

# ACDHUM-LD

The ACDHUM-LD – A 100% Refrigeration Solution  
for Low Dewpoint Applications



## ACDHUM-LD

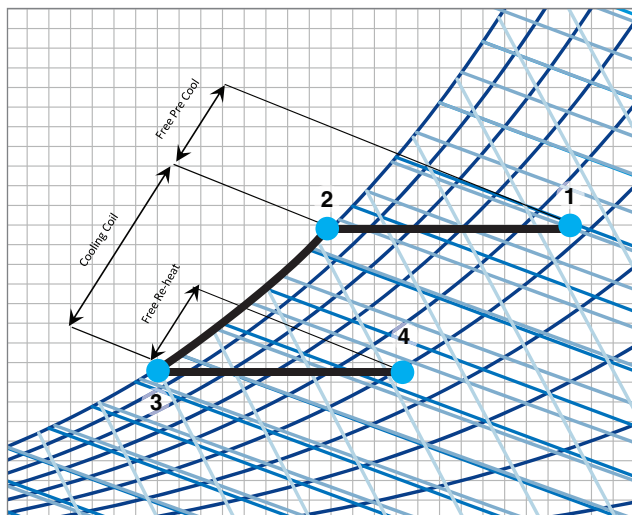
The ACDHUM-LD has been specifically designed to dehumidify air to a nominal 5g/kg for use in supermarket freezer aisles and process air applications. Maintaining the freezer aisle environment in supermarkets at a low humidity has significant energy saving benefits because of the interaction between the refrigerated cabinets and the surrounding air environment. Condensation in refrigerated cabinets is significantly reduced leading to more efficient sensible cooling of the product and hence a reduction in energy consumption for anti sweat and defrost systems.

Until recently, the most common way to deliver air at this low dewpoint was with desiccant dehumidification of the fresh supply air. Whilst effective in controlling humidity levels, the desiccant requires regeneration with hot air, the temperature being dependent on the amount of moisture to be removed from the desiccant to the regeneration airstream. A secondary heating source is often required to raise the regeneration air temperature imposing an energy penalty even where a source of low grade waste heat is available.

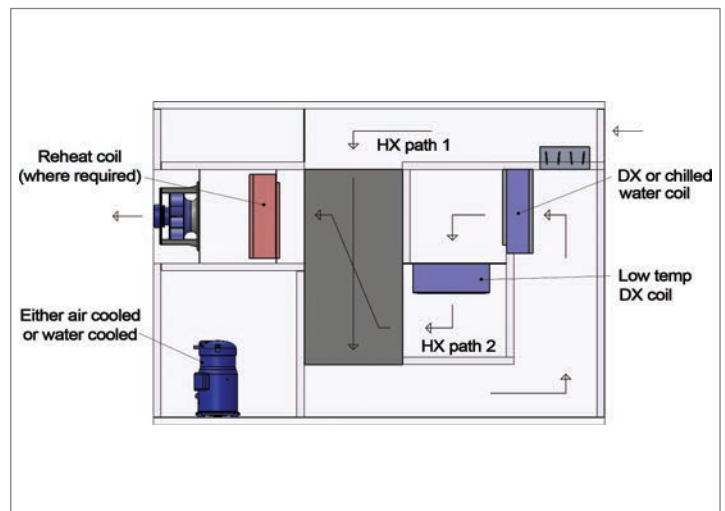
The alternative to desiccant dehumidification to achieve this low store RH is to cool the air to a dew point temperature at or below 4°C to cause moisture to condense from the air. Historically, this has not been a viable option as ice forms on the evaporator cooling coil requiring a defrost cycle which interrupts the dehumidification process and adds to the energy consumed.

Air Change Australia recognised the limitations of desiccant dehumidification in many applications and developed a low dew point dehumidifier [patent pending] that consumes similar or less electrical power than a typical desiccant system by using heat exchange to provide part of the cooling load.

### Psychrometric Chart



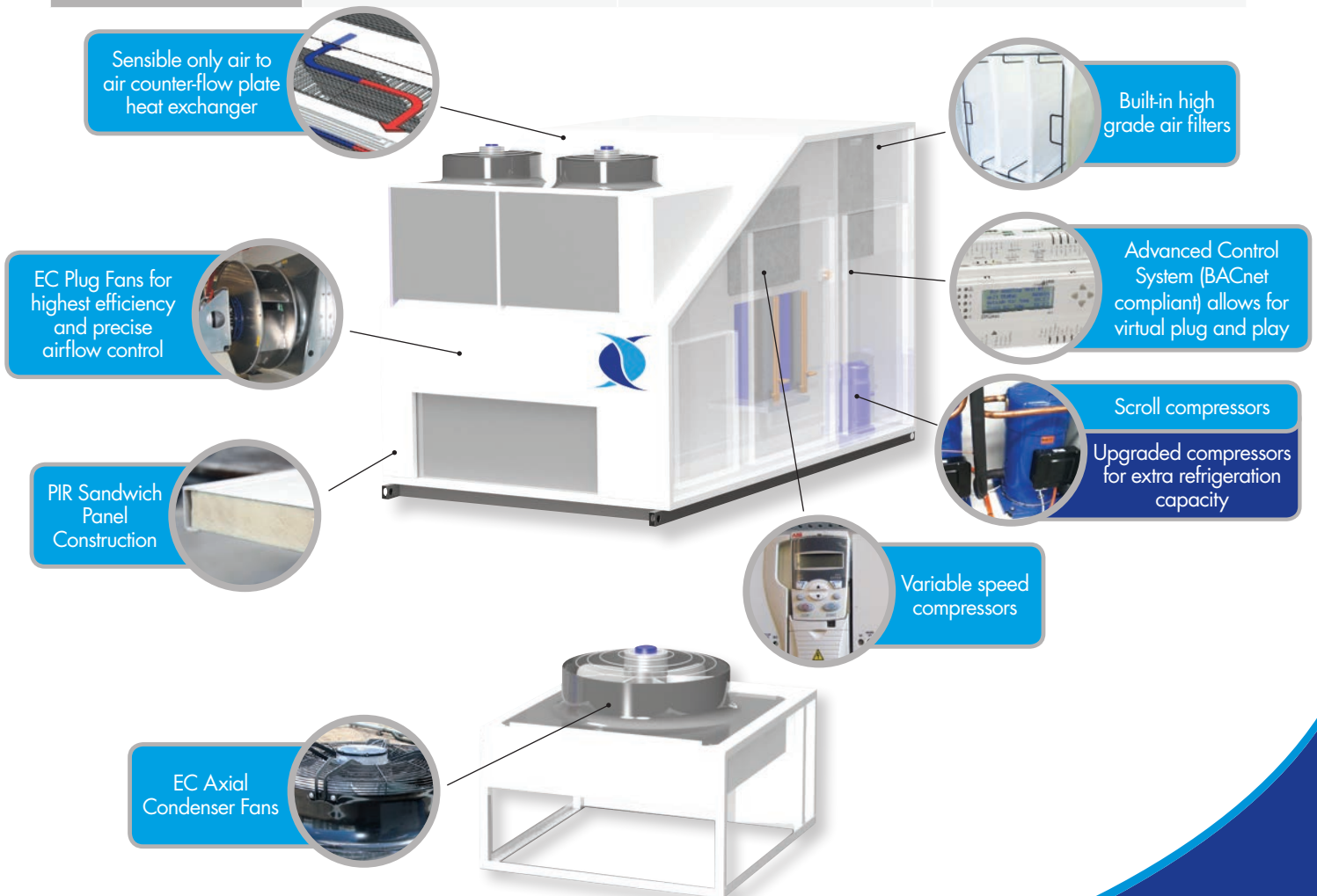
### ACDHUM-LD Common Schematic



## How it works

The ACDHUM-LD dehumidifies air with a highly efficient and sophisticated cool and reheat cycle. The air to air heat exchanger is used to pre-cool incoming air (HX path 1) whilst simultaneously re-heating supply air (HX path 2). Approximately 40% of the required cooling occurs in the heat exchanger. The remaining dehumidification is provided through two stages of air cooling with options for chilled water or Direct Expansion (DX) on the first stage. The second low temperature stage is always direct exchange. Additional heating can be provided through a DX reheat coil, hot water coil or electric element. The available configurations offered are:

Configuration	1st Stage Cooling/Dehum	2nd Stage Cooling/Dehum	Heating and/or Reheat
Hybrid	Chilled Water Coil	DX with Compressor	Hot Water Coil
Hybrid Plus	Chilled Water Coil	DX with Compressor	DX via Condenser Coil
DX	DX with Compressor	DX with Compressor	DX via Condenser Coil



DX Condensers can be mounted to or remote from unit.  
Water Cooled Condenser option is available.

**Multi Award Winning Technology**  
**AIRAH** "Excellence in Innovation" Winner 2013  
**AIRAH** "Excellence in Innovation" Winner 2012  
**ARBS Industry Awards** "ESD Product" Winner 2010

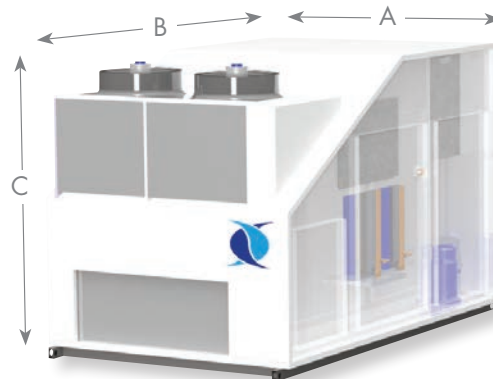


## Dehumidification Units

Model No		ACDHUM-LD 1	ACDHUM-LD 2	ACDHUM-LD 3	ACDHUM-LD 4
Supply Air Flow Range (l/s)		1000	2000	3000	4000
Compressor Type		Variable Speed Hermetic Scroll			
Refrigerant		R410A/R407C			
Fan Type		3 Phase EC Plug - Variable Speed			
Volts/Ph/Hz		415 / 3 / 50			
Construction		50mm PIR Sandwich Panel, 0.6mm zinc coated. UV treated polymer joiners for maximum strength, insulation and durability			
Weight (kg)		800	1100	1400	1600
Overall Width (mm)	A	1100	1750	2400	2500
Overall Depth (mm)	B	3450	3450	3450	3450
Overall Height (mm)	C	2530	2530	2530	3060

Model Configuration			
	1st Stage Cooling/Dehum	2nd Stage Cooling/Dehum	Heating and/or Reheat
Hybrid	Chilled Water Coil	DX with Compressor	Hot Water Coil
Hybrid Plus	Chilled Water Coil	DX with Compressor	DX via Condenser Coil
DX	DX with Compressor	DX with Compressor	DX via Condenser Coil

ACDHUM-LD units are custom built to suit application. Please contact Air Change for further technical information. Specifications subject to change without notice.



“The ACDHUM-LD is an ideal solution for supermarket and process air applications, consuming similar or less electrical power than a typical desiccant system.”

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