

STULZ

CLIMATE.CUSTOMIZED.



Compact CWE

Engineering Manual

**Perimeter Mounted Precision Air Conditioners
30 kW - 360 kW / 60 Hz**

Our Mission

Our mission is to be the premier provider of energy efficient temperature and humidity control solutions for mission critical applications.

STULZ is dedicated to providing innovative solutions for critical temperature and humidity control needs. STULZ designs and manufactures specialized, energy efficient, environmental control equipment. STULZ serves a diverse marketplace; our customers represent a variety of industries including telecommunications, information technology, medical, financial, educational, industrial process and government. Our world-class "island" manufacturing processes takes place in a modern, 150,000 ft² facility located in Frederick, MD USA. STULZ combines a global network of

sales and service companies with an extensive factory engineering staff and highly flexible manufacturing resources dedicated to providing world-class quality, innovation and customer service.

This commitment to excellence, along with a standard two year warranty, fast lead times, and outstanding customer service, make STULZ the perfect choice for all your environmental control needs.

Solutions that help you reach your goals:

Precision Air Conditioning

- Ceiling & Floor Mounted from 1-100 tons
- Air, Water, Glycol, Chilled Water
- Free Cooling
- Alternate Water Source

Ultrasonic Humidifiers

- Duct, AHU, Wall Mounted & Stand-alone
- Clean, Energy Efficient
- Adiabatic Cooling

ISO-9001:2008 Quality Registered

STULZ is committed to satisfying customer expectations by meeting and exceeding requirements. Our Quality Policy ensures that every Employee is committed to Customer Satisfaction, Teamwork and utilizing Continuous Process Improvement methods in order to deliver an exceptional product. We will continually measure our performance to improve the effectiveness of our quality management system.

STULZ Compact CWE

Compact CWE vertical, floor mounted air conditioning units provide precision temperature and humidity control for computer rooms and other critical areas where continuous 24 hours per day, 365 days per year operation is required. Designed for front only access, Compact CWE systems require minimal floor space. The units are designed with a wide range of options to handle both precision and comfort cooling applications.

Typical applications include:

- Internet/Web Hosting
- Telecommunications
- Financial/Banking
- Insurance
- Airlines/Mass Transit
- Legal Services
- Entertainment
- Government
- Colleges/Universities
- Data Centers
- Computer/LAN Rooms
- Telecommunications Rooms
- Co-location Centers
- ISP (Internet Service Providers)
- ASP (Applications Service Providers)
- Hospital Operating & Isolation Rooms
- Laboratories



Computer Room Air Handlers

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Model Nomenclature						
Compact CWE - Vertical Floor Systems						
CCD-2300-CWE-EF or CCD-XXXX-XXX-XX						
Model	Air Pattern	Capacity (kW)	Number of Refrigeration Circuits	Cooling Method	E	Additional Special Options
Compact CWE System	D = Downflow U = Upflow	30, 60, 90, 120, 150, 180, 190, 230, 280, 360	0	CW = Chilled Water System	E = EC Fan	EF = External Filter LF = Large Fan UF = Under Floor RR = Rear Return
CC	D	230	0	CW	E	EF

Compact CWE

Outstanding Advantages

STULZ Compact CWE floor mounted A/C's are designed to be the compact solution to your precision air conditioning requirements. Systems are available in sizes from 10 to 100 tons in a variety of space saving cabinet foot prints.

Efficiently designed for 100% front service access, STULZ Compact CWE units can easily be tucked into a corner, between cabinetry or side-by-side. STULZ Compact CWE units are especially adaptable to raised floors and are available in both down-flow and upflow air pattern configuration.

Compact CWE Systems Offer Outstanding Advantages

Versatility

- Down-Flow and Up-Flow Air Patterns
- Ducted Systems
- Raised Floor Mounting with Floor Stands
- Optional Under Floor Fan Mounting

100% Front Service Access

From 10-100 tons, STULZ Compact CWE systems are designed for 100% Front Only Access. The compact foot-prints require minimal floor space and are easily tucked into a corner, between cabinetry or side-by-side.

Non-Proprietary Parts

STULZ Compact CWE systems incorporate non-proprietary components where possible. Most major HVAC, refrigeration and electrical distributors stock an exact model cross reference or an alternate to most factory provided components.

Code (UL / CSA) Conformance



- NYC MEA Approved (MEA-433-00-E)

Microprocessor Control

Precision temperature and/or humidity control with highly versatile and flexible **E²** series controls. Designed primarily for STULZ precision air conditioners, **E²** controllers offer a wide range of expanded control functions and alarms.

The **E²** controller features a "menu-driven" operating environment to allow system setup and operation via an easy to read user interface display panel which is typically mounted on the front door of the STULZ Compact CWE system.

Electronically Commutated (EC) Fan

Maintenance free, highly reliable EC (Electronically Commutated) Fans offer considerable cost savings and long life.

Fan speed is continuously adjustable via a signal from the system controller without the use of VFD's. EC fans offer energy efficient, quiet and low vibration operation.



Complete Temperature & Humidity Control

- Electrode Canister Steam Humidification
- Dehumidification Mode with
 - Staged Electric Reheat/Heat
 - Optional Hot Water Reheat/Heat

Computer Room Air Handlers

24/7 Year Round Operation

Option offerings available with Compact CWE systems allow for year-round, 24 hrs-a-day A/C operation in any environment in the world.

Modular Motor Controllers

Compact CWE systems incorporate modular motor controllers with motor circuit breakers in lieu of inconvenient replaceable fuses, eliminating the need for ANY motor fusing.

Quiet Operation

EC Fans, and acoustically lined cabinets provide quiet operation.

Warranty

- 2 Year Parts Standard

Selected Standard Features:

- Compact Foot Print
- Microprocessor Control
- High Efficiency EC Fans
- 30% Efficient Filtration
- Main Power Non-Fused Disconnect Switch
- Modular Motor Controllers (w/motor circuit breakers)
- Acoustical/Thermal Insulation
- Aluminum Finned / Copper Tube Coils
- Modulating Chilled Water Control Valves
- Front Filter Access

Other Available Options:

- 2 & 3 way Grilled Plenum Boxes
- Automatic Switchover to Back-Up Power
- Floor Stands
- Condensate Pumps
- Firestats
- Smoke Detectors
- Water Leak Detectors
- 60% Efficient Filtration
- High Short Circuit Current Rating (KAIC)
- Seismic Rated Cabinets/Floor Stands
- **Many more options available!**

Space Saving Configuration

With 100% Front Access, the Compact CWE is suitable for Standalone or In-Row Configurations.



Compact CWE
Model CCD-1800-CWE (shown)



Compact CWE

Compact-CWE Model		300	600	900	1200	1500	1800	1900	2300	2800	3600
SELECTED FEATURES:											
TEMPERATURE CONTROL											
2-Way Modulating Chilled Water Control Valve		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
3-Way Modulating Chilled Water Control Valve		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
2-Stage Electric Reheating/Heating		Standard	Standard	Standard	Standard	N/A	N/A	N/A	N/A	N/A	N/A
3-Stage Electric Reheating/Heating		Optional	Optional	Optional	Optional	Standard	Standard	Standard	Standard	Standard	Standard
Hot Water Reheat		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
High Efficiency, Aluminum Fin/Copper Tube Coils		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
HUMIDITY CONTROL											
Electrode Canister Steam Humidifier		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Dehumidification Mode - Electric Reheat		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
CONTROLS											
E ² Touchscreen Microprocessor Controller		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
BMS/LAN Connection		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
CABINET											
Galvanealed Steel, Powder Coated Finish		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
1/2" Thick, 2lb/ft ² Density Thermal & Sound Insulation		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Seismic Rated		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
FLOOR STAND											
Adjustable Floor Stand		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Adjustable Floor Stand-Enclosed		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Seismic Rated		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
AIR PATTERN											
Up-Flow	Front Free Return	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	N/A
	Rear Return	N/A	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Down-Flow		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
FILTERS / PLENUMS											
30% Avg. Efficiency Pleated Filters		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
60% Avg. Efficiency Pleated Filters		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Return Air Plenum Extension Box (Downflow Units)		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
ELECTRICAL											
3-Phase Power Supply		----- See Electrical Table Page 14 -----									
Multi-Voltage Control Transformer (24V Class 2)		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
High Short Circuit Current Rating (KAIC)		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
SAFETY FEATURES											
Visual Local & Remote Alarms		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Main Power Non-Fused Disconnect (Unit Mounted)		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Motor Overload Protection		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Computer Room Air Handlers

Model	CCU-300- CWE	CCD-300- CWE	CCU-600- CWE	CCD-600- CWE	CCU-900- CWE	CCD-900- CWE	CCU-1200- CWE	CCD- 1200-CWE
Chilled Water Control Valve - Sized for Medium Flow @ 75°FDB/62.5°FWB EAT Conditions								
2-way Modulating (standard)								
Size / (Cv)	1" / 14	1" / 14	2" / 20	2" / 20"	2" / 28	2" / 28	2" / 30	2" / 30
Valve Pressure Rating - psi	600	600	600	600	600	600	600	600
Close-off Pressure Rating - psi	200	200	200	200	200	200	200	200
3-way Modulating (optional)								
Size / (Cv)	1" / 14	1" / 14	1 1/2" / 20	2" / 20	1 1/2" / 28	2" / 28	2" / 30	2" / 28
Valve Pressure Rating - psi	400	400	400	400	400	400	400	400
Close-off Pressure Rating - psi	200	200	200	200	200	200	200	200
Chilled Water Coil - Aluminum Fin, Copper Tube								
Rows/Face Area (ft2)	6 / 15.1	6 / 15.1	4 / 27.6	4 / 31.2	6 / 27.6	5 / 31.2	6 / 39.0	6 / 39.0
Face Velocity, fpm	377	377	416	369	416	369	243	318
Evaporator Blower / Motor - Backward Curved Direct Driven EC								
Horsepower (Nominal)	4.1 hp each	4.1 hp each	4.1 hp each	4.1 hp each	4.1 hp each	4.1 hp each	3.9 hp each	3.9 hp each
CFM @ ext. st. press.	5,700 @ 0.3"	5,700 @ 0.3"	11,500 @ 0.3"	11,500 @ 0.3"	11,500 @ 0.3"	11,500 @ 0.3"	9,480 @ 0.3"	12,400 @ 0.3"
Quantity of Blowers	1	1	2	2	2	2	2	2
Drive Method	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Reheat/Heat - Performance Capacities Include Evaporator Blower Motor Heat								
ELECTRIC REHEAT / HEAT - Finned Tubular Heaters, (Standard)								
Htr kW Rating (No. of Stages)	12 kW (1-stg)	12 kW (1-stg)	24 kW (2-stg)	24 kW (2-stg)	24 kW (2-stg)	24 kW (2-stg)	18 kW (2-stg)	18 kW (2-stg)
Tot BTU/H w/ Evap Mtr Ht:	50,327	50,327	100,312	103,042	100,654	103,042	81,281	81,205
HOT WATER REHEAT / HEAT - Reheat rated @ 180°F Entering Water Temperature, EAT = 72°F DB, (Optional)								
BTU/H	110,478	110,478	118,498	108,886	118,498	108,886	83,320	98,500
GPM / Press. Drop (ft.wg)	11.3 / 16.5	11.3 / 16.5	12.1 / 18.4	11.1 / 9.3	12.1 / 18.4	11.1 / 9.3	8.5 / 6.7	10.1 / 8.2
EWT / LWT	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160
Control	VALVE : ON/OFF, 2-WAY, 1", 300PSI, CV=8.0							
Humidification - Electrode Steam Canister Humidifier with Adjustable Output, (Standard)								
Lbs/Hr, (kW Input)	15 (5.1)	15 (5.1)	15 (5.1)	15 (5.1)	15 (5.1)	15 (5.1)	17.6 (6.0)	15 (5.1)
Std Control	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional
Filters - 30% Average Efficiency, throwaway								
UP-FLOW (Front Free Return); DOWN-FLOW (Top Ducted or Free Return)								
Nom. Size (in.), (Qty.)	21.5 x 13.5 x 4 (4)	14 x 32 x 4 (3)	21.5 x 29.5 x 4 (4)	25 x 32 x 4 (3)	21.5 x 29.5 x 4 (4)	25 x 32 x 4 (3)	10.3 x 30 x 4 (1) 13.5 x 30 x 4 (2) 12.2 x 30 x 4 (2)	18.5 x 37 x 4 (5)
UP-FLOW (Rear Ducted Return)								
Nom. Size (in.), (Qty.)	N/A	N/A	23 x 37 x 4 (3)	N/A	23 x 37 x 4 (3)	N/A	20.5 x 37 x 4 (1) 23 x 37 x 4 (4)	N/A
Connection Sizes - Copper, (Water In/Out connections are sized for flow rates at 75°FDB/62.5°FWB EAT conditions.)								
Condensate Drain, w/ pump	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD
Humidifier Inlet	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD
Water In/Out	1" sweat	1" sweat	1 5/8" sweat	2" sweat	1 5/8" sweat	2" sweat	2" sweat	2" sweat
Physical Data (w/o Plenum Box)								
Approximate Unit Weight	900 lbs	800 lbs	1,450 lbs	1,400 lbs	1,500 lbs	1,450 lbs	1,850 lbs	1,800 lbs
Approximate Shipping Weight	1,00 lbs	900 lbs	1,550 lbs	1,500 lbs	1,600 lbs	1,550 lbs	2,000 lbs	1,950 lbs
Unit Dimensions: (H"x W"x D")*	76.25 x 45.5 x 35	76.25 x 45.5 x 35	76.25 x 77.5 x 35.5 88 x 77.5 x 40.5 (RR)	76.25 x 77.5 x 35.5	76.25 x 77.5 x 35.5 88 x 77.5 x 40.5 (RR)	76.25 x 77.5 x 35.5	88 x 95 x 40.5	76.2 X 95 X 40.5
Shipping Dimensions: (H"x W"x D")	83 x 52 x 42	83 x 52 x 42	83 x 85 x 42	83 x 85 x 42	83 x 85 x 42	83 x 85 x 42	95 x 102 x 47	83 x 102 x 47

* Unit dimensions labeled "RR" are for Rear-Return units (CCU-()-CWE-RR).



Compact CWE

Performance/Capacity Specifications

Model	CCU-1500-CWE	CCD-1500-CWE	CCU-1800-CWE	CCD-1800-CWE	CCU-1900-CWE	CCD-1900-CWE	CCU-2300-CWE	CCU-2300-CWE-LF
Chilled Water Control Valve - Sized for Medium Flow @ 75°FDB/62.5°FWB EAT Conditions								
2-way Modulating (standard)								
Size / (Cv)	2" / 40	2" / 40	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60
Valve Pressure Rating - psi	600	600	600	600	600	600	600	600
Close-off Pressure Rating - psi	200	200	200	200	200	200	200	200
3-way Modulating (optional)								
Size / (Cv)	2" / 40	2" / 40	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60
Valve Pressure Rating - psi	400	400	400	400	400	400	400	400
Close-off Pressure Rating - psi	200	200	200	200	200	200	200	200
Chilled Water Coil - Aluminum Fin, Copper Tube								
Rows/Face Area (ft2)	3 / 52.6	3 / 52.6	4 / 52.6	4 / 52.6	5 / 52.6	5 / 52.6	6 / 52.6	6 / 52.6
Face Velocity, fpm	314	314	314	327	304	332	312	342
Evaporator Blower / Motor - Backward Curved Direct Driven EC								
Horsepower (Nominal)	3.9 hp each	4.1 hp each	3.9 hp each	4.1 hp each	3.9 hp each	4.1 hp each	3.9 hp each	5.3 hp each
CFM @ ext. st. press.	16,500 @ 0.3"	16,500 @ 0.3"	16,500 @ 0.3"	17,200 @ 0.3"	16,000 @ 0.3"	17,500 @ 0.3"	16,400 @ 0.3"	18,000 @ 0.3"
Quantity of Blowers	3	3	3	3	3	3	3	3
Drive Method	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Reheat/Heat - Performance Capacities Include Evaporator Blower Motor Heat								
ELECTRIC REHEAT / HEAT - Finned Tubular Heaters, (Standard)								
Htr kW Rating (No. of Stages)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)
Tot BTU/H w/ Evap Mtr Ht:	123,964	123,964	123,964	123,964	123,964	123,964	121,915	132,515
HOT WATER REHEAT / HEAT - Reheat rated @ 180°F Entering Water Temperature, EAT = 72°F DB, (Optional)								
BTU/H	177,000	183,400	177,000	190,579	177,000	192,444	177,000	195,480
GPM / Press. Drop (ft.wg)	18 / 20.5	19 / 22.7	18 / 20.5	19.5 / 19.3	18 / 20.5	19.7 / 19.6	18 / 20.5	20 / 20.1
EWT / LWT	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160
Control	VALVE : ON/OFF, 2-WAY, 1", 300PSI, CV=8.0							
Humidification - Electrode Steam Canister Humidifier with Adjustable Output, (Standard)								
Lbs/Hr, (kW Input)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)
Std Control	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional
Filters - 30% Average Efficiency, throwaway								
UP-FLOW (Front Free Return); DOWN-FLOW (Top Ducted or Free Return)								
Nom. Size (in.), (Qty.)	26 x 11 x 5.75 (1) 26 x 22.5 x 5.75 (1) 40 x 17.5 x 5.75 (2) 40 x 24 x 5.75 (1)	23 x 32 x 4 (5)	26 x 11 x 5.75 (1) 26 x 22.5 x 5.75 (1) 40 x 17.5 x 5.75 (2) 40 x 24 x 5.75 (1)	23 x 32 x 4 (5)	26 x 11 x 5.75 (1) 26 x 22.5 x 5.75 (1) 40 x 17.5 x 5.75 (2) 40 x 24 x 5.75 (1)	23 x 32 x 4 (5)	26 x 11 x 5.75 (1) 26 x 22.5 x 5.75 (1) 40 x 17.5 x 5.75 (2) 40 x 24 x 5.75 (1)	17.38 x 30 x 4 (2) 16 x 30 x 4 (3) 16 x 19.25 x 4 (1)
UP-FLOW (Rear Ducted Return)								
Nom. Size (in.), (Qty.)	23 x 37 x 4 (1) 25 x 37 x 4 (1) 20.5 x 37 x 4 (2)	N/A	23 x 37 x 4 (1) 25 x 37 x 4 (1) 20.5 x 37 x 4 (2)	N/A	23 x 37 x 4 (1) 25 x 37 x 4 (1) 20.5 x 37 x 4 (2)	N/A	23 x 37 x 4 (1) 25 x 37 x 4 (1) 20.5 x 37 x 4 (2)	23 x 37 x 4 (1) 25 x 37 x 4 (1) 20.5 x 37 x 4 (2)
Connection Sizes - Copper, (Water In/Out connections are sized for flow rates at 75°FDB/62.5°FWB EAT conditions.)								
Condensate Drain, w/ pump	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD
Humidifier Inlet	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD
Water In/Out	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat
Physical Data (w/o Plenum Box)								
Approximate Unit Weight	1,750 lbs	1,650 lbs	1,850 lbs	1,750 lbs	1,950 lbs	1,850 lbs	2,500 lbs	2,600 lbs
Approximate Shipping Weight	1,900 lbs	1,800 lbs	2,000 lbs	1,900 lbs	2,100 lbs	2,000 lbs	2,700 lbs	2,800 lbs
Unit Dimensions: (H" x W" x D")	88 x 118 x 40.5	76.25 x 118 x 35.5	88 x 118 x 40.5	76.25 x 118 x 35.5	88 x 118 x 40.5	76.25 x 118 x 35.5	88 x 118 x 40.5	88 x 118 x 40.5
Shipping Dimensions: (H" x W" x D")	95 x 125 x 47	83 x 125 x 41	95 x 125 x 47	83 x 125 x 42	95 x 125 x 47	83 x 125 x 42	95 x 125 x 47	95 x 125 x 47

Computer Room Air Handlers

Model	CCD-2300-CWE	CCD-2300-CWE-EF	CCD-2300-CWE-EF-UF	CCU-2800-CWE	CCD-2800-CWE	CCD-2800-CWE-UF	CCD-3600-CWE
Chilled Water Control Valve - Sized for Medium Flow @ 75°FDB/62.5°FWB EAT Conditions							
2-way Modulating (standard)							
Size / (Cv)	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	3" / 124
Valve Pressure Rating - psi	600	600	600	600	600	600	360
Close-off Pressure Rating - psi	200	200	200	200	200	200	100
3-way Modulating (optional)							
Size / (Cv)	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	2" / 60	N/A
Valve Pressure Rating - psi	400	400	400	400	400	400	N/A
Close-off Pressure Rating - psi	200	200	200	200	200	200	N/A
Chilled Water Coil - Aluminum Fin, Copper Tube							
Rows/Face Area (ft2)	6 / 52.6	6 / 52.6	6 / 52.6	6 / 63	6 / 70.1	6 / 70.1	6 / 82.8
Face Velocity, fpm	342	389	389	341	342	342	386
Evaporator Blower / Motor - Backward Curved Direct Driven EC							
Horsepower (Nominal)	3.9 hp each	3.9 hp each	3.9 hp each	5.3 hp each	5.3 hp each	5.3 hp each	5.3 hp each
CFM @ ext. st. press.	18,000 @ 0.3"	20,500 @ 0.3"	20,500 @ 0.3"	21,500 @ 0.3	21,500 @ 0.3	24,000 @ 0.3	32,000 @ 0.3
Quantity of Blowers	3	3	3	3	3	3	4
Drive Method	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Reheat/Heat - Performance Capacities Include Evaporator Blower Motor Heat							
ELECTRIC REHEAT / HEAT - Finned Tubular Heaters, (Standard)							
Htr kW Rating (No. of Stages)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)	27 kW (3-stg)
Tot BTU/H w/ Evap Mtr Ht:	121,915	121,915	121,915	132,515	132,515	133,068	146,210
HOT WATER REHEAT / HEAT - Reheat rated @ 180°F Entering Water Temperature, EAT = 72°F DB, (Optional)							
BTU/H	195,480	209,926	209,926	181,000	195,480	187,257	203,255
GPM / Press. Drop (ft.wg)	20 / 20	21.5 / 22.8	21.5 / 22.8	19 / 22.7	20 / 24.1	19.2 / 19	20.8 / 21.5
EWT / LWT	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160	180 / 160
Control	VALVE : ON/OFF, 2-WAY, 1", 300PSI, CV=8.0						
Humidification - Electrode Steam Canister Humidifier with Adjustable Output, (Standard)							
Lbs/Hr, (kW Input)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	20 (6.8)	30 (10.2)
Std Control	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional
Filters - 30% Average Efficiency, throwaway							
UP-FLOW (Front Free Return); DOWN-FLOW (Top Ducted or Free Return)							
Nom. Size (in.), (Qty.)	23 x 37 x 4 (5)	Installed in External Filter Box 23 x 24 x 4 (10)	Installed in External Filter Box 23 x 24 x 4 (10)	46 x 17.5 x 5.75 (2) 46 x 24 x 5.75 (1) 26 x 11 x 5.75 (1) 26 x 22.5 x 5.75 (1)	23 x 47 x 4 (5)	23 x 47 x 4 (5)	Installed in External Filter Box 25 x 37 x 4 (10)
UP-FLOW (Rear Ducted Return)							
Nom. Size (in.), (Qty.)	N/A	N/A	N/A	20.5 x 47.5 x 4 (1) 23 x 47.5 x 4 (4)	N/A	N/A	N/A
Connection Sizes - Copper, (Water In/Out connections are sized for flow rates at 75°FDB/62.5°FWB EAT conditions.)							
Condensate Drain, w/ pump	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD	7/8" OD, 1/2" OD
Humidifier Inlet	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD	1/4" OD
Water In/Out	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat	2" sweat	3 1/8" sweat
Physical Data (w/o Plenum Box)							
Approximate Unit Weight	2,400 lbs	2,500 lbs	2,700 lbs	2,600 lbs	2,500 lbs	2,700 lbs	3,000 lbs
Approximate Shipping Weight	2,600 lbs	2,700 lbs	2,900 lbs	2,800 lbs	2,700 lbs	2,900 lbs	3,200 lbs
Unit Dimensions: (H" x W" x D")	76.25 x 118 x 40.5	76.25 x 118 x 40.5	88 x 118 x 40.5	88 x 118 x 50	88 x 118 x 50	88 x 118 x 50	88 x 127.5 x 50
Shipping Dimensions: (H" x W" x D")	83 x 125 x 47	83 x 125 x 47	83 x 125 x 47	95 x 125 x 57	95 x 125 x 57	95 x 125 x 57	95 x 134 x 57

Compact CWE

Performance/Capacity Data - 45° EWT / 0% Glycol - Upflow

Model: CCU-		300-CWE	600-CWE	900-CWE	1200-CWE	1500-CWE	1800-CWE	1900-CWE	2300-CWE	2300-CWE-LF	2800-CWE
NET COOLING CAPACITY - BTU/H @ 45°F EWT, 0% Glycol Solution (Includes motor heat @ std CFM & e.s.p. ratings)											
80°FDB/67°FWB, 50% RH											
High Flow (10°F ΔTw)	Total	192,502	334,669	436,813	395,922	414,762	508,448	606,092	678,659	724,600	990,024
	Sensible	141,161	258,592	306,627	266,426	333,370	382,922	428,688	455,213	490,850	646,454
	GPM / (pd. Ft.)	40.3 / 32.6	70.9 / 71.1	91.2 / 65.1	82.4 / 28.5	89 / 41.5	107 / 29.7	126.6 / 52.5	141 / 38.1	152 / 43.5	205 / 57.3
Med. Flow (12°F ΔTw)	Total	173,067	318,525	417,730	364,906	389,416	482,134	582,928	656,323	701,000	953,360
	Sensible	132,779	250,147	297,863	253,110	319,954	370,098	417,786	444,990	480,400	630,725
	GPM / (pd. Ft.)	30.4 / 20.2	56.3 / 47.1	72.9 / 43.6	63.8 / 18.8	70 / 27.6	84.8 / 20.6	101.6 / 36	114 / 26.5	123 / 30.1	165 / 38.7
Low Flow (14°F ΔTw)	Total	154,065	303,403	393,979	332,836	364,958	458,424	559,656	628,395	674,600	913,450
	Sensible	124,185	241,605	286,859	239,388	305,782	357,698	406,516	432,790	468,100	613,207
	GPM / (pd. Ft.)	23.4 / 13.6	46.1 / 33.3	59.1 / 30.3	50.2 / 13.3	56.5 / 19.5	69.4 / 15.4	83.8 / 26.3	94 / 19.4	102 / 22.0	136 / 27.6
75°FDB/62.5°FWB, 50% RH											
High Flow (10°F ΔTw)	Total	138,910	253,567	335,796	292,456	312,375	384,468	466,830	508,024	546,300	734,670
	Sensible	122,231	226,995	272,938	231,096	288,981	337,404	378,340	395,992	429,400	557,011
	GPM / (pd. Ft.)	29.7 / 19.6	54.6 / 44.7	71 / 41.6	62.2 / 18.1	68.5 / 26.7	82.6 / 19.8	98.8 / 34.5	107 / 23.9	27.7	155 / 34.7
Med. Flow (12°F ΔTw)	Total	101,273	235,610	318,953	269,372	293,366	362,364	451,664	487,856	525,000	705,133
	Sensible	101,273	214,830	264,003	220,272	273,437	322,870	369,684	385,774	418,800	543,368
	GPM / (pd. Ft.)	18.5 / 10.0	42.6 / 29.2	56.5 / 28.2	47.8 / 12.4	54 / 18.3	65 / 14.1	80 / 24.5	86 / 16.9	94 / 19.4	124 / 23.6
Low Flow (14°F ΔTw)	Total	91,290	212,800	297,617	241,958	269,967	329,048	436,396	468,780	505,100	677,913
	Sensible	91,290	198,529	252,293	207,002	254,121	300,406	360,424	376,113	408,000	530,739
	GPM / (pd. Ft.)	14.5 / 7.7	33.2 / 19.6	45.3 / 19.8	37.2 / 9.1	43 / 13.1	51 / 10.4	66.2 / 18.4	71 / 12.8	78 / 14.6	102 / 17.2
72°FDB/60°FWB, 50% RH											
High Flow (10°F ΔTw)	Total	96,762	191,935	282,484	246,032	265,326	314,360	398,972	426,105	459,100	612,752
	Sensible	96,762	191,935	249,709	211,503	257,583	300,120	346,816	360,905	392,100	505,554
	GPM / (pd. Ft.)	21.3 / 11.9	42.4 / 29.0	60.3 / 31.5	52.8 / 14.3	59 / 21.0	68.4 / 15.1	85.2 / 27.2	91 / 18.4	100 / 21.4	130 / 25.6
Med. Flow (12°F ΔTw)	Total	82,891	171,760	216,261	172,916	220,206	260,878	386,518	412,007	443,700	592,482
	Sensible	82,891	171,760	216,261	172,916	220,206	260,878	338,486	352,743	382,800	495,712
	GPM / (pd. Ft.)	15.5 / 8.3	32 / 18.6	39.3 / 16.0	32 / 7.6	42 / 12.7	48.2 / 9.7	69.2 / 19.7	73.5 / 13.4	80.5 / 15.3	105 / 18.1
Low Flow (14°F ΔTw)	Total	75,980	147,910	189,602	144,986	189,930	225,192	364,724	397,597	316,900	575,119
	Sensible	75,980	147,910	189,602	144,986	189,930	225,192	324,318	344,172	316,900	486,043
	GPM / (pd. Ft.)	12.3 / 6.7	24 / 12.4	30 / 11.0	23.4 / 5.9	31.5 / 8.8	36.2 / 7.3	56 / 14.5	61 / 10.4	51 / 8.4	88 / 13.8
80°FDB/65°FWB, 45% RH											
High Flow (10°F ΔTw)	Total	180,351	312,494	410,293	365,024	385,649	472,112	565,350	614,353	659,400	891,040
	Sensible	151,258	275,467	327,279	281,360	354,506	409,018	453,436	473,634	514,200	667,279
	GPM / (pd. Ft.)	37.9 / 29.3	66.2 / 62.9	85.7 / 58.1	76.4 / 25.1	83 / 36.8	99.8 / 26.6	118 / 46.5	128 / 32.2	140 / 37.6	185 / 47.6
Med. Flow (12°F ΔTw)	Total	162,641	299,008	396,245	344,188	367,644	453,192	549,818	596,156	642,600	861,081
	Sensible	143,043	266,636	320,095	271,860	340,893	397,528	445,074	465,044	506,000	653,995
	GPM / (pd. Ft.)	28.7 / 18.5	53.1 / 42.4	69.3 / 39.9	60.2 / 17.2	66.5 / 25.4	80.0 / 18.9	96 / 32.8	104 / 22.8	114 / 26.5	150 / 32.7
Low Flow (14°F ΔTw)	Total	121,750	282,150	379,655	322,234	349,565	431,450	534,536	575,634	620,800	831,726
	Sensible	121,750	255,183	311,437	261,532	326,040	383,302	436,426	454,975	495,200	640,556
	GPM / (pd. Ft.)	18.8 / 10.5	43.1 / 29.8	57.2 / 28.7	48.6 / 12.7	54.5 / 18.5	65.6 / 14.3	80.2 / 24.6	86 / 16.9	94 / 19.4	124 / 23.6
75°FDB/61°FWB, 45% RH											
High Flow (10°F ΔTw)	Total	118,417	226,014	324,015	285,782	289,139	360,172	449,428	478,401	516,700	686,269
	Sensible	118,417	226,014	289,628	247,992	289,139	350,858	399,536	415,261	452,300	580,095
	GPM / (pd. Ft.)	25.6 / 15.5	49.1 / 37.2	68.6 / 39.2	60.8 / 17.5	64 / 23.9	77.6 / 18.1	95.4 / 32.5	101 / 21.7	111 / 25.4	145 / 30.9
Med. Flow (12°F ΔTw)	Total	100,889	207,706	303,034	261,176	266,247	314,656	437,558	466,330	503,800	668,573
	Sensible	100,889	207,706	278,147	235,958	266,247	314,656	391,482	408,215	445,100	571,316
	GPM / (pd. Ft.)	18.5 / 10.0	38 / 24.3	53.7 / 25.9	46.6 / 12	49.5 / 16.0	57.0 / 11.9	77.4 / 23.3	82.5 / 15.9	90.5 / 18.3	118 / 21.8
Low Flow (14°F ΔTw)	Total	91,042	186,453	235,720	185,324	238,873	283,524	423,776	454,056	388,500	653,103
	Sensible	91,042	186,453	235,720	185,324	238,873	283,524	381,884	401,105	388,500	563,145
	GPM / (pd. Ft.)	14.4 / 7.6	29.5 / 16.5	36.5 / 14.4	29.2 / 7.1	38.5 / 11.3	44.6 / 9.0	64.4 / 17.7	69 / 12.3	61 / 10.4	99 / 16.5
72°FDB/58.7°FWB, 45% RH											
High Flow (10°F ΔTw)	Total	96,467	191,479	237,521	197,430	245,330	290,498	381,106	414,481	386,600	590,853
	Sensible	96,467	191,479	237,521	197,430	245,330	290,498	361,282	382,882	386,600	533,369
	GPM / (pd. Ft.)	21.3 / 11.9	42.3 / 28.9	51.5 / 24.3	43.2 / 10.8	55 / 18.8	63.8 / 13.7	81.6 / 25.4	89 / 17.8	85 / 16.6	126 / 24.3
Med. Flow (12°F ΔTw)	Total	82,694	171,276	215,686	172,366	218,890	260,148	305,516	331,563	355,700	579,247
	Sensible	82,694	171,276	215,686	172,366	218,890	260,148	305,516	331,563	355,700	526,931
	GPM / (pd. Ft.)	15.5 / 8.2	31.9 / 18.5	39.2 / 16.0	31.8 / 7.6	41.5 / 12.5	48.0 / 9.7	55.6 / 14.4	60 / 10.2	66 / 11.6	103 / 17.5
Low Flow (14°F ΔTw)	Total	75,782	147,377	188,952	144,620	189,848	224,384	279,360	296,211	316,700	429,496
	Sensible	75,782	147,377	188,952	144,620	189,848	224,384	279,360	296,211	316,700	429,496
	GPM / (pd. Ft.)	12.3 / 6.7	24 / 12.4	29.9 / 11.0	23.4 / 5.9	31.5 / 8.8	36.0 / 7.3	44 / 10.7	46.5 / 7.6	51 / 8.4	67 / 9.4

Computer Room Air Handlers

Performance/Capacity Data - 50° EWT / 0% Glycol - Upflow

Model: CCU-	300-CWE	600-CWE	900-CWE	1200-CWE	1500-CWE	1800-CWE	1900-CWE	2300-CWE	2300-CWE-LF	2800-CWE
NET COOLING CAPACITY - BTU/H @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ std CFM & e.s.p. ratings)										
80°FDB/67°FWB, 50% RH										
High Flow (10°F ΔT _w)	Total	147,865	261,196	348,649	307,484	316,205	394,764	480,972	522,620	784,182
	Sensible	123,314	226,395	270,676	230,106	287,800	334,988	374,012	390,707	545,094
	GPM / (pd. Ft.)	31.6 / 21.6	56.2 / 46.8	73.7 / 44.3	65.2 / 19.4	69.5 / 27.1	84.8 / 20.5	101.6 / 35.8	110 / 24.8	165 / 38.6
Med. Flow (12°F ΔT _w)	Total	123,179	248,612	334,338	285,818	298,169	375,550	464,946	503,968	748,987
	Sensible	112,334	217,752	263,551	220,940	273,391	323,018	365,702	382,486	530,604
	GPM / (pd. Ft.)	22.2 / 12.6	44.7 / 31.5	59 / 30.1	50.6 / 13.4	55 / 18.6	67.2 / 14.7	82 / 25.5	89 / 17.7	131 / 25.8
Low Flow (14°F ΔT _w)	Total	91,988	229,033	317,363	262,480	277,251	350,392	450,594	483,178	716,783
	Sensible	91,988	204,535	254,771	210,702	256,199	350,392	357,636	372,410	516,992
	GPM / (pd. Ft.)	14.6 / 7.4	35.6 / 21.8	48.2 / 21.7	40.2 / 9.09	44 / 13.4	54 / 11.1	68.4 / 19.1	73 / 13.2	108 / 18.8
75°FDB/62.5°FWB, 50% RH										
High Flow (10°F ΔT _w)	Total	85,611	172,727	215,911	178,440	219,669	262,400	360,536	385,429	552,019
	Sensible	85,611	172,727	215,911	178,440	219,669	262,400	326,386	342,603	478,181
	GPM / (pd. Ft.)	19.1 / 10.3	38.6 / 24.8	47.2 / 21.0	39.4 / 9.7	50 / 16.2	58.2 / 12.21	77.8 / 23.3	83 / 15.9	118 / 21.7
Med. Flow (12°F ΔT _w)	Total	73,173	152,143	193,758	151,838	193,572	231,780	275,298	374,304	538,344
	Sensible	73,173	152,143	193,758	151,838	193,572	231,780	275,398	335,622	470,704
	GPM / (pd. Ft.)	13.9 / 7.3	28.7 / 15.8	35.7 / 13.9	28.4 / 6.9	37.5 / 10.8	43.4 / 8.7	50.6 / 12.6	67 / 11.7	96 / 15.7
Low Flow (14°F ΔT _w)	Total	66,167	127,359	165,178	127,006	164,190	194,590	248,106	258,698	378,959
	Sensible	66,167	127,359	165,178	127,006	164,190	194,590	248,106	258,698	378,959
	GPM / (pd. Ft.)	10.9 / 6.1	21.1 / 10.5	26.5 / 9.4	21.0 / 5.5	28 / 7.7	32 / 6.7	39.6 / 9.5	41 / 6.6	60 / 8.2
72°FDB/60°FWB, 50% RH										
High Flow (10°F ΔT _w)	Total	64,560	136,375	173,415	138,062	173,556	207,976	244,536	266,357	385,705
	Sensible	64,560	136,375	173,415	138,062	173,556	207,976	244,536	266,357	385,705
	GPM / (pd. Ft.)	14.9 / 7.9	31.3 / 17.9	38.7 / 15.6	31.4 / 7.5	41 / 12.2	47.4 / 9.5	54.6 / 14	59 / 10.0	85 / 13.1
Med. Flow (12°F ΔT _w)	Total	57,599	112,349	146,055	110,828	144,900	172,002	218,032	229,405	333,460
	Sensible	57,599	112,349	146,055	110,828	144,900	172,002	218,032	229,405	333,460
	GPM / (pd. Ft.)	11.3 / 6.3	22.1 / 11.2	27.7 / 9.9	21.6 / 5.7	29.5 / 8.2	33.4 / 6.9	41.2 / 9.9	43 / 7.0	62 / 8.6
Low Flow (14°F ΔT _w)	Total	50,411	81,750	105,787	97,838	108,919	123,286	184,574	183,987	267,159
	Sensible	50,411	81,750	105,787	97,838	108,919	123,286	184,574	183,987	267,159
	GPM / (pd. Ft.)	8.7 / 5.3	14.7 / 7.0	18 / 6.4	16.8 / 5.0	20 / 5.7	21.8 / 5.1	30.4 / 7.4	30.5 / 5.1	44 / 6.0
80°FDB/65°FWB, 45% RH										
High Flow (10°F ΔT _w)	Total	122,483	228,645	332,527	298,246	291,077	345,474	456,296	482,847	692,646
	Sensible	122,483	228,645	294,042	252,744	291,077	345,474	402,320	417,625	582,692
	GPM / (pd. Ft.)	26.4 / 16.3	49.8 / 37.9	70.4 / 40.9	63.4 / 18.6	64.5 / 24.0	74.8 / 16.9	96.8 / 33.1	102 / 22	146 / 31.1
Med. Flow (12°F ΔT _w)	Total	106,334	212,694	314,931	278,944	271,200	322,548	443,790	472,118	676,391
	Sensible	106,334	212,694	284,812	243,980	271,200	322,548	394,214	411,912	574,889
	GPM / (pd. Ft.)	19.4 / 10.5	38.7 / 24.9	55.8 / 27.5	49.6 / 13.0	50.5 / 16.4	58.4 / 12.2	78.6 / 23.7	83.5 / 16.1	119 / 22.0
Low Flow (14°F ΔT _w)	Total	91,614	192,992	243,800	194,780	245,585	293,208	430,508	460,736	662,136
	Sensible	91,614	192,992	243,800	194,780	245,585	293,208	385,162	405,269	567,726
	GPM / (pd. Ft.)	14.5 / 7.4	30.5 / 17.2	37.7 / 15.0	30.6 / 7.4	39.5 / 11.6	46 / 9.2	65.4 / 17.9	70 / 12.4	100 / 16.7
75°FDB/61°FWB, 45% RH										
High Flow (10°F ΔT _w)	Total	85,289	172,239	215,346	177,776	220,250	261,622	295,946	327,163	471,565
	Sensible	85,289	172,239	215,346	177,776	220,250	261,622	295,946	327,163	471,565
	GPM / (pd. Ft.)	19.1 / 10.2	38.5 / 24.6	47.1 / 20.9	39.2 / 9.6	50.5 / 16.4	58 / 12.4	64.8 / 17.8	71 / 12.7	102 / 17.2
Med. Flow (12°F ΔT _w)	Total	72,966	151,619	193,146	151,286	193,457	230,940	274,584	297,757	430,105
	Sensible	72,966	151,619	193,146	151,286	193,457	230,940	274,584	297,757	430,105
	GPM / (pd. Ft.)	13.9 / 7.3	28.7 / 15.7	35.6 / 13.9	28.4 / 6.9	37.5 / 10.8	43.2 / 8.7	50.4 / 12.6	54.5 / 9.0	78 / 11.6
Low Flow (14°F ΔT _w)	Total	65,957	126,768	164,456	126,590	164,102	193,638	247,224	258,540	378,703
	Sensible	65,957	126,768	164,456	126,590	164,102	193,638	247,224	258,540	378,703
	GPM / (pd. Ft.)	10.9 / 6.1	21 / 10.5	26.4 / 9.4	20.8 / 5.5	28 / 7.7	31.8 / 6.6	39.4 / 9.4	41 / 6.6	60 / 8.2
72°FDB/58.7°FWB, 45% RH										
High Flow (10°F ΔT _w)	Total	64,721	135,977	172,948	137,606	173,468	207,380	243,960	266,171	385,408
	Sensible	64,721	135,977	172,948	137,606	173,468	207,380	243,960	266,171	385,408
	GPM / (pd. Ft.)	15 / 7.9	31.2 / 17.9	38.6 / 15.5	31.2 / 7.5	41 / 12.2	47.2 / 9.5	54.6 / 14.0	59 / 10.0	85 / 13.1
Med. Flow (12°F ΔT _w)	Total	57,762	111,900	145,507	110,526	144,838	171,326	217,402	229,283	333,238
	Sensible	57,762	111,900	145,507	110,526	144,838	171,326	217,402	229,283	333,238
	GPM / (pd. Ft.)	11.3 / 6.3	22.1 / 11.1	27.6 / 9.9	21.6 / 5.7	29.5 / 8.2	33.4 / 6.8	41 / 9.9	43 / 7.0	62 / 8.6
Low Flow (14°F ΔT _w)	Total	50,577	81,596	105,037	97,526	108,883	122,812	183,854	183,905	267,030
	Sensible	50,577	81,596	105,037	97,526	108,883	122,812	183,854	183,905	267,030
	GPM / (pd. Ft.)	8.7 / 5.3	14.7 / 7.0	17.9 / 6.3	16.6 / 4.4	20 / 5.7	21.6 / 5.1	30.4 / 7.4	30.5 / 5.1	44 / 6.0



Compact CWE

Model: CCD-	300-CWE	600-CWE	900-CWE	1200-CWE	1500-CWE	1800-CWE	1900-CWE	2300-CWE	2300-CWE-EF	2300-CWE-EF-UF	2800-CWE	3600-CWE
NET COOLING CAPACITY - BTU/H @ 45°F EWT, 0% Glycol Solution (Includes motor heat @ std CFM & e.s.p. ratings)												
80°FDB/67°FWB, 50% RH												
High Flow (10°F ΔTw)	Total	192,502	335,200	398,100	488,900	436,676	548,136	642,768	718,732	770,200	731,712	943,148
	Sensible	141,161	259,700	292,400	339,952	349,664	409,335	460,588	494,020	549,800	586,868	657,644
	GPM / (pd. Ft.)	40.3 / 32.6	70.2 / 49.2	82.8 / 42.3	101 / 38.9	93 / 44.2	113 / 32.5	133.8 / 57.8	148.8 / 36.5	157.2 / 40.2	151.4 / 36	196 / 50.7
Med. Flow (12°F ΔTw)	Total	173,067	318,400	380,000	454,062	411,994	519,344	617,250	686,946	739,300	712,008	903,040
	Sensible	132,779	251,200	283,800	324,866	336,274	395,373	448,390	479,738	535,600	576,602	639,500
	GPM / (pd. Ft.)	30.4 / 20.2	55.8 / 32.9	66 / 28.6	78.2 / 25.5	73.6 / 29.5	89.6 / 22.4	107.2 / 39.4	118.8 / 25.1	125.8 / 27.6	123 / 25.5	156.4 / 34.5
Low Flow (14°F ΔTw)	Total	154,065	298,100	357,700	420,604	389,250	493,650	595,314	652,056	711,200	686,756	855,580
	Sensible	124,185	240,400	272,900	310,146	322,868	382,050	437,582	463,866	522,000	563,316	671,832
	GPM / (pd. Ft.)	23.4 / 13.6	45 / 22.9	53.4 / 20.3	62.4 / 18.2	59.8 / 21.1	73.4 / 16.6	88.8 / 28.9	97 / 18.2	104 / 20.3	101.8 / 18.9	127.4 / 24.8
75°FDB/62.5°FWB, 50% RH												
High Flow (10°F ΔTw)	Total	138,910	252,900	304,800	366,348	327,140	413,686	495,746	552,532	600,700	587,612	794,416
	Sensible	122,231	228,100	257,800	298,292	303,026	360,065	407,126	438,924	493,800	524,922	616,386
	GPM / (pd. Ft.)	29.7 / 19.6	53.8 / 30.9	64.2 / 27.3	76.4 / 24.6	71.4 / 28.2	87 / 21.4	104.6 / 37.9	116 / 24.1	123.2 / 26.6	122.8 /	166.4 / 38.3
Med. Flow (12°F ΔTw)	Total	101,273	230,000	283,700	339,924	305,956	393,337	479,112	528,726	577,800	554,206	760,114
	Sensible	101,273	213,200	246,000	285,398	286,336	346,654	397,380	426,640	481,200	506,770	598,884
	GPM / (pd. Ft.)	18.5 / 10.0	41 / 19.8	50 / 18.4	59.4 / 17	56 / 19	69.2 / 15.3	84.4 / 26.6	92.8 / 17.1	99 / 18.9	97 / 17.7	132.8 / 26.5
Low Flow (14°F ΔTw)	Total	91,290	184,400	259,700	303,500	277,592	356,982	462,970	500,008	543,900	432,228	623,846
	Sensible	91,290	184,400	231,900	266,990	263,474	322,520	387,280	411,352	462,500	432,228	579,658
	GPM / (pd. Ft.)	14.5 / 7.7	28.8 / 11.9	39.4 / 13.1	45.8 / 12.2	44 / 13.3	54.2 / 11.1	70.2 / 20	75.4 / 12.8	80.2 / 13.9	65.6 / 10.5	108.8 / 19.6
72°FDB/60°FWB, 50% RH												
High Flow (10°F ΔTw)	Total	96,762	191,600	250,200	305,730	265,612	341,805	422,838	472,420	514,100	431,522	622,058
	Sensible	96,762	191,600	231,000	272,114	263,958	322,492	372,776	404,934	456,300	431,522	541,240
	GPM / (pd. Ft.)	21.3 / 11.9	41.6 / 20.3	53.2 / 20.2	64.4 / 19	59.2 / 20.7	72.8 / 16.5	89.8 / 29.6	100 / 19.2	106.2 / 21	91.6 / 16.2	131.8 / 25.2
Med. Flow (12°F ΔTw)	Total	82,891	169,900	190,800	226,196	231,434	280,384	407,910	442,446	472,900	395,626	575,148
	Sensible	82,891	169,900	190,800	226,196	231,434	280,384	362,646	388,618	433,400	395,626	515,724
	GPM / (pd. Ft.)	15.5 / 8.3	31.2 / 13.2	34.6 / 11	40.4 / 10.5	43.6 / 13.1	50.8 / 10.3	72.6 / 21	78.4 / 13.5	81.6 / 14.3	70.4 / 11.4	102 / 16.9
Low Flow (14°F ΔTw)	Total	75,980	144,300	164,400	186,482	198,616	242,875	386,046	315,624	356,700	350,342	418,700
	Sensible	75,980	144,300	164,400	186,482	198,616	242,875	347,842	315,624	356,700	350,342	418,700
	GPM / (pd. Ft.)	12.3 / 6.7	23 / 9.2	25.8 / 8	29 / 7.8	32.8 / 9.1	38.4 / 7.7	59 / 15.6	49.2 / 7.8	53.4 / 8.5	54 / 8.4	65.4 / 9.5
80°FDB/65°FWB, 45% RH												
High Flow (10°F ΔTw)	Total	180,351	311,900	373,300	456,400	406,692	509,748	600,958	671,010	724,700	779,486	885,792
	Sensible	151,258	277,500	311,100	360,684	371,344	435,728	488,208	523,902	588,600	548,530	700,954
	GPM / (pd. Ft.)	37.9 / 29.3	65.6 / 43.6	77.8 / 38	94.4 / 34.8	87 / 39.4	105.6 / 29.1	125.6 / 51.7	139.6 / 32.8	148.2 / 36.3	160.8 / 40	184.2 / 44.6
Med. Flow (12°F ΔTw)	Total	162,641	295,900	357,700	430,486	385,374	487,481	583,322	650,948	705,800	747,374	861,322
	Sensible	143,043	267,400	302,600	348,624	356,022	422,607	478,512	513,886	578,500	533,906	688,440
	GPM / (pd. Ft.)	28.7 / 18.5	52 / 29.1	62.2 / 26	74.2 / 23.5	69.2 / 26.6	84.6 / 20.4	101.6 / 36	113.2 / 23.2	120.4 / 25.6	129 / 27.4	149.4 / 31.1
Low Flow (14°F ΔTw)	Total	121,750	273,700	337,500	405,826	364,712	464,464	566,710	627,938	684,000	712,598	826,590
	Sensible	121,750	253,100	291,400	336,760	339,770	407,913	468,860	502,148	566,600	517,722	670,800
	GPM / (pd. Ft.)	18.8 / 10.5	41.4 / 20.1	50.4 / 18.6	60.2 / 17.3	56.4 / 19	69.4 / 15.3	84.8 / 26.8	93.6 / 17.3	100 / 19.1	105.6 / 20	123.2 / 22.6
75°FDB/61°FWB, 45% RH												
High Flow (10°F ΔTw)	Total	118,417	226,500	286,600	356,138	303,826	390,510	476,224	539,832	582,400	606,296	711,364
	Sensible	118,417	226,500	268,900	317,432	303,826	374,479	429,414	467,942	526,900	491,616	625,896
	GPM / (pd. Ft.)	25.6 / 15.5	48.6 / 26	60.4 / 24.7	74.4 / 23.6	66.8 / 25.2	82.2 / 19.7	100.6 / 35.6	113.6 / 23.3	119.8 / 25.4	126.6 / 26.7	149.6 / 31.1
Med. Flow (12°F ΔTw)	Total	100,889	206,300	229,800	275,484	280,908	337,827	460,302	516,680	547,500	578,634	674,158
	Sensible	100,889	206,300	229,800	275,484	280,908	337,827	418,772	455,280	507,700	477,076	605,762
	GPM / (pd. Ft.)	18.5 / 10.0	37.2 / 17.1	41 / 13.8	48.6 / 13.1	51.8 / 14.6	60.2 / 12.7	81.2 / 25.1	90.8 / 16.5	94.2 / 17.5	100.8 / 18.6	118.6 / 21.3
Low Flow (14°F ΔTw)	Total	91,042	183,700	207,100	243,374	251,662	305,070	444,162	388,510	436,000	545,214	515,816
	Sensible	91,042	183,700	207,100	243,374	251,662	305,070	407,322	388,510	436,000	458,890	515,816
	GPM / (pd. Ft.)	14.4 / 7.6	28.6 / 11.8	31.8 / 10	37.2 / 9.7	40.2 / 11.7	47 / 9.5	67.4 / 18.8	59.6 / 9.5	64.8 / 10.6	81.8 / 13.8	79.2 / 12
72°FDB/58.7°FWB, 45% RH												
High Flow (10°F ΔTw)	Total	96,467	191,200	212,300	255,456	258,768	311,568	351,196	386,830	435,100	517,608	668,656
	Sensible	96,467	191,200	212,300	255,456	258,768	311,568	351,196	386,830	435,100	453,476	606,116
	GPM / (pd. Ft.)	21.3 / 11.9	41.4 / 20.2	45.8 / 16.1	54.2 / 15	57.6 / 19.9	67.2 / 14.6	75.8 / 22.7	82.8 / 14.5	90.2 / 16.5	108.8 / 21	141.2 / 28.2
Med. Flow (12°F ΔTw)	Total	82,694	169,400	190,200	225,516	230,766	279,605	329,108	355,070	399,800	476,680	503,314
	Sensible	82,694	169,400	190,200	225,516	230,766	279,605	329,108	355,070	399,800	431,130	503,314
	GPM / (pd. Ft.)	15.5 / 8.2	31 / 13.1	34.4 / 11	40.4 / 10.5	43.4 / 13.1	50.6 / 10.3	59.4 / 15.8	64 / 10.4	69.6 / 11.6	84 / 14.3	90.2 / 14.2
Low Flow (14°F ΔTw)	Total	75,782	143,800	163,800	185,678	197,888	242,016	301,156	314,612	355,600	351,466	450,140
	Sensible	75,782	143,800	163,800	185,678	197,888	242,016	301,156	314,612	355,600	351,466	450,140
	GPM / (pd. Ft.)	12.3 / 6.7	23 / 9.1	25.8 / 8	29 / 7.8	32.6 / 9.2	38.2 / 7.7	47 / 11.6	49 / 7.8	53.4 / 8.5	54.2 / 8.5	69.8 / 10.3

Computer Room Air Handlers

Performance/Capacity Data - 50° EWT / 0% Glycol - Downflow

Model: CCD-	300-CWE	600-CWE	900-CWE	1200-CWE	1500-CWE	1800-CWE	1900-CWE	2300-CWE	2300-CWE-EF	2300-CWE-EF-UF	2800-CWE	3600-CWE	
NET COOLING CAPACITY - BTU/H @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ std CFM & e.s.p. ratings)													
80°FDB/67°FWB, 50% RH													
High Flow (10°F ΔT _w)	Total	147,865	260,900	315,400	384,104	335,960	424,667	510,368	569,402	617,900	596,262	750,040	965,002
	Sensible	123,314	227,700	256,500	297,324	303,100	357,274	402,796	432,766	488,000	529,059	578,926	748,880
	GPM / (pd. Ft.)	31.6 / 21.6	55.6 / 32.6	66.2 / 28.7	80 / 26.4	73.2 / 25.4	89.4 / 22.2	107.6 / 39.4	119.2 / 25.1	126.8 / 27.8	126 / 26	157.2 / 33.9	203.2 / 30.5
Med. Flow (12°F ΔT _w)	Total	123,179	243,600	299,400	359,512	315,052	404,284	493,542	551,570	599,600	576,664	728,752	934,482
	Sensible	112,334	216,800	248,000	286,408	287,496	344,754	393,764	424,052	478,300	518,058	568,054	733,192
	GPM / (pd. Ft.)	43.4 / 21.6	52.6 / 19.9	62.6 / 18.3	71 / 15.8	57.6 / 19.7	96.8 / 18.1	81 / 27.8	103 / 19.9	127.8 / 23.9	101 / 18.6	125.8 / 25.6	163.8 / 21.5
Low Flow (14°F ΔT _w)	Total	91,988	219,600	277,900	331,448	293,234	381,376	476,956	527,702	577,100	446,072	693,582	909,022
	Sensible	91,988	200,900	236,300	273,350	269,964	329,383	384,192	412,174	466,000	446,072	550,504	718,506
	GPM / (pd. Ft.)	14.6 / 7.4	33.8 / 14.8	42 / 14.2	49.8 / 13.3	46.2 / 142	57.8 / 11.9	72.2 / 20.7	79.4 / 13.6	85 / 15	67.8 / 10.7	104.6 / 17.5	137.2 / 16.5
75°FDB/62.5°FWB, 50% RH													
High Flow (10°F ΔT _w)	Total	85,611	172,600	192,200	232,206	231,968	281,494	377,129	433,400	398,100	392,948	469,892	613,466
	Sensible	85,611	172,600	192,200	232,206	231,968	281,494	348,824	386,270	398,100	392,948	469,892	613,466
	GPM / (pd. Ft.)	19.1 / 10.3	38 / 17.5	41.8 / 14	49.8 / 13.5	52.6 / 17.2	61.2 / 12.9	81.2 / 24.9	92.4 / 16.9	83.2 / 14.6	84.2 / 14.4	101.8 / 16.8	132.8 / 15.9
Med. Flow (12°F ΔT _w)	Total	73,173	150,000	169,700	200,868	204,522	249,274	296,800	319,750	361,700	355,852	425,024	560,308
	Sensible	73,173	150,000	169,700	200,868	204,522	249,274	296,800	319,750	361,700	355,852	425,024	560,308
	GPM / (pd. Ft.)	13.9 / 7.3	27.8 / 11.4	31 / 9.6	36.4 / 9.5	39.2 / 11.4	45.8 / 9.1	54.2 / 13.8	58 / 9.3	63.4 / 10.3	64 / 10.1	77.4 / 11.6	102 / 11.2
Low Flow (14°F ΔT _w)	Total	66,167	123,400	142,100	157,134	170,282	210,241	267,692	277,220	315,000	307,606	367,210	493,234
	Sensible	66,167	123,400	142,100	157,134	170,282	210,241	267,692	277,220	315,000	307,606	367,210	493,234
	GPM / (pd. Ft.)	10.9 / 6.1	20 / 7.8	22.8 / 7	25 / 7.2	28.8 / 7.8	33.8 / 6.9	42.2 / 9	43.8 / 7.1	47.6 / 7.7	48 / 7.5	58 / 8.3	77.8 / 8.4
72°FDB/60°FWB, 50% RH													
High Flow (10°F ΔT _w)	Total	64,560	135,400	152,700	182,574	183,270	223,432	263,816	286,214	324,800	318,824	380,090	499,444
	Sensible	64,560	135,400	152,700	182,574	183,270	223,432	263,816	286,214	324,800	318,824	380,090	499,444
	GPM / (pd. Ft.)	14.9 / 7.9	30.4 / 12.8	33.8 / 10.7	40 / 10.5	42.8 / 12.8	50 / 10.1	58.4 / 15.4	63 / 10.2	68.6 / 11.3	69.4 / 11.1	83.8 / 12.9	110.2 / 12.3
Med. Flow (12°F ΔT _w)	Total	57,599	109,600	126,100	141,352	149,912	185,645	235,496	244,962	280,400	273,190	324,698	434,904
	Sensible	57,599	109,600	126,100	141,352	149,912	185,645	235,496	244,962	280,400	273,190	324,698	434,904
	GPM / (pd. Ft.)	11.3 / 6.3	21.2 / 8.3	23.8 / 7.4	26.4 / 7.3	30 / 8.2	35.4 / 7.2	44 / 10.6	45.6 / 7.3	49.8 / 8	50.2 / 7.8	60.6 / 8.7	81.2 / 8.6
Low Flow (14°F ΔT _w)	Total	50,411	75,600	89,800	115,728	108,106	137,982	200,098	185,750	217,100	207,126	246,540	380,700
	Sensible	50,411	75,600	89,800	115,728	108,106	137,982	200,098	185,750	217,100	207,126	246,540	380,700
	GPM / (pd. Ft.)	8.7 / 5.3	13.2 / 5.6	15.2 / 5.3	19 / 6.3	19.8 / 5.6	24 / 5.4	32.6 / 7.9	30.8 / 5.4	33.6 / 5.7	33.6 / 5.7	41 / 6.1	62 / 6.5
80°FDB/65°FWB, 45% RH													
High Flow (10°F ΔT _w)	Total	122,483	231,000	293,200	369,604	306,404	389,555	481,510	550,888	587,900	623,578	723,144	921,212
	Sensible	122,483	231,000	273,200	323,770	306,404	376,638	432,006	472,372	530,300	485,084	631,566	816,882
	GPM / (pd. Ft.)	26.4 / 16.3	49.6 / 26.8	61.8 / 25.7	77 / 25	67.4 / 25.4	82.2 / 19.6	101.8 / 35.9	115.6 / 23.8	121.2 / 25.8	129.8 / 27.7	152.4 / 32	194.8 / 28.6
Med. Flow (12°F ΔT _w)	Total	106,334	212,000	236,000	284,252	285,538	346,150	467,912	537,920	566,300	603,576	701,394	893,534
	Sensible	106,334	212,000	236,000	284,252	285,538	346,150	422,892	464,940	518,000	474,932	619,422	800,800
	GPM / (pd. Ft.)	19.4 / 10.5	38.2 / 17.7	42.2 / 14.2	50.2 / 13.6	52.6 / 17.2	61.6 / 13	82.6 / 25.6	94.2 / 17.3	97.2 / 18.3	105 / 19.7	123.4 / 22.6	157.4 / 20.4
Low Flow (14°F ΔT _w)	Total	91,614	190,200	214,100	254,778	260,176	315,274	449,552	400,430	449,500	579,940	532,616	699,990
	Sensible	91,614	190,200	214,100	254,778	260,176	315,274	410,756	400,430	449,500	462,494	532,616	699,990
	GPM / (pd. Ft.)	14.5 / 7.4	29.6 / 12.4	33 / 10.4	38.8 / 10.1	41.6 / 12.3	48.6 / 9.7	68.4 / 19.1	61.2 / 9.9	66.8 / 11	86.8 / 14.9	81.6 / 12.4	107.4 / 11.8
75°FDB/61°FWB, 45% RH													
High Flow (10°F ΔT _w)	Total	85,289	172,100	191,700	231,556	231,350	280,719	317,640	352,128	397,000	394,008	468,696	611,836
	Sensible	85,289	172,100	191,700	231,556	231,350	280,719	317,640	352,128	397,000	394,008	468,696	611,836
	GPM / (pd. Ft.)	19.1 / 10.2	37.8 / 17.5	41.6 / 14	49.6 / 13.4	52.4 / 17	61.2 / 12.9	69.2 / 19.6	76.2 / 12.9	83 / 14.5	84.4 / 14.4	101.4 / 16.7	132.6 / 15.7
Med. Flow (12°F ΔT _w)	Total	72,966	149,400	169,100	200,122	203,804	248,436	295,926	318,770	360,600	357,008	423,716	558,544
	Sensible	72,966	149,400	169,100	200,122	203,804	248,436	295,926	318,770	360,600	357,008	423,716	558,544
	GPM / (pd. Ft.)	13.9 / 7.3	27.8 / 11.4	31 / 9.6	36.2 / 9.4	39 / 11.2	45.6 / 9.1	54 / 13.9	57.8 / 9.2	63.2 / 10.3	64.2 / 10.1	77.2 / 11.5	101.6 / 11
Low Flow (14°F ΔT _w)	Total	65,957	122,800	141,400	155,796	169,480	209,298	266,750	276,088	313,600	308,950	365,700	491,240
	Sensible	65,957	122,800	141,400	155,796	169,480	209,298	266,750	276,088	313,600	308,950	365,700	491,240
	GPM / (pd. Ft.)	10.9 / 6.1	20 / 7.8	22.6 / 7	36.2 / 9.4	28.6 / 7.8	33.8 / 6.9	42.2 / 10.1	43.6 / 7.1	47.4 / 7.6	48.2 / 7.5	57.8 / 8.3	77.6 / 8.2
72°FDB/58.7°FWB, 45% RH													
High Flow (10°F ΔT _w)	Total	64,721	135,000	152,300	182,020	182,726	222,797	263,196	285,482	324,000	319,640	379,102	498,194
	Sensible	64,721	135,000	152,300	182,020	182,726	222,797	263,196	285,482	324,000	319,640	379,102	498,194
	GPM / (pd. Ft.)	15 / 7.9	30.4 / 12.8	33.8 / 10.7	39.8 / 10.4	42.6 / 12.7	49.8 / 10	58.4 / 15.3	63 / 10.2	68.4 / 11.3	69.6 / 11.1	83.6 / 12.7	110 / 12.2
Med. Flow (12°F ΔT _w)	Total	57,762	109,100	125,600	140,656	149,716	184,927	234,826	244,102	279,500	274,134	323,550	433,482
	Sensible	57,762	109,100	125,600	140,656	149,716	184,927	234,826	244,102	279,500	274,134	323,550	433,482
	GPM / (pd. Ft.)	11.3 / 6.3	21 / 8.2	23.8 / 7.4	26.2 / 7.3	30.2 / 8.2	35.4 / 7.2	44 / 10.6	45.4 / 7.3	49.6 / 8	50.4 / 7.8	60.4 / 8.7	81 / 8.6
Low Flow (14°F ΔT _w)	Total	50,577	75,100	89,200	115,362	107,354	137,076	199,334	184,596	216,500	208,394	246,108	368,300
	Sensible	50,577	75,100	89,200	115,362	107,354	137,076	199,334	184,596	216,500	208,394	246,108	368,300
	GPM / (pd. Ft.)	8.7 / 5.3	13.2 / 5.6	15.2 / 5.3	19 / 6.3	19.8 / 5.6	23.8 / 5.3	32.6 / 7.8	30.6 / 5.4	33.6 / 5.7	33.8 / 5.6	41 / 6.1	58 / 6.2

Compact CWE

Model	With Condensate Pump	CCU/D-300			CCU/D-600/900			CCU/D-1200			CCU-1500/1800/1900			CCD-1500/1800/1900		
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling w/ Electric Reheat & Humidification																
208/3/60	No	54.1	67.6	70	93.5	116.9	125	Please Consult Factory			Please Consult Factory			114.8	143.5	150
208/3/60	Yes	56.7	70.9	80	96.1	120.1	125							116.7	145.9	150
460/3/60	No	26.2	32.8	35	45.5	56.9	60	36.9	46.1	50	54.0	67.5	70	55.5	69.4	70
460/3/60	Yes	27.4	34.3	35	46.7	58.4	60	38.1	47.6	50	55.2	69.0	70	56.7	70.9	80
575/3/60	No	21.0	26.2	30	36.3	45.4	50	29.5	36.9	40	43.2	54.0	60	44.4	55.5	60
575/3/60	Yes	21.9	27.4	30	37.3	46.6	50	30.5	38.1	40	44.1	55.2	60	45.3	56.7	60
Cooling w/ Electric Reheat																
208/3/60	No	39.9	49.9	50	79.3	99.1	100	Please Consult Factory			Please Consult Factory			95.9	119.9	125
208/3/60	Yes	42.5	53.1	60	81.9	102.4	110							97.8	122.3	125
460/3/60	No	19.8	24.8	25	39.1	48.9	50	30.5	38.1	40	45.5	56.9	60	47.0	58.8	60
460/3/60	Yes	21.0	26.3	30	40.3	50.4	60	31.7	39.6	40	46.7	58.4	60	48.2	60.3	70
575/3/60	No	15.9	19.8	20	31.2	39.0	40	24.4	30.5	35	36.4	45.5	50	37.6	47.0	50
575/3/60	Yes	16.8	21.0	25	32.2	40.2	45	25.4	31.7	35	37.3	46.7	50	38.5	48.2	50
Cooling w/ Humidification																
208/3/60	No	23.9	29.9	35	33.1	41.4	45	Please Consult Factory			Please Consult Factory			47.0	58.8	60
208/3/60	Yes	26.5	33.1	35	35.7	44.6	45							48.9	61.1	70
460/3/60	No	11.1	13.9	15	15.3	19.1	20	14.3	17.9	20	20.1	25.1	30	21.6	27.0	30
460/3/60	Yes	12.3	15.4	20	16.5	20.6	25	15.5	19.4	20	21.3	26.6	30	22.8	28.5	30
575/3/60	No	9.0	11.2	15	12.3	15.4	20	11.5	14.4	15	16.2	20.2	25	17.4	21.7	25
575/3/60	Yes	9.9	12.4	15	13.3	16.6	20	12.5	15.6	20	17.1	21.4	25	18.3	22.9	25
Cooling Only																
208/3/60	No	9.7	12.1	20	18.9	23.6	30	Please Consult Factory			Please Consult Factory			28.1	35.1	40
208/3/60	Yes	12.3	15.4	20	21.5	26.9	30							30.0	37.5	40
460/3/60	No	4.7	5.9	15	8.9	11.1	15	7.9	9.9	15	11.6	14.5	15	13.1	16.4	20
460/3/60	Yes	5.9	7.4	15	10.1	12.6	15	9.1	11.4	15	12.8	16.0	20	14.3	17.9	20
575/3/60	No	3.9	4.8	15	7.2	9.0	15	6.4	8.0	15	9.4	11.7	15	10.6	13.2	15
575/3/60	Yes	4.8	6.0	15	8.2	10.2	15	7.4	9.2	15	10.3	12.9	15	11.5	14.4	15

Model	With Condensate Pump	CCU/D-2300			CCD-2300(-)-UF			CCD-2300(-)-LF			CCD/U-2800 & CCD-2800(-)-UF			CCD-3600		
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling w/ Electric Reheat & Humidification																
460/3/60	No	54.0	67.5	70	54.0	67.5	70	57.9	72.4	80	57.9	72.4	80	67.2	84.0	90
460/3/60	Yes	55.2	69.0	70	55.2	69.0	70	59.1	73.9	80	59.1	73.9	80	68.4	85.5	90
575/3/60	No	43.2	54.0	60	43.2	54.0	60	46.3	57.9	60	46.3	57.9	60	53.7	67.1	70
575/3/60	Yes	44.1	55.2	60	44.1	55.2	60	47.3	59.1	60	47.3	59.1	60	54.7	68.3	70
Cooling w/ Electric Reheat																
460/3/60	No	45.5	56.9	60	45.5	56.9	60	49.4	61.8	70	49.4	61.8	70	54.4	68.0	70
460/3/60	Yes	46.7	58.4	60	46.7	58.4	60	50.6	63.3	70	50.6	63.3	70	55.6	69.5	70
575/3/60	No	36.4	45.5	50	36.4	45.5	50	39.5	49.4	50	39.5	49.4	50	43.5	54.4	60
575/3/60	Yes	37.3	46.7	50	37.3	46.7	50	40.5	50.6	60	40.5	50.6	60	44.5	55.6	60
Cooling w/ Humidification																
460/3/60	No	20.1	25.1	30	20.1	25.1	30	24.0	30.0	30	24.0	30.0	30	33.3	41.6	45
460/3/60	Yes	21.3	26.6	30	21.3	26.6	30	25.2	31.5	35	25.2	31.5	35	34.5	43.1	45
575/3/60	No	16.2	20.2	25	16.2	20.2	25	19.3	24.1	25	19.3	24.1	25	26.7	33.4	35
575/3/60	Yes	17.1	21.4	25	17.1	21.4	25	20.3	25.3	30	20.3	25.3	30	27.7	34.6	35
Cooling Only																
460/3/60	No	11.6	14.5	15	11.6	14.5	15	15.5	19.4	20	15.5	19.4	20	20.5	25.6	30
460/3/60	Yes	12.8	16.0	20	12.8	16.0	20	16.7	20.9	25	16.7	20.9	25	21.7	27.1	30
575/3/60	No	9.4	11.7	15	9.4	11.7	15	12.5	15.6	20	12.5	15.6	20	16.5	20.6	25
575/3/60	Yes	10.3	12.9	15	10.3	12.9	15	13.5	16.8	20	13.5	16.8	20	17.5	21.8	25

(Note 1: Standard 1 KAIC rating, optional 65 KAIC rating available.)

(Note 2: For voltages not shown, please consult factory.)

Computer Room Air Handlers



Seismic Certification (Optional)



STULZ Compact Chilled Water models CCU/D-600 thru CCU/D-2800 and CCD-3600 shall be manufactured and certified in accordance with the International Building Code (IBC) 2006, 2009, California Building Code (CBC) 2010, American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures, ASCE 7-05, UFC 3-31-04. The units shall be pre-approved by California Office of Statewide Health Planning and Development, OHSPD (OSP-0230-10).

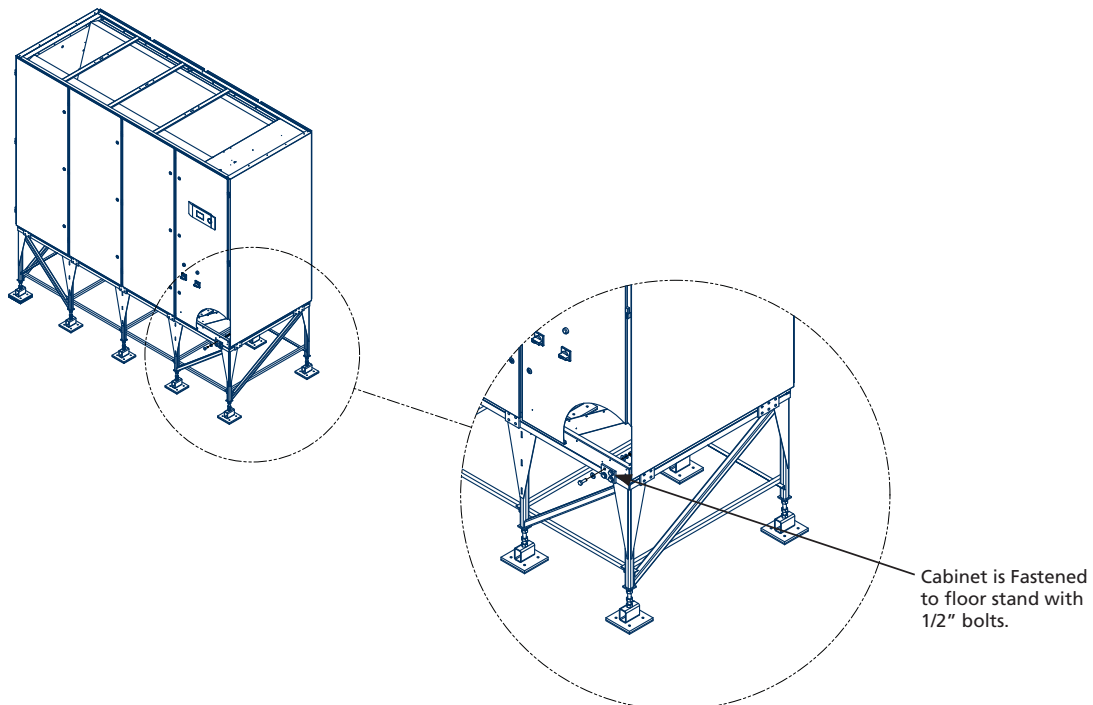
The basis of the Seismic certification shall be shake table tested in accordance with ICC-ES AC 156 (2010). Calculations only shall not be accepted.

The seismic certification shall include all factory accessories including return and supply air plenums, (up to 36" tall) models intended for installation without a manufacturer unit floor stand and models intended for use with a manufacturer provided unit floor stand at a max of 36" tall.

The manufacturer shall supply installation instructions and drawings for anchor requirements and mounting considerations to insure compliance to the seismic application. Complete seismic calculations shall be made available to the Structural Engineer of Record for the project.

A registered Structural Professional Engineer approval stamp shall be provided optionally.

Seismic Rated Cabinet and Floor Stand Assembly



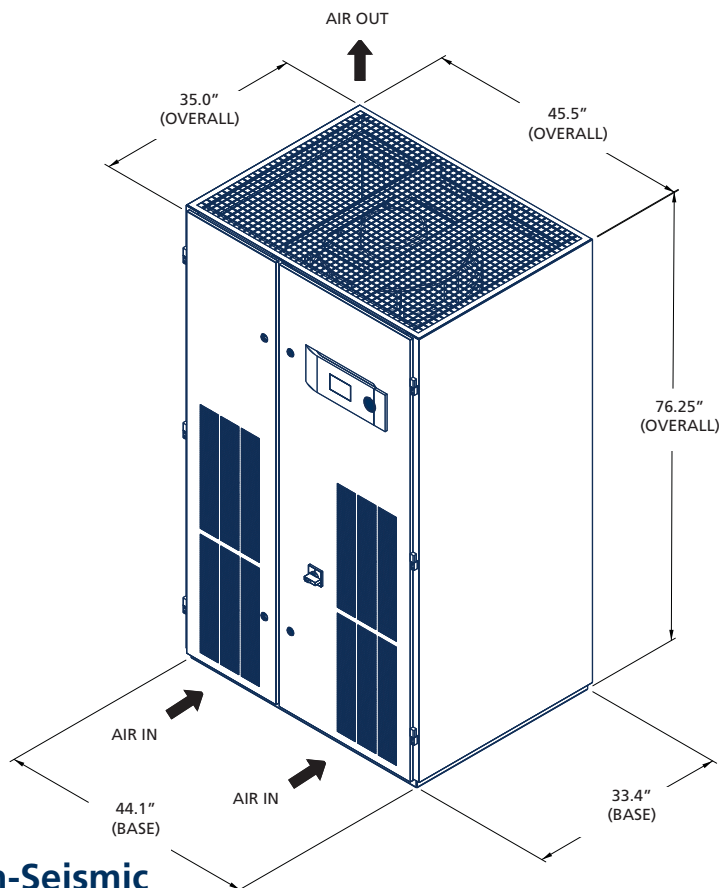
Compact CWE

CCU-300-CWE

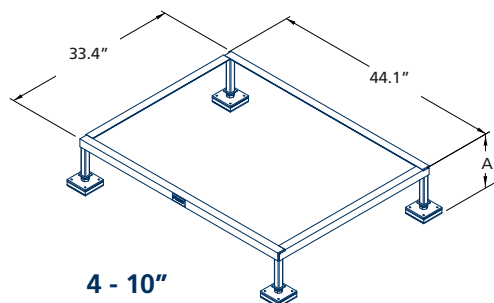
Upflow Vertical Air Conditioner

"Ducted" or provided with optional "2 or 3-way Plenum Box"

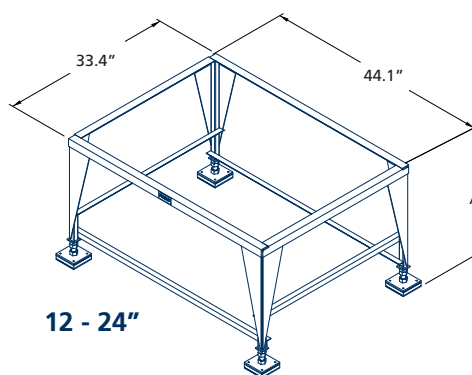
(Note: Piping connections terminate inside the cabinet at the bottom, left hand side.)



Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4\" - 10\" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00



Adjustable 12\" - 24\" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

Higher Floor Stands Optionally Available.

Computer Room Air Handlers

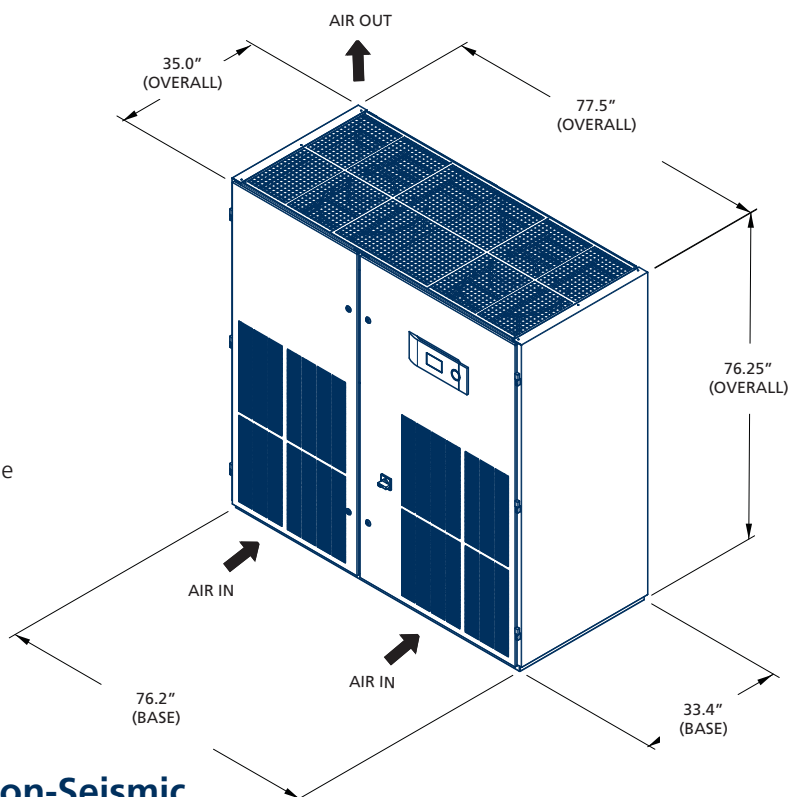
CCU-600/900-CWE

Upflow Vertical Air Conditioner

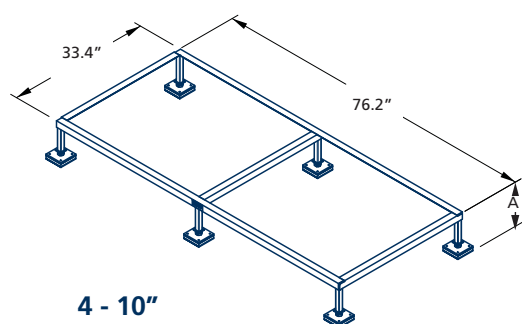
"Ducted" or provided with optional "2 or 3-way Plenum Box"

Dimensional Data- CCU-600/900-CWE

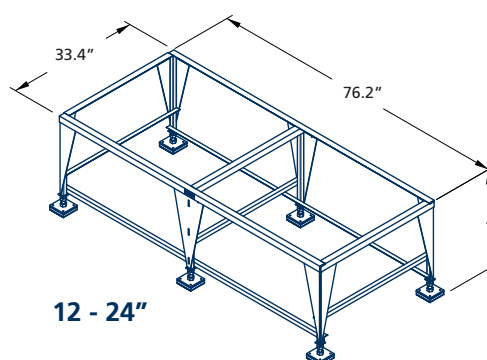
(Note: Piping connections terminate inside the cabinet at the bottom, left hand side.)



Adjustable Floor Stands, Non-Seismic
(Seismic rated floor stands are available)



4 - 10"



12 - 24"

Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00

Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

Higher Floor Stands Optionally Available.

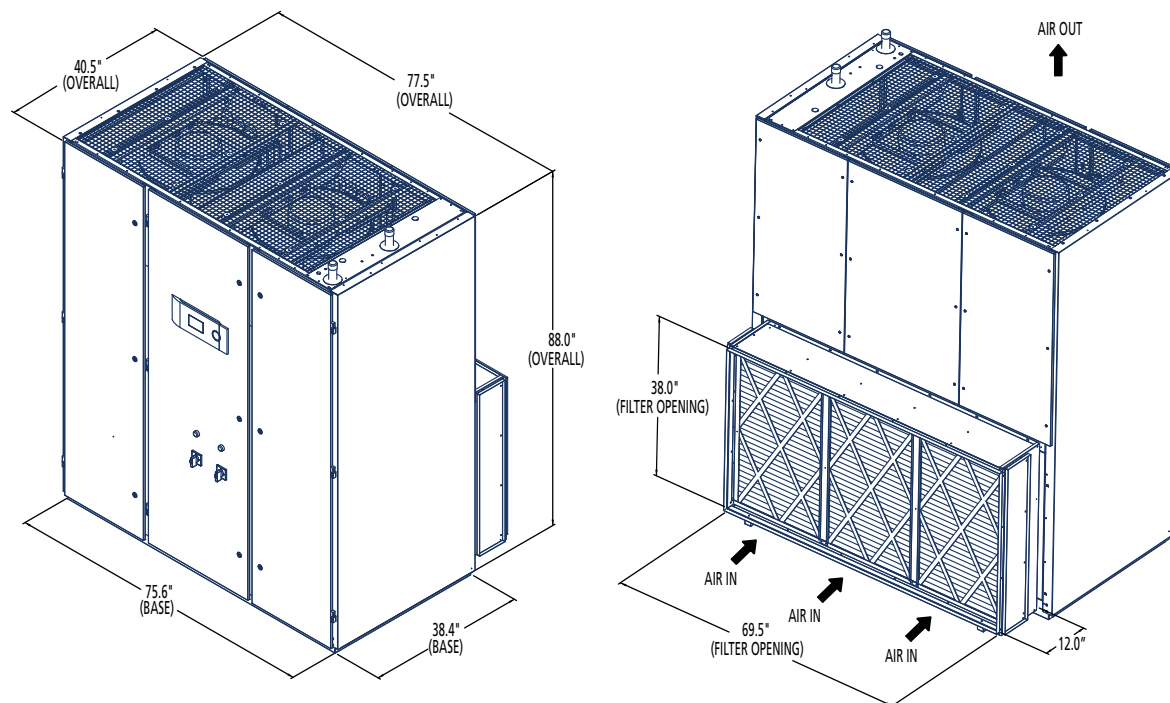


Compact CWE

CCU-600/900-CWE

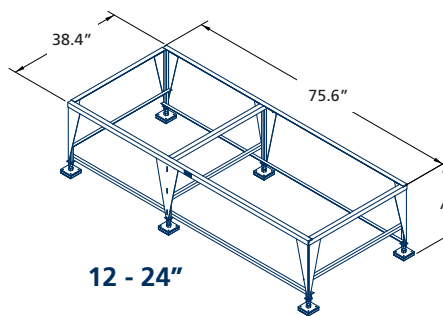
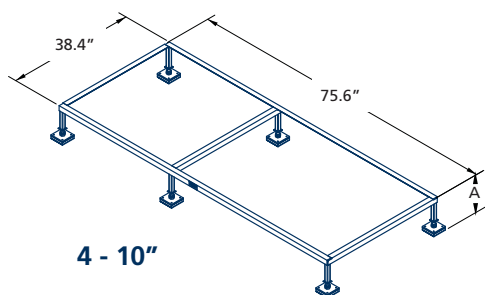
Upflow Vertical Air Conditioner with Rear Return "Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)



(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00

Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

Higher Floor Stands Optionally Available.



Compact CWE

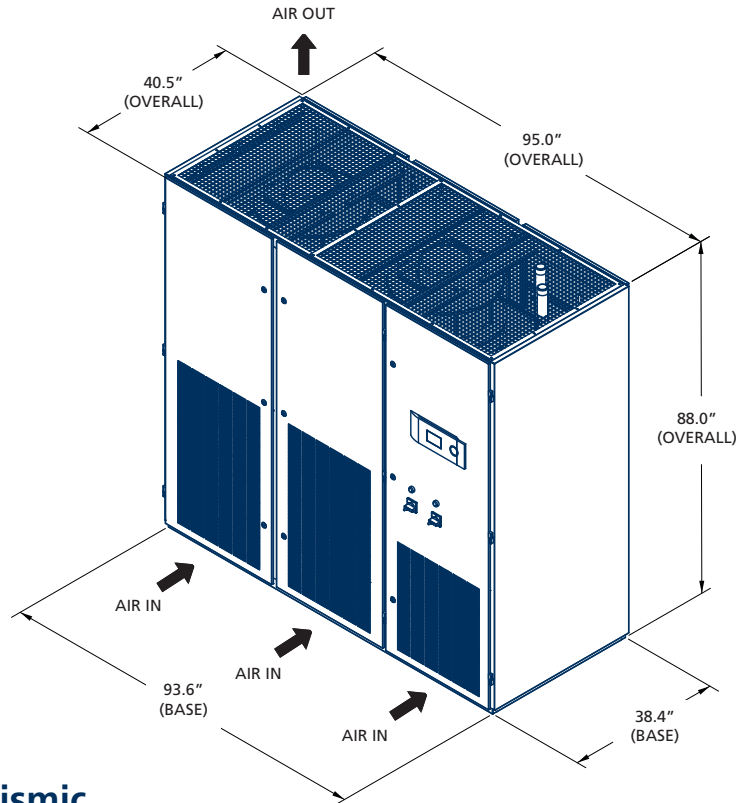
CCU-1200-CWE

Upflow Vertical Air Conditioner

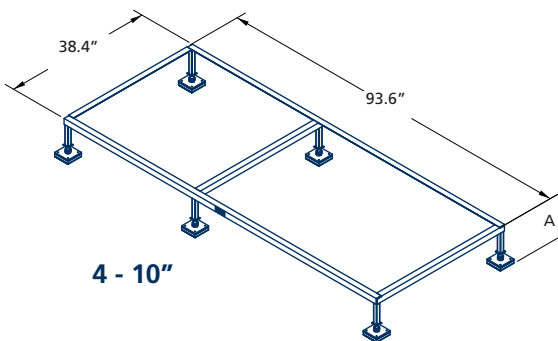
"Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)

(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

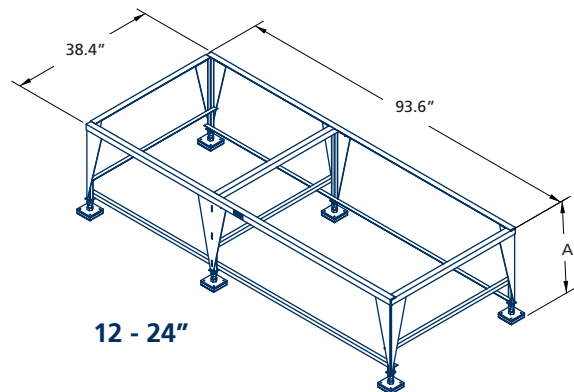


Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



4 - 10"

Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00



12 - 24"

Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

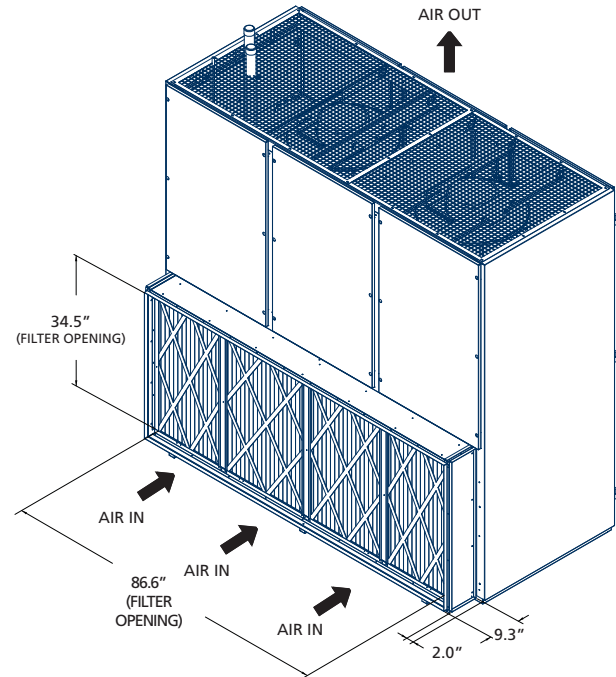
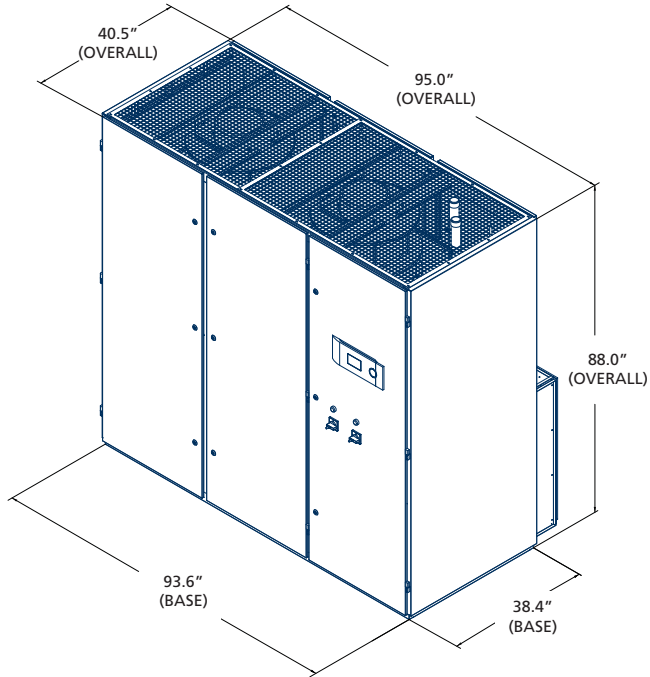
Higher Floor Stands Optionally Available.

Compact CWE

CCU-1200-CWE

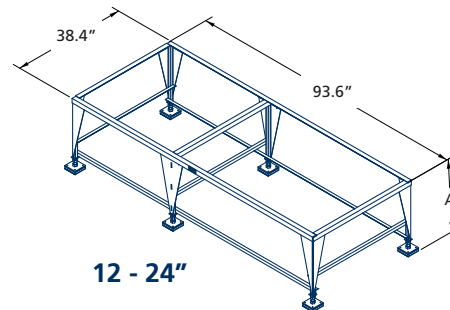
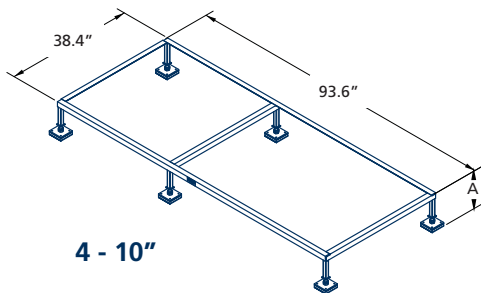
Upflow Vertical Air Conditioner with Rear Return "Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)



(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00

Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

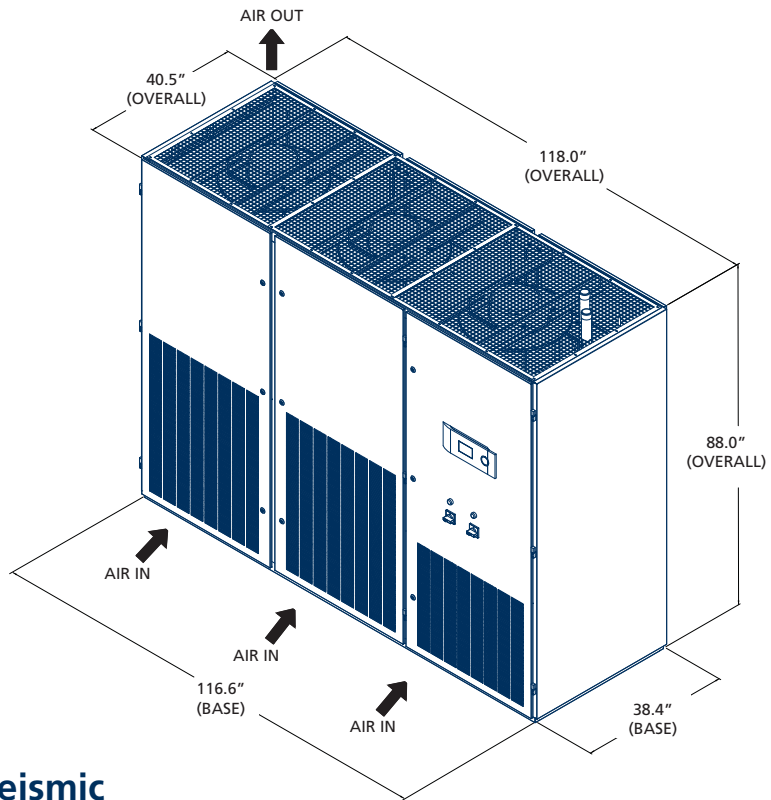
Higher Floor Stands Optionally Available.

Computer Room Air Handlers

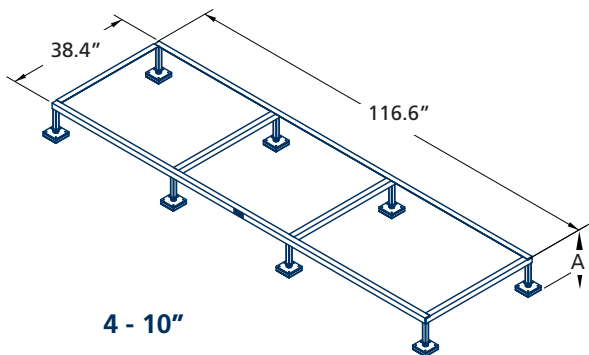
CCU-1500/1800/1900/2300-CWE Upflow Vertical Air Conditioner "Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)

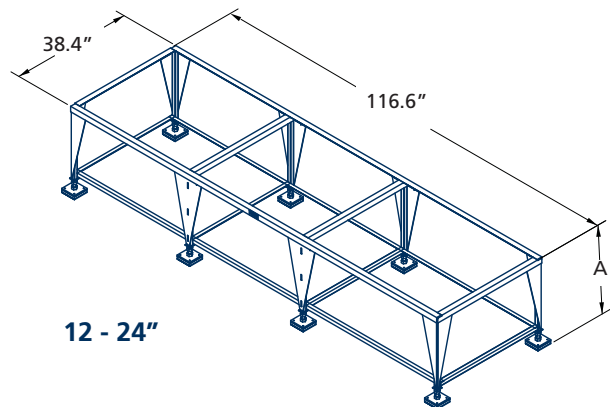
(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)



Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00



Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

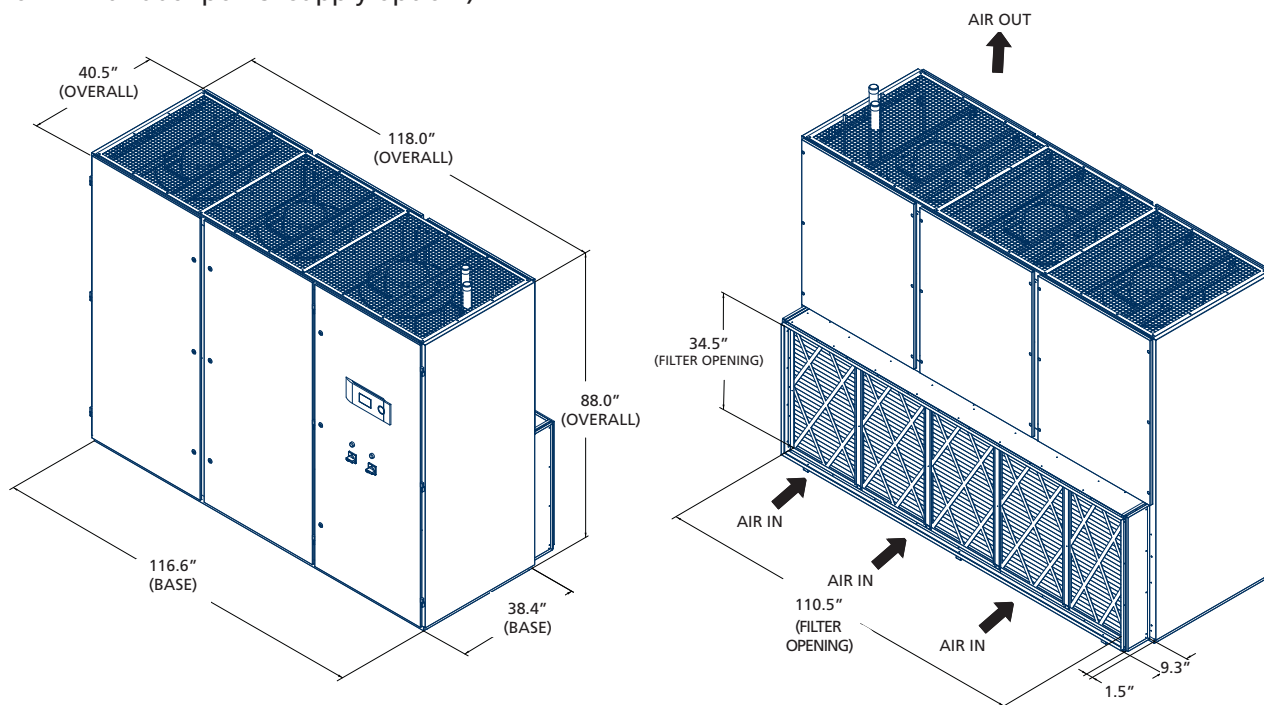
Higher Floor Stands Optionally Available.

Compact CWE

CCU-1500/1800/1900/2300-CWE

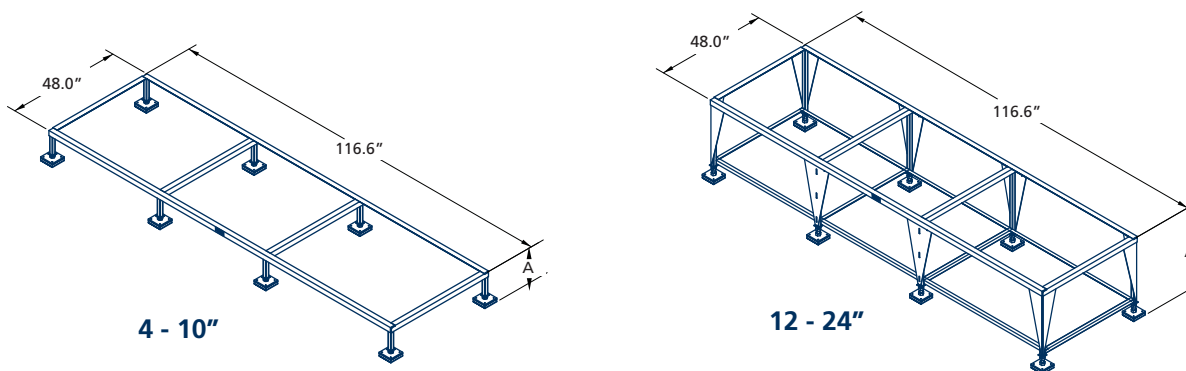
Upflow Vertical Air Conditioner with Rear Return "Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)



(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4" - 10" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00

Adjustable 12" - 24" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

Higher Floor Stands Optionally Available.

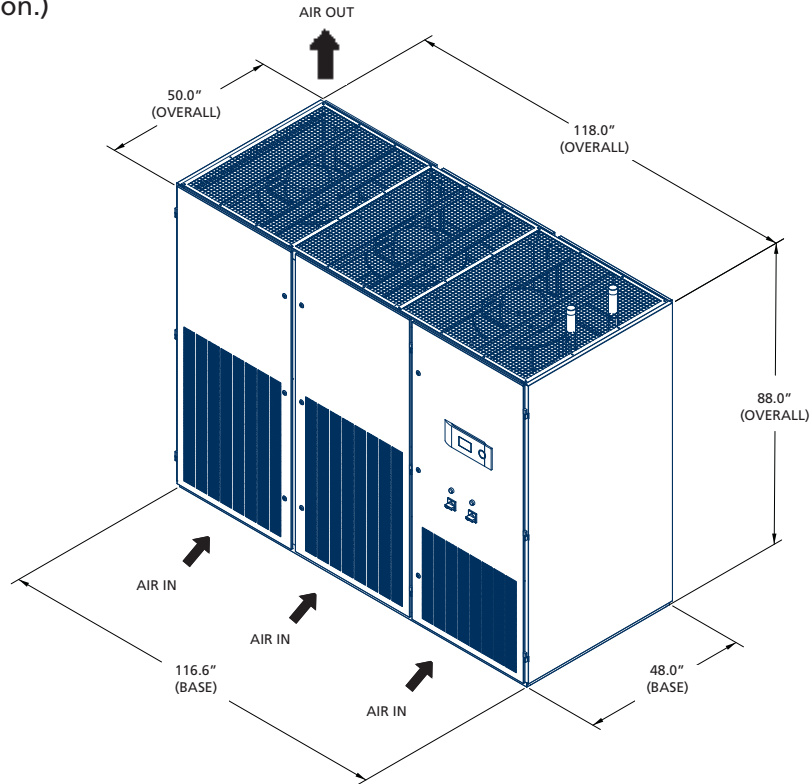
Computer Room Air Handlers

CCU-2800-CWE

Upflow Vertical Air Conditioner

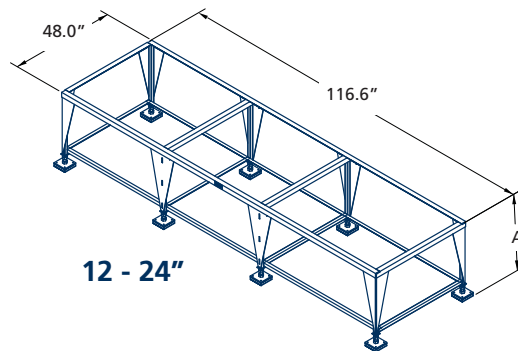
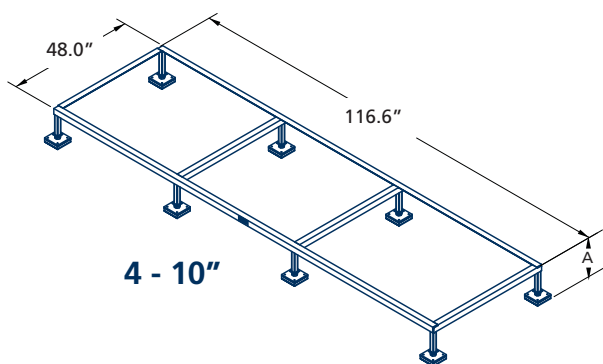
"Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)



(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4\" - 10\" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00

Adjustable 12\" - 24\" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

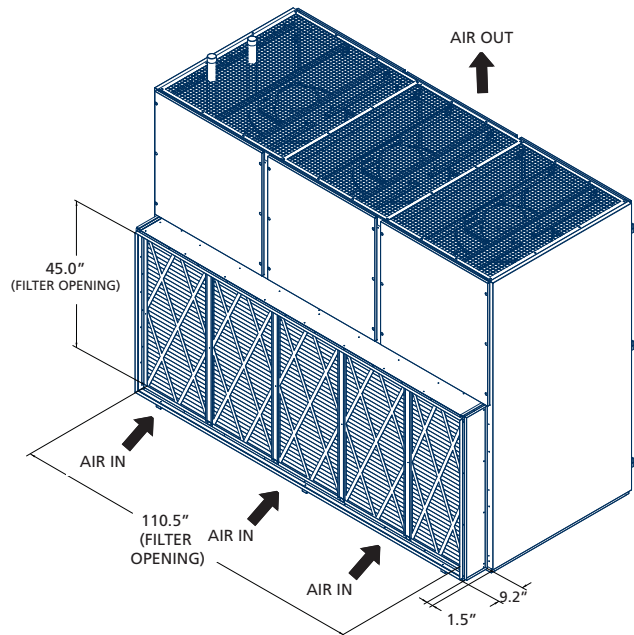
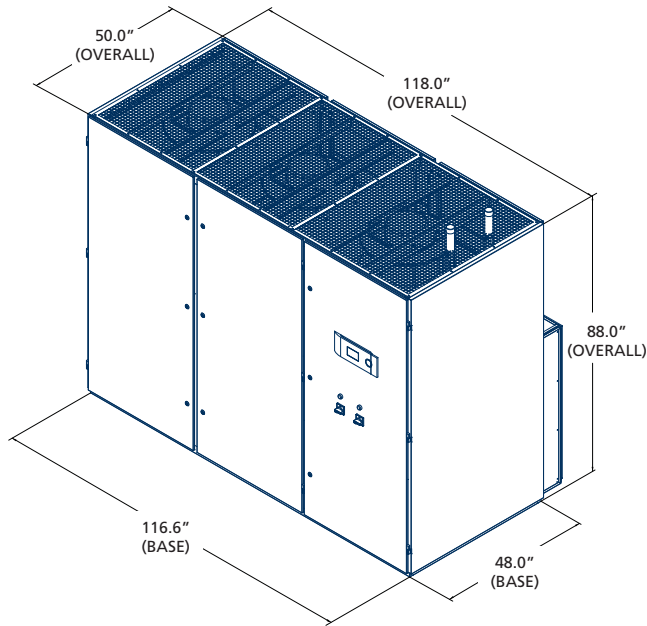
Higher Floor Stands Optionally Available.

Compact CWE

CCU-2800-CWE

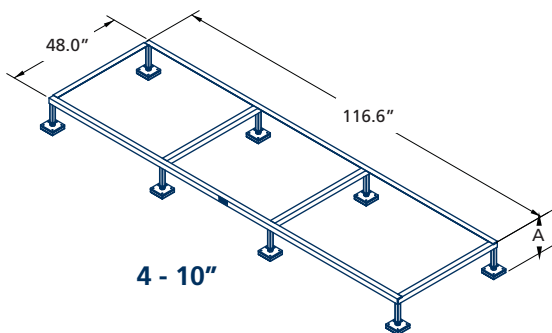
Upflow Vertical Air Conditioner with Rear Return "Ducted" or provided with optional "2 or 3-way Plenum Box"

(Shown with dual power supply option.)

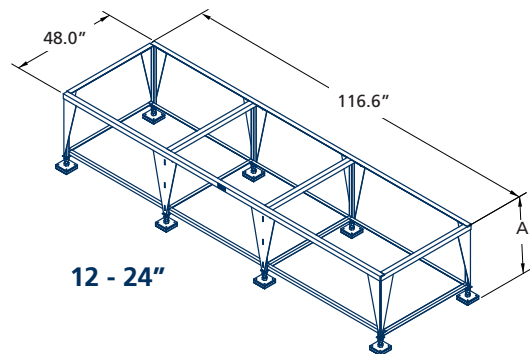


(Note: Piping connections terminate outside the cabinet at the top, right hand side (standard). As an option, piping connections may be furnished inside the cabinet at the bottom right hand side.)

Adjustable Floor Stands, Non-Seismic (Seismic rated floor stands are available)



Adjustable 4" - 10" Floor Stand Height Dimensions (Inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
4.00	3.70	4.50
6.00	5.00	7.00
8.00	7.00	9.00
10.00	9.00	11.00



Adjustable 12" - 24" Floor Stand Height Dimensions (Inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
12.00	11.00	15.00
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

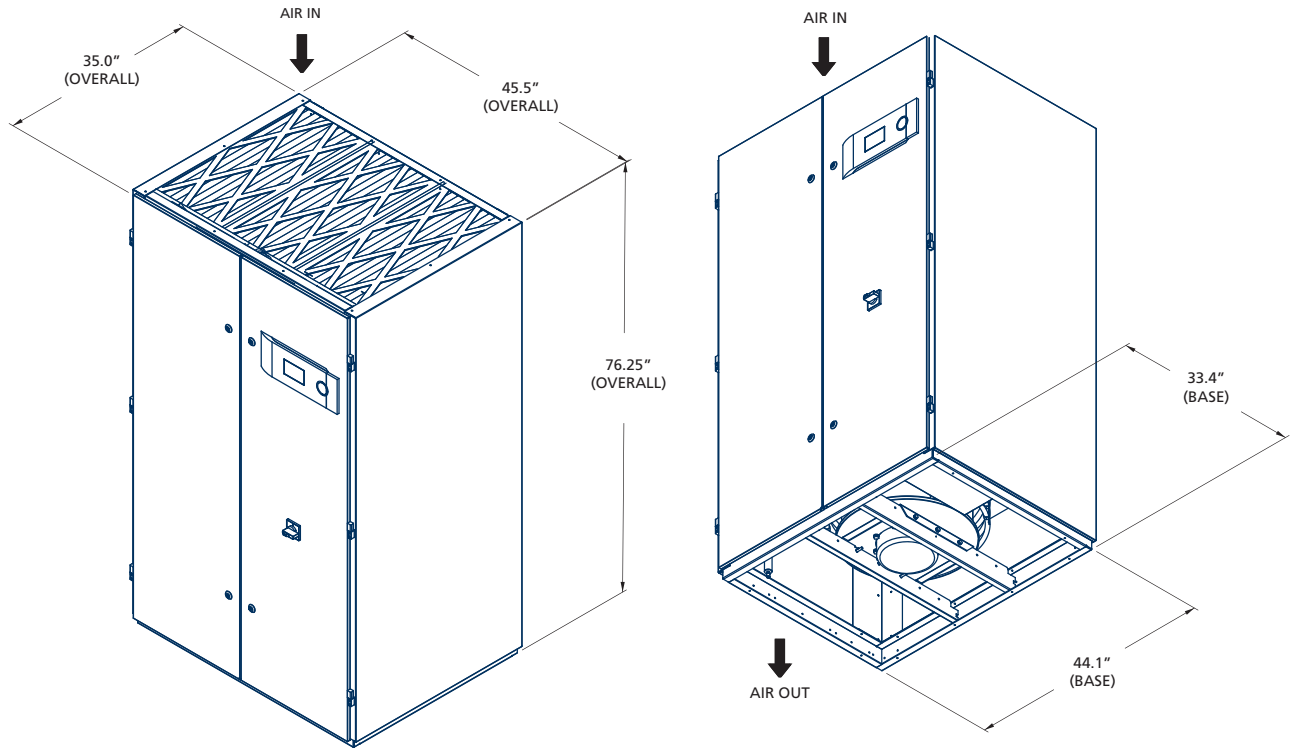
Higher Floor Stands Optionally Available.

Computer Room Air Handlers

CCD-300-CWE

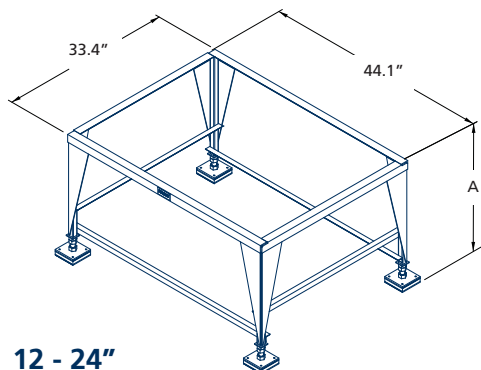
Downflow Vertical Air Conditioner

"Free Return" or with optional "Ducted Return"



(Note: Piping connections terminate inside the cabinet at the bottom, left hand side.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



12 - 24"

Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00

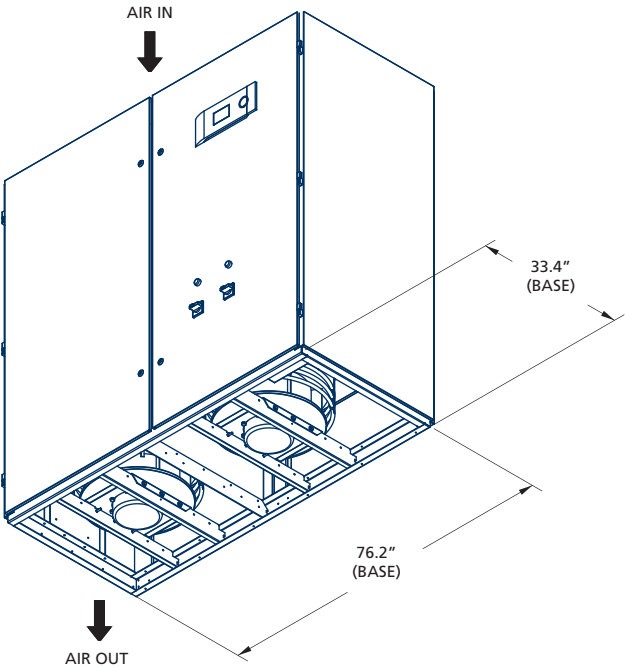
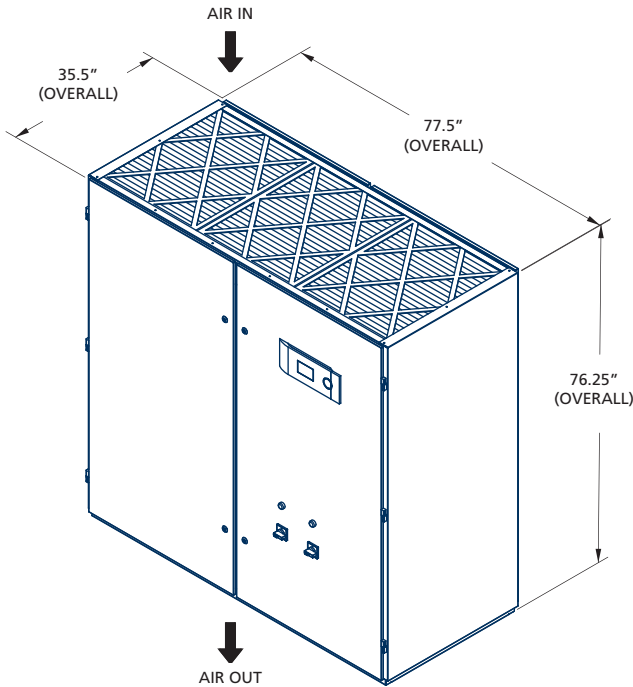
Higher Floor Stands Optionally Available.

Compact CWE

Dimensional Data - CCD-600/900-CWE

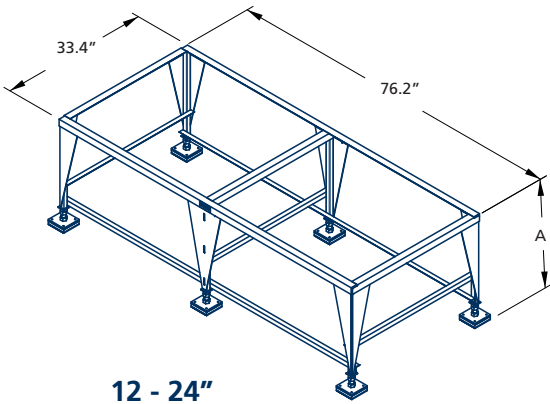
CCD-600/900-CWE Downflow Vertical Air Conditioner "Free Return" or with optional "Ducted Return"

(Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

Computer Room Air Handlers

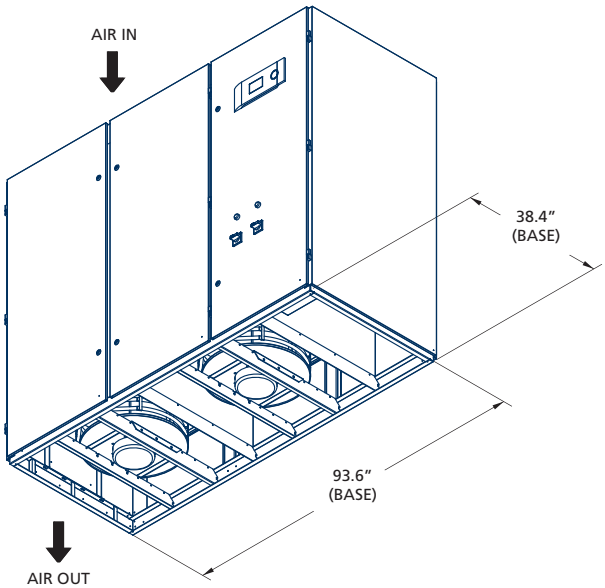
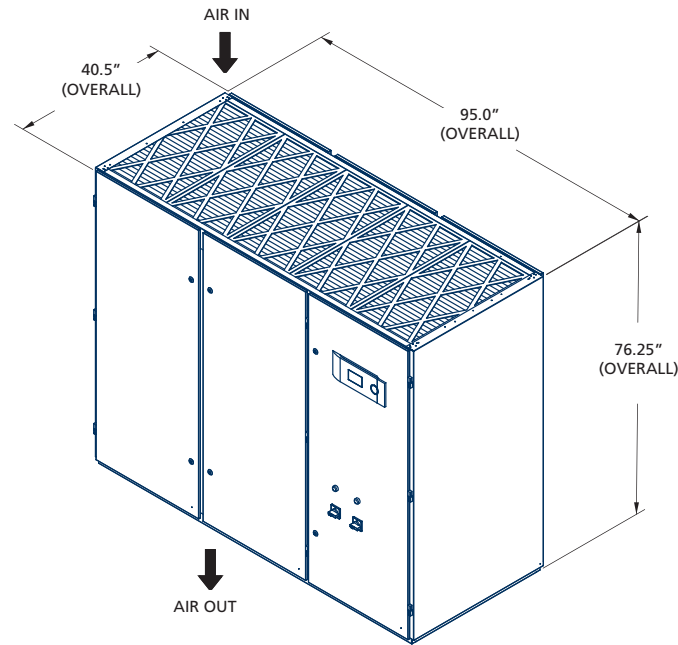
Dimensional Data - CCD-1200-CWE

CCD-1200-CWE

Downflow Vertical Air Conditioner

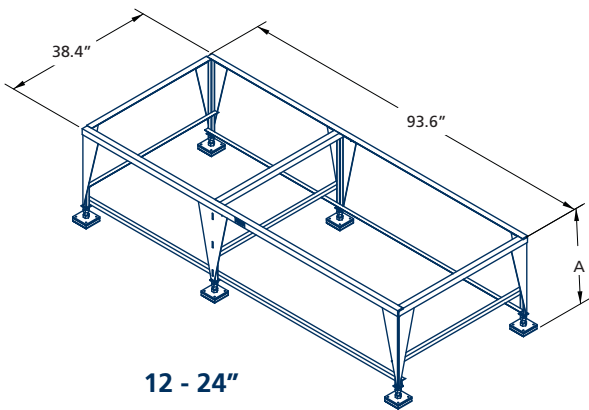
"Free Return" or with optional "Ducted Return"

(Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)

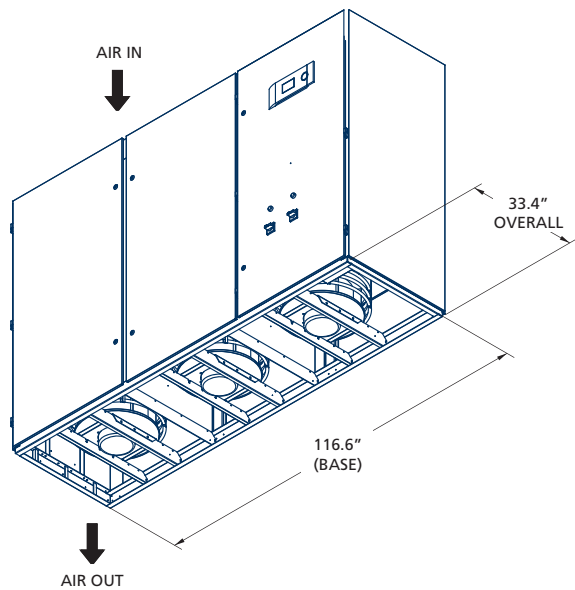
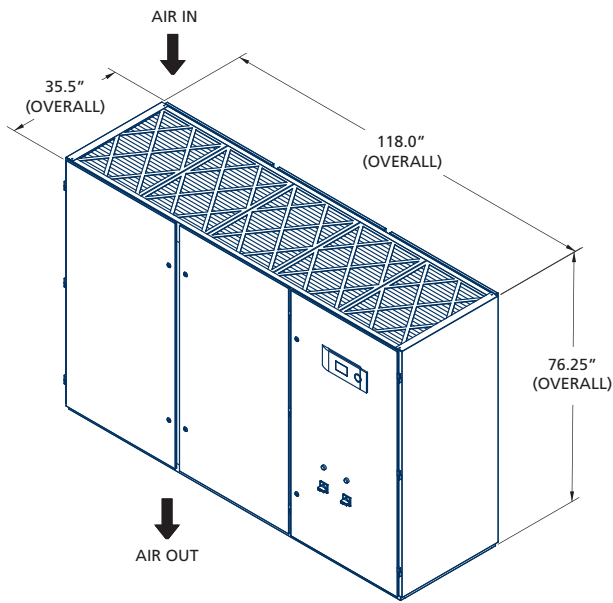


Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

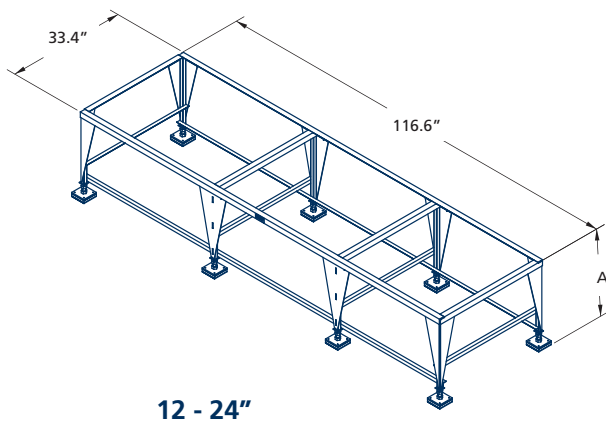
Compact CWE

CCD-1500/1800/1900-CWE
Downflow Vertical Air Conditioner
"Free Return" or with optional "Ducted Return"
 (Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side. Left hand piping is available as option.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

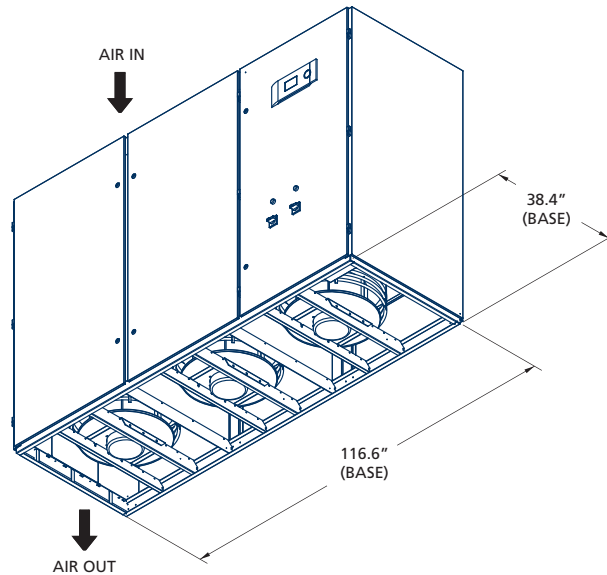
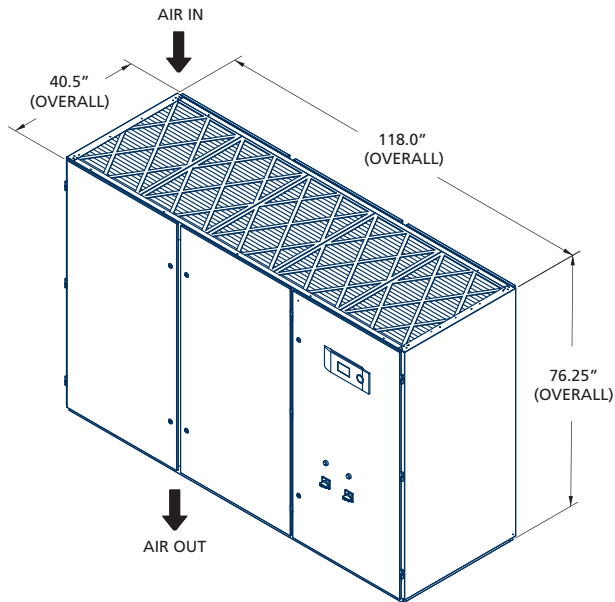
Computer Room Air Handlers

CCD-2300-CWE

Downflow Vertical Air Conditioner

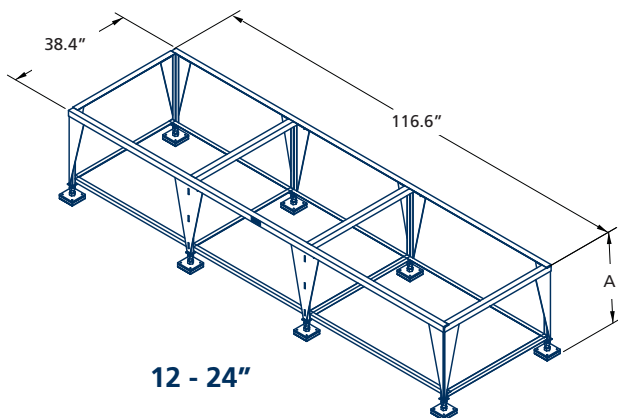
"Free Return" or with optional "Ducted Return"

(Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side. Left hand piping is available as option.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



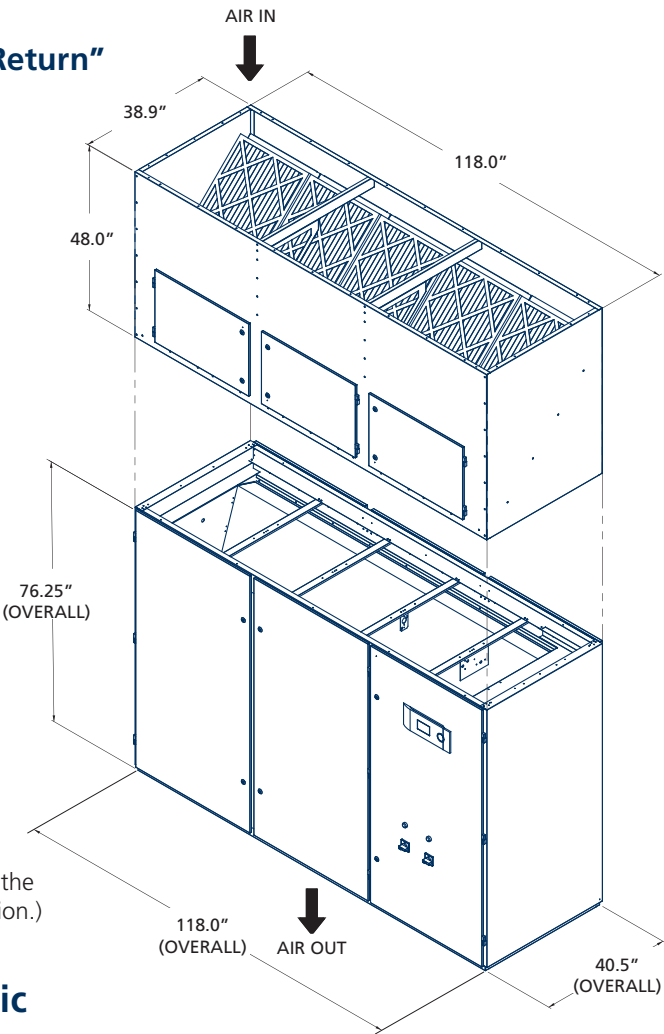
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

Compact CWE

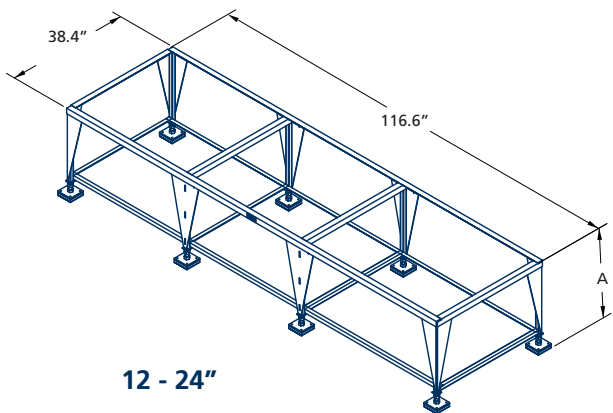
CCD-2300-CWE-EF (Extended Filter Plenum) Downflow Vertical Air Conditioner

“Free Return” or with optional “Ducted Return”
(Shown with dual power supply option.)



(Note 1: Piping connections terminate inside the cabinet at the bottom, right hand side. Left hand piping is available as option.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)

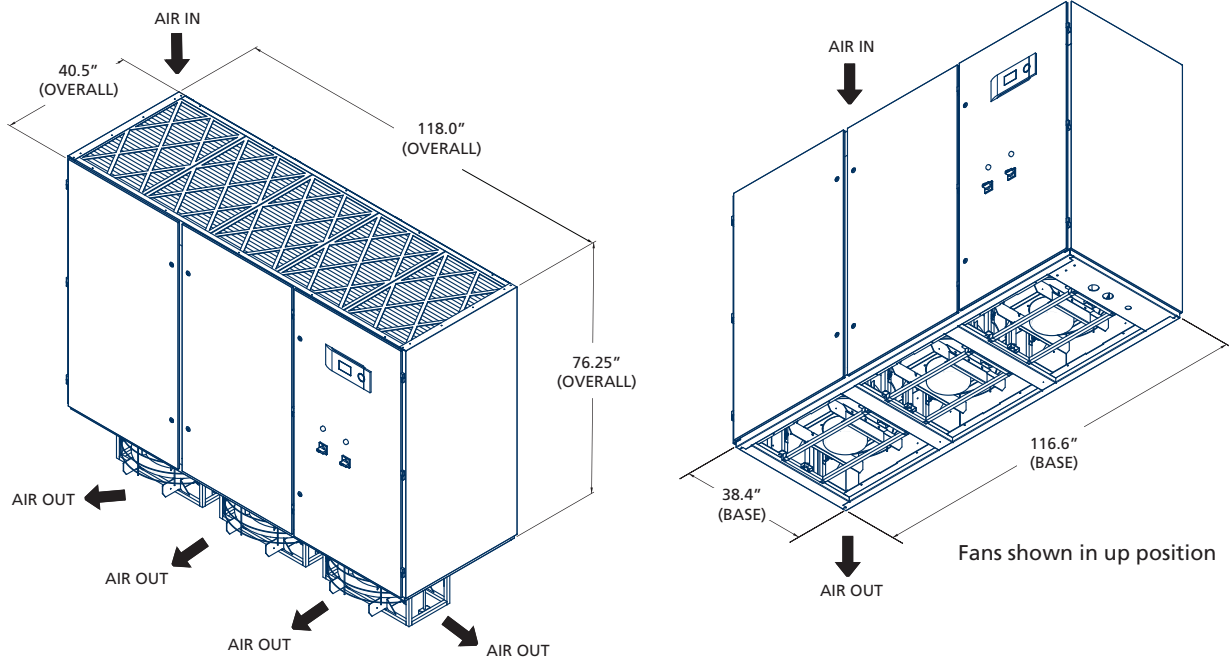


Adjustable Floor Stand Height Dimensions (Inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

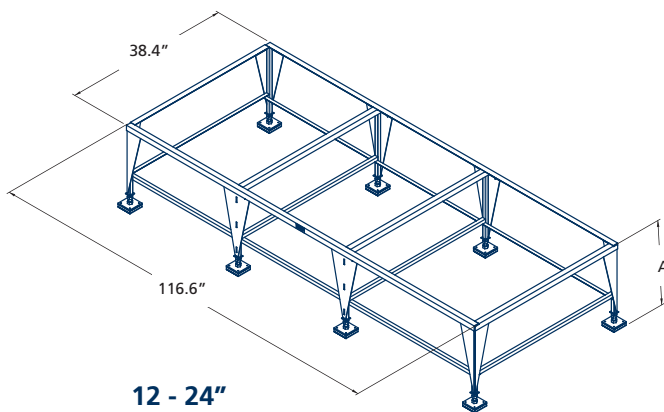
Computer Room Air Handlers

CCD-2300-CWE-UF (Under Floor Fans) Downflow Vertical Air Conditioner "Free Return" or with optional "Ducted Return" (Shown with dual power supply option.)



(Note 1: Piping connections terminate inside the cabinet at the bottom, right hand side (shown)).
(Note 2: Optional EF (Extended Filter) plenum option is available as shown on previous page.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)

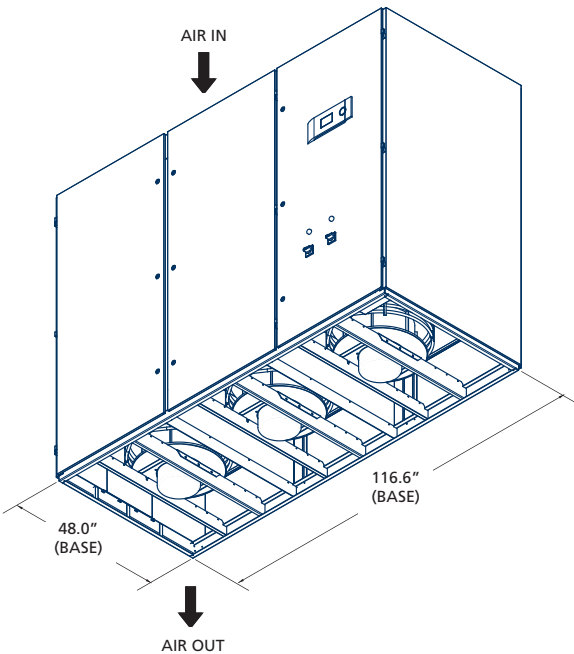
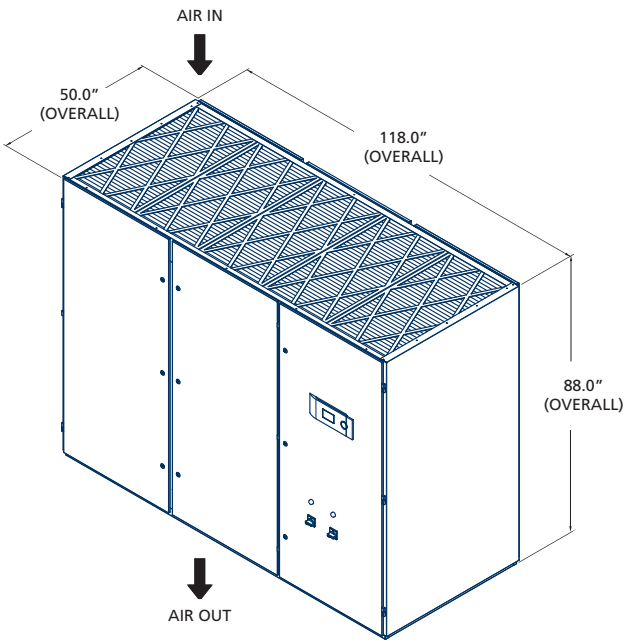


Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

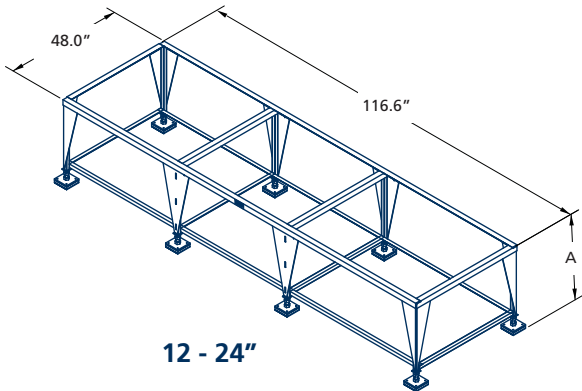
Compact CWE

CCD-2800-CWE Downflow Vertical Air Conditioner "Free Return" or with optional "Ducted Return" (Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side. Left hand piping is available as option.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
15.00	14.00	18.00
18.00	17.00	21.00
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

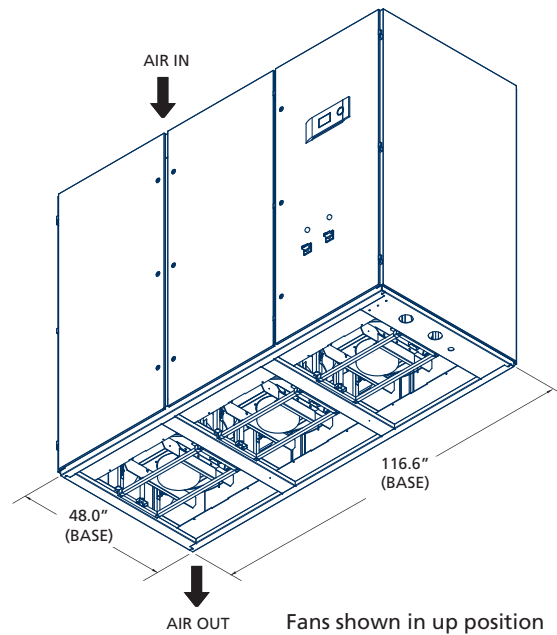
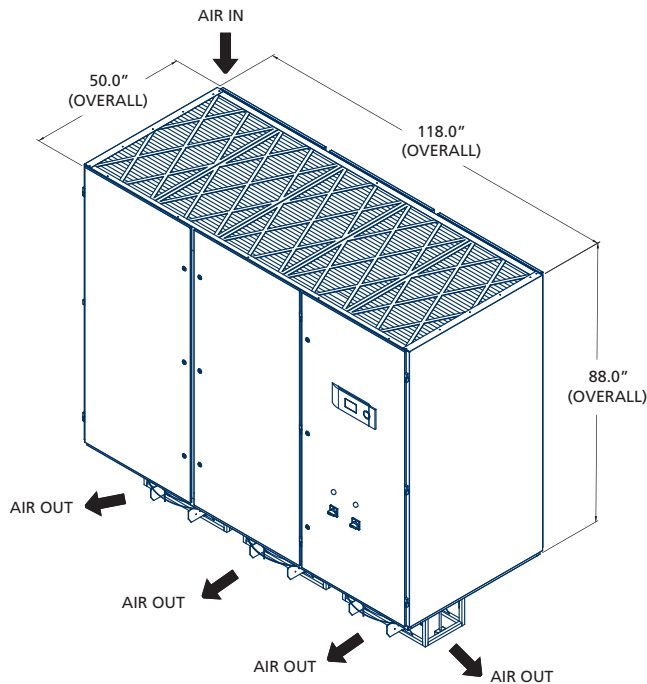
Computer Room Air Handlers

CCD-2800-CWE-UF

Downflow Vertical Air Conditioner

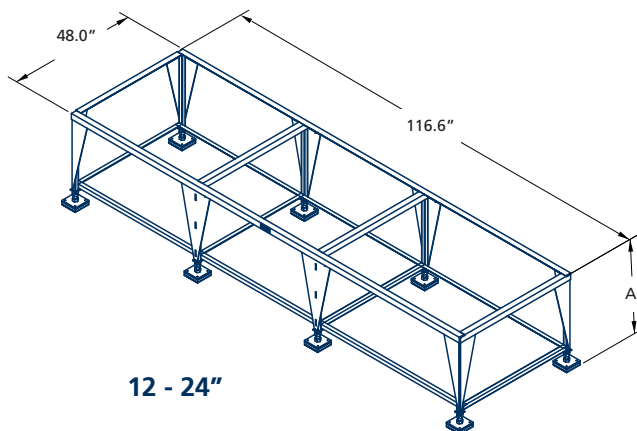
"Free Return" or with optional "Ducted Return"

(Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)



Adjustable 12" - 36" Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

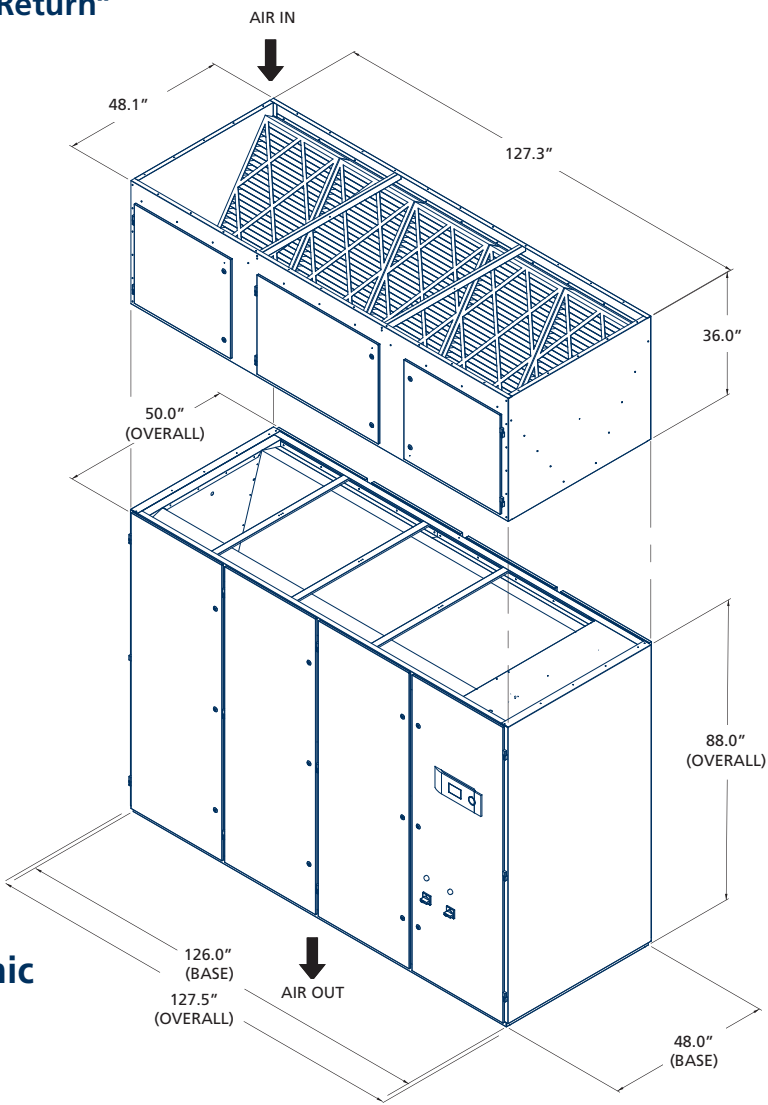
Compact CWE

Dimensional Data - CCD-3600-CWE-UF

CCD-3600-CWE-UF (Extended Filter Plenum) Downflow Vertical Air Conditioner

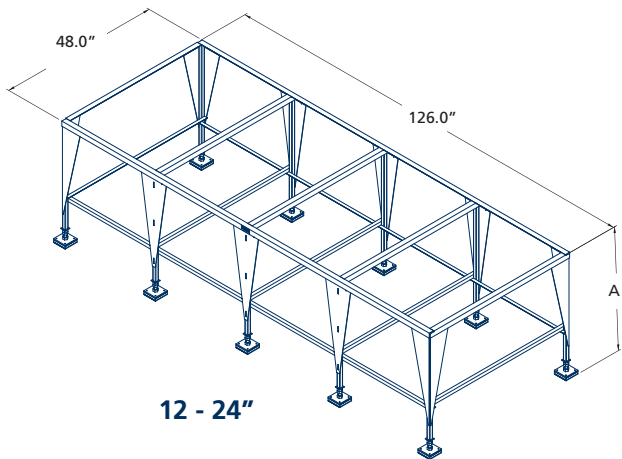
“Free Return” or with optional “Ducted Return”

(Shown with dual power supply option.)



(Note: Piping connections terminate inside the cabinet at the bottom, right hand side.)

Adjustable Floor Stand, Non-Seismic (Seismic rated floor stand is available)

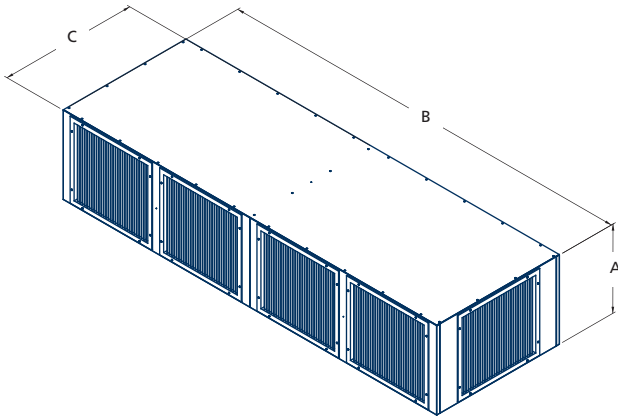


Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	Dim A Minimum	Dim A Maximum
24.00	23.00	26.00
36.00	35.00	38.00
48.00	47.00	50.00

Higher Floor Stands Optionally Available.

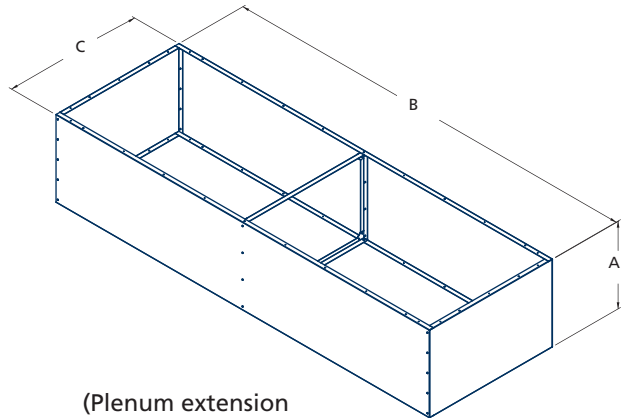
Computer Room Air Handlers

Plenum Box



Plenum Boxes (Upflow)	Dim A Nominal (inches)	Dim B Minimum (inches)	Dim C Maximum (inches)
CCU-300-CWE	18.5	45.40	33.77
CCU-600-900-CWE	18.5	77.56	33.47
CCU-1200-CWE	18.5	95	38.76
CCU-1500-1800-1900-2300-CWE	24	117.9	38.76
CCU-2800-CWE	36	117.9	48.36

Plenum Extension Box

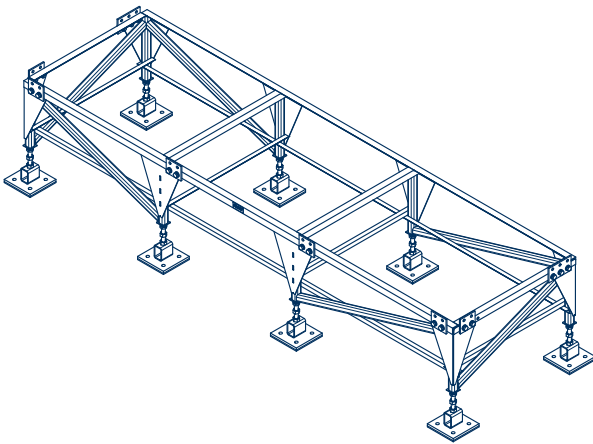


(Plenum extension boxes may be stacked)

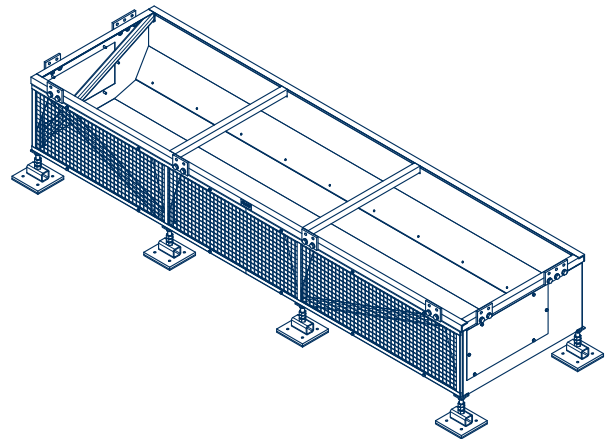
Plenum Extension Boxes (Downflow)	Dim A Nominal (inches)	Dim B Minimum (inches)	Dim C Maximum (inches)
CCD-300-CWE	24, 36, or 48	45.40	33.86
CCD-600-900-CWE	24, 36, or 48	77.50	33.86
CCD-1200-CWE	24, 36, or 48	95.00	38.76
CCD-1500-1800-1900-CWE	24, 36, or 48	117.90	33.86
CCD-2300-CWE	24, 36, or 48	117.90	38.86
CCD-2800-CWE	24, 36, or 48	117.90	48.45
CCD-3600-CWE	24, 36, or 48	127.4	48.45

Higher plenum boxes optionally available.

Seismic Rated Floor Stands (Available For Any Size Cabinet)



Typical Seismic Rated Floor Stand



Typical Enclosed, Seismic Rated Floor Stand

(Enclosed, non-seismic rated Floor stands also available)

Compact CWE

STULZ Compact CWE Series 30 - 360 kW "CCU/CCD" Vertical Floor Mounted Precision Control Air Conditioners Chilled Water Systems

SUMMARY

This specification describes requirements for a precision environmental control system. The STULZ Compact CWE vertical floor-mounted air conditioning system shall provide precision temperature and/or humidity control for computer rooms or rooms containing telecommunications or other highly-sensitive heat load equipment where continuous 24 hour a day, 365 days a year air conditioning is required. Designed for front-only access, "Precision AC" systems require minimum floor space. The units are designed with a wide range of options to handle both precision and comfort cooling applications.

DESIGN REQUIREMENTS

The environmental control system shall be a STULZ Compact CWE factory-assembled unit. The unit shall be designed for corner installation, requiring front only access through hinged and removable front access panels.

No allowance for side service access shall be required, however removable side access panels shall be provided for additional access. The Compact CWE Series units are especially adapted to raised floors and are available in both down-flow and up-flow air pattern configurations.

QUALITY ASSURANCE

The manufacturer shall maintain a set of international standards of quality management to insure product quality. Each system shall be subjected to a complete operational and functional test procedure at the factory prior to shipment.

CABINET

Access panels shall be fabricated from 18 gauge galvanized steel and shall be securely fastened to the 10 gauge base and 16 gauge top plates, fabricated from galvanized steel.

Both shall be painted with a 2-ply epoxy finish to match and provide corrosion protection. The panels shall be lined with 1/2" (13 mm), 2 lb (.90 kg), high-density sound and thermal insulation and sealed with self-extinguishing gasketing conforming to NFPA 90A and 90B. The main unit color shall be charcoal grey.

AIR FLOW PATTERNS

Down-Flow:

The air conditioner shall be configured for a down-flow air pattern with free return air to the top and conditioned supply air discharge through bottom of the system into the raised floor.

Up-Flow - Front Free Return:

The air conditioner shall be configured for an up-flow air pattern with free return air through front filtered grille and conditioned supply air through the top of the cabinet.

Up-Flow - Rear Return:

The air handler shall be configured for an up-flow air pattern with return air through the rear filtered inlet connection and conditioned supply air through the top of the cabinet. The return air filter chamber shall be an integral part of the cabinet serviceable from either side of the unit.

Air Filter

The return air filter chamber shall be an integral part of the cabinet serviceable only from the front of the Compact CWE system. The standard filter efficiency shall be no less than 30% based on ASHRAE 52.1. Filter depth shall be a minimum of 4" deep nominal.

MECHANICAL COMPONENTS

Backward Inclined, Plenum Style Fan, With an EC Motor

The blower(s) shall be direct driven, single inlet, two-fold backward curved radial fan with an electronically commutated motor for maintenance free operation. The motor shall include: integrated electronic control board and direct microprocessor control signaling for fan speed control, soft-starting capabilities, RS-485 BUS connection, and integrated current limitations. Each fan shall be low noise, low vibration manufactured with an anti-corrosive aluminum impeller. Each fan impeller shall be dynamically and statically balanced in two planes to minimize vibration during operation.

Computer Room Air Handlers

Chilled Water Coil

The coil shall be constructed of seamless drawn copper tubes, mechanically bonded to tempered aluminum fins with enhanced fin design for maximum heat transfer and with enhanced fin design for maximum heat transfer, and mounted in a stainless steel condensate drain pan. The coil shall be designed for a maximum of 500 ft./min. face velocity. The water circuit shall be designed to distribute water into the entire coil face area.

2-Way Chilled Water Control Valve

A two-way fully modulating control valve shall be factory installed and wired. The two-way chilled water modulating valve shall automatically meter the flow of chilled water to the cooling coil in response to a proportional signal (0-10vdc) provided to the valve by the microprocessor controller. Manual override capabilities shall be included on the actuator drive. Design pressure shall be 600 psig w.w.p.

3-Way Chilled Water Control Valve (Optional)

A 3-way modulating valve shall be factory piped and wired. The three-way modulating valve shall automatically meter the flow of chilled water to the cooling coil as needed for cooling load control, the remaining flow shall bypass the chilled water coil. A proportional control signal (0-10vdc) is provided to the valve by the unit's controller. Manual override capabilities shall be included on the actuator drive. Design pressure shall be 400 psig w.w.p.

Steam Generating Humidifier (Optional)

The humidifier shall be a self-contained atmospheric steam generator. The humidifier assembly shall include an integral fill cup, fill and drain valves, disposable steam cylinder and associated piping. The humidifier shall be equipped with an auto adaptive control system to optimize water conductivity, control automatic drain/flush cycles, minimize energy waste and maximize cylinder life. Drain water tempered fill water shall insure drains do not exceed 140°F during operation. The humidifier shall have modulating output between 20% and 100% of rated capacity.

Dehumidification Cycle

The system shall be provided with a dehumidification control mode. The chilled water valve shall be opened to allow chilled water flow when a dehumidification demand exists. Moisture is condensed on the cooling coil and discharged through the condensate drain. Reheat (electric) shall be provided to offset sensible cooling during the dehumidification cycle.

ELECTRICAL SYSTEM

The electrical system shall conform to National Electrical Code requirements. The control circuit shall be 24 volts AC, wired in accordance with NEC Class II requirements. The control circuit wire shall not be smaller than 18 AWG. All wiring shall be neatly wrapped and routed in bundles. Each wire shall end with a service loop and be securely fastened by an approved method. Each wire in the unit shall be numbered for ease of service tracing. All electrically actuated components shall be easily accessible from the front of the unit without reaching over exposed high voltage components or rotating parts. Each high voltage circuit shall be individually protected by circuit breakers or manual motor starters on all three phases. The blower motor shall have thermal and short circuit protection. Line voltage and 24 volt control circuit wiring shall be routed in separate bundles. The electric box shall be positioned for service convenience and shall include all the contactors, starters, fuses, circuit breakers, terminal boards and control transformer required for operation of the STULZ unit and shall allow for full service access.

Main Power Service Switch

The indoor Compact Chilled Water system shall be provided with a unit mounted main power service switch.

Remote Stop/Start Contacts

Included in the system's electrical control circuit shall be a 2-pin terminal connection for remote stop/start of the Compact CWE air conditioner by remote source.

Manual Control Override Switch (Optional)

A front panel mounted, keyed override switch shall allow full fan operation and 100% chilled water valve position once engaged in the unlikely event of a controller failure.

Automatic Dual Power Transfer Switch (Optional)

Two individual main power input disconnect switches shall be provided, one for each incoming power source. In the event the primary power fails or a phase loss/imbalance occurs, the automatic transfer switch immediately transfers power to the secondary power source. Once the primary power has been restored, the transfer switch automatically shifts the power load back to the primary power. The transfer time from one source to the other is user adjustable to allow staging or sequence restart of load.

In addition to the automatic transfer switch function, the local controller display shall indicate which power source has failed. This indication is a visual depiction that allows the user to determine the status of the input source. This status shall be conveyed thru the BMS serial communications link.

Compact CWE

A thru-the-door indicator light shall be included for a fast and local notification of available power sources.

AIR CONTROL

Reheat/Heat (Optional)

A factory mounted and wired low-watt density, plated fin-tubular design electric resistance heater shall be included to provide automatic sensible re-heating as required during the dehumidification cycle and automatic heating mode. Electric heaters shall be provided with miniature thermal/magnetic circuit breakers, which protect each ungrounded conductor. Also included will be one automatic reset and one manual reset over-temperature safety device (pilot duty).

EC Fan Speed Control

The system shall include a variable fan speed control package. The unit's controller shall permit control of the fan speed from 100% rated air volumetric flow rate to a user defined minimum fan speed setting. Minimum and maximum fan speed settings shall be user adjustable. User configured control sequences shall be available for fan speed energy savings control.

Fail Safe Mode

In the event of a fan failure, the controller shall automatically increase all remaining EC fans to the maximum fan speed setting.

E² SERIES CONTROLLER DESCRIPTION

General

The advanced microprocessor based E² Series controller shall be equipped with flexible software capable of meeting the specific needs of the application. The setpoints shall be default and their ranges shall be easily viewed and adjusted from the user interface display. The program and operating parameters shall be permanently stored on a non-volatile system in the event of power failure.

The controller shall be designed to manage temperature and relative humidity (RH) levels to a user defined setpoint via control output signals to the Compact CWE system. Control parameters have variable outputs from 0 to 100% of the full rated capacity.

The controller shall receive inputs for measurable control conditions (temperature, relative humidity, and dew point) via return air or room mounted sensors. The internal logic will then determine if the conditions require cooling, heating, humidification or dehumidification. Control setpoints shall be established to maintain design conditions of the installation.

The controller will respond accordingly to changes in these conditions and control the output/demand for the appropriate mode of operation until user defined conditions are achieved.

Field Configurable

The program for the E² Series controller shall be field configurable, allowing the operator the capability of selecting control setpoints specific to the application. Operator interface for the E² controller is provided via a door mounted user interface display panel. The display panel shall give the user complete control and monitoring capability of the precision cooling system. The menu driven interface shall provide users the ability to scroll through and enter various menu screens.

Password Protection

Access to the Info Menu, Alarms Log, and the ability to monitor room conditions shall be allowed without the use of a password. Modifications to the control setpoints shall require the use of a password. Three secured menu levels (Control, Service and Factory) will support unique passwords that must be entered to access the menu screens so only authorized personnel may perform modifications to the settings.

Restorable Parameters/Factory Defaults

Upon initial start-up the CWE system shall operate using the setpoints programmed by the factory. The customer may enter new operating parameters in the Control menu and the system will then operate accordingly. The new setpoints shall be stored as, "Customer Default Setpoints". The setpoints for the system shall be re-adjusted in the Control menu at any time.

Timer Feature

The timer shall allow the user to set up an operating schedule to automatically scale back or shut down the air conditioner during low demand or unoccupied periods. An evening (night-setback) schedule may also be created, allowing the Compact CWE system to operate at night with relaxed temperature/humidity setpoints and offsets.

A/C Grouping pLAN Operation

Multiple CWE system controllers shall be capable of being connected (grouped) to a pLAN local network, allowing the communication of data and information from each controller to a central control terminal or Lead controller. The Lead controller display screens can be used to monitor and adjust group control variables for the individual system controllers.

Multiple CWE systems consisting of up to eight STULZ precision air conditioners equipped with like controllers shall be controlled and monitored via the E² series controller. With multiple Compact CWE systems, each unit can selectively be configured as "Active" to operate as a primary A/C, "Capacity Assist" for staged operation or "Standby" to come online

Computer Room Air Handlers

in case of a failed air conditioning unit to ensure continuous availability. The controller may also be configured to rotate units with timed duty cycling to promote equal run-time and assure that each Compact CWE system within the rotating group is operationally exercised on a periodic timed basis.

BMS Interface (Optional)

The E² Series Controller shall incorporate a 10 Mbps communication interface port that can be field connected through a serial interface to a Building Management System via Modbus, BACnet, SNMP, or HTTP as configured by the factory. For transmission rates above 10 Mbps, an ethernet switch is required. A controller interfaced to a network must be configured for BMS communication.

Alarms

Alarm conditions shall activate a red LED indicator that backlights the alarm function key. As an option, an alarm condition may also be enunciated by an audible alarm signal. An alarm is acknowledged by pressing the alarm key. This calls up alarm display screens that provide a text message detailing the alarm conditions. After an alarm condition is corrected, the alarm can be cleared by pressing the alarm key.

Large Bezel Display Panel

The large bezel touch screen user interface shall include an illuminated display with color graphics and alpha-numeric characters. The unit mounted interface shall allow the operator to visually monitor and customize unit functions and settings via touch entries. Multiple system operating graphs shall be available for the last 24 hours of system operation. The illuminated display shall turn off after a period of no activity to conserve energy.

OPTIONAL COMPONENTS

E² Constant Contact (Optional)

The control package shall include a STULZ Constant Contact short term power supply for the E² Series Controller to allow the controller to manage the power transfer switch from one primary power source to another while maintaining communications with an active monitoring system. The E² Constant Contact shall permit a minimum of one minute ride thru period. The Constant Contact shall include LED indications for presence of power, low charge indication, and minimum backup time.

Hot Water Reheat (Optional)

The hot water reheat coil shall include copper tubes and aluminum fins using a one-row coil selection for minimum air resistance. A two-way modulating control valve shall be factory piped and wired to control the flow of hot water for

reheating or heating control.

Adjustable Floor Stand (Optional)

An adjustable floor stand shall be provided to allow for ease of installation of the Compact CWE system onto a raised floor. Floor stand height shall be adjustable. The floor stand shall ship separately for field installation.

Enclosed Floor Stand (Optional)

A factory provided enclosed floor stand shall be factory constructed full cabinet length and pre-fabricated within the support structure for one-way front air discharge.

Seismic Rated Floor Stand (Optional)

The unit floor stand shall be constructed and rated for use to the seismic performance requirements of the installation site.

Chilled Water Flow Switch (Optional)

The chilled water factory piping shall include a flow indication switch. The switch shall be factory mounted and wired. Upon loss of chilled water flow, the switch shall signal a loss of flow alarm.

High Efficiency Filtration (Optional)

The Compact CWE system shall be provided with high efficiency return air filters. The filters shall have an average efficiency rating of 60% based on ASHRAE Test Standard 52-76.

Condensate Pump (Optional)

A condensate pump shall be factory installed within the Compact CWE system for automatic removal of condensate and humidifier flush water (if applicable). The condensate pump shall include an internal overflow safety float which, when wired to the Compact CWE unit's remote stop/start terminals, shall open the unit's control circuit, thereby shutting the unit down to prevent condensate overflow. The condensate pump shall be specifically designed to operate with the higher condensate temperatures caused by the flush and drain cycle of the electrode canister humidifiers.

Smoke Detection (Optional)

A photo-electric smoke detector shall be factory installed and wired in the return air section of the Compact CWE system. The photo-electric detector shall include built-in circuitry that performs a functional test of all detection circuits at least once every 40 seconds without the need for generating smoke. The UL listed velocity range shall be 0-3000 fpm. The air conditioner will shut down upon sensing smoke in the return air stream.

Firestat (Optional)

The Compact CWE system shall be provided with a factory wired and mounted firestat. The firestat will shut down the air conditioner upon sensing a high return air temperature.

Computer Room Air Handlers

Supply Air Control (Optional)

The Compact CWE system controller shall be provided with a temperature and humidity sensor factory unit mounted in the return air stream and a field installed supply air temperature and humidity sensor for supply air control capabilities. The controller shall provide the user an adjustable supply air control set point.

Under Floor Pressure Control (Optional)

The Compact CWE system shall permit variable fan speed control to a user defined external static pressure setting. A remote differential pressure transducer shall be provided to determine the static pressure and the system controller shall modulate fan speed to maintain an external static pressure set point.

Remote Water Detector-Spot Type (Optional)

A remote single point water/leak detector shall be factory supplied and shall ship separately for field installation. Upon sensing a water leak, the normally closed water detector control circuit shall open, thereby shutting down the Compact CWE unit's water producing components.

Remote Water Detector-Dual Spot Type (Optional)

Two, remote single point water detectors shall be factory supplied and shall ship separately for field installation. Upon sensing a water leak at either detector, the normally closed water detector control circuit shall open, thereby shutting down the Compact CWE unit's water producing components.

Remote Water Detector-Strip Type (Optional)

A 20 ft. in length remote strip/cable type water/leak detector shall be provided for remote field installation. In addition to the 20 ft. sensing cable, a 24 volt water detector power module shall require field mounting and wiring to the factory provided terminal connection. Upon sensing a water leak, the normally closed water detector control circuit shall open, thereby shutting down the CWE unit's water producing components.

Top Discharge Plenum Box (Optional For Up-flow Units)

A 2 or 3-way plenum discharge box shall be provided. The plenum box shall include double-deflecting, adjustable grilles.

High Short Circuit Current Rating (Optional)

The Compact CWE system shall be rated for a short circuit current rating for a minimum of _____. The higher short circuit current rating shall include safe touch fusing up stream of the unit's main power disconnect switch.

Air-Side Economizer Controls (Optional)

The Compact CWE system controller shall be equipped with a unique air-side economizer mode for applications utilizing outdoor air-side economizing. The STULZ Fresh Air (FA) economizer control package shall include an outdoor temperature and humidity sensor, remote space return air sensor, and supply air sensor for proper control during economizer operation. Individual discrete analog output signals (0-10vdc) are available to allow control of the external outdoor air intake damper and exhaust relief provisions. Control settings shall be included for both temperature and humidity properties of the outdoor air. A damper signal lockout shall be included if the outdoor air conditions reaches user adjustable limits.

The economizing damper signal shall allow a minimum output setting for minimum outside air control to meet ventilation requirements.

CODE CONFORMANCE

The supplied system shall be provided with the following compliance approvals:

ETL/CETL

UL Listed to UL 1995 and CSA C22.2

No.236

MEA # 433-00-E



STULZ Sales and Service User Driven | Custom Designed | Purpose Built



Advice



Maintenance



Investment



Location



Technical



Climate Control



Settlement

For general questions about our products and services, contact your local STULZ expert.
You can find your local representative at: www.stulz-usa.com/sales-support/sales-representatives

NORTH AMERICAN HEADQUARTERS FREDERICK, MARYLAND USA

STULZ Air Technology Systems, Inc. (STULZ USA)
15720 Tillo Drive | Frederick, MD 21704
Tel: 301-620-2033
Email: Info@stulz-usa.com

www.stulz-usa.com