



2022 Rooftop Packaged Range



Introduction

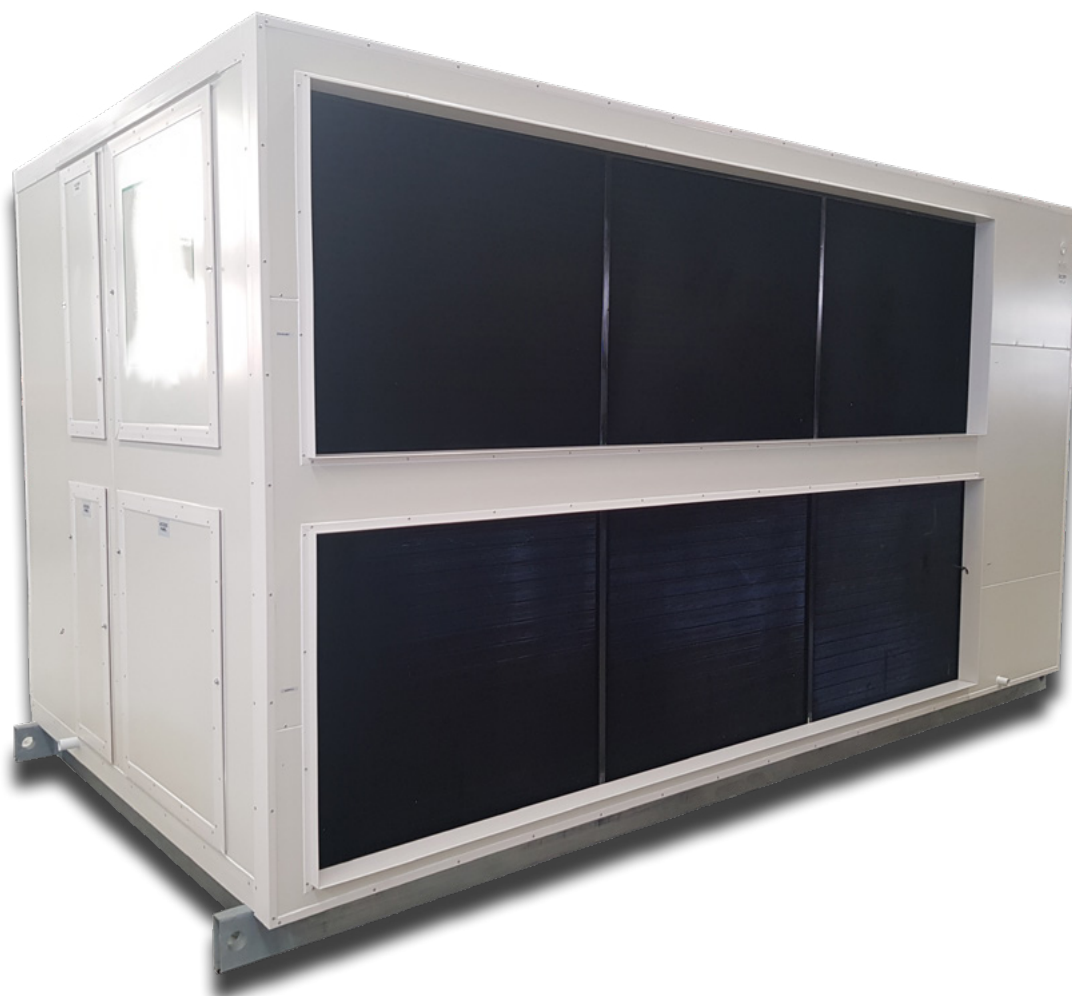
Fresh outside air must be supplied to indoor spaces to meet minimum mandated building code legislation (or greater volumes if required to improve occupant comfort) and provide make up air or positive room pressurisation where ever needed. However, providing fresh outside air to an indoor space comes with a significant energy penalty as any temperature differential between outside and inside increases the heating or cooling load required to condition this outside air to a space neutral temperature. The greater this differential, the greater the amount of energy required. Similarly, if the humidity present in the outside air exceeds that in the space it will need to be removed to maintain a space neutral condition. The removal of this excess humidity adds a latent component to the cooling load and further increases the energy required to maintain the desired room condition. The air conditioning necessary to provide outside air at a space neutral condition is known as the fresh air load ("FAL").

The most efficient way to remove this FAL is treat it separately to the normal sensible load that arises from the space use

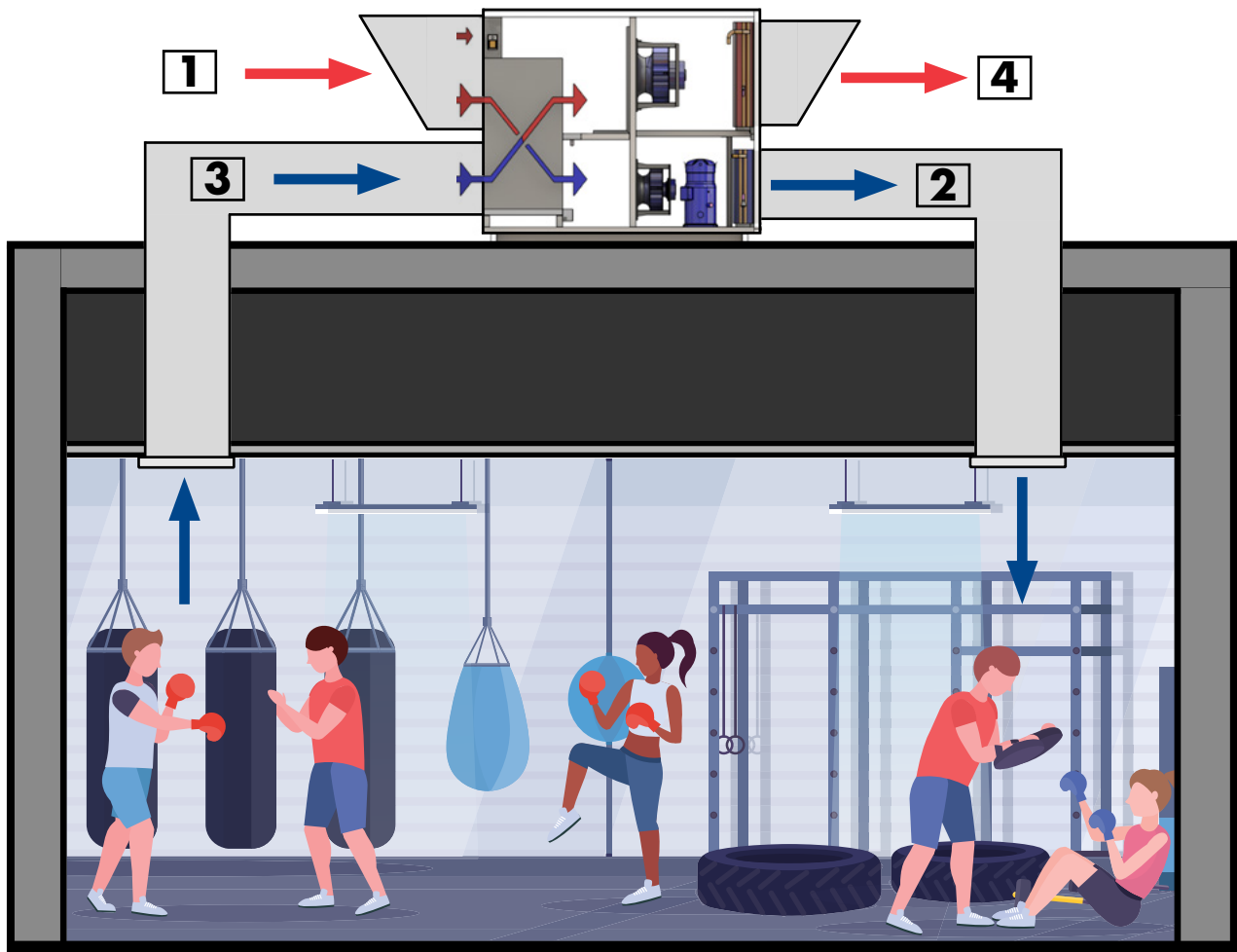
and the building fabric heat gain or loss by employing a dedicated outdoor air system ("DOAS"). The cool dehumidified fresh air supply will provide sensible room cooling but may need to be supplemented depending on the overall room load.

To minimise the energy consumed for this FAL, Air Change have been manufacturing and supplying its DOAS Rooftop Packaged Unit Range for over 20 years to a vast array of projects across Australia. By combining air-to-air heat and energy recovery technology to reduce the FAL with a reverse cycle DX heat pump, the Air Change Rooftop Packaged Range is able to provide space temperature and humidity control using significantly less energy. With a wide product range and other design options available, there is an Air Change Rooftop Packaged solution for any application requiring fresh outside air.

Contact one of our experienced sales engineers for a detailed unit selection.



How it Works



Cooling Mode Scenario

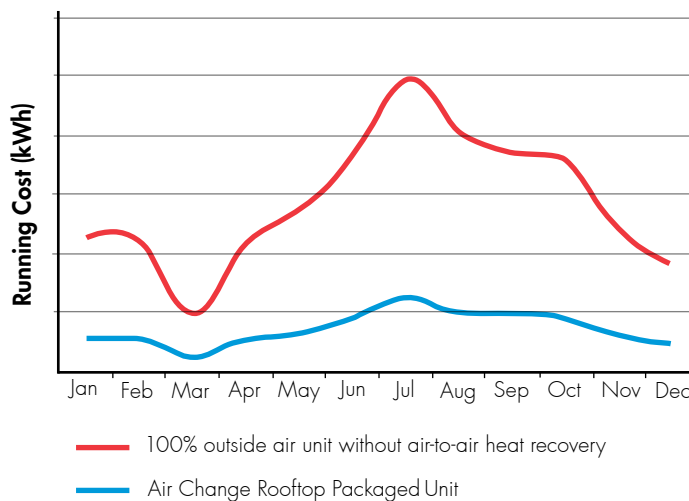
1. 100% fresh outside air enters the unit and passes through an air-to-air heat / energy exchanger where it exchanges heat (and moisture) with the return air (stage 3) that is to be exhausted.
2. Once the air has been precooled (or dehumidified) passing through the air-to-air heat / energy exchanger, additional cooling is provided by a DX evaporator coil to maintain the desired room temperature.
3. Cool dry air returns to the unit where it exchanges heat / energy with the hot fresh air before it is exhausted from the building.
4. Before the return air is exhausted outside, it is used to reject heat from the DX condenser coil and being cooler than the outside air boosts unit EER.

Conversely, in a heating scenario the air-to-air heat exchanger provides preheating to minimise the outside air load. The integrated DX system is reverse cycle and switches to heating mode when required

The Advantages

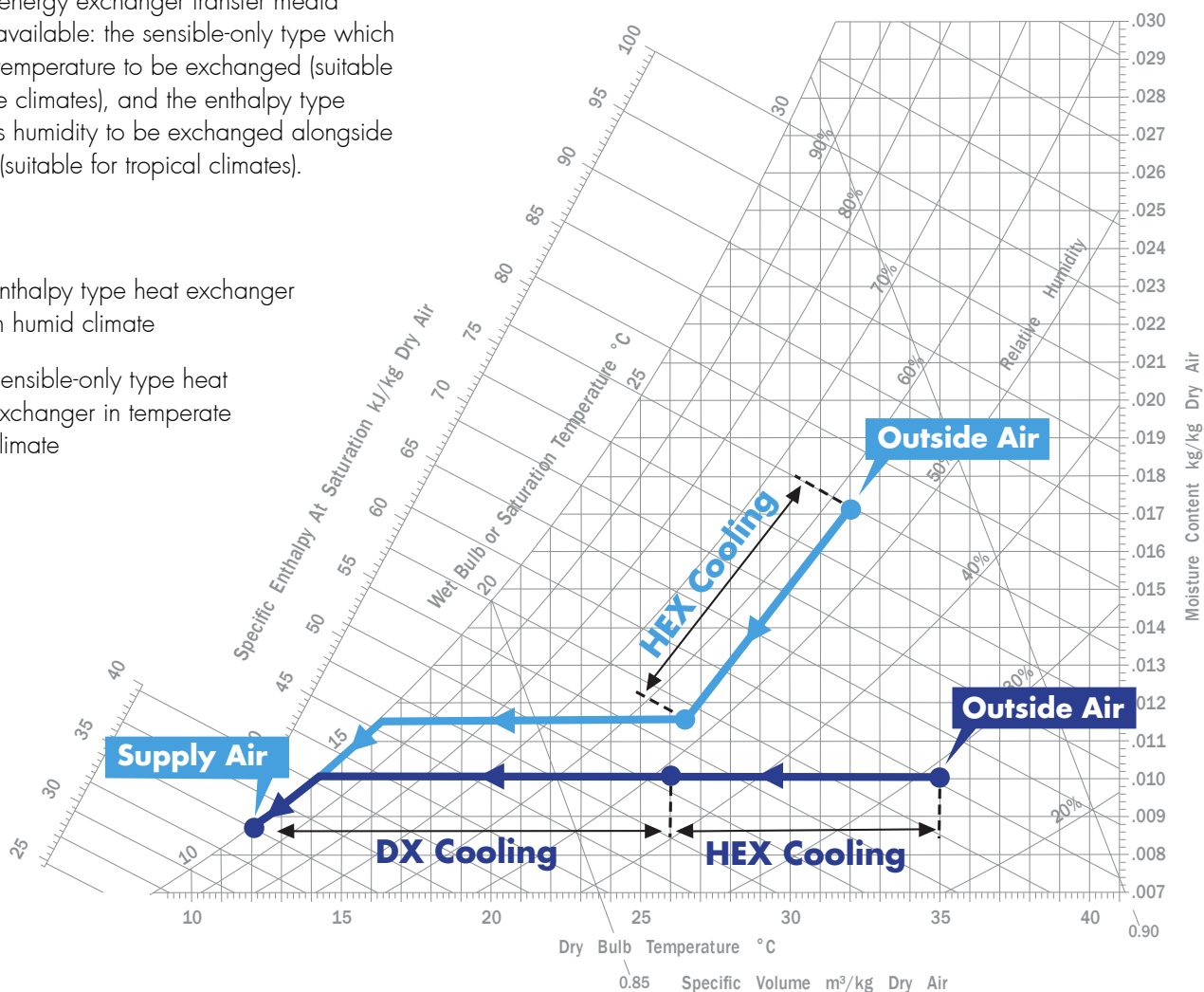
The air-to-air heat / energy exchanger provides significant year-round energy savings by providing precooling in summer and preheating in winter.

Outside Air Load Modelling - Sydney Example
with Economy Cycle Mode

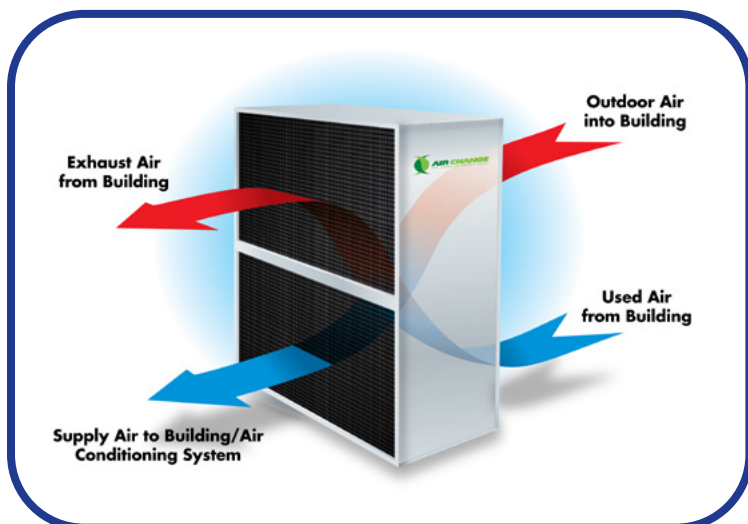


Two heat / energy exchanger transfer media options are available: the sensible-only type which allows only temperature to be exchanged (suitable for temperate climates), and the enthalpy type which allows humidity to be exchanged alongside temperature (suitable for tropical climates).

- Enthalpy type heat exchanger in humid climate
- Sensible-only type heat exchanger in temperate climate



Features



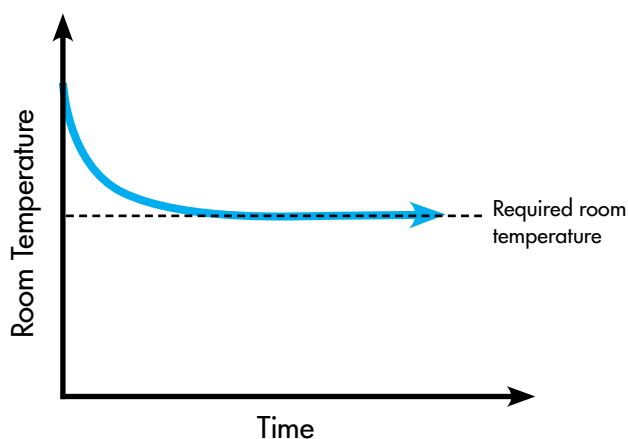
Air-to-Air Heat Exchangers

Air Change's unique counterflow plate heat / energy exchangers provide optimal heat transfer between outside air and return air, reducing the outside air load with significant running cost savings.

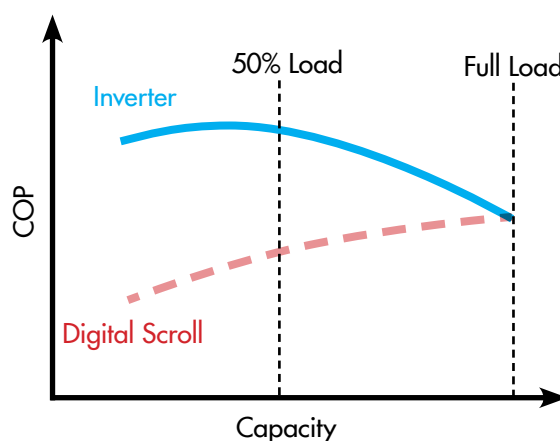


BLDC Inverter Compressors (Optional)

The variable capacity of inverter compressors provide a match of heating or cooling capacity with the heating or cooling load. Because the load and capacity are matched, inverter compressors offer enhanced energy efficiency during capacity turn-down due to the reduced compressor lift. As DX systems typically spend minimal time at full design load, this translates to significant seasonal energy savings.



Smooth and steady control of room temperature achieved by inverter compressors.



Indicative COP vs. capacity profiles of inverter and digital scroll compressors.

Features



EC Supply Air and Exhaust Air Fans

EC fans offer optimal levels of energy efficiency. They also have high static pressure development, making them suitable for applications requiring high filtration grades or long ductwork runs.



ClimaSync Control System (Optional)

The optional ClimaSync Control System ensures optimal performance and reliability. The control logic and operational functions are programmed to meet the requirements of each project. Features include proactive thermostat logic, performance status and trends, advanced protection logic, alarm histories, and time scheduling. Unit operation is achieved through touchscreen human machine interface, high level interface, or through online connectivity.

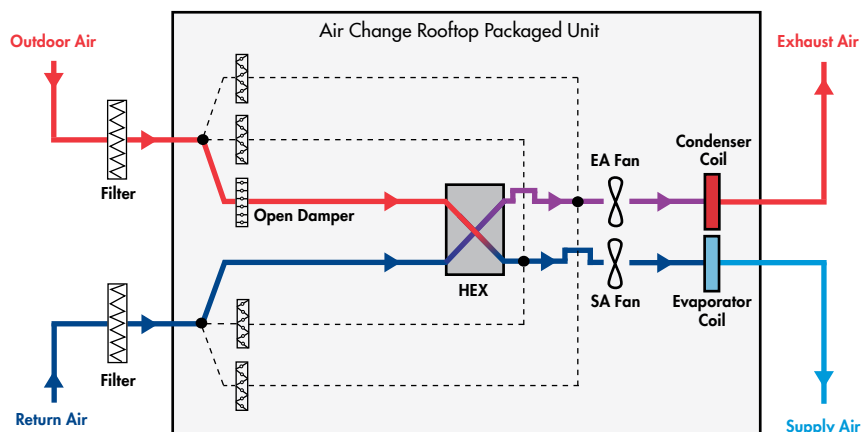


Economy Cycle & Return Air Bypass Modes (Optional)

Dampers can be integrated into the unit to provide the optional operating modes of Economy Cycle and Return Air Bypass. See the schematics on the following page for details.

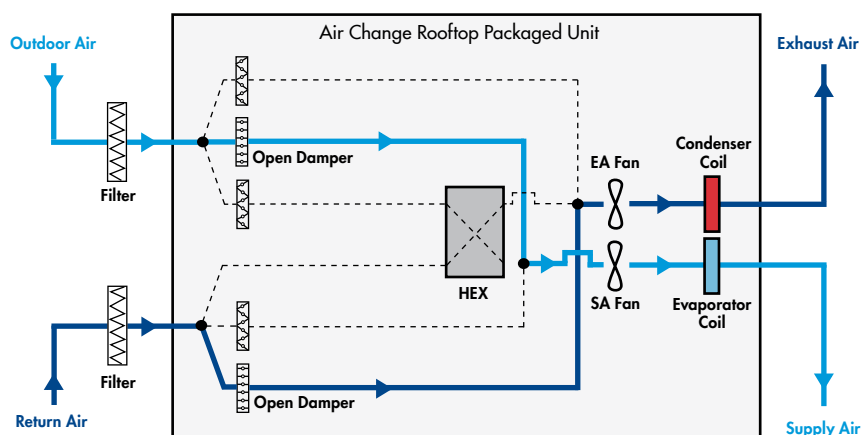
Operating Modes

100% Outside Air Heat Recovery (default)



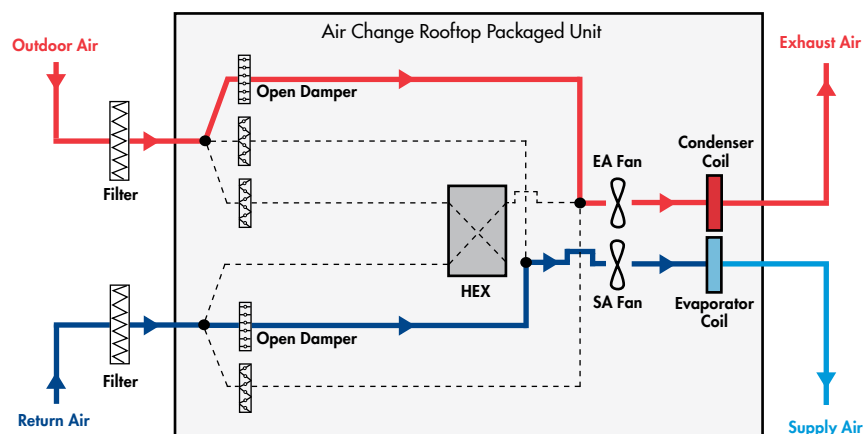
Used when the outside air temperature is hot or cold, and the indoor space requires 100% fresh outside air. The air-to-air heat / energy exchanger minimises the outside air load.

Economy Cycle (optional)



Used for free-cooling - when cold 100% outside air is brought straight into an indoor space to address the room load. Also used when the outside air temperature is mild and air-to-air heat / energy recovery is not necessary for supplying 100% fresh outside air.

Return Air Bypass (optional)



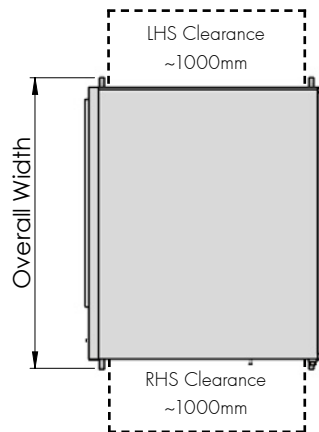
Used when 100% fresh outside air is not required (eg. when room occupancy levels are low). Outside air volume can be modulated between 0% and 100% to provide the minimum required fresh air and achieve further energy savings.

Technical Data

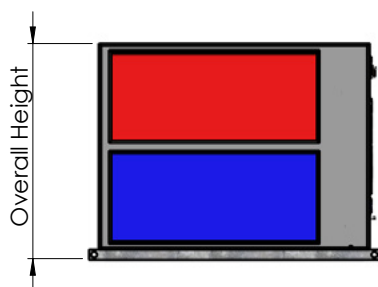
Model Number:	ACSXXRCRTP							ACLXXRCRTP						
	11	16	20	23	27	32	36	45	52	65	70	82	96	125
Supply Air (l/s)	500	750	1000	1100	1200	1400	1700	2000	2300	2800	3200	3700	4200	5000
Return Air (l/s)	500	750	1000	1100	1200	1400	1700	2000	2300	2800	3200	3700	4200	5000
Outside Air	100%													
Condenser Make-Up Air (l/s)	300	450	600	660	720	840	1020	1500	1500	3000	3000	3000	3000	3000
Exhaust Air (RA + CMA) (l/s)	800	1200	1600	1760	1920	1240	2720	3500	3800	5800	6200	6700	7200	8000
HEX Media	Sensible-Only or Enthalpy													
Comp. Capacity [#] Cooling (kW)	11	16	20	23	27	32	36	45	52	65	70	82	96	125
Heating (kW)	15	20	25	29	34	40	45	59	68	85	91	107	125	156
Comp. Stages (Fixed Speed)	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Refrigerant	R407C for Standard Fixed Speed Compressors. R410A for Optional Inverter Compressors													
Fan Type	3 Phase EC Plug Fans - Variable Speed													
Volts / Ph / Hz	415 / 3 / 50													
Construction	50mm PU Sandwich Panel													
Dimensions (standard)														
Overall Depth (mm)	1630	1630	1735	1735	1755	1755	1870	2350	2350	2375	2375	2375	2375	2340
Overall Width (mm)	1760	1760	1950	1950	2200	2200	2200	2250	2250	2900	2900	2900	2900	4200
Overall Height (mm)	1590	1590	1590	1590	1805	1805	1870	1930	1930	2400	2400	2400	2400	2400
Weight (kg)	550	550	650	650	850	850	900	1200	1250	1550	1550	1650	1700	2400
Dimensions (Economy Cycle)														
Overall Depth (mm)	2220	2220	2460	2460	2460	2460	2460	2460	2460	2460	2495	2495	2495	2450
Overall Width (mm)	1600	1600	2250	2250	2250	2250	2250	2250	2900	2900	3550	3550	3550	4200
Overall Height (mm)	1650	1650	1655	1655	1850	1850	1850	1850	1965	2140	2060	2060	2330	2430
Weight (kg)	550	600	750	750	900	900	1150	1200	1500	1550	1900	1900	2000	2400

*Specifications are subject to change. Refer to project certified documentation for finalised details.

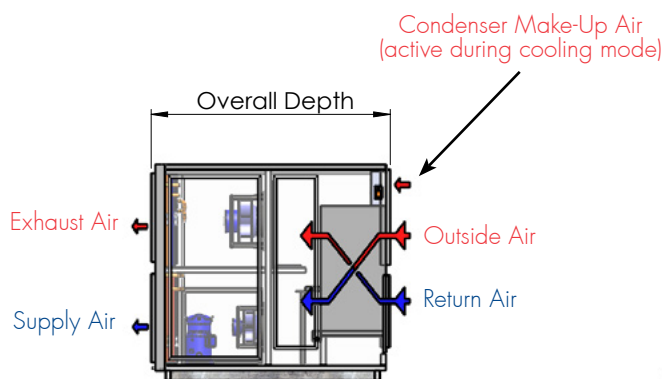
Cooling capacity based on: OA 35/24°C, RA 24/17°C with 100% outside air. Heating capacity based on: OA 8°C, RA 21°C with 100% outside air.



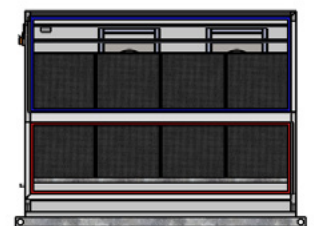
Outside air and return air filter boxes supplied by others.



Front View



Right Side View



Back View

Recent Projects



- Lennox Community Centre, NSW
- Tamworth Public School, NSW
- Coogee Synagogue, NSW
- Electra Community Centre, VIC
- Adina Apartments, VIC
- Catholic Regional College, VIC
- TSS Annand Theatre, QLD
- Northgate Hall, QLD
- Hillbrook Anglican College, QLD
- Fullarton Lutheran Homes, SA
- Sacred Heart College, SA

- Mawson Lakes School, SA
- Ellenbrook High School, WA
- Burswood Tavern, WA
- Harrisdale School, WA
- H Hotel Darwin, NT
- Puma Katherine, NT
- Marrara Tennis Centre, NT
- Fahan School, TAS
- Dial Range Sports, TAS
- Waimakariri Sports Facility, NZ
- Commercial Bay, NZ





Contact Us

Air Change Australia

New South Wales (Head Office)

11 Broadhurst Rd, Ingleburn NSW 2565

Phone (02) 8774 1400

Email sales@airchange.com.au

Queensland

Unit 3, 78 Logan Rd,
Woolloongabba QLD 4102

Phone (07) 3891 1974

Email sales.qld@airchange.com.au

Victoria

Suite 3A, 529 Burwood Rd, Hawthorn VIC
3122

Phone (03) 9482 1010

Email sales.vic@airchange.com.au

Australian Distributors

South Australia & Northern Territory

Industrial Air

14 Princess St, Beverley SA 5009

Phone (08) 8354 0088

Email info@industrialair.com.au

Website www.industrialair.com.au

Western Australia

Industrial Air

Unit 17, 16 Sustainable Ave, Bibra Lake WA
6163

Phone (08) 9418 2448

Email paul@industrialair.com.au

Website www.industrialairwa.com.au

North Queensland

Capricorn Air Conditioning

13 Mackley St, Garbutt QLD 4814

Phone (07) 4775 5222

Email sam2@capaircon.com.au

Tasmania

Major Air - Launceston

76 York St, Launceston TAS 7250

Phone (03) 6344 6888

Website www.majorair.com.au

Major Air - Hobart

Unit 2, 10 Lampton Ave,
Derwent Park TAS 7009

Phone (03) 6273 6455

Website www.majorair.com.au

Air Change South East Asia

Malaysia

No 61, Jalan i-Park 1/1
Perindustrian i-Park 81000 Bandar
Indahpura, Johor

Phone (+60) 7662 6299

New Zealand Distributors

Cooke Industries

31 Station Rd, Penrose, Auckland 1061

Phone +64 (0)9 579 2185

Email sales@cookeindustries.co.nz

Website www.cookeindustries.co.nz

South East Asian Distributors

Thailand

Synergine (Thailand) Co.Ltd

18/6 Sukhumvit 22
Sukhumvit Rd, Khlong Toey
Bangkok 10110

Phone (+66) 851487312

Email w.manprasit@synergine.com.hk

Indonesia

PT Smart Chiller Systems

CEO Suites, One Pacific Place Tower
15th Floor, Jl. Jen. Sudirman Kav. 52-53
12190 Jakarta

Email mp@smartd-indonesia.com

Phone (+62) 21 2550 2413

Singapore

Energy Supplies & Engineering (S) Pte Ltd

61 Bukit Batok Crescent, #03-07B Heng
Loong Building, Singapore 658078

Contact 1- Desmond Tan

Email desmond@esengrg.com

Phone (+65) 9736 9956

Contact 2- Andrew Nah

Email andrew@esengrg.com

Phone (+65) 9771 8186



For more than 20 years, Air Change has provided unique equipment and engineering solutions for local and international clients using our internationally patented heat and energy recovery technology. During that time, we have developed a comprehensive range of energy efficient products to deliver controlled indoor climate conditions satisfying the requirements of all project stakeholders: the developer, the design engineer, and the building's owner and occupants.

www.airchange.com.au

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