



# FULL DC INVERTER SYSTEMS

OWNER'S MANUAL

**SDV4-xxxEAF**

COMMERCIAL AIR CONDITIONERS SDV4



Original instructions

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# 1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.



### WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.



### CAUTION

Failure to observe a caution may result in injury or damage to the equipment.



### WARNING

- **Ask your dealer for installation of the air conditioner.**  
Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.
- **Ask your dealer for improvement, repair, and maintenance.**  
Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.
- **In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.**
- **Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.**  
Use of wire or copper wire may cause the unit to break down or cause a fire.
- **Do not insert fingers, rods or other objects into the air inlet or outlet.**  
When the fan is rotating at high speed, it will cause injury.
- **Never use a flammable spray such as hair spray, lacquers paint near the unit.**  
It may cause a fire.
- **Never touch the air outlet or the horizontal blades while the swing flap is in operation.**  
Fingers may become caught or the unit may break down.
- **The appliance shall be installed in accordance with national wiring regulations**

- **Never inspect or service the unit by yourself.**  
Ask a qualified service person to perform this work.
- **Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.**
- **Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.**  
Contact you local government for information regarding the connection systems available.
- **If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.**
- **Keep far away from high-frequency equipment.**
- **Keep away from the following places:**  
a place where it is full of oil gas; a place where salty air surrounding or near the coast (except for the models with corrosion-resistant function); a place where is caustic gas (the sulfide in hot spring). Location in the following places may cause malfunction or shorten the life span of the machine.
- **In the case of extremely strong wind, please prevent the air from flowing backwards into the outdoor unit.**
- **Snow canopy is necessary in snowfall places on the outdoor unit. Please consult the local dealer for details.**
- **In the frequent thunderstruck place, lightningproof actions should be taken.**
- **To prevent refrigerant leak, contact your dealer.**  
When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
- **The refrigerant in the air conditioner is safe and normally does not leak.**  
If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
- **Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.**  
Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.



### CAUTION

- **The cooling&heating indoor unit is applicable for the cooling&heating and the cooling only outdoor unit;the heating capacity of the indoor unit will be effective only when the indoor unit connect to the cooling&heating outdoor unit.**
- **Do not use the air conditioner for other purposes.**  
In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

- **Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.**  
Otherwise, an electric shock and injury may result.
- **In order to avoid electric shock or fire, make sure that an earth leak detector is installed.**
- **Be sure the air conditioner is grounded.**  
In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.
- **In order to avoid injury, do not remove the fan guard of the outdoor unit.**
- **Do not operate the air conditioner with a wet hand.**  
An electric shock may happen.
- **Do not touch the heat exchanger fins.**  
These fins are sharp and could result in cutting injuries.
- **After a long use, check the unit stand and fitting for damage.**  
If damaged, the unit may fall and result in injury.
- **To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.**
- **Arrange the drain hose to ensure smooth drainage.**  
Incomplete drainage may cause wetting of the building, furniture etc.
- **Never expose little children, plants or animals directly to the air flow.**  
Adverse influence to little children, animals and plants may result.
- **Notice to avoid places where operation noise may easily be spread away or be enhanced.**
- **Noise can be amplified by anything blocking the air outlet of outdoor unit.**
- **Choose a proper place that the noise and hot or cold wind blown out of the outdoor unit will not bring inconvenience to your neighbors and not affect the growth or animal or plant.**
- **Do not allow a child to mount on the outdoor unit or avoid placing any object on it.**  
Falling or tumbling may result in injury.
- **Do not operate the air conditioner when using a room fumigation - type insecticide.**  
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.
- **Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.**  
It may cause incomplete combustion or deformation of the unit due to the heat.
- **Do not install the air conditioner at any place where flammable gas may leak out.**  
If the gas leaks out and stays around the air conditioner, a fire may break out.
- **The appliance is not intended for use by young children or infirm persons without supervision.**
- **Young children should be supervised to ensure that they do not play with the appliance.**

## 2. PARTS NAMES

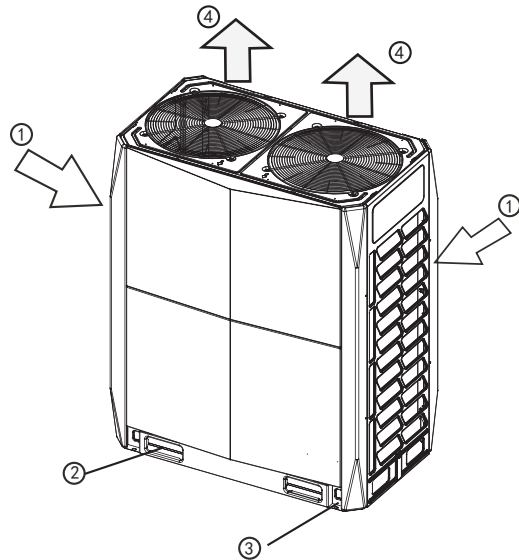


Fig.2-1

The figure shown above is for reference only, the specific panel shall prevail.

①	Air inlet (Both in Left and right sides, as well as in rear side. )
②	Refrigerant pipe connective opening and wires outlet
③	Fixed foot
④	Air outlet (heat air to be blows out in the cooling operation, vice versa while the heating. )



### NOTE

- All the pictures in this manual are for explanation purpose only, There may be slightly different from the air conditioner you purchased (depend on model). The actual shape shall prevail.
- To avoid danger, never put sticks or other objects into it.
- Please preheat the air conditioner for at least 12 hours before operation. Do not switchoff the power if you need to stop the unit for 24h or shorter time. (This is to heat the crank case heater to avoid the compulsive start of compressor.)
- Make sure the air inlet and outlet are not blocked, or it may degrade the performance of air conditioner or start up protector which will stop the unit from running.

## 3. OPERATION AND PERFORMANCE

### ■ Cooling and heating operation of inverter central DC

- The indoor unit of this air conditioner can be controlled solely, and the indoor unit in the same system can not run cooling and heating at the same time.
- When the Cooling and Heating operation confront with each other, please determine the problem according to the settings of outdoor unit Mode dial code S5.

1. When set as the Heating Priority Mode, the indoor unit on Cooling Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Heating Mode will run continuously.

2. When the Cooling Priority Mode has been set, the indoor unit on Heating Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Cooling Mode will run continuously;

3. When the Priority Mode has been set, the first indoor unit will work in Heating Mode that is Heating Priority, please refer to the ITEM 1 for the control logic. If the first indoor unit is work in Cooling Mode, that is the Cooling Priority Mode, please refer to the ITEM 2 for the control logic;

4. In terms of the settings only respond the Heating Mode, the indoor unit will run in Heating Mode normally, if unit be run in the Cooling Mode or air Supply Mode, the indoor unit will display Mode Conflicting;

5. In terms of the settings only respond the Cooling Mode, the indoor unit will run in Cooling Mode or air supply mode normally, if unit be run in the Heating Mode, the indoor unit will display Mode Conflicting.

■ **Features of heating operation**

- Warm air will not be blown out immediately at the beginning of the heating operation, after 3~5minutes (depends on the indoor and outdoor temperature), until the indoor heat exchanger become hot, then blows out warm air.
- During operation, the fan motor in the outdoor unit may stop running under high temperature.
- During Fan operation, if other indoor Units are running on heating mode, the fan may stop in order to prevent sending heat wind.

■ **Defrost in the heating operation**

- During heating operation, outdoor unit sometimes will frost. To increase efficiency, the unit will start defrosting automatically (about 2~10 minutes), and then water will be drained out from outdoor unit.
- During defrosting, both the fan motors in the outdoor unit and indoor unit will stop running.

■ **Operation conditions**

For proper performance, run the air conditioner under the following temperature conditions:

Table.3-1

Temperature Mode	Outdoor temperature	Indoor temperature	Room relative humidity
Cooling mode	-5°C ~ 48°C	17°C ~ 32°C	below 80%
Heating mode (Cooling only type without)	-20°C ~ 24°C	≤27°C	



**NOTE**

Protective device may start if running the unit outside the above condition, which will prevent the unit from operation.

■ **Protection Device**

This protection device will stop the unit automatically in case the air conditioner is on forced running mode. When protection device is activated, running indicator light is lightened and query light flashes. Protection device may start under the following circumstances:

■ cooling operation:

- The air inlet or air outlet of outdoor unit is blocked.
- Strong wind is continuously blowing to the air outlet of the outdoor unit.

■ heating operation:

- Too much dust and rubbish adhere to the dust filter in the indoor unit

■ **Power cut**

- If power is cut during operation, stop all the operation immediately.
- Power comes again. The operation indicator on the wire controller flashes.
- Push the ON/OFF button again if you want to restart the unit.

■ **Mishandling in operation**

In case of mishandling caused by lighting or mobile wireless, please switch off the manual power off the manual power. Push ON/OFF again when restarting.

■ **Heating capacity**

- The heating process is :absorb heat from outdoor, while expel heat to indoor by hot pump. Once the outdoor temperature drop down, heating capacity is degraded correspondingly.
- It is command to equip with other warming facility, when outdoor temperature is low.
- It is better to equip with additional purchase indoor auxiliary heating device in paramos area where is in particularly low outdoor temperature.(See Indoor Unit Operation Manual for detail information)



**NOTE**

Please switch off the power when protection device starts. Do not restart until the problems are solved.

**4. TROUBLES AND CAUSES**



**CAUTION**

- In case the following malfunctions, please switch off the power and contact the local dealer.Incorrect ON/OFF operation
- Fuse or leakage protector is frequently broken.
- Foreign matter or water falls in the unit.

	Troubles	Causes
<b>Not malfunction</b>	<b>Outdoor unit</b> <ul style="list-style-type: none"> <li>• White mist or water</li> <li>• The sound of "hiss"</li> </ul>	<ul style="list-style-type: none"> <li>• FAN function stop automatically to defrost. It is the start and stop sound of the solenoid valve</li> <li>• At the beginning and the end of the running process, sounds like water flow in valve occurs, which will be amplified in 3~15 minutes, this is caused by dehumidifying process of refrigerant current.</li> <li>• Slight hiss is caused by heat exchanger as temperature changes.</li> <li>• Pieces of the wall, carpet, furniture, cloth, cigarette, cosmetics are adhere to the unit.</li> <li>• Switch on the power after the power cut.</li> <li>• Other equipment preheating process stops cooling operation.</li> <li>• The operator sets an opposite mode against the fixed cooling and heating mode.</li> <li>• FAN mode stops to avoid cold air blown out.</li> <li>• The master unit with slave units for different purposes, when abnormal accident happen, the director will illustrate.</li> </ul>
	<b>Indoor unit</b> <ul style="list-style-type: none"> <li>• Bad odor</li> <li>• Operation lamp flashes</li> <li>• No priority of Standby on panel is lightened</li> </ul>	
<b>Check it again</b>	<ul style="list-style-type: none"> <li>• Start or stop operation automatically</li> </ul>	<ul style="list-style-type: none"> <li>• Wrong operation on timer.</li> </ul>
	<ul style="list-style-type: none"> <li>• No operation</li> </ul>	<ul style="list-style-type: none"> <li>• Whether the power is cut.</li> <li>• Whether manual power switch is turned on.</li> <li>• Whether the fuse is melted.</li> <li>• Whether the protection device works. (operation lamp is lightened)</li> <li>• Whether it is the time set.</li> </ul>
	<ul style="list-style-type: none"> <li>• Insufficient cooling</li> <li>• Insufficient heating</li> </ul>	<ul style="list-style-type: none"> <li>• Whether the inlet and outlet of outdoor unit is blocked.</li> <li>• Whether the door and window are open.</li> <li>• Whether the air filter is blocked by dust.</li> <li>• Whether the air deflector is in the right place</li> <li>• Whether fan speed is slight or whether it is in FAN mode.</li> <li>• Whether the temperature is set properly.</li> <li>• Whether setting COOL and HEAT simultaneously. (Indicator light Standby or No Priority on panel is lightened)</li> </ul>

## 5. MALFUNCTION

Malfunction display of outdoor unit's DSP1

Table.5-1

No.	Error code	Error or protection type	Note
1	E0	Outdoor unit COMM.Error	Only display in slave unit
2	E1	Phase protection	
3	E2	COMM.Error with indoor unit	20 minutes after first power on or indoor and outdoor communication break off over 2 minutes after first power on 20 minutes
4	E3	Reserve	
5	E4	Outdoor temp. sensor error	
6	E5	Voltage protection	
7	E6	Reserve	
8	E7	Discharge temp.sensor error	
9	E8	Outdoor unit address error	
10	xE9	Mismatch of drive model	X represents for a system, 1 is A system, 2 is B system
11	xH0	COMM. Error between IR341 and main chip	
12	H1	COMM. Error between 0537 and main chip	
13	H2	Qty.of outdoor unit decreases error	Only main unit will display
14	H3	Qty.of outdoor unit increases error	Only main unit will display
15	xH4	unrecoverable module protection outage(P6)	X represents for a system, 1 is A system, 2 is B system,Not recoverable until re-power on
16	H5	3 times of P2 protection in 60 minutes	Not recoverable until re-power on
17	H6	3 times of P4 protection in 100 minutes	Not recoverable until re-power on
18	H7	Qty.of indoor units decreases error	Indoor unit lost for over 3 minutes; not recoverable, until the unit qty. recover
19	H8	High pressure sensor error	Air discharging pressure $P_c \leq 0.3\text{MPa}$
20	H9	3 times of P9 protection in 60 minutes	Not recoverable until re-power on
21	Hc	Reserve	
22	F0	3 times of PP protection in 150 minutes	Not recoverable until re-power on
23	C7	3 times of PL protection in 100 minutes	Not recoverable until re-power on
24	yHd	Auxiliary unit error (y=1,2,3.e.g,1Hd stands for auxiliary unit1 error)	Y represents for a unit which is not No. 0
25	P0	Inverter compressor top Temp.protection	
26	P1	High pressure protection	
27	P2	Low pressure protection	After 3 times P2 protection in 60 minutes will report H5
28	xP3	Compressor current protection	X represents for a system, 1 is A system, 2 is B system
29	P4	Discharge Temp.Protection	After 3 times P6 protection in 100 minutes will report H6
30	P5	High condenser Temp.protection	
31	xP6	Inverter module protection	X represents for a system, 1 is A system, 2 is B system, after 3 times P6 protection in 60 minutes will report H4
32	P9	DC fan protection	After 3 times P9 protection in 60 minutes will report H9
33	PL	Inverter module Temp.sensor error	After 3 times PL protection in 100 minutes will report C7
34	PP	Protection of insufficient in degree of superheat of compressor discharging	After 3 times PP protection in 150 minutes will report F0
35	xL0	DC compressor module error	X represents for a system, 1 is A system, 2 is B system
36	xL1	DC bus low pressure protection	X represents for a system, 1 is A system, 2 is B system
37	xL2	DC bus high pressure protection	X represents for a system, 1 is A system, 2 is B system
38	xL3	Reserve	X represents for a system, 1 is A system, 2 is B system
39	xL4	MCE error/synchronization/closed loop	X represents for a system, 1 is A system, 2 is B system
40	xL5	Zero speed protection	X represents for a system, 1 is A system, 2 is B system
41	xL6	Reserve	X represents for a system, 1 is A system, 2 is B system
42	xL7	Phase error protection	X represents for a system, 1 is A system, 2 is B system
43	xL8	Protection of the speed change between a moment before and after is $> 15\text{Hz}$	X represents for a system, 1 is A system, 2 is B system
44	xL9	Protection of the speed change between the setting speed and the actual speed $> 15\text{Hz}$	X represents for a system, 1 is A system, 2 is B system

If the problem still existing, please contact the sales distributor or the service center, tell us your model No. and the detail of the error.

## 6. CONSTRAINT COOLING AND QUERY

### ■ Constraint Cooling

Once pressing the constraint cooling button(see the chart on the right), all the indoor unit will be on forced cooling mode and the wind speed is HIGH.

### ■ Use application of the SW2 spot check

Table.6-1

No.	Display content (Normal display)	Note
1	Outdoor unit address	0, 1, 2, 3
2	Outdoor unit itself capacity	8, 10, 12, 14, 16, 18, 20, 22
3	Modular outdoor unit qty.	Available for main unit
4	Qty.setting of indoor units	Available for main unit
5	Total capacity of outdoor unit	Capacity requirement
6	Total requirement of indoor unit capacity	Available for main unit
7	Total requirement of main unit corrected capacity	Available for main unit
8	Operation mode	0, 2, 3, 4
9	This outdoor unit actual operation capacity	Capacity requirement
10	Speed of fan A	
11	Speed of fan B	
12	T2B/T2 average temp.	Actual value
13	T3 pipe temp.	Actual value
14	T4 ambient temp.	Actual value
15	Discharge Temp.of Inverter compressor A	Actual value
16	Discharge Temp.of Inverter compressor B	Actual value
17	Heat sink Temp.	Actual value
18	Discharge pressure corresponding to the saturation temperature	Actual value +30
19	Current of inverter compressor A	Actual value
20	Current of inverter compressor B	Actual value
21	Opening angle of EXV A	
22	Opening angle of EXV B	
23	High pressure	Display value×0.1MPa
24	Low pressure(Reserve)	
25	Qty. of Indoor units	That can communicate with indoor units
26	Qty. of the working Indoor units	Actual value
27	Priority mode	0, 1, 2, 3, 4
28	Night noise control mode	0, 1, 2, 3
29	Static pressure mode	0, 1, 2, 3
30	DC voltage A	
31	DC voltage B	
32	Reserve	
33	The last-time error or the protection code	If there is no protection or error, the panel will display 8.8.8.
34	Times of error clearance	
35	-----	Check end

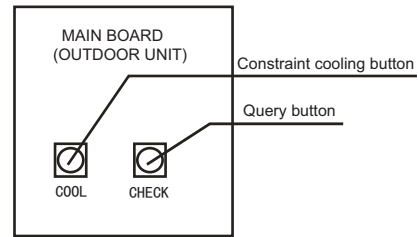


Fig.6-1

The display contents as followings:

(1) Normal display:When standby, the high position displays the adress of the outdoor unit,and the low position displays the Qty.of indoor units that can communicate with outdoor unit .When it is operating, it will display the rotation frequency of the compressor.

(2) Operation mode: 0-OFF; 2-Cooling; 3-Heating; 4-Constraint cooling.

(3) Fan speed: 0-stop; 1~15: speed increase sequentially, 15 is the max. fan speed.

(4) EXV opening angle: Pulse count=display value×8;

(5) Priority mode: 0-heating priority mode ; 1-cooling priority mode; 2-Number 63 & the more operating mode first ; 3-respond the heating mode only ; 4-respond the cooling mode only.

(6) Night noise control mode:0-Night noise control mode ; 1- silent mode ; 2-most silent mode;3-no priority.

(7) Static pressure mode:0-Static pressure is 0 Mpa ; 1-Static pressure mode is low pressure ; 2-Static pressure mode is medium pressure ; 3-high static pressure mode is high pressure.

## 7. AFTER-SALE SERVICE

If the air conditioner was operate abnormally, please plug off the power supply firstly, and contact with After-sales Center or Special Distributor. For detail please refer to the attached accessory Consumer Service Instruction.





## NOTE CONCERNING PROTECTION OF ENVIRONMENT



This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

## INFORMATION CONCERNING USED REFRIGERANT MEDIUM

This unit is containing fluorinated gases included in the Kyoto protocol. The maintenance and the liquidation must be carried out by qualified personnel.

Type of refrigerant: R410A

The composition of the cooling medium R410A: (50% HFC-32, 50% HFC-125)

The quantity of the refrigerant: please see the unit label.

The value GWP: 2088

GWP = Global Warming Potential

In case of quality problem or other please contact your local supplier or authorized service center.

**Emergency number: 112**

## PRODUCER

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