

GUIDE SPECIFICATIONS

VARIABLE CAPACITY COMMERCIAL SPLIT DUCTED UNITS 72-96kW



GENERAL:	
MODEL NUMBER	<p>Outdoor Unit:</p> <ul style="list-style-type: none"> • CRV720T, CRV850T and CRV960T <p>Indoor Unit:</p> <ul style="list-style-type: none"> • EVA720T, EVA850T and EVA960T
SYSTEM DESCRIPTION	<p>The unit shall:</p> <ul style="list-style-type: none"> • Air cooled direct expansion, split ducted system with Variable Capacity technology specifically designed for continuous operation with temperatures of between -10° C DB and 54° C DB. • Manufactured using two variable speed, variable capacity compressors. • Designed with independent refrigerant circuits, one for each compressor. • Low inrush current compressor and fan drives. • Manufactured with EC variable speed backward curve indoor plug fans and EC variable speed Axial outdoor fans. • Reverse cycle operation. • Specifically designed for R410A refrigerant. • PI (Proportional Band + Time Integral) controlled Compressor, Evaporator and Condenser Fans.
COMPLIANCE	<p>The unit shall be compliant with the following standards and regulations</p> <ul style="list-style-type: none"> • Minimum Energy Performance Standards (MEPS) as set out in AS/NZS 3823.2. • Greenhouse and Energy Minimum Standard Determination 2019 • AS/NZS 3000 Electrical Installations (known as the Australian/New Zealand Wiring Rules). • All Equipment safety requirements outlined in AS/NZS 60335.2.40 in conjunction with AS/NZS 60335.1. Household and similar appliances - Electrical Safety. • AS/NZS CISPR 11 (Group 1 Class A) EMC Compatibility. • A minimum Protection Rating of IP44, compliant with Australian Standards AS 60529. • Demand Response Capable as per AS4577.3.1:2012.
QUALITY ASSURANCE	<p>The unit shall be compliant with the following Quality Assurance:</p> <ul style="list-style-type: none"> • Net performance shall be rated in accordance with latest AS/NZS 3823.1.2 including all amendments. • All system components shall be selected to have a maximum operating pressure of no less than 4500kPa (650PSI). • Unit shall carry a rating label in accordance with AS/NZS 3823.1.2. • The Unit cabinet shall be capable of withstanding 500-hour salt spray exposure as per latest AS/NZS 4506. • Unit shall be run tested at the factory. • Units shall be manufactured in an ISO9001 certified manufacturing facility.

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EQUIPMENT:

PERFORMANCE CRITERIA	<p>The unit shall be capable of:</p> <ul style="list-style-type: none"> Starting and running at 54°C ambient outdoor temperature. Meeting AS/NZS 3823.1.2, Table 2 - T1 and Table 7 - H1 "Cooling and Heating Capacity Rating Condition".
OUTDOOR UNIT CABINET	<p>The outside of the cabinet shall:</p> <ul style="list-style-type: none"> Include as standard Louvre grill on coil sides to provide the outdoor coil/s with mechanical protection and to reduce solar heat gain. Exposed outdoor coils are unacceptable. Be constructed from galvanized steel casing with a thermosetting powder coat paint that meets and/or exceeds requirements of AS3715. Have a powder coat finish of no less than 60micron. Be capable of withstanding 500-hour salt spray exposure as per AS/NZS 4506. Incorporate Service Access Panels. <p>The inside of the cabinet shall incorporate:</p> <ul style="list-style-type: none"> Isolated compressor compartment for easier servicing and reduced noise. An electrical compartment with minimum IP44 rating. Internal panels exposed to weather with powder coating as per external panels.
INDOOR UNIT CABINET	<p>The outside of the cabinet shall:</p> <ul style="list-style-type: none"> Be constructed from galvanized steel casing. Incorporate Service Access Panels. <p>The inside of the cabinet shall incorporate:</p> <ul style="list-style-type: none"> All internal edges are sealed to prevent leakages. Foil face polyethylene insulation (25mm) in the evaporator . Insulation shall not be compressed. An evaporator coil condensate tray with an epoxy-based powder primer. An indoor coil condensate tray with an epoxy based powder coat applied to all sides. Main indoor coil condensate tray with polyolefin foam no less than 10mm.
REFRIGERATION COMPONENTS	<p>Unit shall use:</p> <ul style="list-style-type: none"> One fully Hermetic, Variable Speed Scroll Compressor for each independent refrigeration circuit. Solder Type field connections, no flare or flange connections are to be used, thus reducing the risk of leaks. Anti-vibration rubber and rubber clamps where applicable to damper the resonance of the pipe vibration, reduce noise, and improve pipe reliability. Fitted with ball valves for both suction and liquid line of each stage for ease of isolating the system for maintenance and diagnostic. Electronic expansion valves for metering refrigerant flow for both cooling and heating cycles. Fixed orifice or piston type metering devices shall not be used. 1 x EEV with PI control for each refrigeration circuit. Dual strainer per EEV to protect and filter the EEV from dirt and contaminant. <p>Compressors shall be:</p> <ul style="list-style-type: none"> High Efficiency Variable Speed type. Suction gas cooled for prolonged life. Externally protected from high discharge temperature conditions. Protected from an over-temperature and over-ampereage conditions by an external motor overload device. Protected by suction line accumulator from liquid refrigerant flood-back.
SERVICE VALVES	<p>Unit shall be fitted with:</p> <ul style="list-style-type: none"> Schrader valves for reading high and low pressures during cooling and heating. During pressure measurements, the condenser coil shall not have its airflow affected by the removal of panels. Stemless Schrader valve where applicable to minimise cracks and improve reliability.

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PRESSURE TRANSDUCER	<p>Unit shall use:</p> <ul style="list-style-type: none"> High and Low Pressure Transducer for pressure measurement and smart control for enhanced system reliability.
METERING DEVICES	<p>Unit shall be provided with:</p> <ul style="list-style-type: none"> Electronic expansion valves for metering refrigerant flow for both cooling and heating cycles.
COILS	<p>Coils shall be:</p> <ul style="list-style-type: none"> Constructed of seamless riffle bore copper tubes no larger in diameter than 8mm, mechanically bonded to aluminum fins. Shall have Blue Hydrophilic Coat Coil Fin Protection, as standard. Additional coil protection to safeguard against corrosion, and combat mould / bacteria, as optional. <p>Evaporator Coil:</p> <ul style="list-style-type: none"> Aluminum fins shall be lanced with straight edge. Shall be of multi pass type with circuitry optimized for R410A. To reduce moisture carryover, air velocity over the coil is not to exceed 2.5m/s or as specified for tropical or special purpose applications. Shall be cleaned, dehydrated and pressurized at the factory prior to shipment to site. Shall have Blue Epoxy Coat Coil Fin Protection. <p>Condenser Coil:</p> <ul style="list-style-type: none"> Shall be corrugated/wave type. Split fin or Louvre fin is not acceptable due to performance loss over time due to extra build up of particles. Shall have a Blue Epoxy Coat Coil Fin Protection. Shall be of multi pass type with circuitry optimized for R410A.
INDOOR FANS	<p>The Evaporator fan and blower shall consist of the following as standard:</p> <ul style="list-style-type: none"> EC Electronically Commutated motor for maximum efficiency and minimal EMC harmonics. AC motor with inverters / VSD shall not be used. Direct drive only. Belts or pulleys will not be acceptable. Motor insulation class "F". Low In-rush current, with optimized ramp up time. Phase protection (sequence and loss). Non-overloading backward curve impeller.
OUTDOOR FANS	<p>The Condenser fan shall consist of the following:</p> <ul style="list-style-type: none"> EC Electronically Commutated motor for maximum efficiency and minimal EMC harmonics. AC motor with inverters / VSD shall not be used. External rotor design. Low noise axial type. Bearings shall be ball bearing type. Motor insulation class "F". Material of guard grille shall be Steel-phosphate and coated in black plastic. Fan assembly shall have a minimum protection rating of IP54, compliant with Australian Standards AS 60529-2004.
AIR FILTER	<p>Unit shall be fitted with:</p> <ul style="list-style-type: none"> Filter channel to accept 100mm pleated air filters. Filter slides to assist with servicing of filters.

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CONTROL STANDARD FEATURES	<p>Unit Controls shall include:</p> <ul style="list-style-type: none"> • Selectable Auto / Cool / Heat / Fan Only Mode of Operation. • 7-Day Time Clock with 2 On / Off events per day. • Daylight Saving Time Function. • Settable External Static Pressure up to 90pa for Outdoor Fan Operation. • PI Compressor Algorithm (Proportional Band + Time Integral). • PI Outdoor Fan Control for EC Fans. • Adaptive Demand Defrost. • After Hours Compatibility. • Ability to connect with up to 3 wall controllers. • Night Mode function, which allows the outdoor fans and compressor to operate quieter whilst delivering performance, depend upon the ambient temperature. • Filter clean adjustable time period and LED indication. • Optional wall mounted controller fully integrated with the system with a 24-hour Timer and 7-Day Time Clock. • Ability to connect commercial (LC7-2) or Group Control (CG1000K) ActronAir controller. • Available casing in white or grey for LC7. • The ability to connect two remote temperature sensors in addition to wall controllers. • Displays which clearly show (in English) the set temperature, mode of operation and selected fan speed. • Single Speed Indoor Fan Setting with Optional 3 Speed Setting (High, Med, Low). Settable Indoor Fan Operation - (Continuous / Auto Mode) • Mode status • Fault codes displayed on outdoor control boards. • Reverse cycle, indoor fan and compressor third party control available. • Automatic restart to previous operational state after power failure when using ActronAir Controller. • Hot Start function (Heating Mode). • Self-diagnosis. • Run and Fault indication output. • Remote ON/OFF function. • Low ambient cooling operation.
UNIT CONTROLS	<p>Unit Controls shall include:</p> <ul style="list-style-type: none"> • Three selectable speeds for the Indoor Fan. • Mode status display on outdoor control boards and ActronAir wall controllers. • Automatic restart to previous operational state after power failure when using ActronAir Controller. • Hot Start function (Heating Mode) • Up to 3 x LC7 controllers. • CG1000K Group Control • Low ambient cooling operation to +5°C as standard. • The ability to connect 3rd party controls directly to the outdoor PCB. • All safety switches and protection logic will remain in circuit for maximum system protection. • Adaptive demand defrost operation. • Ability to connect commercial (LC7-2) ActronAir controller. • Demand Response ready OR Third party 0-10V control (Reverse cycle, indoor fan and compressor).

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DEFROST	<p>System shall include integrated defrost system to prevent excessive frost accumulation during heating mode, and shall be controlled as follows:</p> <ul style="list-style-type: none">• Defrost shall be initiated on the basis of time and coil temperature or pressure.• Defrost cycle shall terminate when coil temperature or pressure sensor is satisfied and shall have a positive termination time of approximately 10 minutes (except for ice clearing cycle). <p>Defrost system shall also include:</p> <ul style="list-style-type: none">• Defrost Cycle Indicator LED for defrost status.• Adaptive Demand Defrost logic which adjusts itself for a longer or shorter defrost according to prevailing conditions.• Ice clearing cycle every 4th cycle to reduce or eliminate Ice Creep.
ELECTRICAL SYSTEM FEATURES	<p>Electrical System Features shall include:</p> <ul style="list-style-type: none">• Control Circuit Breaker (no fuses to be used) and thermal overload protection.• Electrical panel control wiring that is easily identifiable by colour or number.• Electrical panel component's labelling for easy identification.• 3rd Party Control remote ON/OFF Inputs, as standard.• Group control as an accessory.• Home/Building Automation as an accessory
CONTROL SAFETY FEATURES	<p>Unit shall have the following safeties as standard equipment:</p> <ul style="list-style-type: none">• Pressure switches and transducers that are fully encapsulated solder type with no flare connections.• Compressor envelope management.• Low Pressure and High Pressure Control.• Indoor Coil Anti-Freeze Protection.• High Discharge Temp Control.• Compressor minimum run time 90 seconds and minimum off time 3 minutes.• Over Heat Protection.• Smart crankcase Heater Control.• An independent High and Low Pressure switch to protect each refrigeration circuit.• An independent High and Low Pressure Transducer to protect each refrigeration circuit.