TRANE

Product Catalog

Perimeter Precision Air Conditioners

60-280 kW / 60 Hz

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Ingersoll Rand

Introduction

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090 = 090kW
120 = 120kW
150 = 150kW
180 = 180kW
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230 = 230kW
280 = 280kW

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2 = 2 qty

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0 = Standard
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Technical Data

CyberAir TR-CFD/TR-CFU/TR-CFF floor mounted A/Cs are designed to be the compact solution to your precision air conditioning requirements. CW systems are available in sizes from 60 to 280 kW (60 to 280kW for TR-CFF) in a variety of space saving cabinet footprints.

Designed for efficient 100% front service access, CyberAir units can be easily tucked into a corner or placed side-by-side. CyberAir units are especially adaptable to raised floors and are available in both down-flow and up-flow air pattern configurations.

Table 1. Upflow/Downflow/Front discharge models 060-C thru 280-C

TR-CFD/TR-CFU/TR-CFF-C MODELS	060	090	120	150	180	190	230	280
SELECTED FEATURES								
TEMPERATURE CONTROL								
2-Way Modulating Chilled Water Control Valve	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
3-Way Modulating Chilled Water Control Valve	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Differential Temperature Flow	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
2-Stage Electric Reheating/Heating	Standard	Standard	Standard	N/A	N/A	N/A	N/A	N/A
3-Stage Electric Reheating/Heating	N/A	N/A	N/A	Standard	Standard	Standard	Standard	Standard
Hot Water Reheat	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
High Efficiency, Aluminum Fin/Copper Tube Coils	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
HUMIDITY CONTROL								
Electrode Canister Steam Humidifier	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Dehumidification Mode - Electric Reheat	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
CONTROLS								
E² Color Touchscreen Graphic Microprocessor w/ Alarms	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Remote BMS Communications	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
CABINET								
Galvannealed Steel, Powder Coated Finish	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Stainless Steel Condensate Drain Pan	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
1/2 in.Thick, 2 lb/ft² Density Thermal & Sound Insulation	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Floor Stand (Adjustable)	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
FILTERS / PLENUMS								
2 or 3-Way Plenum Box (Up-Flow Units)	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Return Air Plenum Extension Box (Down-Flow Units)	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Unit Mounted or Plenum	Unit Mounted	Unit Mounted	Unit Mounted	Unit Mounted	Unit Mounted	Unit Mounted	Unit Mounted	Plenum[a]
4 in., MERV8 Rated Pleated Filters	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
4 in., MERV11 Rated Pleated Filters	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
BLOWERS / MOTORS								
Backward Inclined, Plenum Style Fan, With an EC Motor	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
ELECTRICAL								
3-Phase Power Supply	See Electrical Table							
Multi-Voltage Control Transformer (24V Class 2)	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Table 1. Upflow/Downflow/Front discharge models 060-C thru 280-C (continued)

TR-CFD/TR-CFU/TR-CFF-C MODELS	060	090	120	150	180	190	230	280
Motor Starter Protectors and Integral Circuit Breakers	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
SAFETY FEATURES								
Audible/ Visual Local & Remote Alarms	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Main Power Circuit Breaker Unit Mounted	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Motor Overload Protection	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
CODE CONFORMANCE								
CETL US listed to UL 1995 (2011 Ed. 4)	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
CSA C22.2 No. 236 (2011 Ed. 4)	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

(a) Plenum filter is standard on TR-CFF-280-C

Table 2. Technical specifications — TR-CFD/TR-CFF/TR-CFU

Model	TR-CFD/TR-CFF-060-C1	TR-CFU-060-C1	TR-CFD/TR-CFF-090-C1	TR-CFU-090-C1	TR-CFD/TR-CFF-120-C1	TR-CFU-120-C1	TR-CFD/TR-CFF-150-C1
Chilled Water Control Valve – Sized for Medium Flow @ 75 °F DB/62.5 °F WB EAT Conditions							
2-way Modulating (standard)							
Size in. (Cv)	2 (20)	2 (20)	2 (28)	2 (28)	2 (30)	2 (30)	2 (40)
Valve Pressure Rating, psi	600	600	600	600	600	600	600
Close-off Pressure Rating, psi	200	200	200	200	200	200	200
3-way Modulating (optional)							
Size in. (Cv)	2 (20)	2 (20)	2 (28)	2 (28)	2 (30)	2 (30)	2 (40)
Valve Pressure Rating, psi	400	400	400	400	400	400	400
Close-off Pressure Rating, psi	200	200	200	200	200	200	200
Chilled Water Coil – Aluminum Fin, Copper Tube							
Rows (Face Area, ft^2)	4 (31.3)	4 (31.3)	5 (31.3)	5 (31.3)	6 (37.2)	6 (37.2)	3 (52.6)
Face Velocity, ft/min	368	352	368	352	333	269	314
Evaporator Blower / Motor – Backward Inclined Direct Driven EC							
Nominal Motor Power, hp/each	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Rated Air Flow, ft^3/min @ 0.2 in H_2O esp	11,500	11,000	11,500	11,000	12,400	10,000	16,500
Quantity of Blowers	2	2	2	2	2	2	3
Reheat / Heat – Performance Capacities							
Electric Reheat / Heat – Finned Tubular Heaters, (Standard)							
Number of Stages	2	2	2	2	2	2	3
Heater Rating, kW	18.0	18.0	18.0	18.0	18.0	18.0	27.0
Total Capacity, kW (MBh)	23.8 (81.2)	23.8 (81.2)	23.8 (81.2)	23.8 (81.2)	23.8 (81.2)	23.8 (81.2)	35.7 (121.8)

Table 2. Technical specifications — TR-CFD/TR-CFF/TR-CFU (continued)

Model	TR-CFD/TR-CFF-060-C1	TR-CFU-060-C1	TR-CFD/TR-CFF-090-C1	TR-CFU-090-C1	TR-CFD/TR-CFF-120-C1	TR-CFU-120-C1	TR-CFD/TR-CFF-150-C1
Hot Water Reheat / Heat – Rated at 180 °F EWT / 160 °F LWT & 75 °F DB/61.1 °F WB EAT (Optional)							
Include Evaporator Blower Motor Heat @ Rated, ft^3/min and esp							
Total Capacity, kW (MBh)	24.9 (84.9)	28.4 (96.9)	24.9 (84.9)	28.4 (96.9)	27.6 (94.1)	30.5 (104.2)	46.3 (157.9)
gpm (Pressure Drop, ft H_2O)	7 (4)	8 (5)	7 (4)	8 (5)	8 (4)	9 (6)	13 (13)
Control Valve	Modulating, 2-way, 1in., 300psi, Cv=8.0						
Humidification – Electrode Steam Canister Humidifier with Adjustable Output, (Standard)							
Capacity lb/hr	15	15	15	15	15	15	20
Power Input, kW	5.1	5.1	5.1	5.1	5.1	5.1	6.8
Std Control	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional
Filters – MERV 8 Average Dust Spot Efficiency, Throwaway (Standard), MERV 11 Average Dust Spot Efficiency (Optional)							
Actual Size, H in. x W in. x D in. (Quantity)	37 × 23 × 3 3/4 (3)	35 7/8 × 24 3/4 × 3 3/4 (1) 35 7/8 × 18 7/8 × 3 3/4 (2) 21 × 18 7/8 × 3 3/4 (1)	37 × 23 × 3 3/4 (3)	35 7/8 × 24 3/4 × 3 3/4 (1) 35 7/8 × 18 7/8 × 3 3/4 (2) 21 × 18 7/8 × 3 3/4 (1)	37 × 29 × 3 3/4 (3)	35 7/8 × 24 3/4 × 3 3/4 (3) 24 3/4 × 21 × 3 3/4 (1)	35 7/8 × 24 3/4 × 3 3/4 (4) 24 3/4 × 21 × 3 3/4 (2)
Filter Face Area, ft^2	17.7	18.3	17.7	18.3	22.4	22.1	28.5
Connection Sizes – Copper, (Water In/Out connections are sized for flow rates at 75 °F DB/62.5 °F WB EAT conditions.)							
Water In/Out, in. OD (see drawing for quantity)	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
Condensate Drain w/o Pump, in. OD	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Condensate Drain w/ Pump, in. OD	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Humidifier Inlet, in. OD	1/4	1/4	1/4	1/4	1/4	1/4	1/4
HW Reheat / Heat In/Out, in. OD	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Physical Data							
Approximate Unit Weight, lb	1,500	1,700	1,600	1,800	1,900	2,000	2,000
Approximate Shipping Weight, lb	1,600	1,800	1,700	1,900	2,100	2,200	2,200
Unit Dimensions, H in. x W in. x D in.	76.2 × 77.4 × 40.3[a] 88.1 × 77.4 × 40.3[b]	88.1 × 77.4 × 40.3	76.2 × 77.4 × 40.3[a] 88.1 × 77.4 × 40.3[b]	88.1 × 77.4 ×40.3	76.2 × 89.1 × 40.3[a] 88.1 × 89.1 × 40.3[b]	88.1 × 89.1 × 40.3	76.2 × 118.4 × 40.3[a] 88.1 × 118.4 × 40.3[b]

Table 2. Technical specifications — TR-CFD/TR-CFF/TR-CFU (continued)

Model	TR-CFD/TR-CFF-060-C1	TR-CFU-060-C1	TR-CFD/TR-CFF-090-C1	TR-CFU-090-C1	TR-CFD/TR-CFF-120-C1	TR-CFU-120-C1	TR-CFD/TR-CFF-150-C1
(w/ Hot Water Reheat)	Internal	(91.1 x 77.4 x 40.3)	Internal	(91.1 x 77.4 x 40.3)	Internal	(91.1 x 89.1 x 40.3)	Internal
Unit Shipping Dimensions, H in. x W in. x D in. (w/ Hot Water Reheat)	95 × 80 × 46	95 × 80 × 46 (98 x 80 x 46)	95 × 80 × 46	95 × 80 × 46 (98 x 80 x 46)	95 × 95 × 46	95 × 95 × 46 (98 x 95 x 46)	95 × 124 × 46

(a) TR-CFD cabinet.
(b) TR-CFF cabinet.

Table 3. Technical specifications — TR-CFD/TR-CFF/TR-CFU

Model	TR-CFU-150-C1	TR-CFD/TR-CFF-180-C1	TR-CFU-180-C1	TR-CFD/TR-CFF-190-C1	TR-CFU-190-C1	TR-CFD/TR-CFF-230-C1	TR-CFU-230-C1
Chilled Water Control Valve – Sized for Medium Flow @ 75 °F DB/62.5 °F WB EAT Conditions							
2-way Modulating (Standard)							
Size in. (Cv)	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
Close-off Pressure Rating, psi	200	200	200	200	200	200	200
3-way Modulating (Optional)							
Size in. (Cv)	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
Close-off Pressure Rating, psi	200	200	200	200	200	200	200
Chilled Water Coil – Aluminum Fin, Copper Tube							
Rows (Face Area, ft^2)	3 (52.6)	4 (52.6)	4 (52.6)	5 (52.6)	5 (52.6)	6 (52.6)	6 (52.6)
Face Velocity, ft/min	314	342	319	342	319	361	312
Evaporator Blower / Motor – Backward Inclined Direct Driven EC							
Nominal Motor Power, hp/each	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Rated Air Flow, ft^3/min @ 0.2 in H_2O esp	16,500	18,000	16,800	18,000	16,800	19,000	16,400
Quantity of Blowers	3	3	3	3	3	3	3
Reheat / Heat – Performance Capacities							
Electric Reheat / Heat – Finned Tubular Heaters, (Standard)							
Number of Stages	3	3	3	3	3	3	3
Heater Rating, kW	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Capacity, kW (MBh)	35.7 (121.8)	35.7 (121.8)	35.7 (121.8)	35.7 (121.8)	35.7 (121.8)	35.7 (121.8)	35.7 (121.8)

Table 3. Technical specifications — TR-CFD/TR-CFF/TR-CFU (continued)

Model	TR-CFU-150-C1	TR-CFD/TR-CFF-180-C1	TR-CFU-180-C1	TR-CFD/TR-CFF-190-C1	TR-CFU-190-C1	TR-CFD/TR-CFF-230-C1	TR-CFU-230-C1
Hot Water Reheat / Heat – Rated at 180 °F EWT / 160 °F LWT & 75° F DB/61.1 °F WB EAT (Optional)							
Include Evaporator Blower Motor Heat @ Rated ft3/min and esp							
Total Capacity, kW (MBh)	56.2 (191.9)	47.7 (162.9)	56.5 (192.9)	47.7 (162.9)	56.5 (192.9)	48.6 (165.9)	56.1 (191.4)
ft^3/min (Pressure Drop, ftH2O)	17 (20)	14 (13)	17 (20)	14 (13)	17 (20)	14 (14)	17 (19)
Control Valve	Modulating, 2-Way, 1 in., 300 psi, Cv=8.0						
Humidification – Electrode Steam Canister Humidifier with Adjustable Output, (Standard)							
Capacity lb/hr	20	20	20	20	20	20	20
Power Input, kW	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Std Control	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional	Proportional
Filters – MERV 8 Average Dust Spot Efficiency, Throwaway (Standard), MERV 11 Average Dust Spot Efficiency (Optional)							
Actual Size, H in. x W in. x D in. (Quantity)	37 × 18 1/2 × 3 3/4 (6)	35 7/8 × 24 3/4 × 3 3/4 (4) 24 3/4 × 21 × 3 3/4 (2)	37 × 18 1/2 × 3 3/4 (6)	35 7/8 × 24 3/4 × 3 3/4 (4) 24 3/4 × 21 × 3 3/4 (2)	37 × 18 1/2 × 3 3/4 (6)	35 7/8 × 24 3/4 × 3 3/4 (4) 24 3/4 × 21 × 3 3/4 (2)	36 1/2 × 25 3/8 x 3 3/4 (3) 25 3/8 × 17 3/8 x 3 3/4 (1)
Filter Face Area, ft^2	31.9	28.5	31.9	28.5	31.9	28.5	31.9
Connection Sizes – Copper, (Water In/Out connections are sized for flow rates at 75 °F DB/62.5 °F WB EAT conditions.)							
Water In/Out, OD in.(see drawing for quantity)	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
Condensate Drain w/o Pump, OD in.	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Condensate Drain w/ Pump, OD in.	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Humidifier Inlet, OD in.	1/4	1/4	1/4	1/4	1/4	1/4	1/4
HW Reheat / Heat In/ Out, OD in.	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Physical Data							
Approximate Unit Weight, lb	2,200	2,100	2,300	2,200	2,400	2,300	2,500
Approximate Shipping Weight, lb	2,400	2,300	2,500	2,400	2,600	2,500	2,700
Unit Dimensions, H in. x W in. x d in.	88.1 × 118.4 × 40.3	76.2 × 118.4 × 40.3[a] 88.1 × 118.4 × 40.3[b]	88.1 × 118.4 × 40.3	76.2 × 118.4 × 40.3[a] 88.1 × 118.4 × 40.3[b]	88.1 × 118.4 × 40.3	76.2 × 118.4 × 40.3[a] 88.1 × 118.4 × 40.3[b]	88.1 × 118.4 × 40.3
(w/ Hot Water Reheat)	(91.1 x 118.4 x 40.3)	Internal	(91.1 x 118.4 x 40.3)	Internal	(91.1 x 118.4 x 40.3)	Internal	(91.1 x 118.4 x 40.3)
Unit Shipping Dimensions, H in. x W in. x D in.	95 × 124 × 46	95 × 124 × 46	95 × 124 × 46	95 × 124 × 46	95 × 124 × 46	95 × 124 × 46	95 × 124 × 46
(w/ Hot Water Reheat)	(98 x 124 x 46)		(98 x 124 x 46)		(98 x 124 x 46)		(98 x 124 x 46)

(a) TR-CFD cabinet.
(b) TR-CFF cabinet.

Table 4. Technical Specifications — TR-CFD/TR-CFF/TR-CFU

Floor Mounted Air Conditioners		
Model	**D/TR-CFF-280-C1**	**TR-CFU-280-C1**
Chilled Water Control Valve - Sized for Medium Flow @ 75 °F DB/62.5 °F WB EAT Conditions		
2-way Modulating (Standard)		
Size in. (Cv)	2 (60)	2 (60)
Quantity	1	1
Valve Pressure Rating, psi	600	600
Close-off Pressure Rating, psi	200	200
3-Way Modulating (Optional)		
Size in. (Cv)	2 (60)	2 (60)
Valve Pressure Rating, psi	400	400
Close-off Pressure Rating, psi	200	200
Chilled Water Coil — Aluminum Fin, Copper Tube		
Coil Rows	6	6
Face Area, ft^2	70.2	70.2
Face Velocity, ft/min	342	294
Evaporator Blower/Motor — Backward Inclined Direct Driven EC		
Nominal Motor Power, hp/each	5.3	5.3
Rated Air Flow, TR-CFM 0.2 in. H_2O esp	24,000	20,600
Quantity of Blowers	3	3
Reheat / Heat — Performance Capacities		
Electric Reheat / Heat — Finned Tubular Heaters (Standard)		
Number of Stages	3	3
Heater Rating, kW	27	27
Total Capacity, kW (MBh)	35.7 (121.8)	35.7 (121.8)
Hot Water Reheat / Heat— Rated at 180 °F EWT / 160 °F LWT & 75 °F DB/61.1°F WB EAT (Optional)		
Include Evaporator Blower Motor Heat @ Rated TR-CFM and ESP		
Total Capacity, kW (MBh)	47.7 (162.6)	56.4 (192.4)
Flow Rate, GPM	14	17
Pressure Drop, ft H_2O	16	22
Control Valve	Modulating, 2-Way, 1in., 300 psi, Cv=8.0	
Humidification — Electrode Steam Canister Humidifier with Adjustable Output, (Standard)		
Capacity, lb/hr	20	20
Power Input, kW	6.8	6.8
Control Type	Proportional	Proportional
Filters — MERV 8 Average Dust Spot Efficiency, Throwaway (Standard), MERV 11 Average Dust Spot Efficiency (Optional)		
Actual Size, H in. x W in. x D in. (Quantity)	46 1/2 × 18 1/2× 3 3/4 (6)	35 7/8 × 243/4× 3 3/4 (1)24 3/4 × 21 × 33/4 (2) × 45 × 24 3/4 × 3 3/4(3)
Filter Face Area, ft^2	35.8	36.6

Table 4. Technical Specifications — TR-CFD/TR-CFF/TR-CFU (continued)

Floor Mounted Air Conditioners			
Model		**D/TR-CFF-280-C1**	**TR-CFU-280-C1**
Connection Sizes — Copper, (Water In/Out connections are sized for flow rates at 75 °F DB/62.5 °F WB EAT conditions.)			
Water In/Out, in.OD (see drawing for quantity)		2 5/8	2 5/8
Condensate Drain w/o Pump, in. OD		1 1/8	1 1/8
Condensate Drain w/ Pump, in. OD		1/2	1/2
Humidifier Inlet, in. OD		1/4	1/4
HW Reheat / Heat In/Out, in. OD		7/8	7/8
Physical Data			
Approximate Unit Weight, lb		2,900	3,000
Approximate Shipping Weight per pallet, lb.	Coil cabinet	3,100	3,200
	Filter plenum	237	N/A
	Fan deck	Internal	Internal
Unit Dimensions, H in. × W in. × D in.		88.1 x 118.4 x 50.2	96.0 x 118.4 x 49.9
w/ Hot Water Reheat		Internal	99.0 x 118.4 x 49.9
Unit Dimensions w/ Filter Plenum, H in. x W in. x D in.		104 x 118.3 x 50.2	N/A
Unit Shipping Dimensions, H in. × W in. × D in.		95 x 125 x 57	103 x 125 x 57
w/ Hot Water Reheat		Internal	106 x 125 x 57
Filter Plenum Shipping Dimensions, H in. × W in. × D in.		15.9 x 118.3 x 50.2	N/A
Fan Deck Shipping Dimensions, H in. x W in. x D in.		N/A	N/A
Unit Dimensions, H in. × W in. × D in.		88.1 x 118.4 x 50.2	96.0 x 118.4 x 49.9

Note: Shipping Notice: Dimensions and weights are per pallet. Coil sections ship on individual pallets. Filter plenums and fan decks ship with two per pallet.

Performance Data

Table 5. Performance/Capacity data — TR-CFD/TR-CFF 45ºF EWT/0% glycol

Model TR-CFD/TR-CFF-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 45°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft^3/min and esp)									
85°FDB/65.9°FWB, 36% RH, 55°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	102.3 (349)	116.9 (399)	145.4 (496)	133.1 (454)	170.6 (582)	197.8 (675)	226.3 (772)	289 (986)
	Sensible, kW (MBh)	96.4 (329)	104.9 (358)	123.7 (422)	127.8 (436)	157.1 (536)	172.3 (588)	191.1 (652)	242.7 (828)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	74 (49)	84 (38)	104 (39)	97 (42)	123 (38)	141 (63)	161 (42)	206 (55)
Med. Flow (12°F Tw)	Total, kW (MBh)	99.1 (338)	114.0 (389)	141.0 (481)	128.4 (438)	165.9 (566)	193.4 (660)	222.1 (758)	284 (969)
	Sensible, kW (MBh)	94.1 (321)	103.2 (352)	121.6 (415)	124.0 (423)	153.9 (525)	169.7 (579)	189.0 (645)	240.3 (820)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	60 (34)	69 (27)	84 (27)	78 (30)	100 (27)	116 (45)	132 (30)	169 (39)
Low Flow (14°F Tw)	Total, kW (MBh)	95.5 (326)	110.5 (377)	137.2 (468)	123.7 (422)	161.2 (550)	189.0 (645)	218.9 (747)	279.3 (953)
	Sensible, kW (MBh)	91.1 (311)	100.5 (343)	119.9 (409)	119.6 (408)	150.1 (512)	166.8 (569)	187.3 (639)	237.7 (811)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	50 (25)	57 (20)	70 (21)	65 (22)	83 (20)	97 (33)	111 (23)	142 (30)
80°FDB/64.2°FWB, 42% RH, 55°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	87.9 (300)	101.7 (347)	126.6 (432)	113.7 (388)	147.7 (504)	174.1 (594)	199.3 (680)	255 (870)
	Sensible, kW (MBh)	81.2 (277)	89.1 (304)	105.5 (360)	107.3 (366)	133.1 (454)	147.4 (503)	163.8 (559)	208.1 (710)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	65 (38)	74 (30)	91 (31)	84 (33)	107 (30)	125 (51)	143 (34)	182 (45)
Med. Flow (12°F Tw)	Total, kW (MBh)	84.4 (288)	97.6 (333)	121.9 (416)	108.7 (371)	142.7 (487)	168.2 (574)	195.2 (666)	249.4 (851)
	Sensible, kW (MBh)	78.5 (268)	86.5 (295)	103.2 (352)	103.2 (352)	129.5 (442)	143.9 (491)	161.8 (552)	205.1 (700)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	52 (26)	59 (21)	73 (22)	67 (23)	87 (22)	101 (35)	116 (25)	149 (32)
Low Flow (14°F w)	Total, kW (MBh)	80.0 (273)	93.8 (320)	117.8 (402)	103.7 (354)	137.2 (468)	163.8 (559)	189.6 (647)	242.1 (826)
	Sensible, kW (MBh)	75.3 (257)	83.8 (286)	101.1 (345)	98.8 (337)	125.4 (428)	141.3 (482)	158.6 (541)	201.3 (687)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	42 (19)	49 (16)	61 (17)	55 (17)	72 (16)	85 (27)	97 (19)	124 (24)
75°FDB/62.5°FWB, 50% RH, 55°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	73.3 (250)	85.6 (292)	107.6 (367)	94.4 (322)	124.8 (426)	149.2 (509)	172.3 (588)	220.7 (753)
	Sensible, kW (MBh)	65.4 (223)	72.4 (247)	86.5 (295)	86.5 (295)	108.1 (369)	121.3 (414)	135.7 (463)	172.6 (589)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	54 (29)	63 (23)	78 (24)	71 (25)	92 (24)	108 (40)	124 (27)	159 (35)
Med. Flow (12°F Tw)	Total, kW (MBh)	68.6 (234)	80.9 (276)	102.6 (350)	88.5 (302)	118.4 (404)	143.9 (491)	166.2 (567)	212.2 (724)
	Sensible, kW (MBh)	62.4 (213)	69.5 (237)	83.8 (286)	81.8 (279)	104.0 (355)	118.4 (404)	132.5 (452)	168.2 (574)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	43 (20)	50 (16)	62 (17)	56 (18)	73 (17)	87 (28)	100 (19)	128 (25)
Low Flow (14°F Tw)	Total, kW (MBh)	63.9 (218)	76.2 (260)	97.6 (333)	81.8 (279)	111.1 (379)	138.9 (474)	159.7 (545)	204 (696)
	Sensible, kW (MBh)	58.6 (200)	66.5 (227)	81.5 (278)	76.5 (261)	98.8 (337)	115.2 (393)	129.2 (441)	164.1 (560)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	34 (14)	41 (12)	51 (13)	45 (13)	59 (13)	72 (21)	83 (15)	106 (19)

Table 5. Performance/Capacity data — TR-CFD/TR-CFF 45ºF EWT/0% glycol (continued)

Model TR-CFD/TR-CFF-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
85°FDB/64.5°FWB, 32% RH, 52°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	95.2 (325)	114.3 (390)	139.8 (477)	126.9 (433)	158.3 (540)	191.4 (653)	217.8 (743)	277.5 (947)
	Sensible, kW (MBh)	95.2 (325)	109.0 (372)	128.4 (438)	126.9 (433)	158.3 (540)	178.2 (608)	198.4 (677)	251.5 (858)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	69 (44)	83 (36)	100 (37)	93 (39)	115 (34)	137 (59)	155 (39)	198 (52)
Med. Flow (12°F Tw)	Total, kW (MBh)	91.1 (311)	112.0 (382)	137.5 (469)	121.6 (415)	152.4 (520)	188.4 (643)	215.7 (736)	274.9 (938)
	Sensible, kW (MBh)	91.1 (311)	107.3 (366)	127.2 (434)	121.6 (415)	152.4 (520)	175.8 (600)	196.9 (672)	249.7 (852)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	56 (30)	68 (26)	82 (26)	75 (28)	92 (24)	113 (43)	128 (28)	163 (37)
Low Flow (14°F Tw)	Total, kW (MBh)	86.2 (294)	95.5 (326)	116.6 (398)	115.8 (395)	146.5 (500)	185.5 (633)	213.6 (729)	272 (928)
	Sensible, kW (MBh)	86.2 (294)	95.5 (326)	116.6 (398)	115.8 (395)	146.5 (500)	173.5 (592)	195.5 (667)	247.9 (846)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	45 (21)	50 (16)	60 (16)	61 (20)	76 (18)	95 (32)	109 (22)	139 (28)
80°FDB/62.9°FWB, 38% RH, 52°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	80.6 (275)	99.1 (338)	121.9 (416)	107.3 (366)	144.2 (492)	167.1 (570)	191.4 (653)	243.8 (832)
	Sensible, kW (MBh)	80.6 (275)	92.9 (317)	109.6 (374)	107.3 (366)	138.3 (472)	152.4 (520)	170.3 (581)	216 (737)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	59 (33)	72 (29)	88 (29)	80 (31)	105 (29)	120 (48)	137 (32)	175 (42)
Med. Flow (12°F Tw)	Total, kW (MBh)	75.6 (258)	95.8 (327)	118.7 (405)	101.7 (347)	128.7 (439)	163.5 (558)	188.7 (644)	240.3 (820)
	Sensible, kW (MBh)	75.6 (258)	90.3 (308)	108.1 (369)	101.7 (347)	128.7 (439)	149.8 (511)	168.5 (575)	213.6 (729)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	47 (22)	58 (21)	71 (21)	63 (21)	79 (19)	99 (34)	113 (23)	144 (30)
Low Flow (14°F Tw)	Total, kW (MBh)	70.0 (239)	78.2 (267)	115.8 (395)	95.2 (325)	120.7 (412)	160.3 (547)	184.9 (631)	235.9 (805)
	Sensible, kW (MBh)	70.0 (239)	78.2 (267)	106.4 (363)	95.2 (325)	120.7 (412)	147.1 (502)	166.5 (568)	211 (720)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	37 (16)	41 (13)	60 (16)	51 (16)	64 (14)	83 (26)	95 (18)	121 (23)
75°FDB/61.1°FWB, 45% RH, 52°FDP									
High Flow (10°F Tw)	Total, kW (MBh)	71.5 (244)	82.6 (282)	102.9 (351)	92.6 (316)	120.7 (412)	141.6 (483)	163.5 (558)	208.7 (712)
	Sensible, kW (MBh)	68.9 (235)	76.2 (260)	91.1 (311)	90.3 (308)	113.7 (388)	126.3 (431)	142.1 (485)	180.5 (616)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	53 (28)	61 (22)	75 (23)	70 (25)	89 (22)	103 (37)	118 (25)	151 (32)
Med. Flow (12°F Tw)	Total, kW (MBh)	59.2 (202)	79.1 (270)	99.4 (339)	80.6 (275)	115.8 (395)	137.7 (470)	159.4 (544)	203.4 (694)
	Sensible, kW (MBh)	59.2 (202)	73.6 (251)	89.1 (304)	80.6 (275)	109.6 (374)	123.7 (422)	139.8 (477)	177.3 (605)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	37 (16)	49 (16)	60 (16)	51 (16)	71 (16)	84 (26)	96 (18)	123 (23)
Low Flow (14°F Tw)	Total, kW (MBh)	53.0 (181)	59.8 (204)	72.4 (247)	72.7 (248)	93.2 (318)	133.9 (457)	155.0 (529)	197.8 (675)
	Sensible, kW (MBh)	53.0 (181)	59.8 (204)	72.4 (247)	72.7 (248)	93.2 (318)	120.5 (411)	137.2 (468)	173.8 (593)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	29 (12)	32 (10)	39 (9)	40 (12)	50 (11)	70 (20)	80 (14)	103 (18)

Table 6. Performance/Capacity data — TR-CFU 45ºF EWT/0% glycol

Model TR-CFU-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 45°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft^3/min and esp)									
85°F DB/65.9°F WB, 36% RH, 55°F DP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	99.4 (339)	113.4 (387)	121.9 (416)	133.1 (454)	162.9 (556)	189.3 (646)	202.2 (690)	256.7 (876)
	Sensible, kW (MBh)	92.9 (317)	101.1 (345)	101.4 (346)	127.8 (436)	148.6 (507)	162.9 (556)	167.6 (572)	211.6 (722)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	72 (47)	82 (36)	88 (29)	97 (42)	118 (35)	136 (58)	144 (35)	184 (45)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	96.1 (328)	110.2 (376)	118.1 (403)	128.4 (438)	158.3 (540)	184 (628)	198.7 (678)	252.3 (861)
	Sensible, kW (MBh)	90.9 (310)	99.1 (338)	99.6 (340)	124 (423)	145.4 (496)	160 (546)	165.9 (566)	209.5 (715)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	58 (32)	67 (25)	71 (21)	78 (30)	95 (25)	110 (41)	118 (25)	151 (32)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	92.6 (316)	107 (365)	114.6 (391)	123.7 (422)	153.6 (524)	179.9 (614)	194.3 (663)	246.5 (841)
	Sensible, kW (MBh)	87.9 (300)	97 (331)	97.9 (334)	119.6 (408)	141.8 (484)	157.4 (537)	163.5 (558)	206.6 (705)
	Flow Rate, gpm (Pressure Drop,ftH_2O)	48 (24)	55 (19)	59 (16)	65 (22)	80 (19)	93 (31)	99 (19)	126 (24)
80°F DB/64.2°F WB, 42% RH, 55°F DP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	85.3 (291)	98.5 (336)	106.4 (363)	113.7 (388)	141 (481)	165.9 (566)	178.5 (609)	226.5 (773)
	Sensible, kW (MBh)	78.5 (268)	85.9 (293)	86.5 (295)	107.3 (366)	125.7 (429)	139.2 (475)	143.9 (491)	181.7 (620)
	Flow Rate, gpm (Pressure Drop,ftH_2O)	63 (37)	72 (29)	77 (24)	84 (33)	103 (28)	120 (47)	128 (28)	163 (37)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	81.5 (278)	94.7 (323)	102 (348)	108.7 (371)	136 (464)	161.2 (550)	173.5 (592)	220.4 (752)
	Sensible, kW (MBh)	75.6 (258)	83.5 (285)	84.4 (288)	103.2 (352)	122.2 (417)	136.6 (466)	141.6 (483)	178.5 (609)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	50 (25)	58 (20)	62 (17)	67 (23)	83 (20)	97 (33)	104 (21)	132 (26)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	77.7 (265)	90.6 (309)	98.5 (336)	103.7 (354)	130.4 (445)	155.9 (532)	168.2 (574)	213.9 (730)
	Sensible, kW (MBh)	72.7 (248)	80.9 (276)	82.6 (282)	98.8 (337)	118.4 (404)	133.3 (455)	138.9 (474)	175.3 (598)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	41 (18)	48 (15)	51 (13)	55 (17)	68 (15)	81 (25)	87 (16)	110 (20)
75°F DB/62.5°F WB, 50% RH, 55°F DP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	71.2 (243)	82.9 (283)	90.3 (308)	94.4 (322)	119 (406)	142.1 (485)	154.2 (526)	195.5 (667)
	Sensible, kW (MBh)	63.3 (216)	69.8 (238)	70.9 (242)	86.5 (295)	102.3 (349)	114.6 (391)	119 (406)	150.3 (513)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	53 (28)	61 (22)	66 (19)	71 (25)	88 (22)	104 (37)	112 (23)	142 (29)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	66.5 (227)	78.2 (267)	85.9 (293)	88.5 (302)	112.8 (385)	137.2 (468)	147.7 (504)	187.6 (640)
	Sensible, kW (MBh)	60.1 (205)	67.1 (229)	68.6 (234)	81.8 (279)	98.2 (335)	111.7 (381)	116.1 (396)	146.2 (499)
	Flow Rate, gpm (Pressure Drop,ftH_2O)	42 (19)	48 (16)	53 (14)	56 (18)	70 (16)	83 (26)	89 (17)	114 (21)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	61.8 (211)	73.9 (252)	81.5 (278)	81.8 (279)	105.5 (360)	132.2 (451)	141.6 (483)	179.9 (614)
	Sensible, kW (MBh)	56.6 (193)	64.2 (219)	66.5 (227)	76.5 (261)	93.2 (318)	108.7 (371)	112.8 (385)	142.4 (486)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	33 (14)	39 (12)	43 (11)	45 (13)	56 (12)	69 (20)	74 (13)	94 (16)

Table 6. Performance/Capacity data — TR-CFU 45ºF EWT/0% glycol (continued)

Model TR-CFU-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
85°FDB/64.5°FWB, 32% RH, 52°FDP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	92.3 (315)	110.8 (378)	116.6 (398)	126.9 (433)	159.1 (543)	181.7 (620)	193.4 (660)	245 (836)
	Sensible, kW (MBh)	92.3 (315)	104.9 (358)	104.9 (358)	126.9 (433)	154.2 (526)	167.9 (573)	173.2 (591)	218.3 (745)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	67 (41)	80 (34)	84 (27)	93 (39)	115 (34)	131 (55)	138 (32)	176 (42)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	88.2 (301)	108.4 (370)	114 (389)	121.6 (415)	145.1 (495)	178.8 (610)	191.1 (652)	242.4 (827)
	Sensible, kW (MBh)	88.2 (301)	103.2 (352)	103.7 (354)	121.6 (415)	145.1 (495)	165.6 (565)	172 (587)	216.9 (740)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	54 (28)	65 (25)	69 (20)	75 (28)	88 (22)	107 (39)	114 (24)	145 (30)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	83.2 (284)	92.3 (315)	112 (382)	115.8 (395)	139.2 (475)	176.1 (601)	188.7 (644)	238.9 (815)
	Sensible, kW (MBh)	83.2 (284)	92.3 (315)	102.6 (350)	115.8 (395)	139.2 (475)	163.5 (558)	170.6 (582)	215.1 (734)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	44 (20)	48 (16)	58 (15)	61 (20)	73 (17)	91 (30)	97 (18)	123 (23)
80°FDB/62.9°FWB, 38% RH, 52°FDP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	83.8 (286)	95.8 (327)	101.4 (346)	107.3 (366)	137.2 (468)	158.6 (541)	170.3 (581)	215.7 (736)
	Sensible, kW (MBh)	81.8 (279)	89.4 (305)	89.7 (306)	107.3 (366)	130.7 (446)	143.6 (490)	148.9 (508)	187.6 (640)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	62 (36)	70 (27)	74 (22)	80 (31)	100 (27)	115 (44)	123 (27)	156 (34)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	73 (249)	92.6 (316)	98.8 (337)	101.7 (347)	133.3 (455)	155.3 (530)	167.1 (570)	211.3 (721)
	Sensible, kW (MBh)	73 (249)	87 (297)	88.2 (301)	101.7 (347)	127.2 (434)	141.3 (482)	147.1 (502)	185.2 (632)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	45 (21)	57 (20)	60 (16)	63 (21)	81 (20)	94 (32)	100 (20)	127 (25)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	67.7 (231)	75.6 (258)	79.7 (272)	95.2 (325)	114.3 (390)	152.1 (519)	163.5 (558)	207.5 (708)
	Sensible, kW (MBh)	67.7 (231)	75.6 (258)	79.7 (272)	95.2 (325)	114.3 (390)	138.6 (473)	145.1 (495)	182.9 (624)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	36 (15)	40 (12)	42 (10)	51 (16)	61 (13)	79 (24)	85 (15)	107 (19)
75°FDB/61.1°FWB, 45% RH, 52°FDP									
High Flow (10°F ∆Tw)	Total, kW (MBh)	69.5 (237)	80 (273)	85.6 (292)	92.6 (316)	114.9 (392)	134.5 (459)	144.8 (494)	183.8 (627)
	Sensible, kW (MBh)	66.5 (227)	73.3 (250)	74.1 (253)	90.3 (308)	107.6 (367)	119.3 (407)	124 (423)	156.5 (534)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	52 (27)	59 (21)	63 (17)	70 (25)	85 (21)	98 (34)	105 (21)	134 (27)
Med. Flow (12°F ∆Tw)	Total, kW (MBh)	57.1 (195)	76.5 (261)	82.6 (282)	80.6 (275)	109.9 (375)	131 (447)	141 (481)	178.8 (610)
	Sensible, kW (MBh)	57.1 (195)	70.9 (242)	72.7 (248)	80.6 (275)	103.5 (353)	116.6 (398)	121.9 (416)	153.6 (524)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	36 (15)	47 (15)	51 (13)	51 (16)	68 (15)	80 (24)	86 (16)	109 (19)
Low Flow (14°F ∆Tw)	Total, kW (MBh)	51.3 (175)	57.7 (197)	79.4 (271)	72.7 (248)	87.9 (300)	127.2 (434)	137.2 (468)	173.8 (593)
	Sensible, kW (MBh)	51.3 (175)	57.7 (197)	70.9 (242)	72.7 (248)	87.9 (300)	113.7 (388)	119.6 (408)	150.9 (515)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	28 (11)	31 (9)	42 (10)	40 (12)	48 (10)	67 (19)	72 (12)	91 (15)

Table 7. Performance/Capacity data — TR-CFD/TR-CFF 50°F EWT/0% glycol

Model TR-CFD/TR-CFF-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft^3/min and esp)									
85 °FDB/65.9 °FWB, 36% RH, 55 °FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	80.6 (275)	89.1 (304)	120.7 (412)	107 (365)	134.5 (459)	164.4 (561)	187.6 (640)	238.9(815)
	Sensible, kW (MBh)	80.6 (275)	89.1 (304)	113.1 (386)	107 (365)	134.5 (459)	155.9 (532)	174.7 (596)	221 (754)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	59 (33)	65 (25)	87 (29)	80 (30)	98 (26)	119 (46)	134 (31)	171 (40)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	76.2 (260)	84.7 (289)	103.7 (354)	101.4 (346)	128.4 (438)	161.5 (551)	186.1 (635)	237.1 (809)
	Sensible, kW (MBh)	76.2 (260)	84.7 (289)	103.7 (354)	101.4 (346)	128.4 (438)	153.3 (523)	173.5 (592)	219.8 (750)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	47 (23)	52 (17)	63 (17)	63 (21)	78 (19)	97 (33)	111 (23)	142 (29)
Low Flow (14°F ΔTw)	Total, kW (MBh)	70.9 (242)	79.1 (270)	97.3 (332)	95.8 (327)	121.9 (416)	139.5 (476)	159.7 (545)	203.7 (695)
	Sensible, kW (MBh)	70.9 (242)	79.1 (270)	97.3 (332)	95.8 (327)	121.9 (416)	139.5 (476)	159.7 (545)	203.7 (695)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	51 (13)	51 (16)	64 (14)	73 (21)	83 (15)	106 (18)
80°FDB/64.2°FWB, 42% RH, 55°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	65.4 (223)	72.7 (248)	101.7 (347)	87 (297)	110.2 (376)	138.9 (474)	160 (546)	204 (696)
	Sensible, kW (MBh)	65.4 (223)	72.7 (248)	95 (324)	87 (297)	110.2 (376)	130.1 (444)	146.8 (501)	186.1 (635)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	49 (24)	54 (18)	74 (22)	66 (22)	82 (20)	101 (35)	116 (24)	148 (31)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	60.1 (205)	67.1 (229)	82.6 (282)	81.2 (277)	103.7 (354)	136 (464)	158.3 (540)	201.3 (687)
	Sensible, kW (MBh)	60.1 (205)	67.1 (229)	82.6 (282)	81.2 (277)	103.7 (354)	127.5 (435)	145.4 (496)	184.3 (629)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	51 (13)	52 (16)	64 (14)	83 (26)	95 (18)	122 (23)
Low Flow (14°F ΔTw)	Total, kW (MBh)	54.2 (185)	61 (208)	74.4 (254)	73.6 (251)	95 (324)	112.5 (384)	126.6 (432)	162.1 (553)
	Sensible, kW (MBh)	54.2 (185)	61 (208)	74.4 (254)	73.6 (251)	95 (324)	112.5 (384)	126.6 (432)	162.1 (553)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	30 (12)	33 (10)	40 (10)	41 (12)	51 (11)	60 (16)	67 (11)	85 (14)
75°FDB/62.5°FWB, 50% RH, 55°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	49.2 (168)	55.1 (188)	82.4 (281)	66.5 (227)	85.3 (291)	113.1 (386)	131.9 (450)	167.6 (572)
	Sensible, kW (MBh)	49.2 (168)	55.1 (188)	75.6 (258)	66.5 (227)	85.3 (291)	103.7 (354)	118.1 (403)	149.5 (510)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	61 (17)	52 (16)	65 (14)	84 (26)	96 (18)	123 (23)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	43.1 (147)	48.6 (166)	59.5 (203)	58.9 (201)	75.9 (259)	109.3 (373)	128.1 (437)	162.9 (556)
	Sensible, kW (MBh)	43.1 (147)	48.6 (166)	59.5 (203)	58.9 (201)	75.9 (259)	100.5 (343)	115.5 (394)	146.5 (500)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	28 (11)	31 (9)	38 (9)	39 (11)	49 (10)	68 (19)	78 (14)	100 (17)
Low Flow (14°F ΔTw)	Total, kW (MBh)	36.3 (124)	41.3 (141)	48.9 (167)	50.1 (171)	65.4 (223)	82.1 (280)	90 (307)	115.5 (394)
	Sensible, kW (MBh)	36.3 (124)	41.3 (141)	48.9 (167)	50.1 (171)	65.4 (223)	82.1 (280)	90 (307)	115.5 (394)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	21 (8)	23 (7)	27 (7)	29 (8)	37 (8)	45 (11)	49 (8)	62 (10)

Table 7. Performance/Capacity data — TR-CFD/TR-CFF 50°F EWT/0% glycol (continued)

Model TR-CFD/TR-CFF-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft^3/min and esp)									
85°FDB/64.5°FWB, 32% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	80.3 (274)	89.1 (304)	109.3 (373)	107 (365)	134.2 (458)	150.3 (513)	172 (587)	219.2 (748)
	Sensible, kW (MBh)	80.3 (274)	89.1 (304)	109.3 (373)	107 (365)	134.2 (458)	150.3 (513)	172 (587)	219.2 (748)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	59 (33)	65 (25)	79 (25)	79 (30)	98 (26)	109 (40)	124 (27)	158 (35)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	76.2 (260)	84.7 (289)	103.7 (354)	101.4 (346)	128.4 (438)	145.1 (495)	167.1 (570)	213.1 (727)
	Sensible, kW (MBh)	76.2 (260)	84.7 (289)	103.7 (354)	101.4 (346)	128.4 (438)	145.1 (495)	167.1 (570)	213.1 (727)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	47 (23)	52 (17)	63 (17)	63 (21)	78 (19)	88 (28)	100 (19)	128 (25)
Low Flow (14°F ΔTw)	Total, kW (MBh)	70.9 (242)	79.1 (270)	97 (331)	95.8 (327)	121.9 (416)	139.5 (476)	159.4 (544)	203.7 (695)
	Sensible, kW (MBh)	70.9 (242)	79.1 (270)	97 (331)	95.8 (327)	121.9 (416)	139.5 (476)	159.4 (544)	203.7 (695)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	51 (13)	51 (16)	64 (14)	73 (21)	82 (15)	105 (18)
80°FDB/62.9°FWB, 38% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	65.4 (223)	72.7 (248)	89.4 (305)	86.7 (296)	110.2 (376)	124.8 (426)	143.6 (490)	182.9 (624)
	Sensible, kW (MBh)	65.4 (223)	72.7 (248)	89.4 (305)	86.7 (296)	110.2 (376)	124.8 (426)	143.6 (490)	182.9 (624)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	49 (24)	54 (18)	65 (18)	66 (22)	82 (20)	92 (30)	104 (21)	133 (26)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	60.1 (205)	67.1 (229)	82.6 (282)	81.2 (277)	103.7 (354)	119 (406)	136 (464)	173.5 (592)
	Sensible, kW (MBh)	60.1 (205)	67.1 (229)	82.6 (282)	81.2 (277)	103.7 (354)	119 (406)	136 (464)	173.5 (592)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	51 (13)	52 (16)	64 (14)	73 (21)	83 (15)	106 (18)
Low Flow (14°F ΔTw)	Total, kW (MBh)	53.9 (184)	61 (208)	74.4 (254)	73.6 (251)	95 (324)	112.5 (384)	126.6 (432)	161.5 (551)
	Sensible, kW (MBh)	53.9 (184)	61 (208)	74.4 (254)	73.6 (251)	95 (324)	112.5 (384)	126.6 (432)	161.5 (551)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	30 (12)	33 (10)	40 (10)	41 (12)	51 (11)	60 (16)	66 (11)	85 (14)
75°FDB/61.1°FWB, 45% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	49.2 (168)	55.1 (188)	68 (232)	66.2 (226)	85.3 (291)	98.5 (336)	112.2 (383)	143.3 (489)
	Sensible, kW (MBh)	49.2 (168)	55.1 (188)	68 (232)	66.2 (226)	85.3 (291)	98.5 (336)	112.2 (383)	143.3 (489)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	38 (16)	42 (13)	51 (13)	52 (16)	65 (14)	74 (22)	83 (15)	106 (19)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	43.1 (147)	48.6 (166)	59.5 (203)	58.6 (200)	75.9 (259)	91.7 (313)	102.3 (349)	131 (447)
	Sensible, kW (MBh)	43.1 (147)	48.6 (166)	59.5 (203)	58.6 (200)	75.9 (259)	91.7 (313)	102.3 (349)	131 (447)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	28 (11)	31 (9)	38 (9)	39 (11)	49 (10)	58 (15)	64 (11)	82 (13)
Low Flow (14°F ΔTw)	Total, kW (MBh)	36.3 (124)	41 (140)	48.9 (167)	49.8 (170)	65.4 (223)	81.8 (279)	90 (307)	115.2 (393)
	Sensible, kW (MBh)	36.3 (124)	41 (140)	48.9 (167)	49.8 (170)	65.4 (223)	81.8 (279)	90 (307)	115.2 (393)
	Flow Rate, gpm (Pressure Drop, ftH_2O)	21 (8)	23 (7)	27 (7)	29 (8)	37 (8)	45 (11)	49 (8)	62 (10)

Table 8. Performance/Capacity data — TR-CFU 50°F EWT/0% glycol

Model TR-CFU-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft³/min and esp)									
85°FDB/65.9°FWB, 36% RH, 55°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	78 (266)	86.2 (294)	99.9 (341)	107 (365)	127.8 (436)	155.6 (531)	165.9 (566)	210.1 (717)
	Sensible, kW (MBh)	78 (266)	86.2 (294)	92 (314)	107 (365)	127.8 (436)	146.5 (500)	152.1 (519)	191.4 (653)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	58 (32)	63 (23)	73 (22)	80 (30)	94 (24)	113 (42)	120 (25)	152 (33)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	73.9 (252)	81.8 (279)	86.5 (295)	101.4 (346)	121.9 (416)	153.3 (523)	164.7 (562)	208.7 (712)
	Sensible, kW (MBh)	73.9 (252)	81.8 (279)	86.5 (295)	101.4 (346)	121.9 (416)	144.5 (493)	151.2 (516)	190.5 (650)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	46 (22)	50 (17)	53 (14)	63 (21)	75 (17)	93 (31)	99 (19)	126 (24)
Low Flow (14°F ΔTw)	Total, kW (MBh)	68.6 (234)	76.5 (261)	80.9 (276)	95.8 (327)	115.5 (394)	132.8 (453)	141.3 (482)	179.4 (612)
	Sensible, kW (MBh)	68.6 (234)	76.5 (261)	80.9 (276)	95.8 (327)	115.5 (394)	132.8 (453)	141.3 (482)	179.4 (612)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	37 (16)	41 (12)	43 (10)	51 (16)	61 (13)	69 (20)	74 (13)	94 (16)
80°FDB/64.2°FWB, 42% RH, 55°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	63.3 (216)	70.3 (240)	84.4 (288)	87 (297)	104.6 (357)	131.9 (450)	141.8 (484)	179.7 (613)
	Sensible, kW (MBh)	63.3 (216)	70.3 (240)	77.1 (263)	87 (297)	104.6 (357)	122.5 (418)	128.1 (437)	161.2 (550)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	48 (23)	52 (18)	62 (17)	66 (22)	78 (18)	96 (33)	103 (20)	131 (26)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	58 (198)	65.1 (222)	68.9 (235)	81.2 (277)	98.5 (336)	129 (440)	139.5 (476)	176.4 (602)
	Sensible, kW (MBh)	58 (198)	65.1 (222)	68.9 (235)	81.2 (277)	98.5 (336)	120.2 (410)	126.6 (432)	159.4 (544)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	37 (16)	41 (12)	43 (10)	52 (16)	61 (13)	79 (24)	85 (15)	107 (19)
Low Flow (14°F ΔTw)	Total, kW (MBh)	52.2 (178)	58.9 (201)	61.8 (211)	73.6 (251)	89.7 (306)	107 (365)	112.2 (383)	142.1 (485)
	Sensible, kW (MBh)	52.2 (178)	58.9 (201)	61.8 (211)	73.6 (251)	89.7 (306)	107 (365)	112.2 (383)	142.1 (485)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	29 (11)	32 (9)	33 (8)	41 (12)	49 (10)	57 (15)	59 (10)	76 (12)
75°FDB/62.5°FWB, 50% RH, 55°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	47.5 (162)	63.3 (216)	68.3 (233)	66.5 (227)	80.9 (276)	107.3 (366)	116.1 (396)	147.1 (502)
	Sensible, kW (MBh)	47.5 (162)	59.8 (204)	61.3 (209)	66.5 (227)	80.9 (276)	97.6 (333)	102.6 (350)	129 (440)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	37 (16)	48 (15)	51 (13)	52 (16)	62 (13)	80 (24)	86 (16)	109 (19)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	41.6 (142)	47.2 (161)	49.2 (168)	58.9 (201)	72.1 (246)	104 (355)	112.8 (385)	143 (488)
	Sensible, kW (MBh)	41.6 (142)	47.2 (161)	49.2 (168)	58.9 (201)	72.1 (246)	94.7 (323)	100.5 (343)	126.6 (432)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	27 (11)	31 (9)	32 (8)	39 (11)	46 (10)	65 (18)	70 (12)	88 (14)
Low Flow (14°F ΔTw)	Total, kW (MBh)	34.9 (119)	39.9 (136)	38.1 (130)	50.1 (171)	61.3 (209)	77.7 (265)	79.4 (271)	100.8 (344)
	Sensible, kW (MBh)	34.9 (119)	39.9 (136)	38.1 (130)	50.1 (171)	61.3 (209)	77.7 (265)	79.4 (271)	100.8 (344)
	Flow Rate, GPM (Pressure Drop, ftH₂OO)	20 (8)	23 (7)	22 (6)	29 (8)	35 (7)	43 (11)	43 (7)	55 (8)

Table 8. Performance/Capacity data — TR-CFU 50°F EWT/0% glycol (continued)

Model TR-CFU-		060-C1	090-C1	120-C1	150-C1	180-C1	190-C1	230-C1	280-C1
NET COOLING CAPACITY - kW (MBh) @ 50°F EWT, 0% Glycol Solution (Includes motor heat @ rated ft³/min and esp)									
85°FDB/64.5°FWB, 32% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	78 (266)	86.2 (294)	90.9 (310)	107 (365)	127.5 (435)	142.4 (486)	152.7 (521)	193.4 (660)
	Sensible, kW (MBh)	78 (266)	86.2 (294)	90.9 (310)	107 (365)	127.5 (435)	142.4 (486)	152.7 (521)	193.4 (660)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	58 (32)	63 (23)	67 (19)	79 (30)	94 (24)	104 (37)	111 (22)	140 (29)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	73.6 (251)	81.8 (279)	86.5 (295)	101.4 (346)	121.9 (416)	137.7 (470)	147.7 (504)	187.3 (639)
	Sensible, kW (MBh)	73.6 (251)	81.8 (279)	86.5 (295)	101.4 (346)	121.9 (416)	137.7 (470)	147.7 (504)	187.3 (639)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	46 (22)	50 (17)	53 (14)	63 (21)	75 (17)	84 (26)	89 (16)	114 (21)
Low Flow (14°F ΔTw)	Total, kW (MBh)	68.6 (234)	76.5 (261)	80.9 (276)	95.8 (327)	115.5 (394)	132.5 (452)	141.3 (482)	179.1 (611)
	Sensible, kW (MBh)	68.6 (234)	76.5 (261)	80.9 (276)	95.8 (327)	115.5 (394)	132.5 (452)	141.3 (482)	179.1 (611)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	37 (16)	41 (12)	43 (10)	51 (16)	61 (13)	69 (20)	74 (13)	94 (16)
80°FDB/62.9°FWB, 38% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	63.3 (216)	70.3 (240)	74.4 (254)	86.7 (296)	104.6 (357)	118.4 (404)	126.9 (433)	160.9 (549)
	Sensible, kW (MBh)	63.3 (216)	70.3 (240)	74.4 (254)	86.7 (296)	104.6 (357)	118.4 (404)	126.9 (433)	160.9 (549)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	48 (23)	52 (18)	55 (14)	66 (22)	78 (18)	87 (28)	93 (17)	118 (22)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	58 (198)	64.8 (221)	68.6 (234)	81.2 (277)	98.5 (336)	112.8 (385)	120.2 (410)	152.4 (520)
	Sensible, kW (MBh)	58 (198)	64.8 (221)	68.6 (234)	81.2 (277)	98.5 (336)	112.8 (385)	120.2 (410)	152.4 (520)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	37 (16)	41 (12)	43 (10)	52 (16)	61 (13)	70 (20)	74 (13)	94 (16)
Low Flow (14°F ΔTw)	Total, kW (MBh)	52.2 (178)	58.9 (201)	61.8 (211)	73.6 (251)	89.7 (306)	106.7 (364)	112 (382)	142.1 (485)
	Sensible, kW (MBh)	52.2 (178)	58.9 (201)	61.8 (211)	73.6 (251)	89.7 (306)	106.7 (364)	112 (382)	142.1 (485)
	Flow Rate, gpm (Pressure Drop, ftH₂O)	29 (11)	32 (9)	33 (8)	41 (12)	48 (10)	57 (15)	59 (10)	76 (12)
75°FDB/61.1°FWB, 45% RH, 52°FDP									
High Flow (10°F ΔTw)	Total, kW (MBh)	47.5 (162)	53.3 (182)	56.3 (192)	66.2 (226)	80.6 (275)	93.2 (318)	99.4 (339)	125.7 (429)
	Sensible, kW (MBh)	47.5 (162)	53.3 (182)	56.3 (192)	66.2 (226)	80.6 (275)	93.2 (318)	99.4 (339)	125.7 (429)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	37 (16)	41 (12)	43 (11)	52 (16)	62 (13)	70 (20)	74 (13)	94 (16)
Med. Flow (12°F ΔTw)	Total, kW (MBh)	41.6 (142)	46.9 (160)	49.2 (168)	58.6 (200)	72.1 (246)	86.5 (295)	90.3 (308)	114.9 (392)
	Sensible, kW (MBh)	41.6 (142)	46.9 (160)	49.2 (168)	58.6 (200)	72.1 (246)	86.5 (295)	90.3 (308)	114.9 (392)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	27 (11)	30 (9)	32 (8)	39 (11)	46 (10)	55 (14)	57 (9)	72 (11)
Low Flow (14°F ΔTw)	Total, kW (MBh)	34.9 (119)	39.9 (136)	38.1 (130)	49.8 (170)	61.3 (209)	77.7 (265)	78.8 (269)	100.5 (343)
	Sensible, kW (MBh)	34.9 (119)	39.9 (136)	38.1 (130)	49.8 (170)	61.3 (209)	77.7 (265)	78.8 (269)	100.5 (343)
	Flow Rate, GPM (Pressure Drop, ftH₂O)	20 (8)	23 (7)	22 (6)	29 (8)	35 (7)	43 (11)	43 (7)	55 (8)

Electrical Data

Table 9. Electrical data TR-CFU/D/F-060-150-C1

Voltage	Model												
	With Condensate Pump	TR-CFU/D/F-060-C1			TR-CFU/D/F-090-C1			TR-CFU/D/F-120-C1			TR-CFU/D/F-150-C1		
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling with Electric Reheat & Humidification													
460/3/60	No	37.2	46.5	50	37.2	46.5	50	37.2	46.5	50	54.4	68.0	70
460/3/60	Yes	38.0	47.5	50	38.0	47.5	50	38.0	47.5	50	55.2	69.0	70
575/3/60	No	30.0	37.5	40	30.0	37.5	40	30.0	37.5	40	43.9	54.8	60
575/3/60	Yes	30.6	38.3	40	30.6	38.3	40	30.6	38.3	40	44.5	55.6	60
Cooling with Electric Reheat													
460/3/60	No	30.5	38.3	40	30.5	38.1	40	30.5	38.1	40	45.5	56.8	60
460/3/60	Yes	31.3	39.1	40	31.3	39.1	40	31.3	39.1	40	46.3	57.8	60
575/3/60	No	24.7	30.8	35	24.7	30.8	35	30.8	35.0	35	36.8	46.0	50
575/3/60	Yes	25.3	31.6	35	25.3	31.6	35	25.3	31.6	35	37.4	46.8	50
Cooling with Humidification													
460/3/60	No	14.6	18.2	20	14.6	18.2	20	14.6	18.2	20	20.5	25.6	30
460/3/60	Yes	15.4	19.2	20	15.4	19.2	20	15.4	19.2	20	21.3	26.6	30
575/3/60	No	12.0	15.0	15	12.0	15.0	15	12.0	15.0	15	16.9	21.1	25
575/3/60	Yes	12.6	15.8	20	12.6	15.8	20	12.6	15.8	20	17.5	21.9	25
Cooling Only													
460/3/60	No	7.9	9.8	15	7.9	9.8	15	7.9	9.8	15	11.6	14.5	15
460/3/60	Yes	8.7	10.8	15	8.7	10.8	15	8.7	10.8	15	12.4	15.5	20
575/3/60	No	6.7	8.3	15	6.7	8.3	15	6.7	8.3	15	9.8	12.2	15
575/3/60	Yes	7.3	9.1	15	7.3	9.1	15	7.3	9.1	15	10.4	13.0	15

Note: Standard 1 KAIC rating, optional KAIC ratings available. For voltages not shown, call 301.620.2033.

Table 10. Electrical data TR-CFU/D/F-180-280-C1

Voltage	Model											
	With Condensate Pump	TR-CFU/D/F-180-C1			TR-CFU/D/F-190-C1			TR-CFU/D/F-230-C1			TR-CFU/D/F-280-C1	
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling with Electric Reheat & Humidification													
460/3/60	No	54.4	68.0	70	54.4	68.0	70	54.4	68.0	70	59.5	74.3	80
460/3/60	Yes	55.2	69.0	70	55.2	69.0	70	55.2	69.0	70	60.3	75.3	80
575/3/60	No	43.9	54.8	60	43.9	54.8	60	43.9	54.8	60	47.2	59.0	60
575/3/60	Yes	44.5	55.6	60	44.5	55.6	60	44.5	55.6	60	47.8	60.3	70
Cooling with Electric Reheat													
460/3/60	No	45.5	56.8	60	45.5	56.8	60	45.5	56.8	60	50.6	63.2	70
460/3/60	Yes	46.3	57.8	60	46.3	57.8	60	46.3	57.8	60	51.4	64.2	70
575/3/60	No	36.8	46.0	50	36.8	46.0	50	36.8	46.0	50	40.1	50.1	60
575/3/60	Yes	37.4	46.8	50	37.4	46.8	50	37.4	46.8	50	40.7	50.9	60
Cooling with Humidification													
460/3/60	No	20.5	25.6	30	20.5	25.6	30	20.5	25.6	30	25.6	32.0	35
460/3/60	Yes	21.3	26.6	30	21.3	26.6	30	21.3	26.6	30	26.4	33.0	35
575/3/60	No	16.9	21.1	25	16.9	21.1	25	16.9	21.1	25	20.2	25.2	30
575/3/60	Yes	17.5	21.9	25	17.5	21.9	25	17.5	21.9	25	20.8	26.5	30
Cooling Only													
460/3/60	No	11.6	14.5	15	11.6	14.5	15	11.6	14.5	15	16.7	20.8	25
460/3/60	Yes	12.4	15.5	20	12.4	15.5	20	12.4	15.5	20	17.5	21.8	25
575/3/60	No	9.8	12.2	15	9.8	12.2	15	9.8	12.2	15	13.1	16.3	20
575/3/60	Yes	10.4	13.0	15	10.4	13.0	15	10.4	13.0	15	13.7	17.1	20

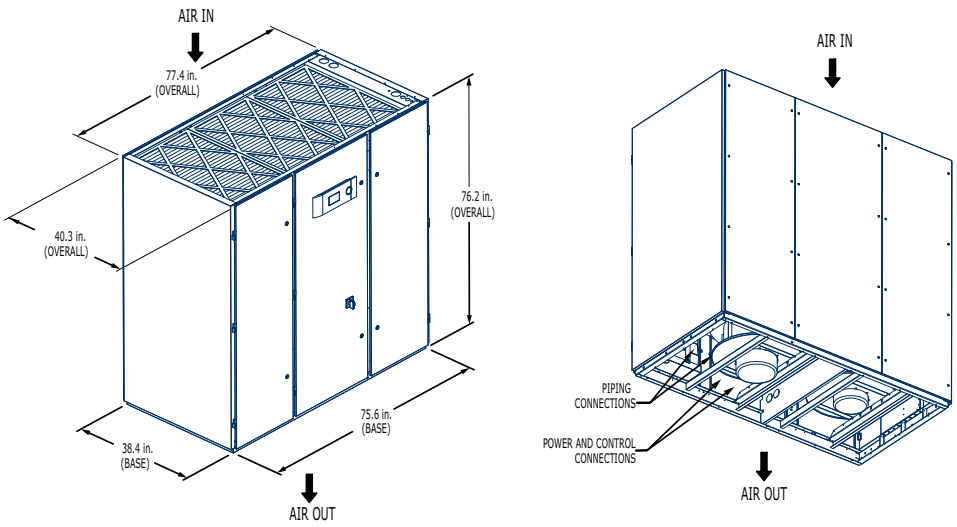
Note: Standard 1 KAIC rating, optional KAIC ratings available. For voltages not shown, call 301.620.2033.

Dimensions Data

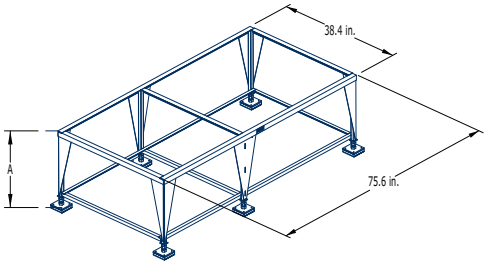
TR-CFD-060/090-C

Downflow Vertical Air Conditioner

Free Return or with Optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic Rated Floor Stand is Available

Note: *Standard piping connections terminate inside the cabinet at the bottom, right hand side. For any other option, contact Trane.*

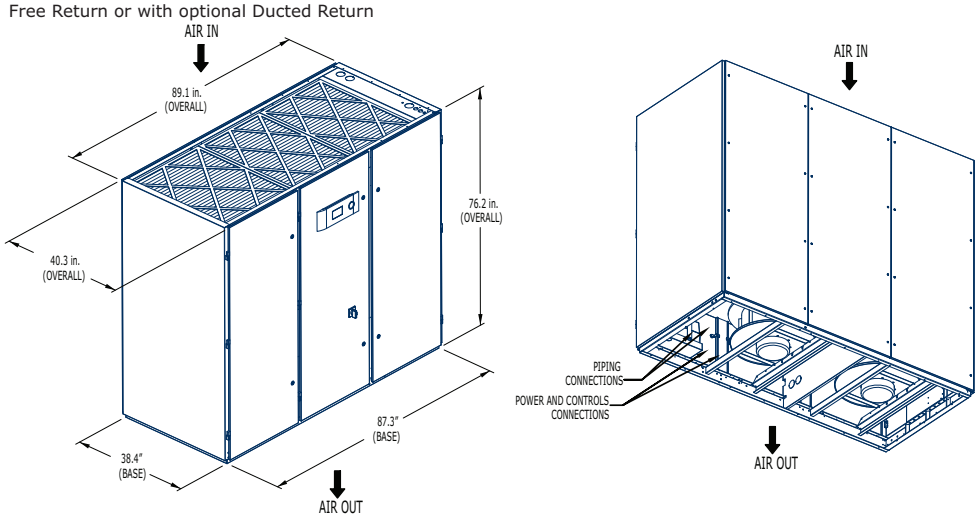
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

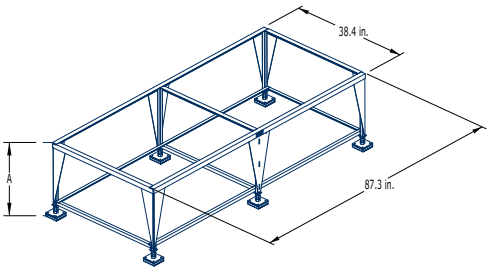
TR-CFD-120-C

Downflow Vertical Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate inside the cabinet at the bottom, right hand side. For any other option, contact Trane.*

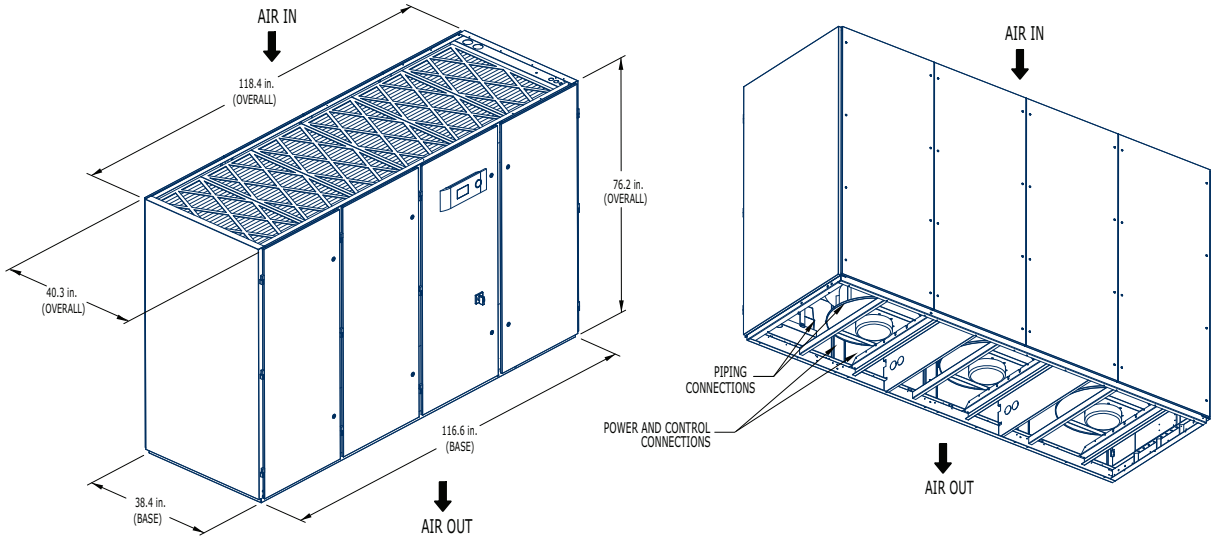
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

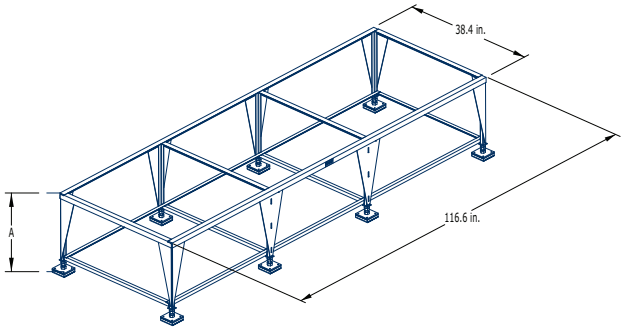
TR-CFD-150/180/190/230-C

Downflow Vertical Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate inside the cabinet at the bottom, right hand side. For any other option, contact Trane.*

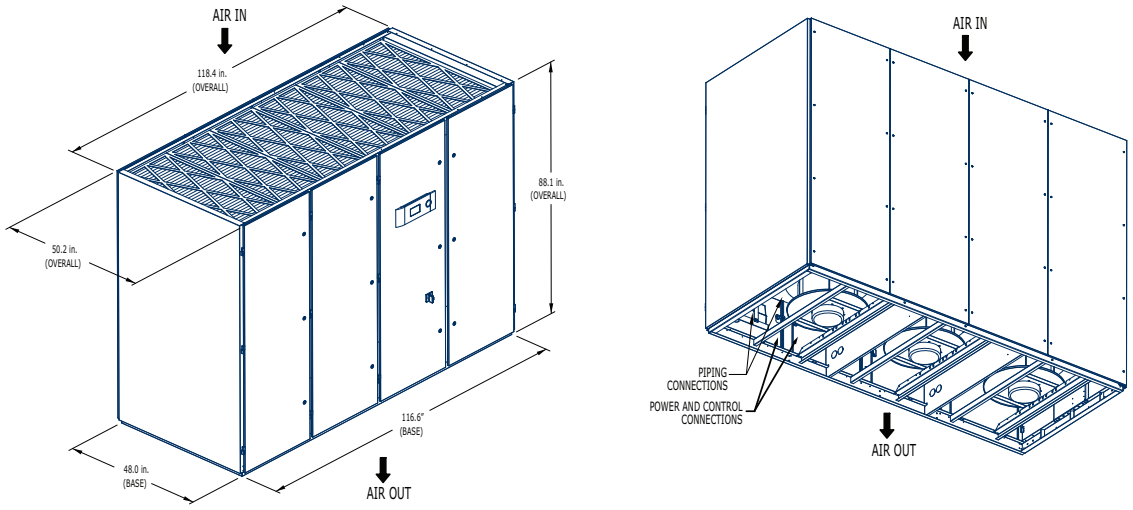
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

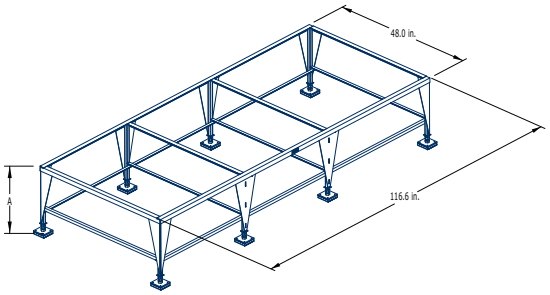
TR-CFD-280-C

Downflow Vertical Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate inside the cabinet at the bottom, right hand side. For any other option, contact Trane.*

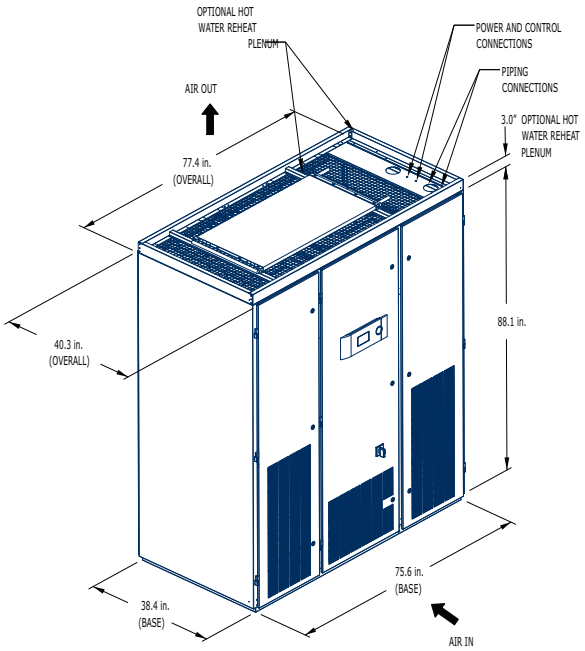
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
42.0	41.0	44.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

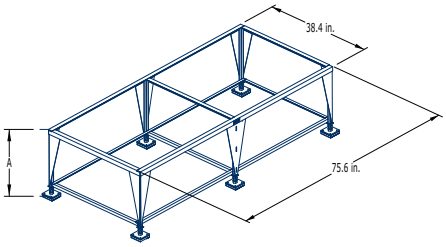
TR-CFU-060/090-C

Upflow Vertical Air Conditioner

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



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

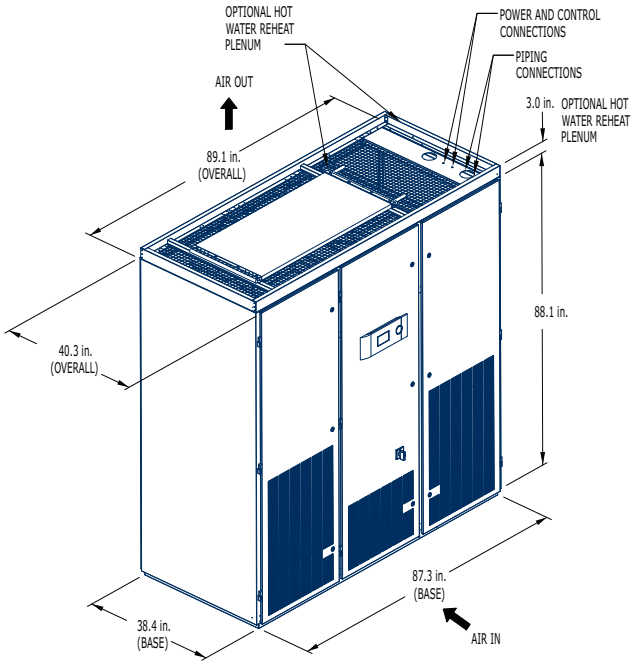
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

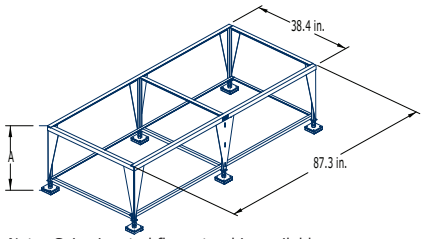
TR-CFU-120-C

Upflow Vertical Air Conditioner

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



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

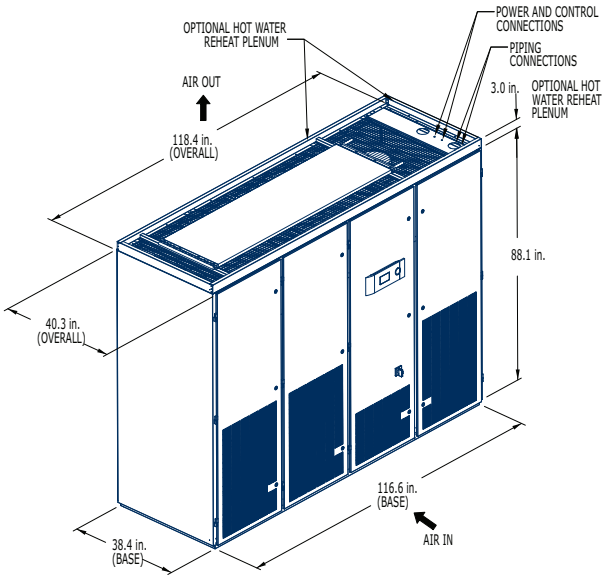
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

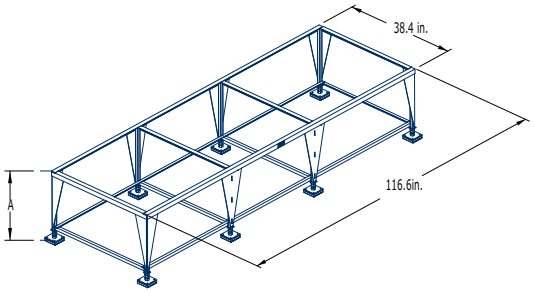
TR-CFU-150/180/190/230-C

Upflow Vertical Air Conditioner

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



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

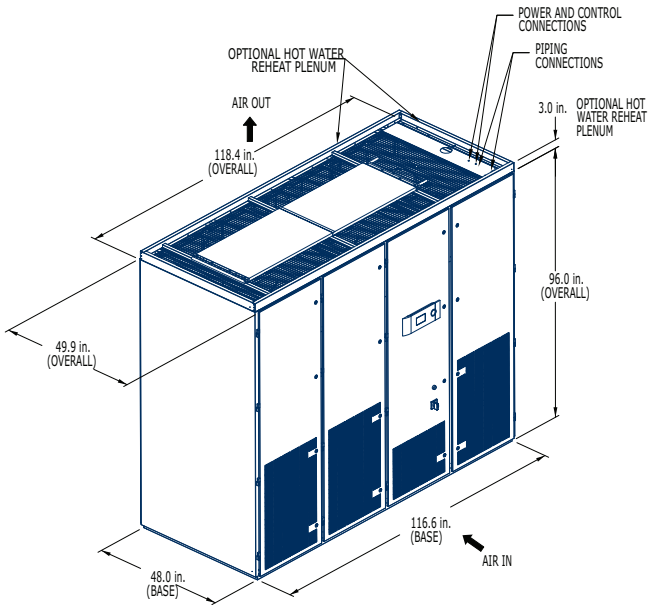
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

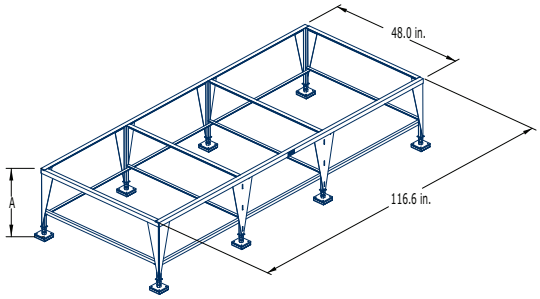
TR-CFU-280-C

Upflow Vertical Air Conditioner

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



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

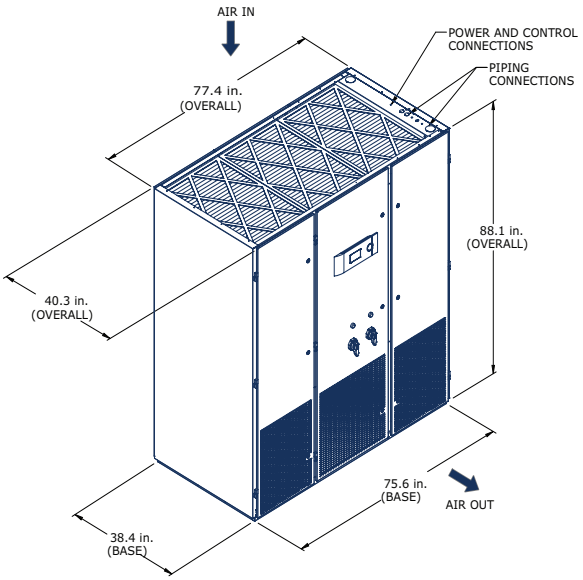
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

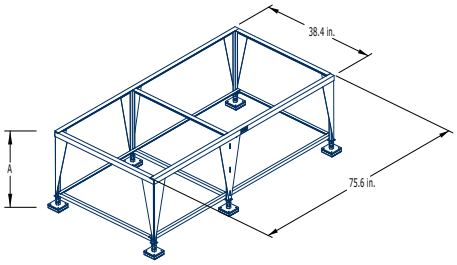
TR-CFF-060/090-C

Front Discharge Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note:Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

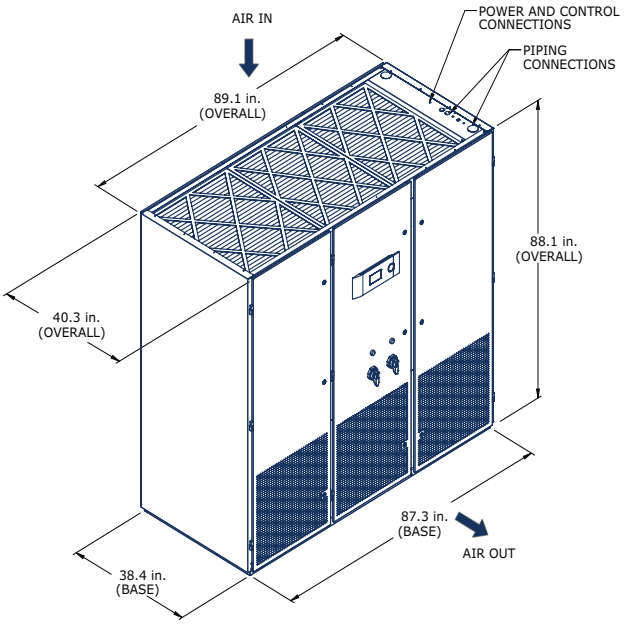
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

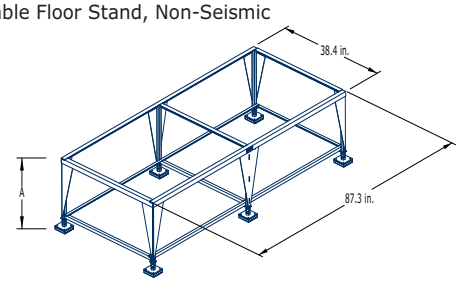
TR-CFF-120-C

Front Discharge Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

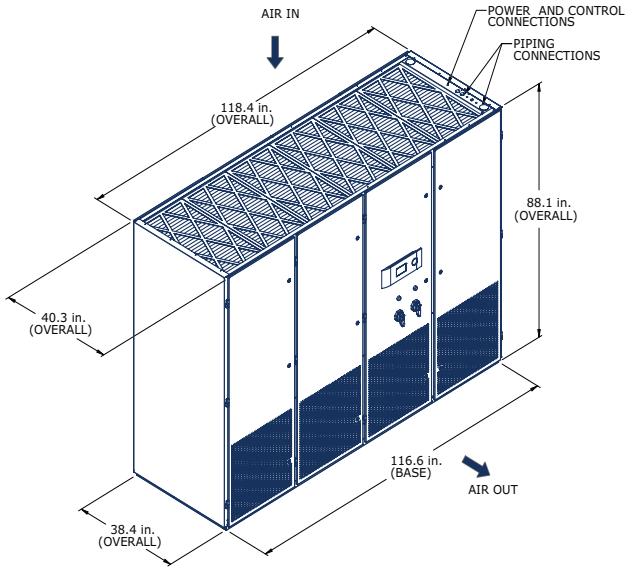
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

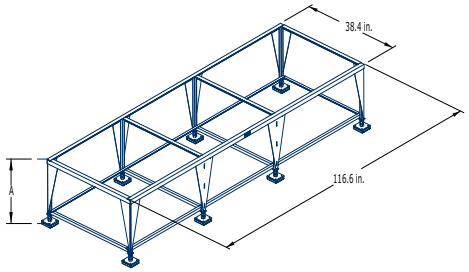
TR-CFF-150/180/190/230-C

Front Discharge Air Conditioner

Free Return or with Optional Ducted Return



Adjustable Floor Stand, Non-Seismic



Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

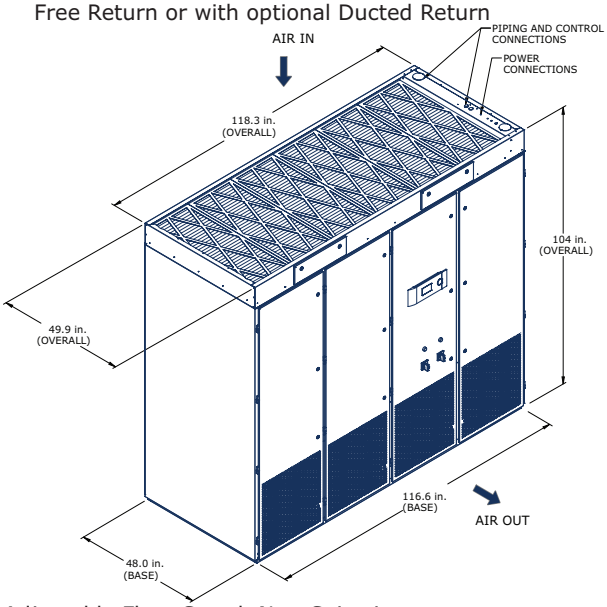
Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

Note: Other floor stand heights optionally available.

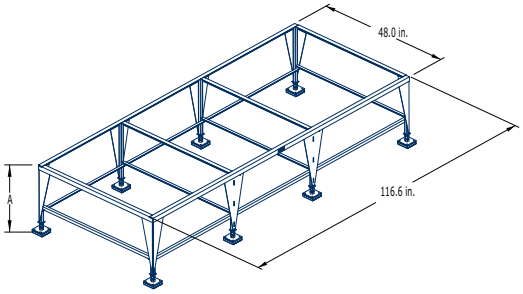
TR-CFF-280-C

Front Discharge Air Conditioner

Free Return or with optional Ducted Return



Adjustable Floor Stand, Non-Seismic



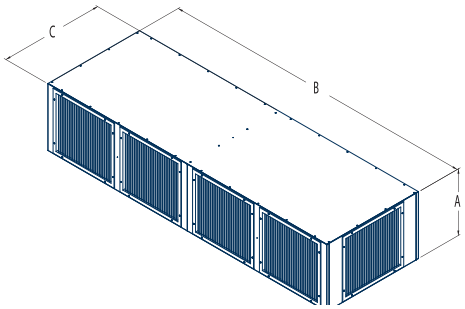
Note: Seismic rated floor stand is available

Note: *Standard piping connections terminate outside the cabinet at the top, right hand side. For any other option, contact Trane.*

Adjustable Floor Stand Height Dimensions (inches)		
Nominal Height	**Dim A Minimum**	**Dim A Maximum**
15.0	14.0	17.0
18.0	17.0	20.0
24.0	23.0	26.0
36.0	35.0	38.0
48.0	47.0	50.0

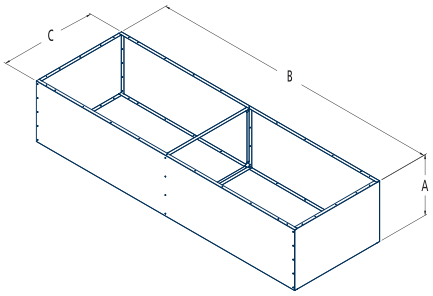
Note: Other floor stand heights optionally available.

Plenum Box



Plenum Boxes (Upflow Units)	Dim A Nominal (inches)	Dim B Minimum (inches)	Dim C Maximum (inches)
TR-CFU-060	18.5	77.4	38.7
TR-CFU-090	18.5	77.4	38.7
TR-CFU-120	18.5	89.1	38.7
TR-CFU-150	24.0	118.4	38.7
TR-CFU-180	24.0	118.4	38.7
TR-CFU-190	24.0	118.4	38.7
TR-CFU-230	24.0	118.4	38.7
TR-CFU-280	24.0	118.4	48.1

Plenum Extension Box



Note:Plenum extension boxes may be stacked.

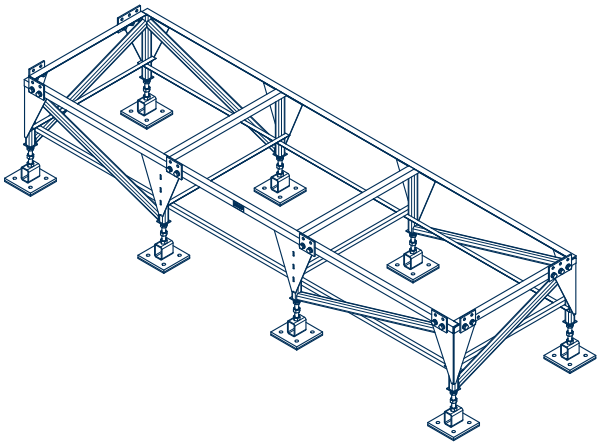
Plenum Extension Boxes (Downflow Units)	Dim A Nominal (inches)	Dim B Minimum (inches)	Dim C Maximum (inches)
TR-CFD-060	12.0 or 24.0	77.4	38.8
TR-CFD-090	12.0 or 24.0	77.4	38.8
TR-CFD-120	12.0 or 24.0	89.1	38.8
TR-CFD-150	12.0 or 24.0	118.4	38.8

Plenum Extension Boxes (Downflow Units)	Dim A Nominal (inches)	Dim B Minimum (inches)	Dim C Maximum (inches)
TR-CFD-180	12.0 or 24.0	118.4	38.8
TR-CFD-190	12.0 or 24.0	118.4	38.8
TR-CFD-230	12.0 or 24.0	118.4	38.8
TR-CFD-280	12.0 or 24.0	118.4	48.1

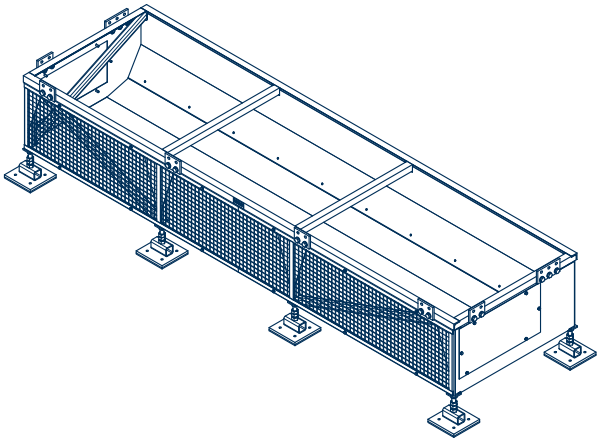
Note: *Taller plenum boxes are optionally available.*

Seismic Floor Stands

Seismic rated floor stands are available for any size cabinet



Note: *Enclosed, non-seismic rated Floor stands also available.*



Specifications

CyberAir Series CW TR-CFD/TR-CFU/TR-CFF Floor Mounted Precision Air Conditioners

Summary

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

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

Design Requirements

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

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

Cabinet

Down-Flow (TR-CFD-060-280)

Access panels are fabricated from 18 gauge galvannealed steel. Door jambs and top cabinet frame is fabricated from 16 gauge galvannealed steel. Bottom cabinet frame is fabricated from 10 gauge galvannealed steel for TR-CFD-060-280.

The panels are lined with ½ inch (13 mm), 2 lb (0.90 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.

Up-Flow/Front-Discharge (TR-CFU/F-060-280)

Access panels are fabricated from 18 gauge galvannealed steel. Door jambs are fabricated from 16 gauge galvannealed steel. Bottom cabinet frame is fabricated from 10 gauge galvannealed steel.

The panels are lined with 1/2 inch (13 mm), 2 lb (0.90 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.

Air Flow Patterns

Down-Flow

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

Down-Flow/Front Discharge

The air conditioner is configured for a down-flow air pattern with top free return air and conditioned supply air discharge through the front of the unit.

Up-Flow

The air conditioner is 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.

Mechanical Components

Air Filtration

All units are supplied with disposable air filters classified as UL 900 or UL 586. Filters are 4 inch deep (nominal). Filters are pleated with a Minimum Efficiency Reporting Value (MERV) of 8. Filters are installed in a front accessible, steel holding frame, and accessible through the front of the unit (except for the rear return configuration).

Optional: Filters rated up to MERV 11 is available.

Backward Inclined Plenum Style Fan with an EC Motor

The blower(s) is direct driven, single inlet, backward curved centrifugal with an electronically commutated motor for maintenance free operation. The motor includes:

- Integrated electronic control board and direct microprocessor control signaling for fan speed control
- Soft-starting capabilities
- RS-485 BUS connection
- Integrated current limitations

Each fan is low noise, low vibration manufactured with an anti-corrosive aluminum impeller. Each fan impeller is dynamically and statically balanced in two planes to minimize vibration during operation.

Chilled Water Cooling Coil

The coil is constructed of seamless drawn copper tubes, mechanically bonded to tempered aluminum fins with enhanced fin design for maximum heat transfer and mounted in a stainless-steel condensate drain pan. The coil is designed for a maximum of 500 ft/min face velocity. The water circuit is designed to distribute water into the entire coil face area. Manual air bleed vents and drain ports are factory installed.

Differential Temperature Flow

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

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

Modulating CW Control Valves

2-Way Chilled Water Control Valve (TR-CFD/CFF/CFU-060-280)

A 2-way fully modulating control valve is factory installed and wired. The 2-way chilled water modulating valve 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

pressure rating of the valve is maximum of 600 psig WOG. Manual override capabilities are included on the actuator drive.

3-Way Chilled Water Control Valve (Optional)

A 3-way modulating control valve is factory installed and wired. The 3-way modulating valve automatically meter the flow of chilled water to the cooling coil as needed for cooling load control, the remaining flow 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 maximum of 400 psig WOG. Manual override capabilities are included on the actuator drive.

Steam Generating Humidifier (Standard)

The humidifier is a self-contained atmospheric steam generator. The humidifier assembly includes an integral fill cup, fill and drain valves, disposable steam cylinder and associated piping. The humidifier is 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 has a modulating output between 20% and 100% of rated capacity. The unit includes draw in water tempering to ensure the drain water does not exceed 140°F during automatic drain cycles.

Dehumidification Cycle (Standard)

The system is provided with a dehumidification control mode. The chilled water valve is opened to allow chilled water flow during a dehumidification demand. Moisture is condensed on the cooling coil and discharged through the condensate drain. Reheat (electric, hot water) is provided to minimize over cooling during the dehumidification cycle.

Electric Heat/Reheat (Standard)

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 are provided with miniature thermal/magnetic circuit breakers, which protects each ungrounded conductor. Also included will be one automatic reset and one manual reset over-temperature safety device (pilot duty).

Hot Water Reheat/Heat (Optional)

A factory-installed, copper tube, aluminum fin heat/reheat coil and 2-way control valve is 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 Reheat/Heat (Optional)

The electric heat/reheat is 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 control.

Electrical System

The electrical system confirms to National Electrical Code requirements. The control circuit is 24 volts AC, wired in accordance with NEC Class II requirements. Ensure the control circuit wire is not smaller than 18 AWG. All wiring is neatly wrapped and routed in bundles. Each wire ends with a

service loop and be securely fastened by an approved method. Each wire in the unit is numbered for ease of service tracing.

All electrically actuated components are easily accessible from the front of the unit without reaching over exposed high voltage components or rotating parts. Each high voltage circuit is individually protected by circuit breakers or manual motor starters.

The blower motor has thermal and short circuit protection. Line voltage and 24-volt control circuit wiring is routed in separate bundles.

The electric box is positioned for service convenience and includes all the contactors, starters, fuses, circuit breakers, terminal boards and control transformer required for operation of the unit and shall allow for full service access.

Main Power Service Switch

The unit is provided with a unit mounted main power service non-fused disconnect switch.

Remote Start/Stop Contacts

Included in the system's electrical control circuit is a 2-pin terminal connection for remote start/stop of the CyberAir CW air conditioner by a remote source.

Automatic Dual Power Transfer Switch (Optional)

Two individual main power input disconnect switches are 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 adjustable to allow staging or to sequence restart of load.

In addition to the automatic transfer switch, the local controller display indicates 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 is conveyed though the BMS serial communications link. A through-the-door indicator light is included for a fast and local notification of available power sources.

Airflow Control

EC Fan Speed Control

The system includes a variable fan speed control package. The unit's controller permits 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 are user adjustable. User configured control sequences are available for fan speed energy savings control.

Fail Safe Mode

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

Microprocessor Controller

General

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

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

The controller receives inputs for measurable control conditions (temperature, relative humidity, and dew point) through return air or room mounted sensors. The internal logic will then determine if the conditions require cooling, humidification or dehumidification. Control setpoints are 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 controller is field configurable, allowing the operator the capability of selecting control setpoints specific to the application. Operator interface for the controller is provided through a door mounted user interface display panel.

The display panel has 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 provides 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 are allowed without the use of a password. Modifications to the control setpoints requires the use of a password. The controller is 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 CyberAir system operates 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 controller's 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 CyberAir system controllers are able to get connected (grouped) to a pLAN local network to enable the communication of data and information from each controller to a central control terminal or Lead controller.

The Lead controller display screen can be used to monitor and adjust group control variables for the individual system controllers. Each controller connected to the pLAN network is identified with its own unique address.

Multiple CyberAir systems consisting of up to eight floor-mounted air conditioners equipped with similar controllers may be controlled and monitored through the controller.

With multiple CyberAir systems, each unit can be selectively 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 CyberAir system within the rotating group is operationally exercised on a periodic timed basis.

Remote BMS Communications (Optional)

The controller incorporates a communication interface port that can be field connected to a Building Management System via Modbus RTU, 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 activates 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 originates from the controller I/O module.

The controller is operated via a round membrane type keypad and 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 CyberAir system.

E^2 Constant Contact

The control package includes a Constant Contact short term power supply for the E^2 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 E^2 Constant Contact permits a minimum of one-minute ride thru period.

Timer Feature

The timer enables 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

CyberAir 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 is provided to enable ease of installation of the CyberAir floor-mounted air conditioning system onto a raised floor environment. Floor stand height is adjustable and shipped separately for field installation.

Seismic Rated Floor Stand

The unit floor is constructed and rated for specific seismic requirements. Please contact your local representative for seismic design details.

Enclosed Floor Stand

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

Condensate Pump

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

The condensate pump is 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 is factory installed and wired in the return air section of the CyberAir floor-mounted air conditioning system. The photo-electric detector includes 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 is 0-3000 fpm. The air conditioner will shut down upon sensing smoke in the return air stream.

Firestat

The CyberAir floor-mounted air conditioning system is 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 CyberAir floor-mounted air conditioning system can have an optional, field installed, supply air temperature and humidity sensor. This sensor can be included with standard factory mount return air sensor. Supply sensor can be used for control or monitoring only. The controller provides the user with an adjustable air control setpoint.

Under Floor Pressure Control

The CyberAir floor-mounted air conditioning system permits variable fan speed control to a user defined external static pressure setting. A remote differential pressure transducer is provided to determine the static pressure, and the system controller shall modulate fan speed to maintain an external static pressure setpoint.

Remote Water Detector— Spot Type

A remote single-point water/leak detector is shipped separately for field installation. Upon sensing a water leak, the normally closed water detector control circuit opens, thereby shutting down the CyberAir floor-mounted air conditioning unit's water producing components.

Remote Water Detector— Dual Spot Type

A dual remote single point water/leak detector is shipped separately for field installation. Upon sensing a water leak, the normally closed water detector control circuit opens, thereby shutting down the CyberAir floor-mounted air conditioning unit's water producing components.

Remote Water Detector— Strip Type

A 20 ft. remote strip/cable type water/leak detector is provided for remote field installation. Upon sensing a water leak, the normally closed water detector control circuit opens, thereby shutting down the CyberAir floor-mounted air conditioning unit's water producing components.

Top Discharge Plenum Box

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

High Short Circuit Current Rating

The CyberAir floor-mounted air conditioning system is rated for a short circuit current rating for a maximum of 65k AIC. The higher short circuit current rating includes safe touch fusing upstream of the unit's main power disconnect switch.

Air-Side Economizer Controls

The CyberAir floor-mounted air conditioning system controller is equipped with a unique air-side economizer mode for applications using outdoor air-side economizing.

The Air-Side economizer control package includes an outdoor temperature and humidity sensor, remote space return air sensor, and supply air sensor for proper control during economizer operation. An individual analog output (0-10 Vdc) is available to act on interlocked return damper and outdoor air damper.

Control settings are included for both temperature and humidity properties of the outdoor air. A damper signal lockout is included if the outdoor air conditions reaches user adjustable limits. The economizing damper signal allows a minimum output setting for minimum outside air control to meet ventilation requirements.

Code Conformance

The supplied system is provided with the following compliance approvals:

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

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

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