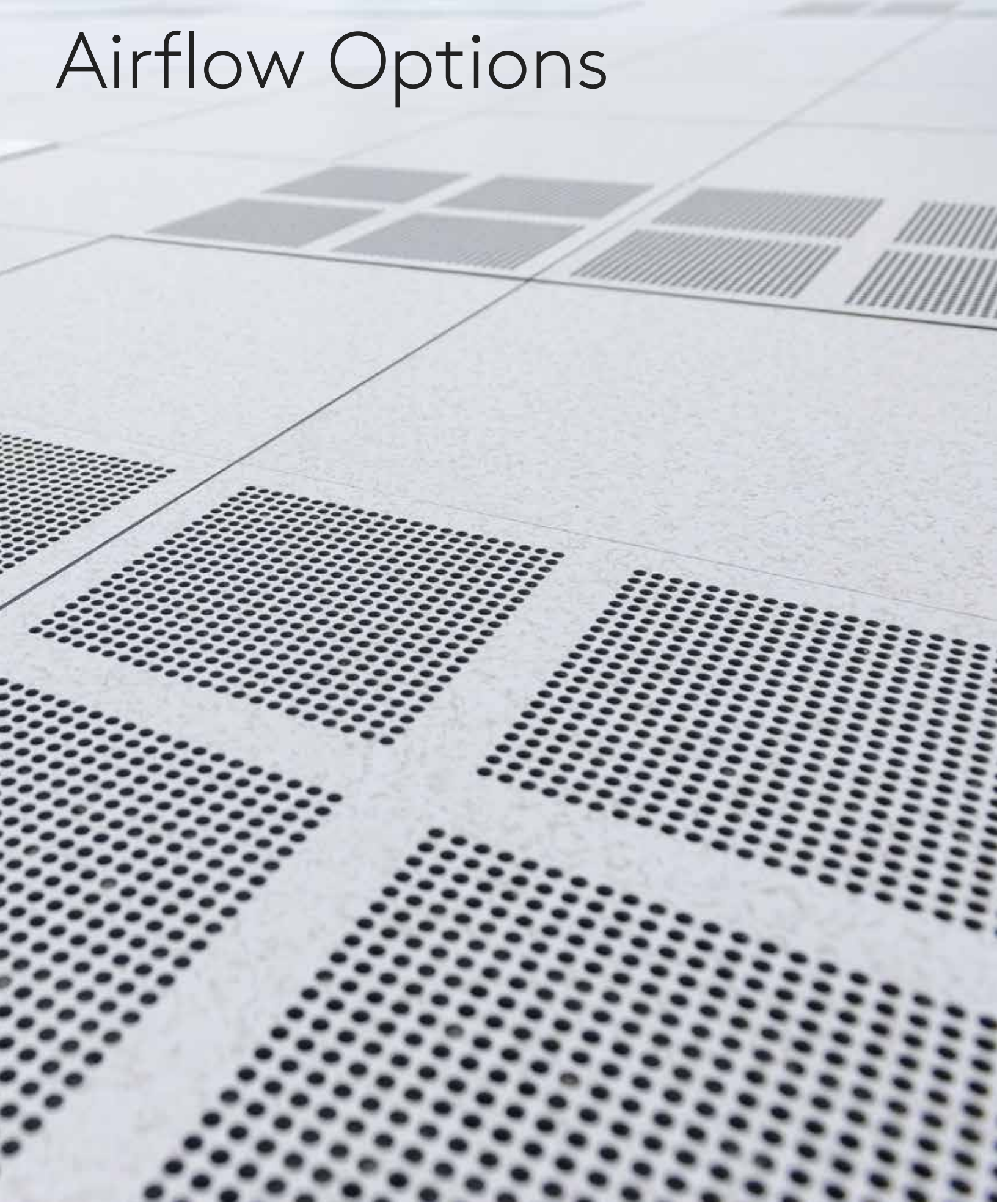
Airflow Options



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Airflow Panels & Controls

Custom Solutions for Your Unique Challenges

Tate is the leading manufacturer of data center solutions, and our manufacturing process allows for the customization of containment and structural ceiling products to fit the needs of your specific facility. Tate offers application engineering, as well as design and specification assistance to develop the solution your data center needs.

Our world-class manufacturing plants have the flexibility to create modular solutions quickly with up-front cost optimization and Tate's in-house engineering team has the experience and industry knowledge to design the best solutions and guide your project from concept to completion.

Whatever your challenges might be, Tate is the single-source solution builder your data center needs.

Leverage Our Experience

When it comes to data center solutions from Tate, you have options. Our application engineering support and custom manufacturing capabilities give you the ability to pick and choose a tailor-made solution that is the perfect fit for your data center.

And the best part is that, even though Tate's containment and structural ceiling systems are designed to fit your exact specifications, they are still fully compatible with all of Tate's other data center products such as access flooring, airflow panels and controls, and more.

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Airflow Panels & Controls

GrateAire® Panels

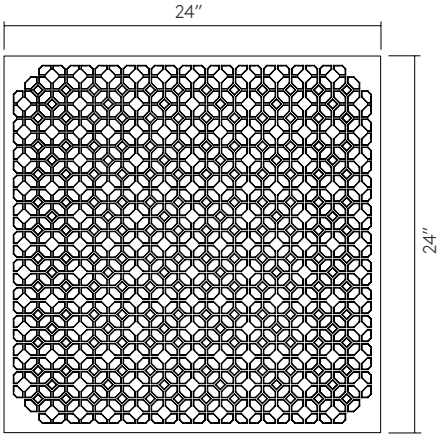
Aisle Level Containment Vertical Airflow Panels

Tate's aluminum GrateAire® offers high volume airflow for physically contained aisles with high heat densities. With 56% open area the lightweight aluminum panel is ideal for areas that need high airflow and load capacity.

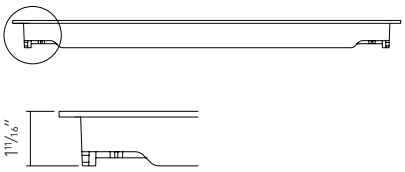
Cool up to 16 kW with 2100 CFM @ .10" H2O in a contained aisle.

Profile

Top View



Side View



Key Performance Characteristics

- GrateAire® die-cast aluminum panels are compatible with any 24" or 60 cm bolted stringer systems
- Cools up to 16kw per rack in a contained aisle
- High rolling load capacity (1000 lbs / 800 lbs)
- Available with top surface adjustable damper
- Available with an unpainted textured surface or epoxy powder coatings
- Interchangeable with Tate's full line of laminated raised floor panels in a stringer system

GrateAire® Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
GrateAire	Bolted Stringer	6.25 (30 kg/m^2)	1000 (4.4 kN)	Min. > 2	>2000 (8.9 kN)	1000 (4.4 kN)	800 (3.6 kN)	100 (45 kg)	50	56

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load.

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

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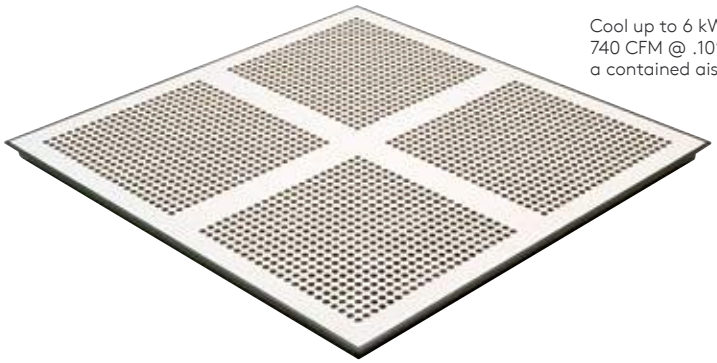
Tate®

Airflow Panels & Controls

Perforated Panels

Aisle Level Containment Vertical Airflow Panels

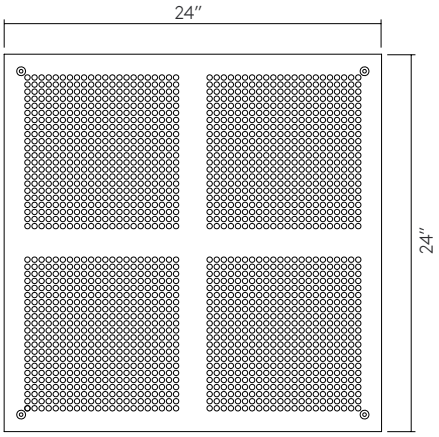
Tate's perforated steel panels are available with a range of load performance characteristics and a 25% open area. They represent the most economical approach to supplying air in a contained cold aisle.



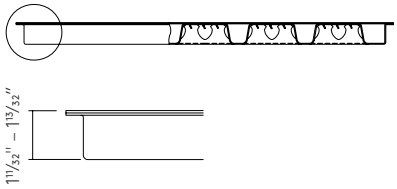
Cool up to 6 kW with 740 CFM @ .10" H2O in a contained aisle.

Profile

Top View



Side View



Key Performance Characteristics

- Compatible with any 24" or 60 cm stringer systems
- Strong design loads with safety factors of 2
- Available with top surface adjustable damper
- Steel perforated panels are available with high pressure laminate or ESD vinyl
- Interchangeable with laminated ConCore® and All Steel panels in a stringer system

Standard Perforated Panels Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
Perf 800	Bolted Stringer	7.0 (34 kg/m²)	800 (3.6 kN)	Min. > 2	>1600 (7.1 kN)	–	–	150 (68 kg)	50	25
Perf 1000	Bolted Stringer	7.5 (37 kg/m²)	1000 (4.4 kN)	Min. > 2	>2000 (8.9 kN)	–	–	150 (68 kg)	50	25
Perf 1250	Bolted Stringer	8.25 (40 kg/m²)	1250 (5.6 kN)	Min. > 2	>2500 (11.1 kN)	–	–	150 (68 kg)	50	25

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load.

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

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Tate®

Airflow Panels & Controls

DirectAire® Panels

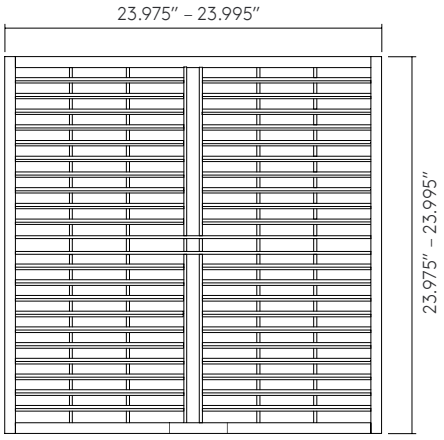
Strong, Efficient, High Capacity Directional Airflow Panels

Ideal for creating a virtual containment system, the steel DirectAire® panel directs the airflow toward the server rack to significantly reduce bypass air. DirectAire is designed to evenly distribute airflow across the full height of a standard 42U rack. DirectAire X2 is designed to divide the airflow evenly in two directions to provide even distribution to racks on both sides of a cold aisle.

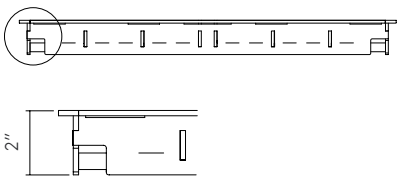
Cool over 19 kW with
2594 CFM @ .10" H2O

Profile

Top View



Side View



Key Performance Characteristics

- Reduce capital expenditures on cooling infrastructure by up to 40%
- Save up to 40% in annual fan energy without the use of containment
- 68% open area provides 2,594 CFM @ .1" H2O
- Cool over 19 kW per rack @ .1" H2O
- DirectAire X2 cools up to 10 kW per rack @ .1" H2O
- 2,500 lbs design load
- 1,500 lbs 10 pass rolling load capacity
- Available in 24" and 60 cm panel sizes

DirectAire® Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectAire®	Bolted Stringer	13.0 (63 kg/m²)	2500 (11.1 kN)	Min. > 2	>5000 (22.2 kN)	1500 (6.67 kN)	1500 (6.67 kN)	200 (91 kg)	93	68
DirectAire® X2	Bolted Stringer	13.0 (63 kg/m²)	2500 (11.1 kN)	Min. > 2	>5000 (22.2 kN)	1500 (6.67 kN)	1500 (6.67 kN)	200 (91 kg)	93	68

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load.

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

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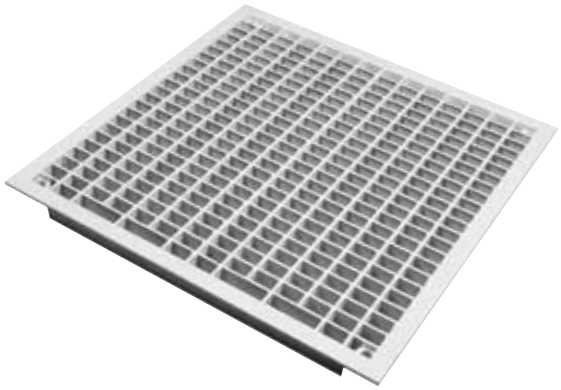
Tate®

Airflow Panels & Controls

DirectAire® AL Panels

Strong, Efficient, High Capacity Directional Airflow Panels

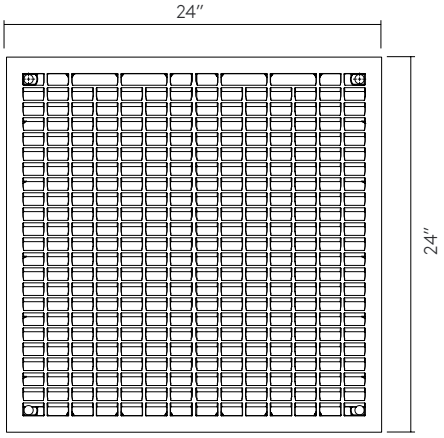
The DirectAire® AL is an all aluminum airflow panel that provides the same directional airflow benefits of the steel DirectAire. This allows the panel to provide similar cooling capacities with a panel that is 40% lighter.



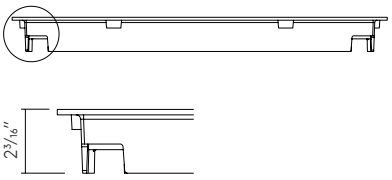
Cool over 18 kW with
2451 CFM @ .10" H2O

Profile

Top View



Side View



Key Performance Characteristics

- Die-cast aluminum construction
- 40% lighter than a steel DirectAire
- 60% open area provides 2,451 CFM @ .1" H2O
- Cools over 18 kW per rack @ .1" H2O
- 1,500 lbs design load
- 1,250 lbs 10 pass rolling load capacity
- Surface adjustable and automatic damper options
- Available in 24" and 60 cm panel sizes

DirectAire® AI Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectAire® AL	Bolted Stringer	7.4 (36 kg/m²)	1500 (6.7 kN)	Min. > 2	>3000 (13.3 kN)	1250 (5.6 kN)	1000 (4.4 kN)	150 (68kg)	93	60

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load.

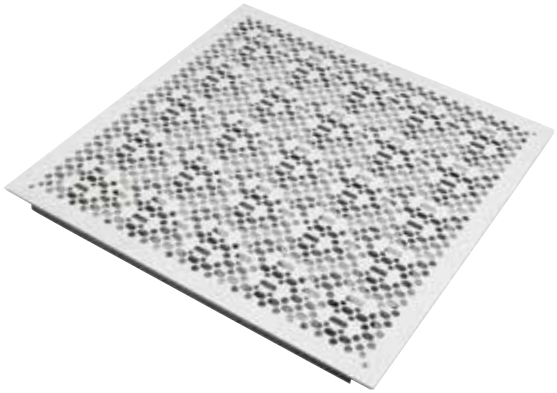
1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

Airflow Panels & Controls

DirectPerf® 32% Panels

Cool the Same Load as Vertical Plume Panels with Half the Airflow

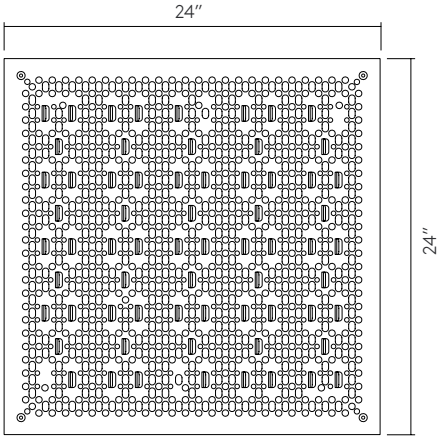
In uncontained spaces directional airflow provided by a DirectPerf 32% panel provides nearly the same cooling capacity as a standard 56% open area grate using about half the airflow.



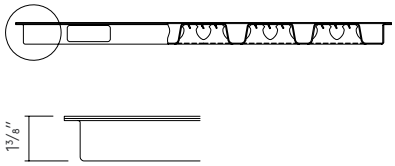
Cool up to 8 kW with
1121 CFM @ .10" H2O

Profile

Top View



Side View



Key Performance Characteristics

- Same kW cooling capacity as GrateAire
- 32% open area delivers 1,121 CFM @ .1" H2O when installed without a damper
- Directional airflow achieves a 88% capture index
- Cools up to 8 kW per rack
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24" and 60 cm raised floor systems

DirectPerf® 32% Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectPerf 32	Bolted Stringer	6.25 (30 kg/m²)	1250 (5.6 kN)	Min. > 2	>2500 (11.1 kN)	–	–	150 (68 kg)	88	32

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2. Safety Factor is Ultimate Load divided by Design Load.

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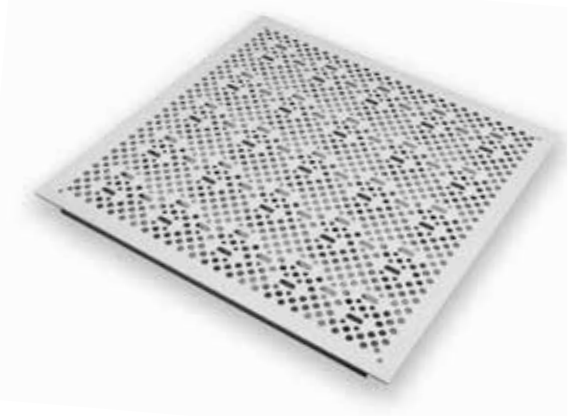
Airflow Panels & Controls

DirectPerf® 25% Panels

Cool the Same Load as Vertical Plume Panels with Half the Airflow

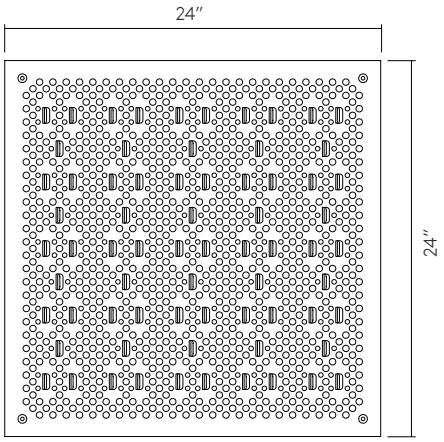
Directional Perf 25% utilizes directional airflow toward the server rack to significantly improve energy efficiency and reduce bypass air.



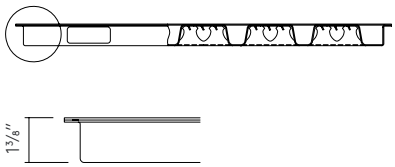
Cool up to 6 kW with
765 CFM @ .10" H2O

Profile

Top View



Side View



Key Performance Characteristics

- 25% open area delivers 765 CFM @ .1" H2O when installed without a damper
- Directional airflow achieves a 93% capture index
- Cools up to 6 kW per rack
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24" and 60 cm raised floor systems

DirectPerf® 25% Load Performance Chart*

Airflow Panel	Under-structure	System Weight (lbs/sqft)	Static Loads (lbs)			Rolling Loads (lbs)		Impact Load (lbs)	Capture Index* (%)	Open Area (%)
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectPerf 25	Bolted Stringer	6.85 (33 kg/m²)	1250 (5.6 kN)	Min. > 2	>2500 (11.1 kN)	–	–	150 (68kg)	93	25

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1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

Airflow Panels & Controls

Manual Airflow Controls

Manual Zone Control for Diverse and Partially Loaded Racks

Slide Damper

Tate's slide damper is used to manually control airflow under a GrateAire or Perforated panel. The slide damper is mechanically attached to the panel to provide airflow control.

Manual Damper for use with GrateAire® and Perf Panels

Key Performance Characteristics

- Easily adjustable from above without panel removal
- Mechanically attached to panel for easy underfloor access

Opposed Blade Damper (OBD)

Tate's Single-zone Opposed Blade Damper offers a dramatic airflow improvement over traditional manual slide dampers. It features a nearly infinite range of adjustment and very little airflow resistance. Easy access through the panel's surface allows for quick adjustment of airflow balancing to IT hardware.

Opposed Blade Damper for use with DirectAire®, DirectAire® AI, DirectPerf 32% and GrateAire® Panels

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without panel removal
- Drop-in design is for use with DirectAire® and allows for easy retrofits under airflow panels
- Field mounted design available for DirectAire AI, DirectPerf 32% and GrateAire panels.

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Dual-Zone Opposed Blade Damper

The dual-zone damper allows the user to control the airflow through each half of a panel independently so that racks on opposite sides of the aisle can receive the right amount of cooling for the load in the rack.

Dual-zone Opposed Blade Damper for use with DirectAire® X2 Panels

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without grate removal
- Drop in design allows for easy retrofits, with DirectAire® X2 in a Tate bolted stringer systems

Multi-Zone Opposed Blade Damper

Tate's multi-zone opposed blade damper enables the airflow delivery to be balanced based on the specific load in the rack. The damper allows data center operators to individually adjust airflow to three zones within the rack – top, middle and bottom.

Multi-zone Opposed Blade Damper for use with DirectAire®, DirectAire® AI or DirectPerf 32% Panels

Key Performance Characteristics

- Reduces cooling energy usage
- For use with full or partial loaded racks
- Provides the most granular airflow control available
- Easily adjustable from above without panel removal
- Drop in design allows for easy retrofits under airflow panels
- Field mounted design avialble for DirectAire AI, DirectPerf 32%, and DirectPerf 25% panels.

Airflow Panels & Controls

PowerAire® Quad

Fan Assisted Airflow Controls

The PowerAire® Quad fan is equipped with 4 fans connected in parallel to provide built-in redundancy. This unit is only 4" deep making it ideal for retrofit situations with finished floor heights as low as 7.5". This unit can cool up to 16 kW of supported IT load per PowerAire® / DirectAire® combination.

Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available
- User programmable set point
- EC fan technology is variable from 0-100 %
- Available in 100-120 V or 200-240 V power options
- Viewable Peak Temp for walk-through check of racks
- Available Auto Transfer Switch offers A/B power feed
- 24" and 60 cm raised floor compatible

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Performance Charts

CFM & kW Capacity

Airflow Panel	0.02″ H_2O (5 Pa)		0.04″ H_2O (10 Pa)		0.06″ H_2O (15 Pa)		0.08″ H_2O (20 Pa)		0.10″ H_2O (25 Pa)	
	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)
DirectAire®										
w/o Damper	1151 (543)	8.5	1626 (767)	12.0	2007 (947)	14.8	2318 (1093)	17.1	2594 (1224)	19.1
w/OBD	986 (465)	7.3	1427 (673)	10.5	1789 (844)	13.2	2056 (970)	15.2	2331 (1100)	17.2
w/PA Quad	2012 (950)	14.9	2061 (973)	15.2	2111 (996)	15.6	2158 (1018)	15.9	2199 (1038)	16.2
DirectAire® AI										
w/o Damper	1123 (528)	8.3	1572 (753)	11.6	1913 (906)	14.1	2200 (1062)	16.3	2451 (1167)	18.1
w/OBD	857 (404)	6.3	1293 (610)	9.5	1546 (730)	11.4	1745 (824)	12.9	1951 (921)	14.4
w/PA Quad	2018 (952)	14.9	2110 (996)	15.6	2140 (1010)	15.8	2130 (1005)	15.7	2158 (1019)	15.9
DirectPerf 32%										
w/o Damper	531 (251)	3.7	744 (351)	5.2	890 (420)	6.2	1010 (477)	7.1	1121 (529)	7.8
w/OBD	480 (227)	3.4	693 (327)	4.8	822 (388)	5.7	963 (454)	6.7	1063 (502)	7.4
DirectPerf 25%										
w/o Damper	357 (168)	2.6	496 (234)	3.7	602 (284)	4.4	689 (325)	5.1	765 (361)	5.6
w/Slide damper	260 (123)	1.9	367 (173)	2.7	447 (211)	3.3	515 (243)	3.8	574 (271)	4.2
GrateAire										
w/o Damper	916 (432)	3.6	1320 (623)	5.2	1608 (759)	6.4	1860 (878)	7.4	2096 (989)	8.3
w/OBD	810 (382)	3.2	1121 (529)	4.5	1386 (654)	5.5	1595 (753)	6.3	1785 (842)	7.1
w/Slide damper	504 (238)	2.0	712 (336)	2.8	876 (413)	3.5	1008 (476)	4.0	1128 (532)	4.5
Standard Perf										
w/o Damper	332 (152)	1.3	476 (224)	1.9	584 (275)	2.3	666 (314)	2.6	746 (352)	3.0
w/Slide damper	237 (112)	0.9	328 (155)	1.3	402 (190)	1.6	461 (218)	1.8	515 (243)	2.0

Cooling capacity per rack is based on: CFM x Capture Index % / 126 (CFM needed to cool 1 kW @ 25° ΔT).
Tests Conducted with fans operating at 100% power and dampers 100% open.