



# Precision Cooling Solutions

FOR MISSION CRITICAL INFRASTRUCTURE



## OVERVIEW

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Since 2003, CANATEC has been committed to research and development of mission critical infrastructure cooling solutions and has continually enhanced on its range of products to meet the unique infrastructure expectations.

Growing demands for highly efficient and energy savings cooling solutions to cope with rising heat load within smaller footprints, has prompted the need for continuous improvement to its cooling systems to achieve the stringent requirements for precise temperature and humidity control.

CANATEC's Computer Room Air-Conditioning (CRAC) systems are designed with superior quality and cutting edge technology, ensuring reliability and efficiency within the highly sensitive mission critical environment. To maintain the highest level of quality control, all procedures are carried out in accordance to ISO 9001:2015 Quality Management Systems and stringent quality control practices.

Priding with dedication to continually offer cutting edge precision cooling equipment, CANATEC offers businesses with different cooling solutions to help them achieve precise temperature and humidity control in the mission critical environment. On top of that, CANATEC's compact and modular CRAC systems can be customized to meet unique site conditions and energy efficient specifications while achieving optimal space utilization.

CANATEC's precision cooling series are specially developed for the following applications :

- > Data Centres / Server Rooms
- > Telecommunications Facilities
- > Command Centers
- > Production Facilities / Test Laboratory



# CANATEC COOLING SOLUTIONS

CANATEC Precision Cooling systems are engineered with high reliability and efficiency, to ensure precise temperature and humidity control in the most stringent environment. Manufactured with **high quality frame structure, components and an intelligent microprocessor**, the modular and compact units are scalable and can be customized to meet unique engineering requirements.

The Containment System and Environmental Monitoring System can be incorporated into your data centre to improve on airflow management and allows for real time equipment status updates through remote monitoring.



## PRECISION COOLING SYSTEMS



### ME SERIES

#### Single Circuit (25kW to 180kW)

- > Air Cool / Water Cool / Chilled Water
- > Upthrow / Downthrow configuration
- > R407C / R410A Refrigerant
- > Option for inverter scroll compressor, dropdown fan

#### Dual Circuit (25kW to 150kW)

- > Air Cool / Water Cool / Chilled Water to Chilled Water
- > Upthrow / Downthrow configuration
- > R407C / R410A Refrigerant
- > Option for inverter scroll compressor

### R SERIES (20kW to 66kW)

- > Air Cool / Chilled Water
- > Rack Cooling, side throw configuration
- > R410A Refrigerant
- > Hot or cold aisle configuration
- > Option for inverter scroll compressor



### GUARDIAN SERIES (5kW to 33kW)

- > Air Cool / Chilled Water
- > Upthrow / Downthrow configuration
- > R410A Refrigerant
- > Option for inverter scroll compressor



### CONTAINMENT SYSTEM

- > Hot or cold aisle configuration
- > Airflow Management



### ENVIRONMENTAL MONITORING SYSTEM

- > Monitors environmental threats
- > Utilise sensors to detect changes
- > Warning and alert messages to be sent to users and operators
- > Auto data logging for investigation and tracking purposes



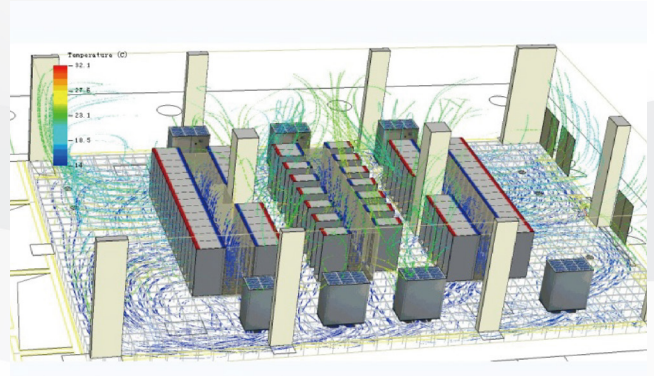




### FEATURES

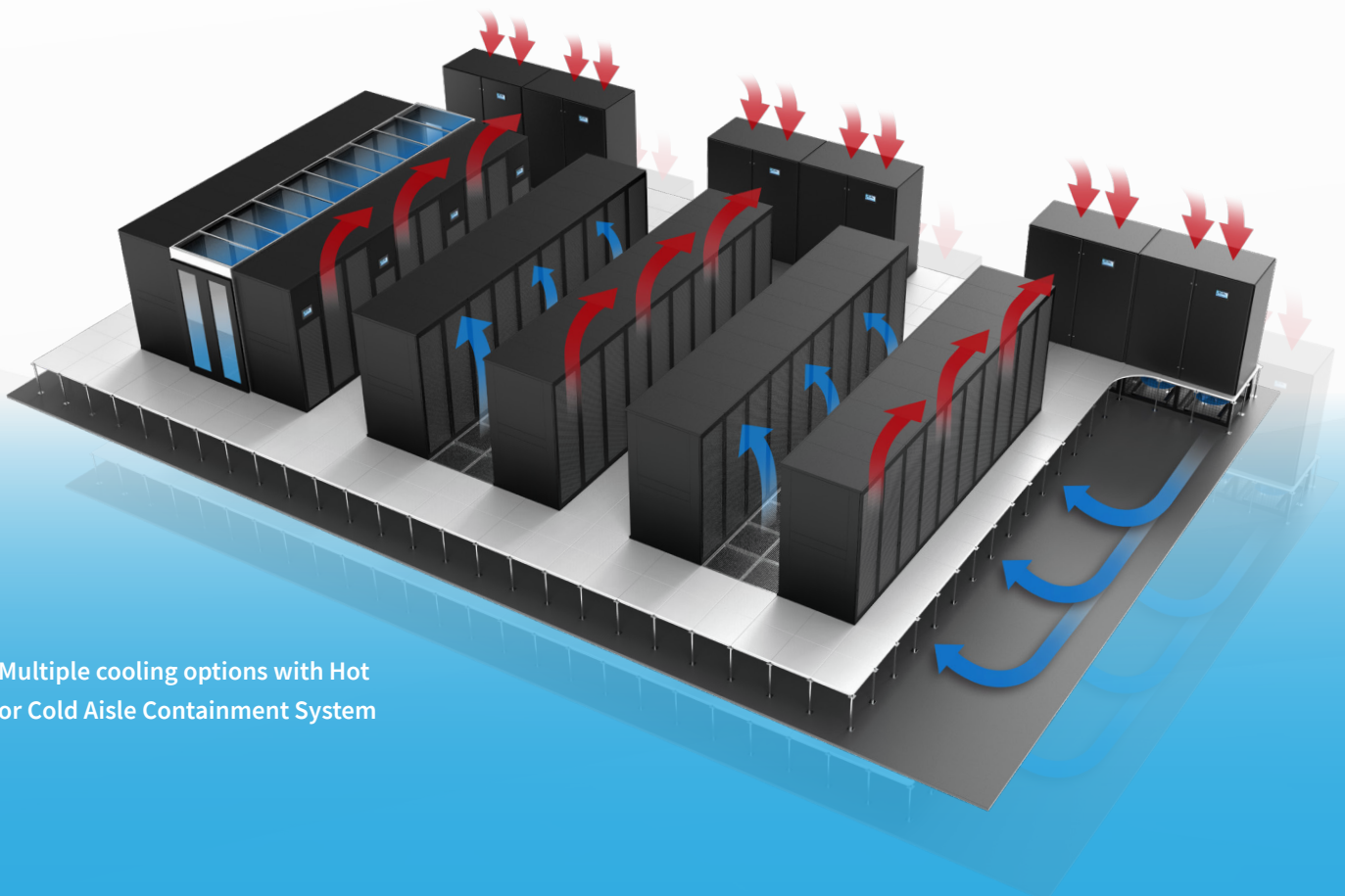
#### MODULAR, COMPACT & CUSTOMIZABLE

- › Smaller footprint at higher capacities – space savings with more cooling
- › Scalability with modular coil design provides flexibility for future add-ons
- › Multi-redundancy in operation and maintenance – independent compressors and condensers operating configuration
- › Customizable in engineering design and monitoring



#### ENERGY SAVINGS AND EFFICIENT

- › **EC Fans** effectively save up to 30% energy with temperature change at partial load
- › **Variable Speed Drive** provides continuous adaptation to cooling demand, resulting in higher energy savings and accurate temperature control
- › Soft start control leads to a near zero inrush current and improves EER
- › **Computational Fluid Dynamics Simulation** technology to optimize unit and layout design for efficiency
- › **Electronic Expansion Valves** automatically adjust degree of opening according to the unit load



Multiple cooling options with Hot or Cold Aisle Containment System



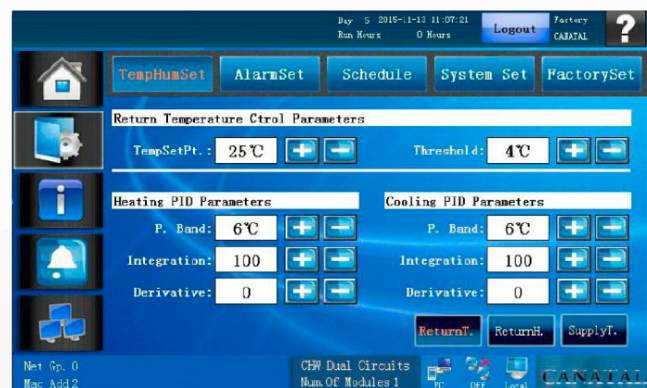
# INTELLIGENT CONTROLS

## KN10 MICROPROCESSOR CONTROLLER

The new intelligent controller with 7" touch screen supports multiple operating modes such as ambient temperature & humidity, operating parameters and conditions of components, system's operating pressure, supply and return air conditions, water inlet and outlet temperatures.



- Intelligent LAN connection mode to synchronize system's status and coordinate operational functions
- Built-in memory chip to preserve settings and data
- Multiple level password protection
- Automatically adjusts fan speed to load change to start energy saving operation mode
- Over 32 types of alarm functions to monitor indoor environment & operating conditions of components in a real-time manner
- Built-in RS485 communication port to provide multi-level local and remote control modes



## CO-WORK™



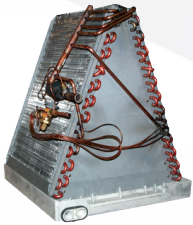
Co-Work™ is based on an unique multi-master network system used to maximize performance, reliability and manageability of our precision cooling systems. It adopts advanced concept of distributed calculation which ensures the security and stability of the entire network.

Each unit has independent unit control operating on Co-Work™ network, offering functions of scheduled rotation, mutual backup and coordinated work schedule, in accordance to site requirements for automatic unit control. The network also has "Multiple Masters" which provides maximum redundancy should a master controller experience technical difficulty.



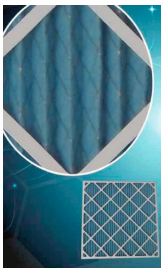


## SYSTEM DESIGN



### SYMMETRICAL A/V FRAMED COIL DESIGNS

- › Internally threaded copper coils and aluminum fins allow uniform air return and low resistance
- › Precise control of cooling and dehumidification
- › Quiet, efficient cooling performance



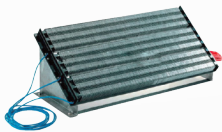
### AIR FILTER

Positioned at the top for downflow units and from the front on upflow units, this filter complies with ASHRAE 52-76 and EN 779 G4 standards with 30% efficiency. Can be easily removed for maintenance, cleaning and replacement.



### AIR PRESSURE / FILTER SENSOR

With a differential switch being used to sense the abrupt decrease in air pressure or blockage in the filter, it will disconnect the power to the compressor for safety purposes.



### PTC HEATER

- › Modulating temperature reheating
- › Reliable and energy efficient performance
- › Easy maintenance and long service life



### DRAIN PAN

An insulated stainless steel condensate drain pan designed for trapping and redirecting the water leak.







### SCROLL TYPE COMPRESSOR

- > Air cooled series units are fitted with scroll type compressor, operating with R410A or R407C refrigerant
- > Limited vibration with low noise level
- > Precautionary safety relay device incorporated to prevent reverse rotation of the compressor
- > Provides high level of efficiency
- > Comes with thermal protection



### BRUSHLESS BACKWARD CURVED EC FAN

The state-of-art EC technology fan provides optimum energy saving at up to 30% at partial load and allows highly efficient ventilation.

- > Low heat emission
- > High efficiency at low rotation speed
- > Energy demand is 50% lesser than standard motors
- > Programmable custom made settings
- > Maintenance free operation
- > Fan speed automatically adjusted according to load



### ELECTRONIC EXPANSION VALVE

Opening degree are automatically adjusted to unit's load.



### MODULATING VALVES

Modulating 2 / 3 way valves controlled by a microprocessor, measuring the water flow of the chilled water flowing into the chilled water coil.







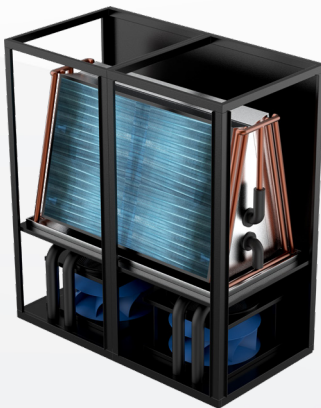
## ME SERIES (25 – 180 kW)



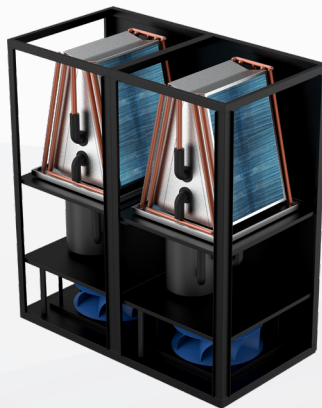
CANATEC ME series systems are designed with quality and cutting edge technology for precise cooling and humidity control to ensure reliability and efficiency in the 24/7 operation within highly sensitive environment. Being a compact and modular floor standing unit, ME series units offer higher cooling capacity at a smaller footprint with much flexibility. Supporting both single and dual cooling sources, ME series are specially developed for precise environmental control applications such as Data Centres and Telecommunications facilities.

### FEATURES AND BENEFITS

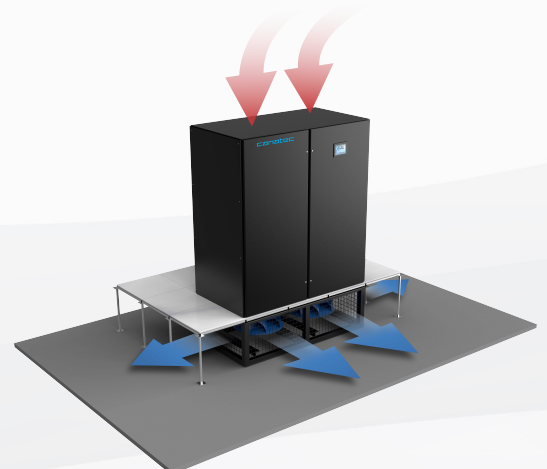
- > Brushless background curved EC fan
- > Automatic variable speed controls
- > Electronic expansion valves
- > Symmetrical A/V Coil Designs
- > Co-Work™ dynamic network
- > DC Inverter scroll compressor option
- > Upthrow or downthrow air configuration
- > Modular design and construction



Chilled Water Series



Air Cooled Series



Downthrow – Dropdown Fan

## R SERIES (20 – 60 kW)

CANATEC R series feature highly efficient rack in-row cooling, uniformed temperature and air distribution. The side throw airflow pattern provides close proximity cooling, suitable for high density servers and the cold/hot aisle containment settings.

Specifically tested to ensure better PUE, energy savings and to support up to 5 configurable modules, the R series are suited for rapid deployment and expansion to achieve high efficiency while extending equipment lifespan. Suitable for data centres, server farms, telecommunications facilities and server rooms.



W300mm

W600mm

### FEATURES AND BENEFITS

- > Multi-Processor distributed framework
- > Automatic variable speed controls
- > Electronic expansion valves
- > Cold or hot aisle configuration
- > CoWork™ dynamic network
- > Utilizing environmental friendly refrigerant

## GUARDIAN SERIES (5 – 40 kW)

CANATEC GUARDIAN series are designed with quality and cutting edge technology for precise cooling and humidity control to ensure reliability and efficiency in the 24/7 operation within highly sensitive environment.

Suitable for tight spaces such as small server rooms, the GUARDIAN series are built with advantages of an intelligent network and variable speed control for better optimization of air volume and energy efficiency.



### FEATURES AND BENEFITS

- > Automatic variable speed controls
- > Electronic expansion valves
- > Upthrow or downthrow air configuration
- > Intelligent Microprocessor Controller
- > Co-Work™ dynamic network
- > Ease of maintenance
- > Utilizing environmental friendly refrigerant



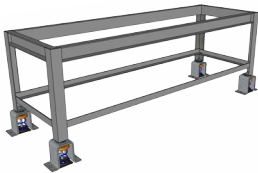


## COMMON ACCESSORIES



### CONDENSATE PUMP

The condensate pump oversees the removal of condensate water from the drain pan and humidifier when a drain is unavailable.



### FLOOR STANDS

Floor stands are made of welded steel frame with corrosion resistant finish.



### WATER DETECTION SENSING (WDS) CABLE

The water sensing cables are wired directly into the microprocessor and include 10 feet of wire to extend to the bottom of the unit. 15 feet of sensing cables shall be supplied with the unit for field placement.



### VARIABLE SPEED DRIVE (VSD)

A VSD works with an inverter compressor which detects the temperature if it is at its optimum and regulates the power output as needed automatically.



### AUTO TRANSFER SWITCH (ATS)

Monitors for power availability from either source to the unit, using the phase monitor devices. This allows automatic switching to the secondary source of power should the primary power source fails using mechanical and electrical interlocked contractors.

### DISCHARGE PLENUMS

The discharge plenums allow upflow units to supply air directly into the space. The plenums have front double deflection grilles for airflow and volume control, and are internally insulated.



## CONTAINMENT SYSTEMS

Containment system comes with both hot and cold aisles which effectively separates the hot air from the server rack. The isolation of hot and cold air shall improve the cooling conditions and eliminate hotspots, while reducing power consumption to cool down the equipment.

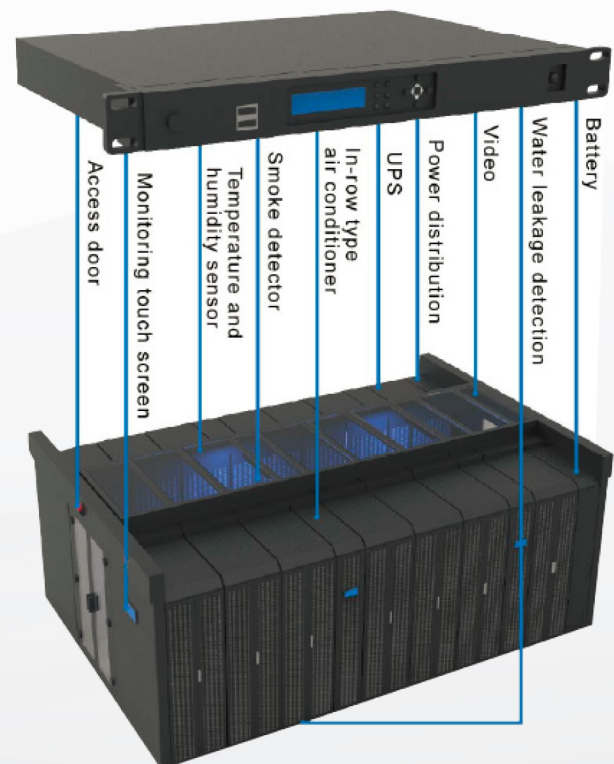
- › Cold and hot air isolation reduces heat loss caused by mixing of cold and hot air
- › Equipped with safety feature which will automatically open the containment door in cases of fire
- › Optional implementation of automatic sliding door and monitoring sensors



## ENVIRONMENTAL MONITORING SYSTEM

An Environmental Monitoring System (EMS) prevents the damages caused by environmental threats by monitoring critical conditions such as temperature and humidity. An EMS utilize sensors to keep track of environmental conditions around mission critical infrastructures.

When it detects an abnormality, the EMS sends an alert by flashing lights, sounding buzzers, mass sending out messages such as emails and SMS to alert operating users.





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