



SmartCool^{DX}

DX Computer Room Air Conditioner
51-140kW



The Global Critical Cooling Specialist



Global Locations:

- **Leeds, UK**
Global Headquarters
Chillers, R&D, Test
Labs, Training Centre
- **Bradford, UK**
CRACs, CRAHs, Fan
Walls, Test Centre
- **Consett, UK**
Air Handling Units
- **Guadalajara, ES**
CRAHs, Fan Walls, Test Labs
- **India**
CRAHs, Fan Walls
- **Rockbridge, VA, US**
Chillers, Test Lab
- **Grenada, MS, US**
CRAHs, Fan Walls, Test Lab
- **Dubai, UAE**
Sales Office

In industries where cooling is critical, you need a critical cooling specialist. Airedale by Modine is a world leader in the delivery of innovative thermal management solutions in mission critical environments like data centers, healthcare and telecoms. As part of the US-based Modine group, our global organisation is Engineering a Cleaner, Healthier World™.

At Airedale, we believe that air conditioning has a critical role to play in an ever-changing world. We also passionately believe that air conditioning manufacturers must play a responsible role in an era where sustainability is key to the preservation of our planet.

Airedale's success is testament to its long standing history of providing flexible, innovative, and efficient cooling solutions.

Our systems approach and ability to combine hardware and software ensures that cooling systems work smarter, not harder, to deliver more cooling for less power with 24/7 availability.

Airedale's product pedigree is further enhanced via significant software and service capabilities; providing complete visibility, harmony, support and autonomy of our installations.

SmartCool^{DX}

SmartCool™ is Airedale's flagship range of computer room air conditioners (CRACs) and computer room air handlers (CRAHs). SmartCool DX is a next generation, highly efficient, indoor packaged unit providing extremely precise, reliable climate control.

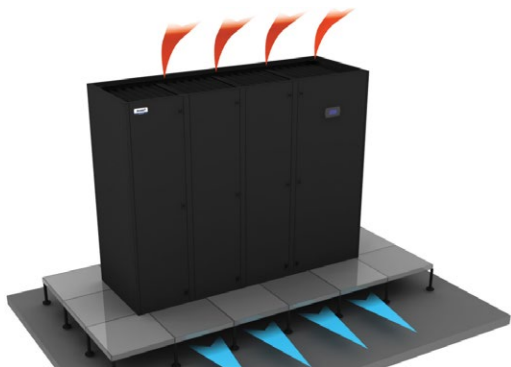
Applied cutting edge technology enables SmartCool to quietly and precisely control room temperature, humidity and air quality to ensure efficient, reliable, 24/7 operation of sensitive systems in data centers and other critical applications.

Optimise your unit selection

SmartCool gives clients the flexibility to optimise unit selection to match the considerations of your specific project – whether a new or retrofit application or driven by cost, efficiency, space, noise, resilience and/or ambient conditions.

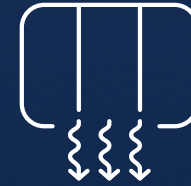
Choose from 81 downflow models available in:

- 4 system types, dual circuit:
 - DX air cooled (51–140kW)
 - DX air cooled with chilled water (51–130kW)
 - DX water cooled (51–130kW)
 - DX water cooled with glycol free-cooling (50–130kW)
- 4 case sizes



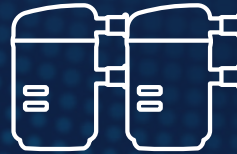
EER up to 34% more efficient*

Enhanced by tandem compressors, EC motors, electronic expansion valves and the latest EC plug fan technology



Downflow configuration

Delivers cold air through floor-mounted grilles directly to the front of the server racks. Ensures optimum air flow management and eliminates hot spots



Tandem compressors = staged cooling

Fixed speed tandem compressors offer four stages of cooling across four system configurations



EC backward curved fans with composite impellers = up to 70% more efficient

Particularly at part load between 30% and 100%, EC fans respond seamlessly to load fluctuations



Variable humidification = up to 80% less power

Efficient de-humidification uses less mechanical cooling and minimum re-heat whilst maintaining precise de-humidification control



Efficient slab coil design incorporating dual cool 2N redundancy and free-cooling variant

Two independent cooling mediums in the same case, with automatic changeover and duty share (option on 51–130kW models)

SmartCool^{DX}

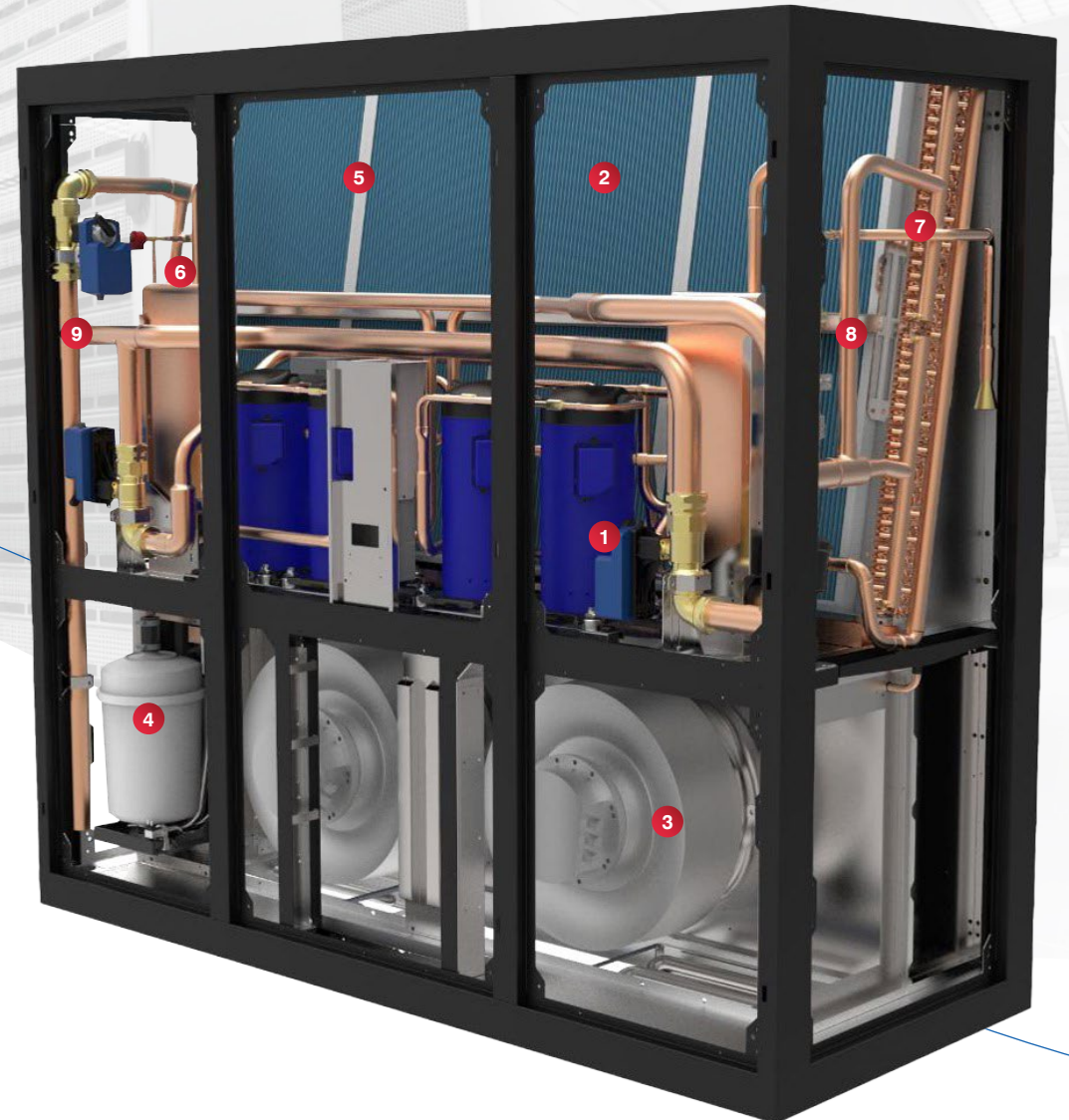
Features

- 1 Tandem scroll compressors**
Fixed speed tandem R410A compressors offer four stages of cooling across four system configurations.
- 2 Large surface area filters**
Reduced airside pressure drops and improved airflow resulting in increased performance and reduced fan power usage.
- 3 EC backward curved fans with composite impellers**
Up to 70% more efficient, particularly at part load between 30% and 100%; EC fans respond seamlessly to load fluctuations.
- 4 Variable humidification**
Up to 80% less Power. Efficient de-humidification uses less mechanical cooling and minimum re-heat whilst maintaining precise de-humidification control.
- 5 Optimised heat exchangers**
Slab coil with hydrophilic coated fins; offers two circuits configured to reduce down time.

- 6 Electronic Expansion Valves**
Deliver 30% increase in efficiency.

DX water cooled and DX water cooled with glycol free-cooling features:

- 7 Reduced waterside pressure drops**
With plate condensers and free-cooling coils configured in parallel on the waterside, total unit pressure drop is reduced and efficiency is increased.
- 8 Bypass leg with own control valve**
Ensures that the unit pressure drop can be regulated at all times whether it is operating in free-cooling mode, concurrent cooling or full DX. Controlling to a fixed pressure drop ensures the system flow rate remains constant.
- 9 Flow Sensor**



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Features (continued)

- 1 Minimum space claim**
Fits through a standard door.
- 2 Plug and Play**
Preconfigured, packaged units with optional, colour touch screen microprocessor display for seamless fine-tuning.
- 3 Robust welded case construction**
- 4 Intelligent Design**
Fans and all main components accessible from front for easy access/maintenance.
- 5 Downflow configuration**
Delivers cold air through floor-mounted grilles directly to the front of the server racks. Ensures optimum air flow management and eliminates hot spots.
- 6 Lift off door hinges**
- 7 360° access**
360° unit access via fully detachable panels as well as all service connections located at one end of the unit facilitates installation and maintenance.

Optimised air flow and pressure management

By delivering the right amount of air flow, at the correct temperature to the server inlet, SmartCool ensures optimum air flow management and eliminates hot spots. Furthermore, water side pressure drops are reduced, and unit efficiency is increased, thanks to a new slab coil design.



SmartCool^{DX}

Integrated, Intelligent Control

helix

Helix™ is a controls platform developed in house by a team of dedicated controls engineers. It represents the bonding of hardware, software and innovation provided as standard within every Airedale product.

- Dynamic demand adjustment for precision control of temperature, humidity and airside (air volume, air pressure).
- Optional touch screen Vu™ display.
- Compressor rotation.
- Discrete compressor staging or proportional BLDC compressor control.
- Dynamic compressor envelope management.
- Constant superheat via EEV control.
- Intelligent, variable head pressure control for increased efficiency (adjustable from display).
- Networking of units for rotation.
- Active alarm and historical alarm summary at user display for diagnostic purposes.
- Supervisory capability for ACIS™ or third party BMS.
- Constant air volume control (option):
 - Controls air flow through the unit.
 - EC fans speed up to prevent system performance dropping off due to resistance such as dirty filters.
- Optional Energy Manager for local and remote energy analysis and monitoring.



SmartCool^{DX}

Features

Options

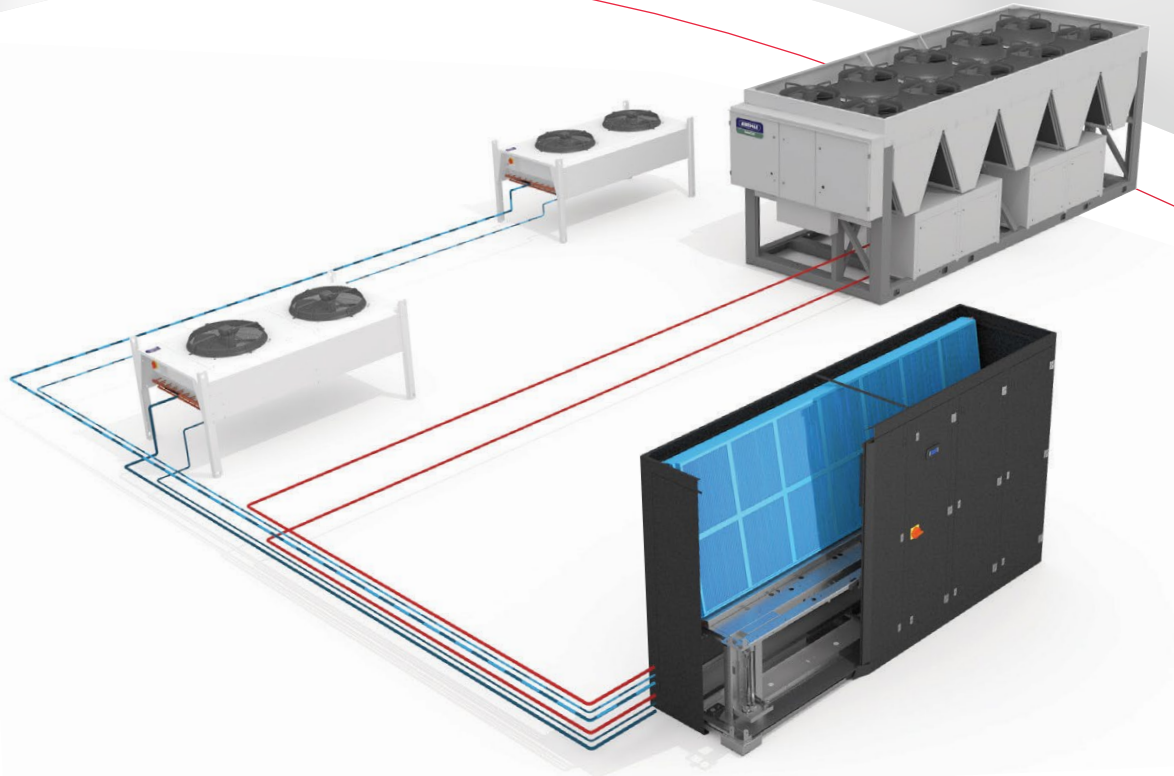
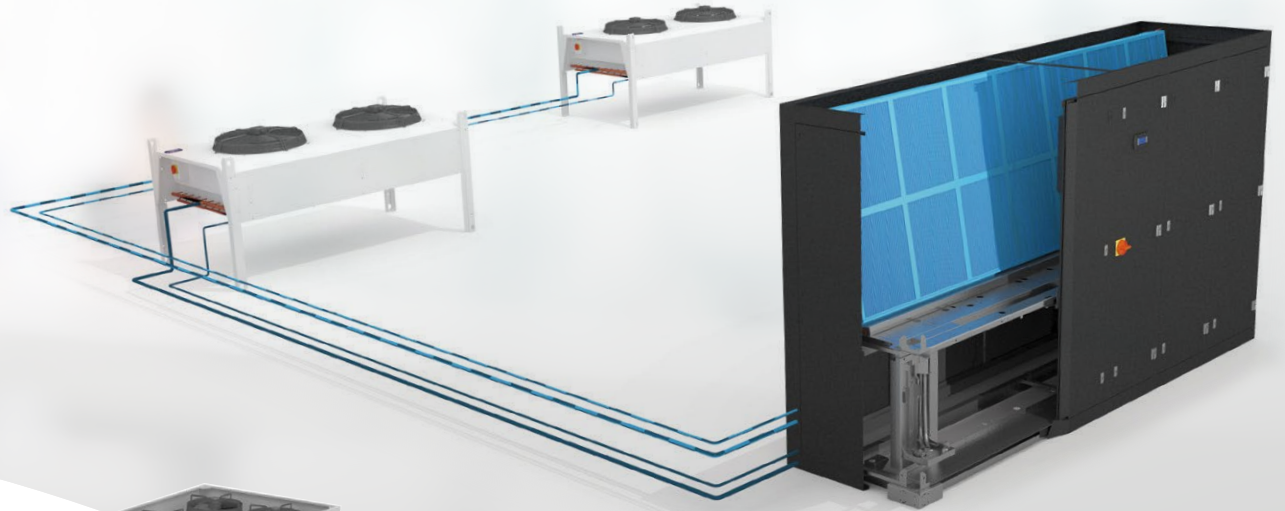
- Vu™ 4.3" touchscreen interface
- Dual power supply for redundancy and flexibility
- Electrical supply phase rotation protection
- Electronic soft start for minimal full load current
- Power monitoring to manage energy consumption
- Ultracap UPS option to backup power to the controller in the event of a power failure
- Drip tray level sensor
- High efficiency ISO-C-80 rated, pleated disposable filters give superior high performance with lower airside pressure drops
- Optional smart ambient cooling kits available for temperatures down to -40°C
- Refrigerant leak detection for F Gas compliance
- Night-time set-back limits sound emissions in noise sensitive applications by reducing condenser fan speed at pre-set hours
- Dual purpose condensate pump for humidifier and condensate drains
- Staged electric heating during dehumidification to ensure thermal balance
- Thyristor-controlled electric heating for precise control



System configurations

Dual circuit – DX air cooled

An air cooled, R410A double circuit system, in this configuration SmartCool is linked to two separate, remotely mounted air-cooled condensers. The system is located within the conditioned space, absorbing room heat and transferring it outside to the condensers. By using tandem fixed scroll compressors across the circuit, capacity can be more precisely matched to application.



Dual cool – DX air cooled and chilled water

For redundancy in critical applications, SmartCool dual cool offers two different cooling mediums, air cooled DX and chilled water, within the same case.

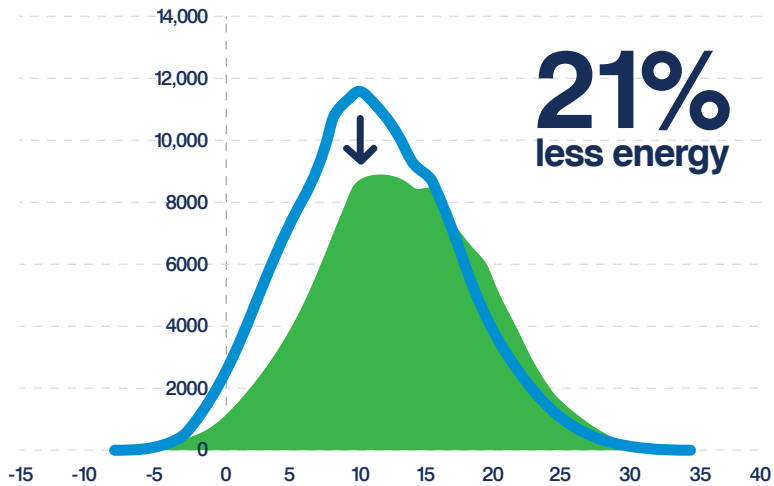
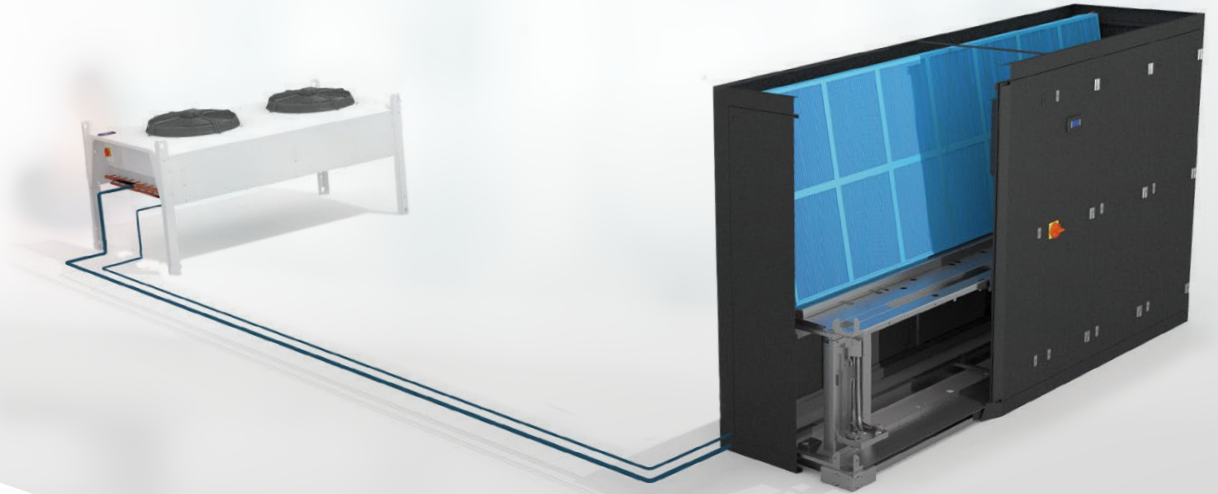
The system is managed by the helix™ microprocessor to select which medium acts as the primary source of cooling or which acts as back-up, should the primary source fail or is unable to cope with the heat load.

System configurations

Dual circuit – DX water cooled

Suitable for applications favouring reduced refrigerant charges, SmartCool Dual Circuit is a double circuit system featuring DX cooling within the case and dry coolers outside.

Warm room air is passed through an interlaced evaporator coil and an integral plate condenser transfers the heat load to the glycol solution which is then channelled outside to either one or two air cooled dry coolers (capacity dependant).



21%
less energy

Energy saving with free-cooling*

● Standard air cooled DX

Y axis: Energy consumed (kW)

● Free-cooling dual cool

X axis: Ambient temperature (°C)

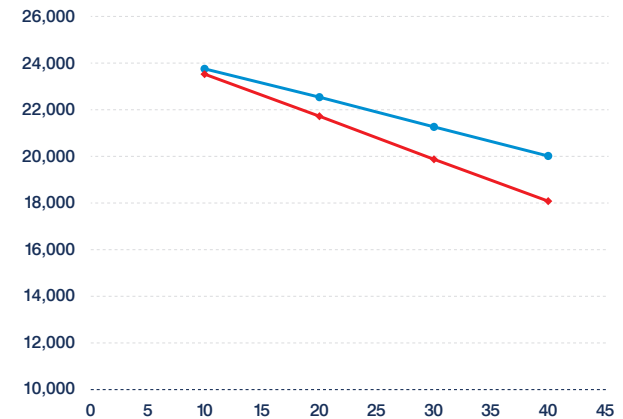
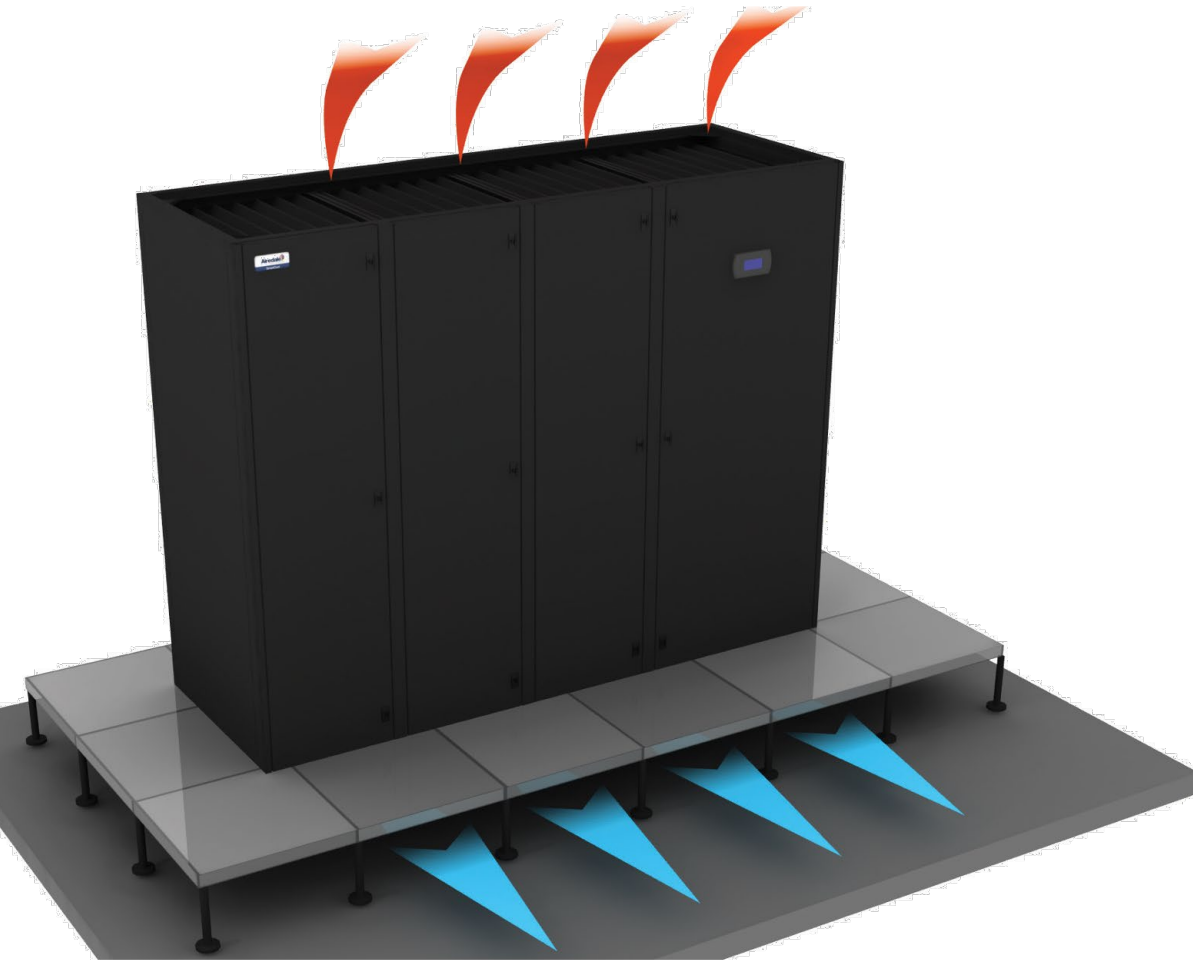
*Based on 24/7 operation in London with a base load of 70kW

Dual circuit – DX water cooled with glycol free-cooling

SmartCool Free Cool includes a free-cooling coil in conjunction with the evaporator. These models make use of the ambient air for cooling whenever the outdoor temperature is lower than the room temperature. High room temperatures and the large surface area coils of SmartCool increase the opportunity for free-cooling. At times of higher ambient, sophisticated helix™ controls technology will modulate the 2-way water regulating valves to transition from free-cooling back to mechanical cooling. Typically, the SmartCool dual circuit free-cooling system uses 21% less energy* than a standard air-cooled DX system.

*Based on 24/7 operation in London with a base load of 70kW.

Precise conditioning – true capacity and humidity match



Two stage vs four stage cooling – the energy saving benefits

- Two stage cooling
 - ◆ Four stage cooling
- Y axis: Annual running cost (£)
X axis: Variable load (kW)

*Based on a total of 80kW with a variable load of up to 40kW, savings per annum would be £2,135.51 (11% less energy consumed)

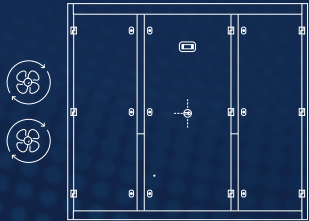
Staged DX cooling

SmartCool offers four stages of cooling across four system configurations via fixed speed tandem compressors. Staged cooling continually utilises the maximum coil area within the space enabling capacity to more precisely match the application, reducing power input.

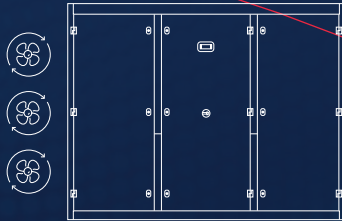
Balancing room temperature and humidity

The balance between temperature and relative humidity is intrinsically linked. By precisely controlling temperature, SmartCool accurately controls humidity. Its control-led, advanced components work in harmony, simultaneously balancing temperature, humidity and air flow to precisely match the load.

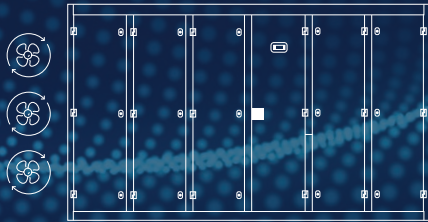
Model Information – DX Air Cooled



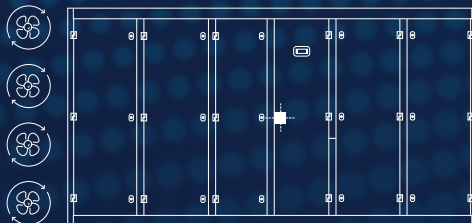
SC22 1980mm x 2200 x 890mm (HxWxD)
2x fans



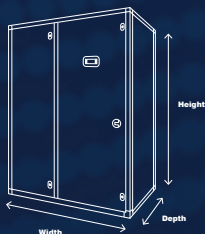
SC25 1980mm x 2500 x 890mm (HxWxD)
3x fans



SC31 1980mm x 3100 x 890mm (HxWxD)
3x fans



SC35 1980mm x 3500 x 890mm (HxWxD)
4x fans



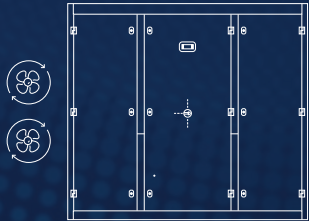
Model	Configuration	Case Size	DX Capacity TC (kW)	Secondary Cooling TC (kW)	EER	Air Volume (m ³ /s)	Sound Pressure @ 3m (dBA)
SC22D050-2X20-0	DX Air Cooled	SC22	51.0	N/A	3.80	4.7	56
SC22D059-2X20-0	DX Air Cooled	SC22	61.9	N/A	3.69	5.1	57
SC22D064-2X20-0	DX Air Cooled	SC22	68.7	N/A	3.52	5.4	61
SC22D074-2X20-0	DX Air Cooled	SC22	76.9	N/A	3.36	5.6	66
SC25D062-2X20-0	DX Air Cooled	SC25	63.9	N/A	3.84	5.7	55
SC25D068-2X20-0	DX Air Cooled	SC25	71.0	N/A	3.70	5.9	58
SC25D075-2X20-0	DX Air Cooled	SC25	79.9	N/A	3.51	6.2	58
SC25D085-2X20-0	DX Air Cooled	SC25	88.8	N/A	3.39	6.4	59
SC25D092-2X20-0	DX Air Cooled	SC25	94.8	N/A	3.36	6.7	59
SC31D069-2X20-0	DX Air Cooled	SC31	74.1	N/A	3.82	6.9	59
SC31D079-2X20-0	DX Air Cooled	SC31	83.7	N/A	3.61	7.2	59
SC31D089-2X20-0	DX Air Cooled	SC31	93.6	N/A	3.49	7.5	60
SC31D094-2X20-0	DX Air Cooled	SC31	100.0	N/A	3.48	7.8	62
SC31D108-2X20-0	DX Air Cooled	SC31	111.8	N/A	3.39	8.1	66
SC31D124-2X20-0	DX Air Cooled	SC31	125.7	N/A	3.40	8.1	66
SC35D079-2X20-0	DX Air Cooled	SC35	85.8	N/A	3.73	7.9	58
SC35D091-2X20-0	DX Air Cooled	SC35	96.3	N/A	3.60	8.2	59
SC35D098-2X20-0	DX Air Cooled	SC35	103.0	N/A	3.60	8.6	60
SC35D111-2X20-0	DX Air Cooled	SC35	115.6	N/A	3.48	9.0	61
SC35D127-2X20-0	DX Air Cooled	SC35	130.5	N/A	3.46	9.3	61
SC35D140-2X20-0	DX Air Cooled	SC35	143.2	N/A	3.32	9.6	63

DX data is based on nominal cooling at 24°C/45%RH 45°C condensing temperatures

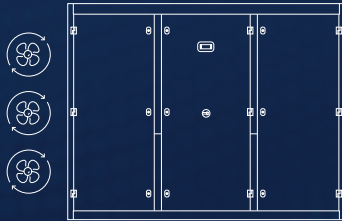
TC = Total Cooling



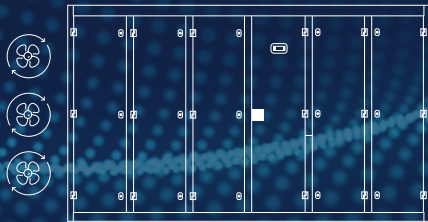
Model Information – DX Water Cooled



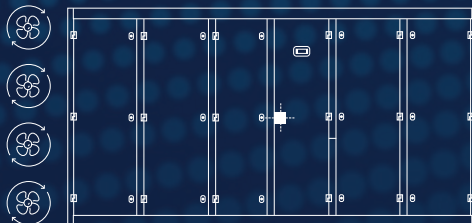
SC22 1980mm x 2200 x 890mm (HxWxD)
2x fans



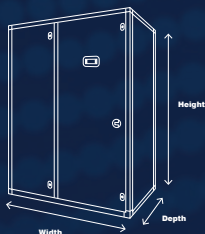
SC25 1980mm x 2500 x 890mm (HxWxD)
3x fans



SC31 1980mm x 3100 x 890mm (HxWxD)
3x fans



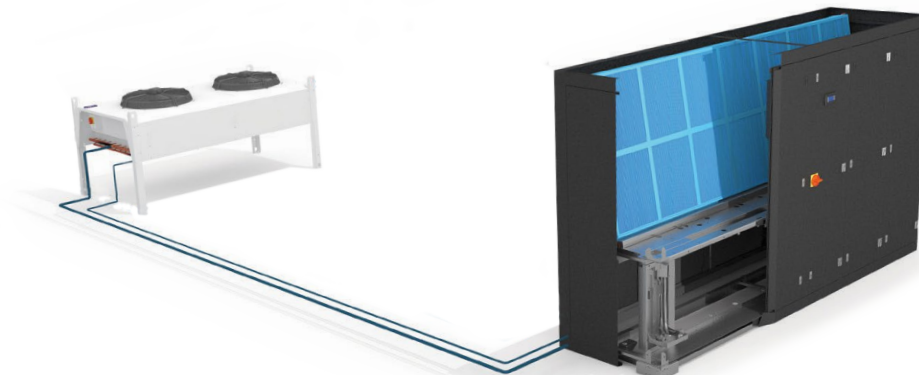
SC35 1980mm x 3500 x 890mm (HxWxD)
4x fans



Model	Configuration	Case Size	DX Capacity TC (kW)	Secondary Cooling TC (kW)	EER	Air Volume (m ³ /s)	Sound Pressure @ 3m (dBA)
SC22D050-2W20-0	DX Water Cooled	SC22	51.0	N/A	3.80	4.7	56
SC22D059-2W20-0	DX Water Cooled	SC22	61.9	N/A	3.69	5.1	57
SC22D064-2W20-0	DX Water Cooled	SC22	68.7	N/A	3.52	5.4	61
SC22D074-2W20-0	DX Water Cooled	SC22	76.9	N/A	3.36	5.6	66
SC25D062-2W20-0	DX Water Cooled	SC25	63.9	N/A	3.84	5.7	55
SC25D068-2W20-0	DX Water Cooled	SC25	71.0	N/A	3.70	5.9	58
SC25D075-2W20-0	DX Water Cooled	SC25	79.7	N/A	3.51	6.2	58
SC25D085-2W20-0	DX Water Cooled	SC25	88.8	N/A	3.39	6.4	59
SC25D092-2W20-0	DX Water Cooled	SC25	94.8	N/A	3.36	6.7	59
SC31D069-2W20-0	DX Water Cooled	SC31	74.1	N/A	3.82	6.9	59
SC31D079-2W20-0	DX Water Cooled	SC31	83.7	N/A	3.61	7.2	59
SC31D089-2W20-0	DX Water Cooled	SC31	93.6	N/A	3.49	7.5	60
SC31D094-2W20-0	DX Water Cooled	SC31	100.0	N/A	3.48	7.8	62
SC31D108-2W20-0	DX Water Cooled	SC31	111.8	N/A	3.39	8.1	66
SC31D124-2W20-0	DX Water Cooled	SC31	125.7	N/A	3.40	8.1	66
SC35D079-2W20-0	DX Water Cooled	SC35	85.8	N/A	3.73	7.9	58
SC35D091-2W20-0	DX Water Cooled	SC35	96.3	N/A	3.60	8.2	59
SC35D098-2W20-0	DX Water Cooled	SC35	103.0	N/A	3.60	8.6	60
SC35D111-2W20-0	DX Water Cooled	SC35	115.6	N/A	3.48	9.0	61
SC35D127-2W20-0	DX Water Cooled	SC35	130.5	N/A	3.46	9.3	61

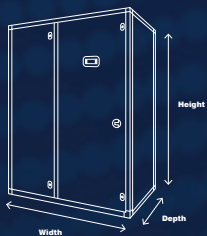
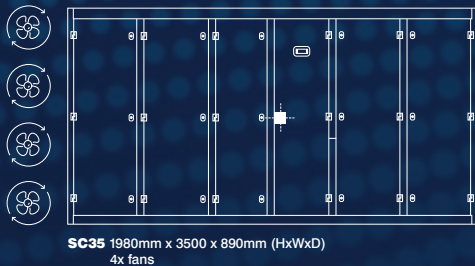
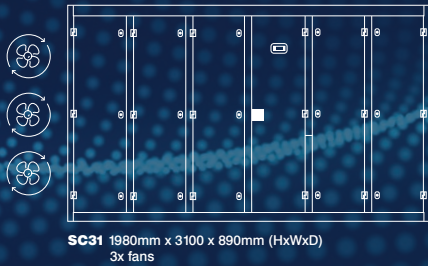
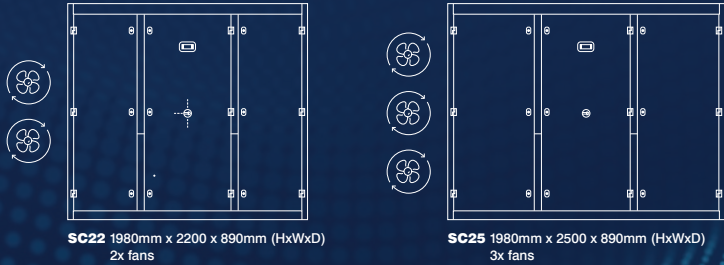
DX data is based on nominal cooling at 24°C/45%RH 45°C condensing temperatures

TC = Total Cooling



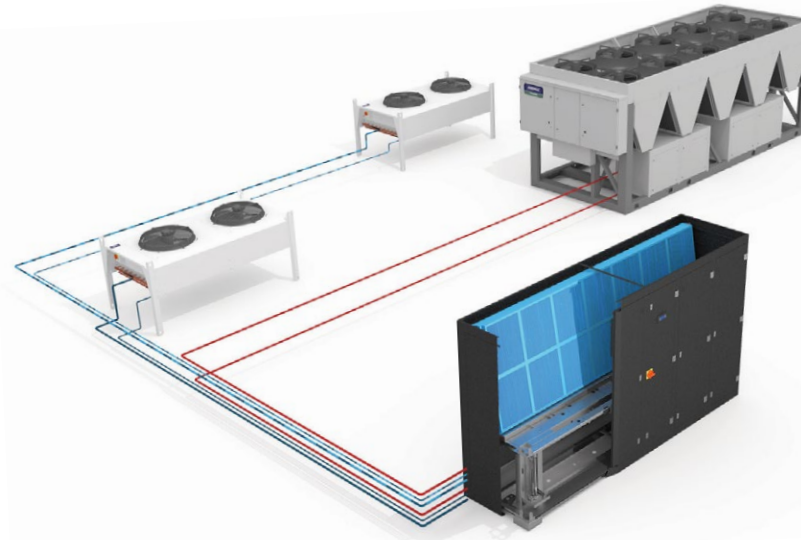
Model Information

– DX Air Cooled/ Chilled Water



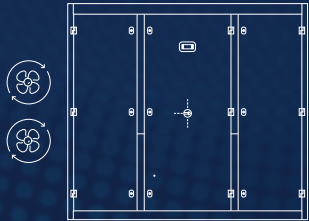
Model	Configuration	Case Size	DX Capacity TC (kW)	Secondary Cooling TC (kW)	EER	Air Volume (m ³ /s)	Sound Pressure @ 3m (dBA)
SC22D050-2X2C-0	DX Air Cooled/Chilled Water	SC22	51.0	68.7	22.71	4.7	56
SC22D059-2X2C-0	DX Air Cooled/Chilled Water	SC22	61.9	72.7	18.96	5.1	57
SC22D064-2X2C-0	DX Air Cooled/Chilled Water	SC22	68.7	75.6	16.56	5.4	61
SC22D064-2X2C-0	DX Air Cooled/Chilled Water	SC22	76.9	77.3	15.47	5.6	66
SC25D062-2X2C-0	DX Air Cooled/Chilled Water	SC25	63.9	80.8	20.61	5.7	55
SC25D068-2X2C-0	DX Air Cooled/Chilled Water	SC25	71.0	83.2	18.60	5.9	58
SC25D075-2X2C-0	DX Air Cooled/Chilled Water	SC25	79.7	86.2	17.01	6.2	58
SC25D085-2X2C-0	DX Air Cooled/Chilled Water	SC25	88.8	86.9	15.11	6.4	59
SC25D092-2X2C-0	DX Air Cooled/Chilled Water	SC25	90.9	87.0	13.38	6.7	59
SC31D069-2X2C-0	DX Air Cooled/Chilled Water	SC31	74.1	100.6	21.68	6.9	59
SC31D079-2X2C-0	DX Air Cooled/Chilled Water	SC31	83.7	103.9	19.54	7.2	59
SC31D089-2X2C-0	DX Air Cooled/Chilled Water	SC31	93.6	107.0	17.69	7.5	60
SC31D094-2X2C-0	DX Air Cooled/Chilled Water	SC31	100.0	109.8	16.14	7.8	62
SC31D108-2X2C-0	DX Air Cooled/Chilled Water	SC31	111.8	112.8	14.74	8.1	66
SC31D124-2X2C-0	DX Air Cooled/Chilled Water	SC31	125.7	112.8	14.74	8.1	66
SC35D079-2X2C-0	DX Air Cooled/Chilled Water	SC35	85.8	115.2	21.87	7.9	58
SC35D091-2X2C-0	DX Air Cooled/Chilled Water	SC35	96.3	118.9	19.70	8.2	59
SC35D098-2X2C-0	DX Air Cooled/Chilled Water	SC35	103.0	122.5	17.77	8.6	60
SC35D111-2X2C-0	DX Air Cooled/Chilled Water	SC35	115.6	126.7	15.73	9.0	61
SC35D127-2X2C-0	DX Air Cooled/Chilled Water	SC35	130.5	129.5	14.47	9.3	61

CW/Free-cool data is based on nominal cooling at 24°C/45%RH and 7/12°C water inlet/outlet temperature 0% glycol
TC = Total Cooling

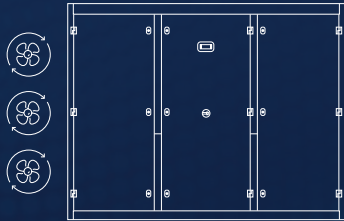


Model Information

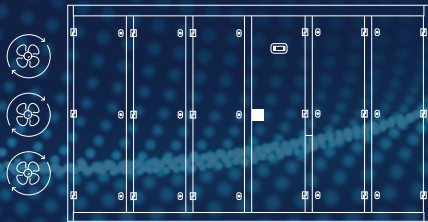
- DX Water Cooled/ Free Cooling



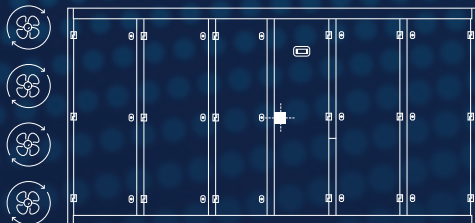
SC22 1980mm x 2200 x 890mm (HxWxD)
2x fans



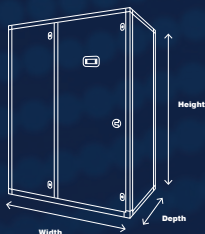
SC25 1980mm x 2500 x 890mm (HxWxD)
3x fans



SC31 1980mm x 3100 x 890mm (HxWxD)
3x fans



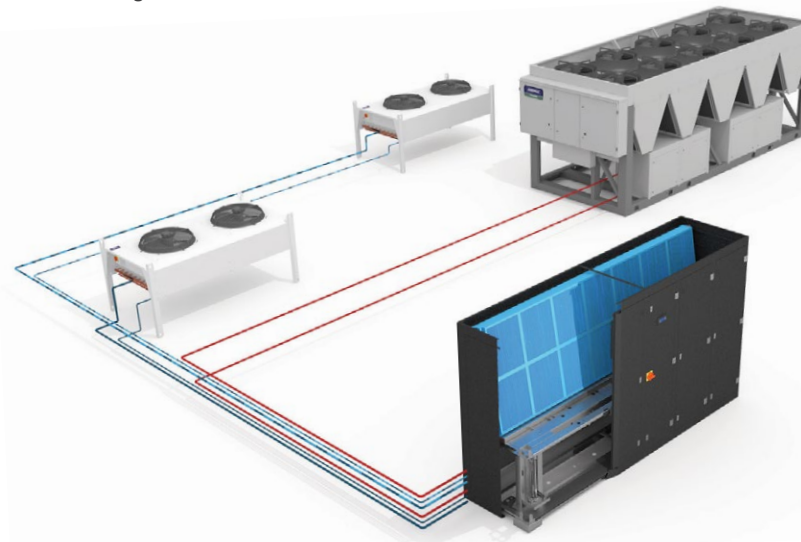
SC35 1980mm x 3500 x 890mm (HxWxD)
4x fans



Model	Configuration	Case Size	DX Capacity TC (kW)	Secondary Cooling TC (kW)	EER	Air Volume (m ³ /s)	Sound Pressure @ 3m (dBA)
SC22D050-2W2F-0	DX Water Cooled/Free Cooling	SC22	51.0	68.7	22.71	4.7	56
SC22D059-2W2F-0	DX Water Cooled/Free Cooling	SC22	61.9	72.7	22.71	5.1	57
SC22D059-2W2F-0	DX Water Cooled/Free Cooling	SC22	68.7	75.6	16.56	5.4	61
SC22D074-2W2F-0	DX Water Cooled/Free Cooling	SC22	76.9	77.3	15.47	5.6	66
SC25D062-2W2F-0	DX Water Cooled/Free Cooling	SC25	63.9	80.8	20.61	5.7	55
SC25D068-2W2F-0	DX Water Cooled/Free Cooling	SC25	71.0	83.2	18.60	5.9	58
SC25D075-2W2F-0	DX Water Cooled/Free Cooling	SC25	79.7	86.2	17.01	6.2	58
SC25D085-2W2F-0	DX Water Cooled/Free Cooling	SC25	88.8	86.9	15.11	6.4	59
SC25D092-2W2F-0	DX Water Cooled/Free Cooling	SC25	90.9	87.0	13.38	6.7	59
SC31D069-2W2F-0	DX Water Cooled/Free Cooling	SC31	74.1	100.6	21.68	6.9	59
SC31D079-2W2F-0	DX Water Cooled/Free Cooling	SC31	83.7	103.9	19.54	7.2	59
SC31D089-2W2F-0	DX Water Cooled/Free Cooling	SC31	96.6	107.0	17.69	7.5	60
SC31D094-2W2F-0	DX Water Cooled/Free Cooling	SC31	100.0	109.8	16.14	7.8	62
SC31D108-2W2F-0	DX Water Cooled/Free Cooling	SC31	111.8	112.8	14.74	8.1	66
SC31D124-2W2F-0	DX Water Cooled/Free Cooling	SC31	117.3	112.8	14.74	8.1	66
SC35D079-2W2F-0	DX Water Cooled/Free Cooling	SC35	85.8	115.2	21.87	7.9	58
SC35D091-2W2F-0	DX Water Cooled/Free Cooling	SC35	96.3	118.9	19.70	8.8	59
SC35D098-2W2F-0	DX Water Cooled/Free Cooling	SC35	103.0	122.5	17.77	8.6	60
SC35D111-2W2F-0	DX Water Cooled/Free Cooling	SC35	115.6	126.7	15.73	9.0	61
SC35D127-2W2F-0	DX Water Cooled/Free Cooling	SC35	130.5	129.5	14.47	9.3	61

CW/Free-cool data is based on nominal cooling at 24°C/45%RH and 7/12°C water inlet/outlet temperature 0% glycol

TC = Total Cooling



IQity™ Software Framework



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S I T E

ACIS™

Facility Management System

S Y S T E M

Cooling System Optimizer™

Intelligent cooling management

P R O D U C T

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We are there when you need us



Life cycle support for critical cooling

Our UK based 24/7 emergency helpline and call out service is available 365 days of the year, ensuring that we are always on hand to provide expert advice and immediate help, day or night. Guaranteed emergency response times mean that a qualified Airedale engineer will be with you in an agreed timeframe, therefore maximising your system's uptime.

For non-UK clients, we offer a service partner network across Europe and the Middle East.

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Our air conditioning service plans offer a preventative air conditioning maintenance service solution to improve system resilience and increase the longevity of your cooling system.

Planned maintenance not only assists in preventing unit breakdowns in business-critical environments, but also helps to improve energy efficiency and enhance system optimisation for improved performance. Over the life cycle of the product this can lead to reduced running costs, improved carbon footprint and quicker returns on investment.

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With over £1.5 million worth of stock on site at its Leeds headquarters, Airedale is the UK's largest stockist for air conditioning parts and specialist HVAC spares and can deliver worldwide.



Vodafone data
centre update

“Reliability and the level of service that Airedale offers are key issues for a business critical location such as this. The project ran very smoothly.”



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