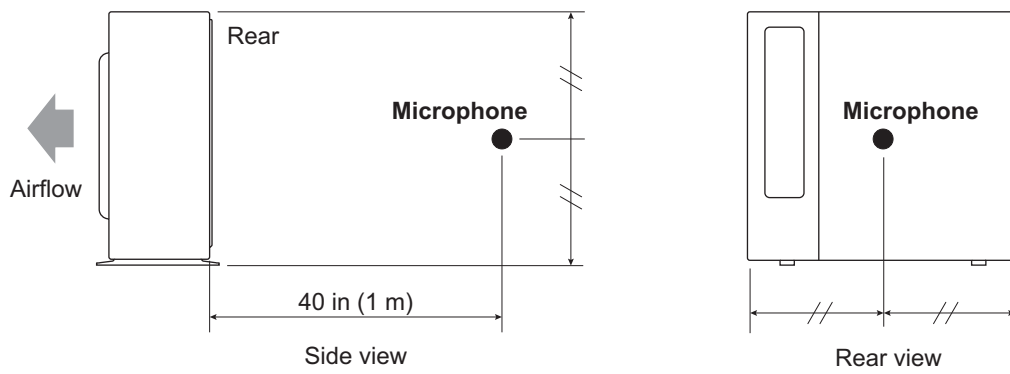
Heating



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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			AOUG09LMAS1	AOUG12LMAS1
Power supply	Voltage		V	
	Frequency		Hz	
			208/230~	
			60	
MCA *1			A	
			9.7	11.5
Starting current			A	
			4.0	6.0
Wiring spec. *2	MAX. CKT. BKR *3		A	15
	Power cable		AWG	14
	Connection cable *4	Size	AWG	14
		Limited wiring length	ft (m)	69 (21)

*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.




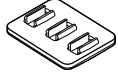
*3: Maximum Circuit Breaker

*4: Limit voltage drop to less than 2%. If voltage drop is 2% or more, increase cable conductor size.

11. Safety devices

Type of protection	Protection form		Model	
			AOUG09LMAS1	AOUG12LMAS1
Circuit protection	Current fuse (Main PCB)		250 V, 15 A	
			250 V, 5 A	
			250 V, 3.15 A	
Fan motor protection	Thermal protection program	Activate	260±9 °F (127±5°C) Fan motor stop	
		Reset	203 °F or less (95 °C or less) 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	

12. Accessories

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Installation manual		1	Cable tie		2
Drain pipe		1	Drain cap		5