

GUIDE SPECIFICATIONS

VARIABLE CAPACITY COMMERCIAL SPLIT DUCTED UNITS 96kW



Image for illustration purposes only, actual unit may differ.

GENERAL:

MODEL NUMBER	Outdoor Unit: <ul style="list-style-type: none"> • CRV96AT Indoor Unit: <ul style="list-style-type: none"> • EVA96AT
SYSTEM DESCRIPTION	The unit shall: <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 -15° C DB and up to 57°C DB depending on the model. • 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 R-32 refrigerant. • PI (Proportional Band + Time Integral) controlled Compressor, Evaporator and Condenser Fans.
COMPLIANCE	The unit shall be compliant with the following standards and regulations <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 on outdoor unit and IP20 on indoor unit, compliant with Australian Standards AS 60529. • Demand Response Capable as per AS4577.3.1:2012.
QUALITY ASSURANCE	The unit shall be compliant with the following Quality Assurance: <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 ambient outdoor temperature. <ul style="list-style-type: none"> 57°C for CRV960T 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	Unit shall use: <ul style="list-style-type: none"> High and Low Pressure Transducer for pressure measurement and smart control for enhanced system reliability.
METERING DEVICES	Unit shall be provided with: <ul style="list-style-type: none"> Electronic expansion valves for metering refrigerant flow for both cooling and heating cycles.
COILS	Coils shall be: <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. For applications requiring additional protection from the environment, coils (including the end plates and return bends) shall be treated using coil protection that includes a mould retardant. Evaporator Coil: <ul style="list-style-type: none"> Aluminum fins shall be lanced with straight edge. Shall be of multi pass type with circuitry optimized for R-32. 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 Hydrophilic Coat Coil Fin Protection. Condenser Coil: <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 Hydrophilic Coat Coil Fin Protection. Shall be of multi pass type with circuitry optimized for R-32.
INDOOR FANS	The Evaporator fan and blower shall consist of the following as standard: <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	The Condenser fan shall consist of the following: <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 coated in black plastic. Fan assembly shall have a minimum protection rating of IP54, compliant with Australian Standards AS 60529-2004.

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CONTROL STANDARD FEATURES

Unit Controls shall include:

- BTC Control Interface for local operation and commissioning.
- Optional Secondary Remote LCD Control Interface.
- Selectable Auto / Cool / Heat / Fan Only / Dry Mode of Operation.
- Mode Status and Fault Display on Control Interface.
- Heat Mode Hot Start Control (Pre-Heat Delay).
- 7-Day Time Clock with 2 On / Off events per day.
- 12 Programmable Special Days with 2 On/Off events per day.
- Daylight Saving Time Function.
- Single Speed Indoor Fan Setting with Optional 3 Speed Setting (High, Med, Low).
- Adjustable Airflow Setting via Control Interface.
- Three settable speed for Indoor Fan Operation + Volume control and Variable Fan Technology (VFT).
- Settable External Static Pressure up to 90pa for Outdoor Fan Operation.
- Variable Speed Outdoor Fan.
- PI Outdoor Fan Control for EC Fans.
- PI Compressor Algorithm (Proportional Band + Time Integral).
- Discharge Sensor for each compressor.
- Adaptive Demand Defrost.
- Indoor Coil Anti Freeze Protection.
- Discharge Temperature Protection.
- An Independent High and Low Pressure switch to protect each refrigerant circuit.
- Crankcase Heater Control.
- Demand Response Capability in compliance with AS/NZS 4755.3.1:2012.
- 3rd Party 0-10VDC.
- Optional Communication with BMS through MODBUS RS-485.
- Access to system operation information such as system low pressure, high pressure, errors and system temperatures to aid with correct servicing of unit.
- Automatic Restart to Previous Operational State after Power Failure.
- Temperature Away Mode.
- After Hours Compatibility.
- Dedicated Input for Remote Stop / Start.
- Password Protected Service menu.
- Alarm Fault Diagnosis with up to 15 Recent Alarm Logs.
- Volt Free Contact available for External Alarm.
- Settable Time Based Air Filter Warning.
- Night Mode function, which allows the outdoor fans and compressor to operate quieter whilst delivering performance, depend upon the ambient temperature.
- CO₂ sensor input for Demand Controlled Ventilation.
- 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) and NEO or Group Control (CG1000K) ActronAir controller.
- Indoor Drain Pan Overflow Sensor.
- Desuper Heater.
- Variable Fan Technology (VFT)- Pressure control.
- Supply Air Temperature Control.
- A2L/R-32 refrigerant
- 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.

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CONTROL STANDARD FEATURES	<ul style="list-style-type: none"> • Fault codes displayed on outdoor control boards. • Reverse cycle, indoor fan and compressor third party control available. • 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 + Volume control and VFT. • 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) and NEO ActronAir controller. • Demand Response ready OR Third party 0-10V control (Reverse cycle, indoor fan and compressor).
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"> • 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. • Logic to ensure only one stage enters defrost at any time. • Defrost termination by either time or temperature or pressure • Defrost Cycle Indicator LED for defrost status
ELECTRICAL SYSTEM FEATURES	<p>Electrical System Features shall include:</p> <ul style="list-style-type: none"> • Internal 10A GPO with RCD protection for service and maintenance • 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 • A complete wiring schematic that is weather resistant and durable

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CONTROL SAFETY FEATURES

Unit shall have the following safeties as standard equipment:

- Pressure switches and transducers that are fully encapsulated solder type with no flare connections.
- High Pressure switch shall use a different colour wire than the low pressure switch for servicing.
- Compressor minimum run time 3 minutes and minimum off time 3 minutes.
- Compressor envelope management.
- Low Pressure and High Pressure Control.
- Anti Freeze control.
- Indoor Coil Anti-Freeze Protection.
- High Discharge Temp Control.
- Compression ratio control.
- 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.