

# ULTRASUITE®

OPERATING ROOM DIFFUSER SYSTEM WITH LED LIGHTING



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## Operating Room Diffuser System with LED Lighting

Ultrasuite is a customizable air distribution and lighting solution specifically engineered for hospital operating rooms. High-output LED lighting combined with precision equalized laminar airflow eliminates the traditional “light ring”, opening valuable ceiling space for surgical equipment while optimizing particulate removal from the surgical zone. Conforming to all ASHRAE 170 requirements, the patented (pat. 10,401,049) Ultrasuite is the perfect combination of performance, aesthetics and efficiency.


*Low profile common plenum is quickly installed, and can be easily integrated in retrofit installations*

*Integrated LED lighting reduces ceiling congestion to provide space for ceiling mounted equipment*

*System layout can be customized to meet the unique requirements of each project*

*Single large diffuser array provides ideal laminar diffuser coverage for a particulate free surgical zone*

*Booms and structural mounting by others*

				
<p><i>High Efficiency 100+ lm/W LED</i></p>	<p><i>L80 &gt; 60,000 hours</i></p>	<p><i>Dimmable</i></p>	<p><i>IP67 Sealed LED</i></p>	<p><i>90+ CRI</i></p>

## INTEGRATED LED LIGHTING

- + The Ultrasuite transforms a typical laminar flow array diffuser into a combination high performance LED light fixture and laminar diffuser by incorporating LED lighting inside each individual diffuser module.
- + Lighting at the surgical table is optimized with the Ultrasuite positioned directly above the patient, reducing shadows within the surgical zone.
- + The large light-emitting surface of the Ultrasuite provides even lighting with a low luminous intensity to reduce glare on monitors and other reflective surfaces.
- + Various lighting color temperatures and flexible dimming control allow the Ultrasuite to meet the unique requirements of modern healthcare facilities.
- + Optional green lighting facilitates improved visibility of flat panel displays for the surgeon by enhancing images while also eliminating the glare that traditional overhead white lights cast on monitors.

## TYPICAL APPLICATIONS

The Ultrasuite® is a fully customizable lighting and air distribution packaged system designed specifically for Operating Rooms. The Ultrasuite® meets the unique needs of operating rooms by providing low velocity laminar airflow, providing lighting directly above the patient table, and by freeing up valuable ceiling space for ceiling mounted equipment.



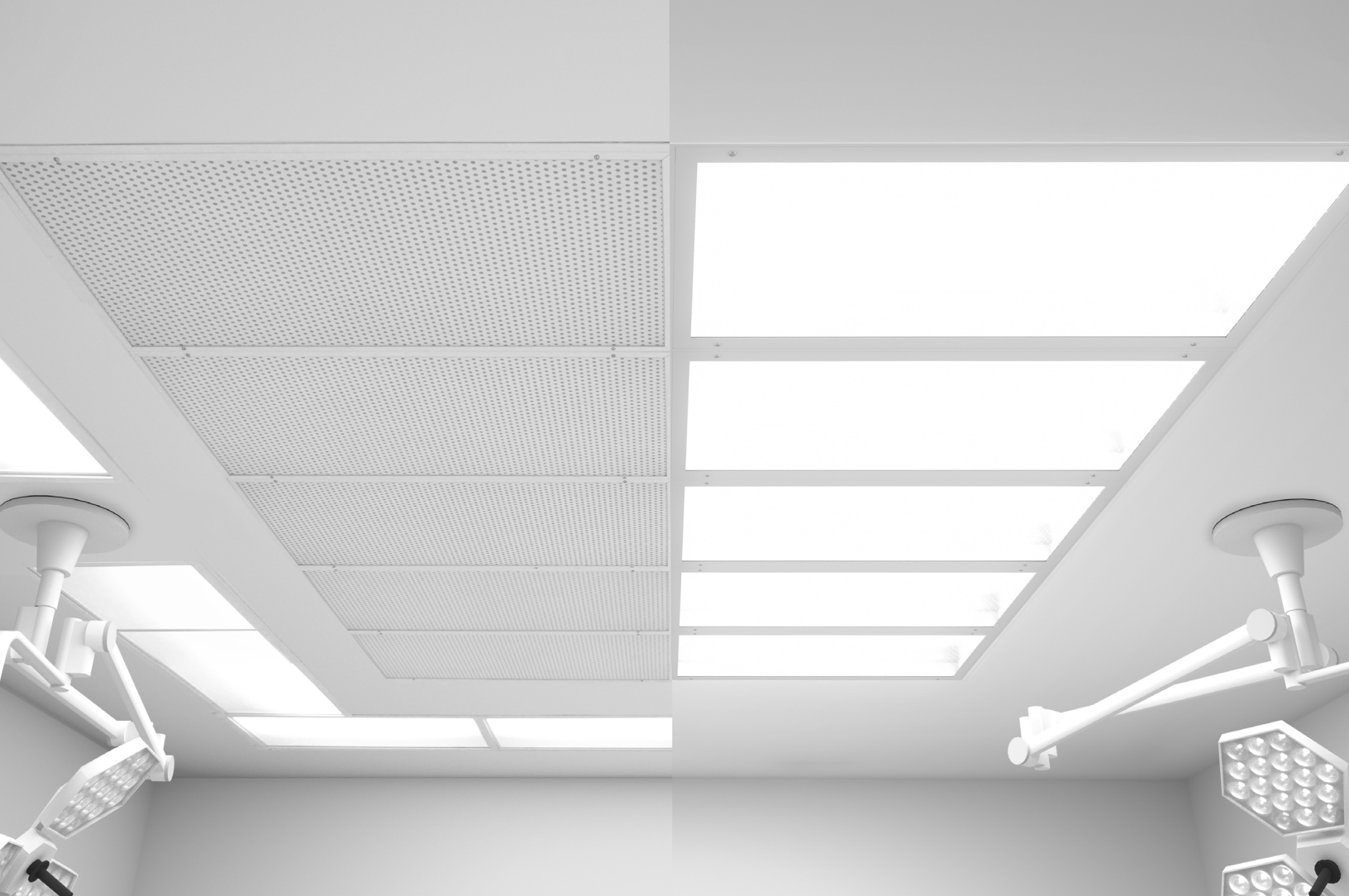


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*Traditional perimeter lighting and laminar diffuser system (168 sq. ft.)*

*Ultrasuite integrated light and diffuser system (80 sq. ft.)*



## REDUCED CEILING CONGESTION

- + The Ultrasuite dramatically reduces the HVAC footprint in the ceiling by incorporating high-performance LED lighting directly within the laminar flow diffusers, effectively freeing space for other ceiling mounted equipment.

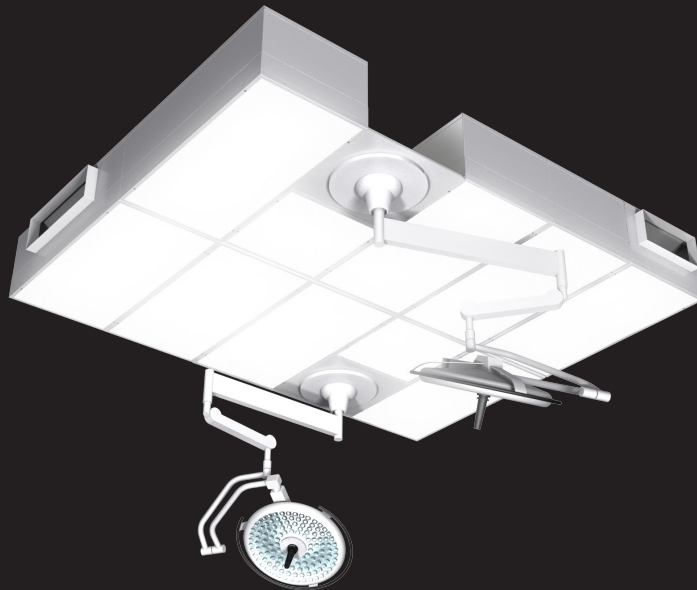
## SINGLE LARGE DIFFUSER ARRAY

- + The single large diffuser design consists of a number of laminar flow diffusers, with a low profile common plenum.
- + A highly engineered dispersion baffle and perforated face ensure even distribution of airflow within each diffuser module, regardless of system layout or inlet location.

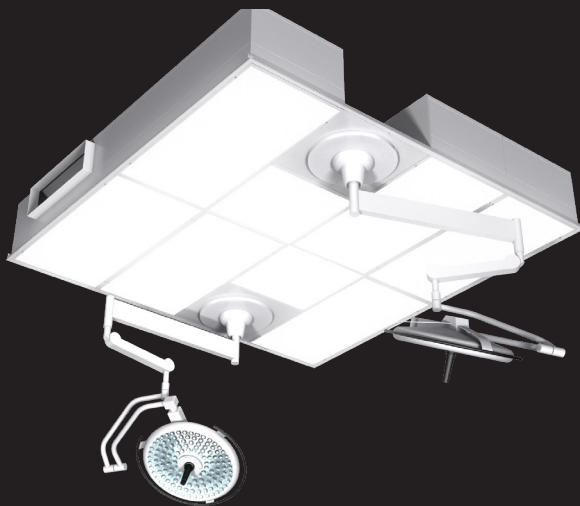
# ULTRASUITE®

## Operating Room Diffuser System with LED Lighting

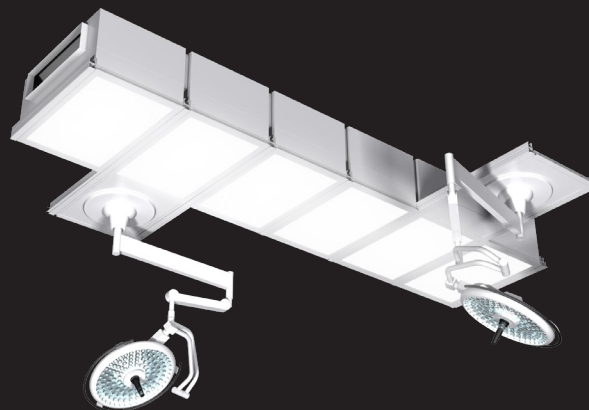
Sample layout A



Sample layout B



Sample layout C



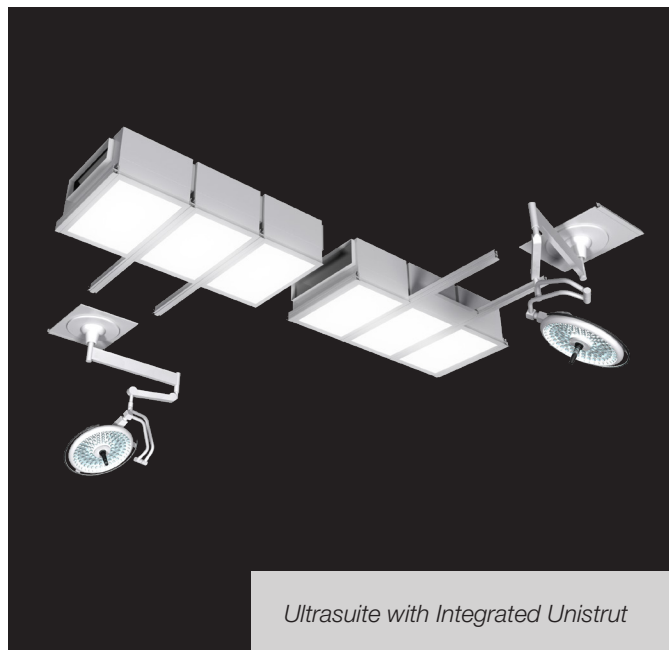
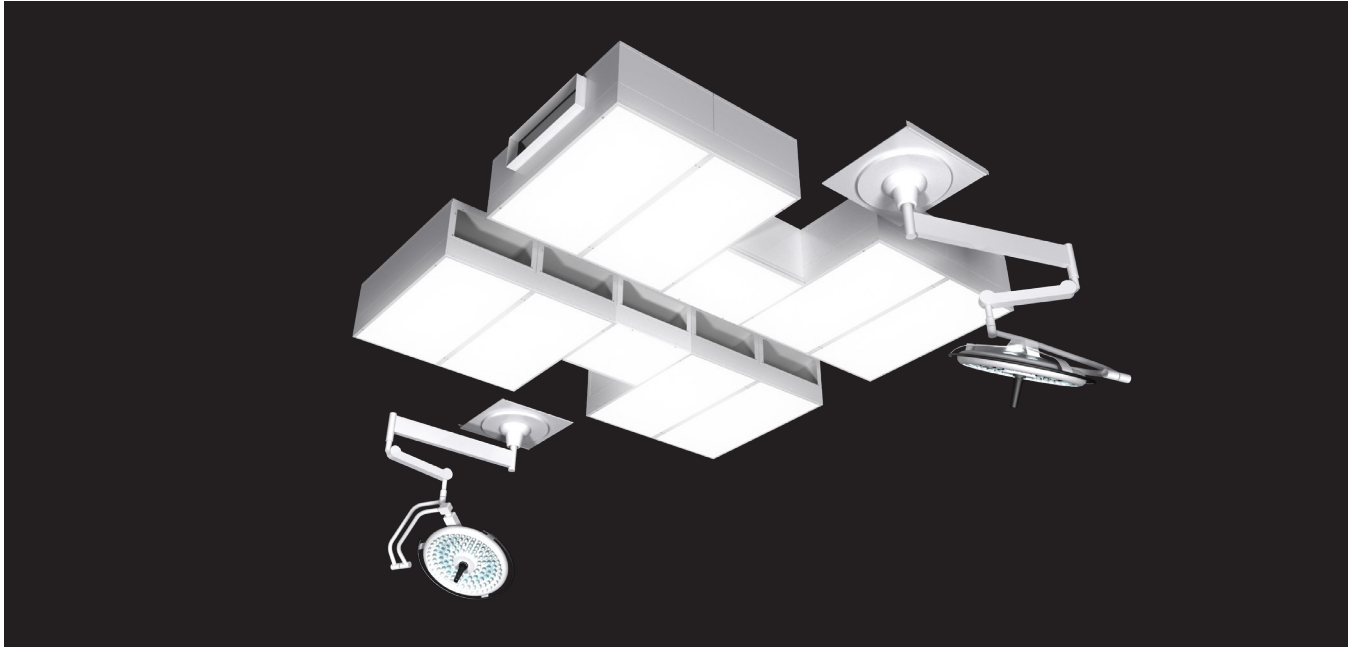
Ultrasuite with Integrated Unistrut

## FULLY CUSTOMIZABLE

- + Flexible system and module sizes to suit any equipment layout.
- + Inlets can be positioned on the sides or top of the plenum to suit existing ductwork configurations, or to optimize ductwork layout for new construction.

# ULTRASUITE®

## Operating Room Diffuser System with LED Lighting



## EASY INSTALLATION

- + The Ultrasuite ships in large, factory-assembled sections to minimize installation time, and the closed-cell gasketed joints ensure an effective seal between modules.
- + Integrated balancing dampers at each module as well as factory installed and wired lighting with quick connect cables make set-up and commissioning simple and efficient.
- + Each Ultrasuite system ships with remote mounted driver cabinets. Each driver cabinet is factory wired for single point high voltage connection. All field wiring between the remoter driver cabinets and Ultrasuite is low voltage class 2 wiring.

# ULTRASUITE®

## Operating Room Diffuser System with LED Lighting

### SIMPLE MAINTENANCE

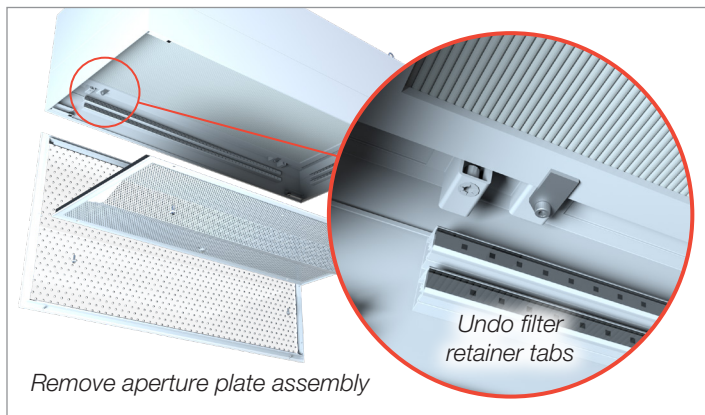
- + The Ultrasuite meets all ASHRAE 170 requirements for cleanability with stainless steel fasteners and retainer cables for easy removal of the diffuser face.
- + Optional room-side replaceable HEPA filters inside each Ultrasuite module provide clean air to the surgical zone. Integrated HEPA filters feature a gel seal to prevent filter bypass and pass on-site filter integrity testing.
- + Integrated LED lighting is a sealed, IP67 rated fixture that effectively seals out debris and liquids.
- + A remotely mounted control enclosure housing the LED drivers provides easy access for maintenance and replacement.
- + High quality LED lights have a long lifespan, rated at 80% original brightness for 60,000 hours. If required, individual LED strips are tool-free replaceable with quick-connect wiring.



*Remotely mounted LED drivers and enclosure*

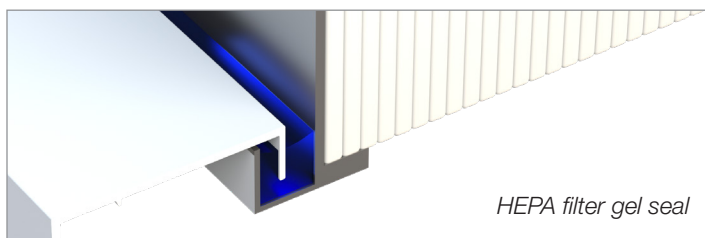


*Remove diffuser face*

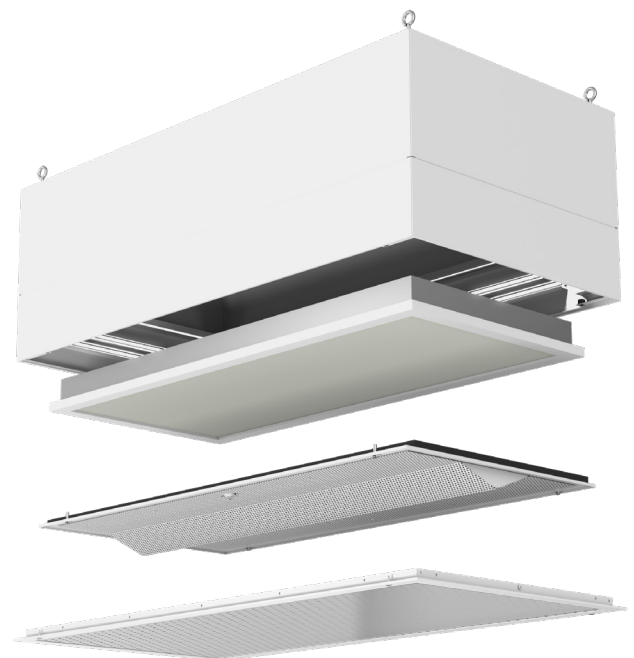


*Remove aperture plate assembly*

*Undo filter retainer tabs*



*HEPA filter gel seal*



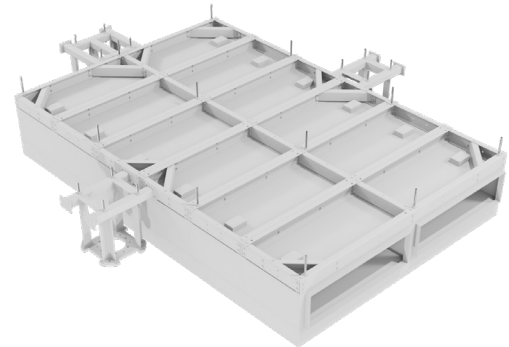
*Remove filter*

# INTEGRATED STRUCTURAL SUPPORT

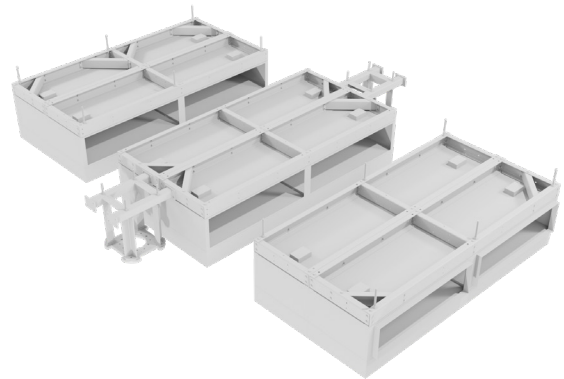
- + Optional integrated structural support is designed to support medical equipment booms and/or rolling loads of ceiling mounted imaging equipment found in operating rooms.
- + A **fully-welded** structural support grid is mounted to the top of the Ultrasuite to maintain the patented equalized lighting across the face of the diffuser array and eliminate any effect on air distribution while adding only 3-5" of height to the overall system.
- + Ultrasuite +Structure is fully customizable to suit project requirements with all structural design coordinated by the Price team and supplied with stamped structural drawings. Connection of the structural grid to the building deck by means of threaded rod shall be coordinated by the structural engineer on the project.
- + To promote quick installation, Ultrasuite +Structure ships in large, factory pre-assembled and pre-wired sections that bolt together on site, similar to standard Ultrasuite modules.



*Integrated structural support (roomside view)*



*Integrated structural support (top view)*



*Ultrasuite +Structure ships in large pre-assembled sections*



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### SEISMIC CERTIFICATION PREAPPROVAL

- + Optional HCAI special seismic certification preapproval as per OSP-0627-10.

### CODE COMPLIANCE & LISTINGS

- + **NFPA 90A-2018** Installation of Air Conditioning and Ventilating Systems
- + **ASHRAE 170-2017** Ventilation of Healthcare Facilities
- + **UL1598** Air-Handling Luminaries
- + **UL 2043** Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
- + **UL2108** Low Voltage Lighting System
- + **UL8750** Light Emitting Diode (LED) Equipment for Use in Lighting Products
- + **UL1310** Class 2 Power Units
- + **UL94** Flammability of Plastic Materials for Parts in Devices and Appliances
- + **IP67** rated Ingress Protection Against Dust and Liquids



# PERFORMANCE DATA

## Individual Module (IP)

Unit Size	Inlet Size	Airflow (cfm)	Face Velocity (fpm)	Static Pressure (in. w.g.)	NC
24 in. x 24 in.	10 in. x 3 in.	100	25	0.05	19
		120	30	0.07	24
		140	35	0.09	29
	14 in. x 3 in.	100	25	0.04	-
		120	30	0.06	-
		140	35	0.08	19
24 in. x 48 in.	20 in. x 3 in.	200	25	0.05	19
		240	30	0.07	24
		280	35	0.09	29

### Performance Notes:

1. Airflow given in cubic feet per minute (cfm).
2. All pressure drops are in inches water gauge (in. w.g.).
3. Velocity given in feet per minute (fpm)
4. Static pressure and NC performance assumes fully open damper and no filter.
5. Blanks "-" indicated NC level below 15.
6. NC = Noise Criteria. NC values are based on room absorption of 10dB re 10<sup>-12</sup> watts.
7. Testing in accordance with ASHRAE standard 70.

## Array (IP)

Configuration	Quantity 24 in. x 24 in. Modules	Quantity 24 in. X 48 in. Modules	Inlet Quantity	Inlet Size	Inlet Velocity (fpm)	Airflow (cfm)	Face Velocity (fpm)	Static Pressure (in. w.g.)	Static Pressure with HEPA filter (in. w.g.)	NC
A	2	8	2	24 in. x 10 in.	540	1800	25	0.05	0.18	25
					648	2160	30	0.07	0.23	31
					756	2520	35	0.09	0.27	35
B	2	6	2	24 in. x 8 in.	525	1400	25	0.05	0.18	24
					630	1680	30	0.07	0.23	30
					735	1960	35	0.09	0.27	35
C	0	6	1	32 in. x 10 in.	540	1200	25	0.05	0.18	22
					648	1440	30	0.07	0.23	28
					756	1680	35	0.09	0.27	32

### Performance Notes:

1. Airflow given in cubic feet per minute (cfm).
2. All pressure drops are in inches water gauge (in. w.g.)
3. Velocity given in feet per minute (fpm)
4. Static pressure and NC performance assumes fully open damper.
5. Blanks "-" indicated NC level below 15.
6. NC = Noise Criteria. NC values are based on room absorption of 10dB re 10<sup>-12</sup> watts.
7. Testing in accordance with ASHRAE Standard 70.

## PERFORMANCE DATA

### Individual Module (SI)

Unit Size	Inlet Size	Airflow (l/s)	Face Velocity (m/s)	Static Pressure (Pa)	NC
600 m x 600 m	250 mm x 75 mm	47	0.13	12	19
		57	0.15	17	24
		66	0.18	22	29
	350 mm x 75 mm	47	0.13	10	-
		57	0.15	15	-
		66	0.18	20	19
1200 mm x 600 mm	500 mm x 75 mm	94	0.13	12	19
		113	0.15	17	24
		132	0.18	22	29

**Performance Notes:**

- Airflow given in litres per second (l/s).
- All pressure drops are in Pascals (Pa).
- Velocity given in meters per second (m/s).
- Static pressure and NC performance assumes fully open damper and no filter.
- Blanks "-" indicated NC level below 15.
- NC = Noise Criteria. NC values are based on room absorption of 10dB re 10<sup>-12</sup> watts.
- Testing in accordance with ASHRAE standard 70.

### Array (SI)

Configuration	Quantity 600mm x 600mm Modules	Quantity 600mm x 1200mm Modules	Inlet Quantity	Inlet Size	Inlet Velocity (m/s)	Airflow (l/s)	Face Velocity (m/s)	Static Pressure without HEPA filter (Pa)	Static Pressure with HEPA filter (Pa)	NC
A	2	8	2	600 mm x 250 mm	2.74	850	0.13	13	45	25
					3.29	1019	0.15	17	57	31
					3.84	1189	0.18	22	67	35
B	2	6	2	600 mm x 200 mm	2.67	661	0.13	13	45	24
					3.20	793	0.15	17	57	30
					3.73	925	0.18	22	67	35
C	0	6	1	810 mm x 250 mm	2.74	566	0.13	13	45	22
					3.29	680	0.15	17	57	28
					3.84	793	0.18	22	67	32

**Performance Notes:**

- Airflow given in litres per second (l/s).
- All pressure drops are in pascals (Pa).
- Velocity given in meters per second (m/s).
- NC = Noise Criteria. NC values are based on room absorption of 10dB re 10<sup>-12</sup> watts.
- Blanks "-" indicate NC level below 15.
- Testing in accordance with ASHRAE Standard 70.
- Static pressure and NC performance assumes fully open damper.



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Ultrasuite is patented (Pat. 10,401,049).