

# Airwell

*Just feel well*



## **SERVICE MANUAL**

**FLOOR & CEILING**

**R32**

*English Manual*

Low temperature application



**IMPORTANT NOTE:**

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

20.AW.FWDB.18-24.R32.SM.EN.03.06





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# Part 1. Reference

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## 1. Model Names of Indoor/Outdoor Units

### 1.1 Indoor Units

Model name	Code	Dimension (W×H×D) (mm)	Net/Gross weight(kg)	Power supply
AW-FWDB018-N91	7SP012274	1245×680×240	34/40	220~240V-1Ph-50Hz
AW-FWDB024-N91	7SP012275	1245×680×240	35/41	220~240V-1Ph-50Hz

### 1.2 Outdoor Units

Model name	Code	Dimension (W×H×D) (mm)	Net/Gross weight(kg)	Power supply
AW-YMDB018-H91	7SP063092	925×700×366	42/45	220~240V-1Ph-50Hz
AW-YMDB024-H91	7SP063093	958×843×392	52/62	220~240V-1Ph-50Hz

## 2. External Appearance

### 2.1 Indoor unit

Floor & Ceiling



### 2.2 Outdoor unit



## 3. Features

- 3.1 Wide operation range, -15 for cooling and -15 for heating.
- 3.2 Excellent in efficiency, SCOP higher than 3.8, meet the EU's new energy efficiency standards.
- 3.3 High quality coils  
The coil is constructed of advanced inner grooved copper tube and aluminum fins.
- 3.4 Low operation sound level: Well-known stable and quiet running DC fan motor.
- 3.5 Well-known compressor, Mitsubishi.
- 3.6 Universal design: convenient for market stock and spare parts stock.
- 3.7 R32 is environment friendly refrigerant.
- 3.8 CE certification, ROHS certification, EUROVENT certification

### 3 Features

1. Flexible installation, ceiling suspended and floor standing.



2. Adopting centrifugal fans, higher ESP and longer air flow distance.



3. Two way auto-swing function, built-in two louver step motors, vertical and horizontal air-flow adjustment.



4. Washable air filter





- 5. High efficiency DC fan motor, low noise and more comfortable.
- 6. New upper and lower buckle type wheel case, the upper plastic wheel case can be removed alone, which is convenient adjust the wheel motor.



- 7. Adopting waterproof plastic film on water collector, avoiding water leakage.



- 8. Self-diagnostic function and multi protection; Auto-restart function.



- 9. Standard wired controller



## 2 Specifications

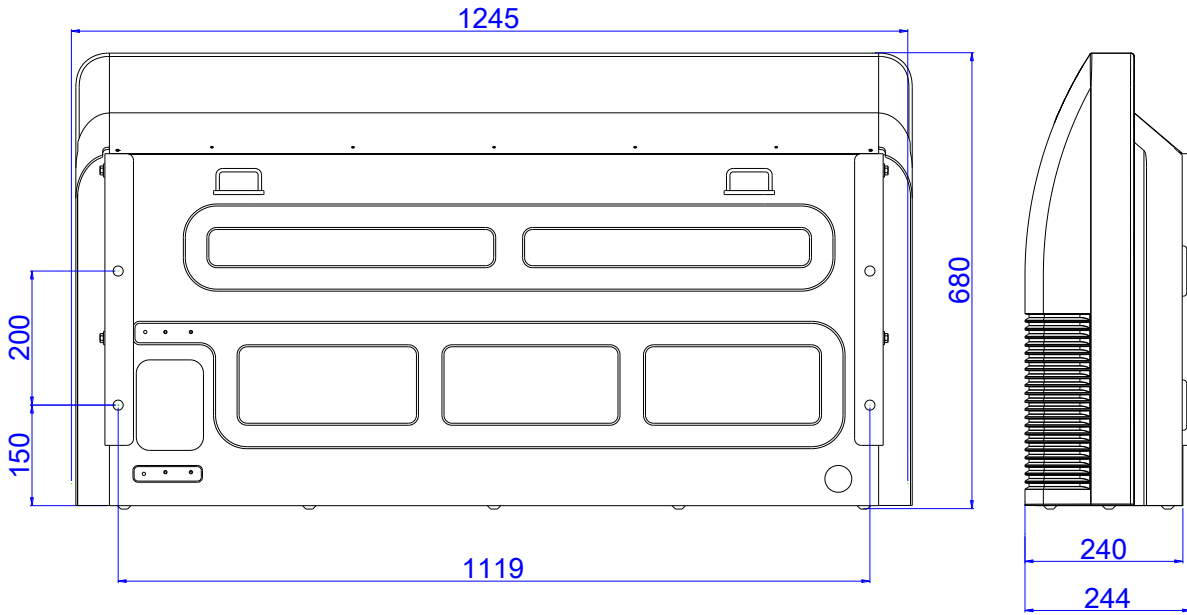
Model			AW-FWDB018-N91	AW-FWDB024-N91
Indoor power supply		V/Ph/Hz	220~240/1/50	220~240/1/50
Cooling	Capacity	KW	2.0-5.3-5.6	3.5-7.0-8.0
	Power input	W	420-1640-2100	600-2200-3000
	Current input	A	2.1-10.1	2.5-9.8-13
	EER	W/W	3.23	3.18
	SEER	W/W	6.1	6.1
Heating	Capacity	KW	2.5-5.9-6.0	4.5-7.7-8.5
	Input	W	500-1530-1940	680-1980-2600
	Rated current	A	2.5-9.2	3.2-11
	COP	W/W	3.87	3.89
	SCOP	W/W	4.0	4.0
Energy rate		Cooling	A++	A++
Energy rate		Heating	A+	A+
Max. power input		W	2400	3200
Max. current input		A	11.4	14
Indoor fan motor	Model		DR-310-120LD-8	DR-310-120LD-8
	Brand		Panasonic	Panasonic
	Power output	W	120	120
	Speed	r/min	1400	1400
	Insulation class		E	E
Indoor coil	Number of rows		2	3
	Tube pitch(a)xrow pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	Φ7	Φ7
			inner grooved	inner grooved
	Coil length x height x width	mm	1000x252x26.74	1000x252x40.11
Number of circuits		2	4	
Indoor air flow (High speed)		m <sup>3</sup> /h	900/800/650	1150/1000/850
Indoor noise level	power level	dB(A)	46~58	53~60
	pressure level		36/42/47	43/46/49
Indoor unit	Dimension (W*H*D)	Body (mm)	1245×680×240	1245×680×240
	Packing (W*H*D)	Body (mm)	1325×770×325	1325×770×325
	Net/Gross weight	Body (Kg)	34/40	35/41
Max pressure		MPa	4.2	4.2
Refrigerant type			R32	R32
Refrigerant piping	Liquid side/Gas side	mm	Φ6.35/Φ12.7	Φ9.52/Φ15.88
Drainage pipe		mm	DN25	DN25
Standard controller			Wired controller	
Operation temp		°C	12~32	12~32
Ambient temp	cooling	°C	-15~50	-15~50
	heating	°C	-15~30	-15~30

### Notes:

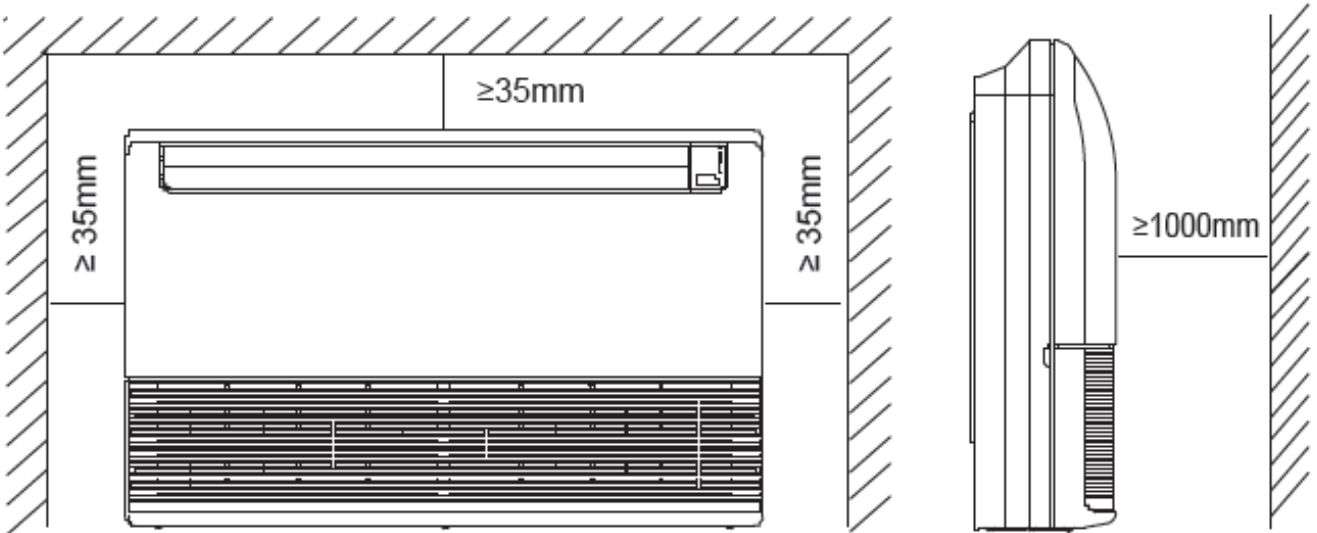
- Nominal cooling capacities are based on the following conditions:  
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 5m (horizontal)
- Nominal heating capacities are based on the following conditions:  
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 5m (horizontal)
- Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

### 3 Dimensions

#### AW-FWDB018-N91 & AW-FWDB024-N91



### 4 Service Space



# 5 Wiring Diagrams

## 5.1 AW-FWDB018-N91 & AW-FWDB024-N91

NOTE:

<input checked="" type="checkbox"/> ON	That DIP to ON
<input checked="" type="checkbox"/> ON	That DIP to Digital
<b>FACTORY DEFAULT</b>	
SW2	
<input checked="" type="checkbox"/> ON	<input checked="" type="checkbox"/>
<input type="checkbox"/> OFF	<input type="checkbox"/>

Indoor models Selectbits	Indoor models
SW2 NO.12	Floor & Ceiling Unit

<b>FAN SPEED CHOICE</b>	
SW2 NO.3	FAN SPEED
<input checked="" type="checkbox"/> ON	Normal speed
<input type="checkbox"/> OFF	High speed

<b>Receive and display light board</b>	
SW2 NO.4	LED
<input checked="" type="checkbox"/> ON	Digital tube
<input type="checkbox"/> OFF	

SW2 NO.5	power-down memory
<input checked="" type="checkbox"/> ON	No power-down memory
<input type="checkbox"/> OFF	

SW2 NO.6	Heating temperature compensation
<input checked="" type="checkbox"/> ON	6j æ
<input type="checkbox"/> OFF	2j æ

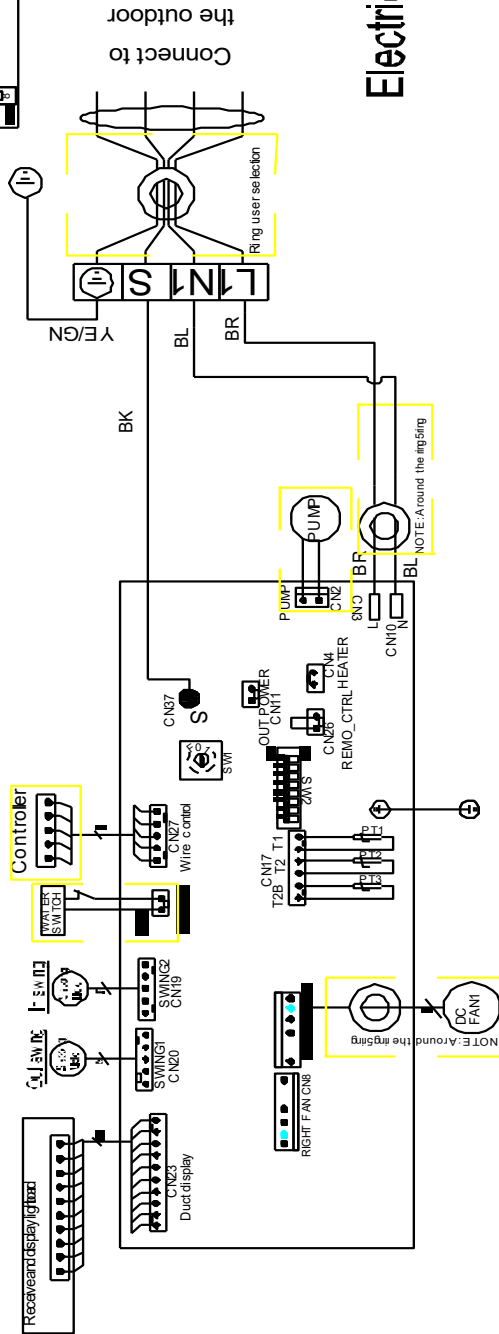
SW2 NO.7	Reserved
<input checked="" type="checkbox"/> ON	Reserved
<input type="checkbox"/> OFF	Reserved

SW2 NO.8	Temperature sensor for Electr. control panel
<input checked="" type="checkbox"/> ON	Wire controller
<input type="checkbox"/> OFF	

Note: If there is no water pump, CN18 need to short answer. The power (HP) of indoor units can be set through DIP switch SW' (16-bit disc DIP) on the indoor control panel before delivery, the detailed information is as follows:

HP	Reserved	0.8	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	Reserved	
MODEL	Reserved	21	26	35	53	70	80	90	105	125	140	150	160	180	Reserved	
POWER	Reserved	7K	9K	12K	18K	24K	27K	30K	36K	42K	48K	52K	58K	60K	Reserved	
SW1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F



Electrical wiring diagram

80203790072 V.3

## 6. Capacity Table

### Cooling

#### 6.1 AW-FWDB018-N91

MODEL		AW-FWDB018-N91						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
12°C D	Total capacity kW	4,48	4,45	4,42	4,39	4,37	4,35	4,32
10°C W	Input kW.	1,19	1,2	1,22	1,25	1,26	1,28	1,32
13°C D	Total capacity kW	4,63	4,59	4,55	4,5	4,47	4,44	4,41
11°C W	Input kW.	1,25	1,26	1,28	1,3	1,32	1,35	1,36
14°C D	Total capacity kW	4,78	4,75	4,72	4,68	4,65	4,61	4,57
11.5°C W	Input kW.	1,32	1,34	1,35	1,37	1,4	1,42	1,45
15°C D	Total capacity kW	4,89	4,86	4,81	4,76	4,72	4,67	4,62
12°C W	Input kW.	1,37	1,38	1,4	1,42	1,45	1,47	1,5
16°C D	Total capacity kW	4,99	4,95	4,92	4,88	4,83	4,81	4,77
12.7°C W	Input kW.	1,4	1,41	1,42	1,44	1,48	1,52	1,55
17°C D	Total capacity kW	5,1	5,06	5,02	4,98	4,94	4,91	4,88
13°C W	Input kW.	1,42	1,44	1,45	1,47	1,52	1,55	1,59
18°C D	Total capacity kW	5,15	5,12	5,08	5,05	5	4,97	4,94
14°C W	Input kW.	1,44	1,46	1,48	1,5	1,54	1,6	1,63
21°C D	Total capacity Kw	5,38	5,35	5,31	5,27	5,23	5,19	5,16
15°C W	Input kW.	1,48	1,49	1,51	1,53	1,58	1,64	1,68
24°C D	Total capacity kW	5,55	5,52	5,47	5,44	5,39	5,35	5,31
17°C W	Input kW.	1,5	1,51	1,53	1,55	1,61	1,66	1,7
27°C D	Total capacity kW	5,72	5,68	5,64	5,6	5,56	5,52	5,47
19°C W	Input kW.	1,52	1,53	1,55	1,57	1,63	1,68	1,72
29°C D	Total capacity kW	5,79	5,75	5,71	5,66	5,62	5,58	5,54
21°C W	Input kW.	1,54	1,56	1,58	1,6	1,65	1,7	1,75
32°C D	Total capacity kW	5,9	5,86	5,82	5,78	5,73	5,68	5,64
23°C W	Input kW.	1,55	1,56	1,58	1,6	1,66	1,71	1,77

#### 6.2 AW-FWDB024-N91

MODEL		FWDB024-N91						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
12°C D	Total capacity kW	6,29	6,24	6,2	6,15	6,11	6,06	6,01
10°C W	Input kW.	1,69	1,71	1,72	1,75	1,79	1,84	1,9
13°C D	Total capacity kW	6,43	6,38	6,33	6,27	6,22	6,17	6,12
11°C W	Input kW.	1,73	1,74	1,75	1,79	1,82	1,86	1,93
14°C D	Total capacity kW	6,59	6,53	6,49	6,45	6,41	6,37	6,33
11.5°C W	Input kW.	1,75	1,77	1,8	1,83	1,87	1,92	1,98
15°C D	Total capacity kW	6,77	6,72	6,57	6,52	6,5	6,43	6,4
12°C W	Input kW.	1,77	1,79	1,83	1,88	1,92	1,97	2,03
16°C D	Total capacity kW	6,87	6,82	6,76	6,7	6,65	6,58	6,54
12.7°C W	Input kW.	1,85	1,86	1,89	1,94	1,99	2,04	2,1
17°C D	Total capacity kW	6,99	6,93	6,87	6,8	6,76	6,71	6,66
13°C W	Input kW.	1,92	1,93	1,95	1,98	2,05	2,1	2,15
18°C D	Total capacity kW	7,05	6,99	6,94	6,87	6,81	6,75	6,72
14°C W	Input kW.	1,95	1,97	1,99	2,03	2,1	2,17	2,22
21°C D	Total capacity Kw	7,21	7,17	7,11	7,06	7,01	6,96	6,9
15°C W	Input kW.	1,99	2	2,02	2,05	2,12	2,2	2,25
24°C D	Total capacity kW	7,44	7,4	7,35	7,28	7,23	7,17	7,13
17°C W	Input kW.	2	2,02	2,05	2,07	2,15	2,22	2,28
27°C D	Total capacity kW	7,66	7,62	7,56	7,4	7,34	7,29	7,23
19°C W	Input kW.	2,03	2,05	2,07	2,1	2,18	2,25	2,32
29°C D	Total capacity kW	7,76	7,71	7,65	7,6	7,54	7,47	7,43
21°C W	Input kW.	2,06	2,08	2,11	2,14	2,21	2,28	2,36
32°C D	Total capacity kW	7,91	7,85	7,8	7,74	7,67	7,62	7,57
23°C W	Input kW.	2,07	2,09	2,12	2,14	2,22	2,29	2,37

All the data are measured at the wired controller setting temperature of 12°C.

## Heating

### 6.3 AW-FWDB018-N91

MODEL		AW-FWDB018-N91						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	6.05	6.00	5.98	5.81	5.55	5.47	4.86
	Input kW	1.66	1.51	1.47	1.45	1.42	1.41	1.34
18°C	Capacity kW	5.99	5.96	5.94	5.77	5.52	5.43	4.90
	Input kW	1.70	1.54	1.50	1.47	1.44	1.43	1.36
20°C	Capacity kW	5.96	5.92	5.90	5.73	5.48	5.40	4.86
	Input kW	1.72	1.56	1.53	1.51	1.47	1.46	1.40
22°C	Capacity kW	5.93	5.88	5.86	5.69	5.44	5.36	4.83
	Input kW	1.75	1.60	1.55	1.53	1.50	1.49	1.42
27°C	Capacity kW	5.80	5.84	5.82	5.65	5.40	5.32	4.79
	Input kW	1.78	1.62	1.57	1.55	1.53	1.52	1.44

### 6.4 AW-FWDB024-N91

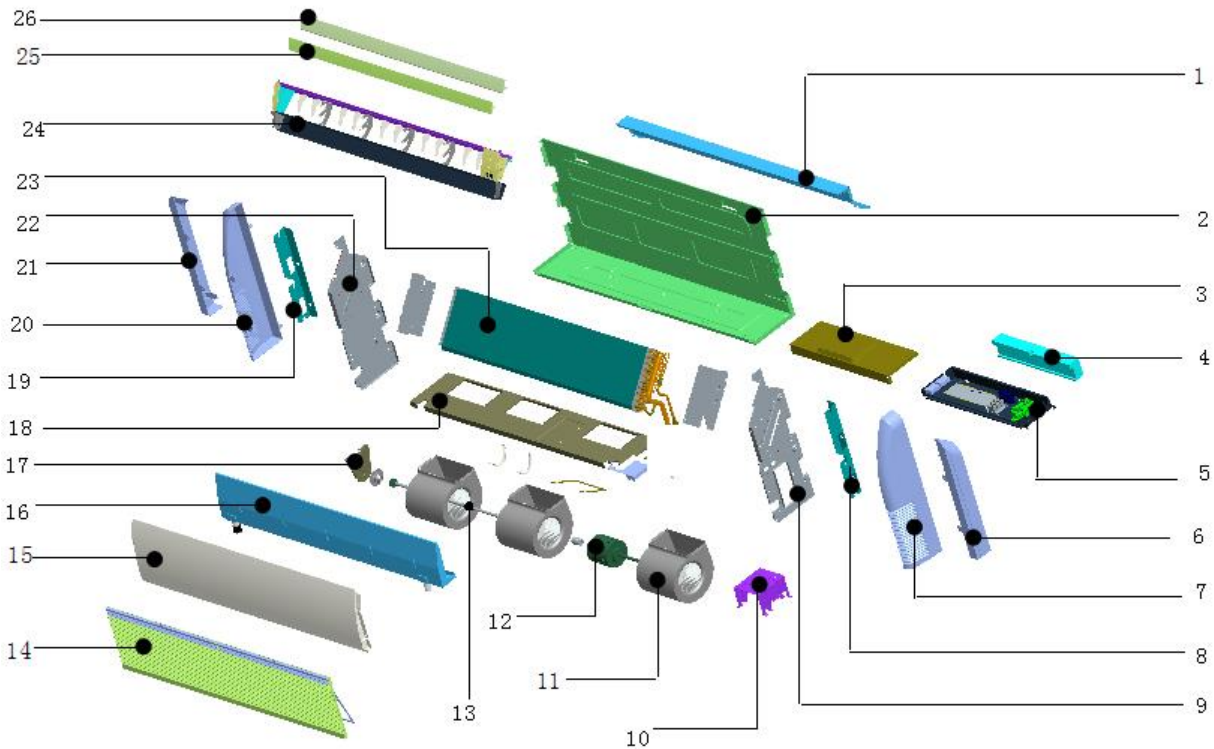
MODEL		AW-FWDB024-N91						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	7.95	7.83	7.81	7.58	7.25	7.14	6.43
	Input kW	2.08	1.97	1.92	1.89	1.85	1.84	1.75
18°C	Capacity kW	7.90	7.78	7.75	7.53	7.20	7.09	6.39
	Input kW	2.11	2.01	1.95	1.92	1.88	1.87	1.78
20°C	Capacity kW	7.86	7.73	7.70	7.47	7.15	7.04	6.35
	Input kW	2.17	2.04	1.98	1.96	1.92	1.90	1.81
22°C	Capacity kW	7.82	7.67	7.65	7.42	7.10	6.99	6.30
	Input kW	2.21	2.08	2.02	1.99	1.95	1.94	1.84
27°C	Capacity kW	7.73	7.62	7.59	7.37	7.05	6.94	6.26
	Input kW	2.26	2.12	2.06	2.03	1.99	1.97	1.88

## 7 Electric Characteristics

Model	Indoor Units				Indoor Fan Motor
	Hz	Voltage	Min.	Max.	kW
AW-FWDB018-N91	50	220-240V	198	254	0.12
AW-FWDB024-N91	50	220-240V	198	254	0.12





## 8. Exploded View

### 8.1 AW-FWDB018-N91 & AW-FWDB024-N91



No.	Part Name	No.	Part Name
1	Rear cover with cotton	17	Supporting board for motor
2	Chassis assembly	18	Weld assembly for intermediate transverse girder
3	Electric box cover	19	Right mounting plate of evaporator
4	E-part box mat	20	Right cover
5	Indoor PCB assembly	21	Right seal plate
5.1	E-part box	22	Right separating board
5.2	Indoor PCB	23	Evaporator component
5.3	Relay	23.1	Left mounting plate of evaporator
5.4	plastic base of Electric control board	23.2	Shunt capillary assembly
5.5	Terminal	23.3	Air inlet header pipe assembly of evaporator
6	Left seal plate	23.4	Evaporator assembly
7	Left cover	24	Air-out frame component
8	Left hoisting pate	24.1	Fixing board assembly for air-out frame
9	Left separating board I	24.2	Display film
10	Motor holder	24.3	Display lamp panel
11	Wheel volute	24.4	Vertical step motor
12	Indoor fan motor	24.5	Horizontal step motor
13	Connecting shaft	24.6	End bearing of louver
14	Air inlet grille	24.7	Intermediate bearing of louver
15	Top Cover assembly	24.8	Guard vane
16	Weld assembly of Water drain pan	25	Upper horizontal louver
16.1	Water outlet rubber cover	26	Down horizontal louver

## 9 Accessories

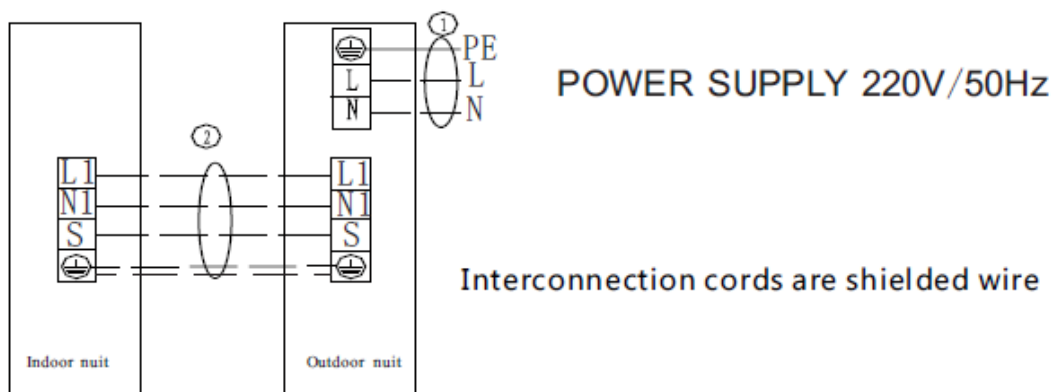
	Name	Shape	Quantity
Installation fittings	1.Hanging arm		2
	2. Wired controller		1
Controller	3. Mounting screw (ST2.9×10-C-H)		2
	4. Installation & operation instruction manual		1
Others			



## 10 The Specification of Power

Model		AW-FWDB018-N91	AW-FWDB024-N91
Indoor power supply	V/Ph/Hz	220~240/1/50	
Outdoor power supply	V/Ph/Hz	220~240/1/50	
Power Supply Method		From outdoor unit	
Outdoor unit Power Supply Wire		3×12AWG	3×12AWG
Indoor unit Power Supply Wire		4×14AWG	4×14AWG
Signal wiring		4×2.5	4×2.5

## 11 Field Wiring



## 12 Troubleshooting

### 12.1 Fault codes table

**Table 1: Wired controller**

Display	Error description	Display	Error description
E0	Phase protection	F0	(reserve)
E1	Communication error between outdoor unit and indoor unit	F1	(reserve)
E2	Indoor room temperature (T1) sensor error	F2	(reserve)
E3	Indoor coil middle temperature (T2) sensor error	F3	Outdoor unit current error cannot recover Display P3 error for 3 times within 60 minutes
E4	Indoor coil outlet temperature (T2B) sensor error	F4	Outdoor temperature (T4) sensor error
E5	Outdoor unit error	F5	(reserve)
E6	Zero speed protection	F6	Outdoor unit condenser outlet (T3) sensor error
E7	EERPOM error	F7	Secondary side current protection
E8	Indoor fan motor speed lose protection	F8	Heat T2 temp. protection
E9	Wired controller communication error	F9	Outdoor unit voltage error
EE	Water level alarm error	EF	EF(Reserve)
P0	(reserve)	H0	Communication error between outdoor unit mainboard and driver board
P1	(reserve)	H1	(reserve)
P2	(reserve)	H2	(reserve)
P3	Primary/secondary overcurrent protection	H3	(reserve)
P4	Exhaust temperature over-high protection	H4	3 times of P6 error within 30 minutes
P5	Outdoor unit condenser outlet (T3) temperature over-high protection	H5	3 times of P2 error within 30 minutes
P6	Compressor driver error or IPM protection	H6	3 times of P4 error within 100 minutes
P7	(reserve)	H7	(reserve)
P8	(reserve)	H8	(reserve)
P9	Outdoor unit DC fan motor error	H9	2 times of P9 error within 10 minutes

**Table 2: LED display**

Error description	Display content
Indoor unit waiting for address assignment	LED timer and running flash together
(reserve)	LED timer, running, protection, defrost flash together
Communication error between outdoor unit and indoor unit	LED timer flash quickly
Fan motor stall protection	LED timer flash slowly
Indoor unit temperature sensor error	LED run flash
Water level alarm	LED protection flash
(reserve)	LED defrost flash
Outdoor unit error	LED protection flash slowly
EEPROM error	LED defrost flash slowly

Quickly flash is 2.5Hz, slowly flash is 0.5Hz.

Error type	Running	Defrost	Timer	Protection
Outdoor unit condenser outlet (T3) sensor error	OFF	OFF	ON	ON
Outdoor temperature (T4) sensor error	OFF	OFF	Flashing	ON
AC overvoltage/under voltage protection	OFF	Flashing	OFF	ON
P6 protection	OFF	Flashing	ON	ON
Compressor protection	OFF	ON	OFF	ON
Compressor top temperature (T5) over-high protection	OFF	ON	ON	ON
Outdoor DC fan motor error	OFF	ON	Flashing	ON
Over current protection	ON	ON	OFF	ON

## 12.2 Spot check

Spot check NO.	Content	Spot check NO.	Content
1	Indoor unit capacity	8	Outdoor unit condenser outlet (T3) temperature
2	Indoor unit capacity demand	9	Outdoor temperature (T4) temperature
3	Indoor demand after T4 amendment	10	Compressor top temperature (T5) temperature (maximum 99°C)
4	Indoor demand after T2 amendment	11	Opening of EXV
5	Indoor room temperature (T1) temperature	12	Running frequency of compressor
6	Indoor coil middle temperature (T2)	13	Primary voltage/4
7	Indoor coil outlet temperature (T2B)		

# Part 3 Outdoor Units

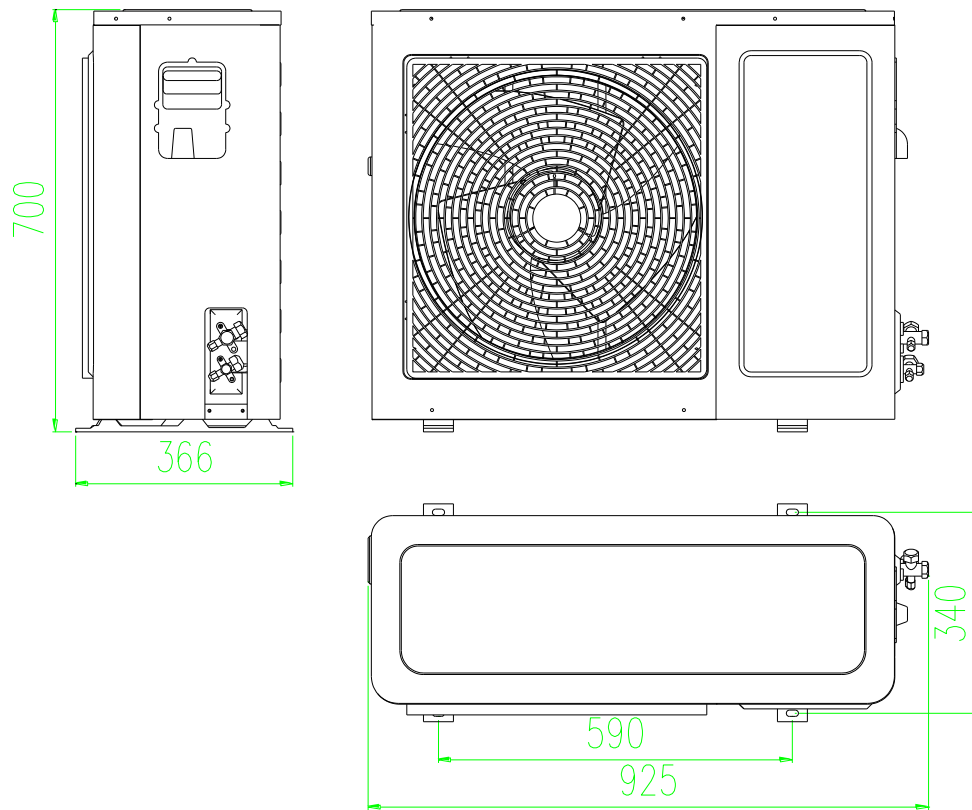
1.Specification .....	20
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# 1 Specification

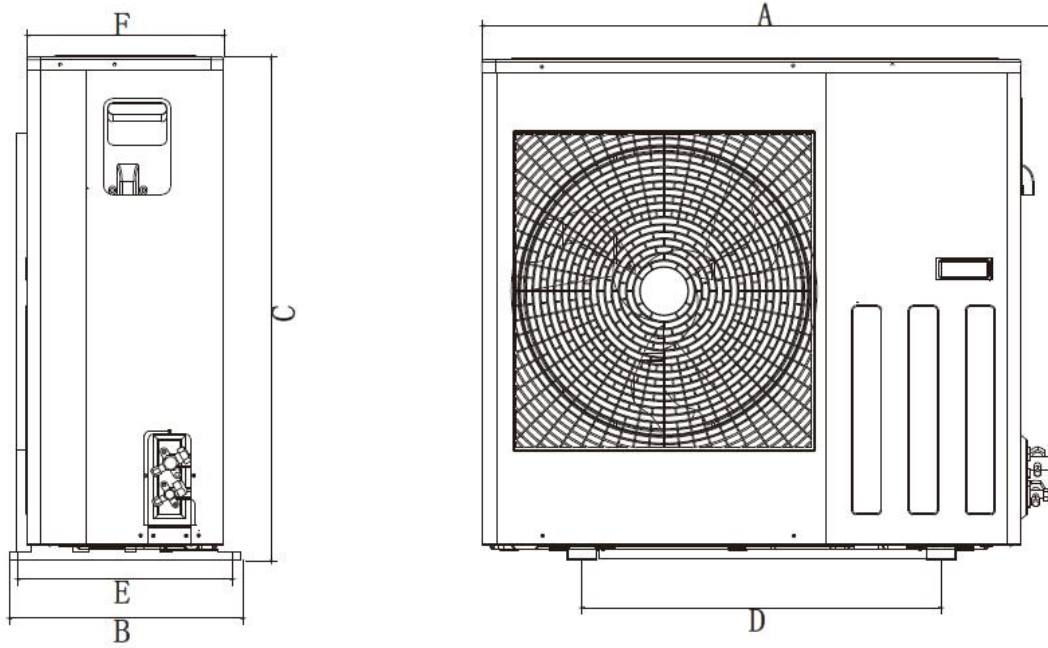
Model		AW-YMDB018-H91	AW-YMDB024-H91	
Outdoor power supply		V/Ph/Hz	220~240/1/50	220~240/1/50
Cooling	Capacity	KW	2.0-5.3-5.6	3.5-7.0-8.0
	Power input	W	340-1520-2020	540-2080-2940
	Current input	A	1.7-9.7	2.2-12.7
Heating	Capacity	KW	3.0-5.9-6.0	4.5-7.7-8.5
	Power input	W	420-1410-1860	560-1860-2540
	Current input	A	2.1-8.8	5.2-10.7
Compressor	Model		SVB140	SVB200
	Type		DC/Twin-rotary	DC/Twin-rotary
	Brand		Mitsubishi	Mitsubishi
	Frequency range	Hz	12-120	12-120
	Capacity	W	4360	6940
	Input	W	1300	2150
	Current (RLA)	A	4.4	8.7
Refrigerant oil	ml	350	520	
Outdoor fan motor	Model		DR-310-72-8	DR-310-72-8
	Brand		Panasonic	Panasonic
	Power output	W	72	72
	Speed	r/min	800	800
	Insulation class		E	E
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	22×19.05	25×21.65
	Fin spacing	mm	1.6	1.8
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	7.94	9.52
			inner grooved	inner grooved
	Coil length x height x width	mm	754×660×38.1	850×800×43.3
Number of circuits		5	4	
Outdoor air flow (High speed)		m <sup>3</sup> /h	3000	3500
Outdoor noise level dB(A)	Power Level		63	67
	Pressure Level		52	54
Outdoor unit	Dimension(W*H*D)	mm	925×700×366	958×843×392
	Packing(W*H*D)	mm	990×770×410	1025×880×430
	Net/Gross weight	kg	42/45	52/62
Refrigerant type/quantity		g	R32/1300	R32/1700
Throttle part			EXV	EXV
Design pressure		MPa	4.5/1.6	4.5/1.6
Max pressure		MPa	4.5	4.5
Connection wire	Power wiring	mm <sup>2</sup>	3×2.5	3×2.5
	Signal wiring	mm <sup>2</sup>	4×2.5	4×2.5
Refrigerant piping	Liquid side/Gas side	mm	φ6.35/φ12.7	Φ9.52/Φ15.88
	Max. pipe length	m	15	20
	Max. high drop	m	8	10
Ambient temp	cooling	°C	-15~50	-15~50
	heating	°C	-15~30	-15~30

## 2 Dimensions

### 2.1 AW-YMDB018-H91

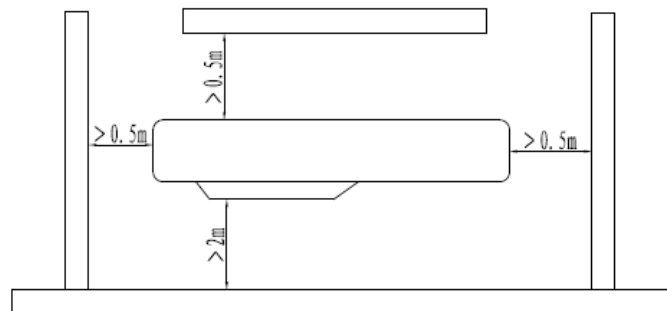


## 2.2 AW-YMDB024-H91



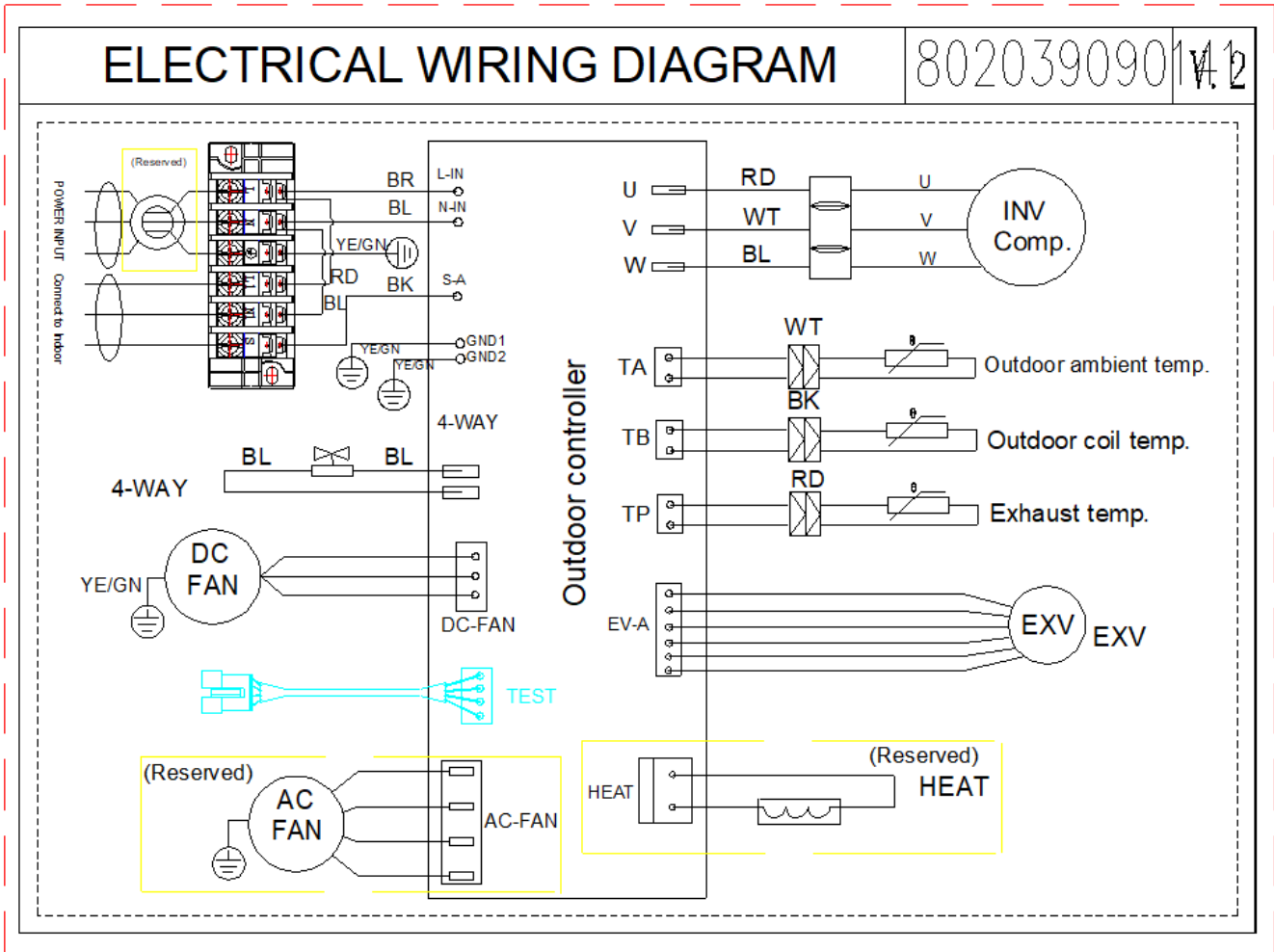
A	B	C	D	E	F
958	392	843	600	360	330

## 3 Service Space



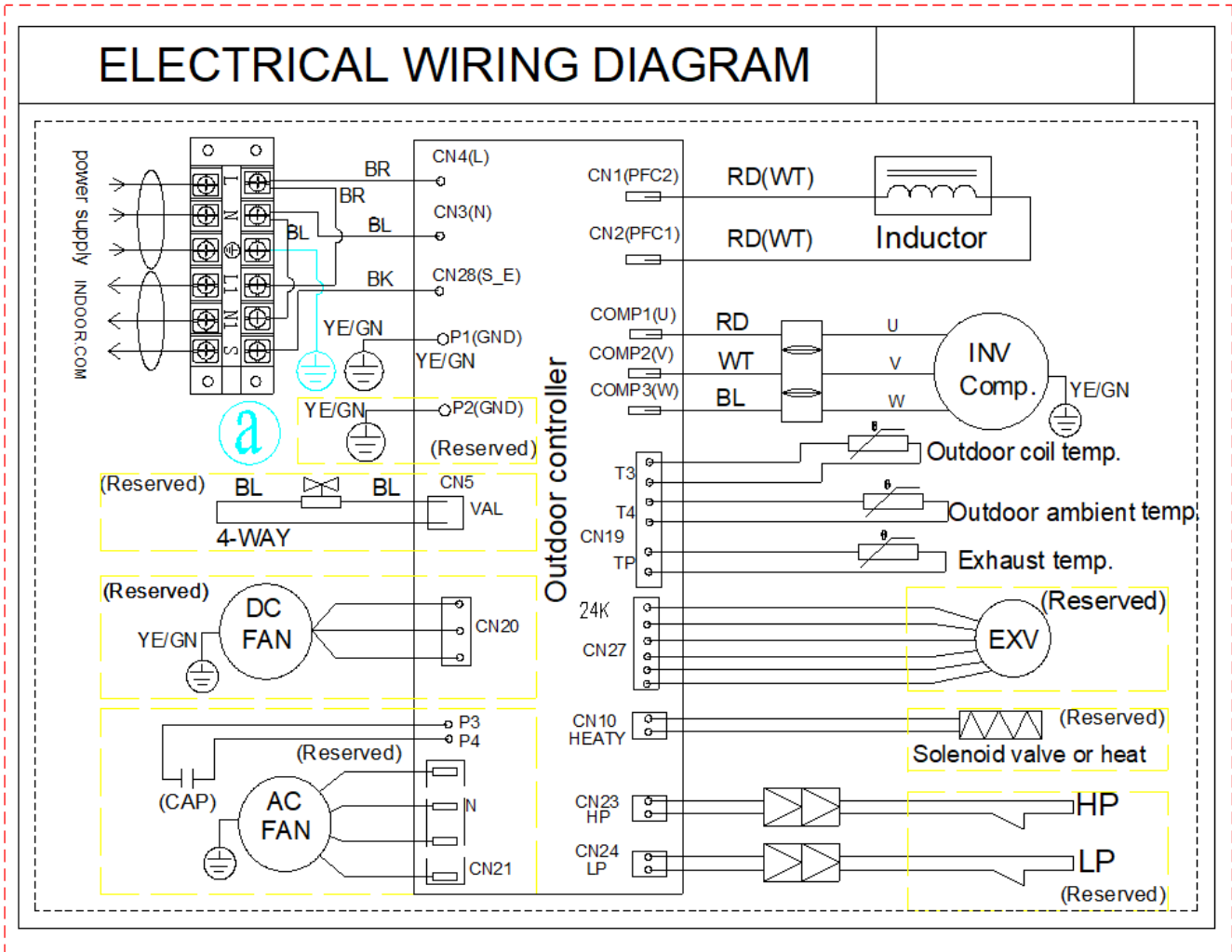
## 4 Wiring Diagrams

### 4.1 AW-YMDB018-H91





## 4.2 AW-YMDB024-H91



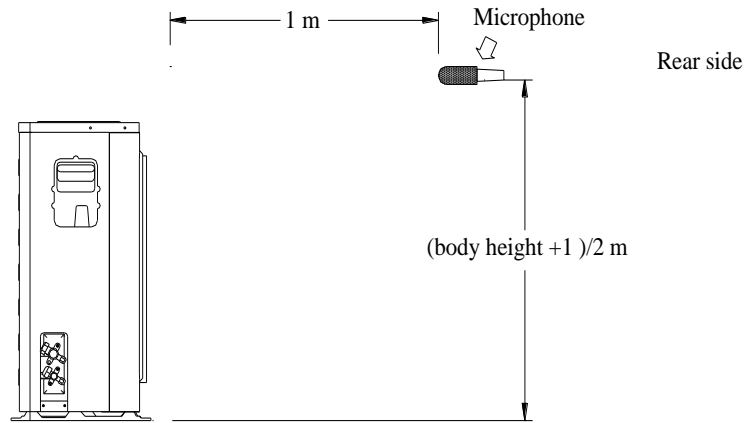
## 5 Electric Characteristics

Model	Outdoor Unit				
	Hz	Voltage	Min.	Max.	Outdoor motor (kw)
AW-YMDB018-H91	50	220~240V	198	254	0.072
AW-YMDB024-H91	50	220~240V	198	254	0.072

## 6 Operation Limits

Operation mode	Outdoor temperature (°C)	Room temperature (°C)
Cooling operation	-15~50	12~32
Heating operation	-15~30	12~32

## 7.Sound Levels



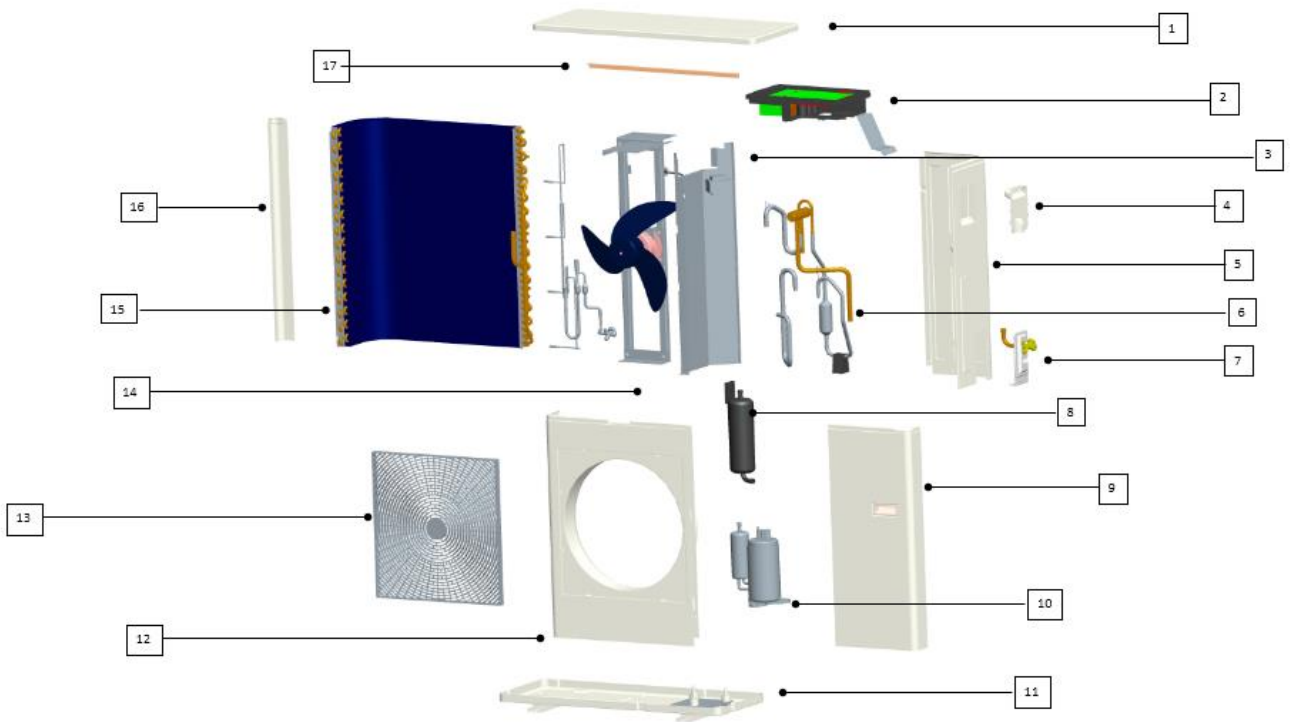
Model	Power level dB(A)	Pressure level
AW-YMDB018-H91	63	52
AW-YMDB024-H91	67	54

Note: Sound level is measured at a point 1 m in front of the unit, at a height of  $(\text{Unit body height} + 1) / 2 \text{ m}$ .



<b>No</b>	<b>Part Name</b>	<b>No.</b>	<b>Part Name</b>
<b>1</b>	Top cover plate parts	<b>8</b>	Repair board (with convex cover) with cotton patch assembly
<b>2</b>	Electronic components	<b>9</b>	Chassis components
<b>2.1</b>	Outdoor inverter module integrated board	<b>10</b>	Front panel (with plastic mesh)
<b>2.2</b>	Terminal bedplate	<b>11</b>	Left side panel
<b>2.3</b>	Terminal	<b>11.1</b>	left side plate
<b>2.4</b>	Line pressing buttons	<b>11.2</b>	Small handle
<b>3</b>	median septum	<b>12</b>	The fan parts
<b>4</b>	Piping components	<b>12.1</b>	Motor support assembly
<b>4.1</b>	4-way valve assembly	<b>12.2</b>	Single shaft outdoor DC motor
<b>4.2</b>	throttling parts	<b>12.3</b>	Axial-flow fan
<b>4.3</b>	Electronic expansion valve coil	<b>12.4</b>	The fan pressing plate
<b>5</b>	Right side panel	<b>13</b>	Condenser unit
<b>5.1</b>	Right board pasted cotton component	<b>13.1</b>	Condenser assembly
<b>5.2</b>	Large hand-drawn cotton patch assembly	<b>13.2</b>	Manifold assembly
<b>6</b>	The seat plate	<b>13.3</b>	Shunt capillary assembly
<b>7</b>	inverter compressor	<b>14</b>	Back mesh connection Angle

## 8.2 AW-YMDB024-H91



<b>No.</b>	<b>Part Name</b>	<b>No.</b>	<b>Part Name</b>
<b>1</b>	Top cover pasted with cotton components	<b>7.1</b>	Seat plate
<b>2</b>	Electronic components	<b>7.2</b>	stop valve
<b>2.1</b>	Integrated panel of outdoor inverter module (explosion proof)	<b>7.3</b>	stop valve
<b>2.2</b>	Terminal bedplate	<b>8</b>	liquid accumulator
<b>2.3</b>	Terminal	<b>9</b>	maintenance panel
<b>2.4</b>	Line pressing buttons	<b>10</b>	inverter compressor
<b>3</b>	Middle partition unit	<b>11</b>	Chassis components
<b>3.1</b>	medium septum	<b>12</b>	Front panel (with plastic mesh)
<b>3.2</b>	reactor	<b>13</b>	Plastic front cover
<b>4</b>	Large handle cotton patch assembly	<b>14</b>	Motor support part
<b>5</b>	right side cover	<b>15</b>	Condenser welded components
<b>6</b>	Piping components	<b>15.1</b>	Condenser
<b>6.1</b>	4-way valve assembly	<b>15.2</b>	Manifold welding assembly
<b>6.2</b>	Exhaust pipe assembly	<b>15.3</b>	Shunt components
<b>6.3</b>	Return pipe assembly	<b>16</b>	left side plate
<b>7</b>	Seat plate assembly	<b>17</b>	Back border

## 9 Troubleshooting

### 9.1 Single phase unit

#### Error code display

Error code	Description	Error code	Description
E01	Communication fault between IDU and ODU	P0C	Current protection
E02	Zero cross detection fault of IDU	P1x	Bus voltage protection
E03	stall fault of indoor fan	P21	Low temperature dehumidification fault
E04	T2B (indoor coil outlet temp.) sensor fault	P22	High and low temp. protection of evaporator
E08	Mode conflict	P23	High temp. protection of condenser
E09	ODU EEPROM error	P24	High and low temp. protection of environment
E0E	IDU EEPROM error	P25	High discharge temperature of compressor
E11	IDU T1 (room temperature) sensor fault	P28	Abnormal discharge in commodity inspection mode (compressor reversal)
E12	IDU T2 (indoor coil middle temp.) sensor fault	P29	T3 abnormal in commodity inspection heating mode (System exception, 4-way valve disconnected)
E13	ODU T3 (outdoor coil outlet temp.) sensor fault	P30	High pressure protection
E14	ODU T4 (ambient temp.) sensor fault	P31	Low pressure protection
E15	ODU discharge temp. sensor fault	H1x	Compressor fault
E16	Module temp. sensor fault	H3x	PFC fault
E17	Suction temp. sensor fault	L01	Lower frequency because of voltage limit
E18	TZA sensor fault	L02	Lower frequency because of high or low temp. limit of evaporator
E19	TZB sensor fault	L03	Lower frequency because of high temp. limit of condenser
E2x	Fan motor fault	L05	Lower frequency because of high discharge temp. of compressor
		L06	Lower frequency because of module temperature limit
		L0C	Lower frequency because of current limit

**Spot check table**

Fr	Running frequency
FT	Target frequency
T1	Unit A T1
T2	Unit A T2
Sr	IDU A fan speed
Tb	IDU A T2B
AL	IDU A EXV opening degree
An	Capacity demand of IDU A
Hn	Amended total capacity demand
b1	Unit B T1
b2	Unit B T2
bb	Unit B T2B
bS	Unit B fan speed
bL	Unit B EXV opening degree
bn	Capacity demand of IDU B
TH	Suction temperature
T3	Outdoor unit pipe temperature
T4	Ambient temperature
TP	Discharge temperature
T6	IPM board temperature
od	Mode
dT	Outdoor load target state
CC	Quantity of IDU
Ud	DC voltage
dL	Current
Pr	Outdoor unit fan speed
Lr	Master EXV opening degree

**Notice:**

**For single phase units, an additional maintenance controller is needed to show error codes and do spot check.**



## Part 4 Installation

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## 1. Precaution on Installation

1.1. Measure the necessary length of the connecting pipe and make it by the following way.

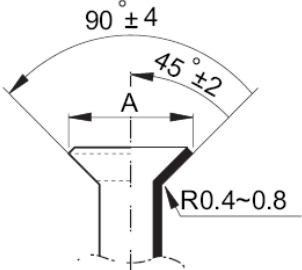
- a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

### CAUTIONS:

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fastening the flare nuts.

Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A		Flare shape
		Min (mm)	Max	
Φ6.4	15~16N.m (153~163 kgf.cm)	8.3	8.7	
Φ9.5	25~26N.m (255~265kgf.cm)	12.0	12.4	
Φ12.7	35~36N.m (357~367kgf.cm)	15.4	15.8	
Φ15.9	45~47N.m (459~480 kgf.cm)	18.6	19.1	
Φ19.1	65~67N.m (663~684kgf.cm)	22.9	23.3	

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

1.2. Locate the Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

1.3. Connect the pipes.

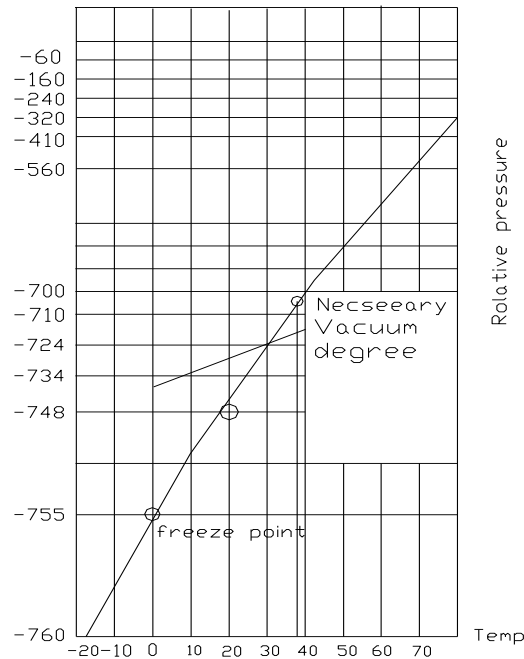
1.4. Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

1.5. Be sure of no leakage by checking it with leak detector or soap water.

1.6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings) and bind it well with the tapes to prevent leakage.

## 2 Vacuum Dry and Leakage Checking

2.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water (steam temperature) is 100°C. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

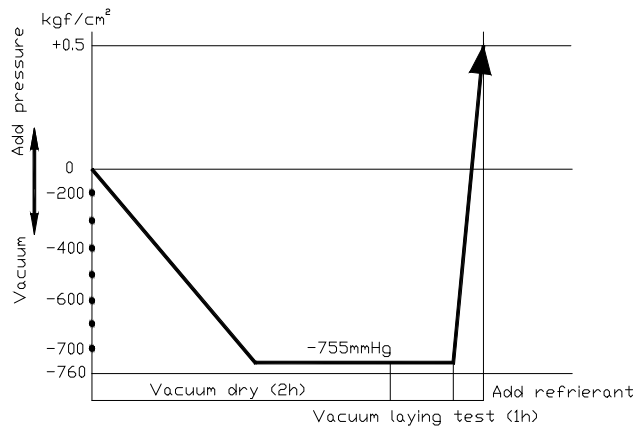


### 2.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

#### ①. Common vacuum dry procedure

- Vacuum dry (for the first time)-connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.



②. Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter the pipe.
- Vacuum dry for the first time ..... 2h pumping

③. Vacuum destroy for the second time ..... Fill nitrogen to 0.5Kgf/cm<sup>2</sup>

Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

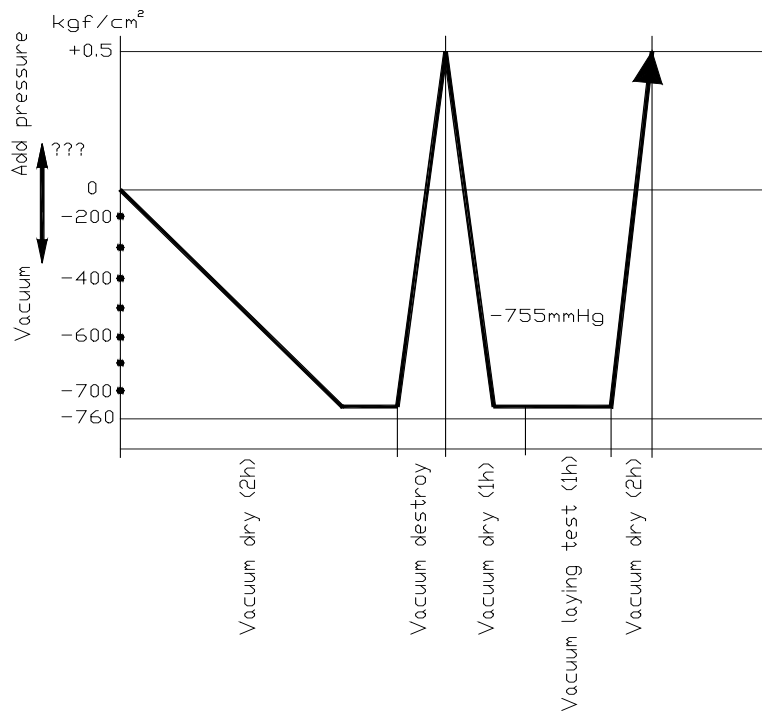
④. Vacuum dry for the second time ..... 1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure

③ and ④.

⑤. Vacuum placing test ..... 1h

⑥. Sketch map of special vacuum dry procedure



### 3 Additional Refrigerant Charge

#### Caution

- Refrigerant cannot be charged until field wiring has been completed.
- Refrigerant may only be charged after performing the leak test and the vacuum pumping.
- When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
- Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
- Refrigerant containers shall be opened slowly.
- Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit

R(g)	D(mm)	
L(m)	Φ6.4	Φ9.5
Less than 5m (One-way)	—	—
Added Refrigerant When Over 5m (One-way)	12g/m×(L-5)	24g/m×(L-5)

#### Remark:

R (g): Additional refrigerant to be charged

L (m): The length of the refrigerant pipe (one-way)

D (mm): Liquid side piping

## 4 Water Drainage

### 4.1 Gradient and Supporting

4.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.

4.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1~1.5m

#### 4.1.3. Precautions

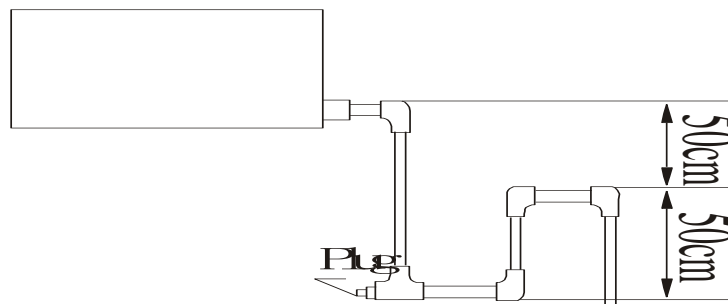
- ① The diameter of drainpipe should meet the drainage requirement at least.
- ② The drainpipe should be heat-insulated to prevent atomization.
- ③ Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.
- ④ All connection should be firm.
- ⑤ Wipe color on PVC pipe to note connection.
- ⑥ Climbing, horizontal and bending conditions are prohibited.
- ⑦ The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- ⑧ Heat-insulation should be done well to prevent condensation.
- ⑨ Indoor units with different drainage type can't share one convergent drainpipe.

## 4.2 Drainpipe Trap

4.2.1. If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.

4.2.2. Every indoor unit needs one drainpipe trap.

4.2.3. A plug should be designed to do cleaning.



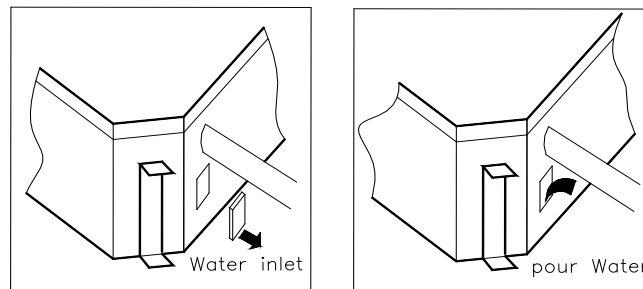
## 4.5 Drainage test

### 4.5.1 Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

### 4.5.2 Drainage with drain pump

① Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.



② Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

③ Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormality. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

## 5 Insulation Work

### 5.1 Insulation material and thickness

#### 5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70°C in the high-pressure side, no less than 120°C in the low-pressure side (For the cooling type machine, no requirements at the low-pressure side.)

◆ Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120°C)

Cooling only type----Polyethylene foam (withstand above 100°C)

#### 5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

### 5.2 Refrigerant pipe insulation

#### 5.2.1. Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

#### 5.2.2. Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

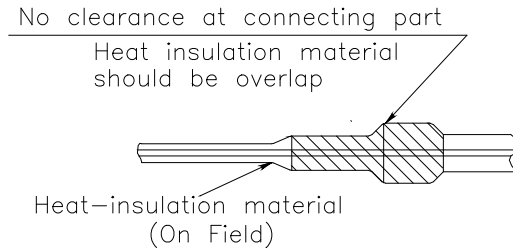


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

5.2.3. Insulate for the jointing area, expanding area and the flange area

① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



### 5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

### 5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in, expand nut ) of the indoor unit

## 6. Test Operation

**(1) The test operation must be carried out after the entire installation has been completed.**

**(2) Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

**(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.**

**(4) Test operation**

Set the air conditioner under the mode of "COOLING" with the remote controller and check the following points.

### Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons work well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

### Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

## Part 5 Controller

1.Wired Controller ..... Erreur ! Signet non défini.

# 1 Wired Controller

## I. Use-method

The control panel of wire controller is responsible for controlling the operation status of the system by the button and displaying the working status of the entire system by its LCD screen, and is responsible for communicating with the control board of the system.



Fig1 Appearance of Wire Controller

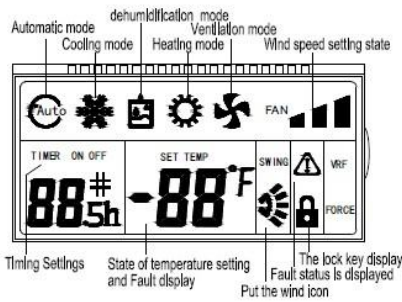


Fig2 LCD display content of Wire Controller

### Operation and Instruction:

#### “ON/OFF” Button:

- 1) Control the On/Off status of the system.
- 2) Press and hold the On/Off button when the wire controller is powered on, to go into the self-test mode. And then you can release the button.

#### “MODE” Button:

When the air conditioning is powered on, every time you press mode button or the mode button of remote controller, the mode will change in the following sequence.

Auto Mode→Refrigeration→Dehumidification→Heating→Ventilation→Auto Mode

#### “TEMP+” and “TEMP-” Button (“▲”, “▼”) :

- 1) Boot state, press “▲” and “▼” button, increase/decrease the setting temperature. Refrigeration, Dehumidification, Ventilation and Heating mode Scope of temperature setting: 16 °C ~ 32 °C ; The setting temperature do not adjust in Auto Mode .

- 2) Press the “▲” and “▼” button for 3s simultaneously to lock this button. At this time, It will display the locking icon in LCD. Deactivate this button, and press the “▲” and “▼” button again simultaneously.

#### “TIMER” Button

Set Timing On or Timing Off. The wire controller to set the time range as 1-24h.

- 1) Press the Timer button in the Off status to go into the Timing On for 1 hour, and then press the Timer button plus 1 until it is timing on for 24h. At this time, if you press the Timer button, it will deactivate Timing On.

- 2) Press the Timer button in the On status to go into the Timing Off for 1 hour, and then press the Timer button plus 1 until it is timing off for 24h. At this time, if you press the Timer button, it will deactivate Timing Off.

#### “FAN SPEED” Button:

- 1) The Fan Speed button is valid in the “Cooling mode”, “Heating mode” and “Ventilation mode”.

- 2) Press the Fan Speed button of the wire controller or the Volume button of the remote controller in the Cooling mode, Heating mode or Ventilation mode, and the volume changes as follows:

High speed → Middle speed → Low speed → Auto wind

- 3) There is no Auto wind in the Ventilation mode.

#### “SWING” Button:

- 1) Press it to display the Swing icon. The Swing icon will swing back and forth.

- 2) Press the Swing button, and the upper and lower wind deflectors will swing within the specified range automatically, and the left and right wind deflectors will swing within the specified range automatically, and press it again to stop the swing.

#### 26°C/CHECK Button Function :

- 1) Short press this button , Enter a state of energy saving of 26 °C, namely the setting temperature is 26 °C. this function under the boot of Refrigeration and Heating mode is effective.

- 2) Long press this button , will enter the query condition; It will exit the query condition , when you press this button again and five seconds is not operating in the condition of the query.

By pressing “▲” and “▼” button to check the temperature in the query condition. 1 is Indoor environment temperature , 2 is Indoor pipe temperature , 3 is outdoor pipe temperature

#### Description of DIP Switch :

	2 ON	2 OFF
3 ON	-4°C	-2°C
3 OFF	2°C	0°C
	ON	OFF
1	The old protocol	The new protocol
4	with power failure memory	witho ut power failure memory

- 1) The second and third bits of the DIP switch will select the compensation value of the indoor temperature. The compensation value is -4°C when the second and third bits are ON, and the

compensation value is 0°C when the second and third bits are OFF. The compensation value is 2°C when the second bit is ON and the third bit is OFF, and the compensation value is -2°C when the second bit is OFF and the third bit is On (for the wire controller sensor only).

- 2) The first bit of the DIP switch indicates to select the new or old protocol. Light commercial units select the new protocol.

- 3) The fourth bit ON of the DIP switch indicates it is With Power Failure Memory function, and the fourth bit OFF indicates it is Without Power Failure Memory.

NOTE : Just need to dial the code when matching the old type . Detailed please see after-sales guidance !



## II. Installation of Wire Controller

### Safety Precautions

- ! Read the safety precautions carefully before installation.
- ! The following is the important content to be paid for the safety, be sure to follow it.
- ! The meaning of each part:

<b>Warning:</b>	Indicate it may cause the death or serious injury for the improper operation.
<b>Note:</b>	Indicate it may cause the death or serious injury for the improper operation.

- Notes:**
- Please do not install the wire controller in damp or direct sunlight places.
  - Please do not hit, throw and frequent disassembling the wire controller.
  - Please do not operating the wire controller with Wet hand ; Don't make any fluid into the wire controller .
  - Please do not do dismantling the wire controller without authorization. Please consult after-sales maintenance personnel If you have a problem .
  - To prevent water and dust into the wire controller, Affect the wire controller normal use. Please dismantle the wire controller When the indoor decoration and maintenancee .

### Installation and disassembly of the wire controller

#### 1. The installation position and requirements of the wire controller

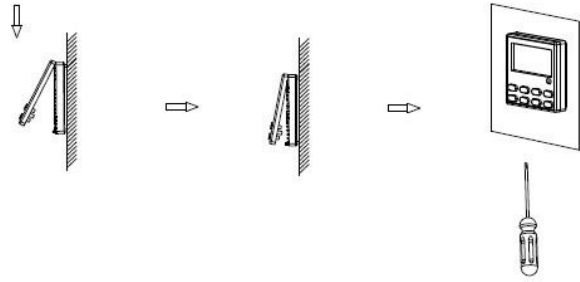
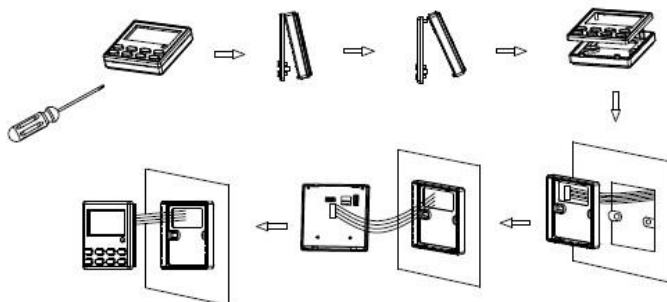
- 1) Please do not install the wire controller in damp or direct sunlight places.
- 2) Please do not install the wire controller in the places, where is near the high temperature or easy to splash water.
- 3) To avoid the interference of the neighbors' remote controller which has the same model , then cause abnormal work. Please do not install the wire controller where the face up to the window.
- 4) Before installation , please cut off the power which is Buried in the wall mounting holes. The whole installation process does not allow operation with power.
- 5) In order to avoid the unit by reason of electromagnetic interference caused by abnormal work . When wiring , please pay attention to the following matters.
  - A) Ensure that communication line access right, otherwise will lead to communication failures.
  - B) If the air conditioning unit is installed on the places , which is influence by electromagnetic interference . the wire controller signal lines must use shielded twisted-pair cable .
- 6) The standard accessories which is installation need to prepare : installed inside a wall socket bottom box, controller base plate, screw the M4 x 25, control panel.

#### 2. The installation of the wire controller

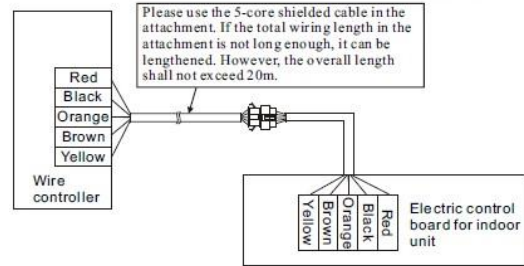
First of all, the wire controller signal line connection mode is as follows :

- 1) Open interior electrical lifted the lid, and the signal wires through the rubber ring;
- 2) Plug the wire controller signal lines within the five core needle base on the indoor machine circuit boards, and using cable tie line tied tightly fixed.

Next, the wire controller installation steps as shown in the figure below:



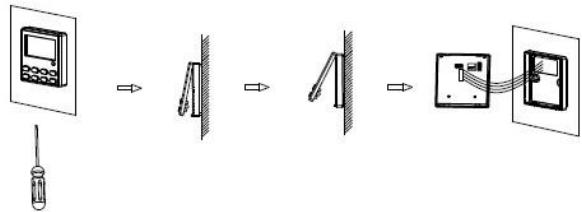
Connect the wire controller in the way as shown in the figure below



Brief description of the installation process is as follows

- 1) The signal lines of short through rectangle hole of the wire controller bottom plate, and then pull out five core twisted pair from the wall installation hole. Finally connect the line and the other end.
- 2) Use screws M4 x 25 to fix the controller base plate on the mounting holes of the wall.
- 3) Put the wire controller panel and floor buttons together, and this installation is complete. When installation, please reserve a certain length of the line at the bottom of box, to facilitate maintenance later removed.

#### 3. Disassembly of the wire controller



! After the completion of the installation, confirm there is no abnormality for the commissioning, and deliver the instruction to customers for storage.

#### Note:

- It may cause the rear cover deformed if the screw is tightened too much.
- It is necessary to reserve a certain length for the connecting cable of the wire controller during the installation, so as to take down the wire controller for the maintenance.

# Airwell

*Just feel well*

**WARNING :**

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

**ATTENTION :**

Le design et les données techniques sont donnés à titre indicatif et peuvent être modifiés sans préavis.



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