

AstroClean™

UNIDIRECTIONAL FLOW CLEANROOM MODULE

A self-contained unidirectional flow module, the AstroClean™ is designed to meet requirements for cleanliness levels of ISO Class 5 or better. These modules are used to supply clean air to processes and equipment including freeze dryers, autoclaves, vial filling, vial filling with powders, research and development work, cell culturing, and ovens. The AstroClean is offered as either a ducted or fan powered supply, as well as with standard options such as aerosol injection, flush LED lighting, and sprinkler pass-throughs. AstroClean modules come in many standard sizes and three configurations to suit nearly any facility layout:

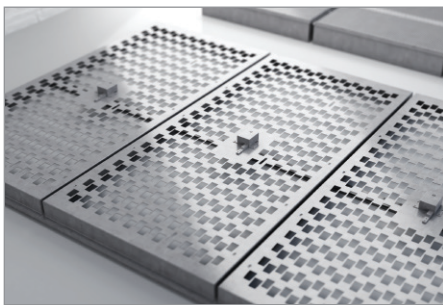
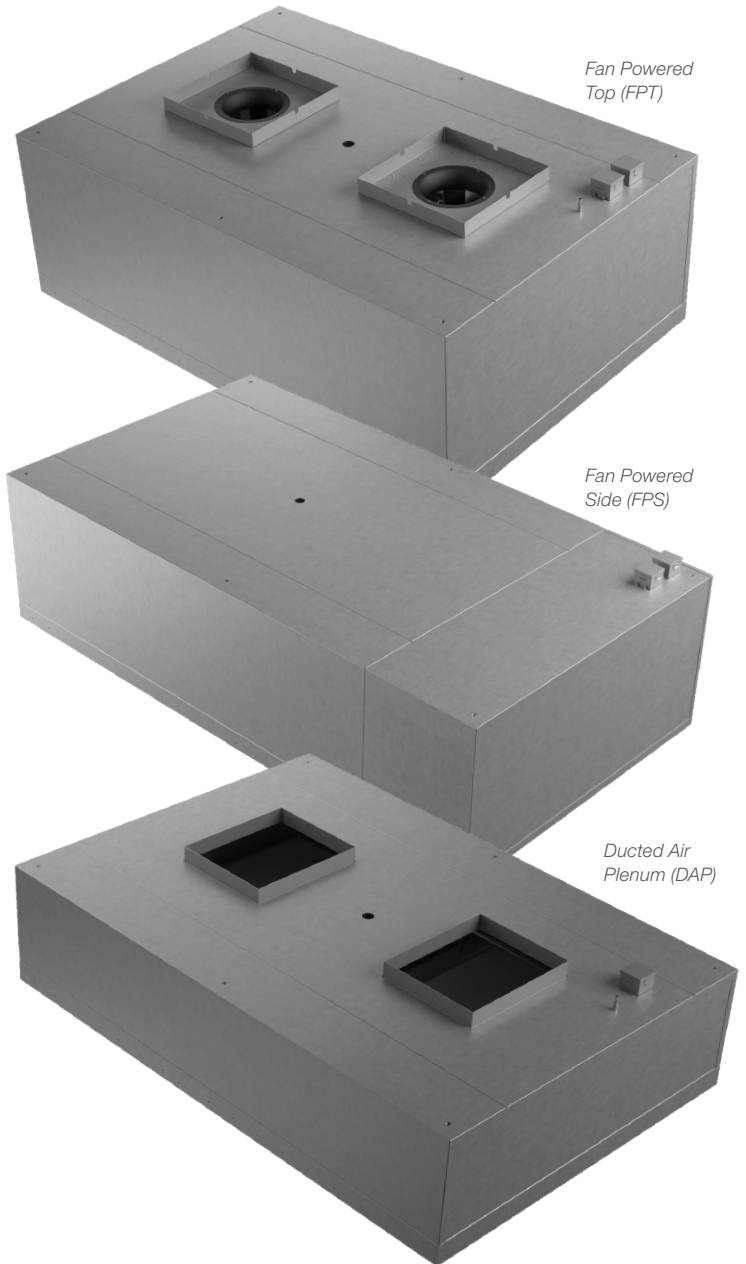
- Fan-powered top (FPT) unit
- Fan-powered side (FPS) unit
- Ducted Air Plenum (DAP) unit

The AstroClean flow module is ideal for many applications, including:

- Pharmaceutical
- Biomedical
- Bioresearch
- Hospitals
- Universities
- Food Processing

The AstroClean is constructed of completely seal-welded 304 or 316L stainless steel and is available with an integrated fan section (side or top) for stand-alone applications, or with duct connections for supply-air entry from an AHU. Top mounted fan option provides n+1 redundancy for further risk mitigation. It also includes several standard and optional features dependent on configuration.

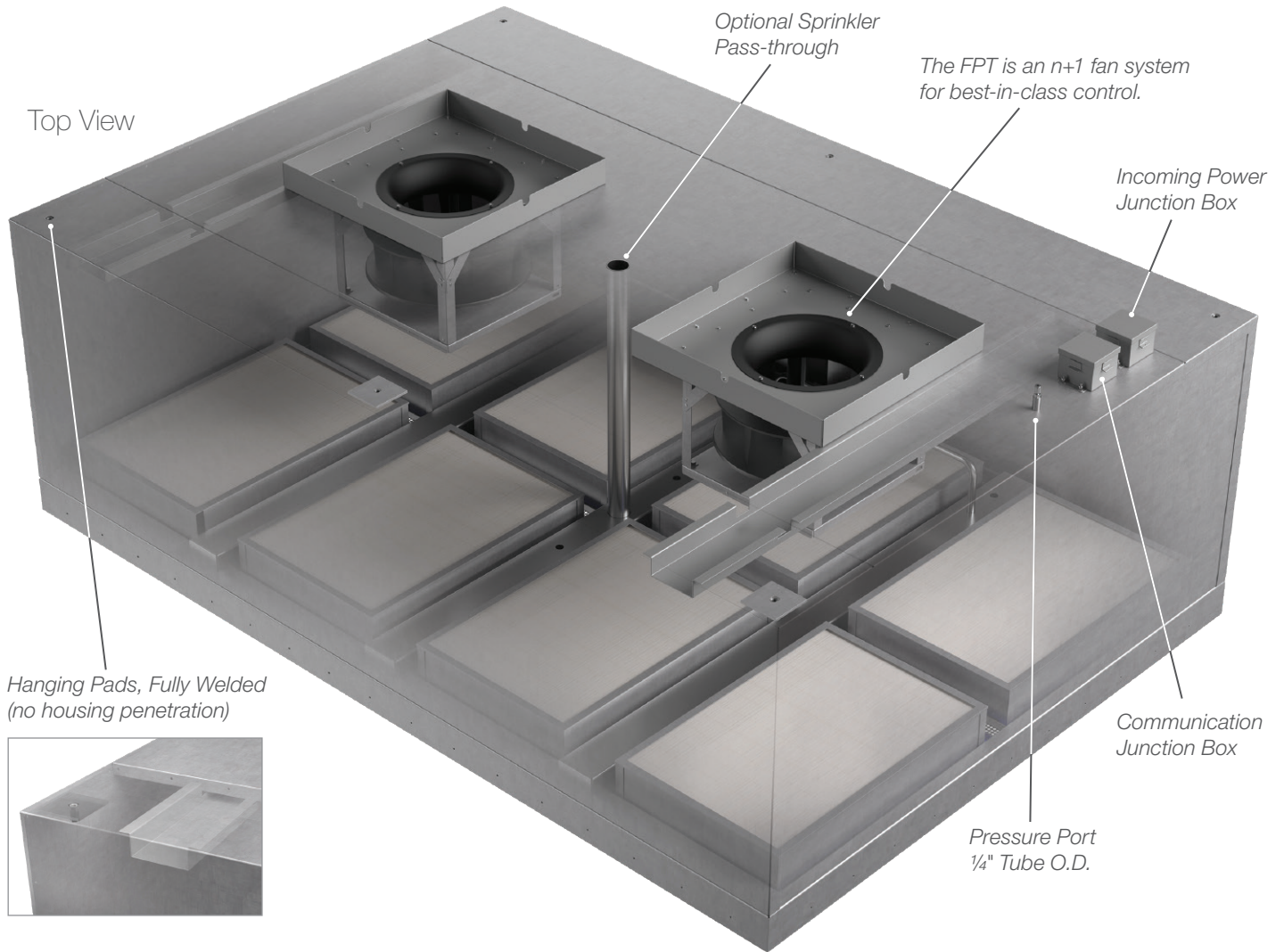
The AstroClean offers the lowest pressure drop on the market when used in conjunction with AAF HEPA/ULPA filters made with eFRM or ePTFE membrane media. There is also an option to integrate the AAF energy-saving damper (ESD) with the filters if volume control is desired.



Integrated eFRM HEPA/ULPA media with ESD damper option

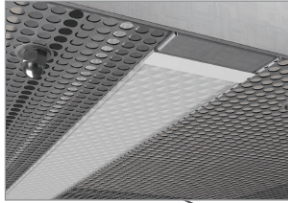
AstroClean™ FPT Module

The AstroClean FPT unit is ideal for spaces where ceilings are high enough to accommodate the installation of modules over operational processes requiring ISO 5 or cleaner air.



Features

Standard	Optional
Hanging Pads (All Thread)	230V or 460V 3PH Motors
40% Open SST Acorn Nut & Stud Mounted Grille	3404 or 316L SST Construction
LED Lighting with Dimmer Circuit	Continuously Welded Grid/Roomside or Continuously Welded Grid & Plenum
Pressure & Upstream Aerosol Sample Ports - 3/8" NPT Plug	#4 Finish Roomside Filtration Area Only or #4 Finish Roomside & All Exterior Surfaces
Photohelic Gauges	No Perimeter Trim, 2" Field Installed Flush Ceiling Mount or Offset Ceiling Mount
Backdraft Dampers to Prevent Air Recirculation	No Aerosol Injection or Roomside 1/2" NPT
N+1 Fan Redundancy	No Sprinkler Pass-through or Sprinkler Pass-through (Centrally Located)
Remote Mounted NEMA 4X Control Panel with AstroDrive 200 Modbus RS-485	



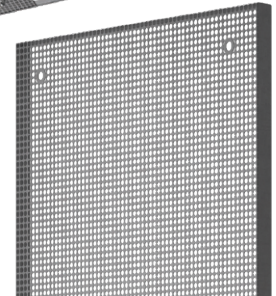
LED Lighting with Dimmer Circuit (Universal Voltage 120-277V)



Bottom View

Behind grille is a 3/8" NPT aerosol sample port (standard), 1/2" aerosol injection port (optional).

40% SST Grille (same material as housing construction)

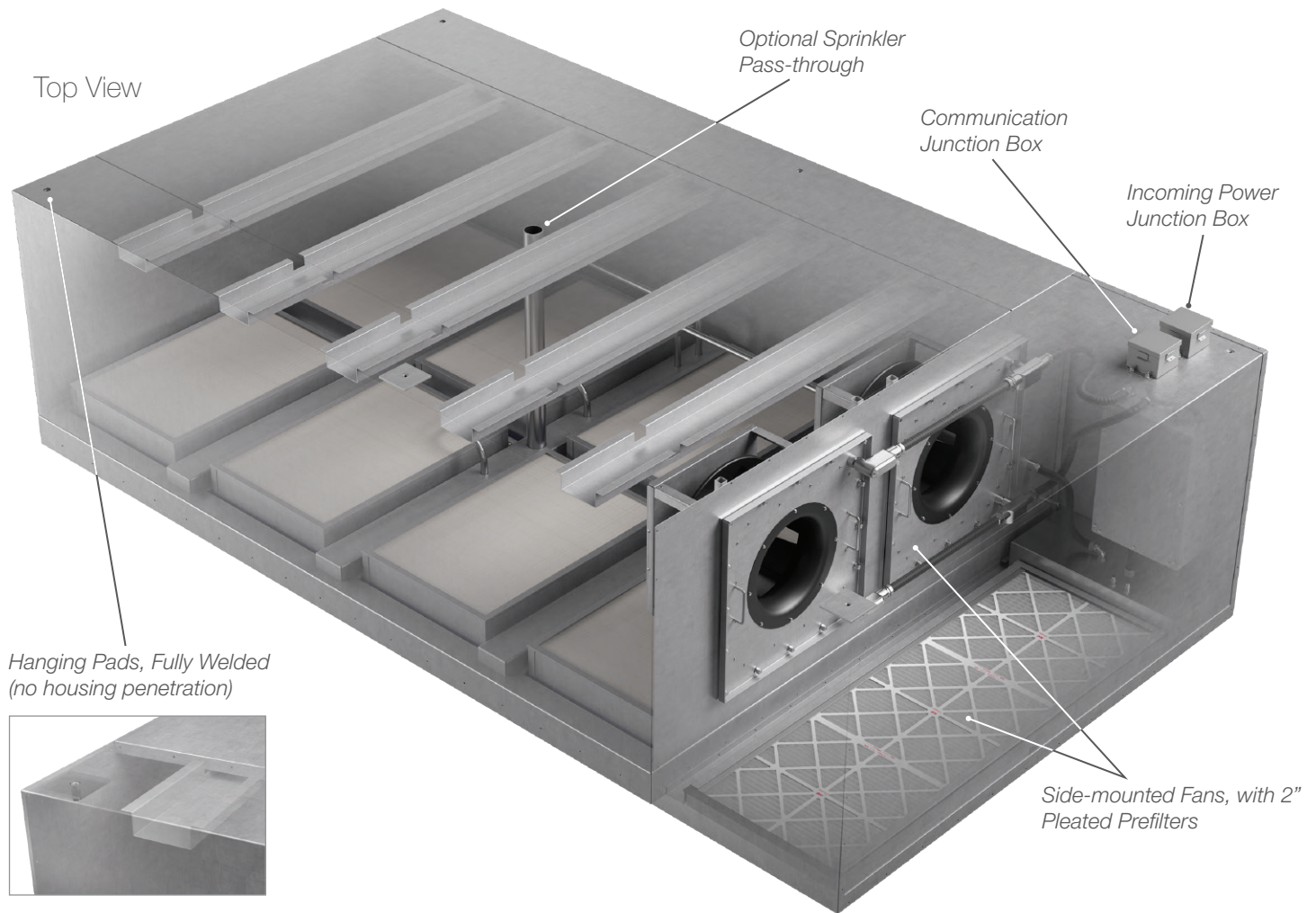


Key Benefits

Hanging Pads	Expedite installation and ensure a snug, air-tight fit within the environment
Sprinkler Pass-through	Helps protect against fire outbreak in environment
Power Junction Box	Enables easy connection to power source
Communication Junction Box	Allows easy linking of units to a control box or system
Pressure Port Tube	USP-compliant BAS DP port
40% Stainless Steel Grille	Ensures uniform airflow into the occupied space, while also protecting the media during wash-down procedures
Aerosol Sample Port	Enables roomside access for testing & validation purposes
Aerosol Injection Port	Allows for roomside introduction of challenge aerosol for testing & validation processes
LED Lighting with Dimmer Switch	Ensures ideal light levels and reduces shadows

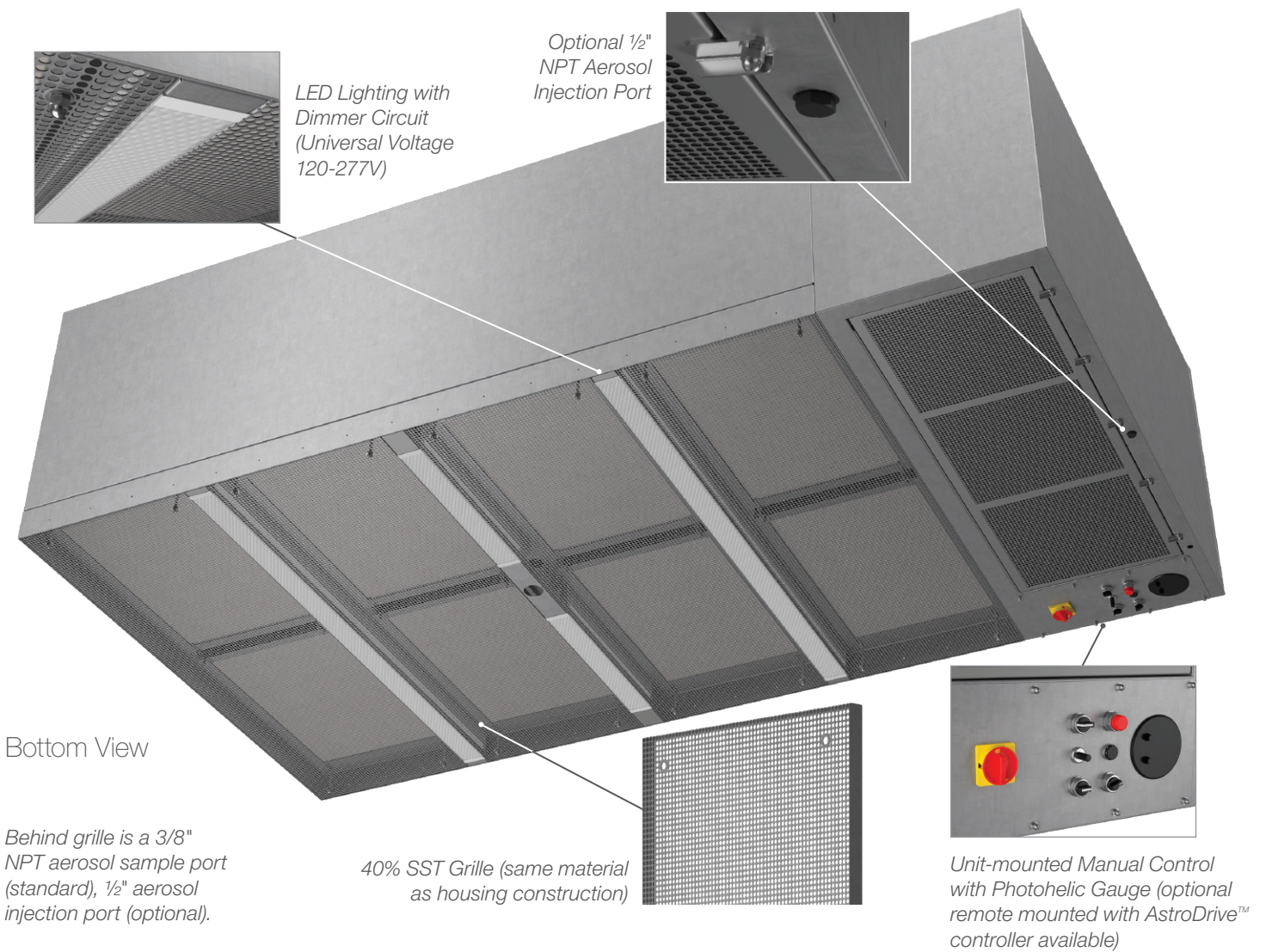
AstroClean™ FPS Module

The AstroClean FPS unit works similarly to the FPT version but instead draws air in from an integral side-mounted plenum. As a result, this unit requires less vertical space between the ceiling and the processes below that require a clean environment.



Features

Standard	Optional
Hanging Pads (All Thread)	230V or 460V 3PH Motors
40% Open SST Acorn Nut & Stud Mounted Grille	3404 or 316L SST Construction
LED Lighting with Dimmer Circuit	Continuously Welded Grid/Roomside or Continuously Welded Grid & Plenum
Pressure & Upstream Aerosol Sample Ports - 3/8" NPT Plug	#4 Finish Roomside Filtration Area Only or #4 Finish Roomside & All Exterior Surfaces
	No Perimeter Trim, 2" Field Installed Flush Ceiling Mount or Offset Ceiling Mount
	No Aerosol Injection or Roomside 1/2" NPT
	No Sprinkler Pass-through or Sprinkler Pass-through (Centrally Located)
	Unit Mounted Manual Control or Remote Mounted AstroDrive 200 Modbus RS-485



Bottom View

Behind grille is a 3/8" NPT aerosol sample port (standard), 1/2" aerosol injection port (optional).

40% SST Grille (same material as housing construction)

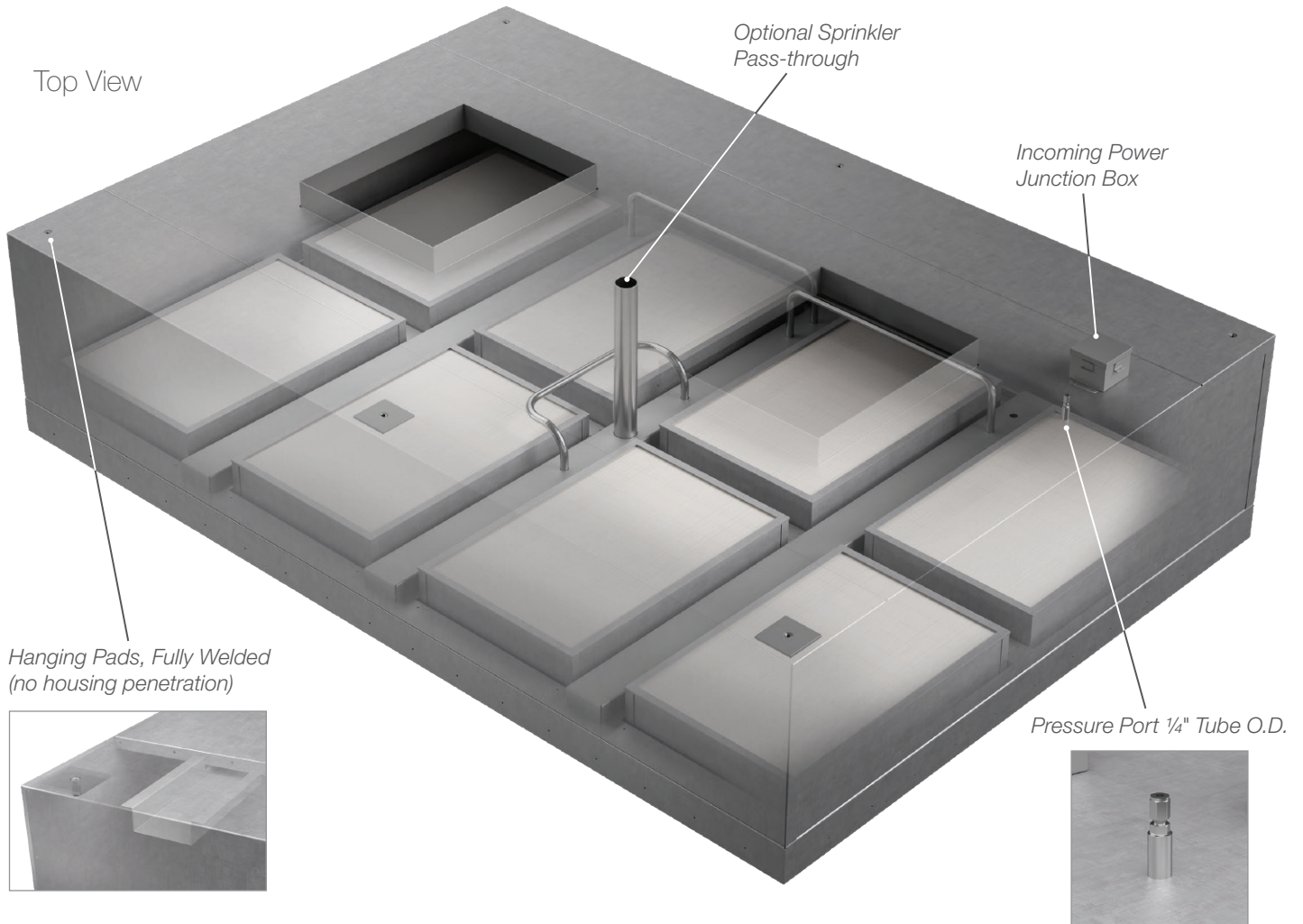
Unit-mounted Manual Control with Photohelic Gauge (optional remote mounted with AstroDrive™ controller available)

Key Benefits

Hanging Pads	Expedite installation and ensure a snug, air-tight fit within the environment
Sprinkler Pass-through	Helps protect against fire outbreak in environment
Power Junction Box	Enables easy connection to power source
Communication Junction Box	Allows easy linking of units to a control box or system
Side-mounted Fans	For use when supply ducting or plenum space is not available; recirculates air from environment
40% Stainless Steel Grille	Ensures uniform airflow into the occupied space, while also protecting the media during wash-down procedures
Aerosol Sample Port	Enables roomside access for testing & validation purposes
Aerosol Injection Port	Allows for roomside introduction of challenge aerosol for testing & validation processes
LED Lighting with Dimmer Switch	Ensures ideal light levels and reduces shadows
Unit-mounted Manual Control with Photohelic Gauge	Allows manual control of fan speed and light settings; Photohelic Gauge provides output signal to controller for air pressure differential management
Remote-mounted Control (optional)	Allows adjustment of light settings and networked connection via AstroDrive software to control fan speed; Photohelic Gauge provides output signal to controller for air pressure differential management

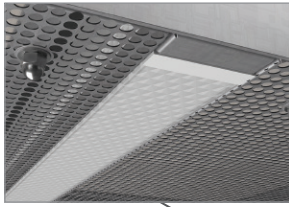
AstroClean™ DAP Module

As stated previously, the AstroClean DAP unit does not contain a powered fan inside. Rather, this module is designed to be connected directly to existing ductwork to purify air that has been forced through HVAC filters.

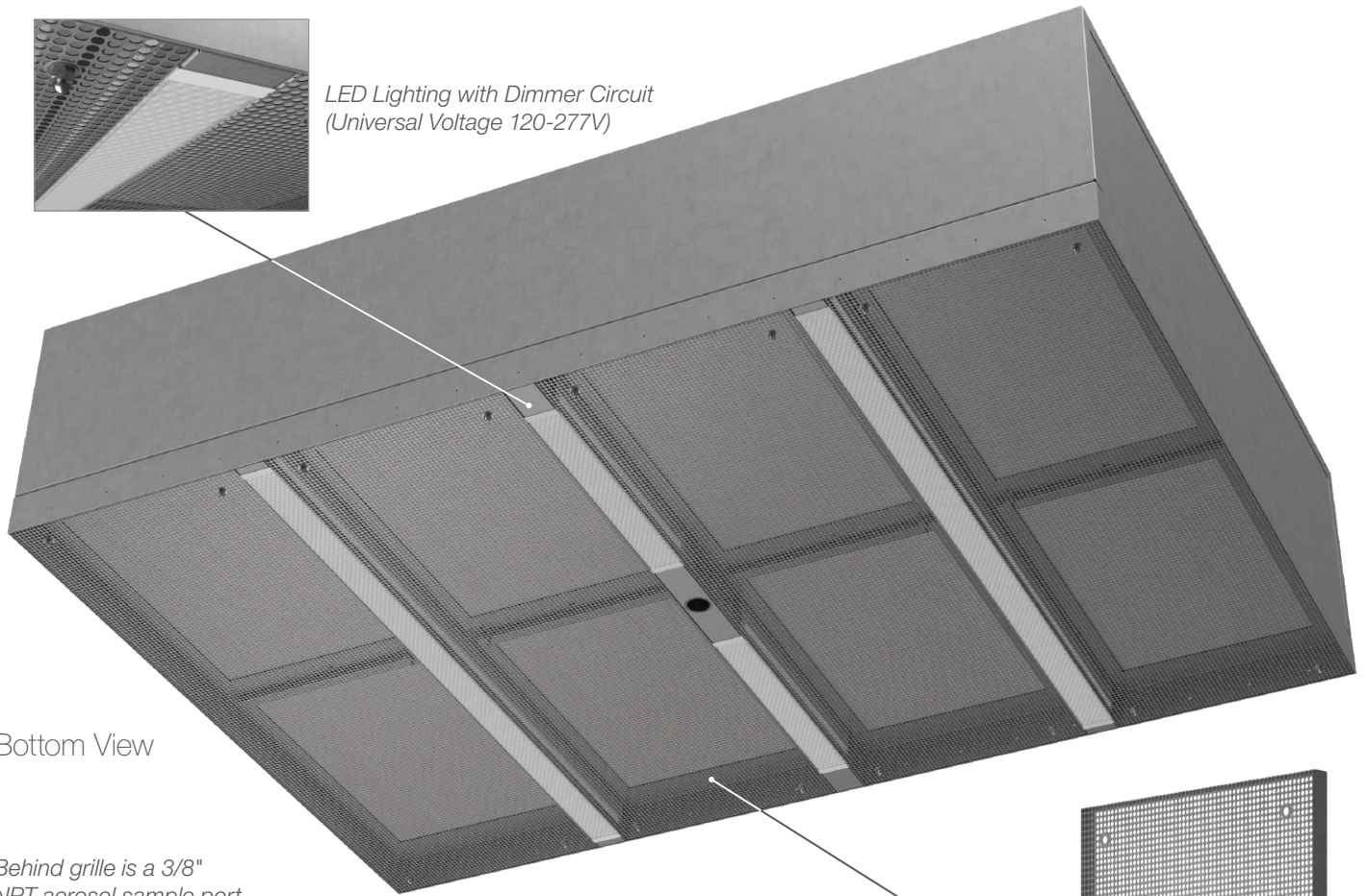


Features

Standard	Optional
Hanging Pads (All Thread)	3404 or 316L SST Construction
40% Open SST Acorn Nut & Stud Mounted Grille	Continuously Welded Grid/Roomside or Continuously Welded Grid & Plenum
LED Lighting with Dimmer Circuit	#4 Finish Roomside Filtration Area Only or #4 Finish Roomside & All Exterior Surfaces
Pressure & Upstream Aerosol Sample Ports - 3/8" NPT Plug	No Perimeter Trim, 2" Field Installed Flush Ceiling Mount or Offset Ceiling Mount
	No Aerosol Injection or Roomside 1/2" NPT
	No Sprinkler Pass-through or Sprinkler Pass-through (Centrally Located)
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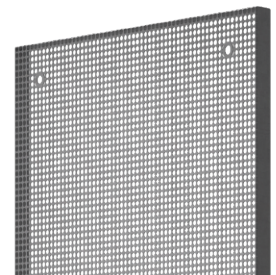
LED Lighting with Dimmer Circuit
(Universal Voltage 120-277V)



Bottom View

Behind grille is a 3/8" NPT aerosol sample port (standard), 1/2" aerosol injection port (optional).

40% SST Grille (same material as housing construction)



Key Benefits

Hanging Pads	Expedite installation and ensure a snug, air-tight fit within the environment
Sprinkler Pass-through	Helps protect against fire outbreak in environment
Pressure Port Tube	USP-compliant BAS DP port
40% Stainless Steel Grille	Ensures uniform airflow into the occupied space, while also protecting the media during wash-down procedures
Aerosol Sample Port	Enables roomside access for testing & validation purposes
Aerosol Injection Port	Allows for roomside introduction of challenge aerosol for testing & validation processes
LED Lighting with Dimmer Switch	Ensures ideal light levels and reduces shadows

AstroClean™ Uni-Directional Flow Module

Construction

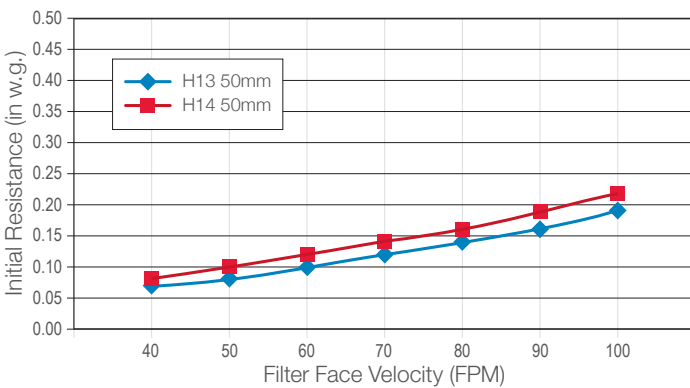
The plenum is constructed of 14 gauge Type 304 stainless steel with a #4 brushed finish outside and a 2B mil finish on the inside. All AstroClean units are continuously welded on the grid/roomside as standard. Additionally, they can be continuously welded on the plenum and grid as an option.

MEGAcel® II eFRM HEPA Filters

Mini-pleat style HEPA filters featuring dual layers of expanded fluoro-resin membrane media supported by a layer of spun-bonded synthetic media upstream and downstream sides.

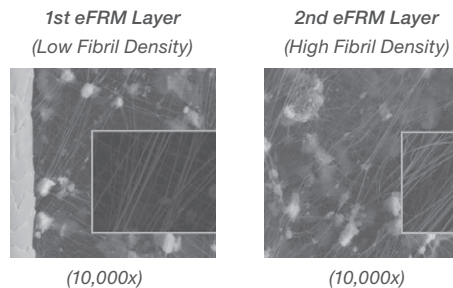
- Available efficiencies – 99.99% @ 0.3µm/99.95% @ MPPS (H13); 99.995% @ 0.3µm/99.995% @ MPPS (H14)
- Designed specifically for Life Sciences applications
- Compatible with photometric test methods

**MEGAcel® II eFRM H13/H14
Initial Resistance vs. Filter Face Velocity**



Filter Face Velocity (FPM)	40	50	60	70	80	90	100
H13 50mm (in w.g.)	0.07	0.08	0.10	0.12	0.14	0.16	0.19
H14 50mm (in w.g.)	0.08	0.10	0.12	0.14	0.16	0.19	0.22

eFRM Membrane Media:



AstroDrive™ AD-200 Wall-Mount Control

AstroClean modules to be controlled by unit-mounted manual control or remote-mounted AstroDrive AD-200 controls using MODBUS RS-485. The light on/off, alarm light, audible alarm, pressure gauge, power-on light, light dimmer, and disconnect switch will all be mounted in a NEMA 4X enclosure for field installation when using the AD-200 option.

- Stand-alone monitoring and control unit
- IP65 wall mounted
- eBUS or MODBUS interface
- Includes digital inputs & outputs
- Clear and simple menu guide
- Includes dry contact points



**AstroDrive 200
Wall-Mount
Control**



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AAF has a policy of continuous product research and improvement. We reserve the right to change design and specifications without notice.

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ISO Certified Firm

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