Model Number:

**P012-023AHC3SA-L/R-S2060001 (Cooling Only Packaged Unit)**

**Part 1 General**

1.01 SYSTEM DESCRIPTION

1. Electro-mechanically controlled, air-cooled packaged unit utilising scroll compressors, EC direct drive indoor fans, external rotor motor direct drive outdoor fans, thermostatic expansion valve(s), specifically designed for R410A.

1.02 QUALITY ASSURANCE

1. Unit shall be rated in accordance with AHRI 210/240 or 340/360.
2. Unit construction shall comply with Ashrae 15 standard.
3. Unit shall be installed in accordance with IEC-60335-1 & 2-40.
4. Unit shall be manufactured in a facility registered to ISO 9001:2000 Manufacturing Quality Standard.
5. Unit shall be run tested at the factory.

1.03 DELIVERY, STORAGE AND HANDLING

1. Unit controls shall be capable of withstanding 66°C storage temperatures in the control compartment.
2. Unit shall be stored and handled per unit manufacturer's recommendations.

**Part 2 Products**

2.01 EQUIPMENT

1. General:

Fully factory assembled and tested, single-piece, cooling only air-cooled packaged units. Contained within the unit cabinet shall be all factory wiring, piping, controls, and refrigerant charge of R-410A.

1. Unit Cabinet:
2. Base frame shall be of heavy-gauge, galvanized steel, demineralised and coated with baked polyester powder coat finish and include built in mounting holes for site positioning and fixing.
3. All panels shall be galvanized steel, demineralised and coated with baked polyester finish on all internal and external surfaces.
4. Panel design shall encapsulate the insulation to ensure a secure fit.
5. Insulation:
6. Interior surfaces of the indoor section shall be fully insulated with a minimum of 25mm thick closed cell, cross-linked, polyethylene with cleanable foil face and high-performance acrylic adhesive formed as an integral part of the product.
7. Cupped head type welded pins shall be fitted in addition to permanently fix the insulation to the internal surface of the sheet metal panels to prevent the insulation coming loose during storage or operation.
8. The entire insulation including adhesive shall meet NFPA 90A fire test requirements for HVAC applications and have a minimum thermal conductivity factor of 0.036W/mC (at 23C).
9. Fixings and Hardware:
10. All fixings and fasteners shall have corrosion protection.
11. All access panel fixing points shall include speed clips or inserts to prevent the de-threading of the screw due to repeated removal of the fastener for maintenance.
12. Compressor/Compressor Assembly:
13. Fully hermetic, direct drive, scroll type compressors with off cycle sump heater(s).
14. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line break thermal or current overload protection.
15. Compressors shall be mounted on rubber in shear vibration isolators.
16. Staging of compressors shall provide unloading capability.
17. Outdoor / Indoor coil(s):
18. Coils shall be air-cooled plate fin coil type with galvanised end plates, with performance enhanced aluminium fins mechanically bonded to performance enhanced seamless copper tubes.
19. Tubes shall be cleaned, dehydrated, and sealed.
20. Fins shall be treated with Epoxy-Coating, rated for 1000hrs salt spray test (outdoor coil).
21. Assembled coils shall be leak tested and pressure tested at 656 psig (4522 kPa).
22. Outdoor coil guards shall be fitted to coil face to prevent damage to the fins. Exposed outdoor coils are not acceptable.
23. Outdoor Fans:
24. Outdoor fans shall be low noise AC type, 6 pole operating at 950rpm, direct-drive external rotor motor, and corrosion resistant polyamide multi-blade type complete with wall ring and shall be statically and dynamically balanced with inherent corrosion resistance.
25. Fan operation shall allow reduced speed via capacitor during low ambient conditions.
26. Air shall be discharged vertically upward.
27. Fans shall be protected by coated steel grille type safety guards.
28. Indoor Fans:
29. Indoor fans shall be single inlet, direct drive, backward curved impeller mounted on an electronically communicated (EC) external rotor motor, with integrated electronics.
30. Integral soft starter, current limitation and noise filter, with maintenance free ball bearings and permanent lubrication.
31. 100% speed controllable.
32. Refrigeration Components:
33. Each refrigerant circuit components shall include.
34. Thermostatic expansion valve (TXV).
35. Suction accumulator to prevent liquid flood back.
36. Complete operating charge of both refrigerant R-410A and compressor oil.
37. Controls, Functions, and Safeties:
38. Unit controls shall include the following minimum components
39. Single point screw type terminal block for mains power and controls.
40. 24VAC Control circuit including circuit breaker protection.
41. Control transformer to serve all controllers, relays, and control components.
42. Replaceable contactors, overloads, and plug-in type relay controls.
43. Clearly labelled devices with separate markers.
44. Independently colour codes cables crimped with pin type terminals, run neatly in cable duct.

2. Unit controls shall include the following functions:

1. Fully compatible with 3rd party DDC/BMS controllers and thermostats of known brands.
2. Automatic restart after power failure.
3. Phase fail protection relay (optional).
4. Compressor anti-cycle timers(s).
5. Integrated reverse cycle defrost initiated on time or coil temperature.
6. Replaceable pressure switches monitoring high and low pressure, fully encapsulated type with auto-reset.
7. Automatic control lock-out circuit in the event of safety device activation.
8. Outdoor fan speed control via capacitors.
9. Indoor fan speed control via selector switch.
10. Emergency stop terminals.
11. Run and fault terminals via volt free contacts.

3. Unit shall be equipped with safeties in conjunction with the control system to provide the unit with the following protections:

1. Control over current protection.
2. Phase rotation, under/over voltage or loss of phase (Optional).
3. Motor over current protection.
4. High pressure.
5. Low pressure.
6. Operating Characteristics:
7. Unit shall be capable of operating down to 10°C as standard.
8. Unit shall be capable of starting and running at outdoor ambient temperatures up to 52°C ambient temperature.
9. Electrical Protection:
10. Electrical enclosures shall be IP44 protected compliant with IEC-60335.
11. Fan motors shall be IP54 protected with class F insulation.
12. Factor Options:

– Phase fail protection relay