User Guide

Distribution Amplifiers

DA HD 4K Series

4K HDMI Distribution Amplifier

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-2636-01 Rev. D
01 19

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**.

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.com**.

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.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.com**.

Istruzioni di sicurezza • Italiano

AVVERTENZA: Il simbolo, ⚠, se usato sul prodotto, serve ad avvertire l'utente della presenza di tensione non isolata pericolosa all'interno del contenitore del prodotto che può costituire un rischio di scosse elettriche.

ATTENTZIONE: Il simbolo, ⚠, se usato sul prodotto, serve ad avvertire l'utente della presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione fornita con l'apparecchio.

Per informazioni su parametri di sicurezza, conformità alle normative, compatibilità EMI/EMF, accessibilità e argomenti simili, fare riferimento alla Guida alla conformità normativa e di sicurezza di Extron, cod. articolo 68-290-01, sul sito web di Extron, **www.extron.com**.

Instrukcje bezpieczeństwa • Polska

OSTRZEŻENIE: Ten symbol, ⚠, gdy używany na produkt, ma na celu poinformować użytkownika o obecności izolowanego i niebezpiecznego napięcia wewnątrz obudowy produktu, który może stanowić zagrożenie porażenia prądem elektrycznym.

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.

ВНИМАНИЕ: Данный символ, ⚠, если указан на продукте, предупреждает пользователя о наличии важных инструкций по эксплуатации и обслуживанию в руководстве, прилагаемом к данному оборудованию.

Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: , **www.extron.com**, номер по каталогу - 68-290-01.

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

安全記事 • 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，設備隨附的用戶手冊中有重要的操作和維護（維修）說明。

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.com**，然後參閱《Extron 安全性與法規遵守手冊》，準則編號 68-290-01。

安全上のご注意 • 日本語

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

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.com**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

Trademarks
All trademarks mentioned in this guide are the properties of their respective owners.
The following registered trademarks(®), registered service marks(℠), and trademarks(™) are the property of RGB Systems, Inc. or Extron Electronics (see the current list of trademarks on the **Terms of Use** page at **www.extron.com**):

Registered Trademarks (®)
Extron, Cable Cubby, ControlScript, CrossPoint, DTP, eBUS, EDID Manager, EDID Minder, Flat Field, FlexOS, Global Configurator, Global Scripter, GlobalViewer, Hideaway, HyperLane, IP Intercom, IP Link, Key Minder, LinkLicense, LockIt, MediaLink, MediaPort, NetPA, PlenumVault, PoleVault, PowerCage, PURE3, Quantum, SoundField, SpeedMount, SpeedSwitch, System *INTEGRATOR*, TeamWork, TouchLink, V-Lock, VideoLounge, VN-Matrix, VoiceLift, WallVault, WindoWall, XTP, XTP Systems, and ZipClip
Registered Service Mark(℠) : S3 Service Support Solutions
Trademarks (™)
AAP, AFL (Accu-Rate Frame Lock), ADSP (Advanced Digital Sync Processing), Auto-Image, CableCover, CDRS (Class D Ripple Suppression), Codec Connect, DDSP (Digital Display Sync Processing), DMI (Dynamic Motion Interpolation), Driver Configurator, DSP Configurator, DSVP (Digital Sync Validation Processing), eLink, EQIP, Everlast, FastBite, FOX, FOXBOX, IP Intercom HelpDesk, MAAP, MicroDigital, Opti-Torque, ProDSP, QS-FPC (QuickSwitch Front Panel Controller), Room Agent, Scope-Trigger, ShareLink, Show Me, SIS, Simple Instruction Set, Skew-Free, SpeedNav, StudioStation, Triple-Action Switching, True4K, Vector™ 4K , WebShare, XTRA, and ZipCaddy

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

ATTENTION: The Twisted Pair Extension technology works with unshielded twisted pair (UTP) or shielded twisted pair (STP) cables; but to ensure FCC Class A and CE compliance, STP cables and STP Connectors are required.

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.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

WARNING: Potential risk of severe injury or death.
AVERTISSEMENT : Risque potentiel de blessure grave ou de mort.

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.

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

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

Esc X1 * X17 * X20 * X23 * X21 CE←

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**.

Extron Glossary of Terms

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

Contents

Introduction

This guide describes the function, installation, and operation of the DA2 HD 4K, DA4 HD 4K, and DA6 HD 4K. Unless otherwise stated, the terms “distribution amplifier” or “DA” refer to any of these distribution amplifiers.

This section provides the following information:

About the DA2 HD 4K, DA4 HD 4K, and DA6 HD 4K

The Extron DA HD 4K Series are one input, multiple output HDMI distribution amplifiers for 4K signals. They distribute one 4K input signal to two (DA2 HD 4K), four (DA4 HD 4K), or six (DA6 HD 4K) simultaneous outputs. They support data rates up to 10.2 Gbps, including computer and video resolutions up to 4096x2160 @ 30 Hz and 1080p @ 60 Hz with Deep Color, 3D, Lip Sync, and HD lossless audio formats.

NOTE: Extron strongly recommends compatibility testing while designing, and before installing any 3D system. There are several unique 3D formats in use by source devices and display manufacturers. The level of 3D product support is governed by pixel clock, signal format, and communication between source and sink devices. For more information, call the Extron S3 Sales and Technical Support Hotline (see contact numbers on the **last page**).

All three models feature EDID Minder, which maintains continuous EDID communication between connected devices, and Key Minder, which continuously authenticates HDCP encryption between all devices, ensuring the simultaneous distribution of source content to all displays.

The DA HD 4K Series provides automatic input cable equalization (up to 25 feet, 7.62 meters, for 4K signals), automatic color bit depth adjustment, and allows outputs to be independently muted.

Front panel LEDs provide immediate confirmation of HDCP authentication and signal presence.

Features

- **4K signal distribution** — Distributes 4K HDMI video and embedded multi-channel digital audio signals. These distribution amplifiers accept one UHD 4K input through a female HDMI type-A connector and provide two (DA2 HD 4K), four (DA4 HD 4K), or six (DA6 HD 4K) simultaneous outputs.
- **Supports HDMI 1.4 specifications, including:**
  - Data rates up to 10.2 Gbps
  - Deep Color up to 12-bit
  - 3D
  - Lip Sync
  - HD lossless audio formats
- **Supports computer and video resolutions up to 4K**, including 1080p @ 60 Hz Deep Color.

- **EDID Minder** — automatically manages EDID communication between connected devices ensuring that the source powers up properly and reliably outputs content for display.
- **HDCP compliant**
- **Key Minder continuously verifies HDCP compliance** — Key Minder authenticates and maintains continuous HDCP encryption between all input and output devices to enable simultaneous distribution of a single source signal to two, four, or six displays.
- **HDCP Visual Confirmation** — A full-screen green signal is sent when HDCP-encrypted content is transmitted to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **Automatic input cable equalization** — Up to 25 feet (7.62 meters) when used with Extron HDMI Pro Series cable. Actively conditions incoming HDMI signals to compensate for signal loss when using long cables, low quality cables, or source devices with poor signal output.
- **Automatic color bit depth management** — The DA HD 4K Series automatically adjusts color bit depth based on the display EDID, preventing color compatibility conflicts between source and displays.
- **HDMI to DVI Interface Format Correction** — Automatically reformats HDMI source signals for output to a connected DVI display.
- **Output muting via RS-232 or USB port** — Provides the capability to mute one or all outputs at any time. This allows content to be viewed on a local monitor prior to appearing on the main presentation display.
- **HDCP authentication and signal presence LED indicators** — Front-panel LED indicators for signal presence and HDCP authentication provide real-time feedback and monitoring of key performance parameters.
- **Easy setup and commissioning with Extron Product Configuration Software (PCS)** — Conveniently configure multiple products using a single software application.
- **Easy mounting options** — The DA2 HD 4K features a 1 inch (2.5 cm) high, quarter rack width enclosure. The DA4 HD 4K and DA6 HD 4K feature a 1U high, half rack width enclosure. All three products can be conveniently mounted in standard racks or under furniture.
- **Includes LockIt HDMI cable lacing brackets** — LockIt lacing brackets are used to secure HDMI cables connected to the HDMI input and output connectors, preventing accidental disconnection of the cables.
- **Provides +5 VDC, 250 mA power on each output for external peripheral devices.**
- **Worldwide power compatibility** — The DA2 HD 4K includes an energy-efficient external universal power supply. The DA4 HD 4K and DA6 HD 4K are equipped with an 100-240 VAC, 50/60 Hz, internal universal power supply.

Application Diagram

Figure 1 shows a typical application for the DA4 HD 4K. The DA2 HD 4K and DA6 HD 4K can be used in similar applications.

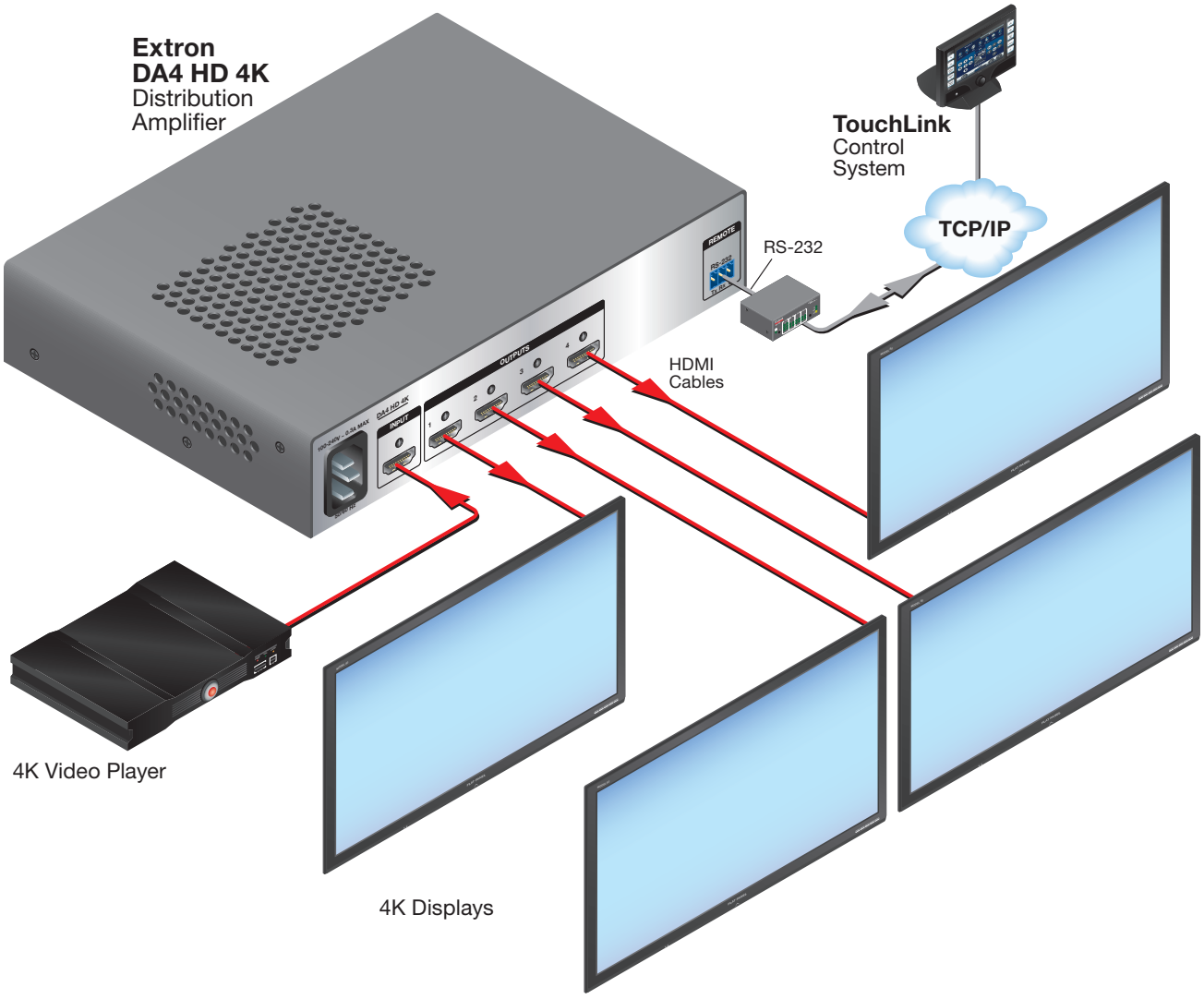


Figure 1. DA4 HD 4K Application Diagram

Installation

This section provides an overview of the installation of the DA HD 4K series distribution amplifiers, including the front panel and rear panel connections. Follow the links for more detailed information elsewhere in the guide.

This section provides the following information:

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

Installation Overview

To install and set up the DA HD 4K series distribution amplifiers, follow these instructions:

1. Mount the unit in a suitable location (see **Mounting** on page 31).
2. Connect power to the unit:
   - **DA2 HD 4K** — connect the provided 12 VDC power supply to the power connector (see **Connecting Power** on page 6).

     ATTENTION:
     - Do not connect any external power supplies until you have read the **Attention notifications** on page 7.
     - Ne branchez pas de sources d'alimentation externes avant d'avoir lu les mises en garde sur la **page 7**.

   - **DA4 HD 4K and DA6 HD 4K** — connect to a 100-240 VAC (50 or 60 Hz) power source using the provided IEC power cord (see **page 7**).
3. Connect the display devices and power them on (see **Connecting Output Displays** on page 9).

   The distribution amplifier automatically reads and stored EDID from the selected display device. By default, this is the device connected to output 1. For other EDID options, see **EDID Minder** on page 15.
4. If configuration using SIS commands is required (see **SIS Commands** starting on page 18), connect a control PC to the rear panel RS-232, 3-pole captive screw connector (see **Rear panel RS-232 connector** on page 10) or the front panel USB port (see **Front panel USB port** on page 11).
5. Connect and power on the input device (see **Connecting the Input Source** on page 8).

Rear Panel Connectors

This section provides information about the rear panel connectors:

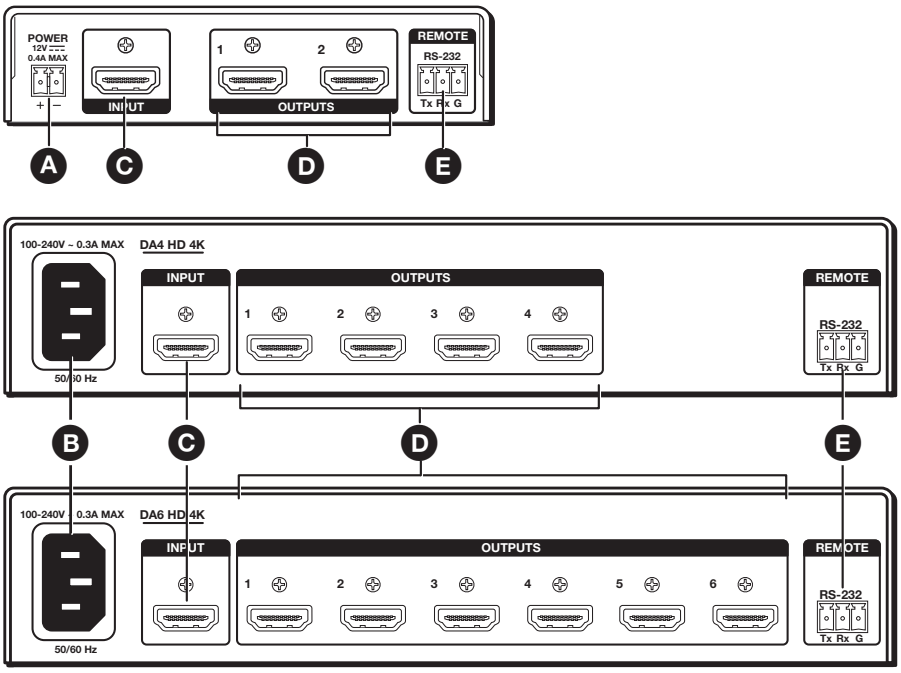
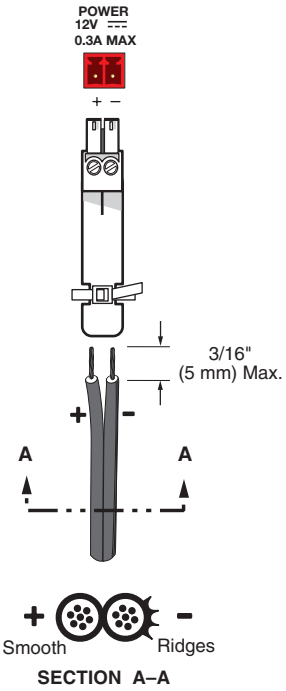


Figure 2. Rear Panel Connectors

A	**Power supply connector** (DA2 HD 4K only)
B	**IEC cable connector** (DA4 HD 4K and DA6 HD 4K)
C	**HDMI input connector**
D	**HDMI output connectors**
E	**RS-232 connector**

Connecting Power

DA2 HD 4K



Ⓐ **Power supply connector** — connect the provided 12 VDC, 1.0 A power supply to the rear panel power supply socket (see **figure 2** on the previous page).

WARNING: The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

AVERTISSEMENT: Les deux cordons d'alimentation doivent être tenus à l'écart l'un de l'autre quand l'alimentation est branchée. Couper l'alimentation avant de faire l'installation électrique.

ATTENTION:

- Do not connect any external power supplies until you have read the **Attention notifications** on page 7.
- Ne branchez pas de sources d'alimentation externes avant d'avoir lu les mises en garde sur la **page 7**.

1. Cut the DC output cord to the length needed.
2. Strip the jacket to expose 3/16 inch (5 mm) of the conductor wire.

ATTENTION:

- The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.

3. Ensure the connections have the correct polarity as shown in the figure above.
4. Slide the exposed end of the wire into the captive screw connector and secure by tightening the screw.
5. Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

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.

- These products are intended for use with a UL Listed power source marked "Class 2" or "LPS" and rated 12 VDC, minimum 0.5 A.
- Ces produits sont destiné à une utilisation avec une source d'alimentation listée UL avec l'appellation « Classe 2 » ou « LPS » et normée 12 Vcc, 0.5 A minimum.

- Extron power supplies are certified to UL/CSA 60950-1 and are classified as LPS (Limited Power Source). Use of a non-LPS or unlisted power supply will void all regulatory compliance certification.
- Les sources d'alimentation Extron sont qualifiées UL/CSA 60950-1 et sont classées LPS (Limited Power Source). L'utilisation d'une source d'alimentation non-listée ou non-listée LPS annulera toute certification de conformité réglementaire.

- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium, or desk.
- Sauf mention contraire, les adaptateurs AC/DC ne sont pas appropriés pour une utilisation dans les espaces d'aération ou dans les cavités murales. La source d'alimentation doit être située à proximité de l'équipement de traitement audiovisuel dans un endroit ordinaire, avec un degré 2 de pollution, fixé à un équipement de rack à l'intérieur d'un placard, d'une estrade, ou d'un bureau.

- 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.

- 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.

- Do not tin the wire leads before installing into the connector. Tinned wires are not as secure in the connector and could be pulled out. They may also break after being bent several times.
- Ne pas étamer les conducteurs avant de les insérer dans le connecteur. Les câbles étamés ne sont pas aussi bien fixés dans le connecteur et pourraient être retirés. Ils peuvent aussi se casser après avoir été pliés plusieurs fois.

DA4 HD 4K and DA6 HD 4K

Ⓑ **IEC cable connector** — use the provided female IEC cable to connect the female IEC connector to a 100-240 VAC (50 or 60 Hz) power source (see **figure 2** on page 5).

Connecting the Input Source

Ⓒ **HDMI input connector** — use HDMI cable to connect the input source to the rear panel female HDMI connector (see **figure 2**, Ⓒ on page 5).

The input follows HDMI 1.4 specifications, supporting data rates up to 3.4 Gbps per color and is fully HDCP compliant.

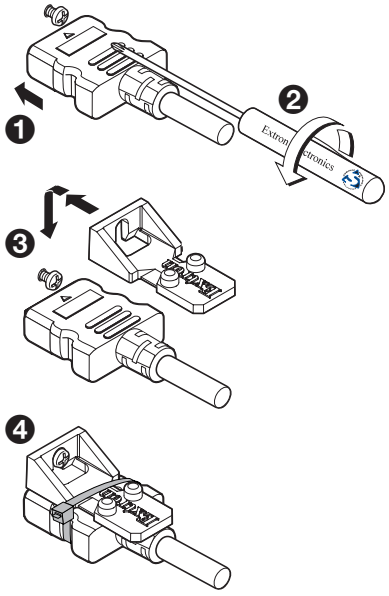
The input can equalize up to 100 feet (30.48 m) of HDMI Pro cable with a 1.65 Gbps per color signal or 25 feet (7.52 m) with a 3.4 Gbps per color signal.

EDID is stored on an EEPROM, and Hot-Plug Detect (HPD) is actively controlled by **EDID Minder** (see page 15).

Securing the HDMI Connector

Follow these instructions to secure the input and output connectors to the distribution amplifier with the LockIt HDMI lacing bracket provided:

1. Plug the HDMI cable into the panel connection (❶).
2. Loosen the HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it (❷). The screw does not have to be removed.
3. Place the LockIt lacing bracket on the screw and against the HDMI connector, then tighten the screw to secure the bracket (❸).



ATTENTION:

- Do not overtighten the connector mounting screw. The shield it fastens to is very thin and can easily be stripped.
- Ne serrez pas trop la vis de montage du connecteur. Le blindage auquel elle est attachée est très fin et peut facilement être dénudé.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket as shown (❹).
5. While holding the connector securely against the lacing bracket, tighten the tie wrap, then remove any excess length.

Connecting Output Displays

Ⓓ **HDMI output connectors** — use a UHD 4K cable to connect up to six output displays to the female HDMI sockets on the rear panel (see **figure 2**, Ⓓ on page 5).

> **NOTE:** Secure the input and output connectors to the distribution amplifier with the provided LockIt HDMI lacing bracket (see **Securing the HDMI Connector**, on the previous page).

By default, the EDID is set to 720p @ 60 Hz with 2-channel audio. However, EDID can be changed by using SIS commands (see the **EDID Minder** command on page 23) or by using **PCS software** (see page 28).

In addition to 12 factory-loaded EDIDs, there are six slots that are automatically populated by EDID from connected sink devices and two slots that can be manually populated by the user. For more information, see the **EDID Minder** table on page 15.

The distribution amplifier monitors the EDID of each connected display to ensure it is compatible with the current input signal. The following adjustments are made for each output independently:

- **Interface format** — If the connected display is DVI and the input signal is HDMI, the signal is reformatted to DVI. If the output is HDMI and the input is DVI, no reformatting is needed because HDMI is backwards compatible with DVI.
- **Video color bit depth** — If the connected output device does not support the color bit depth of the input signal, it is truncated down to the next level that is supported (12-bit > 10-bit > 8-bit). The signal can be forced to always truncate to 8-bit via SIS commands, disabling deep color.
- **Audio** — If the connected output device does not support the audio format of the input signal, audio is muted.

If the source requires HDCP encryption and the display is not HDCP compliant, that output channel outputs a green screen.

Both outputs carry +5 VDC and up to 250 mA on pin 18, regulated by a current limiting circuit.

Wiring for RS-232 Control (Optional)

Rear panel RS-232 connector

Ⓔ **RS-232 connector** — use RS-232 communication between the distribution amplifier and a host PC to update firmware or configure the unit using SIS commands (see **Command and Response Table for SIS Commands** starting on page 21).

Extron recommends Extron universal control cable (see **www.extron.com**).

NOTES:

- You can connect the computer to either the rear panel 3-pole RS-232 port (see **figure 2**, Ⓔ on page 5) or the front panel USB port (see **figure 7**, Ⓑ on page 13) of the distribution amplifier.
- Neither port has precedence and commands from either port are handled in the order they are received.
- Extron recommends that the USB port is used for temporary connections. If a permanent connection is required, the RS-232 port should be used.

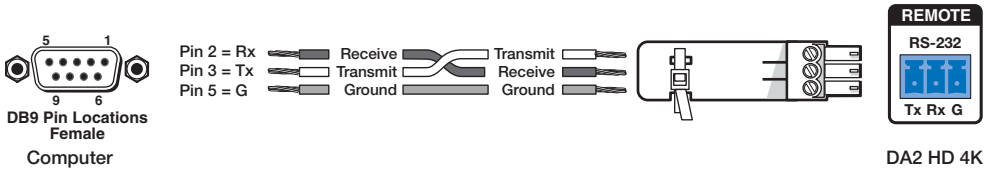


Figure 3. Wiring for Rear Panel RS-232 Control

NOTES:

- The wiring in the RS-232 cables crosses over so that the Tx on the distribution amplifier connects to the Rx of the control device and vice versa. Ground always connects to ground.
- If you use cable that has a drain wire, tie the drain wire to the ground at both ends.

To connect the distribution amplifier to a computer, follow these instructions:

1. Connect an RS-232 cable with a female 9-pin D connector to the computer (see figure 3 above):
   - Data received by the computer = pin 2
   - Data transmitted by the computer = pin 3
   - Ground = pin 5
2. Wire the opposite end of the cable to the provided 3-pole captive screw plug (see figure 3 above):
   - Data transmitted by the DA plugs into the Tx (transmit) port
   - Data received by the DA plugs into the Rx (receive) port
   - Ground plugs into the G (ground) port

Front panel USB port

Use the mini Type B USB port on the front panel (see figure 4 below) to connect the distribution amplifier to a host computer for updating firmware or to configure the unit with SIS commands.

1. Connect a USB A to mini B cable between the front panel USB Config port and a USB port of the PC.

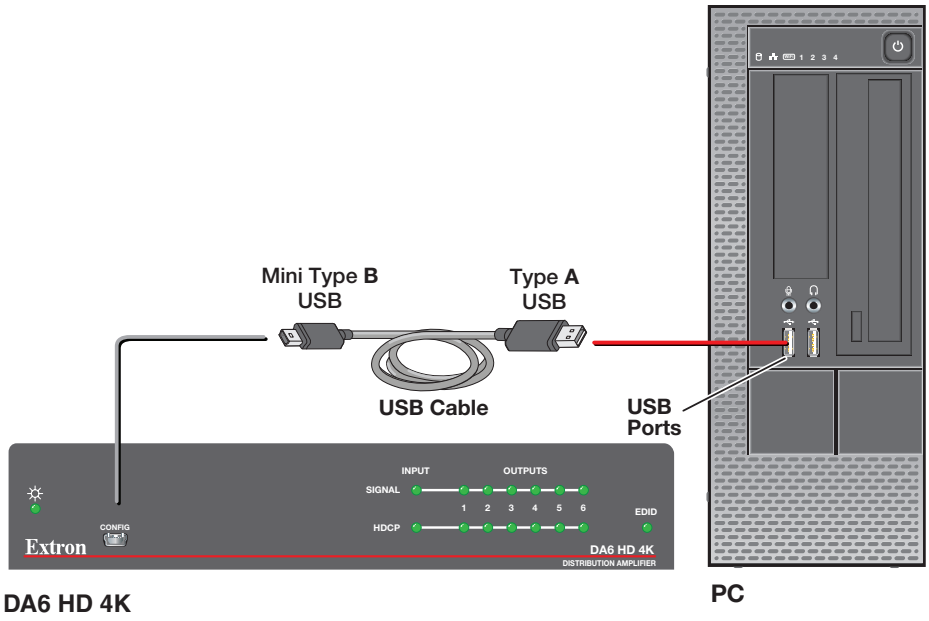


Figure 4. Connecting a PC to the DA6 HD 4K Front Panel USB Port

2. If this is the first time the distribution amplifier has been connected to the PC, the `Found New Hardware Wizard` window opens. The first screen offers to connect to `Windows Update` to search the web for the appropriate driver needed for the USB port to communicate with the distribution amplifier. This is not necessary if the USB driver is already on your PC.

Figure 5. Found New Hardware Wizard Welcome Screen

- Select **Yes, this time only** to connect the PC to Windows Update only this time (see **figure 5** on the previous page).
- Select **Yes, now, and every time I connect a device** to automatically connect to Windows Update every time the DA HD 4K device connects to this USB port.
- Select **No, not this** time if you do not want to connect to Windows Update (for example, if the driver is already on the PC).

3. Click **Next**. The next screen of the Wizard opens (see figure 6):

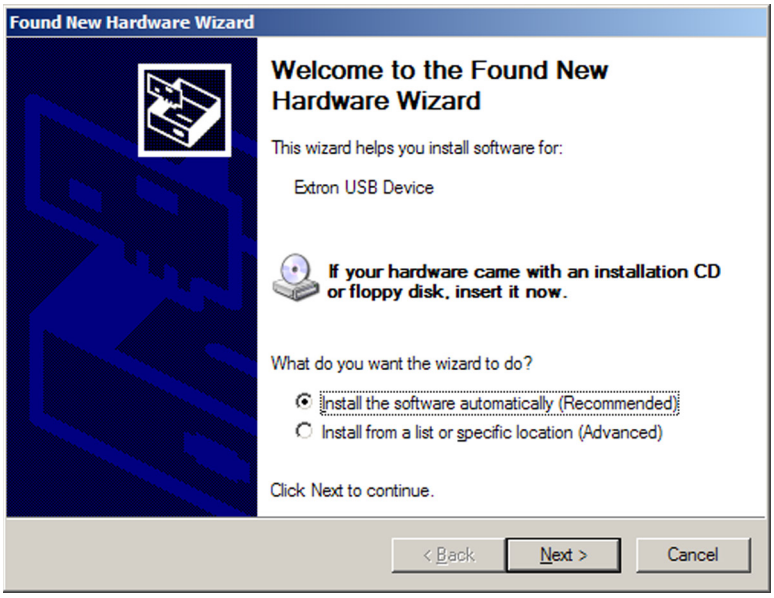


Figure 6. Installing the Software Automatically

4. Select **Install the software automatically (Recommended)** and click **Next** (see figure 6).

NOTE: You do not need to insert an installation disc.

The PC locates the driver needed and installs it in the correct location on the hard drive.

5. When the **Completed** screen appears, click **Finish** to close the wizard.

NOTE: The wizard opens only on the first occasion you connect the distribution amplifier to that USB port. The wizard reappears if you connect the unit to a different USB port or if you connect a different piece of equipment, requiring a different driver, to the same USB port.

6. Configure the distribution amplifier as required (see **Configuration Software**, starting on page 25).

Front Panel Features

This section describes the front panel features of the DA HD 4K series distribution amplifiers:

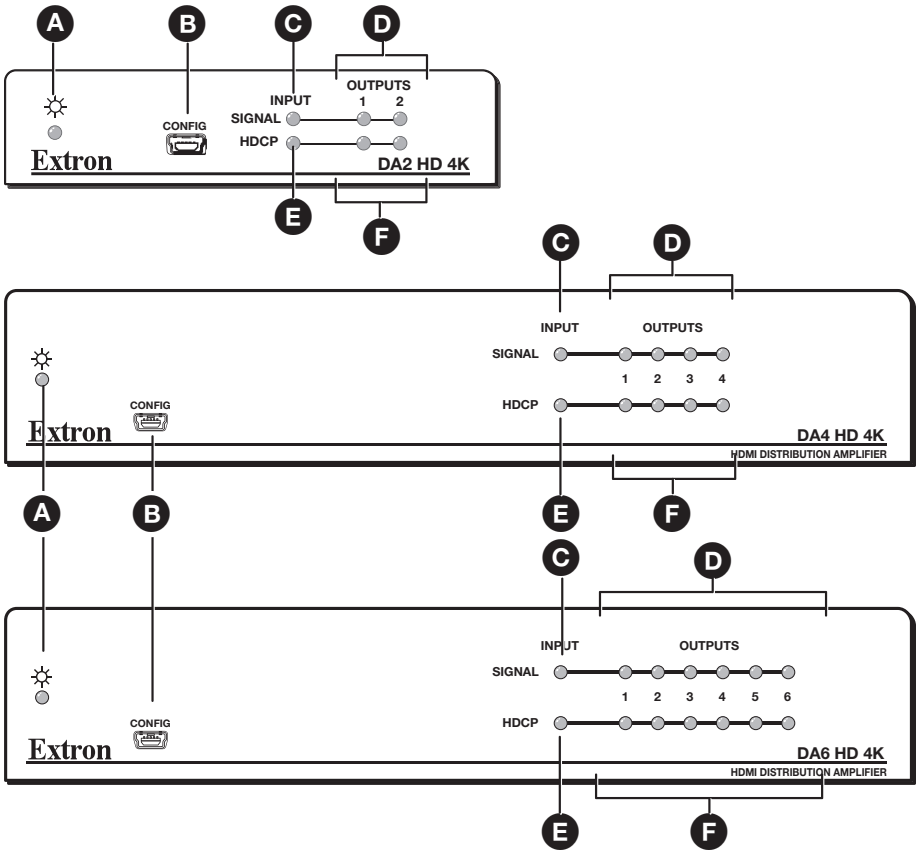


Figure 7. Front Panel Features

- **A Power Status LED**
- **B USB Config Port**
- **C Input signal LED**
- **D Output signal LEDs**
- **E Input HDCP LED**
- **F Output HDCP LEDs**

Ⓐ **Power status LED** — Lights green when power is applied to the unit (see **figure 7** on the previous page).

Ⓑ **USB Config port** — Used for SIS configuration, monitoring, and firmware updates. This port can be used as an alternative to the rear panel RS-232 captive screw connectors.

NOTES:

- Only one serial port can be used at a time. If the front port is in use, the rear captive screw connector must be disconnected from the computer or other control device. Likewise, if the captive screw port is in use, the config port on the front panel must be disconnected from the computer or other control device.
- Extron recommends that the USB port is used for temporary connections. If a permanent connection is required, the RS-232 port should be used.

When a connection is made to the USB Config Port on the distribution amplifier for the first time, the `Found New Hardware Wizard` window opens to install the correct device driver (see **Front Panel USB Port** on page 11).

Ⓒ **Input Signal LED** — Lights green when a TMDS signal is detected on the HDMI input. If the source requires HDCP encryption, this LED may light only when HDCP is authenticated.

Ⓓ **Output Signal LEDs** — Light green when hot plug detect is detected from the corresponding sink device. Each output signal has its own signal LED: two for the DA2 HD 4K, four for the DA4 HD 4K, and six for the DA6 HD 4K.

Ⓔ **Input HDCP LED** — Lights green when the source requires HDCP encryption and it has been authenticated with the HDMI input.

Ⓕ **Output HDCP LEDs** — Light green when HDCP is authenticated between the distribution amplifier output and the corresponding sink device. This happens when the source device requires HDCP encryption and it has already been authenticated on the HDMI input.

The LEDs do not light if the source does not require HDCP encryption or if the sink is not HDCP compliant.

Each output signal has its own HDCP LED: two for the DA2 HD 4K, four for the DA4 HD 4K, and six for the DA6 HD 4K.

Configuration

The DA HD 4K series allows for adjustments to be made to ensure that the sink devices are able to handle the signal provided. Use **SIS Commands** (beginning on page 18) or **PCS software** (beginning on page 25) to make these adjustments.

This section provides information about:

- **EDID Minder**
- **HDCP**
- **Output Compatibility Correction**

EDID Minder

EDID Minder ensures that a source device connected to the DA HD 4K input continuously sees the EDID of a sink device, even if the sink is not physically connected. By default, the EDID is set to 720p @ 60 Hz with 2-channel audio (slot 9).

Additional available values are shown in the following table. There are 12 factory-loaded EDIDs, six slots that are automatically populated by EDID from connected sink devices, and two slots that can be manually populated with EDID imported by the user.

Slot (X4)	Native Resolution	Refresh (Hz)	Rate Type	Video Format
1	1280x800	60	IT	HDMI
2	1440x900	60	IT	HDMI
3	1600x900	60	IT	HDMI
4	1680x1050	60	IT	HDMI
5	1920x1200	60	IT	HDMI
6	2560x1440	60	IT	HDMI
7	2560x1600	60	IT	HDMI
8	720p	50	CE	HDMI
9	720p	60	CE	HDMI
10	1080p	50	CE	HDMI
11	1080p	60	CE	HDMI
12	4K/UHD	30	CE	HDMI
13	Output 1			
14	Output 2			
15	Output 3 (DA4 and DA6 models only)			
16	Output 4 (DA4 and DA6 models only)			
17	Output 5 (DA6 model only)			
18	Output 6 (DA6 model only)			
19	User-loaded slot 1			
20	User-loaded slot 2			

Factory EDID Slots

Factory EDID is categorized by video format (DVI or HDMI). EDID is available for most common resolutions and audio formats.

Output Slots

Each slot contains the EDID of the corresponding, connected sink device. When HPD is detected, the EDID of that sink device is stored automatically.

When a sink is removed or power to the DA HD 4K device is cycled, the EDID is removed from the slot and is replaced with the default value until a new sink is detected and a new EDID stored.

User Slots

These two slots are available for storing imported EDID files. Initially, these slots contain the default EDID until they are overwritten by the imported files. The imported file remains in the slot until they are overwritten or the unit is reset (see the **Reset** command in SIS on page 24 or **Device Menu** on page 28 to reset the unit).

EDID Memory Retention

The assigned EDID is stored to an EEPROM, which is located at the HDMI input. The stored EDID is retained until a reset is initiated.

Hot Plug Detect (HPD)

HPD remains high on all inputs while the unit is powered on. The HPD drops low only while EDID is updated.

HDCP

The DA HD 4K series device acts as an HDCP and HDMI repeater by actively handling HDCP key negotiation and authentication on the input and each output. However, it does not report itself as a repeater or forward a KSV list.

The distribution amplifier supports HDCP Output Mode.

Input

The HDMI input negotiates and authenticates HDCP with the source device if the source requires HDCP encryption. The authentication process is repeated whenever the stored EDID is changed or updated, which is indicated by pulling HPD low.

HDCP support can be disabled using the **HDCP Authorized Device** SIS command (see page 22).

Outputs

Each output is individually pre-authenticated and encrypted, in accordance with the configured HDCP output mode.

If an output requires encryption but the connected sink device cannot be authenticated, that output will display a green screen.

HDCP output modes

Follow input — Output is always authenticated but only encrypted when required by input. HDMI authentication is continuous. DVI authentication occurs for a maximum of 10 seconds, then fails. This is the default mode.

Always encrypt output — Output is always authenticated and encrypted. HDMI authentication is continuous. DVI authentication occurs for a maximum of 10 seconds, then fails.

Follow Input (with continuous DVI trials) — Output is always authenticated but only encrypted when required by input. Both HDMI and DVI authentication are continuous.

Always encrypt output (with continuous DVI trials) — Output is always authenticated and encrypted. Both HDMI and DVI authentication are continuous.

Output Compatibility Correction

EDID Minder manages the EDID that is stored at the HDMI input and presented to the source device. However, additional functionality is required to ensure that all output devices remain compatible with the signal from the source.

The DA HD 4K device scans and monitors the EDID of each sink device connected to each output. It determines the interface (DVI or HDMI) and color depth and uses that information to adjust the signal so that it is compatible with the output device. This occurs independently on each HDMI output.

TMDS output format

The TMDS output format has three components:

- **Video format** — either DVI or HDMI
- **Color space** — RGB, YCbCr 4:2:2, or YUV 4:4:4
- **Quantization range** — either full (0-255) or limited (16-235)

By default, the input format is automatically matched to the output format. If the input signal is in HDMI format and the output device is DVI, the signal is converted to DVI (RGB color space, 8 bit color, no audio, no AVI, Infoframe, etc.) with a quantization range to match the input.

You can use SIS commands to force the **TMDS output format** (see page 22):

- **Auto** — signal passes through unaltered unless the sink is DVI
- **DVI** — RGB 4:4:4; 0-255; no audio, no InfoFrames
- **HDMI RGB Full** — RGB 4:4:4; 0-255
- **HDMI RGB Limited** — RGB 4:4:4; 16-235
- **HDMI YUV 444 Limited** — YUV 4:4:4; 16-235
- **HDMI YUV 422 Limited** — YUV 4:2:2; 16-235

Color depth and deep color support

If the incoming signal uses deep color but that is not supported by the sink device, use SIS commands to truncate the color depth to one that is supported by the sink (see **Video Color Bit Depth** on page 21).
The options are:

- **Automatic** — by monitoring the EDID of the sink, the DA HD 4K device determines the best color depth that is supported by the sink
- **Force 8-bit**

Updating

The DA HD 4K devices monitor HPD on each HDMI output to determine if a new sink has been connected. If necessary, the signal for that output is modified in response to the EDID of the connected device.

SIS Commands

You can use Simple Instruction Set (SIS) commands to configure the DA HD 4K distribution amplifier. This section provides information about using those commands. The following topics are discussed:

- **Introduction to SIS**
- **Symbols Used in this Guide**
- **Command and Response Table for SIS Commands**

Introduction to SIS

The DA HD 4K series distribution amplifiers accept SIS commands from a host device such as a computer running the Extron DataViewer utility or other control system. The host device can be connected to the 3-pole captive screw connector on the rear panel (see **figure 2**, Ⓔ, on page 5) or to the Config port on the front panel (see **figure 7**, Ⓑ, on page 13).

The protocol for the remote port is 9600 baud, 8 data bits, 1 stop bit, and no parity.

NOTES:

- The wiring in the RS-232 cables crosses over so that the distribution amplifier transmit (Tx) wire connects with the control device receive (Rx) and vice versa.
- Only one serial port can be used at a time. If the front port is in use, the rear captive screw connector must be disconnected from the computer or other control device. Likewise, if the captive screw port is in use, the config port on the front panel must be disconnected from the computer or other control device.

SIS commands consist of strings (one or more characters per command field). Unless otherwise stated, upper and lower case characters can be used interchangeably. Commands do not require any special characters to begin or end the command string. Each response from the DA HD 4K devices end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string.

When the distribution amplifier is first switched on, it sends the message:

`(c) Copyright 2015, Extron Electronics DA HD 4K Series, V x7, N`↵

where `V x7` is the firmware version number and *N* is the catalog number for the product.

Symbols Used in this Guide

When programming in the field, certain characters are most conveniently represented by their hexadecimal rather than their ASCII values. The table below shows the hexadecimal equivalent of each ASCII character:

ASCII to HEX Conversion Table										Esc	1B	CR	ØD	LF	ØA
Space	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	l	7C	}	7D	~	7E	DEL	7F

Table 1. ASCII to HEX Conversion Table

↵ — Carriage return with line feed

| or ← — Pipe character or carriage return (no line feed) can be used interchangeably.

• — space character

W or Esc — W or Escape key can be used interchangeably.

The Xn values defined in this section are the variables used in the fields of the Command Response Table.

X1 — Output
- 1 through 2, DA2 HD 4K
- 1 through 4, DA4 HD 4K
- 1 through 6, DA6 HD 4K

X2 — Status
- Ø = disabled, off, or undetected
- 1 = enabled, on, or detected

X3 — Video color bit depth (default = Ø)
- Ø = auto (based on EDID of sink)
- 1 = force 8-bit

X4 — EDID memory location (default = 39)
(see **table** on page 15)

X5 — EDID data as 256 bytes of Hex data (text representation)

X6 — Native resolution and refresh rate (translated from Hex)
for example: 1600x1200 @60Hz

X7 — Controller firmware version to the second decimal place

X8 — Text string of up to 24 characters (default = DA-HD-4K-SERIES).
- Alphanumeric characters and hyphens only.
- No distinction between upper and lower case.
- No spaces.
- First character must be a letter and the last character cannot be a hyphen.

X9 — Output HDCP mode (default = Ø)
- Ø = Encrypt as required by input.
  - Continuous trials for HDMI sinks
  - Attempt for 10 seconds on DVI sinks and then fail.
- 1 = Always encrypt.
  - Continuous trials for HDMI sinks.
  - Attempt for 10 seconds on DVI sinks and then fail.
- 2 = Encrypt as required by input. Continuous trials for HDMI and DVI sinks.
- 3 = Always encrypt. Continuous trials for HDMI and DVI sinks.

X10 — Verbose mode (default = 1)
Ø = Clear or none.
1 = Verbose mode.
2 = Tagged responses for queries.
3 = Verbose mode and tagged responses for queries.

X11 — TMDS output format (default = Ø)
Ø = Auto, pass through if HDMI sink; force DVI format if DVI sink.
1 = DVI RGB 444
2 = HDMI RGB “Full”
3 = HDMI RGB “Limited”
5 = HDMI YUV 444 “Limited”
7 = HDMI YUV 422 “Limited”

X12 — Video mute
Ø = Video mute disabled.
1 = Video mute (TMDS).
2 = Video and sync mute.

Error Messages

EØ1 — Invalid input channel number (too large)

E1Ø — Invalid command

E13 — Invalid value (too large)

Command and Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Video Mute			
Video mute single output	X1*X12B	VmtX1*X12↵	Set video mute status (X12) for output X1
Video mute all outputs	X12B	VmtX12↵	Set video mute status (X12) for all outputs
Query Video mute status	B	X12•X12•...X12↵ VmtX12•X12•...X12↵	Verbose mode 0/1 Verbose mode 2/3 Video mute status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).
Audio Mute			
Audio mute single output	X1*X2Z	AmtX1*X2↵	Set audio mute status (X2) for output X1
Audio mute all outputs	X2Z	AmtX2↵	Set audio mute status (X2) for all outputs
Query Audio mute status	Z	X2•X2•...X2↵ AmtX2•X2•...X2↵	Verbose mode 0/1 Verbose mode 2/3 Audio mute status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).
Video Color Bit Depth			
Set video color bit depth for a specific output	EscVX1*X3BITD←	BitdVX1*X3↵	Set video color bit depth (X3) for output X1
Set video color bit depth for all outputs	EscVX3BITD←	BitdVX3↵	
View video color bit depth status for all inputs	EscVBITD←	X3•X3•...X3↵ BitdVX3•X3•...X3↵	Verbose mode 0/1 Verbose mode 2/3 Video color bit depth status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).

NOTES:

X1 = Output: **1** through **2**, (DA2 HD 4K); **1** through **4**, (DA4 HD 4K); **1** through **6**, (DA6 HD 4K).
X2 = Status: **Ø** = disabled; **1** = enabled.
X3 = Video color bit depth: **Ø** = auto, based on sink EDID); **1** = force 8-bit.
X12 = Video mute status: **Ø** = Video mute disabled; **1** = Video mute (TMDS); **2** = Video and sync mute.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
TMDS Output Format			
Set TMDS output format for a single output	Esc X1 * X11 VTPO ←	Vtpo X1 * X11 ↵	Sets the TMDS output format (X11) for a single output (X1).
Set TMDS output format for all outputs	Esc X11 VTPO ←	Vtpo X11 ↵	Sets the TMDS output format (X11) for all outputs
View TMDS output format settings	Esc VTPO ←	X11 • X11 • . . . X11 ↵ Vtpo X11 • X11 • . . . X11 ↵	Verbose mode 0/1 Verbose mode 2/3 TMDS output format status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).
HDCP Authorized Device			
Enable or disable HDCP authorization	Esc E X2 HDCP ←	HdcpE X2 ↵	Enables or disables HDCP authorization (1 = enabled (default))
View HDCP authorization status	Esc EHDCP ←	X2 ↵	Shows HDCP authorization status
Output HDCP Mode			
Set the output HDCP mode for a single output	Esc S X1 * X9 HDCP ←	HdcpS X1 * X9 ↵	Sets the output HDCP mode (X9) for output (X1).
Set the output HDCP mode for all outputs	Esc S X9 HDCP ←	HdcpS X9 ↵	Sets the output HDCP mode (X9) for all outputs
View the output HDCP mode for all outputs	Esc SHDCP ←	X9 • X9 • . . . X9 ↵ HdcpS X9 • X9 • . . . X9 ↵	Verbose mode 0/1 Verbose mode 2/3 Output HDCP status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).

NOTES:

X1 = Output: **1** through **2**, (DA2 HD 4K); **1** through **4**, (DA4 HD 4K); **1** through **6**, (DA6 HD 4K).

X2 = Status: **Ø** = disabled or undetected; **1** = enabled or detected.

X9 = Output HDCP mode: **Ø** = Encrypt as required by input (continuous trials for HDMI sinks, attempt for 10 seconds on DVI sinks and then fail); **1** = Always encrypt (continuous trials for HDMI sinks, attempt for 10 seconds on DVI sinks and then fail); **2** = Encrypt as required by input (continuous trials for HDMI and DVI sinks); **3** = Always encrypt (continuous trials for HDMI and DVI sinks).

X11 = TMDS output format: **Ø** = Auto, pass through if HDMI sink; force DVI format if DVI sink: **1** = DVI RGB 444; **2** = HDMI RGB "Full"; **3** = HDMI RGB "Limited"; **5** = HDMI YUV 444 "Limited"; **7** = HDMI YUV 422 "Limited"

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Signal Status (unsolicited)			
Request signal status for all outputs	Esc LS ←	X2•X2•...X2 ↵ Sig X2•X2•...X2 ↵	Verbose mode 0/1 Verbose mode 2/3 Request signal status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).
Request HDCP status for all outputs	Esc HDCP ←	X2•X2•...X2 ↵ Hdcp X2•X2•...X2 ↵	Verbose mode 0/1 Verbose mode 2/3 Request HDCP status of outputs 1 to 2 (DA2 HD 4K), 1 to 4 (DA4 HD 4K), or 1 to 6 (DA6 HD 4K).
EDID Minder			
Assign EDID to input	Esc A X4 EDID ←	EdidA X4 ↵	Assigns an EDID value (X4) from the EDID memory location
View EDID assignment	Esc AEDID ←	X4 ↵	Shows the currently assigned EDID
Save EDID of output to user location	Esc S X1 * X4 EDID ←	EdidS X1 * X4 ↵	Store the EDID of specified output (X1) into EDID memory location (X4 user loaded slots 64 or 65).
Read EDID in HEX	Esc REDID ←	X5 ↵	Read out EDID in HEX (as text) from currently selected EDID (X5)
View EDID native resolution	Esc NEDID ←	X6 ↵	Shows native resolution of currently assigned EDID

NOTES:

X1 = Output: **1** through **2**, (DA2 HD 4K); **1** through **4**, (DA4 HD 4K); **1** through **6**, (DA6 HD 4K).
X2 = Status: **Ø** = disabled, off, or undetected; **1** = enabled, on, or detected.
X4 = EDID memory location (see **table** on page 15)
X5 = EDID data as 256 bytes of Hex data (text representation)
X6 = Native resolution and refresh rate (translated from Hex). For example: 1600x1200 @60Hz

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Verbose Mode			
Set verbose mode	Esc X10 CV ←	Vrb X10 ↵	Sets verbose mode (X10).
View verbose mode	Esc CV ←	X10 ↵	
Unit Name			
Set the unit name	Esc X8 CN ←	Ipn•X8 ↵	Sets the unit name (X8).
Reset unit name to factory default	Esc •CN ←	Ipn•DA-HD-4K-SERIES ↵	Default unit name is DA-HD-4K-SERIES
View unit name	Esc CN ←	X8 ↵	
Others			
View unit part number	N	60-1480-01 ↵ 60-1481-01 ↵ 60-1482-01 ↵	DA2 HD 4K DA4 HD 4K DA6 HD 4K
View firmware version	Q	X7 ↵	Firmware build (X7)
Reset	Esc ZXXX ←	Zpx ↵	

NOTES:

X7 = Firmware build to two decimal places (*x.xx*)

X8 = Unit name: a text string of up to 24 characters. (Alphanumeric characters and hyphens only. No distinction between upper and lower case. No spaces. First character must be a letter and the last character cannot be a hyphen.)

X10 = Verbose mode (**0** = Clear or none; **1** = Verbose mode; **2** = Tagged responses for queries; **3** = Verbose mode and tagged responses for queries)

Configuration Software

The DA HD 4K Series distribution amplifiers use Extron Product Configuration Software (PCS). This section describes:

- **Downloading PCS from the Extron Website**
- **Using PCS Software**
- **Updating Firmware**

Downloading PCS from the Extron Website

Visit **www.extron.com** to download and install the PCS software, which provides an easy option for configuring the DA HD 4K series product.

NOTE: Also download the latest version of firmware for your product. To update firmware, you may need to download and install Firmware Loader.

Click the **Download** link at the top of the page (figure 8, ❶).

1. Click the appropriate link on the left sidebar menu (❷).

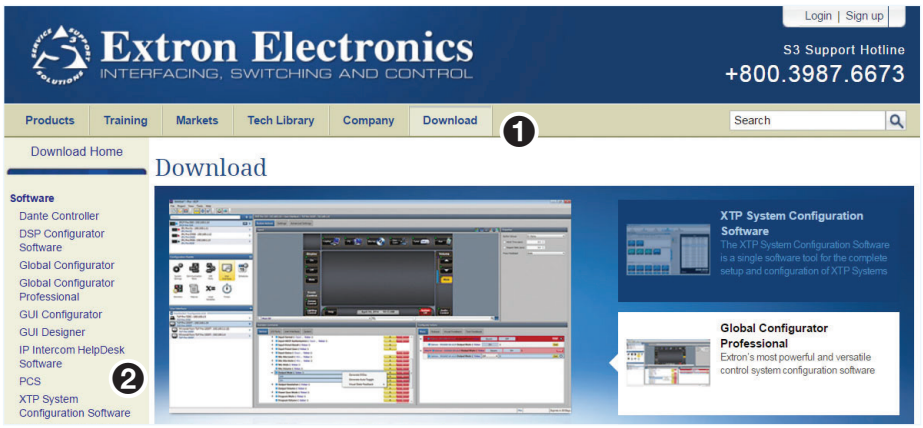


Figure 8. Software and Firmware Links on the Download Tab

For software, either click the **Software** link at the top of the sidebar or, if the software is listed in the sidebar, click directly on that link (for example, see the PCS link in figure 8).

2. If there is no direct link to your software or firmware, scroll down to the alphabetic navigation bar (see figure 9).

Figure 9. Alphabetic Navigation Bar

3. Click the appropriate letter to locate the software or firmware. When an update is available, the device will be listed in alphabetical order on the page.
4. Click **Release Notes** to see the issues that have been addressed by the latest update.
5. Click **Download** and follow the on-screen instructions.

Using PCS Software

Overview

1. Ensure that PCS is installed on the control PC.

   The program can be downloaded, from the **Extron website**.

2. Connect a control PC to the DA HD 4K device. The Windows-based PCS communicates with the switcher via the Front Panel Configuration port with a standard USB mini-B port.

3. Open the PCS software on the control PC.

   Click **Start** > **Programs** > **Extron Electronics** > **Extron Product Configuration Software** > **Extron Product Configuration Software**.

The Product Configuration Software opens to the **Device Discovery** screen.

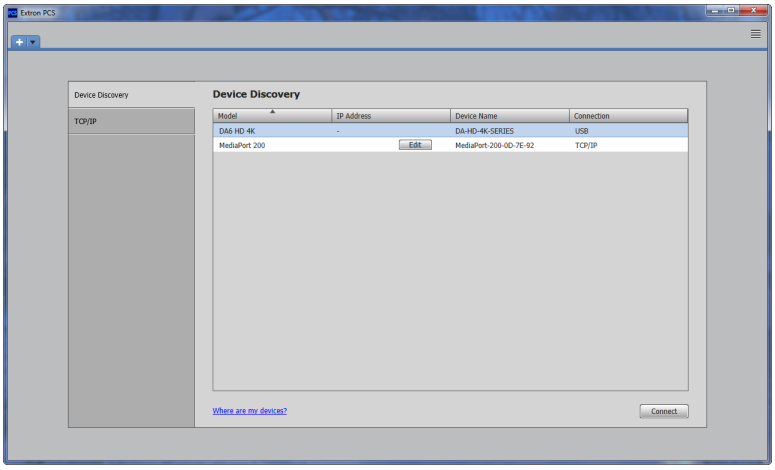


Figure 10. PCS Device Discovery Screen

4. Click the DA HD 4K device in th elist.

5. Click **Connect** (see figure 10).

The Product Configuration Software opens to the device main menu.

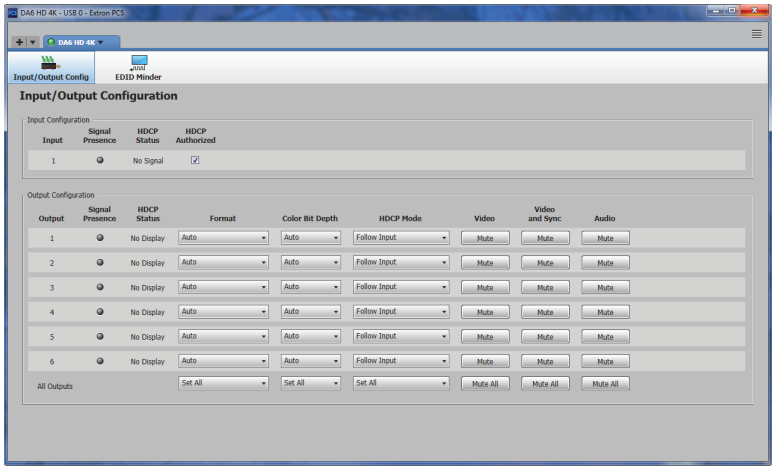


Figure 11. DA HD 4K Main Menu

The two configuration pages can be accessed from the global navigation bar (ribbon) under the device tab. These pages are: **Input/Output Configuration** and **EDID Minder.**

6. Select **Input/Output Configuration** or **EDID Minder** to begin configuring the DA HD 4K (see figure 11).

Input/Output Configuration

This menu allows the user to configure the active input and outputs (see figure 12).

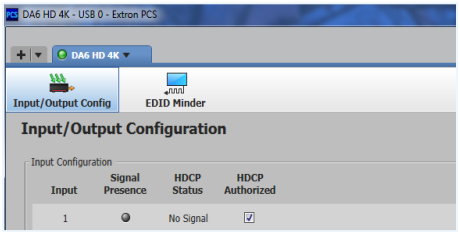


Figure 12. Input Configuration Menu

Input Configuration

Signal Presence — Connection status icon shows green when an active HDMI signal is present.

HDCP Status — The HDMI input negotiates and authenticates HDCP with the source device if the source requires HDCP encryption.

HDCP Authorized — Select this to turn the **HDCP Authorized** on (default) or off. When disabled (off), the DA HD 4K devices do not display content that requires HDCP, and display a green screen.

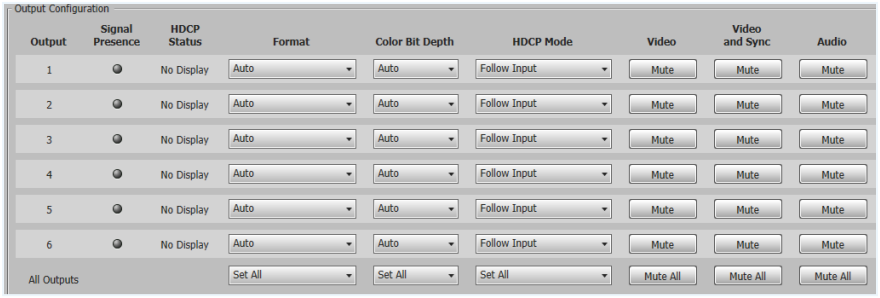


Figure 13. Output Configuration Menu

Output Configuration

Signal Presence — Connection status icon shows green when an active HDMI signal is present.

HDCP Status — Indicates whether the display connected to the output is HDCP compliant.

Format — Select this to set the HDMI output format. Choices are:

- **Auto** — (based on sink EDID), default
- **DVI RGB 444**
- **HDMI RGB 444 Full**
- **HDMI RGB 444 Limited**
- **HDMI YUV 444 Limited**
- **HDMI YUV 422 Limited**

Color Bit Depth — Select this to set the color bit depth, either **Auto** or **Force 8-bit**

HDCP Mode — When enabled, the HDCP Mode can be set to either follow the current input, or always encrypt the output. Choices are:

- **Follow Input** — Encrypts the output only when required by the selected input source.
- **Always Encrypt Output** — Always encrypts the output, regardless of the HDCP status of the input source.
- **Follow Input** — Encrypts the output only when required by the input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode.

- **`Video and Sync`** — Select this to mute the video picture and sync signal. Button will light red when muted.
- **`Audio`** — Select this to mute the audio. Button will light red when muted.

NOTE: The outputs can be configured individually or all configured the same using the output settings for **`All Outputs`** at the bottom of the page (see **figure 13** on the previous page).

EDID Minder

This menu allows the user to configure the EDID (resolution and refresh rate).

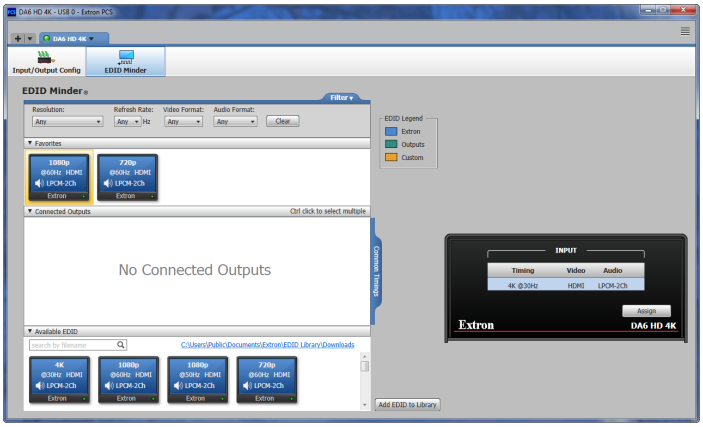


Figure 14. EDID Minder Menu

Select the **`EDID Minder`** tab to change the EDID (resolution and refresh rate) for HDMI input and outputs (see figure 14 above). Set the EDID to match the output rate, or a custom user-defined EDID, or a factory setting (see **table** on page 15 for EDID data).

Device Menu

This menu allows the user to **`Disconnect`** the device, view the hardware **`Settings`**, **`Reset Device`**, **`Update Firmware`** or view information **`About this Module`** (see figure 15 below).

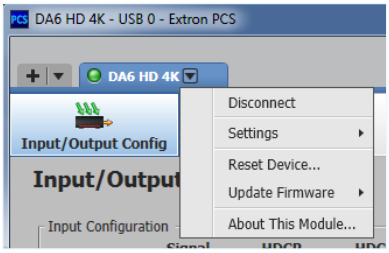
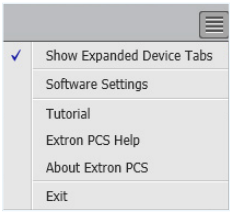


Figure 15. Device Menu

PCS Help File

For assistance, the *PCS Help File* contains complete information about using the program to configure the DA2 HD 4K.

To access the *PCS Help File*, click the button in the right corner of the PCS program screen (see the image on the right).



Updating Firmware

Firmware for the DA HD 4K series products can be upgraded using Extron Firmware Loader or through PCS (see **Device Menu** on the previous page).

Downloading Firmware to a PC

To download the latest version of the firmware for your product, follow these instructions:

1. Power on a computer that is connected to the same network as the distribution amplifier.
2. On the **Extron website**, click **Download** in the menu bar along the top of the page (figure 16, ❶).

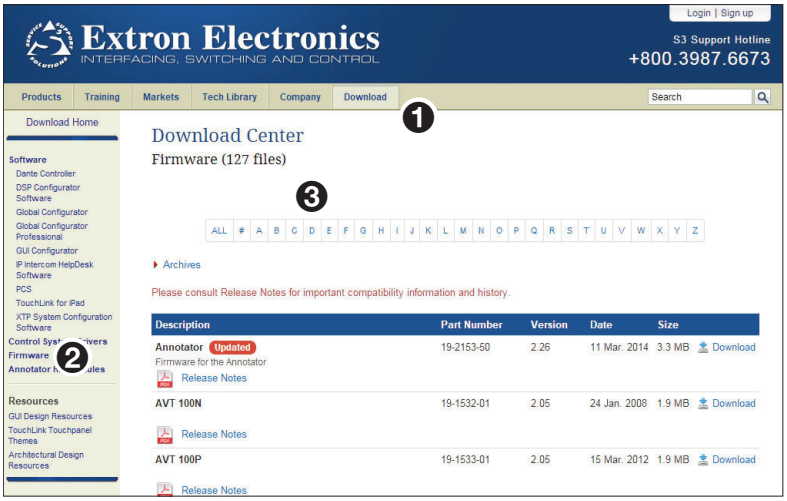


Figure 16. Firmware Download Center

3. Click **Firmware** in the menu bar in the left side bar (❷).
4. Click the letter **D** from the list of letters (❸).
5. Scroll down the page until you find the firmware for your unit.
6. (Optional) Click **Release Notes** for more information about the program.
7. Click **Download**.
8. Follow the on-screen instructions to download the firmware. Make a note of where the firmware file is stored on the PC.

Uploading Firmware to a DA HD 4K Device

1. If you have not already done so, download and install Firmware Loader (see **Downloading Software from the Extron Website** on page 25).
2. Download the latest version of the firmware to your PC.
3. Connect the PC to the DA HD 4K device. You can connect the computer to either the rear panel 3-pole RS-232 port (**figure 2**, Ⓔ on page 5) or the front panel USB port (**figure 7**, Ⓑ on page 13) of the distribution amplifier.
4. Open the Firmware Loader via the Firmware Loader icon installed during the download (optional) or your desktop **Start** menu by making the following selections:

   Start > **All Programs** > **Extron Electronics** > **Firmware Loader** > **Firmware Loader**

The Firmware Loader window opens. The Add Device... window opens in front.

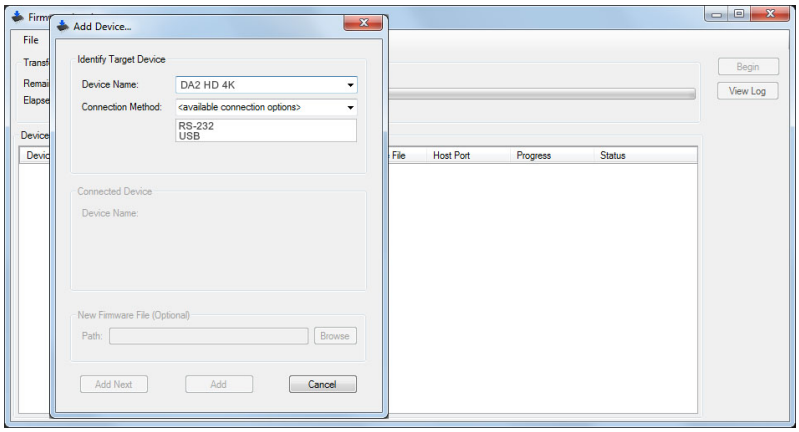


Figure 17. Opening Firmware Loader

5. In the Add Device window, select the appropriate DA HD 4K device from the **Device Names** drop-down menu.
6. From the **Connection Method** drop-down menu, select either **RS-232** or **USB**.
7. Depending on the connection method that you selected, additional options appear. Make the appropriate selections for your connection method.
   - **RS-232**: Select the appropriate options from the **Com Port** and **Baud Rate** menus (this information is provided by your system administrator).
   - **USB**: Only the **Extron USB Device_Ø** option is available on the **Available Devices** menu. Make sure that it is selected.
8. Click **Connect**. If the connection is successful, the unit name is displayed in green in the Connected Device section, followed by a green check mark.
9. Click the **Browse** button in the New Firmware File (Optional) section.
10. On the Open window, navigate to the new firmware file, which has an S19 extension, and double-click it.

ATTENTION:

- Valid firmware files must have the file extension **S19**. A file with any other extension is not a firmware upgrade for this product and could cause the switcher to stop functioning.
- Les fichiers firmware valides doivent contenir l'extension fichier S19. Un fichier avec n'importe quelle autre extension n'est pas une mise à jour de firmware pour cet appareil et l'appareil pourrait arrêter de fonctionner.

NOTE: The original factory-installed firmware is always available on the DA HD 4K device. If the attempted firmware upload fails for any reason, the unit reverts to the factory version.

Mounting

Desktop Placement

Attach the four provided rubber feet to the bottom of the DA HD 4K device and place it in any convenient location.

Rack Mounting

UL Guidelines for Rack Mounting

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

- **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).

Rack Mounting Procedure

The unit can be mounted on an optional Extron rack systems. Recommended mount kits for the DA2 HD 4K device include: MBU 125 and RSB 123. Recommended mount kits for the DA4 HD 4K or DA6 HD 4K devices include: MBU 123 or RSU 126, which are listed on the Extron website (**www.extron.com**). To mount the unit on a rack shelf, follow the instructions provided with the optional shelf kit.

Under-desk Mounting

Mount the unit under a desk or podium, using the optional Extron under-desk mounting kit, UTS 100, listed on the Extron website (**www.extron.com**). Follow the instructions provided with the kit.

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

Middle East:
Extron Middle East
Dubai Airport Free Zone
F13, 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.

Extron Headquarters
+1.800.633.9876 (Inside USA/Canada Only)
Extron USA - West
+1.714.491.1500
+1.714.491.1517 FAX
Extron USA - East
+1.919.850.1000
+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 Australia
+61.8.8113.6800
+61.8.8351.2511 FAX

Extron India
1800.3070.3777
(Inside India Only)
+91.80.3055.3777
+91.80.3055.3737 FAX