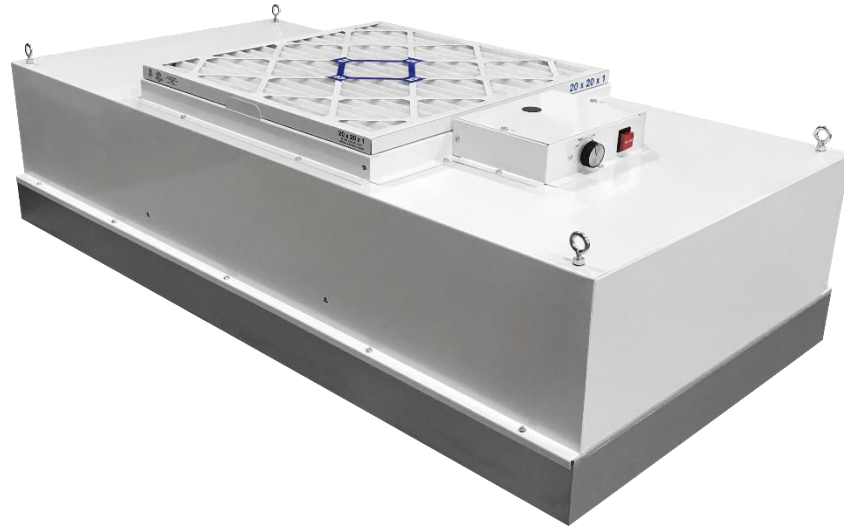




Technical Air Products
Find your clean space.

Installation, Operation & Maintenance

Fan Filter Units



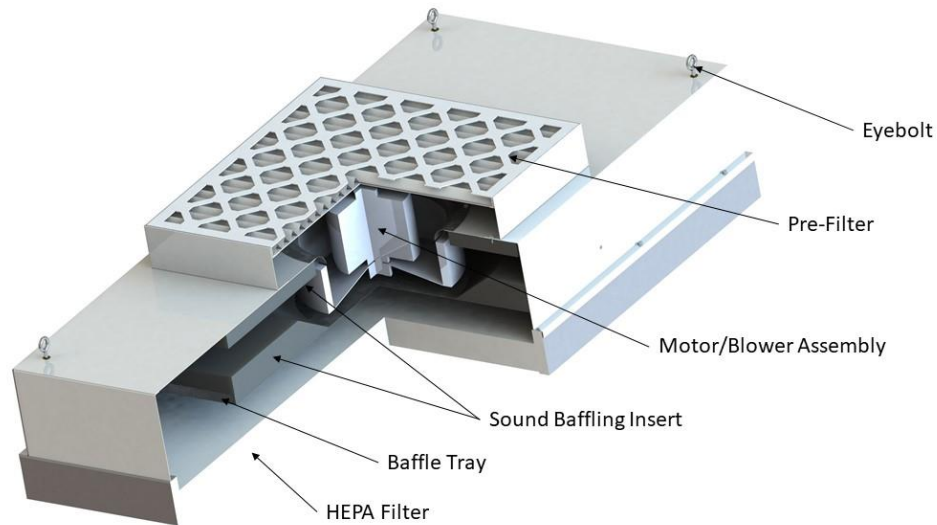
Technical Air Products

Rev. 04/12/21



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Introduction



No matter the critical environment you need to control, you will appreciate the price, performance, and quiet operation of Technical Air Products' motorized fan filter units (FFU). FFUs deliver clean air through high-efficiency particulate air (HEPA) filters, or ultra-low penetration air (ULPA) filters. Our quiet and efficient motorized filter modules are designed to achieve ISO 4 (class 10) levels of air cleanliness. Technical Air Products offers a wide variety of sizes, metal construction and motor type/voltages to better meet your needs. Whether you are looking for a single FFU with a power cord to make your work area cleaner, or you are looking for a smart, fully automated laminar flow cleanroom, Technical Air Products has a solution for you.



Critical Information & Warnings

- Immediately upon receiving your FFU's, inspect all boxes for shipping damage.
- If there is any noticeable shipping damage, note the damage on the Bill of Lading and immediately file a freight claim with the shipping company.
- **Do not touch the HEPA filter media.** A painted expanded metal screen exists as an option to protect the HEPA filter downstream side against accidental contact. However, touching the screen can still result in damage to the filter. Always lift and carry the filter by its aluminum frame. Damage to filter media will void the filter warranty.
- FFUs should never be placed on their filter. Instead place on their side. The blower assembly should never be used as a handle for moving. Only handle the unit by its sides.
- Before initial operation, inspect the FFU for noticeable damage or foreign objects.
- Prior to powering your Fan Filter Unit (FFU), verify that it is wired to an appropriate power supply. Each FFU contains an I.D. label that lists the proper input voltage.
- **WARNING!** To reduce the risk of fire, electrical shock, or injury to personnel:
 - Installation work and electrical wiring must be done by qualified personnel in accordance with all applicable codes and standards.
 - Before servicing or cleaning unit, disconnect power at the control panel or electrical service panel and properly tag or lock panel to prevent power from being accidentally switched on.
 - Operate the FFU only in the manner intended by Technical Air Products. If you have any questions, please contact us:

Technical Air Products

800-595-0020

customerservice@technicalairproducts.com



Installation Instructions Checklist

- Unbox and inspect the FFU for noticeable damage or foreign objects that could interfere with proper operation.
- Install gasket on the ceiling grid before installing FFUs to achieve proper sealing.
- Install the FFU into the ceiling with a minimum of two (2) people, making sure to never touch the filter media during the process.
- If required for seismic or added safety, install hang-wire from the eyebolts on the FFU to the structure above.
- If applicable, connect ductwork to the duct collar installed on the FFU.
- Connect main power or control wiring.
- Install the HEPA/ULPA filter and face grille if the FFU is a Room-side Replaceable (RSR) model.
- Turn FFU on and adjust airflow to required CFM.
- Leak test the FFU and filter and verify airflow with the proper measuring devices.

**Refer to installation Instructions on Page 5*

Installation Instructions

An FFU from Technical Air Products will arrive fully assembled with the exception of Room-side Replaceable (RSR) models with gel seal filters, which will require the HEPA/ULPA filters to be installed after the FFU is installed in the ceiling.

It is recommended that a minimum of two (2) people install the FFU due to the weight of the FFU and the fragile nature of the HEPA/ULPA filter.

Step 1: Remove the FFU from its box and inspect it for noticeable damage, or any foreign or loose objects that would cause it to not run as designed.

Step 2: Inspect the ceiling grid where the FFU will be installed and make sure gasket is installed properly, meaning there are no gaps and the gasket is a uniform thickness throughout.

Step 3: Raise the FFU through the ceiling grid at an angle until it is entirely above the grid and lower the FFU on to the pre-installed gasket.

Step 4: Per seismic requirements, local building codes, or for added safety, wire can be attached to the eyebolts preinstalled on the FFU and secured to the structure directly overhead.

Step 5: Make sure the FFU is level and is compressing the gasket evenly to ensure a proper air-tight seal.

Step 6: If applicable, connect ductwork to the duct collar installed on the FFU.

Step 7: Connect power and control wiring.

- Before hooking up FFU's to field power, ensure the rated voltage listed on the I.D. label of the FFU coincides to the field power available.
- If a power cord is factory installed on the FFU, simply plug it into a power outlet.
- If a prewire package has been provided by the factory, quick-connect Reloc cables for power and speed control have been provided. Connect each FFU to the corresponding Reloc cable provided with the control panel, based on the reflected ceiling plan provided.
- If the FFU is not prewired from the factory, and does not have a power cord installed, a qualified electrician will be required to wire field power to the FFU.

Step 8: If your FFU is a Room-side Replaceable (RSR) model with a gel seal, your HEPA/ULPA filter shipped separately. Install the filter into the filter housing from inside the cleanroom. The knife edge of the filter housing inserts into the gel track of the filter. Filter clips are provided to secure the filter in the filter housing. Once installed, the gel filter should not be removed to ensure a good seal.

Step 9: Turn on and set the speed of the FFU.

- If your FFU is provided with an on-board variable speed control, turn the speed dial clockwise until you hear and/or feel a "click". That turns the FFU power ON and is the FULL SPEED setting. Every turn of the dial clockwise, reduces the power and speed of the motor.



- Note: The SPX-EE (energy-efficient) models also have an ON/OFF switch that must be switched on before the variable speed control will be active.
- Note: If your FFU's are prewired from the factory, the variable speed controllers are located at the control panel and are not installed on each individual FFU.
- If your FFU model has an EC (electronically commutated) motor, it will be controlled by a control card. There are varying degrees of control cards, from basic cards that only control fan speed, to more extensive MODBUS cards that provide higher level operational and maintenance functionality and reporting.
 - For basic control cards, there is a variable speed control that requires a screwdriver to set the speed of the fan.
 - For more extensive control card instructions, please refer to documentation specific to the card and control system you are using.

Startup Checklist

- Check that voltage and all wiring are correct.

- Determine if the blower wheel is free to rotate and has not been subject to misalignment in shipping or installation. Check nuts, bolts, and screws for tightness.

- Apply power and check that the blower wheel is rotating in the correct direction, which should be clockwise when viewed from the top of the unit. Our fan powered filter products are tested for proper operation at the factory. However, problems can sometimes occur during shipment. If the blower does not turn or starts slowly, a wiring connection may have come loose during shipment. First disconnect power to the unit. Check that all wiring connections are intact. If everything appears to be correctly attached, refer to the troubleshooting instructions.

Cleaning and Maintenance

Periodic cleaning of all fan equipment is strongly recommended. Dirt accumulation on the impeller can cause vibration which greatly increases stress and load on motor bearings. A program of preventative maintenance will greatly increase fan and motor life. Inspect the fan wheel, motor, and filter **three months** after initial installation. Based on the findings after this three-month period, set up periodic inspection schedule. If the unit was exceptionally clean, every six or nine months may be acceptable; if extremely dirty, it may require monthly service.

The following items are required during periodic service:

1. Change prefilters
2. Clean area around motor/blower assembly.
3. The motors in these modules are equipped with pre-lubricated bearings which have a life of approximately 10 years of continuous use. No re-lubrication should be necessary for normal operation.

When is it time to replace your filter?

Typically, HEPA or ULPA filters will last 3-5 years before needing to be replaced. Some however, may last 5-7 or more years. Given that filters are used in such a wide variety of applications and environments, all with different requirements, there is no fixed answer. For instance, some fan filter units are required to operate at full capacity, while others may be operated at a fraction of that. Also, when prefilters are used, and they are changed out on a regular basis, they will extend the life of your final filters.

The best answer to this question is, you should change your HEPA or ULPA filters when they can no longer meet the performance level required. The most accurate test would be a particle count to see if your room is following the Federal or ISO standard for which it was designed. If not, make sure the prefilters are clean and the units are operating at full speed. If you prefer a quantitative value, most filter manufacturers suggest a static pressure of twice the initial resistance. For instance, for our standard HEPA filters, that value is 0.45" w.g. x 2 = 0.9" w.g. The pressure is measured in the supply air plenum, after the blower and before the final HEPA filter.

If your filter needs to be replaced, Technical Air Products stocks HEPA/ULPA filters, as well as prefilters, for all our products. Contact us at 800.595.0020, or sales@technicalairproducts.com for assistance.

Final Filter Replacement

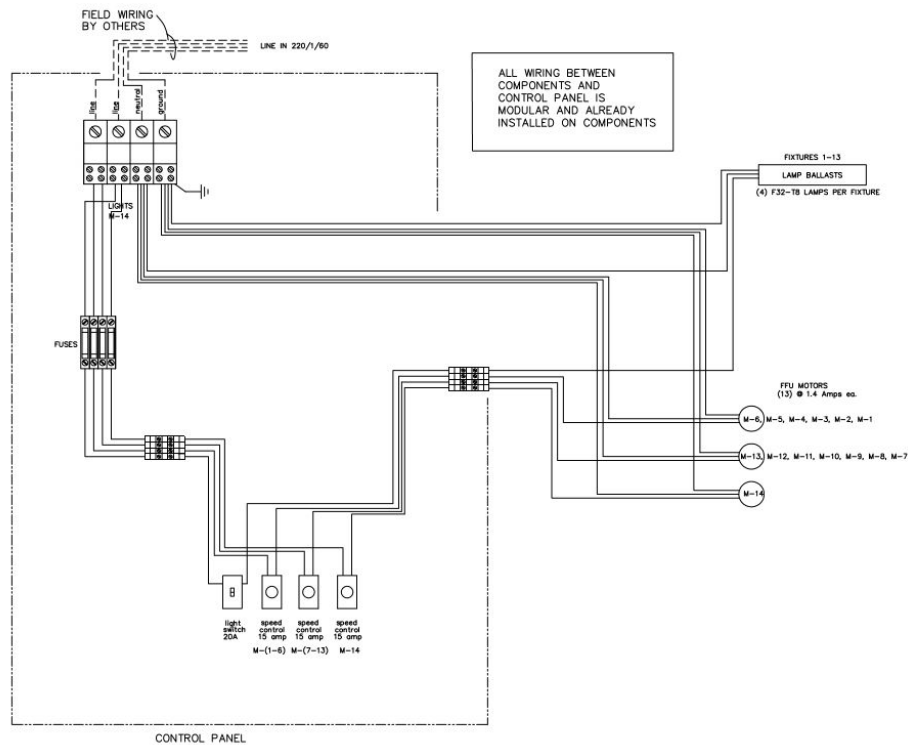
To replace the HEPA/ULPA filter, the module must be removed from the ceiling. For replacement, follow these steps:

1. Remove the unit from the ceiling.
2. Using a ¼" hex drive socket, remove the screws that hold the sheet metal housing to the filter.
3. Detach the housing from the old filter and place it on top of the new filter being careful not to allow the sheet metal to touch the filter media. Any contact will damage the media and cause a leak.
4. Center the housing on the new filter and replace the attachment screws.
5. The unit may now be re-installed in the ceiling.

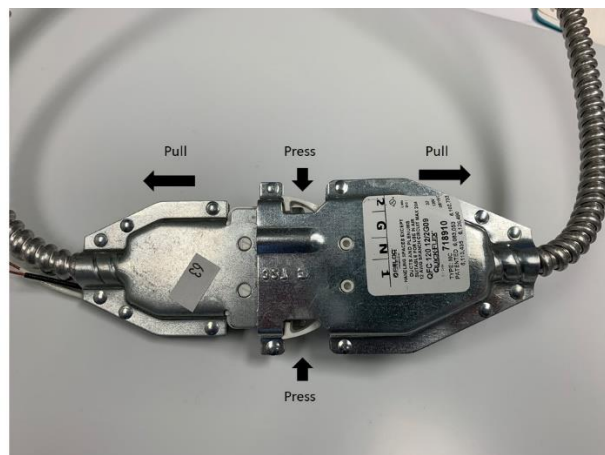
Replacement HEPA/ULPA filters come with new gasket, so no additional sealing will be required.

Prewiring Package

If you opted for the prewired system, your system would come with Reloc connectors attached to all FFUs and lights, as well as a control panel. An example of a control panel wiring diagram is provided below. All that is needed when installing is an electrician to run field power to the control panel after all FFUs and lights are connected.

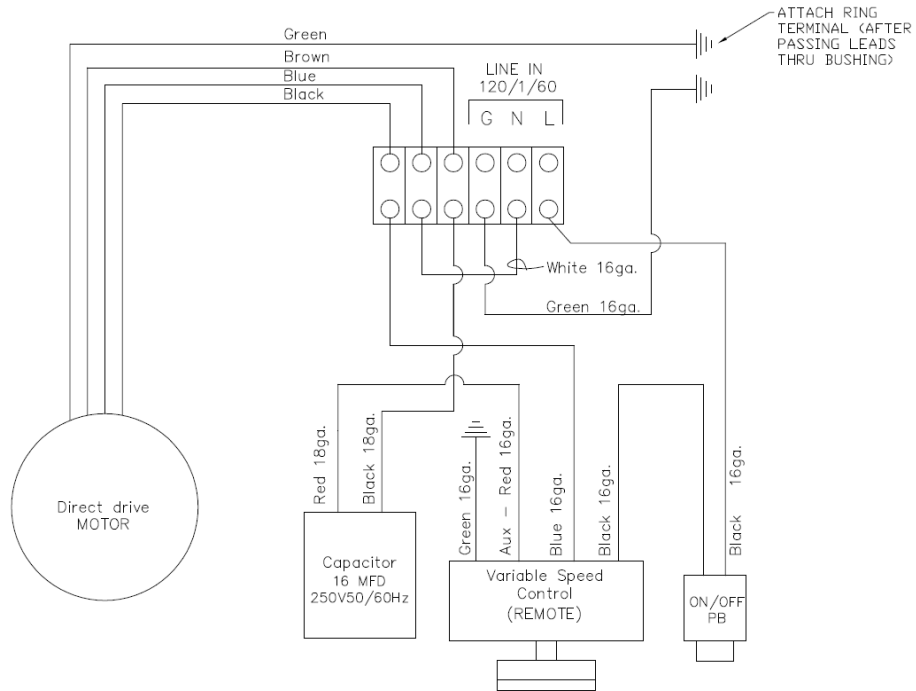


Reloc modular wiring systems offer a lower total installation cost than traditional wiring method. The plug-in connections snap together with ease. The electrical wiring system can be quickly installed and moved as needs change. The cable will only connect one way and will snap into place. To disconnect the two cables, follow the directions below.

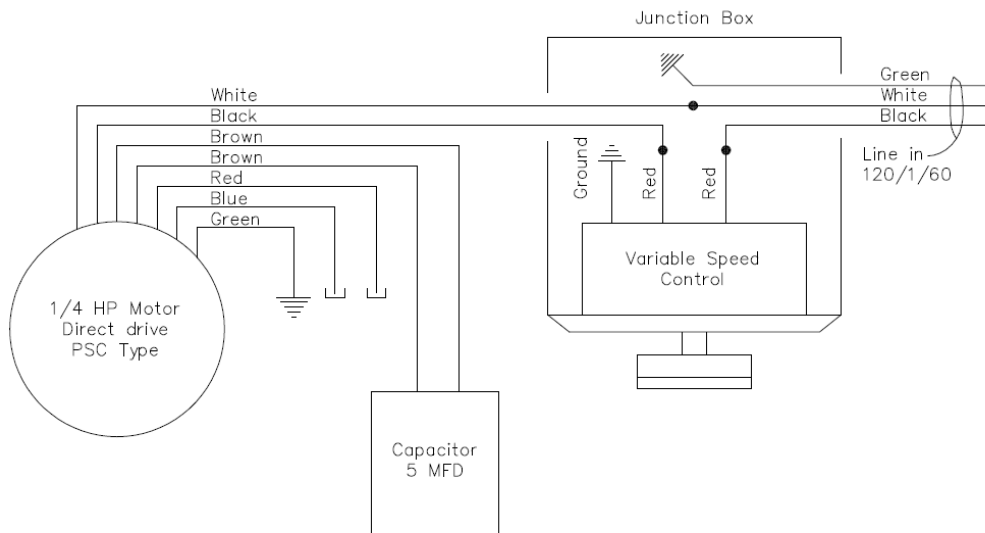


FFU Wiring Diagrams

Wiring diagrams are provided for reference. Wiring should only be done by a certified electrician and must meet NEC guidelines.



SPX-EE 120v W/ Power Cord



Standard SPX W/ Power Cord

3-Year Warranty

The Technical Air Products (TAP) 3-Year Warranty covers all new products manufactured by TAP. Technical Air Products warrants that its manufactured products will be free from defects in material and workmanship for a period of 3 years from date of original delivery.

Written notice of any claimed defect must be given to TAP within the warranty period and within thirty (30) days after such defect is discovered. Liability under this warranty is limited to either replacing or repairing, at TAP's election, any part or parts deemed defective after examination by TAP or an Authorized Service Representative. Any TAP product, or any of its parts, returned by the customer to TAP or an Authorized Service Representative via prepaid transportation, and which is found to be defective, will be repaired or replaced and returned to the customer prepaid. On the other hand, should a part be found not defective, inspection and handling charges may be charged to the customer or Authorized Service Representative by TAP.

This warranty does not apply to any TAP products, or component part(s), that have been subjected to misuse, accident, vandalism, environmental conditions, improper handling or application, maintenance neglect, including lack of lubricants or fluids; nor does it extend to the TAP products and/or parts which have been repaired or altered outside of TAP's plant or the facility of an Authorized Service Representative without the permission of TAP.

This warranty does not apply to routine maintenance or wearable parts, such as, but not limited to, filters, vinyl curtains, gasketing or sealing materials, etc. Moreover, this warranty does not extend beyond its original term for any TAP products or part replaced or repaired under warranty.

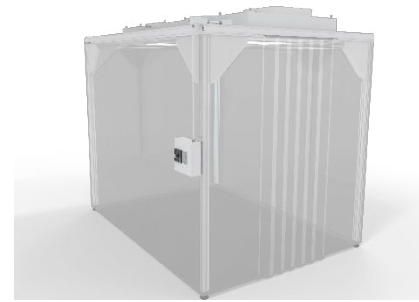
This warranty does not cover or provide credit for the following: product rental or another substitute equipment; certification or testing expenses, loss of time, income, sales, or profits; loss of the use of product, lodging; telephone calls or communication expense; lift truck; storage fees; injury or death to persons, or damage or destruction of property; or consequential, incidental, or punitive damages.

Labor Allowance: A labor allowance may be issued upon request at TAP's discretion. Allowable labor hours and a per hour labor rate will be determined by TAP on a case-by-case basis.

Warranty Claim Procedure: When a warranty situation arises, it is essential that the customer contact TAP's Customer Service Department at +1 616-863-9115, or customerservice@technicalairproducts.com. The customer will need to provide TAP with the product part number/serial number, and date of order. A customer service representative will analyze the problem and determine the next steps. In many cases TAP's technical support personnel will be able to analyze the problem and recommend adjustments that will solve the problem and reduce downtime. If further service is required, a TAP customer service representative will work with customer personnel to arrange a service provider and/or parts be sent to your facility for the repair as quickly as possible.

EXCEPT AS SET FORTH ABOVE, ALL WARRANTIES, CONDITIONS, REPRESENTATIONS, INDEMNITIES AND GUARANTEES, EXPRESS OR IMPLIED, WHETHER ARISING BY STATUTE, CUSTOM OF TRADE OR UNDER ORAL OR WRITTEN STATEMENTS MADE BY OR ON BEHALF OF TAP NEGOTIATIONS WITH CUSTOMER, DISTRIBUTOR, DEALER OR ANY REPRESENTATIVE, ARE HEREBY OVERWRITTEN AND EXCLUDED, AND NO LIABILITY SHALL ATTACH TO TAP, EITHER IN CONTRACT OR IN TORT, OR STRICT LIABILITY IN TORT, FOR ANY DAMAGE TO PROPERTY, LOSS OF PROFITS, DAMAGES, COSTS, CHARGES, LIABILITY OR EXPENSES, WHETHER DIRECT OR INDIRECT, CONSEQUENTIAL OR OTHERWISE, WHICH ARISE OUT OF OR IN CONNECTION WITH THE SALE OR USE OF ANY TAP PRODUCT OR THE SUPPLY OF SERVICES.

SUBJECT TO CHANGE WITHOUT NOTICE.



Softwall Cleanroom

Technical Air Products' softwall cleanrooms utilize high-strength 6063-T6 aluminum extrusions. We then encapsulate all parts in a durable coat of white powder-baked enamel that prevents corroding and contamination.

Other companies require their cleanroom components to be drilled and tapped, which can cause corrosion and compromise frame structure. We use a T-slot fastening system which requires no drilling and tapping, which makes our LogiClean® system much cleaner and easier to install.

Performance you can count on

Technical Air Products' softwall cleanrooms utilize high-strength 6063-T6 aluminum extrusions. We then encapsulate all parts in a durable coat of white powder-baked enamel that prevents corroding and contamination.

Other companies require their cleanroom components to be drilled and tapped, which can cause corrosion and compromise frame structure. We use a T-slot fastening system which requires no drilling and tapping, which makes our LogiClean® system much cleaner and easier to install.

Available Sizes	Standard rooms start at 4'x4', and are available in 2'x4' increments, up to 12'x12'. Custom sizes are available. Clear-spans up to 30'
Room Class	ISO Class 8 (100,000) to ISO Class 4 (10)
Frame Construction	High-strength 6063-T6 extruded aluminum
Finish	White powder-baked enamel
Filtration	Standard motorized HEPA fan filter units (FFU), 99.99% efficient at .3 micron. Several sizes and options available, including advanced automation and monitoring
Walls	40 mil clear standard vinyl around perimeter. Options include antistatic vinyl and 8" or 12" wide strips
Entries	12" strip entries available in 40, 60 and 120 mil
Lighting	2'x4' LED light panels standard. Other sizes and options available
Blank Panels	1/2" gypsum, vinyl faced on both sides with sealed edges
Electrical	FFUs are standard with a variable speed control and 8' power cord. Light fixtures have ballast wires inside a top-mounted access cover for connection
Voltage	Standard voltage for filters is 120/1/60, with options available of 220/1/50-60 and 277/1/60. Lights are universal voltage
Optimal Pre-wiring	Rooms can come with components factory wired with "plug and play" connections to a central control panel. The panel is a powder coated NEMA 1 enclosure with face-mounted variable speed controls and light switches



Rigidwall Cleanroom

Technical Air Products' rigidwall cleanrooms utilize high-strength 6063-T6 aluminum extrusions. We then encapsulate all parts in a durable coat of white powder-baked enamel that prevents corroding and contamination.

Other companies require their cleanroom components to be drilled and tapped, which can cause corrosion and compromise frame structure. We use a T-slot fastening system which requires no drilling and tapping, which makes our LogiClean® system much cleaner, and easier to install.

PERFORMANCE YOU CAN COUNT ON

Our motorized HEPA fan filter units (FFU's) are included with our cleanrooms, so we can guarantee the room will meet the level of cleanliness you require from Class 8 (100,000), to Class 4 (10). Our FFU's offer an exceptional level of performance, in a quiet, competitively priced package. Our cleanrooms also come standard with LED light panels, offering you long-lasting, energy-efficient operation, which saves you money.

Available Sizes	Rooms are available in 2'x4' increments, heights up to 16'. Clear-spans up to 30'
Room Class	ISO Class 8 (100,000) to ISO Class 4 (10)
Frame Construction	Steel and High-strength 6063-T6 extruded aluminum
Finish	White powder-baked enamel
Filtration	Standard motorized HEPA fan filter units (FFU), 99.99% efficient at .3 micron. Several sizes and options available, including advanced automation and monitoring
Walls	1/4" clear acrylic in powder-coated extruded aluminum frames. Standard frames are 4'x 8'. Clear polycarbonate, and white polypropylene, as well as antistatic acrylic or polycarbonate are also available
Entries	Doors can be hinged, sliding or strips. Hinged doors have hydraulic closers, heavy-duty stainless-steel hinges and aluminum pull handles. Panic hardware also available.
Lighting	2'x4' LED light panels standard. Other sizes and options available
Blank Panels	1/2" gypsum, vinyl faced on both sides with sealed edges
Electrical	FFUs are standard with a variable speed control and 8' power cord. Light fixtures have ballast wires inside a top-mounted access cover for connection
Voltage	Standard voltage for filters is 120/1/60, with options available of 220/1/50-60 and 277/1/60. Lights are universal voltage
Optimal Pre-wiring	Rooms can come with components factory wired with "plug and play" connections to a central control panel. The panel is a powder coated NEMA 1 enclosure with face-mounted variable speed controls and light switches