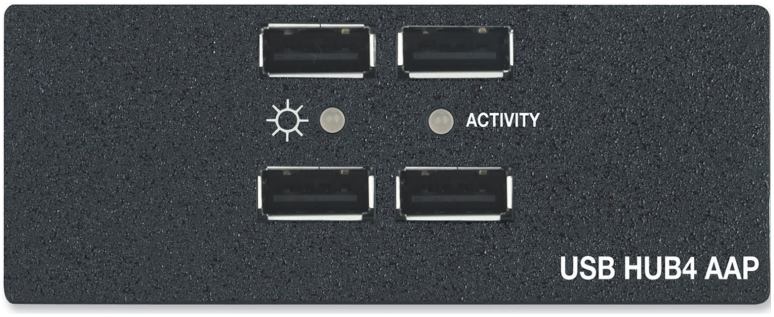
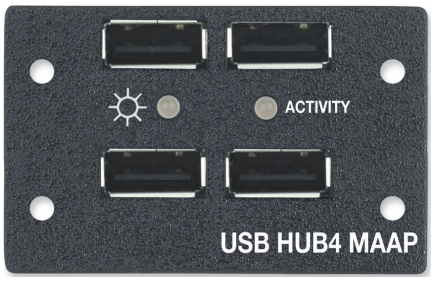
User Guide

USB Hubs

USB HUB4 Series

AAP and MAAP USB Hubs





Extron

68-1735-01 Rev. D
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Safety Instructions

Safety Instructions • English

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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.**

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Instrucciones de seguridad • Español

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

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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 l'équipement.

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.com.**

Istruzioni di sicurezza • Italiano

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UWAGI: Ten symbol, ⚠, gdy używany na produkt, jest przeznaczony do ostrzegania użytkownika ważne operacyjne oraz instrukcje konserwacji (obsługi) w literaturze, wyposażone w sprzęt.

Informacji na temat wytycznych w sprawie bezpieczeństwa, regulacji wzajemnej zgodności, zgodność EMI/EMF, dostępności i Tematy pokrewne, zobacz Extron bezpieczeństwa i regulacyjnego zgodności przewodnik, część numer 68-290-01, na stronie internetowej Extron, **www.extron.com.**

Инструкция по технике безопасности • Русский

ПРЕДУПРЕЖДЕНИЕ: Данный символ, ⚠, если указан на продукте, предупреждает пользователя о наличии неизолированного опасного напряжения внутри корпуса продукта, которое может привести к поражению электрическим током.

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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.com**，参见 Extron 安全规范指南，产品编号 68-290-01。

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安全上のご注意 • 日本語

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安全上のご注意、法規厳守、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.com** より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

안전 지침 • 한국어

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NOTES: 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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ＶＣＣＩ－Ａ

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

CAUTION: Risk of minor personal injury.
ATTENTION : Risque de blessure mineure.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

Specifications Availability

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

Extron Glossary of Terms

A glossary of terms is available at **http://www.extron.com/technology/glossary.aspx**.

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Introduction

- About this Guide
- About the USB HUB4
- Features
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About this Guide

This guide contains information about the installation and operation of the Extron USB HUB4 AAP and the USB HUB4 MAAP. The terms “hub” and “HUB4” refer to both models interchangeably when instructions apply to both.

About the USB HUB4

The USB HUB4 AAP and USB HUB4 MAAP are compact, four-port USB hubs designed to mount within a double-sized Extron AAP or MAAP frame. They enable multiple USB devices to be connected to a single USB port on a host computer and can be mounted in a variety of locations. The MAAP models are available in a black or white finish. The AAP models are available in black and white.

Features

- **USB 2.0 compatibility** — The HUB4 is compatible with USB 2.0, enabling communication with a variety of USB peripheral devices.
- **Supports data transfer rates up to 480 Mbps** — Allows high speed transfer from thumb drives and other mass storage devices.
- **Four port output hub with 5 V, 500 mA available on each port** — Allows simultaneous connection to multiple peripheral devices such as mass storage devices, keyboards, mice, or other HID – Human Interface Devices. When used with an energy-efficient external universal power supply, the USB HUB4 can provide 5 V, 500 mA on each port for attached peripheral devices.
- **Choice of USB Type B and captive screw host inputs** — A captive screw input option and overall shallow depth allows installation in junction boxes, behind whiteboards, in lecterns, and other space-constrained environments.
- **Mounting options** — The HUB4 faceplate can be mounted on a wall, furniture, or in Extron architectural products (such as HSA Hideaway Surface Access enclosures) that accept double-sized MAAP or AAP connector panels.
- **Power** — The USB HUB4 can be powered directly from a computer via the USB connection, or with an optional Extron PS 1215 external 1.5 A, 12 VDC power supply (see **www.extron.com** for more information).
- **Front panel LEDs** — The Activity LED lights when a peripheral device has been recognized by the host and is in communication with it. The Power LED lights with the USB HUB4 is receiving power.

Application Diagram

The following diagram shows an example of a USB HUB4 AAP mounted to an MLM wallplate and installed in a podium.

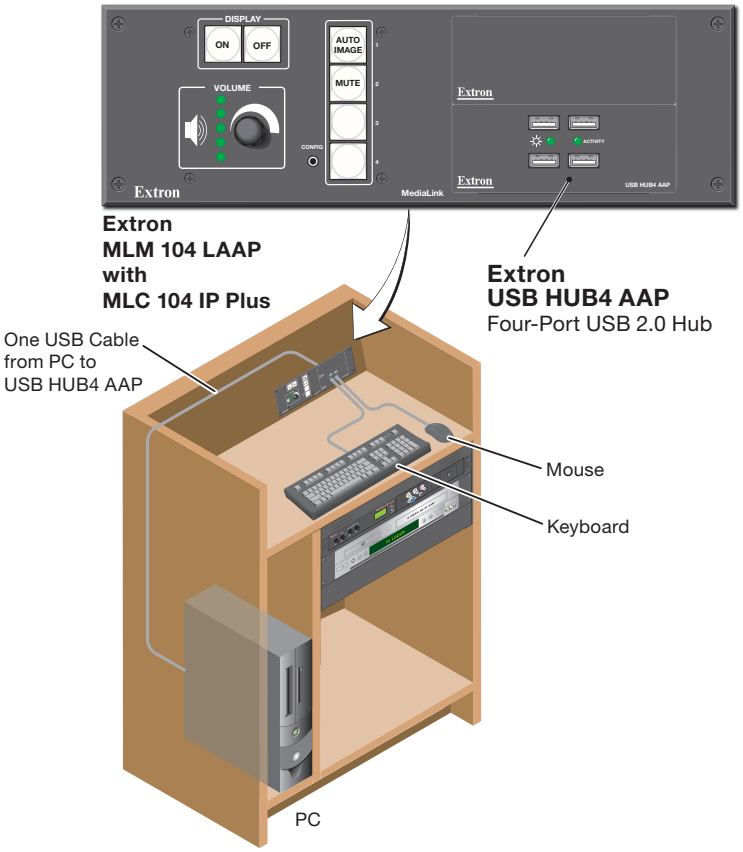


Figure 1. Application Diagram for a USB HUB4 AAP

Installation

- **Installation Overview**
- **Rear Panel Features**
- **Front Panel Features**

Installation Overview

1. If using an electrical junction box or a mounting bracket, install it in the wall or furniture (see **Wall or Furniture Mounting** on page 10).
2. Mount the USB HUB4 into an appropriate sized AAP or MAAP mounting frame, rack space frame, or other Extron listed product (see **Mounting the hub to a mounting frame** on page 12).

   NOTES:

   - The equipment is to be installed in Extron UL Listed products, which accept Architectural Adapter Plates (AAPs) or Mini Architectural Adapter Plates (MAAPs) or installed in a Listed two-gang junction box with provided faceplate.
   - Use an AAP or MAAP blank for any unused faceplate openings.

3. Connect the USB HUB4 to the host computer in either of the following ways:
   - **Using the USB mini B connector:** Connect a USB A to USB mini-B cable (provided) to the USB mini-B port on the HUB4 rear panel.
   - **Using the green captive screw USB In port:** Remove the Type B or Type mini-B terminator from a USB A to B or A to USB mini-B cable and insert the wires from the cable into the 5-pole USB In port. This method may be necessary if space is limited (see **Connecting to the Captive Screw USB Port** on page 5).

   NOTE: Choose one of these two methods to connect the HUB4 to the host computer. Do not connect the host computer to both HUB4 connectors at the same time.

4. (Optional) If the USB peripheral devices that are connected to the HUB4 require more power than the hub can provide, wire an optional Extron PS 1215 external 1.5 A, 12 VDC power supply to the Power In port on the rear panel (see **Connecting the External Power Supply** on page 6).
5. (Optional) If using an electrical junction box, mount the HUB4 and mounting frame to it (see **Mounting the hub to a wall box** on page 12). If using a mounting bracket, this step is not needed.
6. Connect the peripheral USB devices to the front panel USB A ports.
7. Power on the host PC and, if applicable, the desktop power supply.
8. Check the front panel power indicator LED to verify that the HUB4 is receiving power.

Rear Panel Features

The rear panels of the USB HUB4 AAP and USB HUB4 MAAP models contain two types of USB In ports, either of which can be used for the USB cable that connects the computer to the HUB4.

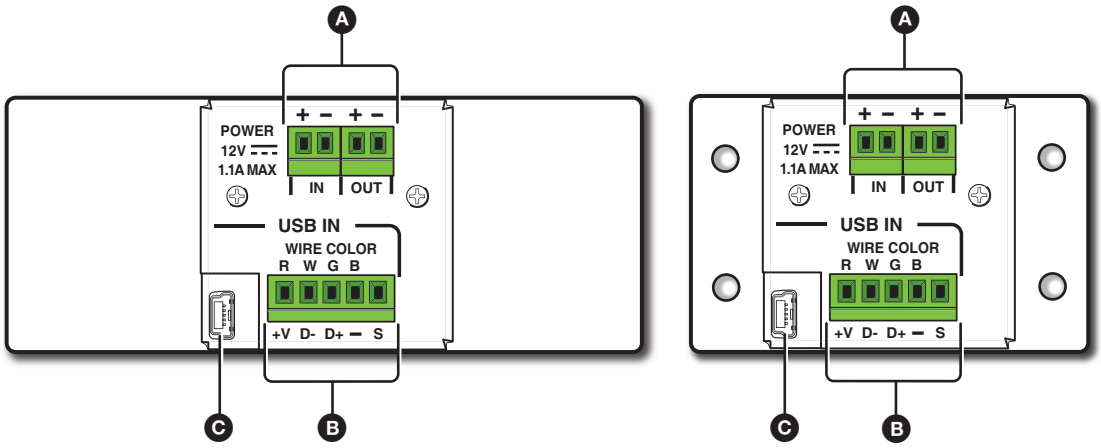


Figure 2. USB HUB4 AAP and MAAP Rear Panels

A **Power input** — If using an Extron external 12 VDC power supply to power the HUB4, connect it to the first two pins (labeled `In`) of this 4-pole, 3.5 mm direct insertion captive screw port (see **Connecting the External Power Supply** on page 6).

If desired, connect another Extron wall mounted device (for example, an MLC 104 IP Plus AAP mounted with the HUB4) to the third and fourth pins (labeled `Out`). Both devices can then be powered from the single connected power supply (power loop out).

If the HUB4 is powered from the computer via the USB connection, this port is not used.

NOTE: Ensure that your system power requirements do not exceed the capacity of the Extron 12 VDC power supply. The current is limited to 100 mA per port when the devices are powered via the USB port; 500 mA per port when they are powered via the power supply.

B **Captive screw USB In port** — Connect a USB A to unterminated USB B or USB mini-B cable from the computer to this 5-pole 3.5 mm captive screw port (see **Connecting to the Captive Screw USB Port** on page 5).

C **Mini-B USB In port** — Connect a USB A to USB mini-B cable from the computer to this USB mini-B port.

NOTE: Only one host can be connected to the USB In ports at a time. If two hosts are connected, the HUB4 defaults to the host attached to the USB mini-B port.

Connecting to the Captive Screw USB Port

It is recommended to connect a computer to the HUB4 by plugging the mini-B end of the provided USB cable into the USB port on the rear panel. If space is limited, use the captive screw USB In port instead, prepare and connect the cable as follows:

1. Cut off the B end of a USB A to USB B or USB A to USB mini-B cable. Do not remove the USB A connector.
2. Strip away the exterior jacket and the foil insulation from the unterminated end of the cable to expose 1 to 2 inches (2.5 to 5 cm) of the wires and shield.

ATTENTION:

- Do not cut or remove the braided shield.
- Ne pas couper ou retirer le blindage tressé.

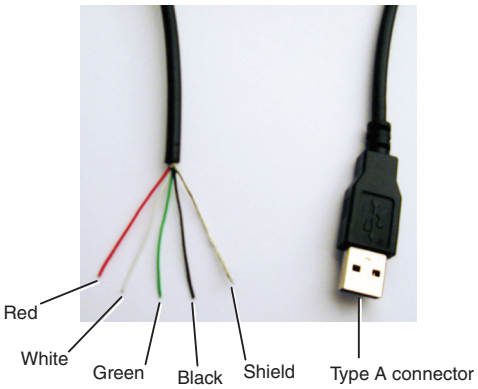
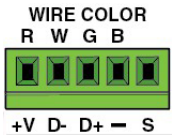


Figure 3. USB A to B (or mini-B) Cable with the USB B Connector Removed

3. Twist the exposed shield strands together.
4. Strip 1/8 inch (4.5 mm) of the insulation from the end of each colored wire of the cable.
5. Connect the colored wires and the twisted shield to the HUB4 as described below. Note that each pin of the port is labeled above with the color of the wire that should be connected to it (R, W, G, and B), based on the USB standard for wiring color schemes.



   - **V+/R** — +5 VDC. Connect the **red** wire to this port.
   - **D-/W** — Data –. Connect the **white** wire to this port.
   - **D+/G** — Data +. Connect the **green** wire to this port.
   - **– /B** — Ground. Connect the **black** wire to this port.
   - **S** — Shield. Connect the braided shield to this port.
6. Plug the A end of the USB cable into a USB port on the computer (see **figure 4** on page 6).

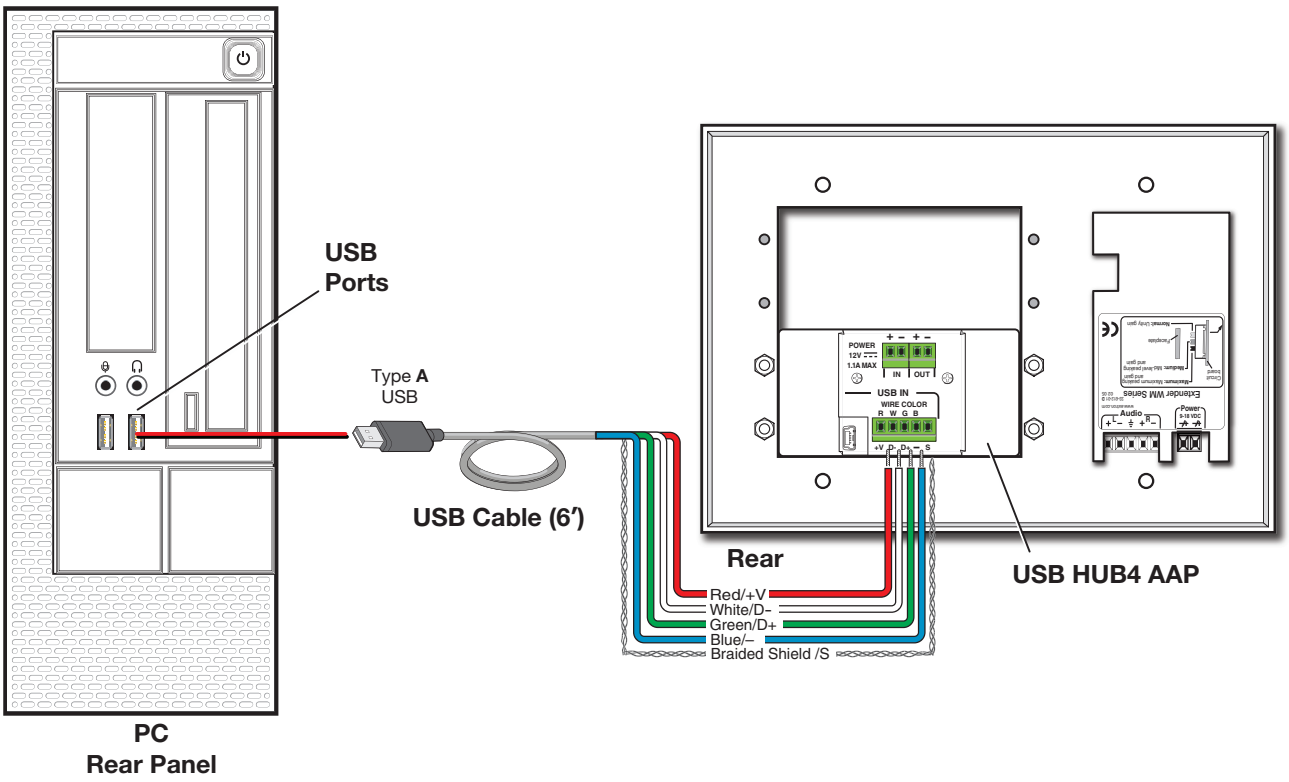


Figure 4. Connecting the PC to the USB Captive Screw Port

Connecting the External Power Supply

If the peripheral devices connected to the HUB4 require more power per port than the 100 mA that is provided through the computer or if you want to drive an additional device from the same power source, attach an Extron PS 1215 external 1.5 A, 12 VDC power supply to the hub to increase the power to 500 mA per port.

NOTES:

- It is recommended to use a 12 VDC external power supply if planning to use flash drives or web cams, because those devices typically require greater than 100 mA.
- If only a keyboard and mouse are being powered, 100 mA is usually sufficient.
- Use only the Extron PS 1215 power supply with the USB HUB4.

ATTENTION:

- Always use a power supply provided by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Utilisez toujours une source d'alimentation fournie ou recommandée par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que le produit final.

- The power supply shall not be permanently fixed to building structure or similar structure.
- La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.

- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16.
- Cette installation doit toujours être en accord avec les mesures qui s'applique au National Electrical Code ANSI/NFPA 70, article 725, et au Canadian Electrical Code, partie 1, section 16.

- Do not place the power supply within environmental air handling spaces or the wall cavity.
- Ne pas placer les sources d'alimentation dans une zone de traitement de l'air ni dans une cavité murale.

- If not provided with a power supply, this product is intended to be supplied by a UL Listed power source marked "Class 2" or "LPS" and rated at 12 VDC and a minimum of 1.1 A and suitable for an ambient temperature of 50°C.
- Si le produit n'est pas fourni avec une source d'alimentation, il doit être alimenté par une source d'alimentation certifiée UL de classe 2 ou LPS, avec une tension nominale 12 Vcc, 1,1 A minimum, et supporter une température ambiante de 50°C.

Wiring the power connector

Follow these steps to wire the Extron external power supply:

1. Connect the power supply to the In pins (first and second) of the Power direct insertion captive screw port as illustrated in figure 5.

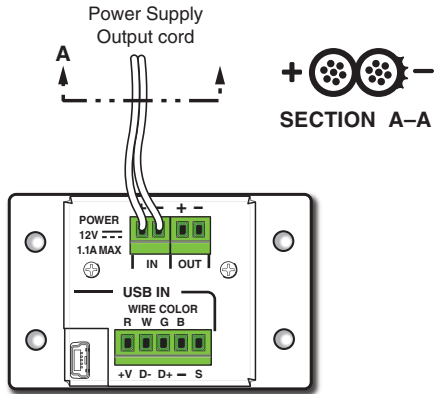


Figure 5. Wiring the Power Connector

2. (Optional) To power an additional wall-mounted Extron device via the USB HUB4, wire the additional device to the Out pins (third and fourth) of the Power direct insertion captive screw port.

   Figure 6 shows the HUB4 connected to a WM Series Extender, which is mounted in the wallplate next to the HUB4.

NOTE: Always take into consideration the total power consumption of the system.

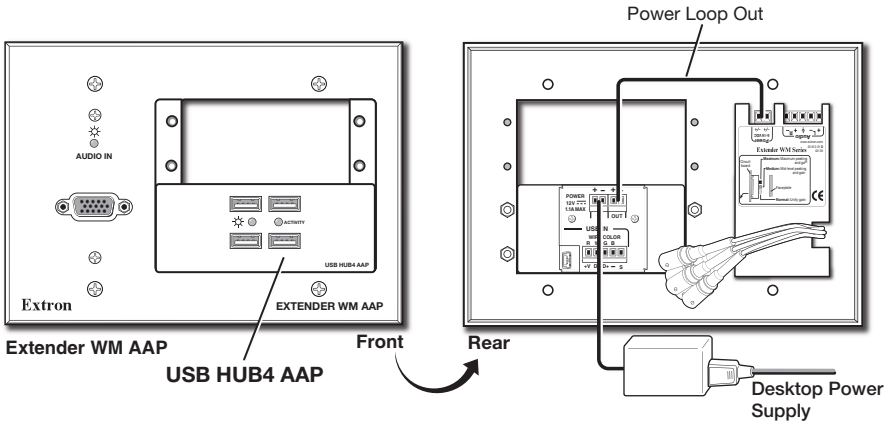


Figure 6. Providing Power to an External Device via the USB HUB4

3. Plug the external power supply IEC connector into an AC power source.

Front Panel Features

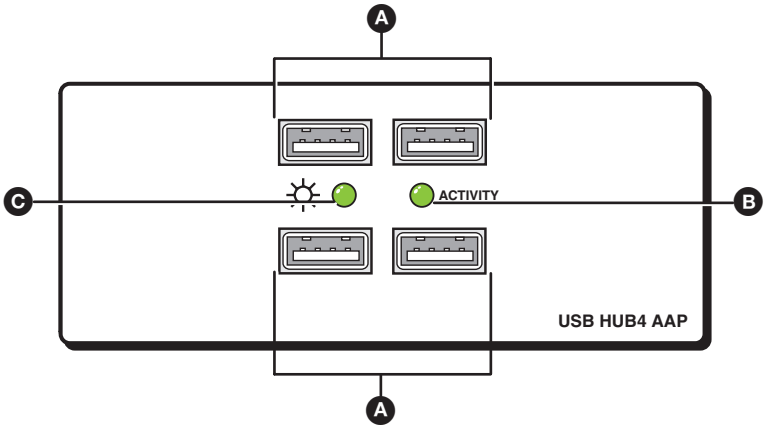


Figure 7. USB HUB4 AAP Front Panel

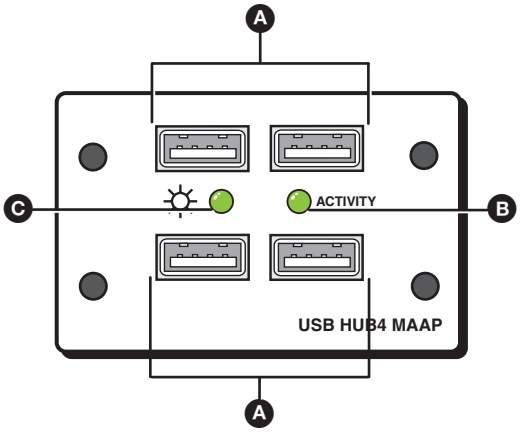


Figure 8. USB HUB4 MAAP Front Panel

Ⓐ **USB hub ports** — Connect up to four USB peripheral devices (for example, a keyboard, mouse, or web cam) to these female USB A ports. Each USB port provides 100 mA of power when the HUB4 is powered via the host computer or 500 mA when it is powered by an Extron PS 1215 1.5 A, 12 VDC external power supply (see **figure 6** on page 8).

Ⓑ **Activity LED** — This LED lights when any peripheral device is enumerated (has been recognized and has had communication established) by the USB host and is currently communicating with it.

Ⓒ **Power LED** — This LED lights if the HUB4 is receiving power through either an external power supply through the Power In port or the rear panel USB host port.

NOTES:

- If the host computer is providing power to the HUB4, the power LED on the front panel illuminates only if the host PC is powered on.
- If the HUB4 is powered by the optional Extron PS 1215 1.5 A, 12 VDC power supply, the LED illuminates regardless of whether or not the host computer is on.

Mounting

Mounting the USB HUB4

The USB HUB4 can be mounted to a wall, on a rack, in furniture, or in an Extron architectural product, such as a cable cubby or HSA. Recommended mount kits and architectural product for the USB HUB4 are listed on the **Extron website**.

NOTES:

- The equipment is to be installed in Extron Listed products, which accept Architectural Adapter Plates (AAPs) or Mini Architectural Adapter Plates (MAAPs) or installed in a Listed two-gang junction box with provided faceplate.
- Use an AAP or MAAP blank for any unused faceplate openings.

Wall or Furniture Mounting

The HUB4 can be attached to a wall, podium, or other flat surface with either a stud-mounted wall box or with a wall mounting bracket (such as the Extron MR or MR D Series). Both types of installations require a double-spaced AAP or MAAP mounting frame (such as the AAP 102 or the CPM101).

Installing the wall box or mounting bracket

Use a UL Listed one-gang sized wall box or mounting bracket for the HUB4 MAAP or a UL Listed two-gang box or bracket for the AAP model. Install cables into the wall, furniture, or conduits before installing the wall box or bracket.

NOTE: The illustrations in this section show examples of a one-gang box mounting. The procedures for mounting to a two-gang box are the same.

If using a wall box, the mounting site must be deep enough for both the box and the cables. The box should be at least 2.5 inches (6.4 cm) deep.

1. Place the wall box or mounting bracket against the installation surface and mark guidelines for the opening on the wall or furniture.
2. Cut out the material from within the marked area.
3. Insert the wall box or bracket to check the size and fit of the opening. Enlarge or smooth the edges of the opening as needed.
4. If using a wall box, feed the cables through the punched out holes in the box and secure the cable clamps to provide strain relief.
5. Exposed cable shields (braids or foil) are potential sources of short circuits. Trim back or insulate shields with heat shrink (see **figure 9** on page 11).

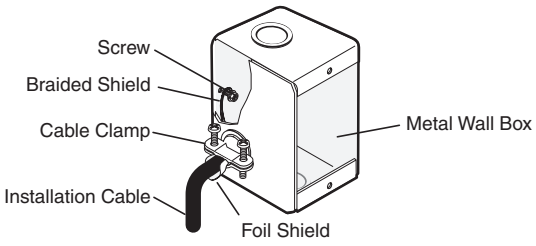


Figure 9. Grounding the Outer Braided and Foil Shields for a Wall Box Installation

CAUTION: To prevent short circuits, cut back the outer foil shield to the point where the cable exits the cable clamp. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.

ATTENTION : Afin d'éviter les court circuits, réduisez le blindage en aluminium extérieur jusqu'à ce que le câble sorte de la cosse de câble. Le blindage tressé et le blindage en aluminium devraient être connectés à la masse d'un équipement à l'autre bout du câble.

Insert the wall box or mounting bracket into the opening, and attach it to the wall, stud, or furniture, leaving the front edge flush with the outer wall or furniture surface (see figure 10).

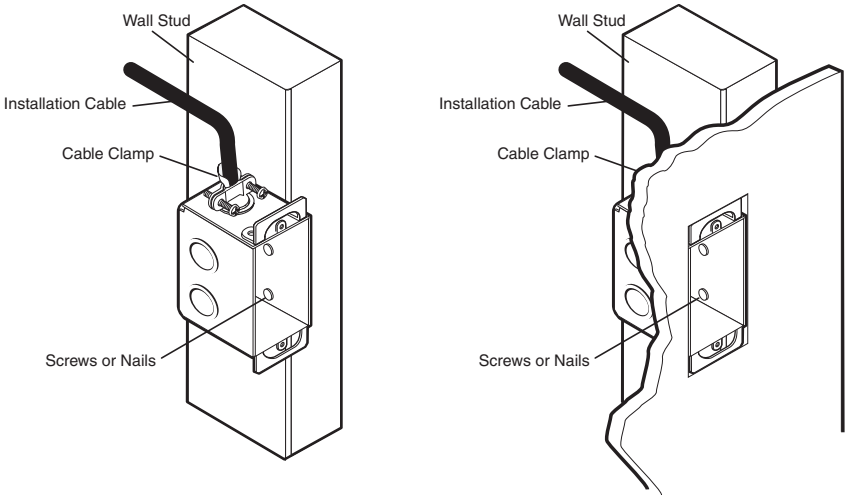


Figure 10. Attaching a Wall Box to a Wall Stud

- To attach a wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of 1/2 inch (1.3 cm) of screw threads must penetrate the wood.
- To attach a wall box to metal, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.
- If using a mounting bracket, follow the directions included with the bracket to attach the clips that fasten the bracket to the wall or furniture.

NOTE: Cable and test the HUB4 before mounting it to the wall box, mounting bracket, or furniture.

Mounting the hub to a mounting frame

If the HUB4 is mounted to a wall box or mounting bracket, it must first be mounted into an AAP or MAAP mounting frame, such as the Extron AAP 102 or CPM101 listed at **www.extron.com**.

Follow the steps below to mount the HUB4 into the appropriate size mounting frame.

USB HUB4 AAP

1. Insert the four threaded studs on the back of the front panel through the holes in an AAP mounting frame and seat the HUB4 in the two-gang opening of the frame.
2. Attach the provided hex nuts to the studs on the back side of the frame (see figure 11).

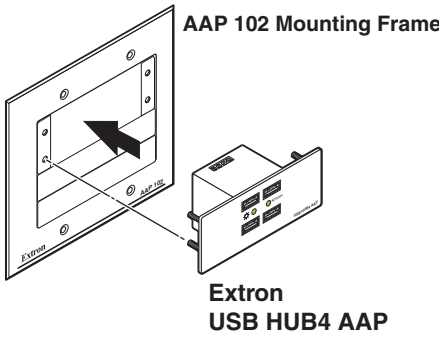


Figure 11. Mounting a USB HUB4 AAP to a Two-gang Mounting Frame

USB HUB4 MAAP

1. Place the HUB4 MAAP in the one-gang opening in the mounting frame.
2. Insert the included hex screws through the HUB4 front panel mounting holes and the holes in the MAAP mounting frame.
3. Attach the provided hex nuts to the screws on the back of the frame.

Mounting the hub to a wall box

To mount the HUB4 to an electrical junction box in a wall or furniture:

1. Mount the HUB4 into a mounting frame as described in Mounting the hub to a mounting frame.
2. Attach all power and USB cables to the HUB4 rear panel ports and test the system.
3. Attach the mounting frame with the attached HUB4 to the wall box, using the two included mounting screws (see **figure 12** on page 13).

NOTE: Use an AAP or MAAP blank for any unused faceplate openings.

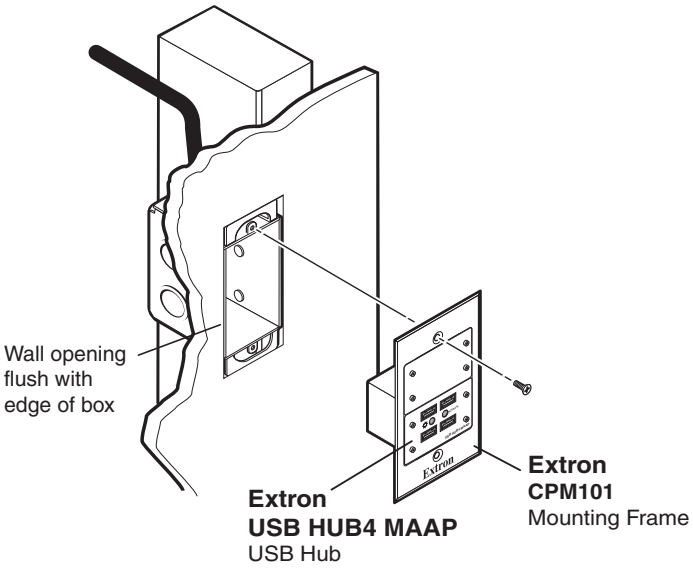


Figure 12. Installing a USB HUB4 MAAP in a One-gang Wall Box

Mounting the hub to a mounting bracket

1. Mount the HUB4 to an AAP or MAAP mounting frame (see **Mounting the hub to a mounting frame** on page 12).
2. Attach all required cables to the rear panel ports of the HUB4 and test the system.
3. Attach the AAP or MAAP mounting frame with the attached HUB4 to the mounting bracket using the two included mounting screws (see figure 13).

NOTE: Use an AAP or MAAP blank for any unused faceplate openings.

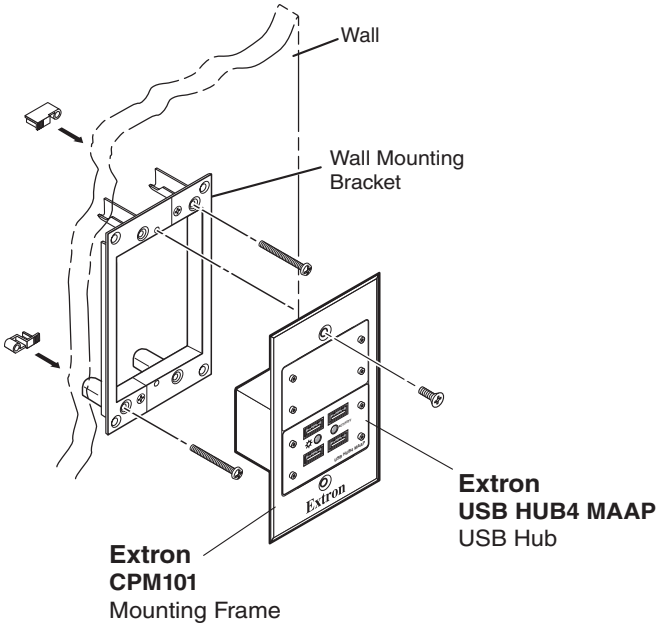


Figure 13. Mounting a USB HUB4 MAAP to a Mounting Bracket

Rack Mounting

You can mount the HUB4 to an optional rack shelf or directly onto a rack using an Extron rack space frame, such as the CPM112R (for the MAAP model) or the AAP 301/302 (for the AAP model) listed on the **Extron website**.

UL Guidelines for Rack Mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of the HUB4 in a rack:

CAUTION:

- **Elevated operating ambient temperature** — If the unit is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (Tma: +122°F, +50°C) specified by Extron.
- **Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider the equipment nameplate ratings when addressing this concern.
- **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Consignes UL pour le montage en rack

Les consignes UL (« Underwriters Laboratories ») suivantes concernent l'installation en rack d'un boîtier HUB4 :

ATTENTION:

- **Température ambiante élevée** — En cas d'installation de l'équipement dans un rack fermé ou composé de plusieurs unités, la température du rack peut être supérieure à la température ambiante. Par conséquent, il est préférable d'installer l'équipement dans un environnement qui respecte la température ambiante maximale (Tma: +122°F, +50°C) spécifiée par Extron.
- **Réduction du flux d'air** — Si l'équipement est installé dans un rack, veillez à ce que le flux d'air nécessaire pour un fonctionnement sécurisé de l'équipement soit respecté.
- **Charge mécanique** — Installez l'équipement en rack de manière à éviter toute situation dangereuse causée par le déséquilibre de la charge mécanique.
- **Surcharge électrique** — Lorsque vous connectez l'équipement au circuit d'alimentation, observez la connexion de l'équipement et étudiez les effets possibles d'une surcharge du circuit sur les protections contre les surintensités et les conducteurs d'alimentation. Consultez à cet égard les indications de la plaque d'identification de l'équipement.
- **Mise à la terre** — Assurez-vous que l'équipement est correctement mis à la terre. Accordez une attention particulière aux connexions électriques autres que les connexions directes au circuit de dérivation (ex. : les multiprises).

Rack mounting procedure

To mount the USB HUB4 directly to a rack or to a rack shelf:

1. Connect all cables to the rear panel of the HUB4.
2. Insert the HUB4 in one of the spaces in a rack architectural frame and attach it to the frame using the provided hex screws and nuts (see figure 14 and figure 15).
3. Attach any desired additional AAP or MAAP devices to the rack space frame.
4. Attach the rack architectural frame to the rack shelf, using the provided screws.
5. If using a rack shelf, mount the shelf with the HUB4 attached, to the rack.

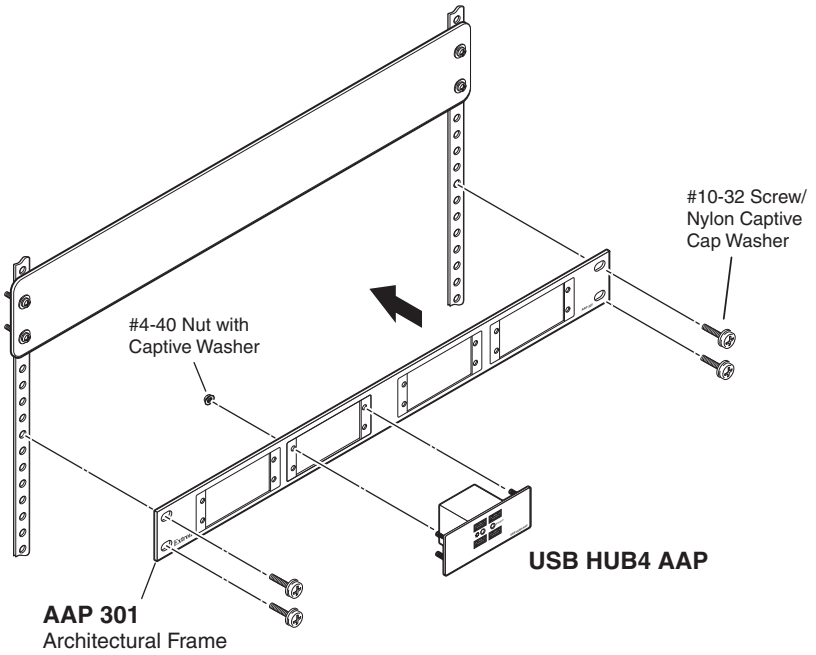


Figure 14. Mounting a USB HUB4 AAP Directly to a Rack Using an AAP 301 Frame

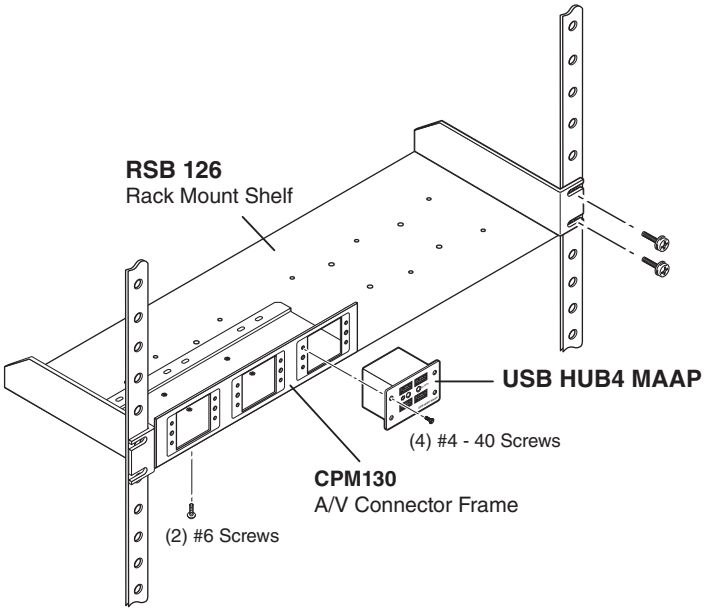


Figure 15. Mounting a USB HUB4 MAAP on a Rack Shelf Using a CPM133 Frame

Extron Warranty

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

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

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

Europe:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Middle East:
Extron Middle East
Dubai Airport Free Zone
F13, PO Box 293666
United Arab Emirates, Dubai

Africa:
Extron South Africa
3rd Floor, South Tower
160 Jan Smuts Avenue
Rosebank 2196, South Africa

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 or 800.3987.6673	**Japan**:	81.3.3511.7655
Africa:	27.11.447.6162	**Middle East**:	971.4.299.1800

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.