

PoleVault IP Systems

Featuring the PVS 305SA IP Switcher

ALSO AVAILABLE:
The PoleVault® System
Installation Video.
View it at www.extron.com.



Extron Electronics
INTERFACING, SWITCHING AND CONTROL

Safety Instructions

Safety Instructions • English

WARNING: This symbol, ⚠, when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

ATTENTION: This symbol, ⚠, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, www.extron.com.

Instructions de sécurité • Français

AVERTISSEMENT: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

ATTENTION: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec le matériel.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, www.extron.fr.

Sicherheitsanweisungen • Deutsch

WARNUNG: Dieses Symbol ⚠ auf dem Produkt soll den Benutzer darauf aufmerksam machen, dass im Inneren des Gehäuses dieses Produktes gefährliche Spannungen herrschen, die nicht isoliert sind und die einen elektrischen Schlag verursachen können.

VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, www.extron.de.

Instrucciones de seguridad • Español

ADVERTENCIA: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de voltaje peligroso sin aislar dentro del producto, lo que puede representar un riesgo de descarga eléctrica.

ATENCIÓN: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento recogidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, www.extron.es.

Chinese Simplified (简体中文)

警告: ⚠ 产品上的这个标志意在警告用户该产品机壳内有暴露的危险电压, 有触电危险。

注意: ⚠ 产品上的这个标志意在提示用户设备随附的用户手册中有重要的操作和维护(维修)说明。

关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容, 敬请访问 Extron 网站 www.extron.cn, 参见 Extron 安全规范指南, 产品编号 68-290-01。

Chinese Traditional (繁體中文)

警告: ⚠ 若產品上使用此符號, 是為了提醒使用者, 產品機殼內存在著可能會導致觸電之風險的未絕緣危險電壓。

注意: ⚠ 若產品上使用此符號, 是為了提醒使用者。

有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊, 請瀏覽 Extron 網站: www.extron.cn, 然後參閱《Extron 安全性與法規遵守手冊》, 準則編號 68-290-01。

Japanese

警告: この記号 ⚠ が製品上に表示されている場合は、筐体内に絶縁されていない高電圧が流れ、感電の危険があることを示しています。

注意: この記号 ⚠ が製品上に表示されている場合は、本機の取扱説明書に記載されている重要な操作と保守(整備)の指示についてユーザーの注意を喚起するものです。

安全上のご注意、法規遵守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイトwww.extron.jpより『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01)をご覧ください。

Korean

경고: 이 기호 ⚠, 가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

주의: 이 기호 ⚠, 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(www.extron.co.kr)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

FCC Class B Notice



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.
For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the “[Extron Safety and Regulatory Compliance Guide](#)” on the Extron website.

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

DANGER: A danger indicates a situation that **will** result in death or severe injury.

WARNING: A warning indicates a situation that has the **potential** to result in death or severe injury.

CAUTION: A caution indicates a situation that **may** result in minor injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “Ø” is used for the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32

C:\Program Files\Extron

Variables are written in slanted form as shown here:

ping xxx.xxx.xxx.xxx -t

SOH R *Data* STX *Command* ETB ETX

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

Introduction

Overview

This guide covers the installation of the Extron PoleVault IP System in a drop ceiling room with a wood or concrete structural ceiling. If the location has a concrete or beam style ceiling, alternative ceiling mounts can be obtained separately from Extron.

It is assumed that the installer has some knowledge and experience of AV, electrical, or electronic device installation. This guide takes the AV installer through the steps for installation and connection of each of the system component parts.

It may be that the locations for the devices (for example, wall plates, projector, and screen) have been pre-determined. However, some room installation examples are given to help in installations where final location is yet to be determined.

The PoleVault IP System

Extron PoleVault IP Systems are easy-to-use, network-enabled, all-inclusive packages, making them ideal for single-projector classrooms. PoleVault IP Systems use economical twisted pair cables for transmitting signals and include network connectivity for Web-based asset management, monitoring, and control.

NOTES:

- The hardware and devices listed on the [inventory pages](#) have detailed safety information, installation, set-up, and configuration instructions, and should be referred to as needed.
- For operation and setup of the projector, screen, and input devices, refer to the relevant manufacturer manuals supplied with those devices.
- A PoleVault System Installation video is viewable online at www.extron.com. This video is also a step by step guide to installing PoleVault System and is useful for first-time installations.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

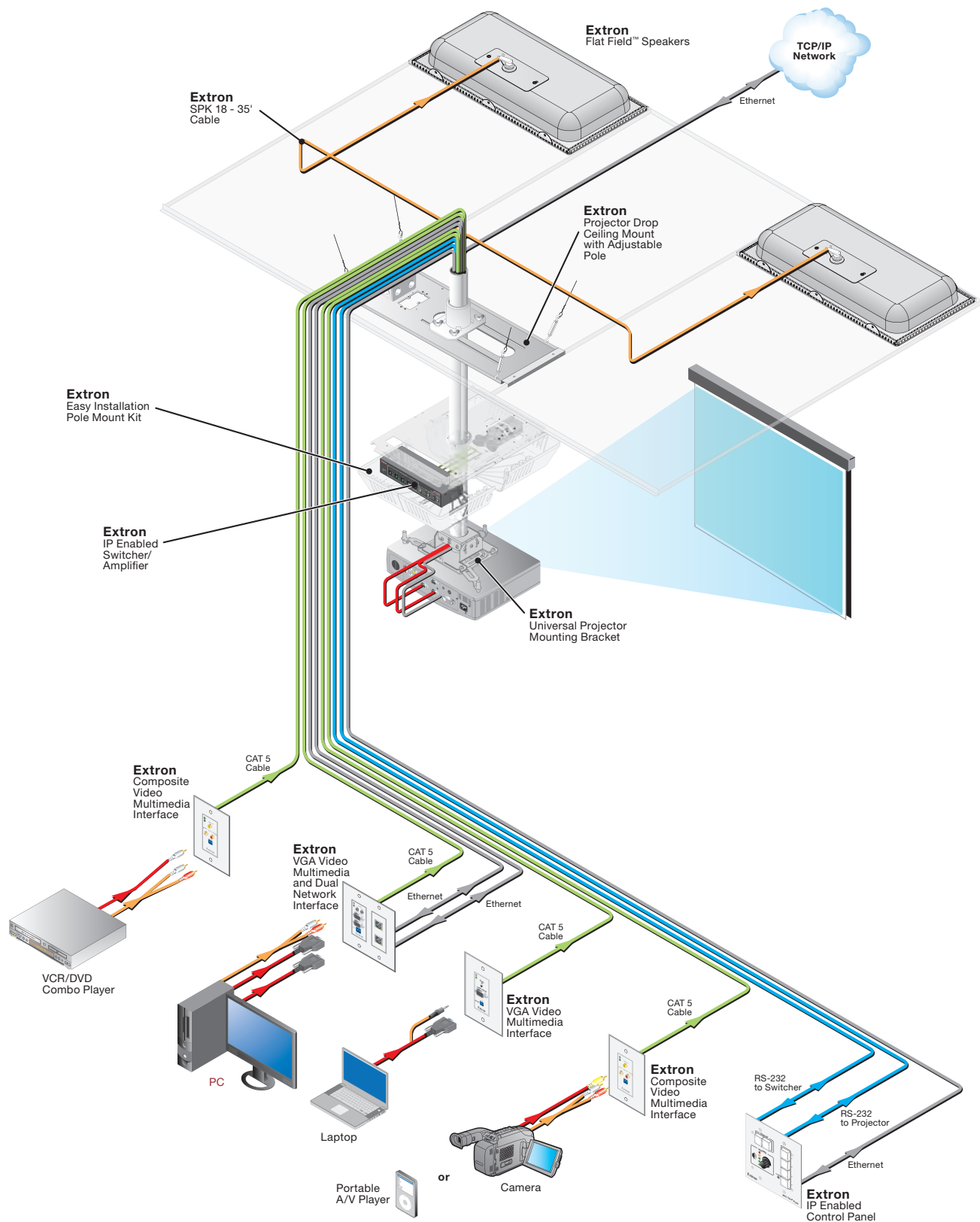


Figure 1. PoleVault IP System Installation and Wiring Overview

Before You Begin — Planning the Installation

Before installation is started, you must consider several major factors to ensure that the installation process is as smooth and trouble free as possible, and so that the final finished project meets the needs of the customers, users, audiences, and installer.

The installation considerations on the following pages, though not comprehensive, should be consulted to help ensure that key installation aspects have been considered.

Americans with Disabilities Act (ADA) Compliance

When planning where to install the PoleVault System, you may need to consider factors affecting accessibility of the system such as the height of devices from the floor (for example the MLC controller), distance from obstructions, and how far a user must reach to press any device buttons.

For guidelines, see sections 307 (“Protruding Objects”) and 308 (“Reach Ranges”) of the 2010 ADA Standards for Accessible Design available at <http://www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards.pdf>

Room Layout

a. The Room

The application diagram below shows a typical classroom installation.

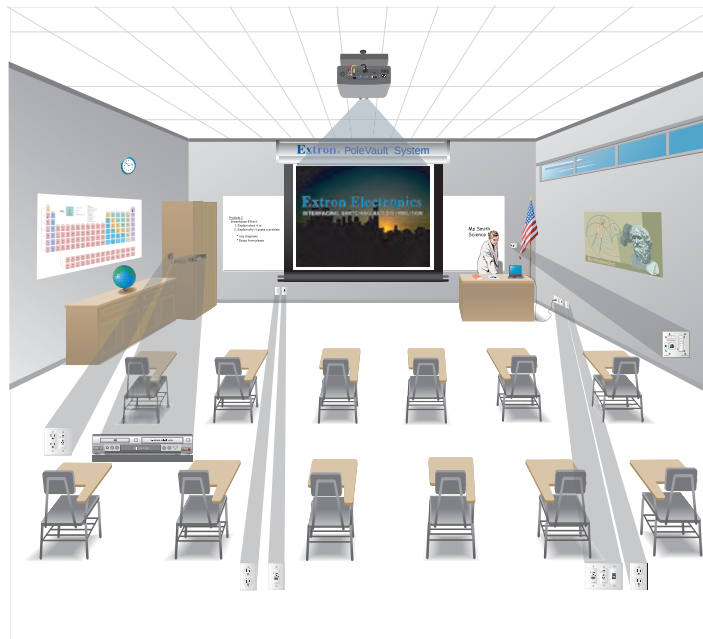


Figure 2. Typical Classroom Installation

Room factors to be considered should include, but are not confined to:

- **Room size, orientation, and layout:**
 - Audience factors (for example number, ADA requirements, seating arrangements)
 - Existing installed furniture (bookcases, racks, cabinets, workbenches, sinks, and so forth.)
 - Windows, doors, and support pillar locations in relationship to the proposed screen location

- **Ceiling and wall type** (important in assessing the hardware needed)
 - Ceiling type: dropped, spline, hard lid and similar. Structural type (wood, concrete, trusses), plenum or non-plenum
 - Wall type: drywall, cement, brick.

WARNING: Structural ceiling failure could cause death serious injury or death. Check the structural ceiling to ensure that it can handle a load four times the weight of the final setup.

- **Lighting**
 - Type and control (important for projector image viewing)
 - Ambient light from windows

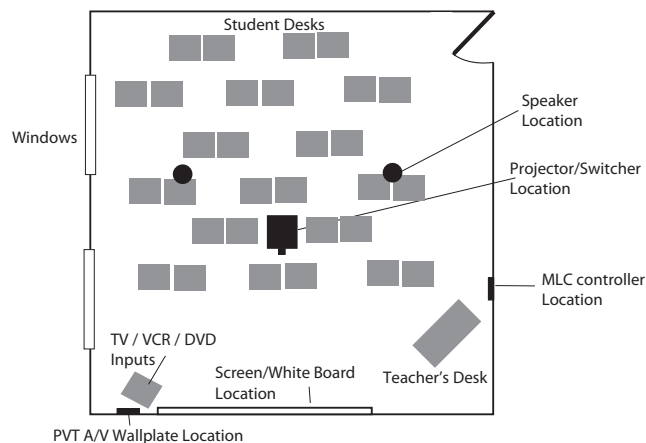


Figure 3. Example Classroom Installation

b. Location of the Screen and Projector

- Proposed screen location (normally located at the front center of the room)
- The lowered screen does not cover safety devices, such as fire alarm strobes.
- Dimensions and type of screen (maximum image size, motorized or hanging screen)
- Proposed projector location
- Projector aligned with center of the screen and not an obstruction to viewing
- Projector throw distance (maximum and minimum limits to the screen) of the image
- Horizontal offset (horizontal distance from the center of the lens to the center of the projector)
- Vertical offset of the projected image (height relationship between the projector and the screen)
- Projector angle (image projected up, down, or horizontal to screen)
- Power source for the projector: existing and accessible or needing installation
- Projector weight: the Universal Projector Bracket (UPB 25) supports a maximum weight of 25 lbs.
- Viewing obstructions: Pillars, furniture and so forth, window locations for glare reduction, obstructions between projector and screen.
- Overhead clearances (refer to a copy of *ADA Standards for Accessible Design, Sections 307 and 308*, for ADA requirements)

c. Location of MediaLink® Controller and Wall Plates

- Forward and side reach (for full details refer to a copy of *ADA Standards for Accessible Design, Sections 307 and 308*, for ADA requirements).
- Location of source devices
Desk, table, or rack mounted, and proximity to proposed transmitter location (wall, podium, or furniture)
- Cabling obstacles
Studs, utility pipes, power supply location (raceway installation needed?)
- Network drop for MediaLink Controller
Wall or floor cabled

d. Type and Location of the Speakers

- Speaker type based on room ceiling and wall type
- Total number and spacing of speakers
Based on ceiling height and room size
- Audience seating and room acoustics
Desired spread and evenness of sound coverage and ambient noise level compensation

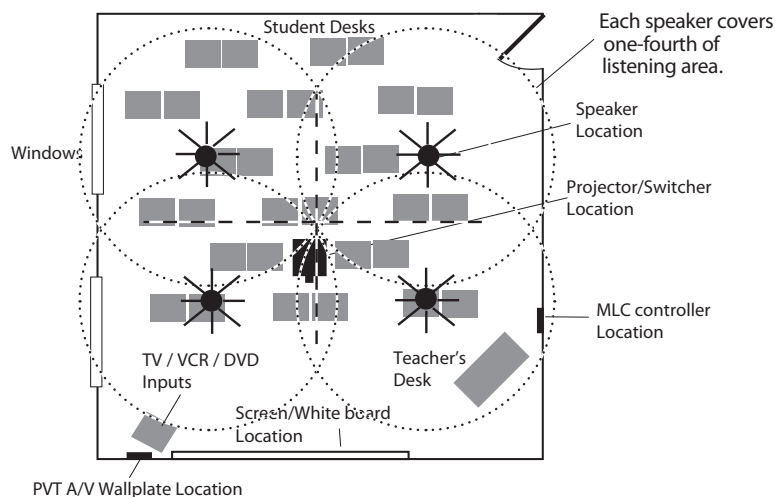


Figure 4. Example Classroom with Four Speaker Installation

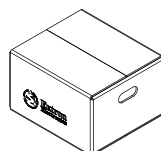
Inventory

Included Items

The PoleVault IP System (featuring the PVS 305SA IP switcher) ships in one box. The box (80-xxx-13) contains the devices, hardware, and FF 120 speakers.

Carefully check all the received items against the lists on this and the next page.

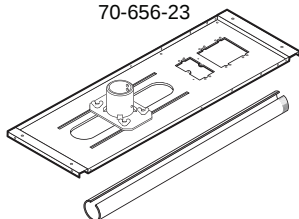
PoleVault® IP System Devices and Hardware



PoleVault IP System
80-200-13 (or 80-300-13, or 80-400-13)

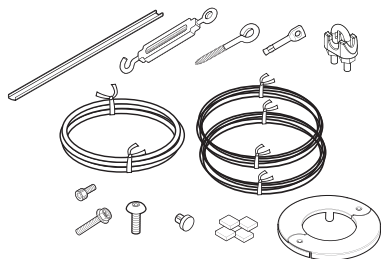
PCM 340

PCM 340 White
70-656-23



PCM 340
Projector Drop Ceiling Mount

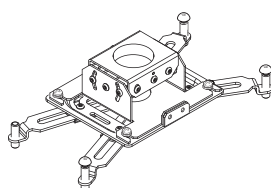
Accessories



- (1) Snap-in trim piece
- (4) Turnbuckles
- (5) Lag eye bolts
- (5) Concrete anchors
- (2) Cable clamps, Gal Steel
- (1) Safety wire (15 ft. 1/8 in. dia)
- (2) Tie wire (30 ft., 14 AWG)
- (4) T-frame screws
- (2) Set screws
- (1) Location screw
- (11) Hole plugs
- (4) Adhesive pads
- (1) 25 in. Slotted pipe
- (1) Escutcheon ring

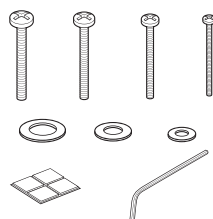
UPB 25

UPB 25 White
60-773-03



UPB 25
Universal Projector Bracket

Accessories

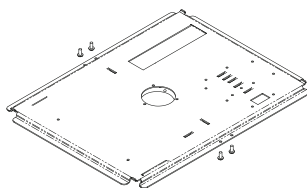


- (4) M6 x 40 mm screws
- (4) M5 x 40 mm screws
- (4) M4 x 40 mm screws
- (4) M3 x 40 mm screws
- (4) 0.328 ID washers
- (4) #10 washers
- (4) #6 washers
- (4) Adhesive pads
- (1) Hex key

NOTE Items not drawn to scale

PMK 550

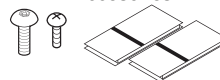
PMK 550 White
70-655-13



PMK 550
Pole Mount Kit

The PVS 305SA IP may come pre-installed on the PMK 550

Accessories



- (4) 10-32 Cover screws
- (3) 4-40 screws
- (2) Velcro™ pads
- (1) Tie wrap

CABLES



(1) SPK 18, 35 ft



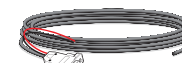
(1) MVGA M-M, 3 ft



(1) V RCA, 3 ft



(1) MLC, PW/RS232/VC, 50 ft



(1) IR SERIAL COMM, 50 ft



CAT5 T568A Patch, 50 ft
Quantity varies depending on PVS system ordered.

These may be boxed separately or loose inside larger box.

Kits

- PVS 200IP (part number **80-200-13**) includes one PVT RGB D IP Plus and one PVT CV D
- PVS 300IP (part number **80-300-13**) includes one PVT RGB D IP Plus, one PVT RGB D, and one PVT CV D
- PVS 400IP (part number **80-400-13**) includes one PVT RGB D IP Plus, one PVT RGB D, and two PVT CV D

NOTE: If any items in the PoleVault System boxes are damaged or missing, contact the Extron Technical Hotline (see rear cover for contact numbers).

PoleVault IP System Devices and Hardware, cont'd

PoleVault IP System
80-200-13 (or 80-300-13*, 80-400-13*)

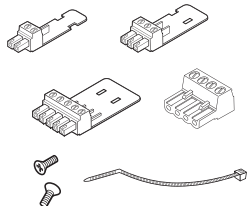
PVS 305SA IP

This item may come pre-installed on the PMK 550

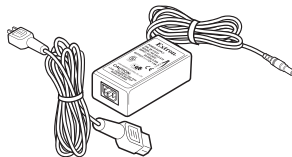
PVS 305SA IP
60-986-01N



PVS 305SA IP
PoleVault IP Switcher



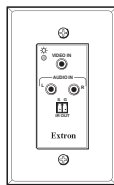
- (1) 2-pole connector
- (1) 3-pole connector
- (3) 5-pole connector
- (1) Audio connector, 4-pole
- (2) Securing screws
- (5) Tie wraps



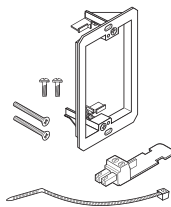
- (1) Power supply
- (1) Power cord

PVT CV D

PVT CV D White
60-819-33



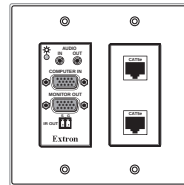
PVT CV D
Wallplate



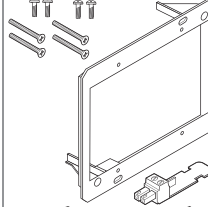
- (1) Mud ring
- (2) PVT mounting screws
- (1) Decora® Faceplate
- (2) Faceplate screws
- (1) 2-pole connector
- (1) Tie wrap

PVT RGB D IP Plus

PVT RGB D IP Plus White
60-1146-03

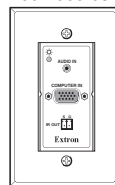


PVT RGB D IP Plus
Wallplate



- (1) Mud ring
- (4) PVT mounting screws
- (1) Decora® Faceplate
- (4) Faceplate screws
- (1) 2-pole connector
- (1) Tie wrap

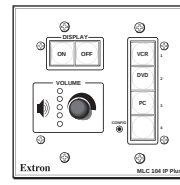
or optional
PVT RGB D White
60-1066-03



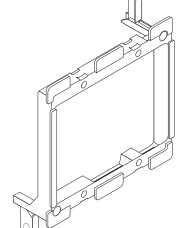
PVT RGB D
Wallplate

MLC 104 IP Plus

MLC 104 IP Plus White
60-818-03



MLC 104 IP Plus
MediaLink Controller

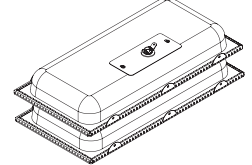


- (1) Mud ring
- (2) Mounting screws
- (4) Faceplate screws
- (2) Faceplates -
- (1) White (on unit)
- (1) Black

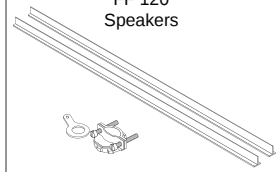
FF 120



FF 120
42-120-03



FF 120
Speakers



- (2) Cable clamps - Anchor ring
- (2) T-rails

*Systems 80-300-13 and 80-400-13 contain
3 or 4 PoleVault Wallplates, according to the type ordered.

Items Not Included

The following items are not included. However, input and display devices are essential parts of the system, and at any installation they may vary depending on their use. This list suggests various devices that may be used.

- Projector (or display device)
- Screen (and mounting hardware)
- Input devices, such as:
 - BluRay, DVD/CD/VCR combo player (and cables)
 - Document camera (and cables)
 - PC or Mac computer (with keyboard, mouse, local monitor, VGA cables, RJ-45 network cables, power cords, and, where desired, a P/2 DA2 or Distribution Amplifier (DA) for PC signal to local monitor)
- Installation hardware needed (may vary per installation):
 - Bolts for concrete structural ceilings where needed
 - Toggles (used for screen mounting on dry wall)
 - S-hooks for hanging the screen
 - Spare ceiling tiles in case of accidental damage during installation
 - Electrical box, where installation of a box on the PCM 340 is desired
 - Safety wire, lag eye bolts, and strain reliefs for installation and securing ceiling speakers
 - Heat shrink, extension cord

Installation Tools

To aid the professional installer, this checklist gives the tools recommended to complete the installation. Tools should include, but are not confined to:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Laser level, or two levels (large for screen installation, small for wall plates and projector mounts) • Tape measure • Stud finder • Drill and drill bit set including a Unibit to cut through metal studs • Extension drill bit (3/4 inch min., 4 to 8 foot length, to drill through fire-breaks) • Socket set • Pipe strap or wrapped pipe wrench • Pliers and wire strippers • Standard screwdriver set and Extron Tweezer • Cable cutters (to cut safety wire) | <ul style="list-style-type: none"> • Dry wall saw and hacksaw blade mounted on handle (for cutting ceiling tiles) • Flashlight and safety goggles • Razor knife • 2 inch hole saw • Painter's tape (to mark up walls), pencil, and marker pen • RJ-45 crimpers and RJ-45 connectors • Voltage tester • Fish tape, pull string, and electrical tape (for taping fish tape to pull string) • Zip ties • Vacuum cleaner • Heat gun |
|--|--|

Installation Overview

This overview outlines the basic steps for installing the PoleVault IP System. An outline and checklist of the stages (Stages One through Five), listing the relevant steps within each stage, is given on page 10 and rear cover.

A fully detailed description of these steps is given in the five corresponding sections.

Carefully check inventory of PoleVault IP System packages, input and output devices, any optional accessories, and installation hardware before commencing.

NOTES:

- Additional installation hardware is needed for this installation, and should be supplied by the installer. See **Items Not Included** on page 8 for a list of items that you may need.
- Refer to local building standards and codes to verify that the installation will meet all the regulatory requirements.
- Observe all local and national building and safety codes, UL requirements, and ADA Accessibility Guidelines.

Outline of Installation Steps

Stage 1 — Install the Screen and Projector

- ☐ Mark the screen location (page 12).
- ☐ Install projector to verify location (page 12).
- ☐ Verify the image location (page 15).
- ☐ Cut the ceiling tile (page 16).
- ☐ Preliminary safety hardware installation (page 16).
- ☐ Finish projector drop ceiling mount installation (page 17).
- ☐ Secure the projector drop ceiling mount to the ceiling (page 18).
- ☐ Install the electrical box (if required) (page 19).
- ☐ Install the screen (page 19).

Stage 2 — Mount the PVT Wall Plates and the MLC 104 IP Plus.

- ☐ Install the mud rings (page 23).
- ☐ Pull cables (at the input locations) (page 24).
- ☐ Install the wall plates (page 25).
- ☐ Install the MediaLink Controller (page 26).

Stage 3 — Install the FF 120 Speakers.

- ☐ Cut the ceiling tile (page 30).
- ☐ Install the speaker on the drop ceiling (page 30).
- ☐ Terminate the speaker cable for the PVS switcher (page 32).

Stage 4 — Install the PMK 550 and the PVS 305SA IP.

- ☐ Install the PMK 550 base plate (page 34).
- ☐ Pull the cables (at the switcher location) (page 35).
- ☐ Finish installing the pole mount kit (page 36).

Stage 5 — Configure the PoleVault Switcher and the System.

- ☐ Configure the switcher — MLS Switcher Configuration program (page 37).
- ☐ Configure the system — Global Configurator (page 38).
- ☐ Test the system (page 39).
- ☐ Final installation (page 41).

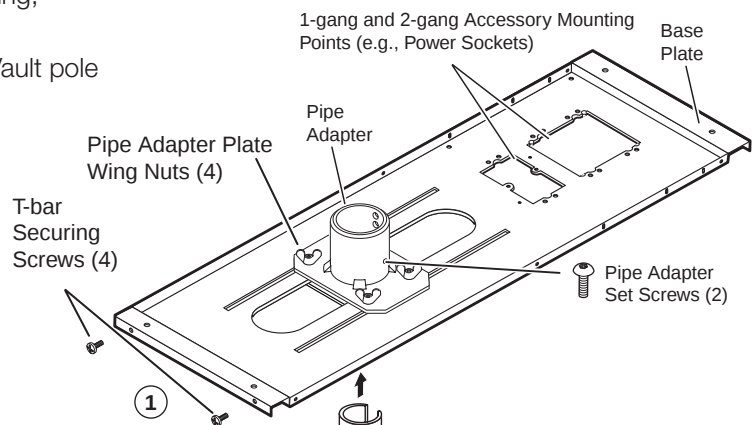
The following pages contain instructions for installing the PoleVault IP System. Where possible, line drawings and photos from an actual installation are used to clarify some of the steps discussed in the text. Most images have a number corresponding to the step that is being described (for example, .

Stage 1: Installing the Screen and Projector

Stage 1 Involves Installing Three Pieces of Hardware Shown Below.

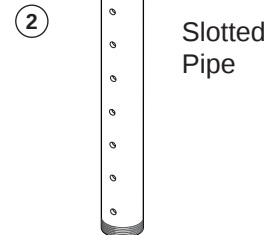
PCM 340 Projector Drop Ceiling Mount ①

- **Where it goes:** Attaches to a structural ceiling, rests on the suspended ceiling.
- **What it does:** Holds the slotted pipe, PoleVault pole mount kit (PMK 550), and projector.



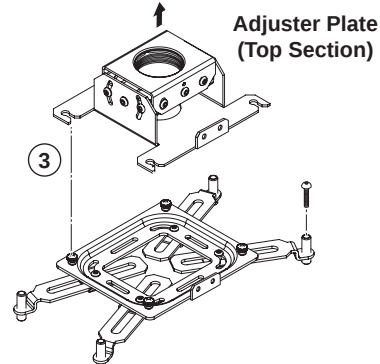
Slotted Pipe ②

- **Where it goes:** Locks into place in the PCM 340 pipe adapter.
- **What it does:** Holds the PMK 550 pole mount kit, UPB 25 Projector Bracket and projector.



UPB 25 Universal Projector Bracket (separated into two sections) ③

- **Where it goes:** Adjuster Plate screws onto the base of the slotted pipe, and the Projector Bracket attaches to the projector.
- **What it does:** Attaches the projector to the PCM 340. Allows proper projector positioning and orientation.

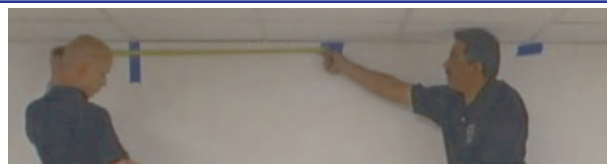


1. — Mark Screen Location

TIPS:

- When marking the location of screens, devices, or the site for installing transmitters and MediaLink control devices, use painters tape to avoid wall surface damage.
- When marking the center line of the screen, where possible, keep it aligned with the center of the ceiling tile. This makes the projector installation and alignment easier.

- a. Mark the center line and the outer edges of the screen.
- b. Mark any structural studs, utility pipes, conduits, or fire breaks before drilling the hardware holes. Do not drill the holes yet.



①a Mark the screen location.

2. — Install Projector to Verify Location

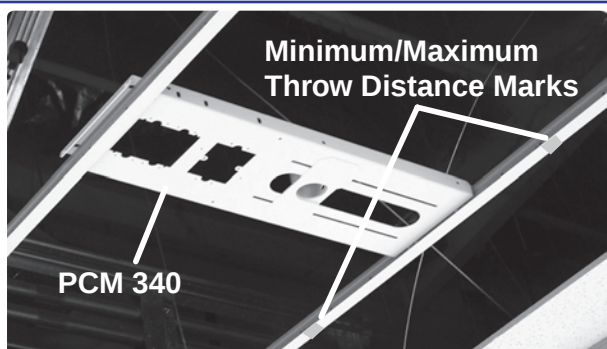
- a. Remove the ceiling tiles at the location, and mark the maximum and minimum throw distances on the T-frame. See the projector installation manual for more information.

TIP: For ease of working on the T-frame remove the adjacent tiles.

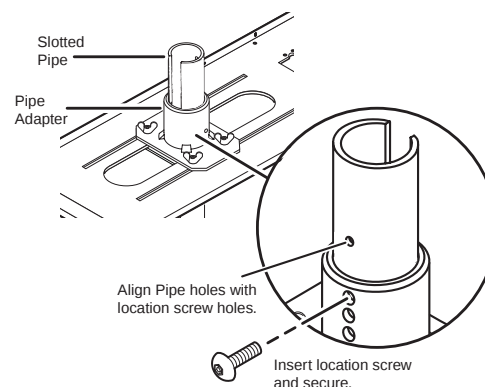
- b. Place the PCM 340 over the T-frame, between the two marks. Lightly tighten the T-frame securing screws. The T-frame screws can be used on the outside or the inside to secure the PCM to the T-frame.

NOTE: Place the PCM 340 on the T-frame so that the pipe adapter slides left to right in relation to the proposed screen location, rather than towards and away from it. This makes it easier to align and center the image.

- c. Slide the slotted pipe up into the pipe adapter. Adjust to the desired height and align the location holes and pipe holes. Insert the location screw, lightly tightening it down using a 5/32 inch hex wrench. Insert and lightly tighten down the set screws onto the pipe. Do not overtighten. The pipe is removed and replaced later during installation.

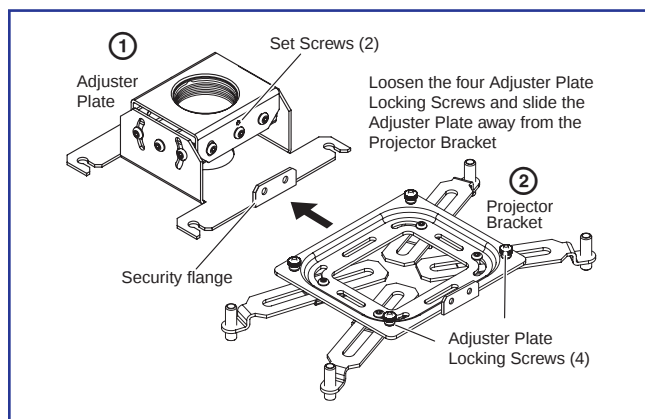


②b Place the PCM 340 on the T-bar



②c Insert and secure the slotted pipe.

- d. Using a 3/32 inch hex wrench, back out the set screws on the top portion of the adjuster plate (see ① in the image below) of the UPB 25. Screw the plate onto the base of the pipe. Align it so the security flange is at the rear

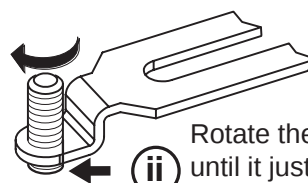


②① Screw the adjuster plate onto the base of the pipe.

- e. Carefully follow the steps below to install the projector bracket on the projector.
- Invert the projector on a flat surface to access the mounting points. Use a blanket or a similar item under the projector to protect the projector and the surface.
 - On each arm, **rotate the barrel** (on the end of the arm) so that it only just protrudes from the base of the arm (see the figure at right).
 - Select the correct sized mounting screws and the appropriately sized washers that fit the projector mounting point inserts.
 - To attach the arms to the projector:
The next step is critical as it provides a flat surface for the bracket to sit on, and must be done for each mounting point.
 - Place a washer on a mounting point (see the figure at right).
 - Position the arm so the barrel is over the washer.
 - Insert the mounting screw down through the barrel and washer, and into the threaded insert (mounting point). Lightly tighten the screw by hand.

NOTE: If using the 3- or 4-millimeter screws, place an additional small washer under each screw head, on top of the barrel, as well as one on the top of the mounting point.

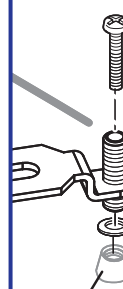
- v. Repeat step iv for **all** projector mounting points.



Rotate the barrel until it just protrudes below the arm.



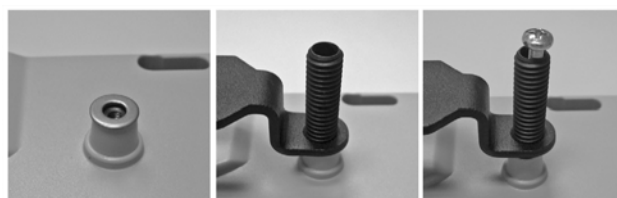
ATTENTION:



iv
Place washer on mounting point.

Mounting Point on Projector Base

This is critical as it provides a flat surface for the bracket to sit on.



Place the washer Align the barrel Insert the screw

- vi. Pivot the arms so that they extend towards the center of the projector (see the figure at right). Adjust the arms as needed for your projector model.

NOTE: Avoid overlapping the arms where possible.

- vii. With the security flange towards the rear of the projector, place the projector bracket on top of the arms and adjust for slot alignment.

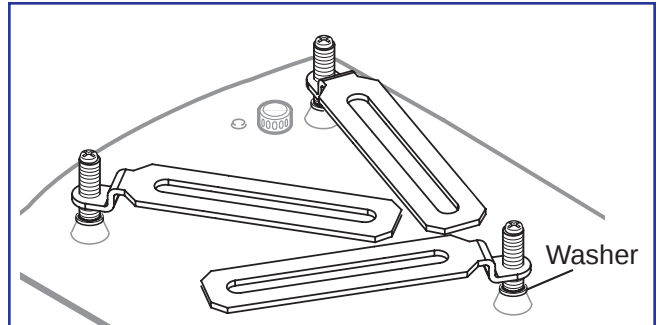
- **Using the slots on the bracket that are closest to the barrel on each arm**, place the clamp under the arm and lightly secure it to the bracket with the adjustment screws (see the figure at right). Loosely secure all the mounted arms.

NOTE: Where arms are unavoidably crossed, replace the original adjustment screw with a supplied 10-32 ¾ inch adjustment screw and secure both arms to the bracket using one clamp. In addition, the barrels on the arms must be raised to compensate, keeping the arms level and reducing stress.

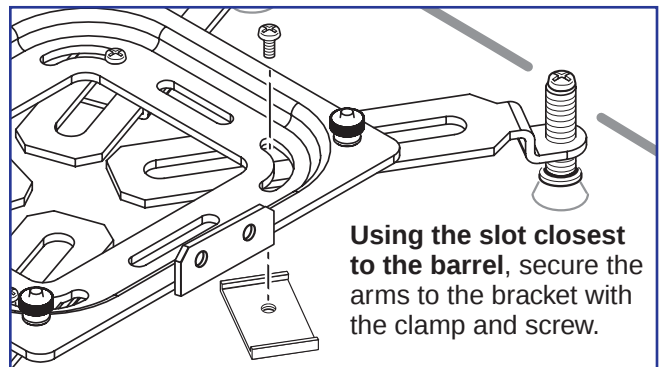
- viii. As close as possible, balance the weight of the projector evenly across the projector bracket. Lift the bracket at opposite corners to assess if the configuration is approximately balanced.

ATTENTION: Take into consideration the uneven weight distribution of the projector when lengthening or shortening the arms. Distribute the projector weight evenly on the arms.

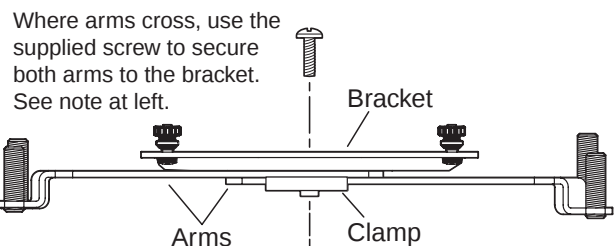
Adjust the bracket on the arms as needed. The projector shown at right is as close as possible to being evenly balanced.



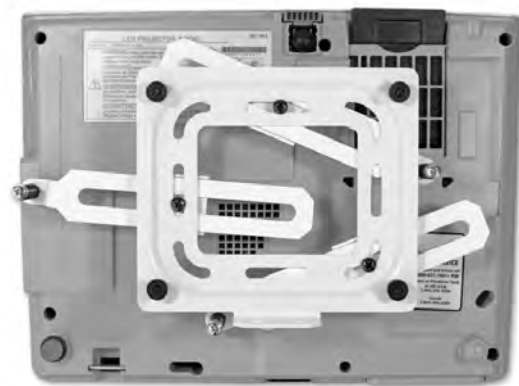
vi. Pivot arms towards center of projector.



vii. Secure arms with clamp



Note: If arms cross, secure both with clamp

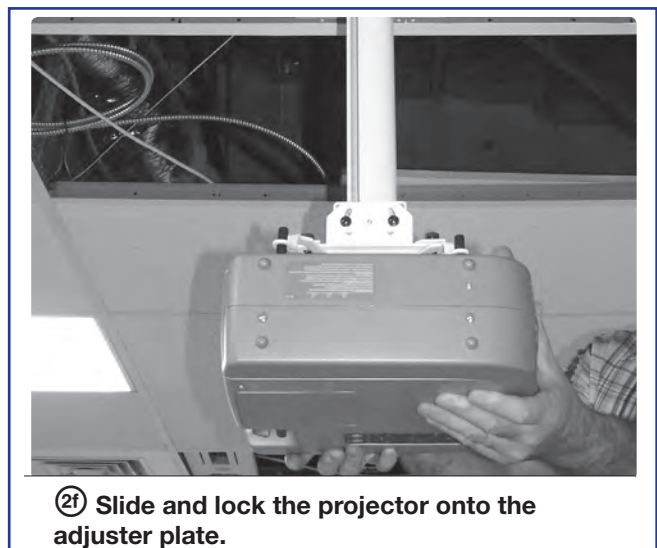
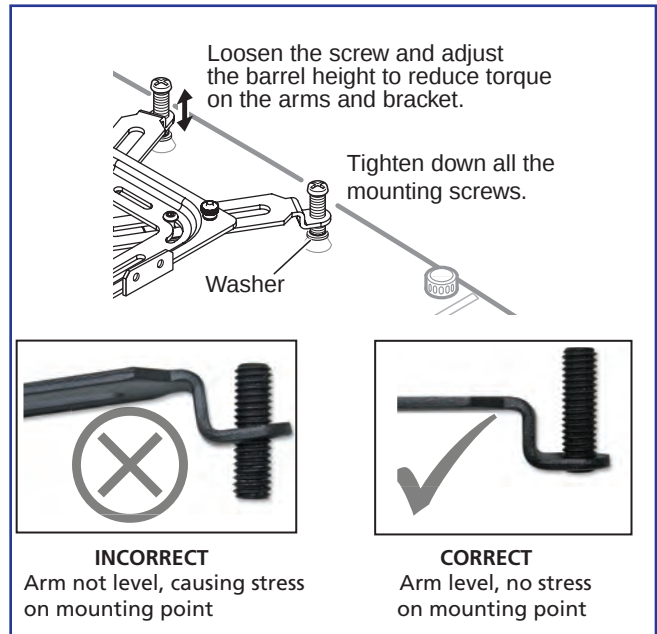


viii. Evenly balanced configuration

- ix. Check for stress on the arms. To do this loosen the mounting screws (do not remove). If the arm or the barrel lifts, this indicates stress on the arm. Adjust the height of the threaded barrels to reduce or eliminate any torque or stress that might be caused by crossed arms or by projector mounting points with differing heights. It is important to keep the arms level and as close (low) to the projector base as possible.
- x. Check that the projector weight is still as evenly distributed as possible. Hand tighten the screws until snug.

ATTENTION: Do not overtighten the mounting screws as this may damage the projector. See the projector manual for the threaded insert torque setting.

- f. Lift the projector up to the adjuster plate and slide it into place. Tighten down the locking and pivot screws.

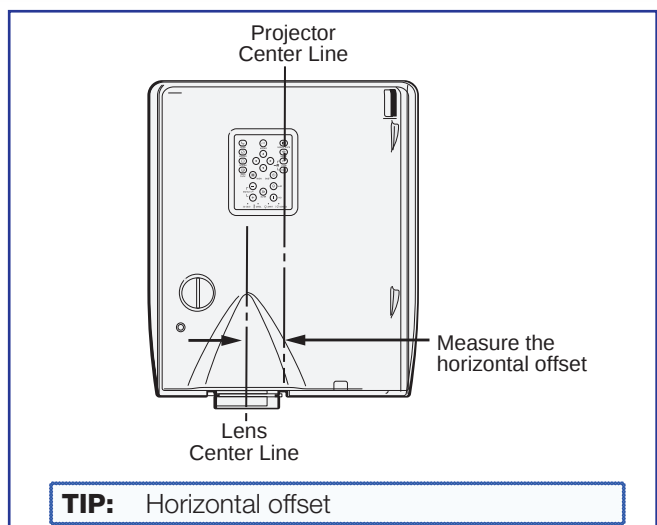


3. – Verify the Image Location

- a. Connect a power cable to the projector and turn it on.
- b. Verify image size and location by loosening the PCM 340 pipe adapter plate wing nuts, and adjust the plate (left-right) to center the image.

TIP: Remember to include the vertical and horizontal offsets when aligning the projector. See the projector manual for information

- c. When satisfied, tighten down the plate wing nuts.



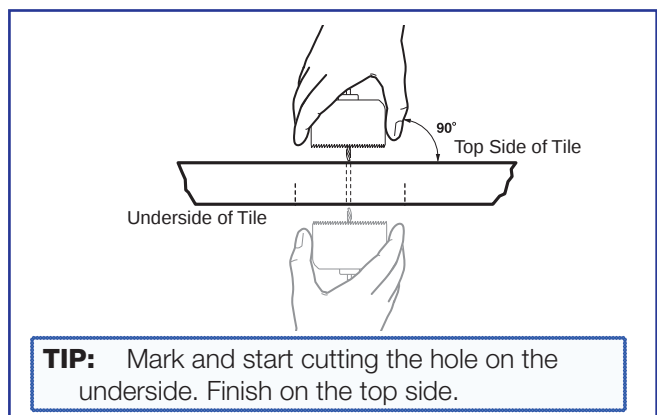
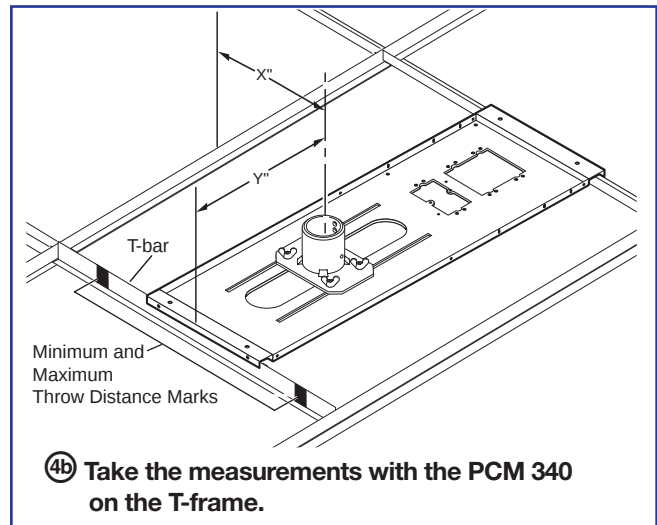
4.— Cut the Ceiling Tile

- a. Mark the location of the PCM 340 on the T-frame. This aids putting it back in the correct location when the tile is replaced.

TIP: Mark the screen direction on back of the tile (for example with an arrow or “to front”) to help orientation of tile when replacing it after cutting

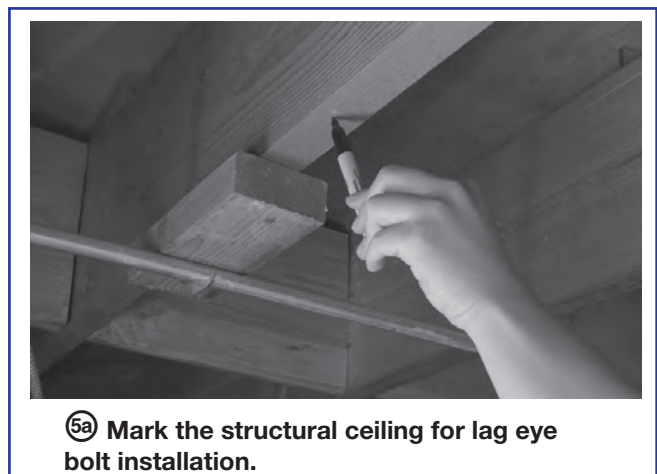
- b. Measure the distances X and Y (see the figure at right) from the inner vertical section of the front and left T-frame runners to the center of the Pipe Adapter Plate. Using the X and Y dimensions, mark and cut a hole for the slotted pipe in the ceiling tile.

TIP: Place the tile on a box and mark the center of the hole on the underside of the tile. Use a hole saw bit to start to cut the hole by hand (turning bit counter clockwise) to avoid damaging the tile. When the drill bit is through the tile, turn the tile over and finish cutting from the top side



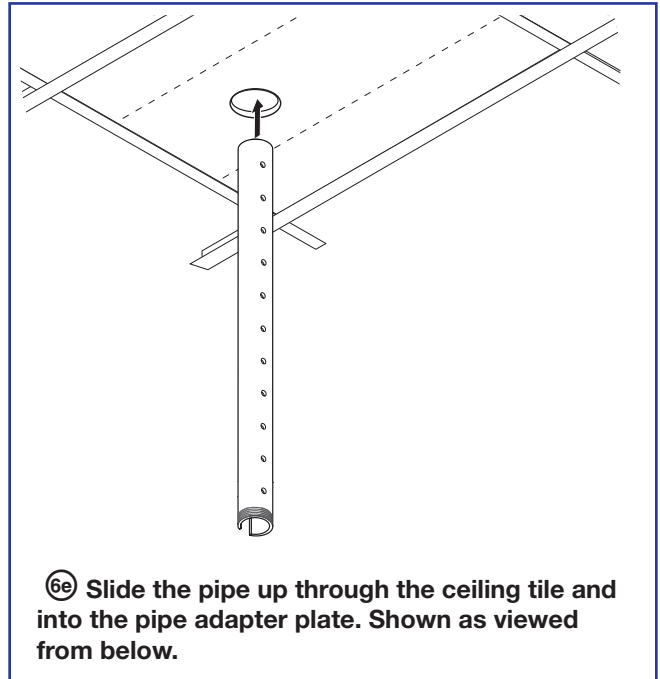
5. — Preliminary Safety Hardware Installation

- a. Mark and drill holes at 10 degrees out from vertical for each turnbuckle. Drill a fifth hole directly centered above the PCM 340 for the safety cable.
- b. Install an appropriate anchors or lag eye bolt for the structural ceiling into each drilled hole.



6.— Finish Projector Drop Ceiling Mount Installation

- a. Detach the projector bracket and projector from the adjuster plate. DO NOT remove the projector bracket from the projector.
- b. Unscrew the adjuster plate from the mounting pole.
- c. Loosen the set screws on the PCM 340 and the pipe location screw and remove the mounting pole, then loosen the T-frame securing screws and remove the PCM 340 from its marked location.
- d. Replace the cut ceiling tile, checking the orientation to align the hole with the PCM 340.
- e. Replace the PCM 340 over the ceiling tile, slide the slotted pipe up through the tile and into the adapter plate. Realign the location holes with the pipe holes, insert and tighten down the location screw. Tighten the set screws.
- f. Tighten the four T-frame securing screws on the PCM 340. The T-frame securing screws can be used on either side of the frame.



7. — Secure the Projector Drop Ceiling Mount to the Ceiling

- a. Attach the four turnbuckles to the mounting plate, one at each corner.

WARNING: May result in serious injury.

DO NOT rest or lean on the mounting plate or suspended ceiling when attaching turnbuckles, tie wire, or when drilling into the ceiling.

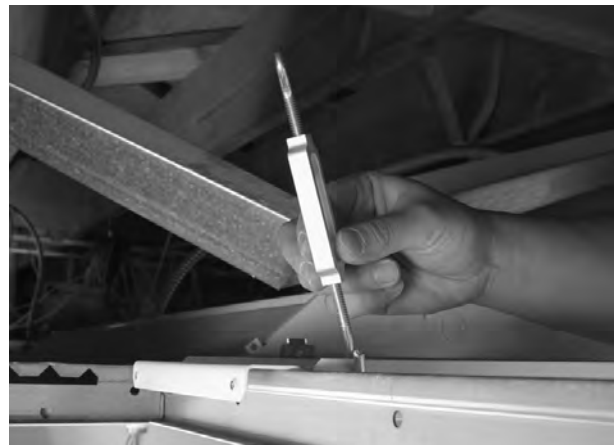
NOTE: For safest installation, insert the turnbuckle from the outside so that it hooks inwards

- b. Cut four equal lengths of the supplied hanging wire, and loop the wire through the anchors or lag eye bolts, and the turnbuckles, then twist the wire around itself at least five times tightly at each end.
- c. Hand tighten the turnbuckles and level the plate so it just rests on the T-frame.

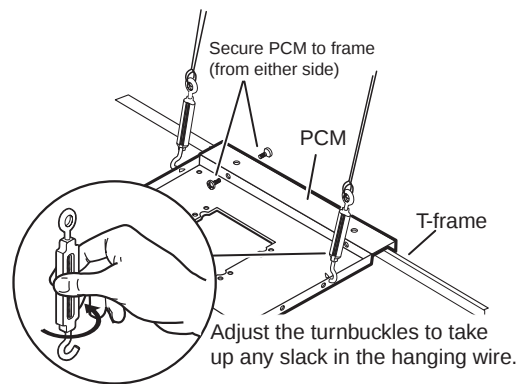
CAUTIONS:

- The four hanging wires should be taut, taking the full weight of the completed installation.
- **Do not overtighten the turnbuckles** or the T-frame assembly could be lifted, making the suspended ceiling bowed and unsafe

- e. Pass the braided safety cable through the fifth and center anchor and attach it to the center holes on either side of the plate. Ensure the cable is of equal length on both sides of the anchor and secure the cable using the cable clamps.



7a Attach the turnbuckles at the corners of the PCM 340.



7c Hand tighten all four turnbuckles.

8. — Install the Electrical Box (if required)

WARNING: Improper installation may result in electrical shock or serious injury.

All electrical installation should be performed by qualified personnel in accordance with local and national building codes, fire and safety codes, and local and national electrical codes.

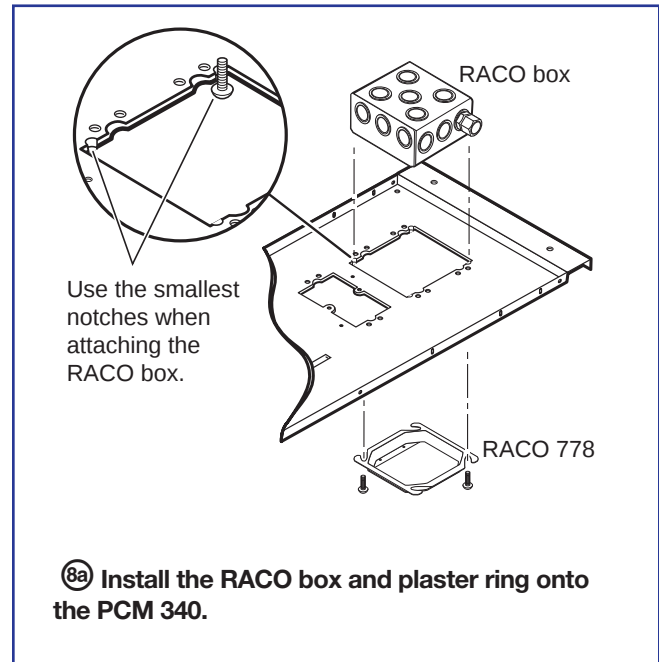
If required, the following method is recommended for integrating a 4S RACO® electrical box (not supplied) on the PCM base plate (for example, a RACO 232, 2 1/8 inch deep, 4x4 inch electrical box and a RACO 778, 1/2 inch raised, 4x4 inch plaster ring or similar).

Install the Raco box on the PCM plate as follows:

- a. Attach the box to the plate, using the smallest notches in opposite corners of the cut-out (see figure 8a). Do not tighten the screws fully at this time.
- b. On the opposite side of the PCM plate, slide the plaster ring under the screws. The plaster ring anchors the box in place with PCM plate sandwiched between.
- c. Fully tighten the screws.

WARNING: May result in electrical shock or serious injury. For safety, complete **all wiring** of the electrical boxes and accessories **after** the plate is fully installed and secured.

- d. Mark and cut a hole in the ceiling tile for the electrical box opening.



9. — Install the Screen

- a. Following the guidelines given by the screen manufacturer, continue to install the screen mounting brackets and then hang the screen.

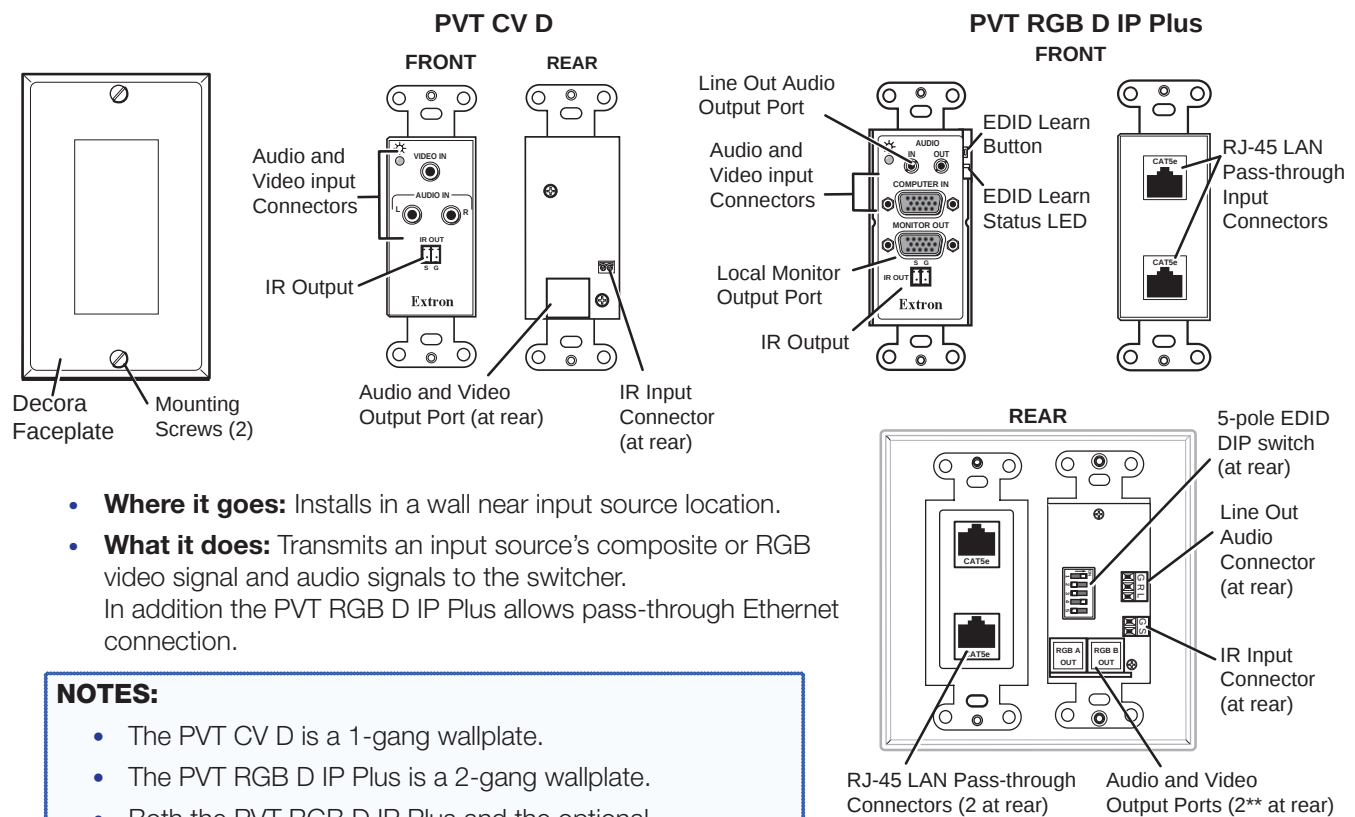
TIP: Use S-hooks to hang the screen from the brackets. Bend the ends of the S-hooks so the screen does not fall when it is rolled up.

Stage 2: Mounting the PVT Wallplates and the MediaLink Controller

Stage 2 Involves Installing and Cabling the Devices Shown Below.

NOTE: The installation must conform to national and local electrical codes and UL requirements. See the device user guide for details.

PVT CV D and PVT RGB D IP Plus AV Source Input Wallplates



- **Where it goes:** Installs in a wall near input source location.
- **What it does:** Transmits an input source's composite or RGB video signal and audio signals to the switch. In addition the PVT RGB D IP Plus allows pass-through Ethernet connection.

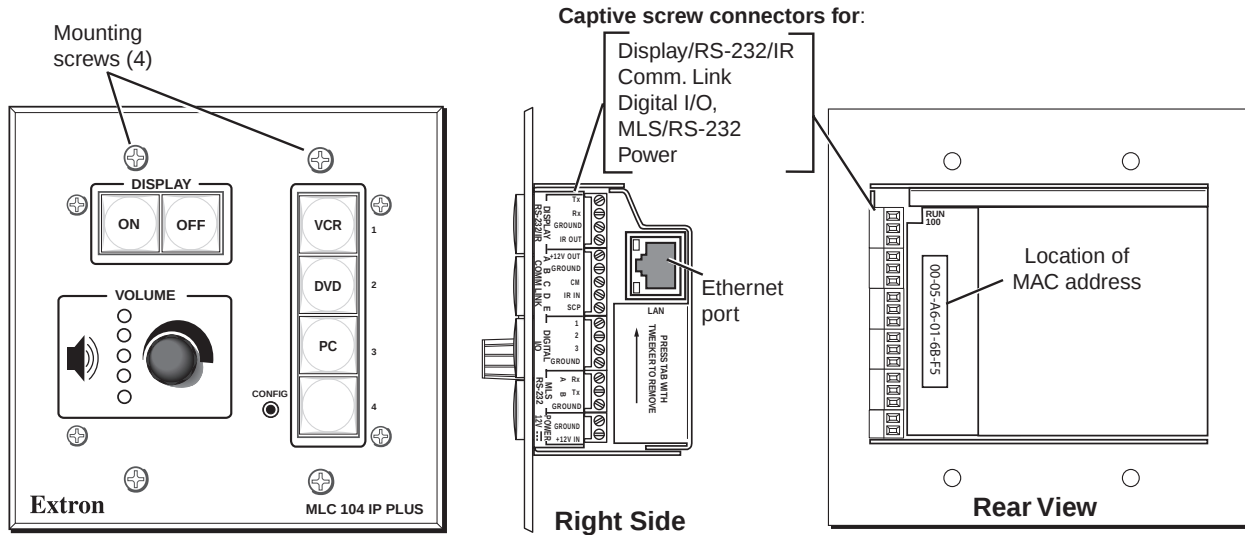
NOTES:

- The PVT CV D is a 1-gang wallplate.
- The PVT RGB D IP Plus is a 2-gang wallplate.
- Both the PVT RGB D IP Plus and the optional PVT RGB D (EDID) incorporate EDID Minder. This allows the transmitter to communicate the appropriate EDID information to the source, ensuring correct video output resolution.

Before fully installing the PVT RGB D IP Plus wallplate, see [EDID Minder](#) on page 42 for setup and operating details.

** Each RGB Wallplate needs 2 Output Cables, A and B.

MLS 104 IP Plus MediaLink Controller



- **Where it goes:** Installs in a wall at a location convenient to user.
- **What it does:** Provides remote control of switcher and projector.

Cabling for the Wallplates and MediaLink Controller

PVT transmitter installation

- CAT 5 T568A signal transmission cables (connects PVT input wallplates to PVS 305SA IP switcher)



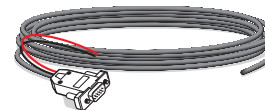
CAT 5 Patch, 50 ft
26-637-50

MLC 104 IP Plus installation

- MLC power and RS-232 control cable (connects the MLC controller to the MLC/Power control port on the PVS 305SA IP switcher)
- IR/RS-232 communications cable control cable (connects the MLC controller to the projector via RS-232 or to an IR emitter)
- LAN network cables (not supplied - connects the MLC controller to LAN)



MLC, PW/RS-232/VC, 50 ft
26-626-50



IR SERIAL COMM, 50 ft
26-621-50

NOTE: The installation must conform to national and local building and electrical codes, and UL requirements. See the device user guides for details.

1. – Install the Mud Rings

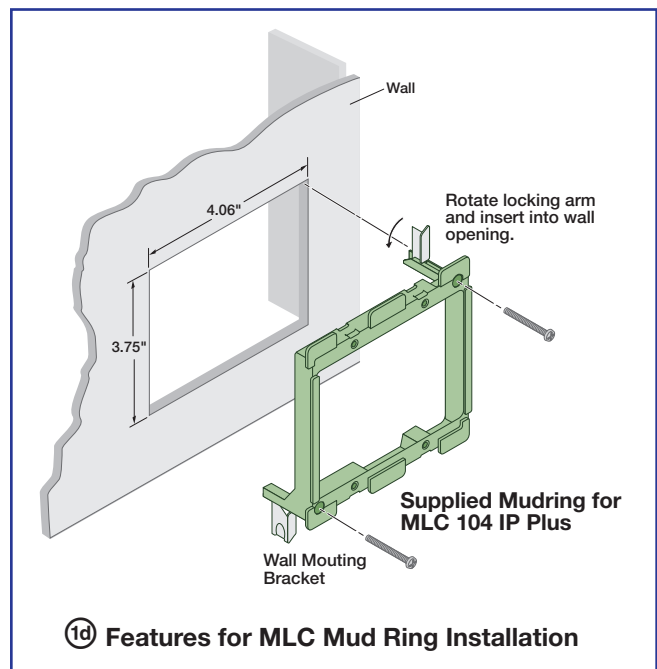
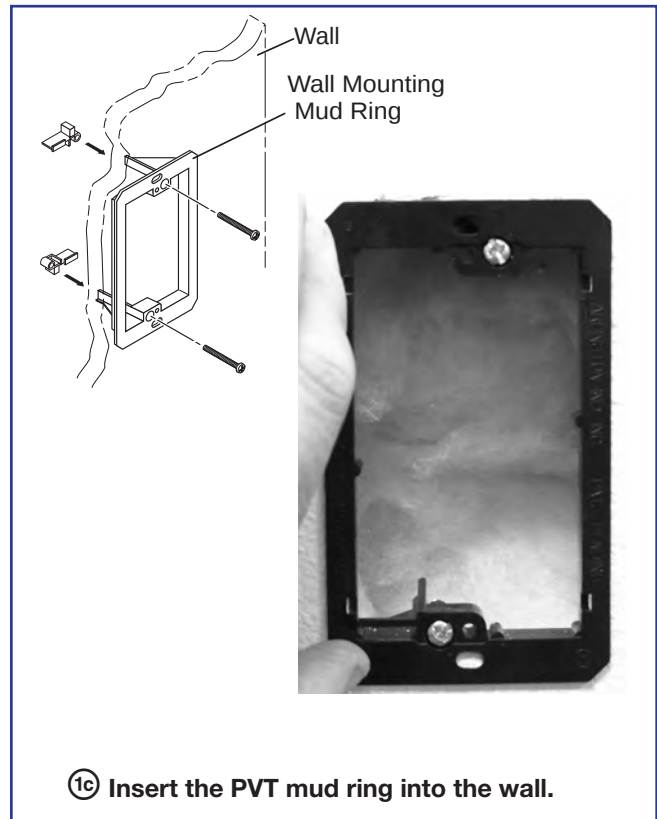
NOTE: These devices can be installed using the supplied mud ring or a wall box. If installing a box, allow enough depth for the plate, and the cables. The box should be at least 2.5 inches (6.4 cm) deep to accommodate the connectors and cables. If a suitable wall box is already installed, follow **step 2** onwards.

- a. Using the mud ring as a template, trace the inside of the mud ring onto the mounting surface.
- b. Cut out the material within the marked area.
- c. Insert the mud ring into the opening. The mud ring locking arms should fit easily into the opening. Flip over the mud ring locking arms and secure with the screws provided.

TIP: Use a level when fitting the mud ring.

Repeat steps a to c for each additional input wall plate that needs to be installed.

- d. At the desired location mark the opening for the larger MLC 104 IP Plus mud ring.
- e. Repeat steps b and c.



2. — Pull the Cables (at the input locations)

The following cables need to be installed:

- CAT 5 cables for signal transmission from the AV wall plates to the PVS 305SA IP

NOTES:

- For PVT RGB D IP Plus four CAT 5 cables (two for video input and two for LAN) are needed, and for PVT RGB D wall plates, **two** CAT 5 signal cables for each input are needed.
- Maximum distance from the PVS 305SA to the Wallplate is 100 feet. **The optimum distance is between 50 and 75 feet.** Minimum distance is 15 feet.
- CAT 5 cables supplied are terminated to the TIA 568A standard. Other CAT 5 cables can be used if they are TIA 568A or 568B standards and terminated to the same standard at both ends.

- CAT 5 cables (included) for MLC network connection.
 - PoleVault switcher communication cable from the MediaLink controller (MLC PW/RS-232/VC, 50 feet, part number **26-626-50**)
 - Projector communication cables from the MediaLink controller (IR Serial Comm, 50 feet, part number **26-621-50**)
- Drill cable pathways through any obstructions (for example, wall caps, fire-breaks, or horizontal studs).
 - Label the CAT 5 signal cables at both ends with the supplied labels.
 - Pull the cabling through the wall from the ceiling space down to the location of the transmitters and other wall devices, and out through the openings.

TIP: Secure cables with cable clamps to provide strain relief.

Signal Cable	Label color
RGB 1A (Input 1 RGB)	Orange
RGB 1 B (Input 1 RGB)	Orange
RGB 2A (Input 2 RGB)	Yellow
RGB 2B (Input 2 RGB)	Yellow
RGB 3A (Input 3 RGB)	Magenta
RGB 3B (Input 3 RGB)	Magenta
RGB 4A (Input 4 RGB)	Light Green
RGB 4B (Input 4 RGB)	Light Green
Video 3 (Input 3 Composite Vid)	Dark Green
Video 4 (Input 4 Composite Vid)	Red

NOTE: Fasten the colored section to the cable first, then wrap the clear section around it.



2b) Use the supplied labels for clear cable identification during installation.



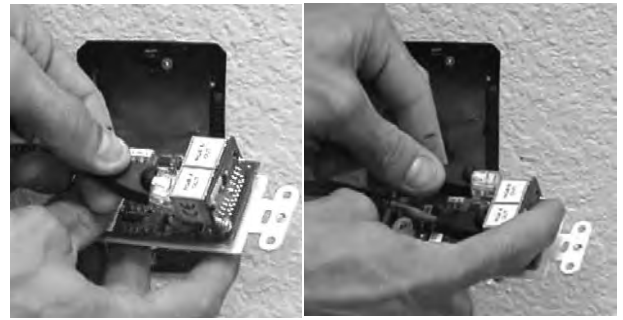
2c) Pull the cables at each location.

3. — Install Wall Plates

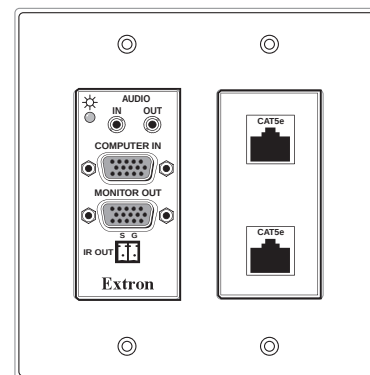
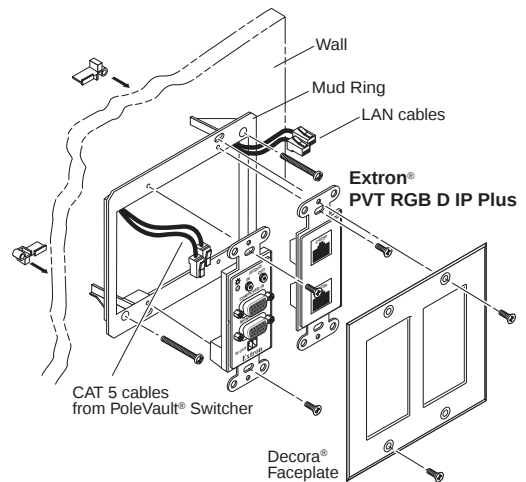
- a. Connect the CAT 5 cables to the rear of the input devices (for RGB devices, connect cable labeled A to port A and cable B to port B). For PVT CV D plates connect the single cable to the device.
- b. Run LAN cables (included) to the rear of the PVT RGB D IP Plus, and connect to the RJ-45 pass-through connectors on the rear panel.
- c. With PVT RGB D IP Plus plates, for podcasting or recording applications, use a three conductor audio cable and connect the audio return to the connector marked G (ground wire), R (black wire), and L (red wire). The other end will be connected to the Line Out connection on the PVS 305SA IP switcher.
- d. If desired wire the IR connection using a two conductor cable. Wire the ground to G and signal lead to S. The other end will be connected to the IR Out port of the MLC 104 IP Plus controller.

TIP: Before completing the installation of the PVT RGB D IP Plus wallplate, see **EDID Minder** on page 42 for setup and operating details.

- e. Mount each device into the mud ring, using the supplied screws.
- f. Attach the supplied Decora® faceplate.
- g. Label the Decora plate with the supplied label, using the appropriate input number. This makes inputs easier to identify when configuring the switcher.
- h. Repeat steps a through g for other wall plates.



3a Connect the cables to the AV source input devices at each location.

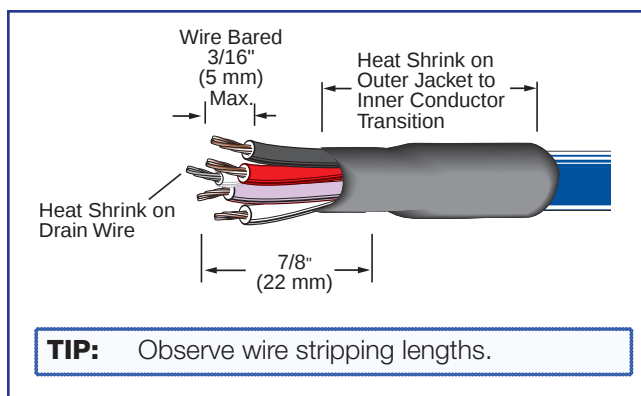


3e Mount the PVT in the mud ring then **3f** attach the Decora faceplate.

4. — Install MediaLink Controller

TIP: Before cabling and installing the MLC 104 IP Plus, locate and write down the MAC address of the device for configuring the IP address. The 12 character alphanumeric address (for example, 00-05-A6-03-9G-H4) can be found on a label on the side of the controller. The length of exposed wire is critical to avoid transmission problems. Ensure the lengths given here are adhered to when stripping the cables for connection.

NOTE: If a drain wire is used, both ends of the wire must be covered by heat shrink to avoid accidental grounding.

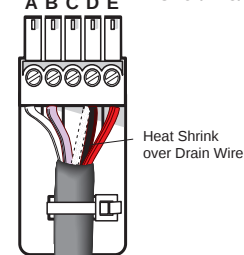


- a. Connect the MLC power and RS-232 control cable (part number **26-626-50**) as shown.

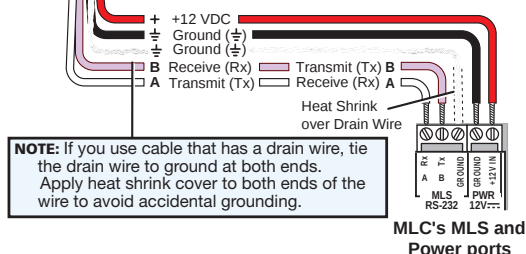
NOTE: The MLC 104 IP Plus is powered from the PVS 305SA IP. **DO NOT** connect an external power supply to the MLC 104 IP Plus unless installing an optional secondary control panel.

RS-232/MLC/IR

PVS 305SA IP
Switcher's rear panel
RS-232/MLC/IR port



From MLC 104 IP Plus terminal	Wire color	To PVS 305SA IP terminal
A - (Rx on the MLS port)	White	A - (Tx on the RS-232 port)
B - (Tx on the MLS port)	Violet	B - (Rx on the RS-232 port)
MLS RS-232 Ground	Drain wire	D - Ground
Power Ground	Black	D - Ground
12 V In	Red	E - +12 V

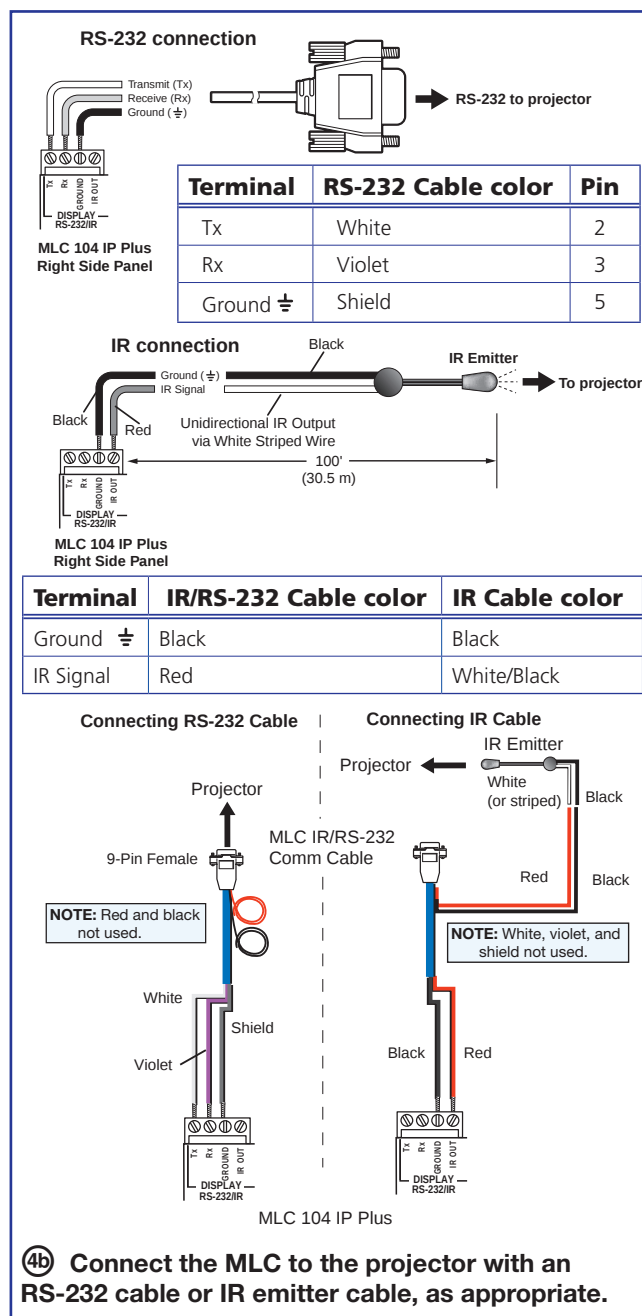


NOTE: If you use cable that has a drain wire, tie the drain wire to ground at both ends. Apply heat shrink cover to both ends of the wire to avoid accidental grounding.

- 4a) Connect the MLC 104 IP Plus to the switcher.

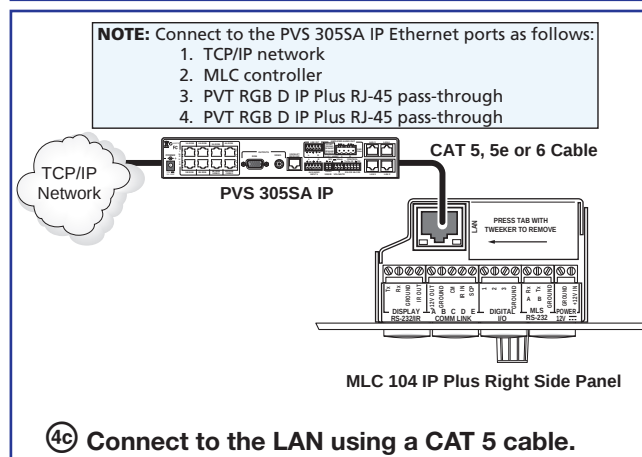
- b. Connect the IR/RS-232 projector communication cable as shown for either RS-232 or IR projector control

NOTE: Some projectors require NULL connection wiring, which inverts the Tx and Rx connections. See the projector guide for details.

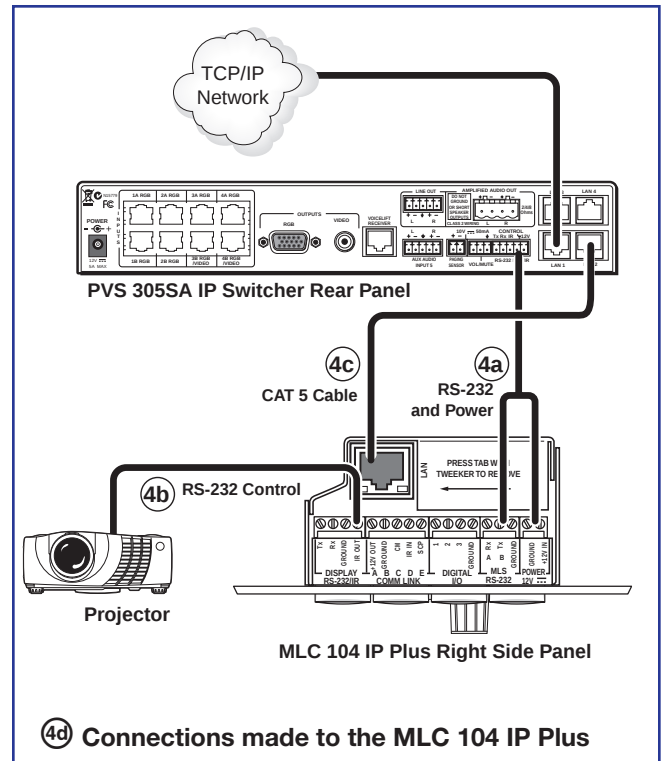


- c. Connect a network cable (CAT 5, 5e, or 6 straight through) from the PVS 305SA IP to the RJ-45 LAN jack on the MLC.

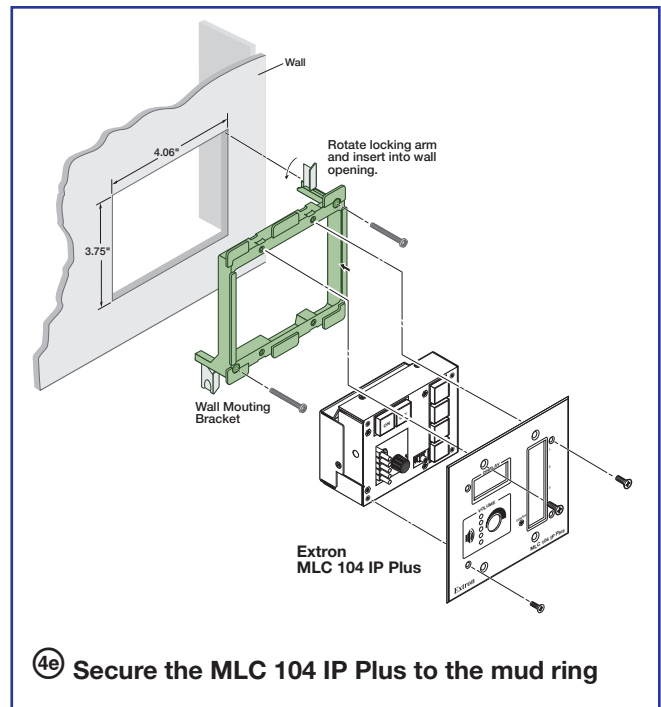
The switcher acts as a 4-port Ethernet switch, when connected to the LAN via the RJ-45 pass-through ports on the rear of the PVT RGB D IP Plus wallplates .



- d. The connections between the MLC 104 IP Plus and the PVS 305SA IP switcher should look like the figure at right.



- e. Sliding the cables into the opening, secure the MLC 104 IP Plus to the mud ring with the provided machine screws.

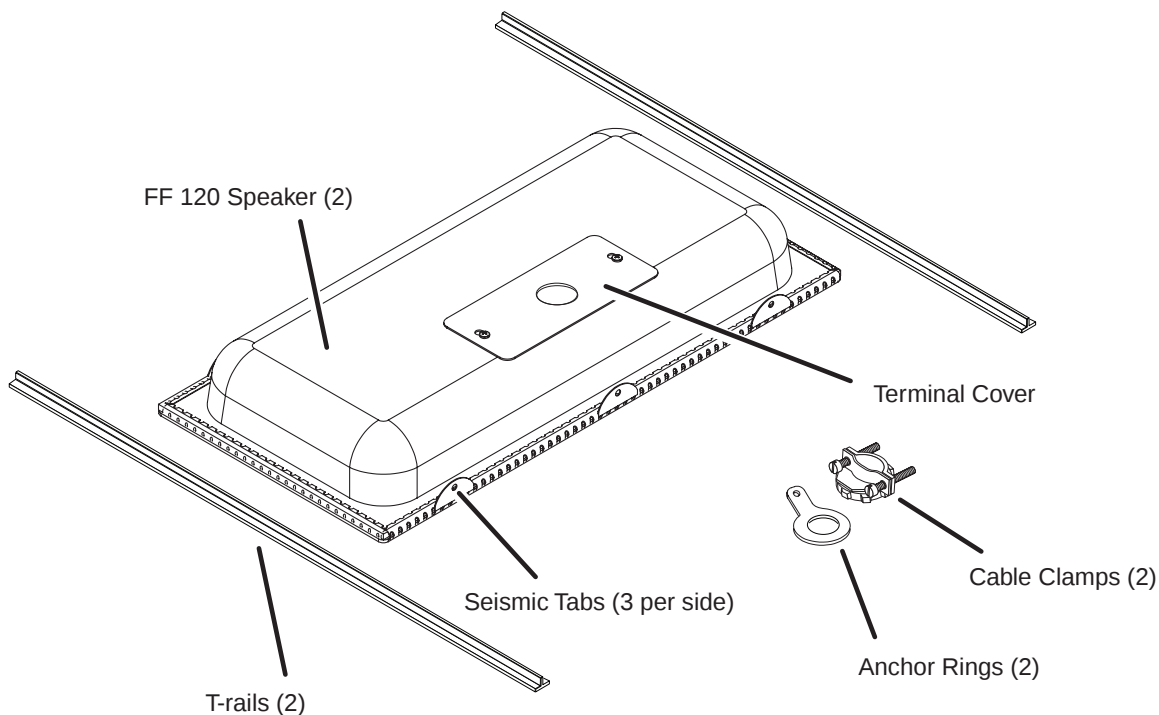


Stage 3:

Installing the FF 120 Ceiling Speakers

Stage 3 Involves Installing the Devices Shown Below.

FF 120 Flat Field Ceiling Speakers



- **Where it goes:** Installs in ceiling tiles at predetermined location for best acoustics. Connects to switcher.
- **What it does:** Receives and outputs audio signal from the PVS 305SA IP switcher.

Cabling for the Speakers

Speaker Installation:

- Speaker cable (connects ceiling speakers to the PVS 305SA IP switcher)



SPK 18, 35 ft

NOTE: The installation must conform to national and local electrical codes, and UL requirements. See the device guide for details.

1. — Cut Ceiling Tile

- a. Remove the ceiling tiles where the speakers are to be installed.

TIP: For ease of working on the speaker when it is replaced on the T-frame, remove adjacent tiles.

- b. Mark a line 12 inches from one of the short sides of the tile and cut along the line. Discard the short portion.

TIP: Use a fine hacksaw blade to cut the tile without damaging the face. Place an empty box under the tile for support and to collect the waste.



①b Mark and cut the tile

2. — Install the Speaker on the Drop Ceiling

- a. At the speaker location, lay one of the supplied T-rails 12 inches from one end of the T-frame. The speaker is placed into the small section.
- b. Remove the terminal cover from the rear of a speaker and attach the anchor ring and cable clamp to the cover.
- c. Place the speaker onto the T-frame and, passing the speaker cable through the cable clamp, connect the speaker wires to the speaker terminals:
 - Red wire - positive (+)
 - Black wire - negative (-)

ATTENTION: DO NOT short the speaker wires together as it may damage the speakers.

- d. Reattach the terminal cover.
- e. Bend the seismic tabs over the T-rails.



②a Place the T-rails on the T-frame



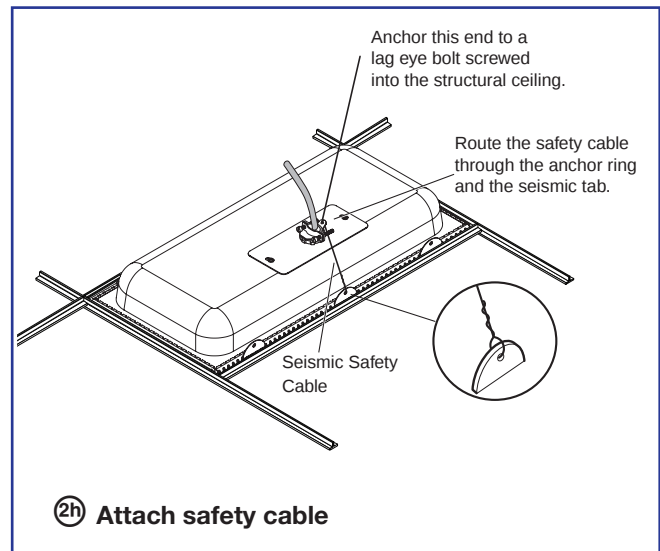
②b Remove terminal cover and attach clamp and ring.

- f.** Replace the ceiling tile.

Repeat steps **1** and **2** for each speaker that needs to be installed, connecting the speakers according to the system preferred (for example, in parallel, see page 32).

If you wish to install an optional seismic/safety cable, at each speaker location do the following:

- g.** Mark, drill and install a lag eye bolt for the seismic safety cables (not included) in the structural ceiling above the speaker location.
- h.** Pass the seismic cable through the anchor ring, down to the seismic tab and twist the end around the cable five times. Pass the other end up through the lag eye bolt and twist it around the cable five times.



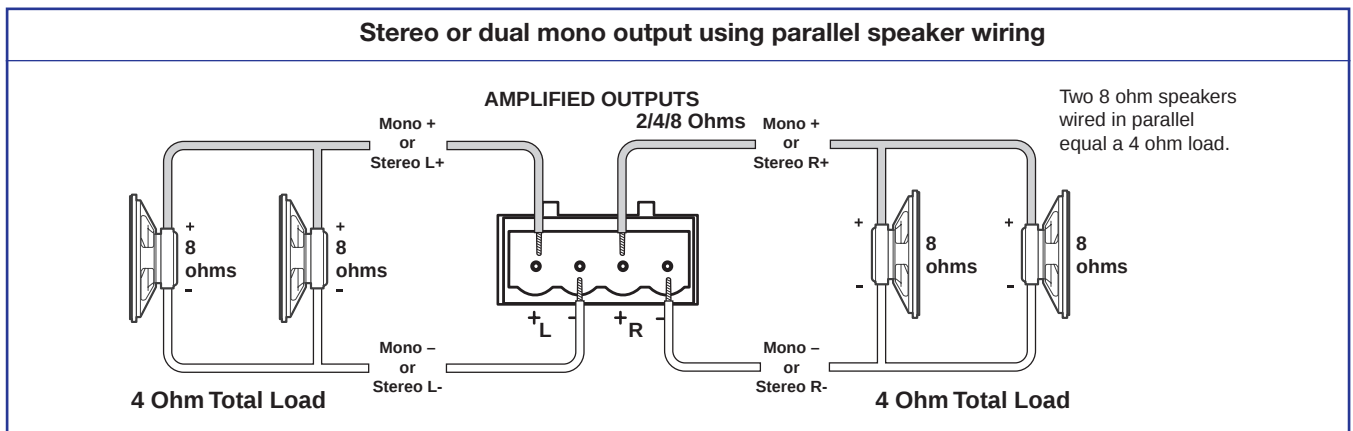
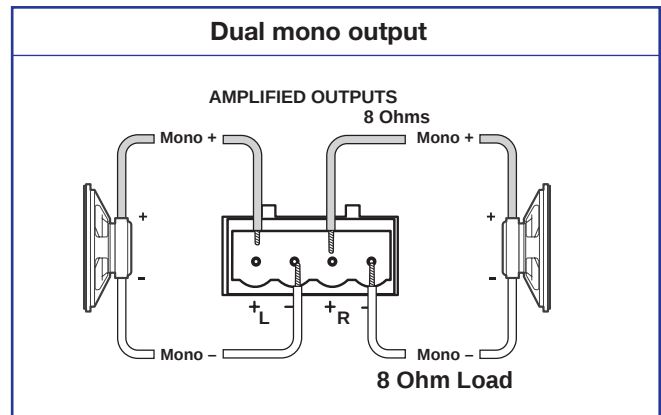
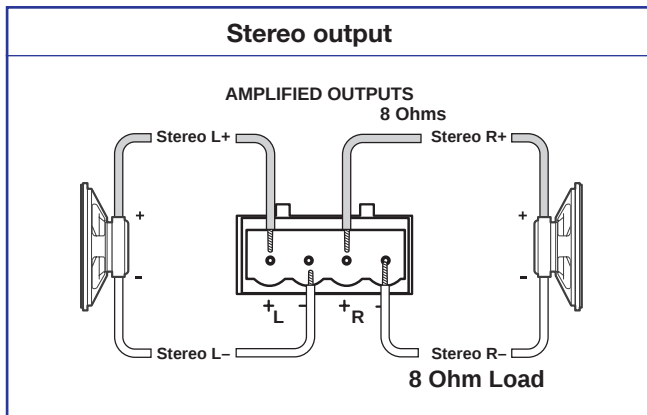
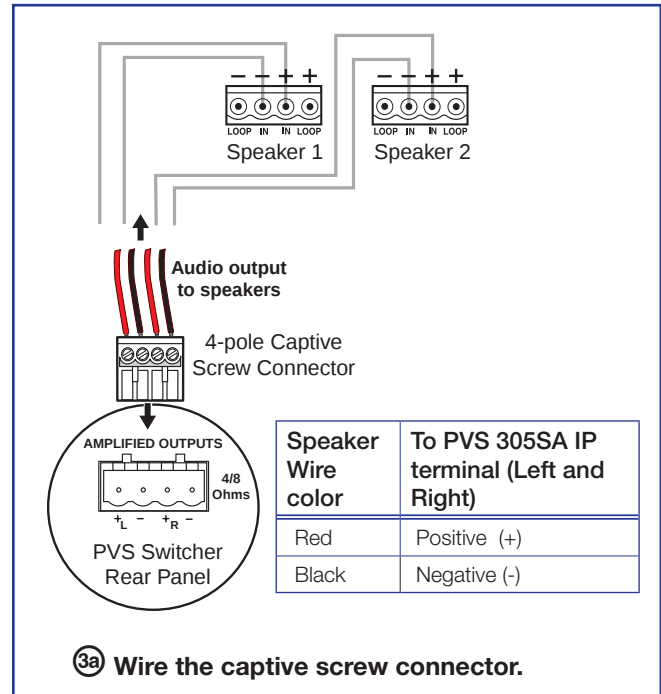
To wire the speaker, see page 32.

3. – Terminate the Speaker Cable for the PVS Switcher

- a. To terminate the cable, strip the end of the cable 0.2 inch (5 mm) and secure the wires into the supplied 4-pole captive screw connector.

ATTENTION: DO NOT short the speaker wires together as it may damage the switcher.

NOTE: The correct speaker impedance loading must be observed when setting up a speaker system. See figures below for examples.

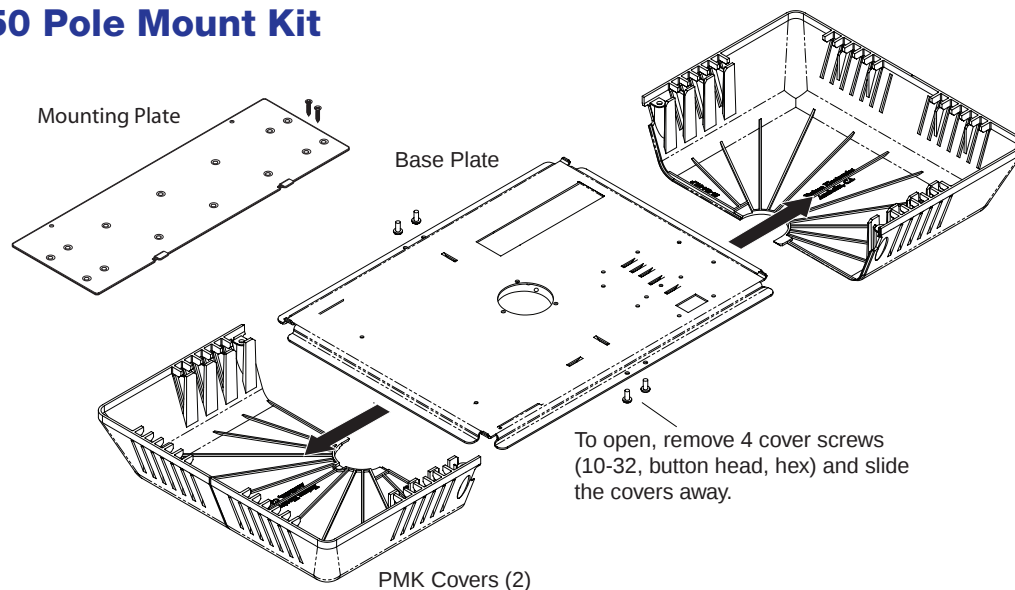


NOTE: By default, the amplifier is set for dual mono output. Use the software or Extron Special Instruction Set (SIS) commands to change the setting to stereo if desired. For full details, see the *PVS 305SA User Guide*, available online at www.extron.com. The commands given in that manual are also applicable to the PVS 305SA IP switcher.

Stage 4: Installing the PMK 550 and the PVS 305SA IP

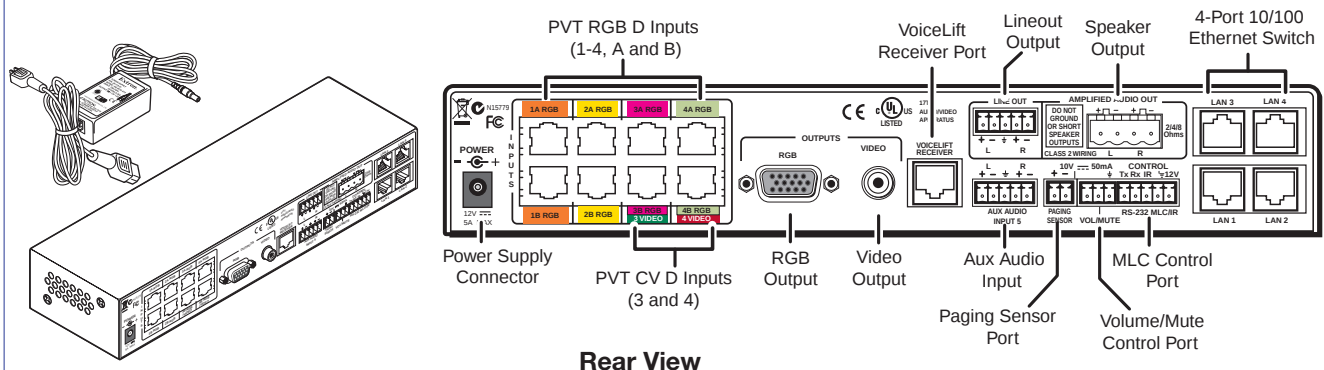
Stage 4 Involves Installing the Devices Shown Below.

PMK 550 Pole Mount Kit



- **Where it goes:** Attaches to slotted pipe, above the projector and close to the drop ceiling.
- **What it does:** Supports and hides from view the installed PVS 305SA IP switcher, power supply, and any installed optional accessories.

PVS 305SA IP PoleVault Switcher



- **Where it goes:** PVS 305SA IP and power supply install onto the base plate of the PMK 550.
- **What it does:** Receives input video and audio signals, and pass through LAN data from AV source input wall plates. Outputs and switches the video and audio signals to projector and ceiling speakers.

NOTES:

- The installation must conform to national and local building and electrical codes, and UL requirements. See the device user guide for details.
- The included power supply **MUST NOT** be installed above the suspended ceiling, in wall cavities or similar locations.

1. — Install the PMK 550 Base Plate

- a. Using a 5/32 inch hex wrench, remove the four cover screws from the center of the PMK 550 and slide the two halves apart. Remove them from the base plate.

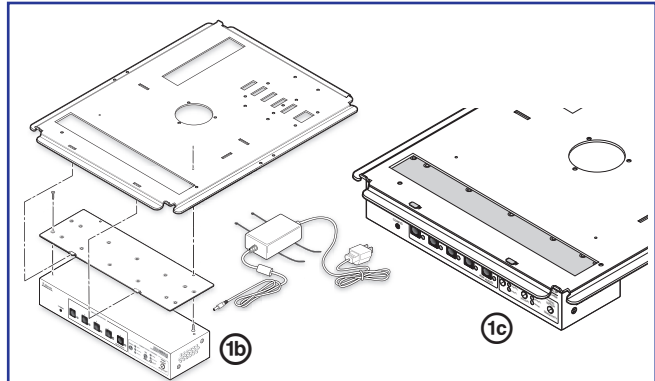
NOTE: If the PoleVault switcher and its power supply are already installed, go directly to step **2e**.

- b. To mount the PoleVault switcher, place the mounting plate, with the raised tabs upwards, on top of the switcher top and pass the two supplied 4-40 x 3/16 inch screws down through the plate holes and into the **top** of the switcher (see image at right). Secure the plate but do not overtighten.
- c. Invert the combined plate and switcher and hook the plate tabs into the PMK 550 base plate. Secure it to the base plate with two screws.

NOTE: The switcher should be mounted on the same side as the base plate's pipe collar. The switcher is secured inverted to the base plate so that when the plate is turned over and fastened on the pole, the device will be in the correct orientation

Use only the supplied screws to avoid damaging the switcher.

- d. Attach the associated power supply with the supplied plastic ties, by passing the ties through the appropriate slots and around the power supply. Tighten until snug.
- e. Using a 3/32 inch hex wrench loosen the four pipe collar set screws, and slide the plate up the pipe until the base plate is touching the drop ceiling.
- f. Level the plate and secure it in place with the four set screws located on the collar, ensuring that a minimum of three set screws are tightened firmly against the pole.



1b Place the plate (with raised tabs up) on the top of the PVS 305SA IP and secure with supplied screws. **1c** Hook tabs into base plate.



1c Invert and secure the PVS 305SA IP and **1d** the power supply on the PMK 550 base plate.



1e Slide the base plate up onto the pole and **1f** secure with the set screws.

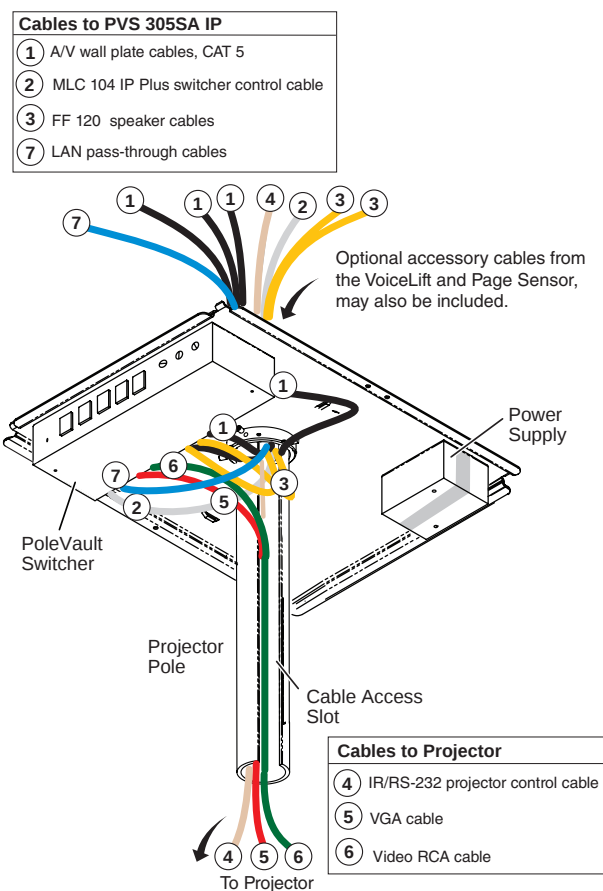
2. — Pull the Cables (at the Switcher location)

- a. Gather all the cables from the speakers, AV wall plates, MLC 104 IP Plus controller, and any installed optional devices that have been run to the switcher location. Pull them down through the ceiling hole and the pipe. These cables are:
 - the MLC power/RS-232 cable
 - the CAT 5 input cables from the wall plates
 - the speaker cables
 - the MLC to projector (IR/RS-232 projector control) cable
 - any optional device cables (Aux audio input Priority Page Sensor Kit, VoiceLift.)
 - Ethernet cable
- b. Pull the cables out of the pipe slot towards the switcher, ready for connection. Leave the IR/RS-232 projector control cable to hang out of the bottom of the pipe.
- c. Connect the output video signal cables (VGA and RCA) to the switcher and pull the loose ends down the pipe so that they hang out the pipe with the IR/RS-232 projector control cable, to be connected to the projector later.

NOTE: Do not thread any high voltage power cabling, such as power supply or projector power cords, through the projector pipe. This violates National Electrical Code.



2b) Gather the cables, pass them down the pipe.



3. — Finish installing the Pole Mount Kit

CAUTION: The PoleVault signal transmission method is specific for PVS 305SA IP switchers working with PVT wallplates. **DO NOT** connect the input ports to an MTP system or to an LAN or data transmission system.

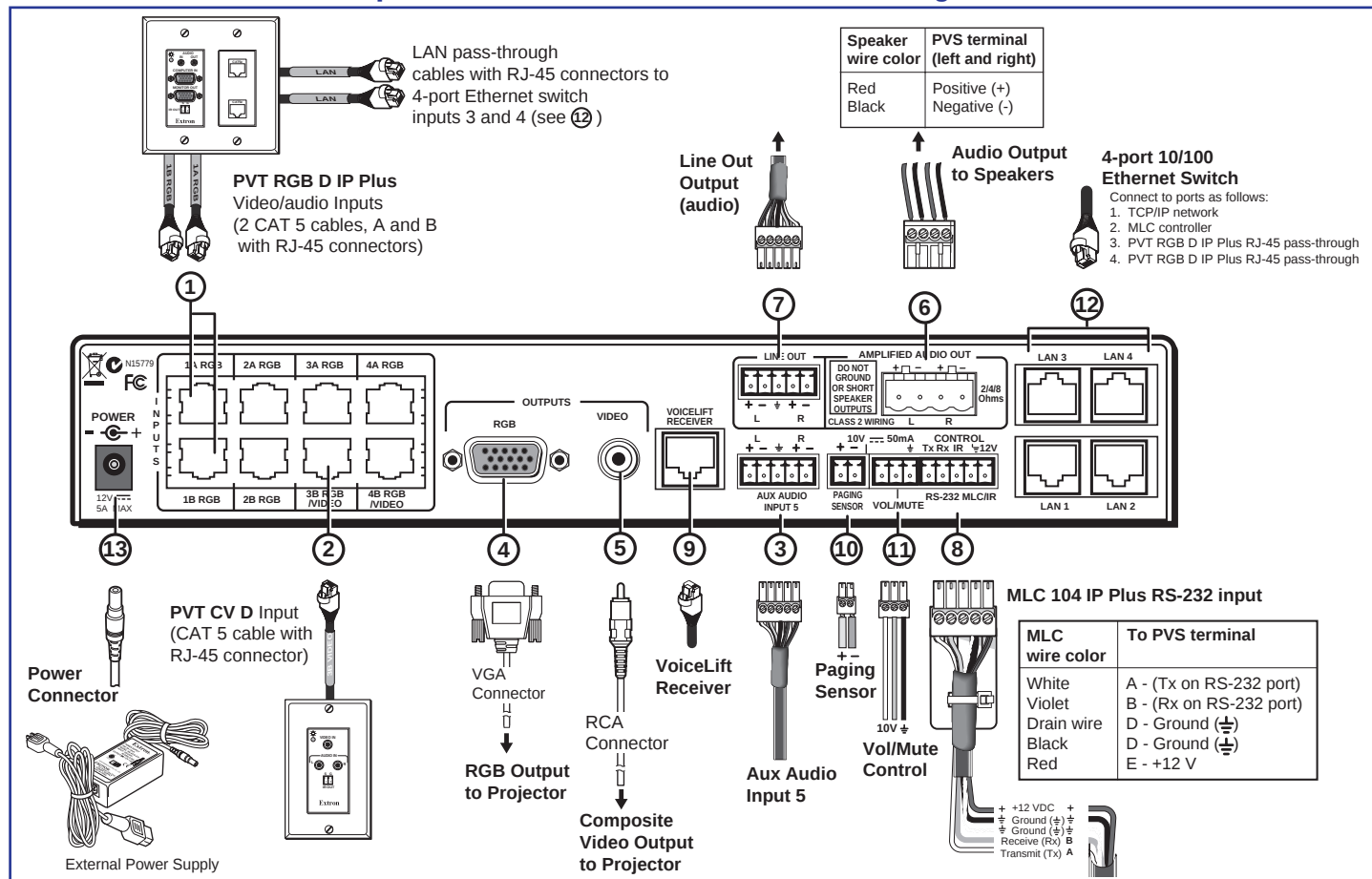
Connect the cables as follows to the switcher:

- ① RGB D IP Plus Input wall plate (CAT 5) cables according to the cable labels
- ② RGB CV D Input wall plate (CAT 5) cables according to the cable labels

NOTE: The default input signal for the switcher ports 3 and 4 is video. Do not connect an RGB cable (cable A) to ports 3A and 4A when connecting composite video cables to ports 3B and 4B. If using VGA inputs for ports 3 or 4, the ports must be reconfigured using the MLS Configuration software utility on the supplied DVD or at www.extron.com.

- ③ Aux audio input 5 cable
- ④ VGA output cable
- ⑤ RCA output cable
- ⑥ Amp audio output to speakers
- ⑦ Line out cable to an assistive or recording device (optional, see audio warning card for details)
- ⑧ Control/power cable from MLC 104 IP Plus
- ⑨ VoiceLift Receiver cable (optional)
- ⑩ Paging sensor cable (optional)
- ⑪ Vol/Mute control.
- ⑫ Pass-through LAN cables as follows:
 - Lan 1 - TCP/IP Ethernet
 - Lan 2 - MLC controller
 - Lan 3 - RGB D IP Plus RJ-45 pass-through
 - Lan 4 - RGB D IP Plus RJ-45 pass-through
- ⑬ Power supply. Do not apply power yet.

Your completed connections should look like the image below.



Stage 5: Configuring the PVS 305SA IP Switcher

Stage 5 Involves Installing the Programs Shown Below.

Items needed to help complete this stage:

- Laptop (or PC) with a network connection
- MLS Configuration program (on supplied DVD or by download from www.extron.com)
- Global configurator software
- MLC 104 IP Plus User Guide
- Projector manufacturer guide
- Device driver and driver package (download from www.extron.com)

1. — Configure the Switcher — MLS Switcher Configuration Program

- Run the DVD (or download) and install on a PC or laptop the Extron MediaLink Switcher Configuration program.
- Ensure the PC and the MLC 104 IP Plus are connected to the LAN.

NOTE: If this is not possible, connect a 2.5 mm TRS configuration cable (part number **70-335-01**) to the PC and to the front panel configuration port of the MLC 104 IP Plus.

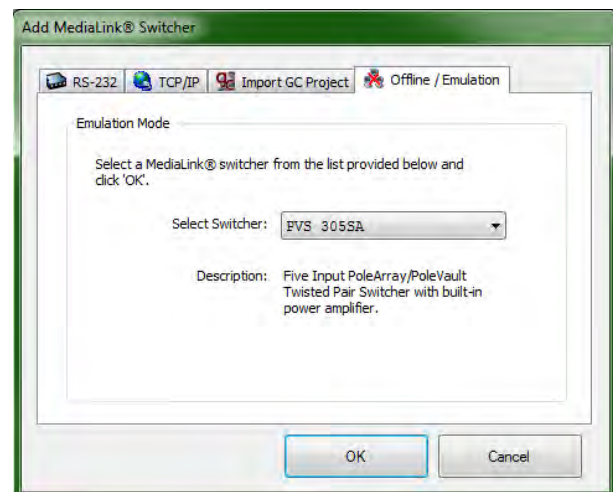
- Launch the MLS Configuration utility. Select the connection format (RS-232 or TCP/IP), or select the emulation mode (see figure 1c).

NOTE: An offline emulation of the PVS 305SA IP can aid in becoming familiar with the PVS 305SA IP before configuring an active unit. For PVS 305SA IP devices, select the PVS 305SA device in the drop-down box.

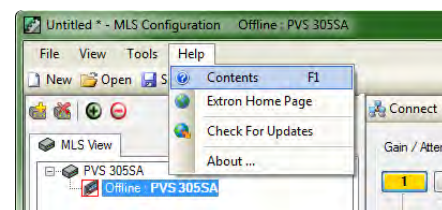
- Once the program is running click **Help**, **Contents**, or press <F1>, and follow the instructions.



The MLS Configuration Utility software



1c Launch the MLS Configuration program



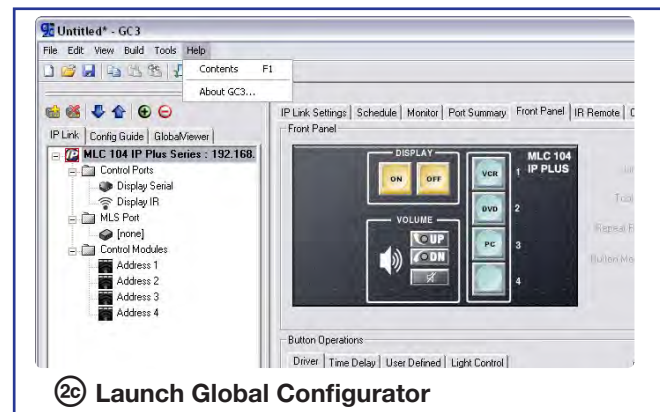
1d Select "Help, Contents" and follow instructions

2. — Configure the System — Global Configurator

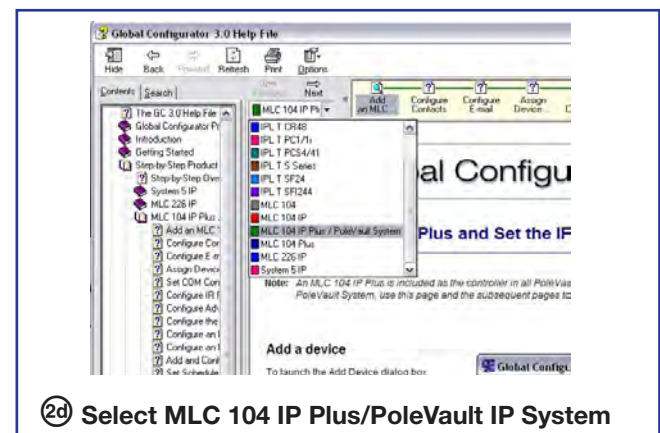
- a. Download and install Extron's Global Configurator (GC) configuration program (available at www.extron.com) on the laptop or PC.
- b. Ensure the PC and the MLC 104 IP Plus are connected to the LAN.

NOTE: Alternatively, connect a 2.5 mm TRS configuration cable (part number **70-335-01**) to the PC and to the front panel configuration port of the MLC 104 IP Plus.

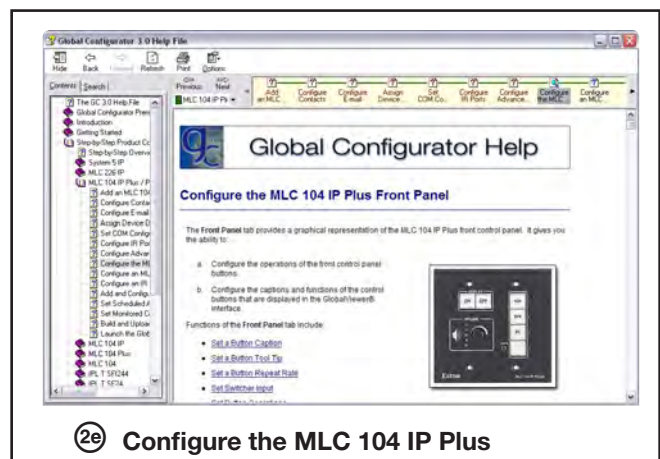
- c. Launch the Global Configurator program. Click on **Help**, **Contents**, or press <F1>.



- d. Select the MLC 104 IP Plus/PoleVault system from the drop-down box. Follow the instructions on the Help page.



- e. To move to the next page (as shown in the yellow box, figure 2e), click the **NEXT** button above the drop-down box. Repeat as needed, following the instructions on the pages to configure the MLC 104 IP Plus.



3. — Test the System

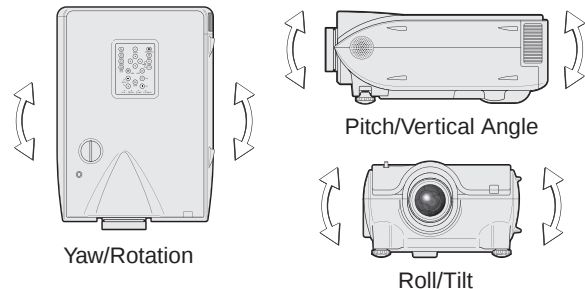
- a. Connect all the input devices (PC, DVD, document camera, and where desired LAN cables, and so forth) to the transmitters and power up the input devices. Check that power and signal are present at the transmitters. The LEDs light red when only power is present and light green when power and a signal are present.
- b. At the MLC 104 IP Plus, turn on the Display. Once the the projector is powered up, check with an active video source (PC or DVD) that a good image is shown on screen.

NOTE: If the display does not turn on, check the MLC controller configuration and wiring.

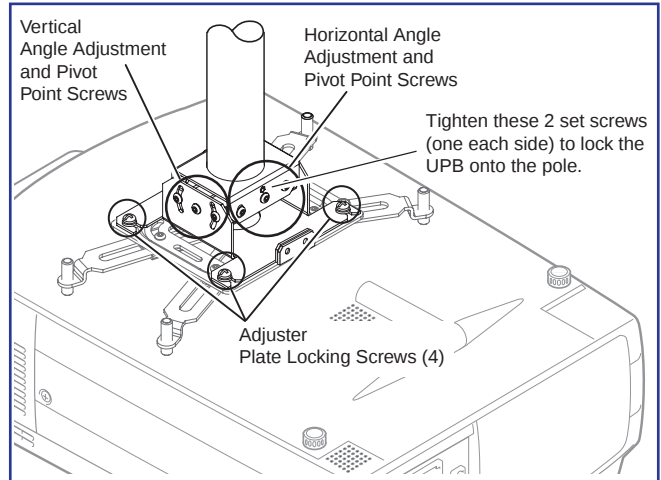
- c. Properly align and adjust projector settings as follows:
 - Adjust the rotation (yaw) by turning the unit on the projector pole. Secure the location by tightening the two set screws on the UPB mount plate to the pole (see below).
 - Loosen all pivot screws and adjust the vertical angle (pitch) of the projector. Lock down the four adjustment screws.
 - Adjust the horizontal tilt (roll) of the projector. Lock down all the remaining adjustment and pivot screws.
 - Adjust the image settings on the projector (zoom, focus, keystone, brightness, contrast, and so on). See the projector user manual.



3b) Connect and turn on the input devices, and turn on the display at the MLC.



3c) Check that an image is present, and adjust as needed.



- d. Test the controller configuration as follows:
 - Check that the MLC is controlling the projector and PVS 305SA IP switcher, and outputs the correct image when switching inputs.
 - Check the projector power control (turn it off and on at the MLC).
 - Adjust the configuration as necessary.
- e. Adjust the audio input sensitivity as follows:
 - Ensure there is an audio source at each transmitter.
 - Gradually set the MLC volume to maximum.
 - On the PVS 305SA IP switcher, set the volume for each input by selecting an input and rotating the Volume encoder to a comfortable maximum level, where the input “normal” LED flashes, indicating the level is set properly. This ensures there is no clipping if the MLC volume is turned to maximum during operation.
 - Repeat step e for all inputs.
- f. Where installed, to adjust the microphone sensitivity switch on the microphone, press and hold the volume down button until no beeps are heard from the speakers. Then press and hold the volume up button until six beeps are heard. To adjust the VoiceLift audio output level rotate the VoiceLift encoder on the switcher to the “normal” setting and the LED lights. Test and adjust the microphone so that the amplified voice is heard just above the normal voice level at each speaker location. See the *VoiceLift User Guide* for details.

NOTES:

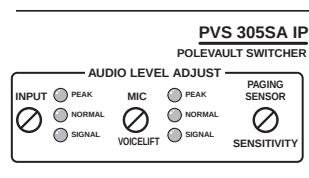
- The MLC volume control does not control the VoiceLift volume.
- By default the switcher has been configured so that input level and VoiceLift input adjustments may not be required.

- g. Where installed, it may be necessary to adjust the sensitivity of the Priority Paging system. During a test transmission of the paging system rotate the Paging Sensor encoder until program audio is no longer heard from the PoleVault speakers. See the *Priority Page Sensor Installation Instructions* for full details.

NOTE: The Paging Sensor feature must be enabled using the MLS Configuration software or SIS commands prior to adjustment.



3d Test the MLC configuration is correct.

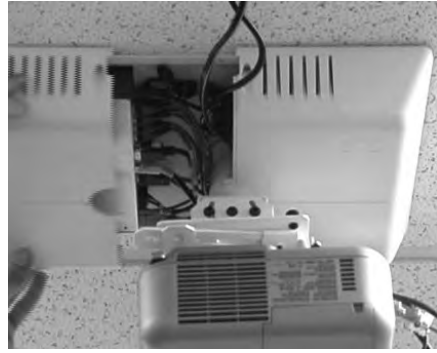


- PEAK Level set too high, lower input gain
- NORMAL Level has been properly adjusted
- SIGNAL Signal threshold -20 dBV (-18 dBu)

3e Adjust the audio levels on the PVS 305SA IP.

4.— Final Installation

- a. Slide the covers of the PMK 550 onto the base plate, ensuring the power cable can exit the unit through the power cable access slot.
- b. Using a 5/32 inch hex wrench, tighten down the four screws on the PMK 550 to secure the sides in place.
- c. Check and tighten the adjuster plate locking screws on the projector bracket.
- d. Hole plugs can be used to cover any exposed holes in the slotted pipe if necessary.



④a Slide the covers onto the PMK 550.

EDID Minder

The PVT RGB D IP Plus (EDID) and the PVT RGB D (EDID) incorporates EDID Minder, which allows the transmitter to communicate the appropriate EDID information to the source, ensuring correct video output resolution.

The 5-pole EDID Minder settings DIP switch is located on the rear of the wallplate. Once installed, these switch settings are only accessible by removing the device from its installed location.

The factory EDID setting (default) is 1024x768@60 Hz (preset 2).

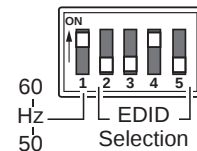
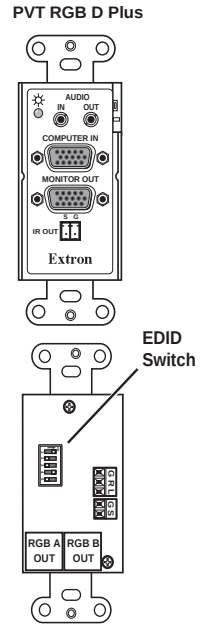
The EDID Minder has two modes; a **Preset** (Emulation) mode and a **Learn** mode.

- **Preset Mode** is available on all PVT RGB (EDID) models, and allows selection of pre-programmed EDID rates, as shown in the table below.
- **Learn Mode** is available only on the PVT RGB D Plus model, and enables the displays specific EDID information to be recorded and emulated by the input wallplate.

To use the EDID Minder mode in Preset or Learn Mode, follow the instructions below

Using Preset Mode

1. If already installed, disconnect any sources and displays from the front panel and remove the wallplate from the wall.
2. On the rear panel, set DIP switch 1 to 50 or 60 kHz as desired.
3. Set DIP switches 2 through 5 accordingly to match the desired EDID rate (see the table below).
4. Connect the video source to the Computer In VGA connector and a local display device to the Monitor Out port.
5. Restart the video source and display devices. Verify the image, making any changes to the EDID settings as needed.
6. When the image is correct, re-install the wallplate.

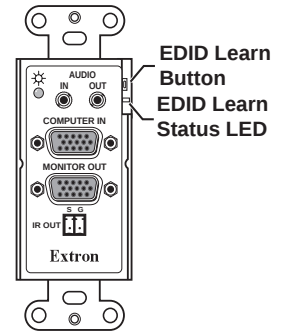


NOTE This setting is for 1024x768@60 Hz, preset 2 (factory default)

Preset Number	Switch setting				Resolution
	2	3	4	5	
0	OFF	OFF	OFF	OFF	Learn Mode (PVT RGB D Plus only)
1	OFF	OFF	OFF	ON	800x600
2	OFF	OFF	ON	OFF	1024x768 (default)
3	OFF	OFF	ON	ON	1280x720
4	OFF	ON	OFF	OFF	1280x768
5	OFF	ON	OFF	ON	1280x800
6	OFF	ON	ON	OFF	1280x1024
7	OFF	ON	ON	ON	1360x768
8	ON	OFF	OFF	OFF	1366x768
9	ON	OFF	OFF	ON	1400x1050
A	ON	OFF	ON	OFF	1440x900
B	ON	OFF	ON	ON	1600x1200
C	ON	ON	OFF	OFF	1680x1050
D	ON	ON	OFF	ON	1920x1080
E	ON	ON	ON	OFF	1920x1200
F	ON	ON	ON	ON	N/A

Using Learn Mode (Available on PVT RGB D Plus only)

1. Disconnect any sources from the front panel and remove the wallplate from the wall.
2. On the rear panel, set all the DIP switches to off (down).
3. Temporarily connect the main display device (the projector) to the Monitor Out port.
4. On the front panel, the learn LED is lit solid green. Press and release the Learn button.
5. The LED flashes red when in “learning” mode, then returns to solid green when complete.
6. Re-install the wallplate and reconnect the source device.
Connect a local display device to the Monitor Out port as needed.
7. Reconnect the projector to the PoleVault switcher. Restart the source and display devices



Optional Accessory Installation — VoiceLift System

The Extron VoiceLift system is an easy-to-use, low-power, voice amplification system that ensures the speaker's voice can be clearly heard at a comfortable level throughout the classroom. Speech is picked up by the pendant microphone worn by the teacher and is transmitted via wireless from a base station receiver and the PVS 305SA IP to the installed ceiling speakers.

For detailed installation information, see the VoiceLift Installation Instructions, supplied with the device.

VoiceLift System Included parts:

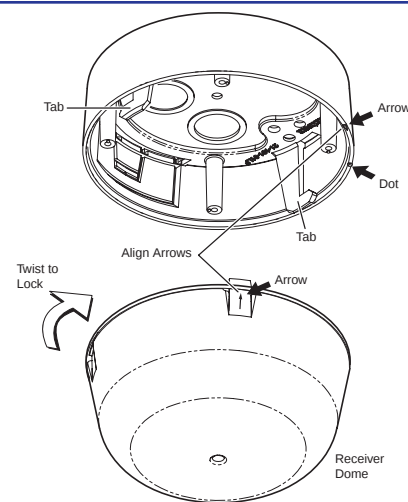
- VLP 102 pendant microphone
- VLR 102 Receiver
- Wall charger

Installation Procedure

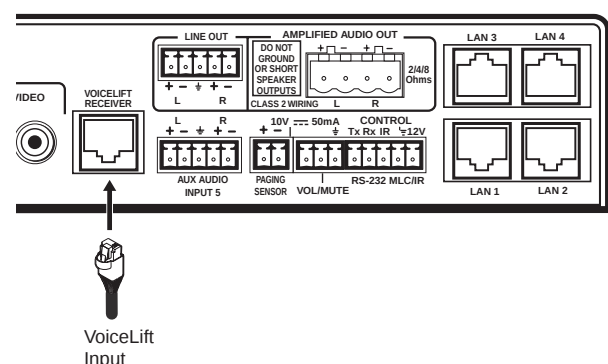
1. Determine the optimal receiver location and mark and drill a 2.5 inch diameter hole in the ceiling tile where it is to be installed.
2. Insert the ceiling bracket screw through the back plate (attached to the housing) and the hole in the ceiling tile and loosely attach the Z bracket.
3. Align the back plate knockout over the hole in the ceiling tile and tighten the bracket screw to secure.
4. Replace the ceiling tile.
5. Pull the communication and power RJ-45 Ethernet cable (and other secondary use cables) through the receiver base and connect the Ethernet cable to the Receiver Out port (the RJ-45 connector on the left on the receiver base).
6. If desired, set the Tone and Mix DIP switches on the receiver base.
7. Place the dome onto the housing, align the arrows on the dome locking tab and on the housing rim. Turn the dome until it locks in place (approximately 1/8 turn).
8. Pull the cables from the receiver to the PVS 305SA IP switcher location, through the pipe and down into the PMK 550.
9. Disconnect the power from the switcher, and plug the included VoiceLift RJ-45 into the PVS 305SA IP VoiceLift receiver port.
10. Replace power to the switcher. This also powers the VoiceLift receiver.



② Attach the Z bracket to the ceiling tile and the back plate.



⑦ Align the arrows on the housing rim and the dome tab.



⑨ Plug VoiceLift cable into PVS 305SA IP.

Optional Accessory Installation — Priority Page Sensor Kit

The Priority Page Sensor Kit momentarily silences classroom audio whenever a page is made from a public address (PA) system.

For detailed information, see the Priority Page Sensor Kit Installation Instructions, supplied with the device.

NOTE: The Priority Page Sensor works with traditional 25 V or 70 V and 4/8 ohm PA systems. It is not designed for, and may not work properly with, two-way intercoms or systems that are IP-based or that use digital clocks.

Priority Page Sensor Kit Included Parts:

- Priority Page Sensor
- UL-compliant junction box with a cable clamp and a lid
- 35 feet. (10.7 m) of sensor cable

Installation Procedure

WARNING: Risk of serious personal injury if installation is not done correctly. All structural steps, anchoring, and electrical installation should be performed by qualified personnel in accordance with local and national building codes, fire and safety codes, and/or local and national electrical codes.

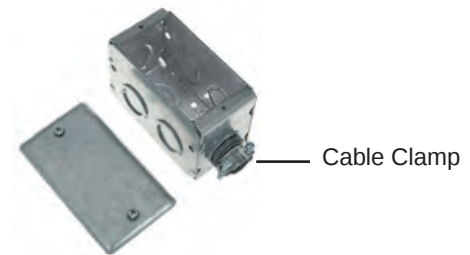
To meet the plenum rating requirement, the Priority Page Sensor assembly must be installed in a UL-compliant junction box with a cover. All cables to and from the sensor must be plenum rated.

1. Choose a suitable location for the sensor near, and in series with, the speakers.
2. **If the sensor is to be located in a plenum space, the junction box (provided) can be used.** Knock out an opening at one end of the box and attach the cable clamp (see figure at right). Secure the box at the sensor location.
3. Disconnect the PA system speaker cable from the speaker.
Remove the outer protective jacket from the speaker cable to expose the two speaker wires from the sensor to the speaker (as shown at right). Do not remove the inner protective jackets that cover the individual wires.
If the sensor is to be located in a plenum space, feed a loop of one of the exposed speaker wires through the cable clamp into the junction box. The other wire must bypass the sensor to be connected later directly to the speaker.
4. Open the top of the Priority Page Sensor and loop the speaker wire that is inside the junction box tightly around the top part of the sensor.

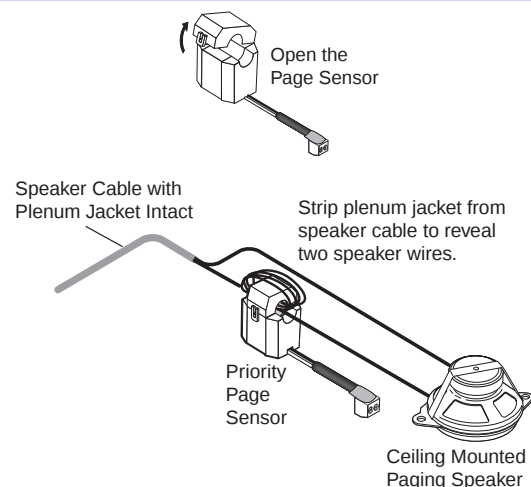
NOTE: Loop only one of the speaker wires around the sensor cover. Do not loop both wires. Polarity need not be observed.

The other speaker wire must bypass the sensor and connect directly to the speaker.

- For a 25 V or 70 V system, wrap 5 to 8 loops.
- For a 4/8 ohm system, wrap 2 to 4 loops.



② UL-Compliant Junction Box and Cover



④ Open the sensor and loop a wire around the sensor.

5. Close and latch the top of the Priority Page Sensor. Reconnect the speaker cable to the speaker.
6. Strip 3/16 inches of insulation from each conductor on the bare wire end of the remaining blue sensor cable. Do not tin the leads. Feed the wire into the junction box (clamping it down if necessary) and connect the wires to the 2-pole captive screw connector on the PVS 305SA IP. Polarity need not be observed
7. If a junction box is being used in a plenum space, ensure the sensor and all wires fit inside the box (as shown at right). All cables leaving the box must be plenum rated. Tighten the cable clamp and secure the lid to the junction box.

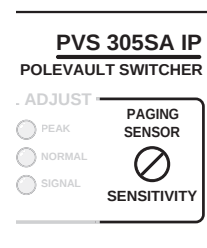
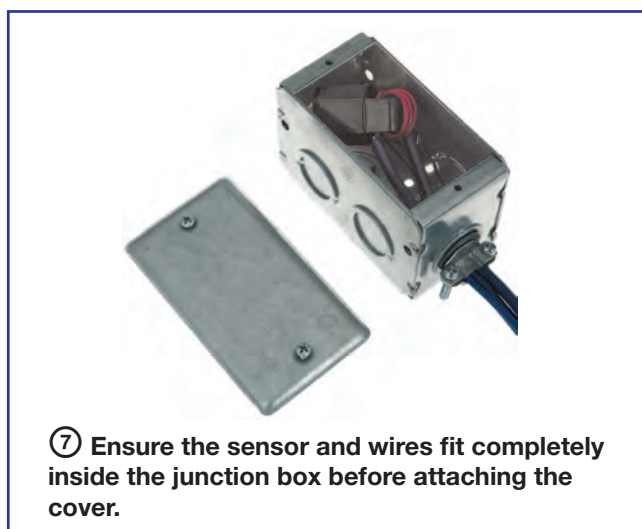
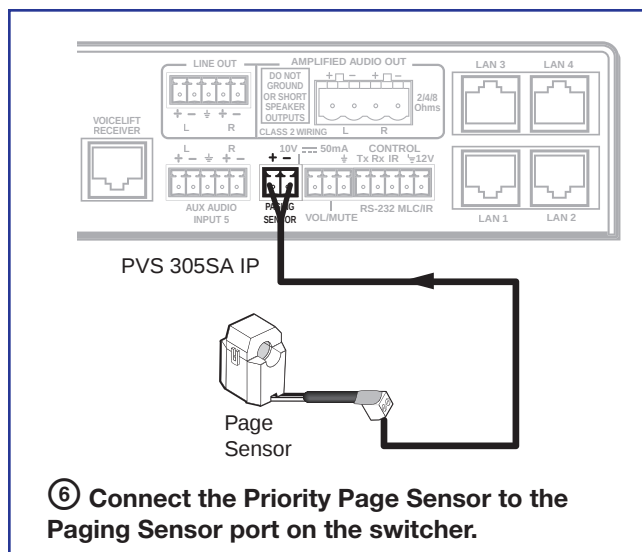
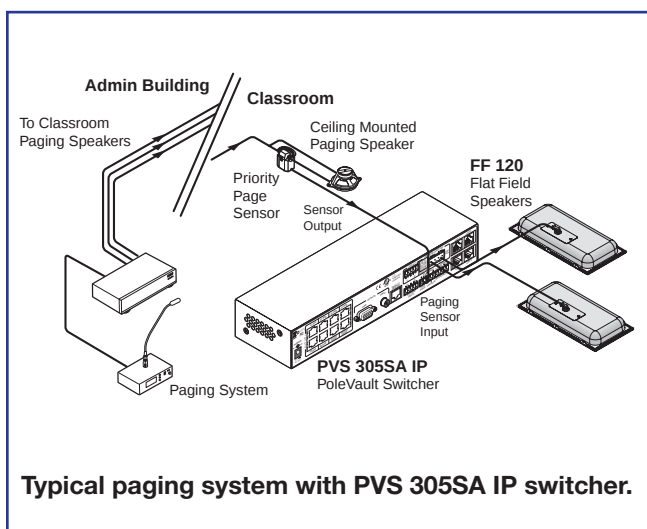
NOTE: To enable the switcher's paging sensor port, use the MediaLink Switchers Configuration program (for MLS and PoleVault Switchers PVS), available at www.extron.com.

Testing and Adjustment Procedure

The fully installed system is shown below.

To test that the classroom audio is muted when a PA system announcement (a page) occurs:

1. Turn the classroom audio on.
2. Speak into the PA system microphone. The classroom audio should be muted while the PA page occurs and be restored when the page ends.
3. If the program fails to mute the classroom audio during a page, turn the Sensitivity adjustment, on the front panel of the PVS 305SA IP, clockwise.
4. If the classroom audio is muted without a page occurring, turn the Sensitivity adjustment counterclockwise



Adjusting sensitivity knob:
Clockwise to increase
Counterclockwise to decrease

③ and ④ Sensitivity Knob Adjustment

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia Pty Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876

Asia: 65.6383.4400

Europe: 31.33.453.4040

Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Outline of Installation Steps

Stage 1 — Install the Screen and Projector

- ☐ Mark the screen location (page 12).
- ☐ Install projector to verify location (page 12).
- ☐ Verify the image location (page 15).
- ☐ Cut the ceiling tile (page 16).
- ☐ Preliminary safety hardware installation (page 16).
- ☐ Finish projector drop ceiling mount installation (page 17).
- ☐ Secure the projector drop ceiling mount to the ceiling (page 18).
- ☐ Install the electrical box (if required) (page 19).
- ☐ Install the screen (page 19).

Stage 2 — Mount the PVT Wall Plates and the MLC 104 IP Plus.

- ☐ Install the mud rings (page 23).
- ☐ Pull cables (at the input locations) (page 24).
- ☐ Install the wall plates (page 25).
- ☐ Install the MediaLink Controller (page 26).

Stage 3 — Install the FF 120 Speakers.

- ☐ Cut the ceiling tile (page 30).
- ☐ Install the speaker on the drop ceiling (page 30).
- ☐ Terminate the speaker cable for the PVS switcher (page 32).

Stage 4 — Install the PMK 550 and the PVS 305SA IP.

- ☐ Install the PMK 550 base plate (page 34).
- ☐ Pull the cables (at the switcher location) (page 35).
- ☐ Finish installing the pole mount kit (page 36).

Stage 5 — Configure the PoleVault Switcher and the System.

- ☐ Configure the switcher — MLS Switcher Configuration program (page 37).
- ☐ Configure the system — Global Configurator (page 38).
- ☐ Test the system (page 39).
- ☐ Final installation (page 41).

Extron Headquarters +1.800.633.9876 (Inside USA/Canada Only) Extron USA - West Extron USA - East +1.714.491.1500 +1.919.850.1000 +1.714.491.1517 FAX +1.919.850.1001 FAX	Extron Europe +800.3987.6673 (Inside Europe Only) +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.299.1800 +971.4.299.1880 FAX	Extron Korea +82.2.3444.1571 +82.2.3444.1575 FAX	Extron India 1800.3070.3777 (Inside India Only) +91.80.3055.3777 +91.80.3055.3737 FAX
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