FUJITSU

Refrigerant R410A INVERTER

AIR CONDITIONER

Duct type

DESIGN & TECHNICAL MANUAL

INDOOR



ARYG72LHTA
ARYG90LHTA

OUTDOOR



AOYG72LRLA
AOYG90LRLA

FUJITSU GENERAL LIMITED

DR_AR012EF_03
2017.04.07

Notices:

- Product specifications and design are subject to change without notice for future improvement.
- For further details, please check with our authorized dealer.

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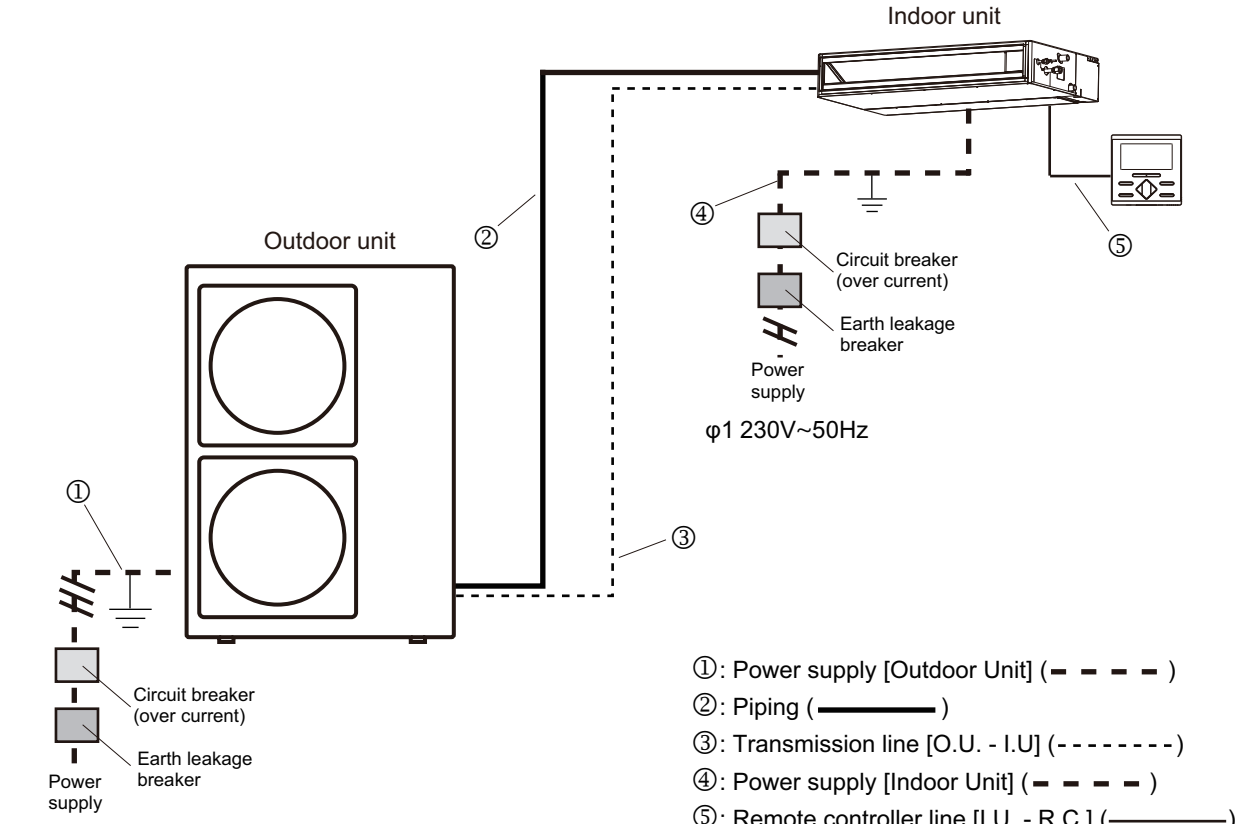
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Part 1. INDOOR UNIT

DUCT TYPE:
ARYG72LHTA
ARYG90LHTA

1. Product features

1-1. System outline



2. Specifications

Type					Duct	
					Inverter heat pump	
Model name					**ARYG72LHTA**	**ARYG90LHTA**
Power supply					230 V ~ 50 Hz	
Available voltage range					198—264 V	
Capacity	Cooling	Rated		kW	19.0	22.0
				Btu/h	64,800	75,000
		Min.—Max.		kW	8.40 —20.90	10.30—24.20
				Btu/h	28,600 —71,300	35,100 —82,500
	Heating	Rated		kW	22.4	27.0
				Btu/h	76,400	92,100
		Min.—Max.		kW	7.20—24.60	8.50—29.70
				Btu/h	24,500 —83,900	29,000—101,300
Input power	Cooling	Rated		kW	4.7	5.3
	Heating				4.7	5.3
	Fan	HIGH		W	580	640
		MED			450	470
		LOW			320	350
		QUIET			210	250
Current	Cooling	Rated		A	3.2	3.5
	Heating				3.2	3.5
Power factor	Cooling			%	63.9	65.8
	Heating				63.9	65.8
EER		Cooling		kW/kW	2.94	2.83
COP		Heating			3.40	3.30
Moisture removal				L/h (pints/h)	4.5 (7.92)	6.0 (10.56)
Maximum operating current *1		Cooling		A	4.6	6.0
		Heating			4.6	6.0
Fan	Airflow rate	Cooling	HIGH	m^3/h	4,300	4,300
			MED		3,900	3,900
			LOW		3,450	3,450
			QUIET		3,000	3,000
		Heating	HIGH		4,300	4,300
			MED		3,900	3,900
			LOW		3,450	3,450
			QUIET		3,000	3,000
	Type × Q'ty				Sirocco fan × 2	
	Motor output			W	750	1,070
Static pressure range				Pa	50 to 150 (Standard: 72)	50 to 200 (Standard: 72)
Sound pressure level *2		Cooling	HIGH	dB (A)	46	47
			MED		43	44
			LOW		41	42
			QUIET		39	40
		Heating	HIGH		46	47
			MED		43	44
			LOW		41	42
			QUIET		39	40
Sound power level		Cooling		dB (A)	79	79
		Heating			80	80
Heat exchanger type		Dimensions (H × W × D)		mm	546 × 1,158 × 39.9	Main: 546 × 1,158 × 39.9 Sub: (252 × 1,158 × 13.3) × 2
		Fin pitch			1.3	Main: 1.3 Sub: 1.45
		Rows × Stages			3 × 26	Main: 3 × 26 Sub: (1 × 12) × 2
		Pipe type			Copper	
		Fin type			Aluminium	
Enclosure		Material			Steel	
		Color			—	
Dimensions (H × W × D)	Net			mm	360 × 1,400 × 850	
	Gross				460 × 1,640 × 1,030	
Weight	Net			kg	69	80
	Gross				80	91
Connection pipe	Size	Liquid		mm (in)	Ø 12.70 (Ø 1/2)	
		Gas			Ø 25.40 (Ø 1)	
	Method				Brazing	
Drain hose	Material				PVC	
	Size			mm	Ø 24.4 (I.D.), Ø 32 (O.D.) (VP25)	
Operation range		Cooling		°C	18 to 32	
				%RH	80 or less	
		Heating		°C	16 to 30	
Remote controller type					Wired	

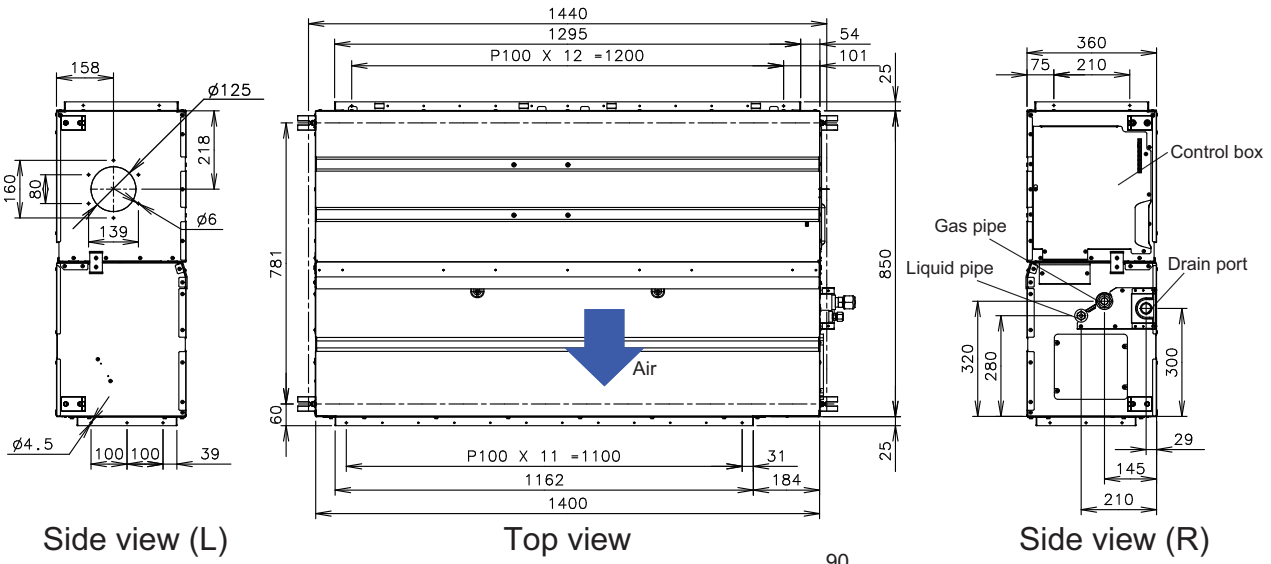
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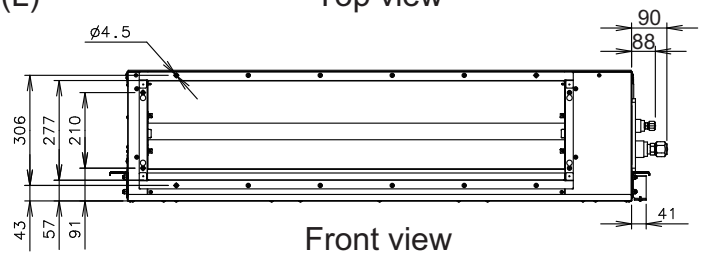
- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.
  - Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.
  - Pipe length: 7.5 m, Height difference: 0 m. (Between outdoor unit and indoor unit.).
- Protective function might work when using it outside the operation range.
- *1: Maximum current:
  - The maximum value when operated within the operation range.
  - The total current of indoor unit and outdoor unit.
- *2: Sound pressure level:
  - Measured values in manufacturer's anechoic chamber.
  - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.

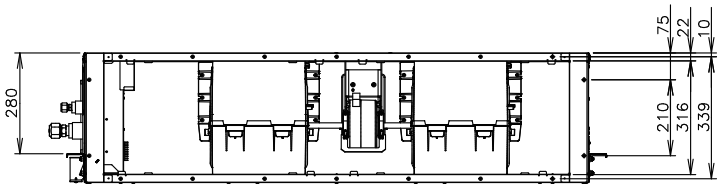
3. Dimensions

3-1. Models: ARYG72LHTA and ARYG90LHTA

Unit: mm







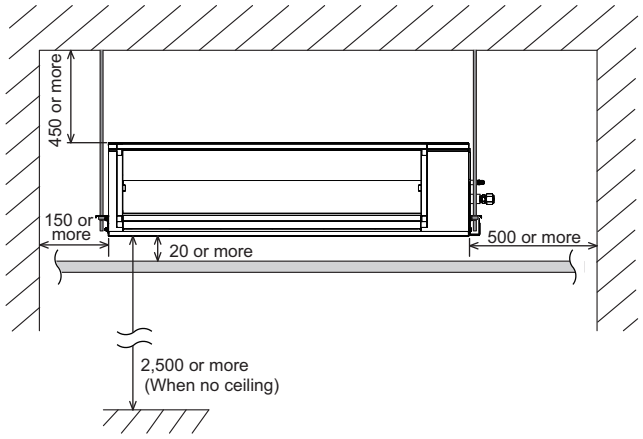
3-2. Installation space requirement

Provide sufficient installation space for product safety.

■ Models: ARYG72LHTA and ARYG90LHTA

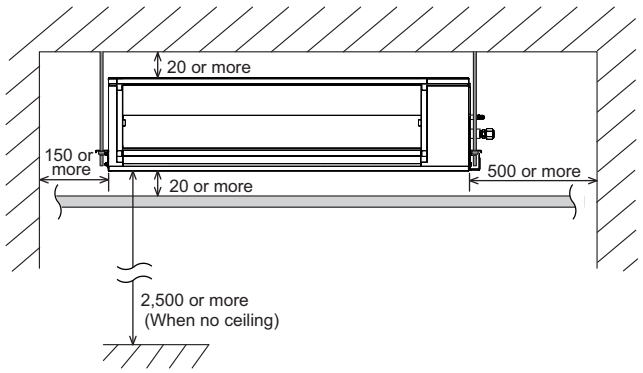
- **Installation by which service space is made on top of the unit (recommended):**

Unit: mm



- **Installation by which service is carried out from the bottom of the unit:**

Unit: mm



3-3. Maintenance space requirement

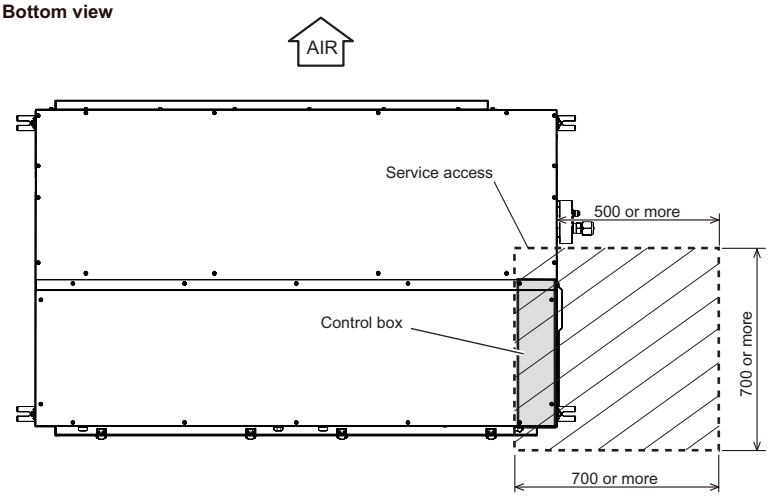
For future maintenance and service access, provide sufficient maintenance space.

NOTE: Do not place any wiring or illumination in the maintenance space, as they will impede service.

■ Models: ARYG72LHTA and ARYG90LHTA

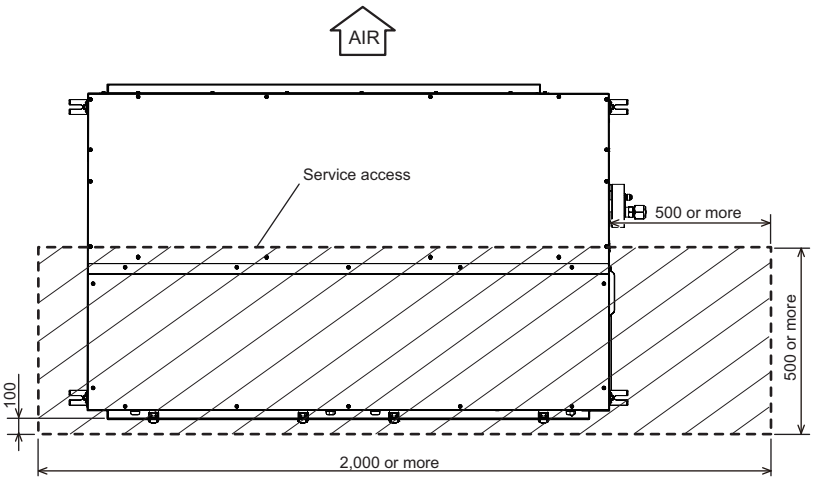
Unit: mm

Bottom view



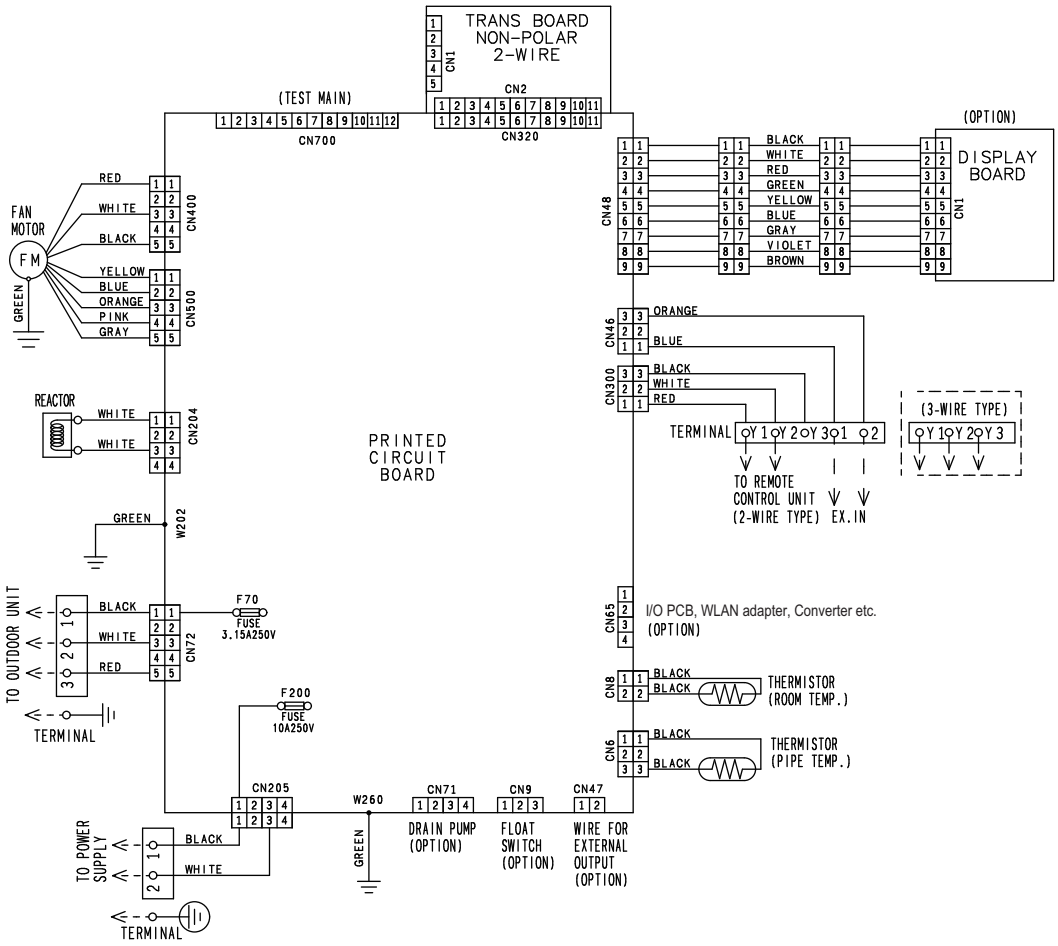
Bottom view

Unit: mm

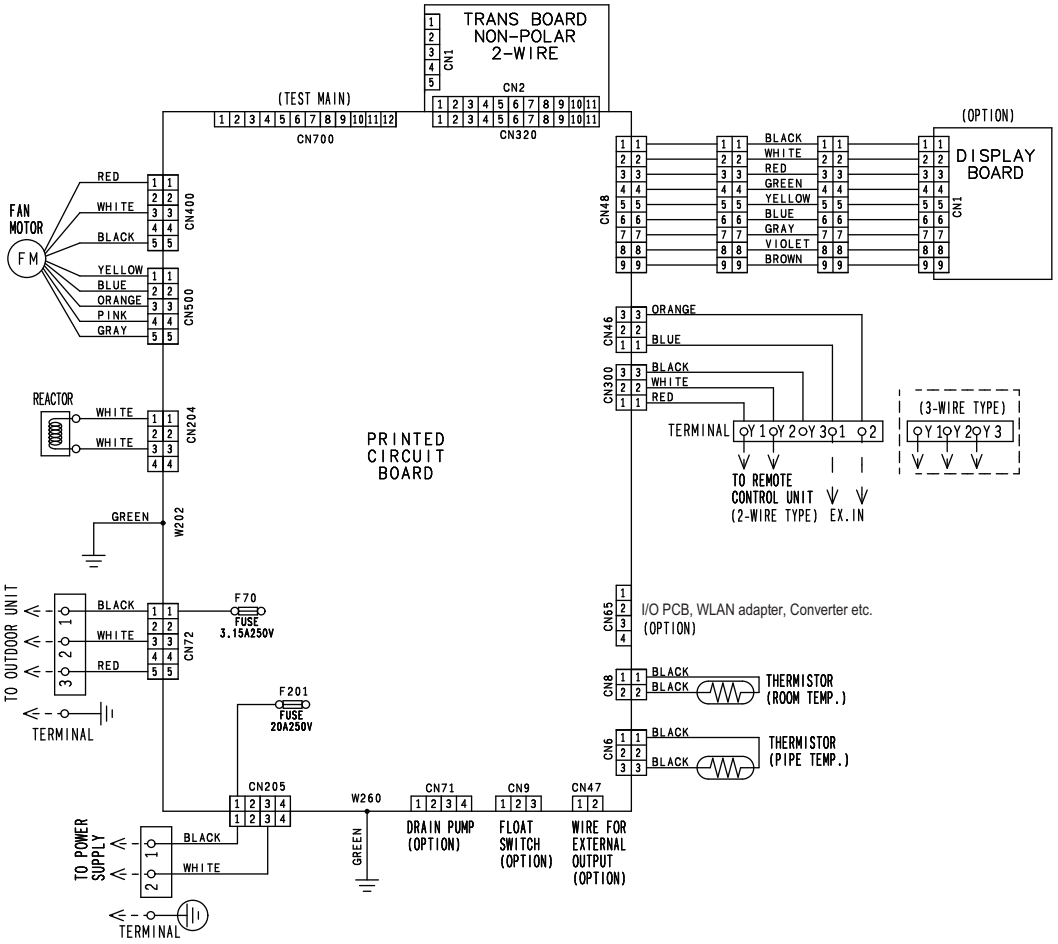


4. Wiring diagrams

4-1. Model: ARYG72LHTA



4-2. Model: ARYG90LHTA



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: ARYG72LHTA

AFR	m^3/h	4,300

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kW			kW			kW			kW			kW			kW			kW		
	-15	17.44	14.30	2.86	19.42	14.39	2.91	20.08	15.64	2.93	21.40	15.70	2.96	22.07	16.94	2.97	23.39	16.88	3.01	24.72	17.99	3.03
	-10	17.26	14.16	2.87	19.23	14.25	2.92	19.88	15.49	2.93	21.20	15.53	2.96	21.85	16.78	2.98	23.16	16.71	3.01	24.48	17.80	3.03
	0	17.10	14.03	3.06	19.05	14.11	3.10	19.69	15.34	3.12	20.99	15.39	3.15	21.64	16.61	3.17	22.95	16.55	3.20	24.24	17.63	3.23
	5	17.06	13.99	3.19	19.01	14.07	3.24	19.65	15.30	3.26	20.94	15.34	3.29	21.60	16.58	3.31	22.89	16.51	3.35	24.19	17.59	3.38
	10	16.88	13.97	3.59	18.81	14.05	3.65	19.44	15.27	3.67	20.72	15.33	3.70	21.37	16.55	3.72	22.65	16.49	3.76	23.94	17.56	3.80
	15	16.40	13.80	3.71	18.25	14.03	3.77	18.89	15.25	3.79	20.12	15.30	3.83	20.74	16.53	3.85	21.99	16.46	3.88	23.23	17.52	3.93
	20	16.62	13.93	4.13	18.50	14.17	4.20	19.14	15.40	4.21	20.40	15.45	4.26	21.03	16.69	4.28	22.29	16.62	4.33	23.56	17.70	4.36
	25	16.78	13.94	4.90	18.69	14.18	4.98	19.33	15.41	5.00	20.61	15.46	5.05	21.24	16.71	5.08	22.52	16.64	5.13	23.79	17.72	5.18
	30	16.45	13.25	5.60	18.33	13.47	5.67	18.96	14.65	5.70	20.19	14.69	5.77	20.82	15.87	5.79	22.07	15.81	5.84	23.32	16.85	5.91
	35	15.01	12.95	6.24	16.72	13.24	6.33	17.29	14.40	6.37	18.43	14.44	6.43	19.00	15.60	6.46	20.14	15.53	6.53	21.28	16.55	6.59
	40	14.86	12.23	5.91	16.55	12.58	5.99	17.12	13.68	6.03	18.25	13.72	6.08	18.81	14.82	6.11	19.94	14.77	6.18	21.07	15.72	6.24
	46	11.84	11.08	5.76	13.19	11.90	5.83	13.63	12.61	5.87	14.52	12.98	5.93	14.98	14.02	5.96	15.89	13.96	6.02	16.78	14.86	6.07

■ Model: ARYG90LHTA

AFR	m^3/h	4,300

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
		kW			kW			kW			kW			kW			kW			kW		
	-15	20.19	16.22	3.44	22.49	16.33	3.50	23.25	17.75	3.52	24.78	17.81	3.56	25.55	19.23	3.57	27.08	19.15	3.62	28.62	20.41	3.65
	-10	19.98	16.06	3.46	22.27	16.16	3.51	23.02	17.58	3.52	24.55	17.63	3.56	25.30	19.04	3.58	26.82	18.96	3.62	28.34	20.20	3.65
	0	19.80	15.91	3.68	22.05	16.01	3.73	22.80	17.40	3.76	24.30	17.46	3.79	25.05	18.85	3.82	26.57	18.77	3.85	28.07	20.00	3.89
	5	19.75	15.88	3.84	22.01	15.96	3.90	22.75	17.36	3.93	24.25	17.41	3.96	25.01	18.81	3.99	26.51	18.73	4.02	28.01	19.95	4.06
	10	19.55	15.85	4.32	21.78	15.94	4.38	22.51	17.33	4.41	24.00	17.39	4.45	24.74	18.77	4.48	26.23	18.71	4.52	27.71	19.92	4.57
	15	18.99	15.66	4.47	21.14	15.92	4.53	21.87	17.31	4.56	23.30	17.35	4.60	24.02	18.75	4.63	25.47	18.68	4.67	26.90	19.88	4.72
	20	19.24	15.81	4.97	21.42	16.08	5.05	22.17	17.48	5.07	23.62	17.53	5.12	24.35	18.94	5.15	25.81	18.86	5.20	27.28	20.09	5.25
	25	19.42	15.82	5.90	21.64	16.08	5.99	22.39	17.49	6.02	23.86	17.54	6.08	24.60	18.96	6.11	26.07	18.88	6.17	27.55	20.11	6.23
	30	19.05	15.03	6.73	21.22	15.29	6.82	21.95	16.62	6.86	23.38	16.67	6.93	24.11	18.01	6.97	25.55	17.94	7.03	27.00	19.12	7.11
	35	17.38	14.69	7.50	19.35	15.02	7.61	20.02	16.34	7.66	21.35	16.39	7.74	22.00	17.70	7.77	23.32	17.63	7.85	24.65	18.78	7.93
	40	17.21	13.87	7.10	19.17	14.27	7.20	19.82	15.52	7.26	21.13	15.57	7.31	21.78	16.82	7.35	23.09	16.76	7.43	24.39	17.84	7.51
	46	13.70	12.57	6.92	15.27	13.50	7.01	15.78	14.31	7.06	16.81	14.73	7.13	17.35	15.91	7.17	18.39	15.84	7.24	19.42	16.86	7.31

5-2. Heating capacity

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

■ Model: ARYG72LHTA

AFR	m^3/h	4,300

			Indoor temperature									
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
Outdoor temperature	-20	-21	10.58	5.57	10.32	5.68	10.07	5.80	9.82	5.91	9.57	6.02
	-15	-16	16.21	6.42	15.83	6.56	15.44	6.69	15.06	6.82	14.68	6.96
	-10	-11	18.89	6.82	18.44	6.96	18.00	7.10	17.55	7.25	17.10	7.39
	-5	-7	20.98	7.11	20.48	7.26	19.98	7.41	19.48	7.56	18.99	7.70
	0	-2	22.62	7.19	22.08	7.34	21.54	7.49	21.00	7.63	20.47	7.78
	5	3	25.56	7.20	24.95	7.35	24.35	7.50	23.73	7.64	23.13	7.79
	7	6	25.83	7.21	25.22	7.36	24.60	7.51	23.99	7.66	23.37	7.81
	10	8	27.04	7.16	26.39	7.30	25.74	7.46	25.09	7.60	24.46	7.76
	15	10	28.06	7.16	27.39	7.30	26.72	7.45	26.05	7.61	25.38	7.71
	20	15	25.25	6.25	24.64	6.37	24.04	6.50	23.44	6.64	22.83	6.72
	24	18	25.81	6.21	25.19	6.33	24.58	6.47	23.96	6.61	23.35	6.69

■ Model: ARYG90LHTA

AFR	m^3/h	4,300

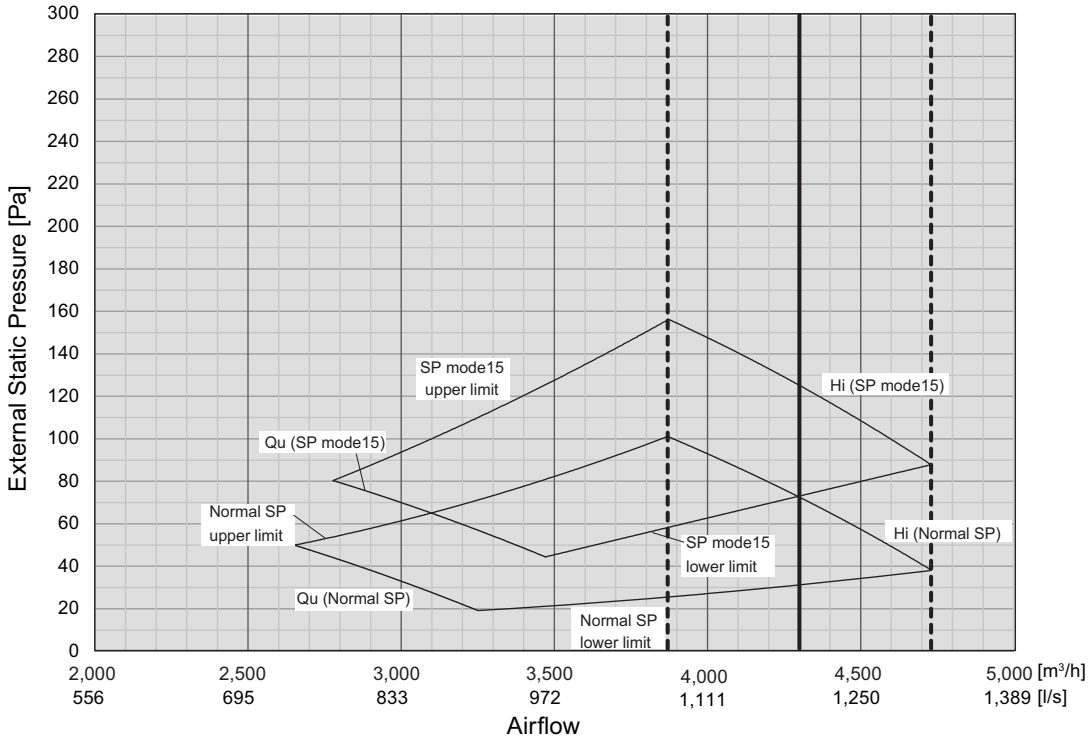
			Indoor temperature									
		°CDB	16		18		20		22		24	
	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
			kW		kW		kW		kW		kW	
Outdoor temperature	-20	-21	12.77	6.65	12.47	6.79	12.16	6.93	11.86	7.07	11.56	7.19
	-15	-16	19.57	7.68	19.11	7.84	18.64	8.00	18.18	8.16	17.72	8.31
	-10	-11	22.81	8.16	22.27	8.32	21.73	8.49	21.19	8.66	20.65	8.83
	-5	-7	25.33	8.50	24.73	8.68	24.12	8.86	23.52	9.03	22.92	9.21
	0	-2	27.31	8.59	26.66	8.77	26.00	8.95	25.35	9.13	24.71	9.29
	5	3	30.86	8.61	30.12	8.79	29.39	8.97	28.65	9.13	27.92	9.27
	7	6	31.19	8.62	30.44	8.80	29.70	8.98	28.96	9.16	28.22	9.28
	10	8	32.64	8.56	31.86	8.73	31.08	8.92	30.29	9.09	29.53	9.28
	15	10	33.88	8.56	33.07	8.72	32.26	8.91	31.45	9.10	30.65	9.22
	20	15	30.48	7.47	29.75	7.61	29.02	7.77	28.30	7.94	27.57	8.04
	24	18	31.16	7.43	30.42	7.57	29.67	7.73	28.93	7.90	28.20	8.00

6. Fan performance

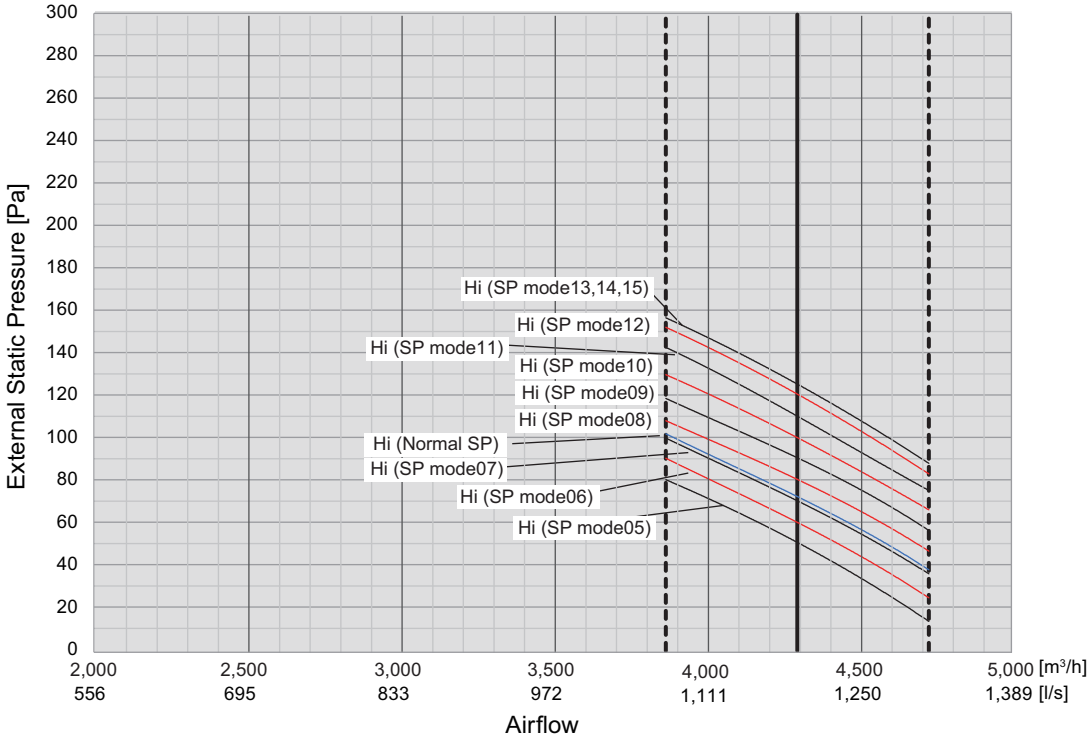
6-1. Fan performance curve

■ Model: ARYG72LHTA

Fan performance curve_1



Fan performance curve_2
(For function setting by remote controller)

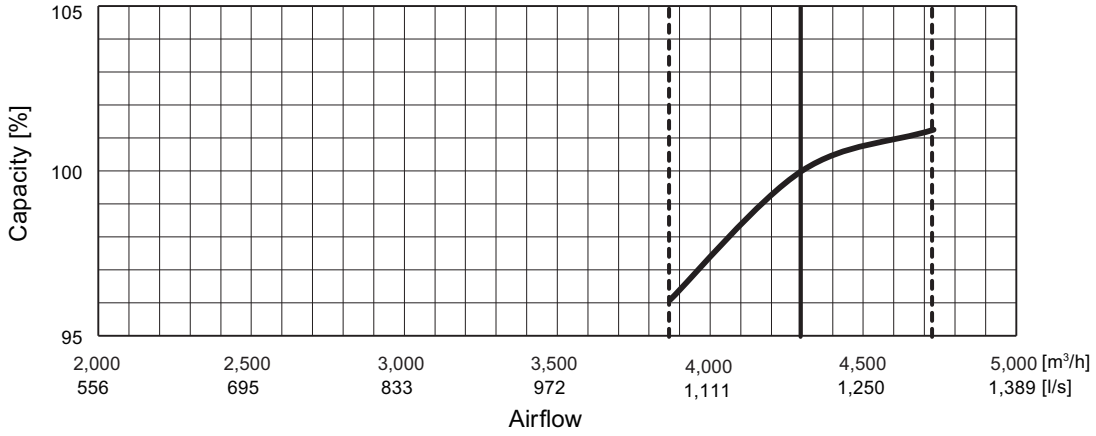


NOTES:

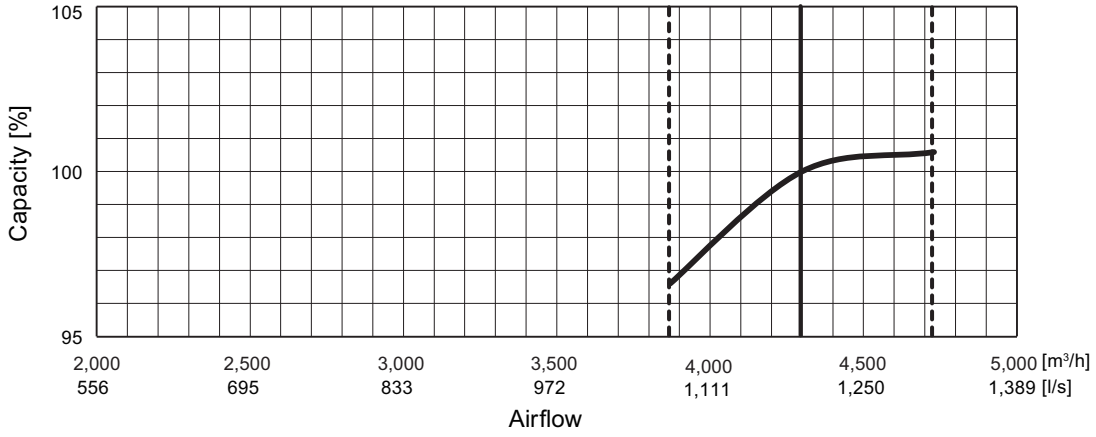
- Setting of the external static pressure is switchable into modes by using the remote controller.
- According to the resistance of the connecting duct, perform the setting of the external static pressure with referring “Fan performance curve_2” above.
- The default setting is set at "Normal SP".

● Characteristics of air volume and capacity

- Cooling

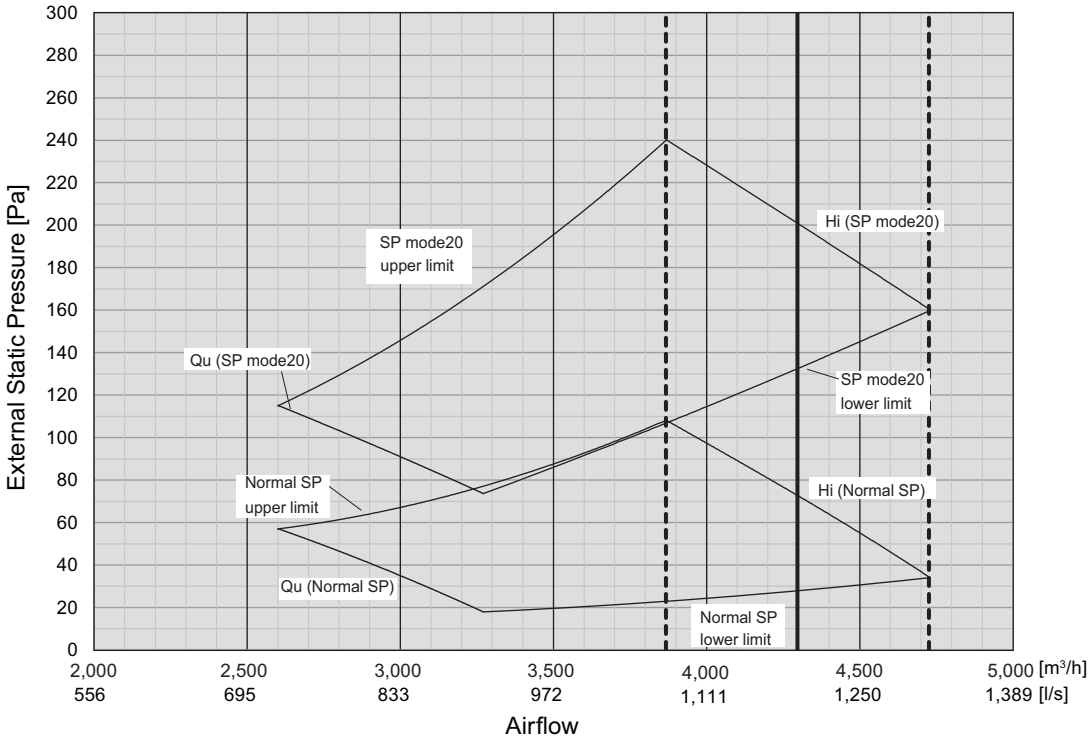


- Heating

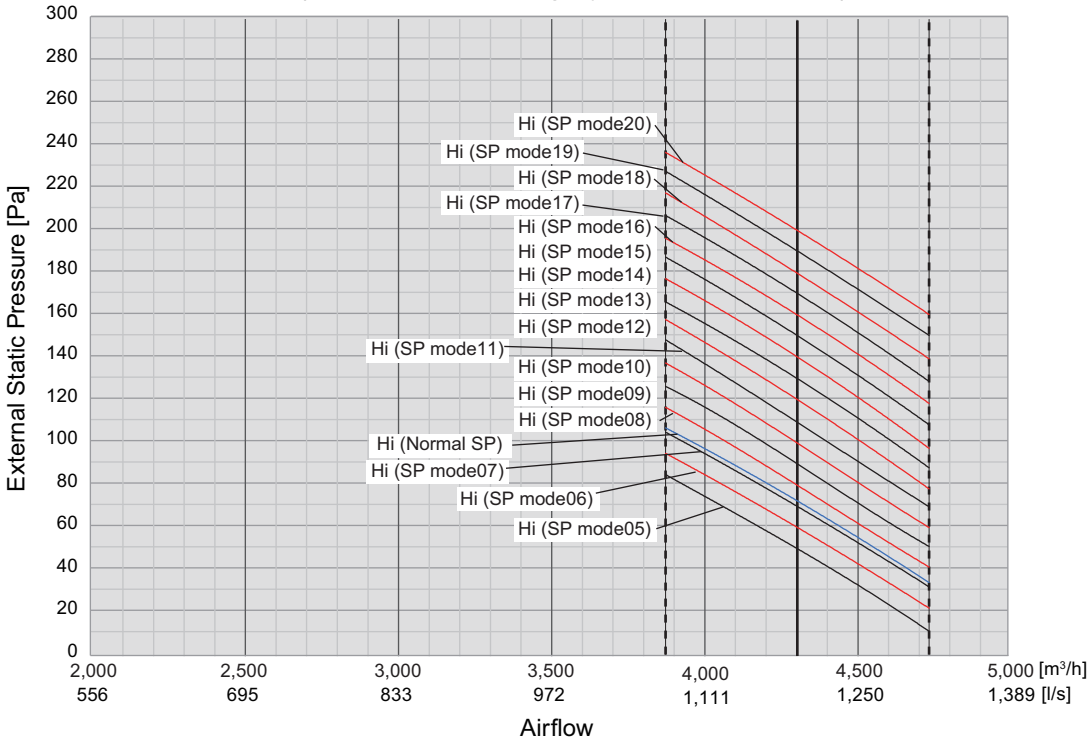


■ Model: ARYG90LHTA

Fan performance curve_1



Fan performance curve_2
(For function setting by remote controller)

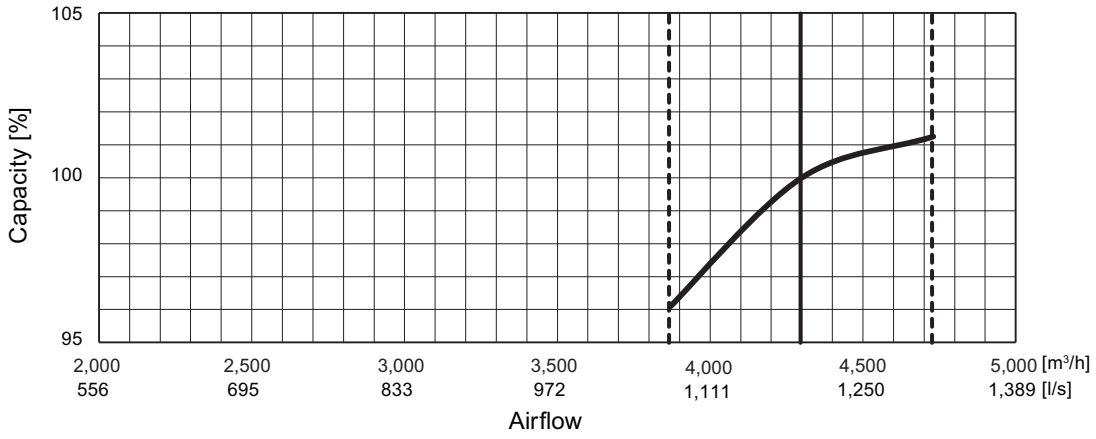


NOTES:

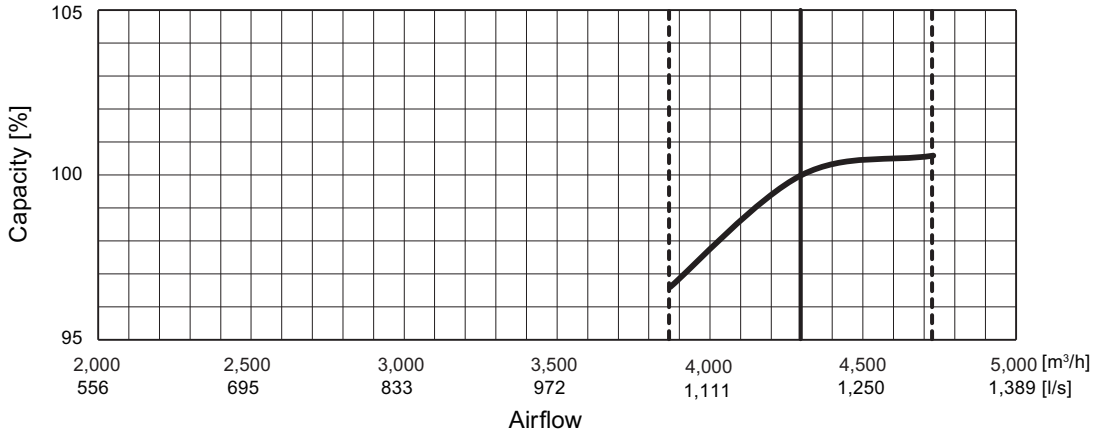
- Setting of the external static pressure is switchable into modes by using the remote controller.
- According to the resistance of the connecting duct, perform the setting of the external static pressure with referring “Fan performance curve_2” above.
- The default setting is set at "Normal SP".

● Characteristics of air volume and capacity

• Cooling



• Heating



■ Automatic airflow adjustment procedures

1. To start the auto setting, use No.32 of setting value in Function Number 26.
2. Run the air conditioner on fan mode (High).
   * For instructions on how to operate the air conditioner, refer to the operation manual of the remote controller.

   During automatic airflow adjustment, the mode will be fixed at fan (High).

   When this function is active, do not operate the outdoor unit.
3. The air conditioner will run for about 1 to 8 min then stop automatically.
   * Do not change the throttles of the inlet and outlet ports during operation.

   When used in a group control system, the setting will take about 10 min.
4. Turn the air conditioner off and on again.
5. Check the setting value of Function 26.
   * If the setting value has not changed, repeat the procedure from step 2.

⚠ CAUTION

When the duct or outlet installations are changed after the Automatic airflow adjustment is completed, repeat the procedure from step 1.

6-2. Airflow

■ Model: ARYG72LHTA

● Cooling

Fan speed	Airflow	
HIGH	m^3/h	4,300
	l/s	1.195
	CFM	2,531
MED	m^3/h	3,900
	l/s	1,083
	CFM	2,296
LOW	m^3/h	3,450
	l/s	958
	CFM	2,031
QUIET	m^3/h	3,000
	l/s	833
	CFM	1,766

● Heating

Fan speed	Airflow	
HIGH	m^3/h	4,300
	l/s	1.195
	CFM	2,531
MED	m^3/h	3,900
	l/s	1,083
	CFM	2,296
LOW	m^3/h	3,450
	l/s	958
	CFM	2,031
QUIET	m^3/h	3,000
	l/s	833
	CFM	1,766

■ Model: ARYG90LHTA

● Cooling

Fan speed	Airflow	
HIGH	m^3/h	4,300
	l/s	1.195
	CFM	2,531
MED	m^3/h	3,900
	l/s	1,083
	CFM	2,296
LOW	m^3/h	3,450
	l/s	958
	CFM	2,031
QUIET	m^3/h	3,000
	l/s	833
	CFM	1,766

● Heating

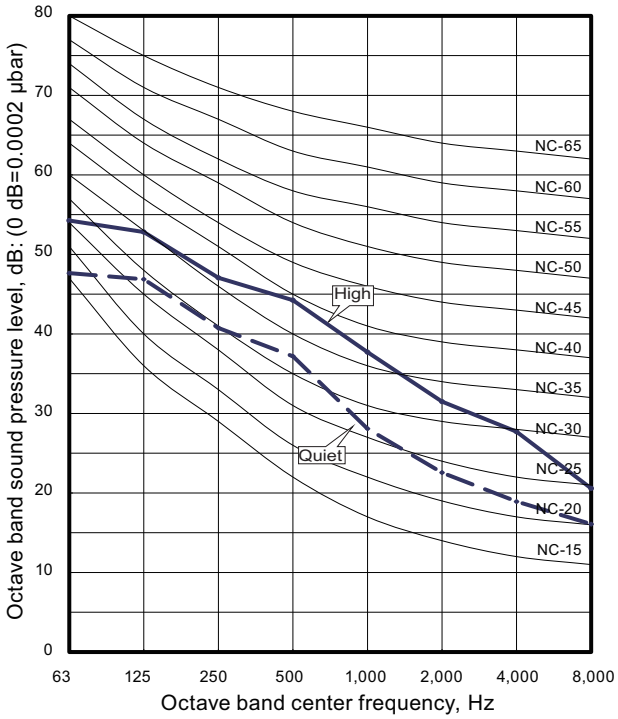
Fan speed	Airflow	
HIGH	m^3/h	4,300
	l/s	1.195
	CFM	2,531
MED	m^3/h	3,900
	l/s	1,083
	CFM	2,296
LOW	m^3/h	3,450
	l/s	958
	CFM	2,031
QUIET	m^3/h	3,000
	l/s	833
	CFM	1,766

7. Operation noise (sound pressure)

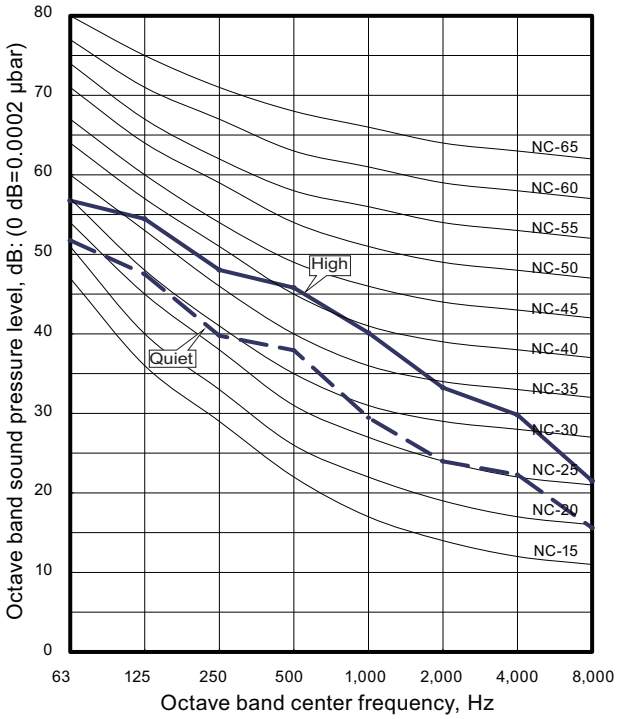
7-1. Noise level curve

■ Model: ARYG72LHTA

● Cooling

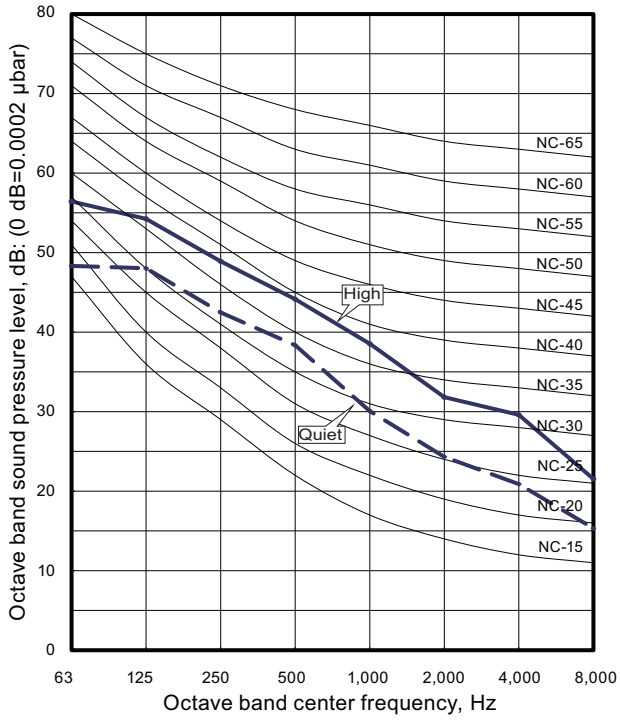


● Heating

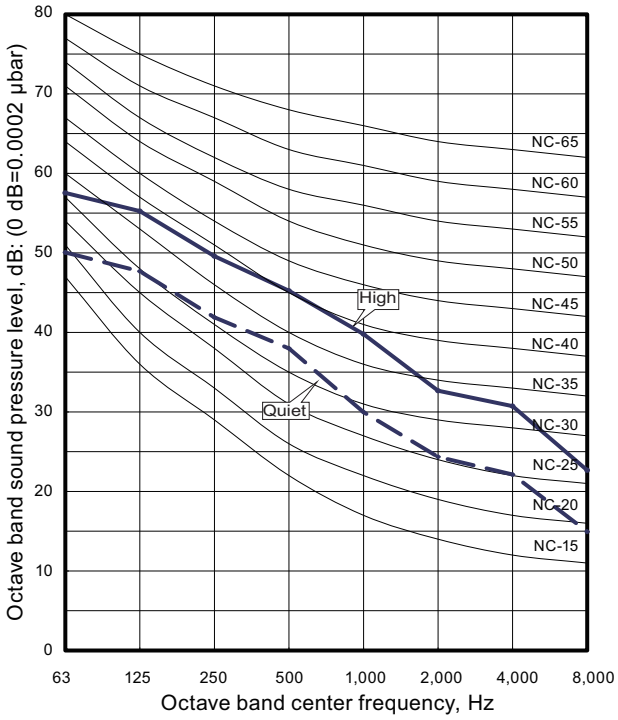


■ Model: ARYG90LHTA

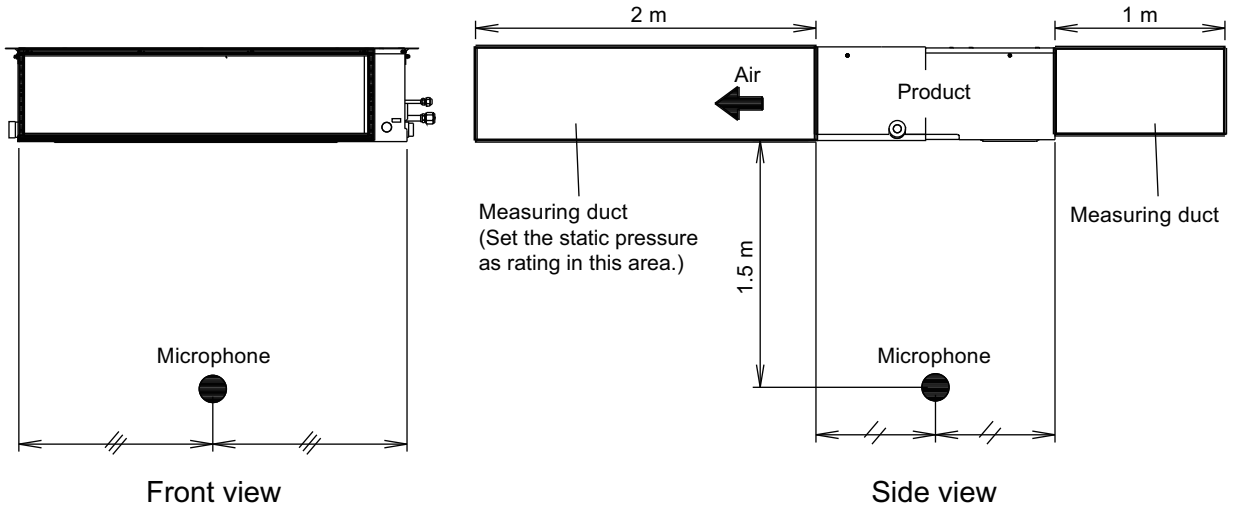
● Cooling



● Heating



7-2. Sound level check point



Front view

Side view

8. Electrical characteristics

Model name			ARYG72LHTA	ARYG90LHTA
Power supply	Voltage	V	230 ~	
	Frequency	Hz	50	
Max operating current		A	4.6	6.0
Wiring spec. *1	Circuit breaker current	A	15	
	Power cable	mm^2	1.5	
	Connection cable *2	mm^2	1.5	
	Limited wiring length	m	101	

*1: 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.

*2: Limit voltage drop to less than 2%. Increase conductor size if voltage drop is 2% or more.

9. Safety devices

Type of protection	Protection form	Model	
		ARYG72LHTA	ARYG90LHTA
Circuit protection	Current fuse (PCB*)	250 V, 3.15 A	
		250 V, 10 A	250 V, 20 A
Fan motor protection	Current protection	12.9 A	19.3 A

*: Printed Circuit Board

10. External input and output

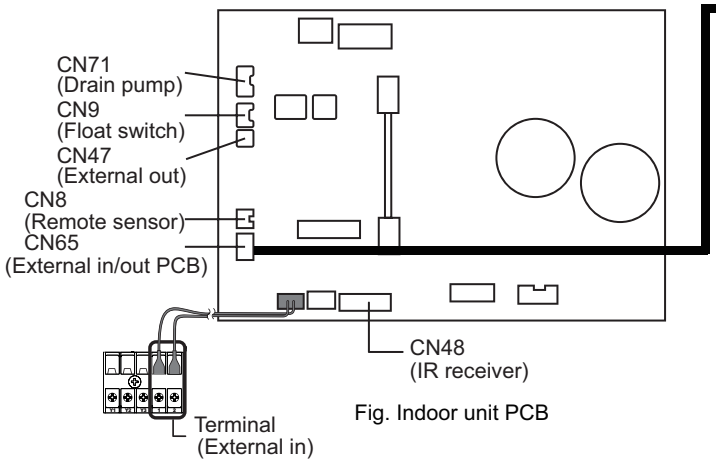


Fig. Indoor unit PCB

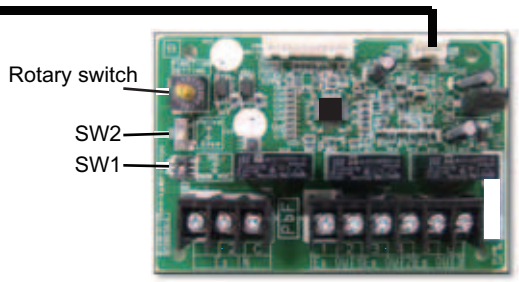


Fig. External input and output PCB

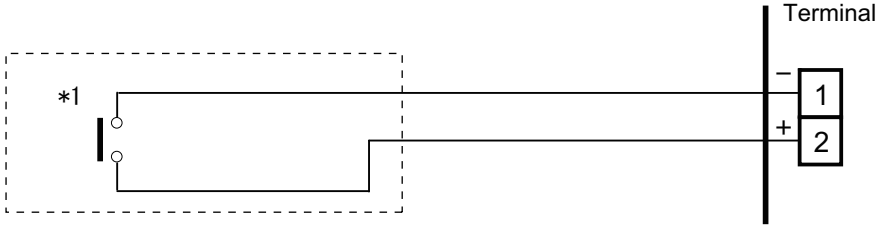
PCB	External input	External output	Connector	Input select	Input signal	External connect kit (Optional parts)
Indoor unit	Operation/Stop Forced stop	-	Terminal	Dry contact	Edge	-
	-	Operation status	CN47	-	-	UTY-XWZXZG
		Error status				
		Indoor unit fan operation status				
		External heater output				
External input and output (UTY-XCSX)	Operation/Stop	-	Input 1/ Input 2	Dry contact/ Apply voltage	Edge/ Pulse	-
	Forced thermostat off		Input 1		Edge	
	-	Operation status	Output 1 Output 2 Output 3	-	-	-
		Error status				
		Indoor unit status				
		External heater output				

10-1. External input

- “Operation/Stop” mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.
- The wire connection should be separate from the power cable line.

■ Indoor unit

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



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

■ External input and output PCB

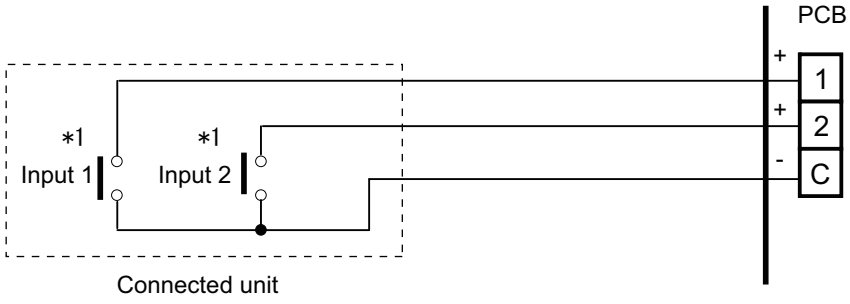
The indoor unit Operation/Stop can be set by using the input terminal on the PCB.

● Input select

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

- Dry contact

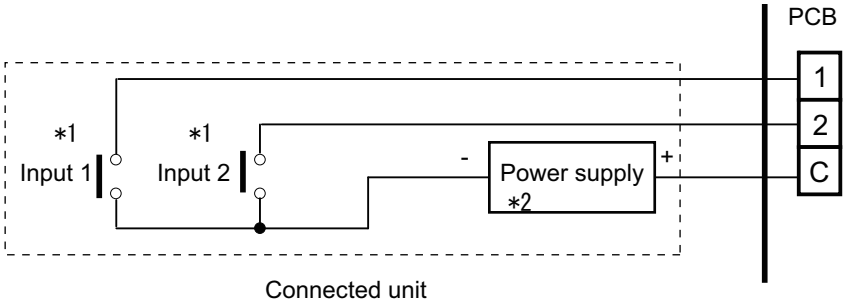
In case of internal power supply, set the slide switch of SW1 to "NON VOL" side.



*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 SW1 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.

10-2. External output

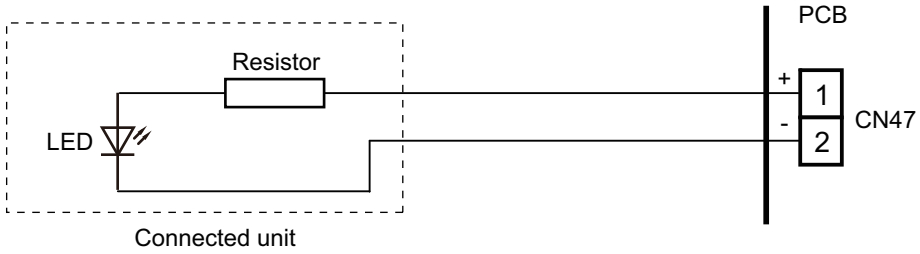
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

■ Indoor unit

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V ± 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to Chapter 10-3. "Combination of external input and output" on page 24.

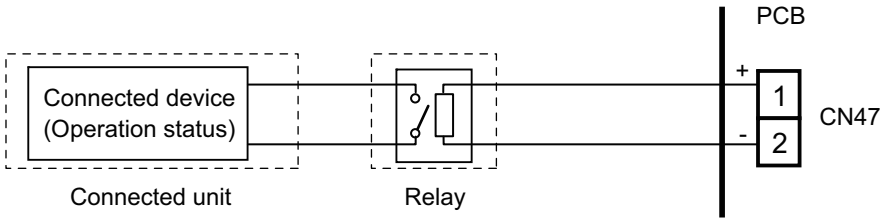
● When indicator, etc. are connected directly

Example: Function setting 60 is set to "00"



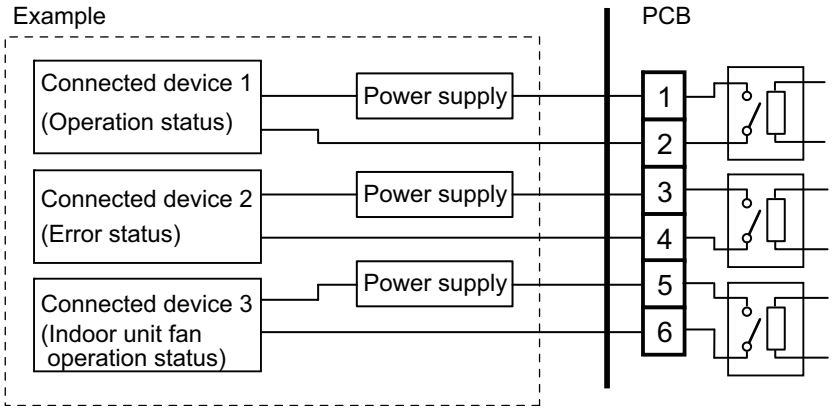
● When connecting with a device equipped with a power supply

Example: Function setting 60 is set to "00"



■ External input and output PCB

- A twisted pair cable (22AWG) should be used.
- Permissible voltage and current: DC 5 V to 30 V / 3 A, AC 30 V to 250 V / 3 A
- For details, refer to Chapter 10-3. "Combination of external input and output" on page 24.



10-3. Combination of external input and output

By combining the function setting of the indoor unit and 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:

Mode	Function setting	External input and output PCB (Rotary SW)	External input			
			Indoor unit Input	External input and output PCB		
			Terminal	Input 1	Input 2	Signal type
0-1	60-00	1	Operation/Stop	Operation/Stop	Not available	Edge
				Operation	Stop	Pulse
0-2	60-00	2	Operation/Stop	Forced Thermostat OFF	Not available	Edge
1—8	60-01 to 60-08	3 - 9, A	(Setting prohibited)			
9	60-09	B	Operation/Stop	Forced Thermostat OFF	Not available	Edge
10	60-10	C	Operation/Stop	Forced Thermostat OFF	Not available	Edge
11	60-11	D	Operation/Stop	Forced Thermostat OFF	Not available	Edge

Mode	Function setting	External input and output PCB (Rotary SW)	External output			
			Indoor unit Output	External input and output PCB		
			CN47	Output 1	Output 2	Output 3
0-1	60-00	1	Operation/Stop	Operation/Stop	Error status	Indoor unit fan operation status
0-2	60-00	2	Operation/Stop	Error status	Indoor unit fan operation status	External heater output
1—8	60-01 to 60-08	3 - 9, A	(Setting prohibited)			
9	60-09	B	Error status	Operation/Stop	Indoor unit fan operation status	External heater output
10	60-10	C	Indoor unit fan operation status	Operation/Stop	Error status	External heater output
11	60-11	D	External heater output	Operation/Stop	Indoor unit fan operation status	Error status

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

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

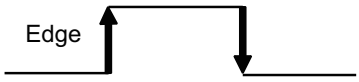
01: (Setting prohibited)

02: Forced stop

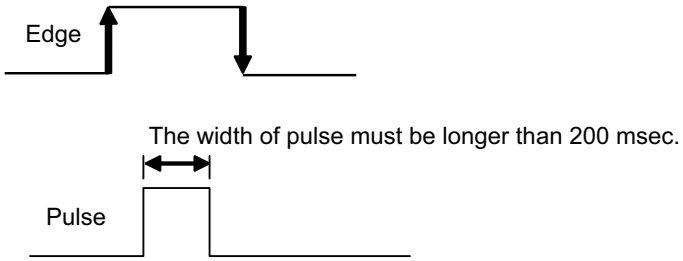
03: Operation/Stop mode 2 (R.C. disabled)

■ Input signal type

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



- 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 (SW2) on the External input and output PCB.



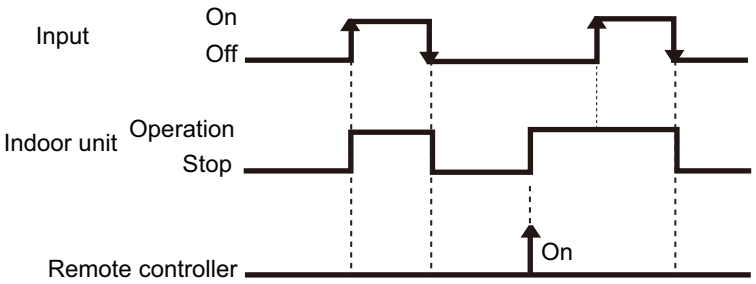
10-4. Details of function

■ Control input function

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

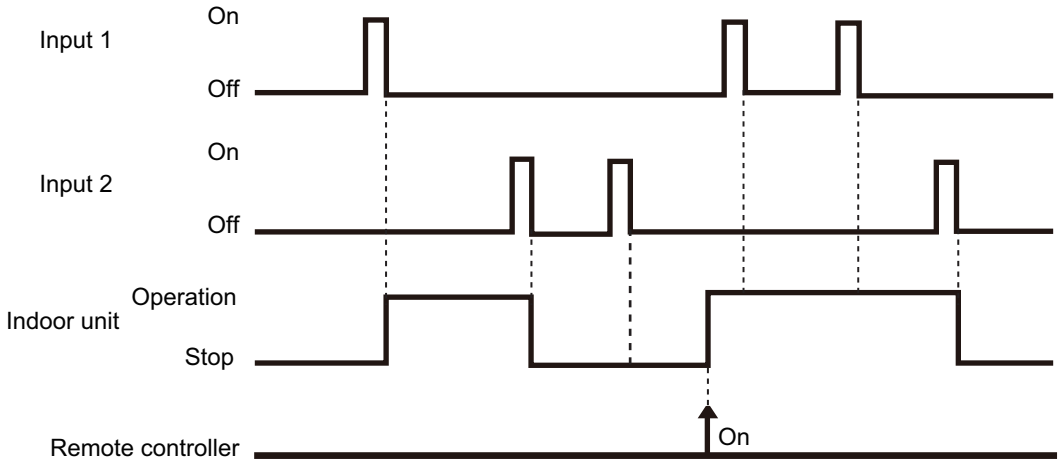
- In the case of "Edge" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-00	-	Input of indoor unit	Terminal	Off → On	Operation
				On → Off	Stop
	60-00 / 1	External input and output PCB	Input 1	Off → On	Operation
				On → Off	Stop



- In the case of "Pulse" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-00	60-00 / 1	External input and output PCB	Input 1	Pulse	Operation
			Input 2	Pulse	Stop



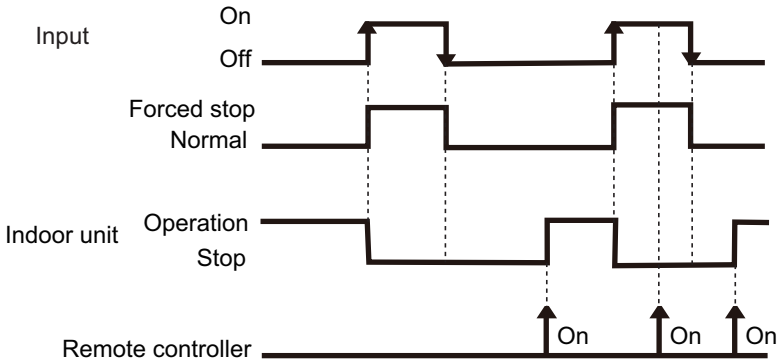
NOTES:

- 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

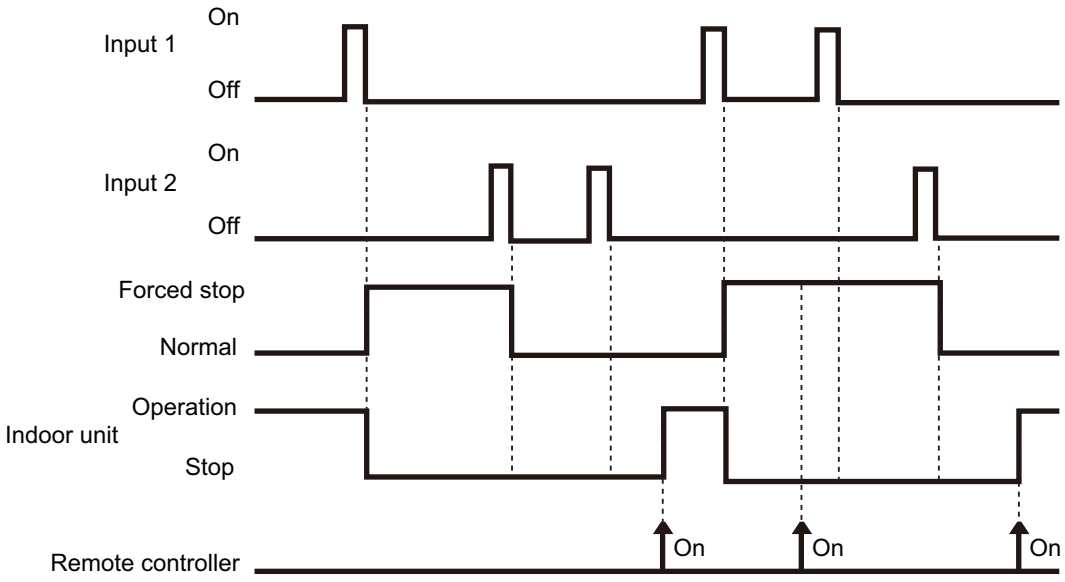
- In the case of "Edge" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-02	-	Input of indoor unit	Terminal	Off → On	Forced stop
				On → Off	Normal
	60-00 / 1	External input and output PCB	Input 1	Off → On	Forced stop
				On → Off	Normal



- In the case of "Pulse" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-02	60-00 / 1	External input and output PCB	Input 1	Pulse	Forced stop
			Input 2	Pulse	Normal



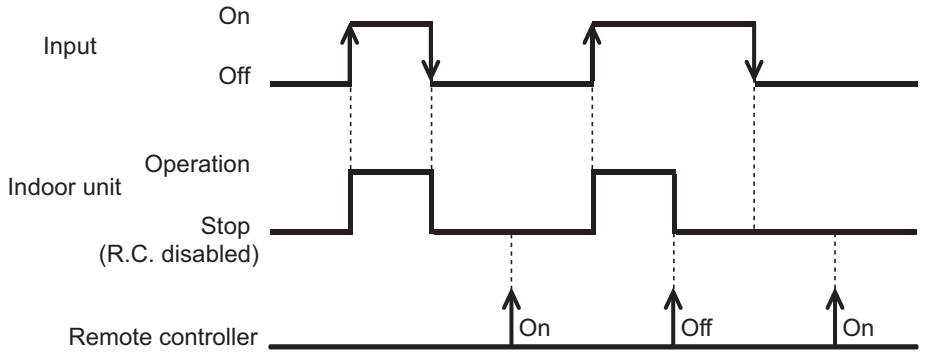
NOTES:

- 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

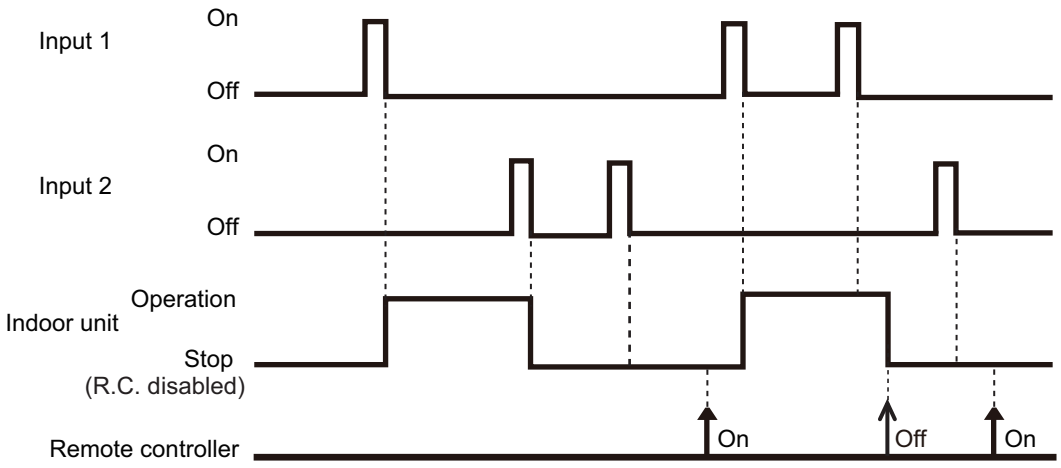
- In the case of "Edge" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-03	-	Input of indoor unit	Terminal	Off → On	Operation
				On → Off	Stop (R.C. disabled)
	60-00 / 1	External input and output PCB	Input 1	Off → On	Operation
				On → Off	Stop (R.C. disabled)



- In the case of "Pulse" input

Function setting /	Rotary SW of External input and output PCB	External input		Input signal	Command
46-03	60-00 / 1	External input and output PCB	Input 1	Pulse	Operation
			Input 2	Pulse	Stop (R.C. disabled)

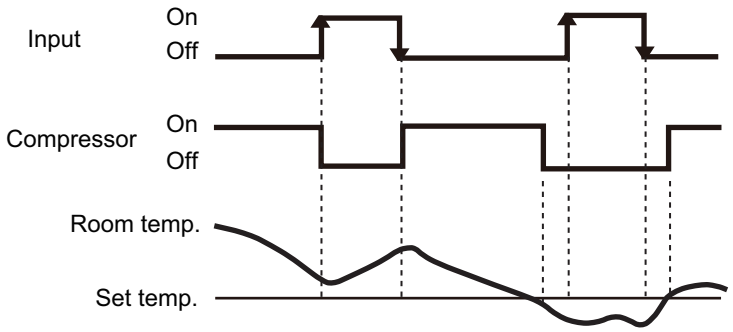


NOTES:

- 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

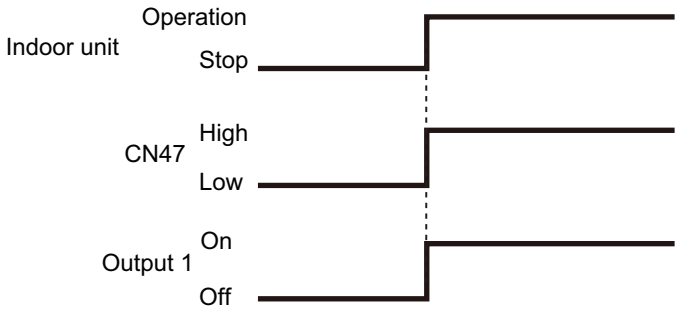
Function setting / Rotary SW of External input and output PCB	External input		Input signal	Command
60-00 / 2 60-09 / B 60-10 / C 60-11 / D	External input and output PCB	Input 1	Off → On	Thermostat off
			On → Off	Normal operation



■ Control output function

Function setting / Rotary SW of External input and output PCB	External output		Output signal	Command
60-00 / 1, 2	Output of indoor unit	CN47	Low → High	Operation
			High → Low	Stop
60-00 / 1 60-09 / B 60-10 / C 60-11 / D	External input and output PCB	Output 1	Off → On	Operation
			On → Off	Stop

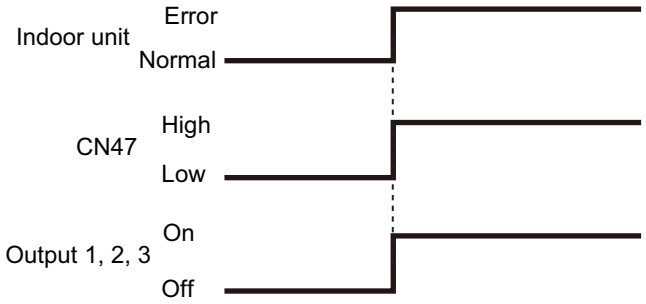
The output is low when the unit is stopped.



■ Error status

Function setting / Rotary SW of External input and output PCB	External output		Output signal	Command
60-09 / B	Output of indoor unit	CN47	Low → High	Error
			High → Low	Normal
60-00 / 2	External input and output PCB	Output 1	Off → On	Error
			On → Off	Normal
60-00 / 1 60-10 / C		Output 2	Off → On	Error
			On → Off	Normal
60-11 / D		Output 3	Off → On	Error
			On → Off	Normal

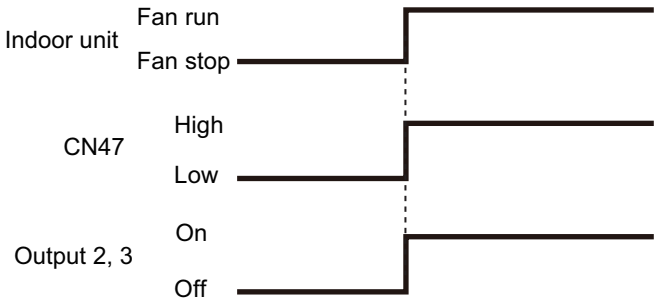
The output is ON when an error is generated for the indoor unit.



■ Indoor unit fan operation status

Function setting / Rotary SW of External input and output PCB	External output		Output signal	Command
60-10 / C	Output of indoor unit	CN47	Low → High	Fan run
			High → Low	Fan stop
60-00 / 2 60-09 / B 60-11 / D	External input and output PCB	Output 2	Off → On	Fan run
			On → Off	Fan stop
60-00 / 1		Output 3	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

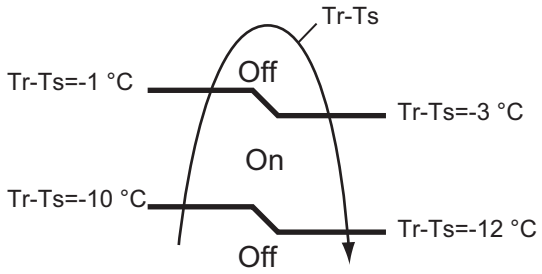
Function setting / Rotary SW of External input and output PCB	External output		Output signal	Command
60-11 / D	Output of indoor unit	CN47	Low → High	Heater on
			High → Low	Heater off
60-00 / 2 60-09 / B 60-10 / C	External input and output PCB	Output 3	Off → On	Heater on
			On → Off	Heater off

Output signal	Condition
Low → High Off → On	Heater turns on as shown in diagram of heating temperature
High → Low On → Off	Heater turns off as shown in diagram of heating temperature • Other than Heating mode • Error occurred • Forced thermo off • Fan stop protection

Specifications of the signal output performance are as shown as follows:

Example: When set temperature (Ts) is set at 22 °C;

- And room temperature (Tr) increase above 12 °C, signal output is on.
- And Tr increase above 21 °C, signal output is off.
- And Tr decrease below 19 °C, signal output is on.
- And Tr decrease below 10 °C, signal output is off.

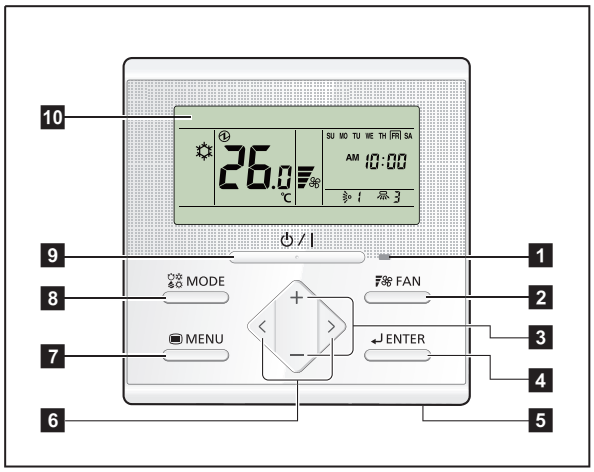


The output also turns off in defrost operation.

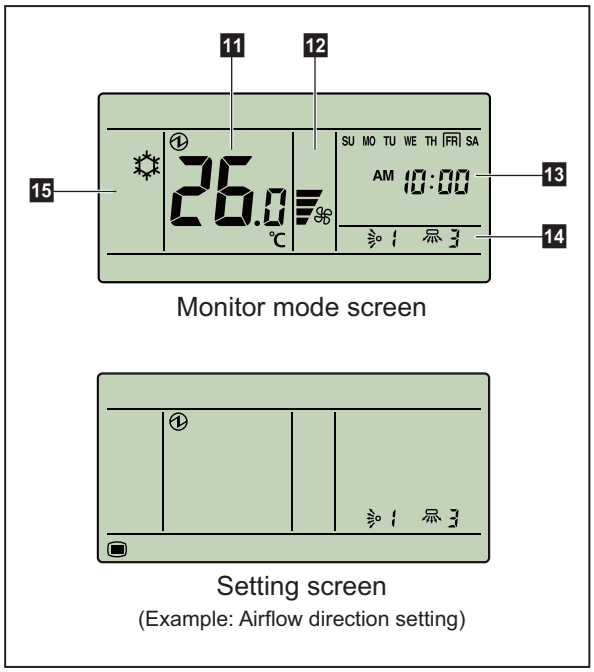
11. Remote controller

11-1. Wired remote controller

■ Overview



Display panel



Monitor mode screen

Setting screen
(Example: Airflow direction setting)

NOTE: For individual icons in Setting screen and related functions, refer to the operation manual.

1 LED lamp (Operation indicator)

Lights while the indoor unit is operating. Blinks when an error occurred.

2 FAN button

Each time the button is pressed, fan speed switches as follows:



3 +, - buttons (Set temperature buttons)

Used to adjust temperature in Monitor mode screen.
+ button: Raise
- button: Lower
In Setting screen, used to select the setting items.
NOTE: When the operation mode is set to FAN, the temperature cannot be adjusted.

4 ENTER button

Used to enter setting items and settings.

5 Room temperature sensor (inside)

Senses ambient temperature of unit.

6 <, > buttons

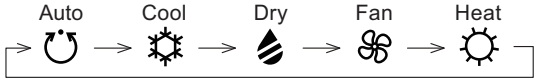
Used to select setting items during the setting item selection screen is displayed.

7 MENU button

Used to display the setting item selection screen.

8 MODE button

Each time the button is pressed, operation mode switches as follows:



9 On/Off button

Starts or stops the operation.
NOTE: On/Off button cannot be operated at screens other than the Monitor mode screen.

10 Display panel

Displays Monitor mode screen or Setting screen.
Monitor mode screen is home screen of this controller, and the basic operation is performed in this screen.
In Setting screen, several settings are adjustable.

11 Temperature indicator

12 Fan speed indicator

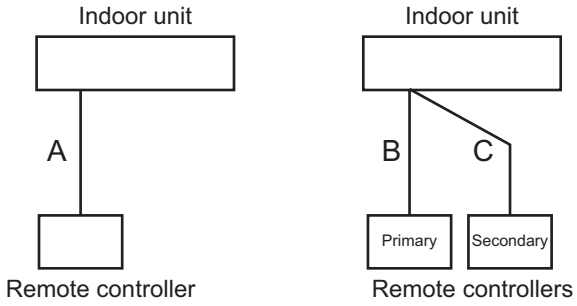
13 Clock indicator

14 Airflow direction indicator

15 Operation mode indicator

■ System diagram

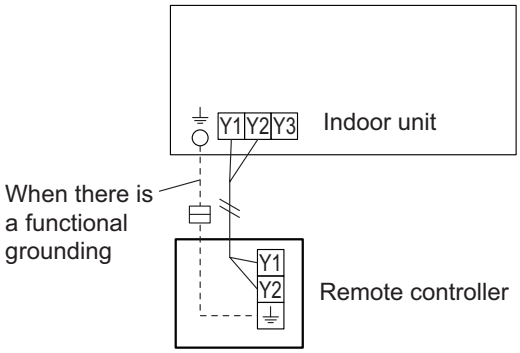
1 remote controller: **2 remote controllers:**



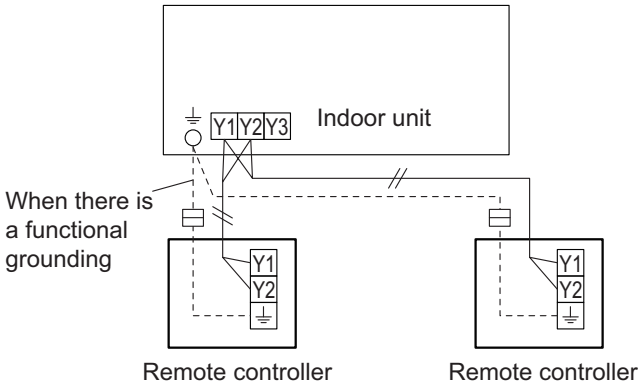
A, B, C: Remote controller cable
A ≤ 500 m;B + C ≤ 500 m

■ Electrical wiring

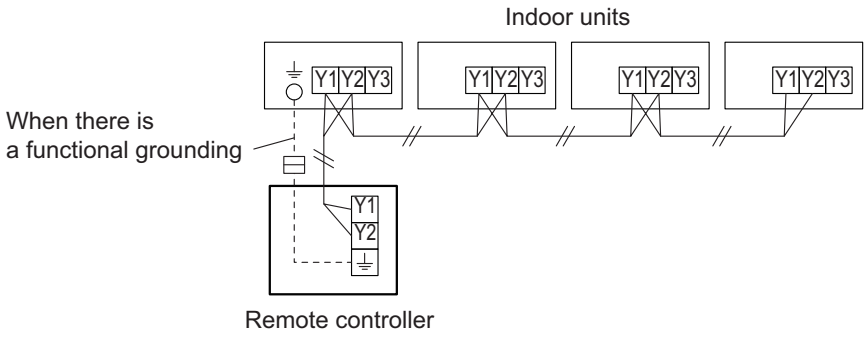
1 remote controller:



2 remote controllers:



Group control:



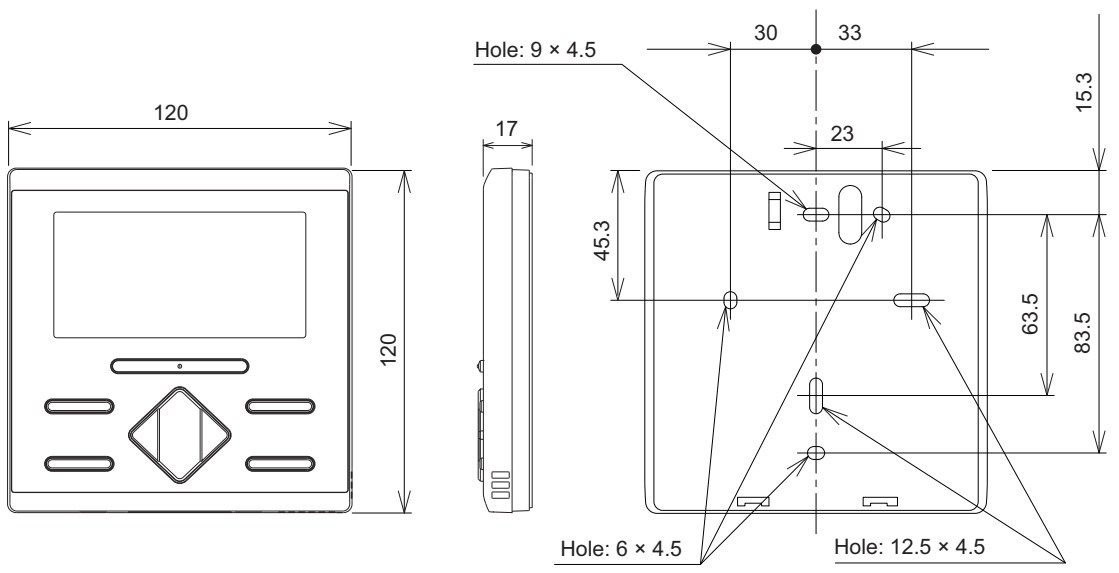
NOTES:

- Group connection with simultaneous multi system is not allowed.
- Group control with Polar 3-wired remote controller is not allowed.

■ Specifications

Dimensions and other specifications on the wired remote controller are as follows.

Unit: mm



Front view Side view Rear view

Size (H × W × D)	mm	120 × 120 × 17
Weight	g	170
Power	V	12

● Wiring specifications

Use	Cable size	Wire type	Remarks
Remote controller cable	0.33 to 1.25 mm^2	Non-polar 2-core, Twisted pair	Use sheathed PVC cable.

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 on indoor unit

■ Models: ARYG72LHTA and ARYG90LHTA

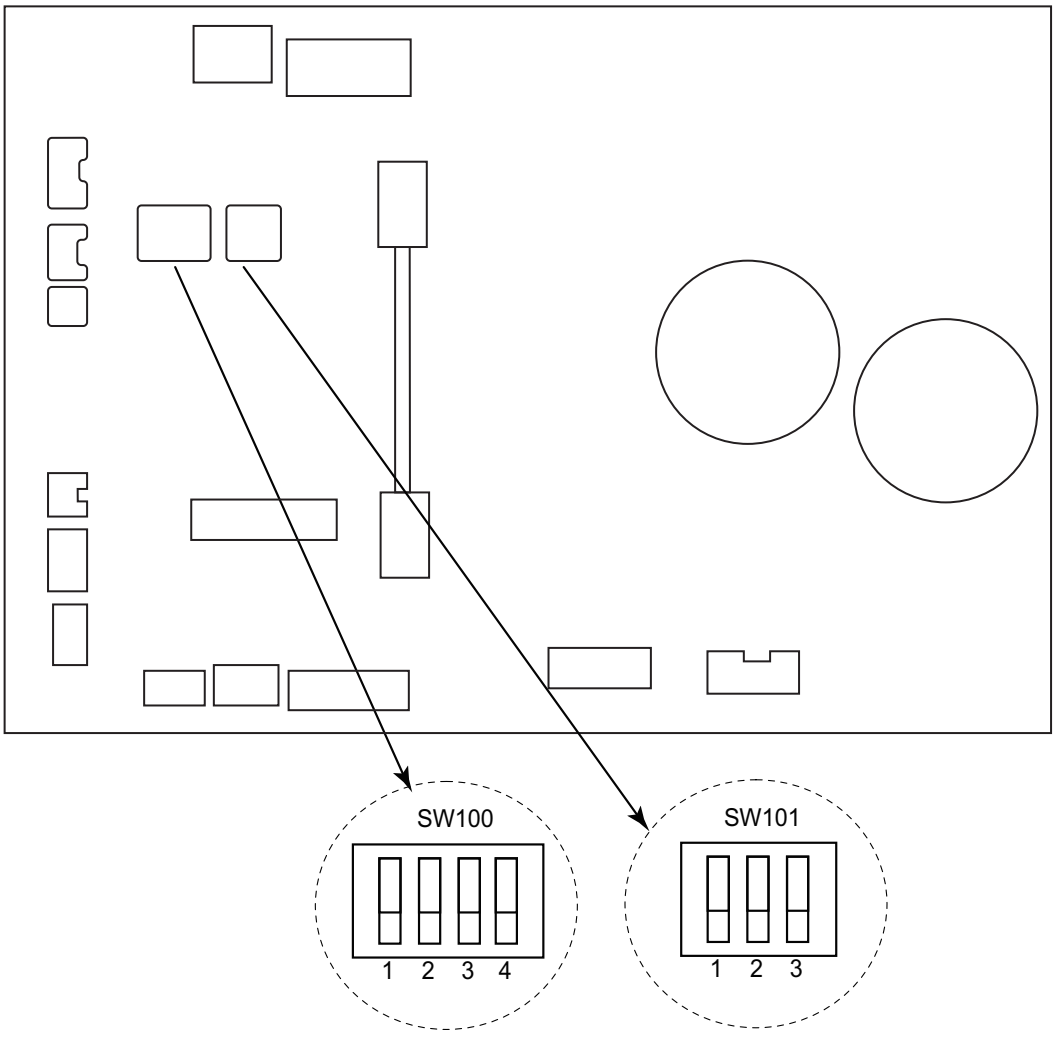
By using some components on the PCB, you can change the function settings.

Related components on the PCB and the applicable settings

Component		Setting content
DIP switch100	1	Remote controller address setting
	2	
	3	
	4	
DIP switch101	1	Setting change prohibited
	2	Setting change prohibited
	3	Fan delay setting

● Component location

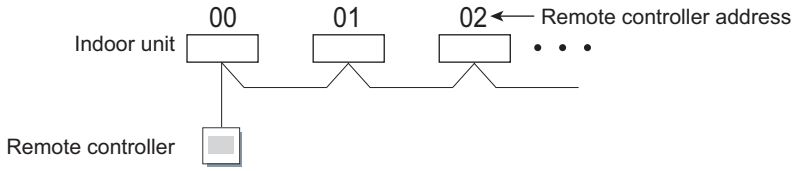
Components on the indoor unit main PCB used for the function settings are located as shown in the following figure.



● DIP switch setting

- **Remote controller address setting (SW100)**
  When operating a number of indoor units by using a wired remote controller, DIP switch setting for assigning unit number to each indoor unit is required.
  DIP switches are normally set to make the unit number 00.

Remote controller address	DIP switch number				Factory setting
	1	2	3	4	
00	OFF	OFF	OFF	OFF	♦
01	ON	OFF	OFF	OFF	
02	OFF	ON	OFF	OFF	
03	ON	ON	OFF	OFF	
04	OFF	OFF	ON	OFF	
05	ON	OFF	ON	OFF	
06	OFF	ON	ON	OFF	
07	ON	ON	ON	OFF	
08	OFF	OFF	OFF	ON	
09	ON	OFF	OFF	ON	
10	OFF	ON	OFF	ON	
11	ON	ON	OFF	ON	
12	OFF	OFF	ON	ON	
13	ON	OFF	ON	ON	
14	OFF	ON	ON	ON	
15	ON	ON	ON	ON	



- **Switch 1: Setting change prohibited (SW101)**
- **Switch 2: Setting change prohibited (SW101)**
- **Switch 3: Fan delay setting (SW101)**
  When the indoor unit is stopped while operating in conjunction with auxiliary heater, the indoor unit fan operation will continue for 1 minute.

Switch 3	Fan delay	Factory setting
ON	Enabled	
OFF	Disabled	♦

12-2. 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.

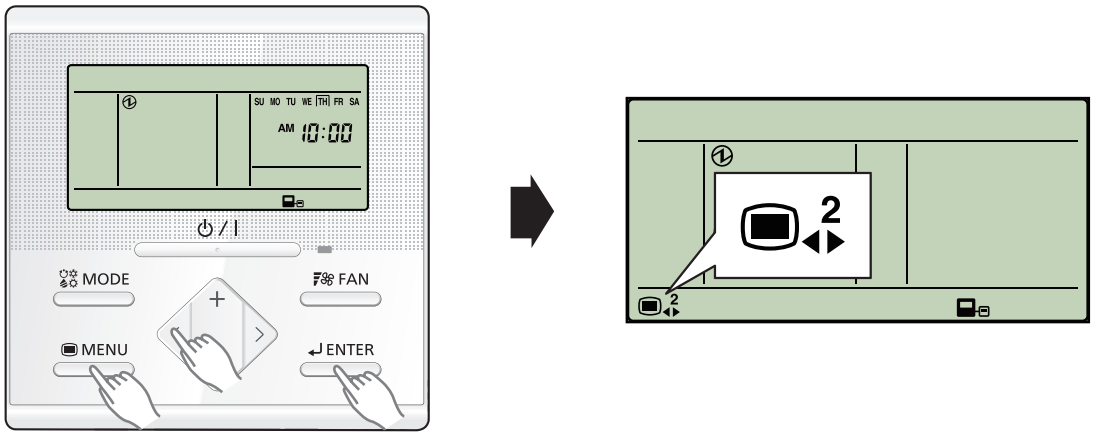
NOTE: Incorrect settings can cause a product malfunction.

■ Remote controller address setting

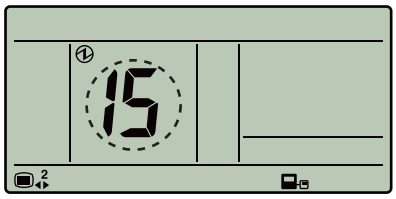
● Remote controller address confirmation

NOTE: The address of this remote controller is set automatically. Do not change the indoor unit remote controller address from the factory setting "0". (Verify that the address is "0".)

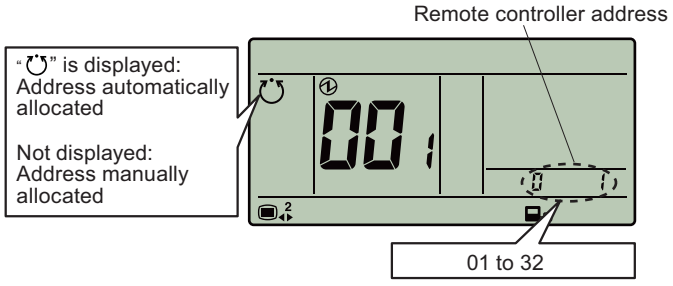
1. To activate the address setting mode, hold down the three buttons of “MENU”, “<“, and “ENTER” at the same time for 2 seconds or longer. Menu 2 setting screen is displayed.



2. Select the “15” in Menu 2 settings. Then press the “ENTER” button.



3. The address of this unit is displayed on the screen.



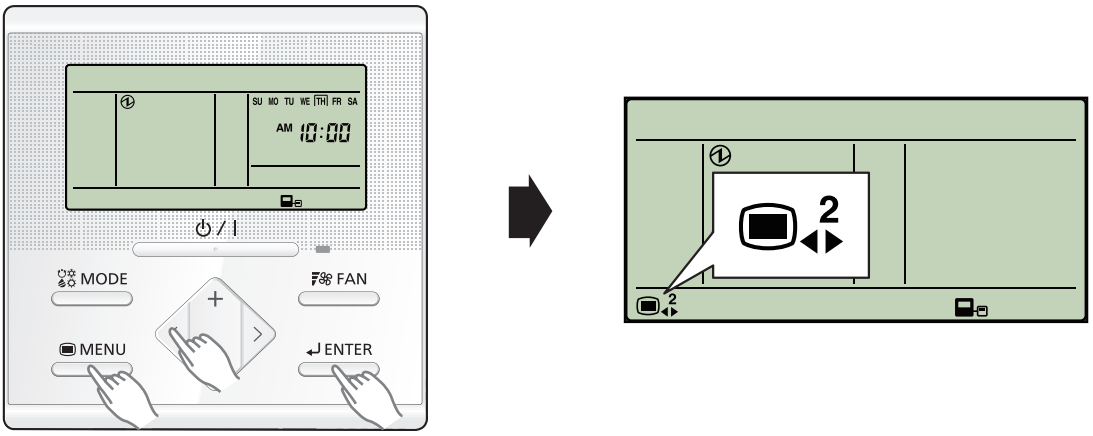
Press the “ENTER” button to return to the Menu 2 item selection screen.

● Setting the remote controller address manually

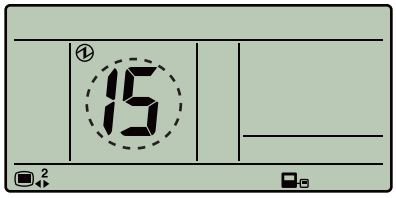
NOTES:

- Perform manual address setting only when setting the address with an arbitrary number. Indoor unit remote controller address setting is necessary. Set the remote controller address of indoor units connected by the same remote controller cable within a range of 1 to 9 and A (10) to F (15) so that there is no duplication. (Do not set to "0".)
- The address of this unit is set within a range of 1 to 32, but set it so that it does not duplicate the remote controller address of an indoor unit connected by the same remote controller cable.

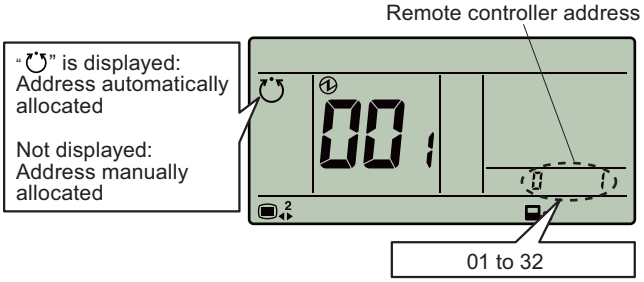
1. To activate the address setting mode, hold down the three buttons of “MENU”, “<“, and “ENTER” at the same time for 2 seconds or longer. Menu 2 setting screen is displayed.



2. Select the “15” in Menu 2 settings. Then press the “ENTER” button.



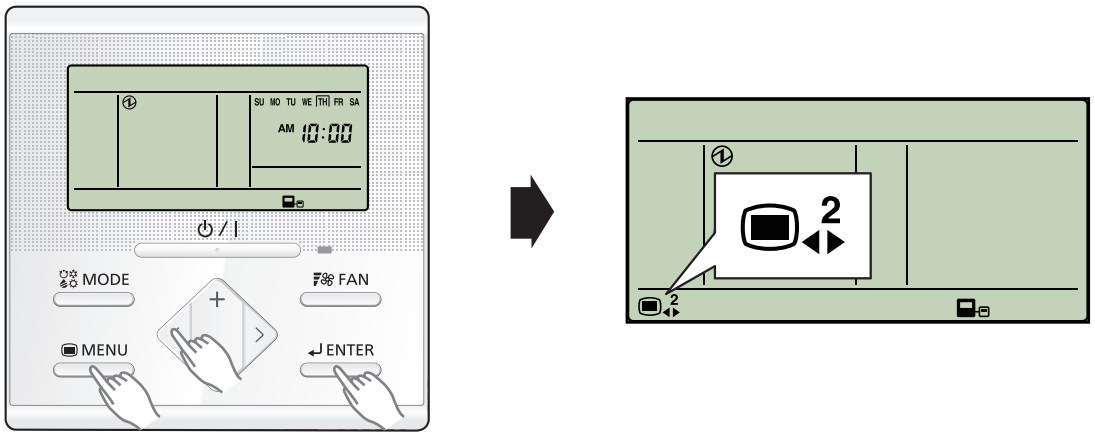
3. The address of this unit is displayed on the screen. Set the unit number with the “+” or “-” buttons. System number cannot be changed.



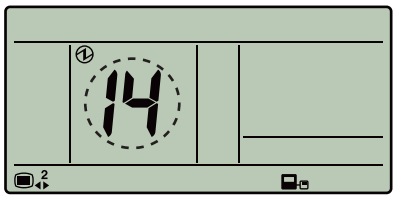
Press the “ENTER” button to return to the Menu 2 item selection screen.

● Resetting the manual address setting number

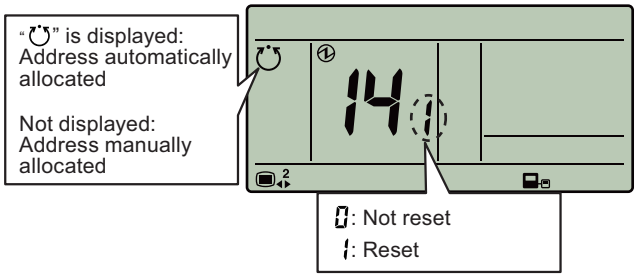
1. To activate the address setting mode, hold down the three buttons of “MENU”, “<“, and “ENTER” at the same time for 2 seconds or longer. Menu 2 setting screen is displayed.



2. Select the “14” in Menu 2 settings. Then press the “ENTER” button.



3. To reset address, select “1: Reset” with the “+” or “-” buttons. If not resetting, press the “MENU” button to the Menu 2 item selection screen.

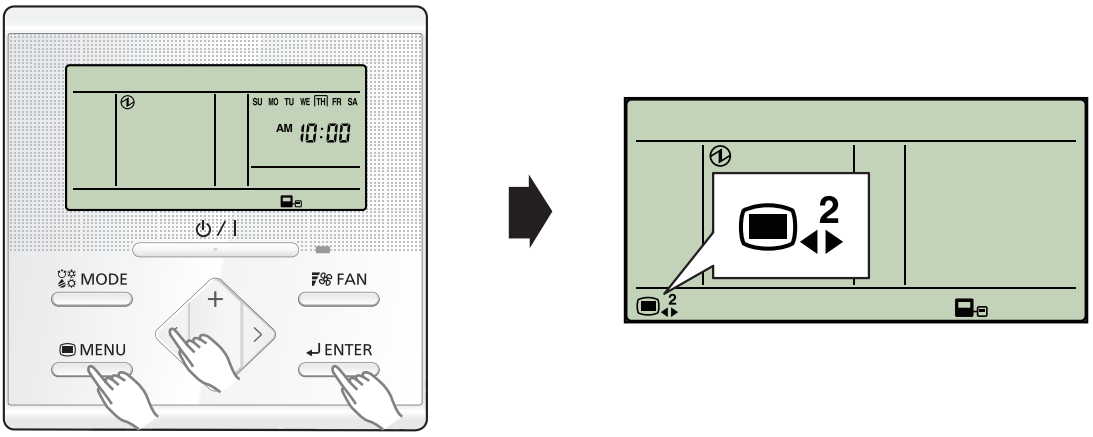


Press the “ENTER” button to return to the Menu 2 item selection screen.

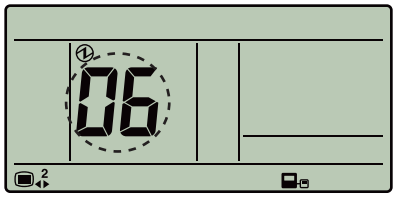
■ Remote controller master/slave setting

NOTE: Set only one Master remote controller.

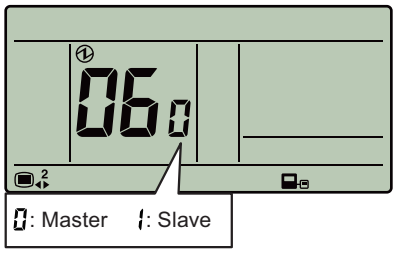
1. To activate the address setting mode, hold down the three buttons of “MENU”, “<“, and “ENTER” at the same time for 2 seconds or longer. Menu 2 setting screen is displayed.



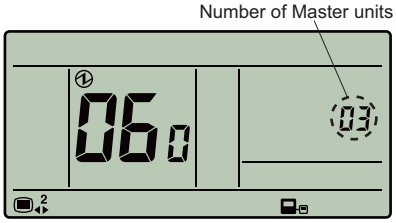
2. Select the “06” in Menu 2 settings. Then press the “ENTER” button.



3. Select the “0: Master” or the “1: Slave” with the “+” or “-” buttons.



4. Press the "ENTER" button. If there is no problem, return to Menu 2 items selection screen. In the case of settings at initial booting, "Monitor mode screen" is displayed.
   - There's 0 or more than 2 "Master" units: The number will be displayed.
   - "Master" is 0: Press the "ENTER" button to return to the Menu 2 item selection screen.
   - "Master" is more than 2: Press the "ENTER" button to return to the screen of step 2.
   - "Master" is 0 or more than 2: Press the "MENU" button to return to the Menu 2 item selection screen.



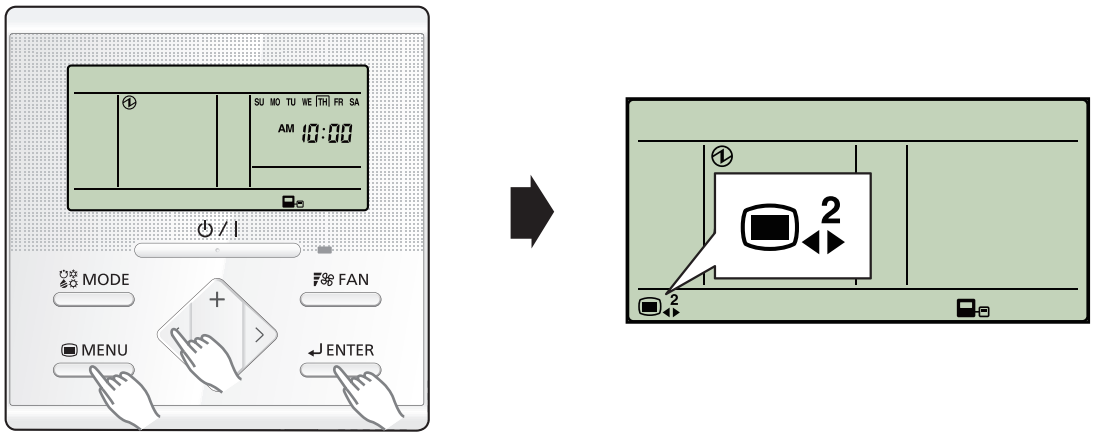
■ Setting procedure by using wired remote controller

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.

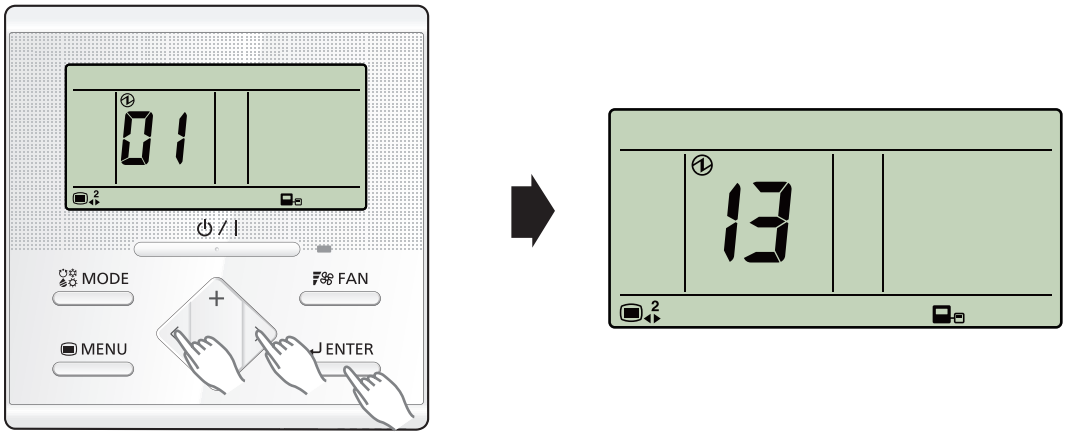
Before connecting the power supply of the indoor unit, reconfirm following items:

- Piping air tight test and vacuuming have been performed firmly.
- There is no wiring mistake.

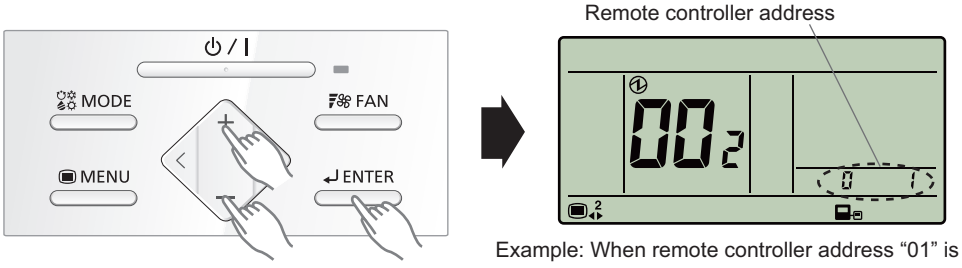
1. Connect the power supply.
2. To activate the address setting mode, hold down the three buttons of “MENU”, “<“, and “ENTER” at the same time for 2 seconds or longer. Menu 2 setting screen is displayed.



3. Select the “13” in Menu 2 settings. Then press the “ENTER” button.

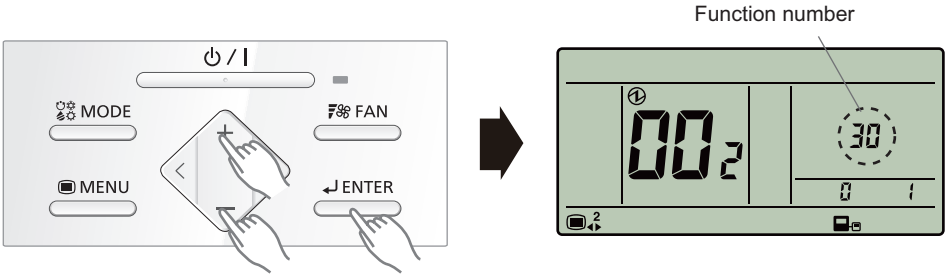


4. Pressing the "+" or "-" button, select a remote controller address (select the indoor unit you want to operate). Then press the "ENTER" button.

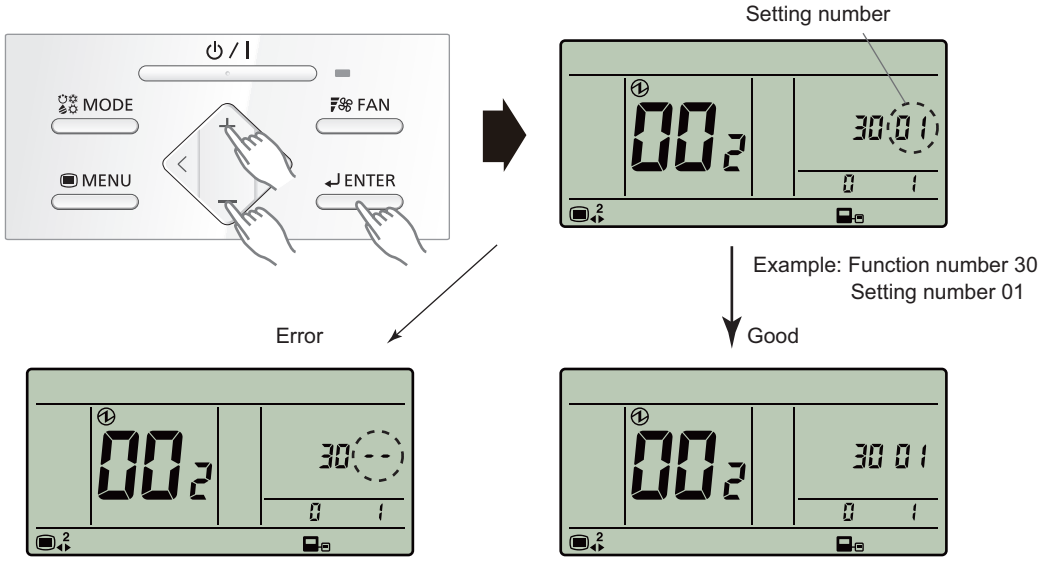


Example: When remote controller address “01” is selected.

5. Pressing the "+" or "-" button, to select the function number. Then press the "ENTER" button.



6. Pressing the "+" or "-" button, to select the setting number. Then press the "ENTER" button.



- When the data was not set up on the indoor unit (" --" is displayed.)
- Set up the data again.

- When the data was normally set up on the indoor unit.

Pressing the "ENTER" button to return to the address selection screen.

If setting has been completed, pressing the "MENU" button to return to the Menu 2 item selection screen.

■ 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)	26	Static pressure
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)	43	Cold air prevention
8)	44	Remote controller custom code
9)	46	External input control
10)	48	Room temperature sensor switching (Aux.)
11)	49	Indoor unit fan control for energy saving for cooling
12)	60	Switching functions for external output terminal

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.
If the indication is not required, select "No indication" (03).

Function number	Setting value	Setting description	Factory setting
11	00	Standard (2,500 hours)	
	01	Long interval (4,400 hours)	
	02	Short interval (1,250 hours)	
	03	No indication	♦

2) Static pressure

Select the appropriate static pressure according to the installation conditions.

Function number	Setting value	Setting description	Factory setting
26	05	50 Pa	
	06	60 Pa	
	07	70 Pa	
	08	80 Pa	
	09	90 Pa	
	10	100 Pa	
	11	110 Pa	
	12	120 Pa	
	13	130 Pa	
	14	140 Pa	
	15	150 Pa	
	16	160 Pa	
	17	170 Pa	
	18	180 Pa	
	19	190 Pa	
	20	200 Pa	
	31	Standard (72 Pa)	♦
	32	Automatic airflow adjustment	

NOTE: Range of static pressure is different by model.

Type name	Setting of static pressure range
72 type	50 to 150 Pa
90 type	50 to 200 Pa

3) Room temperature control for indoor unit sensor

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

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

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

4) Room temperature control for wired remote controller sensor

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

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

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

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

5) Auto restart

Enables or disables automatic restart after a power interruption.

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

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

6) Room temperature sensor switching

(Only for wired remote controller)

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

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

00: Sensor on the indoor unit is active.

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

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

7) Cold air prevention

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

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

8) 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	

9) External input control

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

Function number	Setting value	Setting description	Factory setting
46	00	Operation/Stop mode 1	♦
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2	

10) 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	

11) Indoor unit fan control for energy saving for cooling

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

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

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

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

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

NOTES:

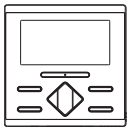
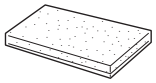
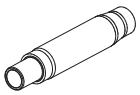
- As the factory setting, this setting is initially inactivated.
- Set to "00" or "01" when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter.
  To confirm if the remote controller has this setting, refer to the operating manual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

12) Switching functions for external output terminal

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

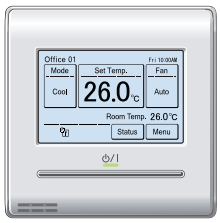
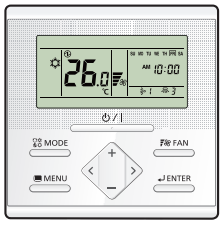
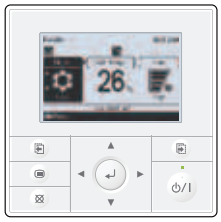
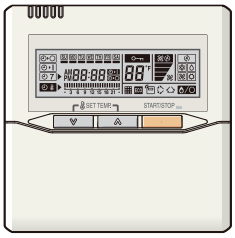
Function number	Setting value	Setting description	Factory setting
60	00	Operation status	♦
	01—08	(Setting prohibited)	
	09	Error status	
	10	Indoor unit fan operation status	
	11	External heater	

13. Accessories

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Operating manual (For indoor unit)		1	Coupler heat insulation (small)		1
Operating manual (CD-ROM)		1	Cable tie (large)		4
Operating manual (For remote controller)		1	Cable tie (medium)		1
Installation manual (For indoor unit)		1	Cable tie (small)		1
Installation manual (For remote controller)		1	Remote controller		1
Special nut A (large flange)		4	Remote controller accessories		1 set
Special nut B (small flange)		4	Drain hose insulation		1
Washer		8	Drain hose		1
Coupler heat insulation (large)		1	Hose band		1

14. Optional parts

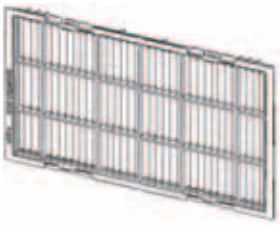
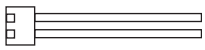
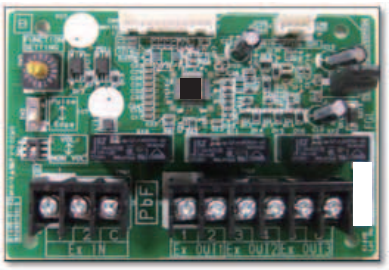
14-1. Controllers

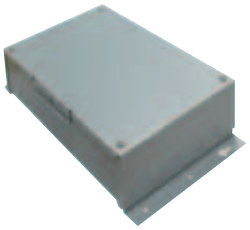
Exterior	Part name	Model name	Summary
	Wired remote controller	UTY-RNRYZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Wired remote controller	UTY-RLRY	High visibility and easy operation. Room temperature can be accurately controlled using the built-in thermo sensor. Wire type: Non-polar 2-wire
	Simple remote controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire
	Simple remote controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire
	Wired remote controller	UTY-RVNYM	Large and full-dot liquid crystal screen, wide and large keys easy to press, user-intuitive arrow key. Wire type: Polar 3-wire
	Wired remote controller	UTY-RNNYM	Room temperature can be controlled by detecting the temperature accurately with built-in thermo sensor. Wire type: Polar 3-wire
	Simple remote controller	UTY-RSNYM	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Polar 3-wire

Exterior	Part name	Model name	Summary
	IR receiver kit with wireless remote controller	UTY-LBTYM	Unit control is performed by wireless remote controller.

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

14-2. Others

Exterior	Part name	Model name	Summary
	Remote sensor unit	UTY-XSZX	New amenity space can be offered by installing Remote sensor unit in the remote controller.
	Long-life filter	UTD-LFKA	Long-life filter can be mounted to the indoor unit.
	Drain pump unit	UTZ-PX1NAB	Optional drain lift up mechanism allows more flexible installation.
	External connect kit	UTY-XWZXZG	Use to connect with various peripheral devices and air conditioner PCB. For control output port.
	External input and output PCB	UTY-XCSX	Use to connect with external devices and air conditioner PCB.
	Wireless LAN adapter	UTY-TFSXZ1	Remotely manage an air conditioning system using mobile devices such as smartphones and tablets.
	MODBUS converter	UTY-VMSX	For connection between an air conditioner and a MODBUS open network.
	KNX converter	UTY-VKSX	For connection between an air conditioner and a KNX network.
	Split system converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system.

Exterior	Part name	Model name	Summary
	Split system converter (AC power supply)	UTY-VTGXV	This converter is required when connecting single split system to VRF network system.
	External switch controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches.

NOTE: Combined use of External input and output PCB, MODBUS converter, KNX converter, and Wireless LAN adapter is not allowed.

Part 2. OUTDOOR UNIT

SINGLE TYPE:
AOYG72LRLA
AOYG90LRLA

1. Specifications

Type				Inverter heat pump	
Model name				**AOYG72LRLA**	**AOYG90LRLA**
Power supply				3N 400 V ~ 50 Hz	
Available voltage range				342—456 V	
Starting current			A	11.5	14.1
Input power	Cooling	Rated	kW	5.99	7.24
	Heating			6.12	7.65
Current	Cooling	Rated	A	11.2	13.5
		Max.		13.3	14.6
	Heating	Rated		11.5	14.1
		Max.		13.3	14.6
Power factor	Cooling	Rated	%	77.2	77.4
	Heating			76.8	78.3
Fan	Airflow rate	Cooling	m^3/h	8,400	8,400
		Heating		8,400	9,000
	Type × Q'ty			Propeller × 2	
	Motor output		W	111 × 2	
Sound pressure level *1		Cooling	dB (A)	55	55
		Heating		55	57
Sound power level		Cooling	dB (A)	68	68
		Heating		70	71
Heat exchanger type		Dimensions (H × W × D)	mm	1,386 × 1,293 × 36.38	Main: 1,386 × 1,293 × 36.38 Sub: 1,386 × 773 × 18.19
		Fin pitch		1.45	
		Rows × Stages		2 × 66	2.6 × 66
		Pipe type		Copper	
		Fin	Type (Material)	Corrugate (Aluminium)	
			Surface treatment	Blue fin	
Compressor	Type × Q'ty			Scroll × 1	
	Motor output		W	4,700	
Refrigerant		Type		R410A	
		Factory charge	g	5,600	7,100
Refrigerant oil		Type		FVC68D	
		Amount	cm^3	2,300	
Enclosure		Material		Painted galvanized steel	
		Color		Beige Approximate color of MUNSELL 10YR 7.5/1.0	
Dimensions (H × W × D)	Net		mm	1,428 × 1,080 × 480	
	Gross			1,557 × 1,174 × 600	
Weight	Net		kg	165	174
	Gross			183	192
Connection pipe	Size	Liquid	mm (in)	Ø 12.70 (Ø 1/2)	
		Gas		Ø 25.40(Ø 1)	
	Method			Brazing	
	Pre-charge length		m	30	
	Max. length			100	
	Max. height difference			30	
Operation range		Cooling	°C	-15 to 46	
		Heating		-20 to 24	

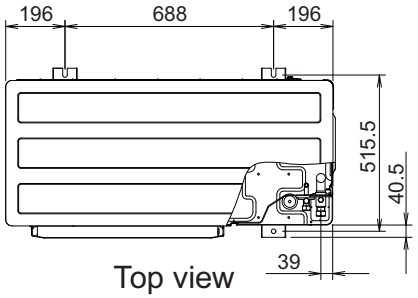
NOTES:

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.
  - Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.
  - Pipe length: 7.5 m, Height difference: 0 m.
- Protective function might work when using it outside the operation range.
- *1: 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.

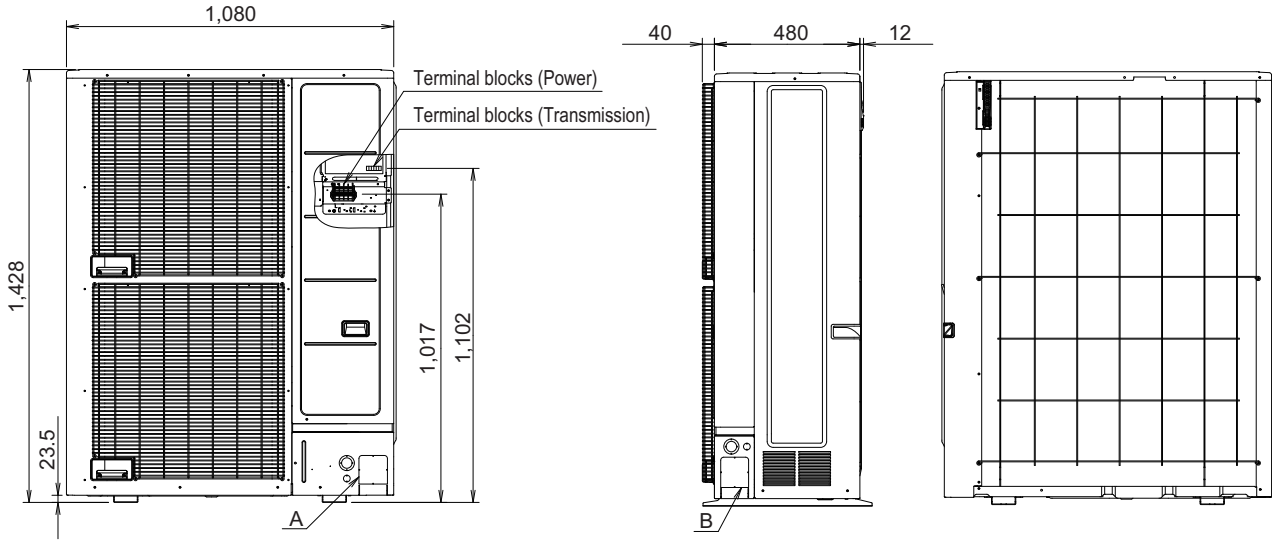
2. Dimensions

2-1. Models: AOYG72LRLA and AOYG90LRLA

Unit: mm



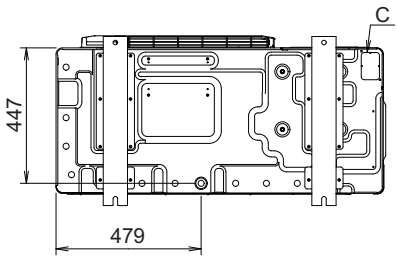
Top view



Front view

Side view

Rear view



Bottom view

3. Installation space

3-1. Models: AOYG72LRLA and AOYG90LRLA

■ Space requirement

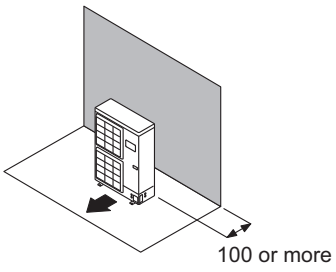
Provide sufficient installation space for product safety.

● Single outdoor unit installation

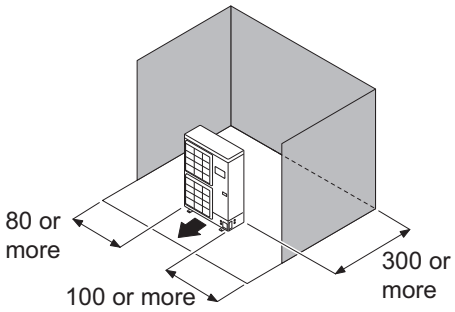
- **When the upper space is open:**

Unit: mm

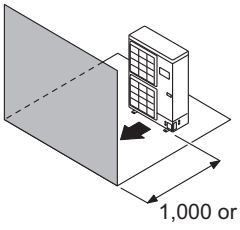
When there are obstacles at the rear only.



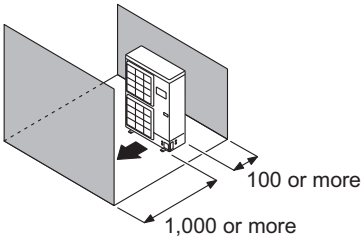
When there are obstacles at the rear and sides.



When there are obstacles at the front only.



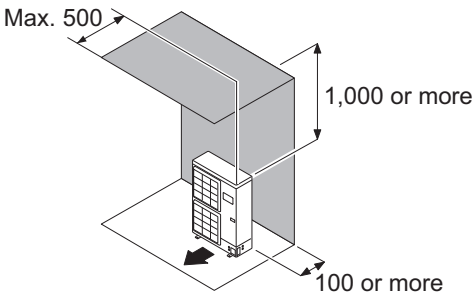
When there are obstacles at the front and rear.



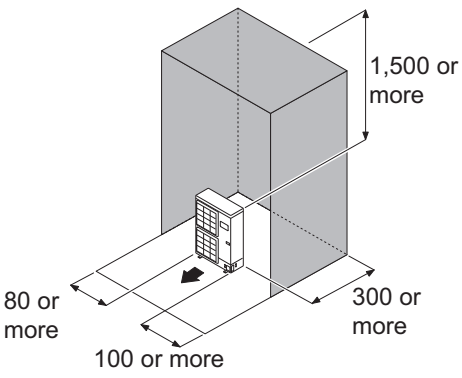
- **When there is an obstruction in the upper space:**

Unit: mm

When there are obstacles at the rear and above.



When there are obstacles at the rear, sides, and above.



● Multiple outdoor unit installation

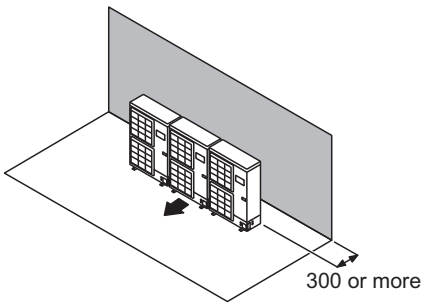
NOTES:

- Provide at least 100 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 the 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 is present also in the upward area.

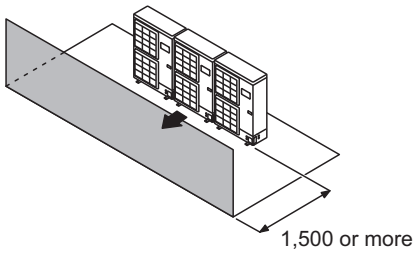
- **When the upper space is open:**

Unit: mm

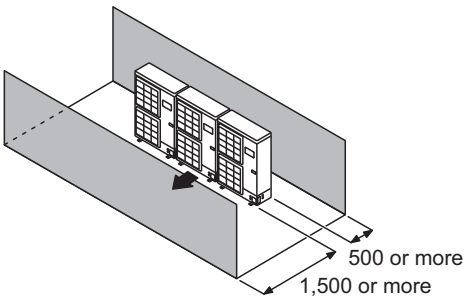
When there are obstacles at the rear only.



When there are obstacles at the front only.



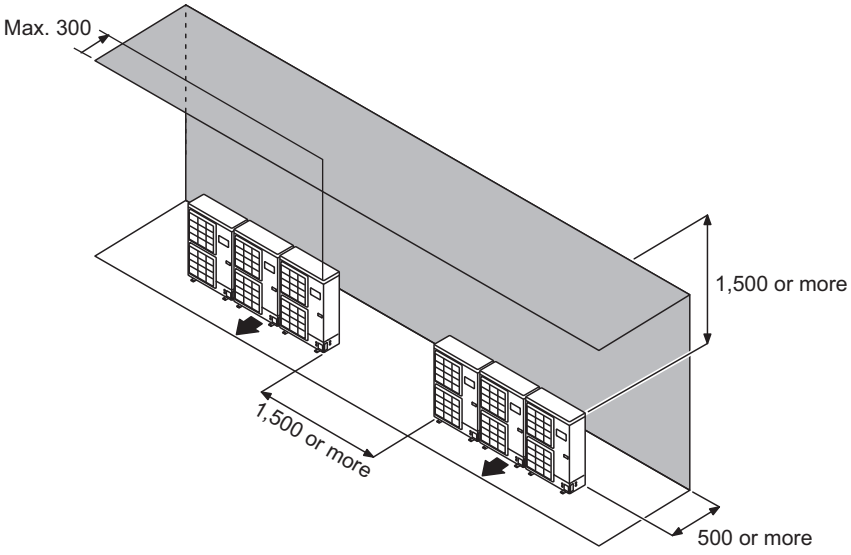
When there are obstacles at the front and rear.



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

Unit: mm

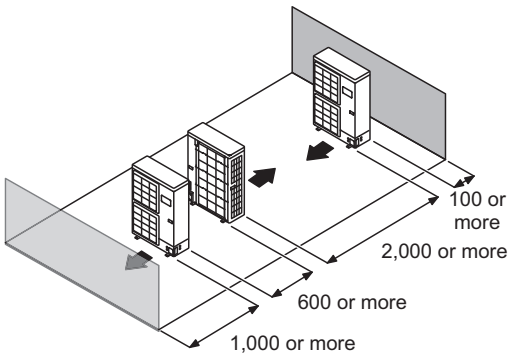
When there are obstacles at the rear and above.



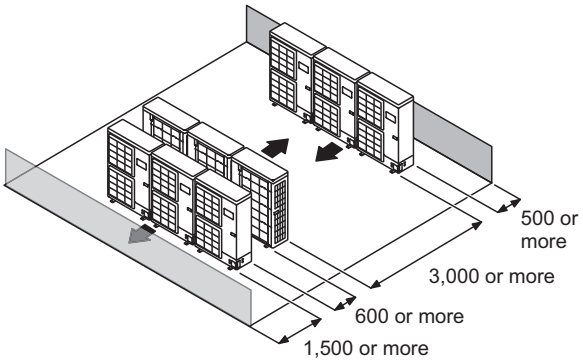
● Outdoor unit installation in multi-row

Unit: mm

Single parallel unit arrangement



Multiple parallel unit arrangement

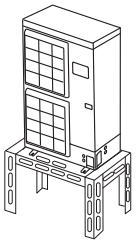


NOTES:

- If the space is larger than stated above, the condition will be the same as when there is no obstacle.
- Height above the floor level should be 50 mm or more.
- When installing the outdoor unit, be sure to open the front and left side to obtain better operation efficiency.

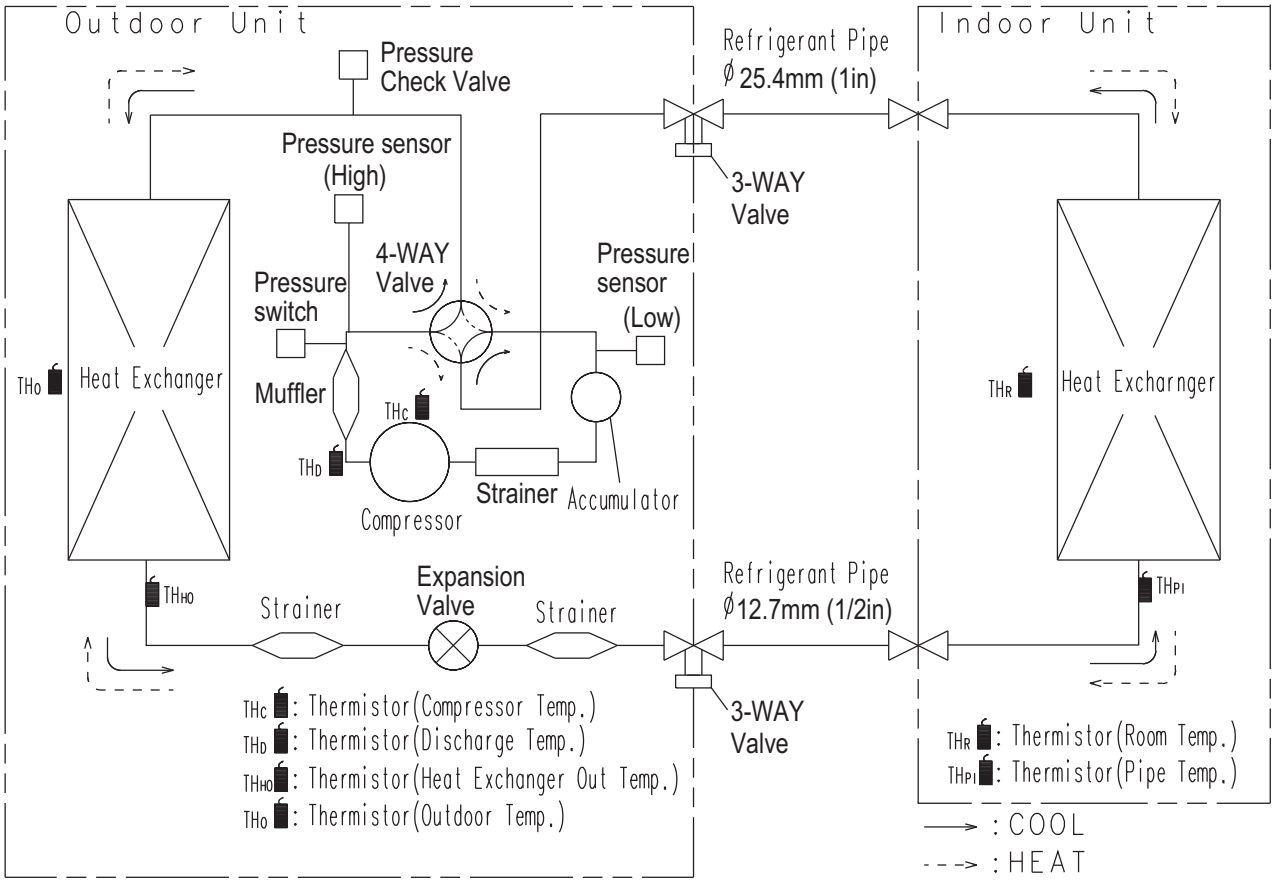
⚠ CAUTION

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



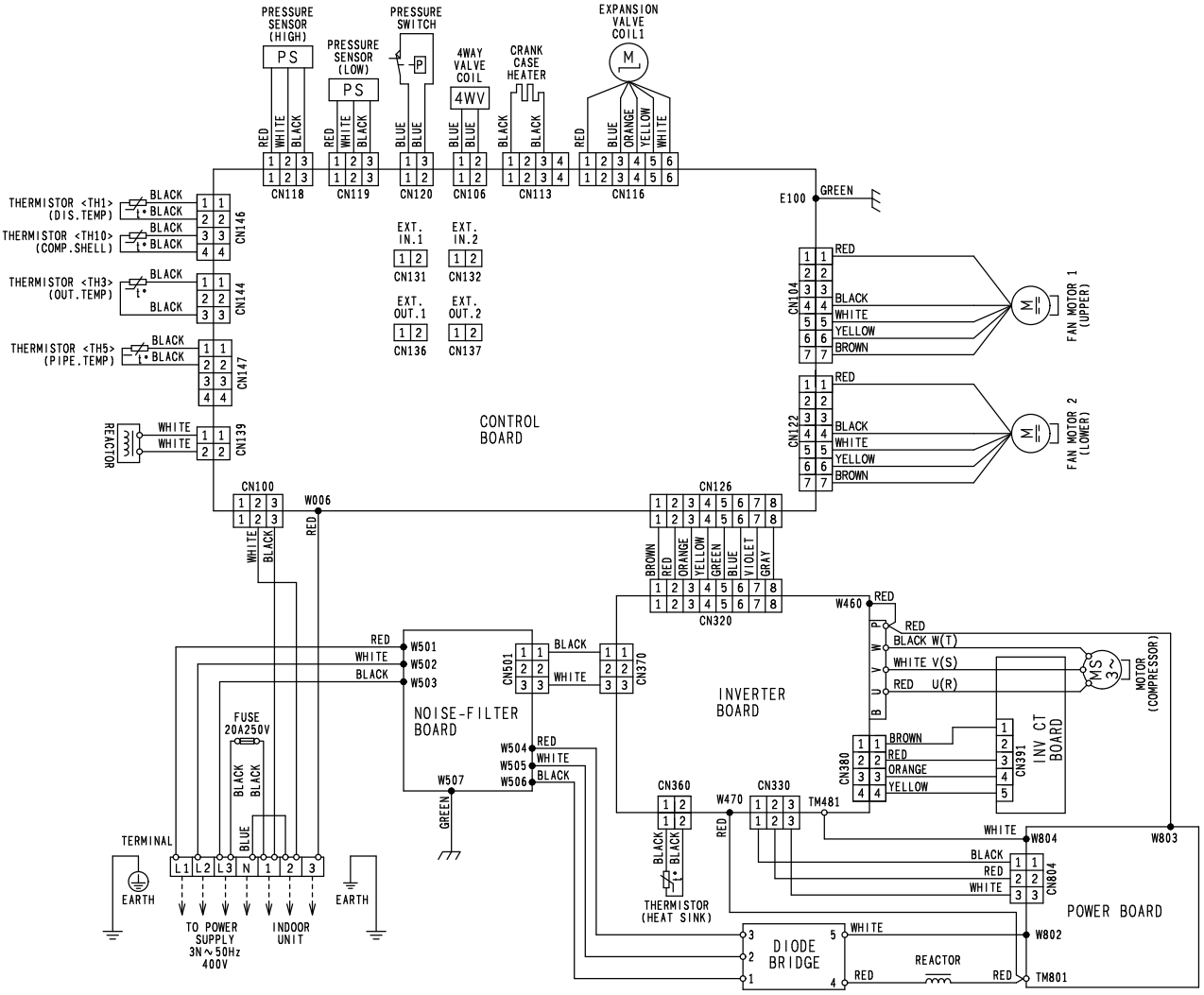
4. Refrigerant circuit

4-1. Models: AOYG72LRLA and AOYG90LRLA

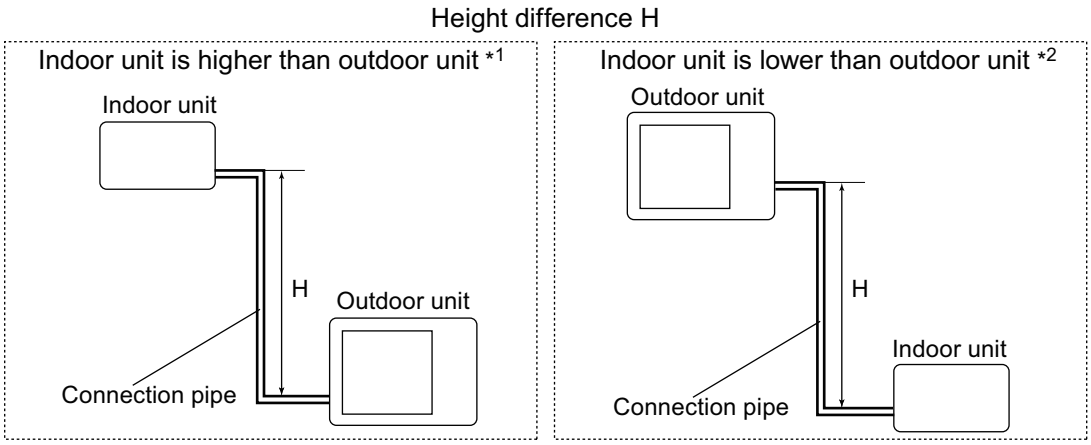


5. Wiring diagrams

5-1. Models: AOYG72LRLA and AOYG90LRLA



6. Capacity compensation rate for pipe length and height difference



6-1. Model: AOYG72LRLA

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

COOLING			Pipe length (m)											
			5	7.5	10	20	30	40	50	60	70	80	90	100
Height difference H (m)	Indoor unit is higher than outdoor unit *1	30	—	—	—	—	0.898	0.874	0.850	0.826	0.803	0.780	0.756	0.732
		20	—	—	—	0.938	0.913	0.889	0.864	0.840	0.817	0.793	0.769	0.744
		10	—	—	0.978	0.953	0.928	0.903	0.879	0.854	0.830	0.806	0.781	0.757
		7.5	—	0.988	0.982	0.957	0.932	0.907	0.882	0.858	0.834	0.809	0.784	0.760
		5	0.992	0.992	0.986	0.961	0.935	0.911	0.886	0.861	0.837	0.812	0.788	0.763
		0	1.000	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
	Indoor unit is lower than outdoor unit *2	-5	1.000	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-7.5	—	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-10	—	—	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-20	—	—	—	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-30	—	—	—	—	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769

HEATING			Pipe length (m)											
			5	7.5	10	20	30	40	50	60	70	80	90	100
Height difference H (m)	Indoor unit is higher than outdoor unit *1	30	—	—	—	—	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		20	—	—	—	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		10	—	—	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		7.5	—	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		5	1.000	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		0	1.000	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
	Indoor unit is lower than outdoor unit *2	-5	0.995	0.995	0.992	0.982	0.972	0.961	0.951	0.941	0.933	0.923	0.913	0.903
		-7.5	—	0.993	0.990	0.980	0.970	0.959	0.949	0.939	0.931	0.921	0.911	0.901
		-10	—	—	0.987	0.977	0.967	0.956	0.946	0.937	0.928	0.918	0.908	0.898
		-20	—	—	—	0.967	0.957	0.947	0.937	0.927	0.919	0.909	0.899	0.889
		-30	—	—	—	—	0.948	0.937	0.927	0.918	0.909	0.900	0.890	0.880

6-2. Model: AOYG90LRLA

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

COOLING			Pipe length (m)											
			5	7.5	10	20	30	40	50	60	70	80	90	100
Height difference H (m)	Indoor unit is higher than outdoor unit *1	30	—	—	—	—	0.898	0.874	0.850	0.826	0.803	0.780	0.756	0.732
		20	—	—	—	0.938	0.913	0.889	0.864	0.840	0.817	0.793	0.769	0.744
		10	—	—	0.978	0.953	0.928	0.903	0.879	0.854	0.830	0.806	0.781	0.757
		7.5	—	0.988	0.982	0.957	0.932	0.907	0.882	0.858	0.834	0.809	0.784	0.760
		5	0.992	0.992	0.986	0.961	0.935	0.911	0.886	0.861	0.837	0.812	0.788	0.763
		0	1.000	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
	Indoor unit is lower than outdoor unit *2	-5	1.000	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-7.5	—	1.000	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-10	—	—	0.994	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-20	—	—	—	0.969	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769
		-30	—	—	—	—	0.943	0.918	0.893	0.868	0.844	0.819	0.794	0.769

HEATING			Pipe length (m)											
			5	7.5	10	20	30	40	50	60	70	80	90	100
Height difference H (m)	Indoor unit is higher than outdoor unit *1	30	—	—	—	—	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		20	—	—	—	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		10	—	—	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		7.5	—	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		5	1.000	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
		0	1.000	1.000	0.997	0.987	0.977	0.966	0.956	0.946	0.938	0.928	0.918	0.908
	Indoor unit is lower than outdoor unit *2	-5	0.995	0.995	0.992	0.982	0.972	0.961	0.951	0.941	0.933	0.923	0.913	0.903
		-7.5	—	0.993	0.990	0.980	0.970	0.959	0.949	0.939	0.931	0.921	0.911	0.901
		-10	—	—	0.987	0.977	0.967	0.956	0.946	0.937	0.928	0.918	0.908	0.898
		-20	—	—	—	0.967	0.957	0.947	0.937	0.927	0.919	0.909	0.899	0.889
		-30	—	—	—	—	0.948	0.937	0.927	0.918	0.909	0.900	0.890	0.880

7. Additional charge calculation

7-1. Model: AOYG72LRLA

Refrigerant type		R410A
Factory charge amount	g	5,600

■ Refrigerant charge

Total pipe length	m	30 or less	40	50	60	70	80	90	100 (Max.)	110 g/m
Additional charge amount	g	0	1,100	2,200	3,300	4,400	5,500	6,600	7,700	

7-2. Model: AOYG90LRLA

Refrigerant type		R410A
Factory charge amount	g	7,100

■ Refrigerant charge

Total pipe length	m	30 or less	40	50	60	70	80	90	100 (Max.)	110 g/m
Additional charge amount	g	0	1,100	2,200	3,300	4,400	5,500	6,600	7,700	

8. Airflow

8-1. Model: AOYG72LRLA

● Cooling

Airflow	
m^3/h	8,400
l/s	2,334
CFM	4,944

● Heating

Airflow	
m^3/h	8,400
l/s	2,334
CFM	4,944

8-2. Model: AOYG90LRLA

● Cooling

Airflow	
m^3/h	8,400
l/s	2,334
CFM	4,944

● Heating

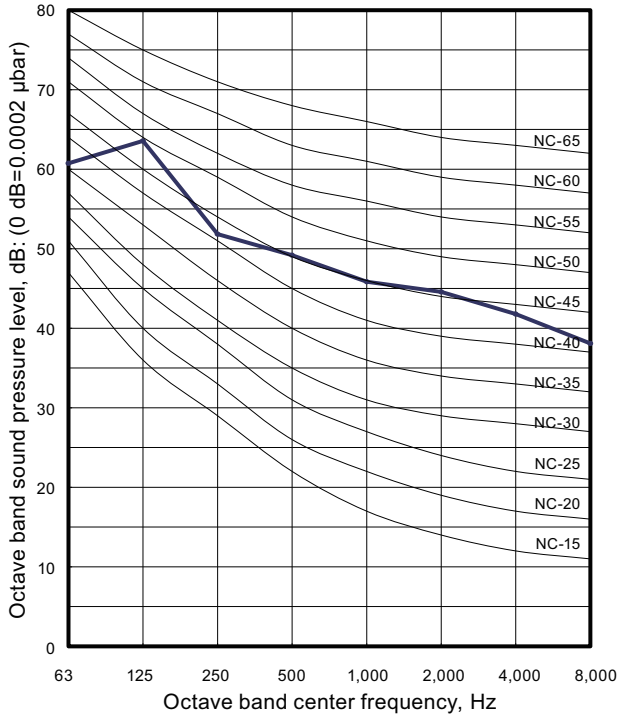
Airflow	
m^3/h	9,000
l/s	2,500
CFM	5,297

9. Operation noise (sound pressure)

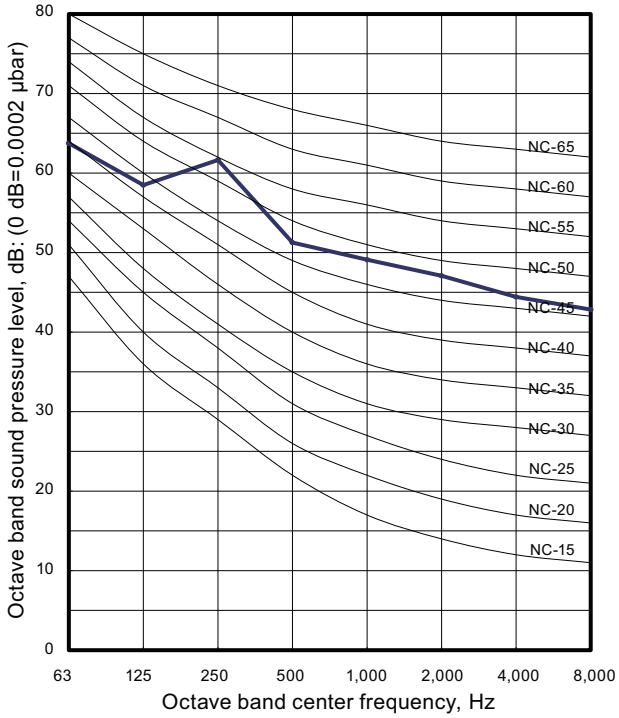
9-1. Noise level curve

■ Model: AOYG72LRLA

● Cooling

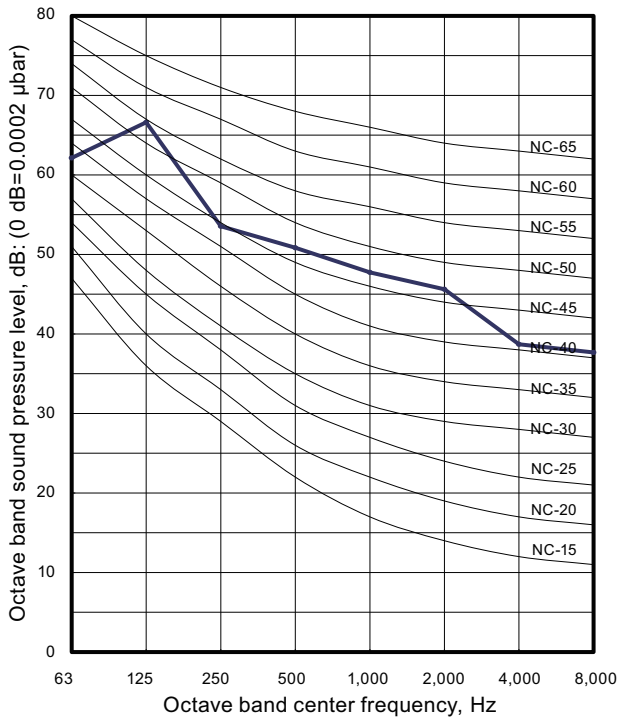


● Heating

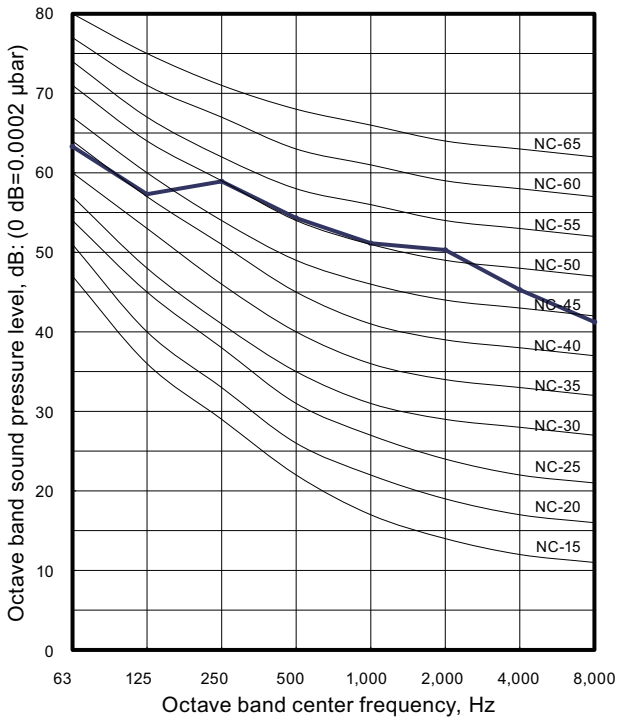


■ Model: AOYG90LRLA

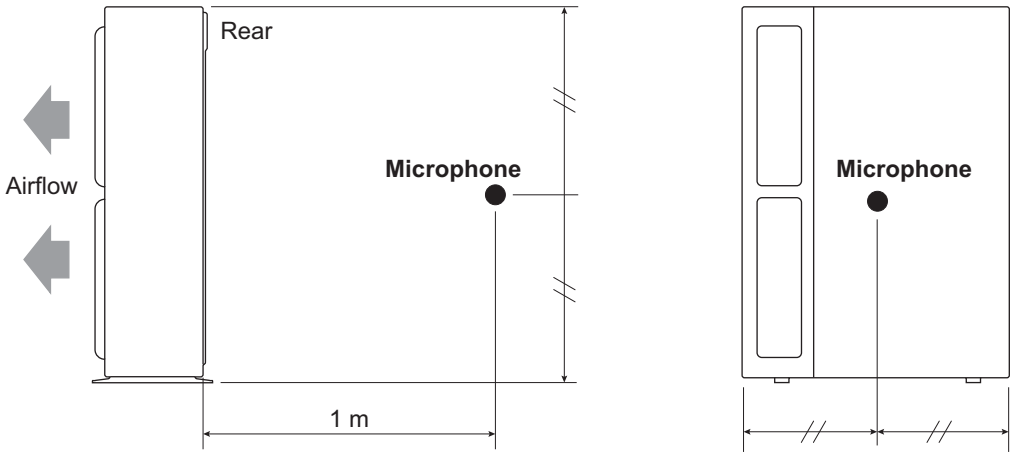
● Cooling



● 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			AOYG72LRLA	AOYG90LRLA
Power supply	Voltage	V	3N 400 ~	
	Frequency	Hz	50	
Max operating current		A	13.3	14.6
Wiring spec. *1	Circuit breaker current	A	30	
	Power cable	mm^2	6.0	
	Connection cable *2	mm^2	1.5	
	Limited wiring length	m	101	

*1: 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.

*2: Limit voltage drop to less than 2%. Increase conductor size if voltage drop is 2% or more.

11. Safety devices

Type of protection	Protection form			Model	
				AOYG72LRLA	AOYG90LRLA
Circuit protection	Current protector (Filter PCB)			500 V, 45 A × 3	
	Current fuse (Main PCB)			250 V, 10 A	
	Current fuse (Terminal)			250 V, 20 A	
Fan motor protection	Thermal protection program		Activate	115±15 °C Fan motor stop	
			Reset	70 °C Fan motor restart	
Compressor protection	Terminal protection program (Compressor temp.)		Activate	130 °C Compressor stop	
			Reset	80 °C Compressor restart	
	Thermal protection program (Discharge temp.)		Activate	115 °C Compressor stop	
			Reset	After 7 minutes Compressor restart	
High pressure protection	Pressure switch		Activate	$4.2^{+0}_{-0.15}$ MPa Compressor stop	
			Reset	3.2±0.15 MPa Compressor restart	
	Pressure sensor		Activate	4.1 MPa Compressor stop	
			Reset	After 3 minutes Compressor restart	
Low pressure protection	Pressure sensor	Cooling	Activate	0.12 MPa or less (for 5 minutes) Compressor stop	
			Reset	0.15 MPa Compressor restart	

12. External input and output

With using external input and output functions, this product can be operated inter-connectedly with an external device.

Connector	Input	Output	Remarks
CN131	Low noise mode	—	See external input/output settings for details.
CN132	Peak cut mode	—	
CN136	—	Error status	
CN137	—	Compressor status	

12-1. External input

With using external input function, on/off status of “Low noise mode” and “Peak cut mode” can be specified by the external signal.

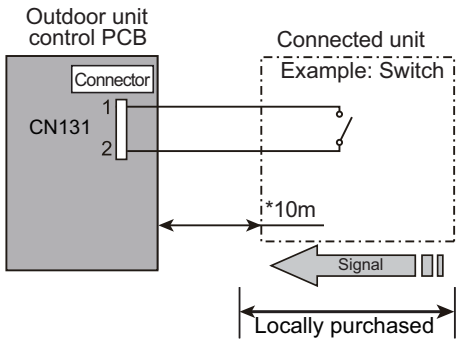
■ Low noise mode

In following condition, the operating noise of the outdoor unit reduces comparing from the one in normal operating condition:

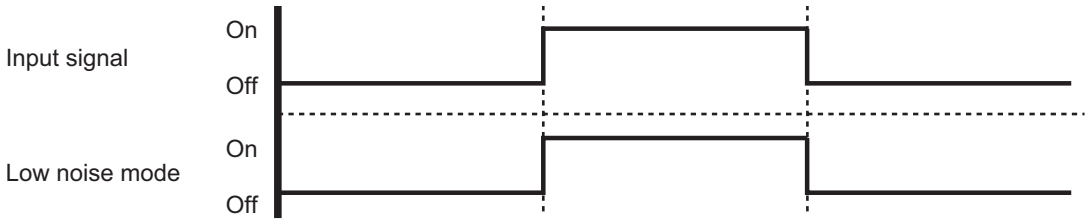
The air conditioner is set to the “Low noise mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

NOTE: Product performance may drop depending on some conditions such as the outdoor temperature.

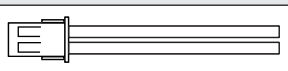
● Circuit diagram example (CN131)



- Contact capacity: DC 24 V or more, 10 mA or more.
- *: Make the distance from the PCB to the connected unit within 10 m.
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Low noise mode”
- Input signal: Off in normal operation
- To set the level of “Low noise mode”, refer to "Low noise mode" on page 76.



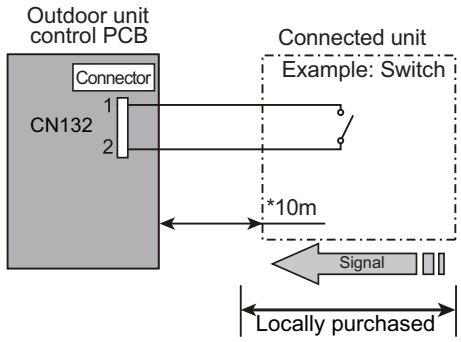
● Optional part

Part name	Model name	Exterior
External connect kit	UTY-XWZXZ3	

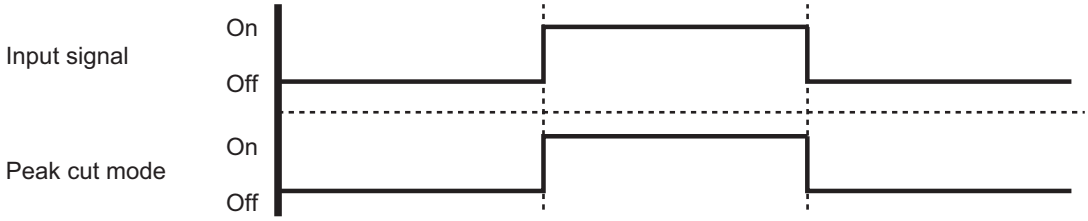
■ Peak cut mode

By performing following on-site work, operation that suppresses the current value can be enabled:
The air conditioner is set to the “Peak cut mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

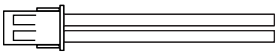
● Circuit diagram example (CN132)



- Contact capacity: DC 24 V or more, 10 mA or more.
- *: Make the distance from the PCB to the connected unit within 10 m.
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Peak cut mode”
- Input signal: Off in normal operation
- To set the level of “Peak cut mode”, refer to "Peak cut mode" on page 78.



● Optional part

Part name	Model name	Exterior
External connect kit	UTY-XWZXZ3	

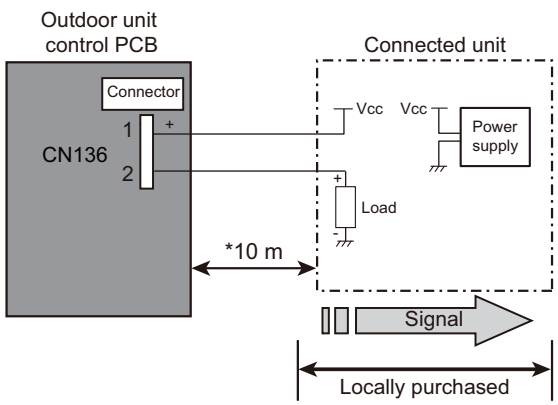
12-2. External output

With using external output function, some status signals are transmitted to the control PCB, and the related LED lamp indicates the status of this product.

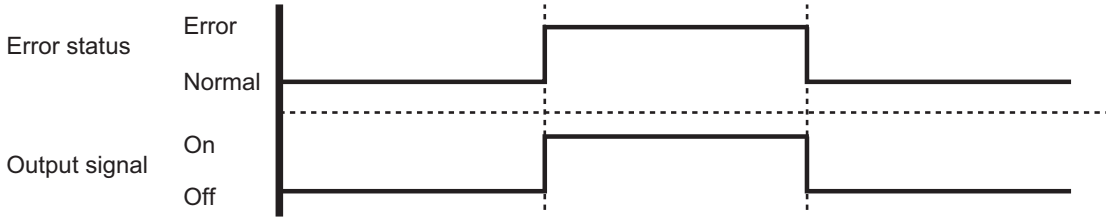
■ Error status output

Signal on air conditioner error status is generated when a malfunction occurs.

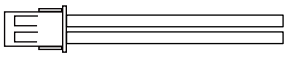
● Circuit diagram example (CN136)



- 1: Power supply
  Voltage (Vcc): DC 24 V or less
- 2: Load
  DC 500 mA or less
- *: Make the distance from the PCB to the connected unit within 10 m.



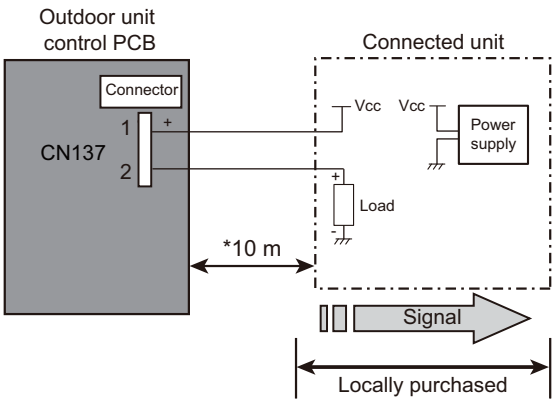
● Optional part

Part name	Model name	Exterior
External connect kit	UTY-XWZXZ3	

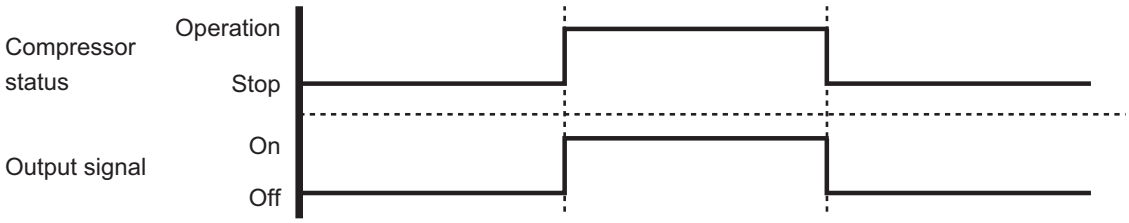
■ Compressor status output

Signal on compressor operation status is generated when the compressor is running.

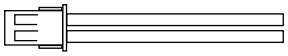
● Circuit diagram example (CN137)



- 1: Power supply
  Voltage (Vcc): DC 24 V or less
- 2: Load
  DC 500 mA or less
- *: Make the distance from the PCB to the connected unit within 10 m.



● Optional part

Part name	Model name	Exterior
External connect kit	UTY-XWZXZ3	

13. Function settings

Perform appropriate function setting locally according to the installation environment.

NOTE: Incorrect settings can cause a product malfunction.

⚠ CAUTION

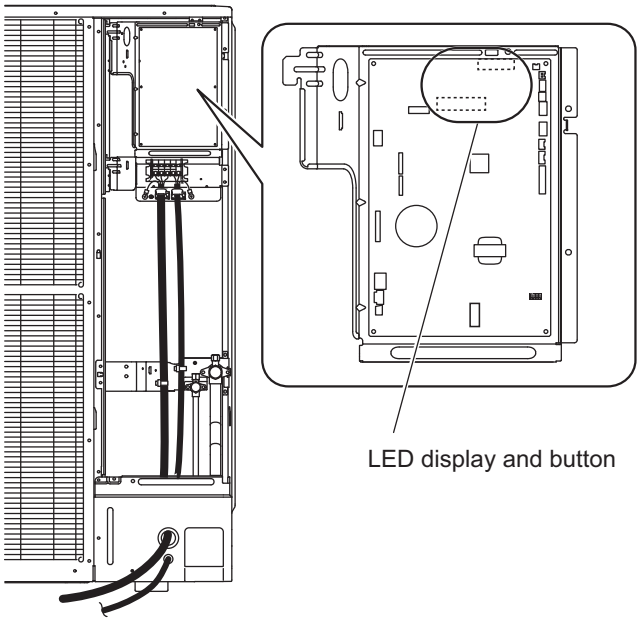
- Before setting up the switch buttons, discharge the static electricity from your body.
- Never touch the terminals or the patterns on the parts that are mounted on the PCB.

13-1. Local setting switch buttons

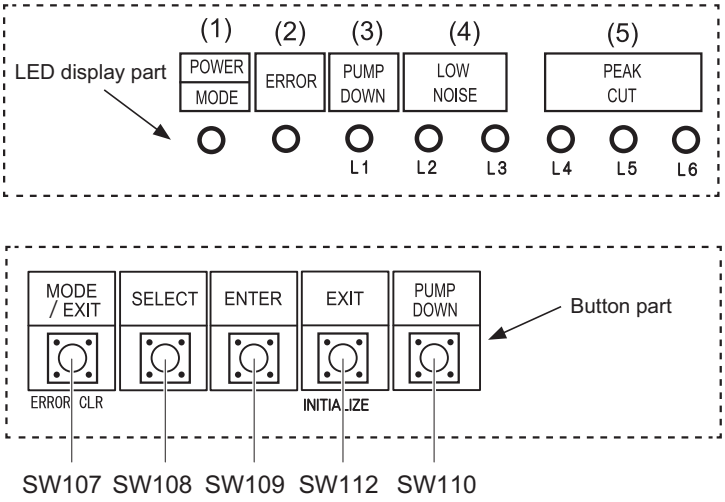
■ Control PCB and switch buttons location

Control PCB of the outdoor unit is located as shown in the following figure.

● Models: AOYG72LRLA and AOYG90LRLA



■ Switch buttons and the functions



LED lamp			Function or operation method
(1)	POWER/MODE	Green	Lights on while power on. Local setting in outdoor unit or error code is displayed with blink.
(2)	ERROR	Red	Blinks during error operation.
(3)	PUMP DOWN (L1)	Orange	Lights on during pump down operation.
(4)	LOW NOISE MODE (L2 and L3)	Orange	Lights on during “Low noise mode” when local setting is activated. (Lighting pattern of L2 and L3 indicates low noise level.)
(5)	PEAK CUT MODE (L4, L5, and L6)	Orange	Lights on during “Peak cut mode” when local setting is activated. (Lighting pattern of L4, L5, and L6 indicates peak cut level.)

Switch button		Function or operation method
SW107	MODE	Switches between “Local setting” and “Error code display”.
SW108	SELECT	Switches between the individual “Local settings” and the “Error code displays”.
SW109	ENTER	Switches between the individual “Local settings” and the “Error code displays”.
SW112	EXIT	Returns to “Operation status display”.
SW110	PUMP DOWN	Starts the pump down operation.

■ Function setting table

No.	Setting item		LED display							Factory setting
			POWER MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
					(L1)	(L2)	(L3)	(L4)	(L5)	(L6)	
1	Low noise mode setting	Level 1	Blink (9 times)	○	○	○	●	○	○	●	♦
		Level 2		○	○	○	●	○	●	○	
2	Peak cut mode setting	Level 1		○	○	●	○	○	○	●	
		Level 2		○	○	●	○	○	●	○	
		Level 3		○	○	●	○	○	●	●	
		Level 4		○	○	●	○	●	○	○	♦

Sign "○": Lights off,"●": Lights on

No.	Setting item	Content
1	Low noise mode setting	By using the "Low noise mode", the limit of the noise level will be set to decrease the noise level. The mode comes in 2 levels which can be set accordingly. To turn on the mode, use the external input terminal (CN131). • By using this mode, the cooling/heating performance may decrease. • Depending on the operating condition, the noise level may not decrease even if the Low noise mode is on.
2	Peak cut mode setting	The capacity limit can be selected when operating with the “Peak Cut mode.” The operation selection can be done by external input terminal (CN132). The lower the level, the more the effect of energy saving, but the cooling/ heating performance decreases.

● Noise level as low noise mode setting

Unit: dB(A)

	AOYG72LRLA		AOYG90LRLA	
	Cooling	Heating	Cooling	Heating
Level1	53	53	53	55
Level2	51	51	51	53

13-2. Local setting procedure

NOTE: Before performing the function setting, be sure to stop the operation of the air conditioner.

■ Low noise mode

1. Press the MODE switch button (SW107) for 3 seconds or more to switch to “Local setting mode”.
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (SW109).

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	(L3)	PEAK CUT (L4)	(L5)	(L6)
Blinks (9 times)	○	○	○	○	○	○	○

Sign “ ○ ”: Lights off

3. Press the SELECT switch button (SW108), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.

	LOW NOISE (L2)	LOW NOISE (L3)
LOW NOISE MODE	○	Blink

4. Press the ENTER switch button (SW109).

	LOW NOISE (L2)	LOW NOISE (L3)
LOW NOISE MOD E	○	●

Sign “ ●”: Lights on

5. Press the SELECT switch button (SW108), and adjust the LED lamps as shown below.

		PEAK CUT (L4)	(L5)	(L6)
Level 1	Low	○	○	Blink
Level 2	Lower	○	Blink	○

6. Press the ENTER switch button (SW109) and fix it.

		PEAK CUT (L4)	(L5)	(L6)
Level 1	Low	○	○	●
Level 2	Lower	○	●	○

7. To return to “Operating status display (Normal operation)”, press the EXIT switch button (SW112).

In case of missing how many times you pressed the SELECT and ENTER switch buttons:

1. To return to “Operation status display (Normal operation)”, press the EXIT switch button once.
2. Restart from the beginning of setting procedure.

NOTE: In case of missing how many times you pressed the SELECT and ENTER switch buttons, you must redo the setting procedure. Return to “Operation status display (Normal operation)” by pressing the EXIT switch button once, and restart from the beginning of the setting procedure.

■ Peak cut mode

1. Press the MODE switch button (SW107) for 3 seconds or more to switch to “Local setting mode”.
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (SW109).

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blinks (9 times)	○	○	○	○	○	○	○

Sign “ ○ ”: Lights off

3. Press the SELECT switch button (SW108), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.

	LOW NOISE (L2)	LOW NOISE (L3)
PEAK CUT MOD E	Blink	○

4. Press the ENTER switch button (SW109).

	LOW NOISE (L2)	LOW NOISE (L3)
PEAK CUT MODE	●	○

Sign “ ● ”: Lights on

5. Press the SELECT switch button (SW108), and adjust the LED lamps as shown below.

		PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Level 1	0% of rated input ratio	○	○	Blink
Level 2	50% of rated input ratio	○	Blink	○
Level 3	75% of rated input ratio	○	Blink	Blink
Level 4	100% of rated input ratio	Blink	○	○

Sign “○”: Lights off

6. Press the ENTER switch button (SW109) and fix it.

		PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Level 1	0% of rated input ratio	○	○	●
Level 2	50% of rated input ratio	○	●	○
Level 3	75% of rated input ratio	○	●	●
Level 4	100% of rated input ratio	●	○	○

Sign “○”: Lights off, “●”: Lights on

7. To return to “Operating status display (Normal operation)”, press the EXIT switch button (SW112).

NOTE: When pressed number is lost during setting, you must redo the setting procedure. Return to “Operation status display (Normal operation)” by pressing the EXIT switch button once, and restart from the beginning of the setting procedure.

14. Check and test

14-1. Test run

■ Pre-test run check items

Check column	Check item
	Is the outdoor unit securely installed?
	Have you performed gas leakage inspection? (Connection joints of various pipes (flange connection, brazing))
	Is the heat insulation done completely? (Gas pipe, liquid pipe, drain hose extension on indoor unit side etc)
	Is the water discharging from drain without any problems?
	Are the cables connected correctly?
	Are the cables as per specifications?
	Is the earth wire connected accurately?
	Are there any obstacles blocking the suction gate, and outlet of the indoor/outdoor units?
	Have you filled the specified amount of refrigerant?
	Are the stop valves of gas pipe and liquid pipe fully open?
	Has the power been supplied to crankcase heater for more than 6 hours?

■ Test operation method

Be sure to configure test run settings only when the outdoor unit has stopped operating.

Notices:

- Depending on the communication status between the indoor and outdoor units, it may take several minutes for the system to start operating after settings for the test run are complete.
- After the test run settings are complete, the outdoor units and the connected indoor units will start operating. Room temperature control will not activate during test operation (continuous operation).
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.

Test operation setting method (It can be performed in the following two ways)

- Set with test operation setting (refer to installation instructions manual of indoor unit for further details) available in the remote controller.
- "Cooling operation" and "Heating operation" can be set using SELECT button and ENTER button available on the board of display unit.
  (*Make sure to perform the first test operation with cooling operation.)
  Set as per the procedure given below.

Symbols in the following table indicate LED status.

"○": Lights off, "●": Lights on

1. Turn on the power of the outdoor unit and enter standby mode.
   “POWER/MODE” Lamp lights up.

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	○	○	○	○	○	○	○

2. Press the ENTER button for more than 3 seconds.

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blink	○	○	○	Blink	○	○	○

3. Press the SELECT button, LED of the test run mode Switched between "COOL " and "HEAT".
   - Cooling test mode

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blink	○	○	○	Blink	○	○	○

   - Heating test mode

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blink	○	○	Blink	○	○	○	○

4. After confirming the operation mode, Press ENTER button.The display changes as follows, and Air conditioner starts operation.
   - Cooling test mode

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blink	○	○	○	●	○	○	○

   - Heating test mode

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
Blink	○	○	●	○	○	○	○

5. Press [ENTER] button.
   Air conditioner stopped operation.

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	○	○	○	○	○	○	○

■ Checklist

Check items during test operation.

Check column	Check item
	Is the outdoor unit making any abnormal noise or vibrating significantly?
	Is the cold air or hot air blowing from indoor unit according to the operation mode?
	Check that the “ERROR” LED blinks. If, it has displayed, check the error content refer to Error code check table.
	Operate the unit according to the operating manual provided with the indoor unit, and check that it is operating normally.

14-2. Error code

If an error occurs, the LED will light up to display the error location and the error code.

■ Error display mode

Display when an error occurs.

POWER / MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	Blink (Hi speed)	○	○	○	○	○	○

Sign "○": Lights off, "●": Lights on

NOTE: Check that the "ERROR" LED blinks, then press the [ENTER] button once.

■ Error code check table

LED display								Description	Remark
POWER/ MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT				
		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)		
◆(2)	●	◆(1)	◆(1)	○	○	●	●	Serial communication error	Serial forward transmission error immediately after operation
◆(2)	●	◆(1)	◆(1)	○	●	○	○		Serial forward transmission error during operation
◆(2)	●	◆(2)	◆(2)	○	○	○	●	Indoor unit capacity error	Indoor unit capacity error
◆(2)	●	◆(5)	◆(15)	○	○	○	●	Indoor unit error	Indoor unit error
◆(2)	●	◆(6)	◆(2)	○	○	○	●	Outdoor unit main PCB error	Outdoor unit PCB model information error
◆(2)	●	◆(6)	◆(3)	○	○	○	●	Inverter PCB error	Inverter error
◆(2)	●	◆(6)	◆(5)	○	○	●	●	IPM error	Trip terminal L error
◆(2)	●	◆(7)	◆(1)	○	○	○	●	Discharge temp. sensor error	Discharge temp. sensor 1 error
◆(2)	●	◆(7)	◆(2)	○	○	○	●	Compressor temp. sensor error	Compressor temp. sensor 1 error
◆(2)	●	◆(7)	◆(3)	○	○	●	○	Outdoor unit Heat Ex. sensor error	Heat Ex. middle temp. sensor error
◆(2)	●	◆(7)	◆(3)	○	○	●	●		Outdoor unit Heat Ex. liquid temp. sensor error
◆(2)	●	◆(7)	◆(4)	○	○	○	●	Outdoor temp. sensor error	Outdoor temp. sensor error
◆(2)	●	◆(7)	◆(7)	○	○	○	●	Heat sink temp. sensor error	Heat sink temp. sensor error
◆(2)	●	◆(8)	◆(4)	○	○	○	●	Current sensor error	Current sensor 1 error (stoppage permanently)
◆(2)	●	◆(8)	◆(6)	○	●	○	○	Pressure sensor error	High pressure switch 1 error
◆(2)	●	◆(8)	◆(6)	○	○	○	●		Outdoor unit discharge pressure sensor error
◆(2)	●	◆(8)	◆(6)	○	○	●	●		Outdoor unit suction pressure sensor error
◆(2)	●	◆(9)	◆(4)	○	○	○	●	Trip detection	Trip detection
◆(2)	●	◆(9)	◆(5)	○	○	○	●	Compressor motor control error	Rotor position detection error (stoppage permanently)
◆(2)	●	◆(9)	◆(7)	○	○	●	●	Outdoor unit fan motor 1 error	Duty error
◆(2)	●	◆(9)	◆(8)	○	○	●	●	Outdoor unit fan motor 2 error	Duty error
◆(2)	●	◆(9)	◆(9)	○	○	○	●	4-way valve error	4-way valve error
◆(2)	●	◆(10)	◆(1)	○	○	○	●	Discharge temp. 1 error	Discharge temp. 1 error
◆(2)	●	◆(10)	◆(3)	○	○	○	●	Compressor temp. error	Compressor 1 temp. error
◆(2)	●	◆(10)	◆(5)	○	○	○	●	Pressure error 2	Low pressure error

Display mode ● : Lights on
○ : Lights off
◆ : Blink (0.5s Lights on / 0.5s Lights off)
( ) : Number of flashing

14-3. Pump down

⚠ WARNING

- Never touch electrical components such as the terminal blocks except the button on the display board. It may cause a serious accident such as electric shock.
- During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping.
  Do not remove the connection pipe while the compressor is in operation with 2-way or g. 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

⚠ CAUTION

- Perform the pump down operation before disconnecting any refrigerant pipe or electric cable.
- Collect refrigerant from the service port or the 3-way valve if pump down cannot be performed.
- In case of a group control system installation, do not turn the power off until pump down is completed in all outdoor units.
  (Group control system installation described in “SPECIAL INSTALLATION METHODS” in the installation manual of the indoor unit.)

■ Pump down procedure

Confirm that the power is off, and then open the service panel.

Symbols in the following table indicate LED status.
"○": Lights off, "●": Lights on

1. Check the 3-way valves (both the liquid side and gas side) are opened.

2. Turn the power on.

POWER MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	○	○	○	○	○	○	○

3. Press [PUMP DOWN] button for 3 seconds or more after 3 minutes after power on.

POWER MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	○	●	○	○	●	●	●

   LED display lights on as shown in the above figure, and the fans and the compressor start operating.

   NOTE: If the [PUMP DOWN] button is pressed during compressor operation, the compressor will stop, and the operation will start after about 3 min.

4. LED display will change as shown below about 3 minutes after the compressor starts. Fully close the 3-way valve on the liquid pipe side at this stage.

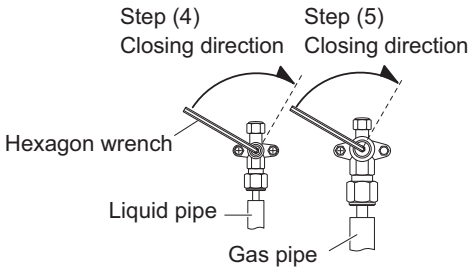
POWER MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	LOW NOISE (L3)	PEAK CUT (L4)	PEAK CUT (L5)	PEAK CUT (L6)
●	○	●	○	○	○	●	●

   NOTE: If the valve on the liquid pipe side is not closed, the pump down cannot be performed.

5. When LED display changes as shown in the below figure, close the 3-way valve on the gas pipe side tightly.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
●	○	●	○	○	○	○	●

NOTE: If the valve on the gas pipe side is not closed, refrigerant may flow into the piping after the compressor stops.



6. LED display changes after 1 minute as shown in the figure below.
The LED will light as follows.

POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
●	○	●	○	○	○	○	○

Fans and compressor stop automatically.

NOTE: If the pump down is successfully completed (the above LED display is shown), the outdoor unit remains stopped until the power is turned off.

7. Turn the power off.

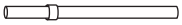
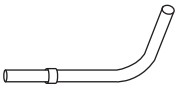
POWER	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
MODE		(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
○	○	○	○	○	○	○	○

Pump down is completed.

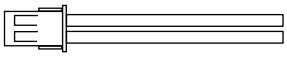
Notices:

- To stop pump down, press the [PUMP DOWN] button again.
- To start the pump down again after the compressor is automatically stopped due to an error, disconnect the power supply and open the 3-way valves. Wait 3 minutes, reconnect the power supply and start the pump down again.
- When starting the operation after completion of the pump down, disconnect the power supply, and then open the 3-way valves. Wait 3 minutes, reconnect the power supply and perform a test run in the “COOL” operation mode.
- If an error occurs, recover the refrigerant from service port.

15. Accessories

Part name	Exterior	Q'ty	Part name	Exterior	Q'ty
Installation manual		1	Joint pipe B		1
Drain pipe		1	Push mount cable tie		2
Drain cap		9	Grommet edging		2
Joint pipe A		1			

16. Optional parts

Exterior	Part name	Model name	Summary
	External connect kit	UTY-XWZXZ3	Use to operate the external input and output functions of outdoor unit.