



## 2022 ACDHUM Range





# ACDHUM – Energy Efficient 100% Outside Air Dehumidification.

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. In humid climates introducing this outside air into an indoor space can cause issues if the high moisture level is not addressed. High indoor humidity can result in occupant discomfort, toxic mould growth and condensation forming on cooler surfaces which leads to the degradation of the building fabric and its contents. Climate change is causing increased humidity levels in cities that have historically been immune from this problem.

Conventional air conditioning systems are not the answer. They are typically designed to provide sensible cooling and therefore are controlled according to dry bulb temperature in the space and thus cycle off or reduce capacity when the room temperature reaches set point. As the ratio of latent to sensible heat load has been increasing the dehumidifying ability of these units is unsatisfactory causing humidity to rise within the indoor environment.

It is possible to run conventional air conditioning equipment constantly at a low enough temperature to provide the necessary dehumidification but unless the sensible load is sufficient this approach could result in over-cooling of the space and cause occupant discomfort.

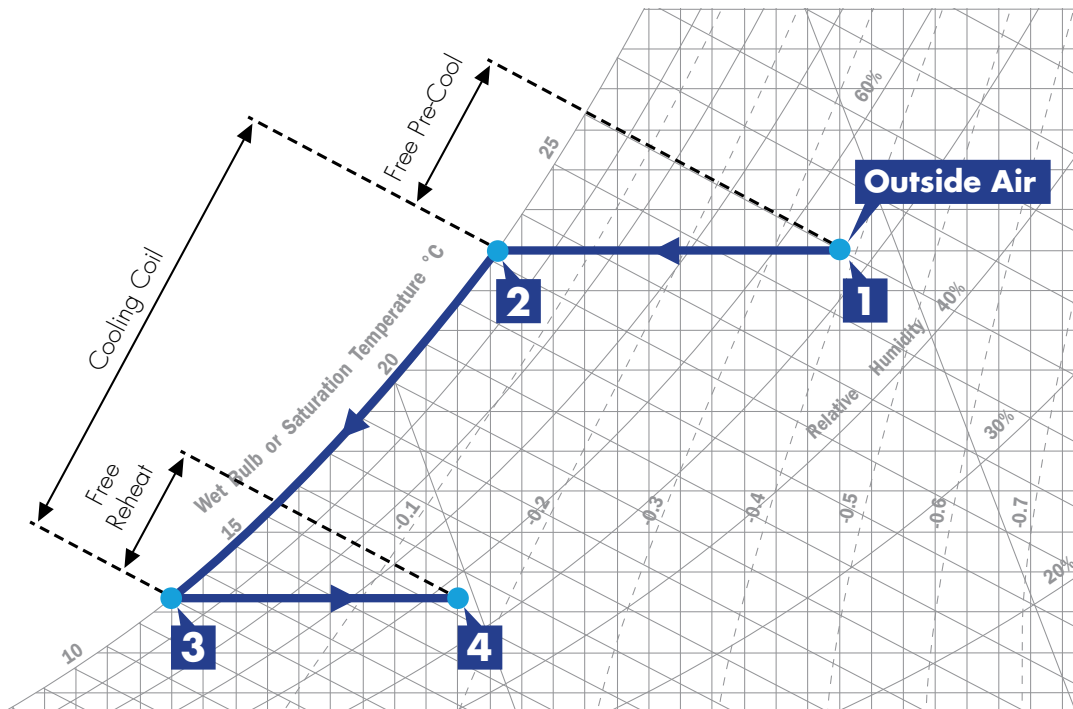
Air Change ACDHUM units provide a highly efficient dehumidification solution by combining air-to-air heat exchange technology with DX or hydronic (CHW) cooling and sophisticated control systems. By using its expertise in control and refrigeration technology, Air Change Low Dew Point dehumidification units are able to produce particularly low supply air moisture contents down as low as 5g/kg dry air. With nominal airflows ranging from 500l/s to 6000l/s, and unit capacities designed around project specific requirements, there is an ACDHUM solution for any application. Contact your Air Change representative for a detailed unit selection.

Condensers can be roof, end or remote mounted.



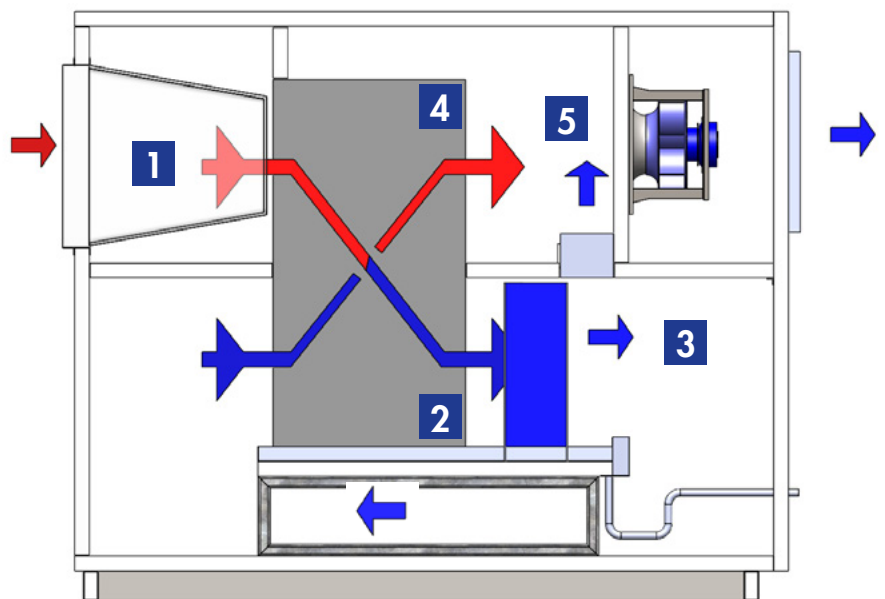


# How it Works



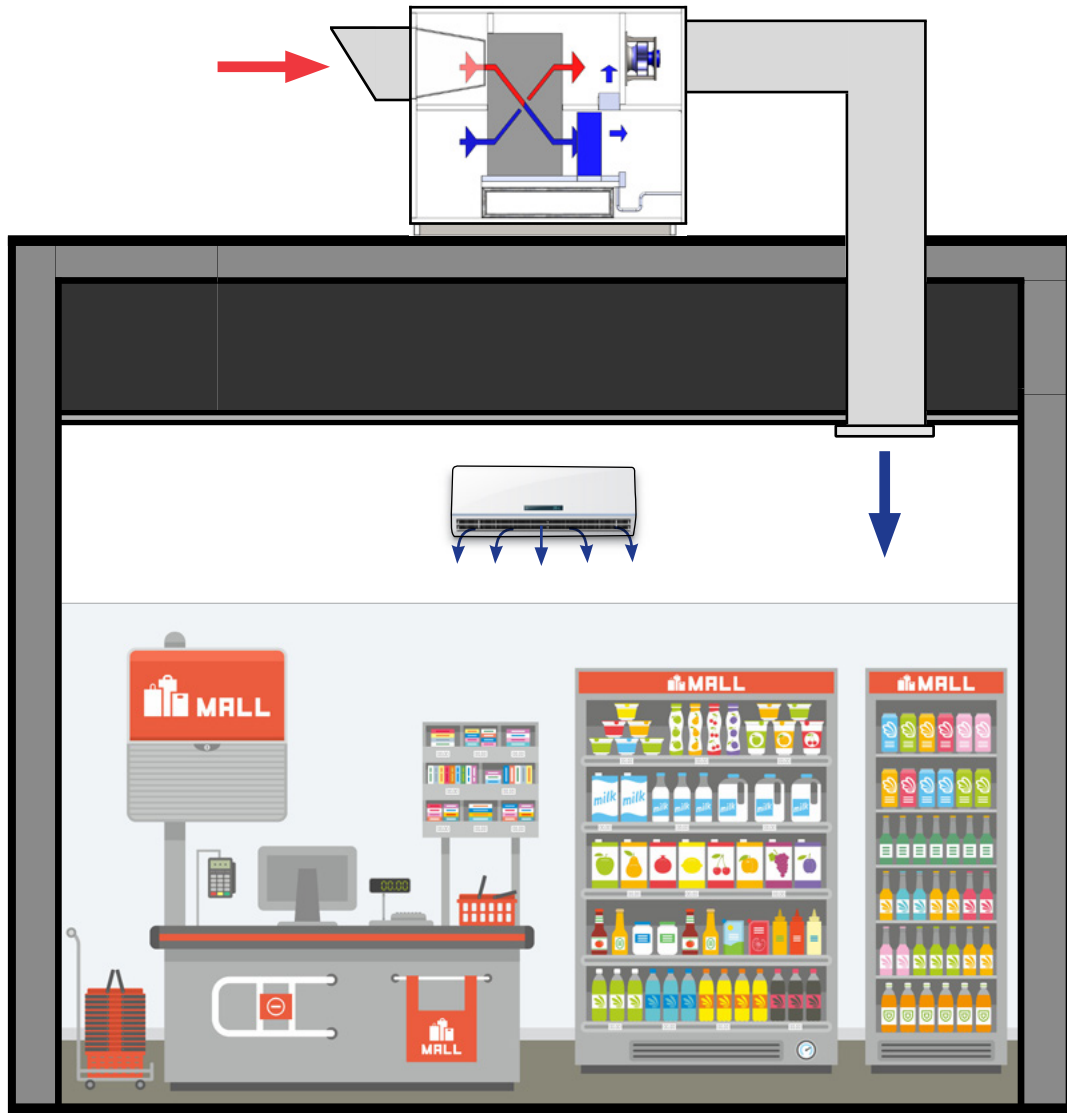
## ACDHUM Stages of Operation

1. Fresh humid outside air enters the unit and is filtered through bag filters.
2. The humid outside air passes through one channel of the air-to-air heat exchanger where it is precooled by the air leaving the cooling coil (stage 3).
3. The precooled outside air is then further cooled through a DX or CHW coil to the required dew point temperature.
4. The cold dehumidified outside air passes through the other channel of the air-to-air heat exchanger where it is heated while simultaneously cooling the incoming air in the first channel.
5. By allowing a portion of dehumidified air to bypass the reheat stage, the supply air temperature can be trimmed and controlled.



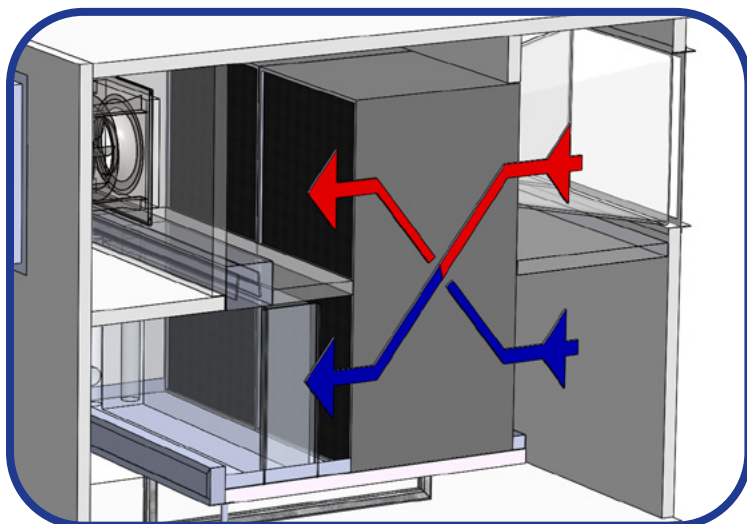
Precooling the outside air in the HEX reduces the DX or CHW load needed for dehumidification. The consequential temperature rise of the supply air in the second channel of the HEX prevents over cooling of the space.

# The Advantages



- Precooling from the air-to-air heat exchanger saves energy by reducing the DX or CHW mechanical cooling needed to achieve the required supply air dew point temperature.
- The air-to-air heat exchanger reheat ensures the space is not overcooled after dehumidification. Separate cooling equipment can then address the room sensible load as required.
- ACDHUM units can be used in series or parallel with conventional cooling equipment dedicated to addressing the room load.
- ACDHUM units can provide positive room pressurisation and help prevent infiltration of external humidity or contaminants.
- As desiccant dehumidification is not used, no hot regeneration air is required which simplifies installation.

# Features



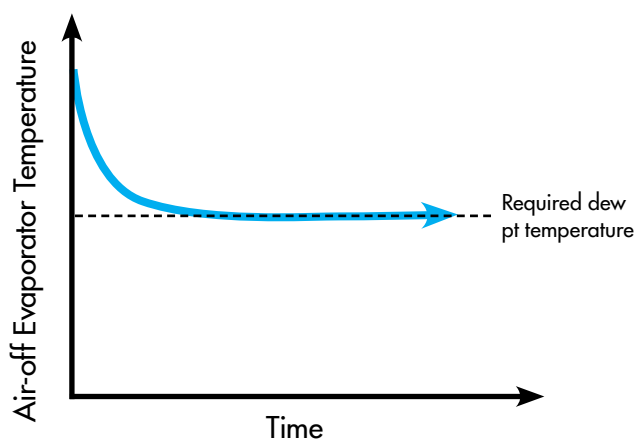
## Air-to-Air Heat Exchangers

Air Change's unique counterflow plate heat exchangers provide optimal heat transfer between airflow paths, which maximises the precooling and reheat effectiveness.

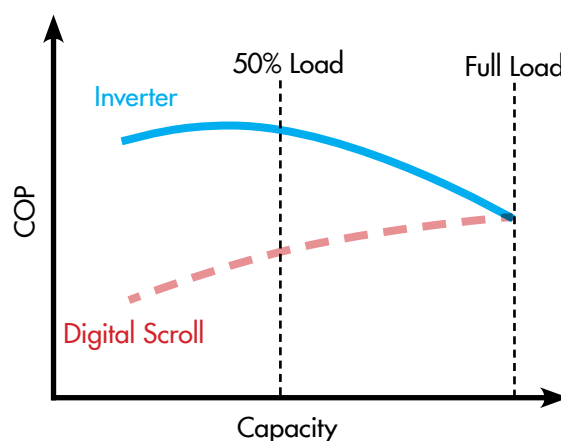


## BLDC Inverter Compressors

To best perform their required function, a dehumidifier must maintain a constant air-off coil dew point temperature which requires a stable evaporator pressure with any air-on coil condition. The variable capacity control of inverter compressors allow units to precisely meet the required dew point temperature without compressor on/off cycling and hence maintain constant and accurate dehumidification. Inverter compressors also offer much higher energy efficiency than fixed speed compressors using hot gas bypass to achieve stable evaporator pressure and better control and efficiency than digital scroll compressors.



Smooth and steady control of evaporator air temperature achieved by inverter compressors.



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

# Features



## EC Supply Air Fans

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



## EC Axial Condenser Fans

High efficiency EC axial fans are used for the condenser air. These are speed controlled by the integrated control system with respect to head pressure.



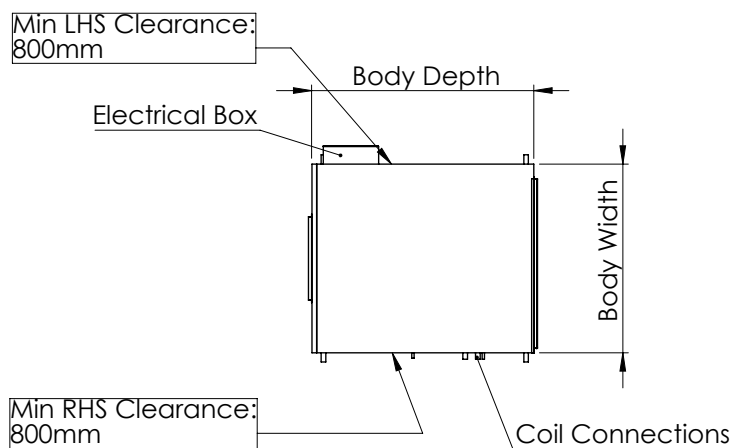
## ClimaSync Control System

The included 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.

# Technical Data - ACDHUM-W (CHW Systems)

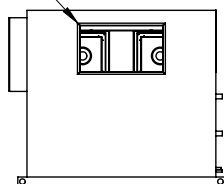
Model Number:	ACDHUM1-W	ACDHUM2-W	ACDHUM3-W	ACDHUM4-W	ACDHUM5-W	ACDHUM6-W	ACDHUM7-W	ACDHUM8-W
<b>Supply Air - Nominal</b> (l/s)	500	1000	1400	2000	2800	3600	4300	5000
<b>Supply Air - Max</b> (l/s)	700	1400	2000	2800	3600	4300	5000	6000
<b>Outside Air</b>	100%							
<b>Capacity</b> (kW) <b>Cooling</b>	CHW Coil Sized to Project Requirements							
<b>SA Moisture Content</b> (g/kg dry air)	CHW Dependent							
<b>Fan Type</b>	3 Phase EC Plug Fans - Variable Speed							
<b>Volts / Ph / Hz</b>	415 / 3 / 50							
<b>Construction</b>	50mm PU Sandwich Panel							
<b>Weight</b> (kg)	550	850	1100	1400	1750	2000	2350	2800
<b>Dimensions</b>								
<b>Body Depth</b> (mm)	2580	2580	2410	2410	2410	2410	2410	2410
<b>Body Width</b> (mm)	850	1400	2050	2700	3350	4000	4650	5300
<b>Overall Height</b> (mm)	1910	1910	1910	1910	1960	1960	1960	1960

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

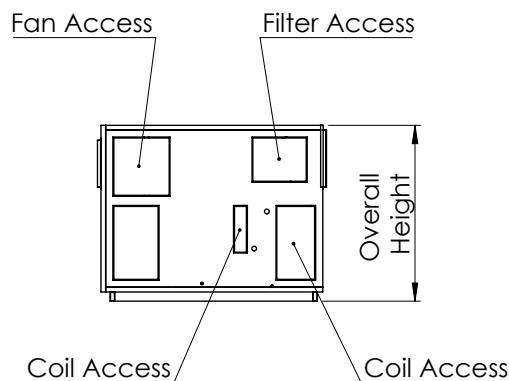


**PLAN VIEW**

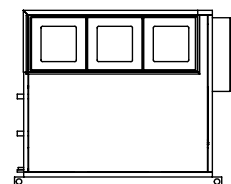
Spigot size & location can be revised according to project requirements (within design limitations)



**FRONT VIEW**



**RIGHT SIDE VIEW**



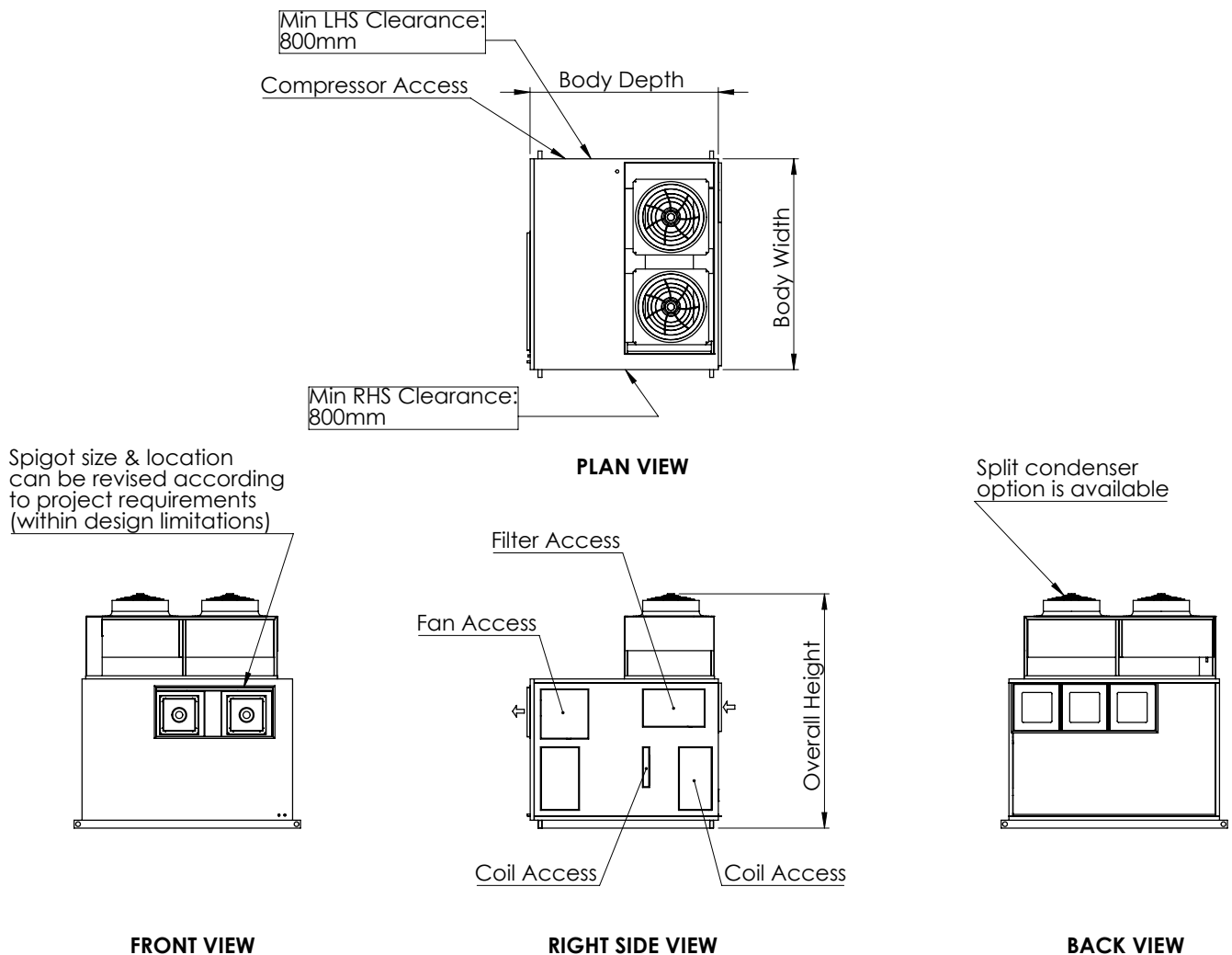
**BACK VIEW**



# Technical Data - ACDHUM-D (DX Systems)

Model Number:	ACDHUM1-D	ACDHUM2-D	ACDHUM3-D	ACDHUM4-D	ACDHUM5-D	ACDHUM6-D	ACDHUM7-D
<b>Supply Air - Nominal</b> (l/s)	500	1000	1400	2000	2800	3600	4300
<b>Supply Air - Max</b> (l/s)	700	1400	2000	2800	3600	4300	5000
<b>Outside Air</b>	100%						
<b>Capacity</b> (kW) <b>Cooling</b>	Refrigeration Sized to Project Requirements						
<b>SA Moisture Content</b> (g/kg dry air)	>8g/kg dry air						
<b>Compressor Type</b>	BLDC Inverter						
<b>Reverse Cycle</b>	Available Upon Request						
<b>Refrigerant</b>	R410A						
<b>Fan Type</b>	3 Phase EC Plug Fans - Variable Speed						
<b>Volts / Ph / Hz</b>	415 / 3 / 50						
<b>Construction</b>	50mm PU Sandwich Panel						
<b>Weight</b> (kg)	850	1300	1550	2150	2700	3150	3600
<b>Dimensions</b>							
<b>Body Depth</b> (mm)	2260	2610	2410	2410	2410	2410	2410
<b>Body Width</b> (mm)	1760	2410	2700	3350	4650	4650	5300
<b>Overall Height</b> (mm)	2170	2246	3000	3000	3000	3000	3000

\*Specifications are subject to change. Dimensions and weight are dependent on the required capacity and design conditions. Refer to project certified documentation for finalised details.

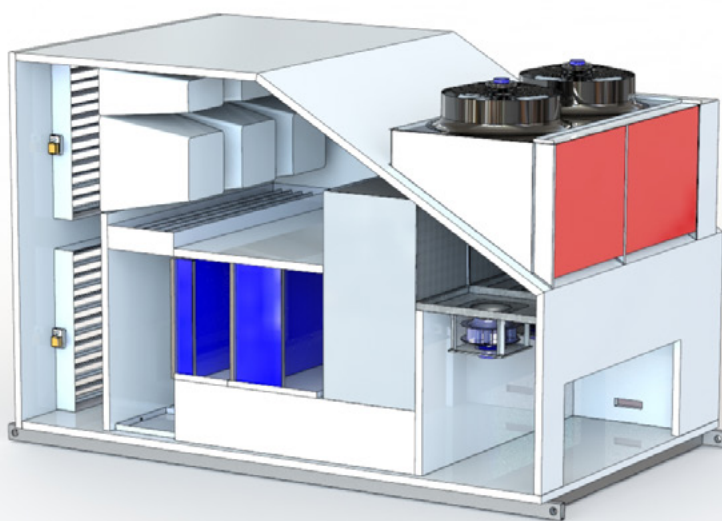


# Technical Data - ACDHUM-LD (Low Dew Point)

Model Number:	ACDHUM1-LD	ACDHUM2-LD	ACDHUM3-LD	ACDHUM4-LD	ACDHUM5-LD
<b>Supply Air - Nominal</b> (l/s)	500	1000	1400	2000	2800
<b>Supply Air - Max</b> (l/s)	700	1400	2000	2800	3600
<b>Outside Air</b>	100%				
<b>Capacity</b> (kW) <b>Cooling</b>	Refrigeration Sized to Project Requirements. Hybrid DX & CHW Available				
<b>SA Moisture Content</b> (g/kg dry air)	>5g/kg dry air				
<b>Compressor Type</b>	BLDC Inverter				
<b>Reverse Cycle</b>	Available Upon Request				
<b>Refrigerant</b>	R410A				
<b>Fan Type</b>	3 Phase EC Plug Fans - Variable Speed				
<b>Volts / Ph / Hz</b>	415 / 3 / 50				
<b>Construction</b>	50mm PU Sandwich Panel				
<b>Dimensions</b>	Contact your Air Change Representative				

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

The ACDHUM-LD range has been specifically designed for supermarket freezer aisles and process air applications requiring dehumidification down to 5g/kg dry air.



Winner of the 2018 ARBS Product Excellence Award, and the 2017 AIRAH Product of the Year Award.



# Recent ACDHUM Projects



- Tesco Supermarkets, Thailand
- KCE Electronics, Thailand
- Jet Aviation, Seletar Airport, Singapore
- 3M Tuas Factory, Singapore
- Caltex Laboratory, QLD
- Brisbane Airport, QLD
- Townsville TAFE, QLD
- Rockhampton Fire Station, QLD

- Stanwell Power Station, QLD
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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](http://www.airchange.com.au)

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Air Change Pty Ltd products internationally patent protected

Refrigerant Trading Authorisation No: AU23586



### Multi Award Winning Technology

**ARBS Industry Awards** "Product Excellence" Winner 2018

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