
Split Wall Mounted R407c SERIES

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1.Features

1.1 Compact design

1.2 High efficiency and quiet operation

2.Specification

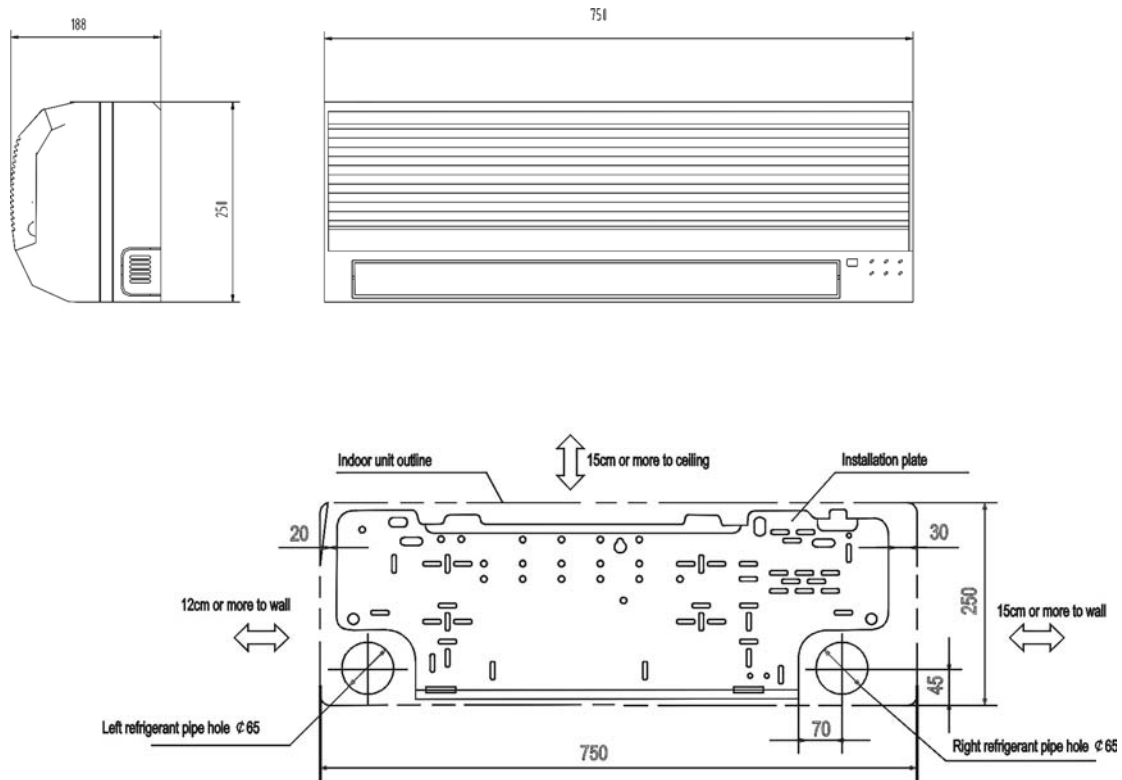
Model			DSG-07CRN2	DSG-07HRN2	DSG-09CRN2	DSG-09HRN2	DSG-12CRN2	DSG-12HRN2
Power supply		Ph-V-Hz	1, 220-240V~, 50Hz	1, 220-240V~, 50Hz	1, 220-240V~, 50Hz	1, 220-240V~, 50Hz	1, 220-240V~, 50Hz	1, 220-240V~, 50Hz
Cooling	Capacity	Btu/h	7500	7500	9000	9000	12000	12000
	Input	W	730	730	860	860	1150	1150
	Rated current	A	3.2	3.23	4.0	4.0	5.2	5.2
	EER	Btu/w.h	10.3	10.3	10.5	10.5	10.4	10.4
Heating	Capacity	Btu/h		9000		11000	—	13200
	Input	W		800		940	—	1140
	Rated current	A		3.6		4.2	—	5.1
	COP	W/W		3.2		3.4	—	3.4
Moisture Removal		L/h	0.7	0.7	1.0	1.0	1.2	1.2
Max. input consumption		W	850	990	1000	1180	1500	1500
Max. current		A	3.8	4.5	4.65	5.2	9	9
Starting current		A	17.0; 18.0	17.0; 18.0	18	18	30	30
Compressor	Model		4PS132EBA;	4PS132EBA;	4PS164EAC	4PS164EAC	PG200X2C-4FT1	PG200X2C-4FT1
	Type		Rotary; Rotary	Rotary; Rotary	Rotary	Rotary	Rotary	Rotary
	Brand		GD Matsushita; GD Toshiba	GD Matsushita; GD Toshiba	GD Matsushita	GD Matsushita	GD Toshiba	GD Toshiba
	Capacity	Btu/h	7700; 7800	7700; 7800	9500	9500	12430	12430
	Input	W	750; 760	750; 760	930	930	1140	1140
	Rated current(RLA)	A	3.3; 3.34	3.3; 3.34	4.1	4.1	5.3	5.3
	Locked rotor Amp(LRA)	A	17.0; 18.0	17.0; 18.0	18	18	30	30
	Thermal protector		7100699(MRA99262); Internal	7100699(MRA99262); Internal	7100077(MRA98776)	7100077(MRA98776)	Internal	Internal
	Capacitor	uF	30; 25	30; 25	30	30	35	35
	Refrigerant oil	ml	350; 400	350; 400	350	350	480	480
Indoor fan motor	Model		RPG13H	RPG13H	RPG13H	RPG13H	RPG20D	RPG20D
	Input	W	36.5	36.5	36.5	36.5	49.2	49.2
	Capacitor	uF	1.2	1.2	1.2	1.2	1.5	1.5
	Speed(hi/mi/lo)	r/min	1020/960/900	1050/960/900	1150/1080/1000	1180/1080/1000	1250/1100/950	1250/1100/950
Indoor air flow (Hi/Mi/Lo)		m3/h	450/400/350	450/400/350	510/460/410	510/460/410	660/580/500	660/580/500
Indoor noise level (Hi/Mi/Lo)		dB(A)	34/32/30	34/32/30	36/34/32	36/34/32	39/33/28	39/33/28
Indoor unit	Dimension (W*H*D)	mm	750x250x188	750x250x188	750x250x188	750x250x188	815X280X195	815X280X195
	Packing (W*H*D)	mm	830x336x280	830x336x280	830x336x280	830x336x280	915X360X275	915X360X275
	Net/Gross weight	Kg	8.5/10.5	8.5/10.5	8.5/10.5	8.5/10.5	10.5/13.5	10.5/13.5
Outdoor fan motor	Model		YDK24-6T	YDK24-6T	YDK24-6F	YDK24-6F	YDK36-6	YDK36-6
	Input	W	56	56	57.5	57.5	68	68
	Capacitor	uF	2.5	2.5	2.5	2.5	2.5	2.5
	Speed	r/min	800	800	800	800	900	900
Outdoor air flow		m3/h	1500	1500	1800	1800	1900	1900
Outdoor noise level		dB(A)	49	49	50	50	51	51
Outdoor unit	Dimension(W*H*D)	mm	700X535X235	700X535X235	780X540X250	780X540X250	760X590X285	760X590X285
	Packing (W*H*D)	mm	815X580X325	815X580X325	910X575X335	910X575X335	890X655X360	890X655X360
	Net/Gross weight	Kg	30/33	31/34	36/39	37/40	40.5/44.5	41.5/45.5
Refrigerant type R407C		g	820	850	930	960	1300	1300
Design pressure		MPa	2.8	2.8	2.8	2.8	2.8	2.8
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ9.53	Φ6.35/Φ9.53	Φ6.35/Φ9.53	Φ6.35/Φ9.53	Φ6.35/Φ12.7	Φ6.35/Φ12.7
	Max. refrigerant pipe length	m	10	10	10	10	10	10
	Max. difference in level	m	5	5	5	5	5	5
Operation temp		℃	17-30	17-30	17-30	17-30	17-30	17-30
Ambient temp		℃	18-45	-7-45	18-45	-7-45	18-45	-7-45
Application area		m2	10-14	10-14	14-21	14-21	18-26	18-26

★1 The noise date is base on anechoic chamber, during actual operation, these values are normally somewhat different as a result of ambient condition.

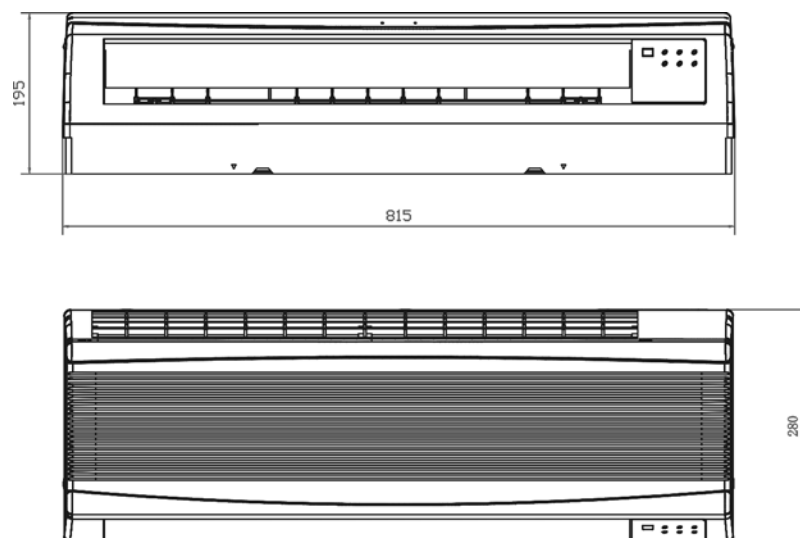
3. Dimensions

3.1 Indoor unit

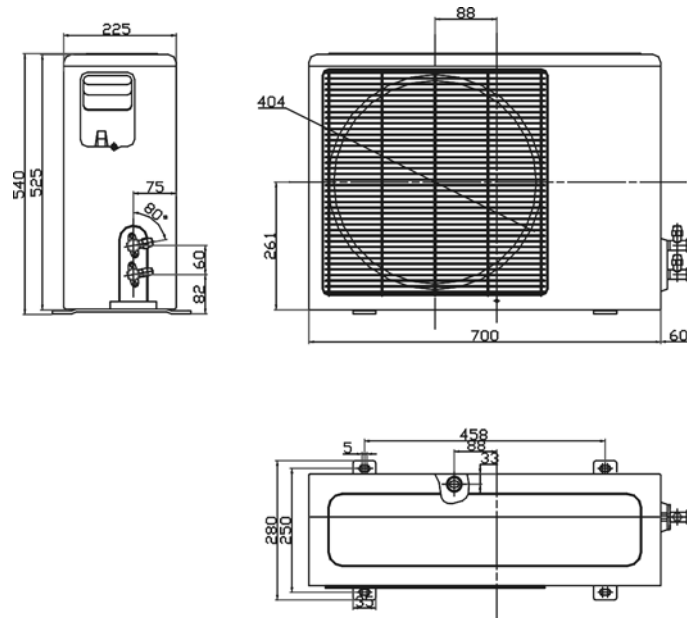
DSG-07/09C(H)RN2



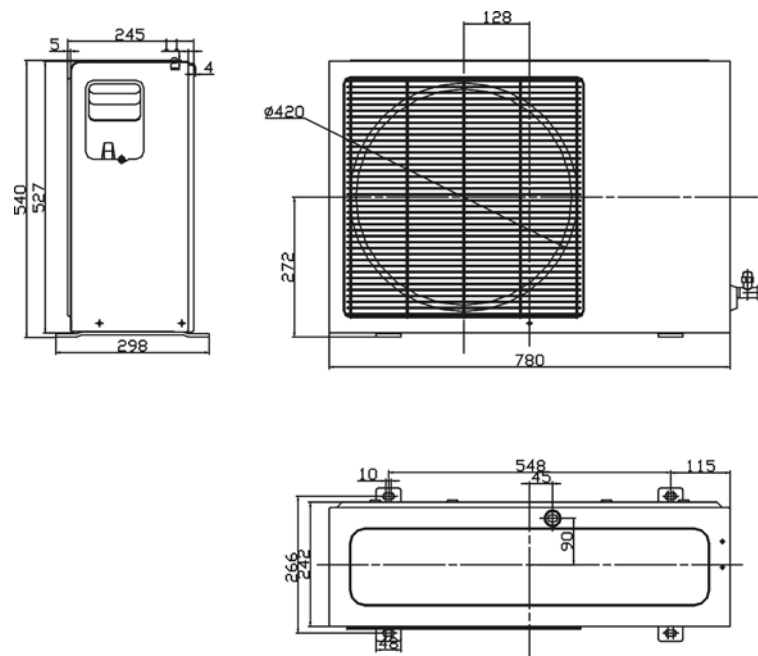
3.2 Indoor unit DSG-12C(H)RN2



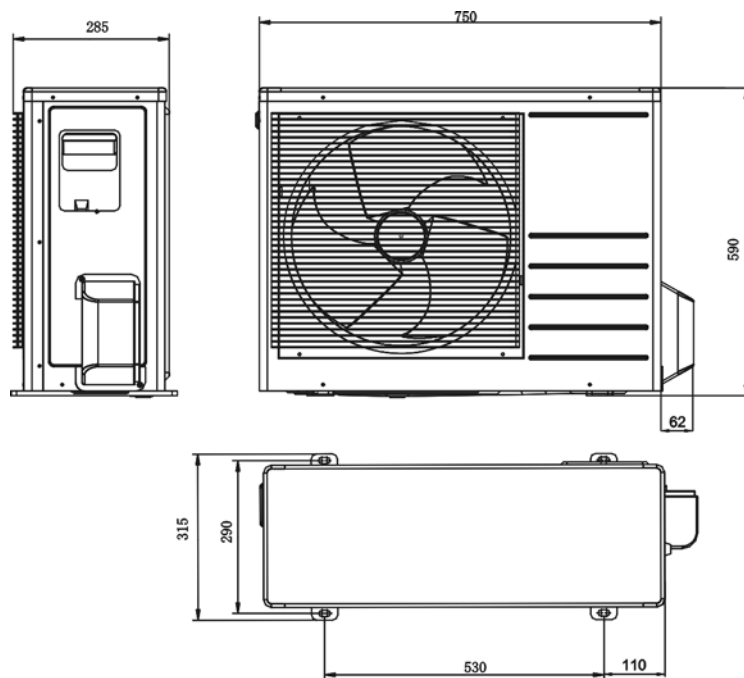
3.3 Outdoor unit DSG-07C(H)RN2,



3.4 Outdoor unit DSG-09C(H)RN2



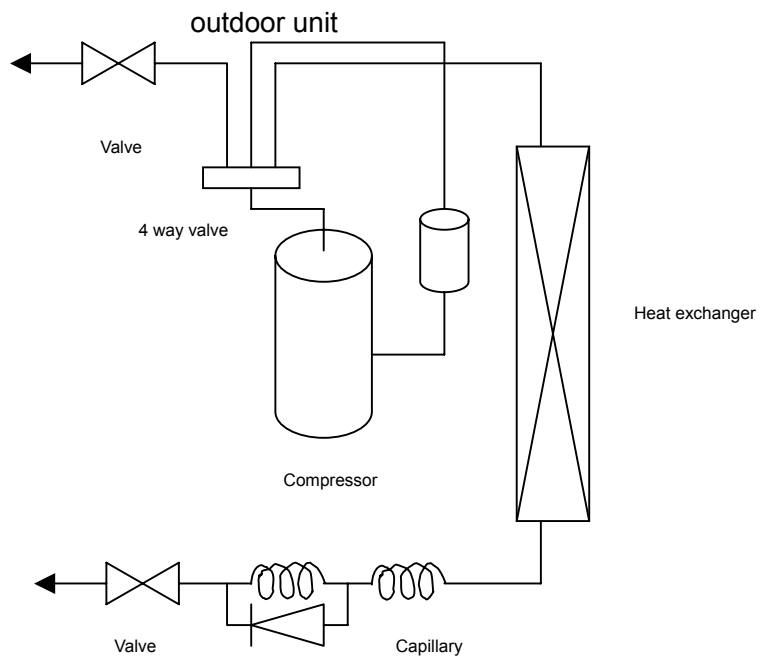
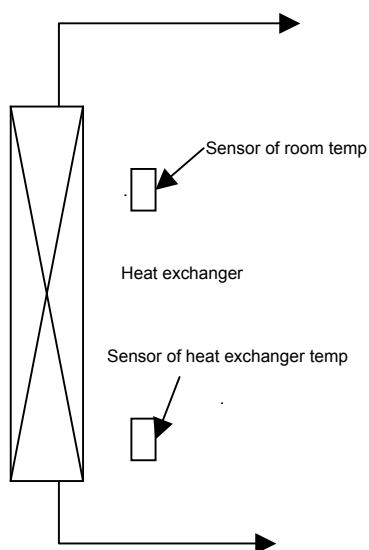
3.5 Outdoor unit DSG-12C(H)RN2



4.Refrigeration cycle diagram

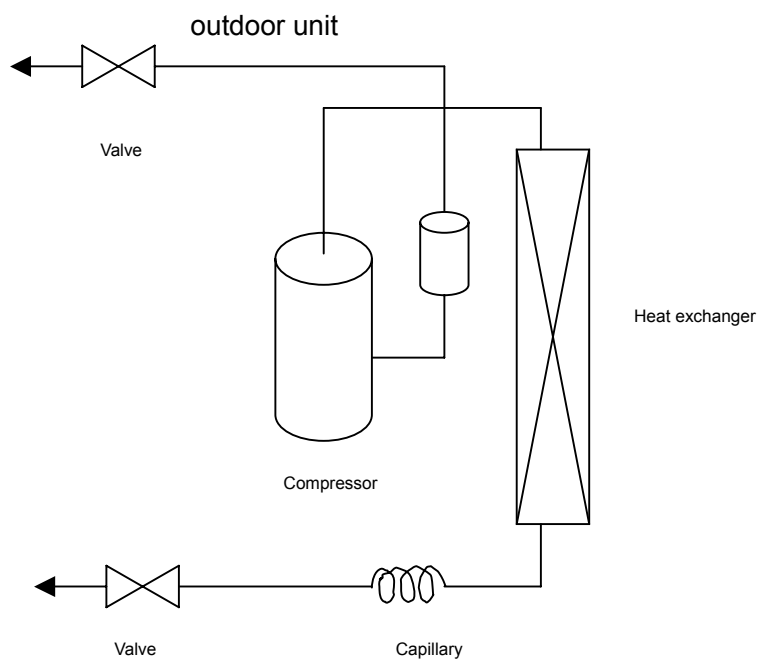
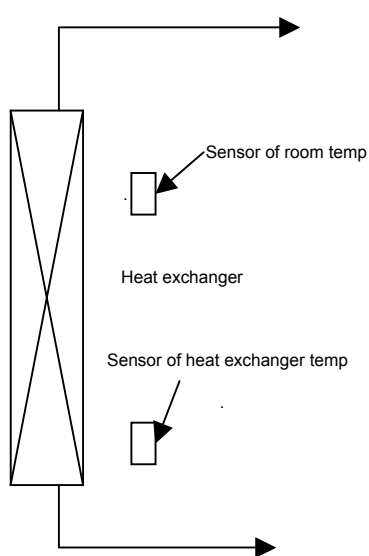
4.1 Cooling/heating

Indoor unit



4.2 Cooling only

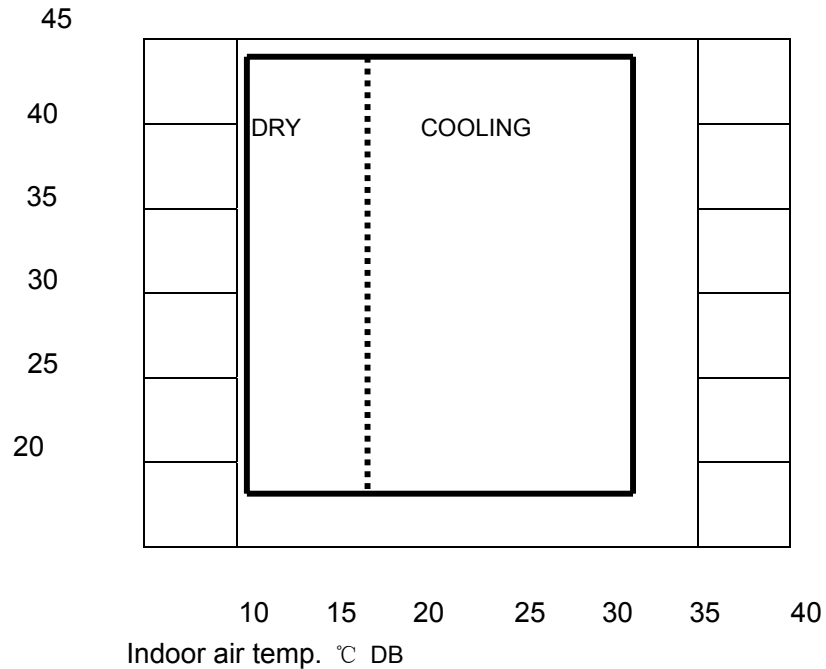
Indoor unit



5.Operation limits

5.1Cooling operation

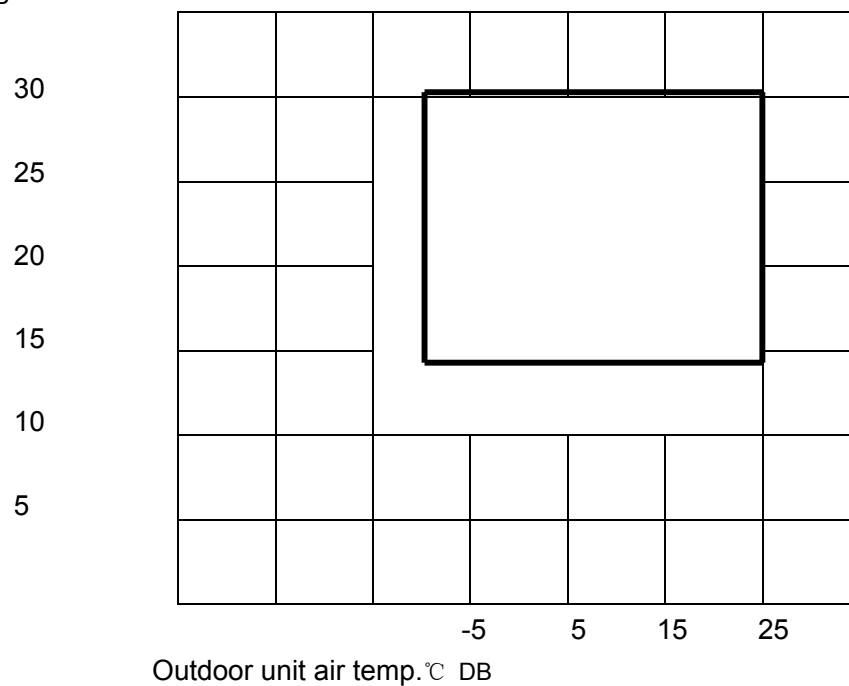
Outdoor unit air temp. °C DB



Note : The chart is the result from the continuous operation under constant air temperature conditions. However, excludes the initial pull-down stage.

5.2Heating operation

Indoor air temp. °C DB

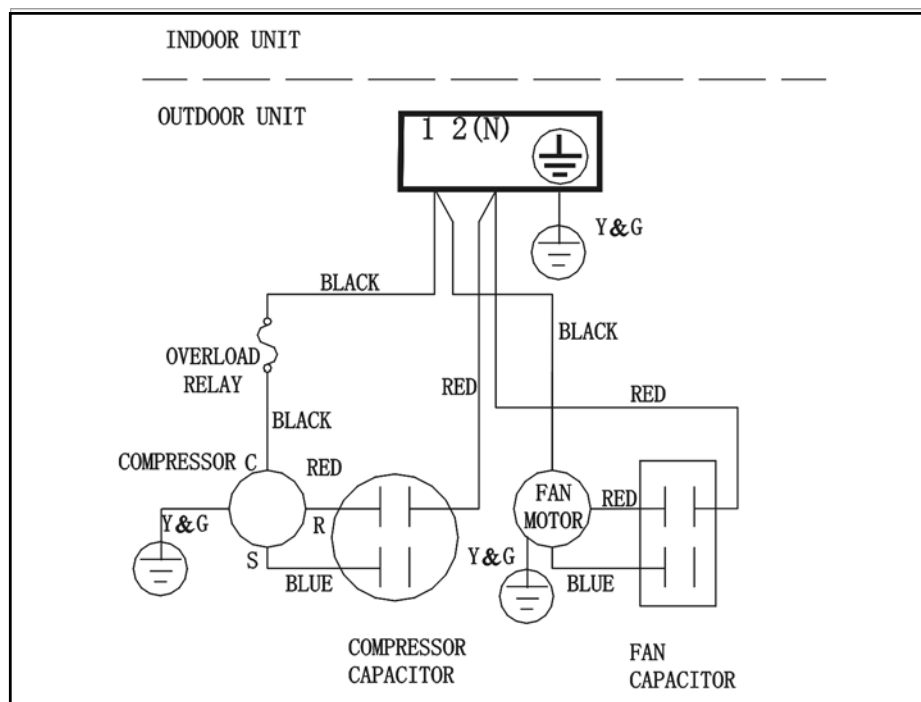
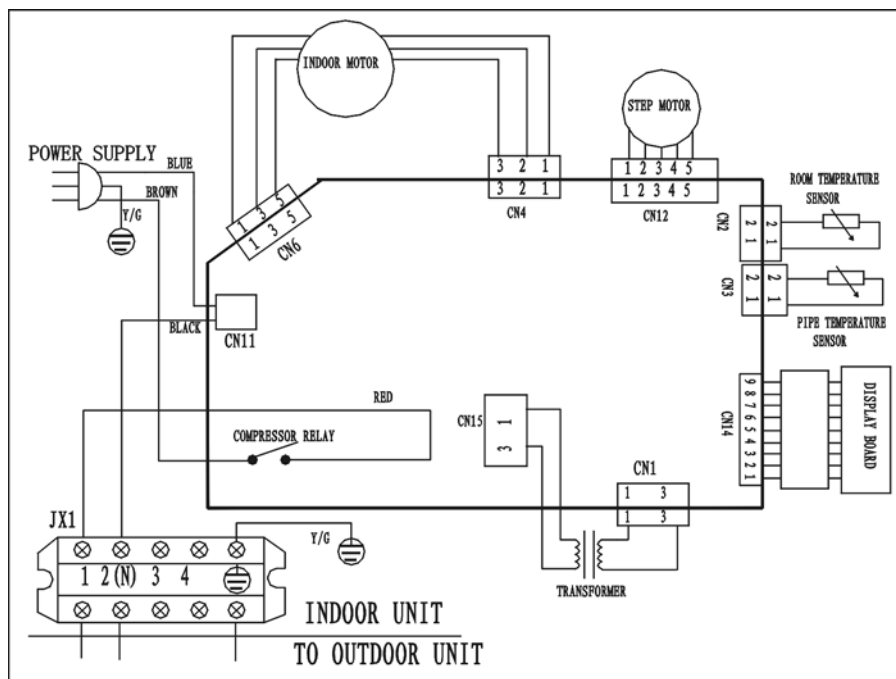


Note : The chart is the result from the continuous operation under constant air temperature conditions. However, excludes the initial pull-down stage.

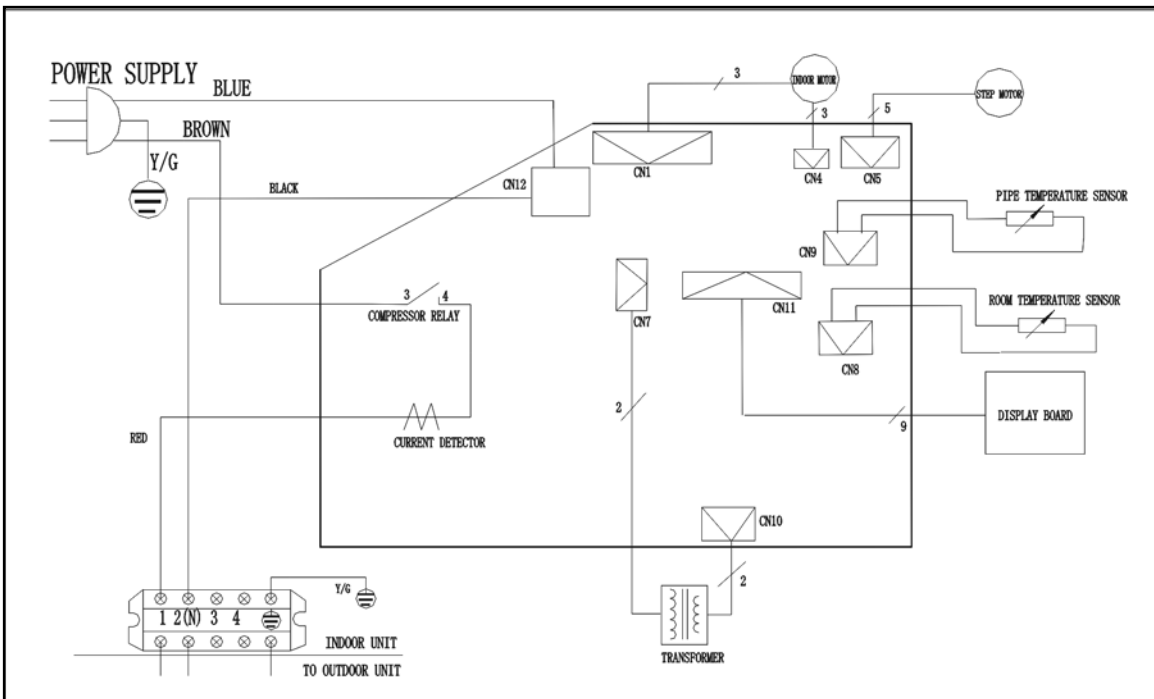
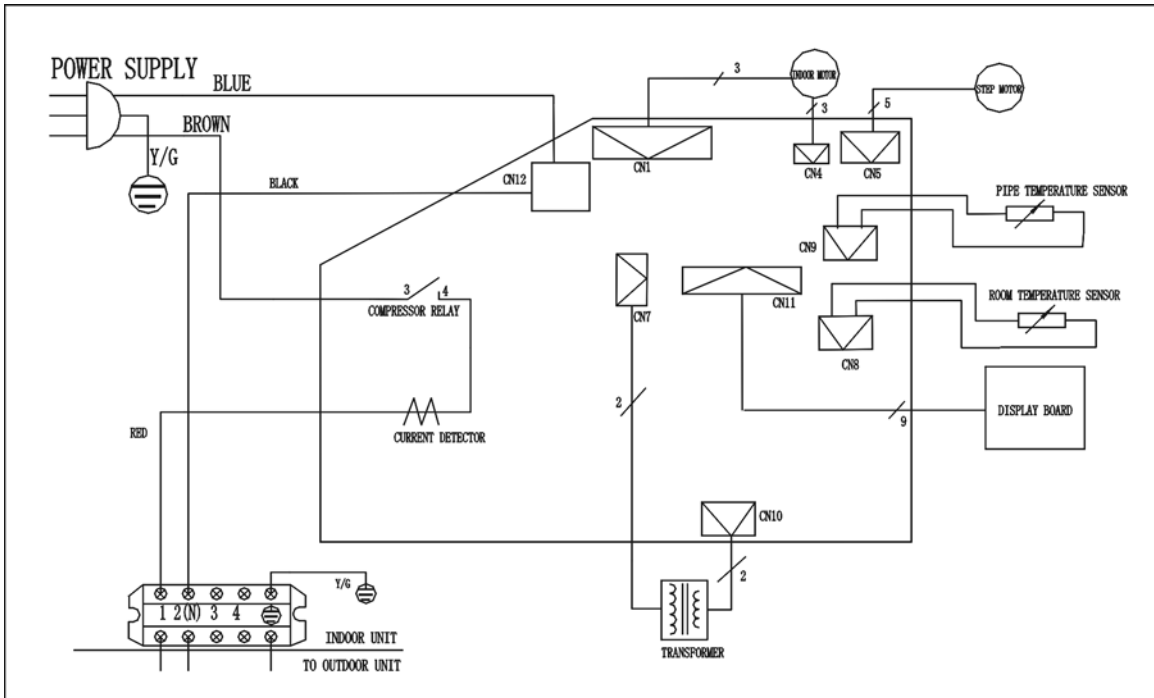
6. Wiring diagram

6.1 Cooling only

6.1.1 DSG-07CRN2, DSG-09CRN2

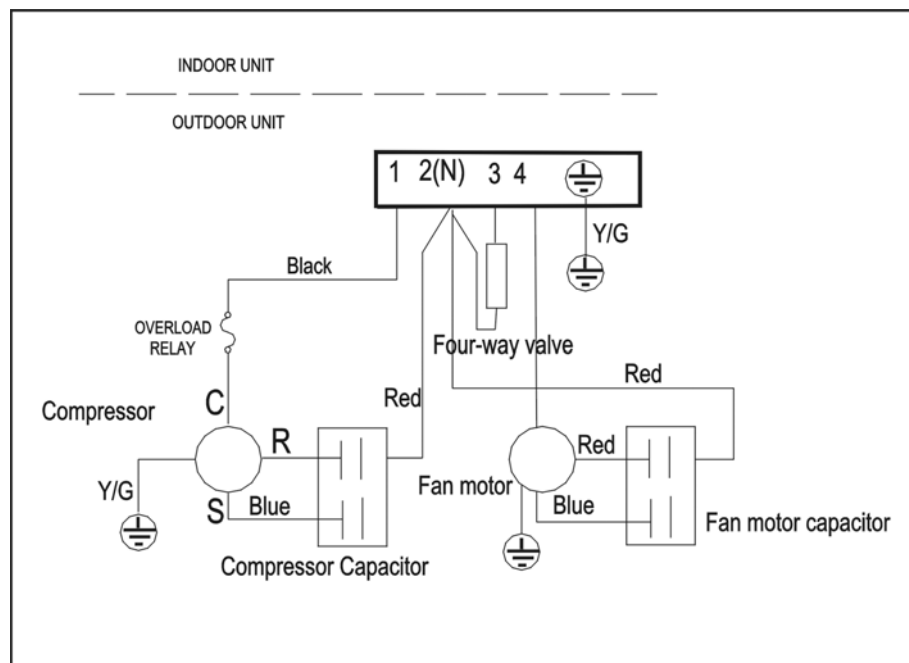
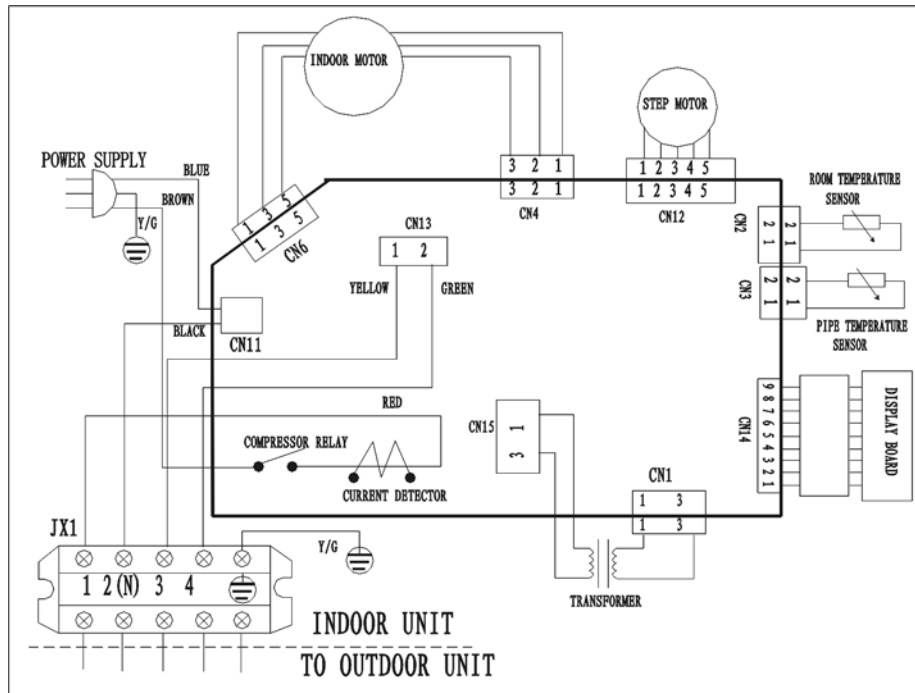


6.1.2 DSG-12CRN2

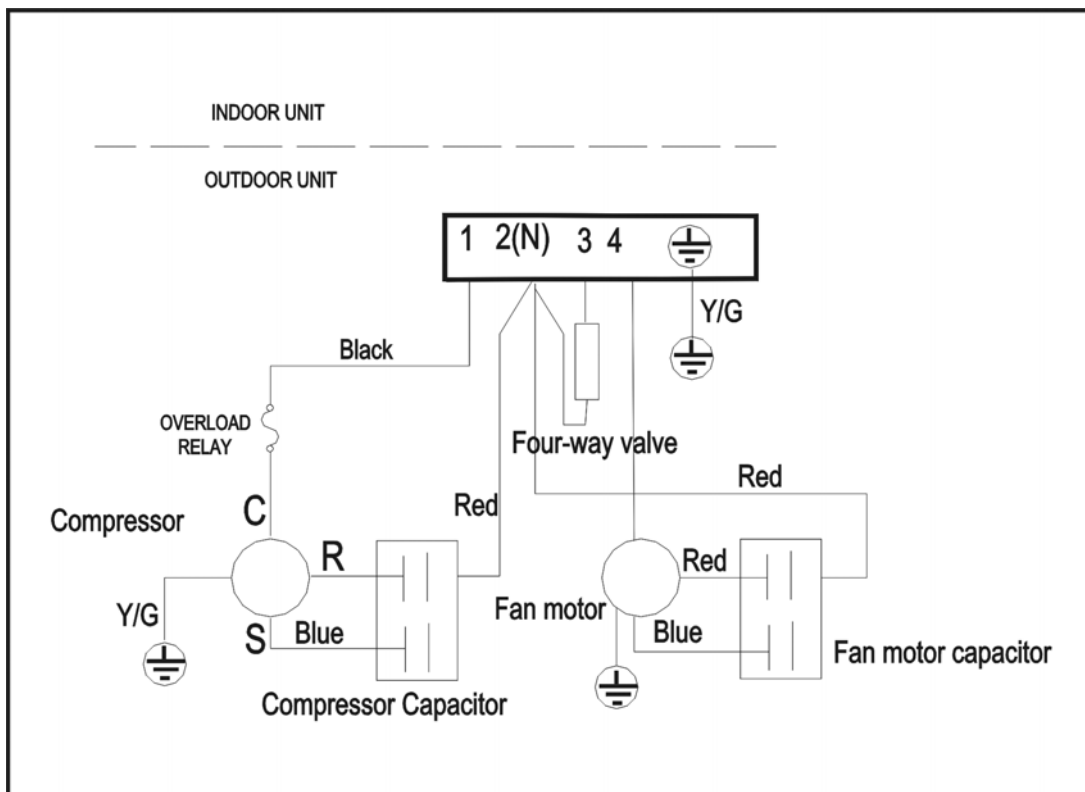
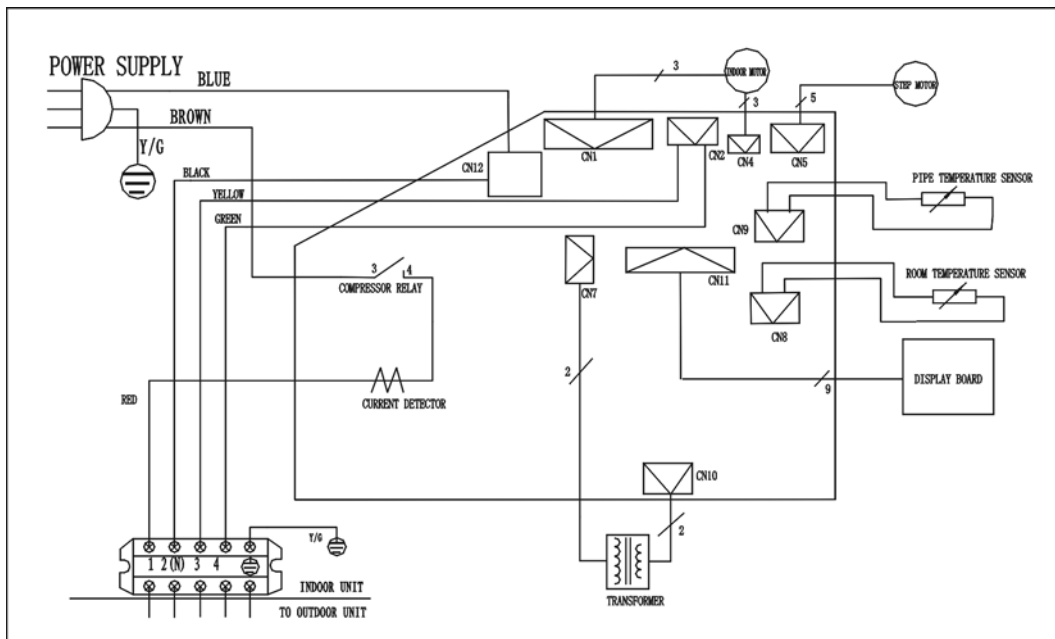


6.2 Heating/cooling

6.2.1 DSG-07HRN2, DSG-09HRN2



6.2.2 DSG-12HRN2



7. Troubleshooting

7.1 For all cooling only model

Failure phenomenon	Operation lamp	Timer lamp
Indoor fan speed has been out of control for over 1 minute	☆	X
Indoor room temp. or evaporator sensor is open circuit or short circuit	☆	On
Over current protection of the compressor occurs 4 times	X	☆
EEROM error	On	☆
No over-zero signal	☆	☆

✕ Extinguish

☆ Flash at 5Hz

7.2 For all heat pump model

Failure phenomenon	Operation lamp	Timer lamp	Defrosting lamp
Over current protection of the compressor occurs 4 times	☆	X	☆
Indoor fan speed has been out of control for over 1 minute	X	☆	☆
No over-zero signal	☆	☆	☆
Temp. sensor on indoor evaporator is open circuit or short circuit	X	X	☆
Indoor room temp. sensor is open circuit or short circuit	X	☆	X
EEROM error	On	☆	X

✕ Extinguish

☆ Flash at 5Hz

8 Electronic function

8.1 Electric Control working environment

8.1.1 input voltage: 175~253V

8.1.2 Input power frequency: 50Hz

8.1.3 Ambient temperature: -7°C~+43°C

8.1.4 Indoor fan normal working amp is less than 1A,

8.1.5 Outdoor fan. Normal working amp is less than 1.5A

8.1.6 Four-way valve normal working amp is less than 1A.

8.1.7 Swing motor: DC12V.

8.1.8 Compressor: single-phase power supply. Its normal working amp is less than 15A

8.2 Proper symbols and their meanings:

TA: Indoor ambient temperature

TE: Indoor evaporator temperature

TS: Setting temperature through the remote controller

I_{3sec}: Self-protection amp of compressor, continue three seconds until turns off the compressor.

I_{5MIN}: Self-protection amp of compressor, continue five minutes until turns off the compressor.

I_{FAN}: Self-protection amp of outdoor fan/indoor fans when they change from higher wind to lower wind.

I_{RESTORE}: Amp self-protection return value

TH_{DEFROST}: High wind, defrosting temperature difference

TM_{DEFROST}: Middle wind, defrosting temperature difference

$TL_{DEFROST}$: Low wind, defrosting temperature difference
 TE1: Anti-cold wind, from Fan Off to Breeze temperature
 TE2: Anti-cold wind, from Breeze to Setting Fan Speed temperature
 TE3: Anti-cold wind, from Setting Fan Speed to Breeze temperature
 TE4: Anti-cold wind, from Breeze to Fan Off temperature
 TE5: Evaporator low temperature protection entering temperature
 TE6: Evaporator low temperature protection restoring temperature
 TE7: Evaporator high temperature protection, compressor off temperature
 TE8: Evaporator high temperature protection, fan off temperature
 TE9: Evaporator high temperature protection, restoring temperature

8.3 Systematic functions

Remote receiving
 Testing and forced run
 Position set for indoor unit wind vane
 LED displaying and alarm
 On or off Timer
 Protection for the compressor
 Current protection
 High temperature protection of indoor heat exchanger at heating mode
 Auto defrosting and heating recovery at heating mode
 Anti cold air at heating mode
 Anti frozen at heating mode

8.4 Protection

8.4.1 The compressor functions protection with a delay of three minutes.

8.4.2 Sensor protection at open circuit and breaking disconnection

8.4.3 Temperature Fuse break protection

8.4.4 Fan Speed is out of control. When Indoor Fan Speed is too high(higher than High Fan+300RPM)or too low(lower than 400RPM), the unit stops and LED displays failure information and can't returns to normal operation automatically.

8.4.5 Cross Zero signal error warning. If there is no Cross Zero signals in 4 minutes, the unit stops and LED displays failure information and can't returns to normal operation automatically.

8.4.6 The current protection of the compressor

	Condition	Indoor fan	Compressor	Outdoor fan	Remark
Current up	$I < I_{RESTORE}$	On	On	On	
	$I_{RESTORE} < I < I_{FAN}$	On	On	Off	Heating mode
		Low speed	On	On	Cooling mode
	$I_{FAN} < I < I_{5MIN}$		Off	Off	After 5 Minutes
	$I_{5MIN} < I < I_{3SEC}$		Off	Off	After 3 Seconds
Current down	$I_{5MIN} < I < I_{3SEC}$		Off	Off	After 3 Seconds
	$I_{FAN} < I < I_{5MIN}$		Off	Off	After 5 Minutes
	$I_{RESTORE} < I < I_{FAN}$	On	On	Off	Heating mode
		Low speed	On	On	Cooling mode
	$I < I_{RESTORE}$	On	On	On	

If compressor turns off for continuously 4 times due to current protection in 5 minutes from Compressor On, the unit stops and LED displays failure information and can't returns to normal operation automatically.

8.5 Fan-only mode

Fan speed is high/mid/low/ Auto

8.6 Cooling mode

The 4-way valve is closed at cooling mode.

The action of the compressor and the outdoor fan:

	Condition	Compressor	Outdoor fan
Temp. up	$T > T_s + 1$	On	On
	$T < T_s + 1$	Off	Off
Temp. down	$T > T_s$	On	On
	$T < T_s$	Off	Off

Auto fan at cooling mode:

	Condition $T = \text{Indoor Temp.} - \text{Setting Temp.}$	Indoor fan speed
Temp. up	$T < 3^\circ\text{C}$	Low
	$3^\circ\text{C} < T < 5^\circ\text{C}$	Med.
	$T > 5^\circ\text{C}$	High
Temp. down	$T > 3^\circ\text{C}$	High
	$1^\circ\text{C} < T < 3^\circ\text{C}$	Med.
	$T < 1^\circ\text{C}$	Low

Anti-freezing control to indoor evaporator at cooling mode(T: evaporator temp.)

	Condition		Compressor	Outdoor fan
	Temp.	Time		
Temp. up	$T > TE6$		On	On
	$T < TE6$	>5 Minutes	Off	Off
Temp. down	$T > TE5$		On	On
	$T < TE5$	>5 Minutes	Off	Off

8.7 Dehumidifying mode

8.7.1 The 4-way valve is off in dehumidifying mode

8.7.2 Compressor and Indoor Fan actions in dehumidifying mode

NO	Conditions	Indoor Fan	Compressor and Outdoor Fan
1	$T_A \geq T_S + 2$	LOW BREEZE	ON 6minutes OFF 4minutes
2	$T_S \leq T_A < T_S + 2$	LOW BREEZE	ON 5minutes OFF 5minutes
3	$T_A < T_S$	LOW BREEZE	ON 4minutes OFF 6minutes

Repeat on and off cycle.

8.7.3 Low room temperature protection:

When room temperature decreases to below 10 °C, compressor and outdoor fan will stop(indoor fan is Breeze). Dehumidifying operation will be resumed when room temperature restores to over 13 °C.

8.7.4 At dehumidifying mode, the anti-freezing function of the indoor heat exchanger is the same as that of cooling mode.

8.7.5 At dehumidifying mode, the action of fans of indoor is the same as that of air-only mode.

8.8 Heating mode

8.8.1 Generally, the 4-way valve is open in heating mode, but it is closed in defrosting mode. 4-way valve must delay 2 minutes compared with compressor if the compressor changed into non-heating mode or turned off. 4-way valve doesn't delay in dehumidifying mode.

8.8.2 Generally, the outdoor fan is turned off with the on-off action of compressor in heating mode, except for the defrosting mode or the end of defrost.

8.8.3 Action of compressor and outdoor fan motor at heating mode: compressor must run for 7 minutes after starting and then judge temperature. Meanwhile other protections are still valid.

	Condition	Compressor	Outdoor fan
Room temp. up	$T > T_s + 3$	Off	Off
	$T < T_s + 3$	On	On
Room temp. down	$T < T_s + 2$	On	On
	$T > T_s + 2$	Off	Off

8.8.4 Indoor Fan actions at heating mode

Indoor Fan can be set at HIGH/MID/LOW/AUTO by using a remote controller, but Anti-cold wind function prevails.

Anti-cold wind control function at heating mode

	Condition $T = \text{Indoor exchanger temp.}$	Indoor fan speed
Indoor exchanger temp. up	$T < TE1$	Off
	$TE1 < T < TE2$	Breeze
	$T > TE2$	Setting fan speed
Indoor exchanger temp. down	$T > TE3$	Setting fan speed
	$TE3 < T < TE4$	Breeze
	$T < TE4$	Off

8.8.5 Auto wind at heating mode

	Condition $T = \text{Indoor Temp.} - \text{Setting Temp.}$	Indoor fan speed
Room temp. up	$T < 2^\circ\text{C}$	High
	$T > 2^\circ\text{C}$	Med.
Room temp. down	$T > 0^\circ\text{C}$	Med.
	$T < 0^\circ\text{C}$	High

8.8.6 Indoor evaporator high-temperature protection at heating mode

	Condition T= Indoor exchanger temp.	Compressor	Outdoor fan
Indoor exchanger temp. up	$T < TE8$	On	On
	$TE8 < T < TE7$	On	Off
	$T > TE7$	Off	Off
Indoor exchanger temp. down	$T > TE9$	Off	Off
	$T < TE9$	On	On

8.8.7. The louver opens to Standard Angle ANGLHEAT when power is on for the first time

8.9 Defrosting operation (Available for heating only).

8.9.1 Defrosting condition: Defrosting starts when either of the following ①&②:

① A and B are satisfied:

A: The compressor keeps running for 40 minutes or more.

B: The temperature difference of evaporator and room temperature meets one of the following:

°C	Temp. of evaporator---room temp.
Fan speed is high	$\leq TH_{DEFROST}$
Fan speed is mid	$\leq TM_{DEFROST}$
Fan speed is low	$\leq TL_{DEFROST}$
Breeze	Meet only if it is Breeze

② Calculate from the end of latest defrost, evaporator high temp. protection only closes outdoor fan with the compressor still running. Add up to 90 minutes.

8.9.2 Defrosting time

If the temp. difference condition ① is satisfied for less than 40 minutes, this can be regarded as severe frosting. The defrosting time is 10 minutes.

If the temp. difference condition ② is satisfied for more than 40 minutes, the defrosting time is 6 minutes.

If the temp. difference condition ① is satisfied out of 40 minutes, generally the defrosting time is 6 minutes, after three continuous 6-minute defrost, the fourth should be 10 minutes defrost.

The circulation is as following:

→6-minute defrost → 6-minute defrost→6-minute defrost→10-minute defrost→

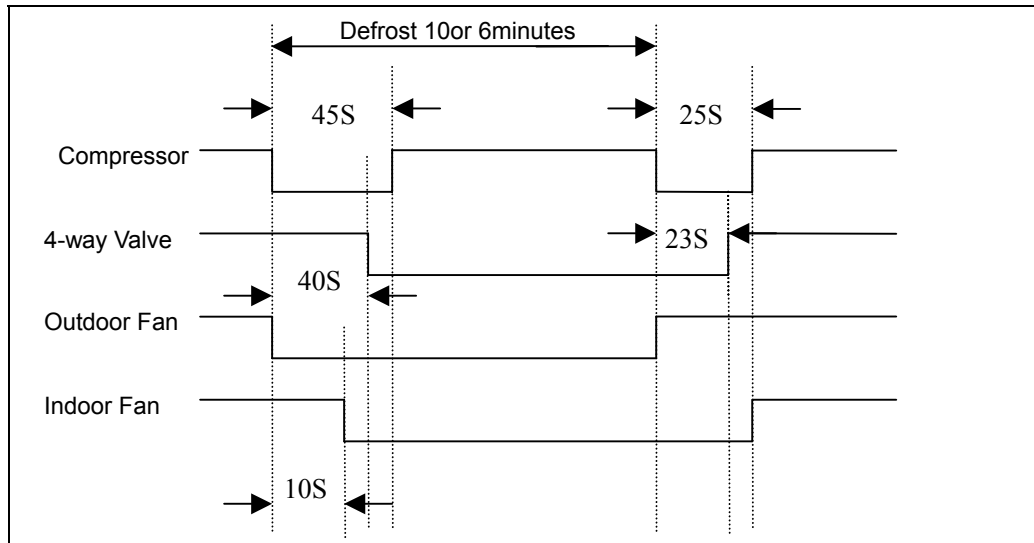
8.9.3 Ending condition of defrosting

If one of following conditions is satisfied, end the defrost and turn into heating mode:

A. The defrost time has reached to 6 or 10 minutes.

B. The compressor current has reached to $I_{DEFROST}$ or above, $I_{DEFROST}$ differs in different models.

8.9.4 Defrosting Actions:



8.9.7 Turn into heating mode, turn off the heating mode in 7 minutes.

8.10 Automatic operation mode

8.10.1 The air conditioner automatically selects one of the following operation modes: cooling, heating or fan only according to the temp. difference between room temp. (TA) and set temp. (TS).

TA—TS	Operation mode
TA—TS>2℃	Cooling
-1℃≤TA—TS≤+2℃	Fan-only
TA—TS<-1℃	Heating (air-only for cooling only type)

8.10.2 The indoor fan blows automatically in corresponding selected mode.

8.10.3 The motion of indoor fan's blade should accord with the selected operation mode.

8.10.4 One mode should be carried out for at least 15 minutes once selected. If the compressor cannot start for 15 minutes, reselect the operation mode according to the room temp. and set temp., or reselect when the set temp. varies.

8.11 Forced cooling function

8.11.1 Select forced cooling function with the forced cooling button or the switch.

8.11.2 The compressor is unconditionally turned on, after 30 minutes cooling operation whose fan mode is set as low, the A/C operates at the DRY mode with a set temp. of 24℃.

8.11.3 All protections of remote control cooling are available at forced cooling operation.

8.12 Forced Auto function

Select forced auto function with the forced auto button or the switch.

In forced auto status the A/C operates at remote control mode with a set temp. of 24℃.

8.13 Timer Function

8.14 Economic Running

-
- 8.14.1 The economic running function is available at cooling, heating or auto mode.
- 8.14.2 Cooling:
The set temperature rise 1°C per hour. Two hours later, the set temperature will maintain as a constant and the fan speed is kept at low speed.
- 8.14.3 Heating:
The set temperature decrease 1°C per hour. Two hours later, the set temperature will maintain as a constant and the air circulation is kept at low speed (Cold air proof function takes precedence over all).
- 8.14.4 Auto:
The economic running function operates in accordance with selected running mode by auto mode.
- 8.15 Auto restart function
In case of a sudden power failure, this function automatically sets the unit to previous settings before the power failure when power returns.

8.16 Models and Parameters

Model	DSG-07CRN2	DSG-07HRN2	DSG-09CRN2	DSG-09HRN2
I3SEC	8.5A	8.5A	10.0A	10.0A
I5MIN	6.2A	6.2A	7.5A	7.5A
IFAN	5.2A	5.2A	5.5A	5.5A
IRESTORE	4.2A	4.2A	4.5A	4.5A
IDEFROST		3.2A		3.5A
TE1		28°C		28°C
TE2		32°C		32°C
TE3		30°C		30°C
TE4		26°C		26°C
TE5	4°C	4°C	4°C	4°C
TE6	10°C	10°C	10°C	10°C
TE7		60°C		60°C
TE8		53°C		53°C
TE9		50°C		50°C
ANGLCOOL	200°	200°	200°	200°
ANGLHEAT		0°		0°
ANGLOFF	124°	124°	124°	124°
TH _{DEFROST}		14°C		14°C
TM _{DEFROST}		15°C		15°C
TL _{DEFROST}		16°C		16°C

Model	DSG-12CRN2	DSG-12HRN2
I3SEC	14.5A	14.5A
I5MIN	13.5A	13.5A
IFAN	9.5A	9.5A
IRESTORE	8.5A	8.5A
IDEFROST		6.5A
TE1		34°C
TE2		37°C
TE3		33°C
TE4		22°C
TE5	2°C	2°C
TE6	7°C	7°C
TE7		62°C
TE8		56°C
TE9		50°C
ANGLCOOL	40°	40°
ANGLHEAT		197°
ANGLOFF	100°	100°
TH _{DEFROST}		17°C
TM _{DEFROST}		18°C
TL _{DEFROST}		19°C