
NetworkAIR™ CW

Computer Room Air-Conditioning—60 Hz



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CW	Model	Module	Configuration	Voltage	Reheat	Humidifier	Air Pattern
CW	100	P=6 row 25 circuit	C= Chilled Water	BA= 208-230/3/60 KA= 480/3/60 MA= 600/3/60	E= Electric X= None	S= Steam Canister X= None	D= Downflow U= Upflow (front return)

CW XXX X X XX X X X

Overview

The APC NetworkAIR CW computer room air conditioning system provides precise environmental control for present and future conditioned spaces.

Precision environmental requirements now reach far beyond the confines of the traditional data center or computer room to encompass a larger suite of applications, referred to as technology rooms. Critical environment applications include:

- Computer rooms
- Telecommunication facilities
- Clean rooms
- Power equipment
- Medical equipment rooms
- Archives
- LAN/WAN environments

A worldwide network of APC representatives is fully qualified to provide engineering, sales, installation and service for our products.

APC warrants all parts for 12 months from shipment. Extended warranties are available.

Model

CW is available in a CW100 model.

Room Air Distribution

Downflow systems discharge air into the raised floor plenum. These systems are suitable for areas with raised floors greater than 12" (305 mm) high. Return air is drawn in through the top of the system.

Upflow systems discharge air into either a plenum or ductwork. These systems are suitable for areas without raised floors, as well as areas with raised floors. Air is drawn in through the front of the system.

Configuration

- Chilled Water

Compliance Approval

- ETL/CETL
- UL Listed to UL 1995 and CSA C22.2 No. 236
- MEA#175-82-E



Standard Features

- Centrifugal Blower Assembly
- Premium Efficiency Motor
- Heavy Gauge Steel Frame
- Main Power Circuit Breaker
- Microprocessor Controller
- 2 or 3 Way Modulating Valve
- Front Service Access Only
- 30% ASHRAE 52.1 Filters
- Environmental Monitoring
- Condensate Pump
- Redundant Group Control

Optional Features

- Three Phase Electric Reheat
- Pure Steam Canister Humidifier
- Plenums (with or without grilles)
- Floorstand (with or without turning vane, seismic)
- Discharge Duct Collar
- Downflow Return Duct
- ModBus/JBus Gateway
- Spot or Cable Water Detector(s)
- Firestat
- Smoke Detector
- Remote Relay Shutdown
- Reheat/Humidity Lockout
- Remote Display and/or Sensor
- 3-Way Valve Flowswitch
- Custom Alarm Contacts

Standard Features

Cabinet

The frame is constructed of heavy gauge steel for maximum strength. Steel access panels are insulated for quieter operation. The unit has been designed for full service access from the front. The flush mounted panels are removable using convenient quarter-turn fasteners. The access doors for the electronic controller and electrical panel can be opened without interrupting the operation of the unit.

Cooling Coil/Drain Pan

The advanced prism arrangement of cross-circuited cooling coils connected to the incoming chilled water supply provides greater sensitivity in cooling and dehumidification. Designed for high sensible heat ratios, the coil is constructed with copper tubes, aluminum fins, galvanized steel end plates, and includes a stainless steel condensate pan. The return is drawn evenly through the entire face of the cooling coil.

Redundant Group Control

Allows up to six NetworkAIR units ability to communicate with each other to automatically switch upon alarm condition, or timed rotation. Can also allow standby units the ability to assist the running system.

Main Power Disconnect

A nonautomatic main power circuit breaker disconnects all high voltage power to the unit if necessary. The disconnect switch is accessible without removing the electric box cover.

Electrical Panel

The electrical panel contains the contactors, starters, overload protection devices, and input power disconnects. Each wire (except jumpers) is numbered every 3" (80mm), or color coded to facilitate circuit tracing when installing and servicing the unit. Each AC power circuit is individually branch circuit fused on all three phases. All motor devices are thermally and short circuit protected. The electrical panel is easily accessible from the front of the unit. An emergency cool override switch can be manually activated to initiate cooling and a field wired thermostat can be utilized to control cooling operation. All electrical components are UL-listed and -recognized and all wiring conforms to NFPA 70 (NEC) and UL 1995 requirements.

Condensate Pump

The factory-installed and wired condensate pump will pump 252 gal/h (0.26 L/s) at 20 ft. (6.1 m) head.

Fan/Premium Efficiency Motor

The NetworkAIR CW includes centrifugal blower assemblies that have been engineered for quiet, reliable operation. Lower blower speeds reduce noise and extend belt and bearing life. Permanently lubricated bearings, a variable pitch drive, and an adjustable motor base all ensure dependable operation. In addition, the return air is evenly distributed across the cooling coil. A 15HP premium efficiency motor reduces overall energy costs, exceeding NEMA standards with efficiencies over 90%. With Class F high temperature insulation and a 1.15 service factor, total cost of ownership is reduced.

Chilled Water Modulating Valve

A fully modulating two-way or three-way valve is microprocessor controlled to automatically direct the proper amount of chilled water into the cooling coil to maintain desired conditions. Pressure rating of the valve is 400 psi (2700kPa).

Air Filter

The filtration of conditioned air is extremely vital to maintaining the clean, particle-free environment required by electrical equipment. The system uses 30% efficient (100 microns) (ASHRAE 52.1-92), 4" (102 mm) deep filters, with full depth filter pleats. Deeper filters produce a lower pressure drop, requiring less energy during normal operation. Filters are replaceable through the front of the upflow unit, and top of the downflow unit.

Environmental Monitoring Unit

A stand-alone unit performs contact monitoring and continuous temperature and humidity sensing through two probes (one included). The unit is controlled by available web, control console, or SNMP interface with a network connection. In the event of an environmental anomaly, notification is sent via e-mail or SNMP. The unit is 18.25" x 9" x 2.75" (464mm x 229mm x 70mm). The probes extend up to 12' (3.66m) from the unit.

Optional Features

Discharge Duct Collar

A 1" (25 mm) duct flange ships loose from the factory for field installation to provide convenient connection to external ductwork for either supply or return as needed.

Spot Water Detector(s)

The solid-state spot water detector activates an audible alarm on the controller when moisture is detected.

Cable Water Detector

A 20ft leak detection cable is placed on the floor around all possible leak sources. If water or other liquids contact the cable anywhere along its length, an alarm is triggered.

Firestat

A firestat is available for factory installation in the air stream of the unit. If the return air temperature reaches 125°F (52°C), an audible and visual alarm on the microprocessor will be activated and the unit will immediately shutdown.

Smoke Detector

The factory-installed smoke detector is designed to sense smoke in the return air stream. Upon detection of smoke, an audible and visual alarm on the microprocessor will be activated and the unit will be immediately shutdown.

Remote Relay Shutdown

Shutdown of the NetworkAIR system can be done remotely by a factory installed relay. The relay can be ordered with a 24V, 120V, or 240V coil.

Air Deflector

Field installed air deflector runs the length of the unit and attaches to the floorstand for changing air direction from vertical to horizontal.

Reheat/Humidity Lockout

Lockout prevents operation of electrical loads not essential for continued site operation when facilities have limited backup power capacity.

Remote Display Panel

The microprocessor controller allows facility or building maintenance personnel to evaluate and control the unit from up to 50ft. away from the unit, without having to enter the secured space.

Remote Sensor(s)

Environmental sensor(s) can be strategically placed, up to 50ft. from the unit to better meet the site's cooling needs. The sensor must be positioned to permit air movement across the sensors.

3-Way Valve Flow Switch

A Single-Pole, Double-Throw flow switch is wired to energize one device and de-energize another device powered from the same source when fluid flow exceeds or drops below the set flow rate.

Environmental Management System

A browser-accessible, 1U, rack-mountable appliance allows monitoring of environmental conditions. Monitoring of 1 temperature, 1 humidity, & 1 vibration sensor ship standard. When conditions change, notifications are sent via email to appropriate personnel. The EMS provides 8 input contacts, 2 output relays, and controllable power outlets for defining actions remotely should conditions warrant it.

Downflow Return Duct

A return duct the length and width of the unit may be field installed on a downflow unit to provide convenient connection to external ductwork.

Floorstand

The floorstand raises the unit above the subfloor to match the height of the raised floor. Heights are available (from 18" (457 mm) to 36" (914 mm)) in 3" (76 mm) increments and are adjustable +/- 1.5" (38.1 mm). Adjustment is provided by threaded pedestals. Vibration absorbing pads are included. The floorstand, pedestal, and pads ship loose. In areas where earthquakes are a concern, seismic floorstands are available in 18" (457 mm) and 24" (610 mm) heights.

Plenum

Air discharge plenums are available with upflow configurations. Heights are offered in 20" (508mm) and 24" (610mm). Manually adjustable, double deflecting grilles are provided on 3 or 4 sides.

ModBus/JBus Gateway

The Gateway translates transmission protocol from the system's network into ModBus/JBus communication protocol. One gateway can support up to 16 units.

Custom Alarm Contact Closures

Each unit is equipped with dry contact closures. Upon activation of the associated alarm, a discreet Normally open or Normally closed contact is available for remote monitoring of that discrete alarm.

Optional Features

Humidifier

The humidifier utilizes a pure steam generator specifically designed for hi-tech area environmental control. The pure steam eliminates contaminating mineral deposits, bacteria, white dust and excessive humidity. The humidifier requires little or no scheduled maintenance. Automatic flushing combined with an indicator that signals when the canister is to be changed, ensure maintenance free operation.

Electric Reheat

A three-phase electrical resistance heater sized to offset the sensible cooling capacity in the dehumidification mode is incorporated in each NetworkAIR CW. The reheat elements are low watt density sheathed components. The reheat is three phase to provide even phase loading. Reheat elements are electrically and thermally protected. Two stages come standard.

Microprocessor Controller

Microprocessor Controller

The microprocessor controller is standard on the main module of each system. The controller provides precision control for the demanding requirements of:

- Data centers
- Control rooms
- Clean rooms
- Switch rooms
- UPS rooms

The easy-to-use display allows the operator to select options from the device's menu-driven interface to control and monitor the connected air conditioning system.

Status

Complete status monitoring is provided within the status menu of the microprocessor controller. Available information includes:

- Current Temperature/Humidity
- Temperature/Humidity Setpoint
- Cooling/Heating Status
- Humidification/Dehumidification Status

Alarms

Quick access to any alarm condition is facilitated through the menu structure. The alarm key acts as a hot key providing immediate access to the alarm display menu. Presence of a new alarm will sound the audible alarm. The red alarm LED on the display panel will remain illuminated until all alarms have been cleared. The temperature and humidity alarm setpoints are adjustable. Alarm annunciations include:

- Loss of airflow
- Clogged filter
- High head pressure
- Low suction pressure
- High/Low temperature
- High/Low humidity

Automatic setpoint crossover protection will prevent the setting of the heat setpoint above the cool setpoint and the humidification setpoint above the dehumidification setpoint. Setpoint adjustment can be restricted to only operators with knowledge of the security codes set within the security menu structure.

Configuration

Flexibility is offered through the use of the configuration menu. Operating requirements are satisfied by changing the configuration settings. New configurations are stored in EEPROM and protected from unauthorized tampering by the four-digit security password, selected in the security menu. Configuration options include:

- Fahrenheit or celsius display
- Power loss restart time delay
- Redundant unit grouping
- Alarm input polarity
- Alarm enable
- Temperature/Humidity deadbands
- Small room delay

Common Alarm Contact

A common alarm relay is installed on every microprocessor. In the event of an alarm condition, the relay will change state. The user can select which alarms change the state of the relay. This feature allows for remote enunciation of alarm status.

Run Times

The major components within the unit have independent run timers that monitor and store accumulated run hours on the components. The run timers are provided with operator adjustable run time alarms.

Security

Multiple security levels prevent unauthorized adjustment of important system parameters. The user may select a four-digit password for setpoint and configuration changes. Should the password be forgotten, APC can provide temporary access.

Monitoring

Supervisory network communications card are available for interfacing with building management systems. Please check with APC for compatibility with your building management system.

Cool Inhibit

Prevents the unit from over-cooling during the dehumidification cycle. If the space temperature falls below a user adjustable setpoint, cooling will become inhibited until the space temperature returns to setpoint.

Remote Shutdown

Events external to the unit, such as activation of a fire suppression system may require the unit to shut down remotely. Additionally this feature may be tied into a BMS that would allow remote control of the units on/off status.

Performance Specifications—Chilled Water

CW MODEL* EWT: 45F (7.2C)	CWI100
80F DB, 67F WB (26.7C DB, 19.4C WB) 50% RH	
Total-BTU/HR (kW)	518,000 (151.7)
Sensible-BTU/HR (kW)	365,000 (106.9)
Flow Rate-GPM (L/s)	108 (6.8)
Pressure Drop-psig (kPa)	35.1 (242)
75F DB, 62.5F WB (23.9C DB, 16.9C WB) 50% RH	
Total-BTU/HR (kW)	410,000 (120.0)
Sensible-BTU/HR (kW)	327,000 (95.7)
Flow Rate-GPM (L/s)	87 (5.5)
Pressure Drop-psig (kPa)	22.4 (154)
75F DB, 61F WB (23.9C DB, 16.1C WB) 45% RH	
Total-BTU/HR (kW)	391,000 (114.5)
Sensible-BTU/HR (kW)	351,000(102.8)
Flow Rate-GPM (L/s)	80 (5.0)
Pressure Drop-psig (kPa)	19.1 (132)
72F DB, 60F WB (22.2C DB, 15.5C WB) 50% RH	
Total-BTU/HR (kW)	343,000 (100.4)
Sensible-BTU/HR (kW)**	307,000 (89.9)
Flow Rate-GPM (L/s)	78 (4.9)
Pressure Drop-psig (kPa)	18.3 (126)
72F DB, 58.6F WB (22.2C DB, 14.8C WB) 45% RH	
Total-BTU/HR (kW)	326,000 (95.4)
Sensible-BTU/HR (kW)	316,000 (92.5)
Flow Rate-GPM (L/s)	74 (4.7)
Pressure Drop-psig (kPa)	16.5 (114)
70F DB, 58.5F WB (21.1C DB, 14.8C WB) 50% RH	
Total-BTU/HR (kW)	283,000 (82.9)
Sensible-BTU/HR (kW)	268,000 (78.5)
Flow Rate-GPM (L/s)	64 (4.0)
Pressure Drop-psig (kPa)	12.3 (85)
70F DB, 57.2F WB (21.1C DB, 14.0C WB) 45% RH	
Total-BTU/HR (kW)	244,000 (71.4)
Sensible-BTU/HR (kW)	244,000 (71.4)
Flow Rate-GPM (L/s)	57 (3.6)
Pressure Drop-psig (kPa)	9.8 (68)
AIR SYSTEM – BELT DRIVE CENTRIFUGAL	
Air Volume-CFM (L/s)	15,800 (7,458)
Blower Motor-HP (kW)	15 (11.2)
External Static Pressure- inches of water (Pa)	0.3 (75)
Number of Blowers/Motors	3
CHILLED WATER CONTROL VALVE	
Size-2-Way CW Valve-- Inches, NPT (Cv)***	2 (41)
Size-3-Way CW Valve-- Inches, NPT (Cv)***	2 (41)
COOLING COIL – A FRAME	
Face Area-ft ² (m ²)	38.2 (3.55)
Rows Deep	6
Face Velocity-FPM (m/s)	414 (2.1)
HUMIDIFICATION --- SOLID STATE ELECTRODE CANISTER	
Flush Cycle	automatic
Capacity-Lbs/hr (Kg/hr)	17 (7.7)
kW	5.8
FILTERS	
Quantity	4, 6
Size -- Inches (mm)	16 x 25 (406 x 635), 16 x 20 (406 x 508)
Depth -- Inches (mm)	4 (102)
REHEAT	
Electric -- Equally Loaded Three (3) Phase, Finned Tubular, Low-Watt Density	
Capacity -BTU/HR (kW) Includes Motor Heat*****	132,000 (38.6)
Stages	2
PHYSICAL DATA	
Weight -- lbs (kg)	2100 (960)
Height -- Inches (mm)	76.0 (1,930)
Length -- Inches (mm)	121.88 (3,096)
Depth -- Inches (mm)	34.88 (886)

*Rated Capacity +/-10%

**Nominal Rating Point

***2-Way Single Seated, 400 psig W.W.P. max

****3-Way Single Seated, 400psig W.W.P. max

*****With equal loading on each phase, rated at 208-230V / 3-phase, 480V / 3-phase and 600V / 3-phase

Performance Specifications—Chilled Water

Performance Specifications - Chilled Water

CW MODEL	CW100
CONNECTION SIZES*****	
Water In/Out -- Inches OD	2-1/8
Humidifier	
Supply Line -- Inches OD	1/4
Condensate Drain	
Return Line -- Inches ID	7/8

*****Connections sizes, not recommended piping sizes

Electrical Data

CHILLED WATER																
REHEAT	Electric				None				Electric				None			
HUMIDIFIER	Electrode Canister - Steam				Electrode Canister - Steam				None				None			
VOLTAGE	208	230	480	600	208	230	480	600	208	230	480	600	208	230	480	600
CW100																
FLA	123.3	123.3	61.9	52.1	60.9	54.5	27.5	22.1	107.3	109.4	54.7	46.2	44.9	40.6	20.3	16.2
MCA	154.1	154.1	77.4	65.1	76.1	68.1	34.4	27.6	134.1	136.8	68.4	57.8	56.1	50.8	25.4	20.3
MOP	175.0	175.0	80.0	70.0	100.0	100.0	50.0	40.0	150.0	150.0	80.0	60.0	100.0	90.0	45.0	35.0

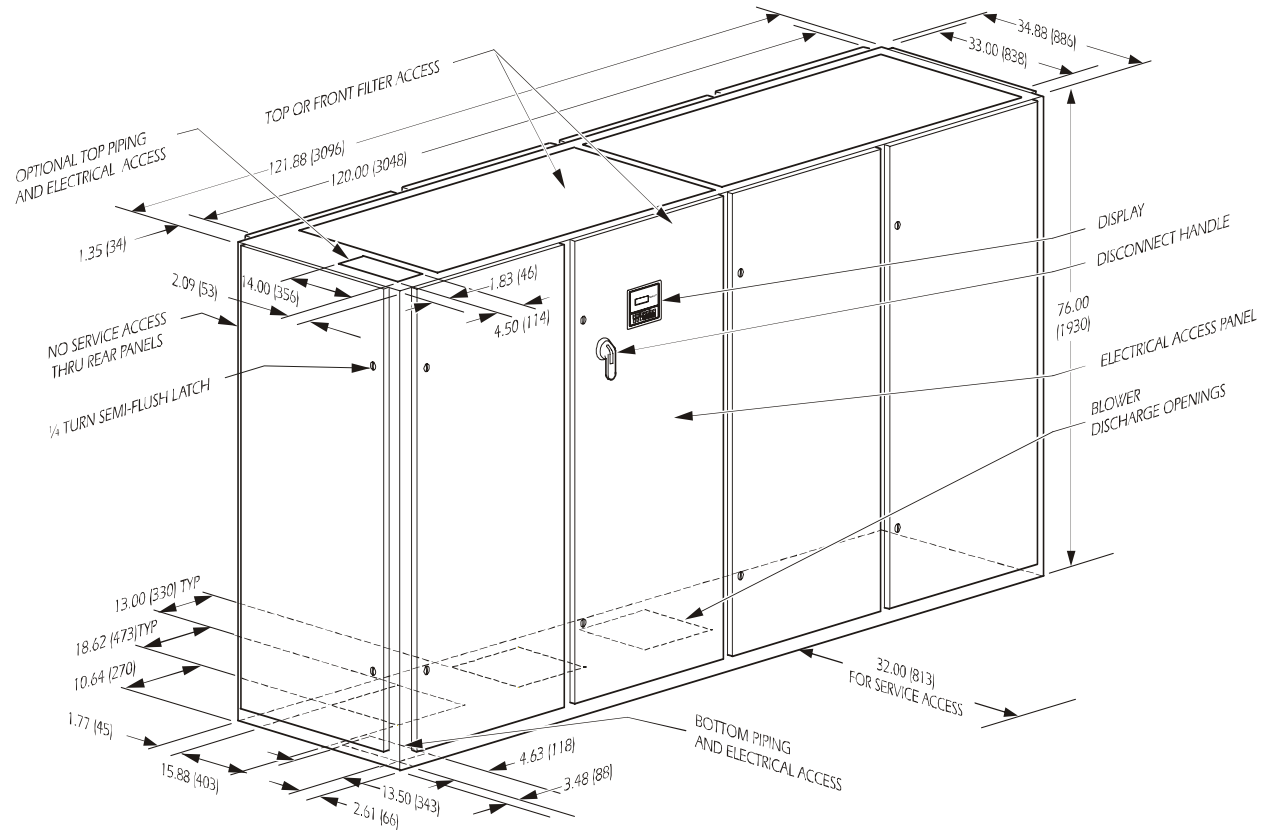
FLA = Full Load Amps

WSA = Minimum Circuit Ampacity

MOP = Maximum Overcurrent Protection

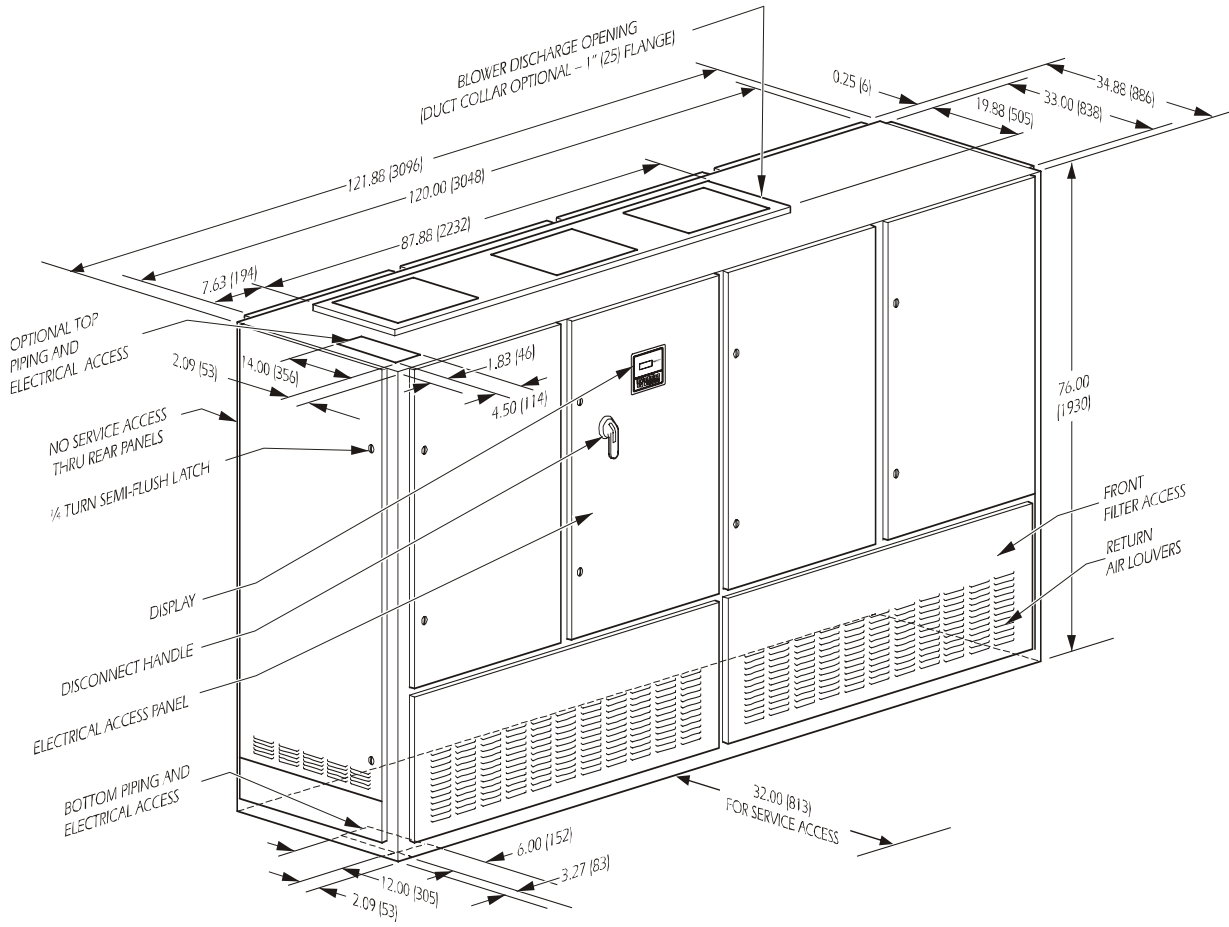
Dimensional Data

Downflow - CW100



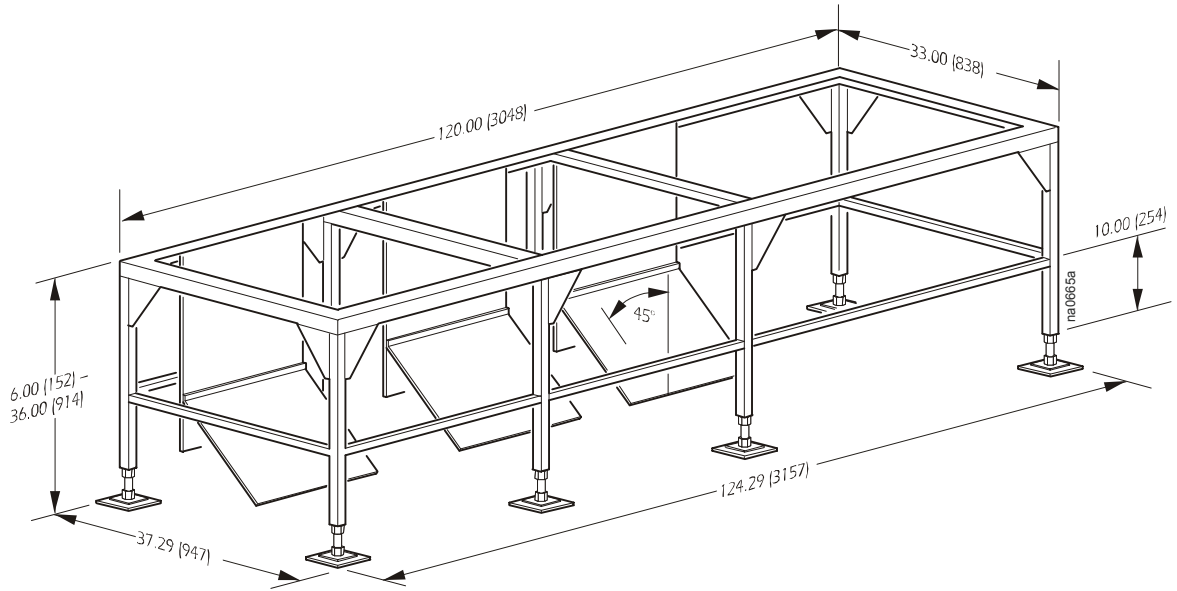
* All dimensions are in inches (mm).

Upflow - CW100

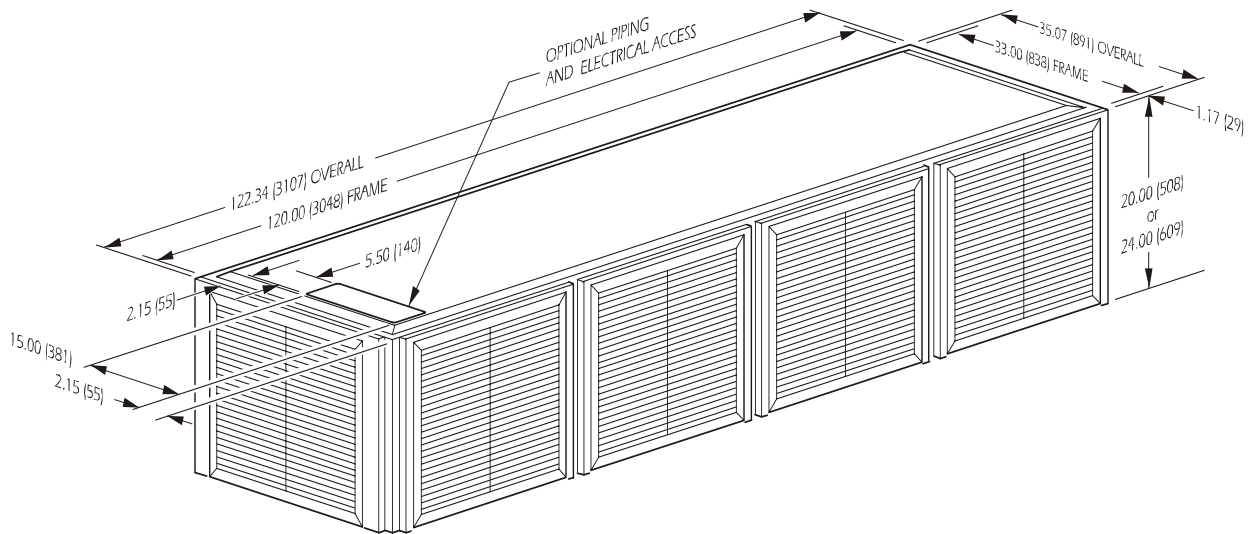


* All dimensions are in inches (mm).

Floorstand - CW120



Top Discharge Plenum - CW120



Guide Specifications

PART 1 — PART 1 GENERAL

1.01 SUMMARY

- A. The environmental control system shall automatically monitor and control heating, cooling, humidifying, dehumidifying, and filtering functions for the conditioned space. The system shall be built to the highest quality engineering and manufacturing standards, and shall be floor mounted and configured for _____ (up/down) discharge of conditioned airflow.

1.02 DESIGN REQUIREMENTS

- A. The system shall be as described in the following specification as manufactured by APC.

1. Model: _____.
2. Total cooling capacity: _____ MBH (kW).
3. Sensible cooling capacity: _____ MBH (kW).
4. Return air temperature: _____ ° F (° C) DB.
5. Return air temperature: _____ ° F (° C) WB.
6. Entering chilled water: _____ ° F (° C).
7. Leaving chilled water: _____ ° F (° C).
8. Humidity: _____ % RH.
9. Air quantity: _____ CFM (L/s).
10. External Static Pressure _____ inches (Pa).
11. Humidifier capacity: _____ lbs/hr (kg/hr).
12. Electrical supply: _____ V, _____ ph, 60 Hz.

1.03 SUBMITTALS

- A. Submittals shall be provided with the proposal and shall include: capacity data, electrical data, physical data, electrical connection drawing, and piping connection drawing.

1.04 QUALITY ASSURANCE

- A. The system shall be completely factory-tested prior to shipment. Testing shall include, but not be limited to: complete pressure and leak testing to ensure system integrity, “Hi-Pot” test, and controls calibration and settings. Each system shall ship with a completed test report to verify completion of factory testing procedure. The system shall be NTRL listed, MCA, and electrical system shall be UL Listed to UL 1995 and CSA 22.2 No. 236.

1.05 WARRANTY

- A. System parts shall be warranted for a period of 12 months from date of shipment from factory.

PART 2 — PART 2 PRODUCT

2.01 STANDARD COMPONENTS

A. MICROPROCESSOR

1. The microprocessor controller shall provide total environmental control. The system, based on the main controller, shall offer up to eight analog inputs, two analog outputs, twelve digital inputs and thirteen digital outputs. The operator interface shall provide a 4-line, 80-character backlit LCD display. User-friendly menu structure along with clearly defined prompts shall allow the operator to easily move about the program and monitor the following functions and alarm conditions.
 - a. Status: Complete status monitoring shall be provided within the status menu of the microprocessor controller, and shall include the following information: current temperature, current humidity, temperature setpoint, humidity setpoint, cooling status, heating status, humidification status and dehumidification status.
 - b. Alarms: Quick access to any alarm condition shall be facilitated through the menu structure. Presence of a new alarm shall sound an audible alarm. A red alarm LED on the display panel shall remain illuminated until such time that all alarms have been cleared. Alarm annunciation shall include: loss of airflow, clogged filter, high head pressure, low suction pressure, high temperature, low temperature, high humidity, and low humidity. The temperature and humidity alarm setpoints are user adjustable.
 - c. Setpoint: The microprocessor controller shall provide independent setpoints for heating, cooling, humidification, and dehumidification. Automatic setpoint cross-over protection shall prevent the setting of the heat setpoint above the cool setpoint and the humidify setpoint above the dehumidify setpoint. Setpoint adjustment shall be capable of being protected via security code.
 - d. Configuration: Flexibility shall be offered through the use of the configuration menu. It shall closely match the operating requirements by changing the configuration settings. The site configuration shall be stored in the EEPROM and be protected from unauthorized tampering by the user selectable 4-digit security password in the security menu. Configuration options shall include: Fahrenheit or Celsius display, power-loss restart time-delay, primary-secondary transfer functions, alarm input polarity, alarm enable, temperature deadbands, humidity deadbands, and small room delay.
 - e. Run time: The major components within the unit shall have independent run-timers that monitor and store the accumulated run-hours on the components. The run timers shall be provided with operator-adjustable run-time alarms for proper component maintenance.
 - f. Security: The microprocessor shall have multiple security levels to prevent unauthorized adjustment of the important system parameters. A user-selectable 4-digit password shall allow setpoint and configuration changes.

B. CABINET CONSTRUCTION

1. The cabinet and frame shall be bolt together formed sheet steel. Access panels shall be insulated with fiberglass 1 in. (25 mm) in thickness, 1.5 lb/ft³ (24.0 kg/m³) in density. The panels shall be powder coated and lift off for access to the unit. A piping and electrical access plate shall be provided in the bottom of the unit. All units shall require front service access, 24 in (610 mm) minimum. In addition, APC recommends 12” rear clearance on upflow units to accommodate for return grills at the back of the unit.

C. FAN/PREMIUM EFFICIENCY MOTOR

1. The unit shall be configured for draw-through air pattern, to provide uniform air-flow over the entire face of the coil. The blower shall be double-inlet centrifugal type, with forward-curving blades, dynamically and statically balanced. A 15HP premium efficiency motor drives a common shaft running through all three blowers. The motor shall exceed NEMA standards with efficiencies over 95%.

D. MAIN POWER DISCONNECT

1. A non-automatic main power circuit breaker shall disconnect high voltage power to the unit if necessary. Disconnect switch shall be accessible without removing electric box cover.

E. ELECTRICAL PANEL

1. The electrical system shall conform to National Electrical Code (NEC) requirements. The control voltage shall be 24 VAC, wired in accordance with NEC Class 1 requirements. The wire for the control circuit shall not be smaller than 18-gauge AWG. Each wire shall end with a service loop and be securely fastened by an approved method. Control wires more than 6 in. (150 mm) shall be color-coded or numbered every 3 in. (80 mm) for ease of service tracing. All electrically-actuated components shall be easily accessible from the front of the unit. Each high voltage unit shall be individually protected on all three phases. Main power shall be connected to a circuit breaker mounted on the electrical panel. The compressor and motor shall have overload and short circuit protection. The electrical box shall include all components and controls required for system operation. An emergency cool override manual switch shall be provided with provision for control using a field supplied thermostat. Incoming power is _____ V, _____ phase, 60 Hz.

F. COOLING COIL/DRAIN PAN

1. The cooling coil shall use the latest heat-transfer technology, raised lanced-aluminum fins and smooth copper tubes. Coil end-supports shall be galvanized steel. An insulated stainless steel drain pan for condensate shall be included.

G. CHILLED WATER MODULATING VALVE

1. A fully modulating two-way or three-way valve shall be microprocessor controlled to automatically direct the proper amount of chilled water into the cooling coil. The standard valve pressure rating shall be 400 psi (2758 kPA).

H. AIR FILTER

1. The air filters shall be 30% efficient per ASHRAE Standard 52.1-92, UL Class 2. The full 4" (102 mm) deep, pleated filters shall be replaceable from the front on upflow units and from the top on downflow units.

I. CONDENSATE PUMP

1. The Condensate Pump shall be factory installed and wired and shall pump 252 gal/h (0.26 L/s) at 20 ft. (6.1 m) head.

J. REDUNDANT GROUP CONTROL

1. Up to six units shall have the ability to communicate with each other to automatically switch upon alarm condition, or time rotation.

K. ENVIRONMENTAL MONITORING UNIT

1. A stand-alone unit shall perform continuous temperature and humidity sensing through two available probes and contact monitoring. Unit shall be controlled by available web, control console, or SNMP interface with network connection. In the event of an environmental anomaly, notification shall be sent to the customer via e-mail or SNMP. The unit shall be 18.25" x 9" x 2.75" (464mm x 229mm x 70mm).

2.02 OPTIONAL COMPONENTS

A. HUMIDIFIER

1. Humidifier shall be self-contained steam-generating type, factory piped and wired, with disposable cylinder and automatic solid-state control circuit. Capacity: _____ lb/h (g/s).

B. ELECTRIC REHEAT

1. Reheat elements shall be low watt density, wired for three-phase, loaded equally on all three phases and shall be electrically and thermally protected by automatic and manual reset thermal cutouts. Reheat capacity shall be ___ MBH, ___ kW, controlled in two steps.

C. DISCHARGE DUCT COLLAR

1. A 1" (25 mm) duct flange shall be provided for field installation on a unit to provide convenient connection to external ductwork.

D. SPOT WATER DETECTOR

1. A water detector shall be factory-wired and shipped in the bottom of the unit to sense water and send a signal to the master control giving the operator possible alarm indications options for shutdown. The water detector shall be provided with 15 ft (5 m) of wire.

E. CABLE WATER DETECTOR

1. A leak detection sensing cable shall be shipped loose with the unit. If water or other conductive liquids contact the cable anywhere along its length, the main controller visually and audibly annunciates the leak.
2. The detector shall be provided with 20ft (6 m) of cable. Cable may be cascaded up to 500ft (152.4 m).

F. FIRESTAT

1. A firestat shall be factory-installed in the return air to sense heat and send a signal to the main controller shutting down the unit and activating a visual and audible alarm.

G. SMOKE DETECTOR

1. A smoke detector shall be factory-installed in the return air to sense concentrations of smoke and send a signal to the main controller shutting down the unit and activating a visual and audible alarm.

H. REMOTE RELAY SHUTDOWN

1. Remote shutdown of the system can be done by a factory installed relay with a 24V, 120V, or 240V coil. The relay must be powered by others to disable the cooling system.

I. REHEAT/HUMIDITY LOCKOUT

1. When facilities have limited backup power capacity, this lockout shall prevent the operation of electrical loads that are not essential for continued site operation.

J. REMOTE DISPLAY PANEL

1. Facility and building-maintenance personnel shall have the ability to evaluate and control the unit from up to 50ft. from the unit.

K. REMOTE SENSOR(S)

1. Environmental sensor(s) shall be strategically placed, up to 50ft from unit to better meet the site's cooling needs. It shall be positioned to permit air movement across the sensor.

L. 3-WAY VALVE FLOW SWITCH

1. A Single-Pole, Double-Throw flow switch shall be wired to energize one device and de-energize another device powered from the same source when fluid flow either exceeds or drops below the set flow rate.

M. FLOORSTAND

1. The heavy gauge floorstand shall raise the unit above the subfloor to match the height of the raised floor. Heights shall be available from 18" (457mm) to 36" (915mm) in 3" (76mm) increments and shall be adjustable +/- 1.5". Threaded pedestals shall provide adjustment. Vibration absorbing pads shall be included. Pedestals and vibration pads shall be included. Seismic floorstands shall be available in 18" (457mm), and 24" (610mm) heights.

N. AIR DEFLECTOR

1. A ninety degree air deflector shall ship loose and shall be _____ in. (mm) high.

O. PLENUM

1. A discharge plenum shall mount on top of an upflow unit to direct and distribute conditioned air.
 - a. The plenum shall be manually adjustable with double deflecting grilles provided on 3 or 4 sides. Plenum height shall be 20".
 - b. The plenum shall be provided with a duct collar and no grilles. Plenum height shall be 24" (610mm).

P. ENVIRONMENTAL MANAGEMENT SYSTEM

1. A browser-accessible, 1U, rackmountable appliance shall allow monitoring of environmental conditions. Monitoring of one temperature, one humidity, and one vibration sensor shall ship standard. When conditions change, notifications shall be sent via email to the appropriate personnel. The EMS shall provide eight input contacts, 2 output relays, and controllable power outlets for defining actions remotely should conditions warrant it.

Q. CUSTOM ALARM DRY CONTACT CLOSURES

1. Each unit shall be equipped with any or all of the listed dry contact closures. Upon activation of the associated alarm, a discreet Normally Open or Normally Closed contact is available for remote monitoring of that discreet alarm.
 - a. High Temperature Alarm
 - b. Low Temperature Alarm
 - c. High Humidity Alarm
 - d. Low Humidity Alarm
 - e. Clogged Filter Alarm
 - f. Fire Alarm (with Firestat)
 - g. Smoke Alarm (with Smoke Detector)
 - h. Humidifier Change Canister Alarm
 - i. Water Underfloor Alarm (with Water Detector)
 - j. Condensate Pump Overflow Alarm (with Condensate Pump)
 - k. Loss of Flow (with Flow Switch)

R. MODBUS/JBUS GATEWAY

1. The Gateway shall translate transmission protocol from the system's network into ModBus/JBus communication protocol. One gateway shall support up to 16 units.

S. DOWNFLOW RETURN DUCT

1. A return duct the length and width of the unit shall be provided for field installation on a downflow unit to provide convenient connection to external ductwork.

PART 3 — PART 3 INDIVIDUAL SYSTEMS

3.01 CHILLED WATER

- A. The unit shall be piped in accordance with the highest commercial quality procedures. All pipe shall be type “L” copper. All pipe forming shall be tool bent with proper bend radii to prevent tube flattening in the curve. The chilled water piping shall be insulated with closed cell neoprene thermal insulation. the chilled water flow shall be controlled by a 3-way valve (2-way valve optional) with a 24 VAC modulating motor. All pipe connections shall be made at the bottom of the unit for ease of field connection.

Guidelines for Installation

The CW provides reliable, accurate temperature and humidity control of computer rooms, laboratories, and other environments that require close tolerance control. The unit incorporates the latest system design innovations to provide you with optimum efficiency, reliability, and accuracy of control.

The CW system will provide years of trouble-free service, when installed and maintained by technically qualified personnel.

Room preparation

During the design of the room, consideration should be given to the following factors: ease of entry for the system, floor-loading factors, and accessibility of piping and wiring.

The room must be sealed with a vapor barrier to minimize migration of moisture. Polyethylene film (plastic sheeting) is a good vapor barrier for ceiling and wall applications. Rubber- or plastic-based paints should be applied to concrete floors and walls. The room should be thoroughly insulated to minimize thermal loads and make-up air (if required) should be preconditioned to reduce additional temperature, filtration, and moisture loads.

A room using a raised-floor plenum for air distribution should have at least 9" (300 mm) of clear space between the false floor and sub-floor for a finished floor height of 12" (380 mm). Pay special attention to the location of pipe chases, electrical conduits and other obstructions under the floor. These objects can block air circulation and cause loss of air pressure, thus reducing system efficiency and causing hot spots in your room.

APC should be notified before installation if the unit is incorrect for the application.

Unit location

The location of the unit is important for efficient and balanced environmental control in your room. The air conditioner should be located as close as possible to the largest heat load. In rooms having a high aspect ratio, mount the unit along the longest wall to ensure even air distribution. If improperly installed, erratic control or mechanical failure can and will result.

Service access

At least 32" (815 mm) of clear space must be left in front of the unit for routine service (filters, humidifier).

Receiving the unit

Your CW unit has been completely tested and inspected prior to shipment. To ensure that you have received the unit in excellent condition, perform a careful inspection of the crating and the unit immediately upon receipt. Verify that all parts ordered were received as specified and that the unit is the correct size and voltage necessary to fulfill your environmental control needs. Report any damage discovered to the freight carrier. If necessary, contact the APC field service department for help in repairing or replacing damaged parts. While APC is not responsible for damage incurred in transit, we want to make sure that you have no undue delays in your system start-up.

Rigging

The unit is manufactured with a formed steel frame for maximum strength and unit integrity. However, as with all electrical and mechanical equipment, you must take care with proper rigging of your unit.

When using a forklift to move the unit, use the shipping skid to protect the bottom of the unit. When using chains, cables or rope to lift the unit, use spreader bars to prevent damage to the finished panel.

Floorstand

Install a threaded pedestal into each leg of the floorstand. Use the washer and nut on each panel to tighten against the floorstand leg.

Utility connections

All connections are made through the bottom left of the unit (the left side of upflow discharge units) for ease of service connections. Refer to the installation manual for pipe sizes and specific locations for your unit.

Power unit

The CW unit uses 3-phase power for operation. Power connections are landed to a receptacle on either floorstand or sub base. Bring the service cable through the bottom left of the unit and through the bulkhead hole into the electrical box to the circuit breaker provided on the left side of the electrical box. The ground lug is located near the 3-phase high-voltage connector. **THE UNIT MUST BE UTILITY GROUNDED OR THE WARRANTY IS VOID.**

Humidifier connections

The humidifier inlet connection point is provided with the equipment. A 1/4" (6.4mm) compression connection is supplied with the unit.

Condensate drain

Condensate from the evaporator pan is collected and discharged by the condensate pump to a 7/8" (22.2mm) fitting for field connection.

Water supply to humidifier

1. The humidifier fill valve orifice is sized for supply water pressure from 15 PSIG (103.4 kPa) to 150 PSIG (1034 kPa).
2. For cases above 150 PSIG (1034 kPa), install a pressure-reducing valve in the water feed line to the unit.
3. With extremely dirty or muddy water sources, proper filtration is required on the unit's incoming water line.
4. DO NOT use softened water with the humidifier. Softened water is too conductive.
5. DO NOT use completely demineralized water with the humidifier. The minerals allow the electrode principle to work.
6. DO NOT use a hot water source. Doing so will cause deposits that will eventually block the fill valve orifices.
7. Water supplies with high conductivity (above 800 mW) must be preconditioned for proper operation and longevity of the humidifier.

Note: Because of an ongoing program dedicated to product improvement, specifications are subject to revisions without notice. APC assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.



APC Worldwide Customer Support

Customer support for this or any other APC product is available at no charge in any of the following ways:

- Visit the APC Web site to find answers to frequently asked questions (FAQs), to access documents in the APC Knowledge Base, and to submit customer support requests.
 - **www.apc.com** (Corporate Headquarters)
Connect to localized APC Web sites for specific countries, each of which provides customer support information.
 - **www.apc.com/support/**
Global support with FAQs, knowledge base, and e-support.
- Contact an APC Customer Support center by telephone or e-mail.
 - Regional centers:

APC headquarters U.S., Canada	(1)(800)800-4272 (toll free)
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Europe, Middle East, Africa	(353)(91)702020 (Ireland)
Asia Pacific	(61) 2 9955 9366 (Australia)

- Local, country-specific centers: go to **www.apc.com/support/contact** for contact information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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