

# Cascade DS Series Four Way Cassette

Owner's Manual



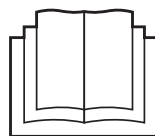
## Model Numbers

URC-100DS / CRE-100DS

URC-125DS / CRE-125DS

URC-140DS / CRE-140DS

**R32** LOW GWP  
REFRIGERANT



### IMPORTANT NOTE:

This unit is designed for use with R-32 refrigerant only. Please read the R-32 Safety Manual and this manual carefully before installing or operating your air conditioning unit. Information in this manual is to be used in conjunction with the R-32 Safety Manual. Make sure to save this manual for future reference.



# A2L

The system is charged with flammable refrigerant, safety checks are necessary to ensure that the risk of ignition is minimised.



**ActronAir**

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Product design and specifications are subject to change without prior notice for product improvement.

Drawings are for illustration purposes only and may vary depending on the model purchased.

READ SAFETY PRECAUTIONS

Incorrect system operations due to ignoring instructions can cause serious damage or injury. The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



CAUTION

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



WARNING

Failure to observe a warning may result in death or serious injury.

## 01. General Information

CONGRATULATIONS on your purchase of an ActronAir air conditioning unit! This unit has been designed and engineered to provide optimum air conditioning and to achieve maximum energy efficiency.

Your air conditioning system has been manufactured from the highest quality materials. Numerous “in house” and “external” inspections and test procedures were conducted to your air conditioning unit to ensure satisfactory operation.

This guide provides operation instructions specific to your split indoor unit. Read this manual thoroughly to ensure safe operation of your air conditioning system.

## 02. Safety Instructions

- Only licensed HVAC technicians\* should service this air conditioning equipment. Improper service or alteration by an unqualified technician could result in significant and major damage to the product or property which may render your warranty null and void. Such unqualified service could also lead to severe physical injury or death. Follow all safety instructions in this literature and all warning labels that are attached to the equipment.
- Prevailing WH&S regulations must be observed and will take precedence to the safety instructions contained on this manual. Safe work practices and environment must be the paramount importance in the performance of all the service procedures.
- This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely. Young children should be supervised to ensure that they do not play with the appliance.

\*Qualifications required will be appropriate Electrical, Refrigeration and Refrigerant Handling License and Training dependent on local State/Territory regulations.



### **DANGER**

#### **Hazardous Voltage - Risk of Electrocutation.**

Turn Off the power from main isolator before proceeding with any service and maintenance work of the unit. Observe proper LOCK-OUT/TAG-OUT (LOTO) procedures for electrical appliances in order to prevent accidental switching-on of the power supply. Extreme care and caution must be observed should there be a need to work on live circuit.



### **WARNING**

- If any abnormal situation arises (like burning smell), turn off the power supply and call your HVAC technician for instructions to avoid electric shock, fire or injury.
- **DO NOT** let the indoor unit or the controller get wet. It may cause electric shock or fire.
- **DO NOT** insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- **DO NOT** use a flammable spray such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.

## CAUTION

- **DO NOT** inspect the unit by yourself. Ask a qualified HVAC technician to perform the inspection.
- To prevent product deterioration, do not use the air conditioner for preservation purposes (storage of food, plants, animals, works of art, etc.).
- **DO NOT** touch the evaporator coils inside the indoor unit. The evaporator coils are sharp and may cause injury.
- **DO NOT** place items that might be affected by moisture damage under the indoor unit. Condensation can occur at a relative humidity of 80%.
- **DO NOT** expose heat-producing appliances to cold air or place them under the indoor unit. This may cause incomplete combustion or deformation of the unit due to the heat.
- If the air conditioner is used together with other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- **DO NOT** climb onto or place objects on top of the outdoor unit.
- **DO NOT** operate the air conditioner when using fumigant insecticides. The chemicals may become layered with the unit and endanger those who are hypersensitive to chemicals.
- **DO NOT** let children play with the air conditioner.
- **DO NOT** attempt to manually adjust or bend louvre blades. Doing so may damage louvre blades, or if pushed closed may cause excess condensation resulting in the failure of the air conditioning.

## DANGER

- **DO NOT** operate the air conditioner in a wet room (e.g. bathroom or laundry room) nor with wet hands. This can cause electrical shock and cause the product to deteriorate.

## WARNING

This air-conditioning unit contains R-32 refrigerant (CLASS A2L) which is mildly flammable.

## WARNING

To prevent the risk of fire or explosion from refrigerant leakage, the following safety requirements apply when the appliance is installed in an unventilated area:

The installation area must be constructed to ensure that any leaked refrigerant does not stagnate and create a fire or explosion hazard.

The appliance must be stored in a room that meets the minimum area requirement specified for operation.

The appliance must not be stored in a room with continuously operating open flames (e.g., gas appliances) or other ignition sources (e.g., electric heaters, hot surfaces).

For Appliances Connected via Air Duct Systems:

If installed in a room smaller than  $A_{min}$  (as determined in Clause GG.2 of AS/NZS 60335.2.40), that room must not contain continuously operating open flames or other ignition sources (e.g., electric heaters, hot surfaces).

A flame-producing device may only be installed if fitted with an effective flame arrestor.

Auxiliary devices that can act as ignition sources must not be installed in ductwork. Examples include, but not limited to:

Hot surfaces exceeding X °C

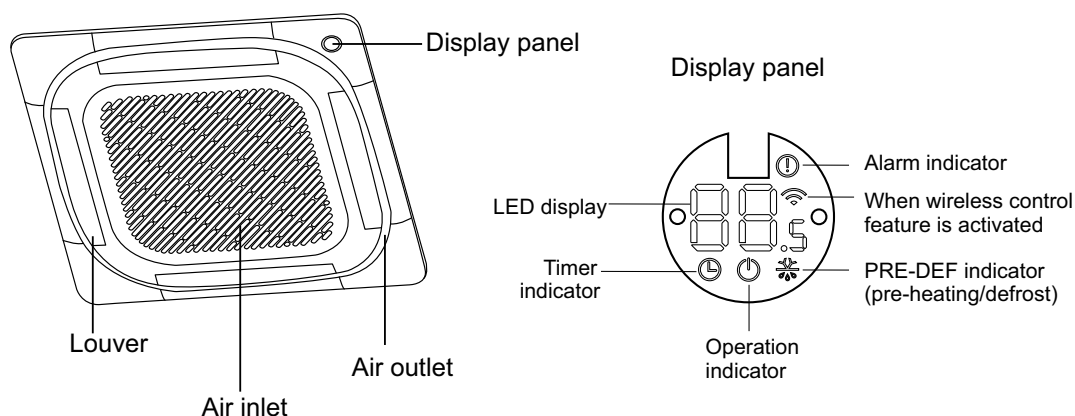
Electric switching devices

Note: X is the maximum allowable surface temperature defined in Clause 22.117 of AS/NZS 60335.2.40.

## NOTE

- Service, maintenance, repairs and decommissioning of this unit must be performed by a licensed HVAC technician; qualified to handle R-32 refrigerant.
- R-32 refrigerant is odourless, if the refrigerant gas comes into contact with fire, it may emit a poisonous gas.

### 03. Unit Parts



### 04. Operating Conditions

#### Operating Temperature

Optimal performance for the **COOL**, **HEAT**, and **DRY** modes can be achieved in the following temperature ranges. When your air conditioner is used outside of these ranges, certain safety protection features will activate and cause the unit to perform less than optimally.

	COOL Mode	HEAT Mode
Room Temperature	16°C to 32°C	0°C to 30°C
Outdoor Temperature	15°C to 50°C	-20°C to 24°C

#### NOTE

Room relative humidity should be less than 80%. If the air conditioner operates in room with relative humidity greater than 80%, the surface of the air conditioner may attract condensation. To avoid condensation on louvers, please set the vertical air flow louvre to its maximum angle and set HIGH fan mode.

#### Optimal Operation

To achieve optimal performance, please note the following:

- Adjust the direction of the air flow so that it is not blowing directly onto people.
- Adjust the temperature to achieve the highest possible level of comfort. **DO NOT** adjust the unit to excessive temperature levels.
- While cooling, close the blinds or curtains to avoid direct sunlight.
- Doors and windows should be kept closed to keep cool or warm air in the room.
- Set an **ON/OFF TIMER** and use **SLEEP/ECONOMY** feature.
- Do not place any object near the air inlet or air outlet, as the efficiency of the air conditioner may be reduced and the air conditioner may stop running.
- When a remote control is used, remove the batteries if you don't plan to use the unit for a long time.
- Clean the air filter periodically, otherwise cooling or heating performance may be reduced.

#### To further optimize the performance of your unit, do the following:

- Keep doors and windows closed.
- Limit energy usage by using **TIMER ON** and **TIMER OFF** functions.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

## 05. Features

### Compressor Protection

- The compressor cannot restart for 3 minutes after it stops.

### Hot Start

- The unit is designed to minimise cold air during **HEAT** mode, when the indoor heat exchanger is in one of the following conditions and the set temperature has not been reached.
  - a. When heating has just started.
  - b. When the system is in defrost.
  - c. Low temperature heating.

### Defrosting

- Frosting may occur on the outdoor unit during a heat cycle when outdoor temperature is low and humidity is high resulting in lower heating efficiency.
- Under these conditions, the air conditioner will stop heating operations and start defrosting automatically.
- The defrost period may vary from 4 to 10 minutes, depending on the outdoor temperature and the amount of frost buildup on the outdoor unit.
- The indoor and outdoor fan stop running when the system is in defrost.

### Auto-Restart

The system has an auto restart function. If a power failure occurs, the system will immediately stop. When power returns, the unit will restart automatically in its last programmed setting once power is resotered.

### Louvre Angle Memory Function

When the unit restarts after a power failure, the angle of the horizontal louvres will automatically return to the previous position. The angle of the horizontal louvre should not be set to small opening (or near close possition) as condensation may form and drip from the machine.

#### NOTE

Lightning or any electronic interference nearby may cause the unit to malfunction. If this happens, reset the power mains (isolator). Press the ON/OFF button on the wired controller to restart operation.

### Optimal Operation

To achieve optimal performance, please note the following:

- Adjust the direction of the air flow so that it is not blowing directly onto people.
- Adjust the temperature to achieve the highest possible level of comfort. **DO NOT** adjust the unit to excessive temperature levels.
- While cooling, close the blinds or curtains to avoid direct sunlight.
- Doors and windows should be kept closed to keep cool or warm air in the room.
- Set an **ON/OFF TIMER** and use **SLEEP/ECONOMY** feature.
- Do not place any object near the air inlet or air outlet, as the efficiency of the air conditioner may be reduced and the air conditioner may stop running.
- When a remote control is used, remove the batteries if you don't plan to use the unit for a long time.
- Clean the air filter periodically, otherwise cooling or heating performance may be reduced.

## 06. Care and Maintenance

### NOTES

Apart from Cleaning the Air Filter, all other general maintenance and care of systems should be undertaken by a licensed technician.

Service, maintenance, repairs and decommissioning of this unit must be performed by a licensed HVAC technician; qualified to handle R-32 refrigerant.

### Maintenance Procedures

This section describes the procedures that must be performed as a part of normal maintenance program. Regular servicing of equipment by a licensed technician is highly recommended. Regular servicing of your unit helps in maintaining its optimum performance and reliability. **The checklist and service periods provided in this manual are guides only, as some sites may require more frequent servicing.** Always disconnect electrical power to the unit before performing these procedures. It is always a safe practice to observe all safety warnings and cautions when conducting maintenance tasks.



### WARNING

#### Hazardous Voltage !

Always make sure that all power supply, including remote controls, are disconnected before performing maintenance. Observe proper LOCK-OUT/TAG-OUT procedures to ensure that power cannot be inadvertently energised. Failure to disconnect power before maintenance procedures can result in serious injury and/or death.



### DANGER

#### Live Electrical Connections!

It may be necessary to work with live electrical components on certain maintenance tasks. Only licensed electricians and qualified technicians are allowed to perform these tasks.

#### Beware of Rotating Fan Blades!

Always make sure that all power supply, to the Outdoor Fans are turn Off and isolated.

Observe WH&S safety procedures, do not wear loose clothing and any jewellery when working near the fans.

Wear PPE whenever performing any maintenance procedures.

Observe all necessary procedures when working in a confined space.

### Annual Maintenance Checklists

- Perform general maintenance inspections.
- Perform scheduled start-up checks.
- Leak test refrigerant circuits.
- Inspect contacts of all contactors and relays. Replace all worn contacts as required.
- Inspect, clean and tighten all electrical connections.
- Check fans for balanced operation. Make sure that there are no loose screws / bolts, no fan blades interference and no damage to the fans and guards.
- Inspect the air filters, clean or replace as required.
- Clean and repaint any corroded panel section.
- Ensure no blockage of airflow through variable speed drive.

## Cleaning the Condenser Coils

Clean the coils at least once a year or more frequently if unit is located in a dusty and dirty environment, in order to maintain your system's proper operating performance. High discharge pressures are good indication that the coils need cleaning. When using detergent or solvents to clean the coils, follow the manufacturer's instructions to avoid potential damage to the coils and to the unit.

To clean the refrigerant coils, use a soft brush and water spray, such as garden hose or pressure washer with low pressure nozzle.

### WARNING

#### **Do Not Use High Alkaline Detergent!**

When using detergent for coil cleaning, ensure that the alkaline level is no higher than 8.5, which can cause corrosion damage to the coils.

#### **No Water into the Electrical Compartments!**

Ensure consideration is given to the possibility of water entering the electrical compartments during cleaning of the condenser coil.

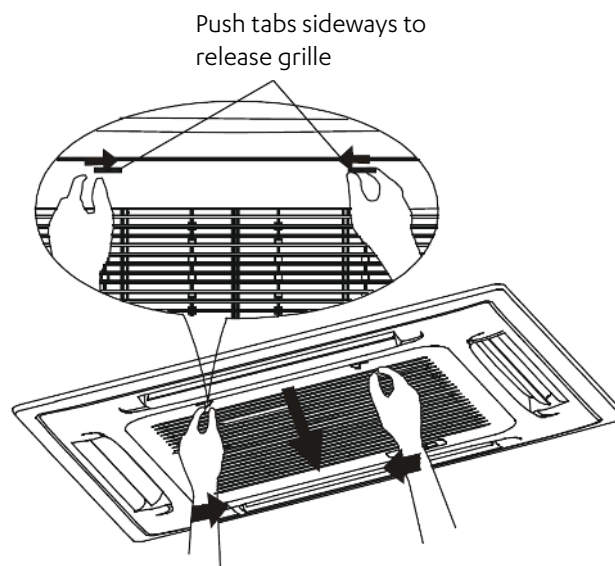
## How To Clean Air Filter

The filter prevents dust and other particles from entering the indoor unit. Dust build up can reduce the efficiency of the air conditioner. For optimum efficiency, clean the air filter regularly or more frequently if unit is installed in a dusty area.

### WARNING

1. Ensure the unit is OFF before checking or cleaning the air filter.
2. To avoid injury, ensure that the blower fan comes to a complete stop before removing the air filter.
3. Air inlet frame may swing down when unlocked. Ensure to guide the air inlet frame to complete open position (do not let it swing freely).

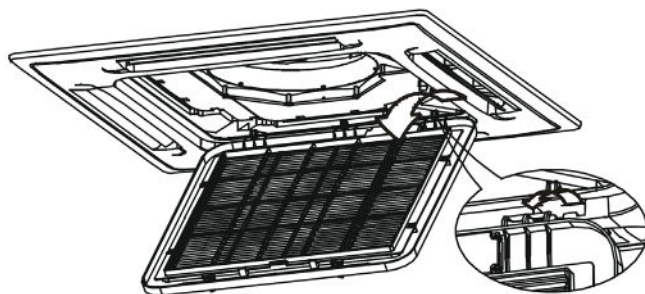
Step 1. Unlock the grille by pushing the two tabs towards the middle simultaneously.





Step 2. Remove the filter from the grille.

(Be mindful of the cable from the control box on the main body to the display panel.)



Step 3. Remove the air filter.

Step 4. Clean the air filter by vacuuming the surface or washing it with warm and mild detergent.

Step 5. Rinse the filter with clean water and allow it to air-dry. DO NOT let the filter dry in direct sunlight.

Step 6. Reinstall the filter.

Step 7. Ensure the cable from the display panel to the control box is not loose and not obstructing the grill.

Step 8. Lock the grille by sliding the two tabs outwards simultaneously.

## Preparation For Periods of Non-Use

If you plan to not use your air conditioner for an extended period of time, do the following:

- Run the appliance on **FAN** mode for 12 hours in a warm room to dry all its components. Presence of moisture for a long period of time may lead to mold formation.
- Turn off the appliance and turn off power via the main power isolator.
- Clean the air filter according to the instructions in the previous section. Reinstall the clean, dry filter before storing.
- Remove the batteries from the remote control (if remote control is used).

## Maintenance – Pre-Season Inspection

After long periods of non-use, or before periods of frequent use, do the following:

- Use a dry cloth to wipe off the dust accumulated on the rear air intake grille in order to avoid the dust being dispersed from the indoor unit.
- Check that the air filter is installed.
- Check if the air outlet or inlet is blocked after the air conditioner has not been used for a long time.
- Turn on the main power isolator at least 12 hours prior to operating the unit.

### CAUTION

- Any unit repairs, maintenance and cleaning of outdoor unit should be performed by qualified HVAC technician.
- Filter cleaning can and should be regularly performed by product owner as required.

### WARNING

- If the refrigerant leaks, turn off the air conditioner and any combustible heating devices, ventilate the room and call your HVAC technician immediately. Refrigerant can be toxic. DO NOT use the air conditioner until the leak is repaired.
- When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit in the event of refrigerant leakage. Concentrated refrigerant causes a severe health and safety threat.

## 07. Troubleshooting



### SAFETY PRECAUTIONS

If ANY of the following conditions occurs, turn off your unit immediately!

- Any cables are damaged or abnormally warm
- You smell a burning odour
- The unit emits loud or abnormal sounds
- A power fuse blows or the circuit breaker frequently trips
- Water or other objects fall into or out of the unit

**DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AUTHORISED SERVICE PROVIDER IMMEDIATELY!**

The following problems are not a malfunction and in most situations will not require repairs.

Fault	Possible Causes
<b>Unit does not turn on when pressing ON/OFF button</b>	The unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
	If the Operation light and PRE-DEF (Pre-heating/ Defrost) indicators are lit up, the outdoor temperature is too cold and the unit's hot start feature is activated in order to defrost the unit.
<b>The unit changes from COOL mode to FAN mode</b>	The unit changes its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will resume operating when the temperature fluctuates again.
<b>The indoor unit emits white mist</b>	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
<b>Both the indoor and outdoor units emit white mist</b>	When the unit restarts in <b>HEAT</b> mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
<b>The indoor unit makes noises</b>	A squeaking sound is heard when the system is <b>OFF</b> or in <b>COOL</b> mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after running the unit in <b>HEAT</b> mode due to expansion and contraction of the unit's plastic parts.
<b>Both the indoor unit and outdoor unit make noises</b>	A low hissing sound may occur during operation. This is normal and is caused by refrigerant gas flowing through both the indoor and outdoor units.
	A low hissing sound may be heard when the system starts, has just stopped running or is defrosting. This noise is normal and is caused by the refrigerant gas stopping or changing direction.
<b>The outdoor unit makes noises</b>	The unit will make different sounds based on its current operating mode.
<b>Dust is emitted from either the indoor or outdoor unit</b>	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
<b>The indoor unit emits a bad odour</b>	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
<b>The fan of the outdoor unit does not operate</b>	During operation, the fan speed is controlled to optimize product operation.

When troubles occur, please check the following points before contacting a HVAC service repair company.

Fault	Possible Causes	Remedies
<b>The unit is not working</b>	Power failure	Wait for the power to be restored
	The power switch is off	Turn on the power
	Remote control batteries are dead	Replace the remote control batteries
	The unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
<b>Poor Cooling / Heating Performance</b>	Temperature setting may be higher than the ambient room temperature for the cooling mode; or lower than the ambient temperature for the heating mode	Adjust to temperature setting higher / lower
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight (Cooling only)	Close windows and curtains during periods of high heat or bright sunshine
<b>The unit starts and stops frequently</b>	Setpoint is reached	Check that the setpoint is not reached
	Unit encounters an error	Check that the unit does not display any error

## NOTE

If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact ActronAir on 1800 119 229 for technical support or warranty.

## 08. Display / Error Codes

When issues occur, please check the following points before contacting a qualified service technician.

### Normal Display (not error code)

Display Codes	Operation Lamp	Timer Lamp	Causes
dF	-	-	Defrost
CL	-	-	Filter cleaning reminder (power on display for 15 seconds)
CL	-	-	Active clean
nF	-	-	Filter replacement reminder (power on display for 15 seconds)
FP	-	-	Heating in room temperature under 8°C
FC	-	-	Forced cooling
AP	-	-	AP mode of WIFI connection
CP	-	-	Remote switched off

## Error Codes

Error Codes	Operation Lamp	Timer Lamp	Causes
EH 00/ EH 0A	<b>1 time</b>	<b>X</b>	Indoor unit EEPROM parameter error
EL 01	<b>2 times</b>	<b>X</b>	Indoor / outdoor unit communication error
EH 03	<b>4 times</b>	<b>X</b>	The indoor fan speed is operating outside of the normal range
EH 60	<b>6 times</b>	<b>X</b>	Indoor room temperature sensor T1 is in open circuit or has short circuited
EH 61	<b>6 times</b>	<b>X</b>	Evaporator coil temperature sensor T2 is in open circuit or has short circuited
EL 0C	<b>8 times</b>	<b>X</b>	Refrigerant Leakage Detection
EH 0b	<b>9 times</b>	<b>X</b>	Communication error between indoor two chips
EH 0E	<b>13 times</b>	<b>X</b>	Water-level alarm malfunction
EC 53	<b>5 times</b>	<b>X</b>	Outdoor room temperature sensor T4 is in open circuit or has short circuited
EC 52	<b>5 times</b>	<b>X</b>	Condenser coil temperature sensor T3 is in open circuit or has short circuited
EC 54	<b>5 times</b>	<b>X</b>	Compressor discharge temperature sensor TP is in open circuit or has short circuited
EC 56	<b>5 times</b>	<b>X</b>	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited
EC 51	<b>5 times</b>	<b>O</b>	Outdoor unit EEPROM parameter error
EC 07	<b>12 times</b>	<b>X</b>	The outdoor fan speed is operating outside of the normal range
PC 00	<b>7 times</b>	<b>--</b>	IPM malfunction or IGBT over-strong current protection
PC 01	<b>2 times</b>	<b>--</b>	Over voltage or over low voltage protection
PC 02	<b>3 times</b>	<b>--</b>	Top temperature protection of compressor or High temperature protection of IPM module
PC 04	<b>5 times</b>	<b>--</b>	Inverter compressor drive error
PC 03	<b>7 times</b>	<b>--</b>	High pressure protection or low pressure protection
EC 0d	<b>14 times</b>	<b>X</b>	Outdoor unit malfunction
EH bA	<b>--</b>	<b>--</b>	Communication malfunction between external fan module and indoor unit
EH 3A	<b>4 times</b>	<b>X</b>	External fan DC bus voltage is too low protection
EH 3b	<b>4 times</b>	<b>X</b>	External fan DC bus voltage is too high fault
--	<b>1 time</b>	<b>O</b>	Indoor units mode conflict (match with multi outdoor unit)

O - ON / X - OFF / ☆ - FLASH

## 09. Maintenance

### Maintenance Procedures

This section describes the procedures that must be performed as a part of normal maintenance program. Regular servicing of equipment by licensed HVAC technician is highly recommended. Always disconnect electrical power to the unit before performing these procedures. It is always a safe practice to observe all safety warnings and cautions when conducting maintenance tasks.



**DANGER**

### Live Electrical Connections !

It may be necessary to work with live electrical components on certain maintenance tasks. Only licensed electricians and qualified technicians are allowed to perform these tasks.



**WARNING**

### Hazardous Voltage !

Always make sure that all power supply, including remote controls, are disconnected before performing maintenance. Observe proper LOCK-OUT / TAG-OUT (LOTO) procedures to ensure that power cannot be inadvertently energised. Failure to disconnect power before maintenance procedures can result in serious injury and/or death.

## Annual Maintenance Checklists

- Perform general maintenance inspections.
- Perform scheduled start-up checks.
- Leak test refrigerant circuits.
- Inspect contacts of all contactors and relays. Replace all worn contacts as required.
- Inspect, clean and tighten all electrical connections.
- Check fans for balanced operation. Make sure that there are no loose screws/bolts, no fan blades interference and no damage to the fans and guards.
- Inspect the air filters, clean or replace as required.
- Clean and repaint any corroded panel section.
- Ensure no blockage of airflow through variable speed drive and drive fan is operating correctly.

## Cleaning the Condenser Coils

Clean the coils at least once a year or more frequently if unit is located in a dusty and dirty environment, in order to maintain your system's proper operating performance. High discharge pressures are good indication that the coils need cleaning. When using detergent or solvents to clean the coils, follow the manufacturer's instructions to avoid potential damage to the coils and to the unit.

To clean the refrigerant coils, use a soft brush and water spray, such as garden hose or pressure washer with low pressure nozzle.



### **DANGER**

#### **Beware of Rotating Fan Blades !**

- Always make sure that all power supply, to the Outdoor Fans are turned-off and isolated.
- Observe WH&S safety procedures, do not wear loose clothing and any jewellery when working near the fans.
- Wear PPE whenever performing any maintenance procedures.
- Observe all necessary procedures when working on a confined space.



### **CAUTION**

#### **Do Not Use High Alkaline Detergent !**

When using detergent for coil cleaning, ensure that the alkaline level is no higher than 8.5, which can cause corrosion damage to the coils.

## Coil Cleaning Procedures

- Disconnect power to the unit.
- Remove the louvered panels from the unit to gain access to the air inlet side of the coils.
- Use a soft brush to remove loose dirt and debris from both sides of the coils.
- Straighten bent coil fins with fin comb.
- Prepare the detergent solutions according to the manufacturer's instructions.
- Spray solution at a 90° angle to the coils, keeping a minimum nozzle spray angle of 15°, with at least a 1800mm distance from the coils and 600 psi pressure.
- Spray leaving air side of the coils first then the air inlet side. Allow the solution to stand on the coils for five minutes.
- Rinse both sides of the coils with cool clean water.
- Inspect the coils, if they are still dirty, repeat the cleaning procedure.
- Clean and wipe dry the outer and inner sides of the unit, the refrigerating parts and other components.
- Ensure that the condensate drain lines are not blocked.
- Reinstall all unit panels, covers and guards.
- Restore electrical power to the unit.

## 10. Maintenance Frequency Checklist

Regular servicing of equipment by a qualified technician is recommended every 12 months for residential applications and every quarter for commercial applications. Regular servicing of your unit helps in maintaining its optimum performance and reliability. **The following checklist and service periods are provided as a guide only, as some sites may require more frequent servicing.**

Electrical						
Parts	Service Frequency				Detail of Service Check	Service Methods
	1 Mth	3 Mth	6 Mth	1 Yr		
Printed Circuit Boards				✓	Visual Inspection.	Tighten Terminals as necessary on printed circuit boards.
Electrical Connections				✓	Check all electrical terminals, mains, communications, etc.	Re-tighten if loose.
Magnetic Contactor				✓	Check for loose terminal connections.	Tighten electrical terminals. Remove any dust.

Indoor Unit						
Parts	Service Frequency				Detail of Service Check	Service Methods
	1 Mth	3 Mth	6 Mth	1 Yr		
Casing/ Panels and Frames				✓	Visual check for damage, rust and dust accumulation.	For highly corrosive environment, wash panels quarterly with water and neutral detergent solution. Wax panels. Repair / re-paint where required.
Insulation				✓	Visual check for insulation conditions.	Repair / replace insulation material.
Fan				✓	Visual check for run out of balance and dust attached.	Clean off dust as necessary to negate possibility of fan running out of balance.
Motor				✓ Ω	Visual check on wiring. Insulation resistance check to be carried out annually.	Measure insulation resistance to earth with Megger. Insulation resistance should be more than 1MΩ.
Heat Exchanger				✓	Check for clogging by dust. Check for leaks / damage.	Clean air inlet side as necessary. Straighten any bent fins using fins comb.
Drain Pan/ Condensation line				✓	Check for obstructions and free flow of water.	Clean to eliminate obstructions/ sludge and check condition of pan. Pour water to ensure free flow.
Filter*	✓				Check for clogging by dust.	Clean / Replace Filter.
Temperature Readings				✓	Measure air on and air off.	Place temperature probe in return and supply air of unit. Be careful not to touch the fan blower whilst checking temperature with thermometer.

\*Service period for filter cleaning may vary depending on operating time and surrounding environment

Outdoor Unit						
Parts	Service Frequency				Detail of Service Check	Service Methods
	1 Mth	3 Mth	6 Mth	1 Yr		
Casing/Panels and Frames				✓	Visual check for damage, rust and dust accumulation.	For highly corrosive environment, wash panels quarterly with water and neutral detergent solution. Wax panels. Repair / re-paint where required.
Insulation				✓	Visual check for insulation conditions.	Repair / replace insulation material.
Fan				✓	Visual check for run out of balance and dust accumulation.	Clean off dust as necessary to negate possibility of fan running out of balance.
Motor				✓ Ω	Visual check on wiring. Insulation resistance check to be carried out annually.	Measure insulation resistance. Should be more than 1MΩ.
Heat Exchanger				✓	Check for clogging by dust. Check for leaks / damage.	Clean air inlet side as necessary. Straighten any bent fins using fins comb.
Condensate Drain Line (if available)				✓	Check for obstructions & free flow of water.	Clean to eliminate obstructions/ sludge and check condition of drain line. Pour water to ensure free flow.
Compressor				✓ Ω	Check for high / low pressure. Measure insulation resistance. Check compressor for abnormal noise/vibrations.	Measure insulation resistance. Should be more than 1MΩ. Ensure to isolate first the VSD from the compressor before measuring insulation resistance.
Compressor drive				✓	For variable drive compressor check full operation of drive from minimum hertz to maximum, check fan operation of drive.	Check compressor amperage & running frequency feedback from outdoor board seven segment display.
				✓	Ensure drive fresh air path is clear and drive fan is operating correctly.	Check ventilation holes on top and bottom of drive cover are clear of leaves, pebbles or dirt.
Refrigeration Operational Readings				✓	Make note of operational reading in test cool/heat mode.	Check operating pressures, record super heat and sub-cool values.
Safety Devices				✓	Check calibration of safety devices.	Check resistance of sensors, pressure cut in / cut out of pressure controls.
Faults				✓	Check for any previous fault history on unit.	Investigate any causes for previous faults, reset fault history.



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