User Guide

Distribution Amplifiers

DA4 12G HD-SDI

HD-SDI Distribution Amplifier

Extron

68-3044-01 Rev. B
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.

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.

NOTE:

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

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

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 DA4 12G HD-SDI. Unless otherwise stated, the terms “distribution amplifier” and “DA” refer to the DA4 12G HD-SDI.

This section provides the following information:

About the DA4 12G HD-SDI

The Extron DA4 12G HD-SDI distributes one HD-SDI input signal with embedded audio, closed caption and time code to up to four simultaneous outputs. It can handle data rates from 270 Mbps to 11.88 Gbps. The DA also features automatic input cable equalization and output signal reclocking to compensate for signal degradation in long cable runs.

The distribution amplifier conforms to SMPTE ST-2082 and is compatible with any of the Extron HD-SDI switchers, equalizers, matrix, and other HD-SDI products that support data rates up to 12G-SDI. Front panel LEDs provide immediate confirmation of active signal presence.

The distribution amplifier is housed in a 1 inch (25 mm) tall, quarter rack wide, and 3 inches (72 mm) deep metal enclosure. The DA can be placed in a convenient location, mounted on a rack shelf, or under a desk (see **Mounting** on page 23).

Features

- **12G-SDI signal distribution** — Distributes multi-rate SDI signals of data rates from one SDI input through a female BNC connector and provides up to four simultaneous outputs.
- **Automatically adapts to SMPTE and ITU digital video standards for SDI signals up to a 12G-SDI data rate.**
- **Supports data rates from 270 Mbps to 11.88 Gbps.**
- **Automatic input equalization** — Compensates for attenuation and distortion on the incoming signal and automatically equalizes cables at distances up to 230 feet (70 meters) for 12G-SDI signals, 787 feet (240 meters) for HD SDI, and 984 feet (300 meters) for SDI.
- **Automatic output reclocking** —Reshapes and restores timing of digital video signals at output, eliminating high frequency jitter and provides AV system designers with additional headroom when connecting multiple devices. Reclocking can also be selected per output or bypassed.
- **Input rate LEDs** — Convenient front panel indicators allow visual confirmation of 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI, and SDI input data rates for quick, visual identification of the incoming digital video signal.
- **SMPTE ST-2082 compliant.**

- **Passes ancillary data including HDR, embedded audio, closed caption, and time code.**
- **Easy setup and commissioning with Simple Instruction Set (SIS) commands** — Conveniently configure using a single software application.
- **Output muting via USB port** — Provides the capability to mute one or all outputs via SIS commands at any time. This allows content to be viewed on a local monitor prior to appearing on the main presentation display.
- **Easy mounting options** — The DA4 12G HD-SDI has a 1 inch (25 mm) high, quarter rack width, 3 inches (72 mm) deep enclosure that allows convenient mounting in standard racks or under furniture.
- **External Extron Everlast power supply included** — Provides worldwide power compatibility with high demonstrated reliability and low power consumption.
- **Extron Everlast Power Supply is covered by a 7 year parts and labor warranty.**

Application Diagram

The diagram in figure 1 shows a typical application for the DA4 12G HD-SDI.

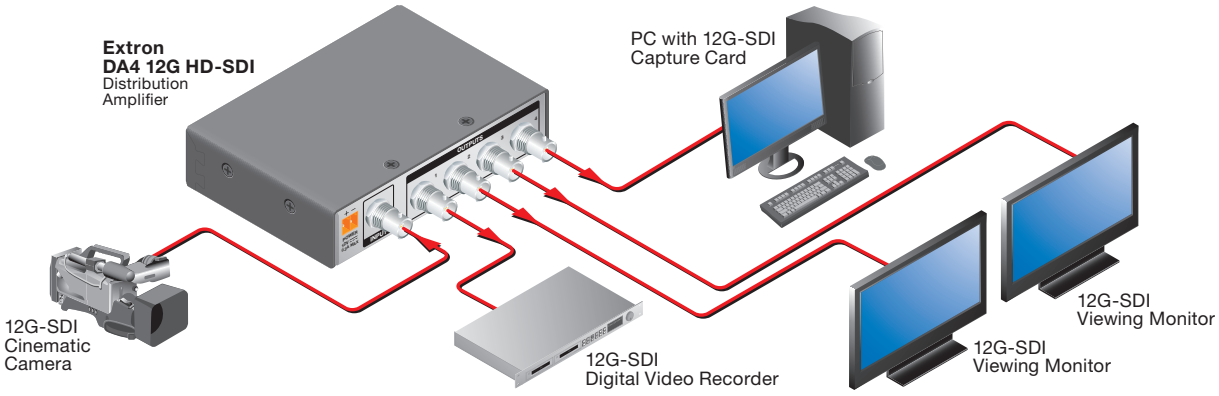


Figure 1. DA4 12G HD-SDI Application Diagram

Installation and Operation

This section provides an overview of the installation of the DA4 12G HD-SDI distribution amplifiers. The following topics are discussed:

- **Installation Overview**
- **Connections**
- **Operations**

Installation Overview

To install and set up the DA4 12G HD-SDI, follow these instructions:

1. Mount the DA in a suitable location (see **Mounting** on page 23).
2. **Connect the display devices** and power them on (see page 6).
3. Connect the provided 12 VDC power supply to the **power supply connector** on the next page

ATTENTION:

- Do not connect any external power supplies until you have read the **Attention notifications** on page 5.
- Ne branchez pas de sources d'alimentation externes avant d'avoir lu **les mises en garde** sur la page 5.

4. If the unit needs to be configured with **Remote Control** (see page 9), connect a control PC to the **front panel Config USB port** (see page 7).
5. **Connect and power on the input device** (see page 6).

Connections

Rear Panel Connections

This section provides information about the rear panel connectors:

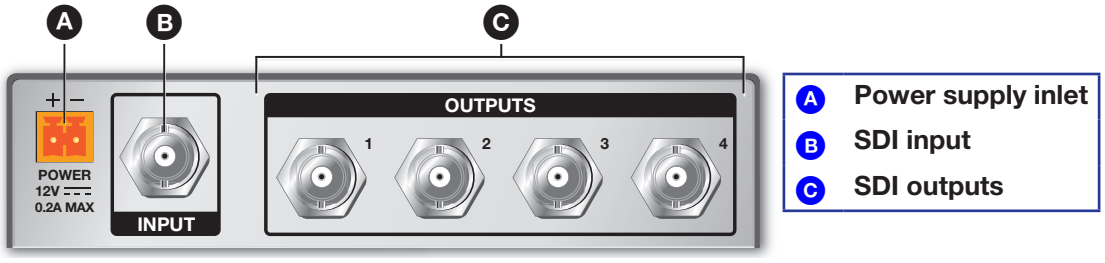


Figure 2. Rear Panel Connectors

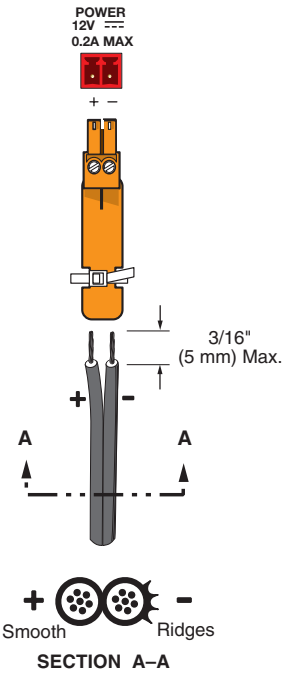
Ⓐ **Power supply inlet** (see **figure 2** on the previous page) — Connect the provided 12 VDC, 0.5 A power supply to the rear panel power supply socket.

CAUTION: • The DC output cables must be kept separate from each other while the power supply is plugged in. Remove power before wiring.

ATTENTION : Les câbles de sortie CC doivent être séparés les uns des autres tant que la source d'alimentation est branchée. Coupez l'alimentation avant d'effectuer les raccordements.

ATTENTION:

- Do not connect power to the DA4 12G HD-SDI until you have read the **ATTENTION:** notices on the next page.
- Veuillez lire les encadrés « **ATTENTION:** » de la page suivante avant de brancher une source d'alimentation externe.



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 (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm). Longer bare wires can short together. Shorter wires are not as secure in the connectors and could be pulled out.
- 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 trop longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont trop courts, ils peuvent être tirés facilement, même s'ils sont correctement serrés par les borniers à vis.

- 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.

4. Ensure the connections have the correct polarity as shown in the figure above.
5. Slide the exposed end of the wire into the captive screw connector and secure by tightening the screw.
6. 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.

- If not provided with a power supply, this product is intended for use with a UL Listed power source marked "Class 2" or "LPS" rated 12 VDC, 0.5 A minimum.
- Si le produit n'est pas fourni avec une source d'alimentation, il doit être utilisé avec une source d'alimentation certifiée UL de classe 2 ou LPS avec une tension nominale de 12 Vcc, 0,5 A minimum.

- 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. The power supply shall not be permanently fixed to building structure or similar structure.
- Cette installation doit toujours être conforme aux dispositions applicables du Code américain de l'électricité (National Electrical Code) ANSI/NFPA 70, article 725, et du Code canadien de l'électricité, partie 1, section 16. La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.

- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord (see the **figure** on the previous page) identify the power cord negative lead.
- La polarité de la source d'alimentation est primordiale. Une polarité incorrecte pourrait endommager la source d'alimentation et l'unité. Les stries sur le côté du cordon (voir **figure** sur la page précédente) permettent de repérer le pôle négatif du cordon d'alimentation.

- To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.
- Pour vérifier la polarité avant la connexion, brancher l'alimentation hors charge et mesurer sa sortie avec un voltmètre.

- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities.
- Sauf mention contraire, les adaptateurs CA/CC ne conviennent pas à une utilisation dans les espaces d'aération ou dans les cavités murales.

- Remote power is intended for indoors use only. No part of a network that uses remote power can be routed outdoors.
- L'alimentation à distance est exclusivement réservée à un usage en intérieur. Un réseau utilisant une alimentation à distance ne peut pas être routé en extérieur.

Ⓑ **SDI input** — Connect the input source to the rear panel female BNC connector (see **figure 2** on page 3).

The input conforms to SMPTE ST-2082, supporting data rates up to 12G-SDI. The DA4 12G HD-SDI equalizes the input signal data rate up to the following distances:

- Up to 70 meters (230 feet) at 11.88 Gbps
- Up to 90 meters (295 feet) at 5.94 Gbps
- Up to 180 meters (590 feet) at 2.970 Gbps
- Up to 240 meters (787 feet) at 1.485 Gbps
- Up to 300 meters (984 feet) at 270 Mbps

NOTE: Transmission distances will vary depending on the signal resolution, type of cable, source, and display used in the system.

Ⓒ **SDI output** — Use a BNC connector to connect up to four output displays to the female SDI sockets on the rear panel.

Video outputs are buffered and reclocked. If the input format is unrecognized, the DA bypasses the reclocking stage automatically and the outputs will be the same rate as the input.

Reclocking can be bypassed completely via SIS Commands (see **Reclocking** on page 11).

Operations

Front Panel Features

This section describes the front panel features of the DA4 12G HD-SDI.

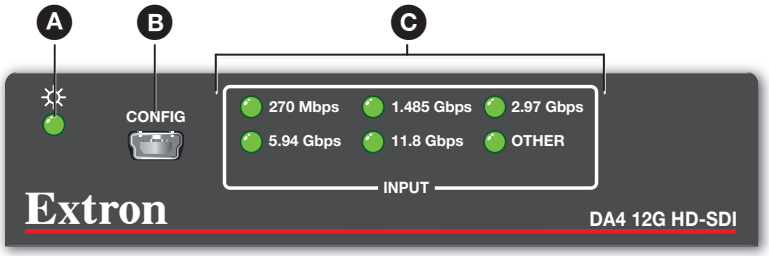


Figure 3. Front Panel Features

Ⓐ **Power status LED** — Lights green when power is applied to the unit.

Ⓑ **USB Config port** — Connect a USB A to mini-B cable between your computer and this female USB mini-B port to configure and control the distribution amplifier via SIS commands and to update the firmware.

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

Ⓒ **Input data rate LEDs** — Light green to indicate the data rate of the input signal. If the input data rate is not recognized, the Input data rate LED for OTHER will light.

Connecting to the Front Panel USB Port

Use the mini Type B USB Configuration port on the front panel (see **figure 3**, **B** on the previous page) to connect the distribution amplifier to a host computer to update 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 PC USB port.

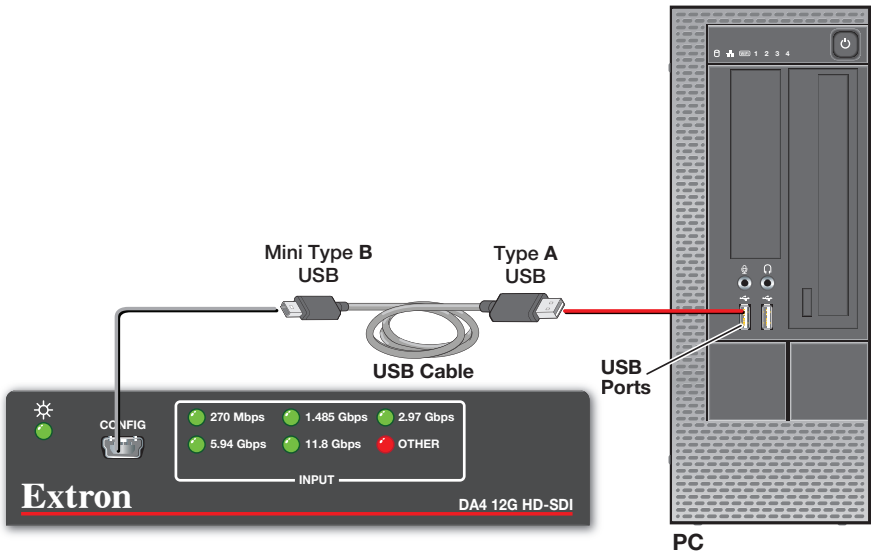


Figure 4. Connecting a PC to the DA4 12G HD-SDI Front Panel USB Port

If this is the first time the distribution amplifier has been connected to the PC, the `Found New Hardware Wizard` window opens (see figure 5).

Figure 5. Found New Hardware Wizard Welcome Screen

2. On the first screen,specify whether you want the computer to connect to Windows Update in order to search the web for the driver that it needs to communicate with the DA via the USB port.

   - Select the **`Yes, this time only`** radio button (**1**) if you want your computer to connect to Windows Update only this one time.

- Select **`Yes, now and every time I connect a device`** (see **figure 5**, ❷ on the previous page) if you want the computer to automatically connect to Windows Update to search the web every time the DA is connected to this USB port.
- Select **`No, not this time`** (❸) if you do not want the computer to connect to Windows Update to search the web at this time (for example, if the driver is already on your computer).

This is not necessary if the USB driver already exists on your computer.

3. Click **`Next`** (❹).

The next screen of the Wizard opens:

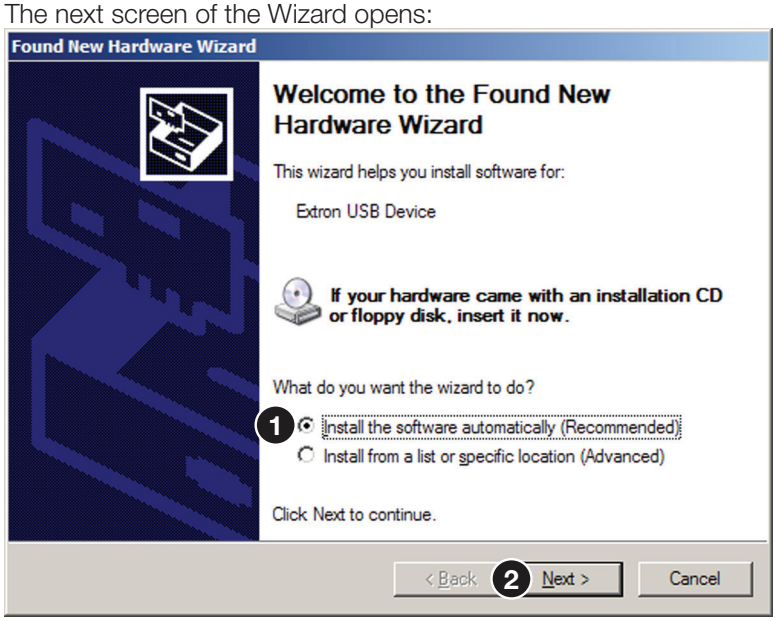


Figure 6. Installing the Software Automatically

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

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 with SIS commands (see **Remote Control** on the next page).

Remote Control

You can use Simple Instruction Set (SIS) commands to configure the DA4 12G HD-SDI. This section provides information about using those commands. The following topics are discussed:

- **Using Simple Instruction Set (SIS) Commands**
- **Symbols Used in this Guide**
- **Command and Response Table for SIS Commands**

Using Simple Instruction Set (SIS) Commands

The DA4 12G HD-SDI accepts 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 mini Type B USB config port on the front panel (see **Connecting to the Front Panel USB Port** on page 7).

Host-to-unit Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. You can enter these commands from your computer using a communication software program such as Extron DataViewer. When the distribution amplifier determines that a command is valid, it executes the command and sends a response to the host device.

Responses from the DA4 12G HD-SDI to the host computer end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters. Unless otherwise stated, upper and lower case characters can be used interchangeably.

Unit-initiated Messages

When a local event such as a front panel selection or change in signal status takes place, the DA responds by sending a message to the host, indicating what change has occurred. No response is required from the host.

The distribution amplifier sends the following message when it is first powered on:

`(c) Copyright 2Ø18, Extron Electronics, DA4 12G HD-SDI, V` *X7*`, N`*N*↵

- *V X7* is the firmware version number.
- *N* is the catalog number for the product.

Error Messages

E1Ø — Invalid command	E14 — Not valid for this configuration
E13 — Invalid parameter	E17 — Invalid command for signal type

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:

Space →

ASCII to Hex Conversion Table																			
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27	Esc	1B	CR	0D
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F	LF	0A		
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37				
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F				
@	40	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	50	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				
`	60	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	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77				
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F				

Figure 7. ASCII to HEX Conversion Table

↵ — Carriage return with line feed (hex 0D 0A)

| or ← — Pipe character or carriage return (no line feed) can be used interchangeably (hex 0D)

• — Space character (hex 20)

W or Esc — Upper case W or Escape key can be used interchangeably (hex 1B)

X1 — Input 1

X2 — Outputs 1 through 4

X3 — Status
- 0 = Disabled, off, or undetected
- 1 = Enabled, on, or detected

X4 — Output reclocking data rate
- 0 = Automatic mode (default)
- 1 = 270 Mbps
- 2 = 1.485 Gbps
- 3 = 2.970 Gbps
- 4 = 5.94 Gbps
- 5 = 11.88 Gbps

X5 — Data rate status
- 0 = 270 Mbps
- 1 = 1.485 Gbps
- 2 = 2.970 Gbps
- 3 = 5.94 Gbps
- 4 = 11.88 Gbps
- 5 = Other

X6 — Device Name. Text string of up to 24 characters (default = DA4-12G-HD-SDI). 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.

X7 — Verbose mode
- 0 = Clear/none
- 1 = Verbose mode (default)
- 2 = Tagged responses for queries
- 3 = Verbose mode and tagged responses for queries

NOTE: Commands are not case sensitive.

Command and Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Video Mute			
Video mute specific output	X2*X3B/b	VmtX2*X3↵	
Video mute all outputs	X3B/b	VmtX3↵	
Query Video mute status	B/b	X3•X3•X3•X3↵	
	Verbose mode 2/3	Vmt X3•X3•X3•X3↵	

KEY: X2 = Output **1** through **4**.
X3 = Status: **Ø** = Unmuted (default), **1** = Muted.

Reclocking			
Set all output reclocker	X4=	RteX4↵	
Query output reclocker data rates	=	X4↵	
	Verbose mode 2/3	RteX4↵	

KEY: X4 = Output reclocking: **Ø** = Automatic mode (default), **1** = 270 Mbps, **2** = 1.485 Gbps, **3** = 2.970 Gbps, **4** = 5.94 Gbps; **5** = 11.88 Gbps.

Verbose Mode			
Set verbose mode	EscX7CV←	VrbX7↵	
Read verbose mode	EscCV←	X7↵	
	Verbose mode 2/3	VrbX7↵	

NOTE: If tagged responses are enabled (modes 2 and 3), all read and query commands return the constant string value as the set command does.

KEY: X7 = Verbose mode: **Ø** = Clear/none, **1** = Verbose mode, **2** = Tagged responses for queries, **3** = Verbose mode and tagged responses for queries

Signal Input Status			
Request signal status for the input	EscLS←	X3↵	Input
	Verbose mode 2/3	SigX3↵	

KEY: X3 = Status: **Ø** = Disabled/undetected, **1** = Enabled/detected.

Unit Name			
Set the unit name	EscX6CN←	Ipn•X6↵	
Reset to factory default	Esc•CN←	Ipn•DA4-12G-HD-SDI↵	
View unit name	EscCN←	X6↵	
	Verbose mode 2/3	Ipn•X6↵	

KEY: X6 = Device name. Text string of up to 24 characters (default = DA4-12G-HD-SDI). 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.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Other			
Information	I/i	Sig[X3]•Rte[X5]↵	Unsolicited
Query unit part number	N *Verbose mode 2/3*	6Ø-1674-Ø1↵ Pno•6Ø-1674-Ø1↵	DA4 12G HD-SDI
Query model name	1I/i	InfØ1*DA4 12G HD-SDI↵	
Query model description	2I/i	InfØ2*12G HD-SDI Distribution Amplifier 4↵	
KEY: [X3] = Status: **Ø** = Disabled/undetected, **1** = Enabled/detected. [X5] = Data rate status: **Ø** = 270 Mbps; **1** = 1.485 Gbps, **2** = 2.970 Gbps, **3** = 5.94 Gbps, **4** = 11.88 Gbps; **5** = Other.			
Firmware			
View firmware version	Q	*x.xx*↵	
View firmware version build	*Q	*x.xx.xxxx*↵	
Reset			
Reset back to default	[Esc]ZXXX↵	Zpx↵	

Configuration Software

The DA4 12G HD-SDI can be easily configured using Extron Product Configuration Software (PCS). Firmware can be upgraded using PCS or Extron Firmware Loader. This section describes:

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

Downloading PCS from Extron Website

Visit **www.extron.com** to download and install the PCS software.

NOTE: Also download the latest versions of software and firmware for your product. To update firmware, you may choose to download and install Firmware loader.

1. Mouse over the **Download** link at the top of the page (figure 8, ❶).
2. Click the appropriate link on the left sidebar menu (❷).

   For software, either click the **Software** link or, if the software is listed, click directly on that link (see the **PCS** link ❸).

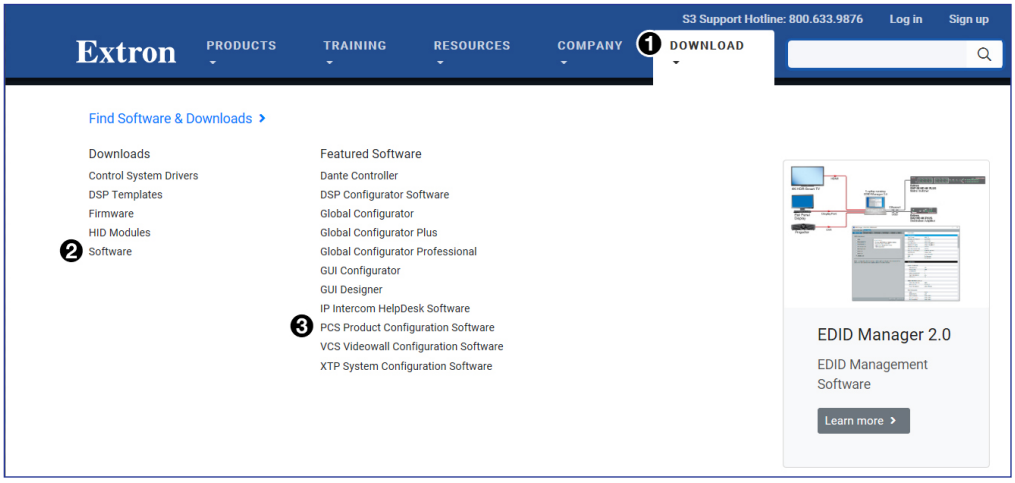


Figure 8. Software and Firmware Links on Download Screen

3. If there is no direct link to your software or firmware, click the **Software** link (❷) and scroll down to the alphabetic navigation bar (see figure 9).

Figure 9. Alphabetic Navigation Bar

4. Click the appropriate letter to locate the software or firmware.
5. Click **Download** and follow the on-screen instructions.

Using PCS Software

Overview

1. Connect the control PC to the DA4 12G HD-SDI. The Windows-based PCS communicates with the DA via the front panel Configuration port with a standard USB mini-B connector (see **Connecting to the Front Panel USB Port** on page 7).
2. Open PCS on the control PC from the **PCS** icon loaded on the desktop (optional, see image on the right) or from the Start menu:

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

The Product Configuration Software opens to the Device Discovery screen.

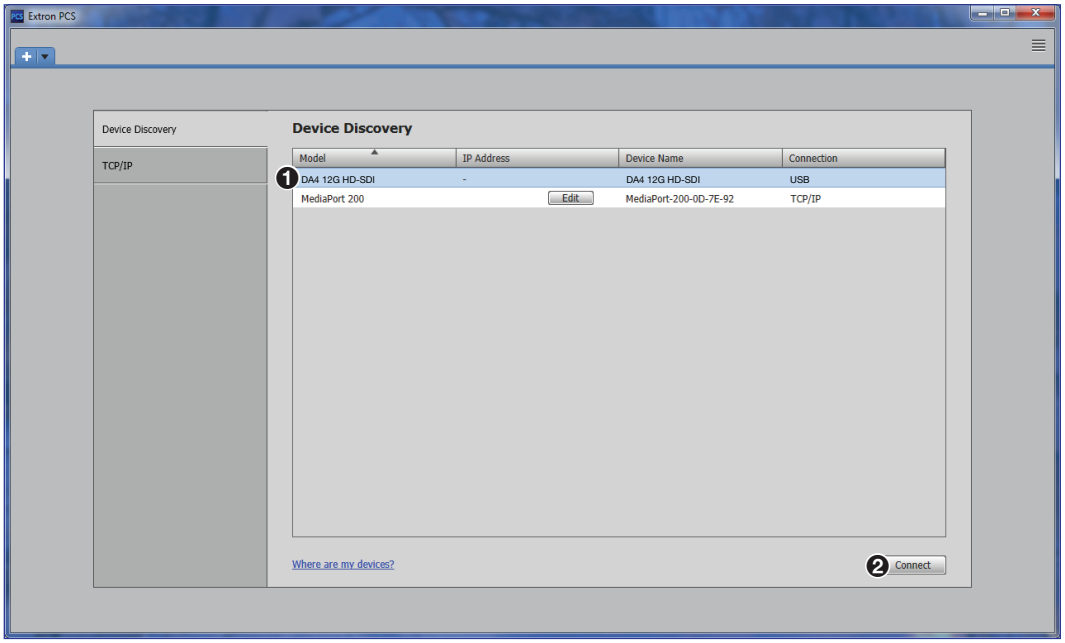


Figure 10. PCS Device Discovery Screen (GET NEW IMAGE)

3. Select the **DA4 12G HD-SDI** by clicking on it to highlight it in the list (see figure 10, ❶).
4. Click **Connect** (❷).

The Product Configuration Software opens to the device main page (see figure 11).

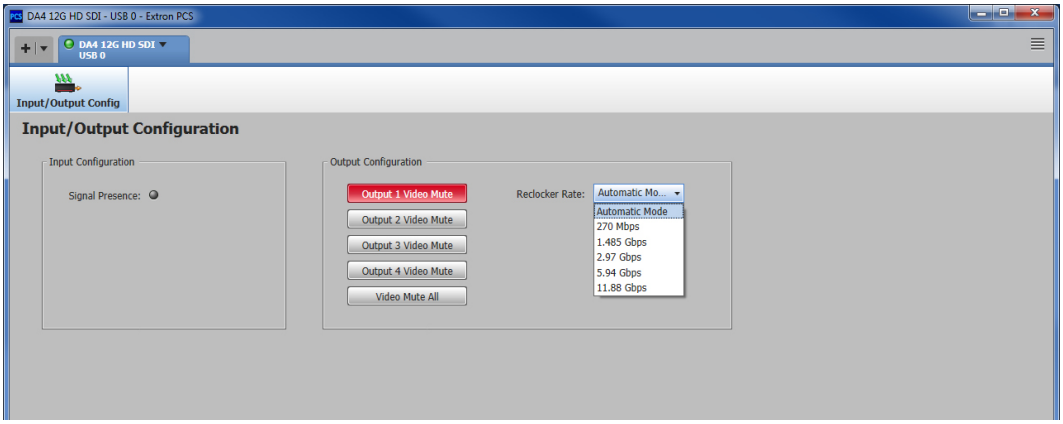


Figure 11. DA4 12G HD-SDI PCS Main Page

The DA4 12G HD-SDI has one configuration page: Input/Output Configuration.

Input/Output Configuration

The `Input/Output Configuration` page allows the user to view the status of the active input and configure the active outputs.

Input Configuration

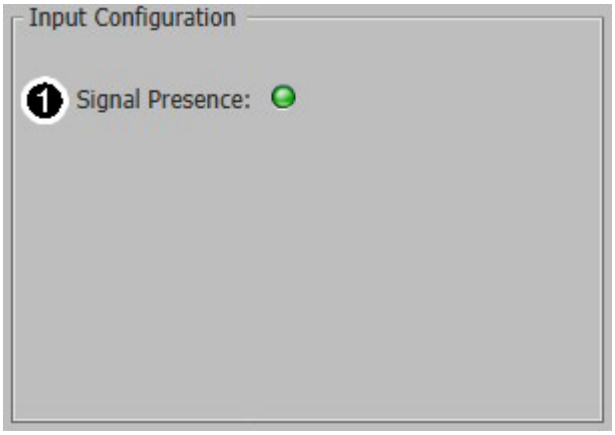


Figure 12. Input Configuration Panel

The `Input Configuration` panel (see figure 12) allows the user to view the `Signal Presence` for the input.

❶ **Signal Type** — Connection status icon shows green when an active signal is present.

Output Configuration

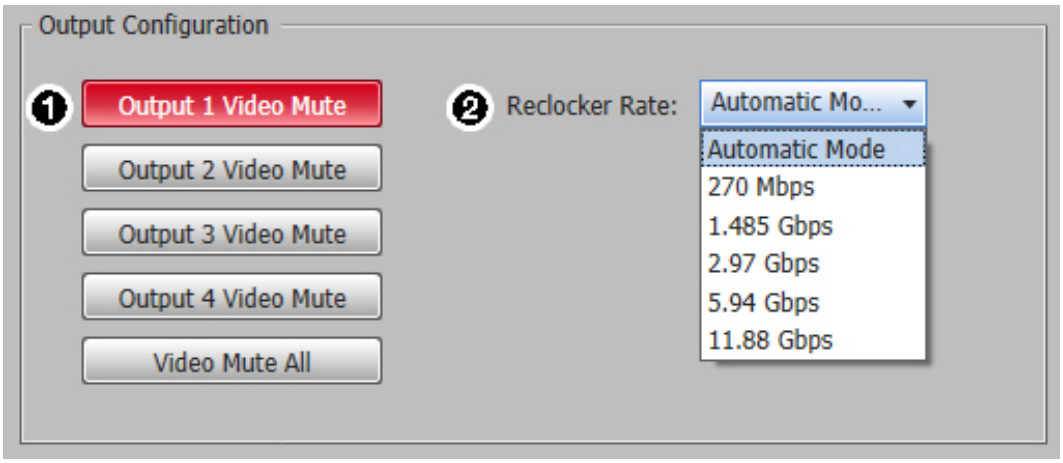


Figure 13. Output Configuration Panel

There are two configuration options in the `Output Configuration` panel (see figure 13): output video mute (❶) and `Reclocker Rate` (❷).

❶ **Output Video Mute** — Click on the **`Output Video Mute`** button to mute the output for an individual output, or click on **`Video Mute All`** to mute all the outputs. The button shows red when the output is muted. Click on the red button to unmute the output.

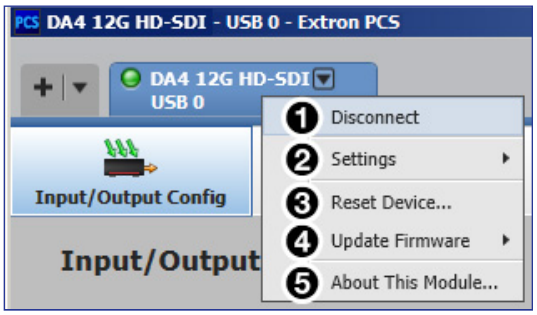
❷ **Reclocker Rate** — Select the desired reclocker rate for the output from the drop-down list. Options are:

- **`Automatic Mode`**
- **`270 Mbps`**
- **`1.485 Gbps`**
- **`2.97 Gbps`**
- **`5.94 Gbps`**
- **`11.88 Gbps`**

Device Menu

The **Device** menu (see image on the right) allows the user to:

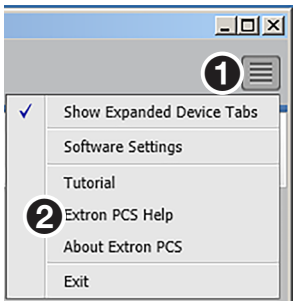
1. **Disconnect** the device from PCS
2. View the hardware **Settings**
3. **Reset Device** to factory default
4. **Update Firmware**
5. View information **About this Module**



Extron PCS Help File

For assistance, **Extron PCS Help** contains complete information about using the program to configure the DA4 12G HD-SDI.

To access **Extron PCS Help**, click the button in the top right corner of the PCS program screen (see the image on the right, ❶) and click on **Extron PCS Help** (❷).



Updating Firmware Using Firmware Loader

The DA4 12G HD-SDI firmware can be upgraded using Extron Firmware Loader.

To download Extron Firmware Loader to your PC, follow these instructions:

1. On the **Extron website**, mouse over the **Download** tab (see figure 14, ❶).

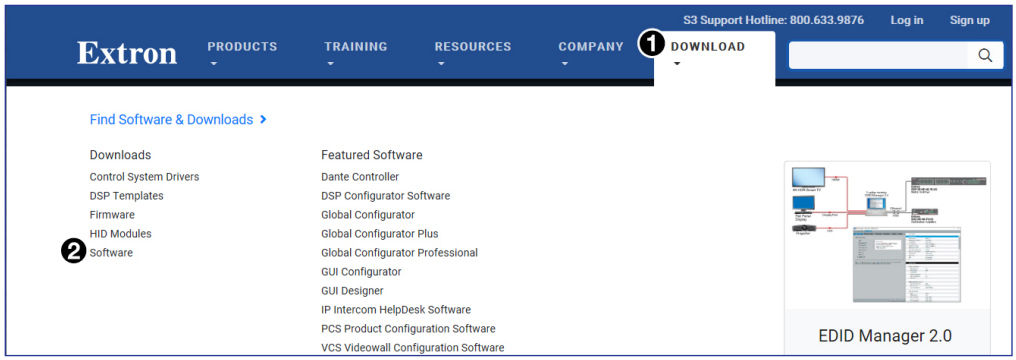


Figure 14. Locating Firmware Loader Software

2. Click on **Software** link (❷) on the drop-down menu. The **Software** page opens (see **figure 15** on the next page).

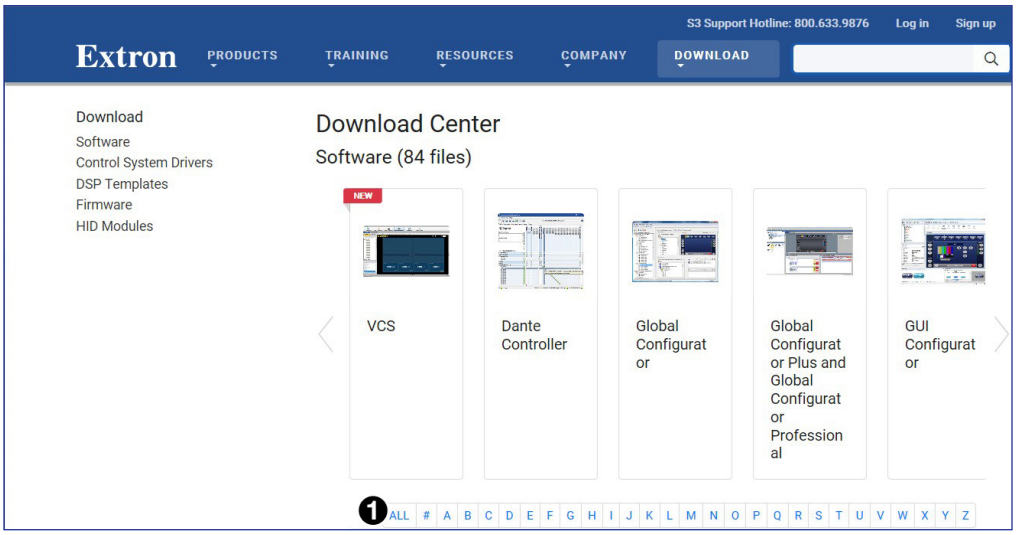


Figure 15. Software Page with Alphabetic Navigation Bar

3. Click on the **F** link from the alphabetic navigation bar (see figure 15, ❶). The page of software that begins with the letter **F** opens.
4. Locate `Firmware Loader`.

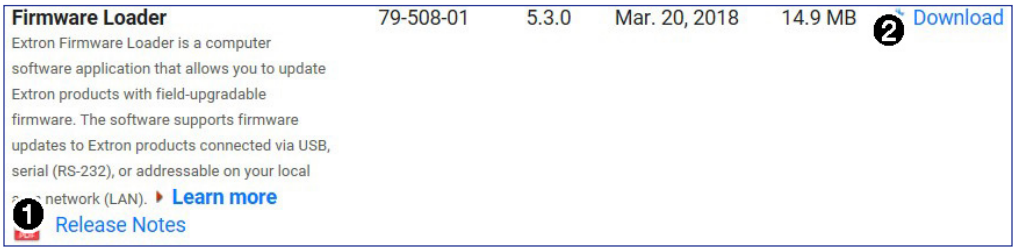


Figure 16. Download Firmware Loader

5. (Optional) Click **`Release Notes`** (see figure 16, ❶) for more information.
6. Click the **`Download`** (❷) link. The product download screen opens.
7. Enter the required user information and click **`Download`**. An executable (.exe) file is downloaded to the PC.

Installing Firmware Loader

1. Once Firmware Loader has been downloaded, run the **`.exe`** file from the save location. The `Installation Wizard` window opens.
2. Follow the instructions on the `Installation Wizard` screens to install Firmware Loader on the computer. The installation creates the necessary subfolders and groups. It places the appropriate files into the correct group folders:

   Firmware Loader —
   - **Folder** — C:\Program Files\Extron\FWLoader
   - **Group folder** —Extron Electronics\Firmware Loader
     - Check for Firmware Loader Updates
     - Firmware Loader Help
     - Firmware Loader
     - Uninstall Firmware Loader

Downloading Firmware to a PC

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

1. On the **Extron website**, mouse over the **Download** tab (figure 17, ❶).

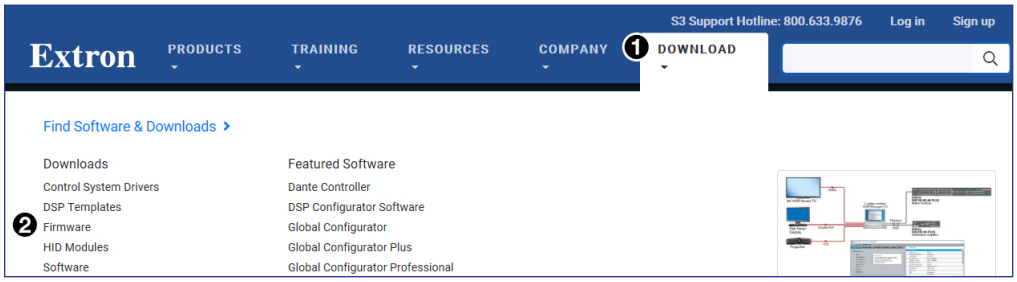


Figure 17. Firmware Download Center

2. Click **Firmware** in the drop-down menu (❷). The Download Center page opens.
3. Click the letter **D** from the alphabetic navigation bar for the DA4 12G HD-SDI device (see figure 18, ❶).

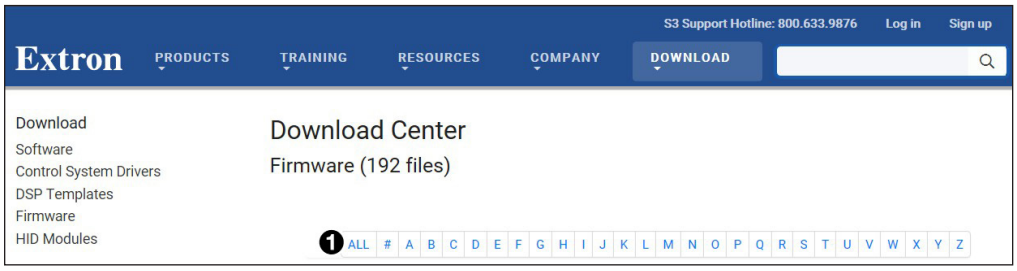


Figure 18. Firmware Page with Alphabetic Navigation Bar

4. Scroll down the page until you find the firmware for your unit.
5. (Optional) Click **Release Notes** for more information about the program.
6. Click **Download**.
7. Follow the on-screen instructions to download the firmware. Make a note of where the firmware file is stored on the PC.

Uploading the Firmware to the DA

To load a new version of firmware to the DA using Firmware Loader:

1. If you have not already done so, download and install Firmware Loader (see **Updating Firmware Using Firmware Loader** on page 16).
2. Download the latest version of the firmware to your PC (see Downloading Firmware to a PC).
3. Connect the PC to the DA4 12G HD-SDI device via Front panel USB Config port (see **figure 3**, Ⓑ on page 6).

4. Open the Firmware Loader program 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 with the Add Device... window in front (see **figure 19** on the next page).

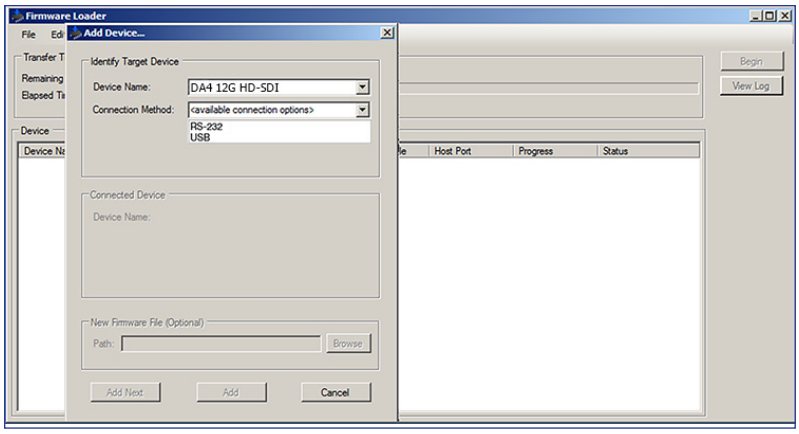


Figure 19. Opening Firmware Loader

5. In the `Add Device` window, select the appropriate DA4 12G HD-SDI from the **`Device Names`** drop-down menu.
6. From the **`Connection Method`** drop-down menu, select **`USB`**.
7. Make the appropriate selections for your connection method.
   - **`USB`**: Only the **`Extron USB Device_Ø`** option is available on the `Available Devices` menu. Make sure 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 (see figure 20, ❶).

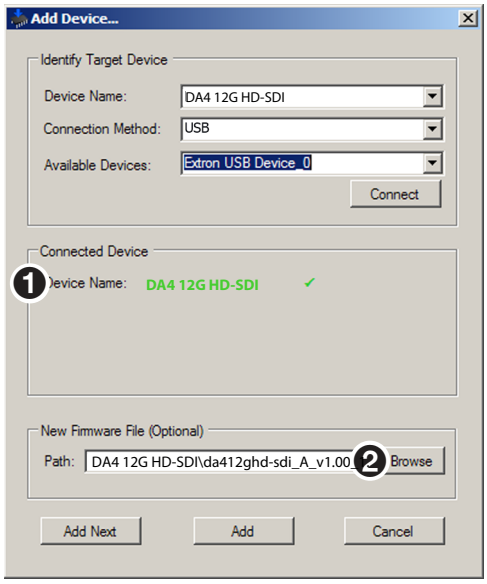


Figure 20. Add Device Window Browse for Firmware

9. Click the **`Browse`** button in the `New Firmware File (Optional)` section (❷).
10. In the `Open` window (see figure 21), navigate to the new firmware file, which has an `.S19` extension, and double-click it.

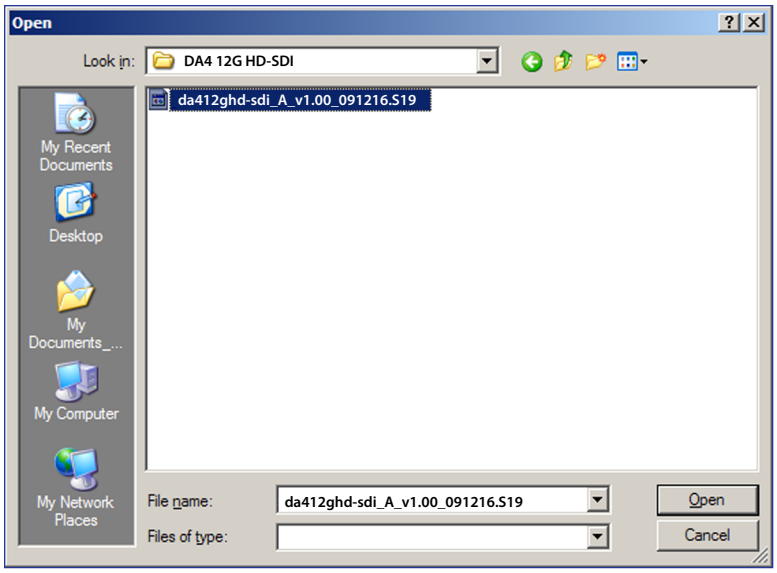


Figure 21. Open Window for Firmware File Selection

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 device 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 DA4 12G HD-SDI device. If the attempted firmware upload fails for any reason, the unit reverts to the factory version.

On the `Add Device` window, the path to the new firmware file is displayed in the `Path` field (see figure 22, ❶).

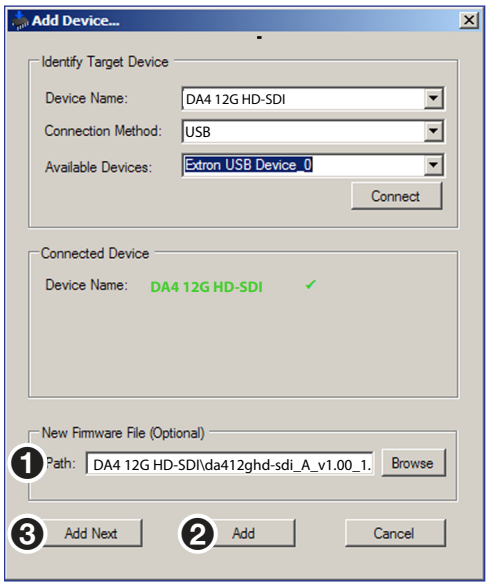


Figure 22. Path to the New Firmware File on the Add Device Window

11. **If this is the only device to which firmware is being uploaded to**, click **Add** (see figure 22, ❷ on the previous page). The distribution amplifier information is added to the `Device` section of the `Firmware Loader` window and the `Add Device` window closes.

    If uploading firmware to multiple distribution amplifiers that are connected to the computer, do the following:

    a. Click **`Add Next`** (❸). Your first device is added to the `Device` section of the `Firmware Loader` window, and the `Add Device` window remains open.

    b. For each additional device added to the `Firmware Loader` window, repeat steps 5 through 11, then click **`Add Next`**.

    c. For the last device, click **`Add`** (instead of **`Add Next`**) to add the device and close the `Add Device` window.

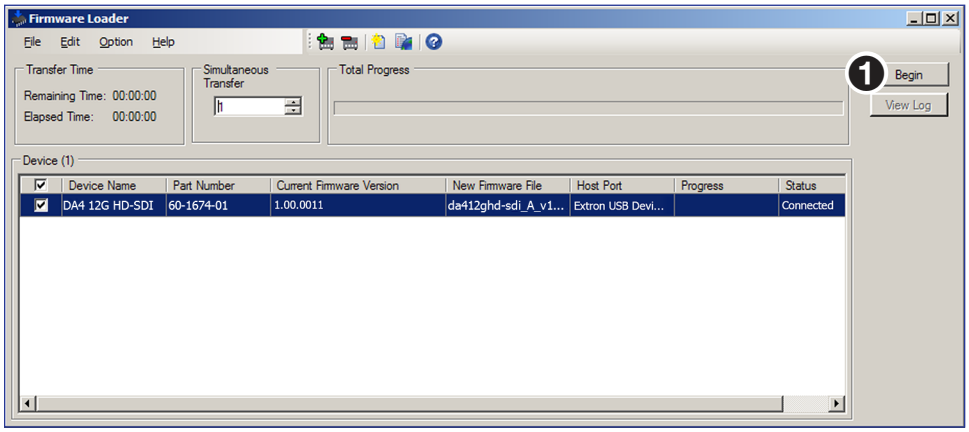


Figure 23. Firmware Loader Screen with a DA4 HD 4K Plus Added

12. To remove a device from the `Device` section, do the following:

    a. Click on the names of the devices to be deleted, to highlight them.

    b. From the `Edit` menu (see figure 24, ❶), select **`Remove Selected Device(s)`** (❷).

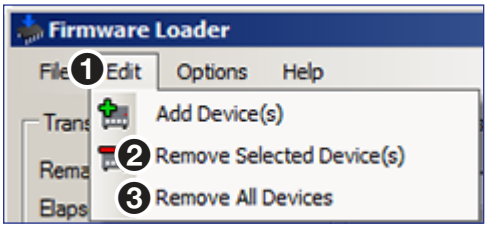


Figure 24. Firmware Loader Edit Menu

    c. Select **`Remove All Devices`** (❸) from the `Edit` menu to remove **all** devices.

13. Click **Begin** (see **figure 23**, ❶ on the previous page).

    The following indicators show the progress of the update:

    - The Transfer Time section (see figure 25, ❶) shows the remaining and elapsed time for the update.
    - The Total Progress section displays a progress bar with Uploading... (❷) above it.
    - In the Device section, the Progress column (❸) displays an incrementing percentage and another progress bar. The Status column displays Uploading... (❹).

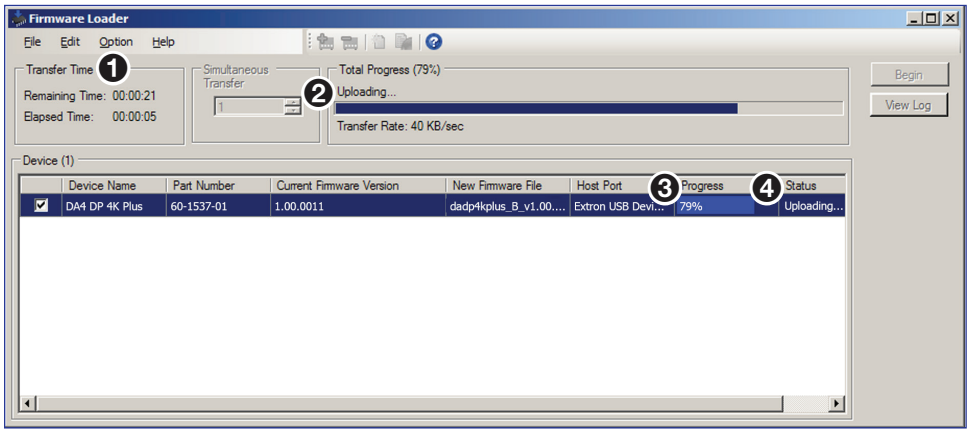


Figure 25. Firmware Upload in Progress

The upload is complete when the Remaining Time field shows 00.00.00, (see figure 26, ❶) the Progress column shows 100% (❷), and Completed is displayed above the progress bar (❸) and in the Status column (❹).

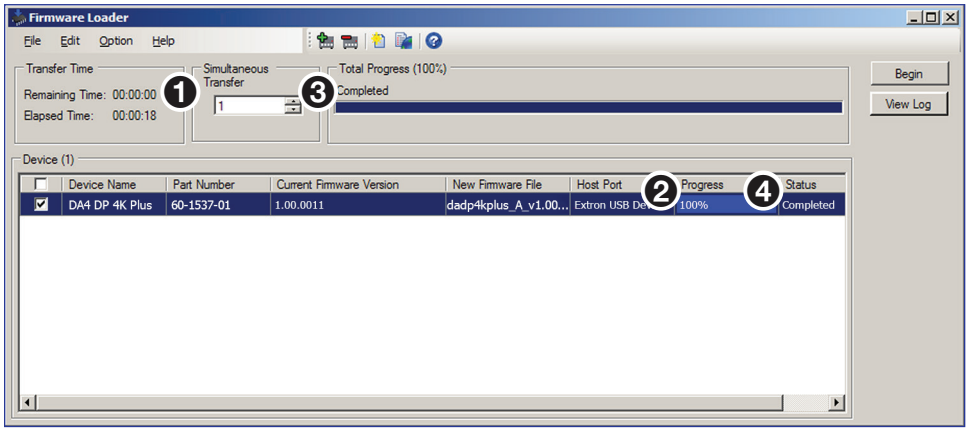


Figure 26. Firmware Upload Complete

14. Close the Firmware Loader window when the upload is complete.

Mounting

Desktop Placement

Attach the four provided rubber feet to the bottom of the DA4 12G HD-SDI and place it in any convenient location.

Rack Mounting

Rack Mounting Procedure

The unit can be mounted on any of the optional Extron rack systems available on the **Extron website**. To mount the unit on a rack shelf, read the UL Guidelines, below, and follow the instructions provided with the shelf kit.

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).

Under-desk Mounting

Mount the unit under a desk or podium, using an optional Extron under-desk mounting kit. 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.