

# 20kW / 40kW



## > **LogiCool FreeCool**

Free-cooling chiller for high density environments

Typical applications

- > Server rooms and data centres
- > Business-critical environments
- > Clean rooms
- > Telecommunications



Authorised User No. 00007

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



### LogiCool FreeCool

The LogiCool FreeCool is a packaged, outdoor, free-cooling chiller designed as an expandable, energy efficient solution for cooling the increasing heat loads of high density servers. It can supply chilled water directly to a rack mounted heat exchanger such as the LogiCool OnRak or be matched with direct rack cooling solutions from other manufacturers. It can also be linked to Airedale or other manufacturers' precision air conditioning systems in business critical areas. The LogiCool FreeCool significantly reduces whole life cycle costs largely due to its integrated free-cooling solution and its digital scroll compressor technology.

### Compact, modular design

A low capacity, packaged chiller, LogiCool FreeCool is configured for outside installation, so freeing up valuable indoor space. Its compact footprint and modular design allow close, side-by-side positioning to optimise available space. Additional chillers can be simply designed in and added on as cooling load increases.

### Flexible, multi-rack cooling

LogiCool FreeCool offers flexible, multi-rack cooling by an individual unit or by a number of units with run/standby and optional sequencing capability. The intelligent, integral controller is key to LogiCool FreeCool's superior energy-efficient performance, reliability and infinitesimal variable capacity control.

**Enhanced Capital Allowance scheme:** LogiCool FreeCool is included on the Energy Technology List, offering the potential for investors to claim 100% first-year capital allowance. For details see [www.eca.gov.uk](http://www.eca.gov.uk).

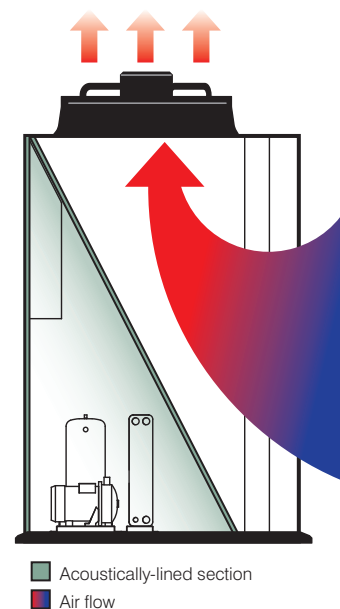
### Key technical data

- > 20kW or 40kW cooling modules
- > Air cooled with integrated free-cooling capability
- > EERs\* up to 2.6, ESEERs\*\* up to 3.0 and FSEERs\*\*\* up to 4.2
- > Compact footprint (from 1.5m<sup>2</sup>) and modular design
- > Advanced AireTronix Controls and remote access from any BMS
- > Innovative digital-scroll compressor technology
- > Direct-drive axial fan with optional EC fan motor technology
- > Efficient plate evaporator with EEV refrigerant controls
- > Designed and optimised for R410A refrigerant

\* EER (Energy Efficiency Ratio)

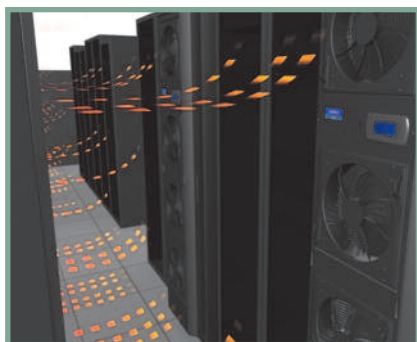
\*\* ESEER (European Seasonal Energy Efficiency Ratio) is based on the part load efficiency of LogiCool FreeCool over a year and is a better indicator of real energy draw and running costs

\*\*\* FSEER (Free-cooling Seasonal Energy Efficiency Ratio) is an Airedale rating based on the part load efficiency of LogiCool FreeCool over a year and incorporates the benefits of free-cooling

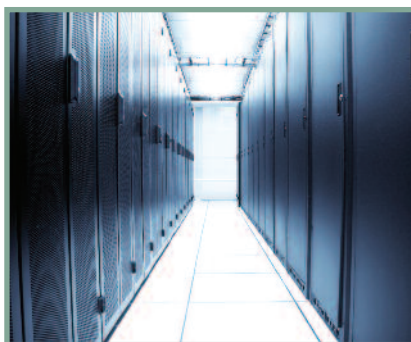


Unit layout showing acoustically-lined section away from unit air flow

### Typical applications



Direct rack cooling



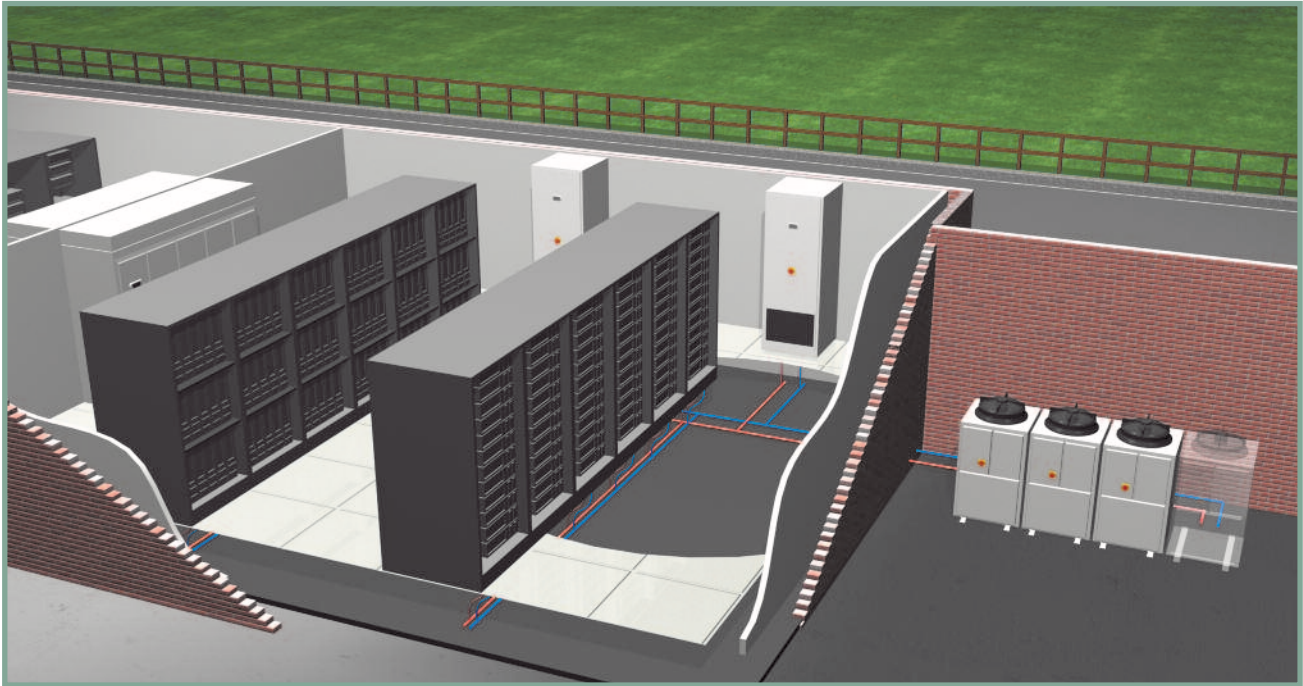
Server rooms



Clean rooms

# LogiCool FreeCool

Features, benefits and options



Example of a typical Airedale data centre solution showing LogiCool FreeCool supplying chilled water directly to server racks and to Airedale precision air conditioning units

## Energy efficient features

- > Integrated, simultaneous free-cooling capability and large surface area free-cooling coil for optimum energy efficiency
- > Digital-scroll compressor technology for precise temperature control, increased efficiency at partial load and reduced system water volumes
- > AireTronix control system for intelligent and optimum system control, N+1 redundancy and full communication with BMS systems
- > Automatic rescheduling of chilled water setpoint for optimal control
- > Large surface area condensing coils maximise energy efficiency
- > High efficiency plate evaporator, with EEV refrigerant controls, gives raised evaporating temperature for enhanced compressor performance
- > Designed and optimised for R410A refrigerant giving greater efficiency and lower refrigerant charge
- > Pre-charged, factory pressure and leak-tested to ensure F-gas compliance and greater efficiency

## Additional features

- > Compact footprint (from 1.5m<sup>2</sup>) and modular design for side-by-side positioning
- > Single DX circuit
- > Condensing coils and water connections located at the rear allowing close side-by-side positioning

## Energy efficient options

- > Cleverly-designed axial fans use latest EC motor technology for ultimate condenser efficiency at full and part load, giving increased performance at reduced power input
- > Intelligent Sequence Control of up to eight chillers
- > Power meter for internal energy monitoring

## Additional options

- > Optional run and standby water pumps
- > Factory-fitted, sealed system expansion tanks

## Key benefits

- > Connects to direct rack cooling systems
- > Modular, expandable solution as load increases
- > Simultaneous DX/free-cooling reduces life cycle costs
- > Flexible individual or multi-rack cooling
- > Latest, high technology AireTronix controller
- > Infinitesimal variable capacity control
- > Reduced minimum system water volumes
- > Exceptional part load efficiencies
- > Proven reliability for business critical applications
- > Easily linked to Airedale/other manufacturers' precision air conditioning systems

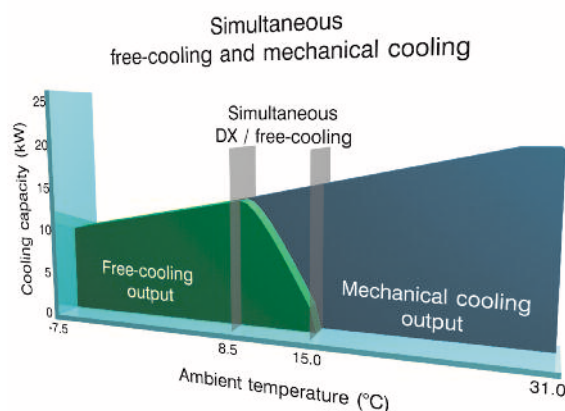
### Key feature: Simultaneous mechanical / free-cooling reduces life-cycle costs

Continuous system operation and the high temperatures of a server environment in relation to cooler outdoor air, allow LogiCool FreeCool to operate in free-cooling mode most of the time and virtually energy-free. Free-cooling operates with as little as 1°C differential between ambient and return fluid temperatures. LogiCool FreeCool's integrated, simultaneous mechanical / free-cooling solution achieves 0-100% free-cooling and offers substantial energy savings throughout the year particularly as LogiCool FreeCool will always use free-cooling first before initiating mechanical cooling. During any mechanical cooling, LogiCool FreeCool retains its excellent EER, ESEER and FSEER\* values.

Fine-tuning of water setpoints by the AireTronix controls according to seasonal variations in ambient temperatures; the ability of LogiCool to self-optimize and the large surface area cooling coils which lengthen the periods of free-cooling, all contribute to LogiCool typically saving more than 50%\*\* of the energy consumed by a conventional chiller.

\* FSEER (Free-cooling Seasonal Energy Efficiency Ratio) is an Airedale rating

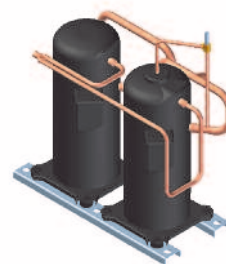
\*\* Based on Met. Office average ambient figures for London, UK at 16/21°C, 20% ethylene glycol



### Key feature: Digital scroll compressors for best part load efficiencies

Innovative digital scroll compressor technology combined with intelligent AireTronix controls and electronic expansion valves offer full modulating control of the unit's DX capacity, achieving unmatched part load efficiencies reflected in high EERs.

Since LogiCool FreeCool has a minimum turndown ratio of 10% (40kW unit), the required system water volume can be reduced. This negates the need for additional buffer vessels normally associated with a close coupled system and enables the unit to be connected directly to the rack.



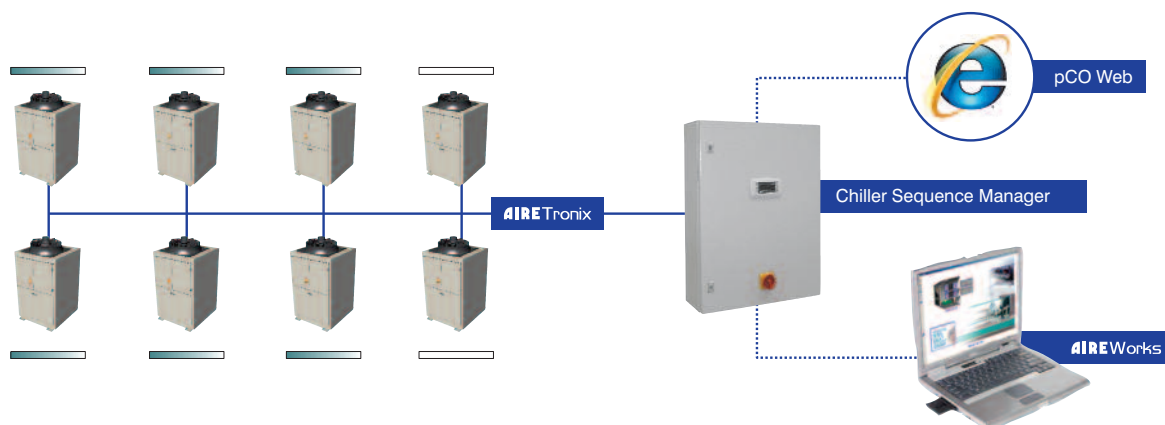
### Key feature: Compact and modular for close positioning

Use of R410A refrigerant and cutting-edge engineering has allowed components to be carefully sized down within a compact case. Condensing coils have been positioned at the rear, further minimising the footprint and allowing close, side-by-side positioning. All refrigeration and water components have been ingeniously contained within an acoustically-lined, fully-enclosed section away from the unit air flow. Part load operation, fan specification and R410A-induced thicker compressor shells also contribute to substantially reduced sound levels.

### Key option: Chiller Sequence Manager

A super-intelligent control system, the Chiller Sequence Manager integrates up to eight LogiCool FreeCool units into a seamless operating system pre-programmed to run as master/slave or run/standby. The master controller will manage the cooling system for the most energy-efficient solution ensuring equal wear on compressors. It allows remote or time zone set point adjustment across the sequence and will react immediately to critical alarms and network failure.

As a further option, Airedale's supervisory plug-in card pCOWeb can be fitted. Communicating with the Chiller Sequence Manager is then simply a matter of logging onto the office Intranet or the web.





## AIRETronix High technology, modulating controls are key to energy efficiency

Pivotal to LogiCool FreeCool's acute intelligence is advanced AireTronix control technology. Linked to key components within the cooling system, the fully-programmable AireTronix microprocessor manages and self-optimises the LogiCool FreeCool for maximum energy efficiency. Via the user-friendly, in-built display, the operator/end user has the power to further fine-tune the system.

Multiple chillers can be networked to work in unison and intelligently rotate cooling stages via the optional Chiller Sequence Manager.



## Supervision and integration

The network-capable AireTronix controller can be readily integrated with a wide range of BMS protocols including:

- > AireWorks intelligent software programme
- > Airedale's new generation of pCOWeb supervisory plug-in cards based on Ethernet TCP/IP technology
- > Other commonly-used protocols include LonWorks®, Modbus®, BACnet™, TCP/IP, SNMP, TREND and METASYS®.

For more details of Airedale's services including:

- > Software program design
- > After-Sales service including chiller sequencing
- > Network setup and integration
- > Remote Monitoring Centre
- > Live Demonstration Centre

For more details, contact Airedale on +44 (0)113 239 1000 or [controls@airedale.com](mailto:controls@airedale.com)

## Technical specifications

LogiCool FreeCool									
Model no.	Nominal cooling duty (kW) <sup>1</sup>	EER <sup>2</sup>	ESEER	Nominal free-cooling duty (kW) <sup>3</sup>	Free-cool EER	FSEER	Sound pressure @10m (dBA)	Dimensions (HxWxD) (mm)	Operating weight (kg)
LCC20	18.2	2.6	2.5	12	12.2	3.4	53	2060 x 1160 x 1290	540
LCC40	33.7	2.4	3.0	21	11.1	4.2	54	2230 x 1370 x 1400	635

<sup>1</sup> At nominal conditions of 12/7°C water in/out, 35°C ambient, 20% ethylene glycol  
<sup>2</sup> EER = DX (mechanical cooling) duty ÷ compressor and fan input power  
<sup>3</sup> Based on water in/water out 12/7°C, DX cooling water/flow rate, 20% ethylene glycol, ambient 5°C

## LogiCool OnRak: High efficiency rear door heat exchanger

Designed to manage discharge temperatures from the server into the aisle, the OnRak deals with the heat load close to the source and is highly efficient in floor space and power usage.

**Simple connections:** The OnRak can be supplied with an industry standard data rack (42 - 47U) or a mating frame to fit a customer-specific rack. Only 200mm deep, the OnRak ensures minimal impact into the aisle space.

**EER up to 166:** Enhanced by smart control logic and EC fan technology, the OnRak can achieve up to 88% annual saving in power input compared with a typical precision air conditioning unit with the same capacity.

**Resilient, future-proof:** One OnRak unit offers 33kW (n) cooling with optional 28kW (n+1) fan configuration to maximise uptime. One or more OnRak units can be linked to a free-cooling chiller.

The LogiCool FreeCool can also supply chilled water to Airedale's precision air conditioning products including the SmartCool, EasiCool and AlphaCool.



OnRak integrated with rack cabinet

## Airedale energy efficiency

At Airedale we work with our customers to deliver quality, reliable, energy-efficient cooling solutions that are right for each application and the environment. Dedicated research and innovative design combined with a vast pool of knowledge and a state-of-the-art Test Centre mean that Airedale technology never stands still and is continually moving forward. Our committed team of engineers are constantly developing new products for improved performance balanced with even better energy efficiency.

## ChillerGuard Service Plan – maintaining your chiller's efficiency

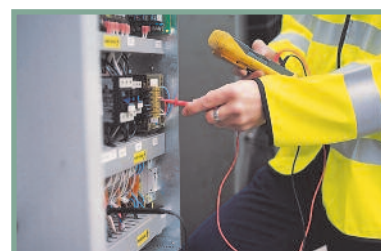
The LogiCool FreeCool is a highly efficient chiller. To make sure its full efficiency is realised after leaving our factory, we provide as standard, a first year **ChillerGuard** Service Plan with every LogiCool FreeCool. An Airedale commissioning engineer will set the chiller to work on site and optimise the control settings in order to meet the user's original specification and the environment into which the unit has been installed.

Once commissioned the **ChillerGuard** Service Plan provides a planned, preventative maintenance package to sustain the optimum efficiency of the LogiCool FreeCool and enable the user to see real savings in energy costs and reduced carbon emissions.

A priority, 24/7 emergency helpline; professional support and call-out service is on hand throughout the year with guaranteed response by a fully qualified Airedale engineer. **ChillerGuard** also ensures you are F Gas compliant and incorporates a full parts and labour warranty for the first 12 months.

For more information visit [www.airedale.com](http://www.airedale.com)

For customers outside the UK, our international distributors trained by Airedale would be pleased to offer service on Airedale units.



- > For the latest information on our products please visit: [www.airedale.com](http://www.airedale.com)
- > Please refer to the technical manuals for more detailed information

Your nearest Airedale distributor is:



ISO 14001  
EMS2006



ISO 9001  
FMS0542



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