Polargy PolarPlexTM

Ceiling Supported 1–Tier System

Hot/Cold Aisle Containment System Specification

**PART 1 - GENERAL**

* 1. SUMMARY
1. A single upper tier Ceiling Suspended Aisle Containment System with Removable Hanging Vertical Panels and Sliding Doors used for either Hot or Cold Aisle Containment (HAC/CAC).

	1. SYSTEM DESCRIPTION
2. The Suspended Panel System (SPS) is to consist of tool-lessly removable aisle containment panels supported from the ceiling and independent of the equipment racks. Also, each SPS will have Sliding Doors. Doors will be supported from either the ceiling or attached to the equipment racks. Gaps between equipment racks will be filled with Rack Gap Panels supported from the floor and adjacent equipment racks.

1.3 DESIGN REQUIREMENTS

1. Suspended Panels shall be vertically hanging containment panels that install and remove from a support track without tools.
2. Provide a sliding door at the end of each aisle. The sliding door should be a dual door, center opening type with auto-close and hold open features.
3. The SPS shall have the capability to remove 1 or more equipment racks from the continuous row without removal of the Suspended Panels to allow the entire exchange of a fully loaded equipment rack.
4. Suspended Panels shall be twin-wall polycarbonate retained in an aluminum hook channel. Twinwall material shall be Class A fire-rated material.
5. Prefabrication of components in order to speed installation.
6. Structural loads for cable and power pathways/trays, communication cables and power cables/busways, and light fixture are not to be supported from the SPS.
7. Where equipment racks are not installed, each aisle shall include Floor Supported Rack Gap Panels and provisions to mount them. Securing of Rack Gap Panels shall be to the floor and adjacent equipment racks.

1.4 PERFORMANCE REQUIREMENTS

1. The HACS/CACS shall have containment integrity to meet or exceed a minimum combined surface area leakage of no more than 3.0% of the total contained zone surface area.
2. The HACS/CACS shall have containment integrity such that no gaps are larger than 0.25” other than the door bottoms that serve as safety pressure relief path when exhaust air and supply air fall out of balance.

1.5 SUBMITTALS

1. Bid Submittals:
	1. Product Data: Provide cut sheets, specification sheets, installation instructions, and material characteristics for manufactured products and assemblies.
	2. Indicate HAC/CAC system layout, plans and elevations, rough dimensions, weights, and system components requiring interface with other systems or structures.
	3. Include the time required for preparing shop drawings, descriptive literature, and material lists.
	4. Include a schedule of the time required for manufacturing and onsite final fabrication and installation time.
	5. Indicate a preferred sequencing and coordination with other trades and installation activities.
2. Action Submittals:
	1. Product Data: For each product and accessory include dimensions and manufacturers' technical data on features, performance, ratings, and finishes.
	2. Shop Drawings for each HACS/CACS: Dimensioned plans, elevations, sections, and details. Include floor plans showing dimensioned layout and support locations, type of support, and weight on each support.
	3. Documents shall also be submitted in PDF for Drawings and Microsoft Word for text format documents.
3. Closeout Submittals:
	1. Spare and Accessory Part/Price List.
	2. Final Shop Drawings if as built substantially different from original drawings.

1.6 QUALIFICATIONS

1. Manufacturer: Company specializing in manufacturing products specified with minimum six years documented experience.
2. Installer: Company specializing in the installation of products and systems specified with minimum six years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to the project site in original wrappings and containers, labeled with manufacturer’s name, and aisle/room/location number, if any.
2. Coordinate with customer for material delivery and staging. The customer shall store/stage materials in their original, undamaged wrappings and containers, inside an area protected from weather, moisture, soiling, extreme temperatures, and humidity.
3. Inspect for dents, scratches, or other damage. Replace damaged products.

1.8 WARRANTY

1. HACS/CACS shall be warranted against defects in materials and workmanship for a one-year period for the first 12 months after initial start-up or 18 months after ship date, whichever occurs first.

**PART 2 – PRODUCTS**

2.1 MANUFACTURERS

1. Basis of Design: Product specified is the PolarPlexTM Suspended Panel System as manufactured by Polargy, Inc. HACS/CACS specified is to establish a standard of quality for design, function, materials, and appearance.
2. Subject to compliance with this specification, the following Manufacturers may be proposed on the project:
	1. Polargy, Inc.
3. Substitutions: Proposed substitutions must be approved prior to bidding.

2.2 GENERAL

1. This hot aisle/cold aisle containment system shall enclose two adjacent rows of equipment racks. The Suspended Panel System (SPS) includes aisle end sliding doors at the ends of each aisle and vertical, hanging containment panels supported from the ceiling and independent of the equipment racks. Vertical panels can be installed and removed without tools. Rack Gap Panels, sealing materials and blanking panels are included as needed.

2.3 STRUCTURE

1. The HACS/CACS above rack plenum shall consist of a series of hanging panels that are aluminum trimmed at the top and hold 8mm thick twinwall pieces. Panels hook onto a support track installed at the ceiling.
2. Suspended Panels shall be tool-less for installation and removal and hang vertically, in a plumb position.
3. There shall be a continuous surface connection between support track and suspended panels to maintain a continuous containment seal.
4. The support track shall incorporate splicing mechanisms with both straight and right angle connections in order to align and support the track.
5. Bottom trim pieces shall be available to capture and align the bottom of the suspended panels and shall accommodate 3” of total vertical movement (2” downward, 1” upward) at the interface between the SPS and the top of the equipment racks. Bottom trim pieces shall be attached to the tops of equipment racks with either hardware or 3M Dual Lock.
6. Sliding Doors shall have automatic closing with no threshold and include a mechanism for holding the door in an open position; the mechanism shall be removable without tools in order to accommodate sites where operators prefer to make this feature temporary.
7. Sliding Doors shall be adjustable in height to easily accommodate various height equipment racks and shall have an adjustment range to accommodate rack heights between 42U and 50U.
8. Sliding Doors shall have clear, twin-wall polycarbonate windows comprising over 75% of each door opening. Twinwall material shall be Class A fire-rated material. Twin-wall panel shall be field replaceable in order to easily swap out damaged inserts with a replacement time of less than 20 minutes to minimize disruption to containment.
9. Rack Gap Panels shall be floor mounted and have provisions for securing to the adjacent equipment racks. Panel sizes and quantities shall be coordinated with the owner.
10. Rack Gap Panels shall be aluminum-framed panels with 8mm thick twin-wall polycarbonate inserts. Panel frame members shall be lightweight anodized aluminum with a 1” tall profile.
11. Empty equipment racks shall be blanked off with 42U full length blanking panels. 42U-blanking panels shall install without tools using push rivets. 42U-blanking panels shall be printed with server images to give the appearance of a fully populated cabinet.
12. Miscellaneous gaps of shall be sealed with fire safe air dam foam or air dam barriers. Air dam foam shall be provided in 24”x24”x2” sheets that are pre-scored at 1” increments so that various sizes and shapes can be easily made. Air dam barriers shall be provided in various sizes and shall include magnetic or Velcro options for attaching the barriers to equipment racks.

**PART 3 – EXECUTION**

3.1 PREPARATION

1. Ceiling structure for supporting the Suspended Panel System will be by others and shall be structurally engineered to support the weight of the system.
2. Coordinate sequence of installation with owner and other trades.
3. Assure ceiling height is within allowable tolerances prior to start of installation.

3.2 INSTALLATION

1. Install SPS vertical panels and sliding doors in accordance with manufacturer's shop drawings and written instructions.
2. Doors must be secured to a framing system or to equipment racks and to the floor.
3. Level and align doorframe prior to permanently fastening.
4. Fill and seal miscellaneous gaps with air dam foam or air dam barriers.
5. Installers shall provide appropriate installation hardware as defined by local code or the authority having jurisdiction (AHJ).

3.3 ADJUSTING AND CLEANING

1. Adjust doors for smooth operation, and, when closed, the door shall be centered on the aisle ends.
2. Clean entire HACS/CACS assembly with mild soap and water solution.

END OF SECTION