The Extron PVM 220 is an enclosure for the safe mounting of PoleVault® system devices in the plenum area of a suspended ceiling.

The main enclosure fits on a 24 by 24 inches (61 by 61 cm) framed tile space and is used to mount a PoleVault System switcher and the power supply, and other optional Extron AV devices. The PVM 220 comes with a detachable device mounting plate that makes installation of PoleVault devices and accessories easier.

The PVM 220 is UL Listed for use in plenum airspaces: meets UL 2043 for heat and smoke release.

Suitable for use in environmental air space in accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1. The product has been additionally investigated to UL 2043, "Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces."

NOTES:

• The following is an example list of products that are approved for use in the UL 2043 rated Extron PVM 220 enclosure as part of the Extron PlenumVault System: • PVS 305SA IP PoleVault Switcher • PVS 405D PoleVault Switcher • PVS 407D PoleVault Switcher • CC 100C Network Codec • IPL 250 IP Link Controller • SW2 HDMI Switcher

In addition, any Extron product that has been individually tested and UL 2043 approved can also be used. For a complete list of products that are approved for use with the plenum rated PVM 220, visit [www.extron.com](http://media.extron.com/download/files/compatibility/plenumvault_ul_2043_approved_products.pdf), or contact Extron.

• The PoleVault switcher and other AV devices are not supplied with the PVM 220.


Pre-installation

Read all instructions before installing this enclosure.

IMPORTANT INSTRUCTIONS:

• Installation of this product must be done by a qualified, professional installer.

•Installation of this product (including the wiring of devices) must meet national electrical codes, and local building standards and codes.

• A readily accessible disconnect device shall be incorporated in the building installation wiring.

• Building installation wiring to be protected by a UL Listed circuit breaker rated 20 A.

• Observe all local and national building and safety codes, UL requirements, and ADA Accessibility Guidelines.

• "Only for use with Extron's UL Listed ITE or Audio/Video equipment." or equivalent.

Identify the location where the PVM 220 will be installed. Typically this would be a T-grid suspended ceiling with minimum 24 x 24 inch tiles, close to the display device location. Take into consideration access to a power source and the proximity of other utilities (gas, water, fire sprinklers, and so forth). Also consider the other devices that are associated with the PoleVault switcher, such as speakers, input and output devices, wallplates and control devices, and the facility communication systems (such as a department information system).

PVM 220 Features

The PVM 220 consists of a main enclosure, an access door, and a device mounting plate (see figure 1). The device mounting plate fits onto the door frame and allows access to the devices and cables when the door is open. Additional installation hardware is needed for this installation, and it should be supplied by the installer.

Included hardware for installation:

<table>
<thead>
<tr>
<th>For Enclosure Installation</th>
<th>Size and (Quantity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspension cables</td>
<td>15 feet x ½ inch dia. (4)</td>
</tr>
<tr>
<td>Suspension cable locks</td>
<td>(4)</td>
</tr>
<tr>
<td>Lag eye bolts</td>
<td>1¼ x ¼ inch (4)</td>
</tr>
<tr>
<td>Cable clamps</td>
<td>1 inch (1), ¾ inch (2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For Device Mounting</th>
<th>(Quantity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4-40 device mounting screws</td>
<td>(10)</td>
</tr>
<tr>
<td>Zip ties</td>
<td>long (4), short (15)</td>
</tr>
<tr>
<td>Signal cable tie downs</td>
<td>(15)</td>
</tr>
</tbody>
</table>
Installation

Step 1 — Remove the device mounting plate from the access door.
   a. Open the access door and remove the two screws* that are located in
      the bottom corners of the plate (left and right sides), near the door
      latches and door tether "T."

   **NOTES:**
   - Door screws used are either Phillips screws or
     thumbscrews. Overall procedure is the same.
   - Do not remove any of the screws located below the hinges.

   b. Swing the bottom of the plate up to separate it from the door frame,
      then slide the plate to the right until it becomes free of the hinge pins
      on the door frame.

   Retain the device mounting plate for later use
   (see step 6 on page 4).

Step 2 — Remove ceiling tile and install suspension cables.

   For threaded rod installation see step 3, threaded rod section on the next page.

   a. At the location where the PVM 220 is to be installed, remove the ceiling
      tile and mark the T-grid for that tile, then remove the adjacent tiles to make
      working on the grid easier.

   b. At an approximate angle of 10 degrees out from each corner of where
      the PVM 220 will be installed, mark and drill four holes in the structural ceiling for the suspension cable anchors.

   c. Screw a lag eye bolt, or an appropriate anchor (not supplied) into each hole.

   d. Thread the looped end of the suspension cable through the bolt eyehole,
      pass the rest of the cable through the loop, and tighten.
      Allow each cable to hang down.

Step 3 — Suspend the main PVM 220 enclosure from the ceiling.

   a. Lift and place the PVM 220 enclosure carefully onto the T-grid so
      that it sits squarely on the grid.

   b. Holding a cable lock, press the locking pin down (following arrow
      directions) and pass the loose end of one the cables down through
      the large hole in the lock. Ensure that about 12 to 15 inches of cable
      has exited the bottom of the lock.

      Pass the loose end of the cable directly through the corner hole on
      the PVM 220 enclosure and then back up through the other large hole
      in the lock. Ensure that at least 6 inches of cable comes out through
      the top of the lock.

   c. Repeat for each corner.

   d. Adjust the cable tension through all locks, making each cable taut
      without lifting the PVM 220 off the T-grid.

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*[Assuming the asterisk notation in the document refers to screws]*
For threaded rod installation

**NOTES:**
- ¼ inch or ⅜ inch diameter threaded rods are recommended for installing this product.
- The threaded rod should be properly secured to the ceiling structure. For example, properly fasten a unistrut to the ceiling structure and attach threaded rods using nuts and washers.

Secure the frame to the structural ceiling using threaded rods.

To do this:

a. Attach four rods to the support structure by using, for example a unistrut, one over each corner of the PVM 220 installation location.

b. Attach a rod to each corner securing point of the PVM 220 with nuts and washers (see figure 5, at right).

c. Adjust all the nuts to secure the PVM 220 to the ceiling, keeping it level and without lifting the unit from the T-grid.

**NOTE:** The nuts and washers for threaded rod installation are not supplied with the PVM 220.

**Step 4 — Run AC power wiring to the AC module in the PVM 220.**

If power is not available close to the installation location, install a junction box or power source at the area.

**NOTES:**
- This must be done by a qualified electrician and must meet local and national electrical, building and safety codes and all the regulatory requirements. See the **Important Instructions** on page 1.
- Use metal conduit only to run wire to the AC module.
- Do not run power cable in the same conduit as signal cables.
- Use 12 AWG gauge solid copper wire only, as required by the installed power receptacles.

Run the power cable through metal conduit and wire it into the PVM 220 power module.

To do this:

a. Unscrew the two center screws (left and right side) of the power inlet/control panel and remove from the enclosure (see figure 6).

b. Unscrew the two screws on the corners and detach the outer cover.

c. Attach the metal conduit to the outer cover.

**NOTES:**
- Remove only the knockouts that are to be used for cabling. Leave intact the unused knockouts.
- The three knockout sizes are ½ inch to ¾ inch, ¾ to 1 inch, and 1 to 1¼ inch.

d. Run the wires through the conduit and connect to the AC receptacles.

e. Reassemble the power module.

f. Reattach the module to the enclosure.

**NOTE:** The power module outlets must be used to power installed AV devices only.
Step 5 — Run signal and control cables to the PVM 220.

Run the signal and control cables either into cable clamps or through conduit attached to the PVM 220 enclosure (see figure 7).

To install a cable clamp on the enclosure:

a. Select a suitable sized cable clamp for the quantity and thickness of cable to be fed into the enclosure. See the notes on page 3, Step 4 for knockout sizes.

b. Identify the most suitable cable entry point and remove one or more knockouts as needed.

   **NOTE:** Remove only the knockouts that are to be used for cabling. Leave intact the unused knockouts.

c. Remove the large nut from the back of the cable clamp and insert the clamp into the enclosure knockout from the inside.

d. Place the nut on the clamp and tighten to secure.

e. Pass the cables through the clamp into the enclosure. Leave enough cable slack at the PVM 220 to ensure cable connection to any device is maintained when the access door is open.

f. Tighten down the cable clamp until the cables are held firmly. Avoid damaging or bending cables at too sharp an angle.

   **NOTE:** See the PoleVault System Installation Guide for full cable connection details.

Step 6 — Install devices onto the device mounting plate.

**NOTE:** The maximum door load is 15 lbs (6.8 kg).

To mount the devices and accessories:

a. If mounting a PoleVault (PVS) switcher, carefully align the switcher with the appropriate holes in the marked location on the device mounting plate (the location is indicated by a white device outline and two arrows, see figure 8, at right). Non-PVS devices can be mounted anywhere within the enclosure.

   **NOTE:** The PVS switcher must be mounted in the designated area ONLY. This ensures that the switcher is positioned correctly for proper ventilation.

b. Secure the PVS switcher with the supplied #4-40, ¾ inch mounting screws, tightening each one until snug. Do not overtighten.

c. Align the power supply with the appropriate holes in the marked location on the device mounting plate (the location is indicated by a white device outline and three arrows). Secure using the supplied screws.

   **NOTE:** Replacement power supplies must be either the equivalent Extron power supply, or a UL Listed NEC Class 2 power supply.

d. Mount all other devices following the procedures in the supplied device guide.
Step 7 — Cut and install the ceiling tile in the access door.

**NOTES:**
- The door can accept a ceiling tile with a thickness of ½ inch to 1¼ inches. Check the tile thickness before cutting.
- If the ceiling tiles have a specific pattern direction, ensure the overall pattern direction is maintained when cutting and fitting the cut tile insert into the access door.

a. Mark the dimensions (21.5 inches by 21.875 inches) for the PVM 220 access door on the ceiling tile and cut the tile to size.

b. With the access door open, insert the cut ceiling tile into the door frame (see figure 11, below right).

Step 8 — Install the device mounting plate onto the access door.

To fit the mounting plate and devices on the access door:

a. Align and slide the device mounting plate onto the two hinge pins located at the top of the door frame.

b. Secure the plate into place with the two mounting plate screws, located at the bottom of the door frame.

Step 9 — Connect the cables to the devices.

**NOTES:**
- See the PoleVault System Installation Guide or the relevant PoleVault switcher user guide for connecting cables and devices to the PVS device.
- For cable connections to optional devices see the relevant device guide or manual.

Plug in the fan controller cable to the switcher power supply. The fan comes pre-wired to the controller in the enclosure.

**NOTE:** The fan is controlled automatically by the internal temperature of the PVM 220. The fan can also be turned on or off manually (see below for wiring). Manually controlling the fan overrides the automatic thermal control mode.

The fan can be wired to a control system for manual On/Off as follows (see figure 12 for connectors):

- For manual On, wire a latching relay to the On and Ground connectors on the fan controller.
- For manual Off, wire a latching relay to the Off and Ground connectors on the fan controller.

Connect and dress the other device cables as needed, providing enough slack to open and close the access door.

Step 10 — Verify and configure the setup.

Turn on the power to all the devices. Verify and configure the system. See the relevant PoleVault switcher user guide available at www.extron.com for full details.
Step 11 — Attach the door tether to the door.
The PVM 220 enclosure has a door tether cable installed on
the right side of the enclosure (when viewed from the front).

After the device mounting plate is installed, the tether should
be attached to the door to ensure safety when the door is
opened.

To attach the tether to the door:

a. With the door fully open, locate the door tether
   attached within the enclosure. The tether
   has a looped end to be attached to the door.

b. In the lower corners of the door locate the cutout with
   a "T" shaped metal tab (see figure 13).

c. Stretch the tether and close up the door until the loop on
   the tether can be carefully slid over the "T" tab on
   the door. Ensure the loop is completely over the "T."

d. Carefully lower the door to the full extent of the tether
   to ensure it functions correctly.

Step 12 — Secure the door latches.
Both door latches can be made secure so the door cannot
be opened accidentally or inadvertently.

To secure the latches close the door and tighten down the
small set screws onto the latch (see figure 14).
For full safety secure both latches.

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PVM 220 Enclosure Dimensions

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