

STULZ

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CyberOne EC CW

Engineering Manual

**Perimeter Mounted Precision Air Handlers
12 kW - 35 kW / 60 Hz**

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Nomenclature				
XXX-XXX-CW-X-EC				
System	Capacity in 1,000s BTU/H	Model	Air Flow Pattern	Fan Cooling
COS = CyberOne	042 060 096 120	CW = Chilled Water	D = Down Flow Air U = Up Flow Air	EC = Direct Driven, single inlet, two fold backward curved radial fan with electronically commutated (EC) motor

Call Product Support at 888 529 1224 for additional information.

Example: CyberOne EC CW, 42,000 BTU, Up Flow Air - COS-042-CW-U-EC

Standard and Optional Features

Model	COS-042/060-CW-()-EC	COS-096/120-CW-()-EC
Selected Standard Features		
Temperature Control		
1-Stage Cooling Mode	Standard	Standard
1-Stage Electric Reheating	Optional	Optional
Cooling or Reheating Only (No Humidity Control)	Optional	Optional
Humidity Control		
Proportional Electrode Canister Steam Humidifier	Optional	Optional
Dehumidification Mode with 1-Stage Electric Reheat	Optional	Optional
Controls		
Advanced Microprocessor w/ Alarms	Standard	Standard
Cabinet		
Powder Coat Painted Galvanneal Steel	Standard	Standard
Insulated Stainless Steel Condensate Drain Pan	Standard	Standard
2 lb Density Thermal & Sound Insulation	Standard	Standard
Floor Stand (Adjustable, turning vanes optional)	Optional	Optional
Filters/Plenum		
2 in., 30% Dust Spot Eff. Pleated Filters	Standard	Standard
2 or 3-way Plenum Box (Up-Flow Units)	Optional	Optional
Blowers/Motors		
Direct Drive Electrically Commutated (EC) Plug Fan	Standard	Standard
Electrical		
3-Phase Power Supply	Standard	Standard
Multi-Voltage Control Transformer (24V Class 2)	Standard	Standard
Modular Motor Controllers with Integral Circuit Breakers	Standard	Standard
Safety Features		
Audible/Visual Local and Remote Alarms*	Standard	Standard
Main Power Non-Fused Disconnect, unit mounted	Standard	Standard
Motor Overload Protection	Standard	Standard
Specific Model Standard Features		
Chilled Water Systems		
2-way, 600 psi WOG (Water, Oil, Gas) Modulating Valve	Standard	Standard
3-way, 600 psi WOG Modulating Valve	Optional	Optional

* Audible alarms available with touchscreen interface only.

Technical Specifications

Model	COS-042-CW-()- EC	COS-060-CW-()- EC	COS-096-CW-()- EC	COS-120-CW-()- EC
Chilled Water Control Valve - Sized for Medium Flow @ 75 °F DB/62.5 °F WB EAT Conditions				
2-way (standard) — Modulating				
Size, in. (Cv)	1 (8)	1 (8)	1-1/4 (16)	1-1/4 (16)
Valve Pressure Rating, psi	600	600	600	600
3-way (optional) — Modulating				
Size, in. (Cv)	1 (8)	1 (8)	1-1/4 (16)	1-1/4 (16)
Valve Pressure Rating, psi	600	600	600	600
Chilled Water Coil — Aluminum Fin, Copper Tube				
Rows (Face Area, ft ²)	4 (5.5)	6 (5.5)	4 (9.75)	6 (9.75)
Face Velocity, ft/min	491	491	492	492
Evaporator Blower/Motor — Backward Curved EC				
Nominal Motor Power, hp	3.6	3.6	4.1	4.1
Rated Air Flow, ft ³ /min @0.5 inH ₂ O esp	2700	2700	4800	4800
Quantity of Blowers	1	1	1	1
Reheat/Heat - Performance Capacities Include Evaporator Blower Motor Heat				
Electric Reheat / Heat — (Standard)				
Number of Stages	1	1	1	1
Total Nominal Capacity, kW (MBH)	9 (30)	9 (30)	9 (30)	9 (30)
Hot Water Reheat/Heat — Reheat Rated @ 180 °F Entering Water Temperature, 72 °F DB EAT (Optional)				
Total Capacity, kW (MBH)	12.2 (41.6)	14.3 (48.8)	27.6 (94.3)	29 (98.8)
Flow Rate, gpm, (Pressure Drop, ftH ₂ O)	4.3 (4.7)	5.0 (5.6)	9.6 (5.3)	10.1 (5.7)
Size, in. (Cv)	7/8 (4)	7/8 (4)	7/8 (8)	7/8 (8)
Humidification - Electrode Steam Canister Humidifier with Adjustable Output (Standard)				
Steam Output, lb/hr (Power Input, kW)	4-10 (3.4)	4-10 (3.4)	4-15 (5.1)	4-15 (5.1)
Std Control	Modulating	Modulating	Modulating	Modulating
Filters — Disposable, MERV 8 Average Dust Spot Efficiency (Standard)				
Actual Size, in. (Quantity.)	28.5 × 26 (1)	28.5 × 26 (1)	31.5 × 21.38 (2)	31.5 × 21.38 (2)
Connection Sizes — Copper				
Condensate Drain, in. OD	7/8	7/8	7/8	7/8
Humidifier Inlet, in. OD	1/4	1/4	1/4	1/4
Water In and Out, in. OD	1-1/8	1-1/8	1-3/8	1-3/8
Physical Data *				
Approximate Unit Weight, lb	400	410	560	570
Unit Dimensions, H in. x W in. x D in. **	76 × 30.6 × 30.6	76 × 30.6 × 30.6	76 × 47.6 × 33.6	76 × 47.6 × 33.6
Approximate Shipping Dimensions, H in. x W in. x D in.**	82 X 37 X 37	82 X 37 X 37	82 X 54 X 40	82 X 54 X 40
Upflow Plenum Box Dimensions, H in. x W in. x D in.	18 × 28.8 × 28.8	18 × 28.8 × 28.8	18.5 × 46 × 32	18.5 × 46 × 32

* Unit dimensions do not include plenum. Add plenum height to height dimension when selecting a plenum. Note that plenum ships loose on a separate pallet.

** Add 17.6 inches to unit depth dimensions for rear-return units.

Performance/Capacity Data – 45°F EWT/55°F DP

Model		COS-042-CW(-)-EC	COS-060-CW(-)-EC	COS-096-CW(-)-EC	COS-120-CW(-)-EC
COOLING CAPACITY - kW(MBH) @ 45 °F EWT, 0% Glycol Solution (Includes motor heat @ rated ft3/min and esp)					
85 °F DB/65.9 °F WB, 36% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	22 (74.9)	28.1 (95.8)	42.1 (143.8)	54.2 (185.1)
	Sensible	21.3 (72.7)	25.1 (85.5)	39.6 (135.2)	46.6 (159)
	Flow Rate, gpm (Pressure Drop, ft H2O)	15.9 (22.0)	20.3 (29.0)	30.4 (40.8)	38.8 (43.6)
Med. Flow (12 °F ΔTw)	Total	19.1 (65)	27.1 (92.5)	40.7 (138.9)	52.7 (179.9)
	Sensible	19.1 (65)	24.6 (83.8)	38.6 (131.6)	45.8 (156.4)
	Flow Rate, gpm (Pressure Drop, ft H2O)	11.6 (13.4)	16.4 (20.2)	24.5 (28.2)	31.5 (30.3)
Low Flow (14 °F ΔTw)	Total	17.6 (60)	26.3 (89.7)	39.1 (133.4)	51.4 (175.2)
	Sensible	17.6 (60)	24.1 (82.2)	37.3 (127.2)	45.1 (153.9)
	Flow Rate, gpm (Pressure Drop, ft H2O)	9.2 (9.7)	13.6 (15.0)	20.2 (20.7)	26.3 (22.4)
80 °F DB/64.2 °F WB, 42% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	18.6 (63.4)	24.2 (82.7)	36.3 (124)	47.4 (161.7)
	Sensible	17.8 (60.7)	21.2 (72.4)	33.5 (114.2)	39.8 (135.8)
	Flow Rate, gpm (Pressure Drop, ft H2O)	13.6 (17.1)	17.6 (22.8)	26.4 (32.0)	34.0 (34.6)
Med. Flow (12 °F ΔTw)	Total	15.5 (52.8)	23.2 (79.3)	34.6 (118)	45.7 (156.1)
	Sensible	15.5 (52.8)	20.7 (70.6)	32.2 (109.9)	38.9 (132.9)
	Flow Rate, gpm (Pressure Drop, ft H2O)	9.5 (10.2)	14.1 (15.8)	21.0 (22.0)	27.5 (24.2)
Low Flow (14 °F ΔTw)	Total	13.9 (47.5)	22.3 (76.1)	32.8 (111.8)	44.2 (150.9)
	Sensible	13.9 (47.5)	20.2 (68.8)	30.8 (105.2)	38.1 (130)
	Flow Rate, gpm (Pressure Drop, ft H2O)	7.4 (7.4)	11.6 (11.8)	17.1 (16.0)	22.8 (17.9)
75 °F DB/62.5 °F WB, 50% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	15.1 (51.6)	20.3 (69.4)	30.2 (103.2)	40.5 (138.2)
	Sensible	14.2 (48.3)	17.2 (58.8)	27 (92.3)	32.7 (111.7)
	Flow Rate, gpm (Pressure Drop, ft H2O)	11.2 (12.8)	14.9 (17.3)	22.2 (24.0)	29.3 (26.9)
Med. Flow (12 °F ΔTw)	Total	11.8 (40.2)	19.2 (65.6)	28.2 (96.3)	38.6 (131.7)
	Sensible	11.8 (40.2)	16.6 (56.7)	25.6 (87.5)	31.8 (108.4)
	Flow Rate, gpm (Pressure Drop, ft H2O)	7.4 (7.4)	11.8 (12.1)	17.3 (16.3)	23.4 (18.6)
Low Flow (14 °F ΔTw)	Total	10.1 (34.5)	18.2 (62.1)	26.1 (89.2)	36.9 (125.8)
	Sensible	10.1 (34.5)	16 (54.6)	24.1 (82.1)	30.8 (105)
	Flow Rate, gpm (Pressure Drop, ft H2O)	5.5 (5.6)	9.6 (9.1)	13.8 (11.8)	19.1 (13.8)

Performance/Capacity Data – 45°F EWT/52°F DP

Model		COS-042-CW-()- EC	COS-060-CW-()- EC	COS-096-CW-()- EC	COS-120-CW-()- EC
NET COOLING CAPACITY — kW(MBH) @ 45 °F EWT, 0% Glycol Solution (Includes motor heat @ rated ft³/min & esp)					
85 °F DB/64.5 °F WB, 32% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	20.5 (69.8)	24.9 (85.0)	39.4 (134.5)	52.3 (178.4)
	Sensible	20.5 (69.8)	24.9 (85.0)	39.4 (134.5)	48.4 (165.1)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	14.9 (19.7)	18.1 (23.9)	28.5 (36.5)	37.4 (40.8)
Med. Flow (12 °F ΔTw)	Total	19 (64.9)	23.5 (80.2)	37.6 (128.3)	51.4 (175.3)
	Sensible	19 (64.9)	23.5 (80.2)	37.6 (128.3)	47.9 (163.3)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	11.6 (13.4)	14.3 (16.2)	22.7 (24.9)	30.7 (29.0)
Low Flow (14 °F ΔTw)	Total	17.6 (59.9)	22 (74.9)	35.5 (121.1)	50.4 (172)
	Sensible	17.6 (59.9)	22 (74.9)	35.5 (121.1)	47.2 (161.2)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	9.2 (9.7)	11.5 (11.6)	18.4 (17.9)	25.8 (21.8)
80 °F DB/62.9 °F WB, 38% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	17 (57.9)	20.9 (71.3)	35.7 (121.8)	45.6 (155.6)
	Sensible	17 (57.9)	20.9 (71.3)	34.8 (118.8)	41.4 (141.3)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	12.4 (14.9)	15.3 (18.1)	26.0 (31.1)	32.8 (32.5)
Med. Flow (12 °F ΔTw)	Total	15.5 (52.8)	19.3 (66)	31.2 (106.6)	44.5 (151.9)
	Sensible	15.5 (52.8)	19.3 (66)	31.2 (106.6)	40.7 (138.9)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	9.5 (10.2)	11.8 (12.1)	19.1 (18.9)	26.7 (23.0)
Low Flow (14 °F ΔTw)	Total	13.9 (47.4)	17.6 (60.2)	28.9 (98.7)	43.4 (148.1)
	Sensible	13.9 (47.4)	17.6 (60.2)	28.9 (98.7)	40 (136.5)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.4 (7.4)	9.3 (8.8)	15.2 (13.5)	22.4 (17.4)
75 °F DB/61.1 °F WB, 45% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	13.4 (45.6)	19.7 (67.4)	29.5 (100.6)	38.6 (131.7)
	Sensible	13.4 (45.6)	18.3 (62.6)	28.4 (96.9)	34.4 (117.4)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	9.9 (10.8)	14.5 (16.5)	21.6 (23.1)	27.9 (24.8)
Med. Flow (12 °F ΔTw)	Total	11.8 (40.2)	15 (51)	24.6 (84)	37.4 (127.5)
	Sensible	11.8 (40.2)	15 (51)	24.6 (84)	33.6 (114.7)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.4 (7.4)	9.3 (8.8)	15.2 (13.6)	22.60 (17.7)
Low Flow (14 °F ΔTw)	Total	10.1 (34.5)	12.9 (44.1)	22 (75.2)	36.1 (123)
	Sensible	10.1 (34.5)	12.9 (44.1)	22 (75.2)	32.8 (111.9)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	5.5 (5.6)	7.0 (6.4)	11.8 (9.7)	18.70 (13.3)

Performance/Capacity Data – 50°F EWT/55°F DP

Model		COS-042-CW(-)-EC	COS-060-CW(-)-EC	COS-096-CW(-)-EC	COS-120-CW(-)-EC
NET COOLING CAPACITY - kW(MBH) @ 50 °F EWT, 0% Glycol Solution (Includes motor heat @ rated ft³/min & esp)					
85 °F DB/65.9 °F WB, 36% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	17.1 (58.5)	21.1 (71.9)	33.4 (114)	41.1 (140.2)
	Sensible	17.1 (58.5)	21.1 (71.9)	33.4 (114)	41.1 (140.2)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	12.6 (15.1)	15.4 (18.3)	24.4 (27.8)	29.8 (27.5)
Med. Flow (12 °F ΔTw)	Total	15.7 (53.5)	19.6 (66.8)	31.5 (107.6)	39.2 (133.6)
	Sensible	15.7 (53.5)	19.6 (66.8)	31.5 (107.6)	39.2 (133.6)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	9.6 (10.4)	12.0 (12.4)	19.2 (19.0)	23.8 (19.0)
Low Flow (14 °F ΔTw)	Total	14.2 (48.4)	18 (61.2)	29.3 (100.1)	36.9 (126)
	Sensible	14.2 (48.4)	18 (61.2)	29.3 (100.1)	36.9 (126)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.4 (13.7)	19.2 (13.8)
80 °F DB/64.2 °F WB, 42% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	13.6 (46.3)	16.9 (57.7)	27.2 (92.8)	38 (129.8)
	Sensible	13.6 (46.3)	16.9 (57.7)	27.2 (92.8)	35.6 (121.5)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	10.1 (11.1)	12.5 (13.2)	20.1 (20.3)	27.7 (24.3)
Med. Flow (12 °F ΔTw)	Total	12 (41)	15.2 (52.0)	25 (85.2)	31.5 (107.5)
	Sensible	12 (41.0)	15.2 (52.0)	25 (85.2)	31.5 (107.5)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.4 (13.7)	19.3 (13.9)
Low Flow (14 °F ΔTw)	Total	10.4 (35.4)	13.2 (44.9)	22.5 (76.7)	28.9 (98.5)
	Sensible	10.4 (35.4)	13.2 (44.9)	22.5 (76.7)	28.9 (98.5)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	5.6 (5.7)	7.1 (6.5)	12.0 (9.8)	15.2 (10.1)
75 °F DB/62.5 °F WB, 50% RH, 55 °F DP					
High Flow (10 °F ΔTw)	Total	9.9 (33.7)	12.5 (42.8)	20.6 (70.2)	30.9 (105.4)
	Sensible	9.9 (33.7)	12.5 (42.8)	20.6 (70.2)	28.4 (97.0)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.5 (13.8)	22.7 (17.7)
Med. Flow (12 °F ΔTw)	Total	8.2 (28)	10.5 (35.8)	18 (61.5)	23.3 (79.4)
	Sensible	8.2 (28)	10.5 (35.8)	18 (61.5)	23.3 (79.4)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	5.3 (5.5)	6.7 (6.2)	11.4 (9.3)	14.5 (9.5)
Low Flow (14 °F ΔTw)	Total	6.6 (22.6)	9.1 (31)	15.2 (52)	19.9 (68.1)
	Sensible	6.6 (22.5)	9.1 (31)	15.2 (52)	19.9 (68.1)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	3.8 (4.5)	5.1 (5.1)	8.4 (6.6)	10.8 (6.7)

Performance/Capacity Data – 50°F EWT/52°F DP

Model		COS-042-CW(-)-EC	COS-060-CW(-)-EC	COS-096-CW(-)-EC	COS-120-CW(-)-EC
NET COOLING CAPACITY - kW(MBH) @ 50 °F EWT, 0% Glycol Solution (Includes motor heat @ rated ft³/min & esp)					
85 °F DB/64.5 °F WB, 32% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	17.1 (58.4)	21 (71.8)	33.4 (113.9)	41 (140)
	Sensible	17.1 (58.4)	21 (71.8)	33.4 (113.9)	41 (140)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	12.6 (15.1)	15.4 (18.3)	24.4 (27.8)	29.8 (27.4)
Med. Flow (12 °F ΔTw)	Total	15.7 (53.5)	19.6 (66.8)	31.5 (107.5)	39.1 (133.5)
	Sensible	15.7 (53.5)	19.6 (66.8)	31.5 (107.5)	39.1 (133.5)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	9.6 (10.4)	12.0 (12.4)	19.2 (19.0)	23.7 (18.9)
Low Flow (14 °F ΔTw)	Total	14.2 (48.3)	17.9 (61.2)	29.3 (100)	36.9 (125.9)
	Sensible	14.2 (48.3)	17.9 (61.2)	29.3 (100)	36.9 (125.9)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.4 (13.7)	19.2 (13.8)
80 °F DB/62.9 °F WB, 38% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	13.6 (46.2)	16.9 (57.6)	27.2 (92.8)	33.7 (115.1)
	Sensible	13.6 (46.2)	16.9 (57.6)	27.2 (92.8)	33.7 (115.1)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	10.1 (11.1)	12.5 (13.2)	20.1 (20.3)	24.7 (20.2)
Med. Flow (12 °F ΔTw)	Total	12 (41.0)	15.2 (52.0)	24.9 (85.1)	31.5 (107.4)
	Sensible	12 (41.0)	15.2 (52.0)	24.9 (85.1)	31.5 (107.4)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.4 (13.7)	19.3 (13.9)
Low Flow (14 °F ΔTw)	Total	10.4 (35.4)	13.1 (44.8)	22.5 (76.7)	28.8 (98.4)
	Sensible	10.4 (35.4)	13.1 (44.8)	22.5 (76.7)	28.8 (98.4)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	5.6 (5.7)	7.1 (6.5)	12.0 (9.8)	15.2 (10.1)
75 °F DB/61.1 °F WB, 45% RH, 52 °F DP					
High Flow (10 °F ΔTw)	Total	9.9 (33.6)	12.5 (42.7)	20.6 (70.2)	26 (88.8)
	Sensible	9.9 (33.6)	12.5 (42.7)	20.6 (70.2)	26 (88.8)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	7.5 (7.6)	9.5 (9.0)	15.5 (13.8)	19.3 (13.9)
Med. Flow (12 °F ΔTw)	Total	8.2 (28)	10.5 (35.8)	18 (61.5)	23.3 (79.3)
	Sensible	8.2 (28)	10.5 (35.8)	18 (61.5)	23.3 (79.3)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	5.3 (5.5)	6.7 (6.2)	11.4 (9.3)	14.5 (9.5)
Low Flow (14 °F ΔTw)	Total	6.6 (22.6)	9.1 (31)	15.2 (51.9)	19.9 (68)
	Sensible	6.6 (22.6)	9.1 (31)	15.2 (51.9)	19.9 (68)
	Flow Rate, gpm (Pressure Drop, ft H ₂ O)	3.8 (4.5)	5.1 (5.1)	8.4 (6.6)	10.8 (6.7)

Electrical Data

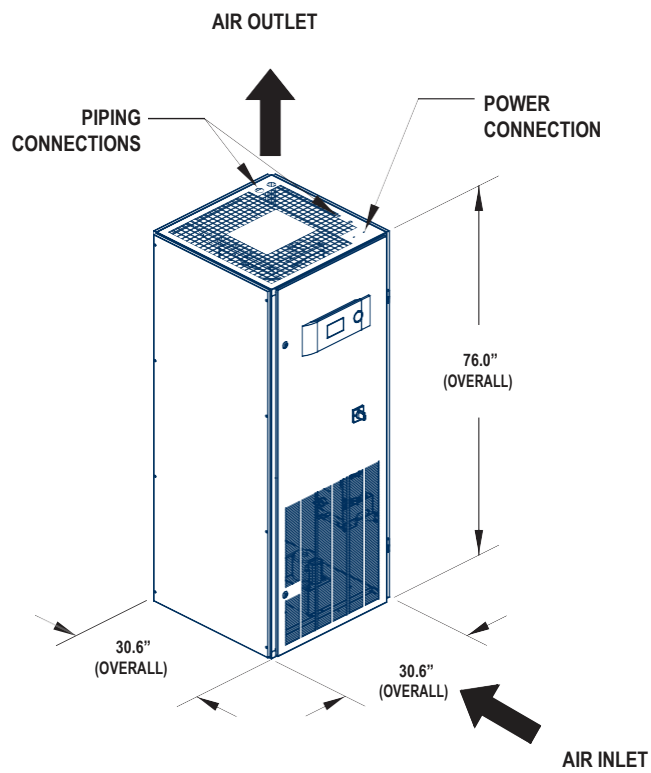
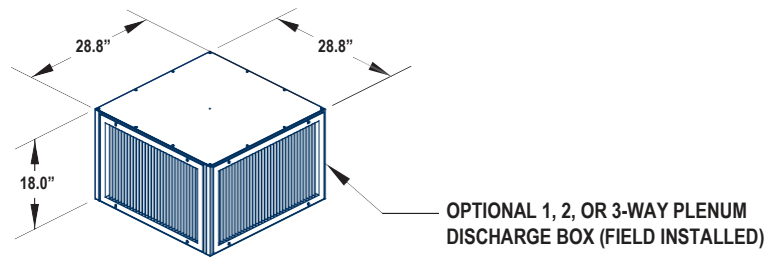
Voltage	Model												
	With Condensate Pump	COS-042-CW-()-EC			COS-060-CW-()-EC			COS-096-CW-()-EC			COS-120-CW-()-EC		
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling w/ Electric Reheat/Heat & Humidification													
208/3/60	No	45.1	56.4	60.0	45.1	56.4	60.0	44.5	55.6	60.0	44.5	55.6	60.0
208/3/60	Yes	47.2	59.1	60.0	47.2	59.1	60.0	46.6	58.2	60.0	46.6	58.2	60.0
460/3/60	No	22.8	28.5	30.0	22.8	28.5	30.0	22.5	28.1	30.0	22.5	28.1	30.0
460/3/60	Yes	23.6	29.5	30.0	23.6	29.5	30.0	23.3	29.1	30.0	23.3	29.1	30.0
575/3/60	No	18.3	22.9	25.0	18.3	22.9	25.0	18.0	22.5	25.0	18.0	22.5	25.0
575/3/60	Yes	18.9	23.7	25.0	18.9	23.7	25.0	18.6	23.3	25.0	18.6	23.3	25.0
Cooling w/ Electric Reheat/Heat Only (No Humidifier)													
208/3/60	No	28.8	36.1	40.0	28.8	36.1	40.0	30.3	37.9	40.0	30.3	37.9	40.0
208/3/60	Yes	30.9	38.7	40.0	30.9	38.7	40.0	32.4	40.5	45.0	32.4	40.5	45.0
460/3/60	No	15.1	18.8	20.0	15.1	18.8	20.0	15.8	19.7	20.0	15.8	19.7	25.0
460/3/60	Yes	15.9	19.8	20.0	15.9	19.8	20.0	16.6	20.7	25.0	16.6	20.7	25.0
575/3/60	No	12.1	15.1	20.0	12.1	15.1	20.0	12.7	15.8	20.0	12.7	15.8	20.0
575/3/60	Yes	12.7	15.9	20.0	12.7	15.9	20.0	13.3	16.6	20.0	13.3	16.6	20.0
Cooling w/ Humidification Only (No Heat/Reheat)													
208/3/60	No	24.7	30.9	35.0	24.7	30.9	35.0	24.1	30.1	35.0	24.1	30.1	35.0
208/3/60	Yes	26.8	33.6	35.0	26.8	33.6	35.0	26.2	32.7	35.0	26.2	32.7	35.0
460/3/60	No	11.5	14.3	15.0	11.5	14.3	15.0	11.2	14.0	15.0	11.2	14.0	15.0
460/3/60	Yes	12.3	15.3	20.0	12.3	15.3	20.0	12.0	15.0	15.0	12.0	15.0	20.0
575/3/60	No	9.3	11.6	15.0	9.3	11.6	15.0	9.0	11.2	15.0	9.0	11.2	15.0
575/3/60	Yes	9.9	12.4	15.0	9.9	12.4	15.0	9.6	12.0	15.0	9.6	12.0	15.0
Cooling Only													
208/3/60	No	8.4	10.6	15.0	8.4	10.6	15.0	9.9	12.4	20.0	9.9	12.4	20.0
208/3/60	Yes	10.5	13.2	20.0	10.5	13.2	20.0	12.0	15.0	20.0	12.0	15.0	20.0
460/3/60	No	3.8	4.7	15.0	3.8	4.7	15.0	4.5	5.6	15.0	4.5	5.6	15.0
460/3/60	Yes	4.6	5.7	15.0	4.6	5.7	15.0	5.3	6.6	15.0	5.3	6.6	15.0
575/3/60	No	3.1	3.9	15.0	3.1	3.9	15.0	3.7	4.6	15.0	3.7	4.6	15.0
575/3/60	Yes	3.8	4.7	15.0	3.8	4.7	15.0	4.3	5.4	15.0	4.3	5.4	15.0

NOTE: Electrical data is based on standard performance and component selection of this brochure. Consult your local sales representative for special equipment electrical data.

Dimensional Data – COS-042/060-CW-U-EC

Up-Flow Vertical A/C

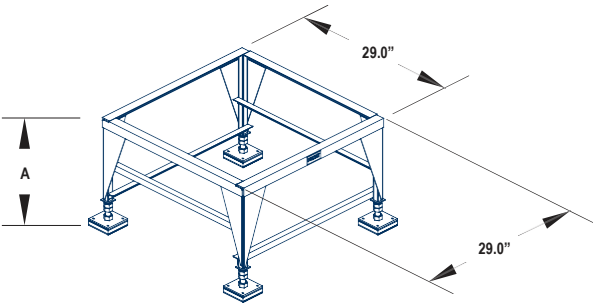
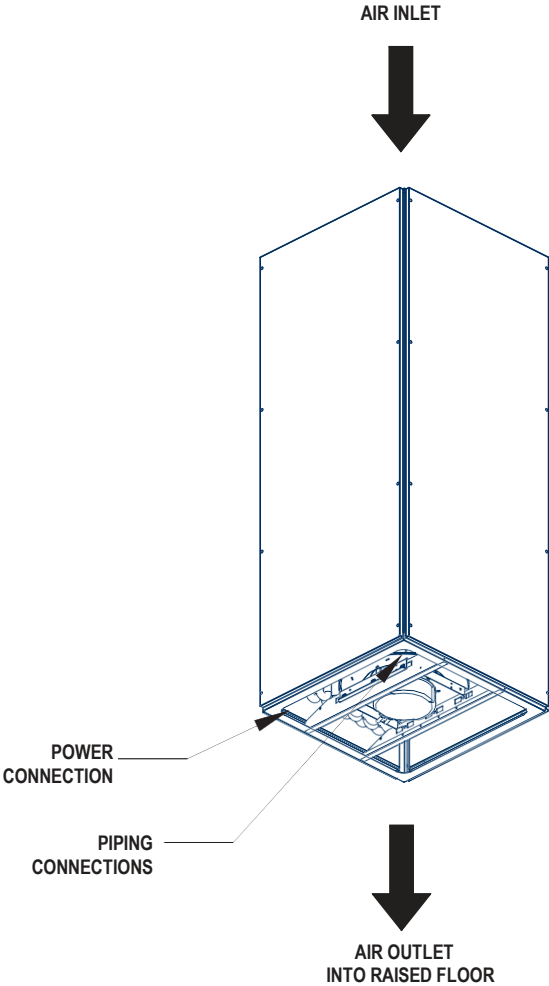
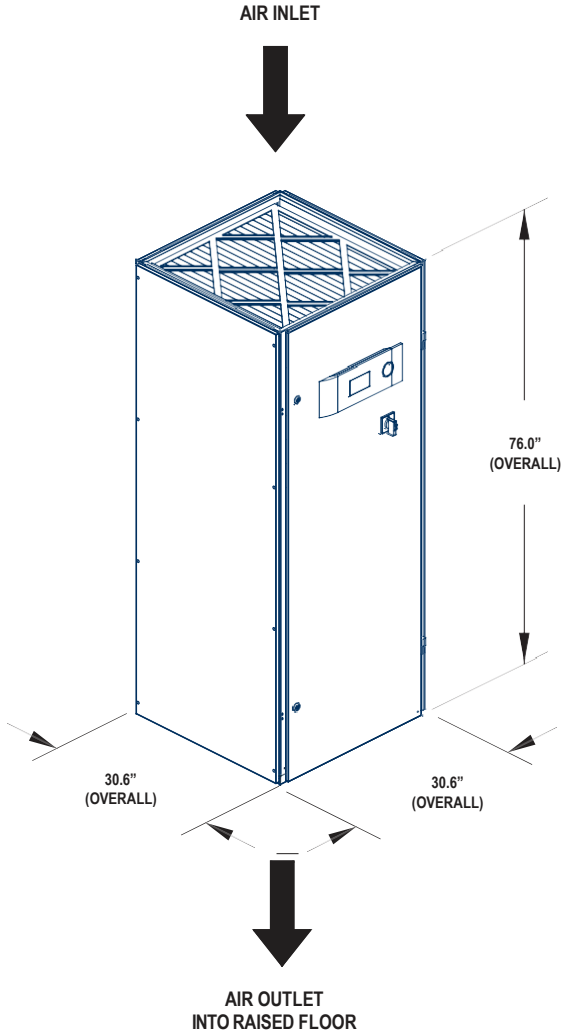
Ducted or Optional 2- or 3-Way Plenum Box



NOTE: Add 17.5" to depth measure for rear-return units.

Dimensional Data – COS-042/060-CW-D-EC

Down-Flow Vertical A/C



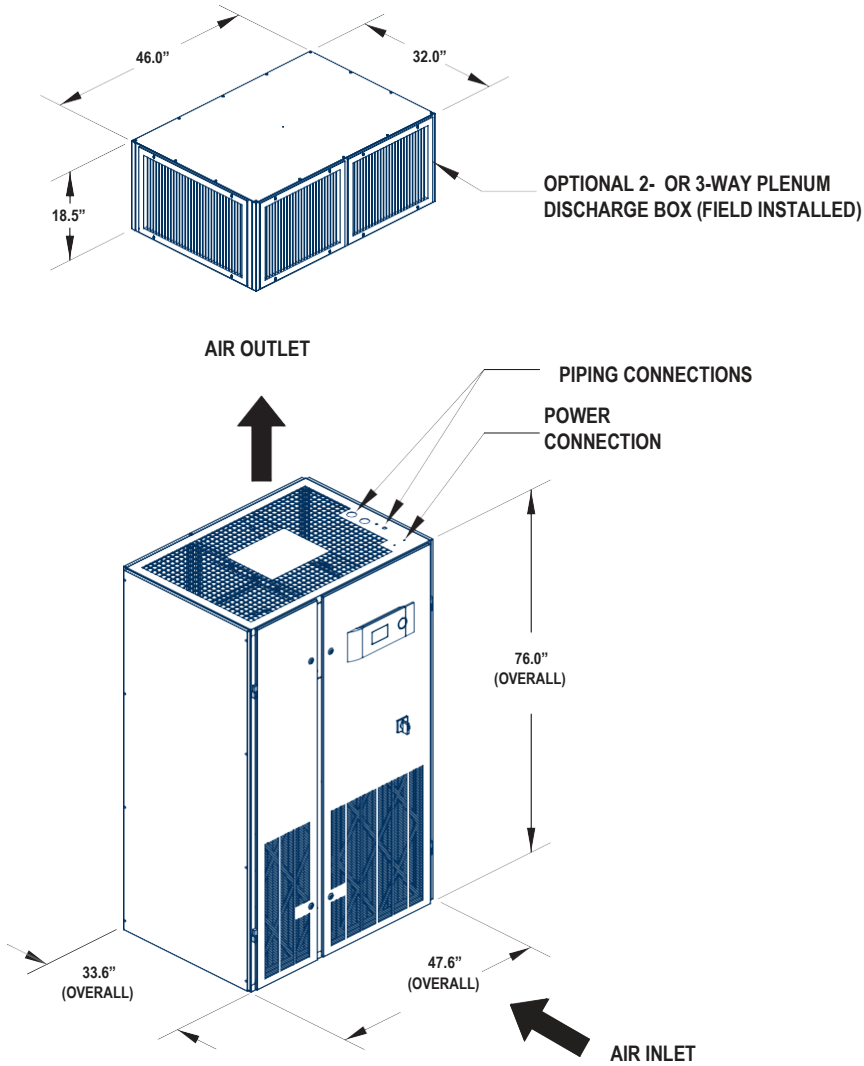
DIMENSIONAL DATA – FLOOR STAND HEIGHTS		
"A" DIMENSION		
NOMINAL HEIGHT	ADJUSTABLE HEIGHT	
	MIN	MAX
6"	5"	7"
12"	11"	15"
15"	14"	18"
18"	17"	21"
24"	23"	26"

NOTE: Turning vane and enclosure grille options available for floor stands. Seismic floor stands are available.

Dimensional Data — COS-096/120-CW-U-EC

Up-Flow Vertical A/C

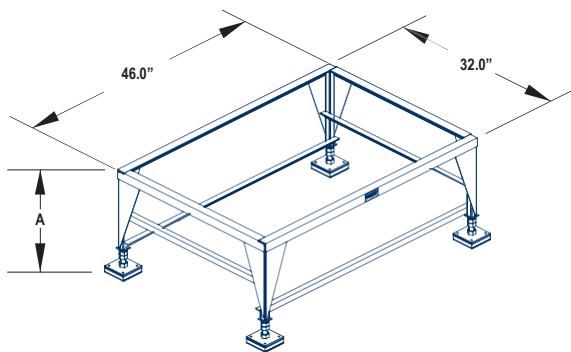
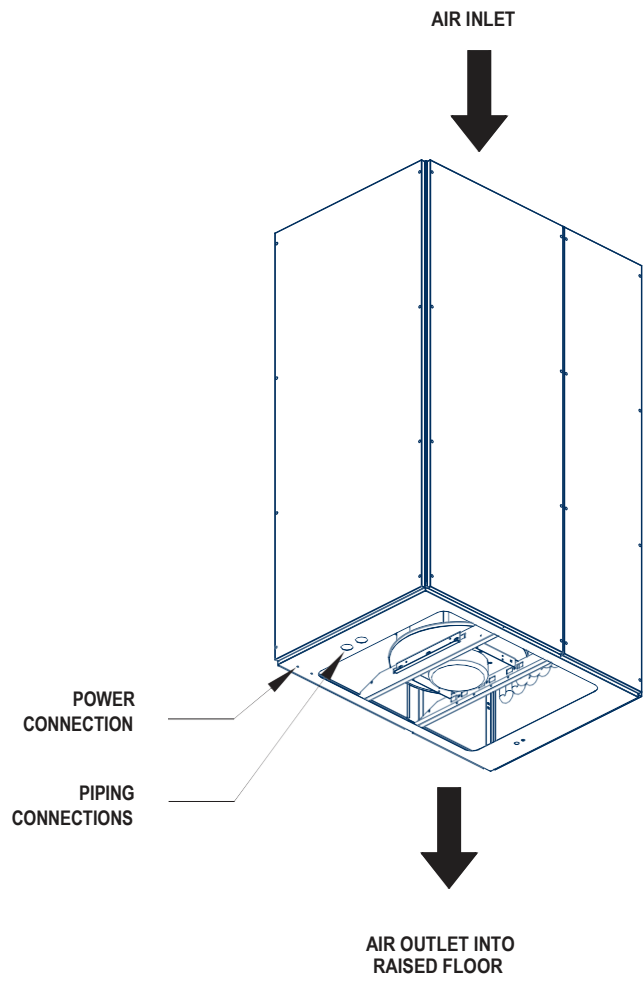
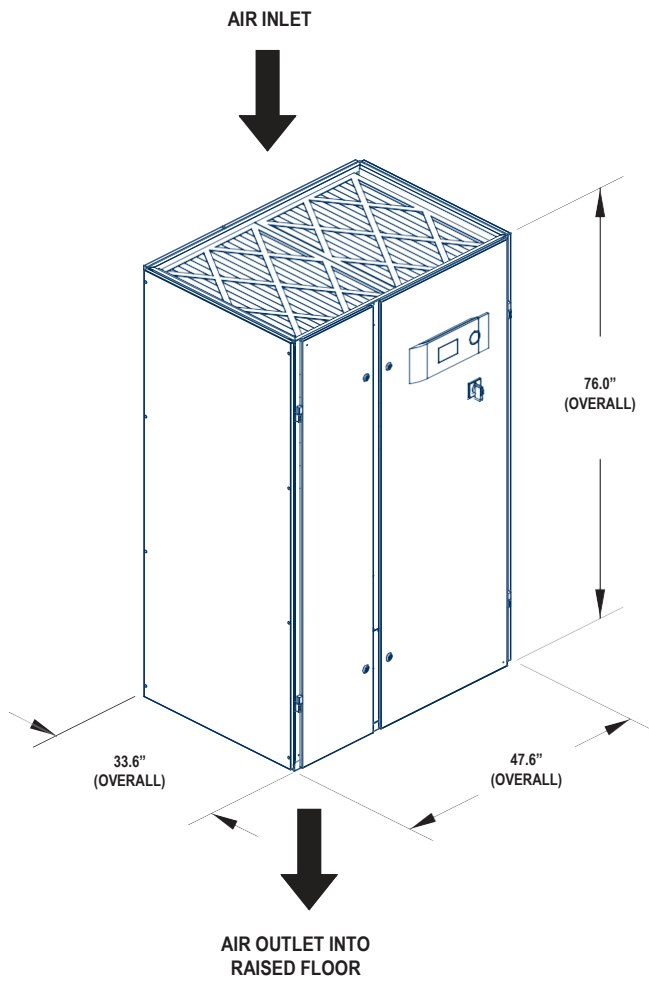
Ducted or Optional 2- or 3-Way Plenum Box



NOTE: Add 17.5" to depth measure for rear-return units.

Dimensional Data – COS-096/120-CW-D-EC

Down-Flow Vertical A/C



DIMENSIONAL DATA – FLOOR STAND HEIGHTS		
“A” DIMENSION		
NOMINAL HEIGHT	ADJUSTABLE HEIGHT	
	MIN	MAX
6”	5”	7”
12”	11”	15”
15”	14”	18”
18”	17”	21”
24”	23”	26”

NOTE: Turning vane and enclosure grille options available for floor stands. Seismic floor stands are available.

STULZ CyberOne Series CW COS

Floor Mounted Precision Air Conditioners

Summary

This specification describes requirements for a precision environmental control system. The CyberOne floor-mounted air conditioning system shall provide precision temperature and/or humidity control for computer rooms or rooms containing communications or other highly sensitive heat load equipment where continuous 24 hour a day, 365 days a year air conditioning is required.

Designed for front service access, CyberOne systems require minimum floor space. The units are designed with a wide range of options to handle all precision cooling applications.

Design Requirements

The environmental control system shall be a CyberOne factory-assembled unit. The unit shall be designed for corner installation requiring front access through hinged and removable front access panels. No allowance for side service access shall be required.

CyberOne units are especially adapted for both raised and non-raised floors. The air handling system shall be specifically designed to provide a high sensible heat ratio.

Quality Assurance

The manufacturer shall maintain a set of international standards of quality management to ensure product quality. Prior to shipment each system shall be subject to a complete operational and functional testing based on predefined procedures. The air conditioner manufacturer shall be ISO 9001:2015 certified.

Cabinet

Downflow

Access panels shall be fabricated from 14 gauge galvanized steel. Door jambs and top cabinet frame shall be fabricated from 16 gauge galvanized steel. Bottom cabinet frame shall be fabricated from 10 gauge galvanized steel.

The panels shall be lined with 1/2" (13 mm), 2 lb (.90 kg), high-density sound and thermal insulation and sealed with a self-extinguishing gasket conforming to NFPA 90A and 90B. The main unit color shall be black, extra fine texture. A white finish shall optionally be provided.

Upflow

Access panels shall be fabricated from 14 gauge galvanized steel. Door jambs shall be fabricated from 16 gauge galvanized steel. Top and bottom cabinet frame shall be fabricated from 10 gauge galvanized steel.

The panels shall be lined with 1/2" (13 mm), 2 lb (.90 kg), high-density sound and thermal insulation and sealed with a self-extinguishing gasket conforming to NFPA 90A and 90B. The main unit color shall be black, extra fine texture. A white finish shall optionally be provided.

Air Flow Patterns

Downflow

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

Upflow

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

Air Filtration

All units shall be supplied with disposable air filters classified as UL 900 or UL 586. Filters shall be 2" deep (nominal). Filters shall be pleated with a Minimum Efficiency Reporting Value (MERV) of 8. Filters shall be installed in a front accessible, steel holding frame, and are accessible through the front of the unit (except for the rear return configuration).

Optional: Filters rated up to MERV 11 shall be available.

Mechanical Components

Backward Inclined, Plenum Style Fan, With an EC Motor

The blower is a direct driven, single inlet, backward curved centrifugal 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
- Integrated current limitations

The 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.

Chilled Water Cooling 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 mounted in a sloped 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. Manual air bleed vents and drain ports shall be factory installed.

Differential Temperature Flow (Standard)

Factory mounted and wired NTC temperature sensors for inlet and outlet chilled water temperatures shall be provided. The sensors shall supply input signals to the system controller for the purpose of indicating the entering and leaving CW temperature in a status display screen.

The controller shall provide a loss of flow alarm in the event the inlet/outlet temperature difference is within 3°F (adjustable) during chilled water valve operation.

Modulating Chilled Water Control Valves

2-Way Chilled Water Control Valve (Standard)

A 2-way fully modulating control valve shall be factory installed and wired. The 2-way chilled water modulating valve shall automatically meter the flow of chilled water to the cooling coil in response to a proportional signal (0-10 VDC) provided to the valve by the microprocessor controller. The maximum pressure rating of the valve is 600 psi WOG. Manual override capabilities shall be included on the actuator drive.

3-Way Chilled Water Control Valve (Optional)

A 3-way modulating control valve shall be factory piped and wired. The 3-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 (0-10 VDC) is provided to the valve by the unit's controller. The pressure rating of the valve is a maximum of 400 psi WOG (water, oil, gas) . Manual override capabilities shall be included on the actuator drive.

Steam Generating Humidifier (Standard)

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. The humidifier shall have a modulating output between 20% and 100% of the rated capacity. The unit shall include draw in water tempering to ensure the drain water does not exceed 140°F during operation.

Dehumidification Cycle (Standard)

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.

Electric Reheat (Standard)

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

Hot Water Heat/Reheat (Optional)

A factory-installed, copper tube, aluminum fin heat/reheat coil and 2-way control valve shall be

provided to control the flow of hot water for automatic sensible reheating mode during the dehumidification cycle and automatic heating mode as required.

SCR Fired Heat/Reheat (Optional)

The electric heat/reheat shall be controlled through a “Zero Firing” Silicon Controlled Rectifier (SCR) with an extruded aluminum heat sink and solid-state logic system to provide close dry bulb temperature.

Electrical System

The electrical system shall conform to National Electrical Code requirements. The control circuit shall be 24 volts AC, wire 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. 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 unit shall be provided with a unit mounted main power service non-fused disconnect switch.

Remote Start/Stop Contacts (Optional)

Included in the system’s electrical control circuit shall be a 2-pin terminal connection for remote start/stop of the CyberOne EC CW air conditioner by remote source.

Air Control

EC Fan Speed Control

The system shall include available 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 define 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.

E² Series Controller

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 during a 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 CW 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, 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 have a backlit LCD graphical display and function keys giving 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. The controller shall be programmed to recognize predetermined security levels before allowing access to display screens containing critical variables. 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 CW 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 may be stored as Customer Default Setpoints. The primary setpoints entered by the factory remain stored in the controllers' memory as Factory Setpoints.

The setpoints for the system may be re-adjusted in the Control menu at any time. If it becomes necessary, the customer may restore the setpoints back to the Customer Default setpoint values or to the original Factory (primary) setpoint values.

A/C Grouping pLAN Operation (Optional)

Multiple CyberOne EC CW system controllers shall be able to be 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. Each E² controller connected to the pLAN network shall be identified with its own unique address.

Multiple CyberOne EC CW systems consisting of up to eight precision air conditioners

equipped with like controllers may be controlled and monitored via the E2 series controller. With multiple CyberOne EC CW systems each unit can selectively be configured as Active to operate as a primary A/C, Capacity Assist for staged operation, or as Standby to come online 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 CyberOne EC CW system within the rotating group is operationally exercised on a periodic timed basis.

Remote BMS Interface (Optional)

The E² series controller shall incorporate a communication interface port that can be field connected to a Building Management System via Modbus, BACnet MS/TP, SNMP, HTTP, or BACnet over ETHERNET/IP as configured by the factory. 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 provides 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-Touch Screen

The large bezel touch screen user interface display panel features a high-resolution backlit liquid-crystal graphical display equipped with contrast adjustment and LED illuminated function keys. The screens that appear on the user interface display panel present data that is from the controller.

The controller offers an alarm log plus four different interface menu levels to the operator: Information, Control, Service, and Factory. These menus permit the user to easily view, control, and configure operating parameters for the CyberOne EC CW system.

Timer Feature

The timer shall enable set up of an operating schedule to automatically scale back or shut down the air conditioner during low demand or unoccupied periods. This is an energy saving feature that offers the ability to create an operating schedule tailored to the needs of the building.

An evening (night-setback) schedule may also be created to enable the CW system to operate at night with relaxed temperature/humidity setpoints and offsets.

Optional Features

CyberOne EC CW floor-mounted air conditioning system standard features can be deleted and/or substituted with optional features to allow you the flexibility to select the configuration best suited for your application.

Adjustable Floor Stand

An adjustable floor stand shall be provided to allow for ease of installation of the STULZ CyberOne EC CW floor-mounted air conditioning system onto a raised floor environment. Floor stand height shall be adjustable ship separately for field installation.

Enclosed Floor Stand

A factory provided enclosed floor stand shall be factory constructed full cabinet length and pre-fabricated within the support structure for 1-way front air discharge.

Seismic Rated Floor Stand

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

Condensate Pump

A condensate pump shall be factory installed within the CyberOne EC CW floor-mounted air conditioning system for automatic removal of condensate and humidifier flush water (if applicable). The condensate pump shall include an internal overflow safety float switch, when wired to the remote start/stop terminals, shall open the unit's control circuit, thereby shutting the unit down in the event of a 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

A photo-electric smoke detector shall be factory installed and wired in the return air section of the CyberOne EC CW floor-mounted air conditioning 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

The CyberOne EC CW floor-mounted air conditioning 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.

Supply Air Control

The CyberOne floor-mounted air conditioning 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. The controller shall provide the user an adjustable supply air control setpoint.

Under Floor Pressure Control

The CyberOne floor-mounted air conditioning 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, the system controller shall modulate fan speed to maintain an external static pressure setpoint.

The transducer shall ship loose for field installation.

Remote Water Detector – Spot Type

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 CyberOne floor-mounted air conditioning unit's water producing components.

Remote Water Detector – Dual Spot Type

A dual 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 CyberOne floor-mounted air conditioning unit's water producing components.

Remote Water Detector – Strip Type

A 20 ft. 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 CyberOne floor-mounted air conditioning unit's water producing components.

Top Discharge Plenum Box

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

High Short Circuit Current Rating

The CyberOne floor-mounted air conditioning system shall be rated for a short circuit current rating for a current rating of 65k AIC (amps interrupting capacity). The higher short circuit current rating shall include safe touch fusing upstream of the unit's main power disconnect switch.

Code Conformance

The supplied system shall be with the following compliance approvals:

CETL US listed to UL 1995 (2011 Ed. 4)

CSA C22.2 No. 236 (2011 Ed. 4)

Glossary

Term	Definition	Term	Definition
AIC	Amps Interrupting Capacity	MAX CKT BKR	Maximum Circuit Breaker
BTU/Hr	British Thermal Units Per Hour	MAX FUZE	Maximum Fuse
CFM	Cubic Feet Per Minute	MCA	Minimum Circuit Ampacity
CNDCT	Conductor	NEC	National Electric Code
CW	Chilled Water	NFPA	National Fire Protection Agency
E ²	Energy Efficiency	PH	Phase
ESD	Electrostatic Discharge	PSI	Pounds Per Square Inch
EST	Eastern Standard Time	psi WOG	Pounds Per Square Inch, Water, Oil, Gas
°F	Degrees Fahrenheit	RLA	Run Load Amps
FLA	Full Load Amps	RMA	Return Material Authorization
FOB	Freight on Board	R-Value	Thermal Resistance
HACR	Heating, Air Conditioning, Refrigeration	SDS	Safety Data Sheet
HP	Horse Power	SPDT	Single Pole, Double Throw
Hz	Hertz	UPS	Uninterruptible Power Supply
IAQ	Indoor Air Quality	V	Volt
in. w.g.	Inches of Water Gauge	VAC	Volt, Alternating Current
kVA	Kilo Volt Amps	VFD	Variable Frequency Drive
kW	Kilowatt	WOG	Water, Oil Gas



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