

## Installation Guide



## *GLI 350 and ADA 2/GLI 350 HV* Ground Loop Isolators

# Precautions

## Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol 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.

### Caution

**Read instructions** • Read and understand all safety and operating instructions before using the equipment.

**Retain instructions** • The safety instructions should be kept for future reference.

**Follow Warnings** • Follow all warnings and instructions marked on the equipment or in the user information.

**Avoid Attachments** • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

## Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

### Attention

Lire les instructions • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conservier les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Éviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

## Sicherheitsanleitungen • Deutsch



Dieses Symbol soll den Benutzer auf wichtige Anleitungen zur Bedienung und Wartung (Instandhaltung) in der Dokumentation hinweisen, die im Lieferumfang dieses Gerätes enthalten ist.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

### Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Sicherheitsanleitungen sollten aufbewahrt werden, damit Sie später darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

## Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

### Precaución

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

## Warning

**Power sources** • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

**Power disconnection** • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

**Power cord protection** • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

**Servicing** • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

**Slots and openings** • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

**Lithium Battery** • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

## Avvertimento

**Alimentazioni** • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

**Déconnexion de l'alimentation** • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

**Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

**Réparation-maintenance** • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

**Fentes et orifices** • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

**Lithium Batterie** • Il a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandée par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

## Vorsicht

**Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Stift oder Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar und sollte nicht umgangen oder außer Betrieb gesetzt werden.

**Stromunterbrechung** • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes oder aus dem Desktop-Strommodul (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

**Schutz des Netzkabels** • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dargegenstellen werden können.

**Wartung** • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Im Inneren des Gerätes sind keine Teile enthalten, die vom Benutzer gewartet werden können. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst zu warten, da beim Öffnen oder Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags oder anderer Gefahren bestehen.

**Schlitze und Öffnungen** • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

**Lithium-Batterie** • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie sie durch gleichartige oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgung der verbrauchten Batterien bitte gemäß den Herstelleranweisungen.

## Advertencia

**Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearla ni eliminarla.

**Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

**Protección del cables de alimentación** • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

**Reparaciones/mantenimiento** • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

**Ranuras y aberturas** • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

**Batería de litio** • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

# Precautions, cont'd

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## 安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有露的危险电压，有触电危险。

### 注意

**阅读说明书** • 用户使用该设备前必须阅读并理解所有安全和使用说明。

**保存说明书** • 用户应保存安全说明书以备将来使用。

**遵守警告** • 用户应遵守产品和用户指南上的所有安全和操作说明。

**避免追加** • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

### 警告

**电源** • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，不能不用或跳过。

**拔掉电源** • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

**电源线保护** • 妥善布线，避免被踩踏，或重物挤压。

**维护** • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

**通风孔** • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。不要用任何东西挡住通风孔。

**锂电池** • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。



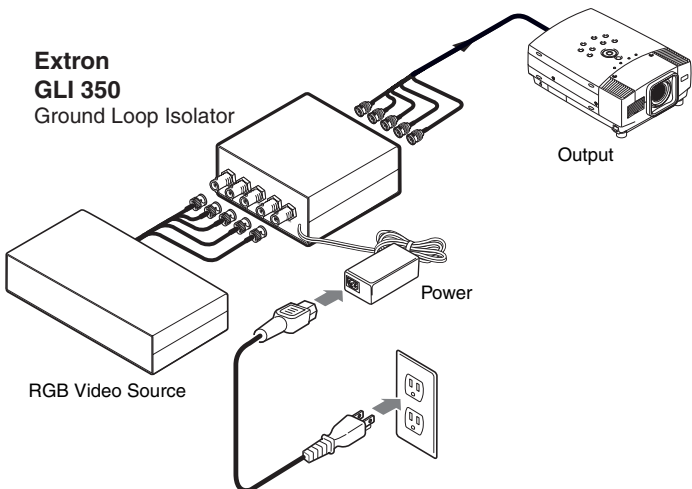
# Installation

The GLI 350 and the ADA 2/GLI 350 HV are ground loop isolators that eliminate the hum bars and mode noise associated with improper equipment grounding in video systems. The GLI 350 is a one-input, one-output dedicated ground loop isolator. The ADA 2/GLI 350 HV is a one-input, two-output distribution amplifier with ground loop isolation.

Use the following steps to install the GLI 350 or the ADA 2/GLI 350 HV ground loop isolator.

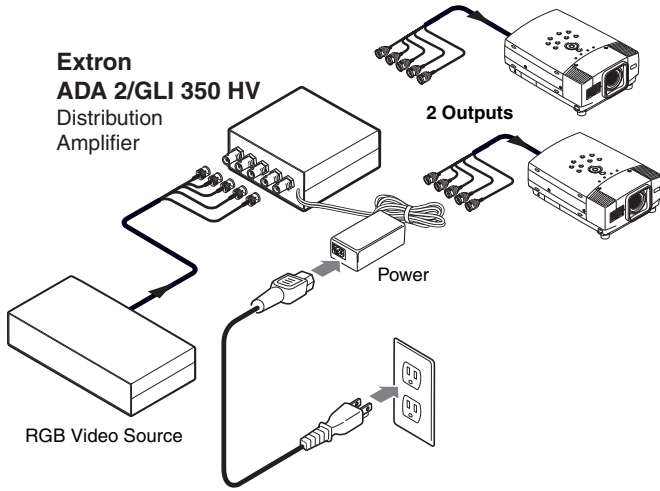
## Installation Procedure

- 1 Install the GLI 350 or ADA 2/GLI 350 HV ground loop isolator near the display device(s), rather than near the signal source device. See the example diagrams.
- 2 Connect the RGBS or RGBHV source cables to the ground loop isolator's BNC inputs.
- 3 Connect the ground loop isolator's BNC outputs to the display device(s).
- 4 Plug the ground loop isolator to the same power source as the display device(s).
- 5 The GLI 350 has 3 gain controls located on the bottom of the case to adjust the red, green, and blue output signals individually. To access the gain controls on the ADA 2/GLI 350 HV, the case must first be opened.



**Example 1: GLI 350 installation**

# Specifications



**Example 2: ADA 2/GLI 350 HV installation**

## Specifications — GLI 350 Ground Loop Isolator

### Video

Gain .....	Unity
Bandwidth .....	350 MHz (-3 dB)
CMRR .....	>47 dB @ 60 Hz, >30 dB @ 10 MHz

### Video input

Number/signal type .....	1 RGBHV, RGBS, RGSB, component video, S-video, composite video
Connectors .....	5 female BNC
Nominal level .....	1 V <sub>p-p</sub> for Y of component video and S-video, and for composite video 0.7 V <sub>p-p</sub> for RGB 0.3 V <sub>p-p</sub> for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels .....	Y and composite video: 0.3 V to 1.5 V <sub>p-p</sub>
Impedance .....	75 ohms
Horizontal frequency .....	15 kHz to 135 kHz
Vertical frequency .....	30 Hz to 150 Hz
Return loss .....	<-39 dB @ 5 MHz
DC offset (max. allowable) .....	0.2 V

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## Video output

Number/signal type .....	1 RGBHV, RGBS, RGsB, component video, S-video, composite video
Connectors .....	5 BNC female
Nominal level .....	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels .....	Y and composite video: 0.3 V to 1.5 Vp-p (follows input)
Impedance .....	75 ohms
Return loss .....	<-45 dB @ 5 MHz
DC offset .....	±10 mV maximum

## Sync

Input type .....	RGBHV, RGBS, RGsB
Output type .....	RGBHV, RGBS, RGsB
Input level .....	0.5 V to 5.0 Vp-p
Output level .....	TTL: 5 Vp-p, unterminated
Input impedance .....	510 ohms
Output impedance .....	75 ohms
Max. propagation delay .....	H: 60 ns V: 226 ns
Max. rise/fall time .....	4 ns
Polarity .....	RGBHV, RGBS: positive or negative RGsB: negative

## General

External power supply (attached) .....	100 VAC to 240 VAC, 50/60 Hz, 6 watts, autoswitchable; to 9 VDC, 1 A, regulated power supply
Temperature/humidity .....	Storage: -40 to +158°F (-40 to +70°C) / 10% to 90%, noncondensing Operating: +32 to +122°F (0 to +50°C) / 10% to 90%, noncondensing
Rack mount .....	No
Enclosure type .....	Metal
Enclosure dimensions .....	1.75" H x 4.6" W x 4.7" D 4.4 cm H x 11.7 cm W x 11.9 cm D (Depth excludes connectors.)

# Specifications, cont'd

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Product weight .....	1.9 lbs (0.9 kg)
Shipping weight .....	4 lbs (2 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Compliances .....	CE
MTBF .....	30,000 hours
Warranty .....	3 years parts and labor

**NOTE** All nominal levels are at  $\pm 10\%$ .

## Specifications — ADA 2/GLI 350 HV

### Video

Gain .....	Unity
Bandwidth .....	350 MHz (-3 dB), fully loaded
CMRR .....	>47 dB @ 60 Hz, >30 dB @ 10 MHz

### Video input

Number/signal type .....	1 RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, composite video
Connectors .....	5 BNC female
Nominal level .....	0.7 Vp-p for RGB
Minimum/maximum levels .....	Analog: 0.3 V to 1.5 Vp-p with no offset at unity gain
Impedance .....	75 ohms
Horizontal frequency .....	15 kHz to 135 kHz
Vertical frequency .....	30 Hz to 150 Hz
Return loss .....	<-39 dB @ 5 MHz

### Video output

Number/signal type .....	2 RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, composite video
Connectors .....	2 x 5 BNC female
Nominal level .....	0.7 Vp-p for RGB
Minimum/maximum levels .....	Analog: 0.3 V to 1.5 Vp-p
Impedance .....	75 ohms

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Return loss .....	<-45 dB @ 5 MHz
DC offset .....	±10mV maximum

## Sync

Input type .....	RGBHV, RGBS, RGsB, RsGsBs
Output type .....	RGBHV, RGBS, RGsB, RsGsBs
Input level .....	RGBHV, RGBS (min./max.): 0.5 V to 5 Vp-p (analog/TTL) RGsB (nominal): 0.3 Vp-p (analog)
Output level .....	TTL: 5 Vp-p, unterminated
Input impedance .....	510 ohms
Output impedance .....	75 ohms
Max. propagation delay .....	H: 60 ns
Max. rise/fall time .....	4 ns
Polarity .....	Positive or negative

## General

External power supply (attached) .....	100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 9 VDC, 1 A, regulated
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount .....	No
Enclosure type .....	Metal
Enclosure dimensions .....	1.75" H x 4.6" W x 4.7" D (1U high, quarter rack wide) 4.4 cm H x 11.7 cm W x 11.9 cm D
Product weight .....	1.8 lbs (0.8 kg)
Shipping weight .....	4 lbs (2 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Listings .....	UL, CUL
Compliances .....	CE
MTBF .....	30,000 hours
Warranty .....	3 years parts and labor

**NOTE** All nominal levels are at ±10%.

# Specifications, cont'd

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## Included Parts

Included part	Part number
GLI 350	60-223-02
<i>or</i> ADA 2/GLI 350 HV	60-230-02
Tweezer (small screwdriver)	
User's manual	

## Optional Accessories

Accessory	Part number
BNCM-RCAF adapter (qty. 10)	100-229-01
SVHSF-BNCM adapter, 12"	26-541-02
SY VGAM-RGBHVM 6' cable	26-533-02
BNC-5 Mini HR cable, 500'	22-020-02

## FCC Class A Notice

Note: 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. These limits are designed to 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 harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

## Extron's 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, USA

### **Asia:**

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

### **Europe, Africa, and the Middle East:**

Extron Electronics, Europe  
Beeldschemweg 6C  
3821 AH Amersfoort  
The Netherlands

### **Japan:**

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

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 non-Extron authorized modification to the product.

*If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), or 65.6383.4400 (Asia) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.*

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 Electronics, USA**

1230 South Lewis Street  
Anaheim, CA 92805  
USA  
714.491.1500  
Fax 714.491.1517

**Extron Electronics, Europe**

Beeldschermweg 6C  
3821 AH Amersfoort  
The Netherlands  
+31.33.453.4040  
Fax +31.33.453.4050

**Extron Electronics, Asia**

135 Joo Seng Road, #04-01  
PM Industrial Building  
Singapore 368363  
+65.6383.4400  
Fax +65.6383.4664

**Extron Electronics, Japan**

Kyodo Building  
16 Ichibancho  
Chiyoda-ku, Tokyo 102-0082 Japan  
+81.3.3511.7655  
Fax +81.3.3511.7656