AIREDALE
air conditioning for every environment

AlphaCool close control range

8 - 101kW

8 - 101kW

> AlphaCool

Typical applications

- > Data Centres
- > Telecommunications and ISP facilities
- > Computer rooms
- > Clean rooms
- > Switching stations
- > Laboratories

www.airedale.com

ADDITIONAL CAPACITIES NOW AVAILABLE
Plus EC fan option

AlphaCool range

Specifications

Overview

The AlphaCool range of close control air conditioning units is designed in a fully configured package to be quiet and easy to install. High efficiency condenser and evaporator coils combined with carefully selected components ensure the lowest possible life-cycle costs in an excellent value package.

The AlphaCool range is ideal for high-tech environments where performance and reliability are essential. The design is both aesthetically appealing and exceptionally rigid. The cabinets are manufactured from galvanised sheet steel with epoxy baked powder paint, built around a welded space frame to provide maximum strength, durability and allowing full service from the front.

Standard features such as direct drive, anti-vibration fans, AireTronix controls and optional EC fans, keep the AlphaCool range at the forefront of market technology; whilst the modular construction and extended range of options ensures there is a unit for every application. The range features 102 models with nominal cooling capacities ranging from 8kW to 101kW, available in DX, chilled water and glycol free-cooling versions.

Key technical data

- 8kW to 101kW cooling capacity
- 102 model sizes
- Upflow and downflow configurations
- Front, rear and base return air options (upflow only)
- DX, chilled water and glycol free-cooling systems
- Single, double and triple circuit models
- Optional backward curved EC fan upgrades for indoor units
- Advanced AireTronix controls technology
- Electronic expansion valves
- Scroll compressor technology*
- Direct drive fan technology (9-19 models only)

* Due to their superior energy efficiency, selected compressors are registered under the Enhanced Capital Allowance scheme for tax relief - details on www.eca.gov.uk

AlphaCool front view
Detailing the AireTronix controls, electric heat and modulating humidifier

Typical applications

Laboratories

Computer rooms

Energy saving features and options

- Designed and optimised for R407C refrigerant
- Backward curved EC fan upgrades for indoor units (option)
- High efficiency independent, dual or triple refrigeration circuits
- AireTronix controller allows for intelligent unit control, optimum system efficiency and full communication to BMS system
- Energy efficient hermetic scroll compressors
- High efficiency fan motors (ECA approved) (option)
- Optimised evaporator coils for maximum capacity ensures lowest cost per kW output
- Glycol free-cooling (models DF65 - 90 only)
- Electronic expansion valves provide up to a 30% increase in operational efficiency (fully adjustable from the display) further reducing operating costs (option)
- Intelligent, variable head pressure control ensures energy efficient operation of the condenser fans while protecting the system during low ambient conditions (option)
- Low pressure hot water coils inclusive of fully modulated 3-way valve for accurate reheat control (option)
- Monitoring and adjustment of the head pressure from the AireTronix display for quick and simple on site commissioning (option)

More features

- Backlit display allows for password protection along with on-site adjustment and interrogation of all major components
- Direct drive fans allow for easy on site airflow adjustment and reduced noise vibration transmission (models 9 - 19 only)
- Front access to all major components facilitates quicker and easier service and maintenance
- 20mm acoustic insulation on all panels minimises case noise breakout for quieter operation
- G4 rated pleated disposable filters give superior high performance with lower airside pressure drops
- All service connections located at one end of the unit to facilitate quicker and easier installation and maintenance
- Sight glass and filter drier included for system reliability
- Multilingual display (French, German, Spanish and English)
- Integrated clock card for date and time tagging of alarms
- Factory fitted mains isolator conforms to International safety standards
- Standard RAL 7035 colour ensures an aesthetic match to almost all applications

More options

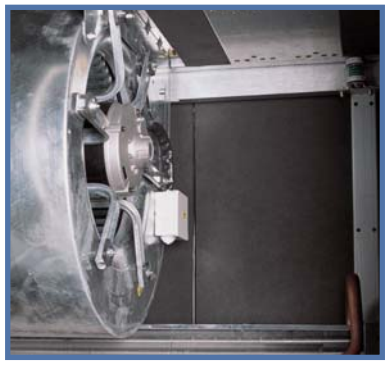
- Modbus, Trend, Lonworks and Carel BMS interface cards ensure full network connectability
- Night time set-back reduces condenser fan speed at pre-set hours during the day or night for noise sensitive applications
- Split-case design simplifies site access and improves unit mobility
- Reversed fan configuration available
- Front, rear and base return airflow configurations (upflow only) for application versatility
- Upgraded fan motors for applications requiring high external static pressure or increased air flow
- Integrated plenum designed to match unit aesthetics (upflow only)
- High performance condensate pump, incorporating high level alarm contacts, enables greater volume flow and increases flood protection
- G6 rated filters for high efficiency filtration
- Modulating capacity output control humidifier ensures precise control and optimised life-time via the integrated water conductivity sensor
- Low, medium and high water conductivity bottles, for optimised operation and extended life
- Electric heating
- Fire, flood and smoke detection
- Phase rotation detection
- Duct extensions, constructed and finished to match the unit to enhance aesthetics
- Open and enclosed floor stands

AlphaCool range

Features and options

Key feature: Direct drive fans (models 9-19 only)

Models 9-19 of the AlphaCool range feature double inlet, forward curved, direct drive, centrifugal fans as standard. The direct drive fans have an integral shaft-mounted motor which is statically and dynamically balanced for quiet operation. Fan speed, airflow and external pressure are controlled via the AireTronix controller in conjunction with voltage controller. Utilising the unit-mounted AireTronix screen settings, the fan speed can be varied within seconds to maintain optimum performance offering easy on-site adjustment.



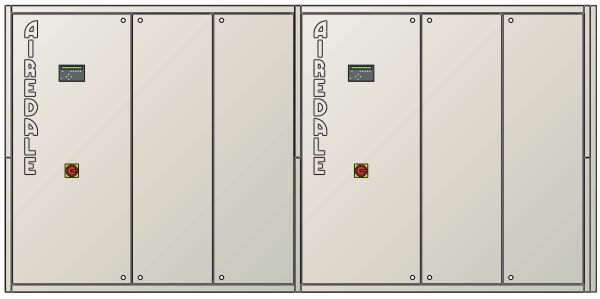
Anti-vibration mounted direct drive fan

Key feature: Easy to install, service and maintain

All major components such as the expansion valves, compressor, humidifier, and chilled water valve are accessible from the front of the unit. Isolated from the airflow, the control panel can be worked on with the unit in operation, helping to simplify commissioning and maintenance.

Key feature: Modular design

The modular design of the AlphaCool range allows any size or model to be installed side by side in a variety of configurations . This means that two or more units can run together as a group to provide DX/DX, DX/CW or CW/CW multi-circuit functionality.



Key option: EC (electronically commutated) fans

Cutting-edge EC motor technology is offered as an option on indoor units for ultimate fan efficiency at full and part load. The cleverly-designed centrifugal fans use latest EC motor technology to convert AC to DC voltage, delivering increased performance at reduced power input. Utilising its highly efficient backward curved impeller, the EC fan system delivers efficient, speed controllable solutions reducing installation and commissioning timescales and minimising lifetime running costs.

Low energy EC fan showing efficient backward curved impeller

Key option: Time-based fan noise reduction

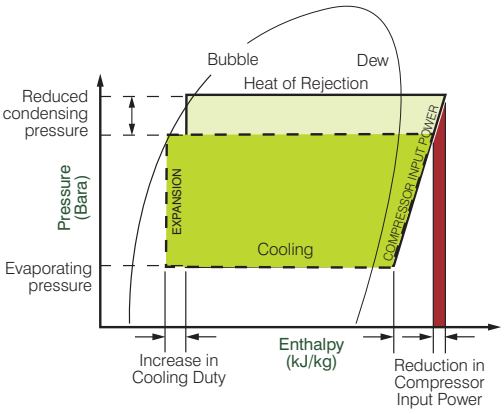
With the intelligent head pressure control feature active, the condensing pressure is controlled via the microprocessor. Based on pre-set, user-defined times, the head pressure set point can be artificially adjusted. In the evening for instance, when heat loads are low and the application may become more sound sensitive, the head pressure can be allowed to rise thus reducing the condenser fan noise footprint.

Time-based condenser fan noise reduction

Key option: Electronic expansion valves

Whilst offering versatile control at the full design duty of the unit, standard Thermostatic Expansion Valves (TEV) do not automatically optimise themselves to all operating conditions. Therefore, if the refrigeration system is operating at 40% or 50% of full load, especially at a lower outside ambient temperature than that for which the valve was sized, the conventional TEV must have the design head pressure available to ensure good refrigerant control. Maintaining an artificially high condensing pressure is normal in conventional systems.

Using an Electronic Expansion Valve (EEV) allows for good refrigeration control whilst operating at part load and lower ambient conditions with a reduced condensing pressure. By fitting an EEV and reducing the head pressure control setting an increase in the system Energy Efficiency Ratio (EER) of up to 30% can typically be seen. The Mollier diagram shown right helps to illustrate how this increase in efficiency is achieved.



Key option: Variable humidification

The sealed humidifier design ensures that only clean sterile steam is supplied to the conditioned area and corrosive salts and minerals are held in the disposable bottle. The steam is distributed through a sparge pipe fitted to the coil assembly.

Featuring modulating capacity output control as standard, the system provides continuous modulation of steam output in response to a proportional control signal. The output control range is 20%-100% of the humidifier rated value and is designed to ensure precise control of the conditioned space.

Humidifier assembly

Key option: Intelligent head pressure control

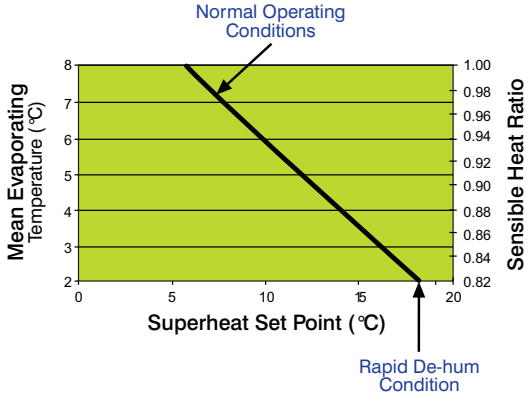
As an alternative to the standard head pressure control fitted to the outdoor condenser or condensing unit, the system can be fitted with a voltage regulating fan speed controller which allows set point adjustment and system monitoring via the indoor unit AireTronix microprocessor controller.

The condenser fan speed is modulated from the AireTronix controller to provide optimum control under varying ambient conditions, and the head pressure can be monitored via the AireTronix display console.

Key option: Rapid de-humidification (with EEVs fitted)

Controlled by the AireTronix microprocessor the electronic expansion valves (EEVs) can be modified independently of the suction line temperature. This unique feature allows the AireTronix controller to raise the superheat set-point, which in turn drops the evaporating temperature to a point at which considerable de-humidification takes place.

This increase in the de-humidification rate means that time taken to reduce the room humidity to the required level is drastically decreased, and with it the energy required to do so.The graph to the right shows the typical effect that the superheat set-point has on the evaporating temperature and sensible heat ratio.



AIRETronix intelligent controls

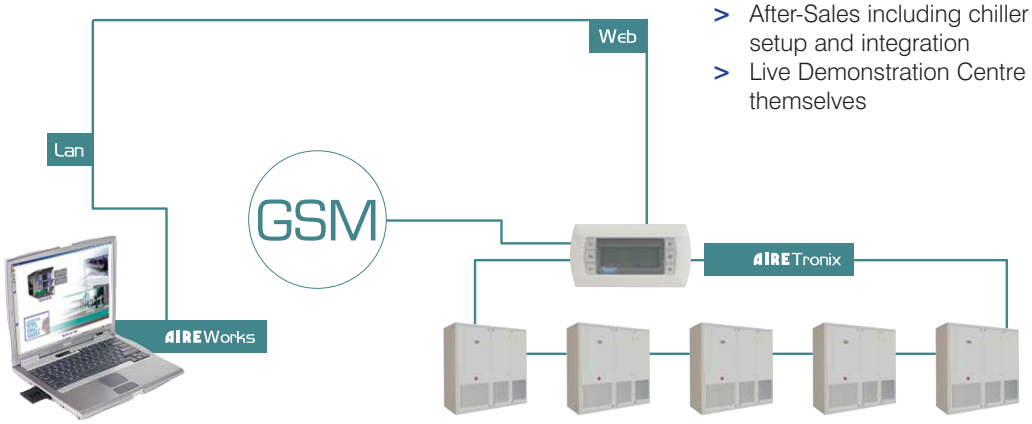
AlphaCool units are equipped with intelligent Airetronix microprocessors specially developed by Airedale to facilitate automation and optimisation of the system. The fully programmable microprocessors are linked with key components within the cooling system, allowing sophisticated, modulating and self-optimising control for increased energy efficiency. The controller's door-mounted display allows viewing of the unit's operating status and its multi-button keypad allows adjustment to control parameters by allowing the operator easy access to a menu system.

Standard microprocessor features:

- LCD backlit display
- Multi-Language (French, German, Spanish & English)
- 1MB FLASH program memory
- Remote on / off capability
- Compressor anti-cycle control
- Compressor hours run log and reset
- Duty rotation (networked units)
- Temperature and humidity sensor (return air)
- Visual alarm display
- Password protection

Duty/standby operation

AireTronix microprocessors can be set-up for duty/standby operation without the requirement for an external sequence panel. Up to six AlphaCool units can be networked together using proprietary Belden 2-core screened communication cable.



Interconnectivity

The network-capable AireTronix controller can be integrated with a wide range of BMS protocols including the Internet via an internal Ethernet plug-in card. The plug-in serial cards have options to communicate with the following systems – Carel, Modbus-Jbus, Trend, Echelon LonWorks devices and Metasys Johnson Controls. The following integration is also available:

- BACnet
- Fax, SMS and GSM
- SNMP (Simple Network Management Protocol) – used for Ethernet TCP IP

Supervisory and integration

AireWorks

AireWorks is an intelligent BMS software programme which links individual AlphaCool systems and Airedale chillers managed by AireTronix controllers and located on one or more sites, into a single, proactive control platform. With the click of a button, information can be pulled back automatically and used for remote monitoring and control including 24/7 alarm indication, time scheduling and adjustment of temperature setpoints for increased energy efficiency.

pCOWeb

pCOWeb supervisory plug-in cards make communicating with an Airedale unit purely a matter of logging onto the office Internet/Intranet. Based on Ethernet TCP/IP secure technology and SNMP features, pCOWeb requires no proprietary cabling or monitoring software, little or no set-up on site and is pre-programmed with an IP address.

GSM

For very simple remote alarm indication, the AireTronix controllers can be fitted with a modem serial card which allows connection to "dual band" type or GSM modems. A recipient's mobile telephone number can be entered into the controller, allowing alarms to be sent to any required personnel.

Airedale Controls - additional services

- Software program design that will manage everything in the air conditioning system, fine-tuning it for energy efficiency
- Remote Monitoring Centre – a tele-monitoring bureau service for customers with critical sites
- After-Sales including chiller sequencing, network setup and integration
- Live Demonstration Centre led by the programmers themselves

DX units

Model no.	Total cooling capacity (kW)		Sensible cooling capacity (kW)		Dimensions (H x W xD) mm	Sound pressure 'A'@ 3m (dBA)		Sound pressure 'X'@ 3m (dBA)		Airflow m³/S	Rec mains fuse size 'A' (A)		Rec mains fuse size 'X' (A)	
	DF	UF	DF	UF		DF	UF ¹	DF	UF ¹		DF	UF	DF	UF
9	8.3	8.4	8.0	8.1	1940 x 900 x 800	34	36	36	49	0.65	25	25	32	32
13	10.7	10.9	10.4	10.6	1940 x 900 x 800	39	42	43	56	0.87	40	40	40	40
16	13.1	13.4	12.8	13.0	1940 x 900 x 800	45	47	46	56	1.09	40	40	50	40
19	16.3	16.6	15.0	15.3	1940 x 1450 x 800	43	45	46	56	1.5	50	40	50	50
23	19.7	20.0	19.5	19.9	1940 x 1450 x 800	47	49	49	56	1.9	40	32	50	50
25	24.7	25.2	23.8	24.3	1940 x 1450 x 800	50	52	52	61	2.1	40	40	50	50
23D	21.2	20.5	21.1	20.4	1940 x 1450 x 800	49	50	50	59	2.2	20	20	32	40
31D	26.2	25.4	25.9	25.2	1940 x 1450 x 800	54	55	55	60	2.8	25	25	40	50
35D	28.9	28	28.6	27.8	1940 x 1450 x 800	57	58	57	62	3.1	40	50	40	50
41D	37.1	36.0	36.8	35.7	1940 x 2000 x 800	50	60	52	62	3.4	40	50	50	50
45D	40	38.8	39.5	38.3	1940 x 2000 x 800	52	63	56	67	3.8	50	50	63	63
50D	40.1	38.9	40.1	38.9	1940 x 2000 x 800	53	63	54	64	4.0	63	50	50	50
55D	49.5	48	48.5	47.1	1940 x 2000 x 800	55	66	57	68	4.4	63	63	63	63
65D	55.0	53.4	54.7	53.1	1940 x 2550 x 800	54	59	59	66	5.0	63	63	63	80
80D	68.6	66.6	67.4	65.4	1940 x 2550 x 800	58	63	63	69	5.8	80	80	100	100
90D	83.3	80.8	80.5	78.1	1940 x 2550 x 800	60	65	64	70	6.5	80	100	100	100
65T	52.6	n/a	52.7	n/a	1940 x 2550 x 800	54	n/a	n/a	n/a	5.0	50	n/a	n/a	n/a
80T	59.8	n/a	59.8	n/a	1940 x 2550 x 800	58	n/a	n/a	n/a	5.8	50	n/a	n/a	n/a
90T	77.5	n/a	75.6	n/a	1940 x 2550 x 800	60	n/a	n/a	n/a	6.5	80	n/a	n/a	n/a

> Nominal cooling based on 'A' models at 24°Cdb / 45%RH and 35°C ambient
> 'A' models are matched with Air Cooled Remote Condensing units (CU/CUSD)
> 'X' models are matched with Air Cooled Remote Condensers (C)
> 'D' suffix indicates double circuit DX
> 'T' suffix indicates triple circuit DX
> 'DF' - downflow, 'UF' - upflow
> Fuse size based on full function unit with electric heat and humidifier
(1) Sound data based on front return air configuration

* The models highlighted feature compressors which, due to their superior energy efficiency, are registered under the Enhanced Capital Allowance scheme for tax relief - details on www.eca.gov.uk

Chilled water units

Model no.	Total cooling capacity (kW)		Sensible cooling capacity (kW)		Dimensions (H x W x D) mm	Sound pressure @ 3m dBA		Airflow m³/S	Rec mains fuse size (A)	
	DF	UF	DF	UF		DF	UF ¹		DF	UF
9	8.6	8.9	8.5	8.2	1940 x 900 x 800	34	36	0.65	32	32
13	11.0	11.3	10.9	10.6	1940 x 900 x 800	39	42	0.87	40	40
16	13.2	13.6	13.2	13.0	1940 x 900 x 800	45	47	1.09	40	40
19	19.1	19.7	18.9	18.4	1940 x 1450 x 800	43	45	1.5	50	50
23	23.2	24.0	23.2	22.7	1940 x 1450 x 800	47	49	1.9	40	40
25	27.52	28.43	27.09	26.34	1940 x 1450 x 800	50	52	2.1	40	40
31	31.4	30.5	31.4	30.5	1940 x 1450 x 800	54	50	2.8	32	50
35	48.84	47.44	45.84	43.61	1940 x 1450 x 800	57	58	3.1	32	50
41	47.1	45.8	46.1	43.8	1940 x 2000 x 800	50	60	3.4	50	63
45	51.5	50.03	50.71	48.23	1940 x 2000 x 800	52	63	3.8	63	63
50	59.5	57.8	56.9	54.1	1940 x 2000 x 800	53	63	4.0	63	63
55	69.97	67.97	65.47	62.28	1940 x 2000 x 800	55	66	4.4	63	80
65	68.3	66.3	67.1	63.8	1940 x 2550 x 800	54	59	5.0	63	80
80	85.4	82.9	81.9	77.9	1940 x 2550 x 800	58	63	5.8	80	100
90	93.7	91.0	90.5	85.6	1940 x 2550 x 800	60	65	6.5	80	100
95	101	98.11	95.22	90.57	1940 x 2550 x 800	60	65	6.5	80	100

> Nominal cooling based on 24°Cdb / 45%RH and 7°C/12°C water temperatures
> 'DF' - downflow, 'UF' - upflow
> Fuse size based on full function unit with electric heat and humidifier
(1) Sound data based on front return air configuration

Free-cooling units

Model no.	Total cooling capacity (kW)	Sensible cooling capacity (kW)	Dimensions (H x W x D) mm	Total free cooling capacity (kW)"	Water / glycol flow rate (1/s)	Sound pressure @ 3m dBA	Airflow m³/S	Rec mains fuse size (A)
	DX			FREE COOLING				
DF65GFCT	58.8	56.4	2215 x 3190 x 800	37.7	2.0	56	5.0	80
DF80GFCT	64.5	63.0	2215 x 3190 x 800	43.9	2.2	59	5.8	63
DF90GFCT	80.8	77.7	2215 x 3190 x 800	50.7	2.8	62	6.5	80

> Nominal DX cooling based on 24°Cdb / 45%RH and 35°C entering glycol temperature
> Nominal free cooling based on 24°Cdb / 45%RH and 20% glycol mixture at entering water / glycol of 7.2°C
> Fuse size based on full function unit with electric heat and humidifier

For data detailing enhanced performance using optional EC fans, please contact Airedale on +44 (0) 113 239 1000.

> For the latest information on our close control products please visit: www.airedale.com
> Please refer to the technical manuals for more detailed information

Your nearest Airedale distributor is:

ISO 14001
EMS52086

ISO 9001
FM00542

AIREDALE
air conditioning for every environment

Airedale International Air Conditioning Limited

Leeds Road, Rawdon
Leeds, LS19 6JY, England

T : +44 (0) 113 239 1000
F : + 44 (0) 113 250 7219
E : enquiries@airedale.com
W : www.airedale.com

A MODINE Company

ENG-PR-CC-ALPHAC-04/08