

# Daitsu Air-conditioner

## ENGINEERING DATA

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split type air conditioner

MODELS:

ASD18UB

### Content

1. Description of product model coding and series introduction
2. Specifications
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4. Description, dimension and function of main components and accessories
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**DESCRIPTION OF  
PRODUCT MODEL CODING  
& SERIES INTRODUCTION**

## A.Standard Situation/Conditions

No.	Operating condition	indoor air status		outdoor air status	
		DB°C	WB°C	DB°C	WB°C
1	Norminal cooling	27°C	19°C	35°C	24°C
2	Norminal heating	20°C	15°C	7°C	6°C
3	Norminal electrical heating	---	---	---	---

## B.Series brief introduction

### 1.Protecting environment function

The air conditioners use R410A as their refrigerant that can make the value of the ODP and GWP decrease greatly .so the environment can be protected better.

### 2.High energy efficient

The design of inner-grooved copper tube greatly increases the refrigerant contact area and the efficiency of cooling/heating functions.Using the R410A refrigerant and the refrigerating system optimizing design make both the EER and COP reach the B class according to the european energy efficient standard.

### 3.Comfortable:wide-angle airflow

The vertical dual-flap and horizontal wide-angle louvers ensure the cool/warm air reaches every corner of the room.

### 4.Health air purifying and negative ion function

An air purifying filter with deodorizing and disinfecting functions keeps the air clean and users healthy.The negative ion generator can produce the negative ion that make the air fresher and cleaner

### 5.Quiet operation

Fan with random-pitched blades.

Random-pitched blades help reduce operating noise while maintaining a high airflow rate.

### 6.Convenience

Auto restart and washable panel:

The grille can be removed easily and washed when necessary.Any series have the function then even if the power falls when the unit is operating unit will automatically return to the operating settings in use before the power failure when power is restored.

### 7.Wide variety of functions

24-Hour Timer:

24-hour timer allows users to select the exact time they would like the air conditioner to turn on and to turn off.Timers on previous models operation based on the number of hours of desired operation.

**8.Night-set models**

When the air conditioner is operating on the timer-off circuit. The preset room temperature gradually rises (going down in heating) before the unit stops as shown below. Users can sleep comfortably without sudden change in temperature.

**9.Program "dry"**

This function automatically reduces the level of humidity while maintaining the preset indoor temperature.

## **SPECIFICATIONS**

Model: ASD18UB

Cooling capacity(W)	4800	Heating capacity(W)	5200
Cooling coefficient(W/W)	2.91	Heating coefficient(W/W)	2.97
Cooling power input(W)	1650	Heating power input(W)	1750
Moiture removal(m <sup>3</sup> /h)	1.9X10 <sup>-3</sup>	Frequency range(Hz)	50
Operating voltage range(V)	220-230 ~	Refrigerant type	R410A
Operating temp. range(°C)	-7-43	Air sending angle	60°
Variation of temp. adjust(°C)	± 1	Fan type	indoor unit outdoor unit
Climate type:	T1	Class of electric shock	I
Indoor unit noise(dB(A)) (cooling)	45/42/37	Outdoor unit noise(dB(A)) (cooling)	54
Indoor unit noise(dB(A)) (heating)	44/41/37	Outdoor unit noise(dB(A)) (heating)	55
Net dimensions(mm) (indoor unit)	938x182x265	Net dimensions(mm) (outdoor unit)	810x288x680
Packaging dimensions(mm) (indoor unit)	1013x331x277	Packaging dimensions (mm) (outdoor unit)	949x406x745
Net/gross weight (kg) (indoor unit)	11/14	Net/gross weight (kg) (outdoor unit)	59/66
Max. mounting height difference(m)	5	Piling layers	indoor unit outdoor unit
Refrigerant charge(g) (R410A)	1530	Current entering side (indoor/outdoor)	indoor
Frequency of filter cleaning	Once/2 weeks	Max. refrigerant charge (g)	1580
Compressor model	RN196VHSMT	Compressor manufacturer	MITSUBISHI
Compressor oil charge(cc)	520	Compressor protector type	internal
Max . length of connecting pipe (m)	20	drain hose	length(mm) diametre(mm)
Tube type	TP <sub>2</sub> Y	Type of tube of evaporator and condenser	Internal treaded
Fan speed(H/M/L)(r/min)	cool heat	Size of tube of evaporator and condenser(mm)	Ø7&Ø9.52
Fan speed(r/min) (outdoor unit)	820	Appearance features of indoor unit	plastic
Cut-off vavle(inch)	two-way three-way	Appearance features of outdoor unit	metal
Max. operating pressure at warm side(Mpa)	4.15	Max. operating pressure at cool side(Mpa)	4.15

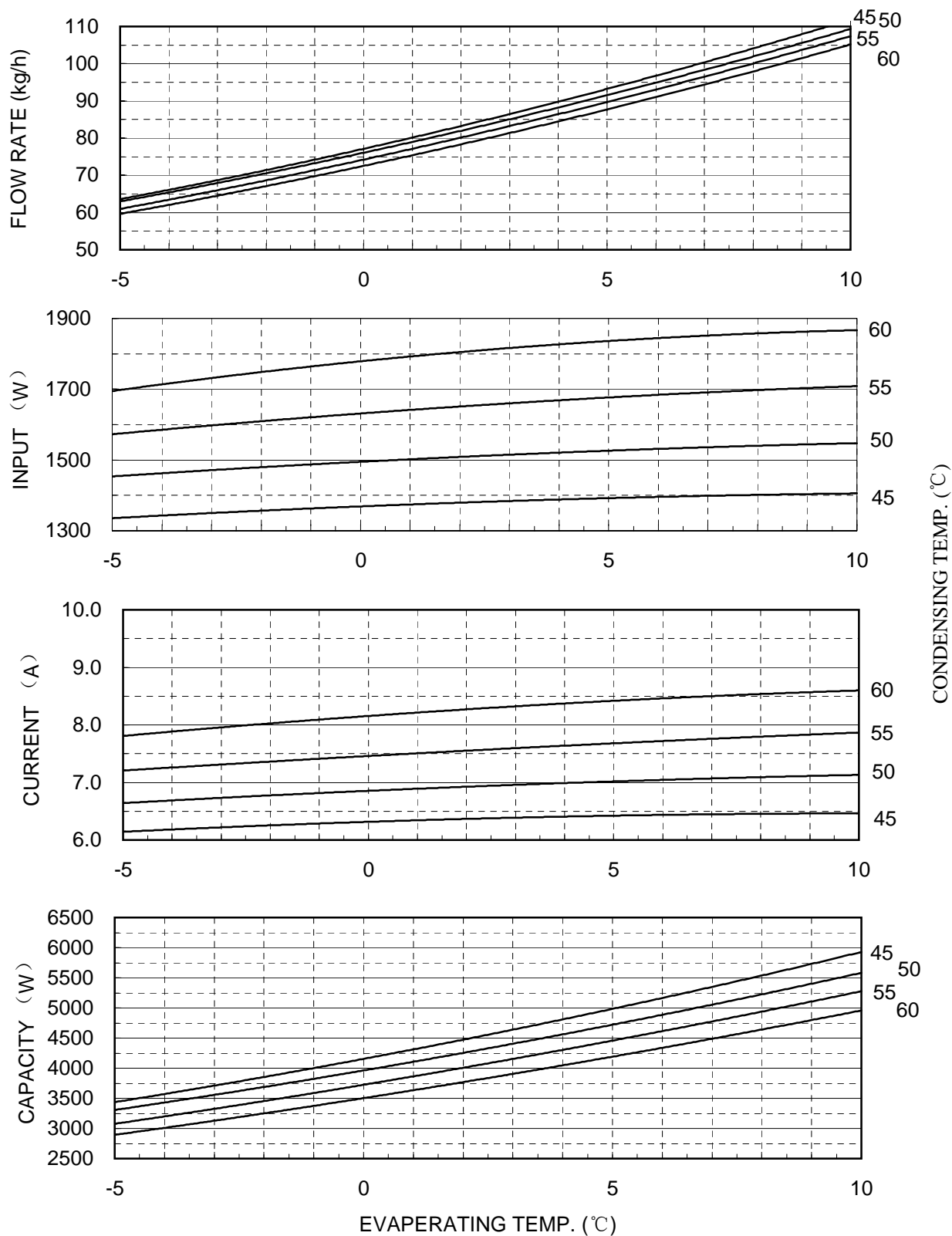
# **CURVES OF PERFORMANCE OF COMPRESSOR**

# SIAM---ROTARY COMPRESSOR---MITSUBISHI

**MODEL: RN196VHSMT**

220V-50Hz-1 PHASE  
SUCTION GAS TEMP.---35°C  
UNDER COOL-----8.3°C  
AMBIENT TEMP.-----35°C  
RUNNING CAPACITOR--40  $\mu$  F

PERFORMANCE CURVE

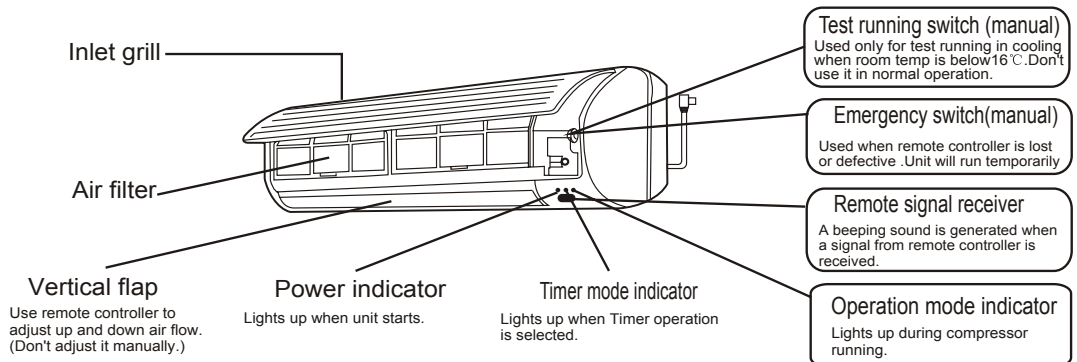




## **DESCRIPTION, DIMENSION AND FUNCTION OF MAIN COMPONENTS AND ACCESSORIES**

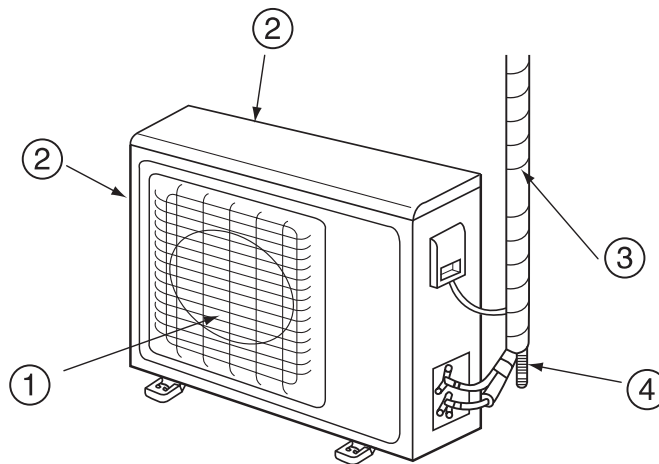
## Indoor Unit

For model:  
ASD18UB



## Outdoor Unit

For model:  
ASD18UB



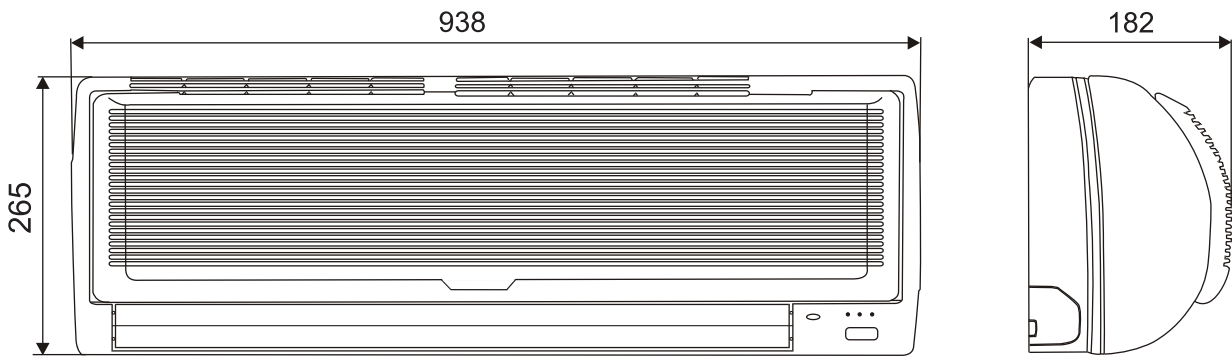
① OUTLET

② INLET

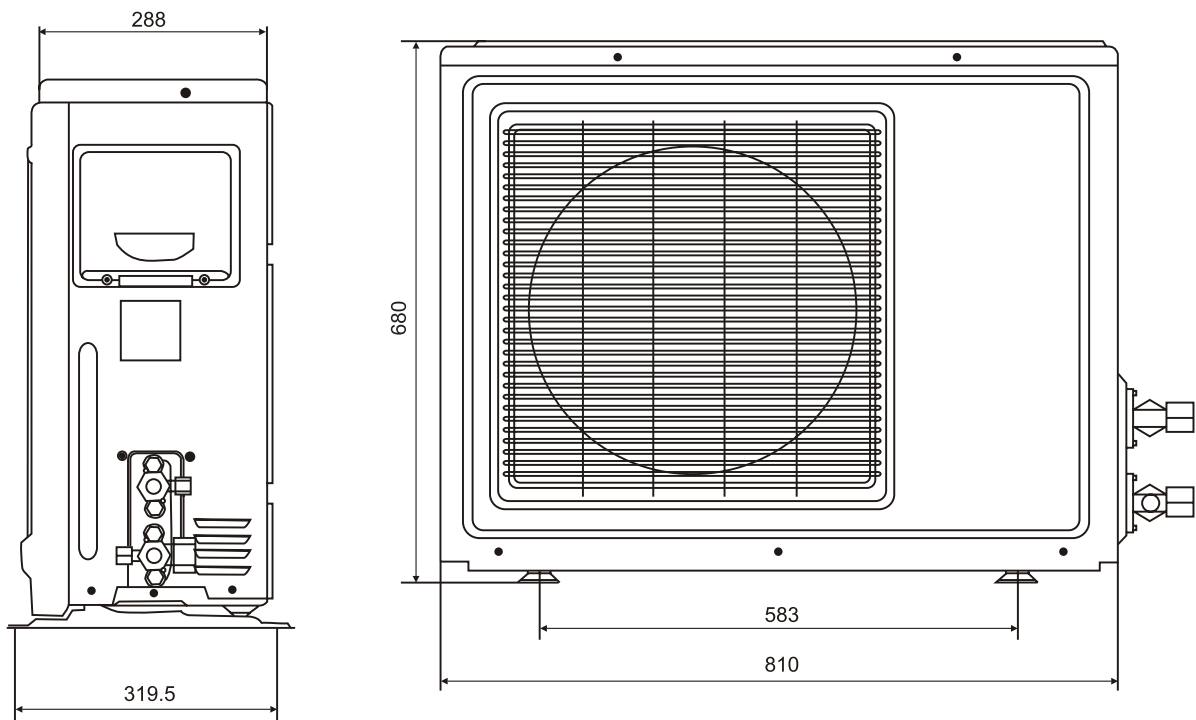
③ CONNECTING PIPING AND ELECTRICAL WIRING

④ DRAIN HOSE

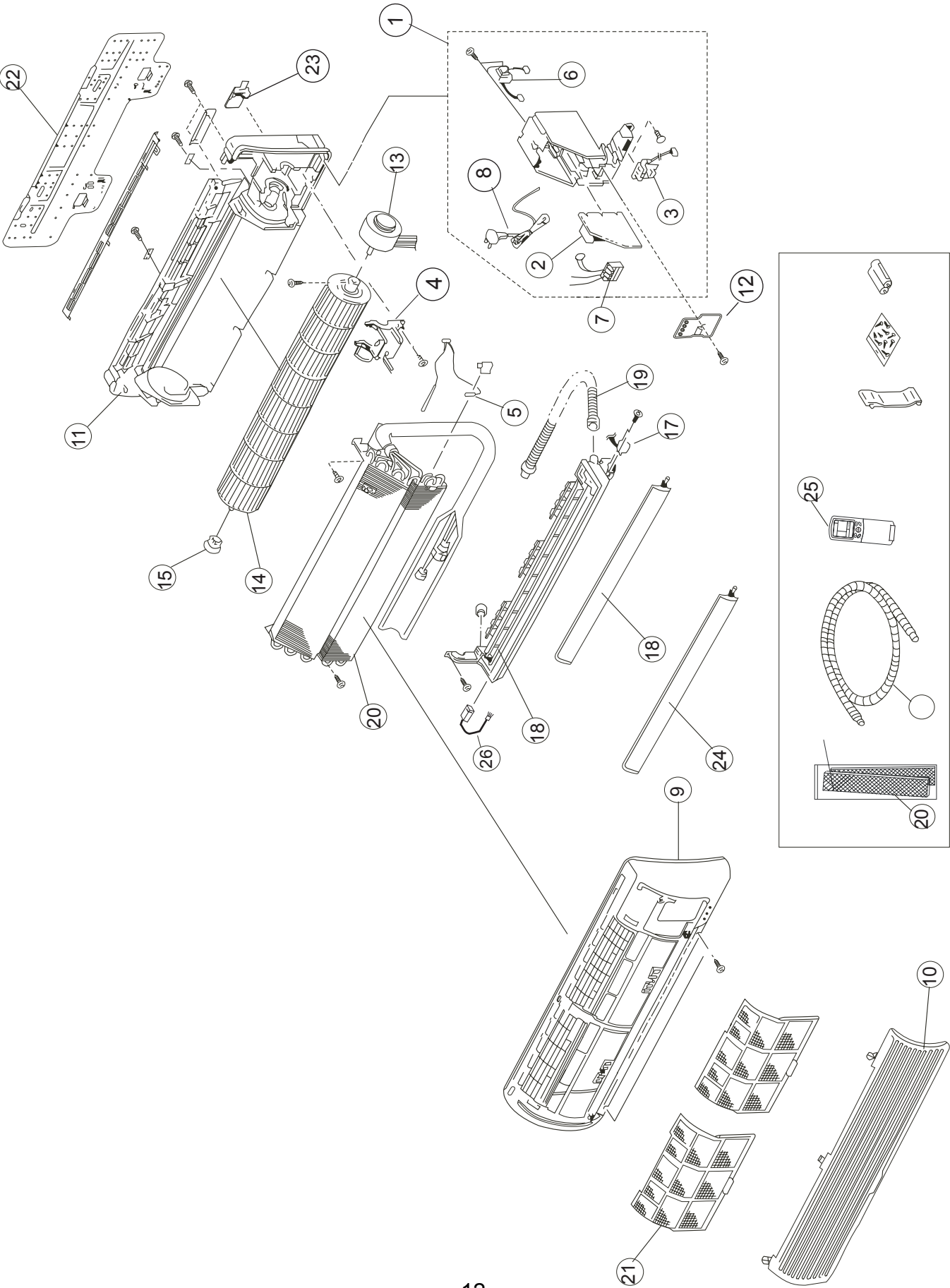
**Net dimensions for indoor unit**



**Net dimensions for outdoor unit**

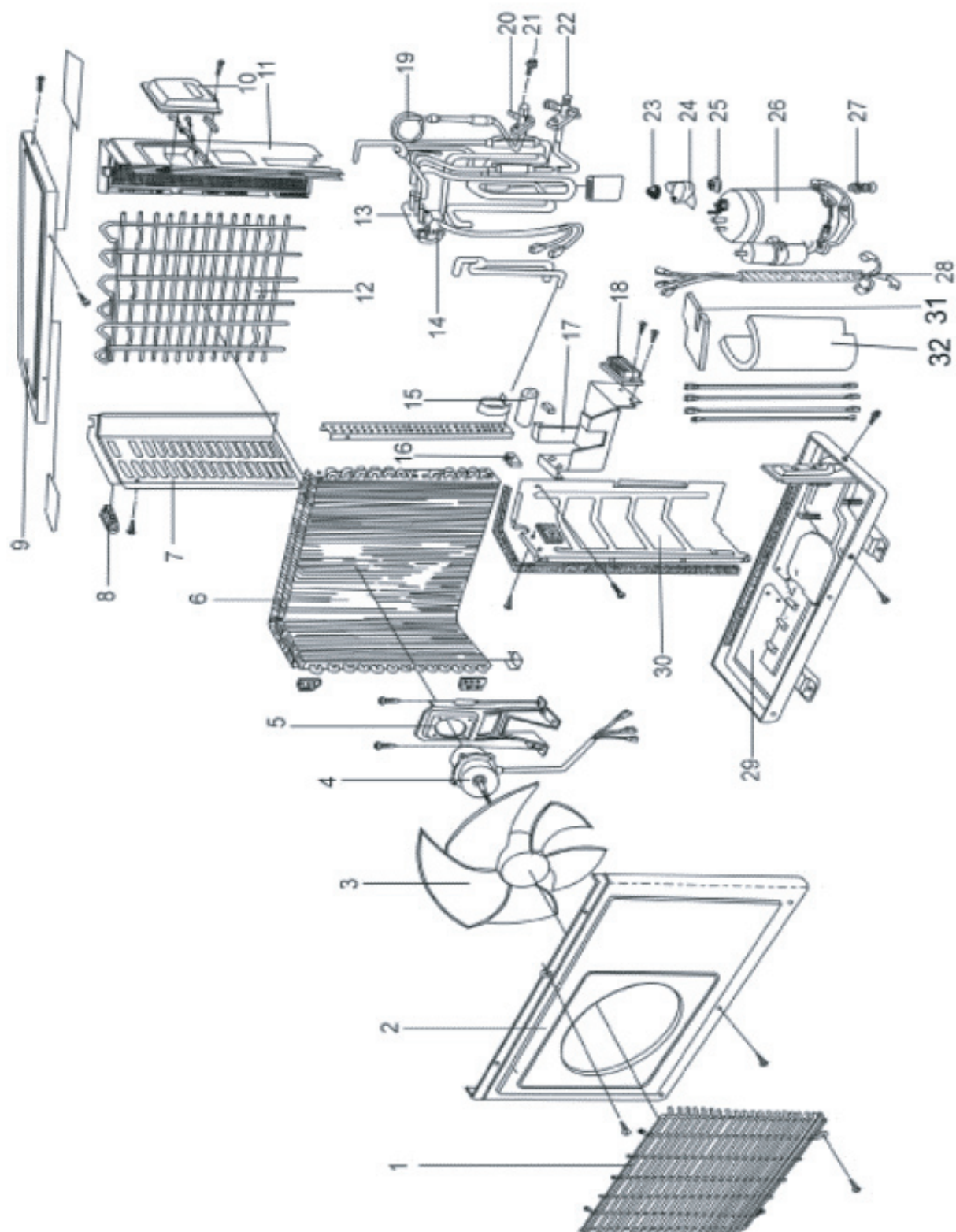


# **KNOCK-DOWN DRAWINGS**



**ASD18UB**
**INDOOR UNIT**

<b>NO. In exploded view</b>	<b>Name of part</b>	<b>Parts code</b>	<b>QTY.</b>	<b>remark</b>
1	Controller assy.	0010802481	1	
2	PCB	0010402025	1	
3	PCB(receiver)	-----	1	
4	Motor cover	001A1431717	1	
5	Sensor	001A3900059	1	
6	Transformer	001A3800065	1	
7	Terminal block	001A4000122	1	
8	Electricity power cord	-----	1	
9	Front panel	001A0100943	1	
10	Front grille			
11	Rear case assy.	001A0100276	1	
12	Service cover	001A1431494	1	
13	Motor	001A3000088	1	
14	Fan	0010202227	1	
15	Bearing	001A0300005	1	
16	Drain pan	001A0100460	1	
17	Swing motor	001A3000008	1	
18	Flap	001A1231140	1	
19	Drain hose	001A0900011	1	
20	Evaporator	0010705516	1	
21	Air filter	001A2400080	2	
22	Mounting plate	001A1301216	1	
23	Piping support	001A1431368	1	
24	Flap	001A1231139	1	
25	remote controller	0010401765	1	
26	Negative ion generator	001A3100083	1	



## ASD18UB

## OUTDOOR UNIT

No. in exploded view	Name of part	Part code	QTY.
1	Front grille	001A1303126A	1
2	Front panel	001A1101038	1
3	Fan	001A2331024	1
4	Motor	0010402624	1
5	Motor support	001A1301133	1
6	Heat exchanger	0010705512	1
7	Side panel assy.(L)	001A0100356	1
8	Handle	001A1436182	1
9	Top panel assy.	001A0100124	1
10	Service cover assy.	001A0100125	1
11	Side panel(R)	001A0100126	1
12	Back grille	001A1303128	1
13	4-way valve	0010703501	1
14	4-way valve coil	0010403102	1
15	Capacitor for comp.	001A3600131	1
16	Capacitor for motor	001A3600018	1
17	Electric box assy.	0010803355	1
18	Terminal block	001A4000092	1
19	Pipe assy.	0010705526	1
20	Two-way stop valve	0010705255	1
21	Screw	001A5002075	4
22	Three-way Stop valve	0010705372	1
23	Nut for fan	001A5102021	1
24	Terminal cover	0010203210	1
25	Nut for compressor	001A5102050	3
26	Compressor	0010705170	1
27	Rubber cushion	0010203209	3
28	Wires	————	——
29	Bottom plate assy.	001A0100237	1
30	Separating plate assy.	001A0100127	1
31	Sound insulation cushion A	001A1762341	1
32	Sound insulation cushion B	001A1762340	1



# **BRIEF INTRODUCTION TO ELECTRICAL CONTROL FUNCTIONS**

**Including electrically controlled function introduction of air conditioners:**

**1、 Introduction of electrically controlled functions**

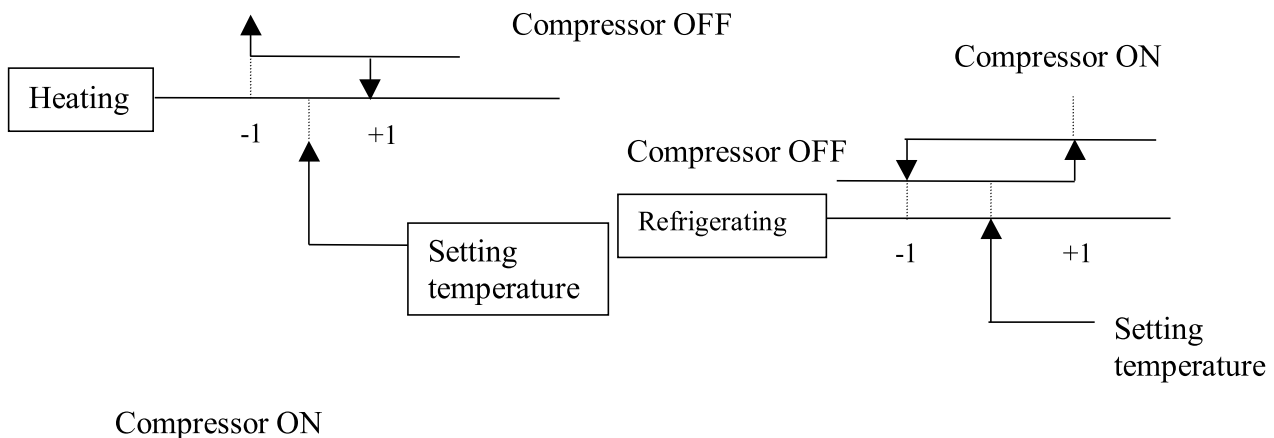
**1.1 Automatic running (applicable to fan-coil model)**

When the running mode is turned to automation after starting the system, the system will first determine the running mode according to the current room temperature and then will run according to the determined mode. Tr in the following selection conditions means room temperature, Ts means setting temperature, Tp means temperature of indoor coil pipe

- |                                 |                      |                            |
|---------------------------------|----------------------|----------------------------|
| a. $Tr > 23^{\circ}\text{C}$    | running cooling mode | $T_s = 26^{\circ}\text{C}$ |
| b. $Tr \leq 23^{\circ}\text{C}$ | running heating mode | $T_s = 23^{\circ}\text{C}$ |

After turning to the automation mode, the running mode can be switched between refrigerating mode, fan mode and heating mode according to the change of the indoor ambient temperature. But the automatic conversion between refrigerating mode and heating mode must be conducted after 15 minutes.

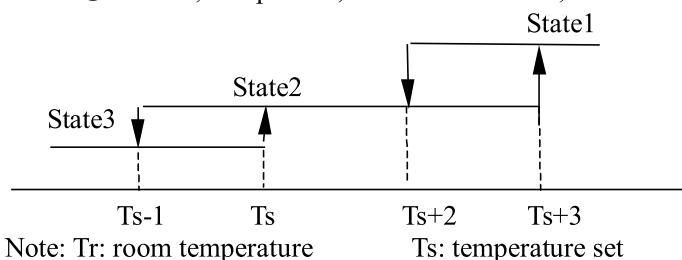
**1.2 Indoor temperature control**



**1.3 Dehumidification running**

The compressor, outdoor fan and indoor fan will run as per the following working pattern so as to realize the cooling running of dehumidification:

- ①  $Tr > Ts + 2^{\circ}\text{C}$ , compressor, outdoor fan run continuously, indoor fan runs as per setting wind speed (State 1);
- ②  $Ts + 2^{\circ}\text{C} \geq Tr \geq Ts$ , compressor, outdoor fan run intermittently with 10 minutes ON, 6 minutes OFF. (Compressor and outdoor fan are synchronous) indoor fan runs in fixed lower wind speed, and will cease at the stand-by time of 3 minutes (State 2)
- ③  $Tr < Ts$ , compressor, outdoor fan ceases, indoor fan runs in lower wind speed. (State 3)



Note: Tr: room temperature

$T_s$ : temperature set

#### 1.4 Warm start (preventing cold wind when heating running begins, applicable to fan-coil model))

When heating running begins, indoor fan will conduct the following fan control:

- ① If the temperature of indoor coil pipe is  $\geq 23^{\circ}\text{C}$ , start lower wind speed;
- ② If the temperature of indoor coil pipe is  $\geq 38^{\circ}\text{C}$  or the running time of compressor  $\geq 4$  minutes, turn to setting wind speed.

#### 1.5 Control of indoor fan under heating OFF state (applicable to fan-coil model)

Under heating state, the compressor will cease; if the indoor coil pipe s temperature  $T_p \geq 23^{\circ}\text{C}$ , indoor fan will run in lower wind speed.

#### 1.6 Defrosting control (applicable to fan-coil model)

##### (1) Defrosting beginning condition:

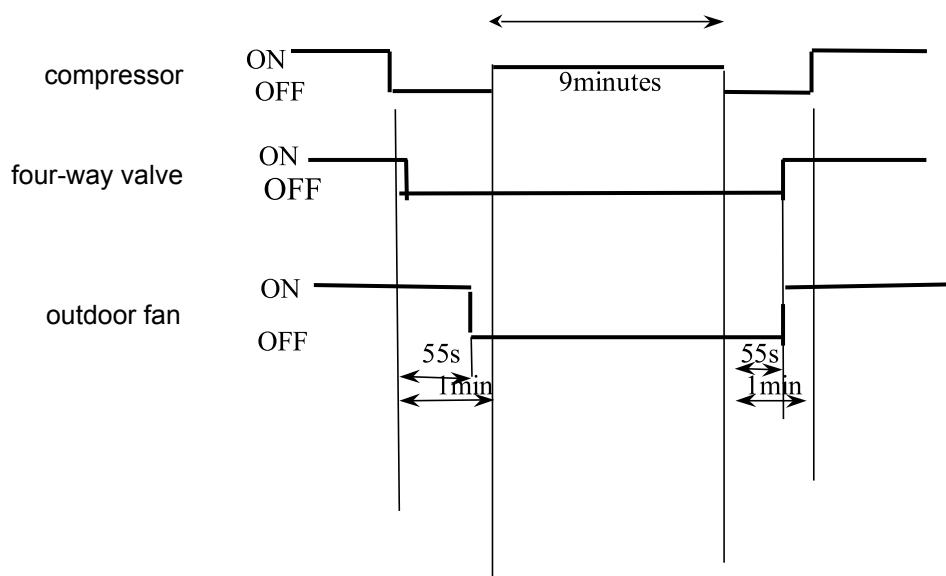
- a. After the state of  $T_p - T_r < 16^{\circ}\text{C}$  is continued for 5 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor exceeds 20 minutes;
- b. The accumulated running time of the compressor exceeds 3 hours, the continuous running time of the compressor exceeds 20 minutes, indoor unit s  $T_p < 38^{\circ}\text{C}$ ;
- c. The continuous running time of the compressor exceeds 20 minutes, the temperature of indoor coil pipe decreases  $1^{\circ}\text{C}$  every 6 minutes, which lasts for more than 3 times, indoor unit s  $T_p < 38^{\circ}\text{C}$ ;
- d. When the indoor unit is in the state of overload protection and the outdoor unit ceases, when the rerunning time of outdoor unit exceeds 10 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor is over 20 minutes, and  $T_p < 38^{\circ}\text{C}$ .

Defrosting will begin if one of the above conditions is met.

##### (2) Defrosting finishing condition:

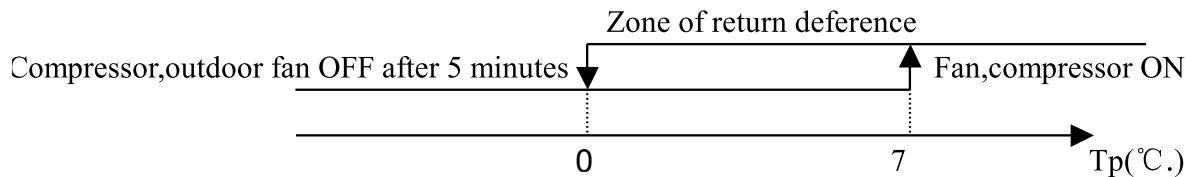
If the defrosting time exceeds 9 minutes, the original heating state will be resumed;

Note: Sequence of defrosting actions:



### 1.7 Freezing prevention function

Under refrigerating and dehumidifying state, the air conditioner will control the outdoor fan as per the temperature  $T_p$  of the indoor coil pipe according to the following conditions:



### 1.8 3 minutes stand-by time

When the compressor ceases due to the sensor OFF, unit On or OFF or fault, it will maintain pause for 3 minutes.

### 1.9 Overload protection during heating running

(1) Temperature protection of indoor coil pipe: Under heating state, the air conditioner will control the running of the fan as per the temperature  $T_p$  of the indoor coil pipe and according to the following conditions:

$65^{\circ}\text{C} \leq T_p$ , outdoor fan ceases;  $T_p \leq 60^{\circ}\text{C}$ , outdoor fan resumes; the time from ceasing to resuming is about 45 seconds;

$72^{\circ}\text{C} \leq T_p$ , outdoor fan of compressor ceases after 5 seconds;  $T_p \leq 64^{\circ}\text{C}$ , compressor resumes after 3 minutes.

(2) Current protection (different models have different protection currents):

- a. When  $5.8\text{A} \leq \text{current of compressor}$ , outdoor fan ceases; current of compressor  $\leq 5\text{A}$ , outdoor fan resumes;
- b. When  $10\text{A} \leq \text{current of compressor}$ , compressor ceases.

### 1.10 Compensatory function of power failure

If the unit is suddenly off during running due to power failure, or closed for maintenance or troubleshooting, it will restart to run after the power resumes with the original condition before the unit is off

Note: 1. Function setting: Pressing the SLEEP button on the remote control unit for 10 times until hearing 4 sounds from the buzzer on the panel.

2. Memory content: Running mode, setting wind speed, setting temperature, sleep state, flap state.

3. Cancellation of function: Pressing the SLEEP button on the remote control unit for 10 times until hearing 2 sounds from the buzzer on the panel.

### 1.11 Trial run function

When the air conditioner is in OFF state, press the emergency switch for 5 seconds till hearing 2 sounds of click from the buzzer, then the air conditioner will turn to the trial run state. The unit will run in the refrigerating mode and the indoor fan will run in high wind speed mode.

### 1.12 Emergency running mode

When the air conditioner is in stand-by state, press the emergency switch till hearing a sound from the buzzer, then the air conditioner will turn to the emergency run state. The rules of emergency run are as follows:

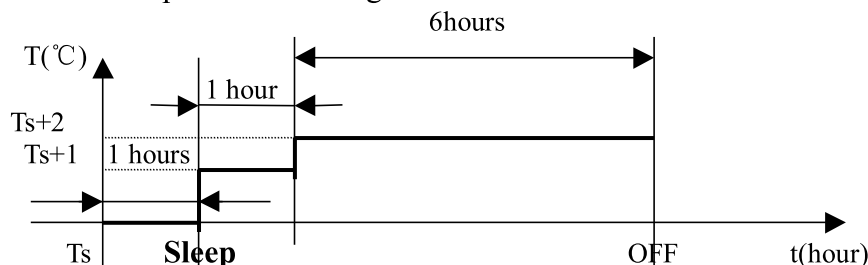
- a.  $T_r > 23^{\circ}\text{C}$ , running refrigerating mode,  $T_s = 26^{\circ}\text{C}$ ;
- b.  $T_r \leq 23^{\circ}\text{C}$ , running heating mode,  $T_s = 2^{\circ}\text{C}$ .

### 1.13 Temperature compensation

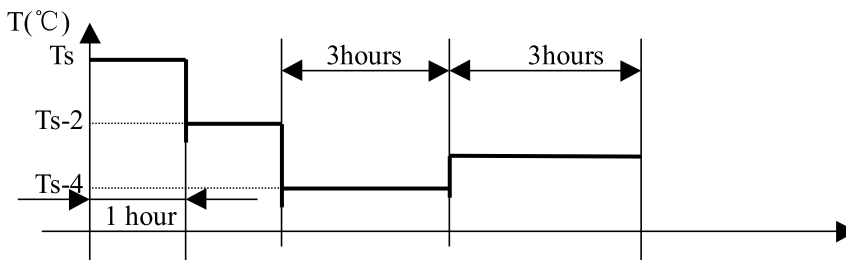
There is the function of automatic temperature compensation when heating, with heating temperature setting =  $T_s(\text{remote setting}) + 4^{\circ}\text{C}$ .

### 1.14 Sleeping function

- a. After setting the sleeping function, the refrigerating mode and dehumidification mode will run as per the following rules:



- b. After setting the sleeping function, the heating mode will run as per the following rules:



As shown in the above diagram, after running for 1 hour under refrigerating mode and dehumidification mode, the setting temperature will increase  $1^{\circ}\text{C}$ ; after another 1 hour, it will increase  $1^{\circ}\text{C}$  again, and after 6 hours, it will cease; after running for 1 hour under heating mode, the setting temperature will decrease  $2^{\circ}\text{C}$ , after another 1 hour, it will decrease the  $2^{\circ}\text{C}$  again, and after 3 hours, it will increase  $1^{\circ}\text{C}$ , and after other 3 hours, it will cease.

### 1.15 Trouble displaying method

- a. The temperature sensor of coil pipe of indoor unit is in short circuit or broken circuit: the timing indicator of indoor unit is on, the power indicator is flickered in 1 Hz;
- b. The room temperature sensor of indoor unit is in short circuit or broken circuit: the timing indicator of indoor unit is off, the power indicator is flickered in 1 Hz;

c. The motor of indoor unit has no backfeed of signal, the power indicator of indoor unit and running indicator are flickered twice, then the power indicator, running indicator and timing indicator are all flickered for 1 second, then repeating the cycle.

#### 1.16 Manual defrosting function

Under heating (automatic heating) state, press continuously the SLEEP button on the remote control unit for 8 times till hearing 3 sounds from the buzzer, then the whole unit will turn to the defrosting state.

# **ABNORMALITY DIAGNOSING**






For the abnormal phenomenon occurred, please conduct trouble analysis and troubleshooting according to the following table:

No	Reason of trouble	Phenomena	Remarks
1	The sensor of indoor ambient temperature is in short circuit or broken circuit	The compressor indicator and timing indicator extinguish, and the running indicator flickers	
2	The temperature sensor of indoor coil pipe is in short circuit or broken circuit	The compressor indicator and timing indicator are on, and the running indicator flickers	
3	The indoor motor is damaged or the computer board is damaged	The power indicator and running indicator of indoor unit flicker twice, the power indicator, running indicator and timing indicator flicker together for 1 second, then repeating the cycle.	The motor has no signal feedback of Hall unit



# Trouble Shooting

Before asking for service, check the following first.

	Phenomenon	Cause or check points
Normal Performance inspection	<p>The system does not restart immediately.</p> 	<ul style="list-style-type: none"> <li>• When unit is stopped, it won't restart immediately until 3 minutes have elapsed to protect the system.</li> <li>• When the electric plug is pulled out and reinserted, the protection circuit will work for 3 minutes to protect the air conditioner.</li> </ul>
	<p>Noise is heard.</p> 	<ul style="list-style-type: none"> <li>• During unit operation or at stop, a swishing or gurgling noise may be heard. At first 2-3 minutes after unit start, this noise is more noticeable. (This noise is generated by refrigerant flowing in the system.)</li> <li>• During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes.</li> <li>• Should there be a big noise from air flow in unit operation, air filter may be too dirty.</li> </ul>
	<p>Smells are generated.</p>	<ul style="list-style-type: none"> <li>• This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.</li> </ul>
	<p>Mist or steam are blown out.</p> 	<ul style="list-style-type: none"> <li>• During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.</li> </ul>
Multiple check	<p>Does not work at all.</p> 	<ul style="list-style-type: none"> <li>• Is power plug inserted?</li> <li>• Is there a power failure?</li> <li>• Is fuse blown out?</li> </ul>
	<p>Poor cooling</p> 	<ul style="list-style-type: none"> <li>• Is the air filter dirty? Normally it should be cleaned every 15 days.</li> <li>• Are there any obstacles before inlet and outlet?</li> <li>• Is temperature set correctly?</li> <li>• Are there some doors or windows left open?</li> <li>• Is there any direct sunlight through the window during the cooling operation?(Use curtain)</li> <li>• Are there too much heat sources or too many people in the room during cooling operation?</li> </ul>

Application temp. range of air conditioner -7℃~43℃.

# REFRIGERATING CYCLE DIAGRAM

