

AIR COOLED PACKAGED

# Air Cooled Inverter Package Units

A new level of innovation in humidity control



Product Of The Year Award



Innovation Thermal Comfort



Product Excellence Award



## OPA 1400 & 2100 ECO ULTRA

COOLING CAPACITY  
OPA 1400 17.4kW ~ 148kW  
OPA 2100 18kW ~ 200kW

HEATING CAPACITY  
OPA 1400 14.2kW ~ 133kW  
OPA 2100 17kW ~ 190kW

\*coming soon



**A revolution in  
climate control  
innovation.**

# ECO ULTRA intuitively controls the space temperature and humidity whilst maintaining optimum efficiency.

## High-Tech Game Changer

Able to operate with or without external intervention, ECO ULTRA's in-built Adaptive software reacts to its environmental surroundings, and changes its operation to continuously generate desired comfort outcomes. Put simply, it understands consumers' needs and reacts to prevailing conditions in order to meet them. And because it has the ability to follow patterns, ECO ULTRA can even choose setting options that correspond to certain weather-heat load combinations.

## Designed to Impress

Designed exclusively using temperzone's in-house R&D expertise, ECO ULTRA represents a cutting-edge technology that strives to change the way sustainable air conditioning solutions are delivered.

The OPA 1400 and 2100, having cooling capacity ranges from 17.4~148kW and 18~200kW respectively, easily and efficiently react to changing building heat loads as required. This makes for ideal use in a wide range of temperature and humidity-sensitive environments.



SUPERMARKETS



SHOPPING CENTRES



SCHOOLS & UNIVERSITIES



ECO ULTRA Inverter package units

01

# ECO ULTRA provides Limitless Simplicity

## Absolute autonomous control

OPA ECO ULTRA provides accurate temperature and humidity control under any conditions through the precise control of evaporating and supply air temperature.

Utilising four independent inverter compressor refrigeration circuits and advanced control logic enables OPA ECO ULTRA to continuously adjust its operation across the spectrum of space heating, cooling and dehumidification requirements while maintaining optimum efficiency.

## Quick and easy set-up

Pre-set optimisation allows for quick and easy set-up of OPA ECO ULTRA systems. Pre-programmed advanced control logic ensures the most effective and efficient operation out of the box.

Easy BMS connection set-up and an inbuilt controller display enables simple management through readily available system information.

## Conventional temperature control is a thing of the past

OPA ECO ULTRA series provides ADVANCED DEW POINT CONTROL.

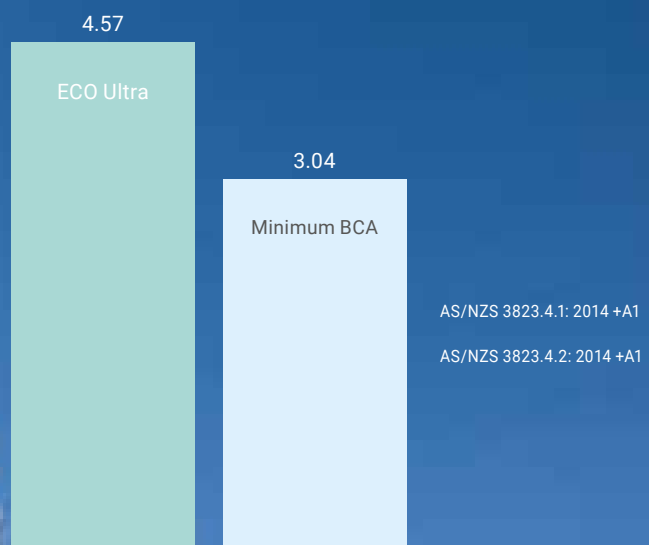
Controlling space conditions relative to room dew point allows for precise control over comfort conditions. Feeling comfortable in an air-conditioned space is different for every individual, when running air conditioning to temperature control you are unlikely to satisfy each person, this can be contributed to over cooling or under cooling the space.

Controlling to dew point prevents sudden temperature shifts when demand for cooling or heating is required. Instead of providing 100% capacity at the time of demand, intuitive steps and measures are made to condition the space, this approach also greatly benefits energy consumption as the unit will be running in part load where high efficiencies are made.

This control combined with temperzone's innovative comfort modes as well as inverter and EC technology eliminates provides perfect comfort all year round.

## Ultra High Efficiency

OPA ECO ULTRA, with four independent refrigeration circuits featuring inverter compressors and EC plug fans, operates to maximise part-load efficiency.



OPA 2100 seasonal energy efficiency ratio

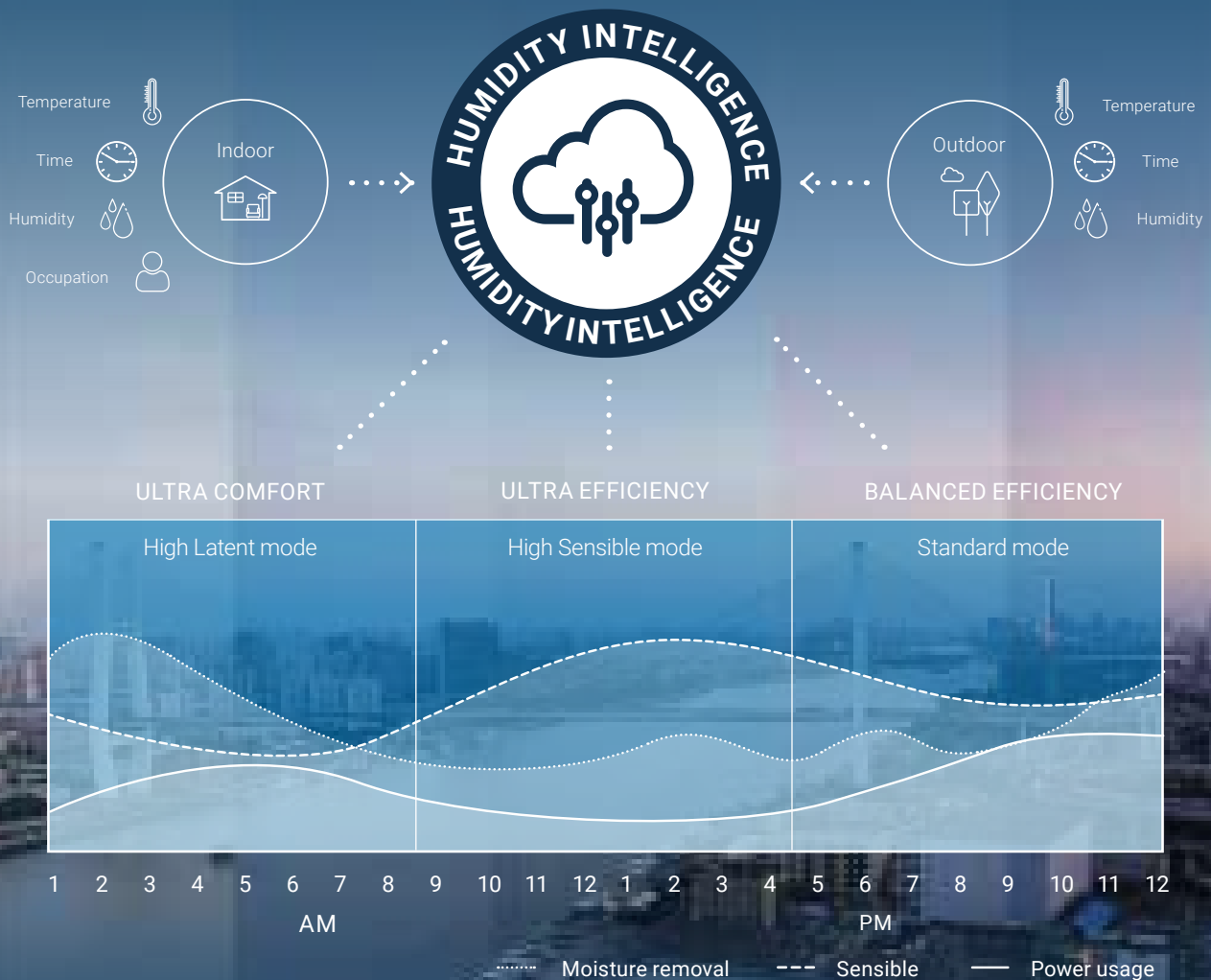
# Adaptive Software Logic

The unit considers indoor and outdoor humidity levels and makes its own decisions by adapting different modes.

## Autonomous comfort modes:

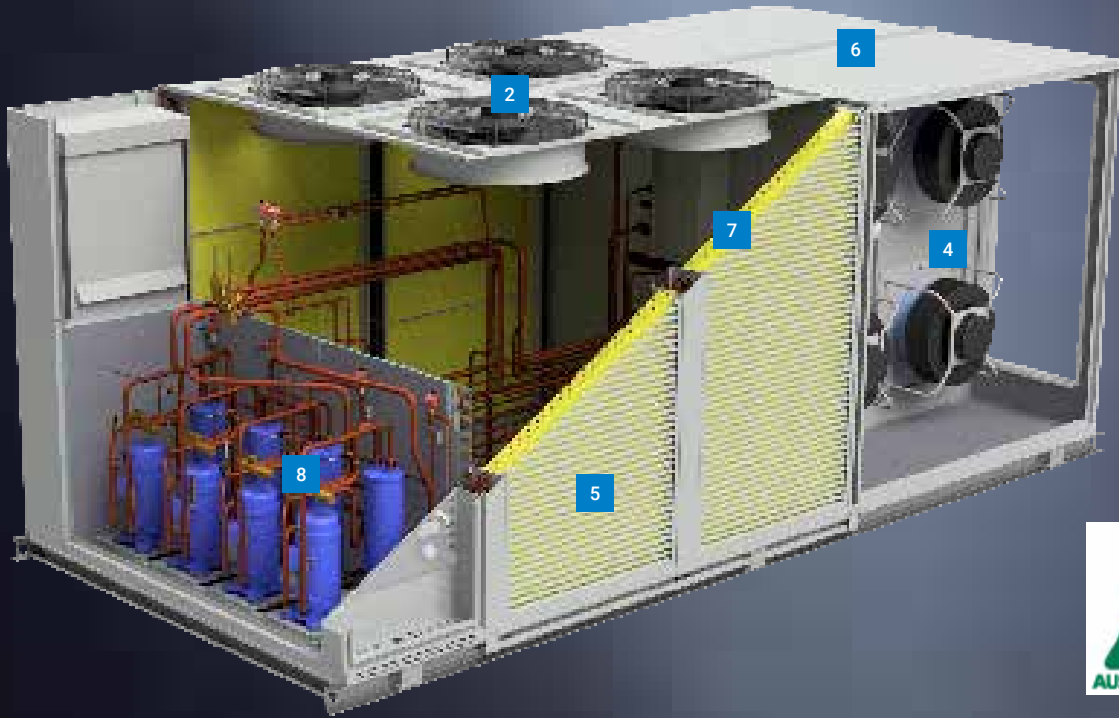
- |  |                            |
|--|----------------------------|
| 1. Heating – Dehumidification                    | 4. Heating – Standard      |
| 2. Cooling – Reheat *                            | 5. Comfort Zone – Fan only |
| *only available with optional reheat coil fitted | 6. Cooling – High Sensible |
| 3. Cooling – High latent                         | 7. Cooling – Standard      |

The unit automatically adjusts between operating modes.



The system automatically switches between modes as required. For example in hotter wetter months 'Cooling – Reheat' mode may operate from midnight until midday. As ambient conditions change and heat infiltrates the space the sensible heat load increases, during this period the system may transition to 'Cooling – High Latent' mode.

In the afternoon when ambient conditions are at peak sensible heat load the system may initiate a change to 'Cooling - Standard' mode. The system modes continuously change based on environmental conditions thus maximising comfort and minimising energy consumption.



1

**INTELLIGENT UNIT CONTROLLER**

Provides several modes of operation including comfort and dehumidification. Turn Key / Stand Alone control



2

**VARIABLE SPEED**

EC Condenser fans provide greater efficiency and control.



3

**FILTER**

Filter rails are adjustable between 50-100mm.



4

**EC PLUG FAN**

Featuring four EC plug fans that precisely adjust airflow to change in static pressure.



5

**LOUVRED GUARDS**

Aesthetic guards protect the coil from damage.



6

**ADVANCED POWDER COATING**

Surpasses 1000hr salt spray test.



7

**EPOXY COATED COILS**

Standard for added coil protection.



8

**INVERTER COMPRESSORS**

Four inverter compressors for superior part load performance.



9

**MAIN SWITCH\***

Electrical lockable safety switch.



10

**HUMIDITY CONTROL\***

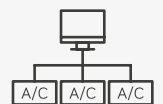
Automatically adjusts coil temperature, airflow and capacity.



11

**PASSWORD**

Multi level password protection (User & Service).



12

**BMS**

BACnet™ or Modbus via TCP/IP or RS485. \*BACnet is optional accessory.

\* Available with reheat and hot gas bypass option

# Technological Advancements



ECO ULTRA Series has been developed with many innovative features allowing for complete flexibility and control in many applications



## Inverter Compressors

Offering the ability to operate at any cooling capacity from 17.4 ~ 148kW (OPA1400) and 18 ~ 200kW for the OPA2100.

This capacity-varying capability means OPA ECO ULTRA easily reacts to changing heat loads. Both models have four independent circuits each with inverter compressors.

**11:1**  
OPA 2100  
turndown ratio  
saves energy



## Ultra Plug EC Fans

When it comes to controlling the fans accurately and efficiently, the unit's integrated electronics continuously monitors the static pressure and adjusts the speed accordingly. Fan speed can also be controlled via external signals via input or modbus. The fan speed and voltage can be read from the units internal controller for simple reference.



## EC Condenser Fans

EC fans contribute to increasing the overall efficiency of an application. Keeping the refrigerant pressure constant (rather than having it rise and fall as fans switch on and off) has been found to reduce compressor loads. It also optimises efficiency keeping the compressor comfortably within its operating envelope.



## Advanced Controller

Incorporated Adaptive technology ensures that ECO ULTRA is flexible, versatile and extremely user-friendly. Full Unit Operation: Fully integrated controls that control every function of the unit



## EEV's

Electronic Expansion Valves (EEV's) optimise refrigeration systems ensuring the evaporator coil is fully utilised at all times which leads to increased energy savings. In addition, the discharge pressures can be lowered based on ambient conditions by simply increasing the speed of the EC condenser fans leading to even higher savings.



## Modular Reheat

### \*Optional Extras

A fully modulating reheat valve with 6386 steps that self calibrates combined with a supply air sensor allows for precise control over the delivered air when optional reheat coil is supplied



# Control Innovation



## INTELLIGENT HUMIDITY CONTROL

Automatic system mode operation



## POWER MONITORING

Power monitoring of individual compressors and fans



## RH & TEMP. MEASUREMENT AND CONTROL

Tempering control during cooling & dehumidification



## SYSTEM MANAGEMENT

Oil and refrigerant management system



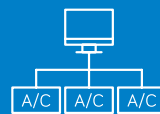
## ADAPTIVE COMPRESSOR CONTROL

Compressor efficiency control



## TEMPERZONE CONNECT

Temperzone on board remote monitoring system (\*coming soon)



## BMS CONNECTIVITY

Modbus or BacNet TCP/IP



## PROGRAMMABLE

7 Day Programmable Time-Clock – Night mode



## PROTECTION

Multi level control & password protection. Mfg./Service/User



## SERVICE INTERFACE SCREEN

Service Interface Screen with data log features and Alarms



## AIRFLOW

Adjustable Indoor Fan Airflow Set-point



## QUICK START

Quick start-up user settings



# Advanced System Control

With pre-programmed optimisation and inbuilt controller display, ECO ULTRA is designed for quick and easy set-up.



- Inputs configurable for the majority of commercially available sensors. Room sensor supplied loose.
- Return and supply air sensors factory fitted.
- Outdoor air sensor option, for control of economiser actuators.
- All fans and compressors have motor information available via Modbus communications and on unit display.
- Ability to turn the supply fans off when there is no capacity demand.
- Refrigeration systems information available via display and optionally via BACnet and Modbus communications.
- Mixed air sensor input available or theoretically calculated.
- Indoor fan can be controlled to a constant speed or to a constant airflow using built in airflow measurement.
- Set back the room temperature during unoccupied periods to maintain space temperature to a wider range.
- Reduce the indoor fan speed during unoccupied times minimising energy use.
- Daily scheduled times for the unit's on/off operation can be programmed. \*Daily scheduling can set up 4 events per day 7 days plus holidays.
- Individual time clock available to turn on night mode or unoccupied mode removing the need for external intervention. Independent of the 24/7 time clock.
- Control of outdoor air and return air dampers using enthalpy based algorithm. \*Optional accessory.
- Night Mode, reduce noise levels when mode activated.

## Customised Controls

We can work with you to provide a customised control solution to help reduce on-site costs with an optional extension module.

Talk with your sales contact for details. Some extra control points may include:

- Push button after hours
- Exhaust fan control
- Averaging sensors

# Australian Made

Manufactured in our Sydney Factory, the famous Australian Made logo is Australia's most trusted, recognised and widely used country of origin symbol, and is underpinned by a third-party accreditation system, which ensures products are certified as 'genuinely Australian'.



## Economy Dampers

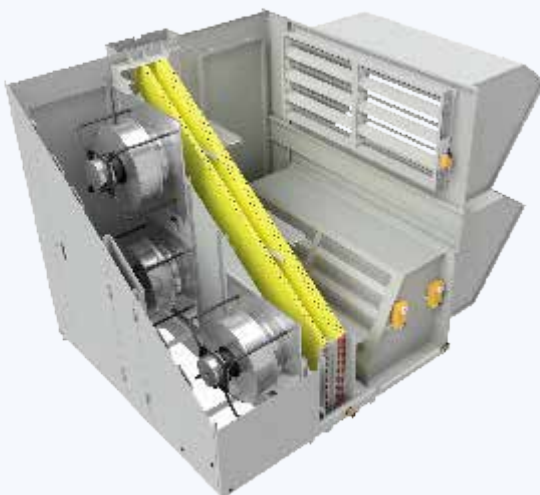
**\*Custom Options**



The controller has a built-in function to control economiser dampers (if fitted). A temperature and an RH% sensor are fitted in both the return air duct along with the outdoor air. Based on the measurements and current space conditions the controller decides which source to use to minimise power use.

## Spill Air

**\*Custom Options**



Used for applications where outside air is introduced into a closed environment that has minimal outside air migration. The spill air control modulates relief pressure in the A/C's return air chamber to prevent over pressurisation of the conditioned space. The spill air option is only available as a bottom return air handling configuration. Supply air configurations are not affected and can be modified to suit any requirement.

The spill air damper is controlled to be opened proportionally to the fresh air inlet damper.

# Reheat

\*Custom Options

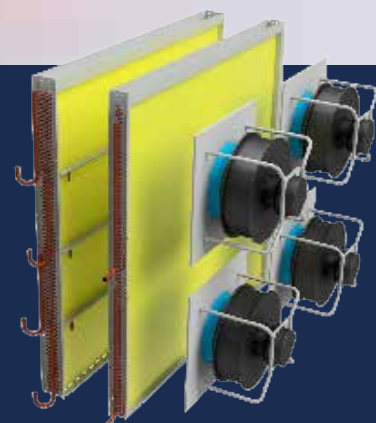


The ECO ULTRA Series has the option of in-built reheat coils for humidity control, or heat reclaim coils for heating where heat is provided from an external source.

There are many applications where waste heat can be used to provide first stage heating for the conditioned space. An example of this is heat reclaim from the refrigeration racks in a supermarket. Instead of rejecting heat through an air cooled heat exchanger the waste heat can be used in the unit with a heat reclaim coil provided by the HVAC contractor.

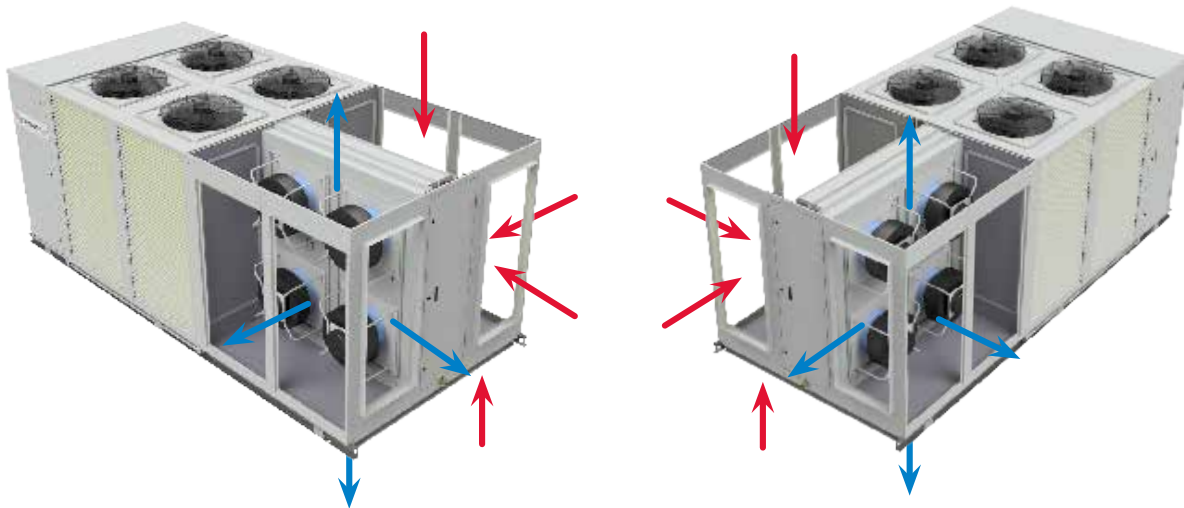


The heat reclaim coil can be either DX or hydronic from a boiler or a hot water heat pump such as the Temperzone Magnus range.



# Flexible Handing Options

Flexible handing configurations available to suit the application.



Standard OPA 1400 and 2100 units are supplied with left hand supply air (when facing the spigots). Alternative configurations for supply air and return air openings are shown in the below tables.

## Configuration without Economiser

Return Air - without Economiser

Supply Air	Top	Front LH	Front RH	Down	Side LH	Side RH
Top	•	•	•	•	•	•
Front LH	•		•	•	•	•
Front RH	•	•		•	•	•
Down	•	•	•	•	•	•
Side LH	•	•	•	•		•
Side RH	•	•	•	•	•	

## Configuration with Economiser

Return Air - with Economiser

Supply Air	Top	Front LH	Front RH	Down	Side LH	Side RH
Top	•	•	•	•		
Front LH	•		•	•		
Front RH	•	•		•		
Down	•	•	•	•		
Side LH	•	•	•	•		
Side RH	•	•	•	•		

## Options

Filters - rated EU4/G4 disposable	Spill air and smoke spill	Remote touch screen display - PGDX
High static condenser fans	Economy dampers	Economy cycle control inc rain sensor
Supply and return air handings	Fresh air damper	Economy cycle control enthalpy
Reheat coil	Outdoor air sensor	CO <sup>2</sup> Sensor

# Technical Specifications



Model	OPA 1400	OPA 2100
<b>Total (Gross) Capacity Range kW*</b>		
Cooling	17.4 ~ 148	18 ~ 200
Heating	14.2 ~ 133	17 ~ 190
<b>Nett (Rated) Capacity Range kW*</b>		
Cooling / Heating	128 / 115	178 / 186.7
<b>EER/COP*</b>		
EER / AEER (cooling)	3.15 / 3.14	3.08 / 3.06
COP / ACOP (heating)	3.33 / 3.31	3.16 / 3.15
<b>Operating Range</b>		
Cooling Operating Range (outdoor ambient)	-10°C to 50°C	-10°C to 50°C
Heating Operating Range (outdoor ambient)	-15°C to 25°C	-15°C to 25°C
<b>Power Supply</b>		
Power Supply	3 Phase - 342 - 436V 50 Hz	3 Phase - 342 - 436V 50 Hz
<b>Run Amps / Phase (A/ph.)</b>		
Running Amps (Total System) (A/ph.)	74 / 71 / 74	94 / 90 / 97
Max. Running Amps (Total System)	103 / 97 / 103	142 / 136 / 142
<b>IP Rating</b>		
IP Rating	IP 44	IP 44
<b>Compressor</b>		
Number per Unit	4	4
Type	Inverter (x4)	Inverter (x4)
No. of Refrigeration Circuits	4	4
Refrigerant	R 410A	R 410A
<b>Fans</b>		
Indoor	EC Motor plug (x4)	EC Motor plug (x4)
Outdoor	EC Motor axial (x4)	EC Motor axial (x4)
<b>Airflow</b>		
Nominal**	6,800 l/s	10,000 l/s
<b>Overall Dimensions (mm)</b>		
Length	5000	5865
Width	2320	2320
Height	2280	2493
<b>Weight (kg)</b>		
Net Weight - Standard	2349	3278

NOTES: \* To AS/NZS 3823 conditions  
 \*\* Supply Airflow at Nominal Conditions

\*\*\* Units comply with MEPS & or the requirements on the NCC



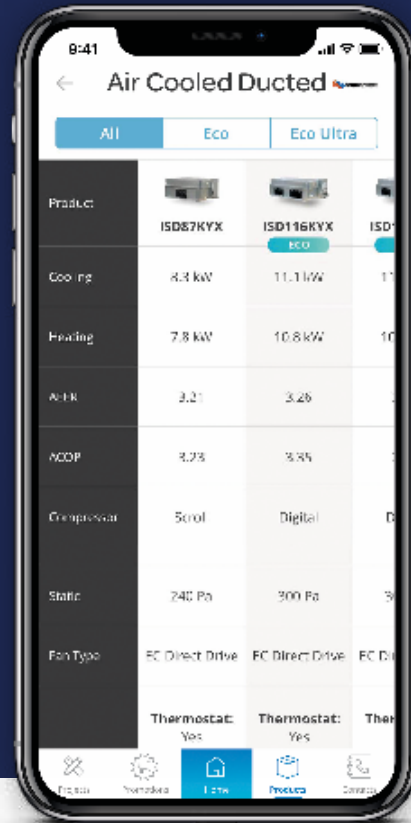
## Temperzone Customer Care

Temperzone Customer Care is designed to deliver the highest level of support and accessibility to all our customers. This program provides factory trained technicians with the ability to resolve issues on-site, significantly reducing guesswork from commissioning.

With Temperzone products continually evolving to provide higher levels of efficiency, control and protection we want our customers to have the comfort of knowledge that Temperzone will be there right along-side them for the entire product life cycle.

Temperzone offers a wide range of training courses in application, service and commissioning.





## WiFi Service Utility Tool

WiFi Service Utility (WSU) is a portable control interface that plugs directly into the UC6, UC7 & UC8 board on a Temperzone Air Conditioning Unit. It allows you to monitor a wide range of operational parameters, view fault logs and even take control of the unit. It has its own WiFi network built in and the control and diagnostics are done wirelessly from a smartphone, tablet or notebook PC.



## Temperzone Access App

Designed with simple access to information in mind, our app allows you to browse temperzone product ranges and view product specs - giving you access to detailed information, wherever you are. Create personalised projects and add product information for efficient & effective project management. Search temperzone Access via the App store or Google Play to download today.



[www.temperzoneaccess.com](http://www.temperzoneaccess.com)

## Temperzone Australia Pty Ltd

### ENQUIRIES

Australia: [sales@temperzone.com.au](mailto:sales@temperzone.com.au)  
New Zealand: [nzsales@temperzone.com](mailto:nzsales@temperzone.com)  
Singapore: [sales@temperzone.com.sg](mailto:sales@temperzone.com.sg)

### AUSTRALIA

Sydney: (02) 8822 5700  
Adelaide: (08) 8115 2111  
Brisbane: (07) 3308 8333  
Melbourne: (03) 8769 7600

### DISTRIBUTORS

Newcastle: (02) 4962 1155  
Perth: (08) 6399 5900  
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### NEW ZEALAND

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Wellington: (04) 569 3262  
Christchurch: (03) 379 3216

### ASIA

Singapore: (65) 6733 4292  
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