



AIR CONDITIONER

**Wall Mounted type**

# **DESIGN & TECHNICAL MANUAL**

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INDOOR



AS\*A09LKC  
AS\*A12LKC

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OUTDOOR



AO\*R09LKC  
AO\*R12LKC

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**FUJITSU GENERAL LIMITED**

# **1.INDOOR UNIT**

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**WALL MOUNTED TYPE :**

**AS\*A09LKC**

**AS\*A12LKC**

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## 1. INDOOR UNIT

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# 1. FEATURE

## ■ MODEL

AS\*A09LKC

AS\*A12LKC

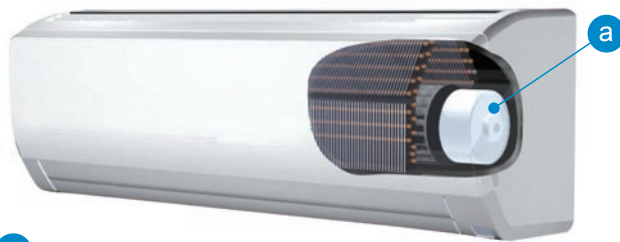


## ■ FEATURES

- Energy-Efficiency classification A

Europe Energy-Efficiency classification A achieved

- ALL DC



- a DC fan motor

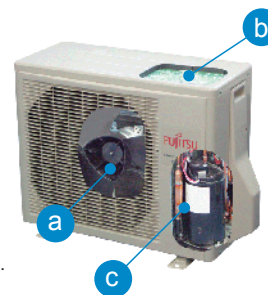
- b i-PAM control (12TYPE)

When operation starts, the machine operates at high voltage and high power and when operation stabilizes, the set temperature is maintained at low voltage.

- V-PAM control (09TYPE)

V-PAM technology makes a compressor more powerful.

- c DC rotary compressor



Front view

### ● Super quiet

Air flow mode can be set in 4 steps and more detailed air flow setting is possible.

Fan speed	Noise level
Quiet	21dB(A)

### ● Easy maintenance

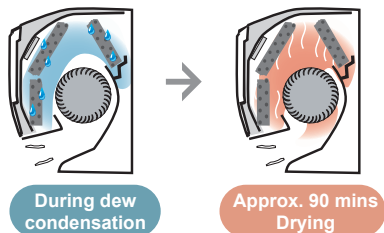
Easy maintenance and always clean. Troublesome maintenance has been made easy.

Since the front panel is easy to remove, maintenance is also easy.



### ● Inner drying operation

This model is equipped with an inner drying function. After the power is turned off, the dry starts inside the air conditioner. This prevents the growth of mold and bacteria inside the air conditioner.



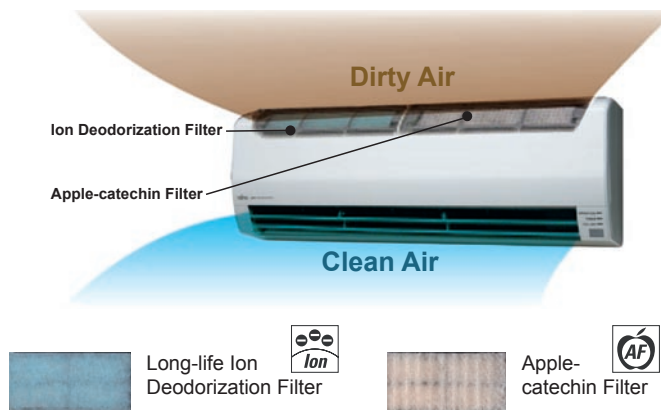
### ● Low outdoor air temperature correspondence

Corresponds to heating operation at -15°C outdoor air temperature

Heating
-15 to 24°C

### ● Corresponds to maximum 20m long piping

### ● Air conditioner filter features(Optional parts)



## 2. WIRELESS REMOTE CONTROLLER

### ■ FEATURES



- \* Three kinds of timer setup (ON / OFF / SLEEP) are possible.
- \* Easy operation.

#### ● Built-in timers

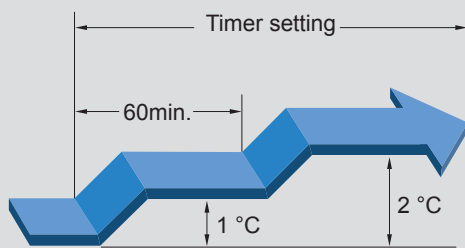
Select from three different timer programs (On/Off/Sleep).

#### ● Sleep timer

The sleep timer function automatically corrects the temperature thermostat setting according to the time setting to prevent excessive cooling and heating while sleeping.

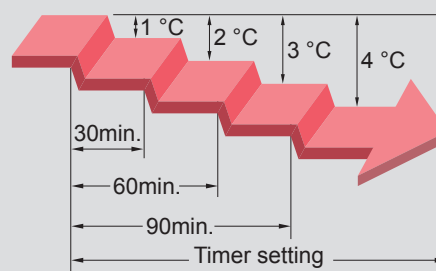
##### Cooling operation/dry operation

When the sleep timer is set, the set temperature automatically rises 1 °C every hour. The set temperature can rise up to a maximum of 2 °C.

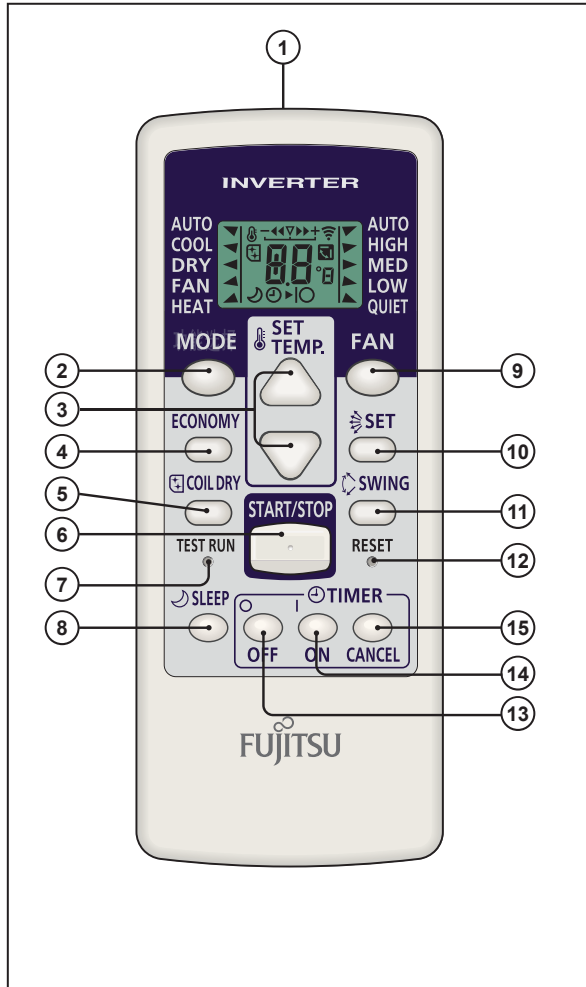


##### Heating operation

When the sleep timer is set, the set temperature automatically drops 1 °C every 30 minutes. The set temperature can drop to a maximum of 4 °C.

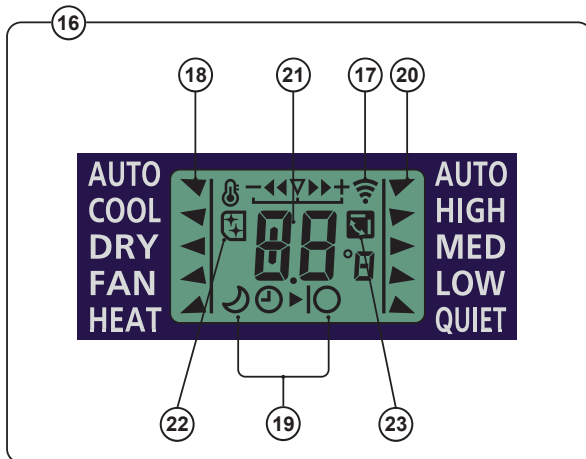


## FUNCTIONS



- 1 Signal Transmitter
- 2 OPERATION MODE button
- 3 SET TEMP. button (▲ / ▼)
- 4 ECONOMY button
- 5 COIL DRY button
- 6 START/STOP button
- 7 TEST RUN button
  - This button is used when installing the air conditioner, and should not be used under normal conditions, as it will cause the indoor unit's thermostat function to operate incorrectly.
  - If this button is pressed during normal operation, the indoor unit will switch to test operation mode, and the Indoor Unit's OPERATION Indicator Lamp and TIMER Indicator Lamp will begin to flash simultaneously.
  - To stop the test operation mode, press the START/STOP button to stop the air conditioner.
- 8 SLEEP button
- 9 FAN CONTROL button
- 10 AIR FLOW DIRECTION SET button
- 11 SWING button
- 12 RESET button
- 13 TIMER OFF button
- 14 TIMER ON button
- 15 TIMER CANCEL button

Display panel



- 16 Remote Controller Display
- 17 Transmit Indicator
- 18 Operation Mode Display
- 19 Timer Mode Display  
OFF TIMER Mark: ○  
ON TIMER Mark: |  
SLEEP TIMER Mark: ↻
- 20 Fan Speed Display
- 21 Temperature and time Display  
It displays the temperature setting.  
However, when making the Timer setting, it will display the Timer time.  
(The temperature setting will reappear after finishing the timer setting)
- 22 COIL DRY Display
- 23 SWING Display

## SPECIFICATION

SIZE	(H x W x D mm)	139×56×18
WEIGHT	(g)	85
ACCESSORY		Holder

### 3. SPECIFICATIONS

Type				WALL MOUNTED INVERTER HEAT PUMP		
Model name				AS*A09LKC	AS*A12LKC	
Power source				230V~ 50Hz		
Available voltage range				198-264V~ 50Hz		
European energy label			Cooling	A	A	
			Heating	A	A	
Capacity	Cooling	Rated	kW	2.50	3.40	
			BTU/h	8,500	11,600	
		Min-Max	kW	0.5~3.0	0.9~3.8	
			BTU/h	1,700~10,200	3,100~13,000	
	Heating	Rated	kW	3.20	4.00	
			BTU/h	10,900	13,600	
Min-Max		kW	0.5~3.9	0.9~5.6		
		BTU/h	1,700~13,300	3,100~19,100		
Input power	Cooling	Rated	kW	0.78	1.06	
				Min-Max	0.25~1.02	0.25~1.40
	Heating	Rated		0.885	1.105	
		Min-Max		0.25~1.15	0.25~1.99	
Current	Cooling	Rated	A	4.2	4.9	
		Max		5.5	6.5	
	Heating	Rated		4.8	5.2	
		Max		5.5	9.0	
EER			Cooling	kW/kW	3.21	3.21
COP			Heating		3.62	3.62
SENSIBLE CAPACITY			Cooling	kW	1.6	2.2
POWER FACTOR			Cooling	%	81	94
			Heating		80	92
Moisture removal				l/h (pints/h)	1.3	1.8
Fan	Air flow rate	Cooling	High	m <sup>3</sup> /h	710	
			Med		590	
			Low		430	
			Quiet		260	
		Heating	High		730	
			Med		590	
			Low		460	
			Quiet		290	
	Type × Q'ty				Cross flow fan×1	
	Motor output				W	30
Sound pressure level	Cooling	High	dB(A)	43		
		Med		38		
		Low		33		
		Quiet		21		
	Heating	High		43		
		Med		38		
		Low		33		
		Quiet		21		
Heat exchanger type	Dimensions (H × W × D)			mm	256 × 630 × 20	
	Fin pitch				1.1	
	Rows Stages				2 × 16	
	Pipe type				Copper	
	Fin type				Aluminium	
Enclosure	Material			Polystyrene		
	Colour			WHITE Approximate colour of MUNSELL N 9.25/		
Dimensions (H × W × D)	Net			mm	260 × 790 × 202	
	Gross				259 × 840 × 328	
Weight	Net			kg(lb)	7.5 (17)	
	Gross				9.5 (21)	
Connection pipe	Size	Liquid	mm	Φ6.35 (Φ1/4 in)		
		Gas		Φ9.52 (Φ3/8 in)		
Method				Flare		
Operation range	Cooling			°C	18~32	
				%RH	80 or less	
	Heating			°C	30 or less	
Remote controller type				Wireless		
Drain pipe	Material			PP+LLDPE		
	Size			mm	Outer diameter:21 / Outer diameter:13.6	

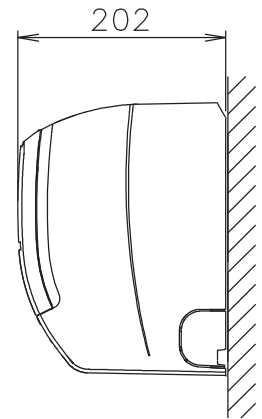
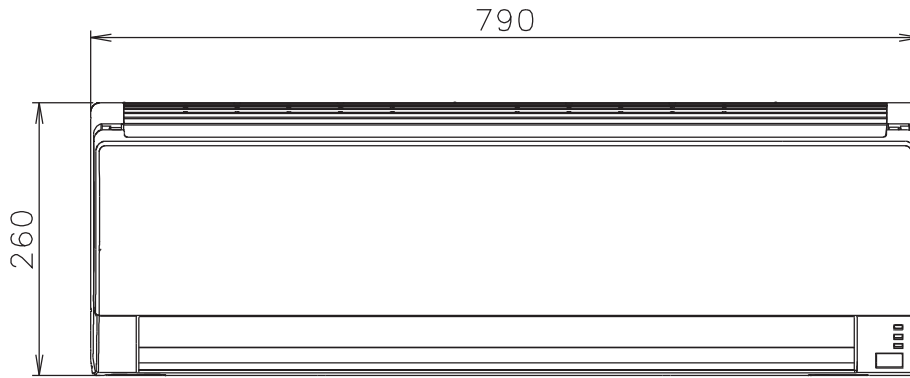
Note :  
 Specifications are based on the following conditions.  
 Cooling:Indoor temperature of 27°C CDB/ 19°C CWB.and outdoor temperature of 35°C CDB/ 24°C CWB.  
 Heating:Indoor temperature of 20°C CDB/ 15°C CWB.and outdoor temperature of 7°C CDB/ 6°C CWB.  
 Pipe length : 5m,Height difference : 0m(Outdoor unit-Indoor unit)  
 The maximum current is the maximum value when the operated within the operation range(temperature).



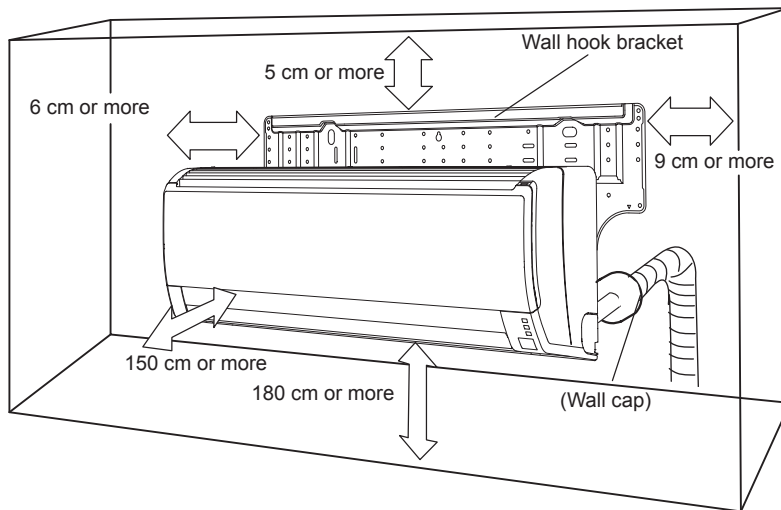
## 4. DIMENSIONS

■ MODEL: AS\*A09LK, AS\*A12LK

(Unit : mm)

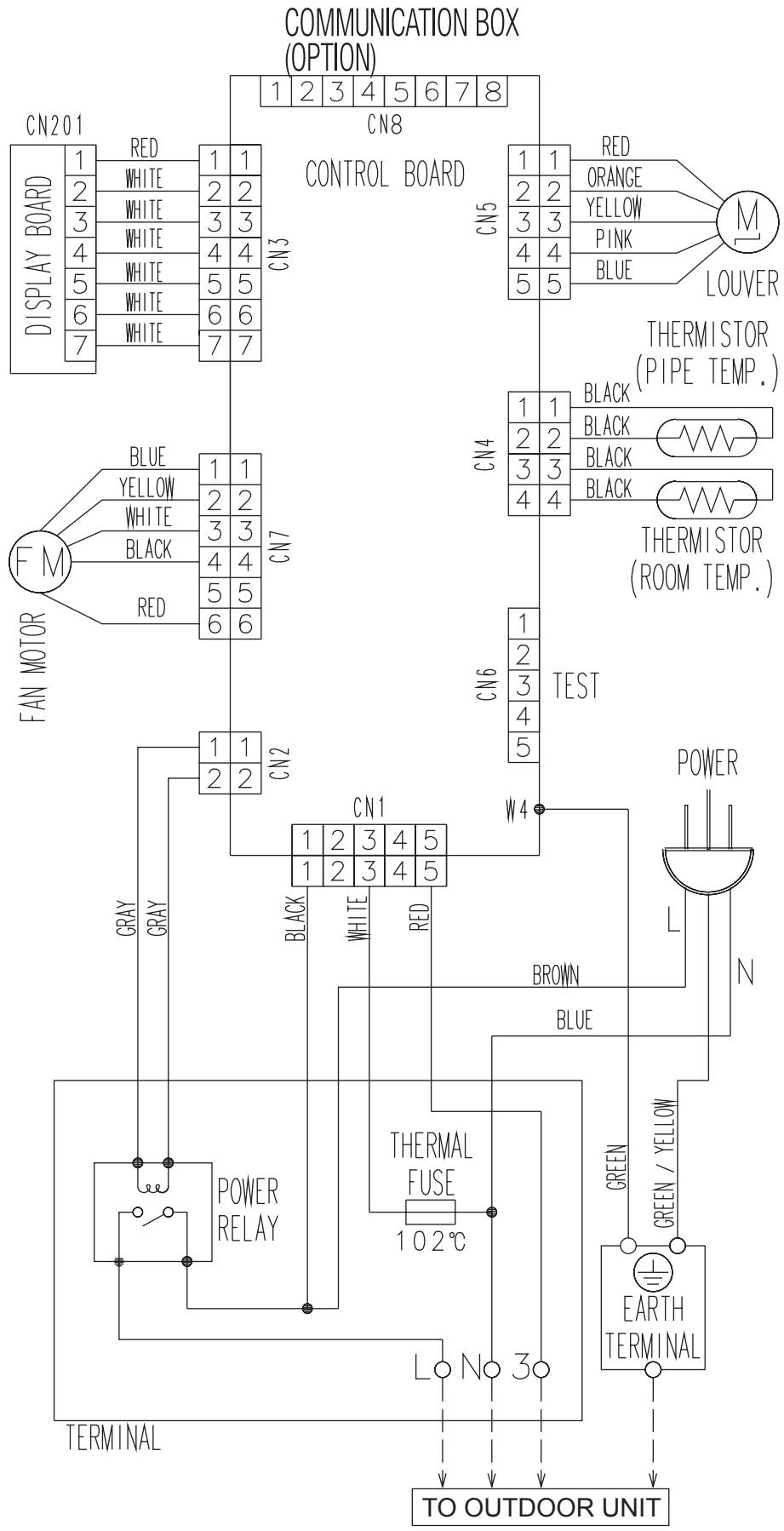


## ■ INSTALLATION PLACE



# 5. WIRING DIAGRAMS

## MODEL: AS\*A09LK, AS\*A12LK



# 6. CAPACITY TABLE

## 6-1. COOLING CAPACITY

### ■ MODEL: AS\*A09LK

AFR	11.8
-----	------

		Indoor temperature																				
		18			21			23			25			27			29			32		
		12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	2.34	1.60	0.55	2.61	1.61	0.56	2.70	1.75	0.56	2.87	1.76	0.56	2.96	1.90	0.57	3.14	1.89	0.57	3.32	2.01	0.58
	25	2.22	1.52	0.62	2.48	1.53	0.62	2.56	1.66	0.63	2.73	1.67	0.63	2.81	1.80	0.64	2.98	1.79	0.64	3.15	1.91	0.65
	30	2.10	1.44	0.68	2.34	1.44	0.69	2.42	1.57	0.70	2.58	1.58	0.70	2.66	1.70	0.71	2.82	1.70	0.72	2.98	1.81	0.72
	35	1.98	1.35	0.75	2.20	1.36	0.76	2.28	1.48	0.77	2.43	1.48	0.78	2.50	1.60	0.78	2.65	1.59	0.79	2.80	1.70	0.80
	40	1.76	1.20	0.75	1.96	1.21	0.76	2.03	1.32	0.77	2.16	1.32	0.78	2.23	1.43	0.78	2.36	1.42	0.79	2.50	1.51	0.80
	43	1.63	1.12	0.75	1.82	1.12	0.76	1.88	1.22	0.77	2.00	1.22	0.77	2.07	1.32	0.78	2.19	1.32	0.78	2.31	1.40	0.79

### ■ MODEL: AS\*A12LK

AFR	11.8
-----	------

		Indoor temperature																				
		18			21			23			25			27			29			32		
		12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	20	3.18	2.20	0.73	3.55	2.21	0.74	3.67	2.41	0.74	3.91	2.41	0.75	4.03	2.61	0.75	4.27	2.60	0.76	4.51	2.77	0.77
	25	3.03	2.09	0.82	3.37	2.11	0.84	3.49	2.29	0.84	3.72	2.30	0.85	3.83	2.48	0.85	4.06	2.47	0.86	4.29	2.63	0.87
	30	2.86	1.98	0.92	3.19	1.99	0.94	3.30	2.17	0.94	3.52	2.17	0.95	3.63	2.35	0.96	3.84	2.34	0.96	4.06	2.49	0.97
	35	2.69	1.86	1.02	2.99	1.87	1.04	3.09	2.03	1.04	3.30	2.04	1.05	3.40	2.20	1.06	3.60	2.19	1.07	3.81	2.33	1.08
	40	2.27	1.57	0.95	2.53	1.58	0.97	2.62	1.72	0.97	2.79	1.72	0.98	2.87	1.86	0.99	3.05	1.85	1.00	3.22	1.97	1.01
	43	2.09	1.45	0.95	2.33	1.45	0.97	2.41	1.58	0.97	2.57	1.59	0.98	2.65	1.71	0.99	2.81	1.71	1.00	2.96	1.82	1.01

AFR : Air flow rate (m<sup>3</sup>/min)  
 TC : Total capacity (kW)  
 SHC : Sensible Heat capacity (kW)  
 PI : Power Input (kW)

## 6-2. HEATING CAPACITY

### ■ MODEL: AS\*A09LK

AFR	12.2
-----	------

		Indoor temperature										
		°CDB		16		18		20		22		24
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	2.05	0.95	2.00	0.97	1.96	0.99	1.91	1.01	1.86	1.03
	-10	-11	2.33	0.97	2.28	0.99	2.22	1.01	2.16	1.03	2.11	1.05
	-5	-7	2.67	1.00	2.61	1.02	2.54	1.04	2.48	1.07	2.42	1.09
	0	-2	3.17	1.04	3.10	1.06	3.02	1.08	2.95	1.10	2.87	1.13
	5	3	3.70	1.08	3.61	1.11	3.52	1.13	3.43	1.15	3.29	1.15
	7	6	4.01	1.10	3.92	1.13	3.82	1.15	3.65	1.15	3.47	1.15
	10	8	4.23	1.12	4.13	1.14	3.96	1.15	3.79	1.15	3.63	1.15
	15	10	4.38	1.15	4.17	1.15	4.00	1.15	3.80	1.15	3.65	1.15

### ■ MODEL: AS\*A12LK

AFR	12.2
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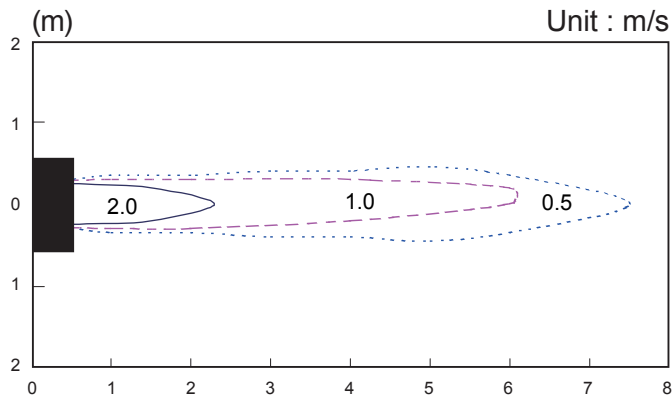
		Indoor temperature										
		°CDB		16		18		20		22		24
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.40	1.96	3.29	1.99	3.15	1.99	3.01	1.99	2.87	1.99
	-10	-11	3.76	1.96	3.65	1.99	3.49	1.99	3.34	1.99	3.19	1.99
	-5	-7	4.18	1.96	4.05	1.99	3.88	1.99	3.71	1.99	3.55	1.99
	0	-2	4.68	1.96	4.52	1.99	4.33	1.99	4.14	1.99	3.96	1.99
	5	3	5.05	1.73	4.93	1.76	4.81	1.80	4.69	1.84	4.57	1.87
	7	6	5.36	1.72	5.23	1.75	5.10	1.79	4.97	1.83	4.85	1.86
	10	8	5.55	1.72	5.42	1.75	5.29	1.79	5.16	1.83	5.02	1.86
	15	10	5.51	1.61	5.29	1.61	5.03	1.61	4.82	1.61	4.61	1.61

AFR : Air flow rate (m<sup>3</sup>/min)  
 TC : Total capacity (kW)  
 SHC: Sensible Heat capacity (kW)  
 PI : Power Input (kW)

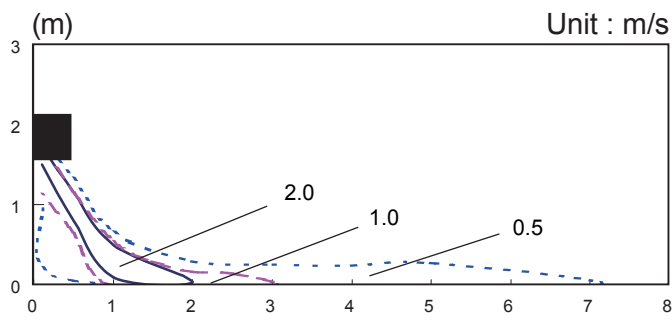
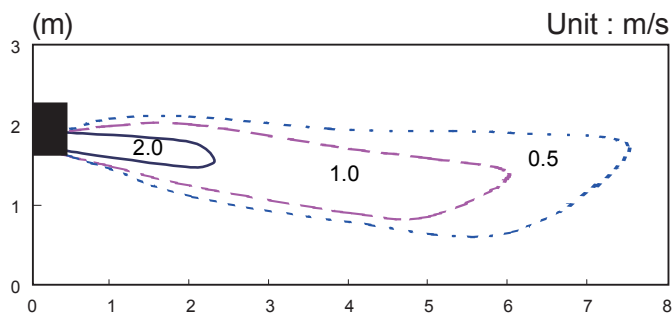
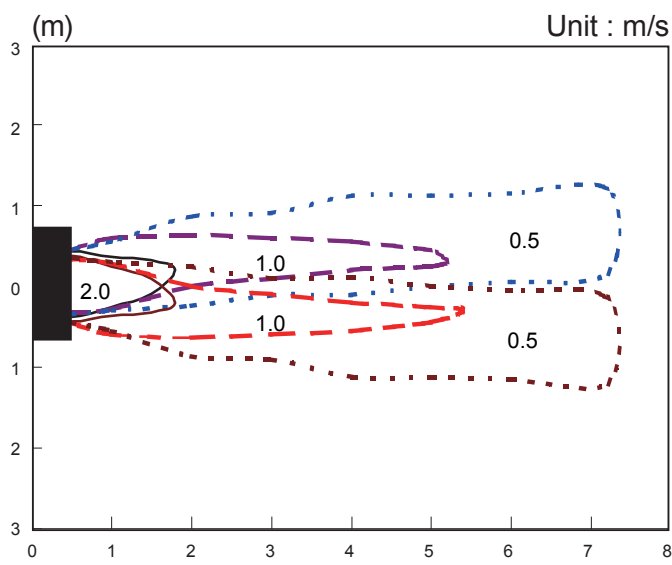
# 7. FAN PERFORMANCE AND CAPACITY

## 7-1. AIR VELOCITY DISTRIBUTION

■ MODEL: AS\*A09LK, AS\*A12LK



Note:  
Fan speed:High  
Operation mode:FAN  
Voltage:230V



## 7-2. AIR FLOW

### ■ MODEL: AS\*A09LK, AS\*A12LK

#### ● COOLING

Fan speed	Number of rotations (r.p.m)	Air flow	
HIGH	1400	710	m <sup>3</sup> /h
		197	l/s
		418	CFM
MED	1200	590	m <sup>3</sup> /h
		164	l/s
		347	CFM
LOW	920	430	m <sup>3</sup> /h
		119	l/s
		253	CFM
QUIET	620	260	m <sup>3</sup> /h
		72	l/s
		153	CFM

#### ● HEATING

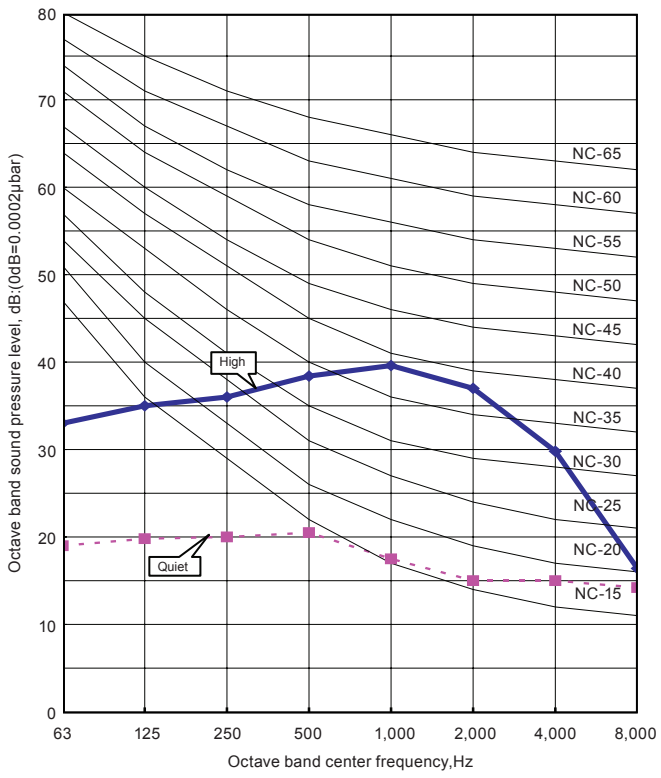
Fan speed	Number of rotations (r.p.m)	Air flow	
HIGH	1440	730	m <sup>3</sup> /h
		203	l/s
		430	CFM
MED	1200	590	m <sup>3</sup> /h
		164	l/s
		347	CFM
LOW	980	460	m <sup>3</sup> /h
		128	l/s
		271	CFM
QUIET	670	290	m <sup>3</sup> /h
		81	l/s
		171	CFM

# 8. OPERATION NOISE

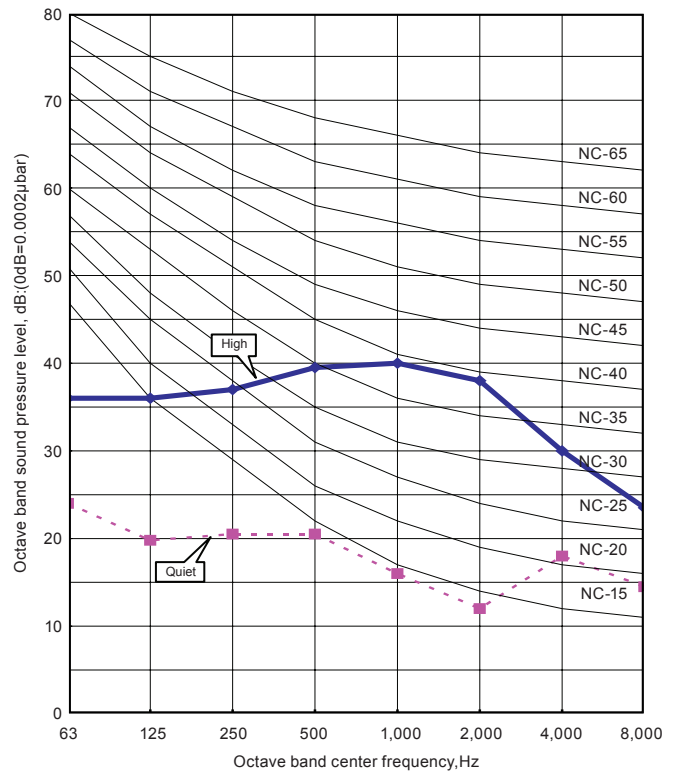
## 8-1. NOISE LEVEL CURVE

### MODEL: AS\*A09LK

#### COOLING

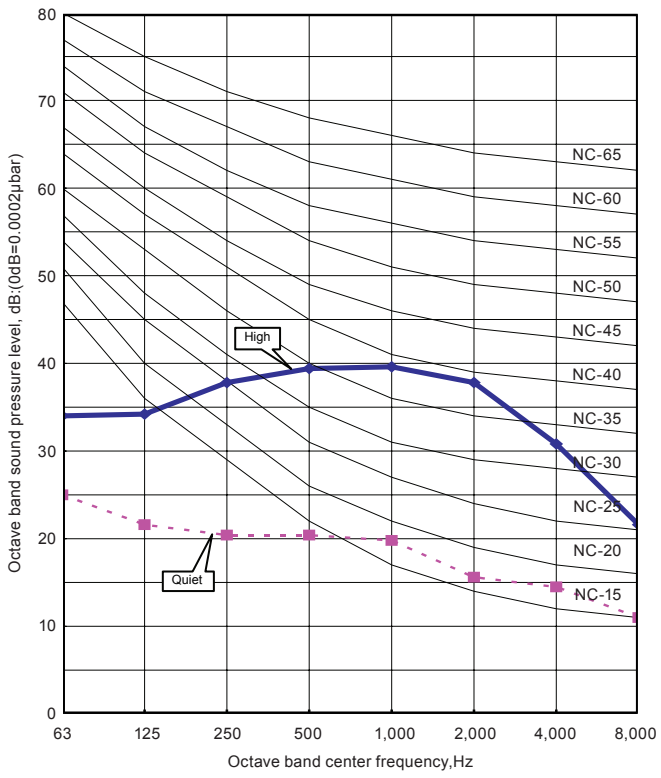


#### HEATING

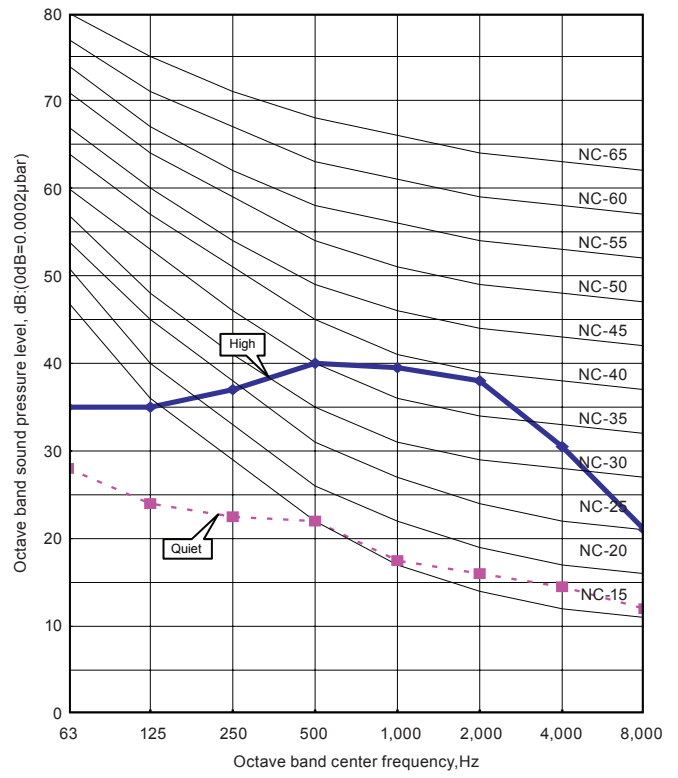


### MODEL: AS\*A12LK

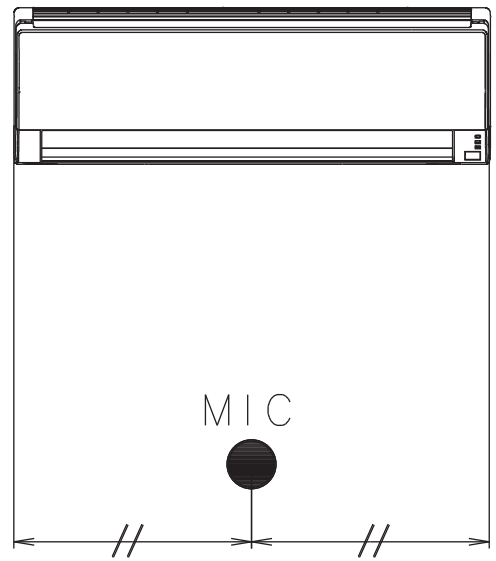
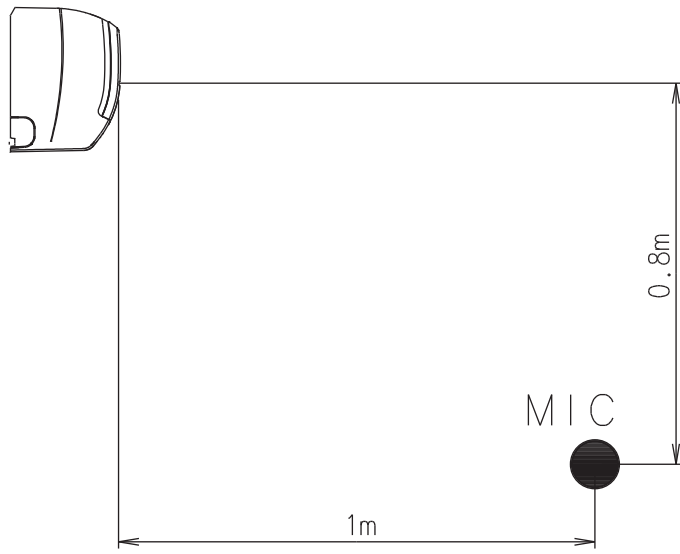
#### COOLING



#### HEATING



## 8-2. SOUND LEVEL CHECK POINT





# 9. ELECTRIC CHARACTERISTICS


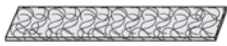
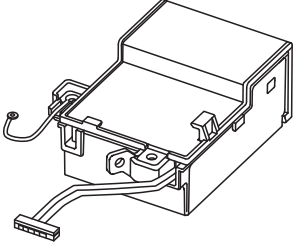
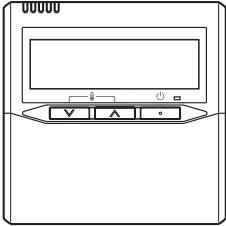
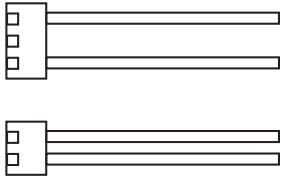
Model Name			AS*A09LKC	AS*A12LKC
Power Supply	Voltage	V	230 ~	
	Frequency	Hz	50	
Max Operating Current		A	5.5	9.0
*)Wiring Spec	Circuit breaker	A	15	
	Connection Cable	mm <sup>2</sup>	1.5-2.5	
	Limited wiring length	m	21	

\*) Wiring Spec  
Selected Sample  
(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

## 10. SAFETY DEVICES

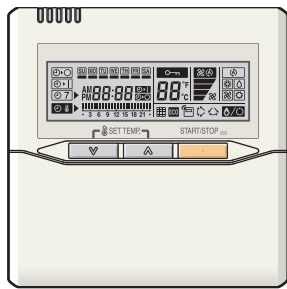
	Protection form	Model	
		AS*A09LKC	AS*A12LKC
Circuit protection	Current fuse (PCB)	3.15A 250V	
Terminal protection	Current (thermal) fuse	3A 250V 102°C	
Fan motor protection	Terminal protection program	MAX: 120±15°C	

# 11. OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Apple-catechin filter	UTR-FA16	Fine dust, invisible mold spores, and harmful microorganisms are absorbed onto the filter by <b>static electricity</b> , and further growth is inhibited and deactivated by the polyphenol ingredient extracted from apples.
	Ion deodorisation filter	UTR-FA16-2	The filter deodorizes by powerfully decomposing absorbed odors using the oxidizing and reducing effects of ions generated by the ultra fine-particle ceramic.
	Communication box kit	UTY-XCBXE	Use to connect with optional devices and air conditioner PC board.
	Wired remote controller	UTB-#UD	Unit control is performed by wired remote controller.
	External connect kit	UTY-XWZX	Use to connect with various peripheral devices and air conditioner PC board.

# 11-1. WIRED REMOTE CONTROLLER

## FEATURES



- \* Various timer setup (ON / OFF / WEEKLY) are possible.
- \* Equipped with weekly timer as standard function. (2 times Start / Stop per day for a week)
- \* When setting up a timer, operation mode and a temperature setup can be changed.
- \* When a failure occurs, the error code is displayed.
- \* Error indication.
- \* Economy operation are possible.
- \* Easy installation with a slim shape with no bulge in the back.

### Simple function setting

Setting of the air conditioner selection function is performed by remote controller.

### High performance and compact size

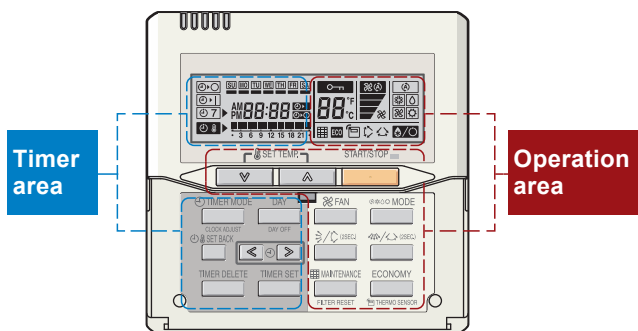
Three functions are combined in one unit.



### Built-in timers

Weekly timer	Setback timer
<p>Possible to set ON/OFF time to operate twice each day of the week.</p> <p>Easy-to-understand time bar display</p> <p>Setup screen example (Set to Wednesday: 8:00 to 20:00.)</p> <p>Screen after setup</p>	<p>Possible to set temperature for two time spans and for each day of the week.</p> <p>Setup screen example (Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)</p>
<b>At "Weekly timer" + "Set back timer" setup</b>	
<p style="text-align: center;">24°C → 28°C → 24°C</p>	

### Easy-to-understand operation

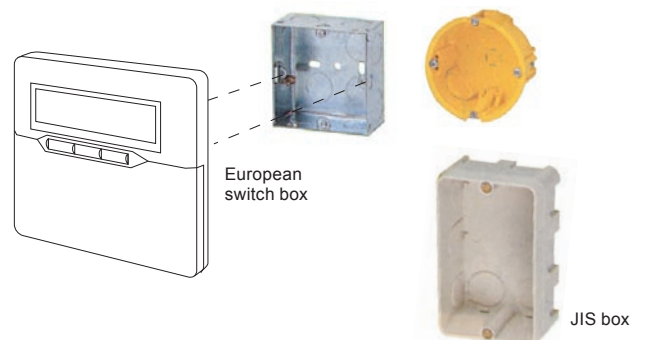


[Variable timer control]

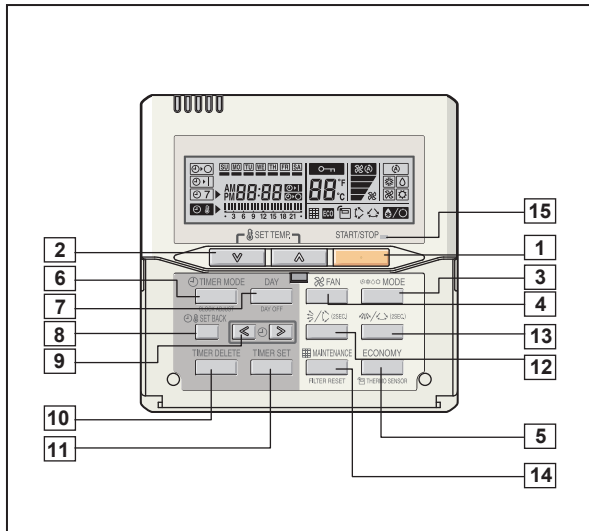
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

### Simple installation

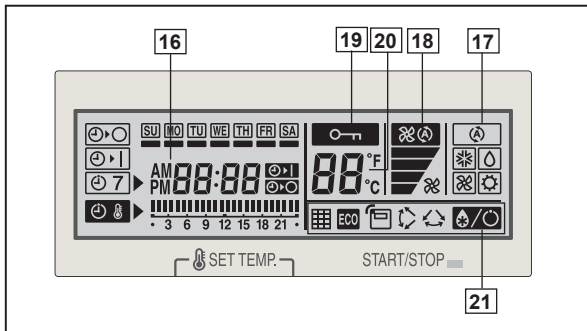
Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.



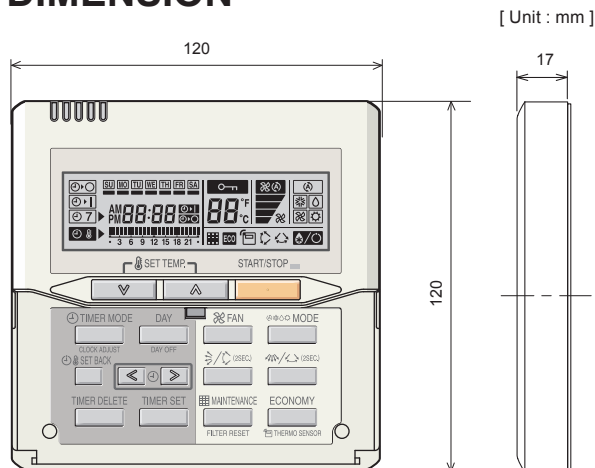
## FUNCTIONS



Display panel



## DIMENSION



- 1 START/STOP button**  
Pressed to start and stop operation.
- 2 Set temperature button**  
Selects the setting temperature.
- 3 Master control button**  
Selects the operating mode(AUTO, HEAT, FAN, COOL, DRY).
- 4 Fan control button**  
Selects the fan speed (AUTO, QUIET, LOW, MED, HIGH).
- 5 Economy button**  
Turns the economy efficient mode on and off.
- 6 Timer mode (CLOCK ADJUST) button**  
Selects the timer mode (OFF TIMER, ON TIMER, WEEKLY TIMER). Set the current time.
- 7 Day (DAY OFF) button**  
Temporarily cancels of one day timer.
- 8 Set back button**  
Pressed to select the set back timer.
- 9 Set time button**  
Pressed to set time.
- 10 Delete button**  
The schedule of a weekly timer is deleted.
- 11 Set button**  
Sets the date, hour, minute and on-off time.
- 12 Vertical airflow direction and swing button**  
Push for two seconds to change the swing mode.
- 13 Horizontal airflow direction and swing button**  
Push for two seconds to change the swing mode.
- 14 Filter button**
- 15 Operation lamp**  
Lights during operation and when the timer is on.
- 16 Timer and clock display**
- 17 Operation mode display**
- 18 Fan speed display**
- 19 Operation lock display**
- 20 Temperature display**
- 21 Function display**
  - Defrost display
  - Thermo sensor display
  - Economy display
  - Vertical swing display
  - Horizontal swing display
  - Filter display

Functions will be different due to type of indoor unit.  
For details, please see operation manual.

## SPECIFICATION

SIZE	(H x W x D mm)	120 x 120 x 17
WEIGHT	( g )	160
CABLE LENGTH	( m )	10
POWER	( V )	12

## 11-2. EXTERNAL CONNECT KIT

This kit allows to operate the air conditioner, such as stopping and starting, using an external device, and output the operation status of the air conditioner.

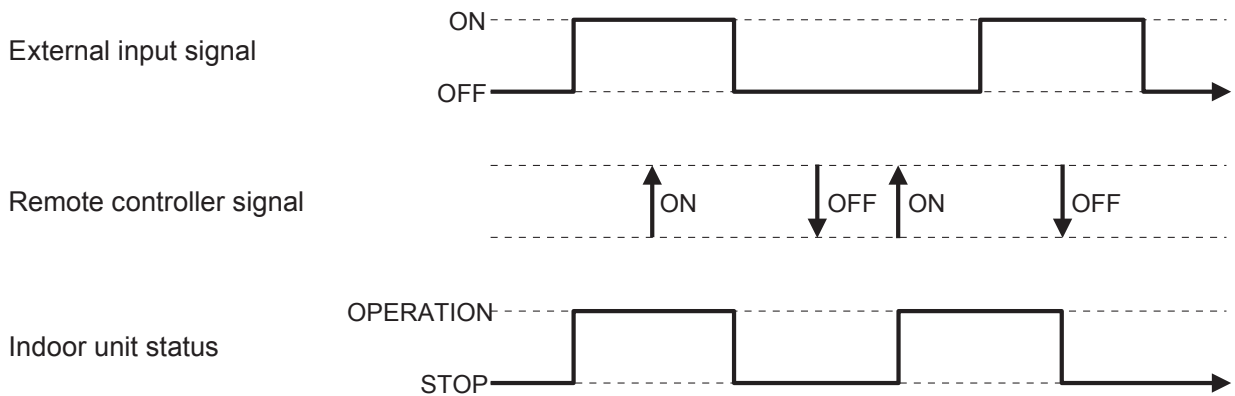
- Only operation and stop signals will be output.  
Use the remote control to check the operation mode, temperature, and airflow.  
Check the error information on the display area of the main unit.
- Operation mode, temperature, and airflow cannot be set by external input. Use the remote controller to set.
- If the air-conditioner is activated by external input, it will operate in the settings before stop.  
To change the settings, use the remote controller.

### 11-2-1. CONTROL INPUT SETTING

- You can control air conditioner ON / OFF operation by external input.

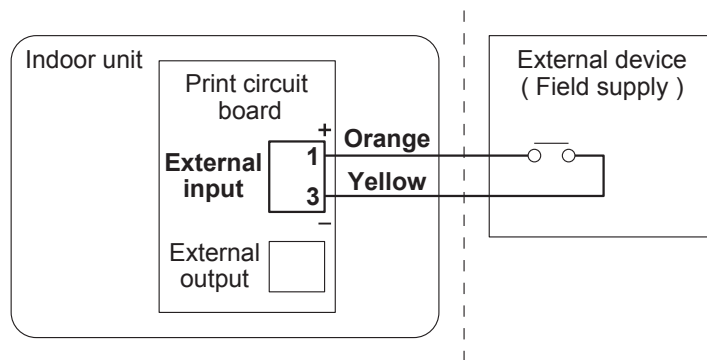
#### ● Signal specification

- No voltage ON/OFF continuous signal.
- Contact capacity : DC12V 10mA

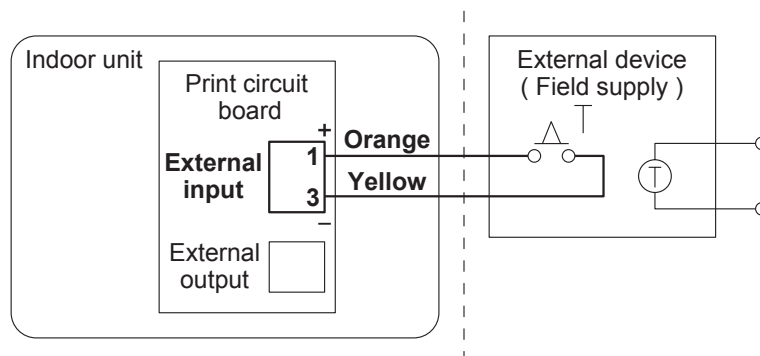


#### ● Installation example

- For remote operation



- For external timer operation

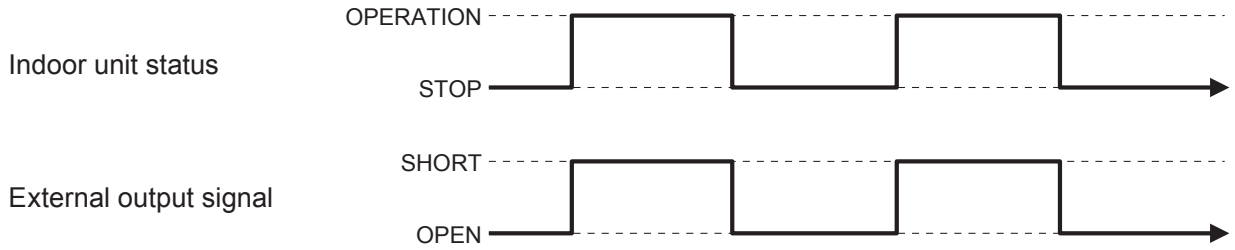


## 11-2-2. Operating output setting

- You can display air conditioner ON / OFF operation by external output.

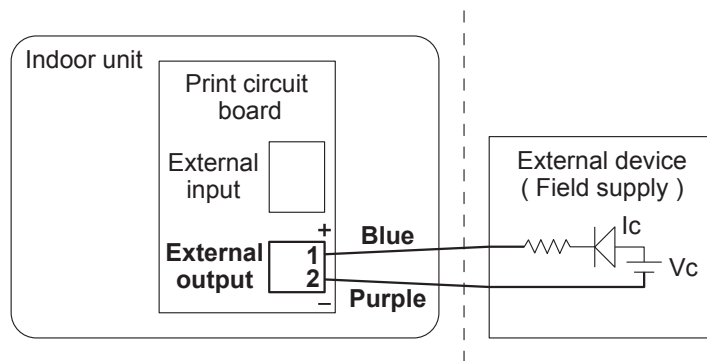
### ● Signal specification

- No voltage contact.
- Contact capacity : Max. DC24V 10mA to 1A or less



### ● Installation example

- For operation display



# 2.OUTDOOR UNIT

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**SINGLE TYPE :**

**AO\*R09LKC**

**AO\*R12LKC**



# CONTENTS

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## 2. OUTDOOR UNIT

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# 1. SPECIFICATIONS

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK

Type				INVERTER COOLING & HEATING			
Model name		AO*R09LKC		AO*R12LKC			
Power source		230V~ 50Hz					
Available voltage range		198-264V~ 50Hz					
Starting current		A		4.8			
Fan	Air flow rate	Cooling	m <sup>3</sup> /h		1,720		
		Heating	m <sup>3</sup> /h		1,830		
	Type x Q'ty		Propeller fan×1				
	Motor output		W		40		
Sound pressure level	Cooling		dB(A)		45		
	Heating		dB(A)		50		
Heat exchanger type	Dimensions (H x W x D)		mm		650 x 504 x 18.2		
	Fin pitch		mm		1.3		
	Rows x Stages		mm		1 x 24		
	Pipe type		Copper				
	Fin type		Aluminium				
Compressor	Type x Q'ty		Rotary×1				
	Motor output		W		500		
Refrigerant	Type		R410A				
	Charge		g		650		
Refrigerant oil	Type		POE(VG74)				
Enclosure	Material		Steel				
	Colour		BEIGE Approximate colour of MUNSELL 10YR 7.5/1.0				
Dimensions (H x W x D)	Net		mm		540 x 660 x 290		
	Gross		mm		611 x 797 x 401		
Weight	Net		kg(lb.)		22(48)		
	Gross		kg(lb.)		25(55)		
Connection pipe	Size	Liquid	mm			Φ6.35 (Φ 1/4 in.)	
		Gas	mm			Φ9.52 (Φ 3/8 in.)	
	Method		Flare				
	Max. length		m		20 (chargeless:15)		
	Max. height difference		m		15		
Operation range	Cooling		°C		18 to 43		
	Heating		°C		-15 to 24		

Note :  
 Specifications are based on the following conditions.  
 Cooling : Indoor temperature of 27 °CDB / 19 °CWB and outdoor temperature of 35 °CDB / 24 °CWB.  
 Heating : Indoor temperature of 20 °CDB / 15 °CWB and outdoor temperature of 7 °CDB / 6 °CWB.  
 Pipe length : 5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)  
 The maximum current is the maximum value when the operated within the operation range(temperature).

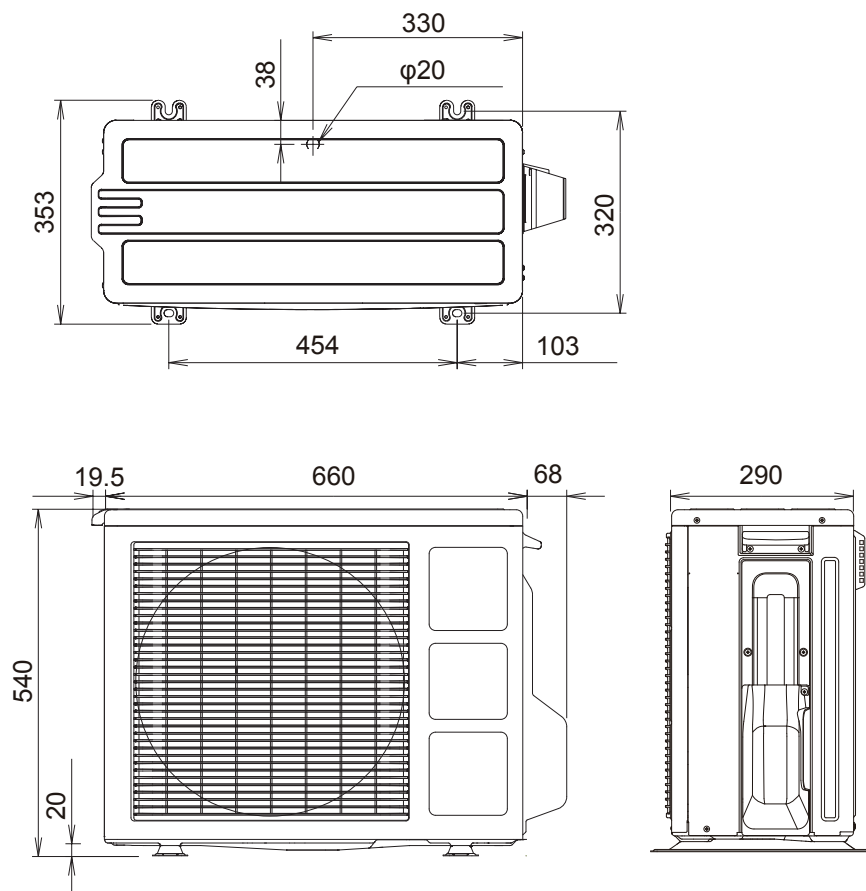
## 2. DIMENSIONS

### ■ MODEL: AO\*R09LK, AO\*R12LK

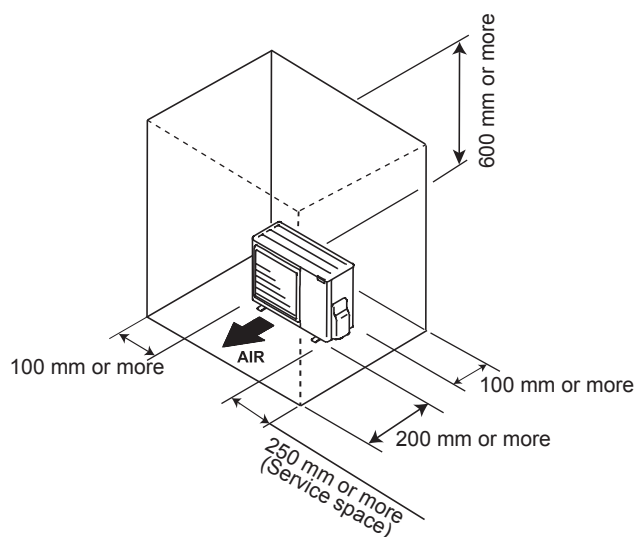
(Unit : mm)

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK



### ■ INSTALLATION PLACE



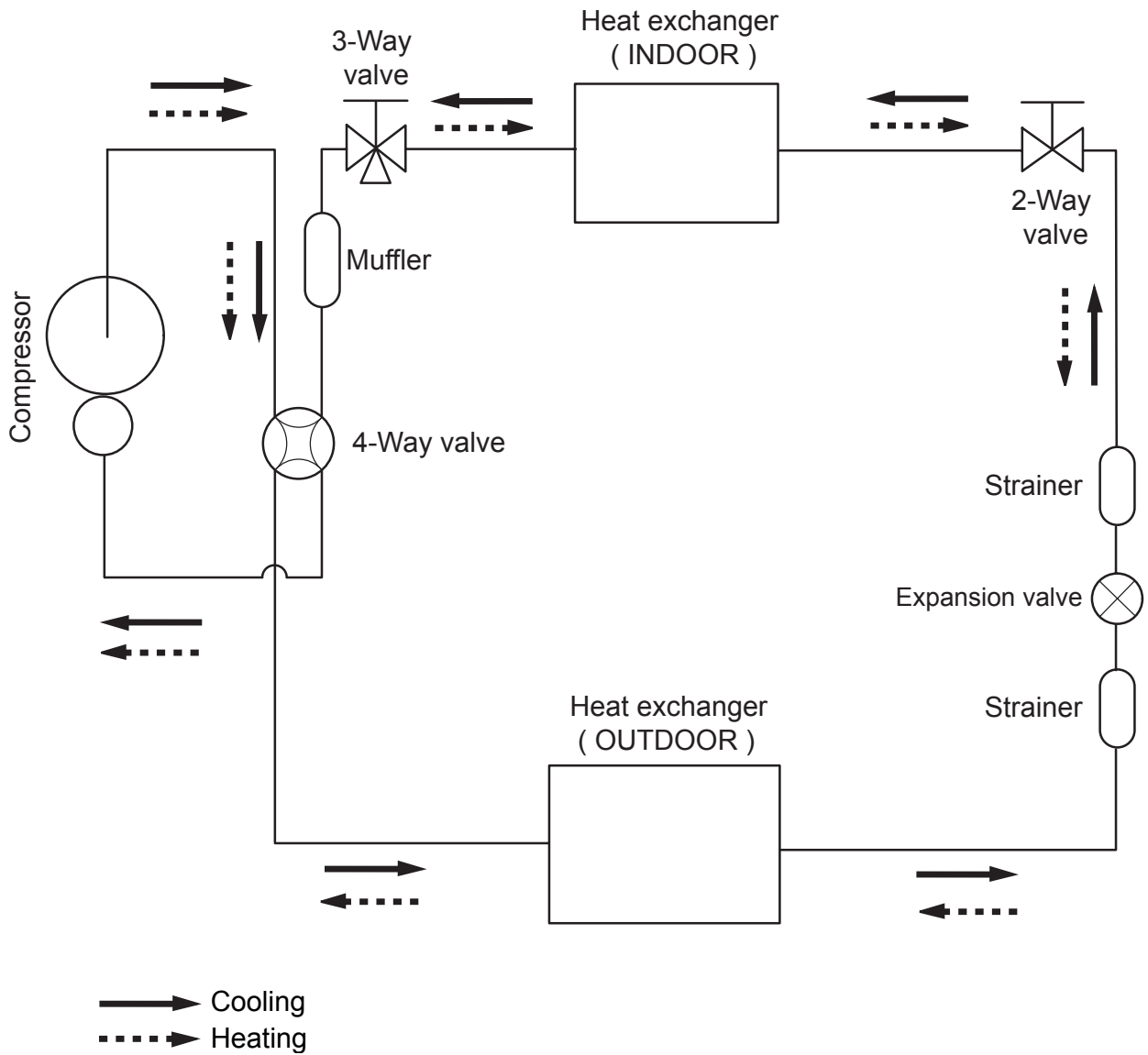
If the space is larger than that is stated, the condition will be the same as that are no obstacles.

### 3. REFRIGERANT CIRCUIT

■ MODEL: AO\*R09LK, AO\*R12LK

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK



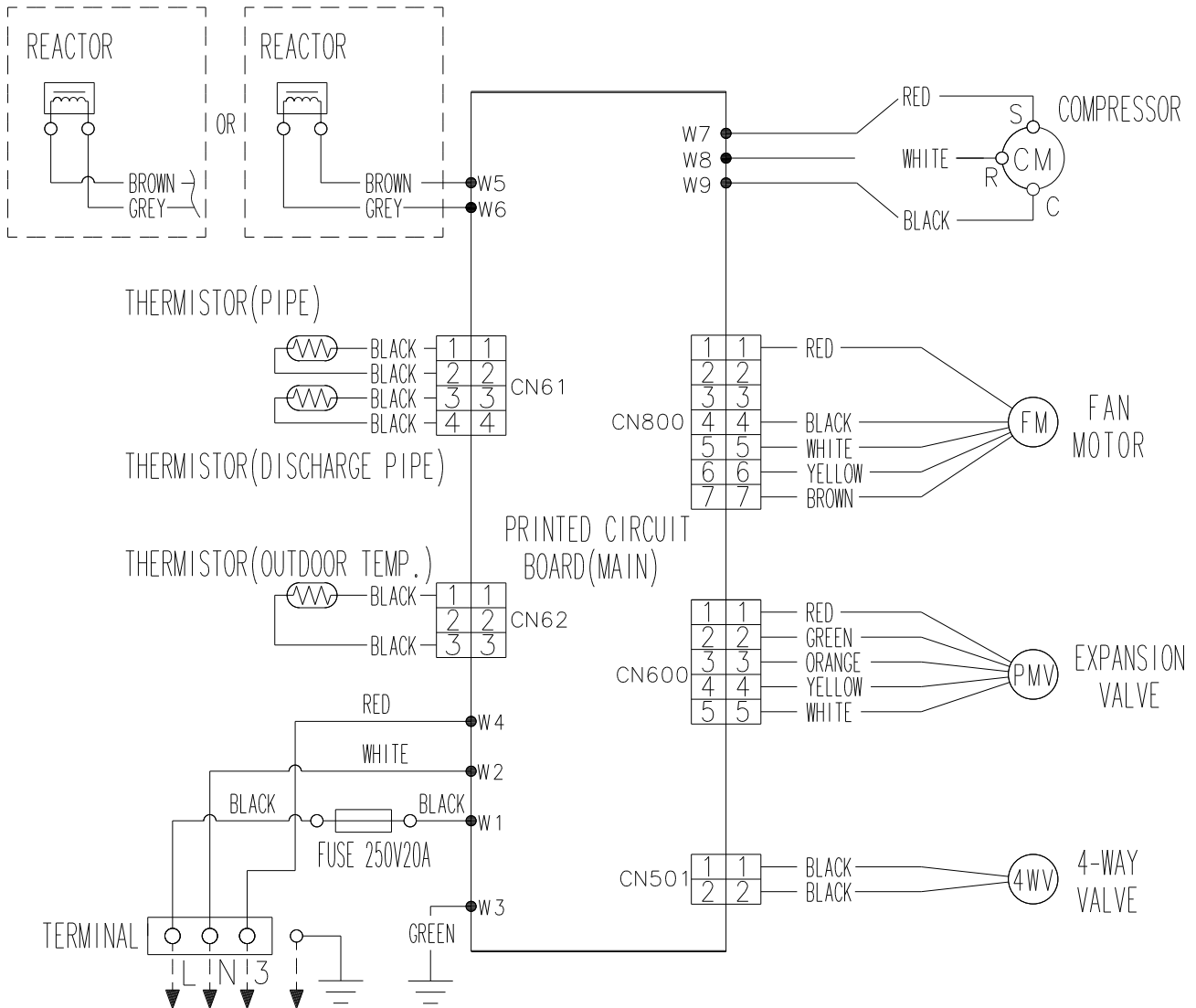
Refrigerant pipe diameter  
Liquid : 1/4" (6.35 mm)  
Gas : 3/8" (9.52 mm)

# 4. WIRING DIAGRAMS

## MODEL: AO\*R09LK

OUTDOOR UNIT  
AO\*R09-12LK

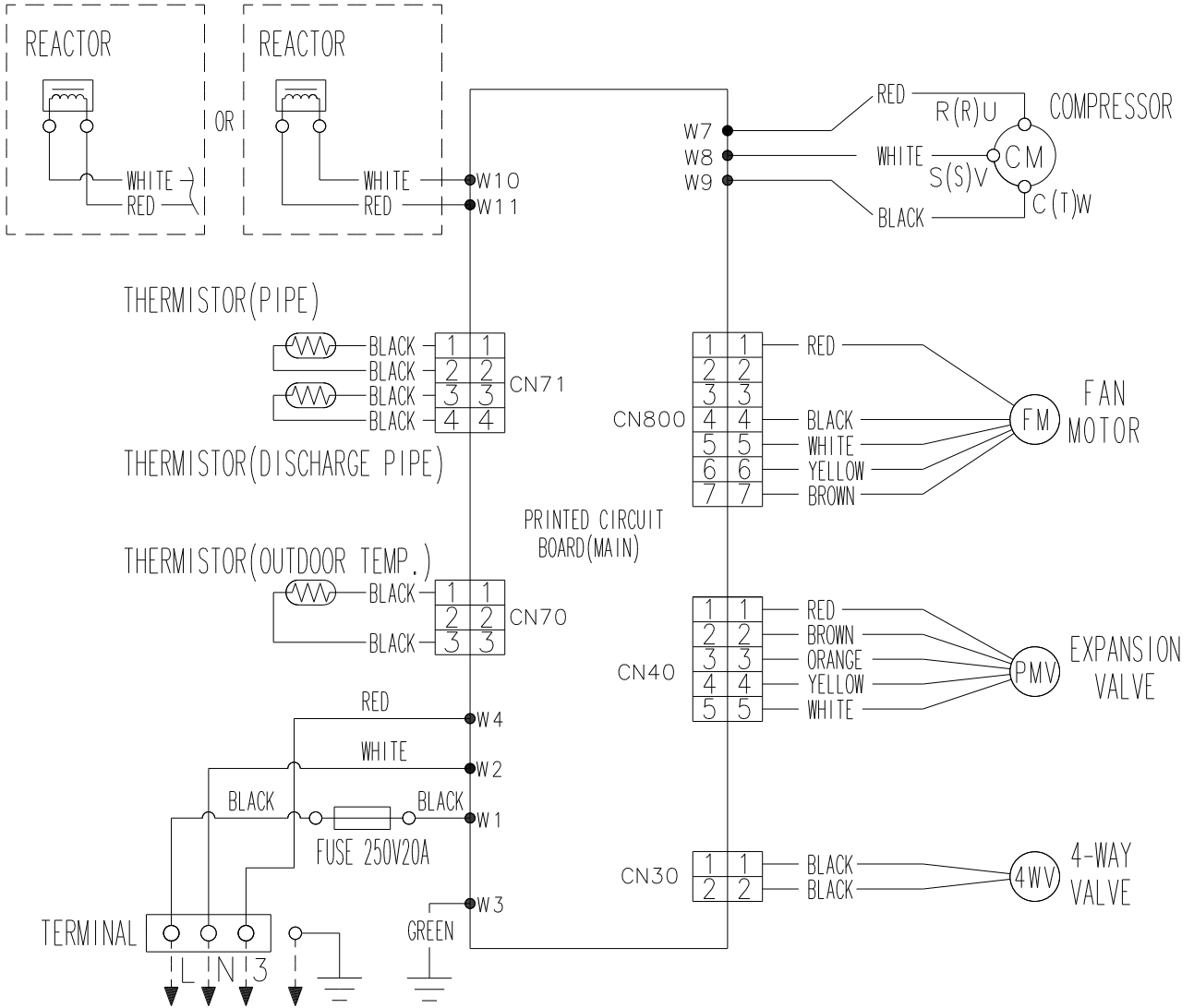
OUTDOOR UNIT  
AO\*R09-12LK



# MODEL: AO\*R12LK

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK



# 5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

## MODEL: AO\*R09LK

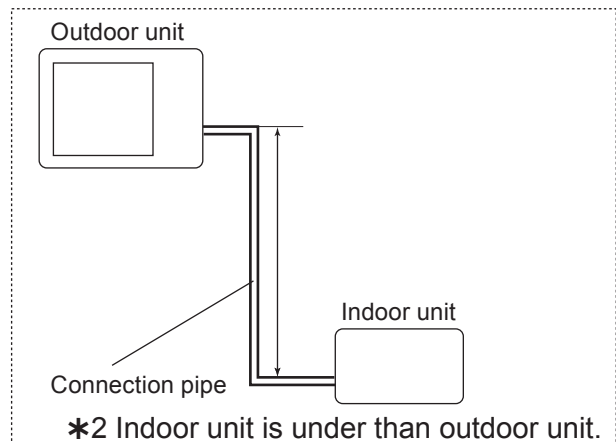
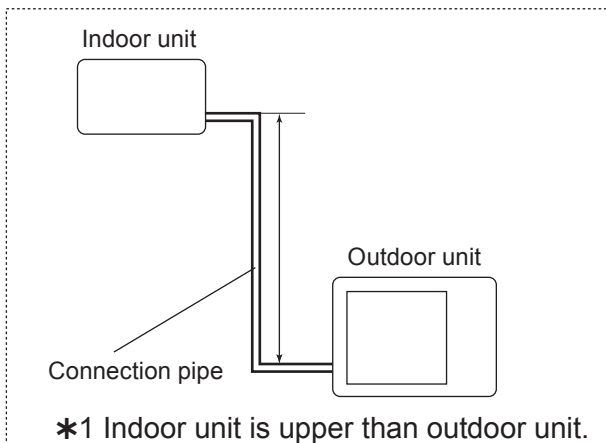
OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	*1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.872	0.910
		10	-	-	0.961	0.886	0.925
		7.5	-	0.979	0.965	0.890	0.929
		5	0.992	0.983	0.969	0.893	0.933
		0	1.000	0.991	0.976	0.901	0.940
	*2 Indoor unit is under than outdoor unit	-5	1.000	0.991	0.976	0.901	0.940
		-7.5	-	0.991	0.976	0.901	0.940
		-10	-	-	0.976	0.901	0.940
-15		-	-	-	0.901	0.940	

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	*1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.832	0.822
		10	-	-	0.917	0.832	0.822
		7.5	-	0.961	0.917	0.832	0.822
		5	1.000	0.961	0.917	0.832	0.822
		0	1.000	0.961	0.917	0.832	0.822
	*2 Indoor unit is under than outdoor unit	-5	0.995	0.956	0.912	0.828	0.818
		-7.5	-	0.954	0.910	0.826	0.816
		-10	-	-	0.908	0.824	0.814
-15		-	-	-	0.815	0.805	

Height difference H



# MODEL: AO\*R12LK

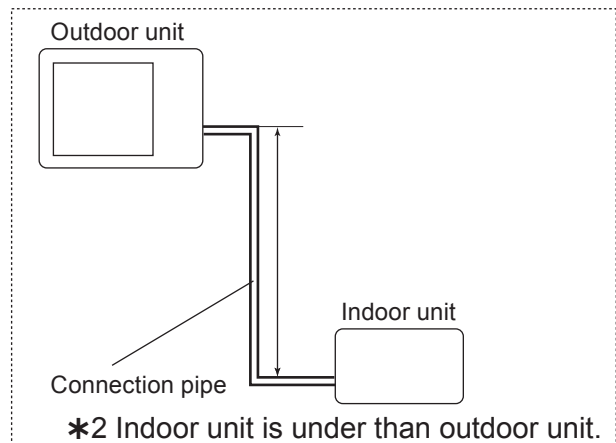
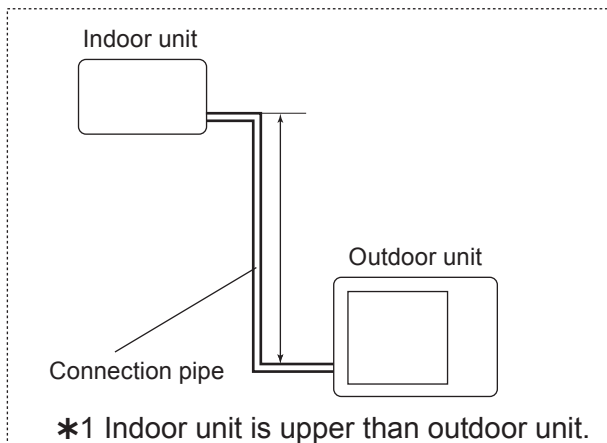
OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK

COOLING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	*1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.858	0.868
		10	-	-	0.929	0.872	0.882
		7.5	-	0.960	0.933	0.876	0.885
		5	0.992	0.964	0.937	0.879	0.889
		0	1.000	0.972	0.944	0.887	0.896
	*2 Indoor unit is under than outdoor unit	-5	1.000	0.972	0.944	0.887	0.896
		-7.5	-	0.972	0.944	0.887	0.896
		-10	-	-	0.944	0.887	0.896
-15		-	-	-	0.887	0.896	

HEATING			Pipe length (m)				
			5	7.5	10	15	20
Height difference H (m)	*1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.896	0.879
		10	-	-	0.968	0.896	0.879
		7.5	-	0.994	0.968	0.896	0.879
		5	1.000	0.994	0.968	0.896	0.879
		0	1.000	0.994	0.968	0.896	0.879
	*2 Indoor unit is under than outdoor unit	-5	0.995	0.989	0.963	0.891	0.875
		-7.5	-	0.987	0.961	0.889	0.873
		-10	-	-	0.959	0.887	0.871
-15		-	-	-	0.878	0.862	

## Height difference H





## 6. ADDITIONAL CHARGE CALCULATION

### ■ MODEL: AO\*R09LK

Refrigerant type		R410A
Refrigerant amount	g	650

#### ● REFRIGERANT CHARGE

Pipe length	m	~15	20	20g/m
Additional charge	g	0 (Charge less)	+100	

### ■ MODEL: AO\*R12LK

Refrigerant type		R410A
Refrigerant amount	g	800

#### ● REFRIGERANT CHARGE

Pipe length	m	~15	20	20g/m
Additional charge	g	0 (Charge less)	+100	

## 7. AIR FLOW

### ■ MODEL: AO\*R09LK

#### ● COOLING

Number of rotations (r.p.m)	Air flow	
730	1720	m <sup>3</sup> /h
	478	l/s
	1012	CFM

#### ● HEATING

Number of rotations (r.p.m)	Air flow	
650	1510	m <sup>3</sup> /h
	419	l/s
	889	CFM

### ■ MODEL: AO\*R12LK

#### ● COOLING

Number of rotations (r.p.m)	Air flow	
860	1830	m <sup>3</sup> /h
	508	l/s
	1077	CFM

#### ● HEATING

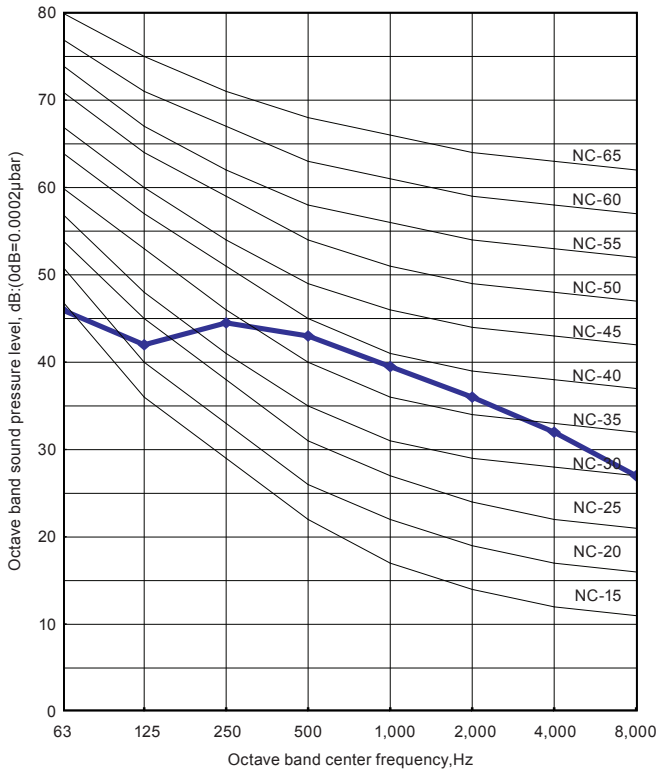
Number of rotations (r.p.m)	Air flow	
760	1600	m <sup>3</sup> /h
	444	l/s
	942	CFM

# 8. OPERATION NOISE

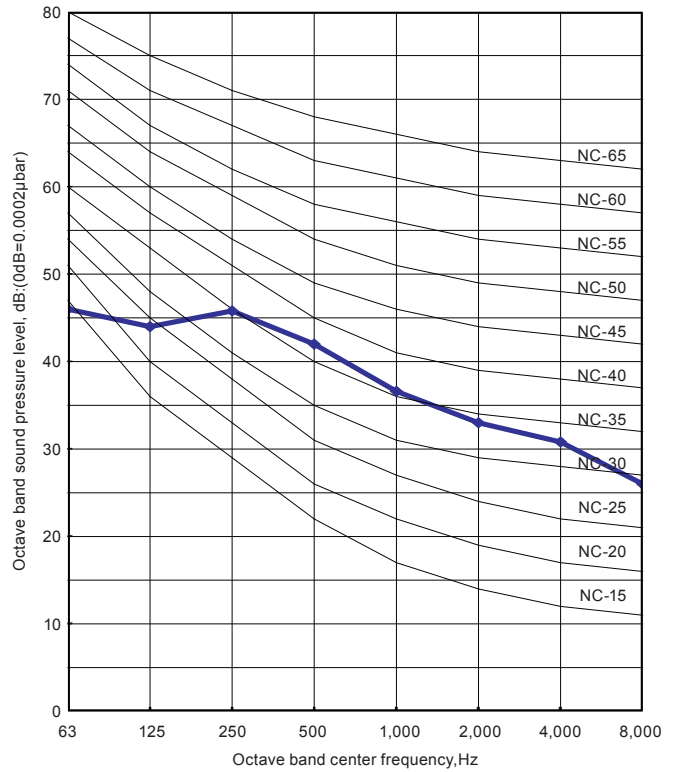
## 8-1. NOISE LEVEL CURVE

### MODEL: AO\*R09LK

#### COOLING

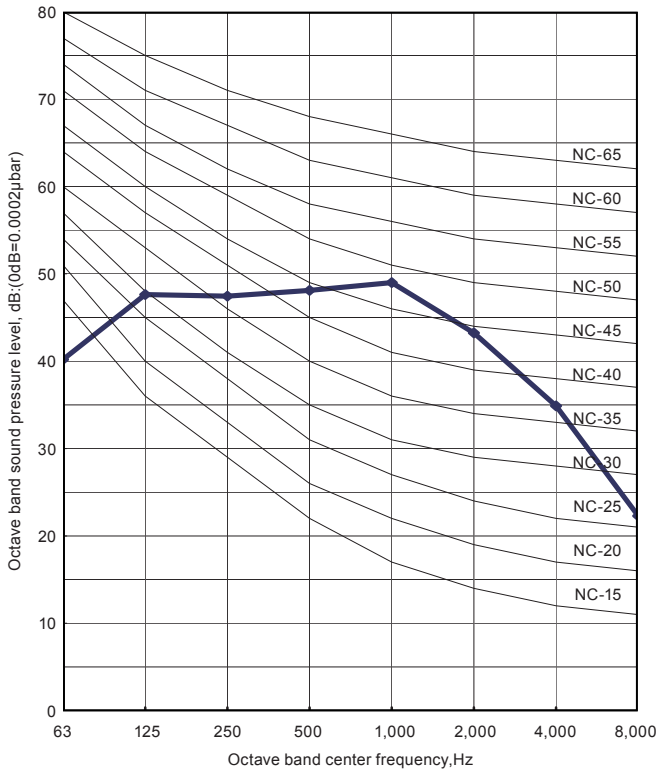


#### HEATING

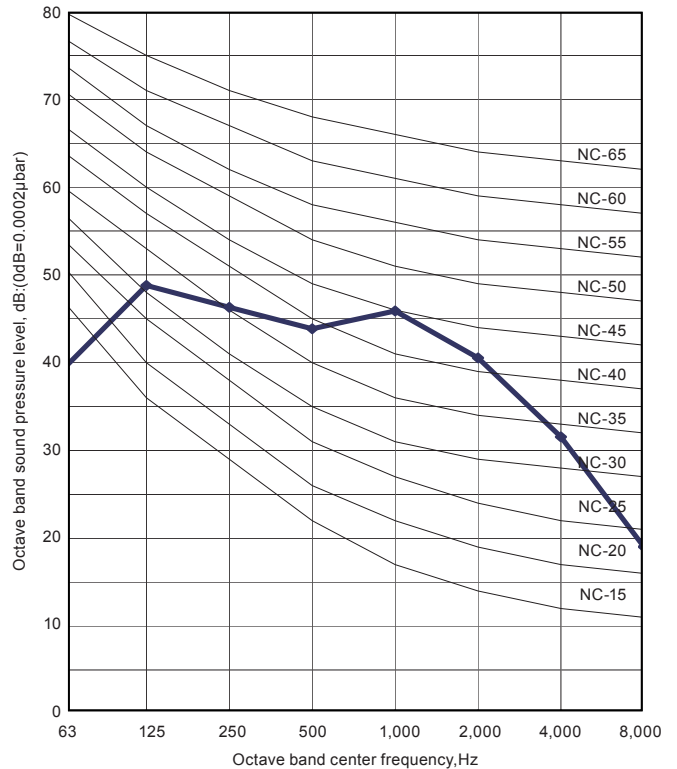


### MODEL: AO\*R12LK

#### COOLING



#### HEATING

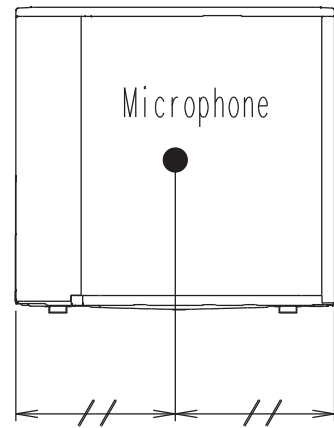
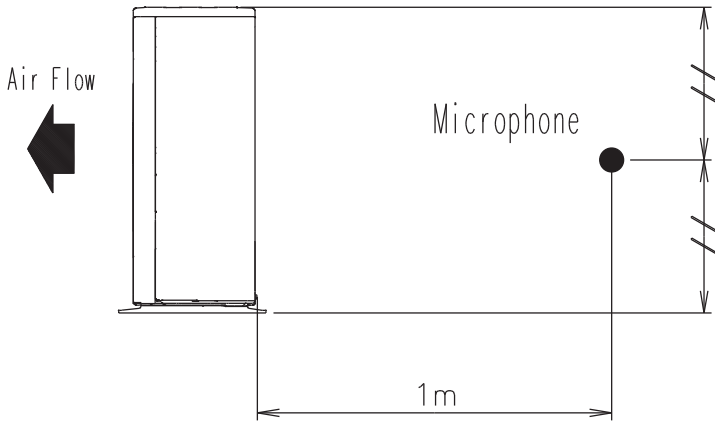


OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK

# 8-2. SOUND LEVEL CHECK POINT

OUTDOOR UNIT  
AO\*R09-12LK



OUTDOOR UNIT  
AO\*R09-12LK

# 9. ELECTRIC CHARACTERISTICS

Model Name			AO*R09LKC	AO*R12LKC
Power Supply	Voltage	V	230 ~	
	Frequency	Hz	50	
Starting Current		A	4.8	5.2

\*) Wiring Spec  
Selected Sample  
(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK

# 10. SAFETY DEVICES

	Protection form	Model	
		AO*R09LKC	AO*R12LKC
Circuit protection	Current fuse (Near the terminal)	20A 250V	
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	3.15A 250V	
Fan motor protection	Terminal protection program	OFF: $100^{+15}_{-10}$ °C ON: $95^{+15}_{-10}$ °C	
Compressor protection	Terminal protection program (DISCHARGE TEMP)	OFF: 110°C ON: After 7 minutes	

OUTDOOR UNIT  
AO\*R09-12LK

OUTDOOR UNIT  
AO\*R09-12LK