



## **Chilled Water Computer Room Air Handler (CRAH)**

Critical Infrastructure for the  
World's Leading Data Centers

# DATA CENTER COOLING EXPERTISE

## Data Center managers have unique needs.

Nortek Air Solutions listens to your needs and responds with innovative, engineered solutions to meet the specific requirements of your data center applications. Our people have extraordinary experience in the exacting demands of mission critical facilities to provide you with the best and most economical solution for the entire life cycle of your data center.

## Your Benefits

- Flexibility to design a system with the lowest possible footprint to maximize available space for computing and/or data storage equipment.
- Close match of operating capacity requirements to avoid the inefficiencies and added electrical demands of over-sized equipment, while often allowing for expansion within the existing footprint.
- N+1 redundancy at the lowest possible connected horsepower and footprint.
- Robust equipment with low maintenance requirements and easy access to components to avoid downtime.

## Control Features

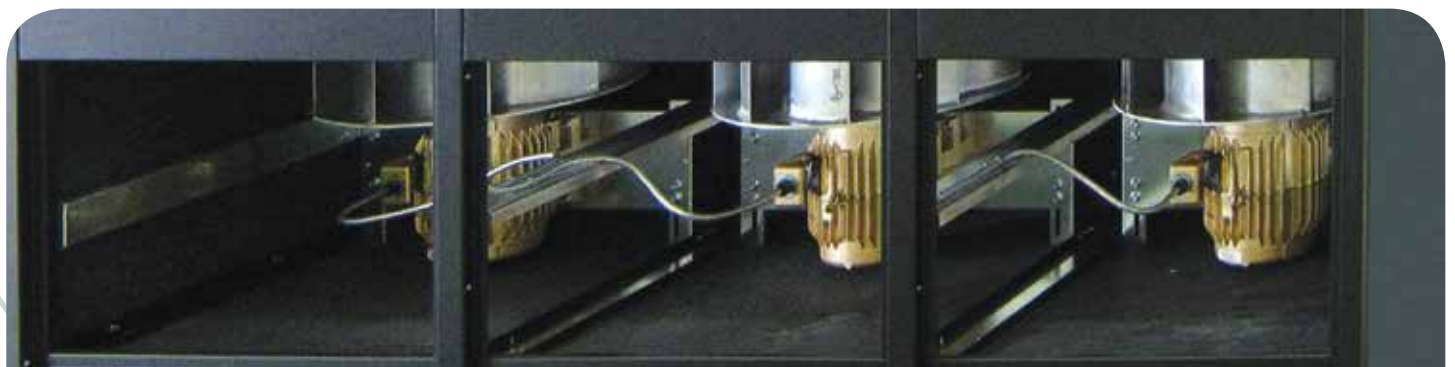
- Fully programmable
- BMS interface

## Monitor and Alarm Points

- Temperature
- Relative humidity
- Airflow
- Filter condition
- Drain pan water detection
- Fire shutdown
- VFD relay alarms
- Smoke detection



For more information about Nortek Air Solutions data center solutions, contact us at [nortekairinfo@nortek.com](mailto:nortekairinfo@nortek.com).



# COMPUTER ROOM AIR HANDLER

## High Efficiency Cooling for High Density Loads

The Nortek Air Solutions Computer Room Air Handler (CRAH) is designed for high density load areas where a large cooling duty is required from a compact footprint, and provides the reliability and redundancy required for the critical application of data center cooling.

Custom size units are available from 85–525 kW providing the flexibility to reduce the number of units, electrical and piping requirements as well as indoor footprint devoted to computer room cooling. All configurations have energy reduction features as well as heating or humidification options.

The full product portfolio has been designed with a rigid welded tube frame and panel construction to maximize the unit's strength and accessibility. Where side restrictions dictate, all maintenance and service can be performed through the front of the unit.

The units are designed with patented FANWALL TECHNOLOGY®, an innovative solution provided by Nortek Air Solutions. It delivers an optimal, efficient airflow supply with built-in system redundancy; a required capability that is crucial to the performance of data center applications.

Modular component assemblies are designed for easy and quick component maintenance and replacement.

## Unit Features / Controller

The CRAH is fitted with a custom programmable industrial PLC controller complete with display/user interface. The controller monitors the temperature and relative humidity and activates cooling to provide precise and efficient cooling of the supply air. Additionally, the controller monitors the in-built safety devices of the unit, which constantly monitor the healthy state of key components. Units can be monitored locally or remotely, and if required, an enhanced web-enabled controller can be supplied, providing password-restricted access from a suitable internet access point.

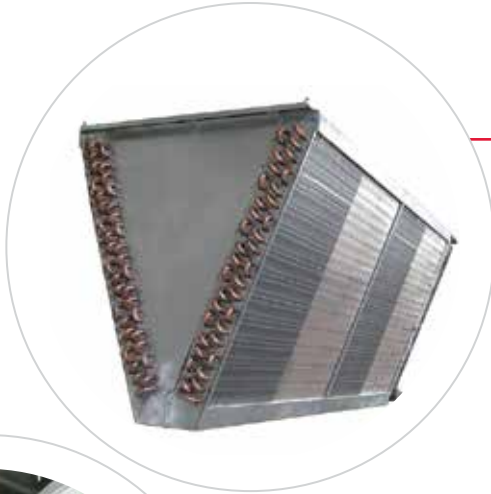


DDC  
Controller



External Panel  
Mount HMI

# INDUSTRIAL-GRADE



**INDUSTRY-LEADING CHILLED WATER COIL  
WITH ENHANCED FIN DESIGN**



**FAN SECTION (BACKWARD INCLINED AIR  
FOIL) WITH NON-OBTRUSIVE AIRFLOW  
MEASURING DEVICE**



**CONTROL VALVES AND PIPING**



**INTERNALLY MOUNTED ELECTRICAL  
CONTROL PANEL**

# CRAH COMPONENTS

## Cabinet

The CRAH unit is constructed of double-wall galvanized sheet steel panels, with fully encapsulated 1-inch thick insulation. The CRAH cabinet is constructed using a welded structural steel tube frame and panel design. All service and maintenance items are designed to be performed from the front of the unit. The front access doors are sealed with quarter turn compression latches and adjustable hinges to seal the doors against a continuous closed cell gasket. All external frames and panels shall be coated with a Dry Powder-Baked Polyester coating similar to Tiger #7035, Drylac Series 49 which is both lead- and cadmium-free.



## FANWALL® System

Direct driven, Class 3, backward inclined centrifugal fans with air foil blades mounted in the CRAH fan base section are constructed of steel frame and panel, designed to be situated under the raised access floor are blow directly into DC space. The fans are arranged to discharge horizontally to maximize mechanical and static efficiency. The fans are rated by AMCA and balanced to exacting industry standards for specific use in our FANWALL TECHNOLOGY® application. Each fan and inlet cone are fitted with a nonobtrusive airflow measuring device and optionally coupled with a transmitter to send real time volume signal to the DDC for control and transmittal of data to the BMS. The signal results in a digital readout in CFM on the touch screen HMI. Standard motors are AC type, in standard NEMA frame sizes, and TEAO design EC motors are available.

## Cooling Coils

Downflow units use dual cooling coils arranged in an A formation. Upflow units use a single coil in a slab configuration. The casing is constructed of minimum 16 gauge galvanized steel. Fins are aluminum plate ripple type. Tubes are copper and are mechanically bonded to aluminum fins. Drain pans are 304 stainless steel with solid welded seams. All coils are rated in accordance with the Air-Conditioning, Heating and Refrigeration Institute (AHRI) Standard 410.

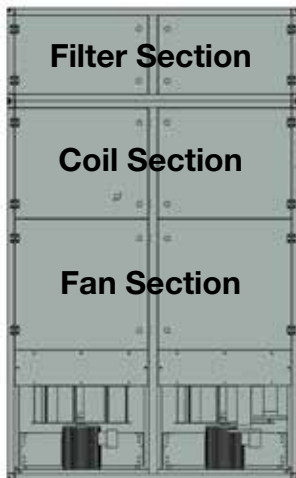
## Control Valve and Control Panel

Control valves are two or three way, cast iron or brass depending on size and application. Actuators are proportional type with an operating voltage of 24v. Each unit ships complete with an independent or integral control panel. The control panel houses a main input fused disconnect with individual fused disconnect, DDC controller or programmable logic controller (PLC) and optional human mechanical interface device (HMI). The controller and HMI are factory mounted and installed for user connections and setup. It has options available for BMS interface via Modbus®, LonWorks® and BACnet®. It can monitor all status points in the system necessary for maintaining room conditions, raised floor differential pressure or duct static pressure; and airflow with optional inputs available for customer connections and monitoring.



# DOWNFLOW AND UPFLOW MODELS

## Downflow Cooling Units



## Filter Section

PerfectPleat 2" and 4" optional prefilters offer the efficiency and low initial resistance that you expect and require. MERV 8 & MERV 13 filters are available.

## Coil Section

Custom heating and cooling water coils are designed and constructed for maximum efficiency in demanding applications. We offer a full range of sizes to meet specific commercial and industrial uses where high performance is necessary.

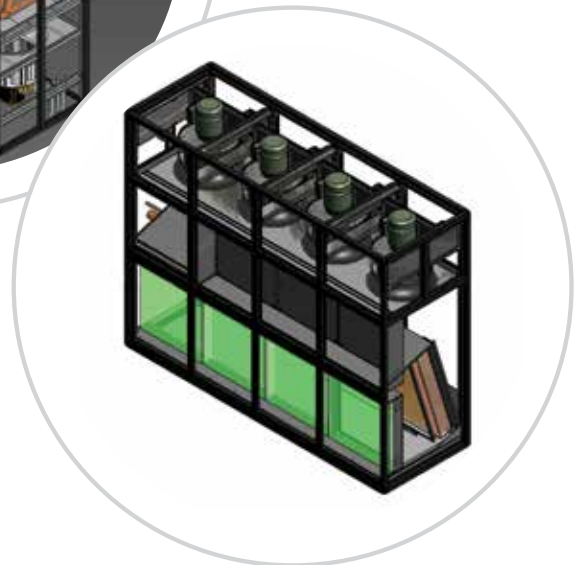
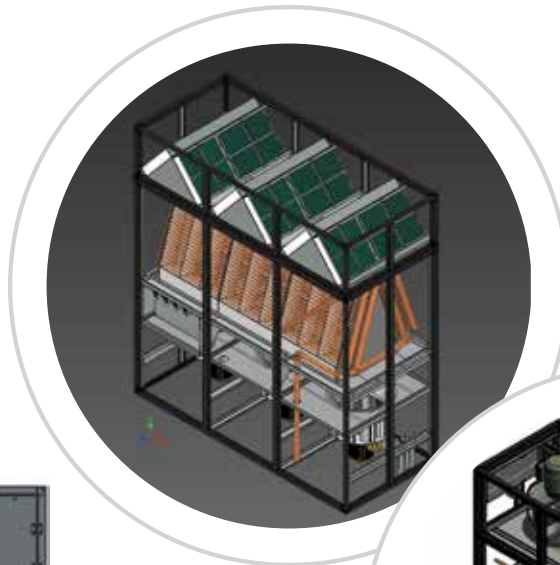
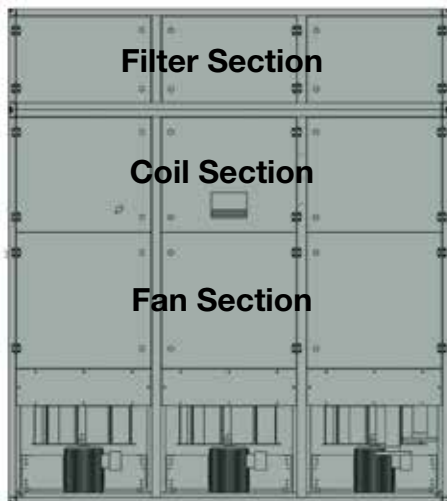
## Fan Section

### FANWALL TECHNOLOGY®

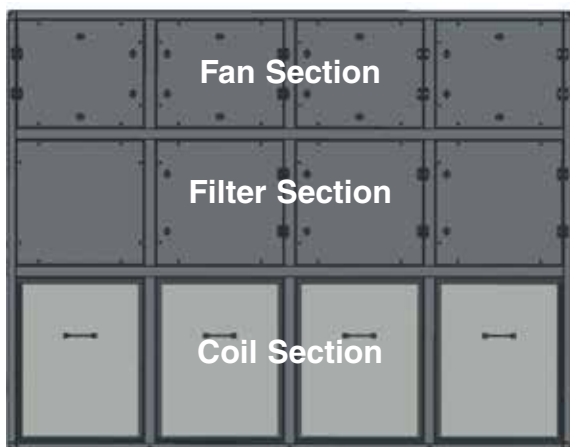
Designed specifically for to achieve 7% to 9% higher efficiency than other fans in their size range. AMCA certified performance.

### Permanent Magnet Motor

The FANWALL® Permanent Magnet (PM) motor is a brushless permanent magnet motor which has proven to be 7% to 15% more efficient when compared to NEMA Premium® efficiency induction motors.



## Upflow Cooling Units







Specifications and illustrations subject to change without notice and without incurring obligation.

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