

AIR CONDITIONER

**Wall mounted type**

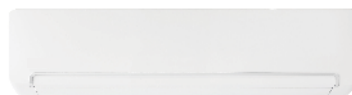
# SERVICE MANUAL

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INDOOR



WHP09WMA21S  
WHP12WMA21S



WHP18WMA21S  
WHP24WMA21S

OUTDOOR



WHP09SZA21S




WHP12SZA21S



WHP18SZA21S



WHP24SZA21S

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**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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**Please Read Before Starting**

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system, so it operates safely and efficiently.

**For safe installation and trouble-free operation, you must:**

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

**If Necessary, Get Help**

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

**In Case of Improper Installation**

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

**SPECIAL PRECAUTIONS****When Wiring****WARNING**

**ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

**When Transporting**

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend

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your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

### **When Installing**

#### ● **In a Ceiling or Wall**

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

#### ● **In a Room**

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

#### ● **In Moist or Uneven Locations**

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

#### ● **In an Area with High Winds**

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

#### ● **In a Snowy Area (for Heat Pump-type Systems)**

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

### **When Connecting Refrigerant Tubing**

△ Use the flare method for connecting tubing.

△ Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak free connection.

△ Check carefully for leaks before starting the test run.

### **When Servicing**

△ Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.

△ Keep your fingers and clothing away from any moving parts.

△ Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

### **Others**



△ Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.

△ Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

### **NOTE:**

The figure, size and parameter of the product may not be identical with the service manual, please take the actual product as the standard.

# Specifications

Type				Wall mounted		
				Inverter, Heat pump		
Model name				WHP09WMA21S	WHP12WMA21S	
Power supply				208/230 V ~ 60 Hz		
Power supply intake				Outdoor unit		
Available voltage range				198—253 V		
Capacity	Cooling	Rated	kW	2.63	3.51	
			Btu/h	9,000	12,000	
	Min.—Max.		kW	1.06—2.93	1.17—3.96	
			Btu/h	3,600—10,000	4,000—13,500	
	Heating	Rated	kW	2.63	3.51	
			Btu/h	9,000	12,000	
	Min.—Max.		kW	1.06—3.08	1.17—4.10	
			Btu/h	3,600—10,500	4,000—14,000	
	Heating (17 °F) <sup>-1</sup>	Rated		kW	1.47	2.20
				Btu/h	5,000	7,500
Max.			kW	2.86	2.86	
			Btu/h	9,758	9,745	
Heating (5 °F) <sup>+2</sup>	Max.		kW	1.98	2.70	
			Btu/h	6,749	9,233	
Input power	Cooling	Rated	kW	0.655	0.920	
	Heating	Rated		0.720	1.110	
	Heating (17 °F) <sup>-1</sup>	Rated		1.465	2.198	
		Max.		2.860	2.856	
	Heating (5 °F) <sup>+2</sup>	Max.			1.978	2.706
Current	Cooling	Rated	A	2.9	4.3	
	Heating		A	2.9	5.0	
EER2	Cooling		W/W	4.03	3.82	
			Btu/hW	13.74	13.04	
COP2	Heating		W/W	3.60	3.28	
			Btu/hW	12.28	11.26	
SEER2	Cooling		Btu/hW	22	21	
HSPF2	Heating		Btu/hW	8.5	9.0	
Power factor	Cooling		%	98	96	
	Heating		%	98	97	
Moisture removal			pints/h (L/h)	1.9 (0.9)	2.5 (1.2)	
Maximum operating current <sup>*3</sup>			Cooling	A	6.5	
			Heating	A	6.5	
Fan	Airflow rate	Cooling	HIGHER	CFM (m <sup>3</sup> /h)	383 (650)	394 (670)
			HIGH		341 (580)	365 (620)
			MED		294 (500)	312 (530)
			LOW		247 (420)	253 (430)
			LOWER		224 (380)	
		Heating	HIGHER		383 (650)	394 (670)
			HIGH		341 (580)	365 (620)
			MED		294 (500)	312 (530)
			LOW		247 (420)	253 (430)
			LOWER		224 (380)	
Type × Qty				Crossflow fan × 1		
Motor output			W	25		
Sound pressure level <sup>*4</sup>	Cooling	HIGHER	dB (A)	42		
		HIGH		39		
		MED		32		
		LOW		29		
		LOWER		26		
	Heating	HIGHER		42		
		HIGH		39		
		MED		32		
		LOW		29		
		LOWER		26		
Heat exchanger type	Dimensions (H × W × D)		in (mm)	11-9/16 × 24-7/16 × 1-1/16 (294 × 620 × 27.2)		
	Fin pitch		FPI	18		
	Rows × Stages			2 × 14		
	Pipe type			Copper		
	Fin type			Aluminum		
Enclosure	Material			Polystyrene		
	Color			White		
Dimensions (H × W × D)	Net		in (mm)	10-5/8 × 33-7/16 × 8-7/16 (270 × 850 × 215)		
	Gross			13-3/16 × 37 × 10-7/16 (335 × 940 × 265)		
Weight	Net		lb (kg)	20 (9)		
	Gross			24 (11)   26 (12)		
Connection pipe	Size	Liquid	in (mm)	Ø1/4 (Ø6.35)		
		Gas		Ø3/8 (Ø9.52)		
	Method			Flare		
Drain hose	Material			PE/PVC		
	Tip diameter		in (mm)	Ø5/8 (Ø15.4) (I.D.), Ø7/8 (Ø23) (O.D.)		
Operation range	Cooling		°F (°C)	61 to 86 (16 to 30)		
			%RH	80 or less		
Remote controller type	Heating		°F (°C)	61 to 86 (16 to 30)		
				Wireless (Wired [option])		

Type	Wall mounted	
	Inverter, Heat pump	
Model name	WHP09WMA21S	WHP12WMA21S
<b>NOTES:</b>		
<ul style="list-style-type: none"> <li>• Specifications are based on the following conditions: <ul style="list-style-type: none"> <li>– Cooling: Indoor temperature of 80°FDB (26.67°CDB) /67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB) / 75°FWB (23.9°CWB).</li> <li>– Heating: Indoor temperature of 70°FDB (21.11°CDB) /59°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB) /43°FWB (6.11°CWB).</li> <li>– *1: Heating (17°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 17°FDB (-8.33°CDB) /15°FWB (-9.44°CWB).</li> <li>– *2: Heating (5°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 5°FDB (-15.0°CDB) /4°FWB (-15.56°CWB).</li> <li>– Test conditions are based on AHRI 210/240 2023.</li> <li>– Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul> </li> <li>• Protective function might work when using it outside the operation range.</li> <li>• *3: Maximum current is maximum value when operated within the operation range.</li> <li>• *4: Sound pressure level: <ul style="list-style-type: none"> <li>– Measured values in manufacturer's anechoic chamber.</li> <li>– Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.</li> </ul> </li> </ul>		

M condition					
Model name	WHP09WMA21S		WHP12WMA21S		
Capacity	Cooling	Rated	kW	2.64	3.51
			Btu/h	9,000	12,000
		Min.—Max.	kW	1.06—2.93	1.17—3.96
			Btu/h	3,600—10,000	4,000—13,500
	Heating	Rated	kW	2.64	3.81
			Btu/h	9,000	13,000
		Min.—Max.	kW	1.05—3.07	1.17—4.10
			Btu/h	3,600—10,500	4,000—14,000
Input power	Cooling	kW	Rated	0.655	0.920
			Min.—Max.	0.230—1.495	0.276—1.610
	Heating		Rated	0.720	1.110
			Min.—Max.	0.230—1.495	0.276—1.610
Current	Cooling	A	Rated	2.9	4.3
	Heating		2.9	5.0	
EER	Cooling	W/W	4.03	3.82	
		Btu/hW	13.74	13.04	
COP	Heating	W/W	3.87	3.43	
		Btu/hW	13.19	11.71	
SEER	Cooling	Btu/hW	22.5	22.0	
HSPF	Heating	Btu/hW	10.7	10.5	
Power factor	Cooling	%	98	96	
	Heating		98	97	
<b>NOTES:</b>					
Specifications are based on the following conditions:					
<ul style="list-style-type: none"> <li>• Cooling: Indoor temperature of 80°FDB (26.67°CDB) /67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB) /75°FWB (23.9°CWB).</li> <li>• Heating: Indoor temperature of 70°FDB (21.11°CDB) /59°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB) /43°FWB (6.11°CWB).</li> <li>• *: Heating (17°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 17°FDB (-8.33°CDB) /15°FWB (-9.44°CWB).</li> <li>• Test conditions are based on AHRI 210/240 2017.</li> <li>• Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul>					

Type				Wall mounted		
				Inverter, Heat pump		
Model name				WHP18WMA21S	WHP24WMA21S	
Power supply				208/230 V ~ 60 Hz		
Power supply intake				Outdoor unit		
Available voltage range				198—253 V		
Capacity	Cooling	Rated	kW	5.28	6.74	
			Btu/h	18,000	23,000	
		Min.—Max.	kW	1.91—5.72	2.35—7.77	
			Btu/h	6,500—19,500	8,000—26,500	
	Heating	Rated	kW	4.98	6.74	
			Btu/h	17,000	23,000	
		Min.—Max.	kW	1.91—5.86	2.35—7.77	
			Btu/h	6,500—20,000	8,000—26,500	
	Heating (17 °F) <sup>1</sup>	Rated	kW	3.40	4.25	
			Btu/h	11,600	14,500	
		Max.	kW	5.14	5.28	
			Btu/h	17,531	18,026	
Heating (5 °F) <sup>2</sup>	Max.	kW	3.54	4.79		
		Btu/h	12,068	16,326		
Input power	Cooling	Rated	kW	1.385	1.870	
				Heating	1.638	2.500
	Heating (17 °F) <sup>1</sup>	Rated		3.400	4.250	
		Max.		5.138	5.238	
	Heating (5 °F) <sup>2</sup>	Max.		3.537	4.785	
Current	Cooling	Rated	A	6.3	8.3	
			Heating	7.2	11.1	
EER2	Cooling		W/W	3.81	3.67	
			Btu/hW	13.00	12.30	
COP2	Heating		W/W	3.15	2.78	
			Btu/hW	10.75	9.55	
SEER2	Cooling		Btu/hW	22.5	20.5	
HSPF2	Heating		Btu/hW	8.6		
Power factor	Cooling		%	96	98	
			Heating	99	98	
Moisture removal			pints/h (L/h)	3.2 (1.5)	5.1 (2.4)	
Maximum operating current* <sup>3</sup>	Cooling		A	12.0	13.0	
			Heating	12.0	13.0	
Fan	Airflow rate	Cooling	CFM (m <sup>3</sup> /h)	HIGHER	647 (1,100)	706 (1,200)
				HIGH	589 (1,000)	647 (1,100)
				MED	483 (820)	559 (950)
				LOW	459 (780)	441 (750)
				LOWER	383 (650)	368 (625)
		Heating		HIGHER	647 (1,100)	706 (1,200)
				HIGH	589 (1,000)	647 (1,100)
				MED	483 (820)	559 (950)
				LOW	459 (780)	441 (750)
				LOWER	383 (650)	368 (625)
	Type × Qty	Crossflow fan × 1				
	Motor output			W	35	
Sound pressure level* <sup>4</sup>	Cooling	dB (A)	HIGHER	48	50	
			HIGH	45	47	
			MED	41	42	
			LOW	37	36	
			LOWER	34	33	
	Heating		HIGHER	48	50	
			HIGH	45	47	
			MED	41	42	
			LOW	37	36	
			LOWER	34	33	
Heat exchanger type	Dimensions (H × W × D)		in (mm)	12-1/2 × 33-1/8 × 1-1/16 (318 × 842 × 27.2)		
	Fin pitch		FPI	18		
	Rows × Stages			2 × 18		
	Pipe type			Copper		
	Fin type			Aluminum		
Enclosure	Material		Polystyrene			
	Color		White			
Dimensions (H × W × D)	Net	in (mm)	12-3/8 × 44-1/2 × 9-5/16 (315 × 1,130 × 237)			
	Gross		15-3/8 × 47-5/8 × 12-7/16 (390 × 1,210 × 316)			
Weight	Net	lb (kg)	32 (14.5)			
	Gross		37 (17)			
Connection pipe	Size	Liquid	Ø1/4 (Ø6.35)		Ø3/8 (Ø9.52)	
		Gas	Ø1/2 (Ø12.70)		Ø5/8 (Ø15.88)	
	Method		Flare			
Drain hose	Material		PE/PVC			
	Tip diameter		Ø5/8 (Ø15.4) (I.D.), Ø7/8 (Ø23) (O.D.)			
Operation range	Cooling	°F (°C)	61 to 86 (16 to 30)			
		%RH	80 or less			
Remote controller type	Heating	°F (°C)	61 to 86 (16 to 30)			
		Wireless (Wired [option])				

Type	Wall mounted	
	Inverter, Heat pump	
Model name	WHP18WMA21S	WHP24WMA21S
<b>NOTES:</b>		
<ul style="list-style-type: none"> <li>Specifications are based on the following conditions: <ul style="list-style-type: none"> <li>Cooling: Indoor temperature of 80°FDB (26.67°CDB) /67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB) / 75°FWB (23.9°CWB).</li> <li>Heating: Indoor temperature of 70°FDB (21.11°CDB) /59°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB) /43°FWB (6.11°CWB).</li> <li>*1: Heating (17°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 17°FDB (-8.33°CDB) /15°FWB (-9.44°CWB).</li> <li>*2: Heating (5°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 5°FDB (-15.0°CDB) /4°FWB (-15.56°CWB).</li> <li>Test conditions are based on AHRI 210/240 2023.</li> <li>Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul> </li> <li>Protective function might work when using it outside the operation range.</li> <li>*3: Maximum current is maximum value when operated within the operation range.</li> <li>*4: Sound pressure level: <ul style="list-style-type: none"> <li>Measured values in manufacturer's anechoic chamber.</li> <li>Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.</li> </ul> </li> </ul>		

M condition					
Model name	WHP18WMA21S			WHP24WMA21S	
Capacity	Cooling	Rated	kW	5.28	6.86
			Btu/h	18,000	23,400
		Min.—Max.	kW	1.91—5.72	2.34—7.77
			Btu/h	6,500—19,500	8,000—26,500
	Heating	Rated	kW	5.57	7.62
			Btu/h	19,000	26,000
		Min.—Max.	kW	1.91—5.86	2.35—7.77
			Btu/h	6,500—20,000	8,000—26,500
Input power	Cooling	kW	Rated	1.385	1.870
			Min.—Max.	0.345—2.760	0.414—2.990
	Heating		Rated	1.638	2.500
			Min.—Max.	0.345—2.760	0.414—2.990
Current	Cooling	A	Rated	6.3	8.3
	Heating		7.2	11.1	
EER	Cooling	W/W	3.81	3.67	
		Btu/hW	13.00	12.30	
COP	Heating	W/W	3.40	3.05	
		Btu/hW	11.60	10.40	
SEER	Cooling	Btu/hW	23.3	21.0	
HSPF	Heating	Btu/hW	11.6	10.5	
Power factor	Cooling	%	96	98	
	Heating		99	98	
<b>NOTES:</b>					
Specifications are based on the following conditions:					
<ul style="list-style-type: none"> <li>Cooling: Indoor temperature of 80°FDB (26.67°CDB) /67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB) /75°FWB (23.9°CWB).</li> <li>Heating: Indoor temperature of 70°FDB (21.11°CDB) /59°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB) /43°FWB (6.11°CWB).</li> <li>*: Heating (17°F): Indoor temperature of 70°FDB (21.11°CDB) /60°FWB (15.56°CWB), and outdoor temperature of 17°FDB (-8.33°CDB) /15°FWB (-9.44°CWB).</li> <li>Test conditions are based on AHRI 210/240 2017.</li> <li>Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul>					

Type			Inverter heat pump		
Model name			WHP09SZA21S	WHP12SZA21S	
Power supply			208/230 V ~ 60 Hz		
Available voltage range			198—253 V		
Fan	Airflow rate	CFM (m <sup>3</sup> /h)	971 (1,650)		1,177 (2,000)
	Type × Q'ty	Propeller fan × 1			
	Motor output	W	30		
Sound pressure level *1			dB (A)		
Heat exchanger type	Dimensions (H × W × D)	in (mm)	26-7/8 × 18-3/16 × 11/16 (683 × 462 × 18.2)		33-1/16 × 21-1/2 × 11/16 (840 × 546 × 18.19)
			25-3/4 × 18-3/16 × 11/16 (654 × 462 × 18.2)		33-1/16 × 21-1/2 × 11/16 (840 × 546 × 18.19)
	Fin pitch	FPI	18		
	Rows × Stages	2 × 22		2 × 26	
	Pipe type	Copper			
Fin type	Type (Material)	Aluminum			
	Surface treatment	Blue fin			
Compressor	Type	Rotary			
Refrigerant	Type	R410A			
	Charge	lb oz	2 lb 2 oz		2 lb 9 oz
		g	950		1,160
Refrigerant oil	Type	68HES-H		VG74 (POE)	
Enclosure	Material	Steel sheet			
	Color	White			
Dimensions (H × W × D)	Net	in (mm)	19 × 28-1/8 × 9-7/16 (482 × 715 × 240)		23-1/16 × 31-7/8 × 11 (585 × 810 × 280)
	Gross		20-7/8 × 33-11/16 × 13-3/8 (530 × 830 × 340)		25-3/16 × 37 × 15-3/16 (640 × 940 × 385)
Weight	Net	lb (kg)	60 (27)		73 (33)
	Gross		65 (29.5)		79 (36)
Connection pipe	Size	Liquid	Ø 1/4 (Ø 6.35)		
		Gas	Ø 3/8 (Ø 9.52)		
	Method	Flare			
	Pre-charge length	ft (m)	24 (7.5)		
	Max. length		65 (20)		
	Max. height difference		Indoor unit higher than outdoor unit: 32 (10) Outdoor unit higher than indoor unit: 16 (5)		
Operation range	Cooling	°F (°C)	5 to 115 (-15 to 46)		
	Heating		-4 to 75 (-20 to 24)		
<b>NOTES:</b>					
<ul style="list-style-type: none"> <li>Specifications are based on the following conditions: <ul style="list-style-type: none"> <li>Cooling: Indoor temperature of 80 °FDB (26.67 °CDB) / 67 °FWB (19.44 °CWB), and outdoor temperature of 95 °FDB (35 °CDB) / 75 °FWB (23.9 °CWB).</li> <li>Heating: Indoor temperature of 70 °FDB (21.11 °CDB) / 59 °FWB (15 °CWB), and outdoor temperature of 47 °FDB (8.33 °CDB) / 43 °FWB (6.11 °CWB).</li> <li>Pipe length: 24 ft 6 in (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul> </li> <li>Protective function might work when using it outside the operation range.</li> <li>*1: Sound pressure level <ul style="list-style-type: none"> <li>Measured values in manufacturer's anechoic chamber.</li> <li>Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.</li> </ul> </li> </ul>					

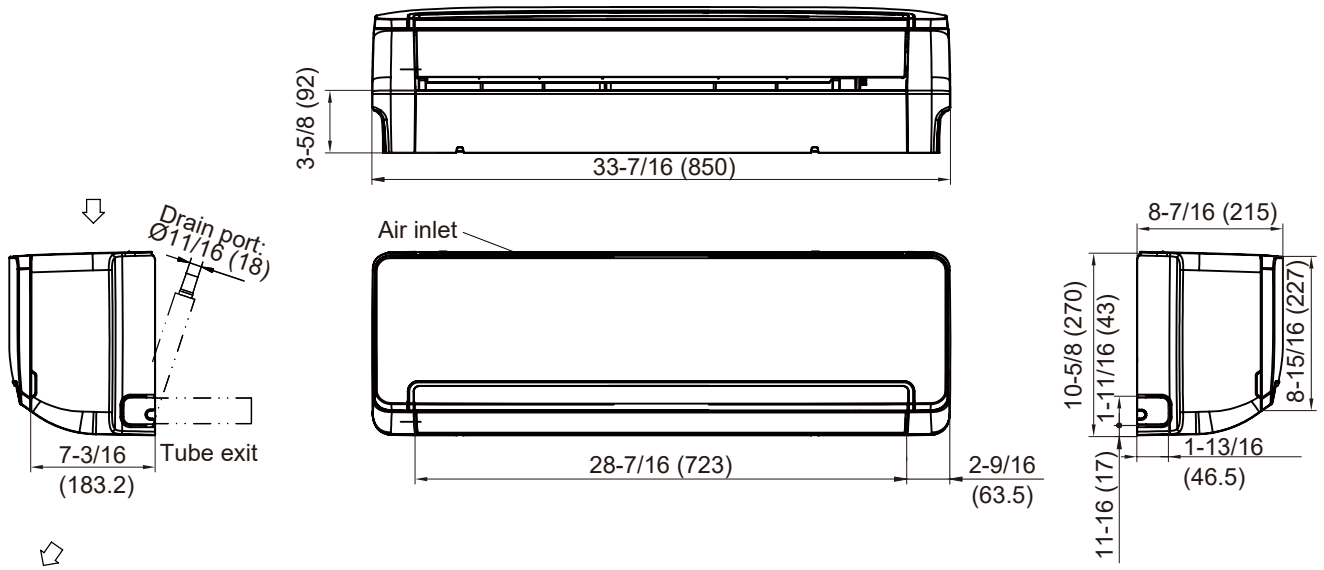


Type			Inverter heat pump	
Model name			WHP18SZA21S	WHP24SZA21S
Power supply			208/230 V ~ 60 Hz	
Available voltage range			198—253 V	
Fan	Airflow rate	CFM (m <sup>3</sup> /h)	1,648 (2,800)	2,354 (4,000)
	Type × Q'ty		Propeller fan × 1	
	Motor output	W	60	70
Sound pressure level *1			dB (A)	55
Heat exchanger type	Dimensions (H × W × D)	in (mm)	35-1/4 × 24-13/16 × 11/16 (895 × 630 × 18.19)	35-1/4 × 24-13/16 × 11/16 (895 × 630 × 18.19)
			34-1/8 × 24-13/16 × 11/16 (867 × 630 × 18.19)	34-1/8 × 24-13/16 × 11/16 (867 × 630 × 18.19)
	Fin pitch	FPI	18	
	Rows × Stages		2 × 30	3 × 30
	Pipe type		Copper	
	Fin type	Type (Material)	Aluminum	
Surface treatment		Blue fin		
Compressor	Type		Rotary	
Refrigerant	Type		R410A	
	Charge	lb oz	3 lb 7 oz	4 lb 12 oz
		g	1,550	2,150
Refrigerant oil	Type		VG74 (POE)	
Enclosure	Material		Steel sheet	
	Color		White	
Dimensions (H × W × D)	Net	in (mm)	25-9/16 × 33-7/8 × 12-3/16 (650 × 860 × 310)	31-5/16 × 34-13/16 × 14-7/16 (795 × 885 × 366)
	Gross		28-3/8 × 39-3/16 × 16-9/16 (720 × 995 × 420)	35-1/16 × 41-5/16 × 19-11/16 (890 × 1,050 × 500)
Weight	Net	lb (kg)	99 (45)	134 (61)
	Gross		108 (49)	144 (65.5)
Connection pipe	Size	Liquid	Ø 1/4 (Ø 6.35)	Ø 3/8 (Ø 9.52)
		Gas	Ø 1/2 (Ø 12.7)	Ø 5/8 (Ø 15.88)
	Method		Flare	
	Pre-charge length	ft (m)	24 (7.5)	
	Max. length		65 (20)	
	Max. height difference		Indoor unit higher than outdoor unit: 32 (10) Outdoor unit higher than indoor unit: 16 (5)	
Operation range	Cooling	°F (°C)	5 to 115 (-15 to 46)	
	Heating		-4 to 75 (-20 to 24)	
<b>NOTES:</b>				
<ul style="list-style-type: none"> <li>Specifications are based on the following conditions: <ul style="list-style-type: none"> <li>Cooling: Indoor temperature of 80 °FDB (26.67 °CDB) / 67 °FWB (19.44 °CWB), and outdoor temperature of 95 °FDB (35 °CDB) / 75 °FWB (23.9 °CWB).</li> <li>Heating: Indoor temperature of 70 °FDB (21.11 °CDB) / 59 °FWB (15 °CWB), and outdoor temperature of 47 °FDB (8.33 °CDB) / 43 °FWB (6.11 °CWB).</li> <li>Pipe length: 24 ft 6 in (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)</li> </ul> </li> <li>Protective function might work when using it outside the operation range.</li> <li>*1: Sound pressure level <ul style="list-style-type: none"> <li>Measured values in manufacturer's anechoic chamber.</li> <li>Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.</li> </ul> </li> </ul>				

# Dimensions

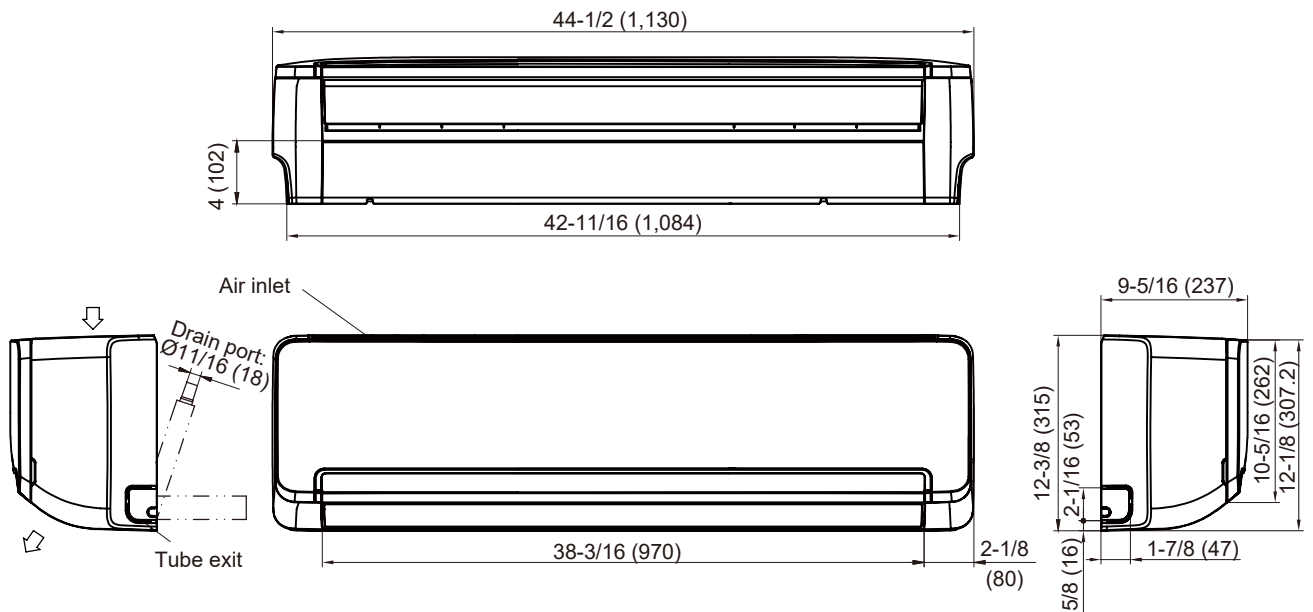
## Models: WHP09WMA21S and WHP12WMA21S

Unit: in (mm)



## Models: WHP18WMA21S and WHP24WMA21S

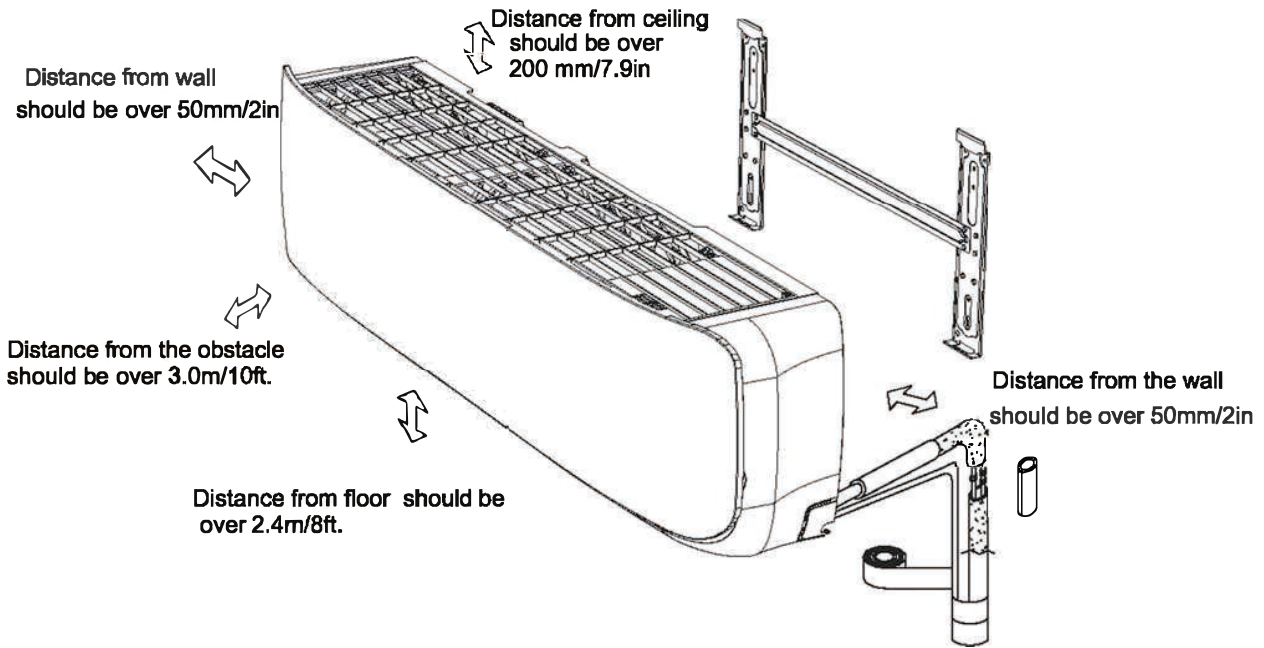
Unit: in (mm)



# Installation space requirement

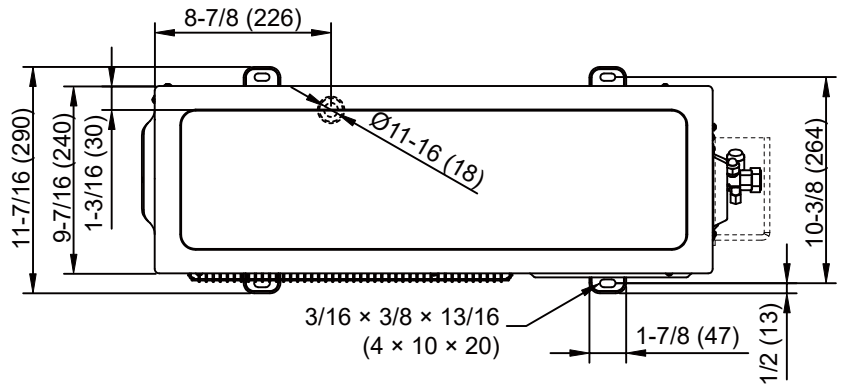
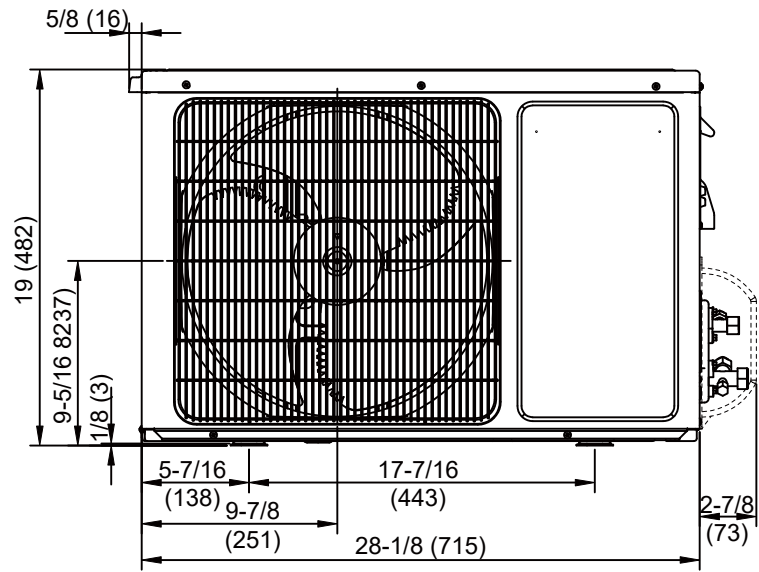
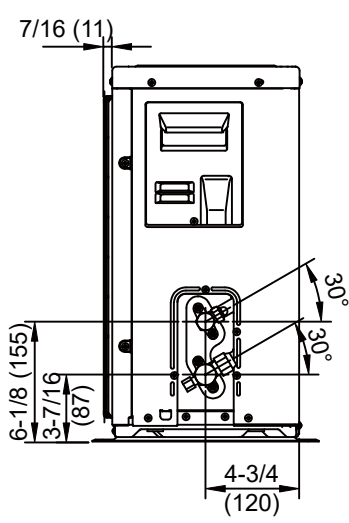
Provide sufficient installation space for product safety.

Unit: in (mm)



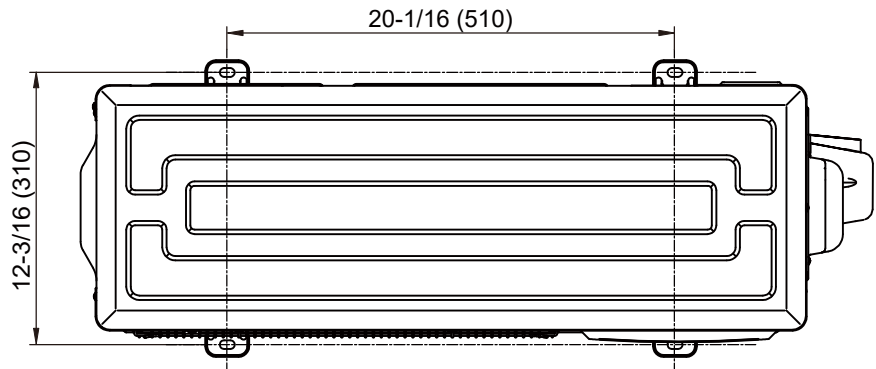
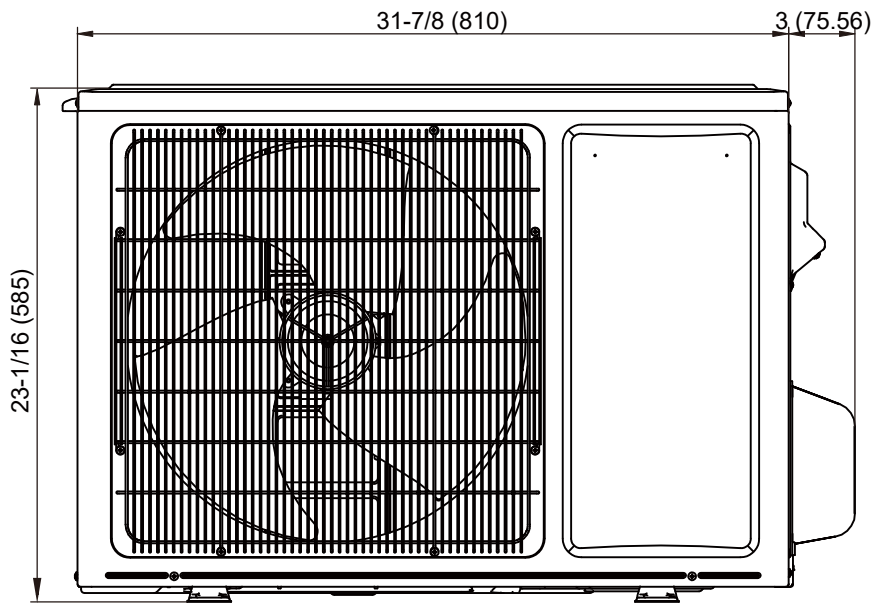
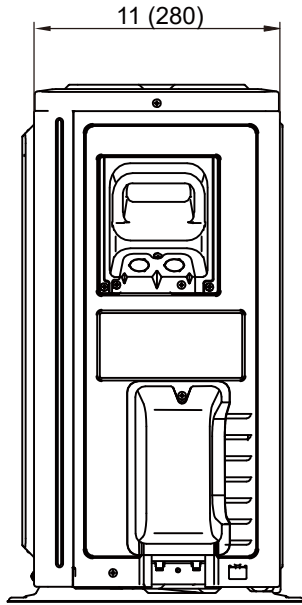
# Model: WHP09SZA21S

Unit: in (mm)



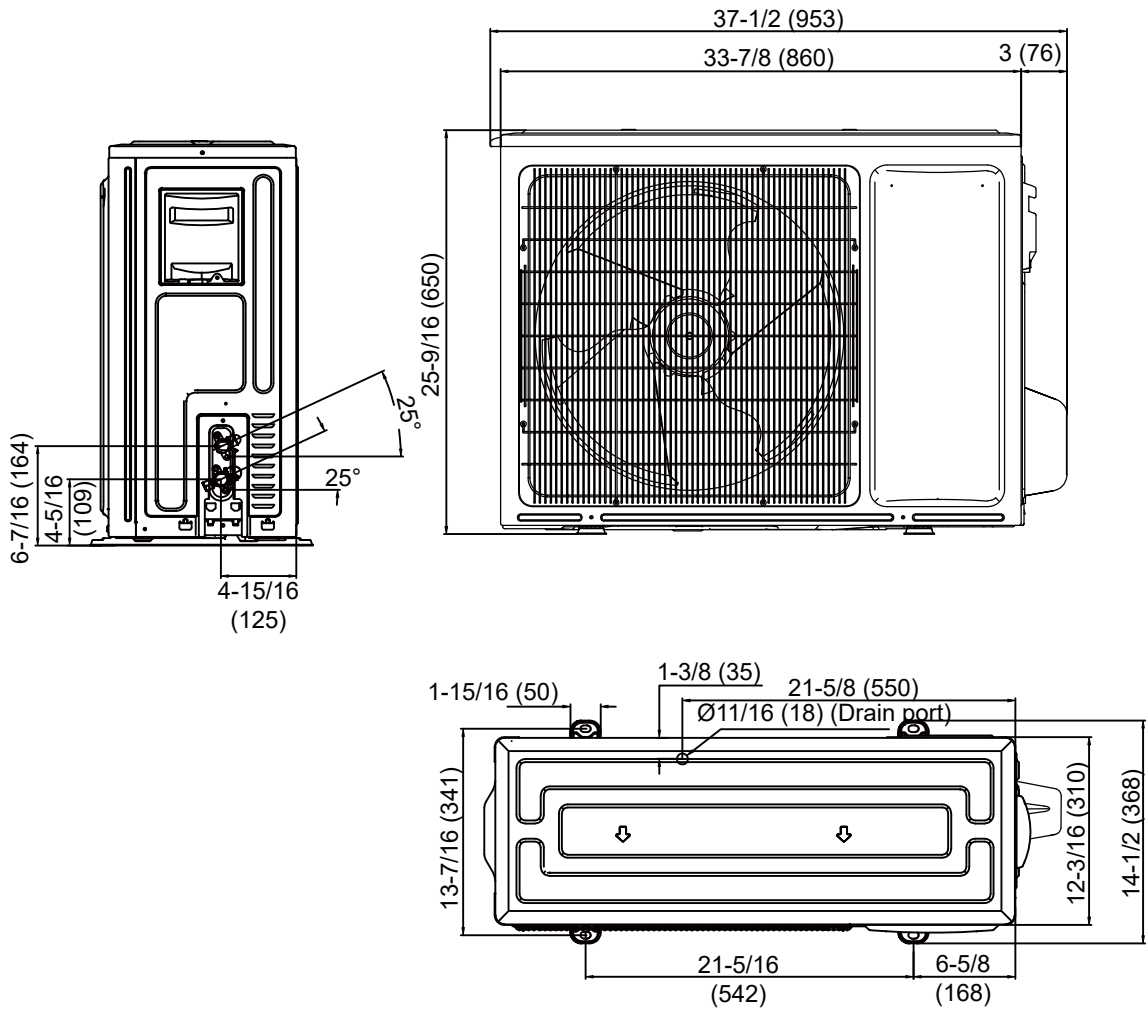
# Model: WHP12SZA21S

Unit: in (mm)



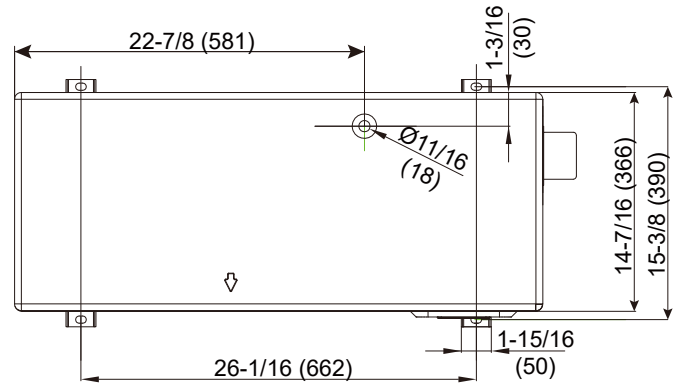
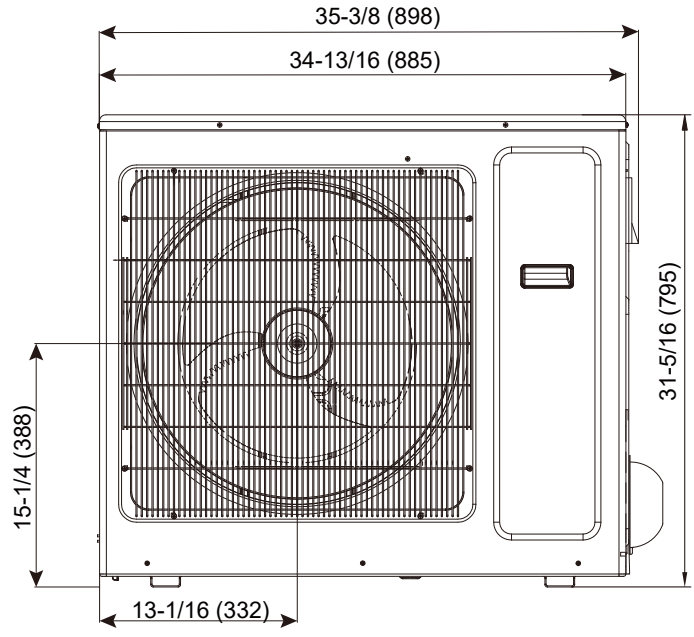
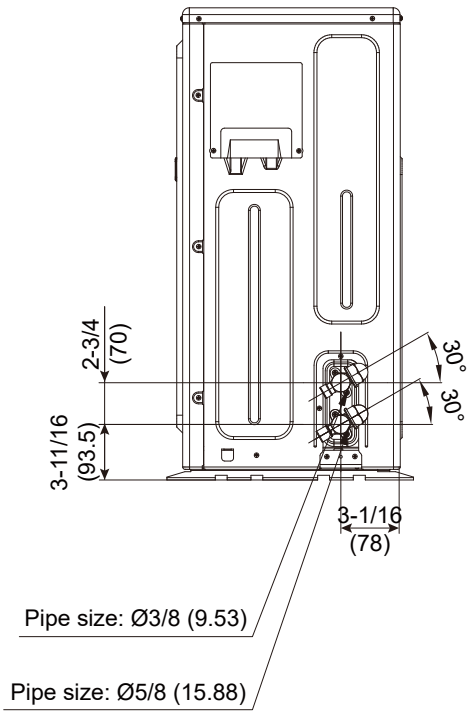
# Model: WHP18SZA21S

Unit: in (mm)



# Model: WHP24SZA21S

Unit: in (mm)



## Installation space

### Models: WHP09SZA21S, WHP12SZA21S, WHP18SZA21S, and WHP24SZA21S

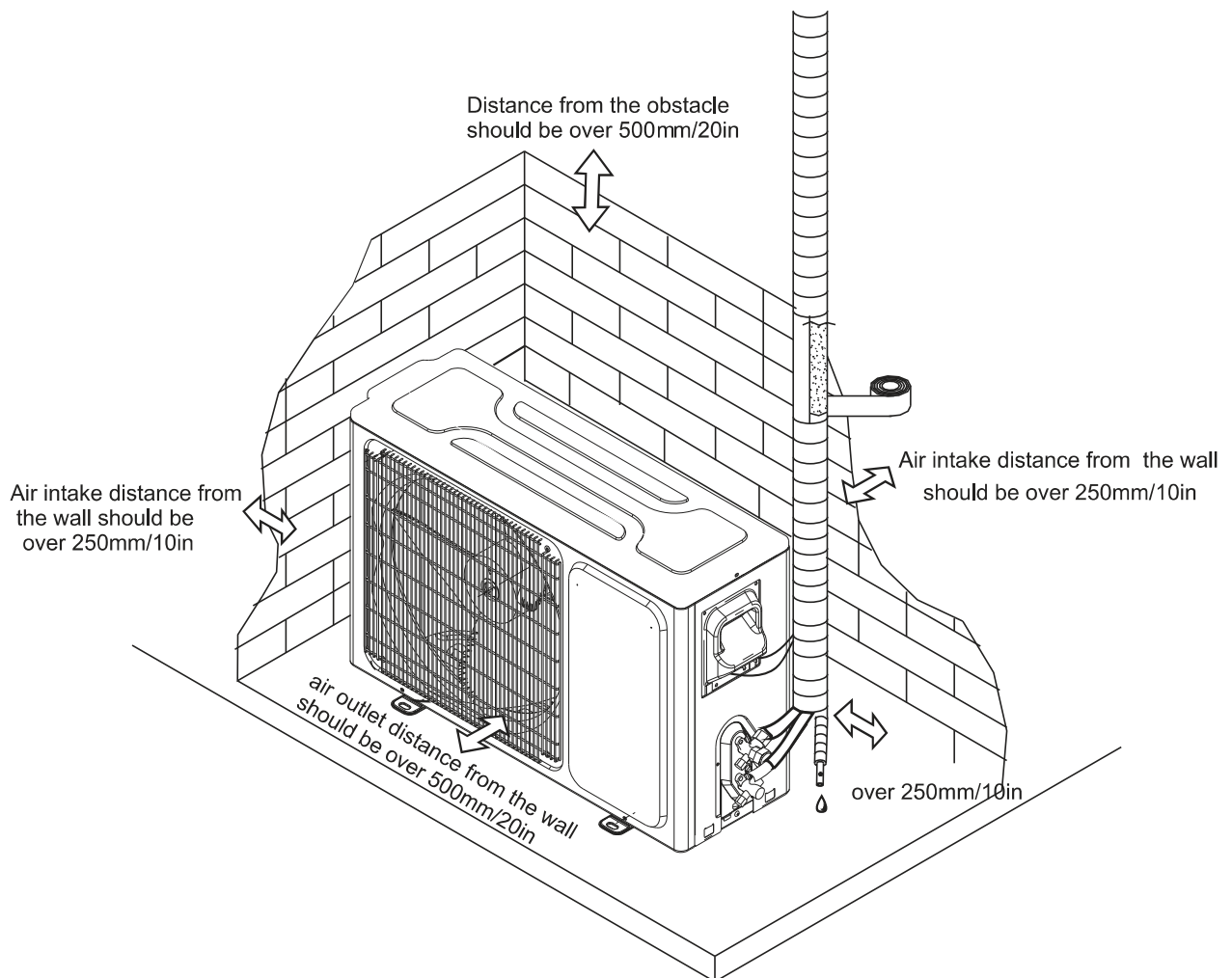
#### ■ Space requirement

Provide sufficient installation space for product safety.

#### ⚠ CAUTION

Keep the space shown in the installation examples.

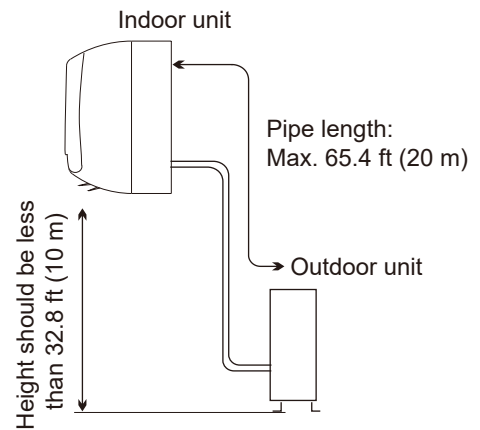
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.





### Site for installing the indoor unit

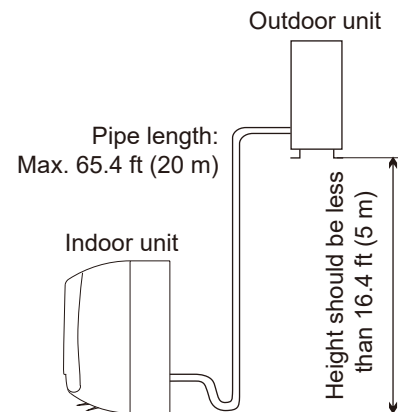
- Where there is no obstruction near the air outlet and air can be easily blown to every corner.
- Where piping and wall hole can be easily arranged.
- Keep the required space from the unit to the ceiling and wall according to the diagram on previous page.
- Where the air filter can be easily removed.
- Keep the unit and remote controller 3.28 ft (1 m) or more apart from television, radio etc.
- Keep as far as possible from fluorescent lamps.
- Do not put anything near the air inlet to obstruct it from air absorption.
- Install on a wall that is strong enough to bear the weight of the unit.
- Install in a place that will not increase operation noise and vibration.
- Keep away from direct sunlight and heating sources. Do not place flammable materials or combustion apparatuses on the top of the unit.



Indoor unit is higher than outdoor unit

### Site for installing the outdoor unit

- Where it is convenient to install and well ventilated.
- Avoid installing it where flammable gas could leak.
- Keep the required distance apart from the wall.
- Keep the outdoor unit away from greasy dirt, vulcanization gas exit.
- Avoid installing it by the roadside where there is a risk of muddy water.
- A fixed base where it is not subject to increased operation noise.
- Where there is not any blockage of the air outlet.
- Avoid installing under direct sunlight, in an aisle or side-way, or near heat sources and ventilation fans. Keep away from flammable materials, thick oil fog, and wet or uneven places.
- In case the pipe length is more than 24.6 ft (7.5 m), the refrigerant should be charged additionally, according to the table below.

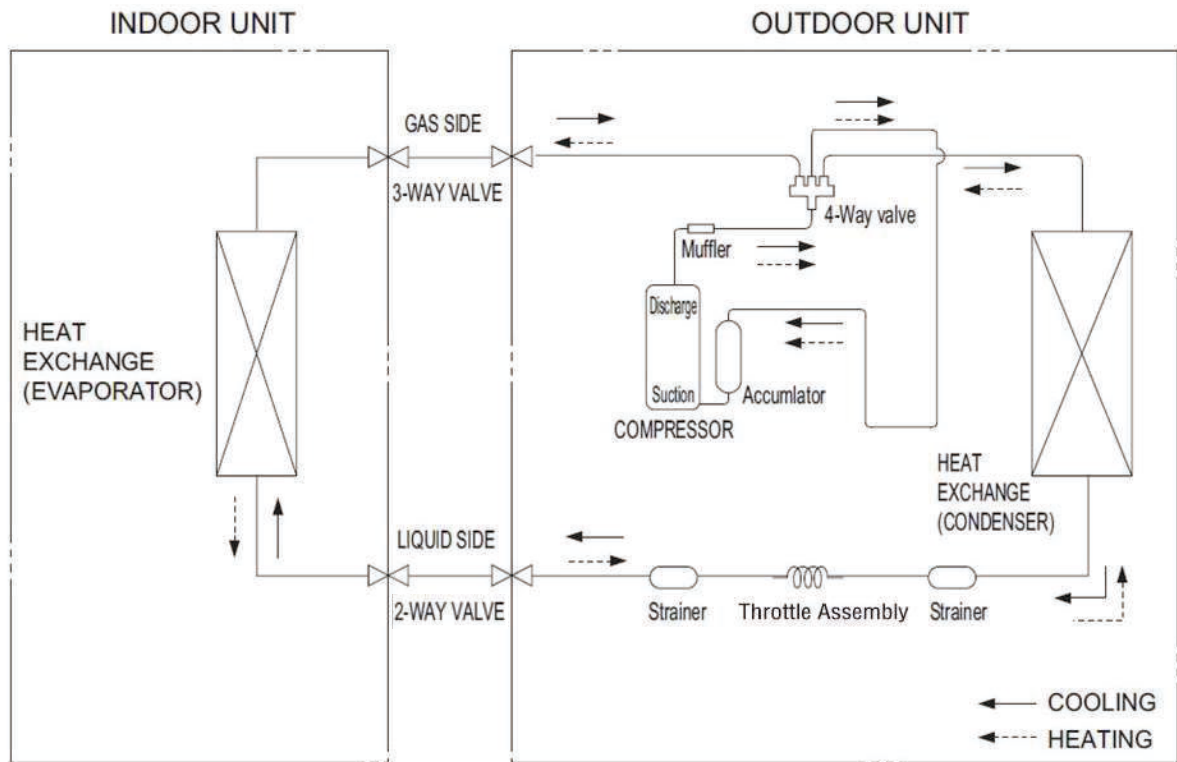


Outdoor unit is higher than indoor unit

Model	Required amount of additional refrigerant (oz/ft)
WHP09SZA21S	0.215
WHP12SZA21S	
WHP18SZA21S	
WHP24SZA21S	0.323

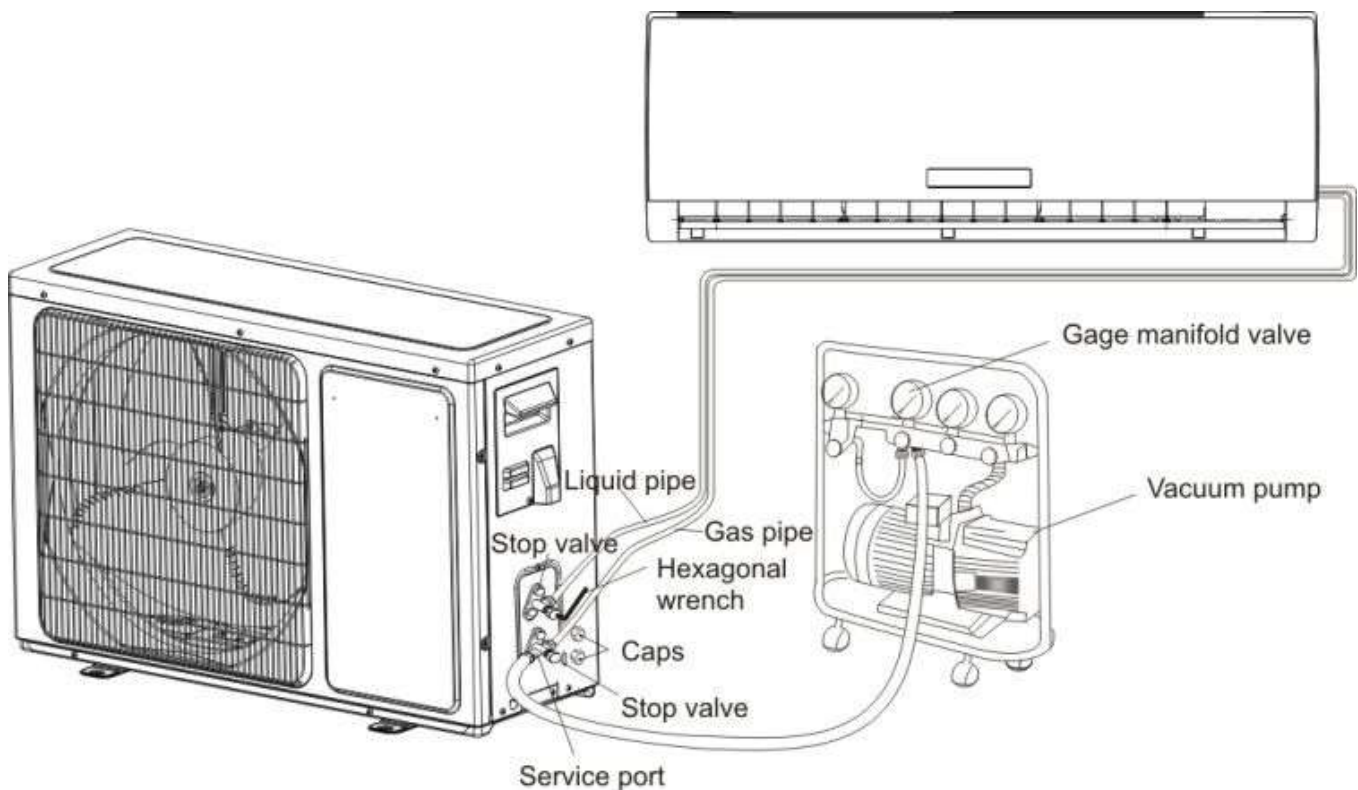
# Refrigerant circuit

Models: WHP09SZA21S, WHP12SZA21S, WHP18SZA21S,  
and WHP24SZA21S



## Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
  2. Connect joint of charging hose to vacuum pump.
  3. Fully open the handle of Lo manifold valve.
  4. Open the vacuum pump to evacuate. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
  5. Keep evacuating for more than 15mins and make sure the reading of multi-meter is  $-1.0 \times 10^5$  pa (-76cmHg).
  6. Check the vacuum with the gage manifold valve, then close the gage manifold valve, and stop the vacuum pump.
  7. Leave it for one or two minutes. Make sure the pointer of the gage manifold valve remains in the same position.
  8. Remove the gage manifold valve quickly from the service port of the stop valve.
- After refrigerant pipes are connected and evacuated, fully open all stop valves on gas and liquid pipe sides.
9. Opening without fully opening lowers the performance and cause dangerous.
  10. Tighten the cap to the service port to obtain the initial status.
  11. Retighten the cap
  12. Leak test



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## Test Running

### △ Check after Installation

Items to be checked	Possible malfunction
Has it been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating)capacity
Is heat insulation sufficient?	It may cause condensation and dripping.
Is water drainage satisfactory?	It may cause condensation and dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the product.
Is the electric wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.
Has the unit been connected to a secure earth connection?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the part.
Are the inlet and outlet openings blocked?	It may cause insufficient cooling(heating)capacity.
Is the length of connection pipes and refrigerant capacity been recorded?	The refrigerant capacity is not accurate.

### △ Operation Test

#### 1. Before Operation Test

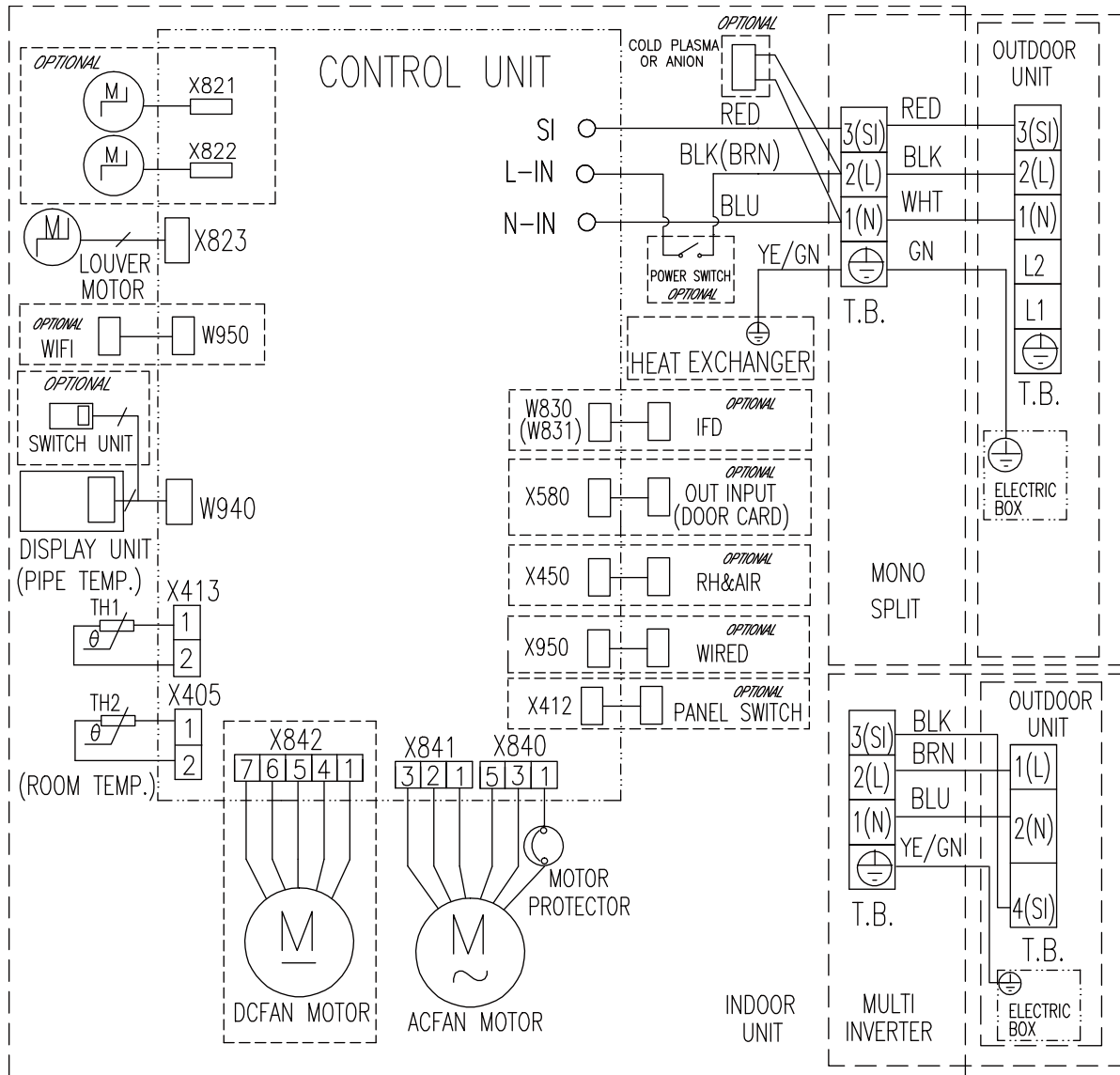
- (1) Do not switch on power before installation is finished completely.
- (2) Electric wiring must be connected correctly and securely.
- (3) Cut-off valves of the connection pipes should be opened.
- (4) All the impurities such as scraps and thrums must be cleared from the unit.

#### 2. Operation Test Method

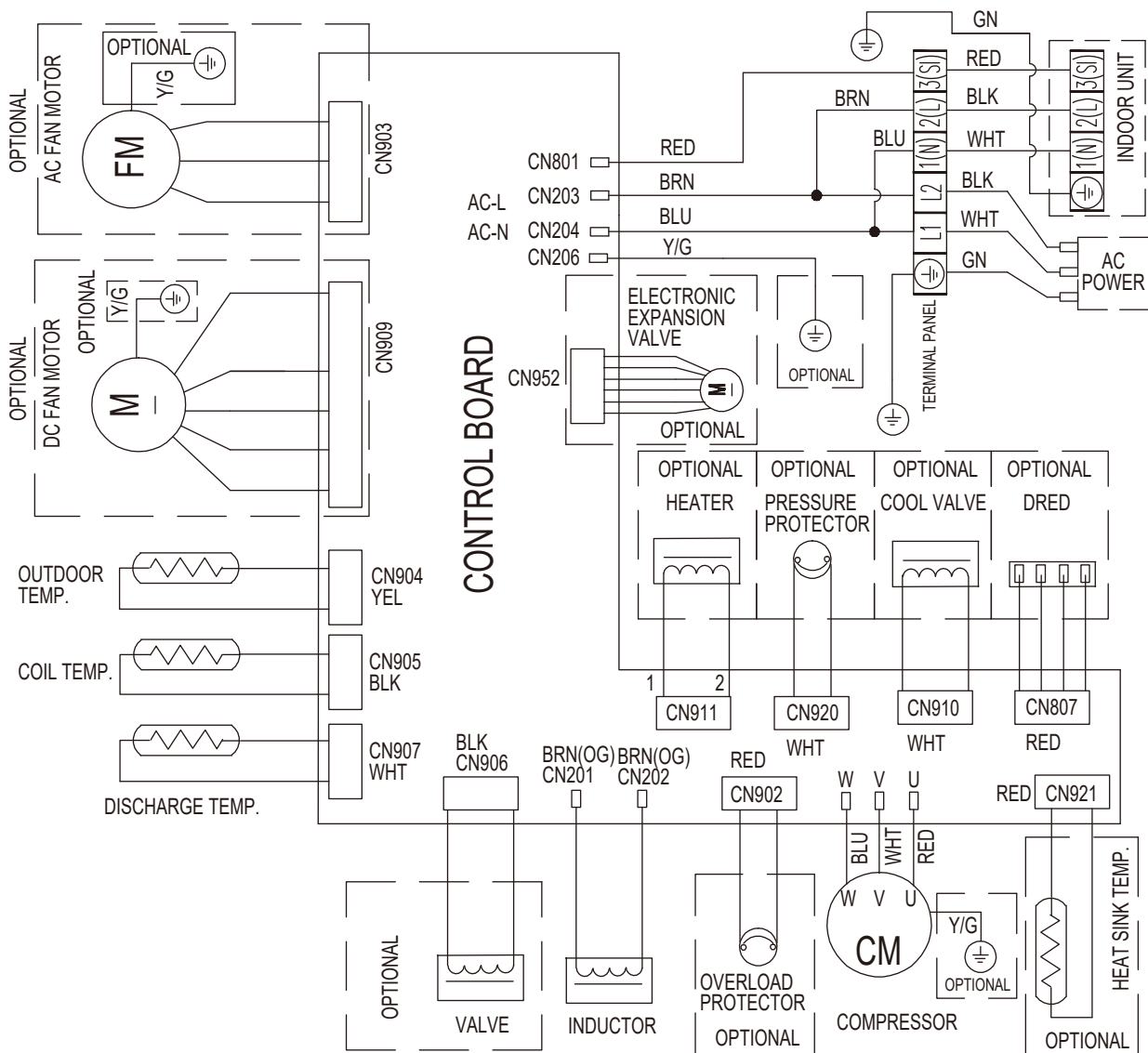
- (1) Switch on power and press "ON/OFF" button on the remote controller to start the operation.
- (2) Press MODE button to select the COOL, HEAT (Cooling only unit is not available), FAN to check whether the operation is normal or not.

# Wiring diagrams

## Models: WHP09WMA21S, WHP12WMA21S, WHP18WMA21S, and WHP24WMA21S



# Models: WHP09SZA21S, WHP12SZA21S, WHP18SZA21S, and WHP24SZA21S



# Troubleshooting

## Error Code Table

### 1. Indication on the outdoor unit:

When the unit has the following trouble and the compressor stops running, The LED of outdoor control board will show the error sequence automatically:

**NOTE:** ★ : LIGHT    ○ : FLASH    × : OFF

Error code	Outdoor Failure Description	LED1	LED2	LED3	the root cause may be one of the following
<b>Mark description: the lights flash every second for the following faults</b>					
	Normal	×	×	×	
	Outdoor coil temperature sensor in trouble	★	×	★	<ul style="list-style-type: none"> <li>a. The outdoor coil sensor connect loose;</li> <li>b. The outdoor coil temperature sensor is failure;</li> <li>c. The outdoor control board is failure</li> </ul>
	Compressor exhaust temperature sensor in trouble	★	×	×	<ul style="list-style-type: none"> <li>a. The compressor exhaust temperature sensor connect loose;</li> <li>b. The compressor exhaust temperature sensor is failure;</li> <li>c. The outdoor control board is failure</li> </ul>
	Communication failure between the indoor unit and outdoor unit	×	×	○	<ul style="list-style-type: none"> <li>a. The communication cable connect loose;</li> <li>b. The communication cable is failure;</li> <li>c. The connection between the filter board and the outdoor control board is incorrect or loose;</li> <li>d. The connection between the filter board and the terminal is incorrect or loose;</li> <li>e. The indoor control board is failure;</li> <li>f. The PFC board is failure;</li> <li>g. The power board is failure; h. the outdoor control board is failure.</li> </ul>
	Current overload protection	★	○	×	<ul style="list-style-type: none"> <li>a. The fan motor run abnormally;</li> <li>b. The condenser or and evaporator is dirty;</li> <li>c. The air inlet and outlet is abnormally</li> </ul>
	Maximum current protection	★	○	★	<ul style="list-style-type: none"> <li>a. The outdoor control board is short circuit;</li> <li>b. The drive board is short circuit;</li> <li>c. The other components is short circuit</li> </ul>
	Communication trouble between outdoor unit and driver	×	★	★	<ul style="list-style-type: none"> <li>a. The connection wires connect loose</li> <li>b. The outdoor board or drive board is failure;</li> </ul>

	Outdoor EEPROM in trouble	★	★	★	<p>a. The EEPROM chip is loose;</p> <p>b. The EEPROM chip inserted with opposite direction;</p> <p>c. The EEPROM chip is failure</p>
	Compressor exhaust temperature too high protection	×	○	★	<p>a. The compressor exhaust temperature sensor is failure;</p> <p>b. The refrigerant of the unit is not enough</p>
	Outdoor ambient temperature sensor in trouble	★	★	×	<p>a. The outdoor ambient temperature sensor connect loose;</p> <p>b. The outdoor ambient temperature sensor is failure;</p> <p>c. The outdoor control board is failure</p>
	Compressor shell temperature too high protection	×	★	○	<p>a. The compressor exhaust temperature sensor connect loose</p> <p>b. The refrigerant of the unit is not enough</p>
	Anti-freeze protection with cooling or overload protection with heating in indoor unit	×	○	○	<p>a. The indoor coil temperature sensor connect loose;</p> <p>b. The indoor coil temperature sensor is failure;</p> <p>c. The indoor control board is failure</p> <p>d. The refrigerant system is abnormal.</p>
	Compressor drive in trouble	○	×	○	<p>a. The outdoor drive board is failure;</p> <p>b. The compressor is failure</p> <p>c. The outdoor control board is failure</p>
	Outdoor fan motor locked rotor protection	○	○	★	<p>a. The connection of the outdoor fan motor is loose;</p> <p>b. There are something block the outdoor fan;</p> <p>c. The fan motor is failure;</p> <p>d. The outdoor control board is failure</p>
	Outdoor coil anti-overload protection with cooling	×	★	×	<p>a. The refrigerant is too much;</p> <p>b. The outdoor fan motor is failure;</p> <p>c. The outdoor fan is broken;</p> <p>d. The condenser is dirty;</p> <p>e. The air inlet and air outlet of the indoor unit and the outdoor unit is not normally</p>



	IPM module protection	×	○	×	<p>a. The IPM board is failure;</p> <p>b. The outdoor fan is broken;</p> <p>c. The outdoor fan motor is failure;</p> <p>d. The outdoor fan has been blocked ;</p> <p>e. The condenser is dirty;</p> <p>f. The outdoor unit has been installed without standard.</p>
	PFC protection	○	×	×	<p>a. The PFC is failure;</p> <p>b. The outdoor drive board is failure</p>
	Compressor pre heating process	○	★	○	It is normal mode in cold weather
	Chip in outdoor board in trouble	★	×	○	<p>a. Using the wrong drive board;</p> <p>b. Using the wrong compressor.</p>
	AC voltage higher or lower protection	★	★	○	<p>a. The supply voltage is higher or lower than normal;</p> <p>b. The inner supply voltage of the unit is higher or lower than normal</p>
	DC compressor start failure	○	○	×	<p>a. The outdoor drive board is failure;</p> <p>b. The compressor is failure</p>
	Outdoor ambient temperature too low protection	★	○	○	a. Outdoor ambient temperature too low
<b>Mark description: the lights flash every two seconds for the following faults</b>					
	Protection against overheated outdoor radiator	○	×	×	<p>a. Radiator sensors fail</p> <p>b. Detection circuit of the sensor on the control panel fails</p>
	Protection of the system against too high pressure	○	○	×	<p>a. The pressure switch fails</p> <p>b. The pressure detection switch on the control panel fails</p> <p>c. The measured value of the system pressure exceeds the limit</p>

**When the compressor is in operation:**

Mark description: ★ : Light ○ : Flash × : Off; the flash cycle is 1S				
No.	LED1	LED2	LED3	Reasons for the current operating frequency of the compressor is limited
1	○	○	○	Normal frequency rising and decreasing, no limitation
2	×	×	★	Frequency decreasing or prohibition of frequency rising caused by over-current
3	×	★	★	Frequency decreasing or prohibition of frequency rising caused by anti-freezing of refrigeration or anti-oveload in heating

4	★	×	★	Frequency decreasing or prohibition of frequency rising caused by too high compressor discharge temperature
5				Limit to the max operating frequency caused by too low power voltage
6	★	★	★	Operation at fixed frequency (in the case of capability measuring or compulsory operation at fixed frequency)
7	○	×	×	Protective frequency decreasing against outdoor overload (overpower, over frequency conversion rate, over torque, detection of DC under-voltage)
8	★	×	×	Frequency decreasing caused by indoor and outdoor communication fault
9	×	★	○	Frequency decreasing or prohibition of frequency rising protection against overload of outdoor coiled pipe
10	×	★	×	Frequency decreasing or prohibition of frequency rising for power-saving when it is being used simultaneously with other appliances

## 2. Indication by the indoor unit:

2.1. The 7-segment tube of the indoor display board will show the error code automatically when the unit has the following trouble:

Error code	Power	Timer	Running	Sleep	Remark : ★Light    ○ Flash    × OFF		
	1	2	3	4	Content	Remark	The root cause is may be one of the following
EA					The error code will display when the communication between display board and control board have in trouble		a. The connection between the display board and control board is loose; b. The indoor control board is failure. c. The wiring of the display board is failure.

2.2. When the unit has the following trouble and the compressor stops running, press the sleep button on the remote controller for 4 times in ten seconds and the 7-segment tube of the display board will show the error code as the following, if two malfunction happened at the same time, it need press the sleep button for 4 times again, the LED will show the other error code.

Refer to the remote controller which the sleep key can set into 4 different combination ways (Hisense's new design remote controller), when using to check the error codes only takes effect for pressing the sleep key 10 times in ten seconds instead of 4 times.

NOTE: If the troubleshooting inquiry display by 7-segment tube, then the error code will be displayed, otherwise only the LED of the display board can show.

Error code	Running	Timer	Sleep	Power	Remark : ★Light    ○ Flash    × OFF		
	1	2	3	4	Content	Remark	The root cause is may be one of the following

0					Normal		
1	x	O	x	x	The failure for temperature sensor of outdoor coil		<ul style="list-style-type: none"> <li><b>a.</b> The outdoor temperature sensor loose;</li> <li><b>b.</b> The outdoor temperature sensor is failure;</li> <li><b>c.</b> The indoor control board is failure</li> </ul>
2	×	O	★	×	Compressor exhaust temperature sensor in trouble		<ul style="list-style-type: none"> <li><b>a.</b> The compressor exhaust temperature sensor connect loose;</li> <li><b>b.</b> The compressor exhaust temperature sensor is failure;</li> <li><b>c.</b> The outdoor control board is failure</li> </ul>
5	★	O	×	×	IPM module protection		<ul style="list-style-type: none"> <li><b>a.</b> The IPM board is failure;</li> <li><b>b.</b> The outdoor fan is broken;</li> <li><b>c.</b> The outdoor fan motor is failure;</li> <li><b>d.</b> The outdoor fan has been blocked ;</li> <li><b>e.</b> The condenser is dirty;</li> <li><b>f.</b> The outdoor unit has been installed without standard.</li> </ul>
6	★	O	×	★	AC voltage higher or lower protection		<ul style="list-style-type: none"> <li><b>a.</b> The supply voltage is higher or lower than normal;</li> <li><b>b.</b> The inner supply voltage of the unit is higher or lower than normal</li> </ul>
7	★	O	★	×	Communication failure between the indoor unit and outdoor unit		<ul style="list-style-type: none"> <li><b>a.</b> The communication cable connect loose;</li> <li><b>b.</b> The communication cable is failure;</li> <li><b>c.</b> The connection between the filter board and the outdoor control board is incorrect or loose;</li> <li><b>d.</b> The connection between the filter board and the terminal is incorrect or loose;</li> <li><b>e.</b> The indoor control board is failure;</li> <li><b>f.</b> The PFC board is failure;</li> <li><b>g.</b> The power board is failure;</li> <li><b>h.</b> The outdoor control board is failure.</li> </ul>

8	★	○	★	★	Current overload protection	<ul style="list-style-type: none"> <li><b>a.</b> The fan motor run abnormally;</li> <li><b>b.</b> The condenser and evaporator is dirty;</li> <li><b>c.</b> The air inlet and outlet is abnormally</li> </ul>
9	×	×	○	×	Maximum current protection	<ul style="list-style-type: none"> <li><b>a.</b> The outdoor control board is short circuit;</li> <li><b>b.</b> The drive board is short circuit;</li> <li><b>c.</b> The other components is short circuit</li> </ul>
10	×	×	○	★	Communication trouble between outdoor unit and driver	<ul style="list-style-type: none"> <li><b>a.</b> the connection wires connect loose</li> <li><b>b.</b> The outdoor board or drive board is failure;</li> </ul>
11	×	★	○	×	Outdoor EEPROM in trouble	<ul style="list-style-type: none"> <li><b>a.</b> The EEPROM chip is loose;</li> <li><b>b.</b> The EEPROM chip inserted with opposite direction;</li> <li><b>c.</b> The EEPROM chip is failure</li> </ul>
12	×	★	○	★	Outdoor ambient temperature too low protection	Outdoor ambient temperature too low
13	★	×	○	×	Compressor exhaust temperature too high protection	<ul style="list-style-type: none"> <li><b>a.</b> The compressor exhaust temperature sensor is failure;</li> <li><b>b.</b> The refrigerant of the unit is not enough</li> </ul>
14	★	×	○	★	Outdoor ambient temperature sensor in trouble	<ul style="list-style-type: none"> <li><b>a.</b> The outdoor ambient temperature sensor connect loose;</li> <li><b>b.</b> The outdoor ambient temperature sensor is failure;</li> <li><b>c.</b> The outdoor control board is failure</li> </ul>
15	★	★	○	×	Compressor shell temperature too high protection	<ul style="list-style-type: none"> <li><b>a.</b> The compressor exhaust temperature sensor connect loose</li> <li><b>b.</b> The refrigerant of the unit is not enough</li> </ul>
16					Anti-freeze protection with cooling or overload protection with heating in	<ul style="list-style-type: none"> <li><b>a.</b> The indoor coil temperature sensor connect loose;</li> <li><b>b.</b> The indoor coil temperature sensor is failure;</li> <li><b>c.</b> The indoor control board is failure</li> </ul>

							<b>d.</b> the refrigerant system is abnormal.
17					PFC protection		<b>a.</b> the PFC is failure; <b>b.</b> the outdoor drive board is failure
18					DC compressor start failure		<b>a.</b> the outdoor drive board is failure; <b>b.</b> the compressor is failure
19	×	×	×	O	Compressor drive in trouble		<b>a.</b> the outdoor drive board is failure; <b>b.</b> the compressor is failure <b>c.</b> the outdoor control board is failure
20	★	×	×	O	Outdoor fan motor locked rotor protection		<b>a.</b> the connection of the outdoor fan motor is loose; <b>b.</b> there are something block the outdoor fan; <b>c.</b> the fan motor is failure; <b>d.</b> the outdoor control board is failure
21					Outdoor coil anti-overload protection with cooling		<b>a.</b> the refrigerant is too much; <b>b.</b> the outdoor fan motor is failure; <b>c.</b> the outdoor fan is broken; <b>d.</b> the condenser is dirty; <b>e.</b> the air inlet and air outlet of the indoor unit and the outdoor unit is not normally
22					Compressor pre heating process		it is normal mode in cold weather
24					Chip in outdoor board in trouble		<b>a.</b> Using the wrong drive board; <b>b.</b> Using the wrong compressor.
26					Overheated outdoor radiator		<b>a.</b> Radiator sensor fails <b>b.</b> Detection circuit of the sensor on the control panel fails
27					Protection against too high system pressure		<b>a.</b> The pressure switch fails <b>b.</b> The pressure detection switch on the control panel fails <b>c.</b> The measured value of system pressure exceeds the limit

33	O	x	x	★	The failure for temperature sensor of indoor room		<p><b>a.</b> The indoor room temperature sensor loose;</p> <p><b>b.</b> The indoor room temperature sensor is failure;</p> <p><b>c.</b> The indoor control board is failure.</p>
34	O	x	★	x	The failure for temperature sensor of indoor coil temperature		<p><b>a.</b> The indoor coil temperature sensor loose;</p> <p><b>b.</b> The indoor coil temperature sensor is failure;</p> <p><b>c.</b> The indoor control board is failure.</p>
36	O	★	×	★	Communication failure between the indoor unit and outdoor unit		<p><b>a.</b> the communication cable connect loose;</p> <p><b>b.</b> the communication cable is failure;</p> <p><b>c.</b> the connection between the filter board and the outdoor control board is incorrect or loose;</p> <p><b>d.</b> the connection between the filter board and the terminal is incorrect or loose;</p> <p><b>e.</b> the indoor control board is failure;</p> <p><b>f.</b> the PFC board is failure;</p> <p><b>g.</b> the power board is failure;</p> <p><b>h.</b> the outdoor control board is failure.</p>
38	O	★	★	★	Indoor EEPROM failure		<p><b>a.</b> The EEPROM chip loose;</p> <p><b>b.</b> The indoor control board is failure</p>
39	O	x	★	★	Indoor fan motor run abnormally		<p><b>a.</b> There are something block the indoor fan motor;</p> <p><b>b.</b> The fan motor cord connect loose;</p> <p><b>c.</b> The fan motor is failure;</p> <p><b>d.</b> The indoor control board is failure</p>
41	★	★	O	★	The failure for Indoor grounding protective		The indoor control board is failure

## 2.2 LED display

Error code	Sleep	Timer	Running	Remark : ★Light    ○ Flash    x OFF		
	1	2	3	Content	Remark	The root cause is may be one of the following

0					<b>Normal</b>	
1	O	★	★		The failure for temperature sensor of outdoor coil	<ul style="list-style-type: none"> <li><b>a.</b> The outdoor temperature sensor loose;</li> <li><b>b.</b> The outdoor temperature sensor is failure;</li> <li><b>c.</b> The indoor control board is failure</li> </ul>
2	O	★	x		Compressor exhaust temperature sensor in trouble	<ul style="list-style-type: none"> <li><b>a.</b> The compressor exhaust temperature sensor connect loose;</li> <li><b>b.</b> The compressor exhaust temperature sensor is failure;</li> <li><b>c.</b> The outdoor control board is failure</li> </ul>
5	★	O	x		IPM module protection	<ul style="list-style-type: none"> <li><b>a.</b> The IPM board is failure;</li> <li><b>b.</b> The outdoor fan is broken;</li> <li><b>c.</b> The outdoor fan motor is failure;</li> <li><b>d.</b> The outdoor fan has been blocked ;</li> <li><b>e.</b> The condenser is dirty;</li> <li><b>f.</b> The outdoor unit has been installed without standard.</li> </ul>
6	x	O	x		AC voltage higher or lower protection	<ul style="list-style-type: none"> <li><b>a.</b> The supply voltage is higher or lower than normal;</li> <li><b>b.</b> The inner supply voltage of the unit is higher or lower than normal</li> </ul>
7	★	★	x		Communication failure between the indoor unit and outdoor unit	<ul style="list-style-type: none"> <li><b>a.</b> The communication cable connect loose;</li> <li><b>b.</b> The communication cable is failure;</li> <li><b>c.</b> The connection between the filter board and the outdoor control board is incorrect or loose;</li> <li><b>d.</b> The connection between the filter board and the terminal is incorrect or loose;</li> <li><b>e.</b> The indoor control board is failure;</li> <li><b>f.</b> The PFC board is failure;</li> <li><b>g.</b> The power board is failure;</li> <li><b>h.</b> The outdoor control board is failure.</li> </ul>
8					Current overload protection	<ul style="list-style-type: none"> <li><b>a.</b> The fan motor run abnormally;</li> <li><b>b.</b> The condenser and evaporator is dirty;</li> <li><b>c.</b> The air inlet and outlet is abnormally</li> </ul>

9					Maximum current protection		<p><b>a.</b> The outdoor control board is short circuit;</p> <p><b>b.</b> The drive board is short circuit;</p> <p><b>c.</b> The other components is short circuit</p>
10	★	x	x		Communication trouble between outdoor unit and driver		<p><b>a.</b> The connection wires connect loose</p> <p><b>b.</b> The outdoor board or drive board is failure;</p>
11	O	x	x		Outdoor EEPROM in trouble		<p><b>a.</b> The EEPROM chip is loose;</p> <p><b>b.</b> The EEPROM chip inserted with opposite direction;</p> <p><b>c.</b> The EEPROM chip is failure</p>
12					Outdoor ambient temperature too low protection		Outdoor ambient temperature too low
13	O	x	★		Compressor exhaust temperature too high protection		<p><b>a.</b> The compressor exhaust temperature sensor is failure;</p> <p><b>b.</b> The refrigerant of the unit is not enough</p>
14	★	★	O		Outdoor ambient temperature sensor in trouble		<p><b>a.</b> The outdoor ambient temperature sensor connect loose;</p> <p><b>b.</b> The outdoor ambient temperature sensor is failure;</p> <p><b>c.</b> The outdoor control board is failure</p>
15	x	O	★		Compressor shell temperature too high protection		<p><b>a.</b> The compressor exhaust temperature sensor connect loose</p> <p><b>b.</b> The refrigerant of the unit is not enough</p>
16	★	x	★		Anti-freeze protection with cooling or overload protection with heating in		<p><b>a.</b> The indoor coil temperature sensor connect loose;</p> <p><b>b.</b> The indoor coil temperature sensor is failure;</p> <p><b>c.</b> The indoor control board is failure</p> <p><b>d.</b> The refrigerant system is abnormal.</p>
17	x	★	x		PFC protection		<p><b>a.</b> The PFC is failure;</p> <p><b>b.</b> The outdoor drive board is failure</p>
18	x	★	★		DC compressor start failure		<p><b>a.</b> The outdoor drive board is failure;</p> <p><b>b.</b> The compressor is failure</p>



19	x	★	O		Compressor drive in trouble		<p><b>a.</b> The outdoor drive board is failure;</p> <p><b>b.</b> The compressor is failure</p> <p><b>c.</b> The outdoor control board is failure</p>
20	★	x	O		Outdoor fan motor locked rotor protection		<p><b>a.</b> The connection of the outdoor fan motor is loose;</p> <p><b>b.</b> There are something block the outdoor fan;</p> <p><b>c.</b> The fan motor is failure;</p> <p><b>d.</b> The outdoor control board is failure</p>
21	x	x	O		Outdoor coil anti-overload protection with cooling		<p><b>a.</b> The refrigerant is too much;</p> <p><b>b.</b> The outdoor fan motor is failure;</p> <p><b>c.</b> The outdoor fan is broken;</p> <p><b>d.</b> The condenser is dirty;</p> <p><b>e.</b> The air inlet and air outlet of the indoor unit and the outdoor unit is not normally</p>
22					Compressor pre heating process		It is normal mode in cold weather
24					Chip in outdoor board in trouble		<p><b>a.</b> Using the wrong drive board;</p> <p><b>b.</b> Using the wrong compressor.</p>
26					Overheated outdoor radiator		<p><b>a.</b> Radiator sensor fails</p> <p><b>b.</b> Detection circuit of the sensor on the control panel fails</p>
27					Protection against too high system pressure		<p><b>a.</b> The pressure switch fails</p> <p><b>b.</b> The pressure detection switch on the control panel fails</p> <p><b>c.</b> The measured value of system pressure exceeds the limit</p>
33	★	O	O		The failure for temperature sensor of indoor room		<p><b>d.</b> The indoor room temperature sensor loose;</p> <p><b>e.</b> The indoor room temperature sensor is failure;</p> <p><b>f.</b> The indoor control board is failure.</p>
34	x	O	O		The failure for temperature sensor of indoor coil temperature		<p><b>d.</b> The indoor coil temperature sensor loose;</p> <p><b>e.</b> The indoor coil temperature sensor is failure;</p> <p><b>f.</b> The indoor control board is failure.</p>

36	O	★	O		Communication failure between the indoor unit and outdoor unit	<ul style="list-style-type: none"> <li><b>a.</b> The communication cable connect loose;</li> <li><b>b.</b> The communication cable is failure;</li> <li><b>c.</b> The connection between the filter board and the outdoor control board is incorrect or loose;</li> <li><b>d.</b> The connection between the filter board and the terminal is incorrect or loose;</li> <li><b>e.</b> The indoor control board is failure;</li> <li><b>f.</b> The PFC board is failure;</li> <li><b>g.</b> The power board is failure;</li> <li><b>h.</b> The outdoor control board is failure.</li> </ul>
38	O	O	x		Indoor EEPROM failure	<ul style="list-style-type: none"> <li><b>c.</b> The EEPROM chip loose;</li> <li><b>d.</b> The indoor control board is failure</li> </ul>
39	O	O	★		Indoor fan motor run abnormally	<ul style="list-style-type: none"> <li><b>a.</b> There are something block the indoor fan motor;</li> <li><b>b.</b> The fan motor cord connect loose;</li> <li><b>c.</b> The fan motor is failure;</li> <li><b>d.</b> The indoor control board is failure</li> </ul>
41	x	x	★		The failure for Indoor grounding protective	The indoor control board is failure

The failure is detected when the room temperature sensor broken or shorted over 5 sec.

The failure is detected when the temperature sensor of heater exchange broken or shorted over 5 sec.

The failure is detected when each setting data is not match after the EEPROM self-check two times.

The failure is occur when the grounding signal is not detected after the appliance power ON.

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## Test the jumper terminals

### Note:

When the whole machine is powered up, if the external unit does not work, to rule out the communications failures, adopt screening method such as short circuit on the jumper terminals to see if the external unit can be started normally or similar method.



There are two blue terminals on the outdoor control panel, as shown above.

Application: Short out the terminals, and power up the outdoor unit, then the outdoor unit may run independently. It can be determined that there is no internal and external communication faults.

When the environment temperature is lower than 18°C, you can't run the unit under the cool mode, but if you need run the unit at this moment, such as add the gas or do more test, at this moment you can use this function,

Under this function, the outdoor motor and compressor will be forced to run until reaching a fixed frequency (general is 50~55Hz).

## Trouble Diagnosis of Protection

### Protection diagnosis of the complete machine (all types of protection during operation, i.e. under-voltage, over-voltage and overcurrent protection)

**Note:** List all types of protection that may occur to the complete machine and describe the conditions and signs of the start, course and end of such protection.

#### Voltage protection

##### Protection against AC input over-voltage/under-voltage

###### 1. Conditions for protection against AC input over-voltage/under-voltage:

If the input AC voltage is greater than “protective over-voltage value” or less than “protective under-voltage value” for five seconds, over-voltage/under-voltage protection starts.

###### 2. Protection actions against AC input over-voltage/under-voltage

The system stops operation.

###### 3. Conditions for ending AC input over-voltage/under-voltage:

If the input AC voltage is lower than “the protective over-voltage value” -10V, or higher than “the protective under-voltage value” +10V, the over-voltage/under-voltage protection will be released.

#### Current protection:

##### 1. Protection against over-current

Conditions for over-current protection: if the current is equal to or greater than “current value for starting the refrigeration current protection (E2 value)” for six seconds, over-current protection starts.

Protection actions against over-current: indoor display screen and outdoor indicator give indications, the

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compressor and outdoor fan stop, but indoor fan runs normally.

Condition for ending over-current protection: when the current drops below “current value for releasing the refrigeration current protection (E2 value)”, over-current protection will be released.

## **2. Frequency decreasing for over-current**

Conditions for over-current frequency decreasing : if the current is equal to or greater than “current value for starting the refrigeration current protective frequency decreasing (E2 value)”, over-current frequency decreasing starts.

Over-current frequency decreasing actions: the compressor will decrease frequency at rate of (E2 value)Hz/S. The indoor and outdoor fans run.

Conditions for ending over-current frequency decreasing : when the current drops below “current value for starting the refrigeration current protective prohibition of frequency rising (E2 value)”, over-current under-clocking will be released.

## **3. Prohibition of frequency increasing of compressor exhausting**

Conditions for prohibition of frequency rising of compressor discharge

Condition 1: in the case of frequency decreasing of compressor discharge, the discharge temperature of the compressor drops below X4°C.

Condition 2: in normal operation, the discharge temperature of compressor reaches X5°C.

Either of the above two conditions is met, prohibition of frequency rising of compressor discharge begins.

Actions relates to prohibition of frequency rising of compressor discharge: the frequency of compressor maintains at the current level, which may decrease as the case requires while cannot rise. The indoor and outdoor fans run.

Condition for ending prohibition of frequency rising of compressor discharge: if the temperature of compressor discharge drops below X6°C, prohibition of frequency rising of compressor discharge will be released.

## **4. Prohibition of frequency for anti-overload of outdoor coiled pipe**

Condition for anti-overload prohibition of frequency of outdoor coiled pipe: in the case of anti-overload frequency decreasing of outdoor coiled pipe, anti-overload prohibition of frequency of the unit begins when the temperature of outdoor coiled pipe drops below “the anti-overload frequency decreasing temperature of outdoor coiled pipe”.

Actions relates to anti-overload prohibition of frequency of outdoor coiled pipe: the frequency of compressor maintains at the current level, which may decrease as the case requires while cannot rise. The indoor and outdoor fans run.

Condition for ending anti-overload prohibition of frequency of outdoor coiled pipe: if the temperature of outdoor coiled pipe drops below “temperature to release the anti-overload state of outdoor coiled pipe”, anti-overload prohibition of frequency of outdoor coiled pipe will be released.

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## **Trouble Diagnosis of Compressor**

Judging the connecting terminals of inverter compressor:

It is impossible to identify terminals U, V and W of inverter compressor with multi-meter. Just connect the terminals in the same way as the original unit when replacing the compressor. A wrong connection will lead to reverse and loud noise of the compressor.

Resistance of compressor coil:

Measure the resistance between any two terminals, which are about a few Ohms, three phases having the same resistance.

## **Trouble Diagnosis of Electric Filter Board**

Visual examination: as the circuit is simple, the connection may be checked visually to see whether any loose or poor connection.

Voltage test: the voltage at the input end shall be the same as the voltage at the output end.

## **Trouble Diagnosis of Electric Communication**

Step one: to determine whether the connecting cables and tether cables of indoor/outdoor units are correctly wired. If not, change wiring order and test connection.

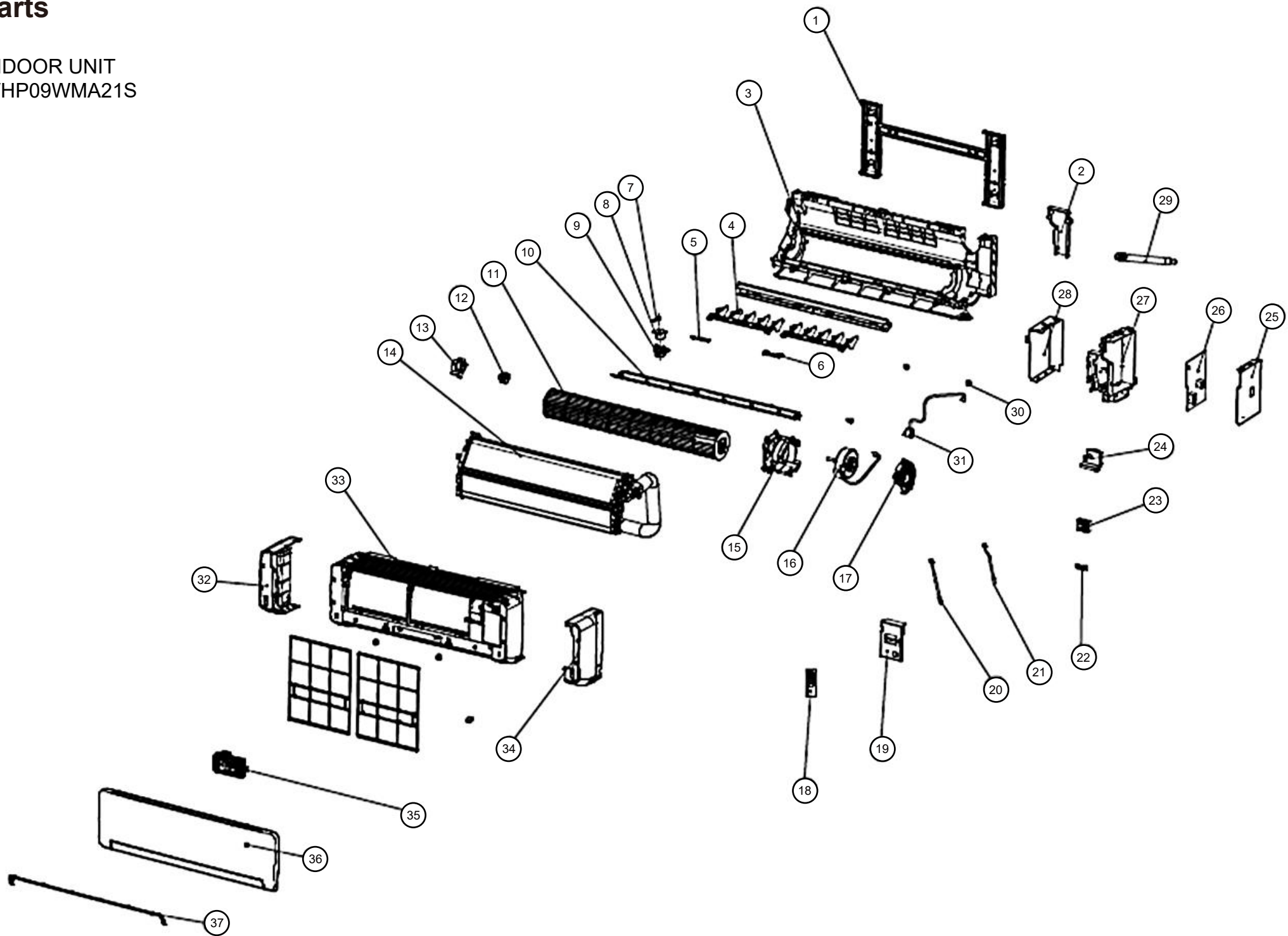
Step two: to determine whether there is loose connection.

Fasten the connection in the case of loose connection and then conduct verification.

Step three: measure the voltage between SI and N with multi-meter and see whether the voltage fluctuates between 0V and 24V. Please directly replace indoor and outdoor control boards if there are not voltage fluctuations.

# Parts

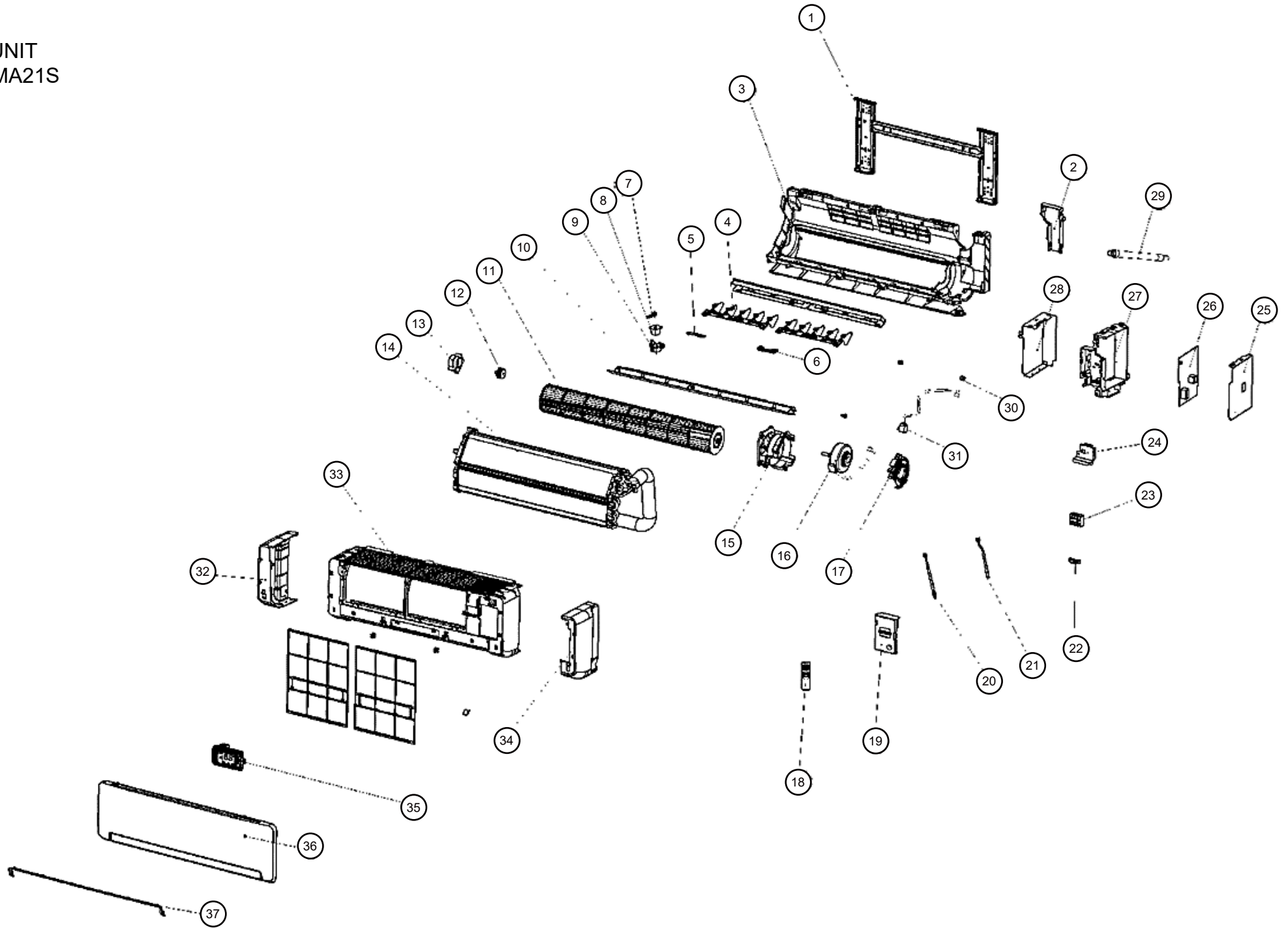
INDOOR UNIT  
WHP09WMA21S



INDOOR UNIT  
WHP09WMA21S

No.	Part number	Description
1	1906600	Bracket wall
2	1984201	Baffle
3	1854439	Base assembly
4	1555378	Vertical louver
5	1555381	Holder center
6	1555385	Holder center
7	1555387	Holder center
8	1260259	Step motor
9	1555386	Guard motor
10	1555374	Louver
11	1466014	Cross flow fan assy
12	1223739	Bearing
13	1465670	Baffle
14	1512275	Evaporator
15	2091423	Guard motor
16	1838324	DC motor
17	2091436	Cover motor
18	4151687	Remote control
19	1840039	Cover wire
20	1837499	Thermistor pipe
21	1896665	Thermistor pipe
22	1839902	Clamp cord
23	1852126	Terminal
24	1465763	Cover wire
25	1465762	Electric box cover
26	1994823	Controller PCB
27	1868909	Electric box
28	1465761	Electric box cover
29	1470426	Drain hose
30	1222824	Plug
31	1468408	Step motor
32	1555390	Ornamental part
33	2007198	Front panel
34	1555391	Ornamental part
35	1874771	Display assembly
36	4151756	Intake grille
37	1826563	Ornamental part
	1506312	Air filter

INDOOR UNIT  
WHP12WMA21S

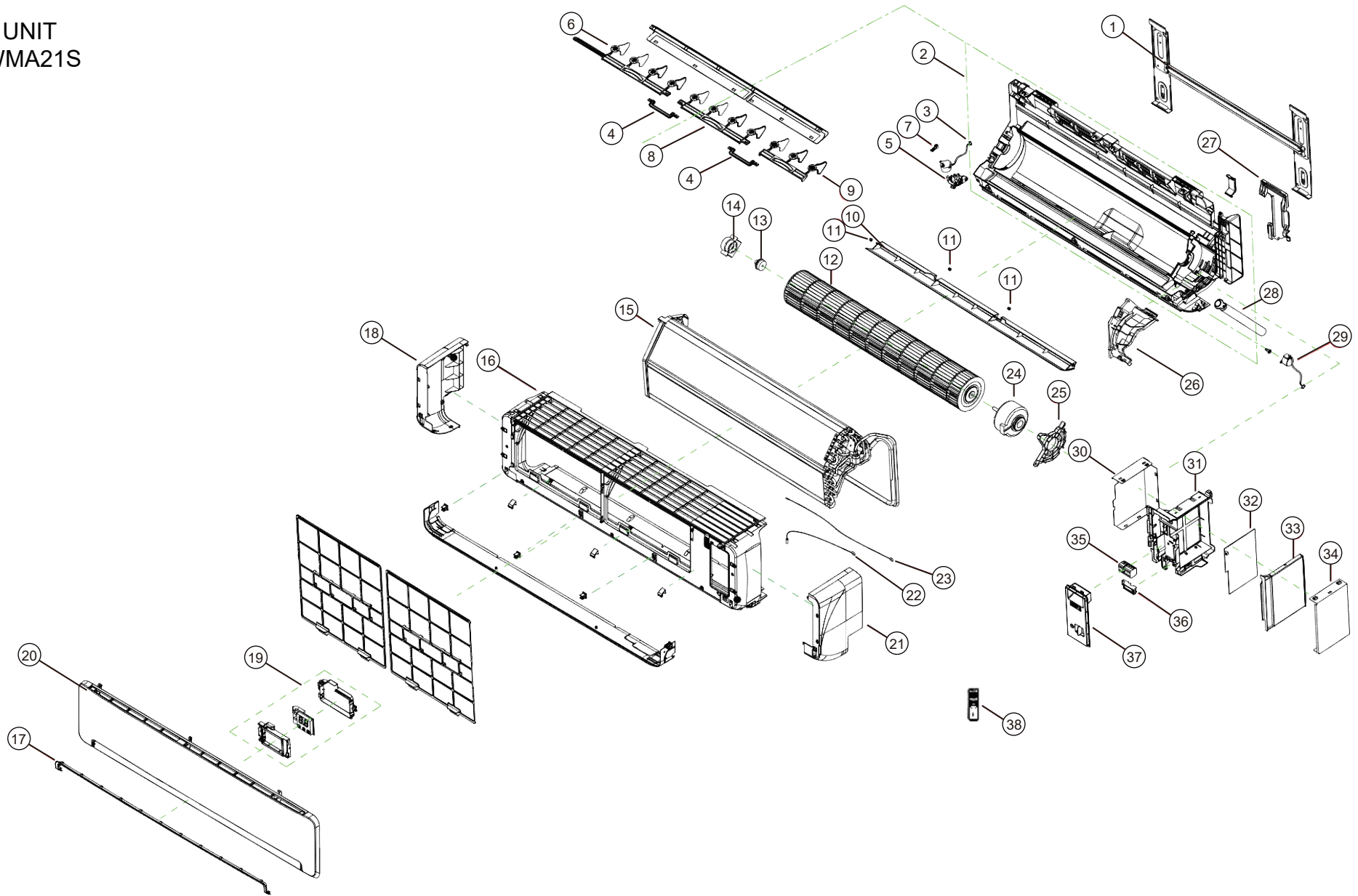




INDOOR UNIT  
WHP12WMA21S

No.	Part number	Description
1	1906600	Bracket wall
2	1984201	Baffle
3	1854439	Base assembly
4	1555378	Vertical louver
5	1555381	Holder center
6	1555385	Holder center
7	1555387	Holder center
8	1260259	Step motor
9	1555386	Guard motor
10	1555374	Louver
11	1466014	Cross flow fan assy
12	1223739	Bearing
13	1465670	Baffle
14	1512275	Evaporator
15	2091423	Guard motor
16	1838324	DC motor
17	2091436	Cover motor
18	4151687	Remote control
19	1840039	Cover wire
20	1837499	Thermistor pipe
21	1896665	Thermistor pipe
22	1839902	Clamp cord
23	1852126	Terminal
24	1465763	Cover wire
25	1465762	Electric box cover
26	1994827	Controller PCB
27	1868909	Electric box
28	1465761	Electric box cover
29	1470426	Drain hose
30	1222824	Plug
31	1468408	Step motor
32	1555390	Ornamental part
33	2007198	Front panel
34	1555391	Ornamental part
35	1874771	Display assembly
36	4151756	Intake grille
37	1826563	Ornamental part
	1506312	Air filter

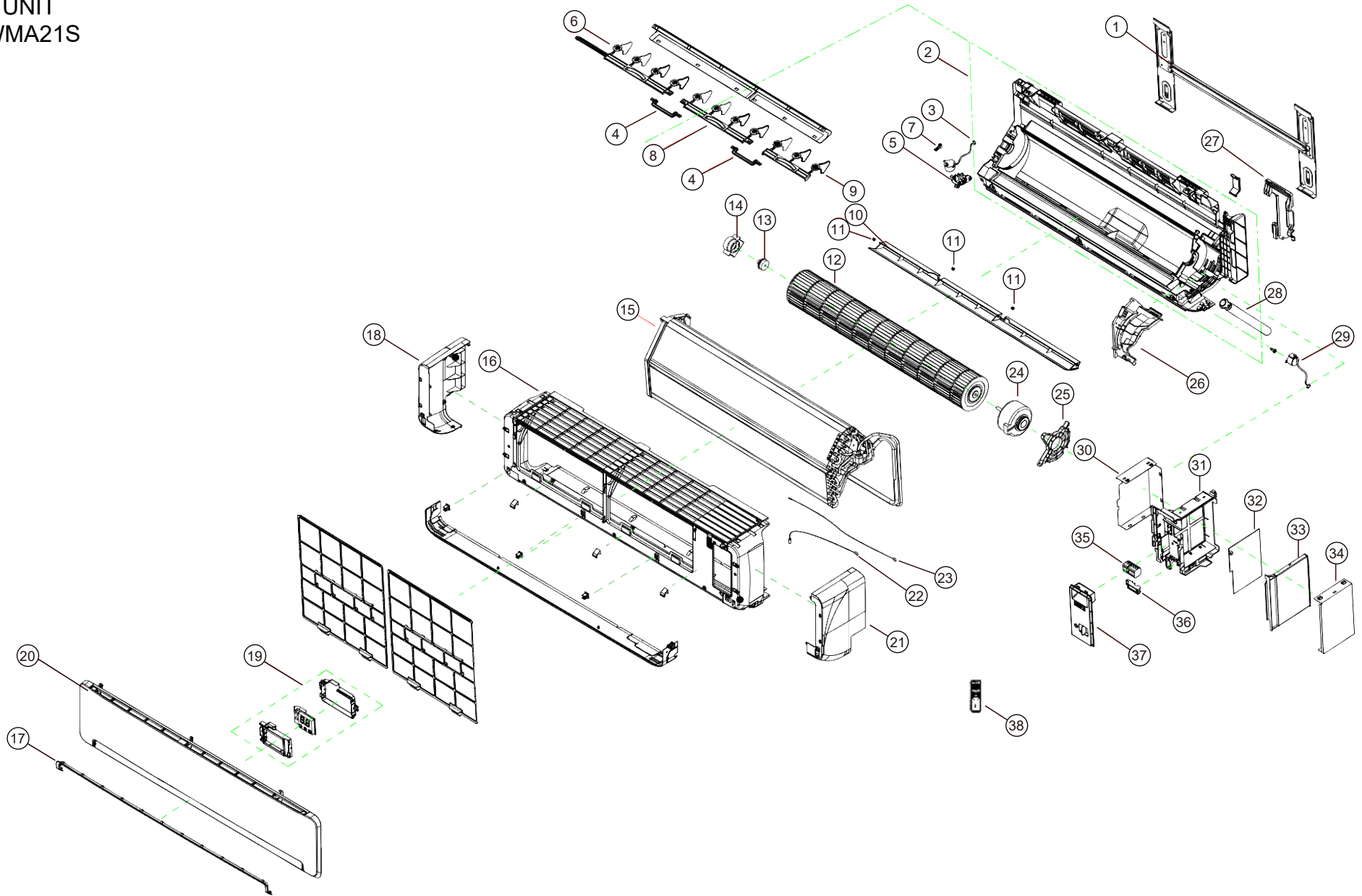
INDOOR UNIT  
WHP18WMA21S



INDOOR UNIT  
WHP18WMA21S

No.	Part number	Description
1	1907022	Bracket wall
2	1954365	Base assembly
3	1260311	Step motor
4	1541366	Holder center
5	1541373	Guard motor
6	1541456	Vertical louver
7	1541368	Holder center
8	1550291	Vertical louver
9	1550300	Vertical louver
10	1541363	Louver
11	1222824	Plug
12	1541633	Cross flow fan assy
13	1223738	Bearing
14	1465670	Baffle
15	1838915	Evaporator
16	1541382	Front panel
17	1826559	Ornamental part
18	1541388	Ornamental part
19	1824935	Display assembly
20	4151757	Intake grille
21	1541389	Ornamental part
22	1837499	Thermistor pipe
23	1896665	Thermistor pipe
24	1561456	Motor fan
25	1541374	Cover motor
26	1541375	Guard motor
27	1541361	Baffle
28	1470426	Drain hose
29	1819726	Step motor
30	1541500	Electric box cover
31	1870720	Electric box
32	1989042	Controller PCB
33	1541507	Cover wire
34	1837043	Cover wire
35	1852126	Terminal
36	1840141	Clamp cord
37	1541379	Cover display
38	4151687	Remote control
	1541387	Air filter

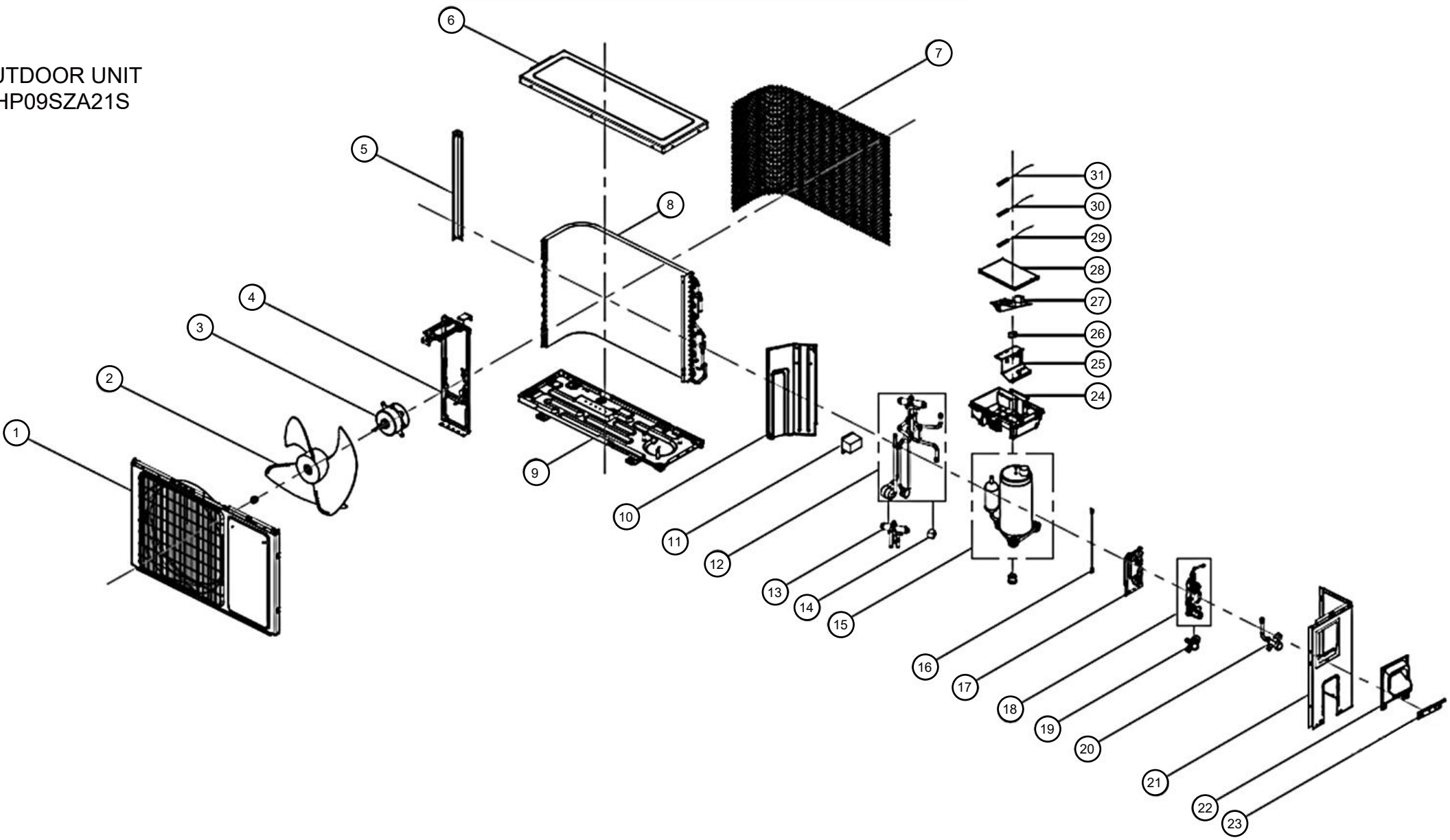
INDOOR UNIT  
WHP24WMA21S



INDOOR UNIT  
WHP24WMA21S

No.	Part number	Description
1	1907022	Bracket wall
2	1954365	Base assembly
3	1260311	Step motor
4	1541366	Holder center
5	1541373	Guard motor
6	1541456	Vertical louver
7	1541368	Holder center
8	1550291	Vertical louver
9	1550300	Vertical louver
10	1541363	Louver
11	1222824	Plug
12	1541633	Cross flow fan assy
13	1223738	Bearing
14	1465670	Baffle
15	1556041	Evaporator
16	1541382	Front panel
17	1826559	Ornamental part
18	1541388	Ornamental part
19	1824935	Display assembly
20	4151757	Intake grille
21	1541389	Ornamental part
22	1837499	Thermistor pipe
23	1896665	Thermistor pipe
24	1561456	Motor fan
25	1541374	Cover motor
26	1541375	Guard motor
27	1541361	Baffle
28	1470426	Drain hose
29	1819726	Step motor
30	1541500	Electric box cover
31	1870720	Electric box
32	1997858	Controller PCB
33	1541507	Cover wire
34	1837043	Cover wire
35	1852126	Terminal
36	1840141	Clamp cord
37	1541379	Cover display
38	4151687	Remote control
	1541387	Air filter

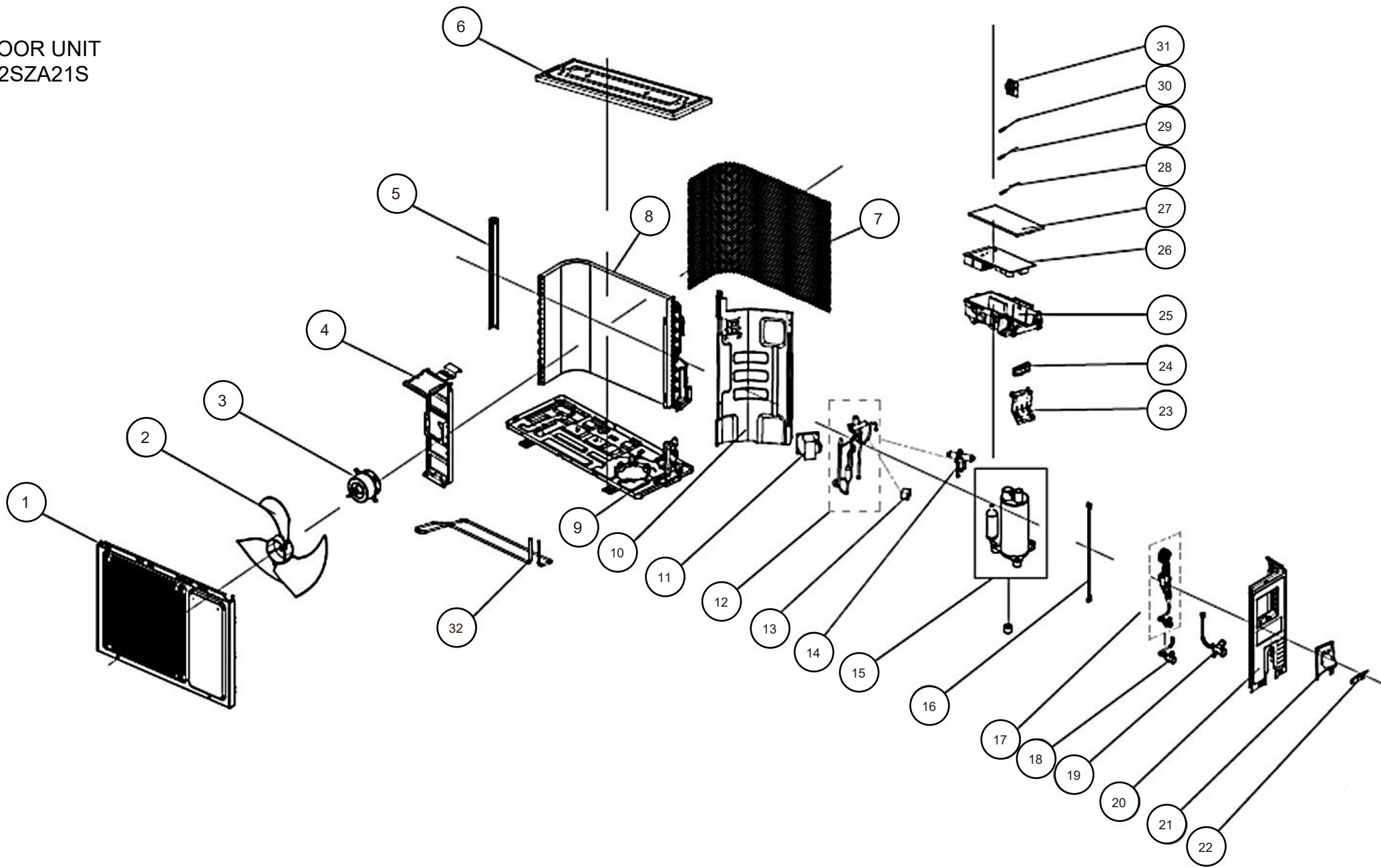
OUTDOOR UNIT  
WHP09SZA21S



OUTDOOR UNIT  
WHP09SZA21S

No.	Part number	Description
1	2135537	Front panel w/ grille
2	1405123	Propeller fan blade
3	1820938	Fan motor
4	1824869	Motor bracket
5	1824871	Mounting plate
6	1824865	Top panel
7	1824902	Protective net back
7	1824903	Protective net left
8	1854202	Condenser assembly
9	1854218	Base assembly
10	1858994	Clapboard part
11	1829624	Choke coil
12	1854176	Valve 4 way TA
13	1258654	Valve 4 way
14	1511783	Solenoid
15	1838380	Compressor
16	1822371	Compressor wire
17	1824870	Bracket valve
18	1838379	Capillary assembly
19	1258653	Valve 2 way 1/4
20	1407169	Valve 3 way 3/8
21	1855206	Cabinet right
22	1854033	Bracket conduit
23	1854034	Plate cover
24	1894523	Electric box
25	1843011	Connecting board
26	1854383	Wire terminal board
27	1985606	Inverter control PCB
28	1894526	Cover wire
29	1472663	Thermistor discharge
30	1472664	Thermistor pipe
31	1831029	Thermistor outdoor
	1854709	Tube electric heater

OUTDOOR UNIT  
WHP12SZA21S

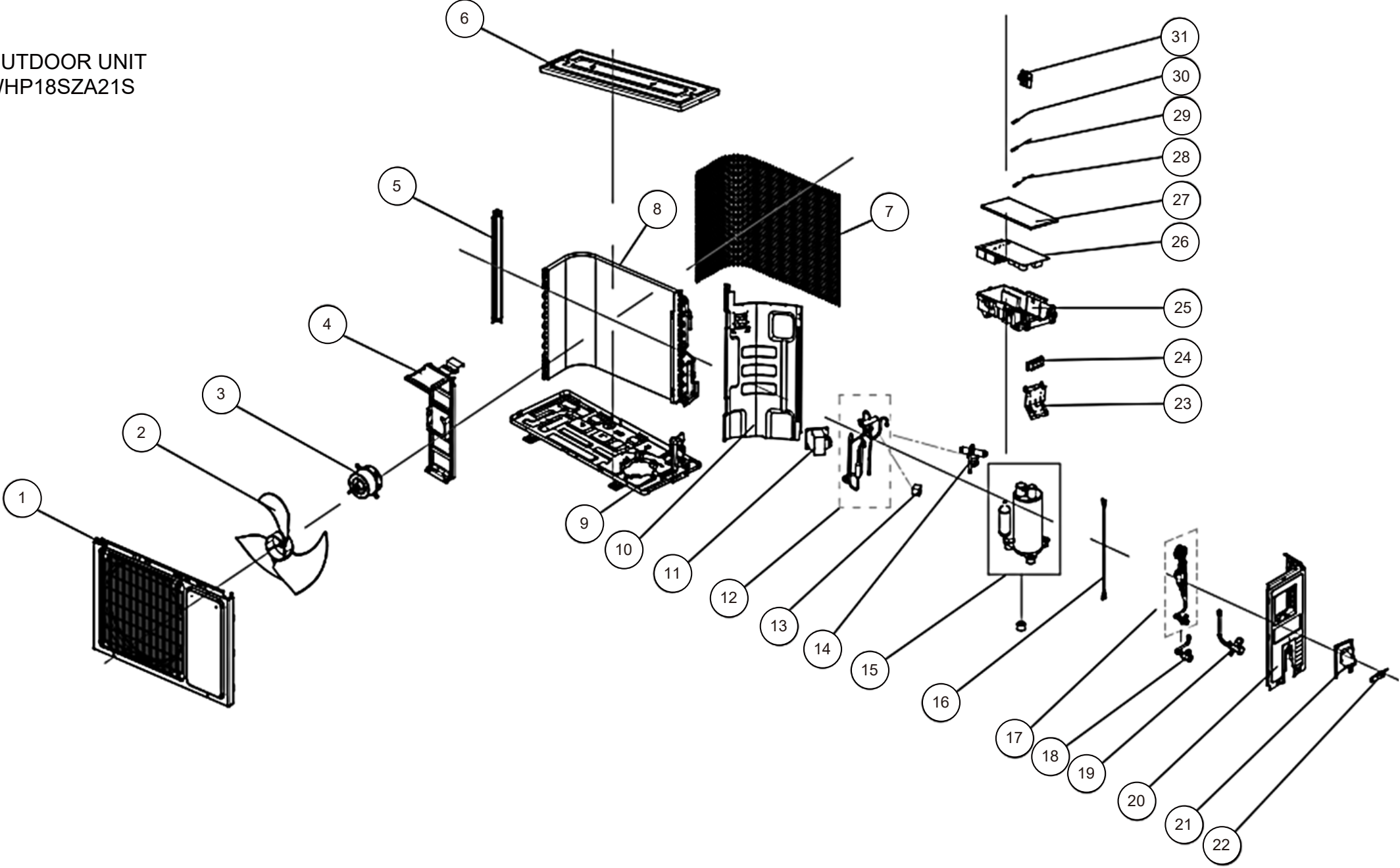




OUTDOOR UNIT  
WHP12SZA21S

No.	Part number	Description
1	2138572	Front panel w/ grille
2	1556766	Propeller fan blade
3	1457759	DC motor
4	1849292	Motor bracket
5	1846086	Mounting plate
6	1846082	Top panel
7	1854579	Protective net back
7	1854580	Protective net left
8	1851339	Condenser assembly
9	1851356	Base assembly
10	1847982	Separate wall
11	1829624	Choke coil
12	1923524	Valve 4 way TA
13	1511783	Solenoid
14	1258654	Valve 4 way
15	1821191	Compressor
16	1822371	Compressor wire
17	1854557	Capillary assembly
18	1844583	Valve 2 way 1/4
19	1335015	Valve 3 way 3/8
20	1846084	Cabinet right
21	1854040	Bracket conduit
22	1854034	Plate cover
23	1937153	Connecting board
24	1852124	Wire terminal board
25	1951957	Electric box
26	1985663	Inverter control PCB
27	1894526	Cover wire
28	1472663	Thermistor discharge
29	1511780	Thermistor pipe
30	1831029	Thermistor outdoor
31	1546721	Sensor mount plate
32	1854766	Tube electric heater

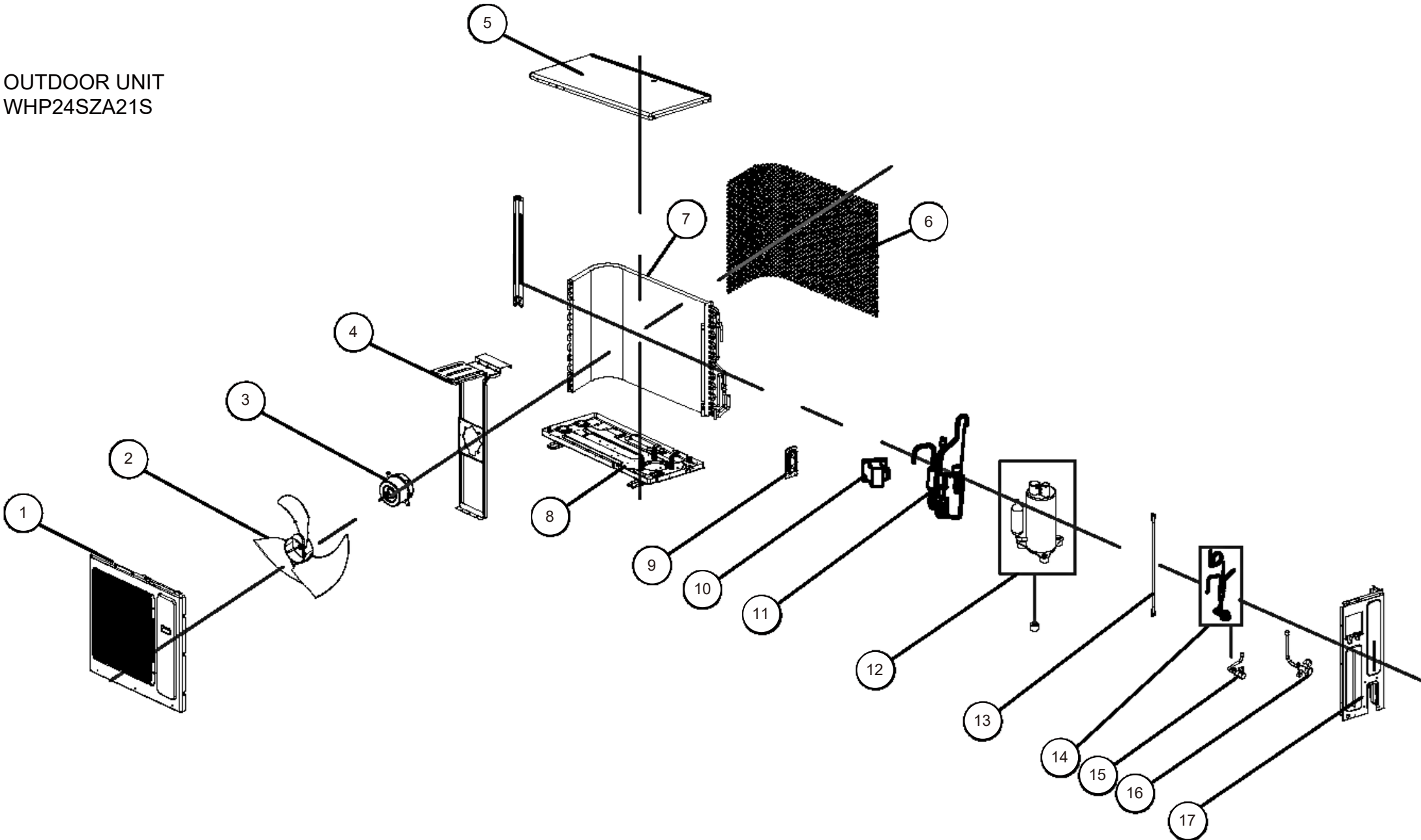
OUTDOOR UNIT  
WHP18SZA21S



OUTDOOR UNIT  
WHP18SZA21S

No.	Part number	Description
1	2138571	Front panel w/ grille
2	1841783	Propeller fan blade
3	1859837	DC motor
4	1841953	Motor bracket
5	1841772	Mounting plate
6	1841779	Top panel
7	1854661	Protective net left
7	1871792	Protective net back
8	1854747	Condenser assembly
9	1841349	Base assembly
10	1841986	Separate wall
11	1205797	Choke coil
12	1888252	Valve 4 way TA
13	1511783	Solenoid
14	1408045	Valve 4 way
15	1850482	Compressor
16	1847142	Wire compressor
17	1854774	Capillary assembly
18	1844583	Valve 2 way 1/4
19	1844499	Valve 3 way 1/2
20	1841776	Cabinet right
21	1854040	Bracket conduit
22	1854034	Plate cover
23	1842392	Connecting board
24	1852124	Wire terminal board
25	1841985	Electric box
26	1854367	Inverter control PCB
27	1546706	Electric box cover
28	1511780	Thermistor pipe
29	1511782	Thermistor pipe
30	1831029	Thermistor outdoor
31	1546721	Sensor mount plate
	1854710	Tube electric heater

OUTDOOR UNIT  
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No.	Part number	Description
1	1542623	Front panel w/ grille
2	1542217	Propeller fan blade
3	1561964	Fan motor
4	1561919	Motor bracket
5	1878885	Top panel
6	1819106	Protective net back
7	1854549	Condenser assembly
8	1814292	Base assembly
9	1534867	Bracket valve
10	1205797	Choke coil
11	2017922	Valve 4 way
12	1830018	Compressor
13	1847142	Wire compressor
14	1867906	EEV assembly
15	1536052	Valve 2 way 3/8
16	1456114	Valve 3 way 5/8
17	1866429	Cabinet right
	2006156	Inverter control PCB
	1852124	Wire terminal board
	1822633	Thermistor pipe
	1822634	Thermistor discharge
	1852304	Thermistor outdoor
	1863482	Clapboard part
	1865713	Cover display
	1854767	Tube electric heater

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## Accessories

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### Indoor unit

Part name	Q'ty	Part name	Q'ty
Remote controller instructions	1	Drain joint rubber seal	1
Use and installation instructions	1	Flare nuts	4
Remote controller	1	Bag of wall anchors and screws	1
Remote controller holder	1	Screw for installations	5
AAA battery	2	Screw cover	09/12 model: 1 18/24 model: 3
Foam insulation	09-18 model: 1 24 mode: 2	Warranty Card	1
Drain joint	1		

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### Outdoor unit

Part name	Q'ty	Part name	Q'ty
Use and installation instructions	1	Power wire	1
Bottom rubber for outdoor unit	4		

